START

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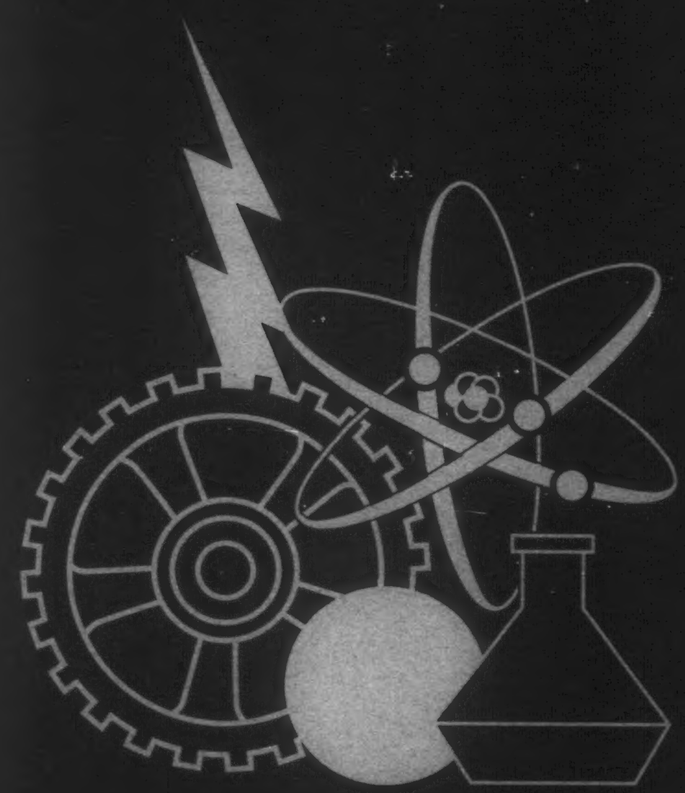
Patent
and
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Office

Vol. 1167 Number 1

OFFICIAL GAZETTE

of the
UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS
October 4, 1994



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
October 4, 1994 Volume 1167 Number 1

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1166 O.G. 94, on Sept. 27, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1994, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1165 O.G. 81, on Aug. 23, 1994.

International fees were changed, effective on May 1, 1993, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1994, and were announced in the *Official Gazette* at 1165 O.G. 132, on Aug. 30, 1994.

The schedule of PCT fees (in U.S. dollars), effective Oct. 1, 1994, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	210.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	640.00
—Corresponding prior U.S. national application filed	420.00
—Supplemental search fee, per additional invention (payable only upon invitation	180.00
European Patent Office as ISA	1537.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
—For the first 10 national or regional offices designated	128.00
—For each designation in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee	128.00
—Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	460.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	690.00
—Additional examination fee, per additional invention (payable only upon invitation)	240.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4)	46.00	92.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	330.00	660.00
USPTO was ISA but not IPEA	365.00	730.00
USPTO was neither ISA nor IPEA		
—Filed without a search report from the European Patent Office or the Japanese Patent Office	490.00	980.00
—Filed with a search report from the European Patent Office or the Japanese Patent Office	425.00	850.00
Other National fees		
—For each independent claim in excess of 3	38.00	76.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	120.00	240.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Sept. 9, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Status of Appeal Cases

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Assignment to Panel for a Decision Without a Hearing as of August 31, 1994.

Chemical Discipline -	October 20, 1992
Mechanical Discipline -	March 3, 1994
Electrical Discipline -	July 7, 1993

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting the Setting of Hearing Date as of August 31, 1994.

Chemical Discipline -	January 22, 1993
Mechanical Discipline -	April 13, 1993*
Electrical Discipline -	October 22, 1991*

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Board of Patent Appeals and Interferences
Decisions Rendered in Ex Parte Appeals
During the Month of August, 1994.

Affirmed	121
Affirmed-in-Part	37
Reversed	121
Total Decided	279

* These cases were just recently received from the examining group.

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on October 1, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,052,052 through 5,054,120
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on September 29, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,696,064 through 4,697,284
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on September 27, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,406,021 through 4,407,020
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $480.00
By other than a small entity $960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $965.00
By other than a small entity $1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,450.00
By other than a small entity $2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $640.00
(2) unintentional $1,500.00

Notice of Expiration of Patents
Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED July 27, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,497	06/917,990	09/08/87
(4,601,743)	(06/729,680)	(07/22/86)
Re. 32,572	06/947,020	01/05/88
(4,601,777)	(06/719,410)	(07/22/86)
4,341,028	06/260,753	07/27/82
4,341,047	06/252,791	07/27/82
4,341,090	06/228,068	07/27/82
4,341,098	06/237,577	07/27/82
4,341,132	06/234,244	07/27/82
4,341,139	06/271,055	07/27/82
4,341,175	06/259,528	07/27/82
4,341,205	06/222,373	07/27/82
4,341,213	06/292,374	07/27/82
4,341,238	06/269,537	07/27/82
4,341,251	06/233,424	07/27/82
4,341,274	06/251,396	07/27/82
4,341,323	06/242,215	07/27/82
4,341,381	06/237,243	07/27/82
4,341,450	06/260,206	07/27/82
4,341,464	06/234,890	07/27/82
4,341,478	06/233,789	07/27/82
4,341,515	06/233,507	07/27/82
4,341,540	06/255,463	07/27/82
4,341,542	06/231,980	07/27/82
4,341,548	06/270,826	07/27/82
4,341,549	06/295,345	07/27/82

Patent Number	Serial Number	Issue Date
4,341,558	06/238,881	07/27/82
4,341,561	06/256,415	07/27/82
4,341,600	06/251,368	07/27/82
4,341,617	06/229,960	07/27/82
4,341,620	06/232,944	07/27/82
4,341,642	06/295,809	07/27/82
4,341,643	06/283,150	07/27/82
4,341,645	06/225,671	07/27/82
4,341,657	06/242,863	07/27/82
4,341,683	06/260,437	07/27/82
4,341,688	06/251,818	07/27/82
4,341,694	06/280,569	07/27/82
4,341,702	06/219,618	07/27/82
4,341,710	06/308,737	07/27/82
4,341,711	06/269,894	07/27/82
4,341,720	06/247,186	07/27/82
4,341,723	06/219,524	07/27/82
4,341,736	06/248,276	07/27/82
4,341,746	06/269,258	07/27/82
4,341,751	06/290,039	07/27/82
4,341,768	06/250,987	07/27/82
4,341,770	06/255,575	07/27/82
4,341,771	06/255,577	07/27/82
4,341,786	06/239,778	07/27/82
4,341,788	06/253,860	07/27/82
4,341,792	06/280,862	07/27/82
4,341,797	06/270,720	07/27/82
4,341,810	06/295,795	07/27/82
4,341,823	06/224,869	07/27/82
4,341,824	06/252,523	07/27/82
4,341,827	06/288,575	07/27/82
4,341,832	06/268,258	07/27/82
4,341,846	06/230,522	07/27/82
4,341,849	06/239,751	07/27/82
4,341,851	06/236,739	07/27/82
4,341,862	06/226,022	07/27/82
4,341,871	06/257,241	07/27/82
4,341,872	06/270,870	07/27/82
4,341,879	06/242,681	07/27/82
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4,341,892	06/243,502	07/27/82
4,341,902	06/278,545	07/27/82
4,341,907	06/229,873	07/27/82
4,341,913	06/217,736	07/27/82
4,341,918	06/219,677	07/27/82
4,341,928	06/229,166	07/27/82
4,341,938	06/215,757	07/27/82
4,342,042	06/218,391	07/27/82
4,342,061	06/240,319	07/27/82
4,601,071	06/740,078	07/22/86
4,601,073	06/729,098	07/22/86
4,601,074	06/596,280	07/22/86
4,601,079	06/655,514	07/22/86
4,601,080	06/728,574	07/22/86
4,601,084	06/744,158	07/22/86
4,601,086	06/661,249	07/22/86
4,601,088	06/614,299	07/22/86
4,601,089	06/688,261	07/22/86
4,601,096	06/702,482	07/22/86
4,601,099	06/550,252	07/22/86
4,601,100	06/642,404	07/22/86
4,601,102	06/674,496	07/22/86
4,601,105	06/675,839	07/22/86
4,601,106	06/722,462	07/22/86
4,601,107	06/689,898	07/22/86
4,601,108	06/664,522	07/22/86
4,601,109	06/682,680	07/22/86
4,601,110	06/685,106	07/22/86
4,601,111	06/737,164	07/22/86
4,601,115	06/727,948	07/22/86
4,601,117	06/631,369	07/22/86
4,601,123	06/569,748	07/22/86
4,601,131	06/667,560	07/22/86
4,601,137	06/518,692	07/22/86
4,601,144	06/658,528	07/22/86
4,601,147	06/766,270	07/22/86
4,601,148	06/507,505	07/22/86
4,601,149	06/747,786	07/22/86
4,601,154	06/614,488	07/22/86
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4,601,249	06/685,998	07/22/86
4,601,250	06/604,327	07/22/86
4,601,257	06/746,449	07/22/86
4,601,259	06/636,840	07/22/86
4,601,266	06/682,793	07/22/86
4,601,274	06/753,372	07/22/86
4,601,278	06/508,155	07/22/86
4,601,280	06/619,202	07/22/86
4,601,282	06/630,283	07/22/86
4,601,291	06/596,916	07/22/86
4,601,296	06/540,016	07/22/86
4,601,297	06/660,959	07/22/86
4,601,298	06/691,052	07/22/86
4,601,305	06/676,258	07/22/86
4,601,308	06/814,360	07/22/86
4,601,309	06/726,565	07/22/86
4,601,314	06/692,205	07/22/86
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4,601,321	06/748,718	07/22/86
4,601,341	06/713,080	07/22/86
4,601,343	06/698,145	07/22/86
4,601,345	06/742,955	07/22/86
4,601,351	06/532,192	07/22/86
4,601,354	06/646,863	07/22/86
4,601,356	06/697,240	07/22/86
4,601,357	06/714,530	07/22/86
4,601,360	06/635,148	07/22/86
4,601,361	06/676,178	07/22/86
4,601,363	06/668,660	07/22/86
4,601,367	06/690,811	07/22/86
4,601,370	06/385,475	07/22/86
4,601,371	06/500,375	07/22/86
4,601,382	06/575,559	07/22/86
4,601,389	06/652,146	07/22/86
4,601,390	06/695,385	07/22/86
4,601,393	06/661,460	07/22/86
4,601,398	06/593,604	07/22/86
4,601,404	06/725,917	07/22/86
4,601,405	06/781,122	07/22/86
4,601,419	06/760,329	07/22/86
4,601,423	06/533,262	07/22/86
4,601,426	06/693,141	07/22/86
4,601,428	06/677,946	07/22/86
4,601,429	06/739,725	07/22/86
4,601,430	06/608,779	07/22/86
4,601,431	06/417,204	07/22/86
4,601,445	06/686,820	07/22/86
4,601,446	06/537,727	07/22/86
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4,601,461	06/609,816	07/22/86
4,601,462	06/627,909	07/22/86
4,601,464	06/644,029	07/22/86
4,601,465	06/592,474	07/22/86
4,601,467	06/660,519	07/22/86
4,601,469	06/597,085	07/22/86
4,601,474	06/693,993	07/22/86
4,601,475	06/788,584	07/22/86
4,601,480	06/709,687	07/22/86
4,601,481	06/674,087	07/22/86
4,601,484	06/743,140	07/22/86
4,601,487	06/670,041	07/22/86
4,601,494	06/478,365	07/22/86
4,601,498	06/441,459	07/22/86
4,601,501	06/673,675	07/22/86
4,601,502	06/730,787	07/22/86
4,601,506	06/741,837	07/22/86
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4,601,511	06/512,017	07/22/86
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4,601,515	06/640,787	07/22/86
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4,943,346	07/401,834	07/24/90
4,943,349	07/018,754	07/24/90
4,943,356	07/379,484	07/24/90
4,943,357	07/211,784	07/24/90
4,943,359	07/180,595	07/24/90
4,943,361	07/289,512	07/24/90
4,943,367	07/370,166	07/24/90
4,943,370	07/194,595	07/24/90
4,943,372	07/265,691	07/24/90
4,943,374	07/185,516	07/24/90
4,943,377	07/190,875	07/24/90
4,943,381	07/366,118	07/24/90
4,943,384	07/002,596	07/24/90
4,943,393	07/310,274	07/24/90
4,943,394	07/301,435	07/24/90
4,943,404	07/238,328	07/24/90
4,943,406	07/366,688	07/24/90
4,943,409	07/162,120	07/24/90
4,943,411	07/430,803	07/24/90
4,943,413	07/305,118	07/24/90
4,943,425	07/176,583	07/24/90
4,943,436	07/326,470	07/24/90
4,943,437	07/038,936	07/24/90
4,943,448	07/257,767	07/24/90
4,943,452	07/232,038	07/24/90
4,943,455	07/315,479	07/24/90
4,943,458	07/287,965	07/24/90
4,943,463	07/087,758	07/24/90
4,943,480	07/315,439	07/24/90
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4,943,482	07/252,924	07/24/90
4,943,485	07/381,508	07/24/90
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4,943,510	07/382,308	07/24/90
4,943,512	07/253,078	07/24/90
4,943,519	06/816,746	07/24/90
4,943,523	07/043,670	07/24/90
4,943,535	07/047,917	07/24/90
4,943,561	07/276,985	07/24/90
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4,943,564	06/928,226	07/24/90
4,943,567	07/228,714	07/24/90
4,943,568	06/933,729	07/24/90
4,943,570	07/344,966	07/24/90
4,943,571	07/335,354	07/24/90
4,943,575	07/155,400	07/24/90
4,943,576	07/184,965	07/24/90
4,943,578	07/355,335	07/24/90
4,943,588	07/305,060	07/24/90
4,943,589	07/263,261	07/24/90
4,943,591	06/918,317	07/24/90
4,943,605	07/162,167	07/24/90
4,943,612	07/128,657	07/24/90
4,943,623	07/273,949	07/24/90
4,943,627	07/234,009	07/24/90
4,943,629	07/232,331	07/24/90
4,943,631	07/141,192	07/24/90
4,943,641	07/311,868	07/24/90
4,943,644	07/274,837	07/24/90
4,943,645	07/390,871	07/24/90
4,943,655	07/328,388	07/24/90
4,943,657	07/365,891	07/24/90
4,943,664	07/410,783	07/24/90
4,943,666	07/337,886	07/24/90
4,943,668	07/237,818	07/24/90
4,943,673	07/258,737	07/24/90
4,943,682	07/284,674	07/24/90
4,943,684	07/391,669	07/24/90
4,943,687	07/289,199	07/24/90
4,943,690	07/319,289	07/24/90
4,943,696	07/302,927	07/24/90
4,943,697	07/440,794	07/24/90
4,943,705	07/345,845	07/24/90
4,943,711	07/330,233	07/24/90
4,943,714	07/309,802	07/24/90
4,943,718	07/312,632	07/24/90
4,943,731	07/423,231	07/24/90
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4,943,744	07/449,428	07/24/90
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4,943,762	07/149,116	07/24/90
4,943,780	07/038,605	07/24/90
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4,943,792	07/160,387	07/24/90
4,943,793	07/290,078	07/24/90
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4,943,878	07/314,775	07/24/90
4,943,881	07/221,224	07/24/90
4,943,882	07/289,422	07/24/90
4,943,886	07/308,515	07/24/90
4,943,891	07/378,409	07/24/90
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4,944,017	07/327,736	07/24/90
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NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(C); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
Re. 34,379	07/744,112	09/14/93	08/09/91	08/02/94
(4,928,283)	(07/160,657)	(05/22/90)	(02/26/88)	
4,506,716	06/436,420	03/26/85	10/25/82	08/03/94
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4,849,593	07/029,663	07/18/89	03/24/87	07/13/94
4,863,451	07/130,520	09/05/89	12/09/87	06/28/94
4,865,806	07/072,122	09/12/89	07/09/87	08/03/94
4,866,046	07/199,679	09/12/89	05/31/88	07/21/94
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4,928,533	07/374,480	05/29/90	06/30/89	08/03/94

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

D. 328,934, Re. S.N. 29/023,765, May 4, 1994, Cl. D21/191, PHYSICAL EXERCISER, Adolf H. Friedebach, Owner of Record: *Fitness Master, Inc., Waconia, Minn.*, Attorney or Agent: Eugene L. Johnson, Ex. Gp.: 2902

4,720,782, Re. S.N. 08/092,287, June 15, 1993, Cl. 395/800, CONSOLE UNIT FOR ALLOWING CENTRAL MONITORING OF A CLUSTER OF DIGITAL DATA PROCESSING SYSTEMS, David Kovalcin, Owner of Record: *Digital Equipment Corp., Maynard, Mass.*, Attorney or Agent: Peter J. Devlin, Ex. Gp.: 2315

4,874,253, Re. S.N. 08/222,324, Apr. 4, 1994, Cl. 374/121, RADIATION DETECTOR WITH TEMPERATURE DISPLAY, Francesco Pompei, et. al., Attorney or Agent: Exergen Corp., Natick, Mass., Attorney or Agent: J. Grant Houston, Ex. Gp.: 2406

5,116,037, Re. S.N. 08/249,317, May 26, 1994, Cl. 271/3.1, APPARATUS FOR RECEIVING AND ISSUING SHEETS, Andre Gerlier, et. al., Owner of Record: *Mars, Inc.,McLean, Va.*, Attorney or Agent: Brandon N. Sklar, Ex. Gp.: 3101

5,132,023, Re. S.N. 08/274,181, July 12, 1994, Cl. 210/734, EMULSIFIED MANNICH ACRYLAMIDE POLYMERS, Joseph J. Kozakiewicz, et. al., Owner of Record: *Cytec Technology Corp., Wilmington, Del.*, Attorney or Agent: Allan A. Fanucci, Ex. Gp.: 1308

5,132,238, Re. S.N. 08/288,731, Aug. 12, 1994, Cl. 437/41, METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE UTILIZING AN ACCUMULATION LAYER, Yoshinori Murakami, et. al., Owner of Record: *Nissan Motor Co., Yokohama, Japan*, Attorney or Agent: John J. Feldhaus, Ex. Gp.: 1104

5,136,697, Re. S.N. 08/285,520, Aug. 4, 1994, Cl. 395/375, SYSTEM FOR REDUCING DELAY FOR EXECUTION SUBSEQUENT TO CORRECTLY PREDICTED BRANCH INSTRUCTION USING FETCH INFORMATION STORED WITH EACH BLOCK OF INSTRUCTIONS IN CACHE, William M. Johnson, Owner of Record: *Advanced Micro Devices, Inc., Austin, Tex.*, Attorney or Agent: Brian J. McNamara, Ex. Gp.: 2302

5,179,715, Re. S.N. 08/274,266, July 13, 1994, Cl. 395/800, MULTIPROCESSOR COMPUTER SYSTEM WITH PROCESS EXECUTION ALLOCATED BY PROCESS MANAGERS IN A RING CONFIGURATION, Ichiroh Andoh, et. al., Owner of Record: *Toyo Communication Co. Ltd., Samukawa, Japan*, Attorney or Agent: David L. Fehrman, Ex. Gp.: 2302

5,189,574, Re. S.N. 08/230,207, Apr. 20, 1994, Cl. 360/103, FLEXIBLE INFORMATION STORING DISK APPARATUS HAVING LAMINAR AIR FLOW, Makoto Imamura, Owner of Record: *Kabushiki Kaisha Toshiba, Kawasaki-Shi, Japan*, Attorney or Agent: Gregory J. Maier, Ex. Gp.: 2512

5,220,107, Re. S.N. 08/280,696, July 26, 1994, Cl. 588/203, PROCESS FOR THE PREPARATION OF SOLID ROCKET PROPELLANT AND SOLID OTHER EXPLOSIVES FOR THERMAL DISPOSAL OR RECLAMATION, Robert W. Kubacki, Owner of Record: *United Technologies Corp., Hartford, Conn.*, Attorney or Agent: Alan C. Cohen, Ex. Gp.: 2204

5,240,321, Re. S.N. 08/258,441, June 8, 1994, Cl. 366/45, VERTICAL SCREW MIXER, Peter Miller, Owner of Record: *Alteen Distributors Ltd., Alberta, Canada*, Attorney or Agent: James J. Hill, Ex. Gp.: 2402

5,250,663, Re. S.N. 08/276,861, July 18, 1994, Cl. 530/364, PREPARING ESSENTIALLY MONOMERIC NORMAL HUMAN SERUM ALBUMIN, Robert A. Tenold, Owner of Record: *Miles Inc., Elkhart, Ind.*, Attorney or Agent: Elizabeth F. Enayati, Ex. Gp.: 1806

5,277,352, Re. S.N. 08/287,420, Aug. 9, 1994, Cl. 226/188, REDUCED HEIGHT TAPE DRIVER, Hiroshi Ohkubo, et. al., Owner of Record: *Teac Corp., Tokyo, Japan*, Attorney or Agent: John C. Altmiller, Ex. Gp.: 2405

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 34,501, Reexam. No. 90/003,517, Aug. 3, 1994, Cl. 073/290 V, SENSOR AND METHOD FOR ULLAGE LEVEL AND FLOW DETECTION, Buford R. Jean, et. al., Owner of Record: *Baker Hughes, Inc., Houston, Tex.*, Attorney or Agent: Sroufe, Zamecki, Payne & Lundeen, Houston, Tex., Ex. Gp.: 2406, Requester: Paul V. Del Giudice, Shoemaker & Mattare, Ltd., Arlington, Va.

4,489,711, Reexam. No. 90/003,497, Jul. 5, 1994, Cl. 600/015, MAGNETIC PLASTER, Arno W. Latzke, Owner of Record: *Magnesystems, Inc., Los Angeles, Calif.*, Attorney or Agent: Jerome B. Klose, Marshall, O'Toole, Gerstein, Murray & Bicknell, Chicago, Ill., Ex. Gp.: 3305, Requester: Nu-Magnetics, Inc., c/o Edwin D. Schindler, Coram, N.Y.

4,596,900, Reexam. No. 90/003,496, Jul. 15, 1994, Cl. 379/105, PHONE-LINE-LINKED TONE-OPERATED CONTROL DEVICE, Philip S. Jackson, Owner of Record: *Philip S. Jackson, Chicago, Ill.*, Attorney or Agent: Trexler, Bushnell & Wolters, Ltd., Chicago, Ill., Ex. Gp.: 2608, Requester: Lowe, Price, LeBlanc & Becker, Alexandria, Va.

4,609,579, Reexam. No. 90/003,492, Jul. 8, 1994, Cl. 428/195, METHOD AND APPARATUS FOR APPLYING STRETCHABLE, PROTECTIVE WRAP, Gary G. Hills, Owner of Record: *Teltronics, Inc., Austin, Tex.*, Attorney or Agent: Arnold, White & Durkee, Houston, Tex., Ex. Gp.: 1513, Requester: Minnesota Mining & Manu., Austin, Tex.

4,931,760, Reexam. No. 90/003,499, Jul. 18, 1994, Cl. 324/319, MAGNETIC FIELD GENERATING DEVICE, Hideya Sakurai, et. al., Owner of Record: *Sumitomo Special Meter Co., Ltd., Osaka, Japan*, Attorney or Agent: Watson, Cole, Grindle & Watson, Washington, D.C., Ex. Gp.: 2607, Requester: Owner

4,980,815, Reexam. No. 90/003,491, Jul. 6, 1994, Cl. 364/140, APPARATUS FOR APPLYING LANE DRESSING TO A BOWLING LANE, John M. Davis, Owner of Record: *Kegel Company, Inc., Sebring, Fla.*, Attorney or Agent: Stephen D. Timmons, Hovey, Williams, Timmons & Collins, Kansas City, Mo., Ex. Gp.: 2306, Requester: AMF Bowling, Inc., Golden, Colo.

4,981,534, Reexam. No. 90/003,518, Aug. 3, 1994, Cl. 149/19.1, OCCUPANT RESTRAINT SYSTEM AND COMPOSITION USEFUL THEREIN, Robert S. Scheffe, Owner of Record: *Atlantic Research Corp., Vienna, Va.*, Attorney or Agent: Laubscher & Laubscher, Alexandria, Va., Ex. Gp.: 2204, Requester: Owner

4,994,117, Reexam. No. 90/003,484, Jul. 5, 1994, Cl. 436/133, QUANTITATIVE CARBON DIOXIDE DETECTOR, Carl G. Fehder, Owner of Record: *Nellcor Inc., Hayward, Calif.*, Attorney or Agent: William E. Pelton, Cooper & Dunham, New York, N.Y., Ex. Gp.: 1809, Requester: Glenn M. Seager, Nawrocki, Rooney & Sivertson, Minneapolis, Minn.

4,997,929, Reexam. No. 90/003,493, Jul. 8, 1994, Cl. 435/240.1, PURIFIED CILIARY NEUROTROPHIC FACTOR, Franklin D. Collins, et. al., Owner of Record: *Synergen, Inc., Boulder, Colo.*, Attorney or Agent: Finnegan, Henderson, Farabow, Garret & Dunner, Washington, D.C., Ex. Gp.: 1808, Requester: Merrell Dow Pharmaceuticals, Inc., Cincinnati, Ohio

5,008,725, Reexam. No. 90/003,495, Jul. 15, 1994, Cl. 257/341, PLURAL POLYGON SOURCE PATTERN FOR MOSFET, Alexander Lidow, et. al., Owner of Record: *International Rectifyer Corp., El Segundo, Calif.*, Attorney or Agent: Samuel H. Weiner, Ostrolenk, Faber, Gerb & Soffen, New York, N.Y., Ex. Gp.: 2508, Requester: SGS-Thomson Microelectronics, Inc., c/o Peter J. Thomas, Dallas, Tex.

5,015,840, Reexam. No. 90/003,520, Aug. 5, 1994, Cl. 250/221, SELF-CHECKING LIGHT CURTAIN SYSTEM AND METHOD OF OPERATION, David Blau, Owner of Record: *Scientific Technologies, Inc., Hayward, Calif.*, Attorney or Agent: Richard E. Backus, Flehr, Hohbach, Test, Albritton & Herbert, San Francisco, Calif., Ex. Gp.: 2509, Requester: Owner

5,064,989, Reexam. No. 90/003,519, Aug. 5, 1994, Cl. 219/121.12, SURFACE SHAPING AND FINISHING APPARATUS AND METHOD, Jerome H. Lemelson, Metuchen, N.J., Owner of Record: *Inventor*, Attorney or Agent: Peter C. Warner, Scottsdale, Ariz., Ex. Gp.: 2106, Requester: Marshall, O'Toole, Gerstein, Murray & Borun, Chicago, Ill.

5,092,780, Reexam. No. 90/003,498, Jul. 7, 1994, Cl. 434/433, SYSTEM PERFORMANCE SIMULATOR, Martin Vlach, Owner of Record: *Analogy, Inc., Beaverton, Oreg.*, Attorney or Agent: James G. Stewart, Kolisch, Hartwell, Dickinson, McCormack & Heuser, Portland, Oreg., Ex. Gp.: 3303, Requester: Mark L. Becker, Klarquist, Sparkman, Campbell, Leigh & Whinston, Portland, Oreg.

5,137,877, Reexam. No. 90/003,521, Aug. 5, 1994, Cl. 514/025, BIFUNCTIONAL LINKING COMPOUNDS, CONJUGATES AND METHODS FOR THEIR PRODUCTION, T. Kaneko, et. al., Owner of Record: *Bristol-Myers Squibb Corp., New York, N.Y.*, Attorney or Agent: Sarah B. Adriano, Merchant & Gould, Los Angeles, Calif., Ex. Gp.: 1803, Requester: Owner

5,187,945, Reexam. No. 90/003,523, Aug. 8, 1994, Cl. 062/234, REFRIGERATED CONTAINER, David A. Dixon, Owner of Record: *Reefco Manufacturing Corp., Vancouver, British Columbia, Canada*, Attorney or Agent: Thomas B. Haverstock, Haverstock, Medlen & Carroll, San Francisco, Calif., Ex. Gp.: 3404, Requester: Owner

5,240,960, Reexam. No. 90/003,522, Aug. 5, 1994, Cl. 514/521, NOVEL 3-CYCLOALKYL-PROPANAMIDES, Philip T. Hambleton, et. al., Owner of Record: *Roussel-Uclaf, Paris, France*, Attorney or Agent: Charles A. Muserlian, Bierman & Muserlian, New York, N.Y., Ex. Gp.: 1205, Requester: Owner

5,241,273, Reexam. No. 90/003,539, Aug. 30, 1994, Cl. 324/338, METHOD FOR CONTROLLING DIRECTIONAL DRILLING IN RESPONSE TO HORNS DETECTED BY ELECTROMAGNETIC ENERGY PROPAGATION RESISTIVITY MEASUREMENTS, Martin Luling, Owner of Record: *Schlumberger Technology Corp., Sugarland, Tex.*, Attorney or Agent: Martin M. Novack, Westport, Conn., Ex. Gp.: 2607, Requester: Frank Sowa, II, Arlington, Va.

5,291,475, Reexam. No. 90/003,516, Aug. 2, 1994, Cl. 370/95.1, SLOT HOPPED FD/TD/CDMA, Eugene J. Bruckert, Owner of Record: *Motorola, Inc., Schaumburg, Ill.*, Attorney or Agent: Donald B. Southard, Motorola, Inc., Schaumburg, Ill., Ex. Gp.: 2603, Requester: Warren J. Krauss, Sedgwick, Detert, Moran & Arnold, San Francisco, Calif.

5,298,013, Reexam. No. 90/003,494, Jul. 11, 1994, Cl. 602/028, METHOD OF HEALING THE DECABITUS ON THE HEEL OF A BEDFAST PATIENT, Robert Lonardo, Owner of Record: *Restorative Care of America, Inc., Clearwater, Fla.*, Attorney or Agent: Donald H. Zarley, Zarley, McKie, Thomte, Voorhees & Sease, Des Moines, Iowa, Ex. Gp.: 3302, Requester: Anatomic Concepts, Inc., Boardman, Ohio

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to reneiq in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED AUGUST 15, 1994
DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
94,164	71/071,701	11/11/1913
307,815	71/339,264	11/07/1913
307,840	71/335,235	11/07/1913
307,849	71/339,681	11/07/1913
307,850	71/339,682	11/07/1913
307,851	71/339,683	11/07/1913
307,855	71/338,402	11/07/1913
307,856	71/338,403	11/07/1913
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307,861	71/338,622	11/07/1913
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307,873	71/339,933	11/07/1913
307,895	71/337,296	11/07/1913
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582,147	71/565,766	11/10/1953
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582,271	71/638,153	11/10/1953

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Reg. No.	Serial Number	Reg. Date
582,274	71/638,501	11/10/1953
582,278	71/638,882	11/10/1953
582,279	71/638,901	11/10/1953
582,281	71/639,011	11/10/1953
582,287	71/639,562	11/10/1953
582,288	71/639,596	11/10/1953
582,298	71/640,447	11/10/1953
582,304	71/640,980	11/10/1953
582,307	71/641,062	11/10/1953
582,310	71/641,277	11/10/1953
582,321	71/642,055	11/10/1953
582,322	71/642,071	11/10/1953
582,328	71/642,378	11/10/1953
582,329	71/642,478	11/10/1953
582,335	71/642,896	11/10/1953
582,345	71/643,340	11/10/1953
582,347	71/643,527	11/10/1953
582,352	71/645,140	11/10/1953
582,355	71/645,945	11/10/1953
582,357	71/615,493	11/10/1953
582,361	71/624,447	11/10/1953
582,366	71/643,274	11/10/1953
972,126	72/449,575	11/06/1973
972,129	72/397,139	11/06/1973
972,134	72/441,791	11/06/1973
972,138	72/354,735	11/06/1973
972,139	72/402,040	11/06/1973
972,140	72/418,697	11/06/1973
972,142	72/426,639	11/06/1973
972,147	72/443,450	11/06/1973
972,151	72/448,358	11/06/1973
972,156	72/416,607	11/06/1973
972,159	72/431,653	11/06/1973
972,164	72/407,095	11/06/1973
972,166	72/428,555	11/06/1973
972,168	72/431,825	11/06/1973
972,170	72/435,384	11/06/1973
972,174	72/434,658	11/06/1973
972,175	72/437,409	11/06/1973
972,180	72/441,896	11/06/1973
972,181	72/443,908	11/06/1973
972,183	72/415,600	11/06/1973
972,185	72/430,356	11/06/1973
972,186	72/430,358	11/06/1973
972,187	72/430,359	11/06/1973
972,200	72/433,206	11/06/1973
972,203	72/446,801	11/06/1973
972,205	72/448,197	11/06/1973
972,206	72/448,633	11/06/1973
972,209	72/338,116	11/06/1973
972,218	72/406,290	11/06/1973
972,223	72/429,640	11/06/1973
972,226	72/429,830	11/06/1973
972,228	72/434,605	11/06/1973
972,233	72/361,728	11/06/1973
972,234	72/376,867	11/06/1973
972,235	72/379,512	11/06/1973
972,244	72/421,019	11/06/1973
972,252	72/431,508	11/06/1973
972,263	72/403,074	11/06/1973
972,271	72/423,802	11/06/1973
972,272	72/423,803	11/06/1973
972,273	72/424,334	11/06/1973
972,276	72/426,508	11/06/1973
972,277	72/428,426	11/06/1973
972,279	72/431,560	11/06/1973
972,280	72/431,617	11/06/1973
972,286	72/439,332	11/06/1973
972,290	72/442,726	11/06/1973
972,291	72/442,750	11/06/1973
972,292	72/442,751	11/06/1973
972,293	72/442,864	11/06/1973
972,294	72/442,865	11/06/1973
972,295	72/442,867	11/06/1973
972,296	72/445,578	11/06/1973
972,299	72/391,616	11/06/1973
972,300	72/397,847	11/06/1973
972,301	72/401,439	11/06/1973
972,302	72/408,688	11/06/1973
972,307	72/423,916	11/06/1973
972,309	72/427,235	11/06/1973
972,311	72/432,949	11/06/1973
972,312	72/435,369	11/06/1973
972,321	72/441,245	11/06/1973
972,323	72/442,081	11/06/1973
972,326	72/385,743	11/06/1973
972,328	72/396,103	11/06/1973
972,332	72/419,259	11/06/1973
972,334	72/421,863	11/06/1973
972,335	72/425,500	11/06/1973
972,338	72/427,979	11/06/1973
972,343	72/431,935	11/06/1973
972,348	72/442,152	11/06/1973
972,351	72/446,180	11/06/1973
972,355	72/394,851	11/06/1973
972,360	72/443,398	11/06/1973
972,366	72/443,239	11/06/1973
972,368	72/443,685	11/06/1973
972,371	72/439,191	11/06/1973
972,372	72/383,653	11/06/1973
972,373	72/398,211	11/06/1973
972,374	72/427,143	11/06/1973
972,375	72/430,747	11/06/1973
972,381	72/449,753	11/06/1973
972,382	72/359,111	11/06/1973
972,385	72/421,599	11/06/1973
972,387	72/432,100	11/06/1973
972,394	72/418,093	11/06/1973
972,398	72/448,538	11/06/1973
972,400	72/449,505	11/06/1973
972,401	72/450,193	11/06/1973
972,407	72/420,405	11/06/1973
972,411	72/429,780	11/06/1973
972,417	72/436,753	11/06/1973
972,421	72/443,070	11/06/1973
972,429	72/423,126	11/06/1973
972,430	72/428,836	11/06/1973
972,432	72/431,136	11/06/1973
972,438	72/436,148	11/06/1973
972,443	72/440,710	11/06/1973
972,444	72/440,734	11/06/1973
972,447	72/448,727	11/06/1973
972,448	72/449,172	11/06/1973
972,449	72/450,361	11/06/1973
972,450	72/411,831	11/06/1973
972,453	72/434,956	11/06/1973
972,463	72/441,309	11/06/1973
972,465	72/441,311	11/06/1973
972,467	72/382,922	11/06/1973
972,469	72/417,913	11/06/1973
972,472	72/423,153	11/06/1973
972,473	72/423,331	11/06/1973
972,474	72/423,813	11/06/1973
972,475	72/424,006	11/06/1973
972,480	72/431,979	11/06/1973
972,481	72/432,022	11/06/1973
972,484	72/445,322	11/06/1973
972,488	72/395,153	11/06/1973
972,490	72/408,456	11/06/1973
972,491	72/412,507	11/06/1973
972,492	72/414,345	11/06/1973
972,493	72/414,614	11/06/1973
972,495	72/418,002	11/06/1973
972,497	72/422,510	11/06/1973
972,500	72/425,354	11/06/1973
972,502	72/430,393	11/06/1973
972,507	72/436,297	11/06/1973
972,508	72/438,242	11/06/1973
972,510	72/438,861	11/06/1973
972,520	72/447,722	11/06/1973
972,523	72/450,408	11/06/1973
972,524	72/450,904	11/06/1973
972,525	72/451,082	11/06/1973
972,526	72/451,151	11/06/1973
972,528	72/452,861	11/06/1973
972,530	72/454,772	11/06/1973

Reg. No.	Serial Number	Reg. Date
972,532	72/421,786	11/06/1973
972,535	72/403,110	11/06/1973
972,538	72/435,168	11/06/1973
972,540	72/436,057	11/06/1973
972,550	72/449,919	11/06/1973
972,552	72/427,129	11/06/1973
972,554	72/443,923	11/06/1973
972,557	72/381,639	11/06/1973
972,559	72/396,005	11/06/1973
972,563	72/421,416	11/06/1973
972,572	72/335,543	11/06/1973
972,573	72/401,705	11/06/1973
972,574	72/404,294	11/06/1973
972,577	72/413,305	11/06/1973
972,581	72/418,448	11/06/1973
972,587	72/425,041	11/06/1973
972,590	72/428,706	11/06/1973
972,591	72/442,663	11/06/1973
972,593	72/415,132	11/06/1973
972,597	72/373,788	11/06/1973
972,602	72/407,518	11/06/1973
972,610	72/402,663	11/06/1973
972,620	72/429,016	11/06/1973
972,621	72/434,994	11/06/1973
972,624	72/422,302	11/06/1973
972,628	72/382,708	11/06/1973
972,629	72/402,305	11/06/1973
972,631	72/445,721	11/06/1973
972,632	72/415,556	11/06/1973
972,633	72/426,666	11/06/1973
972,634	72/407,594	11/06/1973

Trademark Exposition

The 12th Annual National Trademark Exposition will be held on October 8 and 9, 1994, in the Andrew W. Mellon Auditorium, located on Constitution Avenue between 12th and 14th Streets, N.W., Washington, D.C. The Trademark Expo--cosponsored by the Patent and Trademark Office and the Intellectual Property Owners, Inc. --is open to the public October 8 and 9 from 10:00 a.m. to 5:00 p.m. Admission is free. A ribbon-cutting ceremony will open the expo at 10:00 a.m. on Saturday October 8.

Trademark Expo educates the public about the use of trademarks while giving commercial enterprises an opportunity to explain how their marks are a symbol of quality worldwide. Patent and Trademark Office employees will conduct seminars during the expo for small and minority businesses to heighten their awareness of trademark issues.

Some of the organizations that will exhibit their trademarks, products, and services include: American Express, American Tourister, Baltimore Orioles, Chrysler, Coca-Cola, Dixon & Parcel, EverReady, Fruit of the Loom, General Mills, Glory Foods, Intellectual Property Owners, Kellogg, Kraft, Mattel, Mcilhenny, Met Life, National Crime Prevention Council, NIH National Bone Marrow Donor Program, Owens-Corning, Procter & Gamble, Saban Entertainment, Thompson & Thompson, U.S. Copyright Office, U.S. Patent and Trademark Office, Warner-Lambert, and Washington Bullets.

For Additional information call the Office of Public Affairs at (703) 305-8341.

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commisioner of Patents and Trademarks

Errata

The following registration numbers were inadvertently listed as canceled in the "Trademark Registration Canceled, Section 8" and "Index of Registrants" sections of the *Official Gazette*:

TM 444, TMI 28	1,424,104
TM 307, TMI 18	1,427,198
TM 444, TMI 9	1,427,439
TM 373, TMI 28	1,428,208
TM 301, TMI 27	1,441,735
TM 358, TMI 35	1,446,119
TM 210, TMI 17	1,443,103
TM 309, TMI 23	1,445,140
TM 258, TMI 22	1,453,205
TM 376, TMI 21	1,457,600
TM 305, TMI 15	1,459,590
TM 188, TMI 8	1,461,187
TM 215, TMI 24	1,462,090
TM 260, TMI 30	1,463,257
TM 115, TMI 28	1,481,167

Consequently, the above-identified registrations are still active.

August 30, 1994 DAVID E. BUCHER
Director of Trademark Examining Groups

Errata

The following registration numbers listed in the "Trademark Registrations Issued" and "Index of Registrants" sections of the *Official Gazette* of February 1, 1994 were listed inadvertently:

TM 148, TMI 4	1,818,670
TM 152, TMI 27	1,818,864
TM 154, TMI 2	1,818,939
TM 154, TMI 2	1,818,942
TM 160, TMI 27	1,818,199

Consequently, the certificates of registration bearing the above identified registration numbers were not issued on the date indicated, and the registration numbers have been vacated.

August 30, 1994 DAVID E. BUCHER
Director of Trademark Examining Groups

Errata

The following registration numbers listed in the "Trademark Registrations Issued" and "Index of Registrants" sections of the *Official Gazette* of February 8, 1994 were listed inadvertently:

TM 135, TMI 19	1,819,739
TM 136, TMI 3	1,819,810
TM 137,140,145, TMI 25	1,819,859
TM 147, TMI 23	1,820,272
TM 148, TMI 32	1,820,288

Consequently, the certificates of registration bearing the above identified registration numbers were not issued on the date indicated, and the registration numbers have been vacated.

August 30, 1994 DAVID E. BUCHER
Director of Trademark Examining Groups

Errata

The following registration numbers in the "Trademark Registrations Issued" and "Index of Registrants" sections of the *Official Gazette* of February 22, 1994 were listed inadvertently:

TM 245, TMI 50	1,822,206
TM 250, TMI 50	1,822,436
TM 251, TMI 38	1,822,482
TM 251, TMI 14	1,822,501
TM 252, TMI 31	1,822,529

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TM 255, TMI 41	1,822,650
TM 255, TMI 31	1,822,652
TM 255, TMI 27	1,822,668
TM 259, TMI 5	1,822,819
TM 260, TMI 47	1,822,903
TM 264, TMI 36	1,823,060
TM 264, TMI 34	1,823,072
TM 266, TMI 17	1,823,142
TM 267, TMI 38	1,823,202
TM 267,270 TMI 16	1,823,205
TM 268, TMI 20	1,823,249
TM 319, TMI 19	1,823,319
TM 272, TMI 23	1,823,429

Consequently, the certificates of registration bearing the above identified registration numbers were not issued on the date indicated, and the registration numbers have been vacated.

August 30, 1994

DAVID E. BUCHER
Director of Trademark Examining Groups

Errata

The following registration numbers in the "Trademark Registrations Issued" and "Index of Registrants" sections of the *Official Gazette* were listed inadvertently:

TM 285, TMI 4	1,825,969	03/08/94
TM 246, TMI 8	1,830,332	04/12/94
TM 89, TMI 13	1,837,078	05/17/97
TM 90, TMI 13	1,837,079	05/17/94
TM 139, TMI 2	1,837,995	05/31/94
TM 150, TMI 26	1,838,310	05/31/94
TM 188, TMI 29	1,839,504	06/14/94
TM 175, TMI 36	1,840,605	06/21/94
TM 212,215, TMI 16	1,841,686	06/28/94
TM 218, TMI 5	1,841,935	06/28/94
TM 218,222, TMI 3	1,841,966	06/28/94
TM 215,221, TMI 6	1,841,809	06/28/94
TM 218, TMI 17	1,841,929	06/28/94
TM 218, TMI 5	1,841,935	06/28/94
TM 279, TMI 20	1,842,561	06/28/94
TM 223, TMI 19	1,842,179	06/28/94

Consequently, the certificates of registration bearing the above identified registration numbers were not issued on the date indicated, and the registration numbers have been vacated.

August 30, 1994

DAVID E. BUCHER
Director of Trademark Examining Groups

Errata

In the *Official Gazette* of Sept. 6, 1994, in the notices of Adverse Decisions in Interferences, Patent No. 5,102,557, Interference No. 103,265, should be omitted from the Notice of Adverse decisions.

Department of Commerce
Patent and Trademark Office

Grant of Certificate of Interim Extension of the term of U.S. Patent No. 4,048,306; Dynabac

Agency: Patent and Trademark Office, Commerce
Action: Notice of Interim Patent Term Extension
Summary: The Patent and Trademark Office has issued a certificate under 35 U.S.C. § 156(d)(5) for a one-year interim extension of the term of U.S. Patent No. 4,048,306 that claims the human drug product known as Dynabac.

For Further Information Contact: Gerald A. Dost by telephone at (703) 305-9282; or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Office of Special Programs, Office of the Deputy Assistant Commissioner for Patent Policy and Projects, Washington, D.C. 20231.

Supplementary Information: Section 156 of Title 35, United States Code, generally provides that the term of a patent may be extended for a period of up to 5 years if the patent claims a product, or a method of making or using a product, that has been subject to certain defined regulatory review. Under section 156, a patent is eligible for term extension only if regulatory review of the claimed product was completed before the original patent term expired.

On December 3, 1993, section 156 was amended by Pub. L. No. 103-179 to provide that if the owner of record of the patent or its agent reasonably expects the applicable regulatory review period to extend beyond the expiration of the patent, the owner or its agent may submit an application to the Commissioner of Patents and Trademarks for an interim extension of the patent term. If the Commissioner determines that, except for permission to market or use the product commercially, the patent would be eligible for a statutory extension of the patent term, the Commissioner shall issue to the applicant a certificate of interim extension for a period of not more than one year.

On August 22, 1994, Eli Lilly and Company, on behalf of the patent owner Boehringer Ingelheim GmbH, filed an application under 35 U.S.C. § 156(d)(5) for interim extension of the term of U.S. Patent No. 4,048,306. The application states that the patent claims the active ingredient Dirithromycin in the human drug product Dynabac and a method of using the product under regulatory review. The application indicates that the product is currently undergoing a regulatory review before the Food and Drug Administration for permission to market or use the product commercially. The original term of the patent is set to expire on September 13, 1994. Applicant requests an interim extension of the term of the patent for a period of one year.

Review of the application indicates that, except for permission to market or use the product commercially, the subject patent would be eligible for an extension of the patent term under 35 U.S.C. § 156. Since it is appartant that the regulatory period may extend beyond the expiration of the original patent term, an interim extension of the patent term under 35 U.S.C.(d)(5) is appropriate. Accordingly, an interim extension under 35 U.S.C. § 156(d)(5) of the term of U.S. Patent No. 4,048,306 has been granted for a period of one year from the original expiration date of the patent.

Sept. 6, 1994

MICHAEL K. KIRK
Acting Assistant Secretary of Commerce and Acting Commissioner of Patents and Trademarks

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Department of Commerce
Patent and Trademark Office

37 CFR Part 1

RIN 0651-AA68

Revision of Patent Fees; Correction

Agency: Patent and Trademark Office, Commerce
Action: Correction to Final Rulemaking.
Summary: This document contains a correction to the final rulemaking which was published Thursday, August 25, 1994 (59 FR 43736).
Effective Date: October 1, 1994.
For Further Information Contact: Robert Kopson by telephone at (703) 305-8510, fax at (703) 305-8525, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Need For Correction: The final rulemaking contains an error which may prove to be misleading and is in need of clarification.

As published, section 1.492(a)(5) read, "...by the European Patent Office of the Japanese Patent Office...". The section should read, "...by the European Patent Office or the Japanese Patent Office...".
Correction of Publication: Accordingly, on p. 43742 of the final rulemaking which was published on August 25, 1994, paragraph (a)(5) of § 1.492 is corrected as follows:

§ 1.492 National stage fees.

. . . . .

(a)* * *

. . . . .

(5) Where a search report on the international application has been prepared by the European Patent Office or the JapanesePatent Office:
By a small entity (§ 1.9(f)) $425.00
By other than a small entity $850.00

. . . . .

Sept. 1, 1994

MICHAEL K. KIRK
Acting Assistant Secretary of Commerce and Acting Commissioner of Patents and Trademarks

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U.S. Patent and Trademark Office
Quality is Customer Satisfaction

We at the U.S. Patent and Trademark Office have been actively listening to and involving our customers in defining quality. We call this effort *Quality Is Customer Satisfaction*. We have been trying to find out what our customers need and what they consider quality products and services. Some of you may have been involved in this effort.

The first part of our effort was to talk with our customers. We identified areas of high customer concentration. During March and April of 1994, customers were randomly selected and invited to attend focus meetings in Chicago, New York and Washington, D.C. At these meetings, customers were asked their needs and expectations when applying for patents and trademarks. In addition, they provided their views on what makes a quality product, what dissatisfies them, and how we could measure success toward achieving customer satisfaction.

The information from these meetings was evaluated by joint teams consisting of PTO management and union/employee representatives. The teams began developing standards designed to enhance customer satisfaction. The first group of standards was presented to our Labor/Management Partnership Council and was adopted in July 1994. Work continues on reviewing the information and developing additional standards.

Customer service standards adopted to date are as follows:

What you can expect from the PTO overall.

- We will treat you with courtesy each time you contact us and, if appropriate, will direct you promptly to the proper office or person.
- If a PTO employee being called is not available, they will return your call by the next business day or, if you request, an alternate point of contact will be provided.
- We will ensure that our written communications clearly set forth the technical, procedural, and legal position of patent examiners and trademark examining attorneys.
- Our correspondence with you will be legible and of good print quality.
- We will widely disseminate information about changes in practice and procedures to ensure both you and PTO employees know about changes prior to their effective date.
- We will respond to status letters within 30 days from the date received in the PTO.

What you can expect during the prosecution of a patent application.

- We will correctly generate and mail a notice indicating the application number, date of filing, and the title of invention for complete standard applications. These notices will be mailed within 19 days of receipt of the application in the PTO.
- We will conduct a thorough search of relevant U.S. patents, foreign patent literature and non-patent literature contained in PTO search files and, where appropriate, a reasonable search of other non-patent literature during the patent examination process.
- We will deliver your facsimile transmissions of properly addressed papers marked "Informal" or "Draft" to the examiner within one business day. Your facsimile transmissions of properly addressed formal amendments after final rejection will be matched with the appropriate files and delivered to the examiner within three business days of receipt.
- We will respond within 30 days from date received in the PTO to papers filed after the examiner allows the application and up to the time PTO receives payment of the issue fee.

What you can expect during the prosecution of a trademark application.

- We will correctly generate and mail filing notices within 30 days of receipt in the PTO with a goal of reducing the processing time to 14 days by September 30, 1995.
- We will examine new applications and provide a written first communication regarding registrability within three months of the filing date.
- We will make a determination of the registrability of trademarks within 13 months of receipt of the application in the PTO.
- We will issue correct Notices of Abandonment within 45 days of the date the file was abandoned.
- We will issue correct Notices of Publication within 30 days of the date the file is approved.
- We will mail correct certificates of registration within 7 days of the date of registration.

Improving Customer Service

We recognize that we cannot improve service by simply creating standards. To truly improve the quality of our service, we also must change our processes and systems. Some examples of efforts that we have already started are:

- Reorganization of the PTO to a process-driven organization where all functions relating to an application are under the direct control of the process owner (that is, Assistant Commissioner for Patents, Assistant Commissioner for Trademarks and Associate Commissioner).
- Reengineering the patent and trademark processes. This promises exciting advancements in the areas of quality, integrity, customer service and cost savings.
- Installation of a voice mail system so customers have easy, direct access to patent examiners and trademark attorneys.
- Contacting companies such as L. L. Bean and The Washington Post for ideas on improving initial receipt and processing of applications and fees.
- Using facsimile machines in all trademark law offices and patent groups to receive and respond to customer communications more efficiently.
- Encouraging employees to come up with ideas on how to streamline operations, cut costs, remove barriers, get the job done better and improve customer services. So far in 1994, employees have submitted over 1200 ideas.

Next steps. Customer satisfaction is a continuous process. We plan to:

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- Conduct surveys with customers to validate the standards and assess needs and satisfaction.
- Train our employees in customer awareness. The goal is to ensure that employees understand PTO's mission and goals, their customers' needs and expectations and the part they play in providing quality services to their customers.
- Incorporate the standards in budget, strategic and employee performance plans.
- Continue to conduct focus meetings with customers to learn of needs and expectations and adopt additional standards.

We believe that these efforts, coupled with continuous improvement, will result in the PTO becoming a world-class organization where *quality is customer satisfaction*.

If you should have any questions on this effort, contact the Center for Quality Services on (703) 305-4217.

Sept. 7, 1994

Theresa A Brelsford
Deputy Associate Commissioner for Administration and Quality Services

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Errata

"All reference to Patent No. 5,333,215 to Robert Meade et. al., of Massachusetts for 'LOW-LOSS OPTICAL AND OPTOELECTRONIC INTEGRATED CIRCUITS' appearing in the *Official Gazette* of July 26, 1994 should be deleted since no patent was granted."

Reclassification Alert Report

This report is a summary of classification changes which became effective by issuance of Classification Orders from July through September 1994. Information includes:

- subclasses established or abolished (major changes)
- subclass title, indent, or position change
- changes to existing classes and subclasses definitions (minor changes)

This Reclassification Alert Report may appear from time to time in the *Official Gazette* and is intended to provide an interim notice of classification changes pending publication of the Manual of Classification and revisions thereto.

The general public may purchase copies of Classification Orders or Classification Definitions by contacting the Editorial Division at 703-305-6101 or 703-305-5099. Payment can be made through a Deposit Account, or by check made payable to "Commissioner of Patents and Trademarks" and sent to:

Chief, Editorial Division
Office of Classification Support
U.S. Patent and Trademark Office
Crystal Mall 2, Room 303
Washington, D.C. 20231

September 6, 1994

WILLIAM S. LAWSON
Administrator for Search and Information Resources

RECLASSIFICATION ALERT REPORT
July 1994--September 1994

Class	First Subclass	Last Subclass	Action	Order Number
002			DEFN CHANGE	1500
002			DEFN CHANGE	1502
004			DEFN CHANGE	1494
008			DEFN CHANGE	1498
008			DEFN CHANGE	1502
012			DEFN CHANGE	1502
015			DEFN CHANGE	1494
015			DEFN CHANGE	1502
019			DEFN CHANGE	1494
019			DEFN CHANGE	1498
019			DEFN CHANGE	1502
023			DEFN CHANGE	1498
024	071.2	071.3	ABOLISH	1494
024	597		TITLE CHANGE	1494
026			DEFN CHANGE	1494
026			DEFN CHANGE	1502
028			DEFN CHANGE	1494
028			DEFN CHANGE	1498
028			DEFN CHANGE	1502
029			DEFN CHANGE	1494
029			DEFN CHANGE	1498
029			DEFN CHANGE	1502
030			DEFN CHANGE	1494
030			DEFN CHANGE	1502
030			DEFN CHANGE	1503
033			DEFN CHANGE	1494
033			DEFN CHANGE	1495

Class	First Subclass	Last Subclass	Action	Order Number
033			DEFN CHANGE	1502
034			DEFN CHANGE	1494
034			DEFN CHANGE	1502
038	102.21		ESTABLISH	1494
040			DEFN CHANGE	1494
043			DEFN CHANGE	1494
044			DEFN CHANGE	1502
051			DEFN CHANGE	1494
051			TITLE CHANGE	1502
051	001	292	ABOLISH	1502
051	293	309	TITLE CHANGE	1502
051	293		POSITION CHANGE	1502
051	294	309	INDENT CHANGE	1502
051	310	439	ABOLISH	1502
051	DIG001	DIG034	ABOLISH	1502
052			DEFN CHANGE	1494
052			DEFN CHANGE	1502
053			DEFN CHANGE	1494
053			DEFN CHANGE	1502
053			DEFN CHANGE	1503
055			DEFN CHANGE	1494
056			DEFN CHANGE	1494
056			DEFN CHANGE	1502
057			DEFN CHANGE	1494
057			DEFN CHANGE	1498
062			DEFN CHANGE	1498
065			DEFN CHANGE	1494
065			DEFN CHANGE	1502
065	001	002	ABOLISH	1498
065	003.1		ABOLISH	1498
065	003.11	003.15	ABOLISH	1498
065	003.2		ABOLISH	1498
065	003.3		ABOLISH	1498
065	003.31		ABOLISH	1498
065	003.4		ABOLISH	1498
065	003.41	003.44	ABOLISH	1498
065	004.1	004.2	ABOLISH	1498
065	004.21		ABOLISH	1498
065	004.3		ABOLISH	1498
065	004.4		ABOLISH	1498
065	005	010	ABOLISH	1498
065	010.1	010.2	ABOLISH	1498
065	011.1		ABOLISH	1498
065	012	017	ABOLISH	1498
065	017.1	017.6	ESTABLISH	1498
065	018.1	018.4	ABOLISH	1498
065	029		ABOLISH	1498
065	029.1		ESTABLISH	1498
065	029.11	029.19	ESTABLISH	1498
065	029.21		ESTABLISH	1498
065	033		ABOLISH	1498
065	033.1	033.9	ESTABLISH	1498
065	134	136	ABOLISH	1498
065	134.1	134.9	ESTABLISH	1498
065	135.1	135.4	ESTABLISH	1498
065	135.6	135.9	ESTABLISH	1498
065	136.1	136.4	ESTABLISH	1498
065	376	382	ESTABLISH	1498
065	384	540	ESTABLISH	1498
066			DEFN CHANGE	1494
068			DEFN CHANGE	1494
069			DEFN CHANGE	1494
069			DEFN CHANGE	1502
072			DEFN CHANGE	1494
072			DEFN CHANGE	1502
073			DEFN CHANGE	1498
073			DEFN CHANGE	1502
074			DEFN CHANGE	1494
074			DEFN CHANGE	1501
074			DEFN CHANGE	1502
075			DEFN CHANGE	1502
076			DEFN CHANGE	1494
076			DEFN CHANGE	1502
079			DEFN CHANGE	1502
082			DEFN CHANGE	1494
082			DEFN CHANGE	1502

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Class	First Subclass	Last Subclass	Action	Order Number
083			DEFN CHANGE	1494
083			DEFN CHANGE	1502
084			DEFN CHANGE	1494
086	001.1		POSITION CHANGE	1496
087			DEFN CHANGE	1494
092			DEFN CHANGE	1501
096			DEFN CHANGE	1494
096			DEFN CHANGE	1502
099			DEFN CHANGE	1502
100			DEFN CHANGE	1494
100			DEFN CHANGE	1502
101			DEFN CHANGE	1494
101			DEFN CHANGE	1502
102			DEFN CHANGE	1494
106			DEFN CHANGE	1494
106			DEFN CHANGE	1502
108			DEFN CHANGE	1502
112			DEFN CHANGE	1494
112			DEFN CHANGE	1502
114			DEFN CHANGE	1494
116			DEFN CHANGE	1494
116			DEFN CHANGE	1502
118			DEFN CHANGE	1494
118			DEFN CHANGE	1502
119			DEFN CHANGE	1494
122			DEFN CHANGE	1502
123	052	060	ABOLISH	1501
123	052.1	052.6	ESTABLISH	1501
123	053.1	053.6	ESTABLISH	1501
123	054.1	054.8	ESTABLISH	1501
123	055.1	055.7	ESTABLISH	1501
123	056.1	056.9	ESTABLISH	1501
123	057.1		ESTABLISH	1501
123	058.1	058.9	ESTABLISH	1501
123	059.1	059.7	ESTABLISH	1501
123	060.1		ESTABLISH	1501
123	179.17		TITLE CHANGE	1501
123	179.19		TITLE CHANGE	1501
123	184.21	184.29	ESTABLISH	1501
123	184.31	184.39	ESTABLISH	1501
123	184.41	184.49	ESTABLISH	1501
123	184.51	184.59	ESTABLISH	1501
123	184.61		ESTABLISH	1501
123	543		TITLE CHANGE	1501
123	590		TITLE CHANGE	1501
125			DEFN CHANGE	1502
131			DEFN CHANGE	1502
132			DEFN CHANGE	1502
134			DEFN CHANGE	1502
137			DEFN CHANGE	1494
137			DEFN CHANGE	1501
137			DEFN CHANGE	1502
139			DEFN CHANGE	1494
140			DEFN CHANGE	1494
140			DEFN CHANGE	1502
142			DEFN CHANGE	1502
144			DEFN CHANGE	1502
150			DEFN CHANGE	1500
152			DEFN CHANGE	1494
156			DEFN CHANGE	1494
156			DEFN CHANGE	1498
156			DEFN CHANGE	1499
157			DEFN CHANGE	1502
160			DEFN CHANGE	1502
160			DEFN CHANGE	1494
162			DEFN CHANGE	1502
162			DEFN CHANGE	1494
163			DEFN CHANGE	1498
164			DEFN CHANGE	1502
164			DEFN CHANGE	1498
165			DEFN CHANGE	1502
165			DEFN CHANGE	1498
168			DEFN CHANGE	1502
172			DEFN CHANGE	1502
173			DEFN CHANGE	1501

Class	First Subclass	Last Subclass	Action	Order Number
173			DEFN CHANGE	1502
174			DEFN CHANGE	1494
175			DEFN CHANGE	1502
178			DEFN CHANGE	1494
180			DEFN CHANGE	1494
182			DEFN CHANGE	1494
184			DEFN CHANGE	1502
185			DEFN CHANGE	1494
187			DEFN CHANGE	1494
188			DEFN CHANGE	1494
191			DEFN CHANGE	1494
192			DEFN CHANGE	1494
198			DEFN CHANGE	1494
198			DEFN CHANGE	1502
200			DEFN CHANGE	1494
204			DEFN CHANGE	1502
205			DEFN CHANGE	1502
206			DEFN CHANGE	1494
206			DEFN CHANGE	1502
206	.815		ESTABLISH	1503
206	485.1		ESTABLISH	1503
209			DEFN CHANGE	1498
209			DEFN CHANGE	1502
210			DEFN CHANGE	1502
211			DEFN CHANGE	1494
212			DEFN CHANGE	1494
219			DEFN CHANGE	1494
219			DEFN CHANGE	1498
220			DEFN CHANGE	1503
221			DEFN CHANGE	1494
221			DEFN CHANGE	1502
222			DEFN CHANGE	1494
222			DEFN CHANGE	1502
223			DEFN CHANGE	1494
223			DEFN CHANGE	1502
224			DEFN CHANGE	1494
225			DEFN CHANGE	1494
226			DEFN CHANGE	1502
226			DEFN CHANGE	1494
227			DEFN CHANGE	1494
228			DEFN CHANGE	1502
229	008		ABOLISH	1503
229	008.5		ABOLISH	1503
229	009	011	ABOLISH	1503
229	019	020	ABOLISH	1503
229	040		ABOLISH	1503
229	103.2	103.3	ESTABLISH	1503
229	116.1	116.5	ESTABLISH	1503
229	125.125		ESTABLISH	1503
229	129.1		ESTABLISH	1503
235			DEFN CHANGE	1494
239			DEFN CHANGE	1494
239			DEFN CHANGE	1496
239			DEFN CHANGE	1498
241			DEFN CHANGE	1502
242			TITLE CHANGE	1494
242			DEFN CHANGE	1502
242	001		POSITION CHANGE	1494
242	001.1E		TITLE CHANGE	1494
242	003		TITLE CHANGE	1494
242	005		TITLE CHANGE	1494
242	006		TITLE CHANGE	1494
242	007.01		TITLE CHANGE	1494
242	007.05A		TITLE CHANGE	1494
242	007.05B		TITLE CHANGE	1494
242	007.05C		TITLE CHANGE	1494
242	007.17		TITLE CHANGE	1494
242	016		TITLE CHANGE	1494
242	018.1		TITLE CHANGE	1494
242	018R		TITLE CHANGE	1494
242	019	022	TITLE CHANGE	1494
242	024		TITLE CHANGE	1494
242	026.45		TITLE CHANGE	1494
242	027.1		TITLE CHANGE	1494
242	028		TITLE CHANGE	1494

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Class	First Subclass	Last Subclass	Action	Order Number
242	034	036	TITLE CHANGE	1494
242	037A		POSITION CHANGE	1494
242	038		TITLE CHANGE	1494
242	040	042	TITLE CHANGE	1494
242	043B		TITLE CHANGE	1494
242	045		ABOLISH	1494
242	046		TITLE CHANGE	1494
242	046.2		TITLE CHANGE	1494
242	048	053	TITLE CHANGE	1494
242	054		ABOLISH	1494
242	054.1		ABOLISH	1494
242	054.4		ABOLISH	1494
242	055		ABOLISH	1494
242	055.01		ABOLISH	1494
242	055.1		ABOLISH	1494
242	055.16	055.19	ABOLISH	1494
242	055.2		ABOLISH	1494
242	055.21		ABOLISH	1494
242	055.3		ABOLISH	1494
242	055.42		ABOLISH	1494
242	055.53	055.55	ABOLISH	1494
242	056		ABOLISH	1494
242	056.1	056.9	ABOLISH	1494
242	057		ABOLISH	1494
242	057.1		ABOLISH	1494
242	058		ABOLISH	1494
242	058.1	058.6	ABOLISH	1494
242	059	067	ABOLISH	1494
242	067.1	067.5	ABOLISH	1494
242	068		ABOLISH	1494
242	068.1	068.7	ABOLISH	1494
242	071		ABOLISH	1494
242	071.1	071.9	ABOLISH	1494
242	072		ABOLISH	1494
242	072.1		ABOLISH	1494
242	073		ABOLISH	1494
242	073.5		ABOLISH	1494
242	074		ABOLISH	1494
242	074.1	074.2	ABOLISH	1494
242	075		ABOLISH	1494
242	075.1	075.4	ABOLISH	1494
242	075.41	075.47	ABOLISH	1494
242	075.5		ABOLISH	1494
242	075.51	075.53	ABOLISH	1494
242	076	077	ABOLISH	1494
242	077.1	077.4	ABOLISH	1494
242	078		ABOLISH	1494
242	078.1		ABOLISH	1494
242	078.3		ABOLISH	1494
242	078.6	078.8	ABOLISH	1494
242	079	084	ABOLISH	1494
242	084.8		ABOLISH	1494
242	085		ABOLISH	1494
242	085.1		ABOLISH	1494
242	086		ABOLISH	1494
242	086.1	086.5	ABOLISH	1494
242	086.51	086.52	ABOLISH	1494
242	086.6		ABOLISH	1494
242	086.61	086.64	ABOLISH	1494
242	086.7	086.8	ABOLISH	1494
242	094	096	ABOLISH	1494
242	099	100	ABOLISH	1494
242	100.1	100.2	ABOLISH	1494
242	103	107	ABOLISH	1494
242	107.1		ABOLISH	1494
242	107.11	107.15	ABOLISH	1494
242	107.2	107.7	ABOLISH	1494
242	110		ABOLISH	1494
242	110.1	110.3	ABOLISH	1494
242	115	117	ABOLISH	1494
242	118		TITLE CHANGE	1494
242	125		TITLE CHANGE	1494
242	125.1		TITLE CHANGE	1494
242	127	129	TITLE CHANGE	1494
242	129.1		TITLE CHANGE	1494
242	129.5		TITLE CHANGE	1494

Class	First Subclass	Last Subclass	Action	Order Number
242	130.3		TITLE CHANGE	1494
242	131		TITLE CHANGE	1494
242	134		TITLE CHANGE	1494
242	136		TITLE CHANGE	1494
242	137		TITLE CHANGE	1494
242	139		TITLE CHANGE	1494
242	140		TITLE CHANGE	1494
242	147A		POSITION CHANGE	1494
242	147M		POSITION CHANGE	1494
242	147R		TITLE CHANGE	1494
242	148		TITLE CHANGE	1494
242	155BW		TITLE CHANGE	1494
242	156		TITLE CHANGE	1494
242	157R		TITLE CHANGE	1494
242	159		TITLE CHANGE	1494
242	159		POSITION CHANGE	1494
242	160.1	160.4	ESTABLISH	1494
242	163	178	POSITION CHANGE	1494
242	179	210	ABOLISH	1494
242	223	323	POSITION CHANGE	1494
242	224		TITLE CHANGE	1494
242	239		TITLE CHANGE	1494
242	255		TITLE CHANGE	1494
242	299	300	INDENT CHANGE	1494
242	317		TITLE CHANGE	1494
242	324		ESTABLISH	1494
242	324.1	324.3	ESTABLISH	1494
242	325		ESTABLISH	1494
242	325.1	325.3	ESTABLISH	1494
242	326		ESTABLISH	1494
242	326.1	326.4	ESTABLISH	1494
242	327		ESTABLISH	1494
242	327.1	327.4	ESTABLISH	1494
242	328		ESTABLISH	1494
242	328.1	328.2	ESTABLISH	1494
242	329		ESTABLISH	1494
242	329.1		ESTABLISH	1494
242	330	331	ESTABLISH	1494
242	331.1	331.5	ESTABLISH	1494
242	332		ESTABLISH	1494
242	332.1	332.8	ESTABLISH	1494
242	333		ESTABLISH	1494
242	333.1	333.7	ESTABLISH	1494
242	334		ESTABLISH	1494
242	334.1	334.6	ESTABLISH	1494
242	335	337	ESTABLISH	1494
242	337.1		ESTABLISH	1494
242	338		ESTABLISH	1494
242	338.1	338.4	ESTABLISH	1494
242	339	343	ESTABLISH	1494
242	343.1	343.2	ESTABLISH	1494
242	344	345	ESTABLISH	1494
242	345.1	345.3	ESTABLISH	1494
242	346		ESTABLISH	1494
242	346.1	346.2	ESTABLISH	1494
242	347		ESTABLISH	1494
242	347.1	347.2	ESTABLISH	1494
242	348		ESTABLISH	1494
242	348.1	348.4	ESTABLISH	1494
242	349	352	ESTABLISH	1494
242	352.1	352.5	ESTABLISH	1494
242	353	354	ESTABLISH	1494
242	354.1	354.2	ESTABLISH	1494
242	355		ESTABLISH	1494
242	355.1	355.2	ESTABLISH	1494
242	356		ESTABLISH	1494
242	356.1	356.7	ESTABLISH	1494
242	357	358	ESTABLISH	1494
242	358.1		ESTABLISH	1494
242	360	361	ESTABLISH	1494
242	361.1	361.5	ESTABLISH	1494
242	362		ESTABLISH	1494
242	362.1	362.3	ESTABLISH	1494
242	363	364	ESTABLISH	1494
242	364.1	364.3	ESTABLISH	1494
242	370	375	ESTABLISH	1494

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Class	First Subclass	Last Subclass	Action	Order Number
242	375.1	375.3	ESTABLISH	1494
242	376		ESTABLISH	1494
242	376.1		ESTABLISH	1494
242	377	378	ESTABLISH	1494
242	378.1	378.4	ESTABLISH	1494
242	379		ESTABLISH	1494
242	379.1	379.2	ESTABLISH	1494
242	380	381	ESTABLISH	1494
242	381.1	381.6	ESTABLISH	1494
242	382		ESTABLISH	1494
242	382.1	382.6	ESTABLISH	1494
242	383		ESTABLISH	1494
242	383.1	383.5	ESTABLISH	1494
242	384		ESTABLISH	1494
242	384.1	384.7	ESTABLISH	1494
242	385		ESTABLISH	1494
242	385.1	385.4	ESTABLISH	1494
242	386	388	ESTABLISH	1494
242	388.1	388.8	ESTABLISH	1494
242	389	390	ESTABLISH	1494
242	390.1	390.9	ESTABLISH	1494
242	391		ESTABLISH	1494
242	391.1	391.3	ESTABLISH	1494
242	392	394	ESTABLISH	1494
242	394.1		ESTABLISH	1494
242	395		ESTABLISH	1494
242	395.1		ESTABLISH	1494
242	396		ESTABLISH	1494
242	396.1	396.9	ESTABLISH	1494
242	397		ESTABLISH	1494
242	397.1	397.5	ESTABLISH	1494
242	398	399	ESTABLISH	1494
242	399.1	399.2	ESTABLISH	1494
242	400		ESTABLISH	1494
242	400.1		ESTABLISH	1494
242	401	403	ESTABLISH	1494
242	403.1		ESTABLISH	1494
242	404		ESTABLISH	1494
242	404.1	404.3	ESTABLISH	1494
242	405		ESTABLISH	1494
242	405.1	405.3	ESTABLISH	1494
242	406	407	ESTABLISH	1494
242	407.1		ESTABLISH	1494
242	410	412	ESTABLISH	1494
242	412.1	412.3	ESTABLISH	1494
242	413		ESTABLISH	1494
242	413.1	413.9	ESTABLISH	1494
242	414		ESTABLISH	1494
242	414.1		ESTABLISH	1494
242	415		ESTABLISH	1494
242	415.1		ESTABLISH	1494
242	416	417	ESTABLISH	1494
242	417.1	417.3	ESTABLISH	1494
242	418		ESTABLISH	1494
242	418.1		ESTABLISH	1494
242	419		ESTABLISH	1494
242	419.1	419.9	ESTABLISH	1494
242	420		ESTABLISH	1494
242	420.1	420.6	ESTABLISH	1494
242	421		ESTABLISH	1494
242	421.1	421.9	ESTABLISH	1494
242	422		ESTABLISH	1494
242	422.1	422.9	ESTABLISH	1494
242	423		ESTABLISH	1494
242	423.1	423.2	ESTABLISH	1494
242	444.1	444.3	ESTABLISH	1494
242	470	471	ESTABLISH	1494
242	520	523	ESTABLISH	1494
242	523.1		ESTABLISH	1494
242	524		ESTABLISH	1494
242	524.1		ESTABLISH	1494
242	525		ESTABLISH	1494
242	525.1	525.7	ESTABLISH	1494
242	526		ESTABLISH	1494
242	526.1	526.3	ESTABLISH	1494
242	527		ESTABLISH	1494

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242	527.1	527.7	ESTABLISH	1494
242	528	530	ESTABLISH	1494
242	530.1	530.4	ESTABLISH	1494
242	531		ESTABLISH	1494
242	531.1		ESTABLISH	1494
242	532		ESTABLISH	1494
242	532.1	532.7	ESTABLISH	1494
242	533		ESTABLISH	1494
242	533.1	533.8	ESTABLISH	1494
242	534		ESTABLISH	1494
242	534.1	534.2	ESTABLISH	1494
242	535		ESTABLISH	1494
242	535.1	535.5	ESTABLISH	1494
242	536	538	ESTABLISH	1494
242	538.1	538.4	ESTABLISH	1494
242	539	541	ESTABLISH	1494
242	541.1	541.7	ESTABLISH	1494
242	542		ESTABLISH	1494
242	542.1	542.4	ESTABLISH	1494
242	543	545	ESTABLISH	1494
242	545.1		ESTABLISH	1494
242	546		ESTABLISH	1494
242	546.1		ESTABLISH	1494
242	547	548	ESTABLISH	1494
242	548.1	548.4	ESTABLISH	1494
242	550	554	ESTABLISH	1494
242	554.1	554.6	ESTABLISH	1494
242	555		ESTABLISH	1494
242	555.1	555.7	ESTABLISH	1494
242	556		ESTABLISH	1494
242	556.1		ESTABLISH	1494
242	557	559	ESTABLISH	1494
242	559.1	559.4	ESTABLISH	1494
242	560		ESTABLISH	1494
242	560.1	560.3	ESTABLISH	1494
242	561	562	ESTABLISH	1494
242	562.1		ESTABLISH	1494
242	563		ESTABLISH	1494
242	563.1	563.2	ESTABLISH	1494
242	564		ESTABLISH	1494
242	564.1	564.5	ESTABLISH	1494
242	565	566	ESTABLISH	1494
242	570	571	ESTABLISH	1494
242	571.1	571.8	ESTABLISH	1494
242	572	573	ESTABLISH	1494
242	573.1	573.9	ESTABLISH	1494
242	574		ESTABLISH	1494
242	574.1	574.4	ESTABLISH	1494
242	575		ESTABLISH	1494
242	575.1	575.5	ESTABLISH	1494
242	576		ESTABLISH	1494
242	576.1		ESTABLISH	1494
242	577		ESTABLISH	1494
242	577.1	577.4	ESTABLISH	1494
242	578		ESTABLISH	1494
242	578.1	578.3	ESTABLISH	1494
242	579	580	ESTABLISH	1494
242	580.1		ESTABLISH	1494
242	581	584	ESTABLISH	1494
242	584.1		ESTABLISH	1494
242	585	586	ESTABLISH	1494
242	586.1	586.6	ESTABLISH	1494
242	587		ESTABLISH	1494
242	587.1	587.3	ESTABLISH	1494
242	588		ESTABLISH	1494
242	588.1	588.6	ESTABLISH	1494
242	590	594	ESTABLISH	1494
242	594.1	594.6	ESTABLISH	1494
242	595		ESTABLISH	1494
242	595.1		ESTABLISH	1494
242	596		ESTABLISH	1494
242	596.1	596.8	ESTABLISH	1494
242	597		ESTABLISH	1494
242	597.1	597.8	ESTABLISH	1494
242	598		ESTABLISH	1494
242	598.1	598.6	ESTABLISH	1494

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Class	First Subclass	Last Subclass	Action	Order Number
242	599		ESTABLISH	1494
242	599.1	599.4	ESTABLISH	1494
242	600	602	ESTABLISH	1494
242	602.1	602.3	ESTABLISH	1494
242	603	604	ESTABLISH	1494
242	604.1		ESTABLISH	1494
242	605	607	ESTABLISH	1494
242	607.1	607.2	ESTABLISH	1494
242	608		ESTABLISH	1494
242	608.1	608.8	ESTABLISH	1494
242	609		ESTABLISH	1494
242	609.1	609.4	ESTABLISH	1494
242	610		ESTABLISH	1494
242	610.1	610.6	ESTABLISH	1494
242	611		ESTABLISH	1494
242	611.1	611.2	ESTABLISH	1494
242	612	613	ESTABLISH	1494
242	613.1	613.5	ESTABLISH	1494
242	614		ESTABLISH	1494
242	614.1		ESTABLISH	1494
242	615		ESTABLISH	1494
242	615.1	615.4	ESTABLISH	1494
242	900		ESTABLISH	1494
242	901	919	ESTABLISH	1494
248			DEFN CHANGE	1494
248			DEFN CHANGE	1502
250			DEFN CHANGE	1494
250	265	266	POSITION CHANGE	1504
250	269	270	ABOLISH	1504
250	269.1	269.8	ESTABLISH	1504
250	341		ABOLISH	1505
250	341.1	341.8	ESTABLISH	1505
250	363.03		TITLE CHANGE	1504
252			DEFN CHANGE	1502
254			DEFN CHANGE	1494
257			DEFN CHANGE	1495
264			DEFN CHANGE	1494
264			DEFN CHANGE	1502
264	001.2	001.5	ABOLISH	1498
264	001.21	001.29	ESTABLISH	1498
264	001.31	001.38	ESTABLISH	1498
267			DEFN CHANGE	1494
269			DEFN CHANGE	1494
269			DEFN CHANGE	1502
270			DEFN CHANGE	1494
271			DEFN CHANGE	1494
279			DEFN CHANGE	1494
279			DEFN CHANGE	1502
280			DEFN CHANGE	1494
281			DEFN CHANGE	1494
289			DEFN CHANGE	1494
291			DEFN CHANGE	1502
297			DEFN CHANGE	1494
299			DEFN CHANGE	1502
310			DEFN CHANGE	1502
312			DEFN CHANGE	1494
312			DEFN CHANGE	1502
318			DEFN CHANGE	1494
318			DEFN CHANGE	1502
324			DEFN CHANGE	1494
324	158		ABOLISH	1495
324	158.1		ESTABLISH	1495
324	750	772	ESTABLISH	1495
334			DEFN CHANGE	1494
335			DEFN CHANGE	1494
335			DEFN CHANGE	1502
336			DEFN CHANGE	1494
336			DEFN CHANGE	1502
338			DEFN CHANGE	1494
338			DEFN CHANGE	1502
340			DEFN CHANGE	1494
343			DEFN CHANGE	1494
346			DEFN CHANGE	1494
346			DEFN CHANGE	1502
351			DEFN CHANGE	1502
352			DEFN CHANGE	1494

Class	First Subclass	Last Subclass	Action	Order Number
352			DEFN CHANGE	1502
353			DEFN CHANGE	1494
354			DEFN CHANGE	1494
355			DEFN CHANGE	1494
356			DEFN CHANGE	1494
356			DEFN CHANGE	1495
356			DEFN CHANGE	1502
356			DEFN CHANGE	1498
359			DEFN CHANGE	1498
359			DEFN CHANGE	1502
360			DEFN CHANGE	1494
362			DEFN CHANGE	1494
362			DEFN CHANGE	1498
364			DEFN CHANGE	1494
364			DEFN CHANGE	1502
366			DEFN CHANGE	1502
369			DEFN CHANGE	1494
371			DEFN CHANGE	1495
373			DEFN CHANGE	1498
376			DEFN CHANGE	1504
385			DEFN CHANGE	1494
385			DEFN CHANGE	1498
385			DEFN CHANGE	1502
395			DEFN CHANGE	1499
400			DEFN CHANGE	1494
400	109		TITLE CHANGE	1499
400	109.1		ESTABLISH	1499
400	118	126	ABOLISH	1499
400	118.1	118.3	ESTABLISH	1499
400	120.01	120.18	ESTABLISH	1499
400	124.01	124.32	ESTABLISH	1499
401			DEFN CHANGE	1494
402			DEFN CHANGE	1494
404			DEFN CHANGE	1502
406			DEFN CHANGE	1502
407			DEFN CHANGE	1502
408			DEFN CHANGE	1502
409			DEFN CHANGE	1502
414			DEFN CHANGE	1494
414			DEFN CHANGE	1502
419			DEFN CHANGE	1502
424			DEFN CHANGE	1494
424			DEFN CHANGE	1496
424			DEFN CHANGE	1502
424	085.8	085.9	ABOLISH	1497
424	085.91		ABOLISH	1497
424	086	093	ABOLISH	1497
424	093.1	093.2	ESTABLISH	1497
424	093.21		ESTABLISH	1497
424	093.3	093.4	ESTABLISH	1497
424	093.41	093.46	ESTABLISH	1497
424	093.461	093.462	ESTABLISH	1497
424	093.47	093.48	ESTABLISH	1497
424	093.5		ESTABLISH	1497
424	093.51		ESTABLISH	1497
424	093.6		ESTABLISH	1497
424	093.7		ESTABLISH	1497
424	093.71	093.73	ESTABLISH	1497
424	130.1	194.1	ESTABLISH	1497
424	195.11		ESTABLISH	1497
424	196.11		ESTABLISH	1497
424	197.11		ESTABLISH	1497
424	198.1	283.1	ESTABLISH	1497
424	800	832	ESTABLISH	1497
425			DEFN CHANGE	1494
425			DEFN CHANGE	1498
426			DEFN CHANGE	1497
426			DEFN CHANGE	1502
427			DEFN CHANGE	1494
427			DEFN CHANGE	1498
427			DEFN CHANGE	1502
427	002	003	ABOLISH	1496
427	002.1		ESTABLISH	1496
427	002.11	002.19	ESTABLISH	1496
427	002.2		ESTABLISH	1496
427	002.21	002.29	ESTABLISH	1496

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427	002.3		ESTABLISH	1496
427	002.31		ESTABLISH	1496
427	163		ABOLISH	1498
427	163.1	163.4	ESTABLISH	1498
428			DEFN CHANGE	1494
428			DEFN CHANGE	1502
428			DEFN CHANGE	1503
429			DEFN CHANGE	1494
430			DEFN CHANGE	1494
430			DEFN CHANGE	1502
432			DEFN CHANGE	1498
433			DEFN CHANGE	1494
433			DEFN CHANGE	1496
433			DEFN CHANGE	1502
435			DEFN CHANGE	1496
435			DEFN CHANGE	1497
435			DEFN CHANGE	1498
436			DEFN CHANGE	1498
437			DEFN CHANGE	1498
437			DEFN CHANGE	1502
439			DEFN CHANGE	1494
445			DEFN CHANGE	1494
445			DEFN CHANGE	1498
445			DEFN CHANGE	1502
446			DEFN CHANGE	1494
446			DEFN CHANGE	1503
451	001	559	ESTABLISH	1502
451	900	921	ESTABLISH	1502
454			DEFN CHANGE	1502
462			DEFN CHANGE	1494
470			DEFN CHANGE	1502
474			DEFN CHANGE	1494
474			DEFN CHANGE	1502
483			DEFN CHANGE	1502
492			DEFN CHANGE	1494
492			DEFN CHANGE	1502
493			DEFN CHANGE	1494
493			DEFN CHANGE	1502
494			DEFN CHANGE	1502
501			DEFN CHANGE	1502
520			DEFN CHANGE	1502
523			DEFN CHANGE	1502
530			DEFN CHANGE	1497
530			DEFN CHANGE	1498
602			DEFN CHANGE	1496
623			DEFN CHANGE	1496
800			DEFN CHANGE	1497
901			DEFN CHANGE	1502
930			DEFN CHANGE	1497
935			DEFN CHANGE	1497
D02			DEFN CHANGE	1500
D07			DEFN CHANGE	1500
D08			DEFN CHANGE	1500
D16	102	128	ABOLISH	1500
D16	130		TITLE CHANGE	1500
D16	132		TITLE CHANGE	1500
D16	300	342	ESTABLISH	1500
D16	900		ESTABLISH	1500
D19			DEFN CHANGE	1500
D21			DEFN CHANGE	1500
D23	280	282	ABOLISH	1500
D23	280.1	280.4	ESTABLISH	1500
D23	293	294	ABOLISH	1500
D23	293.1		ESTABLISH	1500
D24	106		TITLE CHANGE	1500
D24	110		TITLE CHANGE	1500
D24	110.1	110.6	ESTABLISH	1500
D26			DEFN CHANGE	1500
D29			TITLE CHANGE	1500
D29	001	022	ABOLISH	1500
D29	099		ABOLISH	1500
D29	100	130	ESTABLISH	1500

Procedures for Status Inquires After Receipt of Notice of Allowance

PTO customers have experienced difficulty in ascertaining the status of their patent applications after receiving their Notice of Allowance. The following information is provided to address their concerns.

Status Inquires After Receipt of Notice of Allowance:

An applicant can either write to the Commissioner of Patents and Trademarks, Office of Patent Publication, Publishing Division, Correspondence Branch, Washington, D.C. 20231 or phone (703) 305-8497/8396 with the Attorney Name, Telephone and Registration Numbers and Application Number. PTO will verify applicant's information and will call with the status of the patent application, i.e., a tentative Issue Date, Patent Number, Location of File.

Status Inquires After Receipt of Notice of Allowance for Patent Applications requiring Formal Drawings:

1) If drawings have been received but the required time has elapsed, then PTO sends a Notice of Late Drawing Receipt that notifies the applicant to file for an extension of time.

2) If upon review of the patent application, formal drawings are required but have not been submitted by the date due (3 months after the Notice of Allowability), then PTO sends a Notice of Outstanding Drawing Requirement that notifies the applicants that they can file for an extension of time and submit their drawings.

3) If, after the Draftsperson's review of drawings, the drawings are objected to, then PTO sends a Notice of Draftsperson's Patent Drawing Review that notifies the applicants of an objection to their drawings.

4) If after six months no formal drawings have been submitted, then the PTO sends a Notice of Abandonment.

Be sure to place the serial number directly on the document since cover letters could become seperated.

Status Inquires After Payment of the Issue Fee:

The mechanism for notification of issue fee payment is the Issue Notification. It should be received by the applicant within 8 weeks of paying the issue fee. If the Issue Notification has not been received by that time, then the applicant should contact the PTO

We understand your concerns and hope the above procedures will be followed.

August 30, 1994

JAMES O. THOMAS, JR.
Deputy Assistant Commissioner
for Patent Process Services

Patent and Trademark Office Services

In order to provide improved services to trademark applicants, registrants, and the general public, the Patent and Trademark Office plans to implement a pilot program called the "Trademark Assistance Center." The Center will provide general information about the trademark registration process and will respond to inquiries pertaining to the status of specific trademark applications and registrations. The location of the Center is 2900 Crystal Drive, 4B10, Arlington, Va. 22202-3513. Assistance may be obtained in-person or by dialing (703) 308-9000, Monday through Friday, 8:30 a.m. to 5:00 p.m. Eastern time, except holidays. Opening of the Center is planned for October 3, 1994. Please note that personal assistance concerning trademark as well as patent matters will continue to be available at 308-HELP and recorded information will continue to be available at (703) 557-INFO. Also, automated information about the status of trademark applications and registrations will continue to be available at (703) 305-8747.

September 7, 1994

PHILIP G. HAMPTON, II
Assistant Commissioner
for Trademarks

Certificates of Correction for Week of October 4, 1994

D. 313,064	5,191,793	5,251,012	5,284,603
D. 342,762	5,192,289	5,253,139	5,284,708
D. 343,757	5,192,689	5,253,204	5,284,734
D. 348,133	5,196,410	5,254,429	5,284,896
D. 348,218	5,197,638	5,255,017	5,285,060
P. 8,570	5,199,494	5,255,435	5,285,206
Re. 34,488	5,199,976	5,256,665	5,286,658
Re. 34,504	5,201,479	5,257,310	5,287,069
Re. 34,553	5,202,439	5,258,197	5,287,137
Re. 34,595	5,202,447	5,258,333	5,287,148
4,364,565	5,204,311	5,258,400	5,287,422
4,555,344	5,205,781	5,259,838	5,287,585
4,642,487	5,205,853	5,260,448	5,288,508
4,664,428	5,205,946	5,260,591	5,288,737
4,682,962	5,206,153	5,261,664	5,289,246
4,822,777	5,206,549	5,262,301	5,289,317
4,845,318	5,206,714	5,263,013	5,289,699
4,900,015	5,208,995	5,263,266	5,289,789
4,956,265	5,209,538	5,263,382	5,290,059
4,967,755	5,209,912	5,264,110	5,290,550
4,971,070	5,210,315	5,264,459	5,290,667
5,001,202	5,211,334	5,266,801	5,290,917
5,015,049	5,211,939	5,266,814	5,290,924
5,015,802	5,214,245	5,267,097	5,290,975
5,043,637	5,214,889	5,268,387	5,291,308
5,052,499	5,215,819	5,268,495	5,291,375
5,053,109	5,216,363	5,269,188	5,291,495
5,075,749	5,217,012	5,269,821	5,291,512
5,087,948	5,217,981	5,270,116	5,291,697
5,091,815	5,218,001	5,270,141	5,292,067
5,094,022	5,221,377	5,270,249	5,292,349
5,098,379	5,221,456	5,270,256	5,292,488
5,098,844	5,221,899	5,270,338	5,292,731
5,104,849	5,222,189	5,270,387	5,293,064
5,104,901	5,222,939	5,270,557	5,293,153
5,109,280	5,223,108	5,270,738	5,293,530
5,110,599	5,225,134	5,270,982	5,293,913
5,111,040	5,225,692	5,271,441	5,294,150
5,112,433	5,227,100	5,271,570	5,294,254
5,113,817	5,228,077	5,272,011	5,294,544
5,113,952	5,229,219	5,272,554	5,294,558
5,117,838	5,229,612	5,272,988	5,294,668
5,130,315	5,230,864	5,273,043	5,294,752
5,131,471	5,231,084	5,273,534	5,294,833
5,136,178	5,231,140	5,274,164	5,295,093
5,137,874	5,231,359	5,274,320	5,295,116
5,142,656	5,231,433	5,274,495	5,295,261
5,146,318	5,232,144	5,274,504	5,295,513
5,150,195	5,232,741	5,275,947	5,296,196
5,151,984	5,233,985	5,276,269	5,296,433
5,155,075	5,238,539	5,276,354	5,296,794
5,157,595	5,238,992	5,276,672	5,296,862
5,164,779	5,240,958	5,277,374	5,297,023
5,168,873	5,241,646	5,278,195	5,297,100
5,177,426	5,242,821	5,278,518	5,297,253
5,181,668	5,243,980	5,278,705	5,297,287
5,181,888	5,244,723	5,279,726	5,297,468
5,182,272	5,245,945	5,280,451	5,297,517
5,182,796	5,246,298	5,281,871	5,298,045
5,184,162	5,248,457	5,282,093	5,298,301
5,184,902	5,248,973	5,282,217	5,298,394
5,185,818	5,249,245	5,282,716	5,298,404
5,188,311	5,249,253	5,282,798	5,298,694
5,188,931	5,249,285	5,282,888	5,298,814
5,189,032	5,249,407	5,283,046	5,298,899
5,190,620	5,249,838	5,283,246	5,298,999
5,191,364	5,250,676	5,283,681	5,299,133

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5,299,435	5,303,947	5,310,214	5,316,139	5,319,148	5,323,566	5,238,337	5,332,569
5,299,580	5,304,171	5,310,230	5,316,936	5,319,227	5,323,977	5,328,468	5,332,587
5,300,027	5,304,247	5,310,361	5,317,036	5,319,324	5,324,405	5,328,793	5,332,807
5,300,357	5,304,325	5,310,435	5,317,097	5,319,846	5,324,590	5,328,951	5,332,878
5,300,406	5,304,614	5,310,567	5,317,465	5,320,800	5,325,225	5,329,538	5,333,289
5,300,760	5,305,451	5,311,167	5,317,525	5,320,865	5,325,271	5,329,846	5,333,374
5,300,997	5,305,479	5,311,172	5,317,849	5,320,908	5,326,063	5,330,292	5,333,463
5,301,026	5,305,585	5,311,433	5,318,172	5,321,140	5,326,319	5,330,304	5,333,497
5,301,249	5,305,627	5,311,830	5,318,207	5,321,412	5,326,463	5,331,001	5,333,920
5,301,443	5,305,836	5,312,325	5,318,467	5,321,501	5,326,548	5,331,390	5,333,977
5,301,609	5,305,925	5,312,783	5,318,468	5,321,709	5,326,599	5,331,436	5,334,274
5,301,976	5,306,119	5,312,951	5,318,543	5,322,007	5,326,843	5,331,713	5,334,337
5,302,070	5,306,312	5,313,080	5,318,683	5,322,084	5,327,118	5,331,779	5,334,527
5,302,482	5,307,133	5,313,324	5,318,736	5,322,304	5,327,440	5,331,969	5,334,843
5,302,739	5,307,156	5,313,419	5,318,771	5,322,391	5,327,447	5,331,990	5,335,174
5,302,776	5,307,338	5,313,792	5,318,889	5,322,558	5,327,513	5,332,044	5,335,507
5,303,087	5,308,012	5,314,686	5,318,930	5,322,629	5,327,572	5,332,219	5,336,996
5,303,112	5,308,349	5,315,017	5,318,945	5,322,950	5,327,815	5,332,271	5,338,145
5,303,313	5,308,929	5,315,218	5,318,981	5,323,263	5,328,302	5,332,529	5,338,676
5,303,758	5,309,709	5,315,274	5,319,110				

SPECIAL BOXES FOR MAIL

Special PTO mail department numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special departments. If any documents other than the specified type identified for each department are addressed to that department, they will be significantly delayed in reaching the appropriate area for which they are intended.

The following special departments should be used only for their specified purpose. Address mail as follows:

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Washington, D.C. 20231

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Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislation and International Affairs.
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Box 6	Mail for the Office of Procurement
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
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Box 14	Mail directed to the APS Contracts Office.
Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Assignment	All assignment documents except those filed with new applications.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box EEO	Mail for the Office of Equal Employment Programs.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62)
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85 "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box ITU	All intent to use documents, excluding the initial application and amendments to allege use.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	Mail for the Office of Enrollment and Discipline
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
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	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	Not Yet Operational
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-8847
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	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
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	Detroit Public Library	(313) 833-1450
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Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
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South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	Not Yet Operational
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PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	10/04/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	07/29/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	12/14/93
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	10/14/93
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/07/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—JOSEPH J. ROLLA, JR., Director	308-1782	10/08/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	02/22/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—GERALD GOLDBERG, Director	305-9600	08/31/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—CARLTON CROYLE, Director	308-0771	09/05/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/05/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—BOBBY R. GRAY, Director	305-4700	02/10/93
DESIGN, GROUP 2900—ROBERT E. GARRETT, Director	308-0511	12/08/92
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	09/13/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—N. GODICI, Director	308-1148	08/23/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	09/30/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	04/09/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	08/12/93

*A communication from the examiner should have been received in most applications filed prior to this date

Expiration of Patents: The patents within the range of numbers indicated below expire during September 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.
Patents.....Numbers 4,045,824 to 4,051,551 inclusive
Plant Patents.....4,097 to 4,116

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of Sept. 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/22/94	07/07/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/12/94	06/28/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/21/94	07/11/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/07/94	05/25/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/07/94	04/06/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/06/94	06/27/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/15/94	05/11/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/09/94	07/20/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/13/94	05/07/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/21/94	07/25/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/01/94	05/06/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/24/94	07/13/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/31/94	05/24/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	03/11/94	—0—
Renewals (All Classes)	06/03/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
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REEXAMINATIONS

OCTOBER 4, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,382,124 (2406th)

PROCESS FOR PREPARING MACRORETICULAR RESINS, COPOLYMERS AND PRODUCTS OF SAID PROCESS

Erich F. Meitzner, Glenside, and James A. Oline, Wyncote, both of Pa., assignors to Rohm & Haas Company, Philadelphia, Pa.

Reexamination Request Nos. 90/002,957, Feb. 11, 1993 and 90/003,245, Nov. 4, 1993.

Reexamination Certificate for Patent No. 4,382,124, issued May 3, 1983, Ser. No. 156,004, Jun. 3, 1980.

Division of Ser. No. 749,526, Jul. 18, 1958, Pat. No. 4,224,415

Int. Cl.[5] C08F *2/18*; B01J *41/14*

U.S. Cl. 521—38

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–10** is confirmed.

1. A process for preparing reticular crosslinked copolymer beads of high specific surface having controlled reduced apparent density of at least about 0.02 density units less than the apparent density of gel-type copolymer beads of the same composition made in absence of liquid precipitant, which comprises suspension copolymerizing in an aqueous medium (1) a polyvinylidene monomer containing a plurality of ethylenically unsaturated groups in non-conjugated relationship and (2) a monovinyl aromatic hydrocarbon monomer in a liquid precipitant which (a) has a low solubility in the aqueous medium, (b) is a solvent for the monomer mixture and (c) does not appreciably swell the copolymer of said polyvinylidene monomer and said monovinyl aromatic hydrocarbon monomer, said liquid precipitant and said polyvinylidene monomer each being present in an amount exceeding the critical concentration of each needed for phase separation of the copolymer from the monomer phase as the copolymer is formed, and recovering the copolymer beads so formed.

B1 4,963,150 (2407th)

IMPLANTABLE PROSTHETIC DEVICE

Daniel Brauman, 141 Brush Hollow Cresent, Rye Brook, N.Y. 10573

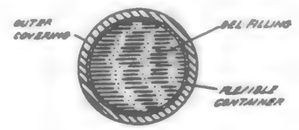
Reexamination Request No. 90/002,659, Mar. 2, 1992.

Reexamination Certificate for Patent No. 4,963,150, issued Oct. 16, 1990, Ser. No. 319,019, Mar. 6, 1989.

Continuation of Ser. No. 12,583, Feb. 9, 1987, which is a division of Ser. No. 630,124, Aug. 30, 1984, Pat. No. 4,648,880

Int. Cl.[5] A61F *2/12*

U.S. Cl. 623—8



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **4** are determined to be patentable as amended.

Claims **2** and **3**, dependent on an amended claim, are determined to be patentable.

1. In an implantable prosthetic device for use in a human body including a flexible container and a soft gel or liquid filling the flexible container;

the improvement which comprises providing an outer plastic covering made of rough textures silicone and bonded to the flexible container, said outer plastic [convering] *covering* having a rough textured external surface thereby providing a multiplicity of pores and/or interstices *to permit tissue ingrowth*, said outer plastic covering encases the flexible container in order to prevent the contraction of scar tissue around the prosthetic device from pulling the prosthetic device into a hard, spherical shape.

B1 5,262,555 (2408th)

METHOD FOR THE PREPARATION OF ACRYLOXY GROUP-CONTAINING OR METHACRYLOXY GROUP-CONTAINING ORGANOSILICON COMPOUNDS

Tadashi Okawa, and Shuji Yamada, both of Chiba, Japan, assignors to Dow Corning Toray Silicone Company, Limited, Tokyo, Japan

Reexamination Request No. 90/003,370, Mar. 25, 1994.

Reexamination Certificate for Patent No. 5,262,555, issued Nov. 16, 1993, Ser. No. 30,900, Mar. 15, 1993.

Claims priority, application Japan, Mar. 25, 1992, 4-098921

Int. Cl.[5] C07F *7/08*, *7/18*

U.S. Cl. 556—440

AS A RESULT OF REEXAMINATION IT HAS BEEN DETERMINED THAT:

Claim **2** is cancelled.

Claim **1** is determined to be patentable as amended.

Claims **3** to **12**, dependent on an amended claim, are determined to be patentable.

1. A method for the preparation of acryloxy group-containing and methacryloxy group-containing organosilicon compounds, wherein the method comprises

(I) reacting, in the presence of a hydrosilylation-reaction catalyst,

(A) an ester of acrylic or methacrylic acid selected from the group consisting of an ester of acylic acid with aliphatically unsaturated alcohol, an ester of an acrylic acid with aliphatically unsaturated phenol, an ester of methacrylic acid with aliphatically unsaturated alcohol and an ester of methacrylic acid with aliphatically unsaturated phenol; and

(B) a silicon compound that contains silicon-bonded hydrogen; and

(II) distilling the reaction mixture of (I) in the presence of a metal halide selected from the group consisting of chromium chloride, cobalt chloride, nickel chloride, germanium chloride, zinc chloride, tin chloride, mercury chloride, [copper chloride,] iron chloride, palladium chloride, tungsten chloride, silver chloride, vanadium chloride, molybdenum chloride, ruthenium chloride, platinum chloride, antimony chloride, bismuth chloride, selenium chloride, and tellurium chloride.

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STATUTORY INVENTION REGISTRATIONS

PUBLISHED OCTOBER 4, 1994

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H1350

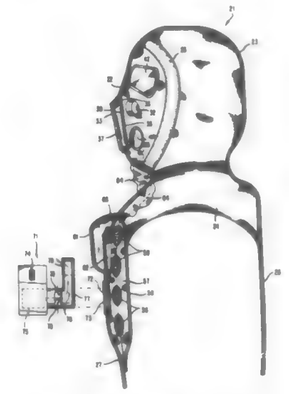
LIGHTWEIGHT PROTECTIVE GAS MASK AND HOOD

Corey M. Grove, Red Lion, Pa.; John A. Scavnicky, Joppa, and Albert N. Tardiff, Jr., Germantown, both of Md., assignors to The United States of America, as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 902,261, Jun. 22, 1992, which is a continuation of Ser. No. 691,243, Apr. 24, 1991, abandoned. This application Dec. 7, 1992, Ser. No. 986,236

Int. Cl.[5] A62B *7/10, 17/00*

U.S. Cl. 128—201.25 **3 Claims**



1. A protective mask comprising:

a hood having a face piece, a head piece and a bib formed from an elastic impervious material, wherein a spacer means is fixed to the inside surface of said face piece for forming a nose cup, and wherein said bib has two shoulder pieces and front and back portions;

a seal mounted on the inside surface of said hood located on the periphery of said face piece;

optical means mounted on said face piece for permitting exterior vision from inside said hood wherein said optical means includes an eye piece having a semi-flexible frame with a fixed lens and at least one removable lens;

filter means, including a flexible filter mounted on said bib and an air duct extending from said face piece, for permitting filtered air to be drawn into said face piece via said filter and said duct; said filter means further including an air reservoir means in communication with said filter and said air duct for containing a volume of filtered air, said reservoir means including a flexible member attached to said bib to form a chamber that is in communication with said filter and said duct; said filter including a plurality of cells mounted on said bib, each said cell having an air output opening in communication with said chamber;

a one-way valve means mounted on said face piece for permitting air to be exhausted from inside said face piece, said valve including a perforated valve cover mounted on said face piece; and

a blower means removably mounted on said bib and including a fan positioned in said chamber to force air into said duct.

H1351

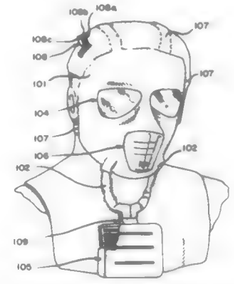
SOFTSHELL PROTECTIVE MASK

Albert N. Tardiff, Jr., Germantown, Md., and Corey M. Grove, Red Lion, Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 6, 1992, Ser. No. 879,017

Int. Cl.[5] A62B *7/10, 18/08, 23/02;* **A42B** *1/04*

U.S. Cl. 128—206.12 **4 Claims**



1. Protective apparel for protecting the head, neck and respiratory tract areas of a human body from harmful chemical, biological, or radioactive atmospheric contaminants and which also provides a source of purified breathing air from such atmosphere, said apparel comprising:

hood means including a face piece portion which has a lens arrangement for direct vision and a communication device in said face piece portion at the position of nose and mouth regions located on said face piece portion, said hood means being comprised of unitary laminated construction of material having a first layer composed of a heat and moisture dissipating material, a second layer comprised of material providing a contaminant barrier, and a third layer comprised of material providing a flexible, puncture-resistant barrier, said hood means further including a suspension system in the head portion of said hood means, said suspension system comprising a series of permanently elastic strips extending from said face piece portion, attached between the said first and second layer materials; and

said source of purified breathing air being provided by a separable air-purifying filter external to said hood means, said filter shaped in a substantially flattened structure, and including connecting means for enabling rapid disengagement and replacement of such filter without loss of integrity of the purified air, wherein said connecting means divides to form a pair of paths of purified air flow, one path extending to either side of the neck and jaw areas of the wearer.

H1352

DRIVE MECHANISM FOR ELEVATOR DOOR

Walter J. Herrmann, 275 Rich Hill Rd., Sellersville, Pa. 18960, and C. Paul Herrmann, 73 Old New Rd., Warrington, Pa. 18976

Filed Mar. 8, 1993, Ser. No. 27,795

Int. Cl.[5] B66B *13/00;* **E05F** *11/00*

U.S. Cl. 187—324 **10 Claims**

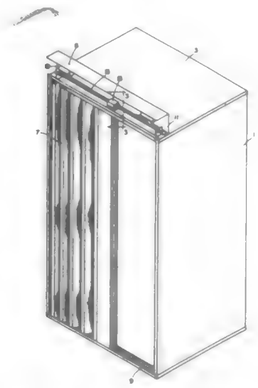
9. In an elevator car, the car including a housing, a sliding

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door, and a drive mechanism for moving the door, the improvement wherein:

the drive mechanism is contained within a module which is removably attached to the housing,

the module includes a rotatable shaft, means for rotating the shaft, a block defining recesses which contain at least one rollable bearing, the bearing being fixedly mounted in the



block, the block being mounted on the shaft such that rotation of the shaft causes the block to slide along the shaft, the block having a bracket attached thereto, the bracket extending from the module, wherein the bearing contacts the shaft with a pressure which is substantially uniform for any position of the block along the shaft,

and wherein the door is attached to the bracket.

H1363

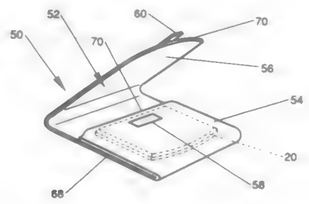
FOLD AND WRAP PACKAGE FOR CATAMENIAL PADS PROVIDING CONVENIENT DISPOSAL

Karen K. Leeker, 6100 Center Hill Rd., Cincinnati, Ohio 45224

Filed Dec. 22, 1992, Ser. No. 994,843

Int. Cl.[5] A61F *13/16, 13/18;* **B65D** *85/00*

U.S. Cl. 206—440 **7 Claims**



1. A fold and wrap package for containing a catamenial pad prior to use and for conveniently and securely disposing of a soiled catamenial pad, said fold and wrap package comprising:

a wrapper having a flap panel, a central panel contiguous with said flap panel, an end panel contiguous with said central panel, longitudinal edges, and end edges, said wrapper being initially configured to provide:

a pouch comprising said central panel and said end panel, said pouch formed by folding said end panel back upon said central panel and frangibly bonding said end panel to said central panel at said longitudinal edges by frangible bonds so that said end panel may be peeled away from said central panel to provide disposal of a soiled catamenial pad, said pouch being capable of receiving an unused catamenial pad; and

a flap contiguous with said pouch, said flap having a distal end defined by one of said end edges, said flap being formed by said flap panel, said flap panel being folded back upon said end panel to close said pouch, said flap panel being frangibly bonded to said pouch along said longitudinal edges by frangible bonds so that said flap may be peeled away from said pouch to open said pouch to allow removal of an unused catamenial pad and provide disposal of a soiled catamenial pad; and

a tape tab positioned adjacent said distal end of said flap for securing said wrapper and a soiled sanitary napkin secured thereto in a disposal configuration.

H1364

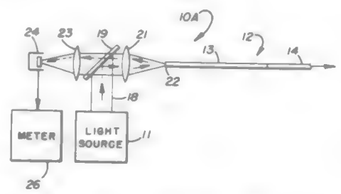
FLUORESCENT FIBER DIAGNOSTICS

John S. Toeppen, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 3, 1993, Ser. No. 70,825

Int. Cl.[5] G01J *1/58*

U.S. Cl. 372—6 **10 Claims**



1. A method of using a fluorescing optical fiber having a doped core that will fluoresce at a relatively long wavelength when pumped by light of a shorter wavelength, comprising:

a) pumping said doped core with light of said shorter wavelength to cause fluorescence in said core at said relatively long wavelength

b) detecting light of said relatively long wavelength exiting from one end of said fiber

c) monitoring the degree of intensity of said detected light of said relatively long wavelength.

REISSUES

OCTOBER 4, 1994

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,746

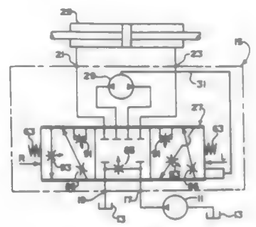
OPEN-CENTER STEERING CONTROL UNIT WITH FLOW AMPLIFICATION

Herman P. Schuttea, Bayside, Wis.; Dwight B. Stephenson, Savage, and Donald M. Haarstad, Chaska, both of Minn., assignors to Eaton Corporation, Cleveland, Ohio

Original No. 4,958,493, dated Sep. 25, 1990, Ser. No. 325,721, Mar. 20, 1989. Continuation-in-part of Ser. No. 254,067, Oct. 6, 1988, Pat. No. 4,862,690. Application for reissue Jan. 17, 1992, Ser. No. 822,245

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—384 **18 Claims**



1. An open-center controller operable to control the flow of fluid from a source of fluid to a fluid pressure operated device; said controller being of the type including housing means defining a fluid inlet port for connection to the source of fluid, a returna port for connection to a reservoir, and first and second control fluid ports for connection to the fluid pressure operated device; valve means disposed in said housing means and defining a neutral position and a first operating position; said housing means and said valve means cooperating to define a neutral fluid path communicating between said inlet port and said return port, and including a variable neutral orifice having its maximum flow area when said valve means is in said neutral position, and a decreasing flow area as said valve means is displaced from said neutral position toward said first operating position; said housing means and said valve means cooperating to define a main fluid path communicating between said inlet port and said first control fluid port, and between said second control fluid port and said return port when said valve means is in said first operating position; fluid actuated means for imparting follow-up movement to said valve means proportional to the volume of fluid flow through said fluid actuated means, said fluid actuated means being disposed in series flow relationship in said main fluid path between said inlet port and said first control fluid port; said main fluid path including a first, [fixed] flow control orifice disposed between said inlet port and said fluid actuated means, a second, variable flow control orifice disposed between said first flow control orifice and said fluid actuated means, and a third, variable flow control orifice disposed between said fluid actuated means and said first control fluid port, said second and third flow control orifices having minimum flow areas when said valve means is in said neutral position, and increasing flow areas as said valve means is displaced from said neutral position toward said first operating position; characterized by:

(a) said housing means and said valve means cooperating to define an amplification fluid path in parallel with said main fluid path, said amplification fluid path being in fluid communication with said main fluid path at a first location disposed between said fluid inlet port and said first[, fixed] flow control orifice, and at a second location disposed between said third, variable flow control orifice and said first control fluid port;

(b) said amplification fluid path including a variable amplification orifice having its minimum flow area when said valve means is in said neutral position, and an increasing flow area as said valve means is displaced from said neutral position toward said first operating position; and

(c) said variable amplification orifice begins to open at substantially the same time as said second and third, variable flow control orifices begin to open.

Re. 34,747

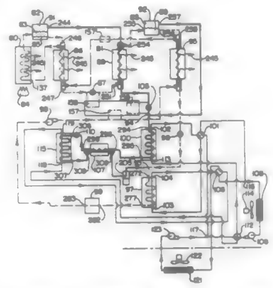
ABSORPTION REFRIGERATION AND HEAT PUMP SYSTEM WITH DEFROST

Stephen Petty, and Bert F. Cook, both of Columbus, Ohio, assignors to Columbia Gas Service Corporation, Wilmington, Del.

Original No. 4,972,679, dated Nov. 27, 1990, Ser. No. 478,274, Feb. 9, 1990. Application for reissue Aug. 31, 1992, Ser. No. 938,447

Int. Cl.[5] F25B *27/00*

U.S. Cl. 62—238.3 **15 Claims**



1. An absorption refrigeration and/or heating system in connection with a primary source of heat, a cooling or heating load, and a heat sink or secondary source, to selectively provide heat to or remove heat from the load, including components comprising:

(a) a multiple effect generator means having multiple desorber components to apply the primary source of heat to an absorption solution pair comprising a highly volatile refrigerant, and an absorbent and to desorb refrigerant from the pair;

(b) a condenser means connected to the multiple desorber components of the generator means;

(c) an evaporator means connected to the condenser means;

(d) an absorber means connected to the evaporator means;

(e) a pump means connected between the absorber means and the generator means to transfer solution to the generator means at higher pressure; and

(f) a heat transfer subsystem for conveying a working fluid [and] between the components and having multiple switchable valve means, including first, second and third valve members selectively switchable to convey transfer fluid:

(i) in the [one] cooling mode, to cool the load by directing the working fluid between heat exchange with the condenser means, the absorber means, and with a first heat exchanger in heat exchange relationship to the heat sink, while directing the working fluid between heat

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exchange with the evaporator means and a second heat exchanger in heat exchange relationship with the load, or

(ii) in the heating mode, to heat the load by directing the working fluid between heat exchange with the condenser means the absorber means and the second heat exchanger in heat exchange relationship with the load, while directing the working fluid between heat exchange with the evaporator means, and the first exchanger means in heat exchange with the load; and

(g) a pump means connected between the members of the second subsystem to convey the working fluid through the subsystem.

Re. 34,748

CRYOGENIC COOLING APPARATUS

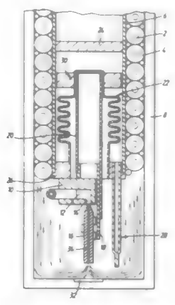
Keith Brown, Redditch, England, assignor to The Hymatic Engineering Company Limited, Worcestershire, England

Original No. 5,181,386, dated Jan. 26, 1993, Ser. No. 741,130, Aug. 7, 1991. Application for reissue Nov. 5, 1993, Ser. No. 147,557

Claims priority, application United Kingdom, Aug. 7, 1990, 9017229.7

Int. Cl.[5] F25B *19/02*

U.S. Cl. 62—51.2 3 Claims



1. Cryogenic cooling apparatus, said apparatus being accommodated within a container which has a wall, a thermal load being connected to the outer surface of a portion of said wall, said apparatus comprising an inlet path through which, in use, refrigerant gas is caused to flow, a Joule-Thomson expansion nozzle which has an outlet and communicates with said inlet path and in which, in use, a proportion of said refrigerant gas is caused to liquefy, an outlet path communicating with said outlet of said expansion nozzle, said inlet path being arranged in heat exchange relationship with said outlet path, an elongate valve needle cooperating with the outlet side of said expansion nozzle and together with the latter constituting a valve, a sensor disposed in a space on the outlet side of said expansion nozzle and arranged progressively to close said valve as the amount of liquid refrigerant in contact with it increases, said valve needle affording a bypass passage which extends over its entire length and remains open at all times, said bypass passage having an outlet end which is directed towards said portion of said wall.

Re. 34,749

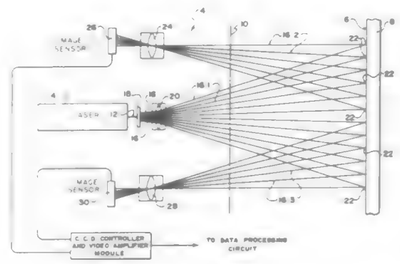
APPARATUS FOR DETERMINING THE DISTANCES OF POINTS ON A SURFACE FROM A REFERENCE AXIS

Kenneth Leong, Burnaby, and Donald Stewart, Langley, both of Canada, assignors to Softac Systems Ltd., Port Coquitlam, Canada

Original No. 4,937,445, dated Jun. 26, 1990, Ser. No. 100,332, Sep. 23, 1987. Application for reissue Jun. 26, 1992, Ser. No. 905,603

Int. Cl.[5] G01B *11/02*

U.S. Cl. 250—237 G 21 Claims



21. An apparatus for monitoring and determining the distances of points on a surface of a strip of material from a pre-determined reference axis, comprising:

means for projecting a plurality of angularly spaced apart beams of light directed towards the surface and extending along a common plane intersecting with the surface to produce a plurality of linearly spaced apart spots of light on the surface;

first means for gathering reflected light from the points on the surface and projecting real images of the spots onto a straight line along a first photodetector plane; and

first linear photodetector means having a plurality of predefined zones positioned along the line extending along the first photodetector plane to receive respective individual images of the spots, the zones being positioned and dimensioned so that each said image impinges upon a different said zone, whereby the point on the surface corresponding to each beam of light can be determined from the zone upon which each said image impinges, the first linear photodetector means providing a quantified signal output representing the position of each said image in its respective zone along the line representing the position on the strip surface where each said spot of light occurs relative to the reference axis.

Re. 34,750

LASER PRINTING SYSTEM

Naoto Ohmori, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Original No. 4,847,643, dated Jul. 11, 1989, Ser. No. 155,532, Feb. 12, 1988. Application for reissue May 13, 1991, Ser. No. 699,461

Claims priority, application Japan, Feb. 19, 1987, 62-37618; Oct. 17, 1987, 62-262460; Oct. 17, 1987, 62-262461

Int. Cl.[5] G01D *15/14*; G03G *15/01*

U.S. Cl. 346—160 19 Claims

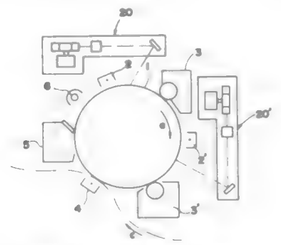
17. An electrophotographic printer, comprising:

photosensitive means having a surface to be charged;

means for electrically charging the surface of said photosensitive means;

means for scanning a light spot on said photosensitive means to form electrostatically a latent image of electric data thereon, said means for scanning including at least two optical units each scanning a light spot on said photosensitive means and different in dot density from each other;

means for developing the latent image into a toner image;



means for transferring the tone image onto a copy sheet; and

means for thermally fixing the toner image on the copy sheet.

Re. 34,752

ALKALINE BATTERY WITH A NICKEL ELECTRODE

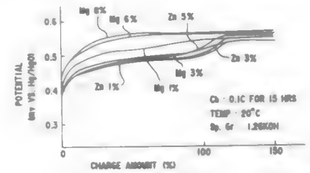
Masahiko Oshitani; Heiichi Hasegawa, and Hiroshi Yufu, all of Takatsuki, Japan, assignors to Yuasa Corporation, Takatsuki, Japan

Original No. 4,985,318, dated Jan. 15, 1991, Ser. No. 358,118, May 30, 1989. Application for reissue Jan. 15, 1993, Ser. No. 5,157

Claims priority, application Japan, Jul. 19, 1988, 63-180047; Oct. 18, 1988, 63-262047

Int. Cl.[5] H01M *4/32*

U.S. Cl. 429—223 6 Claims



1. Active material for a nickel electrode comprising:

nickel hydroxide powder active material; and

zinc or magnesium which is added to said active material at a rate in a range of [3] *1*–10 wt% or 1–3 wt%, respectively, said zinc and magnesium being in a solid solution in crystal of said nickel hydroxide, and in distribution of pore radii calculated from [the] a desorption side at nitrogen adsorption isotherm of said powder, development of pore having a radius of 30 Å or more being prevented, and an entire pore volume rate being controlled at 0.05 ml/g or less.

Re. 34,751

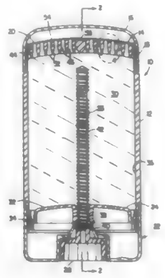
COSMETIC PRODUCT

Harold R. Thompson, Norwell, Mass., assignor to The Gillette Company, Boston, Mass.

Original No. 5,007,755, dated Apr. 16, 1991, Ser. No. 417,260, Oct. 5, 1989. Application for reissue Jan. 13, 1992, Ser. No. 819,824

Int. Cl.[5] A45D *40/06, 40/08*

U.S. Cl. 401—175 36 Claims



28. A dispenser for gel cosmetic product comprising

container structure that includes annular chamber wall structure,

application surface structure at one end of said annular chamber wall structure, said application surface structure defining an application surface having an array of elongated divider webs that define a corresponding array of distribution passages, said elongated divider webs having leading end surface portions of width less than said distribution passages to define flared entrance ports to said distribution passages, and

dispenser structure for urging said gel cosmetic product through said distribution passages to said application surface.

Re. 34,753

ORTHOPEDIC RIGID SPLINT-PLATE ORTHOSIS

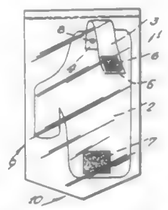
Jorge A. Groiso, Ayacucho 1570 P.9, Buenos Aires 1112, Argentina

Original No. 4,852,556, dated Aug. 1, 1989, Ser. No. 934,120, Nov. 24, 1986. Application for reissue Jul. 29, 1991, Ser. No. 737,405

Claims priority, application Argentina, Sep. 26, 1986, 305395

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—7 11 Claims



10. A combination for immobilizing an injured body member comprising an orthopedic splint-plate, a liquid-impervious, aseptically closed first bag holding the splint-plate, the bag being mechanically resistant to the weight of the splint-plate and thermally resistant to temperatures at or below the boiling point of water, the splint-plate comprising a rigid thermoplastic plate pre-cut to conform to a body member and being deformable to conform to the body member after being heated in the bag to a temperature at or below the boiling point of water and becoming rigid on the body member upon subsequent cooling, and further comprising a second bag disposed about and sealing the first bag so that the second bag containing the first bag with the splint-plate may be submerged in a hot liquid to soften the splint-plate without contact of the hot liquid with said first bag and splint plate, said bags being permeable to sterilizing gas for sterilizing the splint-plate, but impermeable to the hot liquid and to microbes.

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PLANT PATENTS

GRANTED OCTOBER 4, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,918

MINIATURE ROSE PLANT NAMED SAVALIGHTS

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Nov. 4, 1993, Ser. No. 147,816
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—7.1 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described.

8,919

MINIATURE ROSE PLANT NAMED SAVAVEL

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Nov. 4, 1993, Ser. No. 148,206
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—10 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described.

8,920

HYBRID TEA ROSE PLANT NAMED 'LADY LAVENDAR'

O. L. Weeks, Chino, Calif., assignor to Estrella Rose Company, Litchfield Park, Ariz.

Filed Dec. 23, 1991, Ser. No. 812,170
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—11 1 Claim

1. A new and distinct variety of Hybrid Tea rose plant substantially as described and shown herein.

8,921

HYBRID TEA ROSE PLANT NAMED HARDRUBY

Harvey D. Davidson, #3 El Verano Rd., Orinda, Calif. 94563

Filed Oct. 15, 1993, Ser. No. 136,160
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—20 1 Claim

1. A new and distinct variety of rose plant of the Hybrid Tea class, substantially as herein shown and described.

8,922

PLUM COT TREE "FLAVORGLO"

Chris F. Zaiger, 537 Rosemore Ave.; Leith M. Gardner, 1207 Grimes Ave.; Gary N. Zaiger, 1907 Elm Ave., and Grant G. Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Jan. 31, 1994, Ser. No. 189,034
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—38.1 1 Claim

1. A new and distinct variety of Plum Cot tree, as illustrated and described, characterized by its large size, vigorous, semi-upright growth and a moderately productive and regular bearer of firm, yellow flesh, clingstone fruit with excellent flavor and eating quality; the fruit is further characterized by being of large size, nearly uniform throughout the tree and in comparison to the Plum Cot Flavorella (U.S. Plant Pat. No. 8,470) the fruit is larger in size and matures approximately 7 days earlier.

8,923

NECTARINE TREE (KAY DIAMOND)

Lowell G. Bradford, 12439 E. Savana Rd., and Norman G. Bradford, 11875 E. Savana Rd., both of Le Grand, Calif. 95333

Filed Jan. 19, 1994, Ser. No. 183,353
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—41.3 1 Claim

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, which is similar to the Spring Bright Nectarine (U.S. Plant Pat. No. 7,507) by producing fruit that matures in mid June, that is full red in skin color, that is very firm in texture, and that is flavorful in taste, but is distinguished therefrom and an improvement thereon by by having reniform instead of globose glands, by having a higher chilling requirement, by having a small blossom instead of large, and by producing fruit that is freestone instead of clingstone.

8,924

CHRYSANTHEMUM PLANT NAMED SUNSET LADY

Peter S. Hesse, Nipomo, Calif., assignor to Cleangro, Ltd., Wellington, England

Filed Mar. 22, 1993, Ser. No. 35,241
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—78 1 Claim

1. A new and distinct Chrysanthemum plant, substantially as herein described and shown, characterized by its red-bronze bud color and pale yellow flower with a reddish-bronze center in the mature expanded flower.

8,925

LILIUM PARAMOUNT

Gerardus C. Van der Salm, 35306 NW. Toenjes Rd., Woodland, Wash. 98674

Filed Jan. 25, 1994, Ser. No. 186,313
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.4 1 Claim

1. A new and distinctive variety of Oriental hybrid lily plant substantially as herein shown and described, characterized by its high resistance to disease; its tolerance of virus; its vigorous growth and rapid natural propagation; the excellence of its flower form, size, and substance; its versatility both as a garden plant and as a cut-flower producer from pre-cooled bulbs forced under glass out of season; and in particular by its upright buds, its sharply ascending pedicels, and by its completely upfacing flowers with even deep pink coloration, inconspicuously colored papillae, and small green nectaries bordered with narrow yellow margins, a combination unique among Oriental hybrid lilies suited to forcing and to mass commercial cultivation.

8,926

LILIUM ROSE PARAMOUNT

Gerardus C. Van der Salm, 35306 NW. Toenjes Rd., Woodland, Wash. 98674

Filed Jan. 25, 1994, Ser. No. 186,699
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.4 1 Claim

1. A new and distinctive variety of Oriental hybrid lily plant substantially as herein shown and described, characterized by its high resistance to disease; its tolerance of virus; its vigorous growth and rapid natural propagation; the excellence of its flower form, size, and substance; its versatility both as a garden plant and as a cut-flower producer from pre-cooled bulbs forced under glass out of season under a wide range of light and temperature conditions; and in particular by its unique completely upfacing flowers with their evenly distributed medium pink coloration, deep magenta rose papillae on the basal third of the tepals only, green nectaries with yellow margins, and broadly overlapping inner tepals, a combination unique among Oriental hybrid lilies suited to forcing and to mass commercial cultivation.

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LILIUM 'YELLOW GRACE'

Gerardus C. Van der Salm, 35210 NW. Toenjes Rd., Woodland, Wash. 98674

Filed Jan. 25, 1994, Ser. No. 186,700
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.4 1 Claim

1. A new and distinctive variety of Asiatic hybrid lily plant substantially as herein shown and described, characterized by its high resistance to disease; its tolerance of virus; its vigorous growth and rapid natural propagation; the excellence of its flower form, size, and substance; its versatility both as a garden plant and as a cut-flower producer from pre-cooled bulbs forced under glass out of season; and in particular by its unique upfacing flowers showing deep yellow coloration, inconspicuous spotting and small brushmarks, narrow green nectaries with soft yellow pubescent margins, starry flower form with only slightly overlapping tepals, and semi-umbellate inflorescence, a combination unique among Asiatic hybrid lilies suited to forcing and to mass commercial cultivation.

8,928

LILIUM 'LA CLARIDAD'

Gerardus C. Van der Salm, 35210 NW. Toenjes Rd., Woodland, Wash. 98674

Filed Jan. 25, 1994, Ser. No. 186,701
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.4 1 Claim

1. A new and distinctive variety of Oriental hybrid lily plant substantially as herein shown and described, characterized by its high resistance to disease; its tolerance of virus; its vigorous growth and rapid natural propagation; the excellence of its flower form, size, and substance; its versatility both as a garden plant and as a cut-flower producer from pre-cooled bulbs forced under glass out of season under a wide range of light and temperature conditions; and in particular by its unique completely upfacing flowers with their light pink coloration with noticeably deeper pink tepal midribs, inconspicuous white-edged green nectaries, deep magenta rose papillae on the basal half of each tepal, and lightly frilled tepal margins, a combination unique among Oriental hybrid lilies suited to forcing and to mass commercial cultivation.

8,929

***FICUS BENJAMINA* PLANT NAMED RIANNE**

Hubertus T. van Diemen, Aalsmeer, Netherlands, assignor to Kwekerij De Amstel, B.V., Netherlands

Filed Dec. 10, 1993, Ser. No. 165,242
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88.9 1 Claim

1. A new and distinct cultivar of *Ficus benjamina* named 'Rianne', substantially as illustrated and described, particularly characterized by a plant with laterally dominant growth habit.

PATENTS

GRANTED OCT. 4, 1994

ERRATA

For CLASS	See PATENT NO.
451-069	5,351,444
451-271	5,351,445
451-028	5,351,446
451-505	5,351,447
477-116	5,351,577
084-387	5,351,593
084-486	5,351,594
104-296	5,351,620
104-094	5,351,621
180-008	5,351,626
139-091	5,351,719
415-175	5,351,732
477-096	5,351,795
236-044	5,351,855
222-132	5,351,875
206-427	5,351,878
248-118	5,351,897
244-118	5,351,898
239-705	5,351,903
096-009	5,352,272
564-252	5,352,400
423-574	5,352,433
424-205	5,352,596
437-004	5,352,614
437-013	5,352,615
502-107	5,352,658
424-093	5,352,661
525-050	5,352,756
548-255	5,352,792
348-183	5,353,117
348-451	5,353,118
348-446	5,353,119
348-555	5,353,120
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364-164	5,353,207
369-025	5,353,259
371-022	5,353,308

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GRANTED OCTOBER 4, 1994

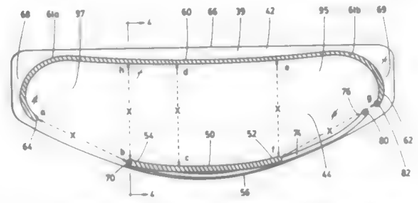
GENERAL AND MECHANICAL

5,351,339

DOUBLE LENS ELECTRIC SHIELD

Douglas A. Reuber, Lindsay, and Amsey Buehler, Cobourg, both of Canada, assignors to 546401 Ontario Limited, Lindsay, Canada

Filed Mar. 3, 1993, Ser. No. 25,873
Claims priority, application Canada, Feb. 3, 1993, 2090805
Int. Cl.[5] A42B *1/08*
U.S. Cl. 2—9 **9 Claims**



1. A face shield for a helmet comprising the following:
a weather lens;
a face lens spaced from said weather lens by spacer means so as to form an appreciable air gap between said weather lens and said face lens, said face lens having an inner layer and a backing layer, said inner layer having a surface facing said air gap;
a first electrode extending along a margin of said inner layer on said air gap facing surface and a second electrode extending along a margin of said inner layer on said air gap facing surface opposite said first electrode;
a contact extending from an end of said first electrode through said inner layer to a conductor, said conductor extending between said inner layer and said backing layer generally along said first electrode past a second end of said first electrode and toward an end of said second electrode;
a terminal connector extending to said end of said second electrode and to an end of said conductor which is proximate said end of said second electrode, said terminal connector for connecting to a source of electrical power;
a transparent conductive film extending between said first and said second electrode on said air gap facing surface, said film having sufficient electrical resistance to create heat effective to inhibit formation of fog, ice or frost upon said face shield when said terminal connector is connected to a source of electrical power.

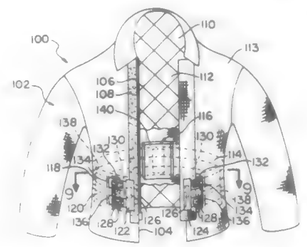
5,351,340

WORK GARMENT WITH LUMBAR SUPPORT

Donald Aldridge, New Carlisle, Ohio, assignor to Lion Apparel, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 780,151, Oct. 21, 1991, Pat. No. 5,157,790. This application Jul. 9, 1992, Ser. No. 911,276
Int. Cl.[5] A41D *1/02*
U.S. Cl. 2—108 **8 Claims**

1. A jacket comprising:
a torso portion having a waist segment covering a lower back area of a wearer; and
means for supporting a lumbar region of a wearer, said support means being attached to said torso portion at said waist segment;
said support means including,
resilient means for urging said support means against said lumbar region, said resilient means including,
elastic strap means extending through said waist portion and
support closure means positioned adjacent to a frontal area of said garment and extending through said torso portion, for selectively activating said resilient means to urge said support means against said lumbar region, and deactivating said resilient means whereby



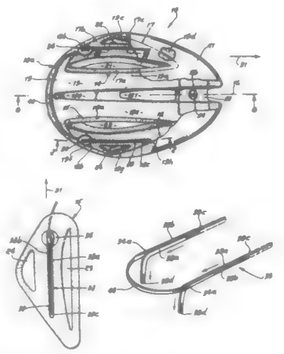
said support means is not urged into said lumbar region, and
a contact member attached to said elastic strap means and positioned to contact said lumbar region when said support means is activated.

5,351,341

MULTIPLE DENSITY HELMET BODY COMPOSITIONS TO STRENGTHEN HELMET

Lester V. Broersma, Bellflower, Calif., assignor to Bell Sports Inc., Norwalk, Calif.

Continuation-in-part of Ser. No. 717,485, Jun. 19, 1991. This application Aug. 24, 1992, Ser. No. 934,200
Int. Cl.[5] A42B *3/02*
U.S. Cl. 2—412 **40 Claims**

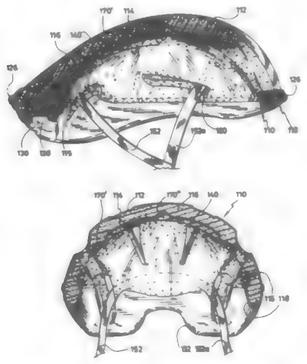


4. In a protective helmet having dome-shaped body means, the combination comprising
a) a retention strap within said body means,
b) a first cavity in said body means in which a substantial length of said strap is stored in position to be pulled out of said cavity for use in retaining the helmet to the head of a user,
c) said body means including a main body portion defining a second cavity, and an insert body portion retained in said second cavity, said insert body portion defining at least a part of said first cavity,

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d) and wherein said insert body portion and main body portion both consist of foamed synthetic resin; one of said portions having higher density than the other.

5,351,342
PROTECTIVE HEADGEAR
Louis Garneau, 246, Chemin de la Butte, Saint-Augustin-de-Desmaures, Québec, Canada G3A 2E6
Continuation-in-part of Ser. No. 829,287, Feb. 3, 1992. This application Apr. 5, 1993, Ser. No. 42,656
Int. Cl.[5] A42B *3/02*
U.S. Cl. 2—414 6 Claims



1. A safety helmet for use with chin retention straps on a cyclist's head, comprising:
(a) a hard, resiliently flexible, external shell;
(b) a hard, resiliently flexible, internal shell, defining a main portion and a rim portion, the latter rim portion formed by an outwardly extending web and a flange projecting upwardly externally from said web, the latter rim portion thus constituting an upwardly-opening trough; and
(c) a soft, substantially rigid, shock absorbing insert, also defining a main portion and a rim portion, said insert main portion defining an external surface generally conforming with and adapted to fit onto the top of said cyclist head;
wherein said insert rim portion conforms with and adheres to the outer surface of said internal shell rim portion, and fills said trough; said internal shell main portion is embedded into said insert main portion; said internal shell rim portion surroundingly conforming with and adapted to fit around the sides of said cyclist head; said insert rim portion having an external surface substantially flush with said flange; said external shell conforming with and adhering to the external surface of said insert and having a bottom edge forming a joint with the top edge of said flange; and further including ventilation openings, each extending through said internal shell, insert and external shell.

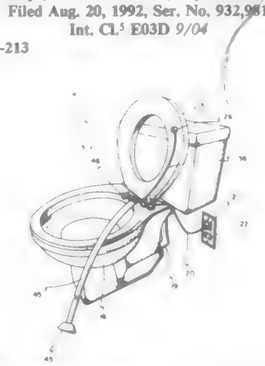
5,351,343
EAR FLAP HAT
Brian P. Harbison, 2855 Polk St., #304, San Francisco, Calif. 94123
Filed Nov. 30, 1992, Ser. No. 983,362
Int. Cl.[5] A42B *1/06*
U.S. Cl. 2—423 7 Claims

1. An ear flap hat comprising:
a. a crown, said crown having a top portion and a bottom portion;
b. a first triangular-shaped ear flap, said first ear flap having a first edge connected to the bottom portion of the crown and positioned to cover one of a wearer's ears, a second edge positioned toward the rear of the wearer's head, and a third edge having a tubular channel sewn therein;
c. a second triangular-shaped ear flap, said second ear flap having a first edge connected to the bottom portion of the crown on the opposing side from the first ear flap positioned to cover the remaining ear of the wearer, a second edge positioned toward the rear of the wearer's head, and a third edge having a tubular channel sewn therein;
d. a first cord positioned within the channel of the first ear flap and coupled to the bottom portion of the crown at the



junction of the first edge and the third edge of the first ear flap;
e. a second cord positioned within the channel of the second ear flap and coupled to the bottom portion of the crown at the junction of the first edge and the third edge of the second ear flap;
f. a cord lock, said cord lock slidably connected to both the first cord and the second cord for adjustably securing the ear flap hat on a wearer's head; and
g. a visor connected to the crown and the first and second ear flaps for shielding the wearer's face from above.

5,351,344
FLUID EVACUATION SYSTEM
Rhudy F. Phillips, 1405 Duncan St., Fayetteville, N.C. 28303
Filed Aug. 20, 1992, Ser. No. 932,981
Int. Cl.[5] E03D *9/04*
U.S. Cl. 4—213 9 Claims

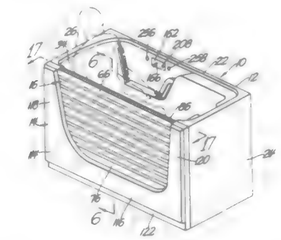


1. A fluid evacuation system for use with a conventional water closet having a bowl with an upper surface surrounding a waste receiving opening and a seat mounted on the upper surface:
a wet/dry vacuum by pass source including a by pass motor adapted to be removably mounted to a rear portion of said water closet, said source having at least one inlet and one outlet;
a keeper having means for attachment to the upper surface of the bowl, said keeper being of a size so as to fit between the bowl upper surface and an under surface of the seat; said keeper having at least one passageway extending there through;

means for conducting fluid from said one outlet to a sewer pipe;
at least one vacuum hose being received in said passageway of said keeper such that said hose is releasably frictionally retained by said passageway with an open end of said hose extending through said passageway for disposition adjacent said waste receiving opening for removal of noxious odors through said at least one vacuum hose to said at least one inlet for passage through said vacuum source and said outlet to a sewer pipe; an auxiliary hose being attachable at one end to said open end of said at least one vacuum hose such that an opposite end of said auxiliary hose may be used to vacuum water from a floor adjacent said bowl

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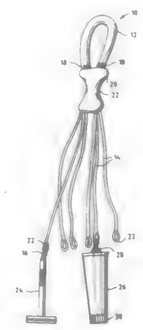
5,351,345
BATH TUB HAVING SIDE ACCESS
Arthur A. Sills, Traverse City; Frederick A. Kilbourn; Brian K. Nelson, both of Suttons Bay, and Donald J. Henderson, Traverse City, all of Mich., assignors to Siltech Products Incorporated, Traverse City, Mich.
Filed Jul. 8, 1992, Ser. No. 910,775
Int. Cl.[5] A47K *3/022*
U.S. Cl. 4—555 61 Claims



1. A bath tub having side access to facilitate ingress and egress including a main tub section with a fixed side wall, a pair of fixed end walls integral with the fixed side wall, a bottom wall integral with the fixed side wall and the pair of fixed end walls, a drain for the bottom of said main tub section and an open side having a sealing surface, said open side being integral with said end walls and said bottom wall, and located opposite said fixed side wall; a tambour door assembly including a tambour door, and a track assembly with generally vertical guides supported on the open side of the main tub section and generally horizontal guides supported below the bottom wall of the main tub section, said door having a plurality of parallel tambour slats faced by a flexible water impervious membrane substantially covering one side of the parallel tambour slats, and being guided by the track assembly in movement between a first position generally under the bottom wall in which the open side of the tub is open and a second position adjacent to the open side of the main tub section in which the open side of the tub is closed; and a seal in contact with said sealing surface on the main tub section and in contact with the flexible impervious membrane of the tambour door when the tambour door is in said second position for preventing water loss.

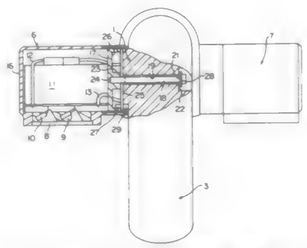
5,351,346
DEVICE FOR HOLDING SHOWER ARTICLES
James E. Hodges, Jr., 888 Congdon Ave., Apt. 23, Bldg. B, Elgin, Ill. 60120
Filed Jul. 26, 1993, Ser. No. 97,404
Int. Cl.[5] A47K *5/00*
U.S. Cl. 4—605 3 Claims

1. A device for holding shower articles comprising:
a single, flexible member having first and second ends and a mid-section intermediate said first and second ends, said member further including a first plurality of strands having respective first ends extending from said first end of said member and said first plurality of strands having respective second ends, said member further including a second plurality of strands having respective first ends extending from said second end of said member and said second plurality of strands having respective second ends, said second ends of said first and second plurality of strands each including fastening means for holding at least one shower article, said device further including a slip



sleeve slidably mounted to said first and second plurality of strands, said slip sleeve having a narrowed central section through which all of said first and second plurality of strands extend and providing a fraction fit therewith, whereby said slip sleeve, said first and second ends of said member and said mid-section of said member define a loop for suspending the device from a neck pipe of a shower head and said slip sleeve provides a means for tightening the device about the neck pipe of the shower head.

5,351,347
PROXIMITY CONTROLLED SANITARY FITTING
Horst Kunkel, Stuttgart, Fed. Rep. of Germany, assignor to Hansa Metallwerke AG, Stuttgart, Fed. Rep. of Germany
Filed Feb. 27, 1992, Ser. No. 842,489
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1991, 4106540
Int. Cl.[5] E03C *1/05*
U.S. Cl. 4—623 5 Claims



1. A sanitary fitting for the controlled dispensing of water which comprises in combination:
(a) a main body including a spout through which a supply of water is adapted to flow,
(b) an electrically controlled valve closely associated with said main body for controlling the flow of water through said spout, an electronic proximity detector comprising a radiation emitting transmitter, and a receiver for said radiation, and an electronic unit associated with said fit-

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ting for sensing at least one of a user and a water level and producing an output control signals electrical connection means being provided for connecting the output control signal to said valve,

(c) a handle adjustably mounted to said main body,

(d) switching means operatively activated by said handle for controlling operation of said electronic proximity detector,

(e) said handle extending outwardly from said main body and separate from said spout, said handle being manually adjustable to positions that include: (1) a first position in which said electronic proximity detector is active and sensitive to the presence of a user and provides said output control signal to said valve which controls the flow of water through said spout,

(2) a second position in which said electronic proximity detector is not active and in this position said valve is closed to prevent the flow of water through said spout, and

(3) a third position in which said electronic proximity detector is active but not sensitive to the presence of a user and in this position said valve is open to permit the flow of water through said spout.

5,351,348

REST PAD FOR AN INFANT

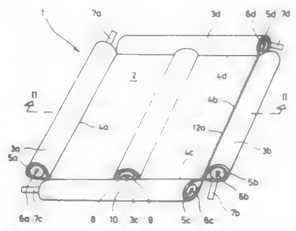
Udo Beger, Lindenstrasse 2, 8300 Landshut, Fed. Rep. of Ger-

Continuation of Ser. No. 838,580, Feb. 19, 1992, abandoned. This application Apr. 9, 1993, Ser. No. 47,951

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1991, 9103105[U]

Int. Cl.[5] **A47G** *9/06*; **A47C** *21/08*

U.S. Cl. 5—420 **10 Claims**



1. A rest pad for an infant, having a bottom comprising a multiple-sided padded central rest area with elevatable rim sections connected to the associated adjacent side of the padded central rest area, said rim sections comprising hollow reception spaces formed by loops to accommodate a filling material in each of said loops for elevating same, said loops consisting of a material of which the padded central rest area is made and said loops being formed by turning over the outside edge of said material so that the rim section is padded additionally, each of said rim sections having a length corresponding to that of the adjacent side of the central rest area connected thereto by a foldable bending boundary such that by folding up the loops the shape and the size of the central rest area is simultaneously variable, alternatively folding neighboring rim sections inwards towards the central rest area or outwards away from said central rest area whereby same can be narrowed or extended depending on the folding actuation of the rim sections.

5,351,349

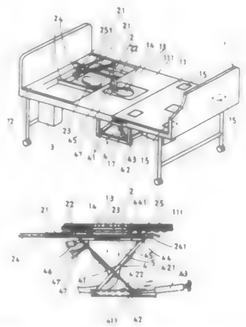
MULTIPURPOSE SICKBED

Liang-Chieg Tsai, 5F, No. 442, Wu Hsing Street, and Henry Tsang, No. 3, Lane 486, Section 1, Tung-Hua Street, Peitou, both of Taipei, Taiwan

Filed Nov. 30, 1993, Ser. No. 159,296

Int. Cl.[5] **A61G** *7/02*

U.S. Cl. 5—604 **3 Claims**



1. A multipurpose sickbed comprising:

a bed body having a bed plate assembly consisting of a front bed plate, an intermediate bed plate, and a rare bed plate longitudinally connected in series, said front bed plate comprising a plurality of massagers, said intermediate bed plate comprising a center opening through which a patient may pass out waste matter from the body, a set of infrared inductors mounted around said center opening;

a lifting mechanism having a top section and a bottom section, said lifting mechanism installed in said bed body below said center opening, said lifting mechanism comprising a first hydraulic cylinder, a track located in the bottom section fastened to said bed body, a linkage driven by said first hydraulic cylinder to move on said track, a platform supported on an intersected rod assembly and moved by said intersected rod assembly toward or apart from said intermediate bed plate, said platform comprising two guide rails bilaterally disposed at the said top section of said lifting mechanism, an opening aligned with the center opening on said intermediate bed plate, an excretion collector mounted around the opening of said platform at a bottom surface thereof to collect waste matter passed from the body of the patient through the center opening of said intermediate bed plate, and a stop board hinged to the opening of said platform at one side for covering over the pubes of the patient as said platform is lifted;

a warm/cold water supply system controlled to spray warm water for cleaning the pubes of the patient through a water pipe being connected to said stop board and to spray cold water for cleaning said excretion collector through a cold water pipe;

an air dryer mounted on said platform at one side by the opening on said platform and controlled to produce a hot current of air toward the opening on said platform and the center opening on said intermediate bed plate to dry the pubes and anus of the patient after the act of excreting;

a cover board for covering the center opening on said intermediate bed plate;

a second hydraulic cylinder mounted on said bed body and controlled to move said cover board to said platform for permitting said cover board to be moved upward by said platform to cover the center opening on said intermediate bed plate; and

a control circuit to control the operation of said infrared inductor, said warm/cold water supply system, said air dryer, said first hydraulic cylinder, and said second hydraulic cylinder.

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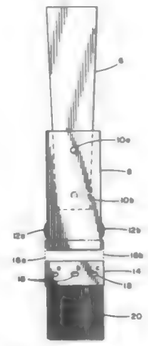
DUSTER

Scott C. Johnson, 5920 Muskie Trail, Morris, Ill. 60450

Filed May 6, 1993, Ser. No. 75,707

Int. Cl.[5] **E04F** *21/28*

U.S. Cl. 7—105 **4 Claims**



1. A combination tool comprising:

a rigid blade for scraping paint having at one end a molded, plastic handle, said handle secured to said blade by fastening means;

detent means on said handle at an end opposite to said blade;

a brush member having bristles at one end secured to a support frame, said support frame having recess means for receiving the detent means of said handle;

whereby said brush member can be removed from said handle and blade by depressing the detent means to disengage the detent means from said recess means on said brush member.

5,351,351

METHOD OF DYEING YARN CHEESES

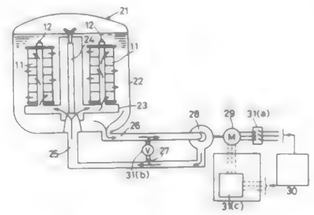
Nobutaka Ono, Ashiya, Japan, assignor to Osaka Bobbin Co., Ltd., Osaka, Japan

Filed May 21, 1993, Ser. No. 65,354

Claims priority, application Japan, Jun. 9, 1992, 4-176055

Int. Cl.[5] **D06B** *5/18*

U.S. Cl. 8—155.1 **5 Claims**



1. A method for dyeing yarn cheeses comprising the steps of: winding up yarns on press bobbins that are compressible to a predetermined degree of compression; mounting and stacking the resulting yarn cheeses one upon another on a spindle that is leakproof, and compressing the stacked yarn cheeses to a stop provided on each press bobbin so that each press bobbin will be compressed to the same extent; and unidirectionally flowing a dye liquor through the pressed yarn cheeses while simultaneously providing periodic pulsations to the dye liquor in the form of periodic reductions and increases in a flow rate and in a flow pressure to such a minimized degree that the dye liquor can pass through the yarn layers on the compressed cheeses, thereby dyeing the yarns evenly.

5,351,352

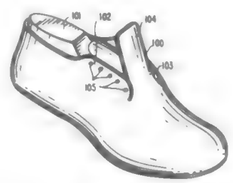
METHOD OF FORMING A SEAMLESS SHOE

John Chillemi, 27 Brittany Dr., Middletown, N.Y. 10940

Division of Ser. No. 901,106, Jun. 19, 1992, abandoned. This application Dec. 2, 1993, Ser. No. 161,987

Int. Cl.[5] **A43D** *21/00*

U.S. Cl. 12—146 C **1 Claim**



1. The method of forming an article of footwear comprising:

placing the identical pattern that contains the appropriate measurements on two pieces of material that are to be used respectively to form a footwear upper and the liner to be situated in the interior of said footwear, adjacent said upper;

cutting said materials to correspond to said measurements;

applying an agent to said material to render it pliable for stretching in the horizontal and vertical planes;

mounting each said material to be used as said upper, and as said liner respectively over a separate footwear shoe last, each said shoe last having top and side surfaces comprising a toe portion, a heel portion and an instep portion and a counter portion that extends on both sides of said last from the instep portion along the top of said last to said heel portion and a sole portion that comprises the bottom of said last;

stretching said material to obtain a tight wrinkle-free surface of the material on said last that it extends snugly along the top and sides of the surface of said last;

securing said material to the bottom of said last;

trimming excess material from the bottom of the last;

allowing the material to set for sufficient time to conform to the shape of said last;

forming an upper shell by cutting said upper material along the counter portion on each side and down the instep to result in the formation of a strip of material suitable for use as a tongue, wherein the two edges adjacent to said strip of material in the instep are suitable to retain eyelets for laces; removing the material cut along the counter to form an opening from instep to heel;

removing said upper shell from said last and placing it over said liner that is secured to a last;

securing said liner to said upper shell at the location of the collar;

stitching said lining to said upper shell at the edge of said opening;

cutting the lining along the edge of the upper shell and removing same so that the opening of said lining corresponds to the opening of said upper shell;

attaching a leather insole to the bottom of said last and securing the lower edge of said lining onto the bottom of said insole;

adhering a counter in the back and a toebox in the front to said lining;

adhering said upper shell to the toebox, lining and counter;

adhering the bottom edge of said upper shell to said insole;

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securing a shank on the bottom of said insole toward the heel and covering the balance of the bottom of said insole with filler means;

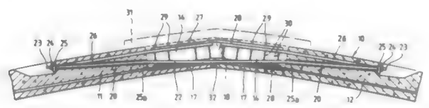
attaching sole to the bottom of said insole and then a heel.

5,351,353

BRIDGE OR TUNNEL CONSTRUCTION

Darryl F. Walters, Brisbane, Australia, assignor to CSR Humes Pty. Limited, North Sydney, Australia

Filed Mar. 31, 1992, Ser. No. 861,257
Claims priority, application Australia, Apr. 2, 1991, PK5359
Int. Cl.[5] E01D 7/00; E04B 1/32; E21D 9/00
U.S. Cl. 14—24 4 Claims



1. A bridge or tunnel construction, including at least one arch unit formed from a plurality of reinforced concrete arch segments interconnected to form said arch unit, the ends of the arch segments at the interconnections therebetween having cavities formed therein, the cavity in the end of one segment opposing the cavity in the end of the other, said cavities facing each other in the direction of the arch and through which cavities at least one tie member extends and is connected to each said segment to provide the interconnection, and

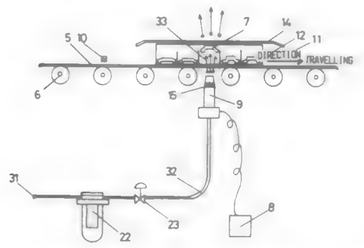
wherein said arch unit is overlaid with a compacted interacting soil layer to complete the bridge or tunnel construction.

5,351,354

DUST CLEANER AND DUST CLEANING METHOD

Kazuo Hasumi; Mamoru Kato, and Isaburou Omori, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Feb. 24, 1992, Ser. No. 840,342
Claims priority, application Japan, Feb. 27, 1991, 3-033235
Int. Cl.[5] B08B 5/02, 6/00, 7/00
U.S. Cl. 15—1.51 15 Claims



1. A dust cleaner for removing dust adhering to the surface of an object by blowing a compressible fluid, comprising:

a fluid permeable container for containing an object;

a clean compressible fluid nozzle for blowing a clean compressible fluid to said object;

filtration filter means for supplying said clean compressible fluid to said clean compressible fluid nozzle; and

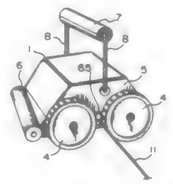
electrostatic elimination means for mixing and blowing electrostatic ions from an electrostatic ion generator into said clean compressible fluid in order to eliminate charged static electricity on said object.

5,351,355

SWIMMING POOL CLEANER

Paul Chiniara, 9044 Rimouski, Brossard, Quebec, Canada J4X 2S1

Filed May 26, 1993, Ser. No. 67,281
Int. Cl.[5] E04H 3/20
U.S. Cl. 15—1.7 6 Claims



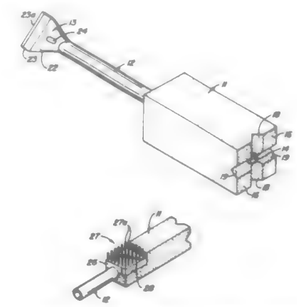
1. A swimming pool cleaner of the submersible type comprising casing means; first wheel means on one end of said casing means; second wheel means on the other end of said casing means; brush means rotatably mounted on said casing means for dislodging dirt from a pool bottom; pump means in said casing means for pumping water through said casing means; filter means in the path of travel of the water pumped by said pump means for rotating said first and second wheel means and said brush means; switch means for causing the drive means to reverse the direction of travel upon reaching a pool wall; cable means for connecting said casing means to a point on the periphery of the swimming pool for causing the cleaner to follow an arcuate path of travel, the trajectory of the path being dependent upon the distance between the cleaner and said point; winding means for changing the length of said cable means whereby the distance between said point and the cleaner is changed; release means connected to said winding means permitting coiling or uncoiling of said cable means; and spring means biasing said second wheel means to a turning position, whereby, by changing the tension on said cable means, while continuing to drive said wheel means, the cleaner can be caused to turn to effect corrections to the path of travel of the cleaner.

5,351,356

COMBINATION SPONGE AND HANDLE

Charles E. Townsend, Jr., 11 Ranch Rd., Orinda, Calif. 94563

Filed Aug. 16, 1993, Ser. No. 107,386
Int. Cl.[5] A47L 13/12
U.S. Cl. 15—114 9 Claims



1. The combination of a sponge mop with handle comprising:

an elongate sponge body having a length exceeding 3" and which in transverse section defines at least three flat side surfaces of substantially the same length;

said sponge body preformed with a central bore of uniform diameter extending the full length through the sponge body;

an elongated handle of preselected length and having a slightly larger diameter than said bore; said handle defining an exposed hand grip portion and a sponge supporting portion extending into the bore from a first end of said sponge body to a point not less than substantially ¾" inwardly from a second and opposite end of the sponge body;

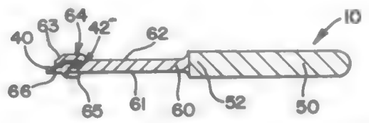
the portion of the bored sponge located between the sponge supporting portion of the handle and the outermost surface of the second end of the sponge body defining an unsupported squishy end portion sponge mass compressibly conformable through manual manipulation of the exposed handle to conform itself to irregular and contoured surfaces, said second end portion of said sponge formed with at least one elongated notched groove extending from a first point on one flat side to a point on a side of the sponge body opposite the first point of said sponge with said notched groove being oriented substantially transverse to the longitudinal axis of the sponge body; said groove providing a visible sight line to assist a user to engage and follow along molded trim and similar surfaces, the sides of said groove also providing a physical trackway for slidably and compressively conformably engaging edges of trim and moldings during back and forth wiping operations, the notched depth of the said groove being less than the spacing between the end of the sponge supporting portion of the handle and the second end surface of the sponge whereby no part of the groove intersects with the handle in the bore.

5,351,357

SPREADER TOOL FOR APPLYING BONDING COMPOUNDS TO PLANAR SURFACES

Isak Liberman, Des Plaines, Ill., assignor to Asak Enterprises, Ltd., Northbrook, Ill.

Filed Jul. 31, 1992, Ser. No. 922,795
Int. Cl.[5] A47L 11/38
U.S. Cl. 15—245.1 19 Claims



1. An improved tool for spreading bonding compound on planar surfaces, said tool having a main body portion comprised of an applicator for carrying and spreading compound to be applied to a planar surface, and a handle for gripping said tool, said applicator having a spreader end, a handle end and two side ends, said applicator fixedly mounted to said handle at said handle ends, said improvement comprising:

a rigid back face, an applicator face, and a curved outer edge end forming said applicator in a single piece construction; and

a flexible applicator edge disposed at said outer edge end of said applicator and having means for removably and interlockably attaching said flexible applicator edge to said outer edge;

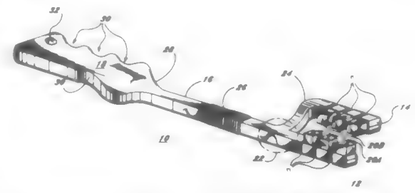
wherein said flexible applicator edge is curved to be insertable into said outer edge end and assumes a substantially curved shape when not forced into contact with said planar surfaces and wherein said flexible applicator edge assumes a substantially linear shape when forced into contact with and dragged along said planar surfaces by said handle with said applicator face forcing said compound out towards said side ends to evenly distribute said compound on said planar surfaces.

5,351,358

TOOTHBRUSH

BaBaTu Larrimore, 140 Royal Palm Ct., Plantation, Fla. 33317

Filed Aug. 27, 1992, Ser. No. 936,851
Int. Cl.[5] A46B 7/02, 9/04
U.S. Cl. 15—201 5 Claims



1. A toothbrush for simultaneously brushing the top and side faces of the user's teeth, comprising:

a first brush head having a plurality of flexibly adjoined segmented portions, each of said segmented portions having a plurality of bristles rigidly attached thereto and spaced to include a gap therebetween, and extending outward therefrom;

a second brush head having a plurality of flexibly adjoined segmented portions, each of said segmented portions having a plurality of bristles rigidly attached thereto, and extending outward therefrom, bristles of said second brush head positioned orthogonally and at a spaced relationship relative to said bristles of said first brush head;

an elongated body portion of narrow plan form width having first and second ends along a body axis, said first end being integral and axially aligned with said first brush head and further wherein said body portion includes at least three ridges extending in and transverse to the length of said elongated body portion for allowing said body portion to bend and twist longitudinally in relation to said first and second brush heads; and

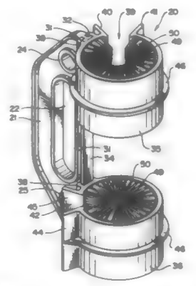
a handle integral with said body portion at said second end thereof, whereby said first and second brush heads may be strategically positioned against said user's teeth to simultaneously brush said top and side faces thereof, wherein said flexibly adjoined segmented portions may bend and twist relatively therebetween to conform to said user's tooth profile and bite.

5,351,359

ANCHOR CHAIN CLEANING DEVICE

Michael H. Golden, 339 Bayside Rd., Bellingham, Wash. 98225

Filed Sep. 30, 1993, Ser. No. 129,467
Int. Cl.[5] B63B 59/00
U.S. Cl. 15—256.6 8 Claims



1. A light weight buoyant anchor chain cleaning device

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adapted to be removably attached to, and reciprocated along, a deployed anchor chain, rope, line and the like for cleaning the same, said anchor chain cleaning device comprising, in combination:

a) a generally O-shaped handle formed of non-metallic material and having at least one generally linear elongate edge;

b) said handle having access openings extending therethrough permitting grasping of said handle by the user's hand and attachment of said handle to at least one of a boat hook and/or a retrieval line/weight combination;

c) first and second generally cylindrical anchor chain guides formed of non-metallic material secured to said generally lineal elongate edge on said handle in spaced apart coaxial relation;

d) said first generally cylindrical anchor chain guide having a first longitudinally extending radial opening extending therethrough and oriented adjacent a plane passing through said handle and said first and second coaxial chain guides and disposed laterally to one side of the plane;

e) said second generally cylindrical anchor chain guide having a second longitudinally extending radial opening extending therethrough and disposed laterally of the plane extending through said handle and said first and second coaxial chain guides on the side of the plane opposite the side where said first longitudinally extending radial opening is disposed; and,

f) a scrubbing medium comprising a flexible backing member of non-metallic synthetic material and a plurality of non-metallic synthetic upstanding bristles embedded in said flexible backing member, said scrubbing medium being bonded to the internal surfaces of said first and second generally cylindrical chain guides so that said bristles extend radially inward towards, but terminate short of, the longitudinal axis extending through said coaxial first and second chain guides.

5,351,360

CLEANING DEVICE FOR A WAFER MOUNT PLATE

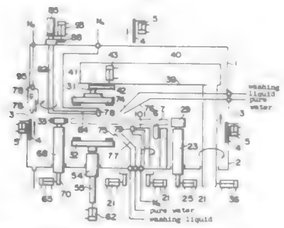
Shizuo Suzuki, Oume, and Noriyoshi Yokosuka, Iruma, both of Japan, assignors to Enya Systems, Limited, Japan

Filed Jun. 5, 1992, Ser. No. 893,775

Claims priority, application Japan, Jun. 6, 1991, 3-160904

Int. Cl.[5] A46B *13/04*

U.S. Cl. 15—302 **19 Claims**



1. A cleaning device for cleaning a wafer mount plate, comprising: supporting means for rotatably supporting a wafer mount plate having upper and lower surfaces bounded by a peripheral side surface to undergo rotation in a generally horizontal plane such that all the surfaces of the wafer mount plate are exposed during rotation of the wafer mount plate, the supporting means including a set of rotatable rollers for rotatably supporting thereon the lower surface of the wafer mount plate, the rollers being positioned beneath the wafer mount plate about a given axis and rotatably supporting the wafer mount plate for rotation about the given axis; driving means for rotationally driving the wafer mount plate; supplying means for supplying washing liquid to the surfaces of the wafer mount plate during rotation thereof; and brushing means for brushing simultaneously the upper, lower and peripheral side surfaces of the wafer mount plate while the washing liquid is being supplied thereto.

5,351,361

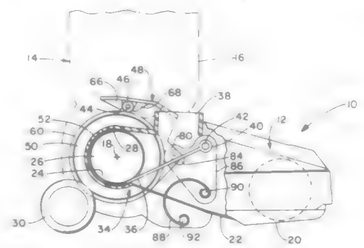
CONVERSION VALVE ARRANGEMENT

Dean H. Buchtel, Louisville, Ohio, assignor to The Hoover Company, North Canton, Ohio

Filed Jan. 8, 1993, Ser. No. 2,205

Int. Cl.[5] A47L *9/00*

U.S. Cl. 15—334 **13 Claims**



1. An upright cleaner having conversion to an above the floor operation including:

a) a cleaner handle pivoted in an upstanding manner to a suction nozzle;

b) a suction duct in said suction nozzle conveying a flow of suction air from a forwardly mounted suction mouth of said suction nozzle towards a motor-fan system in said upright cleaner;

c) a hose port disposed in fluid communication with said suction duct;

d) a pivoting valve closure member disposed in said suction duct and movable to a first position to sealingly close against said flow of suction air from said suction mouth and a second position to open a flow path to said suction mouth;

e) said valve closure member being spring urged by a spring mean to at least one of said positions;

f) said cleaner handle having an abutting piece which, upon pivoting movement of said cleaner handle in at least one direction, aids in abuttingly driving said valve closure member against said spring to move said valve closure member to the other of said position;

g) said abuttingly piece being a pin;

h) a deformable member in driving engagement with said valve closure member; and

i) said pin abuttingly engageable with said deformable member to deform it whereby said deformable member aids in moving said valve closure member against the urging of said spring.

5,351,362

ACTIVE VACUUM CLEANER NOZZLE

Wilfried Krämer, Reichshof-Odenspiel, and Klaus-Dieter Riehl, Drolshagen, both of Fed. Rep. of Germany, assignors to Wessel-Werk G.m.b.H. & Co. Kommanditgesellschaft, Reichshof-Wildbergerhutte, Fed. Rep. of Germany

Filed Jul. 22, 1992, Ser. No. 918,413

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1991, 9109809

Int. Cl.[5] A47L *5/26*

U.S. Cl. 15—387 **9 Claims**

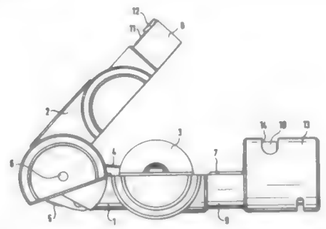
1. An active vacuum cleaner nozzle comprising

a two-part housing including a housing top part, a housing bottom part, and a suction pipe connecting socket,

at least one brush roller, a drive system, and a gear system disposed within an interior of said housing, said gear system transmitting torque from said drive system to said brush roller,

said housing top part being pivotable in relation to said housing bottom part about one of a rotational axis of said brush roller and an axis parallel thereto, between a first position allowing access into the interior of said housing and a lockable second position which closes said housing,

a dividing joint between said housing top part and said housing bottom part which extends into said suction pipe connecting socket,



a locking sleeve essentially surrounding and being axially displaceable along said suction pipe connecting socket between a position enabling said housing to be opened and a locking position which prevents opening of said housing

a first locking element on said suction pipe connecting socket, and

a second locking element on said locking sleeve which is detachably engaged by said first locking element to lock said housing into said closed position.

5,351,363

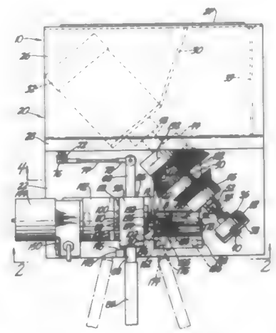
POPPET VALVE CLEANER

Dallas A. Appelgren, Box 88, Hillman, Mich. 49746

Filed Aug. 25, 1992, Ser. No. 934,965

Int. Cl.[5] A46B *13/02*

U.S. Cl. 15—88.2 **16 Claims**



1. A poppet valve cleaner for cleaning a poppet valve having a valve stem with a valve head, the head having a valve head top surface, a valve head bottom surface, and a valve face, the cleaner including a frame; a chuck mounted on the frame for holding the valve stem of a poppet valve and rotating the poppet valve about a valve stem axis; a pair of spaced apart wire brushes rotatably supported on the frame for rotation about a common brush axis of rotation that is at an angle to the valve stem axis; a carriage assembly mounted on the frame and manipulatable to move the poppet valve relative to the wire brushes to position at least a portion of the valve head between the spaced apart wire brushes, to bring the top surface of the head of a poppet valve into contact with one of the wire brushes and to bring the bottom surface of the head of a poppet valve into contact with the other wire brush; a drive assembly attached to the frame and operable to rotate the poppet valve about the valve axis; and a drive assembly attached to the frame and operable to rotate the wire brushes about the brush axis of rotation.

5,351,364

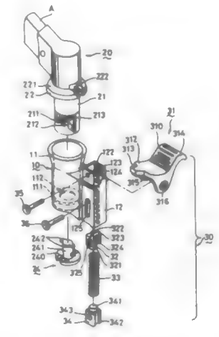
CASTER-SUPPORTING DEVICE FOR A STROLLER

Hong-Fu Zan, No. 59, Alley 85, Lane 673, Chung-Cheng Rd., I-Chia Tsun, Jen-Te Hsiang, Tainan Hsien, Taiwan

Filed Dec. 21, 1993, Ser. No. 172,481

Int. Cl.[5] B60B *33/00*

U.S. Cl. 16—35 R **1 Claim**



1. A caster-supporting device for a stroller, including a connector which is adapted to be connected to a stroller frame, a caster-mounting member which is mounted rotatably to said connector and which is adapted to carry rotatably a caster, and a locking unit which locks releasably said caster-mounting member on said connector to set a direction of the caster, wherein:

said caster-mounting member includes a first upright tube and a second upright tube formed on one side of said first upright tube and parallel to said first upright tube, said second upright tube having an open top end;

said connector includes a tubular member which extends rotatably into said first upright tube and which is formed with a retaining notch; and

said locking unit includes: a caster axle which extends transversely through said second upright tube adjacent to a bottom end of said second upright tube, the caster being carried rotatably on a distal end of said caster axle; a spring support piece provided in said second upright tube and formed with a locking hole to permit extension of said caster axle therethrough; a compression spring provided in said second upright tube on top of said spring support piece; a control piece provided in said second upright tube on top of said compression spring and formed with a raised cam portion on a top end and an elliptical guide hole, said raised cam portion being biased by said compression spring to extend out of said open top end of said second upright tube; a pivot pin extending transversely through said second upright tube adjacent to a top end of said second upright tube and passing through said guide hole in said control piece; and a lever with a plate portion, pivot plates formed on two sides of said plate portion and connected pivotally to two ends of said pivot pin, an upwardly extending portion that extends from a front end of said plate portion and that is formed with a key projection, and a bump formed at a bottom surface of said plate portion, said bump abutting against said raised cam por-

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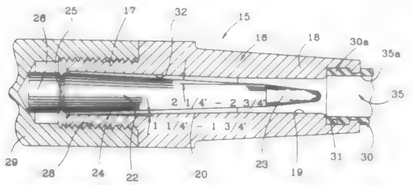
tion, said lever being pivotable to a locked position in which said key projection extends into said retaining notch and in which said bump moves past said raised cam portion and said raised cam portion retains releasably said lever in the locked position.

5,351,365
UNIVERSAL DRAG HANDLE
Timothy G. Hauck, 220 S. Main St., Cortland, N.Y. 13045
Filed May 3, 1993, Ser. No. 55,869
Int. Cl.[5] A47B *95/02;* **A47J** *45/10;* **B66C** *1/34;* **B65D** *25/28*
U.S. Cl. 16—114 R **10 Claims**



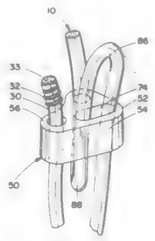
1. Apparatus for assisting in the lifting and moving of a heavy or difficult to handle load that includes:
an elongated flexible member that includes a flexible high strength core means the entire length of which is enclosed within a cylindrical helically wound spring means that is preloaded to normally support said member in a straight line configuration,
a handle means secured to one end of said core means, said handle means having a hand engageable gripping means, and
attaching means secured to the other end of said core that can be removably secured to a load or to said flexible member to form a loop therein.

5,351,366
END CLAMP HIGH TENSILE MODULUS TEXTILE ROPE
Charles R. Shaw, Twinsburg, Ohio, assignor to Esmet, Inc., Canton, Ohio
Filed Jul. 11, 1991, Ser. No. 728,517
Int. Cl.[5] F16G *11/05*
U.S. Cl. 24—122.6 **18 Claims**



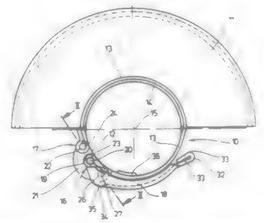
1. A clamp for attachment to the terminating end of a rope formed of aramid fibers including:
a) an elongated tubular outer sleeve having entrance and exit ends and formed with an internal bore, said bore having a first cylindrical section adjacent the entrance end and substantially complementary to the size of a rope to be attached and a second tapered section formed by a tapered inner surface diverging toward the exit end, said taper being within the range of between 1¼ degrees and 1¾ degrees;
b) a plug having a tapered outer surface slidably mounted within the tapered section of the sleeve through the exit end of said sleeve for clamping separated strands of a rope between said tapered outer surface of the plug and the tapered inner surface of the sleeve, said plug taper being within the range of between 2¼ degrees and 2¾ degrees; and
c) said plug forming an annular clearance area between the outer surface of the plug and the tapered inner surface of the sleeve at the exit end of said sleeve substantially equal to or slightly less than the compressed area of a rope.

5,351,367
LINE TENSIONER
E. Scot Kennedy, Hinckley, and Winston H. Breeden, Jr., Westlake, both of Ohio, assignors to Arcadia Management Co., Inc., Cleveland, Ohio
Filed Mar. 4, 1993, Ser. No. 26,497
Int. Cl.[5] B65D *63/00;* **A44B** *19/00*
U.S. Cl. 24—129 R **29 Claims**



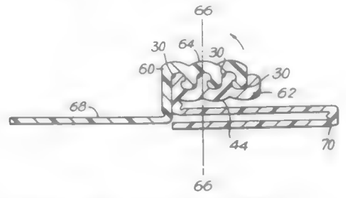
1. A line tensioner comprising:
a tensioner body;
a first bore extending through said tensioner body;
a second bore extending through said tensioner body, said second bore being spaced from said first bore;
a third bore extending through said tensioner body, said third bore being spaced from said first and second bores; and,
a fourth bore extending through said tensioner body, said fourth bore being spaced from said first, second, and third bores, wherein said second and third bores are aligned so that a first line may be constructed such that it intersects and is perpendicular to a respective longitudinal centerline of each of said second and third bores and wherein said second and fourth bores are aligned so that a second line may be constructed such that it intersects and is perpendicular to the longitudinal centerline of the second bore and a longitudinal centerline of the fourth bore, wherein said second line is disposed at an acute angle in relation to said first line.

5,351,368
CLAMPING DEVICE FOR CLAMPING A PROTECTIVE HOOD ON THE CLAMPING COLLAR OF A HAND-OPERATED MACHINE TOOL
Erich Borst, Leinfelden-Echterdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
PCT No. PCT/DE91/00534, § 371 Date Jan. 5, 1993, § 102(e) Date Jan. 5, 1993, PCT Pub. No. WO92/00834, PCT Pub. Date Jan. 23, 1992
PCT Filed Jun. 29, 1991, Ser. No. 965,262
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1990, 4021510
Int. Cl.[5] B65D *63/00*
U.S. Cl. 24—270 **39 Claims**



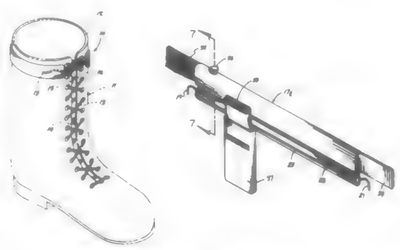
1. A clamping device for clamping a protective hood as a dust proof on a clamping collar of an angle grinder, comprising, a clamping strap which has ends and is clampable together in the region of said ends; a clamping lever having one end and being pivotable at said one end about a pivot axis in respect of one of said ends of said clamping strap; a transmission member which is engaged by said clamping lever and which engages at a distance from said clamping lever another of said ends of said clamping strap and during clamping brings said ends of said clamping strap nearer to one another, said transmission member, said clamping lever, and said ends of said clamping strap forming a toggle-lever device which during clamping contracts said clamping strap in the region of said ends of said clamping strap in a manner essentially free of any bending moment; and a bolt provided in said lever and formed as a rotationally adjustable eccentric bolt, said transmission member being pivotally mounted on said rotationally adjustable eccentric bolt of said clamping lever whereby the clamping force remains constant so that there is no need for any readjustment.

5,351,369
MOISTURE-RESISTANT FASTENER
Henry L. Swain, Bridgewater, N.J., assignor to Illinois Tool Works, Inc., Glenview, Ill.
Filed Jun. 16, 1992, Ser. No. 899,458
Int. Cl.[5] B65D *33/16*
U.S. Cl. 24—304 **23 Claims**



1. A moisture-resistant fastener, comprising:
a first flexible closure strip and a second flexible closure strip, each flexible closure strip having a web portion and a marginal strip portion, said marginal strip portions of said first and second closure strips being formed of a first polymeric material;
said marginal strip portion of said first flexible closure strip having at least one solid form-retaining longitudinal rib having an undercut interlocking hook along one side thereof to form an enlarged head;
said marginal strip portion of said second flexible closure strip having at least one longitudinal channel having an undercut interlocking groove along one side thereof to form an enlarged bottom, said channel being generally complementary to said rib of said first flexible closure strip so that said rib may interlock therewithin with an interference fit when said hook is engaged within said groove;
at least one of said head on said longitudinal rib of said first flexible closure strip and said bottom of said longitudinal channel of said second flexible closure strip having an integrally formed longitudinal gasket of a second polymeric material softer than said first polymeric material, so that a moisture-resistant seal may be formed therebetween when said longitudinal rib of said first flexible closure strip is forced into said longitudinal channel of said second flexible closure strip to establish said interference fit,
wherein said web portion of said first flexible closure strip is attached to its respective marginal strip portion at a point on one side of a centerline of said interlocked marginal strip portions, and wherein said web portion of said second flexible closure strip is attached to its respective marginal strip at a point on the same side of the centerline of said interlocked marginal strip portions, said web portions of said first and second flexible closure strips extending in opposite directions from said interlocked marginal strip portions and lying in a substantially common plane.

5,351,370
BOOTLACE STORAGE DEVICE
Lorenzo Fields, and Lynne Fields, both of 3001 Persimmon Dr., Killeen, Tex. 76543
Filed Oct. 22, 1993, Ser. No. 139,767
Int. Cl.[5] A44B *18/00;* **A43C** *7/00*
U.S. Cl. 24—306 **2 Claims**



1. A bootlace storage device arranged for securement about a boot member, wherein the device comprises,
an elastomeric web having a web first end edge fixedly mounting a first hook thereto, with a web second end edge having a second hook mounted fixedly thereto, a web first side edge spaced from a web second side edge, and a web first side wall spaced from a web second side wall, with the first side wall including a first hook and loop fastener strip extending along the web first side edge between the web first end edge and the web second end edge, and second hook and loop fastener strip mounted to the first side wall extending between the web first end edge and the web second end edge,
and
a reflective strip adhesively mounted to the web second side wall in spaced adjacency to the web second end edge,
and

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further comprising a tube member mounted fixedly and coextensively along the web first side edge,

and

the tube member includes a tube first end and a tube second end, with the tube first end positioned in a colinear relationship relative to the web first end edge, and a tube second end edge arranged in a colinear relationship relative to the web second end edge, with a first hook and loop fastener flap mounted to the tube first end and a second hook and loop fastener flap mounted to the tube second end,

and

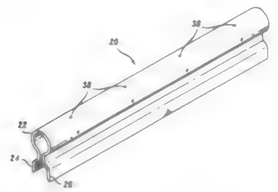
the tube member includes a pneumatic chamber coextensive with the tube member, and an inflation nozzle mounted into the tube member to effect selective inflation of the pneumatic chamber.

5,351,371

ROD-SECURING CLIP FOR USE IN OPTICAL FIBER THREE-ROD CONNECTORS

George F. DeVeau, Jr., Stone Mountain; Monty J. Edwards, Chamblee; Wing S. Liu, Lawrenceville, and Charles McGonigal, Grayson, all of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 881,923, May 12, 1992, Pat. No. 5,220,630.
This application May 26, 1993, Ser. No. 17,558
Int. Cl.[5] A44B *21/00*
U.S. Cl. 24—561 8 Claims



1. Clamping means for keeping a plurality of rods parallel to and in lateral contact with one another, wherein the clamping means comprises:

a body portion having an established inner diameter for substantially encasing the group of rods and further including rod alignment means which comprise a plurality of protrusions which extend inwardly from the body portion and are oriented in pairs wherein the distance separating the two individual protrusions of a pair from each other is established so as to accept and secure one of the rods therebetween; and

leg portions in contact with the body portion and capable of manipulating the body portion so as to controllably vary the inner diameter of the body portion.

5,351,372

DETACHABLE END METAL FITTING USED FOR CARGO FASTENING BELT

Ryoseki Ihara, Aichi, Japan, assignor to Kabushiki Kaisha Ihara Kogyo, Aichi, Japan

Filed Nov. 12, 1992, Ser. No. 974,501
Claims priority, application Japan, Nov. 12, 1991, 3-325249; Aug. 7, 1992, 4-061442[U]
Int. Cl.[5] A44B *11/00*
U.S. Cl. 24—611 8 Claims

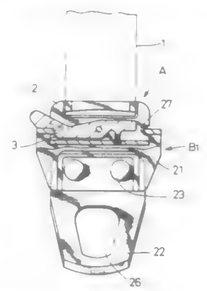
1. An apparatus comprising:

a rail engaging metal fitting attached to one end of a cargo fastening belt, said rail engaging metal fitting being adapted to detachably engage a slot in a rail for fastening cargo; and

a detachable end metal fitting detachably attached to said rail engaging metal fitting, said detachable end metal fitting comprising a metal fitting main body and an engaging portion integral with said metal fitting main body for engaging a mating member when fastening cargo;

wherein said metal fitting main body of said detachable end metal fitting has a slot formed therein and said rail engaging metal fitting is detachably engaged with said slot of said metal fitting main body;

wherein said rail engaging metal fitting has a main body that is substantially U-shaped in cross-section; and



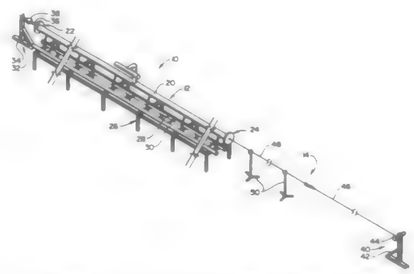
wherein an engaging lever is disposed inside and pivotally mounted on said main body, said engaging lever having a spring biasing said engaging lever to a position wherein, when said rail engaging metal fitting is engaged with said slot, said rail engaging metal fitting is prevented from being removed from said slot.

5,351,373

METHOD AND APPARATUS FOR HEAT STRETCHING SYNTHETIC FIBER ROPE

Richard J. Ryan, Anacortes, Wash., assignor to Puget Sound Rope Corporation, Anacortes, Wash.

Continuation-in-part of Ser. No. 922,552, Jul. 29, 1992. This application Sep. 21, 1992, Ser. No. 949,038
Int. Cl.[5] D02J *1/22;* B28B *11/08;* F26B *7/00*
U.S. Cl. 28—240 17 Claims



1. An apparatus for heat stretching a synthetic fiber rope, said apparatus comprising:

a vessel configured to be at least partially filled with a liquid medium, said vessel having a heat set chamber for receiving a segment of said rope so that said segment is suspended in said liquid medium therein;

means for heating said liquid medium in said heat set chamber to at least a predetermined stretching temperature; and

means for maintaining said heat set chamber at a pressure at which said liquid medium boils at said stretching temperature, so as to maintain said liquid medium at a uniform temperature level throughout said heat set chamber, and

so that said suspended segment of rope is heated uniformly to said predetermined stretching temperature; and

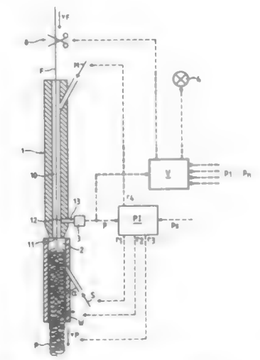
means for applying tension to said heated portion of said segment so as to stretch said segment of said rope to a predetermined increase in length of said segment.

5,351,374

METHOD AND AN APPARATUS FOR THE CONTINUOUS CRIMPING OF THERMOPLASTIC THREADW

Werner Nabulon, Schnelhalde 116, CH-8455 Rudlingen; Jorg Maier, Moosweg 23, CH-8500 Frauenfeld; Peter Grossenbacher, Toastalstrasse 99, CH-8400 Winterthur; Felix Graf, Wylandstrasse 12, CH-8400 Winterthur, and Armin Wirz, Im Grund, CH-8475 Ossingen, all of Switzerland

Filed Feb. 4, 1993, Ser. No. 13,716
Claims priority, application Switzerland, Feb. 7, 1992, 359/92; Jun. 3, 1992, 2052/92
Int. Cl.[5] D02G *1/12;* G01N *33/36*
U.S. Cl. 28—271 24 Claims



1. A method for continuous crimping of a thermoplastic thread comprising the steps of

conveying a travelling length of thermoplastic thread at a predetermined thread speed through a delivery channel having an orifice at one end thereof into a stuffer box with stationary walls;

passing a flow of heated delivery medium into the channel for passage out of said orifice with the thread;

braking the speed of the thread in the stuffer box to form a thread plug by moving the yarn plug along the stationary walls;

conveying the thread plug from the stuffer box at a plug speed less than said thread speed;

monitoring at least one pressure characteristic of plug formation in the vicinity of the orifice of the delivery channel to emit a signal corresponding to a measured value of said characteristic of plug formation;

and

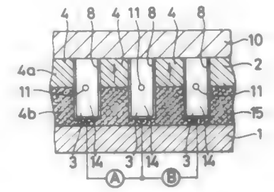
thereafter processing said signal to selectively maintain plug formation constant, to initiate a thread break or to activate an alarm indicative of said characteristic of plug formation deviating from a present value.

5,351,375

METHOD FOR FABRICATING INK JET PRINTHEAD

Kuniaki Ochiai, and Shigeo Komakine, both of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 872,352, Apr. 23, 1992, Pat. No. 5,311,219.
This application Nov. 3, 1993, Ser. No. 145,183
Claims priority, application Japan, Oct. 4, 1991, 3-257531
Int. Cl.[5] H01L *41/22*
U.S. Cl. 29—25.35 4 Claims



1. A method of fabricating an ink jet print head, comprising steps of: spreading an adhesive over one major surface of a flat base plate having a relatively high rigidity and resistant to thermal deformation to form an adhesive layer of a predetermined thickness; joining a piezoelectric plate polarized in a direction of thickness to the adhesive layer; hardening the adhesive layer; forming a plurality of parallel grooves through the piezoelectric plate into the adhesive layer by grinding such that said plurality of parallel grooves include side surfaces which extend through the piezoelectric plate and into the adhesive layer with said plurality of parallel grooves each having a bottom surface located in said adhesive layer; forming electrodes by depositing a metal over the side and bottom surfaces of the grooves by electroless plating; attaching a top plate to the upper surface of the piezoelectric plate so as to close the upper open end of the grooves; attaching a nozzle plate provided with a plurality of ink jets to one end of the assembly of the base plate, the adhesive layer, the piezoelectric plate and the top plate so that the grooves are closed to form a plurality of pressure chambers and the pressure chambers can be connected to an ink supply unit, and wherein deformation of said side surfaces is enhanced upon application of a voltage to said electrodes as a result of said grooves extending into said adhesive layer.

5,351,376

MACHINE TOOL

Koichiro Kitamura, Takaoka, Japan, assignor to Kitamura Machinery Co., Ltd., Japan

PCT No. PCT/JP92/00216, § 371 Date Oct. 23, 1992, § 102(e) Date Oct. 23, 1992, PCT Pub. No. WO92/15424, PCT Pub. Date Sep. 17, 1992
PCT Filed Feb. 27, 1992, Ser. No. 938,142
Claims priority, application Japan, Mar. 1, 1991, 3-119585
Int. Cl.[5] B23P *23/02;* B23Q *11/10*
U.S. Cl. 29—27 C 7 Claims

1. A machine tool comprising:

a frame;

a stationary spindle support mounted on said frame;

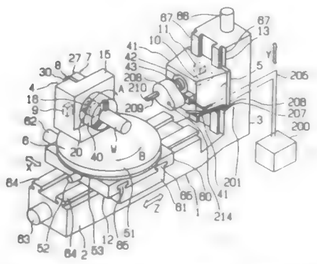
a spindle rotatably mounted in said spindle support for receiving a toolholder;

a toolholder releasably mounted in said spindle;

a tool mounted in said toolholder;

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stop means for preventing said toolholder and said tool from rotating relative to said spindle support; and



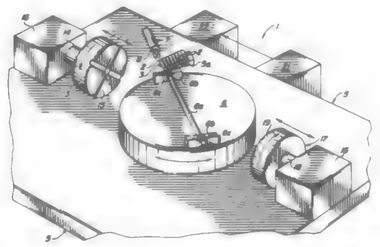
cutting oil supply means, including a conduit extending through said stop means, for supplying cutting oil to said tool mounted in said tool holder.

5,351,377

WORKSTOCK FORMING APPARATUS AND METHOD

Jerry W. Gates, 105 Napoleon, Shreveport, La. 71115

Filed Oct. 28, 1993, Ser. No. 145,879
Int. Cl.[5] B23Q *3/02*
U.S. Cl. 29—38 C **18 Claims**



13. A method of threading both ends of pipe nipples, comprising the steps of:

(a) locating said pipe nipples in loading configuration with respect to a loading means;

(b) operating said loading means to load a first one of said pipe nipples on a rotatable, indexible turntable having a guide tube for receiving said pipe nipples in linear orientation;

(c) rotating said indexible turntable to align said first one of said pipe nipples with a first pipe threading apparatus and engaging said first one of said pipe nipples with said first pipe threading apparatus for threading one end of said first one of said pipe nipples;

(d) rotating said first one of said pipe nipples back into alignment with said loading means and loading a second one of said pipe nipples on said rotatable, indexible turntable and displacing said first one of said pipe nipples in the guide tube with said second one of said pipe nipples, said first one of said pipe nipples and said second one of said pipe nipples disposed on said turntable in slidably linearly aligned relationship with respect to each other;

(e) rotating said indexible turntable to align said second one of said pipe nipples with said first pipe threading apparatus;

(f) engaging said second one of said pipe nipples with said first pipe threading apparatus for threading one end of said second one of said pipe nipples;

(g) sequentially rotating said indexible turntable to alternately load additional pipe nipples one-by-one on said indexible turntable and operating said first pipe threading apparatus to thread one end of said pipe nipples in sequence; and

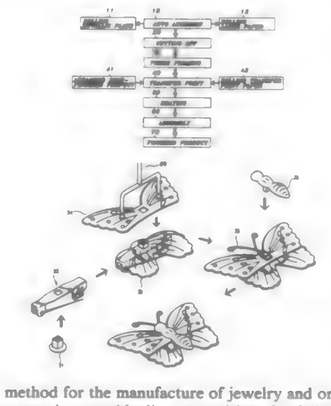
(h) engaging the opposite ends of said pipe nipples with said second pipe threading apparatus for threading the opposite ends of said pipe nipples, responsive to slidable displacement of said pipe nipples in said guide tube.

5,351,378

METHOD FOR AUTOMATIC MANUFACTURING OF JEWELRY AND ORNAMENTS

Fang Hsien-Chung, Suite 1, 11F, 95-8 Chang Ping Road, Sec. 1, Taichung, Taiwan

Filed Feb. 2, 1993, Ser. No. 11,886
Int. Cl.[5] B23P *13/00*
U.S. Cl. 29—160.6 **2 Claims**



1. A method for the manufacture of jewelry and ornaments in an automatic assembly line comprising the following six steps:

step 1, an automatic adhesion of a rolling metallic plate with a roll of laser paper;

step 2, cutting of the now cohesive metallic plate and laser paper into smaller working pieces of predetermined breadth;

step 3, press forming the smaller working pieces into semi-finished products with an automatic press;

step 4, arrangement of semi-finished products in rows with predetermined positions, the pieces having their laser paper side facing up, for the transfer of colored and or patterned print paper which has been set in registry with the pieces on the automatic assembly line;

step 5, application of heat to print transfer paper at a temperature of about 150° C. up to 190° C. for about 15 seconds, to complete the solid transfer of colors and patterns to the semi-finished products;

step 6, automatic assembly of semi-finished products in a stacked manner using suction nozzles and rivet joints to form a finished product.

5,351,379

RIVETER FOR EFFICIENTLY RIVETING AND DRAFTING SETTING MANDRELS AND SCRAPS

Eric Chu, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (10477), Taiwan

Filed Jul. 20, 1993, Ser. No. 93,750
Int. Cl.[5] B21J *15/22*
U.S. Cl. 29—243.525 **5 Claims**

1. A riveter comprising:

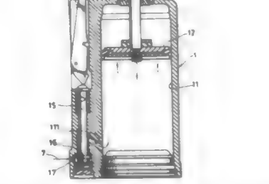
a pneumatic body having a pneumatic piston secured to a vertical plunger rod reciprocatively held in the pneumatic body and operatively pressurized by a compressed air entering the pneumatic body;

a hydraulic body having a handle portion connected on an upper portion of the pneumatic body and a turret hydraulic cylinder slightly inclinedly secured to a top portion of the handle portion having a plunger secured with an upper plunger rod and reciprocatively held in said turret hydraulic cylinder to be operatively pushed by a hydraulic oil when boosted by an upwardly moved pneumatic piston as urged by the compressed air;

a pulling head portion secured to a front portion of said turret hydraulic cylinder having a plurality of jaws for operatively clamping and pulling a mandrel of a set rivet as pulled by said plunger in said turret hydraulic cylinder; and

a suction means secured to a rear portion of said turret hydraulic cylinder having a compressed air stream directed into said suction means for exerting a Venturi effect for drafting spent mandrel from the set rivet from said pulling head portion, said turret hydraulic cylinder to be discharged from the suction means for automatic drafting and removal of mandrel from rivet setting;

each said jaw having a radial aperture radially notched in a radial side portion of each said jaw from a chuck surface formed in a central portion of each said jaw, each said



radial aperture longitudinally formed through each said jaw and fluidically communicating with a central through hole passing through a central portion of the pulling head portion, the turret hydraulic cylinder, and the suction means for purging and flushing any scraps produced when a rivet mandrel is clamped and pulled by said jaws; and

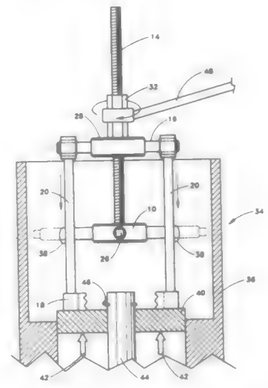
said suction means longitudinally aligned with a longitudinal axis formed in a center of the pulling head portion and the turret hydraulic cylinder and including: a front guide tube secured in a front portion of a coupling sleeve mounted on a rear end portion of the turret hydraulic cylinder by a sealing cap sealing the rear end portion of the turret hydraulic cylinder and having a tapered conical portion formed on a rear end of the front guide tube tapered rearwardly and having a central front tube hole formed therethrough, a rear guide tube secured in a rear portion of the coupling sleeve and having a converging funnel portion formed on a front end portion of the rear guide tube and separated from the tapered conical portion of the front guide tube with a conical throat portion which is concentrically confined between the tapered conical portion of the front guide tube and the converging portion of the rear guide tube for directing a compressed air stream therethrough, and a central rear tube hole formed through said rear guide tube for discharging spent mandrel outwardly therethrough.

5,351,380

COMPRESSION TOOL FOR OVERRUN CLUTCH ASSEMBLIES ON AUTOMATIC TRANSMISSIONS

Patrick J. Myers, 1480 13th St., and Howard D. Edge, 2075 12th St., both of Fennimore, Wis. 53809

Filed Nov. 29, 1993, Ser. No. 158,394
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—259 **8 Claims**



1. A compression tool for an overrun clutch assembly, the overrun clutch assembly being positioned within a casing having upstanding side walls with a plurality of apertures provided therein, the upstanding side walls of the casing surrounding an outwardly biased clutch component, said compression tool comprising:

a hub member;

a plurality of spoke members radiating outward from said hub member for engaging at least some of the plurality of apertures provided in the side walls of the casing;

a compression member for engaging a surface of the outwardly biased clutch component;

translation means for positively moving said compression member away from said hub member and in the direction of the outwardly biased clutch component.

releasable connection means for releasably connecting at least some of said plurality of spoke members to said hub member; and

at least a pair of substantially upright members extending upward from said compression member, and a cross bar extending between said pair of uprights, and wherein said translation means comprises a shaft attached to said hub member and extends upward to said cross bar, and means for moving said shaft with respect to said cross bar.

5,351,381

DEVICE FOR REMOVING A HYPODERMIC NEEDLE FROM A SYRINGE BODY AND FOR DISTORTING THE HYPODERMIC NEEDLE

Scott A. Case, 199 Spruce Ave., Fox Lake, Ill. 60020

Filed May 5, 1993, Ser. No. 57,679
Int. Cl.[5] B23Q *7/04;* **B26D** *7/01;* **B23P** *19/02*
U.S. Cl. 29—283.5 **11 Claims**

1. A device for removing a hypodermic needle and hub from a syringe body and for simultaneously distorting the hypodermic needle, said device comprising:

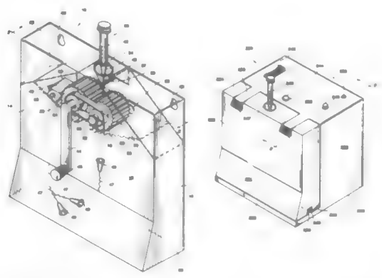
a receptacle;

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a guiding structure for guiding the hypodermic needle into said receptacle;

said guiding structure including abutment means for preventing entry of the syringe body into said receptacle;

engaging, pulling and distorting means, mounted inside said receptacle adjacent to said guiding structure, said engaging, pulling and distorting means engaging the needle and pulling the needle and the hub away from the syringe



body and into said receptacle and said engaging, pulling and distorting means simultaneously permanently distorting the hypodermic needle into a shape that makes reuse of the needle impossible;

an operating means, said operating means operating said engaging, pulling and distorting means to pull the needle and hub away from the syringe body and into said receptacle.

5,351,382

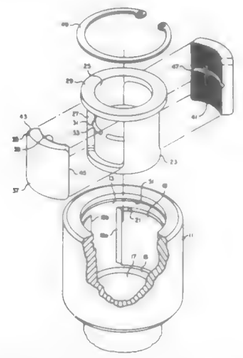
METHOD OF UNSCREWING A THREADED MEMBER

Jake Merrick, Lubbock, Tex., assignor to Jeranddo, Inc., Stuart, Fla.

Continuation of Ser. No. 13,247, Feb. 3, 1993, Pat. No. 5,251,515, which is a continuation of Ser. No. 937,497, Aug. 28, 1992, abandoned, which is a continuation of Ser. No. 772,578, Oct. 7, 1991, Pat. No. 5,152,195. This application Aug. 20, 1993, Ser. No. 109,680

Int. Cl.[5] B23P *19/00*

U.S. Cl. 29—426.5 **4 Claims**



1. A method of unscrewing a threaded member, comprising:

providing a housing having a bore with an open upper region and an extended lower region which joins the upper region, the lower region being of a smaller diameter than the upper region, with the upper region containing both a plurality of formed cam surfaces and carrying a plurality of non-pivoting jaws;

positioning a cylindrical portion of the threaded member within the confines of the jaws, wherein an end of the threaded member extends beyond the jaws and into the lower region;

coupling a rotary power source to a lower end of the housing at a lower end of the lower region of the bore;

spinning the housing with the rotary power source, causing the jaws to engage the cylindrical portion of the threaded member by a radial movement produced by rotation of the housing relative to the jaws and by the sliding of the jaws along the cam surfaces; and

unscrewing the threaded member by continued spinning of the housing after the jaws have engaged the threaded member.

5,351,383

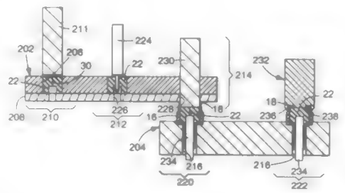
METHOD OF MAKING AN INJECTION OR SAMPLING SITE

Brett A. Behnke, Hastings, and Gary A. Thill, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 921,908, Jul. 29, 1992, Pat. No. 5,300,034. This application Apr. 2, 1993, Ser. No. 43,466

Int. Cl.[5] B21D *39/03*

U.S. Cl. 29—430 **54 Claims**



1. A method of fabricating an injection or sampling site adapted to receive a blunt cannula, the method comprising the steps of:

providing a housing having an outside end and a passageway extending inwardly from the outside end, the passageway opening through the outside end and defining a longitudinal direction;

providing an elastomeric septum having an outside end corresponding to the outside end of the housing and an inside end opposite its outside end;

inserting the elastomeric septum into the passageway of the housing;

inserting a pin into the passageway of the housing to engage the inside end of the septum to reduce or prevent expansion of the septum inwardly through the passageway when the outer end of the housing is swaged; and

during or after the step of inserting the pin, swaging the outside end of the housing inwardly over the septum with a swaging tool.

5,351,384

METHOD OF INSTALLING INSTRUMENT PANEL ASSEMBLIES IN AUTOMOTIVE VEHICLE BODIES

Robert J. Barnhart, East Detroit, and Richard M. Hackman, Sterling Heights, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

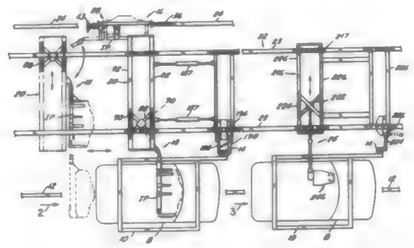
Filed Aug. 6, 1993, Ser. No. 102,925

Int. Cl.[5] B23P *11/02, 19/04*

U.S. Cl. 29—430 **5 Claims**

1. A method of transferring an instrument panel assembly from a pick-up station to an automotive vehicle body having an interior and introducing the instrument panel assembly into the interior of the body for installation while said body moves in

one direction along a path spaced laterally from said pick-up station, comprising the steps of providing a first bridge extending between said pick-up station and said path and a transfer unit movable along said first bridge, moving said transfer unit along said first bridge to said pick-up station, attaching said instrument panel assembly to said transfer unit, moving said first bridge with said body while simultaneously moving said transfer unit and attached instrument panel assembly along said first bridge and into said moving body, positioning said instrument panel assembly in installed position in said body, releasing said transfer unit from said instrument panel assembly and withdrawing said transfer unit from said body, providing a



second bridge extending transversely of said path and spaced from said first bridge in said one direction, providing an attachment unit having a fastener driver and movable along said second bridge, moving said second bridge with said body while simultaneously moving said attachment unit along said second bridge to a position adjacent said path and introducing said attachment unit into the body adjacent the installed instrument panel assembly and operating said fastener driver to drive at least one fastener through said instrument panel assembly and into said body to securely mount said instrument panel assembly in said body, and withdrawing said attachment unit from said body.

5,351,385

METHOD OF MOUNTING RUBBER PLUG TO WIRE

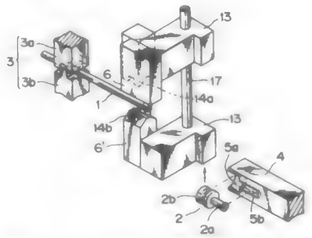
Yukinori Takano, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Aug. 30, 1993, Ser. No. 113,308

Claims priority, application Japan, Aug. 31, 1992, 4-231921

Int. Cl.[5] B23P *11/02*

U.S. Cl. 29—450 **3 Claims**



1. A method of mounting a rubber plug to a wire wherein said rubber plug comprises a thin portion with a small diameter at an end thereof, a thick portion with a large diameter at another end thereof, and a wire insertion hole, and wherein a wire is to be inserted from said thick portion and attached to the rubber plug so as to project from an end of the thin portion of the rubber plug by a predetermined length, said mounting method comprising the steps of:

accommodating the rubber plug in a mounting jig such that said thick portion of the rubber plug is positioned at an open end of the mounting jig;

grasping a tip of the wire between a pair of guides and orienting the wire using the guides to a position where said tip opposes the thick portion of the rubber plug;

aligning an axis of the wire with that of the wire insertion hole of the rubber plug;

moving said mounting jib toward the wire to insert the wire in through the large diameter of the rubber plug while moving said pair of guides in the same direction as said mounting jig moves;

projecting the tip of the wire from the thin portion of the rubber plug by the sum of said predetermined length and a supplemental length;

moving said mounting jig in the direction away from the pair of guides to release the rubber plug therefrom;

moving the pair of guides toward the mounting jig while pushing said rubber plug by the length of said supplemental length toward the tip of the wire to project said wire from said end of the thin portion of the rubber plug by said predetermined length.

5,351,386

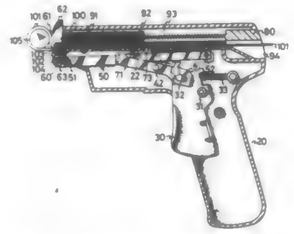
BUNDLING STRAP DISPENSER

Kun-sheng Chang, No. 25, Lane 59, Chung Cheng Rd., La Chou Hsiang, Taipei Hsien, Taiwan

Filed Aug. 13, 1993, Ser. No. 106,268

Int. Cl.[5] B25B *25/00*

U.S. Cl. 29—566.1 **6 Claims**



1. A bundling strap dispenser comprising:

a housing;

a trigger means pivotally mounted in the housing and manually operable from outside;

a cutting means having a cutting blade and being pivoted in the housing and actuatable by the trigger means;

a retaining member mounted to the cutting means to pivot therewith for retaining a bundling strap when cutting the bundling strap;

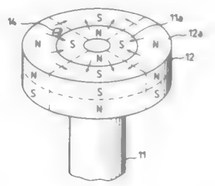
a rib extending in the upper section of the housing and having an opening through which the retaining member is passable;

a stepped plate means mounted above the rib and defining a passage therebetween for the bundling strap, the stepped plate means further including a trough in which a buckle for engaging with the bundling strap is received; the trough having a slot in alignment with the passage and a second slot in a bottom side thereof through which the cutting blade is passable to cut the bundling strap after the bundling strap is retained; and

a feeding means mounted above the rib for feeding a new buckle member after the buckle member in the trough is used and removed.

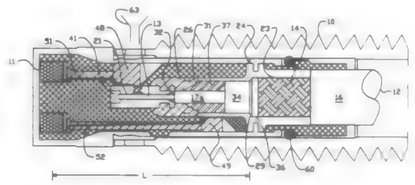
VOL 1167 ISS 1 OCT 4 1994 UMI

5,351,387
METHOD OF MAKING A MAGNETIC ROTATION SENSOR
Hitoshi Iwata; Katsuhiro Minami; Hisahiro Ando; Hisashi Hirose, and Shigeru Iguchi, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan
Division of Ser. No. 794,061, Nov. 19, 1991, Pat. No. 5,239,263. This application Nov. 16, 1992, Ser. No. 977,294
Claims priority, application Japan, Nov. 20, 1990, 2-121703
Int. Cl.[5] H01F *7/06;* **G01B** *7/14;* **G01N** *27/72;* **G01R** *33/12*
U.S. Cl. 29—602.1 **2 Claims**



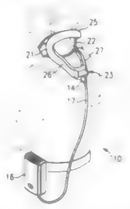
1. A method for making a rotation sensor, comprising the steps of:
magnetizing a surface of an annular magnet by setting a magnetizing yoke over the entire magnetizing surface of said annular magnet so that N and S poles are formed alternately in the circumferential direction of said annular magnet;
fixedly mounting said annular magnet on a rotary shaft having a magnetic end portion; and
positioning a magnetic sensor above a boundary between said magnetic end portion of said rotary shaft and said annular magnet.

5,351,388
CABLE LOCKING AND SEALING PROCESS FOR SENSOR
David Van Den Berg, Markleeville, Calif.; Eric C. Peterson; David M. Saarem, both of Minden, Nev., and Dennis D. De Lange, Gardnerville, Nev., assignors to Bently Nevada Corporation, Minden, Nev.
Continuation-in-part of Ser. No. 887,177, May 21, 1992, abandoned. This application Sep. 28, 1993, Ser. No. 127,955
Int. Cl.[5] H01F *41/02*
U.S. Cl. 29—602.1 **21 Claims**



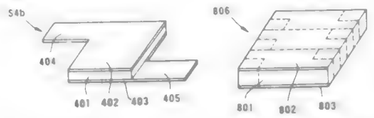
1. A process for making a proximity sensor having a metal case with a sensing coil at one end and a coaxial cable extending out of the other end for connecting to an electrical processing unit, the coaxial cable having an outer insulating jacket and a wire braid outer conductor surrounding an inner cylindrical insulator carrying a center conductor, the process comprising the following steps:
trimming an end of said coaxial cable so that said jacket is cut away to expose said outer conductor, which has a predetermined outer diameter, and trimming a portion of said outer conductor and inner cylindrical insulator to expose an end segment of said center conductor, which has a predetermined diameter;
forming a front and back pair of metal cylinders with said front cylinder having an inner cavity with a diameter substantially matching the diameter of said center conductor and said back cylinder having an inner cavity with a diameter substantially matching the diameter of said outer conductor;
in a first injection molding step molding together in spaced coaxial proximity with a bridging dielectric material which bonds to itself, said front and back metal cylinders;
inserting said trimmed cable end into said inner cavities of said molded together front and back cylinders and mechanically and electrically connecting said outer conductor to said back cylinder and said center conductor to said front cylinder to resist axial forces;
in a second injection molding step with said bondable dielectric material, molding a cylindrical jacket over said front and back cylinders and bonding to said bridging material, said second molding providing an annular bobbin recess near said front cylinder and coaxial therewith and also providing a pair of parallel tunnels leading from said recess with one tunnel terminating at said front cylinder and the other terminating at said back cylinder;
forming said coil into the shape of a bobbin with two leads and inserting said coil in said bobbin recess while inserting said leads through said tunnels, and electrically attaching said leads to said front and back cylinders respectively;
in a third injection molding step encapsulating at least said coil;
inserting the assembly of the above steps into said metal case; and
in a fourth injection molding step affixing said case to said assembly with said bondable dielectric material.

5,351,389
METHOD FOR FABRICATING A CONTOURED TRIANGULAR TRANSDUCER SYSTEM
John H. Erickson, Plano, and John C. Tepper, Carrollton, both of Tex., assignors to AMEI Technologies Inc., Wilmington, Del.
Division of Ser. No. 638,219, Jan. 7, 1991, Pat. No. 5,195,941. This application Nov. 9, 1992, Ser. No. 973,681
Int. Cl.[5] H01F *7/06;* **A61N** *2/00*
U.S. Cl. 29—605 **16 Claims**



1. A method of fabricating a PEMF double transducer system for providing PEMF therapeutic stimulation to a target area of a patient's body, comprising the steps of:
winding at least a primary winding with a selected number of turns around a mandrel;
bonding said windings together into a winding bundle and removing the winding bundle from the mandrel;
encapsulating said winding bundle in a shell that when flat, is substantially triangular in shape and malleable to allow forming the triangular-shaped, winding bundle;
forming an anatomically contoured transducer by conformally bending said shell-encapsulated winding bundle into an anatomically contoured shape for situating on either side of the target area; and
coupling activation electronics to said transducer for selectively activating electromagnetic fields, thereby implementing a prescribed PEMF therapy.

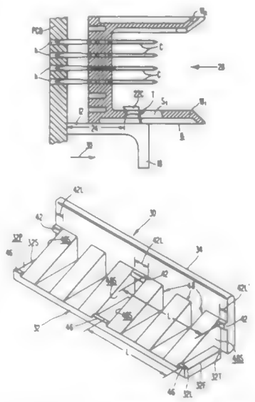
5,351,390
MANUFACTURING METHOD FOR A PTC THERMISTOR
Makoto Yamada, Tokyo; Setsuya Isshiki, Funabashi; Yukihiko Kurosawa; Masakazu Kuroda, both of Chiba, and Morio Hayashi, Kasukabe, all of Japan, assignors to Fujikura Ltd., Tokyo, Japan
Division of Ser. No. 524,920, May 18, 1990, Pat. No. 5,212,466. This application Jan. 12, 1993, Ser. No. 3,473
Claims priority, application Japan, May 18, 1989, 1-125516; Jun. 6, 1989, 1-43916; Apr. 3, 1990, 2-88462
Int. Cl.[5] H01C *7/02, 17/28*
U.S. Cl. 29—612 **10 Claims**



1. A manufacturing method for PTC thermistors including:
(a) preparing a substantially flat sheet of PTC composition demonstrating a positive temperature coefficient behavior and having two contact surfaces;
(b) preparing a pair of electrode plates each having a contact surface, each said contact surface having a plurality of lead portions and non-lead portions;
(c) sandwiching said sheet of PTC composition between said contact surfaces of said pair of electrode plates so that at least a plurality of portions of each said contact surface of said sheet of PTC composition comes to be bonded to corresponding portions of said contact surfaces of said pair of electrode plates thereby forming a PCT thermistor plate;
(d) cutting said PCT thermistor plate into a plurality of PCT thermistor chips, each of said PCT thermistor chips having non-lead sections which include a corresponding non-lead portion from each of said electrode plates and each of said PCT thermistor chips having at least one lead section which includes a corresponding lead portion from at least one of said electrode plates; and
(e) removing the PTC composition and the overlying portion of one of the plates from said at least one lead section, leaving the overlying portion of the other of the plates thereby forming at least one electrical lead.

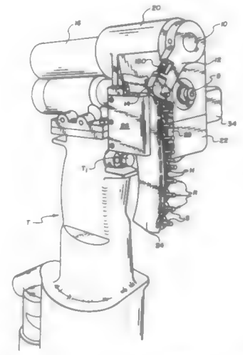
5,351,391
TOOL FOR ASSEMBLING MODULAR HEADER CONNECTORS AND MODULAR RECEPTACLE CONNECTORS
Ray C. Doutrich, Lebanon, and Stuart C. Stoner, Lewisberry, both of Pa., assignors to E. I. DuPont de Nemours & Company, Wilmington, Del.
Continuation of Ser. No. 926,881, Aug. 7, 1992, abandoned. This application Apr. 12, 1993, Ser. No. 46,461
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—758 **6 Claims**

1. A tool for assembling a custom length header from two or more individual header modules each having a length that is an integer multiple of a basic unit length L to form a composite header having a custom length of at least 2 L,
each module having a base with two sidewalls extending therefrom, a sidewall of each module having at least two slots formed therein, each slot in each module being spaced at least a distance L/2 from an adjacent slot,
the tool comprising:
a bar having a planar upper surface with a leading edge and a trailing edge and first and second lateral ends, and
a plurality of anchor hooks arranged in a linear array across the planar surface of the bar between the first and second lateral ends, each anchor hook in the array being spaced from an adjacent hook by a distance that is an integer multiple of the distance L/2,
each anchor hook in the array being sized for entry into a slot in a module, the bar and each module mounted thereon being relatively movable to a latched position in which the anchor hooks on the bar are in mated engagement with the tabs defined in each module,



wherein the bar has a predetermined transverse dimension between the leading edge and the linear array of anchor hooks, the transverse dimension being sized such that the leading edge of the bar extends beyond the base of the module when the anchor hooks are in mated engagement with the tab on the sidewall.

5,351,392
AUTOMATIC RIVET FEED APPARATUS
Harold R. Wing, Springville, and David Francis, Orem, both of Utah, assignors to Huck International, Inc., Irvine, Calif.
Continuation-in-part of Ser. No. 623,189, Dec. 6, 1990, Pat. No. 5,123,162. This application Jun. 12, 1992, Ser. No. 899,677
Int. Cl.[5] B23Q *7/10*
U.S. Cl. 29—818 **24 Claims**



1. An apparatus for feeding a plurality of rivets to a nose piece of a riveting tool, the rivets each having a mandrel and a shank, the apparatus comprising:
carrier means for holding the plurality of rivets in a spaced apart relationship;

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advancing means actuable for sequentially presenting a rivet from the plurality of rivets held by said carrier means to a rivet pick-up point, said rivet pick-up point being offset from the nose piece;

pick-up means for picking-up the rivet at said rivet pick-up point including gripping means for gripping the rivet as it is presented at said rivet pick-up point, retaining means for engaging the rivet at said rivet pick-up point to prevent slippage of the rivet from said gripping means along a longitudinal axis of the rivet when the rivet is withdrawn from said carrier means;

moving means actuable for withdrawing the rivet from said carrier means and moving the rivet and its corresponding mandrel from said rivet pick-up point to a nose piece alignment point where the mandrel of the rivet is in alignment with the nose piece for insertion of the mandrel into the nose piece, said moving means further actuable for inserting the mandrel of the rivet into the nose piece from the forward end of the nose piece; and

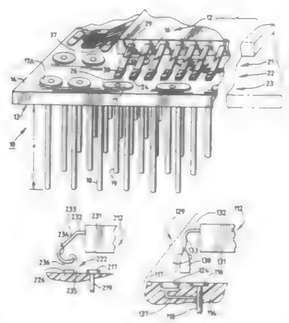
means for actuating said moving means and said advancing means.

5,351,393

METHOD OF MOUNTING A SURFACE-MOUNTABLE IC TO A CONVERTER BOARD

George D. Gregoire, San Diego, Calif., assignor to Dimensonal Circuits Corporation, San Diego, Calif.

Continuation of Ser. No. 706,060, May 28, 1991, abandoned.
This application Jul. 15, 1992, Ser. No. 913,880
Int. Cl.[5] H05K *3/34*
U.S. Cl. 29—835 8 Claims



1. A method for mounting a gull wing surface-mountable integrated circuit to a converter board having a central midplane at a body receiving area for the integrated circuit and a plurality of lead pads disposed at distances p from the central midplane of said board, comprising:

holding in a stationary manner the integrated circuit, the integrated circuit having a body portion with another central midplane and a plurality of gull-wing leads arranged in pairs of groups extending an unreformed distance d from the body portions midplane in diametrically opposing directions from the body portion;

said gull-wing leads having shoulders, thighs and foot portions with integrally connected ankle portions;

moving the ankle portions of the plurality of gull-wing leads upwardly and away from the body portion about a fulcrum point defined between the shoulders and the thighs of the individual ones of said plurality of leads;

said shoulders extending perpendicularly outwardly from said body portion terminating in integrally connected thighs extending downwardly angularly therefrom at an angle substantially greater than 90 degrees, said thighs being integrally connected at opposite ends to ankle portions with foot portions extending therefrom in a plane substantially parallel with said shoulders;

moving the foot portions of the plurality of gull-wing leads about the ankle portions a sufficient distance to be substantially disposed in a parallel plane with said shoulder portions and to reform the leads to cause the foot portions to be disposed at distances from the central midplane of the body portion substantially equal to the distance p;

securing the foot portions onto individual ones of the lead pads of said plurality of lead pads.

5,351,394

METHOD OF MAKING A NERVE ELECTRODE ARRAY

Steven L. Weinberg, League City, Tex., assignor to Cyberonics, Inc., Webster, Tex.

Division of Ser. No. 695,543, May 3, 1991, Pat. No. 5,251,634.
This application Sep. 21, 1992, Ser. No. 948,220
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—872 16 Claims



1. A method of making a nerve electrode array, which comprises the steps of:

forming an electrically insulative helix having a plurality of spiral bands, each spanning 360°, and a lengthwise member further linking the bands together,

securing an electrically conductive filament in one of the bands for electrical connection to a lead wire at a site removed from the linking member, and

severing each of the bands at a point away from the linking member whereby each band remains linked to the member and may be spread open for mounting the array about the nerve.

5,351,395

PROCESS FOR PRODUCING TURBINE BUCKET WITH WATER DROPLET EROSION PROTECTION

Gerald R. Crawmer, Clifton Park; Paul F. Murley, Albany, and James R. Pedersen, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 30, 1992, Ser. No. 999,518
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—889.7 12 Claims

1. A process of manufacturing a turbine bucket including a mounting portion and a blade portion having a leading edge and a trailing edge, the process including the steps of:

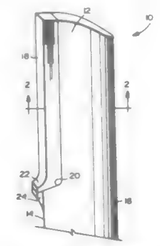
a) forming the bucket:

b) solution annealing the bucket to a condition amenable to welding:

c) tempering a metal alloy insert to a hardness less than the bucket in the solution annealed condition:

d) welding the insert to the leading edge of the bucket;

e) machining the insert and bucket; and



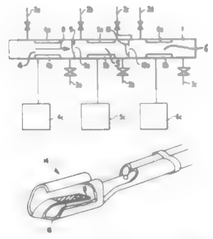
f) hardening the insert after machining, to thereby impart erosion to the bucket.

5,351,396

METHOD FOR PRODUCING ELECTRICAL CONTACT

Kazuo Sawada, Osaka; Atsushi Nakamura, Hisai, and Isao Okugawa, Suzuka, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Sumitoma Wiring Systems, Ltd., Yokkaichi, both of Japan

Division of Ser. No. 824,052, Jan. 23, 1992, Pat. No. 5,272,295.
This application Sep. 10, 1993, Ser. No. 118,622
Claims priority, application Japan, Jan. 23, 1991, 6490; Jan. 23, 1991, 6491; Jan. 23, 1991, 6492; Mar. 12, 1991, 46761; Mar. 12, 1991, 46762
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—885 4 Claims



1. A method of producing an electric contact which is provided on at least one of a pair of conductors and a surface of said at least one conductor being coated with a metal layer comprising a high melting point metal or an alloy of a high melting point metal and, on said metal layer, a ceramic layer comprising at least one material selected from the group consisting of nitrides, carbides and borides of high melting point metals, said method comprising the steps of:

sputter etching a surface of said at least one conductor in a first reaction chamber which is kept at a reduced pressure,

moving said sputter etched conductor to a second reaction chamber which is connected with said first reaction chamber through a connecting hole and kept at a pressure lower than that in said first chamber,

forming a metal layer comprising a high melting point metal or an alloy of a high melting point metal on said sputter etched surface of said conductor by a vapor phase deposition method,

moving said conductor having said metal layer thereon in the previous step to a third reaction chamber which is connected with said second chamber through a connecting hole and kept at a pressure lower than that in said second reaction chamber, and

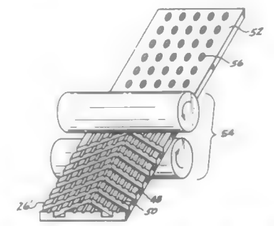
forming a ceramic layer comprising at least one material selected from the group consisting of nitrides, carbides and borides of high melting point metals on said metal layer formed on said conductor.

5,351,397

METHOD OF FORMING A NUCLEATE BOILING SURFACE BY A ROLL FORMING

Daniel J. Angeli, St. Louis, Mo., assignor to Olin Corporation, East Alton, Ill.

Continuation of Ser. No. 860,656, Mar. 30, 1992, abandoned, which is a division of Ser. No. 448,544, Dec. 11, 1989, Pat. No. 5,062,786. This application May 13, 1993, Ser. No. 61,759
Claims priority, application Japan, Dec. 12, 1988, 63-314512; Dec. 16, 1988, 63-317698; Jul. 4, 1989, 1-171219; Jul. 7, 1989, 1-174120; Jul. 10, 1989, 1-175579; Nov. 20, 1989, 1-135233; Nov. 20, 1989, 1-135234; Nov. 20, 1989, 1-135235
Int. Cl.[5] B23P *15/26*
U.S. Cl. 29—890.053 32 Claims



1. A method for forming a nucleate boiling surface on one side of a strip and an enhanced surface pattern on the opposite side, comprising:

(a) roll forming a first pattern of grooves into a first side of said strip and an internal enhancement into the opposing side of said strip, said first pattern of grooves defining a plurality of ridges extending substantially from said strip, said ridges having a base end integral with said strip and an opposing fin end;

(b) machining a second pattern of grooves into said fin ends to a depth of from about 10% to about 50% of the depth of said first pattern of grooves; and

(c) deforming said ridges so said fin ends extend over said first pattern of grooves forming a plurality of subsurface channels, concomitantly said second pattern of grooves forming a pattern of surface pores opening into said subsurface channels.

5,351,398

FUEL INJECTION NOZZLES

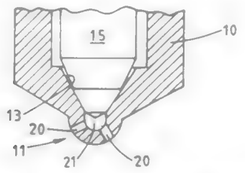
John Haxell, Suffolk, England, assignor to Lucas Industries public limited company, Solihull West Midlands, United Kingdom

Filed Feb. 17, 1993, Ser. No. 18,663
Claims priority, application United Kingdom, Feb. 19, 1992, 9203658.1
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—890.142 6 Claims

1. A method of manufacturing a fuel injection nozzle of the kind comprising a nozzle body having at one end a nozzle tip in which is formed an outlet orifice which communicates with the blind end of a bore formed in the nozzle body, the bore having a seating formed therein adjacent the blind end, comprising the steps of selecting a blank of hardenable material, machining the blank to form the bore and the seating, the machined size of the seating being such that the seating can be fine finished, subjecting the machined blank to a case hardening process followed by heat treatment, machining the outer

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surface of the blank at least in the region of the tip to remove the outer hardened layer and fine finishing the seating so that



at least in the region of the seating the hardness value of the material diminishes to the exterior surface of the body.

5,351,399

METHOD FOR FORMING GROOVES IN ROLL SURFACES

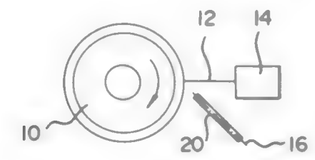
Hans-Friedrich Neuhöffer; Wolfram Rittweger, and Erich Vomhoff, all of Königsbronn, Fed. Rep. of Germany, assignors to Schwäbische Huttenwerke GmbH, Aalen-Wasseralfingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 561,426, Aug. 1, 1990, abandoned. This application Jul. 31, 1991, Ser. No. 738,368

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1989, 3925787

Int. Cl.[5] **A01B** *29/00;* **A01G** *1/12*

U.S. Cl. 29—895.31 **23 Claims**



1. A method for forming grooves in the surface of a roll for working web-like materials, comprising the steps of:

melting portions in the surface of the roll, made of non-corrosive steel, with a laser beam, wherein the melting step includes the step of setting the focus of the laser beam between 1 mm and 3 mm above the surface of the roll; and

forming grooves of not deeper than 10 mm and each with a width of at most 1 mm in the surface of the roll with a pressurized gas jet from an aligned conduit, wherein the step of forming the grooves is at a roll speed of between 1.2 m/min and 1.6 m/min,

wherein the step of forming the grooves further includes the steps of:

(a) pre-heating the pressurized gas jet prior to the flowing thereof from the aligned conduit,

(b) directing the pre-heated pressurized gas toward the portions in the surface of the roll which have been melted by the laser beam, and

(c) blasting the melted portions in the surface of the roll of the grooves with the pre-heated pressurized gas, wherein the blasting step includes the step of blasting the melted portions with the gas having the composition of between 85 and 95 Vol. % of argon, between 2 and 6 Vol. % of oxygen, and between 3 and 7 Vol. % of carbon dioxide.

5,351,400

CONVERTING AND REINFORCING VEHICLES

Andrew J. Samuel, 57 Wynaa Drive, Noosaville QLD 4566, Australia

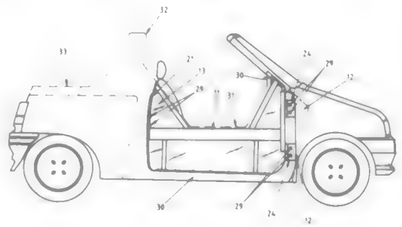
PCT No. PCT/AU91/00040, § 371 Date Jul. 13, 1993, § 102(e) Date Jul. 13, 1993, PCT Pub. No. WO91/12164, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 6, 1991, Ser. No. 30,435

Claims priority, application Australia, Feb. 6, 1990, PJ8454

Int. Cl.[5] **B23P** *17/00*

U.S. Cl. 29—897.1 **19 Claims**



1. A method of converting a sedan type vehicle into a convertible type open top vehicle, said sedan type vehicle having its roof removed and at least one door opening with opposite sides and a door, said at least one door opening having hinge mounting means at one side thereof supporting hinge means for hingedly mounting said door, and latch mounting means at the opposite side of said at least one door opening mounting latch means for latching said door in a closed position, said method including the steps of

removing said door and associated hinge means and latch means,

locating a rigid frame means in said door opening so that said rigid frame means extends between said opposite sides of said at least one door opening, and

rigidly securing opposite ends of said frame means to said opposite sides of said door opening at said latch mounting means and said hinge mounting means respectively.

5,351,401

APPARATUS FOR CUTTING OR SHAVING

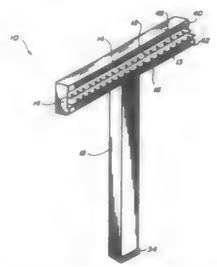
Eric J. Werner, 705 Westminster Rd., Hermitage, Pa. 16148

Continuation-in-part of Ser. No. 954,408, Sep. 29, 1992, Pat. No. 5,205,040, which is a continuation of Ser. No. 788,105, Nov. 5, 1991, abandoned. This application Apr. 26, 1993, Ser. No. 52,839

The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.

Int. Cl.[5] **B26B** *21/00, 19/28, 19/30*

U.S. Cl. 30—50 **24 Claims**



1. An apparatus for shaving comprising:

blade means which comprises at least one blade having an essentially straight and essentially continuous edge, said blade comprised of a plurality of pliable blade segments aligned adjacent to each other to form the straight and essentially continuous cutting edge such that each blade segment is capable of being deflected in a direction perpendicular to the cutting edge independently with respect to the other blade segments by a surface while in contact with the surface during shaving of the surface;

a rectangular shaped head which holds said blade in a desired orientation, said head having a styptic strip disposed along the length of the head in parallel with the cutting edge and above the cutting edge such that after the cutting edge passes over the surface, the styptic strip passes over the surface; and

a handle connected to said head.

5,351,402

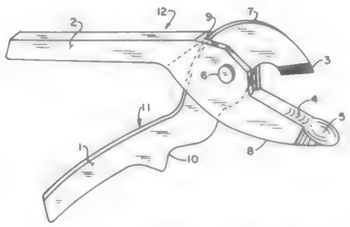
HARD NUT KERNEL EXTRACTOR

Leonard L. Mansfield, 33115 County Rd. 6330, Licking, Mo. 65542-9537

Filed Oct. 26, 1993, Ser. No. 141,216

Int. Cl.[5] **A47J** *43/26*

U.S. Cl. 30—120.3 **1 Claim**



1. A hard nut kernel extracting tool comprising:

(a) first and second opposed curved jaw elements pivoted together by a pin at one end to open and close the jaw elements,

(b) a first handle element extending rigidly from the one end of the first jaw element,

(c) a second handle element extending rigidly from the one end of the second jaw element,

(d) the other end of the first jaw element having a wedge-shaped blade,

(e) the other end of the second jaw element having a concave blade seat aligned with the wedge-shaped blade for receiving the wedge-shaped blade,

(f) the other end of the second jaw element further having a spoon-shaped extension extending from the concave blade seat such that the spoon-shaped extension extends beyond the wedge-shaped blade when the wedge-shaped blade is closed against the concave blade seat,

(g) whereas upon squeezing the handles toward one another, the first jaw element and second jaw element are brought together in a plier-type movement, engaging the wedge-shaped blade and concave blade seat on a nut or portion thereof therebetween, thus creating a three point pressure against the nut shell or portion thereof and producing a break-cut action causing separation of the nut shell and kernel.

5,351,403

PROTECTIVE SHIELD FOR A FREE-CUTTING TOOL

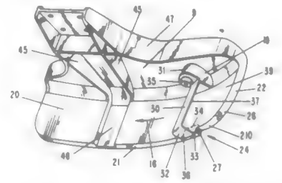
Georg Becker, Winnenden; Joachim Hoffmann, Aichwald; Thilo Hummel, Schwaikheim; Josef Karner, and Helmut Schlessman, both of Waiblingen, all of Fed. Rep. of Germany, assignors to Firma Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Nov. 1, 1993, Ser. No. 145,868

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1992, 4237357

Int. Cl.[5] **A01D** *75/18*

U.S. Cl. 30—276 **11 Claims**



1. A protective shield for a free-cutting tool, said free-cutting tool comprising a cutting head rotatable about an axis of rotation, said cutting head having a cutting thread extending substantially radially to said axis of rotation and defining a cutting plane upon rotation of said cutting head, said protective shield connected to said cutting head such that said cutting plane is within said protective shield, said protective shield comprising:

a support section for fixedly connecting said protective shield to said cutting tool above said cutting plane;

a circumferential wall connected to said support section and extending about a portion of a circumference of said cutting plane;

said circumferential wall extending axially from said support section to at least said cutting plane;

said circumferential wall having axially extending lateral edges extending perpendicular to said cutting plane;

said circumferential wall having a bottom edge, wherein said lateral edges have a round transition into said bottom edge;

a crosscutting blade for cutting to length said cutting thread, said crosscutting blade connected to an inner wall surface of said circumferential wall at a leading portion of said circumferential wall in said direction of rotation and extending substantially over an axial height of said circumferential wall; and

wherein at said leading portion of said circumferential wall said round transition into said bottom edge has an axially extending projection positioned, when viewed in said direction of rotation, upstream of said crosscutting blade, said projection being a step between said round transition and said bottom edge.

5,351,404

CHANGEABLE TIP AWL

John W. Smith, 2022 Carmel Rd., Millville, N.J. 08332

Filed Sep. 20, 1993, Ser. No. 123,052

Int. Cl.[5] **B26F** *1/04;* **B25G** *1/08*

U.S. Cl. 30—366 **4 Claims**

1. A changeable tip awl, comprising,

an elongate rigid shank, having a shank first end spaced from a shank second end, and

an elongate handle, with the handle fixedly receiving the shank second end within said handle, and

the shank first end including an internally threaded bore directed into the shank from the shank first end, and

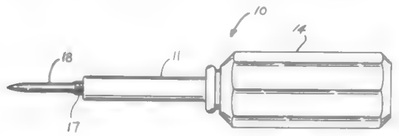
an awl shank having a threaded shank portion threadedly received within the internally threaded bore, and a pointed awl rod, wherein the pointed rod awl, the threaded shank portion, the internally threaded bore, the

VOL 1167 ISS 1 OCT 4 1994 UMI

elongate shank, and the handle are coaxially aligned relative to one another, and

the threaded shank portion having a polymeric insert mounted to the threaded shank portion and projecting beyond the threaded shank portion exteriorly of the threaded shank portion in an inter-engagement with the internally threaded bore, and

a rigid protective sleeve slidably directed along the shank, with the sleeve having a sleeve first end and a sleeve second end, with the sleeve first end arranged for spaced adjacency to the pointed awl rod and extending beyond the pointed awl rod in a first position and arranged for exposing the pointed awl rod in a second position, with



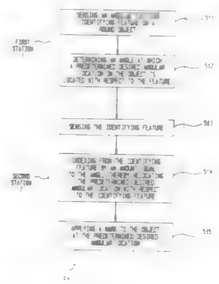
the sleeve second end positioned in facing adjacency to the handle, and a first annular groove directed into the elongate shank in adjacency to the shank first end, and a second annular groove directed into the elongate shank in adjacency to the shank second end in adjacency to the handle, with the sleeve having a sleeve opening and a V-shaped spring projection directed through the sleeve opening, and a spring plate fixedly mounted to an exterior surface of the sleeve, with the V-shaped spring projection mounted to the spring plate biasing the V-shaped projection through the sleeve opening interiorly of the sleeve for engagement selectively with said first annular groove and said second annular groove.

5,351,405

APPARATUS AND METHOD FOR ANGLE-DEPENDENT PROCESSING OF OBJECTS

James C. Beebe, Kent, Ohio, assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Apr. 23, 1993, Ser. No. 52,380
Int. Cl.[5] G01B *5/24, 3/56*
U.S. Cl. 33—203 **31 Claims**



1. In the processing of round objects, a method of determining an angular location on a round object during an operation in order to facilitate positioning said object for a subsequent operation, said method comprising the steps of:

1) at a first station,

a) sensing an angular location identifying feature on said object, and

b) determining an angle at which a predetermined desired angular location on said object is located with respect to said feature,

c) electronically storing information indicative of said angle, and

2) at a second station,

a) sensing said feature,

b) based on said information, indexing from said feature in an amount equal to said angle thereby relocating said predetermined desired angular location with respect to said feature, and

c) marking said object at said predetermined desired angular location.

5,351,406

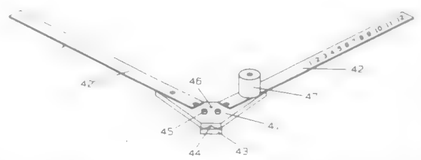
Patent Not Issued For This Number

5,351,407

BOW ANGLE TUNER

Thomas R. Van Drielen, 4326 Silva Ave., San Jose, Calif. 95118

Filed Dec. 17, 1992, Ser. No. 992,135
Int. Cl.[5] G01B *5/00*
U.S. Cl. 33—506 **2 Claims**



1. A bow turning device allowing alignment of a bow to an arrow for vertical arrow flight, comprising:

a planar member containing an elongate groove means for releasably securing an arrow therein;

first and second rulers of equal length, said rulers being attached to said planar member such that said rulers form a fixed angle in a plane parallel to said planar member of less than one hundred eighty degrees, the vertex of said fixed angle bisecting said groove means and being centered therein; and

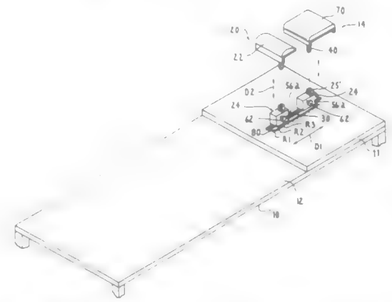
a clamp having attaching means therein for releasably attaching said clamp to said planar member, thereby releasably securing said arrow in said groove means.

5,351,408

CERVICAL MEASUREMENT APPARATUS

Robert E. Street, 848 W. Michigan Ave., Marshall, Mich. 49068

Filed Mar. 19, 1993, Ser. No. 33,407
Int. Cl.[5] A61B *5/103;* **G01B** *5/20*
U.S. Cl. 33—512 **22 Claims**



1. Measurement apparatus for determining parameters of a patient's neck, comprising:

horizontal support means for positioning the patient's torso and head during measurement to direct the weight of the torso and the head downwardly toward said horizontal support means, and

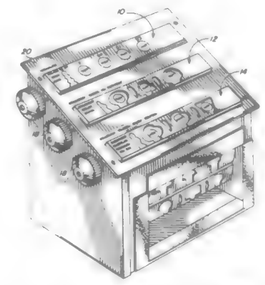
measuring means for moving cervical measuring means in a first horizontal direction corresponding to the length of the patient's neck between the torso and the head and in a second vertical direction transverse to the first direction toward the concavity of the patient's neck, said measuring means including base means movable in said first direction, said cervical measuring means being movably mounted on said base means for movement relative thereto in said second direction and having an arcuate profile selected in dependence on the curvature of the patient's neck, and means for moving said cervical measuring means in said second direction to engage the cervical region of the patient when the patient's torso and head are positioned for measurement, the distances that said base means and said cervical measuring means are moved in the respective first and second directions to engage said cervical measuring means with the cervical region of the patient and the selected profile of said cervical measuring means providing parameters for the manufacture of a cervical pillow for use by the patient.

5,351,409

KEY IDENTIFIER METHOD AND APPARATUS

George Heredia, Paradise Valley, Ariz., assignor to Axxess Entry Technologies, Tempe, Ariz.

Filed Dec. 16, 1992, Ser. No. 991,302
Int. Cl.[5] G01B *5/20*
U.S. Cl. 33—539 **55 Claims**



1. A method for selecting a key blank design functionally compatible with an unknown key having an identified primary classification category, a secondary classification attribute, and a key blade with a defined cross sectional configuration, where the selected key blank design is functionally compatible with, but not necessarily geometrically identical to an original key blank from which the unknown key was cut, comprising the steps of:

a. identifying the primary classification category of the unknown key to sort the unknown key into a specified primary classification category;

b. within the specified primary classification category sorting the unknown key by the secondary classification attribute into a specified secondary classification category;

c. implementing a key blade matching procedure within the specified secondary classification category where the cross sectional configuration of the unknown key blade is compared with at least one cross sectional configuration corresponding to a known blade cross sectional configuration of a known key blank design to determine whether the cross sectional configuration of the unknown key blade matches the known cross sectional configuration;

d. implementing a sequence-prioritized matching procedure where the cross sectional configuration of the unknown key blade is compared with a sequence-prioritized group of known cross sectional configurations where each cross sectional configuration within the group is different; and

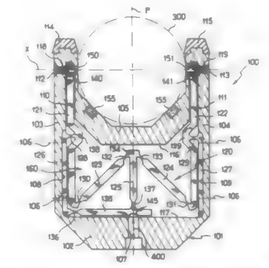
e. identifying the known key blank design when the key matching procedure yields a match between the unknown key blade cross sectional configuration and the known cross sectional configuration.

5,351,410

INSPECTION DEVICE FOR INSPECTING THE DIMENSIONS OF AN OBJECT

Lucien Hainneville, Bayeux, France, assignor to Societe Industrielle De Liaisons Electriques-Silec, Paris, France

Filed Jan. 4, 1993, Ser. No. 185
Claims priority, application France, Jan. 6, 1992, 92 00036
Int. Cl.[5] G01B *5/08*
U.S. Cl. 33—542 **11 Claims**



1. An inspection device for inspecting the dimensions of an object, in particular inside or outside diameters of workpieces, the device comprising a portion which forms a support, a deformable system resiliently mounted on said support and having two measurement arms with free ends provided with respective contactors for contacting the workpiece to be inspected according to a common axis, wherein the deformable system is in the form of a one-piece element that is generally W-shaped, said one-piece element including the two measurement arms together with two link arms associated with an axially movable central arm connected by associated resilient bridges to a junction between said link arms, the said two measurement arms being essentially parallel in a neutral position, and each of the measurement arms being hinged on an associated fixing arm which serves to fix the one-piece element to the support, and said central arm being displaceable in an axial direction essentially perpendicular to the common axis of the contactors as a function of the distance between said contactors, and co-operating with an associated displacement sensor, said one-piece element being essentially flat and deforming within its own plane when the contactors provided at the ends of its hinged measurement arms move away from each other or towards each other.

5,351,411

APPARATUS FOR THE SCANNING OF A PROFILE AND USE HEREOF

Leif Gronskov, Kirkebjerg Allé 95, 1.tv, Brondby, Denmark DK-2605

PCT No. PCT/DK92/00028, § 371 Date Jul. 23, 1993, § 102(e) Date Jul. 23, 1993, PCT Pub. No. WO92/14120, PCT Pub. Date Aug. 20, 1992
PCT Filed Jan. 27, 1992, Ser. No. 94,120
Claims priority, application Denmark, Jan. 30, 1991, 167/91
Int. Cl.[5] G01B *5/20*
U.S. Cl. 33—551 **8 Claims**

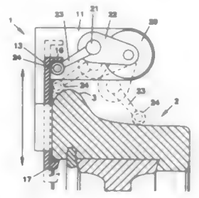
1. Apparatus for the scanning of a profile, comprising:

a movable part being moved over and in contact with the profile;

a stationary part supporting the movable part, wherein the

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movable part comprises at least one first arm and at least one second arm, said arms being coupled together at the ends by means of an electronic angle-encoding joint, in that the first arm is coupled to the stationary part via a further electronic angle-encoding joint and a free end of the second arm is brought into contact with the profile which is to be scanned, and in that the arms and the joints



are coupled together in such a manner that the free end is moved in a pre-determined plane, and where the joints are coupled via an interface circuit to an electronic calculation circuit, preferably a computer; and

wherein the free end of the second arm comprises a roller or a wheel, the first and second arms being pivoted in a plate perpendicular to an axis of the roller or the wheel.

5,351,412

MICRO POSITIONING DEVICE

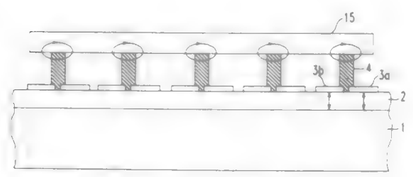
Tomotake Furuhata, Kawasaki, and Toshiki Hirano, Tokyo, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 29, 1992, Ser. No. 890,455

Claims priority, application Japan, Jun. 11, 1991, 3-165259

Int. Cl.[5] B23Q *16/00*

U.S. Cl. 33—568 **17 Claims**



1. A micro positioning semiconductor integrated device for achieving fine positioning of a friction driven moving member, comprising:

a substrate;;

a plurality of micro actuators arranged on said substrate in an array formation, each of said micro actuators comprising:

a driving section providing vertical motion, and

an elongated pin having two ends, one of said ends being free moving and the second contacting said driving section, wherein the vertical motion of the driving section drives the free moving end of said pin to rotate around a horizontal axis; and the moving member is resting on the free moving end of said pins, wherein friction converts the rotational motion of the pins into translational motion of the moving member, thereby providing controllable motion and fine positioning in a predetermined direction.

5,351,413

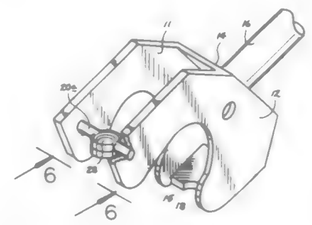
CLEARANCE CHECKING TOOL

C. W. Bruner, and Ingrid E. Bruner, both of 2040 Brannon Dr., Austell, Ga. 30001

Filed May 17, 1993, Ser. No. 61,261

Int. Cl.[5] G01D *21/00*

U.S. Cl. 33—611 **2 Claims**



1. A clearance checking tool, comprising,

an engaging head, the engaging head including a first plate arranged in a parallel, spaced, and coextensive relationship relative to a second plate, and

the engaging head including a first end spaced from a second end, a lowermost end spaced from an uppermost end, with a first wall directed between the first plate and the second plate at the first end, and

a handle mounted to the first wall, a second wall obliquely oriented relative to the first wall and positioned in a spaced relationship relative to the first wall at the lowermost end in adjacency to the first end, and

an abutment rod positioned near said second end extending in a parallel relationship relative to the second wall positioned between the second wall and the uppermost end of the engaging head, and

the second wall includes a forward end, the forward end arranged in a facing relationship relative to the second end of the engaging head, the forward end including a second wall recess oriented medially of the forward end to receive a push rod therewithin to stabilize the engaging head when receiving a rocker arm within the engaging head associated with said push rod, and

the abutment rod includes a cup member medially of the abutment rod having a concave recess, and the abutment rod is arranged for rotation between the first plate and the second plate.

5,351,414

WATER DEPTH APPARATUS

Joseph A. Cogliano, 351 Sturtons La., Pasadena, Md. 21122

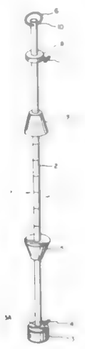
Filed Sep. 30, 1992, Ser. No. 954,744

Int. Cl.[5] G01B *3/00*

U.S. Cl. 33—719 **9 Claims**

1. A device capable of determining water depth comprising a rod-like body having a first end and a second end; a weight located at the first end of said body; a buoyancy means attached to said body at a fixed and spaced position from the weighted first end and capable of causing the rod-like body to extend substantially vertically when the weighted first end is in contact with terrain submerged under water; a float capable of freely moving along the rod-like body from the fixed buoyancy means towards the second end of the body; the rod-like body having markings at intervals along the body between the fixed buoyancy means and the second end; and a stop affixed to said body between the float and the second end

of the body, said stop having an affixing means capable of permitting changes in the position of said stop along the rod-



like body and securing the stop to said body at desired positions.

5,351,415

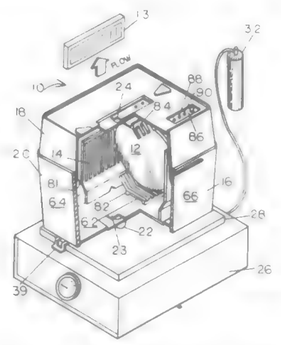
METHOD AND APPARATUS FOR MAINTAINING CLEAN ARTICLES

Ray G. Brooks; Timothy W. Brooks, both of Irving, Tex., and C. James Corris, Elkmont, Ala., assignors to Convey, Inc., Irving, Tex.

Filed May 18, 1992, Ser. No. 884,411

Int. Cl.[5] F26B *7/00*

U.S. Cl. 34—389 **42 Claims**



1. A system for maintaining articles to be processed clean, comprising in combination:

a boat for supporting the articles in an organized upright arrangement;

a box for receiving the boat and the articles;

a cover for mating with the box and forming a closed, airtight container;

an inlet valve in the box for admitting a gas into the container;

an outlet valve in the cover for venting gas from the container;

a purger having an interface to the container and the inlet valve when the container is operably connected to the purger; and

a supply of gas available to the purger wherein gas from the supply can be admitted into the container through the interface and the inlet valve when the container is operably connected to the purger through the interface.

5,351,416

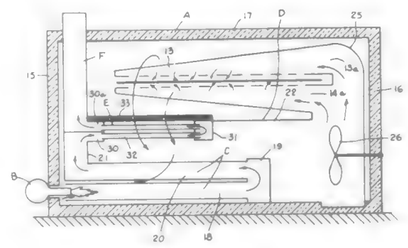
CLEAN AIR OVEN WITH HEAT RECOVERY AND METHOD

Philip M. Witkin, Greenville, S.C., assignor to Marshall and Williams Company, Providence, R.I.

Continuation-in-part of Ser. No. 24,823, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 785,691, Oct. 31, 1991, abandoned. This application Jun. 14, 1993, Ser. No. 76,455

Int. Cl.[5] F26B *21/06*

U.S. Cl. 34—79 **7 Claims**



1. An oven for applying heated air to a moving web through nozzles spaced across the web comprising:

a plurality of zones each having an insulated housing;

a burner positioned within said housings;

an elongated incinerator carried in at least one of said housings receiving combustion gases from the burner and mixing them with process air;

an elongated duct extending in said housing containing said incinerator;

a heat exchanger in said duct receiving the combustion and exhaust products of said incinerator and forming a constant path through which all of said process air passes transferring heat to said process air passing from said nozzles and the web being treated preparatory to return of such process air to the nozzles;

a bypass for directing a portion of the combustion and exhaust products of said incinerator around said heat exchanger;

said duct conveying heated gases from said heat exchanger to said nozzles; and

an exhaust for air to pass from said heat exchanger out of said housing.

5,351,417

HAIR DRYER APPARATUS ADAPTED FOR MULTI-FUNCTIONAL USAGE

Richard Rubin, Melbourne, Australia, assignor to Secajo, Ltd., Raratowga, Cook Islands

Filed Sep. 22, 1992, Ser. No. 949,470

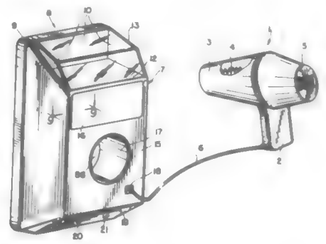
Int. Cl.[5] F26B *19/00*

U.S. Cl. 34—90 **23 Claims**

1. Hair dryer apparatus adapted for multifunctional use comprising a housing attachable to a wall, a hand-held hair dryer, electrical power supply means within said housing, an electrical cable connecting said hand-held dryer to said electrical power supply means, switch means for controlling electrical connection of said electrical cable to said electrical power supply means, said hand-held dryer producing heated air when connected to said electrical power supply, said housing including a receptacle for said hand-held dryer with an opening at said receptacle through which heated air produced by said dryer is introduced into said housing, a plurality of air outlets in said housing respectively configured for specific functions including nail and hand drying and supplying defogging air,

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control means accessible from outside said housing for selectively directing the heated air from said dryer to said outlets, a



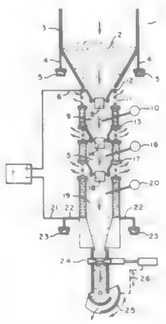
manifold in said housing for receiving the heated air from said hair dryer, said control means selectively directing the flow of heated air in said manifold to said air outlets.

5,351,418

PROCESS FOR DRYING OF GRANULAR OR POWDERED CARBON BY ELECTRICAL RESISTANCE HEATING

Cornelius J. du Plessis, 180 Dover Furnace Rd., Dover Plains, N.Y. 12522

Filed Jul. 12, 1993, Ser. No. 89,439
Int. Cl.[5] F26B *3/34*
U.S. Cl. 34—246 13 Claims



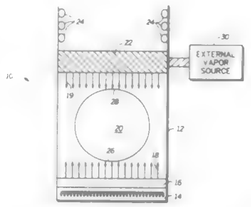
1. In a process for the drying of carbon by electrical resistance heating that comprises passing the wet carbon by gravity through a feed hopper into tubular drying sections of refractory material, wherein the top of the uppermost drying section is joined to the bottom of the feed hopper, and wherein the bottom of the lowermost drying section is joined to a reactor for activation of a carbonaceous feedstock, an electrical terminal affixed to the outside of the feed hopper and another terminal affixed at the bottommost section, said terminals being connected to a source of electric current, the current passing between the terminals through the descending column of carbon particles, the improvement wherein the current is fed into the uppermost column of carbon particles through a graphite block serving as an electrode and positioned at the center of the top of the column by attachment to a steel plate that includes a shelf and that is provided with openings to allow the moisture to escape in the form of steam.

5,351,419

METHOD FOR VAPOR DRYING

John G. Franks; Gary A. DePinto; Ross A. Fisher, and Harry S. Morgan, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 27, 1992, Ser. No. 920,074
Int. Cl.[5] F26B *21/06*
U.S. Cl. 34—470 2 Claims



1. A method for vapor drying comprising the steps of:
providing a tank, the tank having a bottom surface, a side, and at least one cooling coil, wherein the at least one cooling coil is mounted to the side of the tank;
providing a semiconductor substrate, the semiconductor substrate having a liquid present thereon, and having a top portion and a bottom portion;
providing liquefied isopropyl alcohol along the bottom surfaces of the tank;
placing the semiconductor substrate within the tank, wherein the semiconductor substrate overlies the liquefied isopropyl alcohol;
injecting an externally generated isopropyl alcohol vapor into the tank, wherein the externally generated isopropyl vapor is injected into the tank at a location below the at least one cooling coil;
heating the liquefied isopropyl alcohol to generate isopropyl alcohol vapor near the bottom portion of the semiconductor substrate; and
condensing the isopropyl alcohol vapor on the semiconductor substrate to remove the liquid from the semiconductor substrate.

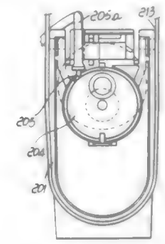
5,351,420

SKI BOOT WITH A LEVER HAVING INDEPENDENT ADJUSTMENT DEVICES

Alessandro Pozzobon, Paderno di Ponzano Veneto; Roberto Gorza, Feltre, and Renato Serafin, Vedelago, all of Italy, assignors to Nordica S.p.A., Montebelluna, Italy

Continuation of Ser. No. 909,499, Jul. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 649,194, Feb. 4, 1991, Pat. No. 5,158,559, which is a continuation of Ser. No. 407,389, Aug. 18, 1989, abandoned. This application Jan. 21, 1994, Ser. No. 183,932
Claims priority, application Italy, Aug. 31, 1988, 82581 A/88
Int. Cl.[5] A43B *5/04*
U.S. Cl. 36—119 4 Claims

1. A ski boot comprising: a shell; a front quarter connected to said shell; a rear quarter pivotally connected to said shell; a lever element having a first end which is pivotally connected to said rear quarter; at least one foot presser arranged inside the ski boot; a winding device supported by said lever; a first traction element having a first end which is connected to said winding device, the first traction element further having a middle portion engaging with said foot presser, and the first traction element further having a second end which is connected to a fixed portion of the ski boot; a second traction element interconnected between said front quarter and a second end of said lever which is opposite to said first end of said lever thereby for closing said front and rear quarters; and a flexible sheath element in which is slidably accommodated said first traction element, said sheath element having a first end which is rigidly connected to said lever and a second end which is rigidly connected to a fixed part of the ski boot, and



said winding device having exclusively only the first traction element of said first and second traction elements connected thereto.

5,351,421

SPORTS SHOE SOLE

David J. Miers, 17 Tennyson Court, Templestowe, Victoria, 3106, Australia

PCT No. PCT/AU91/00056, § 371 Date Aug. 27, 1992, § 102(e) Date Aug. 27, 1992, PCT Pub. No. WO91/11929, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 15, 1991, Ser. No. 923,879
Claims priority, application Australia, Feb. 16, 1990, PJ8684
Int. Cl.[5] A43B *5/00, 23/28*
U.S. Cl. 36—128 23 Claims

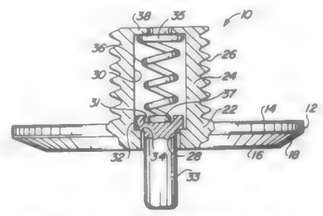
1. A shoe sole having a forward toe end and a rear heel end, said sole divided into a half sole which includes said forward toe end, and a heel portion which includes said rear heel end, said half sole having an inner medial side and an outer lateral side wherein a longitudinal line runs along the center of said half sole and lies between said inner medial side and said outer lateral side, wherein the portion of said sole between said longitudinal line and said inner medial side defines an inner portion of said half sole and the portion of said half sole between said longitudinal line and said outer lateral side defines an outer portion of said half sole,
at least a pair of elongated medial projections having a length and a width, each of said medial projections having an outer end adjacent said medial side and an opposite inner end, at least a pair of elongated lateral projections having a length and a width, each of said lateral projections having an outer end adjacent said lateral side and an opposite inner end, each of said projections extending downwardly from said sole and terminating in an elongated narrow lower edge having a length many times greater than the width thereof, the inner end of each of said projections extending downwardly from said sole and outwardly away from said longitudinal line, the outer end of each of said projections extending downwardly from the associated adjacent side and inwardly toward said longitudinal line such that the length of each of said projections tapers from a larger dimension at said sole to a smaller dimension at the lower edge thereof, the outer end of each of said lateral projections extending downwardly directly from the associated adjacent side, each of said projections having a forward surface and a rearward surface, said forward surface extending downwardly from said sole and away from said toe end, said rearward surface extending downwardly from said sole and away from said heel end such that the width of each of said projections tapers from a larger dimension at said sole to a smaller dimension at the lower edge thereof, the inner ends of each of said projections at said sole being spaced a substantial distance from said longitudinal line in a direction extending laterally of said longitudinal line and toward the associated adjacent side so that said longitudinal line is free of projections and a vacant space is provided along said longitudinal line,
said medial projections being angled such that the outer ends thereof are closer to the toe end than the inner ends thereof, said lateral projections being angled such that the inner ends thereof are closer to the toe end than the outer ends thereof, the angled medial and lateral projections thereby providing increased grip for the outside foot of a wearer during turning movement.

5,351,422

REPLACEMENT CLEAT METHOD AND APPARATUS FOR CONVENTIONAL GOLF SHOE CLEATS

John E. Fitzgerald, 3500 Palmer Dr., Titusville, Fla. 32780

Filed Jun. 15, 1992, Ser. No. 898,418
Int. Cl.[5] A43C *15/00*; A43B *5/00*
U.S. Cl. 36—134 4 Claims



1. A method for replacing a conventional fixed cleat of a golf shoe with a retractable cleat, comprising the steps of:
providing a plate with an inside flat surface and a unitary insert member extending perpendicularly from the flat surface, the insert member having threads about its periphery generally corresponding in diameter and length to the threads of a conventional fixed golf cleat;
forming an axial hole through the plate and the insert member;
fitting a biasing member and a retractable cleat through the axial hole so that the biasing member pushes the retractable cleat outwardly, the cleat extending into the hole when sufficient axial pressure is exerted on the cleat; and
limiting the movement of the cleat member out of the axial hole by fitting the plate and an inside end of the cleat with corresponding retaining shoulders, the retaining shoulders fitting step comprising the steps of
drilling a first hole in the plate from an outside surface opposite the inside surface, the first hole axial with the center line of the insert member; and
drilling a second hole axial with the first hole through the insert member and into a portion of the plate member,

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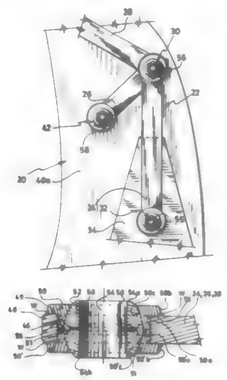
the second hole having a dimension greater than the first hole.

5,351,423

BALL AND SOCKET JOINT FOR SNOWBLOWER CHUTE CONTROL ROD LINKAGES

Raynald Vohl, 411 Saint-Gilbert Street, St-Marc-des-Carrières, Canada G0A 4B0

Filed Jan. 15, 1993, Ser. No. 5,095
Int. Cl.[5] E01H *5/09*
U.S. Cl. 37—260 4 Claims



1. In combination, a snow collecting and ejecting device for use as an attachment to automotive snowblower truck, said device defining:

(a) a box-like open casing, including upright opposite lateral side walls, a front snow engaging mouth between said side walls, and a top snow outlet port for escape of snow to be ejected from within said open casing;

(b) an elongated snow discharge spout pipe having an inner end secured to and in communication with said open casing said main spout pipe projecting outwardly from said open casing and having an outer end;

(c) telescopic spout pipe extension, pivotally carried by said outer end;

(d) control rod linkages, mounted to said spout pipe and commanding telescopic actuation of said spout pipe extension, said control rod linkages including first and second link arms, first pivot means for pivotally mounting said first link arm to said spout pipe, and second pivot means for pivotally interconnecting said first and second link arms to each other, each link arm having a collar at both ends, each collar defining a through bore and opposite parallel, flat, collar faces surrounding said through bore, each one of said first and second pivot means comprising:

a pivotal shank;

a ball and socket joint including a rigid spherical ball, having an axial through bore, said ball axial bore conforming with and being slidingly engaged by said shank;

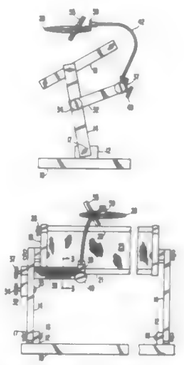
a socket having a pair of complementary seating rings, each said seating ring defining a radially inner, segmental, spherical seating surface contacting said ball with an interface clearance, a smaller diameter cylindrical body fitted within said through bore and having a body inner face at its inner axial end and an out-turned shoulder at its outer axial end, said shoulder having a flat, annular, shoulder inner face parallel to said body inner face, the cylindrical bodies of each pair of seating rings inserted into said through bore through opposite ends thereof with said body faces in mutual contact and with said shoulder inner faces overlying the respective collar faces with a small clearance, securing means to secure said seating rings to said collar, the interface clearance between said ball and said socket allowing free relative rotatable movement of said ball within said socket but without play, said shank of each said first pivot means having one projecting end anchored to said casing side wall.

5,351,424

MAGNIFIER WITH LIGHT THERETHROUGH FOR NEEDLEWORK FRAME

Gaylon E. Schulle, and Kay C. Schulle, both of P.O. Box 161446, Austin, Tex. 78746

Filed Jun. 18, 1993, Ser. No. 79,010
Int. Cl.[5] D05C *1/02*; G02B *27/02*; F21V *21/00*
U.S. Cl. 38—102.1 7 Claims



1. A needlework support apparatus comprising the combination of

means for holding needlework fabric;

a magnifying lens;

a length of flexible tubing connected at one end to said lens and at the other end to said means for holding;

a battery operated light source having a housing extending through an opening through said lens; and

means for holding said light source in said lens,

said tubing being bendable to position said lens and said light source at a position in which a selected portion of said needlework fabric is magnified and illuminated.

5,351,425

DISPLAY DEVICE AND PROCESSES FOR MAKING AND USING THE SAME

Robert T. Knappe, Castle Rock, and John F. B. Prockter, Denver, both of Colo., assignors to Apex Die & Box Company, Denver, Colo.

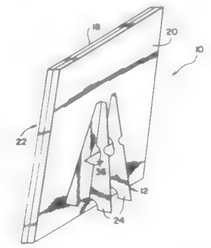
Filed Jun. 26, 1992, Ser. No. 904,986
Int. Cl.[5] G09F *1/12*
U.S. Cl. 40—152.1 16 Claims

1. An assembly, comprising:

a) a first panel;

b) a second panel positioned in a superimposed relationship with said first panel, said second panel including a flap portion which is at least partially detachable from a remaining portion of said second panel, said flap portion capable of moving between a retracted position wherein said flap portion is in substantially planar alignment with said remaining portion of said second panel and an extended position wherein said flap portion is disposed at an angle relative to said remaining portion of said second panel;

c) an adhesive coating, capable of being applied as a viscous fluid, disposed between said first and second panels, said adhesive coating bonding said first panel to said second panel wherein said first and second panels remain bonded by said adhesive coating when said flap is in said extended position; and



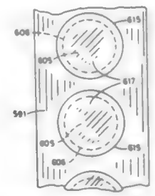
d) a barrier coating, disposed between said first panel and said flap portion and extending substantially entirely across an interface between said first panel and said flap portion, said barrier coating resisting adhesion between said flap portion and said first panel.

5,351,426

LABEL ASSEMBLY

Peter A. Voy, El Dorado Hills, and Robert D. Ihle, Sacramento, both of Calif., assignors to CCL Label Inc., Grand Rapids, Mich.

Continuation of Ser. No. 573,384, Aug. 24, 1990, abandoned, which is a continuation of Ser. No. 210,765, Jun. 23, 1988, abandoned, which is a continuation of Ser. No. 31,888, Mar. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 671,294, Nov. 14, 1984, Pat. No. 4,661,189. This application Dec. 18, 1992, Ser. No. 993,907
Int. Cl.[5] G09F *3/10*
U.S. Cl. 40—638 4 Claims



4. A label assembly comprising:

a carrier sheet having a longitudinal direction and a transverse direction;

adhesive engaging said carrier sheet in zones spaced longitudinally along said carrier sheet leaving adhesive-free areas therebetween; and

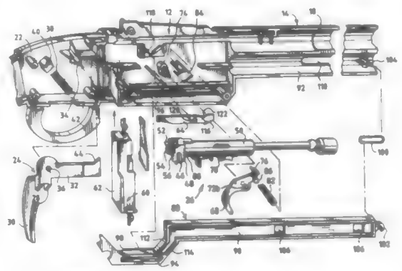
a plurality of labels arranged longitudinally along said carrier sheet, each of said labels having a surface facing said carrier sheet and directly engaging said adhesive, each of said surfaces including an adhesive free transverse margin portion overlying one of said adhesive-free areas to facilitate subsequent removal of said labels from said carrier sheet as said carrier sheet is moved in its longitudinal direction.

5,351,427

TOY GUNS

Gary D. Aigner, Chicago, Ill., assignor to Strombecker Corporation, Chicago, Ill.

Filed Feb. 9, 1993, Ser. No. 15,618
Int. Cl.[5] F41C *3/06*
U.S. Cl. 42—57 9 Claims



1. A toy gun comprising:

a body including a housing section, a grip assembly section connected to said housing section at a posterior end of said gun body and a barrel assembly section connected to said housing section at an anterior end of said gun body;

a sleeve means reciprocatingly mounted on an external surface of said barrel assembly section for movement in a longitudinal direction between the anterior and the posterior ends of said gun body;

a pushrod assembly mounted in said barrel assembly section and having an end section projecting into said housing section, said pushrod assembly being structured and dimensioned for operative engagement with said movable sleeve means in a manner such that said pushrod assembly moves reciprocatingly in a longitudinal direction between the anterior and posterior ends of said gun body responsive to the movement of said sleeve means;

a rocker arm means pivotally mounted about an axis in said housing, said arm means being structured and dimensioned for operative engagement with said end section of said pushrod assembly projecting into said housing section in a manner such that longitudinal reciprocating movement of said pushrod assembly under the influence of said sleeve means causes said rocker arm to pivot about said axis;

a trigger means pivotally mounted on said housing comprising a trigger element projecting from said housing for actuation by a user of said gun and a trigger catch element operatively interconnected with said trigger element, said catch element being normally biased into engagement with a cap firing weight and being disengageable from said cap firing weight in response to actuation of said trigger element enabling said firing weight to be released for movement into detonating contact with a cap, said trigger means comprises an integrally formed, one-piece, essentially L-shaped member having two leg segments aligned at essentially right angles to one another with one leg segment forming said trigger element and the other leg segment forming said trigger catch element.

5,351,428

COLLAPSIBLE LIGHTWEIGHT RIFLE

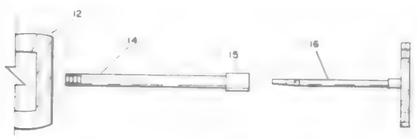
John A. Graham, 5922 Kimbrough St., Corpus Christi, Tex. 78412

Filed Sep. 24, 1993, Ser. No. 125,749
Int. Cl.[5] F41C *23/04*
U.S. Cl. 42—72 1 Claim

1. A collapsible lightweight rifle comprising: a barrel support having a barrel supporting saddle end and a pivot screw end, a barrel and chamber section having a muzzle end and a

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rear sight end, and left and right sides; said barrel section having a threaded portion extending into said barrel and chamber section being concentrically aligned with a bullet chamber which comprises a hole drilled mid-way between said rear sight end of said barrel and chamber section and extending through a plane being at the rear most end in line with a perpendicular plane of said threaded portion and a flanged area formed at said muzzle end; a take-down or break-down barrel comprising three elongated tubes two of which are seven and three-eighths inches long by about ⅜ inch outside diameter and the third of said elongated tubes being 2¼ inches long, said tubes comprising first, second, and third elongated tubes, each having front and rear ends and internal and external walls, said second and third tubes having flat areas machined near rear threaded area to accommodate tightening when assembled, said first tube comprising a front sight and said first tube further having a barrel mating surface containing a flanged area on its rear end, said rear end being threaded on the internal wall, said second tube front end comprising barrel mating means being external threads, thus forming barrel mating surface for means of mating with first elongated tube rear end, a jam nut threaded onto said second tube front end for securing said tubes in a mated formation or configuration; the third of said elongated tubes further comprising similar mating means, being a threaded portion of said second tube rear end exterior wall for connecting said second tube to the front end of the third elongated tube front end by means of a threaded sleeve being about 9/16" outside diameter by about three inches long, having internal and external walls, said threaded sleeve having front and rear ends, said walls being threaded internally with threads, said threads to match designated ends of said elongated tubes, and designed to connect said second and third



tubes, said third tube further comprising mating means on said third tube rear end for connecting said tube into front end of barrel-chamber section; said barrel chamber section, said barrel support, and a frame, each having holes used in pivoting action being aligned for purposes of installing a pivot screw, said holes being located as follows: extreme rear end of said barrel support, extreme front end of said frame, bottom forward area of said barrel-chamber unit, said holes, when aligned, will receive said pivot screw, said pivot screw inserted and gently tightened with screw driver provided, which comprises the ground front end of butt extension shaft, said pivot screw secured parts completing front section assembly of unit, said barrel and frame now comprising several parts and accessories: said barrel-chamber having a steel spring activated rear sight-locking device comprising a sighting area on it's top, and further comprising a locking area located on bottom of said sight-lock and protruding from its position at the top, rear area of said barrel-chamber, said rear area being in alignment with matching hole in said frame, thus allowing positive alignment and locking of said barrel-chamber to said frame when said barrel-chamber is closed, said sight locking device activated by means of thumb or finger pressure of said rear sight-locking device, said pressure being applied toward front or muzzle end of unit, releasing pressure on said rear sight-locking device after closing said barrel-chamber which places said unit in a secure configuration when protruding area of said sight-locking device re-enters alignment hole in said frame, said barrel-chamber accepting said sight-locking device by means of a drilled and slotted hole located on rear of barrel-chamber above said chamber area and drilled to a depth of about ½", said rear sight locking device retained by a retaining pin located at top rear of said barrel-chamber section and protruding left to right through said sight-locking device, said sight-locking device being slotted to accept said retaining pin, said pin a means of keeping said sight-locking device in place, thus assuring secure position with said frame when said barrel-chamber is closed and said sight-locking device is released, said barrel-chamber further comprises: a steel ejector unit located on left rear side of barrel-chamber, said ejector being secured in said barrel-chamber unit by means of a retaining pin inserted through a drilled hole, said hole being drilled from top of said barrel-chamber and through said barrel-chamber, said retaining pin when installed protrudes from bottom of said barrel-chamber to a depth of about ½", being further utilized as a barrel-frame alignment pin entering into a similar sized hole drilled in exact alignment into said frame through said barrel, as means to guide said barrel-chamber unit to a stabilized position when barrel-chamber is closed against said frame, said frame further comprising holes and openings to accommodate further installation and mounting of said parts and accessories, comprising: a hammer, trigger, hammer spring having a narrow end and a wider end, trigger spring, butt, butt anchor stud, butt locking lever, butt lock, hammer screw, trigger screw, butt locking lever screws, barrel-frame alignment pin, stock extension tube, stock extension tube collet, stock extension shaft, butt extension securing screw, butt to frame lock bar, butt locking lever retaining pin; said hammer being step-notched on bottom bearing surface as means of maintaining safety and firing positions when said hammer is cocked or otherwise activated by thumb pressure, thereby defining a hammer action; said hammer being secured in said frame by means of a screw, said screw being inserted into side of said frame through a hole on left side of said frame and a threaded hole on right side in direct alignment with said left side hole, said screw entering through said hammer positioned inside said frame in alignment with said drilled hole as means of allowing pivoting of said hammer upon activation of said hammer, said hammer being forced against spring pressure by means of a flat "S" shaped spring being placed against said hammer into an accommodating grooved area, and based against aforementioned butt, said frame being channeled as means to accept said butt by means of a steel bar located in lower rear area of said frame and positioned in parallel configuration with all pivot points; a frame-butt assembly comprising: a butt lock mounted to upper rear area of said frame by means of said two butt lock screws located on either side of said frame, said butt lock rotates on mounting screws thus raising up at its point furthest from said mounting screws, and is further comprised of; a butt locking lever, spring activated, and maintained in butt lock by means of a retaining pin located through side of butt lock, entering into and through said butt lock from side to side, and said butt locking lever pivot hole, said butt lock comprising; a "U" shaped channel with solid, angled rear end, slotted to hold said butt locking lever and attached to rear of said frame by means of two aforementioned butt lock screws, said butt lock, when raised by means of thumb pressure against butt lock lever, accepts the butt by means of a butt anchor stud, said stud located on front lower lip of butt and proceeding through said area from side to side, said stud being designed to align with said aforementioned steel bar, and by lifting said butt upward from bottom with finger pressure and gently pushing said butt lock downward with thumb, said butt locking lever is activated and snaps into position by means of an alignment hole on upper, central location on back of said butt thereby securing said butt to said frame, and further allowing continued installation of aforementioned "S" shaped flat spring against rear area of said hammer, said spring being placed, small, narrow end first, into said frame from the side and by means of supplying a minor degree of lift torque and pressure against bottom of said spring, wider end of said spring can be positioned into spring slot located on inside bottom area of said butt thereby allowing said hammer to be activated by thumb pressure and maintaining constant pressure against said hammer, said hammer made to function in conjunction with said trigger, said trigger comprised of steel or other suitable wear-resistant material, said trigger having a pivot hole drilled in parallel

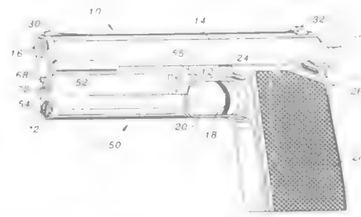
alignment with and similar in configuration to said hammer alignment hole and said trigger having a screw, said screw having small and large ends containing a thread on said small end, said screw entering from left side of said frame, proceeding through said trigger which is positioned inside said frame in alignment with said hole in said frame and threaded into opposite side of frame by means of matching thread as means of allowing pivoting of said trigger when said trigger is activated by means of aforementioned hammer action, said trigger further activated by means of coil spring located in a drilled hole in lower rear area of said trigger: said frame-butt and assembly further comprising one drilled hole located on rear central portion of said butt, said hole being about ½" deep and being threaded internally for accepting a butt extension securing screw, said butt also having an alignment hole to accommodate an alignment stud located in forward lower area of said butt extension, said securing screw permanently located near center forward area of said butt extension comprising: a means to attach said butt extension to said butt by means of positioning said alignment stud into corresponding aforementioned hole, a butt extension securing screw threaded into said threaded hole in said butt, for securing said butt extension tightly against said butt, said butt extension securing screw further comprising: a plastic finger grip turning area approximately ½" in diameter on rear of said screw for means of tightening said butt and said butt extension together; said butt extension comprised of any material suitable to allow proper function and lightness of weight, said butt extension being approximately 3½" in length, said butt extension further comprising: a threaded hole located on rear center of said butt extension as means of accepting previously mentioned stock extension tube, said tube having internal and external walls, being threaded externally on each end, said forward end being mated to said rear end threaded hole of said butt extension, said forward end of said tube being secured into said butt extension, said tube further comprising: a threaded end to accommodate aforementioned extension tube collet, said collet designed to accept aforementioned stock extension shaft, said stock extension shaft further comprising: a forward and rear end having a screwdriver tip ground onto said forward end, and a "T" configuration on rear end, said "T" end having calibrated square grooves machined into said "T" end to be used as tightening areas to fully secure all said barrel assembly parts.

5,351,429

LASER SIGHTING DEVICE FOR FIREARMS

Wilson H. Ford, 26182 Buena Vista Dr., Laguna Hills, Calif. 92653

Filed Feb. 26, 1993, Ser. No. 23,947
Int. Cl.[5] F41G *1/36*
U.S. Cl. 42—103 **6 Claims**



1. An aiming system for an automatic hand weapon, said hand weapon having a receiver group including a trigger assembly and a trigger guard, said device comprising:

a housing adapted to be mounted on said receiver group, said housing defining a front laser emission end, an opposite mounting end, a lower surface, side walls, a rear face and a top face configured to receive at least a portion of said receiver group, said housing having two vertically aligned compartments each opening at said emission end of said housing and being closed at the opposite end to define a rear wall therefor, a chamber opening to the rear face of said housing, a laser emission module contained in one of said compartments, said laser emission module comprising a container in which are disposed a laser diode and associated laser driver circuitry, the container being optically transparent at its emission end and closed at the opposite end, a power supply disposed in said other compartment, passage means communicating between said chamber and each of said compartments, switching means in said chamber electrically connected to said laser module and said power supply for activating said laser diode;

means carried by said housing for contacting and moving said laser module to adjust the vertical and the horizontal alignment of said laser module;

mounting means comprising a mounting plate attached at each side face of said laser housing at the mounting end thereof, portions of said mounting plates extending rearwardly from said housing defining oppositely inwardly turned spaced apart stops at the extending edges thereof, a passage communicating between the lower surface and the rear face of said housing and a securing member axially movably disposed therein; and

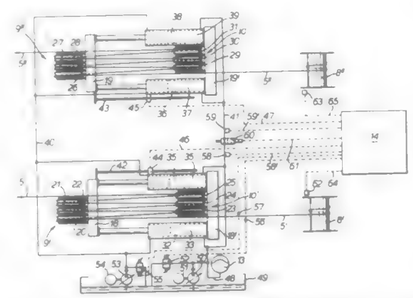
control means operable from either side wall of said housing for activating said aiming system.

5,351,430

DEVICE AND A METHOD FOR AUTOTRAWL OPERATION

Per H. Hystad, Kopervik, Norway, assignor to Karmoy Winch A/S, Kopervik, Norway

Filed May 5, 1993, Ser. No. 56,903
Claims priority, application Norway, May 6, 1992, 921796
Int. Cl.[5] A01K *73/02*
U.S. Cl. 43—9.1 **4 Claims**



1. A trawler equipped for trawling in an autotrawling mode in a body of water having a bed and a surface, comprising:

a trawler afloat on the surface of the body of water;

a submerged trawl disposed for moving along the bed or between the bed and the surface;

first and second trawl wires having one ends connected to the trawl for towing the trawl from the trawler;

first and second power-operated trawl winches mounted on the trawler;

said first and second trawl wires having respective opposite ends thereof connected to respective of said first and second trawl winches, whereby said trawl winches are adapted to heave-in and pay-out said first and second trawl wires, and said first and second trawl wires extend along respective wire paths from said first and second trawl winches to said trawl;

a compensating device for damping shock waves or alternating stresses exerted on said first and second trawl wires, said compensating device including:

first and second cylinder frames supported on said

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trawler, each having fixed portion and a movable portion which is movable along the respective said wire path relative to the respective fixed portion;

first and second hydraulic rams, each including a pair of tandemly operating piston and cylinder sets, of which the pistons thereof are mounted to one of said frame portions of the respective said cylinder frame, and the cylinders thereof are mounted to the other of said frame portions of the respective said cylinder frame;

a respective set of sheaves mounted to each said cylinder frame portion for rotation about a respective axis transverse to the respective said wire path;

an intermediate portion of said first trawl wire respectively running between and being wrapped around sheaves of respective of said sets of sheaves on said first cylinder frame and an intermediate portion of said second trawl wire running between and being wrapped around sheaves of respective of said sets of sheaves of said second cylinder frame, so that as said rams extend and contract, respective said cylinder frame movable portions are moved away from and towards respective said cylinder frame fixed portions, and thereby effectively heave-in and pay-out respective of said first and second trawl wires;

a computer-controlled hydraulic system for powering said piston and cylinder sets, including:

a supply of hydraulic fluid, a hydraulic line for communicating said supply with each of said cylinders for extending and contracting said rams;

a hydraulic accumulator incorporated in said hydraulic line;

a hydraulic pump incorporated in said hydraulic line and arranged for delivering pressurized hydraulic fluid from said hydraulic line from said supply to said hydraulic accumulator;

a first controllable valve operatively connected to said accumulator for bleeding pressurized hydraulic fluid therefrom back to said supply;

a second controllable valve operatively connected to each said cylinder for bleeding pressurized hydraulic fluid therefrom back to said supply;

first and second position sensors respectively operatively associated with said first and second cylinder frames for sensing amount of extension of respective of said rams, acceleration and direction of movement of respective of said cylinder frame movable portions relative to respective of said cylinder frame fixed portions;

first and second pressure sensors for sensing hydraulic pressure within respective of said cylinders;

first and second rotation sensors for sensing rotation of respective of said trawl winches;

a third controllable valve which is openable and closeable and is incorporated in said hydraulic line between said accumulator and said cylinders and between said first and second pressure sensors; and

a programmable computer arranged to operate said first, second and third controllable valves depending on signals received by said computer from said first and second position sensors, and first and second pressure sensors and said first and second rotation sensors.

5,351,431

ELECTRONIC FLOAT FOR FISHING TACKLE

Seok-Joo Ryu, Chooncheongbook-do, Rep. of Korea, assignor to Jahwa Sports Co., Ltd., Choongcheongbook-do, Rep. of Korea

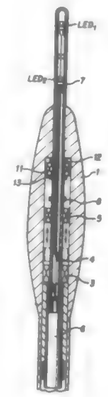
PCT No. PCT/KR91/00020, § 371 Date Apr. 5, 1993, § 102(e) Date Apr. 5, 1993, PCT Pub. No. WO92/05692, PCT Pub. Date Apr. 16, 1992

PCT Filed Sep. 27, 1991, Ser. No. 39,057

Claims priority, application Rep. of Korea, Sep. 27, 1990, 1990/15329; Dec. 27, 1990, 1990/21060[U]; Jan. 31, 1991, 1991/1458[U]; Mar. 29, 1991, 1991/4270[U]; Jul. 20, 1991, 1991/11389[U]

Int. Cl.[5] A01K *93/02*

U.S. Cl. 43—17 **8 Claims**



1. An electronic float for fishing tackle comprising:

a stick;

a floater attached to said stick and having a longitudinal hollow internal cavity;

a fixed permanent first magnet located in said longitudinal hollow internal cavity of said floater;

a moving permanent second magnet facing said fixed permanent first magnet with same magnet polarity so as to be movable up and down in said longitudinal hollow inside cavity;

a switching means which is actuated when said moving permanent second magnet approaches and;

a signal-generating means supplied with power through said switching means, whereby as said floater moves up or down said moving permanent second magnet also moves up and down by the inertial force of said moving permanent second magnet, actuating said signal-generating means.

5,351,432

FLOAT WITH LIGHT EMITTING DEVICES

Steven Tse, Yung Ho City, Taiwan, assignor to Meng-Chin Tseng, Taichung, Taiwan

Filed Aug. 6, 1993, Ser. No. 103,484

Int. Cl.[5] A01K *93/00*

U.S. Cl. 43—17.5 **1 Claim**

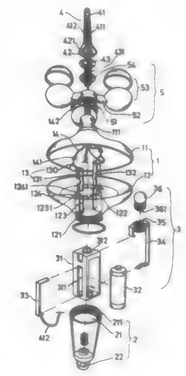
1. A float with light emitting devices, comprising

a floating body comprised of a lower housing and an upper housing, said lower housing having an external engaging means at its lower end, and said upper housing having a cylindrical projection at its upper end, said upper housing and said lower housing defining a compartment therebetween;

a battery compartment having an engaging means for being screwed onto said lower end of said lower housing, a power supply assembly being secured within said battery compartment, said power supply assembly extending into said lower housing;

a first light emitting device being installed on said upper end of said upper housing, said first light emitting device being in electrical connection with said power supply via suitable electrical connections;

a second light emitting device being installed in said compartment defined by said lower and upper housings, said second light emitting device being in electrical connection with said power supply via suitable electrical connections; and



an actuating means slidably mounted on said cylindrical projection of said upper housing comprising a neck portion slidably mounted on said cylindrical projection of said upper housing, said neck portion including a plurality of spokes extending outward, each outer end of said spokes being provided with a floating ball, and wherein said actuating means remains at an idle position until a fish is hooked, the fish then drawing said floating body downward, said floating balls remaining on a water surface, thereby causing an electrical circuit including the second light emitting source to be closed, thus actuating the second light emitting device.

5,351,433

FISHING LURE

John Ellis, Cobram, Australia, assignor to Mary Ellis, Cobram, Australia

Filed Jan. 21, 1993, Ser. No. 4,891

Claims priority, application Australia, Feb. 18, 1992, PL0918/92

Int. Cl.[5] A01K *85/00*

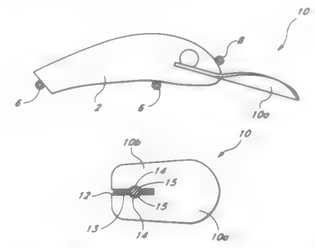
U.S. Cl. 43—42.22 **3 Claims**

1. A fishing lure comprising:

a body having a front end portion and sides, the front end portion of the body including a slot which extends rearwardly, said slot being open to the front of the body and being open to the sides of the body,

a rib extending longitudinally in said slot, and

a bib having a rear mounting portion releasably receivable within said slot and a forward portion shaped to cause the lure, when in use, to ride at a predetermined depth in the water, said rear mounting portion being of plate-like form and having a slot extending forwardly from a rear edge of the mounting portion, said slot in the mounting portion dividing said portion into two opposed wings having opposed inner edges defining the opposed sides of the slot, whereby the slot in the mounting portion receives the rib when the mounting portion of the bib is moved rearwardly into the slot in the body, said bib being composed of a semi-rigid material whereby the wings are capable of limited flexing, the rib and the inner edges of the wings having interengageable formations which interlock by outward deformation of the wings when the mounting



portion is pushed into said slot in the body whereby to lock the mounting portion in said slot, the mounting portion being releasable to permit withdrawal by flexing the forward portion of the bib, and

means for attachment of the body to a fishing line.

5,351,434

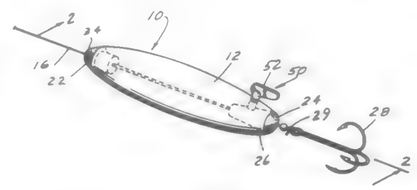
BREAKAWAY JIG

Henry J. Krenn, 2545 Solano Rd., Unit F, Shell Beach, Calif. 93449

Filed Nov. 23, 1993, Ser. No. 155,840

Int. Cl.[5] A01K *95/00*

U.S. Cl. 43—44.91 **10 Claims**



1. A breakaway jig device adjustably affixed to a fishing line, said breakaway jig device comprising:

an elongated body member having suitable weight, whereby the jig will sink to the bottom of a body of water, said body being formed with a front recess and a rear recess, and an elongated bore formed in said body member so as to communicate with said front recess and said rear recess;

a guide plug mounted in said front recess, said guide plug having a central passage formed therein to align with said elongated bore of said body member;

a securing plug mounted in said rear recess, said securing plug having a central passage formed therein to align with said elongated bore, wherein said passages of said guide plug and said securing plug are axially aligned with the center axis of said elongated bore in said body member, whereby the fishing line is received therethrough to extend outwardly and rearwardly of said body member; and

wherein means for adjustably securing said fishing line comprises a set screw threadably mounted adjacent the rear of said body member, whereby said set screw forcibly engages said securing plug so as to fixedly engage the fishing line within the passage of said securing plug.

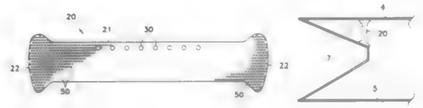
VOL 1167 ISS 1 OC 4 1994 UMI

5,351,435

DEVICE TO FACILITATE REMOVAL OF JUVENILE AND FEMALE CRABS FROM THE INSIDE OF CRAB TRAPS AND METHOD OF USE THEREOF

Robert Hill, 2806 Telequana No. 1, Anchorage, Ak. 99517

Filed Jun. 22, 1993, Ser. No. 80,197
Int. Cl.[5] A01K *69/00*
U.S. Cl. 43—100 12 Claims



1. A device to prevent crab from becoming stuck in a crab trap having four walls, a top and a bottom, and having a wedge space portion having an upper part and a lower part formed between a tunnel entrance in said trap and the top of said trap, said device comprising:

a) a shield, having a solid, unbroken, smooth surface, having an upper portion that conforms to the length and width of the upper part of the wedge space portion and a lower portion molded to conform to the length and width of the lower part of the wedge space portion, said shield being removably installed between the top of said crab pot and the tunnel entrance of said crab pot; and

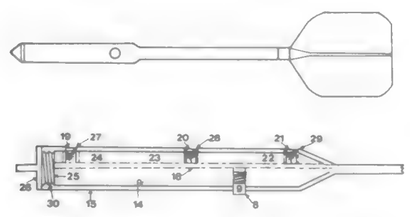
b) means to secure said shield in said crab pot.

5,351,436

FLY SWATTER WITH SOUND EFFECTS

Merrick W. Spalding, and Kathleen J. Spalding, both of Rt. 2 Box 402, Gainesboro, Tenn. 38562

Filed Jul. 29, 1991, Ser. No. 737,363
Int. Cl.[5] A01M *3/02*
U.S. Cl. 43—137 7 Claims



1. An improved fly swatter comprising:

a working end,

a handle, the handle being elongate and having a terminal distal end, the terminal distal end having a cavity inwardly extending toward the working end,

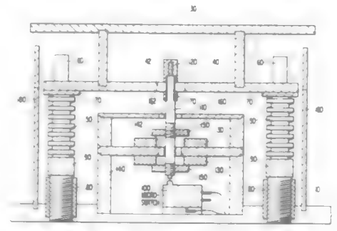
an electronic sound circuit board which is located and secured inside said cavity of said handle and which, when activated, emits sound effects and/or tunes.

5,351,437

MOISTURE SENSITIVE IRRIGATION CONTROL SYSTEM

Fred W. Lishman, 2517 Farmcrest Dr., #125, Herndon, Va. 22070

Filed May 12, 1992, Ser. No. 881,664
Int. Cl.[5] A01G *25/00*
U.S. Cl. 47—79 17 Claims



1. A moisture sensitive irrigation system for controlling irrigation of multiple volumes of soil, comprising:

a supply of water;

means for containing a control volume of soil, the moisture content of which is indicative of the moisture content of said multiple volumes of soil;

means for detecting the moisture content of said control volume of soil; and

means for irrigating each of said multiple volumes of soil including said control volume when said means for detecting has detected that the moisture content of said control volume of soil has reached a predetermined low threshold, and for terminating said irrigation when the moisture content of said control volume of soil has reached a predetermined high threshold;

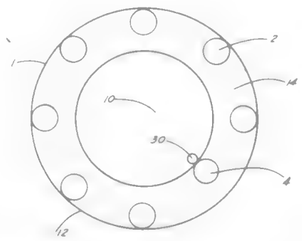
wherein said means for detecting comprises spring-biased weight responsive means for operating said means for irrigating by operatively communicating with said means for irrigating upon said control volume of soil reaching a weight corresponding to said predetermined low and high thresholds.

5,351,438

PLANTER CONTAINER FOR INDOOR AIR PURIFICATION

Billy C. Wolverton, 514 Pine Grove Rd., and John D. Wolverton, P.O. Box 411, both of Picayune, Miss. 39466

Continuation-in-part of Ser. No. 832,479, Feb. 7, 1992, Pat. No. 5,217,696. This application Jun. 7, 1993, Ser. No. 72,835
Int. Cl.[5] A01G *25/06*
U.S. Cl. 47—79 4 Claims



1. An apparatus for planting a houseplant comprising:

a container defining an interior soil containing space, defined by a perforated base and a surrounding wall rising to a top level;

a plurality of vertical vent tubes upwardly extending from said base up to, and terminating at, said top level, said tubes being open through said base, and open at said top level;

said vent tubes being imperforate and sealingly enclosed from said base to an intermediate level;

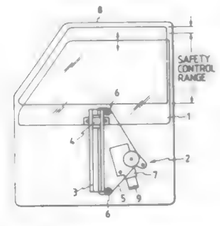
said vent tubes being perforated from said intermediate level to said top level.

5,351,439

POWER WINDOW APPARATUS HAVING IMPROVED SAFETY DEVICE

Hitoshi Takeda; Keiichi Tajima, and Toru Nakayama, all of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Apr. 15, 1993, Ser. No. 47,437
Claims priority, application Japan, Apr. 21, 1992, 4-033043[U]; Oct. 21, 1992, 4-305855
Int. Cl.[5] E05F *15/16*
U.S. Cl. 49—28 19 Claims



1. A power window apparatus, comprising:

a drive source for moving a window between fully open and fully closed positions;

first detecting means for detecting a speed of movement of said window;

second detecting means for detecting whether or not an object is caught in said window by comparing a speed detected by said first detecting means with a reference value;

stopping means for stopping movement of said window when an object is caught in said window as detected by said second detecting means;

third detecting means for detecting an ambient temperature of the window moved by said drive source; and

altering means for altering said reference value of said second detecting means in accordance with the temperature detected by said third detecting means.

5,351,440

VERTICAL LIFT DEVICE

Lloyd Vincent, P.O. Box 1019, Three Rivers, Calif. 93271

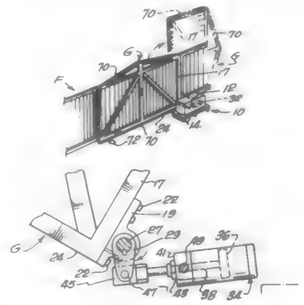
Filed Nov. 27, 1992, Ser. No. 982,431
Int. Cl.[5] E05F *11/24*
U.S. Cl. 49—340 16 Claims

1. Apparatus for raising and lowering a barrier, in a vertical plane, wherein the barrier is rotatable about a fixed pivot comprising, in combination

a hydraulic motor, said motor being anchored relative to the barrier at a predetermined distance therefrom, and operable in coplaner relationship with the barrier;

a link affixed to the barrier at its pivot point and an end thereof extending therebelow; said motor being attached to said end of said link such that when said motor extends or retracts, said barrier is raised and lowered in response thereto;

and said motor having trunions disposed thereon to secure said motor against transverse displacement, fixed bearing members for receipt of said trunions to permit rotation of said motor in said bearing members in a plane parallel to the plane of rotation of the barrier such that optimum force is consistently applied on said barrier irrespective of its pivot;



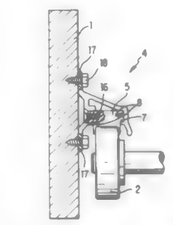
and control means for operating said motor in response to a signal.

5,351,441

SLIDING DOOR

Michael Hörmann, Marienfeld, Fed. Rep. of Germany, assignor to Marantec Antriebs-und Steuerungstechnik GmbH & Co. Produktions KG, Marienfeld, Fed. Rep. of Germany

Filed Mar. 1, 1993, Ser. No. 25,031
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1992, 4206565
Int. Cl.[5] E05F *11/54*
U.S. Cl. 49—362 7 Claims

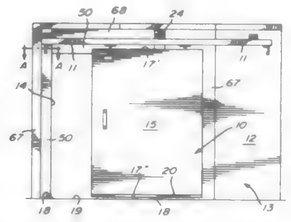


1. A sliding door, and particularly a sliding door bottom rail with attached door structure of desired configuration, movable back and forth in its sliding direction by a stationary motor drive unit, which has a drive pinion that meshes with a gear rack assembly attached to the door panel or bottom rail, wherein the rack assembly comprises a series of sequentially positioned rack segments inserted in a retaining channel extending in the sliding direction of the door panel and attached to said panel, said segments being made as finished molded pieces and secured in position relative to each other with uniform tooth pitch, and wherein the rack segments are provided at their respective adjoining ends with interlocking means comprising a tenon formed on one of the segments and a mortise in the adjoining segment, characterized in that,

teeth which extend across the interlocking means are each composed of separate portions, formed by the tenon on the one hand and by the mortise on the other hand, and particularly with the tenon forming the central tooth portion as viewed over the width of the rack segment and the mortise forming the end portions adjoining both sides of the central portion.

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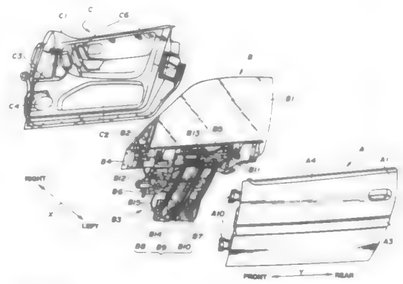
5,351,442
DOOR CLOSURE FOR REFRIGERATION HOUSING
Jean-Pierre Gingras, 1693 Marie-Dubois, Carignan, Quebec, Canada J3L 3P9
Filed Aug. 27, 1992, Ser. No. 936,216
Int. Cl.[5] B24C 3/37
U.S. Cl. 49—411 **15 Claims**



1. A slidable door displaceable on a top support rail from a closed position over a door opening to an open position to one side of said door opening, said slidable door comprising a rectangular door panel having door support means in a top edge thereof for displaceable support engagement with said top support rail, guide means provided in a lower edge of said door panel, spaced bearing means secured at predetermined locations adjacent a bottom edge of said door opening and disposed for engagement by said guide means, said guide means having door urging means to displace said door panel adjacent a frame of said door opening to close said door opening, said top support rail being a straight rail secured at an angle with respect to a vertical surface plane of said door opening so that when said door panel is in front of the door opening it closes said opening, and when displaced to said open position to one side of said door opening it is positioned outwardly of said plane of said door opening by said support means to which a top edge of said door is displaceably attached and said guide means to which a lower edge of said door is guidingly engaged, said guide means being a guide channel in said lower edge of said door panel, said channel having opposed parallel guide walls, said guide channel having an inlet end for receiving said spaced bearing means, an inner one of said guide walls having an outwardly angulated end section at said inlet end extending toward said door opening to frictionally engage with a first bearing means to cause said door panel to be urged closer to said door opening, said bearing means being constituted by a first and second guide post having a bearing surface and adjustably secured on an eccentric connection in a floor adjacent a respective one of opposed side edges of said door opening, said bearing surface being a cylindrical side wall of said guide post.

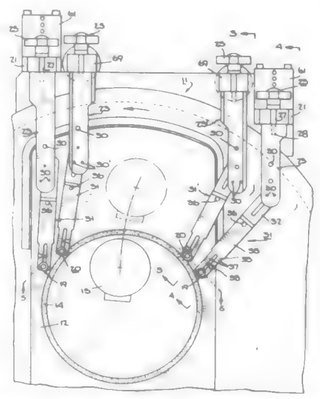
5,351,443
AUTOMOTIVE DOOR WITH WINDOW PANE LIFTER MODULE
Koichi Kimura; Hiroshi Tsuchiya; Kenichi Hirooka, and Hiromitsu Nishikawa, all of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd. and Ohi Seisakusho Co. Ltd., both of Japan
Filed Dec. 28, 1992, Ser. No. 996,828
Claims priority, application Japan, Dec. 28, 1991, 3-359739; Dec. 28, 1991, 3-359740; Dec. 28, 1991, 3-359741; Dec. 28, 1991, 3-359742
Int. Cl.[5] B60J 5/04
U.S. Cl. 49—502 **21 Claims**

1. An automotive sashless door having a window pane, comprising:
an outer module including an outer panel and an inner panel which are connected to each other;
an inner module; and
a window pane lifter module interposed between said outer and inner modules, said window pane lifter module including a plurality of horizontal bracket members, a plurality of vertically extending guide rails secured to said horizontal bracket members to constitute a grid structure, a horizontal reinforcing member secured to said horizontal bracket members to reinforce said grid structure, a carrier plate slidably guided by said guide rails and carrying said window pane, a regulator secured to said reinforcing member to drive said carrier plate and angle adjusting



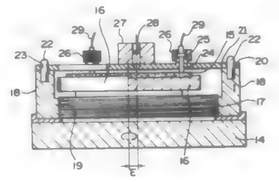
means for adjusting an angle defined between said window pane and said carrier plate,
wherein said bracket members, said guide rails, said reinforcing member, said carrier plate, said window pane, said regulator and said angle adjusting means have been assembled to constitute a single unit before said window panel lifter module is connected to said outer and inner modules.

5,351,444
BLADE TRACK CONTROL SYSTEM
Robert E. Steere, Jr., Boonton, N.J., assignor to Silicon Technology Corporation, Oakland, N.J.
Filed Sep. 25, 1992, Ser. No. 951,393
Int. Cl.[5] B24B 7/00
U.S. Cl. 451—69 **21 Claims**



1. A blade track control system for an ID saw blade, said system comprising
a pair of pneumatic bearing pads disposed in spaced facing relation to an ID saw blade mounted on a given datum plane to provide an aerodynamic bearing surface film between each respective bearing pad and the saw blade during cutting of an ingot;
means connected to each said respective bearing pad to adjust the position of said respective bearing pad relative to said datum plane to deflect the ID saw blade from said datum plane into a cutting plane for cutting of a wafer there from; and
a pair of sensors disposed in spaced facing relation to said blade for sensing a deviation of the blade from said cutting plane thereat during cutting, each sensor being disposed adjacent a respective bearing pad and connected to said means to deliver a signal thereto indicative of a deviation of the blade thereat from said cutting plane during cutting of the ingot to effect an adjustment of the position of said respective bearing pad relative to said datum plane while maintaining said bearing surface film between said respective bearing pad and the saw blade.

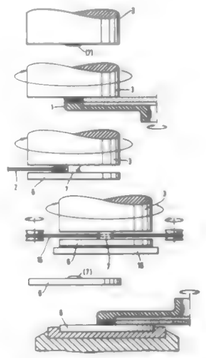
5,351,445
APPARATUS FOR GRINDING END FACES OF FERRULES TOGETHER WITH OPTICAL FIBERS EACH FIRMLY RECEIVED IN FERRULES
Mitsuo Takahashi, Matsudo, Japan, assignor to Seikoh Giken Co., Ltd., Matsudo, Japan
Filed Feb. 18, 1993, Ser. No. 19,303
Claims priority, application Japan, Dec. 15, 1992, 4-354537
Int. Cl.[5] B24B 7/16, 7/24
U.S. Cl. 451—271 **13 Claims**



1. An apparatus for grinding end faces of a plurality of ferrules each having an optical fiber firmly received therein, comprising:
a platform;
a grinding board assembly mounted on said platform, said grinding board assembly including
a grinding board having a working surface; and
a driving mechanism for rotating said grinding board while simultaneously displacing said board along a horizontal reference plane;
a single ferrule holder for holding said plurality of ferrules, the end face of each of said ferrules being oriented toward the working surface of said grinding board;
ferrule holder supporting means for movably supporting said ferrule holder, a surface of said ferrule holder being positioned by said ferrule holder supporting means in parallel with said reference plane upon completion of a grinding operation; and
biasing means for biasing said ferrule holder toward the working surface of said grinding board.

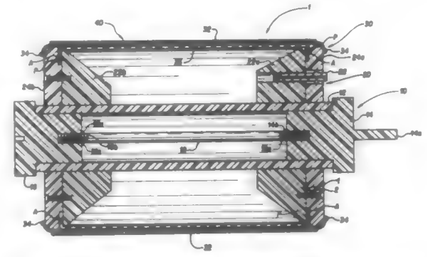
5,351,446
METHOD AND APPARATUS FOR THE ROTARY SAWING OF BRITTLE AND HARD MATERIALS
Karlheinz Langedorf, Burghausen, Fed. Rep. of Germany, assignor to Wacker-Chemtronic Gesellschaft für Elecktronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany
Filed Sep. 1, 1992, Ser. No. 938,691
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1991, 4134110
Int. Cl.[5] B24B 1/00
U.S. Cl. 451—28 **7 Claims**

1. A method for the sawing of a workpiece ingot of a brittle and hard material into thin wafers, said ingot having an end face with central material projections, and said ingot having a longitudinal axis, which method comprises the steps of:
grinding the end face of said workpiece ingot to remove said central material projections while the workpiece ingot is rotating;
sawing the workpiece ingot by means of an annular saw to produce a wafer, the workpiece ingot being rotated around said longitudinal axis;
terminating said sawing by means of said annular saw, said



wafer remaining joined to the ingot by a residual joint, having a narrowest point;
separating the wafer from the workpiece ingot by means of a separation technique, which is alternative to said sawing by means of an annular saw and which leaves behind central material projections from said residual joint both on the workpiece ingot and on the wafer separated therefrom; and
grinding said wafer to remove said central material projections on the wafer.

5,351,447
INFLATABLE SANDING DRUM
Robert J. Grauert, 24 Spruce St., Shillington, Pa. 19607
Filed Jan. 8, 1993, Ser. No. 2,051
Int. Cl.[5] B24D 9/02
U.S. Cl. 451—505 **7 Claims**



1. A device for use with an abrasive member and an abrading machine so as to abrade a predetermined surface area, said device comprising:
a connection member connectable to the abrading machine so as to be rotated, said connection member includes:
a pipe having a first end and a second end,
a distal end portion inserted into said first end of said pipe,

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said distal end portion connectable to the abrading machine,

a proximal end portion inserted into said second end of said pipe, and

a junction rod inserted into said pipe, said junction rod securing said distal end portion and said proximal end portion in said pipe, wherein said distal end portion and said proximal end portion each have thread holes, and said junction rod has two threaded ends each engagable with a respective one of said thread holes of said distal end portion and proximal end portion;

air-chamber forming means coupled to said connection member for forming an air chamber with a desired air pressure around said connection member, said air-chamber forming means comprising a chamber wall which defines said air chamber;

a cover member attached to said chamber wall of said air-chamber forming means so as to cover said chamber wall, wherein;

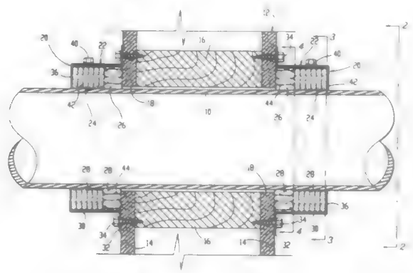
the abrasive member is attached to said cover member and is rotatable with said connection member so as to abrade the predetermined surface.

5,351,448

FIRE BARRIER

Henry Gohlke, Norman, Okla., and Roger L. Rumsey, Wichita, Kans., assignors to Balco, Inc., Wichita, Kans.

Filed Apr. 19, 1993, Ser. No. 49,158
Int. Cl.[5] F16K *17/38*
U.S. Cl. 52—1 **8 Claims**



1. A fire barrier for use in connection with a structural wall having a hole through which a thermoplastic conduit extends, the fire barrier comprising:

a housing having a side wall adapted to extend around a hole and conduit and defining an interior space extending between the conduit and the housing, a first axial end configured to attach to a structural wall, and a second axial end provided with an end wall adapted to extend between the side wall and a conduit to substantially close off the interior space;

a first support matrix provided within the housing adjacent the second axial end and defining a plurality of voids adapted to extend radially between a conduit and the side wall of the housing;

a second support matrix provided within the housing adjacent the first axial end and defining a plurality of longitudinal voids adapted to extend in a direction substantially parallel to the length of the conduit;

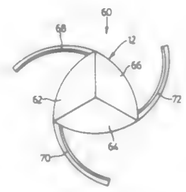
an intumescent material substantially filling the voids of the first and second support matrices so that as a fire adjacent the wall causes failure of the conduit, the intumescent material expands in the directions of orientation of the voids and forms a barrier that prevents the fire from propagating through the hole.

5,351,449

STADIUM BUILDING

Christopher M. Allen, Nepean, and Roderick G. Robbie, Toronto, both of Canada, assignors to 878953 Ontario Inc. and Rodarun Investments, Ltd., Ontario, Canada

Continuation of Ser. No. 836,595, Feb. 18, 1992, abandoned. This application Sep. 30, 1993, Ser. No. 128,754
Int. Cl.[5] E04H *3/10*
U.S. Cl. 52—6 **9 Claims**



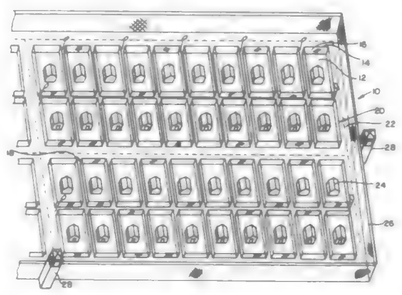
7. A repositionable roof system for a stadium comprising two eccentric horizontal circular track segments each one of said two track segments comprising the sole support for an ungular roof segment which is mounted for horizontal movement along said one track segment, the circular track segments positioned such that said ungular roof segments may be translated horizontally in a circular direction rotating 180° degrees from a first position in opposed abutting relationship wherein the segments form an enclosed roof to a second position in spaced relationship wherein each segment faces the opposite direction than in the first position, and wherein the segments face each other in the same manner as in the first position but at a considerable gap whereby the interior of the building is exposed.

5,351,450

ARRANGEMENT FOR INCARCERATION PROVIDING SELF SUFFICIENT ISOLATION

Andrei Moskowitz, 265 W. 72nd St., New York, N.Y. 10023

Filed Sep. 22, 1992, Ser. No. 948,325
Int. Cl.[5] E04H *3/08*
U.S. Cl. 52—106 **2 Claims**



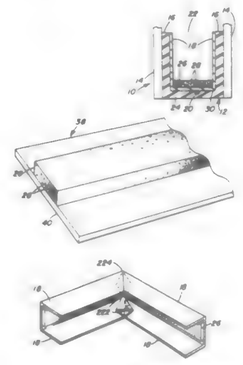
1. An arrangement for providing self-sufficient incarceration comprising a central control and a plurality of dwelling units each for housing an inmate, each dwelling unit including means enabling the housed inmate to care for his basic needs, such means comprising means for storing and preparing food, a water supply for food preparation, cleaning, and personal hygiene, each dwelling unit comprising a dwelling structure and an adjoining area of land open to the weather and freely accessible to the unit occupant, a barrier surrounding each dwelling unit for confining an occupant to within said each unit, said barrier including a portal having externally controlled lock means, and a centrally controlled communications means providing controllable and monitorable communication to and from each dwelling unit.

5,351,451

SPACER AND SPACER FRAME FOR AN INSULATING GLAZING UNIT

Stephen C. Misera, Tarentum, and William R. Siskos, Delmont, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 906,645, Jun. 30, 1992, Pat. No. 5,255,481, which is a division of Ser. No. 578,697, Sep. 4, 1990, Pat. No. 5,177,916. This application May 28, 1993, Ser. No. 64,264
Int. Cl.[5] E06B *7/12*; E04C *2/26, 2/38*
U.S. Cl. 52—172 **14 Claims**



1. Spacer stock for use in fabricating a spacer for an insulating glazing unit comprising:

an elongated member of a predetermined length having only one base, only one first upright leg connected to the base and only one second upright leg connected to the base spaced from the first upright leg to provide the elongated member with a generally U-shape cross section, with each of the upright legs having an edge spaced from the base;

a pair of crease lines in the first upright leg, the crease lines between the edge of the first upright leg and the base, the crease lines having a predetermined spaced distance adjacent the edge of the first upright leg and extending toward the base with the spaced distance between the pair of crease lines decreasing as the distance from the edge of the first upright leg increases;

a pair of crease lines in the second upright leg, the crease lines between the edge of the second upright leg and the base, the crease lines having a predetermined spaced distance adjacent the edge of the second upright leg and extending toward the base with the spaced distance between the pair of crease lines decreasing as the distance from the edge of the second upright leg increases;

a notch defined as a first notch in the edge of the first upright leg between the pair of crease lines in the first upright leg, the first notch having a depth less than the distance between the edge of the first upright leg and the base to provide a portion of the first upright leg within the pair of crease lines in the first upright leg, and

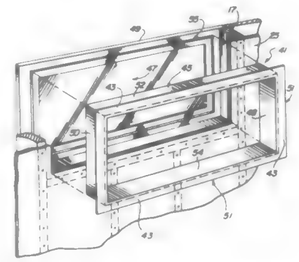
a notch defined as a second notch in the edge of the second upright leg between the pair of crease lines in the second upright leg, the second notch having a depth less than the distance between the edge of the second upright leg and the base to provide a portion of the second upright leg within the pair of crease lines in the second upright leg.

5,351,452

DRYWALLING METHOD AND APPARATUS

James R. Gates, Glendora, Calif., assignor to Gateway Drywall Company, San Dimas, Calif.

Filed Aug. 31, 1993, Ser. No. 114,474
Int. Cl.[5] E04B *1/00*
U.S. Cl. 52—254 **16 Claims**



1. Apparatus for use in drywall installation adjacent a stud comprising:

a flange member means for nailing to said stud;

a panel member means mounted at a right angle to said flange member means for positioning said flange member means to receive the end of a drywall panel;

a window frame located behind the stud; and

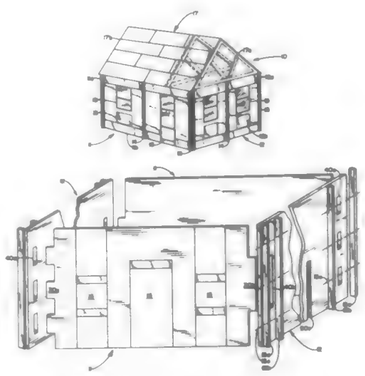
means for attaching said panel member means to said window frame, said means comprising a tongue means mounted to said window frame and a groove means in said panel means for receiving said tongue means.

5,351,453

RAPIDLY ERECTABLE HOUSING UNITS

Robert H. Leslie, Edina, Minn., assignor to Home Builders International, Inc., Minneapolis, Minn.

Filed Feb. 25, 1993, Ser. No. 22,109
Int. Cl.[5] E04B *1/343*
U.S. Cl. 52—270 **9 Claims**



1. A rapidly erectable housing unit including:

a. a pair of vertically positionable side walls, each having a pair of opposite ends;

b. a pair of vertically positionable end walls, each having a pair of opposite ends;

c. mortise and tenon structures provided on respective ends of said side walls and said end walls to provide means for

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joining said ends of said side walls to ends of said end walls.

d. said tenon structures extending through said mortise structures;

e. clamp means attachable to said extending tenon structures and abutting the area adjacent said mortise structures to provide a positive locking effect thereto preventing removal of said tenon structure from said mortise structure, and,

f. a roof structure positionable over said joined walls to provide a covering for the area defined by said joined side and end walls.

5,351,454

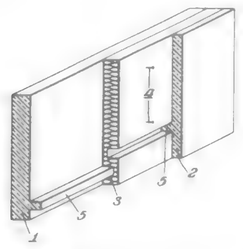
SELF-SUPPORTING FACADE COMPONENT IN SANDWICH CONSTRUCTION

Helfried Hähne, Kelheim, and Johann-Dietrich Wörner, Darmstadt, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 467,862, Jan. 22, 1990, abandoned. This application May 24, 1991, Ser. No. 705,514

Int. Cl.[5] E04B *2/26, 1/40*

U.S. Cl. 52—309.17 7 Claims



1. A self-supporting facade component in sandwich construction, composed of at least two self-supporting layers and at least one interposed insulating layer, which component is essentially metal-free, the self-supporting layers being composed of fiber-reinforced concrete and the layers being positively fixed to one another by essentially non-metallic fixing means, and wherein at least one of the self-supporting layers is a load-bearing layer and one of the self-supporting layers is a facing layer located on the outside, the facing layer and the load-bearing layer having horizontal shoulders which are mutually offset in height and which protrude into an interspace between the two layers and which are superimposed in such a way that the force of the facing layer's own weight is transmitted from its shoulder through the material of the insulating layer to the shoulder of the load-bearing layer.

5,351,455

METHOD AND APPARATUS FOR WALLBOARD ATTACHMENT

Douglas J. Schoonover, Redondo Beach, and Michael W. Doane, San Diego, both of Calif., assignors to American ConForm Industries, Inc., Santa Ana, Calif.

Continuation-in-part of Ser. No. 45,678, Apr. 9, 1993, abandoned. This application Sep. 10, 1993, Ser. No. 118,657

Int. Cl.[5] E04B *5/00*

U.S. Cl. 52—410 11 Claims

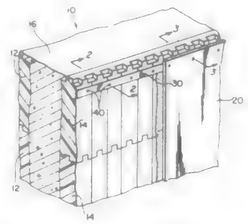
1. A wall assembly comprising:

a support sheet having an upper edge, an inner surface, and an outer surface;

a elongated fastener strip having a plurality of holes formed therein evenly spaced apart lengthwise, said fastener strip being placed against said outer surface of said support sheet parallel to said upper edge thereof;

a plurality of nails, said nails having shanks, and heads and tips at opposite ends of said shanks, said shanks being longer than said thickness of said support sheet, and said heads having a larger diameter than said holes, one said nail being inserted through each of said holes with said shank extending through said support sheet and said tips extending beyond said inner surface of said support sheet;

a plurality of washers, one said washer being placed over each of said tips of said nails and pushed against said inner surface of said support sheet;



an outer sheet having an inner surface and an outer surface, said inner surface of said outer sheet being placed against said outer surface of said support sheet; and

a plurality of elongated fasteners extending from said outer surface of said outer sheet through said outer sheet and into and through said fastener strip at spaced-apart intervals.

5,351,456

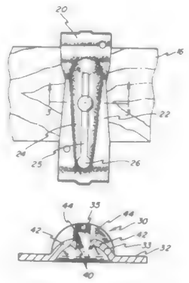
CONCRETE FORM TIE WEDGE

John R. Paine, Jr., Centerville, Ohio, assignor to Dayton Superior Corporation, Miamisburg, Ohio

Filed Jan. 21, 1993, Ser. No. 6,840

Int. Cl.[5] E04B *1/38*

U.S. Cl. 52—426 8 Claims



1. For use in maintaining a predetermined spaced relation between opposed forms prior to and during the pouring of a concrete wall therebetween, the combination comprising:

(a) a rod of substantially uniform section over at least the major portion of the length thereof, said rod including a head of substantially larger section than said rod on each end of said rod; and

(b) a wedge including a planar portion having an opening therein which engages a supporting means for a form along a first surface and an elongated central portion formed forwardly and at an angle to a second surface of said planar portion to define a ramp, said ramp having an elongated keyhole slot therethrough of a width intermediate the width of said rod and head sections and having the lower end thereof enlarged to receive said rod head therethrough, wherein portions of said ramp bordering each side of said elongated keyhole slot are formed inwardly of said ramp to define a flanged rim which is of greater thickness in the direction perpendicular to said planar member than the remainder of said ramp;

wherein said rod head engages said wedge by extending through said opening in said planar member and said elongated slot of said ramp to engage said ramp, whereby said flanged rim braces said ramp against deflection.

5,351,457

WALL CONSTRUCTION AND SPACER FOR USE THEREWITH

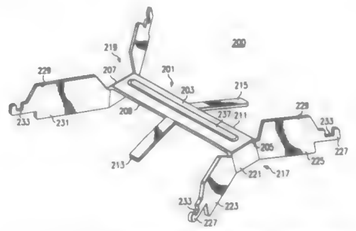
William J. Colen, 11248 Jamestown, Dallas, Tex. 75230

Continuation-in-part of Ser. No. 969,083, Oct. 30, 1992, Pat. No. 5,231,815, which is a continuation-in-part of Ser. No. 775,285, Oct. 11, 1991, Pat. No. 5,159,795, which is a continuation-in-part of Ser. No. 553,176, Jul. 13, 1990, Pat. No. 5,056,289. This application Aug. 3, 1993, Ser. No. 99,925

The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.

Int. Cl.[5] E04B *1/41*

U.S. Cl. 52—438 3 Claims



1. A spacer in the construction of a wall, comprising:

a base including a medial portion, first and second opposed ends and a pair of opposed edges;

at least one spacing tab attached to the medial portion of the base along one of the edges thereof and extended at an angle from the base; and

first and second supports located at and extending from the first and second opposed ends of the base, respectively, each of the supports having a medial portion and at least one leg having a distal end, the medial portion of each support extending at a predetermined angle with respect to the base and each associated leg extending at a predetermined angle with respect to the medial portion, wherein each of the legs include an outer support tab having a notch therein for receiving and maintaining a joint reinforcement member.

5,351,458

SPACED-PLANK FLOOR SYSTEM FOR ANIMAL ENCLOSURES

Russell B. Lehe, 250 Parliament Pl., Mount Prospect, Ill. 60056

Filed Sep. 30, 1992, Ser. No. 954,899

Int. Cl.[5] E04B *5/00*

U.S. Cl. 52—586.2 11 Claims

1. A spaced-plank floor system for supporting animals in an animal enclosure, said floor system comprising

a plurality of spaced longitudinal planks extending horizontally in a parallel spaced relation,

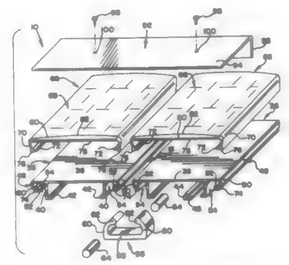
each of said planks including a metal inverted channel comprising a substantially horizontal deck member having a pair of depending structural flanges affording rigidity and resisting vertical bending of the plank,

said deck member having a pair of edge channels projecting laterally thereon beyond the respective depending flanges,

each of said edge channels having a depending leg extending downwardly from said deck member and a lower leg extending laterally inwardly from said depending leg toward the corresponding flange to afford a longitudinal slot therebetween,

a plurality of generally channel-shaped connectors extending between said planks at longitudinally spaced intervals and interlocking with said edge channels on said inverted channels for maintaining a predetermining spacing between said planks and for transferring vertical loading between the adjacent planks,

each of said connectors being generally in the form of a U-shaped channel having a generally horizontal member with a pair of upturned flanges formed with in-turned



hook members for slidable reception in said edge channels of said planks,

and a plurality of stop members made of a soft resilient rubber-like material,

said stop members being substantially larger in cross-sectional width than the width of said longitudinal slots but being dimensioned to fit tightly into said slots adjacent the ends of said connectors when pushed into said slots during the assembly of said planks and connectors, whereby said stop members are effective to locate said connectors in spaced positions along said edge channels and said slots against sliding movement therealong.

5,351,459

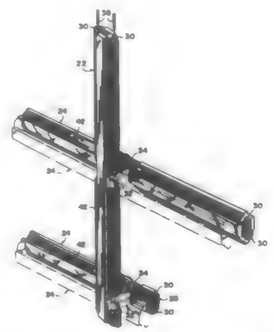
STRENGTH AND DECORATION WINDOW GRID SYSTEM

Robert A. Kassl, 68 Factory Pond Rd., Locust Valley, N.Y. 11560, and Robert N. Kassl, 15 Sparrow La., Huntington, N.Y. 11746

Filed Dec. 10, 1992, Ser. No. 988,826

Int. Cl.[5] E04D *1/00*

U.S. Cl. 52—656.5 9 Claims



1. A grid system for a window having a sash and at least one window pane, comprising at least one elongated vertical bar

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and one elongated horizontal bar arranged in a crossing grid pattern between the sides of the sash and dividing the pane into a plurality of lights, each one of said vertical and horizontal bars having a double mitered cutout in the area of the crossing with the other bar, said cutouts fitting transversely one within the other so that said vertical and horizontal bars form a mating joint with said crossing vertical and horizontal bars defining mitered corners, at least one elongated rod extending lengthwise through each of said bars interconnecting the transversely mating bars together.

5,351,460

ELECTRICAL BOX LOCATOR

Herman Small, R.D. #7, Box 7115, Mercer, Pa. 16137

Filed Oct. 25, 1991, Ser. No. 791,795
Int. Cl.[5] **E04G** *23/00*; **B25B** *11/00*
U.S. Cl. 52—741.1 **14 Claims**



1. A method for:
manufacturing an apparatus for positioning at least one electrical box at a predetermined height along a side portion of a wall stud prior to overlaying wall material about the at least one electrical box, the wall stud further having a front portion for the disposition of a portion of the wall material thereupon, the at least one electrical box having outer top and bottom portions, an outer front portion and at least one outer side portion; and
positioning the at least one electrical box at the predetermined height along the side portion of the wall stud prior to overlaying wall material about the at least one electrical box;
said apparatus comprising:
a strip having an overall length, width and depth and at least one end;
the strip having a front portion for being interfaced with the front portion of the wall stud;
the strip having at least one recessed area being indented into the front portion of the strip and for being positioned adjacent the side portion of the wall stud;
the at least one recessed area being configured to accommodate a portion of the at least one electrical box;
the at least one recessed area being disposed at a predetermined position along the strip;
the predetermined position of the at least one recessed area corresponding to the predetermined height for mounting the at least one electrical box along the side portion of the wall stud;
the at least one recessed area having a substantially flat side surface, said substantially flat side surface for being positioned substantially flush with the side portion of the wall stud and for receiving and contacting a side portion of the at least one electrical box for positioning the at least one electrical box;
the at least one recessed area having a back portion, having a substantial portion which is flat, said back portion of receiving and contacting a front portion of the at least one electrical box for positioning the at least one electrical box;
the at least one recessed area having a top portion, having a substantial portion which is flat, said top portion for receiving and contacting a top portion of the at least one electrical box for positioning the at least one electrical box;
the at least one recessed area having a bottom portion, having a substantial portion which is flat, said bottom portion for receiving and contacting a bottom portion of the at least one electrical box for positioning the at least one electrical box;
the strip being configured such that, during positioning of the at least one electrical box at the predetermined height, the back portion of the at least one recessed area and
the side portion of the wall stud; simultaneously contact a portion of the at least one electrical box for positioning the at least one electrical box at the predetermined height;
said top portion being disposed away from said bottom portion a distance to receive the at least one electrical box;
said distance between said top portion and said bottom portion being substantially the same as a distance between the outer bottom portion and the outer top portion of an electrical box;
said flat side surface being disposed substantially orthogonally to and adjacent to all of: said back portion, said top portion and said bottom portion;
said flat side surface intersecting all of: said back portion, said top portion and said bottom portion, to form a first intersection means;
said back portion being disposed substantially orthogonally to and adjacent to both said top portion and said bottom portion;
said back portion intersecting both said top portion and said bottom portion, to form a second intersection means;
the intersection means being disposed:
to form a first internal edge between said flat side surface and back portion within the at least one recessed area,
to form a second internal edge between said flat side surface and said top portion within the at least one recessed area,
to form a third internal edge between said flat side surface and said bottom portion within the at least one recessed area,
to form a fourth internal edge between said back portion and said bottom portion within the at least one recessed area,
to form a fifth internal edge between said back portion and said top portion within the at least one recessed area,
to form a first internal corner, within the at least one recessed area, from said flat side portion, said back portion and said top portion, and said first internal edge, said second internal edge and said fifth internal edge,
to form a second internal corner, within the at least one recessed area, from said flat side portion, said back portion and bottom portion, and said first internal edge, said third internal edge and said fourth internal edge;
the front portion of the strip being disposed substantially orthogonally to said flat side surface, said top portion and said bottom portion;
said first internal corner portion being disposed in the at least one recessed area opposite to said second internal corner;
said flat side area, said back portion, said top portion and said bottom portion comprising a single surface to receive and make contact with an outer side portion, the outer top and bottom portions and the front portion of the at least one electrical box; said method comprising the steps of: providing a mold for manufacturing the apparatus; configuring the mold to effect:
the provision of the overall length, width and depth of the strip; and

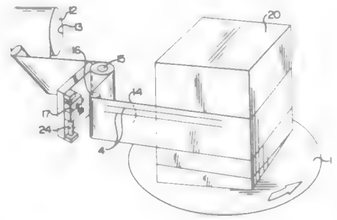
the indenting of the at least one recessed area into the front portion of the strip;
forming the apparatus in the mold;
interfacing the front portion of the strip with the front portion of the wall stud;
positioning the at least one recessed area adjacent the side portion of the wall stud;
positioning the at least one recessed area such that the side surface of the at least one recessed area is substantially flush with the side portion of the wall stud; and
simultaneously contacting both:
the back portion of the at least one recessed area;
and the side portion of the wall stud; with a portion of the at least one electrical box for positioning the at least one electrical box at the predetermined height; and
positioning the at least one electrical box against said continuous surface comprising said flat side surface, said back portion, said top portion, and said bottom portion and the corners of said at least one recessed area and positioning the at least one electrical box at a predetermined height while positioning one end of said strip against a reference area.

5,351,461

INSTALLATION FOR PACKAGING A PALLETIZABLE LOAD

Philippe Fandard, Lyons, and Georges Jaconelli, Brison-Saint-Innocent, both of France, assignors to Newtec International, Viroflay, France

Filed Sep. 10, 1992, Ser. No. 943,302
Claims priority, application France, Sep. 17, 1991, 91 11704
Int. Cl.[5] **B65B** *11/04, 35/54*
U.S. Cl. 53—157 **5 Claims**



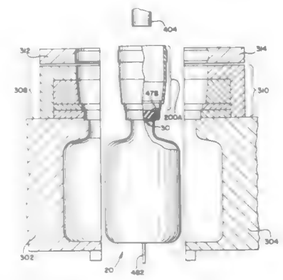
1. An installation for packaging a palletized load formed of a plurality of constituent elements positioned in several layers of palletization, compromising
means for providing at least one separator sheet of a non-slip material between each of the layers of palletization;
a device for delivering, guiding and positioning a stretchable paper tape onto the sides of the palletized load;
means mounting said tape delivering device for movement vertically in translation so that the tape is applied in successive tape windings over the entire height of the palletized load during ascent or descent of the tape delivering device;
a pasting member carried by said tape delivering device and operable for applying adhesive to the stretchable paper tape,
means mounting said pasting member for movement vertically in translation relative to the tape delivering device between an upper position and a lower position during strapping of the load, said pasting member being positioned in the upper position during ascent of the tape delivering device and in the lower position during descent of said delivering device so that the adhesive which is applied by the pasting member is applied only to the part of the paper tape which is to be immediately covered by a successive tape winding; and
means for cutting the stretchable paper tape at the end of the strapping operation.

5,351,462

METHOD AND APPARATUS FOR INSTALLING AN INSERT TO SEAL A CONTAINER

Paul A. Anderson, Arlington Heights, and Colin Colangelo, McHenry, both of Ill., assignors to Automatic Liquid Packaging, Inc., Woodstock, Ill.

Filed Jun. 2, 1993, Ser. No. 71,664
Int. Cl.[5] **B65B** *61/00, 3/02, 43/00*
U.S. Cl. 53—410 **11 Claims**



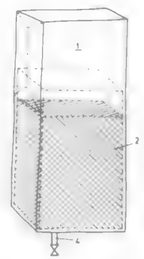
1. A method for forming a package comprising the steps:
molding a parison of a thermoplastic material to form a container body portion while maintaining an access opening thereto;
filling said container body portion with a product;
positioning an insert article within said access opening;
compressing said parison radially inwardly against said insert article to form a bead of said thermoplastic material about said insert article; and
permanently deforming said bead against said insert article so as to form a flange over a portion of said article to retain said article on said container.

5,351,463

METHOD AND APPARATUS FOR MAKING A FILLED AND CLOSED VACUUM PAK

Mathias L. C. Aarts, Bilthoven, Netherlands, assignor to Sara Lee/DE N.V., Utrecht, Netherlands

Filed Nov. 5, 1992, Ser. No. 971,156
Claims priority, application Netherlands, Nov. 7, 1991, 9101862
Int. Cl.[5] **B65B** *7/06, 31/02, 51/14*
U.S. Cl. 53—434 **17 Claims**



1. A method for making a filled and closed vacuum pack, comprising the steps of:

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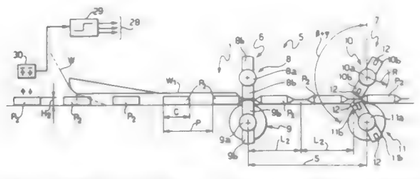
introducing a product into a package so that a portion of said package extends above said product;
providing a vacuum chamber with a flexible portion and subjecting said package to said vacuum within said vacuum chamber;
pleating said flexible portion by said vacuum to form a fold in said portion of said package located above said product, whereby said package portion forms a top wall of said package;
sealing said package portion of the filled package.

5,351,464

PACKAGING MACHINE, PARTICULARLY FOR FORMING FLOW-PACK WRAPPERS AND THE LIKE AND A METHOD OF OPERATING THE MACHINE

Renzo Francioni, Prato Sesia, Italy, assignor to Cavanna S.P.A., Prato Sesia, Italy

Filed Dec. 2, 1992, Ser. No. 984,994
Claims priority, application Italy, Dec. 4, 1991, TO91 A 000940
Int. Cl.[5] B65B *9/00*
U.S. Cl. 53—450 18 Claims



15. A method of operating a packaging machine, in which products to be packaged are inserted in a tubular wrapper which is then closed by at least two closure units disposed in series in the general direction in which the products advance, comprising the steps of:
detecting at least one dimensional characteristic of the products before they are supplied to the closure units and generating a signal indicative of the dimensional characteristic; and
selectively varying the phase difference in the operation of the closure units dependent on the generated signal.

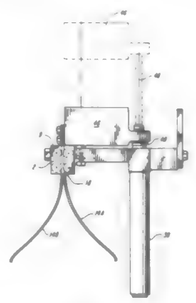
5,351,465

SPREADING DEVICE AND METHOD FOR PARTING CONTAINERS

Robert W. Fortnam, and Charles C. Austin, both of Nashua, N.H., assignors to Austin-Gordon Design, Inc., Nashua, N.H.

Filed Apr. 12, 1993, Ser. No. 46,018
Int. Cl.[5] B65B *43/26, 13/32*
U.S. Cl. 53—492 20 Claims

12. A method of parting a flexible container comprising the steps of
providing a first strip spring having a first end and a second end and extending along a first axis, said first end being substantially flat and said second end being bowed relative to said first axis,
providing a second strip spring having a first end and a second end and extending along said first axis, said first end being substantially flat and said second end being bowed relative to said first axis,
providing a guide block having a groove formed therethrough for receiving each said first and second strip springs and positioning said first and second strip springs in intimate facing contact with each other, said groove extending along said first axis,
joining together said first strip spring first end and said second strip spring first end,
moving said strip springs relative to said guide block in one direction relative to said strip spring first ends causes said first and second strip spring second ends to move into close juxtaposition with one another, and alternately in a second direction opposite to said first direction, thereby causing said second ends to move away from one another in a spreading action.

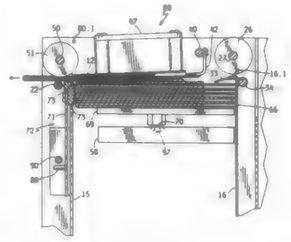


5,351,466

SLEEVER APPARATUS WITH SINGULATE GATE

John S. Lee, Coon Rapids, Minn., assignor to Rimage Corporation, Minneapolis, Minn.

Filed Jun. 10, 1993, Ser. No. 74,391
Int. Cl.[5] B65B *43/22, 43/30*
U.S. Cl. 53—572 16 Claims



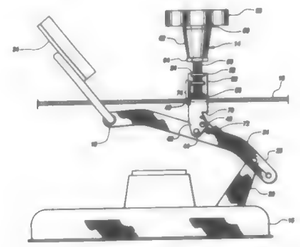
1. A diskette sleeving apparatus for receiving conveyed computer diskettes, sleeving the diskettes, and further conveying the sleeved diskettes, the sleeves comprising a top layer, a bottom layer and having an open end, the bottom layer having a flap extending beyond the open end, the apparatus comprising:
a) conveyance means for conveying the diskettes along a path of travel;
b) a bin for holding a stack of sleeves, the bin having a means of biasing the stack of sleeves, the stack having a topmost sleeve, the bin so oriented as to place the topmost sleeve in a receiving position substantially into the path of travel, the sleeves stacked with the top layer facing upwardly and the open end directed into the path of travel;
c) means for opening the open end of the topmost sleeve for insertion of a conveyed diskette; and
d) a singulate gate transversing the path of travel, adjacent to the topmost sleeve opposite the open end and the singulate gate having a blocking position and having an unblocking position, bias means for urging the singulate gate into the blocking position, the singulate gate having a curved top edge adjacent the topmost sleeve, the curved top edge having a series of microgrooves transverse to the path of travel; whereby as the conveyed diskette with the topmost sleeve is conveyed out of the receiving position engages the curved top edge of the singulate gate, moving the singulate gate from the blocking position to the unblocking position, allowing the conveyed diskette with the topmost sleeve to be further conveyed, and whereby the microgrooves inhibit conveyance of any other sleeves.

5,351,467

HEIGHT ADJUSTMENT MECHANISM FOR RIDING MOWER CUTTING DECK

Harlin J. Trefz; Robert R. Boyd, and Christopher L. Flowers, all of Jackson, Tenn., assignors to Noma Outdoor Products, Inc., Jackson, Tenn.

Filed Jul. 26, 1993, Ser. No. 97,104
Int. Cl.[5] A01D *34/74*
U.S. Cl. 56—16.3 15 Claims



1. In a riding lawn mower having a frame and a cutting deck, apparatus for suspending the cutting deck beneath the frame comprising:
a lifting mechanism selectively operable to raise and lower said cutting deck;
at least one lifting arm having a first end operatively engaged with said lifting mechanism and a second end secured to said cutting deck, movement of said at least one lifting arm effecting vertical movement of said cutting deck;
a suspending member disposed through an opening formed in said frame above a portion of said at least one lifting arm, said member having a lower end secured to said at least one lifting arm and an upper end disposed above said opening in said frame, said suspending member being vertically moveable with said at least one lifting arm; and
support means adjustably secured to said upper end of said suspending member, operative to engage said frame to limit the downward movement of said suspending member and said lifting arm secured thereto, thereby establishing a cutting height for said cutting deck, said support means being vertically adjustable relative to said suspending member to allow selective adjustment of the vertical downward movement of said suspending member.

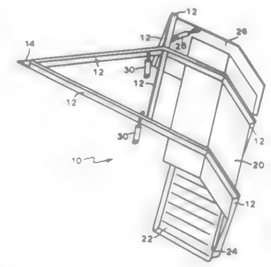
5,351,468

SELECTABLE WINDROWING MOWER ATTACHMENT AND METHOD OF MOUNTING

Joel Pominville, RD3 Box 2540, Middlebury, Vt. 05753

Filed Mar. 31, 1993, Ser. No. 40,840
Int. Cl.[5] A01D *57/30*
U.S. Cl. 56—192 4 Claims

1. A windrow merger for mowers comprising:
a frame means;
a conveyor belt means fixedly mounted on said frame means;
a baffle means attached to said frame means from a hinge means with an actuator means attached to said baffle means to move said baffle means about said hinge means so mower cuttings are caught and fall from said baffle means onto said conveyor belt means; and,



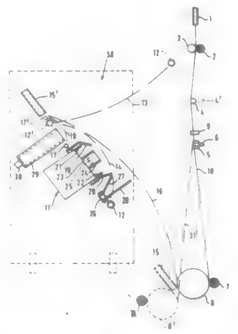
a shock absorber means attached to said frame means and said mower.

5,351,469

SPINNING MACHINE HAVING A PLURALITY OF SPINNING UNITS AND A SERVICING APPARATUS

Oskar Karolyi, Bad Boll, Fed. Rep. of Germany, assignor to Fritz Stahlecker and Hans Stahlecker, Fed. Rep. of Germany

Continuation of Ser. No. 12,372, Feb. 2, 1993, abandoned, which is a continuation of Ser. No. 507,193, Apr. 10, 1990, abandoned.
This application Dec. 7, 1993, Ser. No. 162,793
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1989, 3912573
Int. Cl.[5] D01H *1/00;* B65H *69/04*
U.S. Cl. 57—22 26 Claims



1. A spinning machine comprising:
a plurality of spinning units arranged next to one another which each have at least one spinning device for spinning a yarn, one withdrawing device for withdrawing a spun yarn, and one winding device for winding the spun yarn onto a spool package,
and a movable servicing apparatus which can be applied to the individual spinning units for piecing, said movable servicing apparatus including:
a splicing device for connecting a newly spun new yarn with an old yarn taken off the spool package, said splicing device including a splicing duct having an axis aligned with the yarns during splicing and extending substantially along a tangent of the spool package,
a new yarn pick-up device for picking up the new yarn and for placing it in the splicing device;
an old yarn pick-up device for picking up the old yarn and placing it in the splicing device,

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a yarn storage device arranged approximately as an extension of the splicing duct and including a yarn storage opening facing the splicing travel path of new yarn being produced during splicing, said splicing travel path being spaced from the normal spinning path,

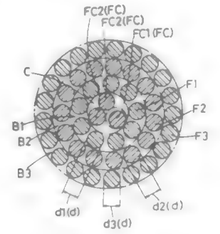
and a new yarn guiding element which is operable only during splicing operations and serves to guide the new yarn to travel adjacent and into the yarn storage opening during splicing operations.

5,351,470

REINFORCING STEEL CORD FOR A TIRE FOR IMPROVING CORROSION RESISTANCE

Yasushi Shimmura, Nishinomiya, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogoken, Japan

Filed Nov. 25, 1992, Ser. No. 981,392
Claims priority, application Japan, Nov. 28, 1991, 3-340305
Int. Cl.[5] D07B *1/06;* D02G *3/48*
U.S. Cl. 57—213 7 Claims



1. A steel cord for reinforcing a polymer material comprising:

a core formed by twisting three steel core filaments having a mutually equal diameter of 0.1 to 0.35 mm; and

at least one sheath formed by twisting a plurality of steel sheath filaments having a mutually equal diameter of 0.1 to 0.35 mm and arranged in a line around the core so as to surround the core, wherein

said three steel core filaments are composed of

at least one waving steel filament, each filament having waved portions apart from a longitudinal center line thereof and repeated in the longitudinal direction, and

remaining filaments being an unwaving steel filament and having clearance portions (T) and contact potions formed between said at least one waving steel filament and said unwaving steel filament by said waved portions;

said steel sheath filaments being composed of unwaving steel filament;

said clearance portions (T) being in a range of 0.15 to 0.6 times the diameter of said steel core filament; and

a sum total (M) of a mean void (m) between adjoining steel sheath filaments in each sheath being in a range of 5 to 35% of a sum total (N) of a mean center distance (n) between adjoining steel sheath filaments in each sheath.

5,351,471

MACHINE HAVING A REDUCED HEIGHT FOR TWISTING AND TEXTURING A YARN

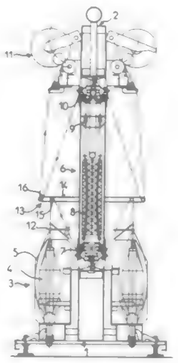
Carlos M. Gabalda, Granges les Valence, and Gilles Ambrois, Saint Marcel les Valence, both of France, assignors to ICBT, France

Filed Sep. 4, 1992, Ser. No. 941,168
Claims priority, application France, Sep. 20, 1991, 91 11882
Int. Cl.[5] D01H *13/26;* D02G *3/02*
U.S. Cl. 57—284 8 Claims

1. A machine for twisting and texturing by false twisting a man-made yarn, said machine comprising at least two working stations arranged on opposite sides of a central stand, each working station comprising:

a double-twist spindle supporting a package of yarn

texturing means for texturing the yarn after being twisted by the double-twist spindle, said texturing means comprising a thermal treatment oven, positively driven first and second feeding devices for accurately feeding the yarn to the thermal treatment oven, and a cooling zone and a false-twist spindle for cooling and false-twisting the yarn, the thermal treatment oven, the cooling zone and the false-twist spindle being disposed between the first and second feeding means, the first and second feeding means being aligned along a first direction corresponding to a height of



the machine so as to maintain the yarn passing therebetween substantially rectilinear;

winding means for winding the yarn after texturing, wherein said winding means and double-twist spindle are laterally offset from said texturing means along a second direction which is perpendicular to said first direction; and

guide means for (i) guiding the yarn from the double-twist spindle to the first feeding means and (ii) guiding the yarn from the second feeding means to the winding means, wherein the guide means comprises first and second yarn guides arranged side-by-side, said second yarn guide being positioned laterally outwardly from the first yarn guide along said second direction.

5,351,472

FLUFFING SUPPRESSING DEVICE

Kenji Ohashi, Uji, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Continuation of Ser. No. 637,217, Jan. 3, 1991, abandoned. This application Mar. 31, 1992, Ser. No. 860,251
Claims priority, application Japan, Jan. 10, 1990, 2-2931
Int. Cl.[5] D01H *7/46;* B65H *54/00*
U.S. Cl. 57—333 16 Claims

1. A fluffing suppressing apparatus for use with an automatic winder for winding spun yarns, the automatic winder defining a yarn winding path, the fluffing suppressing apparatus comprising:

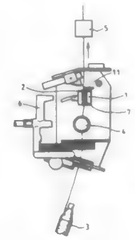
an air nozzle disposed substantially in the yarn winding path for imparting air currents to the spun yarn as the spun yarn is wound by the automatic winder,

a yarn guide pipe extending longitudinally through the air nozzle, the yarn guide pipe defining a yarn running path having a first end and a second end, a first opening at the first end of the yarn running path, and a second opening at the second end of the yarn running path,

at least one air injection hole formed in the yarn guide pipe for injecting air supplied to the air nozzle into the yarn guide pipe in a direction tangent to the yarn guide pipe

and at a predetermined angle with respect to the yarn running path,

a nozzle cap defining a portion which partially covers the second opening of the yarn guide pipe, and



a control plate disposed adjacent the air nozzle such that the nozzle cap is substantially between the control plate and the air nozzle,

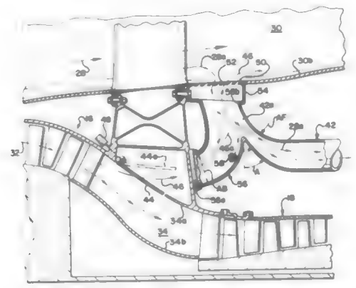
wherein the control plate controls the position of the yarn in cooperation with the nozzle cap.

5,351,473

METHOD FOR BLEEDING AIR

Brian H. Shuba, Mason, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 904,302, Jun. 25, 1992, Pat. No. 5,261,228.
This application Apr. 30, 1993, Ser. No. 56,040
Int. Cl.[5] F02C *6/18*
U.S. Cl. 60—39.02 8 Claims



1. In a gas turbine engine comprising a fan for channeling fan air through a fan bypass duct, a compressor for channeling compressed air through a core duct, and a turbine including a clearance control system, a method of channeling air to said clearance control system comprising the steps of:

bleeding a portion of said compressed air as bleed air from said core duct to said fan bypass duct during a first mode of operation of said clearance control system; and

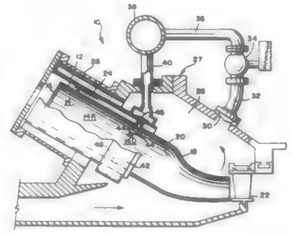
diverting a portion of said bleed air from flowing to said fan bypass duct and instead to said clearance control system during said first mode of operation, with said diverted bleed air being modulated solely by said compressed air bleeding step.

5,351,474

COMBUSTOR EXTERNAL AIR STAGING DEVICE

Gale V. Slocum, Clifton Park; Albert Myers, Amsterdam, and Kenneth W. Beebe, Saratoga, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 809,139, Dec. 18, 1991, abandoned.
This application Apr. 16, 1993, Ser. No. 75,360
Int. Cl.[5] F02C *9/00*
U.S. Cl. 60—39.23 8 Claims



1. In a gas turbine combustion system which includes a plurality of combustors within a pressure vessel, each combustor including a combustion liner defining a combustion chamber having a reaction zone and a dilution zone, the liner in the dilution zone provided with a plurality of circumferentially spaced dilution air feed holes; a flow shield surrounding each combustion liner in radially spaced relation thereto for reverse flowing compressor discharge air around said liner and into the combustion chamber reaction zone, the improvement comprising:

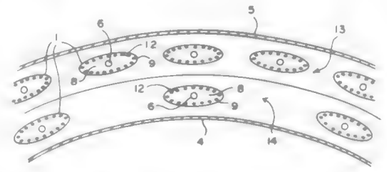
air staging apparatus for uniformly introducing a controlled amount of compressor discharge air into each combustion chamber dilution zone via said dilution air feed holes, said air staging apparatus comprising a plurality of pressure vessel extraction ports in said pressure vessel, downstream of said combustion liners relative to flow through the combustion liners; a first manifold surrounding said pressure vessel and connected to each of said extraction ports; a dilution air control valve located between each extraction port and said first manifold; and a plurality of manifold connector pipes, each extending from said first manifold into said pressure vessel and into communication with the dilution zone of a respective one of said combustion chambers.

5,351,475

AERODYNAMIC FUEL INJECTION SYSTEM FOR A GAS TURBINE COMBUSTION CHAMBER

Denis R. H. Ansart, Bois le Roi, and Denis J. M. Sandelis, Nangis, both of France, assignors to Societe Nationale d'Etude et de Construction de Motors d'Aviation, Paris, France

Filed Oct. 15, 1993, Ser. No. 136,263
Claims priority, application France, Nov. 18, 1992, 92 13832
Int. Cl.[5] F02C *3/06*
U.S. Cl. 60—39.36 5 Claims



1. An injection system for an annular combustion chamber with an end wall comprising: at least one injection head with a

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plurality of air and fuel injection sets, each injection set comprising:

a) a fuel injector;

b) an air swirler extending around the fuel injector;

c) at least one substantially elongated elliptical opening defined by the end wall; and,

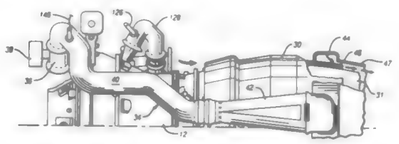
d) a shroud member extending between the air swirler and the end wall, the shroud member having an end with a substantially elongated elliptical cross-section in alignment with the elliptical opening of the end wall.

5,351,476

NACELLE COOLING AND VENTILATION SYSTEM

Daniel Jean-Louis Laborie, Cincinnati; Joseph R. Marban, Springdale; Wallace M. Schulze, and Robert J. Baumbick, both of West Chester, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 700,975, May 16, 1991, Pat. No. 5,284,012.
This application Apr. 14, 1993, Ser. No. 49,099
Int. Cl.[5] F02C *6/18*
U.S. Cl. 60—39.07 **15 Claims**



1. In a nacelle having a turbine engine in a bay thereof, an engine inlet for supplying combustion air to said engine, an exhaust shroud forming an annular passage with an exhaust conduit of said engine for evacuating air from within said engine bay, a chin scoop for receiving cooling air and an air/oil heat exchanger receiving cooling air from said chin scoop, a cooling and ventilation system comprising:

duct means for discharging air from said heat exchanger into said bay wherein said discharged air cools said engine and is drawn through said annular passage into said engine exhaust, whereby thrust recovery is minimized and overboard dumping of cooling air is minimized;

a start bleed air conduit extending between a compressor of said turbine and said engine exhaust downstream of said annular passage whereby start bleed compressor air supplements exhaust from said engine to scavenge said bay at low engine exhaust speeds wherein said annular passage includes an entrance adjacent to and in direct fluid flow communication with said bay; and wherein said bay is substantially enclosed by said nacelle wherein effectively all cooling air entering said bay enters from said chin scoop, wherein the cooling air provided for use in said air/oil heat exchanger and for cooling said engine is provided with minimum reductions in aerodynamic efficiency.

5,351,477

DUAL FUEL MIXER FOR GAS TURBINE COMBUSTOR

Narendra D. Joshi, Cincinnati, and Eric J. Kress, Loveland, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

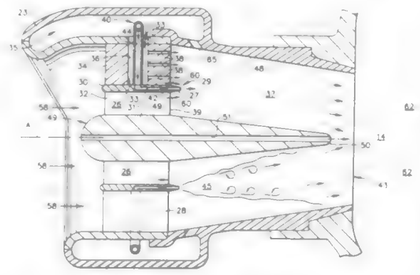
Filed Dec. 21, 1993, Ser. No. 170,969
Int. Cl.[5] F02C *3/20*; F23R *3/32*
U.S. Cl. 60—39.463 **24 Claims**

1. An apparatus for premixing fuel and air prior to combustion in a gas turbine engine, comprising:

(a) a linear mixing duct having a circular cross-section defined by a wall;

(b) a shroud surrounding the upstream end of said mixing duct, said shroud having contained therein a gas fuel manifold and a liquid fuel manifold, each of said manifolds being in flow communication with a gas fuel supply and a liquid fuel supply, respectively, and control means;

(c) a set of inner and outer annular counter-rotating swirlers adjacent the upstream end of said mixing duct for imparting swirl to an air stream, said outer annular swirlers including hollow vanes with internal cavities, wherein the internal cavities of said outer swirler vanes are in fluid communication with said gas fuel manifold, and said outer swirler vanes having a plurality of gas fuel passages therethrough in flow communication with said internal cavities to inject gas fuel into said air stream, and said outer swirler vanes further including liquid fuel passages therethrough in fluid communication with said liquid fuel manifold; and



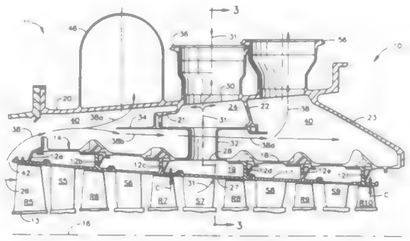
(d) a hub separating said inner and outer annular swirlers to allow independent rotation thereof, said hub having a circumferential slot in fluid communication with said liquid fuel passages to inject liquid fuel into said air stream; wherein high pressure air from a compressor is injected into said mixing duct through said swirlers to form an intense shear region, and gas fuel is injected into said mixing duct from said outer swirler vane passages and/or liquid fuel is injected into said mixing duct from said hub slot so that the high pressure air and the fuel is uniformly mixed therein, whereby minimal formation of pollutants is produced when the fuel/air mixture is exhausted out the downstream end of said mixing duct into the combustor and ignited.

5,351,478

COMPRESSOR CASING ASSEMBLY

Roger C. Walker, Middletown; Richard J. Fallon; Harold P. Rieck, Jr., both of West Chester, and John D. Bibler, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed May 29, 1992, Ser. No. 891,494
Int. Cl.[5] F02C *6/18*
U.S. Cl. 60—39.07 **7 Claims**



1. A casing assembly for reducing bleed air temperature gradient of a gas turbine engine comprising:

an outer annular casing having at least one outlet duct;

an annular inner casing disposed co-axially within the outer casing and placed therefrom to define a plenum;

a first radial disk and a second radial disk extending from the outer casing toward the inner casing for supporting the inner and outer casings and defining said plenum between the casings;

a plurality of bleed openings located in the inner casing for imparting a radial velocity to the bleed air that is greater than the circumferential velocity of the bleed air entering the plenum, whereby the bleed air impinges on the outer casing reducing the circumferential temperature gradient forming at the outer casing sufficiently to prevent distortion of the casing assembly as the bleed air exits the outlet duct; and

an air tube located in the plenum over each bleed opening for directing the bleed air toward the outer casing.

5,351,479

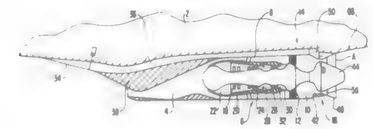
Patent Not Issued For This Number

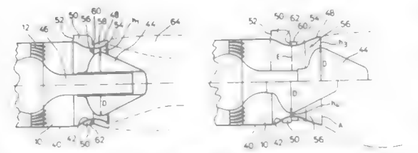
5,351,480

JET ENGINE

Joachim Kretschmer, Feldafing, Fed. Rep. of Germany, assignor to Deutsche Aerospace AG, Fed. Rep. of Germany

Filed Jul. 12, 1993, Ser. No. 89,335
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1992, 4222947
Int. Cl.[5] F02K *1/00*
U.S. Cl. 60—271 **18 Claims**





1. A jet engine having an upstream and downstream end and an axial direction, comprising at least one combustion chamber and a propelling nozzle connected downstream of said combustion chamber, a nozzle outer wall which is fixed to the engine and is divergent in the direction of an outlet end, and an axially adjustable divergent/convergent central body for bounding a hot gas flow duct with a variable cross-section, wherein the propelling nozzle has a propelling nozzle adjusting part which is axially movable for an outlet-side expansion of the hot gas flow duct and connects, in its downstream position, to the outlet end of the nozzle outer wall fixed to the engine, said central body being, axially adjustable such that a largest cross-section of said central body extends into an area formed by the propelling nozzle adjusting part in its downstream position.

5,351,481

MUFFLER ASSEMBLY WITH BALANCED CHAMBER AND METHOD

Ray T. Flugger, Foresville, Calif., assignor to Flowmaster, Inc., Santa Rosa, Calif.

Filed Jun. 26, 1992, Ser. No. 904,645
Int. Cl.[5] F01N *7/10*; F02B *27/04*
U.S. Cl. 60—273 **16 Claims**

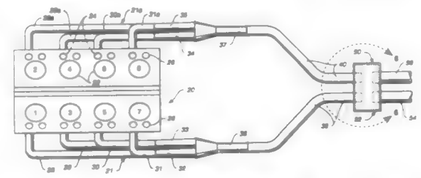
1. An exhaust assembly comprising:

a housing defining a chamber;

a pair of inlet exhaust pipes having substantially unobstructed openings coupled to said housing for discharge of exhaust gas into said chamber through said openings, said inlet exhaust pipes being formed for coupling to an internal combustion engine for receipt of said exhaust gas therefrom; and

a pair of outlet exhaust pipes having substantially unobstructed openings coupled to said housing for receipt of said exhaust gas from said chamber;

said inlet exhaust pipes and said outlet exhaust pipes being spaced apart in said chamber with said openings in said outlet exhaust pipes substantially axially aligned with said openings in said inlet exhaust pipes to cause said exhaust



gas to flow from said inlet exhaust pipes over a length of said chamber to said outlet exhaust pipes, said chamber having a cross-sectional area in a plane transverse to said length and over the distance between said inlet exhaust pipes which is substantially greater in all directions radially of a transverse cross-sectional area of each of said inlet exhaust pipes, said chamber being substantially unobstructed between aligned openings for substantially unimpeded communication of exhaust gases between said inlet exhaust pipes and said outlet exhaust pipes and substantially unimpeded communication of momentum-induced low pressure between said inlet exhaust pipes.

5,351,482

METHOD OF MAINTAINING CATALYTIC CONVERTER ACTIVITY IN GASOLINE VEHICLES

John E. Gwyn, Katy, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 28, 1992, Ser. No. 875,182
Int. Cl.[5] F01N *3/20*
U.S. Cl. 60—274 **15 Claims**

1. A method of reducing hydrocarbon emissions in a gasoline engine vehicle equipped with a catalytic converter comprising feeding to said catalytic converter an amount effective to maintain catalytic converter activity to from about 50 ppmw to about 150 ppmw based on the gasoline/air mixture combusted of chlorine gas or a chlorine compound expressed as Cl_2.

5,351,483

INTEGRAL UNITARY MANIFOLD-MUFFLER-CATALYST DEVICE

James E. Riley; Thomas E. Bazil, both of Northville; William R. Adam, Birmingham; Hans P. Creutz, Saline; Robert W. McCabe, Lathrup Village, and Haren S. Gandhi, Farmington Hills, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 664,722, Mar. 5, 1991, Pat. No. 5,220,789.
This application Apr. 16, 1993, Ser. No. 46,704
The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.
Int. Cl.[5] F01N *3/20*
U.S. Cl. 60—274 **2 Claims**

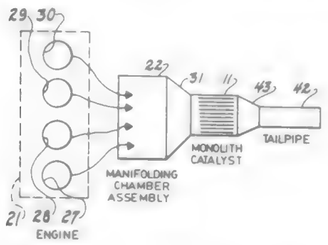
1. A method of treating and muffling exhaust gases of an internal combustion engine comprising:

(a) manifolding the flow of exhaust gases from said engine immediately into an expansion chamber having a size that

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dissipates low frequency sound waves of the exhaust

(b) converging the flow from the expansion chamber into and across substantially the full face of a catalyst effective to convert noxious elements of the exhaust gases; and



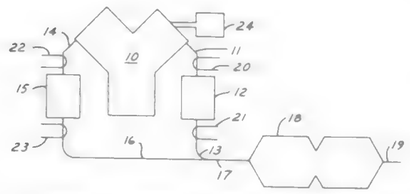
(c) converging the effluent from the catalyst, said convergences reflecting and alternating high frequency sound waves carried by said exhaust gases by interference.

5,351,484

LIGHT-OFF CATALYST MONITOR

Wallace R. Wade, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 16, 1993, Ser. No. 167,301
Int. Cl.[5] F01N 3/20
U.S. Cl. 60—274 8 Claims



1. A method of monitoring a light-off catalyst in an internal combustion engine vehicle having a light-off catalyst and a main catalyst, including the steps of:

providing an exhaust gas oxygen sensor upstream and downstream of the light-off catalyst for monitoring operation of the catalyst;

disabling monitoring of the light-off catalyst when the mass air flow in the engine is such that the space velocity through the light-off catalyst is so high that catalyst monitoring is saturated and unable to detect efficiency of the light-off catalyst or a catalyst with zero efficiency; and

activating monitoring of the light off catalyst when the mass air flow into the engine is such that the space velocity is sufficiently low and the catalyst monitoring is not saturated.

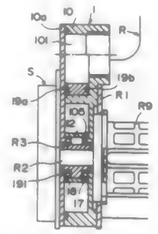
5,351,485

ROTARY ACTUATOR-OPERATED PRETENSIONER

Mitsuhiko Hirata, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan

Filed May 24, 1993, Ser. No. 66,528
Claims priority, application Japan, May 27, 1992, 4-158955
Int. Cl.[5] F16D 31/00
U.S. Cl. 60—325 2 Claims

1. A rotary actuator-operated pretensioner comprising a gas generator and a rotary actuator that is driven in rotation by pressurized gas supplied by the gas generator, the rotary actuator including a cylinder having an annular operating chamber having side walls, a peripheral wall and a partition wall extending across the operating chamber, and the rotary actuator including a rotor having an annular body portion rotatably received in the operating chamber and a vane portion extending across the chamber from the body portion and defining with the partition wall a pressure section on one side of the vane portion into which gas from the generator is delivered and an exhaust section on the other side of the vane portion,



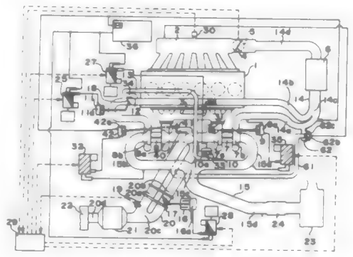
the cylinder having an exhaust opening to the atmosphere from the exhaust section, the annular flange portions extending from the cylinder side walls into the operating chamber, the flange portions being coaxial with the axis of rotation of the rotor, and the rotor being supported by the cylinder for rotation by reception of the flange portions within end portions of the rotor body portion, the rotor body portion overlapping surfaces of the flange portions that face away from the axis of rotation of the rotor.

5,351,486

CHARGING CONTROL APPARATUS FOR AN INTERNAL COMBUSTION ENGINE WITH A DUAL TURBOCHARGER SYSTEM

Mamoru Yoshioka; Kunihiko Nakata, both of Susono; Akira Kotani, Toyoto, and Makoto Makino, Aichi, all of Japan, assignors to Toyoto Jidosha Kabushiki Kaisha, Japan

Division of Ser. No. 924,551, Jul. 31, 1992, Pat. No. 5,313,798.
This application Jan. 6, 1994, Ser. No. 178,536
Claims priority, application Japan, Aug. 2, 1991, 3-216521; Oct. 4, 1991, 3-284097; Oct. 8, 1991, 3-287204
Int. Cl.[5] F02B 37/12
U.S. Cl. 60—612 4 Claims



1. A charging control apparatus for an internal combustion engine with a dual turbocharger system comprising:

a multi-cylinder internal combustion engine having at least one air intake and at least one exhaust outlet, wherein the engine includes first and second groups of cylinders;

an exhaust manifold connected with the at least one engine exhaust outlet, the exhaust manifold including a first portion connected to the first group of the cylinders and a second portion connected to the second group of the cylinders, the first portion and the second portion of the exhaust manifold being joined to each other with a connecting conduit;

a first turbocharger and a second turbocharger arranged in parallel with each other, each said turbocharger including a turbine and a turbine driven compressor, the turbines being connected to the engine exhaust outlet with the exhaust manifold and the compressors being connected to the air intake of the engine;

an air intake line including a first intake conduit connected with the first turbocharger compressor and a second intake conduit connected with the second turbocharger compressor, the air intake line being connected with the engine air intake;

an exhaust line including a first exhaust conduit connected with the first portion of the exhaust manifold, in which the first turbocharger turbine is installed, a second exhaust conduit connected with the second portion of the exhaust manifold, in which the second turbocharger turbine is installed;

an intake switching valve installed downstream of the second turbocharger compressor in the second intake conduit for opening and closing the second intake conduit, and an exhaust switching valve installed in the second exhaust conduit for opening and closing the second exhaust conduit, the intake switching valve and the exhaust switching valve being closed to produce a one-turbocharger-operation, wherein only the first turbocharger operates, when an instant intake air quantity is equal to or less than a reference intake air quantity and an instant engine speed is equal to or less than a reference engine speed, and the intake switching valve and the exhaust switching valve being opened to produce a two-turbocharger-operation, wherein both the first turbocharger and the second turbocharger operate, when the instant intake air quantity exceeds the reference intake air quantity and the instant engine speed exceeds the reference engine speed;

an exhaust bypass conduit connecting a portion of the second exhaust conduit upstream of the exhaust switching valve with one of a portion of the first exhaust conduit downstream of the first turbocharger turbine and a portion of the second exhaust conduit downstream of the exhaust switching valve;

an exhaust bypass valve installed in the exhaust bypass conduit for opening and closing the exhaust bypass conduit, the exhaust bypass valve running-up the second turbocharger before engine operation is switched from one-turbocharger-operation to two-turbocharger-operation when the exhaust bypass valve is open;

means for changing the reference intake air quantity in accordance with a gear shift position; and

means for changing the reference engine speed in accordance with the gear shift position.

5,351,487

HIGH EFFICIENCY NATURAL GAS ENGINE DRIVEN COOLING SYSTEM

Fawzy T. Abdelmalek, 12807 Willowyck Dr., St. Louis, Mo. 63146

Continuation-in-part of Ser. No. 887,876, May 26, 1992, Pat. No. 5,327,987. This application Sep. 14, 1992, Ser. No. 944,537
Int. Cl.[5] F01K 23/10
U.S. Cl. 60—618 2 Claims

1. In combination with a natural gas fueled engine driven liquid chiller system having a refrigerant vapor compressor, a refrigerant evaporator and a refrigerant condenser, wherein the improvement allows waste heat energy from an engine cooling fluid, an engine exhaust gas stream, and from the refrigerant condenser of said chiller system to be recovered and utilized to co-generate electric power, the improvement which comprises;

a natural gas fueled engine having an exhaust gas heat exchanger to exchange heat between the exhaust gas stream and the engine cooling fluid to affect cooling and condensing water vapor contained in said exhaust gas stream while heating said engine cooling fluid;

means to drain water vapor condensed in said exhaust gas heat exchanger;

said refrigerant vapor compressor having a power shaft directly connected to said natural gas fueled engine;

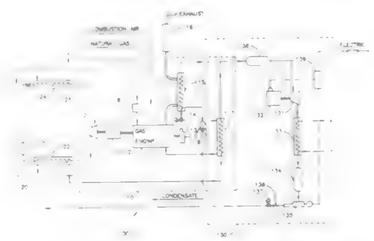
an evaporative power fluid contained in a closed thermal power circuit to recover heat energy from the refrigerant condenser of said chiller system and from said engine cooling fluid;

an evaporative heat exchanger to exchange heat between said engine cooling fluid and said evaporative power fluid to affect cooling the engine cooling fluid while heating and evaporating the power fluid to a power fluid vapor;

an engine cooling fluid circulating pump;

means to interconnect said engine cooling fluid circulating pump with said engine, said exhaust gas heat exchanger and said evaporative heat exchanger in a closed engine cooling circuit;

a high pressure vapor accumulator to receive the power fluid vapor from said evaporative heat exchanger;



a gas power expander to allow said power fluid vapor to expand from a relatively high pressure vapor to a lower pressure vapor;

a power fluid vapor condenser to condense the relatively lower pressure vapor from the gas power expander;

a power fluid liquid receiver to receive power fluid condensate from the said vapor condenser;

a power fluid liquid pump to pressurize and circulate the power fluid condensate back to said evaporative heat exchanger;

a control valve to regulate the rate of flow and pressure of said power fluid;

means to interconnect said gas power expander, the power fluid vapor condenser, the liquid receiver, the liquid pump, the control valve, the refrigerant condenser, and the evaporative heat exchanger in said closed thermal power circuit;

a direct current electric power generator directly connected to said gas power expander to co-generate electric power;

an electric power voltage regulator and inventer to regulate and deliver required electric power characteristics.

5,351,488

SOLAR ENERGY GENERATOR

Wilfred B. Sorensen, 121 Counter Street, Box 1, Kingston, Ontario, Canada K7K 6C7

Filed Jan. 31, 1994, Ser. No. 188,844
Int. Cl.[5] F24J 3/02; F03G 7/02
U.S. Cl. 60—641.11 7 Claims

1. A bubble pump comprising:

(a) a sealed separator chamber;

(b) a sealed condenser chamber;

(c) conduit means defining a a fluid flow path between said condenser chamber and said separator chamber;

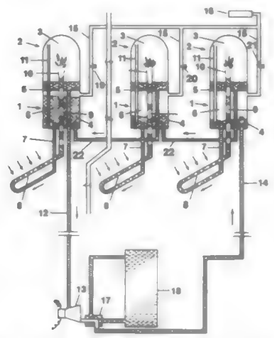
(d) solar energy collector means in said fluid flow path between said condenser chamber and said separator chamber, arranged to partially vapourize a fluid circulating

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between said condenser chamber and said separator chamber;

(e) conduit means between said separator chamber and said condenser chamber arranged to transform vapour separated in said separator chamber into a cooled fluid circulating in said condenser chamber;

(f) conduit means arranged to provide a fluid flow path for the cooled fluid transformed from said vapour in said separator chamber to an external energy transfer means;



(g) conduit means arranged to provide a fluid flow path for cooled fluid from said external energy transfer means to a condenser; and

(h) means to control the level of liquid in the condenser to thereby control the temperature of vapourization of said fluid circulating between said condenser chamber and said separator chamber.

5,351,489

FUEL JETTING NOZZLE ASSEMBLY FOR USE IN GAS TURBINE COMBUSTOR

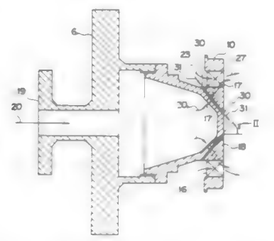
Hiroaki Okamoto, and Takahiro Kobayashi, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 23, 1992, Ser. No. 996,165

Claims priority, application Japan, Dec. 24, 1991, 3-341206

Int. Cl.[5] F23C *5/00*

U.S. Cl. 60—740 **1 Claim**



1. A fuel jetting nozzle assembly for use in a gas turbine combustor comprising an outer casing, a combustor liner disposed inside the outer casing and having a combustion chamber, a head plate closing one end of the outer casing and a fuel jetting nozzle assembly, said fuel jetting nozzle assembly comprising:

a nozzle head secured to the head plate;

a fuel jetting nozzle means secured to the nozzle head and having fuel jetting holes opened to an inside of the combustion chamber;

a swirling means disposed on an outer peripheral portion of the fuel jetting nozzle means for supplying air as an annular swirling flow in the combustion chamber of the combustor liner, said swirling means comprising a base body and a plurality of swirling vanes integrally disposed on the base body and separated equally, said fuel jetting holes being formed at the base body of the swirling means; and

a cooling means formed at a front jetting end portion of the fuel jetting nozzle means so as to introduce a portion of the air into a forward portion of a central portion of the front jetting end portion of the nozzle jetting means from an upstream side, with respect to an air flow direction, of the swirling means so as to flow the air into the combustor liner, said cooling means being composed of a plurality of cooling holes;

wherein said fuel jetting holes are formed at the base body for the swirling vanes and each of said cooling holes is positioned between two adjacent fuel jetting holes, each of said cooling holes having an inward inclination with respect to a front surface of the central portion of the front jetting end portion of the fuel jetting nozzle means, said inward inclination of the cooling hole having a swirling angle component having a same direction as that of an inclination of each of the swirling vanes for causing swirling flow, and the base body of the swirling means having an upstream side front surface constituting a boundary wall structure between the combustion gas and the fuel.

5,351,490

PISTON/DISPLACER SUPPORT MEANS FOR A CRYOGENIC REFRIGERATOR

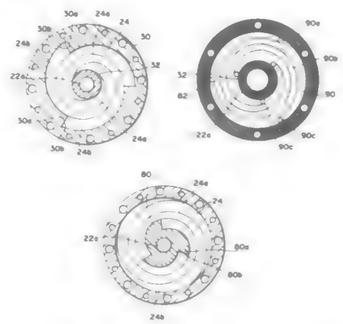
Tatsuru Ohishi; Kazuki Niitsu; Hiroyuki Kiyota; Nobuo Fujii; Yoshihiro Katagishi, and Takeshi Miyazawa, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,273

Claims priority, application Japan, Jan. 31, 1992, 4-016105; Feb. 15, 1992, 4-028671; Jan. 13, 1993, 5-004135

Int. Cl.[5] F25B *9/14*

U.S. Cl. 62—6 **24 Claims**



1. In a cryogenic refrigerator comprising a compressor including a compressor housing, a cylinder mounted within said housing, a piston reciprocable within said cylinder, and a compression chamber defined in said cylinder and having a variable volume, and a cold finger including a low temperature cylinder, a displacer reciprocable within said low temperature cylinder into a low temperature chamber and a high temperature chamber, and a regenerator mounted within said displacer, the improvements comprising means for supporting said piston, said means including:

at least one flat piston suspension spring having a top and bottom surface and having inner and outer peripheral edges, said at least one flat piston suspension spring including a plurality of spiral slits to provide a plurality of spiral arms deflectable as said piston is reciprocated within said compressor cylinder, each of said plurality of spiral slits having inner and outer ends;

a plurality of annular inner retainers secured to said piston and adapted to sandwich the inner peripheral edge of said at least one piston suspension spring; and

a plurality of annular outer retainers secured to said compressor housing, said plurality of annular outer retainers including a plurality of projections which extend inwardly and overlay and contact both surfaces of the outer ends of the spiral arms to sandwich the outer ends of said spiral arms in said at least one flat piston suspension spring.

5,351,491

PROCESS FOR OBTAINING HIGH-PURITY HYDROGEN AND HIGH-PURITY CARBON MONOXIDE

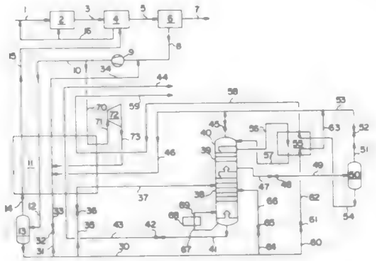
Rainer Fabian, Geretsried, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Mar. 30, 1993, Ser. No. 39,667

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1992, 4210637

Int. Cl.[5] F25J *3/00*

U.S. Cl. 62—18 **24 Claims**



1. In a process for the production of high-purity hydrogen and high-purity carbon monoxide by the separation of an extensively dry and CO_2-free H_2/CO crude gas mixture, also containing methane, by means of pressure swing adsorption and one-stage partial condensation, wherein, the H_2/CO crude gas mixture is subjected to a pressure swing adsorption process, producing a high-purity hydrogen product stream, while the CO-rich gas obtained in the regeneration during the pressure swing adsorption process is compressed, cooled, at least partially condensed, and conducted into a phase separator wherein it is separated into a gaseous H_2-rich fraction and a liquid CO-rich fraction, whereupon the gaseous H_2-rich fraction is heated and admixed to the H_2/CO crude gas mixture before the latter is fed into the pressure swing adsorption, the improvement wherein:

at least a portion of the liquid CO-rich fraction from the phase separator is at least partially expanded, heated, and conducted into the lower column of a double distillation column having an upper and lower column, a liquid methane fraction being withdrawn from the bottom of the lower column, a liquid high-purity carbon monoxide product fraction being withdrawn from the lower part of the upper column, and a gaseous CO-rich fraction being withdrawn from the head of the upper column.

5,351,492

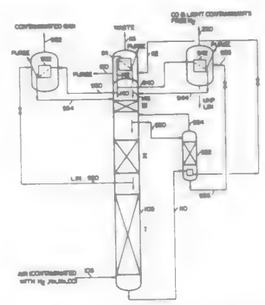
DISTILLATION STRATEGIES FOR THE PRODUCTION OF CARBON MONOXIDE-FREE NITROGEN

Rakesh Agrawal, Emmaus, Pa.; Ajay K. Modi, Maryland Heights, Mo., and William T. Kleinberg, Breinigsville, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 23, 1992, Ser. No. 950,116

Int. Cl.[5] F25J *3/02*

U.S. Cl. 62—24 **15 Claims**



1. A cryogenic process for the separation of air which produces at least a nitrogen product and is carried out in a distillation column system having at least one distillation column from which the nitrogen product is produced, wherein said distillation column, has at least the rectifying section, wherein, the feed thereto comprises nitrogen, oxygen, argon and carbon monoxide which is rectified to separate out nitrogen from the feed, characterized by operating the rectifying section of the distillation column from which the nitrogen product is produced at a ratio of downward liquid flow rate to upward vapor flow rate L/V) is greater than 0.65 and less than 1.0, thereby maximizing the separation between nitrogen and carbon monoxide and thus, producing a carbon monoxide-free nitrogen product.

5,351,493

THERMALLY DRIVEN REFRIGERATION SYSTEM UTILIZING METAL HYDRIDES

Naoki Hiro, Osaka, and Masato Osumi, Moriguchi, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Dec. 8, 1992, Ser. No. 986,744

Claims priority, application Japan, Dec. 10, 1991, 3-349842; Dec. 25, 1991, 3-356514

Int. Cl.[5] F25B *17/12;* **F17C** *7/00;* **F25D** *21/00*

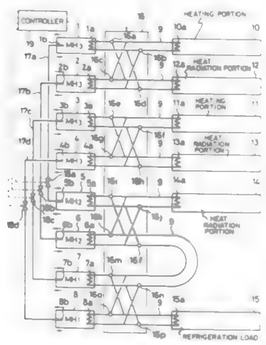
U.S. Cl. 62—46.2 **10 Claims**

1. A refrigeration system utilizing hydrogen and metal hydrides, said system including: two sets of multiple metal-hydride containers each accommodating therein hydrogen, a metal hydride, a hydrogen supply/release tube for connecting each said metal-hydride container with an external hydrogen conduit tube, and a heat exchanger connected with an external heat transfer medium transport tube, heat radiation means, heating means, and cooling means, such that said heat exchangers in the first and the second sets of metal-hydride containers are interchangeably and alternately connected with said heating means and cooling means in a first and a second cycle of refrigeration, respectively, so that in said first cycle of refrigeration hydrogen is dissociated in one set of said first and the second sets of metal-hydride containers to absorb heat while hydrogen is absorbed in another one of said first and the second sets of metal-hydride containers to recover hydrogen dissociated in a current cycle, whereas in said second cycle of refrigeration hydrogen is absorbed in said one set of said two sets of metal-hydride containers to recover the hydrogen

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which was dissociated therefrom in said first cycle while hydrogen is dissociated from said metal hydrides in said another set of metal-hydride containers to remove heat, said first and second cycles being alternately repeated to continuously absorb heat from a refrigeration load, said system comprising:

each of said two sets of metal-hydride containers comprises first, second, and third kinds of metal hydrides respectively having different equilibrium hydrogen pressures wherein said first kind of metal hydride has a lowest equilibrium hydrogen pressure, said second kind of metal hydride has a second lowest equilibrium hydrogen pressure, and said third kind of metal hydride has a highest equilibrium hydrogen pressure;



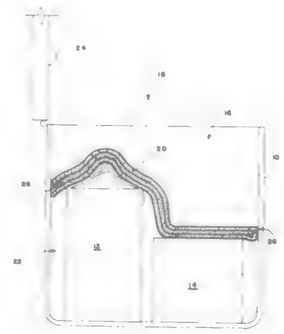
in said first cycle, said first metal-hydride in said one of said two sets of containers is heated by said heating means to dissociate hydrogen which is then supplied to and absorbed by said second and third metal-hydrides, while in said another set of metal-hydride containers hydrogen is dissociated from said second and third metal-hydrides to remove heat with said dissociated hydrogen transferred to and absorbed by said first metal-hydride in the same set, said heat absorbed by said second metal-hydride utilized to cool said third metal hydride in said one set and said heat absorbed by said third metal hydride utilized for refrigeration of said refrigeration load; and

in said second cycle, roles of said first and second sets are interchanged with respect to said first cycle.

5,351,494
COOLER CHEST INSULATIVE BLANKET
Robert L. Jensen, and Joanne E. Jensen, both of 3506 Chambersburg Ave., Duluth, Minn. 55811
Filed Feb. 25, 1994, Ser. No. 202,171
Int. Cl.[5] F25D *3/08*
U.S. Cl. 62—60 **16 Claims**

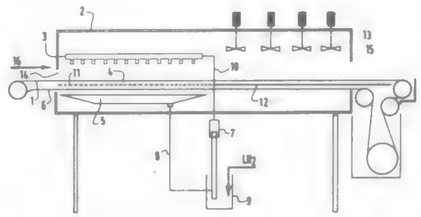
1. A method of insulating a portion of a cooler packed with perishables and cooling medium, comprising the steps of:

a) placing a flexible sheet of synthetic, thermal insulation material over the perishables and cooling medium, below the cover of the cooler; and



b) configuring the flexible sheet to cover substantially the upper surface collectively defined by the perishables and cooling medium.

5,351,495
FREEZING PROCESS AND DEVICE
André Lermuzeaux, Sucy-En-Brie, France, assignor to L'Air Liquide, Societe Anonyme Pour L'Etude El L'Exploitation Des Procedes Georges Claude, Paris, France
Filed Mar. 30, 1992, Ser. No. 860,417
Claims priority, application France, Jan. 21, 1992, 92-00582
Int. Cl.[5] F25D *13/06*
U.S. Cl. 62—63 **14 Claims**



1. Process for freezing an article which comprises:

a) contacting said article with a surface of a porous support which has been previously impregnated with a cryogenic liquid, said porous support being made of one of synthetic and natural polymer, said porous support having pores sufficiently small so as to retain the cryogenic liquid therein,

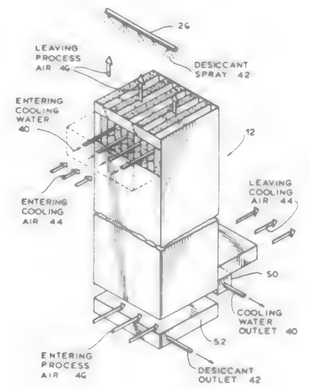
b) ensuring heat transfer between the cryogenic liquid impregnated within the porous support and the article, and

c) recovering the at least partially frozen article.

5,351,496

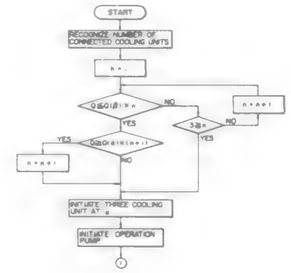
Patent Not Issued For This Number

5,351,497
LOW-FLOW INTERNALLY-COOLED LIQUID-DESICCANT ABSORBER
Andrew I. Lowenstein, Princeton, N.J., assignor to Gas Research Institute, Chicago, Ill.
Filed Dec. 17, 1992, Ser. No. 992,855
Int. Cl.[5] F25D *17/08*
U.S. Cl. 62—94 **10 Claims**



1. An air-conditioning process using an internally-cooled, liquid-desiccant absorber through which the air to be conditioned, the coolant and the liquid desiccant are passed, comprising the step of passing the desiccant into the absorber at a flooding rate of 0.03–1.0 gpm/ft while passing the air to be conditioned into the absorber at a flow rate not exceeding 800 fpm.

5,351,498
COOLING SYSTEM FOR ELECTRONIC APPARATUS AND CONTROL METHOD THEREFOR
Tatsuya Takahashi, and Shizuo Zushi, both of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Microcomputer System Ltd., Kodaira, both of Japan
Filed Nov. 3, 1993, Ser. No. 145,156
Claims priority, application Japan, Nov. 6, 1992, 4-296772
Int. Cl.[5] F25B *7/00*
U.S. Cl. 62—99 **11 Claims**



1. A cooling system for an electronic apparatus comprising:

a flow path in which a cooling medium circulates;

a heat generating source arranged in said flow path;

n+1 cooling units arranged in said flow path in parallel with each other for cooling the cooling medium at a predetermined temperature, said cooling units each having a compressor, the rotational speed of which is controlled by an operation frequency, and being operative in a first operating mode in which n+1 of said cooling units are operated respectively at a first operation frequency and in a second operating mode in which n out of said n+1 cooling units are operated respectively at a second operation frequency;

supply means arranged in said flow path for supplying the cooling medium cooled by said cooling units to said heat generating source;

abnormality detecting means for detecting abnormalities in said respective cooling units; and

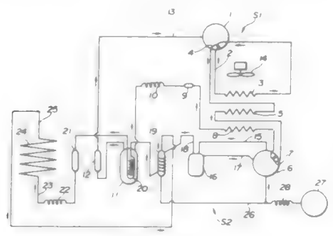
switching means, responsive to said abnormality detecting means when detecting that an abnormality has occurred in one of said cooling units which are operating in said first operating mode, for switching the operating mode from said first operating mode to said second operating mode.

5,351,499
REFRIGERANT COMPOSITION AND BINARY REFRIGERATION SYSTEM USING IT
Kazuo Takemasa, Ota, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Apr. 9, 1993, Ser. No. 44,466
Claims priority, application Japan, Apr. 10, 1992, 4-090904
Int. Cl.[5] C09K *5/00*
U.S. Cl. 62—114 **9 Claims**

1. A refrigerant composition comprising a mixture of an

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azeotropic mixture of trifluoethane and hexafluoroethane and an oil returning agent, in which the oil returning agent is mixed



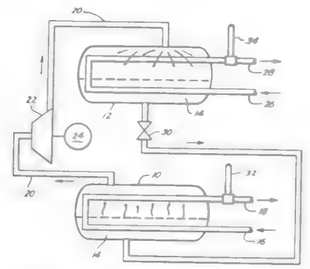
at a ratio from 0.1 to 14% by weight based on the total weight of trifluoromethane and hexafluoromethane.

5,351,500

REFRIGERANT LEAK DETECTOR SYSTEM

Gordon R. Morrow, South Houston, Tex., assignor to Texas Medical Center Central Heating and Cooling Cooperative Association, Houston, Tex.

Filed Dec. 3, 1993, Ser. No. 161,959
Int. Cl.[5] F25F *49/02*; F28F *11/00*
U.S. Cl. 62—129 **8 Claims**



1. An apparatus for detecting refrigerant leaks in a refrigeration system having a refrigerant and a heat exchanging fluid comprising:

a heat exchanger having a conduit therethrough for transporting a heat exchanging liquid, the conduit having first and second ends;

a stand pipe in communication with one of the ends of the conduit;

means for detecting a volume of gas in the stand pipe;

means for injecting gas into the stand pipe; and

means for detecting gasified refrigerant in a gas pocket within the stand pipe.

5,351,501

METHOD OF TRANSFERRING HEAT ENERGY FROM A LOW TO A HIGHER TEMPERATURE

Benny Petersen, Ellehegnet 10, Vedsæk, Denmark 2950

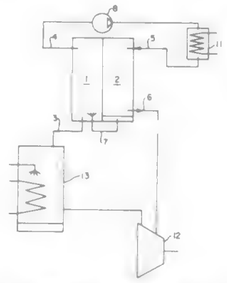
PCT No. PCT/DK91/00166, § 371 Date Dec. 17, 1992, § 102(e) Date Dec. 17, 1992, PCT Pub. No. WO91/19947, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 20, 1991, Ser. No. 965,395
Claims priority, application Denmark, Jun. 20, 1990, 1509/90
Int. Cl.[5] F24J *3/00*
U.S. Cl. 62—114 **15 Claims**

1. A method for transferring heat energy from a low to a high temperature comprising the steps of:

providing a main medium in gas form to a first heating chamber;

adding an auxiliary medium in liquid form to the main medium in said first heating chamber;

adding heat at a low temperature to said main medium in said first heating chamber to also vaporize the auxiliary medium and saturate the main medium with the auxiliary medium vapor;



compressing the saturated main medium from the outlet of the first heating chamber;

performing a heat exchange of the output of the compressed saturated main medium, and

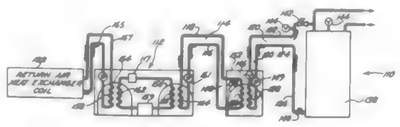
cooling the output main medium from the compressor in a second heating chamber.

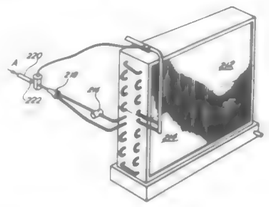
5,351,502

COMBINATION ANCILLARY HEAT PUMP FOR PRODUCING DOMESTIC HOT H20 WITH MULTIMODAL DEHUMIDIFICATION APPARATUS

Theodore C. Gilles, Dallas, and Robert B. Uselton, Lancaster, both of Tex., assignors to Lennox Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 912,819, Jul. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 785,049, Oct. 30, 1991, abandoned. This application May 4, 1993, Ser. No. 57,581
Int. Cl.[5] F25B *27/02, 39/02*
U.S. Cl. 62—238.7 **26 Claims**





1. In combination, an apparatus for producing domestic hot water including a domestic hot water heat pump connected to a hot water storage tank, said domestic hot water heat pump having refrigerant and water circuits operatively disposed at the proximal ends thereof into close array exterior of said hot water storage tank at the heat exchanger of the domestic hot water heat pump, each of said refrigerant circuit and said water circuit respectively including influent and effluent portions, said refrigerant circuit having a heat exchanger coil at the distal end thereof, said water circuit connected at the distal and thereof to a hot water reservoir; said distal refrigerant circuit heat exchanger coil disposed into operative heat exchanging position with a return fluid stream selected from the group consisting of a primary heat source systematically separate from said heat pump and a primary cooling source systemically separate from said heat pump, and combined therewith a multimodal dehumidification apparatus for such domestic hot water heat pump system, said multimodal heat exchanger dehumidification apparatus comprising:

(a) an evaporator having a plurality of evaporator circuits disposed in spaced array, at least one said evaporator circuit continuously receiving refrigerant for flow therethrough to define continuously refrigerant receiving evaporator circuit(s), said evaporator circuits of said evaporator disposed within an air stream for condensative dehumidification thereof;

(b) valve means disposed in operative connection with at least one different of said evaporator circuits to define temporarily refrigerant receiving evaporator circuit(s) for providing refrigerant flow though at selected times and for requiring the refrigerant to flow through; and

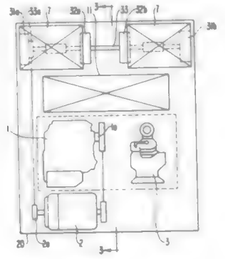
(c) whereby, by means of closing said valve, refrigerant is prevented from flowing through said temporarily refrigerant receiving evaporator circuit(s), and thus at said selected times flows only through said continuously refrigerant receiving evaporator circuit(s) to provide a reduced evaporating temperature as compared to operation with refrigerant flowing through both of said continuously and temporarily refrigerant receiving evaporator circuit(s), which causes an increased amount of water vapor to condense on said evaporator circuits to remove greater amounts of moisture from the air stream.

5,351,503

REFRIGERATING APPARATUS WITH DUAL BLOWERS AND EVAPORATORS FOR USE IN TRANSPORTATION

Tamio Sugimoto, and Masashi Sekoguchi, both of Nishi-Kasugai-gun, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1993, Ser. No. 44,073
Claims priority, application Japan, Apr. 13, 1992, 4-092792
Int. Cl.[5] F25D *17/06*
U.S. Cl. 62—429 **7 Claims**



1. A refrigerating apparatus comprising:

a main body mounted to a freezer compartment, said main body having an interior partitioned into an outdoor side air flow passageway open to the environment outside of the main body, and an indoor side air flow passageway open to the freezer compartment, said outdoor side air flow passageway and said indoor side air flow passageway having respective portions juxtaposed in a widthwise direction of the main body;

a condenser disposed in said main body within said outdoor side air flow passageway;

an evaporator disposed in said main body within said indoor side air flow passageway;

a compressor;

an engine disposed in said main body, said engine being operatively connected to said compressor so as to drive the compressor, and said engine having an output shaft at which the power of the engine is output;

one drive shaft rotatably supported and disposed within said main body, said one drive shaft extending across said outdoor side air flow passageway and said indoor side air flow passageway parallel to the output shaft of said engine;

a transmission operatively connecting the output shaft of said engine to said one drive shaft;

two condenser fans each comprising a propeller mounted to said one drive shaft in said outdoor side air flow passageway; and

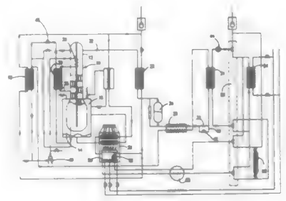
two evaporator fans each comprising a propeller mounted to said one drive shaft in said indoor side air flow passageway.

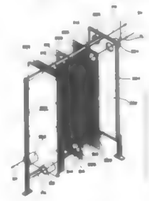
5,351,504

HEAT PUMP FOR HEATING OR REFRIGERATING BUILDINGS AND DELIVERING IN COMBINATION HOT WATER FOR SANITARY FIXTURES

Paolo Giacometti; Carlo Mustacchi, and Vincenzo Cena, all of Rome, Italy, assignors to Ente Per Le Nuove Tecnologie, L'Energia E L'Ambiente (ENEA), Rome, Italy

Filed Jun. 15, 1992, Ser. No. 898,943
Claims priority, application Italy, Jun. 13, 1991, 000421 A/91; Jun. 13, 1991, 000422 A/91; Jun. 13, 1991, 000423 A/91
Int. Cl.[5] F25B *15/00*
U.S. Cl. 62—476 **28 Claims**





1. Absorption heat pump for heating or refrigerating buildings and for delivering in combination hot water for sanitary fixtures, comprising:

a generator to bring the processing fluid to the vapor state, a boiler to supply said generator with heat, a condenser for the processing fluid vapor coming from said generator, a storage tank for the processing fluid condensed from said condenser, a subcooler for said condensed processing fluid, an absorber where the pure processing fluid is absorbed into the poor solution from the generator to provide a near saturated solution, a pump for the near saturated solution for delivering such solution to the generator, a first valve means for passing the poor solution from said generator to said absorber, a heat exchanger for exchanging heat between the near saturated solution and the poor solution, a second valve means for subcooled con-

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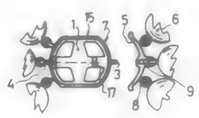
densed processing fluid coming from said tank, means for reducing load loss of said second valve means during summer, an evaporator receiving heat from a low-temperature source to evaporate processing fluid passing through said second valve means, and a multi-way valve allowing said heat pump to be coupled with a split-exchanger by deviating the flows of the processing fluid according to the season so as to cause said split-exchanger to perform the function of a cold source during the winter and the function of a hot drain during the summer, said storage tank of the processing fluid performing the function both of hydrostatic head and changer of the concentration of the solute in the near saturated solution by regulating the cycle pressure for optimizing the efficiency under partial load conditions.

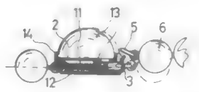
5,351,505

FASTENER FOR JEWELRY

Antonio A. Febrer, Manacor, Spain, assignor to Perlas Manacor, S.A., Manacor, Spain

Filed Jan. 8, 1993, Ser. No. 1,789
Claims priority, application Spain, Jun. 25, 1992, 9202007[U]
Int. Cl.[5] A44B *13/02*
U.S. Cl. 63—2 **14 Claims**





1. A fastener for jewelry, comprising a bottom body having a stud forming a male part; a safety disc movable relative to said bottom body between an open position in which a space is between said stud and said safety disc and a closed position in which said space is not provided; spring means urging said safety disc to said closed position so that for displacing said safety disc from said closed position to said open position said safety disc has to be displaced against a force of said spring means; a female member placeable on said stud in said open position so that in said closed position said female member cannot be withdrawn from said stud; a guiding shaft on which said safety disc is moveable in said open and said closed positions; and a support formed as a projection extending from a surface of said safety disc which faces said closing body and arranged so that said guiding shaft extends through said projection of said safety disc and is guided in said projection of said safety disc so as to guide said safety disc during its movement between said open and said closed positions.

5,351,506

FASTENER FOR JEWELRY

Antonio A. Febrer, Manacor, Spain, assignor to Perlas Manacor, S.A., Manacor, Spain

Filed Jan. 8, 1993, Ser. No. 1,800
Claims priority, application Spain, Jun. 25, 1992, 9202008[U]
Int. Cl.[5] A44B *13/02*
U.S. Cl. 63—2 **13 Claims**

1. A fastener for jewelry comprising a closing body having two diametrically opposite ends as considered in a first direction each provided with a stud arranged so that a space is formed between said body and an end of each of said studs; two rings provided on ends of a jewelry string, said rings being passable through said spaces and settable on said studs; and a closing disc radially extending in a plane and provided with pins which in a closed condition close said spaces between said closing body and said studs and therefore prevent unauthorized withdrawal of said rings and in an open condition opens said spaces, said closing disc being movable sideward in said plane in a second direction which is transverse to said first





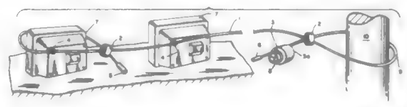
direction from said closed condition to said open condition so as to displace said pins from said spaces and therefore allow a withdrawal of said rings from said studs through said spaces and also back from said open condition to said closed condition so as to displace said pins for closing said spaces.

5,351,507

WIRE CABLE LOCKING DEVICE

Jay S. Derman, P.O. Box 949, Redondo Beach, Calif. 90277

Filed May 18, 1993, Ser. No. 63,156
Int. Cl.[5] E05B *73/00*
U.S. Cl. 70—18 **5 Claims**



1. A wire cable locking device for securing equipments including portable laptop PC's, comprising:

(a) a plastic sheathed wire cable; said wire cable having a hard bulbous protrusion attached at one end and a metal sleeve attached to its distal end; said wire cable forming a loop at near its metal sleeve end and another loop at near its bulbous protrusion end;

(b) a metal ring; said metal ring being used to form a cable loop by passing an end of said cable through said ring twice;

(c) a cam lock assembly comprising:

a lock body member defining a planar zone having a width and depth;

first means including a first opening running through said lock body member and adapted to fit said wire cable diameter, allowing said wire cable to pass through said first opening;

second means including a cavity in said lock body member, said cavity spaced parallel to and adjacent to said first means;

third means including a look element member, fitting in said look body member cavity, having one position within said planar zone for locking said lock element member;

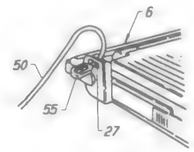
one of said wire cable loops being passed around a portion of a portable equipment and said one loop clamped tightly by a suitable clamp device; the other said wire cable loop being passed around a relatively immovable fixture, through said ring and clamped by said cam lock assembly which prevents said wire cable from being disconnected from said immovable fixture.

5,351,508

LAPTOP COMPUTER SECURITY HANDLE

Donald W. Kelley, Fremont, Calif., assignor to Qualtec Data Products, Inc., Fremont, Calif.

Filed Nov. 12, 1992, Ser. No. 975,619
Int. Cl.[5] E05B *73/00*
U.S. Cl. 70—58 **1 Claim**



1. A security attachment and handle assembly for a laptop computer comprising:

a bracket having an elongated, generally flat, rectangular intermediate member and an L-shaped end member extending perpendicularly from each end of the intermediate member, each of the L-shaped end members having first and second orthogonal walls, wherein at least one of the orthogonal walls extends perpendicular to a longitudinal axis and beyond an adjacent side edge of the intermediate member;

means for mounting the bracket to the computer such that the walls of each of the L-shaped end members extend parallel to surfaces on opposite sides of the computer, respectively;

a U-shaped handle member having a leg member extending perpendicularly from each end of an elongated center member; and

means for attaching one of the leg members at each end of the elongated center member to that wall of a corresponding one of each of the L-shaped end members which extends perpendicular to the longitudinal axis and beyond the adjacent side edge of the intermediate member in such a manner that the handle member can be pivoted between a first and a second position, wherein the wall of at least one of the L-shaped members which extends perpendicular to the longitudinal axis and beyond the adjacent side edge of the intermediate member comprises a hole for receiving a security cable which can be used to tie the computer to a structure in a secure manner.

5,351,509

DEVICE FOR CLOSING AND COUPLING LUGGAGE AND THE LIKE, PARTICULARLY FOR MOTORCYCLES

Guiseppe Visenzi, Viale della Bornata, 117, 25100 Brescia, Italy

Filed Nov. 20, 1992, Ser. No. 979,695
Int. Cl.[5] E05B *65/48*
U.S. Cl. 70—73 **20 Claims**

1. In combination, a case (1) having means for coupling said case (1) to a motorcycle rack, and a device for closing said case (1), said case (1) comprising;

a shell (2) defining on a surface thereof an accommodation seat (5);

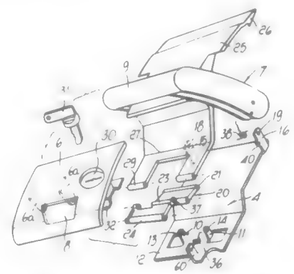
a counter-shell (3) hingedly connected to said shell (2), said device for closing said case comprising;

a plate (4) fixed within said accommodation seat (5);

a linkage member (20) pivotally connected to said plate (4) by first pivoting means (10, 11, 12, 13, 21, 22);

a plate like element (25) having a pawl-shaped portion (26) engaging said countershell (3) and connected to said linkage member (20) by second pivoting means (22*a*, 23, 29), and;

a locking plate (6) having locking means (30) releasably engageable with a portion of said plate (4) and connected



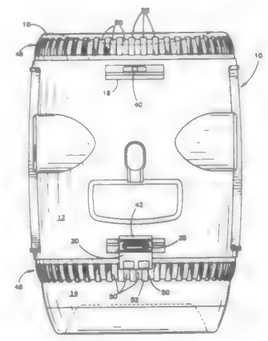
to said linkage member (20) by third pivoting means (6*a*, 22b, 24).

5,351,510

COVER LOCK FOR PRESSURE TRANSMITTER

Jerome S. Alden, Aurora, Ohio, assignor to Elsag International B.V., Amsterdam, Netherlands

Filed Nov. 13, 1992, Ser. No. 976,403
Int. Cl.[5] B65D *55/14*
U.S. Cl. 70—63 **20 Claims**



1. A locking assembly for a device having a main body with a rotatably removable end cap, said end cap having a circumferential corrugated surface, said locking assembly comprising:

a mounting base affixed to the main body of said device proximate to the removable end cap of said device; and

a locking mechanism being mountable to said mounting base to having an end portion extend over the end cap of said device, said end cap circumferential corrugated surface interfacing with the end portion of said locking mechanism to interfere with the rotation of the end cap on said device whenever said locking mechanism is mounted to said mounting base, said locking mechanism including means for allowing said locking mechanism to rotate circumferentially along said main body to allow alignment of said locking mechanism end portion with said end cap circumferential corrugated surface.

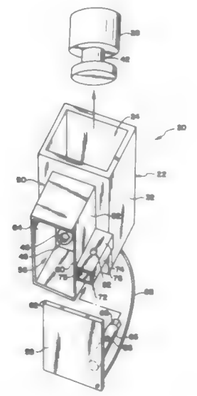
VOL 1167 ISS 1 OC 4 1994 UMI

5,351,511

TRAILER KINGPIN LOCKING DEVICE

Jean P. Bernier, Arlington, Va., assignor to Palma Auto Boot/-Palma, Inc., Arlington, Va.

Filed Mar. 23, 1993, Ser. No. 35,390
Int. Cl.[5] F16B *41/00*
U.S. Cl. 70—232 17 Claims



1. A locking device for selectively lockingly engaging a towing element of a trailer to block access to said towing element, said locking device comprising:

a housing means defining a towing element receptacle for receiving and housing a towing element;

an engaging element for selectively engaging the towing element to retain it within said housing means, said engaging element being coupled to said housing means so as to be displaceable relative thereto from a disengaged position to an engaged position, said engaging element having an engaging portion which engages the towing element when said engaging element is in said engaged position and an actuating portion remote from said engaging portion, engagement and displacement of said actuating portion displacing said engaging portion of said engaging element into engagement with said towing element to secure and lock said towing element within said housing means;

removable lockable covering means for selectively blocking access to said actuating portion of said engaging element, said covering means providing access to said actuating portion of said engaging element when removed to thereby enable said engaging element to be moved between said engaged position and said disengaged position;

an actuating tool means coupled to said covering means for displacing said engaging element and

locking means for lockably securing said covering means such that said lockable covering means when not removed blocks access to said actuating portion of said engaging element.

5,351,512

DUAL MODE LOCKING SYSTEM FOR TRUCK SERVICE BODIES

Daniel Pearlman, Auburn, Pa., assignor to Reading Body Works, Reading, Pa.

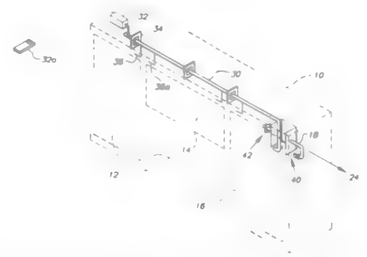
Filed Jul. 20, 1993, Ser. No. 95,088
Int. Cl.[5] E05B *47/02*
U.S. Cl. 70—257 3 Claims

1. In a truck service body, an apparatus for locking and unlocking one or more storage compartments comprising:

(A) a channel assembly, said channel assembly being slidably secured to said service body by at least one channel support;

(B) a rod assembly having an L-shaped locking bracket, said rod assembly being slidably secured to said service body by a plurality of rod supports, said rod assembly passing through said channel assembly;

(C) a handle for manually moving said rod assembly between a locked position and an unlocked position, said handle being rigidly secured to said channel assembly and extending



outside of said service body, said handle being adapted for coupling to said service body by a manual locking means;

(D) an electro-mechanical actuator, coupled to said rod assembly, for moving said rod assembly between said locked position and said unlocked position;

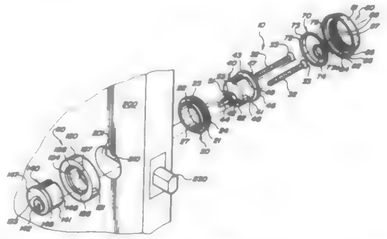
wherein the width of said channel is sufficient to allow said electro-mechanical actuator to move said rod assembly from said locked position to said unlocked position when said handle is coupled to said service body by said manual locking means.

5,351,513

DOUBLE CYLINDER DEADBOLT

Philip C. Ellis, Reading, Pa., assignor to Baldwin Hardware Corporation, Reading, Pa.

Filed Mar. 1, 1993, Ser. No. 24,568
Int. Cl.[5] E05B *9/10*
U.S. Cl. 70—370 20 Claims



1. A door containing a double cylinder deadbolt comprising:

an outside cylinder assembly comprising;

an outside cylinder having a face and a body portion and including at least one blind opening in said body portion adapted to receive at least one fastener, and

an outside escutcheon having a bore therethrough adapted to fit over said outside cylinder; and

an inside cylinder assembly connected to said outside cylinder assembly by said at least one fastener comprising;

an inside cylinder having a flanged face and a body portion and including at least one opening extending through said body portion and said face adapted to receive said at least one fastener;

a collar having a bore adapted to fit over at least said body portion of said inside cylinder,

an inside escutcheon having a bore therethrough adapted to fit over said inside cylinder and collar, said bore of said escutcheon including an internal shoulder, and

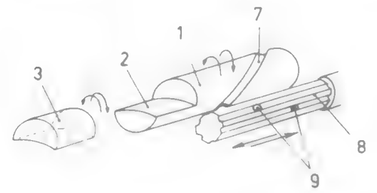
a removable cap adapted to fit over and cover at least part of the face of said inside cylinder and conceal said at least one fastener, said cap including a radially extending flange adapted to abut against said internal shoulder of said inside escutcheon.

5,351,514

LOCKING MECHANISM

Alberto R. Recio, Islas Cies, 59-8oM 28035, Madrid, Spain 28035

Filed Dec. 16, 1992, Ser. No. 991,255
Claims priority, application Spain, Dec. 18, 1991, 9102807
Int. Cl.[5] E05B *27/08*
U.S. Cl. 70—491 10 Claims



1. A locking mechanism having a fixed lock part, a movable lock part rotatably engaged with the fixed lock part and one or more blocking elements for preventing relative rotation between the fixed and movable lock parts, the blocking element being snugly and axially rotatably engaged in a cylindrical cavity defined partly in the fixed lock part and partly in the rotatable lock part, the improvement comprising:

means for preventing axial displacement of the blocking element including the blocking element consisting of first and second complementary semi-cylindrical parts, and the first semi-cylindrical part being adapted to be operatively coupled to a key to effect rotation of the first and second complementary semi-cylindrical parts, whereby the first and second semi-cylindrical parts can be rotated between a blocking position in which they prevent relative movement between the fixed and movable lock parts and an unblocked position with the first and second semi-cylindrical parts engaged in the movable and fixed lock parts, respectively, in which the fixed and movable lock parts are relatively movable.

5,351,515

APPARATUS AND METHOD FOR REDUCING THE DIAMETER OF A CYLINDRICAL WORKPIECE

Eugene R. Astley, Richland; Charles S. Rutkowski, and Jon L. Osborne, both of Kennewick, all of Wash., assignors to Sandvik Special Metals Corporation, Kennewick, Wash.

Continuation-in-part of Ser. No. 5,967, Jan. 19, 1993, abandoned. This application Jun. 9, 1993, Ser. No. 73,790
Int. Cl.[5] B21B *21/00*
U.S. Cl. 72—126 44 Claims

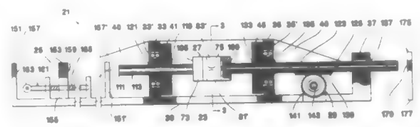
1. An apparatus for reducing the diameter of a cylindrical workpiece, comprising:

a frame;

an assembly including means for supporting a pair of roll dies rotatably about their axes, the roll dies having tapered circumferential grooves defining a nip for receiving a workpiece;

means for supporting the assembly relative to the frame, the assembly supporting means permitting the assembly to rotate about the longitudinal axis of the workpiece and permitting the assembly to move longitudinally relative to the frame;

means for longitudinally reciprocating the assembly including the roll dies relative to the frame through a predetermined distance through a reduction stroke and a smoothing stroke; and



intermittent rotating means for rotating the roll dies around the longitudinal axis of the workpiece such that rotation occurs through a predetermined angle.

5,351,516

RAIL REPAIR DEVICE

Louis Bialy, Simsbury, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Aug. 14, 1991, Ser. No. 744,758
Int. Cl.[5] B21B *1/14, 31/30*
U.S. Cl. 72—199 19 Claims

1. An elevator rail repair device for repairing scored and damaged elevator rails, comprising:

means for forcing raised damaged areas of an elevator rail surface back into corresponding depressions in said rail surface, wherein said means for forcing includes:

a housing;

a roller, rotatably cooperating within said housing, said roller forcing said raised damaged areas back into said corresponding depressions of the rail;

a first cam surface disposed in said housing; and

a wedge, which mounts said roller for rotation therein, said wedge having a second cam surface which slidably contacts said first cam surface of said housing.

5,351,517

METHOD OF, AND A MACHINE FOR, STRETCHING AND BENDING A PROFILED LENGTH OF MATERIAL

Walter Späth, Hardstrasse 8, 7705 Steisslingen, Fed. Rep. of Germany

Filed Aug. 11, 1992, Ser. No. 929,165
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1991, 4140591
Int. Cl.[5] B21D *11/02*
U.S. Cl. 72—297 9 Claims

1. A method of stretching and bending a hollow profiled length of material, the method comprising the steps of:

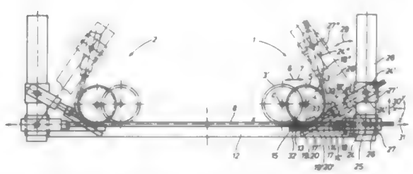
clamping each of two ends of the hollow profiled length of material by means of a clamping head and simultaneously

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supporting said hollow profiled length longitudinally thereof;

disposing a mandrel in the interior of said hollow profiled length;

bending said hollow length at both ends symmetrically while simultaneously tensioning said hollow length by moving



the respective clamping head about a bending tool within a plane defining X-Y directions, while pulling the mandrel through said hollow length, said hollow profiled length being stationary during the bending process; and

displacing said clamping head along selected X-Y directions within said plane while being pivoted about a pivot point about said bending tool.

5,351,518

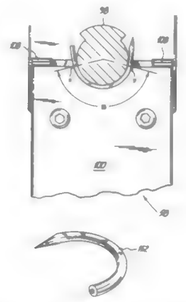
FOUR SLIDER APPARATUS FOR FORMING CURVED RECTANGULAR BODIED NEEDLES AND METHOD

Michael W. Bogart, Milford, and Richard J. Smith, Stamford, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 8, 1993, Ser. No. 134,153

Int. Cl.[5] B21G *1/00*

U.S. Cl. 72—401 **18 Claims**



1. An apparatus for forming a curved, flat sided surgical needle, which comprises:

a) a frame portion; and

b) means associated with said frame portion for substantially simultaneously imparting an arcuate profile and a first pair of opposing flat surfaces to a body portion of a needle blank.

13. A method of forming a curved, flat sided surgical needle comprising the steps of:

a) loading a needle blank onto a first tool; and

b) simultaneously curving and imparting first flat surfaces to at least a first pair of opposing sides of a body portion of the needle blank to produce said surgical needle.

5,351,519

CIRCUIT ARRANGEMENT FOR EVALUATING AND TESTING A CAPACITIVE SENSOR

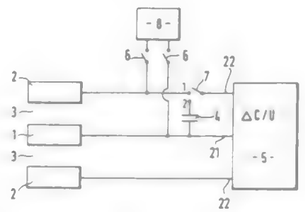
Hans-Juergen Kress, Reutlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 7, 1992, Ser. No. 958,032

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1991, 4133426

Int. Cl.[5] G01P *15/08*

U.S. Cl. 73—10 **5 Claims**



1. A circuit arrangement operable in a measuring mode of operation and in a test mode of operation, for evaluating and testing a capacitive sensor, comprising:

first and second stationary measuring electrode means;

third electrode means mounted for movement between a rest position and a deflected position relative to said first and second electrode means;

capacitance bridge means;

reference capacitance means connected to said capacitance bridge means;

means for connecting said third electrode means to one each of said first and second electrode means thereby to form first and second measuring capacitance means;

means for, in the measuring mode, connecting said first and second measuring capacitance means to said capacitance bridge means, whereby said capacitance bridge means detects a difference between said first and second measuring capacitance means, said difference being a signal representative of the extent of movement of said third electrode means between its said rest and deflected positions;

means for, in the test mode, substituting said reference capacitance means for one of said first and second measuring capacitance means;

means for applying a potential difference between said third electrode means and the electrode means of said substituted one of said first and second measuring capacitance means, thereby to cause movement of said third electrode means between its said rest and deflected positions; and

means for measuring said movement of said third electrode means at the other of said first and second measuring capacitance means.

5,351,520

FLUIDIZED POWDER FLOWRATE MEASUREMENT METHOD AND DEVICE

Thierry Buquet, Grenoble, France, assignor to Sames S.A., Meylan, France

Filed Aug. 7, 1992, Ser. No. 925,638

Claims priority, application France, Aug. 12, 1991, 91 10238

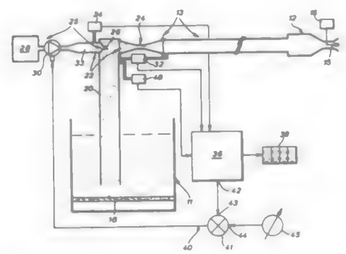
Int. Cl.[5] G01F *1/76*; G01N *3/56*

U.S. Cl. 73—7 **10 Claims**

1. A method of measuring the flow rate of a powder along an air-powder mixture path of a powder drive device, the device being composed of a Venturi tube having an inlet end and an outlet and forming a part of the mixture path and drive air injector means for injecting air into the Venturi tube to drive an air-powder mixture along the path and through the Venturi tube, said method comprising:

measuring the pressure difference between the inlet end and the outlet end of the Venturi tube;

measuring the flow rate at which air is injected into the Venturi tube;



computing the flow rate of powder along the mixture path as a function of the measured pressure difference and air flow rate; and

calculating the degree of wear of the Venturi tube by integrating with respect to time two parameters representing the air-powder mixture flow rate and the air flow rate.

5,351,521

MEASUREMENT OF GAS AND WATER CONTENT IN OIL

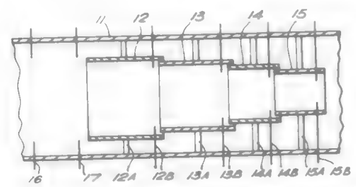
David J. Cracknell, Chelmsford, United Kingdom, assignor to GEC-Marconi Limited, Middlesex, United Kingdom

Filed Oct. 16, 1992, Ser. No. 961,167

Claims priority, application United Kingdom, Oct. 18, 1991, 9122210.9

Int. Cl.[5] G01N *22/00*

U.S. Cl. 73—19.1 **6 Claims**



1. An apparatus for measuring the relative proportions of gas, oil and water in a conductive pipe comprising:

at least one open-ended, conductive tube having a radius different from the conductive pipe, disposed within the conductive pipe;

microwave transmission means for transmitting microwave signals along the conductive pipe and at least one tube at a plurality of frequencies, wherein the conductive pipe and the at least one conductive tube each act as waveguides for the microwave signals;

at least two microwave receiving means disposed at separate positions in the conductive pipe and at least one conductive tube, the positions being at locations having different respective radii, and being spaced apart along the conductive pipe and at least one conductive tube, for receiving the microwave signals transmitted by said transmission means; and

determining means for determining the relative proportions of gas, water and oil in the conductive pipe by comparing the transmitted and received signals.

5,351,522

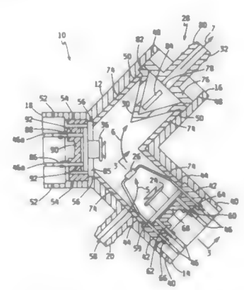
GAS SENSOR

David B. Lura, Brooklyn Park, Minn., assignor to Aequitron Medical, Inc., Minneapolis, Minn.

Filed Nov. 2, 1993, Ser. No. 147,326

Int. Cl.[5] G01N *29/18*

U.S. Cl. 73—24.01 **46 Claims**



1. A gas-sensor device for detection of the presence and concentration of a gas, said gas-sensor device comprising:

(a) an L-shaped housing having a first transmitter end, a second gas outflow end, a junction receiver end, and a gas inlet port through said L-shaped housing proximal to said first transmitter end, said gas inlet port permitting flow-through access of said gas to be detected;

(b) a transmitter assembly having a transmitter/transducer and a temperature sensor positioned in said first transmitter end, said transmitter/transducer having means for generating sound waves for passing through said gas within said L-shaped housing;

(c) a gas outflow end cap assembly having a sonic baffle and a gas outlet port positioned in said second gas outflow end, said sonic baffle having means for reducing reflection of said sound waves within the said L-shaped housing;

(d) a receiver assembly having a receiver/transponder for receipt of said sound waves positioned in said junction receiver end; and

(e) a sound buffer means for reduction of reflected sound waves, said sound buffer means engaged to said L-shaped housing, said first transmitter end, said second gas outflow end, and to said receiver assembly.

5,351,523

APPARATUS AND PROCESS FOR DETERMINING FILTER EFFICIENCY IN REMOVING COLLOIDAL SUSPENSIONS

David B. Blackford, St. Paul; Thomas A. Kerrick, Forrest Lake; Georg Schürmann, Shoreview, all of Minn., and Kevin T. Pate, Beaverton, Oreg., assignors to TSI Incorporated, St. Paul, Minn.

Filed Jan. 21, 1993, Ser. No. 6,401

Int. Cl.[5] G01N *15/08*

U.S. Cl. 73—38 **20 Claims**

1. An apparatus for determining the efficiency of filters in removing a colloidal suspension in a liquid stream, including:

a supply means for generating a continuous liquid flow of a test liquid containing a residue at a proportion substantially uniform throughout the test liquid, said residue including a first residue component consisting of a colloidal suspension and a second residue component consisting of residue other than said colloidal suspension;

a first residue measuring means for determining the proportion of the residue in the test liquid, and for generating a corresponding first residue value;

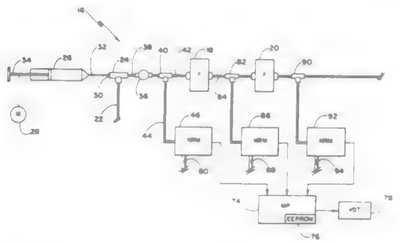
a first filter for removing a portion of the colloidal suspension from the test liquid while allowing substantially all of

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the second residue component to pass through with the test liquid, and thereby providing a first filter output;

a second residue measuring means downstream of the first filter, for determining the proportion of the residue in the first filter output and for generating a corresponding second residue value;

a second filter downstream of the first filter for receiving the first filter output and removing a portion of the colloidal suspension from the first filter output while allowing



substantially all of the second residue component to pass through with the test liquid, to provide a second filter output; and

a third residue measuring means downstream of the second filter, for determining the proportion of the residue in the second filter output and generating a corresponding third residue value, wherein said first, second and third residue values are employable in combination to calculate the efficiency of the first filter and the second filter in removing the colloidal suspension.

5,351,524

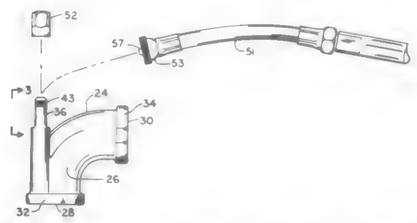
GAS LEAK DETECTION TEST STATION

David W. Lanham, 941 SW. 108th Ave., Pembroke Pines, Fla. 33026

Filed Aug. 23, 1993, Ser. No. 110,552

Int. Cl.[5] G01M *3/28*

U.S. Cl. 73—40.50 R **7 Claims**



1. To be utilized in a gas supply line having an upstream main on/off valve, a meter downstream of the valve, and a pressure regulator intermediate of the valve and meter which is used to supply gas to appliances at an installation site, and to be connected between a pair of adjacent, conventional flow-through pipes, a test station comprising:

a substantially small and compact pipe fitting connected in fluid flow communication in the gas supply line downstream of the pressure regulator and between the pair of conventional flow-through pipes,

said pipe fitting including a body formed of a standard pipe material,

said body including a first pipe opening, a second pipe opening, and a flow path therebetween,

said body at said first pipe opening and said second pipe opening including pipe connection means structured and disposed to secure said pipe fitting in fluid flow, leak-free communication in a conventional pipe connecting manner between the pair of conventional flow-through pipes such that said pipe fitting functions as an ordinary link segment of the gas supply line,

a fixed valve body portion integrally formed in said pipe fitting of said standard pipe material, said valve body portion including a port disposed in fluid flow communication with said flow path and having an exteriorly open distal end,

a movable valve portion means captivated in said fixed valve body portion and moveable relative to said port between a normal valve closed position and a valve open position,

said moveable valve portion means including biasing means normally urging said movable valve portion means to said normal closed position and requiring compressive urging of said biasing means, by applying force to said movable valve portion means, in order to move said movable valve portion means to said valve open position wherein free fluid flow into and out of the port of said fixed valve body portion is achieved, and

manometer connection means disposed on said fixed valve body portion structured and disposed to enable a manometer to be removably yet securely connected to said fixed valve body portion in fluid flow communication with said port and to simultaneously move said movable valve portion means to said valve opening position such that the manometer is able to determine pressure levels in the gas supply line.

5,351,525

PROCESS FOR GENERATING, BY WAY OF EXPERIMENTAL TESTS, THE CAPILLARY PRESSURE CURVE IN A POROUS MEDIUM

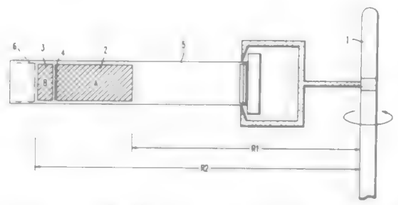
Giovanna Ragazzini, Milan, and Carlo Venturini, Castiglione D'Adda, both of Italy, assignors to AGIP S.p.A., Milan, Italy

Filed Aug. 16, 1993, Ser. No. 106,642

Claims priority, application Italy, Aug. 27, 1992, MI92 A 002019

Int. Cl.[5] G01N *15/08*

U.S. Cl. 73—38 **7 Claims**



1. Process for generating the capillary pressure curve of two immiscible, non-reactive liquids inside a porous medium by means of the technique of centrifugation of cylindrical samples at various revolution speeds, which comprises:

(1) centrifuging an assembly sample, saturated with a first fluid, constituted by the porous sample to be analysed (A), and a material (B) having the same permeability and approximately the same diameter as of (A), the material (B) being connected with the sample (A) through capillary contact along that section of (A) which is the farthest from the centrifuge rotor, with the ratio of the length of (A) to the length of (B) being comprised within the range of from 10:1 to 2:1, with the assembly constituted by (A) and (B) being immersed in a second fluid which is immiscible with the first fluid;

(2) measuring the saturation rate of the first fluid by weighing the only sample (A);

(3) correlating, for each measuring revolution speed, the so determined saturation rate value, with the corresponding average capillary pressure of (A)+(B) assembly.

5,351,526

APPARATUS FOR MONITORING LEAKAGE INTO EXHAUST LINES

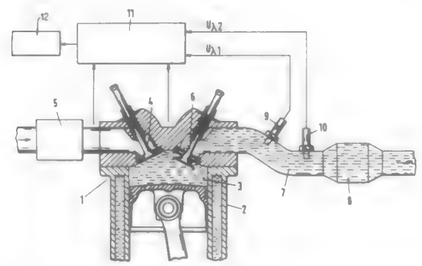
Harald Krohm, Bochum, and Ludger Holscher, Ludenscheid, both of Fed. Rep. of Germany, assignors to AFT Atlas Fahrzeugtechnik GmbH, Werdohl, Fed. Rep. of Germany

Filed Jun. 11, 1993, Ser. No. 75,763

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1992, 4219453

Int. Cl.[5] G01M *3/04*

U.S. Cl. 73—40 **6 Claims**



1. A monitoring apparatus for an internal combustion engine having an exhaust gas path and arranged to intercept a air/fuel mixture fed to the engine while operating, including intermittent reduced pressure phases of engine operation in which the exhaust gas path undergoes periods of reduced pressure relative to the atmospheric pressure of external air, and including a first lambda probe located in the exhaust gas path for sensing an oxygen concentration in the exhaust gas and for issuing a first signal indicative of the oxygen concentration, and a control device responsive to the first signal from the first lambda probe for controlling engine operation by controlling the ratio of the air/fuel mixture fed to the engine, the improvement comprising:

a second lambda probe for sensing the oxygen concentration in the exhaust gas and for issuing a second signal indicative of the oxygen concentration, said second lambda probe being located in the exhaust gas path at a point spaced therealong from the first lambda probe, said control device being arranged such that it is also responsive to said second signal from said second probe, said control device including means for detecting a deviation of the first signal from the first lambda probe from that of said second signal from said second lambda probe by effecting a comparison measurement of the first signal and said second signal from said first and second lambda probes, respectively, during reduced pressure phases in the engine operation and means for generating an error signal when said deviation arises on the basis of an increase in the oxygen concentration during said reduced pressure phases, said increase in oxygen concentration being indicative of external air suction leakage into the exhaust gas path.

5,351,527

METHOD AND APPARATUS FOR TESTING FLUID PRESSURE IN A SEALED VESSEL

Brian K. Blackburn, Rochester; Scott B. Gentry, Romeo, and Joseph F. Mazur, Washington, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Dec. 4, 1992, Ser. No. 986,035

Int. Cl.[5] G01M *3/00*; B60R *21/26, 21/16*

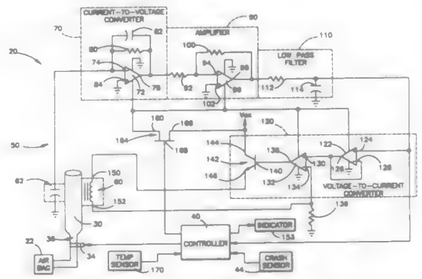
U.S. Cl. 73—52 **30 Claims**

1. An apparatus for sensing pressure in a sealed vessel, said apparatus comprising:

transducer means operatively coupled to said vessel for, when energized, transferring energy to pressurized fluid in said vessel, said transferred energy establishing oscillations of the pressurized fluid in the vessel;

receiver means operatively coupled to said vessel for providing a received electrical signal having a frequency value indicative of a natural frequency of the pressurized fluid in said vessel;

receiver circuit means operatively connected to said receiver means for providing a fluid resonating signal having a frequency equal to the natural frequency of the



oscillating pressurized fluid in the vessel, the natural frequency being indicative of the fluid pressure in said vessel; and

drive circuit means operatively connected to said receiver circuit means and to said transducer means for initially driving said transducer means with a square wave energy pulse signal and subsequently driving said transducer means with an oscillating energy wave having a frequency equal to said natural frequency of said pressurized fluid in said vessel.

5,351,528

APPARATUS AND METHOD FOR DETECTING MISFIRING IN AN INTERNAL COMBUSTION ENGINE

Wataru Fukui, and Toshio Iwata, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

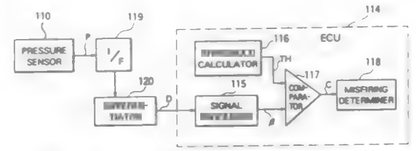
Continuation of Ser. No. 734,712, Jul. 23, 1991, abandoned. This application Apr. 21, 1993, Ser. No. 49,581

Claims priority, application Japan, Aug. 13, 1990, 2-211611; Aug. 23, 1990, 2-220039

The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—115 **7 Claims**



1. A misfiring detecting apparatus for an internal combustion engine, comprising:

a pressure sensor for sensing the preasure in a cylinder of the engine and for generating a corresponding output signal;

a differentiator for differentiating the output signal of said pressure sensor and for generating a corresponding output signal;

a signal processor for processing the output signal of said differentiator to generate a power stroke pressure information signal;

a threshold calculator for calculating a threshold for a mis-

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firing determination based on operating conditions of the engine, wherein said threshold calculator includes means for generating a first threshold having a first prescribed value which is predetermined based on the engine operating conditions and stored in a memory when said engine has a first running condition, and for generating a second threshold having a second prescribed value which is predetermined based on the engine operating conditions and stored in said memory when said engine has a second running condition;

a comparator for comparing the power stroke pressure information signal from said signal processor with the threshold from said threshold calculator; and

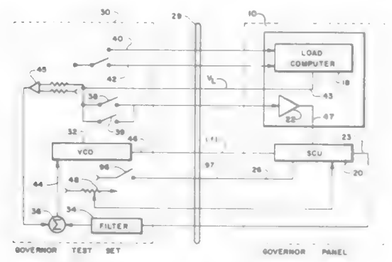
a misfiring determiner for determining, based on a result of the comparison made by said comparator, whether misfiring took place in the cylinder of the engine.

5,351,529

APPARATUS FOR BENCH TESTING A GOVERNOR

David E. Locke, Sr., Hillsville, Va., assignor to The United States of America as represented by the U.S. Army Corps of Engineers, Washington, D.C.

Filed Mar. 16, 1993, Ser. No. 31,979
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—118.1 **11 Claims**



1. An apparatus for testing an electronic governor for an engine generator set, said governor having a speed control unit and a load computer, the testing apparatus comprising:

an input speed voltage means for producing a reference voltage input to the speed control unit corresponding to a desired speed control signal for the engine;

a voltage controlled oscillator (VCO) responsively coupled to the output of the governor and having an output adapted to be coupled to the input of said speed control unit for producing a simulated engine speed signal input, said VCO having a frequency proportional to the desired engine speed for setting a control point of said speed control unit and being responsively coupled to an output of the speed control unit in feed back relationship therewith, said VCO being maintained near said frequency when the speed control unit is operative;

input load voltage and current means for producing input voltage and current signals corresponding to a simulation of the generator output as a function of load, said means adapted to be coupled to the load computer for producing a load simulation signal, said load simulation signal being alternatively coupled to an input of the speed control unit for modifying the control point of the VCO;

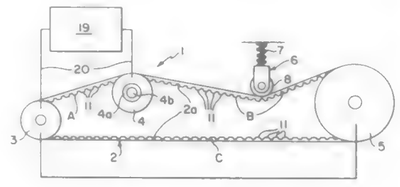
and switch means coupled to an amplifier for selectively introducing droop and load share signals for the speed control unit.

5,351,530

METHOD AND APPARATUS TO CHECK THE ACCEPTABLENESS OF THE STATE OF WEAR IN THE COVERING FABRIC OF A DRIVING BELT

Vincenzo Macchiarulo, Pescara, and Tommaso DiGiacomo, Guardiagrele, both of Italy, assignors to Pirelli Trasmissioni Industriali S.p.A., Chieti, Italy

Division of Ser. No. 801,575, Dec. 6, 1991, Pat. No. 5,212,982.
This application Apr. 8, 1993, Ser. No. 44,045
Claims priority, application Italy, Dec. 11, 1990, 22335A/90
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—118.1 **14 Claims**



1. A driving belt comprising:

an elastomeric body;

at least one reinforcement fabric applied on a working surface of the elastomeric body;

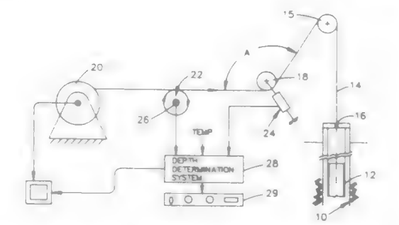
electroconductive fillers incorporated in the reinforcement fabric in an amount sufficient to cause a ratio between an initial electric resistance of the belt body when unworn and said at least one reinforcement fabric to be at least equal to 50:1.

5,351,531

DEPTH MEASUREMENT OF SLICKLINE

Wayne L. Kerr, Stafford, Tex., assignor to Kerr Measurement Systems, Inc., Stafford, Tex.

Filed May 10, 1993, Ser. No. 58,225
Int. Cl.[5] E21B *47/00*; **G01B** *7/04*
U.S. Cl. 73—151 **28 Claims**



16. A method for processing parameters derived from an operation in a well bore where a slickline is moved through a well bore and while a non slip calibrated measuring wheel develops a length parameter representative of the length of slickline traveling over the measuring wheel and while a tension measuring device develops a tension parameter comprising the steps of:

continuously algebraically summing the length parameter while the tool is in the well bore;

continuously developing the tension parameter while the tool is in the well bore;

selecting a temperature parameter relative to a norm for determining the change in length of the slickline due to the temperature differential with respect to the norm and determining the change in length due to the temperature parameter as a function of the temperature coefficient of

the temperature parameter and length of slickline in the well bore;

determining the change in length of the slickline as a function of the tension parameter and the length parameter; and

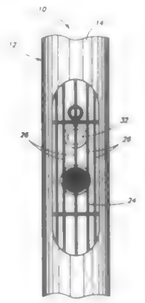
algebraically summing the change in length of the slickline as a function of the tension parameter and the length parameter with the change in length due to the temperature parameter to obtain a length measurement of a slickline corrected for temperature differential and for tension.

5,351,532

METHODS AND APPARATUS FOR MAKING CHEMICAL CONCENTRATION MEASUREMENTS IN A SUB-SURFACE EXPLORATION PROBE

Robert N. Hager, Spokane, Wash., assignor to Paradigm Technologies, Spokane, Wash.

Filed Oct. 8, 1992, Ser. No. 960,486
Int. Cl.[5] G01N *21/23*; **E21B** *47/00*
U.S. Cl. 73—153 **27 Claims**



1. A sub-surface exploration probe for making repeated concentration measurements of a chemical occurring in a sub-surface fluid, the probe comprising:

a probe housing having a surface which is exposed to the sub-surface fluid;

a chemical detection chamber for containing a solvent in which the chemical is soluble;

a filter having a first side positioned to contact the sub-surface fluid, the filter having a second side positioned to contact solvent within the housing, the filter allowing the chemical to permeate from the sub-surface fluid into solvent within the housing;

a radiant energy source positioned relative to the chemical detection chamber to direct radiant energy into the chemical detection chamber; and

a sensor apparatus positioned relative to the chemical detection chamber to measure radiant energy within the chemical detection chamber and thereby determine solvent chemical concentration.

5,351,533

COILED TUBING SYSTEM USED FOR THE EVALUATION OF STIMULATION CANDIDATE WELLS

James M. Macadam; Donald E. Bailey, and Ronald E. Savage, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jun. 29, 1993, Ser. No. 84,678
Int. Cl.[5] E21B *47/06*, *47/00*
U.S. Cl. 73—155 **15 Claims**

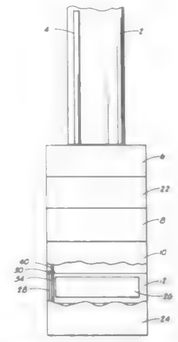
1. An apparatus for measuring downhole pressures during both flowing and shut-in conditions comprising:

a length of coiled tubing;

a length of wireline extending inside said coiled tubing;

a pressure data converting unit operably coupled to said coiled tubing and to said wireline;

an electronic pressure gauge operably coupled to said coiled tubing and to said wireline; and



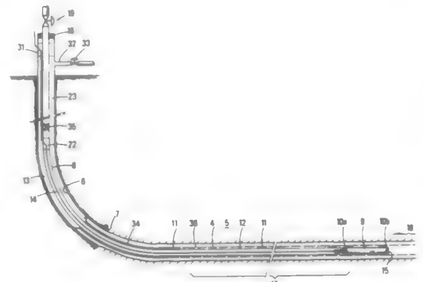
a shut-in tool coupled to said coiled tubing and capable of allowing pressure readings both during shut-in and flowing conditions.

5,351,534

METHOD AND DEVICE FOR PRODUCTION LOGGING IN A GUSHING WELL

Jacques Lesai, Maule, France, assignor to Institut Francais du Petrole, Malmaison Cedex, France

Continuation of Ser. No. 497,266, Mar. 22, 1990, abandoned.
This application Apr. 29, 1992, Ser. No. 877,382
Claims priority, application France, Mar. 22, 1989, 89 03886
Int. Cl.[5] E21B *49/08*
U.S. Cl. 73—155 **17 Claims**



1. Apparatus for creating production logs in a producing well, the well traversing a geological formation, said apparatus comprising:

a perforated liner within a producing zone of the well bore, and not cemented in the well bore, to define an annular space therebetween;

first means for positioning a sealing means within the liner in the well bore to divide the liner into an upstream part and a downstream part with respect to the sealing means;

second means for measuring a characteristic of the production in at least one of the upstream part and the downstream part;

third means for monitoring the pressure differential in the liner across the sealing means;

fourth means for controlling the pressure differential so as to

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control leakage of effluents between the upstream part and the downstream part; and

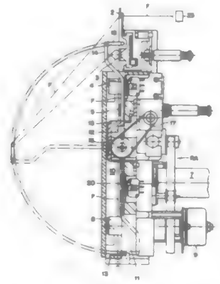
fifth means for preparing production logs based on the measured values of said characteristic and the monitored pressure differential.

5,351,535

MECHANISM FOR INSERTING A THREAD INTO A YARN TESTER

Heinz Etter, Winterthur, and Willi Schlaepfer, Fehraltorf, both of Switzerland, assignors to Zellweger Uster AG, Uster, Switzerland

Filed Jul. 12, 1993, Ser. No. 90,009
Int. Cl.[5] G01N *1/02, 1/04, 3/08;* **G01L** *5/04*
U.S. Cl. 73—160 **16 Claims**



1. In a yard tester in which a thread is tested while running from a thread supply through thread feeding means and to take-away means, a threading mechanism comprising a releasable thread clamp between said supply and said feeding means, and a swingable arm means pivotable about an axis between said clamp and said take-away means so that a portion of said arm means remote from said axis contacts a thread portion between said thread supply and said clamp and, upon swinging of said arm means about said axis, draws a loop of the thread to said take-away means.

3. A method of sequentially threading a plurality of yarns to be tested into test apparatus of the type in which a yarn to be tested is fed from a yarn supply through yarn feed rollers to an air nozzle, said method comprising

(a) disposing yarn end portions in generally parallel relation to one another with the yarns leading from one of a plurality of guides arranged in a row to one of a plurality of clamps arranged in a row that is generally parallel to said row of guides;

(b) pivoting about an axis generally parallel to said rows an insertion arm having a yarn engaging member at its end portion that swings, upon pivoting of said arm, from a first position to a second position to contact a portion of a first of said yarns between its guide and its clamp to draw off a loop of said first yarn, to thread said loop between said feed rollers, and to present said loop to said nozzle;

(c) shifting said rows of guides and clamps endwise after completion of the testing of said first yarn to bring a second of said yarns into alignment with said yarn engaging member on said insertion arm; and

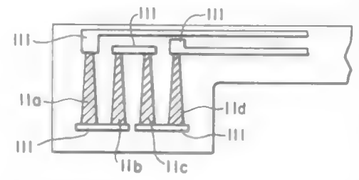
(d) again pivoting said insertion arm about said axis to draw off a loop of said second yarn, to thread the loop of the second yarn between said feed rollers, and to present the loop of the second yarn to said nozzle.

5,351,536

AIR FLOW RATE DETECTOR

Kaoru Uchiyama, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 683,619, Apr. 11, 1991, abandoned. This application Apr. 14, 1993, Ser. No. 46,916
Claims priority, application Japan, Apr. 18, 1990, 2-100332
Int. Cl.[5] G01F *1/68*
U.S. Cl. 73—204.26 **11 Claims**



1. An air flow rate detector for detecting rate of flow of air in an air passage, said air flow rate detector comprising:

a thermosensitive film resistor having a resistance value which varies with temperature;

a control circuit for controlling current flowing through said thermosensitive film resistor;

a substrate having said thermosensitive film resistor and said control circuit formed thereon;

a holder member for positioning said substrate with said thermosensitive film resistor in the air passage and said control circuit outside the air passage; and

a foam adhesive having high thermal insulating properties bonding a portion of said substrate, intermediate said thermosensitive film resistor and said control circuit, to said holder member, while preventing passage of air from a space adjacent said control circuit to a space adjacent said thermosensitive film resistor;

said thermosensitive film resistor comprising at least one longitudinal electrical resistance element, including a first portion and a second portion and being adapted to be positioned in the air flow passage with said longitudinal resistor element extending longitudinally in the air flow direction and said first portion adapted to be positioned upstream in the air flow direction from said second portion, said longitudinal resistor element having smoothly increasing resistivity with said first portion having a greater resistivity than said second portion, whereby the temperature distribution in the direction of air flow is substantially uniform.

5,351,537

HEAT-SENSITIVE FLOW RATE SENSOR HAVING A LONGITUDINAL WIRING PATTERN FOR UNIFORM TEMPERATURE DISTRIBUTION

Hiroyuki Uramachi, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1993, Ser. No. 110,970
Claims priority, application Japan, Aug. 28, 1992, 4-229894
Int. Cl.[5] G01F *1/68*
U.S. Cl. 73—204.26 **7 Claims**

1. A heat-sensitive flow rate sensor comprising:

a housing which provides a principal path of flow of a fluid;

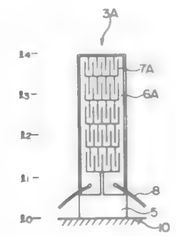
a detecting tube disposed at a predetermined location inside said housing;

a measuring resistor unit disposed in said detecting tube;

a fluid temperature sensor disposed in said detecting tube; and

resistors connected to said measuring resistor unit and said fluid temperature sensor so as to form a bridge circuit;

wherein said measuring resistor unit includes a supporting substrate, a heat-sensitive resistor formed on said supporting substrate, and a wiring pattern formed on said heat-sensitive resistor such that conducting wires of said wiring pattern principally extend in parallel with a longitudinal



axis of said measuring resistor unit in such a manner that the temperature distribution over said heat-sensitive resistor is substantially uniform.

5,351,538

ON-LINE FISHING DEPTH INDICATOR

Michael P. McGuire, Ripon, Wis.; John J. Dill, II, Kalamazoo, and Michael J. Barker, Portage, both of Mich., assignors to Bait Data, Inc., Ripon, Wis.

Continuation of Ser. No. 845,913, Mar. 4, 1992, abandoned. This application Oct. 14, 1993, Ser. No. 137,394
Int. Cl.[5] G01F *23/14*
U.S. Cl. 73—301 **40 Claims**



1. An on line, controllable electronic fishing depth indicator for monitoring the water depth of a trollable fishing bait of the type trollable from a rod and reel located within a boat when both the depth indicator and the bait are secured to and trolled by a fishing line, the fishing depth indicator comprising:

a. an elongate, hydrodynamic body having an outer peripheral wall, opposite closed ends and a hollow interior cavity;

b. through ports in the body and in communication with the cavity;

c. means for securing one end of the body to a fishing line in combination with a fishing bait for trolling the body beneath the water in the same conditions as the fishing bait;

d. a pressure sensor, Said pressure sensor including a pressure transducer mounted in the cavity and in communication with the ports, and adapted for sensing the water pressure in the ports and producing in response a transducer signal indicating the water depth of the transducer;

e. a control circuit associated with the pressure transducer for receiving the transducer signal and producing in response thereto an output signal relating to the water depth of the transducer;

f. a readout device associated with the control circuitry and adapted for converting the output signal into a useable form; and

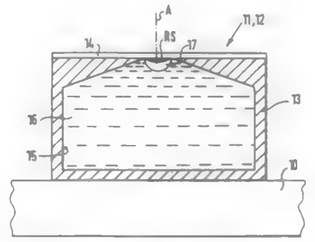
g. a power supply associated with the pressure transducer, the control circuitry and the readout device for driving same, said power supply including a control element for controlling the power supply and the readout device, said control element adapted to sequence through a plurality of operative modes.

5,351,539

SENSOR FOR MEASURING ACCELERATION AND TILT WITH A BUBBLE LEVEL

Botho Ziegenbein, Reutlingen; Ulrich Kippelt, Eningen, and Uwe Foell, Gomaringen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE90/00862, § 371 Date May 26, 1992, § 102(e) Date May 26, 1992, PCT Pub. No. WO90/08492, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 13, 1990, Ser. No. 839,757
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1989, 3939410
Int. Cl.[5] G01P *15/12;* **G01C** *9/06*
U.S. Cl. 73—500 **15 Claims**



1. A sensor for detecting the acceleration and the inclination of a movable object (**10**), with the aid of a bubble level (**11**) secured to the movable object (**10**),

comprising

a housing (**12**),

a liquid (**16**) partially filling the housing (**12**), while leaving a gas bubble (**17**) in a portion of the housing,

where the liquid (**16**) and the gas bubble (**17**) together completely fill a hollow chamber (**15**) defined by the housing (**12**), so that the gas bubble is not completely enclosed by the liquid (**16**), but lies against the interior of the housing (**12**), so that an interface separating the liquid and the gas contacts the interior of the housing (**12**) and

where the gas bubble (**17**) is in an initial position inside the housing (**12**) when the acceleration and the inclination of the bubble level (**11**) are equal to zero or their effects cancel each other,

where furthermore the sensor has an electrically heatable, temperature-sensitive electrical circuit element (**RS**) and the electrical circuit element (**RS**) is a component of an evaluation circuit, which generates an output signal (U_D) which is a function of the acceleration and the inclination of the bubble level (**11**), and wherein,

on the inside of the housing (**12**), within that area over which the gas bubble (**17**) extends in said initial position, the housing (**12**) consists of a lower housing body (**13**) and a cover plate (**14**),

the electrical circuit element (**RS**) is disposed on a surface side of the cover plate (**14**) oriented towards the lower housing body (**13**), and

the circuit element (**RS**) is formed on the cover plate (**14**) by thick-film production techniques.

5,351,540

GRADE ANGLE AND ACCELERATION SENSOR

Thomas A. Gee, Allen Park, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 30, 1992, Ser. No. 954,665
Int. Cl.[5] G01P *15/08*
U.S. Cl. 73—509 **25 Claims**

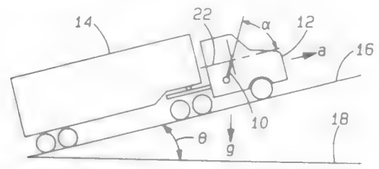
1. A grade and acceleration sensor for measuring the angle of a road grade being traversed by a vehicle and the vehicle's acceleration, said grade and acceleration sensor comprising:

a weight having a predetermined mass m;

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a first sensor for generating a first signal indicative of a first parameter caused by said weight in response to at least the force of gravity acting on said weight;

a second sensor for generating a second signal indicative of a second parameter caused by said weight in response to the combined forces of gravity and acceleration of said vehicle acting on said weight;



grade angle logic means responsive to said first and second signals for generating a grade angle signal having a value corresponding to the grade angle θ of the grade being traversed by the vehicle; and

acceleration logic means responsive to said first and second signals for generating an acceleration signal having a value corresponding to the acceleration "a" of the vehicle.

5,351,541

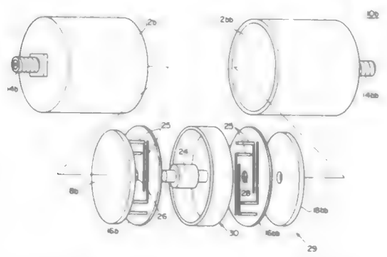
MICROWAVE RESONATOR ACCELEROMETER

Anthony Petrovich, Tewksbury, and Marc Weinberg, Needham, both of Mass., assignors to Charles Stark Draper Laboratories, Cambridge, Mass.

Filed Jan. 22, 1992, Ser. No. 823,866

Int. Cl.[5] G01P *15/08*

U.S. Cl. 73—517 R **19 Claims**



1. A microwave resonator accelerometer comprising:

a microwave resonant cavity having a predetermined resonant frequency; said cavity including a flexible portion;

a proof mass fixed to said flexible portion for changing the geometry and establishing a new resonant frequency of said cavity in response to an acceleration force on said proof mass;

means for coupling to said cavity a microwave frequency signal at or approximately at said predetermined resonant frequency; and

means, responsive to a reflected microwave signal from the cavity, for discriminating a shift in said predetermined resonant frequency of said cavity to a new resonant frequency effected by a change in geometry of said cavity resulting from said acceleration force on said proof mass; said discriminating means includes a phase locked loop circuit; said circuit comprising an oscillator for generating a microwave carrier signal proximate said predetermined resonant frequency; means for modulating said microwave carrier signal with a modulating signal; means for submitting the modulated microwave carrier signal to said means for coupling and for receiving a reflected signal from said cavity; and means for determining an acceleration signal from the difference between the submitted modulated microwave carrier signal and said reflected signal.

5,351,542

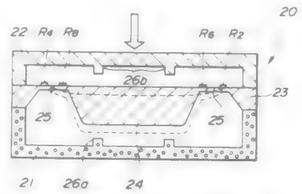
ACCELERATION SENSOR ASSEMBLY

Etsuo Ichimura, and Masaru Goto, both of Saitama Prefecture, Japan, assignors to Kansei Corporation, Omiya City, Japan

Filed Jan. 27, 1992, Ser. No. 826,950

Int. Cl.[5] G01P *15/09*

U.S. Cl. 73—517 R **7 Claims**



1. An acceleration sensor assembly comprising:

a base board;

a ceramic plate bonded to said base board and having predetermined circuits printed thereon;

a silicon-chip operational amplifier mounted on said ceramic plate;

a piezoresistance semiconductor acceleration sensor mounted on said ceramic plate;

a first group of bonding wires through which said operational amplifier and said circuits are electrically connected; and

a second group of bonding wires through which said acceleration sensor and said circuits are electrically connected,

wherein said acceleration sensor includes lower and upper cases united to constitute a housing; an apertured silicon plate member installed in said housing and having a frame portion, a center weight portion, and thinner beam portions through which said frame portion and said center weight portion are integrally connected, said center weight portion being displaceable relative to said frame portion causing deformation of said thinner beam portions upon application of a specific acceleration to said center weight portion; piezoelectric resistors mounted on said thinner beam portions; wires connecting said piezoelectric resistors to constitute a bridge circuit; and a plurality of terminals connected to said wires and said second group of bonding wires, and

wherein the bonding wires of said first and second groups are of the same type and are identical in diameter.

5,351,543

CRACK DETECTION USING RESONANT ULTRASOUND SPECTROSCOPY

Albert Migliori; Thomas M. Bell, both of Santa Fe, and George W. Rhodes, Albuquerque, all of N. Mex., assignors to The Regents of the University of California, Office of Technology Transfer, Alameda, Calif.

Filed Dec. 27, 1991, Ser. No. 813,651

Int. Cl.[5] G01N *29/12*

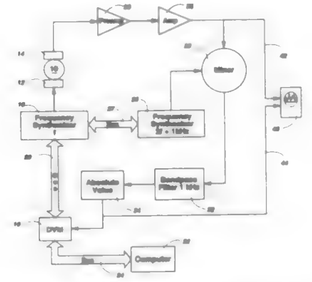
U.S. Cl. 73—579 **10 Claims**

1. A method for detecting crack-like flaws in a work piece comprising the steps of:

establishing said work piece in a first condition to produce a first response of said crack-like flaws to an acoustic excitation;

acoustically exciting said work piece over a selected range of resonant ultrasound frequencies to generate a first spectrum containing second harmonic components in said first response of said component;

establishing said work piece in a second condition to produce a second response of said crack-like flaws to said acoustic excitation;



acoustically exciting said work piece over said selected range of resonant ultrasound frequencies to generate a second spectrum containing second harmonic components in said second response of said work piece; and

comparing said first and second spectra to determine the presence of said crack-like flaws.

5,351,544

MEASURING APPARATUS USING AN ULTRASONIC WAVE TO PROVIDE FLAKING STATE DETECTION FOR A SPECIMEN ON THE BASIS OF FREQENCY ANALYSIS OF A WAVE REFLECTED BY THE SPECIMEN

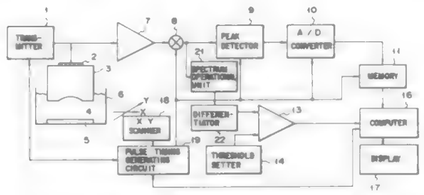
Tomio Endo; Masahiro Aoki, both of Tokyo, and Takeshi Yamagishi, Kanagawa, all of Japan, assignors to Olympus Optical Co., Ltd, Tokyo, Japan

Filed Nov. 18, 1991, Ser. No. 793,615

Claims priority, application Japan, Nov. 21, 1990, 2-318419

Int. Cl.[5] G01N *29/12*

U.S. Cl. 73—588 **11 Claims**



1. A measuring apparatus using an ultrasonic wave, comprising:

ultrasonic wave transmission/reception means for transmitting an ultrasonic wave pulse into a specimen, for receiving an echo wave from the specimen and for converting the echo wave, including reflected components reflected by the specimen, into an electric signal;

extracting means for extracting reflected signal components corresponding to the reflected components from the electric signal;

spectrum detecting means for detecting a power spectrum of the reflected signal components, extracted by said extracting means, on the basis of a Fourier-transformation; and

flaking detecting means for detecting peaks and troughs of the power spectrum, and for then detecting a flaking of the specimen in accordance with a cycle of the peaks and troughs of the power spectrum that is detected.

5,351,545

ELECTROMAGNETIC VIBRATION GENERATORS

John H. Lucas, Essex, United Kingdom, assignor to Ling Dynamic Systems Ltd., Royston Herts, United Kingdom

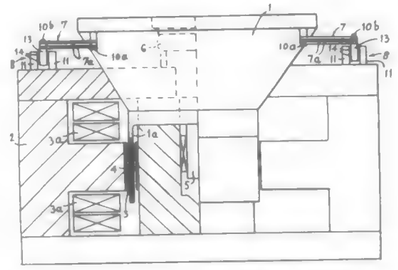
PCT No. PCT/GB/90/01474, § 371 Date Mar. 23, 1992, § 102(e) Date Mar. 23, 1992, PCT Pub. No. WO91/04801, PCT Pub. Date Apr. 18, 1991

PCT Filed Sep. 26, 1990, Ser. No. 842,119

Claims priority, application United Kingdom, Sep. 29, 1989, 8922054

Int. Cl.[5] B06B *1/00*

U.S. Cl. 73—663 **8 Claims**



1. In an electromagnetic vibration generator comprising a stator, a coil-driven armature suspended within said stator for transmitting vibrations to an article to be vibrated, and suspension means bridging said armature and said stator for suspending said armature as aforesaid; the improvement wherein said suspension means comprises:

a plurality of peripherally spaced flexure members, each having an inner end and an outer end;

means securing each said inner end to said armature; and

a plurality of brackets equal in number to the number of said flexure members, each of said brackets supporting the outer end of an associated one of said flexure members and each comprising:

two spaced outer rigid stationary parts; a central rigid floating part sandwiched between said stationary parts; and

a pair of resilient members disposed on opposite sides of said floating part between said floating part and said stationary parts;

mutually facing blind recesses being formed in said floating part and in said stationary parts for receiving and locating said resilient members, thereby reducing the tendency of said resilient members to migrate during operation of said vibration generator and providing rotational stiffness for said armature.

5,351,546

MONOCHROMATIC ULTRASONIC TRANSDUCER

James H. Terhune, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Oct. 22, 1992, Ser. No. 964,998

Int. Cl.[5] G01N *29/00*

U.S. Cl. 73—642 **16 Claims**

1. An ultrasonic transducer comprising: piezoelectric means capable of transforming electrical energy into ultrasonic energy and transforming ultrasonic energy into electrical energy;

means for supplying continuous wave electrical energy having a power spectrum of predetermined bandwidth to said piezoelectric means;

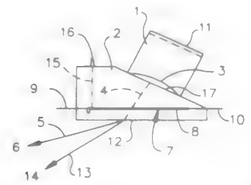
solid medium means for propagating ultrasonic energy;

coupling means for allowing transmission of ultrasonic energy from said piezoelectric means to said solid medium means; and

a gap of uniform width located inside said solid medium

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means, said gap being an open volume filled with fluid medium, said gap width and said fluid medium being such that said gap transmits therethrough only ultrasonic en-



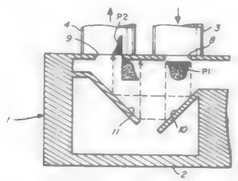
ergy having a power spectrum of bandwidth narrower than said predetermined bandwidth and centered on a frequency of a standing wave produced in said fluid-filled gap.

5,351,547

OPTICAL PRESSURE TRANSDUCER HAVING A FIXED REFLECTOR AND A MOVABLE REFLECTOR ATTACHED TO A DIAPHRAGM

Christopher P. Grudzien, Jr., Mansfield, and Louis Panagotopulos, Walpole, both of Mass., assignors to Dynisco, Inc., Sharon, Mass.

Continuation of Ser. No. 907,331, Jul. 1, 1992, which is a continuation-in-part of Ser. No. 517,827, May 2, 1990, Pat. No. 5,127,269. This application Jan. 21, 1993, Ser. No. 7,085
The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.
Int. Cl.[5] G01L *7/08*
U.S. Cl. 73—705 **30 Claims**



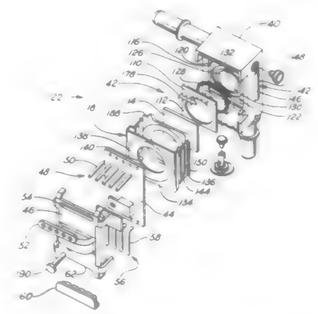
1. A pressure transducer comprising:
a body;
an input optical fiber for receiving input light, disposed in said body, and having a lengthwise axis;
an output optical fiber, disposed in said body, and having a lengthwise axis;
a force responsive diaphragm, secured to the body, having an at rest position when no pressure is sensed and deflected positions when different levels of pressure are sensed;
a fixed position reflector secured to the body;
a moveable reflector, wherein the reflectors are positioned in the optical path between the input and output optical fibers and reflect at least a portion of input light from the input optical fiber to the output optical fiber; and
means for securing the moveable reflector to the diaphragm such that the moveable reflector moves with the diaphragm and wherein a greater amount of light is reflected to the output optical fiber when the diaphragm is in an intermediate deflected position than when the diaphragm is in the at rest position.

5,351,548

CAPACITIVE PRESSURE SENSOR

Paul F. Briggs, Wolcott; George H. Bucci, Tolland; Donald L. Drapeau, Meriden, and Lawrence E. Egle, E. Hampton, all of Conn., assignors to Walbro Corporation, Cass City, Mich.

Filed Dec. 2, 1992, Ser. No. 984,896
Int. Cl.[5] G01L *9/12*; **G01M** *15/00*
U.S. Cl. 73—718 **31 Claims**



1. A pressure sensor comprising, a housing, a flexible diaphragm received in said housing and having a generally flat face when in its unflexed state, a separate and rigid substrate received in said housing and having a generally flat face in spaced apart and generally opposed relation to the flat face of said diaphragm, at least one electrode on each of said generally flat opposed faces of said substrate and said diaphragm, a spacer disposed between said substrate and said diaphragm adjacent the periphery thereof and extending circumferentially at least substantially continuously and constructed and arranged to space apart said electrodes in substantially parallel and opposed relation when said diaphragm is unflexed, a seat carried by said housing for receiving one of said flexible diaphragm and rigid substrate thereon, a resilient clamp carried by said housing and yieldably biasing said substrate, spacer and diaphragm together at least substantially continuously around the electrodes on the substrate and diaphragm and yieldably urging onto said seat one of said flexible diaphragm and rigid substrate, whereby said electrodes are disposed in operative relationship in said housing to produce a signal varying with and responsive to the pressure of fluid acting on said diaphragm to flex it and displace the electrode thereon relative to the electrode on said rigid substrate.

5,351,549

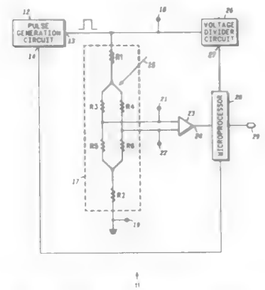
PULSED PRESSURE SENSOR CIRCUIT AND METHOD THEREFOR

Jeffrey Baum, Scottsdale, and Warren J. Schultz, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 1, 1992, Ser. No. 954,996
Int. Cl.[5] G01L *9/00*, *9/04*
U.S. Cl. 73—723 **17 Claims**

1. A pulsed pressure sensor circuit having increased sensitivity comprising:
a pressure sensor having a bias input, a port and an output, said pressure sensor for providing an output voltage corresponding to a pressure at said port when a bias voltage is applied to said bias input; and

a pulse generation circuit for providing a voltage pulse to said bias input of said pressure sensor, said voltage pulse



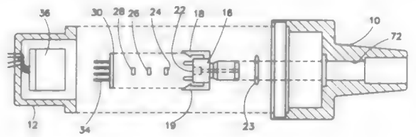
biasing said pressure sensor for generating said output voltage.

5,351,550

PRESSURE SENSOR ADAPTED FOR USE WITH A COMPONENT CARRIER

Dean J. Maurer, Galena, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 16, 1992, Ser. No. 962,641
Int. Cl.[5] G01L *7/08*, *9/06*
U.S. Cl. 73—727 **17 Claims**



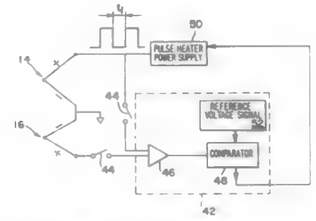
1. A pressure transducer, comprising:
a housing having an opening therein and a conduit extending from said opening to a fluid port of said housing;
a pressure sensitive device disposed in said opening;
a seal member disposed between said pressure sensitive device and a surface of said opening, said seal member providing fluid communication between said conduit and said pressure sensitive device;
a selectively conductive resilient member disposed in contact with said pressure sensitive device, said selectively conductive resilient member being disposed in electrical communication with at least one conductive element on said pressure sensitive device, said pressure sensitive device being disposed between said seal member and said selectively conductive resilient member;
a generally planar member attached to said housing, said seal member, said pressure sensitive device and said selectively conductive resilient member being compressed between said generally planar member and said surface of said opening, said selectively conductive resilient member being disposed in electrical communication with at least one conductive element on said generally planar member; and
means for attaching said housing to said generally planar member and compress said, pressure sensitive device, said selectively conductive resilient member and said seal member therebetween.

5,351,551

CONVECTION THERMOCOUPLE VACUUM GAUGE

Emil Drubetsky, Philadelphia; Donald R. Taylor, Jr., Chalfont, and Leonard Woshczyn, Bensalem, all of Pa., assignors to The Fredericks Company, Huntingdon Valley, Pa.

Filed May 27, 1993, Ser. No. 68,328
Int. Cl.[5] G01L *21/14*
U.S. Cl. 73—755 **14 Claims**



1. A thermocouple vacuum gauge comprising:
(a) a heated and a non-heated thermocouple element, the heated thermocouple element being spaced below the non-heated element;
(b) a pulse generator for generating on-off electrical heating pulses to the heated thermocouple element, the heated and non-heated thermocouple elements being electrically connected in series in a back-to-back manner by having one of their respective like ends connected together at least during off periods, the off periods being the time between the end of a heating pulse and the beginning of a subsequent heating pulse;
(c) a voltage measuring and comparing circuit for measuring a thermally generated voltage difference between the other respective like ends of the thermocouple elements during the off periods, generating a voltage signal related to the difference and comparing the voltage signal to a reference signal;
(d) switch means for connecting said other respective like ends of the thermocouple elements to the voltage measuring and comparing circuit only during the off periods of the heating pulses so as to allow the voltage measuring and comparing circuit to make its measurement and comparison only during said off periods; and
(e) means for varying the output current of the pulse generator so as to supply an amount of current to the heated thermocouple element sufficient to cause the voltage signal to approach the reference signal, the amount of supplied current being proportional to the vacuum level.

5,351,552

MACHINE FOR SQUEEZE TESTING GLASS CONTAINERS

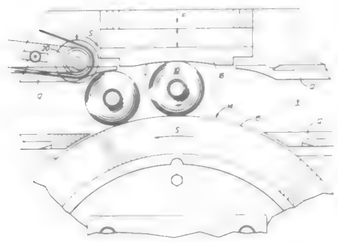
Stephen M. Giometti, Horseheads, N.Y., assignor to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Filed Nov. 10, 1993, Ser. No. 151,189
Int. Cl.[5] G01N *3/08*
U.S. Cl. 73—824 **3 Claims**

1. A machine for squeeze testing glass containers comprising
a test station including
a fixed pad having a curved container engaging surface and
an opposed wheel selectively spaced from said surface and rotating at a predetermined surface speed and in the direction required to roll a container delivered to the station along said curved surface until it is released therefrom,
a conveyor for delivering containers to said test station and for carrying released containers away from said test station,
roller means rotatable about an axis parallel to the axis of

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rotation of said wheel and located to define with said wheel a path through which released containers will pass, means for resiliently urging said roller means to a selected location whereat the distance between said roller means



and said wheel is less than the outer diameter of a released container, and

means for rotating said roller means at a surface speed selected to reduce the rotation of a released container.

5,351,553

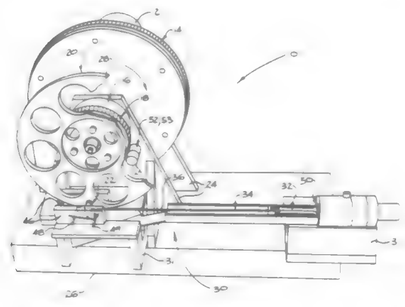
HIGH RATE FLYWHEEL TENSILE TESTING APPARATUS FOR VISCOELASTIC MATERIALS

Albert H. Lepie, 121 S. Desert Candles St.; R. Allen Boyack, 804 Ward Ave.; Frank E. Hudson, 1114 Randall St., and Larry D. Sawyer, 1248 E. Javis Ave., all of Ridgecrest, Calif. 93555

Filed May 3, 1993, Ser. No. 59,769

Int. Cl.[5] G01N *3/08*

U.S. Cl. 73—826 **17 Claims**



2. A high rate tensile testing apparatus for viscoelastic test specimens comprising:

a plurality of support trestles mounted on a base;

a flywheel mounted for rotation on the support trestles;

a light weight engagement wheel mounted for rotation on the support trestles, the light weight engagement wheel further defining an engagement claw disposed on the periphery of the light weight engagement wheel and further defining an outer diameter groove located on a peripheral surface of the light weight engagement wheel;

a clutch and rotor assembly disposed between the flywheel and the light weight engagement wheel and in operative association with the flywheel, the clutch and rotor assembly further adapted to engage the light weight engagement wheel in response to a signal; and

a stretching mechanism for adapted elongating the viscoelastic test specimen, the stretching mechanism disposed on the base and proximate to the .light weight engagement wheel and further positioned so as to tangentially align the viscoelastic test specimen with the light weight engagement wheel and engagement claw.

5,351,554

MAGNETOINDUCTIVE FLOWMETER

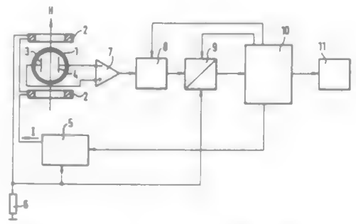
Thomas Budmiger, Ettingen, Switzerland, assignor to Endress + Hauser Flowtec AG, Switzerland

Filed May 29, 1992, Ser. No. 891,396

Claims priority, application European Pat. Off., Jun. 8, 1991, 91 109405.0

Int. Cl.[5] G01F *1/60*

U.S. Cl. 73—861.17 **16 Claims**



1. A magnetoinductive flowmeter comprising

an insulated nonferromagnetic metal conduit,

a coil system for producing a magnetic field whose direction is generally perpendicular to the axis of the pipe and which cuts the pipe,

a control circuit for controlling a current flowing through the coil system and a measuring resistor,

two electrodes which are mounted opposite each other in the wall of the pipe and whose connecting line is generally perpendicular to the pipe axis and to the direction of the magnetic field, and

a measuring circuit having its input connected to the electrodes and containing, between its input and its output, the following subcircuits electrically connected in the order given:

a differential amplifier connected to the electrodes,

a summer,

an analog-to-digital converter which continuously incorporates a variable reference voltage in the conversion and to which the voltage across the measuring resistor is applied as said reference voltage to compensate for variations in the current flowing through the coil system,

a microprocessor generating a compensation signal for the summer and including a sequencer, and

a display unit.

5,351,555

CIRCULARLY MAGNETIZED NON-CONTACT TORQUE SENSOR AND METHOD FOR MEASURING TORQUE USING SAME

Ivan J. Garshelis, Pittsfield, Mass., assignor to Magnetoelastic Devices, Inc., Pittsfield, Mass.

Filed Jul. 29, 1991, Ser. No. 736,299

Int. Cl.[5] G01L *3/10*

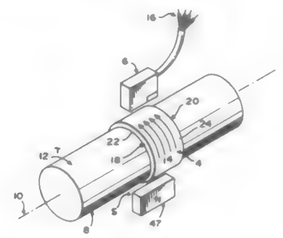
U.S. Cl. 73—862.335 **59 Claims**

1. A magnetoelastic torque sensor for providing an output signal indicative of the torque applied to a member about an axially extending axis, of said member, comprising:

a magnetoelastically active element directly or indirectly attached to or forming a part of the surface of said member in such a manner that torque applied to said member is proportionally transmitted to said element;

said magnetoelastically active element being endowed with an effective uniaxial magnetic anisotropy having the circumferential direction as the easy axis, and magnetically polarized in a circumferential direction, whereby, when torque is applied to said member, said magnetoelastically active element produces a magnetic field varying with said torque; and

magnetic field sensor means mounted proximate to said magnetoelastically active element and oriented with re-



spect thereto to sense the magnitude of said magnetic field and provide said output signal in response thereto.

5,351,556

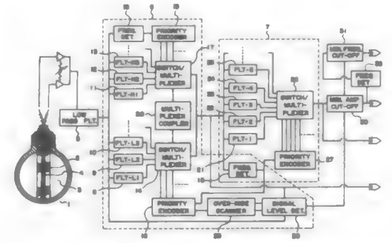
COMPOUND ELECTRONIC FILTER FOR VORTEX FLOWMETERS

Yon S. Lew, and Hyok S. Lew, both of 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 848,291, Mar. 9, 1992, Pat. No. 5,309,771. This application Aug. 30, 1993, Ser. No. 113,197

Int. Cl.[5] G01F *1/32*

U.S. Cl. 73—861.22 **20 Claims**



1. A method for conditioning an alternating electrical signal generated by vortex shedding in a vortex flowmeter, comprising in combination:

a) supplying an input signal representing the vortex shedding to a first stage filter including a parallel combination of a first plurality of electronic filters respectively including a first plurality of electronic switches, wherein each of the first plurality of electronic filters has a different band width and selectively transmits an alternating electrical signals having frequencies distributed substantially within the band width of said each electronic filter, and one of the first plurality of electronic switches closes when a first command signal controlling the first plurality of electronic switches is generated from frequencies of the alternating electrical signal falling substantially within the band width of one of the first plurality of electronic filters controlled by said one electronic switch, and stays open when the first command signal is generated from frequencies of the alternating electrical signal falling substantially outside of the band width of said one of the first plurality of electronic filters controlled by said one electronic switch;

b) converting a frequency of an output signal from the first stage filter to the first command signal;

c) supplying said output signal from the first stage filter to a second stage filter including a parallel combination of a second plurality of electronic filters respectively including a second plurality of electronic switches, wherein each of the second plurality of electronic filters has a different band width band selectively transmits an alternating electrical signal having frequencies distributed substantially within the band width of said each electronic filter, and one of the second plurality of electronic switches closes when a second command signal controlling the second plurality of electronic switches is generated from frequencies of the alternating electrical signal falling substantially within the band width of one of the second plurality of electronic filters controlled by said one electronic switch, and stays open when the second command signal is generated from frequencies of the alternating electrical signal falling substantially outside of the band width of said one of the second plurality of electronic filters controlled by said one electronic switch;

d) converting the frequency of said output signal from the first stage filter to the second command signal; and

e) obtaining an output signal from the second stage filter as a refined alternating electrical signal representing the vortex shedding in the vortex flowmeter.

5,351,557

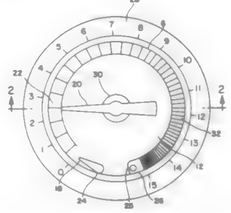
ROTARY FLOWMETER WITH VARYING AREA CHANNEL

Thomas C. Jones, Columbia, Md., assignor to Ohmeda Inc., Liberty Corner, N.J.

Filed Jul. 1, 1992, Ser. No. 907,495

Int. Cl.[5] G01F *1/28*

U.S. Cl. 73—861.53 **7 Claims**



1. A flowmeter for indicating the flow of fluid, said flowmeter comprising a housing, said housing having a clear cover and a backplate forming a metering chamber therebetween, a channel formed in said backplate, and a moveable needle affixed to said housing and positioned within said metering chamber intermediate said clear cover and said backplate and moving within said channel, a paddle located on said needle, said paddle located at least partially within said channel, an orifice means affixed to said housing and positioned to direct the flow of the fluid into said metering chamber along said channel toward and impinging upon said paddle whereupon said needle moves in relationship to the effect of the velocity of the fluid impinging against said needle, said channel having a varying cross-section area in a plane transverse to the needle movement to vary the effect of the fluid velocity impinging on said needle.

5,351,558

DEVICE FOR MEASURING BULK FLOW

Klaus Horn, Braunschweig; Horst Weigelt, Gütersloh, and Stefan Böttinger, Steinhagen, all of Fed. Rep. of Germany, assignors to Claas oHG, Harsewinkel, Fed. Rep. of Germany

Filed Feb. 18, 1992, Ser. No. 836,477

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1991, 4105857

Int. Cl.[5] G01F *23/00*

U.S. Cl. 73—861.08 **18 Claims**

1. A device for measuring a bulk flow of objects such as a grain material, having dielectric constants which are different from the surrounding medium, where the bulk flow is passed

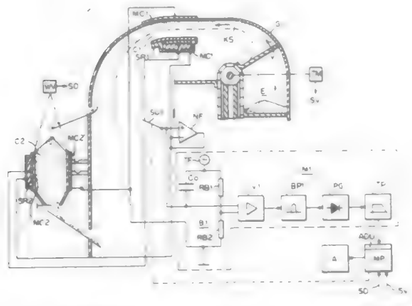
VOL 1167 ISS 1 OCT 4 1994 UMI

through a measuring capacitor, the capacitance of which is continuously measured,

characterized in that

the bulk flow is conducted through the measuring capacitor in a path in parallel with electrodes of the measuring capacitor by propulsion by centrifugal force of bulk flow objects so that the bulk flow objects form a layered dielectric with an approximately homogenous velocity distribution;

the bulk flow is deflected on a housing wall at the outlet of an elevator, so that it forms the velocity-homogenous, layered dielectric in the measuring capacitor disposed there;



the capacitor having coverings, one of the coverings being disposed at a distance from the bulk flow;

a covering of the capacitor of at least one of two measuring capacitors being enclosed with a protective ring electrode which is maintained by means of an impedance converter at the same potential as the enclosed capacitor covering so that the latter has an approximately homogenous electrical measuring field towards an other capacitor covering;

the layered dielectric has an air layer and a bulk flow layer;

the protective ring electrode and a measuring electrode enveloped by it are disposed on one side of the layered dielectric and a reference electrode is formed by an envelope on another side of the layered dielectric.

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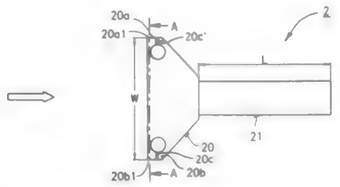
T-SHAPE VORTEX SHEDDER WHEREIN THE BLUFF BODY EXTENDS ACROSS THE DIAMETER OF A CIRCULAR PIPE AND HAS A LENGTH TO WIDTH RATIO BETWEEN 1.56 AND 2.0

Jiun-Jih Miau; Chi-Cheng Yang; J. H. Chou, and Tzu-Liamg Chen, all of Tainan, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Aug. 31, 1993, Ser. No. 114,100

Int. Cl.[5] G01F *1/32*

U.S. Cl. 73—861.24 **8 Claims**



1. A T-shape vortex shedder disposed within a circular pipe through which fluid flows for producing a vortex in the fluid flow, comprising:

an extended plate having a central plane and a length L in a flow direction; and

a generally linear bluff body extending diametrically across the circular pipe and having a front surface of a width W facing the fluid flow and an outer peripheral surface, the front surface being perpendicular to the central plane of said extended plate, the extended plate being secured to said bluff body;

wherein a ratio L/W of the length L of said extended plate in the flow direction to the width W of the front surface of said bluff body is within the range of 1.56 to 2.0, whereby steady vortex shedding is maintained when the Reynolds number of the fluid flow in the circular pipe is between 2.4×10^3 and 3.2×10^4.

5,351,560

ULTRASONIC FLOW METER

Winfried Russwurm, Regensburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

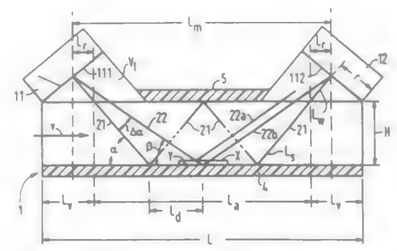
PCT No. PCT/EP90/02179, § 371 Date Sep. 15, 1992, § 102(e) Date Sep. 15, 1992, PCT Pub. No. WO91/09281, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 13, 1990, Ser. No. 861,861

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1989, 3941544

Int. Cl.[5] G01F *1/00*

U.S. Cl. 73—861.27 **2 Claims**



1. An ultrasonic flow meter having a measurement tube through which a fluid flows and having ultrasonic transducers operable as transmission transducers and reception transducers, which, for a "W"-shaped ultrasonic path with multiple reflections provided within the measurement tube, are positioned at a given spacing from one another on a common side wall of the measurement tube, comprising:

in order to at least reduce a disturbing signal of a parasitic "V"-shaped ultrasonic path which occurs within the measurement tube, means for providing at least one of an elevation and a depression of an inner wall of the measurement tube that is located in the interior of the tube at a tube wall which is opposite the side wall provided with the transducers and at which a reflection of a V-shaped path occurs, said means extending over a first half component of a reflection region of the V-shaped path, said means having a single step height, the single step height being dimensioned so that for ultrasonic radiation of the "V"-shaped path extinguishing interference occurs between radiation reflected at said first half component of said means and radiation reflected at a remaining second half component of the reflection region.

5,351,561

CORIOLIS-TYPE FLOW METER HAVING AN IMPROVED TEMPERATURE RANGE OF OPERATION

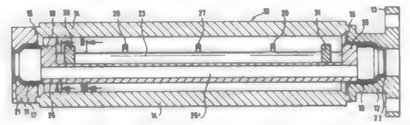
Alfred Wenger, Neftenbach, and Enzio Bitto, Aesch, both of Switzerland, assignors to Endress+Hauser Flowtec AG, Switzerland

Filed Sep. 3, 1993, Ser. No. 116,374

Claims priority, application European Pat. Off., Nov. 6, 1992, 92810859.6

Int. Cl.[5] G01F *1/84*

U.S. Cl. 73—861.38 **10 Claims**



1. A mass flow meter working on the Coriolis principle which is insertable into a conduit of a given diameter so as to be axially aligned with the conduit and through which flows a fluid to be measured, the flow meter comprising:

an inlet tube and an outlet tube which serve to connect the flow meter with the conduit;

an inlet manifold and an outlet manifold;

an external support tube;

means for coupling the external support tube to the inlet tube and outlet tube;

means for coupling the inlet and outlet tubes to the inlet and outlet manifolds;

two measuring tubes each having the same inner diameter and the same wall thickness;

means for coupling each measuring tube to the inlet manifold and outlet manifold;

an internal supporting element that is parallel to the measuring tubes, wherein the temperature of the internal supporting element changes more rapidly in response to the temperature changes of the fluid than the temperature of the external support tube;

means for coupling of the internal supporting element to the inlet manifold and outlet manifold;

a vibration exciter for vibrating the measuring tubes;

at least two sensors spaced along the measuring tubes for sensing the vibration of the measuring tubes and generating signals; and

means for determining the mass flow rate from the phase difference of the signals.

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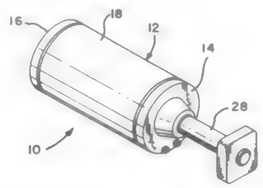
HYDRAULIC--PNEUMATIC CUSHIONING DEVICE WITH PRESSURE INDICATOR

Mark P. Scott, Boiling Springs, Pa., assignor to Keystone Railway Equipment Co., Inc., Camp Hill, Pa.

Continuation of Ser. No. 825,506, Jan. 24, 1992, abandoned. This application Dec. 15, 1993, Ser. No. 167,454

Int. Cl.[5] G01M *17/04*

U.S. Cl. 73—37 **56 Claims**



1. A hydraulic-pneumatic cushioning device for cushioning railway cars, said device comprising a body, a piston guide within the body, a piston fitted in the guide, a piston rod connected to the piston and extending outwardly of the body, a fluid reservoir within the body, a fluid in the reservoir including hydraulic fluid and pressurized gas, and a pressure indicator connected to said body and located in communication with fluid in the reservoir, said pressure indicator including pressure sensing means for sensing the pressure of the fluid in the reservoir; movable tactile indicator means for indicating, by touch of the tactile indicator means, the pressure of the fluid in the reservoir, said tactile indicator means being exposed on the outside of the body, connected to the pressure sensing means and adapted to be moved outwardly of the body to an extended position;

said pressure sensing means including piston means disposed within said pressure indicator for moving tactile indicator means from a retracted position inside said pressure indicator to an extended position outside said pressure indicator;

biasing means disposed entirely within said pressure indicator for urging said piston means and tactile indicator means to move the tactile indicator means from the extended position toward the retracted position;

seal means for precluding fluid from exiting said pressure indicator, said seal means being disposed about said piston means and positioned between said biasing means and said tactile indicator means; and

means for communicating hydraulic fluid from said reservoir to said pressure sensing means and said seal means in said pressure indicator.

5,351,563

ONE-WAY MEASURING ELEMENT FOR ANALYZING GASEOUS OR LIQUID SAMPLES

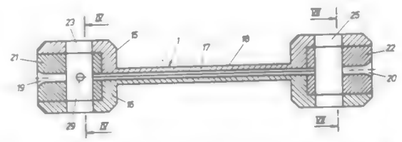
Hellfried Karpf; M. Jean-Pierre Leiner; Anton Mösti, all of Graz; Klaus Reichenberger, Knittelfeld; Bernhard Schaffar, and Werner E. Ziegler, both of Graz, all of Austria, assignors to AVL Medical Instruments AG, Schauffhausen, Switzerland

Division of Ser. No. 643,273, Jan. 22, 1991, Pat. No. 5,228,350. This application Apr. 9, 1993, Ser. No. 44,605

Claims priority, application Austria, Jan. 8, 1990, 1258/90

Int. Cl.[5] G01N *1/10, 1/22*

U.S. Cl. 73—864.84 **14 Claims**



6. One-way measuring element, comprising a measuring channel with at least one electrochemical or optical sensor located therein, a first opening on one end of said measuring channel for connecting said measuring element to an analyzer, a second opening on the other end of said measuring channel for connecting said measuring element to a sample-taking part, and a first sealing element for said first opening and a second sealing element for said second opening, said first and second sealing elements being configured as rotary valves which are rotatable in bores in said measuring element but cannot be shifted axially, wherein a buffer tank is located in said measuring element in the area of said first sealing wherein a collecting tank is located in said measuring element in the area of said second opening, wherein said first sealing element has at least three positions: a first position for closing said measuring channel, a second position for connecting said measuring channel to said first opening, and a third position for connecting said measuring channel to said buffer tank; and wherein said second sealing element has at least three positions: a first position for closing said measuring channel, a second position for connect-

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ing said measuring channel to said collecting tank, and a third position for connecting said measuring channel to said second opening.

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PIPELINE INSPECTION VEHICLE

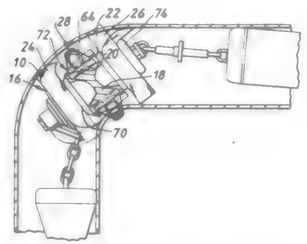
Kenneth Watson, North Shields, and Roger P. Ashworth, Forest Hall, both of United Kingdom, assignors to British Gas plc, England

Filed Jul. 6, 1992, Ser. No. 908,258

Claims priority, application United Kingdom, Jul. 19, 1991, 9115658

Int. Cl.[5] G01M *3/08;* **B08B** *9/04;* **G01N** *27/83;* **G01R** *33/12*

U.S. Cl. 73—865.8 **16 Claims**



1. A pipeline inspection vehicle for detecting defects in the wall of the pipeline comprising a body, two spaced apart flux conductors for engaging the inside of the pipeline, and means for generating flux either electromagnetically or by permanent magnetism, said flux being capable of circulating in a path, said path comprising said wall, one of said conductors, said body, and an array of defect sensors arranged around the vehicle between said conductors, each sensor being mounted on a respective assembly which comprises a housing for the sensor, a sledge secured to the housing, a leading member and a trailing member extending from the sledge to respective anchorages which are spaced apart along a surface opposed to the housing, and are separated by a greater distance than the length of the sledge, and a spring which is positioned between the leading and trailing members against the sensor housing and against said surface, said leading and trailing members being inextensible and each being readily collapsible under forces tending to make its ends become closer.

5,351,565

ENGINE STARTER

Minoru Wada; Yoshiaki Tanaka; Hiroshi Katoh, and Hiroshi Taguchi, all of Tokyo, Japan, assignors to Komatsu Zenoah Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 915,014, Jul. 16, 1992, abandoned, which is a continuation of Ser. No. 391,506, Nov. 10, 1989, Pat. No. 5,159,845. This application Sep. 13, 1993, Ser. No. 120,842

Claims priority, application Japan, Nov. 27, 1987, 62-179758; Nov. 27, 1987, 62-179759

Int. Cl.[5] F02N *15/02*

U.S. Cl. 74—6 **17 Claims**

1. An engine unit comprising:

an engine having a rotatable crankshaft;

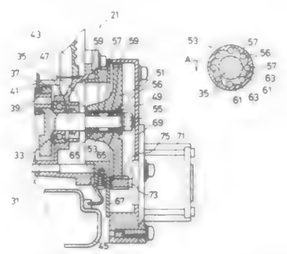
a starter motor having a rotary shaft for supplying rotational power for rotating the crankshaft to start

a drive gear adapted for rotation by the rotational power supplied by the rotary shaft of the starter motor;

a driven gear including an inner bore and adapted for rotation relative to the crankshaft, and concentric with the crankshaft, wherein the driven gear is engaged with the drive gear for rotation responsive to rotation of the drive gear;

a case fixedly and coaxially fitted in the inner bore of the driven gear and surrounding the crankshaft; and

clutch means provided on the case, separably surrounding the crankshaft and biased for engagement with the crankshaft responsive to rotation of the driven gear, for connecting and disconnecting the crankshaft and the case so that when the starter motor is driven to start the engine, the crankshaft is connected to the driven gear, and so that after the engine is started, the crankshaft is fully disconnected from the clutch means and the driven gear so that only the crankshaft rotates.



5,351,566

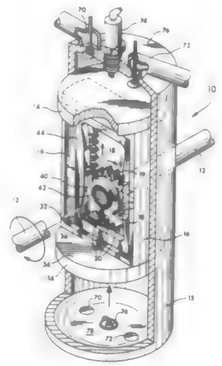
DRIVE APPARATUS AND METHOD

Franklin E. Barnett, 4717 Freeport Way, Denver, Colo. 80239, assignor to Franklin E. Barnett, Denver and Brian D. Smith, Highlands Ranch, both of Colo.

Continuation-in-part of Ser. No. 924,181, Aug. 3, 1992, Pat. No. 5,236,398. This application Aug. 16, 1993, Ser. No. 106,831

Int. Cl.[5] F16H *19/04*

U.S. Cl. 74—30 **6 Claims**



1. A drive apparatus comprising:

sprocket means rigidly connected to a shaft and axially aligned thereabout;

an endless racetrack-shaped ratch means for continuously engaging said sprocket means and moving between first and second linear drive positions, said ratch means having opposing first and second linear segments wherein said first linear segment engages said sprocket means when said ratch means is in its first linear drive position and wherein said second linear segment engages said sprocket means when said ratch means is in its second linear drive position, said first and second opposing linear sprocket engaging drive segments being joined at their ends by a pair of opposing half circular-shaped sprocket engaging segments to provide said ratch means with its racetrack shape;

ratch moving means for facilitating movement of said ratch means between its first and second linear drive positions and maintaining said ratch means in engagement with said sprocket means, said ratch moving means including an equilateral triangularly-shaped member which is coaxially aligned with said sprocket means and freely rotatable about the shaft;

means attached to said ratch means for transmitting the energy of linear motion to and from said ratch means by enabling reciprocating strokes to be made with said ratch means such that (1) when a stroke is made in a generally linear predetermined first direction said first linear segment of said ratch means engages said sprocket means and (2) when a stroke is made in a generally linear second direction which is opposite that of the linear first direction said second linear segment engages said sprocket means; and

guide means rigidly connected to said ratch means, said guide means defining a track for receiving and cooperating with said triangularly-shaped member to (1) rotate said triangularly-shaped member one-sixth of a turn at the end/beginning of each stroke and (2) maintain said sprocket means engaged with said half-circular segments of said ratch means as said ratch means moves between the first and second positions at the end/beginning of each stroke, said track also having a cross-width which is substantially equal to the height of said triangularly-shaped member so that said triangularly-shaped member and track cooperate to maintain said ratch means in engagement with said sprocket means when said ratch means is in its first or second drive position.

5,351,567

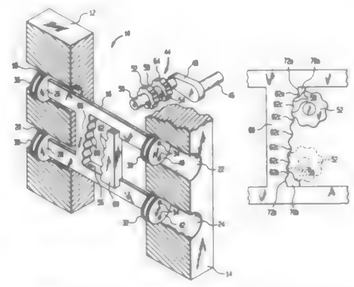
MOTION ARRESTER FOR A CONJUGATE DRIVE MECHANISM

Douglas C. Brackett, P.O. Box 306, Portland, Me. 04112

Filed Nov. 8, 1993, Ser. No. 148,492

Int. Cl.[5] F16H *21/18*

U.S. Cl. 74—49 **25 Claims**



1. A motion arrester for a conjugate drive mechanism of a scotch yoke type motion converter, comprising a linearly movable shuttle; a crankpin positioned within an aperture in said shuttle and rotatable in a circular path; a bearing conjugate forming a portion of a peripheral boundary of said aperture; a conjugate driver positioned within said aperture and rotatably mounted about said crankpin, at least a portion of said conjugate driver being located between said crankpin and said bearing conjugate, said conjugate driver and said bearing conjugate engaging each other continuously in conjugation between a first end point and a second end point as said crankpin rotates such that motion is transferable between said crankpin and said shuttle; and arresting means for arresting the motion of said conjugate driver relative to said bearing conjugate at said first end point and said second end point.

5,351,568

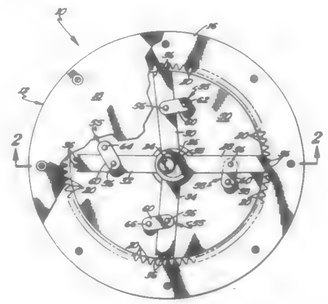
ROTARY SPEED CHANGING APPARATUS

Leon G. Feteri, Salem, S. Dak., assignor to Core Industries, Inc., Bloomfield Hills, Mich.

Filed Mar. 19, 1993, Ser. No. 33,828

Int. Cl.[5] F16H *21/12, 24/00*

U.S. Cl. 74—63 **5 Claims**



1. A rotary speed changing apparatus comprising:

a first rotatable shaft having a first axis of rotation;

a second rotatable shaft having a second axis of rotation;

a housing, said housing including a first and a second hub, said first hub rotatably receiving said first shaft and said second hub rotatably receiving said second shaft so that said first and second axes of rotation are substantially coincident; and

a power transfer assembly for transferring rotary power between said first and second shafts and for changing the speed of rotation between said first and second shafts so that said first and second shafts rotate at different speeds, said assembly comprising:

a plurality of inwardly directed, circumferentially disposed teeth members mounted within said housing concentrically with and about said first and second shafts;

a plurality of follower arms eccentrically mounted to said first shaft for substantially radial reciprocation into engagement with and disengagement from said circumferential teeth members, said arms extending outwardly from said first shaft toward said plurality of teeth members, each said arm including at least one tooth for reciprocal toothed engagement with said plurality of circumferential teeth members as said first shaft rotates, wherein said plurality of follower arms are each disposed in individual planes, said planes being substantially parallel with each other;

a base plate, said base plate rigidly attached to said second shaft; and

means for transferring rotary motion from each said follower arm to said base plate, said means extending between said base plate and each said follower arm and comprising:

a base pin member rigidly attached to said base;

an arm pin member attached to an arm; and

a linking arm extending between said base pin member and said arm pin member and being pivotally attached at opposing ends to said base pin member and said arm pin member;

whereby rotation of said first shaft causes said teeth of said follower arms to reciprocally engage said circumferential teeth members, said engagement imparting rotary motion to said arm pin member which is transferred to said base pin member by said linking arm, said rotary motion of said base pin member being transferred to said base plate, thereby causing said sec-

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ond shaft to rotate a rotational speed different from said first shaft.

5,351,569

MOTOR VEHICLE CHANGE-SPEED GEARBOX

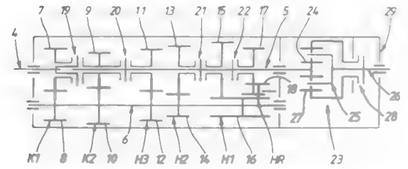
Wolfgang Trick, Hochdorf, and Detlef Schnitzer, Denkendorf, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Sep. 1, 1992, Ser. No. 937,754

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1991, 4129290

Int. Cl.[5] F16H *3/08*

U.S. Cl. 74—329 **9 Claims**



1. A change-speed gearbox for providing multiple transmission ratios in a motor vehicle, comprising an input shaft, an output shaft, a countershaft located parallel to the input and output shafts, a respective drive connection between the input shaft and the countershaft via two gear stages, means for alternatively selecting one of the two gear stages, and a drive connection between the countershaft and the output shaft via a further gear stage, wherein a first countershaft gearwheel of one of the gear stages has a smaller number of teeth than a main shaft gearwheel engaging therewith, only two of the three gear stages have the same total number of teeth, and a second countershaft gearwheel, associated with one of the two gear stages having the same total number of teeth, has a smaller number of teeth than an associated main shaft gearwheel.

5,351,570

ELECTRONICALLY CONTROLLED AUTOMATIC TRANSMISSION FOR VEHICLES

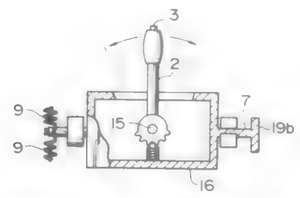
Wataru Mizunuma; Mitsumasa Yahata; Kaoru Watanabe; Kensaku Nakajima; Jun Kato; Yukihiro Masuko, and Yoshihiko Shimada, all of Sagamihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1992, Ser. No. 995,266

Claims priority, application Japan, Dec. 19, 1991, 3-337052; Feb. 13, 1992, 4-026583

Int. Cl.[5] F16H *59/00;* **B60K** *20/10, 20/04*

U.S. Cl. 74—335 **8 Claims**



1. An electronically controlled automatic transmission for vehicles having a shift lever which is moveable in a longitudinal shift path parallel to the direction of a vehicle to automatically switch a gear state to a speed change pattern indicated by a stop position of the shift lever, comprising a transverse shift path intersecting said longitudinal shift path at the stop position of the shift lever, wherein the shift lever is moveable from said longitudinal shift path to said transverse shift path so as to switch a gear stage of said transmission from an automatic speed change stage to a manual speed change stage.

5,351,571

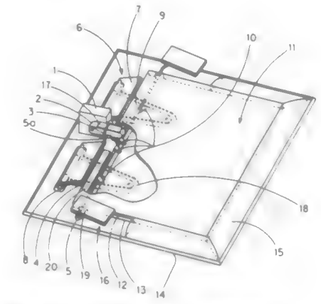
ERGONOMICALLY SYMMETRIC PEDAL CONTROL SYSTEM

Robert E. Johnson, 201 Point East Dr., Nashville, Tenn. 37216

Filed Sep. 11, 1992, Ser. No. 944,053

Int. Cl.[5] G05G *9/00*

U.S. Cl. 74—478 **5 Claims**



1. A machinery control system comprising:

a) a base;

b) a control pedal system connected to said base having a reciprocally matched pair of pedal sets and a means for generating a control signal from each pedal of said sets such that corresponding pedals in the reciprocally matched pair of pedal sets send the same control signal to a means for communicating said control signal to said machinery; and

c) a platform mounted on said base having a support structure that supports an operator such that said reciprocally matched pair of pedal sets are disposed adjacent to and about said platform in a mirrored image fashion.

5,351,572

ADJUSTING DRIVE FOR AXIALLY ADJUSTABLE STEERING COLUMNS IN MOTOR VEHICLES

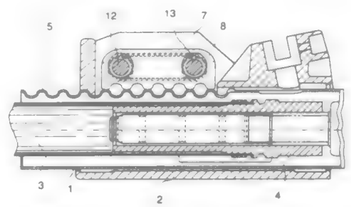
Jens Vortmeyer, Preus.-Oldendorf, Fed. Rep. of Germany, assignor to Lemforder Metallwaren AG, Lemforde, Fed. Rep. of Germany

Filed Feb. 18, 1993, Ser. No. 19,020

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1992, 4206176

Int. Cl.[5] B62D *1/18;* **F16H** *29/00*

U.S. Cl. 74—493 **10 Claims**



1. An adjusting drive for an axially adjustable steering column, comprising:

a housing secured to a motor vehicle;

a drive unit mounted to rotate in said housing;

a steering column tube mounted to shift axially in said housing, said steering column tube having gearing extending in an axial direction;

a telescoping steering shaft having an upper part connected to a steering wheel, said telescoping steering shaft being mounted to rotate in said steering column tube: and

transmission means connecting said drive unit and said gearing extending in an axial direction, said gearing extending in an axial direction being cycloidal gearing, said transmission means including two toothed racks having gearing engaging said cycloidal gearing on said steering column tube, said gearing of said two toothed racks being out of phase by one half of one toothed spacing and including eccentric bearings supporting said toothed racks for eccentric movement 180° out of phase.

5,351,573

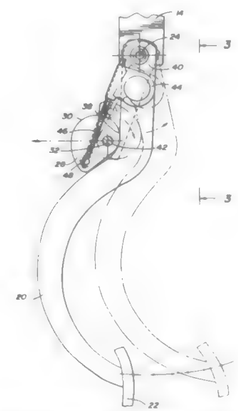
ADJUSTABLE AUTOMOBILE PEDAL SYSTEM

Edmond B. Cicotte, 11086 Hedgeway, Utica, Mich. 48087

Filed Oct. 7, 1991, Ser. No. 772,326

Int. Cl.[5] G05G *1/14*

U.S. Cl. 74—512 **15 Claims**



1. A method for adjusting an automobile pedal arm adapted to rotate about an axis of arm rotation, said method comprising the steps of:

positioning camming means, having an axis of cam rotation, juxtaposed said automobile pedal arm;

positioning said axis of cam rotation a predetermined distance from said axis of arm rotation; and

rotating said camming means about sid axis of cam rotation such that said automobile pedal arm is rotatively displaced relative to said axis of arm rotation.

5,351,574

FLYWHEEL

Moriji Hiraishi, Ebina, and Ichiro Yamazaki, Tokyo, both of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Jun. 7, 1993, Ser. No. 72,258

Claims priority, application Japan, Jun. 8, 1992, 4-147617; Mar. 18, 1993, 5-058931

Int. Cl.[5] F16F *15/10;* **G05G** *1/00*

U.S. Cl. 74—574 **2 Claims**

1. A flywheel, for use with a rotating drive means experiencing a fluctuating torque, comprising:

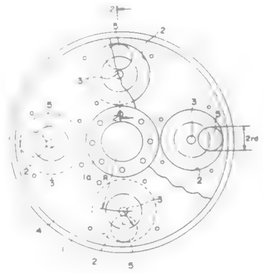
a body formed to be attached to the rotating drive means;

a rolling chamber formed in said body; and

a damping mass accommodated in said chamber, said damping mass executing a pendulum motion in a radial direction in rolling inside each chamber according to the torque fluctuation of said rotating drive means,

wherein a distance R from the center of rotation of said body to the center of the pendulum motion of the damping mass, and a distance L from the center of the pendulum motion of said damping mass to the center of gravity of same are defined by the equations:

$$-2\% \leqq \{(R/L)-(Ro/Lo)\}/(Ro/Lo) < 0\%$$



or

$$0\% < \{(R/L)-(Ro/Lo)\}/(Ro/Lo) \leqq +50\%$$

$$Ro/Lo = n^2 \cdot [1+\{Id/(Md \cdot rd^2)\}]$$

where md is the mass of the damping mass, Id is the moment of inertia the damping mass, rd is the radius of the damping mass, and n is the order of torque fluctuations of the rotating drive means.

5,351,575

PUMPING PROPULSION SYSTEM

Nathan Overby, 7200 Vincent Ave. S., Richfield, Minn. 55423

Continuation-in-part of Ser. No. 21,757, Feb. 24, 1993. This application Jun. 1, 1993, Ser. No. 70,552

Int. Cl.[5] G05G *1/14*

U.S. Cl. 74—594.2 **21 Claims**



1. A combination pumping propulsion system and bicycle, said bicycle having a frame, said combination comprising:

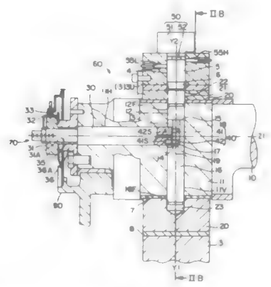
(a) a hub having an interior, said hub being integral to said frame of said bicycle;

(b) a shaft positioned inside said hub, said shaft having a first end and a second end;

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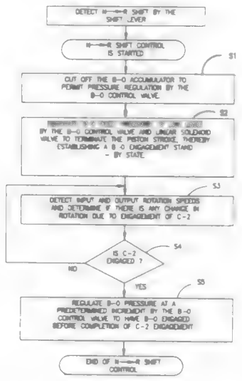
(c) a means for facilitating the rotation of said shaft within said interior of said hub;
(d) a first means for affixing said shaft to said hub, said first means for affixing further confining said means for facilitating within said interior of said hub;
(e) a sprocket having a first aperture therethrough positioned proximal to said second end of said shaft;
(f) a first support member having a first engagement portion having a centrally positioned second aperture therethrough, a first pedal brace, and a first pedal rotatably affixed to said first pedal brace;
(g) a second support member having a second engagement portion having a centrally positioned third aperture therethrough, a second pedal brace, and a second pedal rotatably affixed to said second pedal brace;
(h) a means for actuating affixed to said frame of said bicycle, said means for actuating being further attached to said first support member and said second support member for elevating said first support member and said second support member to a position proximal to said frame;
(i) a first drawn cup roller clutch engaged to said first aperture of said sprocket, said first drawn cup roller clutch having an interior engaged to said second end of said shaft, a second drawn cup roller clutch engaged to said second aperture of said first support member, said second drawn cup roller clutch having an interior engaged to said first end of said shaft, and a third drawn cup roller clutch engaged to said third aperture of said second support member, said third drawn cup roller clutch having an interior engaged to said second end of said shaft; and
(j) a second means for affixing said first support member and said second support member to said shaft.

5,351,576
APPARATUS FOR ADJUSTING SLIDE STROKE OF PRESS
Akira Matsui, and Shozo Imanishi, both of Sagamihara, Japan, assignors to Aida Engineering, Ltd., Kanagawa, Japan
Filed Dec. 1, 1992, Ser. No. 982,647
Claims priority, application Japan, Dec. 2, 1991, 3-318093; Dec. 12, 1991, 3-328840
Int. Cl.[5] F16C *3/04*; B26D *5/08*
U.S. Cl. 74—600 **18 Claims**



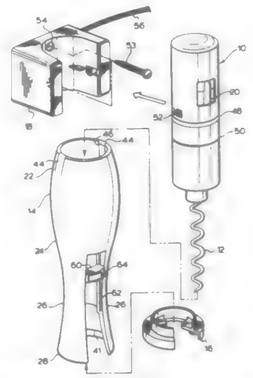
1. A crankshaft mechanism, comprising
a housing;
an eccentric crankshaft having a crankshaft axis, said crankshaft being rotatable in said housing about said crankshaft axis, said crankshaft having a cylindrical eccentric portion, a center of said eccentric portion being displaced radially from said crankshaft axis;
an eccentric sheave rotatably mounted on the outer circumference of said eccentric portion, said sheave having an outer circumference with a center displaced radially from the center of said eccentric portion;
a connecting member rotatably mounted on the outer circumference of said sheave;
said eccentric portion, said sheave, and said connecting member having pin-receiving bores formed therein, said pin-receiving bores having axes intersecting said crankshaft axis, said pin-receiving bores including a first bore in said eccentric portion, a second bore in said connecting member, and at least one third bore in said sheave, the first and second bores both being aligned with said at least one third bore when said crankshaft and said sheave are in predetermined angular positions;
a first lock pin means in said first bore, selectively engageable with said at least one third bore to fix said sheave to said eccentric portion for rotation therewith; and
a second lock pin means in said second bore, selectively engageable with said at least one third bore to fix said sheave to said connecting member;
wherein said at least one third bore comprises a pair of third bores, said first lock pin means comprising a pair of first lock pins, engageable simultaneously with said third bores, said crankshaft having an axial bore, the mechanism further comprising:
first lock pins moving means for simultaneously moving said pair of first lock pins in the axial direction of said first bore, said first lock pins moving means including
a rotary member rotatably fitted in said axial bore, and
means, responsive to rotation of said rotary member, for projecting and retracting said pair of first lock pins respectively into and from said pair of third bores; and
a first position detecting sensor, provided on an outer shaft portion of said rotary member, for detecting the rotational position of said rotary member.

5,351,577
CONTROL SYSTEM FOR SERVO HYDRAULIC PRESSURE OF TWO FRICTION ENGAGING MEANS DURING AN N-R SHIFT IN AUTOMATIC TRANSMISSION
Masahiko Ando, Okazaki; Koji Noda, Anjo; Yoshihisa Yamamoto, Nishio; Masahiro Hayabuchi, Anjo; Kazumasa Tsukamoto, Toyota; Yasuo Hojo, Nagoya; Yutaka Taga, and Hidehiro Oba, both of Aichi, all of Japan, assignors to Aisin AW Co., Ltd. and Toyota Jidosha Kabushiki Kaisha, both of Japan
Filed Nov. 27, 1992, Ser. No. 982,679
Claims priority, application Japan, Dec. 3, 1991, 3-344121
Int. Cl.[5] F16H *61/04, 61/08*
U.S. Cl. 477—11.6 **4 Claims**



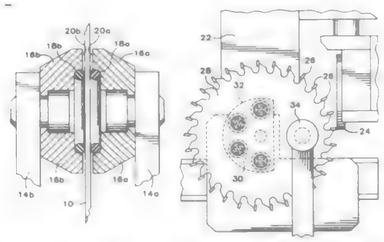
1. A control system for servo hydraulic pressure in an automatic transmission provided with first and second shifting units connected in series with each other, disposed between an input shaft and an output shaft so that shifting elements of the first and second shifting units can be connected under control by servo hydraulic pressure to establish a different power flow in accordance with engagement or release of frictional engagement means and hence to achieve plural speed stages, comprising:
first frictional engagement means for establishing a shift of the first shifting unit, second frictional engagement means for establishing a shift of the second shifting unit, said first and second frictional engagement means engagable simultaneously in a reverse range;
first and second servo pressure feed lines for feeding servo hydraulic pressure to said first and second frictional engagement means, respectively;
a regulator valve disposed in the first servo pressure feed line to regulate the servo hydraulic pressure;
a solenoid for outputting a signal pressure for controlling the regulator valve;
an initiating engagement detector for detecting initiating engagement of the second frictional engagement means,
a shift range detector for detecting shifting to the reverse range, and
electronic control means for outputting a control signal to the solenoid responsive to detection of shifting to the reverse range by said shift range detector, said regulator valve controlling engagement of the first frictional engagement means being responsive to said signal pressure to coincide with engagement of said second frictional engagement means as detected by said initiating engagement detector.

5,351,579
RECHARGEABLE ELECTRIC CORKSCREW
Robert Metz, 12 Nantucket Boulevard, Scarborough, Ontario, Canada M1P 4W7 , and Dusan Nikolic, 225 Erskine Avenue, Toronto, Ontario, Canada M4P 1Z5
Filed May 20, 1993, Ser. No. 64,305
Int. Cl.[5] B67B *7/04*
U.S. Cl. 81—3.2 **12 Claims**



1. A rechargeable electric corkscrew for removing a cork from a bottle comprising:
a reversible drive means,
an auger driven by said drive means,
a housing having a longitudinal axis, comprising
a body for housing said drive means and a power source and for rotatably mounting said auger to extend in a longitudinal direction, and
a sleeve having a first end adapted for slidably mounting onto said body, said sleeve being slidable in said longitudinal direction between a rest position wherein said sleeve and body are in an abutting relation to a cork removal position wherein said sleeve and body are in an extended condition, said sleeve having a second end surrounding said auger comprising cantilevered members each having an abutment surface adapted to abut a mouth of said bottle, said cantilevered members adapted to flex for positioning said abutment surfaces relative to each other about said mouth, said sleeve having a longitudinal extent for extending beyond said auger when said body and sleeve are in the rest condition, said cantilevered members having a terminal end having a radial extent for stably supporting said corkscrew in an upright condition,
wherein said auger is rotated in a first sense advancing the auger into the cork and advancing said body from the cork removal position towards the rest position, whereafter the auger extracts the cork between the cantilevered members and wherein said auger is rotated in a sense opposite said first sense and relative to said cork, extracting said auger from said cork.

5,351,578
RESILIENT COMPRESSIBLE CLAMPING SURFACE FOR CIRCULAR SAW BLADES
James Emter, 200 NW. 267th Clr., Ridgefield, Wash. 98642
Filed Nov. 20, 1992, Ser. No. 984,175
Int. Cl.[5] B23D *63/14*
U.S. Cl. 76—41 **9 Claims**



1. In a saw regrinding machine having a circular saw blade mounted for rotation about an axis thereof, a side clamp assembly being laterally offset from the axis for frictionally engaging the blade during a regrinding operation, said side clamp assembly having a pair of clamping members, each having a clamping surface, wherein said clamping surfaces each include a first surface portion formed of a resilient compressible material and a second surface portion comprising a rigid noncompressible material, the first surface portions forming outward protrusions in the second surface portions.

5,351,580
ELECTRICALLY HEATED WIRE STRIPPING DEVICE
Richard E. Potesta, Salem, and Gary E. Medved, Lyndhurst, both of Ohio, assignors to Milbar Corporation, Chagrin Falls, Ohio
Filed Aug. 17, 1983, Ser. No. 107,513
Int. Cl.[5] H02G *1/12*
U.S. Cl. 81—9.44 **10 Claims**

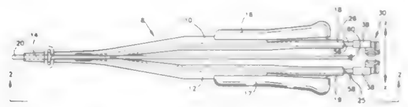
1. A thermal wire stripping device comprising:
a pressure actuated set of first and second arms laterally

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opposed and having distal ends, said arms being interconnected at a location remote from their distal ends with said distal ends being movable toward and away from each other on a z axis upon application and release of pressure thereon;

an electrical conductor circuit carried by said arms and including jaw mounts at the distal ends of each of said arms;

a pair of jaws comprised of a ceramic material each having



a severing edge, and a resistance heater spaced from the severing edge;

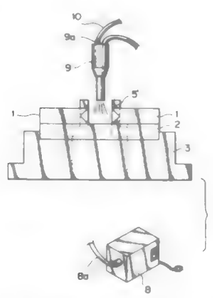
said jaws including electrically conducting members associated therewith in electrical circuit relationship with the resistance heaters and slidably mounting each jaw on the jaw mounts of one of said arms to form a conducting circuit with said electrical conductor circuitry carried by said arms, the contact between the conducting member and jaw mounts being a telescoping mechanical and electrical connection.

5,351,581

EQUIPMENT AND A METHOD FOR DISPOSING A PEELED-OFF CHIP OF AN ELECTRIC CABLE

Noboru Ito, and Nobuaki Yamakawa, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jul. 3, 1991, Ser. No. 725,725
Claims priority, application Japan, Jul. 9, 1990, 2-179580
Int. Cl.[5] H02G *1/12*
U.S. Cl. 81—9.51 **5 Claims**



2. A device for stripping insulation from an electric cable, said device comprising:

cable stripping means comprising a pair of cutting blades, said cable stripping means for cutting a sheath of an electric cable;

disposal means for disposing of a cut sheath of an electric cable; said disposal means including

an air supplying means for blowing air against a cut sheath which is attached to said pair of cutting blades; and

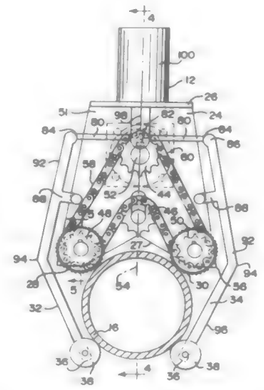
an air ionizing means for ionizing the air supplied from said air supplying means.

5,351,582

PIPE TURNING TOOL

Edwin Snyder, Wadsworth, and L. Warren Aldridge, Libertyville, both of Ill., assignors to Aldridge Electric Inc., Libertyville, Ill.

Filed Sep. 4, 1992, Ser. No. 940,675
Int. Cl.[5] B25B *17/00*
U.S. Cl. 81—57.17 **20 Claims**



1. A tool for turning an elongate pipe, the tool comprising:

a base having a bottom edge;

a pair of guide arms, each guide arm having a free end;

means for pivotally mounting each guide arm to the base, each guide arm being mounted so that the free ends of the guide arms extend beyond the base;

a guide roller rotatably mounted at each free end of each guide arm;

a first drive wheel mounted for rotation on the base, the drive wheel being positioned so that a portion of the drive wheel extends beyond the bottom edge of the base, the drive wheel serving to frictionally engage the elongate pipe to turn the elongate pipe with rotation of the drive wheel;

the guide arms being pivotable on the base between a first position wherein the free ends of the guide arms are spaced from each other a distance greater than the diameter of the elongate pipe and a second position wherein the free ends of the guide arms are spaced from each other a distance less than the diameter of the elongate pipe and spaced from the drive wheel to capture the elongate pipe between the drive wheel and guide rollers at the free ends of the guide arms;

wherein the guide arms have ends opposite the free ends, the tool further comprising:

a pair of toggle arms pivotally connected in an end to end relationship;

a toggle arm pivot joint connecting the two adjacent ends of the toggle arms;

guide arm pivot joints pivotally connecting the opposite ends of the guide arms to the toggle arms;

the toggle arm pivot joint and guide arm pivot joints having parallel axes of rotation;

a reciprocatable ram connected to the toggle arm pivot joint;

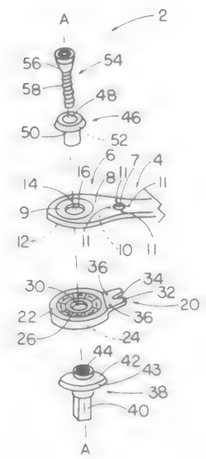
means for driving said reciprocatable ram to move in a direction perpendicular to the axes of rotation of the toggle arm pivot joint and guide arm pivot joints to cause the guide arms to pivot between said first and second positions.

5,351,583

TOOTHLESS RATCHET, CLUTCH, AND MECHANISMS TO ELIMINATE BACKLASH

Oleg Szymber, Arlington Heights, Ill., and Eustathios Vassiliou, Newark, Del., assignors to PatCore, Incorporated, Newark, Del.

Filed Mar. 3, 1993, Ser. No. 25,573
The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.
Int. Cl.[5] B25B *13/46*
U.S. Cl. 81—60 **16 Claims**



1. A toothless ratchet tool comprising in combination an assembly of:

a handle ending to a head, the head having an upper side and a lower side opposite the upper side,

the lower side comprising a first set of helical doublets of ramps, each doublet of ramps comprising two single ramps of opposite helical inclination, the doublets of ramps disposed around a center axis, the center axis passing through a central point of the head, and being perpendicular to the lower and upper sides;

an activator disposed toward the lower side of the head and pivoted around the center axis, the activator having a doublet side and a first frictional side opposite the doublet side, the first frictional side comprising at least one first frictional surface

the doublet side comprising a second set of helical doublets of ramps commensurate to the first set of the helical doublets of ramps of the lower side of the head, thus forming pairs of co-acting doublets of ramps;

a driver being turnable around the center axis and disposed under the activator in a manner to place the activator between the driver and the head of the handle, the driver having a socket driving side and a second frictional side commensurate to and adaptable to engage with the first frictional side through at least one second frictional surface; and

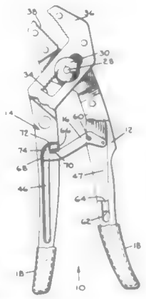
means for rotatably connecting the driver and the head of the handle, and at such distance from each other, that when the doublets of helical ramps of each pair are caused to be displaced with respect to each other, the activator is pushed toward the driver causing the first and the second frictional surfaces to firmly engage and lock the driver in one direction with respect to the handle.

5,351,584

PLIER TOOL ASSEMBLY

William A. Warheit, 121 Iroquois Dr., Butler, Pa. 16001

Continuation of Ser. No. 804,911, Dec. 11, 1991, abandoned. This application Mar. 25, 1993, Ser. No. 40,912
Int. Cl.[5] B25B *7/04*
U.S. Cl. 81—407 **9 Claims**



1. A plier tool comprising:

first and second rigid members, each having a handle portion, a throat portion, a jaw end, and a distal end, the members being joined in a scissors-like arrangement whereby the jaw ends are caused to move toward each other in response to the handle portions being moved toward each other;

the first rigid member being of laminated construction wherein its handle portion comprises a plurality of substantially flat lamination, including at least one inner lamination secured between oppositely-disposed outer laminations;

means between the outer laminations for guidably positioning a spring, comprising a groove in the inner lamination and extending substantially longitudinal within the handle portion of the first rigid member;

a first end of the groove terminating within the handle portion of the first rigid member and at a point toward the first rigid member's distal end; and

a second end of the groove constituting an arcuate section terminating as an opening on a surface of the first rigid member and oriented toward the second rigid member; and

the second rigid member being of laminated construction wherein its handle portion comprises a plurality of substantially flat laminations, including at least one inner lamination secured between oppositely-disposed outer laminations.

5,351,585

LARGE CAPACITY LOCKING PLIERS

Terry G. Leseberg, Marysville, Kans., and Gene L. Tyser, Wilbur, Nebr., assignors to Petersen Manufacturing Co. Inc., Dewitt, Nebr.

Filed Aug. 11, 1993, Ser. No. 105,431
Int. Cl.[5] B25B *7/02, 7/12*
U.S. Cl. 81—426 **13 Claims**

1. A large capacity locking pliers comprising

a body;

a fixed jaw secured to the body and comprising a first working surface, said first working surface comprising a first end portion, a first intermediate portion, and a first concave inner portion;

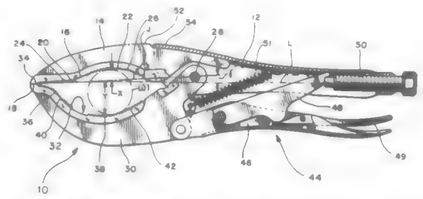
a movable jaw pivotably mounted to the body to pivot with respect to the fixed jaw about a pivot axis that is fixed with respect to the body, said movable jaw comprising a second working surface opposed to the first working surface,

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said second working surface comprising a second end portion, a second intermediate portion, and a second concave inner portion;

an over-center toggle linkage secured between the movable jaw and the body to pivot the movable jaw about the pivot axis and to lock the movable jaw in position with respect to the fixed jaw;

said first concave inner portion extending over an arc α of at least 45°, said second concave inner portion extending over an arc β of at least 80° and greater than the arc α, said



concave inner portions being concentric when the movable jaw is moved to a selected open position to grip a large cylindrical workpiece;

said first and second end portions positioned to abut one another in surface contact when the movable jaw is moved to a closed position;

said body defining a longitudinal axis extending between the first end portion and a central portion of an end of the body remote from the fixed jaw;

said longitudinal axis passing adjacent to said pivot axis.

5,351,586

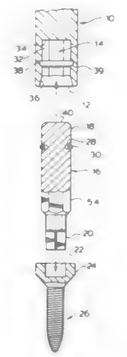
SCREWDRIVER REPLACEMENT BIT ASSEMBLY

G. Lyle Habermehl, 7528 Hickory Hill Ct., Whites Creek, Tenn. 37189, and Paul T. Scherer, Lexington, Ky., assignors to G. Lyle Habermehl, Whites Creek, Tenn.

Filed Apr. 8, 1993, Ser. No. 44,956

Int. Cl.[5] B25B *23/16*

U.S. Cl. 81—438 **26 Claims**



1. A driver to drive a screw having a selected maximum diameter, the driver comprising:

rotatable screwdriver means comprising:

elongate mandrel means having in one end thereof axially extending socket means with replaceable, screw engaging bit means axially slidably removably received in the socket means for rotation with the socket means;

guideway means to guide a screw coaxially therein, the guideway means having a diameter equal to or marginally greater than the maximum diameter of the screw to assist in coaxially locating and guiding the screw therein,

the mandrel means and bit means reciprocally axially movable in the guideway means for engaging and driving a screw through the guideway means into a workpiece;

resiliently deformable means removably retaining the bit means in the socket means;

the resiliently deformable means carried by and removable with the bit means.

5,351,587

CUTTING TOOL FOR MACHINING A PLUMBING NIPPLE

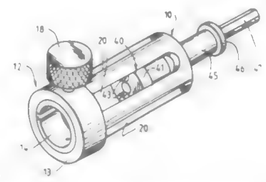
Rodney Griffin, 4 Clarence St., Ivanhoe, Victoria, Australia 3079

Filed Nov. 23, 1992, Ser. No. 952,844

Claims priority, application Australia, May 21, 1990, 0202;90

Int. Cl.[5] B23B *5/6, 3/22;* **B23D** *21/10*

U.S. Cl. 82—113 **11 Claims**



7. A cutting tool for machining a pipe nipple, comprising:

a substantially cylindrical body of an internal diameter sufficient for receiving said pipe nipple through a first end of said cylindrical body;

clamping means adjacent said first end for clamping said cylindrical body to said pipe nipple;

a shaft extending beyond a second end of said cylindrical body, said second end being opposite said first end;

means for effecting rotation of said shaft;

a cutting heat attached to said shaft;

at least one cutter located within said cylindrical body and mounted on said cutting head, said cutting head being adapted for rotation by said shaft which, in turn, is attachable to said means for effecting rotation of said shaft so that said pipe nipple is able to be cut from its outwardly directed end inwardly;

a closure; and,

a bearing formed in said closure at said first end of said cylindrical body through which said shaft passes, said shaft having an extension thereon capable of acting against said closure for restricting inward movement of said shaft.

5,351,588

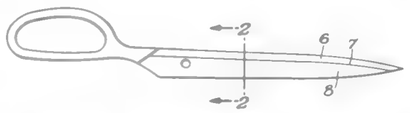
HAND SHEAR

Frank J. Penoza, 201 Pine Knoll Clr., Hockessin, Del. 19707

Filed Dec. 31, 1992, Ser. No. 999,207

Int. Cl.[5] B26B *13/00*

U.S. Cl. 83—13 **8 Claims**



1. An improved, wear-resistant hand shear having at least one cutting edge made of the composition consisting essentially of

70% to 97% by weight of tungsten carbide, and 3% to 30% by weight of nickel; or

94% to 99.9% by weight of tungsten carbide and nickel taken together, the ratio of tungsten carbide to nickel being in the range of 0.70 : 0.30 to 0.97 : 0.03, and 0.1% to 6% by weight of an ingredient selected from the group consisting of cobalt, titanium carbide, tantalum carbide and mixtures thereof.

5. The method of cutting a material with a wear resistant hand shear having at least one cutting edge made of the composition consisting essentially of

70% to 97% by weight of tungsten carbide and 3% to 30% by weight of nickel; or

94% to 99.9% by weight of tungsten carbide and nickel taken together, the ratio of tungsten carbide to nickel being in the range of 0.70 : 0.30 to 0.97 : 0.03, and 0.1% to 6% by weight of an ingredient selected from the group consisting of cobalt, titanium carbide, tantalum carbide and mixtures thereof.

5,351,589

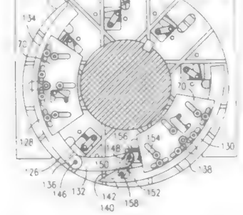
SLOTTER WHEEL MECHANISM HAVING DYNAMICALLY RETRACTABLE SLOTTER BLADES

David E. Creaden, Lawrence, Kans., assignor to Lawrence Paper Company, Lawrence, Kans.

Division of Ser. No. 916,610, Jul. 22, 1992, Pat. No. 5,297,462, which is a continuation-in-part of Ser. No. 782,523, Oct. 25, 1991, abandoned. This application Sep. 27, 1993, Ser. No. 126,877

Int. Cl.[5] B26D *1/12;* **B31B** *1/14*

U.S. Cl. 83—678 **8 Claims**



1. Slotter wheel apparatus for slotting of box blanks, comprising:

a rotatable body presenting a peripheral margin;

at least one slotter blade comprising a first blade section having a first end, and a second blade section having a second end adjacent said first end, each of said first and second blade sections having a cutting edge, and a pivot coupling said first end with said second end to permit shifting of said first and second blade sections between a retracted blank-clearing position and an extended slotting position; and

means operably coupling said blade to said body including structure for shifting of said blade between said extended slotting position wherein the blade cutting edges of said blade sections are located outboard of said body peripheral margin for slotting of said blank, and said retracted blank-clearing position wherein said cutting edges of said blade sections will pass said blank without slotting thereof.

5,351,590

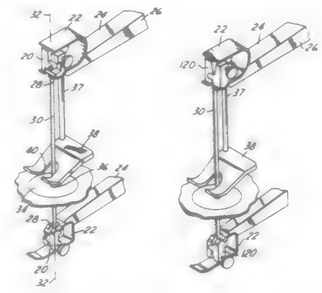
SCROLL SAW CLAMP AND METHOD FOR MAKING THE SAME

Robert G. Everts; Naoki Kikuchi, both of Chandler, and Chi-Kin Chiang, Phoenix, all of Ariz., assignors to Ryobi Limited, Japan

Continuation of Ser. No. 959,735, Oct. 13, 1992, abandoned. This application Sep. 22, 1993, Ser. No. 125,346

Int. Cl.[5] B27B *19/02*

U.S. Cl. 83—699.21 **15 Claims**



1. A clamp for releasably retaining an end of a saw blade during operation of a saw, the clamp comprising:

separate first and second jaws, each jaw having a clamping end and a distal end;

pivot means intermediate the clamping and distal ends for cooperatively enabling the pivoting of each of the jaws with respect to the other about a single axis; and

actuation means for pivoting the jaws relative to one another about the pivot means sufficiently to clampingly retain the end of the saw blade therebetween during the operation of the saw blade.

5,351,591

FRET-SAW MACHINE

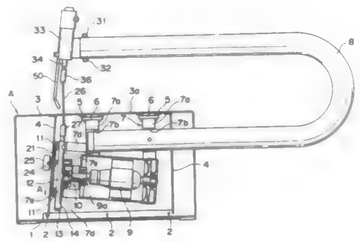
Kouichi Miyamoto, and Shoji Takahashi, both of Tokyo, Japan, assignors to Ryobi Limited, Tokyo, Japan

Division of Ser. No. 931,588, Aug. 18, 1992, Pat. No. 5,267,498. This application Jul. 7, 1993, Ser. No. 88,518

Claims priority, application Japan, Aug. 20, 1991, 3-065730[U]; Aug. 20, 1991, 3-208014; Aug. 21, 1991, 3-066163[U]; Aug. 21, 1991, 3-066164[U]; Aug. 26, 1991, 3-213359; Sep. 2, 1991, 3-070017[U]; Sep. 18, 1991, 3-074964[U]

Int. Cl.[5] B27B *3/10*

U.S. Cl. 83—768 **3 Claims**



1. A fret-saw machine comprising:

a base unit having a table on which a workpiece to be cut is placed;

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a frame member disposed in the base unit and secured to the table;

a U-shaped arm member having one end portion secured to the frame member and another end portion disposed above the table;

a blade holder means having first and second slide holder units and first and second blade holder units, each of the blade holder units being respectively secured to a corresponding slide holder unit, the first slide holder unit and the first blade holder unit being disposed in the base unit and secured to the frame member and the second slide holder unit and the second blade holder unit being secured to the end portion of the arm member; said blade holder means being arranged with an inclination with respect to a surface of the table;

a blade having first and second opposed ends, said blade being supported at its ends by the first and second blade holder units said blade being held substantially perpendicularly with respect to the surface of the table; and

a drive means supported in the base unit by the frame member and connected to the first slide holder unit to drive the blade,

said blade and said blade holder means being arranged so that when said blade carries out a cutting operation, said blade moves in one direction towards the table in cutting engagement with the workpiece and also moves in another direction away from the table while being spaced apart from the workpiece all the while maintaining the blade substantially perpendicular to the surface of the table.

5,351,592

SAW BLADE

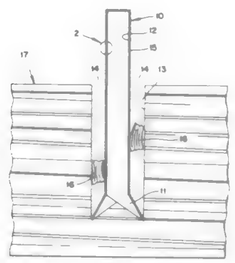
Bertil Bloom, Bollnäs, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Filed May 6, 1993, Ser. No. 57,551

Claims priority, application Sweden, May 6, 1992, 9201417-4

Int. Cl.[5] B26D *1/14*

U.S. Cl. 83—835 **11 Claims**



7. A saw blade for sawing of wood, comprising a flat member having cutting teeth along an edge thereof, sides of the flat member having an organic coating with an uneven surface structure having peaks and troughs, the coating having friction and graininess corresponding generally to a surface of cut wood, the surface of the coating having a profile depth of 0.05–0.15 mm peak to trough.

5,351,593

MUSICAL WIND INSTRUMENT WITH INNER HORN ASSEMBLY

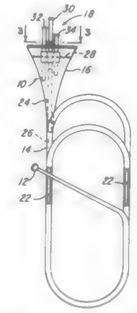
Philip J. Ostendorf, 3331 SE. Fairway West, Stuart, Fla. 34997

Continuation-in-part of Ser. No. 561,524, Aug. 2, 1990, Pat. No. 5,133,238. This application Jul. 27, 1992, Ser. No. 920,345

The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.

Int. Cl.[5] G10D *7/10*

U.S. Cl. 84—387 R **25 Claims**



13. An attachment for a musical horn having a belled end for converting said horn to a musical instrument which may be used to play a scale without coordinated mouth and finger operations, said attachment comprising a support member adopted to be clipped to the bell of the horn, and an inner horn assembly mounted on said support member, said inner horn assembly comprising at least one inner horn having an open, upstream end located inside said outer horn and tuned to produce approximately the "Ti", "Mi", "La#", or "Do#" frequency of the outer horn.

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Patent Not Issued For This Number

5,351,595

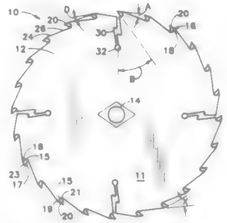
THIN KERF CIRCULAR SAW BLADE

Jed G. Johnston, Leitchfield, Ky., assignor to Vermont American Corporation, Louisville, Ky.

Continuation-in-part of Ser. No. 810,912, Dec. 20, 1991. This application Sep. 24, 1992, Ser. No. 950,834

Int. Cl.[5] B27B *33/08*

U.S. Cl. 83—848 **20 Claims**



1. A thin kerf circular saw blade, comprising:

a generally circular main body having a pair of side faces and a plurality of teeth, each one of said teeth comprising a tooth projection having a cutting element affixed thereto, said teeth being spaced about the periphery of said main body, said cutting element having a positive hook angle of about 30 degrees to about 40 degrees relative to a radial line extending from the center of said main body to the periphery of said main body;

said saw blade having a central opening for mounting;

said main body of said saw blade having a plurality of expansion slots disposed between selected teeth and extending inwardly from the periphery of said saw blade toward said central opening;

each of said cutting elements being a carbide cutting element affixed to a leading edge of each one of said tooth projections, each of said carbide cutting elements tapering inwardly from top to bottom and front to back, each of said carbide cutting elements having cutting edges of greater width than said main body, each of said carbide cutting elements having an alternating top bevel so that a portion of said cutting edges alternately project laterally beyond the face of at least one side of said main body;

a shallow generally straight gullet between each tooth; and

a continuous extended shoulder extending from said gullet supporting each of said teeth.

5,351,596

PROCESSING OF POWDER

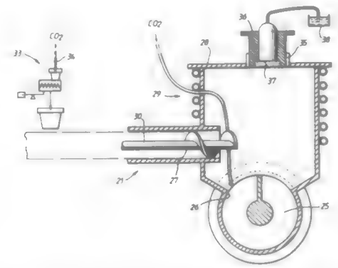
Francis F'Emi Agunloye, Newport; Allistair S. Cox, Warley, and Eric H. Foakes, Edgbaston, all of England, assignors to Albright & Wilson Limited, Warley, England

Filed Aug. 7, 1992, Ser. No. 926,497

Claims priority, application United Kingdom, Aug. 15, 1991, 9117605

Int. Cl.[5] F42B *33/00*

U.S. Cl. 86—45 **1 Claim**



1. An apparatus for introducing a flammable powder into a hot polymer salt, said hot polymer melt being in motion at the point of introduction of said flammable powder, said apparatus comprising:

a transition chamber provided with an inlet for said powder wherein said inlet is connected to a screw conveyor connected to a gas tight powder dispenser;

a delivery tube via which an inert gas is supplied to said powder dispenser connected thereto to provide a positively pressurised inert atmosphere in said transition chamber;

a feeder adapted to feed said powder through said inlet against said pressure;

a mixer consisting of a compounding extruder, said extruder having an inlet for polymer at the upstream end thereof and a perforated die at the extreme downstream end thereof, said extruder further including an inlet for powder downstream with respect to said inlet for polymer and a conventional venting system for volatiles near the downstream end of said extruder, wherein co-rotating twin screws extend through said extruder and wherein each of said screws comprises a first coarse-threaded screwflight portion wherein each said first coarse-threadened screwflight portion, extends from the extreme upstream end of said mixer corresponding to said inlet for polymer, a first portion of fine intermeshing space-filling threads extending downstream from said first coarse-threaded portion and terminating immediately upstream from said inlet for powder, a second coarse-threaded screwflight portion extending downstream from said first portion of fine intermeshing space-filling threads and corresponding to the vicinity of said inlet for powder, a second portion of fine intermeshing space-filling threads extending downstream from said inlet for powder and terminating immediately upstream with respect to said venting system for volatiles, a third coarse-threaded portion extending from said second portion of fine intermeshing space-filling threads and corresponding to the vicinity of said venting system for volatiles and a third portion of fine intermeshing space-filling threads extending from said third coarse-threaded portion and being located at the downstream end of said mixer and terminating at said perforated die;

a screw conveyor for conveying said powder from said transition chamber to said mixer, said screw conveyor communicating in a gas tight manner with said transition chamber via an opening, the pressure within said chamber being regulated by means of a lid resting freely on said chamber, said powder inlet is positioned at minimum drop height with respect to said screw conveyor and accommodates in a gas tight manner said feeding means, said lid further including a substantially annular port having a filter connected in a gas tight manner thereto, and being connected to a pressure confirming and regulating device comprising a water seal; and

said mixer being adapted to convey and to mix said flammable powder and said hot melt.

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ARRANGEMENT WITH RELEASE SYSTEM, AMMUNITION UNIT AND RELEASE SYSTEM

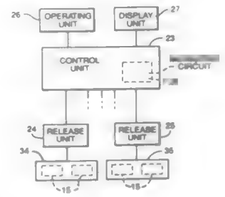
Peter Holmström, Lidingö , and Björn Levison, Kista, both of Sweden, assignors to NobelTech Electronics AB, Jarfalla, Sweden

Filed Jan. 14, 1993, Ser. No. 4,243

Claims priority, application Sweden, Jan. 16, 1992, 9200122-1

Int. Cl.[5] B64D *1/04*; F42B *12/02*

U.S. Cl. 89—6.5 **11 Claims**



6. An ammunition unit comprising:

a cartridge;

at least one ammunition charge in said cartridge, means for activating release of the ammunition charge in response to an activating signal and a device for indicating the type of ammunition charge which is contained in the ammunition unit, said device including:

a) a distinguishable specific identification means allocated for each type of ammunition and made up of electronic means with different electrical characteristics depending on the type of ammunition, said electronic means including a status-changing element which can change between at least two statuses having different electrical characteristics; and

b) a control circuit for controlling change-over of said status-changing element between said at least two statuses having different electrical characteristics, the process of the status changes controlled by the control circuit being indicative of the type of ammunition contained in the ammunition unit.

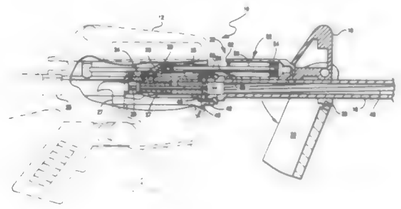
VOL 1167 ISS 1 OC 4 1994 UMI

5,351,598

GAS-OPERATED RIFLE SYSTEM

Robert C. E. Schuetz, Olympia, Wash., assignor to Olympic Arms, Inc., Olympia, Wash.

Filed Aug. 28, 1992, Ser. No. 938,005
Int. Cl.[5] F41A *5/26, 15/16*
U.S. Cl. 89—185 **8 Claims**



1. In an improved M16 rifle having a magazine housing; a trigger and hammer assembly; a handgrip; a buffer assembly; a buttstock assembly; an upper receiver connected to the lower receiver; a barrel attached to said upper receiver and having a rifled bore connected to a cartridge chamber; a breech chamber connected to the cartridge chamber and having a plurality of locking lugs formed therein; a gas port formed in said barrel passing through the wall thereof to said bore; a bolt assembly slidably located in the upper receiver in a forwardly biased relationship by the buffer assembly, axially aligned with the barrel and having a lugged end for close-fitting, locking engagement in the breech chamber; a firing pin slidably located in said bolt and arranged to be activated by the hammer and trigger assembly to fire a cartridge located in the chamber; an ejector assembly located in said rifle arranged to eject cartridges from said bolt assembly upon rearward movement of said bolt; and a gas piston/cylinder assembly mounted on said barrel, having a gas passage communicating with the gas port in the barrel, and a piston mounted on a piston rod and located in a snug-fitting slidable relationship in the gas cylinder, said piston rod extending out of said gas cylinder into the upper receiver in engaging relationship with the bolt assembly; the improvement comprising: said cartridge chamber receiving therein a pistol-caliber cartridge; said gas port being enlarged to a diameter of from 0.180 inch to 0.250 inch in order to allow sufficient gas volume to pass from said rifle bore to said cylinder to move said piston and bolt assembly enough to eject a fired cartridge from said cartridge chamber; and, wherein said ejector assembly comprises a transverse rod extending across the inside of said upper receiver and a concentric biasing spring on said rod and having a projecting end extending forward of said rod into an ejector groove formed in said bolt and arranged to contact a cartridge face when said bolt is moved rearwardly in said upper receiver.

5,351,599

LINEAR DRIVE DEVICE

Kurt Stoll, Esslingen, Fed. Rep. of Germany, assignor to Festo KG, Esslingen, Fed. Rep. of Germany

Filed Mar. 12, 1992, Ser. No. 849,990
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1991, 4108158
Int. Cl.[5] F01B *31/12*
U.S. Cl. 91—1 **14 Claims**

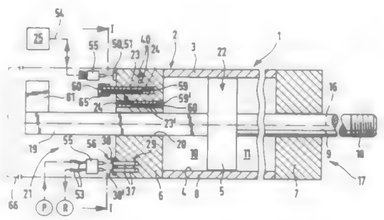
1. A linear drive device comprising:

a linear motor having an elongated motor housing with an internal housing cavity oriented between first and second housing end plates, in which cavity is mounted an axially displaceable piston which separates the cavity into two separate working spaces and which together with a power output rod and a control rod connected to and on opposite sides of the piston and movable with the piston constitutes a common drive unit, the output rod and the control rod extending through the respectively associated one of the first and second housing end plates, the output rod extending through the first housing end plate at a power output end and the control rod extending through the second housing end plate at a control end of the motor housing;

a valve device having an electrically operated actuating device for effecting a supply and/or discharge of pneumatic or hydraulic fluid in relation to at least one working space for actuating the linear motor;

at least one sensor for responding to certain positions of translation of the control rod, both the valve device and associated actuating device and the sensor being mounted on the second housing end plate, said valve device and said associated actuating device being seated in means defining at least one receiving well in the second housing end plate;

means defining first fluid ducts in the second housing end plate and at least one second fluid duct extending in a wall of said motor housing alongside the working spaces, at least one of said first fluid ducts being connected to the



valve device for controlling fluid flow to said working spaces through said first and second fluid ducts, said at least one of said second fluid ducts opening at one end thereof into the working space adjacent to the power output end and at the other end thereof being connected with said first fluid duct in the second housing end plate connected in fluid circuit with the valve device;

fluid connection means arranged on an exterior of the second housing end plate connected in fluid circuit with said first and second fluid ducts and at least one of the working spaces through the valve device;

first electrical connection means provided on the exterior of the second housing end plate and being connected with the actuating device of the valve device, said first electrical connection means including passageway means in the second housing end plate and electrical wiring extending through said means; and

second electrical connection means on the exterior of the second housing end plate and being connected with said at least one sensor, said at least one sensor including control lines extending at least substantially in the interior of the second housing end plate through said passageway means.

5,351,600

HYDRAULIC BOOSTER FOR VEHICLE

Ichiro Ishiwata, Yokosuka, Japan, assignor to Nippon Air Brake Co., Ltd., Kobe, Japan

Continuation of Ser. No. 691,645, Apr. 25, 1991, abandoned. This application Nov. 30, 1992, Ser. No. 983,295
Claims priority, application Japan, Oct. 27, 1989, 1-280623
The portion of the term of this patent subsequent to Feb. 4, 2011, has been disclaimed.
Int. Cl.[5] F15B *9/10;* **B60T** *13/00*
U.S. Cl. 91—369.1 **8 Claims**

1. A hydraulic booster for a vehicle, comprising:

(A) a cylinder body having a cylindrical bore;

(B) a piston slidably fitted into said cylindrical bore:

(C) a pressure-servo chamber formed at one side of said cylindrical bore by said piston;

(D) a valve hole made in a side of said pressure-servo chamber in said piston;

(E) pressure supply path means extending into said valve hole and communicating with a fluid pressure source;

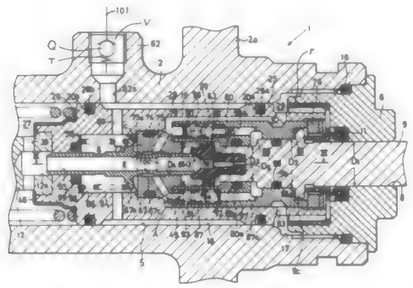
(F) pressure discharge path means extending into said valve hole and communicating with a pressure-relieving source;

(G) an input member passing through said pressure-servo chamber and entering said valve hole or movement thereinto when input pressure is applied to said input member;

(H) pressure-supply valve means arranged in said valve hole for opening and closing the path between said pressure supply means and said pressure-servo chamber in response to the movement of said input member;

(I) pressure-discharge valve means arranged in said valve hole for opening and closing the path between said pressure discharge path means and said pressure-servo chamber in response to the movement of said input member;

(J) a reaction chamber in which said input member is able to receive the pressure-servo chamber side pressure of said



pressure-supply valve means in a direction against the input direction of said input member; and

(K) valve apparatus arranged in a path to said reaction chamber and preventing fluid pressure from transmitting into said reaction chamber at a lower fluid pressure than a predetermined pressure, wherein by-pass means is arranged for connecting said pressure-servo chamber with said pressure-discharge valve means without passing through said reaction chamber, said path to the reaction chamber is formed as an axial path in a sleeve member securely fitted into said piston, communicating with said pressure supply path means, said valve apparatus is a check valve arranged in said path, and a second axial path is formed in said sleeve member so as to make said reaction chamber communicate with said pressure supply path means, and a second check valve is arranged in said second axial path, permitting fluid to flow from said reaction chamber towards said pressure-supply path means, whereby fluid only from said pressure-servo chamber flows through said by-pass means when input pressure applied to said input means is relieved.

5,351,601

HYDRAULIC CONTROL SYSTEM

Kenneth W. Zeuner, New Hope, and Charles Heisig, New Holland, both of Pa., assignors to Control Concepts, Inc., Newtown, Pa.

Filed May 4, 1992, Ser. No. 878,349
Int. Cl.[5] F15B *11/08;* **F16D** *31/02*
U.S. Cl. 91—445 **6 Claims**

1. A system having a load sense signal for modulating the fluid inflow to first and second sides of load means comprising:

a) a control valve for opening and closing to control the flow of fluid from a fluid inlet and a tank to first and second flow outlets, said control valve having (1) a closed state (2) at least one open state;

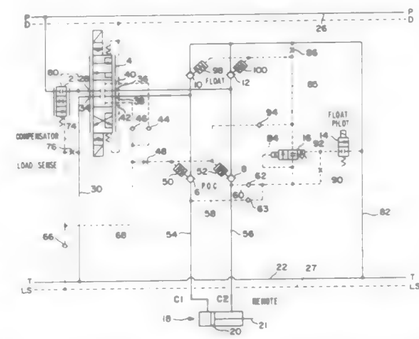
b) pilot means selectively coupled to one of the sides of the load means for receiving fluid from the one side of the load means at a load pressure, and for providing the fluid at the load pressure forming a pilot pressure signal;

c) first and second hydraulically operated check valve assemblies each assembly having;

i) first and second plug means movable between (1) valve normally closed states seating in and closing respective first and second orifices for preventing flow of fluid through respective first and second orifices and (2) valve open states, said first and second plug means being individually operated and not mechanically connected to each other;

ii) means, for biasing said first and second plug means toward their respective orifices for normally maintaining said check valves closed;

iii) a load sense inlet fluidly coupled to said first plug means for receiving one of said load sense signal and said pilot pressure signal, such that either one of said load sense signal and said pilot pressure signal is sufficient to move said first plug means to its valve open state;



d) means for fluidly coupling first and second flow outlets with respective first plug means in the respective first and second check valve assemblies;

e) means for providing said load sense signal for moving the first plug means in each check valve assembly to its valve open state when said control valve is in said open state;

f) means for fluidly coupling first and second sides of the load means with respective first plug means in said first and second check valve assemblies when said first plug means are in the valve open state;

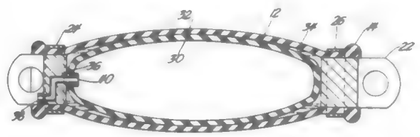
g) means responsive to said pilot pressure signal for moving all of said first plug means and second plug means to their valve open states;

h) means for fluidly coupling each respective side of the load means to the tank when respective first and second plug means are in said valve open state;

wherein fluid flows between the tank and one of first and second sides of the load means and between the fluid inlet and the other side of the load means actuating the load means when both of the first plug means are in their valve open states and both second plug means are in their valve closed states, and fluid flows between the tank and each side of the load means permitting the load means to move freely when all of said first and second plug means are in their valve open positions.

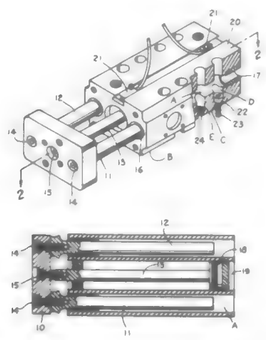
VOL 1167 ISS 1 OC 4 1994 UMI

5,351,602
JOINTED ASSEMBLY ACTUATED BY FLUID PRESSURE
John W. Monroe, Warren, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Aug. 5, 1992, Ser. No. 925,048
Int. Cl.[5] F01B *21/02*
U.S. Cl. 92—64 7 Claims



1. A mechanical muscle comprising:
a muscle longitudinal axis;
a flexible sleeve disposed along the muscle axis and resistant to elongation along the muscle axis;
a smooth inner peripheral surface of the sleeve;
terminus means at ends of the sleeve for sealing the sleeve;
a flexible, outwardly expandable bladder within the sleeve, a smooth outer peripheral surface of the bladder slidable against the inner peripheral surface of the sleeve, the bladder and sleeve defining a void therebetween;
a free state of the bladder occurring during a relaxed state of the muscle;
an outwardly expanded state of the bladder occurring during a tensed state of the muscle;
a first volume of the void occurring during the relaxed state of the muscle;
a second volume of the void smaller than the first volume occurring during the muscle's tensed state;
one or more fluids sealed within the void;
wherein the fluid exerts greater pressure on an exterior surface of the bladder during the tensed state of the muscle than during the relaxed state.

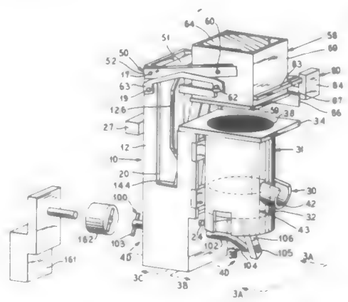
5,351,603
MOUNTING FOR GUIDED CYLINDER AND METHOD
Lawrence F. Yuda, P.O. Box 499, Westminster, S.C. 29693
Filed Aug. 23, 1993, Ser. No. 109,917
Int. Cl.[5] F01B *29/00*
U.S. Cl. 92—161 5 Claims



1. A guided fluid operated cylinder having an elongated housing carrying a guide rod outside of a sealed cylinder chamber comprising:
an elongated bore in said housing in alignment with said sealed cylinder chamber for mounting said guide rod for sliding movement therein;
a mounting surface on an exterior portion of said housing;
an exterior wall formed in said housing by said elongated bore and said exterior mounting surface of said housing;
a transverse mounting bore extending across said wall between said elongated bore and said mounting surface;
said mounting bore having an enlarged section for receiving a head of a fastener having a shank carried thereby; and
an abutment formed between said enlarged section for receiving said head and a reduced section for receiving said shank;
whereby said fastener may be placed in said mounting bore when the guide rod is withdrawn leaving an end portion of said shank extending outwardly of said mounting surface for mounting said guided cylinder.

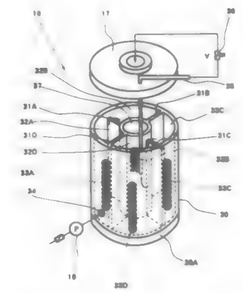
5. The method of mounting a guided fluid operated cylinder having an elongated housing carrying a guide rod outside of a sealed cylinder chamber comprising the steps of:
providing a mounting surface on an exterior portion of said housing;
utilizing a mounting bore extending across a wall between an elongated guide rod bore and said mounting surface for prepositioning a threaded fastener;
prepositioning said threaded fastener by withdrawing said guide rod giving access to said mounting bore;
placing said threaded fastener in said mounting bore;
returning said guide rod to said elongated guide rod bore confining said fastener in said mounting bore; and
leaving an end portion of said shank extending outwardly of said mounting surface for mounting said guided cylinder.

5,351,604
COFFEE BREWER METHOD AND APPARATUS
Brian L. King, Palo Alto, Calif., and Paul A. King, Dorval, Canada, assignors to Zuma Coffee Technologies, Inc., Saint-Hubert, Canada
Filed Sep. 1, 1992, Ser. No. 938,768
Int. Cl.[5] A47J *31/32*
U.S. Cl. 99—289 R 40 Claims



1. Apparatus for brewing a beverage comprising, in combination:
an upper chamber for receiving and containing hot water and a brewing material and having an open lower end,
a lower chamber having an open upper end,
a filter mounted over the upper end of said lower chamber preventing passage of the brewing material therethrough,
means for providing relative movement between said lower chamber and said upper chamber to move said chambers between a first position wherein said filter is clamped between said lower end of said upper chamber and said upper end of said lower chamber and a second position wherein said lower end and said upper chamber is spaced from said upper end of said lower chamber,
means for removing brewing material off the top surface of said filter,
means for moving said removing means across said filter when said chambers are in said second position to remove brewing material from said filter, and
including means for moving said removing means from a stored position on one side of said chambers to a return position on the opposite side of said chambers when said chambers are spaced apart by a wide distance sufficient for said removing means to move from said stored position to said return position without touching the beverage material on said filter and when said chambers are closer together than said wide distance to move said removing means in contact with said filter from said return position across said filter to said stored position to remove the brewing material off said filter.

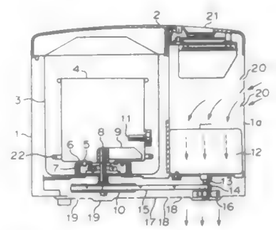
5,351,605
AUTOMATIC NOODLE COOKER
Keishu Sai, 3-160, Hongo-cho, Naka-ku, Yokohama 231, Kanagawa-ken, Japan, and Tetsuya Hayashibara, 1-6-8, Kugahara, Ohta-ku, Tokyo 146, Japan
Filed Aug. 31, 1992, Ser. No. 937,391
Int. Cl.[5] A23L *1/00*
U.S. Cl. 99—330 8 Claims



1. A single stage automatic noodle cooker comprising:
a heating section having a water storage space and partitions for dividing said water storage space into multiple spaces wherein each of said multiple spaces includes a heater, wherein said heating section is designed so that water supplied to a first of said multiple spaces flows sequentially from space to space;
a single stage processing section operatively connected to said heating section, by flow control means, to receive hot water which is discharged from said heating section, said processing section being adapted to receive ingredients to be cooked and further comprising outflow control means for controlling the outflow of cooked ingredients from said single stage processing section to immediately exit said automatic noodle cooker; and
a control section operatively connected to said flow control means for control of the flow of hot water from said heating section to said processing section.

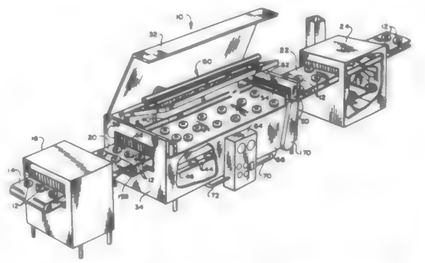
5,351,606
BREAD BAKING DEVICE
Yoshiaki Matsuzaki, Daito, Japan, assignor to Funai Electric Co., Ltd., Daito, Japan
Filed Jul. 27, 1993, Ser. No. 98,448
Claims priority, application Japan, Jul. 29, 1992, 4-059072[U]
Int. Cl.[5] A21D *2/00, 8/00;* A47J *27/00, 37/00*
U.S. Cl. 99—348 7 Claims

1. In an improved bread baking machine having a driving motor and driving means, and a bread baking case with a driven means for driving a bread kneading blade, and transmission means between said driving and driven means, the improvement comprising a housing provided with louvers and a bottom plate of said housing having vent apertures, and an air



cooling fan integrally formed as part of said driving means; said louvers and vent apertures being disposed substantially about said driving motor so as to discharge heat generated by said transmission means by the rotatable action of said cooling fan in moving air into and out of said housing.

5,351,607
APPARATUS FOR COOKING DOUGH PRODUCTS
Matthew J. Rini, Madison; Vincent Apicella, West Haven; Frederick Fulton, Guilford, all of Conn.; Bennet Black, Orchard Park, N.Y., and James Sinnott, Stratford, Conn., assignors to Kraft General Foods, Inc., Northfield, Ill.
Continuation of Ser. No. 841,724, Feb. 26, 1992, which is a division of Ser. No. 633,669, Dec. 26, 1990, abandoned. This application Dec. 20, 1993, Ser. No. 170,671
Int. Cl.[5] A47J *37/12*
U.S. Cl. 99—404 7 Claims



1. An apparatus for cooking dough products, comprising:
a vessel adapted for holding water as a cooking medium, having an inlet end and an outlet end;
heating means for heating the water in the vessel;
shower means for showering heated water on the dough products being carried through the vessel, the shower means being spaced above said vessel;
connecting means for connecting said shower means to a source of heated water;
conveyor means having an exposed upper surface for carrying the dough products through the vessel, said conveyor means having opposed end portions of preselected height extending beyond the inlet end and outlet end of the vessel and said conveyor means further having a depressed medial portion at least partly disposed within said vessel;
level control means for maintaining the level of heated water in said vessel above the exposed upper surface of said conveyor means so that the upper portions of the dough products are exposed to water from the shower means and at least the lower portions of said dough products being

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submerged in the heated water in said vessel so as to be cooked thereby;

said shower means including a perforated pan having a depressed medial portion which is located generally at the height of the inlet and outlet ends of the vessel, said shower means located immediately above said conveyor means and conforming to the conveyor means with the depressed medial portion of said shower means being generally coextensive with the depressed medial portion of said conveyor means, so as to shower dough portions carried on the depressed medial portion of said conveyor means with heated water to thereby cook upper portions of the dough products; and

means for creating currents in the water contained in the depressed medial portion of the pan for maintaining the heated water at a substantially uniform temperature.

5,351,608

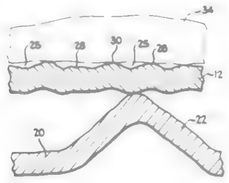
BAKEWARE WITH SURFACE TEXTURE

Jay Z. Muchin, Manitowoc, Wis., and Dennis W. Miller, Summerville, S.C., assignors to Anchor Hocking Corporation, Freeport, Ill.

Filed Mar. 18, 1992, Ser. No. 853,293

Int. Cl.[5] A47J *37/01*

U.S. Cl. 99—422 **2 Claims**



1. An improved baking device that is both non-stick and scratch resistant, the baking device comprising:

a first sheet having an upper surface and a lower surface,

a second sheet spaced underneath said first sheet, said first and second sheets being joined at their respective peripheries to form an insulated baking device, said second sheet having upwardly extending protrusions which provide spacing means for holding said sheets a predetermined distance apart,

said upper surface of said first sheet including a baking area for carrying and supporting an article to be baked,

said baking area of said upper surface having roughened surface texturing, said roughened surface texturing providing means for reducing surface contact between said upper surface and a food article placed on said upper surface for baking, said roughened surface texturing also providing means for reducing frictional contact between said upper surface and cooking utensils and cleaning utensils thereby reducing likelihood of scratching said upper surface, said upper surface texturing being comprised of a plurality of different surface features, said plurality including

a first surface feature which comprises a series of generally rounded discrete undulating protrusions, said rounded discrete undulating protrusions having an outer periphery that defines a peripheral shape and a surface area, said rounded discrete undulating protrusions varying in peripheral shape, surface area, height and upper surface shape,

said upper surface containing between about 25 and 30 protrusions per square inch of surface area,

a second surface feature which comprises a series of crater-like depressions with generally sharp and unrounded surface edges, said crater-like depressions having an outer periphery that defines a peripheral shape and a surface area, the outer periphery and surface area of the crater-like depressions being smaller than the outer periphery of the discrete undulating protrusions so that a plurality of crater-like depressions can occur within the periphery of a single discrete undulating protrusion, said crater-like depressions varying in peripheral shape and depth,

said upper surface containing from about 150 to about 200 irregularly shaped crater-like depressions per square inch of surface area,

said first and second surface features being superimposed on said sheet such that said irregularly shaped crater-like depressions occur both on and between said generally rounded discrete undulating protrusions,

said first sheet having a thickness of about 0.003 inch and a ratio of thickness to textural differential of between about 3.5 and 5.0.

5,351,609

CONCHING MACHINE

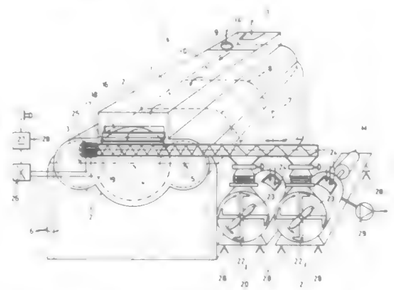
Kurt Müntener, Bad Salzuflen, Fed. Rep. of Germany, assignor to Richard Frisse GmbH Maschinenfabrik, Bad Salzuflen, Fed. Rep. of Germany

Continuation of Ser. No. 869,774, Apr. 16, 1992, abandoned. This application Sep. 27, 1993, Ser. No. 127,284

Claims priority, application Switzerland, May 2, 1991, 01 317/91-4

Int. Cl.[5] A23G *1/00, 1/10, 1/16;* **B01F** *7/02*

U.S. Cl. 99—485 **10 Claims**



1. A conching machine for treating chocolate paste by kneading and mixing comprising

a trough for containing said chocolate paste extending along a longitudinal axis from an input end to an output end, said trough having

at least two compartments extending along said longitudinal axis;

an input opening on said input end for inputting said chocolate paste;

an output opening on said output end for outputting said chocolate paste;

at least one partition wall being arranged transversely to said longitudinal axis and dividing said trough into said at least two compartments of said trough, said partition wall comprising

at least one passage opening for said chocolate paste, said passage opening being located at a top portion of said at least one partition wall;

at least two rotors with kneading elements, each rotor being arranged within one of said compartments and having a rotational axis substantially parallel to said longitudinal axis; and

motor means for driving said rotors;

wherein each of said kneading elements is a conching element configured as a wiper extending to a cylindrical wall of a trough and meeting the cylindrical wall at an angle thereto for introducing a radial movement to chocolate paste relative to the cylindrical wall;

a flow of chocolate paste through said at least one passage

opening is dependent on a level of a filling of said trough by inputting chocolate paste via said input opening into said trough; and

a conveying of the chocolate paste from one of said compartments to a second of said compartments is independent substantially of the consistency of the paste.

5,351,610

PEELING MACHINE FOR VEGETABLE PRODUCTS

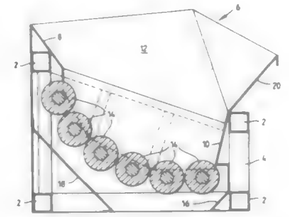
Bo Jönsson, Manne Måns väg, Sweden, assignor to Limas AB, Ahus, Sweden

Filed Jun. 18, 1993, Ser. No. 79,011

Claims priority, application Sweden, Jul. 24, 1992, 9202245

Int. Cl.[5] A23N *7/00, 7/02*

U.S. Cl. 99—628 **16 Claims**



1. A peeling machine for batchwise peeling of vegetable products including peels comprising:

a container for receiving the vegetable products, said container including a bottom and first and second opposite sides;

peeling means, arranged in said container, for removing the peels of the vegetable products during relative movement and engagement between the vegetable products and said peeling means, wherein said peeling means comprises a plurality of rotatable peeling rollers, wherein each roller of said plurality of rotatable peeling rollers is positioned in parallel with all the other rollers of said plurality of rotatable peeling rollers;

wherein at least a part of said bottom of said container comprises said rotatable peeling rollers;

wherein at least a section of said at least a part of said bottom of said container forms a concavely curved surface; and

wherein said peeling rollers adjacent said first side of said container are positioned in a horizontal plane, and wherein from said horizontal plane successive peeling rollers in the direction towards said second side of said container take a successively higher position in said concavely curved surface.

5,351,611

ASSEMBLY DEVICE FOR BINDING BUNCHED CABLES

Holger Schafer, Weil am Rheim; Lothar Escher, Bellingen, and Martin Busch, Bamlach, all of Fed. Rep. of Germany, assignors to A. Raymond GmbH & Co. KG, Lorrach, Fed. Rep. of Germany

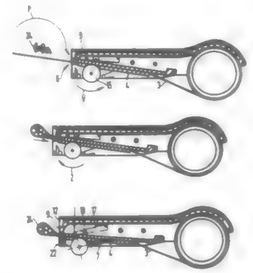
Filed Apr. 15, 1993, Ser. No. 46,307

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1992, 4212789

Int. Cl.[5] B65B *13/34*

U.S. Cl. 100—30 **5 Claims**

1. An assembly device for firmly binding bunched cables with a plastic fastener, said fastener comprising a tension band of indeterminate length having transverse ribs along its length and adapted to be wrapped around said cables and a separate locking clasp having an opening for leading there through the tension band, said opening having two mutually opposite catching tongues that interact with the transverse ribs of the tension band to lock it in place, the assembly device comprising a housing for holding a wound roll of said tension band, an exit opening in one end of said housing through which said tension band can be fed, a first guide channel in said housing having an entrance end and an exit end and positioned for feeding the tension band from said roll to said exit opening, a second guide channel located in said housing above said first guide channel for feeding an endless chain of said locking clasps interconnected together by frangible webs to position the locking clasps one at a time in said exit opening so that the tension band can be passed out through the opening in the



clasp, a cutting blade mounted in the housing between a locking clasp positioned in said exit opening and the exit end of said first guide channel, said first guide channel being pivotally mounted in said housing adjacent its entrance end so that the exit end of said first guide channel can be pressed down from the feeding position to bring said tension band down into engagement with said blade to sever said tension band after the band has been firmly wrapped around a bunch of cables and engaged with said locking clasp and spring means for returning said first guide channel to the feeding position.

5,351,612

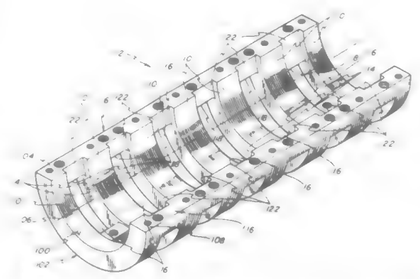
WATER COOLED SLEEVE

Timothy G. Kemper, Piqua; James King, Jr, Sidney, both of Ohio, and Hugo J. Espinal, Chinandega, Nicaragua, assignors to The French Oil Mill Machinery Co., Piqua, Ohio

Filed Jun. 24, 1993, Ser. No. 82,097

Int. Cl.[5] B30B *15/34, 9/14*

U.S. Cl. 100—93 S **6 Claims**



1. A sleeve for use in a mechanical screw press for compressing loose solid particles along a passage defined by screen bars supported by said sleeve to form an interior wall for said press, said screen bars defining elongated apertures along the length of said press for permitting fluids expressed from said loose solid particles to pass out of said passage, said sleeve comprising:

a curved inner wall defining a first radius of curvature;

a curved outer wall defining a second radius of curvature;

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first and second side edges extending parallel to a longitudinal axis of said sleeve and connecting said inner and outer walls;

a plurality of drainage apertures formed through said walls and located between said first and second side edges for permitting drainage of fluids passing through said elongated apertures defined by said screen bars, said drainage apertures including lateral edges extending substantially parallel to said longitudinal axis; and

slots between said side edges and said drainage apertures, said slots extending radially inwardly from said inner wall toward said outer wall such that fluid passing through said elongated apertures defined by said screen bars located adjacent to said side edges will flow into said slots and then through said drainage apertures.

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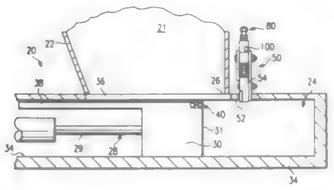
APPARATUS FOR ADJUSTING A FIXED KNIFE IN RAM BALERS

Horace R. Newsom, Waco, Tex., assignor to Harris Waste Management Group, Inc., Peachtree City, Ga.

Continuation-in-part of Ser. No. 998,468, Dec. 30, 1992. This application Mar. 12, 1993, Ser. No. 30,792

Int. Cl.[5] **B30B** *9/30*

U.S. Cl. 100—98 R **20 Claims**



1. A ram baler for compressing material comprising:

a compression ram within the ram baler;

a first knife assembly attached to the compression ram for movement with the compression ram to cut the material;

a second knife assembly attached to the ram baler for cutting the material in cooperation with the first knife assembly;

the second knife assembly vertically spaced from the first knife assembly;

the second knife assembly having a knife carrier and means for adjusting the vertical spacing between the knife carrier and the first knife assembly;

a first support plate and a second support plate for use in attaching the second knife assembly to the ram baler;

the knife carrier movably positioned between the first support plate and the second support plate with the first support plate and the second support plate disposed on opposite sides of the knife carrier; and

a first cutting edge secured to the knife carrier.

5,351,614

SELF-OSCILLATING ROLLER ASSEMBLY AND METHOD

Louis S. Depa, Downers Grove, Ill., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Nov. 5, 1991, Ser. No. 787,857

Int. Cl.[5] **B41F** *31/26*

U.S. Cl. 101—148 **16 Claims**

1. A self-oscillating roller assembly, comprising:

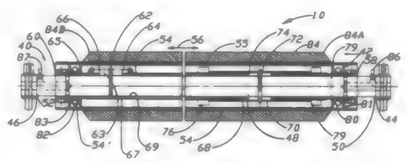
an elongate stationary shaft extending between a pair of opposed fixed ends;

an oscillating shaft assembly including

an elongate oscillating shaft with an interior surface extending coextensively with the stationary shaft substantially from said one fixed end to said other fixed end of said stationary shaft,

means for mounting the oscillating shaft for sliding movement in the elongate direction of the shaft including a pair of translational bearings adjacent the opposed fixed ends, and

means adjacent the opposed fixed ends for mounting the pair of translational bearings to the interior surface of the oscillating shaft; and



a rotatable shaft assembly including

an elongate rotary shaft, and

means physically spaced apart from the translational bearings including a pair of rotational bearings for mounting the rotary shaft for support by and rotational movement around the elongate oscillating shaft.

5,351,615

OFFSET BLANKET FOR A GROOVELESS BLANKET CYLINDER COMPOSED OF A CARRIER PLATE AND A RUBBER LAYER PLACED THEREON

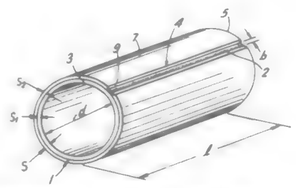
Ingo Köbler, Anhausen; Hans Mamberer, Königsbrunn; Eduard Hoffmann, Bobingen, and Wolfgang Prem, Ustersbach, all of Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach, Fed. Rep. of Germany

Filed May 25, 1993, Ser. No. 66,769

Claims priority, application Fed. Rep. of Germany, May 29, 1992, 4217793

Int. Cl.[5] **B41F** *30/04, 13/08*

U.S. Cl. 101—217 **20 Claims**



1. An offset blanket for a grooveless blanket cylinder for applying a printed image on sheet material or web material, the blanket comprising: a carrier plate which is cut to size; a rubber layer having a width corresponding to a printing width being placed on the carrier plate, the carrier plate and the rubber layer each having a beginning and an end, the blanket having an outer circumferential surface; means for bonding the beginning and end of the carrier plate and the beginning and end of the rubber layer to each other such that the outer circumferential surface of the blanket is continuous and gap-free and the blanket forms a sleeve-shape, the sleeve-shaped blanket having end faces and being adapted to be removably mountable on the blanket cylinder in a frictionally engaging manner; and means for positioning the blanket on the blanket cylinder, the positioning means being provided on at least one of the end faces of the blanket.

5,351,616

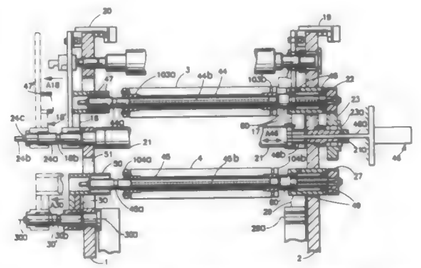
ROTARY WEB PRINTING MACHINE, PARTICULARLY FOR PRINTING ON THICK OR CARTON-TYPE STOCK WEBS WITH REPLACEABLE PLATE CYLINDERS

W. Robert Gelinas, Jewett City, Conn., and Roland D. Horth, Burlington, Mass., assignors to MAN Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Continuation of Ser. No. 929,999, Aug. 13, 1992, abandoned. This application Jul. 21, 1993, Ser. No. 95,361

Int. Cl.[5] **B41F** *5/22, 27/00;* **B41L** *35/32*

U.S. Cl. 101—218 **20 Claims**



1. Rotary web offset printing machine, especially adapted for printing on thicker carton-type stock webs for packaging of merchandise, having

spaced side wall elements (**1**, **2**);

a printing cylinder shaft or core (**44**) having a predetermined diameter;

a selectively removable and replaceable printing cylinder sleeve (**3**, **3***a*) positioned on, and surrounding the shaft or core, said printing cylinder sleeve comprising a specific sleeve within a set of sleeves (**3**, **3***a*), each sleeve of said set of sleeves fitting on said shaft or core (**44**), and in which each sleeve of said set of sleeves has an individual outer circumference dimension within a predetermined range of circumference dimensions;

rotation-symmetrical support means (**103***a*, **103***b*) at axial ends of the printing cylinder sleeve (**3**, **3***a*) retaining said sleeve on the shaft or core, said sleeve (**3**, **3***a*) forming a replaceable axially removable element, for selective replacement with another printing cylinder sleeve of a different circumference dimension of said set on said shaft or core;

machine drive means (**23**) located at a fixed position in the machine;

a cylinder drive means (**22**) uniquely provided for said shaft or core (**44**) and secured to the shaft or core (**44**) and drivingly connectable with the machine drive means (**23**), said cylinder drive means being dimensioned for engagement with said machine drive means (**23**);

an inker (**6**, **8**, **9**, **10**) having at least one inker roller (**8**, **9**) located in and positionable in the machine for circumferential engagement with the specific cylinder sleeve (**3**, **3***a*) of the selected circumference dimension then positioned on the shaft or core (**44**);

movable shaft support means (**17–20**) supporting said cylinder shaft or core (**44**) coupled to said shaft or core (**44**) on the machine,

said shaft support means (**17–20**) selectively positioning or repositioning the printing cylinder shaft or core (**44**) and hence the cylinder drive means (**22**) secured thereto with respect to the machine drive means (**23**) at selected positions in the printing machine in dependence on the circumference dimension of the specific printing cylinder sleeve (**3**, **3***a*) within said range on said cylinder shaft or core (**44**), while maintaining driving connectability of the printing cylinder drive means (**22**) with the machine drive means (**23**); and

further comprising

a blanket cylinder shaft or core (**45**);

a blanket cylinder sleeve (**4**, **4***a*) surrounding the blanket cylinder shaft or core, and having a blanket circumference dimension within said predetermined range of circumference dimensions;

a blanket cylinder drive means (**28**) at an axially fixed location in one (**2**) of the side wall elements and coupled to the machine drive means (**23**);

a blanket cylinder shaft drive means (**27**) coupled to the blanket cylinder shaft (**45**) and in driving engagement with said blanket cylinder drive means (**28**); and

movable blanket cylinder shaft support means (**30**, **32**, **50**) movably secured to the side wall elements (**1**,**2**) and supporting said blanket cylinder shaft or core (**45**) and said blanket cylinder shaft drive means (**27**) coupled to said blanket cylinder core or shaft, said blanket cylinder shaft support means selectively positioning the blanket cylinder shaft drive means (**27**) with respect to the blanket cylinder drive means (**28**), and the blanket cylinder shaft or core (**45**) for circumferential engagement of the specific blanket cylinder sleeve (**4**, **4***a*) of the selected circumference dimension on said blanket cylinder shaft or core, with respect to the printing cylinder sleeve (**3**, **3***a*) of a coordinate selected circumference dimension within said range.

5,351,617

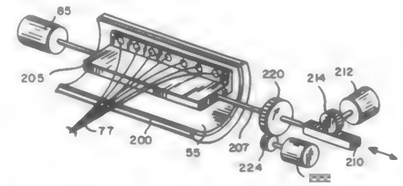
METHOD FOR LASER-DISCHARGE IMAGING A PRINTING PLATE

Richard A. Williams, Hampstead; Frank G. Pensavecchia, Hudson; John F. Kline, Londonderry, all of N.H., and Thomas E. Lewis, E. Hampstead, Mass., assignors to Presstek, Inc., Hudson, N.H.

Continuation-in-part of Ser. No. 917,481, Jul. 20, 1992, abandoned. This application May 13, 1993, Ser. No. 61,701

Int. Cl.[5] **B41N** *1/14*

U.S. Cl. 101—467 **13 Claims**



1. A method of imaging a lithographic printing member, the method comprising the steps of:

a. providing a printing member including a solid oleophobic layer and a solid oleophilic layer underlying the oleophobic layer, the oleophobic layer being characterized by ablative absorption of imaging radiation;

b. spacing at least one laser source capable of producing an imaging output opposite the member;

c. orienting the member such that the oleophilic layer faces the laser source;

d. guiding the output of each laser to focus on the oleophobic layer through the oleophilic layer;

e. causing relative movement between the laser output and the member to effect a scan of the member by the laser output; and

f. selectively exposing, in a pattern representing an image, the member to the laser output during the course of the scan so as to remove or facilitate the removal of the oleophobic layer, thereby directly producing on the member an array of image features.

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5,351,618

SHOCK TUBE INITIATOR

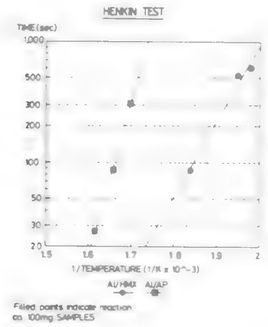
Geoffrey F. Brent, Dundonald, and Malcolm D. Harding, Irvine, both of Scotland, assignors to Imperial Chemical Industries PLC, London, United Kingdom

Filed Sep. 2, 1992, Ser. No. 937,787

Claims priority, application United Kingdom, Sep. 9, 1991, 9119217

Int. Cl.[5] C06C *5/04*

U.S. Cl. 102—275.8 14 Claims



1. In a shock tube initiator tube comprising a plastics tubing having an unobstructed axial bore, said tubing having throughout its length an inner surface, and unconsolidated reactive materials provided upon said surface as a loosely adherent dusting of shock-dislodgeable particles at a core loading sufficiently low to avoid rupture of the tubing in use, wherein said reactive materials comprise fuel particles selected from the group consisting of metals, quasi-metals and non-metallic fuels, the improvement wherein the fuel particles include, as oxidant, at least about 20% (by weight) of ammonium perchlorate.

5,351,619

GAS GENERATOR IGNITED BY LAMINA OR FILM

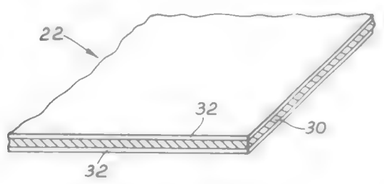
Sek K. Chan, Sr. Bruno, Canada; Graeme A. Leiper, Prestwick, and Steven J. Graham, Fairlie, both of Scotland, assignors to Imperial Chemical Industries PLC, London, England and ICI Canada, Inc., Ontario, Canada

Filed Feb. 18, 1992, Ser. No. 843,942

Claims priority, application United Kingdom, Feb. 18, 1991, 9103372.0; Aug. 1, 1991, 9116566.2

Int. Cl.[5] C06B *45/00*

U.S. Cl. 102—289 21 Claims



1. A gas generating device comprising:

a compacted particulate gas-generating propellant charge; and

a pyrotechnic igniter for said propellant charge, said pyrotechnic igniter comprising a lamina or film comprising a pyrotechnic layer, and said pyrotechnic layer being in ignition transmission relationship with said propellant charge.

5,351,620

TROLLEY CONVEYOR SYSTEM HAVING A HELICALLY TWISTED TRACK FOR A POSITIONABLE MOBILE DEVICE MOUNTED IN THE TROLLEY AXLE

Vincent Becheau, and Marie-Laure Bourgeois, Ancienne Ecole, 24700 Saint-Geraud-de-Corps, France

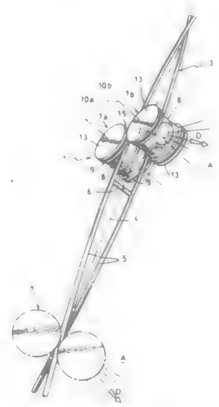
PCT No. PCT/FR90/00881, § 371 Date Jun. 1, 1992, § 102(e) Date Jun. 1, 1992, PCT Pub. No. WO91/08420, PCT Pub. Date Jun. 13, 1991

PCT Filed Dec. 4, 1990, Ser. No. 852,222

Claims priority, application France, Dec. 6, 1989, 89 16136

Int. Cl.[5] B61B *3/00*; E01B *25/00*

U.S. Cl. 104—296 19 Claims



1. Bearing system for omni-directionally orientating a mobile device, comprising:

a guide ramp having a shape of a ribbon twisted helically about a rectilinear or incurved axial line;

a trolley supported by and movable along said guide ramp, said trolley comprising a pair of axles having parallel axes, with said ramp being positioned between said pair of axles;

elastic connecting means for biasing the axles of said pair of axles towards one another, each of said axles being rotatable about a respective axis on moving said trolley along said ramp; and

a mobile device mounted in one of said two axles, so as to rotate with said axle about the axle, either continuously or intermittently, as said trolley moves along said ramp.

5,351,621

TRAVELING INSPECTION ROBOT SYSTEM

Keiji Tanaka; Tatsuyuki Omote; Yutaka Kometani; Masaki Takahashi, all of Hitachi; Tsuyoshi Kido, Ibaraki; Tetsuo Waki, Hitachi, and Tomiharu Yoshida, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 18,544

Claims priority, application Japan, Feb. 17, 1992, 4-029773

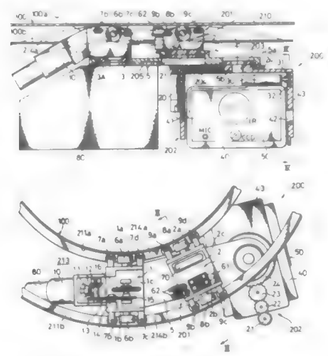
Int. Cl.[5] B61B *3/00*

U.S. Cl. 104—94 22 Claims

1. A traveling inspection robot system comprising a monorail and an inspection robot traveling along said monorail, said inspection robot comprising a travel unit and a sensor unit mounted to said travel unit, said system being operated by a control console installed on the ground, wherein:

(a) said monorail is a channel-shaped rail comprising a closed upper wall, a pair of side walls suspending from both transverse ends of said upper wall in opposite relation to form first travel guide surfaces, and a pair of lower walls extending inwardly from lower ends of said side walls to form second travel guide surfaces and spaced from each other in the transverse direction by a groove; and

(b) said travel unit comprises first and second carriages, each being provided with one pair of guide rollers contacting said second travel guide surfaces inside said monorail to guide the travel in the vertical direction and with two pairs of side rollers arranged on the front and rear sides of said pair of guide rollers as viewed in the direction of



advance, respectively, and contacting said first travel guide surfaces inside said monorail to guide the travel in the horizontal direction, coupling means interconnecting said first and second carriages for independent rotation thereof through parallel steering shafts attached to said first and second carriages, respectively, and travel driving means provided on at least one of said first and second carriages for giving a traction force to a transversely central portion of said upper wall inside said monorail.

5,351,622

SECUREMENT OF LINER FOR SHAPED CHARGE

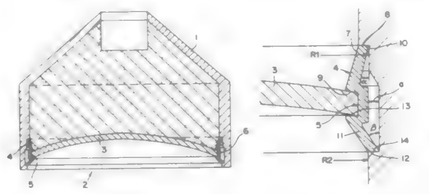
Olof Ekholm, Karlskoga, Sweden, assignor to Bofors AB, Karlskoga, Sweden

Filed Jan. 28, 1993, Ser. No. 10,054

Claims priority, application Sweden, Jan. 29, 1992, 9200235

Int. Cl.[5] F42B *1/02, 3/08, 12/10*

U.S. Cl. 102—476 11 Claims



1. A method of securing a liner or inlay in an opening of a case, said case having a different coefficient of thermal expansion than said liner or inlay, said case surrounding a shaped explosive charge on all sides except for said opening, said opening facing the direction of the intended effect of the charge, said liner or inlay defining the shape of the charge in the direction of the intended effect of the charge, said method comprising:

immovably securing said liner or inlay in said case in a direction parallel to the direction of the intended effect of the charge;

simultaneously resiliently securing said liner or inlay in a direction orthogonal to the direction of the intended effect of the charge; and

providing a clearance for radial expansion of said inlay or liner between an outer edge of the inlay or liner and an inner wall of the case.

5,351,623

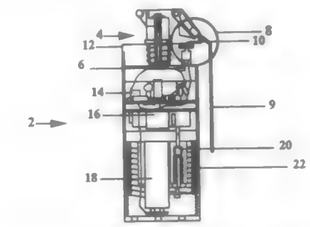
EXPLOSIVE SIMULATOR

Robert P. Kissel; Eric P. Johnson, both of LaPlata, and Alan L. Gehl, Marbury, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 21, 1993, Ser. No. 79,472

Int. Cl.[5] F42B *8/00*

U.S. Cl. 102—498 9 Claims



9. A method of simulating an explosion comprising the steps of:

dusting the inside of a shock tube with aluminum and HMX,

forming a bridge head from copper wires and a carbon-based phenolic,

placing said bridge head within said shock tube, and

providing power to said bridge head,

whereby, some of the carbon near the end of said copper wires vaporizes,

whereby, said vaporization of said carbon causes a reaction of said aluminum and said HMX in said shock tube,

whereby, the reaction of said aluminum and said HMX produces a bright white flash of light and propagates a shock wave in said shock tube,

whereby, a loud noise is produced when said shock front emerges from the end of said shock tube,

whereby, said bright white flash of light and said loud noise simulate an explosion.

5,351,624

BOGIE FOR HIGH-SPEED RAIL VEHICLES

Günter Ahlborn, Siegen; Guido Bieker, Kirchhundem; Gerhard Kampmann, Netphen, and Alfred Lohmann, Siegen, all of Fed. Rep. of Germany, assignors to ABB Henschel Waggon Union GmbH, Berlin, Fed. Rep. of Germany

Filed Mar. 10, 1993, Ser. No. 29,025

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1991, 4122741

Int. Cl.[5] B61F *5/00*

U.S. Cl. 105—185 1 Claim

1. A bogie for high-speed rail vehicles, comprising:

an H-shaped bogie frame having axles, longitudinal girders and cross girders, said cross girders having guides and sliding blocks in said guides;

primary springs cushioning said bogie frame relative to said axles;

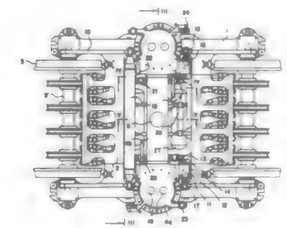
a lateral bolster for receiving a coach body of the rail vehicle;

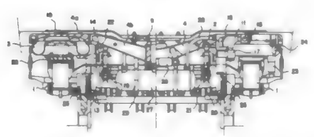
pneumatic secondary air springs each being supported directly on said longitudinal girder for cushioning said lateral bolster relative to said bogie frame;

means including tilting torsional shafts for retarding rotation of said lateral bolster;

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said lateral bolster having an upper surface, transverse ends, and a bearing on said air springs;
friction plates disposed on said upper surface near said transverse ends above said bearing of said lateral bolster for supporting the coach body;
said lateral bolster being movable relative to said bogie frame only vertically and horizontally transversely within a defined path and being guided horizontally in the longitudinal direction by said tilting torsional shafts with play through said sliding blocks; and
a king pin for connecting said lateral bolster to the coach body and for transmitting only horizontal forces, said king pin being geometrically freely rotatable with said bogie frame relative to the coach body;
said lateral bolster having a central part with a lateral bolster head at each of said transverse ends, and including connection elements for a longitudinal bolster stop integrated in said lateral bolster head, a lateral bolster stop disposed





on said lateral bolster head, upper and lower vertical stops for limiting a spring path of said lateral bolster and a vertical damper mounted on said bolster head, and connection elements for roll support, retardation, an air spring control valve each integrated in said lateral bolster head, and said air spring and said friction plates of the bogie being integrated in said lateral bolster heads; and wherein said longitudinal girders of said bogie frame have longitudinal ends, said rotation retarding means are disposed on each side of said lateral bolster, and each of said rotation retarding means includes one of said torsional shafts being disposed parallel to said lateral bolster and having longitudinal ends, vertical bearing journals being fixedly disposed at said longitudinal ends of said torsional shafts for flexibly mounting said torsional shafts on said lateral bolster heads, and connecting rods being mounted spherically at said longitudinal ends of said torsional shafts for mounting and connecting said torsional shafts to said longitudinal ends of said longitudinal girders.

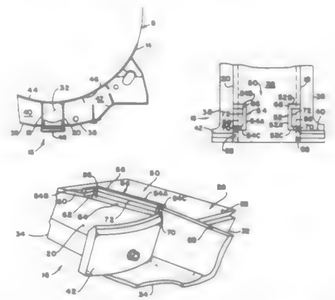
5,351,625

WELD SUPPORT FOR RAILWAY TANK CAR UNDERBODY CONSTRUCTION

Laurence E. Culligan, Portage Des Sioux, and Paul J. Dumser, St. Charles, both of Mo., assignors to ACF Industries, Earth City, Mo.

Filed Jul. 12, 1993, Ser. No. 89,305
Int. Cl.[5] B61D *5/00*
U.S. Cl. 105—362 **22 Claims**

1. A weld support for use with a center sill assembly for supporting a cradle pad used to support the end of a railway tank car body, the center sill assembly including first and second spaced apart side plates spaced to either side of a longitudinal centerline of the car body and a top plate extending a portion of the length of the center sill assembly, and the weld support comprising first and second support members respectively installed on the center sill assembly on both sides of the assembly, a pocket being formed in the center sill assembly on each side thereof during fabrication of the center sill assembly, and each weld support member being attached to the top plate



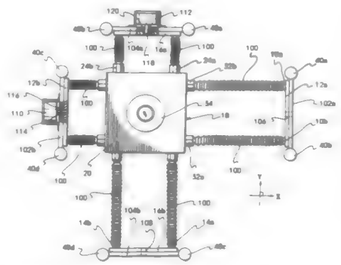
adjacent the respective pockets for the weld support members to extend above the upper surface of the top plate, the weld support members each providing a substantial contact surface with the cradle pad, and each weld support member helping pool welding material in the respective pockets to help effect a strong weld between the cradle pad and the center sill assembly.

5,351,626

WALKING ROBOT

Ken Yanagisawa, c/o Kabushiki Kaisha Mechanic Sekkei Jimusho, 5175-1, Ooaza Toyoshina, Toyoshina-machi, Minamiazumi-gun, Nagano-ken, Japan

Filed Nov. 10, 1992, Ser. No. 974,169
Claims priority, application Japan, Nov. 11, 1991, 3-322475
Int. Cl.[5] B62D *57/02*
U.S. Cl. 180—8.6 **22 Claims**



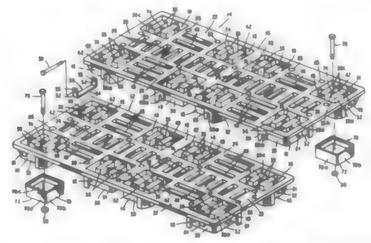
1. A walking robot comprising:
an X-elongated member being provided in an X-direction;
a Y-elongated member being provided in a Y-direction perpendicular to the X-direction;
a moving body being capable of moving on said X-elongated member in the X-direction and on said Y-elongated member in the Y-direction;
an X-leg section being provided to said X-elongated member, said X-leg section being capable of extending and shortening its length in a Z-direction perpendicular to the X- and the Y-directions, wherein, in a supporting state, said X-leg section is capable of supporting said X-elongated member, said Y-elongated member and said moving body;
a Y-leg section being provided to said Y-elongated member, said Y-leg section being capable of extending and shortening its length in the Z-direction, wherein, in a supporting state, said Y-leg section is capable of supporting said X-elongated member, said Y-elongated member and said moving body;
an X-driving mechanism for relatively moving said moving body in the X-direction with respect to said X-elongated member;
a Y-driving mechanism for relatively moving said moving body in the Y-direction with respect to said Y-elongated member;
a first Z-driving mechanism for extending and shortening said X-leg section in the Z-direction;
a second Z-driving mechanism for extending and shortening said Y-leg section in the Z-direction;
first including means for inclining said moving body, said X-elongated member, said Y-elongated member, said Y-leg section, said X-driving mechanism, said Y-driving mechanism and said second Z-driving mechanism with respect to said X-leg section when said X-leg section is in the supporting state;
second inclining means for inclining said moving body, said X-elongated member, said Y-elongated member, said X-leg section, said X-driving mechanism, said Y-driving mechanism and said first Z-driving mechanism with respect to said Y-leg section when said Y-leg section is in the supporting state;
an X-connecting member connected to distal ends of each of a pair of said X-elongated members;
a Y-connecting member connected to distal ends of each of a pair of said Y-elongated members;
an X-cylinder plate rotatably connected to each of said X-connecting members; and
a Y-cylinder plate rotatably connected to each of said Y-connecting members;
wherein said first inclining means causes axial rotation of said X-connecting members with respect to said X-cylinder plates and said second inclining means causes axial rotation of said Y-connecting member with respect to said Y-cylinder plate.

5,351,627

PORTABLE PALLET ASSEMBLY

Satria Junaedi, Arcadia, Calif., assignor to Satria International, Temple City, Calif.

Filed Dec. 21, 1992, Ser. No. 994,100
Int. Cl.[5] B65D *19/12*
U.S. Cl. 108—56.1 **10 Claims**



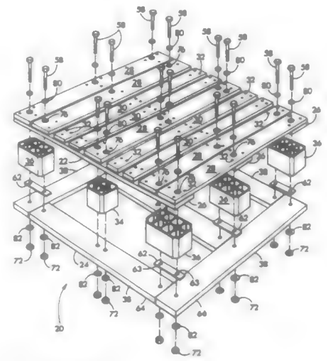
1. A portable pallet assembly for use in handling, storing and moving articles and materials comprising:
(a) first and second platform units, each said unit comprising:
(i) a top support wall having a central area and transversely spaced side areas;
(ii) a plurality of hollow support pedestals depending from each of said side areas, each said hollow pedestal comprising interconnected side, end and bottom walls defining a basin like recess, each said recess having at least one upwardly extending island like protuberance provided therewithin, each said island like protuberance comprising interconnected side and end walls connected to said bottom walls of said hollow support pedestals, one of said end walls of said protuberance having an aperture;
(b) first connector means for interconnecting said first and second platform units, said first connector means comprising:
(i) a generally U-shaped rigid connector member having end walls interconnected by a bight portion, each said end wall of said U-shaped rigid connector member having an aperture; and
(ii) an elongated bolt removably received through said apertures of said end walls of said connector member and through said apertures of said end walls of said protuberances.

5,351,628

WOOD AND PLASTIC PALLET

Harlon W. Breezer, Portage; Thomas M. Pintar, Coloma, and Michael J. Wolfe, Pardeeville, all of Wis., assignors to TriEnda Corporation, Portage, Wis.

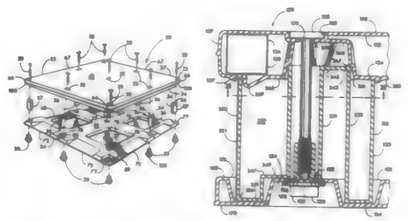
Filed Mar. 26, 1993, Ser. No. 38,711
Int. Cl.[5] B65D *19/16*
U.S. Cl. 108—56.1 **14 Claims**



1. A pallet comprising:
a) an upper load supporting deck;
b) a lower deck comprised of a plurality of laterally extending members and a plurality of longitudinally extending members;
c) a plurality of plastic blocks positioned between the upper deck and the lower deck, and engaged with the upper deck and the lower deck to space the upper deck a desired distance from the lower deck, wherein at least one of said plurality of blocks has portions defining at least two vertically extending sockets, wherein said at least one block is positioned above a joint formed between a laterally extending member and a longitudinally extending member of the lower deck; and
d) a plurality of vertically extending fasteners which extend through the block sockets and are engaged with the upper deck and the lower deck members to join the lower deck laterally extending members to the lower deck longitudinally extending members and to join the lower deck to the upper deck.

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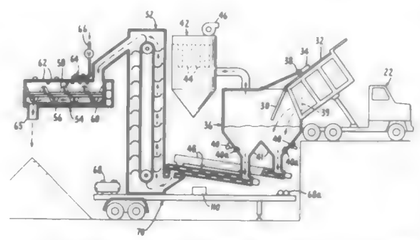
5,351,629
DOUBLE DECK PLASTIC PALLET
Harlon W. Breezer; William Price, both of Portage, Wis.; Kenneth C. Wilken, Minneapolis, Minn., and Michael J. Wolfe, Pardeeville, Wis., assignors to TelEnda Corporation, Portage, Wis.
Division of Ser. No. 740,374, Aug. 5, 1991. This application Mar. 16, 1993, Ser. No. 31,958
Int. Cl.[5] B65D *19/12*
U.S. Cl. 108—56.3 7 Claims



1. A plastic post through which a bolt passes for vertically spacing horizontal decks of a double deck pallet; the post comprising:
a) a support member having vertically extending outer walls with portions adapted to engage against and support a reinforced portion of a pallet horizontal top deck, the support member having at least one vertically extending reinforcing web connected to the support member walls to stiffen the support member;
b) a sleeve integrally formed with the support member and having wall portions spaced inwardly from the outer walls, said walls portions defining a bolt hole spaced from the support member wall, wherein a bolt may be inserted through the pallet horizontal top deck and through the post bolt hole; and
c) a protruding portion extending upwardly to a level above the support member and being spaced from a center of the post such that the protruding portion orients the post by engaging with a depression located in the pallet top deck, wherein the support member walls are joined to inner walls to form a polygonal post, and a stiffening column with vertical walls extends vertically adjacent to the sleeve, the stiffening column forming the protruding portion.

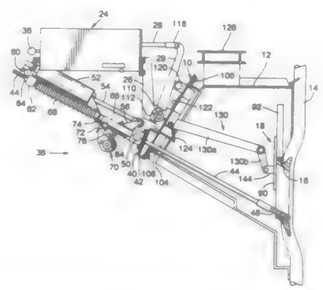
5,351,630
APPARATUS FOR CONDITIONING ASTM CLASS C FLY ASH
Robert A. Lister; William H. Barrow; James B. Merkel, all of San Antonio; Gary W. Beckcom, Boerne, and I Samuel Young, San Antonio, all of Tex., assignors to Monex Resources, Inc., San Antoni, Tex.
Filed Jul. 3, 1991, Ser. No. 725,204
Int. Cl.[5] F23J *1/00*
U.S. Cl. 110—165 A 3 Claims

1. An ASTM Class C fly ash conditioner comprising:
a container having a front wall and a back wall, the container having a fly ash intake opening near the front wall and an output opening near the back wall;
a paddle assembly extending from the container front wall to the container back wall, the paddle assembly including at least one rotatable shaft having a plurality of paddles extending outward and oriented to urge the fly ash from the intake opening to the output opening as the shaft rotates;
a lid comprising a fly ash receiving portion, a water dispensing portion and an access door, so that when the lid is mounted on top of the container, the fly ash receiving portion is disposed near the container front wall, and the access door is located near the container back wall; and
a water dispenser including a water distribution manifold



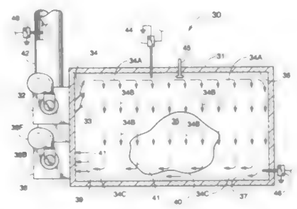
and a plurality of hoses attached thereto, each hose being connected to a spray nozzle which is directed into the container, the manifold being mounted on the water dispensing portion of the lid.

5,351,631
REMOVABLE DAMPER FOR CHEMICAL RECOVERY FURNACE
Robert B. Hill, Beaverton; Daniel R. Higgins, Portland, and Kenneth A. Pingel, Hillsboro, all of Oreg., assignors to Anthony-Ross Company, Beaverton, Oreg.
Continuation-in-part of Ser. No. 949,223, Sep. 23, 1992. This application Nov. 30, 1993, Ser. No. 159,682
Int. Cl.[5] F23L *5/00*
U.S. Cl. 110—182.5 25 Claims



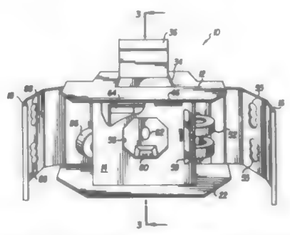
1. Apparatus for adjusting combustion air flow into a furnace from a windbox via an air port, said apparatus comprising:
a faceplate spaced from said air port at the forward side of said windbox,
a damper blade for controlling air flow, and
a cantilevered arm pivotally mounted to said faceplate,
wherein said cantilevered arm carries said damper blade, said arm being provided with spring means for urging said damper blade toward said air port in slidable but unattached relation thereto for controllably positioning said damper blade in blocking relation to a portion of said air port in accordance with the pivotal attitude of said arm, said damper blade being movable with said arm in a direction away from said air port to enable selective insertion and removal of said damper blade with respect to said air port.

5,351,632
TOP FIRED BURN-OFF OVEN
Carlton B. Mann, 3403 Lynnwood, Tyler, Tex. 75701
Filed Sep. 23, 1993, Ser. No. 125,004
Int. Cl.[5] F23N *5/02*
U.S. Cl. 110—190 10 Claims



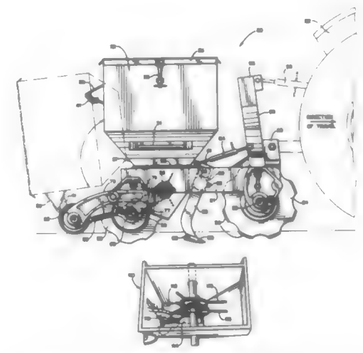
1. A pyrolytic burn-off oven for processing materials with volatile constituents, comprising:
a chamber for containing materials with volatile constituents, the interior of which includes a top, an upper portion, a lower portion and a bottom;
means at said upper portion for heating the chamber interior and materials contained therein from the top downwardly;
means for controlling the heating means so as to vaporize volatile constituents of the materials; and
means at said lower portion for exhausting the vaporized volatile constituents.

5,351,633
BALANCED PRESSURE SOLID FUEL HEATING UNIT
Carrol E. Buckner, Fletcher, N.C., assignor to Dovetech, Inc., Fletcher, N.C.
Continuation of Ser. No. 449,051, Feb. 26, 1990, abandoned, which is a continuation of Ser. No. 170,239, Mar. 18, 1988, abandoned. This application Dec. 16, 1992, Ser. No. 992,964
Int. Cl.[5] F23B *7/00*
U.S. Cl. 110—233 18 Claims



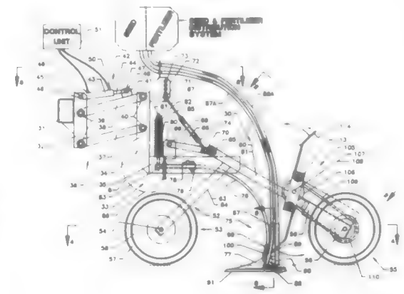
1. A pellet burning heating unit including a firebox, a burner means within said firebox, air duct means connected to said burner means to provide combustion air to said burner means, exhaust duct means to remove combustion gases from said firebox, and air supply means including a blower and a divergent air splitter to deliver air to said air duct means and to said exhaust duct means, said air splitter having a single inlet to receive fresh air from said blower and having a pair of adjacent outlets diverging from and spaced from said inlet, one of said outlets in communication with said air duct means and the other of said outlets in communication with said exhaust duct means.

5,351,634
GRASS PLANTER
John E. Patton, 321 Norwood Rd., Silver Spring, Md. 20905
Filed Oct. 27, 1992, Ser. No. 967,115
Int. Cl.[5] A01C *5/06*
U.S. Cl. 111—77 22 Claims



1. A grass planting apparatus for use with a tractor or other motor vehicle and which is well suited for no till operation in the planting of warm season and other grasses, comprising:
a frame member; at least one planting coulter rotatably mounted on said frame member; a feeder through mounted on said frame member adjacent said planting coulter, said feeder trough having front and rear side walls and a bottom wall, one of said side walls having an opening therein to receive said planting coulter and with the bottom wall having an opening therein adjacent the planting coulter; and an agitator feeder having at least one elongated member rotatably mounted in said feeder trough, said agitator feeder including two sets of kicker tines, with one set of said kicker tines being mounted for rotation on one side of said planting coulter, and with the other set of said kicker tines being mounted for rotation on the other side of said planting coulter.

5,351,635
AGRICULTURAL SEEDER
Leslie Hulicsko, P.O. Box 3344, Regina, Saskatchewan, Canada S4P 3H1
Filed Jul. 30, 1992, Ser. No. 922,327
Int. Cl.[5] A01C *5/06*
U.S. Cl. 111—135 17 Claims



1. An agricultural seeder comprising a frame, ground wheel

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means for supporting the frame for transportation in a direction of working movement across ground to be seeded, a plurality of seeding elements mounted on the frame at spaced positions across the width of the frame for applying seeds to the ground as the frame is moved across the ground, supply means for supplying seeds to each seeding element, each seeding element including ground cutting means for cutting a furrow into the surface of the ground, seed feeding means for depositing seeds from the supply means onto the ground within the furrow, mounting means mounting the ground cutting means of each seeding element for up and down floating movement relative to the frame independently of the other seeding elements to vary the height of the cutting means relative to the frame, and height control means for controlling the height of the cutting means relative to the ground such that the cutting means moves relative to the frame to be maintained at a required height relative to the ground surface, said height control means comprising a first grounding engaging rolling element positioned forwardly of the cutting means, a second ground engaging rolling element positioned rearwardly of the cutting means, interconnecting strut means rigidly interconnecting the first and second rolling elements and pivot mounting means connecting the strut means to the mounting means to allow free pivotal movement of the strut means and the first and second rolling elements relative to the mounting means about an axis transverse to the direction of movement such that vertical movement of either of the first and second rolling elements is communicated to the cutting means.

5,351,636

FULLY ROTATING HOOK FOR A LOCKSTITCH SEWING MACHINE

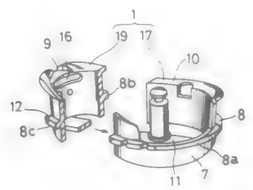
Tokuzo Hirose, Ashiya, Japan, assignor to Hirose Manufacturing Co., Ltd., Osaka, Japan

Filed Jul. 1, 1993, Ser. No. 84,519

Claims priority, application Japan, Mar. 12, 1993, 5-052554

Int. Cl.[5] D05B *57/16*

U.S. Cl. 112—231 **25 Claims**



1. In a fully rotating hook for a lockstitch sewing machine and including an inner bobbin case comprising a cylinder extending in an axial direction, a bottom at a first axial end of said cylinder, a flange at a second axial end of said cylinder, a track projection extending outwardly from said cylinder at a position spaced from said first and second axial ends, and a needle aperture in said cylinder at a position between said track projection and said second axial end, the improvement comprising:

said inner bobbin case including first and second portions formed separately of respective different first and second materials and joined integrally at abutting joining surfaces;

said joining surfaces being defined along a plane extending parallel to the longitudinal axis of said cylinder;

said first portion including said needle aperture and a portion of said flange;

said second portion including a remaining portion of said flange;

said second material comprising synthetic resin.

5,351,637

INFLATABLE SAILBOARD

Michele Brenckmann, 3360 Paul Anka Dr., #610, Ottawa, Ontario, Canada K1V 9S2

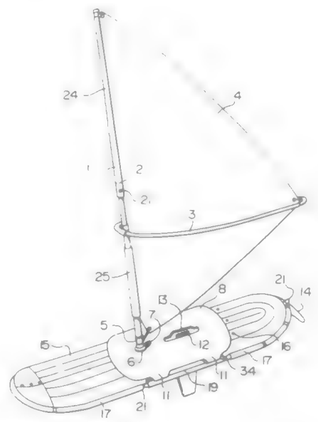
PCT No. PCT/CA92/00174, § 371 Date Dec. 7, 1992, § 102(e) Date Dec. 7, 1992, PCT Pub. No. WO92/19491, PCT Pub. Date Nov. 12, 1992

PCT Filed Apr. 24, 1992, Ser. No. 949,641

Claims priority, application United Kingdom, Apr. 24, 1991, 9108768.4

Int. Cl.[5] B63B *35/79*

U.S. Cl. 114—39.2 **4 Claims**



1. A collapsible, inflatable or inflated, rigid floatation board comprising:

(i) a floatation member comprising a plurality of discrete, gas-fillable or gas-filled, elongated chambers, each said chamber having a top skin and a bottom skin, each said chamber, when inflated, being sufficiently rigid to maintain its shape without any additional support, and to provide a flat bottom surface for contact with water, said chambers being integrally united to provide an elongated float which is of greater length than width;

(ii) a longitudinally-extending, supporting and stiffening rigid peripheral frame comprising a plurality of interconnected tubular members, interconnected with each other in a longitudinal direction, said rigid peripheral frame being adapted to support said floatation member and to provide additional stiffness and resistance to fore-and-aft bending and torsion; and

(iii) a rigid platform, which is of the same width as said floatation member but which is of less length, said rigid platform including two downwardly-extending lateral portions, each portion terminating in a snap-on, semi-circular foot, said rigid platform being directly and rigidly connected to said frame by direct engagement between said frame and a respective snap-on, semi-circular foot of said rigid platform, so that said rigid platform is firmly held to the top skin of said floatation member and is directly and rigidly connected to said rigid longitudinal frame;

whereby said gas-fillable floatation member, when filled with gas, said rigid frame, and said rigid platform together provide an integral, unitary assembly which imparts additional rigidity to said flat bottom surface of said flotation member and also imparts stiffness in a transverse direction to said flotation member.

5,351,638

KEEL ASSEMBLY FOR A SAILBOAT

Niels C. Helleberg, Swampscott, Mass., assignor to John G. Alden, Inc., Everett, Mass.

Filed Jan. 11, 1994, Ser. No. 180,027

Int. Cl.[5] B63H *25/00*

U.S. Cl. 114—140 **10 Claims**



1. In a keel assembly for a sailboat hull comprising a base portion which is integrally formed with said hull so that said base portion extends downwardly therefrom terminating in a first mating face, said base portion having a plurality of downwardly extending fastening elements holes therethrough, a plurality of elongated fastening elements extending downwardly in sealed relation through said fastening element holes in said base portion and outwardly through said first mating face, and a keel portion having opposite first and second side faces and including a second mating face which is received in mating engagement in a predetermined assembled position with said first mating face, said keel portion further including a plurality of fastening element passages extending downwardly therein from said second mating face, said fastening elements extending downwardly through said fastening element passages and securing said keel portion to said base portion, said keel portion further including a plurality of access passages extending transversely inwardly from said first side face thereof toward said second side face thereof and intersecting said fastening element passages, said fastening elements being manipulatable through said access passages to effect the assembly of said keel portion with or without the removal thereof from said base portion, the improvement comprising said base portion having a recess formed in said first mating face around each of said fastening element holes, said fastening elements each comprising a shaft portion extending downwardly through said base portion and through said keel portion to one of said access passages, and a permanently attached flange portion on the shaft portion thereof between said base portion and said keel portion, each of said flange portions being nonrotatably received in one of said recesses.

5,351,639

POSITIVE-ACTION DEVICE FOR BRINGING ABOUT THE ROTARY MOVEMENT OF A HATCH WITH SECURE LOCKING THEREOF IN THE OPEN POSITION

Aurelio Ortelli, Bologna, Italy, assignor to Riva Calzoni S.p.A., Milan, Italy

Filed Jul. 22, 1993, Ser. No. 96,020

Claims priority, application Italy, Aug. 5, 1992, MI92A001933

Int. Cl.[5] B63B *19/12*

U.S. Cl. 114—203 **7 Claims**

1. A hatch with a positive-action locking device, comprising:

a housing extending along a longitudinal axis;

a cover pivotally mounted on said housing between a closed position corresponding to closure of the hatch and an open position;

an axially displaceable shaft in said housing shiftable between outward and inward positions;

an articulated kinematic mechanism in said housing including:

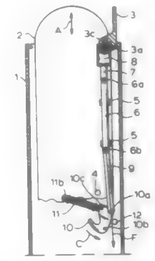
a resilient body hinged to the cover in said housing, and

link means operatively connected with said resilient body for displacing same;

a fulcrum fixed on said housing;

bistable means articulated to said housing for maintaining said open and closed positions of said cover;

a regulating element mounted pivotally on said fulcrum and operatively connected with said bistable means and with said link means for displacing said link means linearly and for swinging said link means from one side to another past



alignment with said fulcrum upon displacement of said regulating element from a position corresponding to the closed position of said cover to a position corresponding to said open position of said cover; and

an actuator on said shaft engageable with said regulating element upon shifting said shaft to the inward position for displacing said regulating element.

5,351,640

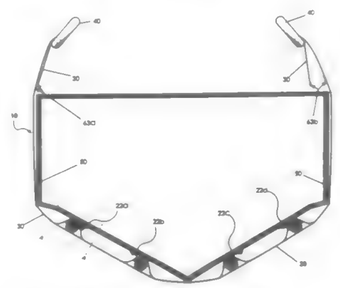
PORTABLE MANUAL BOAT HULL CLEANER

Robert V. Attaway, and Charles E. Rodgers, Jr., both of 544 Plasters Ave., NE., Atlanta, Ga. 30324

Continuation of Ser. No. 839,486, Feb. 20, 1992, abandoned. This application Aug. 23, 1993, Ser. No. 110,500

Int. Cl.[5] B63B *59/00*

U.S. Cl. 114—222 **21 Claims**



1. A boat hull cleaning device comprising:

an elongated strap extending between a pair of longitudinally spaced apart ends having an upper surface;

a plurality of cleaning loops attached to and extending above said upper surface;

a plurality of support cushions attached to and extending above said upper surface and below said cleaning loop; wherein each of said plurality of support cushions comprises a deformable buoyant cylinder of a form having a diameter no greater than the distance between said elongated strap and said cleaning loop.

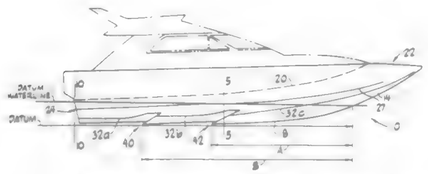
VOL 1167 ISS 1 OC 4 1994 UMI

5,351,641

BOAT HULL CONSTRUCTION

Scott Robson, 24A Creyke Road, Fendalton, Christchurch, New Zealand

Filed Feb. 9, 1993, Ser. No. 15,483
Int. Cl.[5] B63B *1/32*
U.S. Cl. 114—288 22 Claims



1. A boat having two spaced-apart hulls, a boat body positioned on the hulls and a tunnel formed on three sides by such body and hulls and on a fourth and a bottom side by the water in which the boat is positioned, said tunnel defining a mouth at the bow of the boat and an exit at the stern; wherein:

the distance between the spaced apart hulls defines a tunnel width which decreases from the mouth to the exit;

the boat body defines a tunnel roof at a decreasing height above the waterline from the mouth to the exit;

each said hull comprises an aft planing section, a mid planing section and a fore planing section disposed one adjacent to the next from aft to forward along the hull, a first step break disposed between the aft and mid planing sections and a second step break disposed between the mid and fore planing sections;

the aft section defines first a constant deadrise angle and the mid section defines a second constant deadrise angle greater than the first constant deadrise angle such that the deadrise angle of said hull increases from aft through the mid sections without twist or warp; and

the fore section defines at least a third deadrise angle greater than the first and second deadrise angles.

5,351,642

POWER BOAT HULL

T. Robert Ackerbloom, 4751 Rosewood Dr., Orlando, Fla. 32806

Continuation-in-part of Ser. No. 765,168, Sep. 25, 1991, Pat. No. 5,231,945. This application Jul. 30, 1993, Ser. No. 100,030
The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[5] B63B *1/00*
U.S. Cl. 114—291 25 Claims



1. A V-shape power boat hull having a bow and a stern, the hull comprising:

an inner running surface extending fore and aft along the hull, the inner running surface transitioning from a deep V-shape to a modified V-shape from fore to aft;

a central running surface extending fore and aft along the hull, the central running surface an integral part of the inner running surface, the central running surface transitioning from a V-shape to a substantially planar configuration from fore to aft;

an outer running surface flanking the running surface, the outer running surface forming a channel having a cross-section of concave curvature commencing at the bow and extending to the stern; and wherein

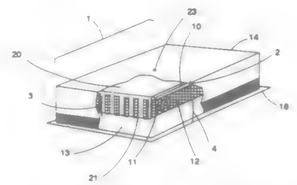
the channel is positioned between an inside chine and an outside lip, the channel being defined in cross-section by a first vertical dimension between an apex of curvature to a first imaginary horizontal line passing through the outside lip, a second vertical dimension between the first horizontal line and a second horizontal line passing through the inside chine; and a horizontal dimension between the inside chine and the outside lip, the second vertical dimension gradually increasing from the stern to a point approximately amidships and gradually decreasing from the amidships point to the bow for locking a forward position of the channel into water when the boat makes a turn.

5,351,643

HIGH DENSITY REARING SYSTEM FOR LARVAE

Patrick R. Hughes, Ithaca, N.Y., assignor to Boyce Thompson Institute for Plant Research, Inc., Ithaca, N.Y.

Continuation-in-part of Ser. No. 62,417, May 13, 1993, abandoned, which is a continuation-in-part of Ser. No. 989,103, Dec. 11, 1992, abandoned. This application Jul. 19, 1993, Ser. No. 93,982
Int. Cl.[5] A01K *67/04*
U.S. Cl. 119—6.5 20 Claims



1. A method of rearing insect larvae, comprising the following steps:

a. providing an enclosed rearing unit located within an appropriate environment for rearing said insect larvae;

b. providing a diet space within said rearing unit including an appropriate diet medium for said insects;

c. providing a larval space within said rearing unit located below said diet space and including larval attaching surfaces such that said insect larvae are able to disperse themselves over said surfaces;

d. providing a frass space within said rearing unit located below said larval space wherein any frass collects within said frass space as it is produced and does not interfere with said larval space or said diet space;

e. determining a maximum larval density for said insect larvae within said rearing unit at a particular desired stage of larval development wherein said maximum larval density is based upon spatial behavior of said insect larvae and the amount of said surfaces within said larval space;

f. placing eggs of said insect larvae or early stage insect larvae within said rearing unit such that any emerging larvae from said eggs or early stage insect larvae are able to move into said larval space of said rearing unit and the amount of eggs or early stage insect larvae placed within said rearing unit is dependant upon the maximum larval density for said insect larvae; and

g. allowing said larvae to grow to said desired stage of development.

5,351,644

METHOD OF BOVINE HERD MANAGEMENT

Robert W. Everett, Freeville, N.Y., assignor to Cornell Research Foundation, Ithaca, N.Y.

Filed Feb. 25, 1993, Ser. No. 23,244
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—14.01 14 Claims

1. A method of bovine herd management comprising the steps of:

a) gathering test-day data on milk production for each member of a herd on a routine basis;

b) using a mathematical herd management model to modify the test-day data to determine the actual productivity of each cow in the herd;

c) establishing a database for each member of said herd, based upon the modified data of step (b);

d) continuously updating said database; and

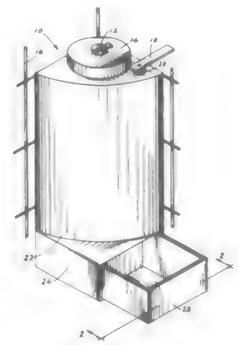
e) making physical changes to said herd based upon information in said database, in order to increase milk productivity of said herd.

5,351,645

TRANSPORTABLE ANIMAL SUSTENANCE DISPENSING DEVICE

Rebecca Brennon, 6321 N. 100th St., Milwaukee, Wis. 53225

Filed Sep. 23, 1993, Ser. No. 125,928
Int. Cl.[5] A01K *31/00*
U.S. Cl. 119—18 7 Claims



1. A device for dispensing sustenance to an animal, said dispensing device comprising:

A. a reservoir for storing sustenance;

B. a sustenance container which receives sustenance from said reservoir, said container being movable between a closed container position in which said container is resistant to sustenance spillage and an open container position in which said sustenance is accessible by said animal; and

C. means for controlling flow of said sustenance from said reservoir into said sustenance container, said means for controlling comprising:

1. an actuator;

2. a valve, said valve being in fluid communication with said reservoir and said sustenance container, said valve permitting the flow of sustenance from said reservoir into said sustenance container while in an open valve position and prohibiting the flow of sustenance while in a closed valve position; and

3. a transferring member, said transferring member being capable of transferring a force from said actuator to said valve so as to move said valve in response to force applied to said actuator.

5,351,646

PORTABLE HAIR COLLECTING FURNITURE DEVICE FOR CATS AND CARRIER

Aboolhassan Zoroufy, 3592 Mathias Way, Verona, Wis. 53593

Filed Dec. 20, 1993, Ser. No. 169,329
Int. Cl.[5] A01K *1/02*
U.S. Cl. 119—19 24 Claims



1. A furniture device for a cat comprising:

a) a rigid housing having a top portion having a pair of imperforate sidewalls and an adjoining planar floor portion affixed therebetween said sidewalls, said housing having at least one open end, an interior surface and an exterior surface, said interior surface comprising a top portion interior surface and a floor portion interior surface, said housing further defining a device interior cavity; and

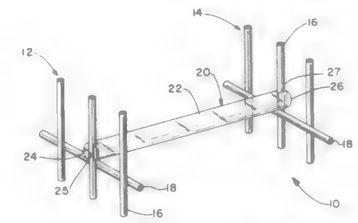
b) a first material affixed to said housing and disposed within said interior cavity and generally conforming to said top portion interior surface of said housing, said first material having a plurality of rubberized protuberances thereupon, said protuberances extending into said interior cavity.

5,351,647

AVIAN OR ANIMAL CAGE CROSS MEMBER

James R. Frenelle, Geneva, Ohio, assignor to Controls Unlimited, Inc., Perry, Ohio

Filed Jan. 22, 1993, Ser. No. 7,498
Int. Cl.[5] A01K *31/12*
U.S. Cl. 119—26 14 Claims

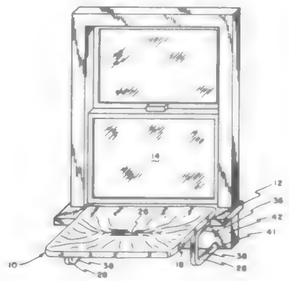


1. A bird or animal cage cross member comprising:

a unitary elongated beam member having a first end and a second opposing end, each end having at least one open slot paired with a slot at the opposing end, each said slot extending across said end and being of sufficient dimension for operatively receiving at least one cage support member, each pair of slots being offset of parallel to one another, said cross member being capable of removable attachment to opposing or adjacent sides of said cage by first engaging at least one support member of one side of said cage within a slot, followed by axial rotation of said beam member to engage at least one support member of a second cage side within said paired slot at the opposite end of said beam member wherein said cross member is held with a friction fit.

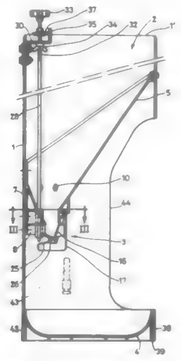
VOL 1167 ISS 1 OC 4 1994 UMI

5,351,648
PET PERCH FOR ATTACHMENT TO A WINDOW SILL
James N. Eleah, Evanston, Ill., assignor to Flexi-Mat Corporation, Chicago, Ill.
Filed Jan. 21, 1993, Ser. No. 6,462
Int. Cl.[5] A01J *1/00*
U.S. Cl. 119—28.5 19 Claims



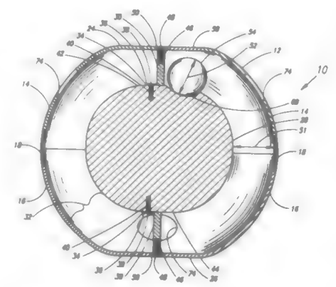
1. A pet perch for securing to a support surface comprising:
a frame defining an opening;
a webbing supported by the frame and covering the opening, the webbing defining a pet resting area; and
securing means comprising at least one mounting bracket, the mounting bracket being generally U-shaped and having first and second legs, the first leg being engageable with the frame at alternate locations for adjustably spacing the perch from the support surface, the second leg abutting the support surface.

5,351,649
ANIMAL FEEDER
Antonio Rovira Badia, and Jose Franco Tarazaga, both of Vilafranca Del Penedes, Spain, assignors to Technica E. Innovaciones Ganaderas S.A. (TIGSA), Vilafranca Del Penedes, Spain
Filed May 25, 1993, Ser. No. 66,435
Claims priority, application Spain, May 28, 1992, 9201195; Dec. 2, 1992, 9202447
Int. Cl.[5] A01K *7/00*
U.S. Cl. 119—53.5 8 Claims



1. An animal feeder of the type which comprises a tubular body with a hopper having an outlet provided with an adjustable dispensing valve to be operated by an animal so that feed from the hopper falls onto a plate below to the tubular body, characterized in that the hopper comprises a lower funnel with a lower opening which forms a neck to which is attached a dispensing body consisting of a one-piece plastic moulding fixed vertically to said opening and horizontally to the tubular body so as to form an upper chamber which channels the feed and which is connected to a lower dispensing chamber provided with two openings including one frontal opening and one rear opening, the frontal opening of which houses a piston forming an integral part of a pivotal metal sluice defining said valve to be operated by the animal and the sluice having an upper part pivoted on the dispensing body, the dispensing body being provided with a pair of tubular extensions into which a pivot axle for the sluice is fitted, the sluice being attached to said axle by means of perforated lateral lugs provided on the sluice.

5,351,650
CAT TOY
David A. Graves, 3631 E. 55th St., Tulsa, Okla. 74135
Filed Sep. 30, 1993, Ser. No. 129,984
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—707 13 Claims

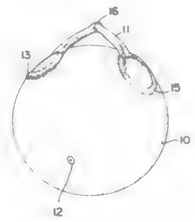


1. A toy for use by a cat comprising:
a hollow external ball,
an interior ball suspended by attachment means within the hollow exterior ball so that a gap is defined between the exterior ball and the interior ball,
at least one small ball having a diameter less than a height of the gap being provided within the gap, and
the hollow exterior ball being comprised of an upper exterior ball half and a lower exterior ball half removably attached together by connector means.

5,351,651
ARTIFICIAL SEA-WATER
Kazumichi Ushio, Nishinomiya, and Takaichi Kinoshita, Kobe, both of Japan, assignors to Senju Pharmaceutical Co., Ltd., Osaka, Japan
Filed Jun. 29, 1993, Ser. No. 83,234
Claims priority, application Japan, Jun. 30, 1992, 4-173123
Int. Cl.[5] A01K *63/04*
U.S. Cl. 119—231 13 Claims

9. A method for improving the pH stability of an artificial sea-water comprising adding to said artificial sea-water one or more boron compounds in an amount which imparts thereto a total boron concentration of from 0.002 to 0.05 w/v %.

5,351,652
RECREATIONAL AND AMUSEMENT DEVICE FOR HORSES
Sandra E. Budman, and Jack F. Budman, both of 21 Valerian Ct., Rockville, Md. 20852
Filed Apr. 13, 1993, Ser. No. 45,168
Int. Cl.[5] A01K *13/00*
U.S. Cl. 119—711 20 Claims

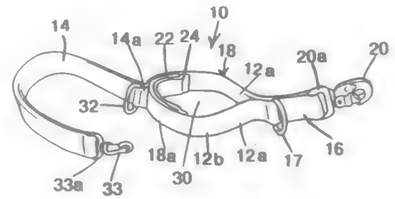


1. A recreational device for horses comprising:
a resilient body capable of bouncing when dropped from a height of at least one foot; and
a grip extending from said body and having a configuration suitable for engagement between a horse's upper and lower teeth;
wherein said body includes material treated to emit an aroma of food for horses.

5,351,653
ANIMAL TRAINING METHOD USING POSITIVE AND NEGATIVE AUDIO STIMULI
Joseph E. Mariachen, Austin, Tex., and Peter L. Borchelt, Brooklyn, N.Y., assignors to Canine Concepts, Incorporated, Austin, Tex.
Continuation of Ser. No. 945,516, Sep. 16, 1992, abandoned. This application Oct. 6, 1993, Ser. No. 132,654
Int. Cl.[5] A01K *15/02*
U.S. Cl. 119—719 11 Claims

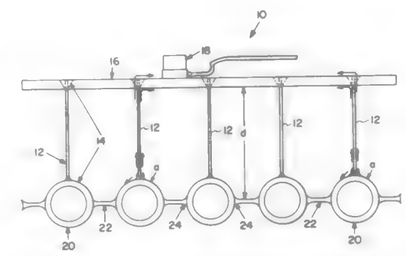
1. A method of modifying the behavior of an animal without inflicting physical ham or pain to the animal, comprising the steps of:
providing a device capable of emitting a first audio stimulus always at a constant frequency to be sensed by the animal without startling the animal and also capable of emitting a second audio stimulus always at a constant frequency distinct from the first audio stimulus to be sensed by the animal and startle the animal;
generating only the first audio stimulus by actuating the device while the animal is having a positive experience and senses the first audio stimulus thereby training the animal to associate the first audio stimulus with the positive experience without requiring any specific behavior by the animal;
repeating the previous step until the animal responds positively to the first audio stimulus alone; then
generating only the first audio stimulus by actuating the device to reward the animal using the first audio stimulus alone; and
generating the second audio stimulus by actuating the device to punish the animal using the second audio stimulus alone.

5,351,654
LEAD AND TETHERING DEVICE
Eileen M. Fuentes, 4418 Forman Ave., Toluca Lake, Calif. 91602-2505
Filed Aug. 25, 1993, Ser. No. 111,172
Int. Cl.[5] A01K *3/00*
U.S. Cl. 119—770 20 Claims



15. A lead and tethering device, including
a ring member along the length of the device,
at least a pair of looped straps connected together from end to end,
one of said straps serving as a holding strap which the user grips, and the other strap serving as a connecting strap to which an animal or child being tethered is connected, said connecting strap having opposed ends, one of which is looped and the other having a first clasp member that is adapted to be attached and detached to an animal or child being tethered,
the holding strap being elongated and having one end connected to the looped end of the connecting strap and an opposed terminal end with a second clasp member attached to said terminal end,
said second clasp member being adapted to be attached and detached to the ring member, forming a looped strap when attached to the ring member.

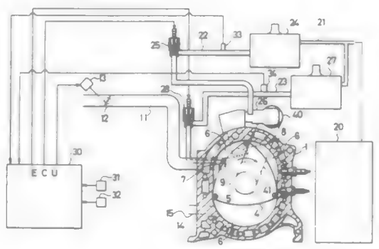
5,351,655
ACOUSTIC EMISSION SIGNAL COLLECTOR MANIFOLD
Steven P. Nuspl, Barberton, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.
Filed Jan. 18, 1994, Ser. No. 183,020
Int. Cl.[5] F22B *37/42*
U.S. Cl. 122—504 11 Claims



1. An acoustic emission signal collector, comprising:
a plurality of waveguides attached to an object to be tested at a plurality of locations thereon; and
a cross member connected to said plurality of waveguides.

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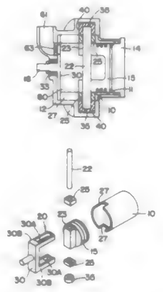
5,351,656
FUEL SUPPLY APPARATUS
Takafumi Teramoto; Kenji Morimoto, both of Hiroshima; Hiroyasu Uchida, Higashihiroshima; Eiji Takano, Aki; Tsutomu Fukuma, Higashihiroshima, and Kazuho Douzono, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Continuation of Ser. No. 9,757, Jan. 27, 1993, abandoned. This application Jan. 10, 1994, Ser. No. 180,805
Claims priority, application Japan, Jan. 31, 1992, 4-017085; Feb. 3, 1992, 4-017891
Int. Cl.[5] F02R *43/00*; F02M *21/04*
U.S. Cl. 123—3 19 Claims



1. A fuel supply apparatus for use with a gaseous fuel engine having a cylinder, comprising:
an intake passage having an inlet port open to the cylinder and adapted for supplying air into the cylinder therethrough;
fuel supply means for supplying gaseous fuel into the cylinder, the fuel supply means having a high pressure fuel supply system for use in a high induction zone where a larger amount of air is admitted into the cylinder, and a low pressure fuel supply system for use in a low induction zone where a smaller amount of air is admitted into the cylinder;
the high pressure fuel supply system having a high pressure fuel supply port open to the cylinder independently of the inlet port, and adapted for supplying a larger amount of gaseous fuel into the cylinder at a pressure higher than a pressure in the cylinder during a former half of a compression stroke following an air intake stroke of the engine;
the low pressure fuel supply system adapted for supplying a smaller amount of gaseous fuel into the cylinder at a finer adjusting scale than the high pressure fuel supply system;
said low pressure fuel supply system having a first fuel amount adjusting means and said high pressure fuel supply system having a second fuel amount adjusting means, said first fuel amount adjusting means having an adjustment accuracy higher than said second fuel amount adjusting means; and
control means for controlling actuation of the respective fuel supply systems according to an operating state of the engine.

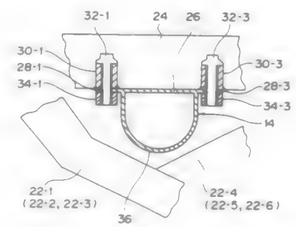
5,351,657
MODULAR POWER UNIT
Erik S. Buck, 1106 Lipton La., Dayton, Green County, Ohio 45430
Filed Sep. 28, 1992, Ser. No. 951,766
Int. Cl.[5] F02B *57/00*
U.S. Cl. 123—43 C 11 Claims

1. A rotary power device comprising:
a housing having a bore therein,
a cylinder sleeve supported in said bore for rotary motion,
at least one piston in said cylinder sleeve and axially reciprocable in said cylinder sleeve, said sleeve and said piston defining a variable volume power chamber,
an annular cam supported on said housing co-axial with said cylinder sleeve and including at least two symmetrically disposed sinuous cam surfaces,
cam followers supported from said piston and radially arranged with respect to said piston and contacting said cam surfaces to translate rotation of said followers along said cam surfaces of said cam into relative reciprocating motion between said piston and said cylinder sleeve,
a crosshead supporting said followers and having a sliding connection means to said piston to constrain said piston to revolve with said cylinder sleeve and cam followers,



an air inlet port, a fuel inlet port, and an exhaust port through said housing and into said bore, said ports being spaced around said bore separated from each other,
cooperating apertures in said cylinder sleeve acting with said air inlet port, said fuel inlet port, and said exhaust port as a sleeve valve to admit air and fuel to said power chamber and to release products of combustion from said power chamber.

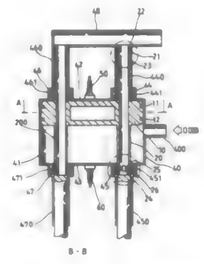
5,351,658
INTAKE SYSTEM FOR ENGINE
Naoki Suzuki, Shizuoka, Japan, assignor to Suzuki Motor Corporation, Shizuoka, Japan
Filed Dec. 13, 1993, Ser. No. 166,385
Claims priority, application Japan, Dec. 28, 1992, 4-361529
Int. Cl.[5] F02M *35/10*
U.S. Cl. 123—184.36 7 Claims



1. An intake system for a V-type engine, in which an intake pipe is connected to an upstream side of a throttle valve of an engine having first and second cylinder banks of a cylinder block formed in a V-like configuration, an intake path is branched, at its intermediate part on a downstream side of said throttle valve, into first and second branch paths by a branch tube, and said first and second branch paths are provided at their downstream end portions with first and second surge tanks respectively, said first and second surge tanks being connected to each other through a communication pipe, the intake pipe being disposed between said first and second surge tanks and under said communication pipe and the upper wall

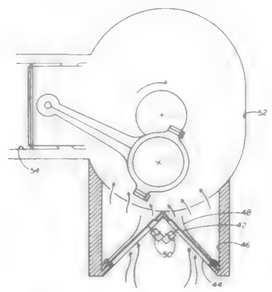
portion of said intake pipe is fixedly secured to said communication pipe.

5,351,659
SHAFT ENGINE
Kuo-An Chao, 2F, No. 8, Alley 6, Lane 207, Sec. 3, Ho-Ping E. Rd., Taipei, Taiwan
Filed Dec. 14, 1993, Ser. No. 167,588
Int. Cl.[5] F02D *19/00*
U.S. Cl. 123—61 R 7 Claims



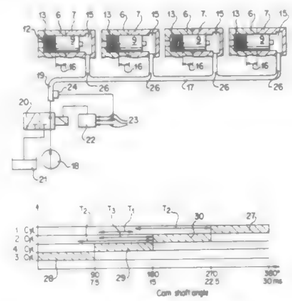
1. A shaft engine comprising a cylinder having at least one spark plug and at least one raised air chamber, each raised air chamber having an extension tube extending outwardly from said cylinder, a piston moved up and down in said cylinder by means of the ignition of a fuel gas introduced into said cylinder, the ignition being accomplished by said spark plug, at least one cylinder shaft respectively received in said at least one raised air chamber and the corresponding extension tube, said cylinder shaft being reciprocated by said piston to move a crank shaft outside said cylinder, each cylinder shaft being peripherally mounted with seal rings to seal the gap between the extension tube in which it is mounted and said cylinder shaft having a longitudinal air passage which communicates, as the piston reciprocates, with the raised air chamber for exhausting gas from said cylinder to the surrounding atmosphere.

5,351,660
ELECTRICALLY ACTIVATED DYNAMIC VALVE FOR SPARK IGNITION ENGINES
Michael Logozzo, 48541 I-94 Service Dr., Apt. 206, Belleville, Mich. 48111
Filed Jul. 1, 1993, Ser. No. 86,538
Int. Cl.[5] F02B *33/04*
U.S. Cl. 123—73 V 2 Claims



1. In a two-stroke internal combustion spark ignition engine comprising at least one cylinder and a piston therein, a sealed crankcase in intermittent communication with the cylinder through an inlet port, an inlet manifold in communication with the crankcase through at least one reed valve,
the improvement comprising electric solenoid means to activate the reed valve to open and close the manifold in response to the application and removal of electric energy, said reed valve of sufficient opening size to fully open the manifold for unthrottled air flow therethrough upon activation by electric energy, said reed valve upon activation being fully open regardless of engine load wherein air mass per inlet stroke is limited by the time period per inlet stroke said reed valve is open, and said solenoid means including armature and connection means between the solenoid armature and reed valve through which the solenoid activates the reed valve.

5,351,661
MULTI-CYLINDER INTERNAL COMBUSTION ENGINE VALVE ACTUATOR
Gerhard Doll, Stuttgart, Fed. Rep. of Germany, assignor to Mercedes-Benz AG, Fed. Rep. of Germany
Filed May 21, 1993, Ser. No. 63,711
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1992, P4221135
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.16 9 Claims



1. A valve actuation apparatus in a multi-cylinder internal combustion engine having, per cylinder, an actuation lever driving a valve and driven by a first cam of a camshaft, said first cam including a cam protrusion and a base circle, and a coupling lever driven by a second cam of the camshaft, said second cam includes a cam protrusion and a base circle, said levers being supported on a common lever pin so as to be pivotable relative to one another and arranged to be connected together by a coupling apparatus comprising a first coupling element being cylindrical hole in one of the levers and a second adjustable coupling element being a pin associated with the other lever, and the pin having a partial length pushed into the hole to complete coupling, the second coupling element being triggered for adjustment thereof, and means are provided for common triggering of all the adjustable coupling elements of the engine within a predetermined setting range of the camshaft so that the coupling elements of each coupling apparatus have at least a predetermined limiting overlap when a cam protrusion associated with any of the coupling apparatus becomes effective, wherein the predetermined limiting overlap is reached when approximately a third of the partial length of the pin is located in the cylindrical hole.

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5,351,662

VALVE CONTROL MEANS

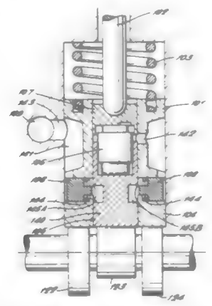
Clive Dopson, and Jeffrey Allen, both of Norwich, United Kingdom, assignors to Group Lotus Plc, Norfolk, United Kingdom

Division of Ser. No. 44,816, Apr. 8, 1993, Pat. No. 5,253,621, which is a continuation-in-part of Ser. No. 920,389, Aug. 14, 1992, Pat. No. 5,287,830. This application Sep. 24, 1993, Ser. No. 126,380

Claims priority, application United Kingdom, Feb. 16, 1990, 9003603

Int. Cl.[5] F01L *1/34;* F02D *13/06*

U.S. Cl. 123—90.16 3 Claims



1. Valve control means for a push-rod internal combustion engine comprising:

valve means;

cam means comprising a rotatable camshaft having a cam member and a raised portion of circular axial cross-section; and

transmitting means for transmitting reciprocating movement to the valve means from said cam means, said transmitting means comprising rocker arm means in engagement with said valve means, a first cam follower and a second cam follower movable relative to said first cam follower, and locking means to enable said cam followers to be linked so as to move together, and means to transmit movement of said cam followers to said rocker arm wherein

when the follower members are not so linked the valve means is controlled by the first cam follower member in engagement with and following the profile of the raised portion of circular cross-section and the valve means is deactivated and

when the follower members are linked the valve means is controlled by the second cam follower member in engagement with and following the profile of the cam member and the valve means is activated by the cam member.

5,351,663

V-TYPE ENGINE

Kazuki Makimura, and Noriyuki Iwata, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 20, 1993, Ser. No. 109,483

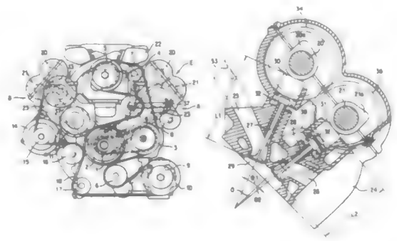
Claims priority, application Japan, Aug. 20, 1992, 4-245917

Int. Cl.[5] F01L *1/00*

U.S. Cl. 123—90.27 17 Claims

1. In a V-type multiple cylinder internal combustion engine for an automobile, which has two cylinder banks arranged in a V-formation at an appropriate angle, a number of cylinders divided into two groups, each group of said cylinders being formed in one and the same cylinder bank, an intake valve for each of said cylinders displaced in one of said cylinder banks closer to the other of said two cylinder banks than an exhaust valve for said each of said cylinders displaced in said one of said two cylinder banks, and intake and exhaust camshafts disposed over a cylinder head for each of said two cylinder banks, the improvement comprising:

said intake valve being inclined at an angle relative to a center line of a cylinder bore of said cylinder larger than an angle relative to said center line at which said exhaust valve is inclined; and



said intake valve having a length between an intake valve face and an intake cam longer than a length between an exhaust valve face and an exhaust cam of said exhaust valve.

5,351,664

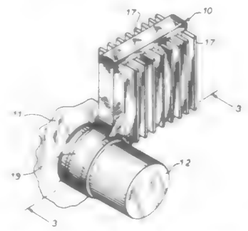
OIL COOLING DEVICE

Terrence M. Rotter, Sheboygan Falls, and Victor Van Dyke, Kohler, both of Wis., assignors to Kohler Co., Kohler, Wis.

Filed Apr. 16, 1993, Ser. No. 49,047

Int. Cl.[5] F01M *5/00*

U.S. Cl. 123—196 AB 13 Claims



1. An oil cooling device for use with an internal combustion engine, comprising:

an air coolable body member adapted to be placed between an oil filter and a wall of an internal combustion engine, the body member including a cooling section and a connecting section, the connecting section being for connection to the engine wall on one side and the oil filter on another side; and

fluid feed and return passages disposed internally in the connecting and cooling sections, the fluid feed passage adapted to be connected to an oil outlet port of the engine wall, and the return passage adapted to be connected to the oil filter, the oil cooling device characterized by the absence of external feed and return lines.

5,351,665

INTERNAL COMBUSTION ENGINE

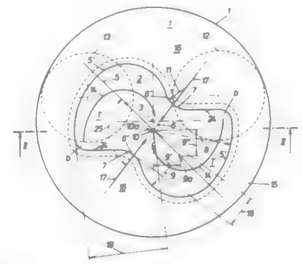
Paul Kapus, and Franz Camela, both of Graz, Austria, assignors to AVL Gesellschaft fur Verbrennungskraftmaschinen und Mestechnik M.B.H. Prof. Dr. Dr.H.C.Hans List, Graz, Austria

Filed May 11, 1993, Ser. No. 60,083

Claims priority, application European Pat. Off., Nov. 26, 1992, 92120153.9

Int. Cl.[5] F02F *3/26*

U.S. Cl. 123—276 8 Claims



1. An internal combustion engine comprising at least one reciprocating piston having a piston head and a longitudinal axis and a combustion chamber being located in said piston, said combustion chamber having a bottom, a wall and a central axis being parallel to said longitudinal axis of said piston, said combustion chamber is divided into at least two partial chambers by restrictions extending to said bottom of said combustion chamber, said partial chambers being shaped asymmetrically as seen from above and being arranged rotation-symmetrically relative to said central axis of said combustion chamber, with a minimum distance at said restrictions of said wall of said combustion chamber and a maximum distance in concave-shaped areas of said wall of said combustion chamber, measured in a cutting plane directly below said piston head, departing from said central axis of said combustion chamber, wherein the ratio between said minimum distance and said maximum distance being greater than or equal to 0.2, and the ratio between said minimum distance at said restrictions and the piston radius is smaller than or equal to 0.5, wherein said wall of said combustion chamber having a convex shape in an area of said restrictions, and wherein the ratio between said maximum distance and the piston radius is greater than or equal to 0.7.

5,351,666

METHOD AND DEVICE FOR CONTROLLING AN INTERNAL COMBUSTION ENGINE

Bernhard Bronkal, Koengen, and Martin Grosser, Korntal, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 22, 1993, Ser. No. 80,792

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1992, 4229540

Int. Cl.[5] F02D *41/06*

U.S. Cl. 123—359 12 Claims

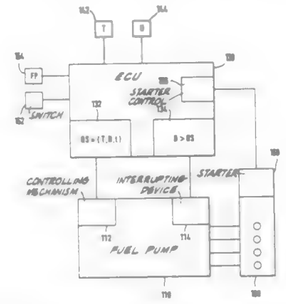
1. A method of controlling an internal combustion engine, comprising the steps of:

triggering a power-regulating, controlling mechanism into a starting position when an engine starting procedure is initiated;

subsequently actuating a starter for the engine;

determining whether a safety condition is fulfilled; and

releasing a flow of fuel to the engine by an interrupting device operatively coupled to the power-regulating, con-



trolling mechanism only after the safety condition is fulfilled.

5,351,667

FUEL TANK PRESSURIZING APPARATUS

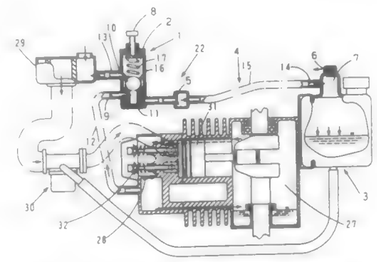
Shigemi Mori, and Hitoshi Akagi, both of Okayama, Japan, assignors to Kaaz Corporation, Okayama, Japan

Filed Jun. 29, 1993, Ser. No. 84,308

Claims priority, application Japan, Jul. 3, 1992, 4-176646

Int. Cl.[5] F02M *37/04*

U.S. Cl. 123—510 4 Claims



1. A fuel tank pressurizing apparatus comprising:

an engine mounted on a carriage;

a pressure adjusting chamber provided in a breather device of a crank case of said engine;

a pipe conduit provided between said pressure adjusting chamber and a fuel tank so as to connect said pressure adjusting chamber to said fuel tank; and

a check valve installed in said pipe conduit so as to prevent fuel from passing from said fuel tank into said pressure adjusting chamber; and

wherein one end of said pipe conduit is connected to a vicinity of an upper end portion of a top area which is formed in an upper portion of said fuel tank, said top area projecting from said fuel tank so as to form a projecting space and being smaller in cross-sectional area than said fuel tank.

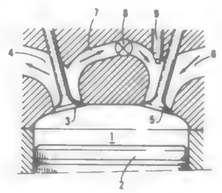
VOL 1167 ISS 1 OC 4 1994 UMI

5,351,668

PROCESS AND DEVICE FOR FAVORING FUEL VAPORIZATION IN AN INTERNAL-COMBUSTION ENGINE

Bertrand Gatellier, Boulogne, France, assignor to Institut Francais du Petrole, Rueil Malmaison Cedex, France

Filed Nov. 18, 1992, Ser. No. 978,326
Claims priority, application France, Nov. 18, 1991, 91 14170
Int. Cl.[5] F02M *25/07*
U.S. Cl. 123—568 12 Claims



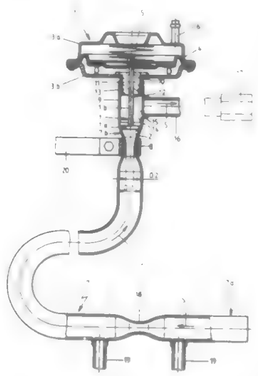
1. A device for favoring fuel vaporization in a multi-cylinder internal combustion engine, the device comprising fuel mixture inlet pipes, an exhaust pipe, multi-point injection means, and secondary conduits associated respectively with each cylinder, each one of said secondary conduits, toward an end thereof communicating with a corresponding inlet pipe, being curved so that a recycled gas flow is driven toward an inlet valve in the inlet pipe, wherein the injection means is arranged substantially at a level of said end of each of said secondary conduits.

5,351,669

VALVE DEVICE FOR EXHAUST GAS FEEDBACK IN AN INTERNAL COMBUSTION ENGINE

Rolf Herzog, Schelklingen-Hütten, Fed. Rep. of Germany, assignor to Metallwarenfabrik Schelklingen GmbH, Schelklingen, Fed. Rep. of Germany

Filed Jun. 17, 1993, Ser. No. 79,128
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1993, 4301655
Int. Cl.[5] F02M *25/07*
U.S. Cl. 123—568 6 Claims



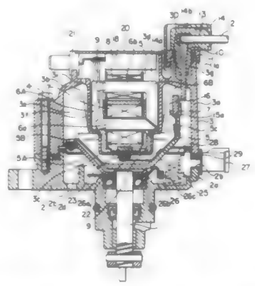
1. In a valve arrangement for an exhaust-gas return in an internal combustion engine, comprising a control valve having reciprocally movable valve plate attached to a valve spindle, a valve housing containing a valve seat against which the valve plate is sealingly moved, said valve housing having, in a direction of flow of exhaust gases from the internal combustion engine upstream of the valve seat, an exhaust gas inlet connected to an exhaust gas return pipe and, downstream of the valve seat, an exhaust gas outlet and a valve connection supporting a housing having therein an adjustable drive mechanism, wherein the exhaust gas return pipe is connected to the exhaust gas side of the internal combustion engine and wherein the exhaust gas outlet is connected to and through a connecting pipe to a suction side of the internal combustion engine, and wherein the valve spindle extends through the valve connection, the improvement wherein the valve housing is formed from an end section of the exhaust gas return pipe itself, wherein the valve seat is defined by a constriction formed in the end section by means of a chipless deformation, wherein the valve connection is defined by an extension of the pipe of the end section located downstream of the constriction and terminating in an open pipe end, wherein the valve connection includes a means for securing the valve housing to the extension of the pipe and in the open end, wherein said extension of pipe includes a region defining a lateral opening defining the exhaust gas outlet, and wherein the connecting pipe is brazed to the extension of pipe and the region defining the lateral opening.

5,351,670

IGNITION DISTRIBUTOR FOR AN INTERNAL COMBUSTION ENGINE

Kaneo Buma, Obu; Katsumaru Oda, Chiryu, and Hideo Inaba, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 18, 1992, Ser. No. 976,940
Claims priority, application Japan, Nov. 21, 1991, 3-306235
Int. Cl.[5] F02P *1/00*
U.S. Cl. 123—635 16 Claims



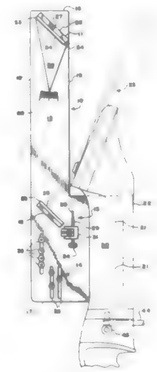
1. An ignition distributor for an internal combustion comprising:
- a hollow housing;
- a distributor cap mounted on one end of said housing and having a caved portion, said caved portion extending toward said housing and defining a space continuous in a circumferential direction around said caved portion;
- an ignition coil mounted in said caved portion of said distributor cap; and
- a distribution section including a shaft rotatably supported at an opposite end of said housing and adapted to be driven by the internal combustion engine, a rotor electrode arranged in said continuous space, holding means for holding said rotor electrode, joining said rotor electrode with said shaft in a rotatable manner, and electrically connecting said ignition coil to said rotor electrode, and a plurality of side electrodes arranged in said continuous space to face said rotating rotor electrode;
- wherein said distributor cap includes an outer wall extending axially and an inner wall defining said caved portion inside of said outer wall;
- wherein said inner wall extends axially to an extent substantially identical with said outer wall; and
- wherein said ignition coil is substantially completely received in said caved portion.

5,351,671

DISTANCE-COMPENSATING SIGHT FOR AN ARCHERY BOW

Albert J. Cervera, Rt. 1, Box 808, Hanover, Va. 23069

Filed Sep. 7, 1993, Ser. No. 116,574
Int. Cl.[5] F41G *1/467*
U.S. Cl. 124—87 6 Claims



1. A sight device for mounting upon the handle of an archery bow comprising:
- a) a mounting plate comprised of a vertical panel elongated between upper and lower extremities, and further bounded by forward and rearward edges, a portion of said panel extending horizontally rearwardly from said rearward edge and having means for attachment to a bow,
- b) upper and lower mirrors of rectangular shape defined by straight upper, lower, inside and outside margins, said mirrors being orthogonally disposed to said vertical panel, and pivotably attached thereto at the midpoints of said inside margins, said mirrors having flat reflective surfaces of identical size in facing relationship and disposed one above the other in angled disposition to said forward edge whereby the reflective surface of said upper mirror is directed toward said forward edge and the reflective surface of said lower mirror is directed toward said rearward edge, said mirrors being pivotable in a vertical path,
- c) an upper aiming pin disposed between said lower mirror and said rearward edge, and adjustably positionable by a threaded mechanism in horizontal and vertical directions,
- d) a series of horizontally disposed straight distance-determining pins supported by said vertical panel below said lower mirror, and
- e) series of horizontally disposed lower aiming pins held by said vertical panel below said distance-determining pins.

5,351,672

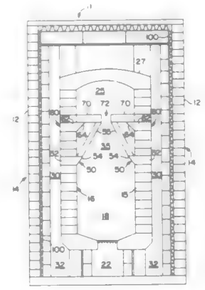
MASONRY HEATER WITH REPLACEABLE THROAT CONSTRUCTION

Albert A. Barden, III, RFD 1, Box 640, Norridgewock, Me. 04957

Filed Jul. 21, 1993, Ser. No. 95,690
Int. Cl.[5] A21B *1/00*
U.S. Cl. 126—19 R 20 Claims

1. A masonry heater having a combustion confining core of refractory material construction, said core including a primary combustion firebox with fuel access firebox door, a secondary combustion chamber bakeoven over the firebox with a bakeoven access door, and a tapered throat coupling the firebox to the bakeoven, the improved tapered throat construction comprising:

said tapered throat comprising a plurality of unmortared replaceable flat refractory bricks accessible for replacement through the bakeoven door, said flat refractory bricks being constructed in configurations to rest on each other and provide a structurally self supporting tapered throat with at least two sloping sides, said core being constructed with supports to support the unmortared replaceable flat refractory bricks forming the tapered throat.

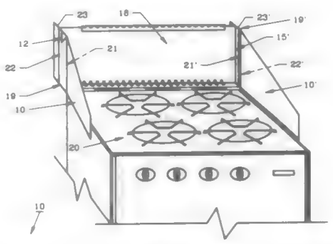


5,351,673

RV STOVE SPATTER GUARD

Michael G. Somerton, Goodlettsville, Tenn., assignor to CAMCO Manufacturing, Inc., Greensboro, N.C.

Filed Jun. 18, 1993, Ser. No. 79,981
Int. Cl.[5] F24C *15/10*
U.S. Cl. 126—214 D 12 Claims



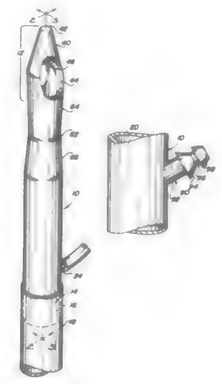
1. A spatter guard in combination with a recreational vehicle folding stove top cover, the stove top cover having side flanges that extend forwardly when the stove top cover is folded up away from the stove top, the side flanges each having inner and outer surfaces and top edges, the spatter guard comprising:

(a) a planar quadrangular sheet, said sheet having a first surface and a second surface , and

(b) means for attaching said sheet to said stove top cover , said attaching means comprising a hook, said hook spaced from said first surface of said sheet, said attaching means also comprising an elongated magnetic strip, said strip affixed to said second surface of said sheet .

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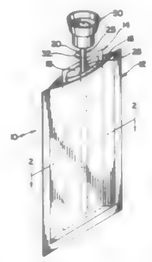
5,351,674
INLET TUBE FOR A SPECULUM
Robert A. Hawks, 17215 Lime Rock Dr., Sun City, Ariz. 85373
Continuation-in-part of Ser. No. 850,469, Mar. 11, 1992. This application Nov. 20, 1992, Ser. No. 979,179
Int. Cl.[5] A61B 1/00
U.S. Cl. 128—3 2 Claims



1. A speculum for use in a colonic lavage procedure, said speculum comprising in combination:
a) a cylindrical surface defining a passageway extending through said speculum and having a tapered distal end and a proximal end for introducing a fluid and for discharging liquified fecal matter, respectively;
b) a pair of inlets disposed at the tapered distal end of said passageway for introducing the fluid into the colon and for receiving the liquified fecal matter;
c) a blunt closed tip disposed at the distal end and terminating the distal end to displace the wall portion of the colon on contact without producing trauma to the wall portion in the event of a prolapse condition;
d) an inlet tube disposed toward the proximal end of said passageway for conveying the fluid from a source of fluid into said passageway, said inlet tube including a first annular barb of a first diameter for engagement by the end of a first length of tubing in fluid communication with the source of fluid, a second annular barb of a second diameter for alternative engagement by the end of a second length of tubing in fluid communication with the source of fluid, said first annular barb being severable from said inlet tube; and
e) a bore extending through said inlet tube, said bore being of a first diameter proximate said first barb and of a second and greater diameter proximate said second barb, said second barb being of a greater diameter than said first barb.

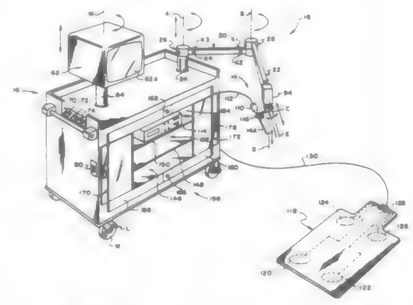
5,351,675
METHOD AND APPARATUS FOR PREHEATING AN OPTICAL INSTRUMENT PRIOR TO USE THEREOF IN A MEDICAL PROCEDURE
David L. Brodsky, Providence, R.I., assignor to The Kendall Company, Mansfield, Mass.
Filed Aug. 14, 1992, Ser. No. 929,825
Int. Cl.[5] A61B 1/00; F24J 1/00
U.S. Cl. 128—4 11 Claims

1. In combination, a laparoscope and an apparatus for preheating said laparoscope prior to use thereof in a medical procedure, said laparoscope including an elongated optical shaft portion which is adapted to be received in the body of a patient, said apparatus comprising an elongated sleeve dimensioned for receiving said shaft portion therein, said sleeve having an open end and a closed end and including flexible inner and outer walls which cooperate to define a compartment therebetween, said inner wall defining an inner pocket dimensioned for receiving said laparoscope therein, said



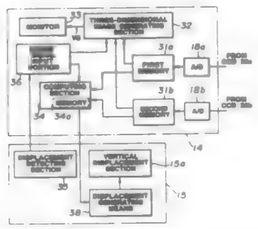
pocket having an open end and a closed end which correspond to the open and closed ends of said sleeve, respectively, said compartment substantially completely surrounding said pocket, and heating means in said compartment for heating said shaft portion.

5,351,676
ENDOSCOPE STABILIZER
John M. Putman, 3707 Gaston Ave. Ste. 410, Dallas, Tex. 75246
Continuation of Ser. No. 740,413, Aug. 5, 1991, Pat. No. 5,184,601. This application Feb. 8, 1993, Ser. No. 15,393
Int. Cl.[5] A61B 1/00; H01H 9/26
U.S. Cl. 128—4 1 Claim



1. A foot switch assembly for use in combination with positioning apparatus for adjusting the elevational and longitudinal extension of a surgical accessory relative to a patient comprising, in combination:
first and second non-latching, pressure responsive momentary contact switches having electrical contacts adapted for electrical connection to up and down elevation position control circuits, respectively;
third and fourth non-latching, pressure responsive momentary contact switches having electrical contacts adapted for electrical connection to extend and retract control circuits;
a latching, continuous contact pressure responsive switch having electrical contacts adapted for electrical connection to a switch enable circuit for selectively enabling and disabling said first, second third and fourth non-latching switches; and,
first and second sheets of flexible material, said latching and non-latching switches being sandwiched between said sheets.

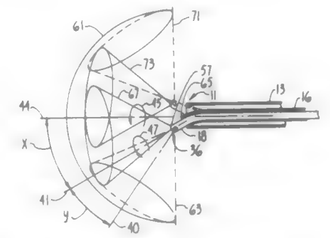
5,351,677
MEDICAL SYSTEM HAVING OBJECT INFORMATION REPRODUCTION MEANS FOR PALPATION
Kuniaki Kami; Hideyuki Adachi, both of Hachioji; Koichi Umeyama, Kasukabe; Yoshihiro Kosaka, Hachioji; Seiji Yamaguchi, Hachioji; Eiichi Fuse, Hachioji; Michio Sato, Hino; Masakazu Nakamura, Hachioji; Yasundo Tanaka, Urawa; Takashi Fukaya, Hachioji; Kiyotaka Matsuno, Hachioji, and Katsuya Suzuki, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Apr. 15, 1992, Ser. No. 868,642
Claims priority, application Japan, Apr. 24, 1991, 3-094459
Int. Cl.[5] A61B 1/06; G06F 15/42; H04N 7/18
U.S. Cl. 128—6 9 Claims



1. A medical system for diagnosing tactual information from an object which is not capable of being directly palpated, comprising:
a medical device for visually diagnosing the state of the object;
detecting means connected to said medical device for detecting three-dimensional information showing the unevenness of the object, further including imaging means for providing a three-dimensional image of a location of the object not normally accessible to direct contact for palpation;
computing means operably connected to said detecting means for calculating a quantity of unevenness at a predetermined position on said image; and
object information reproduction means operably connected to said computing means for reproducing said information showing the unevenness of the object at said predetermined position according to an output from said computing means so as to be sensed in a tactile manner by an operator who operates said medical device.

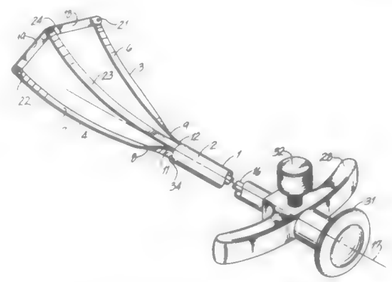
5,351,678
ENDOSCOPE SCOPE ASSEMBLY FOR FULL HEMISPHERE VIEW
John B. Clayton, Reno, Nev.; Darryl J. Bornhop, Truckee, Calif., and George H. Middle, Reno, Nev., assignors to Citation Medical Corporation, Reno, Nev.
Filed Sep. 1, 1992, Ser. No. 938,827
Int. Cl.[5] A61B 1/06
U.S. Cl. 128—6 20 Claims

1. A scope assembly for an endoscope for examining an internal structure of a body, which comprises:
a substantially rigid guiding cannula removably attached to the endoscope, said guiding cannula having a substantially straight longitudinal axis and having a distal end bent at a first angle relative to said longitudinal axis, said guiding cannula being adapted for rotation within a stationary portal cannula adapted to be inserted into the body, thereby rotating said bent distal end through an arc about the axis of said portal cannula;
a flexible scope removably attached to the endoscope, said scope being slidable and rotatable within said guiding cannula, and said scope including an illuminating means for directing light into the body and a flexible image guide for gathering reflected light from the body;
a distal viewing end on said image guide, said viewing end being constrained by said bent distal end of said guiding cannula to offset the axis of said viewing end, at said first angle relative to said longitudinal axis; and



a lens mounted on said distal viewing end of said image guide, said lens having an optical axis offset at a second angle relative to said axis of said viewing end.

5,351,679
SURGICAL ENDOSCOPIC RETRACTOR INSTRUMENT
Ilya Mayzels, 2451 Coldwater Cyn. Dr., Beverly Hills, Calif. 90210, and Joseph Shvager, 10847 Wystone Ave., Northridge, Calif. 91326
Filed Aug. 17, 1992, Ser. No. 930,178
Int. Cl.[5] A61B 17/02
U.S. Cl. 128—20 10 Claims



7. An endoscopic retractor instrument for retracting an internal body structure adjacent an operative region during endoscopic surgery comprising:
(a) a housing having a longitudinal axis, a proximate end and a distal end and an axially extending cavity forming a passageway therethrough;
(b) an extension member responsive to external force slideably carried by said housing and extending at least in part in said cavity for axial displacement relative to said housing; and support means for resiliently supporting the internal structure carried by said extension member adjacent the distal end of said extension member and extending distally therefrom such that upon sufficient distal axial displacement of said extension member said support means is distally extensible from said housing, said support means including a pair of support links having first and second ends where said second ends are pivotally connected to each other and said first ends are pivotally mounted respectively in hinged relationship with said support means and where said support means is resiliently biased to open during distal extension from said distal end of said housing and to close during proximate retraction into said housing, and where said support means further includes a pair of flat springs each having a distal region defining an engage-

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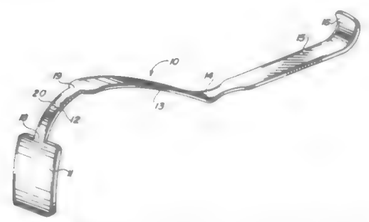
ment surface for resiliently bearing against the internal structure and a proximate region for resiliently biasing said springs into an open position where said proximate regions are respectively mounted in fixed relationship to said extension member adjacent said distal end of said extension member and where each said flat spring is so constructed and designed that said proximate region is angularly displaced from said distal region such that the resultant restoring spring force acting on said proximate region occurs in a different plane from the restoring spring force acting on said distal region, and where each said first end is pivotally connected respectively to one of said distal regions.

5,351,680

SURGICAL RETRACTOR

Hong I. Jung, 1416 Monroe Ave., Dunmore, Pa. 18509

Continuation of Ser. No. 783,538, Oct. 28, 1991, abandoned.
This application Mar. 16, 1993, Ser. No. 33,182
Int. Cl.[5] A61B *17/02*
U.S. Cl. 128—20 10 Claims



1. A surgical separator for assisting in mini-cholecystectomy procedures conducted through a right, subcostal oblique skin incision approximately four cm. long, said separator comprising a thin flat rectangular head portion adapted to be inserted through said incision, a first flat elongated body portion, a flat, elongated neck portion operatively interposed between said first body portion and said head portion and secured thereto to support said head portion in a continuous, smoothly curved angular relationship to said first body portion, said flat, elongated neck portion adapted to exit said incision and hold a side of said incision open, said flat, elongated neck portion being narrower than said head portion to provide maximum exposure through said incision, a flat second elongated body portion, a flat tail portion integrally formed with said second body portion and disposed at an angle relative to the longitudinal axis of said second body portion and extending therefrom; and a flat intermediate portion operatively interposed between said first body portion and said second body portion and integrally formed therewith, said flat intermediate portion being narrower than said first and second body portions.

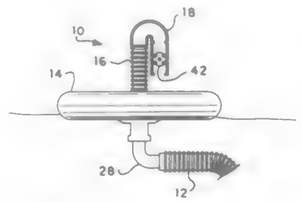
5,351,681

UNDERWATER BREATHING APPARATUS FOR A SWIMMER

William C. Hudson, 5609 St. Charles Dr., Woodbridge, Va. 22193

Filed May 13, 1993, Ser. No. 60,527
Int. Cl.[5] B63C *11/16, 11/02*
U.S. Cl. 128—201.11 9 Claims

1. An underwater breathing apparatus comprising:
a mouthpiece consisting of a housing defining a chamber having a minimal volume and containing an inlet check valve and an outlet check valve sealing said chamber, air being constrained to flow only into said chamber through said inlet check valve and only out of said chamber through said outlet check valve, a conduit communicating between said chamber and a user's mouth, wherein breathing air is drawn from and spent air is expelled to said chamber;
a flexible breathing tube supplying air to said mouthpiece, said breathing tube having a proximal end and a distal end, said breathing tube's distal end connecting to said mouthpiece through said inlet check valve;
a floating air pickup member attached to said breathing tube at said proximal end, said pickup member consisting of a float, means for permitting an observer to monitor the breathing of a user of the underwater breathing apparatus, said means for permitting monitoring comprising a visible indicator consisting of a transparent air pickup tube extending upwardly from said float and terminating above water level, said air pickup tube containing a perforated ball constrained to bob in response to air flow therethrough, a right-angled conduit connecting said air pickup to said tube's proximal end, and enabling fluid communication therebetween, said right-angle conduit extending



downwardly from said float and causing said breathing tube to be disposed substantially parallel to the surface of the water, whereby a user breathes through said mouthpiece while underwater, air supply to the user being constrained to flow into said air pickup tube, through said right-angled conduit and said flexible breathing tube to said mouthpiece, through said inlet check valve to said chamber, to the user's mouth and back into said chamber through said mouthpiece conduit, and is expelled by pneumatic pressure from said mouthpiece chamber into surrounding water, and
wherein said right-angled conduit further includes a swivel means for enabling said right-angled conduit to rotate relative to said floating member, for avoiding entanglement of said breathing tube with said floating member, and for promoting stability of said floating member to prevent intake of water into said air pickup tube when a user exerts a lateral pull rather than a downward pull on said float.

5,351,682

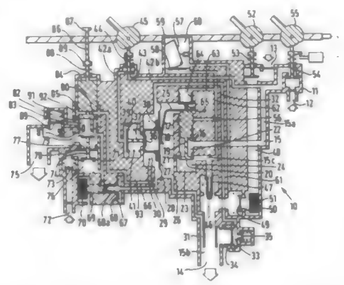
BREATHING DEMAND REGULATIONS

James C. Foote, Yeovil, England, assignor to Normalair-Garrett (Holdings) Ltd., Yeovil, England

Filed Apr. 6, 1993, Ser. No. 43,526
Claims priority, application United Kingdom, Apr. 16, 1992, 9208481
Int. Cl.[5] A61M *15/00*
U.S. Cl. 128—205.24 7 Claims

1. An aircrew breathing demand regulator (**1**) for controlling delivery of breathing gas in accordance with breathing demands of an end user, comprising a regulator body (**11**); a first inlet (**12**) for receiving a flow of oxygen-enriched breathing gas; an outlet (**14**) for delivering breathing gas to the end user; a passageway (**15**) communicating the first inlet with the outlet; a demand valve (**16**) connected in the passageway between the first inlet and the outlet, the demand valve (**16**) including a valve head (**20**) for controlling flow of oxygen-enriched breathing gas from the first inlet to the outlet; breathing demand sensing means (**26, 27, 28**) connected with the demand valve (**16**) and operable in response to sensed breathing demand at the outlet (**14**) for moving the demand valve (**16**)

towards opening; a second inlet (**13**) communicating the passageway downstream of the demand valve (**16**) with ambient atmosphere; an ambient air control valve (**49, 50**) for closing communication between the passageway and the second inlet (**13**); ambient air entrainment means (**47**) connected in the



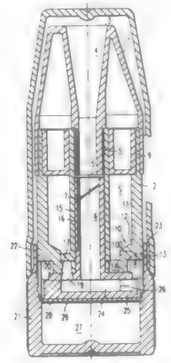
passageway for opening the ambient air control valve (**49, 50**) and entraining ambient air to enter the second inlet (**13**) and flow to the passageway; and balancing means (**64, 95, 99**) connected with the demand valve for nullifying feedback of pressure downstream of the demand valve onto the demand valve head.

5,351,683

DEVICE FOR THE ADMINISTRATION OF POWDERED MEDICINAL SUBSTANCES

Paolo Chiesi; Paolo Ventura, and Isabella Panza, all of Parma, Italy, assignors to Chiesi Farmaceutici S.p.A., Parma, Italy

Continuation of Ser. No. 682,561, Apr. 9, 1991, abandoned. This application Feb. 1, 1993, Ser. No. 11,785
Claims priority, application Italy, Apr. 12, 1990, 20025 A/90
Int. Cl.[5] A61M *15/00*
U.S. Cl. 128—203.12 4 Claims



1. A powdered medicinal substance inhaler comprising:
a nozzle having an aperture for permitting the passage of a respirable powdered medicinal substance when a user inhales through said aperture;
a main body on which said nozzle is rotatably mounted, said main body comprising a circular storage chamber for storing said powdered medicinal substance and a base portion;
a ventilation chamber located below said base of said main body for receiving said powdered medicinal substance and air, said ventilation chamber comprising a powdered medicinal substance inlet for permitting a passage of said powdered medicinal substance from said circular storage chamber to said ventilation chamber;
a channel having an inlet end connected to said ventilation chamber and an outlet end connected to said nozzle for providing a passage for said powdered medicinal substance from said ventilation chamber to said nozzle;
first slot means leading into said ventilation chamber for permitting, when said user inhales through said aperture, a negative pressure to be created in said ventilation chamber so as to draw air into the ventilation chamber through said first slot means, said drawn in air mixing with the powdered medicinal substance in said ventilation chamber for breaking up large aggregates of said powdered medicinal substance into small particles and conveying said powdered medicinal substance comprised of said small particles through said channel and to the user by way of said nozzle and aperture; and
an external body located below said main body and having an upper portion which overlaps and circumferentially surrounds said base of the main body in a spaced manner for forming a circular space between the base of the main body and the upper portion of the external body, said first slot means being defined by said circular space and extending between the base of the main body and the upper portion of the external body, said external body comprising a lower portion which defines a lower chamber and second slot means extending between said lower chamber and said circular storage chamber, said lower chamber containing a dehumidifying means for absorbing moisture in the powder in the circular storage chamber;
wherein:
a size of said ventilation chamber and a length and diameter of said channel permit a localized resistance to flow of air at the inlet end of the channel where mixing of air and powder occurs, said channel having a length in a range of 2.5 to 4 cm and a diameter in a range of 3 to 5 mm.

5,351,684

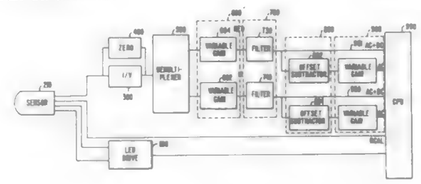
Patent Not Issued For This Number

5,351,685

CONDENSED OXIMETER SYSTEM WITH NOISE REDUCTION SOFTWARE

Robert S. Potratz, Lenexa, Kans., assignor to Nellcor Incorporated, Pleasanton, Calif.

Filed Aug. 5, 1991, Ser. No. 740,362
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 30 Claims



1. A method for determining a parameter of blood, comprising the steps of:
emitting first and second wavelengths of light through a sample;
detecting said first and second wavelengths of light through said sample;
producing first and second analog signals responsive to said detection of said first and second wavelengths, respectively, said first and second analog signals being proportional to the intensity of said first and second wavelengths of light, respectively, said first analog signal having an AC

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and DC component and said second analog signal having an AC and a DC component;

separating said AC component of said first analog signal from said first analog signal to produce a first separated AC component and separating said AC component of said second analog signal from said second analog signal to produce a second separated AC component;

converting said first and second separated AC components into a first digital signal and a second digital signal, respectively;

computing the derivatives of said first and second separated AC components;

taking a linear regression of the ratio of said derivatives of said first and second separated AC components for a plurality of sample points in a period; and

computing said parameter of blood, said parameter of blood being dependent on the derivatives of said first and second separated AC components.

5,351,686

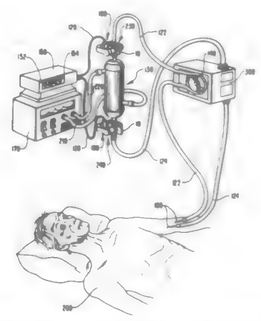
DISPOSABLE EXTRACORPOREAL CONDUIT FOR BLOOD CONSTITUENT MONITORING

Robert R. Steuer, Pleasant View, and David H. Harris, Ogden, both of Utah, assignors to In-Line Diagnostics Corporation, Ogden, Utah

Continuation-in-part of Ser. No. 11,882, Feb. 1, 1993, which is a continuation of Ser. No. 598,169, Oct. 6, 1990, abandoned. This application May 24, 1993, Ser. No. 66,344

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—633 **53 Claims**



1. A disposable fluid cuvette, defining a fluid passageway for containing and conducting therethrough a fluid flowing under pressure in a pulsatile fashion, comprising:

a. an inlet;

b. an outlet;

c. a conduit, in fluid communication both between and with said inlet and outlet and being comprised of materials which permit transmission of at least two predetermined wavelengths of electromagnetic radiation therethrough, comprising:

i. first and second opposed walls, having a predetermined separation therebetween, and constraining the pulsatile flowing fluid therebetween; and

ii. a transducer means, located in said first wall of said conduit, for varying said predetermined separation responsive to pressure pulsations in the fluid.

5,351,687

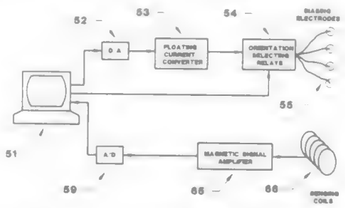
METHOD AND APPARATUS FOR NON-INVASIVELY DETERMINING A PATIENT'S SUSCEPTIBILITY TO VENTRICULAR ARRHYTHMIAS

Mark W. Kroll, 13011 Brenwood Trail, Minnetonka, Minn. 55343, and Karl J. F. Kroll, 550 W. Sandhurst #125, Roseville, Minn. 55113

Division of Ser. No. 563,106, Aug. 6, 1990, Pat. No. 5,117,834. This application May 29, 1992, Ser. No. 890,957

Int. Cl.[5] A61B *5/05*

U.S. Cl. 128—653.1 **2 Claims**



1. A device for determining a patient's susceptibility to ventricular arrhythmias, comprising:

a) means to inject electromagnetic energy into a patient's body at a current of less than 100 milliamperes;

b) at least one magnetic sensor to detect the magnetocardiographic signals; and

c) means connected to the magnetic sensor to record the changes in the patient's magnetocardiographic signals caused by the injection of the electromagnetic energy into the patient's body;

thereby sensing the cardiac instability related to ventricular arrhythmias noninvasively.

5,351,688

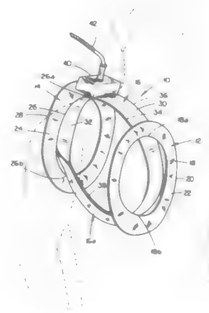
NMR QUADRATURE DETECTION SOLENOIDAL COILS

Randall W. Jones, Bellevue, Nebr., assignor to Univ. of NE Board of Regents, Lincoln, Nebr.

Filed Aug. 16, 1993, Ser. No. 106,635

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653.5 **11 Claims**



1. A RF local coil set for use in detecting an RF field in MRI comprising:

a first resonant solenoidal antenna oriented such that it is sensitive to RF magnetic flux changes along a first linear axis in a volume;

means connected to said first antenna for transmitting a signal to an MRI system as a first output, in response to the first antenna sensing an NMR signal along said first linear axis;

second and third solenoidal antennas electrically connected and oriented with respect to one another to sense RF magnetic flux changes along a second linear axis, said second axis orthogonal to, and centered within the same volume as, the first axis;

means connected to said second and third antennas for transmitting a signal to the MRI system as a second output, in response to the second and third antennas sensing an NMR signal along said second axis;

said first antenna electrically connected in an electrically quadrature sense with the second and third antennas; and

said means for transmitting said first and second outputs to the MRI system including

means for quadrature summing said first and second outputs and transmitting a

summed output to the MRI system.

5,351,689

METHOD AND APPARATUS FOR LOW DOSE ESTIMATES OF BONE MINERALS IN VIVO GAMMA RAY BACKSCATTER

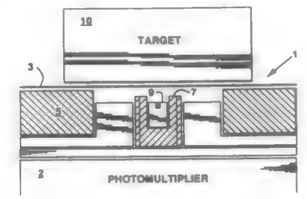
Innes MacKenzie, Guelph, Canada, assignor to University of Guelph, Guelph, Canada

Division of Ser. No. 762,326, Sep. 18, 1991. This application Aug. 26, 1993, Ser. No. 112,590

Claims priority, application United Kingdom, Sep. 18, 1990, 9020353.0

Int. Cl.[5] A61B *6/00;* **G01N** *23/203;* **G01T** *1/00*

U.S. Cl. 128—653.1 **7 Claims**



7. A radioactive device for use with a NaI (tI) spectrometer for obtaining very low dose estimates of bone minerals in vivo irradiated from said said holder comprising a molybdenum tube, a gold insert within said tube, a blind hole within said insert receiving said radioactive source, and an inner tube inserted into said blind hole for directing radiation from said radioactive source in a narrow cone, whereby said directing of radiation in said narrow cone minimizes spectrometer response to radiation which has been scattered by soft tissue overlying a bone and said radioactive source is ^{241}Am.

5,351,690

ULTRASONIC DIAGNOSTIC APPARATUS CAPABLE OF PERFORMING SWITCHING BETWEEN SINGLE BEAM RECEPTION AND SIMULTANEOUS PARALLEL BEAM RECEPTION

Kazutaka Okada, Iwatsuki; Akira Sasaki, Ichikawa, and Minoru Yoshida, Kashiwa, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Dec. 14, 1993, Ser. No. 165,918

Claims priority, application Japan, Dec. 18, 1992, 4-354907

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—661.01 **6 Claims**

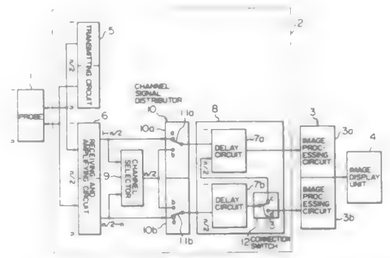
1. An ultrasonic diagnostic apparatus comprising:

means for transmitting ultrasonic waves to a subject;

receiving means for receiving echo signals reflected from said subject and dividing receiving signals to deliver them in the form of "K" (K being an integer which is 2 or more) blocks each having a predetermined number of channels;

selector means for selecting signals corresponding to respective ones of said plurality of blocks from output signals of said receiving means and delivering selected signals;

signal distributor means for delivering either output signals of said receiving means or output signals of said selector means;



"K" delay means connected to outputs of said signal distributor means and each having said predetermined channel number;

means for performing switching between parallel connection and series connection of said "K" delay means;

means for preparing an image signal from output signals of said delay means; and

means for displaying said image signal.

5,351,691

ENDOSCOPIC PROBE

Pieter D. Brommersma, Hamburg, Fed. Rep. of Germany, assignor to B.V. Optische Industrie "De Oude Delft" , Delft, Netherlands

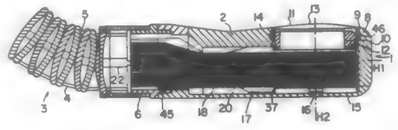
PCT No. PCT/NL91/00141, § 371 Date Feb. 22, 1993, § 102(e) Date Feb. 22, 1993, PCT Pub. No. WO92/02178, PCT Pub. Date Feb. 20, 1992

PCT Filed Jul. 31, 1991, Ser. No. 969,211

Claims priority, application Netherlands, Aug. 2, 1990, 9001755

Int. Cl.[5] A61B *8/12*

U.S. Cl. 128—662.06 **12 Claims**



1. An endoscopic probe, which comprises: a probe head including a cylindrically-shaped transducer housing rotatably disposed therein;

an ultrasonic transducer of the phase array type formed of a plurality of elongated transducer elements disposed within said transducer housing, said ultrasonic transducer having a longitudinal axis perpendicular to a longitudinal axis of said probe head;

means for rotating said ultrasonic transducer in said transducer housing within a plane of said phase array of said ultrasonic transducer;

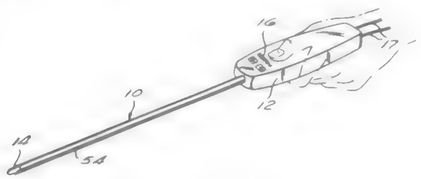
a loop-shaped flexible circuit board extending into said ultrasonic housing and connected to said plurality of elongated transducer elements;

a flexible tube connected to said probe head; and

conductors extending through said flexible tube electrically connected to said flexible circuit board.

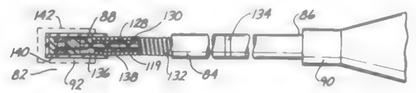
VOL 1167 ISS 1 OC 4 1994 UMI

5,351,692
LAPAROSCOPIC ULTRASONIC PROBE
Julian Dow, San Clemente; Paul F. Meyers, San Juan Capistrano, and Michael Waddell, San Clemente, all of Calif., assignors to Capistrano Labs Inc., San Clemente, Calif.
Filed Jun. 9, 1993, Ser. No. 75,121
Int. Cl.[5] A61B *8/12*
U.S. Cl. 128—662.06 **23 Claims**



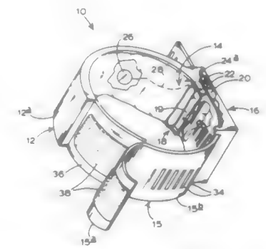
1. An ultrasonic probe comprising:
(a) an elongate tubular member having proximal and distal ends;
(b) an imaging ultrasonic transducer pivotally mounted proximate the distal end of said tubular member; and
(c) cable means for effecting reciprocating pivotal motion of said imaging ultrasonic transducer, comprising:
a first cable having proximal and distal ends, said first cable being attached at its distal end to said imaging ultrasonic transducer to effect pivoting of said imaging ultrasonic transducer in a first direction when said first cable is pulled;
a second cable having proximal and distal ends, said second cable being attached at its distal end to said imaging ultrasonic transducer to effect pivoting of said imaging ultrasonic transducer in a second direction when said second cable is pulled;
a linear motor attached to said first cable for pulling said first cable to effect pivoting of said imaging ultrasonic transducer in the first direction; and
a tension means attached to said second cable for pulling said second cable when said linear motor ceases pulling said first cable to effect pivoting of said imaging ultrasonic transducer in the second direction.

5,351,693
ULTRASOUND PROBE FOR USE WITH TRANSPORT CATHETER AND METHOD OF MAKING SAME
Miriam H. Taimisto, Sierra Madre; David L. Swendson, Garden Grove, both of Calif.; Lawrence J. Busse, Littleton, Colo., and Robert Skidmore, Bristol, United Kingdom, assignors to Baxter International Inc., Deerfield, Ill.
Continuation of Ser. No. 865,163, Apr. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 790,724, Nov. 8, 1991, Pat. No. 5,246,016. This application Oct. 13, 1993, Ser. No. 137,381
Int. Cl.[5] A61B *8/06*
U.S. Cl. 128—662.06 **7 Claims**



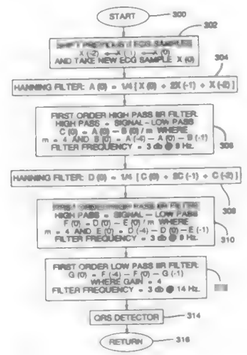
1. A method of measuring blood flow rate in a blood vessel by the use of an ultrasound probe, wherein the ultrasound probe includes a single hollow cylindrical transducer element comprising the steps of:
positioning the ultrasound probe in the vessel such that the distal end of the probe is at a desired location for measuring blood flow;
energizing the transducer element at a first frequency so as to generate a radially oriented signal beam;
energizing the transducer element at a second frequency so as to generate a forwardly oriented signal beam;
analyzing the radially generated signals to compute the cross-sectional area;
analyzing the forwardly generated signals to compute the velocity of the blood particles; and
analyzing the cross-sectional area and blood velocity so as to compute the blood flow rate.

5,351,694
NONINVASIVE-BLOOD-PRESSURE (NIBP) MONITORING APPARATUS WITH NONINFLATABLE, PRESSURE-INFORMATION-PROVIDING (PIP) STRUCTURE
Charles L. Davis, and John R. Marshall, both of Beaverton, Oreg., assignors to Protocol Systems, Inc., Beaverton, Oreg.
Filed Nov. 16, 1992, Ser. No. 977,597
Int. Cl.[5] A61B *5/021*
U.S. Cl. 128—672 **12 Claims**



1. A portable, self-contained, ambulatory, noninvasive-blood-pressure (NIBP) monitoring apparatus adapted for a removable circumscribing fit relative to a subject's limb adjacent a blood vessel therein, comprising:
frame structure releasably fittable on a subjects limb;
plural adjustable, fluid-filled, non-inflatable bladders mounted on said frame structure and adapted, with said frame structure and band so fitted, to pressure-contact such limb adjacent such vessel;
a change-condition adjustment mechanism carried on said frame structure and operatively connected to said bladder, with said adjustment mechanism also operable selectively and differentially to adjust said bladders, thus to impose and relax occluding pressure on such a vessel;
power-operated structure, and a power source therefor, on-board said frame structure, and operatively connected to said adjustment mechanism for operating the same;
plural sensors, one corresponding to each bladder, and with each sensor being operatively associated with a corresponding bladder for sensing therethrough heartbeat-induced pressure pulsations in said pulse-responsive structure, and for generating at least two streams of related NIBP-data signals; and
control means operatively connected to said power source, to said power-operated structure and to each said sensor, for controlling the operation of the power-operated structure, and for receiving the NIBP-data signals generated by the sensors.

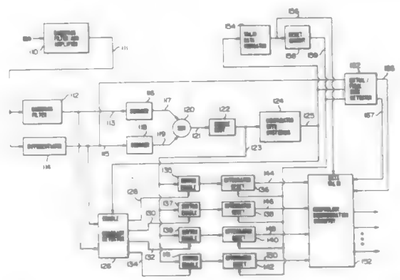
5,351,695
WRIST WORN ECG MONITOR
Gary N. Mills, Gladstone, and Habib Homayoun, Aloha, both of Oreg., assignors to Instromedix, Inc., Hillsboro, Oreg.
Division of Ser. No. 816,389, Dec. 26, 1991, Pat. No. 5,289,824. This application Jan. 7, 1993, Ser. No. 1,748
Int. Cl.[5] A61B *5/0428*
U.S. Cl. 128—696 **16 Claims**



1. For use with a wrist-worn ECG data monitor, a method for digitally filtering successive ECG data samples comprising:
providing successive ECG data samples;
initializing a first and second filter output value;
first calculating a first filter output value equal to a first weighted average of plural ones of such successive ECG data samples, wherein the contributions of said ones to said weighted average are related to one another by powers of two;
second calculating a second filter output value equal to a second weighted average of at least one said first filter output value and at least one said second filter output value, wherein the contributions of said output values to said second weighted average are related to one another by powers of two;
repeating said first and second calculating steps to produce a succession of digitally filtered output values; and
processing said succession of digitally filtered output values into a record of filtered ECG data.

5,351,696
METHOD AND APPARATUS FOR INTRACARDIAC ELECTROGRAM MORPHOLOGIC ANALYSIS
Kenneth M. Riff, Plymouth; Ray S. McDonald, Roseville, and Michael J. German, Mounds View, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Apr. 23, 1993, Ser. No. 52,359
Int. Cl.[5] A61B *5/0452*
U.S. Cl. 128—702 **11 Claims**

1. A method of identifying a cardiac event as being of a specific type, comprising the steps of:
monitoring a patient's EGM signal during a cardiac event;
generating a four quadrant phase plane trajectory representation of said patient's EGM signal during said event:
defining a metric reflecting the relative areas circumscribed by said phase plane trajectory in each said quadrant; and
identifying said event as being of said specific type in response to said phase plane trajectory corresponding to said metric;
wherein said generating step comprises:
applying said patient's EGM signal to a filter circuit and to a differentiator circuit to produce a filtered EGM signal and a differentiated EGM signal;
applying said filtered EGM signal to a squaring circuit to produce a filtered, squared signal;
applying said differentiated EGM signal to a squaring circuit to produce a squared, differentiated EGM signal;
summing said squared, differentiated EGM signal and said filtered, squared EGM signal to produce a summation signal;
applying said summation signal to a square root circuit to produce a magnitude signal corresponding to a magnitude



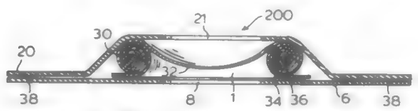
component of said phase plane trajectory representation of said patient's EGM signal;
defining said four quadrants of said phase plane trajectory representation;
for each said quadrant, separately integrating said magnitude signal to produce a separate integration signal for each said quadrant; and
wherein said identifying step comprises indicating occurrence of an event of said specific type when said integration signals correlate in accordance with said metric.

5,351,697
THREE-DIMENSIONAL IMPEDANCE IMAGING PROCESS
Margaret Cheney, Troy, and David Isaacson, Latham, both of N.Y., assignors to Rensselaer Polytechnic Institute, Troy, Mich.
Continuation-in-part of Ser. No. 808,795, Dec. 16, 1991, Pat. No. 5,284,142. This application Sep. 29, 1993, Ser. No. 128,834
Int. Cl.[5] A61B *5/05*
U.S. Cl. 128—734 **4 Claims**

1. A method for electrical impedance imaging by obtaining and using sets of current patterns for three-dimensionally imaging the interior of a body having an internal resistivity using electrical impedance tomography, the method comprising:
providing a multidimensional array of electrodes arranged in a plurality of groups for an impedance imaging system;
establishing a linearly independent set of current patterns for forming a basis for each group;
adjoining a constant pattern to each basis for forming an augmented basis for each group;
taking the tensor product of the augmented bases for forming a tensor product basis for each group;
removing the constant pattern from the tensor product basis for establishing a basis of current patterns for being applied to the array of electrodes;
applying the current patterns to the electrodes to form voltage patterns at the electrodes; and
measuring the voltage patterns to create an electrical impedance image of the body.

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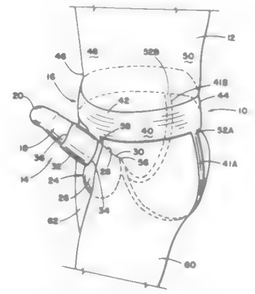
5,351,698
BIDIRECTIONALLY DONNABLE GENERALLY TUBULAR SHEATH ARTICLES, AND APPARATUS AND METHOD FOR MAKING AND USING SAME
Robert G. Wheeler, deceased, late of Greenbank, Wash. by Helen J. Wheeler, legal representative , and Edwin C. White, Jr., Siler City, N.C., assignors to Family Health International, Research Triangle Park, N.C.
Continuation-in-part of Ser. No. 726,984, Jul. 8, 1991, abandoned, which is a division of Ser. No. 568,426, Aug. 16, 1990, Pat. No. 5,036,863, which is a division of Ser. No. 271,884, Nov. 15, 1988, Pat. No. 4,964,416, and a continuation-in-part of Ser. No. 775,783, Oct. 11, 1991, Pat. No. 5,335,675, which is a continuation-in-part of Ser. No. 726,984, Jul. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 568,426, Aug. 16, 1990, Pat. No. 5,036,863, which is a division of Ser. No. 271,884, Nov. 15, 1988, Pat. No. 4,964,416. This application Apr. 1, 1992, Ser. No. 861,646
Int. Cl.[5] A61F *6/02*
U.S. Cl. 128—844 **33 Claims**



1. A bidirectionally donnable unitary article for sheathing a member, comprising:
(i) a main sheath portion having an elongate form when fully extended, with a closed distal end, and an open proximal end,
(ii) a first flange element integrally and permanently secured to the open proximal end of the main sheath and having an aperture formed or pressure-formable therein, in substantial registration with the proximal open end of the sheath, said first flange aperture having a diameter smaller than the diameter of the main sheath portion, and
(iii) a second flange element integrally, directly and permanently secured at its outer peripheral portion to the first flange element, the second flange element having an aperture formed or pressure-formable therein, in substantial registration with the aperture of the first flange element, said second flange aperture having a diameter smaller than the diameter of the main sheath portion and wherein the main sheath is compactible to a compacted form reposable between the first and second flange element, with said first flange element aperture and said second flange element aperture diameter being sized to compressively bear against the outer circumference of the member when sheathed in the article wherein said open end of said sheath is encased between said apertures of said first and said second flange members.

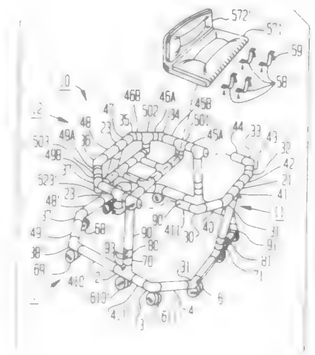
5,351,699
MALE CONDOM
Sharon Hammons, 4411 E. Woodrow Pl., Tulsa, Okla. 74115-4123
Filed Oct. 1, 1993, Ser. No. 130,263
Int. Cl.[5] A61F *5/44*
U.S. Cl. 128—844 **7 Claims**

1. A condom for use by a male user, comprising:
a protective section, said protective section comprised of a hollow tubular sheath portion connected to a hollow bag portion so that the hollow tubular sheath panion communicates with the hollow bag portion in order that the tubular sheath portion cover a penis of a user and the hollow bag portion cover a scrotum of the user,
a second protective layer being provided with a first end and with an opposite second end, said second end being secured to an external surface of the tubular sheath portion, said first end being unattached to the tubular sheath portion and freely extendable to a proximal end of said tubular sheath portion, and



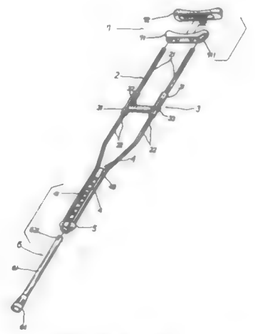
a belt section being attached to the protective section to hold the protective section on the user.

5,351,700
WALKABOUT WITH SEAT AND FALL CONTROL
Clayton H. Jones, III, and Rosalie V. Jones, both of 409 Granada Ave., Isle of Capri, Naples, Fla. 33962
Filed Jan. 5, 1993, Ser. No. 505
Int. Cl.[5] A61H *3/00*
U.S. Cl. 135—67 **18 Claims**



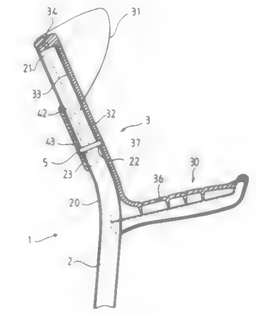
1. A walker particularly suitable for use by persons with varying degrees of disability including in combination:
(a) a horizontal base frame of approximately rectangular shape, attached to said base frame a plurality of upright supports, said upright supports angle in to attach to a top frame of approximately rectangular shape of smaller circumference than the base frame;
(b) a free section of said top frame is attached to one upright supports having horizontal hinged means at the base to allow said section of the top frame to pivot outwardly about said base to allow a person to enter a region surrounded by the base frame and the top frame;
(c) locking means for rigidly locking the free section of the top frame to the top frame after said person has entered said region to securely enclose the person in the region;
(d) a plurality of rolling means attached to the base frame.

5,351,701
CRUTCH STRUCTURE
Fang-Jung Hsiao, 380-8, Hsinchuotze, Lung-Chiang Li, Pu Tai, Chiayi Hsien, Taiwan
Filed Mar. 24, 1994, Ser. No. 216,831
Int. Cl.[5] A61H *3/02*
U.S. Cl. 135—68 **4 Claims**



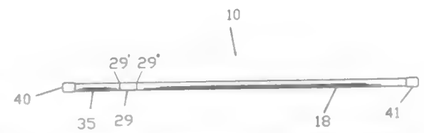
1. A crutch structure comprising an armpit seat, a lateral tube assembly having two lateral tubes, a handle assembly, a middle supporting tube, a bottom cap and a telescopic tube, wherein:
said armpit seat having two sleeve sections
said lateral tubes are symmetrically arranged, each including an outer semi-circular tube section and an inner rectangular beam section, multiple aligned pairs of transverse through holes being formed on predetermined portions of said lateral tubes, lower portions of said lateral tubes first extending downward and toward each other and then extending straight downward in parallel with each other;
said handle assembly is substantially H-shaped, including two vertically arranged sleeve members formed with transverse through holes, and a transverse handle member formed with a transverse central through hole corresponding to said transverse through holes of said sleeve members, said sleeve members being fitted on said lateral tubes in alignment with one of said pairs of through holes thereof and said handle being transversely disposed between said sleeve members, whereby an elongated thread rod is extended through said through holes of said lateral tubes, said thread holes of said sleeve members and said central through hole of said handle to engage with a butterfly nut to lock said handle assembly on said lateral tubes a telescopic tube having a V-shaped resilient member, said resilient member having free ends and projecting bosses on said free ends; and
said middle supporting tube includes a central circular tube section having multiple aligned pairs of circular through holes formed on front and back sides of said circular tube section, and two lateral substantially C-shaped outward open rib sections, whereby said crutch structure is assembled in such a manner that said sleeve members of said handle assembly are first fitted on said lateral tubes and then two upper ends of said lateral tubes are inserted into two sleeve sections of said armpit seat and riveted therewith, and then said C-shaped rib sections of said middle supporting tube are engaged with said rectangular beam sections of said lateral tubes and slided upward from bottom ends thereof to a predetermined position, and then said C-shaped rib sections are secured with said rectangular beam sections by rivets and then said bottom cap is fitted with and riveted with bottom end of the engaged lateral tubes and middle supporting tube, and then said telescopic tube is fitted into said middle supporting tube with bosses of a V-shaped resilient member compressed and inserted into a desired one of said pairs of through holes of said middle supporting tube so as to lock said telescopic tube in said middle supporting tube and finally, said handle is adjustably secured between said sleeve members and said handle assembly is locked with said lateral tubes at a height according to the length of a user' hand.

5,351,702
WALKING AID DEVICE OF THE CRUTCH OR ENGLISH CANE TYPE
Francois Denjean, La Tour-du-Pin, France, assignor to FDI Francemedical, France
Filed Nov. 18, 1993, Ser. No. 154,293
Int. Cl.[5] A61H *3/02*
U.S. Cl. 135—71 **4 Claims**



1. A walking aid device of the crutch or English cane type, wherein the upper portion thereof comprises an angled metal tube assembled on a molded plastic piece comprising a handle and an arcuate end connected by an elongate body, said elongate body having an internal face wherein said internal face assuming the contour of the tube ove about a half-circumference, said elongate body having a hole disposed opposite two diametrically opposed holes made in the tube, a counter-part whereof one face partially assumes the contour of the tube, said counter-part including an aperture wherein said aperture being positioned opposite the holes in the tube, an assembly screw passing through the holes and aperture to enabling the tube to be solidly fixed to the piece and to the counte-part.

5,351,703
WALKING CANE/QUICK ATTACHMENT CUE STICK
Michael C. Moe, and Leo Rosenvold, both of R.R. 4, P.O. Box 2, Williston, N. Dak. 58801
Filed Nov. 27, 1992, Ser. No. 982,711
Int. Cl.[5] A45B *9/02*
U.S. Cl. 135—77 **4 Claims**



1. A combination walking cane and quick attachment cue stick comprising:
a hollow elongated forward shaft having a forward end and a rearward end;
an elongated plug member engagingly mounted in said for-

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ward end of said forward shaft and having a tip at a forward end of said forward shaft for impacting a cue ball;

a generally hollow elongated rearward shaft having a closed end and an open end and slidably engageable on said rear end of said forward shaft for assembling a cue stick and slidably engageable on said forward end of said forward shaft for assembling a walking cane;

a tubular cap member slidably engageable on said rear end of said forward shaft opposite of said rearward shaft for assembling a single walking cane;

an engageable fastener means fixedly mounted near said rearward end of said forward shaft, said fastener means having a fastener sleeve fixedly mounted about said rearward end of said forward shaft and having a plurality of circumferential grooves spaced thereabout, having a collar fixedly mounted about a portion of said fastener sleeve between said grooves to provide an abutment and a stop for either said cap member or said rearward shaft, and having a plurality of resilient rings in said grooves for compressibly engaging interior diameters of either said cap member or said rearward shaft for assembling said cue stick or said walking cane;

a pair of feet members, one fixedly attached to said closed end of said rearward shaft and the other fixedly attached to an end of said cap member; and

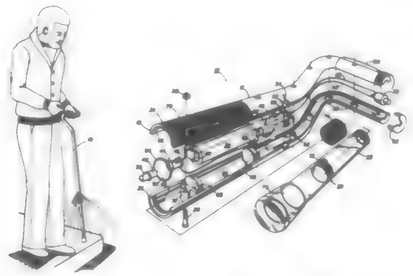
a slide member mounted on said forward shaft and slidably extendable forward said tip of said cue stick to guide said cue stick and assist the aim of a user.

5,351,704

WALKING CANE FOR ILLUMINATING THE FOOTPATH OF THE USER

Willard T. Hunnicutt, Jr., Atlanta, and Thomas F. Wyatt, III, Doraville, both of Ga., assignors to American Geriatric Products, Inc., Norcross, Ga.

Filed May 18, 1993, Ser. No. 63,510
Int. Cl.[5] A45B *3/04*
U.S. Cl. 135—66 **8 Claims**



1. A walking cane for illuminating the footpath of the user, comprising:

(a) an elongated body portion having an upper section having an upper end and an opposite lower end, the upper section containing fiber reinforced plastic and comprising two lengthwise halves which are aligned with each other and fastened to each other, a lower section and means for joining the sections together, the body portion having a translucent portion containing clear polycarbonate, wherein the translucent portion is in the lower section and wherein the translucent portion extends through the entire perimeter of the body portion;

(b) a handle on the upper end;

(c) an illuminating means in the body portion to supply light through the translucent portion, wherein the illuminating means is in the upper section;

(d) means on the cane for powering the illuminating means; and

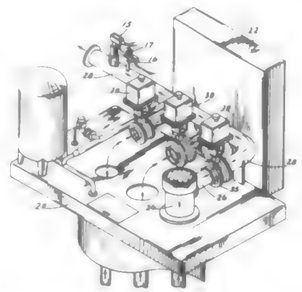
(e) reflecting means disposed opposite the illuminating means within the translucent portion so as to direct light onto the footpath of the user.

5,351,705

METHOD AND APPARATUS FOR CONTROLLING FLUID PUMPS AND VALVES TO REGULATE FLUID PRESSURE AND TO ELIMINATE FLUID FLOW SURGES

Richard G. Reinders, Sullivan; Anton L. Novak, New Berlin, and Frank R. Carlson, III, Hartland, all of Wis., assignors to Watertronics, Inc., Hartland, Wis.

Continuation of Ser. No. 935,289, Aug. 26, 1992, abandoned. This application Aug. 9, 1993, Ser. No. 104,396
Int. Cl.[5] G05D *7/00*
U.S. Cl. 137—12 **12 Claims**



1. A method for supplying and delivering fluids at a constant pressure and without fluid surges within a system which comprises the steps of

providing at least one fluid pump,

providing an actuable fluid valve downstream from each of said fluid pump or pumps, said valve or valves being actuable between a fully closed and a fully opened position to correspondingly prevent and allow fluid flow through such valve,

providing a fluid pressure measuring means downstream from said fluid valve or valves,

providing a fluid flow measuring means,

measuring fluid pressure within the system,

measuring the rate of change of fluid pressure within the system,

measuring fluid flow within the system, and

variably actuating said valve or valves to control fluid pressure and fluid flow through, and to prevent fluid surges within, the system, said valve actuating step including a pump switching step, said pump or pumps being switchable between "on" and "off" fluid pumping states to correspondingly pump and not pump fluid within the system.

5,351,706

VIBRATION RESPONSIVE GAS SHUT-OFF VALVE ASSEMBLY

James A. Banks, 1827 W. 74th St., Los Angeles, Calif. 90047

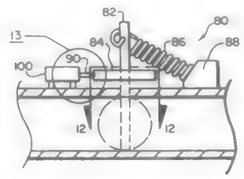
Continuation-in-part of Ser. No. 804,012, Dec. 6, 1991, abandoned. This application May 12, 1992, Ser. No. 882,444
Int. Cl.[5] F16K *17/36*
U.S. Cl. 137—38 **19 Claims**

1. A vibration responsive gas shut-off valve which is operable to shut off gas flow through a gas line in response to a vibration imposed on the line which exceeds a predetermined threshold line, said valve comprising:

a) a somewhat spherical gas flow control element located in a gas conduit and having a diameter approximately equal

to the inner diameter of the conduit and forming an upstream side of the conduit on the gas supply side of the element and a downstream side of the conduit on the opposite side of the element;

b) means forming a duct having a first leg and a second leg extending through said element providing gas communication from the upstream side of the element to the downstream side of the element with respect to the conduit, said duct having the first leg of said duct extending from a surface of the flow control element to a point at the approximate center thereof and communicating with said second leg at the approximate center, said second leg also extending outwardly to the surface of the flow control element at an obtuse angle from said first leg with respect to a diametral centerline passing through said flow control



element, said first and second legs being so arranged with an orientation and shape such that when the element is in a gas open flow position the gas from the upstream side will flow through the duct from the upstream side to the downstream side and provide a source of gas to a user thereof, said element being rotatable in said conduit to a gas closed flow position where the duct is arranged so there is no gas flow from the upstream side to the downstream side;

c) a vent in said conduit located to be in communication with a portion with said duct for venting the downstream side of the conduit through the duct when the element is in the gas closed flow position, and;

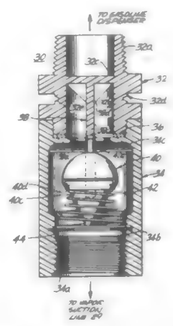
d) means responsive to a vibration exceeding a predetermined level to move the element from a gas open flow position to a gas closed flow position.

5,351,707

VIBRATION-RESISTANT IMPACT VALVE FOR VAPOR RECOVERY LINE

Sergio M. Bravo, 2872 Tigertail Dr., Los Alamitos, Calif. 90720

Continuation of Ser. No. 17,654, Feb. 12, 1993, Pat. No. 5,289,842. This application Aug. 4, 1993, Ser. No. 101,979
Int. Cl.[5] F16K *17/40*
U.S. Cl. 137—68.1 **16 Claims**



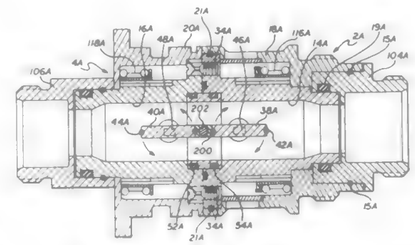
1. In an apparatus for recovering flammable vapors, the apparatus including a conduit having a vapor inlet and means for sucking the vapor through the conduit, the improvement comprising a valve disposed along the conduit, the valve comprising a valve body, a valve housing threaded to the valve body, a valve plug disposed in the housing, means for biasing the valve plug towards the valve body and a first position for closing the valve to vapors, and plunger means disposed in the valve body for normally holding the valve plug in a second position away from the valve body in which the valve is open to vapors, the valve body having means for defining a weakened portion for breaking in response to stress more readily than the valve housing and other portions of the valve body, wherein the plunger means and valve plug have mating surfaces which comprise means for securely seating the plunger means in the valve plug so that the plunger means will only be dislodged from the valve plug in response to breakage of the valve body, and further comprising means for integrally attaching the plunger means to the valve body, whereby a broken valve body may be unthreaded and a new valve body identical thereto may be re-attached so that its plunger means will press the valve plug away from the new valve body into the second position as the new valve body is threaded to the valve housing.

5,351,708

AUTOMATIC FLUID SEALING MECHANISM FOR A CONDUIT WITH A FRANGIBLE CONNECTOR

Joseph T. Donato; John H. Calvin, both of Newbury Park, Calif.

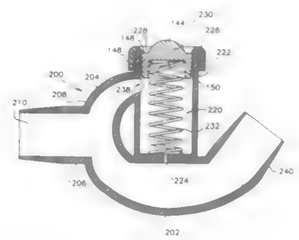
Filed Dec. 13, 1993, Ser. No. 165,956
Int. Cl.[5] F16K *17/40*
U.S. Cl. 137—68.1 **3 Claims**



1. A sealing mechanism for a pair of conduits held together in axially aligned coaxial relationship by frangible connecting means, said mechanism comprising: first and second disc-shaped butterfly valves pivotally mounted in respective ones of said conduits in the vicinity of said frangible connecting means; spring means coupled to each of said butterfly valves to bias each of the valves from an open position in which it extends parallel to the longitudinal axis of the corresponding conduit to a closed position in which it turns ninety degrees and extends across the corresponding conduit in sealing relationship therewith; said disc-shaped butterfly valves being axially spaced from another when in their open position, and a spacer member pivotally mounted in one of said conduits and interposed between said butterfly valves in position to engage the respective peripheral edges of said valves and hold the valves in an open position so long as the conduits are held together by said frangible connecting means, in which said spacer member has opposite arcuate edges configured to mate with the adjacent peripheral edges of the disc-shaped butterfly valves when the valves are in their open position, and in which said butterfly valves and said spacer member are flat and have a co-planar relationship when the valves are in their open position so as to reduce the pressure-drop/flow rate of fluid through the conduits and thereby minimize turbulence.

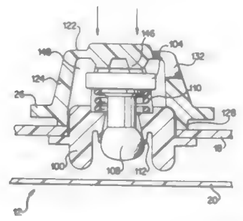
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5,351,709
CONTROL VALVES
Richard V. Vos, Randburg, South Africa, assignor to Prelude Pool Products C C, Randburg, South Africa
Filed Oct. 6, 1993, Ser. No. 131,687
Claims priority, application South Africa, Oct. 7, 1992, 92/7704; Apr. 13, 1993, 93/2558
Int. Cl.[5] F16K *17/00*
U.S. Cl. 137—114 **17 Claims**



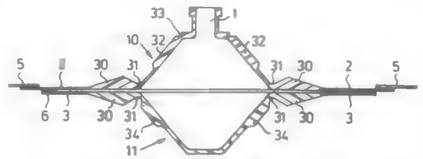
1. A control valve comprising:
a main water passage having an inlet port and an outlet port;
a valve chamber having a side wall and an outlet in the side wall and a pressure relief port remote from the outlet;
an apertured cap closing off the valve chamber, the underside of said cap constituting the valve seat;
a bypass passage connecting the outlet to the main water passage;
a valve member located within the chamber and being movable between an open position and a closed position to which it is biassed, the valve member when in said closed position seating on the valve seat and isolating the outlet from the relief valve; said valve member controlling the opening of the relief valve and the outlet in dependence upon its position; and
a pressure sensitive surface which is connected to the valve member and which is subject to the suction pressure in the by-pass passage so that when there is excessive suction in the main passage, the valve member is drawn against the bias away from the closed position on the valve seat into an open position.

5,351,710
INFLATION MECHANISM FOR INFLATABLE ARTICLE OF MANUFACTURE
Matthew L. Phillips, North Easton, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Continuation of Ser. No. 973,670, Nov. 9, 1992, abandoned. This application May 2, 1994, Ser. No. 236,163
Int. Cl.[5] F16K *15/20*
U.S. Cl. 137—223 **8 Claims**



1. An inflatable article of manufacture, comprising:
(1) a bladder,
(2) a valve, comprising
(a) a housing,
(b) means for controlling fluid entering and exiting said valve, said means being positioned within said housing, and
(c) a cover securingly received about said housing of said valve, said cover comprising
(i) a top portion having thickness,
(ii) at least one side wall, and
(iii) at least one fluid aperture extending through said thickness of said top portion of said cover to provide a fluid passageway between said valve and the atmosphere,
wherein said cover is configured to be removably coupled to an inflation mechanism to inflate said bladder.

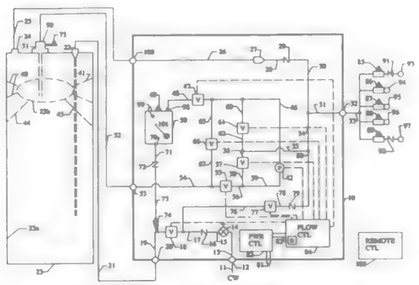
5,351,711
AUTOMATIC SEALING VALVE MOUNTED ON AN INFLATABLE BODY
Arthur M. Peter, Kronenstrasse 10, CH-8157 Dielsdorf, Switzerland
Filed Sep. 18, 1992, Ser. No. 947,107
Claims priority, application Switzerland, Sep. 19, 1991, 02 773/91-2
Int. Cl.[5] F16K *15/20*
U.S. Cl. 137—232 **18 Claims**



1. In an automatic sealing valve having a cylindrical inflation nozzle (1) with a peripherally extending welding rim (2) connected to a foil (5) of an inflatable body through which the inflation nozzle (1) extends, the improvement comprising: two membranes (3, 2, 20) sealably positioned on each other and positioned below the inflation nozzle (1), said membranes (3, 2, 20) being connected with a peripheral joint (6, 22) surrounding a lower edge of the inflation nozzle (1), the inflation nozzle (1, 21) extending through an upper membrane (2, 20) of said two membranes, said peripheral joint (6, 22) having at least one open air passage (7), said two membranes (3, 2, 20) forming an annular area (8) which completely encircles the inflation nozzle (1), said two membranes (3, 2, 20) positioned on top of each other when exposed to an internal pressure (P_I) within the inflatable body, and an area of said welding rim (2) being larger than an area of a lower membrane (3) of said two membranes (3, 2, 20) and said peripheral joint (6) positioned at least partially concentric within an outer peripheral joint (4) between the foil (5) of the inflatable body and the welding rim (2).

5,351,712
HOT WATER RECOVERY SYSTEM
John A. Houlihan, 1210-A E. Foster Rd., Santa Maria, Calif. 93454
Filed Nov. 23, 1993, Ser. No. 157,668
Int. Cl.[5] F16K *49/00*
U.S. Cl. 137—337 **10 Claims**

1. In a plumbing system which has a pressurized cold water supply, having a cold water supply conduit for the purpose of coupling the cold water supply to a cold water inlet of a water heating reservoir and having a hot water supply conduit for the purpose of coupling the hot water outlet of said water heating reservoir, to a plurality of hot water outlets, a hot water recovery system, remotely controlled, which installs in existing structures without requiring the installation of additional plumbing lines, and for supplying hot water on command and for, upon completion of use, automatically and rapidly returning unused hot water from the hot water outlets, to the water heating reservoir, comprising in combination:
(a) a flow control and recovery apparatus;
(b) a dual chamber, dual hot water outlet, water heating reservoir;
(c) said flow control and recovery apparatus and said dual chamber, dual hot water outlet water heating reservoir, in fluid communication and being interposed between said cold water supply conduit and said hot water supply conduit;
(d) a power source;
(e) a vent, relief nipple;
(f) a vent relief flow device;
(g) a pump means, for pumping water into and out of the recovery system and the plumbing system;
(h) a power control means, remotely actuated, for the purpose of supplying, on command, power to the hot water recovery system;
(i) a remote control means to transmit a command to said power control means;
(j) a flow control means for actuating and deactuating, at the proper times and in the proper sequences, remotely actuated valve means, which control flow, individually and in combinations, and for actuating and deactuating said pump means;
(k) a remotely actuated valve means and the conduit means for the purpose of permitting the interruption of the cold



water supply to the plumbing system, and the water heating reservoir;
(l) a cold water holding tank to capture cold water evacuated from said hot water outlets;
(m) a remotely actuated valve means and the conduit means to couple the hot water outlets to the inlet side of said pump means and a second remotely actuated valve means and the conduit means coupled between the outlet side of said pump means and said cold water holding tank, acting in combination with the actuated pump means to evacuate standing cold water from said hot water outlets, to said holding tank;
(n) a large chamber within said dual chamber, dual hot water outlet, water heating reservoir, having a cold water inlet in fluid communication with said flow control and recovery apparatus and the conduit means, which is coupled to said pressurized cold water supply, and with a hot water outlet which is in fluid communication with said flow control and recovery apparatus and the conduit means, in fluid communication with said hot water outlets;
(o) a small chamber, located within said large chamber of said dual chamber, dual hot water outlet, water heating reservoir, with a dual purpose fitting functioning as an inlet to and outlet from, said small chamber;
(p) said vent relief nipple coupled to said dual purpose, inlet outlet of said small chamber, in fluid communication with said flow control and recovery apparatus, which permits the bi-directional transfer of hot water between said hot water outlets, and said small chamber, said vent relief nipple being constructed with a fluid passage and a separate air passage;
(q) a vent relief means coupled to said vent relief nipple, to permit the ingress and egress of air in to and out of said small chamber of said water heating reservoir during the filling and draining sequences of said small chamber;
(r) a remotely actuated valve means and conduit means to connect the vent relief nipple coupled to said dual purpose, inlet outlet of said small chamber, to the inlet side of said pump means and a second remotely actuated valve means and the conduit means coupled between the outlet side of said pump means and the hot water outlets, acting in combination with the actuated said pump means, to fill evacuated hot water outlets with hot water from said small chamber;
(s) a remotely actuated valve means and conduit means to couple the hot, water outlets to the inlet side of said pump means and a remotely actuated valve means and the conduit means, coupled between the outlet side of said pump means and the vent relief nipple coupled to said small chamber acting in combination with the actuated pump means, to permit the return of hot water from said hot water outlets to said small chamber;
(t) a remotely actuated valve means and conduit means which couples the cold water supply, through the recovery apparatus, to the cold water inlet of said large chamber of said dual chamber, dual hot water outlet heating reservoir and the conduit means coupling the hot water outlet of said large chamber to the recovery apparatus, in fluid communication with said hot water outlets, to permit hot water to be directed to any of the hot water outlets which may be opened;
(u) a remotely actuated valve means and the conduit means to couple the cold water supply to the evacuated hot water outlets, for the purpose of refilling the outlets with fresh cold water;
(v) a check valve to prevent hot water from back flowing into said cold water supply;
(w) a flow switch means in fluid communication with the hot water outlet of the large chamber of the water heating reservoir and the hot water outlet conduit, to control power to the said flow control means, during the hot water use sequence;
(x) a venturi means coupled between said cold water holding tank and the cold water supply conduit of the large chamber to drain captured cold water, from said cold water holding tank, into the large chamber;
(y) a float switch means incorporated into said cold water holding tank which interrupts power, in the event of tank overfill;
(z) a vent-relief means incorporated in said cold water holding tank, which permits the ingress and egress of air to and from said cold water holding tank;
(aa) a vent-relief flow device coupled to the upstream side of each hot water outlet, which permits the ingress and egress of air, and permits water flow to the attached outlet.

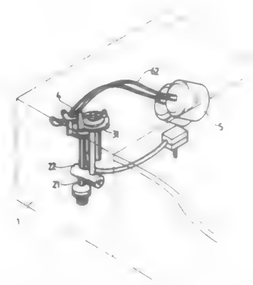
5,351,713
EFFECT-ENHANCING STRUCTURE FOR RINSING A FLUSH TOILET
Kuan-Yuh Lin, Miao Li Hsien, Taiwan, assignor to Chen Ying Ceramic Co., Ltd., Miao Li Hsien, Taiwan
Filed Apr. 13, 1993, Ser. No. 51,069
Int. Cl.[5] F16K *31/24, 33/00*
U.S. Cl. 137—410 **9 Claims**

1. An effect enhancing structure for rinsing a flush toilet comprising:
at least two water-supply devices, each including a floating ball;
a trunk duct through which water flows into a water case;
a distributing duct disposed and connected transversely

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between said trunk duct and said water supply devices to distribute inlet water to the water-supply devices;

said water supply devices including at least one stop valve connected to said distributing duct to control water supply to said water supply devices, said stop valves each being operatively connected to a first end of float actuating rods, a second end of the float actuating rods being attached to floating balls so that each water supply device operates independently of each other according to the



difference in the water level heights that affect each water;

wherein water pressure is restored much more quickly following a use, and the overall water pressure is increased to provide a more effective rinse to the flush toilet by the provision of an outlet duct associated with each water-supply device, thus enabling multiple outlet ducts to thereby permit a control increase in the amount of stored water supply over a shorter period of time to the flush toilet.

5,351,714

SAFETY VALVE FOR HIGH-PRESSURE PUMPS, HIGH-PRESSURE WATER-JET MACHINES AND THE LIKE

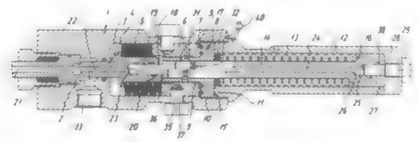
Ulrich Barnowski, Oelde, Fed. Rep. of Germany, assignor to Paul Hammelmann Maschinenfabrik, Oelde, Fed. Rep. of Germany

Filed Dec. 9, 1993, Ser. No. 165,006

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1992, 4241344

Int. Cl.[5] F16K *17/00*

U.S. Cl. 137—467 **10 Claims**



1. A safety valve comprising:

a valve seat and a spring-loaded first control piston being axially moveable with respect to the valve seat, the valve seat and the first control piston each having a central channel for a branched-off portion of a transported pressure medium, and the first control piston central channel has an annular surface that is in fluid communication with the pressure medium, a spring is supported at one axial end by a flange of the first control piston and at an opposite axial end by a switching element, when the pressure medium reaches a predetermined operating pressure, the switching element is axially moveable, through the release of an arresting mechanism, to that side which faces away from the valve seat to relieve the fluid pressure.

5,351,715

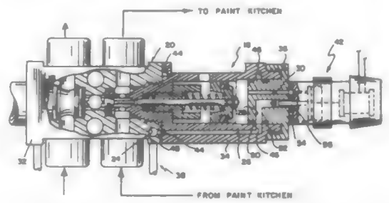
INTEGRALLY PILOTED, PNEUMATICALLY ACTUATED VALVES

Matthew D. Byam, Indianapolis, Ind., assignor to ABB Flakt, Inc., Auburn Hills, Mich.

Continuation-in-part of Ser. No. 840,879, Feb. 25, 1992, abandoned. This application Jan. 21, 1993, Ser. No. 6,799

Int. Cl.[5] F16K *11/22, 31/42*

U.S. Cl. 137—607 **7 Claims**



1. A coating material type change system for changing the type of coating material being supplied to a dispensing device from one type to another, the system including a manifold having a main coating material passageway through which a selected type of coating material flows during its selection as the type to be supplied to the dispensing device, a plurality of secondary coating material passageways intersecting the main passageway, an equal plurality of coating material supply valves mounted to the manifold, each coating material supply valve having a body and a member movable in an interior portion of the valve body for controlling the flow of the coating material to be supplied by that coating material supply valve through a respective secondary coating material passageway to the main coating material passageway and a mechanism for actuating the member, the mechanism being controllable by a control fluid selectively to control the position of the member and thus the supply of the coating material to the main coating material passageway, the manifold and valve bodies including control fluid passageways and means for coupling the control fluid passageways to a source of control fluid at superatmospheric pressure, a valve seat for coupling each control fluid passageway to the interior portion of a respective valve body, and an equal plurality of electrically operated valves for controlling the flow of control fluid through the respective control fluid passageways from the source of control fluid to the interior portions of respective valve bodies to minimize the distance the control fluid must travel from a respective electrically operated valve to the interior portion of a respective valve body.

5,351,716

CONCRETE DISTRIBUTOR SYSTEM

Ernst Korthaus, Gebringer Schlade 7, 5983 Balve, Fed. Rep. of Germany

Filed Jul. 22, 1993, Ser. No. 95,007

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1992, 4224162

Int. Cl.[5] E03B *5/00*

U.S. Cl. 137—615 **10 Claims**

1. A concrete distributor system comprising:

a concrete delivery pump for pumping the concrete so as to impart a pulse-like movement thereto;

a multi-part concrete distributor mast;

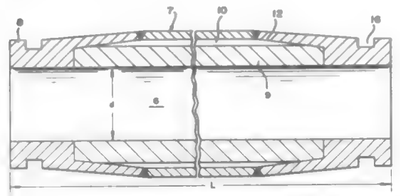
a concrete delivery conduit mounted on said mast;

a connecting delivery conduit connecting said pump to said concrete delivery conduit thereby subjecting said conduits to a shock action because of said pulse-like movement;

each of said conduits defining a longitudinal axis;

pipe damper means mounted in one of said conduits for attenuating the pulse-like movements of said concrete as the concrete flows through said conduits;

said pipe damper means including a hose section connected into one of said conduits along the longitudinal axis thereof;



said hose section being defined by an uninterrupted solid annular wall having an inner wall surface defining a clear uninterrupted interior space for conducting said concrete therethrough and for being in direct contact with said concrete as said concrete flows therethrough; and,

said annular wall being made of resilient material for expanding in response to the pulsating load of said concrete thereby attenuating said shock action on said conduits.

5,351,717

HIGH DIFFERENTIAL PRESSURE CONTROL VALVE

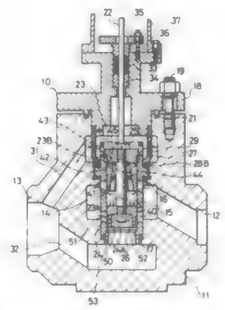
Takeshi Saito, Shizuoka, Japan, assignor to Bailey Japan Co., Ltd., Tagata, Japan

Filed Aug. 27, 1993, Ser. No. 113,281

Claims priority, application Japan, Oct. 9, 1992, 4-298111

Int. Cl.[5] F16K *47/04, 11/02*

U.S. Cl. 137—625.12 **3 Claims**



1. A high differential pressure control valve including a casing having an inlet passage and an outlet passage, a cage provided between the inlet passage and the outlet passage in the casing and having a plurality of stages of ports, a valve stem inserted into the cage and movable relative to the casing and the cage, the valve stem carrying a plurality of disc portions corresponding to respective ports in the cage for opening and closing the latter, wherein the fluid flow control areas of the respective ports are increased and decreased according to opening and closing of the disc portions relative to the respective ports to sequentially reduce fluid pressure at the inlet passage side to discharge, wherein the high differential pressure control valve comprises:

a plurality of stages of high resistance ports forming a high resistance passage and one or more low resistance ports forming a low resistance passage being provided in the cage;

a high resistance passage shut-off seat provided in the cage at a position downstream of an inlet side port of the high resistance passage being opened and closed by corresponding one of the disc portions;

a low resistance passage shut-off seat provided in the cage at a position downstream of an inlet side port of the low resistance passage being opened and closed by corresponding one of the disc portions;

respective of the disc portions movable in relation to the ports of the cage so that a fluid at the side of the inlet passage is introduced into the high resistance passage under a low open degree range and into the low resistance passage and the high resistance passage under a medium and a high open degree range; and

respective of the disc portions having an upper end face and a lower end face wherein pressure of the fluid introduced into the cage from the inlet passage acts on the upper end face of on disk portion and an opposing lower end face of another disc portion.

5,351,718

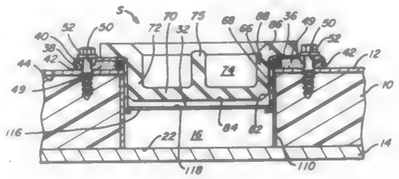
ACCESS PLUG FLANGE

David D. Barton, 5451 Maple, Houston, Tex. 77096

Filed Jun. 28, 1993, Ser. No. 82,998

Int. Cl.[5] F16L *55/10*

U.S. Cl. 138—92 **23 Claims**



1. An access plug flange assembly for sealing an inspection port in insulation covering for a chemical processing vessel, comprising:

a flange for fitting in the insulation covering to serve as a receiving member, comprising:

a sleeve member conforming to a side wall of the insulation covering for fitting into the insulation covering;

a collar member formed at an upper end of said sleeve member;

said collar member having an access passage formed therein;

said collar member having a downwardly extending outer closure lip for contacting the insulation covering;

a sealing plug insertable into said access passage in said collar member for sealing contact therein, comprising:

a side wall member conforming to said sleeve member for sealing against it;

a central barrier wall extending between and connecting said side wall member at a lower end thereof to seal said access passage in said collar member;

a central recess formed above said central barrier wall and within said side wall member; and

a raised gripping tab formed extending above from said central barrier wall in said central recess to be gripped and pulled to exert an outward pulling force on said central barrier wall, causing said side wall member to move inwardly break the seal and reduce adhesion between said sealing plug and said sleeve member for ease of removal from said flange.

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5,351,719

HEDDLE FRAME WITH DETACHABLE EDGE CONNECTIONS

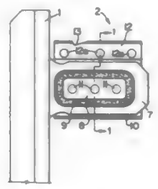
Martin Graf, Horgenberg, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Horgen, Switzerland

PCT No. PCT/CH90/00035, § 371 Date Mar. 29, 1993, § 102(e) Date Mar. 29, 1993, PCT Pub. No. WO91/12360, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 14, 1990, Ser. No. 768,306

Int. Cl.[5] D03C *9/06*

U.S. Cl. 139—91 **7 Claims**



1. A heddle frame comprising: spaced side supports, frame staves extending between the side supports, the frame staves including a hollow space at each end, the side supports each having a projection mounted thereto, which projections are received in respective hollow spaces of the frame staves to permit connections between the side supports and the frame staves, each projection including a first rigid body securely mounted to a respective side support and including an opening, a second rigid body having a first portion adapted to be loosely received within the opening in the first rigid body and a second portion overlying at least a portion of an outer surface of the first rigid body, an elastic vibration damping element positioned between the first portion of the second rigid body and the first rigid body, and a clamp engagable with the second portion of the second rigid body for clampingly holding the second rigid body within the hollow space of the frame stave.

5,351,720

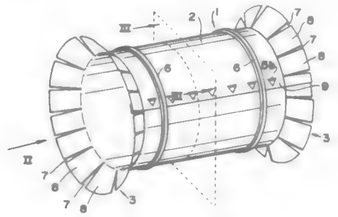
APPARATUS FOR REPAIRING CONDUITS

Lembit Maimets, Richmond Hill, Canada, assignor to Link-Pipe, Inc., Richmond Hill, Canada

Filed Mar. 10, 1992, Ser. No. 849,217

Int. Cl.[5] F16L *55/18*

U.S. Cl. 138—98 **27 Claims**



1. A conduit repair apparatus comprising:

a sleeve member comprising:

(i) a sheet of material having an outer surface and being movable from a coiled pre-installation position, in which said sheet of material generally surrounds a longitudinal axis, to an uncoiled installation position; and

(ii) a pair of longitudinally spaced-apart stop members affixed to the outer surface of said sheet of material, an annular area thereby being limited, in said uncoiled installation position, by (1) said outer surface of said sheet of material, (2) said pair of stop members, and (3) an inner surface of a conduit to be repaired, said pair of longitudinally spaced-apart stop members comprising opposite end regions of said sheet of material which are flared outwardly from said outer surface of said sheet of material for contacting the inner surface of the conduit to be repaired in the uncoiled installation position, said flared opposite end regions being radially flexible relative to the remainder of said sleeve member, wherein each of said flared opposite end regions comprises a plurality of distinct flare elements projecting outwardly and longitudinally away from said outer surface of said sheet of material.

5,351,721

MISPICKED WEFT REMOVING METHOD

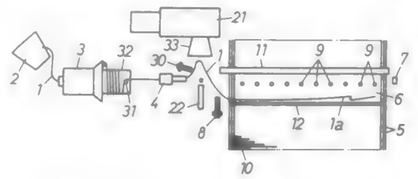
Shigeharu Sawada, Kanazawa; Satoshi Azuma, Matto, and Yoshinobu Tobe, Ishikawa, all of Japan, assignors to Tsudakoma Kogyo Kabushiki Kaisha, Ishikawa, Japan

Filed Jun. 22, 1993, Ser. No. 79,786

Claims priority, application Japan, Jun. 26, 1992, 4-191388; Jun. 26, 1992, 4-191389

Int. Cl.[5] D03D *47/30*

U.S. Cl. 139—116.2 **7 Claims**



1. A mispicked weft removing method comprising the steps of:

after mispicking of a weft yarn in a shed of warp yarns occurs, inserting a looped weft yarn, which is continuous with the mispicked weft yarn, from a main picking nozzle into the shed of warp yarns from a picking side toward an arriving side thereof by jetting of said main picking nozzle and auxiliary picking nozzles;

pulling the weft yarn from the picking side while locating a retaining member in a loop of the looped weft yarn in the shed of warp yarns; and

during picking of the looped weft yarn, stopping the jetting of given ones of said auxiliary picking nozzles adjacent said arriving side to limit an extent to which the weft yarn is transferred in a picking direction from said picking side to said arriving side.

5,351,722

TETRAXIAL FABRIC AND WEAVING MACHINE FOR ITS MANUFACTURE

Dini Mamiliano, Milan, Italy, assignor to D.I.M.A. Ricerche Technologiche S.R.L., Drezzo, Italy

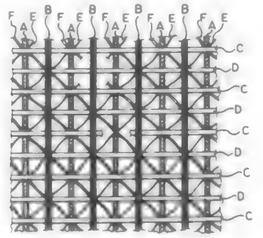
Continuation of Ser. No. 958,959, Oct. 9, 1992, abandoned. This application Dec. 16, 1993, Ser. No. 168,582

Claims priority, application Italy, Oct. 11, 1991, MI91 A 002697

Int. Cl.[5] D03D *13/00, 41/00*

U.S. Cl. 139—180 **22 Claims**

1. A tetraxial fabric, comprising: warp yarns, weft yarns, and first bias yarns and second bias yarns, the first and second bias yarns crisscrossing each other, and the warp and weft yarns, along two opposite diagonal directions, wherein a first set of the warp yarns is overlaid by the weft yarns and, in turn, overlies the first and the second bias yarns, and that a second set of the warp yarns, which alternate with and lie parallel to the warp yarns in the first set, overlies the weft yarns and is, in turn, overlaid by the first and the second bias yarns.



5,351,723

THREE DIMENSIONAL CAM DRIVE FOR GRIPPER LOOM BELT WHEEL

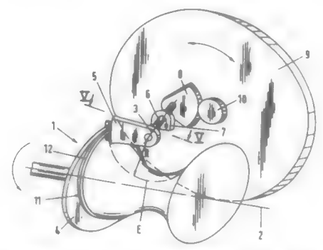
Maurer Reudi, Bubikon, Switzerland, assignor to Sulzer Rueti AG, Rueti, Switzerland

Filed Oct. 4, 1993, Ser. No. 131,063

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1992, 4233636

Int. Cl.[5] D03D *47/12*

U.S. Cl. 139—449 **11 Claims**



1. An apparatus for driving a gripper belt, the apparatus including a three-dimensional cam drive for converting a rotational movement into a pivotal movement, the drive comprising:

a rotatable cam carrier having at least one surface section forming a guide surface, the guide surface being a closed curve and having a generatrix defining a circular arc with a center point; and

a pivot arm engaging the guide surface of the cam carrier and non-rotatably connected to a shaft, the shaft having an axis of rotation that is concentric with the center point of the generatrix, rotation of the cam carrier causing the pivot arm to pivot about the axis of rotation of the shaft.

5,351,724

ELECTROPNEUMATIC DEVICE FOR THE AUTOMATIC THREADING OF A WEFT FEEDING APPARATUS

Pietro Zenoni; Giovanni Pedrini, both of Leffe, and Rosario Castelli, Gandino, all of Italy, assignors to L.G.L. Elettronica S.p.A., Bergamo, Italy

Filed Apr. 9, 1993, Ser. No. 45,574

Claims priority, application Italy, Apr. 22, 1992, TO92A000353

Int. Cl.[5] D03D *47/34*

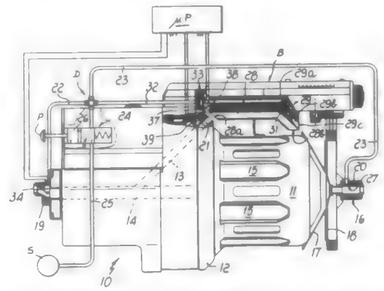
U.S. Cl. 139—452 **19 Claims**

1. Electropneumatic device for automatically threading weft feeder apparatuses of the type comprising a fixed drum, a hollow rotating radial arm, braking means elastically engaging the drum, and thread inlet and outlet bushes, said device comprising;

first and second ducts for feeding pressurized pneumatic fluid and adapted to end respectively in a rear thread inlet bush and in a front thread outlet bush of a weft feeder apparatus to create a pneumatic flow and a consequent suction current for entraining said thread from one end of the weft feeder apparatus to the other;

manually actuated valve means acting on said first and second ducts;

an intermediate open channel having an outlet, said intermediate channel being arrangeable adjacent and parallel to a drum of a weft feeder apparatus for conveying a pneumatic flow, and a thread entrained thereby, in a free portion comprised between a radial arm outlet and a braking means of a weft feeder apparatus;



a pneumatic pusher fed by a third pneumatic duct, said pusher being arranged at said outlet of said intermediate channel for deforming a braking means and hindering elastic action applied by said braking means to a drum of a weft feeder apparatus, and for guiding thread entrained by a pneumatic flow through such braking means, and;

position-marking means for aligning a radial arm outlet of a weft feeder apparatus with said intermediate channel, whereby to convey pneumatic flow and guide thread entrained thereby upon activating said device for automatically threading weft feeder apparatuses,

wherein said intermediate channel has a U-shaped profile having an opening, said intermediate channel being arrangeable with said opening directed toward and adjacent to a drum of a weft feeder apparatus.

5,351,725

SYSTEM FOR MONITORING FILLS OF LIQUID IN A TANK CONTAINER AND ONGOING LIQUID CONDITION

David B. Suthergreen, Stamford, Conn.; Fredrick W. Cotton, Irvington, and Richard M. Zingel, Mahopac, both of N.Y., assignors to Optimum Applied Systems, Inc., Dobbs Ferry, N.Y.

Filed Apr. 1, 1993, Ser. No. 41,485

Int. Cl.[5] B65B *1/30, 3/26*

U.S. Cl. 141—1 **30 Claims**

18. A method of monitoring quantities of liquid delivered to a tank, comprising:

locating air bell means inside a tank, whereby the air bell means produces an output signal corresponding to a liquid pressure at a certain location in the tank;

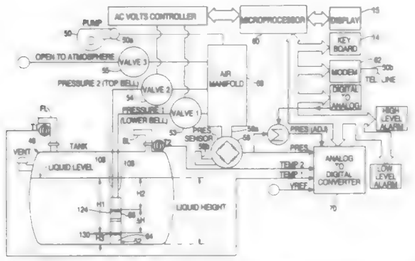
sensing the output signal for an initial increase in the liquid pressure greater than a preset pressure difference, thereby providing a corresponding delivery indication,

determining an initial volumetric measure of liquid in said tank at about a time when said delivery indication is provided,

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providing a delivery complete indication in the absence of further increases in said liquid pressure following said initial increase,

determining a final volumetric measure of liquid in said tank at about a time when said delivery complete indication is provided; and



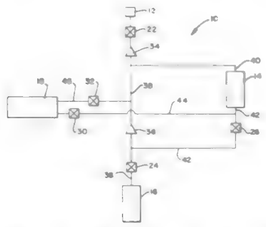
determining a volumetric measure of liquid delivered to said tank, by calculating a difference between said final and said initial volumetric measures of liquid in said tank, and producing a signal indicative of a measure of liquid delivered to said tank in accordance with the calculated difference.

5,351,726

SYSTEM AND METHOD FOR COMPRESSING NATURAL GAS AND FOR REFUELING MOTOR VEHICLES

David A. Diggins, Midland, Tex., assignor to Wagner & Brown, Ltd., Midland, Tex.

Filed Sep. 27, 1993, Ser. No. 127,426
Int. Cl.[5] B65B *31/00;* **B67C** *3/00*
U.S. Cl. 141—4 **14 Claims**



7. A method for refilling a vehicle storage tank from an initial pressure to an intended fill pressure with compressed natural gas, said method comprising the steps of:

providing a source of natural gas at a supply pressure ranging from about 350 to about 1000 psig;

providing an intermediate storage tank;

selectively delivering natural gas from the source to the vehicle storage tank until the vehicle storage tank pressure equalizes with the supply pressure;

selectively delivering natural gas from the source to a single stage compressor that is operable at suction pressures ranging from about 330 to about 3600 psig with attendant discharge pressures ranging up to about 4500 psig;

compressing the natural gas and selectively storing the compressed natural gas discharged from the compressor in the intermediate storage tank until an intermediate storage pressure ranging up to about 3600 psig is reached;

simultaneously delivering compressed natural gas to the vehicle storage tank from the compressor and from the intermediate storage tank until the vehicle storage tank pressure equalizes with the intermediate storage tank pressure;

selectively delivering compressed natural gas to the compressor from the intermediate storage tank and further compressing the natural gas;

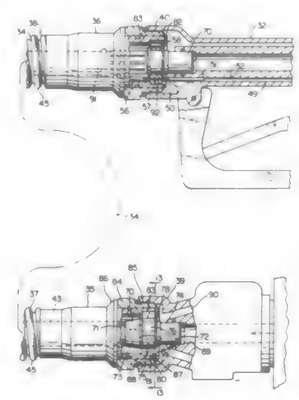
selectively delivering the further compressed natural gas from the compressor to the vehicle storage tank until the vehicle storage tank pressure reaches the intended fill pressure.

5,351,727

FUEL DISPENSING SYSTEM, HOSE ASSEMBLY THEREFOR AND METHODS OF MAKING THE SAME

John D. Sanders, Springfield, and Randy C. Foster, Strafford, both of Mo., assignors to Dayco Products Inc., Dayton, Ohio

Filed Jan. 18, 1994, Ser. No. 182,924
Int. Cl.[5] B65B *3/18;* **F16L** *47/00, 9/18*
U.S. Cl. 141—59 **20 Claims**



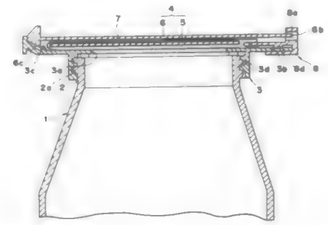
1. In a system comprising a liquid fuel source unit, a dispensing nozzle, and a hose assembly having a first fluid passage therein for conveying said liquid fuel in one direction from said liquid fuel source unit to said nozzle that is adapted to dispense said liquid fuel into a container and a second fluid passage therein for returning the vapors of said liquid fuel from said container to said liquid fuel source unit, said hose assembly comprising a flexible inner hose having an outer peripheral surface and defining said first fluid passage therein, and a flexible outer hose having an inner peripheral surface and being disposed around said inner hose, said inner peripheral surface of said outer hose and said outer peripheral surface of said inner hose defining said second fluid passage therebetween, said nozzle having a venturi section therein that tends to remove liquid from a drape area of said hose assembly when said nozzle is being utilized to dispense said liquid fuel into said container, said hose assembly having opposite ends one of which is interconnected to said nozzle and the other of which is interconnected to said liquid fuel source unit, said one end of said hose assembly having a spider means therein that tends to maintain said inner hose concentric within said outer hose, said spider means having a passage means therethrough, said system comprising a first tube section connecting said passage means to said venturi section and a second tube section connected to said passage means and having inlet means located in said drape area, the improvement wherein said spider means is secured to said inner hose and to said nozzle so that said nozzle, said spider means and said inner hose are adapted to rotate in unison relative to said liquid fuel source unit.

5,351,728

DEVELOPER CARTRIDGE

Yutaka Ban, Tokyo; Mitsuru Honda, Kamagaya, and Takuya Hatakeyama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 11,204, Jan. 29, 1993, abandoned. This application Dec. 1, 1993, Ser. No. 159,935
Claims priority, application Japan, Feb. 3, 1992, 4-046354
Int. Cl.[5] G03G *15/06*
U.S. Cl. 141—364 **6 Claims**



1. A developer cartridge removably mountable on a developer receiving device, comprising:

a container for containing developer to be replenished to said developer receiving device, said container having a circumferential portion forming a developer discharge opening in said container;

a film member peelably adhered to said circumferential portion around said discharge opening of said container and having a first portion for sealingly closing said discharge opening, and a second portion continuous with said first portion and folded back over said first portion;

a plate-shaped lid member slidably supported by said container to open and close said discharge opening, said lid member comprising first and second lid portions opposed to each other with a gap therebetween, said first lid portion having a first engagement portion and said second lid portion having a second engagement portion so that said first and second lid portions are interconnected by engaging said first engagement portion with said second engagement portion, said second portion of said film member extending through said gap between said first and second lid portions; and

a grip, fixed to a free end of said second portion of said film member, for pulling said film member through said gap, said grip being releasably supported by said container and having a hold-down portion for holding down said lid member relative to said container.

5,351,729

APPARATUS FOR LOG UNSCRAMBLING AND FOR FEEDING INDIVIDUAL LOGS TO PROCESSING SYSTEMS

Maurice Brisson, Laval, Canada, assignor to Les Ateliers Benoit Allard, Inc., Quebec, Canada

Filed Jul. 14, 1993, Ser. No. 92,383
Claims priority, application Canada, Jul. 24, 1992, 2074645
Int. Cl.[5] B27B *31/00;* **B65G** *25/00*
U.S. Cl. 144—242 R **5 Claims**

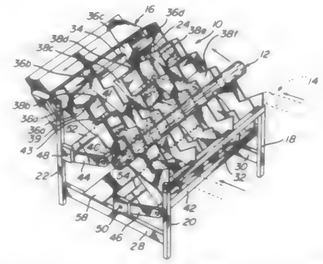
1. An apparatus for moving sawlogs or tree stems from a first multiple feeding station to a second receiving station which is elevated with respect to a second receiving station which is elevated with respect to the first station, comprising:

a frame;

a set of fixed plates mounted on said frame, said plates being parallel to one another and inclined upwards from said first station to said second station; each of said plates having along its upper edge, a shape adapted to receive logs or stems;

a set of movable plates spaced parallel to said first set of fixed plates, each of said movable plates having, along its upper edge, a shape adapted for the displacement of logs and stems each of said movable plates movable along its longitudinal plane;

movable support means connecting the set of movable plates to said frame and providing the set of movable plates with a reciprocating trajectory corresponding to an arc of circle, and



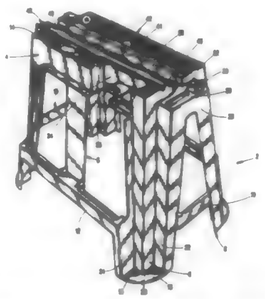
driving means, mounted on said frame and associated with said support means, imparting a sinusoidal acceleration to said movable plates along said trajectory for moving saw logs or three stems upwardly from the first multiple feeding station to the second receiving station.

5,351,730

MULTIPURPOSE PORTABLE WORKBENCH

Richard R. Lewellen; John A. Vura, both of Wooster, and Stacy L. Wolff, Akron, all of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio

Filed Jul. 23, 1993, Ser. No. 95,406
Int. Cl.[5] B25H *1/00*
U.S. Cl. 144—286 R **17 Claims**



1. A carpenter's workbench comprising a freestanding frame supported by four legs, the frame comprising:

an elongate body having a planar longitudinal top surface;

a longitudinal profiled channel extending downward into the top body surface, the channel having an T-shape cross-sectional provide dimensioned to alternatively receive a wood stud in a flat or on-edge condition, whereby enabling ends of the stud to be cut, the channel having a relatively wide upper portion dimensioned in width and depth to receive the wood stud in said flat condition.

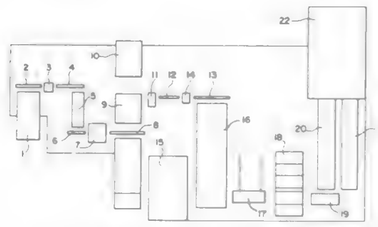
VOL 1167 ISS 1 OC 4 1994 UMI

5,351,731

MEANS FOR SAWING ELONGATE UNITS FROM A TREE TRUNK

Jerker Brandt, and Leonart Hellberg, both of Karlstad, Sweden, assignors to Traform AB, Karlstad, Sweden

Filed May 10, 1993, Ser. No. 50,062
Claims priority, application Sweden, Nov. 8, 1990, 9003554-4
Int. Cl.[5] B27D *1/00*; B32B *31/00*
U.S. Cl. 144—352 16 Claims



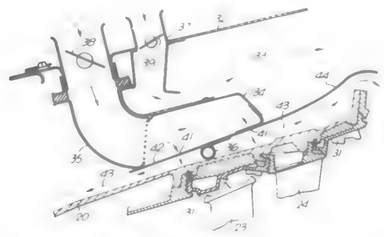
1. A method of forming a wood product comprising the steps of:
providing an elongate piece of lumber having a substantial moisture content;
sawing said piece into lengths;
sawing said lengths into elongate units;
applying adhesive to said units;
overlying said units in at least one group of at least two units with said adhesive therebetween;
banding said at least one group to preclude movement between said units thereof; and
drying said at least one banded group of units to substantially reduce the moisture contents,
wherein curing of said adhesive does not terminate until after said drying has begun.

5,351,732

GAS TURBINE ENGINE CLEARANCE CONTROL

Stephen J. Mills, Derbyshire; Robin D. Monico, Derby, and Andrew J. Bradley, Derbyshire, all of England, assignors to Rolls-Royce plc, London, England

PCT No. PCT/GB91/01964, § 371 Date Jun. 22, 1993, § 102(e) Date Jun. 22, 1993, PCT Pub. No. WO92/11444, PCT Pub. Date Jul. 9, 1992
PCT Filed Nov. 8, 1991, Ser. No. 78,218
Int. Cl.[5] F01D *5/08*
U.S. Cl. 415—175 8 Claims



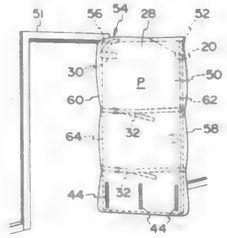
1. A gas turbine engine turbine comprising a casing enclosing a plurality of annular arrays of rotor aerofoil blades, said blades being arranged in radially spaced apart relationship with said casing, means being provided to direct cooling air onto the outer surface of said casing to provide cooling thereof, control means being provided to control the distribution of cooling air so directed onto said casing between two circumferential axially adjacent regions of said casing, one of said region being axially forward and the other rearward of said forward region, means being provided to facilitate a flow of cooling air from the forward of said regions to the rearward of said regions, said control means being adapted to vary the distribution of said cooling air between a first condition in which all of said cooling air is initially directed onto the forward region of said casing and a second condition in which some of said cooling air is initially directed onto the forward regions of said casing and the remainder is directed only onto the rearward region of said casing, a manifold being located externally of the forward region of said casing, said manifold being adapted to be supplied with cooling air and to direct that cooling air onto said forward region of said casing to provide at least impingement cooling thereof, said casing having walls positioned so that at least some of the cooling air directed onto said forward region of said casing to cause impingement cooling thereof is subsequently caused to flow over the rearward region of said casing to provide convection cooling thereof, pipe members being provided to divide the cooling air directed onto said forward region of said casing into two portions with one portion subsequently caused to flow over said forward region in a generally upstream direction and the other portion in a generally downstream direction to provide convection cooling thereof.

5,351,733

REVERSIBLE DOOR PROTECTIVE DEVICE

Donald L. Ullman, 10825 Havenhurst, Peoria, Ill. 61615

Filed Apr. 9, 1993, Ser. No. 44,675
Int. Cl.[5] B65D *75/28*
U.S. Cl. 150—154 20 Claims



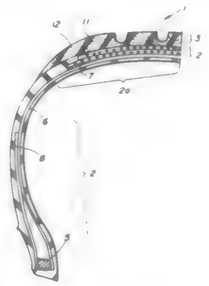
8. A reversible door protective device for use on a left or a right side door hung in a frame by hinge means, the door including a left edge portion hinged to a first side portion of the frame and a free right edge portion lying adjacent a second side portion of the frame, the device comprising:
a) a generally planar flexible panel member having a length substantially corresponding to the length of a door and a width slightly larger than the width thereof;
b) said panel member including top, bottom, left and right sides;
c) said panel member including reversible pocket means adjacent the top thereof for engaging a first top corner portion of the door lying away from the first side portion of the door frame;
d) flexible loop means disposed adjacent the top of said panel member and generally opposite to said pocket means for engaging a second top corner portion of the door lying adjacent the first side portion of the door frame;
e) fastener means attached to said panel member for removably securing the protective device to the door;
f) said panel member including first and second opposed surfaces;
g) said pocket means including an opening extending along one of said first and second surfaces of said panel member;
h) said panel member being reversible between first and second positions for use on left and side doors, respectively;
i) said panel member including left and right side flaps each extending along the length thereof for protecting the corresponding left and right edge portions of the door; and
j) said fastener means comprising at least one strap-fastener including first and second sections respectively mounted to left and right sides of said panel;
k) wherein when said pocket means is reversed said opening thereof extends along the other of said first and second surfaces of said panel member;
l) wherein regardless of said first and second positions of said panel member, said pocket means engages the top corner portion of the door lying away from the first side portion of the frame and said loop means engages the top corner portion of the door lying adjacent the first side portion of the frame.

5,351,734

PNEUMATIC TIRE WITH FOAM RUBBER IN THE TREAD

Hiroshi Mouri; Yasuyoshi Kawaguchi; Michio Ishii; Seiichiro Iwafune, and Toshiro Iwata, all of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Division of Ser. No. 527,706, May 24, 1990, Pat. No. 5,147,477, which is a continuation of Ser. No. 307,219, Feb. 6, 1989, abandoned, which is a continuation of Ser. No. 9,367, Jan. 30, 1987, abandoned. This application Sep. 14, 1992, Ser. No. 944,426
Claims priority, application Japan, Feb. 5, 1986, 61-24634; Apr. 2, 1986, 61-77081; Oct. 2, 1986, 61-235921; Oct. 2, 1986, 61-235923
The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.
Int. Cl.[5] B60C *11/00*
U.S. Cl. 152—209 R 25 Claims



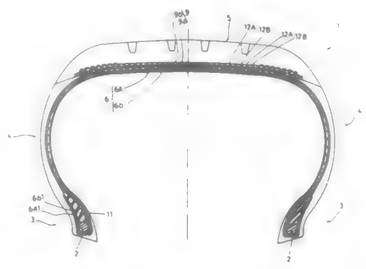
1. A pneumatic tire comprising:
a case having a crown portion; and
a tread covering said crown portion of the case, said tread including as at least a portion of its outer surface a foamed rubber which has a volume of at least about 10% of the entire volume of said tread, said foamed rubber being formed of a rubber composition which consists essentially of at least one rubber component having a glass transition point not higher than about −60° C.,
wherein said foamed rubber has an expansion ratio ranging from about 5% to about 50%, has closed cells the mean diameter of which ranges from about 5 μm to about 150 μm, and has at least about 20 closed cells of diameters from about 30 μm to about 200 μm per 1 mm^2.

5,351,735

PNEUMATIC TIRE WITH BELT PLY INCLUDING BOTH STEEL CORDS AND AROMATIC POLYAMIDE CORDS

Takaaki Okuda, Shirakawa, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Division of Ser. No. 829,275, Feb. 3, 1992, abandoned. This application Apr. 16, 1993, Ser. No. 47,062
Claims priority, application Japan, Feb. 5, 1991, 3-036792
Int. Cl.[5] B60C *9/18*, *9/20*, *9/22*
U.S. Cl. 152—536 6 Claims



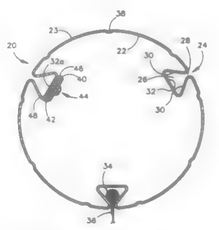
1. A pneumatic tire comprising
a carcass extending between the bead portion and turned up around bead cores, and
a belt disposed radially outside the carcass and inside a tread, said belt comprising at least one ply of parallel cords including steel cords and aromatic polyamide cords arranged in a plurality of sequences in the widthwise direction of said belt and the ratio of the steel cord count to the aromatic polyamide cord count in each of said sequences in each said ply being varied in the widthwise direction of said belt.

5,351,736

ROLLER TUBE FOR AWNING AND METHOD OF FORMING

Ronald A. Laffler, Sturgis, and Thomas DeVoursney, Muskegon, both of Mich., assignors to The Dometic Corporation, LaGrange, Ind.

Filed Oct. 4, 1993, Ser. No. 131,305
Int. Cl.[5] E04F *10/06*
U.S. Cl. 160—66 10 Claims



1. An awning assembly, comprising:
a roller tube of rigid sheet material having two longitudinal edges and formed in an elongated, hollow, and generally cylindrical shape having an inner surface defining a circumference;
a seam comprising the edges being joined in an interlocking arrangement, and disposed radially inwardly from the inner circumference;
a longitudinal channel formed in the sheet material of the roller tube, said channel comprising a base wall and two

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side walls, the seam being disposed along the base wall, said side walls being of single sheet thickness; and

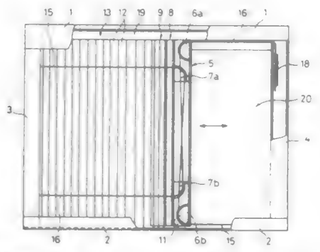
an awning having first and second ends, the first end being attachable to a wall or support and the second end being attached to the roller tube, the awning being rollable around the roller tube.

5,351,737

PLEATED SCREEN DEVICE BASED ON WIRE TENSION SYSTEM

Yasuo Hoshiyama, Tokyo, Japan, assignor to Metaco Inc., Tokyo, Japan

Filed Dec. 9, 1992, Ser. No. 987,595
Claims priority, application Japan, Dec. 26, 1991, 3-345386
Int. Cl.[5] E06B *3/94*
U.S. Cl. 160—84.1 B **21 Claims**



1. A pleated screen device comprising: a frame; at least one sliding bar mounted to said frame so as to be slidable in opening/closing directions; at least one foldable and spreadable pleated screen, one end of each said screen being secured to a respective said sliding bar; a wire tension system including wire extending through said sliding bar and across the device in said opening/closing directions, at least one of the ends of the wire being fixed in the device, said wire supporting said pleated screen at sides of the pleated screen opposite one another in said opening/closing directions; and direction changing members disposed in said sliding bar, said direction changing members each having an arcuate guide surface over which said wire extends and is guided to smoothly change the direction in which the wire is extending when it meets the guide surface, said direction changing members guiding portions of said wire to cross over one another within said sliding bar.

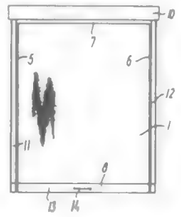
5,351,738

ROLLER SCREEN FOR SHIELDING AN OPENING IN A WALL OR IN AN INCLINED ROOF SURFACE

Stefan D. Petersen, Skjern; Ove Kold, Borris, and Niels K. Jensen, Skjern, all of Denmark, assignors to V. Kann Rasmussen Industri A/S, Soborg, Denmark

Filed Feb. 2, 1993, Ser. No. 12,385
Claims priority, application Denmark, Feb. 17, 1992, 198/92
Int. Cl.[5] A47H *1/00*
U.S. Cl. 160—120 **12 Claims**

1. A roller screen for shielding an opening in a wall or an inclined roof surface (3; 30) comprising a spring-biassed roller bar (9) for mounting at an upper edge of the opening (2; 28), a flexible screen web connected at a top edge with said roller bar for permitting rolling-up and unrolling of the web from the roller bar (9), and a bottom bar (13; 36) connected with a bottom edge of the flexible screen web (1; 32, 33) guide members (17) provided at the ends of said bottom bar (13; 36, 37), in guide rails (11, 12) arranged along lateral edges of the opening (2) and including channels (15) accommodating said guide members for slidable movement, a retainer device arranged on each of said lateral walls at the bottom of each guide rail (11, 12), an arrestable locking device provided at either end of the bottom bar and including a roll (18) positioned beneath the guide member (17) and engaging the channel (15) in the guide rail (11, 12), said roll being pivotally journalled in the bottom bar (13) so that from a first position in which it is aligned with the guide member (17) while accommodated in said channel, said roll may be pivoted to a second, locking position and located outside the path of movement of the guide member (17), the rolls (18) at either end of the bottom bar (13) being



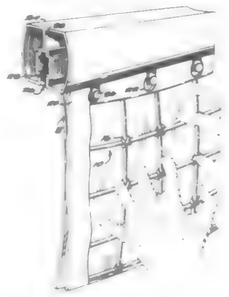
connected together and biassed to cause said first and second positions to be stable switch-over positions, said retainer device being formed as a stop member (23) including a track (24) extending in axial alignment with the channel (15) of the guide rail (11, 12) and a lateral recess (25) formed at a bottom of said track for receiving and retaining said roll (18) in its second position.

5,351,739

SHOWER ROD AND SAFETY NET

James F. Levy, 434 Barnwell St., Columbia, S.C. 29202

Filed Apr. 21, 1993, Ser. No. 50,710
Int. Cl.[5] A47H *1/00*
U.S. Cl. 160—124 **20 Claims**



1. An article for use with a shower rod having a plurality of carriers for hanging a shower curtain across a shower stall having an open side, said article comprising a shower curtain;

a foldable lattice defining a plurality of closely spaced holes, said lattice and said showers curtain being dimensioned to each cover said open side of said shower stall; and

means for handing said shower curtain and said foldable lattice from said shower rod so that said shower curtain and said lattice can each cover said open side of said shower stall.

5,351,740

LOCKING MEANS AND PANEL ASSEMBLY INCORPORATING SUCH LOCK MEANS

Ronald D. Hanna, Ajax, Canada, assignor to G. D. Hanna Incorporated, Don Mills, Canada

Filed Jul. 10, 1992, Ser. No. 911,844
Claims priority, application Canada, Jul. 12, 1991, 2046976
Int. Cl.[5] A47G *5/00*
U.S. Cl. 160—135 **9 Claims**



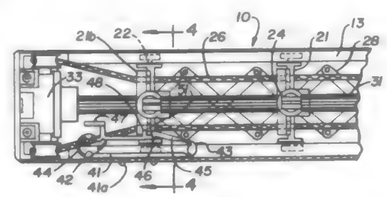
1. An attachment system having a slotted support post; at least one slot of predetermined length and width penetrating a wall portion of the post and extending parallel with the main axis of the post; a support plate for attachment of an upright panel to the post, said plate having a hook portion for insertion within the post, through the slot, to engage an interior surface of the post adjacent the slot; and at least one flexible restraint means secured to the support plate, to engage the post in restraining relation thereagainst each said restraint means including two contact pads extending laterally, on opposite sides of said support plate, in resilient, attached relation thereto, in use to form with said hook a triangulated, lateral away restraint relative to said post and said panel, to reduce lateral swaying of said panel relative to the post.

5,351,741

VERTICAL BLIND WITH RELEASABLE CARRIAGE LATCH

Cletis F. Swopes, Madison, Wis., assignor to Springs Window Fashions Division, Inc., Middleton, Wis.

Filed Jun. 25, 1993, Ser. No. 83,310
Int. Cl.[5] E06B *9.30*
U.S. Cl. 160—168.1 **8 Claims**



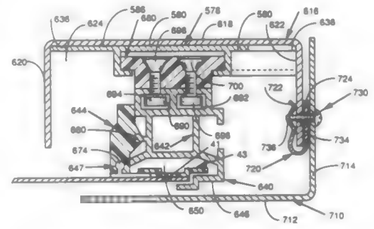
1. A vertical blind apparatus including an elongated head-rail channel having a top wall and depending side walls and inwardly extending carriage support flanges on the side walls, a plurality of panel support carriages mounted on the carriage support flanges for movement in a path lengthwise of the channel and including a lead carriage and a trail carriage, means connecting the carriages to control relative movement therebetween, means for selectively advancing and retracting the lead carriage, and means for retaining the trail carriage at a selected location along the head-rail, the improvement wherein said carriage retaining means includes an elongated base mounted on one side wall of the channel to extend lengthwise of the channel adjacent said selected location and an elongated latch member having forward and rear resilient end portions formed integrally with said base, the latch member having a forward ramp portion diverging rearwardly from the forward end portion relative to said one side wall of the channel; a rearwardly facing stop shoulder intermediate the ends of the latch member; and a finger pad rearwardly of said stop shoulder, the ramp portion being disposed in the path of movement of a portion of the trail carriage to be deflected laterally thereby when the trail carriage is moved in a rearward direction along said path and said rearwardly facing stop shoulder being engageable with the trail carriage to inhibit forward movement of the trail carriage, said finger pad, when pressed in a direction toward said one side wall, being arranged to shift the latch member toward the one side wall and disengage the stop shoulder from the trail carriage.

5,351,742

CLOSURE ASSEMBLY FOR STRUCTURAL MEMBERS

Dale Lichy, 4651 Sylvan Dr., Allison Park, Pa. 15101

Continuation-in-part of Ser. No. 729,696, Jul. 15, 1991, Pat. No. 5,163,495, which is a division of Ser. No. 535,101, Jun. 8, 1990, Pat. No. 5,131,450. This application Jul. 24, 1992, Ser. No. 919,035
The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.
Int. Cl.[5] E06B *9/56*
U.S. Cl. 160—273.1 **20 Claims**



1. A closure assembly for covering an opening comprising

a generally rectangular closure member of a size which at least substantially covers said opening,

said closure member having affixed thereto a pair of tracking means disposed generally adjacent opposite edges of said closure member and along substantially the full length of each said edge,

a pair of spaced elongated guide means disposed generally adjacent opposite sides of said opening,

said guide means each having a pair of generally re-entrant flanges defining a tracking means receiving recess, whereby one of said tracking means of said closure member is received within said tracking means receiving recess and secured to each said guide means while permitting relative sliding movement therebetween for moving said closure member between an open position and a closed position along said guide means, and

said guide means having a removable portion thereof at least partially providing one of said re-entrant flanges being removably secured at a first connection to a second portion of said guide means.

5,351,743

IMPROVED ROLLER SHUTTER ASSEMBLY

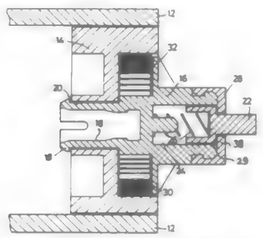
John Jackson, St. Helens, Great Britain, assignor to Rotalac Plastics Limited, Altrincham, England

Filed Sep. 11, 1992, Ser. No. 943,572
Int. Cl.[5] E06B *9/56*
U.S. Cl. 160—310 **8 Claims**

1. An improved roller shutter assembly comprising an elongate core having opposed ends, the core having at each said

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end an end block onto which the shutter is to be wound, each said end block being of larger diameter than the elongate core and shaped to provide a substantially radially disposed step at which an end of the shutter is to be located, at least one of said



end blocks having a carrying block rotatably mounted therein, said carrying blocks being attached to said at least one end block by spring means disposed so as to be tensioned by rotation of said end block with respect to said carrying block.

5,351,744

DEVICE IN A PRESS CASTING MACHINE AND METHOD OF USING SUCH DEVICE

Bengt-Inge Larsson, Herrljunga, Sweden, assignor to Tour & Andersson AB, Sweden

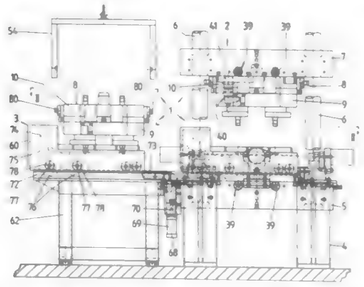
PCT No. PCT/SE91/00436, § 371 Date Dec. 16, 1992, § 102(e) Date Dec. 16, 1992, PCT Pub. No. WO91/19580, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 18, 1991, Ser. No. 955,702

Claims priority, application Sweden, Jun. 19, 1990, 9002173-4

Int. Cl.[5] B22D *17/22, 17/24*

U.S. Cl. 164—342 **13 Claims**



1. A vertical press casting machine having a stationary lower machine table (5), vertical support bearings (6) extending upwards from the lower machine table (5), an upper machine table (7) vertically displaceably supported on said support bearing (6), an upper and a lower tool half (9 and 10) releasably connected to the upper and lower machine tables (5 and 7) respectively, said upper and lower tool halves (9 and 10) each having mould inserts mounted therein such that said upper and said lower tool halves together form a parent tool having a horizontal mould parting, wherein said vertical press casting machine comprises:

connecting means for selectively disconnecting and connecting the tool halves to each other and to the upper and lower machine tables, and conveyance means for conveying the parent tool out of and into the casting machine;

said conveyance means comprises a rail pair (58) mounted on the lower machine table (5) running in a rearward direction, a main carriage (61) located adjacent to the lower machine table, said main carriage being movable along a displacement direction perpendicular to the rearward direction, at least one rail pair (66, 67), running in the rearward direction, mounted on the main carriage for selective alignment and connection with the rail pair (58) on the lower machine table (5), via displacement of said main carriage in the displacement direction, at least one tool carriage (60) slidably stored on said at least one rail pair (66, 67) on the main carriage (6);

wherein, when the parent tool is raised above the lower machine table by the upper machine table, at least one tool carriage (66, 67) is displaceable from the at least one rail pair on the main carriage to the rail pair on the lower support table to a position beneath the raised parent tool for receiving and removing the parent tool from the casting machine to the main carriage;

the main carriage is movable along the displacement direction from a position adjacent the casting machine to a service position, a handling device (54) is located at the service position, the handling device (54) has a lifting and turning means for lifting and turning the parent tool, the upper tool half and the lower tool half.

5,351,745

REFRIGERATOR SYSTEM HAVING A FUNCTION CAPABLE OF FERMENTING FOOD

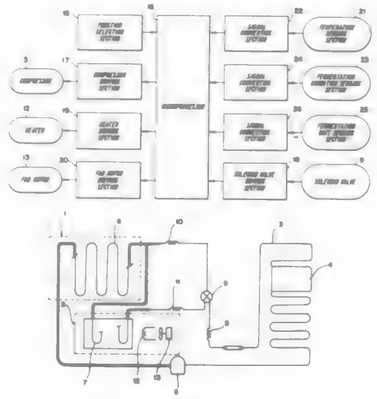
Seak H. Park, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 30, 1993, Ser. No. 83,486

Claims priority, application Rep. of Korea, Jul. 8, 1992, 92-12150; Apr. 15, 1993, 93-6343

Int. Cl.[5] F25B *29/00*; G12H *1/00*; A23B *4/00*

U.S. Cl. 165—30 **6 Claims**



1. A refrigerating system having a cold storage function and a fermenting function, comprising

a first compartment constituting a cold storage compartment, said first compartment including a first heat exchanger for cooling said first compartment;

a second compartment selectively constituting a cold storage compartment and a fermentation compartment, said second compartment including a second heat exchanger for cooling said second compartment and a heater for heating said second compartment;

refrigerating means for cooling and circulating a refrigerant;

a first flow passage for conducting the refrigerant to said first heat exchanger;

a second flow passage for conducting the refrigerant to said second heat exchanger;

refrigerant distributing means including valve means movable between:

a first position for directing some refrigerant to said first flow passage, and some refrigerant to said second flow passage, and

a second position for directing refrigerant to said second flow passage and blocking the flow of refrigerant to said first flow passage;

a conduit for conducting refrigerant exiting said second heat exchanger to an inlet of said first heat exchanger; and control means connected to said valve means and said heater and selectively actuable for:

positioning said valve means in said first position while at least periodically actuating said heater, to effect a fermentation operation in said second compartment, and

positioning said valve means in said second position while keeping said heater deactivated, to effect cold storage operations in said first and second compartments.

5,351,746

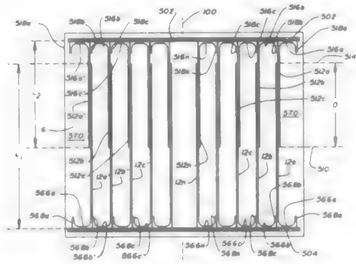
SPACECRAFT THERMAL PANELS & MAKE-BREAK THERMAL JOINTS

Robert J. Mackey, Lawrenceville, N.J.; Peter K. Homer, Newtown, Pa.; Vasuki Subarrao, Plainsboro, N.J., and Paul V. Barcomb, Yardley, Pa., assignors to General Electric Co., East Windsor, N.J.

Filed Sep. 21, 1992, Ser. No. 948,221

Int. Cl.[5] B64G *1/50*; F28F *27/00*

U.S. Cl. 165—41 **19 Claims**



1. A spacecraft comprising:

a plurality of first "spreader" heat pipes, each in the general form of the letter "L", each of said first heat pipes including a straight bottom portion lying in a plane and including first and second ends defining a length therebetween, and a second portion, including first and second ends defining a length longer than said length of said bottom portion, connected at said first end to said first end of said bottom portion, said second portion being straight and also lying in said plane, said first heat pipes being arrayed in a common plane with said bottom portions coaxial and with said second portions mutually parallel;

a second plurality, equal in number to said first plurality, of second "spreader" heat pipes, also in the general form of the letter "L", each of said second heat pipes including a straight bottom portion lying in a plane and including first and second ends defining a length therebetween, and a second portion, including first and second ends defining a length longer than the length of said bottom portion, connected at said first end to said first end of said bottom portion, said second portion being straight and also lying in said plane, said second end of said second portion of each one of said first heat pipes being juxtaposed and in thermal contact with said second end of said second portion of an associated one of said second heat pipes along at least a portion of said second portion of each heat pipe, and said first end of said second portion of each one of said first heat pipes being remote from said first end of said second portion of that one of said second heat pipes with which it is associated, for providing for thermal flow between said first and second heat pipes in a direction parallel to said second portions;

a first header heat pipe extending past, and in thermal contact with, each of said bottom portions of said first heat pipes, for providing for transverse thermal flow in a direction perpendicular to said second portion.

5,351,747

HEAT EXCHANGER ESPECIALLY FOR SPACECRAFT

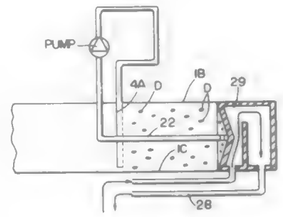
Alois Koeppl, Stuhr-Moordeich, Fed. Rep. of Germany, assignor to Erno Raumfahrttechnik GmbH, Bremen, Fed. Rep. of Germany

Filed Oct. 30, 1992, Ser. No. 969,409

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1991, 4136219

Int. Cl.[5] F28D *15/00*; B64G *1/50*

U.S. Cl. 165—41 **17 Claims**



1. A heat exchanger for a spacecraft, comprising a central rotational axis, a droplet radiator including a droplet generator positioned centrally about said central rotational axis, a droplet collector positioned radially outwardly around said droplet radiator, and a liquid return arrangement for returning cooling liquid from said droplet collector to said droplet generator, said droplet collector comprising a ring body having substantial rotational symmetry relative to said central rotational axis, said ring body forming an annular free space between said droplet generator and said ring body, said annular free space being open at two parallel radial planes, whereby coolant droplets exiting from said droplet generator and travelling through said annular free space radially outwardly from said droplet generator to said ring body are in direct contact with the environment surrounding said heat exchanger thereby directly giving off heat to said environment before being collected by said ring body of said droplet collector, and a drive operatively connected to rotate at least said droplet collector about said central rotational axis, wherein said droplet generator, said droplet collector and said liquid return arrangement together form a primary coolant flow circuit, and further comprising a secondary coolant flow circuit arranged at least partly within a hollow portion of said droplet collector.

5,351,748

TUBULAR PIN FIN HEAT SINK FOR ELECTRONIC COMPONENTS

Baruch Dagan, 296 Torresdale Ave., Toronto, Ontario, Canada M2R 3N3

Filed Jan. 21, 1993, Ser. No. 6,647

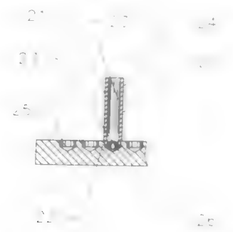
Int. Cl.[5] F28F *7/00*

U.S. Cl. 165—80.3 **6 Claims**

1. A heat sink for use in an air-cooled electronic component, comprising an array of pins extending from a base, at least one of said pins comprising a tube having an interior wall having a stepped configuration wherein an upper portion of said tube has an interior diameter larger than the interior diameter of a lower portion thereof, said lower portion being engaged to said base by means of an expansion member within said lower portion, said expansion member being adapted to pass freely

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through the upper portion of said tube and to engage the interior wall of the lower portion of said tube to expand said



lower portion outwardly to fixedly engage said tube within an recess within said base.

5,351,749

PROCESS FOR COOLING FLUID SOLID PARTICLES

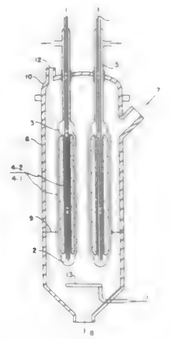
Zhouping Lai; Hongyan Liu; Qiye Yang, and Ziliang Liu, all of Beijing, China, assignors to Sinopec Beijing Design Institute, Beijing, China

Division of Ser. No. 658,719, Feb. 21, 1991, Pat. No. 5,242,012. This application May 27, 1993, Ser. No. 68,988

Claims priority, application China, Mar. 7, 1990, 90101048.0

Int. Cl.[5] F28C *3/16;* **B01J** *38/32*

U.S. Cl. 165—104.16 **8 Claims**



1. A process for cooling hot fluid solid particles, said process comprising the steps of:

a. Introducing a fluidizing gas into a substantially vertical heat removal vessel via a gas inlet conduits at the lower portion of said heat removal vessel,

b. introducing said hot fluid solid particles into said heat removal vessel via an inlet conduit at the upper portion of said heat removal vessel,

c. forming fluidized bed of said hot fluid solid particles fluid-like flowing downwardly by direct contact of said fluidizing gas with said hot fluid solid particles,

d. introducing the supply coolant via an inlet tube into one or more separate heat exchange tube units comprising a central casing heat removal tube enclosing a supply coolant inlet tube and one or more sideline heat removal tubes, said one or more separate heat exchange tube units being substantially vertically and securely suspended form the top of said hot solid particles, and then discharging via an outlet tube vapor formed by indirect heat exchange of said coolant with said hot solid particles downwardly flowing through the shell side passage of said heat removal vessel in the form of fluidized dense phase along said separate heat exchange tube units,

e. releasing said fluidizing gas via an outlet conduit at the upper portion of said heat removal vessel, and

f. discharging the cooled fluid solid particles via an outlet conduit at the lower portion of said heat removal vessel.

5,351,750

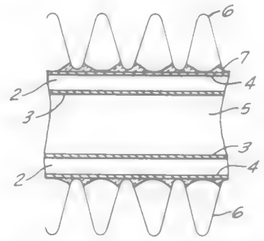
TUBULAR ELEMENT FOR A HEAT EXCHANGER

José J. Garcia, Jamestown, N.Y., assignor to Valeo Engine Cooling, Inc., Jamestown, N.Y.

Filed Mar. 24, 1993, Ser. No. 36,323

Int. Cl.[5] F28F *19/02*

U.S. Cl. 165—133 **20 Claims**



1. A tubular element for a heat-exchanger comprising:

a tubular core composed of a first aluminum alloy comprising up to 0.3 wt % maximum of silicon, up to 0.5 wt % maximum of iron, from 0.50 to 0.70 wt % of copper, from 0.65 to 1.0 wt % of manganese, from 0.1 to 0.30 wt % of magnesium, up to 0.05 wt % maximum of zinc, from 0.08 to 0.10 wt % of titanium, and the balance aluminum and unavoidable impurities;

an inner layer on the tubular core and composed of a second aluminum alloy comprising up to 0.70 wt % maximum in total of silicon and iron, up to 0.10 wt % maximum of copper, up to 0.10 wt % maximum of manganese, up to 0.10 wt % maximum of magnesium, from 0.80 to 1.3 wt % of zinc, up to 0.05 wt % maximum of titanium and the balance aluminum and unavoidable impurities; and

an outer brazable layer on the tubular core and composed of a third aluminum alloy comprising from 6.8 to 8.2 wt % of silicon, up to 0.80 wt % maximum of iron, up to 0.25 wt % maximum of copper, up to 0.10 wt % maximum of manganese, up to 0.10 wt % maximum of zinc, up to 0.05 wt % maximum of titanium, and the balance aluminum and unavoidable impurities.

5,351,751

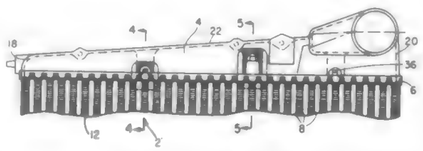
HEAT EXCHANGER TANK WITH TIE BAR

Lynn L. Cage, Warren, Pa.; Rodney A. Spears, Forestville, and Lawrence R. Barron, Jr., Jamestown, both of N.Y., assignors to Valeo Engine Cooling, Incorp., Jamestown, N.Y.

Filed Sep. 2, 1993, Ser. No. 116,033

Int. Cl.[5] F28F *9/02*

U.S. Cl. 165—173 **20 Claims**



1. A tie bar for connection between opposed side walls of a heat exchanger tank, comprising:

an elongate body having enlarged head portions at opposite

ends thereof for receipt within pockets formed in opposed tank side walls, wherein the head portions have a generally wedge-shaped section of dimension which decreases in a direction generally perpendicular to the elongate extent of the body.

5,351,752

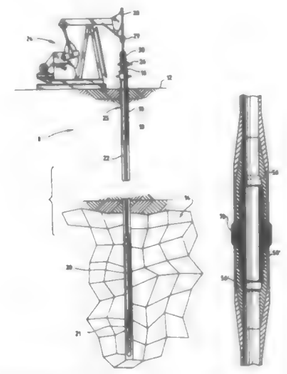
ARTIFICIAL LIFTING SYSTEM

Steven M. Wood, Tulsa, Okla., and Blaine Tew, Lincoln, Nebr., assignors to Exoko, Incorporated (Wood), Tulsa, Okla. and Brunswick Corporation (TEW), Skokie, Ill.

Filed Jun. 30, 1992, Ser. No. 906,669

Int. Cl.[5] E21B *17/20, 43/00*

U.S. Cl. 166—68 **16 Claims**



1. An artificial lifting system for extracting oil and the like from an underground source, the lifting system being designed for use at a pumping installation having pump drive means at the head of a well and a pump with a reciprocable member secured in the lower end of the well, the improvement comprising

hollow tubing string means extending axially between the head of the well and the pump for performing the dual functions of reciprocating the reciprocable member in response to activation of the pump drive means and for transporting oil from the underground source to the wellhead,

the tubing string means including a plurality of tubing segments made of fiber-reinforced composite material and a fitting interconnected between adjacent ends of a pair of adjacent tubing segments for serially connecting said segments to define an elongated non-corrosive conduit, said fitting having a tapered sidewall received in the end of a tube segment and fibers wound about the fitting in an annular space between the tapered sidewall and the end of the tube segment to restrict withdrawal of the fitting from the tube segment end.

5,351,753

LEAK CONTAINMENT SYSTEM FOR A STUFFING BOX

Tony Golson, 3709 Irvin Dr., Midland, Tex. 79705

Filed Feb. 1, 1993, Ser. No. 11,969

Int. Cl.[5] E21B *33/08*

U.S. Cl. 166—81 **8 Claims**

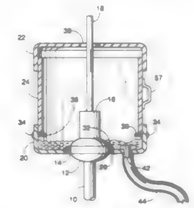
1. A leak containment device for a wellhead stuffing box having a flange with an outer peripheral edge with a first diameter and a reciprocating polish rod reciprocated in the stuffing box through an opening therein above the flange, comprising:

a partially split single piece bottom tray having a cylindrical shape with an outer circumferential surface with a first inner diameter and a bottom surface over one end of said cylindrical shape, said circumferential surface extending upward from said bottom surface, said bottom surface having a hole with a second inner diameter larger than the first diameter of the flange, said bottom surface and said circumferential surface having a partial split that extends from one point on the edge of said hole outward along said bottom surface to said circumferential surface and upward away from said bottom surface along said circumferential surface to form first and second abutting and separable edges, said bottom tray fabricated from a flexible material to allow said abutting edges to be separated to encircle the flange so as to facilitate easy installation without the need to disassemble the wellhead or the stuffing box;

a first clamp disposed proximate to a portion of said first and second abutting edges on said circumferential surface to allow said first and second abutting edges to be forced together, so as to bring said second inner diameter into contact with said flange to hold said bottom tray in position relative to said stuffing box;

a continuous layer of sealing material disposed on the outer surface of the flange on said bottom surface and wrapped therearound and extending proximate to both of said first and second abutting edges are abutting and secured with said first clamp, said sealing material forms a seal between said first and second abutting edges;

a cowling having a cylindrical shape with open ends and a split that extends parallel to the longitudinal axis of said cowling to form third and fourth abutting edges such that when said third and fourth abutting edges abut, said cowling has an outer diameter that is slightly smaller than said first inner diameter of said bottom tray, said cowling being fabricated from flexible material and operable to have said third and fourth abutting edges separated to allow said cowling to be disposed abut the stuffing box such that when said third and fourth abutting edges are abutted, said cowling can be tightly inserted into the bottom tray from the open end thereof;



a second clamp having first and second portions for being disposed proximate to each of said third and fourth abutting edges, respectively; said first and second portions operable to mate and secure said third and fourth abutting edges in an abutting relationship;

a top having a cylindrical shape with an outer circumferential surface with a third inner diameter substantially identical to said first inner diameter and an upper surface over one end of said circumferential surface, said outer circumferential surface extending downward from said upper surface, said upper surface having a hole disposed therein with a predetermined diameter, said upper surface and said circumferential surface having a split that extends from one point on the edge of said hole outward along said upper surface to said associated circumferential surface and down said associated circumferential surface away from said upper surface to form fifth and sixth abutting edges, said top fabricated from a flexible material to allow said fifth and sixth abutting edges to be separated to allow said top to encircle the polish rod above the stuffing box and within said hole, said predetermined diameter of said hole larger than the diameter of the polish rod; and

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a third clamp having first and second portions disposed proximate to said fifth and sixth abutting edges and operable to force said fifth and sixth abutting edges into an abutting relationship.

5,351,754

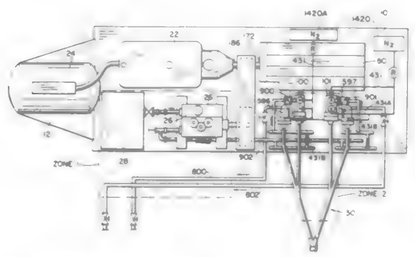
APPARATUS AND METHOD TO CAUSE FATIGUE FAILURE OF SUBTERRANEAN FORMATIONS

Nathanial A. Hardin, Forsyth, Ga., and George C. Morgan, Birmingham, Ala., assignors to N. A. Hardin 1977 Trust, Forsyth, Ga., N. A. Hardin, trustee

Continuation-in-part of Ser. No. 864,366, Apr. 6, 1992, abandoned, which is a continuation of Ser. No. 699,984, May 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 563,053, Aug. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 370,050, Jun. 21, 1989, Pat. No. 4,945,986. This application Oct. 6, 1992, Ser. No. 957,419

Int. Cl.[5] B06B *1/20, 3/02;* **E21B** *43/25*

U.S. Cl. 166—249 **59 Claims**



1. Apparatus comprising:

energy generating means for carrying high frequency waves of variable characteristics as to amplitude, frequency and strength in a liquid medium which is transmitted to an object, area, or subsurface formation to be treated;

feed pump means having a suction inlet and an outlet for supplying said liquid medium under pressure to said energy generating means,

a reservoir for supplying said liquid medium to said suction inlet of said feed pump;

means to maintain a substantially positive and constant head of said liquid medium to said suction inlet; and

said outlet from said feed pump means is divided for delivery to at least one main pump and each said outlet to said main pump includes a check valve.

50. A method of fatigue fracturing a subterranean fluid formation comprising the steps of:

determining the natural frequency of said subterranean formation;

applying pressurized stress via a treating fluid medium against and into said formation to cause said formation to be under displaced strain energy; and

intermittently by command, for timed periods, creating periodic loads in said fluid medium of a frequency substantially equally to said natural frequency whereby there is a build-up of amplitude of said frequency until rupture or fracture of said formation.

5,351,755

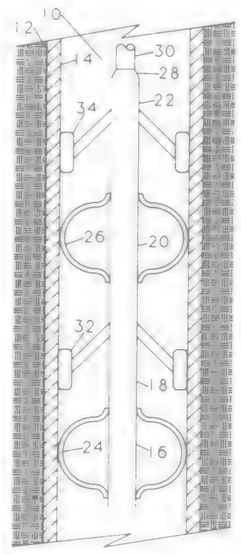
METHOD AND APPARATUS FOR ESTABLISH THE ORIENTATION OF TOOLS IN A CASED BOREHOLE

Donald L. Howlett, Kingwood, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Aug. 2, 1993, Ser. No. 100,791

Int. Cl.[5] E21B *47/09*

U.S. Cl. 166—250 **10 Claims**



1. A method to establish the orientation of tools in a cased borehole comprising the steps of:

providing a tool having a gyrocompass section, a depolarizing magnet section, a magnetic compass section and a polarizing magnet section;

running said tool through said casing recording its magnetic orientation as noted by said gyrocompass and said magnetic compass;

running said tool through said casing with at least said depolarizing magnet section energized to apply a depolarizing magnetic force to the casing;

running said tool through said casing with at least said polarizing section energized to apply to said casing a polarizing force with a defined magnetic orientation; and

running said tool through said casing with both said magnet sections de-energized whereby the magnetic compass will read the new polarized orientation of the casing and the gyrocompass will establish the orientation of said casing with respect to an actual direction.

5. A tool to establish the orientation of a cased borehole, said tool comprising:

a gyrocompass section;

a depolarizing magnet section;

a magnetic compass section; and

a polarizing magnet section whereby the tool passing through a well casing will demagnetize the casing and remagnetize it with the orientation of the subsequently magnetized casing being determined by the relative reading of the magnetic compass and the gyrocompass on pre and post operation passes.

5,351,756

PROCESS FOR THE TREATMENT AND TRANSPORTATION OF A NATURAL GAS FROM A GAS WELL

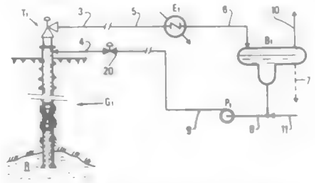
Ari Minkkinen, Saint Nom la Breteche, and Joseph Larue, Chambourcy, both of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed May 20, 1993, Ser. No. 63,912

Claims priority, application France, May 20, 1992, 92 06261

Int. Cl.[5] E21B *43/40, 43/16, 43/34*

U.S. Cl. 166—267 **19 Claims**



1. A process for the treatment and transportation of natural gas coming from at least one production well embedded in a reservoir rock and connected to a reception and processing terminal, said process comprising the following stages:

(a) in a contact zone, contacting the natural gas with a liquid phase at least partly coming from a recycling operation (stage (e) hereinafter) and containing both water and at least one anti-hydrate additive, said additive being a non-hydrocarbon compound, which is normally liquid, other than water, said compound being at least partly miscible with water, and vaporizing in said anti-hydrate additive in the pure state or as an azeotrope at a temperature below the vaporization temperature of the water, so as to obtain a liquid aqueous phase containing substantially no additive by comparison with said recycled liquid phase, and a gaseous phase containing production natural gas, water vapor, and substantially all the additive;

(b) transporting said gaseous phase of stage (a) in a pipe to at least one heat exchange zone of said terminal;

(c) cooling and partially condensing the gaseous phase from stage (b) in the heat exchange zone to obtain a non-condensed gas and a condensate containing an aqueous phase which contains at least part of said additive;

(d) separating the condensate containing the aqueous phase from the non-condensed gas in a separating zone and withdrawing said non-condensed gas; and

(e) recycling at least part of the aqueous phase of stage (d) to stage (a), characterized in that the contact zone comprises at least part of the production well.

5,351,757

METHOD FOR SILICA GEL EMPLACEMENT FOR ENHANCED OIL RECOVERY

Shang Chou, and Jae Bae, both of Anaheim, Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Filed Dec. 18, 1992, Ser. No. 993,478

Int. Cl.[5] E21B *33/138, 43/20, 43/22*

U.S. Cl. 166—270 **13 Claims**

1. A method for improving the sweep efficiency of water, gas, or steam floods by reducing the permeability of higher permeability thief zones of a hydrocarbon bearing subterranean reservoir having heterogeneous and/or fracture permeability and being penetrated by at least one well, said method comprising:

(a) injecting a controlled quantity of a silicate solution into said well; and

(b) injecting controlled quantities of a gas and an organic acid that is soluble or dispersible in said gas into said well so that a controlled amount of a silicate gel of a controlled SiO_2 concentration is generated in said high-permeability thief zones so that said permeability of said thief zones is reduced.

5,351,758

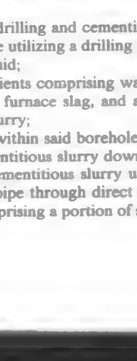
TUBING AND PROFILE REAMING TOOL

Michael Henderson, and Dale O. Tupper, both of Singapore, Singapore, assignors to Pacific Well Services Ltd., Tortola, British Virgin Isls.

Filed Feb. 22, 1993, Ser. No. 20,638

Int. Cl.[5] E21B *37/00*

U.S. Cl. 166—277 **19 Claims**



1. A method for removing internal deposits and/or drifting the production tubing string of a well which defines at least one internal completion profile, said method comprising:

(a) extending through said tubing string a reaming tool having radially movable reaming dogs at least some of which defining external reaming teeth having an external profile of mating configuration with said internal completion profile;

(b) moving said reaming tool within said tubing string to position said reaming dogs in registry with said internal completion profile;

(c) inducing radially outward movement of said expandable reaming dogs into said internal completion profile;

(d) rotating said reaming tool for removal of any foreign matter present within said internal completion profile;

(e) retracting said reaming dogs from said internal completion profile by radially inward movement thereof; and

(f) repeating method steps (a) through (e) hereof for other internal completion profiles of said tubing string.

5,351,759

SLAG-CEMENT DISPLACEMENT BY DIRECT FLUID CONTACT

James J. W. Nahm, Houston, Tex., and Kazem Javanmardi, Slidell, La., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 22, 1992, Ser. No. 964,988

Int. Cl.[5] E21B *33/14*

U.S. Cl. 166—293 **21 Claims**

1. A method for drilling and cementing a well, comprising:

drilling a borehole utilizing a drilling fluid, thus producing a used drilling fluid;

combining ingredients comprising water, granulated water-quenched blast furnace slag, and activator to produce a cementitious slurry;

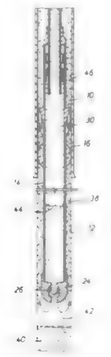
disposing a pipe within said borehole;

passing said cementitious slurry down said pipe; and

displacing said cementitious slurry up into an annulus surrounding said pipe through direct contact by a displacement fluid comprising a portion of said used drilling fluid.

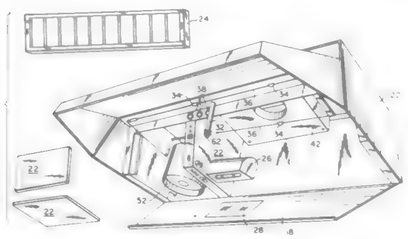
VOL 1167 ISS 1 OC 4 1994 UMI

13. A method for drilling and cementing a well, comprising:
combining constituents comprising water and a metal compound proton acceptor component to produce a drilling fluid;
utilizing said drilling fluid in a well drilling operation to form a borehole, thus producing a used drilling fluid and laying down a filter cake;



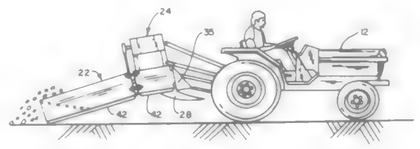
contacting a reactive second component with said filter cake;
disposing a pipe within said borehole after said filter cake is laid down;
passing a cementitious slurry down said pipe; and
displacing said cementitious slurry up into an annulus surrounding said pipe by direct contact with a displacement fluid.

5,351,760
FIRE SUPPRESSION SYSTEM AND METHOD FOR ITS USE
Bernard E. Tabor, Jr., 2375 North Ave., Bridgeport, Conn. 06605
Filed Aug. 18, 1992, Ser. No. 931,726
Int. Cl.[5] A62C *3/00*
U.S. Cl. 169—65 21 Claims



1. A fire suppression system adapted for use with a stove and contained within a hood over the stove, said system comprising:
a) a nozzle located over said stove;
b) a pressurized supply of fire retardant contained in a pressure vessel connected to said nozzle;
c) activation means for activating release of said fire retardant through said nozzle;
d) a fusible link coupled to said activation means such that when said fusible link melts at a melting temperature, said activation means activates release of said fire retardant through said nozzle;
e) provisional fire control means selected from a group consisting of a fan, an alarm, and a stove shut-off means;
f) a first temperature sensor located above said stove which senses when a first temperature is reached, said first temperature being lower than said melting temperature, said first temperature sensor being coupled to said provisional fire control means such that when said first temperature is reached, said first temperature sensor causes said provisional fire control means to activate; and
g) thermal insulation means for establishing a fire enclosure in the hood, said fire safe enclosure said pressure vessel containing said pressurized supply of fire retardant, wherein said fusible link and said first temperature sensor are located outside said fire safe enclosure.

5,351,761
FIELD STONE COLLECTION APPARATUS
Clyde E. Henthorn, 6100 County Rd. 23, Mt. Gilead, Ohio 43338
Filed Jul. 22, 1993, Ser. No. 94,750
Int. Cl.[5] A01D *15/04*
U.S. Cl. 171—13 4 Claims

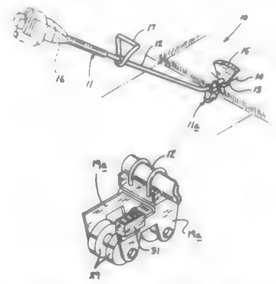


1. A farm implement for cooperation with a farm tractor having implement hitch and power take-off accessories and operation to collect field stones which lie on or partially or wholly below the earth's surface, comprising:
a forward dragbox section having open forward and aft ends, a bottom provided with perforations through which unwanted collected materials may be passed to the earth's surface below, multiple spaced-apart stone-engaging teeth projecting downwardly and forwardly from the dragbox section leading end, and hitch points for coupling the section to a farm tractor implement hitch accessory,
an aft dragbox section having an open forward end generally aligned with said forward dragbox section aft end, a bottom provided with perforations through which unwanted collected materials received from said forward dragbox section may be passed to the earth's surface below, and an aft end from which collected field stones received from said forward dragbox section are dumped when said aft dragbox section open forward end is elevated,
vibrating means mounted upon said forward dragbox section and adapted for connection to and operation by a farm tractor power take-off accessory, and
coupling means joining said forward and aft dragbox sections in a manner whereby said sections are rotated relative to each other when said forward dragbox section and said aft dragbox section forward end are elevated by farm tractor implement hitch accessory elevation of said forward dragbox section hitch points.

5,351,762
LAWN EDGE ADAPTER APPARATUS
Robert W. Bean, 4 Melroy Cir., The Colony, Tex. 75056-3541
Filed May 10, 1993, Ser. No. 58,146
Int. Cl.[5] A01D *34/47*
U.S. Cl. 172—17 2 Claims

1. A lawn edge adapter apparatus including a weed cutter assembly having a handle shaft, the handle shaft including a handle member extending orthogonally relative to the handle

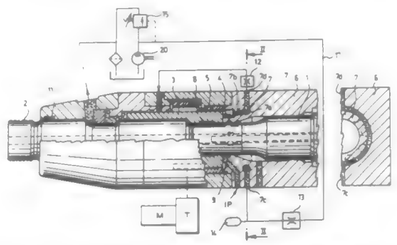
shaft, with the handle shaft including a rotary head mounted at a lowermost end of the handle shaft, with the rotary head including a cutter filament mounted to the rotary head, and
a guide assembly mounted to the handle shaft in adjacency to the rotary head, with the guide assembly and the handle member opposed relative to one another relative to the handle shaft, the guide assembly including a wheel member, with the wheel member including an axle, the axle oriented parallel to the handle shaft, and
the guide assembly further includes a U-shaped mounting bracket, having a mounting bracket floor plate and spaced parallel mounting bracket flanges, the mounting bracket flanges each include a semi-cylindrical recess to receive the handle shaft in contiguous communication, and at least one clamp member mounted between the mounting bracket flanges extending around the handle shaft and directed through the mounting bracket floor plate, and



the guide assembly further includes a support bracket, the support bracket having a support bracket floor plate and spaced support bracket flanges, the support bracket flanges orthogonally mount the axle therebetween, and the axle including an axle spacer positioned on each side of the wheel member in adjacency to a respective one of said support bracket flanges to orient the wheel member intermediate the support bracket flanges, and
the support bracket flanges include a a second axle spaced from said axle in parallel relationship, wherein the second axle includes a plurality of second axle wheel members, with the second axle wheel members including a central spacer cylinder therebetween, wherein the second axle wheel members are oriented on opposed sides of the wheel member, said central spacer cylinder having a predetermined length, and wherein the wheel member includes a predetermined width substantially equal to said predetermined length.

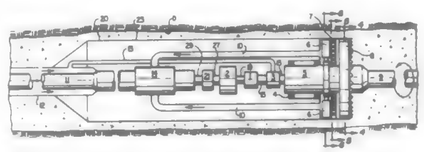
5,351,763
ARRANGEMENT FOR AN AXIAL BEARING IN A DRILLING MACHINE
Timo Muuttonen, Siuro, Finland, assignor to Tamrock OY, Tampere, Finland
PCT No. PCT/FI91/00049, § 371 Date Aug. 14, 1992, § 102(e) Date Aug. 14, 1992, PCT Pub. No. WO91/12934, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 18, 1991, Ser. No. 916,838
Claims priority, application Finland, Feb. 23, 1990, 900937
Int. Cl.[5] B25D *17/24*
U.S. Cl. 173—210 8 Claims

1. An arrangement for an axial bearing in a drilling machine comprising a frame (6); a percussion device (1) fitted in the frame; a shank (2) positioned on an axial extension of the percussion device and having a percussion surface adapted to be struck by said percussion device; means for rotating the shank (2); and an axial bearing fitted in the frame to receive axial forces acting on the frame (6) through the shank (2), the axial bearing being formed by a plurality of pistons (4*a*, 4*b*) accommodated in axial housings formed in the frame (6) along a periphery circumscribing the shank (2) and interconnected with a conduit system (7), the pistons being further arranged to travel an axial distance axially so as to act on the shank (2) to force the shank towards a forward portion of the drilling machine under the influence of a hydraulic fluid acting on respective back surfaces of the pistons; and means for limiting the axial travel distance of a first group of said plurality of pistons towards the forward portion of the drilling machine



relative to the axial travel distance of a second group of said plurality of pistons so that when said plurality of pistons are in a foremost position and the shank (2) is supported by said plurality of pistons (4*a*, 4*b*), the percussion surface of the shank is positioned substantially at its optimal percussion point, whereby the pressure of the hydraulic fluid acting on the back surface of the pistons (4*a*, 4*b*) at least during the drilling is arranged to be such that the total force exerted on the shank (2) by said plurality of pistons so as to force it forwards exceeds the feed force acting on the drilling machine during drilling.

5,351,764
METHOD AND APPARATUS FOR ENLARGING AN UNDERGROUND PATH
Martin D. Cherrington, Fair Oaks, Calif., assignor to Cherrington Corporation, Sacramento, Calif.
Continuation of Ser. No. 557,992, Jul. 26, 1990, Pat. No. 5,096,002. This application Jan. 10, 1992, Ser. No. 819,458
Int. Cl.[5] E21D *3/00*
U.S. Cl. 175—53 11 Claims



1. Apparatus for removing cuttings from a borehole, comprising:
apparatus for supplying fluid to the borehole, said fluid combining with said cuttings;
a pipe for removing said fluid and cuttings from said borehole;
a screen having holes formed therein disposed in front of an end of said pipe for filtering large cuttings from said fluid; and
an agitator disposed between said end of said pipe and said screen for agitating said fluid with cuttings to prevent clogging of said pipe.

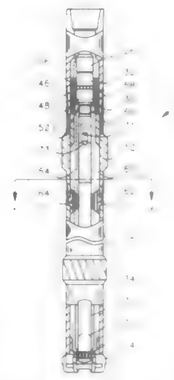
VOL 1167 ISS 1 OC 4 1994 UMI

5,351,765

CORING ASSEMBLY AND METHOD

Ronald D. Ormsby, Houston, Tex., assignor to Baroid Technology, Inc., Houston, Tex.

Filed Aug. 31, 1993, Ser. No. 114,534
Int. Cl.[5] E21B *25/00*
U.S. Cl. 175—58 22 Claims



19. A method for obtaining a core sample from a borehole cut using a drill string for turning a core head, said core head having a core head bore therethrough for receiving said core sample, said method comprising the following steps:

connecting a core head with an outer coring barrel;

lowering said core head and said outer coring barrel into said well bore using a drill string;

dropping an inner core barrel into said drill string;

connecting a drilling fluid pump to said drill string;

forming a flow restriction between a first end and a second end of said inner core barrel within said outer coring barrel; and

pumping drilling fluid through said drill string to axially secure said inner core barrel within said outer coring barrel using a differential fluid pressure between a first end and a second end of said inner core barrel which arises from said drilling fluid flow through said flow restriction, said differential pressure rotatably securing a portion of said inner core barrel to said outer core barrel so that said portion of said inner barrel rotates with said outer core barrel.

5,351,766

FLOW RESTRICTER FOR MUD LUBRICATED EARTH DRILLING MOTORS

Kenneth H. Wenzel, and Dean Foote, both of Edmonton, Canada, assignors to Vector Oil Tool Ltd., Canada

Filed Nov. 16, 1992, Ser. No. 976,887
Claims priority, application Canada, Nov. 22, 1991, 2056043
Int. Cl.[5] E21B *4/02*
U.S. Cl. 175—107 8 Claims

1. A flow restricter using mechanical seals for a mud lubricated earth drilling motor, having an outer housing, an inner tubular member with an interior drilling mud flow passage concentrically disposed within the outer housing, and a plurality of bearings disposed between the outer housing and the inner tubular member facilitating the rotation of the inner tubular member, comprising:

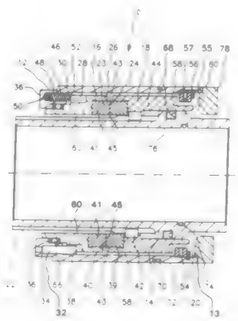
a. a first seal support having a first seal face;

b. means secured to an inner surface of the outer housing for non-rotatably coupling the first seal support within an interior bore of the outer housing while permitting the first seal support to be axially movable in relation to the outer housing;

c. a second seal support having a second seal face;

d. means secured to an exterior surface of the inner tubular member for non-rotatably coupling the second seal face to the exterior surface of the inner tubular member while permitting the second seal support to be axially movable in relation to the inner tubular member, the second seal face being in axial alignment with the first seal face;

e. biasing means secured to one of the inner surface of the outer housing and the exterior surface of the inner tubular member for exerting a biasing force axially upon the first seal support thereby bringing the first seal face into sealing engagement with the second seal face to form a mechanical seal having a first side adjacent the outer housing and a second side adjacent the inner tubular member;



f. stop means secured to one of the exterior surface of the inner tubular member and the inner surface of the outer housing for limiting the movement of the second seal support;

g. a first fluid flow passage which extends from the interior drilling mud flow passage of the inner tubular member to one of the first side and the second side of the mechanical seal;

h. a second fluid flow passage which extends from the other of the first side and the second side of the mechanical seal to exterior of the outer housing; and

i. at least one groove in one of the first seal face and the second seal face and extending from the first side to the second side of the mechanical seal such that a continuous flow of drilling mud passes through the groove and is vented to the exterior of the outer housing via the second fluid flow passage.

5,351,767

DRILL PIPE HANDLING

Huey Stogner, League City, and Craig A. Watson, Katy, both of Tex., assignors to Global Marine Inc., Houston, Tex.

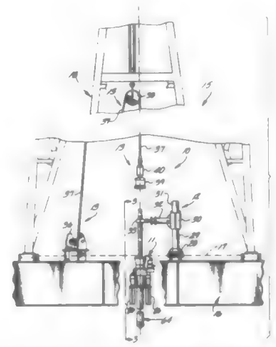
PCT No. PCT/US92/09257, § 371 Date Dec. 21, 1992, § 102(e) Date Dec. 21, 1992
PCT Filed Oct. 29, 1991, Ser. No. 972,469
Int. Cl.[5] E21B *19/00*
U.S. Cl. 175—162 31 Claims

1. A method for making up, in a well drilling rig having a platform beneath a derrick in which a hoist is movable along a vertical path above a well bore, a drill pipe stand comprised of plural individual lengths of drill pipe having cooperating pin and box threaded coupling moieties at their opposite ends, comprising the steps of:

a) engaging a first pipe length adjacent the box end thereof in a yieldably supported drivable pipe rotating device in vertically supported torque-transmitting relation to the device for rotation about a substantially vertical axis passing through a hole in the platform adjacent the well bore with the first pipe length below the device in essential alignment with said axis,

b) lowering the pin end of a vertically disposed second pipe length along the axis into essentially aligned engagement with the box end of the first pipe length,

c) holding the second pipe length from rotation about the axis while yieldably supporting the second length for limited movement along the axis,



d) driving the device to rotate the first pipe length about the axis in a direction causing the pin and box ends of the first and second pipe lengths to thread together to form a drill pipe stand, and

e) releasing the stand from movement constraints associated with tire driving step,

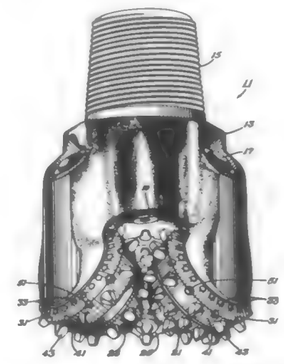
wherein the yieldably supporting operations afford limited longitudinal, lateral and angular play of the pin and box ends of the two pipe lengths relative to each other before and during performance of the driving step.

5,351,768

EARTH-BORING BIT WITH IMPROVED CUTTING STRUCTURE

Danny E. Scott, Houston; Robert E. Grimes, Cypress; Matthew R. Isbell, and Rudolf C. O. Pessier, both of Houston, all of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Jul. 8, 1993, Ser. No. 89,318
Int. Cl.[5] E21B *10/00*
U.S. Cl. 175—374 11 Claims



1. An earth-boring bit having improved ability to maintain an efficient cutting geometry as the earth-boring bit encounters a mix of hard and soft formation material, and as the earth-boring bit wears during drilling operation, the earth-boring bit comprising:

a bit body;

at least one cutter rotatably secured to the bit body and having an axis of rotation, the cutter having a cutter shell surface including at least a gage surface intersecting a heel surface;

a plurality of cutting teeth arranged in generally circumferential rows on the cutter, including a heel row of heel teeth on the heel surface of the cutter and a gage row of gage inserts secured by interference fit to the gage surface of the cutter; and

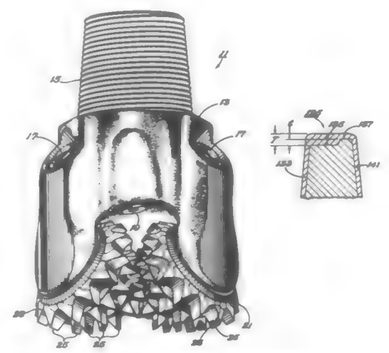
a secondary cutting structure including at least one scraper insert formed of material more wear-resistant than that of the cutter shell surface and secured by interference fit to the cutter shell surface generally at the intersection of the gage and heel surfaces and generally intermediate a pair of heel teeth having a pitch therebetween and a projection from the heel surface, the scraper insert including a gage insert surface and a heel insert surface, the gage and heel insert surfaces converging to define a cutting edge for engagement with the sidewall of the borehole and, the cutting edge protruding from the heel surface a distance not greater than the lesser of one-half the projection of the heel teeth and 30% of the Ditch between the pair of heel teeth.

5,351,769

EARTH-BORING BIT HAVING AN IMPROVED HARD-FACED TOOTH STRUCTURE

Danny E. Scott, Houston; Anton F. Zahradnik, Sugarland, and Rudolf C. O. Pessier, Houston, all of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Jun. 14, 1993, Ser. No. 76,029
Int. Cl.[5] E21B *10/16*
U.S. Cl. 175—374 10 Claims



1. An improved earth-boring bit comprising:

a bit body;

at least one cutter rotatably secured to the bit body, the cutter including a plurality of teeth formed integrally with the cutter and arranged in circumferential rows on the cutter, each tooth having an inner end, an outer end, a pair of flanks, and a crest substantially transversely connecting the ends and flanks;

the crest of at least one of the plurality of teeth in at least one row having a depression formed therein and extending from the outer end of the tooth to an intermediate point

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along the crest, a remainder of the crest defining a raised guide rib portion;

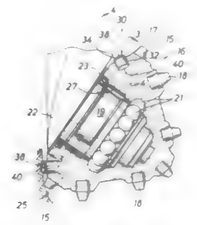
a wear-resistant material applied over at least the crest and a portion of the ends and flanks of the at least one of the plurality of teeth, wherein a thickness of the wear-resistant material over the depression is substantially greater than elsewhere on the at least one tooth.

5,351,770

ULTRA HARD INSERT CUTTERS FOR HEEL ROW ROTARY CONE ROCK BIT APPLICATIONS

Chris E. Cawthorne; Scott D. McDonough, both of The Woodlands; Gary Portwood, Katy, and Michael A. Siracki, Spring, all of Tex., assignors to Smith International, Inc., Houston, Tex.

Filed Jan. 15, 1993, Ser. No. 78,123
Int. Cl.[5] E21B *10/16*
U.S. Cl. 175—374 **24 Claims**



1. A rotary cone rock bit for drilling in an earthen formation comprises one or more rotary cones rotatively retained on a bearing connected to a body of said rock bit, each cone forms a circumferential heel row with diamond inserts spaced within said heel row, each of said diamond inserts forms a first exposed polycrystalline diamond surface that is about adjacent to said formation, said diamond insert is a right angle cylindrical body, an edge formed by said cylinder at said exposed diamond surface is chamfered, an edge formed by said chamfer nearest said exposed polycrystalline diamond surface of said insert is radiused to reduce cracking and chipping of the diamond, said inserts serve to maintain a constant diameter borehole wall formed by said formation as said rotary cone rotates against a bottom of said borehole.

10. A rotary cone rock bit for drilling boreholes in earthen formation comprises one or more rotary cones rotatively retained on a bearing connected to a body of said rock bit, each cone forming a circumferential heel row, with extended inserts spaced within said heel row, each of said inserts forms a first diamond cutting surface that is angled with respect to the formation to maintain the inserts in compression, a leading edge formed by said diamond surface of said insert being further away from the formation than a trailing edge formed by the diamond surface of said insert, the diamond heel row inserts with their angled cutting surface serve to maintain a substantially constant borehole diameter as the rotary core rotates against a bottom of said borehole.

5,351,771

EARTH-BORING BIT HAVING AN IMPROVED HARD-FACED TOOTH STRUCTURE

Anton F. Zahradnik, Sugarland, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

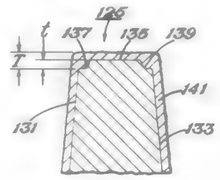
Filed Jun. 14, 1993, Ser. No. 76,716
Int. Cl.[5] E21B *10/50*
U.S. Cl. 175—374 **11 Claims**

1. An improved earth-boring bit comprising:

a bit body;

at least one cutter rotatably secured to the bit body, the cutter having a plurality of teeth integrally formed thereon and arranged in circumferential rows, each of the teeth including a pair of ends, a pair of flanks, and a crest substantially transversely connecting the ends and flanks;

the crest of at least one of the plurality of teeth in at least one row having a depression formed therein at at least one intersection of the ends and the crest;



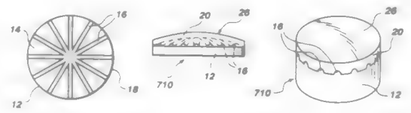
a wear-resistant material provided over at least the crest and a portion of the flanks and ends of the at least one tooth, wherein a thickness of the wear-resistant material is substantially greater over the depression than elsewhere on the tooth.

5,351,772

POLYCRYSTALLINE DIAMOND CUTTING ELEMENT

Redd H. Smith, Salt Lake City, Utah, assignor to Baker Hughes, Incorporated, Houston, Tex.

Filed Feb. 10, 1993, Ser. No. 16,085
Int. Cl.[5] E21B *10/46*
U.S. Cl. 175—428 **24 Claims**



1. A cutting element for use on a rotary drag bit for drilling subterranean formations, said cutting element comprising:

a substrate having at least one substantially planar side and an arcuate perimeter comprising at least a segment of a circle, and further including a plurality of upwardly-projecting lands located on said at least one substantially planar side adjacent the perimeter of said substrate, said lands extending radially inwardly from said arcuate perimeter toward the location of the center of said circular segment; and

a table comprising polycrystalline superhard material bonded to said substrate on said at least one substantially planar side thereof, extending between said lands and having a depth greater than the height of said upwardly-projecting lands.

5,351,773

WALKING ROBOT

Ken Yanagisawa, c/o Kabushiki Kaisha Mechanic Sekkei Jimusho, 5175-1, Ooaza Toyoshina Toyoshina-machi, Minamiazumi-gun, Nagano-ken, Japan

Filed Nov. 15, 1993, Ser. No. 151,885
Claims priority, application Japan, Dec. 1, 1992, 4-349920
Int. Cl.[5] B62D *51/06*
U.S. Cl. 180—8.5 **15 Claims**

1. A walking robot,

comprising:

a pair of X-guides provided parallel in an X-direction;

a pair of Y-guides provided parallel in a Y-direction perpendicular to the X-direction;

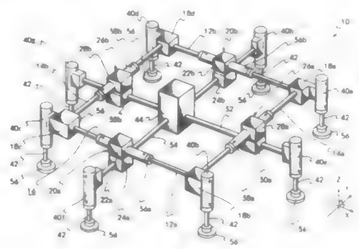
four corner blocks for connecting each end of said X-guides and said Y-guides;

a pair of X-travellers being capable of moving in the X-direction along said X-guides;

a pair of Y-travellers being capable of moving in the Y-direction along said Y-guides;

an X-rod provided in the X-direction, said X-rod being pierced through said Y-travellers;

a Y-rod provided in the Y-direction, said Y-rod being pierced through said X-travellers, said Y-rod being connected to said X-rod;



X-driving means for moving said X-travellers in the X-direction;

Y-driving means for moving said Y-travellers in the Y-direction; and

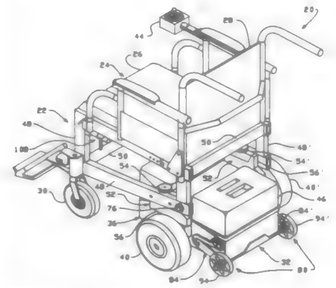
a plurality of Z-driving means for moving said corner blocks, said X-travellers and said Y-travellers in a Z-direction perpendicular to the X- and Y-directions, said Z-driving means being provided on said corner blocks, both ends of said X-rod and both ends of said Y-rod.

5,351,774

POWERED WHEELCHAIR WITH A DETACHABLE POWER DRIVE ASSEMBLY

James Okamoto, Clovis, Calif., assignor to Quickie Designs Inc., Fresno, Calif.

Filed Jun. 2, 1992, Ser. No. 892,276
Int. Cl.[5] B60K *1/02*
U.S. Cl. 180—65.1 **12 Claims**



1. A wheelchair comprising:

a wheelchair frame having a fore portion and an aft portion;

a seat assembly carried by said wheelchair frame;

a power drive assembly including a drive assembly frame, a motor mounted to said drive assembly frame, at least one power drive wheel mounted to said drive assembly frame and operably coupled to said motor;

said power drive assembly being removably coupled to said aft portion of said wheelchair frame by a mounting structure including a first mounted element carried by said wheelchair frame, a second mounting element carried by said drive assembly frame, and a fastener releasably coupling said first mounting element to said second mounting element, said second mounting element including a positioning structure for coupling said second mounting element to said drive assembly frame at a plurality of positions changing the location of a center of gravity of said wheelchair; and

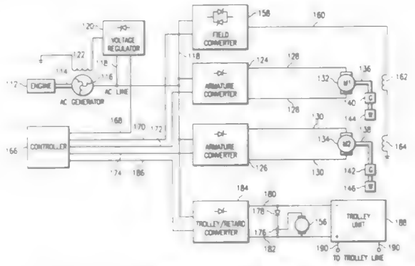
a wheel mounting structure provided on said aft portion of said wheelchair frame and formed to releasably receive a pair of manually operable drive wheels for mounting to said wheelchair frame when said power drive assembly is removed from said wheelchair frame.

5,351,775

METHOD FOR PROPELLING AND RETARDING OFF-ROAD HAULERS

Ronald A. Johnston; Dwight Baker, and Gary L. Nelson, all of Longview, Tex., assignors to Marathon LeTourneau Company, Longview, Tex.

Continuation of Ser. No. 818,174, Jan. 8, 1992, abandoned, which is a division of Ser. No. 443,177, Nov. 30, 1989, Pat. No. 5,103,923. This application Apr. 22, 1993, Ser. No. 54,010
Int. Cl.[5] B60K *6/00*
U.S. Cl. 180—65.2 **9 Claims**



1. A method for operating an electrically-powered off-road hauler utilizing, selectively, electrical power generated on board said hauler and electrical power from an external source, comprising the steps of:

operating an internal combustion engine on board said hauler as a prime mover;

driving an AC generator from said engine to generate AC electrical power at a desired voltage;

supplying AC power from said AC generator to an AC power distribution means;

supplying AC power from said AC power distribution means to a first thyristor converter;

converting AC power to DC power in said first thyristor converter;

supplying DC electrical power from said first thyristor converter to at least one DC wheel motor;

powering at least one drive wheel of said hauler from said DC wheel motor;

selectively supplying DC line power from said external source to a second thyristor converter on board said hauler;

converting DC line power from said external source to AC power in said second thyristor converter;

supplying AC power from said second thyristor converter to said AC power distribution means simultaneously with the step of supplying AC power from said AC generator to said AC power distribution means; and

utilizing AC power supplied to said AC power distribution means from said external source and from said AC generator to power said DC wheel motor, so as to replace a portion of the AC power generated by said AC generator, and reduce fuel consumption by said internal combustion engine.

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5,351,776

ELECTRONIC SYSTEM FOR A MOTOR VEHICLE

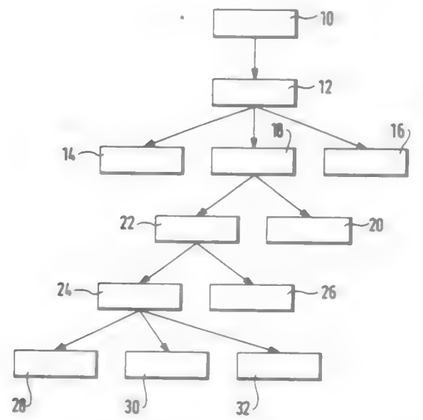
Frieder Keller, Bretten; Martin Streib, Vaihingen/Enz; Otto Holzinger, Eschenbach; Rolf Leonhard, and Thomas Gölzer, both of Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 6, 1992, Ser. No. 863,006

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1991, 4111023

Int. Cl.[5] B60K *31/04;* B60T *8/00, 17/22*

U.S. Cl. 180—79.1 11 Claims



1. An electronic control system for a motor vehicle having a drive assembly and a braking apparatus for braking the vehicle, the drive assembly including a motor and a transmission, the electronic control system comprising:

means for controlling said braking apparatus;

first means defining an upper hierarchial level and being provided for detecting driver commands and for generating first control commands corresponding to said drive commands;

second means defining a mid hierarchial level;

third means for controlling said drive assembly;

said second means being provided for receiving said first control commands and for generating second and further control commands corresponding to said first control commands for controlling the operating performance of the motor vehicle in accordance with said driver commands and for transmitting said further control commands to said means for controlling said braking apparatus and for transmitting said second control commands to said third means for controlling said drive assembly;

said third means defining a lower hierarchial level and being provided for receiving said second control commands and for generating third control commands based on said second control commands and for emitting said third control commands for controlling said motor and said transmission to effect a control of said operating performance of said motor vehicle in accordance with said second control commands;

said second means being a coordinating element adapted to provide the drive commands by acting on said braking apparatus of the vehicle and by controlling the drive assembly of the vehicle while inputting a desired output torque of the drive assembly; and ,

each of the command exchanges taking place between said hierarchial levels in only one direction.

5,351,777

REAR WHEEL TURNING SYSTEM FOR VEHICLE AND METHOD OF NEUTRAL ADJUSTMENT OF THE SAME

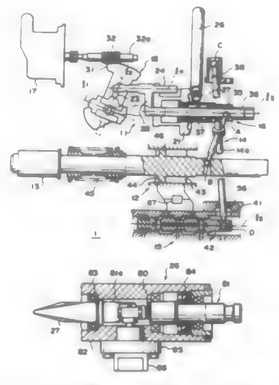
Koji Fujio, and Yutaka Tagashira, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed May 15, 1992, Ser. No. 883,488

Claims priority, application Japan, May 17, 1991, 3-113020; May 23, 1991, 3-118504

Int. Cl.[5] B62D *7/14*

U.S. Cl. 180—140 4 Claims



1. In a rear wheel turning system for a vehicle which is for turning rear wheels of the vehicle in response to turning of front wheels and has a mechanical system which displaces a rear wheel turning shaft in the transverse direction of the vehicle to turn the rear wheels and a hydraulic system which assists the mechanical system in displacing the rear wheel turning shaft, said hydraulic system comprising a piston-and-cylinder mechanism having a piston fixed to the rear wheel turning shaft and received in a cylinder to form first and second pressure chambers, a hydraulic circuit which applies hydraulic pressure to the piston-and-cylinder mechanism, and a hydraulic switching valve which can take a neutral position where it causes the hydraulic circuit to apply no hydraulic pressure to the piston, a first position where it causes the hydraulic circuit to apply hydraulic pressure to the first pressure chamber of the piston-and-cylinder mechanism and a second position where it causes the hydraulic circuit to apply hydraulic pressure to the second pressure chamber, said mechanical system comprising an input member which is connected to a system for turning the front wheels and is rotated in response to turning of the front wheels to input the amount and direction of turning of the front wheels into the mechanical system, a rear wheel turning ratio changing means which changes an amount by which an output member is displaced for a given amount of turning of the front wheels and a direction in which the output member is displaced for a given direction of turning of the front wheels according to predetermined rear wheel turning characteristics and a displacement transmission means which is connected to the output member at a first end, to the rear wheel turning shaft at a second end, to a vehicle body at a third end and to the hydraulic switching valve of the hydraulic system at a fourth end to transmit the displacement of the output member to the rear wheel turning shaft and the hydraulic switching valve, the hydraulic switching valve being to be held in the neutral position when the front wheels are in the neutral position, being to be moved to the first position when the output member is displaced in one direction and being to be moved to the second position when the output member is displaced in the other direction,

a method of neutral adjustment of the rear wheel turning system comprising the steps of

incorporating the rear wheel turning system in the vehicle body with said third end of the displacement transmission means temporarily held stationary in one position relative to the vehicle body,

setting the rear wheel turning ratio changing means in an arbitrary position except the position where the output member is not displaced irrespective of whether the input member is rotated,

rotating the input member in one direction and the other by the same angles about a neutral angular position of the input shaft where it is held when both the front wheels and the rear wheels are held straight ahead while a hydraulic pressure is applied to the piston-and-cylinder mechanism,

measuring a maximum displacement of the rear wheel turning shaft when the input member is rotated in one direction and a maximum displacement of the rear wheel turning shaft when the input member is rotated in the other direction,

calculating the average of the maximum displacements, and

moving said third end of the displacement transmission means to the position where the rear wheel turning shaft is displaced by the average of the maximum displacements and fixing said third end of the displacement transmission means there.

5,351,778

AUTOMOTIVE WORKING MACHINE OF RADIO CONTROL TYPE

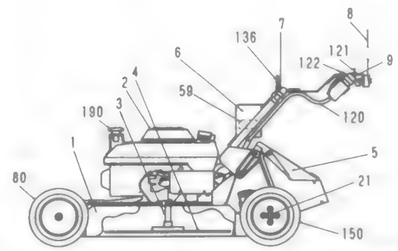
Mori Shigemi, and Akagi Hitoshi, both of Okayama, Japan, assignors to Kaaz Corporation, Okayama, Japan

Filed Aug. 28, 1992, Ser. No. 936,938

Claims priority, application Japan, Aug. 30, 1991, 3-246762; Apr. 18, 1992, 4-024868; Apr. 28, 1992, 4-028369

Int. Cl.[5] B62D *1/24;* B60K *41/24*

U.S. Cl. 180—167 4 Claims



1. A radio-control automotive working machine comprising a motor mounted on a carriage, a radio receiver, and an actuator to operate a traveling transmission and steering wheels in response to signals of the receiver so that the working machine is operated when the signals are transmitted to said receiver by a radio transmitter, wherein a traveling brake and a traveling clutch are provided in a traveling control apparatus to function said traveling brake when said traveling clutch is in neutral, switches for operating said traveling clutch which are provided on said radio transmitter of said traveling control apparatus are independent switches for advancing and retreating operations, and said switches are located in a vicinity of a side surface to one side of a vertical center line of a front surface of said transmitter, and maintained at an appropriate distance such that they can not be easily operated simultaneously, said switches for said advancing and retreating operations occupying a position such that the advancing operation is easier to perform then the retreating operation, said switches being designed to transmit a clutch 'on' signal only when each of said switches is turned on by a finger of an operator.

5,351,779

SLIP CONTROL SYSTEM FOR VEHICLE

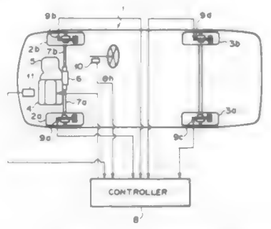
Tetsuhiro Yamashita, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 26, 1994, Ser. No. 186,641

Claims priority, application Japan, Jan. 27, 1993, 5-034176

Int. Cl.[5] B60T *8/32;* B60K *28/16*

U.S. Cl. 180—197 19 Claims



1. A slip control system for a vehicle comprising a traction control means for effecting traction control in which the amount of slip of the driving wheels of the vehicle relative to the road surface is detected and the engine output is controlled with a predetermined control variable so that the amount of slip of the driving wheels converges on a target value wherein the improvement comprises

a first determining means which determines that the friction coefficient μ of the road surface is high,

a limiting means which limits the control variable for said traction control when the first determining means determines that the friction coefficient μ of the road surface is high and the engine speed is not higher than a predetermined value while the traction control is being effected, and

a limitation releasing means which releases the limitation of the control variable when the engine speed increases by a predetermined value from a minimum engine speed to which the engine speed fell as a result of the traction control before limitation of the control variable.

5,351,780

TRANSFER APPARATUS FOR A VEHICLE

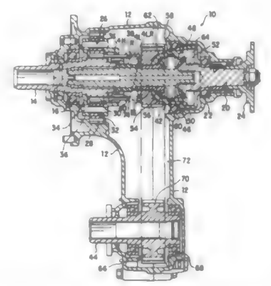
Wataru Kuwahara; Masaru Shiraishi, both of Hatsukaichi, and Ethuo Shirai, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 859,761, Mar. 30, 1992, Pat. No. 5,271,479. This application Sep. 28, 1993, Ser. No. 127,620

Claims priority, application Japan, Mar. 29, 1991, 3-065848; Jun. 13, 1991, 3-141993

Int. Cl.[5] B60K *17/35*

U.S. Cl. 180—249 10 Claims



1. A transfer apparatus for a vehicle comprising:

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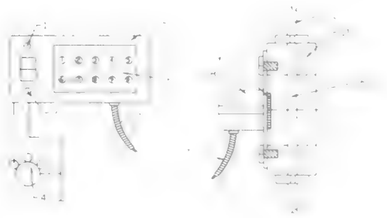
an input shaft rotatively driven by drive power from an engine of said vehicle;
pinion shaft means for mounting pinion gearing so that said pinion gearing is rotatable, said pinion shaft means mounted on said input shaft so as to rotate together with said input shaft;
first and second differential side gears meshing with said pinion gearing;
a first output shaft, forming a unitary body together with the first differential side gear, rotatively driven in association with rotation of said pinion shaft means;
a differential casing connected to said pinion shaft means so as to rotate together with said pinion shaft means;
clutch means, disposed on one side of said pinion shaft means, for selectively connecting said differential casing and said first output shaft;
an output ring disposed on another side of said pinion shaft means and connected to the second differential side gear so as to rotate together therewith; and
a second output shaft rotatively driven in association with rotation of said output ring;
wherein said output ring is disposed so as to radially overlap said differential casing in a direction of an axis of said input shaft.

5,351,781

BULLDOG VEHICLE ANTI-THEFT SYSTEM

Chalmers A. Pritchard, Rt. 5, Box 2505, Tallahassee, Fla. 32311, and John B. Whitman, Rt. 3, Box 5300, Crawfordville, Fla. 32327

Filed Jun. 28, 1993, Ser. No. 82,796
Int. Cl.[5] **B60R** *25/00*
U.S. Cl. 180—287 **18 Claims**



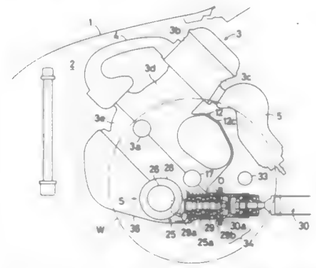
1. A brake locking mechanism for use with a vehicle's hydraulic braking system with means for blocking and unlocking the flow of hydraulic fluid through the existing brake hydraulic system comprising:
a housing;
said housing having an exterior and an interior;
said housing having a first cavity within said interior, a second cavity within said interior, and a third cavity within said interior;
a first input channel, and a second input channel;
said first input channel being in fluid communication with said first cavity and also in fluid communication with a master cylinder of said brake system;
said second input channel being in fluid communication with said second cavity and also in fluid communication with said master cylinder of said brake system;
a first output channel, and a second output channel;
said first output channel being in fluid communication with said first cavity and also in fluid communication with a proportioning valve of said brake system;
said second output channel being in fluid communication with said second cavity and also in fluid communication with said proportioning valve of said brake system;
a direct current motor;
said direct current motor has a shaft;
said shaft rotates in response to operation of said direct current motor;
said direct current motor being attached to said exterior;
said shaft protrudes into said third cavity;
a first limit switch, and a second switch;
said first limit switch being in electrical communication with said direct current motor;
said second limit switch being in electrical communication with said direct current motor;
a first gear, a second gear, and a third gear;
said first gear has a first fluid channel;
said first fluid channel, said first input channel and said first output channel being of substantially the same diameter;
said first gear is located within said first cavity;
said first fluid channel, said first input channel, and said first output channel are aligned when the brake locking mechanism is in an initial state;
said second fluid channel, said second input channel and said second output channel being of substantially the same diameter;
said second gear is located within said second cavity;
said second fluid channel, said second input channel, and said second output channel are aligned when the brake locking mechanism is in an initial state;
said third gear is attached to said shaft;
said third gear is located within said third cavity;
said third gear is in gearable communication with said first gear;
said third gear is in gearable communication with said second gear;
a control means;
said control means being in electrical communication with said direct current motor;
whereby said direct current motor is activated in response to receiving a predetermined signal from said control means and if the brake locking mechanism is in an initial state said direct current motor turns said third gear which in turn turns said first gear and said second gear until said first fluid channel is unaligned with said first input channel and said first output channel preventing fluid flow between said first input channel and said first output channel and said second fluid channel is unaligned with said second input channel and said second output channel preventing fluid flow between said second input channel and said second output channel wherein said direct current motor deactivates pursuant to a stop signal from said first limit switch rendering said brake locking mechanism into an armed state; and
whereby said direct current motor is activated in response to receiving a predetermined signal from said control means and if the brake locking mechanism is in an armed state said direct current motor turns said third gear which in turn turns said first gear and said second gear until said first fluid channel is aligned with said first input channel and said first output channel enabling fluid flow between said first input channel and said first output channel and said second fluid channel is aligned with said second input channel and said second output channel enabling fluid flow between said second input channel and said second output channel wherein said direct current motor deactivates pursuant to a stop signal from said second limit switch rendering said brake locking mechanism into an initial state.

5,351,782

POWER TRAIN CONSTRUCTION OF VEHICLE

Osamu Kameda, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Oct. 14, 1992, Ser. No. 961,775
Claims priority, application Japan, Oct. 17, 1991, 3-267988
The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.
Int. Cl.[5] **B60K** *5/04*
U.S. Cl. 180—297 **19 Claims**



19. A power train construction of a vehicle in which an exhaust pipe is connected to a rear side of a rearwardly inclined engine, the power train construction comprising:
a bevel gear of a transfer device connected with a transmission and which receives a driving power changed by the transmission and which changes a transmitting direction of the driving power,
a propeller shaft which is connected with said bevel gear of the transfer device by a connecting part and which extends in the longitudinal direction of the vehicle and transmits the driving power transmitted to the bevel gear of the transfer device to the rear wheels; and
a steering shaft extending in a car width direction and disposed between said exhaust pipe and said propeller shaft;
wherein the connecting part which connects said propeller shaft and said transfer device is located forward of said steering shaft.

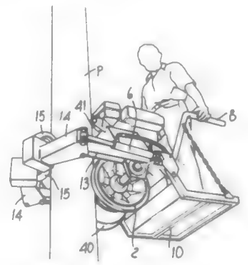
5,351,783

SELF-PROPELLED VEHICLE FOR CLIMBING ALONG POLE-SHAPED ELEMENTS, SUCH AS TREE TRUNKS, POLES AND THE LIKE

Alfredo Celli, Forli', Italy, assignor to Alcegarden S.r.l., Forli', Italy

Filed Nov. 10, 1992, Ser. No. 974,008
Claims priority, application Italy, Nov. 15, 1991, FO91 A 000019; Aug. 12, 1992, FO92 A 000018
Int. Cl.[5] **A63B** *27/00*
U.S. Cl. 182—133 **14 Claims**

1. Climbing vehicle for vertical movement along pole-like elements comprising;
a rigid frame provided with a loading platform;
a pair of drive wheels carrying said frame and, in a working position, resting against a pole-like element to be climbed, said drive wheels each having a drive wheel diameter, a cylindrical portion, and a frustum-shaped taper extending from said cylindrical portion for centering a pole-like element to be climbed;
a motor supported by said frame and actuating said drive wheels;
a pair of horizontal and mutually parallel beams extending frontally from said frame, each of said beams having a free end;
a pair of arms articulated to said beams;
a pair of counteracting wheels each having a diameter smaller than said drive wheel diameter and being freely rotatably supported about a horizontal axis by said arms;
jacks provided said free end of said beams to actuate said arms for clamping said counteracting wheel against a pole-like element to be climbed, in a position opposite to said drive wheels, and;
a pair of handlebars extends rearward from said frame for steering said climbing vehicle, and;



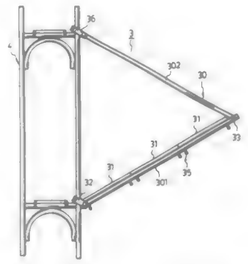
wherein said loading platform is pivoted to said frame about a horizontal axis and raisable during movement of said vehicle on the ground.

5,351,784

PROTECTIVE DEVICE FOR A SCAFFOLD

Te-Fu Sung, No. 179, Mu-Tan Rd., Mu-Tan Tsun, Mu-Tan Hsiang, Ping-Tung Hsien, Taiwan

Filed Mar. 24, 1994, Ser. No. 217,428
Int. Cl.[5] **E04G** *21/00*
U.S. Cl. 182—138 **4 Claims**



1. A protective device, which is to be mounted removably on a scaffold so as to prevent building materials falling from the scaffold from hurting people under said protective device, comprising:
a pair of aligned connecting rod assemblies each of which including an inclined inner rod that has a first end and a second end, an inclined outer rod that is spaced apart from said inner rod at a predetermined distance so as to define a longitudinal guideway between said inner and outer rods and that has a first end connected securely to said first end of said inner rod and a second end connected securely to said second end of said inner rod, and an inclined middle rod that has a first end to be mounted removably on an outside portion of said scaffold and a second end mounted pivotally on and located between said second ends of said inner and outer rods so as to allow turning of said middle rod downwardly into said guideway when said first end of said middle rod is removed from said scaffold, said first ends of said inner and outer rods to be mounted removably on said outside portion of said scaffold under said first end of said middle rod, said second end of said middle rod being disposed higher than said first ends of said inner and outer rods and lower than said first end of said middle rod,

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said connecting rod assemblies being spaced apart from each other at a predetermined distance; and

a row of aligned and inclined coplanar protective assemblies disposed side by side on said inner rods of said connecting rod assemblies, each of said protective assemblies including an inclined sheet-like protective unit which is disposed on said inner rods of said connecting rod assemblies so as to prevent the building materials which fall from said scaffold from falling into a space under said protective assembly, and two elongated retaining units which are mounted securely on a bottom surface of said protective unit and which are retained respectively on said inner rods of said connecting rod assemblies, each of said retaining units including a guide member secured thereto, each of said guide members being engaged within a corresponding one of said guideways, thereby, when a lowermost one of said protective assemblies is removed from said connecting rod assemblies, remainder of said protective assemblies can slide downward on said inner rods so as to be removed one by one from said connecting rod assemblies.

5,351,785

FOLDING SAWHORSE WITH LOCKING SHELF

Kenrick J. DuRapau, Austin, Tex., assignor to Storehorse, Inc., San Antonio, Tex.

Filed Nov. 16, 1992, Ser. No. 977,113
Int. Cl.[5] B27B *21/00*
U.S. Cl. 182—153 **7 Claims**



1. A folding sawhorse comprising:

(a) a first frame having a first elongated crossmember, a first pair of substantially parallel spaced apart legs extending from the first crossmember, and a first brace extending between the first pair of legs;

(b) a second frame having a second elongated crossmember, a second pair of substantially parallel spaced apart legs extending from the second crossmember, and a second brace extending between the second pair of legs;

(c) a hinge connection pivotally connecting the first crossmember to the second crossmember so as to enable the first frame to pivot with respect to the second frame about a hinge axis substantially parallel to both a longitudinal axis of the first crossmember and a longitudinal axis of the second crossmember; and

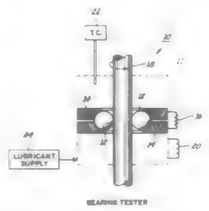
(d) a substantially rectangular shelf having at a first side thereof a slidable attachment to opposing inner channels formed on the first pair of legs and having a second side pivotally connected to the second frame, the shelf being capable of sliding along the slidable attachment at the first side thereof and pivoting at the second side between a storage position in which a plane defined by the first frame is substantially parallel to a plane defined by the second frame and a working position in which the planes defined by the first and second frames form generally two sides of an "A" shape with the shelf comprising a cross portion of said "A" shape.

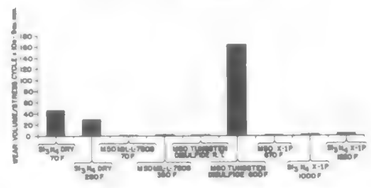
5,351,786

HIGH TEMPERATURE LUBRICATION FOR METAL AND CERAMIC BEARINGS

Edgar E. Graham, Lyndhurst, and Nelson H. Forster, Dayton, both of Ohio, assignors to Cleveland State University, Cleveland, Ohio

Filed Aug. 31, 1992, Ser. No. 937,425
Int. Cl.[5] F01M *5/00*
U.S. Cl. 184—6.22 **24 Claims**





1. Improved lubrication means for a mechanical apparatus employing at least one pair of moving bearing surfaces constructed with a material selected from the group consisting of metals and ceramics, said bearing surfaces being operated in dynamic physical contact to resist mechanical wear of said bearing surfaces at elevated bearing operating temperatures of at least 300° C. comprising:

(a) treating the bearing surfaces during operation with a vaporizable and polymerizable phosphazene compound in the vapor phase at elevated temperatures of at least 300° C., and

(b) polymerizing the vaporized phosphazene compound while in contact with the operating bearing surfaces to form an adherent solid polymer lubricating coating with a molecular weight of at least 30,000 on at least one of the treated bearing surfaces.

21. A method of reducing mechanical wear between a pair of moving bearing surfaces constructed with a material selected from the group consisting of metals and ceramics, said bearing surfaces being operated in dynamic physical contact at elevated temperatures of at least 300° C. comprising:

(a) proving a source of vaporizable and polymerizable phosphazene compound,

(b) heating the phosphazene compound sufficiently to cause its vaporization, and

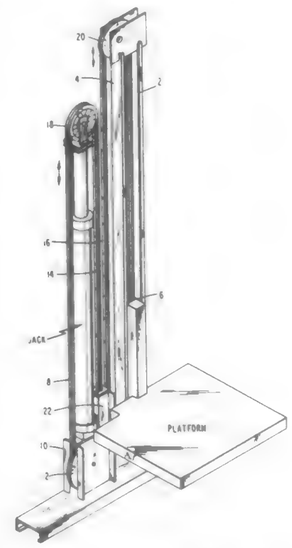
(c) polymerizing the vaporized phosphazene compound while in contact with the operating bearing surfaces to form an adherent solid polymer lubricating coating with a molecular weight of at least 30,000 on at least one of the contacted bearing surfaces.

5,351,787

ELEVATOR

Frederick Hoch, Middletown, and Robert Buonora, Camp Hill, both of Pa., assignors to Inclinator Company of America, Harrisburg, Pa.

Continuation of Ser. No. 9,081, Jan. 26, 1993, abandoned. This application Nov. 18, 1993, Ser. No. 154,122
Int. Cl.[5] B66B *11/04*
U.S. Cl. 187—253 **1 Claim**



1. An elevator arrangement especially suited for use in a home which consists of a combination of

(a) a single vertical guide rail (**2, 4**) that consists of two C-shaped channels that are interconnected along the entire vertical height of the guide rail,

(b) an elevator platform having a central portion which is slidably mounted within said single vertical guide rail (**2, 4**) so as to move on rollers vertically up and down within said two continuously interconnected C-shaped channels, said platform extending laterally outwardly from both sides of said single vertical guide rail (**2, 4**),

(c) a hydraulic jack in the form of a piston and cylinder, mounted closely adjacent to said guide rail (**2, 4**), and

(d) a rope and pulley arrangement interconnecting said platform, said guide rail and said hydraulic jack comprising

(1) a first pulley (**20**) mounted on the top of said single vertical guide rail (**2, 4**),

(2) a second pulley (**12**) at a fixed location adjacent the bottom of said hydraulic jack,

(3) a third pulley (**18**) connected to the outer end of the piston of said hydraulic jack that moves as the piston moves, and

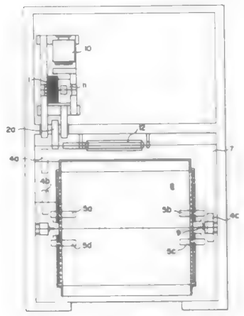
(4) a rope which has one end anchored at a point which is near the lower portions of both said hydraulic jack and said single vertical guide rail (**2, 4**), then travels up and over said third pulley (**18**), then down and around said second pulley (**12**), then up and around said first pulley (**20**) and then downwardly where its other end is connected to said elevator platform.

5,351,788

ROPE ARRANGEMENT FOR AN ELEVATOR CAR

Johannes DeJong, Järvenpää, Finland, assignor to Kone Elevator GmbH

Filed Sep. 15, 1993, Ser. No. 120,817
Claims priority, application Finland, Sep. 18, 1992, 924207
Int. Cl.[5] B66B *11/04*
U.S. Cl. 187—264 **6 Claims**



1. An elevator including a hoisting rope and elevator car comprising:

a hoisting machine and a hoisting rope for moving the elevator car;

four rope pulleys located below the elevator car;

three diverting pulleys mounted on a shaft for the elevator car;

the hoisting rope running in sequence from a traction sheave of an hoisting motor to a first diverting pulley of the hoisting motor to a second diverting pulley mounted on the shaft to a first and second rope pulley located below the elevator car to a third diverting pulley mounted on the shaft to a third and fourth pulley located below the elevator car to a rope anchorage located on the shaft to which the rope is attached;

so that the transmission ratio between the speed of the elevator car and the rotational speed of the hoisting machine is at least 1:4.

5,351,789

POSITIONING MECHANISM

Isao Tochihara; Osamu Yamashita; Mitsunori Sano; Tomoyuki Takahashi, and Makoto Nakano, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 27, 1992, Ser. No. 842,639
Claims priority, application Japan, Feb. 28, 1991, 3-033935
Int. Cl.[5] B65H *59/10*; H01L *41/08*
U.S. Cl. 188—67 **1 Claim**

1. A sizing feed system comprising:

a moving member for supporting in part;

a linear drive connected to the moving member for driving the moving member;

supporting means for supporting the moving member for movement along a linear path;

a base, the linear drive and the supporting means being mounted on the base;

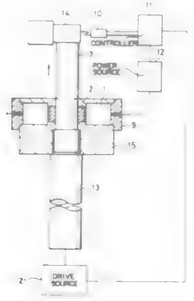
a lever pivotably supported by the supporting means and having a pressing portion adapted to press a surface of the moving member;

an electrostrictive effect element supported by the supporting means and coupled to the lever for applying a dressing force to the lever;

a power source electrically connected to the electrostrictive effect element for energizing the electrostrictive effect element;

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sensing means for sensing a position of a part supported by the moving member; and



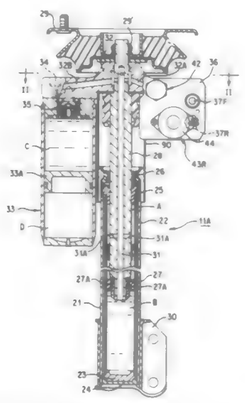
control means for controlling the linear drive and the power source based on the position sensed by the sensing means.

5,351,790

HYDRAULIC SUSPENSION DEVICE FOR AUTOMOBILE

Hiromi Machida, Ebina, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed Jun. 19, 1992, Ser. No. 901,070
Claims priority, application Japan, Jun. 20, 1991, 3-176131
Int. Cl.[5] B60G *17/00*
U.S. Cl. 188—314 13 Claims



1. A hydraulic suspension device for an automobile for vehicle level control, said device receiving pressurized fluid from and releasing pressurized fluid into a hydraulic control circuit, including a hydraulic oil pump and an oil tank, and comprising:

a hydraulic cylinder assembly having a hollow pressure tube, a piston which is slidably received in said hollow pressure tube so as to form a pressure fluid chamber within said hollow pressure tube, and a piston rod secured at one end to said piston and extending so that its other end is disposed outside of said hollow pressure tube;

fluid passage means, incorporated in one of said piston rod and said hollow pressure tube, for communicating said pressure fluid chamber with said hydraulic control circuit; and

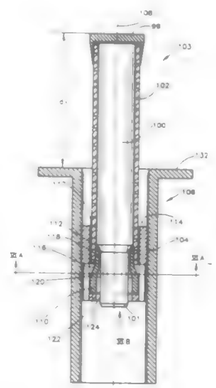
valve means for regulating a position of the automobile to provide said vehicle level control by controlling pressurized fluid introduced into said pressure fluid chamber through said fluid passage means, said valve means being (a) disposed between (1) the hydraulic cylinder assembly and (2) the hydraulic oil pump and the oil tank so as to selectively communicate the hydraulic cylinder assembly with the hydraulic oil pump and the oil tank to introduce said pressurized fluid into and release said pressurized fluid from said hydraulic cylinder assembly and (b) directly and integrally attached to said one of said piston rod and said hollow pressure tube outside of said hollow pressure tube.

5,351,791

DEVICE AND METHOD FOR ABSORBING IMPACT ENERGY

Nachum Rosenzweig, 3440 Bryant St., Palo Alto, Calif. 94306

Continuation of Ser. No. 855,045, Jul. 1, 1992, abandoned. This application Dec. 20, 1993, Ser. No. 171,340
Claims priority, application Israel, May 18, 1990, 94442
Int. Cl.[5] F16F *7/12*
U.S. Cl. 188—372 15 Claims



1. An energy absorption device comprising:

an elongate body arranged along a longitudinal axis to receive an axial impact force at a first end thereof along the longitudinal axis, and

means arranged adjacent a second end of said body for deformation thereof, said means including die means for producing deformation of said body and ring means attached to said die means and spaced therefrom for surrounding said body.

5,351,792

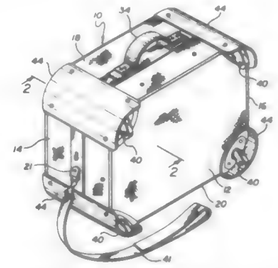
WHEELED STACKABLE LUGGAGE

Fred E. Cohen, 2201 Banyan Dr., Los Angeles, Calif. 90049

Filed Dec. 13, 1993, Ser. No. 165,664
Int. Cl.[5] A45C *13/26*
U.S. Cl. 190—18 A 9 Claims

1. A piece of luggage in the form of a suitcase of a rectangular configuration and having a flat top, a flat bottom, and four flat sides; four wheels mounted on said bottom and extending downwardly therefrom at the respective corners thereof; at least two elongated rigid members mounted adjacent to at least two of the corners of the suitcase and extending to a plane

below said bottom to protect said wheels, and in which said top is formed of a soft fabric material, and in which said top



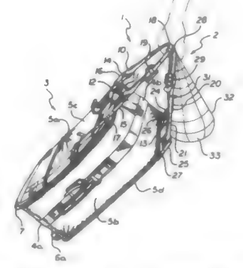
includes a zippered flap portion to permit access to the interior of the suitcase.

5,351,793

HANDLE FOR A WHEELED SUITCASE

Richard Gibbs, Los Angeles, Calif., assignor to Himar Sales Corp., Bel Air, Calif.

Filed May 5, 1993, Ser. No. 58,540
Int. Cl.[5] A45C *5/14, 13/26, 13/28*
U.S. Cl. 190—115 16 Claims



1. A handle for a suitcase, the suitcase having a bottom surface, a top surface, and at least first, second, third and fourth sides where the first and second sides oppose one another and the third and fourth sides oppose one another, the suitcase further having a plurality of wheels disposed on the bottom surface to provide transitional movement of the suitcase when the suitcase is placed in an inclined position by pulling the handle in a direction generally perpendicular to the third and fourth side so that the suitcase tilts toward the fourth side, the handle comprising:

a first and second strap each having a first and second end, the first and second straps being coupled to opposite sides of the suitcase;

first means for attaching the first and second ends of the first strap to the suitcase, said first attaching means being proximately coupled to the third side of the suitcase;

second means for attaching the first and second ends of the second strap to the suitcase, said second attaching means being proximately coupled to the fourth side of the suitcase; and

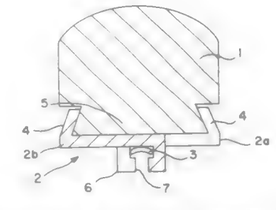
the first and second straps adapted to have a first length L1 and a second length L2, respectively defined by the distance from the top surface of the suitcase to a middle portion of the first and second straps, the middle portion of each the first and second straps being joined during transport of the suitcase to form a substantially right triangle having an angle A between the first and second straps where the first and second lengths have a relationship corresponding approximately to the equation L1 = L2 × cosine A.

5,351,794

CURRENT COLLECTOR HOLDER FOR A CARBON SHOE

Manfred Deutzer, Franz-Stenzer-Str. 3, D-1140 Berlin, Fed. Rep. of Germany

PCT No. PCT/DE91/00794, § 371 Date Apr. 1, 1993, § 102(e) Date Apr. 1, 1993, PCT Pub. No. WO92/05975, PCT Pub. Date Apr. 16, 1992
PCT Filed Oct. 4, 1991, Ser. No. 30,455
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1990, 4031686; Nov. 9, 1990, 4036137
Int. Cl.[5] B60L *5/08*
U.S. Cl. 191—55 19 Claims



1. A current collector holder for a carbon shoe, which bears against a contact wire, for electrically driven vehicles, which holder has two first webs, which project away from the shoe and are arranged underneath said shoe, a spring system separable from said holder being provided which presses each of the second webs relative to one another for pressing the first webs against the foot region of the shoe, wherein a spring is provided as the spring system, which spring extends uniformly in a longitudinal direction of the shoe, bears with its longitudinal region against the second webs, and in this way transmits its spring force, which acts in a direction transverse to the shoe, to the second webs for exerting forces continuously over the length of said shoe.

5,351,795

ELECTRONICALLY CONTROLLED HYDRODYNAMIC RETARDER WITH ADAPTIVE DUTY CYCLES BASED ON DECELARATIONS

Martin R. Dadel, Plainfield; Bradley L. McCafferty, and Phillip F. McCauley, both of Zionsville, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 31, 1992, Ser. No. 938,103
Int. Cl.[5] B60K *31/00;* B60T *8/26*
U.S. Cl. 477—96 5 Claims

1. A vehicle transmission system, comprising:

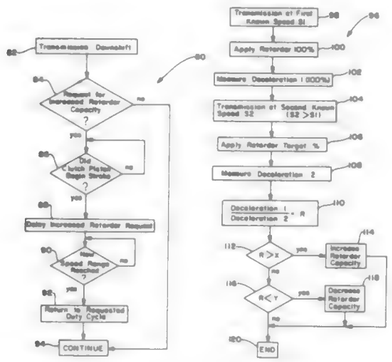
a transmission having a power output shaft;

a retarder interconnected with said output shaft for selectively applying a braking torque thereto; and

control means interconnected between said transmission and said retarder for regulating said retarder to control said braking torque, said control means (a) sensing vehicle speed and transmission temperature and regulating said retarder to control said braking torque as a function thereof, (b) reducing said braking torque by control of said retarder when said transmission temperature exceeds a particular level and said vehicle speed is not increasing, and (c) reducing said braking torque a proportional

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amount by control of said retarder when said vehicle deceleration exceeds a particular level and a vehicle brake



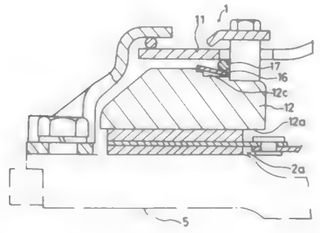
is not being applied, and by a set percentage when said vehicle brake is being applied.

5,351,796

CLUTCH COVER ASSEMBLY

Norihisa Uenohara, Neyagawa, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Nov. 5, 1992, Ser. No. 971,960
Claims priority, application Japan, Nov. 8, 1991, 3-091681[U]
Int. Cl.[5] F16D *13/44, 13/58*
U.S. Cl. 192—70.27 8 Claims



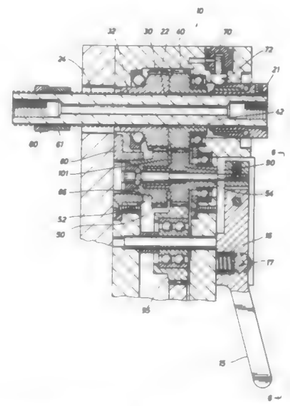
1. A clutch cover assembly, comprising:
an input rotation member connected to an engine of an automobile;
a clutch disc to be pressed against said input rotation member;
a dish-shaped clutch cover fixed to said input rotation member;
an annular one piece pressure plate disposed within said clutch cover, for pressing said clutch disc against said input rotation member, said pressure plate being connected to said input rotation member to rotate integrally and having a retainer on a side opposite to said rotation member;
a diaphragm spring supported by said clutch cover, for impelling said pressure plate toward said input rotation member;
a disc spring located between said pressure plate and said diaphragm spring for transmitting impelling force from said diaphragm spring to said pressure plate, said disc spring having a retained margin which is secured in said retainer on said pressure plate such that said disc spring is movable toward said rotation member, a free margin of said disc spring providing a given spacing from said pressure plate when said clutch disc is not pressed against said input rotation member, said retained margin of said disc spring being radially outward, and said free margin thereof being radially inward and a radially outward margin of said diaphragm spring being supported by said clutch cover, and a radially middle portion of said diaphragm spring pressing said radially inward margin of said disc spring through a wire ring; and
said wire ring arranged between said disc spring and said diaphragm spring, said wire ring being located between said free margin of said disc spring and said diaphragm spring and being separated from said clutch cover and said pressure plate.

5,351,797

RETRACTION SYSTEM FOR A POWER TOOL DRIVE SPINDLE

John R. Lawson, and Robert H. Alexander, both of Colombia, S.C., assignors to Cooper Industries, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 865,711, Feb. 24, 1992, abandoned, which is a continuation of Ser. No. 590,993, Oct. 1, 1990, abandoned. This application Feb. 12, 1993, Ser. No. 19,409
Int. Cl.[5] F16H *25/12*
U.S. Cl. 192—141 7 Claims



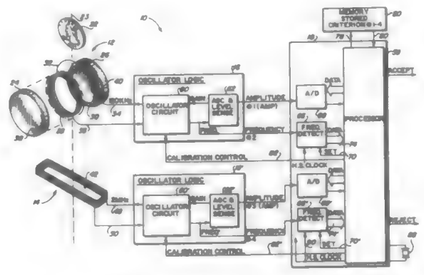
1. A retraction system for a power tool comprising:
a drive spindle, said drive spindle having:
a threaded portion; and
a splined portion;
a spindle feed gear, said spindle feed gear threadably interconnected with said threaded portion of said drive spindle;
a spindle drive gear, said spindle drive gear slidably interconnected with said splined portion of said drive spindle;
a spindle feed idler gear, said spindle feed idler gear constructed and arranged to intermesh with said spindle feed gear;
a cup member; said cup member arresting the rotational motion of said spindle feed idler gear by tapered interfitment with said cup member;
whereby, when the rotational motion of said spindle feed gear is arrested, the continued rotation of said drive spindle caused by the engagement of said spindle drive gear with the splines of said drive spindle will cause axial movement of said drive spindle through said spindle drive gear by the threaded engagement of said drive spindle with said spindle feed gear.

5,351,798

COIN DISCRIMINATION APPARATUS AND METHOD

Stephen J. Hayes, Swansea, England, assignor to Protel, Inc., Lakeland, Fla.

Division of Ser. No. 722,480, Jun. 28, 1991, Pat. No. 5,191,957.
This application Mar. 8, 1993, Ser. No. 27,363
Int. Cl.[5] G07D *5/08*
U.S. Cl. 194—318 26 Claims



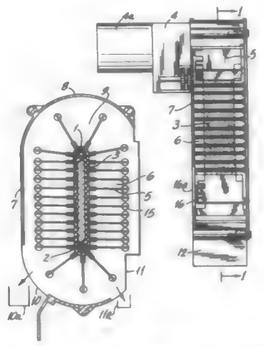
11. A method of determining whether or not a coin being sampled is acceptable, the method comprising the steps of:
providing a signal having electrical characteristics corresponding to physical characteristics of the coin being sampled;
storing into memory statistical variables determined from electrical characteristics for acceptable coin types;
determining for said coin being sampled a statistical variation of said electrical characteristics of said signal from the stored statistical variables; and
providing an indication that the coin being sampled is acceptable if said statistical variation is within a predetermined range.

5,351,799

TEMPORARY AUTOMATIC MACHINE COIN STORE

Jesus E. Ibarrola, Pamplona Navarra Espana, Spain, assignor to Azkoyen Industrial, S.A., Peralta, Spain

PCT No. PCT/ES91/00043, § 371 Date May 18, 1992, § 102(e) Date May 18, 1992, PCT Pub. No. WO92/02003, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 17, 1991, Ser. No. 838,763
Claims priority, application Spain, Jul. 18, 1990, 9001946
Int. Cl.[5] G07D *1/00*
U.S. Cl. 194—346 3 Claims



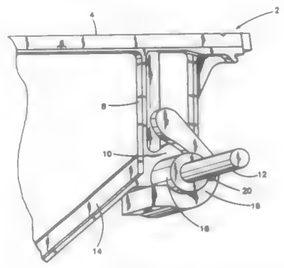
1. A temporary automatic machine coin store, comprising a vertically elongate and substantially rectangular housing with semi-cylindrically rounded ends; two tooth-gear blocks positioned within said housing upon an imaginary vertical middle plane; a motor-reducer group including a drive motor, said motor-reducing group being mounted outside said housing, one of said tooth-gear blocks being a driving block connected to said motor-reducer group to be operated thereby and another of said tooth-gear blocks being a return block vertically spaced from said driving block; a gear-tooth belt mounted between said tooth-gear block and being rotatable thereby, said belt being provided with a plurality of blades attached thereto, said blades extending at right angles to said belt at all times and defining therebetween spacings for accommodating coins inserted into said housing, said housing having at an upper end region thereof an entry window for insertion of coins by a user of the machine coin store so that as said belt with said blades are rotated by said motor-reducer group and said tooth-gear blocks, two adjacent uppermost blades which are positioned at a time below said entry window, form a dihedral into which the coins inserted through said entry window drop, and two opposed outlet windows formed in a bottom region of the housing for the coins to be ejected from said housing, said drive motor turning said belt in two opposite directions so as to selectively move said belt to one of said outlet windows depending on whether or not a machine provides the user with a product or service requested so as to send the coins to a collector box or to channel the coins back to the user.

5,351,800

ESCALATOR STEP AXLE ATTACHMENT ASSEMBLY

Gerald E. Johnson, Farmington, and James A. Rivera, Bristol, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Continuation of Ser. No. 914,813, Jul. 15, 1992, abandoned. This application Jun. 28, 1993, Ser. No. 82,150
Int. Cl.[5] B66B *23/12*
U.S. Cl. 198—332 7 Claims



1. An escalator or moving walkway step assembly comprising:
a) a step having an upper tread portion carried on support posts which extend downwardly from said tread portion;
b) a step chain axle socket disposed at the bottom of each support post, said sockets being configured to receive a step chain axle;
c) clamp means pivotally mounted on the step adjacent to each of said sockets, said clamp means including socket portions configured to grip the step chain axle, said clamp means also including curvilinear camming fingers extending from said socket portions, said camming fingers being operable to engage the axle as the step axle sockets are moved toward the axle so that said camming fingers slide over the axle to cam said clamp means around the axle and move said socket portions so that said socket portions will intercept the axle prior to pivoting to an axle-clamping position; and means for securing said clamp means in said axle-clamping position.

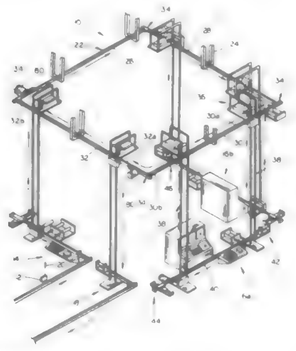
VOL 1167 ISS 1 OC 4 1994 UMI

5,351,801

AUTOMATED LABORATORY CONVEYOR SYSTEM

Rodney S. Markin, Omaha, Nebr.; Eldon L. Tackett, Neola, Iowa, and Stephen J. Hoskinson, Omaha, Nebr., assignors to Board of Regents - Univ. of Nebraska, Lincoln, Nebr.

Filed Jun. 7, 1993, Ser. No. 75,682
Int. Cl.[5] B65G *37/00*
U.S. Cl. 198—346.1 12 Claims



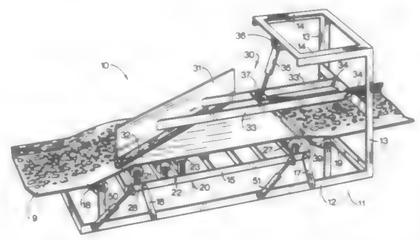
1. An automated laboratory conveyor system, comprising:
a conveyor track for transporting a specimen carrier;
said conveyor track including:
a first length of track having upstream and downstream ends; and
a second length of track having upstream and downstream ends, connected at its upstream end to the downstream end of said first track length;
said first and second track lengths oriented at an angle with respect to one another to form a corner at the connection thereof;
said corner connection including:
a first auxiliary transport surface aligned with said first track length and connected to the downstream end thereof, said first auxiliary transport surface operating at a speed less than that of first track length transport surface, to slow the movement of a specimen carrier thereon;
a second auxiliary transport surface aligned with said second track length and connected to the upstream end thereof;
a downstream end of said first auxiliary transport surface located adjacent to and slightly above an upstream end of the second auxiliary transport surface, to convey a specimen carrier from the first auxiliary transport surface to the second auxiliary transport surface;
said conveyor track further including:
inner and outer spaced-apart guide rails therealong for directing a specimen carrier therebetween, and an operable transport surface for moving a carrier placed thereon;
said track formed in a closed loop and operable to continuously transport said specimen carrier thereon;
means associated with said track for placing a specimen carrier on said track;
means associated with said track for removing a specimen carrier from said track;
a central control unit operably associated with said track for selectively operating said track to transport a specimen carrier;
said central control unit operatively connected to said carrier placing means and said carrier removing means;
said carrier placing means and carrier removing means being operable in response to signals from said central control unit.

5,351,802

METAL REMOVAL SYSTEM FOR CONVEYOR BELTS

William A. Wilson, 83 Pleasant Dr., SE., Marietta, Ga. 30067

Filed Dec. 28, 1992, Ser. No. 998,265
Int. Cl.[5] B65G *47/46*
U.S. Cl. 198—367 3 Claims



1. A system adapted for removing metal objects from overburden moving on a conveyor belt capable of assuming a trough-like configuration and having at least one outer edge, comprising:
(a) a frame through which the conveyor belt moves;
(b) a platform having horizontally disposed idlers mounted thereon, the platform being pivotally mounted, beneath portions of the belt, on the frame;
(c) means for raising the platform so that the idlers can be brought into contact with the belt and cause the belt, which otherwise assumes a trough-like configuration, to flatten, the idlers mounted on the platform remaining fixed in inclination with respect to each other as the platform is being raised;
(d) a scraper blade mounted on the frame above said portions of the belt;
(e) means for lowering the scraper blade so that the blade can be brought into close proximity with said portions of the belt; and
(f) means for controlling the raising of the platform and the lowering of the scraper blade so that the raising and lowering occur simultaneously.

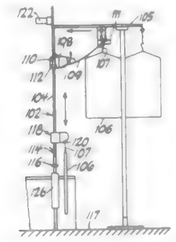
5,351,803

APPARATUS AND METHOD FOR RETRIEVING ARTICLES

Bernard S. Speckhart, Short Hills; Paul M. Berson, Jersey City, and Ramon R. Duterte, Jr., Lodi, all of N.J., assignors to White Conveyors, Inc., Kenilworth, N.J.

Filed Apr. 15, 1993, Ser. No. 47,851
Int. Cl.[5] B65G *43/08*
U.S. Cl. 198—464.3 11 Claims

1. An apparatus for receiving at least one article from a conveyor wherein the conveyor includes a release mechanism for releasing the article in response to a release signal, comprising:
a column member coupled to the conveyor;
a carriage member coupled to the column member for movement along the column member between a first position for receiving the article from the conveyor and a second position spaced from the first position;
a discharge rail coupled to the conveyor for transporting the article, released from the conveyor, to the carriage member;
a stop rail hingeably coupled to the column member for movement between a third position spaced from the discharge rail when the carriage member is in the first position and fourth position in contact with the discharge rail for preventing transportation of the article along the discharge rail;
a drive mechanism coupled to the carriage member for controlling movement of the carriage member between the first and second positions;
a first sensor electrically coupled to the drive mechanism for detecting when the article has been received by the carriage member and for transmitting a first signal to the drive mechanism for moving the carriage member from the first position to the second position when the receipt of the article has been detected; and
a second sensor electrically coupled to the drive mechanism for detecting when the article has been removed from the carriage member and for transmitting a second signal to the drive mechanism for moving the carriage member from the second position to the first position when removal of the article has been detected.

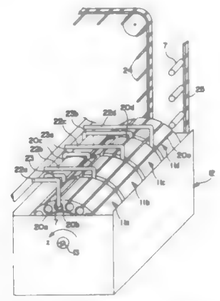


5,351,804

DEVICE FOR THE TRANSPORTATION OF OBJECTS

Karl Haberstroh, Hohenkrahenstr. 2, D-7703 Rielasingen, Fed. Rep. of Germany

Filed Feb. 25, 1993, Ser. No. 22,131
Claims priority, application Fed. Rep. of Germany, Feb. 29, 1992, 4206364; Jul. 30, 1992, 4225147
Int. Cl.[5] B65G *47/84*
U.S. Cl. 198—478.1 18 Claims



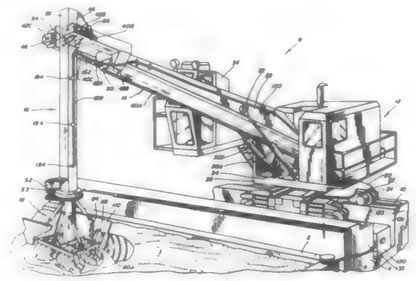
1. A device for the transportation of substantially hollow body objects, comprising delivery means, bars disposed in parallel on said delivery means, said bars having mutually aligned side walls exhibiting concave depressions, wherein each bar includes a filling adjoined to the concave depression, said filling having a semi-bore molded therein, wherein the semi-bores of two adjacent bars forms a bore for receiving a catching pin, thereby forming a receiving fixture for the hollow body of the object.

5,351,805

METHOD AND APPARATUS FOR UNLOADING BULK MATERIALS

David J. Miller; Allen R. Miller, and Charles P. Miller, all of McHenry, Ill., assignors to Miller Formless Co. Inc., McHenry, Ill.

Continuation of Ser. No. 7,542, Jan. 22, 1993, abandoned, which is a division of Ser. No. 750,971, Aug. 28, 1991, Pat. No. 5,191,966, which is a division of Ser. No. 549,895, Jul. 9, 1990, Pat. No. 5,078,261, which is a division of Ser. No. 144,428, Jan. 15, 1988, Pat. No. 4,957,198, which is a division of Ser. No. 848,907, Apr. 4, 1986, Pat. No. 4,738,350, which is a continuation of Ser. No. 672,151, Nov. 16, 1984, abandoned, which is a continuation of Ser. No. 414,383, Sep. 2, 1982, abandoned. This application Sep. 30, 1993, Ser. No. 129,803
Int. Cl.[5] B65G *33/32*
U.S. Cl. 198—493 5 Claims



1. A method of transferring a supply of aeratable bulk powder material disposed at a first location to a predetermined second location, said method comprising successively advancing portions of the bulk powder material to a predetermined area of the first location; successively moving at a first rate the advanced bulk powder material portions in a first closed conveyor portion from the predetermined area in a generally vertically oriented direction to a first elevated station; successively moving at a second rate faster than the first rate the bulk powder material portions from the first elevated station in a generally vertically oriented direction and in a second closed conveyor portion communicating with said first conveyor portion to a second elevated station above said first elevated station thereupon conveying the bulk powder material portions in a generally laterally oriented direction from the second elevated station to the second location.

5,351,806

FLEXIBLE SCREW FOR CONVEYORS

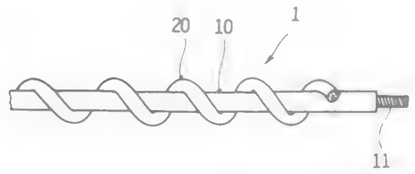
Masaaki Ohtsuji; Takahisa Ito, and Kiyoshi Furukawa, all of Amagasaki, Japan, assignors to Mitsubishi Cable Industries, Ltd., Hyogo, Japan

Filed Mar. 10, 1993, Ser. No. 28,955
Claims priority, application Japan, Mar. 11, 1992, 4-088035; Mar. 11, 1992, 4-088036
Int. Cl.[5] B65G *33/26*
U.S. Cl. 148—659 7 Claims

1. A flexible screw for conveyors, which comprises a flexible

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rod and a polymer-coated cord helically wound on the rod, said cord comprising a core and a polymer layer formed on the



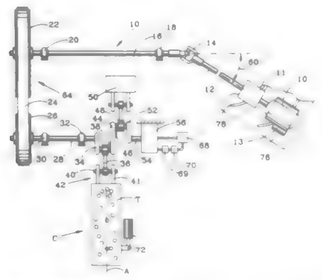
core, and said core comprising a fiber bundle having a specific amount of buckling of not more than 0.3%.

5,351,807

DRIVE MECHANISM FOR A LINEAR MOTION CONVEYOR

Paul Svejkovsky, 15714 Firthridge Ct., Webster, Tex. 77598

Filed Mar. 23, 1994, Ser. No. 217,207
Int. Cl.[5] B65G *25/00*
U.S. Cl. 198—750 20 Claims



1. A drive mechanism for powering a linear motion conveyor, the linear motion conveyor including a tray movable in a forward direction at a slow speed, then in a backward direction at a fast speed to move goods along the tray, the drive mechanism comprising:

a drive motor having a first shaft with a first shaft axis, the first shaft having a substantially constant rotational output;

a second shaft having a second shaft axis inclined relative to the first shaft axis;

a universal joint for interconnecting the first shaft and the second shaft, such that the rotational speed of the second shaft varies as a function of the angle between an axis of the first shaft and the axis of the second;

a third shaft having a third shaft axis;

a speed reducer for interconnection between the second shaft and the third shaft; and

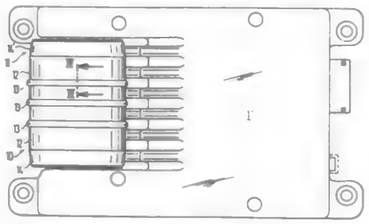
a crank interconnected between the third shaft and the tray, such that the tray moves forward during one-half rotation of the third shaft, then backward during a subsequent one-half rotation of the third shaft, thereby moving goods along the tray.

5,351,808

ROLLER DRIVE ASSEMBLY

Jarl Sundseth, Neuhaus, Fed. Rep. of Germany, assignor to Electro Pneumatic International GmbH, Fed. Rep. of Germany

Filed Jul. 27, 1993, Ser. No. 98,472
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1992, 4224816
Int. Cl.[5] B65G *13/02*
U.S. Cl. 198—782 7 Claims



1. A roller drive assembly comprising

a frame;

a drive roller mounted in the frame in such a way that the roller can be pivoted from a lower retracted position when the drive roller is stationary to one of two, upper operating positions when the drive roller is rotating, dependent on the direction in which the roller is pivoted;

drive means for the drive roller;

an outer shell forming part of the drive roller for engaging an object to be conveyed and defining a first larger-area frictional surface projecting above which is a plurality of second smaller-area frictional surfaces that are disposed in such a way that when the drive roller is pivoted from its retracted position into one of its operating positions, an object to be conveyed by the assembly is first contacted by the second frictional surfaces which, as the drive roller moves further into its operating position and thereby presses with greater force against the conveyed object, are displaced until they lie flush with said first frictional surface which can then make contact with said object to be conveyed.

5,351,809

MULTIPLE-STAGE EXTENDABLE CONVEYOR

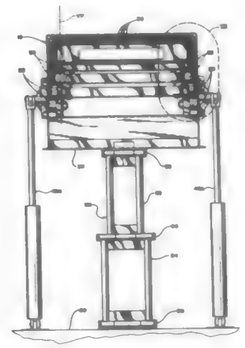
Phillip J. Gilmore, Healdsburg, and Richard J. Micheletti, Sebastopol, both of Calif., assignors to Rapistan Demag Corporation, Grand Rapids, Mich.

Filed Apr. 26, 1993, Ser. No. 54,106
Int. Cl.[5] B65G *21/14*
U.S. Cl. 198—812 39 Claims

1. In an extendable conveyor for conveying product, said extendable conveyor having a base unit, at least two extendable units selectively nested within each other and said base unit and a conveying member supported by said base unit and any extended portions of said extendable units, wherein said extendable units may be adjustably positioned incrementally between fully nested positions within said base unit or the next most inward extendable unit and fully extended position telescoped outwardly from said base unit and from one another, and further wherein each of said extendable units is supported by a cantilever support system from the next most inward extendable unit or said base unit, the improvement comprising:

said cantilever support system for each extendable unit including at least one rearward support member on each extendable unit engaging the next most inward extendable unit or the base unit and at least one forward support member on the next most inward extendable unit or the base unit supporting the extendable unit; and

wherein at least said rearward support members or said forward support members being laterally aligned in a vertical plane adjacent a lateral perimeter of said conveying member in order to allow a reduced range in width of said extendable units and thereby a wider conveying surface relative to the width of said base unit.

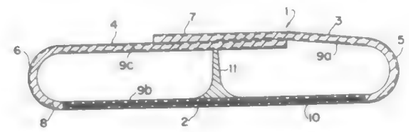


5,351,810

CONVEYOR BELT

Lennart Tingskog, Helsingborg, Sweden, assignor to Conveytech Systems AB, Helsingborg, Sweden

Filed Jun. 21, 1993, Ser. No. 75,492
Claims priority, application Sweden, Dec. 28, 1990, 9004166-6
Int. Cl.[5] B65G *15/08*
U.S. Cl. 198—819 12 Claims



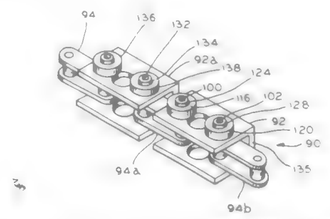
1. A conveyor belt comprised of an elastic material and comprising a flat center piece; transverse reinforcement rendering said center piece flexurally rigid about the longitudinal axis of the belt and longitudinal reinforcement rendering said center piece only slightly extendible in the longitudinal direction; two flat edge pieces which are each articulated to one side edge of the center piece, said edge pieces comprising transverse reinforcement rendering said edge pieces flexurally rigid about the longitudinal axis of the belt, said edge pieces being extendible in the longitudinal direction of the belt, and said edge pieces together having a total width at least equal to the width of the center piece; and two link pieces connecting said respective edge pieces with the center piece, said link pieces being flexible about the longitudinal axis of the belt and extendible in the longitudinal direction of the belt, said link pieces being resilient to enable outward pivotal or folding movement of the edge pieces from a position in which they are folded over the center piece, said link pieces having a width substantially smaller than that of the center piece; characterized by a longitudinal strip which if fixedly connected to an projecting upwardly from one side of the center piece, said longitudinal strip being extendible in the longitudinal direction of the belt, the height of the strip being not substantially larger than the width of the link pieces and the transverse position of the strip on the center piece being such that the edge pieces, when folded over the center piece, are applied against the strip.

5,351,811

SERPENTINE CONVEYORS ESPECIALLY FOR AUTOMATIC PACKAGING MACHINE

Stevan Tisma, Elk Grove Village, Ill., assignor to Tisma Machinery Corp., Elk Grove, Ill.

Filed Oct. 29, 1992, Ser. No. 968,580
Int. Cl.[5] B65G *39/20*
U.S. Cl. 198—845 4 Claims



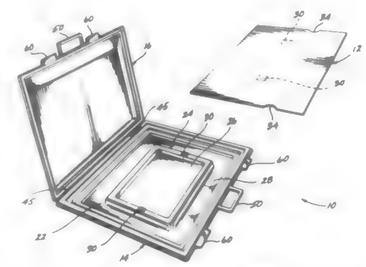
1. A link chain conveyor for an automatic packaging machine comprising first chain links having upper and lower spaced parallel plates of conventional configuration with bearing posts extending between and in contact with opposite ends of said plates for defining between them a space to receive a tooth on a sprocket wheel, second chain links fitting into space occupied by links having a conventional configuration, said second links being formed of a U-shaped bracket having spaced parallel plates formed by opposite arms of said U-shape, a space between the parallel plates fitting and receiving said first chain links, a pair of shafts passing through opposite ends of said spaced parallel plates of said second links and through said bearing posts of said first links, four rollers associated with said U-shaped bracket of said second chain links, each of said rollers being mounted on and individually associated with an end of said pair of shafts, equipment mounting means on at least one of said parallel plates of said U-shaped bracket, said mounting means conforming to and being compatible with mounting means on conventional automatic packaging machine link chain conveyors in order to carry standard automatic packaging equipment of a type usually mounted on said conventional link chain, and means defining a conveyor path of any suitable closed configuration through an automatic packaging machine for receiving and confining said rollers for causing said link chain conveyor to travel along said defined path.

5,351,812

PALETTE CASE

Colleen M. Eagon, 1506 N. B St., Aberdeen, Wash. 98520

Filed Oct. 6, 1992, Ser. No. 957,279
Int. Cl.[5] B05C *17/00*; B44D *3/00*
U.S. Cl. 206—1.7 14 Claims



1. A case for carrying a palette having a surface for the

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spreading of paint and other wet materials, the surface having an area S, wherein the case provides a controlled humidity environment for the temporary storage of paint and other wet materials on the palette when the case is closed, the case comprising:

a first case portion;

a second case portion adapted to be mated to the first case portion when the case is closed to form an enclosure for storage of the palette:

a gasket disposed between the first and second case portions around the periphery of the enclosure;

a first magnet disposed on the first case portion around the periphery of the enclosure; and

a second magnet disposed on the second case portion around the periphery of the enclosure, the second magnet having opposite polarity relative to the first magnet, the magnetic attraction of the first and second magnets causing the first and second case portions to contact the gasket at opposite sides thereof to form a substantially airtight seal around the enclosure when the case is closed;

wherein (a) the first case portion comprises an inner side, the inner side of the first case portion comprising a compartment for placement of the palette, and the second case portion comprises an inner side, the inner side of the second case portion comprising a cover for covering the palette; and (b) the first magnet is secured to the inner side of the first case portion around the entire periphery of the compartment and the second magnet is secured to the inner side of the second case portion around the entire periphery of the cover; and

wherein a first fastener is attached to the inner side of at least one of the first and second case portions, the first fastener cooperating with a second fastener on the palette to secure the palette within the case.

5,351,813

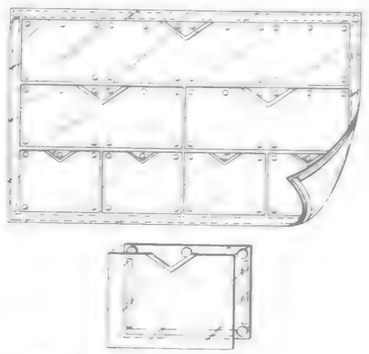
DISPLAY AND STORAGE APPARATUS

Bruce Golovan, 23305 Beachwood Blvd., Beachwood, Ohio 44122

Continuation of Ser. No. 801,671, Dec. 2, 1991, abandoned. This application Sep. 30, 1993, Ser. No. 130,153

Int. Cl.[5] B65D *30/22*

U.S. Cl. 206—45.34 **16 Claims**



1. A holding apparatus comprising:

a generally thin planar flexible base having front and back opposed surface;

at least one magnetic strip for attaching the base to a surface disposed in a generally vertical plane, the magnetic strip being generally thin and fixedly attached to the back surface of the base;

at least one generally thin transparent plastic compartment for holding or displaying objects, wherein said compartment is releasably attached to the front surface of said base and wherein said compartment has a front portion, a back portion, and an inner compartmental space having an opening formed by said front and back portions for receiving objects;

a notch formed in the front portion along the opening and provided with a protective strip; and,

compartment attachment means for releasably attaching the compartment to the front surface of the base, the compartment attachment means including at least one engaging portion and at least one corresponding receiving portion, and wherein the engaging portion is fixedly attached to the front surface of the base and the receiving portion is fixedly attached to the back portion of the compartment in corresponding relation to the notch.

5,351,814

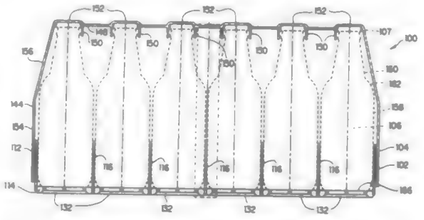
STACKABLE CASE FOR BOTTLES

William P. Apps, Anaheim, Calif., assignor to Rehrig-Pacific Company, Inc., Los Angeles, Calif.

Filed Aug. 28, 1992, Ser. No. 936,707

Int. Cl.[5] B65D *75/00, 21/00*

U.S. Cl. 206—139 **52 Claims**



1. A stackable case for bottles, comprising:

(a) a low depth tray to hold and separate bottles, said tray comprising:

a pair of opposed side walls having bottom surfaces lying generally in a plane;

a pair of opposed end walls having end portions and bottom surfaces lying generally in a plane, said end walls being integrally joined at said end portions with said side walls to define a tray rectangular structure;

a floor structure secured to and positioned generally within said tray rectangular structure, said floor structure defining a support surface for a plurality of bottles positioned within said tray rectangular structure;

said floor structure comprising a plurality of spaced, generally circularly-shaped members, a plurality of dividing walls between adjacent said circularly-shaped members thereby forming a plurality of separate bottle receiving pockets and preventing contact of adjacent bottles, and strut means interconnecting said circularly-shaped members and said dividing walls; and

said circularly-shaped members having a bottom surface lying generally in a plane and said dividing walls having a bottom surface lying generally in a plane, said plane of said bottom surface of said dividing walls being spaced a distance below the plane of the bottom surface of said circularly-shaped members such that a plurality of generally circular depressions are thereby formed on a bottom surface of said floor structure;

(b) a cover for said tray comprising:

a pair of opposed side walls having bottom surfaces lying generally in a plane;

a pair of opposed end walls having end portions and bottom surfaces lying generally in a plane, said end walls being integrally joined at said end portions with said side walls to define a cover rectangular structure;

a ceiling structure secured to and positioned generally within said cover rectangular structure, said ceiling structure defining a generally planar upper surface; and

said ceiling structure comprising a plurality of generally circular separator rings projecting downwards from said upper surface and a plurality of generally circular receiving caps projecting upwards from said upper surface, each of said separator rings being joined with one of said receiving caps thereby forming an opening in said upper surface for receiving the tops of bottles; and

wherein said cover is disposed over and exterior to said side walls of said tray when said tray is loaded with bottles such that each of the bottle tops is engaged by one of said receiving caps of said cover and lateral movement of the bottles is thereby substantially prevented.

5,351,815

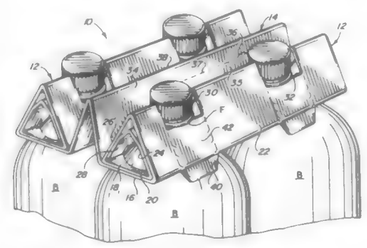
NECK CLIP BOTTLE CARRIER FOR TWO ROWS OF BOTTLES

James C. Fogle, Atlanta, and Robert L. Sutherland, Kennesaw, both of Ga., assignors to Riverwood International Corporation, Atlanta, Ga.

Filed Sep. 20, 1993, Ser. No. 123,552

Int. Cl.[5] B65D *75/00*

U.S. Cl. 206—153 **10 Claims**



1. A neck clip bottle carrier, comprising:

a central handle structure connected to spaced neck clip carrier units on either side thereof;

each carrier unit including a bottom panel having openings therein for receiving the necks of bottles and side panels angled upwardly toward each other;

upper portions of the side panels containing openings for receiving the necks of bottles, the openings including lower edges for engaging the underside of outwardly extending flanges on the bottle necks to support the bottles in the carrier;

the bottom and side panel of each carrier unit being comprised of inner and outer plies of material; and

the handle structure being comprised of opposite panels connected to each other along a fold line, each handle panel being connected to the outer bottom panel ply of an adjacent neck clip unit.

5,351,816

NECK CLIP BOTTLE CARRIER WITH MEANS FACILITATING BOTTLE REMOVAL

Robert L. Sutherland, Kennesaw, and James C. Fogle, Marietta, both of Ga., assignors to Riverwood International Corporation, Atlanta, Ga.

Filed Oct. 14, 1993, Ser. No. 136,522

Int. Cl.[5] B65D *75/00*

U.S. Cl. 206—153 **8 Claims**

1. A neck clip bottle carrier, comprising:

a bottom panel having openings therein for receiving the necks of bottles;

side panels connected to the bottom panel along fold lines, the side panels being angled toward each other;

at least one side panel being comprised of inner and outer plies of material;

the upper portions of the side panels containing openings for receiving the necks of bottles, the openings including lower edges for engaging the underside of outwardly extending flanges on the bottle necks to support the bottles in the carrier;

each of the inner and outer plies of said one side panel including a single easily severed line associated with each bottle neck opening in said one side panel, the easily severed line being angled from a lower portion of said one side panel to a point on the lower edge of said associated bottle neck opening, the easily severed line in the outer ply of said one side panel being substantially aligned with and overlying the easily severed line in the inner ply of said one side panel; and

a tab extending from the inner ply of said one side panel adjacent each easily severed line of the inner and outer plies, the tab extending below the overlying outer ply.



5,351,817

REINFORCED CLIP-TYPE ARTICLE CARRIER

Robert L. Sutherland, Kennesaw, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Oct. 14, 1993, Ser. No. 136,525

Int. Cl.[5] B65D *71/12*

U.S. Cl. 206—153 **16 Claims**



1. A clip-type carrier containing adjacent rows of articles, each article having an upper portion which includes an outwardly projecting lip, comprising:

a support panel including two spaced parallel inner fold lines and two outer fold lines parallel to and outwardly spaced from the inner fold lines;

the support panel including downwardly extending outer support sections connected thereto along the outer fold lines and downwardly extending inner support sections connected thereto along the inner fold lines, the inner support sections converging toward each other;

each inner and outer fold line being interrupted by spaced slits forming slots in the support sections through which at

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least portions of the projecting lips of the articles protrude;

the slots having lower surfaces engaging the underside of the protruding portions of the article lips to thereby support the articles;

a rib extending upwardly from the inner support sections; and

glue flaps extending from the rib and being adhered to the support panel on opposite sides of the rib.

11. A clip-type carrier containing adjacent rows of articles, each article having an upper portion which includes an outwardly projecting lip, comprising:

a support panel including two parallel downwardly extending outer support sections at opposite ends of the panel and two downwardly extending inner support sections parallel to said outer support sections and converging toward each other;

each inner and outer support section including slots through which at least portions of the projecting lips of the articles protrude;

a rib extending upwardly from the inner support sections; and

glue flaps extending from the rib and being adhered to the support panel on opposite sides of the rib.

12.A blank for forming a clip-type carrier adapted to support adjacent rows of articles from outwardly projecting lips on the upper portions of the articles, comprising:

a generally rectangular sheet including two spaced parallel inner fold lines extending longitudinally of the sheet and two outer fold lines parallel to and outwardly spaced from the inner fold lines;

the sheet including outer support sections connected thereto along the outer fold lines and inner support sections connected thereto along the inner fold lines;

each inner and outer fold line being interrupted by spaced slits forming slots .in the support sections for receiving at least portions of the projecting lips of the articles to be carried;

the edges of the inner and outer support sections formed by folding the inner and outer support sections down about their connecting fold lines being adapted to engage the underside of the outwardly projecting lips of articles;

each inner support section being connected to a rib section along a fold line;

the rib sections being connected to each other along a central fold line so as to form an upwardly extending two-ply rib in a carrier formed from the blank; and

a plurality of slits extending from the central fold line into the inner support sections and the rib sections, each slit having ends beginning and terminating at spaced points on the central fold line, the slits forming glue flaps which are adhered to the sheet between the inner and outer fold lines in a carrier formed from the blank.

14. A blank for forming a clip-type carrier adapted to support adjacent rows of articles from outwardly projecting lips on the upper portions of the articles, comprising:

a generally rectangular sheet including two spaced parallel inner fold lines extending longitudinally of the sheet and two outer fold lines parallel to and outwardly spaced from the inner fold lines;

the sheet including outer support sections connected thereto along the outer fold lines and inner support sections connected thereto along the inner fold lines;

each inner and outer fold line being interrupted by spaced slits forming slots in the support sections for receiving at least portions of the projecting lips of the articles to be carried;

the edges of the inner and outer support sections formed by folding the inner and outer support sections down about their connecting fold lines being adapted to engage the underside of the outwardly projecting lips of articles;

each inner support section being connected to a rib section along a fold line;

the rib sections being connected to each other along a central fold line so as to form an upwardly extending two-ply rib in a carrier formed from the blank; and

slits in the inner support sections and the rib sections forming glue flaps which are adhered to the sheet between the inner and outer fold lines in a carrier formed from the blank, the glue flap slits forming a pair of oppositely located flaps, each flap containing a cutout for use in lifting the carrier.

5,351,818

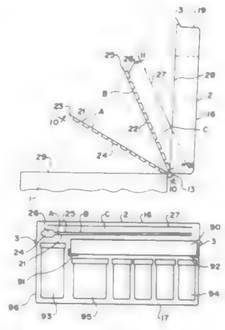
MEDICINE BOX

Yousef Daneshvar, 33200 Slocum, Farmington, Mich. 48024

Filed Aug. 20, 1992, Ser. No. 932,562

Int. Cl.[5] **B65D** *77/00*

U.S. Cl. 206—216 **12 Claims**



1. A medicine box for use in dispensing pills comprising a main body means for defining an internal volume and lid means for rendering said internal volume selectively accessible and inaccessible by permitting opening and closing of said main body means, said main body means containing a pill bottle storage space within said internal volume, said medicine box further including a pill container for receiving a weekly supply of pills taken on a daily basis, said pill container removably supported on said main body means within said internal volume such that said pill container is located above said pill bottle storage space said lid means permitting access to said pill container, said main body means further comprising ledge means for supporting said pill container, said lid means comprising an outer lid and an inner lid, said inner lid including a plurality of compartments for receiving pills and sheets of printed material that convey information relevant to medication, said inner lid further including two transparent plastic walls secured together to cooperatively define said plurality of compartments.

5,351,819

SLEEP THERAPY PACKAGE

Steven C. Varon, Neshanic Station, N.J., assignor to Carter-Wallace, Inc., New York, N.Y.

Filed Dec. 10, 1993, Ser. No. 165,385

Int. Cl.[5] **B65D** *71/00*

U.S. Cl. 206—232 **16 Claims**

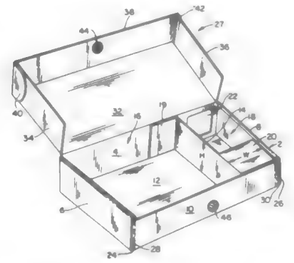
1. A sleep therapy package comprising:

a box having side walls, a bottom and a lid;

a partition dividing the box into first and second compartments;

a plurality of envelopes in said first compartment;

each of said envelopes respectively containing at least one playable audiogenic recording for inducing sleep; and



a plurality of packs of medical doses to be used for sleep inducement in said second compartment.

5,351,820

CIGARETTE CARTON WITH OPENINGS FOR REVENUE STAMPS

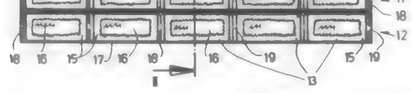
Heinz Focke, Verden, and Hans-Jürgen Bretthauer, Bremen, both of Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

Filed Jun. 4, 1992, Ser. No. 894,336

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1991, 4120059

Int. Cl.[5] **B65D** *85/10*

U.S. Cl. 206—273 **5 Claims**



1. A bundle pack containing a plurality of elongated cuboid cigarette packages (13) which are wrapped in an outer wrapper (14) made of cardboard, paper or plastic foil and each of which has a rectangular cross-section, wherein:

the bundle pack (10) comprises two longitudinally extending cuboid partial bundles (20, 21), each containing a row (11, 12) of side-by-side cigarette packages (13);

the cigarette packages (13) of each partial bundle (20, 21) are completely enwrapped by the outer wrapper (14), such that the outer wrapper (14) of each partial bundle (20, 21) forms an inner wall (25, 26) and, opposite thereto, an outer wall (34, 35), oppositely disposed elongated side walls (32, 33) each having a height, and oppositely disposed end walls (36);

the cigarette packages (13) are arranged within the rows (11, 12) so that the packages (15) abut one another at elongated side faces thereof and so that a substantially rectangular bottom face (15) of each package (13) faces one (33) of said side walls (32, 33), each bottom face (15) having a height;

the outer wrapper (14) contains, in said one side wall (33), side-by-side cut-outs (17) which expose the entire height of the bottom face (15) of each cigarette package (13) to permit the bottom face (15) to receive stamps or markings;

adjacent cut-outs (17) of the same said one side wall (33) are delimited from one another by transversely directed webs (19) which extend from the outer wall (34, 35) to the inner wall (25, 26);

along longitudinal sides thereof, the cut-outs (17) are directly delimited only by said inner wall (25, 26) and said outer wall (34, 35) so that each cut-out has a height that is the same as said height of said one side wall (33); and

each cut-out (17) has a rectangular configuration having an area that nearly corresponds to the substantially rectangular bottom face (15) of each cigarette package (13), and has a height at least as great as the entire said height of said bottom face of each cigarette package.

5,351,821

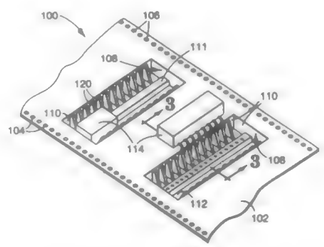
CARRIER TAPE WITH GENERIC POCKETS

Thomas Skrtic, Eau Claire, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 30, 1992, Ser. No. 876,045

Int. Cl.[5] **B65D** *85/38*

U.S. Cl. 206—330 **38 Claims**



1. A unitary flexible carrier tape for storage and seriatim delivery of components by an advancement mechanism, each component having a body and a number of leads arranged in aligned rows and projecting from the body, the carrier tape comprising:

(a) a strip portion having a top surface, said strip portion including means for engaging the advancement mechanism;

(b) a plurality of aligned pockets spaced along the carrier tape and opening through said top surface, said pockets each comprising

(i) four side walls each at generally right angles with respect to each adjacent side wall, said side walls adjoining and extending downwardly from said top surface of said strip portion,

(ii) a bottom wall adjoining said side walls to form the pocket, and

(iii) a plurality of individual lead

retaining portions adjoining at least one of said side walls and said bottom wall, greater in number than the number of leads of at least one of the components to enable the carrier tape to carry and retain different sizes of components within said pocket; and

(c) at least one component within at least one pocket, said component having a body and a number of spaced leads arranged in aligned rows and projecting from the body, at least one component having less leads than the pocket in which it is contained has lead-retaining portions.

5,351,822

RETAINER FOR AN ELONGATED SURGICAL INSTRUMENT

Hans-Jurgen F. Sian, Fairfield, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Feb. 17, 1993, Ser. No. 18,681

Int. Cl.[5] **B65D** *85/08, 73/00*

U.S. Cl. 206—363 **22 Claims**

1. A retainer for releasably holding an elongated surgical instrument having a distal end and a proximal end, which comprises:

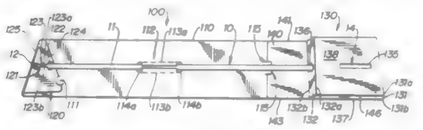
a) a middle panel;

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b) a distal end panel foldably connected to said middle panel and movable into a position wherein said distal end panel overlaps said middle panel;

c) a proximal end panel foldably connected to said middle panel by first and second spaced apart fold lines and movable into a position wherein said proximal end panel overlaps said middle panel,

said proximal end panel having third and fourth spaced-apart fold lines for separating said proximal end panel into a first portion which contacts a surface of said middle



panel when said proximal end panel has been moved to said overlap position, and a second portion which is spaced-apart from said surface of said middle panel when said proximal end panel has been moved to said overlap position;

d) means for locking said proximal end panel in said overlap position, said proximal end panel locking means including a proximally oriented tab located on the middle panel; and,

e) means for locking said distal end panel in said overlap position.

5,351,823

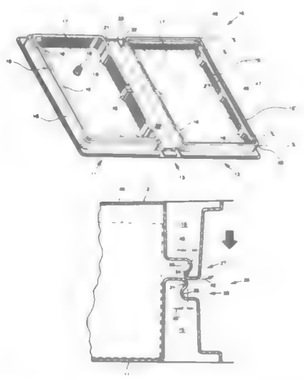
VIDEO CASE CLOSURE

Kurt Kollinek, Wayne, N.J., assignor to American Sealcut Corporation, South Hackensack, N.J.

Continuation-in-part of Ser. No. 117,400, Sep. 3, 1993. This application Nov. 29, 1993, Ser. No. 158,403

Int. Cl.[5] B65D *85/672*

U.S. Cl. 206—387 **12 Claims**



1. A foldable case comprising:

a) first and second case sections joined by an integral flexible spine to form an integral body constituted mainly of plastic material, the first and second case sections on a first major side defining a well for receiving an object such that the case sections can be closed with the object inside and having a second opposed side, said integral flexible spine having a longitudinal dimension and transverse thereto a width dimension extending toward and between said first and second case sections,

b) closure means integral with said first and second case sections for holding said case sections together when the said first and second case sections are folded together to close the case, said closure means comprising:

(i) an elongated inverted S-shaped configuration, in cross-section, extending along the peripheral edge of each of said first and second case sections remote from the integral flexible spine, said inverted S-shaped configuration extending along the center of the respective case section peripheral edge a substantial distance parallel to the longitudinal dimension of the integral flexible spine,

(ii) said inverted S-shaped configuration comprising, starting from the outer surface of its respective edge, a first curved male part followed inwardly by a second curved female part with the first male part of the first case section configured to mate with the second female part of the second case section and with the first male part of the second case section configured to mate with the second female part of the first case section when the case is closed.

5,351,824

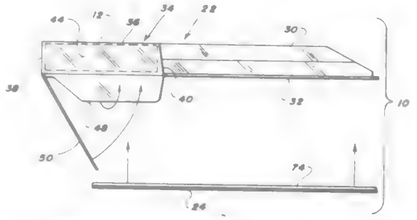
CASSETTE BOX HOLDER

D. Sherman Cox, 4 Chipper Rd., St. Louis, Mo. 63128

Filed Jun. 4, 1993, Ser. No. 71,258

Int. Cl.[5] B65D *55/02*

U.S. Cl. 206—387 **8 Claims**



1. A cassette box holder for holding a cassette box containing a cassette comprising a unitary body and a closure plate,

said body having a longitudinal axis and a top surface and a bottom surface, a generally rectangular chamber for a cassette box formed in said body having a substantially planar top wall joined at its edges by side and end walls, said chamber side and end walls opening on the bottom surface of the body, a substantially planar tab formed in said body attached to one of the side walls, said tab having at least one ridge with first and second ends and a top wall coplanar with the top wall of the chamber, said ridge generally parallel to the longitudinal axis of the body and running substantially the length of the tab, said ridge merging with the top wall of the chamber at its first end and rising out of the plane of the tab and sloped towards the top wall of the chamber at its second end;

said closure plate closing the chamber at the bottom surface of the body

whereby the cassette box holder is resistant to folding perpendicular to its longitudinal axis such that the cassette is less susceptible to theft and the ridge furthers proper placement of the cassette box holder in a display box.

5,351,825

PACKAGING PLUG WITH CONICAL NOSE

Thomas J. Duffy, Appleton, Wis., assignor to Badger Plug Company, Appleton, Wis.

Filed Dec. 31, 1992, Ser. No. 999,595

Int. Cl.[5] B65D *85/672*

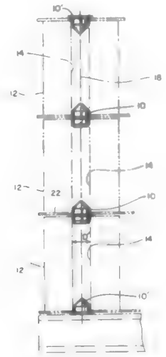
U.S. Cl. 206—394 **7 Claims**

1. In combination: (a) first lower roll goods rolled about a first hollow, substantially cylindrical, vertically extending

core, (b) second upper roll goods rolled about a second hollow, substantially cylindrical, vertically extending core, and (c) a plug coupled between the two cores to assist in fixing the position of the second roll goods above the first roll goods, said plug comprising:

a substantially cylindrical portion designed to fit within the first and second cores with a small clearance so that the axes of the cores and the plug are substantially coincident with each other;

flange means extending radially out from the substantially cylindrical portion of the plug far enough to engage an axial end of at least the first roll goods to limit relative axial movement of the plug and the first roll goods with



respect to each other, the substantially cylindrically portion extending axially in opposite directions from the flange means; and

a nose extending axially from the substantially cylindrical portion in spaced-apart relation to the flange means, the nose being substantially conical, having a base diameter substantially equal to the diameter of the substantially cylindrical portion, and tapering to a vertex spaced apart from the substantially cylindrical portion;

thereby having facilitated blind coupling of the plug and the second core even if the plug and the second roll goods when making initial contact with each other were laterally offset from each other by a distance of up to a half of the diameter of the core.

5,351,826

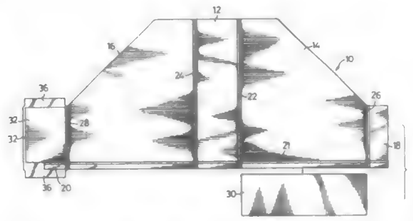
FILE BOX

Mao-Hsiung Chen, No. 19, Lane 40, Hu Lu St.,, Shih-Lin, Taipei, Taiwan

Filed Jan. 7, 1994, Ser. No. 178,780

Int. Cl.[5] B65D *6/10, 6/22, 6/26*

U.S. Cl. 206—425 **2 Claims**



1. A file box comprising:

a main board having first and second faces and two sides and a bottom board, said main board being integral and comprising a mediate section, first and second side sections respectively extending outwardly from two sides of said mediate section, and first and second engaging sections respectively extending outwardly from distal sides of said first and second side sections;

said first face of said main board having first, second, third, and fourth vertical notches respectively formed in a transition section between said mediate section and said first side section, in a transition section between said mediate section and said second side section, in a transition section between said first side section and said first engaging section, and in a transition section between said second side section and said second engaging section, allowing said main board to be folded to form four sides of a file box;

said first face of said main board having a fifth notch formed in a lower section thereof and extending along a length thereof for securely holding said bottom board when said main board is folded along said first and second notches;

said second engaging section having a distal end with two opposite faces, each of said faces of said distal end of said second engaging section having an adhesive tape securely attached thereto, each of said adhesive tapes having an extension which extends beyond said second engaging section, said extensions defining a compartment therebetween for receiving said first engaging section, and said extension of each said adhesive tape having a sheet peelably mounted to one face thereof which faces said first engaging section when said main board is folded along said third and fourth notches.

5,351,827

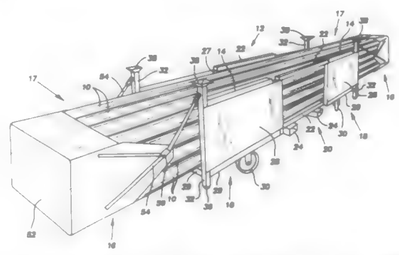
RETURNABLE PACKAGING SYSTEM FOR AWNINGS

Gregory J. Baka, Corunna, Ind., assignor to The Dometic Corporation, LaGrange, Ind.

Filed Jun. 25, 1993, Ser. No. 83,067

Int. Cl.[5] B65D *85/20, 85/66;* **B60P** *7/12;* **B61D** *3/16*

U.S. Cl. 206—443 **12 Claims**



1. A returnable and reusable packaging and storing system for elongated tubular members, said system comprising a plurality of support plates and means for movably supporting said support plates, said support plates cooperating to define a series of elongated, generally horizontal channels, each of said channels surrounding and supporting an elongated tubular member, said elongated channels being dimensioned to allow the tubular members to be slidably removed therefrom and inserted therein without interference from adjacent tubular members and to permit ends of said tubular members to project from the channels in a cantilever fashion, wherein said supporting means comprises a cart having a pair of support plate supporting sections and an open section intermediate the supporting sections, each of said supporting sections having a plurality of support plates stacked thereon, thereby forming a pair of stacks of support plates which are separated by the open section, said elongated channels defined by one stack of support plates are generally coaxially aligned with the elongated channels defined by the other stack of support plates, wherein

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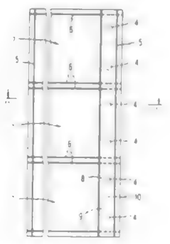
coaxially aligned channels receive and support spaced-apart sections of one of the elongated tubular members.

5,351,828

INFLATABLE FOIL SACHET, ESPECIALLY FOR PACKAGING PURPOSES

Rolf Becker, and Wolfram Becker, both of Schlob Stetten, D-7118 Kunzelsau, Fed. Rep. of Germany

PCT No. PCT/DE90/00516, § 371 Date Feb. 28, 1992, § 102(e) Date Feb. 28, 1992, PCT Pub. No. WO91/00834, PCT Pub. Date Jan. 24, 1991
Continuation of Ser. No. 807,848, Feb. 28, 1992, abandoned.
This PCT application: Jul. 11, 1990, Ser. No. 118,950
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1989, 3922882
Int. Cl.[5] B65D *33/24*
U.S. Cl. 206—522 19 Claims



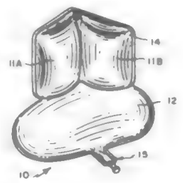
1. An inflatable film bag for packaging purposes comprising:
first and second elongate film portions, one overlying the other, defining a longitudinal direction and a transverse direction, at least one longitudinal edge of said first and second film portions being interconnected with one another by a first longitudinal seam, said first and second elongate film portions having a plurality of transverse seams which, with said first longitudinal seam, define a plurality of substantially rectangular inflatable chambers formed between said first and second film portions and sequentially arranged along said inflatable film bag in the longitudinal direction,
a fluid supply channel extending in the longitudinal direction, along the entire length of said inflatable film bag and located adjacent said first longitudinal seam, for inflating said plurality of chambers of said film bag with a medium, each of said plurality of chambers having at least one fill opening communicating with said supply channel to allow the medium to enter into each of said plurality of chambers, and each said filling opening automatically closing, after completion of the inflating process, due to an internal pressure within each respective chamber,
wherein each of said plurality of chambers has a said filling opening interconnected with said supply channel via at least one channel branch, and each said at least one channel branch is located adjacent said first longitudinal seam and is configured so that each said at least one channel branch will sufficiently bend and crease, as said film bag is deformed during inflation, thereby creating a high flow resistance from the interior of each said chamber to the exterior environment.

5,351,829

PLURALITY OF AIR INFLATABLE/DEFLATABLE COMPONENTS SHAPED TO FIT CORNERS OF ARTICLES

Charles A. Batsford, Stow, Mass., assignor to Air-Ride Packaging of America, Stow, Mass.

Continuation of Ser. No. 2,066, Jan. 8, 1993, abandoned. This application Nov. 16, 1993, Ser. No. 153,485
Int. Cl.[5] B65D *81/10*
U.S. Cl. 206—522 6 Claims



1. A packaging system for protecting a product placed in a shipping container, said system comprising
a plurality of packaging components, each of said packaging components including a first single generally rectangular element, a second single generally oval element positioned remotely from said first element, and a coupling element substantially centrally positioned between and coupling said first and second elements, each of said elements being formed as an inflatable and deflatable plastic element;
a valve;
an inflatable and deflatable flexible plastic coupling channel for coupling said plurality of packaging components to each other and to said valve;
said valve permitting air under pressure to be supplied to, or to be released from, said packaging components via said coupling channel, whereby said packaging components and said coupling channel are inflated, or deflated, respectively,
the shapes of the first and second elements of each of said plurality of packaging components being such that, when said elements are inflated and folded with respect to each other, they form a corner-shaped configuration for enclosing separate ones of a plurality of corners of a said product so as to provide a firm and snug fit thereon when a said product is placed in a said container.

5,351,830

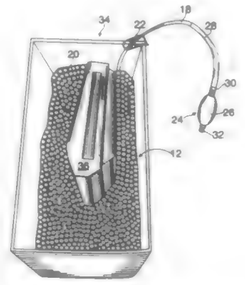
PACKAGE HAVING A VACUUM ACTUATED CONFORMAL PACKING NEST

Stephen Bender, Fort Lee, N.J., and Douglas J. Montgomery, Trumbull, Conn., assignors to Ambico, a division of Recoton Corporation, Long Island City, N.Y.

Filed May 26, 1992, Ser. No. 888,880
Int. Cl.[5] B65D *81/20, 81/02*
U.S. Cl. 206—524.8 18 Claims

1. A package comprising:
A. a case comprising generally vertical side walls and a bottom attached thereto;
B. a vacuum actuated conformable packing nest located at the bottom of said case comprising:
a. a sealed container formed of material substantially impervious to air, at least the upper surface of said container being pliable and of dimensions substantially within the range of 1.15 to 1.5 times the dimensions of said bottom;
b. closed cell particles of a range of sizes contained within said container being deformable under a pressure of less than about ½ atmosphere;
c. a passageway for air into and out of said container; and
d. means for closing said passageway whereby the upper surface of said container may be deformed by an object

to surround the lower portion of said object with said particles in said container and said particles made rigid by evacuating said container through said passageway and closing said passageway to form a rigid packing nest conformed to the object.

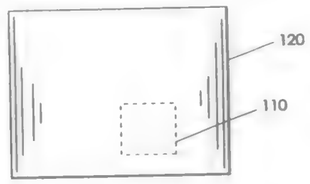


5,351,831

BAG IN A BAG FOR CONTAINERIZATION OF TOXIC OR HAZARDOUS MATERIAL

Samuel T. Gouge, and James E. Shue, both of Raleigh, N.C., assignors to Rhone-Poulenc Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 889,860, May 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 803,084, Dec. 4, 1991, Pat. No. 5,222,595, which is a continuation-in-part of Ser. No. 713,684, Jun. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 680,301, Apr. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 679,290, Apr. 2, 1991, abandoned, and Ser. No. 554,615, Jul. 18, 1990, Pat. No. 5,080,226. This application Sep. 29, 1993, Ser. No. 129,215
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[5] B65D *77/04, 81/32*
U.S. Cl. 206—524.7 22 Claims



1. A containerization system which comprises at least one inner water soluble or water dispersible bag containing a hazardous compound, the containerization system further comprising an outer water soluble or water dispersible bag containing another hazardous compound different from the first and incompatible with it, the outer bag also containing the inner bag with its content.

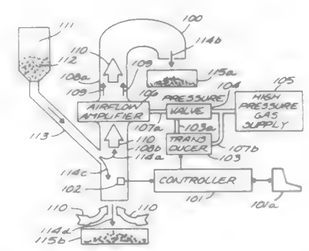
2. A containerization system which comprises at least one inner water soluble or water dispersible bag containing a hazardous compound, the containerization system further comprising an outer water soluble or water dispersible bag containing another hazardous compound different from the first and incompatible with it, the outer bag also containing the inner bag with its content, and wherein the hazardous compounds and the wall of the bags they contact are chosen so that the hazardous compounds do not substantially dissolve the wall of the bag they contact and do not substantially permeate through it.

5,351,832

CONTROL SYSTEM FOR CLEANING SYSTEMS

Kenneth E. Abbott, and Patrick J. Lyons, both of Tucson, Ariz., assignors to Stripping Technologies, Inc., Tucson, Ariz.

Filed Mar. 29, 1993, Ser. No. 39,722
Int. Cl.[5] B07B *4/00*
U.S. Cl. 209—139.1 18 Claims



1. A particle separator comprising:
a) a vertical tube having a first section and a second section, said first section positioned above said second section;
b) an airflow amplifier interposed between said first section and said second section of said vertical tube, said airflow amplifier creating a rising airflow in said vertical tube in response to high pressure gas;
c) air pressure means for selectively providing high pressure gas to said airflow amplifier;
d) wind speed sensor means for creating signals indicative of the speed of airflow in said second section of said vertical tube;
e) depositing means for depositing a mixture of a first group of materials and a heavier second group of materials in said second section of said vertical tube; and,
f) control means for,
1) receiving, from an operator interface, targeted wind speed data indicative of a selected wind flow in said second section of said vertical tube,
2) receiving signals from said wind speed sensor means, and,
3) adjusting said air pressure means such that signals received from said wind speed sensor means correspond to said targeted wind speed data such that said first group of materials rises in said vertical tube while said second ground of materials falls in said vertical tube.

5,351,833

METHOD FOR SELECTING WOOD STOCK TO FORM PANELS OF PREDETERMINED SIZE

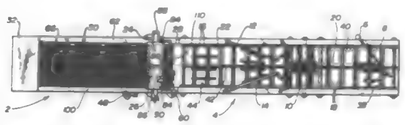
Bradley S. Quick, Staatsburg, N.Y., assignor to James L. Taylor Manufacturing Company, Poughkeepsie, N.Y.

Division of Ser. No. 412,168, Sep. 25, 1989, Pat. No. 5,161,697, which is a continuation-in-part of Ser. No. 157,409, Feb. 18, 1988, abandoned. This application Nov. 5, 1992, Ser. No. 972,143
The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.
Int. Cl.[5] B07C *5/14*
U.S. Cl. 209—518 4 Claims

1. A method of selecting from a number of workpieces a lesser number of workpieces for further processing comprising the steps of:
conveying said workpieces to be selected from the first station to the second station;
scanning said workpieces at said second station to generating electrical signals representing height and location of each of said workpieces;

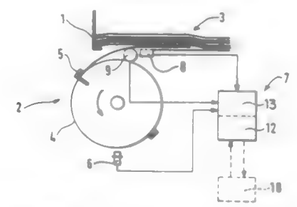
VOL 1167 ISS 1 OC 4 1994 UMI

comparing the signals generated with predetermined conditions representing the desired width of a final product;
comparing the electrical signals representing height and location of said workpieces with said predetermined con-



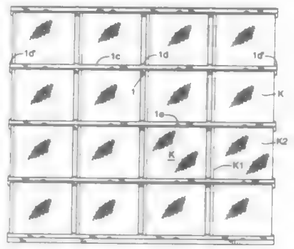
ditions and selecting which of said workpieces will comprise said desired width of the final product; and
recording parameter describing the characteristic of said lesser number of workpieces.

5,351,834
MONITORING OF PRINTED SHEETS
Hanspeter Duss, Gretzenbach, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland
Filed Sep. 22, 1992, Ser. No. 949,779
Claims priority, application Switzerland, Sep. 26, 1991, 2859/91-1
Int. Cl.[5] B07C 5/00; G06K 9/68
U.S. Cl. 209—576 **17 Claims**



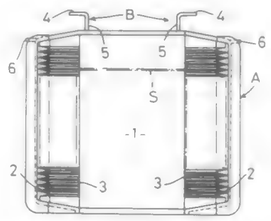
1. An apparatus for checking printed articles for mutual identity and proper orientation while allowing for relative positional displacement within predetermined limits, said apparatus comprising:
(a) means for advancing said printed articles along a predetermined path;
(b) a sensor, having means for optically sensing a preselected reference section of a printed article, to produce an optical image regardless of the degree of luminous density of said printed article, and for optically sensing a test section of each of said printed articles to be checked in an operating mode, to produce an optical image regardless of the degree of luminous density of said printed articles, said image of one of said reference section and said test section having a larger cross-sectional area than the image of the other one of said reference section and said test section;
(c) means for storing the result of said optical sensing;
(d) means for comparing the stored results by shifting said smaller cross-sectional area image in superposition with respect to said larger cross-sectional area image;
(e) means for calculating a value to represent a difference between said images in each of said shifted positions; and
(f) means for generating a control signal, indicative of a mismatch between said reference and said test article, when said value is insufficient to establish identity between said reference and said test article.

5,351,835
DEVICE FOR STORING CASSETTES FOR CD-RECORDS
Anders Hallgren, Stockholm, Sweden, assignor to CD Ware i Stockholm AB, Pilgrimstad, Sweden
PCT No. PCT/SE91/00843, § 371 Date Jun. 4, 1993, § 102(e) Date Jun. 4, 1993, PCT Pub. No. WO92/10115, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 6, 1991, Ser. No. 70,438
Claims priority, application Sweden, Dec. 7, 1990, 9003918
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—40 **4 Claims**



1. A device for storing parallelepipedal cassettes for CD records, the cassettes being of identical predetermined length and width, the device including a plurality of supporting means disposed on a wall, on which supporting means the cassettes are supported side by side and above each other for forming a wall picture made up of the cassettes, the supporting means consisting of a plurality of parallel, horizontal profiled bars, having supporting surfaces which support the cassettes, these horizontal bars being so arranged that the distance between adjacent cassettes will be essentially equal in the vertical and in the horizontal directions, a plurality of spacing means operatively connected to the horizontal bars to maintain the horizontal bars in predetermined vertically spaced apart relations, and each of the horizontal bars having a plurality of projections protruding from the cassette supporting surface thereof, which projections are integral with the horizontal bar and are spaced apart at a distance corresponding to the length of a cassette.

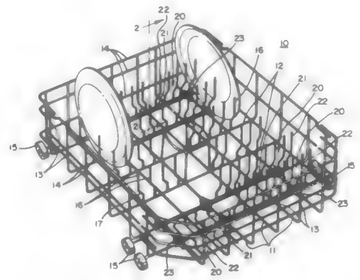
5,351,836
CONTAINER FOR PLATE-LIKE OBJECTS
Shoichi Mori, Omihachiman, and Takehide Hayashi, Koganei, both of Japan, assignors to Daifuku Co., Ltd., Osaka, Japan
Filed Jul. 7, 1993, Ser. No. 88,853
Claims priority, application Japan, Jul. 8, 1992, 4-047648[U]; Jan. 6, 1993, 5-000061[U]; Jan. 11, 1993, 5-002178
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—41 **20 Claims**



1. A plate-like object container comprising:
a container body having an object insertion/withdrawal opening formed in a side face thereof for allowing insertion and withdrawal of a plate-like object and a plurality

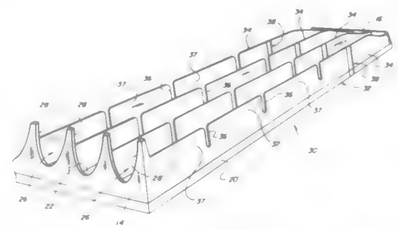
of positioning recesses arranged inside the container body in a direction of the thickness of the object, with, an after periphery of each object being introduced and held in position at each recess;
a hook section provided on an upper face of the container body, the hook section including at least one pair of hook members and support members for supporting the hook members;
wherein, each said hook member is formed like a plate extending in substantially parallel with upper face of the container body, said hook members being disposed apart from each other inwardly of an outer periphery of the upper face of the container body; and
wherein each said support member supports one of said hook members corresponding thereto at a position upwardly distant from the upper face of the container body in such a manner as to allow displacement of the hook members closer to each other through elasticity of said support member per se or of the container body.

5,351,837
DISHWASHER RACK ASSEMBLY WITH FOLD DOWN COMBS
John M. Smith, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Sep. 7, 1993, Ser. No. 116,573
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—41 **12 Claims**



1. A dishwasher rack assembly comprising:
a plurality of first elongated wire members extending in parallel spaced apart relationship and a plurality of second elongated wires extending generally perpendicular to said first wires in parallel spaced apart relationship and secured to said first wires to form a generally horizontal bottom wall;
a comb including an elongated base wire and a plurality of finger wires attached to said base wire and projecting generally at right angles thereto;
at least two connectors positioned at selected junctions of said first and second wires; each of said connectors including a first elongated channel receiving a portion of said first elongated wire, a portion of said second elongated wire and a portion of said comb base wire; a second elongated channel perpendicular to said first channel and receiving a portion of said second elongated wire; and a third elongated channel generally perpendicular to both said first and second channels and releasably receiving a portion of a corresponding one of said finger wires;
whereby said comb is securely mounted at a predetermined location in said basket bottom and is rotatable between a position in which said finger wires are substantially vertical and a position in which said finger wires are substantially horizontal.

5,351,838
PRODUCT MERCHANDISING DISPLAY SHELF WITH FLEXIBLE GUIDE CHANNEL DIVIDER MEANS
Paul L. Flum, Ladue, Mo., assignor to Paul Flum Ideas, Inc., St. Louis, Mo.
Filed Jul. 7, 1993, Ser. No. 87,670
Int. Cl.[5] A47F 1/04
U.S. Cl. 211—59.2 **18 Claims**



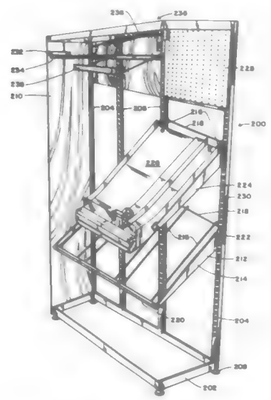
1. A product display shelf structure for organizing and merchandising a plurality of products in parallel rows, said shelf structure comprising front, rear and opposed side edges and a floor portion extending therebetween, a plurality of divider walls extending from said front edge portion towards said rear edge portion having a top edge and dividing said floor portion into a plurality of parallel guide channels for maintaining and guiding products located therein, said divider walls being resilient and including means for allowing at least the upper portions of said divider walls to flex sidewardly along a substantial portion of the length thereof to prevent binding of such products as they move within said guide channels, said means for allowing at least the upper porions of said divider walls to flex sidewardly including a plurality of slots formed in said divided walls at spaced locations therealong, each of said slots extending beyond at least one half the height each divider wall from said top edge thereof and being spaced from said floor portion.

5,351,839
VERTICALLY ADJUSTABLE PUSHER POINT OF PURCHASE DISPLAY
Mark T. Beeler, and Brian H. Welker, both of Winston-Salem, N.C., assignors to Decision Point Marketing, Inc., Winston-Salem, N.C.
Continuation-in-part of Ser. No. 952,245, Sep. 28, 1992. This application Mar. 12, 1993, Ser. No. 30,812
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—59.3 **20 Claims**

1. An apparatus for displaying goods in a retail environment comprising
a frame having an upright standard with a plurality of affixation elements spaced along said standard,
a plurality of supports affixed to said standard by affixation to said affixation elements and including forwardly-extending rails,
a plurality of trays each including a plurality of location means across a width of said tray, each tray being supported on said rails of one of said supports, said trays having protrusions from their undersides engaged by said ported on said rails of one of said supports,
a plurality of product pushers releasably connected to said trays and positioned in said trays in reference to said location means,
whereby goods to be displayed may be positioned forwardly of said product pushers to urge them to one end of said

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tray for retail purchase and the apparatus may be disassembled to arrange a different plurality of product pushers



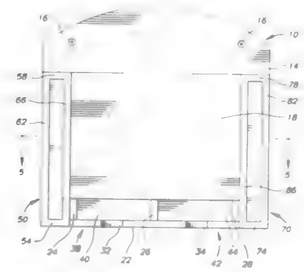
differently in said tray and a different plurality of supports and trays differently along said standard.

5,351,840

COMBINED CHALK AND ERASER DISPENSER

Louis A. Visco, Marlton, and Arthur Gravina, Medford, both of N.J., assignors to University of Pennsylvania, Philadelphia, Pa.

Filed Sep. 4, 1992, Ser. No. 940,250
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—69.1 8 Claims



1. A combined chalk and eraser dispenser, comprising:

(a) means for retaining a plurality of conventional, substantially rectangular chalkboard erasers of a selected eraser size in a vertical stack, said retaining means having a dispensing opening defined in a lower, forward portion thereof; and

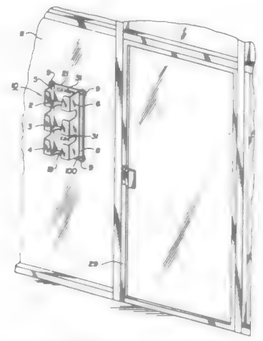
(b) a chalk receptacle for chalk pieces of a selected chalk length attached to said eraser retaining means, said chalk receptacle comprising a rear vertical wall, opposite side walls, and a bottom wall, said side walls and said bottom walls defining a forward opening, the width of said forward opening being equal to the horizontal distance between said side walls, the surface of said bottom wall defining the bottom of said forward opening, the distance from said rear wall to said forward opening being slightly less than said selected chalk length.

5,351,841

MERCHANDISE CASE WITH ADVERTISING DISPLAY

Paul Belokin; Martin P. Belokin, both of P.O. Box 1907, Denton, Tex. 76202, and Norman P. Belokin, 3341 Evers Pkwy., Denton, Tex. 76207

Filed Feb. 25, 1993, Ser. No. 22,474
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—88 36 Claims



1. A merchandise display comprising:

(a) a substantially transparent window of a store having first and second opposite surfaces visible and accessible to prospective customers of said store;

(b) a display case including

i. opposed sides having rear edges defining an open rear face therebetween;

ii. a first shelf extending generally horizontally between said opposed sides and extending rearwardly of said open rear face supporting products which are readily observable to prospective customers from either side of said window; and

iii. a second shelf located above said first shelf extending generally horizontally between said opposed sides and extending rearwardly of said rear face; and

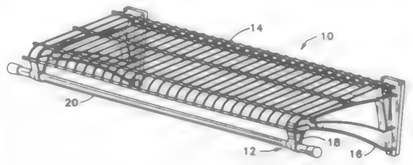
(c) means for mounting said display case on one surface of said window with said rear face adjacent said one surface.

5,351,842

SHELF AND SUPPORT ASSEMBLY

Lee E. Remmers, Ocala, Fla., assignor to Vermont American, Louisville, Ky.

Filed Sep. 17, 1993, Ser. No. 123,300
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—90 39 Claims



1. A shelf and support assembly, comprising:

a ventilated shelf having a shelf surface formed having a downwardly projecting front lip portion and having a plurality of transverse members protruding from the bottom of said shelf;

at least one support bracket comprising an elongated shelf support member defining a rail having a generally flat top surface and a downwardly projecting front end portion,

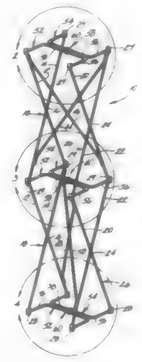
said rail including a plurality of transverse slots including at least a first front slot and a second slot, said slots being positioned in alignment with and cooperatively engaging selected transverse members of said shelf, said elongated shelf support member attaching to an elongated base member for mounting to a supporting structure in a cantilevered fashion, said elongated base member having a rear surface, wherein the rear surface of the elongated base member includes at least one aperture therein in cooperative relationship with means for holding said elongated base member to said supporting structure.

5,351,843

FOLDING DISPLAY FRAME FOR FORMING COLUMN-LIKE STRUCTURES

William J. Wichman, 702 Brownsage Dr., Glendora, Calif. 91740, and David E. Robertson, Glendora, Calif., assignors to William J. Wichman, Glendora, Calif.

Filed Apr. 27, 1992, Ser. No. 874,028
Int. Cl.[5] A47B *43/00*
U.S. Cl. 211—195 30 Claims



1. A collapsible frame comprising one or more frame-like compartments movable to an open, expanded position forming a structurally stable open framework for a long, narrow column structure of a portable display frame, in which the frame-like compartment is foldable in a single direction to a compact closed form for storage of the frame in a transportable form, each compartment of the display frame in its open, expanded position having a front and a rear side, a pair of opposite sides defining the width of the compartment, and a pair of opposite ends, the ends being formed within planes defining corners at each end of the compartment, at least one end of each compartment being shared with a common end of an adjoining compartment in a multi-compartment open frame structure,

the opposite sides of the compartment comprising a pair of elongated rigid rods pivotally joined to each other at an intermediate point to form scissor members along the opposite sides of the compartment, the scissor members the on opposite sides of the compartment being substantially parallel to one another,

a plurality of hubs at the corners of the compartment, the respective ends of the scissor members being pivotally connected to a corresponding one of the hubs,

rigid end brace members at both ends of the compartment secured to and movable relative to the scissor members to an end-bracing position forming a rigid connection between the hubs at the corners of the compartment at each end of the compartment to thereby hold the scissor members at the same corners of the compartment in fixed positions rigidly spaced apart from one another by the joined end brace members, said end-bracing position being formed by the end brace members at each end of the compartment extending rigidly between the pair of hubs at the front corners and the pair of hubs at the rear corners of the compartment, and

means for releasably disconnecting the end brace members from their end-bracing position so that the ends of the scissor members at front corners of the compartment are freely movable away from the ends of the scissor members at the rear corners of the compartment,

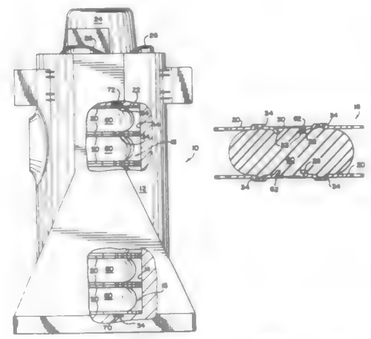
the disconnection of the end brace members permitting the frame to be collapsed into a compact form by folding the scissor members of the compartment in unison about their pivot points so the compartment is collapsed in a single direction along the length of the column and into a compact form in which the scissor members at the sides of the compartment are folded generally parallel to each other, and with the folded scissor members on one side of the frame being rigidly spaced apart by a fixed distance defined by the lengths of the end brace members.

5,351,844

ELASTOMERIC SPRING UNIT

Richard A. Carlstedt, Wheaton, Ill., assignor to Miner Enterprises, Inc., Geneva, Ill.

Filed Jun. 1, 1993, Ser. No. 69,328
Int. Cl.[5] B61G *9/00*
U.S. Cl. 213—44 3 Claims



1. An improvement in a draft gear having a housing, a friction wedge unit extending from the interior of the housing for receiving impact forces and spring units mounted within the housing adjacent said wedge unit for absorbing impact forces that may occur between rail cars, said improvement residing in at least one of said spring units comprising:

a) a spring member formed of an elastomer having a molecular structure and a ratio of plastic strain to elastic strain that is greater than 1.5 to 1, said member having two generally flat opposed surfaces with a central projection extending from each surface;

b) a metal plate having a boss with an inturned flange defining an aperture, said aperture receiving the central projection extending from the associated flat surface of said spring member;

c) the molecular structure of said elastomer being oriented, and;

d) the central projection extending through said aperture of said plate, terminating in a diameter larger than said aperture to form a mechanical interlock with said inturned flange.

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5,351,845

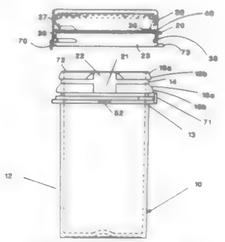
COGNITIVE SKILL BASED CHILD-RESISTANT AND TAMPER-EVIDENT CLOSURE

Robert M. Hunter, Bozeman, Mont., assignor to Yellowstone Environmental Science, Inc., Bozeman, Mont.

Continuation-in-part of Ser. No. 437,656, Nov. 15, 1989, which is a continuation-in-part of Ser. No. 339,819, Apr. 18, 1989, Pat. No. 4,991,729. This application Jan. 31, 1992, Ser. No. 828,716

Int. Cl.[5] B65D *55/02*

U.S. Cl. 215—225 **7 Claims**



1. A generally cylindrical relatively rotatable lock structure comprising:

a first member having at least a generally cylindrical portion, said generally cylindrical portion having an axis of rotation and an outer surface, said first member having connection means on said outer surface;

a second member having at least a generally cylindrical portion, said generally cylindrical portion having an axis of rotation and an inner surface and said generally cylindrical portion being coaxial with the cylindrical portion of said first member, said second member being rotatable relative to said first member about a common axis;

a third member having at least a generally cylindrical portion coaxial with the cylindrical portions of the first and second members and on one of which first and second members said third member is supported to prevent axial movement relative to the member that supports said third member but to permit a rotatable movement relative to the member that does not support said third member about said common axis subject to friction between the third member and said member that does not support said third member, such that the third member tends to rotate with said member that does not support said third member, the cylindrical portion of said third member having on a surface facing away from said member that supports said third member connection means cooperable with the connection means on the surface of said member that does not support said third member to prevent relative axial movement between said third member and said member that does not support said third member, except that in predetermined relatively rotatable positions axial movement of said third member relative to said member that does not support said third member is not prevented; and

a first stop on said third member, said first stop having a stop face and another face, and a second stop on said member that supports said third member, said second stop having a stop face and another face, the stops limiting rotation of said third member relative to said member that supports said third member in one direction to less than one revolution before the stop faces abut, after which said third member is driven by the stops to rotate with said member that supports said third member, at least one of the stops having a ramp on the other face of said at least one of the stops of such pitch that the other stop, upon encountering said ramp, is able to ride up said ramp and over said at least one of the stops having a ramp whenever relative rotation is in a direction opposite to said one direction causing said stop faces to abut.

5,351,846

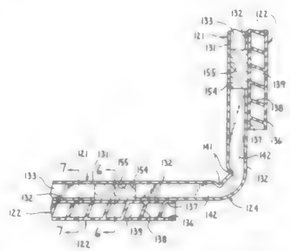
SIDEWALL STRUCTURE FOR STACKABLE BIN

Alan T. Carter, Sturgis, Mich., assignor to Carter Associates, Inc., Sturgis, Mich.

Continuation-in-part of Ser. No. 891,446, May 29, 1992, abandoned. This application Jun. 14, 1993, Ser. No. 76,817

Int. Cl.[5] B65D *19/18*

U.S. Cl. 220—6 **27 Claims**



1. In a collapsible storage bin having a collapsible sidewall structure which is of generally rectangular shape in horizontal cross section and defines a vertically extending opening therethrough, and upper and lower pallet-like supports removably engaged with respective upper and lower edges of sidewall structure for closing off said sidewall structure and defining a storage compartment therein, said sidewall structure including a pair of substantially parallel sheet-like sidewalls joined together by a pair of sheet-like end walls, the end walls and at least one of the sidewalls having adjacent vertical edges joined together by a corner fold structure which permits relative horizontal swinging movement between the adjacent end walls and said one sidewall for permitting collapsing of the sidewall structure, the improvement comprising:

each said sidewall and end wall being constructed as a two-ply laminate having substantially coextensive inner and outer sheet-like layers directly fixedly secured to and substantially coextensively overlaying one another;

each said inner and outer sheet-like layer being constructed as an extruded plastic member having substantially parallel inner and outer plastic facing sheets joined together by a plurality of substantially parallel plastic ribs which extend transversely between and are rigidly joined to said facing sheets, said ribs and sheets cooperating to define therebetween a plurality of elongated and substantially parallel channels which are enclosed between said facing sheets, the ribs and channels of a first of said inner and outer sheet-like layers being elongated substantially vertically, and the ribs and channels of a second of said inner and outer layers being elongated substantially horizontally;

a predetermined one of said inner and outer sheet-like layers terminating in a free vertically-extending edge disposed closely adjacent a respective said corner fold structure;

a selected one of said inner and outer sheet-like layers of each said sidewall and end wall having a horizontally enlarged groove formed therein and extending vertically thereof adjacent each said free edge, said groove opening inwardly through one of the facing sheets of said selected one layer and also through the ribs disposed thereunder with the bottom of the groove being closed by the other facing sheet of said selected one layer, said groove being confined entirely within the two-ply laminate so that the mouth of the groove is closed off by the other sheet-like layer which is not said selected one layer; and

a vertically elongate metal reinforcing rod fixedly positioned within and substantially totally occupying each said groove.

5,351,847

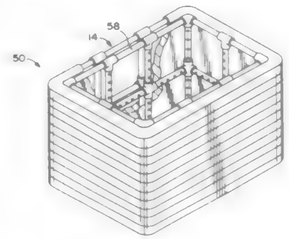
SOLAMAR POTABLE WATER SYSTEM

George Greenbaum, 1005 N. Caribe Ave., Tucson, Ariz. 85710

Continuation-in-part of Ser. No. 971,391, Nov. 4, 1992, abandoned. This application Feb. 18, 1993, Ser. No. 19,418

Int. Cl.[5] B65D *7/00*

U.S. Cl. 220—401 **12 Claims**



1. A structure which comprises:

a plurality of hollow members joined one to the other by hollow fittings, the hollow fittings and members defining frame having a network of hollow passageways;

a settable material filling the hollow network of passageways and functioning in combination with the members and the fittings to impart superior structural strength to the members and thereby the frame;

an open topped impermeable liner received within the frame, the liner having upper edges which extend over at least a portion of the outer wall of the frame; and

an open topped outer wall comprising a plurality of layers of substantially self-adhering polymeric film, wherein the frame comprises a first outer frame and which comprises a second inner frame, the liner between and supported by the inner and outer frames.

5,351,848

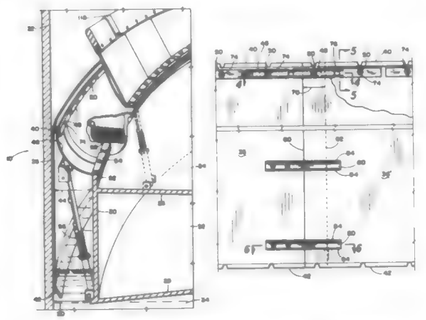
PERIPHERAL SEAL DEVICE FOR FLOATING TANK COVER

Robert B. Wagoner, Broken Arrow, Okla., assignor to Matrix Service, Inc., Tulsa, Okla.

Filed Sep. 3, 1993, Ser. No. 115,816

Int. Cl.[5] B65D *88/46*

U.S. Cl. 220—224 **4 Claims**



1. A device for sealing a rim space between a floating cover, movably disposed within a storage tank, and an inner wall of the storage tank, which device comprises:

a. a peripheral sealing ring formed of a plurality of overlapped shoe segments, each segment having first and second opposed side edges and opposed top and bottom edges, the first edge of each shoe segment overlapping the second edge of an adjacent shoe segment;

b. at least three countersunk apertures in each of said shoe segments, aligned in a single horizontal plane parallel to the top edge one said aperture being spaced a first distance from said first edge of each of said shoe segments, a second said aperture being spaced from said second edge of each said shoe segments a second distance substantially greater than said first distance, said second distance being free of apertures in said plane,

c. a fastener extending through each said countersunk aperture, a head portion of said fastener residing within a recess formed by each said countersunk aperture;

d. at least one movable rod extending past each said shoe segment first edge; and

e. a rigid, elongated clip for each said fastener, each clip having opposed paralleled legs and having a space between said opposed legs for slidably receiving a said rod, each said clip having opposed ends and being secured by a said fastener received in each said one aperture near said first edge of each of said shoe segments wherein one end of said clip extends past said shoe segment first edge to overlap a portion of an adjacent shoe segment so that said shoe segments are assembled to form said peripheral seal ring only with said first edge of each said shoe segments overlapping said second edge of an adjacent shoe segment.

5,351,849

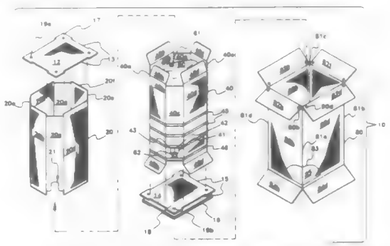
CONTAINER FOR FREE-FLOWING MATERIAL

Eugene Jagenburg, 491 Hung La., Manhasset; Robert Jagenburg, 14 Valley Rd., Plandome, both of N.Y. 11030, and Bruce Jagenburg, 19 Horseshoe Dr., Northport, N.Y. 11768

Filed Mar. 12, 1993, Ser. No. 31,239

Int. Cl.[5] B65D *90/04*

U.S. Cl. 220—403 **10 Claims**



1. A container for storing material having a top and a bottom, comprising:

an outer shell having a plurality of shell panels;

a liner disposed within said outer shell and including an inner sleeve and a separate outer sleeve having substantially the same configuration as said inner sleeve, said inner sleeve and said outer sleeve each including main liner panels contiguous with said shell panels and a secondary liner panel, each secondary liner panel being angularly disposed in relation to said main liner panels and said shell panels to form an elongated space, the elongated space having a triangular cross section and being bordered by said outer sleeve secondary liner panel and two adjacent shell panels, said inner sleeve including an opening with a base bordering the opening;

at least one reinforcing band coupled to said liner;

a material storing bladder disposed within said liner for storing material, said material storing bladder including a discharge valve with a throat having opposite ends, a first collar disposed at one end of said throat and a second collar disposed at the opposite end of said throat, said throat being

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(i) supported by said base, with said inner sleeve being located adjacent one of said collars; p2 (ii) located a specified distance from the bottom of the container; and

(iii) constrained by said outer sleeve, with said outer sleeve being wedged between said inner sleeve and the other of said collars; and

a base panel disposed within said outer shell for supporting said material storing bladder and facilitating removal of the material from said container.

5,351,850

DOUBLE-WALLED BARREL AND METHOD OF ITS MANUFACTURE

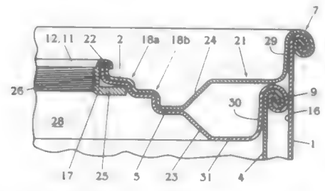
Günter Brieskorn, Neustadt/Weinstr., Fed. Rep. of Germany, assignor to Rheinpfälzische Emballagenfabrik G. Schönung GmbH & Co. KG, Neustadt/Weinstrasse, Fed. Rep. of Germany

Filed Sep. 11, 1992, Ser. No. 943,775

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1991, 4131899

Int. Cl.[5] **B65D** *90/04*

U.S. Cl. 220—466 **4 Claims**



1. A double-walled barrel comprising:

an outer barrel including

(a) a cylindrical barrel jacket with an inner surface and a first set of corrugations; and

(b) a top with barrel openings and a bottom, said top and bottom being attached to said cylindrical barrel jacket by a first set of folds to form said outer barrel;

an inner barrel including:

(a) a steel container having a second set of corrugations; and

(b) an inner top with barrel openings and an inner bottom, said inner top and inner bottom being attached to said container by a second set of folds to form said inner barrel, said inner barrel being configured and dimensioned to closely fit within said outer barrel and being supported by said second set of folds and said second set of corrugations lying against the inner surface of said cylindrical barrel jacket;

a connecting flange, said inner top extending upwardly toward said top and contacting said top in a region of the barrel openings, said top conforming to the shape of said inner top and being joined to said inner top by said connecting flange at the barrel opening;

wherein the region of contact between said top and said inner top is step-shaped with the steps progressing upwardly, in a direction away from said bottom, toward the barrel opening.

5,351,851

CONTAINER WITH INSERT AREA

David A. Powell, Coon Rapids, Minn., assignor to Kablooe Products, Inc., Blaine, Minn.

Continuation of Ser. No. 68,421, May 28, 1993, abandoned. This application Mar. 7, 1994, Ser. No. 206,263

Int. Cl.[5] **B65D** *65/16*

U.S. Cl. 220—503 **4 Claims**

1. A container having an insert area to receive an article therein, said container consisting of:

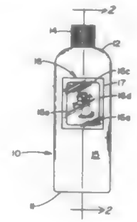
a. a bottom and at least one upstanding side wall to provide a hollow member to receive a first material therein;

b. said side wall converging to provide a closeable top;

c. an indentation having a perimeter formed in said side wall and directed inwardly of said hollow member to receive said article therein;

d. said indentation having substantially smooth side walls;

e. a film associated with said side wall, covering said indentation to provide a means for retaining the article within said indentation and secured on said side wall adjacent said indentation;



f. said film having a shape similar to said indentation and said film having a perimetric size substantially equal to and greater than the perimetric size of said indentation, so that the perimeter of said film is secured to said upstanding side wall; and,

g. said film being clear over said indentation.

5,351,852

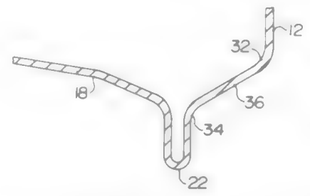
BASE PROFILE FOR A DRAWN CONTAINER

Andrew B. Trageser, Cheswick; Gary L. Myers, Natrona Heights, and Hans H. Diekhoff, Avonmore, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 583,423, Sep. 17, 1990, abandoned. This application Oct. 10, 1991, Ser. No. 773,773

Int. Cl.[5] **B65D** *17/00*

U.S. Cl. 220—606 **16 Claims**



1. In a drawn container having a generally cylindrical sidewall extending upwardly from an integral base portion forming an open neck adapted to be double seamed with a generally circular top end closure to provide a seamed pressure-holding container, said base portion having a downwardly extending, generally U-shaped circumferential nose portion defined by an inner wall, an outside wall and a concave outside nose radius therebetween, the outside surface of the nose radius defining plane of the base of the container, and an inwardly domed central portion, the improvement comprising

said base portion being a reformed base portion wherein a radius of curvature of the nose portion of said base portion is tightened having:

a gauge of less than about 0.0116 inch, a substantially vertically disposed inner wall of the nose portion,

the outside wall of the nose portion extending from a lower portion of the cylindrical sidewall through a convex lower body radius to a concave profile radius disposed above the nose portion, with a first frustoconical wall portion between the convex lower body radius and the concave profile radius, said first frustoconical wall portion forming a lower body angle of at least 30° with respect to the plane of the base of the container, and a second frustoconical wall portion between the concave profile radius and the concave outside nose radius, said second frustoconical wall portion disposed at an angle of from about 60° to about 90° with respect to the plane of the base of the container, with the angle of disposition of the second frustoconical wall portion being greater than the lower body angle of the first frustoconical wall portion, and

the inwardly domed central portion extending inwardly of the inner wall, having at least three progressively increasing radii of curvature in the direction of the center of the dome.

5,351,853

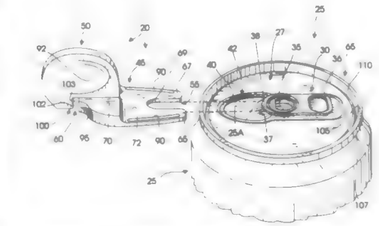
BEVERAGE CAN CLOSURE

John P. Shock, #1 Oakmont Ct., Little Rock, Ark. 72212

Filed Sep. 20, 1993, Ser. No. 123,242

Int. Cl.[5] **A47G** *19/22*

U.S. Cl. 220—729 **11 Claims**



1. A closure for selectively resealing cans equipped with pry tab openers, said closure comprising:

elongated body means for contacting and sealing an exposed opening in a top of said can, said body means comprising:

a pair of forwardly projecting, tapered tongues adapted to be wedged beneath the pry tab as said closure is installed;

a rivet clearance notch defined between said tongues; and,

said notch interiorly terminating in a saddle extending arcuately between said tongues for sealingly contacting the pry tab fastening rivet when the body means is installed to limit closure travel and aid in sealing the can;

handle means extending integrally from said body means for facilitating gripping by a user;

captivating means for yieldably snap fitting to a rim of said can when said closure is installed; and,

downwardly projecting offset means integral with said body means for mating within said opening exposed by activation of said pry tab for sealing said can.

5,351,854

PACKAGE DISPENSING DEVICE

Gerald M. Hagopian, Oak Creek, Wis., assignor to KCS Industries Inc., Milwaukee, Wis.

Filed Jun. 14, 1993, Ser. No. 76,581

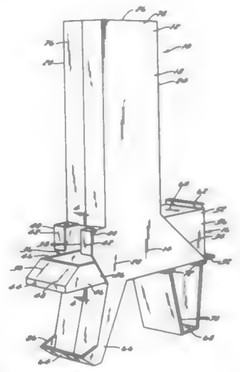
Int. Cl.[5] **B65G** *59/00*

U.S. Cl. 221—107 **14 Claims**

1. An apparatus for dispensing uniformly sized packages, the apparatus comprising:

a storage portion including a first wall and a second wall disposed generally parallel to ne another, said storage portion further including dividers extending at least partially between said first wall and said second wall to divide said storage area into adjacent slots, each slot being configured to receive the packages in a vertically stacked arrangement;

a dispensing portion disposed beneath the storage portion, the dispensing portion including a first guide wall generally aligned with the first wall of the storage portion, a second guide wall generally aligned with the second wall of the storage portion, a bottom wall extending between the first guide wall and the second guide wall generally perpendicular to the first and second guide walls, the dispensing portion further including a stop member extending from at least one of the first and second guide walls at least partially between the first and second guide members, wherein the packages slide downwards through the slots, the lowermost packages being supported by the bottom wall;



a puller assembly slidably mounted between the first guide wall and the second guide wall, the puller assembly including a ram portion constantly disposed above the bottom wall for contact with at least one of the lowermost packages and a handle portion connected to the ram portion, wherein upon moving the handle portion forward, the ram portion forces the lowermost packages forward until one package falls from the dispensing portion; and

a support disposed beneath the dispensing portion, wherein the storage portion, the dispensing portion, and the support are formed in two integral pieces which are joined along a plane disposed generally parallel with the first and second guide walls.

5,351,855

HUMIDISTAT RESET CONTROL

Lorne W. Nelson, Bloomington, Minn., and Eric W. Grald, Canaan, N.H., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 2, 1992, Ser. No. 862,131

Int. Cl.[5] **G05D** *22/00*

U.S. Cl. 236—44C **18 Claims**

1. An environmental control system for controlling the temperature and humidity of a space, comprising:

temperature control means having a temperature setpoint, a heating system output and an operation output, said temperature control means for controlling a means for heating;

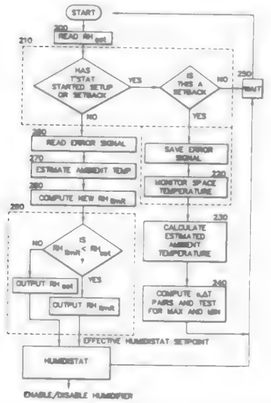
humidity control means having an adjustable setpoint and an output for controlling a humidifier, said humidity control means connected to said temperature control means operation output, wherein said humidity control means further comprises:

means for monitoring the setback status of said temperature control means, the sensed temperature of said tem-

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perature control means, the temperature setpoint of said temperature control means, and the error signal of said temperature control means,

means to calculate an estimated outdoor temperature, based upon said sensed temperature, said temperature setpoint, and said error signal, and;



means to calculate a calculated humidistat setpoint based upon said estimated outdoor temperature; and

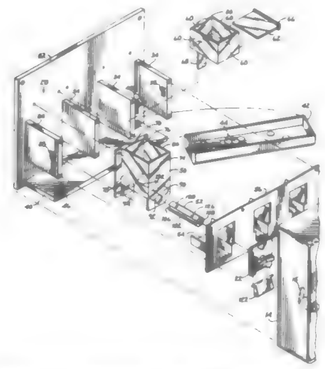
means for adjusting said humidity control means setpoint based on said calculated humidity setpoint.

5,351,856

VENDING MACHINE FOR INDIVIDUAL CIGARETTES

Ronald W. Laidlaw, 8790 E. Lupine Dr., Scottsdale, Ariz. 85260

Filed Oct. 28, 1992, Ser. No. 967,788
Int. Cl.[5] G07F *11/44*; A24F *15/04*
U.S. Cl. 221—131 27 Claims



1. A gravity fed, individual-cigarette vending machine comprising:

a holding bin dimensioned to retain a multiplicity of individual cigarettes in a substantially horizontal orientation;

a substantially horizontally oriented, elongated dispensing member rotatably positioned underneath said holding bin, said dispensing member having an axially extending slot dimensioned to accommodate a single cigarette;

a coin mechanism coupled to said dispensing member, said coin mechanism being configured to permit rotation of said dispensing member upon the insertion of a coin in said coin mechanism,

said dispensing member being centrally located underneath said holding bin,

said bin having

a first wall extending from a first wall upper edge that substantially parallels said slot of said dispensing member downward and inward toward said dispensing member; and

a second wall extending from a second wall upper edge that substantially parallels said slot of said dispensing member downward and inward toward said dispensing member, said first and second walls residing on opposing sides of said dispensing member,

said dispensing member rotating in a single direction so that said slot rises proximate said first wall and falls proximate said second wall; and

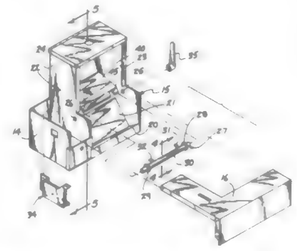
said first wall extending lower than said second wall.

5,351,857

WRITING INSTRUMENT DISPENSER APPARATUS

Luis R. Gonzalez, 6708 Willow Spring Ct., Tampa, Fla. 33615

Filed Jul. 9, 1993, Ser. No. 88,389
Int. Cl.[5] G07F *11/24*
U.S. Cl. 221—265 4 Claims



1. A writing instrument dispenser apparatus, comprising,

a base housing, having a housing front wall spaced from a housing rear wall, a housing first side wall spaced from and parallel to a housing second side wall, and the housing second side wall is of an L-shaped configuration, and wherein the base housing includes a top wall, wherein the second side wall extends above the top wall, and the housing including a housing floor, wherein the first side wall is oriented between the housing floor and the housing top wall, the housing front wall having a front wall opening, with the front wall opening including a lowermost edge,

and

a first ramp extending from the lowermost edge towards the housing floor, and a second ramp extending from the first ramp towards the top wall, wherein the first ramp and the second ramp are defined at an obtuse angle therebetween,

and

hopper means extending from the top wall for depositing of individual writing instrument members onto the second ramp,

and

the first ramp is arranged to include a first length, and the second ramp having a second length, wherein the first length is less than said second length,

and

an intermediate wall positioned between the first side wall and the second side wall, and the intermediate wall is coextensive and parallel relative to the second side wall, with the second side wall having a second side wall extension flange, and the intermediate wall having an intermediate wall extension flange, with a first opening directed through the second side wall in adjacency to the second side wall extension flange, and a second opening coaxially aligned with the first opening oriented through the intermediate wall adjacent the intermediate wall extension flange, and a dispensing shaft, having a dispensing shaft first end rotatably directed through the first opening and a dispensing shaft second end directed rotatably through the second opening, with the dispensing shaft first end including a handle oriented exteriorly of the second side wall, and a shaft slot directed into the dispensing shaft orthogonally oriented between the intermediate wall and the second side wall in adjacency to the hopper means,

and

the hopper means includes the second side wall extension flange and the intermediate wall extension flange, and further including a rear wall extension flange extending from the rear wall, and the hopper having a hopper front wall, the hopper further including a hopper floor, wherein the hopper floor is canted from the rear wall extension flange towards the housing floor, with the hopper floor having a hopper floor forward edge spaced from and parallel to the rear wall extension flange, and the hopper floor forward edge oriented below the hopper front wall and oriented above the second ramp,

and

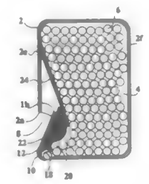
the dispensing shaft includes first and second arcuate flanges that are arranged in a parallel coextensive relationship relative to one another and extend radially and project exteriorly of the dispensing shaft, with the hopper floor forward edge including first and second slots that are arranged in a parallel relationship to receive the respective first and second arcuate flanges respectively therethrough.

5,351,858

TABLET DISPENSER

Itzhak Bar-Yona, Neve Monoson, and Mordechai Teicher, Kfar Saba, both of Israel, assignors to Log-Plastic Products, Kibbutz Ashdod Yaacov Ichud, Israel

Filed Nov. 23, 1992, Ser. No. 980,073
Int. Cl.[5] B65G *59/00*
U.S. Cl. 221—266 12 Claims



1. A tablet dispenser, comprising:

a housing formed with a compartment for receiving a plurality of tablets to be dispensed, and with a dispensing opening for dispensing tablets from said compartment;

said housing including a top wall, a bottom wall, first and second opposed side walls, and first and second opposed narrow end walls, said dispensing opening being formed in said first end wall adjacent said bottom wall;

said compartment being of a length and width to receive a plurality of tablets, but of a thickness, defined by said first and second narrow end walls, only slightly greater than the thickness of one of the tablets such that the tablets received therein form a single layer;

and a dispensing member mounted between said side walls adjacent said dispensing opening in said first end wall and manually movable either to a closed position closing said dispensing opening, or to an open position to dispense a tablet from said compartment through said dispensing opening;

said dispensing member being pivotally mounted at a pivot point intermediate a first end thereof facing the top wall and a second end thereof facing the bottom wall;

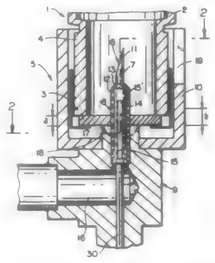
said second end of the dispensing member being formed on an inner surface thereof with a recess for receiving a single tablet, such that manually pressing said first end of the dispensing member inwardly towards said second end wall, while in its closed position, pivots said second end of the dispensing member outwardly from said first end wall to said open position to dispense the single tablet received in said recess in said second end through said dispensing opening.

5,351,859

DEVICE FOR REMOVING A FLUID FROM A CONTAINER

Adolf E. Jansen, Rotterdam, Netherlands, assignor to Dobart Holding B.V., Rotterdam, Netherlands

Filed Jun. 5, 1992, Ser. No. 894,070
Claims priority, application Netherlands, Jun. 7, 1991, 91 [illegible]
Int. Cl.[5] B67B *7/00*
U.S. Cl. 222—82 5 Claims



1. Device for removing a fluid from a container,

said container being sealed by an elastic septum,

said device comprising a support member for supporting the container,

said support member having a plane of cooperation for cooperating with the septum,

said support member having a needle-shaped member with a distal end for piercing the septum and penetrating into the container and a proximal end with an axially extending slot, said plane of cooperation being formed by an upturned edge surrounding the needle-shaped member,

said slot comprising at least one opening,

when the needle-shaped member penetrates into the container, said at least one opening being situated at a distance, measured in axial direction, from the plane of cooperation, wherein said distance is greater than the thickness of the septum, and said slot extending beyond the plane of cooperation, and

said support member further comprising a discharge member being in open connection with said at least one opening for discharging the fluid from the container.

5,351,860

COUPLING FOR BREAKING A SEAL FILM OF A DISPENSING OPENING FOR A FLUID-FILLED CONTAINER

Kunihiko Gotoh, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Dec. 24, 1992, Ser. No. 996,588
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—83 6 Claims

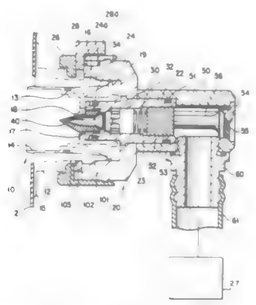
1. A coupling comprising:

a plug attached to an opening of a fluid-filled container, said

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plug including an inner cylinder having an opening sealed by a breakable film and an outer cylinder fitted on the inner cylinder; and

a socket connected to the plug and including means connected to a fluid suction pump, a cutter section having a sharp blade tip including a tip portion having a triangular pyramidal shape to gradually break the film at the opening of the inner plug cylinder when the socket is connected to the plug, said blade tip also having a base portion continu-



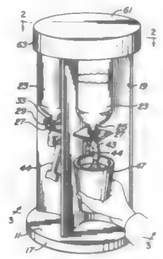
ous from the tip portion and having a triangular cross-sectional shape, an inner cylinder having a valve operable in synchronism with said suction pump to open and close a fluid passage formed in the inner cylinder, a sleeve having means rotatable fitted on the inner cylinder and cooperative with stopper means on the outer plug cylinder, when said cutter section finishes breaking the film, to detachably fix the inner socket cylinder in the plug when said cutter section finishes breaking the film, and an outer cylinder fitted on the inner socket cylinder.

5,351,861

BEVERAGE DISPENSER HAVING TURNTABLE-SUPPORTED MULTIPLE BEVERAGE CONTAINERS

Bartolome D. Jovellana, 16737 Mulvane St., Valinda, Calif. 91744

Filed Apr. 23, 1993, Ser. No. 52,796
Int. Cl.[5] B67D *5/60*
U.S. Cl. 222—144 **14 Claims**



1. A beverage dispenser comprising:

a base having a central vertical axis,

a circular turntable rotatably mounted on said base for rotation about said central axis, said turntable having a peripheral edge,

partition means extending upwardly from said turntable, said partition means comprising a plurality of vertical partition walls extending radially from said central axis toward the turntable peripheral edge to define a plurality of segmental chambers, each vertical partition wall having an outer vertical edge,

beverage container support means in each chamber,

a removable beverage container supportable on each support means, each beverage container having a downwardly directed liquid discharge spout, and a valve controlling liquid flow through the spout,

said partition means being affixed to the turntable, whereby the turntable and partition means are rotatable as a unit for access to any selected beverage container, each said container support means comprising a shelf disposed above the turntable to support the container elevated a substantial distance above the turntable, whereby a drinking vessel may be placed on said turntable below the spout to dispense a beverage into the vessel,

the outer vertical edges of said vertical partition walls defining an imaginary circular boundary for said segmental chambers, said circular turntable having a larger diameter than said circular boundary whereby liquid spillage occurring during a dispensing operation collects on the turntable surface rather than outside the turntable,

each beverage container being a soft drink bottle having a relatively narrow neck defining a discharge opening for the bottle contents, each bottle being removably disposed in an inverted position in one of said segmental chambers, with the bottle neck extending vertically downwardly through the associated shelf,

each liquid discharge spout and associated valve comprising an assembly separate from the associated bottle, each separate assembly comprising an internally threaded tubular connector adapted for threaded connection with the neck of the associated bottle,

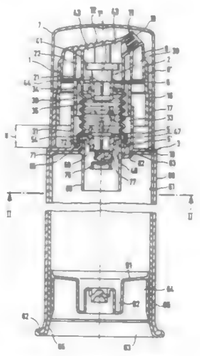
each said valve comprising an operator extending downwardly below the associated spout, whereby beverage dispensing is achieved by moving a drinking vessel against the valve operator.

5,351,862

DISPENSING PUMP FOR MEDIA OF LOW VISCOSITY, ESPECIALLY PASTE-LIKE MEDIA

Ernst Weag, Villingen-Schwenningen, Fed. Rep. of Germany, assignor to Raimund Andris GmbH & Co. KG

Filed Apr. 13, 1993, Ser. No. 46,648
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1992, 4212413
Int. Cl.[5] B67D *5/60*
U.S. Cl. 222—145 **16 Claims**



1. A dispensing pump formed of plastic for dispensing metered amounts of media of low viscosity from a container, the dispenser comprising:

a dimensionally stable upper housing part;

a dimensionally stable lower housing part, said upper housing part and said lower housing part being positioned telescopingly movable relative to each other;

an elastic bellows defining a pumping member, said elastic bellows being connectingly arranged between said upper housing part and said lower housing part and being coaxial thereto whereby an interior of said elastic bellows forms a pump chamber through which a medium is pumped, said upper housing part having a radial partition provided with a paste flow opening, said elastic bellows being in sealing contact with an annular wall of said radial partition, said lower housing part having a lower housing part radial partition and said elastic bellows being in sealing contact with an annular shoulder of said lower housing part radial partition, said upper housing part having a discharge opening and said lower housing part having a suction valve connecting the paste container to the pump chamber and including a suction tube socket connected to said container;

an upper annular wall socket formed in one piece with said upper housing part;

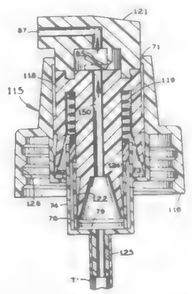
a lower annular wall socket formed in one piece with said lower housing part, said upper annular wall socket and said lower annular wall socket being telescopingly guided one inside the other and surrounding said bellows at a radially spaced location to define a second pump chamber, said second pump chamber communication with said discharge opening through said flow opening of said upper housing part radial partition, said second pump chamber being connected to at least one eccentric suction channel of said radial partition of said lower housing part.

5,351,863

MANUALLY-OPERATED DISPENSING PUMP

Howard E. Cecil, Miramar, Fla., and Thomas Dupont, Hoschton, Ga., assignors to Dupont Industries, Inc., Braselton, Ga.

Filed Mar. 8, 1993, Ser. No. 27,448
Int. Cl.[5] G01F *11/00*
U.S. Cl. 222—259 **10 Claims**



1. A manually-operated pump for dispensing a flowable product from a container through a dip tube extending down into the container comprising:

a pump body having cylinder means with a product inlet opening for receiving product from said dip tube and a vent opening for connecting the interior of the container above the product therein to the atmosphere;

means for mounting said pump body on the top of the container;

a plunger reciprocable in said pump body along said cylinder means, said plunger carrying an annular first skirt slidable sealingly along the inside of said cylinder means past said product inlet opening to control the flow of product from the dip tube into said cylinder means, said plunger carrying an annular second skirt slidable sealingly along the inside of said cylinder means past said vent opening to control the venting of the interior of the container above the product therein to the atmosphere, said plunger having a longitudinal passage which at one end thereof opens into said cylinder means to receive product introduced into said cylinder means through said product inlet opening;

a spray head connected to receive product from the opposite end of said longitudinal passage in the plunger, said spray head having a discharge opening;

and a normally-closed check valve for blocking the flow of product from said longitudinal passage in the plunger to said discharge opening, said check valve opening in response to the pressure of product in said longitudinal passage in the plunger to pass product to said discharge opening;

said plunger being movable (a) in one direction in an intake stroke to create a partial vacuum in said cylinder means by the movement of said first skirt therealong and to move said first skirt past said product inlet opening to draw product from the dip tube into said cylinder means and to move said second skirt past said vent opening to a position blocking said vent opening from the atmosphere, and (b) in the opposite direction in a pressurizing stroke to block said cylinder means from said product inlet opening and pressurize the product in said cylinder means and force said product into said longitudinal passage in the plunger and to move said second skirt past said vent opening to a position connecting said vent opening to the atmosphere;

said cylinder means and said plunger providing an air passage extending from said second skirt toward spray head for connecting said vent opening to the atmosphere when said second skirt is past said vent opening in the direction along said cylinder means away from said spray head;

said cylinder means comprising an inner cylinder with a closed end on one side of said product inlet opening and an outer cylinder which is open on the opposite side of said vent opening from said product inlet opening;

said plunger in said intake stroke being movable in said one direction away from said closed end of the inner cylinder to slide said first skirt past said product inlet opening and draw product from the dip tube up into the inner cylinder and to slide said second skirt past said vent opening to a position blocking said vent opening from said open end of the outer cylinder;

and said plunger in said pressurizing stroke being movable in said opposite direction toward said closed end of the inner cylinder to slide said second skirt past said vent opening to vent to the atmosphere the interior of the container above the product therein and to force the product in the inner cylinder along said longitudinal passage in the plunger to said spray head.

5,351,864

APPARATUS FOR TRANSFERRING FLOWABLE MATERIAL TO A RECEPTACLE AND SYSTEM INCORPORATING THE SAME

Ivan Semenenko, Moreton-In-Marsh, England, and Glenn Selch, Boulder, Colo., assignors to Matcon Limited, Gloucestershire, United Kingdom

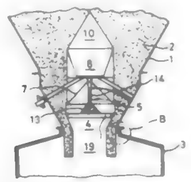
Filed Dec. 14, 1992, Ser. No. 990,855
Claims priority, application United Kingdom, Dec. 16, 1991, 9126664
Int. Cl.[5] B67D *3/00*
U.S. Cl. 222—504 **27 Claims**

1. Apparatus for transferring a flowable material to a receptacle, comprising:

a container for the flowable material, said container having an outlet and means for obturating said outlet; and

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means carried by said container for applying suction to a removable closure of the receptacle and for removing and



replacing the closure under suction to open and close the receptacle.

5,351,865

APPARATUS FOR THE CONVEYING AND EXCHANGING OF A POURING TUBE

Stanislav Szadkowski, Marly, Switzerland, and Stanislav Knapik, Mons, Belgium, assignors to International Industrial Engineering S.A., Belgium

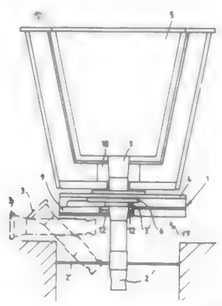
PCT No. PCT/BE91/00039, § 371 Date Mar. 2, 1993, § 102(e) Date Mar. 2, 1993, PCT Pub. No. WO92/00822, PCT Pub. Date Jan. 23, 1992

PCT Filed Jun. 20, 1991, Ser. No. 989,001

Claims priority, application PCT Int'l Appl., Jul. 4, 1990, PCT/BE90/00039

Int. Cl.[5] B22D *41/56*

U.S. Cl. 222—607 **6 Claims**



1. An apparatus for conveying and exchanging a pouring tube for pouring molten metal from the bottom of a vessel (5) in which a replacement pouring tube (2) attached to a first movable plate (3) located in a loading position (14) is adjacent to a second movable plate (3') carrying a worn pouring tube (2') to be replaced, the vessel (5) having a pouring gate (7) and an upper reference plate (6) with a pouring opening (27), the pouring gate (7) and the pouring opening (27) defining a pouring axis (L,L'), the upper reference plate (6) having a lower face for forming a sealing zone with the movable plates (3,3'), the second movable plate (3') being engaged with a lower face of the upper reference plate (6) in a working position (14'), said first movable plate (3) and said second movable plate (3') being mounted so as to slide parallel on guide rails (9) under the action of a pneumatic Jack (16, 16') in a direction perpendicular to the pouring axis (L, L'), the guide rails being suitable to transmit upward pressure and to guide the displacement by transferring the first movable plate (3) and the replacement pouring tube (2) from the loading position (14) to the working position (14') in the axis (L, L') of the pouring gate (7) in the vessel (5), and the second movable plate (3') and the worn pouring tube (2') from the working position (14') to a clearing position (17), so as to permit the exchanging of the tube (2,2') without raising the vessel (5), comprising a rocker arm (20) which sets a lever (26) in action between a bottom loading position and a raised working position so as to impart to the first movable plate (3) a rocking movement about a frontal transverse edge of the movable plate engaged in the sealing zone surrounding the pouring opening (27) so that the movable plate (3) is strictly parallel to the lower face of the upper reference plate (6) during movement from the loading position (14) to the working position (14').

5,351,866

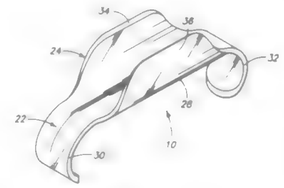
VIAL HOLDERS

Delbert Foss, N. 5208 Millview Dr., Spokane, Wash. 99212

Filed May 13, 1993, Ser. No. 61,209

Int. Cl.[5] A45C *11/00*

U.S. Cl. 224—218 **12 Claims**



1. A vial holder comprising:

a handle portion adapted to be carried by a human hand, the handle portion comprising an inverted first "C"-shaped member; and

a mount portion for releasibly retaining a vial, the mount portion comprising a second "C"-shaped member fixedly coupled to the inverted first "C"-shaped member of the handle portion so that the first and second "C"-shaped members open in opposite directions, the first and second "C"-shaped members being oriented substantially perpendicular to one another.

5,351,867

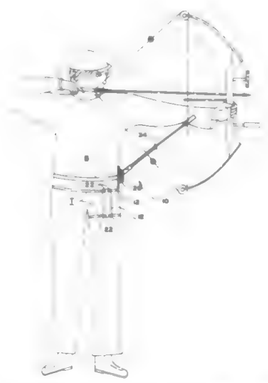
ARM STEADY BRACE

Clyde L. Vest, 119 Deepwood Ave., Beckley, W. Va. 25801

Filed May 28, 1993, Ser. No. 68,850

Int. Cl.[5] A47F *5/00*

U.S. Cl. 224—224 **13 Claims**



1. A bodily attachable arm brace providing generally horizontal support for an arm of a user thereof, comprising:

a planar base portion;

an intermediate portion smaller than said planar base portion and secured thereto;

a channel comprising a channel base having an inner surface and two oppositely disposed side walls each having at least one passage therethrough, with said channel base secured to and extending outward from said intermediate portion, and said channel being parallel to said base portion and defining a slot therebetween;

a brace arm attachment component having a first end and an opposite second end and a lateral elongated slot therethrough;

a retaining pin installed through each said channel side wall passage and said brace arm attachment component elongated slot, thereby pivotally securing said brace arm attachment component within said channel;

a brace arm having opposite first and second ends, with said brace arm first end secured to said brace arm attachment component second end, and said brace arm second end having an arm rest secured thereto; and

means providing for the attachment of said arm brace to a user of said arm brace, said attachment means comprising a plurality of holes through said base portion and plural ties passing through said base portion holes and securable about said user of said arm brace;

whereby, upward and outward locking cantilever extension of said brace arm is provided by means of arcuately raising said brace arm upward and outward in a single motion to allow said brace arm attachment component to drop downward within said channel by means of said elongated slot around said retaining pin, thereby lockingly biasing said brace arm attachment component first end against said inner surface of said channel base, and whereby reversal of the locking cantilever extension is provided by lifting said brace arm upward and arcuately lowering said brace arm downward in a single motion.

5,351,868

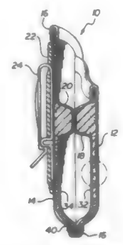
MOLDED LAMINATED POUCH

Robert J. Beletsky; Anthony G. Lefeber, both of Temecula; John J. Chase, and Gary M. Paudler, both of Santa Barbara, all of Calif., assignors to Bianchi International, Temecula, Calif.

Filed Jan. 13, 1993, Ser. No. 4,106

Int. Cl.[5] B65D *25/04*

U.S. Cl. 224—245 **15 Claims**



1. A pouch having two sides formed of laminate material including a layer of woven synthetic fabric, a layer of polyfoam and a layer of liner fabric, said layers being bonded together; said laminate material being processed by:

heating said laminate material to a desired elevated temperature,

compressing selected areas of said laminate material while in a mold under said temperature and subsequently cooling said laminate material in said mold such that the thickness of said laminate material over said selected areas is substantially reduced, thereby causing said laminate material to be permanently formed with said selected areas of reduced thickness having substantial stiffness, and edges and corners having substantial stiffness;

wherein said sides each have at least one highly compressed central area and at least one smaller upstanding relatively uncompressed island area in said central area to conform to the size and shape of an object to be covered in said pouch;

trimming said laminate material to define said sides, each of which has a top edge and other peripheral edges; and

securing said peripheral edges together.

5,351,869

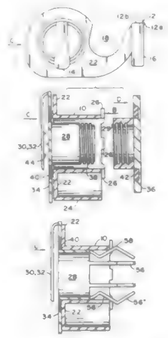
TAPE DISPENSING DEVICES

Carlene Ridenour, 2123 Favor Rd., Marietta, Ga. 30060

Continuation of Ser. No. 487,404, Mar. 1, 1990, Pat. No. 5,065,925, which is a continuation-in-part of Ser. No. 290,369, Dec. 29, 1988, abandoned. This application Nov. 18, 1991, Ser. No. 793,646

Int. Cl.[5] B26F *3/02*; **B65D** *85/672*

U.S. Cl. 225—78 **7 Claims**



1. A device for the dispensing of tape, comprising a spindle means for carrying a roll of tape, a cutter means for severing tape pulled from the roll, and a clip means for clipping the spindle means and cutter means to an article of clothing, the cutter means and clip means being arranged with respect to one another such that a cutting edge of the cutter means lies generally perpendicular to said article of clothing when the clip means has clipped the spindle means and the cutter means to said article of clothing, the clip means having torque resisting means for resisting torque around the spindle means from the cutter means, the spindle means comprising a core means for supporting a sleeve and a sleeve supported on the core means for carrying a roll of tape, the sleeve being connected to the cutter means by a panel means for connecting, the sleeve and cutter means extending laterally from the panel means, the clip means being attached to the core means, and rotation preventing means for preventing rotation of the sleeve on the core means.

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5,351,870

METHOD OF AND DEVICE FOR SEPARABLY CONNECTING WEBS OF PHOTOSENSITIVE MATERIAL TO A BELT CONVEYOR

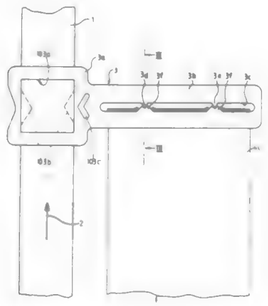
Erich Nagel, Aazing; Karl-Heinz Wagner; Lothar Himmelsbach, both of Munich; Alfred Zwischenberger, Putzbrunn, and Wolfgang Viehrig, Munich, all of Fed. Rep. of Germany, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 415,176, Sep. 29, 1989, abandoned. This application Apr. 10, 1992, Ser. No. 869,191

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1988, 3833469

Int. Cl.[5] B65H *20/16*; G03D *13/10*

U.S. Cl. 226—92 17 Claims



1. A method of separably affixing a flexible web which has a leader to a one-piece motion transmitting arm having a slot and forming part of a clip which is adapted to be connected to a conveyor, comprising the steps of inserting the web into the slot of the arm so that the leader is located at one side and a portion of the web which is immediately adjacent and of one piece with the leader is located at the other side of the slot; folding the web in the region of the slot so that the leader and the portion which is immediately adjacent and of one piece with the leader of the web make with each other an angle of less than 90°; and establishing a form-locking connection between the web and the arm in the region of the slot.

5,351,871

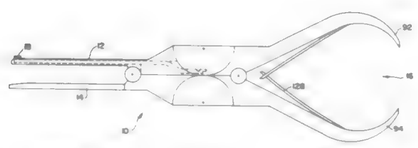
INTRANASAL SEPTAL STAPLING DEVICE

William Bauer, 80 Summerhill Pl., Newnan, Ga. 30263

Continuation-in-part of Ser. No. 858,028, Mar. 26, 1992. This application Mar. 23, 1993, Ser. No. 35,809

Int. Cl.[5] A61B *17/068*

U.S. Cl. 227—177 13 Claims



1. A stapling device comprising:

first and second arms, each of said arms having a distal portion and a proximal portion;

a stapler head rotatably coupled to a free end of said distal portion of said second arm, said stapler head having a first, inoperative position and a second, operative position;

means for moving said stapler head from said inoperative position to said operative position;

means for pivotally coupling said first arm to said second arm; and

first and second handle members each pivotally coupled to said proximal portions of said first and second arms, said moving means being cooperable with at least one of said handle members so that after displacement of said moving means by initial movement of said handle members to place said stapler head in said operative position, further displacement of said handle members moves said second arm to bring said stapler head and said first arm into contact with tissue structure to be stapled.

5,351,872

DIE BONDING APPARATUS

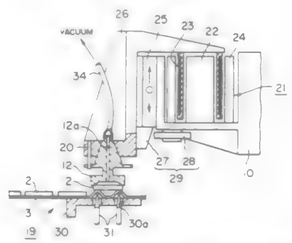
Hiroaki Kobayashi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanegawa, Japan

Filed Jun. 24, 1993, Ser. No. 82,285

Claims priority, application Japan, Jun. 24, 1992, 4-166104

Int. Cl.[5] H01L *21/603*

U.S. Cl. 228—6.2 10 Claims



1. A die bonding apparatus for bonding a die onto a bonding surface of a lead frame by pressing the die under a constant pressure, which comprises:

mounting means for mounting the die;

a collet having chucking means for holding the die mounted on said die mounting means;

a linear motor for moving said collet up and down;

separating means for separating the die from said die mounting means when the die mounted on said mounting means is held by said chucking means;

horizontal driving means for moving said collet horizontally;

lead frame mounting means for mounting the lead frame;

a position sensor for detecting vertical positions of said collet; and

linear motor control means for controlling vertical travel speed of said collet and bonding pressure of the die against the bonding surface of the lead frame, by controllably driving said linear motor on the basis of position information of said collet detected by said position sensor.

5,351,873

DEVICE FOR ASSEMBLING SEMICONDUCTOR CHIPS BETWEEN TWO HEAT SINKS

Claude Pouet, Tours, and Yoland Collmeau, Rochecorbon, both of France, assignors to SGS-Thomson Microelectronics S.A., Saint-Genis Pouilly, France

Filed Jun. 25, 1993, Ser. No. 82,668

Claims priority, application France, Jun. 26, 1992, 92 08282

Int. Cl.[5] B23K *37/04*

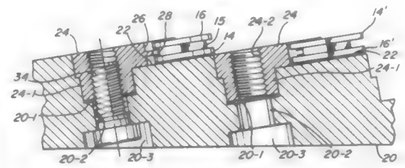
U.S. Cl. 228—49.1 21 Claims

1. A device for safely mounting chips between two flat heat sinks, comprising:

a base;

a plurality of ramps disposed within the base;

first and second means, located on each ramp, for receiving and contacting first and second heat sinks; and



means for abutting against a chip disposed between the first and second heat sinks wherein the means for abutting divide the first and second means for receiving.

5,351,874

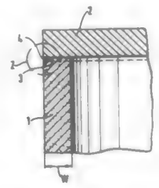
METHOD OF JOINING A CERAMIC COMPONENT TO A METAL COMPONENT

Walter Rajner, Nürnberg, and Peter Stingl, Lauf, both of Fed. Rep. of Germany, assignors to Hoechst CeramTec AG, Selb, Fed. Rep. of Germany

Filed Jan. 6, 1993, Ser. No. 2,501

Int. Cl.[5] B23K *1/00, 31/02, 103/16*

U.S. Cl. 228—124.1 7 Claims



1. A method of joining a ceramic component along a joining surface thereof to a metal component comprising the steps of:

providing a ceramic component having a joining surface provided with a metallizing layer, and having the outer peripheral edge of the joining surface of the ceramic component provided with a chamfer whose chamfer angle (ϵ) is from about 15° to about 45°, the chamfer having an edge radius of ≦ about 0.3 mm and its minimum height being from about 5 to about 30% of a wall thickness of the ceramic component;

positioning a metal component adjacent to the joining surface of the ceramic component; and

brazing the metal component to the ceramic component at the joining surface.

5,351,875

MIXING AND DISPENSING DEVICE

Steve Rhine, Canton, Mich., and Gordon Baker, Amelia, Ohio, assignors to Hydro Systems Company, Cincinnati, Ohio and Diversey Corp., Livonia, Mich.

Filed Oct. 29, 1992, Ser. No. 968,336

Int. Cl.[5] B67D *5/60*

U.S. Cl. 222—132 9 Claims

1. A mixing and dispensing device for liquids comprising:

(a) means for delivering a liquid;

(b) plural sources of chemicals to be mixed with the liquid;

(c) a first container filling station including:

(1) a first selector switch valve;

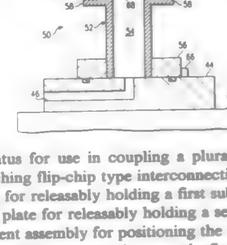
(2) an eductor in fluid communication with the first selector switch valve and means for delivering;

(3) a filling tube in fluid communication with the eductor and extending from the eductor and adapted to fill a container associated therewith;

(4) means for controlling liquid flow through the eductor;

(d) a second container filling station for filling containers of a size different than the first filling station including:

(1) a cross-contamination reducing second selector switch valve having means for minimizing chemical residue collection therein;



(2) an eductor in fluid communication with the second selector switch valve and the means for delivering;

(3) a filling tube in fluid communication with the eductor, extending from the eductor and adapted to fill a container associated therewith; and

(4) means for controlling the liquid flow through the eductor.

5,351,876

APPARATUS AND METHOD FOR FLIP-CLIP BONDING

James F. Belcher, Plano, and Gary W. Andrews, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 4, 1994, Ser. No. 177,037

Int. Cl.[5] H01L *21/60*

U.S. Cl. 228—180.22 20 Claims

1. Apparatus for use in coupling a plurality of substrates having matching flip-chip type interconnections comprising:

a pedestal for releasably holding a first substrate;

a retainer plate for releasably holding a second substrate;

an alignment assembly for positioning the retainer plate and the second substrate proximate to the first substrate on the pedestal; and

an electromagnet on the pedestal for applying a selected amount of force to the retainer plate after the second substrate has been aligned with the first substrate.

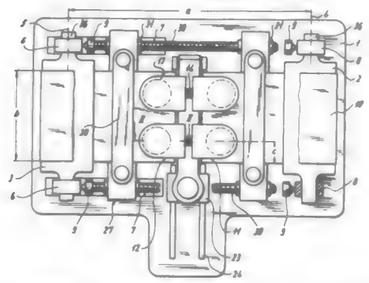
VOL 1167 ISS 1 OC 4 1994 UMI

5,351,877

METHOD OF AND DEVICE FOR MANUFACTURING BANDS OF STEEL

Rolf Rottger, Melle, Fed. Rep. of Germany, assignor to Firma Theodor Hymmen, Bielefeld, Fed. Rep. of Germany

Division of Ser. No. 916,564, Jul. 20, 1992, Pat. No. 5,312,025.
This application Feb. 7, 1994, Ser. No. 192,241
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—212 2 Claims



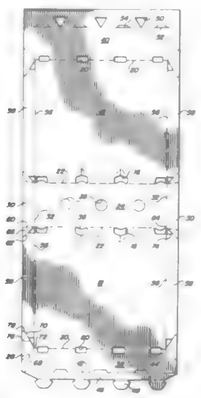
1. A method for manufacturing loops of steel comprising the steps of: providing two separate drums with the same diameter and with parallel axes, wherein the axis of one of the drums is stationary and the axis of the other drum is transversely displaceable; cutting a strip of steel into a length with two ends; looping the length around the drums; clamping the ends of the length together with clamps which move along the axes; stretching the length of a prescribed tension; securing the ends of the length with securing arms extending parallel to the axis of the other drum towards said one drum; and connecting the ends of the length by welding, while being held in the securing arms, to form a loop.

5,351,878

WRAP-AROUND CARRIER WITH END RESTRAINTS

Leonard M. Cooper, West Monroe, La., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Nov. 12, 1993, Ser. No. 152,550
Int. Cl.[5] B65D *85/62*
U.S. Cl. 206—427 3 Claims



1. A package comprised of a wrap-around carrier containing a plurality of articles, comprising:

a top panel;

a bottom panel;

end flaps connected to the top panel along fold lines;

opposite side panels, each of said side panels being connected along an upper fold line to the top panel, along a lower fold line to a bottom panel flap and along end fold lines to side panel flaps, the bottom panel flaps being connected to each other to form the bottom panel and the side panel flaps being inwardly folded between the side panels and adjacent end articles in the package;

an upper gusset panel associated with each of said side panel flaps, each of said upper gusset panels connecting one of said side panel flaps to an associated one of the end flaps;

a lower gusset panel associated with each of said side panel flaps, each of said lower gusset panels connecting one of said side panel flaps to an end edge of an adjacent one of the bottom panel flaps;

one of the articles being adjacent each of the lower gusset panels, the lower gusset panels restraining outward movement of said adjacent articles;

the bottom panel being longer than adjacent portions of the side panels; and

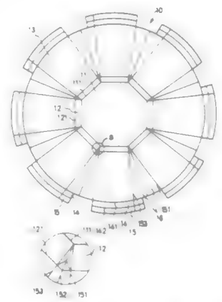
the top panel being narrower than the bottom panel.

5,351,879

PAPER FOOD CONTAINER HAVING A BOTTOM SECTION FORMED WITH A FLANGE

Yuan-Shin Liu, 11th-1 Floor, No. 90, Fu Hsin S. Road, Sec. 1, Tah An District, Taipei, and Richard C. H. Chang, 19, Alley 2, Lane 685, Chung Cheng Road, Fuan Yuan City, Taichung Hsien, both of Taiwan

Filed Sep. 2, 1993, Ser. No. 115,115
Int. Cl.[5] B65D *5/24, 5/40*
U.S. Cl. 229—104 2 Claims



1. A food container formed form a unitary paper board blank and comprising:

a) a bottom having a substantially planar, polygonal configuration with a plurality of sides;

b) a flange section foldably attached to each of the plurality of sides;

c) a wall section having an upper edge and a lower edge foldably attached to each flange section such that the wall sections and bottom define an interior of the food container, whereby the flange sections extend from the bottom in a direction away from the interior of the food container;

d) an inner folding edge section foldably attached to the upper edge of each wall section and extending outwardly from the interior of the food container;

e) an outer folding edge section foldably attached to each inner folding edge section and extending in contact with and parallel to the inner folding edge section; and

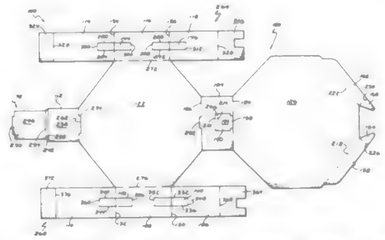
f) a polyethylene coating applied to the bottom, the flange sections, the wall sections, the inner folding edge sections and the outer folding edge sections such that they are held in position by heat sealing.

5,351,880

MULTIPLE TIER FOOD PACKAGE

Rodney A. Goudreau, West Warren, Mass., assignor to Eastern Container Corporation, Springfield, Mass.

Filed May 10, 1993, Ser. No. 58,177
Int. Cl.[5] B65D *5/48*
U.S. Cl. 229—120.32 24 Claims



1. A box for housing at least two products arranged inside the box in a vertical relationship to one another, comprising:

a. a bottom having an upper surface operable to support one product; and

b. at least six sidewalls disposed perpendicular to the bottom upper surface and forming an enclosure surrounding the bottom upper surface, the sidewalls being of a predetermined vertical height sufficient to contain the products arranged inside the box; as characterized by: at least two knock-in tabs, each tab comprising two parallel horizontal slits cut through the sidewall material at the portion of the sidewall material that comprises a single panel thickness of sidewall material, the slits extending across the corresponding vertical corner formed at the intersection of a pair of adjacent sidewalls each comprising a single panel thickness of sidewall material, the intersection of the pair of adjacent sidewalls having the tab formed therein forming an angle of greater than ninety degrees, the slits terminating at their outer dimensions at associated vertically-oriented fold lines disposed on both sides of the corresponding corner, wherein the tabs, when pushed inward toward the inside of the box, form shelf supports that facilitate the housing of the product thereon, and provide for communication of air between the inside of the box and the ambient air outside the box.

5,351,881

FOLDING CARTON BLANK

Karl F. DeMay, Newark, N.Y., assignor to Fold-Pak Corporation, Newark, N.Y.

Continuation of Ser. No. 974,975, Nov. 12, 1992, Pat. No. 5,288,012, which is a continuation-in-part of Ser. No. 796,758, Nov. 25, 1991, abandoned. This application Mar. 18, 1993, Ser. No. 32,988
Int. Cl.[5] B65D *5/06, 5/54*
U.S. Cl. 229—134 5 Claims

1. A blank for assembling a folding carton, said blank comprising:

(a) cover, top, rear, bottom and front panels hingedly connected in the order named, said panels having bottom and top ends;

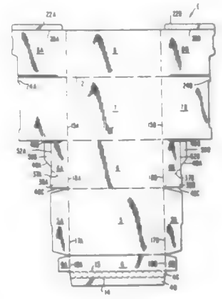
(b) left and right bottom panel end flaps hingedly connected to said bottom and top ends of said bottom panel;

(c) left and right front panel end flaps hingedly connected to said bottom and top ends of said front panel;

(d) left and right top panel end flaps hingedly connected to said bottom and top ends of said top panel;

(e) left and right rear panel end flaps each hingedly connected to said bottom and top ends of said rear panel by a first score line, said left and right rear panel end flaps each having a flex point defined by a second score line disposed below the plane of said rear panel end flap and separating areas in the same general plane of said rear panel end flap; and

(f) left and right cover panel end flaps hingedly connected to said bottom and top ends of said cover panel; wherein the



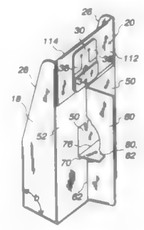
blank is adapted to form an intermediate carton sleeve having top and bottom end openings, said bottom panel end flaps are folded first, said front panel end flaps are folded second to overlie a portion of said bottom panel end flaps, said top panel end flaps are folded third and said rear panel end flaps are folded fourth so that said flex points contact said bottom panel end flaps and said top and bottom end openings are substantially closed.

5,351,882

FOLDABLE DISPLAY APPARATUS

Richard G. Krautsack, Arlington Heights, Ill., assignor to Comark Merchandising, Inc., Elk Grove, Ill.

Filed Jun. 25, 1992, Ser. No. 903,898
Int. Cl.[5] B65D *5/02, 5/52*
U.S. Cl. 229—164 4 Claims



1. A display apparatus which may be hung or held upright on a planar surface and being formed from a one-piece blank, the display apparatus comprising a front wall, side walls, a rear wall, an upright support for supporting the display apparatus, the upright support extending from the rear wall, a clip mounted on the back wall of the apparatus and hidden from view from a front view of the display apparatus, the clip including means for mounting the clip in a C-channel, and a means for hanging the apparatus from a fastener, the hanging means associated with the back wall of the apparatus, the walls forming a receptacle extending from the back wall, the upright support including

an easel support comprising a first flap hingedly connected to said rear wall along a first hinge line for pivoting movement between extended and retracted positions, said first

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flap having a bottom surface for supporting said display apparatus in an upright position;

a lock tap comprising a second flap at least partly struck out from the first flap so as to form an outer edge of the second flap and a recess in said first flap, the recess concavely curved with respect to said second flap, the second flap hingedly connected to said rear wall along a second hinge line for pivoting movement within the recess of said first flap, between extended and retracted positions;

said first flap having an outwardly directed notch in the recess edge portion; and

said second flap movable within the recess of said first flap so as to engage said notch to lock said first and second flaps in their respective extended positions.

5,351,883

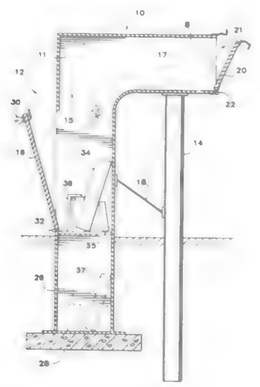
SECURITY MAILBOX

John Pachl, 10021 N.E. 152nd Ave., Vancouver, Wash. 98682

Filed Mar. 5, 1993, Ser. No. 26,972

Int. Cl.[5] B65D *91/00*; B65G *11/04*

U.S. Cl. 232—17 **18 Claims**



1. A security mailbox comprising:

an access section elongated in a horizontal direction, the access section including a front part having an opening for inserting and extracting mail and having a substantially horizontal stationary floor rigidly joined at a bottom end and sized to be at least one half the length of the access section defining a shelf for storing and receiving mail, the access section further including a horizontally aligned rear part having an open bottom end; and

a containment section elongated in a vertical direction having an open top end in direct communication with the access section through the open bottom of the rear part of the access section, the containment section fixed below the access section for receiving mail through the open bottom end of the access section;

the length of the floor preventing the arm from extending down into the containment section to prevent removal of mail from the containment section through the access section.

5,351,884

HEATING APPARATUS IN CABIN

Kanichi Kadotani, Atsugi; Teruyuki Matsuki, and Hiroki Nakanishi, both of Hiratsuka, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

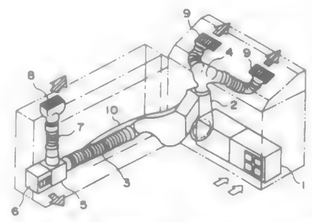
PCT No. PCT/JP91/01252, § 371 Date Mar. 24, 1993, § 102(e) Date Mar. 24, 1993, PCT Pub. No. WO92/05971, PCT Pub. Date Apr. 16, 1992

PCT Filed Sep. 20, 1991, Ser. No. 30,198

Claims priority, application Japan, Sep. 27, 1990, 2-101438[U]

Int. Cl.[5] B60H *1/02*

U.S. Cl. 237—12.3 A **20 Claims**



1. A cabin heating apparatus provided with a central duct having a front end part extended to one side of an operator's seat, said central duct being connected through a front-to-rear changeover damper to an air conditioner unit, a rear duct having an extreme end part extended to the rear of the operator's seat, said rear duct being connected through the front-to-rear changeover damper to said air conditioner unit, and outlets formed at said extreme end part of the rear duct, and further provided with a lower outlet for supplying an air flow along a floor through an above-to-below changeover damper connected to the front end part of the central duct, a front duct having an upper end part and rising from the above-to-below changeover damper, and a front outlet provided at said upper end part of the front duct, whereby the front-to-rear changeover damper divides air flow supplied from the air conditioner unit into a flow through said central duct and a flow through said rear duct, and the above-to-below changeover damper divides air flow from said central duct into a flow through said front outlet and a flow through said lower outlet.

5,351,885

LIQUID JETTING APPARATUS INCLUDING POSITION CHANGE AND DETECTOR MECHANISMS

Nobuyuki Manabe, Fujisawa, Japan, assignor to Taiho Industries Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1993, Ser. No. 174,012

Claims priority, application Japan, Apr. 5, 1993, 5-100064

Int. Cl.[5] B05B *3/02, 3/12*

U.S. Cl. 239—73 **2 Claims**

1. A liquid jetting apparatus comprising:

a drive mechanism including a motor,

a fixed cylinder section disposed under the drive mechanism,

a rotating cylinder section rotatably disposed at the lower end of the fixed cylinder section and having a free end with an inclined end surface,

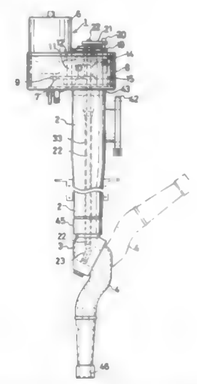
a jetting cylinder section having an inclined upper end face-to-face with the inclined end surface of the rotating cylinder section and a lower end equipped with a liquid jetting nozzle, the jetting cylinder section being rotatably connected to the rotating cylinder section,

a first rotation transmission mechanism connected to the drive mechanism and having a first operating element,

a second rotation transmission mechanism connected to the drive mechanism and having a second operating element, the rotational speed of the second transmission mechanism being slightly different from that of the first rotation transmission mechanism,

a first operating rod connected at one end to the first rotation transmission mechanism through a position change mechanism and at its other end to the jetting cylinder section,

a second operating rod connected at one end to the second rotation transmission mechanism and at its other end to the rotating cylinder section, and



a detection mechanism for detecting the positions of the first operating element and the second operating element and reversing the direction of rotation of the drive mechanism when both operating elements are present at a prescribed position.

5,351,886

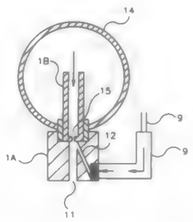
SELF-CLEANING SHOWER NOZZLE SYSTEM

Dan F. Bull, 191 Lehn Springs Dr., and Frank F. Bull, 130 Lafayette Blvd., both of Williamsville, N.Y. 14221

Filed Feb. 11, 1993, Ser. No. 16,318

Int. Cl.[5] B05B *15/02*

U.S. Cl. 239—119 **3 Claims**



1. A nozzle system for use in the paper making industry comprising:

a manifold having at least one opening through a wall thereof;

a white water supply means connected to said manifold;

each said at least one opening of said manifold having a nozzle assembly connected thereto;

each said nozzle assembly including:

an internal sleeve which extends through a corresponding said at least one opening into said manifold, said internal sleeve having a passageway therethrough;

a shower nozzle head located external of said manifold and having an outlet channel and a reverse airflow channel therein;

said passageway of said internal sleeve communicating with said outlet channel and said reverse airflow channel through an orifice located at one end of said passageway of said internal sleeve;

air supply means connected to an end of said reverse airflow channel farthest from said orifice.

5,351,887

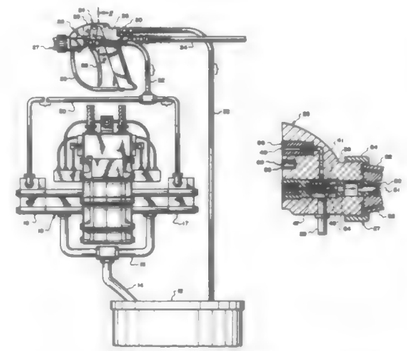
PUMPING AND SPRAYING SYSTEM FOR HEAVY MATERIALS

Robert D. Heterington; James E. Cavanaugh, both of Sunland, and Gary D. Cavanaugh, Bakersfield, all of Calif., assignors to Binks Manufacturing Company, Franklin Park, Ill.

Filed Feb. 16, 1993, Ser. No. 19,161

Int. Cl.[5] B05B *9/00*

U.S. Cl. 239—125 **28 Claims**



7. A system for pumping and spraying a heavy filled viscous fluid comprising;

a source of a heavy filled viscous fluid;

pump means for pumping said viscous fluid;

spraying means connected to said pump means for spraying said viscous fluid, said spraying means comprising;

a spray gun having a fluid nozzle for spraying said viscous fluid;

a chamber in said spray gun for receiving said viscous fluid;

a first conduit for delivering said viscous fluid to said chamber in said spray gun;

primary valve means in said chamber for releasing said viscous fluid to said nozzle;

second conduit means intersecting said chamber near said primary valve means for diverting said viscous fluid back to said source of viscous fluid when said primary valve means is closed;

said second conduit means including substantially preventing diversion of said viscous fluid when said primary valve means is open;

whereby substantially all said viscous fluid is delivered to said fluid nozzle when said primary valve means is open and said viscous fluid is diverted into said second conduit means for recirculation back to said source when said primary valve means is closed.

5,351,888

MULTI-AXIS VECTORABLE EXHAUST NOZZLE

John B. Taylor, and Dudley O. Nash, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed May 14, 1993, Ser. No. 61,398

Int. Cl.[5] B64D *33/08*; B05B *1/12*

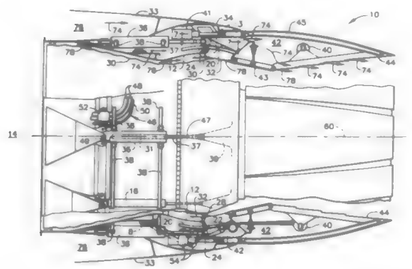
U.S. Cl. 239—127.3 **16 Claims**

12. An exhaust nozzle assembly for jet aircraft, comprising:

an exhaust duct;

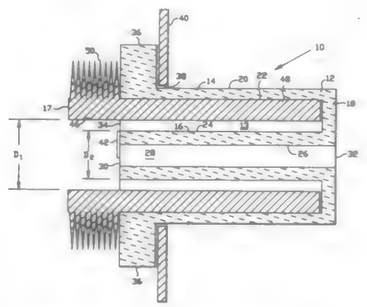
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a nozzle assembly mounted downstream of said exhaust duct;
convergent flap means mounted within said nozzle assembly;
divergent flap means mounted within said nozzle assembly;
a ram air duct surrounding said exhaust duct for channeling cool ram air into said nozzle assembly and through said divergent flap means.



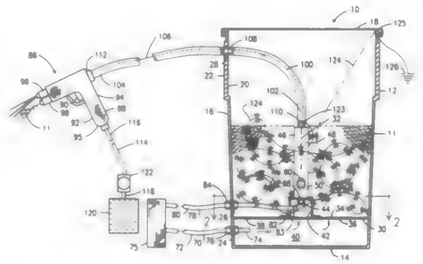
at least three hydraulic cylinders mounting said nozzle assembly to said exhaust duct, each of said cylinders mutually hydraulically interconnected by a pair of captured flow hydraulic circuits;
pitch actuator means interconnected between said exhaust duct and said nozzle assembly;
yaw actuator means interconnected between said exhaust duct and said nozzle assembly; and
a swivel joint extending between said exhaust duct and said nozzle assembly.

5,351,889
FLOW TRIPPED INJECTOR
Steven K. Whiteside, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 16, 1991, Ser. No. 777,031
Int. Cl.[5] B05B *1/24*
U.S. Cl. 239—132 **16 Claims**



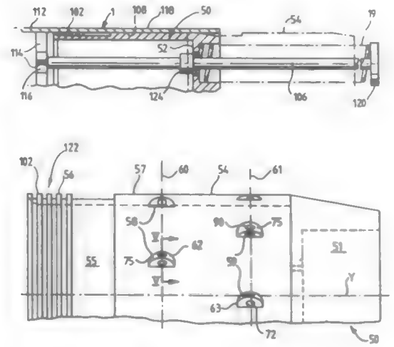
1. A turbulent flow injector, comprising:
a ceramic injector body having an outer cylindrical wall with an inner surface, an inner cylindrical wall having an inner surface, an end wall at an outlet end of said body terminating said outer and inner walls so as to define an annular cavity between said inner and outer walls, said annular cavity being open at an inlet end of said body, a duct defined by said inner surface of said inner wall and having an inlet at said inlet end of said body;
a heat conductive insert positioned within said annular cavity and having an outer surface in thermal contact with said inner surface of said outer wall, said insert having an external section extending beyond said inlet end of said body and having cooling fins extending from said external section;
an annular air chamber defined between said insert and said inner wall of said body; and
a protuberance mounted at said inlet end of said body and radially extending over said inlet of said duct.

5,351,890
APPLICATOR HAVING A GLITTER CONTAINER INCLUDING A VENTURI PUMP AND STATIC REDUCING TINSEL
Amy K. Clements, Largo, Fla., assignor to Graves Spray Supply, Inc., Clearwater, Fla.
Filed Jan. 13, 1994, Ser. No. 180,601
Int. Cl.[5] B05B *7/08, 7/14*
U.S. Cl. 239—143 **15 Claims**



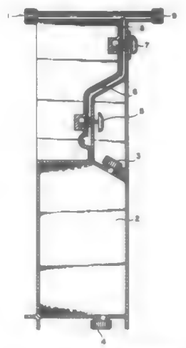
1. An apparatus for applying glitter on a surface, the apparatus comprising,
a container having a planar bottom member, a planar intermediate floor member with a multiplicity of air holes formed therein, and an air flow zone between the bottom member and the intermediate floor member for receiving a flow of air,
the glitter to be applied being located above the intermediate floor member and kept within the container by a lid,
a vertical housing mounted on the intermediate floor member, a bottom portion of the vertical housing containing an internally mounted venturi Jet, and a hole formed in a sidewall of the vertical housing for drawing glitter into the vertical housing when air is pumped through the venturi jet from the bottom portion of the vertical housing,
a static reducing tinsel located within an area containing glitter and connected to a grounding means outside the container to prevent static buildup, and
means for connecting the vertical housing to a spray gun to permit flow of glitter when the spray gun is activated.

5,351,891
ROTATING HIGH-PRESSURE SPRAY HEAD AND OPTIONAL DRILL
Leno B. Hansen, 31 Thornby Avenue, Solihull, West Midlands B91 2BT, United Kingdom, and Bjorn R. Hansen, Asmarkveien Soreal N-2600, Lillehammer, Norway
PCT No. PCT/GB91/01083, § 371 Date Dec. 24, 1992, § 102(e) Date Dec. 24, 1992, PCT Pub. No. WO92/00811, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 3, 1991, Ser. No. 966,032
Claims priority, application United Kingdom, Jul. 3, 1990, 9014776.0
Int. Cl.[5] B05B *3/06;* A62C *31/05*
U.S. Cl. 239—248 **15 Claims**



1. A spray gun, comprising:
mounting means:
a hollow, substantially cylindrical body having an upstream end adapted for connection to a high pressure liquid supply and a downstream end which is open and provided with said mounting means; and,
a spray head for converting high pressure liquid into an enveloping atomized spray mist around said spray head, wherein said spray head comprises a hollow cylindrical shell having a barrel portion of circular cross-section, said mounting means mounting said spray head for rotation about its longitudinal axis, said spray head and said hollow body having cooperating bearing surfaces for sealing said spray head to said hollow body while permitting rotation of said spray head about its longitudinal axis, said spray head having means substantially closing said cylindrical shell ahead of said barrel portion and having an upstream end which is open for receiving high pressure liquid from within said hollow body, said barrel portion having groups of jet orifices arranged around its circumference and formed through its wall, each of said groups comprising at least two orifices having substantially convergent axes orientated so as to be closest to each other in a mixing region adjacent the outer cylindrical surface of said spray head, the axis of at least one orifice in each of said groups being orientated in a pre-determined circumferential direction for direction a jet of said liquid in said circumferential direction and for promoting rotation of said spray head about its axis, said outer cylindrical surface having a plurality of recesses formed therein, one of said recesses for each said group of orifices, the orifices of each group opening into the respective said recess whereby said recess consititutes at least part of the mixing region associated therewith.

5,351,892
UNITARY, MULTI-PURPOSE, SELF-CONTAINED SELECTION, DILUTION, MIXING AND DISPENSING APPARATUS
Nicholas P. Conte, 288 Central Ave., Jersey City, N.J. 07307
Filed Sep. 30, 1993, Ser. No. 135,305
Int. Cl.[5] B05B *7/30*
U.S. Cl. 239—304 **6 Claims**



1. A unitary, multi-purpose, self-contained apparatus for entraining at least one additive in a dilution stream, said apparatus being integrally formed by the union of two complimentary halves, the union of which defines a space therein, the defined space in said apparatus comprising an inlet for said dilution stream, an outlet therefor, and at least one chamber for containing an additive, said at least one chamber being connected to said inlet and outlet through an integrated circuit of liquid carrying lines and valves, each chamber having an opening formed therein for filling said chamber with an additive and a drain outlet for removing additive therefrom, at least one of said valves having a multi-orifice dilution selector element for varying the ratio of additive supplied to the dilution stream, and at least one of said valves having a selecting element for selecting an additive to be supplied to the dilution stream, each chamber being connected to a respective multi-orifice dilution selector element by at least one of said lines and to a respective selecting element by at least one of said lines, whereby when said dilution stream passes from said dilution stream inlet to said dilution stream outlet, the selected ratio of the selected additive is entrained in said dilution stream, with the resulting entrained stream exiting through said dilution stream outlet.

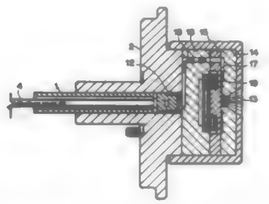
5,351,893
ELECTROMAGNETIC FUEL INJECTOR LINEAR MOTOR AND PUMP
Niels O. Young, 714 W. State St., Boise, Id. 83702
Filed May 26, 1993, Ser. No. 67,670
Int. Cl.[5] B05B *1/30*
U.S. Cl. 239—585.1 **11 Claims**

9. An electromagnetic fuel injector which comprises:
a linear motor configured to have a motor core having a cylindrical pump barrel located within said motor core;
an elongated pump plunger slidably disposed within said pump barrel, said pump plunger having a backward stroke end and a forward stroke end, and operable for being driven a predetermined length in both said forward stroke and said backward stroke;
switching current means electrically connected to the linear motor for driving the pump plunger in forward stroke with a first predetermined force towards, and impacting into, a pump check slug, and backwards in said backward stroke;

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said pump check slug slidably disposed within said pump barrel near the forward stroke end of the pump plunger, said check slug sealing the pump barrel from a nozzle assembly containing a volume of fuel;

said nozzle assembly for discharging a spray of fuel when subjected to hydraulic load imparted to the contained fuel when the plunger impacts the check slug with a second predetermined force;



a pump bias spring connected to the backward stroke end of the pump plunger, said pump bias spring exerting a force upon the plunger in the direction of its forward stroke end sufficient to increase the force at which the forward stroke end of the plunger impacts the check slug to match the second predetermined force required to discharge the spray of fuel from the nozzle assembly.

5,351,894

METHOD FOR THE COMMINUTION OF BRITTLE MATERIAL FOR GRINDING

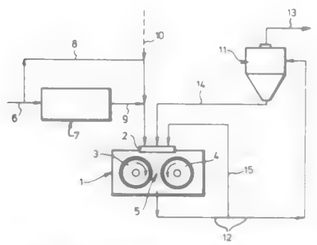
Donald A. Longhurst, Marietta, Ga., and Norbert Patzelt, Beckum, Fed. Rep. of Germany, assignors to Krupp Polysius AG, Fed. Rep. of Germany

Filed Jul. 21, 1992, Ser. No. 916,277

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1991, 4126899

Int. Cl.[5] B02C *4/28*

U.S. Cl. 241—21 **18 Claims**



1. A method of comminuting sand-like brittle material in a roller gap between a pair of high pressure, contrarotating rollers of a material bed roller mill, said method comprising:

delivering a quantity of fresh sand-like brittle material from a supply thereof to the roller gap for crushing; and

maintaining the moisture content of the material just before said roller gap in an optimum range of 0.3% to 3.0%.

5,351,895

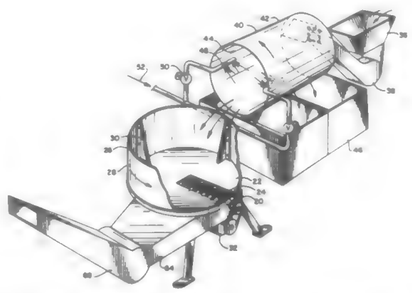
SEPARATING DEVICE FOR CELLULOSIC AND THIN PLASTIC MATERIALS

Joe G. Brooks, Springdale; Billy D. Goforth, Fayetteville; Charles Goforth, Lowell, and J. Douglas Brooks, Springdale, all of Ark., assignors to Advanced Environmental Recycling Technologies, Inc., Springdale, Ark.

Division of Ser. No. 854,231, Mar. 29, 1992, Pat. No. 5,277,758, which is a continuation-in-part of Ser. No. 672,832, Mar. 21, 1991, Pat. No. 5,268,074, which is a continuation-in-part of Ser. No. 499,718, Mar. 27, 1990, Pat. No. 5,084,135. This application Jul. 13, 1992, Ser. No. 912,866

Int. Cl.[5] B02C *23/40*

U.S. Cl. 241—41 **4 Claims**



1. A device for use in partially separating cellulosic materials and adhesives from thin plastic materials, comprising:

(a) a casing having an inlet and an outlet;

(b) a rotor shaft driven for rotation in said casing;

(c) a plurality of hammer shafts attached parallel to and spaced apart from said rotor shaft or rotation therewith;

(d) a plurality of hammers pivotably mounted axially spaced apart on said parallel hammer shafts, such that said hammers sling outward during rotation of said rotor shaft to define a predetermined maximum diameter circle within the said casing;

(e) a plurality of shear bars within said casing projecting inwardly between said hammers and spaced a distance between about ⅛ inch and about 3/16 inch from said hammers

(f) a tub base having an opening communicating with the casing inlet;

(g) a cylindrical tub rotatably connected about the tub base enclosing the opening;

(h) a plurality of vanes projecting inwardly from the cylindrical tub for rotation therewith; and

(i) water spray means disposed outside the casing.

5,351,896

FLUORESCENT TUBE BREAKING APPARATUS

Jimmy P. Nuttall, 2775 Locust, Montrose, Colo. 81401

Filed Oct. 4, 1993, Ser. No. 130,691

Int. Cl.[5] B02C *19/12, 1/00*

U.S. Cl. 241—99 **1 Claim**

1. A fluorescent tube breaking apparatus, comprising,

an elongate rigid tubular housing, having a housing first end spaced from a housing second end, the housing having a housing side wall, with the housing symmetrically oriented about a housing axis, a housing threaded portion extends about the housing side wall extending from the housing second end and the housing threaded portion spaced from the housing first end, with a first end cap secured to the housing first end, and a second end cap having an internally threaded skirt arranged for securement to the housing threaded portion,

and

a guide tube fixedly mounted to the housing between the housing first end and the housing second end, with the guide tube having a guide tube cavity, the housing having a housing cavity, the guide tube cavity in communication with the housing cavity,

and

a rigid impact rod slidably received through the guide tube and received within the housing cavity from the guide tube,

and

the rigid impact rod includes an impact rod first end and an impact rod second end, the impact rod first end is arranged for reception within the housing cavity, the impact rod second end having a second end handle, and the impact rod including an impact rod cap fixedly mounted to the impact rod, and a spring member mounted to the cap and the guide tube having a guide tube floor, with the spring member captured between the guide tube floor and



the cap, with the spring biased towards the guide tube floor to bias the impact rod first end within the housing cavity, and the guide tube having a guide tube roof plate to orient the spring between the guide tube roof plate and the guide tube floor to guidably direct the impact rod through the guide tube,

and

a housing sleeve, the housing sleeve slidably received over the housing side wall and projecting beyond the housing second end, with the sleeve having a sleeve outer distal end, and the sleeve outer distal end including a sleeve threaded portion arranged to receive said second end cap, the sleeve including a row of openings parallel to the housing axis directed through the sleeve, with the housing side wall including a lock button projecting through the side wall, with the lock button including a lock button spring mounted to the housing side wall and to the lock button to project the lock button through the housing side wall and through one of said openings.

5,351,897

ADJUSTABLE ERGONOMIC SUPPORT FOR COMPUTER KEYBOARDS

Michael Martin, 117 W. End Ave., Somerville, N.J. 08876

Filed Apr. 20, 1992, Ser. No. 871,108

Int. Cl.[5] A47F *5/00*

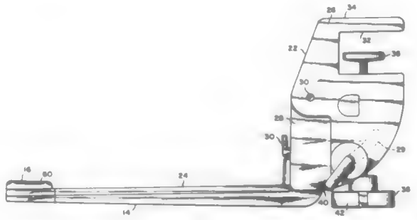
U.S. Cl. 244—118 **6 Claims**

1. An adjustable ergonomically-designed support assembly for support of a keyboard of the type associated with computers, the assembly comprising in combination:

a securing means engageable with a desk or counter top, said desk or table top supportive of a video monitor:

a support bracket attached to said securing means, said support bracket comprised of a fixed member depending from said securing means and a movable member secured to said fixed member and angularly positionable with respect to said fixed member;

an angular adjustment means cooperative with said fixed member and said movable member to selectively fix the angular relationship between said fixed member and said movable member, said angular adjustment means comprising a compression member selectively positioned from a locked to an unlocked position permitting the angular adjustment between said fixed member and said movable member;



a platform member slidably secured to said movable member in adjustable and vertical relationship to said movable member, said platform member slidably adjustable in height with respect to said movable member, said height adjustment means comprising a compression member engaged on a facing plate of said platform means, said compression member passing through said facing plate and engaging said movable member by means of a vertically-disposed channel aperture centrally disposed on said movable member thereby permitting vertical disposition of said platform means relative to said movable member;

a height adjustment means for selectively adjusting the height of said platform means;

a palm rest support secured to said platform means.

5,351,898

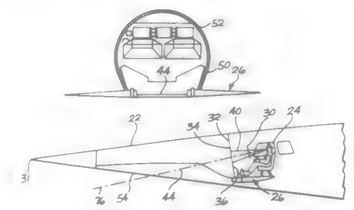
APPARATUS AND METHOD FOR ALLOWING A PILOT TO SEE OUTSIDE AN AIRPLANE

Michael S. Koehn, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 10, 1992, Ser. No. 988,563

Int. Cl.[5] B64C *1/28*

U.S. Cl. 244—118.5 **9 Claims**



1. In an aircraft having a cockpit, apparatus comprising:

a. an aperature located in an instrument panel of the cockpit;

b. a nose portion of the aircraft having an opening located between the aperature and a tip of the nose portion to permit a pilot in the cockpit to look simultaneously through the aperature and the opening to a location outside the aircraft; and

c. a door, which is an aerodynamic lifting surface of the aircraft, is connected to the aircraft and is movable between (i) an open position where the opening is not cov-

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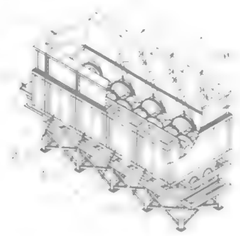
ered and (ii) a closed position where the opening is covered and the door is aligned with an exterior surface of the nose portion.

5,351,899

MODULAR AUGER SHREDDER SYSTEM

Larry E. Koenig, c/o Komar Industries, Inc., 4425 Marketing Pl., Groveport, Ohio 43125

Filed Feb. 11, 1993, Ser. No. 16,805
Int. Cl.[5] B02C *18/22*
U.S. Cl. 241—260.1 **16 Claims**



16. An auger shredder module comprising:

a housing having a substantially open top for receiving material to be shredded, opposing end enclosures and side deflector means extending between said end enclosures, said end enclosures and said side deflector means defining a grinding chamber;

auger screw means rotatably mounted on said housing within said grinding chamber, said auger screw means including a pair of opposed, counter-rotating tapered screws, each of said screws being mounted on a different one of said end enclosures;

motor means mounted within said end enclosures for driving said auger screw means;

said side deflector means being shaped to guide said material to said auger screw means; and

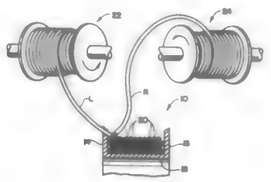
said housing being substantially rhomboid in shape when viewed from above, whereby a plurality of said modules can be positioned in side-by-side relation to form an array of said modules such that adjacent ones of said screws of adjacent ones of said modules overlap and substantially uniform spacing between said screws is maintained across said array.

5,351,900

METHOD OF MANUFACTURE OF QUADRUPOLE-WOUND FIBER OPTIC SENSING COIL

Everett M. Torney, Gaithersburg, Md., assignor to Optelecom, Inc., Gaithersburg, Md.

Filed Oct. 21, 1992, Ser. No. 964,089
Int. Cl.[5] G01B *9/02*
U.S. Cl. 242—7.03 **4 Claims**



1. A method of winding an optical fiber sensor in a quadrupole configuration comprising:

(a) forming first and second wound optical fiber supplies, each consisting of one-half the total length of fiber to be wound into said sensor;

(b) winding a first turn of said fiber intermediate said fiber length against a first flange of a spool;

(c) winding from the first optical fiber supply from the first turn to a second flange of the spool to form a first layer, winding one turn in a second layer lying in a groove formed by the last two turns in the first layer and winding an additional one turn in a third layer resting against the second flange and the fiber turn just made in the second layer;

(d) winding the second layer from the second supply in grooves formed by the turns of the first layer from a first groove spaced one turn from the first flange toward the second flange to the previously wound one turn in the second layer while rotating the spool in the opposite rotational direction to that used for winding the first layer;

(e) winding a third layer from the second supply in grooves formed by the turns of the second layer, starting at a first groove spaced one turn from the second flange and proceeding to the first flange, with the spool rotating in the same direction as was used for winding the second layer; winding one turn in a fourth layer lying in a groove formed by the last two turns in the third layer and winding one turn in a fifth layer resting against the first flange and on the fiber turn just made in the fourth layer;

(f) winding said fourth layer from the first supply in grooves formed by the turns of the third layer from a first groove spaced one turn from the second flange and rotating the spool in the same direction of rotation to that used for winding the first layer;

(g) winding the fifth layer from the first supply in grooves formed by the turns of the fourth layer with the spool turning in the same direction as was used for the first and fourth layers starting at a first groove spaced one turn the first flange and proceeding to the second flange, winding a turn in a sixth layer lying in grooves formed by the last two turns in the fifth layer and winding one turn in a seventh layer resting against the first flange and on the fiber turn just made in the sixth layer;

(h) repeating steps (d)-(g) until all of the optical fiber from the first and second optical fiber supplies is wound;

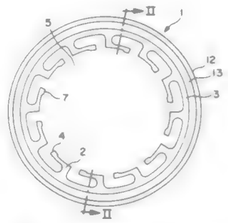
(i) winding each of said turns to include a first portion oriented perpendicular to the axis of said coil and a second portion angularly disposed with respect thereto.

5,351,901

HUB TENSIONING DEVICE

Bernd Scholtysik; August Liepold; Jose Toral, and Manfred Baumann, all of Munich, Fed. Rep. of Germany, assignors to BASF Magnetics GmbH, Mannheim, Fed. Rep. of Germany

Filed Dec. 18, 1992, Ser. No. 992,833
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1991, 9115828[U]
Int. Cl.[5] B65H *75/18*
U.S. Cl. 242—540 **3 Claims**



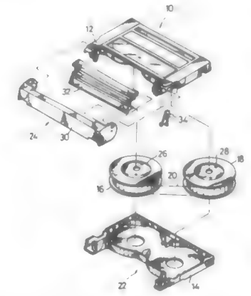
1. A winding device comprising a winding shaft having individual hub holders mounted axially there along for individual hubs having inner cylindrical bores, means for locking in of the hubs in the axial direction on each individual hub holder, wherein each hub (1) includes along its inner circumference (3), alongside the inner bore (5) and uniformly distributed over the circumference, a multiplicity of resilient elements (3), which have the form of a bent-off arm which extends in the radial direction from the inner circumference (3) of the hub (1) and is bent off in the circumferential direction, the end (4) of each resilient arm being at a distance from the bending point of the next-following arm, thereby forming a clearance between the end of a resilient arm and the bending point of the next-following, resilient arm, wherein the means for locking in of the hubs are one or more radially spring loaded ball thrust pieces (14) on the outer circumference of the hub holder (6) which lock into the clearance between the neighboring resilient arms.

5,351,902

8MM VIDEO TAPE CASSETTE

Kouji Matsuno, Miyotamachi, and Kiyotaka Okuyama, Usudamachi, both of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed May 29, 1992, Ser. No. 890,918
Claims priority, application Japan, May 31, 1991, 3-049131[U]
Int. Cl.[5] B65H *75/18*
U.S. Cl. 242—345 **5 Claims**



1. An 8 mm video tape cassette comprising:

a casing;

a feed reel and a take-up reel each including a hub and rotatably arranged in said casing;

a magnetic tape formed with a thickness of 11.0 μm or less and wound on said feed reel and take-up reel so as to extend therebetween;

said casing being provided with an opening through which said magnetic tape is drawn out from said casing; and

an openable lid pivotally mounted on said casing so as to cover said opening of said casing;

said hub of said feed reel being formed with a diameter of 25 mm or more.

5,351,903

ELECTROSTATIC POWDER PAINT GUN WITH TRIGGER CONTROL VARIABLE VOLTAGE

Russell Mazakas, 1691 Solano, Ontario, Calif. 91764, and Scott Corrothers, San Bernardino, Calif., assignors to Russell Mazakas, Ontario, Calif.

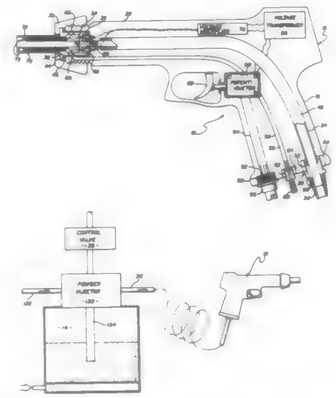
Filed Apr. 6, 1993, Ser. No. 43,664
Int. Cl.[5] B05B *5/053, 5/03*
U.S. Cl. 239—705 **19 Claims**

1. A spray gun that can spray electrostatically charged powdered paint, comprising:

a housing having an inlet, an outlet and an internal passage that provides fluid communication between said inlet and said outlet;

voltage means attached to said housing for providing a voltage and creating an electric field at said outlet of said housing;

input means attached to said housing for varying the voltage of said voltage means;



pressurized paint means for supplying powdered paint to said inlet in a stream of air, and

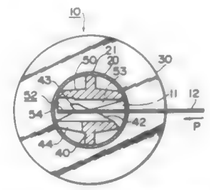
paint control means operatively connected to said input means for varying a powdered paint density of said stream of air when said voltage of said voltage means is varied.

5,351,904

PHOTOGRAPHIC FILM SPOOL HAVING AN ARRANGEMENT FOR RECEIVING AND HOLDING AN END OF THE FILM

Hiroshi Mitake, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Feb. 23, 1993, Ser. No. 21,455
Claims priority, application Japan, Feb. 24, 1992, 4-036207
Int. Cl.[5] B65H *75/28*
U.S. Cl. 242—584.1 **4 Claims**



1. A photographic film spool comprising a spool core on which is to be wound photographic film, a pair of flanges which are provided on both sides in the axial direction of the spool core for restricting the movement of the photographic film in the axial direction, a slot for film insertion formed on the spool core into which a trailing end of the photographic film is inserted, and a pair of walls facing each other which form the slot for film insertion,

one of said walls having a ramp portion which gradually approaches the other wall in the direction of film insertion, a retention hook, which is provided at a part of the ramp portion spaced from the one wall and which engages an aperture in the trailing end of the photographic film, and a penetrated portion formed on each side of the retention hook and penetrating into and through said one wall in the direction perpendicular to the direction of film

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insertion for providing access to the trailing end of the photographic film to thereby permit removal of the trailing end of the photographic film from the spool core, and the other of said walls having a hold-down projection which inhibits the photographic film from becoming detached from the retention hook.

5,351,905

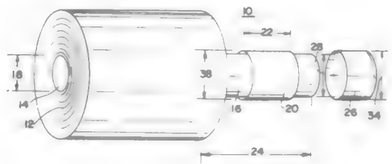
COHESIVE STRETCH-TAPE WRAPPER WITH POSITIVE-BRAKING ACTION

Norman I. Ferber, 17 Owens Rd., Marlboro, N.J. 07746

Continuation-in-part of Ser. No. 185,697, Apr. 25, 1988, abandoned. This application Oct. 29, 1990, Ser. No. 604,162

Int. Cl.[5] B65H *23/06*

U.S. Cl. 242—588.2 **6 Claims**



1. A stretch-tape wrapper comprising:

a roll of stretch-tape on a central core and rotatable therewith;

a co-linear extension coupling with said core only at one end thereof;

an incompressible sheath surrounding said co-linear extension along a portion of its length; and

means situated at said end of said co-linear extension remote from said roll of stretch-tape for preventing separation of said incompressible sheath from surrounding said co-linear extension during periods of use of said stretch-tape wrapper at all extending angles of use;

wherein said roll of stretch-tape is located along said central core at an end thereof remote from said co-linear extension;

wherein said incompressible sheath is open at the opposite ends thereof and of a length less than the length of said co-linear extension;

wherein the inner diameter of said incompressible sheath is greater than the outer diameter of said co-linear extension in permitting the free rotation of said co-linear extension within said sheath when said wrapper is in use;

wherein said means includes a cap at said end of said co-linear extension having an inner diameter just slightly larger than the outer diameter of said co-linear extension to form a snug-fit therebetween and an outer diameter larger than the outer diameter of said incompressible sheath;

and wherein the lengths of said co-linear extension, said incompressible sheath and said cap are selected to permit a user to grasp with one hand both said incompressible sheath and said cap at the same time, with the heel of the hand grasping said cap;

whereby said incompressible sheath is captured in movement along said co-linear extension from said roll of stretch-tape to said cap in all angles of use of said wrapper, in unrolling said stretch-tape from said roll when not imparting pressure to said cap by the heel of the user's hand, and in breaking said stretch-tape from said roll when imparting pressure to said cap by the heel of the user's hand.

5,351,906

SAFETY ANCHORAGES FOR CONTROLLING PAY-OUT OF A SAFETY LINE

Leonard J. Feathers, Ty Croes, United Kingdom, assignor to Barrow Hepburn Sala Ltd., Portishead, United Kingdom

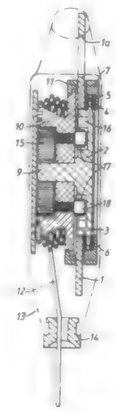
PCT No. PCT/GB91/02282, § 371 Date Aug. 19, 1992, § 102(e) Date Aug. 19, 1992, PCT Pub. No. WO92/11065, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 19, 1991, Ser. No. 920,383

Claims priority, application United Kingdom, Dec. 21, 1990, 9027783.1

Int. Cl.[5] B66D *1/48, 1/54, 5/00*

U.S. Cl. 242—396.6 **5 Claims**



1. A fall-arrest safety anchorage including:

load bearing spine means (**1,26,65,155**), having at least one attachment point (*1a; 271;* **140***a;* **155***a*) by which it can be attached to a fixture;

a safety line drum (**10,62,143**) from which a safety line can be drawn in response to a pulling force on that line exerted by a body attached thereto,

braking means for arresting rotation of the drum, said braking means including relatively rotatable brake components (*2;* **22,26; 65; 144,148; 155**),

means for imparting frictional resistance (**5,6; 145,146**) to relative rotation of said relatively rotatable brake components,

clutch means (**16,17,22; 140,149–151**) which functions automatically to cause relative rotation of the relatively rotatable brake components against said frictional resistance means on rapid acceleration of the safety line drum such as occurs in the event of a fall of a person attached to the safety line,

said clutch means including coupling elements (**17; 150**) which are displaceably connected to the safety line drum, abutments (**16; 151**) with which said coupling elements move into engagement so as to bring about the relative rotation of the brake components,

said safety-line drum and said braking means are carried by the load-bearing spine means,

said load-bearing spine means consisting of a single spine plate (**1; 26; 65; 140; 155**) having an annular aperture;

said single spine plate serving to transmit load and braking forces operating on the safety anchorage to said at least one attachment point, and

said coupling elements (**17; 150**) and the abutments (**16; 151**) being so located that they engage within the aperture in said spine plate.

5,351,907

COILING DEVICE FOR CORDAGE MATERIAL

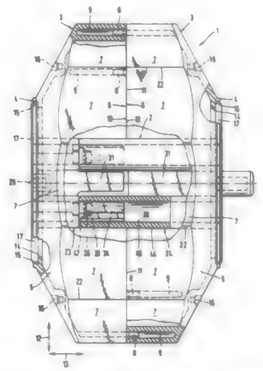
Horst Hartmann, Kemmathen 44, W-8551 Hiltpoltstein, Fed. Rep. of Germany

Filed Jun. 5, 1992, Ser. No. 894,711

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1991, 9107008[U]; Oct. 9, 1991, 9112546[U]

Int. Cl.[5] B65H *75/38*

U.S. Cl. 242—388.1 **17 Claims**



1. A coiling device for cordage material, comprising:

a pair of housing shells which are structurally identical and which are joined together in mirror inversion to form a housing, each housing shell having a plane bottom which is pierced by a bearing eye, a curving wall which extends from the plane bottom, and a rim which is disposed approximately perpendicular to the bottom and which has an end face, the rim including a plurality of plane faces which are joined at edge regions, the housing shells being joined together with the end faces of their rims resting on one another, the housing shells further including means at the edge regions for aligning the housing shells when they are joined to form the housing;

a first half shaft; and

a second half shaft locked to the first half shaft to form a bearing shaft which is rotatably supported by the housing at the bearing eyes and which braces the housing,

wherein the housing shells have bores at some of their edge regions, and wherein the means for aligning the housing shells comprises centering pins which extend from one housing shell into the bores of the other housing shell.

5,351,908

WEBBING RETRACTOR

Yoshio Umezawa, and Hisao Yamada, both of Aichi, Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki Seisakusho, Aichi, Japan

Filed Mar. 1, 1993, Ser. No. 24,453

Claims priority, application Japan, Mar. 9, 1992, 4-011621[U]

Int. Cl.[5] B65H *75/48*

U.S. Cl. 242—383.4 **21 Claims**

1. A webbing retractor for a vehicle comprising:

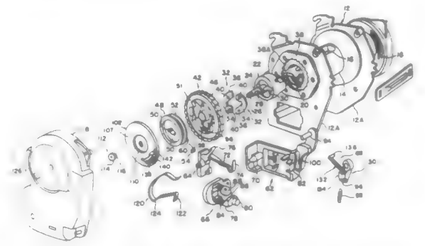
a winding shaft for retracting a webbing;

a relative rotary member connected to said winding shaft which generates rotational delay with respect to said winding shaft due to an inertial force exerted by said relative rotary member when at least one of rapid drawing-out of said webbing and sudden deceleration of the vehicle occurs;

lock means connected to said winding shaft for preventing a drawing-out of said webbing from said winding shaft after said generation of said rotational delay;

an engaging member having a first portion engageable with and disengageable with said relative rotary member, said engaging member being movable between a separated position where said engaging member is separated from said relative rotary member and an engaged position where said engaging member engages said relative rotary member;

a moving member connected to said winding shaft and rotatable therewith and operatively associated with said engaging member; and



guiding means provided in said moving member for guiding a second portion of said engaging member, during rotation of said moving member caused by movement of said winding shaft as said webbing is drawn out, to a predetermined engaging waiting position intermediate to said engaged position and to said separated position such that said engaging member disengages said relative rotary member, and for guiding said engaging member to said engaged position from said engaging waiting position during rotation of said moving member caused by movement of said winding shaft as said webbing is retracted.

5,351,909

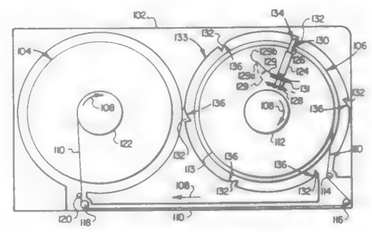
FAST-FORWARDING LOCKING TAPE CASSETTE

Clay E. Moore, 4214 Simmons Dr., Rowlett, Tex. 75088

Continuation-in-part of Ser. No. 919,761, Jul. 24, 1992, abandoned. This application Aug. 21, 1992, Ser. No. 933,984

Int. Cl.[5] G11B *15/32*

U.S. Cl. 242—343 **15 Claims**



1. A fast-forward locking tape cassette, comprising:

a pay-out reel;

a take-up reel;

a casing for enclosing the take-up reel and pay-out reel;

catching means;

attaching means for attaching the catching means to the pay-out reel of the cassette;

stopping means fixed to the casing of the cassette for the catching means to butt against, stopping the pay-out reel from rotating in the paying-out direction; and

retracting means for biasing the catching means against inertial forces;

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said catching means being an extended body, said attaching means movably attaching the catching means to the pay-out reel such that the catching means moves relative to the pay-out reel in response to a predetermined level of centripetal acceleration of the attaching means produced by the rotation of the pay-out reel, such movement of the catching means causing the catching means to butt against the stopping means, stopping the pay-out reel from rotating in the pay-out direction.

5,351,910

DUST FREE TAPE CASSETTE AND MAGNETIC RECORDING APPARATUS

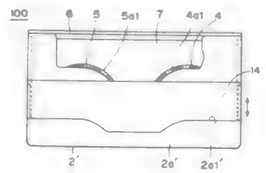
Mitsuhiko Hara, Yokohama, Japan, assignor to Victor Company of Japan, Yokohama, Japan

Filed Sep. 21, 1992, Ser. No. 948,156

Claims priority, application Japan, Sep. 25, 1991, 3-273185; Dec. 12, 1991, 3-351402

Int. Cl.[5] G11B *23/087*

U.S. Cl. 242—342 **4 Claims**



1. Tape cassette having a cassette case, and a front lid for holding protectively a magnetic tape wound on a pair of reels within said cassette case, a part of said magnetic tape being extended behind said front lid which opens to expose said part of the magnetic tape to be drawn out of said tape cassette, said tape cassette comprising:

a pair of shafts stationarily provided within said cassette case for supporting respectively and rotatably said pair of reels housed in said cassette case, a loading pocket provided behind said front lid and being open at a bottom of said cassette case to allow tape loading means of a tape recording/playback apparatus to enter into said loading pocket to draw out said part of the magnetic tape upon loading said tape cassette into said tape apparatus, said loading pocket having a rear wall which partitions said reels from said loading pocket, said rear wall having window means for exposing said pair of reels to said loading pocket, said tape recording/playback apparatus having reel driving means for driving said pair of reels;

flange means provided on each of said pair of reels for laterally holding respectively said magnetic tape in said pair of reels, said flange means protruding partially into said loading pocket through said window means to engage with said reel driving means; and

shield means provided at a bottom of said cassette case for moving slidingly to close and expose said loading pocket, said shield means and said bottom of said cassette case having no access openings to expose said pair of reels.

5,351,911

VERTICAL TAKEOFF AND LANDING (VTOL) FLYING DISC

George A. Neumayr, 2536 10th Ave. North, Apt. 302S, Lake Worth, Fla. 33461-3124

Filed Jan. 6, 1993, Ser. No. 1,319

Int. Cl.[5] B64C *29/00*; **B64B** *1/20*

U.S. Cl. 244—23 C **12 Claims**

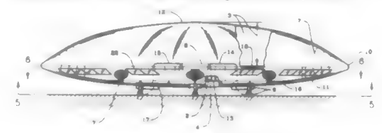
1. A vertical takeoff and landing (VTOL) flying disc comprising:

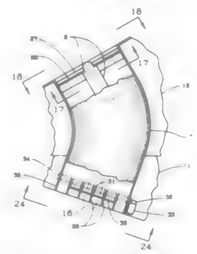
a circular disc-like airfoil-shaped wing structure having a convex upper surface and a concave lower surface, said wing structure further having a leading edge and a trailing edge;

means for delivering power, said means for delivering power consisting essentially of the outer skin of said convex upper surface;

means for storing helium gas, said means for storing helium gas having an upper boundary defined by said convex upper surface and a lower boundary defined by a passenger deck;

means for producing thrust, said means for producing thrust connected to said circular wing structure; and





means for angularly adjusting the thrust produced by said means for producing thrust, said means for angularly adjusting comprising a plurality of vanes pivotally attached to a rotatable sleeve, said rotatable sleeve being attached proximate the outlet of said means for producing thrust, said rotatable sleeve further being positioned above a stationary sleeve;

a member pivotally mounted to said vanes, said member being transverse to said vanes; and

means for selectively pivoting said vanes three-dimensionally

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5,351,912

Patent Not Issued For This Number

5,351,913

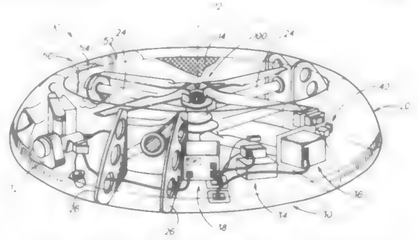
COAXIAL TRANSMISSION/CENTER HUB SUBASSEMBLY FOR A ROTOR ASSEMBLY HAVING DUCTED, COAXIAL COUNTER-ROTATING ROTORS

James P. Cycon, Orange; Fred W. Kohlhepp, Hamden, and Vincent F. Millea, Stratford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 22, 1992, Ser. No. 903,065

Int. Cl.[5] B64D *35/06*

U.S. Cl. 244—60 **9 Claims**



1. A coaxial transmission/center hub subassembly for a rotor assembly of an aerial vehicle having ducted counter-rotating rotors defining a rotational axis for the aerial vehicle, the aerial vehicle having a toroidal fuselage with a plurality of inwardly extending radial struts and including an engine, the rotor assembly including upper and lower swashplate subassemblies, comprising:

center hub support structure means for mounting said coaxial transmission/center hub assembly in fixed coaxial relation to the toroidal fuselage utilizing the plurality of inwardly extending radial support struts;

a multi-member transmission housing including

an upper standpipe housing secured in combination with said center hub support structure means, and

a lower standpipe housing secured in combination with said center hub support structure means; and

a single stage transmission subsystem including

an upper bevel gear including an upper rotor shaft rotatably mounted in combination in said upper standpipe housing,

a lower bevel gear including a lower rotor shaft rotatably mounted in combination in said lower standpipe housing, said upper and lower rotor shafts providing means for mounting the counter-rotating rotors in combination with said coaxial transmission/center hub subassembly, and

an input gear rotatably mounted in combination in said center hub support structures means, said input gear being mechanically coupled in combination with said upper and lower bevel gears and the engine to couple torque therefrom to the counter-rotating rotors; and wherein

said upper and lower standpipe housings are secured in combination with said center hub support structure means in opposed relation along the rotational axis of the aerial vehicle; and wherein

external surfaces of said upper and lower standpipe housings provide sliding surfaces for bi-directional linear movement of the upper and lower swashplate subassemblies, respectively.

5,351,914

HYDRAULIC CONTROL SYSTEM FOR AIRCRAFT

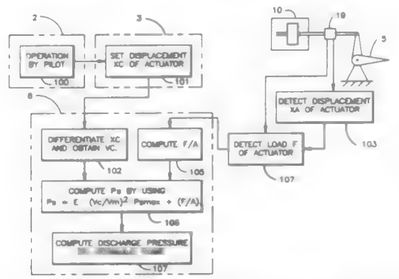
Toru Nagao, Utsunomiya, and Hiroyuki Katsoka, Soja, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1992, Ser. No. 894,554

Claims priority, application Japan, Jun. 14, 1991, 3-143333

Int. Cl.[5] B64C *13/36*

U.S. Cl. 244—78 **11 Claims**



1. A hydraulic control system for an aircraft, said aircraft having a control surface, hydraulic pump, a servo actuator for operating said control surface in association with fluid supplied from said hydraulic pump, a flight maneuver system for generating an output signal to control said aircraft depending on flight conditions and a flight control system responsive to said output signal for producing to said servo actuator a control signal representing the displacement of said servo actuator, the hydraulic control system comprising:

differentiating means responsive to said control signal for calculating an actuating speed of said servo actuator and for generating a speed signal;

load detecting means for detecting the load on said servo actuator and for producing a load signal;

pressure calculating means responsive to said speed and load signals for computing an optimum pressure of fluid to be supplied to said servo actuator and for producing a pressure signal; and

setting means responsive to said pressure signal for controlling said hydraulic pump so as to supply fluid to said servo actuator at said optimum pressure, thereby to precisely control said control surface with minimum energy loss.

5,351,915

HELICOPTER DECK

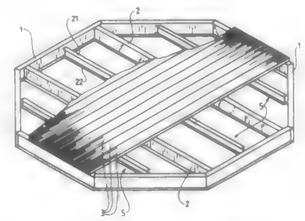
Ernst Aandalen, N-2834 Nygard, Norway

Filed Jan. 15, 1993, Ser. No. 5,245

Claims priority, application Norway, Jan. 24, 1992, 920323

Int. Cl.[5] B64F *1/00*

U.S. Cl. 244—114 R **4 Claims**



1. A helicopter deck (helipad) comprising a supporting main frame (**1**,**2**) which at least comprises a polygonal circumferential frame (**1**), connected with intermediate carrying beams (**2**), said main frame (**1**,**2**) forming a supporting frame for the actual deck comprised of elongate, deck elements (**3**), the deck elements (**3**) joined together to permit limited relative motion and most of the deck elements (**3**) connected with at least one underlying, lateral load distribution beam (**5**) which is freely suspended and, thus, not connected with or supported on the main frame (**1**,**2**), the task thereof being to distribute point loads between adjacent deck elements (**3**), said deck elements (**3**), each comprising an upper carrying flange (**6**) forming a portion of the deck and being provided with a mortice (**13**) along one longitudinal edge of said flange and a corresponding, complementary tenon (**14**) along the other longitudinal edge of said flange as well as two or more vertical webs (**7**–**9**) extending into lower horizontal flanges (**10**–**12**) formed for connection with the load distribution beam (**5**), and that the load distribution beam (**5**), has an upper flange (**21**) attachable to said deck elements.

5,351,916

SYSTEM FOR AUTOMATIC LOADING OF VEHICLES FOR TRANSPORT

Kevin P. McGonigle, Milford; James A. Monson, Waterbury, and Timothy R. Budd, Trumbull, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 20, 1993, Ser. No. 51,034

Int. Cl.[5] B64C *1/22*

U.S. Cl. 244—115 **11 Claims**

1. A system for automatic loading and unloading of a vehicle in a cargo compartment comprising:

height adjustment means installed on said vehicle responsive to control signals for adjusting the height of said vehicle;

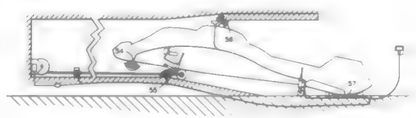
at least one distance measuring sensor for providing distance

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signals indicative of the distance between the vehicle and the cargo compartment;

positioning means for moving the vehicle into and out of the cargo compartment; and

signal processing means responsive to said distance signals being greater than or equal to corresponding minimum allowable clearances for operating said positioning means to move the vehicle into or out of the cargo compartment,



and responsive to said distance signals being less than said corresponding minimum allowable clearances for discontinuing operation of said positioning means, providing control signals to said height adjustment means to adjust the height of the vehicle until said distance signals are greater than or equal to said corresponding minimum allowable clearances, and thereafter recommencing operation of said positioning means.

5,351,917

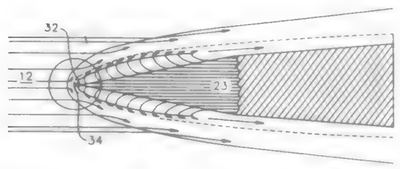
TRANSPIRATION COOLING FOR A VEHICLE WITH LOW RADIUS LEADING EDGES

Melvin J. Bulman, Folsom, Calif., assignor to Aerojet General Corporation, Rancho Cordova, Calif.

Filed Oct. 5, 1992, Ser. No. 956,928

Int. Cl.[5] A01J *25/13*

U.S. Cl. 244—117 A **9 Claims**



1. In an airfoil having a leading edge with respect to ambient atmosphere, the leading edge having a mechanical radius or curvature, a cooling system for avoiding overheating of said airfoil, comprising:

a plurality of apertures formed through at least a portion of the surface of the airfoil, said portion including at least said leading edge;

a fluid flow system having at least one conduit in fluid communication with said plurality of apertures;

a source of pressurized fluid, coupled to said conduit, for providing a flow of said fluid through said apertures to establish an aerodynamic radius of curvature for said airfoil, said aerodynamic radius of curvature being at least about 1.5 times said mechanical radius of curvature, said mechanical radius of curvature being about 0.01 inches or less.

5,351,918

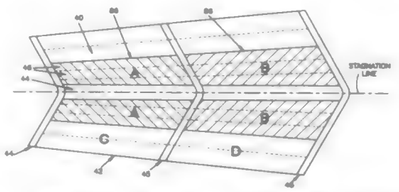
ELECTRICAL HEATER DE-ICER

Michael J. Giamati; Kevin Leffel, both of Akron, and Tommy M. Wilson, Stow, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 531,588, Jun. 1, 1990, abandoned. This application Apr. 6, 1993, Ser. No. 43,667

Int. Cl.[5] B64D *15/00*

U.S. Cl. 244—134 D **24 Claims**



1. A method for de-icing an aircraft structural member having a stagnation line developed during flight that moves from a first position to a second position resultant from a change in flight condition, the method comprising the steps of:

providing a first electrothermal heater coincident with the first position;

providing a second electrothermal heater coincident with the first position;

providing a second electrothermal heater coincident with the second position;

continuously heating the first electrothermal heater and intermittently heating the second electrothermal heater when the stagnation line is at the first position; and,

intermittently heating the first electrothermal heater and continuously heating the second electrothermal heater when the stagnation line is at the second position.

5,351,919

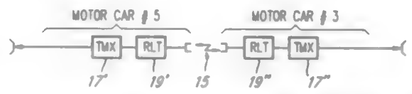
TRAINLINE COMMUNICATION LINK USING RADIO FREQUENCY SIGNAL

André Martin, Brossard, Canada, assignor to Primetech Electroniques Inc., Dollard des Ormeaux, Canada

Filed Mar. 29, 1993, Ser. No. 38,010

Int. Cl.[5] B61L *23/00*; **G08C** *19/00*

U.S. Cl. 246—167 R **1 Claim**



1. A communication link for permitting communications between adjacent cars of a multi-car vehicle, said link comprising:

(A) on a first one of said cars,

(i) a first multiplexing/demultiplexing means for multiplexing first digital signals representative of parameters associated with various systems on said first one of said cars and for processing said first digital signals into a first digital trainline signal;

(ii) first converting means for converting said first digital trainline signal to a first radio frequency signal;

(iii) a first antenna mounted on one end of said first one of said cars for transmitting said first radio frequency signal;

(B) on a second, adjacent one of said cars,

(i) a second multiplexing/demultiplexing means for multiplexing second digital signals representative of parameters associated with various systems on said second one of said cars, and for processing said second digital signals into a second digital trainline signal;

(ii) second converting means for converting said second digital trainline signal to a second radio frequency signal;

(iii) a second antenna, mounted on an end of said second one of said card adjacent said one end of said first one of said cars, for transmitting said second radio frequency signal;

said second antenna receiving said first radio frequency signal and said second multiplexing/demultiplexing means converting said first radio frequency signal into a third digital trainline signal which is equivalent to said first digital trainline signal;

said first antenna receiving said second radio frequency signal and said first multiplexing/demultiplexing means converting said second radio frequency signal into a fourth digital trainline signal which is equivalent to said second digital trainline signal;

a first housing mounted on said first one of said cars, including a first shielding means for surrounding and shielding said first antenna;

a second housing mounted on said second one of said cars, including a second shielding means for surrounding and shielding said second antenna; and

said first housing and said second housing each comprising an open end and each being mounted such that the open end of the first housing faces the open end of the second housing;

wherein communications can be sent from said first one of said cars to said second one of said cars and from said second one of said cars to said first one of said cars via said first and second antennae by free space radio frequency coupling.

5,351,920

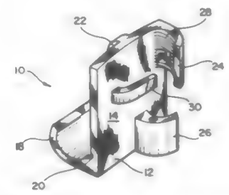
PIPE SUPPORT

John R. Decky, Vero Beach, Fla., and Louis F. Atzel, Boone, N.C., assignors to Pipe Tytes, Inc., Boone, N.C.

Filed Apr. 9, 1993, Ser. No. 45,591

Int. Cl.[5] F16L *3/00*

U.S. Cl. 248—73 **9 Claims**



1. In combination with a suspended threaded rod, a support for a tubular conduit comprising:

a base member;

a pair of C-shaped clips integrally formed on a first planar side of said base member;

each of said C-shaped clips having a rounded threaded opening sized to interconnect with the threaded rod for mounting the support on the threaded rod;

a U-shaped clamp integrally formed on a second planar side of said base member opposite said first planar side for supporting said tubular conduit on said support;

means for maintaining said rod in said C-shaped clips formed by a resilient finger positioned on said first planar side of said base member;

said finger being perpendicular to said rod when said support is attached thereto; and,

means for maintaining said tubular conduit in said U-shaped clamp.

5,351,921

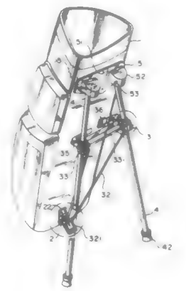
GOLF BAG FOLDING STAND

Chen-Tung Chen, No. 631, Sec. 1, Chung Shan Rd., Ta Chia Chen, Taichung Hsien, Taiwan

Filed Jun. 7, 1993, Ser. No. 72,010

Int. Cl.[5] A63B *55/00*

U.S. Cl. 248—96 **5 Claims**



1. A golf bag stand comprising:

a mount fastened to a golf bag on the outside at a higher elevation, said mount having two spaced sockets, each socket having an opening at the bottom;

a hinge device consisted of a mounting plate fastened to said golf bag at vertically spaced from said mount at a lower elevation, and a movable plate having one end hinged to the mounting plate of said mount and an opposite end terminated to a hooked portion;

two legs each having a top end respectively and pivotably fastened to either socket and a bottom end covered with a cushion for supporting said golf bag on the ground; and

a positioning device for holding said legs in a supporting position to support said golf bag on the ground in a sloping position or in a collapsed position for allowing said legs to be closely attached to said golf bag, said positioning device comprising two connectors respectively mounted around said legs spaced below said mount, a spring link connected between said connectors and the hooked portion of said movable plate of said hinge device, a strap connected between said golf bag and said connectors to define the moving range of said legs from said golf bag, and an elastic loop fastened between said connectors to define the moving range between said legs.

5,351,922

CLAMP

Richard A. Lindsay, Eye, United Kingdom, assignor to Vinten Group plc, Buckinghamshire, England

PCT No. PCT/GB91/01052, § 371 Date Mar. 11, 1993, § 102(e) Date Mar. 11, 1993, PCT Pub. No. WO92/02756, PCT Pub. Date Feb. 20, 1992

PCT Filed Jun. 28, 1991, Ser. No. 972,456

Claims priority, application United Kingdom, Jul. 31, 1990, 9016721.4

Int. Cl.[5] F16M *11/26*

U.S. Cl. 248—188.5 **11 Claims**

1. Clamping means for a movable element comprising:

a housing to receive the movable element:

a clamping member movable relative to the housing to effect clamping of the movable element;

rotary drive means mounted in the housing and rotatable in one direction relative to the housing to effect the said

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clamping movement of the first member and in an opposite direction to release clamping;
torque limiting means in said rotary drive means to limit force applied to the clamping element;
lost motion stop means between the drive means and housing rotatable by the drive means in said one direction into a first stop position relative to the housing and into a second stop position spaced angularly from the first stop position in said opposite direction, and



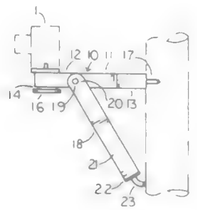
clutch means between the rotary drive means and said lost motion stop means adapted to slip when said first stop position is reached allowing the rotary drive means to continue turning in said one direction until the movable element is clamped and to engage when the rotary drive means is turned to release the movable element so that release movement of the rotary drive is limited by the lost motion stop means to travel between said first and second stop positions however far the drive means has turned to effect said clamping of the movable element.

5,351,923

PORTABLE CAMERA SUPPORT

Thorald L. Booth, Jr., 4545 Tallmadge Rd., Rootstown, Ohio 44272

Filed Jan. 3, 1994, Ser. No. 176,838
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—217.1 **2 Claims**



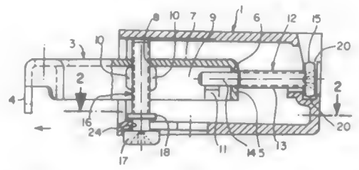
1. A portable camera support, for use in providing a lightweight stable camera platform while in outdoor settings, comprising:
a horizontal support platform;
said horizontal support platform comprising a lightweight, rectangular block;
said horizontal support platform having a pivot aperture positioned in said horizontal support platform;
said horizontal support platform further having camera connection means positioned at one end of said horizontal support platform for permitting a camera to be connected to said horizontal support platform;
said camera connection means comprising a rotatable threaded rod for insertion into the female receiving slot of the camera;
said rotatable threaded rod having a control knob;
said horizontal support platform further having means for attaching said horizontal support platform to a tree or a post;
said attaching means comprising a threaded screw;
an angled support piece;
said angled support piece comprising a lightweight material in an elongated U shaped configuration;
said angled support piece further comprising twin parallel, vertical sides;
said angled support piece having pivot means positioned at one end of said angled support piece for permitting a rotatable connection to said horizontal support platform;
said angled support piece further having apertures adjacent to the upper portion of said twin parallel, vertical sides for receiving said pivot means;
said angled support piece further having a hollowed middle portion for receiving said horizontal support platform when said angled support piece is rotated upward for creating a small portable device; and
said angled support piece further having an arcuate protrudence extending from the end of said angled support piece opposite said pivot means.

5,351,924

FURNITURE MOUNT

Gerhard Schröder, Bad Oeynhausen, Fed. Rep. of Germany, assignor to Paul Hettich GmbH & Co., Kirchlengern, Fed. Rep. of Germany

PCT No. PCT/DE92/00185, § 371 Date Nov. 6, 1992, § 102(e) Date Nov. 6, 1992, PCT Pub. No. WO92/15227, PCT Pub. Date Sep. 17, 1992
PCT Filed Feb. 29, 1992, Ser. No. 946,337
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1991, 9102703[U]
Int. Cl.[5] F16B *45/00*
U.S. Cl. 248—274 **17 Claims**



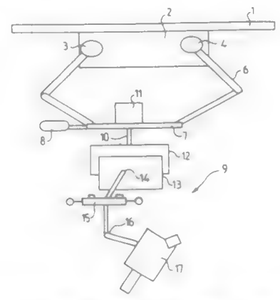
1. A mount for furnishings, comprising a housing for attachment to a furnishing; a carrier movable relative to said housing in both a horizontal and a vertical direction; and means for moving said carrier relative to said housing including a vertical adjusting screw and a horizontal adjusting screw, said horizontal adjusting screw moving said carrier from a first horizontal position to a second horizontal position, said second horizontal position being a terminal position of said carrier, said horizontal adjusting screw having a first section and a second section constituting an extension of said first section, said first section having a first coupling portion and said carrier having a second coupling portion which is complementary to said first coupling portion, said first coupling portion being coupled to said second coupling portion when said carrier is in said first horizontal position, said second section having a smaller cross section than said first section, said second section becoming disposed within and threadably disengaged from said second coupling portion when said carrier is moved into said second horizontal position.

5,351,925

DEVICE FOR SUPPORTING AND POSITIONING A MICROSCOPE

Hervé Druais, Seynsinet, France, assignor to Deemed International, France

PCT No. PCT/FR91/00583, § 371 Date Jun. 23, 1993, § 102(e) Date Jun. 23, 1993, PCT Pub. No. WO92/01963, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 15, 1991, Ser. No. 969,842
Claims priority, application France, Jul. 18, 1990, 90 09159
Int. Cl.[5] A47H *1/10*
U.S. Cl. 248—325 **12 Claims**



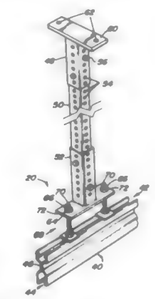
1. A device for supporting and positioning a microscope, the device comprising a support suitable for being tied to a fixed frame of reference, and a plate suitable for supporting a microscope, an intermediate moving element being connected firstly to said support via a first series of parallel motor-drive hinged members having three degrees of freedom and to said plate via a second series of motor-driven members, the device including control means generating control signals that are used by a computer for servo-controlling the displacement of the microscope.

5,351,926

SUPPORT STRUCTURE BEAM

James A. Moses, Dexter, Mich., assignor to Unistrut International Corp., Ann Arbor, Mich.

Filed Mar. 25, 1992, Ser. No. 857,008
Int. Cl.[5] A47F *5/00*
U.S. Cl. 248—354.5 **9 Claims**



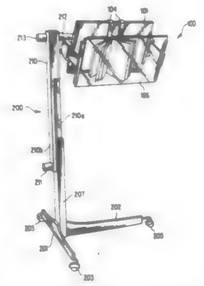
1. A support beam comprising:
a body extending along a longitudinal axis, said body having two outwardly facing channels, each of said channels being formed of two laterally-spaced flanges extending outwardly from a web, wherein the ratio of the depth of at one channel to the height of said web is approximately 2, and the ratio of the depth of the other of said channels to the height of said web is approximately 1.4.

5,351,927

BOOK HOLDER FOR USE WITH STAND ASSEMBLIES

Richard J. Howell, 209 Dewey Hill Rd., Stowe, Vt. 05672

Filed Dec. 7, 1992, Ser. No. 986,458
Int. Cl.[5] A47B *5/00*
U.S. Cl. 248—444.1 **35 Claims**



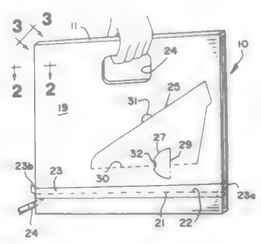
1. A book holder comprising back plate means, unitary transparent cover plate means substantially coextensive with and movable relative to the back plate means, and means movably connecting the cover plate means with said back plate means to provide movement of said cover plate means toward and away from said back plate means in substantially co-planar relationship including two lateral support arm means fixed relative to said cover plate means and hollow receiver plate means fixed relative to said back plate means, said hollow receiver plate means being of such internal configuration as to enable said lateral support arm means to slide therethrough to thereby change the spacing between said back plate means and said cover plate means.

5,351,928

EASEL AND PAD PACK AND METHOD OF USE

John F. Cooper, Naperville, and Kenneth A. Keeley, Chicago, both of Ill., assignors to Wallace Computer Services, Inc., Hillside, Ill.

Filed Feb. 4, 1993, Ser. No. 13,630
Int. Cl.[5] A47B *97/04*
U.S. Cl. 248—459 **7 Claims**

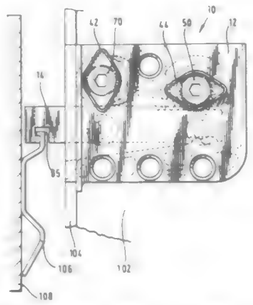


1. An easel and pad pack comprising: a pack having only first and second spaced apart four sided planar panels constructed of paperboard to provide relatively stiff surfaces, means closing said first and second panels at least temporarily on all four sides to provide an operable holder having an interior pocket, and easel pad confined within said pocket, one of said first and second panels being equipped with a cut defining stand means for pivotal movement out of the plane of said

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panel to provide support for said on panel, and opening means on one of said first and second panels for hand insertion to carry said pack.

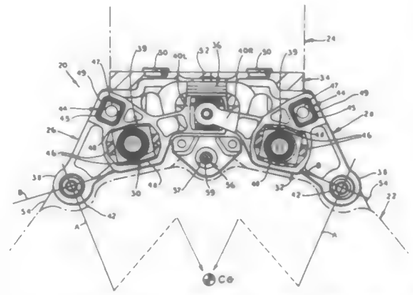
5,351,929
MOUNTING DEVICE
William E. T. Vallance, Marlow, England, assignor to Titus International Limited, Buckinghamshire, United Kingdom
Filed Aug. 23, 1993, Ser. No. 109,956
Claims priority, application United Kingdom, Aug. 25, 1992, 9218033.0
Int. Cl.[5] F16M 13/00
U.S. Cl. 248—544 22 Claims



1. A device for mounting a panel to a bracket on a wall with the panel vertical and at right angles to the wall, comprising a base member adapted to be secured with a reference surface thereof against a major surface of the panel and carrying a hanging member which lies substantially parallel to said reference surface and one end of which extends beyond the base member and is adapted for engagement with said bracket, and means for adjusting the position of the hanging member relative to the base member so that said end is moveable in a plane substantially parallel to said reference surface, characterised in that the adjusting means comprises two adjusting devices for moving said end in respective different directions and in that each adjusting device includes a single component which contacts the hanging member so as to be able to move said hanging member and which also is in high-interference inter-engagement with the base member to resist an inadvertent change of its adjusted position.

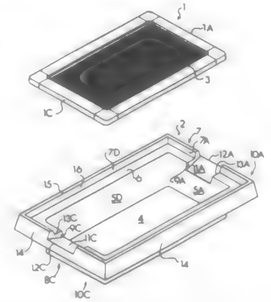
5,351,930
MOUNTING FOR ENGINES AND THE LIKE
John J. Gwinn; Warren E. Schmidt, both of Erie, Pa., and Marshall W. Downing, Chambourcy, France, assignors to Lord Corporation, Erie, Pa.
Filed Aug. 11, 1992, Ser. No. 928,925
Int. Cl.[5] B64D 27/26
U.S. Cl. 248—557 20 Claims

1. A mounting for attaching a supported member to a supporting member, comprising:
(a) a top member for attachment to said supporting member,
(b) a first arm having an outboard end, an intermediate member interconnecting said outboard end to said supported member, an inboard end spaced apart from said outboard end, and a central portion extending between said outboard and said inboard ends;
(c) a second arm having an outboard end, an intermediate member interconnecting said outboard end to said supported member, an inboard end spaced apart from said outboard end, and a central portion extending between said outboard and said inboard ends;
(d) a first spring attached to said central portion of said first arm for allowing pivoting and reacting loads into said top member and for connecting said first arm to said top member;
(e) a second spring attached to said central portion of said second arm for allowing pivoting and reacting loads into said top member and for connecting said second arm to said top member; and



(f) a third spring attached near said inboard ends of said first and said second arms for reacting loads into said top member and for connecting said inboard ends of said first and said second arms to said top member and for reacting loads between said first and said second arms.

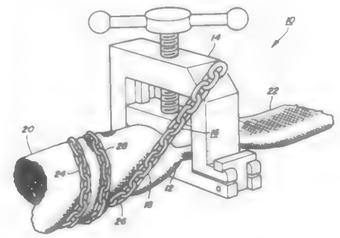
5,351,931
PAPER-MAKING KIT WITH IMPROVED BASIN AND WEB SUPPORTING SCREEN
Teresa Houben, Apt. 2, 31 King Street East, Bowmanville, Ontario, Canada L1C 1N1 ; Mary Houben, Box 164, and Trudy Van Dyk, Box 151, both of Strathroy, Ontario, Canada N7G 3J2
Filed Mar. 23, 1993, Ser. No. 39,597
Int. Cl.[5] D21F 13/02; D21J 7/00
U.S. Cl. 249—141 8 Claims



1. In a paper making apparatus adapted to receive a mixture of liquid and paper fiber on a fiber retaining screen surface operable to drain excess water from said fiber, through said screen, during the formation of a discrete fiber web on said surface, wherein the improvement comprises a basin defining confines for retaining liquids received therein, having a bottom with generally upwardly extending side walls including a generally horizontally extending ledge adapted to receive said screen in supported relation thereon, and wherein said ledge is generally surrounded by a screen positioning wall for locatingly positioning said screen in supported relation on said ledge in draining register above the confines of said basin, and wherein said screen positioning wall includes at least one

longitudinally-extending opening therein adapted to provide generally open lateral access for grasping an adjacent screen edge in aid of the removal thereof from said supported relation, and wherein said opening is subtended by an adjacent and generally longitudinally-coextensive depression in said ledge, said depression and said opening being thereby co-operable for controllably directing the draining of collected liquids from within the confines of said basin, upon tilting of said basin towards said opening.

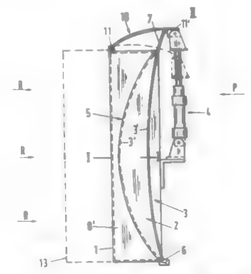
5,351,932
CONTROL SYSTEM FOR A FLEXIBLE FLUID CARRYING HOSE
Pieter J. von Herrmann, Shaker Heights, Ohio, assignor to Cleveland State University, Cleveland, Ohio
Filed Sep. 20, 1993, Ser. No. 123,923
Int. Cl.[5] F16K 7/02
U.S. Cl. 251—4 11 Claims



1. A clamp assembly for a flexible hose member having an exterior surface which comprises:
(a) hose clamp means to restrict fluid flow through the hose member with movable cooperating jaws of a clamp member when applied to the exterior surface of the hose member intermediate the supply end and the discharge end of said hose member,
(b) frictional engagement means which limits movement of the clamp member by frictional force when the movable jaws of the clamp member are opened and closed, and
(c) the frictional engagement means having a flexible and extendable connecting portion connected at one end to the clamp member while being adapted at the opposite end to be attached to the hose exterior surface.

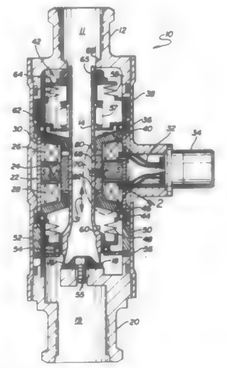
5,351,933
QUICK-ACTING GATE VALVE
Bernhard Schonks, Frankfurt am Main, Fed. Rep. of Germany, assignor to Luwa Fahrzeugklimatechnik GmbH, Frankfurt, Fed. Rep. of Germany
Filed Nov. 10, 1993, Ser. No. 150,470
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1992, 4238942
Int. Cl.[5] F16K 31/124
U.S. Cl. 251—58 7 Claims

1. A quick-acting gate valve comprising a frame, provided with a least one passage slot confined by edges and having an adjustable closure element which, relative to the passage slot, is to be opened and closed by a servo drive controlled in response to air pressure, wherein the edges laterally confining the passage slot relative to an in-flow direction are of a convex curvature and wherein the closure element, in the form of a leaf spring of a similarly convex yet lesser curvature than the curvature of said edges is formed and arranged behind said edges, with a length of the leaf spring corresponding at least to a length of the convex-curved edges of the passage slot, said leaf spring with one end thereof being held on the frame and



with the other end region being guided displaceably on the free.

5,351,934
PROPORTIONAL SOLENOID VALVE
Ron B. Jensen, Mesa, and James R. Guyuax, Chandler, both of Ariz., assignors to Alliedsignal, Inc., Morris Township, Morris County, N.J.
Filed Dec. 15, 1992, Ser. No. 991,020
Int. Cl.[5] F16K 31/08
U.S. Cl. 251—65 13 Claims



1. A solenoid valve having an inlet and an outlet for a fluid which is to flow through the valve; the valve comprising in combination:
a first pole piece;
a second pole piece spaced from the first;
an armature defining a longitudinal axis thereof; the armature being interposed between and spaced from the pole pieces as determined by reference to the axis such that a first gap is formed between the armature and the first pole piece, and a second gap is formed between the armature and the second pole piece;
a valve seat relatively proximal to the second gap and relatively distal from the first gap;
modulating means rigidly connected to or integral with the armature for cooperating with the valve seat to alternatively prevent or permit fluid flow from the inlet to the outlet; the modulating means having first and second ends relatively proximal to the inlet and outlet, respectively;
a permanent magnet circumscribing the armature and being interposed between the pole pieces as determined by

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reference to the axis; the second gap being narrower than the first whereby flux density attributable to the magnet is greater in the second gap than in the first gap and the armature is operative, in response to magnetomotive force originating from the magnet, to urge the second end of the modulating means into abutment with the valve seat so that the valve is normally closed; the second gap being further narrowed and the first gap correspondingly widened when the armature is thus subjected to the magnetomotive force originating from the magnet; and

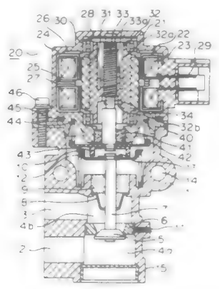
electromagnetic means for cooperating with the permanent magnet to move the modulating means in response to current flow; the electromagnetic means being operable to increase flux density in the first gap and simultaneously decrease flux density in the second gap sufficiently to move the modulating means away from the valve seat to a distance which renders the first gap narrower than the second gap while maintaining a clearance between the armature and the first pole piece.

5,351,935

MOTOR-DRIVEN CONTROL VALVE DEVICE

Sotsuo Miyoshi; Toshihiko Miyake, and Hidetoshi Okada, all of Sanda, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Mitsubishi Electric Engineering Company Limited, Tokyo, Japan

Filed Dec. 23, 1993, Ser. No. 172,156
Claims priority, application Japan, Jul. 7, 1993, 5-167894
Int. Cl.[5] F16K *31/04*
U.S. Cl. 251—129.11 **6 Claims**



1. A pushing type motor-driven control valve device for opening and closing a valve by a reciprocating motion of a motor shaft driven by normally and reversely rotating a motor, said pushing type motor-driven control valve device comprising:

a valve shaft for driving the valve;

a motor shaft for driving the valve shaft, said motor shaft being separated from and disposed coaxially with the valve shaft;

a valve shaft spring for urging the valve shaft in a first direction of closing the valve; and

a motor shaft spring for urging the motor shaft in a second direction of opening the valve;

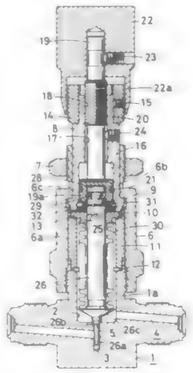
wherein a first pushing force applied on the motor shaft by the motor shaft spring is set to be smaller than a second pushing force applied on the valve shaft by the valve shaft spring.

5,351,936

FLUID CONTROLLER

Tsuyoshi Tanikawa, and Tetsuya Kojima, both of Osaka, Japan, assignors to Fujikin Incorporated, Osaka, Japan

Filed Feb. 24, 1992, Ser. No. 839,557
Claims priority, application Japan, Feb. 26, 1991, 3-030922
Int. Cl.[5] F16K *31/50, 41/10*
U.S. Cl. 251—278 **4 Claims**



1. A fluid controller comprising:

a valve element being formed at a lower end portion thereof with a downwardly tapered conical face to be seated;

a valve stem being attached at a lower end portion thereof to the upper end portion of the valve element so that the valve element and the valve stem are rotatable axially thereof relative to each other, the valve stem being movable in one of an upward direction and a downward direction by rotation thereof, and thereby the valve element being movable axially in one of an upward direction and a downward direction, the tapered conical face contacting an annular valve seat to close a fluid channel by moving the valve element in a downward direction, the tapered conical face being away from the valve seat to open the fluid channel by moving the valve element in an upward direction; and

elastic member means for urging the valve element upward to press the valve element against the valve stem with a predetermined force when the valve element is in a first range of movement, the first range of movement including a predetermined range of movement wherein the valve element is in ine of a seated position and positions in the vicinity of the seated position, and wherein the elastic member means does not urge the valve element when the valve element is moved through a second range of movement.

5,351,937

HOIST AND TRACTION MACHINE WITH FREE ROTATION CONTROL

Yoshio Nishi; Yasuo Wada; Haruo Kubota; Munenobu Honda, and Yoshio Ueno, all of Osaka Sayama, Japan, assignors to Elephant Chain Block Company Limited, Osaka, Japan

Filed Sep. 16, 1992, Ser. No. 945,403
Claims priority, application Japan, Sep. 20, 1991, 3-241372; Dec. 2, 1991, 3-318040; Sep. 11, 1992, 4-243808; Sep. 11, 1992, 4-243809
Int. Cl.[5] B66D *1/14;* **F16D** *7/02*
U.S. Cl. 254—352 **2 Claims**

1. A hoist and traction machine comprising:

a load sheave;

a driving shaft, having a driven member, for driving said load sheave;

a driving member threadingly mounted to said driving shaft;

a braking pawl;

a braking ratchet wheel engageable with said braking pawl;

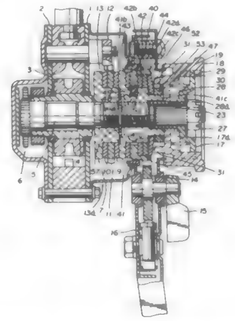
braking plates, interposed between said driving member and said driven member, constituting a mechanical brake;

driving means for normally and reversely driving said driving member;

a free rotation control means for controlling operation of said mechanical brake so as to selectively provide free rotation for said load sheave, said free rotation control means comprising

(a) a stopper provided at an axial end of said driving shaft so as to be non-rotatable and axially immovable with respect to said driving shaft,

(b) a free-rotation operation handle provided between said stopper and said driving member in such a manner as to be axially movable between a first position, proximate to said driving member, and a second position, spaced therefrom, said free-rotation operation handle being engaged with said stopper so as to be non-rotatable relative to said driving shaft, said free-rotation operation handle being rotationally operable to rotate said driving shaft and cause said driving member to screw backward in a non-braking direction, so as to provide the free rotation operation,



(c) an elastically biasing member, interposed between said stopper and said free-rotation operation handle, for biasing said free-rotation operation handle toward said first position proximate to said driving member,

(d) regulation means, provided between said free-rotation operation handle and said driving member, for (i) regulating a relative rotation range of said driving member with respect to said driving shaft when said free-rotation operation handle is placed in the first position and (ii) releasing said regulation when said handle is put in the second position, and

(e) free-rotation-control holding means for applying a biasing force of said elastically biasing member to said driving member, when (1) said free-rotation operation handle is in the second position so as to release said regulation and (2) said free-rotation operation handle is rotated to perform the free rotation operation, so as to maintain said free rotation operation, said free rotation control holding means comprising a free rotation control surface and an engaging projection for being placed in elastic contact with said free rotation control surface by said biasing force of said elastic member, one of (1) said free rotation control surface and (2) said engaging projection being provided at said driving member, and the other of (1) said free rotation control surface and (2) said engaging projection being provided at said free-rotation operation handle;

said regulation means being provided with a first regulation surface and a second regulation surface which are engageable with the engaging projection,

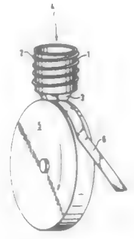
said free rotation control surface being provided at a location in contact with said second regulation surface, and a slanted guide surface for guiding said engaging projection to said free rotation control surface when said operating handle rotates in the direction of free rotation being provided on at least one of (1) said engaging projection at its surface confronting said second regulation surface and (2) said second regulation surface.

5,351,938

APPARATUS FOR FABRICATING A FOIL

Frank Hegner, Lörrach; Elke Schmidt, Schopfheim; Thomas Kühn, Freiburg-Opfingen, all of Fed. Rep. of Germany; Peter Reimann, Buckten, Switzerland; Heinz Breitenstein, Büttwil, Switzerland, and Stephan Messmer, Allschwil, Switzerland, assignors to Endress u. Hauser GmbH u. Co., Fed. Rep. of Germany

Division of Ser. No. 791,092, Nov. 12, 1991. This application Feb. 11, 1993, Ser. No. 16,515
Int. Cl.[5] B22D *41/01*
U.S. Cl. 266—236 **15 Claims**



1. Apparatus for fabricating a foil (6) from a ternary active brazing alloy containing at least one of titanium, zirconium, or nickel by melt spinning, the foil having a uniform thickness and two generally smooth surfaces, the apparatus comprising a cylindrical uncooled crucible (1) made of high-density graphite or of boron nitride, means or melting the alloy in the crucible, and means for forcing the melted alloy through an opening (3) in the bottom of the crucible onto a metal drum (5) of high thermal conductivity rotating at a high circumferential speed, on which the liquid alloy solidifies at a cooling rate of about of 10^3 to 10^6 ° C/s.

5,351,939

MACHINE FOR PIERCING A TAPHOLE FOR A SHAFT FURNACE

Victor Kremer, Luxembourg; Emile Lonardi, Bascharage; Guy Thillen, Diekirch, all of Luxembourg, and Philippe Malivoir, Thionville, France, assignors to Paul Wurth S.A., Luxembourg

Filed Jun. 17, 1993, Ser. No. 80,145
Claims priority, application Luxembourg, Jun. 17, 1992, LU 88 135; Sep. 2, 1992, LU 88 167
Int. Cl.[5] C21B *7/12*
U.S. Cl. 266—271 **18 Claims**

1. A machine for piercing a taphole in a wall of a shaft furnace, using a method in which, after having plugged the taphole with a taphole clay, a piercing rod is driven into this clay, before it has fully hardened, and it is extracted, at the appropriate time in order to open the taphole, the machine comprising:

mounting means which can be oriented in front of the wall of the shaft furnace in a working position in the extension of the axis of the taphole;

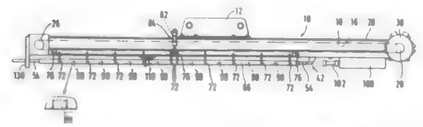
VOL 1167 ISS 1 OC 4 1994 UMI

first carriage means which can be displaced along said mounting means;

drive means for driving said first carriage means along said mounting means;

guide means for defining a guide channel for the piercing rod, said guide means having at least one longitudinal opening giving access to the inside of the guide channel perpendicularly to the axis of the guide channel;

support means for supporting said guide means on said mounting means wherein the longitudinal axis of the guide



channel is coaxial with the axis of the taphole when said mounting means is located in said working position in front of the wall of the shaft furnace; and

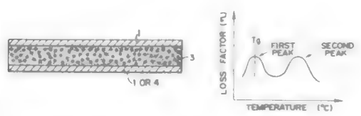
a finger integral with said first carriage means, said finger being sized so as to penetrate through said longitudinal opening to the inside of said guide channel and to be able to exert an axial pushing force on one end of the piercing rod during the advancement of said first carriage means in the direction of the taphole wherein said guide channel is sized so as to prevent the buckling of the piercing rod as the latter is driven into the taphole clay.

5,351,940

VIBRATION DAMPING MATERIAL

Kunihiko Yano, Saitama; Takahiro Niwa, Kanagawa, and Seiji Sakurada, Nara, all of Japan, assignors to Nichias Corporation, Tokyo, Japan

Filed Oct. 21, 1992, Ser. No. 964,429
Claims priority, application Japan, Oct. 30, 1991, 3-311736
Int. Cl.[5] F16F *1/36*
U.S. Cl. 267—153 **6 Claims**



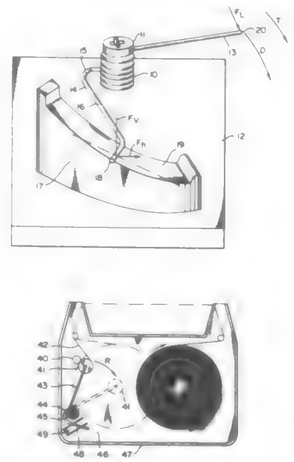
1. In a composite type vibration damping material which includes a constraining plate having a surface thereon, and a vibration-absorbing viscoelastic material layer laminated on said surface of said constraining plate, the improvement comprising wherein said viscoelastic material layer is a pressure sensitive adhesive layer which is a stable single phase of polymer containing a number of bubbles having a pore rate in the range of 5% to 80% and having a pore diameter in the range of 10 to 300 μm, so that a high vibration damping characteristic having two peaks at substantially different temperatures is obtained, a first of said peaks being at a glass transitional temperature, and a second of said peaks being at a temperature higher than said glass transitional temperature and being due to consumption of vibration energy through friction at an interface between said bubbles and said polymer attendant to expansion and contraction of said bubbles.

5,351,941

CONSTANT FORCE SPRING SYSTEM

Paul C. Hwang, 1650 S. 308th St., Apt 17, Federal Way, Wash.

Filed Aug. 13, 1993, Ser. No. 106,425
Int. Cl.[5] F16F *1/06*
U.S. Cl. 267—155 **2 Claims**



1. A spring system comprising:

a coil spring,

a ramp,

a pin and

a base,

said pine being attached to and extending from said base,

said spring being installed on said pin and having first and second ends and an axis,

said spring further comprising a first arm extending from said first end in a plane perpendicular to said axis and a second arm extending from said second end in a direction away from said coil and a plane perpendicular to said axis whereby moving said second arm into said plane perpendicular to said axis requires a first force applied in a direction parallel to said axis, said first force being reacted to by a second force applied by said second arm,

said ramp having a surface having a slope angle and being positioned relative to said spring installed on said pin such that said second arm contacts said surface whereby said second force is applied to said surface, said slope angle being relative to a plane perpendicular to said axis and said ramp being configured and positioned relative to said spring such that said first force applied to said first arm applies a first torque to said spring tending to move said second arm up said surface, said first torque being reacted by a second torque produced by a third force which is a component of said second force, said third force being applied to said second arm in a plane perpendicular to said axis, thereby applying a second torque to said spring,

whereby said first torque caused by said first force applied to said first arm is equal and opposite to said second torque caused by application of said third force to said second arm and said first and second torques and said first and third forces are constant to the extent that said second force is constant,

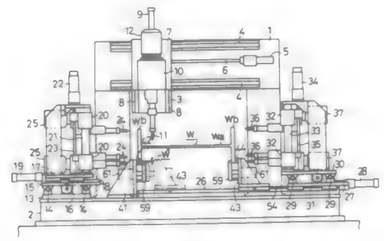
said third force being a function of the value of said second force and said slope angle.

5,351,942

CLAMP APPARATUS USED IN HOLE MACHINING DEVICE

Tadashi Mori, and Tetsuo Kayukawa, both of Seki, Japan, assignors to Miyakawa Industry Co., Ltd., Seki, Japan

Filed Nov. 5, 1992, Ser. No. 973,987
Claims priority, application Japan, Nov. 6, 1991, 3-290233
Int. Cl.[5] B23Q *3/08*
U.S. Cl. 269—25 **3 Claims**



1. A clamp apparatus utilizable for machining a workpiece, the clamp apparatus comprising:

a stationary clamp means for clamping a first side of the workpiece, said stationary clamp means being secured on a base;

a movable clamp means for clamping a second side of the workpiece, said movable clamp means being capable of moving in the direction of said stationary clamp means;

a pair of guide rails disposed on said base in a direction that is generally perpendicular to the longitudinal direction of the workpiece for guiding said movable clamp means;

fastening means, positionably secured to said stationary and said movable clamp means, for securely positioning the workpiece with respect to said stationary and moveable clamp means;

a main cylinder secured on said movable clamp means for causing said movable clamp means to move, said main cylinder including a piston rod; and

wherein the clamp apparatus further includes a power transmission mechanism disposed between said movable clamp means and said piston rod, a secondary cylinder that includes a movable plunger, an activating pin connected to said movable plunger, a case for movably accommodating said actuating pin, and a pair of springs disposed within said case to generally sustain said movable clamp means in a neutral position.

5,351,943

MULTIPLE VICE FOR CLAMPING AT LEAST TWO WORKPIECES

Pankraz Milz, Kempten, Fed. Rep. of Germany, assignor to Saurer-Allma GmbH, Kempten, Fed. Rep. of Germany

Filed Oct. 7, 1991, Ser. No. 772,097
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1990, 4031746
Int. Cl.[5] B25B *1/10*
U.S. Cl. 269—246 **15 Claims**

1. A multiple vise for the clamping of at least two workpieces simultaneously, comprising:

a vise body;

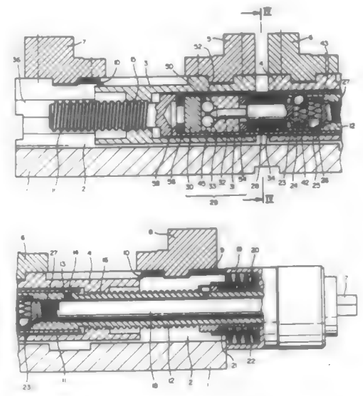
guide means in said vise body;

two fixed jaws mounted in relative spaced relationship on said vise body;

means for rigidly mounting said fixed jaws on said vise body;

two movable jaw means mounted on said vise body between said two fixed jaws in sliding engagement with said guide means for substantially linear movement relative to said fixed jaws and each other, so that each movable jaw means is movable between clamping and non-clamping positions in cooperation with one of said fixed jaws;

spindle means having first and second spindle parts rotatably mounted within said vise body and having opposite screw threads thereon, each screw thread being engaged with a cooperating screw thread on a respective one of said movable jaw means, and said spindle parts being relatively movable with respect to each other in a direction substantially parallel to the direction of movement of said jaw means, so that rotation of said spindle parts in one direction simultaneously moves said movable jaw means apart



and toward said clamping position with respective fixed jaws and rotation of said spindle parts in the opposite direction moves said movable jaw means toward each other and said non-clamping position and away from said respective fixed jaws;

a drive shaft rotatably disposed within said spindle parts for relative rotation with respect thereto and releasably engageable with said spindle means for rotating said first and second spindle parts; and

clamping force increasing means interposed between said first and second spindle parts for urging said spindle parts away from each other in the clamping position.

5,351,944

MANUFACTURER'S THIRD HAND VICE

John Johnson, Rt. 8, Box 116, DeRidder, La. 70634

Filed Jan. 18, 1994, Ser. No. 182,565
Int. Cl.[5] B25B *1/00*
U.S. Cl. 269—254 CS **2 Claims**

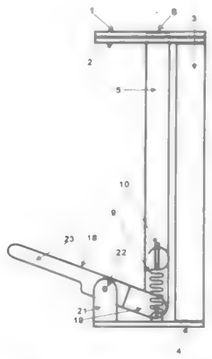
1. A free standing foot operated mechanism for clamping and holding objects in a fixed position comprising;

a. means for clamping and supporting said objects, said means further comprising an upper jaw, a lower jaw, a support structure, a control bar, a base, two tension springs, and a tension spring equalizer bar, said upper jaw comprising a horizontally positioned rectangular plate having a front, rear, and mid section and an upper and lower side, said lower Jaw comprising a horizontally positioned rectangular plate having a front, mid, and rear section and an upper and lower side, said upper jaw being positioned atop and aligned with said lower jaw, said base comprising a rectangular plate having a front, rear, and mid section, said base positioned a suitable distance below said jaws, said support structure comprising a vertically positioned, rigid member having a bottom end and a top end, said bottom end being affixed to said rear section of said base, said top end being rigidly affixed to said rear section of said underside of said lower jaw, said control

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bar comprising a rigid, vertically positioned member having an upper, mid, and lower end, said lower end further comprising an eyelet, said lower end being positioned just above said mid section of said base, said control bar also comprising a hole in said mid section, said tension spring equalizer bar traversing said control bar through said hole, said mid section of said lower jaw further comprising a hole, said upper end of said control bar traversing said hole in said mid section of said lower jaw and being rigidly affixed to said mid section of said underside of said upper jaw, said spring equalizer bar further comprising two ends, and a spring retaining notch at each of said ends, said base further comprising two spring retaining eyelet tabs said eyelet tabs being located below said spring retaining notches, said springs being affixed between said eyelet tabs and said spring retaining notches so as to exert downward pressure upon said control bar and thus said upper jaw, so as to exert pressure between said upper jaw and said lower jaw, thereby retaining said objects placed between said jaws; and

b. means of releasing said objects by use of said foot comprising a pedal and lever member, two pedal pivot brackets each having a bracket eyelet, and two pivot pins, said pedal and lever member further comprising a bar having a



rear, mid, and front end, said front end being equipped with extension plates, thus forming a fork, said plates each having a fork eyelet, said mid section having a pedal member pivot bracket eyelet, said lower end of said control bar being inserted into said fork, one of said pivot pins traversing said fork eyelets and said control bar eyelet thus pivotally affixing said lower end of said control bar to said front end of said pedal and lever member, said pedal pivot brackets being vertically affixed to said front section of said base so as to accommodate the insertion of said mid section of said pedal and lever member between said pedal pivot brackets, one of said pedal pivot pins traversing said bracket eyelets in said pedal pivot brackets and said pedal member pivot bracket eyelet so as to pivotally affix said mid section of said pedal and lever member to said pedal pivot brackets, said mid section of said pedal and lever member being elevated above said lower end of said control bar so as to elevate said rear end of said pedal and lever member thus allowing upward pressure to be applied to said control bar as said foot is pressed downward upon said rear end of said pedal and lever member, thus forcing said upper jaw upward and releasing said objects as the downward force of said springs is overcome by said upward pressure.

5,351,945

OVERLAPPED TRANSFER-PREVENTING MECHANISM

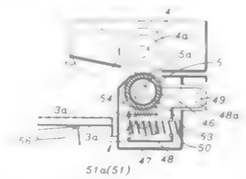
Yoshiyuki Asakawa; Kazuyoshi Yamamura; Toshinori Murooka, and Masaru Hatano, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed May 25, 1993, Ser. No. 67,441

Claims priority, application Japan, May 30, 1992, 4-163470; Dec. 12, 1992, 4-352991; Dec. 12, 1992, 4-352992

Int. Cl.[5] B65H *3/06*

U.S. Cl. 271—118 **5 Claims**



1. An overlapped transfer-preventing mechanism provided in an image-forming apparatus, comprising an upper rotatably driven separating roll having a lower end face, a lower separating roll offset from said upper separating roll and having an upper end face, a pivot integrated with one of said separating rolls, and a spacer mounted on said pivot and selectively engagable with the other of said separating rolls for setting a spacing interval between the upper end face of said lower separating roll and the lower end face of said upper separating roll.

5,351,946

DELIVERY APPARATUS FOR SHEET-FED PRINTING PRESS

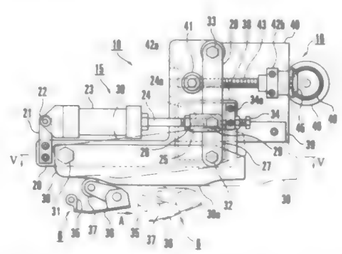
Hiroyoshi Kamoda, and Reiji Itoh, both of Ibaragi Toride, Japan, assignors to Komori Corporation, Tokyo, Japan

Filed Nov. 17, 1993, Ser. No. 153,748

Claims priority, application Japan, Nov. 26, 1992, 4-086840

Int. Cl.[5] B65H *29/04*

U.S. Cl. 271—206 **8 Claims**



1. A delivery apparatus for a sheet-fed printing press, comprising:

a holding member for holding a printed paper sheet;

conveying means for causing said holding member to travel to convey the held paper sheet;

at least two sheet stacking units respectively arranged at upstream and downstream portions along a sheet convey direction of said conveying means;

an engaging member, arranged above said sheet stacking unit at the upstream portion, for releasing the held paper sheet by abutting against said traveling holding member; and

switching means for selectively switching said engaging member between a sheet release position where said engaging member abuts against said holding member and a retreat position where said engaging member does not abut against said holding member, said switching means including driving means having a movable actuating rod, a first lever, having two ends pivotally mounted on said actuating rod and said engaging member, respectively, for coupling said actuating member and said engaging member, and a second lever having one end swingably supported and the other end swingably and pivotally mounted on a coupling portion between said actuating rod and said first lever, so that said first and second levers are located substantially on a straight line when said engaging member is at the sheet release position.

5,351,947

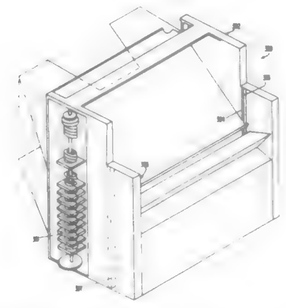
SHEET SORTING APPARATUS

Jack Aaron, Tustin, Calif., assignor to Gradco (Japan) Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 696,772, May 7, 1991, Pat. No. 5,169,144. This application Dec. 3, 1992, Ser. No. 985,553

Int. Cl.[5] B65H *31/24*

U.S. Cl. 271—293 **9 Claims**



1. A sheet sorting apparatus of the shifting tray type for receiving paper sheets, comprising;

a pair of helical coils, each coil of said pair of helical coils being predominantly would with a plurality of turns of a first pitch, and containing at least one turn of a second pitch, the second pitch being coarser than the first pitch, each coil having a longitudinal axis;

means for rotational support, the support means holding the coils in positions wherein said longitudinal axes of the coils are approximately parallel to each other;

means for rotational drive, the drive means rotating each coil about said longitudinal axis, both coils rotating in the same sense and at the same speed of rotation;

a plurality of trays arranged in a stack, each said tray being separated from an adjacent said tray by a space, each tray having a leading edge for receiving the sheets, two side edges on either side of the leading edge, the side edges defining the sides of the stack, and a surface for supporting the sheets, one said coil being positioned adjacent to each of said sides of the stack;

one of said coils being positioned at about the center of each of said side edges; and

a plurality of tray lift blocks, each tray having a pair of the tray lift blocks for attachment of the tray to coils, each tray lift block having a means for tray engagement and a helical shaped guideway therethrough, the guideway providing clearance for sliding engagement of the tray lift block with the coil so that as the coil rotates the attachment means moves along the coil in accordance with the direction of rotation of the coil;

said apparatus including a pair of vertical guides, each of said leading edges of said trays including extensions for engaging said guides;

whereby the stack of trays move along the pair of coils as the coils rotate, the space between each pair of adjacent trays being approximately equal for adjacent trays moving on the coil turns of the first pitch, the space between each pair of adjacent trays growing to a larger spacing as each tray moves into the coil turns of the second pitch, the larger spacing facilitating the ingress of the sheet of paper, so that each tray in turn may receive a paper sheet.

5,351,948

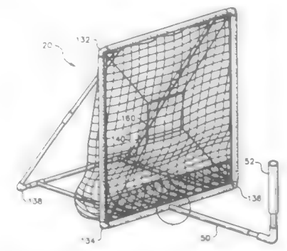
PORTABLE BALL RECEIVER WITH INTEGRATED BALL SUPPORTING PLATFORM

Roy J. Thomas, 12823 NE. 107th Pl., Kirkland, Wash. 98033

Filed Feb. 28, 1994, Ser. No. 202,383

Int. Cl.[5] A63B *69/00*

U.S. Cl. 273—26 A **2 Claims**



1. A portable ball receiving device with means to separate and rotate its segmented frame so as to facilitate portability, having attachments which may be selectively used and positioned in varying alignments comprising:

(a) a support frame having a upper horizontal tube and a base horizontal tube spaced apart from each other and connected to a first vertical tube comprised of a coupled lower tube and upper tube, and to a second vertical tube comprised of a coupled lower tube and upper tube which together define a reasonably dimensioned aperture,

(b) a first oblique brace for said support frame extending from distal end of said upper horizontal tube to a rear base horizontal tube which is parallel to said base horizontal tube, and a second oblique brace for said support frame extending from opposite distal end of said upper horizontal tube and attaching to opposite distal end of said rear base horizontal,

(c) a first rearward facing base tube extending perpendicular from said base horizontal tube to attach to said rear base horizontal tube, and a second rearward facing base tube extending perpendicular to said rear base horizontal tube

(d) a vertically adjustable ball support platform extended forward from said base horizontal tube,

(e) a target outline scented to a receiving net with means for horizontal or vertical adjustment,

(f) a net attached and gravity suspended within the support frame aperture for stopping and containing projectiles traveling through said aperture with said net means operating in a rearward and upward sliding manner when dispersing projectile energy.

5,351,949

PUTTER-MOUNTED HOLDER FOR GOLF BALL POSITION MARKER

Robert B. Fox, 3810 Inwood Rd., #106, Dallas, Tex. 75209, and Ronald B. Fox, 4831 Sugar Mill, Dallas, Tex. 75244

Filed Dec. 13, 1993, Ser. No. 166,091

Int. Cl.[5] A63B *53/14, 57/00*

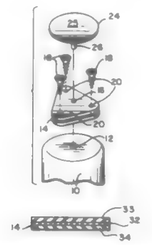
U.S. Cl. 273—32 A **8 Claims**

1. A holder for a golf ball position marker having a disc and integral stem, which holder comprises:

a flat gripping body formed from a rubber-nylon-rubber

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laminate and adapted to securement on the end of a putter handle grip, the body having a central aperture for gripping the marker stem, and having substantially the shape of an equilateral triangle.

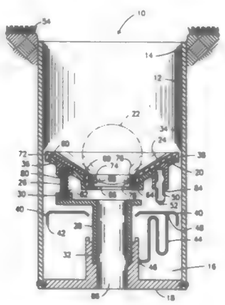


5,351,950

GOLF CUP AND METHOD OF MAKING SAME

John Frankum, 1641 Edlesbearan Rd., Lake Mary, Fla. 32746

Filed Sep. 23, 1993, Ser. No. 126,245
Int. Cl.[5] A63B 57/00
U.S. Cl. 273—34 R 24 Claims



1. A golf cup comprising:
a vertical tube having top and bottom ends;
a carriage having a non-metallic cover placed on a portion of the carriage facing the tube top end;
pounding means for providing a metal pinging sound indicating that a golf ball has dropped into the tube;
means for movably suspending the carriage away from the sounding means, the suspending means responsive to a force from a golf ball dropped from the tube top end onto the carriage causing the carriage to be displaced for making contact with the sounding means for producing the metal pinging sound.

5,351,951

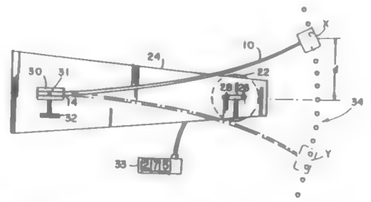
IDENTIFICATION AND USE OF GOLF CLUB SELECTIVITY

George W. Hodgetts, 971 Orange Ave., West Haven, Conn. 06516

Continuation-in-part of Ser. No. 694,648, May 2, 1991, Pat. No. 5,163,681. This application Nov. 17, 1992, Ser. No. 979,070
Int. Cl.[5] A63B 53/00
U.S. Cl. 273—77 A 8 Claims

1. A method of determining the selectivity Q of a golf club for use by a golfer to determine the relative risk factor associated with a particular club comprising:
(1) subjecting a golf club having a grip end and a club head attached to a stationary means at its grip end to an energy pulse to cause the club head end to oscillate;
(2) positioning two detectors below and equidistant from a line extending from the club grip end to the club head end before the club is oscillated for measuring the time it takes to complete an oscillation cycle;
(3) determining the velocity V of the oscillating club according to the formula:

$$V=p/t_2$$



wherein p is the distance between the two detectors and t_2 is the time in seconds during which it takes a given point of a club to travel from one detector to the other;
(4) thereafter calculating the rate of decay of club velocity by comparing successive velocity determinations using that rate in the velocity equation:

$$V=e^{-\alpha t}\sin(2\pi f_o t)$$

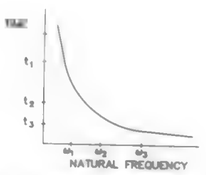
wherein α is the damping factor and t is the elapsed time;
(5) thereafter solving for Q in the formula $Q=2\pi$.

5,351,952

METHOD OF MATCHING GOLFER TO GOLF CLUB

Lloyd E. Hackman, 1322 Clubview Blvd. S., Worthington, Ohio 43085

Filed Dec. 30, 1992, Ser. No. 998,662
Int. Cl.[5] A63B 53/12
U.S. Cl. 273—77 A 7 Claims



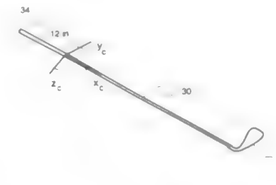
1. A method for matching a golfer to a golf club to maximize club head momentum upon ball impact, the golf club having a natural frequency of vibration in a mode of oscillation of a cantilevered beam that has a spring constant when held at a grip end of a club shaft, the club having a club head mounted to the opposite shaft end which oscillates along an arcuate path about the grip end, the method comprising:
(a) measuring the golfer's swing time from the moment of maximum club head acceleration during downswing until the moment of ball impact;
(b) selecting for the golfer a golf club wherein the reciprocal of four times the its natural frequency of vibration is substantially equal to the golfer's measured swing time.

5,351,953

DYNAMICALLY MATCHED SET OF GOLF CLUBS AND METHOD AND APPARATUS FOR DESIGNING THE SAME USING THE INERTIA TENSOR

George T. Mase, 1008 Henry Ct., Flushing, Mich. 48433

Filed Mar. 18, 1993, Ser. No. 33,488
Int. Cl.[5] A63B 53/00
U.S. Cl. 273—77 A 13 Claims



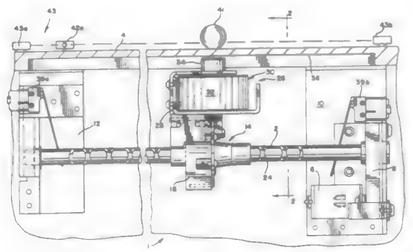
1. A method of producing a dynamically matched set of golf clubs, including the following steps:
(a) selecting a reference club having an inherent inertia tensor,
(b) determining the inertia tensor for the reference club about a preselected reference axis of said reference club;
(c) selecting the club head, shaft, and grip for each of the clubs in the set so that one of the following criteria is met:
i) at least one of the products of inertia of the reference club is substantially matched in accordance with a predetermined relationship with the remaining clubs in the said set; and
ii) at least two of the inertia tensor components of the reference club are substantially matched in accordance with a predetermined relationship with the remaining clubs in the said set.

5,351,954

MAGNETIC BALL CARRIER FOR A PINBALL GAME

Barry Oursler, Barrington, and Zofia Bil, Chicago, both of Ill., assignors to Williams Electronics Games, Inc., Chicago, Ill.

Filed Jun. 16, 1993, Ser. No. 79,074
Int. Cl.[5] A63F 7/34
U.S. Cl. 273—127 R 8 Claims



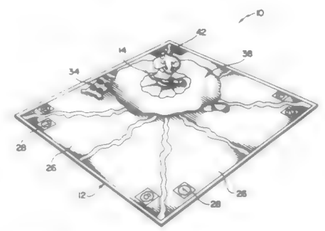
1. A play feature for a pinball game having an inclined playfield supporting a plurality of other play features and a rolling ball, comprising:
a) an electromagnet adapted to be disposed adjacent the playfield so as to be able to magnetically hold a ball, said ball being in contact with said playfield;
b) means for moving the electromagnet relative to the playfield to drag the held ball across a path on the playfield; and
c) means for determining the presence or absence of the ball on the magnet anywhere along said path.

5,351,955

BOARD GAME APPARATUS AND SPINNER ASSEMBLY

Mary Danby, Ashampstead, England, assignor to Hasbro, Inc., Pawtucket, R.I.

Filed Jun. 4, 1993, Ser. No. 71,537
Int. Cl.[5] A63F 9/00
U.S. Cl. 273—141 R 13 Claims



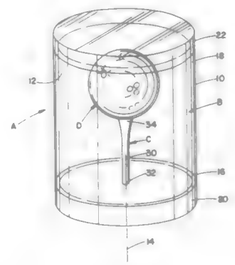
12. A spinner assembly comprising:
pivot means; and
a spinner arm rotatably and pivotably mounted on said pivot means, said spinner arm including an arm portion extending outwardly from said pivot means, and a counterweight portion extending outwardly from said pivot means in an opposite direction from said arm portion, said arm portion normally resting on a supporting surface, said counterweight portion including a weighted counterweight element which is centrifugally moved radially outwardly away from said pivot means in response to a predetermined rotational speed of said spinner arm to pivot said arm portion upwardly and counterbalance said arm portion above said supporting surface, said counterweight portion further including means for causing said counterweight element to be moved radially inwardly towards said pivot means when rotation of said spinner arm is reduced to a level sufficient to cause the weight of said counterweight to overcome the centrifugal force applied thereto.

5,351,956

GAME APPARATUS

Ellsworth S. Kershner, Philadelphia, Pa., assignor to R. M. & G. Products, Inc., Brunswick, Ohio

Filed Oct. 18, 1993, Ser. No. 138,398
Int. Cl.[5] A63F 9/00
U.S. Cl. 273—153 R 6 Claims

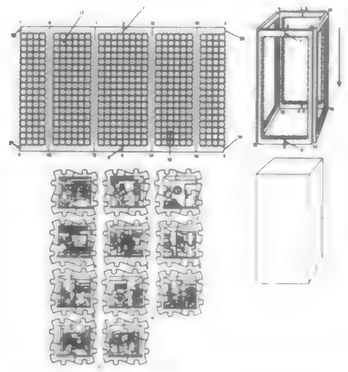


1. A game apparatus comprising:
a housing having a sidewall and first and second end walls at opposite ends thereof defining a cavity;
a golf tee extending from the first end wall toward the second end wall and being substantially aligned with a longitudinal axis of the cavity, the tee being spaced a first predetermined dimension from the sidewall; and

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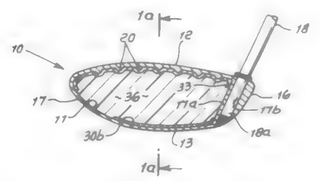
a golf ball freely received in the cavity for selective support on the golf tee, the golf ball having a diameter greater than the first predetermined dimension to limit movement of the golf ball within the cavity.

5,351,957
VERTICALLY ASSEMBLED PUZZLES
Donald W. Scott, 8265 Davis Road (Rte. 240), P.O. Box 218, Colden, N.Y. 14033
Filed Oct. 8, 1993, Ser. No. 134,261
Int. Cl.[5] A63F 9/12
U.S. Cl. 273—157 R 6 Claims



1. A jigsaw puzzle comprising interlocking interior pieces and at least three rectangular frame pieces which completely surround and interlock with the interior pieces and are joined by a hinge along parallel sides so that the resulting structure may stand vertically on one of its non hinged edges allowing the interlocking interior pieces to be assembled into the resulting hinged vertical frame pieces, at least one of said frame pieces is cut into two interlocking half-frames by cutting its non hinged opposite sides with an interlocking shaped cut holding the two half-frames together when assembled.

5,351,958
PARTICLE RETENTION IN GOLF CLUB METAL WOOD HEAD
Richard C. Helmstetter, Carlsbad, Calif., assignor to Callaway Golf Company, Carlsbad, Calif.
Continuation-in-part of Ser. No. 29,553, Mar. 11, 1993, Pat. No. 5,301,945, which is a continuation of Ser. No. 819,379, Jan. 15, 1992, Pat. No. 5,240,252, which is a continuation-in-part of Ser. No. 791,322, Nov. 14, 1991, Pat. No. 5,180,166, which is a continuation of Ser. No. 595,963, Oct. 16, 1990, Pat. No. 5,067,715. This application Aug. 26, 1993, Ser. No. 112,123
Int. Cl.[5] A63B 53/04
U.S. Cl. 273—167 H 17 Claims



1. In a golf club head, the combination comprising:
a) a hollow shell defining a hollow interior and having a hosel, and walls defining s ball striking front face, a toe and a heel,
b) a particle or piece getter within said interior,
c) said greater comprising a substance presenting to the hollow interior a surface which remains tacky during use of the club head to strike golf balls, thereby to capture pieces or particles therein by adherence to said surface,
d) and an adhesive consisting essentially of epoxy extending between said substance and said walls and adherent thereto, the getter being everywhere in the form of a thin layer in said shell and adherent to said adhesive on said walls.

5,351,959
GOLF CLUB
Thomas Duffy, 33 Poplar Drive, Parkhall, Clydebank, United Kingdom G81 3PL
PCT No. PCT/GB91/02019, § 371 Date Jun. 30, 1993, § 102(e) Date Jun. 30, 1993, PCT Pub. No. WO92/08521, PCT Pub. Date May 29, 1992
PCT Filed Nov. 15, 1991, Ser. No. 50,297
Claims priority, application United Kingdom, Nov. 17, 1990, 9025045; Apr. 2, 1991, 9106843
Int. Cl.[5] A63B 53/08, 69/36
U.S. Cl. 273—170 6 Claims

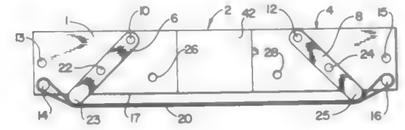


5. A golf club comprising a hollow shaft and a club head, at least a portion of which is hollow and in communication with the hollow shaft, a portion of the shaft defining a reservoir to carry a supply of fluent weight material, the head being baffled to restrict movement of weight during play and means to permit the flow of weight material into or out of the club head for changing the weight of the club head including a valve control means mounted within the shaft below the reservoir, wherein the valve control means comprises a plurality of valve members provided in an offset relationship and a switching means to alter the relative positions of the valve members to allow a measured amount of weight material to be selectively introduced into or removed from the head of the club, the head having a base portion and head portion with said baffle being provided in one of said portions.

5,351,960
PUTT PRACTICING DEVICE
Robert J. Knapp, 39 Yacht Club Pl., Tequesta, Fla. 33469
Filed Dec. 2, 1993, Ser. No. 161,149
Int. Cl.[5] A63B 69/36
U.S. Cl. 273—177 B 10 Claims

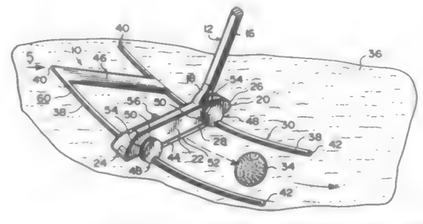
1. A putt practicing device having a body with an elongated shape, said elongated shape having a forwardly facing surface, said body having a flat bottom surface for being placed on a flat putting surface, said body having a flat surface on the top, means stretching a strip of rubber just above the flat surface on

the top of said elongated shaped body, means placing said stretched strip of rubber forwardly of the center portion of the



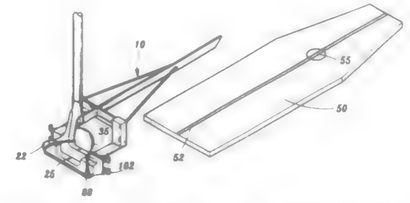
forwardly facing surface forming a target area so that a golf ball striking the target area will be deflected away therefrom.

5,351,961
GOLF PUTTER ALIGNMENT AID
Steven D. Eulau, 82 Hawkins Ave., Smithtown, N.Y. 11787-3437
Filed Apr. 14, 1993, Ser. No. 45,716
Int. Cl.[5] A63B 69/36
U.S. Cl. 273—186.2 1 Claim



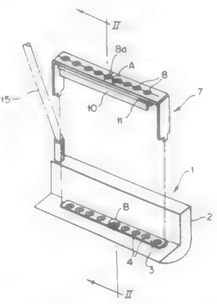
1. A golf putter alignment aid device for attachment to a golf putter of the type having a grip, a shaft, a neck, a head with a front face between a toe and a heel and a sole, said device comprising means for removably connecting the center portion of said device to the front face of the head of the golf putter, for encouraging a golfer to produce a correct pendulum motion needed for a putting stroke against a golf ball on a putting green by the front face of the head of the golf putter, a pair of curved, parallel, horizontally spaced apart, extensions projecting forwardly and rearwardly from the center portion of said device with the forward extensions adapted to be positioned on opposite sides of a golf ball being putted and the rear extensions having a pair of cross pieces for the purpose of spacing and rigidity and a single further rearward extension member to aid in sight alignment.

5,351,962
GOLF PUTTING PRACTICE DEVICE
Lung-Chian Lin, 4F., No. 4, Lane 55, Chunghsiao St., Chung-Ho City, Taipei Hsian, Taiwan
Filed Nov. 9, 1993, Ser. No. 149,557
Int. Cl.[5] A63B 69/36
U.S. Cl. 273—186.2 1 Claim



1. A golf putting practice device permitting inspection of linear perpendicular movement of gravitational center of a putting club, composed of a connecting seat, a perpendicular standard strip and a pad member, wherein said connecting seat is substantially W-shaped, having an upper vertical U-shaped board defining a visually inspecting hole and a lower horizontal support board defining a fixing hole, two pairs of L-shaped hook members being disposed on two sides of said support board, said support board having a support surface for fixing a putting club, said perpendicular standard strip having a left and a right support rods which are respectively connected with two connecting columns each of which is formed with a fissure, whereby when said standard strip is associated with said connecting seat, said connecting columns are fitted on said U-shaped board of said connecting seat with said U-shaped board inserted in said fissures, said pad member being rectangular, formed with a standard line and a circle positioned at a middle portion of said standard line.

5,351,963
GOLF PUTTER INCLUDING ALIGNMENT AND LEVEL INDICATORS
Tae S. Baek, Hyundai Apt. 63-410, Apgujung-dong, Kangnamgu, Seoul 135-110, Rep. of Korea
Filed Jul. 23, 1993, Ser. No. 64,133
Claims priority, application Rep. of Korea, Sep. 27, 1991, 91-17161
Int. Cl.[5] A63B 69/36
U.S. Cl. 273—187.4 3 Claims



1. In a known putter in which a head **1** is provided at bottom of a shaft **15** and one side surface is made of a hitting surface; a structure of putter in golf club which is characterized in that:
a lower confirming indicator board **3** in which a rear portion of said hitting surface **2** is made of flat surface portion, a level **5** is provided at a central portion on said flat surface portion, and a multiplicity of confirming indicator means **4** are processed by color printing with predetermined distance intervals;
a upper confirming indicator board **7** formed with a multiplicity of through sighting means **8,8***a* provided with lenses **9** so as to enable to sight through toward the lower confirming indicator means **4** and level **5** on the top side of said lower confirming indicator board **3**, is provided by coupling in parallel therebetween with keeping a predetermined distance;
a cover **10** capable of opening and closing at an angle of 90 degree is coupled by a hinge **11** at bottom of said upper confirming indicator board **7**.

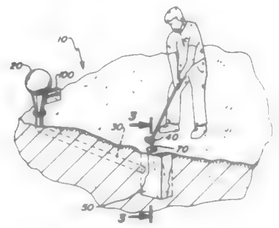
VOL 1167 ISS 1 OC 4 1994 UMI

5,351,964

GOLF BALL TEEING DEVICE

Robert D. Kruger, Henderson, Colo., assignor to WorldWide Golf Resources, Inc., Denver, Colo.

Filed Dec. 1, 1993, Ser. No. 159,825
Int. Cl.[5] A63B *57/00*
U.S. Cl. 273—201 9 Claims



1. A golf ball tee apparatus for automatically teeing golf balls enabling a golfer to practice hitting golf balls one at time including a supply of said golf balls, a means for teeing said golf balls, a delivery tube connected between said supply and said means for teeing said golf balls for providing a continuous supply of golf balls; said means for teeing said golf balls further including a tee; a drive means for automatically moving said tee between a lower ball engaging position in said receptacle to an upper ball hitting position wherein the improvement comprises:

said tee being a flexible tee allowing said golf balls to be hit from any direction without causing damage to said tee;

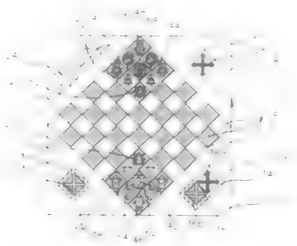
a first sensor means for detecting the presence and absence of a golf ball in said receptacle and a second sensor means for detecting the movement of said flexible tee in response to hitting a golf ball therefrom, whereby the flexible tee remains in the lower ball engaging position when the supply of said golf balls is exhausted.

5,351,965

APPARATUS FOR PLAYING A BOARD GAME

Stephen J. Telfer, 74 Windsor St., Arlington, Mass. 02174, and Michael J. Zuraw, 3 Brattle Dr., Arlington, Mass. 02174

Filed Sep. 10, 1993, Ser. No. 119,040
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—260 17 Claims



1. Apparatus for playing a game, the apparatus comprising:

a board beating a two-dimensional grid of fixed playing areas, equal numbers of said fixed playing areas being of first and second colors;

a first and a second set of movable playing areas, the first and second sets of movable playing areas differing in color but having an equal number of movable playing areas in each set, each movable playing area not being substantially larger than one of the fixed playing areas but being capable of resting in a fixed position upon one of the fixed playing areas;

a plurality of multiple movable playing areas, each of said multiple movable playing areas comprising at least a first and a second subsection, the first subsection being of substantially the same size, shape and color as one of the first set of movable playing areas, and the second subsection being of substantially the same size, shape and color as one of the second set of movable playing areas, the subsections of each multiple movable playing area being fixedly joined together so that the multiple movable playing area can rest in a fixed position upon a plurality of said fixed playing areas; and

a first and a second set of playing pieces, each set of playing pieces comprising at least one first, at least one second and at least one third playing piece, the first and second sets of playing pieces having the same number of each type of playing piece therein, each of said playing pieces having a first characteristic identifying it as a member of either the first or second set, and a second characteristic identifying the type of playing piece within that set, each playing piece being capable of resting in a fixed position upon one of the fixed playing areas, and also being capable of resting in a fixed position upon one of the movable playing areas which is itself resting in a fixed position upon one of the fixed playing areas,

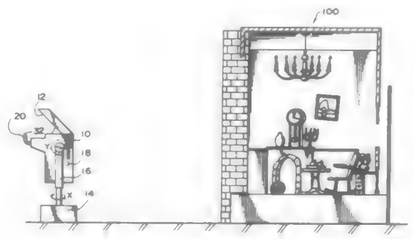
the numbers of movable playing areas in said first and second sets of movable playing areas, the number and sizes of said multiple movable playing areas, and the number of playing pieces in said first and second sets of playing pieces being such that all of said playing pieces, said movable playing areas and said multiple movable playing areas can be placed simultaneously on separate ones of said grid of fixed playing areas while still leaving a plurality of said fixed playing areas which are not occupied by a movable playing area, a multiple movable playing area or a playing piece.

5,351,966

IMAGE SYNTHESIZING SCOPE AND IMAGE SYNTHESIZER USING THE SAME

Shigeki Tohyama, Kawasaki; Hiroshi Igarasi, and Takumi Obgane, both of Yokohama, all of Japan, assignors to Namco Ltd., Tokyo, Japan

Filed Feb. 3, 1993, Ser. No. 12,649
Claims priority, application Japan, Feb. 5, 1992, 4-56446
Int. Cl.[5] A63F *9/22*
U.S. Cl. 273—311 20 Claims



1. An image synthesizing scope comprising:

a viewing window selectively viewing a scene from a predetermined play space, wherein the play space is larger than the scene viewed through the viewing window;

a direction detecting sensor sensing a viewing direction of the viewing window;

a transparent reflector forming a composite image, the transparent reflector including an optical transparent-side path and an optical reflecting-side path, an optical viewing path of said viewing window located in one of said optical transparent-side path and said optical reflecting-side path;

a video display disposed in the other of said optical transparent-side path and said optical reflecting-side path of said transparent reflector, the video display superimposing a window image through said transparent reflector onto the scene viewed through said viewing window; and

window control means for displaying and controlling the window image of said video display, said window control means comprising:

image data memory means for storing data of a panorama scene superimposable on said play space, wherein the panorama scene is larger than the scene viewed through said viewing window; and

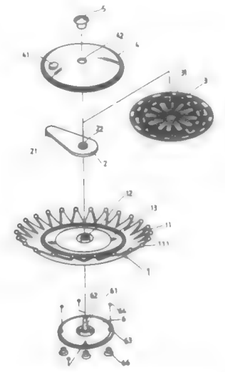
image synthesizing means responsive to the output of said direction detector sensor for reading data of a varying portion of the panorama scene from the image data memory means as the window image and for displaying the window image on said video display, the varying portion of the panorama scene corresponding to the scene viewed through the viewing window, wherein said window image is formed by scrolling said panorama scene based on a direction detected by said direction detecting sensor and said composite image is formed by superimposing the window image on the scene viewed through the viewing window.

5,351,967

AERIAL AMUSEMENT SYSTEM WITH VACUUM MOUNTS

Tsung-Pin Yang, No. 12, Alley 2, Lane 131, Chang-Chin Rd., Hsi-Jyy, Taipei Hsien, Taiwan

Filed Aug. 16, 1993, Ser. No. 106,578
Int. Cl.[5] A63B *63/00, 71/00;* A63H *27/00*
U.S. Cl. 273—344 3 Claims



1. An aerial amusement system comprising:

(a) a concentrically contoured base member having a top surface and a bottom surface on opposing sides thereof and a circularly contoured central opening for insert of an axle member therethrough, a ring shaped top annular groove concentrically formed about said axis of said central opening within said top surface, a plurality of projections extending in an arcuate and radial direction extending in an upward direction with respect to said top surface, each of said projections having a width dimension defined in the direction normal to said radially outward direction, said width dimension of each said projections decreasing toward a respective projection radial extremity, each said projection having a bead-like formation formed thereon at a respective outer radial extremity, said central opening extending through said base member substantially perpendicular to said top and bottom surfaces;

(b) a longitudinally extended swivel bar member having a top face and a bottom face on opposing sides thereof, said swivel bar having an inner end and an outer end defining opposing longitudinal extremities of said swivel bar, a circularly contoured axle opening adjacent said inner end formed by a passage extending therethrough, a counter weight mounted to said bottom face adjacent said outer end, said axle opening bounded by a tubular protrusion in alignment therewith, an outer wall of said tubular protrusion having a predetermined diameter;

(c) a disk-shaped scoreboard member having indicia formed thereon, said scoreboard having a center through hole for press fitting of said scoreboard member onto said tubular protrusion of said swivel bar member;

(d) a top cover member having a center opening for insert of said axle member, said top cover member having a convex lens formed thereon for viewing therethrough of said indicia of said scoreboard member:

(e) fastening means for concentrically capturing in constrained relation said base member, said swivel member, said scoreboard member, and said top cover member; and,

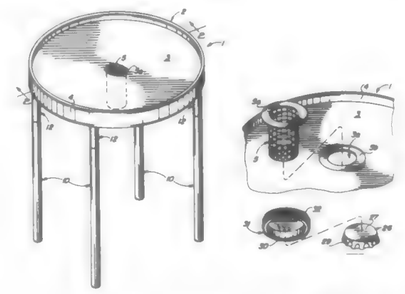
(f) vacuum mounting means for adherence of said throwable amusement system to an external surface, said vacuum mounting means secured to said bottom surface of said base member.

5,351,968

CAP TOSS GAME

Donald W. Starnes, 3529 Colquitt Rd., Shreveport, La. 71118

Filed Nov. 6, 1992, Ser. No. 972,567
Int. Cl.[5] A63B *67/06*
U.S. Cl. 273—346 2 Claims



1. A cap toss game comprising a substantially flat game board having a border raised above the plane of said game board, said game board oriented in a substantially horizontal plane; a first element of a loop-pile fastener provided on said game board; support means provided on said game board for supporting said game board; at least one opening provided in said game board; bottle caps, each having a round side, a flat top and a concave bottom, for tossing toward said game board at said opening; and a second element of a loop-pile fastener provided on said side and said flat top of each of said bottle caps as a sleeve, whereby said sleeve covers said side and said flat top of each of said bottle caps, leaving said concave bottom of said bottle caps open and said first element engages said second element when said bottle caps are tossed on said game board.

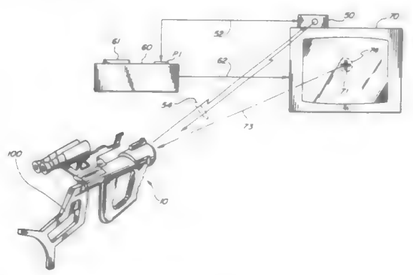
VOL 1167 ISS 1 OC 4 1994 UMI

5,351,969

REMOTE CONTROL SYSTEM FOR RASTER SCANNED VIDEO DISPLAY

Jay Smith, III, Los Angeles, and Kenneth J. Curran, Thousand Oaks, both of Calif., assignors to Smith Engineering, Los Angeles, Calif.

Filed May 26, 1992, Ser. No. 888,735
Int. Cl.[5] A63F 9/22
U.S. Cl. 273—438 6 Claims



1. A video system comprising:
an electronic gaming unit which executes a game program and which generates a video signal in response thereto;
a raster scanned video display terminal which displays a video image in response to said video signal, two alternating time phases being used to display said video image, an image phase during which horizontal scan lines are displayed and a blank phase during which the display is blank; and
a remote control system for controlling the game program including:
a fixed transceiver having a transmission means for transmitting time phase information denoting the blank phase and a receiving means for receiving data;
a mobile transceiver including at least one button which may be activated by a user and means for generating button-press data in response thereto, an optical sensor means for observing a target area on the raster scanned video display terminal, a receiving means for receiving the time phase information from the transmission means of said fixed transceiver, and a transmission means for transmitting data, said mobile transceiver transmitting the button-press data during the blank phase in response to the time phase information only and transmitting the image position data during the image phase.

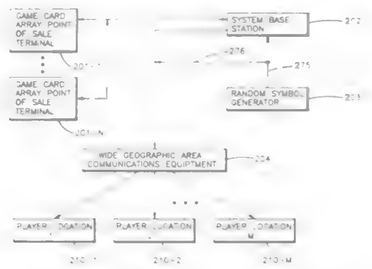
5,351,970

METHODS AND APPARATUS FOR PLAYING BINGO OVER A WIDE GEOGRAPHIC AREA

Philip R. Floretti, 81 W. Walk, West Haven, Conn. 06516

Filed Sep. 16, 1992, Ser. No. 946,176
Int. Cl.[5] A63F 3/06, 9/22
U.S. Cl. 273—439 63 Claims

1. A system for enabling bingo to be played over a wide geographic area, comprising:
(a) means for issuing game card arrays in response to purchase requests, at the time of request, wherein said means for issuing game card arrays further includes:
(a1) point of sale terminal means including means for uploading game card array purchase requests to system base station means from a site other then where said system base station means is physically located; and
(a2) system base station means including means for issuing valid game card arrays and downloading said valid game card arrays to said point of sale terminal means in response to game card array purchase requests;
(b) means for keeping track of all game card arrays issued in response to said purchase requests;
(c) means for sequencing through each bingo game in a scheduled bingo session; and



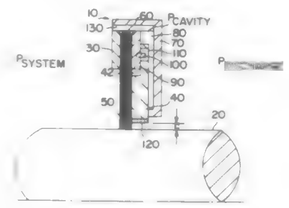
(d) means for communicating over a wide geographic area the sequence of random symbols being generated during a particular bingo game to thereby enable players over the wide geographic area to participate in the bingo session.

5,351,971

BRUSH SEAL DEVICE HAVING A FLOATING BACKPLATE

John F. Short, Scituate, R.I., assignor to EG&G Sealol, Inc., Cranston, R.I.

Continuation-in-part of Ser. No. 64,578, May 21, 1993, abandoned. This application Jun. 30, 1993, Ser. No. 83,487
Int. Cl.[5] F16J 15/16
U.S. Cl. 277—53 14 Claims



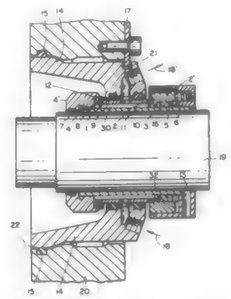
1. A brush seal device for sealing a high pressure area from a low pressure area, the brush seal device comprising:
an annular sideplate having a first side facing the high pressure area and a second side opposite the first side;
an annular backplate having a first side facing the low pressure area and a second side opposite the first side, the backplate being moveable in a radial direction relative to the annular sideplate; and
a plurality of bristles between the second side of the sideplate and the second side of the backplate, the plurality of bristles extending inwardly from an outer peripheral edge of the sideplate.

5,351,972

INSIDE/OUTSIDE MOUNTED DOUBLE MECHANICAL FACE SEAL

Göran Anderberg, Strandvägen 303, S-261 61 Landskrona, Sweden

PCT No. PCT/SE91/00187, § 371 Date Aug. 28, 1992, § 102(e) Date Aug. 28, 1992, PCT Pub. No. WO91/14118, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 13, 1991, Ser. No. 923,911
Claims priority, application Sweden, Mar. 15, 1990, 9000919-2
Int. Cl.[5] F16J 15/34
U.S. Cl. 277—59 13 Claims



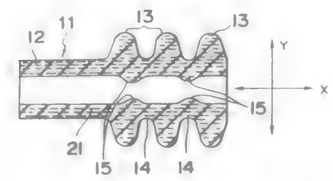
1. An inside/outside mounted double mechanical face seal for sealing a moving shaft extending through a stationary wall of a container having an interior in which a medium to be sealed is contained, comprising:
an inner seal arranged in a counter ring on the inside of the wall;
an outer seal arranged on the outside of the wall;
an intermediate ring extending between the inner and outer seals and through the wall; and
springs arranged on the outside of the wall and outside the outer seal;
wherein the inner and outer seals are biased to the intermediate ring by means of the springs.

5,351,973

RUBBER SEAL FOR WATERPROOF CONNECTOR

Osamu Taniuchi; Hajime Okada, and Hajime Kawase, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Jan. 29, 1993, Ser. No. 11,501
Claims priority, application Japan, Jan. 31, 1992, 4-3362[U]
Int. Cl.[5] F16J 15/10
U.S. Cl. 277—209 3 Claims



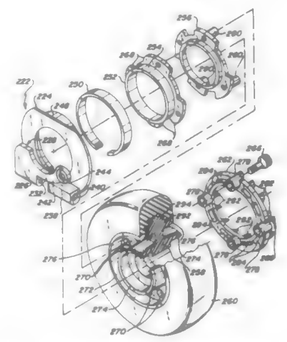
1. A rubber seal made of rubber and filled with reinforcing fibers being placed between a male connector and a female connector, said female connector having a chamber for receiving said male connector therein for securing a tight connection therebetween, said rubber seal comprising:
an elongated tubular body having first and second openings at opposite ends thereof, and having an inner tubular space extending between said first and second openings, said inner tubular space being adapted to receive said female connector therein;
said elongated tubular body having a first portion with an increased outersurface diameter and a second portion with a decreased outersurface diameter, said first portion having a diameter greater than an inner diameter of said female connector;
said elongated tubular body having a third portion with a decreased innersurface diameter and a fourth portion with an increased innersurface diameter, said third portion having a diameter smaller than an outer diameter of said male connector, said reinforcing fibers being oriented in an axial direction of said rubber seal to impart anisotropy to the strength of said rubber seal, wherein the strength in said axial direction is greater than the strength in a radial direction, and elasticity is maintained in said radial direction.

5,351,974

IN-LINE SKATE BRAKING ASSEMBLY AND METHOD

Donald E. Cech, 1736 Collyer St., Longmont, Colo. 80501

Continuation-in-part of Ser. No. 753,318, Aug. 30, 1991, Pat. No. 5,226,673, which is a continuation-in-part of Ser. No. 608,849, Nov. 5, 1990, abandoned. This application Sep. 23, 1992, Ser. No. 950,082
Int. Cl.[5] A63C 17/14
U.S. Cl. 280—11.2 19 Claims



1. A braking assembly for wheeled skating apparatus having a single linearly arranged set of at least three wheels, the set of wheels including at least a first middle wheel, each of the wheels having a central hub with a skating surface engaging unit mounted thereon and being rotatably connected by a separate axle through the hub with a support structure, said braking assembly comprising:
a brake pad mount having an inwardly facing annular surface mountable with the support structure adjacent to the hub of one of the wheels;
a brake pad attached to said annular surface of said brake pad mount;
the hub of said one of the wheels having an annular surface configured to be in proximity to said brake pad when said brake pad mount is mounted; and
actuating means operatively associated with said brake pad mount for selectively contracting said brake pad mount so that said brake pad contacts said surface of the hub of said one of the wheels.

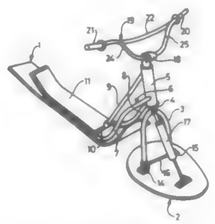
VOL 1167 ISS 1 OC 4 1994 UMI

5,351,975

SLIDING APPARATUS FOR SNOW SPORTS

Frank Petoud, Champs Gonin, St. Cergues 74140, France

PCT No. PCT/FR91/00208, § 371 Date Nov. 19, 1992, § 102(e) Date Nov. 19, 1992, PCT Pub. No. WO91/14608, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 15, 1991, Ser. No. 927,403
Claims priority, application France, Mar. 21, 1990, 90 03622
Int. Cl.[5] B62B *13/04*
U.S. Cl. 280—14.3 10 Claims



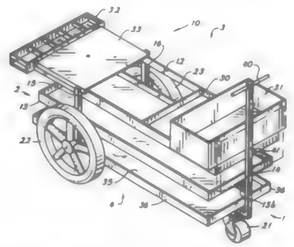
1. A sliding for snow sports comprising:
a rigid frame (6);
one supporting runner (1) affixed to said rigid frame, and having a tip and a tail;
a foot support 11 mounted on said rigid frame over said supporting runner;
pivoting arm (4) rotatably mounted to said rigid frame wherein an axis of the pivoting arm (4) is inclined towards the rear at an angle of about 65 degrees;
a cross piece (18) adjustable in height by a sliding action within the pivoting arm (4);
a handlebars (19) mounted in said cross piece (18) so that said handlebars is shifted forward of a top of said pivoting arm (4), and having lateral arms (24,25) approximately perpendicular to the ground and;
a front steering runner (2) in line with the supporting runner and linked to said pivoting arm by a link in the general axis of the steering runner wherein
a tail of the steering runner is rounded;
a widest part of the supporting runner (1) is about ⅔ of a widest part of the steering runner;
a length of the supporting runner being about double a length of the steering runner;
the nose of the supporting runner being higher than a nose of the steering runner.

5,351,976

EQUIPMENT CART

Joe R. Penson, 4918 TVA Lab Rd., Louisville, Tenn. 37777

Filed Mar. 8, 1993, Ser. No. 27,685
Int. Cl.[5] B62B *3/10, 3/12*
U.S. Cl. 280—47.35 7 Claims



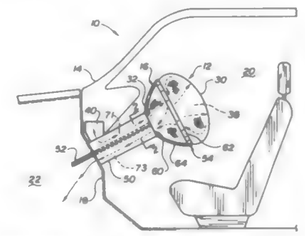
1. A sports equipment cart comprising
a frame base
a rectangular first horizontal support surface attached to the frame base, said first horizontal support surface terminating in a narrow vertical rim
first, second, third and fourth sides of the cart corresponding to the sides of the rectangular frame base, said first and third sides being parallel to each other and said second and fourth sides being parallel to each other,
a first vertical support member connected to the frame base and extending upwardly from the rectangular first horizontal support surface along the first side of the cart at a point equidistant from the second and fourth sides of the cart,
second and third vertical support members each symmetrically located at a point near the third side of the cart and connected to second and fourth sides of the first horizontal support surface,
a rectangular upper frame tier member attached to the first vertical support member at a point along the first side of the cart at a point equidistant from the second and fourth sides of the cart and attached along the second and fourth sides of the cart to the second and third vertical support members, said upper frame tier member comprising a rectangular band with an open interior suitable for admitting items taller than the distance between the upper frame tier member and the first horizontal support surface while said items are supported on said cart from below said upper frame tier member,
a first wheel and axle mounted to the frame base at a point near the first side of the cart and equidistant from the second and fourth sides of the cart,
a second axle mounted to the frame base adjacent to the points where the second and third vertical support members attach to the first horizontal support surface,
second and third wheels rotatably mounted on the second axle,
a first box-shaped compartment mounted on the upper frame tier adjacent to the first vertical support member and extending across said upper frame tier member along the second and fourth sides of the cart, said first box-shaped compartment being of a size and shape suitable for receiving footballs, and a second box-shaped compartment mounted within the upper frame tier member adjacent said first box-shaped compartment.

5,351,977

EXTERNALLY VENTED AIRBAG ASSEMBLY

Gregory B. Grace, Gilbert, Ariz., assignor to TRW Inc., Lyndhurst, Ohio

Filed Nov. 3, 1992, Ser. No. 970,916
Int. Cl.[5] B60R *21/28, 21/30*
U.S. Cl. 280—738 15 Claims



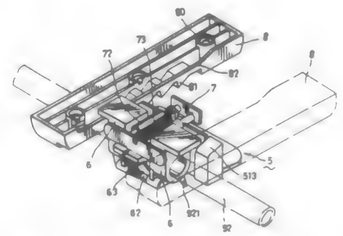
1. In combination, a vehicle and an airbag assembly;
said vehicle comprising a steering assembly and a firewall;
said firewall partially defining an occupant compartment and separating said occupant compartment from an external environment;
said steering wheel assembly being positioned at least partially within said occupant compartment;
said airbag assembly being mounted on said steering assembly;
said airbag assembly comprising an airbag and an inflator which supplies inflation fluid to said airbag to inflate said airbag into said occupant compartment;
said steering assembly comprising a steering column defining an inlet passageway which communicates with said airbag and a separate exhaust passageway which communicates with said airbag separately and independently of said inlet passageway;
said inlet passageway communicating with said inflator whereby inflation fluid travels through said inlet passageway into said airbag; and
said exhaust passageway communicating with said external environment whereby at least a certain portion of said inflation fluid is vented to said external environment.

5,351,978

DOUBLE-LOCK HEIGHT ADJUSTMENT APPARATUS FOR BABY WALKER

Jueh-Cheng Chen, No. 42, Hsin-Le Rd., Tainan City, Taiwan

Filed Mar. 18, 1993, Ser. No. 33,118
Int. Cl.[5] B62B *7/06*
U.S. Cl. 280—87.051 1 Claim



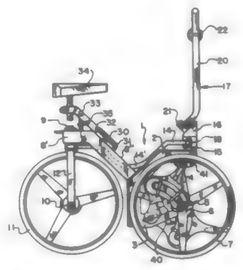
1. A height adjustment apparatus for a baby walker, said baby walker including a seat, a slidable base member, and a U-shaped tube which has a central portion that is coupled with said seat and two parallel end portions that are pivoted to said base member, said height adjustment apparatus comprising:
two aligned rack members secured to an underside of said seat, each of said rack members having a bottom surface with a toothed portion;
a first controlling member having a sleeve portion sleeved rotatably on said central portion of said U-shaped tube, an operation plate connected securely to said sleeve portion, and two engaging portions connected securely to said operation plate and engaged with said toothed portions of a respective one of said rack members;
a first spring biasing said engaging portions to engage said toothed portions of said rack members;
two lock elements sleeved fixedly on said central portion of said U-shaped tube on two sides of said sleeve portion of said first controlling member, each of said lock elements having an engaging hole formed therein;
a second controlling member being mounted slidably on said first controlling member and having two engaging tongues projecting therefrom to engage said engaging holes of said locking elements, and a push plate being connected securely to said engaging tongues so as to prevent rotation of said first and second controlling members about said central portion of said U-shaped tube, said push plate being pushed to disengage said engaging tongues of said second controlling member from said engaging holes of said lock elements; and
a second spring biasing said engaging tongues to engage said engaging holes of said lock elements respectively;
whereby, when said push plate is actuated to disengage said engaging tongues of said second controlling member from said engaging holes of said lock elements, depression of said operation plate disengages said engaging portions of said first controlling member from said toothed portions of said rack members so as to allow movement of said engaging portions of said first controlling member relative to said rack members, thereby adjusting the position of said U-shaped tube relative to said seat.

5,351,979

TWO-WHEELED VEHICLE

Christianus P. Langen, Culjk, Netherlands, assignor to Langenberg B.V., Culjk, Netherlands

Filed Dec. 4, 1992, Ser. No. 986,135
Claims priority, application Belgium, Dec. 5, 1991, 91.01113
Int. Cl.[5] B62M *3/06*
U.S. Cl. 280—254 20 Claims



1. A two-wheeled vehicle comprising:
a frame;
two wheels rotatably suspended on said frame, wherein one of said wheels is a driven wheel and the other of said wheels is a steerable wheel steerable relative to said frame via a sub-frame;
a saddle-like seat element connected to said frame;
a rotatable steering member connected to said frame;
a coupling mechanism connected to and extending between said steering member and said sub-frame, wherein said sub-frame for said steerable wheel is positioned under said seat element, and said driven wheel is positioned under said steering member; and
a pedal means connected to said frame for driving said driven wheel, said pedal means including a lever with one end of said lever guided for reciprocal movement relative to said frame and the other end of said lever coupled to a pedal element, and at least one gear means coupled to said lever adapted to drive a pinion mounted on a rotation shaft of said driven wheel.

5,351,980

JOINT ASSEMBLY FOR A BICYCLE SADDLE

Andrew Huang, Taichung Hsien, Taiwan, assignor to Giant Manufacturing Co., Ltd., Taichung Hsien, Taiwan

Filed Jan. 13, 1994, Ser. No. 180,627
Int. Cl.[5] B62K *19/36*
U.S. Cl. 280—281.1 2 Claims

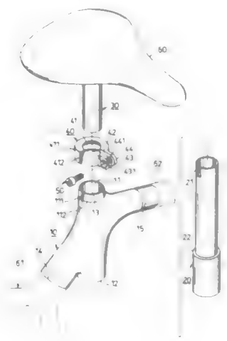
1. A joint assembly for a bicycle saddle, said joint assembly including an elongated seat tube member, a joint member having a lower connecting portion which is sleeved on and adhered to said seat tube member and an upper connecting portion which has a plurality of open-ended slots that are formed through an upper end of a wall thereof and a plurality of flexible plates that are respectively defined between each adjacent pair of said open-ended slots, a seat post extending downward from a bottom side of said bicycle saddle to engage movably said upper connecting portion of said joint member,

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and a hoop member being sleeved on said upper connecting portion of said joint member and locking said seat post on said joint member,

wherein the improvement comprises:

said joint member being made of a carbon-fiber composite material and being a tubular body which is adapted to interconnect a crossbar and a seat stay of a bicycle and which has a longitudinal receiving chamber formed



through said joint member from said upper connecting portion to said lower connecting portion; and

said seat tube member being inserted fittingly into said receiving chamber of said joint member and having a plurality of open-ended slots formed through an upper end of a wall of said seat tube member and aligned with said open-ended slots of said joint member, and a shoulder portion abutting against a bottom surface of said lower connecting portion of said joint member.

5,351,981

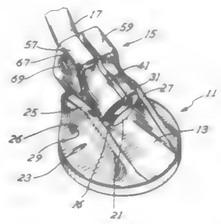
BICYCLE KICKSTAND ACCESSORY

Jan B. Thomas, Hilton Head, S.C., assignor to Janko U.S.A., Hilton Head, S.C.

Continuation-in-part of Ser. No. 923,062, Jul. 31, 1992, abandoned. This application Jan. 27, 1993, Ser. No. 9,835

Int. Cl.[5] B62H *1/00*

U.S. Cl. 280—301 **16 Claims**



1. A bicycle kickstand accessory for attachment to the terminal end of a conventional bicycle kickstand of an associated bicycle comprising:

a base support member having a bottom surface of an area substantially larger than the area of the terminal end surface of the kickstand, said base support member including pivot means for defining a pivot axis disposed above said bottom surface and spaced laterally from the center of said bottom surface; and

a clamp member pivotally mounted to said base support member for releaseably securing said base support member to the terminal end of the kickstand, said clamp member including:

A. a unitary body member comprising:

(1) a constrictable opening for receiving the terminal end of the kickstand;

(2) a first mounting tab pivotally attached to said pivot means for pivotally mounting said base support member to said unitary body member, said first mounting tab extending outwardly from said opening; and

(3) a second mounting tab extending outwardly from said opening, said second mounting tab being formed of a pair of locking tabs; and

B. applied force means for forcing said pair of locking tabs relative to one another to constrict said opening, such that said bottom surface engages the ground for providing support to the kickstand for resting the associated bicycle in an upright position.

5,351,982

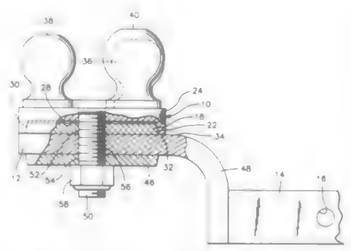
CLUSTER BALL TRAILER HITCH

Alden B. Walrath, Plantation, Fla., assignor to W.H.P. Innovations Inc., Boynton Beach, Fla.

Filed May 25, 1993, Ser. No. 66,228

Int. Cl.[5] B60D *1/07*

U.S. Cl. 280—416.1 **18 Claims**



1. A cluster ball trailer hitch including a mount for rigid securement to a hitch mounting portion of a towing vehicle, said mount comprising a horizontal plate-like member of predetermined height and of non-circular plan shape and including first remote upwardly convergent peripheral edges inclined upwardly toward a central portion of said member, a horizontal ball supporting fixture defining a downwardly opening cavity of predetermined depth and of a size and shape corresponding to the size and shape of said member and including second remote upwardly convergent inclined peripheral edges which correspond to and are inclined to substantially the same degree as said first remote edges, said fixture being removably downwardly displaced over said member with said first and second remote inclined peripheral edges seated tightly against each other, means removably anchoring said fixture over said member, said fixture including a plurality of different size hitch balls rigidly mounted therefrom and projecting upwardly from said fixture in horizontally spaced apart relation, said fixture cavity and member being of a plan shape allowing said fixture to be secured downwardly over said member in a plurality of predetermined positions rotated relative to said member about an upstanding axis with said plurality of said predetermined positions being equal in number to the number of said plurality of hitch balls and in each of which positions a corresponding hitch ball will be disposed adjacent a predetermined peripheral portion of said member.

5,351,983

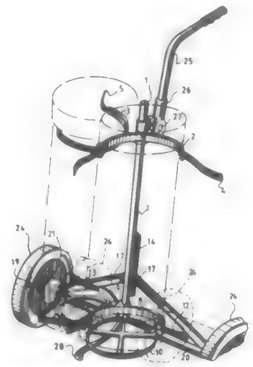
CONVERTIBLE DUAL GOLF CART

Theresa A. Descalo, 973 Ferndale Blvd., Central Islip, N.Y. 11722

Filed Apr. 20, 1993, Ser. No. 48,186

Int. Cl.[5] B62B *1/12*

U.S. Cl. 280—646 **20 Claims**



1. An adjustable golf bag carrier cart which comprises:

a supporting frame assembly,

a pair of movably adjacent clamps and a pair of movably adjacent base portions attached to said frame assembly,

said clamps and said base portions being responsive to holding a single golf bag when said clamps and said base portions are in a first position,

said clamps and said base portions being in respective positional register with each other in said first position,

said pair of clamps and said pair of base portions being alternatively movable from said first position to a second position to accommodate a pair of golf bags, wherein said pair of clamps are movably adjacent C-shaped clamps and wherein said base portions are a pair of generally disk shaped base portions, said clamps and said base portions holding one bag when the clamps and the base portions are in respective positional register with each other in said first position, and which can alternatively accommodate two golf bags when said C-shaped clamps and said base portions are rotated approximately ninety degrees away from each other to said second position.

5,351,984

TROLLEY WITH IMPROVED TELESCOPIC HANDLES

Chiun J. Cheng, No. 20, Lane 327, Sec. 2, Chung Shan Rd., Chung Ho City, Taipei Hsien, Taiwan

Filed Nov. 8, 1993, Ser. No. 148,852

Int. Cl.[5] B62B *1/12*

U.S. Cl. 280—655 **3 Claims**

1. A trolley handle comprising:

a first tube being telescopically received in a second tube being telescopically received in a third tube, the first tube comprising a pin-receiving hole being formed therethrough, a slot being formed therethrough below the pin-receiving hole, a first hole being formed therethrough below the slot and a second hole being formed therethrough below the first hole, the second tube comprising a first hole being formed therethrough, a second hole being formed therethrough below the first hole being formed therethrough and a third hole formed therethrough below the second hole being formed therethrough, the third tube comprising a hole being formed therethrough;

an actuating pole being longitudinally disposed in the first tube and comprising an eye being formed at an upper end thereof, a first block being formed below the eye, a second block being formed below the first block and a third block being formed below the second block and a fourth block being formed on a lower end thereof;

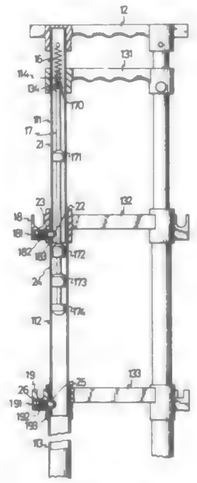
a first pin being inserted through the pin-receiving hole formed through the first tube;

a second pin being inserted through the slot formed through the first tube;

a compression spring linking the first and second pins to each other so that the actuating pole is biased away from the first pin;

a first locking device being mounted on an upper end of the second tube and comprising a latch being biased by means of a compression spring being received therein into the first hole formed through the second tube, the latch comprising a semi-spherical tip; and

a second locking device being mounted on an upper end of the third tube and comprising a latch being biased by means of a compression spring being received therein into the hole formed through the third tube, the latch comprising a semi-spherical tip;



the first block being disposed below the first hole formed through the first tube in order to retract the semi-spherical tip of the latch of one of the locking devices into the first hole formed through the first tube when the first block is moved upwards by moving the second pin upwards;

the second block being disposed below the second hole formed through the first tube in order to retract the semi-spherical tip of the latch of the first locking device into the first hole formed through the first fube when the first block is moved upwards by moving the second pin upwards;

the third block being disposed below the second hole formed through the second tube when the first tube is in an extended position in order to retract the semi-spherical tip of the latch of the second locking device into the second hole formed through the second tube when the third block is moved upwards by moving the second pin upwards;

the fourth block retracting the semi-spherical tip of the second locking device into the third hole formed through the second tube.

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5,351,985

SUSPENSION SYSTEM FOR AUTOMOTIVE VEHICLES

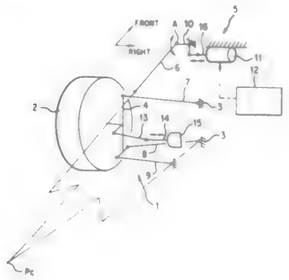
Fumitaka Ando, Hatsukaichi; Takeshi Edahiro, Higashihiroshima, and Shigefumi Hirabayashi, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 9, 1993, Ser. No. 88,638

Claims priority, application Japan, Jul. 9, 1992, 4-207594; Jul. 9, 1992, 4-207595; Jul. 10, 1992, 4-207406; Jul. 10, 1992, 4-207407

Int. Cl.[5] B60G *3/20*

U.S. Cl. 280—675 25 Claims



1. A suspension system for a wheel, related to a steering system of an automobile, which is supported for rotation by a wheel support member, said suspension system comprising:

link means, disposed between said wheel support and a body of an automobile, for suspending said wheel support from said automobile body for enabling said wheel to swing about a center axis relative to said vehicle body; and

adjusting means for causing said link means to change a height of an instantaneous center of a swing of said wheel relative to the ground according to degrees of turn of said automobile so as to maintain a height of an instantaneous center axis of swing at a substantially fixed height from the ground.

5,351,986

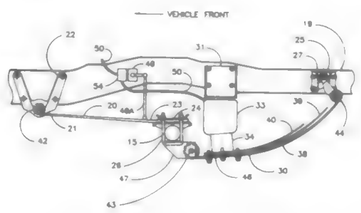
VEHICLE AIR SUSPENSION SYSTEM

William E. Hedenberg, P.O. Box 4173, Northbrook, Ill. 60062, and Dennis E. Hedenberg, 1786 South Illinois St., Des Plaines, Ill. 60018

Filed Apr. 14, 1993, Ser. No. 45,778

Int. Cl.[5] B60G *11/34*

U.S. Cl. 280—712 6 Claims



1. A rear axle air suspension system including a rear axle for a vehicle, said vehicle having a frame, a front axle, an axle housing for said front axle and wheels mounted at opposite ends of said axle,

a) said rear axle air suspension system being mountable adjacent each wheel on said rear axle for absorbing forces imparted to said wheels and said axle such as during movement of said vehicle on a roadway,

b) said air suspension system extending transverse to said rear axle and including a rear axle housing,

c) a pusher torque rod extending forward of said rear axle and means for pivotally mounting the forward end of said pusher torque rod to said frame,

d) means for rigidly affixing the rear end of said pusher torque rod to said rear axle housing at a point above said rear axle housing,

e) elongated leaf spring means extending rearwardly of said rear axle and means for pivotally mounting the rear end of said leaf spring means to said frame,

f) means for pivotally mounting the forward end of said leaf spring means to said rear axle housing at a point beneath said axle housing, and

g) an air spring means mounted on said leaf spring means to be effective in a relative vertical direction between said leaf spring means and said frame, whereby said air spring and said leaf spring are effectively supporting said frame and loads thereon in series.

5,351,987

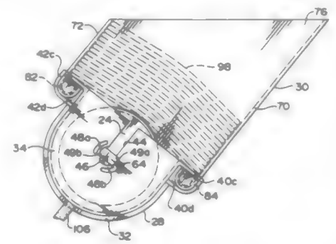
AIR BAG, CANISTER AND CHUTE ASSEMBLY

Michael W. Donegan, Bellbrook; Richard P. Nuchols, Loveland; James L. Webber, Spring Valley, and Jerry A. McCann, Miamisburg, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 897,118, Jun. 11, 1992, abandoned. This application Dec. 27, 1993, Ser. No. 172,986

Int. Cl.[5] B60R *21/16*

U.S. Cl. 280—728 A 7 Claims



1. A container for housing an air bag and its inflator and for mounting the air bag thereto, comprising

an elongated reaction canister having a closed housing formed of a U-shaped body having spaced side walls interconnected by spaced end walls to define a rectangular top gas discharge opening and including means for mounting an inflator therein,

an air bag deployment chute comprising a rectangular body having spaced side walls interconnected by spaced end walls to define a top air bag deployment opening and a bottom gas transfer opening which mates with the canister opening upon assembly thereto,

air bag mounting means comprising a pair of spaced elongated loops formed in the ends of air bag fabric webs and an elongated rod received in each loop,

an elongated, open-top trough carried by the bottom of each chute side wall for receiving a loop and rod to mount the air bag to the chute,

an elongated channel carried by the top of each canister side wall and having an open end for slidingly receiving a chute trough upon endwise assembly of the chute and air bag to the canister,

each canister channel being configured to permit only endwise movement of a trough with loop and rod therethrough and including a longitudinal gap through which the chute side wall and air bag web slide during said endwise assembly,

abutment surfaces on the canister and on the chute which

close the canister channel ends upon assembly to trap the rod and loop therein against removal, and

locking means on the canister and chute for locking the chute to the canister upon assembly to prevent sliding disassembly thereof.

5,351,988

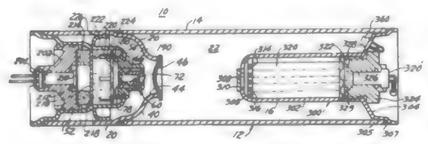
HYBRID INFLATOR WITH STAGED INFLATION CAPABILITY

Robert J. Bishop, Sterling Heights; Richard L. Frantom, Richmond; Robert M. Kremer; Klaus F. Ocker, both of Fraser, all of Mich.; Roy G. Brown, Hot Springs, Ark.; James Ross, Fairfax, and Donald W. Renfroe, Haymarket, both of Va., assignors to AlliedSignal Inc., Morristown, N.J.

Continuation-in-part of Ser. No. 808,781, Dec. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 618,428, Nov. 27, 1990, Pat. No. 5,076,607. This application Apr. 14, 1992, Ser. No. 833,240

Int. Cl.[5] B60R *21/26*

U.S. Cl. 280—737 8 Claims



1. An inflator (**10**) comprising:

a pressure means (**12**, **14**, **16**, **20**) for storing a quantity of inflation gas under pressure, the pressure means comprising a first housing having a first part extending into the pressure means and a second part in contact with the pressure means for sealing one end of the pressure means, the first part including an opening closed by a first burst disk (**46**) and a second housing (**302**) having a first part extending into the pressure means and a second part in contact with the pressure means for closing a second end of the pressure means, the first part of the second housing including at least one additional opening closed by a seal disk (**310**);

gas release means (**52**, **300**) for permitting the controlled, staged release of the inflation gas at determinable inflation rates, such gas release means including:

first pyrotechnic means, for generating products of combustion for heating the stored gas, positioned outside of the pressure means and spaced from the first burst disk (**46**), including a piston (**72**) moved into a disk piercing position to rupture the first burst disk (**46**) in response to the buildup of pressure caused burning of a first quantity of propellant material (**218**), the bursting of the first burst disk permitting the inflation gas to initially flow out of the pressure means at a determinable cold inflation rate, the piston thereafter providing a conduit to communicate the products of combustion of the burning propellent to the pressure means so as to increase the temperature of the inflation gas therein and thereby increase the rate of egress of the gas;

second pyrotechnic means (**300**), positioned in the second housing, positioned outside of the pressure means and spaced from the seal disk (**310**), for providing, when activated, additional products of combustion arising from burning of a second quantity of propellent material, the products of combustion opening the seal disk (**310**) and thereafter entering the pressure means to heat the inflation gas therein and thereby elevate the rate of egress of the inflation gas above the rate achievable by the first pyrotechnic means.

5,351,989

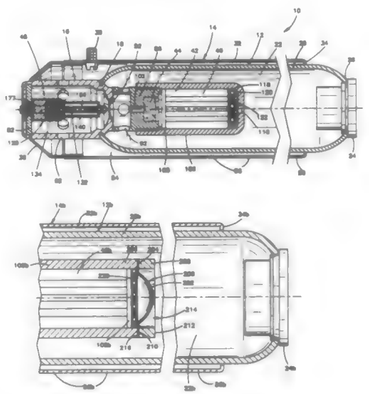
INFLATOR ASSEMBLY

Joseph C. Popek, Detroit, and William F. McLeod, Roseville, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Nov. 30, 1992, Ser. No. 982,857

Int. Cl.[5] B60R *21/26*

U.S. Cl. 280—737 7 Claims



1. An apparatus for use in inflating a vehicle occupant restraint, said apparatus comprising:

means for defining a storage chamber for storing a gas under pressure which is releasable to inflate the vehicle occupant restraint;

an ignitable material;

actuator means for igniting said ignitable material;

means for defining a combustion chamber in which said ignitable material is located;

passage means for blocking communication of said combustion chamber with said storage chamber when said ignitable material is burning;

said ignitable material producing combustion products when burning, said passage means including a surface defining an opening for communicating said combustion chamber with said storage chamber, said blocking means including a releasable member which blocks the passage of said combustion products through said opening, said releasable member being releasable to permit the passage of said combustion products from said combustion chamber to said storage chamber through said opening when said combustion products reach a predetermined elevated pressure.

5,351,990

INSULATING FLOOR FORMING TRAILER MAIN BEAM UPPER FLANGE

Michael I. Thomas, Savannah, Ga., assignor to Great Dane Trailers, Savannah, Ga.

Filed Apr. 2, 1993, Ser. No. 41,958

Int. Cl.[5] B62D *21/20, 25/20*

U.S. Cl. 280—789 32 Claims

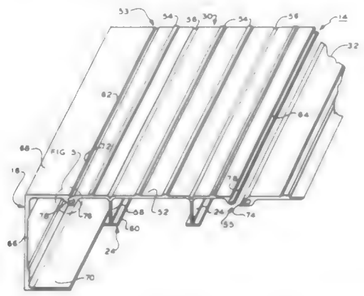
1. A trailer for use with a truck tractor comprising:

a pair of generally parallel main beams each comprising a vertical web having an upper edge region and a lower edge region and a lower horizontal flange secured to said web at said lower edge region, said beams extending in a direction from a trailer front region to a rear region and means for securing the beams to said truck at said front region; and

a load bearing platform secured to said beams, said platform

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forming at least one upper horizontal flange for each said vertical webs at said upper edge region, said platform comprising a pair of spaced metal sheet-like members and at least one relatively intermediate rigid foam layer between and secured to said sheet-like members wherein



said sheet-like members are constructed to be sufficiently strong to provide support for tensile bending loads and said at least one foam layer is constructed sufficiently thick and of such material so as to provide support for shear loads borne by said platform.

5,351,991

FOLDED SHEET MEANS

George W. McDonald, Mon Cachet, Rue de la Cache, Castel, Guernsey, Channel Islands, Great Britain

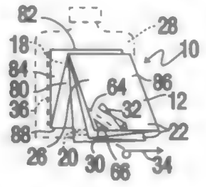
PCT No. PCT/GB91/02154, § 371 Date Sep. 22, 1992, § 102(e) Date Sep. 22, 1992, PCT Pub. No. WO92/10828, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 4, 1991, Ser. No. 916,090

Claims priority, application United Kingdom, Dec. 5, 1990, 9026390

Int. Cl.[5] B42D *15/00*

U.S. Cl. 281—2 20 Claims



1. Sheet means comprising a sheet of material having a first set of concertina folds and, so as to be transverse to these when the sheet is folded with these folds, a second set of concertina folds;

each of said concertina folds having at least three panels; and

sealing means to seal the same in a folded condition, and defining opening means at which the seal means can be opened;

said sheet having diagonally opposite segments defined by said concertina folds, one of said opposite segments being freely pullable to open the sheet fully with a single movement once said sealing means have been opened for opening said concertina folds.

5,351,992

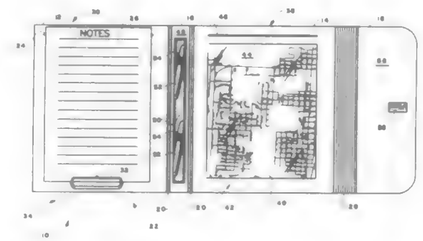
ITINERARY PLANNER

Douglas Chilson, and Pamela Chilson, both of 2245 Wisconsin SW., Huron, S. Dak. 57350

Filed Feb. 9, 1994, Ser. No. 194,505

Int. Cl.[5] B42D *3/00*

U.S. Cl. 281—31 8 Claims



1. A portfolio for holding and displaying a map and writing materials, comprising:

a cover having a front panel, a rear panel, a hinge panel located between said front and rear panels, and a flap panel attached to one of said front and rear panels,

one of said front and rear panels having said flap panel hingedly connected thereto and a pocket including a transparent interior face, and the other of said front and rear panels having an upper edge, a lower edge, a pocket open at one of said upper and lower edges, a pocket on said flap panel, and a spring clip attached at the other of said upper and lower edges,

said hinge panel including means for releasably retaining thereto at least one writing implement, and

said flap panel and said other of said front and rear panels having corresponding, aligned means for releasably adhering one to the other.

5,351,993

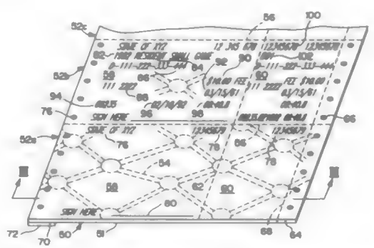
HUNTING LICENSE

Kenneth D. Wright, Grand Rapids, Mich., and Kent P. Blackwell, Neenah, Wis., assignors to Bissell Graphics Corporation, Grand Rapids, Mich.

Filed Aug. 5, 1992, Ser. No. 925,076

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—62 12 Claims



1. A hunting license form comprising:

a flexible base sheet having first and second opposed major surfaces, a license tag portion, and a record portion;

said license tag portion having spaced apart, opposed top and bottom edges, and spaced apart, opposed first and second side edges;

said record portion having spaced apart, opposed top and bottom edges, and spaced apart, opposed first and second side edges;

said first side edge of said license tag portion being temporarily and separably joined to said first side edge of said record portion along a weakened line formed in said base sheet;

said license tag portion further having a longitudinally extending marginal edge portion formed along said second side edge of said license tag portion, said marginal edge portion having a series of longitudinally, regularly spaced holes formed therethrough for engagement with a pin feed tractor of a printer and for attachment of said license tag portion to an animal carcass, said marginal strip being nonremovable;

said record tag portion further having a longitudinally extending marginal strip along said second side edge of said record portion, said marginal strip having a series of longitudinally, regularly spaced holes formed therethrough for engagement with a pin feed tractor of a printer, said hunting license form further including a weakened line formed between said second side edge of said record portion and said marginal strip, whereby said marginal strip formed along said record portion is removable.

5,351,994

AUTOMATED PAYMENT SYSTEM AND METHOD

Robert E. Pollin, 19107 Grotto La., Germantown, Md. 20874

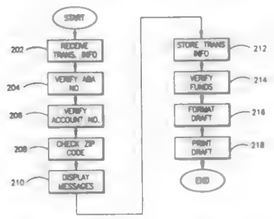
Filed Oct. 15, 1992, Ser. No. 959,930

Int. Cl.[5] G06F *15/30*

U.S. Cl. 283—117 26 Claims

MICROFICHE APPENDIX INCLUDED

(2 Microfiche, 178 Pages)



1. An automated apparatus for generating a plurality of authorized drafts on financial accounts belonging to a plurality of payors, the drafts payable to one of a fixed set of one or more payees, comprising:

input means for performing an electronic information input process wherein a system operator enters information specifying a new payor previously unknown to the system and a draft to be generated on an account of that payor, said information including a financial institution identification number, payor account identifier, and an amount to be drafted from said payor's account;

an institutional database comprising financial institution identification information;

institution verification means for receiving said financial institution identification number and comparing said financial institution identification number to entries in said institutional database, wherein when said financial institution is found in the institutional database, the institution verification means retrieves identifying information about the institution and verifies the accuracy of said financial institution identification number, and wherein when said financial institution is not found in the institutional database, an error indication is generated;

processing means connected to said input means for receiving said input information and processing said information to format a draft on said financial account payable to said payee, said draft format including identification of said financial account, identification of said financial institution holding said financial account, and an instruction to pay said amount to said payee including particular identification of said payee, and further including a signatory block for an authorizing signature other than said payor's signature; and

output means for transferring said draft formats to an external magnetic printing means connectable to said processing means for generating a paper copy of said drafts using magnetically encoded ink and printing fonts compatible with clearing house check processing equipment.

5,351,995

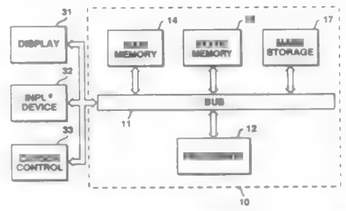
DOUBLE-SIDED, REVERSIBLE ELECTRONIC PAPER

Susan L. Booker, San Carlos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Jan. 29, 1992, Ser. No. 831,256

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—117 8 Claims



1. A computer implemented method of representing and manipulating a graphic image of a two dimensional sheet of paper displayed on a display device of a computer system, the computer system including a central processing unit, a memory, an input device allowing a computer user to input information and commands to the central processing unit, and a cursor control device for manipulating a cursor displayed on the display device, the cursor control device including a selection device for signaling an active state and an inactive state to the central processing unit, the method comprising the computer implemented steps of:

a) generating the graphic image of the two dimensional piece of paper, the graphic image of the two dimensional sheet of paper including a first side and a second side, the first side including first graphic information and the second side including second graphic information;

b) storing the graphic image of the two dimensional sheet of paper in the memory of the computer system;

c) retrieving the graphic image of the two dimensional sheet of paper from the memory;

d) displaying via the display device the first side of the graphic image of the two dimensional sheet of paper and hiding the second side;

e) determining whether the graphic image of the two dimensional sheet of paper may be flipped over in response to a flip command received from a one of the cursor control device and the input device;

f) if the graphic image of the two dimensional sheet of paper may be flipped over;

1) retrieving the graphic image of the two dimensional sheet of paper from the memory; and

2) displaying via the display device the second side of the graphic image of the two dimensional sheet of paper and hiding the first side.

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5,351,996

PLUMBING SYSTEM WITH CONNECTOR BETWEEN A FLEXIBLE PIPE CONDUIT LAID UNDERNEATH PLASTER AND A FITTING TO BE ARRANGED OUTSIDE THE PLASTER

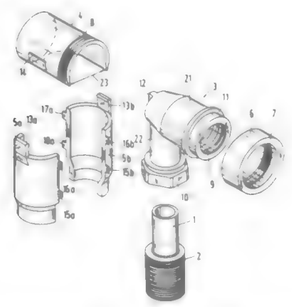
Kurt Martin, Sissach, Switzerland, assignor to R. Nussbaum AG., Olten, Switzerland

Filed Dec. 21, 1992, Ser. No. 994,366

Claims priority, application Switzerland, Mar. 13, 1992, 00847/92; European Pat. Off., Oct. 12, 1992, 92810773.9

Int. Cl.[5] F16L *35/00, 55/00*

U.S. Cl. 285—64 28 Claims



1. A connection assembly between at least one flexible pipe conduit (**1**, **2**) adapted to be installed underneath the surface of a wall and a fitting adapted to be positioned on top of the wall surface, comprising

a casing, a pipe elbow (**3**) removably insertable in the casing and affixable therein;

said casing (**4**, **5***a*, **5***b*) comprising a cylindrical casing head (**4**) with a front and a rear end, at least one casing neck (**5***a*, **5***b*) detachably connected to said casing head, and a locking ring detachably connected to said front of said casing head;

a pipe clamping ring and cooperating cap nut (**10**) connected on one end (**22**) of the pipe elbow (**3**) for connecting a pipe conduit (**1**) to said pipe elbow, said pipe elbow having a second end (**21**);

said cylindrical casing head having a bottom side with an opening (**23**) extending from the front to the rear end of said bottom side, said cylindrical casing head having a lower end adjacent the opening, said one end of said pipe elbow which carries said cap nut extending through said opening thereby ensuring a simple assembly of the pipe elbow (**3**) to an at least one pipe conduit (**1**); the front end of said cylindrical casing head being open towards the front, said locking ring detachably connected to said front end of said casing head engaging said second end (**21**) and retaining said pipe elbow in said casing head, whereby said pipe elbow (**3**) is removable from said casing head by detaching said locking ring from said front end, and said pipe elbow (**3**) removed from the casing and connected to the end of an at least one pipe conduit (**1**) is insertable in said casing head (**4**) from the front end;

said pipe elbow (**3**) connected in said casing head (**4**) by said locking ring having said cap nut (**10**) on said one end (**22**) projecting outwardly from said casing head (**4**) beyond said lower end, whereby an at least one pipe conduit (**1**) may be coupled to said one end (**22**) with said cap nut (**10**) without the pipe elbow (**3**) having to be removed from said casing head, thereby providing an alternate mode of connection;

and means for detachably connecting said at least one casing neck (**5***a*, **5***b*) at an intersecting angle to said cylindrical casing head (**4**) encompassing the cap nut (**10**) on said one end (**22**) of the pipe elbow (**3**) as well as a portion of an at least one pipe conduit (**1**) connected thereto.

5,351,997

PIPE COUPLING

Ian R. Webb, Gerrards Cross; William Taylor, Pinner, and Neil J. T. Taylor, Rickmansworth, all of United Kingdom, assignors to Taylor Kerr (Couplings) Ltd., London, United Kingdom

PCT No. PCT/GB91/01232, § 371 Date Jan. 26, 1993, § 102(e) Date Jan. 26, 1993, PCT Pub. No. WO92/02752, PCT Pub. Date Feb. 20, 1992

PCT Filed Jul. 23, 1991, Ser. No. 988,114

Claims priority, application United Kingdom, Jul. 27, 1990, 9016489.8; Jan. 25, 1991, 9101641.0

Int. Cl.[5] F16L *17/00*

U.S. Cl. 285—105 19 Claims



1. A pipe coupling for connecting together two pipes in a fluid-tight manner, the coupling comprising:

a tubular casing concentrically surrounding mutually opposing end portions of the pipes:

a tubular sealing sleeve disposed radially between the pipes and the tubular casing, the sealing sleeve having at least one circumferential slot disposed in a radially outer surface thereof;

tensioning means for tightening the tubular casing about the sealing sleeve; and

gripping ring means for preventing the pipes from being pushed apart axially when subjected to large internal pressures, the gripping ring means being positioned within the at least one slot and having a plurality of radially inwardly projecting gripping teeth whereby tightening the tensioning means causes the sealing sleeve to be pressed into sealing engagement with the pipe ends, and causes the gripping teeth to penetrate through a radially inner surface portion of the sealing sleeve which is disposed radially inwardly from an inner end of the at least one slot to engage a radially outer surface of one of the pipes.

5,351,998

COUPLING DEVICE

Gunter Behrens, Schloss-Holte, and Dieter Ehrke, Steinhagan, both of Fed. Rep. of Germany, assignors to Parker Ermeto GmbH, Bielefeld, Fed. Rep. of Germany

Filed Nov. 27, 1991, Ser. No. 800,677

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1990, 4038539

Int. Cl.[5] F16L *17/02*

U.S. Cl. 285—382.7 12 Claims

1. An improved coupling device for pressure-tight pipe connection of the type having:

a coupling body with an internal annular opening for receiving a pipe to be connected to the body, an annular conical face adjacent the annular opening, and a radially extending face adjacent the conical face;

a pipe holding and sealing means; and

a coupling nut which can receive the pipe to be connected to the body therethrough and which is threadably connectable to the body to make up and hold the pipe holding and sealing means with respect to the body and nut, the improvement comprising:

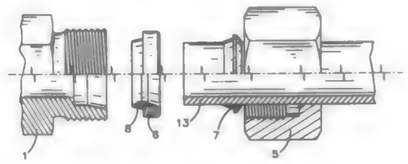
said pipe holding and sealing means comprising:

a holding ring having a cutting tooth portion for cutting into and holding a pipe received therethrough, a nut engaging face for engaging the nut, and a holding ring stop face which extends radially; and

a sealing ring having:

a metal sealing ring body;

a first radially extending stop face on said sealing ring body which, when the coupling is assembled and properly tightened to a pipe, abuts the radially extending face of the coupling body and stops the sealing ring with respect thereto;



an elastomer sealing means attached to the sealing ring body and extending adjacent the first radially extending stop face and which, when the coupling is assembled and properly tightened to a pipe is pressed between the annular conical face of the coupling body and pipe without cutting into the pipe so as to form a compression type seal therebetween;

a conically progressing sliding face on said sealing ring body for slidingly receiving the cutting tooth portion of the holding ring so that as the nut is tightened on the body the cutting tooth portion of the holding ring slides along the sliding face of the sealing ring and cuts into the pipe; and

a second radially extending stop face on said sealing ring body which, when the coupling is assembled and properly tightened to a pipe, abuts the radially extending holding ring stop face of the holding ring and stops the sealing ring with respect thereto.

5,351,999

PIPE COUPLING ARRANGEMENT

Takamasa Hattori, 218-315 Ogaito Oaza Kumatori-cho, Sennan-gun Osaka-fu, Japan

Filed Sep. 28, 1992, Ser. No. 952,078

Claims priority, application Japan, Nov. 19, 1991, 3-094785[U]

Int. Cl.[5] F16L *19/025*

U.S. Cl. 285—404 18 Claims

1. A pipe coupling arrangement fitted on at least one of a pair of pipes to connect said pipes with one another, said coupling arrangement comprising:

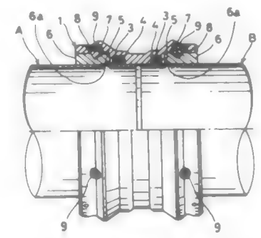
a coupling body having an inner periphery including a first portion and second portions, said first portion formed so as to contactingly engage with connecting ends of each of the pair of pipes to be connected therein;

a protruded portion formed on an outer periphery of each of said pipes;

a pair of integrally formed annular sleeves each having an inner wall therein and being engageable with said protruded portion of a corresponding pipe, each of said sleeves being provided in a space between the outer periphery of said corresponding pipe and one of said second portions of the inner periphery of said coupling body;

a threaded hole for each of said sleeves being inwardly and slantingly defined in said coupling body closer to one end of said coupling body;

a cut-away face being defined on an outer periphery of each of said sleeves, said cut-away face having a tilt angle perpendicular to an axis of said threaded hole; and



a fastening member for each of said sleeves being screwed into said threaded hole such that a tip portion of said fastening member abuts against said cut-away face, thereby arresting a slipping off of a corresponding sleeve from said coupling body.

5,352,000

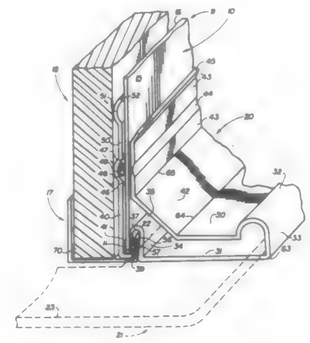
FLANGE CONNECTOR FOR AIR DUCT WITH DETENT ADJACENT SEALING MATERIAL

Robert Issagholian-Havai, Tujunga, and George J. Ohandjanian, Los Angeles, both of Calif., assignors to Mez Industries, Inc., Scottsdale, Ariz.

Filed Jan. 25, 1993, Ser. No. 8,685

Int. Cl.[5] F16L *23/00*

U.S. Cl. 285—405 4 Claims



1. A flange connection (**20**) for an air duct, said duct including at least one wall (**10**) having a leading edge (**11**), said flange connection comprising a generally L-shaped profile slidably fitted onto said duct wall and including

(a) a first stay member (**43**) having an inner and outer surface and including an elongate linear detent (**44**) formed in said outer surface;

(b) a second stay member spaced apart from and opposing said first stay member (**43**) and including

(i) a first portion (**50**),

(ii) a second portion (**40**),

(iii) a third portion (**48**) intermediate said first and second portions, and

(iv) sealant material (**49**) intermediate said first and second stay members; and,

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(c) a third stay member (39) attached to and outwardly extending from said second stay member;

said wall (10) being slidably inserted between said first and second stay members such that said leading edge slides sequentially over

said first portion,

said third portion and said sealant material, and

said second portion,

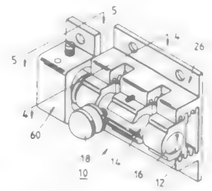
and such that said leading edge (11) is positioned adjacent said third stay member, said detent (44) being opposed and adjacent to said sealant material and defining a visible line along which fasteners can be inserted through said detent and said first stay member, said wall (10), said sealant material, and said second stay member to sealingly secure said wall (10) in said flange connection (20) intermediate said detent and said sealant material.

5,352,001

DOOR BOLT

Jin-Ren Shieh, No. 178, Shih Chia Rd., Taichung, Taiwan

Filed Oct. 15, 1993, Ser. No. 136,694
Int. Cl.[5] E05C *5/02*
U.S. Cl. 292—57 6 Claims



1. A door bolt for a door con prising:

a slide bar seat 12 provided with an axial hole 16 along a longitudinal axis of said slide bar seat;

a slide bar slidably disposed in said axial hole;

a bolt button fastened to said slide bar;

said slide bar seat being engaged in an outer seat;

a slide bar retainer seat horizontally with} spaced from an end of said outer seat and having a retaining hole to receive said slide bar;

wherein said outer seat is provided along a longitudinal axis thereof with a recessed portion having two open ends and two side walls opposite to each other and defining said recessed portion, said two side walls being provided respectively and symmetrically with a plurality of grooves parallel to the longitudinal axis of said recessed portion; and

wherein said slide bar seat is provided with two wings disposed along said longitudinal axis thereof on a side surface thereof such that said two wings extend respectively, outwardly from two edges of said side surface, said two wings being slidably insertable into any two opposite grooves of said plurality of grooves of said outer seat.

5,352,002

DEVICE FOR CLEARANCE-FREE MOUNTING OF PANES OF GLASS

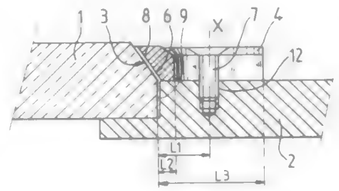
Patrick Vouillon, Villebon sur Yvette; Claude Bedoya, Montigny le Bretonneux, and Philippe Gaultier, Le Chesnay, all of France, assignors to Sextant Avionique, Meudon la Foret, France

Filed Oct. 13, 1993, Ser. No. 135,348
Claims priority, application France, Nov. 12, 1992, 92 13799
Int. Cl.[5] E05C *1/06*
U.S. Cl. 292—155 9 Claims

1. A device for clearance-free mounting of a pane of glass onto a rigid support by means of at least one block applying on an edge of said pane and having:

a bearing face applied on said support,

a through passage along an axis perpendicular to said support, in which can freely pass a fastening screw intended to be screwed into said support, said passage penetrating said block having an oblong section in a plane parallel to said support, extending along a longitudinal axis perpendicular to said edge, and



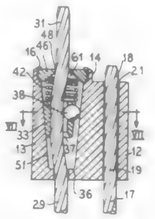
an oblique face extending from said bearing face, which applies on said edge on at least a point belonging to said longitudinal axis, this face sliding and self-adjusting against the edge of said pane of glass during screwing of said screw.

5,352,003

CABLE LOCKING AND SEALING DEVICE

Jerry A. Bystry, Orland, Ind., assignor to Brammall, Inc., Angola, Ind.

Filed Oct. 5, 1993, Ser. No. 131,600
Int. Cl.[5] B65D *27/30*
U.S. Cl. 292—323 1 Claim



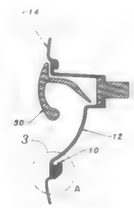
1. A cable lock and seal device comprising, a body member formed with first and second openings, a cable with a first end fixedly mounted in said first opening, said second opening comprising a tapered opening, a truncated cone-shaped member mounted in said second opening and formed with a central opening through which the second end of said cable can be inserted, a single transverse opening formed in said truncated cone-shaped member, a single ball mounted in said single transverse opening, and engageable with the side wall of said tapered second opening of said body member, and a coil spring biasing means engageable with said truncated cone-shaped member to bias it in a said direction relative to said body member such that said single ball engages said second end of said cable so as to lock it to said body member between said single ball and the surface of said truncated cone-shaped member within said central opening of said truncated cone-shaped member, wherein a washer formed with a tapered central opening is mounted to said body member over said second tapered opening and said coil spring biasing means is mounted between said washer and said truncated cone-shaped member, and wherein said first end of said cable is staked to said body member within said first opening.

5,352,004

GASKET RIB LOCK FOR DOOR HANDLE ASSEMBLY

Ralph G. Nedbal, St. Charles, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Aug. 26, 1993, Ser. No. 112,125
Int. Cl.[5] E05B *1/00*
U.S. Cl. 292—347 24 Claims



1. An arrangement for mounting a gasket upon a vehicle door handle assembly, comprising:

a vehicle door handle housing including a body portion, and a peripheral portion surrounding said body portion, said peripheral portion of said handle housing including a groove formed within a central portion of said peripheral portion by being interposed between laterally spaced projecting rib portions; and

an annular gasket including a projecting rib member which is formed upon a central portion of said annular gasket between laterally spaced shoulder portions of said annular gasket, said projecting rib member being dimensioned and contoured so as to be tightly engaged within said groove of said handle housing while said shoulder portions of said annular gasket overlie and engage said laterally spaced projecting rib portions of said handle housing peripheral portion so as to securely mount and support said annular gasket to and upon said handle housing.

5,352,005

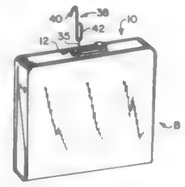
Patent Not Issued For This Number

5,352,006

HANGING ASSEMBLY FOR FOLDING GARMENT BAGS

Morton Ocuin, 2736 Independence Ave., Bronx, N.Y. 10463

Filed Nov. 25, 1992, Ser. No. 981,554
Int. Cl.[5] A45C *13/26*
U.S. Cl. 294—142 12 Claims



1. A hanging assembly for securement to an end of a folding garment bag, to facilitate hanging the bag over a door or closet pole, said assembly comprising:

a base plate securable to the end of the garment bag forming the top of the bag when the bag is extended for hanging;

a chain guide on said base plate;

a spring anchor on said base plate at a point spaced from said chain guide;

an elongate extensible coil spring having two ends, one of which is coupled to said spring anchor;

an elongate chain having two ends, one of which is coupled to the other end of said spring;

a hook-handle member secured to the other end of said chain, said hook-handle member having a hook portion dimensioned to fit over the top of a door or closet pole, and a handle portion dimensioned to accommodate the hand of a user;

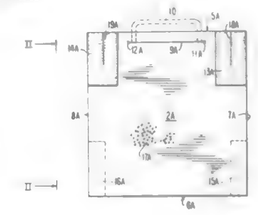
and a hook retaining pocket on said base plate for receiving and enclosing the hook portion of said hook-handle member when said spring is not extended.

5,352,007

CONFORMAL ARTICLE CARRIER

Jerome Kirsch, Dix Hills, N.Y., assignor to K-5 Industries Inc., Dix Hills, N.Y.

Filed Jun. 25, 1992, Ser. No. 904,465
Int. Cl.[5] A45F *5/10*
U.S. Cl. 294—149 1 Claim



1. A carrying device for an elongated article, said device comprising

a sheet of substantially flexible material having a pair of spaced opposite faces, first and second spaced opposite side edges and third and fourth spaced opposite side edges, said side edges bordering said opposite faces;

a first slit formed through said sheet in proximity with said first edge for removably supporting said sheet on a supporting object;

fastening means on one of said faces of said sheet adjacent said first edge and each of said third and fourth edges and on the other of said faces of said sheet adjacent said second edge and each of said third and fourth edges for fastening said sheet to itself with an article rolled up therein and with said second edge in proximity with said first edge whereby said sheet supports and carries said article so that said article is removably supported and carried by said supporting object via said sheet, said fastening means comprising a first strip of pressure fastening material on one of said faces of said sheet extending along said third edge from said first edge, a second strip of pressure fastening material on said one of said faces of said sheet extending along said fourth edge from said first edge, a third strip of pressure fastening material on the other of said faces of said sheet extending along said third edge from said second edge and a fourth strip of pressure fastening material on said other of said faces of said sheet extending along said fourth edge from said second edge, said first and third strips being releasably affixed to each other when said article is rolled up in said sheet and at least part of said first and third strips overlap and are pressed together and said second and fourth strips being releasably affixed to each other when said article is rolled up in said sheet and at least part of said second and fourth strips overlap and are pressed together; and

a second slit in said sheet through said first strip of pressure fastening material spaced from and substantially parallel to said third edge and a third slit in said sheet through said second strip of pressure fastening material spaced from and substantially parallel to said fourth edge.

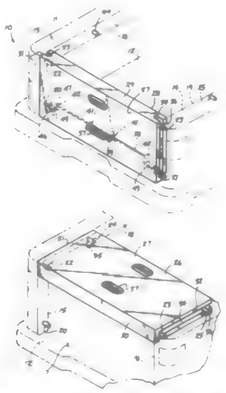
VOL 1167 ISS 1 OC 4 1994 UMI

5,352,008

TURBULENCE-REDUCING TRUCK TAILGATE APPARATUS

John M. Deavir, HCR 33, Box 181-C, West Tremont, Me. 04690

Filed Jul. 30, 1993, Ser. No. 99,475
Int. Cl.[5] B62D *35/00*
U.S. Cl. 296—50 10 Claims



1. A turbulence-reducing truck tailgate apparatus arranged in combination with a truck cargo bed having a truck bed floor, a truck bed first side wall spaced from a truck bed second side wall, and

an entrance opening oriented between said first side wall and said second side wall, and

a tailgate of sufficient size to cover or close said entrance opening, and

latch means whereby said tailgate may be secured to said truck bed in a first position and a second position, and whereby said tailgate may be partially released so as to rest in a third position, said first position being a vertical orientation covering said entrance opening of said truck bed, said second position being a horizontal orientation substantially forward of said first position, said third position being a horizontal orientation substantially rearward of said first position and in the same plane as said truck bed floor, and

including means for maintaining proper alignment of said tailgate plate in relation to said truck bed while said tailgate plate is in transit between said first position and said second position, and

a truck bed, having a truck bed floor, a truck bed first side wall spaced from a truck bed second side wall, with said truck bed first side wall and said truck second side wall including a first vertical panel spaced from, parallel to, and coextensive with a second vertical panel orthogonally intersecting said truck bed floor, and

a first horizontal panel and a second horizontal panel arranged in a facing coextensive relationship mounted to the respective truck bed first side wall and truck bed second side wall, and

an entrance opening oriented between said first vertical panel and said second vertical panel, and

a first pin and a second pin fixedly and orthogonally mounted to the respective first vertical panel and second vertical panel in adjacency to said truck bed floor, wherein said first pin and said second pin are coaxially aligned relative to one another, with a third pin and a fourth pin mounted to the respective first vertical panel and second vertical panel, with said third pin and said fourth pin coaxially aligned relative to one another spaced from the respective first pin and second pin, with said third pin and said fourth pin positioned in adjacency relative to said first horizontal panel and said second horizontal panel respectively, with a fifth pin mounted to said first horizontal panel spaced from said third pin, and a sixth pin fixedly and orthogonally mounted to said second horizontal panel spaced from said fourth pin, wherein said fifth pin and said sixth pin are coaxially aligned relative to one another, and

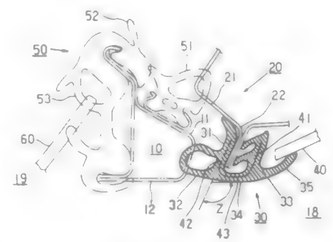
a tailgate plate having a front wall spaced from a rear wall, a top wall spaced from a bottom wall, and a plate first side wall spaced from a plate second side wall, with a first L-shaped slot directed into said tailgate plate into said plate first side wall, and a second L-shaped slot directed into said plate into said plate second side wall, with said first L-shaped slot and said second L-shaped slot originating in communication with said rear wall and extending to said top wall, with a first connecting slot extending from said rear wall intersecting said first L-shaped slot in adjacency to said top wall, and a second connecting slot extending from said rear wall in adjacency to said top wall intersecting said second L-shaped slot, with said first L-shaped slot arranged slidably receive said first pin, said third pin, and said fifth pin, with said second L-shaped slot arranged to receive slidably said second pin, said fourth pin, and said sixth pin permitting displacement of said tailgate plate from a first position mounted between said first vertical panel and said second vertical panel permitting displacement of said tailgate plate to a second position extending between said first horizontal panel and said second horizontal panel and to a third position located in the same plane as said truck bed floor.

5,352,009

DOOR SEAL DEVICE

Norio Takeuchi, Hiroshima, Japan, assignor to Nishikawa Rubber Co., Ltd., Hiroshima, Japan

Filed Mar. 23, 1993, Ser. No. 35,451
Claims priority, application Japan, Mar. 30, 1992, 4-105774
Int. Cl.[5] B60J *10/08*
U.S. Cl. 296—146.9 5 Claims



1. A weather strip for sealing a gap between an opening edge of a car body and a frame of a car door, the device comprising:

an upwardly opening U-shaped retainer portion frictionally engaged with a flange protruding downwardly from the opening edge;

a hollow seal portion integrally secured to an exterior side of said retainer portion and elastically contacting an interior side of the frame when the car door is closed; and

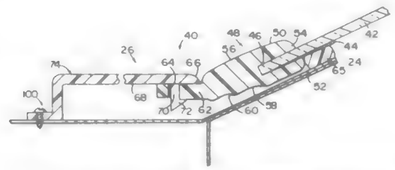
said retainer portion and said hollow seal portion cooperating to define a continuous bottom surface oriented in a plane extending substantially parallel with a lower surface of the frame, an outer leg of said retainer portion extending at an acute angle of no more than 80° with respect to said plane, and a lowermost portion of said bottom surface being substantially flush with the lower surface of the frame.

5,352,010

POST ATTACHED STRUCTURES FOR WINDOW ASSEMBLIES

James L. Brodie, 7355 Yorkshire, Hudsonville, Mich. 49426, and Timothy A. Davis, 1362 Chevelle, Jenison, Mich. 49428

Filed Mar. 10, 1992, Ser. No. 849,293
Int. Cl.[5] B62D *25/10*
U.S. Cl. 296—192 36 Claims



1. A multi-part panel assembly for a vehicle having at least one portion detachable from the vehicle, comprising in combination:

a first panel having a peripheral edge and adapted to close an opening in the vehicle;

a second panel detachable from said first panel and adapted to be adjacent said first panel and overlie at least a portion of the vehicle;

an attachment member secured on said peripheral edge of said first panel;

securing means on said attachment member and second panel for detachably mounting said second panel to said first panel; and

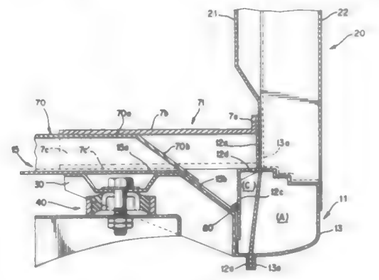
coupling means spaced from said securing means for detachably coupling said second panel to the vehicle.

5,352,011

BODY STRUCTURE OF AN AUTOMOTIVE VEHICLE

Kenzo Kihara; Kousuke Murakami, both of Aki; Atsushi Nishiyama; Masayuki Takamitsu, both of Hiroshima; Yoshio Fujii, Higashihiroshima, and Ryuji Matsumura, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Nov. 12, 1992, Ser. No. 974,431
Claims priority, application Japan, Nov. 11, 1991, 3-323651; Dec. 6, 1991, 3-349709
Int. Cl.[5] B62D *25/20, 25/02*
U.S. Cl. 296—203 10 Claims



1. A body structure of a vehicle body comprising:

a chassis frame for forming a chassis of the vehicle body;

a pair of side sills disposed on opposite sides of said chassis frame and extending in a lengthwise direction of the vehicle body, each of said side sills including an inner side sill member and an outer side sill member connected so as to form a closed cross section therebetween;

a floor panel formed with an upper surface and a downwardly bent side extension of said upper surface and secured to each said inner side sill member;

a cross beam extending in a transverse direction of the vehicle body and secured to said floor panel so as to form a closed cross section therebetween, said cross beam having an end; said ends of said cross beam being secured to one said side extension; and

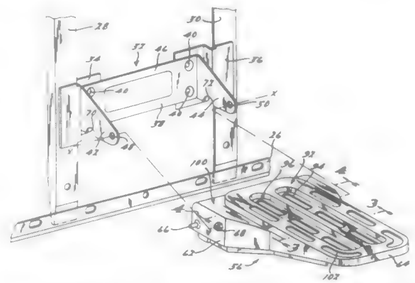
a connecting member disposed between an upper surface of said cross beam and said inner side sill member for rigidly connecting said cross beam and said inner side sill member.

5,352,012

VEHICLE ARMREST WITH ENHANCED LOAD SUPPORT

Dipak R. Chowdhury, Northville, and Thomas A. Coseo, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 4, 1992, Ser. No. 941,008
Int. Cl.[5] A47C *7/54*
U.S. Cl. 297—113 4 Claims



1. In combination with an automotive vehicle seat, an elongated armrest mounted on the seat proximate one end of the armrest for pivotal movement with respect to the seat between a generally vertical stowed position and a generally horizontal operative position for supporting substantially downwardly vertically imposed loads, the armrest comprising:

an armature defining an elongated housing having one end corresponding to the armrest one end and a free end remote therefrom;

means defining an upper load supporting wall on the armature, the upper load supporting wall having a plurality of elongated depressions formed therein, symmetrically arrayed about the longitudinal center of the armature, each extending from a position proximate the one end of the armature to a position proximate the free end of the armature opposite the one end, a plurality of slots being formed through the load supporting wall in the elongated depressions; and

means defining a peripherally continuous sidewall depending downwardly from the load supporting wall to define a cup-like configuration for the armature.

5,352,013

COMBINATION TABLE AND LEG REST FOR RECLINING CHAIR

Michael F. Rusyniak, 9 Donald Pl., Liverpool, N.Y. 13090

Continuation-in-part of Ser. No. 850,924, Mar. 13, 1992, Pat. No. 5,160,183. This application Sep. 11, 1992, Ser. No. 943,519
The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.
Int. Cl.[5] A47C *7/52, 7/68*
U.S. Cl. 297—119 14 Claims

1. In a reclining chair having two arms and a leg rest mov-

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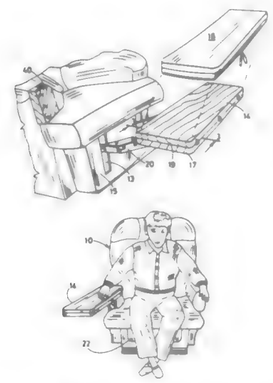
able from a retracted position to an extended position, a combination table and leg rest which comprises:

a base member mounted on extendable chair frame members foe movement from a retracted to an extended position;

a table assembly detachably mounted on said base member;

means for detachably mounting said table assembly on said base member;

support means for firmly supporting said table assembly on one arm of said reclining chair, said support means further comprising:



a pin affixed to the underside of one side of said table assembly; and

a receptacle fixed in one arm of said reclining chair, said receptacle being sized to receive therein said pin when said table assembly is being used as a table,

so that said table assembly may be selectively removed from said base member and placed on said support means to form a generally horizontal table surface for the use of a person seated in the reclining chair, in said table assembly is adapted to being pivoted in a horizontal plane to allow a user ingress and egress to said chair.

5,352,014

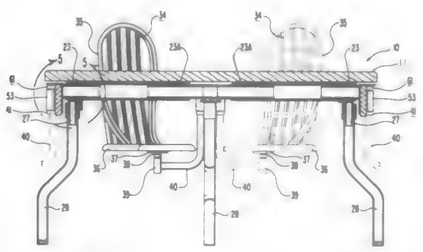
TABLE CONSTRUCTION

Carling D. Allen, 581 N. 640 West, Orem, Utah 84057

Filed Dec. 16, 1993, Ser. No. 167,149

Int. Cl.[5] A47B *83/02*

U.S. Cl. 297—142 **10 Claims**



1. A construction for supporting a table-type top including, in combination: a hub having plural horizontal extensions; spokes having outer extremities and telescopingly cooperating with and engaging said hub at said plural extensions, respectively; means for securing said spokes to said extensions of said hub against relative slidable movement therebetween, said extensions being provided with elements for securing an external table-type top thereto; respective legs depending from, secured to, and supporting said spokes proximate said outer extremities; plural seat constructions respectively positioned on said outer extremities of said spokes and above said legs, and plural means for respectively positively mounting respective ones of said seat constructions to respective ones of said spokes above and proximate respective ones of said legs.

5,352,015

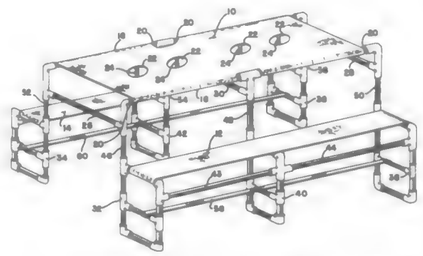
DEMOUNTABLE TABLE AND SEAT STRUCTURE

Michael C. Morgan, 6 S. 130 Country Dr., Naperville, Ill. 60540

Filed Apr. 17, 1992, Ser. No. 870,332

Int. Cl.[5] A47B *83/02*

U.S. Cl. 297—157 **13 Claims**



1. A demountable table and seat assembly comprising:

a plurality of seats support structures, each having a table top supporting structure and at least one seat spreader engaging coupling;

a plurality of removable seat spreader members, each having coupling ends with each of said ends for removably engaging an associated one of said seat spreader engaging couplings, said plurality of removable seat spreader members holding said plurality of seat support structures spaced apart;

a table top assembly having a plurality of coupling devices slidably removably engaging associated ones of said table top supporting structures;

at least one fabric seat mounted to associated ones of said seat support structures and held in tension in a first direction; and

a fabric table top having predetermined length dimensions and width dimensions and mounted to said table top assembly and held in tension in a second direction substantially transverse to said first direction,

whereby said plurality of seat support structures and said table top assembly are at least partially held in place by and provide said tension in said first direction and said second direction by said at least one fabric seat and said fabric table top.

5,352,016

ADJUSTABLE BICYCLE SEAT

Richard S. Hobson, 13760 Oxnard St. Apt. #305, Van Nuys, Calif. 91401

Filed Nov. 26, 1991, Ser. No. 798,596

Int. Cl.[5] B62J *1/00*

U.S. Cl. 297—201 **33 Claims**

1. An adjustable bicycle seat, comprising:

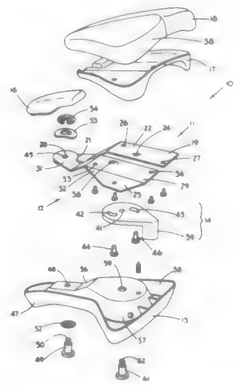
a base integral with a lower horn portion;

a first support platform positioned above and supported by the base for support of a rider's right buttock;

a second support platform positioned above and supported by the base and positioned adjacent to the first rider support platform for support of a rider's left buttock; and

means for symmetrically moving the first support platform and second support platform with respect to the base;

wherein the means for symmetrically moving said support platforms comprises:



a pivotable adjustment plate positioned between the base and platforms wherein pivoting of the adjustment plate symmetrically moves said support platforms in any of rider selected positions.

5,352,017

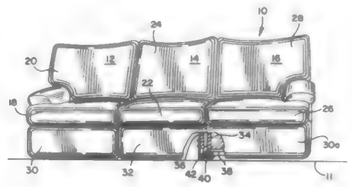
MODULAR FURNITURE CONNECTING APPARATUS

Lloyd G. Berning, Hazel Green, Wis., assignor to Flexsteel Industries, Inc., Dubuque, Iowa

Continuation of Ser. No. 916,882, Jul. 20, 1992, abandoned. This application Mar. 18, 1994, Ser. No. 210,729

Int. Cl.[5] A47C *15/00*

U.S. Cl. 297—248 **14 Claims**



1. A connecting apparatus for joining furniture modules for securement adjacent one another on a surface comprising:

a substantially vertically aligned and longitudinally extending first plate mountable to the bottom of and near one side of a first furniture module;

a substantially vertically aligned, substantially horizontally and longitudinally extending second plate for extending parallel to said surface and being mountable to the bottom of and near one side of a second furniture module;

a first pin projecting outwardly from said first plate toward said second plate; and

a vertically disposed and vertically upwardly opening first slot formed in said second plate for receiving said first pin in connected relationship, thereby limiting relative movement between said modules to movement substantially along their vertical axes;

said second plate having a substantially horizontally and longitudinally extending rim merging into said first slot for guiding said pin to said slot.

5,352,018

LUMBAR SUPPORT FOR SEAT

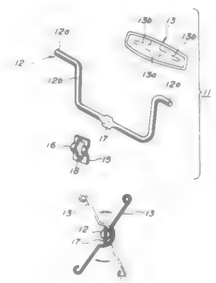
Shinji Arakawa; Harufumi Terasawa; Masahiro Tachibana, and Isamu Chinomi, all of Ayase, Japan, assignors to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Jun. 9, 1993, Ser. No. 73,562

Claims priority, application Japan, Jun. 9, 1992, 4-174770; Jun. 9, 1992, 4-174771

Int. Cl.[5] A47C *3/00*

U.S. Cl. 297—284.4 **8 Claims**



1. A support for a seat comprising:

a support shaft rotatably installed at its opposite ends on a seat back frame of said seat and having a cranked portion;

a support panel;

retainer means for rotatably holding said support panel on said support shaft; and

means for limiting rotation of said support panel relative to said support shaft;

said support shaft having at said cranked portion an integral protrusion which protrudes radially outward in two opposed directions and is abuttingly engageable at opposite ends thereof with said support panel for preventing farther rotation of said support panel relative to said support shaft;

said support panel including a first vertically arcuate portion at which it is abuttingly engageable with said opposite ends of said protrusion of said support shaft;

said limiting means being constituted by said protrusion of said support shaft and said first arcuate portion of said support panel;

said retainer means including a retainer having an opening for allowing one of said opposite ends of said protrusion to protrude outward therethrough when the other of said opposite ends of said protrusion is abuttingly engaged with said first arcuate portion of said support panel.

5,352,019

MOTOR VEHICLE SEAT MOVABLE IN THE LONGITUDINAL DIRECTION IN THE TIPPED STATE

Heinz Bauer; Burckhard Becker, and Ernst-Reinhard Frohnhaus, all of Solingen, Fed. Rep. of Germany, assignors to Firma C. Rob. Hammerstein GmbH, Fed. Rep. of Germany

Filed Jun. 18, 1993, Ser. No. 79,485

Int. Cl.[5] A47C *1/02*

U.S. Cl. 297—341 **20 Claims**

1. A motor vehicle seat comprising: a) a longitudinal guide having a locking mechanism **(40)** that can be locked in an engaged position, said locking mechanism **(40)** having a release device for unlocking said locking mechanism **(40)** from said engaged position: b) a backrest that can be tipped forward connected to the locking mechanism **(40)** of the longitudinal guide through the release device for unlocking the locking mechanism **(40)** when the backrest is tipped forward, and for allowing manual movement of the motor vehicle seat in a longitudinal direction, and c) a memory device for finding the

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previously engaged position of the locking mechanism (40) following a manual longitudinal movement, wherein:

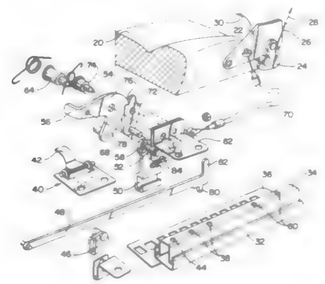
the longitudinal guide further comprises, a floor track (32), a seat track (34) that is guided by said floor track (32), and to which the locking mechanism (40) is connected, a notched bar (36) having notches, and arranged on the floor track (32);

the memory device has a drag lever (48) fixed at the seat track (34) in a longitudinally movable and swivelable manner, and a memory pin (80) that engaged the notches of the notch bar (36);

the release device including an unlocking lever (54) having an unlocking arm (56) that acts in conjunction with the locking mechanism (40), the unlocking lever (54) being swivelably supported around a bearing axle (64) connected to the seat track (34), and connected to the backrest in a movement dependent manner, characterized by:

the drag lever (48) being held in a guiding part (50) in a longitudinally movable manner, and swivelably attached to the unlocking lever (54) at a distance from the bearing shaft (64), and having a counterstop (82); and

a blocking lever 72 which is i) swivelably supported around a lever axle (74) which is connected to a seat track (34) at a distance from the bearing axle (64), said blocking lever (72), ii) having a recess (76) for holding the unlocking lever (54) in a blocking position, and said blocking lever (72), iii) featuring a stop (78) for the counterstop (82), for having the stop (78) and the counterstop (82) meet, when the blocking lever (72) swivels out of the blocking position and the unlocking lever (54) is released.

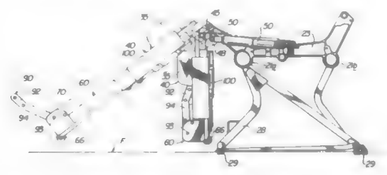


5,352,020

HYDRAULIC EXTENDABLE LEGREST

Douglas L. Wade, Gainesville; Wade Walterscheid, Lindsay, and Jim Shepherd, Gainesville, all of Tex., assignors to Weber Aircraft, Inc., Gainesville, Tex.

Filed Jul. 10, 1992, Ser. No. 911,874
Int. Cl.[5] A47C *7/50*
U.S. Cl. 297—423.26 **20 Claims**



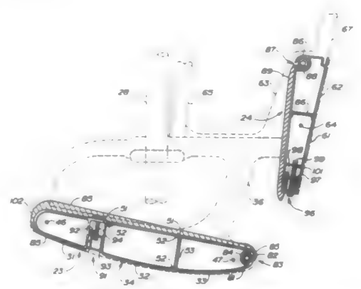
1. An extendable legrest movably secured to a seat frame having armrests adjacent opposite sides of a seat portion supported by the frame comprising: a legrest assembly; means pivotally securing said legrest assembly to the frame; actuator means; means securing said actuator means to the frame adjacent the armrest and adjacent an edge of the seat portion such that the actuator means does not project into space below the seat portion; means operably connecting said actuator means and said legrest assembly; and control means on one of the armrests and connected to actuate said actuator means to pivot said legrest assembly relative to the frame.

5,352,021

SEAT ASSEMBLY FOR CHAIRLIFT

Jan K. Kunczynski, Glenbrook, Nev., assignor to Zygmunt Alexander Kunczynski and Alexander Jan Kunczynski, both of Carson City, Nev.

Filed Oct. 25, 1991, Ser. No. 782,583
Int. Cl.[5] A47C *7/02*
U.S. Cl. 297—452.1 **18 Claims**



1. A seat assembly for a chairlift comprising:

a transversely-extending hollow body having a length dimension and a width dimension sufficient to support a passenger thereon;

a pair of side assemblies with one side assembly mounted in engagement with each end of said hollow body, said side assemblies include arm rest means and means for securement of said seat assembly to a hanger arm; and

elongated securement means extending transversely through said hollow body and coupled to both said side assemblies, said securement means urging said side assemblies toward each other and against said hollow body to secure said side assemblies to said hollow body as a unit with said side assemblies applying sufficient compressive force to said hollow body to support a passenger thereon without substantial deflection of said hollow body.

5,352,022

CONTROLLED DEFLECTION FRONT LIP FOR SEATING

Glenn A. Knoblock, Kentwood, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

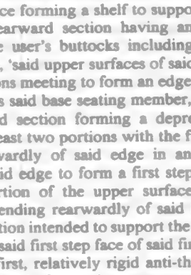
Continuation of Ser. No. 797,717, Nov. 25, 1991, which is a continuation of Ser. No. 738,808, Jul. 31, 1991, abandoned, which is a continuation of Ser. No. 850,528, Apr. 10, 1986, Pat. No. 5,050,931. This application May 26, 1993, Ser. No. 66,575
Int. Cl.[5] A47C *1/024*
U.S. Cl. 297—452.15 **11 Claims**

1. A chair comprising:

a base;

a back support pivotally connected with said base for moving between an upright position and a reclined position, said back support having a terminal end away from said base; and

a one piece support shell for receiving and supporting a user, said shell having a seat portion, having a back portion, and having a compressible flex area extending between said seat portion and said back portion, said back portion being connected to said back support and movable with said back support between said upright position and said reclined position, said seat portion being connected to said base, said back portion and said seat portion being spaced apart from one another in said upright position, said back portion and said seat portion being spaced relatively nearer to one another in said reclined position whereby compression forces develop in said shell and said compressible flex area compresses and narrows when said back portion moves from said upright position to said reclined position.

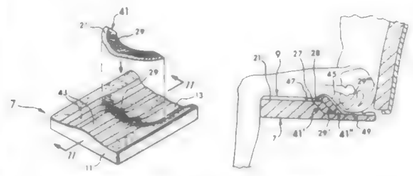


5,352,023

SEATING AND BACK SYSTEMS FOR A WHEELCHAIR

Eric C. Jay, Boulder, and John C. Dinsmoor, III, Westminister, both of Colo., assignors to Jay Medical, Ltd., Boulder, Colo.

Filed Sep. 16, 1992, Ser. No. 945,733
Int. Cl.[5] A47C *27/14, 27/18, 7/02*
U.S. Cl. 297—452.21 **54 Claims**



1. An adjustable, anti-thrust seating system for properly fitting and supporting a user's thighs and buttocks, said seating system including:

a base seating member having forward and rearward sections adjacent one another, said forward section having an upper surface forming a shelf to support the user's thighs and said rearward section having an upper surface to support the user's buttocks including the user's ischial tuberosities, 'said upper surfaces of said forward and rearward sections meeting to form an edge extending substantially across said base seating member, said upper surface of rearward section forming a depressed, seating well having at least two portions with the first portion extending downwardly of said edge in an area immediately adjacent said edge to form a first step face and with the second portion of the upper surface of said rearward section extending rearwardly of said first step face, said second portion intended to support the user's ischial tuberosities and said first step face of said first portion intended to form a first, relatively rigid anti-thrust barrier to prevent undesirable forward movement of the user's ischial tuberosities, and

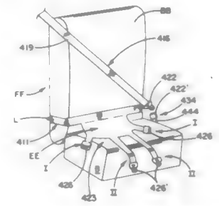
said seating system further including substantial means for extending said first step face substantially rearwardly to form a second, relatively rigid anti-thrust barrier, said second anti-thrust barrier being positioned rearwardly of said first anti-thrust barrier wherein said extending means includes separate step means with a second step face and means for positioning said separate step means immediately adjacent and rearwardly of said first step face with the second step face of said separate step means located rearwardly of said first step face to form said second anti-thrust barrier, said second anti-thrust barrier being positioned rearwardly of said first anti-thrust barrier wherein if the first anti-thrust barrier formed by the first step face is undesirably positioned too far forwardly for the user, said separate step means and the second step face thereof can be positioned to effectively extend said first step face and the first anti-thrust barrier formed thereby rearwardly to the desired position of said second step face and the second anti-thrust barrier formed thereby to properly fit and support the user, said first and second step faces being made of relatively rigid material to form said respective anti-thrust barriers to substantially prevent any forward movement of the user's ischial tuberosities, and said base seating member extending along a central axis and said first and second step faces extending laterally across the central axis of said base seating member for a distance of at least about 3 to 8 inches, said distance being at least equal to the distance between the user's ischial tuberosities.

5,352,024

VEHICLE SAFETY RESTRAINT

Ethel Grene, 816-D Skokie Rd., Wilmette, Ill. 60091

Continuation-in-part of Ser. No. 667,816, Mar. 12, 1991, Pat. No. 5,215,354, which is a continuation-in-part of Ser. No. 656,288, Feb. 15, 1991, Pat. No. 5,156,436. This application May 27, 1993, Ser. No. 69,588
Int. Cl.[5] B60R *22/12*
U.S. Cl. 297—485 **7 Claims**



1. A vehicle safety restraint for avoiding trauma to a fetus or the uterus region of a woman seated in a motor vehicle, said restraint comprising flexible first restraint members releasably encompassing the upper torso region of the seated woman above the gravid uterus region, said first restrain members including a first member and a second member, said first member being securely coupled to the vehicle and extending from above the shoulder of the seated woman diagonally across her chest, said second member being securely coupled to the vehicle and extending in an area adjacent the woman, said first member being releasably secured to said second member by complementary lock components; flexible second restraint members releasably encompassing each thigh region of the seated woman in a groin area below the gravid uterus region, said second restraint members including a pliable apron-like member for at least partially subtending the seated woman, said apron-like member including attachment members with releasable lock components for removably securing said second restraint members to a vehicle seat, said second restraint members further including a pair of first flexible restraint members connected to and projecting laterally outwardly from first peripheral segments of said apron-like member and a pair of second flexible restraint members connected to and projecting laterally outwardly from second peripheral segments of said apron-like member, said first and second pairs of flexible restraint members being provided with complemental lock components whereby the lock components of corresponding re-

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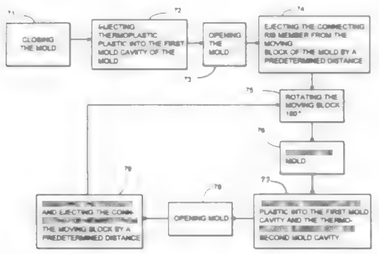
strain members of said pairs are adapted to interlock with one another and individually encompass each thigh of the seated woman in a groin area to prevent said second restraint from moving from the thigh region of the seated woman to her gravid uterus region, said second restraint members being adjustable independently of said first restraint members; said first and second restraint members being disposed when engaging a seated woman so as not to impinge upon the gravid uterus region of the woman, thereby curtailing injury to the fetus or uterus region of the seated woman in the event of sudden deceleration.

5,352,025

METHOD FOR MANUFACTURING A HAIRBRUSH AND THE PRODUCT THEREOF

Jason Huang, No. 311, Sec. 1, Nan-Chien Rd., La-Chu Hsiang, Tao-Yuan Hsien, Taiwan

Filed Mar. 22, 1993, Ser. No. 34,903
Int. Cl.[5] A46D *3/00*
U.S. Cl. 300—21 **2 Claims**



1. A method for manufacturing a hairbrush which has a plurality of bristles and a base into which said bristles are set, said method comprising the steps of:

(1) closing a mold that includes a moving block and a fixed block, said moving block having a first bristle-forming cavity and a second bristle-forming cavity which is configured to be similar to said first bristle-forming cavity, said fixed block having a rib-forming cavity and a base-forming cavity, said first bristle-forming cavity being registerable with said rib-forming cavity to confine cooperatively a first mold cavity, and said second bristle-forming cavity being registerable with said base-forming cavity to confine cooperatively a second mold cavity;

(2) injecting a molten thermoplastic plastic into said first mold cavity to form a plurality of bristles, each of which has an end connected to a connecting rib member;

(3) opening said mold;

(4) ejecting said connecting rib member from the bottom of said first bristle-forming cavity by a predetermined distance;

(5) rotating said moving block 180 degrees relative to said fixed block in order to allow said second bristle-forming cavity to register with said rib-forming cavity and to allow said first bristle-forming cavity to register with said base-forming cavity;

(6) closing said mold in order to allow said second bristle-forming cavity and said rib-forming cavity to confine cooperatively a third mold cavity which is configured to be similar to said first mold cavity and to allow said first bristle-forming cavity and said base-forming cavity to confine cooperatively a fourth mold cavity which is configured to be similar to said second mold cavity, said connecting rib member ejected from said first bristle-forming cavity being received in said base-forming cavity;

(7) injecting simultaneously a molten thermoplastic plastic into said third mold cavity and injecting a molten thermoplastic rubber into said fourth mold cavity in order to form a rubber base in which said connecting rib member is buried in and is adhered to;

(8) opening said mold and removing a first product, which is formed in said fourth mold cavity, from said mold, and ejecting said connecting rib member from the bottom of said second bristle-forming cavity by said predetermined distance;

(9) rotating said moving block 180 degree relative to said fixed block in order to allow said first and second bristle-forming cavities to register respectively with said rib-forming and base-forming cavities;

(10) closing said mold and injecting said molten thermoplastic plastic into said first mold cavity and injecting said molten thermoplastic rubber into said second mold cavity;

(11) opening said mold and removing a second product, which is formed in said second mold cavity, from said mold, and ejecting said connecting rib member from the bottom of said first bristle-forming cavity by said predetermined distance; and

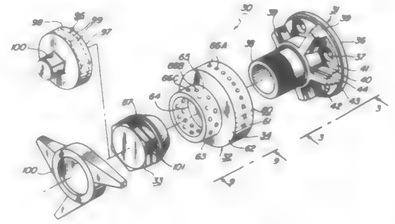
(12) repeating the steps (5) to (11).

5,352,026

BAR DRIVE WHEEL AND ADAPTER

Steven J. Snook, 3752 Helena Cir., La Verne, Calif. 91750-3238

Filed Oct. 21, 1993, Ser. No. 139,095
Int. Cl.[5] B60B *27/00*
U.S. Cl. 301—105.1 **21 Claims**



1. An adapter providing the capability for installing knock-off type wheels on a disk brake hub or brake drum of a vehicle utilizing wheels of the type that are attached by means of a plurality of lug bolts or lug nuts in a circular pattern, said adapter comprising;

a. a base plate having through its thickness dimension a plurality of mounting holes adapted to register with lug bolt holes or studs of a wheel disk brake hub or brake drum,

b. an elongated hollow tube protruding axially outwards from said base plate, said tube having a bore extending through said base plate and having an inner or rear opening of sufficient size to fit over the wheel bearing cap of said disk brake hub or brake drum, said tube having on the exterior surface of an outer axial portion thereof helical threads adapted to be engaged by an internally threaded cup-shaped hub nut, and

c. a plurality of engagement bars protruding axially outwards from said base plate and disposed radially outwards from said tube, said engagement bars adapted to be insertably received into registered grooves formed in the inner transverse wall surface of a wheel.

5,352,027

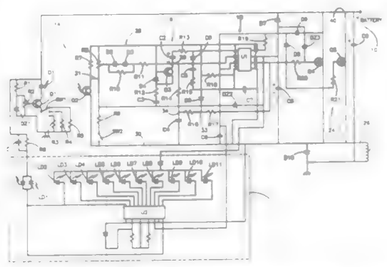
Patent Not Issued For This Number

5,352,028

CONTROLLER FOR ELECTRIC BRAKING SYSTEMS

Larry Eccleston, Marshall, Mich., assignor to Tekonsha Engineering Company, Tekonsha, Mich.

Continuation-in-part of Ser. No. 563,505, Aug. 7, 1990, Pat. No. 5,149,176, which is a continuation-in-part of Ser. No. 390,617, Aug. 7, 1989, Pat. No. 5,050,937. This application Dec. 13, 1991, Ser. No. 807,115
Int. Cl.[5] B60T *13/74*
U.S. Cl. 303—20 **13 Claims**



1. An electronic controller for electrically actuated brakes of the type having means for producing control signals which are proportionally representative of the extent of vehicle braking desired, said means for producing control signals including a means for generating an input signal, said input signal generating means including an inertial sensor having an input and an output, and said electronic controller further having a brake actuation controller coupled to said means for producing control signals for receiving said control signals therefrom, said brake actuation controller responsive to said control signals for energizing and actuating said vehicle brakes with a current signal proportionally representative of the magnitude of said control signals, the improvement comprising a first control means coupled to said input of said inertial sensor for adjusting the magnitude of a current applied to said input of said inertial sensor, said first control means accessible to the vehicle operator during normal operation of the vehicle whereby the vehicle operator adjusts said first current control means to adjust the current supplied to said inertial sensor to compensate for different trailer weights, and a second control means coupled to said input of said inertial sensor, said second control means accessible to the vehicle operator during normal operation of the vehicle whereby the vehicle operator adjusts the second control means to adjust the rate at which the current is applied to the towed vehicle brakes.

5,352,029

POSITIVELY DRIVEN ELASTOMERIC TRACKED WORK VEHICLE

James A. Nagorcka, Tarrington, Australia, assignor to Warane Pty. Ltd., Hamilton, Australia

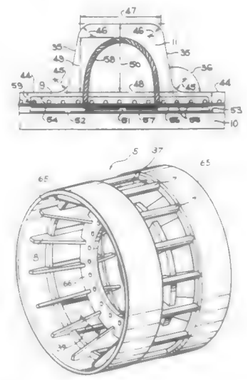
PCT No. PCT/AU90/00542, § 371 Date Jun. 10, 1992, § 102(e) Date Jun. 10, 1992, PCT Pub. No. WO91/07306, PCT Pub. Date May 30, 1991
PCT Filed Nov. 12, 1990, Ser. No. 854,593
Claims priority, application Australia, Nov. 13, 1989, PJ7365
Int. Cl.[5] B62D *55/088*
U.S. Cl. 305—39 **29 Claims**

1. A drive assembly for a track laying vehicle having a vehicle body, a longitudinal axis extending between forward and rearward ends of the vehicle, and at least one track mounted for movement on the vehicle body, the drive assembly comprising:

at least first and second rotatable wheels relatively spaced in the direction of said longitudinal axis with at least one of said wheels being a drive wheel; and

a continuous elastomeric track comprising a main body having a ground engaging surface, an opposite wheel engaging surface and a plurality of power transmission elements integrally molded with said main body and projecting from said wheel engaging surface;

said drive wheel comprising a hub member, a peripheral edge on said hub member, a plurality of circumferentially spaced rim supports connected to said hub member, each of said rim supports extending from said hub member and comprising at least one plate-like body having at least one laterally extending side portion, a radially outer support portion and a radially inner portion, at least one pair of circumferential rim sections operatively connected to said



outer support portions of said rim supports in laterally spaced apart relation with respect to each other to form a gap therebetween, open side zones between said rim sections and said side portions of adjacent rim supports, and a plurality of circumferentially spaced drive members extending between said rim sections and separating said gap into a plurality of circumferentially spaced radially outer zones each being adapted to receive therein at least one of said power transmission elements on said continuous track so that said power transmission elements are engageable with said drive members with said radially outer zones communicating with said open side zones.

5,352,030

ANTI-TIP DEVICE

Wolfgang Derle, 232 Myers Road, Cambridge, Onario, Canada N1R 7M4 , and Ronald G. Schenk, 564 Greenbrook Drive, Kitchener, Ontario, Canada N2M 4K6

Filed Sep. 11, 1992, Ser. No. 943,480
Int. Cl.[5] F05C *7/06*
U.S. Cl. 312—221 **12 Claims**

1. An interlock and anti-rebound mechanism for a multi-drawer file cabinet having a vertical series of drawers, each of which is mounted on a pair of progressive drawer slides comprising at least two channel slides, slidably mounted to one another for individual opening and closing movement of the drawer, said interlock and anti-rebound mechanism comprising:

a resilient spring base plate fixedly mounted within a first channel slide;

said resilient spring base plate having at least one aperture in a base portion and including a raised portion at each end;

each of said raised portions including an elongate rectangular slit therethrough;

each of said slits being adapted to receive a curvilinear end portion of a vertically aligned locking bar when in operation;

an activator cam pivotally mounted on said spring base plate

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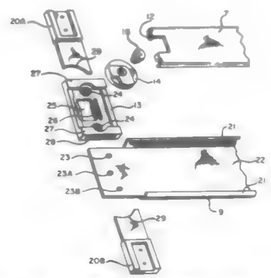
within said first channel slide and adapted to move two locking bars outwardly from and inwardly toward said resilient spring base plate, said activator cam comprising at least three different axially-spaced configurations, including an upper L-shaped configuration;

said mechanism further including:

a pair of right angled projections on one end of a second channel slide and integral therewith; said projections extending inwardly, at substantially right angles, towards a web of said first channel slide;

said projections adapted to rotate said L-shaped portion of said activator cam from a drawer-open/locked position to a drawer-closed/unlocked position;

wherein, in operation, when one of said drawers is pulled outwardly from said cabinet to an open position, said projections interact with said L-shaped portion of said



cam and rotate said cam 90 degrees such that a second different axially-spaced configuration of said cam urges an upper and lower locking bar outwardly from said spring base plate, thereby exerting pressure on activator cams and locking bars associated with each other of said drawers in said cabinet, thus preventing the remainder of said cams from rotating and said other drawers from opening;

and when said drawer is retracted into said cabinet, said cam is rotated in the opposite direction 90 degrees to a drawer-closed/unlocked position permitting said locking bars to move inwardly toward said resilient spring base plate thus permitting rotation of any one of said cams associated with said other drawers;

all components of said mechanism functioning within a space defined by outer surfaces of said first and second channel slides.

5,352,031

STORAGE DRAWER UNIT FOR UNFINISHED STAIRWAY

Hugh I. Nahrgang, 1749 Rockhurst La., Cincinnati, Ohio 45255

Filed Jul. 19, 1993, Ser. No. 94,257
Int. Cl.[5] A47B *83/00*
U.S. Cl. 312—235.1 **9 Claims**



1. A storage drawer unit for installation under at least one step of an unfinished stairway having an inclined front face, comprising:

a drawer adapted to fit under said step, said drawer having a front, a back, a bottom, and a pair of opposite sides to retain articles placed therein, said drawer front being adjacent said inclined front face when said drawer is in a closed position; and

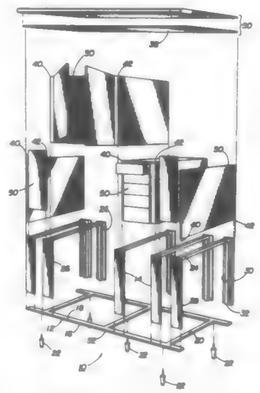
support means mounted under said step for slidably supporting said drawer such that said drawer is readily extensible from said inclined front face by hand thereby opening for placement or retrieval of articles therein and is retractable to said closed position.

5,352,032

ADJUSTABLE CABINET SYSTEM

Andrew J. Cisternino, Marietta, Ga., assignor to Ask Research & Development, Inc., Norcross, Ga.

Filed Oct. 13, 1992, Ser. No. 959,780
Int. Cl.[5] A47B *47/00*
U.S. Cl. 312—265.3 **13 Claims**



1. A system for assembling cabinet components in adjustable relationship to each other, comprising:

a. a base member comprising

i. at least two spaced-apart, parallel longitudinally extending members, each having at least one surface for bearing a portion of the weight of the frame member secured thereon; and

ii. means for rigidly interconnecting the two longitudinally extending members;

b. a plurality of frame members comprising

i. an elongated top portion with opposed ends and which is parallel to the base member; and

ii. first and second leg portions depending downwardly from each end of the top portion and terminating in bottom surfaces, a portion of each bottom surface being complimentary to a respective bearing surface on each longitudinally extending member of the base member;

c. means on the frame members and the base member for securing the frame members in an upright position at selected intervals along the length of the base member; and

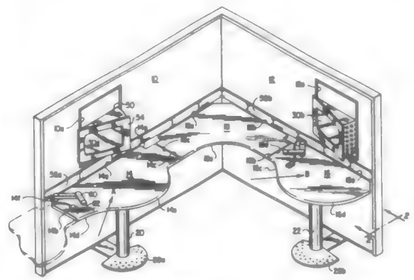
d. means on the frame members for receiving between adjacent pairs thereof a cabinet component, wherein the cabinet component comprises a counter top having a lower surface and an opposed upper surface and wherein the top portion of each frame member engages the lower surface of the counter top when the counter top and the frame member are in assembled relationship.

5,352,033

OPERATOR WORK STATION HAVING A MONITOR SUPPORT ASSEMBLY

David Gresham, Columbus, Ohio; Michael J. Kurinski, Georgetown, Tex.; Matthew D. Hern, Columbus, Ohio; Piero Molteni, Di Modrone, and Arch Franco L. Grampella, Milan, both of Italy, assignors to Fisher-Rosemount Systems, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 859,021, Mar. 27, 1992, Pat. No. 5,265,952. This application Oct. 5, 1992, Ser. No. 956,748
Int. Cl.[5] A47B *51/00*
U.S. Cl. 312—312 **37 Claims**



1. A work station comprising:

a wall defining a work area;

a work surface module disposed adjacent said wall and defining one or more continuous work surfaces along said wall;

an opening formed through said wall in a predetermined relationship with said work surface module;

means for housing a video monitor; and

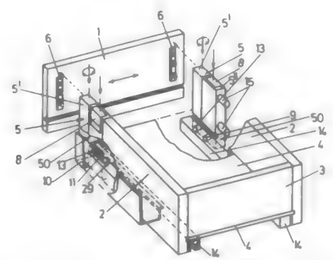
a support assembly disposed within said opening for mounting said housing means within said opening, said support assembly providing said monitor with at least two degrees of freedom.

5,352,034

HOLDING APPARATUS FOR REMOVABLY CONNECTING A DRAWER SIDE WALL TO A PULL-OUT RAIL

Wolfgang Held, Hard, and Maximilian Mai, Feldkirch-Tisis, both of Austria, assignors to Julius Blum Gesellschaft m.b.H, Höchst, Austria

Division of Ser. No. 644,733, Jan. 18, 1991, Pat. No. 5,222,791. This application Feb. 3, 1993, Ser. No. 15,363
Claims priority, application Austria, Jan. 22, 1990, 124/90
Int. Cl.[5] A47B *95/00*
U.S. Cl. 312—334.27 **2 Claims**



1. A holding apparatus for use on each of opposite sides of a drawer for removably connecting the drawer to a pull-out rail of a pull-out guide fitting on the respective side of the drawer, wherein the pull-out rail and drawer are relatively movable in opposite directions between a connected position and a released position, said apparatus comprising:

a holding member to be mounted on the drawer for movement in opposite directions toward and away from the pull-out rail between a locking position, whereat said holding member engages the pull-out rail and prevents movement of the pull-out rail from the connected position thereof, and an unlocked position, whereat said holding member is disengaged from the pull-out rail to enable movement to the released position thereof; and

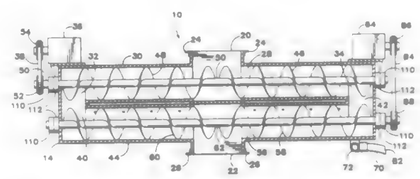
an unlocking member to be mounted on the drawer for movement in opposite directions away from and toward said holding member between a first position, whereat said holding member is maintained in said locking position thereof, and a second position, whereat said unlocking member moves said holding member to said unlocked position thereof.

5,352,035

CONCRETE MIXING SYSTEM WITH CEMENT/WATER PREMIXER

Donald J. Macaulay, Sherwood, Oreg., and David S. Lofts, Vancouver, Wash., assignors to Hydromix, Inc., Tualatin, Oreg.

Filed Mar. 23, 1993, Ser. No. 36,192
Int. Cl.[5] B28C *5/14, 5/34, 7/04;* **B01F** *7/08*
U.S. Cl. 366—15 **8 Claims**



1. An apparatus for mixing cementitious material, liquid, and aggregate material together, including:

(a) a cementitious material measuring device having a material outlet;

(b) a screw conveyor having a conveyor screw assembly enclosed within a tubular housing assembly, said tubular housing assembly having a conveyor inlet located in-line with said material outlet to receive a quantity of said cementitious material from said measuring device, said conveyor screw assembly being capable of moving said cementitious material from said conveyor inlet toward a conveyor outlet in said tubular housing assembly located in-line with both said material outlet and said conveyor inlet;

(c) liquid introduction means located in said tubular housing assembly between said conveyor inlet and said conveyor outlet for depositing a quantity of a liquid into said cementitious material as said cementitious material is being moved from said conveyor inlet toward said conveyor outlet so that said liquid and said cementitious material are agitated and mixed together by movement of said conveyor screw assembly, forming a flowable slurry as said conveyor screw assembly moves said cementitious material and said liquid toward said conveyor outlet;

(d) final product mixing chamber means in receiving relationship to said conveyor outlet for receiving a quantity of said flowable slurry emanating from said conveyor outlet and for mixing said slurry with a measured quantity of aggregate material; and

(e) a selectively openable and closable bypass gate interposed in-line between said conveyor inlet and said con-

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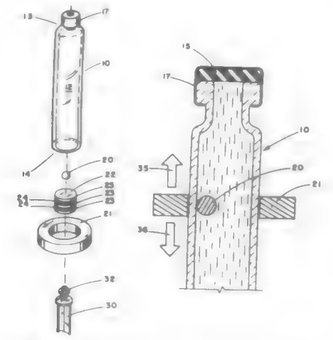
veyor outlet to permit said cementitious material to flow from said measuring device into said final product mixing chamber means without being moved by said conveyor screw assembly.

5,352,036

METHOD FOR MIXING AND DISPENSING A LIQUID PHARMACEUTICAL WITH A MISCIBLE COMPONENT

Terry M. Haber, Lake Forest; Clark B. Foster, Laguna Niguel, and William H. Smedley, Lake Elsinore, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Continuation of Ser. No. 950,105, Sep. 23, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 91,722
Int. Cl.[5] B01F *13/08*
U.S. Cl. 366—130 14 Claims



1. A method of mixing and dispensing a liquid pharmaceutical having a liquid and a miscible component comprising the following steps:

providing a pharmaceutical container containing the liquid pharmaceutical with miscible component, the container having a first end, a second end and a wall structure defining an inner volume, the first end including a needle-pierceable member, the container including a magnetic mixing member within the inner volume;

positioning a magnetic field generating element external to the container;

moving the magnetic field generating element such that the magnetic mixing member is translated along the container to admix the miscible component within the liquid pharmaceutical;

controlling the relative velocity between the container and the magnetic field generating element such that the magnetic mixing member will create enough turbulence to thoroughly admix the miscible component within the liquid pharmaceutical without mechanically damaging the miscible component;

accessing the inner volume of the container through the needle-pierceable member by inserting the tip of a needle through the needle-pierceable member; and

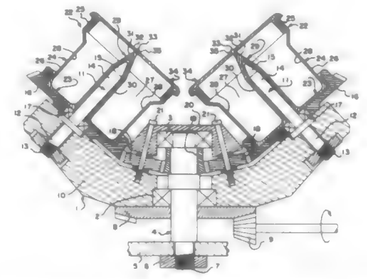
withdrawing a volume of the now mixed liquid pharmaceutical with miscible component from the container through the needle.

5,352,037

MIXING BOWL FOR A PLANETARY CENTRIFUGAL MIXER, AND MIXER RECEIVING SUCH BOWLS

Jean-Luc Jouvin, 42, avenue du Général-Leclerc, Le Mans, F-72000, France

Filed Apr. 19, 1993, Ser. No. 39,386
Claims priority, application France, Oct. 18, 1990, 90 12904
Int. Cl.[5] B01F *9/00*
U.S. Cl. 366—219 13 Claims



1. A mixing bowl for a planetary centrifugal mixer, comprising:

a bottom;

a lateral wall extending from peripheral portions of the bottom and having an overall shape which is substantially cylindrical and an inner surface which, along at least lower portions of the lateral wall, includes a plurality of regularly spaced zones wherein two of the regularly spaced zones have a first radius of curvature and are separated by another two of the regularly spaced zones having a second radius of curvature greater than the first radius of curvature; and

a central guide extending from central portions of the bottom and including an outer surface having a shape wherein radial distances between the inner surface of the lateral wall and the outer surface of the central guide are substantially the same.

5,352,038

METHOD OF AND MEASURING ARRANGEMENT FOR CONTACTLESS ON-LINE MEASUREMENT

Hugo Schmidt, Giessen-Luetzellinden; Manfred Ruckszio, Taunusstein; Raimund Haas, Frankfurt am Main, and Walter Mackert, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 876,418, Apr. 30, 1992, abandoned. This application Jan. 24, 1994, Ser. No. 185,168
Claims priority, application Fed. Rep. of Germany, May 6, 1991, 4114671.
Int. Cl.[5] G01N *25/00, 21/55;* G01B *11/30*
U.S. Cl. 374—45 11 Claims

1. A method of performing a contactless on-line measurement of the surface roughness of a material formed of a metal or metal alloy, said method comprising the steps of:

(A) exposing said material to a spectrum of obliquely incident infrared radiation, including a predetermined wavelength range, generated by an infrared radiator;

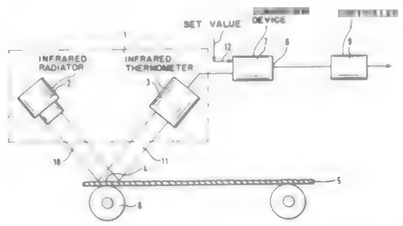
(B) measuring the temperature of infrared radiation reflected from a measuring area located on the surface of said material by integrating an intensity of said reflected infrared radiation over predetermined wavelengths within said predetermined wavelength range, the intensity of said infrared radiation depending on the surface roughness of said material; and

(C) determining the surface roughness of said material by

comparing the temperature measured in said step (B) with a calibrating curve, said calibrating curve representing the temperature of infrared radiation reflected from material surfaces having different, known degrees of roughness, said infrared radiation being generated and applied as in step (A).

10. A measuring arrangement for performing a contactless on-line measurement of the surface roughness of a material, said measuring arrangement comprising:

(A) means for directing a spectrum of infrared rays, including a predetermined wavelength range, onto a surface of



said material within an outlined measuring area in a path which is directed obliquely onto said surface;

(B) means for receiving and measuring infrared rays reflected from said surface of said material, the intensity of said reflected infrared rays depending on the surface roughness of said material, the intensity of said reflected infrared rays being integrated over predetermined wavelengths within said predetermined wavelength range to determine a temperature of said reflected infrared rays; and

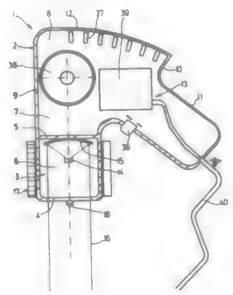
(C) means, responsive to output values of said means (B), for determining the surface roughness of said material.

5,352,039

REMOTE TEMPERATURE AND/OR TEMPERATURE DIFFERENCE MEASURING DEVICE

Jean-Pierre Barral, Seyssins; Bernard Million, Saint-Martin-d'Hres, and Francois Colomb, Grenoble, all of France, assignors to Ortomedic, Corenc, France

PCT No. PCT/FR91/00648, § 371 Date Mar. 17, 1993, § 102(e) Date Mar. 17, 1993, PCT Pub. No. WO92/02792, PCT Pub. Date Feb. 20, 1992
PCT Filed Aug. 6, 1991, Ser. No. 975,566
Claims priority, application France, Aug. 6, 1990, 90 10029
Int. Cl.[5] G01J *5/52, 5/08*
U.S. Cl. 374—121 22 Claims



1. Device for measuring temperature and/or a temperature difference of a surface, comprising:

a housing;

a measuring circuit supported by said housing, said measuring circuit including

a heat flux sensor with output,

a memory circuit in communication with the output of said heat flux sensor,

an input unit adapted to activate said memory circuit so as to memorize an output signal from the output of said heat flux sensor while the heat flux sensor senses a first explored surface area, and the memorized output signal constituting a reference signal,

a comparator having a first input connected to said memory circuit and a second input connected to the output of said heat flux sensor, and said comparator having an output for delivering a signal corresponding to any difference between the reference signal and a subsequent output signal of said heat flux sensor, and

a signaling means connected with the output of said comparator for providing a signal corresponding to any difference between the reference signal and said subsequent output signal; and

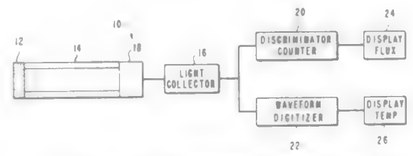
marking means for designating an area on said surface for sensing by said heat flux sensor, and said marking means being supported by said housing.

5,352,040

DUAL NEUTRON FLUX/TEMPERATURE MEASUREMENT SENSOR

John T. Mihalczo, Oak Ridge; Marc L. Simpson, Knoxville, and Stephanie A. McElhaney, Oak Ridge, all of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Continuation of Ser. No. 933,372, Aug. 24, 1992, abandoned. This application Apr. 8, 1994, Ser. No. 225,363
Int. Cl.[5] G01J *5/00*
U.S. Cl. 374—131 13 Claims



1. A dual neutron flux/temperature measurement sensor comprising:

a fiber optic having first and second ends;

a coating disposed on the first end of the fiber optic and having a first neutron-sensitive phosphor constituent and a second activated thermophosphor constituent;

neutrons absorbed by the first constituent producing charged particles which cause scintillations to radiate from the second constituent;

light detector means, coupled to the second end of the fiber optic, for converting the scintillations into an electrical signal; and

means, coupled to the light detector means, for correlating a count of the scintillations into a value indicative of neutron flux and at least one characteristic of the scintillations into a value indicative of temperature.

5,352,041

SECURITY BAG FOR VALUABLE ARTICLES

Murray G. Fullerton, and Michael R. Clacy, both of Redmond, Wash., assignors to Trigon Packaging Corporation, Redmond, Wash.

Filed Jan. 26, 1993, Ser. No. 11,477
Int. Cl.[5] B65D *30/122, 33/16, 33/34*
U.S. Cl. 383—5 19 Claims

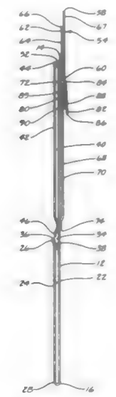
1. A security bag for storing and transporting valuable articles, said bag comprising:

a first sheet of plastic having a first length and a first width,

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opposing marginal first and second edges and opposing first and second ends extending between the marginal first and second edges;

a second sheet of plastic having a width substantially equal to said first width and a length less than said first length, the second sheet connected along a lower end to the second end and connected along marginal edges to said first and second marginal edges to provide a lower pouch open at an upper end between the first sheet and the second sheet;



a third sheet of plastic having a width substantially equal to said first width and a length approximately equal to or less than the difference between the length of the second sheet and said first length, the third sheet connected along a lower end to the first sheet above the lower pouch and connected along marginal edges to the first and second marginal edges to provide an upper pouch open at the first end between the first sheet and the second sheet;

an adhesive for sealing the opening of the lower pouch, said adhesive positioned within the opening of the lower pouch; and

a closure for sealing the opening of the upper pouch.

5,352,042

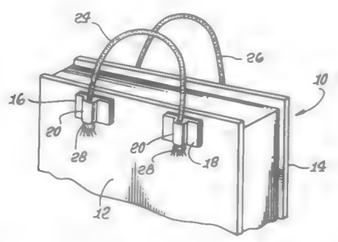
HANDLES MEANS FOR PACKAGES

Ron Roy, 102 E. Prospect, Burbank, Calif. 91502

Continuation-in-part of Ser. No. 956,672, Oct. 5, 1992, Pat. No. 5,232,287. This application Jul. 1, 1993, Ser. No. 87,505

Int. Cl.[5] B65D *33/12*

U.S. Cl. 383—6 **6 Claims**



1. A packet which enables the user to attach a pair of carrying handles to a package and containing a pair of flexible cords and four plastic members each having a flat surface coated with an adhesive and provided with an adherent protective strippable plastic film thereover covering said surface, and an opposed surface, the opposed surface of each of said plastic members being provided with a raised portion having an opening therethrough for receiving an end of one of said flexible cords.

5,352,043

SELF-SUPPORTING BAG, A METHOD OF PRODUCTION THEREOF AND AN APPARATUS FOR PRODUCTION THEREOF

Tadao Takagaki; Shizuo Hirose, and Ikuo Tonouchi, all of Tokyo, Japan, assignors to Sumitomo Bakelite Co., Limited, Tokyo, Japan

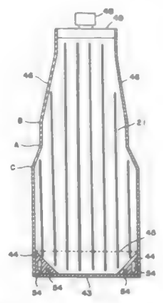
PCT No. PCT/JP92/00700, § 371 Date Jan. 29, 1993, § 102(e) Date Jan. 29, 1993, PCT Pub. No. WO92/21581, PCT Pub. Date Dec. 10, 1992

PCT Filed May 28, 1992, Ser. No. 965,287

Claims priority, application Japan, May 29, 1991, 3-071298[U]; Jul. 3, 1991, 3-051203[U]; Nov. 1, 1991, 3-313271; Apr. 7, 1992, 4-114117

Int. Cl.[5] B65D *30/16, 30/20*

U.S. Cl. 383—104 **30 Claims**



1. A self-supporting bag having a trunk part and a bottom part, at least the trunk part having a trunk wall made of multilayered plastic film, the self-supporting bag comprising:

an inner layer of a heat adherable plastic material being laminated with an outer layer of a different material to form the multilayered plastic film of the trunk wall;

the trunk wall having convex and concave portions and having linear ribs formed in a surface thereof to stiffen the bag.

5,352,044

PLASTIC BEARING FOR STABILIZERS IN MOTOR VEHICLES

Ernst-Günter Jördens, and Helmut Kammel, both of Damme, Fed. Rep. of Germany, assignors to Lemforder Metallwaren AG, Lemforde, Fed. Rep. of Germany

Filed Aug. 3, 1993, Ser. No. 101,398

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1993, 4312958

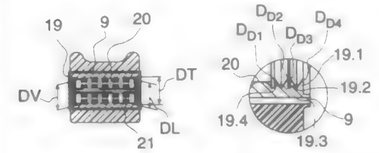
Int. Cl.[5] F16C *33/74, 27/06*

U.S. Cl. 384—140 **5 Claims**

1. Plastic bearing made of elastically deformable material for stabilizers in motor vehicles, the stabilizer having a stabilizer diameter, comprising:

a one-part bearing include a slot on one side in an axial plane for opening the bearing for mounting;

said one-part bearing having an inner contact surface that is slidingly movable on a jacket surface of the stabilizer, said inner contact surface being delimited by sealing lip rings at axial ends, said inner contact surface defining pockets filled with a lubricant, said pockets being provided between radially extending beads and longitudinal ribs extending axially between said radially extending beads, said plastic bearing being mounted in a housing with an inner pretension, said plastic bearing having a ratio of said stabilizer diameter to a diameter of said radial beads which is inversely proportional to a ratio of said stabilizer diameter to a diameter of said longitudinal ribs, said sealing lip rings



being provided adjacent to each other at said axial ends of said contact surface and including an inner sealing lip ring and outer sealing lip ring and having at least one additional sealing lip ring positioned between said inner and outer sealing lip rings, said additional sealing ring having an internal diameter which is larger than an internal diameter of said inner sealing lip ring

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5,352,045

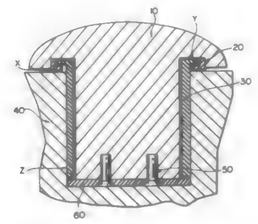
MEANS OF MOUNTING A REVOLVING CUTTING ELEMENT

Ronald Bennett, Nyon, Switzerland; Lewis J. Isaacs, Littleton, and Kenneth Jump, Arvada, both of Colo., assignors to The Integrated Bearing Co. Ltd., Tortola, British Virgin Isls.

Filed Jan. 6, 1993, Ser. No. 1,317

Int. Cl.[5] E21B *10/22*

U.S. Cl. 384—96 **12 Claims**



1. A means of mounting a revolving cutting element on a rotary drill bit body by means of a spindle, the spindle having a longitudinal axis, an end and a base, the longitudinal axis of the spindle being the axis of rotation of the cutting element, comprising a bearing element formed by a hollow body element, into which is set the spindle, the bearing element having a shape matching that of the spindle, a plate attached to the end of the spindle and having a portion extended beyond the periphery of the end of the spindle, the end of the bearing element close to the base of the spindle is made with a flange projecting outwards and providing means for coupling with a retaining ring.

5,352,046

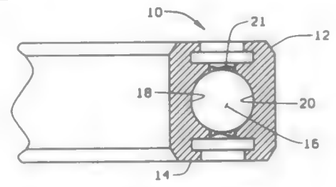
CORROSION-RESISTANT ZINC-NICKEL PLATED BEARING RACES

Peter C. Ward, Peterborough, N.H., assignor to MPB Corporation, Keene, N.H.

Continuation-in-part of Ser. No. 710,656, Jun. 5, 1991. This application Jul. 31, 1992, Ser. No. 923,371

Int. Cl.[5] F16C *33/62*

U.S. Cl. 384—492 **20 Claims**



1. A rolling element bearing comprising:

a first race having a first raceway;

a second race having a second raceway, said first and second races being positioned so that said first and second raceways form a channel;

a first zinc alloy plated layer on said first race along the first raceway thereof;

a second zinc alloy plated layer on said second race along the second raceway thereof; and

a plurality of rolling elements disposed within said channel formed by said first and second raceways.

5,352,047

SNAP-TAB ROLLER BEARING CASE

Kirk L. Ingall, Clinton, Tenn., and John R. Marjancik, Brownsburg, Ind., assignors to Rexnord Corporation, Milwaukee, Wis.

Filed Jul. 13, 1992, Ser. No. 912,548

Int. Cl.[5] F16C *33/46, 33/49*

U.S. Cl. 384—572 **7 Claims**



1. An anti-friction bearing assembly comprising:

an annular inner bearing race member;

an annular outer bearing race member positioned coaxially around the inner bearing race member, the inner and outer bearing race members defining therebetween an annular raceway space, the raceway space having opposite annular end openings;

a plurality of bearing elements positioned within the raceway space; and

means for supporting the plurality of bearing elements in spaced apart relation in the raceway space, the means for supporting including a bearing cage having a cage member which is axially insertable into the raceway space through one of the annular end openings, the cage member including an annular body portion, a plurality of axially extending webs spaced circumferentially around the

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annular body portion, the webs defining therebetween pockets for housing the bearing elements, each of the webs including an inner circumferential side, an outer circumferential side, and a free end portion, and the cage member further including flexible means for retaining the cage member within the raceway space, the flexible means including first and second opposite tab members extending radially and axially from each web, the first tab members extending from the inner circumferential side of respective webs, and the second tab members extending from the outer circumferential side of respective webs, each said tab member being flexible between a first position in which a space is defined between the tab member and the web from which it extends and in which the tab member is engageable with one of the inner and outer bearing race members, when the cage member is positioned within the raceway space, to prevent removal of the cage member from the raceway space, and a second position in which the tab member is flexed radially from the first position to permit insertion of the cage member through the one annular end opening.

5,352,048

INK SHEET CASSETTE AND RECORDING APPARATUS CAPABLE OF LOADING THE INK SHEET CASSETTE

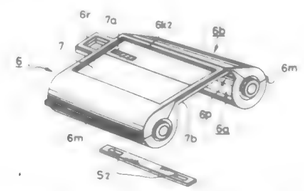
Yoshiyuki Mizoguchi, and Yoshitaka Watanabe, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 885,012, May 19, 1992, abandoned, which is a continuation of Ser. No. 454,684, Dec. 21, 1989, abandoned. This application Mar. 29, 1993, Ser. No. 39,691

Claims priority, application Japan, Dec. 23, 1988, 63-323560; Dec. 23, 1988, 63-323562

Int. Cl.[5] B41J *35/28*

U.S. Cl. 400—208 **32 Claims**



1. An ink sheet cassette loadable in a recording apparatus, said ink sheet cassette comprising:

an ink sheet having an ink layer surface;

first winding means for winding said ink sheet;

second winding means for winding said ink sheet; and

a bent frame to which are attached said first winding means and said second winding means, said frame having a first leg and a second leg meeting said first leg at an intersection and thereby defining a bent ink sheet path within said legs such that when said ink sheet cassette is not loaded in said recording apparatus, said ink sheet extends from said first winding means along a first plane in said first leg, bends only once at said intersection when said ink sheet is fullytensioned, and extends along a second plane in said second leg to said second winding means, said frame further comprising;

guiding means for guiding feeding of a recording medium when said ink sheet cassette is loaded in the recording apparatus, said frame being bent orthogonally with respect to said ink layer surface.

5,352,049

MEANS FOR HOLDING THERMAL TRANSFER PRINTING INK-SHEET IN CARTRIDGE

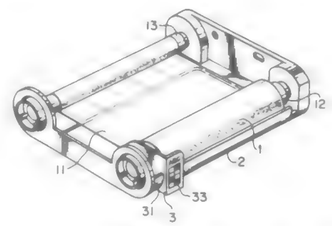
Mikio Shiraishi, Yokohama; Toshihiko Gotoh, Tokyo; Seiji Okunomiya, Katsuta, and Hiroshi Shimizu, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 8, 1992, Ser. No. 941,688

Claims priority, application Japan, Oct. 14, 1991, 3-264531

Int. Cl.[5] B41J *35/28*

U.S. Cl. 400—208 **18 Claims**



1. Means for holding a thermal transfer printing ink-sheet in a cartridge case and for indicating a characteristic of the ink-sheet, comprising:

an ink-sheet including an ink which is transferred from the ink-sheet by heat energy,

a shaft on which the ink-sheet is wound, said shaft being detachably and rotatably mounted in the cartridge case, and

an indicating member separate from the cartridge case, indicates the characteristic of the ink-sheet, the indicating member being rotatably mounted with respect to the shaft to substantially prevent said indicating member from being rotated by said shaft, and said indicating member being connected to the shaft so that the indicating member and shaft are maintained as a unit on the cartridge case, and wherein the indicating member and the shaft are separable from the cartridge case upon the replacement of the ink-sheet.

5,352,050

KEYBOARD ARRANGEMENT TO MAXIMIZE TYPING SPEED AND EASE OF TRANSITION FROM A QWERTY KEYBOARD

John I. M. Choate, 173 Hubbard Ave., Stamford, Conn. 06905-4814

Filed Jul. 27, 1992, Ser. No. 918,767

Int. Cl.[5] B41J *5/10*

U.S. Cl. 400—486 **21 Claims**



1. A keyboard having, a complete alphabet, in at least three rows, each row having nine or more keys; comprising:

a home row having the keys corresponding to the letters E, T, A, O, N, I, R, and S; wherein at least two of the keys corresponding to the letters A, S, D, and H have the same location as in the home row of the conventional QWERTY keyboard;

an upper row, adjacent to said home row, having at least four keys corresponding to the letters selected from the group consisting of Q, W, Y, U, and P; at least three keys corresponding to the letters selected from the group consisting of F, G, J, K and the key corresponding to the semicolon and colon; wherein at least four of the keys corresponding to the letters Q, W, Y, U, and P have the same location as in the upper row of the QWERTY keyboard; and

a lower row, adjacent to said home row, having at least three of the keys corresponding to the letters selected from the group consisting of C, V, B, and M; at least two keys corresponding to the letters selected from the group consisting of Z, X, and L; at least two keys corresponding to the punctuation marks selected from the group consisting of the period, the comma, and the question mark; wherein at least five of the selected keys selected from the group consisting of C, V, B, M, Z, X, period, comma, and question mark have the same location as in the lower row of the QWERTY keyboard.

5,352,051

WRITING INSTRUMENT

Takashi Tamura; Masamitsu Nagahama; Koichi Enuma; Yoshihiro Wada; Masayuki Kawasaki; Kazuo Sakai, and Kazunori Suzuki, all of Saitama, Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan

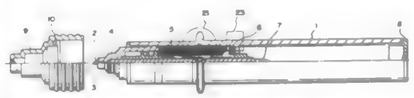
Continuation of Ser. No. 678,322, Apr. 30, 1991, Pat. No. 5,217,313. This application Sep. 16, 1992, Ser. No. 945,402

Claims priority, application Japan, Sep. 29, 1989, 1-115051; Sep. 30, 1989, 1-115437; Nov. 30, 1989, 1-139439; Dec. 27, 1989, 1-152382; Apr. 28, 1990, 2-45989

The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.

Int. Cl.[5] B43K *5/02, 3/00, 1/12;* **G01D** *5/16*

U.S. Cl. 401—48 **9 Claims**



1. A writing instrument for a plotter, comprising:

a hollow shaft of a synthetic resin and having a longitudinal axis;

a pen tip holder injection molded of a synthetic resin and fitted into and fixed to a forward end of said shaft and having mounted therein a pen tip projecting forward therefrom along said longitudinal axis, and an ink tank at a rear end portion of said shaft;

an injection molded temporary ink storage member made of a synthetic resin and non-threadedly housed in said shaft between said pen tip and said ink tank; and

a mounting means on said hollow shaft consisting of a non-threaded flange portion integral with said shaft and positioned around the outer peripheral portion of said shaft at a position corresponding to said temporary ink storage member within said shaft, said flange portion extending radially outwardly from the outermost peripheral portion of said shaft and having two spaced radial surfaces for being engaged by the plotter in non-threaded engagement for mounting said writing instrument on the plotter, said surfaces having a radial dimension and being spaced for being firmly non-threadedly engaged between and held fixedly in the direction of the longitudinal axis by mounting pawls on the plotter, whereby the writing instrument can be mounted without the necessity for adjustment of its position in the direction of the longitudinal axis;

said synthetic resin of said shaft being softer than said synthetic resin of said pen tip holder.

5,352,052

DEVICE FOR APPLYING WRITING, DRAWING, PRINTING AND PAINTING FLUIDS ONTO A SURFACE

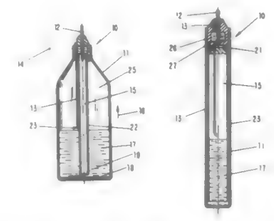
Rainer Kaufmann, Hamburg, Fed. Rep. of Germany, assignor to Dataprint Datendrucksysteme R. Kaufmann KG, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 966,901, Oct. 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 700,575, May 14, 1991, abandoned. This application Dec. 22, 1992, Ser. No. 994,899

Claims priority, application Fed. Rep. of Germany, May 15, 1990, 4015586

Int. Cl.[5] B43K *5/18, 8/08;* **B43M** *11/06*

U.S. Cl. 401—199 **4 Claims**



1. A device for applying writing, drawing, printing and painting fluids onto a surface, said device comprising:

a fluid container, a respective applicating tip, an air inlet tube that connects an interior of said fluid container to the surrounding atmosphere, and a capillary fluid reservoir, whereby said capillary fluid reservoir is arranged between fluid, that is contained in said fluid container, and said applicating tip, with a fluid flow being interrupted when said applicating tip is pointed in a downward direction;

said capillary fluid reservoir having a tube delimiting the same within said fluid container and extending into the vicinity of a bottom of said fluid container; and

said air inlet tube terminates essentially at the volumetric center of said fluid container.

5,352,053

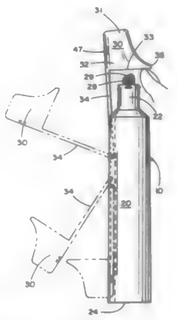
WRITING INSTRUMENT AND CAP

Frederick Reitze, 2659 W. Arthur, Chicago, Ill. 60645

Filed Jul. 8, 1993, Ser. No. 87,257

Int. Cl.[5] B43K *9/00*

U.S. Cl. 401—202 **9 Claims**



1. A writing instrument comprising:

an elongated cylindrical body having a first end,

a second end, and a passage extending from said first end to said second end;

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a writing means disposed within said passage and extending outwardly from the first end;

a cap means having a body for covering the first end of said cylindrical body, an arm extending from a first side of said body, a projection disposed on the opposite side of said body to facilitate removal of the cap means from said cylindrical body, and a cap retaining means disposed on said first side for retaining the cap means in an open position;

said cap means further having a pivot means for pivotably and slidably positioning the cap arm along the cylindrical body;

wherein said cylindrical body has a continuous groove extending from the first end of said body to the second end of said body; said groove having channel portions disposed at said first end and extending longitudinally toward said second end adapted to receive said pivot means; and

a cap receiving area disposed adjacent the second end of the elongated cylindrical body, wherein said cap receiving area is adapted to engage said cap retaining means.

5,352,054

DEVICE FOR OBTURATING AN APPLICATOR OF A LIQUID PRODUCT

Francois N. B. Lhuisset, Montgeron, France, assignor to L V M H Recherche, France

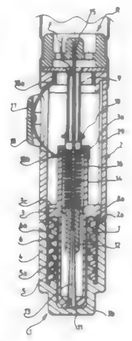
PCT No. PCT/FR91/00304, § 371 Date Nov. 10, 1992, § 102(e) Date Nov. 10, 1992, PCT Pub. No. WO91/15974, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 11, 1991, Ser. No. 941,064

Claims priority, application France, Apr. 12, 1990, 90 04752

Int. Cl.[5] A46B *11/00*

U.S. Cl. 401—269 **12 Claims**



1. Device for the obturation of an apparatus for the application of a liquid product, comprising

a body having a tank for containing a liquid product,

an applicator brush mounted in said body in connection with said tank,

a sleeve movably mounted in said body, said sleeve comprising an external tubular wall and a concentric internal tubular wall, said external wall having a threading on an interior surface, and

a stopper for obturating said applicator brush, said stopper being arranged to cooperate with said sleeve to cause said applicator brush to be exposed when in use and to be covered when not in use, said stopper comprising an external tubular wall and a concentric internal tubular wall, said internal wall of said stopper having a threading on an outer surface such that, upon screwing and unscrewing said stopper on said body, said external wall of said sleeve is inserted between said internal wall of said stopper and said external wall of said stopper, and said threading on said external wall of said sleeve cooperates with said threading on said internal wall of said stopper, said external wall of said stopper being arranged to abut with said body.

5,352,055

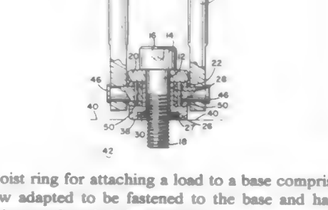
LOCKING MEMBER AND STABILIZER BAR/LOCKING MEMBER COMBINATION

Keith Hellon, Libertyville, Ill., and Gerald D. Nickerson, Gibraltar, Mich., assignors to Mac Lean Fogg Company, Mundelein, Ill.

Continuation-in-part of Ser. No. 660,132, Feb. 22, 1991, Pat. No. 5,145,273. This application Jul. 16, 1992, Ser. No. 915,079

Int. Cl.[5] F16D *1/00*

U.S. Cl. 403—24 **19 Claims**



1. A locking member for holding a bar against movement of said bar with respect to said member, said locking member comprising:

an inner element shaped to fit around the bar;

an annular outer element;

the outer element having dimensions sufficient for accepting the inner element; and

the outer element including an inwardly extending flange for strengthening the outer element against radial deformation;

said outer element comprising first and second ends, and said outer element accepting the inner element via the first end;

said flange positioned at the second end such that a leading end of the inner element moves progressively nearer to the flange as the inner element is received in the outer element.

5,352,056

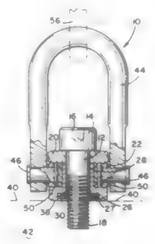
HOIST RING WITH SELF-LOCK RETAINING RING

William M. Chandler, Ward, Ark., assignor to The Crosby Group, Inc., Tulsa, Okla.

Filed Nov. 30, 1992, Ser. No. 982,783

Int. Cl.[5] B66C *1/00;* **F16B** *21/00*

U.S. Cl. 403—79 **12 Claims**



1. A hoist ring for attaching a load to a base comprising:

a screw adapted to be fastened to the base and having a continuous threaded shank portion,

a lower bushing mounted about the screw, the lower bushing provided with a base engaging surface spaced away from the screw and engageable with the base,

a body rotatably mounted on the lower bushing,

means for connecting the load to the body,

a washer being provided below a head of the screw and above the body and lower bushing, said head being located on an end of the screw opposite an end which attaches to the base,

self-lock retaining ring means provided around the screw adjacent the lower bushing for engaging threads within the continuous threaded shank portion thereby holding the hoist ring together.

5,352,057

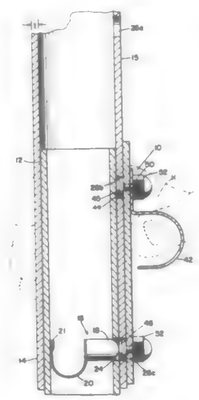
ADJUSTMENT TOOL FOR TELESCOPING MEMBERS

Charles R. Zody, 554 Melissa Dr., Oxford, Ohio 45056

Filed Dec. 28, 1992, Ser. No. 998,185

Int. Cl.[5] F16B *7/00;* **A63B** *5/00*

U.S. Cl. 403—109 **12 Claims**



9. A release tool for adjustable telescoping members having a biased detent locking assembly located within a pair of longitudinal telescoping members, wherein said detent extends outwardly through aligned apertures in the telescoping members toward an outer surface thereof to selectively lock such telescoping members in a predetermined longitudinal position, said release tool characterized by the combination of a pressure plate having inner and outer faces, said inner face having an inwardly extending release protuberance and a shaped portion which corresponds in conformation with at least a portion of the outer surface of said telescoping members to enable substantially face-to-face contact therebetween, said shaped portion provided in the form of a curved pressure plate having a semicircular shape less than half of a full cylinder, said outer face comprising a handle for enabling tactile manipulation by the user, and wherein said release protuberance is aligned with said detent in use and extends at least partially into said aligned apertures when said inner face is placed in contact with said outer surface of said telescoping members to force the detent inwardly during release and adjustment procedures.

5,352,058

ROTATABLE CLAMP

Paul J. Munro, 27 The Avenue, Newport, New South Wales 2106, and Alan Swan, Unit 10/113 Hunter Street, Hornsby, New South Wales 2077, both of Australia

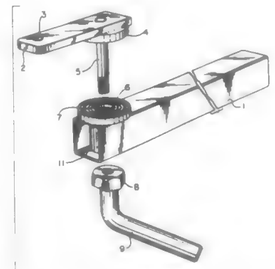
PCT No. PCT/AU91/00296, § 371 Date Mar. 2, 1993, § 102(e) Date Mar. 2, 1993, PCT Pub. No. WO92/01164, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 4, 1991, Ser. No. 956,899

Claims priority, application Australia, Jul. 11, 1990, PK1137

Int. Cl.[5] F16B *2/06, 7/04*

U.S. Cl. 403—110 **7 Claims**



1. A rotatable clamp for clamping first and second relatively rotatable elements together, the clamp comprising a first plate for attaching to the first element, a second plate for attaching to the second element and clamping means for clamping the two plates together in use, wherein the two plates are provided with a plurality of matching alternating concentric circular ridges and grooves provided in the opposing faces of the plates, so that the ridges on one plate fit into the grooves on the other plate whereby when the two elements are to be clamped together the two plates are clamped together by the clamping means so that the ridges and grooves on the plates are thereby in contact to provide a frictional clamping force, and when the clamping means is loosened, the two plates can rotate with respect to each other.

5,352,059

SYNTHETIC RESIN BALL JOINT WITH REINFORCING RIB

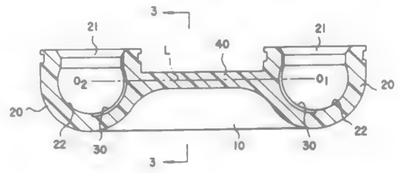
Atsushi Ueno; Yoshimichi Kamiyama, both of Fujisawa; Tatsuyoshi Tsuji, Aichi, and Toshirou Tanaka, Utsunomiya, all of Japan, assignors to Musashi Seimitsu Kogyo Company Ltd., Toyohashi and Oiles Corporation, Tokyo, both of Japan

Filed Dec. 16, 1991, Ser. No. 808,313

Claims priority, application Japan, Feb. 14, 1991, 3-040727

Int. Cl.[5] F16C *11/06*

U.S. Cl. 403—122 **21 Claims**



1. A ball joint for connecting a stabilizer, which is installed rotatably in an automobile body, to a suspension arm, the ball joint comprising:

a synthetic resin connecting rod;

a pair of sockets formed at each end of, and integral with, the

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connecting rod to form an integral structure, each socket having an opening and a concave spherical surface extending from the opening on a first side of each socket, each concave spherical surface having a center point;

a reinforcement rib formed in said integral structure on a connecting line extending between the center points of each concave spherical surface, said connecting line intersecting a transverse cross section of the reinforcement rib; and

a concave groove extending from the bottom of each concave spherical surface to the respective opening of each socket for the passage of air during the insertion of a stud into the socket, said concave groove provides a space between the stud and the socket after the insertion;

wherein the ball joint further comprises a second rib said second rib formed integrally with and perpendicularly to said reinforcement rib.

5,352,060

ATTACHABLE HANDLE

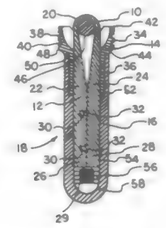
Philip J. Poetker, Winnipeg, Canada, assignor to Poetker Dynamics Inc., Winnipeg, Canada

Filed Jan. 26, 1993, Ser. No. 8,994

Claims priority, application Canada, Apr. 24, 1992, 2067035

Int. Cl.[5] F16B *7/08*

U.S. Cl. 403—233 **14 Claims**



1. Kit means for securing to a round object, said kit means comprising:

a flexible strip to be secured around the object, the strip comprising opposed terminal means, central means, and opposed connecting means extending between said central means and said terminal means,

said opposed terminal means having cooperating interlocking means and opposed outer thread means

said central means having a width greater than said opposed connecting means and said opposed terminal means

said central means being adaptable to releasably engage said object,

saddle member means comprising first block means having first and second ends, and second block means joined thereto at said second end,

said second block means being lesser in dimension than said second end of said first block means, said second block means including first cylindrical tube means with a through passage of a predetermined diameter,

said first block means including frustoconical aperture means tapering from said first end to said second end, said frustoconical aperture means having a diameter at said second end substantially identical to the predetermined diameter of the through passage of said cylindrical tube means, and a substantially greater diameter at said first end, said first block means including first rim means at said first end circumjacent said frustoconical aperture means,

paired diametrically opposed peripheral curved recesses extending into said first rim means toward said second end

said flexible strip opposed terminal means when interlocked being passable through said saddle member means, and

female thread means to engage said flexible strip thread means.

5,352,061

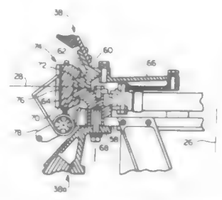
ANTI-ROTATION RING JOINT

Wilfred Robinson, Glendale, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 5, 1993, Ser. No. 778

Int. Cl.[5] F16B *2/08*

U.S. Cl. 403—338 **1 Claim**



1. A ring joint for a space vehicle comprising:

a top annular member having an axis and having a top flange with a top bearing surface, a top radially outer tapered surface and a top cutout;

a bottom annular member coaxially disposed along the axis having a bottom flange with a bottom bearing surface, a bottom radially outer tapered surface and a bottom cutout;

said bearing surfaces having a gap therebetween;

a band having a plurality of peripherally spaced band segments, each segment having a V-shaped groove with two radially inner tapered surfaces for bearing against the respective flange radially outer tapered surfaces for closing the gap by applying a force in a radially inward direction on each segment, and

key means disposed between at least one segment and oppositely facing portions of the flanges, wherein

the key means includes top and bottom inserts fitted into respective top and bottom cutouts in the top and bottom flanges and having at least one tooth formed by top and bottom axially aligned tooth parts disposed in the top and bottom inserts and a pocket portion disposed in a groove radially inner surface disposed radially opposite thereto.

5,352,062

SKID ROAD SURFACE AND METHOD FOR CONSTRUCTING SAME

Tyuzo Yoshida, Ichikawa; Masao Watanabe, Kasukabe; Tuyoshi Satoh, Sendai; Takao Arai, Sayama, and Tetsuya Shimoda, Hachioji, all of Japan, assignors to Nippon Hodo Company, Limited, Tokyo, Japan

Filed Sep. 14, 1992, Ser. No. 944,822

Claims priority, application Japan, Sep. 13, 1991, 3-308582; Sep. 13, 1991, 3-308583

Int. Cl.[5] E01C *9/00, 21/00*

U.S. Cl. 404—17 **20 Claims**

13. A road surface specially designed to enhance skidding comprising an asphalt mixture which includes substantially spherical course aggregates present in the concentration of between 50% and 90% by weight, based on the total weight of said asphalt mixture; fine aggregates including sand, present in a concentration of between 25% and 75% by weight, based on the total weight of said fine aggregates; stone dust; slaked lime; and asphalt.

5,352,063

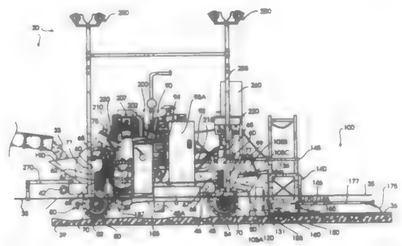
POLYMER CONCRETE PAVING MACHINE

J. Dewayne Allen, Paragould, Ark.; Ralph C. Luebke, Memphis, Tenn., and Hugh L. Adams, Bassett, Ark., assignors to Allen Engineering Corporation, Paragould, Ark.

Filed Sep. 30, 1992, Ser. No. 954,747

Int. Cl.[5] E01C *19/12*

U.S. Cl. 404—84.1 **27 Claims**



27. A concrete finishing assembly for distributing and finishing high slump polymer concrete upon a surface to be paved, said assembly comprising:

means for referencing an intended resultant plane;

distribution means for laterally, adjustably spreading concrete, said distribution means comprising:

an elongated distribution box having a generally rectangular cross-section defined between front and back walls and an open top and open bottom, said box comprising an input region adapted to receive concrete and a pair of ends spaced from said input region;

bidirectional, distribution auger means deployed within said distribution box for moving concrete from said input region between said ends upon said surface to be paved;

an elongated finishing screed rigidly disposed adjacent said distribution box for densifying and finishing said concrete, said finishing screed comprising vibrator means for vibrating said screed to aid in finishing and densifying said concrete;

a reinforcing grid generally in the form of a parallelepiped for structurally bracing the assembly, said grid disposed upon said screed and secured to said distribution box; and,

dampening means for isolating screed vibrations from said grid assembly.

5,352,064

COLLAPSIBLE SPACER

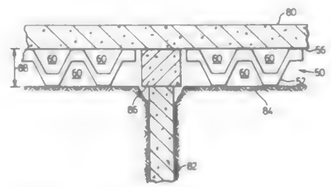
Bruce M. Carruthers, Calgary; F. Gordon French, Winnipeg; B. Wayne Heath, Warman, and Randal B. Smith, Calgary, all of Canada, assignors to Plasti-Fab Ltd., Calgary, Canada

Continuation of Ser. No. 859,148, Mar. 27, 1992, abandoned. This application Jul. 22, 1993, Ser. No. 96,737

Claims priority, application Canada, Apr. 26, 1991, 2041324

Int. Cl.[5] E02D *5/00*

U.S. Cl. 405—229 **8 Claims**



1. A foundation comprising:

a foundation structure;

a soil grade susceptible to heaving;

a form used to fabricate said foundation structure, the form having an upper surface upon which the foundation structure is disposed; and

a spacer of water resistant material to support the dead load of the form and said foundation structure above said soil grade while said foundation structure is being fabricated, the spacer including voids such that, in the event of heaving of said soil grade, said spacer permanently deforms to accommodate the heaved soil thereby inhibiting damage to said foundation structure.

5,352,065

ROCK BOLTING

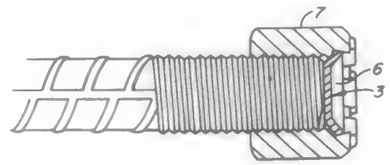
Peter D. Arnall, Merewether, and Rataj Mieczyslaw, Newcastle, both of Australia, assignors to The Ani Corporation Ltd., Bennetts Green, Australia

Filed Apr. 21, 1992, Ser. No. 871,560

Claims priority, application Australia, Apr. 26, 1991, PK5839

Int. Cl.[5] E21D *21/02;* **F16B** *31/00*

U.S. Cl. 405—259.2 **16 Claims**



1. A drive nut for a rock bolt, said drive nut comprising:

a nut having a head forming a recess; and

an insert;

the nut having a plurality of lips retaining said insert in the recess in the head of said nut, said plurality of lips being formed from a protrusion, said plurality of lips extending inwardly over the insert when the insert is positioned in the recess to limit a breaking torque of the drive nut to a predetermined range, said plurality of lips being sized and configured to displace and release said insert from said recess upon application of said breaking torque within said predetermined range;

the insert being dish-shaped with a narrow peripheral annular rim and a relatively wide diameter planar central portion displaced relative to the plane of said rim so that a first contact between a bolt to which said drive nut is threaded, and said insert, is with said insert central portion, the insert being located solely between the lips and the bottom of said recess out of contact with threads of the nut.

5,352,066

MINE ROOF/BOLT ANCHOR ASSEMBLY AND METHOD OF INSTALLATION THEREOF

Charles W. Schaeffer, Lebanon, Pa., and Raymond L. Wright, Syracuse, N.Y., assignors to The Eastern Company, Syracuse, N.Y. and Birmingham Bolt Co., Inc., Birmingham, Ala.

Filed Nov. 26, 1991, Ser. No. 798,199

Int. Cl.[5] E21D *20/20*

U.S. Cl. 405—259.6 **15 Claims**

13. A method for installing a combined resin and mechanical anchor assembly in a bore hole formed in a substrate for anchoring a tensioned bolt to the substrate, comprising the steps of:

a) providing resin bonding means for securing a tensioned bolt to a substrate;

b) providing mechanical expansion means for mechanically

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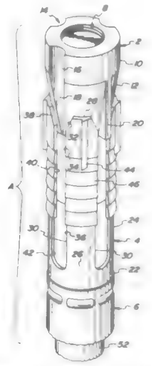
coupling the tensioned bolt to the substrate, the mechanical expansion means includes a mechanical expansion shell having an annular collar and a plurality of fingers operably associated therewith, the plurality of fingers each including upper and lower surfaces;

c) forming at least one substantially V-shaped notch between a pair of adjacent fingers; and,

d) forming rib means on each of the pair of adjacent fingers for providing a channel to permit resin to flow therethrough, the rib means extending along at least the entire length of the V-shaped notch.

15. An anchor assembly operably associated with a bore hole in a substrate for anchoring a tensioned bolt to the substrate, comprising:

a) a mechanical expansion means for mechanically copuling the tensioned bolt to the substrate, said mechanical expansion means including a mechanical expansion shell having a longitudinal axis;



b) said mechanical expansion shell having an annular collar and a plurality of fingers operably associated therewith, said plurality of fingers each including upper, lower, inner and outer surfaces;

c) at least one substantially v-shaped notch being formed between a pair of adjacent fingers;

d) at least one of said pair of adjacent fingers having at least one rib extending along the longitudinal axis of said mechanical expansion shell, said rib includes first and second faces, said first face extends substantially perpendicular to a tangent taken at a point where said first face intersects said outer surface of said at least one finger; and,

e) said second face forms an angle less than 90° with said first face.

5,352,067

MILLING CUTTER CLAMPING WEDGE WITH HARDENED CHIP SURFACE

Tatsuo Arai, and Takayoshi Saito, both of Ibaraki, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Division of Ser. No. 857,989, Mar. 26, 1992, Pat. No. 5,240,356. This application Jun. 1, 1993, Ser. No. 69,417

Claims priority, application Japan, Mar. 28, 1991, 3-89720; Aug. 6, 1991, 3-196882; Aug. 8, 1991, 3-199640

Int. Cl.[5] **B23C** *5/22, 5/06*

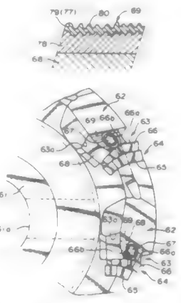
U.S. Cl. 407—5 **3 Claims**

1. A clamp assembly for clamping a cutting insert on a tool body of a cutter, said clamping assembly comprising:

a clamp member having an abutment surface and a chip-contacting surface;

means for holding said clamp member on said tool body such that said abutment surface is in abutting contact with the cutting insert;

said chip-contacting surface contacting chips produced by the cutting insert during a cutting operation when the cutting insert and clamp member are held on the tool body, said chip-contacting surface being constructed and



arranged so as to have a nitrided hard layer formed on a precision-cast unglazed layer defining non-finished, uneven outer surface, said nitrided hard layer having an outer-most portion defined by a decarburized layer having an uneven compound layer therein defining said outer surface.

5,352,068

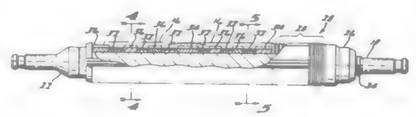
BROACH APPARATUS

Robert E. Roseliep, Grosse Pointe, Mich., assignor to Utica Enterprises, Inc., Shelby Township, Oceana County, Mich.

Filed Feb. 8, 1993, Ser. No. 14,648

Int. Cl.[5] **B23D** *43/04*

U.S. Cl. 407—15 **18 Claims**



1. A broach apparatus comprising:

an arbor;

a plurality of annular members disposed on said arbor, each of said plurality of annular members having a plurality of longitudinal slots located on its outer periphery, said plurality of annular members being aligned on said arbor so as to align each of said slots of said plurality of longitudinal slots and thereby define a plurality of segmented elongated slots extending substantially longitudinally along the outer periphery of said plurality of annular members disposed on said arbor;

a plurality of annular spacers disposed on said arbor, at least one of said plurality of annular spacers being disposed between at least one adjacent pair of said plurality of annular members;

at least one cutting insert mounted in each of said plurality of longitudinal slots located in the outer periphery of said plurality of annular members; and

means disposed on said arbor for retaining said plurality of annular members and said plurality of annular spacers concentrically positioned relative to each other on said arbor.

5,352,069

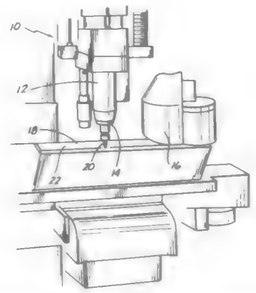
METHOD AND APPARATUS FOR A NUMERICALLY CONTROLLED TAPPING MACHINE

Edward G. Rourke, 20705 Cheney Dr., Topanga, Calif. 90290

Filed Apr. 12, 1993, Ser. No. 44,716

Int. Cl.[5] **B23B** *35/00;* **B23G** *1/02*

U.S. Cl. 408—1 R **17 Claims**



1. An apparatus for use with a computer controlled machine comprising:

a toolholder adapted for coupling with said computer controlled machine;

an independent drive mechanism for driving a working tool, said drive mechanism being resiliently coupled to said toolholder; and

a control circuit for controlling said drive mechanism, said control circuit being responsive to relative displacement of said drive mechanism with respect to said toolholder so that said working tool is driven as a function of said relative displacement between said toolholder and drive mechanism,

whereby machining by said computer control machine is improved and effective lifetime of said working tool extended.

15. A method for machining a workpiece comprising the steps of:

selectively disposing a tool fixture by means of a computer controlled machine;

driving a working tool coupled to said tool fixture independently from disposition of said tool fixture by means of said computer controlled machine, said working tool being driven as a function of sensed machining performed by said working tool on said workpiece,

relatively displacing said working tool with respect to said tool fixture; and

controlling said step of driving said working tool as a function of the degree of relative displacement of said working tool with respect to said toolholder,

whereby tool life is extended.

5,352,070

SUPPLEMENTAL APPARATUS FOR A HAND-HELD POWER DRILL

Henry Tehrani, 3652 Veteran Ave., Los Angeles, Calif. 90034

Filed Sep. 23, 1992, Ser. No. 949,904

Int. Cl.[5] **B23B** *47/18*

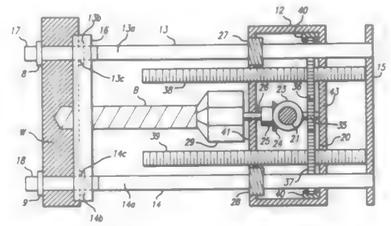
U.S. Cl. 408—102 **13 Claims**

1. A separate attachment for a standard hand drill for using the rotation of the hand drill to both rotate and advance a drill bit relative to a work piece, the attachment comprising:

a) base means;

b) holding means movably mounted on said base means for releasibly grasping a drill bit with the axis of the drill bit generally perpendicular to the surface of the work piece and for movement relative to said base means toward and away from the work piece;

c) transmission means on said base means for being releasibly grasped by the chuck of the hand drill to impart rotation to the transmission means, said transmission means being



connected to said holding means to both (i) impart rotation to the drill bit and (ii) impart generally linear movement to said holding means relative to said base means which moves the drill bit toward and away from the work piece.

5,352,071

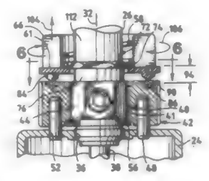
HOLE SAW ARBOR WITH RETAINING MECHANISM

Paul Cochran, Stillman Valley, and Thomas J. Pearson, Rockford, both of Ill., assignors to Greenlee Textron Inc., Rockford, Ill.

Filed Jun. 7, 1993, Ser. No. 73,580

Int. Cl.[5] **B23B** *51/04*

U.S. Cl. 408—204 **7 Claims**



1. A drive collar retaining assembly for use with a hole saw arbor assembly of the type having a shaft, a hole saw operatively associated with said shaft, a drive collar operatively retained on said shaft for engaging said hole saw and transferring torque from said shaft to said hole saw attached thereto, and biasing means operatively associated with said shaft and said drive collar for urging said drive collar into engagement with said hole saw, said drive collar being axially displaceable along said shaft for engaging and disengaging said hole saw; said drive collar retaining assembly comprising: a retaining collar operatively associated with said shaft between said biasing means and said drive collar; and means for selectively limiting axial movement of said drive collar along said central axis, a first non-circular surface of said limiting means formed on said shaft and a cooperatively formed second non-circular surface formed on said retaining collar, said first and second non-circular surfaces defining at least an axial displacement position and a drive collar retaining position, said axial displacement position of said limiting means being defined by said first and second non-circular surfaces being aligned for axial displacement of said retaining collar and drive collar along said central axis, said retaining position being defined by said first and second non-circular surfaces being positioned out of registration to prevent axial displacement of said retaining collar and said drive collar along said central axis, when said axial displacement position is selected said drive collar being disengagable from said hole saw, when said retaining position is

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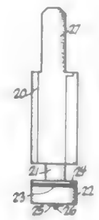
selected said drive collar being retained in engagement with said hole saw.

5,352,072

CUTTING TOOL WITH GUIDE FOR TRIMMING LAMINATE

Fredric A. Velepec, Glendale, N.Y., assignor to Fred M. Velepec Co., Inc., Glendale, N.Y.

Filed Mar. 1, 1993, Ser. No. 24,595
Int. Cl.[5] B23C *3/12*; B27D *5/00*
U.S. Cl. 409—126 8 Claims



2. A cutting tool for trimming a laminate flush with the surface of a substantially perpendicular laminate, said cutting tool comprising:

a) a first shaft section having an axis and being adapted to be accommodated in a chuck;

b) a cutting section being coaxial with said first shaft section and having a first side and a second side, said first side being adjacent to said first shaft section;

c) a glue well shaft section being coaxial with said first shaft section, having an outer diameter, and extending from said second side of said cutting section;

d) a second shaft section being coaxial with said first shaft section, extending from said glue well shaft, and having an outer diameter which is less than said outer diameter of said glue well shaft section; and

e) a ball bearing guide assembly accommodated on at least a portion of said second shaft section, wherein said glue well prevents softened glue resulting from trimming operations from contacting said ball bearing guide assembly, and

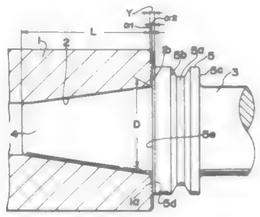
wherein said glue well shaft section has a length which is at least ⅔ of the dimension of said outer diameter of said glue well shaft section.

5,352,073

TOOL HOLDER FOR A MACHINE TOOL

Ryoichi Kitaguchi, Higashiosaka, Japan, assignor to Daishowa Seiki Co., Ltd., Osaka, Japan

Filed Oct. 8, 1992, Ser. No. 957,791
Claims priority, application Japan, Apr. 14, 1992, 4-094526; Jul. 14, 1992, 4-187140
Int. Cl.[5] B23C *5/26*
U.S. Cl. 409—232 3 Claims



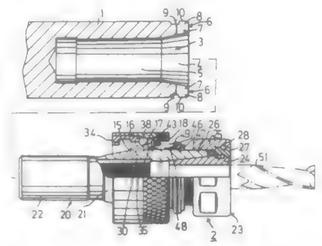
1. In a tool holder arrangement for a machine tool, having a main shaft containing a flared hole, a tool holder having a tapered shank portion fittable into and in engagement with said flared hole, said main shaft having a reference end face so that when said main shaft and said tool holder are in engagement with each other said reference end face faces said tool holder, said tool holder having a collar thereon with a collar end face so that when said main shaft and said tool holder are in engagement with each other said collar end face is opposed to said reference end face of said tool holder, with a clearance between the opposed end faces, the improvement which comprises an extension of said reference end face toward said collar end face, and an extension of said collar end face toward said reference end face, said extensions being sufficient to establish an intimate contact between said opposed end faces when the tapered shank portion of the tool holder is in intimate engagement with the flared hole of the main shaft.

5,352,074

TOOL MOUNTING APPARATUS

Hitoshi Ishikawa, Takahama, Japan, assignor to NT Tool Kabushikikaisha, Japan

Filed Oct. 25, 1993, Ser. No. 140,911
Claims priority, application Japan, Oct. 26, 1992, 4-310908
Int. Cl.[5] B23C *5/26*
U.S. Cl. 409—232 6 Claims



1. A tool mounting apparatus comprising;

a main shaft including an insertion hole with open end, a receive surface and a stop flange and

an insertion part including

(a) a main body which is formed, at the rear end thereof, with an insertion rod conformable to said insertion hole and, at the front end thereof, with a tool mount, with an abutment surface adapted to abut said receive surface when said insertion rod is put in said insertion hole and with a first receive wall formed on the outside surface of said main body and directed towards said tool mount,

(b) an annular engage member which is disposed around said main body, is formed with lock nails adapted to make said annular engage member engage said stop flange when said abutment surface is abutting said receive surface and with holding holes, and is provided with a second receive wall facing said first receive wall, the separation between said first and second receive walls increasing with increasing radial distance from the axis of said main body,

(c) wedge members disposed between said receive walls and adapted to be movable radially relative to the axis of said main body with said holding holes as retreat spaces and

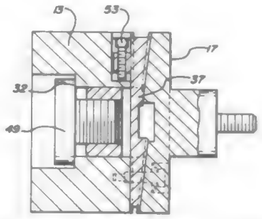
(d) an annular clamp member which is disposed outside said annular engage member, is adapted to be movable in the axial direction of said main body, is formed, at the inner surface thereof facing said wedge members, with a tilted thrust surface and is biased in said axial direction so as to make said thrust surface push in said wedge members radially.

5,352,075

ROTARY CUTTING TOOL HAVING AN AXIAL ADJUSTMENT

Ray Stephens, Sterling Hts., Mich., assignor to Valenite Inc.

Filed Sep. 20, 1993, Ser. No. 122,964
Int. Cl.[5] B23C *5/26*; B24B *41/00*; B23B *51/00*
U.S. Cl. 409—234 11 Claims



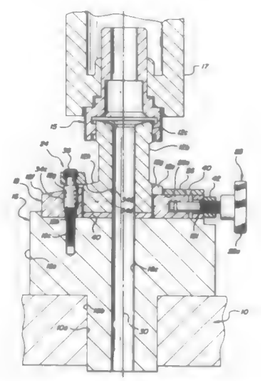
1. An adjustable cutting tool assembly comprising a rotary arbor having a central rotational axis; a cutting element adaptor slideably mounted on said arbor for axial adjustments; a wedge member extending transversely through said adaptor; and a radially oriented set screw threadably engaged with said wedge member for moving said wedge member in a radial direction across said rotational axis; said adaptor having a flat radial surface engaged with said wedge member so that the wedge member is confined to radial motion; said arbor having two flat parallel wedge surfaces located on opposite sides of the arbor rotational axis and acutely angled to a radial plain in facing relation to the radial surface on the adaptor; said wedge member having two flat wedge surfaces acutely angled to a radial plain being in slidable engagement with said acutely angled wedge surfaces on said arbor, so that radial motion of said wedge member produces an axial adjustment of said adaptor.

5,352,076

QUICK RELEASE TOOL HOLDER

Dale J. Garden, Warren, Mich., assignor to Anderson-Cook Incorporated, Fraser, Mich.

Filed Apr. 8, 1993, Ser. No. 44,155
Int. Cl.[5] B23D *41/00*; B23B *29/04*
U.S. Cl. 409—287 3 Claims



1. A quick release tool holder assembly for use with a tool having a base and including a recess in the outer periphery of the base, the tool holder assembly defining a well positioned around the central vertical axis of the holder and toll and sized to loosely receive the base of the tool with a plurality of contact members engaging the outer periphery of the base of the tool at circumferentially spaced locations to position the base within the well, characterized in that:

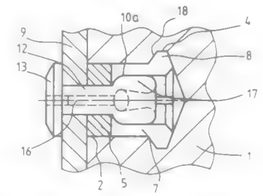
all of the contact members are located within an angular range of 180° as measured around said axis, the tool holder assembly further includes a locating member having a tip movable radially into and out of the well at a location within the remaining 180° as measured around said axis and sized to fit into the recess in the base of the tool to position the tool angularly with respect to the tool holder, and the tool holder assembly further includes a plurality of clamps mounted on the tool holder assembly in surrounding relation to the well and adapted to engage an upper annular face on the base of the tool to preclude upward displacement of the tool out of the well.

5,352,077

FIXING ELEMENT, IN PARTICULAR FOR FIXING FACING PANELS

Stefan Lind, Tumlingen, Fed. Rep. of Germany, assignor to Fischerwerke, Artur Fischer GmbH & Co. KG, Tumlingen, Fed. Rep. of Germany

PCT No. PCT/EP93/00052, § 371 Date May 28, 1993, § 102(e) Date May 28, 1993, PCT Pub. No. WO93/15288, PCT Pub. Date Aug. 5, 1993
PCT Filed Jan. 13, 1993, Ser. No. 70,347
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1992, 4202774
Int. Cl.[5] F16B *13/04*, *13/06*
U.S. Cl. 411—43 6 Claims



1. A fixing element of metal, in particular for fixing facing panels, the fixing element comprising a slotted expansible sleeve arranged to be expanded into an undercut of a drilled hole and having an inner bore and a slotted part provided with a plurality of inwardly bent expansible segments each having a leading end face and an outer surface with a circumferential enlargement in the region of said leading end face; and an expander element effecting the expansion of said expansible sleeve and arranged to clamp an article to a facing panel, said expander element being formed as a blind rivet with a rivet shank and a clench head which is drawn with said river shank into said slotted part of said inner bore of said expansible sleeve and riveted.

5,352,078

APPARATUS FOR ATTACHING ELEMENTS TO AN AIRPLANE STRINGER

Keyle H. Nasu, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 825,487, Jan. 24, 1992, abandoned. This application Dec. 7, 1992, Ser. No. 986,305
Int. Cl.[5] F16B *21/00*
U.S. Cl. 411—337 9 Claims

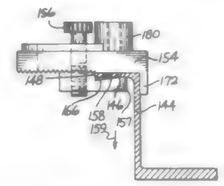
1. Apparatus for attaching an element to a flange, the apparatus comprising:

a. top means for engaging the flange which has an upper surface, a lower surface, a left end and a right end, the top means having a horizontal surface and a vertical surface;

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b. bottom means for engaging the flange, the bottom means including an upper horizontal surface and a lower surface and the bottom means including a member having a right end and a left portion which is adjacent to a vertical surface of the bottom means such that the member has a smaller thickness at the left portion than at the right end so that the element is flexible in a vertical direction in order to engage flanges of different sizes between the top means horizontal surface and the bottom means lower surface;

c. means for connecting the top means to the bottom means about the flange in a manner that (i) the top means hori-



zontal surface engages the flange upper surface, (ii) the top means vertical surface engages the flange fight end, and (iii) the top means horizontal surface and the bottom means lower surface engage the flange between them in an interference fit such that the bottom means lower surface is located below the bottom means upper surface by an amount which allows engagement of the flange between the top means horizontal surface and the bottom means lower surface while the bottom means upper surface engages the top means horizontal surface; and

d. means, connected to the top means, for attaching the element to the top means.

5,352,079

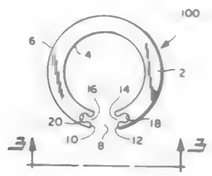
RETAINING RING AND CUTTER THEREFOR

Ronald A. Croskey, Wilmot, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 19, 1993, Ser. No. 34,923

Int. Cl.[5] F16B *21/18*

U.S. Cl. 411—518 **8 Claims**



1. A substantially cylindrical split resilient retaining ring adapted to expandedly seat in an external groove surrounding an outer periphery of the ring in registration therewith when released from a radially comprised state and to contractively seat in an internal groove surrounded by an inner periphery of the ring in registration therewith upon release from a radially expanded state, said ring having a pair of opposed spaced-apart facing ends on opposite sides of the split having corresponding substantially radially aligned slots therethrough having a prescribed radial width and extending away from each other in substantial parallel relationship to the inner and outer peripheries for a prescribed circumferential distance and communicating with respective apertures therethrough having a breadth that is larger than the width of the slots such that a pair of fingers of a manipulating tool are respectively operative to move away from each other circumferentially along the slots and into the respective apertures for radially expanding and contracting the ring.

5,352,080

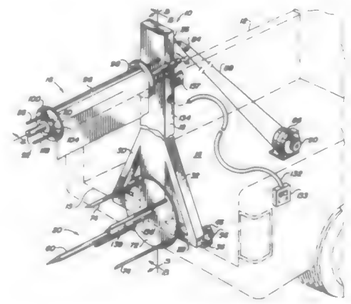
BALE HANDLING AND WRAPPING APPARATUS

Nayles G. Bakke, 18114 Memorial Estates Dr., Spring, Tex. 77379

Continuation of Ser. No. 897,041, Aug. 31, 1992, abandoned. This application Dec. 10, 1993, Ser. No. 165,009

Int. Cl.[5] A01D *90/08*

U.S. Cl. 414—24.5 **8 Claims**



1. A hay bale handling apparatus attachable to a horizontal platform such as a truck bed comprising:

a rigid frame supported on said platform, said frame including an upwardly-extending central column;

bale handling means attached to said frame;

tilting means for angularly rotating said frame in relation to said horizontal platform;

rotating means for rotating said hay bale handling means;

bale wrapping means attached to said column;

attachment means for removably attaching said frame to said platform;

said bale handling means including an end member, a shaft located centrally of said end member and extending generally perpendicularly from said end member, and at least one rod extending generally perpendicularly from said end member;

said rotating means rotating said end member about an axis coincident with said central shaft thereby causing the at least one rod to revolve around said central shaft;

said wrapping means comprising an elongated member attached to an upper end of said column and extending generally perpendicularly from said column, said elongated member supporting a roll of wrapping material;

said roll of wrapping material slidably moveable along said elongated member;

said rotating means supported on said central column and angularly rotatable therewith; and

said rotating means operable in a first substantially vertical column position and operable in a second angularly-rotated column position.

5,352,081

GOODS HANDLING APPARATUS AND METHOD

Nobuhiro Tanaka, Saitama, Japan, assignor to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 602,113, Oct. 23, 1990, abandoned. This application May 11, 1993, Ser. No. 59,877

Claims priority, application Japan, Apr. 27, 1990, 2-110399; Apr. 27, 1990, 2-110400

Int. Cl.[5] B65G *1/04*

U.S. Cl. 414—266 **9 Claims**

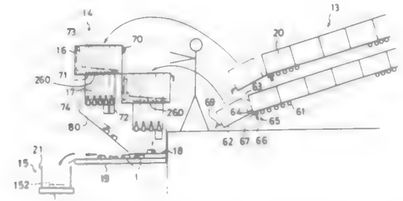
1. A method of handling goods (1) with a machine having a storage apparatus (13) that holds a container (20) in which the goods (1) are placed in a given arrangement and a goods take-out device (16), the goods take-out device (16) being provided with storage boxes (73) arranged in a first matrix, the goods

take-out device (16) being spaced from the storage apparatus (13) and movable between a first position spaced from the storage apparatus (13) and a second position horizontally closer than the first position to the storage apparatus (13) such that the second position serves to facilitate shifting of goods (1) from the storage apparatus (13) to the goods take-out device (16) due to a shortened distance therebetween, said method comprising the steps of:

(a) when the goods take-out device (16) is empty, moving such device (16) to the second position;

(b) shifting the goods (1) from the container (20) to load said goods take-out device (16);

(c) returning the loaded goods take-out device (16) to the first position;



(d) shifting the goods (1) from such device (16) to a goods drop-out device (17) directly below the goods take-out device (16), the goods drop-out device (17) having storage boxes (74) arranged in a second matrix identical to the first matrix; and

(e) discharging goods (1) from selected storage boxes (74) of said goods drop-out device (17);

characterized by moving the goods take-out device (16) horizontally between the first and second positions and by selecting the sizes and positioning of the storage boxes of both the goods take-out device (16) and the goods drop-out device (17) from one of a plurality of predetermined arrangements, including the given arrangement.

5,352,082

BAG SLITTING MACHINE

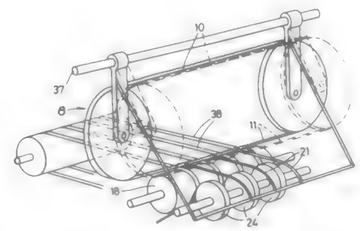
Stewart Bennison, Sheepbridge, England, assignor to Palamatic Handling Systems Limited, Chesterfield, England

Filed Dec. 17, 1991, Ser. No. 809,736

Claims priority, application United Kingdom, Dec. 22, 1990, 9027976.1

Int. Cl.[5] B65B *69/00*

U.S. Cl. 414—412 **13 Claims**



1. A machine for slitting filled bags, said machine incorporating:

(i) saw means to effect slitting;

(ii) displacement means to cause progressive relative movement between said saw means and a bag to be slit;

(iii) a splitter means located downstream of said saw means in said direction of relative movement and transversely of said direction of relative movement, to progressively penetrate said slit bag to ensure progressive separation of said slit bag; and

(iv) means to advance said splitter means to an active position and to retract said splitter means to a non-active position.

5,352,083

TOWING AND WRECKER TRUCK CONSTRUCTION HAVING AN EXTENSIBLE WHEEL LIFT

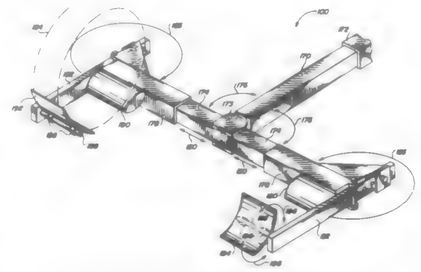
Don Roberts, 720 Pine St., Auburndale, Fla. 33823, and Steve Gerstner, 159 Bahia Ct., Winter Haven, Fla. 33880

Continuation-in-part of Ser. No. 820,495, Jan. 14, 1992, Pat. No. 5,249,909. This application Apr. 7, 1993, Ser. No. 44,213

The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.

Int. Cl.[5] B60P *1/04*

U.S. Cl. 414—477 **2 Claims**



1. An elevated wheel lift supported by the frame of a tow truck for engaging a vehicle to be towed, wherein the elevated wheel lift comprises:

an elongated support movable into and out of the frame;

a cross bar extending lateral to and pivotably attached with the support;

two sliding end members, each telescoping with an outer end of the cross bar to permit a lateral adjustment of the cross bar;

two tire supports, each extending laterally from and pivotably attached with, a corresponding one of the sliding end members, each tire support rotatable between a storage position parallel with the cross bar and an operational position lateral to the cross bar;

two rod-shaped members, each extending laterally from and attached to a corresponding one of the tire supports; and

two tire braces, each having a distal edge, each rotatably affixed along the length of a corresponding one of the rod-shaped members, rotation being possible between a position for loading a vehicle to be towed, the distal edge touching the ground, and a position for towing the vehicle, the tire brace being rotated as the vehicle to be towed is moved onto the stinger until the tire brace's distal edge is pointing away from the ground.

5,352,084

REFUSE CARRIER FOR RECYCLABLE AND NON-RECYCLABLE MATERIAL

Burt E. Hodgins, R.R. #2, Kincardine, Ontario, Canada N2Z 2X4

Filed Feb. 25, 1992, Ser. No. 840,558

Claims priority, application Canada, Mar. 4, 1991, 2037513

Int. Cl.[5] B65F *3/20*

U.S. Cl. 414—517 **6 Claims**

1. A refuse collecting vehicle comprising:

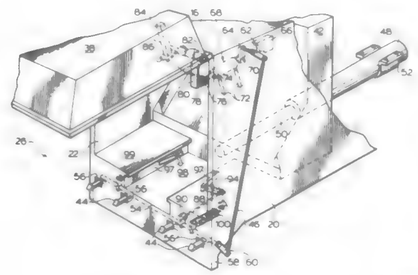
a vehicle having a chassis, and a body mounted to said chassis of said vehicle, said body having a first compart-

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ment having a door assembly, an opening and refuse compaction means therein, said vehicle further including at least one separate compartment adapted for receiving recyclable refuse, said at least one separate compartment with a chamber therein having a top, a bottom and spaced apart opposed sides, said separate compartment further including at least one lateral access opening for loading said recyclable refuse therein and at least one lateral discharge opening for discharging said recyclable refuse from said at least one separate compartment;

a movable compaction means in said at least one separate compartment, and movable between said lateral access opening and said lateral discharge opening, said movable compaction means being adapted to effect discharge of compacted refuse from said body;

and said vehicle further including stop means having a pair of opposed stop members actuable between an opened position whereby said stop members are effective to limit



the movement of said compaction means and a closed position whereby said stop members do not limit the movement of said compaction means whereby said compaction means may be actuated to effect discharge of compacted refuse from said body; and

actuation means for effecting sequential actuation of said stop members and said body further includes latch members and means for effecting movement of said door assembly, said actuation means comprising means linking said means for effecting movement of said door assembly, said stop members, and said latch members whereby displacement of said actuation means from a first position to a second position is effective to disengage said latch members from said door assembly and is effective to move said stop members from an opened position to a closed position and is effective to actuate said means for effecting movement of said door assembly from a closed position to an opened position.

5,352,085

SHEET TRANSFER METHOD AND SYSTEM THEREOF

Max L. Sargent, and Ervin P. Koone, both of Greenwood, S.C., assignors to Fuji Photo Film, Inc., Greenwood, S.C.

Filed Aug. 18, 1993, Ser. No. 107,598

Int. Cl.[5] B65H *3/00*

U.S. Cl. 414—796 **10 Claims**

3. A sheet transfer system for transferring a pile of sheet materials from a destacking position to a restacking position, the system comprising:

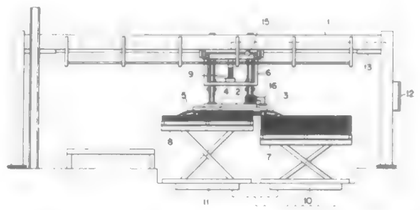
a pair of vertically movable tables located at the destacking and restacking positions, respectively, which support the pile of materials;

a transfer unit which is horizontally movable and vertically movable, and which incorporates an entry-conveyor, a mid-conveyor, and an exit-conveyor;

table driving means for actuating the tables;

carriage means for driving back and forth the transfer unit between the destacking and the restacking positions;

control means electrically connected to the table driving means and the carriage means for controlling the advance and retraction of the carriage means and the actuation of



the entry-conveyor, mid-conveyor and the exit-conveyor unit so that advancement of the transfer unit and actuation of the entry-conveyor and mid-conveyor, and the exit-conveyor, are concurrently effected substantially at a same speed, but wherein a direction of top surfaces of the conveyors is opposite to a direction of the transfer unit.

5,352,086

APPARATUS FOR LIFTING SHEETS FROM A STACK

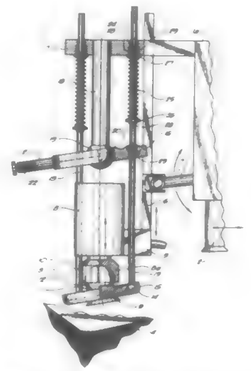
Klaus Mank, München, Fed. Rep. of Germany, assignor to Georg Speiss GmbH, Gersthofen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 629,652, Dec. 7, 1990, abandoned. This application Aug. 20, 1992, Ser. No. 932,990

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1990, 4002368

Int. Cl.[5] B65G *59/04*

U.S. Cl. 414—797 **17 Claims**



16. An apparatus for lifting a sheet from a stack of sheets comprising:

a suction head frame;

suction plate means for engaging the sheet;

lifting means connected to said suction plate means so as to move said suction plate means in a vertical direction, said lifting means for moving said suction plate means between a first sheet-engaging position and a second sheet-releasing position, said suction plate means pivotally connected to said lifting means so as to align parallel to a surface of the stack;

a setting member extending upwardly from said suction plate means to said suction head frame, said suction plate means pivotally connected to said setting member, said setting member linearly movable relative to said suction head frame; and

a ramp member connected to said frame and positioned along a length of said setting member, said ramp member in cooperative relationship with said setting member, said setting member for causing said suction plate means to be positioned in parallel relation to said ramp member when said suction plate means is in said first position, said ramp member being stationary during a movement of said suction plate means between said first and second positions, said ramp member having a releasable locking mechanism affixed thereto, said locking mechanism for fixing said ramp member in a position.

5,352,087

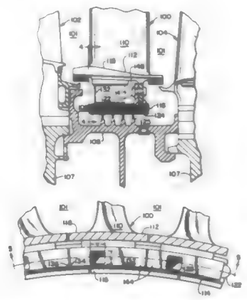
COOLING FLUID EJECTOR

Stephen M. Antonellis, Woodbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 23, 1993, Ser. No. 81,902

Int. Cl.[5] F04D *29/38*

U.S. Cl. 415—115 **24 Claims**



1. An improved stator vane assembly for a gas turbine engine of the type disposed about a longitudinal axis, having an axially extending flowpath circumferentially disposed about the axis, a turbine section including a first rotor assembly disposed circumferentially about the axis, a second rotor assembly disposed circumferentially about the axis and axially downstream of the first rotor assembly, a seal runner disposed circumferentially about the axis and extending axially between the first rotor assembly and the second rotor assembly, the seal runner including sealing means, and wherein the first rotor assembly, second rotor assembly, and seal runner are rotatable about the axis in an operational condition, and wherein the improvement is comprised of:

the stator vane assembly being disposed axially between the first rotor assembly and the second rotor assembly and radially outward of the seal runner, wherein an annular upstream seal cavity is defined in part by said stator vane assembly, said upstream seal cavity having effectively continuous flow surfaces in the circumferential direction, wherein a downstream seal cavity is defined in part by said stator vane assembly, and wherein said stator vane assembly includes plurality of vanes, each of the vanes being hollow to permit cooling fluid to pass through said vane, a sealing shroud mounted radially inward of said vanes, said sealing shroud engaging said seal runner to block gaseous communication between the upstream seal cavity and the downstream cavity, and a plurality of ejectors, each of said ejectors disposed radially inward of and being in communication with one of said plurality of hollow vanes, each ejector including an aperture permitting cooling fluid to flow into the seal cavity, and the plurality of ejectors defining wall means providing an effectively continuous, circumferential flow surface for the upstream seal cavity and to isolate said ejectors from said seal cavity, wherein said wall means is comprised of a plurality of wall portions, each of said wall portions disposed on an ejector and having a leading edge and a trailing edge, said leading edge and said trailing edge disposed on circumferentially opposite ends of said wall portion, and wherein said trailing edge has a flow surface disposed a finite distance Δ axially upstream, relative to the direction of flow within the flow path, of a corresponding flow surface of a leading edge of a circumferentially adjacent wall portion.

5,352,088

PUMP HOUSING DEVICE

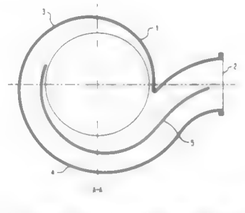
Ulf Arbeus, Lidingo, Sweden, assignor to ITT Flygt AB, Solna, Sweden

Filed Nov. 3, 1993, Ser. No. 147,199

Claims priority, application Sweden, Nov. 13, 1992, 9203397-6

Int. Cl.[5] F01D *25/24*

U.S. Cl. 415—182.1 **2 Claims**



1. A device for pump housings for centrifugal pumps comprising a pump impeller (11) having one or several vanes which rotate in a spiral formed pump housing (1) where the liquid is axially sucked in and leaves through a mainly tangentially directed outlet (2), the pump housing along a part of its turn being divided by an axially directed partition wall (5) the distance of which to the pump impeller circumference corresponding with the distance between said circumference and the diametrically opposite part of the pump housing, characterized in that the partition wall (5) is parted in its longitudinal direction into two parts (6, 7) by a slot (10).

5,352,089

MULTI-BLADES FAN DEVICE

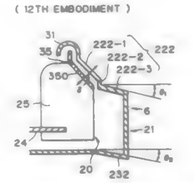
Takahiro Tokunaga, Kosai; Yukio Uemura, Kariya; Hideo Asano, Gifu; Hikaru Sugi, Nagoya; Teruhiko Kameoka, Okazaki, and Yasushi Kondo, Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 19, 1993, Ser. No. 20,085

Claims priority, application Japan, Feb. 19, 1992, 4-32156; Feb. 28, 1992, 4-43289; Apr. 28, 1992, 4-110145; Dec. 25, 1992, 4-345818; Dec. 25, 1992, 4-345819

Int. Cl.[5] F04D *17/08*

U.S. Cl. 415—206 **13 Claims**



1. A fan device comprising: a casing having a tubular body portion having axially spaced first and second end walls and a

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tubular side wall connecting the first and second end walls, and a discharge duct connected to the body portion;

the first wall having an opening that is coaxial with respect to the axis of the casing;

a fan assembly arranged in the casing so that a passageway is created in the casing around the fan assembly so that the width of the passageway is gradually increased in the circumferential direction until the passageway is connected to the duct;

said fan assembly being constructed by a base plate rotatably supported by the casing at the second wall, a plurality of blades fixedly connected to the outer periphery of the base plate so that the blades are circumferentially spaced, and an annular shroud connected to edges of the blades spaced from the base plate;

said first wall forming a first portion, adjacent to said opening having a curved cross sectional shape; and

the first wall having a second portion extending radially outward from said first portion, said second portion being arranged adjacent to the shroud of the fan assembly;

the first wall having a third portion, and an intermediate portion interconnecting said second and third portions, said third portion extending radially outwardly from the intermediate portion to the tubular side wall;

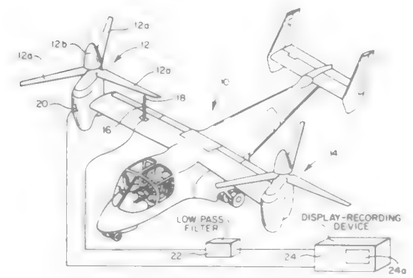
the first and the second portions creating, along an axial cross section, a smoothed profile portion extending along the shroud, which forms, with respect to the shroud, a small annular gap of substantially constant value along substantially an entire radial length of the shroud.

5,352,090

SYSTEM FOR DETERMINING AERODYNAMIC IMBALANCE

Gary B. Churchill, San Jose, and Benny K. Cheung, San Francisco, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 7, 1992, Ser. No. 926,117
Int. Cl.[5] B64C *11/00*
U.S. Cl. 416—61 **14 Claims**



1. A system for determining the aerodynamic unbalance among the blades of an aircraft rotor, said system comprising:

pressure sensor means for separately sensing the pressure pulse produced by each of the blades during the passage thereof by said pressure sensor means and for producing an output signal in accordance therewith; and

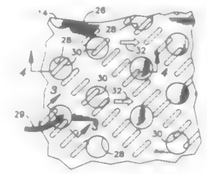
output means, connected to receive the output of said pressure sensor means, for enabling the relative amplitudes of said pressure pulses to be compared so as to determine the relative magnitudes of any discrepancies between the lift provided by the individual blades.

5,352,091

GAS TURBINE AIRFOIL

Joseph A. Sylvestro, New Britain, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jan. 5, 1994, Ser. No. 177,488
Int. Cl.[5] F01D *5/18*
U.S. Cl. 416—96 A **7 Claims**



1. A first stage hollow airfoil for a gas turbine comprising:

airfoil walls having an exterior airfoil shape and an internal surface;

a hollow tube located within said airfoil and spaced from said internal surface of said airfoil walls, forming a flow chamber between said tube and said internal surface;

air supply means for supplying cooling air through said hollow tube;

an air exit located at the trailing edge of said airfoil and in fluid communication with said flow chamber;

a plurality of extended surface protrusions on said internal surface; and

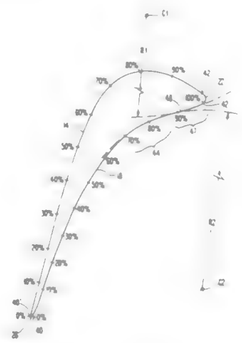
a plurality of flow openings in said hollow tube in registration with at least some of said protrusions.

5,352,092

LIGHT WEIGHT STEAM TURBINE BLADE

Jurek Ferleger, Longwood, and Daniel R. Cornell, Winter Springs, both of Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 24, 1993, Ser. No. 157,714
Int. Cl.[5] F01D *5/14*
U.S. Cl. 416—223 A **14 Claims**



1. A steam turbine comprising:

a) a stationary cylinder for containing a steam flow, and a rotor enclosed by said cylinder; and

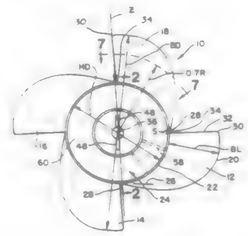
b) a row of blades, each of said blades having a root portion attached to said rotor and an airfoil portion, each of said airfoil portions having (i) a base portion and a tip portion defining an airfoil height therebetween, (ii) a rounded leading edge portion and a trailing edge, (iii) a pressure surface and a generally concave suction surface extending between said rounded leading edge portion and said trailing edge and defining a thickness of said airfoil therebetween, said pressure surface over at least a first portion of said airfoil height having a curvature undergoing an inflection at a location disposed within said pressure surface, a first portion of said pressure surface extending over said first portion of said airfoil height having a concave curvature and being disposed between said inflection location and said rounded leading edge portion, a second portion of said rounded leading edge portion, a second portion of said pressure surface extending over said first portion of said airfoil height having a convex curvature and being disposed between said inflection location and said trailing edge, said concave curvature in said first portion of said pressure surface having a maximum negative value in excess of $-0.03\ mm^{-1}$, said convex curvature in said portion of said pressure surface having a maxmum positive value in excess of $-0.03\ mm^{-1}$.

5,352,093

WEEDLESS PROPELLER

R. Douglas Hannon, and George E. Lackman, both of c/o First Union National Bank of Florida, 100 S. Ashley Dr., Suite 1000, Tampa, Fla. 33602

Continuation-in-part of Ser. No. 384,507, Jul. 24, 1989, abandoned. This application Mar. 23, 1992, Ser. No. 855,529
Int. Cl.[5] B63H *1/20*
U.S. Cl. 416—234 **19 Claims**



1. In an improved weedless propeller for producing thrust upon rotation by a rotatable shaft within water and having elongate fibrous material therein, the propeller comprising a tubular hub having a hub diameter and an axially extending outer surface, the hub having a longitudinal axis, and at least two blades connected to the hub in circumferentially equally spaced-apart relationship, each of the blades having a blade root with a predetermined width at the outer surface of the hub and a leading blade edge swept back in a direction opposite to the direction of rotation of the propeller, the propeller having a propeller diameter defined by the radially outermost point of the leading edge subscribing a circle having a center at the center of the hub as said propeller is rotated about the longitudinal axis of the hub, and each of the blades having a blade length equal to one-half of the difference between the propeller diameter and the hub diameter, the improvement comprising:

the junction of the leading edge of one blade with the hub is in close proximity with a plane containing the longitudinal axis of the hub and which plane passes through the junction of the trailing edge of the adjacent blade with the hub means;

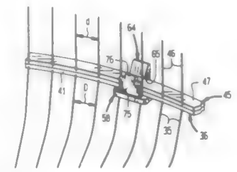
said junction of the leading edge of the one blade with the hub is spaced no greater than 5 degrees from the plane containing the longitudinal axis of the hub and passing through the junction of the trailing edge of the adjacent blade with the hub.

5,352,094

GRILL ASSEMBLY FOR PORTABLE FAN

Johnson Peng, Chaug-Haw City, Taiwan, assignor to Duracraft Corporation, Whitinsville, Mass.

Filed Jan. 16, 1992, Ser. No. 821,643
Int. Cl.[5] F01D *25/28*
U.S. Cl. 416—247 R **27 Claims**



1. Environmental conditioning apparatus comprising:

conditioning means for conditioning a surrounding environment;

housing means retaining said conditioning means and comprising a flange means defining an opening, said flange means having inner and outer flange edge portions separated by oppositely directed front and rear flange surface portions;

grill means covering said opening and comprising a rim means juxtaposed to said flange means, said rim means having inner and outer rim edge portions separated by oppositely directed front and rear rim surface portions and said rear rim surface portion facing said front flange surface portion;

a plurality of fastening elements securing said rim means to said flange means; each of said elements being U-shaped and having an inner leg portion extending over said inner rim and flange edge portions, an outer leg portion extending over said outer rim and flange edge portions, a web portion joining said inner and outer leg portions and engaging one of said front rim surface portion or said rear flange surface portion, and a latch portion terminating one of said inner or outer leg portions and engaging the other said front rim surface portion or rear flange surface portion not engaged by said web portion; and

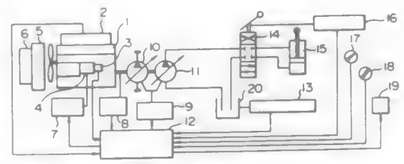
bias means exerting a separating force between each of said fastening elements and one of said flange means or said rim means.

5,352,095

METHOD FOR CONTROLLING HYDRAULIC PUMP DRIVEN BY ENGINE

Masayuki Tanaka; Isao Murota; Kazuhito Nakai, and Makoto Iga, all of Tokyo, Japan, assignors to Shin Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Dec. 28, 1992, Ser. No. 997,513
Claims priority, application Japan, Jun. 10, 1992, 4-150855
Int. Cl.[5] F04B *49/00*
U.S. Cl. 417—12 **20 Claims**



1. A method for controlling a hydraulic pump driven by an engine, comprising the steps of:

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measuring a temperature of at least one of the engine and a hydraulic fluid,

comparing the measured temperature with a first predetermined temperature to judge as to whether the measured temperature is higher than the first predetermined temperature or not,

calculating a difference between the measured temperature and another predetermined temperature, less than or equal to said first predetermined temperature,

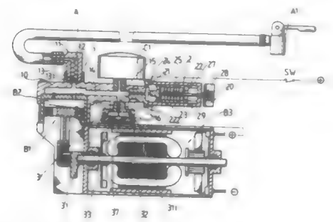
decreasing an output flow rate of the hydraulic pump by a degree according to the difference between the measured temperature and said another predetermined temperature, when the measured temperature is judged to be higher than the first predetermined temperature.

5,352,096

AIR COMPRESSOR FOR AUTOMOBILES

Chen Chi-Wen, P.O. Box 82-144, Taipei, Taiwan

Filed Sep. 27, 1993, Ser. No. 127,015
Int. Cl.[5] F04B *49/06, 49/08*
U.S. Cl. 417—12 **1 Claim**



1. An air compressor comprising:

a valve controlling device having a check valve and a cover, said check valve being fixedly mounted on said cover and being connected with a pipe, said check valve including a spring, a ball and a packing , said spring urging said ball against said packing thereby sealing said pipe, said cover being fixedly mounted on a cylinder so that air in said cylinder can flow out of said cover, a passage being formed between said cylinder and said cover and communicated with said check valve, a power breaker, an exhaust valve, and a pressure gauge;

said power breaker fixedly connected with said cover via a connector and having an adjusting knob, a diaphragm, a main body, and two conducting members, said main body having an interior chamber in which is fitted a piston, said piston receiving a spring and having a protuberance on which is fitted a circular conductor, said spring urging said piston to go forward thereby pushing said circular conductor against said conducting members; and

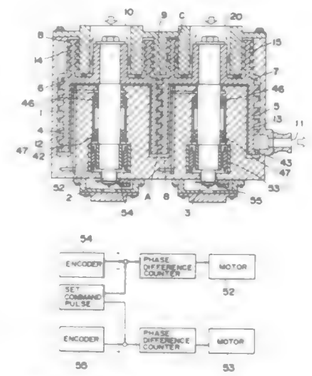
said exhaust valve fixedly mounted on said cover and including a thermo-couple and a needle valve, said exhausting device comprising an upper bakelite cover and a lower bakelite cover closely engaged with said upper bakelite cover, said upper bakelite cover being provided with a locking member and an air outlet, said locking member being fitted with a seal ring and formed with a hole in which is fitted said needle valve with the lower end contacting a heat sensitive member.

5,352,097

VACUUM PUMP

Daisuke Itou, Yao, and Teruo Maruyama, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 21, 1993, Ser. No. 6,500
Claims priority, application Japan, Jan. 23, 1992, 4-009736
Int. Cl.[5] F04C *25/02*
U.S. Cl. 417—42 **5 Claims**



1. A vacuum pump comprising:

a housing;

a plurality of rotors accommodated in said housing and having a plurality of rotary shafts, respectively;

a plurality of bearings for supporting said rotary shafts, respectively;

a fluid-sucking opening and a fluid-discharge opening formed in the housing;

a plurality of motors for driving said rotors, respectively; and

a plurality of control means for respectively controlling said motors so that the motors rotate synchronously, whereby fluid is sucked and discharged by utilizing change in the volume of a space formed by the rotors and the housing;

a positive displacement vacuum pump structure section disposed on the discharge side of each rotor; and

a plurality of kinetic vacuum pump structure sections disposed on the sucking sides of said rotors, respectively;

wherein a part of each of the kinetic vacuum pump structure sections has a thread groove; and

wherein the kinetic vacuum pump structure sections are different relative to one another in one of depth of the thread grooves, width of the thread grooves, width of threads, and number of threads

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5,352,098

TURN VALVE CONTROL SYSTEM FOR A ROTARY SCREW COMPRESSOR

James A. Hood, Concord, N.C., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Apr. 22, 1993, Ser. No. 51,725
Int. Cl.[5] F04B *49/00*
U.S. Cl. 417—282 **6 Claims**

1. In a rotary screw compressor having an inlet port for receiving a low pressure fluid to be compressed and a discharge port for discharging the compressed fluid at a predetermined pressure, an apparatus for regulating the fluid throughput of the rotary screw compressor from a full capacity operating condition to a desired, predetermined capacity operating condition, the apparatus comprising:

an inlet valve flow connected with the inlet port;

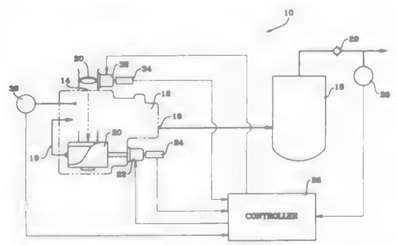
positioning means for positioning the inlet valve in a predetermined orientation, the inlet valve positioning means positioning the inlet valve in discrete, predetermined, angular steps;

position sensing means, operably connected to the inlet valve, for detecting the angular orientation of the inlet valve;

pressure sensing means for detecting fluid pressure at the compressor inlet port;

a rotatable valve disposed in fluid communication with the low pressure fluid;

rotatable valve positioning means for positioning the rotatable valve in a predetermined orientation, the rotatable valve positioning means positioning the rotatable valve in discrete, predetermined, angular steps;



position sensing means, operably connected to the rotatable valve, for detecting the angular orientation of the rotatable valve;

pressure sensing means for detecting a compressor service pressure; and

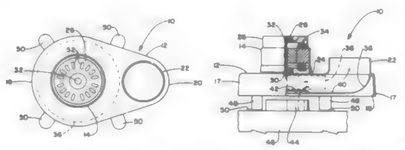
electronic control means, responsive to the inlet valve and rotatable valve position sensing means and to the inlet port pressure and service pressure sensing means, for controlling the inlet valve positioning means and the rotatable valve positioning means to orient the inlet valve and the rotatable valve in a respective, predetermined position thereby regulating a fluid throughput of the rotary screw compressor from a full capacity to a predetermined capacity during compressor operation.

5,352,099

EXHAUST FAN FOR WATER HEATER

William E. Anstine, North Canton; Gregory P. Wagner, and Michael P. Conner, both of Uniontown, all of Ohio, assignors to Ametek, Inc., Kent, Ohio

Filed Dec. 14, 1992, Ser. No. 990,667
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—366 **16 Claims**



1. An exhaust fan assembly for a water heater tank, comprising:

an elliptical casing having a first larger end and a second smaller end;

a fan received within said first end and rotatable about a first vertical axis over a flue pipe of the water heater tank;

an exhaust port extending from said second end about a second vertical axis; and

a motor connected to said fan, said fan being interposed between, and axially aligned with, said motor and an intake aperture of said casing, said casing being spaced above said flue pipe and said fan drawing motor cooling air across said motor and exhaust gas from said flue pipe and passing said gas together out of said exhaust port.

5,352,100

PUMP DRIVE FOR A MOTOR VEHICLE AUTOMATIC TRANSMISSION

Gert Bauknecht, Immenstaad; Rainer Pfalz, and Manfred Bucksch, both of Friedrichshafen, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Fed. Rep. of Germany

PCT No. PCT/EP91/01900, § 371 Date Apr. 1, 1993, § 102(e) Date Apr. 1, 1993, PCT Pub. No. WO92/07204, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 4, 1991, Ser. No. 30,457
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1990, 4032081
Int. Cl.[5] F16D *33/00;* **F04B** *17/00*
U.S. Cl. 417—405 **4 Claims**

1. A pump drive for supplying fluid to a motor vehicle automatic transmission, said pump drive including a torque converter (**1**) comprising:

a first torque converter primary part (**4**);

a stator; and

a torque shell (**2**) being non-rotatably connected together with a second torque converter primary part (**3**); said torque shell (**2**) being further connected to a first end of a hollow shaft (**6**), a second end of said hollow shaft (**6**) passing into an interior of a pump housing (**7**) and being drivingly connected to an impeller (**10**) of a pump, said hollow shaft (**6**) being supported in a bore (**12**) of said pump housing (**7**) via a roller bearing (**13**), a radial sealing ring (**18**), having at least one sealing lip engagable with said hollow shaft (**6**), being situated in said bore (**12**) on a side of said roller bearing facing said torque shell (**2**), and a second sealing ring (**14**) being situated in said bore (**12**) and surrounding said hollow shaft (**6**), on a side facing said impeller (**10**), and forming with said hollow shaft (**6**) a sealing cap (**25**);

wherein said second sealing ring (**14**) is floatingly passed into said bore (**12**), said second sealing ring (**14**) has radial play (**24**) relative to said bore (**12**) and has axial play (**23**) relative to axial limits formed by an outer ring (**19**) of said roller bearing (**13**) and a stop (**22**) of said bore (**12**), and the amount of said axial play (**23**) for said second sealing ring (**14**) is determined by an axial position of said outer ring (**19**) once said outer ring (**19**) is biased against a locating face (**21**) of said pump housing (**7**).

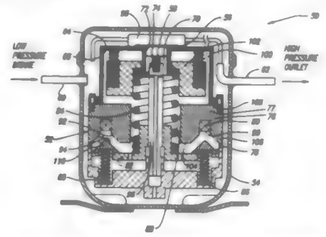
VOL 1167 ISS 1 OC 4 1994 UMI

5,352,101

ELECTROMAGNETICALLY ACTUATED COMPRESSOR VALVE

Fernando B. Morinigo, Los Angeles, and Keith O. Stuart, Cypress, both of Calif., assignors to Aura Systems, Inc., El Segundo, Calif.

Division of Ser. No. 988,280, Dec. 9, 1992, which is a continuation-in-part of Ser. No. 957,194, Oct. 10, 1992, Pat. No. 5,222,714. This application Sep. 17, 1993, Ser. No. 122,691
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—410.1 7 Claims



1. A compressor having a compression cylinder defining an aperture, and a piston disposed within said aperture for movement between an upper end of the aperture and a lower end of the aperture, wherein the piston's movement is actuated by an electromagnetic actuator comprising:

an electromagnetic element, said electromagnetic element including a core and a coil, said core having a first surface and an opening at said first surface extending through said core, said first surface further having a continuous channel extending around said opening, said coil being disposed in said channel; and

an armature element interconnected with the compressor piston, said armature element having a raised portion dimensioned to be received within said channel, said armature further being in a normally biased initial spaced apart position from said electromagnetic element;

wherein applying current to the coil in the electromagnetic element causes the armature to move toward the electromagnetic element and the piston to move to the upper end of the aperture, and interrupting the current to the coil causes the armature to move away from the electromagnetic element and the piston to move to the lower end of the aperture.

5,352,102

Patent Not Issued For This Number

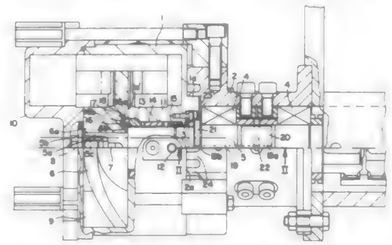
5,352,103

PUMP WITH UNDULATING PUMP ELEMENT

Dirk Auer, Meerbusch, Fed. Rep. of Germany, assignor to PKL Verpackungsysteme GmbH, Linnich, Fed. Rep. of Germany

Filed May 18, 1993, Ser. No. 63,449
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1992, 9290117[U]
Int. Cl.[5] F01C *21/04*
U.S. Cl. 418—101 6 Claims

1. A pump having a pump element (6) which is shaped undulating in an axial direction and cylindrical along a periphery of the pump element (6) and which is attached to a rotor shaft (5) mounted in a pump casing (1) and rotates in a pump channel (9) of the pump casing (1), characterized in that starting from a wall (1a) of the pump casing (1) adjacent a rear end face (6b) of the pump element (6), a wall of a casing opening (3) receiving the rotor shaft (5) is formed with an annular groove (11) in which there is disposed a spring-loaded sealing element (13) which bears slidably against said rear end face (6b) of the pump element (6) when the pump element (6) rotates said sealing element being subjected to the pressure of superheated steam via pressure channels connected to the annular groove (11), the rotor shaft (5) having radial and axial channels (19a, b)



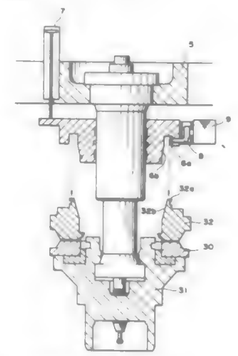
which form a cooling system and through which a coolant flows.

5,352,104

POST-CURE INFLATOR

Katsumi Ichikawa; Keiji Ozaki, and Akihiko Masagaki, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Oct. 14, 1992, Ser. No. 960,867
Claims priority, application Japan, Oct. 15, 1991, 3-296396
Int. Cl.[5] B29C *35/16*
U.S. Cl. 425—58.1 5 Claims



1. A post-cure inflator, comprising:

a rotary frame;

a locking shaft mounted for rotation around a longitudinal axis thereof on said rotary frame;

an upper rim support mounted for rotation about said axis with respect to said locking shaft;

an upper rim removably supported on said upper rim support;

a lower rim support removably supported on said locking shaft;

a lower rim removably supported on said lower rim support for cooperating with said upper rim to hold a vulcanized tire therebetween;

means for inflating and cooling the vulcanized tire held between said upper and lower rims;

said upper rim support and said upper rim having tapered fitting portions for cooperating with each other;

said upper rim having an outer peripheral annular groove facing radially outwardly and formed at an upper portion thereof; and

a latching member mounted on said upper rim support for

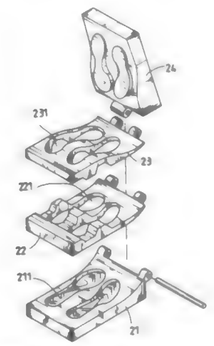
movement in a direction substantially perpendicular to said axis, into and out of said outer peripheral annular groove of said upper rim to selectively lock said upper rim to said upper rim support for any circumferential orientation of said upper rim with respect to said upper rim support.

5,352,105

EVA SOLE MOLDING DIE ASSEMBLY

Kuo-Nan Yang, No. 92, Lane 52, Fu Te Rd., Ta Li, Taichung Hsien, Taiwan

Filed Jan. 24, 1994, Ser. No. 185,005
Int. Cl.[5] B29C *33/00, 45/26*
U.S. Cl. 425—129.2 2 Claims



1. An EVA sole molding die assembly for molding integral EVA (ethylene vinyl acetate) soles having different color layers, the molding die assembly comprising a bottom die having a pair of die cavities for molding the bottoms of EVA outsoles, an outsole molding die hinged to said bottom die and having a pair of outsole molding slots corresponding to the die cavities on said bottom die for molding EVA outsoles, an insole molding die hinged to said outsole molding die and having a pair of insole molding slots corresponding to the outsole molding slots on said outsole molding die for molding EVA insoles on EVA outsoles being molded in said outsole molding die, and a top die hinged to said insole molding die and having unitary lasts raised from a bottom surface thereof corresponding to the insole molding slots on said insole molding die for molding EVA insoles.

5,352,106

APPARATUS FOR MELT SPINNING MULTICOMPONENT YARNS

Erich Leak, Remscheid; Ralph Sievering, Wermelskirchen; Gerd Zimmerbeutel, Huckeswagen, and Gerhard Nickisch, Radevormwald, all of Fed. Rep. of Germany, assignors to Barmag AG, Remscheid, Fed. Rep. of Germany

Filed Aug. 6, 1992, Ser. No. 926,763
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1991, 4125956
Int. Cl.[5] B29C *47/30;* D01D *5/32*
U.S. Cl. 425—131.5 13 Claims

1. A melt spinning apparatus adapted for spinning multi component yarn and comprising

a heater box having a vertically extending open shaft,

spinning head means closely received in the upper portion of said vertically extending shaft for extruding at least two different thermoplastic components through respective discharge outlet means,

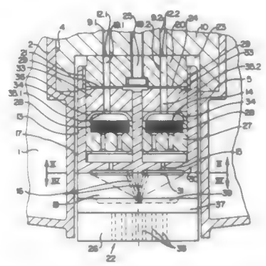
a collection chamber positioned in said shaft below each of said discharge outlet means for receiving and collecting respective ones of said components,

a spinning nozzle plate mounted in said shaft below said collection chambers and including a plurality of nozzle bores extending vertically therethrough,

a blending plate mounted in said shaft between said collection chambers and said nozzle plate, said blending plate including at least two melt lines leading to and communicating with each of said nozzle bores,

a distributor plate positioned in said shaft between said collection chambers and said blending plate, and so as to form an interface with said blending plate,

a plurality of parallel longitudinal channels formed at the interface between said distributor plate and said blending



plate, with alternate ones of said channels respectively communicating with one of said melt lines leading to each of said nozzle bores and with intervening ones of said channels respectively communicating with a second one of said melt lines leading to each of said nozzle bores, and

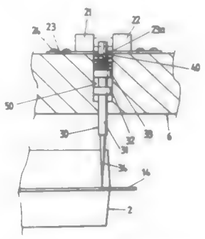
distribution channel means formed in said distributor plate and connecting one of said collection chambers with alternate ones of said channels, and connecting the other of said collection chambers with intervening ones of said channels, so that said melt lines leading to each nozzle bore are adapted to deliver different components to such nozzle bore, and with said distribution channel means including a plurality of melt ducts which terminate at said interface along a straight line which is perpendicular to the longitudinal direction of said channels.

5,352,107

APPARATUS FOR SENSING INCOMPLETE MOLDING OF AN AUTOMOLD SYSTEM

Yong Young Oh, Choongcheongbook-Do, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Rep. of Korea

Filed Dec. 21, 1992, Ser. No. 993,426
Claims priority, application Rep. of Korea, Dec. 23, 1991, 23611/1991
Int. Cl.[5] B29C *45/76*
U.S. Cl. 425—141 4 Claims



1. An apparatus for sensing incomplete molding of packages

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formed by an automold system, the apparatus comprising an unloader unit having a horizontal plate with one or more vacuum heads mounted thereon, and a plurality of devices for sensing incomplete molding of packages, said devices mounted on the horizontal plate at both sides of each of the vacuum heads, each of the devices corresponding to a cavity formed on a bottom mold die of said automold system when the unloader unit is aligned above the bottom mold die, each cavity containing a package, each of said devices for sensing incomplete molding of packages comprising:

a guide hole extending through said horizontal plate of the unloader unit, said guide hole having an upper and a lower part, the upper part having a first diameter, and the lower part having a second diameter which is smaller than the first diameter;

a detect pin having a pin body and a point formed at a lower end of said pin body for contacting a resin filled junk portion of said package, said detect pin positioned in the guide hole such that the point extends outside of the guide hole and such that said detect pin is reciprocable therein between a raised position indicating a completely filled junk portion when contacted by said point, and a lowered position indicating an incompletely filled junk portion when contacted by said point, said pin body including a flange means located at a middle portion thereof and being reciprocable within said upper part of said guide hole, said flange means engaging said lower part of said guide hole so as to prevent the pin body from slipping out of the guide hole when said detect pin is in said lowered position,

a sensor assembly for sensing the raised position and the lowered position of the detect pin depending upon the presence of resin in said junk portion and for generating a signal corresponding to incomplete filling of said package when the lower position is sensed, said sensor assembly having a sensor supporting plate fixed to said horizontal plate of the unloader unit and formed with a through hole positioned axially with said guide hole such that an upper end of the detect pin is positioned in the through hole and protrudes therefrom when said detect pin is in said raised position; and,

a spring mounted on an upper end of said detect pin within said guide hole between said sensor supporting plate and said flange means, said spring engaging said sensor supporting plate and said flange means to resiliently bias said detect pin in a downward direction to said lowered position.

5,352,108

POROUS FILM AND POROUS FILM MANUFACTURING APPARATUS

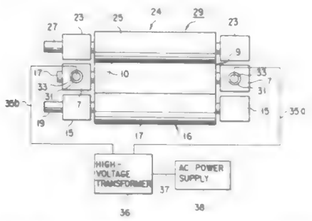
Seiji Kagawa, 1-17-13-601, Honcho, Kawaguchi-shi, Saitama-ken, and Yoichiro Kagawa, Kawaguchi, both of Japan, assignors to Norito Sudo and Seiji Kagawa, both of Japan

Filed Oct. 9, 1992, Ser. No. 958,729

Claims priority, application Japan, Oct. 18, 1991, 3-297681; Mar. 31, 1992, 4-77322

Int. Cl.[5] B26F *1/10*

U.S. Cl. 425—174.4 **13 Claims**



1. A porous film manufacturing apparatus comprising:

feed means for feeding an elongated organic film;

a recess-forming unit including a first rotatable roll having a surface on which a large number of dielectric particles, each having sharp pointed portions and a Mohs hardness value of not less than 5, are deposited, and a second roll which is rotatable in a direction reverse to a rotating direction of said first roll and having a surface on which a dielectric layer is formed, said first and second rolls being arranged to cause the elongated organic film to pass therebetween, and either one or both of said rolls being movable in a direction along which said first and second rolls are aligned;

pressure control means, arranged near two end portions of either one of said rolls of said recess-forming unit, for controlling a pressure applied from each of said rolls to the elongated organic film; and

high-voltage supply means for supplying a high voltage to said first roll.

5,352,109

INJECTION MOLDING APPARATUS

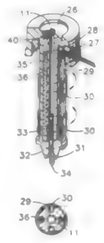
Salvatore Benenati, 3407 Rose Ave., Ocean, N.J. 07712

Filed Mar. 8, 1993, Ser. No. 27,858

Int. Cl.[5] B29C *45/20, 45/74*

U.S. Cl. 425—192 R **8 Claims**

1. An elongated nozzle for convrying hot fluid resin from fluid resin supply apparatus to a mold cavity, said nozzle including an elongated nozzle body having an end-to-end central passage for the fluid resin, and said nozzle body having an external elongated side surface around the body, multiple elongated channels extending along said nozzle body, said channels constituting recesses in said elongated side surface and being spaced apart around said body, elongated rod-like electrical cartridge heaters received in said channels, respectively, and means for releasably confining said cartridge heaters in said channels, respectively, said means including at least one retainer member extending around said nozzle body and said retainer member being movable in relation to said nozzle body into position overlying all of said channels and thereby to confine all of said cartridge heaters in said channels, respectively, and said retainer member being positionable to allow removal of any of said heaters.



5,352,110

MOLDING APPARATUS FOR MOLDING FIBER REINFORCED RESIN WITH PLURALITY OF ROLL PAIRS

Yuzo Hayakawa, Takarazuka; Tsuneo Hirai, and Tsutao Katayama, both of Takatsuki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Mar. 10, 1992, Ser. No. 849,662

Claims priority, application Japan, Mar. 12, 1991, 3-047020

Int. Cl.[5] B29C *43/46, 43/26*

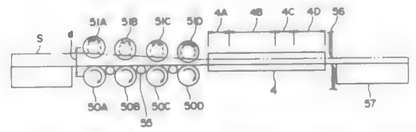
U.S. Cl. 425—237 **14 Claims**

1. A molding apparatus for molding a resinous material, which is reinforced with reinforcement fibers and has a starting

shape and thickness, into a fiber-reinforced resin article having a final shape and thickness, said apparatus comprising:

a plurality of roll pairs mounted in spaced apart relation along a transport path, each of said plurality of roll pairs comprising a roll-die and a roll opposing said roll-die so as to form a gap therebetween, said gap for each said roll pair being smaller than said gap for any of said roll pairs disposed upstream thereof along said transport path;

wherein said plurality of roll pairs constitute at least part of a pressing means which is operable to reduce the thickness of the resinous material and to cause the resinous material to attain the final shape and thickness by compressing the resinous material between said roll-die and said roll of



each of said roll pairs in respectively successive discrete compressing steps, each of which reduces the thickness of the resinous material by 1/5 to 1/100 of an overall reduction amount necessary to reduce the resinous material from the starting thickness and shape to the final thickness and shape; and

wherein a rotary drive means is operatively coupled with at least one of said roll-die and said roll of each roll pair for rotating said at least one of said roll-die and said roll of each roll pair such that a peripheral rotary speed of said at least one of said roll-die and said roll is variable independently for each roll pair relative to other roll pairs, such that an orientation of the reinforcement fibers in said fiber-reinforced resin article can be selectively controlled.

5,352,111

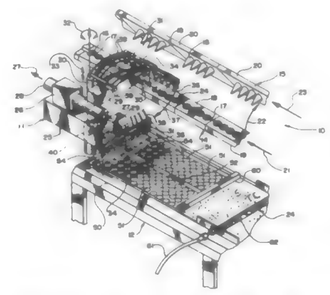
APPARATUS FOR REMOVING A HAND HELD FOOD PRODUCT FROM A BAKING MOLD

Will L. Selbak, Minnetonka, Minn., assignor to Selbak's Cookie Cones, Inc., Maple Grove, Minn.

Continuation-in-part of Ser. No. 630,312, Dec. 19, 1990, Pat. No. 5,223,286. This application Jun. 28, 1993, Ser. No. 83,351

Int. Cl.[5] A21C *15/00*

U.S. Cl. 425—351 **13 Claims**



1. An apparatus for producing an edible, hand held food product having a configuration that may be used as a container for ice cream and other frozen confections, said container configuration having an outer surface and a spaced inner surface, said apparatus comprising:

a mold for baking said food product, said mold including a female portion and a male portion for insertion into said female portion to define a cavity therebetween conforming to the desired container configuration, said male portion being selectively moveable into and out of said female portion;

a vacuum removal plug selectively insertable into said female portion for removing said baked food product, said removal plug having an exterior surface with an exterior surface portion having a configuration corresponding substantially to a portion of the inner surface of said container configuration and including a plurality of vacuum ports opening to said exterior surface;

vacuum means for selectively creating a vacuum within said vacuum ports to facilitate removal of said baked food product from said female portion; and

a cooling conveyor having at least one cooling basket for receiving said baked food product, said cooling basket having an interior configuration corresponding substantially to at least a portion of the outer surface of said container and having a plurality of cooling openings.

5,352,112

ROTARY PRESS

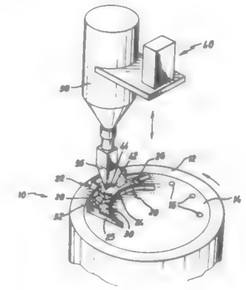
Frederick J. Moore, c/o British Nuclear Fuels plc, Patents Section, Legal Department, Risley, Warrington, Cheshire WA3 6AS, United Kingdom

Continuation of Ser. No. 836,401, Feb. 18, 1992, abandoned. This application Apr. 8, 1993, Ser. No. 54,102

Claims priority, application United Kingdom, Apr. 9, 1991, 9107476

Int. Cl.[5] B29C *31/00*

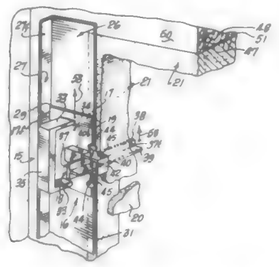
U.S. Cl. 425—352 **6 Claims**



1. A rotary press having a rotatable table defining die cavities therein, wherein the improvement comprises a dispensing device for dispensing granular material onto the table, the device comprising a vessel for retaining the granular material, a discharge port connectable to the vessel for discharging the granular material from the vessel, a frame located above and close to the table, the discharge port being located so as to discharge into the frame, guide means located inside the frame for guiding the granular material in the frame into said die cavities as the table rotates, and means for raising and lowering the discharge port so as to vary the feed of the granular material onto the table, the guide means comprising a plurality of unconnected guide fingers projecting angularly from the frame including a first finger which points towards a second finger which in turn points towards a third finger, whereby granular material deposited on the table is transported by rotation of the table against the fingers and is thereby guided by the fingers into the die cavities.

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5,352,113
JAMB CUTTER
Michael A. Alvarez, 6980 Varna Ave., Van Nuys, Calif. 91405
Continuation of Ser. No. 833,776, Feb. 11, 1992, abandoned. This application Jan. 4, 1994, Ser. No. 177,207
Int. Cl.[5] B05C *17/10*
U.S. Cl. 425—458 **8 Claims**



1. An assembly for removing excess fluent material applied to a wall to form an outer corner, wherein the assembly comprises a face member which includes a housing mounted thereto, a cutting means held in said housing and a support means for guiding the face member and cutting means,

said face member having a first edge and second edge parallel thereto, said first edge and second edge being separated by a width for said face member,

the cutting means being movably mounted on said face member at its first edge by placement in the housing in a first or second alternate position, said cutting means extending at an angle from said face member for acting on the excess fluent material,

the support means having a flat surface with a width that is substantially equal to the width of said face member and along which said face member slides, said width being defined by a terminal edge and a guide means, the guide means being spaced from and parallel to the terminal edge,

said guide means comprising a flange for guiding said face member as it slides along said support means with the second edge against the flange,

the cutting means first alternate position locating a flat top portion of the cutting means in contact with the first edge of the face member and the cutting means second alternate position locating the flat top portion parallel to, but spaced from, the first edge with a leg of the cutting means in contact with the first edge of the face member,

the cutting means being mounted to the face member so that when the support means is positioned on a supporting surface a desired amount of fluent material placed on a second surface perpendicular thereto can be removed by the cutting means as the face member is slid along the flat surface of the support means.

5,352,114
CATALYTIC BURNING APPARATUS AND CATALYTIC BURNING METHOD
Hironao Numoto, Ikoma, and Tetsuo Terashima, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 9, 1993, Ser. No. 73,892
Claims priority, application Japan, Jun. 9, 1992, 4-149160
Int. Cl.[5] F23D *14/12*
U.S. Cl. 431—7 **32 Claims**

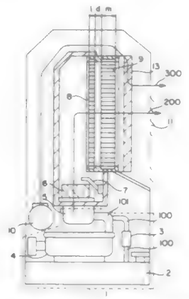
1. A catalytic burning apparatus comprising:

a main catalyst layer for catalytic burning, and

a subsidiary catalyst layer for catalytic burning,

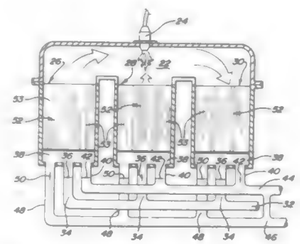
wherein said main catalyst layer has a larger thermal capacity than that of said subsidiary catalyst layer and is disposed along a flow of premixed gas in a downstream direction from said subsidiary catalyst layer; and

said main catalyst layer and said subsidiary catalyst layer define a gap along said flow of premixed gas, said gap, said



main catalyst layer, and said subsidiary catalyst layer being so arranged that a thickness of said main catalyst layer is used substantially for strong catalytic burning and a thickness of said subsidiary catalyst layer is used substantially for weak catalytic burning.

5,352,115
REGENERATIVE THERMAL OXIDIZER WITH HEAT EXCHANGER COLUMNS
Joseph M. Klobucar, Plymouth, Mich., assignor to Durr Industries, Inc., Plymouth, Mich.
Filed Jul. 12, 1993, Ser. No. 89,722
Int. Cl.[5] F27D *17/00*
U.S. Cl. 432—181 **17 Claims**



1. A regenerative thermal oxidizer comprising:

a combustion chamber including a burner;

at least two heat exchangers, each having a heat exchanger passage leading into said combustion chamber and having a heat transfer column located therein;

an inlet line connected to a source of gas having entrained pollutants, said inlet line communicating with an inlet branch leading to each of said heat exchangers, and an inlet valve located in each said inlet branch;

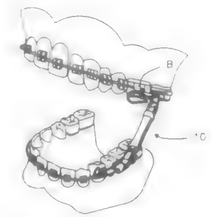
an outlet branch leading from each heat exchanger, each said heat exchanger outlet including an outlet valve;

gas to be cleaned being delivered through said inlet line, and into one of said heat exchanger inlets by opening said inlet valve and closing said outlet valve on one of said heat exchangers in an inlet mode, moving a gas to be cleaned through said one heat exchanger and into said combustion chamber, combusting such gas and leading it from the combustion chamber through a second heat exchanger having a closed inlet valve and an open outlet valve in an outlet mode, and delivering such cleaned gas to said outlet branch;

said heat transfer column including a solid body formed of a heat resistant, heat retaining material having a plurality of spaced axial gas flow passes, said gas flow passages having a maximum dimension of less than about one-half inch, said heat transfer column having a substantially constant cross-sectional area, and said flow passages having a substantially constant cross-sectional area comprising at least about fifty percent of said cross-sectional area, and the pressure drop across said heat transfer column being less five inches of water when the superficial flow rate is greater than 100 feet per minute; and

wherein there are at least three of said heat exchangers, and each of said heat exchangers also includes a purge line and a purge valve, said purge line leading to a source of clean air, and said purge valve being opened after said heat exchanger is done receiving a gas to be cleaned, and before said heat exchanger receives said clean gas, the purge acting to purge any residual gas to be cleaned from said heat exchanger passage and into the combustion chamber prior to that heat exchanger receiving a clean gas.

5,352,116
ADJUSTABLE BITE CORRECTOR
Richard P. West, 3115 Montecito Meadow Dr., Santa Rosa, Calif. 95404
Filed Dec. 6, 1993, Ser. No. 163,368
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—19 **3 Claims**



1. An orthodontic appliance for treating an overbite condition in a patient whose upper row of teeth lies abnormally forward of the lower row of teeth in the patient's lower jaw, comprising:

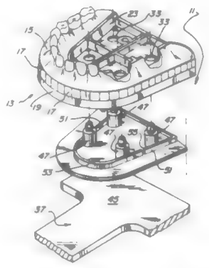
upper attachment means adapted to be secured to said upper row of teeth;

lower attachment means adapted to be secured to said lower row of teeth;

at least one flexible, adjustable-length, stretching appliance element extending between and attached to said upper attachment means and to said lower attachment means and adapted to lie on one side of the patient's jaw, said appliance element having sufficient stiffness to exert a small axial pushing force from end to end when flexed, each said element having end means for bearing against said attachment means while allowing the element to swivel relative to said attachment means;

whereby said appliance element, when installed in a patient's mouth and in a slightly flexed condition, exerts a small pushing force on the patient's upper and lower jaws, tending to correct said overbite condition, said appliance element allowing the patient to move his jaws to talk, chew and cleanse both rows of teeth.

5,352,117
METHOD AND APPARATUS FOR ATTACHING A DENTAL MODEL TO AN ARTICULATOR
Robert Silva, Lakewood, Colo., assignor to The Silva Group, Lakewood, Colo.
Filed Jul. 6, 1993, Ser. No. 85,812
Int. Cl.[5] A61C *19/00*
U.S. Cl. 433—60 **18 Claims**

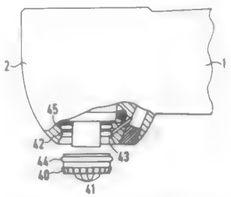


1. System for removably mounting a dental model to an articulator that includes a pair of upper and lower opposed frame members, said system including:

a. a base plate having a configuration commensurate with at least one quadrant of a person's dental structure, wherein a bottom side of said base plate includes a plurality of spaced apart apertures, and wherein a top side of said base plate is adapted to be selectively attached to and detached from the dental model so that at least one segment of the dental model is selectively detachable and replaceable with respect to the base plate; and

b. an adapter plate having bottom side that is adapted for being secured to one of said upper or lower frame members, and a top side having a plurality of spaced support posts for engagement with the corresponding base plate apertures to releasably attach the adapter plate to the base plate.

5,352,118
DENTAL INSTRUMENT HAVING A NOZZLE FOR COOLING
Manfred Franetzki, Bensheim, and Juergen Wohlgemuth, Darmstadt, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Dec. 16, 1992, Ser. No. 991,591
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1991, 4142113.2
Int. Cl.[5] A61C *1/10, 1/02, 1/08*
U.S. Cl. 433—82 **17 Claims**



1. A dental instrument having an active tool for treating hard dental substances, the improvement comprising first means for utilizing water for cooling the preparation location, said first means including second means for forming a nozzle arrangement comprising a water discharge opening, said second means containing an annular gap having a comb-shaped edge part in

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the water discharge opening, wherein the volume proportion of cooling air passing through the nozzle arrangement at a maximum lies in the order of the magnitude of the water being supplied, said second means forming a water envelope for surrounding the tool.

5,352,119

DISPOSABLE DENTAL PROPHY ANGLE HANDPIECE

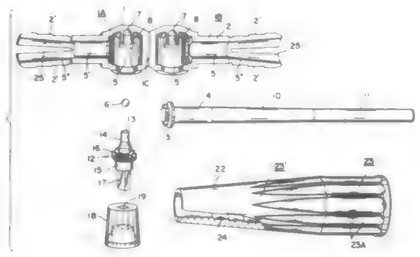
Masatoshi Sakurai, Sakado-City, Japan, assignor to Promident Manufacturing, Limited, Saitama, Japan

Filed Jul. 13, 1993, Ser. No. 90,610

Claims priority, application Japan, May 25, 1993, 5-122536

Int. Cl.[5] A61C *3/06*

U.S. Cl. 433—125 2 Claims



1. A dental prophy angle handpiece comprising:

a front casing comprising two sections which are hinged at its center so as to make a receptacle when folded, each of said sections including a front cell, a shaft support and a coned portion which are formed successively;

a rotary member installed in said front casing, said rotary member being provided with a driven pinion at its middle portion, a concave end at one end and an angled shaft at another end;

a metal ball placed in said concave end of said rotary member;

a drive shaft provided with a drive pinion on an end surface, one end of said drive shaft being set in said shaft holders of said front casing and said drive pinion being engaged with said driven pinion of said rotary member in said front cells of said front casing;

a front cover mounted on said front casing forming said rotary member, drive shaft and front casing into a single unit;

flat edges formed around said front cells, shaft supports and cone portions of said front casing; and

a cleaning cap attached to said angled shaft of said rotary member; and wherein

said front casing, rotary member, drive shaft and front cover are made of plastic; and

said flat edges are provided with stepped edge portions and said front cover is provided with stepped grooves on its inner surface so that said stepped edges portions and said stepped grooves are engaged with each other.

5,352,120

PROCESS FOR APPLYING BEADS TO A SUBSTRATE

Perry Hambright, 22543 Ventura Blvd., Suite 211, Woodland Hills, Calif. 91364

Continuation-in-part of Ser. No. 844,248, Mar. 2, 1992, Pat. No. 5,234,340, which is a continuation-in-part of Ser. No. 564,740, Aug. 6, 1990, Pat. No. 5,096,422. This application Jun. 30, 1993, Ser. No. 86,504

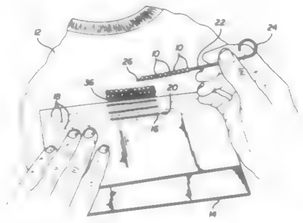
Int. Cl.[5] G09B *19/20*

U.S. Cl. 434—95 23 Claims

1. A process for applying beads to a substrate in a pre-determined arrangement, the steps comprising:

providing a pattern of indicia for placement of the beads on the substrate;

sliding a row of beads onto a rod, corresponding to a row of the indicia pattern;



placing the row of beads on the rod adjacent to the row of the indicia pattern;

removing the rod from the row of beads; and

adhering the row of beads to the substrate adjacent to the row of the indicia pattern.

5,352,121

DEMONSTRATION DEVICE

Karl-Weiner Schmitz, Im Rheinwinkel 20, D-5000 Köln 90, and Manfred Bergfelder, Gimborner Weg 3, D-5000 Köln 80, both of Fed. Rep. of Germany

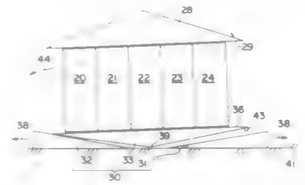
PCT No. PCT/DE90/00064, § 371 Date Apr. 8, 1992, § 102(e) Date Apr. 8, 1992, PCT Pub. No. WO90/10923, PCT Pub. Date Sep. 20, 1990

PCT Filed Feb. 1, 1990, Ser. No. 730,980

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1989, 8902865[U]

Int. Cl.[5] G09B *25/02*

U.S. Cl. 434—403 15 Claims



1. Demonstration device in the form of a single-story house for communicating messages; comprising:

a body, a roof and a substantially planar base having mutually assembled and disassembled states,

wherein the body comprises a plurality of prism-shaped building blocks abutting against one another in side by side relation in the assembled state;

each building block having an oblong, narrow lower surface;

the roof defining sloping roof surfaces,

the base comprising at least two prism-shaped components, each prism-shaped component having a sloping surface and having a contact surface for abutting against the contact surface of the other prism-shaped component in the assembled state;

the sloping surfaces of the prism-shaped components mutually defining a supporting surface for the base in the assembled state for supporting the lower surfaces of the building blocks of the body;

wherein the prism-shaped components can be moved away from one another, from the assembled state to the disassembled state, having an effect on the supporting surface of the base in the assembled state and causing an occurrence of the building blocks of the body to fall over, such occurrence of the building blocks falling over thereby communicating one of said messages.

5,352,122

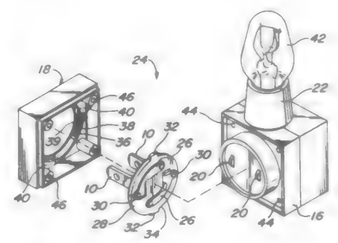
ROTATABLE ELECTRICAL CONNECTOR

Henning J. Speyer, 3931 Longmeadow, Downers Grove, Ill. 60515, and Franklin Fong, 761 Eastchester Rd., Wheeling, Ill. 60090

Filed Dec. 15, 1992, Ser. No. 990,958

Int. Cl.[5] H01R *39/02*

U.S. Cl. 439—13 27 Claims



1. A rotatable plug comprising:

first and second contact means defining arcuate electrically conductive contact surfaces, the first and second contact means being symmetrically arranged with respect to an axis of rotation, in opposed relation to one another and separated at each end by a non-conductive space;

first and second conductive means for electrically and frictionally contacting the arcuate electrically conductive contact surfaces of the first and second contact means, the first and second contact means being rotatable a preselected angular distance with respect to the first and second conductive means, respectively, while maintaining electrical contact throughout rotation;

means for keeping the first and second contact means and the first and second conductive means in frictional contact with one another, respectively;

first and second male prong means for insertion into a female electrical receptacle, the first and second male prong means being in fixed electrical contact with a preselected one of the set of first and second contact means, respectively, and the set of first and second conductive means, respectively;

a nonconductive disk means for carrying one of the preselected sets of first and second contact means and first and second conductive means, the preselected set being fastened to one side of the nonconductive disk means, the first and second male prong means extending through the disk means and protruding outward from the other side; and

a holding means having outwardly facing and inwardly facing sides, the outwardly facing side having a circular opening of a first diameter for allowing the first and second male prong means to extend therethrough, the inwardly facing side having a circular groove therein, the nonconductive disk means and the preselected set fastened thereto being disposed within and rotatable within the circular groove.

5,352,123

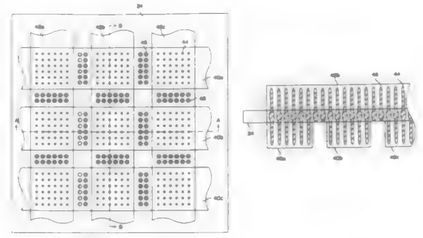
SWITCHING MIDPLANE AND INTERCONNECTION SYSTEM FOR INTERCONNECTING LARGE NUMBERS OF SIGNALS

Stephen P. Sample, Mountain View, and Terry L. Goode, Sunnyvale, both of Calif., assignors to Quickturn Systems, Incorporated, Mountain View, Calif.

Filed Jun. 8, 1992, Ser. No. 896,068

Int. Cl.[5] H05K *1/14*

U.S. Cl. 439—61 4 Claims



1. A printed-circuit board interconnect system for making electrical interconnections between a plurality of first printed-circuit boards and a plurality of second printed-circuit boards, said interconnect system comprising:

a midplane printed-circuit board including a first face and a second face, said second face parallel to said first face, and having a plurality of conductive traces disposed therein;

a plurality of first printed-circuit board connectors mounted parallel to one another on said first face of said midplane printed-circuit board;

a plurality of second printed-circuit board connectors mounted parallel to one another on said second face of said midplane printed-circuit board in a direction perpendicular to said plurality of first printed-circuit board connectors, each of said plurality of second printed-circuit board connectors crossing each of said plurality of first printed-circuit board connectors at a plurality of intersection regions;

a plurality of double-ended pins, each of said plurality of double-ended pins extending from said first printed-circuit board connectors, through said intersection regions of said midplane printed-circuit board, and into one of said second printed-circuit board connectors;

a plurality of first single-ended pins, each of said first single-ended pins extending from said first face of said midplane printed-circuit board and into one of said first printed-circuit board connectors, each of said plurality of first single-ended pins in electrical contact with at least one of said plurality of conductive traces, said first single-ended pins and said plurality of double-ended pins forming a plurality of rows and columns of equidistantly spaced pins within said first printed-circuit board connectors; and

a plurality of second single-ended pins, each of said plurality of second single-ended pins extending from said second face of said midplane printed-circuit board and into one of said second printed-circuit board connectors, each of said plurality of second single-ended pins in contact with at least one of said plurality of conductive traces such that said second single-ended pins are respectively in electric contact with said first single-ended pins, said second single-ended pins and said double-ended pins forming a plurality of columns of equidistantly spaced pins within each of said second printed-circuit board connectors.

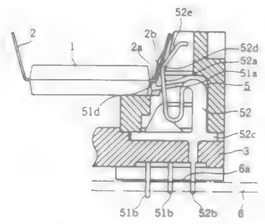
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5,352,124

SOCKET FOR IC PACKAGE

Noriyuki Matsuoka, Yokohama, and Eisaku Tsubota, Kawasaki, both of Japan, assignors to Yamaichi Electronics Co., Ltd., Tokyo, Japan

Filed May 26, 1993, Ser. No. 67,002
Claims priority, application Japan, May 27, 1992, 4-160307
Int. Cl.[5] H01R *23/72*
U.S. Cl. 439—70 19 Claims



1. A socket for an IC package having a plurality of leads, said socket comprising:
a socket base having an IC package receiving portion for receiving the IC package;
a plurality of contacts mounted to said socket base and being arranged to respectively contact the leads of the IC package when the IC package is received in said IC package receiving portion of said socket base;
wherein each of said contacts comprises a first unitary contact member which constitutes a means for contacting and pressing upwardly against a lower surface of a respective one of the leads of the IC package, and a second unitary contact member which constitutes a means for contacting and pressing inwardly against a side surface of the respective one of the leads in a direction toward the IC package when the IC package is received in said IC package receiving portion;
wherein said first unitary contact member of each of said contacts has a male terminal extending through a surface of said socket base and adapted to connect to a wiring board;
wherein said second unitary contact member of each of said contacts has a male terminal extending through a surface of said socket base and adapted to connect to the wiring board separately from said male terminal of said first unitary contact member; and
wherein said first unitary contact member of each of said contacts is separate and discrete from said second unitary contact member of each of said contacts, respectively.

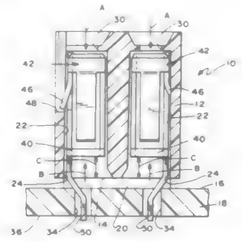
5,352,125

ANTI-WICKING ELECTRICAL CONNECTOR

Emanuel G. Banakis, Naperville; Donald J. Brinkman, Woodridge; Charles Galauner, St. Charles, and Irvin R. Triner, Willow Springs, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Jan. 8, 1993, Ser. No. 1,880
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—83 4 Claims

1. In an electrical connector assembly which includes a dielectric housing having a lower face for mounting on a top surface of a printed circuit board, the housing including at least one terminal-receiving cavity having an opening with the same cross-sectional area as the cavity in the lower face of the housing, a terminal including a receptacle portion received in the cavity for mating with a complementary electrical component, the terminal including a solder tail portion projecting from the receptacle portion past the opening of the cavity into a hole in the printed circuit board, said solder tail having at least a portion coated with organic flux/cleaner material composed generally of isopropyl alcohol and hexylene glycol, wherein the improvement comprises said receptacle portion of the terminal being located in the cavity spaced from said opening a distance greater than 0.015 inch to prevent solder material



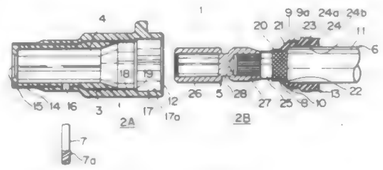
from wicking up the solder tail portion onto the receptacle portion when the solder tail portion is wave soldered from a bottom surface of the printed circuit board.

5,352,126

SHIELDED CONNECTOR

Hidehiko Kuboshima; Shigemi Hashizawa, and Shigemitsu Inaba, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Nov. 10, 1993, Ser. No. 149,916
Claims priority, application Japan, Nov. 11, 1992, 4-300839; Aug. 31, 1993, 5-216039
Int. Cl.[5] H01R *4/58*
U.S. Cl. 439—89 11 Claims



1. A shielded connector comprising:
a housing assembly having a housing and a first shield element molded integrally with said housing;
a terminal assembly including a plug fitted over a sheath of a shielding wire having a distal end thereof connected to a terminal, and a conductor in electrical contact with a second shield element of the shielding wire, wherein upon inserting said terminal assembly into said housing assembly, said conductor electrically engages said first shield element so that said conductor establishes electric continuity between said first shield element and said second shield element, and said plug fits to an inner wall of the housing so that said terminal assembly engages said housing assembly in a watertight relation.

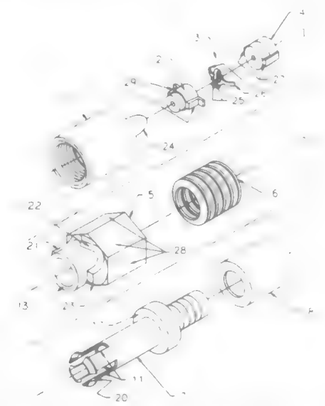
5,352,127

CABLE CONNECTOR AND METHOD

John Muller, 1348 Hillside Dr., Tarpon Springs, Fla. 34689; R.J. DiMaggio, Zephyrhills, and Randolph C. Hook, Tampa, both of Fla., assignors to John Muller and Carmine Muller, both of Tarpon Springs, Fla.

Filed Feb. 24, 1993, Ser. No. 21,581
Int. Cl.[5] H01R *29/00*
U.S. Cl. 439—188 12 Claims

1. A method of securing an electrical connector to a jack or other installation comprising the steps of attaching the connector to the installation with an electrical contact included in the connector short circuited to a conductive portion of the connector, securing the connector to the installation such that when adequate securement is achieved, the contact will no longer be shorted to said conductive portion and will allow a signal to pass to a mating connector, and wherein the connector includes two parts which in one phase of securement move together in rotation as a unit and in a second phase of securement move axially relative to each other such that the contact



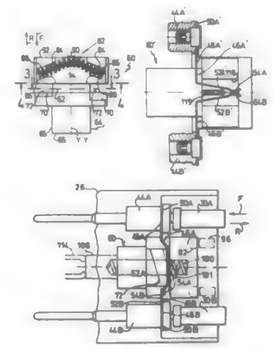
is no longer shorted to said conductive portion, and wherein the connector is secured to an installation by applying a torque to the connector and wherein once sufficient torque is applied, the contact is no longer shorted to said conductive portion, and wherein there is further included the step of utilizing a cam and cam follower on said parts respectively to cause the parts to move relative to each other upon sufficient torquing of one said part.

5,352,128

CONNECTION ASSEMBLY WITH FAST BREAK SWITCHES

Herve Bricaud, Dole, France, assignor to ITT Industries, Inc., Secaucus, N.J.

Filed Oct. 28, 1992, Ser. No. 968,656
Claims priority, application France, Oct. 31, 1991, 91 13502
Int. Cl.[5] H01R *13/703*
U.S. Cl. 439—188 18 Claims



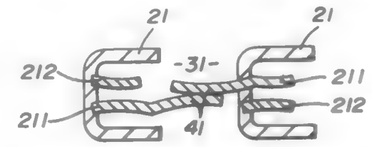
1. A first electrical connector which is designed to mate with a second electrical connector, comprising:
a switch mounted on said first connector, said switch including first and second contacts wherein said first contact can be deflected away from said second contact to open said switch;
an actuator which has a deflector, said actuator being movable in a rearward direction to move said deflector against said first contact to open said switch;
a trigger spring which is coupled to said actuator to be deflected by movement of said actuator, said trigger spring having a stable state wherein it biases said actuator in a forward direction, said trigger spring being mounted to suddenly decrease its biasing force in said forward direction when deflected to a predetermined intermediate position;
an actuator biasing device which includes an actuator biasing spring that has a first spring portion positioned to be progressively deflected as said connectors mate, and which has a second portion coupled to said actuator to bias it in said rearward direction with a force that increases progressively as said first spring portion is progressively deflected, to move said actuator progressively rearwardly and thereby progressively deflect said trigger spring, until said trigger spring reaches said intermediate position, when the forward biasing force of said trigger spring suddenly decreases to thereby allow rapid rearward acceleration of said actuator under the force of said biasing spring.

5,352,129

ACTIVATOR PLUG

Bernhard Guglhör, Buching, Fed. Rep. of Germany, assignor to Bernhard Guglhor Prazisionsteile GmbH & Co., Fed. Rep. of Germany

Filed Feb. 1, 1993, Ser. No. 11,884
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1992, 4203239
Int. Cl.[5] H01R *13/703*
U.S. Cl. 439—188 3 Claims



1. An activator plug for a power strip connector of printed circuit board circuits of electronic components that comprises a number of laterally adjacent metallic sockets fastened on an insulating base body for the resilient reception of a blade contact connector, comprising
at least two resilient contact elements for each socket having protruding circuit lugs extending therefrom to engage with a contact insert for normally producing an electrically conductive connection between the sockets; and
said resilient contact elements being separable from said contact insert upon insertion of the blade contact connector into the socket to interrupt the electrically conductive connection.

5,352,130

CONTACT FOR IC SOCKET

Takayuki Nagumo, Sagamihara, Japan, assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Jun. 8, 1993, Ser. No. 73,588
Claims priority, application Japan, Jun. 10, 1992, 4-150340
Int. Cl.[5] H01R *11/22*
U.S. Cl. 439—266 2 Claims

1. An IC socket comprising a socket body which has a

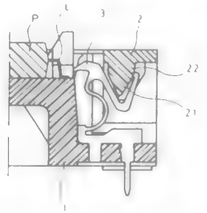
VOL 1167 ISS 1 OC 4 1994 UMI

plurality of contacts positioned adjacent the edges of said body to be connected with leads of an IC package while being resiliently depressed, and a cover, which is mounted on and movable in relationship to said socket body, having inclined surfaces to engage and depress said contacts to displace them outwardly against their resilience when said cover is moved toward said body, wherein

each said contact has

(a) a fixing portion which is fixed to said socket body, said fixing portion having a recessed area reducing the width of the fixing portion and defining a post at one end of the fixing portion,

(b) a C-shaped portion which is formed continuously integral with said fixing portion and is cantilever mounted at



one end to said post to extend therefrom into said recessed area and positioned to be open-faced to the inside of said socket body,

(c) a resilient curved portion which is formed integral with the other end of said C-shaped cantilever portion in a circular curved shape as if the C-shaped part of said cantilever portion is substantially reversed and is totally S-shaped in conjunction with said cantilever portion,

(d) a contact portion which is formed integral with said resilient curved portion and comes in contact with a lead of said IC package, and

(e) an engaging portion engaged with said cover, which is formed integral with said resilient curved portion and provided in an opposite direction to said contact portion in reference to said resilient curved portion.

5,352,131

IC SOCKET

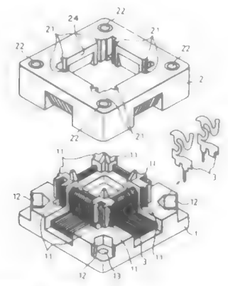
Takayuki Nagumo, Kanagawa, Japan, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 2, 1993, Ser. No. 71,583

Claims priority, application Japan, Jun. 2, 1992, 4-141381

Int. Cl.[5] H01R *13/62*

U.S. Cl. 439—266 **1 Claim**



1. An IC socket including:

a socket body formed with a support to receive an IC package and means supporting a plurality of contacts for electrical contact with leads of said IC package; and

a cover fitted on said socket body and having a central opening defined by four side surfaces for releasibly loading said IC package on said socket body by vertical movement of said cover in relationship to said socket body, wherein a plurality of guide sections extending vertically are formed on the four side surfaces of said cover, said guide section being defined by two grooves formed in each of the four side surfaces defining the opening in said cover and that the grooves are spaced from the corners of said central opening, and

said socket body comprising a plurality of engaging sections for engaging with said guide sections, supporting vertical movement of said cover in relationship to said socket body and restricting said cover from tilting during testing of said IC package, said engaging sections being formed respectively, on four side surfaces of said socket body forming said support for a said IC package, said engaging sections being defined by two ribs formed on each of the four side surfaces of the socket body support, which ribs are received in said grooves of said cover to restrict tilting when the cover is moved vertically toward the socket body.

5,352,132

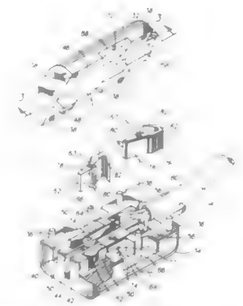
EXTENSION CORD

Michael S. O'Keefe, 236 Parkerville Rd., Southboro, Mass. 01772, and Theodore Sares, 849 Main St., Wilbraham, Mass. 01095

Filed Jun. 14, 1993, Ser. No. 75,794

Int. Cl.[5] H01R *4/50*

U.S. Cl. 439—346 **6 Claims**



1. An extension cord adapted to receive a plug having at least one prong and an aperture disposed in the prong, the extension cord comprises: a socket housing having at least one receptacle adapted to receive the prong; a cavity disposed adjacent to said receptacle and having a pin member disposed therein said socket housing is a two parts housing and said pin member being disposed on one of the housing part, said pin member being insertable in an aperture formed on the other housing part, said cavity being substantially accessible from a position outward of said socket housing; a lever rotatably mounted about said pin member and having a user actuated portion disposed outwardly of said cavity and said socket housing, and an engagement portion engagable with the aperture of the prong, whereby when said user actuated portion is depressed, said lever is moved to an unlocked position where said plug may be inserted into said socket housing and when said user actuated portion is released, said lever is moved to a locked position where said plug cannot be removed from said socket housing.

5,352,133

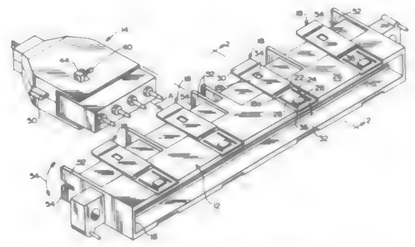
CONNECTOR ASSEMBLY HAVING ANTI-OVERSTRESS LATCH MEANS

Stephen A. Sampson, Downers Grove, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Jul. 19, 1993, Ser. No. 93,835

Int. Cl.[5] H01R *13/627*

U.S. Cl. 439—357 **9 Claims**



1. In a connector assembly which includes

a dielectric shroud having receptacle means for receiving a plug connector having terminal contacts in position for mating with a complementary connector means,

a plug connector positionable in the receptacle means of the shroud, and

complementary interengaging latch means between the shroud and the plug connector for latching the plug connector in the receptacle means automatically in response to positioning the plug connector thereinto in a mating direction,

wherein the improvement comprises

said latch means includes a metal latch member secured to the dielectric shroud and interengageable with a complementary latch device on the plug connector, and

anti-overstress means adjacent to said latch device on the plug connector engageable with the metal latch member and adapted to allow the latch member to move into and out of engagement with the latch device but only a limited degree therefrom to prevent overstressing the latch member.

5,352,134

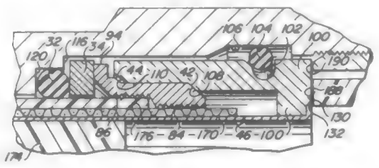
RF SHIELDED COAXIAL CABLE CONNECTOR

Ingolf G. Jacobsen, Phoenix, Ariz., and Claus K. Jorgensen, Vordingborg, Denmark, assignors to Cabel-Con, Inc., Phoenix, Ariz.

Filed Jun. 21, 1993, Ser. No. 80,343

Int. Cl.[5] H01R *9/05*

U.S. Cl. 439—584 **22 Claims**



1. A coaxial cable connector having two threadedly engagable parts for terminating an end of a coaxial cable having a sheath and a conductor, said connector comprising in combination:

a) a first part comprising a rear nut body having an inlet for receiving and gripping the sheath of the coaxial cable said nut body including:

1) a ferrule disposed within said rear nut body for at least partially circumscribing the sheath, said ferrule including means for floating said ferrule relative to said rear nut body upon engaging the cable with said rear nut body, said ferrule including a first ramp means disposed about the central part of said ferrule and a second ramp means disposed about an end of said ferrule;

2) a sleeve having third and fourth ramp means for engaging said first and second ramp means, respectively, to radially inwardly compress at least the center and one end of said ferrule;

3) a mandrel for penetrating the cable adjacent the inner surface of the sheath in juxtaposed relationship with said ferrule;

b) a second part comprising a front nut body for receiving and gripping the conductor of the coaxial cable, said front nut body including:

1) an electrode;

2) means for interconnecting the conductor with said electrode;

c) means for translating said sleeve along said ferrule to urge said third and fourth ramp means into engagement with said first and second ramp means, respectively, to compress said ferrule and to urge amalgamation between said sleeve and said ferrule to eliminate a pathway for spurious RF radiation;

d) a deformable ring disposed at said inlet and subject to compressive forces exerted by said ferrule for deforming into conforming configuration with said inlet and the cable to eliminate a pathway for spurious RF radiation through said inlet; and

e) visually perceivable means for limiting the extent of threaded engagement between said rear nut body and said front nut body.

5,352,135

POLYGONAL CONNECTOR, IN PARTICULAR A RECTANGULAR CONNECTOR INCORPORATING A CENTRAL INSULATOR

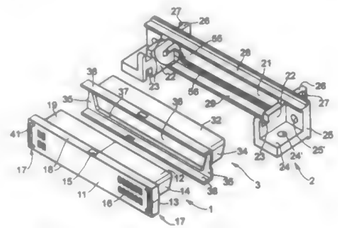
Michel Lenoir, Montfort le Gesnois, France, assignor to Framatome Connectors International, Paris La Defense, France

Filed Mar. 10, 1993, Ser. No. 29,242

Claims priority, application France, Mar. 10, 1992, 92 02827

Int. Cl.[5] H01R *13/658*

U.S. Cl. 439—607 **17 Claims**



1. A polygonal connector comprising:

a casing;

a central insulator having front and rear parts and incorporating electrical contact elements disposed in said front part, said front part protruding from said rear part along an insertion axis and being insertable within said casing to a limited depth and said front part having an external polygonal contour which is smaller than an external contour of said rear part;

returning means for positioning said central insulator within and in locking engagement with at least one side of said casing said retaining means comprising at least one lug of

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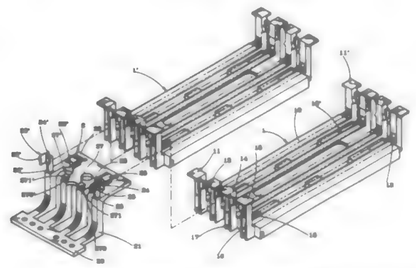
said casing engageable and lockable with a corresponding bar element of said central insulator, said bar element having a central part spaced from said rear part of said central insulator in a direction laterally of said insertion axis and elastic arms connecting respective ends of said central part to said rear part so as to effect said locking engagement of said lug with said central part.

5,352,136

ELECTRICAL COUPLING DEVICE

Michael Chen, No. 11, Alley 16, Lane 337, Sec. 1, Ta-Tung Rd., Hsi-Chih Town, Taipei Hsien, Taiwan

Filed Feb. 10, 1994, Ser. No. 194,573
Int. Cl.[5] H01R *13/74*
U.S. Cl. 439—719 1 Claim



1. An electrical coupling device comprising at least one wiring block, and at least one pair of supporting blocks respectively fastened to said at least one wiring block at two opposite ends to support said at least one wiring block inside an electrical junction box, wherein

each wiring block comprises a flat, rectangular base panel horizontally disposed and having pairs of opposed retaining holes bilaterally disposed near two opposite ends thereof, two opposite rows of upright posts vertically disposed and transversely aligned at either end of said base panel, and a plurality of transversely spaced electrical connecting strips longitudinally installed in said base panel between the two rows of upright posts, each upright post having a mounting hole, a T-hole disposed inside the mounting hole at the bottom, and a retaining notch disposed inside the mounting hole at the top;

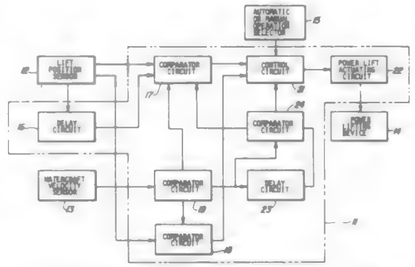
each supporting block comprises a horizontal mounting plate at the bottom for mounting on the electrical junction box, a plurality of equally spaced upright legs raised from said mounting plate, and a horizontal bearing plate connected to said upright legs at the top for supporting said wiring block, said horizontal bearing plate comprising two opposed mounting members bilaterally disposed at the top for fastening to either upright post at either end of said base panel, two rear T-rods spaced between said mounting members for engaging into the mounting hole on either upright post at either end of said base panel to retain the respective supporting block to said wiring block, and two front T-rods for engaging into either retaining hole on said base panel at either end, each mounting member comprising a neck raised from said horizontal bearing plate for inserting into the mounting hole on the corresponding upright post, a hook projected from the neck for hooking in the retaining notch on the respective upright post, and a finger strip extended from the neck for bending the neck in releasing said hook from the retaining notch.

5,352,137

AUTOMATIC POSITION CONTROLLER FOR MARINE PROPULSIONS

Tomio Iwai, and Ryoji Nakahama, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 119,097, Nov. 10, 1987, abandoned, which is a continuation-in-part of Ser. No. 864,449, May 16, 1986, abandoned. This application May 15, 1991, Ser. No. 702,157
Claims priority, application Japan, May 18, 1985, 60-106627
Int. Cl.[5] B03H *21/22*
U.S. Cl. 440—1 23 Claims



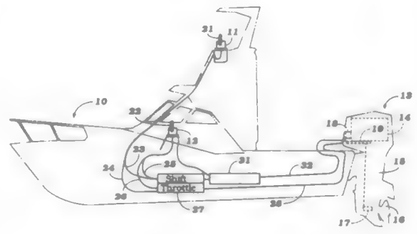
1. A marine propulsion device for a watercraft comprising an outboard drive carried by the watercraft, means for supporting said outboard drive for changes in the elevation of the position of said outboard drive relative to the watercraft independently of the trim of the outboard drive, power means for effecting said changes in elevation, sensing means for sensing a watercraft running condition and control means for operating said power means automatically to change the elevation of said outboard drive independently of the trim in response to the output of said sensing means.

5,352,138

REMOTE CONTROL SYSTEM FOR OUTBOARD DRIVE UNIT

Isao Kanno, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Mar. 3, 1992, Ser. No. 845,237
Claims priority, application Japan, Mar. 6, 1991, 3-065475
Int. Cl.[5] B60K *41/04*
U.S. Cl. 440—1 12 Claims



1. A remote control system for transmitting control movement to at least two controlled members of an outboard drive unit having an engine comprising an actuator unit, a remote control unit having an operator movable between a plurality of positions and mechanically connected to said actuator unit, a transmitter mechanically connecting said actuator unit to one of said controlled members for actuating it in response to

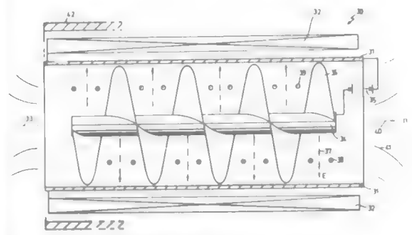
movement of said operator, a controlling unit, means for detecting the position of said operator and outputting a signal to said controlling unit indicative of the detected position of said operator, electric actuating means electrically connected to said controlling unit for actuating said other controlled member on the basis of the signal received by said controlling unit, and means electrically connected to said controlling unit for interrupting the engine operation when the engine speed is determined to be greater than a predetermined value and when the signal outputted by said detecting means indicates a change in the position of said operator.

5,352,139

METHOD AND APPARATUS FOR THE PROPULSION OF WATER VEHICLES

Gunther Laukien, Silberstreifen, D-7512 Rheinstetten-Forchheim; Arne Kasten, Karlsruhe, and Michael Westphal, Offenbach, all of Fed. Rep. of Germany, assignors to Gunther Laukien, Fed. Rep. of Germany

PCT No. PCT/DE90/00379, § 371 Date Jan. 23, 1991, § 102(e) Date Jan. 23, 1991, PCT Pub. No. WO90/14265, PCT Pub. Date Nov. 29, 1990
PCT Filed May 23, 1990, Ser. No. 646,613
Claims priority, application Fed. Rep. of Germany, May 24, 1989, 3916882; Oct. 3, 1989, 3932918
Int. Cl.[5] B60L *11/02*
U.S. Cl. 440—6 17 Claims



1. A water vehicle, comprising:

a hull;

an open-ended pipe connected to said hull and positioned to be immersed in water surrounding said vehicle, said pipe defining a longitudinal axis;

a solenoid magnet coil arranged around said pipe in an essentially coaxial relationship for generating an axially oriented magnetic field therein;

a first electrode extending essentially along said longitudinal axis;

a second electrode having essentially cylindrical shape and extending coaxially to said first electrode with a cylindrical gap formed therebetween;

a voltage source arranged to be switched between said first and second electrodes for generating an electrical field therebetween, said electrical field being directed in a radial direction; and

hydrodynamic vane means arranged within said cylindrical gap and inclined relative to a radial plane under a pitch angle with respect to said longitudinal axis for deflecting circularly flowing water into an axial direction.

5,352,140

MOTORBOAT THRUST TUBE

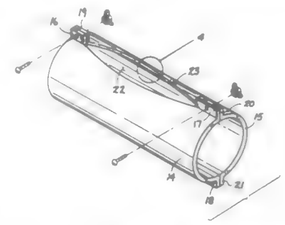
Roy A. Schriner, 202 E. Brier St., Dodge City, Kans. 67801

Filed Sep. 13, 1993, Ser. No. 120,070
Int. Cl.[5] B63H *1/16*
U.S. Cl. 440—67 3 Claims

1. A motorboat thrust tube, comprising in combination,

an outboard motor unit having a thrust propeller, the thrust tube secured to the outboard motor unit in surrounding relationship relative to the thrust propeller, with the thrust tube symmetrically oriented about a predetermined axis, with the thrust propeller coaxially aligned relative to the predetermined axis and positioned medially of the thrust tube, and

the thrust tube includes a first semicylindrical shell secured to a second semicylindrical shell, the first shell having a first shell first flange spaced from a first shell second flange, the second shell having a second shell first flange spaced from a second shell second flange, the first shell first flange secured to the second shell first flange, and the first shell second flange secured to the second shell second



flange, the first shell including a first shell third flange, the second shell including a second shell third flange, with the first shell first flange secured to the second shell third flange, and

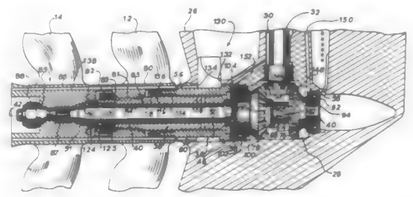
a housing unit opening directed through the first shell and the second shell between the first shell first flange and the first shell second flange and the second shell first flange and the second shell second flange, and the second shell having a magnetic flange extending between the second shell first flange and the second shell second flange, with the magnetic flange arranged for securement to the outboard motor unit.

5,352,141

MARINE DRIVE WITH DUAL PROPELLER EXHAUST AND LUBRICATION

Waylon D. Shields; Woody R. Smith, both of Stillwater, and Steven J. Pavey, Carney, all of Okla., assignors to Brunswick Corporation, Lake Forest, Ill.

Filed May 28, 1993, Ser. No. 69,162
Int. Cl.[5] B63H *5/10*
U.S. Cl. 440—80 16 Claims



1. A marine drive comprising:

a housing having a horizontal bore and an intersecting vertical bore therein;

a spool positioned in said horizontal bore;

a hollow outer propeller shaft positioned in said spool;

an inner propeller shaft positioned in said outer propeller shaft, said inner and outer propeller shafts being concentric and rotating in opposite rotational directions along a common axis;

a first exhaust passage comprising a passage in said housing communicating with said horizontal bore at said spool;

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a second exhaust passage comprising a passage through said spool passing exhaust from said first exhaust passage rearwardly through said spool;

a forward propeller mounted to said outer propeller shaft;

an aft propeller mounted to said inner propeller shaft, one of said propellers being a right hand rotation propeller, the other of said propellers being a left hand rotation propeller, each propeller having a hub with through-hub exhaust passages passing exhaust from said spool rearwardly through said propeller hubs,

wherein said spool comprises a cylindrical member comprising:

a first outer diameter portion engaging said housing within said horizontal bore;

a second reduced outer diameter portion within said horizontal bore and aft of said first outer diameter portion and defining an annular recess receiving exhaust from said first exhaust passage;

a third outer diameter portion aft of said second outer diameter portion and engaging said housing and having a plurality of slots extending rearwardly therethrough, such that exhaust from said annular recess flows rearwardly through said face through said third outer diameter portion then rearwardly through said hubs, and

wherein said third outer diameter portion extends rearwardly externally of said horizontal bore and includes a raised annular shoulder of outer diameter greater than the inner diameter of said horizontal bore and engaging said housing at the aft end of said horizontal bore.

5,352,142

METHOD OF REPROCESSING PICTURE TUBES

Jurgen Wolf, Stein, Fed. Rep. of Germany, assignor to Hetzel & Co. Elektronik-Recycling GmbH, Nurmberg, Fed. Rep. of Germany

Filed Sep. 10, 1993, Ser. No. 118,798

Claims priority, application European Pat. Off., Sep. 10, 1992, 92115511.5

Int. Cl.[5] **H01J** *9/50*

U.S. Cl. 445—2 **18 Claims**

1. A method of reprocessing a picture tube having solder at a joint between a screen and a cone wherein each of said screen and said cone comprises a glass material, said method comprising:

aerating the picture tube;

heating the picture tube to at least the fusing temperature of the solder at the joint; and

separating the screen and the cone under the influence of gravity,

wherein a clean separation of the screen and the cone is effected by slowly heating the aerated picture tube which is arranged, during heating, in such a way that the joint between the screen and the cone is inclined with respect to the horizontal, and displacing the screen and the cone in opposite directions.

5,352,143

AUTOMATED NEON TUBE EVACUATION AND GAS FILLING SYSTEM AND PROCESS

Henry A. Brown, III, 104 Dantzler St., St. Matthews, S.C. 29135

Filed Aug. 27, 1993, Ser. No. 113,593

Int. Cl.[5] **H01J** *9/395*

U.S. Cl. 445—3 **23 Claims**

1. A system for automatically evacuating neon tubing during an evacuation cycle and filling the neon tubing with a gas from at least one gas source during a gas fill cycle comprising:

a manifold system through which a vacuum is drawn during said evacuation cycle and through which said gas is delivered during a filling cycle;

at least one processing station connected with said manifold system having a fitting for connection to said neon tubing;

at least a first gas valve for controlling the flow of gas from said gas source;

at least one main valve connected in said manifold system for establishing fluid communication between said manifold system and said processing station and neon tubing;

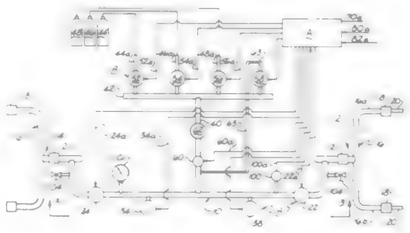
at least one vacuum pump connected to said manifold system for evacuating said neon tubing, and a first pump valve for connecting said pump in fluid communication with said manifold system for evacuating tubing connected to said processing station;

an electrical controller containing input data corresponding to operational parameters and values utilized during said evacuation and fill cycles;

a pressure sensor connected in said manifold system for generating a pressure signal representing the pressure in said neon tubing, said pressure signal being transmitted to said controller;

a bombarder unit for generating an electrical current and electrical potential across an electrode in said neon tubing for heating said tubing;

a temperature sensor sensing the temperature of said tubing as said tubing is heated by said bombarder current for



generating a temperature signal representing said temperature, said temperature signal being input into said controller, and said bombarder unit being controlled by said controller in response to said temperature signals;

said controller generating a main valve signal to control said main valve, a pump signal for controlling said first pump valve, a gas valve signal for controlling said gas valve, and a current signal for controlling said bombarder unit and current generated thereby;

said controller automatically generating said pump signal and controlling said first pump valve in response to said pressure signals for providing desired pressure conditions in said tubing as said tubing is heated by said bombarder current during said evacuation cycle, and said controller opening said pump valve to evacuate said tubing in response to said temperature signal during said evacuation cycle and closing said pump valve in response to said pressure signal after said evacuation cycle; and

said controller automatically controlling said gas valve during said fill cycle to admit gas to backfill said evacuated tubing with a desired gas according to predetermined specifications, and, thereafter, said controller closing said gas valve and said main valve.

5,352,144

WIND ACTIVATED TOY

Gerald F. Kuhn, P.O. Box 803, Sandia Park, N. Mex. 87047

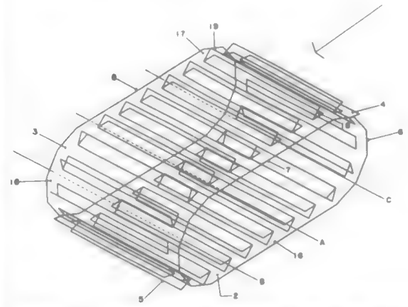
Filed May 12, 1993, Ser. No. 59,675

Int. Cl.[5] **A63H** *33/40, 29/16, 27/08*

U.S. Cl. 446—176 **21 Claims**

1. A toy activated by air movement, comprising:

a loop of a self-supporting flexible sheet-like material, said loop having an interior surface and an exterior surface and a major axis perpendicular to the direction of travel, said loop being formed of a material which at least partially deforms under its own weight and having sufficient rigidity such that a portion of the interior surface of the loop will not contact an opposite portion of the interior surface of the loop when the toy is placed upon a supporting surface, said toy traveling along said supporting surface in response to air movement; and



a plurality of flaps extending outwardly from said exterior surface of said loop generally in a direction parallel to the major axis of said loop, said flaps being angled away from the exterior surface of said loop, whereby air impacting upon said flaps will cause said top to roll about said major axis along said supporting surface.

5,352,145

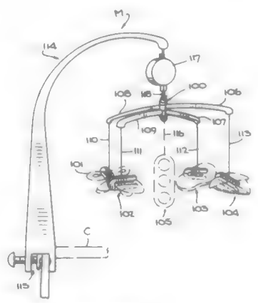
CHILD'S MOBILE AND IMPROVED ELEMENT CLAMP THEREFOR

Rita Raiffe, Far Hills, and Robert W. Shaw, Piscataway, both of N.J., assignors to Gund, Inc., Edison, N.J.

Continuation-in-part of Ser. No. 625,603, Dec. 11, 1990. This application Aug. 14, 1991, Ser. No. 744,924

Int. Cl.[5] **A63H** *33/00, 21/02, 1/06;* **A41F** *1/00*

U.S. Cl. 446—227 **7 Claims**



1. A child's mobile comprising:

a two-sided decorative element;

an element clamp for removably receiving said decorative element, the clamp including two longitudinal fingers, said longitudinal fingers being connected to each other at only one end thereof, at least one of said fingers having at least one hole therethrough; and

a string, said string extending through said at least one hole such that said element clamp is substantially horizontally balanced when suspended from said string.

5,352,146

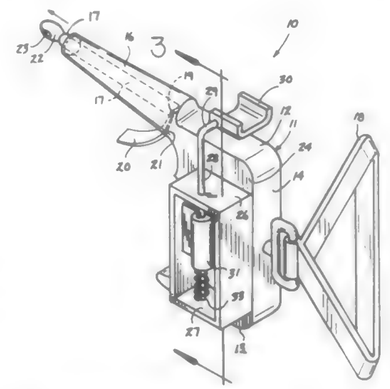
COMBINED TRIGGER BOW RELEASE AND TURKEY CALL

Keith W. Shuart, R.D. 1, Box 96, Unadilla, N.Y. 13849

Filed Oct. 22, 1993, Ser. No. 139,764

Int. Cl.[5] **A63H** *5/00*

U.S. Cl. 446—397 **4 Claims**



1. A turkey call device, comprising,

a unitary housing, having a top wall spaced from a bottom wall, a rear wall spaced from a front wall, and a first side wall spaced from a second side wall,

a barrel tube extending from the front wall in adjacency to the top wall,

and

a barrel rod reciprocatably mounted within the barrel tube, the barrel rod having a resilient bifurcated rod head arranged for selective compression when directed into the barrel tube, with the bifurcated rod head including a bow string receiving slot, and a trigger lever pivotally mounted to the housing, including a trigger axle pivotally mounting the trigger lever to the housing, with a barrel rod axle pivotally mounting the trigger lever to the barrel rod, whereupon pulling of the trigger lever to the front wall effects projection of the barrel rod from the barrel tube,

and

a container mounted to the first side wall, having a container top wall and a container bottom wall arranged in a parallel relationship and orthogonally mounted to the first side wall, with a guide rod reciprocatably directed through the container top wall and the container bottom wall, the guide rod having an extension leg extending over the housing top wall, with the extension leg including a trough member to accommodate an individual's finger thereon to direct the guide rod through the container top wall and container bottom wall,

and

a striker boss fixedly mounted to the guide rod, with the striker boss including a striker plate fixedly mounted to the striker boss,

and

a first side wall cavity directed into the first side wall, with the first side wall cavity having a cavity floor in facing relationship relative to the striker plate,

and

a mounting hub secured relative to the cavity floor, having projecting leg means extending from the mounting hub, wherein the projecting leg means is arranged to frictionally engage the striker plate for effecting an audible signal.

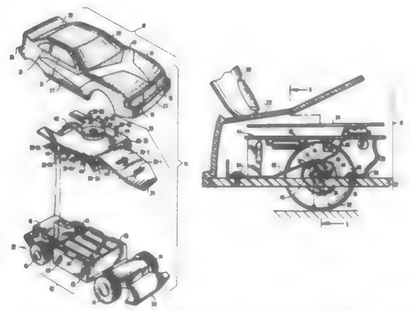
VOL 1167 ISS 1 OC 4 1994 UMI

5,352,147

TOY VEHICLE AND METHOD OF MANUFACTURE

Dietmar Nagel, 147 South Rd., Chester, N.J. 07930, and Craig P. Nadel, 201 Wingate Rd., Parsippany, N.J. 07054

Filed Dec. 31, 1992, Ser. No. 998,999
Int. Cl.[5] A63H *17/28, 17/34*
U.S. Cl. 446—409 10 Claims



1. A method for manufacturing a toy vehicle, comprising the steps of:

forming a substantially transparent vehicle body having a front, a back, an interior side and an exterior side;

defining at least one substantially transparent portion of said body having a substantially Y-shaped pattern, wherein said Y-shaped pattern extends longitudinally and continuously along said vehicle body from a front hood of the body to and along opposite sides panels of said vehicle body, said Y-shaped pattern comprising a first portion extending on and longitudinally along at least a portion of said front hood substantially centrally between said side panels, and a pair of leg portions extending rearwardly from said first portion, each said leg portion extending rearwardly on and along said front hood and then continuously from said front hood rearwardly on and along a respective one of said side panels;

defining an opaque portion of said body, said opaque portion comprising all of said body except for said at least one substantially transparent portion;

arranging a mask on said vehicle body such that said mask is disposed protectively over said at least one substantially transparent portion;

applying a coating material to said vehicle body such that the coating material is applied to said vehicle body only at said opaque portion, wherein said applied coating material is effective to substantially block transmission of light from said interior side to said exterior side of said body at said opaque portion;

mounting a plurality of individually energizable illuminating devices within said body and proximate said at least one substantially transparent portion such that when each of said plural illuminating devices emits light, the emitted light is transmitted through said at least one substantially transparent portion for viewing from said exterior side of said body; and

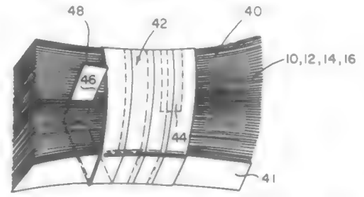
providing within said body a controller operable for repeatedly and individually sequentially energizing and deenergizing said plural illuminating devices for illumination of said devices sequentially and serially along said substantially Y-shaped pattern from the front to the rear of said body to thereby simulate rapid forward motion of the vehicle body.

5,352,148

CONFETTI

James O. Watkins, 14920 Mt. Nebo Rd., Poolesville, Md. 20837

Filed Apr. 23, 1993, Ser. No. 51,355
Int. Cl.[5] A63H *33/30, 27/00*
U.S. Cl. 446—475 8 Claims



1. Amusement confetti means for injecting confetti upwardly into the air and creating an aerial display of confetti which flutters as it falls downwardly comprising:

a large plurality of flat, unconnected, individual pieces of confetti,

each of said pieces of confetti having an elongated, tetragonal shape including a length, a width, a pair of faces and a longitudinal axis,

said pieces having widths of substantially of one-quarter to one inch,

said plurality of pieces being arranged with their longitudinal axes in parallel and with their faces in face-to-face relationship to form a stack of confetti pieces, and

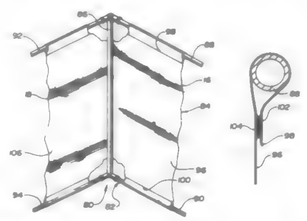
releasable wrapper means for releasing said stack of confetti pieces in the air, said releasable wrapper means extending around said stack to form a plurality of wrapped layers, said releasable wrapper means having first and second ends, said first end being covered by said wrapped layers and said second end being unsecured when said stack is injected into the air such that said releasable wrapper means unwraps in the air and releases said pieces of confetti to form an aerial display of confetti which flutters downwardly.

5,352,149

CHILDREN'S PLAY STRUCTURE WITH INTERCHANGEABLE SCENE

Connie R. Melashenko, Redlands, Calif.; Erik W. Nielsen, Boring, Oreg., and Robert A. Melashenko, Redlands, Calif., assignors to Calspitter Creations, Inc., Redlands, Calif.

Continuation of Ser. No. 697,081, May 8, 1991, abandoned. This application May 3, 1993, Ser. No. 57,190
Int. Cl.[5] A63H *3/52, 33/00;* A47G *5/00*
U.S. Cl. 446—478 7 Claims



1. A children's play apparatus capable of being arranged into a generally enclosed free-standing structure, said apparatus comprising:

an apparatus frame comprised of a plurality of hingedly connected sections, each section being generally rectangular and comprising a peripheral section frame formed by an upper frame member, a generally opposite lower frame member and two side frame members, said frame members being generally coplanar and generally perpendicular with respect to each other to form an open center, each section being hingedly connected to another section adjacent to one of the side frame members of each section; and

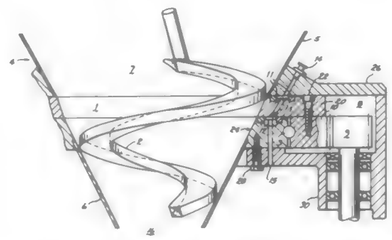
at least one panel of cloth-like material having a periphery including an upper edge and a generally opposite lower edge and carrying periphery engagement means for removably attaching the at least one panel to the apparatus frame to provide a scene creating a play environment, wherein the at least one panel is removably attached to said apparatus frame, at least a portion of said material wrapped around at least a portion of the upper and lower frame members, said periphery engagement means comprising at least one hook and loop fastening member mounted adjacent to the periphery on a first side of the at least one panel releaseably connected to at least one complimentary hook and loop fastening member mounted on a second side opposed to the first side of the at least one panel.

5,352,150

FEEDING DEVICE INSTALLED IN A LOADING BIN, FOR SPECIAL USE IN A SAUSAGE FILLING MACHINE

Klaus Markwardt, Hofestrabe 3b, 3014 Laatzen, Fed. Rep. of Germany

Filed Apr. 24, 1992, Ser. No. 874,182
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1991, 4113807
Int. Cl.[5] A22C *11/02*
U.S. Cl. 452—30 17 Claims



1. A feeding device for a loading bin of a sausage filling machine or the like, the feeding device including a mounting ring having upper and lower surfaces and a drive mechanism rotatably driving the mounting ring, a screw secured to the mounting ring and located in the loading bin, and two concentrically arranged gaskets associated with each of the mounting ring upper and lower surfaces, respectively, wherein a gap is formed between each of the two gaskets along the associated surface of the mounting ring.

5,352,151

APPARATUS FOR APPLYING CASING TO A STUFFING HORN AND METHOD OF USE THEREOF

Ludwig Piereder, Waterloo, Canada, assignor to Handtmann Piereder Machinery Ltd., Waterloo, Canada

Filed Oct. 1, 1993, Ser. No. 130,336
Int. Cl.[5] A22C *13/00*
U.S. Cl. 452—32 23 Claims

1. Apparatus for stuffing meat into a casing from a supply thereof in flat tubular form comprising

a stuffing horn having an exit end;

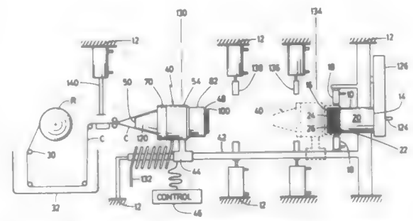
a casing brake generally surrounding said horn adjacent said exit end;

a shuttle for use in transporting casing from said supply for coupling to said horn, said shuttle comprising an outer tubular member

a core member;

roller means for mounting said core member within said outer member in coaxial axially fixed, radically spaced apart relationship therewith to permit the passage of said tubular casing therebetween;

means for moving said shuttle between a first station remote from said horn and a second station forwardly of said first station adjacent said horn;



means for releasably locking said casing to said shuttle during movement from said first station to said second station so as to draw casing from said supply to said horn;

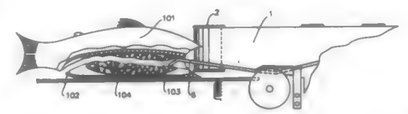
characterized wherein said means for releasably locking said casing to said shuttle comprises a vacuum manifold disposed on the interior surface of said outer member adjacent the forward end thereof, and means for applying a vacuum to said vacuum manifold to cause forward end portions of said casing to be urged into gripping relationship with said inner wall surface of said outer member.

5,352,152

METHOD AND APPARATUS FOR PROCESSING FISH

Brian J. Claudon, 4855 Lakehurst La., Bellevue, Wash. 98006

Filed Jun. 18, 1993, Ser. No. 79,622
Int. Cl.[5] A22C *25/14*
U.S. Cl. 452—127 27 Claims



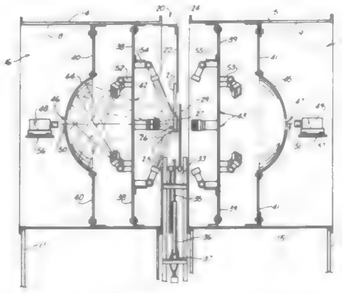
1. A fish processing machine for removing viscera and egg skeins from fish with minimal damage comprising: a framework for attachment and support of components thereto; and, two feed belts attached to said framework for moving fish through the machine wherein the distance between said belts is automatically adjustable to allow said belts to accept different sized fish, and a gullet release arm attached to each belt adapted to move along the belly wall of a fish moved through the machine by said feed belts, and a entrail removal arm pivotally attached to each gullet release arm at one end and pivotally attached to said framework at the other end for remove entrails from the body of a fish moved through the machine by said belts.

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5,352,153
IMAGING SYSTEM FOR USE IN PROCESSING TRANSVERSELY CUT FISH BODY SECTIONS

Ronald H. Burch, River Ridge; Mark E. Sutton, Kenner, both of La.; Bernard Bretagnolle, Grenoble, France; Somsak S. Rodboon, Kenner, La.; Warren E. Cancienne, River Ridge, La., and Soumitra Sengupta, New Orleans, La., assignors to The Laitram Corporation, Harahan, La.

Filed Jul. 13, 1993, Ser. No. 90,819
Int. Cl.[5] A22C *25/18*
U.S. Cl. 452—157 42 Claims



1. A method of processing transverse fish slab sections, each having opposing and generally parallel sides and non-edible portions and edible meat portions, comprising the steps of:

a) sectioning a fish body into a plurality of generally transverse fish slab sections;

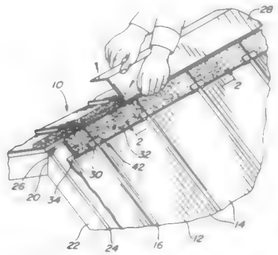
b) imaging both opposing sides of the fish body section with a camera to produce an image of each side of the fish slab section; and

c) cutting the non-edible parts of the fish section with a cutting fluid jet that uses the image of each side of the fish slab section to define a jet cutting path.

5,352,154
METAL ROOF VENTILATION SYSTEM

Martin J. Rotter, Glenside, Pa., and William W. Collins, Wayne, N.J., assignors to Martin Rotter and Building Materials Corporation of America, Wayne, N.J., a part interest

Filed Nov. 1, 1993, Ser. No. 145,930
Int. Cl.[5] F24F *7/02*
U.S. Cl. 454—365 10 Claims



7. A clip member for use in a metal roof ridge ventilating system, said clip member adapted to engage with an upper edge of a metal roof panel and to straddle a standing seam between roof panels, said clip member adapted to support and secure a ridge cap above a vent slot along the ridge of the roof and to retain air-permeable venting material along the vent slot, the clip member comprising:

(i) a cap-engaging portion for supporting and securing the ridge cap,

(ii) a hook portion having a lower leg and an upper leg, said legs spaced from each other for receiving an upper edge of adjacent metal panels between said upper and lower leg to engage the clip to the metal panels,

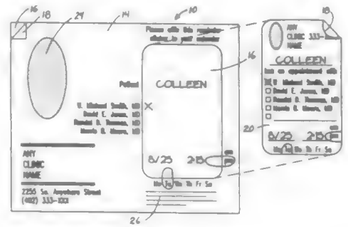
(iii) a wall portion extending between the upper leg of the hook portion and the cap-engaging portion, wherein the cap-engaging portion, the upper leg and the side wall portion define a channel for retaining air-permeable venting material, and

(iv) wherein a slot extends through the wall portion and at least partially through the cap-engaging portion and upper leg, for receiving the standing seam.

5,352,155
DUAL IMPRESSION APPOINTMENT REMINDER

Patrick S. Fahey, 15217 Lloyd Cir., Omaha, Nebr. 68144

Filed Oct. 26, 1992, Ser. No. 966,418
Int. Cl.[5] B42D *15/00;* B41L *1/22*
U.S. Cl. 462—25 21 Claims



1. A dual impression appointment reminder for a service provider, comprising,

a two-ply form including a face stock having top and bottom surfaces, a release liner and an adhesive on said bottom surface releasably securing said face stock to said release liner,

said face stock and liner being of such material that upon writing information on said face stock with an impression instrument, a copy of that information is simultaneously made on said liner,

said face stock including a label at least partially defined by a peripheral cut through said face stock whereby said label is removable from said release liner and the reminder of said face stock and attachable by the adhesive on the bottom surface thereof to another surface,

said face stock having printed information on the top surface thereof including indicia at least one service provider, and

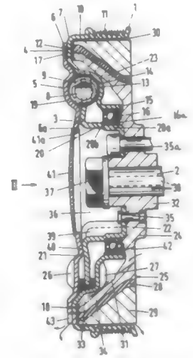
said label having printed information thereon including indicia for at least one service provider and spaces for indicating with an impression writing instrument the date and time of an appointment on said label whereby, upon indicating said date and time on said label with an impression instrument and upon removal of said label from said liner, two reminders are provided with the date and time of an appointment recorded thereon, said label being adapted for adherence to another surface such as a calendar,

the indicia for at least one service provider on said label being adjacent one edge of the label, said indicia for the name of said service provider on said face stock being positioned outwardly of said label, but in adjacent aligned relation with said indicia for at least one said service provider on said label whereby a single marking on said label is operative to designate said service provider on both said label and remaining form.

5,352,156
ELASTIC DRIVE ASSEMBLY

Peter Klein, Edenkoben, and Stefan Valtwies, Ottersweier, both of Fed. Rep. of Germany, assignors to LuK Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Aug. 4, 1992, Ser. No. 925,595
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1991, 4126209; Nov. 28, 1991, 4139168; Dec. 3, 1991, 4139730
Int. Cl.[5] F16H *55/36, 55/30;* F16D *3/12, 3/80*
U.S. Cl. 464—67 25 Claims



1. A sheave comprising a rotary input element connectable with a rotary driving member for rotation about a predetermined axis; an output element coaxial with and rotatable relative to said input element and including a radially outer portion having a substantially axially extending rim engageable by a flexible member; a friction reducing device disposed between said elements; a damping unit installed between said elements radially inwardly of 10 said radially outer portion of said output element to oppose rotation of said elements relative to each other and including energy storing members which store energy in response to rotation of said elements 14 relative to each other; and an inertial damper comprising a mass and means, including a torsional damping device, for connecting said mass to the driving member, at least a portion of said mass being radially inwardly adjacent said radially outer portion of said output element, said inertial damper and said damping unit as well as said radially outer portion of said output element being interfitted in the axial direction of said elements.

5,352,157
SPEED-ADAPTIVE TORSIONAL VIBRATION DAMPER

Winfried Ochs, Alsbach-Hähnlein, and Bernhard Röhrig, Heppenheim, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Hohnerweg, Fed. Rep. of Germany

Filed Jan. 15, 1993, Ser. No. 6,003
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1992, 4201049
Int. Cl.[5] F16D *3/12*
U.S. Cl. 464—89 5 Claims

1. A torsional vibration damper comprising:

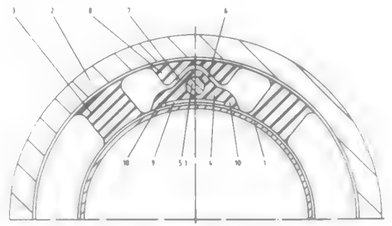
a hub ring;

a flywheel encircling said hub ring;

at least one first spring element connecting said flywheel and said hub ring;

at least one second spring element connected to said hub ring, said at least one second spring element being capable of expansion in a radial direction towards said flywheel under the action of centrifugal forces caused by rotation of the hub ring, each said second spring element comprising a stop face which projects in the direction of the flywheel;

at least one third spring element connected to said flywheel, each said third spring element comprising a cavity shaped to receive said stop face, each said third spring element comprising an engagement face, wherein there is a clearance space between said stop face and said engagement

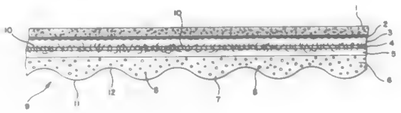


face when the torsional vibration damper is not rotating, and wherein centrifugal forces caused by rotation of the hub ring allow said stop face to engage said engagement face.

5,352,158
COURT SURFACE

Edouard A. Brodeur, Jr., 141 Huntcliff Ct., Marietta, Ga. 30066

Filed Nov. 2, 1992, Ser. No. 970,254
Int. Cl.[5] E04F *15/16*
U.S. Cl. 472—92 17 Claims



1. A court surface comprising:

a base comprising a plasticized foam thermoplastic material;

a scrim located above the base to provide dimensional stability, said scrim comprising a plasticized thermoplastic material; and

a top coat located above the scrim, said top coat comprising a thermosetting resin that is resistant to absorption of plasticizers.

5,352,159
CHAIN TENSIONER WITH OIL RESERVOIR

Tadasu Suzuki, Chicopee, Mass., and Shigekazu Fukuda, Tokorozawa, Japan, assignors to Tsubakimoto Chain Co., Japan

Filed Nov. 23, 1993, Ser. No. 156,069
Claims priority, application Japan, Nov. 27, 1992, 4-087211[U]
Int. Cl.[5] F16H *7/00*
U.S. Cl. 474—110 1 Claim

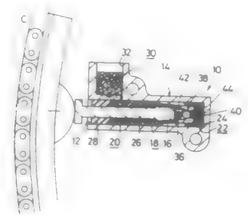
1. A chain tensioner comprising:

a housing having first and second ends, and means defining a wall extending between said ends, said housing defining an internal oil chamber and being closed at said first end and having an opening at said second end;

a plunger located within the oil chamber, and having two sides, one side of the plunger facing the opening at the second end of the oil chamber and the other side of the plunger facing said first end of the oil chamber, and said plunger dividing the oil chamber into a low pressure chamber on the side thereof facing the opening and a high pressure chamber on the opposed side thereof;

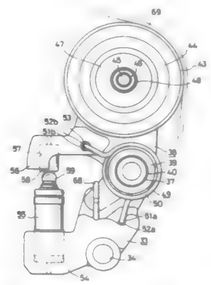
VOL 1167 ISS 1 OC 4 1994 UMI

a rod extending from said plunger and projecting through said opening;
spring means for imparting a projecting force to said plunger, urging the plunger in a direction toward said opening;
means providing a seal between said wall of the housing and said rod on said one side of the plunger whereby the low pressure chamber is located between the seal means and the plunger;
an oil reservoir having an oil collecting port;



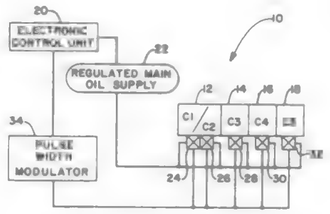
means interconnecting said oil reservoir and said low pressure chamber;
a restricted oil passage formed between said low pressure chamber and said high pressure chamber;
means providing a second oil passage between one of said low pressure chamber and said oil reservoir, on the one hand, and said high pressure chamber on the other; and
check valve means in said second oil passage for allowing flow of oil into said high pressure chamber while preventing flow of oil out of said high pressure chamber through said second oil passage.

5,352,160
AUTO TENSIONER
Kouichi Sakai, Zama; Hayato Oumi, Chigasaki, and Hiroshi Suzuki, Yokohama, all of Japan, assignors to NSK Ltd., Tokyo, Japan
Filed Sep. 3, 1993, Ser. No. 115,681
Claims priority, application Japan, Sep. 3, 1992, 4-067543[U]; May 12, 1993, 5-029569[U]
Int. Cl.[5] F16H *7/08*
U.S. Cl. 474—117 **8 Claims**



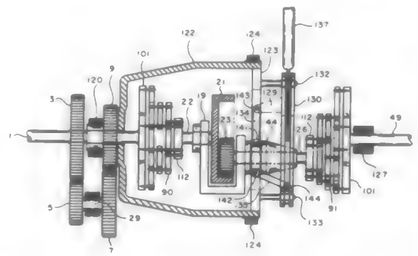
1. An auto tensioner for use in applying a tension to a moving belt, comprising:
a base member having a projection,
a fixed shaft securely mounted to the base member,
a rocking member rockingly mounted to the fixed shaft and having a rocking arm,
an axle secured to the rocking member,
a pulley rotatably mounted to the axis for applying the tension to the moving belt,
the fixed shaft being located outside the outer peripheral surface of the pulley so as to provide the pulley with a larger rocking range with reference to the fixed shaft,
a torsion coil spring provided around the fixed shaft and having opposite ends respectively engaged with the base member and the rocking member, and
a damper device provided between the projection on the base member and the rocking arm of the rocking member.

5,352,161
CAPACITY CONTROL FOR NESTED CLUTCH AUTOMATIC TRANSMISSION
Joel E. Mowatt, Zionsville; Charles F. Long, Pittsboro, and Phillip F. McCauley, Zionsville, all of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Apr. 13, 1993, Ser. No. 47,587
Int. Cl.[5] F16D *25/11*
U.S. Cl. 475—123 **3 Claims**



1. An automatic transmission for a vehicle, comprising:
a plurality of clutches, including at least a pair of first and second of such clutches being nested together; and
means interconnecting said plurality of clutches for engaging and disengaging selected ones of said clutches to attain desired transmission ranges, said means reducing a pressure to said first clutch to keep said first clutch engaged while applying a pressure to said second clutch to attain engagement of said second clutch while said first clutch is engaged.

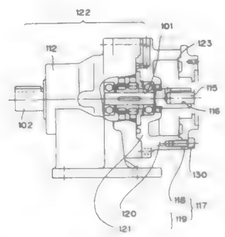
5,352,162
DUAL CONCENTRIC POSITIVELY INFINITELY VARIABLE ROTARY MOTION TRANSMISSION
Paul K. Coronel, c/o Noreen Chun, 3840 Claudine St., Honolulu, HI. 96816
Filed Nov. 16, 1992, Ser. No. 977,112
Int. Cl.[5] F16H *19/00*
U.S. Cl. 475—169 **12 Claims**



12. A process for stepless and clutchless torque transmission in a drive arrangement having an input shaft, a set of condition-

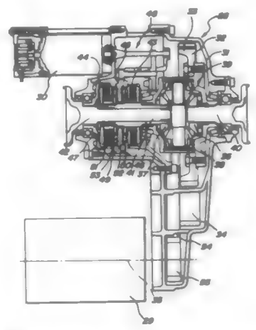
ing gears, an input stage, an output stage, an output shaft, a central axis defined by the input shaft and the output shaft, an input universally positionable connecting linkage, an internally toothedly ring gear engaged to an output receiving gear, a variably orbital alignment arm, an output universally positionable connecting linkage, the process comprising:
translating rotation of said input shaft with said conditioning gears to concurrently rotate and orbit said ring gear by said input universally positionable connecting linkage,
changing the rotation of said output stage to a geared neutral configuration by orbiting the center of rotation of said ring gear about said output receiving gear by said input universally positionable connecting linkage,
continuously changing the rotation of said output stage from the geared neutral configuration to a predetermined maximum speed by continuously increasing the diameter of the orbit of the output receiving gear about said central axis by said output universally positionable connecting linkage, and concurrently decreasing the diameter of the orbit of the ring gear about said central axis by said input universally positionable connecting linkage,
converting the rotation of said output stage to rotation of the output shaft by said universally positionable output connecting linkage.

5,352,163
STEP-UP OR REDUCTION GEAR SERIES USING INTERNALLY MESHING PLANETARY GEAR STRUCTURE
Kiyoji Minegishi, Aichi; Shigeru Toyosumi, Ohbu; Takashi Haga, Ohbu, and Ryoji Sakurai, Ohbu, all of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan
Filed Apr. 19, 1993, Ser. No. 47,293
Claims priority, application Japan, Apr. 21, 1992, 4-101067
Int. Cl.[5] F16H *1/32*
U.S. Cl. 475—178 **6 Claims**



1. A series of transmission gears using an internally meshing planetary gear structure having a first shaft, eccentric bodies provided on said first shaft, external gears mounted on said eccentric bodies through bearings, an internal gear internally meshing with said external gears, and a second shaft connected to said external gears through means for transmitting only the rotational component of said external gears, said series also comprising:
a group of sub-series of the transmission gears, the sub-series of the transmission gears including transmission gears which are different from each other in a speed change ratio within a range from a low speed change ratio to a high speed change ratio, and which are the same in the mating dimension for installation to a mating-machine, wherein transmission gears in a same sub-series comprise a transmission gear of a low angular backlash type which is configured to reduce an angular backlash between the low speed side and the high speed side, and a general type of transmission gear of a general angular backlash type which does not reduce the angular backlash, each type of transmission gear having a same speed change ratio, a same mating dimension, and a same transmission capacity.

5,352,164
SWITCHABLE DIFFERENTIAL DRIVE
Jörg Bensinger, Hennef; John Botterill, Saarbrücken, and Karl-Heinz Hülsebusch, Köln, all of Fed. Rep. of Germany, assignors to GKN Automotive AG, Siegburg, Fed. Rep. of Germany
Filed May 21, 1993, Ser. No. 65,637
Claims priority, application Fed. Rep. of Germany, May 26, 1992, 4217313
Int. Cl.[5] B60K *17/08, 17/16, 23/04*
U.S. Cl. 475—223 **7 Claims**



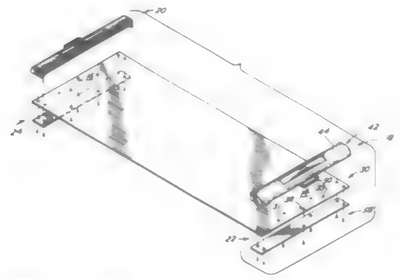
1. A switchable differential drive preferably for a vehicle driven by an electric motor, comprising:
a differential drive housing;
a drivable differential carrier rotatably supported in said housing;
two axle shaft gears supported within said housing, said axle shaft gears being connected to output shafts extending out of the differential carrier and which are coupled to one another via differential gears;
a first output shaft being an axle shaft and a second output shaft being coaxially supported in the axle shaft;
two switching couplings being arranged coaxially relative to said axle shaft; and
means for actuating said switching couplings wherein, to obtain a first gear stage, said first switching coupling being engaged, thereby non-rotatingly connecting the output shaft to the axle shaft, while the second switching coupling is open, and obtaining a second gear stage, when said second switching coupling being engaged, thereby non-rotatingly connecting said output shaft to the differential drive housing while the other switching coupling is open.

5,352,165
PERSONAL EXERCISE DEVICE
Jeffrey M. Koblick, 351 Townes Rd., Wayzata, Minn. 55391
Filed May 3, 1993, Ser. No. 57,127
Int. Cl.[5] A63B *23/04*
U.S. Cl. 482—51 **6 Claims**

1. A personal exercise device comprising, in combination:
a sliding mat having first and second ends, each of said ends defining a plurality of apertures; and
a first end piece fixedly attached to said first end of said mat and a second end piece fixedly attached to said second end of said mat, and each of said end pieces further including:
a housing;
a base plate, said housing and base plate co-operatively receiving an end of said mat; and
attachment means for holding said mat, housing and base plate together in a substantially fixed relation, said attachment means co-operatively defined by:
at least first and second bosses extending into said apertures of one of said ends of said mat, each of said bosses disposed between said base plate and said housing, and

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at least first and second pins, extending, through said first and second bosses, respectively, for holding said housing and base plate in a substantially fixed relation;



whereby an exerciser may slide on said mat between said first and second end pieces.

5,352,166

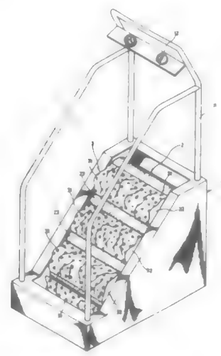
MOUNTAIN CLIMBING TRAINING MACHINE

Tsan-Yun Chang, No. 13, Wuchuen First Road, Wuku Industrual Area, Taipei Hsien, Taiwan

Filed Sep. 28, 1993, Ser. No. 127,737

Int. Cl.[5] A63B *22/04, 7/00*

U.S. Cl. 482—52 **3 Claims**



1. A mountain climbing training machine comprising:

a machine base;

first and second cylindrical roller shafts rotatably mounted at spaced positions to said machine base;

an endless conveyor belt wrapped about said first and second roller shafts for rotation in a predetermined direction;

a plurality of shell plates, each of said shell plates defining a stepping surface having a plurality of rock-like protrusions distributed thereover; and

means for pivotally attaching said plurality of shell plates at spaced locations in said predetermined direction along said endless conveyor belt.

5,352,167

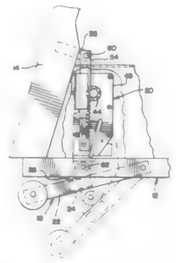
INCLINATION DRIVE MECHANISM FOR A TREADMILL

Dennis J. Ulicny, Waukesha, Wis., assignor to ECM Motor Co., Elkhorn, Wis.

Filed Jun. 8, 1993, Ser. No. 74,116

Int. Cl.[5] A63B *22/02*

U.S. Cl. 482—54 **5 Claims**



1. An inclination drive mechanism for selectively adjusting the inclination of a treadmill, said drive mechanism comprising:

an electric motor;

a gear train operatively connected to said electric motor and including an output gear pinion and an output bearing for rotatably supporting said output gear pinion, said gear train being enclosed within a gear box connected to said electrical motor;

a driven linear gear rack positioned in meshing engagement with said output pinion; and

a load-carrying support bracket connected to said gear box and including a rack mounting element comprising a channel-like portion of said support bracket generally within which said gear rack is mounted on said support bracket and is maintained in engagement with said gear pinion, said support bracket being positioned in engagement with said output bearing to transfer non-torsional loads exerted on said support bracket by said linear gear rack from said support bracket to said output bearing, said support bracket and said gear rack being connected to the treadmill for selectively adjusting its inclination, so that operation of said electric motor acts through said gear train to move said gear rack relative to said support bracket for adjusting the inclination of the treadmill.

5,352,168

METHOD OF PERFORMING AN AEROBIC EXERCISE WITH USE OF ADJUSTABLE STEP

William T. Wilkinson, P.O. Box 572, Crownsville, Md. 21032-0572

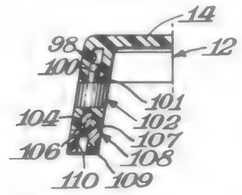
Continuation-in-part of Ser. No. 891,178, May 29, 1992, Pat. No. 5,248,286, and a continuation-in-part of Ser. No. 967,711, Oct. 28, 1992, Pat. No. 5,275,579, which is a continuation-in-part of Ser. No. 754,075, Sep. 3, 1991, Pat. No. 5,162,028, and a continuation-in-part of Ser. No. 698,382, May 10, 1991, Pat. No. 5,184,987, said Ser. No. 891,178, is a division of Ser. No. 718,754, Jun. 21, 1991, Pat. No. 5,118,096, which is a division of Ser. No. 588,449, Sep. 26, 1990, abandoned. This application Jun. 1, 1993, Ser. No. 69,740

Int. Cl.[5] A63B *5/00*

U.S. Cl. 482—55 **9 Claims**

1. In a method of performing an aerobic exercise, the improvement being in (a) providing an exercise step having a base with four corners and a leg assembly, the base having an uppermost portion which is substantially horizontal and planar to comprise a stepping platform, the base having an apron extending downwardly from the platform and terminating in a lowermost portion which is substantially horizontal and planar and

parallel to the platform, the leg assembly having a lowermost portion which is substantially horizontal and planar, mounting means on one of the base and the leg assembly, complementary mounting means on the other of the base and leg assembly for detachable engagement with the mounting means to selectively mount the leg assembly to the base, a separate set of plural legs mounted at each of the four corners of the base, each of the legs having its upper end of narrower cross sectional area than the remainder of the leg and having an opening exposed from its lowermost portion whereby a narrower upper end of one leg may be selectively inserted in a complementary shaped opening of the base or in the lowermost portion of another of the legs in the set, the openings and the narrower upper ends being the mounting means and the complementary mounting means, the platform having a first substantially horizontal height level when lowermost portion is directly on a support surface, the platform having a second substantially horizontal height level higher than the first height level when one leg from each set at each corner is mounted to the base by the engagement of the mounting means and complementary mounting means and when the lowermost portion of the leg assembly is directly on a support surface, the platform having a third substantially horizontal height level when another leg from each set at each corner is mounted to the one leg by engagement of the mounting means and complementary mounting means; (b) selecting one of the height levels in accordance with the selective mounting and detachment of the legs to each other and to the base to provide an exercise step at the selected height level; (c) placing the exercise step on a support surface at the selected height level; and (d) repeatedly stepping up on to and down from the platform.



5,352,169

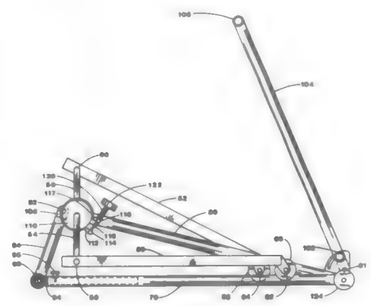
COLLAPSIBLE EXERCISE MACHINE

Paul W. Eschenbach, 143 Lakeland Ave., Moore, S.C. 29369

Filed Apr. 22, 1993, Ser. No. 50,636

Int. Cl.[5] A63B *69/16, 22/04*

U.S. Cl. 482—57 **20 Claims**



1. A collapsible exercise machine comprising:

a frame, said frame having side members, said side members each having a hollow member and a rod member telescoped within said hollow members at one end, said hollow members being connected to one another by a first support member, said rod members being connected to one another by a second support member, a third support member pivotally connected to said second support member, a fourth support member pivotally connected to said first support member at one end and rotatably connected to said third support member at the other end, a crankshaft bearing housing connected to said fourth support member and having a crank means projecting outwardly therefrom on both sides thereof, a pedal means connected to the end of each crank means being operably associated with said side member to allow said pedal means to move relative to said side member when the foot of the user is rotating said crank means and a lock means on at least one of said side members maintaining said hollow tube and said rod member in a fixed position until said lock means is released to allow said rod members to slide outwardly from said hollow members and collapsing said exercise machine.

5,352,170

BOXING TRAINING APPARATUS

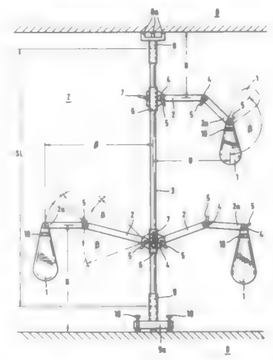
Girolamao Condo, and Luigi Trocola, both of Eislingen, Fed. Rep. of Germany, assignors to Petra Condo, Eislingen, Fed. Rep. of Germany

Filed Apr. 8, 1993, Ser. No. 44,126

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1992, 4212374

Int. Cl.[5] A63B *26/00*

U.S. Cl. 482—83 **7 Claims**



1. A boxing training apparatus for developing aiming and blocking punching techniques, comprising an arm having a free end; punching means secured to said free end of said arm; a substantially vertical support means for supporting said arm; and means for adjusting the height, of said arm relative to said support means;

wherein said arm has a first arm portion and a second arm portion attached to said first arm portion at one end thereof, with another end of said second arm portion opposite said one end defining said free end;

wherein said adjusting means includes first hinge means for pivotally attaching said first arm portion to said support means, and second hinge means for pivotally attaching said second arm portion to said first arm portion and a third hinge means for pivotally attaching said punching means, thereby providing means for adjusting the projection and inclination of said arm; and the projection of said punching bag means relative to said support member,

Wherein each of said first and second hinge means comprise means for looking a respective one of said first and second arm portions in a predetermined pivotal position.

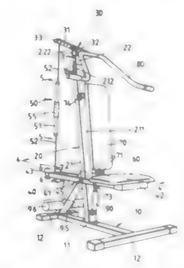
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5,352,171

EXERCISE MACHINE MAKING USE OF BODY WEIGHT OF EXERCISER AS LOAD WEIGHT THEREOF

Chin-Ta Lin, Taichung Hsien, Taiwan, assignor to Kuo-Chung Shieh, Taichung Hsien, Taiwan

Filed Jan. 31, 1994, Ser. No. 188,758
Int. Cl.[5] A63B *21/068*
U.S. Cl. 482—96 4 Claims



1. An exercise machine making use of the body weight of an exerciser as a load weight thereof comprising:

a base;

a fixation rod member fastened obliquely at one end thereof to said base such that a front surface of said fixation rod member forms a greater angle with an upper surface of said base;

an upper rocking bar member provided with a predetermined number of through holes and pivoted adjustably to a top end of said fixation rod member;

a lower rocking bar member pivoted to said fixation rod member and located under said upper rocking rod member;

an expandable connection rod member with both ends thereof pivoted respectively to said upper rocking bar member and said lower rocking bar member such that said expandable connection rod member is located behind said fixation rod member;

a seat pad disposed on another end of said lower rocking bar member;

a back pad having one end pivoted to said lower rocking bar member and another end lapped with said front surface of said fixation rod;

a handle fastened to another end of said upper rocking bar member; and

a cushioning member having one end pivoted to said lower rocking bar member and another end pivoted to said fixation rod member for enabling said lower rocking bar member to return to a stationary position at a moderate pace.

5,352,172

ROPE EXERCISER

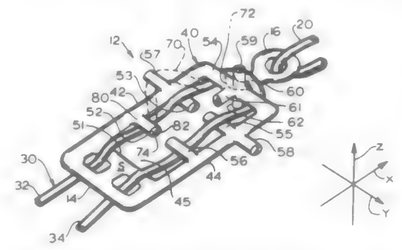
Kiyoshi Suzaki, 1137 El Medio Ave., Pacific Palisades, Calif. 90272

Filed Oct. 25, 1993, Ser. No. 143,911
Int. Cl.[5] A63B *21/018*
U.S. Cl. 482—120 10 Claims

1. An exercise device having surface regions about which a rope can be wrapped in a plurality of wrappings to slide thereon, so as to provide frictional resistance to pulling of the rope, comprising:

a member having a frame with a first side extending primarily along a longitudinal direction, and having a first plurality of bars permanently fixed in position and orientation on said frame first side and spaced apart along said longitudinal direction, with each bar extending primarily perpendicular to said longitudinal direction and having a rope-wrap surface, with said rope-wrap surfaces being curved rather than forming sharp corners, so a rope can slide along said rope-wrap surfaces without damage;

said bars each having a first end mounted on said frame first side and an opposite second end, with said second ends



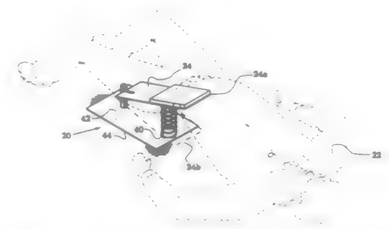
being free and being devoid of any barriers at said free ends, so a rope can be wrapped and unwrapped about one of said bars by moving a middle portion of a rope onto and off the bar free end, without disassembling said device.

5,352,173

METHOD FOR EXERCISING BUTTOCK AND THIGH MUSCLES

Gary G. McLaughlin, 1300 Wingo St., Arleta, Calif. 91331

Filed Mar. 10, 1993, Ser. No. 29,009
Int. Cl.[5] A63B *21/02*
U.S. Cl. 482—123 1 Claim



1. A method for exercising buttocks and thigh muscles, comprising the steps of:

providing a base having a floor abutting member;

providing a body contact member having a defined periphery;

pivotably supporting the body contact member a selected height above the base at one portion of its periphery for vertical pivoting up and down;

yieldingly supporting said contact member between vertically spaced first and second positions thereof in response to said vertical pivoting with a biasing member disposed between said contact member and said base;

lying face-up with said contact member under the buttocks and the knees bent; and

urging, with said buttocks and thigh muscles, said contact member between said first and second positions.

5,352,174

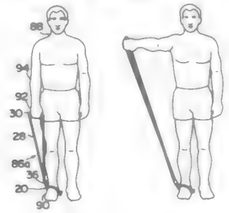
SHOULDER EXERCISE SYSTEM

Bradley R. Mason, Olivenhain, and Jeffrey T. Mason, Escondido, both of Calif., assignors to Breg, Inc., Vista, Calif.

Filed Jul. 26, 1991, Ser. No. 736,393
Int. Cl.[5] A63B *21/02*
U.S. Cl. 482—129 3 Claims

1. A shoulder exercise system having a plurality of interactive components combinable in a shoulder exercise device for strengthening, stretching or range of motion exercise for the shoulder of a user, said shoulder exercise system comprising:

a door strap loop having a stop appended thereto, said door strap loop and stop integrally formed from a flexible strap wherein a portion of said door strap loop has a profile with a first thickness enabling said portion to be fixably positionable within a union between a door jamb and a closed door while the remainder of said door strap loop is extendable from one side of said union, and further wherein said stop has a profile with a second thickness greater than said first thickness such that said stop is too



thick to be positionable in said union, but is extendable from the opposite side of said union, said second thickness defined by a secured balled up configuration of said strap;

a first continuous elastomeric tubing loop having a substantially rigid handle positioned on said continuous tubing loop; and

a releasable loop connector means for connecting said door strap loop and said tubing loop by simultaneous engagement of said loop connector means with said door strap loop and said tubing loop to provide a first shoulder exercise device.

5,352,175

Patent Not Issued For This Number

5,352,176

MUTIPURPOSE, SPRING-SUPPORTED EXERCISING MACHINE

Ming-Chih Huang, 11F. No.46, Sec.2, Chung Shan N. Road, Taipei, Taiwan

Filed Sep. 24, 1993, Ser. No. 125,692
Int. Cl.[5] A63B *22/14*
U.S. Cl. 482—146 3 Claims



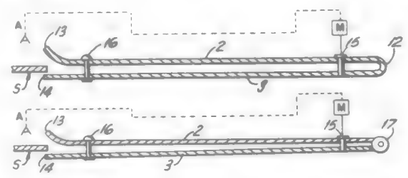
1. An exercising machine comprising a triangular base frame, a rotating disk, spring elements and stands, said triangular base frame having three handles on three sides thereof and three bottom sockets on three corners thereof on the bottom, said rotating disk rotatably mounted, on a shaft disposed above said triangular base frame, said spring elements respectively retained between said bottom sockets of said triangular base and said stands, each stand having a vacuum mount on the bottom.

5,352,177

BUCKLE CHUTE FOLDER WITH ADJUSTABLE SPACING BETWEEN PLATES

Bernd H. Walter, Naples, Fla., assignor to GBR Systems Corporation, Naples, Fla.

Filed Oct. 9, 1992, Ser. No. 958,807
Int. Cl.[5] B31B *3/00*; B41L *43/06*
U.S. Cl. 493—23 11 Claims



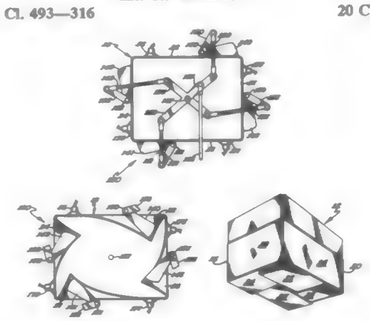
1. A buckle-chute folder for folding at least one sheet of paper comprising an upper and a lower plate facing each other, each plate having a front and a rear end, said plates being connected to each other at said rear end, said plates being movable toward and away from each other whereby the space between the two plates may be adjusted, means are provided to move the plates toward and away from each other to adjust the space between said two plates, and said hinge means are spring pressed hinge means.

5,352,178

COLLAPSED, TUBULAR CARTON ERECTING APPARATUS

Irvan L. Pazdernik, Alexandria, Minn., assignor to Douglas Machine Limited Liability Company, Alexandria, Minn.

Continuation-in-part of Ser. No. 17,480, Feb. 12, 1993. This application Jul. 9, 1993, Ser. No. 89,042
Int. Cl.[5] B31B *3/52*
U.S. Cl. 493—316 20 Claims



1. Device for erecting a collapsed carton, with the carton including first, second, third, and fourth side panels connected together about hinge connections, with the second and fourth panels being spaced and located intermediate the first and third side panels, with the carton including first and second major bottom closure flaps connected to the first and third side panels and first and second minor bottom closure flaps connected to the second and fourth side panels, comprising, in combination: a frame for supporting the third panel and including means for removable securement to the third panel; means for moving the frame from an attachment position and an open position,

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with the frame in the attachment position being vertically above and horizontally offset from the open position, with the frame being horizontally orientated in the attachment and open positions and intermediate the attachment and open positions; means for placing the carton at an operative position with the first and second panels in a linear arrangement and the third and fourth panels in a linear arrangement, with the third panel located vertically below and underlying at least the second panel and with the frame in the attachment position abutting the third panel, with the placing means holding the first panel at an operative position while the frame moves from the attachment position to the open position, with the closure flaps extending generally linearly to the first, second, third, and fourth panels in the operative position, with the closure flaps each including first and second outside corners; and means for pushing the first corner of the first major closure flap simultaneously inward and forward and prior to the second corner of the first minor closure flap, for pushing the first corner of the first minor closure flap simultaneously inward and forward and prior to the second corner of the second major closure flap, for pushing the first corner of the second major closure flap simultaneously inward and forward and prior to the second corner of the second minor closure flap, and for pushing the first corner of the second minor closure flap simultaneously inward and forward and prior to the second corner of the first major closure flap, with the first corners of the first and second major closure flaps and of the first and second minor flaps being pushed simultaneously until extending generally perpendicularly to the panels of the carton and forming the bottom of the carton.

5,352,179

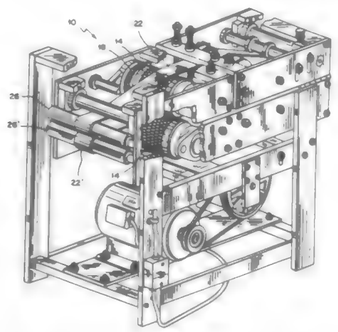
FLATTENING FOLDED MINIATURE PRINTED ITEMS

Stephen W. De Lise, c/o Mini-Graphics, 45 St. John's Pl., Freeport, N.Y. 11520

Continuation-in-part of Ser. No. 850,978, Mar. 11, 1992, abandoned. This application Sep. 1, 1993, Ser. No. 114,157

Int. Cl.[5] B30B *3/00*

U.S. Cl. 493—407 **4 Claims**



1. In combination with a compressing machine of the type wherein a folding machine individually folds printed sheets and feeds them serially to the compressing machine and a stacking conveyor receives the compressed sheets from the compressing machine and stacks the sheets; the folding machine, the compressing machine and the stacking conveyor cooperatively processing the printed sheets in a continuous in-line process, the compressing machine comprising:

a lower machine frame;

an upper machine frame with two sections, each section having one end pivotally mounted to said lower machine frame and a spaced opposite second free end;

each frame rotatably supporting an input roller, a pair of motor driven weighted rollers, an output roller and an endless belt encircling said rollers;

each section of the upper machine frame having one of the weighted rollers adjacent its second free end; and

means for independently adjusting the distance between said second free ends and said lower machine frame to adjust the pressure between the pairs of weighted rollers;

wherein said input rollers are vertically aligned with each other and positioned adjacent an output of the folding machine for serially grasping individual folded, printed sheets fed from the folding machine;

wherein said output rollers are vertically aligned with each other and positioned adjacent an input of the stacking conveyor for serially feeding the individual compressed, printed sheets into the stacking conveyor.

5,352,180

METHOD AND APPARATUS FOR REGULATING THE FLOW RATE OF A PERIODIC FLOW HEART PROSTHESIS

Bernard J. L. Candelon, Toulon; Jean Trinkl; Patrick J. Havlik, both of Marseille, and Jean-Raoul E. Monties, Auriol, all of France, assignors to Societe Teracor, France

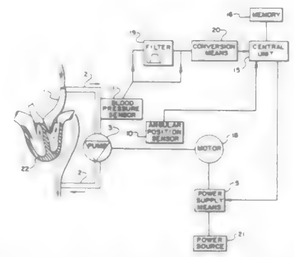
PCT No. PCT/FR91/00098, § 371 Date Sep. 22, 1992, § 102(e) Date Sep. 22, 1992, PCT Pub. No. WO91/12035, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 8, 1991, Ser. No. 917,101

Claims priority, application France, Feb. 9, 1990, 90 01850; Feb. 9, 1990, 90 01851

Int. Cl.[5] A61N *1/362*

U.S. Cl. 600—17 **16 Claims**



1. A method of regulating a heart prosthesis which includes a positive displacement pump providing a periodic flow of period T and which includes an electrical actuator driving said pump, said actuator being powered by electrical power supply means, the method comprising following operations:

a) calculating a sequence of normal values for a physical operating parameter of said prosthesis as a function of a sequence of positions of said prosthesis, each of said positions respectively corresponding to one of said normal values of said physical operating parameter, which sequence of normal values of said physical operating parameter should be complied with during said period T;

b) then during operation prosthesis, during each of said period of said periodic flow, at time intervals T_4 shorter than said period T, and preferably at time intervals T_4 that are regularly spaced apart and that are such that the ratio T/T_4 is greater than 10;

c) sensing values of said physical operating parameter of said prosthesis by means of a physical operating parameter sensor; and simultaneously sensing a position of said prosthesis by prosthesis position sensor means;

d) calculating a difference (E) between said sensed value of said physical operating parameter and the normal value of said physical operating parameter in said sequence of normal values corresponding to said position of said prosthesis as sensed by said prosthesis position sensor means, and

e) if said difference (E) is greater than a threshold (S), taking action on said power supply means to reduce drive speed of said heart pump.

5,352,181

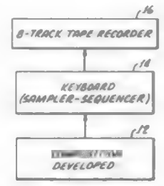
METHOD AND RECORDING FOR PRODUCING SOUNDS AND MESSAGES TO ACHIEVE ALPHA AND THETA BRAINWAVE STATES AND POSITIVE EMOTIONAL STATES IN HUMANS

Mark E. Davis, 24902 Oak Creek, Lake Forest, Calif. 92630

Filed Sep. 2, 1992, Ser. No. 939,088

Int. Cl.[5] A61M *21/00*

U.S. Cl. 600—28 **10 Claims**



1. A method for producing an audio sound tape for use in achieving Alpha and Theta brainwave states and effecting positive emotional states in humans to enhance learning and self-improvement, said method comprising:

recording on an audio tape, a musical composition having an initial tempo; and

during recording of the musical composition reducing the initial tempo at regular intervals over a length of the musical composition until a final tempo is reached at an end of the musical composition, said initial tempo being reduced at a rate of approximately 2 beats per minute.

5,352,182

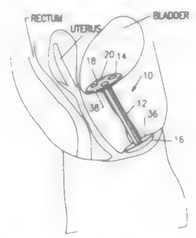
PRODUCT AND METHOD TO TREAT FEMALE INCONTINENCE

Irvin M. Kalb, 327 Alta Ave., Santa Monica, Calif. 90402; Robert H. Shaw, 243 Peck Dr., Beverly Hills, Calif. 90212, and Michael J. Ram, 1 Horseshoe Rd., Bell Canyon, Calif. 91307

Filed May 27, 1992, Ser. No. 888,597

Int. Cl.[5] A61F *2/02*

U.S. Cl. 600—30 **17 Claims**



1. A urinary drainage catheter for placement in the female urethra, the urethra having an exterior opening at the point of exit from the body and an interior opening at the point of entry into the urinary bladder, the catheter comprising a hollow shaft, a sealing portion on a first end of the shaft and a cap on a second end of the shaft, wherein:

the shaft has a length sized to approximate the length of the urethra and an outer diameter approximating the diameter of the urethra such that the shaft does not extend beyond the exterior opening of the urethra,

the sealing portion having

a) an upper surface with openings therein so that fluid in the bladder can enter the shaft, and

b) a width greater than the outer diameter of the shaft, the width of the sealing portion being reducible so that the sealing portion can be readily passed through the urethra,

a lower surface of said sealing portion resting against the interior end of the urethra, and

the cap having a width greater than the outer diameter of the shaft, an upper surface of said cap resting against the exterior opening of the urethra, no portion of the urinary drainage catheter extending exterior of the urethra cap.

5,352,183

ILEAL RESERVOIR DEVICE

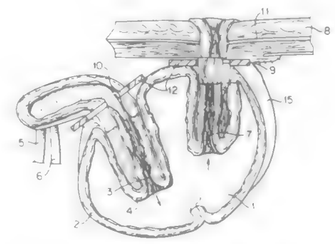
Olof Jonsson, Västra Frölunda; Bo Rangert, Mölnlycke, and Staffan Akerlund, Göteborg, all of Sweden, assignors to Nobelpharma AB, Goteborg, Sweden

Filed Dec. 11, 1992, Ser. No. 987,969

Claims priority, application Sweden, Dec. 12, 1991, 9103668-1

Int. Cl.[5] A61F *2/02*

U.S. Cl. 600—32 **6 Claims**



1. A device for stabilizing the base of the nipple valves in a continent ileal reservoir including inlet and outlet nipple valves, said device comprising:

a substantially annular member made of a biocompatible material, said annular member being pre-formed and permanently shaped to substantially define a ring, said annular ring member having a radial slot formed therein to allow insertion of said annular ring member over the base of a respective nipple valve, said annular ring member having an inner radius adapted to fit around said base,

said annular ring member including an outwardly cambered segment so as to overbridge the mesentery,

said annular ring member having first and second surfaces, one of said surfaces facing the ileal reservoir outer wall, said annular ring member being provided with means extending through said first and second surfaces for promoting a good adherence of said device to the surrounding soft tissue.

5,352,184

RESERVOIR FOR ENCLOSING AND RETRIEVING BODY SPECIMENS

Mark C. Goldberg, Boston, Mass.; Lev Melinyshyn, Buffalo Grove, Ill.; Alexander Poloyko, Morton Grove, Ill., and Edward M. Goldberg, Glencoe, Ill., assignors to UreSil Corporation, Skokie, Ill.

Filed Mar. 12, 1992, Ser. No. 850,655

Int. Cl.[5] A61F *2/00*

U.S. Cl. 600—37 **19 Claims**

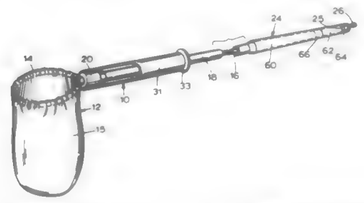
1. An instrument intended for percutaneous insertion through an access port for receiving, containing, and removing

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a specimen from a patient during a minimally invasive surgical procedure, the instrument including:

a rigid, elongate guide member that has a proximal end and a distal end;

an elongate belt that can be moved along the length of the guide member; has a proximal end outside the guide member; and has a belt portion that has a major axis and a minor axis, is more flexible to bending perpendicular to



the plane of the major axis than to bending perpendicular to the plane of the minor axis, and forms a loop outside the distal end of the guide member when the proximal end of the belt is moved toward the guide member; and

a receptacle that is connected to the belt, can be opened by moving the proximal end of the belt toward the guide member, and can be closed by moving the proximal end of the belt away from the guide member.

5,352,185

ANKLE EXERCISING APPARATUS

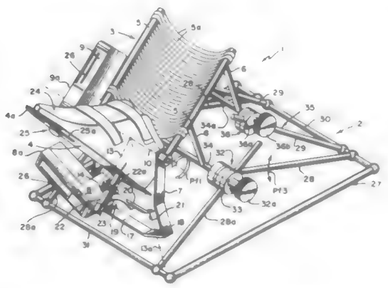
Walter Blauth, Kiel, and Ernst Knoll, Umkirch, all of Fed. Rep. of Germany, assignors to Ernst Knoll Feinmechanik, Umkirch, Fed. Rep. of Germany

Filed Oct. 27, 1992, Ser. No. 967,627

Claims priority, application Fed. Rep. of Germany, Oct. 29, 199F, 4135552

Int. Cl.[5] A61H *1/00*

U.S. Cl. 601—32 33 Claims



1. Apparatus for exercising an ankle, comprising:

a frame;

a first support for the lower leg of a person desiring to exercise the ankle;

a second support for the foot of the person, said supports being mounted on said frame;

first joint means for permitting first movements performed about a first axis and including dorsal extension and plantar flexion of a foot relative to a lower leg;

second joint means for permitting second movements performed about a second axis and including spination and pronation of the foot;

means for moving at least one of said supports relative to the frame about one of the first and second axes defined by the ankle between the lower leg and the foot on said first and second supports, respectively; and

means for adjusting said second support relative to said frame, said adjusting means including a carrier for adjusting a relative position of said second support,

said moving means including a primer mover having a first output element connected with and arranged to pivot said carrier and said second support relative to said frame about the first axis

said moving means further including a second prime mover mounted between said carrier and said second support and having a second output element connected with and arranged to pivot said second support about the second axis, and

means for adjustably coupling said second prime mover to said carrier in any one of a first relative position, at which said second output element is in alignment with the second axis that extends through the ankle of the left foot when the left foot is on said second support, and a second relative position, at which said second output element is in alignment with the second axis that extends through the ankle of the right foot on said second support, said first and second relative positions being spaced from each other.

5,352,186

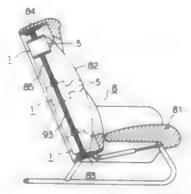
FINGER PRESSURE DEVICE

Yoshikiyo Yamasaki, Sakai, and Shinichiro Fujimoto, Osaka, both of Japan, assignors to Kabushiki Kaisha Japan Health and Kabushiki Kaisha Fuji Tryoki, Osaka, Japan

Continuation of Ser. No. 832,937, Feb. 10, 1992, abandoned. This application Jul. 26, 1993, Ser. No. 97,578

Int. Cl.[5] A61H *1/00, 7/00*

U.S. Cl. 601—99 3 Claims



1. A finger pressure massaging device comprising:

a box having a pair of holding trunks provided on opposite sides of said box, a starting motor provided at a central location in said box, said starting motor having a hollow shaft with a female threaded part provided therein; a T-shaped supporting bar comprising a forward member and a rearward member joined to said forward member, the distal end of said rearward member having a male threaded part provided thereon, said male threaded part being threadedly engaged with said female threaded part provided in said starting motor hollow shaft; a pair of finger pressure massaging disks provided on said T-shaped supporting bar forward member; and a pair of slidable plates provided at opposite ends of said T-shaped supporting bar forward member, said slidable plates being mounted for slidable movement inside said holding trunks, whereby rotation of said starting motor hollow shaft in a first direction causes said male threaded part provided on said T-shaped supporting bar to screw into said hollow shaft female threaded part and rotation of said starting motor hollow shaft in a second direction opposite to said first direction causes said male threaded part to screw out of said hollow shaft female threaded part, thereby causing said T-shaped supporting bar, and said pair of finger pressure massaging disks provided thereon, to move toward or away from said starting motor, said box being slidably supported on a pair of parallel supporting guide bars fixed

in a seat back of a massage chair and cooperable with an elevator structure so as to be raised and lowered along the supporting guide bars repeatedly by operation of the elevator structure, said elevator structure comprising a drive motor provided in said box for raising and lowering said box.

5,352,187

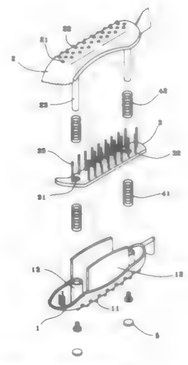
HAND MASSAGER

Ton Tseng, 5F. No. 2, Lane 104, Ching Hua Street, Taipei, Taiwan

Filed Nov. 23, 1993, Ser. No. 156,050

Int. Cl.[5] A61H *15/00*

U.S. Cl. 601—134 1 Claim



1. A hand massager comprising:

a top shell having a plurality of raised portions evenly distributed over an outside surface thereof, two parallel upright walls longitudinally and bilaterally disposed on the inside, and two upright tubes spaced on the inside near two opposite ends thereof, each upright tube having an inside annular flange;

a bottom shell fitting over said top shell, said bottom shell comprising a plurality of raised portions evenly distributed over an outside surface thereof, a plurality of pin holes spaced between the raised portions thereof, two upright posts spaced respectively inserted into said upright tubes and moved to slide therein;

a pin set mounted around said upright posts of said bottom shell and retained between said upright walls of said top shell, said pin set comprising a flat back board having two round holes, through which said upright posts of said bottom shell pass, and a plurality of upright pins respectively aligned with and moved to extend out of the through holes on said bottom shell;

first spring means respectively mounted around said upright posts of said bottom shell and retained between said bottom shell and said pin set;

second spring means respectively mounted around said upright posts of said bottom shell and retained between said pin set and the inside annular flange of either upright tube of said top shell; and stop means respectively fastened to said upright posts to retain said upright posts in said upright tubes permitting said upright posts to be moved in said upright tubes.

5,352,188

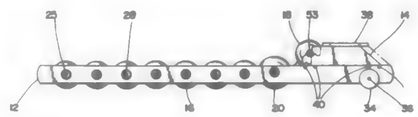
COMBINED BACK AND NECK STIMULATOR AND REHABILITATION DEVICE

David M. Vitko, 973 Fairfield Ave., Columbiana, Ohio 44408

Filed Feb. 4, 1993, Ser. No. 13,620

Int. Cl.[5] A61H *15/00*

U.S. Cl. 601—128 10 Claims



1. A combined back and neck stimulation device comprising:

a) a thin substantially rectangular main frame having a head end and being of sufficient size to accomodate a human body in the supine position;

b) a plurality of flexible roller ball axles which are substantially smooth, transversely mounted within said rectangular main frame;

c) a plurality of backroller balls which are attached to said back roller axles such that the balls can rotate;

d) the centers of said back roller balls exist in a singular plane in which the plane has an upper surface and a lower surface, wherein the lower most surface of the device is defined by the outer most surface of the back roller balls such that the device will be able to roll along a surface;

e) a neck roller frame located at the head end of said main frame;

f) a head rest attached to said neck roller frame;

g) said head rest comprising a generally planar surface;

h) a pair of neck roller balls attached to the headrest, the centers of the neck roller balls are at a substantial vertical distance away from the upper surface of the plane containing the center of the back roller balls, whereas said neck roller balls constitute a means of axial elongation of the spine during use of the device.

5,352,189

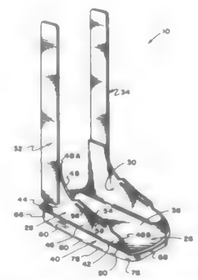
ANKLE BRACE WALKER

Gail H. Schumann, and Vernon L. Stevenson, both of Fort Worth, Tex., assignors to Tecnol Medical Products, Inc., Fort Worth, Tex.

Filed Feb. 19, 1992, Ser. No. 838,608

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—23 7 Claims



1. An ankle brace walker assembly comprising, in combination:

a foot plate having a first planar surface for supporting a patient's foot and having a second planar surface for attachment to an outsole;

lateral and medial side plates attached to said foot plate on opposite sides of said first planar surface, said lateral and

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medial side plates projecting upright with respect to said foot plate;

lateral and medial brace members attached to said lateral and medial side plates, respectively, said lateral and medial brace members protecting upright with respect to said foot plate;

a composite outsole attached to the second side surface of said foot plate, said composite outsole including an elongated, flexible shell, a flexible heel core and a flexible foot core, the flexible heel core and the flexible foot core being enclosed within the flexible shell in tandem relation to each other; and

wherein said flexible shell has a heel sidewall portion, a toe sidewall portion, a first bottom panel portion attached to said heel sidewall portion and a second bottom panel portion attached to said toe sidewall portion, said first bottom panel portion being substantially planar, and said second bottom panel portion having a convex curvature, the planar bottom panel portion being joined to said convex bottom panel portion along a fulcrum line at a location intermediate the toe sidewall portion and the tandem interface of the heel core and foot core.

5,352,190

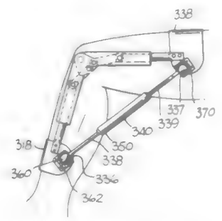
KNEE BRACE

Mark F. Fischer, Colorado Springs; Tammy C. Luttrell, Elbert, and Christopher J. Barton, Colorado Springs, all of Colo., assignors to Q-Motus, Inc., Colorado Springs, Colo.

Continuation-in-part of Ser. No. 495,044, Mar. 16, 1990, Pat. No. 5,117,814, and a continuation-in-part of Ser. No. 507,212, Apr. 9, 1990, Pat. No. 5,178,137, and a continuation-in-part of Ser. No. 550,256, Jul. 9, 1990, Pat. No. 5,144,943. This application Feb. 26, 1992, Ser. No. 841,625

Int. Cl.[5] A01F *5/00*

U.S. Cl. 602—26 **11 Claims**



1. A method of bracing a limb, having an upper portion, a lower portion and a joint between the upper and lower portion, comprising attaching a brace to the limb, the brace having a lower attachment for attachment to the lower portion of the limb and an upper attachment for attachment to the upper portion of the limb, a first lower strut attached to the lower attachment and extending along the lower portion of the limb toward the joint, a first upper strut attached to the upper attachment and extending along the upper portion of the limb toward the joint, and a first connecting mechanism to pivotally connect the first upper and first lower struts, the connecting mechanism having a lower telescoping portion slidably attached to the end of the first lower strut that is toward the joint, whereby the first lower strut slides out of the lower telescoping portion and away from the joint as the joint bends, and the connecting mechanism further having an upper telescoping portion slidably attached to the end of the first upper strut that is toward the joint, whereby the upper strut slides out of the telescoping portion and away from the joint as the joint bends.

5,352,191

TRANSFUSION DEVICE

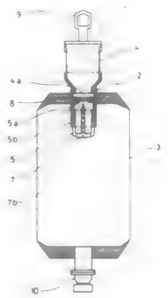
Seizo Sunago, Hyogo, and Osamu Aoki, Osaka, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Oct. 14, 1992, Ser. No. 960,838

Claims priority, application Japan, Oct. 25, 1991, 3-279770

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—7 **5 Claims**



1. A transfusion device comprising a flexible vessel containing a solvent fluid, a drug container containing a drug, and a communicating portion for communicating the drug container and the flexible vessel with each other;

wherein the communicating portion comprises a communicating passage leading to the interior of the flexible vessel integrally through an upper portion thereof and having the drug container fitted partially or wholly into a top portion thereof, said drug container including a mouth with a plug member therein to form a plugged mouth portion, the plugged mouth portion of the drug container facing downward, a membrane disposed in the communicating passage for closing the communicating passage, and a slidably mounted puncturing needle unit disposed beneath the membrane and axially slidable along an inner periphery of said communicating passage such that when an external pressing force is applied through the flexible vessel the slidably mounted puncturing needle unit slides upward with respect to said inner periphery of said communicating passage and with respect to said flexible vessel to break said membrane and to penetrate the plug member of the drug container thereby to allow the drug container and the flexible vessel to communicate with each other.

5,352,192

MEDICAL DEVICE

Philip O. Byrne, Newcastle upon Tyne, and Thomas S. J. Elliot, Sutton Coldfield, both of England, assignors to British Technology Group Limited, London, England

Filed Apr. 16, 1992, Ser. No. 869,608

Claims priority, application United Kingdom, Apr. 27, 1991, 9109166.0

Int. Cl.[5] A61N *1/30*

U.S. Cl. 604—20 **7 Claims**

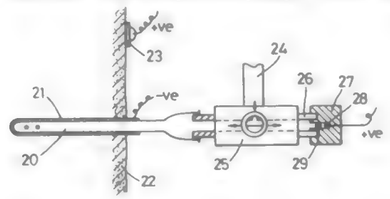
1. A medical device for invasive positioning within a body, said device comprising

an inlet orifice for the admission of liquid into the device;

an exit orifice for passing liquid from the device into the body;

a liquid flow passage extending between said inlet orifice and said exit orifice; and

means for establishing a positive electric field at a point within the device which is out of line of liquid flow from said inlet orifice to said outlet orifice but is in liquid communication with said liquid flow passage, whereby negatively-charged bacteria are attracted away from said passage and towards said point.



5,352,193

Patent Not Issued For This Number

5,352,194

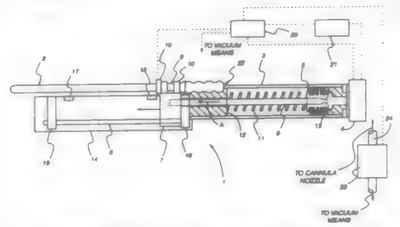
AUTOMATED DEVICE FOR LIPOSUCTION

Richard J. Greco; Mark B. Freidman, and J. William Futrell, all of Pittsburgh, Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Filed Jun. 29, 1992, Ser. No. 905,726

Int. Cl.[5] A61B *17/00*

U.S. Cl. 604—35 **63 Claims**



1. An automated device for performing suction lipectomy comprising:

(a) a cannula;

(b) a powered means for producing a reciprocal, rectilinear motion of the cannula, said motion being of a stroke length of at least 1 cm.;

(c) a means for operatively connecting the cannula to said means for producing a reciprocal, rectilinear motion; and

(d) a control means in operative connection with said powered means for maintaining active control over the reciprocal, rectilinear motion produced by the powered means, said control means comprising means for providing a control signal to said powered means responsive to input from the group consisting of a predetermined waveform and feedback from operation of said cannula, said control means being operable to control the reciprocal, rectilinear motion in a desired manner via the control signal provided to said powered means.

5,352,195

APPARATUS FOR INTRAVENOUS REGIONAL ANESTHESIA

James A. McEwen, Richmond, Canada, assignor to IVRA Systems, Inc., Vancouver, Canada

Continuation-in-part of Ser. No. 471,514, Jan. 29, 1990, Pat. No. 5,254,087. This application Aug. 27, 1992, Ser. No. 935,785

The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.

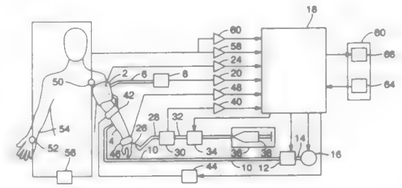
Int. Cl.[5] A61M *31/00*

U.S. Cl. 604—66 **18 Claims**

1. Apparatus for monitoring the administration of liquid anesthesia in a portion of a patient's limb distal to a cuff, comprising in combination:

(a) applied pressure transducing means for generating an applied pressure signal representative of a pressure applied to a limb by a cuff which encircles the limb and applies pressure to the limb;

(b) anesthetic pressure sensing means for sensing the pressure of anesthetic liquid in a vein distal to the cuff and for generating an anesthetic liquid pressure signal indicative of the pressure;



(c) alarm mean for determining the difference between the pressures corresponding to the applied pressure signal and the anesthetic liquid pressure signal, for comparing the difference therebetween to a preassigned safety limit, and for producing an alarm signal when the difference is less than the preassigned safety limit; and

anesthetic delivery means for introducing anesthetic liquid into the vein in the limb, the anesthetic delivery means being responsive to the alarm signal for stopping the introduction of anesthetic liquid when the alarm signal is produced.

5,352,196

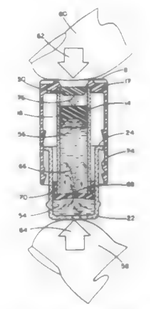
MIXING VIAL

Terry M. Haber, Lake Forest; Clark B. Foster, Laguna Niguel, and William H. Smedley, Lake Elsinore, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Division of Ser. No. 741,780, Aug. 7, 1991, Pat. No. 5,188,615, which is a continuation-in-part of Ser. No. 615,610, Nov. 19, 1990, Pat. No. 5,114,411. This application Jan. 13, 1993, Ser. No. 4,150

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—90 **6 Claims**



1. A vial for containing a liquid, comprising:

a rigid, chemical resistant vessel having a closed end and an open end;

a resilient piston disposed in said vessel and forming an air tight and liquid tight chamber between said piston and said closed end of said vessel, wherein when said chamber is filled with a liquid and a needle cannula is made to penetrate said resilient piston, the liquid can be drawn out

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of said chamber through said needle cannula by a fluid suction, said fluid suction decreasing the liquid volume in said chamber and pulling the piston toward the closed end of the chamber thereby preventing ambient air from becoming entrained in said liquid;

a housing for at least partially containing said vessel, said housing having a removable rigid shield positioned over said open end of said vessel, said housing and said shield both fabricated from material which prohibits penetration of a needle cannula; and

the vessel including means for moving the piston displacing the shield when moved from the closed end]to the open end of the chamber to displace the shield so to permit needle access to the piston.

5,352,197

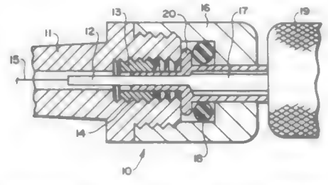
TURN LIMITER FOR A CATHETER WITH TWISTABLE TIP

Dan J. Hammersmark, Colorado Springs; John Lennox-Gentle, Littleton; Kenneth P. Grace, Woodland Park; Boyce D. Richardson, Colorado Springs; John G. Stine, Woodland Park; Kevin D. Taylor, Colorado Springs, all of Colo., and Matthew S. Solar, Cooper City, Fla., assignors to The Spectranetics Corporation, Colorado Springs, Colo.

Continuation-in-part of Ser. No. 853,607, Mar. 18, 1992. This application Mar. 12, 1993, Ser. No. 31,388

Int. Cl.[5] A61M *25/00, 37/00;* **A61B** *5/00*

U.S. Cl. 604—95 **17 Claims**



1. An apparatus for rotating a torque wire extending through a torque catheter, comprising:

a housing;

a handle rotatably attached to the housing and constructed to be connected to a torque wire such that rotating the handle imparts a rotational force on the torque wire; and

friction means, disposed between the housing and the handle, for resisting rotational forces urging the handle to return to an original position after being rotated and released by an operator.

5,352,198

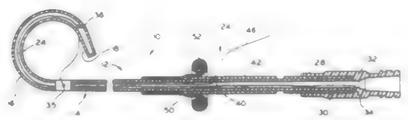
LOCKING CATHETER SYSTEM

Barry Goldenberg, Arlington Heights; Jeffrey T. Williams, Grayslake; David Schucart, Homewood; Paul H. Hubbard, Chicago, and Lev Melinyshyn, Buffalo Grove, all of Ill., assignors to Uresil Corporation, Skokie, Ill.

Filed Nov. 24, 1993, Ser. No. 157,648

Int. Cl.[5] A61M *37/00, 29/00, 5/32*

U.S. Cl. 604—95 **19 Claims**



1. A locking catheter system comprising:

a flexible catheter having a restraining portion at its distal end;

means, extending from the restraining portion to the proximal end of the catheter, for drawing the restraining portion toward the proximal end; and

means, at the proximal end of the catheter, for removably attaching the drawing means to the catheter,

said attaching means comprising a self-sealing sleeve covering a portion of the proximal end of the catheter and an elastomeric sheath sized to fit over the self-sealing sleeve, a portion of said drawing means for positioning along the self-sealing sleeve, said portion of said drawing means restrained when the elastomeric sheath is drawn over the self-sealing sleeve.

5,352,199

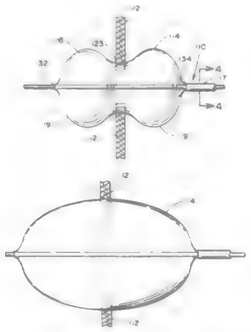
BALLOON CATHETER

Allen J. Tower, North Lawrence, N.Y., assignor to Numed, Inc., Hopkinton, N.Y.

Filed May 28, 1993, Ser. No. 68,928

Int. Cl.[5] A61M *29/00*

U.S. Cl. 604—96 **6 Claims**



1. A device for cardiac valvuloplasty comprising:

a catheter having an longitudinal axis and a lumen for transferring a fluid therethrough;

a transaxially expandable dilation means attached to the catheter in fluid flow communication with said lumen for inflation therethrough, said dilation means consisting essentially of a distensible chamber bounded by a membrane, said chamber being inflatable at a first inflating pressure to a memorized shape comprising two end sections and a central waist therebetween that has a smaller diameter than said end sections, said waist being positionable in an orifice of a valve to be dilated, said end sections engaging upstream and downstream surfaces of the valve to restrain axial displacement of said chamber relative thereto, said waist being effaced at a second inflating pressure that is higher than said first inflating pressure to dilate the valve thereabout.

5,352,200

NON-REUSABLE SYRINGE WITH NEEDLE GUARD

Roy Hammett, 16103 Carden Dr., Odessa, Fla. 33556, and Eric J. Sundsvold, 5121 Ironton Way, Englewood, Colo. 80111

Division of Ser. No. 985,301, Dec. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 802,628, Dec. 5, 1991, Pat. No. 5,181,912. This application Jul. 28, 1993, Ser. No. 103,046

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—110 **11 Claims**

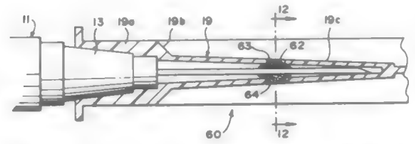
1. A non-reusable syringe having a built-in needle guard, comprising:

an elongate cylindrical barrel having adapter means on one end for attachment of a needle, and an open other end;

a needle secured to said adapter means on said one end of the barrel;

an elongate plunger reciprocable in the barrel between a forward position in the barrel and a retracted position, said plunger having a forward end in the barrel and a rearward end accessible exteriorly of the barrel for operating the plunger;

a piston carried on the forward end of the plunger for effecting a sliding seal with the barrel to draw material into the barrel and discharge it therefrom through said one end upon reciprocating motion of the plunger and piston in the barrel;



said plunger having a hollow bore formed longitudinally through a central portion thereof, said bore including a first portion for cooperative locking engagement with the adapter means on the barrel and a second portion for receipt of the needle, whereby the plunger may be withdrawn from the barrel and placed in shielding relationship over the needle after the syringe has been used for its intended purpose; and

a small ampoule piercable by the needle and containing a quantity of liquid adhesive that cures in the presence of oxygen located in the second portion of the hollow bore in position to be pierced by the needle when the plunger is removed from the barrel and placed over the needle, said adhesive serving to adhesively secure the plunger over the needle in shielding relationship thereto.

5,352,201

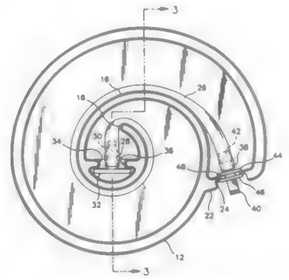
COMPACT UNIFORM PRESSURE INFUSION APPARATUS

Gilbert F. Jemmott, San Marcos, Calif., assignor to Block Medical, Inc., Carlsbad, Calif.

Filed Feb. 3, 1994, Ser. No. 191,429

Int. Cl.[5] A61M *5/148*

U.S. Cl. 604—131 **26 Claims**



1. An apparatus for dispensing a liquid under pressure at a substantially constant flow rate over a period of time comprising:

support means extending from a central axis with a substantially radial spiral configuration outwardly from said central axis to a terminal end;

a pressure reservoir defined by an elongated elastic sleeve mounted on said support member and having an inner end disposed at said central axis and an outer end at said terminal end for holding a liquid in a pressurized state for dispensing therefrom;

means at said outer end for introducing a liquid into said pressure reservoir and for dispensing liquid from said pressure reservoir to a selected site.

5,352,202

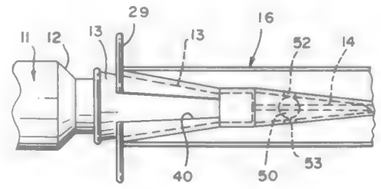
NON-REUSABLE SYRINGE WITH REMOVABLE PLUNGER USABLE AS A NEEDLE GUARD

Roy Hammett, 16103 Carden Dr., Odessa, Fla. 33556, and Eric J. Sundsvold, 5121 Ironton Way, Englewood, Colo. 80111

Continuation-in-part of Ser. No. 985,301, Dec. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 802,628, Dec. 5, 1991, Pat. No. 5,181,912. This application Apr. 2, 1993, Ser. No. 42,386

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—110 **10 Claims**



1. A non-reusable syringe having a built-in needle guard, comprising:

an elongate cylindrical barrel having adapter means on one end for attachment of a needle, and an open other end;

a needle secured to said adapter means on said one end of the barrel; an elongate plunger reciprocable in the barrel between a forward position in the barrel and a retracted position, said plunger having a forward end in the barrel and a rearward end accessible exteriorly of the barrel for operating the plunger;

a piston carried on the forward end of the plunger for effecting a sliding seal with the barrel to draw material into the barrel and discharge it therefrom through said one end upon reciprocating motion of the plunger and piston in the barrel;

said plunger having a hollow bore formed longitudinally through a central portion thereof, said bore including a first portion for cooperative locking engagement with the adapter means on the barrel and a second portion for receipt of the needle, whereby the plunger may be withdrawn from the barrel and placed in shielding relationship over the needle after the syringe has been used for its intended purpose;

said plunger having an elongate slot formed in a side wall thereof, communicating with said bore and extending from said plunger open end toward the forward end, so that the plunger may be initially positioned laterally over said needle and then moved axially with respect thereto to fully seat the needle in the plunger; and

a small ampoule containing a liquid adhesive that cures in the presence of oxygen located in the second portion of the hollow bore in position to be pierced by the needle when the plunger is removed from the barrel and placed over the needle, whereby the needle and plunger are adhesively secured together.

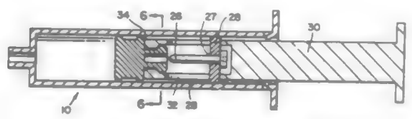
VOL 1167 ISS 1 OC 4 1994 UMI

5,352,203

ASPIRATING NON-REUSEABLE SYRINGE

Anthony J. Vallelunga, 209 Schoolhouse Rd., Albany, N.Y. 12203-5956; Paul V. Cacciotti, and Vincent E. Cacciotti, both of 9 Morgan Way, Latham, N.Y. 12110

Filed Mar. 31, 1994, Ser. No. 220,867
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 5 Claims



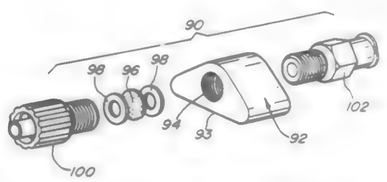
1. A plunger for an aspirating single use syringe comprising:
a cylindrical plunger stem being hollow at an open end thereof, said plunger stem having a plurality of circumferentially spaced slots extending longitudinally at said open end thereof and being constricted on an interior of said open end thereof;
a piston attached to said open end of said plunger stem;
a first connecting member connected to said piston and extending into said open end of said plunger stem, said first connecting member comprising a plurality of circumferentially spaced arms extending longitudinally away from said piston, said circumferentially spaced arms forming a first aperture at an interior thereof and said circumferentially spaced arms flared at an exterior thereof on an end opposite said connection to said piston;
a second connecting member comprising a plurality of protrusions extending radially away from a second aperture, said second connecting member positioned within said plunger stem so that said plurality of protrusions slide within said plurality of slots; and
a third connecting member comprising a longitudinal nipple slidable within said second aperture and matable with said first aperture, wherein when said nipple is mated with said first aperture, the flared circumferentially spaced arms of said first connecting member snugly mate with said constricted interior of said plunger stem.

5,352,204

IMPLANTABLE ACCESS DEVICES

William D. Ensminger, 2770 Parkridge Dr., Ann Arbor, Mich. 48103

Division of Ser. No. 940,626, Sep. 4, 1992, Pat. No. 5,263,930, which is a continuation-in-part of Ser. No. 818,626, Jan. 10, 1992, Pat. No. 5,226,879, which is a continuation-in-part of Ser. No. 654,661, Feb. 15, 1991, Pat. No. 5,180,365, which is a continuation-in-part of Ser. No. 539,793, Jun. 18, 1990, Pat. No. 5,053,013, which is a continuation-in-part of Ser. No. 487,541, Mar. 1, 1990, Pat. No. 5,057,084. This application Sep. 29, 1993, Ser. No. 128,841
Int. Cl.[5] A61M *11/00*
U.S. Cl. 604—98 4 Claims



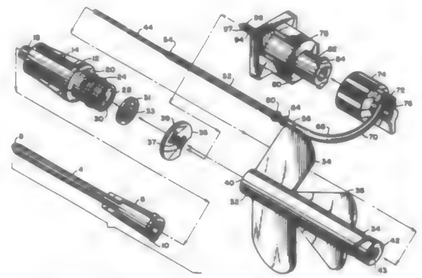
1. An access system for enabling the infusion or withdrawal of a fluid to or from a site within the body of a patient, comprising:
an implantable access port permitting the transcutaneous placement of an access catheter, said access port having means for mounting said port within the body of said patient and including a catheter located within the body of the patient for delivering infused fluid,
an access catheter placed transcutaneously with a first portion placed within the body of said patient and within said port and a second portion being positioned external to the body of said patient, and
a red blood cell trap connected to said second portion of said access catheter and positioned at a location external to the body of said patient, said trap permitting fluids to be infused into said patient and having a filter media element adapted to trap red blood cells migrating from said first portion of said access catheter to said second portion thereby preventing the red blood cells from entering into said second portion of said access catheter.

5,352,205

BLOODLESS INSERTION CATHETER ASSEMBLY

Lawrence Dales, and Elsa A. Dales, both of 1556 Old Orchard St., West Harrison, N.Y. 10604

Filed Sep. 16, 1993, Ser. No. 121,706
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—158 2 Claims



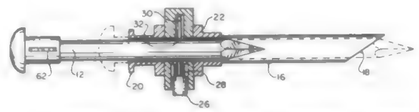
1. A catheter assembly comprising a catheter of flexible plastic tubing secured at one end to a catheter hub, a hollow adaptor body with a distal end for fluid tight connection to said catheter hub and in fluid communication therewith, the proximal end of said adaptor body having a self-closing elastomeric gasket valve member, an introducer needle proportioned so as the sharpened distal end thereof penetrates said gasket valve member and when in extended position extends through said hollow catheter body, hub, and catheter tubing for penetration of a patient's vein to introduce said catheter into said vein, the proximal end of said introducer needle secured in flow communication to a plastic collar having a distal and proximal end, and slidable within a hollow cylindrical container, said collar having dogs at the proximal end thereof to engage the rear wall of said cylindrical container to stop rearward movement, a sealable gasket closure at the distal end of cylindrical container to safely enclose the sharp end of said introducer needle within said cylindrical container upon withdrawal, a curved transparent plastic tube extending from the proximal end of said plastic collar for sighting blood flash back, said tube having a filter valve in the end thereof to allow passage of air, but preclude passage of liquids, and an adaptor unit connectable to said adaptor body, said adapter unit having a hollow shaft at its distal end, said hollow shaft having a sharp end, and ports on its side walls said hollow shaft proportioned to pierce said gasket valve member in said adaptor body to place said adaptor body and said adapter unit in flow communication, the proximal end of said adaptor unit adapted to be connected in flow communication with IV tubing.

5,352,206

TROCAR SYSTEM HAVING PENETRATION INDICATOR

Alfred Cushieri, Hepburn Gardens, Scotland, and Terry Buelna, Long Beach, Calif., assignors to Laparomed Corporation, Irvine, Calif.

Filed Mar. 31, 1993, Ser. No. 40,551
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—164 13 Claims



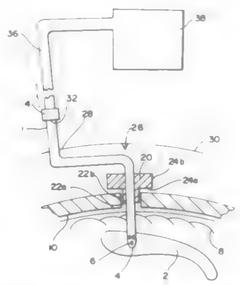
1. An obturator for use with a trocar cannula, said obturator comprising:
an elongate shaft having a proximal end and a tapered distal end; and
means on the shaft for establishing a gas flow stream when gas pressure at the distal end of the shaft is greater than gas pressure at the proximal end of the shaft and producing an audible signal in response to said gas flow stream.

5,352,207

VENTRICULAR DRAINAGE CATHETER WITH GUARD

Eric S. Nussbaum, 11712 Auth La., Silver Spring, Md. 20902

Filed May 18, 1992, Ser. No. 885,129
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—175 20 Claims



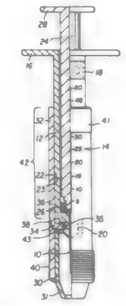
1. A neurosurgical apparatus for the drainage of cerebrospinal fluid from ventricles of the brain, comprising:
a flexible catheter, including an outer surface, suitable for surgical implantation in a patient through a skull hole drilled in a skull bone of the patient;
a repositionable guard comprising a larger portion, a smaller portion projecting from said larger portion, and an outer surface comprising a material that promotes ingrowth of body tissue;
each of said smaller portion and said larger portion including a hole capable of encircling said outer surface of said catheter with frictional gripping contact; and
at least said smaller portion is positionable inside the skull hole, and said guard is positionable at a point of entry of said catheter to the skull hole so that a space around said catheter in the skull hole is substantially occluded.

5,352,208

SAFE NON-REUSABLE HYPODERMIC SYRINGE

Wilbur D. Robinson, 4571 W. Lake Rd., Canandaigua, N.Y. 14424

Filed Nov. 30, 1992, Ser. No. 983,053
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—198 12 Claims



1. An improved hypodermic syringe of the type comprising:
a medication barrel, being generally conventional, rigid, and transparent, provided at one end with a needle and at its opposite open end with a pair of finger flanges, said barrel including graduated dosage indicia located on its exterior cylindrical surface; a plunger slidably received within said barrel; and a removable cap initially surrounding and protecting said needle;
a sleeve, being generally cylindrical, transparent, and made of a resilient plastic, slidably surrounding said barrel and movable between an initial retracted position, in which said needle and said cap project beyond the adjacent end of the retracted said sleeve, and a final extended position, said cap having been removed, in which the extended said sleeve protectively surrounds said needle;
a yieldable restraining means for yieldably restraining said sleeve in said initial retracted position; said yieldable restraining means comprising an annular detent groove provided with a sloped face, said annular detent groove being shaped essentially as a portion of a cone, machined, molded, or otherwise formed into, and surrounding said barrel, and a cooperative pawl arm, carried resiliently by said sleeve essentially in a location central to the length of said sleeve; said pawl arm being provided with a resiliently supported pawl tooth, resiliently and yieldably receivable in said annular detent groove; said yieldable restraining means also including a restraining frictional force which will occur naturally at an interface between the contacting surfaces of said sleeve and said barrel; all said yieldable restraining means providing but a light restraint in opposition to a user, intent on initiating an extension of said sleeve from said initial retracted position by application of opposing axial forces between said sleeve and said barrel, said light restraint capable of being easily and smoothly overridden by said user; said syringe being further characterized by;
an extension opposing means, externally accessible, whereby said user may manually grasp and squeeze said syringe so as to create additional restraint in opposition to the likelihood of a premature extension of said sleeve from said initial retracted position; said extension opposing means including external access to a pawl grasping surface located on the exterior surface of said pawl arm, manually graspable to enable said user to squeeze said resiliently supported pawl tooth into a more positive cooperative engagement with said annular detent groove; and said extension opposing means also including any resultant stray peripheral squeezing of the resilient cylindrical sec-

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tion of said sleeve, in proximity of said pawl arm, which may cause a flexing deformation of the generally thin resilient cylindrical section of said sleeve, into one more generally oval in section, thereby increasing said restraining frictional force which must occur naturally at said interface between the contacting surfaces of said sleeve and said barrel; and

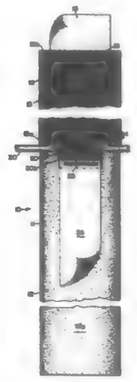
a latching means, responsive to axial movement of said sleeve to said final extended position, for permanently latching said sleeve, both terminally and irreversibly, in said final extended position; said latching means comprising an annular tooth retaining groove, machined, pressed, or molded into, and surrounding said barrel, adapted to permanently receive said resiliently supported pawl tooth, both terminally and irreversibly, when said sleeve reaches said final extended position.

5,352,209

BAND FOR ANCHORING A TUBULAR DEVICE TO THE BODY

John R. Bird, St. Paul, and Michael J. Frazer, Minneapolis, both of Minn., assignors to Bird & Cronin, Inc., Minneapolis, Minn.

Filed Mar. 12, 1993, Ser. No. 30,563
Int. Cl.[5] A61M *25/02*
U.S. Cl. 604—179 **14 Claims**



1. A band for anchoring a catheter or other tubular device to a body, comprising:

(a) an extendible primary strap adapted to encircle the portion of the body to which the device is to be anchored;

(b) fastening means connected to the primary strap for securing it in place on the body;

(c) a single secondary strap made of stretchable flexible material and having a length approximating the circumference of the device, said secondary strap having at least one broad surface of raised resilient high friction material and being configured to engage and form a loop about the periphery of the device;

(d) means for securing a first length of said secondary strap adjacent one end thereof to said primary strap intermediate its ends and in longitudinal alignment therewith, such that said high friction material of said secondary strap faces outward from the body;

(e) fastening tab means connected to and continuously extending from the unsecured end of said secondary strap, for buckleless releasable securement directly to the primary strap when said secondary strap is configured in a loop, said fastening tab means being relatively longitudinally unstretchable and significantly longer than said secondary strap to enable ease of user grasp for longitudinally stretching said secondary strap; and

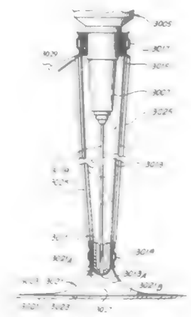
(f) wherein said resilient high friction material of said secondary strap engages approximately two-thirds or more of the outer circumference of the device retained thereby when said fastening tab means is operatively secured to said primary strap.

5,352,210

METHOD AND DEVICE FOR MANIPULATING AND TRANSFERRING PRODUCTS BETWEEN CONFINED VOLUMES

Piero Marrucchi, Piazza Pitti No. 17, Firenze, Italy

Division of Ser. No. 671,014, Mar. 18, 1991, Pat. No. 5,176,673, which is a division of Ser. No. 357,326, May 25, 1989, Pat. No. 5,117,875. This application Sep. 15, 1992, Ser. No. 944,896
Claims priority, application Italy, Jun. 2, 1988, 12.495; Apr. 10, 1989, 9396 A/89
Int. Cl.[5] A61M *25/02*
U.S. Cl. 604—180 **9 Claims**



1. A device for transferring fluids through a surface, the device comprising:

a piercing means for piercing the surface, said piercing means having a first end and a second end which is insertable into the surface;

a flexible tubular film having a first end surrounding said second end of said piercing means and extending away and gradually widening outward from said piercing means to form a flanged second end;

a diaphragm adhesivable to the surface, said diaphragm extending across and sealing said flanged second end of said flexible tubular film, said piercing means being movable and pierceable through said adhesivable diaphragm and the surface when said adhesivable diaphragm is in contact with the surface, said piercing means also being removable from the surface, and said adhesivable diaphragm being removable from said surface after said piercing element is removed from said surface and said adhesivable diaphragm;

an elastic hood-type sheath surrounding and sealing off said piercing means from an outside environment, said hood type sheath having a first end adjacent said first end of said piercing means, and a second end adjacent said second end of said piercing means and connected to said first end of said flexible tubular film, said piercing means being movable inside and pierceable through said elastic hood-type sheath; and

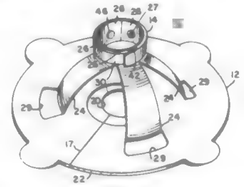
a protection ring located inside said elastic hood-type sheath through which said piercing means is able to slide and pierce said elastic hood-type sheath, said first end of said flexible film surrounding a portion of said elastic hood-type sheath through which said piercing means pierces.

5,352,211

EXTERNAL STABILITY DEVICE

William L. Merakelly, Xenia, Ohio, assignor to Louisville Laboratories, Louisville, Ky.

Filed Jul. 11, 1993, Ser. No. 86,010
Int. Cl.[5] A61M *25/02*
U.S. Cl. 604—180 **20 Claims**



1. A stability device for holding a medical device onto a patient, while permitting resilient flexibility and cleanliness of a surgical site, said device comprising:

a planar, flexible base having a central inner opening and an outer peripheral edge;

a plurality of spaced apart flexible legs each extending from a proximal location on one side of said planar, flexible base, each of said legs having a distal end; and

a diametrically contractable clamp arrangable about the distal ends of said legs so as to enable a medical device to be securely engaged therewithin;

said distal end of said legs having a tab extending therefrom, which tabs are disposable between said contractable clamp and a device being secured therewithin.

5,352,212

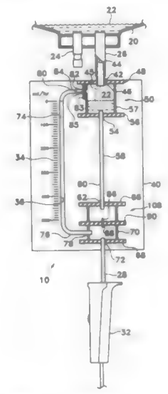
Patent Not Issued For This Number

5,352,213

INTRAVENOUS FLUID FLOW MONITOR

Robert W. Woodard, R.R. 2, Box 94, Frankfort, Kans. 66427

Filed Nov. 16, 1993, Ser. No. 153,668
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—246 **20 Claims**



1. An IV flow monitor comprising:

a. a backing plate having an upper end and a lower end;

b. a fluid reservoir fixed to said backing plate and having an inlet;

c. an orifice chamber fixed to said backing plate at a point lower than said fluid reservoir and a calibrated orifice tube mounted within said orifice chamber and means for transferring a liquid from said fluid reservoir through said calibrated orifice tube said orifice chamber having an outlet; and

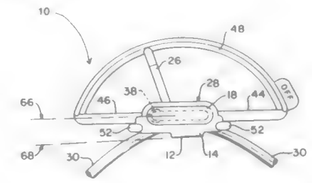
d. a manometer tube having an upper leg portion, a lower leg portion and a central vertical portion and being in fluid communication with both said fluid reservoir and said orifice chamber and a scale for said manometer tube.

5,352,214

TUBING CLAMB TO CONTROL FLOW THROUGH COMPRESSIBLE TUBING

Rolf A. Oscarsson, 1550 Winchell Dr., Hudson, Ohio 44236

Continuation-in-part of Ser. No. 618,236, Nov. 26, 1990, abandoned. This application Mar. 22, 1993, Ser. No. 35,084
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—250 **15 Claims**



1. A tubing clamp to control fluid flow through compressible tubing, said clamp having an operative array, an inoperative or molded array, anterior and posterior ends, the tubing clamp comprising:

a body having first and second sidewalls and a bottom wall, said first side wall durably coupled to the bottom wall and the second side wall repositionally coupled to the bottom wall adapting the body to have an open and a closed arrangement, said body in open arrangement adapted for sidewise insertion of tubing therein; and said body in closed arrangement defining a channel open at the top and at both ends;

a hinge for repositionally coupling said second side wall to the bottom wall:

a flow controller having two ends, a cylinder portion having a cylindrical surface at the first end and a lever arm at the second end, said lever arm projecting radially from said cylinder portion to extend outside the channel; said controller removably mounted in the body upon the tubing in the channel to form the operative array of the clamp;

the clamp being constructed of a polymeric material;

wherein the hinge is a living hinge formed of clamp material; and

wherein the body and controller are constructed in a one-piece structure to form a molded array for the clamp, wherein said controller is detachably attached to the body by a tear tab formed of clamp material.

5,352,215

Y-ADAPTER WITH A SIDEPORT RADIUS

Scott P. Thome, Waite Park, and Thomas J. Holman, St. Louis Park, both of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Filed Aug. 26, 1992, Ser. No. 935,856
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—284 **13 Claims**

1. A Y-adapter for an angioplasty procedure comprising,

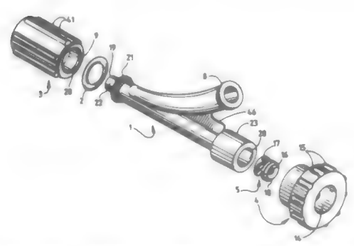
a main body having proximal and distal extremities,

said main body having a straight passageway formed along a longitudinal axis that extends from the proximal to the distal end thereof,

said main body having an arcuate branch passageway generated along a circular arc that is substantially tangent to

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said longitudinal axis and extends from the proximal toward the distal end thereof such that said arcuate branch



passageway smoothly merges into said straight passageway.

5,352,216

STRETCH FABRIC FOR MEDICAL USE

Katsuki Shiono, Hatogaya, and Koji Usukura, Kasukabe, both of Japan, assignors to Alcare Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 602,760, Oct. 24, 1990, abandoned. This application Nov. 18, 1992, Ser. No. 978,194
Claims priority, application Japan, Oct. 26, 1989, 1-279500
Int. Cl.[5] A61F *7/00, 13/15, 13/20;* A61L *15/00*
U.S. Cl. 604—312 5 Claims



1. A composite stretch fabric material for medical use comprising a nonwoven fabric layer having opposed first and second sides and being formed of a spun elastomeric resin arranged in a random web of fibers, said nonwoven fabric layer being formed of a polyurethane resin, said nonwoven layer being of a weight per unit area in a range of about 50–250 g/m^2 and having an air permeability rate per unit area of at least 10 $cc/sec/cm^2$, a first stretchable fabric layer laminated to the first side of said nonwoven fabric layer, and a second stretchable fabric layer laminated to the second side of said nonwoven fabric layer, said composite material formed by said first and second stretchable fabric layers and said nonwoven fabric layer, said composite material further being air permeable throughout all layers thereof and being elastic in all directions.

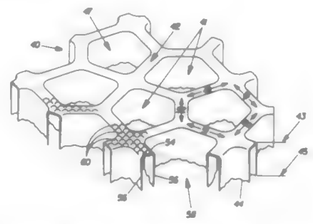
5,352,217

ABSORBENT ARTICLE HAVING MULTIPLE TOPSHEETS

John J. Carro, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Sep. 14, 1993, Ser. No. 121,330
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—378 17 Claims

1. An absorbent article comprising:
(a) a first topsheet, said first topsheet including a first apertured, macroscopically expanded, three-dimensional, polymeric web having a body facing surface and a garment facing surface;
(b) a second topsheet underlying and secured to said first topsheet, said second topsheet including a second apertured, macroscopically expanded, three-dimensional, polymeric web having a body facing surface and a garment facing surface;
(c) an absorbent core underlying said second topsheet, said absorbent core having a body facing surface and a garment facing surface; and



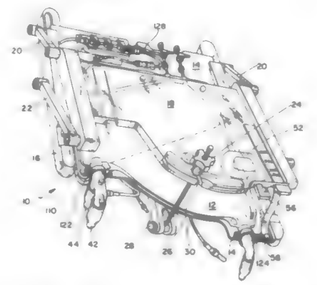
(d) a backsheet underlying said absorbent core and being secured to said second topsheet, said backsheet having a body facing surface and a garment facing surface.

5,352,218

VENOUS RESERVOIR BAG ASSEMBLY

John T. Buckley, Englewood; William D. Dalke, Aurora; Barry D. Reed, Lafayette; Joseph A. Selbona, Littleton, and Rodger L. Stewart, Lafayette, all of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Continuation-in-part of Ser. No. 538,903, Jun. 15, 1990, abandoned. This application Jul. 3, 1991, Ser. No. 725,126
Int. Cl.[5] A61J *1/05*
U.S. Cl. 604—407 10 Claims



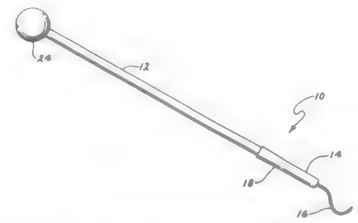
1. A body fluid reservoir bag support assembly comprising
a bracket frame, said bracket frame including a back plate and a means for supporting said back plate at an acute angle to the horizontal, and
a weighted front plate mounted for relative movement with respect to said back plate and to receive a fluid reservoir bag assembly including flexible bag between said front plate and said back plate, said front plate being mounted with respect to said back plate so as to be supported said flexible bag when filled and to move toward said back plate when the volume of said bag is decreasing and to move away from said back plate when the volume of said bag is increasing,
in which said bracket frame and said front plate are connected by two pairs of arms, a first pair symmetrically oriented in parallel and relatively toward a first end of a carried bag plate having inlet and outlet tubes and a second pair symmetrically oriented in parallel and relatively toward the opposite end of said carried bag plate, each of said arms being pivotally mounted at one end on said bracket frame and at its other end on said front plate.

5,352,219

MODULAR TOOLS FOR LAPAROSCOPIC SURGERY

Pratap K. Reddy, 5610 Hyland Greens Dr., Bloomington, Minn. 55437

Filed Sep. 30, 1992, Ser. No. 953,865
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—1 23 Claims



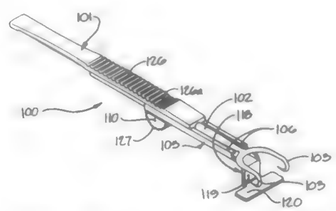
1. A two-art modular laparoscopic tool for use with laparoscopic surgical procedures in a body cavity, comprising:
an instrument head comprising:
an instrument passable through a laparoscopic port; and
an elongate shank attached to said instrument; and
an elongate shaft having a tapered end portion with first detachable attachment means for detachable attachment to said shank and an opposite handle portion, said tapered end portion insertable through a needle hole into said body cavity for intracorporeal detachable attachment to a second detachable attachment means in said shank for detachable attachment to said shaft;
wherein said tapered end portion comprises a sharp cutting point for puncture and passage through a body wall.

5,352,220

GUARDED SKIN HOOK FOR SURGICAL PURPOSES AND METHOD THEREOF

Michael R. Abidin, and Steven P. Lehmbeck, both of Baltimore, Md., assignors to Leonard Bloom, Towson, Md., a part interest

Continuation-in-part of Ser. No. 867,881, Apr. 13, 1992, Pat. No. 5,222,951. This application Apr. 30, 1993, Ser. No. 56,030
Int. Cl.[5] A61B *17/00, 19/00*
U.S. Cl. 606—1 29 Claims



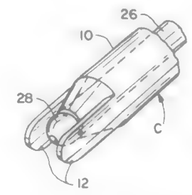
1. A guarded skin hook, comprising a handle including a shank having at least one downwardly-extending hook formed thereon, the handle further including a pair of longitudinal guide tracks formed thereon, a guard having a pair of inturned laterally-extending flanges slidably received in the respective guide tracks, such that the guard has a longitudinal sliding movement on the handle, and such that the guard has an advanced position in which the hook is guarded and further has a retracted position in which the hook is exposed, manually-releasable detent means between the guard and the handle, means for limiting the longitudinal sliding movement of the guard on the handle, and the guard having a forwardly-extending downwardly-offset portion substantially guarding the hook in the advanced position of the guard, thereby precluding inadvertent contact with the hook.

5,352,221

GUIDE TIP APPARATUS FOR LASER SURGERY

Robert M. Fumich, P.O. 397, Gates Mills, Ohio 44040

Filed Nov. 4, 1992, Ser. No. 971,316
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—15 24 Claims



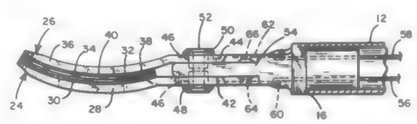
1. In combination with a contact surgical laser knife including an optical fiber with a distal end emitting a laser light beam ablating tissue contacting said distal end, a laser knife elongate center portion and a laser knife grip portion, a guide tip apparatus comprising:
a body member
attaching means, on the body member, for selectively releasably attaching the apparatus to the laser knife grip portion; and,
tissue positioning means, on the body member coincident with said laser knife distal end and including a pair of spaced apart guide members axially extending beyond the laser knife distal end, for receiving tissue between said pair of spaced apart guide members and positioning the tissue in contact with said laser knife distal end.

5,352,222

SURGICAL SCISSORS WITH BIPOLAR COAGULATION FEATURE

Mark A. Rydell, Golden Valley, Minn., assignor to Everest Medical Corporation, Minneapolis, Minn.

Filed Mar. 15, 1994, Ser. No. 213,671
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—37 11 Claims



1. A bipolar electrosurgical instrument for cutting and coagulating tissue comprising:
(a) first and second blade members each comprising a laminated assembly of a metal blade defining a shearing surface, a metal blade support and an intermediate electrically insulative bonding/spacing layer for joining said blade to said blade support;
(b) means for pivotally joining said first and second blade members together with their respective shearing surfaces facing one another;
(c) means coupled to at least one of said first and second blade members for imparting a scissors-like movement relative to the other of said first and second blade members; and
(d) means for applying a voltage between the metal blade supports of said first and second blade members.

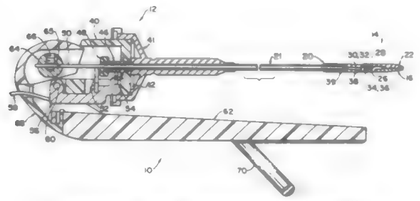
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5,352,223

ENDOSCOPIC INSTRUMENTS HAVING DISTALLY EXTENDING LEVER MECHANISMS

Michael S. McBrayer, Miami; Jurgen A. Kortenbach, Miami Springs, and Saul Gottlieb, Miami, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Filed Jul. 13, 1993, Ser. No. 91,166
Int. Cl.[5] A61B 17/36
U.S. Cl. 606—51 20 Claims



1. An endoscopic surgical instrument comprising:
a) a hollow tube having a proximal end and a distal end;
b) a rod having a proximal end and a distal end, said rod being carried inside said tube;
c) handle means coupled to said proximal end of said tube;
d) clevis means coupled to said distal end of said tube;
e) first and second end effectors, wherein at least one of said first and second end effectors pivotally engages said clevis means and is coupled to said distal end of said rod; and
f) an actuating lever pivotally coupled at a pivot location to said handle means, and coupled at a coupling location to said proximal end of said rod for imparting reciprocal motion to said rod relative to said tube which is translated at said clevis means to pivotal motion of said at least one of said first and second end effectors, said actuating lever having a proximal end portion including said pivot location and said coupling location, and said actuating lever extending substantially distally from said proximal end portion, wherein:
said actuating lever has a lever portion extending substantially distally from said proximal end portion, and
said pivot location is located between said coupling location and said lever portion such that movement of said lever portion towards said hollow tube effects a movement of said rod in a proximal direction.

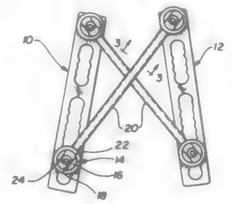
5,352,224

CORRECTION IMPLANT FOR THE HUMAN VERTEBRAL COLUMN

Kord Westermann, New York, N.Y., assignor to Howmedica GmbH, Schoenkirchen, Fed. Rep. of Germany

Filed Nov. 6, 1991, Ser. No. 788,392
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1990, 9016227[U]
Int. Cl.[5] A61B 17/56
U.S. Cl. 606—61 11 Claims

1. Correction implant for the human vertebral column, comprising
(a) four pedicle screws each having a threaded shank and a head having an underside and having an open-ended slot and a shoulder defined by said underside of said head and being adapted to be threaded into a vertebra,
(b) a pair of rods arranged in mutually crossing relation, each rod of which is connected to heads of two pedicle screws and accommodated by said open-ended slots, each rod having a non-circular cross section and being fixable within said slots by fastening means, with each of said slots having a cross-section matched to said cross-section of one of said rods, and
(c) a pair of elongated elements arranged substantially side-by-side and spaced apart from each other and also connected to two of said pedicle screws, each of said elongated elements being plate-shaped and having a plurality of openings, with said pedicle screws being extendable through said openings and at least one of said openings being elongated and having a plurality of arc-shaped



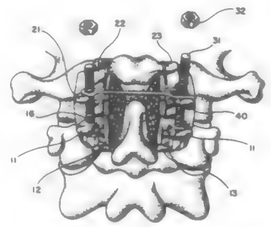
oppositely located recesses, said threaded shank and said shoulder of each of said pedicle screws being dimensioned such that relative movement between each pedicle screw and said plate element is prevented if said shoulder engages said plate element, but is permitted if said shoulder is spaced apart a distance from said plate element.

5,352,225

DUAL-TIER SPINAL CLAMP LOCKING AND RETRIEVING SYSTEM

Hansen A. Yuan, 5066 Pine Valley Dr., Fayetteville, N.Y. 13066, and Chih-I Lin, 813 S. Golden Pardos Dr., Diamond Bar, Calif. 10765

Filed Jan. 14, 1993, Ser. No. 4,610
Int. Cl.[5] A61H 7/00; A61F 2/44
U.S. Cl. 606—61 6 Claims



1. A duel-tier spinal clamp locking and retrieving system, comprising:
a slotted clamp member composed of a first hooked portion bending toward a vertebra intended to be locked, a first connecting portion for connecting said first hooked portion with a first locking block, said first locking block protruding in a direction away from said vertebra and having a first through hole located near a center thereof, at least one of said first connecting portion and said first locking block having at least one locking slot;
a tongued clamp member composed of a second hooked portion bending toward another vertebra intended to be locked, a second connecting portion for connecting said second hooked portion with an elongated tongue which has thereon a second locking block projecting in a direction away from said another vertebra, said second locking block having a second through hole located near a center thereof, said tongue being so dimensioned as to fit deep into said at least one locking slot of said slotted clamp member; and
a clamp adjusting device for adjustably holding together said slotted clamp member and said tongued clamp member, said clamp adjusting device connecting said first

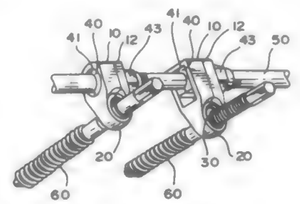
through hole of said slotted clamp member with said second through hole of said tongued clamp member;
wherein said clamp adjusting device holds together said slotted clamp member and said tongued clamp member to effect a first tier locking mechanism, and wherein said tongue of said tongued clamp member is inserted into and held in said at least one locking slot of said slotted clamp member so as to bring about a second tier locking mechanism.

5,352,226

SIDE LOCKING SYSTEM ROTATABLE IN ALL DIRECTIONS FOR USE IN SPINAL SURGERY

Chih-I Lin, 513 S. Golden Pardos Dr., Diamond Bar, Calif. 10765

Filed Feb. 8, 1993, Ser. No. 14,525
Int. Cl.[5] A61F 5/00; A61B 17/56
U.S. Cl. 606—61 5 Claims



1. A side locking system for use in spinal surgery comprising:
a spinal locking rod;
a side locking member including a side locking block and a rotatable locking block, said side locking block having a through hole receiving the spinal locking rod and having a fastening slit substantially perpendicular to an axis of said through hole that extends to said rotatable locking block, said rotatable locking block having a rotatable receiving mount of a spherical construction;
a spinal pin adapted to be fastened within a vertebra;
a spherical liner mounted in said rotatable locking block and provided with a hollow portion so dimensioned as to receive the spinal pin, said spherical liner further having a slit; and
means for tightening said fastening slit of said side locking block so as to bring about a compression of said spherical liner in order to clamp said spinal pin, which in turn causes said through hole of said side locking block to clamp said spinal locking rod.

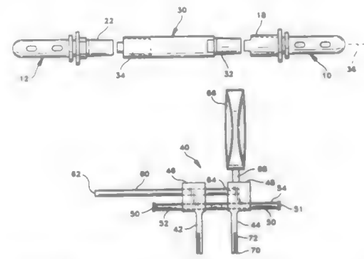
5,352,227

INTERCALARY DEVICE

April L. O'Hara, Basking Ridge, N.J., assignor to Howmedica Inc., New York, N.Y.

Filed Feb. 3, 1993, Ser. No. 13,592
Int. Cl.[5] A61F 2/28
U.S. Cl. 606—63 4 Claims

1. A kit for coupling two bone segments comprising:
a first longitudinally extending intercalary element having a first end for insertion into the medullary canal of one of the bone segments and a second end in the form of a male conically tapered portion;
a second longitudinally extending intercalary element having a first end for insertion into the medullary canal of the other bone segment and having a second end in the form of a female conically tapered portion for mating with said male section of said first intercalary element to couple the bone segments;
engagement means formed on each of said intercalary elements intermediate said first and second ends thereof, said engagement means having a flange formed thereon and extending radially outwardly from an outer surface intermediate the first and second ends thereof;
an instrument having a pair of moveable arms each for engaging a respective one of said flange of said engagement means formed on each of said first and second intercalary elements for moving said male and female conically tapered portions towards or away from one another in the



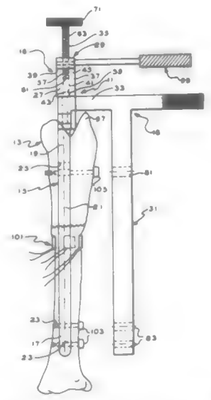
longitudinal direction to couple or uncouple said first and second intercalary elements; and
at least one extension element having a male conically tapered portion at a first end and a female conically tapered portion at a second end, said conically tapered portions for mating with respective ends of said intercalary elements for increasing the distance between the bone segments coupled by said intercalary elements.

5,352,228

APPARATUS AND METHOD TO PROVIDE COMPRESSION FOR A LOCKED INTRAMEDULLARY NAIL

Frederick J. Kummer, and Kenneth Koval, both of 301 E. 17th St., New York, N.Y. 10017

Filed May 10, 1993, Ser. No. 58,206
Int. Cl.[5] A61B 17/58
U.S. Cl. 606—64 16 Claims



1. An apparatus for fixation of a bone having a medullary canal for use with an intramedullary nail that has been inserted into the medullary canal, the intramedullary nail having a longitudinal axis and distal and proximal ends and apertures in said ends, comprising:
a compression assembly for providing interfragmentary

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compression to said bone, comprising a first means and a compression means;

said first means in the form of an elongated first member having first and second ends, central portions defining a central aperture, and a longitudinal axis, adapted to be aligned with said longitudinal axis of said intramedullary nail, said first end for engaging only said bone adjacent said proximate end of said intramedullary nail;

said compression means, bearing against said second end of said first member, for applying compressive force to said bone through said first member;

guide means, disposed parallel to and spaced apart from said intramedullary nail, having a proximal end and a proximal aperture; and

alignment means, connected to said guide means and said first means, for aligning said guide means with respect to said intramedullary nail to position the axis of the proximal aperture in said guide means along the axis of the proximal aperture in said intramedullary nail.

5,352,229

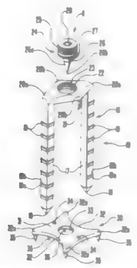
ARBOR PRESS STAPLE AND WASHER AND METHOD FOR ITS USE

E. Marlowe Goble, 850 E. 1200 North, and David P. Luman, 1430 E. 1260 North, both of Logan, Utah 84321

Filed May 12, 1993, Ser. No. 59,618

Int. Cl.[5] A61F *5/04*

U.S. Cl. 606—72 **22 Claims**



17. An arbor press staple and washer for securing soft tissue adjacent to bone comprising, a staple having a pair of spaced apart legs adapted for insertion into bone and including a web section extending between top ends of said staple legs; a movable plate for disposition between said staple legs and adapted to cover soft tissue between said staple legs; and means extending between said staple and said movable plate to bias said movable plate towards said bone.

5,352,230

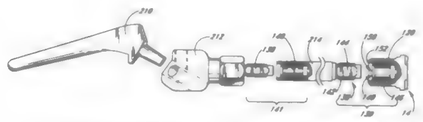
PNEUMATIC IMPULSE TOOL

Larry L. Hood, Laguna Hills, Calif., assignor to Biomet, Inc., Warsaw, Ind.

Filed Feb. 19, 1992, Ser. No. 837,649

Int. Cl.[5] A61F *2/32, 5/00*

U.S. Cl. 606—99 **7 Claims**



1. A method of implanting an orthopedic prosthesis into or extracting an orthopedic prosthesis from a host bone, said method comprising the steps of:

providing a reciprocating mass hammer comprising a shuttle movably disposed within an elongated bore, said hammer further comprising an anvil positioned at a distal end of said bore and connected to an engagement head of said hammer;

positioning an orthopedic prothesis in a medullary canal of a host bone such that a frictional force opposes movement of the prosthesis relative to the host bone;

coupling said engagement head of said reciprocating hammer to a proximal end of said prosthesis;

accelerating said shuttle through said elongated bore;

striking said anvil with said shuttle to produce an impulse force sufficient to overcome said frictional force opposing movement of said prosthesis; and

imparting a peak level of said impulse force from the shuttle to the anvil over a rise time period equal to or less than about 100 μsec.

5,352,231

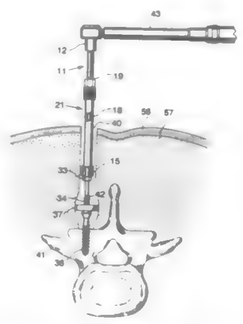
NUT STARTER WRENCH FOR ORTHOPEDIC FIXATION SYSTEM

David L. Brumfield, Southaven, Miss., and Robert A. Farris, Memphis, Tenn., assignors to Danek Medical, Inc., Memphis, Tenn.

Filed Nov. 23, 1992, Ser. No. 980,554

Int. Cl.[5] A61F *2/32*

U.S. Cl. 606—99 **19 Claims**



1. A nut starting tool assembly for driving a nut onto a threaded end of a bone bolt when the bolt is secured in animal bone, comprising:

a shaft having a first end configured for fitting reception on a tool receiving end of a bone bolt, and having an opposite second end configured for rotating said shaft,

said shaft further having storage means at an intermediate portion thereof for reception and temporary storage thereon of a nut to be installed on the threaded end of the bone bolt; and

a sleeve coaxially disposed on said shaft and having a first end configured for fitting reception on the nut when temporarily stored on the intermediate portion of the shaft, and an opposite second end configured to be manipulated independent of said shaft to move the nut off said storage means and drive the nut onto the threaded end of the bone bolt when the nut is received within said first end.

5,352,232

METHOD FOR USING DETACHABLE TIP VALVULOTOME

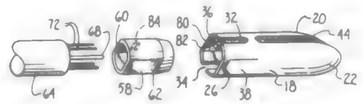
Donald Cohen, Irvine, Calif., assignor to Endovascular, Inc., Costa Mesa, Calif.

Division of Ser. No. 895,090, Jun. 8, 1992, Pat. No. 5,284,478. This application Sep. 10, 1993, Ser. No. 120,039

The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—159 **1 Claim**



1. A method for cutting venous valves in-situ within a vein, comprising the steps of:

making an entry opening into the vein;

connecting a first cutting head having first and second cutting blades and a proximal segment having a plurality of portions to a pushing member by:

urging the blades toward each other to cause the portions to move away from each other;

advancing the cutting head onto the pushing member;

releasing the blades to permit the blades to move away from each other, thereby causing the portions of the cutting head to engage the pushing member;

operably engaging the pushing member with an optical scope;

advancing the pushing member into the vein through the opening in a direction opposite to normal venous blood flow to cut the venous valves with the cutting head and to generate an image of the inside of the vein;

removing the pushing member from the vein;

disconnecting the first cutting head from the pushing member without substantially damaging the first cutting head and pushing member; and

connecting a second cutting head to the pushing member without substantially damaging the second cutting head and pushing member.

5,352,233

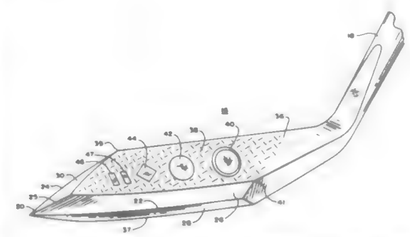
SCALPEL AND TECHNIQUE FOR USING SCALPEL

Aziz Y. Anis, 9540 Firethorne La., Lincoln, Nebr. 68520

Filed Feb. 9, 1993, Ser. No. 15,479

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—167 **11 Claims**



1. A scalpel having a blade with reflective and light-absorbing portions on its surface, whereby glare from the reflective portions of the blade indicate the angle of an incision; the blade including a plurality of portions that reflect light differently from other portions, wherein the angle can be identified by a characteristic of the reflected light.

5,352,234

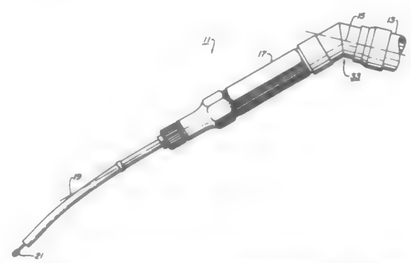
SURGICAL INSTRUMENT WITH ANGULAR SWIVEL

Tony D. Scott, Weatherford, Tex., assignor to Midas Rex Pneumatic Tools, Inc., Fort Worth, Tex.

Filed Oct. 8, 1992, Ser. No. 958,229

Int. Cl.[5] A61B *17/32, 17/00*

U.S. Cl. 606—170 **12 Claims**



1. In a surgical instrument for dissecting tissue, the surgical instrument including a conduit having a conduit axis defined through a terminal end thereof, and a fluid powered motor for rotating a dissecting tool, the motor having a longitudinal motor axis, the improvement comprising:

connection means for rotatably connecting the motor to the conduit; and

the connection means including swivel means for swiveling the motor relative to the conduit from an aligned position, wherein the motor axis is aligned with the conduit axis, to an angularly displaced position, wherein the motor axis intersects the conduit axis at a selected included angle, the swivel means comprising:

a motor portion in fluid communication with the motor;

a conduit portion in fluid communication with the conduit;

a connection shaft extending from one of the portions;

a connection receptacle formed in the other of the portions, the connection receptacle formed to receive the connection shaft in rotatable engagement; and

fastener means for securing the connection shaft in rotatable engagement with the connection receptacle.

5,352,235

LAPAROSCOPIC GRASPER AND CUTTER

Tibor Koros, and Gabriel Koros, both of 610 Flinn Ave., Moorpark, Calif. 93021

Continuation-in-part of Ser. No. 853,307, Mar. 16, 1992. This application Oct. 27, 1992, Ser. No. 967,086

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—174 **24 Claims**



1. A surgical instrument, which comprises:

a rotatable combination shaft having a proximal end and a distal end;

said rotatable shaft combination comprising:

an outer hollow shaft;

an inner shaft slidably positioned axially in said outer hollow shaft;

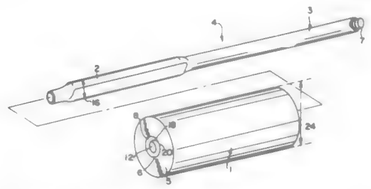
means at said distal end of said inner shaft for cutting;

anchor means at said proximal end of said inner shaft;

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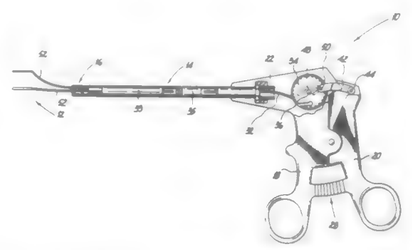
a pair of distal and proximal squeeze handles pivotally secured together;
mounting means on each of said handles;
means attached to said mounting means on said proximal handle for releasably securing said anchor means at said proximal end of said inner shaft;
stationary barrel means having a proximal end and a distal end, and having an axial bore and mounted on said mounting means of said distal handle;
movable barrel means having an axial bore and mounted at said distal end of said stationary barrel means;
means for engaging said shaft combination with said removable barrel means so that both can rotate in unison;
clutch means for allowing said shaft combination and said rotatable barrel means to temporarily disengage from said stationary barrel means to allow angular adjustment of said means for cutting on said shaft combination; and
cartridge means positioned in said axial bore of said movable barrel and said axial bore of said stationary barrel means for holding said movable barrel means, said shaft combination, said stationary barrel means and said clutch means together as a unit;
said cartridge means having an axial bore for allowing said inner shaft to reciprocate therein.

5,352,236
BALLOON PROTECTOR
Eugene Jung, San Diego, and Kazuo Sasamine, Lemon Grove, both of Calif., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Sep. 29, 1992, Ser. No. 954,780
Int. Cl.[5] A61M *29/00*
U.S. Cl. 606—194 **10 Claims**



1. A balloon catheter system comprising:
an elongated shaft having a distal end and a proximal end, and an inflation lumen running through the shaft;
a balloon wrapped about the distal end of the shaft and the balloon in fluid communication with the inflation lumen; and
a balloon protector disposed about the wrapped balloon, the balloon protector comprising:
an elongated elastomeric sleeve with a longitudinal lumen running therethrough;
an elongated tube within the lumen of the sleeve, the sleeve having an inner diameter smaller than the outer diameter of the uninflated wrapped balloon on a catheter when the sleeve is in a relaxed state, the tube having an inner diameter smaller than that of the uninflated wrapped balloon when the tube is in a relaxed state, and the tube being made of a lubricous material and having a longitudinal slit defining a first end and a second end, the ends overlapping each other.

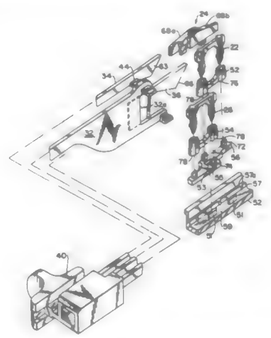
5,352,237
ENDOSCOPIC INSTRUMENT INCLUDING A HANDLE HAVING A FLYWHEEL MECHANISM
Daniel P. Rodak, Milford, and Paul A. Matula, Brookfield, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Feb. 8, 1993, Ser. No. 14,805
Int. Cl.[5] A61B *17/28*
U.S. Cl. 606—206 **21 Claims**



1. An endoscopic or laparoscopic surgical instrument comprising:
a handle assembly including a housing and at least one movable handle member;
a body portion extending from said housing of said handle assembly including a tubular member having a lumen and a flexible member, said flexible member slidably positioned within said tubular member and operatively connected to said movable handle, said flexible member terminating in a tool mechanism; and
rotatable means positioned within said housing of said handle for extending and withdrawing said tool mechanism from within said lumen upon movement of said movable handle member;
wherein said flexible member is at least partially wound about said rotatable means and extends at least partially through said tubular member.

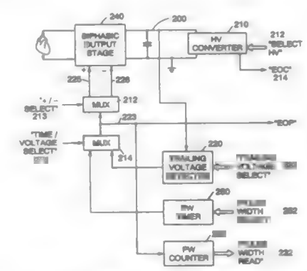
5,352,238
APPARATUS FOR APPLYING TWO-PART SURGICAL FASTENERS
David T. Green, Westport; Henry Bolanos, East Norwalk; Robert J. Geiste, Milford, all of Conn.; Wayne P. Young, Brewster, N.Y.; Stephen W. Gerry, Bethel, and Frank M. Rende, III, Stamford, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Continuation of Ser. No. 794,596, Nov. 14, 1991, Pat. No. 5,156,614. This application Oct. 16, 1992, Ser. No. 962,279
The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—220 **16 Claims**

1. Apparatus for applying at least two rows of two-part surgical fasteners, each surgical fastener having a fastener portion and a retainer portion, which comprises:
a) a first section having a plurality of said fastener portions of said two-part fasteners supported thereby, said fastener portions arranged in at least two rows;
b) a second section engageable with said first section and having a plurality of said retainer portions of said two-part fasteners supported thereby, said retainer portions arranged in at least two rows and supported in positions opposite said fastener portions, said first and second sections being relatively movable to clamp body tissue therebetween; and
c) at least two cam bars movable within the first section and an actuating member for moving the at least two cam bars longitudinally for sequentially driving said fastener portions toward said retainer portions in a direction generally transverse to the direction of movement of said at least two cam bars and into engagement with each other.



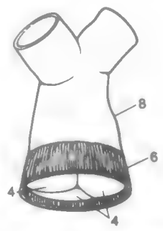
5,352,239
APPARATUS FOR PRODUCING CONFIGURABLE BIPHASTIC DEFIBRILLATION WAVEFORMS
Benjamin Pless, Menlo Park, Calif., assignor to Ventritex, Inc., Sunnyvale, Calif.
Continuation of Ser. No. 629,252, Dec. 18, 1990, abandoned. This application Mar. 24, 1993, Ser. No. 37,482
Int. Cl.[5] A61N *1/39*
U.S. Cl. 607—5 **2 Claims**

1. An implantable medical device utilizable for delivering a configurable biphasic defibrillation waveform to a heart, the medical device comprising:
(a) charge storage means;
(b) charging means for charging the storage means to an initial selected voltage;
(c) control means for initiating delivery of a first defibrillation pulse of a first polarity to the heart when the storage means stores the initial selected voltage and for initiating delivery of a second defibrillation pulse of a second polarity to the heart when the voltage of the charge storage means decays to a programmed decay voltage, said control means including timer means for measuring the duration of the first defibrillation pulse and means for delivering said second defibrillation pulse having a duration related to the measured duration of the first defibrillation pulse; and



(d) programmable disable means for terminating the first defibrillation pulse when the voltage of the charge storage means decays to the programmed decay voltage.

5,352,240
HUMAN HEART VALVE REPLACEMENT WITH PORCINE PULMONARY VALVE
Donald N. Ross, London, England, assignor to Promedica International, Inc., Newport Beach, Calif.
Filed May 31, 1989, Ser. No. 359,478
Int. Cl.[5] A61F *2/24*
U.S. Cl. 623—2 **6 Claims**



1. A method of treating aortic or pulmonary valve dysfunction in a human patient, comprising replacing the existing dysfunctioning valve with a fixed and sterilized whole excised unstented pulmonary porcine valve.

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5,352,241

PROCESS FOR RETANNING MINERAL TANNED LEATHERS WITH AROMATIC SULPHONIC ACIDS

Franz Schade, Bergisch Gladbach; Wilhelm Krümmel, Leverkusen; Bernhard Wehling, Bergisch Gladbach, and Henricus Slaats, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

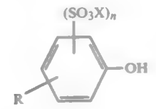
Continuation of Ser. No. 738,703, Jul. 31, 1991, abandoned. This application Mar. 29, 1993, Ser. No. 41,294

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1990, 4025344

Int. Cl.[5] C14C *3/08, 3/20*

U.S. Cl. 8—94.21 2 Claims

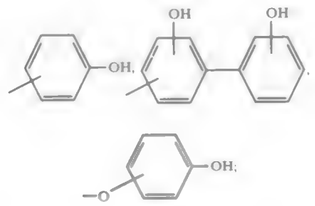
1. A process for retanning mineral-tanned leathers, said process comprising contacting the mineral-tanned leathers with a retanning agent, said retanning agent selected from the group consisting of sulphonic acids or salts thereof having the formula:



(I)

wherein

R represents one of the radicals:



X represents hydrogen, an alkali metal ion or an ammonium ion; and

n represents 1, 2, 3 or 4.

5,352,242

FORMALDEHYDE-FREE EASY CARE FINISHING OF CELLULOSE-CONTAINING TEXTILE MATERIAL

Dieter Lämmermann, Hofheim/Taunus, and Bernhard Mees, Eppstein/Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 2, 1993, Ser. No. 70,566

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1992, 4218091

Int. Cl.[5] D06M *13/00*

U.S. Cl. 8—120 11 Claims

1. A process for the formaldehyde-free easy care finishing of cellulose-containing textile material by treating the cellulose-containing textile material with an aqueous liquor comprising a polycarboxylic acid crosslinker and a crosslinking catalyst, then drying and heat treating, wherein the improvement comprises using a crosslinking catalyst selected from the group consisting of boric acid, a salt of a polyboric acid, and a borate ester of the formula $B(OR)_3$, where R is alkyl or aryl.

5,352,243

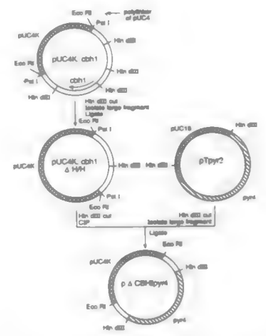
METHODS OF ENHANCING PRINTING QUALITY OF PIGMENT COMPOSITIONS ONTO COTTON FABRICS

Eunice C. Ashizawa, Oakland; Kathleen A. Clarkson, San Francisco; Pushkaraj J. Lad, San Mateo, and Edward Larenas, Moss Beach, all of Calif., assignors to Genencor International, Inc., S. San Francisco, Calif.

Filed Feb. 28, 1992, Ser. No. 843,589

Int. Cl.[5] C09B *67/00*

U.S. Cl. 8—401 11 Claims



1. A method for printing an image onto a cotton-containing fabric with a pigment composition which method comprises:

(a) contacting a cotton-containing fabric with an aqueous cellulase formulation comprising at least about 50 ppm of cellulase proteins selected from the group consisting of exo-cellobiohydrolase, endoglucanase, and β-glucosidase components at a temperature of from about 25° C. to about 70° C. for at least 0.1 hours wherein the aqueous formulation is maintained at a pH where the cellulase proteins have activity;

(b) inactivating the cellulase proteins from the cotton-containing fabric;

(c) drying the fabric; and

(d) printing an image on the fabric with a pigment composition

wherein said cotton-containing fabric is made from fibers selected from the group consisting of pure cotton and cotton blends comprising cotton and non-cotton fibers wherein at least 40 weight percent of the cotton-containing material is cotton and further wherein the non-cotton fiber is a synthetic fiber.

5,352,244

PROCESS FOR TRACING LIQUID FLOW WITH A DYE-IMPREGNATED PAPER STRIP

Franklin D. Azok, Amherst, Ohio, assignor to Norlab, Inc., Lorain, Ohio

Filed Sep. 2, 1992, Ser. No. 943,404

Int. Cl.[5] C09B *67/02;* D06P *5/00*

U.S. Cl. 8—506 8 Claims

1. A process for tracing liquid flow, comprising:

providing a dye-impregnated paper strip comprised of:

a dry form water-soluble biodegradable paper formed from a weave embossed fabric of bleached pulp and latex binder, said water-soluble biodegradable paper uniformly impregnated and saturated with a water-soluble non-toxic colored tracing dye selected from the group consisting of triphenylmethane and xanthene based dyes; submerging the dye-impregnated paper strip into a vessel containing an aqueous liquid therein, the aqueous liquid being above its freezing temperature;

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diffusing the colored tracing dye from the paper into the aqueous liquid to form colored aqueous liquid;
observing the flow of the colored liquid within the vessel downstream from the paper; and
subsequently breaking down the paper through biological activity.

5,352,245

PROCESS FOR TINTING CONTACT LENS

Kai C. Su, and William M. Hung, both of Alpharetta, Ga., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 20, 1992, Ser. No. 984,188
Int. Cl.[5] D06P 5/00
U.S. Cl. 8—507 **18 Claims**

1. A method of providing a solid, substantially unblemished cover of colorant on the surface of a dry hydrophilic contact lens comprising the steps of:
(a) placing a colorant solution comprising a coloring agent, a surfactant selected from the group consisting of polyalkylene oxide-modified methylpolysiloxanes; 2,4,7,9-tetramethyl-5-decyn-4,7-diol; ethylene oxide adducts of 2,4,7,9-tetramethyl-5-decyn-4,7-diol and mixtures thereof, and water onto a silicon rubber printing pad;
(b) contacting the printing pad with a surface of the contact lens to transfer the colorant solution to the lens; and
(c) affixing the colorant to the lens;
wherein said surfactant is present in an amount sufficient to produce a substantially solid, unblemished cover of colorant on said contact lens.

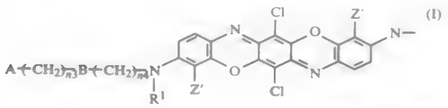
5,352,246

DYE COMPOSITION CONTAINING A MIXTURE OF WATER-SOLUBLE FIBER-REACTIVE DYES AND METHOD OF DYEING WITH SAID DYE COMPOSITION

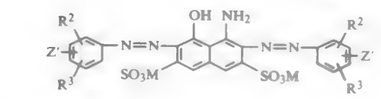
Manfred Hähnke, Kelkheim; Marcos Segal, Suzano; Werner H. Russ, Flörsheim am Main; Uwe Mrotzeck, Kelkheim; Jutta Reiter, Frankfurt am Main, and Christine Feuchtner, Gian-Münchweiler, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 10, 1992, Ser. No. 944,050
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1991, 4130498
Int. Cl.[5] D06P 1/38; C09B 62/002, 62/006
U.S. Cl. 8—638 **18 Claims**

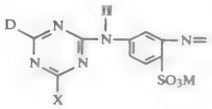
1. A dye composition of water-soluble fiber-reactive dyes, wherein the dye composition contains at least one dioxazine dye of the formula (I) and at least one disazo dye of the formulae (IIa), (IIb), (IIc), (IId), (IIe) and (IIf) in a formula I:formulae II weight ratio of 90:10 to 10:90 parts by weight,



(I)

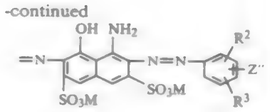


(IIa)

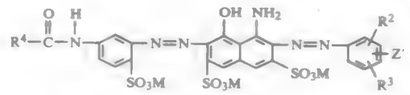


(IIb)

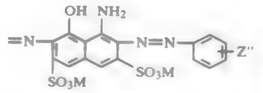
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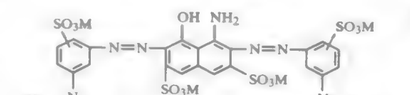
(IIc)



(IId)

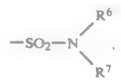


(IIe)



(IIf)

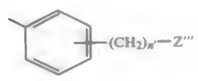
in which the individual symbols have meanings which are identical to or different from one another and
Z′ is a vinylsulfonyl group, a β-sulfatoethylsulfonyl group or an ethylsulfonyl group which is substituted in the β position by a substituent which can be eliminated by alkali with the formation of a vinylsulfonyl group;
Z″ has the same meaning as Z′ or is a carboxyl, sulfo or sulfonamide group of the formula (III)



(III)

in which
R^6 is a hydrogen atom, a C_1–C_4-alkyl group or a C_1–C_4-alkyl group which is substituted by a sulfo, sulfato, phosphato or carboxyl group, and
R^7 is a hydrogen atom or a C_1–C_4-alkyl group which can be substituted by 1 or 2 substituents from the group consisting of sulfato, sulfo, carboxyl and phosphato, or is an aryl group, which can be substituted by 1 to 3 substituents from the group consisting of sulfo and carboxyl, or is a C_1—C_4-alkyl group which is substituted by an aryl group and can be substituted in the aryl moiety by 1 to 3 substituents from the group consisting of sulfo and carboxyl;
R^1 is a hydrogen atom, a C_1–C^4-alkyl group or a C_1–C_4-alkyl group which is substituted by a sulfo, sulfato, phosphato or carboxyl group;

R^2 and R^3, independently of one another, are each a hydrogen atom, a sulfo group, a carboxyl group, a C_1–C_4-alkyl group, an alkoxy group having 1 to 4 carbon atoms or a halogen atom;
R^4 is a group of the formula (IV)



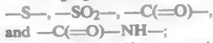
(IV)

in which
Z‴ has the same meaning as Z′, and
n′ is an integer from 0 to 3,
or is a group of the formula (V)



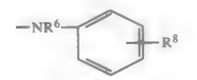
(V)

in which
Z′ has the abovementioned meaning and
n is an integer from 1 to 3;
M is a hydrogen atom or an alkali metal atom;
n_1, n_2, n_3 and n_4 are each, independently of one another, an integer from 1 to 3;
A is a sulfo, sulfato, phosphato or carboxyl group;
B is a bridging member from the group consisting of —O—, —S—, —SO_2—, —C(=O)—, —NH—, —NH—C(=O)— and —C(=O)—NH—;
D is a hydroxyl, sulfo, cyanamide or alkoxy group having 1 to 4 carbon atoms, a halogen atom, or a group of the formula (VI)



(VI)

in which R^6 and R^7 have the abovementioned meanings, or is a group of the formula (VII)



(VII)

in which
R^6 has the abovementioned meanings
R^8 is a halogen atom, a sulfo group or a sulfonamide group of the formula (III) defined above or a carboxyl group, a β-sulfatoethylsulfonyl group, a vinylsulfonyl group or an ethylsulfonyl group which is substituted in the β position by a substituent which can be eliminated by alkali with the formation of a vinylsulfonyl group, and
X is a halogen atom.

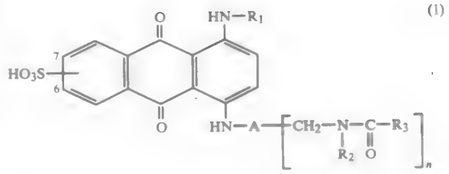
5,352,247

ANTHRAQUINONE DYES, THEIR PREPARATION AND THEIR USE

Jean-Marie Adam, Rosenau, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 30, 1993, Ser. No. 159,408
Claims priority, application Switzerland, Dec. 3, 1992, 3718/92
Int. Cl.[5] C09B 1/20, 43/00, 62/00; D06P 1/20
U.S. Cl. 8—676 **15 Claims**

1. An anthraquinone dye of the formula



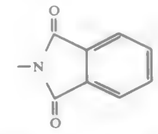
(1)

in which
R_1 is substituted or unsubstituted C_5–C_8cycloalkyl or a radical of the formula



R′ and R″, independently of one another, being a C_1–C_4alkyl radical,
R_2 is hydrogen or C_1–C_4alkyl,
R_3 is unsubstituted or halogen-substituted C_1–C_4alkyl or C_2–C_4alkenyl, or is substituted or unsubstituted phenyl, or in which the radical of the formula

is a radical of the formula



which is unsubstituted or substituted on the phenyl ring,
A is an aromatic bridging member, and
n is 1, 2 or 3,
the sulfo group in the dye of the formula (1) being attached to the position designated as 6 or 7.

5,352,248

PYROMETER TEMPERATURE MEASUREMENT OF PLURAL WAFERS STACKED ON A PROCESSING CHAMBER

Hiroichi Ishikawa, Mahwah, N.J., and Michael S. Kolesa, Norwalk, Conn., assignors to Materials Research Corporation, Orangeburg, N.Y.

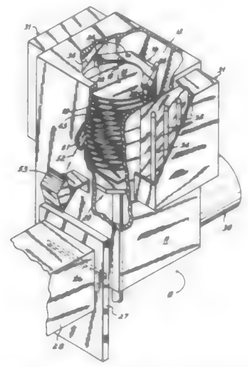
Continuation-in-part of Ser. No. 701,800, May 17, 1991, Pat. No. 5,259,881. This application Apr. 15, 1992, Ser. No. 869,465
Int. Cl.[5] H01L 21/00, 21/02, 21/306
U.S. Cl. 29—25.01 **9 Claims**

1. A method of measuring the temperature of a plurality of N wafers, N≧4, each having a diameter D, a thickness T and bounded by an edge, the wafers being aligned on an axis and spaced a distance S from each other and lying in a stack in parallel planes perpendicular to the axis, the edges of the wafers lying on the surface of a cylinder centered about the axis, the planes defining N-1 spaces between adjacent ones thereof having a boundary lying on the surface of the cylinder, the stack being contained in a sealed processing chamber, surrounded by a chamber wall, of a semiconductor wafer processing apparatus, the method comprising the steps of:
providing a pyrometer outside of the chamber, the pyrome-

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ter having a line-of-sight extending therefrom and a field-of-view spanning an angle θ centered on the line-of-sight, the pyrometer being responsive to radiant thermal energy impinging thereon at an angle that is within the field-of-view about the line-of-sight;

directing the pyrometer through a window in the wall of the chamber toward a side of the stack and generally toward the axis with the line-of-sight at an angle θ to the planes;



the pyrometer being directed such that, and the angle α being such that, the field-of-view includes the boundary of at least one of the spaces and excludes the boundaries of the 1st and (N-1)th spaces;

wherein $\tan^{-1}(R \cdot S/D) + \alpha/ \leqq \theta < 90° - /2$,

where R equals at least 5; and

producing, in response to energy incident upon the pyrometer so directed, a signal representative of the temperature of the wafers of the stack.

5,352,249

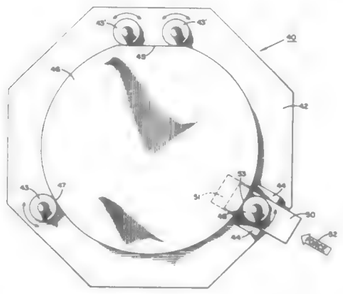
APPARATUS FOR PROVIDING CONSISTENT, NON-JAMMING REGISTRATION OF SEMICONDUCTOR WAFERS

Joseph F. Vollaro, Pleasantville, N.Y., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 28, 1992, Ser. No. 937,793

Int. Cl.[5] B23Q *3/18*

U.S. Cl. 29—25.01 **17 Claims**



1. An apparatus for providing consistent, non-jamming registration of semiconductor wafers undergoing process work in a plurality of process instruments, wherein each semiconductor wafer has a flat formed along a portion of its circumference, said apparatus comprising:

means for providing a support upon which a semiconductor wafer is registered;

movable means for providing a registration that movably accommodates a flat of said semiconductor wafer;

movable means for providing a registration that movably accommodates a first point along the circumference of said semiconductor wafer; and

movable means for providing a registration that movably accommodates a second point along the circumference of said semiconductor wafer, such that said movable flat registration means, said movable first point registration means, and said movable second point registration means movably accommodate said semiconductor wafer via force that is applied to said semiconductor wafer by said movable second point registration means such that friction between said movable means and said wafer is minimized to reduce jamming during registration.

5,352,250

PROCESS OF TREATING LACQUER COAGULUM AND ITS USE

Juergen Geke, Duesseldorf; Lutz Huesemann, Haan, and Hans-Joergen Rehm, Hilden, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/02006, § 371 Date Apr. 30, 1993, § 102(e) Date Apr. 30, 1993, PCT Pub. No. WO92/07900, PCT Pub. Date Mar. 14, 1992

PCT Filed Oct. 23, 1991, Ser. No. 50,128

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1990, 4034596

Int. Cl.[5] C02F *11/20*

U.S. Cl. 34—391 **20 Claims**

1. A process for preparing a lacquer coagulum in a reusable form which comprises:

a) providing a wet lacquer coagulum produced from coagulating lacquer overspray with a layer-silicate-containing coagulant;

b) drying the wet lacquer coagulum at a temperature of up to 100° under vacuum to form a dried lacquer coagulum with a water content less than 10% by weight;

c) treating the dried lacquer coagulum at a temperature of from 0° to −270° C. to form a cold brittle lacquer coagulum; and

d) immediately grinding the cold brittle lacquer coagulum to a particle size of 1–500 μm.

5,352,251

FUEL COMPOSITIONS

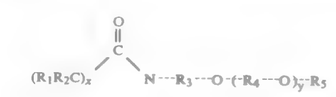
Jiang-Jen Lin; James R. Macias; Earl J. Haury; Sarah L. Weaver; Charles L. Edwards; Pen-Chung Wang, and Garo G. Vaporciyan, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 30, 1993, Ser. No. 40,245

Int. Cl.[5] C10L *1/22;* **C07D** *207/26*

U.S. Cl. 44—340 **83 Claims**

1. A fuel composition comprising a mixture of a major amount of hydrocarbons in the gasoline boiling range and a minor amount of an additive compound having the general formula:



wherein x is from 3 to 11; y is from 1 to 50; R_1 and R_2 are independently selected from the group consisting of hydrogen, hydrocarbyl of 1 to 100 carbon atoms and substituted hydrocarbyl of 1 to 100 carbon atoms; R_3 is selected from the group consisting of hydrocarbyl of 1 to 100 carbon atoms and substituted hydrocarbyl of 1 to 100 carbon atoms; R_4 is independently selected from the group consisting of hydrocarbyl of 2 to 100 carbon atoms and substituted hydrocarbyl of 2 to 100 carbon atoms; R_5 is selected from the group consisting of hydrogen, hydrocarbyl of 1 to 100 carbon atoms, substituted hydrocarbyl of 1 to 100 carbon atoms and acyl of 1 to 20 carbon atoms and the weight average molecular weight of the additive compound is at least about 600.

5,352,252

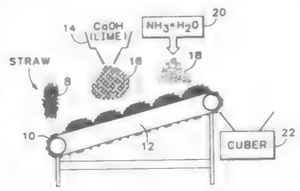
PROCESS FOR MAKING FUEL CUBES FROM STRAW

Richard W. Tolmie, 5464 Kalama River Rd., Kalama, Wash. 98625

Filed Dec. 7, 1993, Ser. No. 181,622

Int. Cl.[5] C01L *5/00*

U.S. Cl. 44—580 **4 Claims**



1. A process for forming a combustible fuel cube from straw or grass comprising the steps of:

(a) drying the straw;

(b) cutting the straw to a length not to exceed 3 inches;

(c) applying lime to the straw;

(d) applying ammonia to the straw; and

(e) compressing the straw into dense bricks or cubes.

5,352,253

POT PLANT WATERING SYSTEM

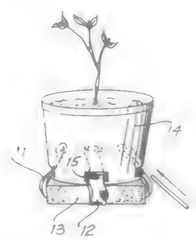
Joseph W. Gritching, Terrey Hills, Australia, assignor to Lease-A-Leaf Pty. Limited, Terrey Hills, Australia

Filed Apr. 7, 1993, Ser. No. 43,810

Claims priority, application Australia, May 22, 1992, 17083/92

Int. Cl.[5] A01G *25/00*

U.S. Cl. 47—58.01 **4 Claims**



1. A method of sub-irrigation watering of a plant growing in a growing medium in a growing pot, said growing pot being surrounded by an impermeable container holding a desired volume of water, said method comprising the steps of:

(i) providing a pair of wicks and crossing said wicks so that said wicks overlap in the shape of a cruciform structure;

(ii) laying a support member on top of said overlapping wicks so that said wicks have freely exposed ends that extend outwardly from said support member;

(iii) placing said growing pot, having holes therein, on top of said support member so that said freely exposed ends extend outwardly from said growing pot;

(iv) urging said freely exposed ends separately through corresponding holes in said growing pot so that said ends penetrate into said growing medium, thereby forming a wick watering structure;

(v) placing said wick watering structure into a water impermeable container; and

(vi) adding a desired volume of water to said impermeable container so that the water level is at least the height of said wicks, and so that said water is absorbed by and passes by capillary attraction along said wicks to said growing medium in said growing pot.

5,352,254

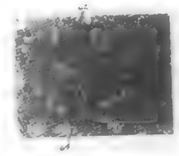
ABRASIVE GRAIN, METHOD OF MAKING SAME AND ABRASIVE PRODUCTS

Ahmet Celikkaya, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 920,728, Jul. 28, 1992, Pat. No. 5,213,591. This application May 20, 1993, Ser. No. 65,175

Int. Cl.[5] B24D *11/00*

U.S. Cl. 51—295 **36 Claims**



1. An abrasive grain comprising:

(i) an abrasive particle having an outer surface; and

(ii) grinding aid material bonded to said outer surface via interparticle attraction.

5,352,255

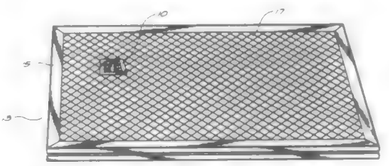
NOISE MAKER FOR AIR FILTER

Andrew A. Taft, P.O. Box 1583, Houston, Tex. 77251

Filed Apr. 5, 1993, Ser. No. 48,451

Int. Cl.[5] B01D *35/14;* **G01L** *19/12*

U.S. Cl. 55—274 **16 Claims**



1. A noise maker comprising:

a housing having a hole formed on at least one surface of said housing; and

a member in resilient relationship over said hole, said member movable from a first position closing said hole to a second position for allowing a desired volume of air to flow through said hole so as to produce an audible sound, said housing having said hole formed in a first surface of said housing, said housing having an opening formed on a second surface of said housing, said member interposed between said first surface and said second surface, said housing having a rectangular chamber extending between said first surface and said second surface, said member positioned within said chamber.

6. The noise maker of claim **1**, further comprising:

an air filter extending around an exterior of said housing, said housing permanently affixed to said air filter.

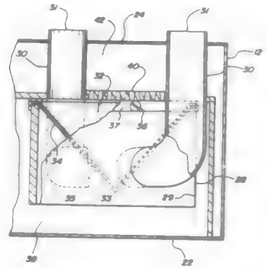
VOL 1167 ISS 1 OCT 4 1994 UMI

5,352,256

AIR INTAKE PROTECTION DEVICE

Ronald D. Stead, 2071 Oak Terrace, P.O. Box 614, Ortonville, Mich. 48462, and Craig M. Blackmer, 213 E. Lakeview, Flint, Mich. 48503

Filed Sep. 7, 1993, Ser. No. 118,503
Int. Cl.[5] B01D *46/02*
U.S. Cl. 55—323 20 Claims



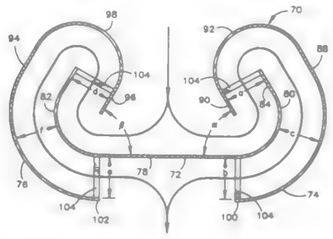
1. An air filtration device comprising:
a housing defining at least one pollution chamber;
at least one air intake for communicating polluted air into the pollution chamber;
an air outlet for communicating filtered air from the housing;
means for forcing polluted air into the inlet and filtered air from the outlet;
a non-planar filter disposed within the pollution chamber and between the air inlet and outlet;
a clean air chamber disposed within the housing and between the non-planar filter and the air outlet;
a debris collection chamber disposed within the housing and in communication with the pollution chamber;
deflector means disposed within the pollution chamber for causing the inlet air to be directed in a cyclonic path as it enters the pollution chamber whereby heavier pollutant particles within the polluted air are separated from the polluted air and into the debris collection chamber, and lighter pollutant particles are engaged by the non-planar filter as the polluted air is forced through the non-planar filter.

5,352,257

OVERSPRAY COLLECTION BAFFLE

Harold R. Powers, St. John, Ind., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Oct. 8, 1993, Ser. No. 134,039
Int. Cl.[5] B01D *45/06*
U.S. Cl. 55—444 13 Claims



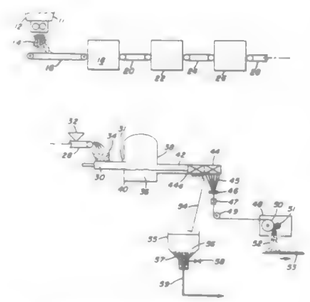
1. A baffle arrangement for removing particles from an air stream passing therethrough, said baffle arrangement comprising:
a first plate member comprising a longitudinally extending planar portion and oppositely disposed longitudinally extending curved outer ends, said longitudinally extending planar portion being interposed between said oppositely disposed longitudinally extending curved outer ends,
a second plate member comprising a longitudinally extending first curved portion and a longitudinally extending second curved portion, said longitudinally extending first curved portion having a curvature which approximates the curvature of one of said longitudinally extending curved outer ends of said first plate member, said longitudinally extending first curved portion terminating in said longitudinally extending second curved portion of said second plate member; and
a third plate member comprising a longitudinally extending first curved portion and a longitudinally extending second curved portion, said longitudinally extending first curved portion having a curvature which approximates the curvature of the other of said longitudinally extending curved outer ends of said first plate member, said longitudinally extending first curved portion terminating in said longitudinally extending second curved portion of said third plate member,
said first plate member being received and positioned within said second plate member and said third plate member so that said one of said longitudinally extending curved outer ends of said first plate member is substantially surrounded by said second plate member, and said other of said longitudinally extending curved outer ends of said first plate member is substantially surrounded by said third plate member.

5,352,258

PRODUCTION OF GLASS FIBERS FROM SCRAP GLASS FIBERS

Stanley C. DeGreve, Allison Park, Pa.; Joe B. Lovelace, Salisbury, N.C.; E. Charles Watkins, Lexington, N.C.; Timothy G. Mathis, Kings Mountain, N.C.; Harry Makitka, Clemmons, N.C.; Thomas C. Bour, Glenshaw, Pa.; John W. Cotton, Lexington; Curtis L. Hauvey, Jr., Boiling Springs, both of N.C.; Dennis S. Postupack, Natrona Heights, Pa.; James V. Shivers, Shelby, and Timothy Smith, Lexington, both of N.C., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 31, 1993, Ser. No. 40,756
Int. Cl.[5] C03B *5/16*
U.S. Cl. 65—474 18 Claims



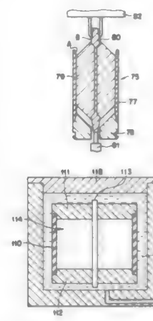
1. Process for producing glass fiber product from scrap glass fibers, comprising:
feeding to a glass melter scrap glass fibers having an average length of less than around 12 inches (305 mm.) and having an approximately similar fiberizable inorganic composition to that of the glass fiber product, where at least some of the fibers have coatings with organic compounds, where the feeding rate is sufficient to maintain a pool of melted glass in the melter with any changes in the level of the pool maintained to less than around 0.35 inch (9 mm.) over a period of eight hours;
melting the scrap glass fibers in the presence of an oxidizing atmosphere in at least the vicinity of the feed of the scrap glass fibers and at a temperature at least sufficient to melt the fibers in the presence of an oxidizing atmosphere and in the presence of the pool of melted glass and without the presence of non-vitrified glass forming materials being feed to the melter to maintain the level of the pool when melted glass is pulled from the melter in the production of glass fiber product;
conditioning the glass melt at a temperature less than the temperatures of the melter to a forming viscosity; and
forming glass fiber product from at least one bushing adapted to receive the conditioned glass melt, with a near constant pull of melted glass from the melter for a given glass fiber product.

5,352,259

METHOD OF MANUFACTURING OPTICAL FIBER PREFORM

Masato Oku; Noritsugu Enomoto; Hiroshi Hihara; Tsuguo Sato; Kazuaki Yoshida; Takayuki Morikawa, and Takeshi Yagi, all of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1993, Ser. No. 10,670
Claims priority, application Japan, Jan. 30, 1992, 4-040237; Jul. 31, 1992, 4-205651; Jul. 31, 1992, 4-205653; Jul. 31, 1992, 4-205654; Jul. 31, 1992, 4-205655; Jul. 31, 1992, 4-205656; Oct. 19, 1992, 4-280175
Int. Cl.[5] C03B *19/09*
U.S. Cl. 65—412 3 Claims



1. A method of manufacturing an optical fiber preform, comprising the steps of:
disposing a rod member made of a silica-based material within a cavity of a mold, followed by loading a molding material within the mold cavity;
pressuring the mold from outside of the mold to form a porous layer on the surface of the rod member and, thus, to obtain a porous preform;
wherein at least one end portion of the rod member extends outside the mold cavity in the step of pressurizing the mold;
mechanically taking the porous preform out of the mold by pressuring an end portion of the rod member; and
applying preasure to one end of the rod member while applying a withdrawing force to another end portion of the rod member in the step of taking the porous preform out of the mold.

3. A method of manufacturing an optical fiber preform, comprising the steps of:
disposing a rod member made of a silica-based material within a cavity of a mold, followed by loading a molding material within the mold cavity;
pressurizing the mold from outside of the mold to form a porous layer on the surface of the rod member and, thus, to obtain a porous preform;
wherein at least one end portion of the rod member extends outside the mold cavity in the step of pressurizing the mold;
attaching a supporting member larger in diameter than the rod member to at least one end of the rod member, the supporting member and the rod member each having a respective cross sectional area; and
setting a molding pressure P in said pressurizing step to meet formula (I) given below:

$$P/(A/B) < 4000 \quad \ldots (I)$$

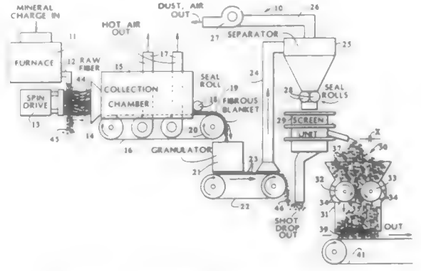
where A is the cross sectional area of the rod member, and B is the cross sectional area of the supporting member.

5,352,260

MANUFACTURE OF MINERAL FIBER

Robert A. Carlson, Northbrook; William F. Porter, Algonquin, and James L. Medwid, Lisle, all of Ill., assignors to Industrial Fibers, Inc., Lake Bluff, Ill.

Filed Sep. 16, 1993, Ser. No. 121,524
Int. Cl.[5] C03B *37/06*
U.S. Cl. 65—469 7 Claims



1. An improved process for the manufacture of a flake-like mineral fiber material, comprising the steps of:
A. melting a charge of raw mineral such as igneous rock, slag from a metal furnace, or the like to produce a molten mineral stream;
B. spinning and attenuating the molten mineral stream of step A to form a fibrous mineral blanket containing some contaminants;
C. severing the fibrous blanket of step B into a multiplicity of small segments;
D. separating the contaminants from the small blanket segments of step C and generating a stream of a multiplicity of mineral fiber pellets of a maximum dimension X;
the process improvement comprising:
E. discharging the stream of mineral fiber pellets from step D into an acceleration passage, no smaller than X, containing an acceleration member;
F. driving the acceleration member through the passage, in contact with the pellets, at a speed sufficient to accelerate and stress the mineral fiber pellets to shred those pellets and form a flake-like mineral fiber material including at least one shredded flake for each pellet; and
G. removing the mineral fiber material for use.

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5,352,261

APPARATUS FOR THE PRODUCTION OF HERMETICALLY COATED OPTICAL FIBER

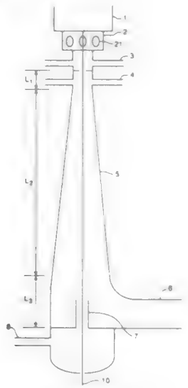
Harahiko Aikawa; Katsuya Nagayama, and Toshio Danzuka, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 25, 1993, Ser. No. 66,427

Claims priority, application Japan, May 26, 1992, 4-133645; Mar. 12, 1993, 5-052238

Int. Cl.[5] C03B *37/023*

U.S. Cl. 65—530 9 Claims



1. An apparatus for the production of a hermetically coated optical fiber in which a glass preform for an optical fiber is melt drawn in a melt drawing furnace to produce a bare optical fiber which is passed to a reactor where a feed gas is supplied and the bare optical fiber is coated with a thin carbon coating made from the feed gas by the Chemical Vapor Deposition (CVD) method characterized in that the reactor comprises an upper portion to which the feed gas is supplied, a middle portion in which the CVD method is substantially carried out and a lower portion from which an exhausted gas is withdrawn, and a cross sectional area of the middle portion perpendicular to a longitudinal direction of the optical fiber is larger than that of the upper portion, wherein said upper portion has a cross sectional area in the range of 80 to 700 mm^2 said lower portion has a cross sectional area in the range of 700 to 5000 mm^2 and the cross sectional area of the upper portion is gradually increased to the cross sectional area of the middle portion.

5,352,262

Patent Not Issued For This Number

5,352,263

METHOD AND APPARATUS FOR BENDING GLASS PLATES IN A HORIZONTAL POSITION

Hans-Werner Kuster, Aachen, Fed. Rep. of Germany, and Luc Vanaschen, Eupen, Belgium, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed May 10, 1993, Ser. No. 59,137

Claims priority, application Fed. Rep. of Germany, May 9, 1992, 4215285

Int. Cl.[5] C03B *23/035*

U.S. Cl. 65—106 11 Claims

1. A method of bending glass plates, comprising the steps of:

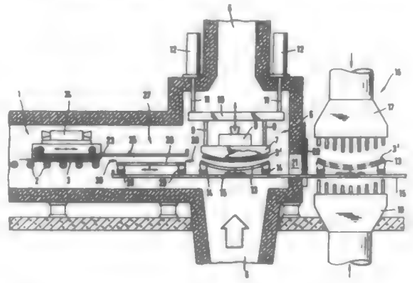
using a suction plate to raise and hold a heated glass plate;

transferring the heated glass plate from the suction plate to a transfer ring;

displacing the transfer ring having the heated glass plate thereon into a bending chamber and beneath an upper bending mold of the bending chamber;

using a differential gas pressure to raise the heated glass plate from the transfer ring and to apply the heated glass plate to the upper bending mold so as to bend the heated glass plate;

using a shaping ring to further bend the glass plate applied to the bending mold; and



using the shaping ring to transfer the bent glass sheet from the bending chamber to a cooling station.

5,352,264

SEED HULL EXTRACTS

Luis R. Medina Vega, Diego de Vilchis No. 2956, Chihuahua, Chihuahua, Mexico

Filed Oct. 15, 1991, Ser. No. 775,460

Int. Cl.[5] C05F *5/00*; C13K *1/02*; C05C *9/00*

U.S. Cl. 71—23 12 Claims

1. A method for preparing a mixture of polyhydroxycarboxylic acids, carbohydrates, and alcohols with plant growth regulating and fruit development properties, consisting essentially of the steps of:

extracting pentoses from glucoxylane hemicellulose containing seed hulls selected from the group consisting of rice hulls, oat hulls and a mixture of rice hulls and oat hulls with a diluted solution of nitric acid having a liquid/solid ratio of 3:1 to 5:1;

injecting steam into the extracted pentoses and hull solids, said steam having a pressure of 7.0 to 9.0 kg/cm^2 to agitate said mixture and to raise the temperature of said mixture to a temperature of 75°–85° C. for a period of 8–20 hours, thereby oxidizing said pentoses in the solution to polyhydroxycarboxylic acids and oxidation products and forming spent solids;

adding additional nitric acid to said polyhydroxycarboxylic acids and oxidation products of said solution to further oxidize extracted pentoses into polyhydroxycarboxylic acids; and

clarifying and concentrating said polyhydroxycarboxylic acids and said oxidation solution by evaporating said polyhydroxycarboxylic acids and said oxidation products at a pressure of 145–200 mm Hg absolute and a maximum temperature of 45°–60° C. to make a clarified product extract.

5,352,265

GRANULAR UREA-BASED FERTILIZER

Charles W. Weston, Prairieville, La.; Lawrence A. Peacock, Mundelein, Ill., Willis L. Thornsberry, Jr., Gretna, La.; Allen R. Sutton, Coryden, Ky., assignors to Freeport-McMoRan Resource Partners, Limited Partnership, New Orleans, La.

Filed Nov. 12, 1993, Ser. No. 151,553

Int. Cl.[5] C05C *9/00*

U.S. Cl. 71—29 23 Claims

1. A homogenous granular fertilizer composition comprising as components urea, N-(n-butyl) thiophosphoric triamide, and dicyandiamide, wherein said urea is present in an amount between about 90% and about 99% by weight, said N-(n-butyl) thiophosphoric triamide is present in an amount between about 0.02% and about 0.5% by weight, and said dicyandiamide is present in an amount of about 0.01% to about 1.2% by weight.

5,352,266

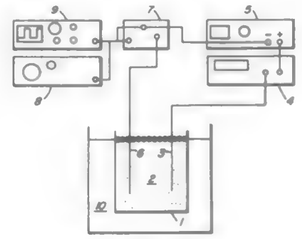
NANOCRYSTALLINE METALS AND PROCESS OF PRODUCING THE SAME

Uwe Erb, Glenburnie, and Abdelmounam M. El-Sherik, Kingston, both of Canada, assignors to Queen'University at Kingston, Kingston, Canada

Filed Nov. 30, 1992, Ser. No. 983,205

Int. Cl.[5] C25D *3/12*

U.S. Cl. 75—300 17 Claims



16. A nanocrystalline metallic material having an average grain size less than 5 nanometers having a hardness which is at a maximum in a size range of 8–10 nm, and saturation magnetization properties substantially equal to those of said metallic in normal crystalline form.

5,352,267

METHOD OF PRODUCING METAL POWDER

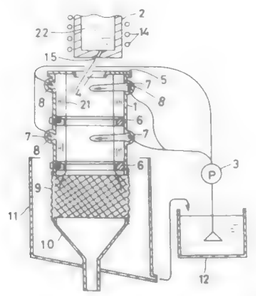
Syoichi Yoshino; Hiroshi Izaki; Masanori Yoshino; Fumio Kasai; Yosimitu Tokunaga, all of Osaka, and Naotsugu Isshiki, Tokyo, all of Japan, assignors to Kubota Corporation, Osaka, Japan

Division of Ser. No. 672,576, Mar. 20, 1991, Pat. No. 5,180,539. This application Sep. 25, 1992, Ser. No. 950,684

Claims priority, application Japan, Mar. 20, 1990, 2-70732; May 10, 1990, 2-121962

Int. Cl.[5] B22F *9/10*

U.S. Cl. 75—333 29 Claims



17. A method of producing a metal powder comprising the steps of:

injecting a cooling liquid into a cooling tubular body along an inner peripheral surface thereof;

forming a cooling liquid layer within the cooling tubular body, the cooling liquid flowing down the inner peripheral surface of the cooling tubular body;

injecting a molten metal into the cooling liquid layer from the inner peripheral surface so that the cooling liquid layer divides, cools, and solidifies the molten metal and the metal powder is obtained; and

maintaining a constant thickness of the cooling liquid layer by providing a ring around the inner peripheral surface of the cooling tubular body, the cooling liquid layer flowing over the ring as the cooling liquid layer flows downwardly.

5,352,268

FE-NI ALLOY FINE POWDER OF FLAT SHAPE

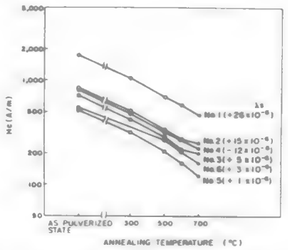
Takashi Meguro; Hideki Nakamura, both of Yonago; Yoichi Mochida, Yasugi, and Tsutomu Inui, Yonago, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 868,212, Apr. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 619,448, Nov. 29, 1990, Pat. No. 5,135,586. This application Feb. 19, 1993, Ser. No. 19,657

Claims priority, application Japan, Dec. 12, 1989, 1-322365; Apr. 4, 1990, 2-89705

Int. Cl.[5] H01F *1/047*

U.S. Cl. 75—338 13 Claims



1. A method of producing a flat-shaped fine Fe-Ni alloy powder comprising the steps of: preparing a melt of an Fe-Ni alloy material having a composition containing 70 to 90 wt % Ni, not more than 6 wt % Mo, and not more than 6 wt % Cu and which exhibits, in a bulk state, a saturated magnetostriction constant value falling within the range of $\pm 15 \times 10^{-6}$; obtaining a precursor powder from said Fe-Ni alloy melt by use of a water-atomizing process; mechanically pulverizing the material into fine powder having a mean particle size of 0.1 to 30 μm and a mean thickness not greater than 2 μm; and effecting an annealing on a portion comprising said fine powder without adding refractory material powder, at a temperature not less then about 300° C. and not more than about 700° C. and in a non-oxidizing atmosphere without causing substantial change in the shape of said fine powder, so as to reduce the coercive force to a level not higher than 400 A/m.

5,352,269

SPRAY CONVERSION PROCESS FOR THE PRODUCTION OF NANOPHASE COMPOSITE POWDERS

Larry E. McCandlish, 262 Lincoln Ave., Highland Park, N.J. 08904; Bernard H. Kear, 10 Campbells Brook, Whitehouse Station, N.J. 08889, and Swarn J. Bhatia, 2259 Shawnee Path, Scotch Plains, N.J. 07076

Continuation-in-part of Ser. No. 433,742, Nov. 9, 1989, abandoned. This application Jul. 9, 1991, Ser. No. 734,285

Int. Cl.[5] B22F *9/26*

U.S. Cl. 75—351 11 Claims

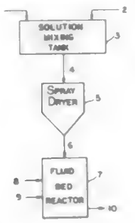
1. A spray conversion process for the production of nanophase composition tungsten carbide cobalt powders comprising the steps of:

a. Preparing and mixing a starting solution consisting essen-

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tially of a tungsten compound and a cobalt compound dissolved in a solution;

b. drying droplets of said solution at a sufficiently rapid rate to form a chemically homogeneous precursor powder;



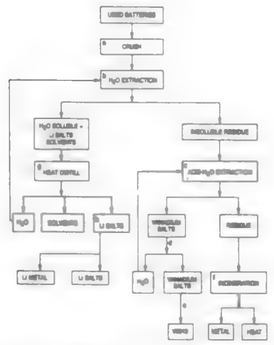
c. converting the precursor powder by thermochemical means in the presence of a carburization gas to form a homogeneous nanophase composite tungsten carbide cobalt powder.

5,352,270

METHOD FOR RECYCLING METAL CONTAINING ELECTRICAL COMPONENTS

Dale R. Shackle, Morgan Hill, Calif., assignor to Valence Technology, Inc., San Jose, Calif.

Filed Sep. 11, 1992, Ser. No. 943,855
Int. Cl.[5] C22B *3/04*
U.S. Cl. 75—419 32 Claims



1. A method for safely treating a reactive metal containing electrical component comprising at least one of:

a) comminuting a reactive metal containing electrical component in an aqueous solution in an inert environment, and

b) extracting comminuted reactive metal-containing electrical components with an aqueous solution in an inert environment to obtain an aqueous solution containing water-soluble ingredients and a water-insoluble resides,

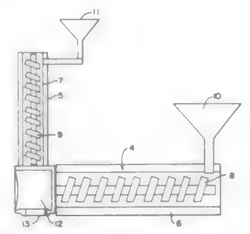
wherein said inert environment is provided by a member selected from the group consisting of an environment essentially oxygen-free and nitrogen free, an environment at a very low pressure or a vacuum, controlling the rate of contacting said electrical component with said aqueous solution and by continually removing hydrogen below the aqueous solution interface thereby preventing undesirable side reactions.

5,352,271

COMPOSITE WIRE WITH A PLASTIC SHEATH FOR ADDITIONS TO METALLIC BATHS

Thomas Margaria, and Michel Rebiere, both of Passy, France, assignors to Pechiney Electrometallurgie, Courbevoie, France

Filed Feb. 24, 1993, Ser. No. 21,090
Claims priority, application France, Mar. 5, 1992, 92 02867
Int. Cl.[5] C21C *7/02*
U.S. Cl. 75—526 10 Claims



1. Process for producing a composite wire for the introduction of addition product into a liquid metal bath, comprising the steps of:

forming a mixture containing 70–98% by weight of a powder of addition product, and 2–30% by weight of a thermoplastic polymer powder;

extruding the mixture in the form of a continuous product of circular or elliptical cross-section;

coextruding a thermoplastic sheath around the continuous product; and

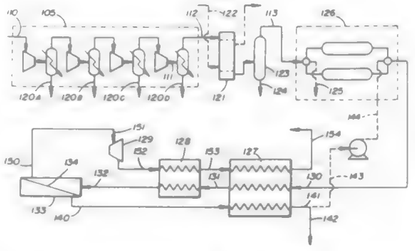
extracting the product of extrusion as a continuous wire.

5,352,272

GAS SEPARATIONS UTILIZING GLASSY POLYMER MEMBRANES AT SUB-AMBIENT TEMPERATURES

David J. Moll; Alan F. Burmester, both of Midland, Mich.; Thomas C. Young, Walnut Creek, Calif.; Kent B. McReynolds; James E. Clark, both of Midland, Mich.; Charles Z. Hotz, Walnut Creek; Ritchie A. Wessling, Berkeley, both of Calif.; George J. Quarderer, Midland, Mich.; Ronald M. Lacher, Midland, Mich.; Stephen E. Bales, Midland, Mich.; Henry N. Beck, Walnut Creek; Thomas O. Jeanes, Antioch, both of Calif., and Bethanne L. Smith, Freeland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 803,921, Dec. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 647,960, Jan. 30, 1991, abandoned. This application Aug. 13, 1992, Ser. No. 930,059
Int. Cl.[5] B01D *53/22*
U.S. Cl. 96—9 14 Claims



1. An apparatus for separating components of a gas mixture comprising:

A. a means for compressing the gas mixture to a desired pressure, the means for compressing the gas having an inlet and outlet;

B. at least one heat exchange device having a first inlet and first outlet and a second inlet and a second outlet, a first conduit connecting the first inlet and outlet and a second conduit connecting the second inlet and outlet, with said first and second conduits being in thermal contact along a major portion of their respective lengths;

C. a means for conveying the gas mixture from the outlet of the means for compressing the gas to the first inlet of the heat exchange device;

D. at least one membrane device operated at a temperature of 5° C. or less having an inlet for introducing a gas mixture to be separated, a membrane which divides the membrane device into a first side of the membrane non-permeate chamber and a second side of the membrane permeate chamber, a non-permeate gas outlet and a permeate gas outlet;

E. a means for conveying gas from the first outlet of the heat exchange device to the inlet of the membrane device;

F. a means for altering the temperature of part or all of the gas which exits either the permeate gas outlet or the non-permeate gas outlet of the membrane device, or a combination thereof, the means for altering the temperature of the gas having an inlet and an outlet;

G. a means for conveying part or all of the gas from either the permeate gas outlet or non-permeate gas outlet of the membrane device, or a combination thereof, to the inlet of the means for altering the temperature of the gas; and

H. a means for conveying gas from the outlet of the means for altering the temperature of the gas to the second inlet of the heat exchange device;

wherein the membrane within the membrane device is selected so that, when using a mixture of 80 mole percent nitrogen and 20 mole percent oxygen as a feed gas at 30° C. with a pressure of 30 psia on the first side of the membrane and a vacuum of less than 1 mm Hg on the second side of the membrane, the permeability of oxygen in barrers is less than 2000 and has the following relationship to oxygen/nitrogen selectivity:

$$\text{Permeability} > \frac{2000}{(\text{Selectivity})^{7/2}}.$$

5,352,273

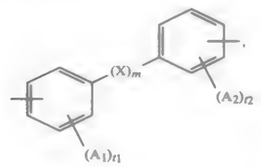
ALKYL SUBSTITUTED AROMATIC POLYESTER GAS SEPARATION MEMBRANES

John W. Simmons, and Samuel D. Arthur, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del. and l'Air Liquide S.A., Paris, France

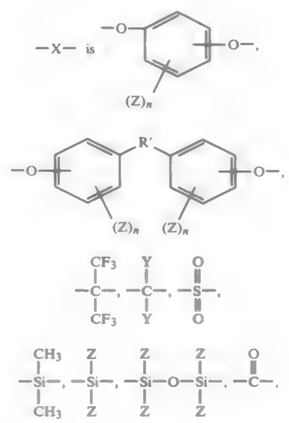
Filed Apr. 14, 1993, Ser. No. 45,782
Int. Cl.[5] B01D *53/22, 71/48*
U.S. Cl. 95—45 6 Claims

1. A gas separation membrane formed from an aromatic polyester comprising:

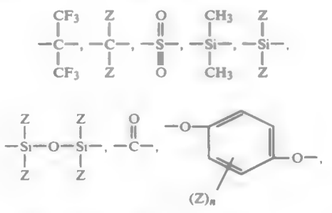
(a) moieties derived from a diol wherein 0–90% is any diol moiety and 10–90% is an aromatic diol moiety diol having the following formula:



where A_1 and A_2 are independently —H, alkyl groups having 1 to 10 carbon atoms or aromatic groups having 6 to 12 carbon atoms, and t_1 and t_2 are independently an integer from 1 to 4 inclusive, and at least one of A_1 and/or A_2 is a tertiary butyl group; and



or mixtures thereof; where Z is independently —H, alkyl groups having 1 to 10 carbon atoms, aromatic groups having 6 to 12 carbon atoms; Y is independently alkyl groups having 2 to 10 carbon atoms; n is independently an integer from 0 to 4 inclusive; m is 0 or 1; and R′ is



or mixtures thereof; and

(b) moieties derived from an aromatic diacid chloride or the free acid, ester or salt forms of the aromatic diacid chloride.

5,352,274

AIR FILTER AND METHOD

Richard L. Blakley, 3060 Gladewater Ct., Pfafftown, N.C. 27040

Filed May 10, 1993, Ser. No. 58,884
Int. Cl.[5] B01D *53/04, 29/07*
U.S. Cl. 95—90 14 Claims

1. A method of filtering air comprising the steps of:

(a) forming a first sheet with an absorbing agent consisting of approximately fifty percent by weight of carbon particles having a diameter of 10–250 micrometers;

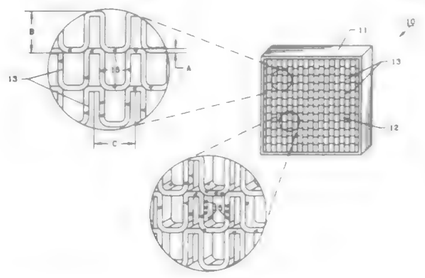
(b) corrugating the formed sheet;

(c) forming a second sheet identical to said first sheet;

(d) corrugating the second formed sheet;

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(e) nestling said first sheet with said second sheet wherein said first sheet is in direct contact with said second sheet;



(f) placing the nestled sheets in a frame; and
(g) placing the framed sheets into the path of an air current.

5,352,275

METHOD OF PRODUCING HOT MIX ASPHALT

Robert Nath, Austin; Robert Erickson, Georgetown; John Wiley, Leander; Harry Hebard, Burnet, and Michael Miles, Georgetown, all of Tex., assignors to Cyclean, Inc., Round Rock, Tex.

Continuation-in-part of Ser. No. 803,642, Nov. 27, 1991, which is a continuation-in-part of Ser. No. 754,264, Aug. 29, 1991, which is a continuation-in-part of Ser. No. 387,160, Jul. 31, 1989, abandoned. This application Sep. 25, 1992, Ser. No. 951,084
Int. Cl.[5] B01D *53/04*
U.S. Cl. 95—117 13 Claims



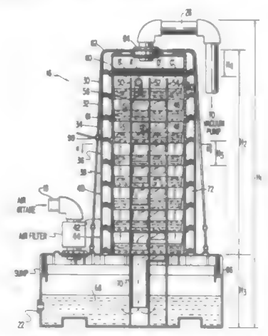
1. In a process of drying and heating recycled asphaltic pavement (RAP) to form a hot mix, with low hydrocarbon emissions, into the atmosphere wherein hot gases are passed through a drum in a direction opposite to RAP, the further steps comprising:
a) discharging the hot gases from the drum at temperature of from about 160°–200° F.,
b) passing the hot gases from the drum through a knockout box, whereby to remove particulate material from the hot gases,
c) passing the hot gases from the knockout box through bags in a baghouse to further remove fines from the hot gases, said baghouse having a particulate coating thereon of a particulate material comprising SiO and Al_2O_3, and
d) passing hot gases from the baghouse through an oxidizer, whereby to remove any smoke and entrained asphaltic material.

5,352,276

WATER REMEDIATION

Dennis Rentschler, Wilton; Steven Szabo, Nashua, both of N.H.; Paul Farrow, Concord, Ma.; Gary R. Powers, Weare, and Jeffery H. Gerade, Peter, both of N.H., assignors to Sippican, Inc., Marion, Mass.

PCT No. PCT/US92/01241, § 371 Date Aug. 26, 1993, § 102(e) Date Aug. 26, 1993, PCT Pub. No. WO92/14533, PCT Pub. Date Sep. 3, 1992
Continuation-in-part of Ser. No. 661,403, Feb. 26, 1991, abandoned. This PCT application Feb. 26, 1992, Ser. No. 107,837
Int. Cl.[5] B01D *19/00*
U.S. Cl. 95—246 72 Claims



1. A method of treating contaminated water, comprising the steps of:
pumping contaminated water to an elevated position;
directing the water to flow laterally across and downwardly through a series of substantially horizontal trays sealed to each other to form a stripping apparatus;
flowing air upwardly through said stripping apparatus, while said water flows downwardly from tray to tray through downcomers and laterally across a perforated area of said trays, in such a manner that the air passes through a plurality of apertures of the perforated area having a diameter no greater than 0.100 inch and through the water as it flows laterally across each tray, whereby contaminants in the water are transferred to the air flowing upwardly, with substantially no water seepage through said apertures;
exhausting air from the stripping apparatus for subsequent treatment; and
recovering decontaminated water which has passed through the stripping apparatus.

5,352,277

FINAL POLISHING COMPOSITION

Shigeo Sasaki, Yokkaichi, Japan, assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Continuation of Ser. No. 908,058, Jul. 6, 1992, abandoned, which is a continuation of Ser. No. 448,624, Dec. 11, 1989, abandoned. This application Jul. 26, 1993, Ser. No. 105,462
Claims priority, application Japan, Dec. 12, 1988, 63-313480
Int. Cl.[5] C09G *1/02, 1/16*
U.S. Cl. 106—6 3 Claims

1. A final polishing composition for a wafer comprising water, colloidal silica, a water-soluble polymeric compound and a water-soluble salt;
said colloidal silica comprising 20 to 50% by weight of silica and 80 to 50% of water and having an average silica particle diameter of 5 to 500 mμ and silanol groups on the surface thereof in a surface density of about 8 groups/nm^2;
said water-soluble polymeric compound being present in an amount of 20 to 1,000 ppm and being one or more selected from the group consisting of polyethylene oxide, polyacrylamide, polyvinylpyrrolidone, hydroxypropylcellulose, polyacrylic acid, polymethacrylic acid, polymaleic acid, a copolymer of acrylamide and acrylic acid and a graft copolymer of guar gum with acrylamide and having a molecular weight of 100,000 or more and
said water-soluble salt being present in an amount of 20 to 1,000 ppm and being one or more combinations of a cation selected from the group consisting of sodium, potassium and ammonium, and an anion selected from the group consisting of fluoride, chloride, nitrate and perchlorate.

5,352,278

MARKING POWDER FOR AND METHOD OF MARKING A METALLIC ARTICLE

Johannes C. Korver, Noord-Scharwoude; Bala K. Paramanathan, Heemstede, and Andries C. de Muijnck, Heiloo, all of Netherlands, assignors to Hoogovens Groep B.V., Ijmuiden, Netherlands

Filed Sep. 30, 1993, Ser. No. 128,572
Claims priority, application Netherlands, Sep. 30, 1992, 9201690
Int. Cl.[5] C09D *11/00*
U.S. Cl. 106—19 D 11 Claims

1. A marking powder for marking a metallic article, comprising a binding agent, a pigment and zinc powder in an amount in the range of 20 to 70% by weight of the marking powder.

5,352,279

WASHABLE PAVEMENT CHALK COMPOSITION

John C. Fusi, New Providence; Cynthia A. Gale, High Bridge, both of N.J., and Frank M. Young, Excelsior, Minn., assignors to Rapid Mounting & Finishing Co.-Cadaco Division, Chicago, Ill.

Filed Feb. 2, 1994, Ser. No. 190,313
Int. Cl.[5] C09D *11/00*
U.S. Cl. 106—19 B 19 Claims

1. A washable pavement chalk composition comprising:
a) powdered calcium carbonate and
b) rice starch.

5,352,280

PIGMENT AND INK COMPOSITIONS

Robert B. McKay, Crooked Holm, Scotland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 28, 1993, Ser. No. 145,443
Claims priority, application United Kingdom, Nov. 3, 1992, 9223133.1
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—20 C 11 Claims

1. A lithographic printing ink containing a varnish and as colourant, a major amount of a pigment having a small crystal size of 0.015 to 0.052 mm and a minor amount of a coloured compound having a larger crystal size of 0.025 to 0.5 mm.

5,352,281

USE OF AZO PIGMENT PREPARATIONS FOR SOLVENT-CONTAINING PACKAGING INTAGLIO AND FLEXOGRAPHIC PRINTING INKS

Joachim Weide, Kelkheim; Hans J. Metz, Darmstadt; Ruediger Jung, Kelkheim, and Rainer Winter, Oberursel, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 1, 1993, Ser. No. 115,445
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1992, 4229206
Int. Cl.[5] C09D *11/10*
U.S. Cl. 106—20 R 15 Claims

1. A method of pigmenting solvent-containing packaging intaglio and flexographic printing inks comprising the step of preparing mono- or disazo pigments or a preparation of the said pigments from the group of the acetoacetarylide pigments, pyrazolone pigments, β-naphthol pigments, 2-hydroxy-3-naphthanilide pigments, 2-hydroxynaphthoic acid pigments, benzimidazolone pigments, diaryl yellow pigments, diarylpyrazolone pigments and disazobenzimidazolone pigments, subject to the proviso that pigments which have bis(acetoacetylamino)-benzene or derivatives thereof as coupling component shall be excluded, by adding at least one nonionic surfactant which has a cloud point in aqueous solution at the latest immediately prior to the isolation of the mono- or disazo pigment and then incorporating said pigments or pigment preparations into said printing inks.

5,352,282

COLOR CHANGING COMPOSITIONS

Richard E. Miller, Nazareth, Pa., assignor to Binney & Smith, Inc., Easton, Pa.

Continuation of Ser. No. 923,308, Jul. 31, 1992, Pat. No. 5,232,494. This application Jun. 16, 1993, Ser. No. 78,722
The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—22 B 24 Claims

1. A multiple coloring composition system comprising:
(a) a first aqueous coloring composition comprising an amount of a first dye sufficient to produce a workable color changing composition and whose coloring ability is destroyed in the presence of a bleach; and
(b) a second aqueous coloring composition comprising an amount of a bleach sufficient to allow for the erasing of said first aqueous coloring composition, and a second colorant capable of and in an amount sufficient to maintain its characteristic color in the presence of a bleach.

5,352,283

JET INKS AVOIDING SOLID FORMATION

Bradley L. Beach; Ashok V. Gangal; James M. Mrvos; Ann M. Piekunka, all of Lexington, and Jerry F. Stone, Georgetown, all of Ky., assignors to Lexmark International, Inc., Greenwich, Conn.

Continuation of Ser. No. 872,738, Apr. 22, 1992, abandoned. This application Jul. 19, 1993, Ser. No. 93,520
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—22 H 34 Claims

1. A liquid ink composition comprising a dye having anionic solubilizing groups, a polar solubilizing liquid providing a liquid vehicle for said dye in said ink, and a hydroxy alkyl substituted polyethyleneimine of weight average molecular weight of about 2000 or less, said polyethyleneimine being in an amount of not more than 0.3 percent by weight of said ink and being in sufficient amount to prevent solid formation in said ink which would otherwise occur after extended rest of said ink.

5,352,284

STARCH BASED ADHESIVE

Jure Anic, Krefeld, and Christian Meyer-Wegner, Kempen, both of Fed. Rep. of Germany, assignors to Cerestar Holding B. V., Netherlands

Continuation of Ser. No. 730,439, Jul. 16, 1991, abandoned. This application Dec. 27, 1993, Ser. No. 173,880
Claims priority, application United Kingdom, Jul. 16, 1990, 9015568.0
Int. Cl.[5] C09D *101/26*
U.S. Cl. 106—189 12 Claims

1. A starch adhesive composition which comprises a gelatinised carrier starch, an ungelatinised starch, an alkali and water in which the ungelatinised starch comprises a cross-linked starch and the composition also contains a hydroxypropyl methyl cellulose ether.

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5,352,285
MICROSURFACING SYSTEM
Dennis Krivohlavek, Claremore, Okla., assignor to Asphalt Technology and Consulting, Claremore, Okla.
Division of Ser. No. 699,362, May 13, 1991, Pat. No. 5,242,492.
This application Sep. 7, 1993, Ser. No. 117,723
Int. Cl.[5] C09D *195/00*
U.S. Cl. 106—269 7 Claims

1. A method of preparing a fast breaking emulsifier at ambient temperature which consists essentially of mixing at a temperature of at least ambient temperature, water having an acidic pH, an amidoamine and imidazoline mixture, wherein the amidoamine and imidazoline mixture is prepared by a process which comprises condensing diethylenediamine and a C_{20+} fatty acid having a rosin content greater than 10%, at a temperature of at least 280 to 300 degrees Fahrenheit, followed by applying vacuum pressure to obtain the imidazoline product, followed by cyclizing the condensation product at a temperature of at least 400 degrees Fahrenheit.

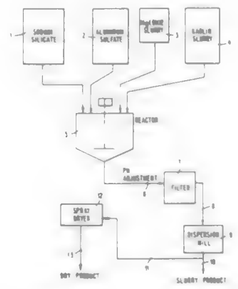
2. A method of preparing a fast breaking emulsion at ambient temperature or higher which consists essentially of mixing at ambient temperature, water having an acidic pH, an amidoamine and imidazoline mixture, wherein the amidoamine and imidazoline mixture is prepared by a process which comprises condensing diethylenediamine and a C_{20+} fatty acid having a rosin content greater than 10%, at a temperature of at least 280 to 300 degrees Fahrenheit, followed by applying vacuum pressure to obtain the imidazoline product, followed by cyclizing the condensation product at a temperature of at least 400 degrees Fahrenheit, followed by quaternization of the amidoamine and imidazoline mixture.

5,352,286
GAS-PHASE PASSIVATION OF METAL PIGMENTS
Raimund Schmid, Neustadt; Norbert Mronga, Dossenheim, and Juan A. G. Gomez, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Oct. 14, 1993, Ser. No. 135,620
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1992, 4236332
Int. Cl.[5] C09C *1/62*
U.S. Cl. 106—404 8 Claims

1. A process for passivating metal pigments against hydroxyl-containing compounds, which comprises treating the metal pigments with passivators in the gas phase.

5,352,287
PRECIPITATED ENCAPSULATED PAPER PIGMENTS AND METHODS
Satish K. Wason, Bel Air, and Michael C. Withiam, Elkton, both of Md., assignors to J. M. Huber Corporation, Locust, N.J.
Division of Ser. No. 833,582, Feb. 12, 1992, Pat. No. 5,262,239, which is a continuation of Ser. No. 484,756, Feb. 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 228,584, Aug. 5, 1988, abandoned. This application Apr. 26, 1993, Ser. No. 51,962
The portion of the term of this patent subsequent to May 17, 2011, has been disclaimed.
Int. Cl.[5] C04B *14/20*
U.S. Cl. 106—416 20 Claims

1. A method for the preparation of a composite product consisting essentially of a substantially inert mineral nucleus coated with a substantially continuous uniform coating consisting of discreet particles of an active paper pigment, substantially all of the discreet particles having a diameter of less than 1 micron, which process consists essentially of:
(1) providing individual solutions of the reactants needed to form the coating;
(2) initially combining some of the reactant solutions in a reactor until active paper pigment coating material begins to form in an alkaline reaction medium;
(3) adding a slurry of uncoated mineral nucleus to the reactor;



(4) adding the remaining reactant solutions to said alkaline reaction medium in said reactor, at least two of the needed reactants being added simultaneously; and
(5) recovering the product.

5,352,288
LOW-COST, HIGH EARLY STRENGTH, ACID-RESISTANT POZZOLANIC CEMENT
William A. Mallow, Helotes, Tex., assignor to Dynastone LC, San Antonio, Tex.
Filed Jun. 7, 1993, Ser. No. 73,346
Int. Cl.[5] C04B *7/02*
U.S. Cl. 106—605 21 Claims

1. A low cost cement composition that can be admixed with water and closed cured to give acid-resistant products of high compressive strength consisting essentially of, in parts by weight, 1 to 1.5 parts of a calcium oxide material containing at least about 60% CaO, 10 to 20 parts of pozzolanic material containing at least about 30% by weight amorphous silica, and 0.025 to 0.075 parts by weight of an alkali metal catalyst.

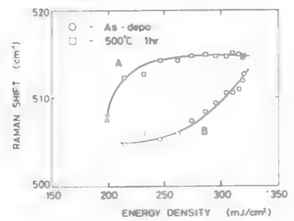
5,352,289
LOW ASH CARBON BLACKS
Daniel W. Weaver, Upton, United Kingdom; Frank J. Hrach, Jr., Parkersberg, W. Va.; Chung-Huei Shieh, Lexington; William L. Sifleet, Acton, both of Mass., and Jay J. Zimmer, Pampa, Tex., assignors to Cabot Corporation, Boston, Mass.
Filed Dec. 18, 1992, Ser. No. 995,408
Int. Cl.[5] C09C *1/48*
U.S. Cl. 106—476 19 Claims

1. A furnace carbon black having an ash level less than or equal to 50 ppm; a sulfur level less than or equal to 50 ppm, a L_a less than or equal to 30 Å and a L_c less than or equal to 30 Å.

5,352,290
CONCRETE COMPOSITION
Haruyuki Takeshita; Haruya Sawara; Shohei Hoshino, and Yoshiyuki Shoji, all of Tokyo, Japan, assignors to JDC Corporation, Tokyo, Japan
Filed Jun. 23, 1992, Ser. No. 902,925
Claims priority, application Japan, Jun. 25, 1991, 3-153223; Jun. 2, 1992, 4-141387
Int. Cl.[5] C04B *24/00, 24/10, 24/12*
U.S. Cl. 106—802 39 Claims

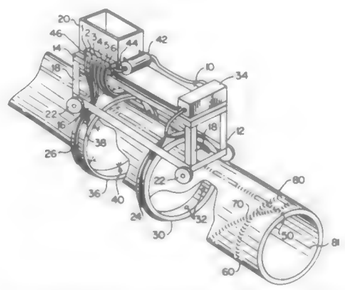
1. A concrete composition comprising cement, water, fine aggregate, coarse aggregate, a superplasticizer, (a) at least one admixture selected from a water reducing agent, an air entraining agent, and an air entraining water reducing agent and (b) at least one viscosity improver, selected from the group consisting of a cellulose viscosity improver having a low foaming property which shows 100 to 10,000 centipoises of viscosity at a 1% ratio in an aqueous solution and an acrylic viscosity improver having a low viscosity which shows 5 to 100 centipoises viscosity at a 0.5% ratio in a 4% saltwater solution and is exclusive of an antifoaming agent, wherein a total amount of the viscosity improver is 0.02% to 0.5% by weight based on cement and having a superior fluidity and resistance to material segregation.

5,352,291
METHOD OF ANNEALING A SEMICONDUCTOR
Hongyong Zhang, and Naoto Kusumoto, both of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 886,817, May 22, 1992, abandoned.
This application Aug. 11, 1993, Ser. No. 104,614
Claims priority, application Japan, May 28, 1991, 3-152477
Int. Cl.[5] C30B *13/22*
U.S. Cl. 117—8 13 Claims



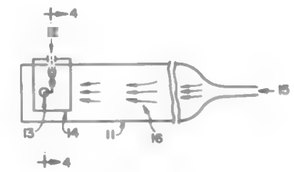
1. A method for forming a crystalline semiconductor comprising the steps of:
forming an amorphous semiconductor:
heat treating said amorphous semiconductor at a temperature not higher than a crystallization temperature of said amorphous semiconductor in order to discharge hydrogen contained in said amorphous semiconductor; and then
irradiating said amorphous semiconductor with a laser after heat treating said amorphous semiconductor to crystallize said amorphous semiconductor.

5,352,292
APPARATUS FOR COATING EXTERIOR WELD JOINTS OF A PIPE
Samuel J. Thomas, Lowel, Mass., assignor to The Kendall Company, Mansfield, Mass.
Filed Jan. 4, 1993, Ser. No. 351
Int. Cl.[5] B05C *5/00*
U.S. Cl. 118—669 2 Claims



1. Apparatus for coating exterior surfaces of uncoated longitudinal, helical and girth weld joints of a pipe, the apparatus being movable along a pipe's surface by a crane or other similar mechanical device, comprising:
a carriage having opposed first and second frame members, and opposed leading and trailing ends with respect to the direction of movement of the device along the pipe's surface;
the first frame member of the carriage having wheels rotatably mounted to the first frame member at the leading and trailing ends of the carriage, the wheels being contactable with the outer surface of the pipe;
a reservoir for storage of liquid resin for coating the pipe surface secured to a frame member of the carriage;
opposed side members connecting the opposed first and second frame members together;
sensing means attached to the first frame member for sensing the presence of longitudinal, helical or girth weld joints on the pipe surface, the sensing means including a circular sensor member secured to the first frame member and having at least one sensor for locating a weld to be coated, the circular member being located at the leading end of the first frame member;
dispensing means for dispensing liquid resin from the reservoir to coat welds sensed and thereby located by the sensing means, the dispensing means being attached to the first frame member between the sensing means and the trailing end of the carriage whereby the sensing means determines the presence of a weld in advance of the dispensing means as the carriage is advanced along the pipe surface;
means for delivering liquid resin from the reservoir to the dispensing means;
microprocessor means for transmitting an electrical signal when the sensing means senses the presence of a weld on the pipe surface; and
means for transmitting the signal from the microprocessor means simultaneously to both the means for delivering liquid resin from the reservoir and to the dispensing means, thereby actuating the dispensing means on signal for coating the weld as the carriage moves along the pipe surface.

5,352,293
TUBE APPARATUS FOR MANUFACTURING SEMICONDUCTOR DEVICE
Chang-jip Yang; Kyu-bok Ryu; Jung-soo An, and Jun-geen An, all of Kyungki-do, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea
Filed Jan. 6, 1993, Ser. No. 870
Claims priority, application Rep. of Korea, Jan. 6, 1992, 92-54
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—715 7 Claims



1. A tube apparatus for manufacturing a semiconductor device comprising:
(a) a one-piece cylindrical tube having means for loading a semiconductor wafer, said tube having a first closed end with first and second openings formed adjacent to said first closed end, said tube further having a second end with an opening formed therein; and
(b) a saddle portion conformally mounted on a portion of an exterior surface of said tube, said saddle portion having first and second openings, wherein said saddle portion is

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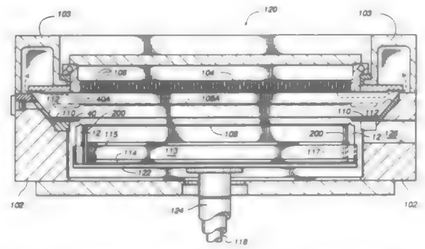
mounted on said tube such that said first and second openings of said saddle portion positionally correspond to said first and second openings of said tube adjacent to said closed end.

5,352,294

ALIGNMENT OF A SHADOW FRAME AND LARGE FLAT SUBSTRATES ON A SUPPORT

John M. White, 2811 Colony View Pl., Hayward, Calif. 94541; David E. Berkstresser, 19311 Bear Creek Rd., Los Gatos, Calif. 95030, and Carl T. Petersen, 1185 Gilbert Ct., Fremont, Calif. 94536

Filed Jan. 28, 1993, Ser. No. 10,892
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—725 20 Claims



1. In a vacuum processing chamber for processing a substrate comprising a substrate support for said substrate that is movable in a vertical direction, the improvement which comprises:

a shadow frame for contacting an outer periphery of said substrate for preventing processing of a backside of said substrate; and

a plurality of vertically extending fingers each having an outside sidewall for mating with said shadow frame and an inside sidewall for mating with said substrate, thereby aligning said shadow mask with said substrate.

14. A method of loading and centering a substrate in a processing chamber, comprising the steps of:

loading a substrate through a port of said processing chamber onto a plurality of centering pins carried by a pin support, said centering pins having first sloping surfaces for laterally centering said substrate;

moving said pin support vertically upward to engage a shadow frame having a central aperture, mating surfaces of said centering pins and said shadow frame laterally centering said shadow mask; and

moving a substrate holder vertically upward to lift said substrate and further moving said substrate holder further vertically upward to engage said shadow mask with an upper surface of said substrate to thereby lift said shadow mask from said centering pins.

5,352,295

ROTARY VANE ENGINE

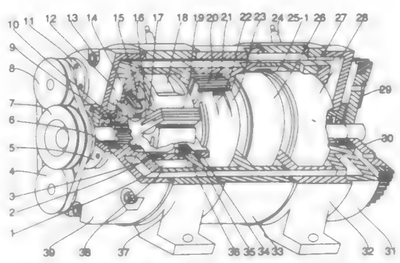
Yi Chou, No. 3, Building 57, Ganjingzi District, Dalian, Liaoning Province, China

Filed May 10, 1993, Ser. No. 59,837
Claims priority, application China, May 16, 1992, 92103705
Int. Cl.[5] F02B *53/00*
U.S. Cl. 123—236 9 Claims

1. A combined rotary vane engine, comprising at least a compressing portion, at least a working portion and an ignition system, characterized in that:

A. said working portion comprises at least a cylinder, an output shaft disposed on an axis of said cylinder and extended to the compressing portion, a single vane secured on the output shaft and extended radially to the internal wall of said cylinder, a hollow cylindrical eccentric rotor located between said output shaft and said cylinder and biased relative to the axis of said cylinder and supported on the side wall of said cylinder by bearings and being rotatable about the axis of said rotor, the section of the internal wall of the said cylinder in contact with the rotor forms an arc which is identical to the external wall of the rotor and forms sealed areas, the cross-section which is provided at the said rotor adjacent to the upstream side of the vane is a triangular combustion chamber, the hollow cylindrical wall of the eccentric rotor being provided with a longitudinally extended opening for said vane to project out, a slide which allows said vane to reciprocate relative to said rotor being provided in the opening;

B. said compressing portion comprising at least a cylinder adjacent to and coaxial with the cylinder of said working portion, a single vane secured on the portion extended into said cylinder from the output shaft, and extended radially to the internal wall of said cylinder in said compressing portion, a hollow cylindrical eccentric rotor provided between the output shaft and said cylinder, and biased relative to the axis of said cylinder and supported on the side wall of said cylinder by bearings and being rotatable about the axis of said rotor, the section of the internal wall



of the said cylinder in contact with the rotor forms an arc which is identical to the external wall of the rotor and forms sealed areas, the cross-section which is provided at the said rotor adjacent to the downstream side of the vane is a shallow wedge-like trough, the hollow cylindrical wall of the eccentric rotor being provided with a longitudinally extended opening for the vane to project out, a slide which allows said vane to reciprocate relative to said rotor being provided in he opening; and

C. at the wall of the cylinder of the said working portion is installed an exhaust outlet which is interlinked with the end of the space surrounded by the cylinder and the rotor in the direction of rotation, the wall of the cylinder of the said compressing portion being provided with an inlet which is interlinked with the upstream side in the space surrounded by the cylinder and the rotor in the direction of rotation, an interlinked gas passage being installed along the adjacent walls of the cylinder in the sealed area formed by the cylinder and the rotor of the above two portions while a spark plug or an injection nozzle used in the ignition system of the engine is attached to the position adjacent to the downstream side in the direction of rotation inside the wall of the area sealed by the said rotor of the working portion.

5,352,296

PROCESS FOR CLEANING METAL SURFACES

Klaus Wittel, Frankfurt am Main, and Georg Blümlhuber, Oberasbach, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 2, 1992, Ser. No. 956,737
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1991, 4133100
Int. Cl.[5] C23G *1/14*
U.S. Cl. 134—2 8 Claims

1. A process for cleaning a metal surface comprising the steps of:

(a) preparing a cleaning solution which contains a silicate cleaning agentand surfactants, and wherein the silicate of said cleaning agent is exclusively a silicate selected from the group of sodium silicate and potassium silicate of the formula $Na_2O.2SiO_2.xH_2O$ and/or $K_2O.2SiO_2.xH_2O$ and mixtures thereof;

(b) treating a metal surface with said solution at a temperature and for a time sufficient to clean said metal surfaces; and

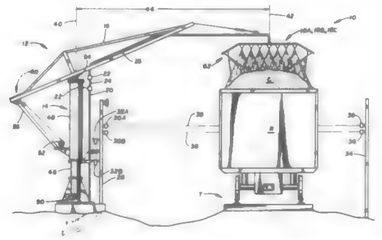
(c) regenerating said solution by subjecting said solution to ultrafiltration through an ultrafiltration membrane and recycling a permeate of said solution after ultrafiltration to step (b) whereby the fact that the exclusive silicate in said solution is a sodium silicate and/or potassium silicate of the formula $Na_2O.2SiO_2.xH_2O$ and/or $K_2O.2SiO_2.xH_2O$ permits extended permeation through said membrane prior to blockage.

5,352,297

RAILROAD CAR SPRAYING METHOD AND APPARATUS

David E. Peters, 1971 E. Yellowstone, Casper, Wyo. 82601

Filed Jul. 8, 1993, Ser. No. 87,381
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—15 14 Claims



10. A method of surface encapsulation spraying of railway coal cars carrying heaped coal on departing a coal mine, comprising the steps of:

detecting approach and proximity of a railway coal car carrying heaped coal to a spray apparatus having first, second and third series of spray nozzles;

causing the first series of nozzles to spray a frontal, inclined surface of the heaped coal, the spray being directed such that it includes backward and downward components of direction;

causing the second series of nozzles to spray an upwardly exposed, central surface of the heaped coal, the spray being directed downwardly; and

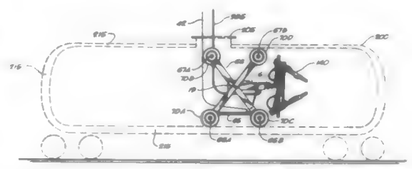
causing the third series of nozzles to spray a rear, inclined surface of the heaped coal, the spray being directed such that it includes forward and downward components of direction, wherein said spraying uniformly penetrates the top six inches of the heaped coal surface and prevents evaporation of liquids trapped in the coal heap and, consequently, prevents dusting during further transportation of said railway coal cars moving at traveling speed.

5,352,298

TANK CAR CLEANING AND STRIPPING APPARATUS AND METHOD

Jeffrey E. Moulder, P.O. Box 1104, New Caney, Tex. 77357

Filed Apr. 27, 1993, Ser. No. 53,726
Int. Cl.[5] B08B *3/02, 9/08*
U.S. Cl. 134—22.18 18 Claims



1. In a tank car having a plurality of interior surfaces including a floor, side walls, end walls and a ceiling having a manway for access of a worker thereinto, a cleaning and stripping apparatus comprising:

a X-frame assembly having a swivel support assembly rotatably attached thereto;

said X-frame assembly configured to be insertable into said manway when arranged in a compressed position and further configured to receive a plurality of pneumatic tire assemblies and to support a K-frame assembly when said X-frame assembly is arranged in an extended position;

said K-frame assembly releasably and rotatably attached to said swivel support assembly and having swivel means;

fluid supply conduit means connected to said swivel support assembly for operating hydraulic motor means for rotating said swivel means;

spray means fixedly attached to said swivel means for forming a fluid spray pattern upon said plurality of interior surfaces of said tank car; and

air supply conduit means connected to a plurality of air cylinder means hingedly connected to said X-frame assembly for pneumatically controlling said compressed or extended configuration of said X-frame assembly, connected to drive means for pneumatically controlling linear movement of said X-frame assembly independently of movement of said rotation of said swivel means and for synchronizing said rotational movement of said swivel means with said linear movement of said X-frame assembly.

5,352,299

THERMOELECTRIC MATERIAL

Yoshikazu Yoshimoto; Eizo Ohno, both of Tenri; Masaru Yoshida, Ikoma; Shigeo Nakajima, Nara, and Shoei Kataoka, Tanashi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 698,484, Apr. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 433,413, Nov. 7, 1989, abandoned, which is a continuation of Ser. No. 192,683, May 10, 1988, abandoned. This application Jul. 2, 1992, Ser. No. 908,919
Claims priority, application Japan, Jun. 26, 1987, 62-160680
Int. Cl.[5] H01L *35/14*
U.S. Cl. 136—201 15 Claims

1. A method for generating electrical energy comprising: applying a temperature differential to thermoelectric elements, which comprise a P element and an N element, such that electrical energy is generated by the Seebeck effect wherein at least one of said P element and said N element comprises a thermoelectric material consisting of an oxide with a perovskite structure, wherein said oxide is of the formula $(Ln_{1-x}A_x)_2MO_4$ with $0.01 \leqq x < 0.05$, where Ln is a rare earth element, A

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is an alkaline earth metal element, and M is a transition metal element, said thermoelectric material having a thermoelectric

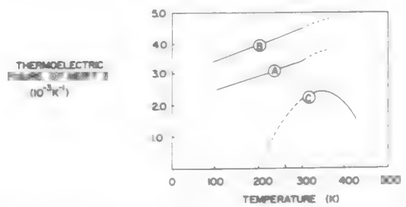
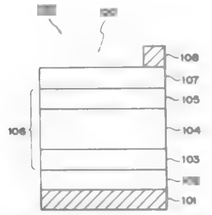


figure of merit Z of 2.5×10^{-3} to $4.6\times10^{-3}K^{-1}$ at temperatures ranging from 100K. to room temperature.

5,352,300
SOLAR CELL

Mitsuyuki Niwa, Nagahama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 24, 1992, Ser. No. 950,288
Claims priority, application Japan, Sep. 26, 1991, 3-247452
Int. Cl.[5] H01L *31/06, 31/075, 31/0376, 31/0224*
U.S. Cl. 136—256 14 Claims



1. A solar cell including a substrate and having a first transparent electrode, a non-single crystalline semiconductor layer on said first electrode)and a second electrode on said semiconductor layer, wherein said first transparent electrode is composed of a first zinc oxide layer containing at least one transition metal in which the density of the transition metal is continuously changed in the thickness direction thereof within the range of not less than 1 atomic ppm to 5 atomic %.

5,352,301
HOT PRESSED MAGNETS FORMED FROM ANISOTROPIC POWDERS

Viswanathan Panchanathan, Anderson, and John J. Croat, Noblesville, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 20, 1992, Ser. No. 979,030
Int. Cl.[5] H01F *41/02*
U.S. Cl. 148—101 14 Claims

10. A method for forming a hot pressed iron-rare earth metal permanent magnet comprising, on a weight percent basis, about 26 to 32 percent rare earth wherein at least about 90 percent of this constituent is neodymium, about 0.7 to about 1.1 percent boron, and the balance being essentially iron, the method comprising the steps of:

melt spinning a hot pressed iron-rare earth metal composition to form overquenched ribbons;

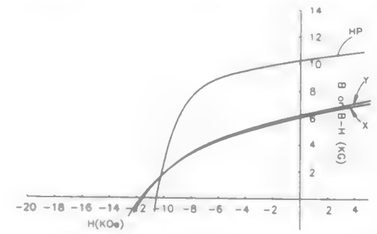
forming isotropic iron-rare earth particles from the ribbons;

hot pressing the isotropic iron-rare earth metal particles to form an isotropic magnet body;

hot working the isotropic magnetic body so as to plastically deform the iron-rare earth metal particles of the isotropic magnet body, so as to form an anisotropic magnet body;

comminuting the anisotropic magnet body so as to form platelet-shaped anisotropic iron-rare earth metal particles from the anisotropic magnet body; and

hot pressing a quantity of the anisotropic iron-rare earth metal particles in the absence of a magnetic alignment



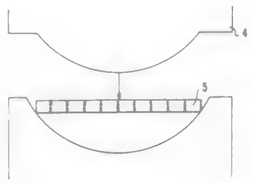
field such that the anisotropic iron-rare earth metal particles are substantially magnetically nonaligned during the hot pressing step, the hot pressing step forming the hot pressed iron-rare earth metal permanent magnet;

whereby the iron-rare earth metal permanent magnet exhibits an energy product of at least about 15 megaGaussOersteds.

5,352,302
METHOD OF PRODUCING A RARE-EARTH PERMANENT MAGNET

Fumio Takagi; Osamu Kobayashi; Akira Arai; Seiji Ihara, and Koji Akioka, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

PCT No. PCT/JP92/00521, § 371 Date Oct. 16, 1992, § 102(e) Date Oct. 16, 1992, PCT Pub. No. WO92/20081, PCT Pub. Date Nov. 12, 1992
PCT Filed Apr. 27, 1992, Ser. No. 955,748
Claims priority, application Japan, Apr. 25, 1991, 3-95692; Feb. 24, 1992, 4-036614; Feb. 24, 1992, 4-036615; Feb. 24, 1992, 4-036616; Feb. 25, 1992, 4-037741
Int. Cl.[5] H01F *1/00*
U.S. Cl. 148—101 9 Claims



1. A method of producing a rare-earth permanent magnet, comprising the steps of:

melting raw material including R (R is at least one of the rare earth elements including Y), Fe (iron) and B (boron) as the basic constituents and casting the melt into a cast alloy ingot of permanent magnet material,

hot working the cast alloy ingot to form an anisotropic plate shaped magnetic material,

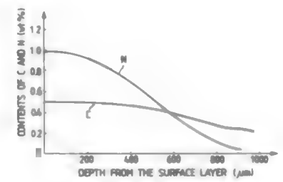
hot bending the plate shaped magnetic material at a temperature in the range of about 900°–1050° C. at a strain rate of not more than 0.001 sec^{-1} such that the maximum bending strain ϵmax which is expressed as

$\epsilon max = t/(2r+t)$ (wherein r is a curvature radius of an inner surface of the plate shaped material and t is the thickness of the plate) is less than or equal to 0.2.

5,352,303
ROLLING BEARING

Yasuo Murakami; Yasuo Utsumi, and Toichi Kondou, all of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Nov. 24, 1993, Ser. No. 156,914
Claims priority, application Japan, Nov. 25, 1992, 4-314905
Int. Cl.[5] C22C *38/18, 29/04*
U.S. Cl. 148—318 4 Claims



1. A rolling bearing comprising an inner race, an outer race, and rolling elements, in which

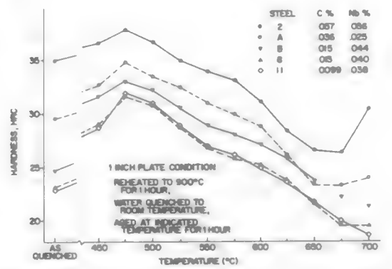
at least one of the inner race, outer race and rolling elements thereof is made of an alloy steel which contains 0.10 to 1.0 wt % of C and 0.50 to 3.0 wt % of Cr; and

said at least one of the inner race, outer race and rolling elements is carbo-nitrided so that the sum (C+N) of the contents of carbon (C) and nitrogen (N) in the surface layer thereof is 1.0 to 2.0 wt %, and the ratio (N/C) of the content of nitrogen (N) to the content of carbon (C) is 0.8 to 2.0.

5,352,304
HIGH STRENGTH LOW ALLOY STEEL

Anthony J. DeArdo, Pittsburgh, and Robert A. Walsh, Natrona Heights, both of Pa., assignors to Allegheny Ludlum Corporation, Pittsburgh, Pa.

Filed Nov. 16, 1992, Ser. No. 976,879
Int. Cl.[5] C22C *38/42*
U.S. Cl. 148—336 11 Claims

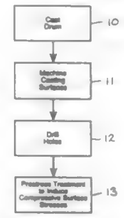


11. An alloy steel having been quenched and aged, and having a tensile yield strength of 100,000 to 120,000 pounds per square inch at room temperature, and a CVN impact toughness of at least 35 ft-lbs. at minus 84° C. at a thickness of up to 6 inches in the as-quenched condition, the steel consisting essentially of, by weight percent, up to 0.006 sulfur and an effective amount up to 0.015 carbon for low temperature toughness, 0.5 to 1.5 manganese, up to 0.4 silicon, 3.0 to 4.0 nickel, 1.0 to 2.0 copper, 0.02 to 0.01 niobium, aluminum up to 0.1, up to 0.9 molybdenum, up to 1.2 chromium, and the balance iron and incidental impurities, said alloy having a low carbon bainite microstructure in the as-quenched condition.

5,352,305
PRESTRESSED BRAKE DRUM OR ROTOR

Larry B. Hester, Dayton, Ohio, assignor to Dayton Walther Corporation, Dayton, Ohio

Filed Oct. 16, 1991, Ser. No. 778,438
Int. Cl.[5] B21D *53/34*
U.S. Cl. 148—581 7 Claims



1. A method for forming an improved vehicle brake component adapted to engage a brake pad comprising:

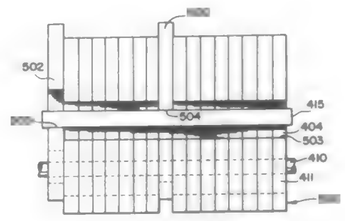
(a) providing an annular rotatable brake component selected from the group consisting of a vehicle brake dram and a vehicle brake rotor, the brake component having a machined annular surface for frictional engagement with the brake pad, the machined surface having residual stresses formed therein as a result of a machining operation which provides the brake component with an initial fatigue life; and

shot peening the machined surface to prestress the machined surface by inducing compressive stresses to reduce the residual surface tensile stresses produced by the machining operation and to increase the fatigue life of the brake component.

5,352,306
TAPE LAYING APPARATUS AND METHOD

Michael N. Grimshaw, and David A. Peterson, both of Milford, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed May 27, 1993, Ser. No. 68,011
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—64 9 Claims



9. An improved method of laying plastic tape onto a work surface using a presser member having a plurality of plate segments with flat parallel faces stacked in face to face array, the improvement comprising the steps of:

bringing the presser member into initial engagement with the work surface;

transmitting vertical movement of the segment making initial contact with the work surface to a preselected non-terminal segment of the plurality of segments of the presser member to produce vertical movement of the non-terminal segment;

detecting the vertical movement of the non-terminal segment;

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generating a signal in response to the movement of the non-terminal segment; and

processing said signal to means for controlling and directing movement of the presser member onto the work surface.

5,352,307

METHOD OF PRODUCING A BREAST PROSTHESIS

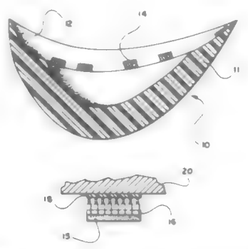
Helmut F. Wild, Rohrdorf, Fed. Rep. of Germany, assignor to Amoena-Medizin-Orthopadie-Technik GmbH, Fed. Rep. of Germany

Filed Nov. 13, 1992, Ser. No. 975,920

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1991, 9114201[U]; Nov. 21, 1991, 9114512[U]; Apr. 6, 1992, 4211542

Int. Cl.[5] A61F *2/52*

U.S. Cl. 156—66 **9 Claims**



1. In a method for the production of a breast prosthesis comprising the following steps:

introducing a two-component addition cross-linkable soft elastic silicone rubber composition into a synthetic resin film, which is to constitute the outer and inner side of the breast prosthesis,

introducing the uncross-linked silicone rubber composition into a mold, and

cross-linking said silicone-rubber composition by heating said mold and said silicone rubber composition, the improvement comprising the step of:

applying to the synthetic resin film constituting the inner side of the breast prosthesis at least one holding element, in the form of an adhesive strip, applied by the activation of a hot-melt adhesive, said hot-melt adhesive being cured during the step of cross-linking said silicone-rubber composition.

5,352,308

SELF-LOCKING AGENT

Kenichi Tomihara; Naoki Sato; Minami Hanada; Isao Noguchi, and Yumi Oka, all of Hachioji, Japan, assignors to Three Bond Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 587,398, Sep. 25, 1990, abandoned. This application Jun. 4, 1993, Ser. No. 72,167

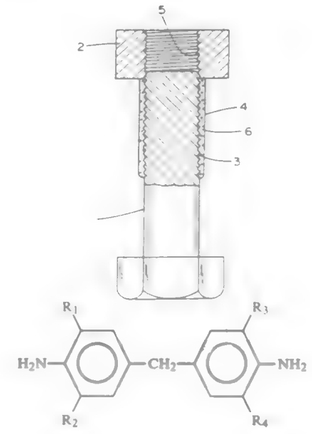
Int. Cl.[5] B32B *7/08*; C08K *9/10*

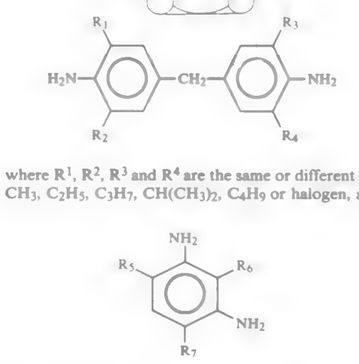
U.S. Cl. 156—66 **5 Claims**

1. A process for enhancing the effectiveness of a fastening device comprising applying a self-locking agent to the engaging portion of a fastening device, said self-locking agent comprising a microencapsulated adhesive composition which includes:

(a) an epoxy compound having at least two epoxy groups;

(b) an aromatic diamine selected from the group consisting of





where R^1, R^2, R^3 and R^4 are the same or different and are CH_3, C_2H_5, C_3H_7, $CH(CH_3)_2$, C_4H_9 or halogen, and

where R_5, R_6 and R_7 are the same or different and are CH_3, C_2H_5, C_3H_7 or halogen; and

(c) thiosalicylic acid,

with the proviso that at least one of components (a) and (b) is microencapsulated.

5,352,309

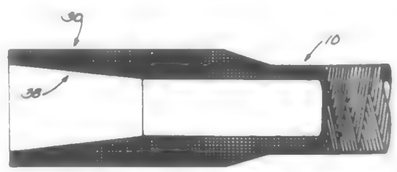
METHOD FOR MANUFACTURING PIPE BELLS

Kenneth J. Oswald, Little Rock, Ark., assignor to Smith Fiberglas Products Inc., Milwaukee, Wis.

Continuation of Ser. No. 740,364, Aug. 5, 1991, abandoned. This application Nov. 23, 1992, Ser. No. 980,138

Int. Cl.[5] F16L *47/00*; B32B *31/16*

U.S. Cl. 156—154 **4 Claims**



1. A method for manufacturing a filament reinforced plastic pipe including an integral bell, said method comprising the steps of impregnating a filament bundle with a resin, winding said filament bundle in a plurality of layers to form a pipe around a mandrel having an outer surface which is cylindrical along the entire length of said mandrel, the pipe having a wall thickness, winding additional layers of said filament bundle around a portion of said mandrel to form, adjacent an end of said pipe, a bell portion having a cylindrical inner surface, having a reinforcement length, and having an increased wall

thickness, and machining said inner surface so that the wall thickness at said end of said pipe is less than the wall thickness at a point spaced from said end, and so that said inner surface includes a frustoconical portion which converges in the direction away from said end of said pipe, and which has a length less than said reinforcement length.

5,352,310

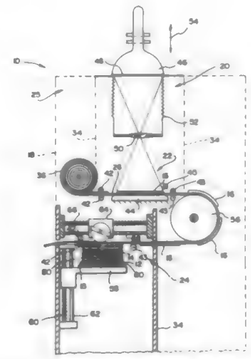
ACTINIC ACTIVATION SHAPING SYSTEM AND METHOD

Marc D. Natter, Honatech, Inc., 185 Riverdale Ave., Yonkers, N.Y. 10705

Continuation-in-part of Ser. No. 312,613, Feb. 17, 1989, Pat. No. 5,174,843. This application Jun. 25, 1992, Ser. No. 904,023

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—155 **14 Claims**



1. A method of forming the three dimensional configuration of an article from a plurality of sheets of polymer material, the thickness of each sheet corresponding to an incremental heighth of the article, the method comprising:

a) facilitating the curing of at least a portion of the polymer material of each sheet by exposing each sheet to radiation from an actinic energy source, the radiation being configured in a pattern corresponding to said incremental heighth of the article;

b) stacking successive sheets over previously exposed sheets to form a matrix;

c) segregating the shape of the article from the matrix by exposing the entire matrix to an energy source which is not configured in a pattern to cure the portions of the polymer material whose curing has been facilitated and thereafter;

d) simultaneously removing from all of the sheets which comprise the matrix, the portions of each sheet which do not comprise the configuration of the article.

12. A method of forming the three dimensional configuration of an article, the method comprising the steps of:

a) providing a plurality of sheets of polymer material, the thickness of each sheet corresponding to an incremental heighth of the article,

b) providing means for exposing an actinic radiation image patterned to correspond with the configuration of an incremental heighth of the article on a sheet of the plurality,

c) exposing actinic radiation images patterned to correspond with configurations of successive incremental heighths of the article on successive sheets of the plurality to effect a change of chemical reactivity on each of the successive sheets corresponding to the patterned images exposed on each sheet,

d) providing means for stacking successive sheets of the plurality on previously exposed sheets to form a matrix,

e) providing an unpatterned energy source for segregating the configuration of the article from the matrix by effecting a reactive change in the molecular structure of the polymer material of each of the sheets which comprise the matrix as a function of the differential in the chemical reactivity between the exposed and unexposed portions of each sheet,

f) segregating the configuration of the article from the matrix by effecting a reactive change in the molecular structure of the polymer material of each of the sheets as a function of the differential in chemical reactivity by exposing the matrix to the unpatterned energy source, and

g) providing means for separating the segregated configuration of the article from the matrix by altering the dimensional stability of the polymer material as a function of the changed molecular structure.

13. A method of forming the three-dimensional configuration of an article from a plurality of sheets of polymer material, the thickness of each sheet corresponding to an incremental heighth of the article, the method comprising:

(a) facilitating the curing of at least a portion of the polymer material of each sheet by exposing each sheet to actinic radiation configured in the shape of an incremental heighth of the article,

(b) stacking successive exposed sheets over previously exposed sheets to form a matrix,

(c) curing the portions of the polymer material whose curing has been facilitated to segregate the shape of the article from the matrix, and

(d) simultaneously removing from all of the sheets which comprise the matrix, the portions of each sheet which do not comprise the configuration of the article.

14. A method of forming the three dimensional configuration of an article, the method comprising the steps of:

a) providing a plurality of sheets of polymer material, the thickness of each sheet corresponding to an incremental heighth of the article,

b) exposing actinic radiation images patterned to correspond with configurations of successive incremental heighths of the article on successive sheets of the plurality to effect a change of chemical reactivity on each of the successive sheets corresponding to the patterned images exposed on each sheet,

c) stacking successive sheets of the plurality on previously exposed sheets to form a matrix,

d) segregating the configuration of the article from the matrix by effecting a reactive change in the molecular structure of the polymer material of each of the sheets which comprise the matrix as a function of the differential in the chemical reactivity between the exposed and unexposed portions of each sheet, and

e) separating the segregated configuration of the article from the matrix by altering the dimensional stability of the polymer material as a function of the changed molecular structure.

5,352,311

METHOD OF MANUFACTURING A COMPOSITE SAIL BATTEN

Peter A. Quigley, Cataumet, Mass., assignor to Composite Development Corporation, West Wareham, Mass.

Filed Jul. 2, 1992, Ser. No. 907,866

Int. Cl.[5] B63H *9/08*; B65H *81/00*

U.S. Cl. 156—180 **11 Claims**

1. A method of manufacture of a sail batten comprising the steps of

(a) fabricating an initial batten structure of thermoplastic fiber reinforced composite material elongated along a first axis, and

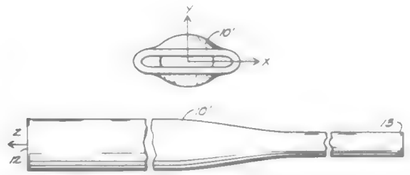
(b) heating at least one longitudinal portion of said fabricated structure to a plastic condition and flattening said portion

VOL 1167 ISS 1 OC 4 1994 UMI

in its plastic condition to selectively decrease stiffness in a direction generally transverse to said first axis along said first axis for attaining a selected sail-configuring stiffness, thereby to form said initial structure into a batten having a predetermined variation, along said first axis, in stiffness in said transverse direction.

8. A method of manufacture of a sail batten comprising the steps of

(a) fabricating an initial batten structure of thermoset polymer elongated along a first axis,



(b) curing said thermoset polymer to a condition wherein it can be heated to a plastic condition, and

(c) thereafter heating a longitudinal portion of said fabricated structure to a plastic condition and flattening said portion in its plastic condition to selectively decrease stiffness in a direction generally transverse to said first axis along said first axis for attaining a selected sail-configuring stiffness,

thereby to form said initial batten structure into a batten having a predetermined variation, along said first axis, in stiffness in said transverse direction.

5,352,312

METHOD OF INSULATING A ROCKET MOTOR

David G. Guillot, Tremonton, Utah, assignor to Thiokol Corporation, Ogden, Utah

Continuation-in-part of Ser. No. 563,906, Jun. 25, 1990, which is a continuation-in-part of Ser. No. 350,079, May 10, 1989, abandoned. This application Aug. 6, 1992, Ser. No. 927,135

Int. Cl.[5] B32B *31/20;* B65H *81/06;* C09K *21/14;* F02K *9/08*

U.S. Cl. 156—172 15 Claims

1. A method of insulating a rocket motor comprising the steps of:

a. providing an insulation material comprising a thermoplastic liquid crystal polymer and a filler selected from the group consisting of fiber fillers and powdered fillers;

b. fabricating said insulation material to form a thermoplastic rocket motor insulating member; and

c. installing said member in a portion of a rocket motor requiring insulation.

2. A method as defined in claim 1 wherein said fabricating step comprises the further steps of forming at least one piece of said thermoplastic insulation material, laying up said at least one piece on a rocket motor component so portions of said at least one piece are in contacting relation, and joining the portions of said at least one piece which are in contacting relation by heat sealing said portions together.

4. A method as defined in claim 2 wherein said laying up is carried out by winding a ribbon of said insulation on a component of a rocket motor requiring insulation.

5,352,313

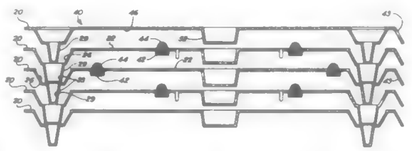
SEALANT AND WINDOW CARRIER STRUCTURES

Michael T. Tiedeck, 431 Calvin, Grosse Pointe Farms, Mich. 48236, and Gene A. Micell, 1460 Winchell Dr., Hudson, Ohio 44236

Filed Jan. 28, 1993, Ser. No. 10,661

Int. Cl.[5] B32B *31/04*

U.S. Cl. 156—230 20 Claims



10. A method of transporting workpieces on carriers comprising the steps of:

(1) providing a plurality of carriers each including a sealant groove;

(2) inserting a sealant in the sealant groove;

(3) placing a workpiece on each carrier; and,

(4) stacking adjacent ones of said plurality of carriers in a first position.

5,352,314

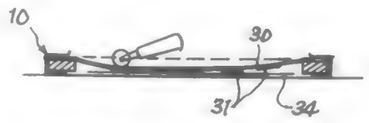
GRAPHICS TRANSFER APPLICATOR

Jay E. Coplan, 2614 Jacaranda Ave., Carlsbad, Calif. 92009

Filed Feb. 5, 1993, Ser. No. 16,151

Int. Cl.[5] B44C *1/16, 3/00;* B32B *1/00*

U.S. Cl. 156;234 2 Claims



2. A method of transferring weeded graphics to a display panel by using an open frame having a plane-defining face and a film-mounting face spaced from and being substantially parallel to said plane-defining face and substantially covered on said film-mounting face with a sheet of transparent, flexible film having releasable adhesive on the side thereof toward said plane-defining face, said frame defining an open area large enough to encompass said graphics and said film being flexible enough to be pressed through said film substantially into alignment with a plane defined by said plane-defining surface, said method comprising:

(a) placing said weeded graphics onto said film from the plane-defining side of said frame to adhere the non-sticky side of said graphics to said film;

(b) peeling said release paper from said graphics, leaving the graphics adhered to said film;

(c) positioning said frame over said display panel and visually properly aligning said graphics with respect to said panel by observing said graphics and panel through said film;

(d) pressing said film, carrying said graphics on the underside thereof, down against said display panel until said graphics stick thereto; and,

(e) lifting said frame to pull said film free of said graphics.

5,352,315

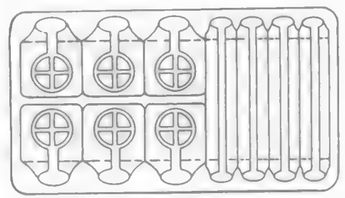
BIOMEDICAL ELECTRODE

Levi A. Carrier; Jay M. Ruehlen, both of Longmeadow, and Nilay Sankalia, Agawam, all of Mass., assignors to Ludlow Corporation, Exeter, N.H.

Continuation of Ser. No. 728,876, Jul. 12, 1991, abandoned. This application Nov. 5, 1993, Ser. No. 147,442

Int. Cl.[5] B32B *31/12, 31/18*

U.S. Cl. 156—267 20 Claims



1. A continuous process for fabricating a kit containing a plurality of biomedical electrodes, the impedances of the electrodes within the kit being variable in that at least one electrode in the kit has an impedance value that differs from an impedance value of at least one of the other electrodes within the kit, the electrodes being adaptable to be placed on the human skin at various predetermined locations for monitoring the electrical activity associated with physiological functioning of the heart that is manifested on the skin, the process being continuous from a starting point at which the electrodes exist in a disassembled state through an ending point at which complete functional electrodes are totally fabricated, all of the steps in the process being carried out on machinery in a predetermined sequence on a single pass through various stations in operation of the machinery, the process comprising the steps of:

a. providing a continuous web of a non electrically conductive backing material;

b. advancing the web of backing material to a first station of the machinery;

c. printing predetermined graphical information in register at a plurality of locations on a first side of the backing material, the printing being carried out at the first station of the machinery;

d. advancing the web of backing material to a second station of the machinery;

e. applying an electrically conductive ink in one or more predetermined patterns at a plurality of locations on a second side of the backing material, the ink being applied in register with the predetermined graphical information printed at the plurality of locations on the first side of the backing material, each predetermined pattern of conductive ink being selective to provide a desired impedance value for each electrode in the kit, the applying of the ink being carried out at the second station of the machinery;

f. advancing the web of backing material to a third station of the machinery;

g. applying an electrically conductive adhesive onto the conductive ink, the applying of the adhesive being carried out at the third station of the machinery;

h. advancing the web of backing material to a fourth station of the machinery;

i. applying a protective release liner over the electrically conductive adhesive, the applying of the protective release linear being carried out at the fourth station of the machinery;

j. advancing the web of backing material to a fifth station of the machinery;

k. die cutting the backing material to form a plurality of individual biomedical electrodes, each electrode comprising the backing material with the graphical information printed on one side, the conductive ink applied to the second side of the backing material, and the conductive adhesive applied onto the conductive ink, the die cutting of the backing material being carried out at the fifth station of the machinery;

l. advancing the protective release liner to a sixth station of the machinery; and

m. die cutting the release liner at a predetermined location to form a plurality of kits, each kit comprising a plurality of electrodes attached to a continuous portion of the die cut release liner, wherein the impedance value of at least one electrode within each kit differs from the impedance value of at least one of the other electrodes within that corresponding kit, the die cutting of the release liner being carried out at the sixth station of the machinery.

5,352,316

MEMBRANE, E.G. FOR USE IN AN ILEOSTOMY BAG

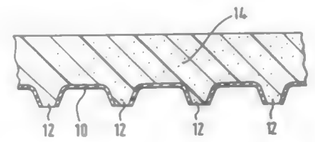
Graham E. Steer, London, England, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 19, 1991, Ser. No. 747,086

Claims priority, application United Kingdom, Aug. 22, 1990, 9018411

Int. Cl.[5] B32B *31/00;* A61F *5/44*

U.S. Cl. 156—252 4 Claims



1. A method for making a membrane to be used in a ileostomy pouch comprising:

providing a linear low density polyolefin film capable of being heat welded or RF welded to the bag walls of an ileostomy pouch; said film being perforated with an array of holes each with an average diameter of 300–400 microns;

coating said film with porous polyurethane having connecting pores ranging from 1–10 microns so as to make the coated film gas permeable and liquid impermeable;

providing an ileostomy pouch having an opening for receiving waste material and a filter in said ileostomy pouch for deodorizing the waste material; and

welding with heat or RF the coated film to the ileostomy pouch so as to cover the filter and permit gaseous waste material to pass through the filter while preventing liquid waste material from blocking the filter.

3. A product made pursuant to the method claimed in claim 1.

5,352,317

METHOD OF PREPARING A MULTILAYERED SOLID WOOD PANEL

Josef Traben, and Siegmar Goenner, both of Oberkirch, Fed. Rep. of Germany, assignors to Firma Gebruder Linck Maschinenfabrik "Gatterlinck" GmbH & Co. KG, Oberkirch, Fed. Rep. of Germany

Filed Nov. 1, 1990, Ser. No. 608,973

Claims priority, application Fed. Rep. of Germany, Nov. 1, 1989, 3936312

Int. Cl.[5] B32B *31/18*

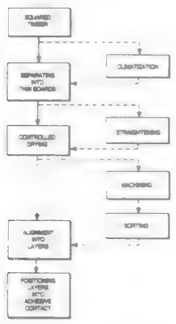
U.S. Cl. 156—254 18 Claims

1. A method for the production of finished wood sheets from wood planks, comprising the steps of:

(a) sawdust-free cutting of the wood planks into individual wood sheets having predetermined dimensions;

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(b) controlled drying of the individual wood sheets to a predetermined moisture content; and



(c) subsequent machining of one or more sides of the dried wood sheets to form finished wood sheets.

5,352,318

METHOD OF MUTUALLY CONNECTING ELECTRODE TERMINALS

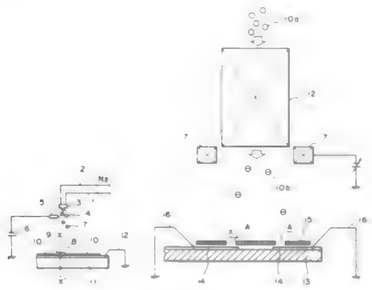
Hiroshi Takabayashi, Kawasaki, and Masanori Takahashi, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 566,115, Aug. 13, 1990, abandoned. This application Feb. 2, 1993, Ser. No. 12,805

Claims priority, application Japan, Aug. 17, 1989, 1-210584; Aug. 24, 1989, 1-216140; Dec. 15, 1989, 1-324983; Jul. 23, 1990, 2-195332

Int. Cl.[5] B32B *31/00*; B05D *5/12*; H01L *21/44*

U.S. Cl. 156—272.6 24 Claims



1. A method of mutually connecting electrode terminals formed on a pair of circuit substrates to be connected, comprising the steps of:

charging electroconductive particles by passing electroconductive particles through a charging zone in space in which a corona electric field is formed by electric field discharge means;

dispersing the charged electroconductive particles in an electrostatic field formed between the discharge means and at least one of the electrode terminals to guide the charged electroconductive particles along electric lines of force in the electrostatic field, thereby selectively attaching the electroconductive particles onto the electrode terminals; and

sandwiching the electroconductive particles between the electrode terminals of the pair of circuit substrates to electrically connect the electrode terminals.

10. A method of connecting electrode terminals for electrical connection and fixing an electrode terminal formed on a first electrical circuit substrate and a an electrode terminal formed on a second circuit substrate, comprising the steps of:

charging electroconductive particles by passing electroconductive particles through a charging zone in space in which a corona electric field is formed by electric field discharge means;

dispersing the charged electroconductive particles in an electrostatic field formed between the discharge means and at least one of the electrode terminals to guide the charmed electroconductive particles along electric lines of force in the electrostatic field, thereby selectively attaching the electroconductive particles onto the electrode terminals; and

bonding the electrode terminal formed on the first circuit substrate with the electrode terminal formed on the second circuit substrate.

18. A method of connecting electrode terminals for electrical connection and fixing an electrode terminal formed on a first electrical circuit substrate and an electrode terminal formed on a second circuit substrate, comprising the steps of:

charging electroconductive particles by passing electroconductive particles through a charging zone in space in which a corona electric field is formed by electric field discharge means;

dispersing the charged electroconductive particles in an electrostatic field formed between the discharge means and at least one of the electrode terminals to guide the charged electroconductive particles along electric lines of force in the electrostatic field, thereby selectively attaching the electroconductive particles onto the electrode terminals; and

bonding the electrode terminal formed on the first circuit substrate with the electrode terminal formed on the second circuit substrate.

5,352,319

PROCESS AND APPARATUS FOR PRODUCTION OF TOILET PAPER ROLLS HAVING NO CORE

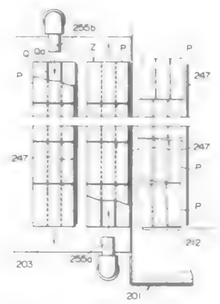
Noboru Ishizu; Teruo Takahashi, and Tomoyuki Shinohara, all of Iyomishima, Japan, assignors to Ishizu Machinery Co., Ltd., Japan

Filed Jun. 25, 1993, Ser. No. 81,220

Claims priority, application Japan, Jul. 2, 1992, 4-175711; Nov. 16, 1992, 4-305541; Dec. 7, 1992, 4-326870; Dec. 17, 1992, 4-086653; Feb. 15, 1993, 5-025390

Int. Cl.[5] B65H *18/00*

U.S. Cl. 156—446 15 Claims



1. An apparatus for the production of rolls of toilet paper, comprising:

winding means, having a shaft to which a plurality of coaxially aligned, cylindrical cores each having a fixed, outer diameter are detachably fitted, for winding a predetermined length of a continuous toilet paper web around each of said cores;

means for wetting only a leading portion of said web such that the web wound around each of said core has a wet inner portion adjacent said core;

means for releasing said plurality of wound web-bearing cores from said shaft such that the released, wound web-bearing cores remain coaxially arrayed;

drying means for receiving said arrayed, wound web-bearing cores released from said shaft and for drying said wet inner portion of the web wound around each of said cores; and

separating means for separating said wound web having said dried, inner portion from each of said cores.

5,352,320

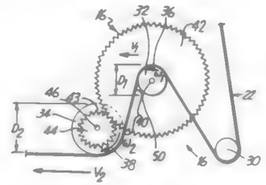
MANUAL TAPE DISPENSING APPARATUS

Mark E. Schwartz, Mahtomedi; James D. Ramacier, Hugo, both of Minn.; Robert A. Luhman, Deer Park, Wis., and Raymond D. Zachrison, Lindstrom, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 45,986, Apr. 9, 1993, abandoned. This application Nov. 24, 1993, Ser. No. 158,037

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—494 20 Claims



1. A portable manual tape dispensing apparatus comprising:

supply means for carrying a supply of stretchable adhesive tape;

a handle connected to the supply means, for manually grasping and manipulating the dispensing apparatus;

stretching means, arranged and configured to receive the tape from the supply means, for stretching the tape, the stretching means including a stretching zone defined between first and second engagement surfaces which frictionally engage the tape, wherein the engagement surfaces move at disparate longitudinal speeds to stretch the tape when the stretching means is activated;

manually operative means for selectively activating the stretching means, whereby an operator can remove the tape from the supply in a unstretched condition when the stretching means is deactivated, and a substantially stretched condition when the stretching means is activated.

5,352,321

CONTINUOUSLY OPERATING DOUBLE BAND PRESS

Kurt Held, Alte Strasse 1, D-7218 Trossingen 2, Fed. Rep. of Germany

Continuation of Ser. No. 875,526, Apr. 27, 1992, abandoned, which is a continuation of Ser. No. 540,371, Jun. 19, 1990, abandoned. This application May 11, 1993, Ser. No. 60,792

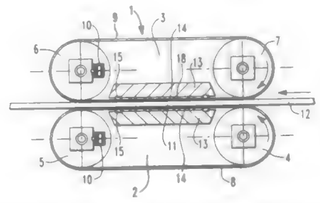
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1989, 3921364

Int. Cl.[5] B30B *5/06*

U.S. Cl. 156—498 28 Claims

1. A continuously operating double band press for fabrication of compression layers, i.e. laminates, chipboard, fiberboard, plywood or the like comprising:

upper and lower endless press bands each conducted over two reversing drums rotatably supported in a rigid press stand, said press bands having upper and lower spaced parallel segments with inner and outer sides; said compression layer being disposed between the upper and lower spaced segments so as to move with said band segments through said press stand, pressure exerting means located on the inner sides of the associated press band segments and including pressure plates fastened in the press stand and engaging respective sides of the press band segments and sealed with respect to the latter in a horizontal direction by respective spaced floating seals and bounding in a vertical direction respective pressure chambers for receiving pressurized fluid medium for forcing said pressure plates toward one another for compressing the compression layer between said band segments while moving through said pressure stand and a plurality of heat-con-



ducting elements including heat transfer means for heating or cooling, said heat-conducting elements being arranged in said pressure chambers and having flexible conduit means extending between said pressure plates and said heat-conducting elements for supplying heat thereto or removing it therefrom to allow direct heating or cooling of the compression layer through the associated press band segments, said heat-conducting elements being individually movably mounted on said pressure plates and spring-biased into engagement with said band segments such that their surfaces are in contact with the inner side of said band segments with predetermined contact pressures, which are independent of the pressure exerted by said pressurized fluid medium, onto said press bands and the inner sides of said associated press band segments slide along said contact surfaces under said predetermined contact pressure for efficiently transferring heat between said compression layer and said heat-conducting elements through said press band segments while moving with said compression layer through said press stand.

5,352,322

ADHESIVE APPLICATOR APPARATUS

Paul D. Leverick, Rotherham, England, assignor to C. B. Kaymich & Company Limited, United Kingdom

Filed Sep. 15, 1992, Ser. No. 944,901

Claims priority, application United Kingdom, Sep. 23, 1991, 9120239

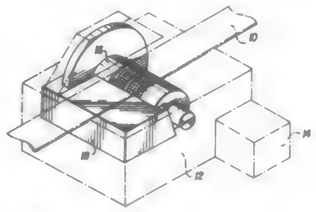
Int. Cl.[5] B65C *11/04*

U.S. Cl. 156—578 11 Claims

1. Adhesive applicator apparatus including a rotatable applicator roller, an adhesive tank for the supply of adhesive to the roller and at least one doctor blade operatively associated with said applicator roller, the applicator roller being located above the level of adhesive in said tank and the apparatus also including an adhesive pick-up disc on a common rotary axis with said applicator roller, laterally offset from said roller and depend-

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ing to a lower level than said roller for feeding adhesive in the tank to a receiving reservoir for applying the adhesive to the



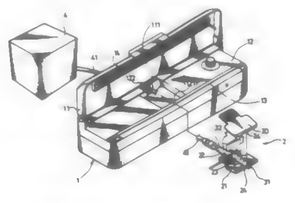
roller at a region of the path of rotation of the roller preceding said at least one doctor blade.

5,352,323

HEAT SEALING APPARATUS

James Chi, Taipei, Taiwan, assignor to Sunfa Plastic Co., Ltd., Taipei, Taiwan

Filed Oct. 20, 1993, Ser. No. 138,101
Int. Cl.[5] B65B *31/00;* B30B *15/34*
U.S. Cl. 156—583.9 2 Claims



1. A heat sealing apparatus comprising: a sealing unit, a clip, a guide tube, and a vacuum ejector, said sealing unit comprises a base, a cover including a rear side pivoted to said base and a front side including a heat-resisting press bar, an electrical wire fastened to the top of said base along one side thereof corresponding to said press bar, wherein said base includes a top recess, and an arched hole on one side of said top recess opposite to said electric heating wire; said cover includes a notch on a rear side thereof corresponding to said arched hole on said base; said clip is removably received within said top recess of said base, including a guide tube fastened thereto, said guide tube comprising a front and a rear end respectively extended out of said clip, said rear end of said guide tube being inserted into said arched hole on said base and connected to a vacuum ejector.

5,352,324

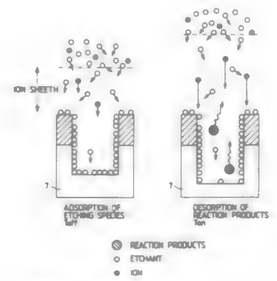
ETCHING METHOD AND ETCHING APPARATUS THEREFOR

Yasushi Gotoh, Kokubunji; Tokuo Kure, Tokyo; Hiroshi Kawakami, Hachioji; Masanori Katsuyama, Ome; Kiyomi Yagi, Hamura, and Hiromichi Enami, Tachikawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 18, 1993, Ser. No. 136,947
Claims priority, application Japan, Nov. 5, 1992, 4-296039; Mar. 12, 1993, 5-051122
Int. Cl.[5] H01L *21/306;* B44C *1/22;* C03C *15/00, 25/06*
U.S. Cl. 156—643 16 Claims

1. An etching method for etching an exposed portion of an article to be etched placed in a reaction vessel using a plasma of an etching gas, comprising the step of:

periodically repeating the switching between a first state that an average thickness of an ion sheath formed on the surface of said article to be etched and an average energy of etching ions are respectively taken as d_1 and V_{S1}, and a second state that the average thickness of an ion sheath



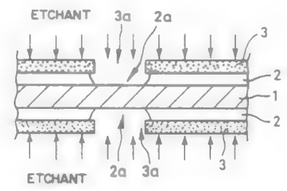
and the average energy of etching ions are respectively taken as d_2 and V_{S2}, thereby etching said article to be etched.

5,352,325

METHOD OF FORMING THROUGH HOLES IN PRINTED WIRING BOARD SUBSTRATES

Yoji Kato, Chino, Japan, assignor to Eastern Co., Ltd., Chino, Japan

Filed Jul. 28, 1993, Ser. No. 98,637
Claims priority, application Japan, Apr. 30, 1993, 5-124736
Int. Cl.[5] B44C *1/22;* B23F *1/00;* B29C *37/00*
U.S. Cl. 156—644 19 Claims



1. In a printed wiring board substrate material consisting of a conductive layer applied to both surfaces of a dielectric resinous base material, a method of forming through holes in said substrate material comprising

a covering process for covering said conductive layer with an etching resist, leaving open positions where a hole is to be formed into the surfaces of said layer,

a removing process for selectively removing the conductive layer only at positions where holes are to be formed by bringing etchant into contact with said surfaces,

a removing process for removing the etching resist,

a softening process for softening the dielectric base material at positions where exposed by removal of the conductive layer, i.e., at positions where a hole is to be formed, by employing a strong alkaline agent and solvent solution,

a removing process under vibratory agitation for dissolving the softened dielectric material to form holes employing alkaline potassium permanganate, or concentrated sulfuric acid, or chromate liquid, and

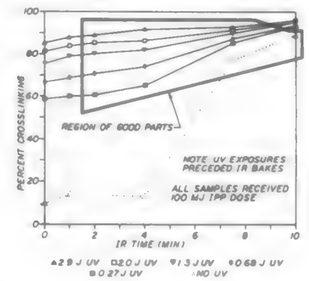
a plating process for plating the surface of the inner walls of the hole forming a conductive layer electrically connecting the conductive layers (plated through hole).

5,352,326

PROCESS FOR MANUFACTURING METALIZED CERAMIC SUBSTRATES

Douglas Cywar, Endicott; Don H. Hess, Endwell, both of N.Y., and Christian Lalonde, Brossard, Canada, assignors to International Business Machines Corporation, Endicott, N.Y.

Filed May 28, 1993, Ser. No. 69,304
Int. Cl.[5] B44C *1/22;* C23F *1/00;* B29C *37/00*
U.S. Cl. 156—659.1 19 Claims



1. A method for selectively etching metal from a substrate comprising of steps of:

A. providing an acrylic negative photoresist;

B. applying the photoresist to the substrate;

C. then imaging the photoresist;

D. then developing the photoresist;

E. then exposing the photoresist to actinic radiation comprising wavelengths selected from the group consisting of: about 200 to 310 nm; or about 2.4 to about 8 microns;

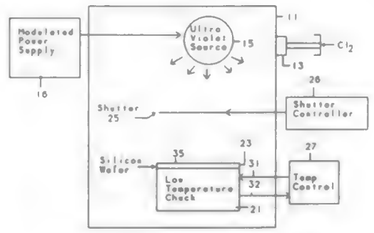
F. then contacting the photoresist coated substrate with an etchant so as to remove portions of the metal not covered by the photoresist.

5,352,327

REDUCED TEMPERATURE SUPPRESSION OF VOLATILIZATION OF PHOTOEXCITED HALOGEN REACTION PRODUCTS FROM SURFACE OF SILICON WAFER

Robert Witowski, Austin, Tex., assignor to Harris Corporation, Melbourne, Fla.

Filed Jul. 10, 1992, Ser. No. 911,902
Int. Cl.[5] B44C *1/22;* H01L *21/302*
U.S. Cl. 156—646 20 Claims



1. A process for removing contaminant material from a surface of a substrate without causing said surface of said substrate to become roughened comprising the steps of:

(a) placing said substrate in a controlled ambient chamber;

(b) introducing a halogen gas into said chamber;

(c) while maintaining said substrate at a temperature below a temperature at which halogen-substrate compounds on the surface of said substrate volatilize off said surface of said substrate, photoexciting said halogen gas to produce a halogen reactant that reacts with contaminant material on the surface of said substrate to produce halogen-contaminant compounds; and

(d) removing halogen-substrate compounds that have been formed in step (c) from the surface of said substrate.

5,352,328

CONTROL OF TIME-DEPENDENT HAZE IN THE MANUFACTURE OF INTEGRATED CIRCUITS

Yaw S. Obeng, and Edward J. Vajda, both of Allentown, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 15, 1992, Ser. No. 991,064
Int. Cl.[5] H01L *21/00, 21/02;* B44C *1/22;* C03C *15/00*
U.S. Cl. 156—646 10 Claims

1. A method of manufacturing an integrated circuit comprising the steps of:

a) providing a silicon wafer having an unpatterned major surface,

b) processing the wafer in a manner which tends to produce time-dependent haze on the major surface, said processing including cleaning the surface with a mixture of sulfuric acid and hydrogen peroxide,

c) treating the surface with a chemical selected from the group consisting of hot water and isopropyl alcohol, and

d) storing the wafer in an inert atmosphere.

5,352,329

REMOVING PORTIONS OF IMAGING MEMBER LAYERS FROM A SUBSTRATE

William G. Herbert, Williamson; Gary J. Maier; Ernest F. Matyi, both of Webster, and Monroe J. Hordon, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 9, 1993, Ser. No. 163,777
Int. Cl.[5] B44C *1/22*
U.S. Cl. 156—646 13 Claims

1. A method for removing a coating material from the edge of a photoreceptor substrate bearing the coating material, comprising:

(a) covering the substrate so that the coating material to be removed is exposed;

(b) contacting solution comprising acetic acid to the exposed coating material until the coating material is removed from the substrate; and

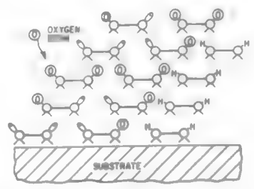
(c) rinsing the substrate with acetic acid and then water.

5,352,330

PROCESS FOR PRODUCING NANOMETER-SIZE STRUCTURES ON SURFACES USING ELECTRON BEAM INDUCED CHEMISTRY THROUGH ELECTRON STIMULATED DESORPTION

Robert M. Wallace, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 30, 1992, Ser. No. 954,626
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—643 20 Claims



1. A method of forming a structure comprising the steps of:

(a) providing a surface passivated with a passivating species;

(b) providing a controllable, energy tunable electron beam

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having a voltage of from 100 to 2000 eV and a current of 5 nanoamperes;

(c) passing said controllable electron beam over selected portions of said passivated surface in a controlled manner to desorb said passivating species at said selected portions of said passivated surface to provide regions of reactivity at said selected portions of said passivated surface; and

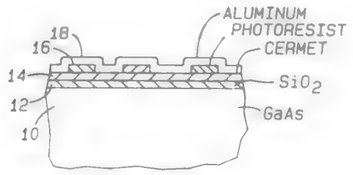
(d) reacting a species with said surface at said regions of reactivity to provide said desired structure.

5,352,331

CERMET ETCH TECHNIQUE FOR INTEGRATED CIRCUITS

Alan S. Templin, Hermosa Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 7, 1993, Ser. No. 163,260
Int. Cl.[5] B05D *5/00*
U.S. Cl. 156—656 **8 Claims**



1. A process of manufacturing thin film cermet resistance patterns on a substrate comprising the steps of:

depositing a cermet layer on said substrate,

depositing a photoresist layer on said cermet layer so as to expose selected areas of said cermet layer,

depositing an aluminum layer on said photoresist layer and on said selected areas of said cermet layer, and

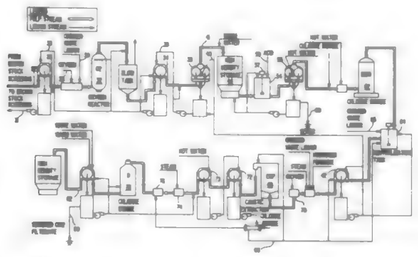
etching away at least some of said aluminum layer and the cermet at said selected areas using an etchant comprising an acid solution.

5,352,332

PROCESS FOR RECYCLING BLEACH PLANT FILTRATE

Gerald E. Maples, 4550 Dhadesview Dr., Pensacola, Fla. 32504, and Raman Ambady, 3506 Bayswater Dr., Pensacola, Fla. 32514

Continuation-in-part of Ser. No. 873,673, Apr. 24, 1992, abandoned, which is a continuation of Ser. No. 646,179, Jan. 28, 1991, abandoned. This application Sep. 14, 1992, Ser. No. 944,327
Int. Cl.[5] D21C *11/04, 11/10*
U.S. Cl. 162—30.1 **19 Claims**



1. A process for bleaching Kraft wood pulp comprising subjecting the wood pulp after brown stock washing to the following steps conducted in sequence:

oxygen delignification in the presence of oxygen and oxidized white liquor followed by one to two stages of post oxygen washing;

subjecting the oxygen delignified pulp to an acid treatment at a pH of about 2 to 4 to substantially remove non-process metals and washing the treated pulp with fresh water and discharging at least a portion of the filtrate from said washing to the sewer;

bleaching in a first chlorine dioxide stage where consistency is maintained from about 9% to 14% and pH is about 2 to 4;

partially neutralizing pulp, from said first chlorine dioxide bleaching stage, to a pH of 5 to 7 in a neutralization tank with filtrate from a subsequent oxidative extraction stage and with oxidized white liquor;

thickening pulp on a decker after which oxidized white liquor is added to raise the pH to about 10 to 13 and oxygen and hydrogen peroxide bleaching chemicals are added;

subjecting the thickened pulp and bleaching chemicals to a hot extraction stage;

thoroughly washing pulp from said extraction stage with fresh water on two sequential washing stages to minimize the wash volume;

subjecting said washed pulp to one or two final chlorine dioxide bleaching stages and thoroughly washing pulp after each stage with either fresh water or paper machine white water or a combination of both;

discharging to sewer the filtrate from said washing, after each said final chlorine dioxide stage;

using filtrate from said two stage sequential washing stages, after said extraction stage, to dilute and neutralize pulp from said first chlorine dioxide stage of bleaching in said neutralization tank such that filtrate from the extraction stage and the first chlorine dioxide stage are combined with pulp;

separating the combined filtrates from the pulp on said decker and at least a portion of the filtrate is recycled to the last washer of the post oxygen washing stage as wash water;

recovering filtrate from said last washer of the post oxygen washing stage in the cooking liquor recovery process by recycling countercurrently through brownstock washing constituting a weak black liquor which is evaporated to produce a strong black liquor;

combusting said strong black liquor in a recovery boiler to produce a smelt and a flue gas such that chloride from the recovered bleach plant filtrate is preferentially enriched in the flue gas from combustion;

collecting particles containing chloride and sulfate in said flue gas as ash in an electrostatic precipitator;

removing chloride and potassium from said ash by either leaching with water or by evaporation crystallization from a water solution to produce a solid stream of sodium sulfate and a salt solution rich in chloride and potassium;

discharging the salt solution to the sewer or recovering it for its chlorine value;

mixing said solid sodium sulfate with said strong black liquor prior to combustion in said recovery boiler; and

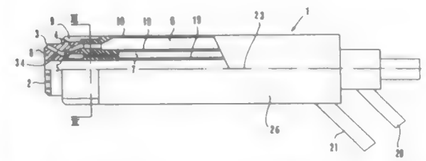
dissolving said recovery boiler smelt in water to form green liquor and converting it to pulping liquor in the causticizing process.

5,352,333

PROCESS FOR THE PARTIAL COMBUSTION OF CELLULOSE SPENT LIQUOR USING TWIN-FLUID NOZZLE BURNER

Lars Stigsson, Bjarred, Sweden, assignor to Chemrec Aktiebolag, Sweden

PCT No. PCT/SE91/00346, § 371 Date Nov. 25, 1992, § 102(e) Date Nov. 25, 1992, PCT Pub. No. WO91/19041, PCT Pub. Date Dec. 12, 1991
PCT Filed May 16, 1991, Ser. No. 952,875
Claims priority, application Sweden, May 31, 1990, 9001959?
Int. Cl.[5] D21C *11/12*
U.S. Cl. 162—30.1 **17 Claims**



1. Process for partial combustion of cellulose spent liquors in a reactor equipped with a burner comprising a liquor lance and an atomizing nozzle having a downstream front side, said process comprising

(a) feeding, separately of each other, an oxygen containing gas and spent liquor through said lance to said atomizing nozzle,

(b) atomizing the spent liquor by contacting it with said oxygen containing gas for forming a spray of atomized spent liquor emanating in a divergent manner from the nozzle to sustain a flame in the reactor,

wherein said oxygen containing gas comprises more than 80% of the oxygen required for the partial combustion, said oxygen required for partial combustion being supplied to the reactor at a stoichiometric ratio of from 0.3 to 0.6 relative to the oxygen needed for complete combustion of the spent liquor, and

wherein the feeding of oxygen containing gas and the liquor to the nozzle is through separate spaces, each space being defined by two concentric cylindrical walls, the inner wall which defines the space for the liquor also forming the outer wall defining the space for the oxygen containing gas.

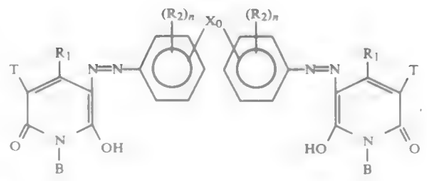
5,352,334

THE USE OF METAL-FREE SULFO GROUP FREE BASIC DISAZO COMPOUNDS CONTAINING TWO IDENTICAL 6-HYDROXYPYRID-2-ONE COUPLING COMPONENT RADICALS FOR PRODUCING COLORED PAPER

Helmut A. Moser, Oberwil, Switzerland, and Roland Wald, Huningue, France, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 709,849, Jun. 3, 1991, abandoned, which is a division of Ser. No. 75,368, Jul. 20, 1987, abandoned, which is a continuation-in-part of Ser. No. 845,097, Mar. 27, 1986, abandoned. This application Nov. 25, 1992, Ser. No. 981,740
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1985, 3511733
Int. Cl.[5] D21H *21/28, 17/07;* **C09B** *44/08, 44/12*
U.S. Cl. 162—162 **20 Claims**

1. In a process for producing colored paper comprising the steps of incorporating a dye into paper pulp and producing paper from said paper pulp or the step of applying a dye to paper sheet, the improvement wherein said dye is a compound of the formula



or an acid addition salt thereof,

wherein each B is $-A_1-NR_7R_8$ or $-A_1-{}^{\oplus}NR_7R_8R_9\,A^{\ominus}$, to two B's being identical,

wherein each A_1 is linear or branched C_{2-8}alkylene,

each R_7 is C_{1-6}alkyl; C_{2-6}alkyl monosubstituted by halo, hydroxy or cyano; phenyl(C_{1-3}alkyl); phenyl(C_{1-3}alkyl) the phenyl ring of which is substituted by 1 to 3 substituents selected from halo, C_{1-4}alkyl and C_{1-4}alkoxy; C_{5-6}cycloalkyl or C_{5-6}cycloalkyl substituted by 1 to 3 C_{1-4}alkyl groups,

each R_8 is C_{1-6}alkyl; C_{2-6}alkyl monosubstituted by halo, hydroxy or cyano; phenyl(C_{1-3}alkyl); phenyl(C_{1-3}alkyl) the phenyl ring of which is substituted by 1 to 3 substituents selected from halo, C_{1-4}alkyl and C_{1-4}alkoxy; C_{5-6}cycloalkyl or C_{5-6}cycloalkyl substituted by 1 to 3 C_{1-4}alkyl groups, and

each R_9 is C_{1-4}alkyl; phenyl(C_{1-4}alkyl); 2-oxopropyl; carbamoylmethyl or 3-chloro-2-hydroxypropyl, or

each $-NR_7R_8$ is an unsubstituted saturated ring containing 1 to 3 hetero atoms, a saturated ring containing 1 to 3 hetero atoms and substituted by 1 to 3 C_{1-4}alkyl groups or N'-aminoethylpiperazino, or

each $-{}^{\oplus}NR_7R_8R_9$ is pyridinium, pyridinium substituted by 1 to 3 C_{1-4}alkyl groups, an unsubstituted saturated ring containing 1 to 3 hetero atoms, a saturated ring containing 1 to 3 hetero atoms and substituted by 1 to 3 C_{1-4}alkyl groups or N—C_{1-2}alkyl-N'-aminoethylpiperazinium,

each R_1 is hydrogen, C_{1-4}alkyl, C_{5-6}cycloalkyl, phenyl, benzyl or phenylethyl, the two R_1's being identical,

each R_2 is independently halo, nitro, carboxy, C_{1-4}alkyl or C_{1-4}alkoxy,

each T is hydrogen or

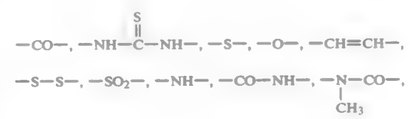


the two T's being identical,

wherein each R_3 is independently hydrogen, C_{1-4}alkyl, $-N(R_5)_2$ or $-CON(R_5)_2$,

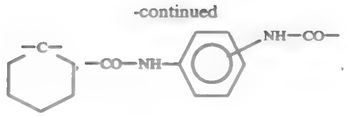
wherein each R_5 is independently hydrogen or C_{1-4}alkyl, or $-N(R_5)_2$ is an unsubstituted saturated ring containing 1 to 3 hetero atoms or a saturated ring containing 1 to 3 hetero atoms and substituted by 1 to 3 C_{1-4}alkyl groups,

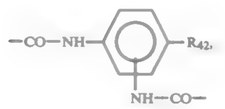
X_o is a direct bond, linear or branched C_{1-4}alkylene,

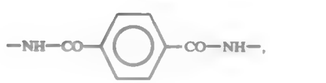


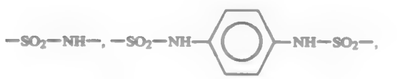
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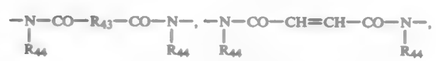
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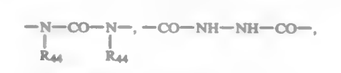


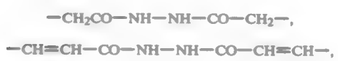


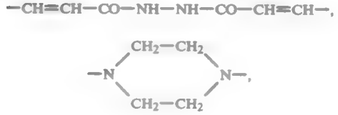


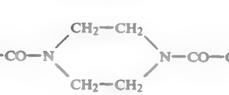


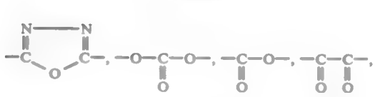




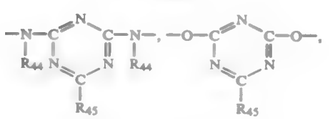


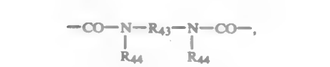


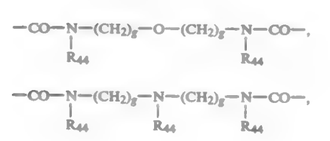




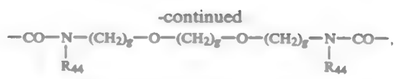


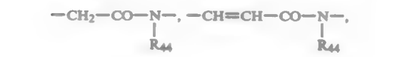


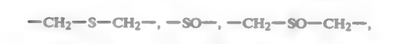




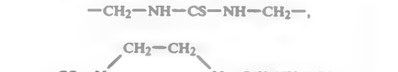
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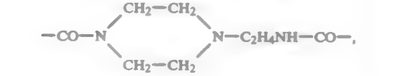


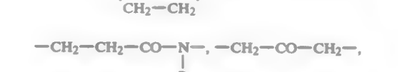


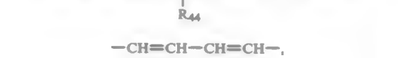




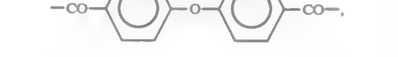


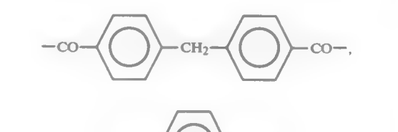






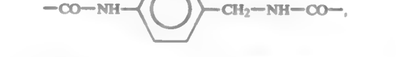






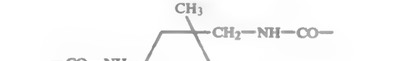




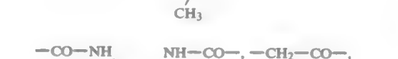


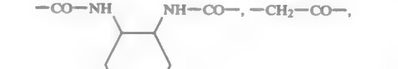


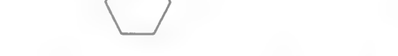






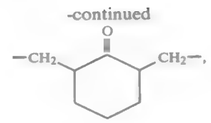


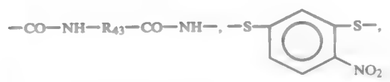


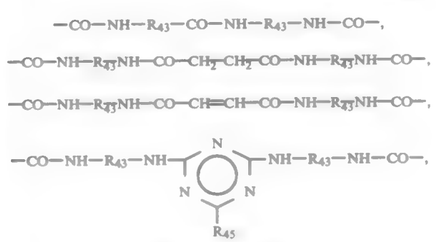


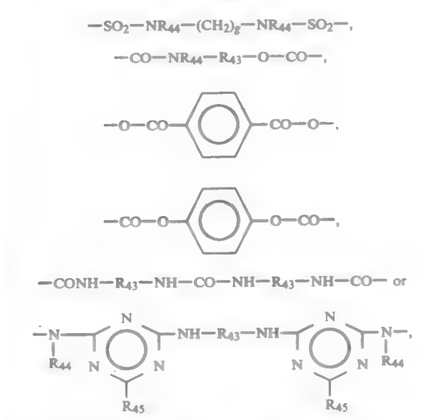


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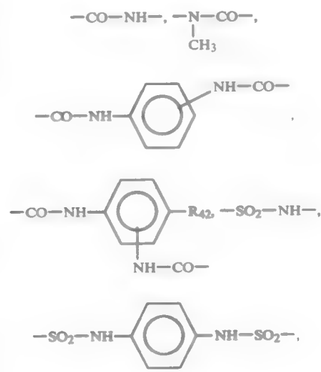




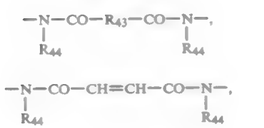


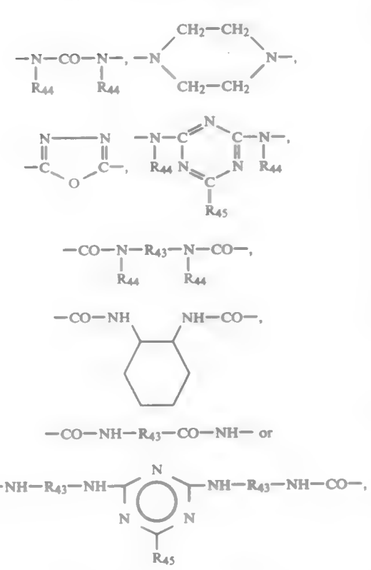


with the proviso that when at least one n is 1 or 2, X_o is a direct bond, linear or branched C_{1-4}alkylene,

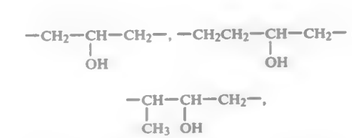


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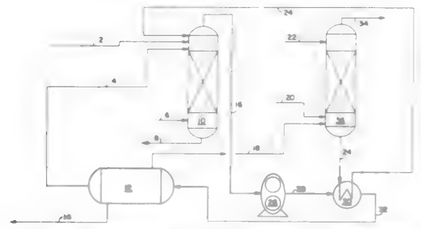
wherein R_{42} is halo, C_{1-4}alkyl or C_{1-4}alkoxy,
each R_{43} is independently linear or branched C_{1-4}alkylene,



each R_{44} is independently hydrogen or C_{1-4}alkyl,
each R_{45} is independently halo, hydroxy, methoxy, ethoxy, amino, 2-hydroxyethylamino, N,N-di-(2-hydroxyethyl)amino, —NH—$(CH_2)_m$—$N(C_2H_5)_2$, N-methyl-N-phenylamino, N-cyclohexyl-N-methylamino, piperidino or N'-aminoethylpiperazino, wherein m is 2 or 3, and
each g is independently 1, 2, 3 or 4, and each n is independently 0, 1 or 2,
wherein each $A^{\ominus}$ is a non-chromophoric anion, and
each halo is fluoro, chloro, bromo or iodo.

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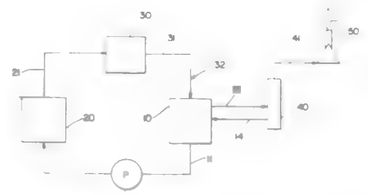
5,352,335
GROUNDWATER TREATMENT PROCESS
Phillip R. Beaver, Baton Rouge, La., assignor to Albemarle Corporation, Richmond, Va.
Filed Nov. 9, 1992, Ser. No. 973,972
Int. Cl.[5] B01D *3/10, 3/34;* C02F *1/04*
U.S. Cl. 203—11 19 Claims



1. A carbon adsorption-free process for extracting halogenated hydrocarbons from a dilute, halogenated hydrocaron-containing aqueous fluid, said process comprising:
(a) introducing dilute, halogenated hydrocarbon-containing aqueous fluid into an upper portion of an upright enclosed chamber;
(b) introducing a stripping medium into a lower portion of the chamber whereby the stripping medium intimately contacts the dilute, halogenated hydrocarbon-containing aqueous fluid in a countercurrent manner;
(c) removing halogenated hydrocarbon-depleted aqueous fluid from the lower portion of the chamber;
(d) removing a halogenated hydrocarbon rich vapor stream from the upper portion of the chamber;
(e) condensing at least a portion of the halogenated hydrocarbon-rich vapor stream thereby forming a halogenated hydrocarbon-rich liquid portion and a halogenated hydrocarbon-containing non-condensed portion;
(f) contacting at least a portion of the non-condensed portion with an aqueous absorbing fluid whereby the amount of halogenated hydrocarbons in the contacted non-condensed portion is reduced by at least about 85 wt. % based on the initial weight of halogenated hydrocarbons in the non-condensed portion; and
(g) collecting contacted absorbing fluid from step (f) and introducing collected fluid into the upright enclosed chamber.

12. A carbon adsorption-free continuous process for extracting halogenated hydrocarbons from a dilute, halogenated hydrocarbon-containing aqueous fluid, said process comprising:
(a) continuously introducing dilute, halogenated hydrocarbon-containing aqueous fluid into an upper portion of an upright, elongated, enclosed chamber containing contact packing material;
(b) continously introducing steam into a lower portion of the enclosed chamber below the contact packing whereby the steam contacts the dilute, halogenated hydrocarbon-containing aqueous fluid in a countercurrent manner within the enclosed chamber;
(c) continously removing a halogenated hydrocarbon-depleted aqueous fluid from the lower portion of the enclosed chamber;
(d) continously removing a vapor stream containing halogenated hydrocarbon and steam from the upper portion of the enclosed chamber;
(e) continuously condensing at least a portion of the halogenated hydrocarbon and steam in the vapor steam from the upper portion of the enclosed chamber thereby forming a halogenated hydrocarbon rich liquid portion and a non-condensed portion;
(f) continously contacting at least a portion of the non-condensed portion with an aqueous absorbing fluid whereby the amount of halogenated hydrocarbon is contacted non-condensed portion is reduced by at least about 85wt. % based on the initial weight of halogenated hydrocarbons in the non-condensed portion; and
(g) collecting contacted absorbing fluid from step (f) and introducing collected fluid into the upright enclosed chamber.

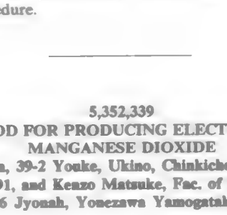
5,352,336
REMOVAL OF LOW-BOILING FRACTIONS FROM HIGH TEMPERATURE HEAT TRANSFER SYSTEMS
Walter F. Seifert; Gary R. Buske, and John B. Cuthbert, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Jun. 17, 1993, Ser. No. 78,387
The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.
Int. Cl.[5] B01D *3/34*
U.S. Cl. 203—49 7 Claims



1. A process for removing low-boiling constituents from an organic heat transfer fluid, the low-boiling constituents having a boiling point below that of the organic heat transfer fluid, comprising the steps of:
(A) introducing a stripping gas, in an amount sufficient to vaporize at least a portion of the low-boiling constituents, into a turbulent flow of the organic heat transfer fluid;
(B) separating the stripping gas containing low-boiling constituents from the organic heat transfer fluid;
(C) removing organic heat transfer fluid from the stripping gas containing low-boiling constituents of Step (B) and returning the organic heat transfer fluid to the organic heat transfer fluid of Step (A); and
(D) combusting the stripping gas containing low-boiling constituents from Step C.

5,352,337
METHOD FOR REDUCING NITROGEN OXIDES
Tetsuro Kobayashi; Kazuo Kawahara; Katsushi Abe; Kiyoshi Yamazaki; Tomoko Iijima; Koji Yokota; Haruo Doi, and Hiroyasu Iwahara, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan
Filed Apr. 14, 1993, Ser. No. 45,692
Claims priority, application Japan, Apr. 14, 1992, 4-121311; Mar. 24, 1993, 5-90772; Mar. 24, 1993, 5-90773
Int. Cl.[5] C25B *1/00*
U.S. Cl. 204—59 R 27 Claims

1. A method for reducing nitrogen oxides in a gas to be treated which comprises:
applying a direct current (DC) voltage between
an anodic portion comprising an oxidizing catalyst provided on one surface of a proton conductive solid electrolyte which separates the flow path of the gas to be treated into two parts, to face one flow path, and
a cathodic portion comprising a reducing catalyst provided on the other surface of said proton conductive solid electrolyte to face the other flow path, said reducing catalyst comprising at least one member selected from the group consisting of oxides of elements of Group 5A, Group 6A, and Group 7A of the periodic table, palladium, palladium alloys, transition elements carried on alumina, cerium oxide, and $La_{1-x}Sr_xCo_{1-y}Fe_yO_3$ where, $0 \leq x \leq 1$, $0 \leq y \leq 1$),
to electrolytically oxidize water vapor in said gas on said anodic portion in said one flow path; and



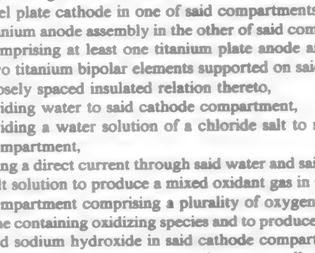
transporting protons obtained as a result of said oxidation to said cathodic portion through said solid electrolyte based on the potential gradient, thereby reducing nitrogen oxides within the other flow path by using the reducing power of hydrogen brought to said cathodic portion.

5,352,338
CATHODE PROTECTION
Drago D. Juric, Bulleen Victoria; Kevin D. Watson, Salisbury East South Australia, and Raymond W. Shaw, North Balwyn Victoria, all of Australia, assignors to Comalco Aluminium Limited, Melbourne, Australia
Continuation of Ser. No. 896,902, Jun. 11, 1992, abandoned, which is a continuation of Ser. No. 481,844, Feb. 20, 1990, abandoned. This application Mar. 9, 1993, Ser. No. 28,188
Claims priority, application Australia, Feb. 20, 1989, PJ2827
Int. Cl.[5] C25B *3/06*
U.S. Cl. 204—67 27 Claims

1. A method of starting up an aluminum smelting cell having a cathode with an exposed cathode surface during start-up procedure of the cell, comprising forming on said cathode surface during the start-up procedure a liquid barrier substantially impervious to oxygen at temperatures up to about 1000° C. to protect the exposed cathode surface until the cell starts producing aluminum, said barrier comprising a first layer substantially impervious to oxygen and being liquid at temperature in the range of about 400° C. to about 700° C. and a second layer impervious to oxygen and substantially stable and being liquid at temperatures up to about 1000° C. during the start-up procedure.

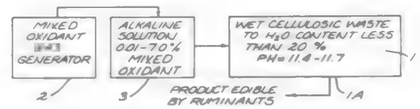
5,352,339
METHOD FOR PRODUCING ELECTROLYTIC MANGANESE DIOXIDE
Akiya Kozawa, 39-2 Youke, Ukino, Chinkicho Ichinomiya-shi Aichiken 491, and Kenzo Matsuke, Fac. of Engr. Yamagato Univ. 4-3-16 Jyonah, Yonezawa Yamogataken 992, both of Japan
Filed May 4, 1993, Ser. No. 59,418
Int. Cl.[5] C25B *1/00*
U.S. Cl. 204—96 14 Claims

1. Method for producing electrolytic manganese dioxide for an electrochemical cell by electrolyzing an electrolyte which contains carbon black or acetylene black particles in which the



surface is at least partially sulfonized and assembling the electrolytic manganese dioxide in an electrochemical cell.

5,352,340
APPARATUS AND METHOD FOR CONVERSION OF CELLULOSIC AGRICULTURAL WASTES
Charles T. Sweeney, 3223 S. Loop 289, Lubbock, Tex. 79423
Continuation-in-part of Ser. No. 593,028, Oct. 5, 1990, Pat. No. 5,118,397. This application Dec. 16, 1991, Ser. No. 808,223
The portion of the term of this patent subsequent to Jul. 16, 2008, has been disclaimed.
Int. Cl.[5] A23K *1/00*
U.S. Cl. 204—103 16 Claims



1. A method for treating cellulosic wastes to render them edible by ruminants, which comprises
providing a mixed oxidant gas generator comprising a hollow container having a wall dividing the same into two compartments and including an ion-permeable membrane permitting flow of cations therethrough,
a steel plate cathode in one of said compartments,
a titanium anode assembly in the other of said compartments comprising at least one titanium plate anode and at least two titanium bipolar elements supported on said anode in closely spaced insulated relation thereto,
providing water to said cathode compartment,
providing a water solution of a chloride salt to said anode compartment,
passing a direct current through said water and said chloride salt solution to produce a mixed oxidant gas in said anode compartment comprising a plurality of oxygen and chlorine containing oxidizing species and to produce hydrogen and sodium hydroxide in said cathode compartment,
collecting said mixed oxidant gas in aqueous alkali solution,
adjusting the pH of said solution to about 7.5–8.3 and the normality of oxidant species in solution to 0.01–0.04,
providing a quantity of cellulosic wastes, and
treating said cellulosic wastes with said mixed oxidant solution to convert said wastes into a form edible by ruminants.

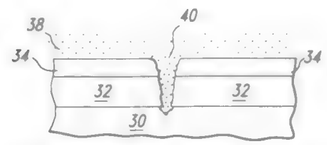
VOL 1167 ISS 1 OCT 4 1994 UMI

5,352,341

REDUCING LEAKAGE CURRENT IN SILICON-ON-INSULATOR SUBSTRATES

Keith A. Joyner, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 24, 1993, Ser. No. 82,079
Int. Cl.[5] C25F *3/12*
U.S. Cl. 204—129.1 **11 Claims**



1. A method of etching silicon from one or more silicon leakage pipes in a SIMOX wafer, said wafer comprising a silicon substrate, a buffed insulator layer overlaying said substrate, and a surface silicon layer overlaying said buffed insulator, wherein said leakage pipes connect said substrate and said surface layer through said buried insulator, said method comprising:

a. exposing said surface layer to an electrolytic solution, wherein said solution does not substantially etch said surface layer without a predetermined potential difference between said wafer and said solution, but does etch said surface layer if said potential difference does exist between said wafer and said solution; and

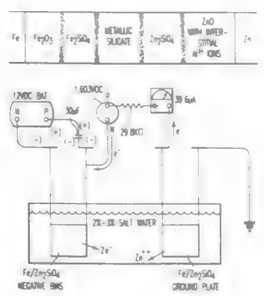
b. creating said potential difference between said wafer and said solution, thereby causing current to flow through said leakage pipes, thereby causing said solution to etch a portion of said surface silicon that is essentially above said leakage pipes, and to substantially etch said silicon in said leakage pipes, whereby etching the silicon from the leakage pipes substantially reduces the leakage current paths between the substrate and the surface layer.

5,352,342

METHOD AND APPARATUS FOR PREVENTING CORROSION OF METAL STRUCTURES

William J. Riffe, 510 Fisher St., Morehead City, N.C. 28557, assignor to William J. Riffe and Otho L. Graham, both of Morehead City, N.C.

Filed Mar. 19, 1993, Ser. No. 34,783
Int. Cl.[5] C23F *13/00*
U.S. Cl. 204—147 **23 Claims**



1. A system for preventing corrosion of a surface of a metal structure in contact with a corrosive environment, said system comprising:

(a) a conductive zinc silicate coating in conductive contact with at least part of said surface, wherein said conductive zinc silicate coating forms an interfacial layer between said surface and said corrosive environment; and

(b) means for imparting a net negative electrostatic bias to said metal structure, said means comprising a power supply means having a negative terminal directly coupled to said metal structure and a positive terminal coupled to said metal structure, at a position remote from said negative terminal, by way of a capacitor;

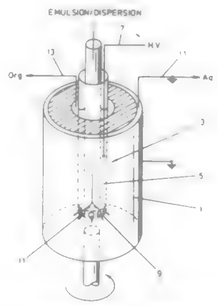
wherein said surface with said conductive zinc silicate coating has an active electronic barrier in a metal-oxide-p-semiconductory configuration which inhibits a net transfer of electrons from said surface to oxidizing species.

5,352,343

SEPARATION OF THE COMPONENTS OF LIQUID DISPERSIONS

Philip J. Bailes, Baildon, and Martin Watson, Preston, both of United Kingdom, assignors to The University of Bradford, Baildon, United Kingdom

Filed Apr. 5, 1993, Ser. No. 53,761
Claims priority, application United Kingdom, Oct. 6, 9021756
Int. Cl.[5] C02F *1/463*
U.S. Cl. 204—149 **14 Claims**



1. A method of separating the components of a dispersion or emulsion of at least one electrically-conducting liquid in at least one liquid of lower electrical conductivity, comprising the steps of:

collecting the emulsion or dispersion in a vessel;

applying to the emulsion or dispersion within the vessel an electric field via at least on pair of spaced electrodes; and

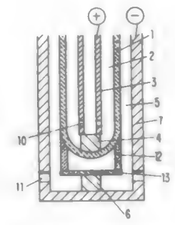
rotating the emulsion or dispersion to apply simultaneously thereto a centrifugal force aligned with the electric field, so as to establish within the electric field a bulk interface between the dispersion or emulsion and one separated component thereof, wherein at least one of each pair of electrodes is separated from the dispersion or emulsion by a layer of electrically insulating material and the voltage across the electrodes is pulsed at a frequency of from 1.5 to 50 Hz.

5,352,344

METHOD AND APPARATUS FOR MEASURING THE OXYGEN POTENTIAL OF A HEAT-TREATMENT FURNANCE

Werner Göhring, Kleve; Max Roggatz, Goch-Nierswalde, and Bernd Edenhofer, Kleve, all of Fed. Rep. of Germany, assignors to Ipsen Industries International Gesellschaft mit beschränkter Haftung, Kleve, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 664,416, Feb. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 418,020, Oct. 6, 1989, abandoned. This application Dec. 8, 1992, Ser. No. [illegible]
Claims priority, application Fed. Rep. of Germany, Oct. 6, [illegible]
Int. Cl.[5] G01N *27/417*
U.S. Cl. 204—153.18 **15 Claims**



14. A method for measuring the oxygen potential of a furnace atmosphere relative to a reference medium of a known oxygen potential, especially to determine the carbon-transfer properties of a furnace atmosphere containing the gases H_2, CO, and CH_4, said method comprising the steps of:

exposing a first surface of an oxygen ion conducting solid measuring electrolyte to said furnace atmosphere and a second surface to said reference medium;

detachably connecting an oxygen ion conducting compensation electrolyte means that comprises a solid body between a first contact electrode and a portion of said first surface for avoiding oxygen potential deviations of said measuring electrolyte at said first surface in said furnace atmosphere by eliminating contact between said first surface of said measuring electrolyte and said first contact electrode; and

connecting a second contact electrode to a portion of said second surface in said reference medium.

5,352,345

ION EXCHANGE RESIN REGENERANT WASTE RECOVERY AND RECYCLING VIA BIPOLAR MEMBRANES

Carolyn Byszewski, Morris; John C. McArdle, and Krishnamurthy N. Mani, both of Somerset, all of N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 696,686, May 7, 1991, abandoned. This application Sep. 18, 1992, Ser. No. 946,728
Int. Cl.[5] B01D *61/44*; C02F *1/469*
U.S. Cl. 204—182.4 **15 Claims**

6. A method comprising the steps of:

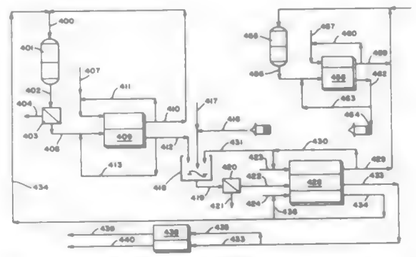
providing a three compartment electrodialytic water splitter having an anode and a cathode, and between said anode and cathode at least one anion membrane and at least one cation membrane, disposed between at least two bipolar membranes, each bipolar membrane having a cation layer and an anion layer, wherein said anion layers of said bipolar membranes face said anode, and said anion membrane and said cation membrane are arranged such that there is an acid compartment formed between said cation layer of the first bipolar membrane, and said anion membrane, a salt compartment formed between said anion membrane and said cation membrane and a base compartment formed between said cation membrane and said anion layer of the second bipolar membrane;

pretreating an exhausted regenerant solution chosen from the group consisting of anionic and cationic regenerant solutions to remove at least one impurity chosen from the group consisting of insoluble contaminants, multivalent metals, and dissolved organics;

feeding said pretreated regenerant solution into said salt compartment;

feeding a first aqueous solution into said base compartment;

feeding a second aqueous solution into said acid compartment;



applying sufficient current across said electrodialytic water splitter to cause the migration of anions into said electrodialytic acid compartment, the migration of cations into said electrodialytic base compartment, and the splitting of water into H^+ and OH^- at the bipolar membranes;

withdrawing an acid product stream from said acid compartment;

withdrawing a base product stream from said base compartment;

withdrawing an electrodialytically depleted regenerant solution from said salt compartment; and

regenerating an ion exchange column with a product stream chosen from the group consisting of said base product stream, and said acid product stream.

5,352,346

CURRENT GENERATION AND CONTROL SYSTEMS FOR ELECTROLYTIC VAT

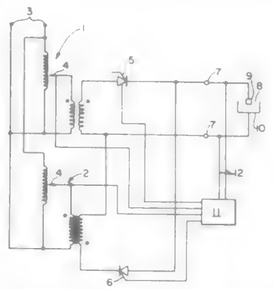
Dionisio Rodriguez, Pamplona, Spain, assignor to Novamax Technologies Holdings, Inc., Ontario, Canada

PCT No. PCT/ES91/00089, § 371 Date Feb. 11, 1993, § 102(e) Date Feb. 11, 1993, PCT Pub. No. WO92/18666, PCT Pub. Date Oct. 29, 1992
PCT Filed Dec. 20, 1991, Ser. No. 952,547
Claims priority, application Spain, Apr. 11, 1991, P 9100924
Int. Cl.[5] C25B *9/04, 15/02*; C25D *21/12*
U.S. Cl. 204—228 **2 Claims**

1. A current generation and control system for electrolytic processes in an electrolytic vat having a load and a counterload therein, the system comprising two autotransformers each having a primary part and a secondary part and being shunted to the same phase; each autotransformer including an automatically driven regulator coupled to said primary part thereof for automatically controlling the number of coils being operative at all times, said electrolytic vat having two inputs of which one input is coupled to said load and another input is coupled to said counterload, the secondary part of one of said autotransformers being coupled to said one input and the secondary part of another of said autotransformers being coupled to said another input; two half-wave rectifiers each coupled between the respective input of the electrolytic vat and the secondary part of the respective autotransformer such that said rectifiers act on opposite half-waves so that while one rectifier suppresses a negative half-wave from a voltage generated by one autotransformer another rectifier suppresses a positive half-

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wave of the voltage generated by another autotransformer to yield a sine wave voltage with symmetric or asymmetric positive and negative half-waves at said inputs; and a microprocessor coupled to said regulators so as to control an output voltage of said autotransformers, and to said rectifiers so as to control said positive and negative half-waves separately, each rectifier including a thyristor.

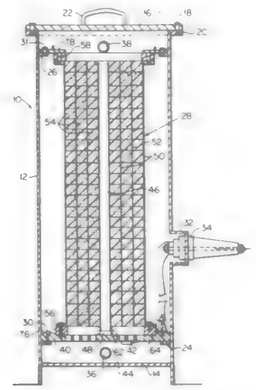


5,352,347

ELECTROSTATIC FILTER FOR NON-CONDUCTIVE LIQUIDS

Ralph Reichert, Belmont, Calif., assignor to Adfiltech Corporation, Alexandria, Va.

Filed Dec. 4, 1992, Ser. No. 985,817
Int. Cl.[5] B01D *35/06*; B03C *5/02*
U.S. Cl. 204—302 3 Claims



1. An electrostatic filter for non-conducting liquids comprising:

a cylindrical housing having an axial direction and composed of electrically conductive material having a fluid inlet at a first end portion thereof and a fluid outlet at a second end portion thereof;

an orifice plate having a plurality of apertures therein and located at the inlet end of said housing;

an easily removable filter cartridge disposed in said cylindrical housing and positioned on said orifice plate, said filter cartridge extending in the same axial direction as said cylindrical housing between said orifice plate and said outlet, said filter cartridge including a plurality of concentric spaced electrically conductive tubes adapted to function as electrodes and extending in the same axial direction as said cylindrical housing, said orifice plate being adapted to direct flow in the axial direction between the spaced tubes;

filter means disposed in the space between said concentric conductive tubes;

means for directing the fluid flow exclusively parallel to the electrodes and transverse to the electrostatic field present between said electrodes during operation of the filter such that positive charged particulate migrate to a negative electrode and negative charged particulate migrate to a positive electrode with no discrimination as to the type or size of particulate;

a hot line positive electrical connector; and

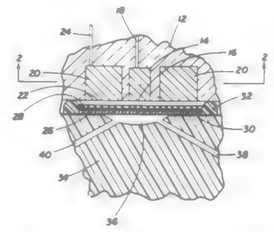
electrically conductive members disposed on said orifice plate for electrically connecting said cylindrical housing and said positive electrical connector to said concentric spaced electrically conductive tubes in such as manner as to provide an opposite electric charge to each adjacent concentric tube.

5,352,348

METHOD OF USING ENZYME ELECTRODE

Chung Chang Young, Weston, and Handani Winarta, Waltham, both of Mass., assignors to Nova Biomedical Corporation, Waltham, Mass.

Continuation of Ser. No. 628,941, Dec. 14, 1990, abandoned, which is a continuation of Ser. No. 492,316, Mar. 5, 1990, abandoned, which is a continuation of Ser. No. 403,992, Sep. 6, 1989, abandoned, which is a continuation of Ser. No. 152,836, Feb. 5, 1988, abandoned, which is a continuation-in-part of Ser. No. 36,495, Apr. 9, 1987, Pat. No. 4,759,828. This application Nov. 3, 1992, Ser. No. 970,944
Int. Cl.[5] G01N *27/327*, *27/404*
U.S. Cl. 204—153.12 8 Claims



1. A method of assaying the concentration of a substance in an undiluted whole blood or undiluted plasma sample, which includes catalase, comprising

providing a polarographic cell that includes an electrode assembly comprising a reference electrode and a hydrogen peroxide sensor electrode having a laminated membrane covering a sample-contacting face of said sensor electrode, said laminated membrane comprising an outer membrane permeable to said substance and oxygen while preventing the passage of proteins and red blood cells, an inner membrane permeable to hydrogen peroxide and located adjacent the face of said sensor electrode, and an enzyme layer between said inner membrane and said outer membrane, said enzyme layer comprising an enzyme that can oxidize said substance to generate hydrogen peroxide, said outer membrane having pores that allow passage of said substance and oxygen from said undiluted sample to said enzyme layer, the thickness of said outer membrane and the size of said pores being selected so that said passage of said substrate is sufficiently hindered relative to said passage of said oxygen that a steady state response proportional to the substance concentration with said electrode assembly can be obtained at substance concentrations in an undiluted whole blood sample of at least 300 mg/dl where the oxygen concentration is equivalent to the oxygen concentration in a plasma sample derived from a normal human subject, and

said outer membrane having a thickness of between 20 and 100μ to impair the passage of hydrogen peroxide from said enzyme layer to said undiluted sample to an extent great enough to permit said steady state to be reached;

contacting said outer membrane with said undiluted sample comprising said substrate to permit said substance and oxygen in said undiluted sample to pass through said outer membrane to said enzyme layer so that said enzyme oxidizes said substance to generate hydrogen peroxide, said generated hydrogen peroxide passing through said inner layer to contact said face of said sensor electrode;

maintaining said contact between said outer membrane and said undiluted sample for a sufficient period of time to generate a steady state responses proportional to the substrate concentration; and

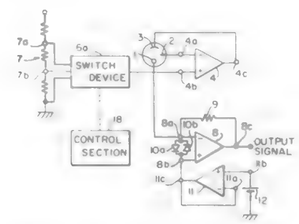
measuring said steady state response to determine said substrate concentration.

5,352,349

METHOD FOR REVIVING AN ELECTRODE OF A BIOSENSOR

Tomoyuki Inamoto, Kusatsu; Hidetaka Fujimura, Kusatsu, and Yasuhiro Nagata, deceased, late of Kusatsu, all of Japan Yuko Nagata, Yasutaka Nagata, heir , assignors to Daikin Industries, Ltd., Japan

Continuation-in-part of Ser. No. 574,788, Aug. 30, 1990, abandoned, and a continuation-in-part of Ser. No. 574,790, Aug. 30, 1990, abandoned. This application Jan. 7, 1993, Ser. No. 1,197
Claims priority, application Japan, Aug. 30, 1989, 1-223613; Aug. 30, 1989, 1-223614
Int. Cl.[5] G01N *27/327*
U.S. Cl. 204—153.12 8 Claims



1. A method for reviving an electrode unit of a biosensor device which includes a working electrode and a counter electrode, and which measures a concentration of an object substance based upon an electrical signal generated between the working electrode and the counter electrode when a predetermined forward measurement bias voltage is applied to the working electrode on which a physiologically active substance is placed, the electrical signal being generated based upon a biological reaction of the object substance, said method comprising the steps of:

(1) applying a predetermined reverse bias voltage to the working electrode for a predetermined time period, and

(2) applying a predetermined forward measurement bias voltage to the working electrode,

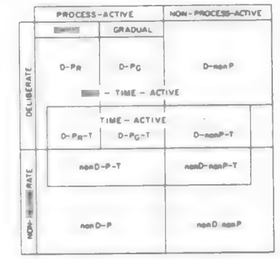
wherein at least one of the bias voltages is gradually increased in absolute value according to a time constant to reach a predetermined value.

5,352,350

METHOD FOR CONTROLLING CHEMICAL SPECIES CONCENTRATION

Panayotis C. Andricacos, Croton-on-Hudson; John O. Dukovic, Pleasantville, and Lubomyr T. Romankiw, Briarcliff Manor, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 14, 1992, Ser. No. 837,468
Int. Cl.[5] C25D *21/14*, *21/18*, *21/20*
U.S. Cl. 205—101 23 Claims



1. A method for controlling the concentration of chemical species in a wet chemical bath which is chemically interacting with a workpiece, comprising the steps of:

a. classifying the chemical species deliberately added to the bath as deliberate species;

b. developing a material balance model by performing a material balance on each deliberate species using the stoichiometry of chemical reactions in the bath involving the deliberate species;

c. using the material balance model to predict an amount of each deliberate species to add to the bath in order to keep each deliberate species in the bath near a target concentration;

and

d. replenishing the bath with the predicted amount of the deliberate species by using one or more feed stocks that are formulated in compliance with the material balance for the deliberate species where each feed stock is dosed into the wet chemical bath in a volume proportional to a process service delivered over a time period and where a constant of proportionality for dosing is determined by the material balance.

5,352,351

BIOSENSING METER WITH FAIL/SAFE PROCEDURES TO PREVENT ERRONEOUS INDICATIONS

Bradley E. White, Indianapolis; Robert A. Parks, Springport; Paul G. Ritchie, Indianapolis, and Vladimir Svetnik, Carmel, all of Ind., assignors to Boehringer Mannheim Corporation, Indianapolis, Ind.

Filed Jun. 8, 1993, Ser. No. 73,180
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—406 10 Claims

1. A biosensing meter for receiving a sample strip that includes electrically isolated excitation and sense electrodes and a sample well bridging thereacross, with an analyte reactant resident therein, said biosensing meter comprising:

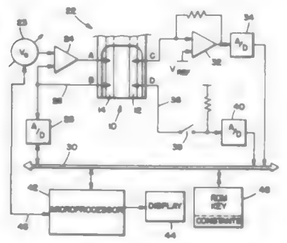
excitation supply means for applying an excitation potential to said excitation electrode;

sense amplifier means connected to said sense electrode for producing an output signal when a volume of a biological fluid is placed in said sample well and creates a current path between said excitation and sense electrode;

processor means coupled to said sense amplifier means for first, testing if said output signal exceeds a first threshold value and second, testing if said output signal thereafter exceeds a second, larger threshold value, an output signal

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that exceeds said first threshold value recognized as an indication of said volume in said sample cell, an output signal that exceeds said second larger threshold recognized as an indication that said volume will enable a subsequent determination to be made for an analyte in said biological fluid, said processor means only enabling said subsequent determination after said second, larger threshold has been exceeded by said output signal.

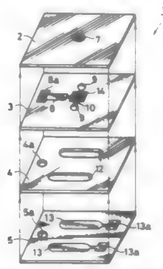


5,352,352

CARBONIC ACID GAS SENSOR

Keiji Tsukada, Chiba; Yuji Miyahara, Hitachi; Yasuhisa Shibata, Ibaraki, and Yoshio Watanabe, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 23, 1992, Ser. No. 948,646
Claims priority, application Japan, Sep. 24, 1991, 3-243516
Int. Cl.[5] G01N *27/404*
U.S. Cl. 204—415 12 Claims



1. A carbonic acid gas sensor capable of detecting carbonic acid gas dissolved in fluid, comprising:

an outer plate including first and second glass substrates each having a window formed therein and fixedly sandwiching a gas permeable membrane to form a carbonic acid gas permeable window;

a first supporting plate supporting a pH-electrode, for detecting a pH of an electrolyte, including an insulating substrate, a pH sensitive membrane formed on said substrate so as to oppose said carbonic acid gas permeable window, and a compartment for accommodating the electrolyte, said compartment extending through the thickness of said first supporting plate; and

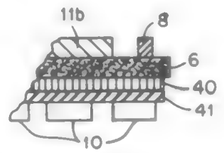
a second supporting plate supporting a reference electrode, wherein said outer plate, said first supporting plate and said second supporting plate are laminated.

5,352,353

DEVICE FOR MONITORING THE CONCENTRATION OF GASEOUS CONSTITUENTS IN MIXTURES OF GASES

Ulrich Schönauer, and Edelbert Häfele, both of Karlsruhe, Fed. Rep. of Germany, assignors to Roth-Technik GmbH & Co. and Forschung für Automobil- und Umelttechnik, both of Gaggenau, Fed. Rep. of Germany

Continuation of Ser. No. 920,374, Aug. 7, 1992, abandoned. This application Dec. 23, 1993, Ser. No. 173,713
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1991, 4102741; Mar. 22, 1991, 4109516
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—426 13 Claims



1. An arrangement for continuously monitoring concentration of at least one gaseous constituent in mixtures of gases containing different constituents simultaneously as CO, NO or HC and O_2, comprising: a base having a wafer shape; at least two electrochemical half cells with a solid electrolyte conducting oxygen ions in said base; each of said electrochemical half cells comprising an electrode in form of a thin layer on said base and having a solid porous structure containing a metal and interacting with said gaseous constituent for generating a test signal dependent on the concentration of said constituents; heating means with electrical lines for providing communications and intercept signals for processing electronically in a computer and converting into amounts of concentration, said wafer having a first side and a second side; at least two electrodes mounted on said first side of said wafer and comprising thin separated coatings; temperature sensing means mounted on said first side and spaced from said electrodes; said heating means having a resistance-heating coating mounted on said second side of said wafer; said wafer being a ceramic solid electrolyte; a counter electrode on said second side of said wafer; an insulating layer under said counter electrode and supporting said resistance-heating coating.

5,352,354

GASOLINE UPGRADING PROCESS

David L. Fletcher, Turnersville; Timothy L. Hilbert, Sewell; Stephen J. McGovern, Mantua; Michael S. Sarli, Haddonfield, and Stuart S.-S. Shih, Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 745,311, Aug. 15, 1991, and a continuation-in-part of Ser. No. 850,106, Mar. 12, 1992, which is a continuation-in-part of Ser. No. 745,311, Aug. 15, 1991. This application Jun. 1, 1992, Ser. No. 891,134
The portion of the term of this patent subsequent to Sep. 13, 2011, has been disclaimed.
Int. Cl.[5] C10G *69/02*
U.S. Cl. 208—89 21 Claims

1. A process of upgrading a catalytically cracked, olefinic sulfur-containing feed fraction boiling in the gasoline boiling range and having a 95 percent point of at least 325° F., which comprises:

contacting the catalytically cracked, olefinic sulfur-containing feed fraction with a hydrodesulfurization catalyst in a first reaction zone, operating under a combination of elevated temperature, elevated pressure and an atmosphere comprising hydrogen, to produce an intermediate product comprising a normally liquid fraction which has a reduced sulfur content and a reduced octane number as compared to the feed;

contacting at least the gasoline boiling range portion of the intermediate product in a second reaction zone with an acidic catalyst comprising a porous crystalline material having an X-ray diffraction pattern with the following lines:

Interplanar d-Spacing (A)	Relative Intensity, $I/I_o \times 100$
12.36 ± 0.4	M–VS
11.03 ± 0.2	M–S
8.83 ± 0.14	M–VS
6.18 ± 0.12	M–VS
6.00 ± 0.10	W–M
4.06 ± 0.07	W–S
3.91 ± 0.07	M–VS
3.42 ± 0.06	VS

to convert it to a product comprising a fraction boiling in the gasoline boiling range having a higher octane number than the gasoline boiling range fraction of the intermediate product.

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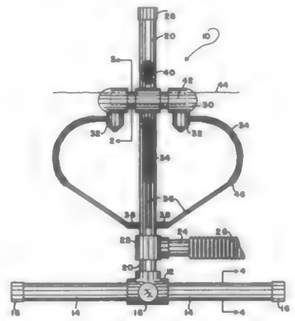
Patent Not Issued For This Number

5,352,356

STOVEPIPE DECANTER APPARATUS

D. Thomas Murphy, 584 Mililani Dr., Kihei, Hi. 96753

Continuation-in-part of Ser. No. 850,113, Feb. 19, 1992, Pat. No. 5,234,580, which is a division of Ser. No. 753,860, Sep. 3, 1991, Pat. No. 5,186,821. This application Mar. 17, 1993, Ser. No. 32,112
Int. Cl.[5] B01D *21/24*
U.S. Cl. 210—122 11 Claims



1. A decanter apparatus comprising; at least one elongated hollow up-rising first member, support means to support said at least one first member in substantially a vertical position, said support means including at least three horizontal legs, said legs containing weights, a manifold, said manifold being substantially in the shape of a hollow doughnut body with a cavity forming substantially a doughnut hole, said manifold surrounding but spaced from said first member, said doughnut hole being larger in circumference than the outer circumference of said at least one first member, an inlet valve means adjacent to said manifold, buoyant means within or coupled to said manifold, at least one flexible hollow second member, said at least one first member, an inlet valve means adjacent to said manifold, buoyant means within or coupled to said manifold, at least one flexible hollow second member, said at least one second member connecting the interior of said body of said manifold to the interior of said at least one first member, at least one hollow third member, said at least one third member connecting the interior of said at least one first member to an effluent discharge system,

whereby,

said at least one first member, said support means, said manifold, said valve means, said buoyant means, said at least one second member and said at least one third member cooperate together to form a floating decanting apparatus.

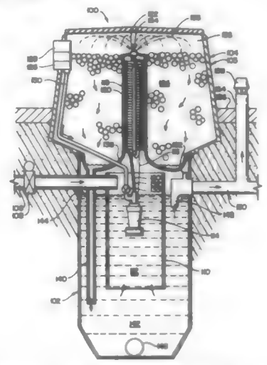
9. The decanting apparatus of claim 1 in which said valve means includes a screen.

5,352,357

WASTE WATER TREATMENT SYSTEM

Cliff R. Perry, 934 S. 259th Pl., Federal Way, Wash. 98003

Filed Feb. 18, 1993, Ser. No. 20,300
Int. Cl.[5] C02F *3/30*
U.S. Cl. 210—150 17 Claims



1. A biological waste treatment assembly for use between a septic tank and a drain field, said waste treatment assembly comprising:

an upper bed portion for aerobic biological treatment of an effluent from said septic tank;

a lower sump portion for holding said effluent in a reservoir, said reservoir having a lower, relatively oxygen-free layer comprising means for aerobic biological treatment;

pump means for delivering a flow of said effluent to an upper portion of said bed so that said effluent migrates through said bed portion and undergoes aerobic biological treatment therein;

means for collecting said effluent which has migrated through said aerobic bed portion; and

means for draining said effluent which has been collected from said bed portion directly to said oxygen-free lower layer of said reservoir so that said effluent undergoes anaerobic biological treatment therein;

whereby said effluent passes sequentially through aerobic and then anaerobic biological treatment in said assembly prior to entering said drain field.

5,352,358

VACUUM HOSE MANIPULATOR TOOL

Wayne C. Davey, 4493 Rainbow Vista Dr., Fallbrook, Calif. 92028

Filed Jul. 9, 1993, Ser. No. 87,870
Int. Cl.[5] E04H *3/20*
U.S. Cl. 210—169 5 Claims

1. A manipulator tool for use in a swimming pool that has a skimmer with a skimming inlet communicating therewith and a suction outlet on the bottom thereof, said suction outlet connected to a pump located externally of the pool, and a portable pool cleaner located on the floor of the pool, said cleaner having connected thereto the inner end of a flexible

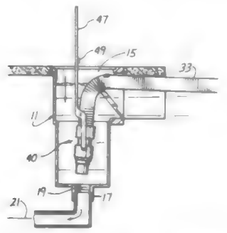
VOL 1167 ISS 1 OC 4 1994 UMI

vacuum hose, and a cuff having a back portion connected on the outer end of the hose, said manipulator tool comprising:

an auxiliary cuff having a back portion adapted to be attached to the front portion of the cuff on the outer end of the hose, the back portion of the auxiliary cuff having opposite sides;

an elongated handle having a transversely curved inner surface whose curvature is substantially the same as the curvature of the outer surface of the hose, said elongated handle having an inner end and an outer end;

a pair of integral side arms on the inner end of the elongated handle respectively pivotally connected to the opposite sides on the back portion of the auxiliary cuff; and



a stop on the auxiliary cuff located adjacent the pivotal connection of the integral side arms to limit the rotation of said elongated handle;

whereby the elongated handle can be rotated on its integral side arms so that it lies in a rest position with the transversely curved inner surface thereof mating with the outer surface of the hose when not in use, and can be rotated away from its rest position so as to lie forwardly of the auxiliary cuff and pushed through the skimming inlet, while the auxiliary cuff remains submerged in the pool, causing the outer end of the elongated handle to extend out of a top opening of the skimmer so that it can be used to push the auxiliary cuff downwardly to hook up with the suction outlet on the bottom of the skimmer.

5,352,359

ULTRAVIOLET REACTOR WITH MIXING BAFFLE PLATES

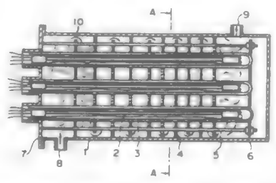
Hiroshi Nagai; Ken Nakajima, both of Kanagawa; Yukio Ikeda, Tokyo, and Noriyoshi Mashimo, Iwate, all of Japan, assignors to Ebara Corporation, Tokyo and Kabushiki Kaisha Toshiba, Kawasaki, both of Japan

Filed Feb. 1, 1993, Ser. No. 11,904

Claims priority, application Japan, Feb. 5, 1992, 4-047778

Int. Cl.[5] C02F *1/32*

U.S. Cl. 210—192 **9 Claims**



1. An ultraviolet reactor for purifying a liquid, the ultraviolet reactor comprising:

a housing having a circular or rectangular cross-section, said housing comprising a liquid inlet side having a first end with an inlet for the liquid, and a liquid outlet side having a second end with an outlet for the liquid;

a plurality of ultraviolet lamps accommodated in said housing; and

a plurality of mixing baffle plates provided inside said housing at a mounting pitch along a longitudinal axis of said housing so that the liquid flows at right angles to said ultraviolet lamps;

wherein:

said baffle plates are provided in said housing such that the mounting pitch of the baffle plates at the liquid inlet side of the housing is relatively large and the mounting pitch of the baffle plates at the liquid outlet side of the housing is relatively small.

5,352,360

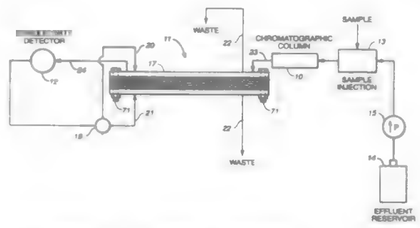
ION CHROMATOGRAPHY SYSTEM USING ELECTROCHEMICAL SUPPRESSION AND DETECTOR EFFLUENT RECYCLE

John R. Stillian, Pleasanton; Victor M. Barreto, Santa Clara; Keith A. Friedman, Santa Clara; Steven B. Rabin, Santa Clara, and Mahmood Toofan, Dixon, all of Calif., assignors to Dionex Corporation, Sunnyvale, Calif.

Division of Ser. No. 968,246, Oct. 29, 1992, Pat. No. 5,248,426, which is a continuation of Ser. No. 833,334, Feb. 10, 1992, abandoned. This application Jul. 1, 1993, Ser. No. 86,560

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—198.2 **8 Claims**



1. Apparatus for ion analysis comprising

(a) an eluent source,

(b) chromatographic separating means in communication with said eluent reservoir for receiving eluent therefrom, said chromatographic separating means comprising a chromatographic separating medium adapted to separate ionic species of a sample eluted therethrough using eluent solution comprising an electrolyte including transmembrane electrolyte ions of opposite charge to said ionic species,

(c) suppressor means for treating effluent eluted from said chromatographic separating means, said suppressor means including

(1) at least one chromatography effluent compartment means having an inlet end and an outlet end,

(2) at least one detector effluent compartment means having an inlet end and an outlet end,

(3) at least one ion exchange membrane partitioning said chromatography eluent compartment means and detector effluent compartment means and defining therewith a chromatography effluent flow channel and at least one detector effluent flow channel, respectively, said ion exchange membrane being preferentially permeable to ions of one charge only, positive or negative, of the same charge as said transmembrane electrolyte ions, and including exchangeable ions of said one charge,

(d) detector means suitable for detecting separated ionic species having an inlet end and an outlet end, said detector means inlet end communicating with said chromatography effluent compartment means outlet end to receive treated chromatography effluent therefrom, and said detector means outlet end communicating with said detector effluent compartment means inlet end to permit flow of post-detection treated effluent thereto, and

(e) first and second electrode means in electrical communication with said chromatography effluent flow channel and said one detector effluent flow channel, respectively.

5,352,361

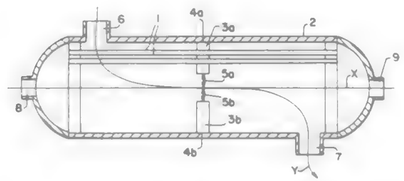
SPIRAL-WOUND HOLLOW FIBER MEMBRANE FABRIC CARTRIDGES AND MODULES HAVING FLOW-DIRECTING BAFFLES

Ravi Prasad; Charles J. Runkle, both of Charlotte, N.C., and Harry F. Shuey, San Dimas, Calif., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 816,511, Dec. 31, 1991, Pat. No. 5,264,171. This application Jul. 23, 1993, Ser. No. 95,460

Int. Cl.[5] B01D *63/02*

U.S. Cl. 210—321.81 **18 Claims**



11. In a spiral-type hollow fiber membrane fabric-containing module, comprising:

a. a plurality of hollow fiber membranes each having a lumen, said membranes being formed into a fabric-like array in which the hollow fibers substantially are mutually-parallel and constitute the fabric weft, and are held in spaced-apart relationship by filaments constituting the fabric warp;

b. a hollow mandrel having a longitudinal axis and a cylindrical exterior surface, an axial bore, and perforations along the surface which communicate with the bore;

c. the array being wound upon the axis such that the hollow fibers are substantially parallel to the axis, into a spirally-wound membrane bundle having two bundle ends and a cylindrical exterior surface;

d. each of the two bundle ends being potted in resinous potting material serving to seal the bundle end into an adjacent monolithic tube sheet, a portion of the bundle between the two tube sheets being free from potting material to form a shell-side region, and the lumen ends of the hollow fibers constituting a first one of the bundle ends being exposed and communicating with the exterior of the bundle;

e. a housing having first and second housing ends and a cylindrical housing interior and being suitably shaped to contain the membrane bundle, having means adjacent the first housing end sealing the tube sheet adjacent the first bundle end to the cylindrical housing interior, said housing which contains the bundle defining two regions mutually communicating through the membrane including (1) a shell-side space exterior to the portion of the bundle between the tube sheets and within the housing, and (2) a space including the hollow fiber lumens and the first bundle end;

f. first end cap means adjacent the first housing end and suitably shaped, together with the cylindrical housing interior and the first bundle end, to seal the first housing end and define a first chamber communicating with the membrane lumens;

g. second end cap means adjacent the second housing end and suitably shaped, together with the cylindrical housing interior and the second bundle end, to seal the second housing end and define a second chamber; and

h. the housing having at least one port communicating with the first chamber, arranged to permit fluid injection and withdrawal therethrough; the improvement comprising:

i. impermeable wrapping means covering the cylindrical exterior surface of the bundle;

j. at least two axially-symmetrical axial sealing means formed within the shell-side region in a shape which is rotationally symmetrical about the axis, said axial sealing means being spaced apart from each other along the axis, each of said axial sealing means being in sealing engagement with the mandrel and extending to a perimeter which is located at a distance away from the cylindrical housing interior, each forming a perimeter sub-portion of the shell-side region between the cylindrical interior of the housing and the perimeter of the axial sealing means which is unobstructed to fluid flow, said axial sealing means dividing the shell-side region into a plurality of shell-side portions in mutual fluid communication through the perimeter sub-portions;

k. means completely obstructing the axial bore at the point where each axial sealing means is in sealing engagement with the mandrel;

l. at least one axially-symmetrical perimeter sealing means formed within the shell-side region in a shape which is rotationally symmetrical about the axis, said perimeter sealing means being interposed between two axial sealing means, and in sealing engagement with the impermeable wrapping means and extending to a distance away from the mandrel, forming an axial sub-portion of the shell-side region which is unobstructed to fluid flow, said perimeter sealing means dividing the shell-side region into two shell-side portions in mutual fluid communication through the axial sub-portion; and

m. means completely obstructing the axial bore where the mandrel intersects the axial sub-portion.

5,352,362

BRINE RECYCLING METHOD AND APPARATUS THEREFOR

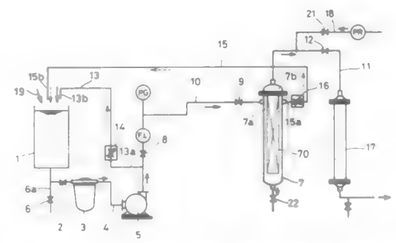
Masumi Mizutani; Kaoru Mizutani, both of Gifu; Masaru Kawahashi, Toyonaka, and Yoshio Fujiwara, Ikoma, all of Japan, assignors to Showa Water Industries Co., Ltd, Gifu; Kuraray Co., Ltd., Kurashiki and Tokiwa Co., Ltd., Osaka, all of Japan

Filed Mar. 5, 1993, Ser. No. 26,732

Claims priority, application Japan, Mar. 9, 1992, 4-086397

Int. Cl.[5] B01D *61/00*

U.S. Cl. 210—650 **4 Claims**



1. A method of recycling a used brine containing metal ions, said method comprising the steps of:

adding a reaction agent to said used brine to provide an agent-added brine, said reaction agent producing an insoluble substance when reacted with said metal ions;

filtrating said agent-added brine through a microporous filtration member having an average pore size greater than 0.005 μm and smaller than 1 μm, wherein said reaction agent contains at least dithiocarbamic acid salt and is selected from a group consisting of dithiocarbamic acid salt, thiourea, thiazole, and triazole.

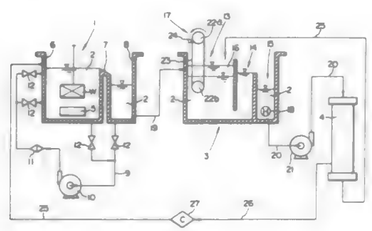
VOL 1167 ISS 1 OC 4 1994 UMI

5,352,363

PROCESS FOR REMOVAL OF OIL IN AQUEOUS LIQUID

Yoshihide Shibano, 1629-1-12, Oyama-cho, Machida, Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 7,092
Claims priority, application Japan, Jan. 20, 1992, 4-28851
Int. Cl.[5] B01D *61/16*
U.S. Cl. 210—651 13 Claims



8. A process for the removal of oil from an aqueous solution, the aqueous solution containing a detergent therein, comprising the steps of:

feeding the aqueous solution containing the detergent into a first sealed vessel, said aqueous solution having droplets of oil dispersed therein;

heating said aqueous solution with a heating means disposed in said first sealed vessel to a predetermined temperature at which at least a portion of the detergent contained in said aqueous solution is vaporized, and further uniting the droplets of oil dispersed in said aqueous solution with each other, thereby increasing the size of said droplets and separating the oil from said aqueous solution;

feeding said aqueous solution and the vaporized portion of the detergent from said first sealed vessel into a second sealed vessel airtightly connected to said first sealed vessel;

cooling the vaporized portion of the detergent with a cooling means disposed in said second sealed vessel, thereby condensing said vaporized portion of the detergent and returning the condensed detergent to said aqueous solution from which the oil has been separated;

feeding said aqueous solution from said second sealed vessel into an oil-removing tank, wherein the oil separated from said aqueous solution is caused to float as a layer of oil on the surface of said aqueous solution in said oil-removing tank; and

removing said oil from the surface of said aqueous solution with an oil removing means disposed in said oil-removing tank.

5,352,364

MEDICAL DRUG FORMULATION AND DELIVERY SYSTEM AND REVERSE OSMOSIS PURIFICATION DEVICE

Robert J. Kruger, Arlington Heights; Warren P. Frederick, Wonder Lake; Mark E. Larkin, Lindenhurst; Joaquin Mayoral, Mundelein, and Sheldon M. Wecker, Libertyville, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

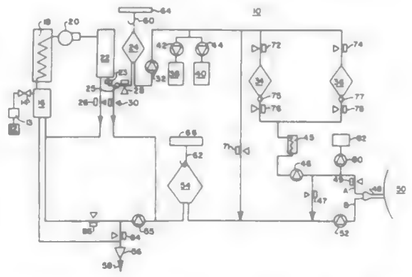
Division of Ser. No. 570,660, Aug. 20, 1990, abandoned. This application Dec. 15, 1992, Ser. No. 990,580
Int. Cl.[5] B01D *61/08*
U.S. Cl. 210—652 5 Claims

4. Method for purifying water from a source comprising:

a. passing water in a spiral fluid flow manner from the source through a first spiral wound reverse osmosis means being in fluid communication with the source so as to purify at least a first portion of the water from the source;

b. passing the purified first portion of water in a spiral fluid flow manner through a second spiral wound reverse osmosis means being in fluid communication with said first osmosis means to receive the purified first portion of water for further purification of at least a second portion of the water; and

c. passing the purified second portion of water through chemical means being in fluid communication with said



second reverse osmosis means to receive said second purified portion of water and for removal of at least chemical contaminants from said purified second portion of water, said chemical means also being in fluid communication with an outlet so as to permit passage of said chemically purified water through said outlet.

5,352,365

PROCESS FOR REMOVING SCALE, AND REDUCING SCALE FORMATION IN SEWAGE TREATMENT PLANTS

Richard L. Fuller, 1240 N. Jefferson Ste. P, Anaheim, Calif. 92807

Filed Feb. 22, 1993, Ser. No. 20,426
Int. Cl.[5] C02F *5/14*
U.S. Cl. 210—699 9 Claims

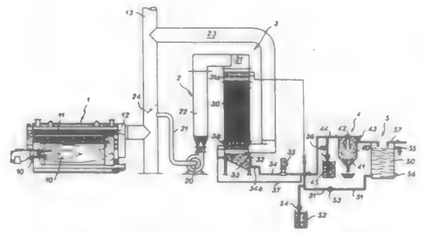
1. A process for removing scale and reducing scale formation including CaCO3, vivianite and struvite, on components of a sewage treatment plant processing sewage water, comprising: adding to the sewage water an effective amount of an aqueous solution of acrylic acid terpolymer containing about 11–40 weight percent of a 2-acrylamido-2-methylpropane sulfonic acid, about 10–84 weight percent of an acrylic acid and about 5 to about 50 weight percent of a nonionic group selected from the class consisting of hydroxyethyl methacrylate, vinyl acetate, acrylamide, ethyl acrylate, t-butyl acrylate, hydroxypropyl acrylate, cellosolve acrylate, t-octyl acrylamide, dimethyl acrylamide, propyl acrylamide, t-butyl acrylamide, cyclohexyl acrylamide, t-butyl methacrylamide, benzyl methacrylamide, hydroxyethyl acrylate, and mixtures thereof, to remove said scale and reduce said scale formation, together with a phosphonic acid, or a phosphonate, the solution having a pH range of about 2–9, the weight average molecular weight of the terpolymer being from about 2,500–8,000 without flocculent formation, the ratio of perpolymer to phosphonic acid or phosphonate being from about 1:1 to 3:1, and the effective amount of acrylic acid terpolymer and phosphonic acid or phosphonate being at least about 30 ppm in the sewage solution.

5,352,366

METHOD FOR PURIFYING LIQUID FUEL BOILER SMOKE BY COOLING AND WASHING THE SMOKE AND NEUTRALIZING THE EFFLUENTS

Yves Courtaud, Brie Comte Robert, and Claude Caveriviere, Vincennes, both of France, assignors to AQUAFRANCE, Roissy, France

Filed Aug. 12, 1993, Ser. No. 104,763
Claims priority, application France, Aug. 13, 1992, 92 09996
Int. Cl.[5] B01D *47/06*
U.S. Cl. 210—712 9 Claims



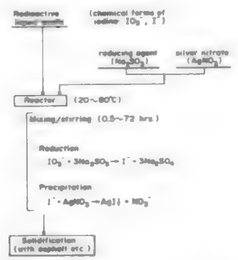
1. Method of purifying smoke from a liquid fuel boiler by eliminating unwanted components including acids in which method the smoke, before it is exhausted to the atmosphere, is caused to pass along a vertical path in a heat exchanger adapted to recover the latent heat of condensible components together with the substantive heat of the smoke, water is sprayed at the top of said vertical path and collected at the bottom thereof in the form of an effluent comprising said water, condensates and soot, a reserve water supply is provided, water is fed from said reserve supply to the top of said heat exchanger where it is sprayed after adding to it an alkaline solution in sufficient quantity to neutralize acid components of the smoke, the effluent is recovered at the bottom of said heat exchanger, an effective dose of a floculating agent is added to it, and said effluent is fed into a settling tank where is separates into a soot sludge and a clarified effluent which is fed to said reserve water supply.

5,352,367

PROCESS FOR THE SEPARATION OF RADIOACTIVE IODINE COMPOUNDS BY PRECIPITATION

Ken-ichi Ochiai, Mito, and Yoshiro Fuseya, Yokohama, both of Japan, assignors to Doryokuro Kakuseiryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Nov. 3, 1992, Ser. No. 970,847
Claims priority, application Japan, Nov. 5, 1991, 3-317419
Int. Cl.[5] C02F *1/70, 1/58*
U.S. Cl. 210—719 2 Claims



1. A process for the separation of radioactive iodine compounds by precipitation, which comprises adding 0.1 to 3 parts by weight of a reducing agent selected from the group consisting of sodium sulfite and sodium hydrogensulfite and an effective amount of silver nitrate to 100 parts by weight of a liquid waste containing radioactive iodine compounds in the form of iodides and iodates while keeping the liquid waste at a temperature ranging from 20° to 80° C., and stirring the obtained mixture for 0.5 to 72 hours to reduce the iodates to iodides by the action of the reducing agent and to react the iodides with the silver nitrate to precipitate the iodides in the form of silver iodide.

5,352,368

ALDEHYDE TREATMENT SYSTEM

Travis W. Honeycutt, Gainesville, Ga., assignor to Isolyser Co., Inc., Norcross, Ga.

Filed Sep. 23, 1993, Ser. No. 126,073
Int. Cl.[5] C02F *1/58*
U.S. Cl. 210—749 6 Claims

1. A method of converting a toxic composition containing aldehyde to a composition which is substantially non-toxic, said method comprising reacting said aldehyde with resorcinol capable of undergoing ortho and para electrophilic substitution and a polyimine forming a liquid product by way of a substantially irreversible reaction.

5,352,369

METHOD OF TREATING WATER

Charles F. Heinig, Jr., Providence, R.I., assignor to Fountainhead Technologies, Inc., Providence, R.I.

Filed Apr. 1, 1993, Ser. No. 40,454
Int. Cl.[5] C02F *1/50, 1/78*
U.S. Cl. 210—760 22 Claims

1. A method of treating water to kill bacteria contained therein comprising exposing the water to a silver catalyst in the presence of oxygen to form an active oxidizer in the water, said silver catalyst comprising an aluminum matrix having elemental silver chemically deposited thereon, said matrix with said silver thereon having previously been heated to between approximately 750° C. and 1050° C.

5,352,370

METHOD FOR SO_x REMOVAL BY CATALYTIC CARBON

Richard A. Hayden, Pittsburgh, Pa., assignor to Calgon Carbon Corporation, Pittsburgh, Pa.

Filed Jan. 21, 1993, Ser. No. 8,722
Int. Cl.[5] C02F *1/72*
U.S. Cl. 210—763 6 Claims

1. A process for the removal of sulfur oxides from gaseous or liquid media which process comprises contacting said media, in the presence of oxygen and water vapor at temperatures below 100° C., with a catalytically-active carbonaceous char, said carbonaceous char comprising a bituminous coal or bituminous coal-like material carbonized and oxidized at temperatures below 700° C., and thereafter contacted with nitrogen-containing compounds while the temperatures were increased above 700° C.

5,352,371

METHOD AND APPARATUS FOR REPEATEDLY PASSING A FLUID THROUGH A FLUID TREATMENT UNIT

Thomas J. Felt, Boulder, Colo., assignor to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Feb. 24, 1993, Ser. No. 21,885
Int. Cl.[5] B01D *21/26*
U.S. Cl. 210—787 24 Claims

1. A method for repeatedly passing a fluid through a fluid treatment unit comprising an inlet and an outlet, said inlet allowing fluid to pass into said treatment unit and said outlet allowing fluid to pass out of said treatment unit, said method comprising:

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providing a fluid transfer assembly for attachment to said treatment unit comprising:

a primary vessel comprising an interior region therein;

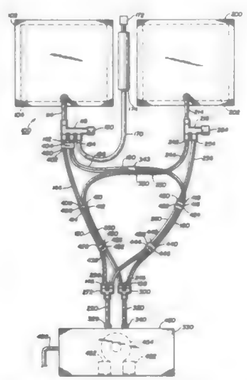
a first conduit comprising a proximal end operatively connected to said primary vessel and in fluid communication with said interior region thereof, said first conduit further comprising a distal end operatively connected to and in fluid communication with said outlet of said treatment unit;

a second conduit comprising a proximal end operatively connected to said primary vessel and in fluid communication with said interior region thereof, said second conduit further comprising a distal end operatively connected to and in fluid communication with said inlet of said treatment unit;

a secondary vessel comprising an interior region therein;

a third conduit comprising a proximal end operatively connected to said secondary vessel and in fluid communication with said interior region thereof, said third conduit further comprising a distal end operatively connected to and in fluid communication with said inlet of said treatment unit;

a fourth conduit comprising a proximal end operatively connected to said secondary vessel and in fluid communication with said interior region thereof, said fourth



conduit further comprising a distal end operatively connected to and in fluid communication with said outlet of said treatment unit; and

a clamp member for simultaneously clamping at least two of said first conduit, said second conduit, said third conduit, and said fourth conduit in order to entirely restrict fluid flow therethrough;

clamping said first conduit and said second conduit simultaneously with said clamp member;

supplying said interior region of said primary vessel with a fluid to be treated;

removing said clamp member from said first conduit and said second conduit when treatment of said fluid by said treatment unit is desired;

clamping said first conduit and said third conduit simultaneously with said clamp member in order to permit said fluid to flow out of said interior region of said primary vessel, into said second conduit, and into said inlet of said treatment unit, said fluid subsequently passing through said treatment unit and outwardly therefrom through said outlet, said fluid thereafter passing from said outlet through said fourth conduit and into said interior region of said secondary vessel;

removing said clamp member from said first conduit and said third conduit; and

clamping said second conduit and said fourth conduit simultaneously with said clamp member in order to permit said fluid to flow out of said interior region of said secondary vessel, into said third conduit, and into said inlet of said treatment unit, said fluid subsequently passing through said treatment unit and outwardly therefrom through said outlet, said fluid thereafter passing from said outlet through said first conduit and back into said interior region of said primary vessel.

5,352,372

TEXTILE RESINS WITH REDUCED FREE FORMALDEHYDE

Bernard F. North, Rock Hill, S.C., assignor to Sequa Chemicals, Inc., Chester, S.C.

Filed Feb. 2, 1993, Ser. No. 12,229

Int. Cl.[5] D06M *13/402*

U.S. Cl. 252—8.6 **11 Claims**

1. A composition for treating a textile fabric having reduced free formaldehyde levels both in the resin and in the finished treated fabric which comprises:

a resin comprising dimethyloldihydroxyethylene urea or an alkylated dimethyloldihydroxyethylene urea mixed with 2 to 60% by weight of a formaldehyde scavenger consisting essentially of dimethyl acetoacetamide wherein an effective amount of time is allowed for the free formaldehyde to react with the dimethyl acetoacetamide in the resin to reduce the level of free formaldehyde in the resin by at least 25%.

5,352,373

LUBRICATING COMPOSITION FOR USE IN HOT ROLLING OF STEELS

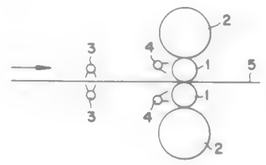
Kunio Goto, Takarazuka, Japan, assignor to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Mar. 5, 1993, Ser. No. 26,786

Claims priority, application Japan, Mar. 5, 1992, 4-048568; Jun. 16, 1992, 4-156827; Sep. 1, 1992, 4-233268; Oct. 14, 1992, 4-276249

Int. Cl.[5] C10M *125/22*

U.S. Cl. 252—18 **15 Claims**



1. A lubricating composition for use in hot rolling of steels, which comprises a base lubricating oil selected from the group consisting of synthetic lubricating oil, rapeseed oil, lard oil, higher fatty acids and higher fatty acid esters and from about 20% to about 70% by weight, based on the total weight of the composition, of an overbased metal sulfonate having a base number of at least about 40 mg-KOH/g in which the metal is one or more alkaline earth metals.

5,352,374

LUBRICANT COMPOSITION CONTAINING ALKOXYLATED AMINE SALT OF A DIHYDROCARBYLDITHIOPHOSPHORIC ACID (LAW024)

Jacob J. Habeeb, Westfield; Ramon L. Espino, Califon, and Elisavet P. Vrahopoulou, Chatham, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 21,292, Feb. 22, 1993. This application Sep. 13, 1993, Ser. No. 120,623

The portion of the term of this patent subsequent to Feb. 22, 2010, has been disclaimed.

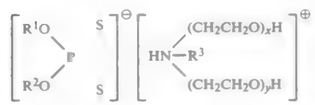
Int. Cl.[5] C10M *105/74*

U.S. Cl. 252—32.7 R **8 Claims**

1. A lubricating oil composition comprising:

(a) a hydroisomerized wax basestock wherein the hydroisomerized basestock has a viscosity index of at least 120, a pour point of −15° C. or lower and a viscosity of from 2 to 15 cSt at 100° C., and

(b) from about 0.02 wt % to about 0.40 wt %, based on basestock of an ethoxylated amine salt of a dihydrocarbyldithiophosphoric acid, said salt having the formula



(I)

where R^1 and R^2 are each independently hydrocarbyl groups having from 3 to 30 carbon atoms, R^3 is a hydrocarbyl group of 2 to 22 carbon atoms, and x and y are each independently integers from 1 to 15 with the proviso that the sum of x+y is from 2 to 20.

5,352,375

AZEOTROPE-LIKE COMPOSITIONS OF 1,1,1,2,2,3,3,-HEPTAFLUOROPENTANE, C_1-C_3 ALKANOL AND OPTIONALLY NITROMETHANE

E. L. Swan, Amherst; David Nalewajek, W. Seneca, and L. Ellis, Orchard Park, all of N.Y., assignors to AlliedSignal Inc., Morristownship, Morris County, N.J.

Filed Aug. 17, 1993, Ser. No. 108,207

Int. Cl.[5] B08B *3/00;* **C11D** *7/30, 7/50;* **C23G** *5/028*

U.S. Cl. 252—171 **16 Claims**

1. Azeotrope-like compositions consisting essentially of 1,1,1,2,2,3,3-heptafluoropentane, a second component selected from the group consisting of methanol, ethanol and isopropanol and optionally nitromethane as a third component; wherein

said compositions of 1,1,1,2,2,3,3-heptafluoropentane, methanol and optionally nitromethane consist essentially of from about 99.2 to about 74 weight percent 1,1,1,2,2,3,3,-heptafluoropentane; from about 0.8 to about 25 weight percent methanol and from about 0 to about 1.0 weight percent nitromethane, which boil at about 35° C. at about 754 mm Hg;

said compositions of 1,1,1,2,2,3,3,-heptafluoropentane, ethanol and optionally nitromethane consist essentially of about 99.9 to about 94 weight percent 1,1,1,2,2,3,3,-heptafluoropentane, about 0.1 to about 5 weight percent ethanol and from about 0 to about 1.0 weight percent nitromethane which boil at about 38° C. at about 749 mm Hg; and

said compositions of 1,1,1,2,2,3,3,-heptafluoropentane, isopropanol and optionally nitromethane consist essentially of about 99.9 to about 96 weight percent 1,1,1,2,2,3,3,-heptafluoropentane, from about 0.1 to about 3.0 weight percent isopropanol and from about 0 to about 1.0 weight percent nitromethane which boil at about 40° C. at about 749 mm Hg.

5,352,376

THERMOPLASTIC COMPATIBLE CONVEYOR LUBRICANT

Timothy A. Gutzmann, Eagan, Minn., assignor to Ecolab Inc., St. Paul, Minn.

Filed Feb. 19, 1993, Ser. No. 19,606

Int. Cl.[5] C01M *173/02, 101/02*

U.S. Cl. 252—49.3 **30 Claims**

1. A polyethylene and polybutylene terephthalate compatible lubricant concentrate used in the transportation of polyethylene and polybutylene terephthalate containers on a conveyor, the lubricant concentrate comprising an alkyl substituted polyglycoside (alkylpolyglycoside), said alkylpolyglycoside comprising one to three reducing saccharide units, each of which containing 5 or 6 carbon atoms, wherein the alkyl group is a saturated or nonsaturated fatty alkyl group containing 5 to 30 carbon atoms.

5,352,377

CARBOXYLIC ACID/ESTER PRODUCTS AS MULTIFUNCTIONAL ADDITIVES FOR LUBRICANTS

David A. Blain, Notre Dame de Gravenchon, France; Robert H. Davis, Pitman; Andrew G. Horodysky, Cherry Hill, both of N.J., and Shi-Ming Wu, Newtown, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Feb. 8, 1993, Ser. No. 15,970

Int. Cl.[5] C10M *151/00*

U.S. Cl. 252—51.5 R **17 Claims**

1. An improved lubricant composition comprising a major proportion of an oil of lubricating viscosity or grease prepared therefrom and a minor multifunctional antiwear, rust/corrosion inhibiting proportion of an additive product of reaction prepared by reacting a hydrocarbylcarboxylic anhydride or its acid equivalent with an aminoalkanol wherein the reaction is carried out at temperatures varying from ambient to about 250° C. under autogenous pressures or pressures varying from ambient to about 100 psi for a time sufficient to obtain the desired carboxylic acid ester additive product of reaction and wherein the reaction is carried out in molar ratios of anhydride to aminoalkanol varying from about 100/99 moles to about 100/1 moles.

5,352,378

NONFLAMMABLE LUBRICIOUS COMPOSITION

Todd R. Mathisen, Lake Elmo, and Scott D. Thomas, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 27, 1993, Ser. No. 68,683

Int. Cl.[5] C10M *129/00*

U.S. Cl. 252—54 **14 Claims**

1. A nonflammable liquid composition, comprising (a) a highly fluorinated organic compound selected from the group consisting of hydrochlorofluorocarbons, hydrofluorocarbons, and chlorine-free perfluorocarbons, (b) a silicone lubricant, and (c) a fluorine-free solvent in which said silicone lubricant is soluble and in which is dissolved an amount of said highly fluorinated organic compound sufficient to render the composition nonflammable.

5,352,379

LIQUID CRYSTAL COMPOSITION, LIQUID CRYSTAL ELEMENT AND PROCESS FOR THE PREPARATION OF LIQUID CRYSTAL ELEMENT

Shinichi Nishiyama; Hideo Hama; Tooru Yamanaka, all of Sodegaura, and Yukio Miyachi, Aichi, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jun. 5, 1992, Ser. No. 894,659

Claims priority, application Japan, Jun. 6, 1991, 3-134878

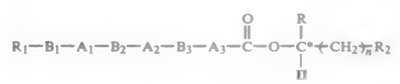
Int. Cl.[5] C09K *19/32, 19/30, 19/12;* **G02F** *1/13*

U.S. Cl. 252—299.62 **14 Claims**

1. A liquid crystal composition comprising at least one compound exhibiting an antiferroelectric phase and at least one

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compound exhibiting a cholesteric phase, wherein the at least one compound exhibiting an antiferroelectric phase is a carboxylic acid ester represented by the following formula (A):



(A)

wherein R_1 is an alkyl group of 3 to 20 carbon atoms or a halogenated alkyl group of 3 to 20 carbon atoms;

R_2 is an alkyl group of 1 to 20 carbon atoms;

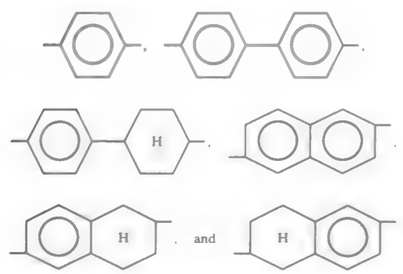
R is a methyl group or trifluoromethyl group;

B_1 represents a single bond or —O—,

B_2 represents —COO—, or $—CH_2CH_2—$;

B_3 represents a single bond, —COO—, or $—(CH_2)_2—$;

A_1 and A_2, each, independently, represent a ring structure selected from the group consisting of



which may be substituted by halogen atom or a lower alkyl group,

when B_3 represents a single bond, A_3 represents a single bond, and when B_3 represents —COO— or $—CH_2—CH_2—$, A_3 is



provided that at least one of A_1 and A_2 represent the following ring structures

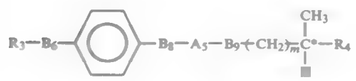


(1)

which may be substituted by halogen atom or a lower alkyl group; and

n is an integer of 0 to 4; and

the compound exhibiting a cholesteric phase is a compound represented by the following formula (B)



(B)

wherein R_3 is an alkyl group of 3 to 20 carbon atoms or a halogenated alkyl group of 3 to 20 carbon atoms;

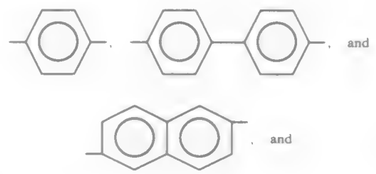
R_4 represents an alkyl group of 2 to 5 carbon atoms;

B_6 represents —O—;

B_8 represents —COO— or —OCO—;

B_9 represents —COO—, —O— or a single bond;

A_5 represents a ring structure selected from the group consisting of



(2)

m is an integer of 1 to 3.

5,352,380

FERROELECTRIC LIQUID-CRYSTALLINE POLYMERS, A PROCESS FOR THEIR PREPARATION AND THEIR USE IN ELECTROOPTICAL COMPONENTS

Günter Scherowsky; Andreas Schliwa, and Wolfgang Trapp, all of Berlin, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

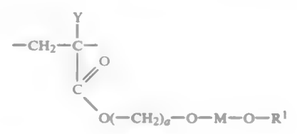
Continuation of Ser. No. 635,182, Jan. 3, 1991, abandoned. This application Dec. 17, 1993, Ser. No. 170,669

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1988, 3823154

Int. Cl.[5] C09K *19/52;* **G02F** *1/13;* **C08F** *122/10*

U.S. Cl. 252—299.01 **2 Claims**

1. A ferroelectric, liquid-crystalline polymer composed of repeating units of the formula

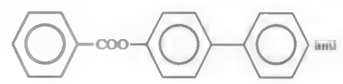


in which

Y is H,

a is 11,

M is



where $—R^2$ is $—CH_3$ and b is 5.

5,352,381

LIQUID CRYSTAL THIOL COMPOUNDS

Damien G. McDonnell; Sally E. Day, both of Malvern; David Coates, Poole; John A. Jenner, Dorset; Michael Hird, and Kenneth J. Toyne, both of Hull, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, United Kingdom

Filed Apr. 13, 1992, Ser. No. 867,739

Claims priority, application United Kingdom, Jun. 11, 1990, 9012968

Int. Cl.[5] C09K *19/06, 19/12, 19/34, 19/52*

U.S. Cl. 252—299.60 **7 Claims**

1. A compound of the formula:



wherein R is C_{1-15}alkyl; X is hydrogen, fluorine or chlorine; m and n are independently 1 or 0; W is C_{1-15}alkyl or alkoxy, CN or halogen; rings A and B are independently selected from phenyl, laterally fluoro- or chloro- substituted phenyl, transcyclohexyl, pyridyl or pyrimidyl;

provided that alkyl when m=O, n=O, A=phenyl, B if present=phenyl, W=CN and X=H:

A or B is not pyrimidine when m=O,X=H, W=alkyl or alkoxy and whichever of A or B is not pyrimidine is phenyl; and

m is not 1 when n=O, A=phenyl, W=Cn, alkyl or alkoxy and X=H;

and excluding those compounds where m=O, n=O or 1, A=phenyl, B if present=phenyl, W=CN and X=H.

5,352,382

LIQUID CRYSTAL COMPOSITION

Masahiro Johno, Tsukuba; Tomoyuki Yui, Nagareyama, and Yoshihisa Arai, Tsukuba, all of Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

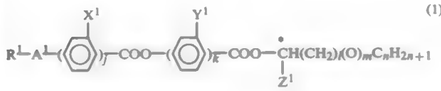
Filed Jan. 4, 1992, Ser. No. 893,548

Claims priority, application Japan, Jan. 4, 1991, 3-159614

Int. Cl.[5] C09K *19/12, 19/20*

U.S. Cl. 252—299.65 **8 Claims**

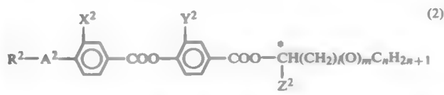
1. An antiferroelectric liquid crystal composition comprising at least one of antiferroelectric liquid crystal substances of the formula (1),



(1)

wherein R^1 is a linear alkyl group having 6 to 14 carbon atoms, A^1 is —O— or a single bond, each of X^1 and Y^1 is, independently of each other, H or F, Z^1 is $—CH_3$, $—CF_3$ or $—C_2H_5$, each of j and k is, independently of each other, 1 or 2, providing at least one of j and k is 2, l is 0 or an integer of 5 to 8, m is 0 or 1, and n is an integer of 1 to 8, and

at least one of optically active substances of the formula (2),



(2)

wherein R^2 is a linear alkyl group, A^2 is —O— or a single bond, each of X^2 and Y^2 is, independently of each other, H or F, Z^2 is $—CH_3$ or $—CF_3$, l is 0 or an integer of 5 to 8, m is 0 or 1, and n is an integer of 1 to 6, provided that l is 0 when Z_2 is $—CH_3$ or an integer of 5 to 8 when Z^2 is $—CF_3$ and m is 0 when Z^2 is $—CH_3$ or 1 when Z^2 is $—CF_3$,

wherein at least one of the optically active substances of the formula (2) is contained in an amount of not more than 30 mol % based on the total amount of at least one of the liquid crystal substances of the formula (1) and at least one of the optically active substances of the formula (2).

5,352,383

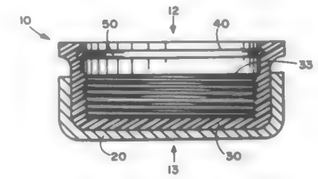
CORROSION INHIBITOR AND SEALABLE THREAD PROTECTOR END CAP FOR TUBULAR GOODS

Donald M. Johnson, Woodlands, and John S. Ippolito, Houston, both of Tex., assignors to Centrax International Corp., Houston, Tex.

Continuation-in-part of Ser. No. 779,354, Oct. 18, 1991, abandoned. This application Jun. 25, 1993, Ser. No. 82,996

Int. Cl.[5] C23F *11/12, 11/14*

U.S. Cl. 252—389.62 **8 Claims**



1. An environmentally-safe and biodegradable liquid composition for inhibiting the corrosion of ferrous metal surfaces in oil field applications consisting essentially of:

(a) about 5–25% cyclohexylammonium benzoate;

(b) about 8–50% of a non-toxic and non-carcinogenic alkali metal benzoate salt; and

(c) about 35–80% water.

5,352,384

AGLUCONE ISOFLAVONE ENRICHED VEGETABLE PROTEIN FIBER

Jerome L. Shen, St. Louis, Mo., assignor to Protein Technologies International, Inc., St. Louis, Mo.

Division of Ser. No. 135,193, Oct. 12, 1993, Pat. No. 5,320,949. This application Jan. 13, 1994, Ser. No. 181,138

Int. Cl.[5] A61K *35/78, 31/35;* **C08H** *3/00;* **C12P** *21/00*

U.S. Cl. 252—398 **1 Claim**

1. An aglucone enriched fiber product having genistein contents of about 1.0 and 2.0 mg/g and a daidzein contents of about 0.7 to 1.7 mg/g.

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5,352,385

JOINING AGENT FOR JOINING CERAMIC WITH ELECTRIC JOINING METHOD

Hiroaki Yanagida, Chofu; Akio Matsui, Ikeda; Tokumitsu Nishi, Osaka; Kouji Okuda, Kobe; Hiroshi Takai, Nishinomiya; Hisakiyo Hoshino, Settsu; Masahi Numano, Takatsuki, and Natsumi Miyake, Toyonaka, all of Japan, assignors to Daihen Corporation, Osaka, Japan

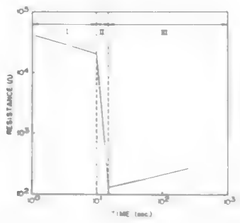
PCT No. PCT/JP91/00796, § 371 Date Mar. 25, 1992, § 102(e) Date Mar. 25, 1992, PCT Pub. No. WO91/19689, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 13, 1991, Ser. No. 834,258

Claims priority, application Japan, Jun. 13, 1990, 2-154266; Jun. 13, 1990, 2-154267; Jul. 19, 1990, 2-191912; Aug. 10, 1990, 2-213068; Dec. 25, 1990, 2-405758

Int. Cl.[5] H01B *1/00, 1/06*

U.S. Cl. 252—521 3 Claims



1. A joining agent which is used for joining ceramic bodies by an electric joining method comprising:

a composition of:

(a) an electric conductive component effective for providing an electric conductivity to said composition at an electric current supplying time; and

(b) a joining component for providing an effective wetability to the ceramic bodies at the molten state of the joining agent and an effective joining strength in the solidified state;

wherein said electric conductive component is an ion conductor selected from the group consisting of fluorides, chlorides, alkali metal oxides and alkaline earth metal oxides and is selected so as to form carrier ions during pro-heating which provide said joining agent with an electric conductivity higher than that of the ceramic bodies at the electric current supplying time, whereby said electric conductive component and said joining component are selected in effective amounts such that the electric resistance of said joining agent increases gradually at said molten state by decreasing the density or the mobility of said carrier ions;

wherein said composition comprises 10 to 40 weight % of CaF_2, as said electric conductive component and more than 10 weight % of Al_2O_3, 15 to 45 weight % of Si_3N_4 and the residual of SiO_2 as said joining component.

5,352,386

COMPOSITIONS FREE OF BORON COMPRISING N-ALKYLERYTHRONAMIDES AND N-ALKYLXYLONAMIDES AS SURFACTANTS

Mohammad A. Rahman, River Edge; Robert W. Humphreys, Oradell; Shang-Ren Wu, Mahwah, all of N.J., and Abid N. Khan-Lodhi, Hoole Chester, England, assignors to Lever Brothers Company, New York, N.Y.

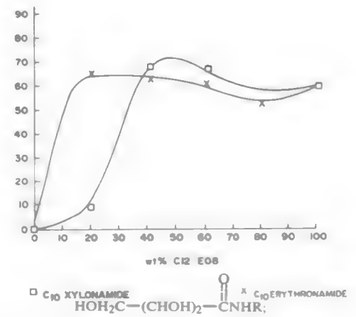
Filed Nov. 25, 1992, Ser. No. 981,643

Int. Cl.[5] C11D *1/72, 3/32*

U.S. Cl. 252—548 8 Claims

1. A detergent composition comprising a detergent active system which detergent active system consists essentially of

(a) 10 to 60% by weight N-alkylerythronamide surfactant having the formula:



$$HOH_2C-(CHOH)_2-\overset{O}{\overset{\|}{C}}-NHR;$$

wherein R is a straight or branched chain, saturated or unsaturated hydrocarbon having 8 to 24 carbons; and

(b) 90% to 40% by weight of octaethylene glycol monodecyl ether; and

said composition being free of boron.

5,352,387

ALKYL GLYCERAMIDE SURFACTANTS AND COMPOSITIONS COMPRISING THESE SURFACTANTS

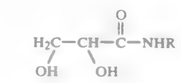
Mohammad A. Rahman, River Edge, and Shang-Ren Wu, Mahwah, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Nov. 25, 1992, Ser. No. 981,972

Int. Cl.[5] C11D *1/14, 3/32, 1/83*

U.S. Cl. 252—548 3 Claims

1. A detergent composition comprising a detergent active system comprising a cosurfactant and alkyl glyceramide having the formula:



wherein R is a C_8 or greater than about C_8 straight-chain, saturated or unsaturated aliphatic hydrocarbon;

wherein said alkylglyceramide comprises 25–90% by wt. of the active system and the balance of the active system comprises a cosurfactant which cosurfactant is an alkali metal alkyl sulfate anionic surfactant.

5,352,388

NON-LINEAR OPTICAL DEVICE

Kenneth R. Seddon; Christer B. Aakeroy, both of West Sussex; Nicholas Blagden, Merseyside, and Yasmin Patell, Kent, all of England, assignors to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

PCT No. PCT/GB91/00616, § 371 Date Dec. 17, 1992, § 102(e) Date Dec. 17, 1992, PCT Pub. No. WO91/16657, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 19, 1991, Ser. No. 965,379

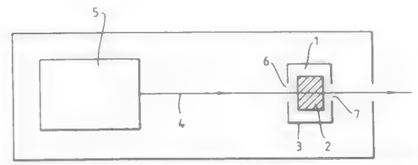
Claims priority, application United Kingdom, Apr. 20, 1990, [redacted]

Int. Cl.[5] F21V *9/00*

U.S. Cl. 252—582 10 Claims

1. NLO device comprising a crystalline SHG material mounted in the optical path of a laser, wherein the crystalline material comprises a salt of an organic nitrogenous base and an optically active enantiomer of a chiral carboxylic acid, said

acid containing, in addition to its carboxyl (—COOH) group, at least one substituent group selected from —COOH and —OH, said crystalline salt having a non-centrosymmetric crystal structure.



5,352,389

COMPOSITION FOR THE CLEANING OF THE SKIN, SCALP AND HAIR

Giovanni Gazzani, Appiano Gentile, Italy, assignor to Crinos Industria Farmacobiologica SpA, Guardia, Italy

Filed Jul. 7, 1992, Ser. No. 909,836

Claims priority, application Italy, Jul. 8, 1991, MI91 A 001885

Int. Cl.[5] C11D *7/32, 7/40, 7/42*

U.S. Cl. 252—544 21 Claims

1. Detergent composition in the form of an aqueous solution or an O/W emulsion for the cleaning of the skin, scalp and hair, said composition being substantially free of fatty acids and organic solvents of the skin soil, said composition comprising at least one surfactant in an overall quantity not higher than 4% w/v and being of the amphoteric, anionic or nonionic type, at least one water soluble organic base buffered at pH 7–8.5 in a quantity ranging from 0.5 to 5% w/v, said water soluble organic base being chosen from one or both of the following groups:

Low molecular weight primary, secondary or tertiary saturated aliphatic alkylamines and their corresponding hydroxy derivatives characterized in that, with the sole exception of the compound N-methyl glucamine, said substances have no more than 4 carbon atoms for each alkyl chain, wherein no more than three carbon atoms are set on the longest straight alkyl chain(s); and

Basic aminoacids;

characterized in that an acidic ingredient is added to the composition and then neutralized with said water soluble organic base, the quantity of said at least one base being in excess of the amount required for neutralization, so that the solution pH should be in the alkaline range of 7–8.5.

5,352,390

CEMENTITIOUS COMPOSITIONS CONTAINING SHREDDED POLYSTYRENE AGGREGATE

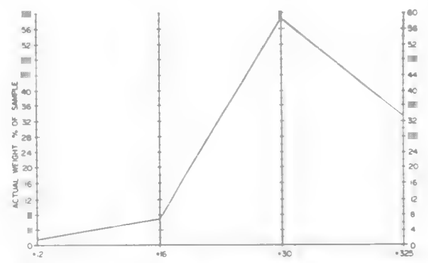
Dennis M. Hilton, Londonderry, N.H., and Paul E. Korenberg, Carlisle, Mass., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation of Ser. No. 850,217, Mar. 12, 1992, abandoned, which is a continuation of Ser. No. 384,941, Jul. 25, 1989, abandoned. This application Mar. 11, 1993, Ser. No. 31,041

Int. Cl.[5] C09K *21/00;* B27N *9/00*

U.S. Cl. 252—601 19 Claims

1. A dry fire proofing composition comprising a hydratable cementitious binder and shredded polystyrene aggregate having a particle size distribution such that a range of about 0 to about 20 percent by weight of the particles is retained by a standard #12 sieve and a maximum of about 40 percent by weight of the particles both passes through a standard #30 sieve and is retained by a standard #325 sieve said composition comprising the hydratable cementitious binder from at least 60% by weight and comprising the said polystyrene from



about 1% to 5% by weight, wherein the polystyrene has a density in the range of about 0.2 to 0.6 pcf.

5,352,391

GAS DISTRIBUTOR FOR SMALL-BUBBLE AERATION OF WATER

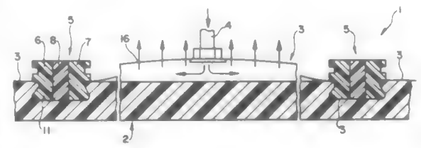
Urs V. Heck, Schmerikon, Switzerland, assignor to Bontec AG, Schmerikon, Switzerland

Filed May 12, 1993, Ser. No. 72,481

Claims priority, application Switzerland, Aug. 31, 1992, 02 722/92-3

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—122.2 16 Claims



1. A gas distributor for bubble aeration of water comprising:

a bottom plate;

a base plate coupled to said bottom plate;

a perforated diaphragm member coupled to said base plate; and

a continuous fastening and sealing assembly for fastening and sealing a periphery of said diaphragm member to said base plate such that the diaphragm member rests on top of said base plate when a gas supply is minimal and such that said diaphragm bulges during supply of gas between said base plate and said diaphragm member,

said fastening and sealing assembly including:

two outer fastening members having a half dovetail cross-section for insertion into a mating dovetail recess defined in said base plate; and

a center fastening member,

said two outer fastening members being pre-stressed outwardly against sidewalls of said recess by said center fastening member,

said two outer fastening members and said center fastening member having substantially similar height and widths and being flexible in a dimensionally stable manner in a plane of the base plate permitting said fastening and sealing assembly to define curved portions thereof while maintaining a fastening and sealing function at the periphery of said diaphragm member,

said sidewalls and said two outer fastening members having mating step-like cross-sections.

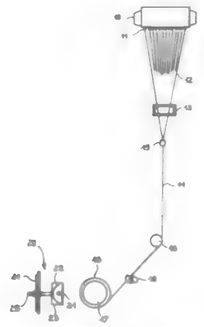
VOL 1167 ISS 1 OC 4 1994 UMI

5,352,392

PROCESS FOR MANUFACTURING A CONTINUOUS THREAD BY MECHANICAL DRAWING

Timothy Johnson, Vimines, and Patrick Moireau, Curienne, both of France, assignors to Vetrotex France, Chambery, France

Filed May 17, 1993, Ser. No. 61,223
Claims priority, application France, May 15, 1992, 92 05958
Int. Cl.[5] B29C *35/10, 47/02;* C03B *37/022*
U.S. Cl. 264—22 8 Claims



1. Process for manufacturing a continuous thread, comprising the steps of:

forming a large number of continuous filaments by mechanically drawing a large number of molten thermoplastic material streams flowing from openings in at least one device;

depositing on the surface of at least some of the filaments a mixture in a liquid state which reacts under the effect of ultraviolet radiation;

subsequently combining the filaments to form a thread;

winding the thread into the form of a winding on a rotating support; and

exposing the thread wound on the winding support to ultraviolet radiation during the winding step.

5,352,393

METHOD OF AND APPARATUS FOR GAGING AND CONTROLLING CIRCUMFERENCE OF EXTRUSION-BLOWN FILM

Daniel R. Joseph, 700 Highlander Blvd., Suite 150, Arlington, Tex. 76015

Continuation-in-part of Ser. No. 496,798, Mar. 21, 1990, Pat. No. 5,104,593. This application Apr. 13, 1992, Ser. No. 867,762
The portion of the term of this patent subsequent to Jun. 14, 2008, has been disclaimed.
Int. Cl.[5] B06B *3/00;* B29C *47/92;* G01N *29/00*
U.S. Cl. 264—23 28 Claims

2. A method of gauging and controlling the circumference of an extruded film tube formed from film extruded form an annular die comprising:

providing a transducer;

placing said transducer adjacent said extruded film tube;

transmitting an interrogating signal to, and receiving an interrogating signal from, said extruded film tube;

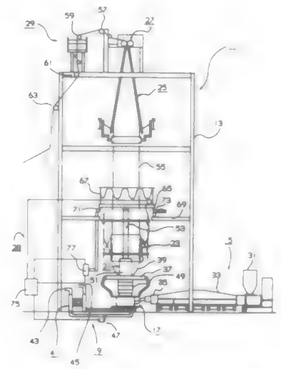
producing a detected position signal based on information contained in aid interrogating signal;

determining if said detected position signal violates at least one preselected condition, and providing an estimated position signal in lieu of said detected position signal if said at least one preselected condition is violated; and

varying a quantity of air within said extruded film tube in response to said detected and estimated position signals depending upon whether or not said at least one preselected condition is violated.

12. In a blown film extrusion apparatus in which film is extruded as a tube from an annular die and then pulled along a predetermined path, an apparatus for gauging and controlling the position of said extruded film tube, comprising:

at least one transducer means adjacent said extruded film tube for transmitting interrogating pulses to, and receiving interrogating pulses from, said extruded film tube and for producing a signal corresponding to a detected position of said extruded film tube;



means for varying a quantity of air within said extruded film tube in response to control signals for urging said extruded film tube to a desired position;

control means for receiving said detected position signal and for providing said control signals to said means for varying; and

wherein during selected extruded film tube position conditions, said control means activates said means for varying to provide at least one predetermined air flow rate.

5,352,394

INJECTION MOLDING METHOD AND APPARATUS WITH MAGNETIC MOLD CLAMPING

Jun Fujita; Yoshinori Nakanishi, both of Numazu; Shinichi Tazawa; Hideo Tanaka, both of Mishima; Masao Hirosawa, Shizuoka; Nobukatsu Omura, and Harukatsu Goto, both of Numazu, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP91/00586, § 371 Date Jul. 29, 1992, § 102(e) Date Jul. 29, 1992, PCT Pub. No. WO92/09416, PCT Pub. Date Jun. 11, 1992
PCT Filed Apr. 30, 1991, Ser. No. 916,081
Claims priority, application Japan, Nov. 30, 1990, 2-334814; Nov. 30, 1990, 2-334815
Int. Cl.[5] B29C *45/64, 45/76*
U.S. Cl. 264—40.5 17 Claims

1. A method for clamping a pair of molds in an injection molding machine, which comprises the steps of:

(a) providing a magnetic attracting force generating means in at least one of first and second platens, said first platen having a first mold retained therein and said second platen having a second mold retained therein;

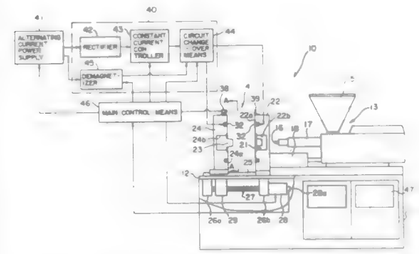
(b) moving both of the plates relatively towards each other to thereby close the first and second molds;

(c) generating a magnetic attracting force between the first and second platens by the magnetic attracting force generating means to retain both of the platens in a close condition and produce a predetermined mold clamping force between both of the molds;

(d) pouring a raw molding material into the cavity within said molds;

(e) releasing the magnetic attracting force between both of the platens; and

(f) moving both of the platens relatively away from each other to open the first and second molds;



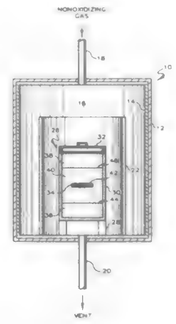
wherein said method further includes detecting the amount of a gap between the first and second platens, and controlling the amount of the gap to thereby control the mold clamping force between both of the molds.

5,352,395

CARBON AND CERAMIC-CONTAINING LAYERS FOR USE IN SINTERING OF SILICON NITRIDE ARTICLE

Lyle R. Kallenbach, and Bruce W. Gerhold, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 17, 1992, Ser. No. 916,318
Int. Cl.[5] C04B *35/58*
U.S. Cl. 264—62 25 Claims



1. A method comprising:

(a) providing an article molded from a first particulate material comprising silicon nitride;

(b) providing at least one outer layer which is closely adjacent to but not contacting said article and which comprises a second particulate material comprising at least about 90 weight percent carbon;

(c) providing at least one inner layer which at least partially surrounds said article so as to be intermediate to said article and said at least one outer layer and which comprises a third particulate material comprising a ceramic compound selected from the group consisting of a nitride, a carbide, and mixtures thereof; and

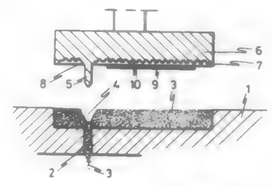
(d) heating said article as positioned with respect to said at least one outer and inner layers in steps (b) and (c) so as to sinter said article.

5,352,396

METHOD OF FABRICATING CERAMIC TILE

Juan J. L. Zaragueta, calle Europa, 2 Benicasim (Catello), Spain

Division of Ser. No. 574,588, Aug. 29, 1990, abandoned. This application Nov. 25, 1992, Ser. No. 981,599
Claims priority, application Spain, Aug. 31, 1989, 8902984
Int. Cl.[5] C04B *33/34*
U.S. Cl. 264—62 8 Claims



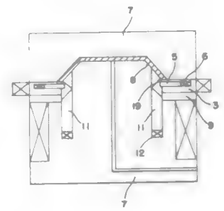
1. A method for fabricating a ceramic tile comprising the steps of initially pressing a ceramic or stoneware powder in a mold to form a tile having an opening located near an end of said tile extending between opposite surfaces of said tile with a descending step around said opening and lateral grooves extending along a length of said tile adjacent opposite edges of said tile and subsequently pressing said ceramic tile to form a hidden side of said tile having striations extending in two directions, baking said tile and glazing said tile on an outer side thereof.

5,352,397

PROCESS FOR PRODUCING MULTILAYER MOLDED ARTICLE INCLUDING FOLDING OF A SKIN MATERIAL OVER A BACK OF A RESIN MATERIAL

Takahisa Hara, Kawanishi; Masahito Matsumoto, Ibaraki; Nobuhiro Usui, Takatsuki, and Shigeyoshi Matubara, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 10, 1992, Ser. No. 942,502
Claims priority, application Japan, Sep. 10, 1991, 3-230264
Int. Cl.[5] B29C *43/18, 43/20, 53/00*
U.S. Cl. 264—153 4 Claims



1. A process for producing a multilayer molded article comprising a thermoplastic resin body and a skin material covering the resin body, which process comprises steps of:

supplying a skin material between a pair of upper and lower molds;

closing the molds a predetermined distance for holding said skin material between a skin material-holding frame which is movable in a direction perpendicular to a mold-closing direction and a skin material-supporting frame which is movable in the mold-closing direction;

supplying a mass of a thermoplastic resin melt between the lower mold and the skin material;

closing the molds and pressing a thermoplastic resin melt to form a multilayer molded article;

retracting at least one moving member, which moves forward or rearward in the mold closing direction and is

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provided around a periphery of the mold face, away from the mold face after the closing of the molds;

ejecting at least one ejector, which is provided on the skin material-holding frame and movable in a direction perpendicular to the mold closing direction, to fold an edge of the skin material towards a center of the mold; and

advancing said at least one moving member until it reaches the mold face so as to fold back the edge of the skin material over the back of the resin body.

5,352,398

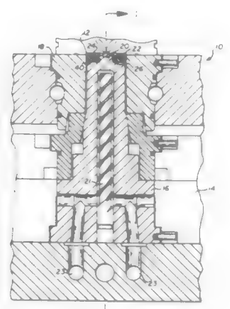
APPARATUS AND METHOD FOR ATTACHING A CAP TO A MOLD CORE

Kevin P. Crowe, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 6, 1993, Ser. No. 58,626

Int. Cl.[5] B28B *7/10;* **B29C** *33/40, 45/03, 45/40*

U.S. Cl. 264—219 **16 Claims**



1. An apparatus for molding and ejecting an article from an air eject mold, said mold having a core and sleeve between which said article is molded, said apparatus comprising:

a T-shaped member having a boss thereon and being formed on an upper end portion of said core; and

a cap member having a hole mateable with said boss, a closed rear wall and a relieved front wall, said front wall having a first slot for receiving said T-shaped member, a second slot larger than said first slot and concentric with said first slot for having said T-shaped member rotated therein into engagement with said cap member, and a third slot larger than said second slot and concentric with said first and second slots for providing an air distribution channel for ejection of said article.

16. A method for ejecting a molded article from an air eject mold, said mold having a core and sleeve between which said article is molded, said method comprising the steps of:

forming a T-shaped member on an upper end portion of said core, said T-shaped member having a boss thereon;

forming a cap member having a boss mating hole, a closed rear wall and a relieved front wall, said front wall having a first slot for receiving said T-shaped member, a second slot larger than said first slot and concentric with said first slot for having said T-shaped member rotated therein into engagement with said cap member, and a third slot larger than said second slot and concentric with said first and second slots for providing an air distribution channel for ejection of said article;

inserting said T-shaped member into said first slot;

placing a pin between said cap member and said T-shaped member and angularly orienting said cap member relative to said T-shaped member;

controlling axial movement of said cap member relative to said T-shaped member by a fit tolerance between said T-shaped member and said second slot of said cap member;

rotating said T-shaped member in said second slot until said boss engages said boss mating hole and radially locating said T-shaped member relative to said cap member;

providing an air distribution channel in said third slot;

molding said article between said core having said cap member thereon and said sleeve of said air eject mold; and

introducing pressurized air into said air distribution channel and forcibly separating said molded article from said core.

5,352,399

PROCESS FOR TWO-STAGE INJECTION MOLDING OF AIR-CONDITIONING BLOW-OUT PORT DEVICE

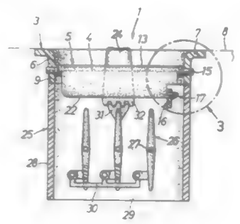
Kazuhiro Hashimoto, and Hiroyuki Okamoto, both of Kawagoe, Japan, assignors to Moriroku Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1993, Ser. No. 62,838

Claims priority, application Japan, Dec. 1, 1992, 4-321961

Int. Cl.[5] B32B *1/00, 3/00, 7/04*

U.S. Cl. 264—242 **1 Claim**



1. A process for two-stage injection molding of an air-conditioning blow-out port device comprising:

a housing of synthetic resin, which includes pairs of shaft bores provided in a coaxial arrangement in opposed wall portions of a peripheral wall to extend through the opposed wall portions, and

a plurality of blades of synthetic resin which each include a pair of support shafts projectingly provided at opposite ends of a blade body disposed within the housing and rotatably fitted in the shaft bores of the housing, the process comprising the steps of:

closing a pair of housing-forming opposed opening-closing dies to clamp, between both the opening-closing dies, a plurality of first opposed slide dies each including a plurality of shaft bore-forming cores and a plurality of protrusions juxtaposed with the cores, thereby defining a housing-forming cavity so as to include the shaft bore-forming cores and the protrusions;

primarily injecting a synthetic resin into the cavity to form the housing including the shaft bores and a plurality of recesses in the opposed wall portions, the recesses being formed by the corresponding protrusions of the first slide dies and opened into outer surfaces of the opposed wall portions;

retreating the first opposed slide dies such that the shaft bore-forming cores and the protrusions are removed from the corresponding shaft bores and recesses formed in the housing, and opening the pair of housing-forming opposed opening-closing dies leaving the housing attached to one of the opening-closing dies;

closing the one of the opening-closing dies for forming a front edge of each blade body located on a side of a front surface of the housing, while closing another opening-closing die for forming a rear edge of each blade body, the another opening-closing die including a plurality of second opposed slide dies each having a plurality of protrusions corresponding to the recesses formed in the housing, thereby clamping the second slide dies between both of these opening-closing dies, with the housing being clamped between these opening-closing dies and the second slide dies and with the protrusions of the second slide dies being fitted into the recesses of the housing, respectively, while defining blade body-forming cavities between these opening-closing dies;

using the shaft bores in the housing as support shaft-forming cavities and secondarily injecting a synthetic resin into the blade body-forming cavities and the support shaft-forming cavities to form the blade bodies and the rotatably fitted support shafts of the blow-out port device;

opening both the opening-closing dies, with the blow-out port device being left on the another opening-closing die by the fitting of the protrusions of the second slide dies into the recesses in the housing; and

separating the protrusions of the second slide dies out of the corresponding recesses, and then bringing a plurality of ejector pins provided on the another opening-closing die into abutment against the rear edges of the blade bodies respectively to push off the blow-out port device from the other opening/closing die.

5,352,400

CARBODIIMIDES AND PROCESSES THEREFOR

Michael W. J. West, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 29, 1992, Ser. No. 875,886

Int. Cl.[5] C07C *267/00;* **C08G** *18/16*

U.S. Cl. 564—252 **14 Claims**

1. A process for the preparation of tertiary-aryl carbodiimide, comprising, contacting a tertiary isocyanate, an aryl isocyanate, and a catalyst for the condensation of isocyanate to carbodiimide, at a sufficiently high temperature and for a sufficient amount of time to effect conversion of the isocyanates to carbodiimide, and provided that the selectivity for the tertiary-aryl carbodiimide is greater than it is for random reaction.

5,352,401

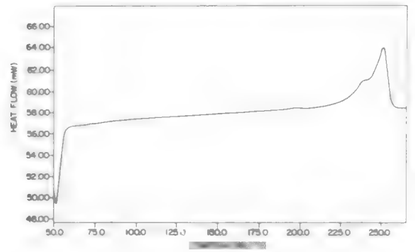
PROCESS FOR PRODUCING ELEVATED TEMPERATURE DIMENSIONALLY STABLE POLYESTER ARTICLES WITH LOW GAS PERMEABILITY

Edward J. Dalgewicz, III, Millstone, and Richard A. Freundlich, Plainsboro, both of N.J., assignors to Therma-Plate Corporation, South Plainfield, N.J.

Division of Ser. No. 863,204, Apr. 3, 1992. This application Apr. 16, 1993, Ser. No. 48,955

Int. Cl.[5] C08J *5/00*

U.S. Cl. 264—331.11 **27 Claims**



1. A process for producing a shaped polyester article comprising the steps:

(a) heating a composition consisting essentially of a substantially non-oriented crystallizable thermoplastic polyethylene terephthalate homopolymer to a completely or substantially completely amorphous state;

(b) maintaining the composition heated in step (a) at a temperature above the peak crystallization rate temperature of said crystallizable polyethylene terephthalate homopolymer, while simultaneously contacting said composition with a surface which imparts shape to said composition, said surface being at or above the peak crystallization rate temperature from melt for said polyethylene terephthalate homopolymer;

(c) maintaining the contact between said composition and said surface, at the surface temperature set forth in step (b), for about 20 seconds to about 5 minutes to provide a crystalline composition having an enthalpy of recrystallization of about 0 to about −2.1 calories per gram as measured by differential scanning calorimetry;

(d) cooling the crystalline composition provided by step (c) at a rate of from between about 5° C. to about 80° C. per minute, for a time sufficient to provide a shaped article comprising said polyethylene terephthalate homopolymer, with said shaped article having an oxygen permeability of from about 0.2 to about 4.9 cc-mil/100 in^2-24 hrs-atm at 23° C. and at 100% relative humidity inside and 60% relative humidity outside.

5,352,402

METHOD AND APPARATUS FOR MANUFACTURING BIAXIALLY ORIENTED, THERMALLY STABLE, BLOWN CONTAINERS

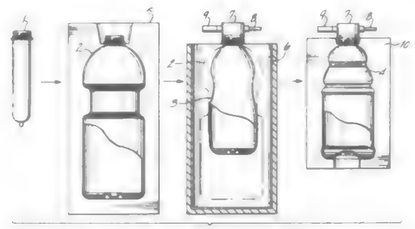
Hiroyuki Orimoto; Saburo Suzuki, both of Ueda, and Fumiya Amari, Komoro, all of Japan, assignors to Nissei ASB Machine Co., Ltd., Komoro, Japan

Continuation-in-part of Ser. No. 942,323, Sep. 9, 1992, abandoned, which is a continuation of Ser. No. 600,202, Oct. 18, 1990, abandoned. This application Dec. 14, 1992, Ser. No. 990,647

Claims priority, application Japan, Oct. 23, 1989, 1-275565; Feb. 9, 1990, 2-30495

Int. Cl.[5] B29C *49/06, 49/12, 49/28, 49/64*

U.S. Cl. 264—526 **31 Claims**



1. A method of manufacturing a biaxially oriented, thermally stable, blown container having a predetermined capacity comprising the steps of:

blow-molding a preform into a primary molded article of capacity larger than the predetermined capacity;

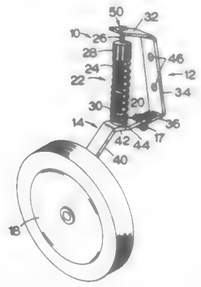
heating the primary molded article in an oven outside of the first mold to cause the primary molded article to shrink and sealing a mouth portion of the article during heating, so that internal pressure within the article increases as the article shrinks;

allowing the article to shrink against the increased internal pressure to less than the predetermined capacity to produce a shrunken article; and

blow-molding the shrunken article into a biaxially oriented, thermally stable, blown container having the predetermined capacity.

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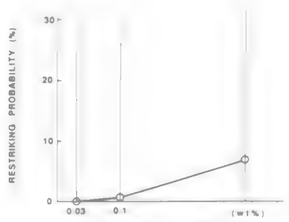
5,352,403
ADJUSTABLE TRAINING WHEEL APPARATUS
Larry P. Egley, 109 Traveler's Trail, St. Peters, Mo. 63376
Filed Oct. 1, 1993, Ser. No. 130,311
Int. Cl.[5] B62H *7/00*
U.S. Cl. 280—293 10 Claims



1. An improved adjustable training wheel apparatus in combination with a bicycle comprising:
an upper support member having an upper portion, an intermediate portion, and a lower portion, the lower portion of the upper support member having at least one slotted hole;
a lower support member having an upper portion, a first intermediate portion, a second intermediate portion, and a lower portion, the upper portion of the lower support member overlapping the lower portion of the upper support member;
a hinge attaching the lower portion of the upper support member to the upper portion of the lower support member;
a strut assembly flexibly attaching the upper portion of the upper support member to the second intermediate portion of the lower support member; and
a wheel rotatably attached to the lower portion of the lower support member;
wherein the hinge is attached to the upper and lower support members by a plurality of threaded members, at least one of said threaded members received within said at least one slotted hole providing clearance allowing the hinge to pivot without obstruction due to the threaded members.

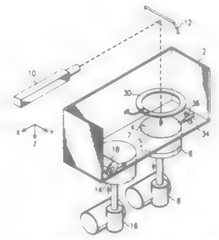
5,352,404
PROCESS FOR FORMING CONTACT MATERIAL INCLUDING THE STEP OF PREPARING CHROMIUM WITH AN OXYGEN CONTENT SUBSTANTIALLY REDUCED TO LESS THAN 0.1 WT. %
Nobuyuki Yoshioka; Toshimasa Fukai; Yasushi Noda, and Nobutaka Suzuki, all of Tokyo, Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan
Filed Oct. 23, 1992, Ser. No. 965,203
Claims priority, application Japan, Oct. 25, 1991, 3-279994; Oct. 29, 1991, 3-282715; Nov. 6, 1991, 3-289612; Jan. 21, 1992, 4-5769
Int. Cl.[5] B22F *1/00;* C22C *38/60, 33/00*
U.S. Cl. 419—31 18 Claims

1. A process for forming contact material of an electrode comprising the steps of:
preparing chromium of which oxygen content is substantially reduced to less than 0.1 wt %,
forming a molten mixture of said chromium and copper,
atomizing said molten mixture into fine particles to obtain Cu-Cr alloyed powder,



compacting said Cu-Cr alloyed powder under desired pressure, and
sintering said compacted alloyed powder.

5,352,405
THERMAL CONTROL OF SELECTIVE LASER SINTERING VIA CONTROL OF THE LASER SCAN
Joseph J. Beaman, Austin, Tex.; Joseph C. McGrath, Calistoga, and Frost R. R. Prioleau, Piedmont, both of Calif., assignors to DTM Corporation, Austin, Tex.
Filed Dec. 18, 1992, Ser. No. 992,926
Int. Cl.[5] B22F *3/10, 5/00*
U.S. Cl. 419—45 12 Claims



1. A method of producing an object by selective laser sintering, comprising the steps of:
dispensing a first layer of heat-fusible powder over a target surface having a width in a first direction;
defining a first scanning region of the target surface for a first cross-section of the object to be formed in the first layer of powder, said first scanning region having a width, in the first direction, substantially equal to the maximum width of the first cross-section in the first direction, and substantially smaller than the width of the target surface in the first direction;
scanning a directed energy beam in the first direction, beginning at a first end of said first scanning region and stopping upon reaching a second end of said first scanning region;
modulating the directed energy beam on and off during said scanning step so that the directed energy beam is turned on over selected portions of the first layer of powder corresponding to the first cross-section, to fuse the powder thereat; and
repeating said scanning and modulating steps in such a manner that adjacent scans of the directed energy beam overlap one another over the target surface.

5,352,406
HIGHLY MECHANICAL AND CORROSION RESISTANT STAINLESS STEEL AND RELEVANT TREATMENT PROCESS
Massimo Barteri, Rome, and Ivan Nembrini, Montello, both of Italy, assignors to Centro Sviluppo Materiali S.p.A., Rome and Dalmine S.p.A., Dalmine, both of Italy
Filed Apr. 23, 1993, Ser. No. 51,424
Int. Cl.[5] C22C *38/44, 38/20;* C21D *8/10, 8/00*
U.S. Cl. 420—49 25 Claims

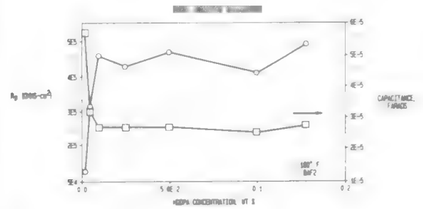
1. Alloy having the following composition (% by wt.):
C≦0.03, Cr 24.5–27, Ni 6.5–9, Mo 3.5–4.5, W 0.7–2.5; Cu 1.5–2.5, N 0.25–0.30, Mn≦1, P≦0.03, S≦0.005, Si≦1, balance iron and trace impurities.

5,352,407
LEAD-FREE BISMUTH FREE TIN ALLOY SOLDER COMPOSITION
Karl F. Seelig, 32 Deck St., Jamestown, R.I. 02835, and Donald G. Lockard, 85 Meadow, North Providence, R.I. 02904
Filed Apr. 29, 1993, Ser. No. 52,518
Int. Cl.[5] C22C *13/00*
U.S. Cl. 420—561 17 Claims

1. A lead-free bismuth-free solder alloy composition for electronic assembly applications having reduced toxicity and a melting point between 210° C. and 215° C. consisting of in weight percent:

93–98%	tin
1.5–3.5%	silver
0.2–2.0%	copper
0.2–2.0%	antimony.

5,352,408
DIPHOSPHONATES AS CORROSION INHIBITORS FOR ANTIFREEZE COOLANTS AND OTHER FUNCTIONAL FLUIDS
Stanley T. Hirozawa, Bloomfield Hills; David E. Turcotte, and Michael C. Welch, both of Woodhaven, all of Mich., assignors to BASF Corp., Parsippany, N.J.
Filed Oct. 30, 1991, Ser. No. 784,827
The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.
Int. Cl.[5] C23F *11/167;* C09K *5/00*
U.S. Cl. 422—7 4 Claims



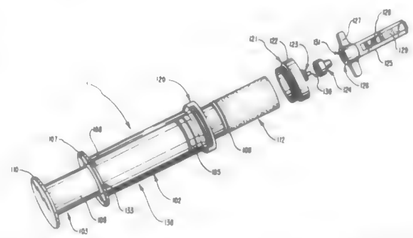
1. A method of inhibiting metallic corrosion in coolant systems selected from the group consisting of radiators, heaters, water pumps and engines which comprises adding to said coolant systems having one or more glycol or glycol ether based coolant compositions therein an effective amount of 1-hydroxyoctylidene-1,1-diphosphonic acid as a corrosion inhibitor.

2. A method of inhibiting metallic corrosion in coolant systems selected from the group consisting of radiators, heaters, water pumps and engines which comprises adding to said coolant systems having one or more glycol or glycol ether based coolant compositions therein from about 0.01–0.05% by total composition weight of 1-hydroxydodecylidene-1,1-diphosphonic acid as a corrosion inhibitor.

5,352,409
BUFFER AND METHOD FOR BUFFERING HOT TUBS AND SPAS
David J. Kierzkowski, Milwaukee, Wis., assignor to Great Lakes Biochemical Company, Inc., Milwaukee, Wis.
Filed Jun. 17, 1993, Ser. No. 78,603
Int. Cl.[5] C23F *11/08*
U.S. Cl. 422—14 9 Claims

1. A method of adjusting the pH of the water in a hot tub or spa to between 7.0 and 8.0 without adversely removing calcium or increasing the total alkalinity of the water, the method comprising the steps of:
a) adding to said water from 1 to 5 pounds of buffer per 500 gallons of water, said buffer comprising from about 90% to 99.5% by weight boric acid and from about 10% to about 0.5% by weight sodium carbonates; and
b) allowing said buffer to dissolve in said water;
whereby said water is buffered without clouding to a pH within the range of 7.0 to 8.0, the dissolved calcium in said buffered water is not substantially removed, and the total alkalinity of the water is not adversely increased.

5,352,410
FLUID SPECIMEN COLLECTION AND TESTING APPARATUS
Warren D. Hansen, 8378 Azul Way; Richard H. Taylor, 1892 E. Brady Creek Dr., both of Sandy, Utah 84093, and Bobbye J. Wetsel, 13278 S. Jared Cir., Riverton, Utah 84065
Filed Jun. 3, 1993, Ser. No. 72,592
Int. Cl.[5] G01N *21/00*
U.S. Cl. 422—58 8 Claims



1. A fluid specimen collection and testing apparatus adapted for collecting and testing a single quantity of fluid specimen, the apparatus consisting essentially of:
(a) a container having within its interior a single fluid specimen retention chamber;
(b) means for absorbing a single fluid specimen into an absorbent material, said absorbing means being adapted for placement within said specimen retention chamber,
(c) means for sealing a fluid specimen retained by said absorbent material within said specimen retention chamber of said container, and
(d) an accessory tip constructed and adapted to mount to said container, said accessory tip comprising a substantially fluid-tight transparent sleeve to form a single fluid specimen testing chamber, and a dry paper reagent strip disposed within said sleeve, said fluid specimen testing chamber being in fluid communication with said specimen retention chamber when said accessory tip is mounted to said container so that transmission of fluid specimen from said absorbent material to said reagent strip may be effected;
wherein a quantity of fluid specimen may be collected by

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contacting said absorbent material with fluid specimen to initiate performance of a test; and

wherein said fluid specimen collection and testing apparatus is adapted to be manipulated entirely in the user's hands without the necessity of the use of any type of mount or stand.

5,352,411

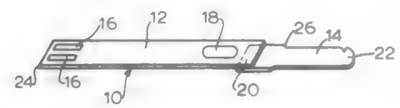
DEVICE FOR DETERMINATION OF TEAR CONSTITUENTS

Raja N. Khuri, 122 Longmeadow Rd., Greenville, N.C. 27858

Filed Aug. 13, 1993, Ser. No. 106,282

Int. Cl.[5] G01N *21/00*

U.S. Cl. 422—58 **1 Claim**



1. A device for determination of a tear constituent selected from the group consisting of glucose, urea, potassium, and calcium comprising:

(a) an absorbent tear strip extending between a distal end for placement in a lateral bulbar conjunctiva of an eye of a person, and a proximal end, said tear strip having a length and width to enable the tear strip distal end to be placed in a lateral bulbar conjunctiva and to enable tear material absorbed by the tear strip distal end to migrate to the tear strip proximal end; and

(b) an electrochemical strip extending between a distal end and a proximal end, said electrochemical strip being impregnated with sensor and indicator chemistry which in the presence of the selected constituent acts as a specific sensor of the selected constituent in tear material, said chemistry being located in an electrochemical sensing area between the distal end and the proximal end of the electrochemical strip; said electrochemical strip distal end being bonded to the tear strip proximal end in a manner enabling tear material reaching said tear strip proximal end to migrate from the tear strip proximal end to the electrochemical sensing area, thereby enabling said selected tear constituent to be detected in the electrochemical sensing area by use of a reader when the presence of the selected constituent is indicated by said chemistry.

5,352,412

APPARATUS FOR GENERATING PYROLYZATES OF MICROSCOPIC PARTICLES

Joseph T. Senftle, and Richard L. Tharp, both of Plano, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 1, 1993, Ser. No. 22,701

Int. Cl.[5] G01N *25/02, 33/24*

U.S. Cl. 422—78 **19 Claims**

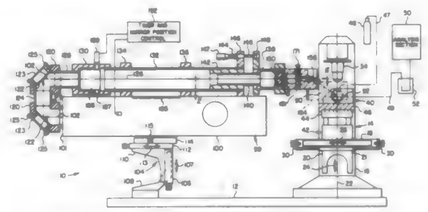
1. An apparatus for generating a pyrolyzate of a microscopic particle for analysis comprising:

an optical sensor having a focal plane and a movable support stage operable to move along three mutually perpendicular axes;

a housing supported on said stage and including a closable chamber, a first window opening into said chamber for optically viewing said particle through said optical sensor, a second window for admitting a beam of electromagnetic radiation for heating said particle in said chamber, and particle support means in said chamber;

a source of visible light and a conductor for providing a focused beam of said light into said chamber for targeting said particle to be aligned with a focal axis and in said focal plane when viewed by said optical sensor; and

a source of electromagnetic radiation and a conductor for providing a focused beam of said radiation through said second window and into said chamber for heating said particle, said source of light and said source of radiation



being operably mounted on a movable support for adjusting the position of said light and said radiation beams with respect to said particle support means.

5,352,413

DEVICE FOR THE SAFE REMOVAL OF BLOOD FROM A SUPPLY VESSEL

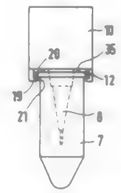
Michael Kratzer, Munich, and Volker F. von der Goltz, Seeon, both of Fed. Rep. of Germany, assignors to Baxter Diagnostics Inc., Deerfield, Ill.

Filed Aug. 28, 1992, Ser. No. 889,328

Claims priority, application Fed. Rep. of Germany, May 28, 1991, 4117483; Mar. 26, 1992, 4209872

Int. Cl.[5] B01L *3/02;* **G01N** *33/00*

U.S. Cl. 422—100 **27 Claims**



1. A device for the safe removal of blood from a supply vessel using an aperture holder having a capillary for removing the blood from the supply vessel via a suction operation, comprising:

a supply vessel having an opening therein for accepting blood;

an aperture holder defining an aperture and having a depending first capillary positioned for insertion into the opening of the supply vessel;

a cover unit sealing the opening of the supply vessel, the cover unit including a region through which the capillary is insertable into the supply vessel while the cover unit seals the opening of the supply vessel; and

a locking means for locking the supply vessel and the cover unit to the aperture holder and preventing the supply vessel and the aperture holder from being separated, wherein the locking means includes a ventilation gap

located in a space between the opening in the supply vessel and the cover unit adapted to allow ambient air to enter the supply vessel when blood is withdrawn through the capillary, which facilitates removal of the blood, while also being adapted to prevent blood from escaping therethrough.

5,352,414

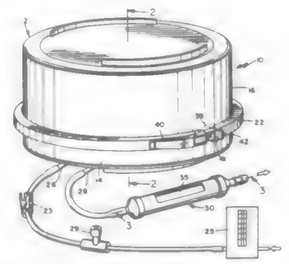
INCUBATOR UNIT AND FILTER SYSTEM

Barry E. Rothenberg, P.O. Box 977, Del Mar, Calif. 92014-0977

Filed Dec. 30, 1992, Ser. No. 998,425

Int. Cl.[5] B01L *11/00*

U.S. Cl. 422—101 **11 Claims**



1. An incubator apparatus, comprising:

an outer housing having an internal sealed chamber with an upper wall and a lower wall, the housing comprising a base, a lid, and a releasable securing mechanism for releasably securing the base to the lid and sealing the chamber;

the housing having inlet and outlet passageways communicating with the chamber for allowing gas flow into and out of the chamber;

an elongate outlet filter member in the outlet passageway for filtering contaminants from gas flowing out of the chamber;

a static filter unit in the chamber for absorbing radioactive gases;

the filter unit comprising a flat filter member for absorbing contaminants and a support device for releasably supporting the flat filter member at a location spaced above the lower wall and below the upper wall of the chamber; and

the support device comprising a central post extending upwardly from the lower wall of the chamber, and the flat filter member having a central opening for sliding engagement over the central post, and mounting means for mounting the filter member at a selected height on the post.

5,352,415

CONTROL SYSTEM FOR ACETIC ACID MANUFACTURING PROCESS

Shinya Ochiai, Corpus Christi, Tex., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Sep. 29, 1993, Ser. No. 129,971

Int. Cl.[5] G05D *9/00;* **G08B** *21/00;* **B01J** *8/00*

U.S. Cl. 422—105 **18 Claims**

1. In a reaction system for the carbonylation of methanol to acetic acid comprising:

(a) a reactor containing a liquid reaction medium of methanol, a rhodium catalyst, a solvent and water to form a reactor product;

(b) a flasher for receiving said reactor product from said reactor and capable of flashing off product acetic acid as vapor and forming a liquid at a base of said flasher containing rhodium;

(c) means to direct said reactor product from said reactor to said flasher;

(d) means to recycle said rhodium from the base of said flasher to said reactor;

(e) means to feed methanol to said reactor;

(f) means to control the liquid level in said reactor to a desired liquid level;

(g) means to control the liquid level in said flasher to a desired liquid level;

(h) means to control the flow rate of said reactor product from said reactor to said flasher;

(i) means to control the flow rate of said recycled rhodium from said flasher base to said reactor;

the improvement comprising:

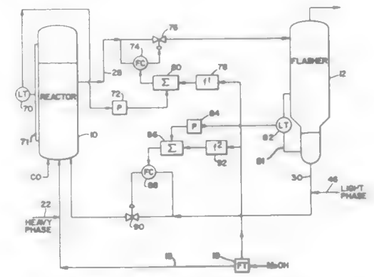
said reactor liquid level control means (f) containing;

(j) means to determine the actual liquid level in said reactor and transmit a level signal;

(k) controller means to receive said level signal, to determine any differences in liquid level between said desired liquid level in said reactor and said actual liquid level therein and to send a correction signal, said controller means being such as to not endlessly seek a zero off-set from said desired level;

(l) means to determine the methanol feed rate in said methanol feed means (e) and to send a methanol feed rate signal;

(m) a function generator means to receive said methanol feed rate signal and correlate said methanol feed rate to a desired reactor product flow rate from said reactor to said flasher by means of a first function which depicts the empirical relationship between said methanol feed rate



and said reactor product flow rate from said reactor to said flasher under steady state conditions, and to convert said desired reactor product flow rate to a bias signal and to send said bias signal;

(n) means to sum said correction signal and said bias signal to form a command signal and send said command signal;

(o) a flow control means for receiving said command signal and for adjusting the flow rate of said reactor product in said means to control the flow rate of said recycled rhodium (h);

said flasher liquid level control means (g) containing;

(p) means to determine the actual liquid level in said flasher and transmit a flasher level signal;

(q) controller means to receive said flasher level signal, to determine any differences between said desired liquid level in said flasher and said actual liquid level therein and to send a second correction signal, said controller means being such as to not endlessly seek a zero off-set from said desired liquid level in said flasher;

(r) a function generator means to receive said methanol feed rate signal and correlate said methanol feed rate to a desired recycle flow rate from said flasher to said reactor by means of a second function which depicts the empirical relationship between said methanol feed rate and said recycle product flow rate from said flasher to said reactor under steady state conditions, and to convert said desired recycle flow rate to a second bias signal and to send said second bias signal;

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(s) means to sum said second correction signal and said second bias signal to form a second command signal and send said second command signal; and

(t) a second flow control means for receiving said second command signal and for adjusting the flow rate of said recycle rhodium in said means (i).

5,352,416

VALVE ARRANGEMENT FOR A STERILIZATION CONTAINER

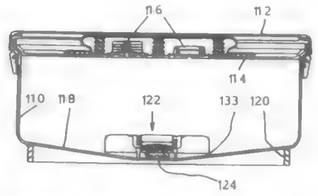
Peter Wagner, Söcking/Kr. Starnberg, Fed. Rep. of Germany, assignor to Wagner GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 3, 1992, Ser. No. 862,808

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1991, 4111075; Apr. 5, 1991, 4111076; Apr. 5, 1991, 4111077

Int. Cl.[5] G05D *16/06*

U.S. Cl. 422—108 **12 Claims**



1. A sterilization system comprising:

a sterilizer means having a sterilization cycle, the cycle having a sterilization phase, a drying phase following the sterilization phase, and a venting phase following the drying phase;

a sterilization container having a pressure chamber therein, said container being configured to be placed within said sterilizer means;

first valve means located within aid pressure chamber of said sterilization container, the first valve means being moveable between an open position wherein an exchange of fluid between the container and the sterilizer means takes place during the sterilization phase, and a closed position where said first valve means closes a first venting opening in said pressure chamber;

second valve means located in said pressure chamber for movement between a closed position wherein said second valve means closes a second venting opening in said pressure chamber and an open position wherein pressure equalization of said pressure chamber occurs;

a first temperature sensor disposed in said first valve means which enables said first valve means to close said first vent opening at a first predetermined temperature, the sterilizer means reaching said first predetermined temperature during the sterilization phase;

a second temperature sensor disposed in said second valve means for enabling said second valve means to open said second vent opening and for reclosing said second vent opening when the sterilizer means reaches a second predetermined temperature during the drying phase, wherein when said first and second vent openings are closed pressure equalization of said pressure chamber ceases;

a bellows disposed between a normally open outer lid and an inner lid of the container, the inner lid having fluid exchange openings which permit the exchange of fluid between the container and the sterilizer means during the sterilization and drying phases, said bellows forming said pressure chamber, and said first and second valve means being disposed within said bellows.

5,352,417

APPARATUS FOR DEODORIZATION OF CORK

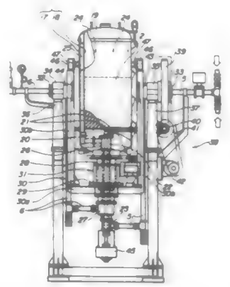
Ichiro Konishi, Kanagawa; Ryoichi Tajima, Shiga, and Tetsuo Tsutsumi, Tokyo, all of Japan, assignors to Suntory Limited and Uchiyama Manufacturing Corporation, Japan

Division of Ser. No. 825,332, Jan. 27, 1992, Pat. No. 5,174,956, which is a continuation of Ser. No. 513,842, Apr. 24, 1990, abandoned. This application Jul. 21, 1992, Ser. No. 915,654

Claims priority, application Japan, Apr. 26, 1989, 1-106781

Int. Cl.[5] G05D *7/00*

U.S. Cl. 422—111 **18 Claims**



1. An apparatus for removing a substance which is contained in cork and which originates an offensive odor, comprising:

a container means defining an internal space for receiving a cork piece therein, said container means having an inlet and an outlet;

a steam generator for generating steam flow of a given temperature to supply said generated steam flow to said container means through the inlet thereof;

pressure control means for controlling pressure within said container means at a predetermined pressure required to promote penetration of said steam flow into the internal structure of said cork piece so as to promote evaporation of said substance;

agitating means for agitating said cork piece in said container means, said agitating means including rotating means for rotating said container means around a rotation axis and oscillating means for causing said container means to oscillate around an oscillation axis which is essentially perpendicular to said rotation axis of said container means; and

discharging means for discharging the steam flow along with the evaporated substance from said container means through said outlet.

5,352,418

FILTERING MATERIAL AND METHOD OF PRODUCING THE SAME

Sumiaki Tsuru, 9-7, Tagara 3-chome, Nerima-ku, Tokyo 179, Japan, assignor to Sumiaki Tsuru and Kunihiro Yamamoto, both of Tokyo, Japan

Filed Nov. 5, 1992, Ser. No. 973,010

Claims priority, application Japan, Nov. 5, 1991, 3-317478

Int. Cl.[5] A62B *7/08;* **B05D** *5/00*

U.S. Cl. 422—122 **15 Claims**

1. A filtering material comprising calcium phosphate particles, water insoluble β-1,3-glucan, and a sheet-shaped raw material wherein said calcium phosphate particles are caused to adhere to said sheet-shaped material with the aid of said β-1,3-glucan serving as a binder.

5,352,419

RECOVERY OF ALUMINIUM AND FLUORIDE VALUES FROM SPENT POT LINING

David H. Jenkins, Ormond, Australia, assignor to Comalco Aluminium Limited, Melbourne, Australia

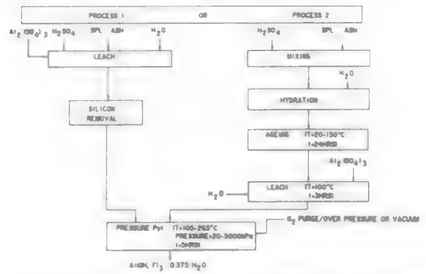
PCT No. PCT/AU92/00004, § 371 Date Jun. 15, 1993, § 102(e) Date Jun. 15, 1993, PCT Pub. No. WO92/12268, PCT Pub. Date Jul. 23, 1992

PCT Filed Jan. 6, 1992, Ser. No. 74,839

Claims priority, application Australia, Jan. 11, 1991, PK4188

Int. Cl.[5] C01F *7/50*

U.S. Cl. 423—126 **11 Claims**



1. A process for the recovery of aluminium and fluoride values from spent pot lining materials, comprising the steps of calcining spent pot lining material to produce an ash having environmentally acceptable levels of cyanide contamination, subjecting the ash to a leaching step in a solution containing a mineral acid and a corresponding aluminium salt in such proportions as to dissolve the aluminium and fluoride values, and subjecting the leached liquid to thermal hydrolysis to cause precipitation of an aluminium fluoride product.

9. A process for the recovery of spent pot lining materials to recover aluminium and fluoride values comprising mixing the spent pot lining material with a concentrated mineral acid solution, ageing the mixture for a period of up to about 24 hours to prevent dissolution of the silica contained in the mixture, leaching the mixture by the addition of an aluminium salt corresponding to the mineral acid in such proportions as to dissolve the aluminium and fluoride values, and subjecting the leached liquid to thermal hydrolysis in the presence of an inert atmosphere or vacuum to prevent precipitation of a product containing aluminium and fluoride values.

5,352,420

PROCESS FOR THE PURIFICATION OF WASTE GAS HAVING A HIGH CHLORIDE CONTENT

Karl Kurzinger, Helmstadt, and Rainer Stephan, Alzenau, both of Fed. Rep. of Germany, assignors to KRC Umwelttechnik GmbH, Wurzburg, Fed. Rep. of Germany

Continuation of Ser. No. 821,308, Jan. 13, 1992, abandoned, which is a continuation of Ser. No. 509,782, Apr. 17, 1990, abandoned. This application Apr. 16, 1993, Ser. No. 47,063

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1989, 3912563; Nov. 29, 1989, 3939413

Int. Cl.[5] B01D *53/14, 53/34;* **C01B** *7/01, 7/07*

U.S. Cl. 423—210 **12 Claims**

1. A process, for purification of a combustion flue gas from a garbage incineration plants having a hydrogen chloride content and further contaminated with HF, SO_2, NO_x and heavy metals, and for the recovery of HCl,

said process comprising:

(a) removing HCl and HF and heavy metals from the combustion flue gas, in a first absorption step, by washing the combustion flue gas with water for said first absorption step, said water for said first absorption step initially containing up to 20 g/l of HCl, to form a wash water from said first absorption step containing HCl, HF, and heavy metals, wherein the HCl in said wash water is further concentrated to a level in excess of 50 g/l;

(b) separating part of the concentrated HCl in said water from said first absorption step in a rectification, into a more concentrated hydrochloric acid solution, said more concentrated hydrochloric acid solution being substantially free of HF and heavy metals, and a bottoms fraction, said bottoms fraction containing heavy metals;

(c) reaching HF with compounds of calcium and silicon which are present during the concentrating and at the latest the rectification to remove the HF for discharge with said bottoms fraction;

(d) removing further HCl, HF and heavy metals, which remain in the combustion flue gas after said first absorption step, from the combustion flue gas, in a second absorption step, by washing the combustion flue gas with water for said second absorption step, wherein water from said second absorption step, containing up to 20 g/l of HCl, is recycled and used as said water for said first absorption step; and

(e) removing SO_2, which remains in the combustion flue gas after said first absorption step and after said second absorption step, from the combustion flue gas in a subsequent step.

5,352,421

METHOD AND APPARATUS FOR EFFECTING GAS-LIQUID CONTACT

James W. Smith, Toronto; David T. R. Ellenor, Scarborough, and John N. Harbinson, Aurora, all of Canada, assignors to University of Toronto Innovations Foundation, Toronto and Apollo Environmental Systems Corp., Willowdale, both of Canada

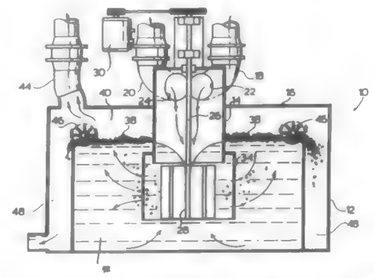
Continuation-in-part of Ser. No. 622,485, Dec. 5, 1990, Pat. No. 5,174,973, which is a continuation-in-part of Ser. No. 582,423, Sep. 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 446,776, Dec. 6, 1989, abandoned. This application Apr. 3, 1992, Ser. No. 863,720

Claims priority, application Canada, Dec. 5, 1989, 2004652; United Kingdom, May 2, 1990, 9002462

The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.

Int. Cl.[5] C01B *17/16, 31/20, 17/20;* **B05B** *7/10*

U.S. Cl. 423—220 **9 Claims**



1. A method for the distribution of a gaseous phase in a liquid phase, which comprises:

providing a rotary impeller comprising a plurality of blades at a submerged location in said liquid phase surrounded by a shroud through which are formed a plurality of openings,

feeding said gaseous phase to said submerged location,

rotating said impeller about a substantially vertical axis at a speed corresponding to a blade tip velocity of at least

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about 350 in/sec so as to draw liquid phase into the interior of the shroud and to generate sufficient shear forces between said impeller and said plurality of openings in said shroud to distribute said gaseous phase as fine bubbles in said liquid phase to the interior of said shroud and to effect intimate contact of said gaseous phase and said liquid phase at said submerged location so as to form a gas-liquid mixture of fine bubbles of said gaseous phase in said liquid phase contained within said shroud,

flowing said gas-liquid mixture of fine bubbles of gaseous phase and liquid phase from interior of said shroud through and in contact with said openings to external of said shroud at a gas velocity index (GVI) of at least about 18 per second per opening in said shroud so as to effect further shearing of the fine gas bubbles and further intimate contact of said gaseous phase and said liquid phase,

said gas velocity index being the ratio of the linear velocity (V) of the gaseous phase through each opening and the equivalent diameter (d) of the opening, as determined by the expression:

$$GVI = V/d$$

where d is determined for each opening by the expression:

$$d = 4A/P$$

where A is the area of the opening and P is the length of the perimeter of the opening.

5,352,422

PROCESS FOR THE SELECTIVE OXIDATION OF SULPHUR COMPOUNDS TO ELEMENTAL SULPHUR

Peter J. van den Brink, and John W. Geus, both of Utrecht, Netherlands, assignors to VEG-Gasinstituut N.V., Amsterdan and Comprimo B.V., Apeldoorn, both of Netherlands

Division of Ser. No. 555,254, Jul. 19, 1990, Pat. No. 5,286,697. This application Feb. 26, 1993, Ser. No. 23,607

Claims priority, application Netherlands, Jul. 21, 1989, 8901893; Oct. 31, 1989, 8902690

Int. Cl.[5] C01B *17/16, 17/02*

U.S. Cl. 423—224 **6 Claims**

1. A process for treating a tail gas from a Claus process to oxidize hydrogen sulphide to elemental sulphur, characterized by passing said Claus process tail gas together with an oxygen containing gas, at a temperature above 150° C. and below 330° C. over a catalyst comprising at least one catalytically active material and a carrier, the catalyst having a specific surface area of more than 20 m^2/g and an average pore radius of at least 50 Å, the catalytically active material being homogeneously dispersed in the carrier, the catalyst characterized by exhibiting no substantial activity towards the Claus reaction ($2H_2S+SO_2 \rightleftarrows 3/n\ S_n+2H_2O$), the definition of no substantial activity towards the Claus reaction being that under reaction conditions for the conversion of hydrogen sulphide to elemental sulphur in the presence of 30% by volume of water at 250° C., the selectivity of the catalyst for the reaction to elemental sulphur is not more than 15% lower than the selectivity of the catalyst in the absence of water.

5,352,423

USE OF AROMATIC SALTS FOR SIMULTANEOUSLY REMOVING SO_2 AND NO_x POLLUTANTS FROM EXHAUST OF A COMBUSTION SYSTEM

Yiannis A. Levendis, Boston, and Donald L. Wise, Belmont, both of Mass., assignors to Northeastern University, Boston, Mass.

Continuation-in-part of Ser. No. 805,012, Dec. 11, 1991, Pat. No. 5,312,605. This application Mar. 30, 1993, Ser. No. 39,853

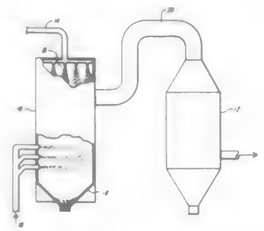
Int. Cl.[5] B01D *53/34*

U.S. Cl. 423—235 **20 Claims**

1. A method for simultaneously removing SO_2 and NO_x pollutant emissions from a combustion system, consisting essentially of the steps of:

providing an aromatic salt of a cation that forms an oxide reactive with gaseous compounds of sulfur; and

spraying said aromatic salt into a high temperature environment of a combustion system in the presence of gaseous compounds including SO_2 and NO_x pollutants resulting



from combustion in said combustion system, the aromatic anion of said salt pyrolyzing and controlling NO_x pollutants and, simultaneously, cenospheric, porous particles of an oxide of said cation forming and controlling SO_2 pollutants.

5,352,424

ALUMINUM NITRIDE POWDER HAVING A REDUCED AMMONIA ODOR AND A METHOD FOR PREPARING THE SAME

Kevin E. Howard, and John R. Moyer, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 16, 1993, Ser. No. 18,486

Int. Cl.[5] C01B *21/072;* **C01C** *3/00*

U.S. Cl. 423—237 **14 Claims**

1. An aluminum nitride powder that is substantially free of an ammonia odor upon exposure to atmospheric moisture comprising an operative combination of the aluminum nitride powder and an amount of a gettering compound sufficient to react with substantially all of the ammonia so generated, the gettering compound volatilizes, sublimes or decomposes at a temperature of less than about 500° C. and is selected from the group consisting of aliphatic carboxylic polyfunctional acids containing from one to eleven carbon atoms, esters of said carboxylic acids, anhydrides of said carboxylic acids and aromatic carboxylic acid anhydrides.

5. A method of treating aluminum nitride powder to getter ammonia generated by hydrolysis of the powder upon exposure to atmospheric moisture consisting essentially of placing the powder in operative contact with an amount of a gettering compound sufficient to react with substantially all of the ammonia so generated, the gettering compound volatilizes, sublimes or decomposes at a temperature of less than about 500° C. and is selected from the group consisting of aliphatic carboxylic polyfunctional acids containing from one to eleven carbon atoms, esters of said carboxylic acids, anhydrides of sad carboxylic acids and aromatic carboxylic acid anhydrides.

5,352,425

SORBENT FOR TREATMENT OF EFFLUENT GAS STREAM

Domingo Rodriguez, Miranda, Venezuela; Roy Payne, Mission Viejo, Calif., and Cebers O. Gómez, Miranda, Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Division of Ser. No. 898,121, Jun. 12, 1992, Pat. No. 5,282,999. This application Dec. 9, 1993, Ser. No. 164,480

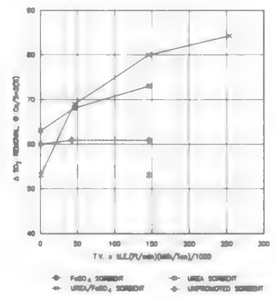
Int. Cl.[5] B01J *8/00;* **C01B** *17/00;* **C09K** *3/00*

U.S. Cl. 423—244.07 **5 Claims**

1. A process for reducing the sulfur oxide concentration of an effluent gas stream comprising admixing with said effluent gas stream a sulfur sorbent composition comprising a hydrated alkaline earth metal oxide and a promoting additive mixture of urea and water soluble iron salts; said sorbent composition having the following properties:

alkaline earth metal (wt. %)—about 40–52;

molar ratio of promoting additive mixture to alkaline earth metal—about 0.001–0.2;



wherein said admixing is carried out at a temperature of between about 900° C. to about 1200° C. for a period of less than about 2.0 seconds and provides at least a 65% reduction in the sulfur content of the treated gas stream.

5,352,426

METHOD FOR THE PREPARATION OF COPRECIPITATED CARBONATE OF LANTHANUM, CERIUM AND TERBIUM

Yuji Kimura; Shigeru Sakai, and Norifumi Yoshida, all of Fukui, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1993, Ser. No. 164,453

Claims priority, application Japan, Dec. 16, 1992, 4-354557; Dec. 16, 1992, 4-354558

Int. Cl.[5] C01F *17/00*

U.S. Cl. 423—263 **9 Claims**

1. A method for the preparation of a composite carbonate powder of lanthanum, cerium and terbium in which the molar fraction of terbium does not exceed 30% which comprises the successive steps of:

(a) adding, to an aqueous solution of inorganic acid salts of lanthanum, cerium and terbium in combination at a temperature of 40° C. or lower, a water-soluble inorganic carbonate having alkalinity in an amount in excess by at least 20% over the stoichiometrically equivalent amount to completely precipitate lanthanum, cerium and terbium in the form of precipitates of a composite of the respective carbonates to give an aqueous slurry;

(b) heating the aqueous slurry containing the coprecipitated carbonate of lanthanum, cerium and terbium at a temperature of 50° C. or higher for at least 1 hour;

(c) adjusting the pH value of the aqueous slurry containing the coprecipitated carbonate of lanthanum, cerium and terbium in the range from 5.0 to 7.5 by the addition of a pH-adjusting agent;

(d) heating the aqueous slurry containing the coprecipitated carbonate of lanthanum, cerium and terbium after the pH adjustment in step (c) at a temperature of 60° C. or higher for at least 1 hour; and

(e) recovering the precipitates of the coprecipitated carbonate of lanthanum, cerium and terbium from the aqueous slurry followed by washing with water and drying.

5,352,427

GEOPOLYMERIC FLUORO-ALUMINO-SILICATE BINDER AND PROCESS FOR OBTAINING IT

Joseph Davidovits, 16 Rue Galilee, Saint Quentin, France F-02100 ; Michel Davidovics, 5 Route de Villers, Pont Ste Maxence, France F-60700 , and Nicolas Davidovits, 6 Rue Brison, Roanne, France F-42300

PCT No. PCT/FR91/00176, § 371 Date Sep. 2, 1992, § 102(e) Date Sep. 2, 1992, PCT Pub. No. WO91/13840, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 5, 1991, Ser. No. 923,796

Claims priority, application France, Mar. 7, 1990, 90 02854

Int. Cl.[5] C01B *33/26*

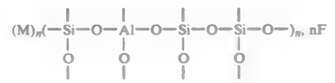
U.S. Cl. 423—328.1 **20 Claims**

1. A fluoro-alumino-silicate geopolymer compound whose composition expressed in terms of oxides and in fully dehydrated form is:

$$yM_2O:Al_2O_3:xSiO_2:wF^{2-}$$

"x" has a value between 5.5 and 75, "y" has a value comprised between 1.0 and 20, "w" has a value between 0.5 and 50, wherein after curing, the said geopolymer binder consists essentially of:

a) a geopolymer fluro-alkaline poly(sialate-disiloxo) type, (M,F)-PSDS, of formula



b) an alkaline-alumino-fluoride M_3AlF_6,

c) a silicious phase of the hydrous SiO_2;

where "M" represents the cations Na and/or K, "n" the degree of polymerisation, the said alkali-fluoro poly(sialate-disiloxo) geopolymer having the Al cation in IV-fold coordination, of Al4(Q4) as determined by MAS-NMR spectroscopy for ^{27}Al, the said silicous phase of hydrous SiO_2 having a dilatometric pattern characteristic of cristobalite SiO_2.

9. A method for obtaining a geopolymr binder from a geopolymer compound according to claim 1, wherein the geopolymeric resin is obtained by mixing:

a) an aqueous potassium silicate solution having a molar ratio

$K_2O:siO_2$ 1:1

having a 50% concentration in water

b) a powder comprising the alumino-silicate oxide (Si_2O_5.,Al_2O_2) with the Al cation in (IV–V)-fold coordination as determined by MAS-NMR spectroscopy for ^{27}Al, sodium fluosilicate Na_2SiF_6 and thermal fume silica ($15Si_2O_5$,Al_2O_2);

the geopolymeric resin resulting from the mixture of a)+b) has a water content lower than 30% by weight, the initial viscosity being in the 350–500 centipoises range and the oxide molar ratios between:

$Al_2O_3:M_2O$	1:1.0 and 1:20
$Al_2O_3:SiO_2$	1:5.5 and 1:75
$M_2O:H_2O$	1:5.0 and 1:12.0
$Al_2O_3:F^-$	1:0.5 and 1:50

aging of the said geopolymeric resin to dissolve the said thermal silica; wherein during a first step of said aging the viscosity decreases to reach a minimum at 250–300 centipoises, then increases at the beginning of geopolymerization.

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5,352,428

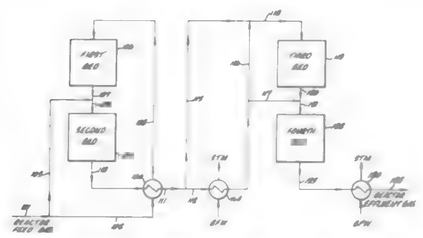
HIGH CONVERSION AMMONIA SYNTHESIS

Mukund L. Bhakta, Whittier, and Bernard J. Grotz, Pasadena, both of Calif., assignors to C.F. Braun, Inc., Alhambra, Calif.

Continuation of Ser. No. 586,755, Sep. 24, 1990, abandoned. This application Aug. 21, 1992, Ser. No. 935,130

Int. Cl.[5] C01C *1/04;* F28D *7/00;* B01J *8/02*

U.S. Cl. 423—360 31 Claims



1. In a continuous ammonia synthesis process in which a synthesis gas mixture containing nitrogen and hydrogen is passed sequentially through three or more catalyst beds to produce a gaseous effluent from each of the catalyst beds containing ammonia and unreacted nitrogen and hydrogen, the improvement comprising passing a portion of the partially reacted synthesis gas which has passed through at least a first catalyst bed to a first subsequent catalyst bed, directly quenching the effluent from said first subsequent catalyst bed with partially-reacted synthesis gas which has passed through at least said first catalyst bed, and passing said quenched effluent through a second subsequent catalyst bed to form a gas stream of increased ammonia concentration.

5,352,429

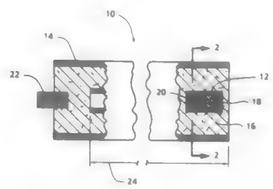
DYNAMIC COMPACTION PROCESSING SYSTEM

Kibong Kim, Potomac, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 14, 1992, Ser. No. 914,678

Int. Cl.[5] C01B *31/06, 21/064*

U.S. Cl. 423—446 3 Claims



1. In a method of compacting material encased within a container, including placement of the container in contact with an explosive exert on the material a variable compaction pressure having a peak value of short duration in response to detonation of the explosive without channel effects, the improvement comprising the steps of: preparing said explosive to establish channel effects therein affecting the compaction pressure; and initiating said detonation of the explosive while in contact with the container of the material for propagation of shock waves through said explosive at a velocity increased by the channel effects therein so that the peak value of the variable compaction pressure is reduced to a lower level by the channel effects and maintained constant at said lower level for an interval longer than said detonation without channel effects.

5,352,430

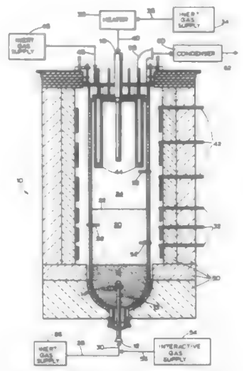
METHOD OF MANUFACTURING INTERCALATION COMPOUNDS

Timothy J. McCulfor, Hebron, Ind., and F. Lincoln Vogel, Whitehouse Station, N.J., assignors to Inland Steel Company, Chicago, Ill.

Filed Jul. 17, 1992, Ser. No. 914,513

Int. Cl.[5] C01B *31/04*

U.S. Cl. 423—448 12 Claims



1. A method of preparing an intercalation compound comprising a host material selected from the group consisting of graphite, molybdenum disulfide and hexagonal boron nitride, and an intercalant selected from the group consisting of molybdenum trioxide, vanadium pentoxide, chromium trioxide, antimony oxide, molybdenum disulfide, antimony sulfide, thallium sulfide, chromium sulfide, vanadium sulfide, tungsten sulfide, palladium sulfide, iron sulfide, and copper sulfide, said method comprising the steps of:

(a) introducing said host material and said intercalant into a fluidized bed reactor;

(b) passing a stream of an inert gas through said fluidized bed reactor to mix said host material and said intercalant and form a fluid bed mixture;

(c) heating said fluid bed mixture in the presence of said inert gas stream to provide a heated fluid bed mixture having a temperature sufficient for said host material and said intercalant to interact in the presence of oxygen; and

(d) passing a stream of oxygen through said heated fluid bed mixture for a time sufficient for the oxygen to cause the host material and the intercalant to interact and form an intercalation compound.

5,352,431

LOW MOLECULAR WEIGHT POLYSACCHARIDE COMPLEXES FOR X-RAY IMAGING

Yuji Hashiguchi, Sodegaura; Kumiko Iwai, Ichihara; Shigemi Seri, Ichihara; Susumu Kondo, Ichihara, and Makoto Azuma, Ichihara, all of Japan, assignors to Nihon Medi-Physics Co., Ltd., Hyogo, Japan

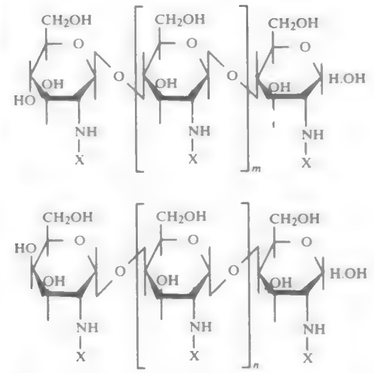
Division of Ser. No. 952,992, Sep. 29, 1992, Pat. No. 5,271,924. This application Sep. 13, 1993, Ser. No. 119,387

Claims priority, application Japan, Oct. 4, 1991, 3-258017

Int. Cl.[5] A61K *49/04, 31/715;* C08B *37/08*

U.S. Cl. 424—4 9 Claims

1. An imaging agent for X-ray diagnosis comprising a compound composed of a polynuclear type Compound of the formula I or II:



(I)

(II)

wherein each X is a hydrogen atom or a bifunctional ligand, at least one of them is a bifunctional ligand and each of m and n is an integer of 1 to 6, and at least one metal ion being coordinated with at least one bifunctional ligand moiety, said metal ion being a radiopaque metal ion.

5,352,432

HEPATOCYTE SPECIFIC COMPOSITION AND THEIR USE AS DIAGNOSTIC IMAGING AGENTS

Edward T. Menz, Quincy, Mass.; Jeffrey M. Rothenberg, Gary, Ind.; Ernest V. Groman, Brookline, and Lee Josephson, Arlington, both of Mass., assignors to Advanced Magnetics, Inc., Cambridge, Mass.

Division of Ser. No. 771,876, Oct. 3, 1991, Pat. No. 5,284,646, which is a continuation of Ser. No. 384,991, Jul. 2, 1989, abandoned, which is a continuation-in-part of Ser. No. 228,640, Aug. 4, 1988, abandoned, which is a continuation-in-part of Ser. No. 67,586, Jun. 26, 1987, Pat. No. 4,827,945, which is a continuation-in-part of Ser. No. 882,044, Jul. 3, 1986, Pat. No. 4,770,183. This application Jul. 20, 1992, Ser. No. 917,567

Int. Cl.[5] A61B *5/055;* A61K *33/26, 31/715*

U.S. Cl. 424—9 24 Claims

1. A method for obtaining an enhanced MR image of an organ or tissue of an animal or human subject which comprises:

(a) administering to such a subject an effective amount of a colloidal biodegradable superparamagnetic contrast agent in a physiologically acceptable medium such that an image-enhancing amount of such contrast agent can be internalized by hepatocytes of the liver by receptor mediated endocytosis, said contrast agent comprising (1) biodegradable superparamagnetic metal oxide particles, physically or chemically joined with (2) a ligand,

wherein such metal oxide particles:

comprise one or more individual biodegradable superparamagnetic metal oxide crystals, and

are capable of being biodegraded in such subject, as evidenced by a return of proton relaxation rates of the liver to preadministration levels, within 30 days of administration; and

wherein such ligand:

comprises a terminal galactose moiety,

is recognized and internalized, thereby permitting said metal oxide particles to be internalized, by hepatocytes of the liver by receptor mediated endocytosis, and is selected from the group consisting of (i) a polysaccharide and (ii) a macromolecular species conjugate, which macromolecular species conjugate comprises two macromolecular species, a first macromolecular species which is a polysaccharide and a second macromolecular species which is physically or chemically joined with the metal oxide particles and conjugated to the first macromolecular species; and

(b) recording such MR image.

5,352,433

AN OXYGEN ENHANCED SPLIT FEEDSTREAM SULFUR RECOVERY PROCESS

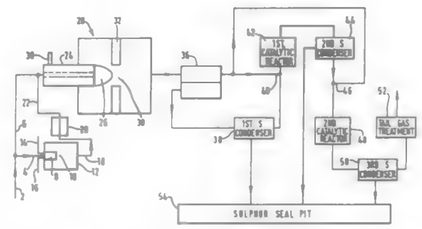
Richard W. Watson, Ilkley, England, assignor to The BOC Group plc, Windlesham, United Kingdom

Filed Mar. 2, 1987, Ser. No. 20,624

Claims priority, application United Kingdom, Mar. 7, 1986, 8605649; Jan. 30, 1987, 8702132

Int. Cl.[5] C01B *17/04*

U.S. Cl. 423—574.1 8 Claims



1. A method of recovering sulphur from a feed gas stream comprising hydrogen sulphide comprising: dividing the feed gas stream into a major stream and a minor stream; burning in a first combustion region at least 50% of the hydrogen sulphide content of the minor stream to form sulphur dioxide and water vapour; cooling said minor stream; introducing the cooled minor stream into a second combustion region, a thermal region associated therewith or both of said regions; burning in said second combustion region less than one-third of the hydrogen sulphide content in the major stream to form sulphur dioxide and water vapour, wherein the combustion in both of said first and second combustion region is supported by supplying oxygen-rich gas thereto and a fluid is introduced into the first combustion zone to moderate the temperature therein; reacting hydrogen sulphide with the thus-formed sulphur dioxide in said thermal region to form sulphur vapour and water vapour; extracting said sulphur vapour from the resulting gas mixture; reacting residual hydrogen sulphide in the gas mixture with residual sulphur dioxide to form further sulphur vapour and water vapour, and extracting said further sulphur vapour; wherein about one-third of the total hydrogen sulphide content of the major and minor streams is combusted to form sulphur dioxide and water vapour.

5,352,434

X-RAY CONTRAST COMPOSITIONS CONTAINING A BARIUM SALT AND FILM-FORMING MATERIALS

Carl B. Illig, Phoenixville, and John L. Toner, Downingtown, both of Pa., assignors to Sterling Winthrop Inc., Malvern, Pa.

Continuation-in-part of Ser. No. 938,786, Sep. 1, 1992, abandoned, which is a continuation-in-part of Ser. No. 877,690, May 1, 1992, abandoned. This application Aug. 9, 1993, Ser. No. 104,222

Int. Cl.[5] A61K *49/04, 33/04, 31/715*

U.S. Cl. 424—4 4 Claims

1. Am x-ray contrast composition designed for depositing a thin, flexible film membrane onto the mucosal lining of the nutrient absorbing inner surface of the intestine to form a barrier between the nutrient absorbing inner surface and the content of the intestine, the flexible film membrane to remain bound to the mucosal lining until eliminated by normal cell turnover comprising based on w/w:

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(a) of from about 0.001 to about 25% of a polymeric material capable of forming a film membrane on the gastrointestinal tract in the pH range of from about 5 to about 8, said the polymeric material being selected from the group consisting of:
dermatan sulfate,
hepatosulfate,
hyabromic acid,
heparin,
chitin, and
ethylene oxide:
(b) of from about 0.1 to about 20% of a divalent cation to potentiate the binding of the flexible film membrane to the mucosal lining selected from the group consisting of Ca^{++}, Mg^{++}, Zn^{++} and Ba^{++};
(c) of from about 5 to about 95% of a barium salt in a liquid pharmaceutically acceptable carrier comprising a surfactant selected from the group consisting of
cetyltrimethyl ammonium bromide,
dodecyl ammonium bromide,
sodium lauryl sulfate:
sodium heptadecyl sulfate,
alkyl benzene sulfonic acid,
carboxylic esters,
carboxylic amides,
ethoxylated alkylphenols,
ethoxylated aliphatic alcohols,
polyoxyethylene alkyl ethers
polyoxyethylene sorbitan fatty acid esters; and
zwitterionic surfactants.

5,352,435

IONOPHORE CONTAINING LIPOSOMES FOR ULTRASOUND IMAGING

Evan C. Unger, 13365 E. Camino La Cebadilla, Tucson, Ariz. 85749

Division of Ser. No. 818,069, Jan. 8, 1992, Pat. No. 5,230,882, which is a division of Ser. No. 750,877, Aug. 26, 1991, Pat. No. 5,123,414, which is a division of Ser. No. 569,828, Aug. 20, 1990, Pat. No. 5,088,499, which is a continuation-in-part of Ser. No. 455,707, Dec. 22, 1989, abandoned. This application Oct. 27, 1992, Ser. No. 967,974
Int. Cl.[5] A61B *8/08*
U.S. Cl. 424—9 18 Claims

1. A contrast agent for ultrasonic imaging which comprises an ionophore-containing liposome having encapsulated therein a pH-activated gaseous precursor.

5,352,436

SURFACTANT-STABILIZED MICROBUBBLE MIXTURES, PROCESS FOR PREPARING AND METHODS OF USING THE SAME

Margaret A. Wheatley, Media, Pa.; Shen Peng, Hayward, Calif.; Shruti Singhal, Penn Valley, and Barry B. Goldberg, Oreland, both of Pa., assignors to Drexel University, Philadelphia, Pa.

Continuation of Ser. No. 970,343, Nov. 2, 1992, abandoned. This application Nov. 22, 1993, Ser. No. 162,421
Int. Cl.[5] A61K *49/00*
U.S. Cl. 424—9 26 Claims

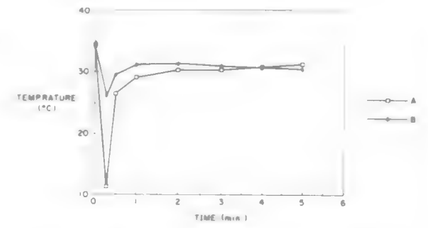
1. A mixture having stabilized gas microbubbles formed therein by sonication, the gas microbubbles having a mean diameter of less than about 10 micrometers, and being for use in ultrasonic diagnostics, comprising
a substantially aqueous solvent;
a first surfactant; and
a second, substantially water-dispersible surfactant different from the first surfactant.

5,352,437

FOAMABLE AEROSOL PREPARATION

Akira Nakagawa; Satoru Miyata, and Kenji Masuda, all of Tosu, Japan, assignors to Hisamitsu Pharmaceutical Co., Inc., Tosu, Japan

PCT No. PCT/JP90/00944, § 371 Date Jun. 7, 1991, § 102(e) Date Jun. 7, 1991, PCT Pub. No. WO91/01712, PCT Pub. Date Feb. 21, 1991
PCT Filed Jul. 23, 1990, Ser. No. 689,067
Claims priority, application Japan, Jul. 28, 1989, 1-197674
Int. Cl.[5] A61K *7/00, 9/12*
U.S. Cl. 424—45 10 Claims



1. A foamable aerosol preparation comprising 0.1 to 5 wt./vol. % of at least one surfactant which is a member selected from the group consisting of polyoxyethylene octyl phenyl ether and sodium polyoxyethylene lauryl ether sulfate and mixtures thereof, 0.05 to 10 wt./vol. % of at least one member selected from the group consisting of ethanol, isopropanol, propylene glycol, 1,3-butanediol, 3-methyl-1,3-butanediol, dipropylene glycol, tripropylene glycol, glycerin, polyoxyethylene polyoxypropylene glycol and polyethylene glycol; 3 to 25 wt./vol. % of water and 60 to 95 wt./vol. % of n-butane gas.

5,352,438

ANTI-FREE RADICAL TOPICAL COMPOSITION BASED ON DISMUTASE SUPEROXIDE AND A PHOSPHONIC DERIVATIVE

Quang L. N'Guyen, Antony, and Jean-Baptiste Galey, Paris, both of France, assignors to L'Oreal, Paris, France

PCT No. PCT/FR92/00400, § 371 Date Jan. 26, 1993, § 102(e) Date Jan. 26, 1993, PCT Pub. No. WO92/19224, PCT Pub. Date Nov. 12, 1992
PCT Filed Apr. 30, 1992, Ser. No. 962,597
Claims priority, application France, May 3, 1991, 9105464
Int. Cl.[5] A61K *37/48, 7/00*
U.S. Cl. 424—45 11 Claims

1. A cosmetic or pharmaceutical composition for topical application to the hair or skin comprising 0.001 to 4 percent by weight of at least one dismutase superoxide in combination with 0.005 to 2 percent by weight of at least one polyphosphonic acid or salt thereof, said polyphosphonic acid being selected from the group consisting of ethylenediamine tetra(-methylene phosphonic) acid, hexamethylene diamine tetra(-methylene phosphonic) acid, diethylenetriamine penta(methylene phosphonic) acid, 1-hydroxyethylidene 1,1-diphosphonic acid, aminotri(methylene phosphonic) acid and a salt thereof.

5,352,439

DESENSITIZING ANTI-TARTAR DENTIFRICE

James Norfleet, Plainfield; Willie J. Carter, Belle Mead; Matthew J. Frankel, Franklin Park, and Abdul Gaffar, Princeton, all of N.J., assignors to Colgate Palmolive Company, New York, N.Y.

Continuation of Ser. No. 778,532, Oct. 17, 1991, Pat. No. 5,240,697. This application Jun. 4, 1993, Ser. No. 71,384
The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.
Int. Cl.[5] A61K *7/16, 7/18*
U.S. Cl. 424—52 15 Claims

1. A desensitizing, anti-tartar toothpaste which comprises an orally acceptable vehicle or base for such composition, an effective anti-tartar proportion of (a) tetrasodium pyrophosphate, (b) disodium pyrophosphate, (c) mixtures of (a) and (b) or (d) mixtures of at least one of (a) and (b) with a potassium pyrophosphate, and a desensitizing proportion of a tooth pain inhibiting potassium salt which passes through exposed dentin tubules to tooth nerves or neurons, which tooth pain inhibiting potassium salt is potassium nitrate, potassium citrate, potassium oxalate or a mixture of two or more thereof, and which toothpaste comprises a pyrophosphate stabilizing proportion of a polymeric pyrophosphate stabilizer, wherein said stabilizer is a polymeric polycarboxylate, said stabilizer appearing to act to close off narrow tubules in the dentin and thereby block such tubules.

5,352,440

METHODS FOR INCREASING MELANIN CONTENT IN MELANOCYTES USING DIACYLGLYCEROLS AND USES THEREOF

Barbara A. Gilchrest, Brookline, Mass., and Philip R. Gordon, Philadelphia, Pa., assignors to Trustees of Boston University, Boston, Mass.

Continuation-in-part of Ser. No. 635,405, Dec. 11, 1990, abandoned, Ser. No. 625,236, Dec. 10, 1990, abandoned, and Ser. No. 624,453, Dec. 10, 1990, abandoned, which is a continuation of Ser. No. 175,129, Mar. 30, 1988, abandoned. This application Aug. 21, 1992, Ser. No. 934,872
Int. Cl.[5] A61K *7/18, 31/22, 31/225*
U.S. Cl. 424—59 6 Claims

1. A method for increasing the melanin content of vertebrate melanocytes, comprising topically or subcutaneously administering to said vertebrate an effective amount of a diacylglycerol compound wherein the 3 position is a hydroxyl and the 1 and 2 positions are independently carboxylic acid esters 1 to 18 carbon atoms long in a pharmaceutically acceptable carrier.

5,352,441

POWDER-BASED LIP LINER COSMETIC COMPOSITION

Jack Mausner, New York, N.Y., assignor to Chanel, Inc., Piscataway, N.J.

Filed Sep. 9, 1993, Ser. No. 119,037
Int. Cl.[5] A61K *7/025*
U.S. Cl. 424—64 31 Claims

1. A powder-based lip liner cosmetic composition comprising:
(a) talc coated with an aluminum salt of a long-chain fatty acid;
(b) mica coated with an aluminum salt of a long-chain fatty acid;
(c) low luster pigment which includes mica, titanium dioxide and barium sulfate;
(d) a substantially hydrophobic polymer selected from the group consisting of a copolymer of polyvinylpyrrolidone and hexadecene, a copolymer of polyvinylpyrrolidone and pentadecene, and a copolymer of polyvinylpyrrolidone and heptadecene;
(e) hydrophilic polymer selected from the group consisting of butylated polyvinylpyrrolidone and propylated polyvinylpyrrolidone; and
(f) an emulsifier component; the talc component, the mica component, the low-luster pigment, the substantially hydrophobic polymer, and the hydrophilic polymer each being present in a quantity sufficient to contribute to the appearance of the lips of a wearer to whom the composition is applied, and the emulsifier being present in a quantity sufficient to emulsify the components including the substantially hydrophobic polymer and the hydrophilic polymer.

29. A powder-based lip liner cosmetic composition comprising:
(a) talc coated with aluminum myristate;
(b) mica coated with aluminum myristate;
(c) a low-luster pigment including mica, titanium dioxide, and barium sulfate;
(d) a substantially hydrophobic polymer that is a polyvinylpyrrolidone/hexadecene copolymer;
(e) hydrophilic polymer that is butylated polyvinylpyrrolidone;
(f) an emulsifier component including sorbitan laurate, polysorbate 20, glyceryl monooleate, and tocopheryl acetate;
(g) a skin-tone dependent pigment selected from the group consisting of D&C Red No. 6, brown iron oxide and red iron oxide;
(h) lauroyl lysine;
(i) magnesium stearate;
(j) a preservative component that is sodium dehydroacetate;
(k) trisodium ethylenediaminetetraacetate; and
(l) diisopropyl dimerate; the mica component, the low-luster pigment, the substantially hydrophobic polymer, and the hydrophilic polymer each being present in a quantity sufficient to contribute to the appearance of the lips of a wearer to whom the composition is applied, and the emulsifier component being present in a quantity sufficient to emulsify the components including the substantially hydrophobic polymer and the hydrophilic polymer.

31. A powder-based lip liner cosmetic composition comprising:
(a) about 10% to about 25% of talc coated with aluminum myristate;
(b) about 5% to about 15% of lauroyl lysine;
(c) about 10% to about 30% of mica coated with aluminum myristate;
(d) about 2% to about 10% of magnesium stearate;
(e) about 5% to about 15% of a low-luster pigment including mica, titanium dioxide, and barium sulfate;
(f) about 0.1% to about 1% of sodium dehydroacetate;
(g) about 0.05% to about 0.5% of trisodium ethylenediaminetetraacetate;
(h) about 1% to about 5% of an butylated polyvinylpyrrolidone;
(i) up to about 15% of D&C red No. 6;
(j) up to about 15% of brown iron oxide;
(k) up to about 15% of red iron oxide;
(l) about 1% to about 5% of sorbitan laurate;
(m) about 1% to about 5% of polysorbate 20;
(n) about 1% to about 5% of glyceryl monooleate;
(o) about 0.5% to about 1% of tocopheryl acetate;
(p) about 3% to about 8% of diisopropyl dimerate; and
(q) about 1% to about 5% of a copolymer of polyvinylpyrrolidone and hexadecene.

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5,352,442

TOPICAL TEMPO

Peter H. Proctor, 4126 Southwest Freeway, Suite 1616, Houston, Tex. 77027

Continuation-in-part of Ser. No. 149,720, Jan. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 8,186, Jan. 28, 1987, abandoned, which is a continuation-in-part of Ser. No. 858,050, Apr. 30, 1986, abandoned, which is a continuation-in-part of Ser. No. 757,131, Jul. 18, 1985, abandoned. This application Feb. 24, 1993, Ser. No. 21,970

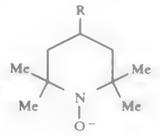
Int. Cl.[5] **A61K** *7/06, 31/47*

U.S. Cl. 424—70 **10 Claims**

1. Topical 2,2,6,6-tetramethyl-1-piperidinyloxyl having utility in the treatment of hair loss from radiation, comprising a dispersion, suspension or emulsion selected from creams, lotions, shampoos and cream rinses.

3. Topical 4-hydroxy-2,2,6,6-tetramethyl-1-piperidinyloxyl having utility in the treatment of hair loss from radiation, comprising a dispersion, suspension or emulsion selected from creams, lotions, shampoos and cream rinses.

6. A topical dispersion, suspension or emulsion selected from creams, lotions, shampoos and cream rinses, comprising an effective amount from about 0.01 to about 20 percent by weight of a 4-substituted piperidine N-oxide for the stimulation of hair growth in the treatment of radiation-induced alopecia by repeated topical application having the formula:



wherein R is selected from hydroxyl; amino; 2-bromoacetamideo; ethoxyfluorophosphonyloxy; iodoacetamido; isothiocyanato; maleimido; 4-nitrobenzoyloxyl; oxo; and phosphonooxy.

5,352,443

PERMANENT WAVING COMPOSITION

Sanae Kubo, Darien, and Thomas M. Schultz, Ridgefield, both of Conn., assignors to Shiseido Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 898,420, Jun. 15, 1992, abandoned. This application May 25, 1993, Ser. No. 67,346

Int. Cl.[5] **A61K** *7/09, 7/11*

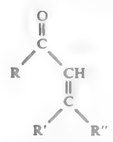
U.S. Cl. 424—72 **10 Claims**

1. A method for permanently waving a head of hair comprising the steps of

A. preparing an aqueous solution consisting essentially of

a. an organic compound

1. capable of reacting with alkaline material or being oxidized to form an alpha, beta-unsaturated ketone comprising the following structure



wherein R, R′, R″=H, CH_3, CH_2—, aryl, cyclic aliphatics, and/or members of cyclic aliphatics, and

2. selected from the group consisting of Catechol, 3,4 Dihydroxyphenylalanine, 4-Hydroxyindole, 5-Hydroxyindole, 2-S-Cysteinyl-1,4-hydroquinone, 3′-Hydroxy-2,2,3,3-tetrahydrophenothiazine, Hematoxylin, Hydroquinone, 5,6-Dihydroxyindole, and N-Methyl-5,6-dihydroxyindole, and

b. a member selected from the group consisting of oxidizing agents and alkali materials;

B. intermixing the components of the aqueous solution for a sufficient amount of time to enable substantially all of the organic compound to be activated into the alpha, beta-unsaturated ketone;

C. mixing the aqueous solution into a permanent waving lotion consisting essentially of a hydroxylated ester of an organic acid of sulfur in sufficient quantity to obtain a permanent waving lotion having between about 0.001% and 0.1% by weight of the activated alpha, beta-unsaturated ketone and between about 7% and 20% by weight of the hydroxylated ester of an organic acid of sulfur,

D. applying the permanent waving lotion to a head of hair and allowing the lotion to remain on the hair for the desired processing time;

E. removing the permanent waving lotion from the hair; and

F. applying a neutralizing or oxidizing composition to the hair.

5,352,444

STABILIZATION OF BIOWASTES

James P. Cox, and R. W. Duffy Cox, both of 246 E. Bartlett Rd., Lynden, Wash. 98264

Filed May 19, 1992, Ser. No. 886,417

Int. Cl.[5] **A61L** *11/00*

U.S. Cl. 424—76.5 **20 Claims**

1. A biowaste treatment agent comprising a surfactant component, a metal component, and an aldehyde;

said surfactant component comprising 1.0–99 percent of the treatment agent;

the metal component comprising a source of: (a) zinc, or (b) copper, or (c) a combination of copper with aluminum or iron and said metal component comprising from 0.5 to 85 percent of the treatment agent; and

said aldehyde comprising 0.1 to 80 percent of the treatment agent.

5,352,445

LAVAUX TEAR TEST LACRIMAL EQUILIBRATION TIME (LET)

Joseph E. Lavaux, 608 E. Harmony Rd., Fort Collins, Colo. [illegible]

Filed May 7, 1992, Ser. No. 879,330

Int. Cl.[5] **A61K** *31/715*

U.S. Cl. 424—78.04 **3 Claims**

1. A method of accessing precorneal tear film stability, including symptomatic dry and wet eye conditions, comprising topically applying into the eye a predetermined topical ophthalmic preparation that is visually blurring comprising carboxymethylcellulose sodium 1%, calcium chloride, potassium chloride, purified water, sodium chloride and sodium lactate said eye so treated visually clearing over a period of time by tear film production, tear mixing by the blink force and tear elimination by evaporation and drainage, wherein said period of time measures a precorneal tear film stability and said period of time for visual clearing is substantially longer when dry and wet eye symptoms occur.

5,352,446

METHOD OF TREATING DENTAL CARIES WITH MONOCLONAL ANTIBODIES AGAINST THE ANTIGEN I AND ANTIGEN I/II OF STREPTOCOCCUS MUTANS

Thomas Lehner, Barnet, England, assignor to Council of Governors of the United Medical and Dental Schools of Guy's and St. Thomas's Hospitals, London, England

Continuation of Ser. No. 841,783, Mar. 2, 1992, abandoned, which is a continuation of Ser. No. 616,829, Nov. 20, 1990, abandoned, which is a continuation of Ser. No. 120,690, Nov. 9, 1987, abandoned, which is a continuation of Ser. No. 843,690, Mar. 25, 1986, abandoned. This application Nov. 30, 1992, Ser. No. 983,273

Int. Cl.[5] **A61K** *39/00, 39/40*

U.S. Cl. 424—150.1 **4 Claims**

1. A method of combatting dental caries in a mammal, which comprises topically applying to a surface of a tooth in the mouth of said mammal the monoclonal antibody produced by the hybridoma deposited in the European Collection of Animal Cell Cultures Under the Deposit No. 86031901.

5,352,447

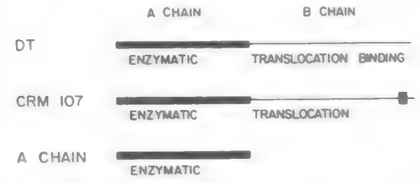
IMMUNOTOXINS FOR TREATMENT OF INTRACRANIAL LESIONS AND AS ADJUNCT TO CHEMOTHERAPY

Virginia Johnson, College Park, and Richard J. Youle, Garrett Park, both of Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 401,412, Sep. 1, 1989, abandoned, which is a continuation-in-part of Ser. No. 301,376, Jan. 25, 1989, Pat. No. 5,208,021, which is a division of Ser. No. 236,225, Aug. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 105,172, Oct. 5, 1987, abandoned. This application Aug. 10, 1992, Ser. No. 925,417

Int. Cl.[5] **A61K** *39/44, 37/04;* **C07K** *17/02*

U.S. Cl. 424—183.1 **10 Claims**



1. A method of treating central nervous system tumors or prophylaxing against metastatic lesions to the central nervous system comprising administering a tumor-inhibiting amount of a conjugate comprising a diphtheria toxin, wherein said diphtheria toxin lacks an active cell binding activity, attached to a moiety which binds to transferrin receptors, wherein said moiety which binds to transferrin receptors is selected from the group consisting of an anti-transferrin receptor antibody and transferrin, and wherein the mode of administration is intracranial or intrathecal.

5,352,448

ORAL ADMINISTRATION OF ANTIGENS

Terry L. Bowersock, Lafayette, Ind.; Waleed S. W. Shalaby, Mt. Pleasant, S.C.; William E. Blevins, Offerbem, Ind.; Michel Levy, West Lafayette, Ind., and Kinam Park, West Lafayette, Ind., assignors to Purdue Research Foundatioin, West Lafayette, Ind.

Filed Jul. 20, 1992, Ser. No. 916,533

Int. Cl.[5] **A61K** *39/00, 47/34, 9/16, 9/22*

U.S. Cl. 424—438 **10 Claims**

1. An oral vaccine composition for ruminant species said composition comprising

an antigenic composition in an amount effective to induce an immune response in gut-associated lymphoid tissue of said ruminant species in a delivery vehicle consisting essentially of a water swellable hydrogel matrix in the form of pellets having a volume of about 3 to about 75 mm^3 and an air-dried density of about 1.1 to about 1.4 g/cc for hydration int he post-ruminal portion of the digestive tract of said species and release of said antigenic composition for contact with the gut-associated lymphoid tissue.

5,352,449

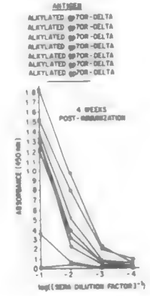
VACCINE COMPRISING RECOMBINANT FELINE LEUKEMIA ANTIGEN AND SAPONIN ADJUVANT

Gerald A. Beltz, Lexington; Dante, Lexington; Dante J. Marciani, Hopkinton; Chung-Ho Hung, and Charlotte A. Kensil, both of Milford, all of Mass., assignors to Cambridge Biotech Corporation, Worcester, Mass.

Continuation of Ser. No. 538,678, Jun. 15, 1990, abandoned, which is a continuation of Ser. No. 55,298, May 29, 1987, abandoned, which is a continuation-in-part of Ser. No. 868,585, May 30, 1986, abandoned. This application Apr. 14, 1992, Ser. No. 869,082

Int. Cl.[5] **A61K** *39/39, 39/12*

U.S. Cl. 424—187.1 **9 Claims**



1. A vaccine capable of protecting a cat against feline leukemia vira (FeLV) comprising an immunogenically effective amount of FeLV subgroup A recombinant gp70 together with a substantially pure saponin adjuvant selected from the group consisting of QA-7, QA-17, QA-18, and QA-21.

5,352,450

METHOD FOR PREPARING VACCINE FOR DENTAL CARIES AND VACCINAL COMPOSITIONS FOR DENTAL CARIES USED AS NASAL DROP

Toshihiko Koga, Tokyo; Nobuo Okahashi, Komae; Ichiro Takahashi, Yokohama; Koji Shibuya, and Hirotaka Ohta, both of Kanagawa, all of Japan, assignors to Lion Corporation and National Institute of Health, both of Tokyo, Japan

Filed May 29, 1990, Ser. No. 529,602

Claims priority, application Japan, May 29, 1989, 1-137025; Aug. 9, 1989, 1-207700

Int. Cl.[5] **A61K** *39/02, 39/00;* **C12P** *21/06, 21/04*

U.S. Cl. 424—190.1 **4 Claims**

1. A method for preparing a vaccine against dental caries comprising integrating a protein antigen-expressing gene (Pac-expressing gene) into a *Streptococcus mutans* GS-5 strain to produce a variant bacterial strain; culturing the variant bacterial strain; the variant *Streptococcus mutans* GS-5 strain encoding a protein antigen to produce the protein antigen on the surface of cells of *Streptococcus mutans* or to extracellularly produce the protein antigen, wherein the protein antigen produced has a molecular weight ranging from about 170,000 to 220,000; and recovering the protein antigen produced by the variant bacterial strain.

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5,352,451

BIOLOGICAL INSECT CONTROL AGENTS AND METHODS OF USE

Lois K. Miller, and David R. O'Reilly, both of Athens, Ga., assignors to University of Georgia Research Foundation, Inc., Athens, Ga.

PCT No. PCT/US90/03758, § 371 Date Feb. 28, 1991, § 102(e) Date Feb. 28, 1991

Continuation-in-part of Ser. No. 373,952, Jun. 29, 1989, Pat. No. 5,180,581. This PCT application Jun. 29, 1990, Ser. No. 656,179

The portion of the term of this patent subsequent to Jan. 19, 2009, has been disclaimed.

Int. Cl.[5] A01N *63/00*; C12N *7/01, 15/00*

U.S. Cl. 424—93.2 8 Claims

1. An insect control agent comprising a baculovirus in which a naturally occurring gene encoding an ecdysteroid modifying enzyme having ecdysteroid UDP-glucosyl transferase activity is inactivated.

5,352,452

STABILIZED COMPOSITIONS CONTAINING NON-GLYSYLATED HUMAN TISSUE TYPE PLASMINOGEN ACTIVATOR DERIVATIVE K2P PRO

Ulrich Kohnert, Habach, and Rainer Rudolph, Weilheim, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim Gmbh, Mannheim-Waldhof, Fed. Rep. of Germany

PCT No. PCT/EP90/02250, § 371 Date Aug. 2, 1991, § 102(e) Date Aug. 2, 1991, PCT Pub. No. WO91/08765, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 19, 1990, Ser. No. 730,938

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1989, 3942141

Int. Cl.[5] A61K *37/48, 37/62, 37/547*; C12N *9/96*

U.S. Cl. 424—94.64 31 Claims

1. A stabilized composition having human tissue type plasminogen activator (t-PA) activity consisting essentially of non-glycosylated t-PA derivative K2P Pro having enzymatic activity of at least 1.4 MU/ml, citrate, and at least one compound selected from the group consisting of:

(a) ascorbic acid;

(b) EDTA;

(c) an amino compound of the formula

$$R^1R^2N—R—X$$

wherein:

x is SO_3H, $CH(NH_2)—CO_2H$, CO_2H, H, NH_2 or OH;

R is a C_1–C_9 alkylene, C_3–C_6 cycloalkylene or benzylidene and

R^1 is H or C_1–C_3 alkyl and R^2 is H or C_1–C_3 alkyl;

(d) a guanidine analogue of formula

$$H_2N—\overset{\overset{Y}{\|}}{C}—NH—Z$$

whereby

Y is NH_2 or O;

Z is H, $(CH_2)_mCH(NH_2)—CO_2H$, $CH(CO_2H)—(CH_2)_m$, CO_2H, or $(CH_2)_mV$, where V is NH_2, or COOH and m is a number from 1 to 4;

(e) a carboxylic acid substituted at least once with a hydroxyl group, keto group, or a carboxyl group;

(f) dimethylbiguanide;

(g) a pyrimidine nucleoside;

(h) a pyrimidine nucleotide;

(i) trehalose;

(j) glucosamine; and

(k) N-methylglucamine, said composition having a pH of from 4.5 to 6.5.

5,352,453

COMPOSITIONS CONTAINING NON-GLYCOSYLATED HUMAN TISSUE TYPE PLASMINOGEN ACTIVATOR

Ulrich Kohnert, Habach, and Rainer Rudolph, Weilheim, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Aug. 6, 1991, Ser. No. 741,483

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1989, 3942143

Int. Cl.[5] A01K *37/48, 37/62, 37/547*; C12N *9/96*

U.S. Cl. 424—94.64 25 Claims

1. A composition having human tissue type plasminogen activator (t-PA) activity consisting essentially of a non-glycosylated t-PA pro having enzymatic activity of at least 0.1 MU/ml, a citrate and at least one compound selected from the group consisting of:

(a) ascorbic acid;

(b) EDTA;

(c) an amino compound selected from the group consisting of taurine, 4-aminobutanol-1, 5-aminopentanol-1, 6-aminohexanol-1, 1,9-diaminononane, 1,8-diaminooctane, 1,7-diaminoheptane, 1,6-diaminohexane, 1,5-diaminopentane, 1,4-diaminobutane, 1,3-diaminopropane, lysine, ornithine, 8-aminooctanoic acid, 7-diaminoheptanoic acid, ϵ-aminocaproic acid, ϵ-aminovaleric acid, δ-aminobutyric acid, tranexamic acid and p-aminomethylbenzoic acid;

(d) guanidinobytric acid;

(e) dimethylbiguanide;

(f) a pyrimidine nucleoside;

(g) a pyrimidine nucleotide; and

(h) a carboxylic acid substituted at least once with a hydroxyl group, keto group, or a carboxyl group wherein said composition has a pH of from 4.5 to 6.

5,352,454

ANTI-CHEWING AND ANTI-CRIBBING COMPOSITION

John W. Dyer, Sr., Bartlett, Ill., assignor to Dyco Associates, Inc., West Chicago, Ill.

Continuation-in-part of Ser. No. 712,399, Jun. 10, 1991, abandoned. This application Aug. 5, 1992, Ser. No. 925,504

Int. Cl.[5] A01N *25/08*

U.S. Cl. 424—410 17 Claims

1. A method for preventing chewing of wood by applying coating, having an odor objectionable to a horse, to a wood surface, wherein said method comprises the steps of:

(a) gathering ingredients for said coating consisting of (1) an aromatic solvent of 120–200 molecular weight having a boiling point range of 160°–293° C., a flash point range of 50°–105° C., a vapor pressure of below 1–4 millimeters of mercury at 8° C., crystals of said aromatic solvent, (2) a liquid carrier from the group consisting of an alkali refined soy bean oil and linseed oil, (3) a pigment, and (4) a non-volatile component carrier and binder from the group consisting of hydrocarbon resin, maleic resin and phenolic resin;

(b) blending said aromatic solvent and crystals if the crystals are not firmly within the aromatic solvent to form a homogeneous mixture;

(c) adding carrier, pigment and non-volatile component carrier and binder to said homogeneous mixture to form a coating wherein the aromatic is 20–70% carrier 5–40% and the non-volatile component carrier and binder 5–40% of the coating by weight; and

(d) applying the coating to a wood surface in a quantity sufficient to deter the horse from chewing said wood surface.

5,352,455

CONTROLLED RELEASE COMPOSITIONS

Steven Robertson, Strathclyde, Scotland, assignor to British Technology Group Ltd., London, England

Filed Jan. 17, 1992, Ser. No. 821,946

Claims priority, application United Kingdom, Jan. 23, 1991, 9101502

Int. Cl.[5] A61K *9/02*

U.S. Cl. 424—436 8 Claims



1. A controlled release composition which comprises a water swellable carrier and at least one active ingredient, said composition having a surface which is crenellated in the form of a series of furrows and ridges running in the direction of the longitudinal axis of a cylinder.

3. A composition according to claim 1, wherein the surface of the composition comprises from 3 to 6 crenellations.

7. A composition according to claim 3, wherein the device has an external surface area which is at least 15% greater than that of a device formed from the same quantity of material having a smooth exterior surface.

5,352,456

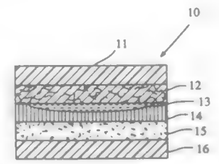
DEVICE FOR ADMINISTERING DRUG TRANSDERMALLY WHICH PROVIDES AN INITIAL PULSE OF DRUG

Renee A. Fallon, Sunnyvale, and Donald R. Wilson, San Francisco, both of Calif., assignors to Cygnus Therapeutic Systems, Redwood City, Calif.

Filed Oct. 10, 1991, Ser. No. 775,638

Int. Cl.[5] A61F *13/02*

U.S. Cl. 424—448 17 Claims



1. A device for administering a drug through intact skin that provides an initial pulse in the flux of the drug through the skin followed by a substantially lower flux of drug through the skin comprising in combination:

(a) a reservoir comprising the drug and a volatile permeation enhancer having a vapor pressure greater than about 10 mm Hg at 25 ° C.;

(b) a backing layer overlying the reservoir that is permeable to the volatile permeation enhancer such as to permit essentially complete evaporation of the enhancer to occur within 0.1 to 10 hours from the time at which the said permeable backing layer is exposed to the atmosphere, and

(c) means for maintaining the device on the skin in drug and permeation enhancer transferring relationship thereto, whereby when the device is placed on the skin, the volatile permeation enhancer is depleted from the reservoir by evaporation through the backing layer with the magnitude and duration of the pulse being dependent among other things upon the permeability of the backing layer to the enhancer.

5,352,457

TRANSDERMAL DEVICE

Anthony W. Jenkins, Comberton, United Kingdom, assignor to Ethical Pharmaceuticals Limited, Ely, United Kingdom

PCT No. PCT/GB91/01730, § 371 Date Apr. 5, 1993, § 102(e) Date Apr. 5, 1993, PCT Pub. No. WO92/05811, PCT Pub. Date Apr. 16, 1992

PCT Filed Oct. 4, 1991, Ser. No. 30,265

Claims priority, application United Kingdom, Oct. 5, 1990, 9021674.8

Int. Cl.[5] A61F *13/02*

U.S. Cl. 424—448 29 Claims



1. A method of preparing a device for transdermal delivery of an active ingredient which is a solid at room temperature and in which part or all of the active ingredient is present in a supersaturated solution comprising the steps of:

(a) preparing a mixture comprising at least:

(i) a polymer adhesive which is selected from the group consisting of acrylate polymer adhesives, polyisobutylene adhesives, and silicone adhesives;

(ii) a vehicle for the polymer adhesive, which vehicle is selected from the group consisting of water, ethanol, industrial methylated spirits, isopropanol, toluene, xylene, methylene chloride, and chlorofluorocarbon;

(iii) the active ingredient;

(iv) a solvent mixture for the active ingredient which comprises at least two solvents having different boiling points;

(b) forming the mixture prepared in step (a) into a film, and

(c) drying the film prepared in step (b),

wherein the vehicle for the polymer adhesive and at least one of the solvents in the solvent mixture for the active ingredient have boiling points below the drying temperature, and at least one of the solvents in the solvent mixture for the active ingredient has a boiling point above the drying temperature, and wherein the solubility of the active ingredient in the said solvent or solvents having a boiling point above the drying temperature is greater than 10%.

5,352,458

TANNING METHOD USING DNA REPAIR LIPOSOMES

Daniel B. Yarosh, Merrick, N.Y., assignor to Applied Genetics Inc., Freeport, N.Y.

Filed Dec. 21, 1992, Ser. No. 995,262

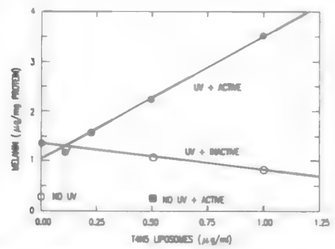
Int. Cl.[5] A61K *9/127*

U.S. Cl. 424—450 23 Claims

1. A method for tanning skin comprising applying liposomes containing at least one DNA repair enzyme to skin in an

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amount effective to produce tanning or melanin production and exposing the skin to UV radiation, said applying of the



liposomes occurring before and/or during and/or after the exposure to said UV radiation.

5,352,459

USE OF PURIFIED SURFACE MODIFIERS TO PREVENT PARTICLE AGGREGATION DURING STERILIZATION

Kenneth R. Hollister, Chester Springs; David Ladd, Wayne; Gregory L. McIntire, West Chester; George C. Na, Fort Washington; Natarajan Rajagopalan, Phoenixville, and Barbara O. Yuan, Villanova, all of Pa., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Dec. 16, 1992, Ser. No. 991,639

Int. Cl.[5] A61K *9/14, 47/34*

U.S. Cl. 424—489 **9 Claims**

1. A composition comprised of 0.1–60% by weight of nanoparticles consisting of therapeutic or diagnostic agent having 0.1–90% by weight of a purified noncrosslinked polymeric surfactant containing less than 15% impurities as a surface modifier adsorbed on the surface thereof and 0.01–20% by weight of a cloud point modifier associated with said polymeric surfactant and said therapeutic or diagnostic agent.

5,352,460

COMPOSITIONS OF GASTRIC ACID-RESISTANT MICROSPHERES CONTAINING SALTS OF BILE ACIDS

Tibor Sipos, Lebanon, N.J., assignor to Digestive Care Inc., Lebanon, N.J.

Division of Ser. No. 902,578, Jun. 22, 1992, Pat. No. 5,234,697. This application May 24, 1993, Ser. No. 65,780

The portion of the term of this patent subsequent to Nov. 9, 2010, has been disclaimed.

Int. Cl.[5] A61K *9/16*

U.S. Cl. 424—490 **11 Claims**

1. A process for preparing a ursodeoxycholate composition for the treatment of ursodeoxycholic acid deficient mammals comprising the steps of:

a) blending dry, powdery ingredients selected from the group consisting of (i) from about 60 to about 89% w/w of a salt of UDCA selected from the group consisting of sodium, potassium, ammonium, tromethamine, ethanolamine, diethanolamine and triethanolamine; (ii) up to about 5% of a buffering agent selected from the group consisting of from about 0.25 to about 5.0% w/w sodium carbonate (anhydrous), sodium bicarbonate, potassium carbonate and potassium bicarbonate and from about 0.25 to about 1.5% w/w, tromethamine, diethanolamine and triethanolamine; (iii) of from about 2 to about 19% w/w of an adhesive polymer selected from the group consisting of polyvinylpyrrolidone, cellulose acetate phthalate, hydroxypropylcellulose and methylcellulose; (iv) of from about 1 to about 16% w/w of a disintegrant selected from the group consisting of starch and modified starches, microcrystalline cellulose and propylene glycol alginate;

b) wetting said blended ingredients with a liquid to cause the blend to stick together, wherein said liquid is selected from the group consisting of: 1%–25% w/w ethanol/75%–99% w/w water; 5%–99% w/w 2- propanol/0.2%–2% w/w water; 98%–99% w/w 2- propanol/0.2%–2% w/w water; 1%–25% w/w methanol/0.2%–2% w/w water/75%–98% w/w 2 propanol/1%–5% w/w ethylacetate;

c) granulating or extruding the liquid-wetted blend through a 10 or 18 mesh S/S screen;

d) converting the granules to a uniform diameter particle size;

e) compacting the uniform particles to spherical particles;

f) drying the spherical particles;

g) separating the spherical particles if not of uniform size according to desired sizes using U.S. Standard sieve screens;

h) coating the particles with a gastric acid-resistant polymer that disintegrates under neutral or slightly basic conditions; and

i) drying the polymer-coated spherical particles.

5,352,461

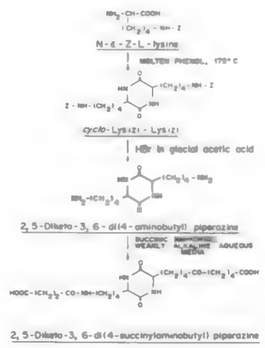
SELF ASSEMBLING DIKETOPIPERAZINE DRUG DELIVERY SYSTEM

Robert Feldstein, Pelham; John Glass, Shoreham, and Solomon S. Steiner, Mt. Kisco, all of N.Y., assignors to Pharmaceutical Discovery Corporation, Elmsford, N.Y.

Filed Mar. 11, 1992, Ser. No. 849,186

Int. Cl.[5] A61K *9/16*

U.S. Cl. 424—493 **20 Claims**



1. A microparticulate system for drug delivery comprising:

diketopiperazine microparticles incorporating a biologically active agent selected from the group consisting of proteins, peptides, polysaccharides, lipids, lipopolysaccharides, nucleic acids and other biologically active organic molecules,

wherein the microparticles are stable at a first defined pH due to association and precipitation of the diketopiperazines and unstable at a second defined pH due to dissociation of the diketopiperazines.

5,352,462

ANTI-INFLAMMATORY FACTOR, METHOD OF ISOLATION, AND USE

Lee R. Beck, Lebanon, Ohio, assignor to Stolle Research & Development Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 580,382, Sep. 11, 1990, Pat. No. 5,242,691, which is a continuation-in-part of Ser. No. 177,223, Apr. 4, 1988, Pat. No. 4,956,349, which is a continuation-in-part of Ser. No. 1,848, Jan. 9, 1987, Pat. No. 4,897,265, which is a division of Ser. No. 546,162, Oct. 27, 1983, Pat. No. 4,636,384, and Ser. No. 910,297, Sep. 17, 1986, Pat. No. 4,919,929, which is a continuation of Ser. No. 576,001, Feb. 1, 1983, abandoned, said Ser. No. 1,848, is a continuation-in-part of Ser. No. 384,625, Jun. 3, 1982, abandoned. This application Oct. 27, 1992, Ser. No. 966,741

The portion of the term of this patent subsequent to Sep. 11, 2007, has been disclaimed.

Int. Cl.[5] A61K *35/20*

U.S. Cl. 424—278.1 **11 Claims**

1. A composition comprising an anti-inflammatory factor, in purified form, wherein:

a) said factor is present in the whey of pasteurized skimmed milk;

b) said factor occurs in both aggregated and non-aggregated form;

c) the percentage of said factor present in aggregated form increases as the salt concentration of said composition decreases;

d) both the aggregated and non-aggregated forms of said factor have anti-inflammatory activity;

e) the molecular weight of said factor in non-aggregated form is less than about 10,000 daltons as determined by ultrafiltration;

f) said factor carries a negative charge at pH 7.0 as determined by its binding characteristics to ion exchange columns;

g) said factor is not a peptide or protein;

h) said factor is not inactivated when boiled for 30 minutes; and

i) said factor binds to a chromatography medium having an affinity for cis hydroxyl groups when such binding takes place in 0.25M ammonium acetate at pH 7.0 and detaches from said medium in 0.1M formic acid at pH 2.8.

5,352,463

TISSUE GRAFT FOR SURGICAL RECONSTRUCTION OF A COLLAGENOUS MENISCUS AND METHOD THEREFOR

Steven F. Badylak, 2610 Nottingham Pl., West Lafayette, Ind. 47906; Robert J. Demeter, 360 Cottonwood Dr., Mooresville, Ind. 46158; Michael Hiles, 3817 Cologne Ct., Indianapolis, Ind. 46208; Sherry Voytik, 271 S. River Rd., Apt. #33, West Lafayette, Ind. 47906, and Peter M. Knapp, Jr., 1009 Laurelwood, Carmel, Ind. 46032

Filed Nov. 13, 1992, Ser. No. 975,606

Int. Cl.[5] A61K *35/38*

U.S. Cl. 424—551 **2 Claims**

1. A method for surgical reconstruction of a collagenous meniscus at the interface of articulating bones, said method comprising the step of surgically implanting into said interface a meniscus graft comprising a sheet of a first tissue graft composition comprising the tunica submucosa and basalar portions of the tunica mucosa of a segment of intestine of a warm-blooded vertebrate, said sheet being formed into a sealed pouch and filled with a second tissue graft composition comprising comminuted or protease digested tunica submucosa and basalar portions of the tunica mucosa of a segment of intestine of a warm-blooded vertebrate.

5,352,464

PROCESS FOR THE MANUFACTURE OF SALT-FREE, CONDENSED SEASONING POWDER

Michiro Kotegawa, Usuki, Japan, assignor to Fundokin Shoyu Kabushiki Kaisha, Oita, Japan

Filed Feb. 27, 1991, Ser. No. 661,174

Claims priority, application Japan, Apr. 17, 1990, 2-99235

Int. Cl.[5] A23L *1/221*

U.S. Cl. 426—18 **17 Claims**

1. A process for the manufacture of salt-free, condensed seasoning powder, comprising the steps of:

(a) adding koji mold to proteinaceous and/or starch-rich starting materials to produce koji;

(b) subjecting said koji to hydrolysis, without adding salt, in the presence of alcohol;

(c) removing insolubles from the hydrolysate; and

(d) concentrating and drying the remaining mother liquor to yield seasoning powder.

5,352,465

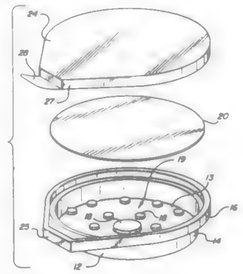
DISPOSABLE, MICROWAVEABLE, FOOD STORAGE CONTAINER

Charlene Gondek, Boca Raton; Trevor Nicholson, Fort Lauderdale; Robert Waszak, Pompano Beach, all of Fla., and Kathleen D. Taggares, Los Angeles, Calif., assignors to Vendtron, Inc., Pompano Beach, Fla.

Continuation-in-part of Ser. No. 934,567, Aug. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 925,090, Aug. 4, 1992, abandoned. This application Oct. 19, 1992, Ser. No. 963,054

Int. Cl.[5] A23L *1/025;* **B65B** *25/22;* **B65D** *81/34*

U.S. Cl. 426—87 **15 Claims**



1. A disposable package assembly for freezer storage and subsequent microwave heating of a food item comprising:

a molded container body substantially transparent to microwaves and configured to receive said food item therein, said container body including a flat bottom and a side wall formed integrally thereon;

at least one raised land integrally formed on said container bottom and defining a raised support surface having a depending side wall integrally formed along an entire periphery thereof;

a disk for receiving said food item including a microwave-susceptible material disposed on a surface thereof to convert incident microwave energy to heat, said disk being supported on said support surface to define at least one air space between said container bottom on said disk; and

a lid substantially transparent to microwaves and configured to cover said container to enclose said food item.

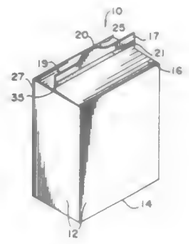
VOL 1167 ISS 1 OC 4 1994 UMI

5,352,466

TABBED EASY-OPEN BRICK COFFEE PACKAGE

Michael E. Delonis, Croton-on-Hudson, N.Y., assignor to Kraft General Foods, Inc., Northfield, Ill.

Filed Oct. 15, 1991, Ser. No. 776,968
Int. Cl.[5] B54D *77/10, 81/20*
U.S. Cl. 426—123 9 Claims



1. A package formed of a flexible material which encloses a food product under vacuum conditions, said package being in the shape of a brick, comprising a regular rectangular shaped bottom having opposed long sides and opposed short sides, a pair of opposed side walls extending up from the long sides of the rectangular shaped bottom, and a pair of opposed end walls extending up from the short sides of the rectangular shaped bottom, said product being contained in the package, the side walls and end walls extending above the product to form an upper closure structure,

said upper closure structure formed by upper portions of said end walls above the product being folded in to form two opposing gussets and lie along the top centerline of the package that extends parallel to the side walls and midway therebetween, and upper portions of the side walls above the produce being positioned substantially along said centerline of the package, the upper portions of the side walls forming the top of the package above the product, each gusset extending inwardly from its end wall toward the vertical center of the package, the innermost ends of the two opposing gussets being spaced from each other leaving a central opening between the two innermost ends of the two gussets,

the upper closure structure comprising a peelable heat seal extending across the full length of said centerline which is strong enough to maintain said vacuum conditions within the package, wherein said peelable heat seal comprises both the upper portions of the folded in gussets peelably sealed to the upper portions of the side walls which they engage, as well as the upper portions of the side walls peelably sealed to each other in the central portion thereof between the innermost ends of the gussets, the uppermost portions of said side walls and end walls comprising upper edges which form a generally horizontal upper edge of the package, said uppermost portions of said side and end walls between said peelable seal and said upper edges being unsealed to any wall and defining an unsealed flap in each upper portion of said side wall,

and including a grippable tab integral with each side wall and extending up from the upper edge of each of said flaps, each tab being in the form of a wave, the top of the wave being at least 12 mm above the seal at the center of each side wall, and the edges of the tab extending downwardly from said top thereof along a curved path, meeting the side wall edge of its respective side wall outwardly of the innermost ends of the gussets, such that the major part of each tab is in the central part of the package between the innermost ends of the gussets where the two side walls are peelably sealed to each other, with a minor portion of each tab being located outwardly of the innermost ends of the gussets such that the tabs are easily gripped and positioned to facilitate opening of the package by pulling the tabs apart to pull the seal initially in the central part of the package, peeling the two side walls away from each other, and subsequently peeling the side walls from their engagement with the gusseted end walls.

5,352,467

IN SITU METHOD FOR PROCESSING A PERISHABLE PRODUCT

Jerry L. Mitchell, Livingston, Tex.; A. James Farr, Baton Rouge, La.; Kenneth W. McMillin, Baton Rouge, La., and John H. Wells, Baton Rouge, La., assignors to Pakor, Inc., Livingston, Tex.

Continuation-in-part of Ser. No. 510,947, Apr. 19, 1990, abandoned, which is a continuation of Ser. No. 214,195, Jun. 27, 1988, Pat. No. 4,919,955, which is a division of Ser. No. 94,384, Sep. 8, 1987, abandoned. This application May 11, 1992, Ser. No. [illegible],669
Int. Cl.[5] B65B *31/04*
U.S. Cl. 426—316 19 Claims

1. A method for processing a perishable meat product comprising the steps of:

sealing the meat product in a consumer-ready package, where said package is provided with a resealable valve;

introducing a first agent into said package through said resealable valve where said agent is selected to reduce the microbial activity present on the surface of said meat product, where further said agent is introduced at a selected concentration as determined by the weight and type of said meat product;

maintaining said first agent in said package for a residence time determined on the basis of the type and concentration of the agent;

extracting said first agent from said package through said valve and replacing it with a second agent where said second agent is adapted to inhibit microbial activity on the surface of said meat product, where further the concentration of the second agent is determined on the basis of the weight of said product;

replacing said second agent with a third agent, where said third agent includes a high O_2 content and is adapted to induce a bloom in the meat product.

5,352,468

PROCESS CONCENTRATE AND DIARY PRODUCTS

Bruce G. Schroder, Dairilean, Inc., P.O. Box 88647, Sioux Falls, S. Dak. 57105

Filed Sep. 30, 1992, Ser. No. 954,862
Int. Cl.[5] A23C *3/08*
U.S. Cl. 426—330.2 15 Claims

1. A method of making a dairy product from a process concentrate that is stable at room temperature, the process concentrate includes a liquid dairy base, a preservative and a food grade acid, the method comprising the step of making a process concentrate by:

mixing the dairy base and an aliquot of the total preservative in the dairy product, the dairy base being at least one of a retentate of a dairy starting material, a permeate of the dairy starting material or dairy water obtained from the dairy starting material, the dairy starting material being selected from the group consisting of milk, defatted milk, whey, defatted whey, retentate and defatted retentate, the preservative being effective at a pH below about 7; and

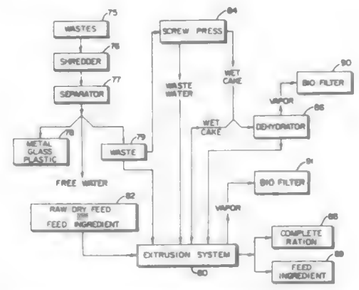
reducing the pH of the mixture to a pH at which the preservative is effective using the food grade acid in an amount effective to reduce the pH, the preservative being present in an amount effective to have a preserving effect on the process concentrate.

5,352,469

METHOD FOR RECOVERING AND RECYCLING OF FOOD PRODUCTS FROM NON-METALLIC CONTAINERS

Thomas J. Peters, Denver, Colo., assignor to SSDE Technologies Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 790,368, Nov. 12, 1991, Pat. No. 5,230,917. This application Oct. 26, 1992, Ser. No. 966,872
Int. Cl.[5] A23P *1/00*; B03C *1/00*
U.S. Cl. 426—478 15 Claims



1. The method of separating non-metallic container bodies and their food contents comprising the steps of:

(a) cutting and crushing said container bodies into fragments whereby to expose said contents;

(b) spraying said fragments and said contents with liquid to facilitate the separation of said contents from said fragments;

(c) mechanically separating said fragments from said contents according to size for separate recovery from said fragments; and

(d) drying said contents to reduce the moisture content therein to a predetermined level.

5,352,470

PROCESS OF MAKING FROZEN CONFECTION WITH ENCASED WHISTLE

Ping Yang, 8220 Dorothy St., Rosemead, Calif. 91770

Filed May 29, 1992, Ser. No. 871,819
Int. Cl.[5] A23G *9/04*; A23P *1/10*
U.S. Cl. 426—515 29 Claims

1. A method of making an iced confection with a whistle inside, comprising:

filling a first mold with a first ingredient, said first mold having an open top and a generally central hollow portion with a shoulder at an interface between a cylindrical first space and a frustoconical second space:

holding in place at least one generally narrow and elongated support member having one end immersed in said first ingredient in said first mold and another end outside said first ingredient;

filling a second mold with a second ingredient, said second mold having an open top, a frustoconical outer wall, and an inner wall defining a cylindrical hollow portion extending through said mold;

freezing said first and second ingredients in said first and second molds to produce a first frozen part matching the inside contours of said first mold and a second frozen part matching the inside contours of said second mold, respectively;

removing said first and second frozen parts from said first and second molds;

inserting a whistle element into a space of said first frozen part corresponding to said second, frustoconical space of said first mold until said whistle element abuts a shoulder of said first frozen part corresponding to said shoulder of said first mold;

inserting said second frozen part into said space in said first part until it abuts said whistle element;

applying pressure to an outer end of said second frozen part;

freezing an outer surface of said first frozen part in contact with an inner surface adjoining said space in said second frozen part to bond said first and second parts together, thereby forming an iced confection having a whistle therein; and

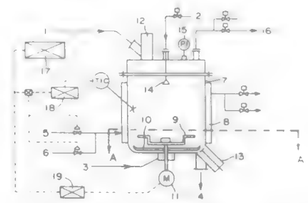
recovering an iced confection having a whistle therein.

5,352,471

PROCESS FOR DRYING AND PULVERIZING FOOD RAW MATERIALS

Keigo Kusano, Kumamoto; Osamu Matsunaga, and Naomasa Hayashida, both of Tochigi, all of Japan, assignors to Mitsui Kouzan Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1993, Ser. No. 25,286
Claims priority, application Japan, Mar. 2, 1992, 4-081540
Int. Cl.[5] A23P *1/00*; B02C *18/00*
U.S. Cl. 426—518 10 Claims



1. A process for dry pulverization of food raw materials, characterized by the process steps, comprising

placing the food raw material in a closed vessel,

evacuating the vessel to a vacuum and

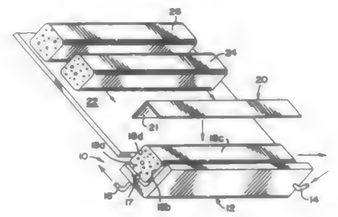
effecting therein the processing operations, which comprises cutting the raw material, drying the cut raw material and crushing the dried and cut material mass into powder, successively.

5,352,472

METHOD AND APPARATUS FOR PRODUCING A FROZEN CRUST ON A FOOD LOAF

Donald E. Lacke, Madison, Wis., assignor to Oscar Mayer Foods Corporation, Madison, Wis.

Filed May 14, 1993, Ser. No. 62,097
Int. Cl.[5] A23P *1/00*
U.S. Cl. 426—518 18 Claims



12. A process for preparing food slices from a loaf-shaped food product, the process comprising:

providing a heat exchanger having a first contact surface thereon for contacting a loaf-shaped food product;

positioning a loaf-shaped food product to contact said first contact surface;

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maintaining said first contact surface at a temperature sufficient to freeze a surface of said loaf-shaped food product;
applying a clamping pressure to said food product to press said food product against said first contact surface to facilitate freezing thereof within a preset period of time of less than about 90 seconds; and
slicing said food product after said product is at least partially frozen.

5,352,473

METHOD FOR INCREASING STABILITY AND BAKE ABSORPTION OF A BREAD BAKING WHEAT FLOUR AND RESULTING DOUGH

Sambasiva R. Chiqurupati, and James Pulverenti, both of Omaha, Nebr., assignors to ConAgra, Inc., Omaha, Nebr.

Continuation of Ser. No. 868,012, Apr. 13, 1992, abandoned, Continuation-in-part of Ser. No. 819,886, Jan. 13, 1992, abandoned. This application Feb. 4, 1994, Ser. No. 192,308
Int. Cl.[5] A23L *1/10*
U.S. Cl. 426—549 **22 Claims**

1. A method for increasing stability of a bread baking wheat flour comprising the following steps:
(a) providing a quantity of a bread baking wheat flour;
(b) drying the flour by suspending the flour in a heated carrier gas having an outlet temperature in the range of about 70–145 degrees C. for a time less than about one minute sufficient to reduce moisture content of the flour to less than about 8 wt % and to increase farinograph stability of the flour by at least 20%, both as compared with the flour provided in step (a);
(c) separating the flour from the carrier gas to provide a free flowing dry powder having a reduced moisture content and an increased farinograph stability as compared with the flour provided in step (a).

5,352,474

STABILIZED, WHIPPABLE NON-DAIRY CREAMS

Jannes G. Lammers, Ganderkesee, Fed. Rep. of Germany; Hendrik Dijkstra, Maassluis, Netherlands; Ian M. Kimsey, Radwell, and Malcolm G. Jones, Stevington, both of Great Britain, assignors to Unilever Patent Holdings B.V., Vlaardingen, Netherlands

Filed Mar. 11, 1993, Ser. No. 29,670
Claims priority, application European Pat. Off., Mar. 11, 1992, 92302042.4
Int. Cl.[5] A23C *11/08*; A23L *1/19*; A23D *7/00*
U.S. Cl. 426—568 **11 Claims**

1. A ready-to-use sterilized whippable non-dairy cream comprising (1) a water-continuous fat emulsion having a fat content of 25–45 wt. %, wherein the fat consists of at least partly of vegetable fat, (2) 0.05–0.5 wt. % of an emulsifier (3) 0.5–8 wt. % of egg yolk, (4) 0.01–1.0 wt. % of a caseinate, (5) 0.5–4.0 wt. % of egg white, (6) 0–1.0 wt. % of a thickener, and (7) 1–10 wt. % of a carbohydrate.

5,352,475

PROCESS FOR THE PRODUCTION OF LOW-CALORIE SPREADS

George W. Tholl, Pewee Valley, Ky., assignor to United Dominion Industries, Inc., Charlotte, N.C.

Continuation-in-part of Ser. No. 6,656, Jan. 22, 1993. This application Apr. 6, 1993, Ser. No. 43,442
Int. Cl.[5] A23D *7/04*
U.S. Cl. 426—603 **20 Claims**

1. A process for producing a water-in-oil emulsion which is an edible margarine-like spread composition having a fat content of less than about 80 percent by weight and approximate consistency of margarine at room temperature, said process comprising:
(a) forming a water phase containing about 0.5 to 30 percent by weight of a hydrocolloid;
(b) forming a liquid fat phase containing substantially hard fat and a liquid soft fat;
(c) cooling the liquid fat phase to form a partially crystallized fat phase;
(d) blending the water phase and partially crystallized fat phase to form a liquid dispersion such that the crystallized fats from the partially crystallized fat phase remain substantially crystallized;
(e) subjecting the liquid dispersion to a shearing force sufficient to produce a water-in-oil emulsion wherein the maximum droplet size of the dispersed water phase is less than about 400 microns; and
(f) discharging the water-in-oil emulsion to provide an edible margarine-like spread composition having a fat content of less than about 80 percent by weight and approximate consistency of margarine at room temperature.

5,352,476

NUTRIENT COMPOSITION CONTAINING NON-PHOSPHORYLATED PEPTIDES FROM CASE IN BASED MATERIAL

Gérard Brule; Loïc Roger, both of Rennes; Jacques Fauquant, Monfort, and Michel Piot, Rennes, all of France, assignors to Institut National De La Recherche Agronomique, Paris, France

Division of Ser. No. 599,102, Oct. 17, 1990, Pat. No. 5,219,735, which is a continuation of Ser. No. 734,750, May 15, 1985, Pat. No. 4,980,450, which is a continuation of Ser. No. 418,600, Sep. 16, 1982, abandoned, which is a continuation of Ser. No. 229,075, Jan. 28, 1981, Pat. No.
Claims priority, application France, Feb. 1, 1980, 80 02.280
The portion of the term of this patent subsequent to Nov. 9, 1999, has been disclaimed.
Int. Cl.[5] A23J *3/00*; C12P *21/06*; A61K *37/18*; C07K *1/00*
U.S. Cl. 426—657 **1 Claim**

1. A composition for effecting nutrition, which comprises:
a) an amount of an essentially pure casein non-phosphorylated peptide sufficient to effect nutrition, which comprises greater than 12% by weight of aromatic amino acids, less than 4% per weight of serine, less than 10% by weight of free amino acids, and a value of less than 0.02 the formula:

$$\frac{Ca + Mg + P}{N_T}$$

wherein Ca is total calcium, Mg is total magnesium, P is total phosphorus, and N_T is total nitrogen $\times 6.38$; and wherein said non-phosphorylated peptide has values of N_T, Ca and P in the range of 27.0 to 53.3 g/kg, 0.14 to 0.20 g/kg and 0.35 to 0.40 g/kg, respectively; and
b) a carrier suitable for consumption.

5,352,477

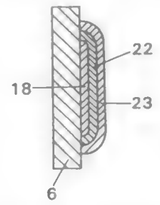
METHOD FOR MANUFACTURING A CATHODE FOR A GAS DISCHARGE TUBE

Hiroshi Sakurai, Takatsuki, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

Division of Ser. No. 773,489, Oct. 9, 1991, Pat. No. 5,266,867. This application Jul. 14, 1993, Ser. No. 92,182
Claims priority, application Japan, Oct. 15, 1990, 2-276981
Int. Cl.[5] C23C *14/00*
U.S. Cl. 427—58 **1 Claim**

1. A method for manufacturing a cathode for a gas discharge tube comprising the steps of:
forming a film made of a material containing Mg as a main component on the surface of a conductive metal base,

diffusing part of a component of the metal base to part of the film to form an intermediate layer containing Mg,



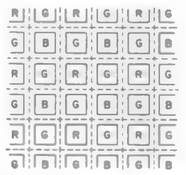
oxidizing the remaining part of the film to form a dielectric film made of a material containing MgO as a main component.

5,352,478

PLASMA DISPLAY PANEL AND METHOD OF MANUFACTURING SAME

Toru Miyake; Yoshiki Kudo, and Naoshige Higuchi, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 478,966, Feb. 9, 1990, Pat. No. 5,136,207. This application Apr. 17, 1992, Ser. No. 870,243
Claims priority, application Japan, Feb. 10, 1982, 57-31466; Aug. 10, 1989, 1-207467
Int. Cl.[5] B05D *5/06*
U.S. Cl. 427—68 **11 Claims**



1. A method manufacturing a plasma display panel comprising a front plate, a rear plate disposed in parallel to the front panel in an opposing relation, and cell barriers as display elements arranged between the front and rear plates, the cell barriers being of matrix or linear structure forming a plurality of cells, characterized in that the cell barriers are formed by printing phosphor paste containing glass frit multiple times in an superimposing manner by a screen printing method, drying the phosphor/glass paste after each printing, and sintering the phosphor/glass paste after formation of the cell barriers.

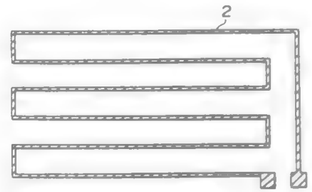
5. A method of manufacturing a plasma display panel comprising a front plate, a rear plate disposed in parallel to the front panel in an opposing relation, and cell barriers as display elements arranged between the front and rear plate, the cell barriers being of matrix or linear structure forming a plurality of cells, characterized in that a positive pattern of cell barriers is formed by applying a photo reisit on the front or rear plate, curing part of the photo resist, removing uncured photo resist leaving the cured photo resist to form the positive pattern, applying a phosphor-containing slurry to portions of the plate not covered by the pattern of the photo resist, drying the phosphor-containing slurry, and removing the photo resist pattern to thereby form cell barriers.

5,352,479

METHOD FOR FORMING AN ELECTRODE

Masaru Iida; Akihiro Konno, both of Funabashi, and Michio Yamada, Matsudo, all of Japan, assignors to NFE Co., Ltd., Funabashi and Asahi Glass Company Ltd., Tokyo, both of Japan

Continuation of Ser. No. 842,164, Mar. 31, 1992, abandoned. This application Jul. 8, 1993, Ser. No. 88,731
Int. Cl.[5] B05D *5/12*
U.S. Cl. 27—96 **5 Claims**



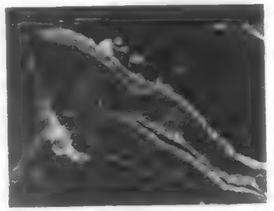
1. A method for forming an electrode, which comprises printing and drying on a transparent glass substrate a first film paste containing no glass powder and having an inorganic powder containing an inorganic pigment, said inorganic powder being dispersed in an organic binder, then printing a second film paste having an inorganic powder containing a metal powder and a glass powder, said inorganic powder being dispersed in an organic binder, to cover a part of said first film paste, followed by baking at a temperature of from 400° to 800° C., and then removing the first film paste at the portion which is not covered by the second film paste, to form an electrode which exhibits a color as observed from the side opposite to the printed side.

5,352,480

METHOD FOR BINDING PARTICLES TO FIBERS USING REACTIVATABLE BINDERS

Michael R. Hansen, Seattle, and Richard H. Young, Sr., Renton, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Aug. 17, 1992, Ser. No. 931,278
Int. Cl.[5] B05D *1/36*
U.S. Cl. 427—202 **40 Claims**



1. A method of producing fibers with adhered particles, comprising:
providing fibers that have hydrogen bonding functional sites;
applying a binder to the fibers, the binder having a volatility less than water, the binder also having a functional group that is capable of forming a hydrogen bond with the fibers, and a functional group that is capable of forming a hydrogen bond or a coordinate covalent bond with particles that have a hydrogen bonding or a coordinate covalent bonding functionality;
adding the particles to the fibers; and
activating the binder on the fibers from an inactive state, whereby a substantial portion of the particles are adhered

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in particulate form by the binder to the fibers by a hydrogen bond or coordinate covalent bond between the particles and binder, and a hydrogen bond between the binder and fibers.

5,352,481

PROCESS FOR FORMING PARTICLES HAVING A UNIFORM SIZE DISTRIBUTION

Chan S. Bak, Newbury Park; Hiroshi Kimura, Northridge, and Ricardo C. Pastor, Manhattan Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 890,978, May 29, 1992. This application Apr. 29, 1993, Ser. No. 55,424

Int. Cl.[5] B05D *7/00*

U.S. Cl. 427—212 **8 Claims**



1. A process for forming particles having a substantially uniform size distribution and provided with an outer coating having a melting point of less than 900° C. to enable sintering of said particles at a temperature less than 900° C., comprising:

(a) providing titania powder comprising core particles of irregular shape and broad particle size distribution;

(b) coating said titania powder with a first coating consisting essentially of a silica gel by

(1) suspending said powder in a suspending medium consisting essentially of an alcohol, said suspending medium acting as a solvent for a silicon alkoxide and containing a quantity of water,

(2) adding said silicon alkoxide to said suspending medium, and

(3) allowing said silicon alkoxide to hydrolyze and condense on the surface of said core particles to form said silica sol-gel; and

(c) coating said first coating of silica gel with a second coating consisting essentially of a bismuth oxide gel by

(1) suspending said silica-gel coated particles in an alcohol, said alcohol acting as a solvent for a bismuth alkoxide and containing a quantity of water,

(2) adding said bismuth alkoxide to said suspending medium, and

(3) allowing said bismuth alkoxide to hydrolyze and condense on the surface of said first coating of silica gel to form said second coating of said bismuth oxide gel.

5,352,482

PROCESS FOR MAKING A HIGH HEAT-CONDUCTIVE, THICK FILM MULTI-LAYERED CIRCUIT BOARD

Kazuo Kondo, Nagoya, and Asao Morikawa, Komaki, both of Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Continuation of Ser. No. 838,941, Feb. 21, 1992, abandoned, which is a division of Ser. No. 456,087, Jan. 4, 1990, Pat. No. 5,122,930, which is a continuation of Ser. No. 146,636, Jan. 21, 1988, abandoned. This application Oct. 4, 1993, Ser. No. 131,560

Claims priority, application Japan, Jan. 22, 1987, 62-11287

Int. Cl.[5] B05D *5/12*

U.S. Cl. 427—96 **6 Claims**

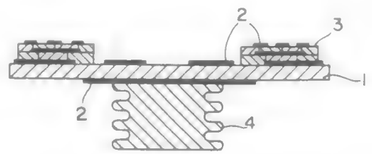
1. A process for making a heat-conductive, thick film multilayered circuit board, comprising:

(1) providing an electrically conductive substrate having heat conductivity and resistance to heat;

(2) oxidizing a surface of said substrate to form an oxidized layer thereon;

(3) applying on the oxidized layer on insulating paste comprising crystallized glass as a principal constituent to form a printed insulating paste layer;

(4) applying on the insulating paste layer an electrically



conductive paste containing therein crystallized glass to form a printed electrically conductive paste layer;

(5) repeating steps (3) and (4) at least one cycle to form a laminate; and

(6) heating the resultant laminate at a temperature sufficient to consolidate layers to form an integral multi-layer circuit board.

5,352,483

PREADHERED MELT SPUN SPIN-DRAWN POLYESTER FILAMENTS

Remy Humbrecht, Littau; Peter Beutler, Meggen, and Armin Mueller, Emmenbrucke, all of Switzerland, assignors to Viscosuisse S.A., Emmenbrucke, Switzerland

Continuation-in-part of Ser. No. 134,538, Dec. 15, 1987, abandoned. This application Oct. 8, 1991, Ser. No. 774,012

Claims priority, application Switzerland, Mar. 24, 1983, 1614/8

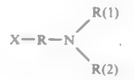
Int. Cl.[5] B05D *3/10;* **C09J** *201/02*

U.S. Cl. 427—175 **11 Claims**

1. A process for preadhering melt-spun, spin-drawn polyester filament which improves the adhesive properties of the filament towards rubber, said process comprises the steps of:

(a) spin-drawing polyester filaments to an up-take speed between about 2,000 to about 6,000 meters per minute using an integrated spin-drawing process; and

(b) immediately after spin-drawing, applying to the polyester filament, a composition comprising simultaneously about 0.05 to about 0.5% by weight of a polyepoxide and about 5 to about 140 ppm of a tertiary amine with linear functional groups, wherein said tertiary amine has the following general formula:



where R is $—(CH_2)_n—$ or $—C_6H_5—$, and "n" is $1 \leqq n \leqq 6$;

where R(1) and R(2) are identical or different and are each selected from the group consisting of: alkyl groups having $C_{1\text{-}6}$, hydroxalkyl groups having $C_{1\text{-}6}$, alkyl aryl groups or aryl groups; and

wherein X is H, OH, NH_2, NHR(3), NR(4), R(5), or (R6), where R(3), R(4), R(5) and R(6) are each selected from the group consisting of alkyl groups having $C_{1\text{-}6}$ or aryl groups, to produce a polyester filament having a minimum adherence towards rubber in the Strip-test ranging from between about 16.0 to about 21.5daN.

5,352,484

METHOD OF DENSIFYING A POROUS SUBSTRATE BY MEANS OF A MATRIX CONTAINING CARBON

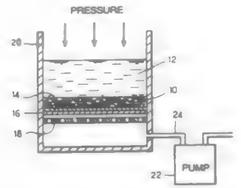
Bruno C. Bernard, Eusines; Christian B. Brosse, Le Haillan, and Jean-Claude Cavalier, Le Pian Medoc, all of France, assignors to Societe Europeenne de Propulsion, Suresnes, France

Filed Jan. 17, 1992, Ser. No. 823,835

Claims priority, application France, Jan. 18, 1991, 91/00592

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—228 **20 Claims**



1. A method of densifying a porous carbon substrate by means of a matrix containing carbon, for obtaining an article made of composite material, comprising the following steps:

introducing into a first side of a porous carbon substrate to be densified a suspension containing submicron carbon powder and a carbon precursor including one of a liquid resin and a resin powder;

establishing a pressure difference to force the suspension through the substrate;

providing a filter on a second side of the substrate opposite the first side of the substrate, for filtering the suspension to retain the carbon powder inside the substrate and progressively densifying the substrate with the carbon powder that is retained by the filter to produce a densified substrate; and

drying the densified substrate and transforming the carbon precursor in the substrate into carbon by carbonization thereby binding the carbon powder constituting the matrix.

5,352,485

SYNTHESIS OF METAL OXIDE THIN FILMS

Mark R. DeGuire, Cleveland Heights; Arthur H. Heuer, Cleveland, and Chaim N. Sukenik, Cleveland Heights, all of Ohio, assignors to Case Western Reserve University, Cleveland, Ohio

Filed Apr. 8, 1993, Ser. No. 28,594

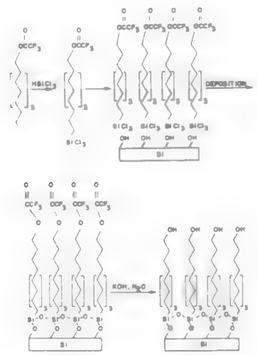
Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—226 **25 Claims**

1. A method for synthesizing a metal oxide thin film, comprising the steps of:

providing a substrate having an oxide layer at its surface;

covalently bonding a first end of a chain hydrocarbon to the surface of the substrate, the first end of the chain hydrocarbon having a first functional group which covalently bonds with the oxide at the substrate surface, a second end of the chain hydrocarbon having a second functional



group providing a bonding site for a metal oxide in solution; and

depositing metal oxides on the second functional groups.

5,352,486

METHOD FOR PRODUCING CARBON MATERIAL COATED WITH CARBON FILM AND THE USE OF CARBON MATERIAL

Takashi Matsumoto; Hiroaki Ogura; Osamu Okada, and Shinsuke Goda, all of Kagawa, Japan, assignors to Toyo Tanso Co., Ltd., Osaka, Japan

Filed Apr. 23, 1992, Ser. No. 872,400

Claims priority, application Japan, Aug. 23, 1991, 3-237338

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—228 **1 Claim**

1. A method for producing a carbon material coated with carbon film comprising the steps of:

dissolving an aromatic polyamide imide resin in an organic solvent to obtain a solution having a concentration of the aromatic polyamide imide resin of 10 to 50%, said aromatic polyamide imide resin being a resin of low molecular weight of about 10 to 100 in number of monomers; applying said solution to the carbon material or impregnating the carbon material with said solution, said carbon material selected from the group consisting of isotropic carbon, isotropic graphite material and material of a carbon/carbon composite; curing said material at 300° C. to 400° C.; and carbonizing and/or graphitizing said material by baking under a non-oxidizing atmosphere.

5,352,487

PROCESS FOR THE FORMATION OF SiO_2 FILMS

Keith A. Klinedinst, Marlborough, and Joseph E. Lester, Lincoln, both of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Aug. 31, 1992, Ser. No. 938,088

Int. Cl.[5] C23C *16/00*

U.S. Cl. 427—248.1 **1 Claim**

1. A method for the deposition of SiO_2 onto a substrate which comprises the steps of:

a) providing a feed stream comprising gas-phase DADBS to a first reactor;

b) heating the feed stream in said first reactor to a first temperature between about 450° C. and 550° C. to allow the formation of activated DADBS and for a time sufficient to form a mixture of activated DADBS and unactivated DADBS; and

c) contacting the mixture with a substrate in a second reactor

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while maintaining the substrate and the mixture in said second reactor at a second temperature between about 400° C. to 450° C., said second temperature 50° C. lower than said first temperature, for a time sufficient to allow SiO_2 to deposit from the mixture onto the substrate, said first and said second reactors being separate and interconnected.

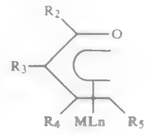
5,352,488

CHEMICAL VAPOR DEPOSITION PROCESS EMPLOYING METAL PENTADIENYL COMPLEXES

James T. Spencer, Syracuse, N.Y., and Richard D. Ernst, Salt Lake City, Utah, assignors to Syracuse University

Filed May 14, 1993, Ser. No. 61,447
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—250 13 Claims

1. Chemical vapor deposition process for depositing a metal film upon a substrate comprising contacting said substrate with a vapor of a precursor of the general formula



where M is a nonferrous metallic element;
Ln is one or more additional ligands;
R_1, R_2, R_3, R_4 and R_5 are substituents selected from the group consisting of hydrogen, lower alkyl, halogenated lower alkyl, alkylated silyl and siloxy; and
thermally or photolytically decomposing said precursor in contact with the substrate with sufficient energy to bring about deposition of a film of the metallic element.

5,352,489

METHOD FOR MANUFACTURING A ROTARY ANODE FOR X-RAY TUBE

Hisanori Ohara; Hiromu Kawai, both of Itami; Shigehiko Takaoka, and Yasuhiro Katoh, both of Tokyo, all of Japan, assignors to Tokyo Tungsten Co., Ltd, Tokyo and Sumitomo Electric Industries, Ltd., both of Osaka, Japan

Division of Ser. No. 882,026, May 13, 1992, Pat. No. 5,259,015. This application Aug. 10, 1993, Ser. No. 103,761
Claims priority, application Japan, May 17, 1991, 3-142457
Int. Cl.[5] C23C *16/00;* H01J *35/10*
U.S. Cl. 427—250 1 Claim

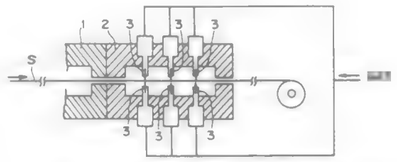
1. A method for manufacturing a rotary anode for use in an X-ray tube, said method comprising the steps of forming, on a graphite substrate plate, an intermediate layer of rhenium by subjecting rhenium chloride to a thermal decomposition CVD process at a substrate temperature of 1200° C. or more, and forming, on said intermediate layer, an X-ray generating layer of tungsten or tungsten-rhenium alloy by subjecting tungsten fluoride or both tungsten fluoride and rhenium fluoride to a hydrogen reduction thermal CVD process; wherein said intermediate layer is about 10–50 microns thick and consists essentially of rhenium having an equiaxed grain structure which is free from columnar grain structure, and an average grain size of about 10–50 microns.

5,352,490

METHOD OF CHEMICAL VAPOR DEPOSITION IN A CONTINUOUS TREATMENT LINE

Masahiro Abe; Kazuhisa Okada, and Shuzo Fukuda, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 247,741, Sep. 22, 1988, abandoned. This application Jul. 6, 1992, Ser. No. 910,827
The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—251 7 Claims



1. A method of chemical vapor deposition in a continuous treatment line for coating the surface of a steel material having a surface by passing it through a chemical vapor deposition treating chamber, comprising blowing a reacting as or a gas containing a reacting gas onto the steel material through blowing nozzles in the chemical vapor deposition treating chamber so as to cause chemical vapor deposition on said surface at a velocity sufficient to forcibly remove products of the reaction caused by said reacting gas from said surface of the steel material, and concurrently carrying out chemical vapor deposition thereon, including blowing the gas onto the steel material from the blowing nozzles at discharging speed V_o of not less than 0.5 m/sec.

5,352,491

METHOD FOR COATING USING MOLTEN ORGANOSILOXANE COMPOSITIONS

Martin E. Cifuentes; Michael R. Strong, and Bernard Vanwert, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 11, 1993, Ser. No. 75,987
Int. Cl.[5] B05D *3/10*
U.S. Cl. 427—387 10 Claims

1. A method for applying a coating on at least one surface of a substrate, the method comprising the sequential steps of
I) causing a coating composition to become flowable by heating the composition above its flow-transition temperature, where the coating composition comprises
(a) a resinous organosiloxane copolymer exhibiting a number average molecular weight of at least 1000 and comprising monovalent $R^1{}_3SiO_{\frac{1}{2}}$ units, tetravalent $SiO_{4/2}$ units, and up to 6 weight percent, based on the weight of said copolymer, of $XSiO_{3/2}$ units, where X is at least one member selected from the group consisting of hydroxyl groups, hydrolyzable groups and trihydrocarbylsiloxy units, and
(b) a polyorganosiloxane that is a liquid at 25° C. and contains an average of more than two hydrolyzable groups per molecule, where R^1 represents a monovalent unsubstituted or substituted hydrocarbon radical, at least 80 percent of the repeating units of said polyorganosiloxane are disiloxane units, and the amount of said resinous organosiloxane copolymer relative to said polyorganosiloxane is sufficient for
1) a coating consisting essentially of a 0,075 mm-thick vertical layer of said composition to be substantially nonflowable at 25° C., and
2) said composition to have a flow transition temperature within the range from 40° to 200° C. prior to reaction of said hydrolyzable groups,

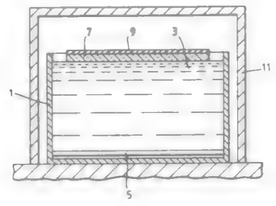
II) applying said composition as a flowable material to a surface of a substate to form a coating, and
III) exposing the coating to moisture for a time sufficient to react said hydrolyzable groups and increase the flow transition temperature of said composition by at least 10° C.

5,352,492

ANNEALING PROCESS

John Stoemenos, Thessaloniki, Greece, assignor to Gec-Marconi Limited, United Kingdom

Filed Mar. 18, 1993, Ser. No. 33,130
Claims priority, application United Kingdom, Mar. 20, 1992, 9206064.7
Int. Cl.[5] B05D *3/00*
U.S. Cl. 427—397.7 8 Claims



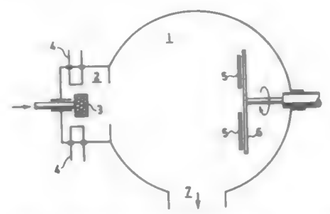
1. A process of annealing an annealable substance deposited on a substrate constituted of a heat-softenable material that has a density and softens at a softening temperature, comprising the steps of: supporting the substrate on a liquid having a boiling point and a density greater than the density of the substrate material; and raising the temperature of the substrate and the substance deposited thereon to an annealing temperature which is higher than the softening temperature of the substrate material but lower than the boiling point of the liquid.

5,352,493

METHOD FOR FORMING DIAMOND-LIKE NANOCOMPOSITE OR DOPED-DIAMOND-LIKE NANOCOMPOSITE FILMS

Veniamin Dorfman, 8 Norman Dr., Shoreham, N.Y. 11786, and Boris Pypkin, Moscow, U.S.S.R., assignors to Veniamin Dorfman, Shoreham, N.Y.

Filed May 3, 1991, Ser. No. 695,552
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—530 11 Claims



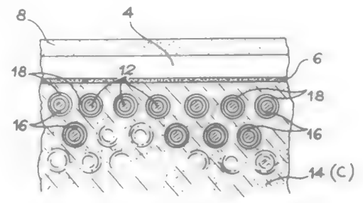
1. A method of fabricating diamond-like nanocomposite or doped-diamond-like nanocomposite films containing the constituent elements carbon, hydrogen, silicon, oxygen and metal, comprising:
depositing onto a substrate by co-deposition a clusterless particle beams comprised of ions, atoms and/or radicals of said constituent elements, the free path length of each of particles of said constituent elements being in excess of the distance between its source and the growing film surface of the substrate; and
wherein at least 50% of carbon particles comprise an energy above 100 eV, and the temperature of the substrate during growth is less than about 500° C.

5,352,494

PROCESS FOR THE PRODUCTION OF A COMPOSITE MATERIAL PROTECTED AGAINST OXIDATION AND MATERIAL OBTAINED BY THIS PROCESS

Gérard Rousseau, Saint Aubain de Medoc, France, assignor to Societe Nationale Industrielle et Aerospatiale, France

Continuation of Ser. No. 605,656, Oct. 30, 1990, abandoned. This application Jul. 8, 1992, Ser. No. 911,335
Claims priority, application France, Nov. 9, 1989, 89 14703
Int. Cl.[5] B05D *3/06, 1/36;* C23C *16/00*
U.S. Cl. 427—562 9 Claims



1. Process for producing a composite material protected against oxidation, said material comprising a composite body having a substrate of inorganic fibers embedded in a carbon-based matrix, said process consisting of forming said substrate;
embedding said substrate in the carbon-based matrix for forming said composite body;
directly depositing a crystalline aluminum nitride layer on said body with process heating to a first elevated temperature, said first elevated temperature selected to provide chemical reaction of aluminum of said nitride layer with carbon of said body to form an aluminum carbide layer between said aluminum nitride layer and said body;
depositing on said aluminum nitride layer an outer layer of alpha alumina which is substantially impermeable to oxygen by chemical vapor deposition at a second elevated temperature of at least 950° C., said deposition step excluding the use of plasma assisted chemical vapor deposition.
said first and second elevated temperatures being selected to provide oxidation protection and thermal stability at temperatures up to 2000° C.

5,352,495

TREATMENT OF A SURFACE BY LASER ENERGY

Andrew R. Henderson, and Robert Jones, both of Cambridge, England, assignors to The Wiggins Teape Group Limited, Basingstoke, United Kingdom

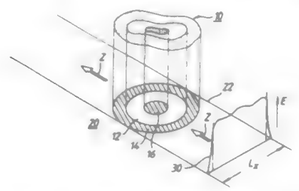
Continuation of Ser. No. 863,321, Apr. 1, 1992, abandoned, which is a continuation of Ser. No. 480,793, Feb. 16, 1990, abandoned. This application Jan. 6, 1993, Ser. No. 721
Claims priority, application United Kingdom, Feb. 16, 1989, 8903525
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—596 22 Claims

1. A method of treating the surface of a paper material with laser energy comprising the steps of providing a relative scanning movement between a surfaced and an axis of a laser beam in a scan direction where:
the laser beam is unfocussed at the surface,
the beam has a cross-section at the surface with a width transverse to the direction of scan,
the cross-section of the beam at the surface comprises a

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ring-shaped propagation mode and exhibits an irradiance distribution distinctive of the propagation mode structure of the beam, and

relatively moving the beam and the surface in the scan direction such that a scanning velocity of the beam relative to the surface is such that at any scanned point on the surface, thermal energy is generated which is a function of an integral of the beam irradiance distribution acting at that point as the beam traverses that point.



5,352,496

COLOR MATCH MOLDING AND BELT WEATHER STRIP

Norman C. Jackson, Livonia, Mich., assignor to The Standard Products Company, Cleveland, Ohio

Continuation of Ser. No. 570,008, Aug. 20, 1990, Pat. No. 5,151,307, which is a continuation of Ser. No. 246,511, Sep. 19, 1988, Pat. No. 4,975,306. This application Aug. 28, 1992, Ser. No. 937,532

The portion of the term of this patent subsequent to Aug. 28, 2009, has been disclaimed.

Int. Cl.[5] B60J *10/02*

U.S. Cl. 428—31 10 Claims



1. A belt weather strip for attachment to a vehicle, said vehicle having a surface appearance which is to be matched in appearance by said weather strip, said weather strip comprising:

a generally 'U' shaped support member;

a first selected layer secured to said support member;

a second selected elastomeric layer secured to said support member; and said first and second selected layers having similar appearances matching the surface appearance of the vehicle wherein said second selected elastomeric layer forms a sealing lip.

5,352,497

SORBENT PADS FOR HAZARDOUS WASTES

Kirit Patel, Bensalem, Pa., assignor to Leucadia, Inc., La Jolla, Calif.

Filed Feb. 4, 1992, Ser. No. 830,648

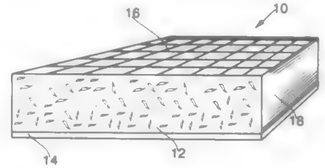
Int. Cl.[5] B32B *5/00*

U.S. Cl. 428—34.1 16 Claims

1. A sorbent pad for sorption of at least one liquid comprising a pad for placement under a container of liquid hazardous waste, said pad further comprising:

(a) a fiber blanket having a top face and a bottom face and sidewalls which extend from said top face to said bottom face, said blanket comprising fibers which are chemically resistant to said liquid hazardous waste;

(b) a barrier layer affixed to said bottom face of said blanket and completely covering said bottom face of said blanket, said barrier layer being impervious to said liquid hazardous waste;



(c) a biaxially oriented polypropylene net on said top face of said blanket and completely covering said top face of said blanket, said net providing strength to said blanket and for distributing the weight of the container; and

(d) a thermoplastic coating which completely coats the exterior edges of said sidewalls of said blanket, said thermoplastic coating being impervious to said liquid hazardous waste.

5,352,498

PACKAGE FOR COMPOUNDING RUBBER AND COMPOUNDED RUBBER

Bharat K. Kansupada, Mogadore, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 19, 1992, Ser. No. 932,115

Int. Cl.[5] B29D *22/00*

U.S. Cl. 428—35.5 5 Claims

1. A compounded rubber comprised of a mixture of unsaturated rubber and a package which comprises (A) compounding ingredients for unvulcanized rubber packaged in (B) a protective film having a thickness in the range of about 0.02 to about 0.08 mm consisting essentially of a thermoplastic polycaprolactone containing an anti-block agent and further characterized by a melting point in the range of about 60° C. to about 70° C., a melt flow index at 190° C. and about 440 psi of about 5 to about 7 g/min, and a molecular weight (number average) in a range of about 70,000 to about 90,000.

5,352,499

MULTILAYERED STRUCTURES COMPRISING POLYCARBONATE LAYERS AND FUNCTIONALIZED POLYAMIDE LAYER

G. Fred Willard, Dalton, Mass., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 423,309, Oct. 18, 1989, abandoned. This application Jan. 30, 1992, Ser. No. 827,855

Int. Cl.[5] B32B *1/08, 27/36;* B65D *1/00*

U.S. Cl. 428—357 7 Claims

1. A multilayered bonded laminated structure comprising:

(a) an aromatic polycarbonate resin layer; and

(b) a polyamide resin layer exhibiting gas barrier properties, said polyamide resin comprising the reaction product of:

(i) a dicarboxylic acid,

(ii) a diamine, and

(iii) an effective amount comprising at least about 3 mole percent of (iii) based on total moles of (ii) and (iii) of a polyamine of the general formula:

$$H_2N-(R_6)_n-\underset{\displaystyle H}{\underset{|}{N}}-(R_7)_m-NH_2$$

wherein R_6 and R_7 are independently selected from aliphatic, aromatic, and unsaturated hydrocarbons and n is an integer of from 1 to 6, and m is an integer from 1 to 6 said polyamine containing an internal amine group which is less reactive than the terminal amine groups and said polyamine having a concentration greater than approximately 1% of the dicarboxylic acid concentration, based on total moles of dicarboxylic acid, said layers (a) and (b) being in direct adhesive contact with each other without the use of a tie layer therebetween.

5,352,500

THERMOPLASTIC POLYMER COMPOSITIONS CONTAINING MELT-RHEOLOGY MODIFIERS

Nazir A. Memon, Failsington, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 389,656, Feb. 18, 1992, abandoned, which is a continuation-in-part of Ser. No. 153,170, Feb. 8, 1988, abandoned. This application Feb. 5, 1993, Ser. No. 14,054

Int. Cl.[5] B29D *22/00, 23/00;* B32B *1/08*

U.S. Cl. 428—35.7 8 Claims

1. A blow-molded article formed from a polymer blend which comprises a thermoplastic engineering resin and blended therewith from about 1 to about 25%, based on the total weight of the blend, of a methacrylic ester polymer of units of one or more copolymerizable vinyl monomers, wherein at least 70% by weight of the units have the formula.

5,352,501

LONGITUDINAL MAGNETIC RECORDING MEDIUM COMPRISING A CIRCUMTERENTIALLY TEXTURED DISK SUBSTRATE, CHROMIUM PRIMER LAYER AND A COBALT CHROMIUM MAGNETIC ALLOY LAYER HAVING A SEGREGATION STRUCTURE

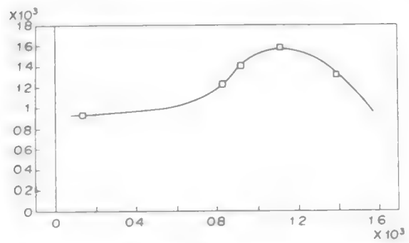
Yukihiro Miyamoto, and Fumiaki Yokoyama, both of Yokohama, Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Dec. 21, 1990, Ser. No. 631,904

Claims priority, application Japan, Dec. 27, 1989, 1-338992

Int. Cl.[5] G11B *5/00*

U.S. Cl. 428—64 22 Claims



1. A longitudinal magnetic recording medium comprising a non-magnetic substrate in the form of a disk having a texture provided in a circumferential direction of the medium, with an arithmetic average roughness Ra measured in a radial direction of at least 20 angstroms, a non-magnetic chromium primer layer and a magnetic alloy layer comprising cobalt and chromium as the main components, formed on the substrate, wherein the magnetic alloy layer has (i) a feature that when an orientation degree of a hcp crystal structure is represented by diffraction ray intensity of electron diffraction by transmission electron diffractiometry, the intensity ratio of the electron diffraction ring in a Co (002) plane between the circumferential direction and the radial direction of the substrate is at least 3, and (ii) a segregation structure having cobalt chromium regions with a lower chromium concentration and a higher intensity of magnetization than surrounding cobalt chromium regions, diameters of the surrounded cobalt chromium regions being within a range of from 80 to 500 angstroms, and a number of the surrounded cobalt chromium regions being from 600 to 1,500 regions/μm^2.

5,352,502

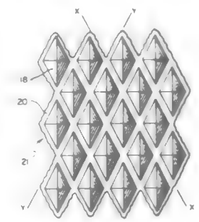
FOLDABLE FREEZE GEL WRAP

Sheila P. Fuller, 15850 Swain St., Sylmar, Calif. 91342

Filed Mar. 5, 1993, Ser. No. 27,101

Int. Cl.[5] B32B *1/00*

U.S. Cl. 428—172 1 Claim



1. A foldable freeze wrap comprising:

a first support sheet of material;

a second compartmented sheet of material attached to said support sheet and having a plurality of individual and separate pockets;

said pockets arranged in spaced-apart relationship and each of said pockets enclosing a freezable product which totally occupies the interior of each of said pockets;

selected fold areas of said sheets specifically defined as being between said pockets joined together by a heat seal attachment and said selected fold areas constituting fold lines about a linear hinge axis so that said sheets are foldable over to accommodate wrapping about an article to be chilled;

said freezable product is a gel and said sheets are composed of a freezable material whereby both gel and sheets may be frozen prior to wrapping about the article to be chilled;

said wrap being foldable in its frozen condition and adapted to assume the shape of the article intended to be chilled;

each of said gel occupied pockets are configured in the shape of a diamond in plan view and a pyramid in side elegational view;

said selected fold areas include hinge axis crossing along X—X and Y—Y axis between adjacent ones of said separate and individual diamond shaped pockets.

5,352,503

RECORDING PAPER FOR INK JET RECORDING PROCESSES

Mark C. Drake, Springfield, and Alex J. Miklasiewicz, Holyoke, both of Mass., assignors to Rexham Graphics Inc., South Hadley, Mass.

Filed Sep. 21, 1992, Ser. No. 947,571

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—195 21 Claims

1. A recording paper useful in ink jet recording comprised of a cellulose substrate and a coating, with the coating comprising a pigment and a binder, said binder being comprised of a water-soluble resin and a polyether, with the amount of polyether contained in the coating being at least 15 wt. % based on the total weight of the dry coating.

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5,352,504

ELECTROCHROMIC GLAZING

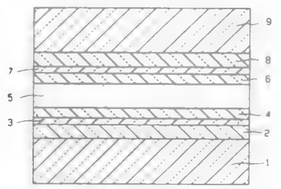
Frank Boulanger, Ville d'Avray; Francois Lerbet, Paris; Corinne Papret, Evry; Franck Perrodo, Paris, and Gilles Thomas, Gif sur Yvette, all of France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed Nov. 8, 1991, Ser. No. 790,722

Claims priority, application France, Nov. 14, 1990, 90 14134; Jun. 27, 1991, 90 07932

Int. Cl.[5] G02F *1/15;* C03C *27/06*

U.S. Cl. 428—216 13 Claims



1. An electrochromic glazing comprising a glass sheet (1), a first transparent electroconductive electrode (2), a cathodic electrochromatic material layer (4), an electrolyte (5), an anodic electrochromatic material layer (6) and a second transparent electroconductive electrode (8), the first electrode (2) comprising a barrier layer (3) of tin oxide in contact with the cathodic electrochromic material layer (4), and the second electrode comprising a barrier layer (7) of tin oxide in contact with the anodic electrochromic material layer (6) and the second transparent electroconductive electrode (8), wherein the first and second electrodes each have a square resistance below about 5 Ohms.

5,352,505

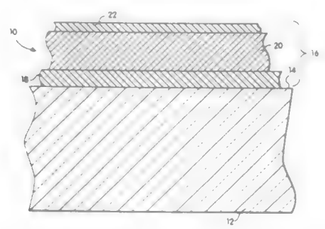
PLASMA ENHANCED CHEMICAL VAPOR DEPOSITION OF OXIDE FILM STACK

Annette J. Krisko, Highland, and James W. Proscia, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 724,275, Jul. 1, 1991. This application Jun. 4, 1993, Ser. No. 73,230

Int. Cl.[5] G02F *1/17*

U.S. Cl. 428—216 2 Claims



1. An article comprising a substrate and an infrared reflective film stack on a surface of the substrate, the film stack comprising a 10 to 100 nm thick sub-film of amorphous tungsten oxide and a 50 to 1,000 nm thick film of substantially stoichiometric, crystalline tungsten oxide on the sub-film.

5,352,506

DIAPHRAGM

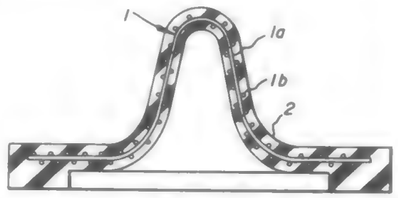
Nobuhiro Sowa, Kawachinagano, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Feb. 22, 1993, Ser. No. 20,403

Claims priority, application Japan, Feb. 26, 1992, 4-008657[U]

Int. Cl.[5] B32B *7/00;* D03D *3/00;* G10K *13/00;* H04R *7/00*

U.S. Cl. 428—225 3 Claims



1. A diaphragm comprising a woven substantially circular base fabric formed of warp yarns radially extending in centrally convex form from the center of the fabric and weft yarns helically interwoven with said warp yarns, and a rubber member of centrally convex membrane form molded integrally with said base fabric.

5,352,507

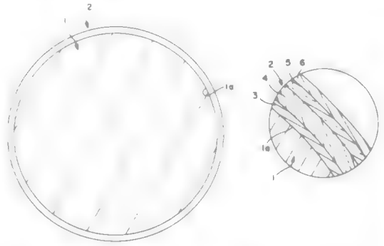
SEAMLESS MULTILAYER PRINTING BLANKET

Michel Bresson, Whittelsheim, France; David Beckerman, Andover, Mass.; Claude Berna, Moosch, France; Christian Chesneau, Wuenheim, France; Jean P. Jenny, Hatstatt, France; Dennis D. O'Rell, Roxborough, Mass.; Herve Praet, Mulhouse, France; Gerard Rich, Orschwihr, France, and Jean P. Stutz, Vieux Thann, France, assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation-in-part of Ser. No. 682,048, Apr. 8, 1991, Pat. No. 5,205,213. This application Mar. 3, 1993, Ser. No. 25,482

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—245 29 Claims



1. A multilayered, printing blanket sleeve comprising:

a seamless outer printing surface layer;

at least one reinforced elastomer layer beneath said seamless outer layer, said reinforced elastomer layer being a cylindrical tube having inward and outward sides and being reinforced by fibers that are substantially parallel to said inward and outward sides; and

a resiliently compressible layer surrounded by said at least one reinforced elastomer cylindrical tube layer, said compressible layer having a modulus of elasticity in the range of 0.2 to 100 megapascals; said seamless printing surface layer, said at least one reinforced elastomer layer, and said resiliently compressible layer having an axially symmetrical tubular shape.

5,352,508

NET WOUND DRESSINGS

Catherine L. Cheong, Burnley, United Kingdom, assignor to Johnson & Johnson Medical, Inc., Arlington, Tex.

Continuation of Ser. No. 828,263, Jan. 30, 1992, abandoned. This application Mar. 4, 1993, Ser. No. 28,924

Claims priority, application United Kingdom, Jan. 31, 1991, 9102089.1

Int. Cl.[5] B32B *7/00*

U.S. Cl. 428—264 11 Claims

1. A pliant and comformable net dressing that adheres well to dry skin but does not adhere to wet skin and that comprises a net substrate, which has apertures whose smallest dimension is about 1.0 to 3.0 mm and which is encapsulated in a hydrophilic tacky resin, comprising either

a polymerised hydrogel or

a high molecular weight crosslinked polyurethane matrix containing at least one polyhydroxy compound having a number average molecular weight from 1,000 to 12,000 and a number average hydroxyl value from 26 to 110, the polyhydroxy compound comprising from 40 to 85% by weight based on the total weight of the matrix and the polyhydroxy compound, the resin being essentially free of polyhydroxy compounds having a molecular weight below 800, and

the resin on the net substrate leaving the majority of the apertures in the net substrate unoccluded.

5,352,509

INSULATING PRODUCT OF MINERAL FIBRE WOOL, INTENDED IN PARTICULAR FOR HEAT INSULATION OF PIPES AND METHOD FOR PREPARING THIS PRODUCT

Bob L. O. Talling, Abo, Finland, assignor to Oy Partek AB, Pargas, Finland

Continuation of Ser. No. 768,313, Jan. 6, 1992, abandoned. This application Jan. 10, 1994, Ser. No. 179,762

Claims priority, application Finland, Apr. 6, 1989, 89.1659

Int. Cl.[5] D04H *1/58*

U.S. Cl. 428—288 8 Claims

1. Insulating product of mineral fibres intended in particular for the heat insulation of pipes whereas its binder consists essentially of water glass and slag, the water glass having a molar ration R_s of 2.3 to 3.0, in which product the weight ratio of the mineral fibre amount to the dry substance of the water glass is 100:1–100:20, the slag is present in the binder in such an amount that the weight ratio of the dry substance of the water glass to the slag is 100:1–100:50, and the slag is pulverized blast furnace slag.

5,352,510

METHOD FOR CONTINUOUS MANUFACTURE OF FOAM BOARDS WITH ISOCYANATE-IMPREGNATED FACERS

Wayne E. Laughlin, Gulfport, and Kenneth P. Klapper, Palm Harbor, both of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Filed Sep. 27, 1993, Ser. No. 126,864

Int. Cl.[5] C08G *18/08*

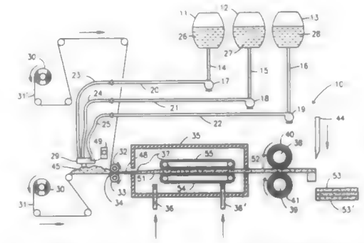
U.S. Cl. 428—304.4 29 Claims

1. A method for continuously producing an insulation board comprising a rigid plastic foam core having two major surfaces and a facing material on at least one of the major surfaces, the method comprising:

(a) conveying a facing material along a production line for attachment to one major surface of the core,

(b) applying a foam-forming mixture to the facing material,

(c) optionally conveying a second facing material along the line for attachment to the other major surface of the core, at least one facing material comprising a cellulosic sheet or a composite of a cellulosic sheet with an air- and/or moisture-impermeable material, the air- and/or moisture-impermeable material being interposed between the cellulosic sheet and the foam-forming mixture or being positioned on the outside surface of the cellulosic sheet, wherein the cellulosic sheet has been impregnated with about 5 to 20% by weight of polyisocyanate, and the polyisocyanate has been cured, and the cellulosic sheet is



(i) sufficiently flexible so that it can be supplied from a roll for conveyance along the production line, and (ii) has a moisture content not exceeding about 10 percent, the moisture being substantially evenly distributed throughout the cellulosic sheet, and

(d) foaming and curing the faced foam-forming mixture.

5,352,511

HYDROPHILIC COMPOSITIONS WITH INCREASED THERMAL RESISTANCE

Dilip R. Abaysekara, Newark, and Robert L. Henn, Wilmington, both of Del., assignors to W. L. Gore & Associates, Onc., Newark, Del.

Filed Nov. 15, 1993, Ser. No. 153,339

Int. Cl.[5] B32B *5/18, 33/00*

U.S. Cl. 428—308.4 8 Claims

1. A hydrophilic, fluid permeable composition comprising a substrate having continuous pores through it in which at least a portion of the interior of the substrate is coated with a copolymer of a fluorinated ethylenically unsaturated monomer and vinyl alcohol, wherein the vinyl alcohol units have been reacted with a monofunctional epoxide.

5,352,512

MICROSCOPIC TUBE MATERIAL AND ITS METHOD OF MANUFACTURE

Wesley P. Hoffman, Lancaster, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 691,582, Apr. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 324,280, Mar. 15, 1989, Pat. No. 5,011,566. This application Nov. 16, 1992, Ser. No. 980,317

Int. Cl.[5] B32B *5/18, 18/00;* C04B *38/04, 38/06*

U.S. Cl. 428—311.5 13 Claims

1. A microscopic hollow tube, said tube having an inside diameter of at least about 0.1 microns and a wall thickness of at least 1 nanometer, said tube having been formed by removing the fiber substrate upon which the tube had been deposited by subjecting the fiber substrate to solvation.

3. A device, said device containing one or more microscopic hollow tubes positioned in a preselected, non-random orientation, said device having been made by a process comprising the steps of:

selecting one or more fibers characterized by the cross-sectional configuration desired for the inner surface of said microscopic hollow tubes, said one or more fibers having a diameter of at least 0.1 microns and a predetermined rate of chemical reaction or solvation within a specific reactive or solvating environment;

placing an inert environment about said one or more fibers;

adjusting the temperature of said one or more fibers to a

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deposition temperature of a tube material in the inert environment;

depositing said tube material on said one or more fibers to coat said one or more fibers to a thickness of at least 1 nanometer, said tube material having a predetermined rate of chemical reaction or solvation which is lower than said predetermined rate of reaction or solvation of said one or more fibers;

placing said one or more coated fibers positioned in said preselected, non-random orientation in said reactive or solvating environment; and

conducting a reaction or solvation to thereby remove said one or more fibers from said tube material without damaging said tube material.

5,352,513

OIL, WATER AND SWEAT REPELLENT MICROPOROUS MEMBRANE MATERIALS

James S. Mrozinski, Oakdale, and Harold J. Seppala, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 779,015, Oct. 18, 1991, Pat. No. 5,260,360. This application Jul. 29, 1993, Ser. No. 99,177

Int. Cl.[5] B32B *3/26*

U.S. Cl. 428—315.5 22 Claims

1. A layered structure comprising a microporous membrane material which comprises a crystallizable olefin polymer, a processing compound which is miscible with the olefin polymer at the polymer's melting point but phase separates on cooling to or below the olefin crystallization temperature of the polymer, the blending ratio of polyolefin to processing compound being in the range of about 40:60 to 80:20, and a fluorochemical oxazolidinone compound, said material being oriented in at least one direction and at least one other porous material which does not substantially affect the porosity of the microporous material.

5,352,514

METAL SURFACE ADHERED TO A SECOND METAL SURFACE

Seiki Ueno, and Masaaki Nakamura, both of Osaka, Japan, assignors to Nitta Gelatin Inc., Osaka, Japan

Division of Ser. No. 690,218, Apr. 24, 1991, abandoned. This application Mar. 29, 1993, Ser. No. 38,081

Claims priority, application Japan, Apr. 25, 1990, 2-109372; Nov. 22, 1990, 2-319614; Dec. 28, 1990, 2-409590

Int. Cl.[5] B32B *5/16, 15/08, 27/38, 27/40*

U.S. Cl. 428—330 6 Claims

1. An article comprising a first metal surface selected from the group consisting of an aluminum surface and an aluminum alloy surface, and a second metal surface wherein an adhesive composition comprising

(a) a synthetic resin adhesive matrix which has adhesive properties, selected from the group consisting of an isocyanate compound possessing two or more isocyanate groups, and an epoxy resin; and

(b) a biological calcium compound having a mean particle size of 10 μm or less which is selected from the group consisting of hydroxyapatite, crushed sea shells and crushed egg shells,

adheres said surfaces together.

5,352,515

COATING FOR TISSUE DRAG REDUCTION

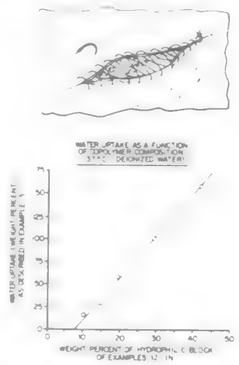
Peter K. Jarrett, New Haven; George Jessup, Brookfield; Louis Rosati, Norwalk, all of Conn.; Chris Martin, Guildford, Australia, and John W. Maney, Spring Valley, N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Filed Mar. 2, 1992, Ser. No. 843,053

Int. Cl.[5] B32B *27/02, 27/36;* C08G *63/08;* A61L *17/00*

U.S. Cl. 428—357 30 Claims

1. An article of manufacture comprising a surgical filamentary device having a bioabsorbable coating, the bioabsorbable coating manufactured from an ABA or AB block copolymer having a B block comprising a poly(alkylene oxide) having a number average molecular weight of about 5,000 to 20,000 and



an A block comprising a biodegradable random copolymer of (1) glycolide and (2) ϵ-caprolactone, wherein the ABA or AB block polymer has a glass transition temperature at or less than 16° C.

5,352,516

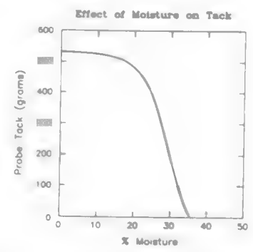
WATER-INACTIVATABLE PRESSURE SENSITIVE ADHESIVE

Donald J. Therriault, York, and Michael J. Zajaczkowski, Yoe, both of Pa., assignors to Adhesives Research, Inc., Glen Rock, Pa.

Filed Jan. 31, 1992, Ser. No. 828,685

Int. Cl.[5] C09J *7/02*

U.S. Cl. 428—355 26 Claims



1. A water-inactivatable pressure sensitive adhesive comprised of a hydrophilic/hydrophobic base polymer component in admixture with a water-soluble tackifying agent for said base polymer, said base polymer component comprising a phase separated graft copolymer composition comprised of copolymerized monomers A and B to form a backbone polymer having a polymeric moiety grafted thereto, wherein monomer A is a monomeric acrylic or methacrylic acid ester of a non-tertiary alcohol having from 1 to 14 carbon atoms, with the average number of carbon atoms being in the range of about 4 to 12, and monomer B is a polar monomer which is copolymerizable with monomer A, wherein said graft polymeric moiety is present in an amount of from about 1.5 to 2.5 graft polymeric moieties per polymer backbone chain on average, and wherein said water-soluble tackifying agent and said base polymer components are present in a weight ratio of from about 0.05:1 to about 1.5:1, respectively.

5,352,517

IRON OXIDE COATED SUBSTRATES

Thomas J. Clough, Santa Monica; Victor L. Grosvenor, Topanga, and Nanm Pinsky, Thousand Oaks, all of Calif., assignors to Esaci, Inc., Pismo Beach, Calif.

Division of Ser. No. 743,827, Aug. 12, 1991, Pat. No. 5,290,589, which is a continuation-in-part of Ser. No. 621,660, Dec. 3, 1990, Pat. No. 5,204,140, which is a continuation-in-part of Ser. No. 348,789, May 8, 1989, Pat. No. 5,167,820, Ser. No. 348,788, May 8, 1989, Pat. No. 5,039,845, Ser. No. 348,787, May 8, 1989, abandoned, and Ser. No. 348,786, May 8, 1989, Pat. No. 5,182,165, each is a continuation-in-part of Ser. No. 272,517, Nov. 17, 1988, abandoned, and Ser. No. 272,539, Nov. 17, 1988, abandoned, each is a continuation-in-part of Ser. No. 82,277, Aug. 6, 1987, Pat. No. 4,787,125, which is a division of Ser. No. 843,047, Mar. 24, 1986, Pat. No. 4,713,306. This application Jan. 18, 1994, Ser. No. 183,990

Int. Cl.[5] B32B *19/00*

U.S. Cl. 428—357 22 Claims



1. An article comprising a three dimensional inorganic substrate other than magnetic or electrically conductive iron oxide having at least one coating containing magnetic or electrically conductive iron oxide on at least a portion of all three dimensions thereof produced by a process comprising;

contacting an inorganic three dimensional substrate which includes external surfaces and shielded surfaces which are at least partially shielded by other portions of said substrate with a composition comprising an iron oxide forming compound other than iron oxide at conditions effective to form an iron oxide-forming compound containing coating on at least a portion of said substrate;

forming a liquidus iron oxide forming compound containing coating on at least a portion of the three dimensions of said substrate including the shielded surfaces of said substrate;

contacting said substrate with at least one additional magnetic or conductivity interacting component at conditions effective to form a component-containing coating on at least a portion of said substrate including at least a portion of the three dimensions of said substrate including the shielded surfaces of said substrate; said contacting being initiated at least prior to the substantially complete oxidation of said iron oxide forming compound to iron oxide;

contacting said substrate having said iron oxide forming compound containing coating and said additional component-containing coating thereon with an oxidizing agent at conditions effective to convert said iron oxide forming compound to iron oxide and form an iron oxide coating with additional magnetic or conductivity interacting component on at least a portion of said three dimensions of said substrate including the shielded surfaces of said substrate.

5,352,518

COMPOSITE ELASTIC FILAMENT WITH ROUGH SURFACE, PRODUCTION THEREOF, AND TEXTILE STRUCTURE COMPRISING THE SAME

Yasuo Muramoto; Kiyoshi Yoshimoto, both of Hofu; Masami Fujimoto, Kudamatsu, and Yoshiaki Morishige, Yamaguchi, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Continuation of Ser. No. 835,422, Feb. 19, 1992, abandoned. This application Aug. 25, 1993, Ser. No. 112,214

Claims priority, application Japan, Jun. 22, 1990, 2-165426

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—373 15 Claims



1. A composite elastic filament consisting of a sheath portion composed of a fiber-forming thermoplastic polymer and a core portion composed of a fiber-forming elastomer, extending along the filament axis, which is characterized in that a core/-sheath conjugate ratio is within the range between 5/1 and 90/1 by cross-sectional area, said core portion has a smooth peripheral surface and the sheath portion covering said core portion has numerous ridges rising along the circumference of the filament and closely spaced along the length of the filament.

5,352,519

SULFURIZED CHAFF FIBER HAVING AN EVANESCENT RADAR REFLECTANCE CHARACTERISTIC, AND METHOD OF MAKING THE SAME

Ward C. Stevens, New Fairfield; Edward A. Sturm, New Milford, and Bruce C. Roman, Cromwell, all of Conn., assignors to Advanced Technology Materials, Inc., Danbury, Conn.

Continuation-in-part of Ser. No. 450,585, Dec. 11, 1989, abandoned. This application Nov. 27, 1992, Ser. No. 982,393

Int. Cl.[5] B32B *9/00, 15/00*

U.S. Cl. 428—389 18 Claims



1. An article comprising a substrate element formed of a non-conductive material and having a sub-micron thickness of a sulfurized oxidizable conductive metal coating thereon comprising an unoxidized metal coating doped with from about 0.01 to about 35% by weight, based on the weight of unoxidized metal in the oxidizable metal coating of a reactive sulfur constituent by exposure of said unoxidized metal coating to a sulfur doping agent, to provide said doped sulfur constituent on said unoxidized metal coating, such that the sulfur constituent is (i) non-protective of the unoxidized metal coating in exposure to oxygen and/or moisture, and (ii) effective to promote the corrosion of the unoxidized metal when the article is exposed to atmospheric exposure conditions so that the unoxidized metal coating is oxidatively converted to a non-conduc-

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tive metal oxide coating, at a corrosion rate which is greater than the corrosion rate of a corresponding article lacking such doped sulfur constituent on the unoxidized metal coating.

5,352,520

PROPYLENE-ETHYLENE/BUTENE BLOCK COPOLYMER

Yoshiyuki Kitajima, and Eitaro Asaeda, both of Tokuyama, Japan, assignors to Tokuyama Corporation, Tokuyama, Japan

Continuation of Ser. No. 782,127, Oct. 25, 1991, abandoned. This application Apr. 15, 1993, Ser. No. 47,626

Claims priority, application Japan, Oct. 25, 1990, 2-285846; Aug. 8, 1991, 3-199338

Int. Cl.[5] C08F *297/08*

U.S. Cl. 428—402 **12 Claims**

1. A powdery propylene-ethylene/butene block copolymer thermoplastic elastomer, comprising (i) a butene polymer block composed of a butene homopolymer or a copolymer of butene and up to 5 mole % of an alpha-olefin other than butene, (ii) a propylene-ethylene random copolymer block and (iii) a propylene polymer block composed of a propylene homopolymer or a copolymer of propylene and up to 5 mol % of an alpha-olefin other than propylene, the content of the butene polymer block (i) being 0.1 to 10% by weight, the total content of the propylene-ethylene random copolymer block and the propylene polymer block being 99.9 to 90% by weight and the content of the propylene polymer block being 0 to 30% by weight, wherein the propylene-ethylene random copolymer block is composed of a copolymer comprising 15 to 80 mol % of ethylene and 85 to 20 mol % of propylene, and said block copolymer is a thermoplastic elastomer which is a powder having a high molecular weight and a bulk density of at least 0.35 g/cm^3 and wherein the proportion of said block copolymer having a molecular weight below 10,000 is less than 1% by weight.

5,352,521

RESIN PARTICLES, METHOD FOR PRODUCTION THEREOF AND THEIR USES

Yasunari Hotta; Satoshi Maeda; Yozo Yamada, all of Ohtsu; Koji Tanaka; Hiroshi Ono, both of Okayama, and Toshio Uno, Ohtsu, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 32,441, Mar. 16, 1993, which is a continuation of Ser. No. 616,060, Nov. 20, 1990, abandoned. This application Jan. 19, 1994, Ser. No. 183,516

Int. Cl.[5] B32B *5/16*

U.S. Cl. 428—402 **23 Claims**

1. Resin particles comprising a condensation polymer containing at least one ionic group as the main component, wherein the condensation polymer is at least 80% by weight of the particles, the average particle diameter (D) ranges from 0.1 to 30 μm, at least 70% by weight of the particles have a diameter of 0.5D to 2.0D and at least 70% by number average of the particles have a sphereness (ratio of the short diameter to the long diameter) of not less than 0.7.

5,352,522

COMPOSITE MATERIAL COMPRISING METALLIC ALLOY GRAINS COATED WITH A DIELECTRIC SUBSTANCE

Koichi Kugimiya; Yasuhiro Sugaya; Osamu Inoue; Mitsuo Satomi, and Ken Hirota, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

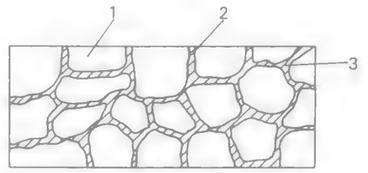
Division of Ser. No. 535,080, Jun. 8, 1990, Pat. No. 5,183,631. This application Sep. 16, 1992, Ser. No. 945,763

Claims priority, application Japan, Jun. 9, 1989, 1-147902; Jul. 7, 1989, 1-175901; Jul. 19, 1989, 1-186488; Sep. 28, 1989, 1-253321; Oct. 26, 1989, 1-280554; Nov. 6, 1989, 1-288356; Nov. 6, 1989, 1-288358; Nov. 6, 1989, 1-288359; Nov. 6, 1989, 1-288360; Jan. 12, 1990, 2-4980; Mar. 26, 1990, 2-76062; Apr. 18, 1990, 2-101934

The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.

Int. Cl.[5] B32B *5/16*

U.S. Cl. 428—403 **8 Claims**



1. A composite sintered material with a resistivity of at least 10 ohm-cm comprising:

a discrete phase including grains made of a first substance, said first substance comprising at least one of a metal and an alloy thereof; and

a continuous phase including a thin coating film made of a second substance of a dielectric material comprising an inorganic material and formed on the surface of said grains to prepare coated grains, said thin coating film having a mean thickness smaller than the mean particle size of said grains,

wherein said grains are separated substantially from each other by said thin coating film and the porosity of said composite sintered material is 5% or less, said coated grains being compacted into a green body and said green body being densified in an active gas atmosphere of oxygen, nitrogen or air, and said mean thickness of the thin coating film being from 5 to 50 nanometers, and

wherein said first substance contains an aluminum metal and said second substance of a dielectric material contains oxides or nitrides of aluminum.

5,352,523

GRAPHITE/CARBON ARTICLES FOR ELEVATED TEMPERATURE SERVICE AND METHOD OF MANUFACTURE

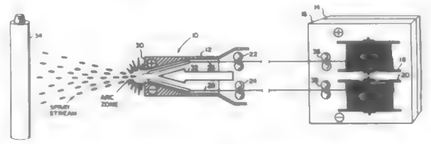
Zbigniew Zurecki, Macungie; Edward A. Hayduk, Jr., Blandon; John G. North, Pottstown; Robert B. Swan, Bath, and David L. Mitchell, Jr., Coopersburg, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 715,169, Jun. 14, 1991, Pat. No. 5,254,359, which is a division of Ser. No. 360,564, Jun. 2, 1989, Pat. No. 5,304,417. This application May 8, 1992, Ser. No. 880,278

Int. Cl.[5] C04B *41/06*

U.S. Cl. 428—408 **2 Claims**

1. An electric arc furnace electrode comprising a generally elongated cylindrical graphite body having a first end with a projection adapted to securely mate with a complimentary shaped receptacle on a second end of another like electrode and a second end having said shaped receptacle therein, the major portion of the body coated with an electric arc thermal sprayed coating consisting essentially of titanium nitride said coating having a thickness of at least 0.002 inches with a ratio of titanium to nitrogen of between 1 and 2, said coating applied



by electric arc thermal spraying of titanium wire in ambient air using nitrogen gas as the atomizing/propelling gas.

5,352,524

CARBON FILM AND PROCESS FOR PREPARING THE SAME

Yasuhisa Nagata, Shizuoka, Japan, assignor to Toho Rayon Co., Ltd., Tokyo, Japan

Filed May 29, 1992, Ser. No. 890,155

Claims priority, application Japan, May 31, 1991, 3-129277; May 15, 1992, 4-123972

Int. Cl.[5] C01B *31/00*

U.S. Cl. 428—408 **6 Claims**

1. A carbon film derived from a polyimide film, which has a tensile strength of at least 15 Kgf/mm^2, a tensile modulus of elasticity of at least 5000 Kgf/mm^2 and an electric conductivity of at least 200 S/cm.

5,352,525

WATER-THINNABLE COATING COMPOSITIONS

Klaus Huemke, Friedelsheim; Dieter Faul, Bad Durkheim, and Ulrich Heimann, Muenster, all of Fed. Rep. of Germany, assignors to BASF Lacke + Farben AG, Muenster, Fed. Rep. of Germany

Filed Feb. 25, 1993, Ser. No. 25,335

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1992, 4206431

Int. Cl.[5] B32B *15/08*

U.S. Cl. 428—418 **9 Claims**

1. A water-thinnable coating composition consisting essentially of

A. a mixture of

A_1. 50–95% by weight of one or more oligomeric or polymeric polyaddition or polycondensation compounds which have on average a molecular weight of from 200 to 20,000 and contain per molecule at least two hydroxyl groups and at least two primary and/or secondary amino groups, and

A_2. 5–50% by weight of a crosslinker that is reactive toward component A_1, and

B. a mixture of

B_1. 90–99.9% by weight of one or more radical-polymerizable compounds which have an average molecular weight of from 100 to 10,000 and contain per molecule at least two olefinic double bones, and

B_2. 0.1–10% by weight of a free radical initiator having a decomposition temperature within the range 50°–150° C., the ratio of mixture A to mixture B being from 10:1 to 1:10 and mixture A being substantially chemically inert toward mixture B.

5,352,526

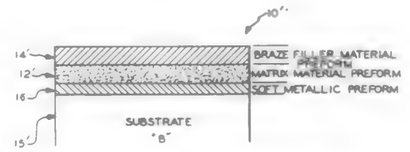
HARDFACED ARTICLE AND PROCESS TO PREVENT CRACK PROPAGATION IN HARDFACED SUBSTRATES

Mukesh M. Solanki, and Christopher B. Harley, both of New Albany, Ind., assignors to Pullman Company, Highland Heights, Ohio

Filed Feb. 6, 1990, Ser. No. 475,757

Int. Cl.[5] B32B *15/08*

U.S. Cl. 428—422 **6 Claims**



1. An improved metallurgically coated hardfaced composite article, the article is produced by a single heat brazing of a braze metal layer with a hard matrix preform layer containing a hard particle material in e PTFE carrier material to a surface of a metal substrate to form a hard metallic coating on said substrate, wherein the improvement comprises:

a soft metal preform layer between said substrate and the hard matrix preform layer, wherein said soft metal preform layer is comprised of a soft metallic particle material in a PTFE carrier to prevent crack propagation from the hard metallic coating into the substrate.

5,352,527

THERMAL IMAGE TRANSFER RECORDING MEDIUM

Shigeyuki Harada, Mishima; Yoshihiko Hiyoshi; Takeshi Yuyama, both of Shizuoka, and Keishi Taniguchi, Susono, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 18, 1992, Ser. No. 946,609

Claims priority, application Japan, Sep. 19, 1991, 3-268413; Jan. 13, 1992, 4-024599

Int. Cl.[5] B41M *5/26*

U.S. Cl. 428—423.1 **31 Claims**

1. A thermal image transfer recording medium, comprising a support, a thermal image transfer ink layer formed on said support, and a heat-resistant protective layer formed on the back side of said support, opposite to said thermal image transfer ink layer with respect to said support, said heat-resistant protective layer having a tensile strength effective to prevent said protective layer from adhering to a thermal head and to prevent loss of flexibility of said protective layer, said heat-resistant protective layer, comprising an amount of each of (i) amino-modified polysiloxane, (ii) a polyisocyanate and (iii) a reaction product of said amino-modified polysiloxane and said polyisocyanate effective for obtaining said tensile strength in said heat-resistant protective layer.

5,352,528

LAMINATED PANE

Anne L'Her; Pascal Chartier, both of Paris, and Joël Robineau, Noisy le Grand, all of France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed May 7, 1993, Ser. No. 57,832

Claims priority, application France, May 7, 1992, 92 05623

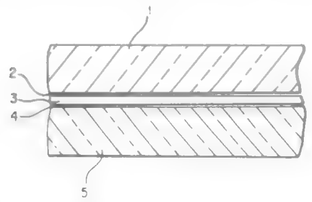
Int. Cl.[5] B32B *17/06*

U.S. Cl. 428—426 **20 Claims**

1. A laminated pane including at least one glass sheet and at least one film of plastics material comprising PVC and having a transparency which is stable with respect to aging and weathering and having an energy absorption suitable for a safety pane, wherein there is disposed an adhesive film between the

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glass sheet and film of plastics material, said adhesive film having a greater adhesion to the glass than to the film of plastics material, and wherein said adhesive film comprises a terpolymer comprised of ethylene, either vinyl acetate or acrylic ester, and maleic anhydride.

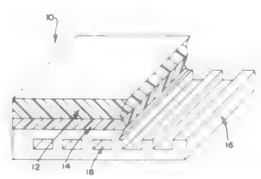


5,352,529

LIGHTWEIGHT THRUST VECTORING PANEL

John F. Scanlon, Bath, and Gary Wigell, Lansing, both of Mich., assignors to Auto-Air Composites, Inc., Lansing, Mich.

Continuation-in-part of Ser. No. 699,316, May 13, 1991, abandoned. This application Mar. 3, 1993, Ser. No. 25,918
Int. Cl.[5] B32B *9/00, 17/00;* B64C *1/00*
U.S. Cl. 428—428 13 Claims



1. A thrust vectoring panel for deflecting the thrust of axial turbine engines comprising

a face layer comprising a silicon carboxide matrix with ceramic reinforcing fibers, an insulation layer and a skeletal structure,

said face layer being of a material capable of withstanding high temperatures in the range of 2200°–2500° F. for an extended period of time and 2800° F. for a short period of time while retaining at least 90% of its room temperature strength during these temperature excursions, said insulation layer being of a fiber reinforced material capable of providing insulation from the extreme heat of the jet engine thrust, and said skeletal structure being of a fiber reinforced material capable of supporting integral interfaces.

5,352,530

TRANSPARENT FILMS AND LAMINATES HAVING THE SAME

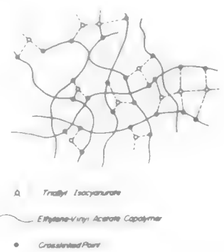
Itsuo Tanuma, Sayama; Hideo Takeichi, Tanashi; Hiromi Ohtsuru, and Toshio Honda, both of Akigawa, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 481,258, Feb. 20, 1990, abandoned, which is a division of Ser. No. 338,507, Apr. 14, 1989, Pat. No. 4,935,470, which is a continuation of Ser. No. 944,112, Dec. 22, 1986, abandoned. This application Jun. 8, 1992, Ser. No. 895,457
Claims priority, application Japan, Dec. 23, 1985, 60-287987
Int. Cl.[5] B32B *17/10*
U.S. Cl. 428—442 2 Claims

1. A laminate comprising two glass sheets, two transparent films sandwiched therebetween, each film consisting essentially of an ethylene vinyl acetate copolymer triallyl isocyanurate-crosslinked structure, and a semiconductor wafer interposed between the films; wherein,

(a) the content of vinyl acetate in the ethylene vinyl acetate copolymer of the ethylene vinyl acetate copolymer triallyl isocyanurate-crosslinked structure is 15–50% by weight, and

(b) the content of triallyl isocyanurate based on 100 parts by weight of the ethylene vinyl acetate copolymer is 0.5–20 parts by weight.



5,352,531

COATING SOLUTION FOR TREATING BASEMENT WALLS

Michael G. Roberts, Akron, Ohio, and Charles E. Bolen, 2346 Short Hills Dr., Akron, Ohio 44333, assignors to Ozko, Inc. and Charles E. Bolen, Akron, Ohio

Filed Dec. 20, 1990, Ser. No. 632,130
Int. Cl.[5] B32B *13/12*
U.S. Cl. 428—446 4 Claims

1. An article of manufacture, comprising a concrete foundation having an interior surface and an exterior surface, and a continuous water impervious elastomeric coating disposed on said exterior surface, said coating consisting essentially of a mixture of a hydrocarbon resin and a copolymer selected from the group consisting of a polystyrene-polyisoprene block copolymer, a polystyrene-polyisoprene-polystyrene block copolymer, a polystyrene-polybutadiene block copolymer, a polystyrene-polybutadiene-polystyrene block copolymer, and mixtures thereof, said coating being produced by adding toluene and an aliphatic petroleum distillate as solvents to said moisture to provide a homogeneous solution having a viscosity in the range of bout 3,000 to 5,000 cps at 70° F., spraying said solution on said exterior surface of the concrete foundation, and thereafter evaporating the solvents.

5,352,532

PANEL AND METHOD OF MAKING SAME

James R. Kline, Petoskey, Mich., assignor to Glass Alternatives Corp., Petosky, Mich.

Continuation of Ser. No. 389,338, Aug. 3, 1989, abandoned. This application Aug. 26, 1992, Ser. No. 936,063
Int. Cl.[5] B32B *9/04;* E06B *3/24*
U.S. Cl. 428—447 13 Claims

1. A light transmitting panel having opposite inner and outer surfaces, including:

a substrate formed of molded, light transmitting plastic resin having a level of process-induced internal stress of approximately 1500 psi or less after molding and at least one optical-quality surface finish underlying said outer panel surface for optimizing light transmission through said resin; and

a thin, tough, transparent, abrasion and chemical resistent, and ultraviolet light resistant, relatively hard protective coating layer containing silicon applied in a liquid form and permanently bonded to said optical-quality surface finish of said substrate to form at least one outer surface of said panel;

whereby said process-induced internal stress of said substrate is sufficiently low to reduce micro-cracking or delamination of said coating layer from said substrate at least through a temperature range of about −40° F. to about +170° F.

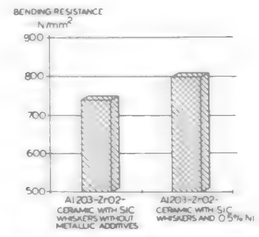


5,352,533

CERAMIC COMPOSITE BODY, PROCESS FOR PRODUCING A CERAMIC COMPOSITE

Klaus Dreyer, Essen; Dieter Kassel, Witten, and Hans Kolaska, Bottrop, all of Fed. Rep. of Germany, assignors to Krupp Widia GmbH, Essen, Fed. Rep. of Germany

PCT No. PCT/EP91/00980, § 371 Date Oct. 26, 1992, § 102(e) Date Oct. 26, 1992, PCT Pub. No. WO91/18847, PCT Pub. Date Dec. 12, 1991
PCT Filed May 28, 1991, Ser. No. 946,307
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1990, 4017651; Sep. 6, 1990, 4028217
Int. Cl.[5] B41M *5/40*
U.S. Cl. 428—472 16 Claims



1. A fiber-reinforced ceramic composite body consisting of:

(a) 5 to 40% by mass of a SiC constituent selected from the group which consists of SiC whiskers, of SiC whiskers and up to 80% by mass SiC lamellae, and of SiC whiskers and up to ⅓ of the total SiC mass as SiC powder;

(b) at least one component selected from the group which consists of components (b_1), (b_2) and (b_3) wherein

component (b_1) is 0.05 to 3% by mass of at least one compound selected from the group which consists of Y_2O_3, SiO_3, NgO, NiO and AlN,

component (b_2) is up to 40% by mass of at least one compound selected from the group which consists of carbides, nitrides or carbonitrides of a metal from one of the Groups IVa, Va, Via of the periodic Table of elements, and

component (b_3) is up to 40% by mass of at least one oxide of at least one metal selected from the group which consists of the metals of Group IVa of the Periodic Table of elements;

(c) 0.05 to 10% by mass of a metal constituent selected from the group which consists of at least one element selected from the group which consists of nickel, cobalt, iron and chromium in an amount up to 25% of the mass of the metal constituent with the balance being at least one element selected from the group which consists of nickel, cobalt and iron; and

(d) a minimum of 30% by mass Al_2O_3 to the balance of the body.

5,352,534

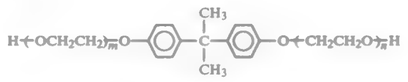
ORIENTED POLYESTER FILM

Hisashi Hamano, Sagamihara; Masahiro Hosoi, Tokyo; Masanori Nishiyama, Sagamihara, and Yasuhiro Saeki, Sagamihara, all of Japan, assignors to Teijin Limited, Osaka, Japan

Division of Ser. No. 32,102, Mar. 17, 1993, Pat. No. 5,312,893. This application Mar. 1, 1994, Ser. No. 203,923
Claims priority, application Japan, Mar. 19, 1992, 4-63444; Mar. 19, 1992, 4-63445; Mar. 27, 1992, 4-71093
Int. Cl.[5] B32B *27/36*
U.S. Cl. 428—480 12 Claims

1. An oriented polyester film:

(A') which comprises modified polyethylene-2,6-naphthalenedicarboxylate containing of a glycol component derived from a compound represented by the following formula,



wherein each of n and m is independently a positive number of 1 to 9 as an average, provided that m+n equals 2 to 9 as an average, and having a heat of crystallization of 6 to 20 Joule/g, and

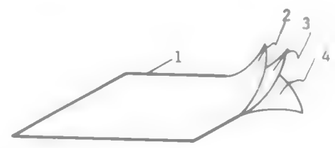
(B) which is biaxially oriented.

5,352,535

MESSAGE BOARD

Ching-Fang Su, No. 184 Fengren Rd., Fengsan, Kaushiong, Taiwan

Filed Jan. 25, 1993, Ser. No. 8,480
Int. Cl.[5] B32B *23/08*
U.S. Cl. 428—511 5 Claims



1. A three-layer message board comprising:

a smooth planar surface layer of a material which can be erasably written on with a whiteboard marker;

an intermediate mounting layer of hard polyvinyl chloride or polyethylene connected to said surface layer; and

a base layer connected to said intermediate mounting layer, said base layer being of a soft polyvinyl chloride whereby said base layer can be attached directly to and removed from a glazy surface repeatedly.

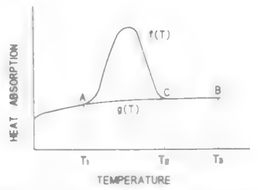
VOL 1167 ISS 1 OC 4 1994 UMI

5,352,536

MULTILAYERED STRUCTURAL BODY

Masahiro Akamatsu; Osamu Tohya, and Toru Yukumoto, all of Himeji, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Japan

Filed Apr. 19, 1993, Ser. No. 49,561
Claims priority, application Japan, Apr. 21, 1992, 4-126683
Int. Cl.[5] B32B *27/08, 27/30, 33/00*
U.S. Cl. 428—522 4 Claims



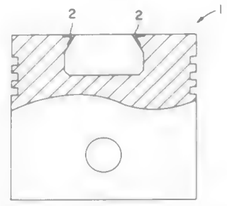
1. A multilayered structural body which comprises, as an integral body:
(a) at least one layer of a sheet of an ethylene-vinyl alcohol copolymeric resin;
(b) at least one layer of a hot-melt adhesive resin; and
(c) at least one layer of a sheet of a polystyrene-based resin,
the layer (b) of the adhesive resin being interposed between and adhesively bonding together the layer (a) and the layer (c) and the ethylene-vinyl alcohol copolymeric resin having a thermal characteristic such that, when the resin is subject to a measurement of DSC (differential scanning calorimetry), the fraction of the integrated value of the area of the peak or peaks in the DSC diagram at 160° C. or below taken by increasing the temperature is at least 30% of the integrated value of the area for all of the peaks over the whole temperature range up to melting point of the resin, and wherein the adhesive resin for the layer (b) has a thermal characteristic such that, when the resin is subjected to a measurement of DSC (differential scanning calorimetry), the DSC diagram taken by increasing the temperature does not have a peak ending at a temperature of 130° C. or higher.

5,352,538

SURFACE HARDENED ALUMINUM PART AND METHOD OF PRODUCING SAME

Toshihide Takeda, and Kaoru Adachi, both of Hirakata, Japan, assignors to Komatsu Ltd., Tokyo, Japan

Filed Aug. 31, 1992, Ser. No. 937,266
Int. Cl.[5] B22F *7/04*
U.S. Cl. 428—553 20 Claims



1. A surface hardened aluminum part comprising an alloy layer formed on the surface of an aluminum base material made of aluminum or an aluminum alloy,
said alloy layer formed from an aluminum alloy powder of which particles are evenly dispersed therein and
said aluminum alloy powder including at least a powder of one type of aluminum alloy made of aluminum and at least one metal selected from a group of metals each of which forms an intermetallic compound of high hardness with aluminum.

6. A method for producing a surface hardened aluminum part comprising:
(a) first, providing an aluminum base material made of aluminum or an aluminum alloy with an aluminum alloy powder including at least a powder of one type of aluminum alloy made of aluminum and at least one metal selected from a group of metals each of which forms an intermetallic compound of high hardness with aluminum; and
(b) second, forming an alloy layer by melting the aluminum alloy powder supplied onto the aluminum base material by use of a high-density energy heat source so as to be alloyed with the aluminum or aluminum alloy contained in the aluminum base material.

5,352,537

PLASMA SPRAYED CONTINUOUSLY REINFORCED ALUMINUM BASE COMPOSITES

Santosh K. Das; Michael S. Zedalis, both of Randolph, N.J., and Paul S. Gilman, Suffern, N.Y., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Division of Ser. No. 435,137, Nov. 9, 1989, Pat. No. 5,229,165.
This application Dec. 7, 1992, Ser. No. 986,395
The portion of the term of this patent subsequent to Dec. 7, 2009, has been disclaimed.
Int. Cl.[5] B22F *7/00*
U.S. Cl. 428—549 6 Claims

1. A composite comprised of a plurality of preforms bonded to form an engineering shape, each of said preforms comprising a substrate having thereon a fiber reinforcing material upon which an aluminum base alloy layer is deposited, said alloy having been rapidly solidified to produce therein a metastable structure, formed into a powder and deposited by plasma spraying at a powder flow rate and vacuum level adjusted to retain said metastable structure, and said fiber reinforcing material being present in an amount ranging from about 0.1 to 75 percent by volume thereof.

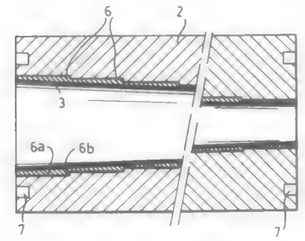
5,352,539

EXTRUDER HOUSING FOR DOUBLE-SCREW EXTRUDER HAVING AN ANNULARLY STEPPED INTERNAL BORE COVERED BY A HOT ISOSTATICALLY-PRESSED STRUCTURE, AND METHOD OF MAKING SAME

Werner G. Psiuk, Hannover, Fed. Rep. of Germany, assignor to Friedrich Theysohn GmbH, Langenhagen, Fed. Rep. of Germany

Filed Oct. 27, 1992, Ser. No. 967,075
Int. Cl.[5] B22F *7/04, 7/08;* B01F *7/12;* A23P *1/12*
U.S. Cl. 428—558 12 Claims

1. An extruder housing for a double-screw extruder for processing plastics and synthetic resins, said extruder house comprising:
a seamless elongated body formed with a pair of adjacent longitudinally extending generally conical bores for receiving respective conical extruder screws and together defining a figure-eight cross section cavity, each of said bores being provided with a plurality of axially spaced generally annular steps;
a wear resistant layer of a hard powder-metallurgical material in a hot isostatic-pressed structure extending along and lining said cavity against said body, said layer filling said steps and having smooth conical walls; and



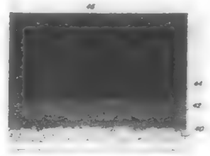
a diffusion layer formed by said material of said layer and material of said body bonding said wear resistant layer to said body.

5,352,540

STRAIN-TOLERANT CERAMIC COATED SEAL

James L. Schienle, and Thomas E. Strangman, both of Phoenix, Ariz., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Aug. 26, 1992, Ser. No. 936,141
Int. Cl.[5] B32B *3/30, 15/04;* F01D *11/00*
U.S. Cl. 428—623 17 Claims



1. A sealing member having a low coefficient of friction and good resistance to oxidation at high temperatures when sealing against a ceramic material comprising:
a superalloy substrate;
a first ceramic layer over said substrate;
an outer layer, over said first layer, of a ceramic solid lubricant having at least one constituent with a melting point less than the melting point of stabilized zirconia, said outer layer having an outer surface for sealingly engaging said ceramic material, and having a segmented morphology configured to render said outer layer more tolerant to strain.

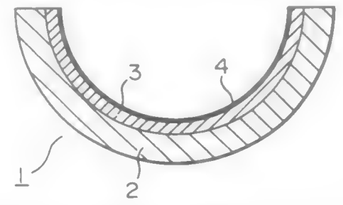
5,352,541

SLIDING MEMBER MADE OF ALUMINUM BEARING ALLOY HAVING EXCELLENT ANTI-SEIZURE PROPERTY

Tadashi Tanaka, Konan; Masaaki Sakamoto, Nagoya; Koichi Yamamoto, Komaki, and Tsukimitsu Higuchi, Kani, all of Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan

Division of Ser. No. 751,417, Aug. 28, 1991, abandoned. This application Sep. 23, 1992, Ser. No. 949,377
Claims priority, application Japan, Aug. 31, 1990, 2-228249
Int. Cl.[5] F16C *33/06*
U.S. Cl. 428—628 9 Claims

1. An aluminum bearing alloy sliding member comprising an aluminum alloy sliding member body having a sliding surface of said aluminum alloy coated with a film consisting essentially



of aluminum fluoride formed by a chemical conversion process and having a thickness ranging from 0.1 μm to 10 μm.

5,352,542

USE OF SILVER ALLOYS AS CADIUM-FREE BRAZING SOLDER

Alexander Voelcker, Rodenbach; Joerg Beuers, Gelnhausen; Sigurd Joensson, Alzenau; Dieter Kaufmann, Birstein; Georg Ptaschek, Rosbach, and Wolfgang Kaster, Langenselbold, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Sep. 1, 1993, Ser. No. 115,001
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1992, 4229189; May 7, 1993, 4315190
Int. Cl.[5] B32B *15/00;* C22C *5/08;* B23K *35/28*
U.S. Cl. 428—673 7 Claims

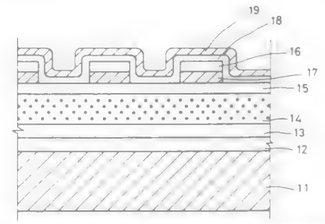
1. A cadmium-free silver alloy brazing solder comprising 45 to 80 wt. % silver, 5 to 25 wt. % copper, 10 to 25 wt. % gallium, and 0.1 to 5 wt. % indium and/or tin; wherein said solder has a working temperature of 530° to 600° C.

5,352,543

STRUCTURE OF THIN FILM ELECTROLUMINESCENT DEVICE

Jae H. Ryu, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 30, 1991, Ser. No. 785,371
Claims priority, application Rep. of Korea, Oct. 31, 1990, [illegible]1760[illegible]
Int. Cl.[5] H05B *33/14*
U.S. Cl. 428—690 7 Claims



1. A thin film electroluminescent device, comprising:
a) a substrate;
b) a transparent electrode formed on said substrate;
c) a first insulating layer formed on said transparent electrode;
d) a fluorescent layer formed on said first insulating layer and including dopants for emitting light when being charged;
e) a second insulating layer formed on said fluorescent layer wherein said first and second insulating layers effectively excite the dopants in said fluorescent layer and make said dopants emit light;

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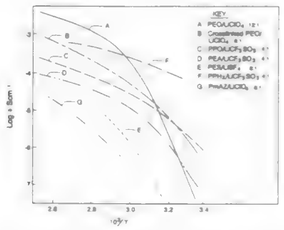
f) a first light absorbing layer formed on said second insulating layer and including an etched portion to improve the effect of contrast by preventing light from being reflected;
g) a rear electrode formed on said first light absorbing layer;
h) a rear insulating layer formed on said rear electrode to prevent current leakage; and
i) a second light absorbing layer formed on said rear insulating layer for preventing blackening of the etched portion of said first light absorbing layer.

5,352,544

FAST ION CONDUCTORS

Binod Kumar, Centerville, and Richard A. Marsh, Tipp City, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 1, 1993, Ser. No. 69,322
Int. Cl.[5] H01M *14/00*
U.S. Cl. 429—4 **10 Claims**



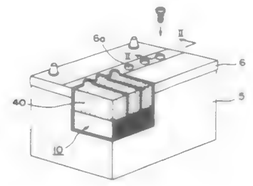
1. A method for increasing the ionic conductivity of the solid polymer electrolyte in a unit consisting essentially of an electrode, a counter-electrode, a solid polymer electrolyte between said electrode and said counter-electrode, a first electrical contact in conducting relation with said electrode, a second electrical contact in conducting relation with said counter-electrode, and a housing holding said electrical contacts, said electrode, said counter-electrode and said polymer electrolyte, which comprises mechanically exciting said unit.

5,352,545

BATTERY CONTAINING FOAM POLYURETHANE RESIN AND METHOD OF MAKING

Hiroshi Furukawa, and Yoshito Tokunaga, both of Takatsuki, Japan, assignors to Yuasa Corporation, Osaka, Japan

Filed Jan. 27, 1993, Ser. No. 12,157
Claims priority, application Japan, Jan. 31, 1992, 4-046176; Sep. 22, 1992, 4-072223[U]
Int. Cl.[5] H01M *10/12*
U.S. Cl. 429—57 **6 Claims**



1. A sealed lead acid battery comprising:
a container;
a cover connected to said container;
a plurality of plate groups disposed in said container, each of said plate groups comprising a plurality of pairs of positive plates and negative plates separated, each from the other, by separators;
an upper space within said container extending from said plates to said cover;
a pair of straps disposed in said upper space;
each of said plates having an upstanding lug;
each of the lugs extending from said negative plates being connected to one of said straps;
each of the lugs extending from said positive plates being connected to the other of said straps; and
foam polyurethane resin filling a sufficient amount of said upper space to control the possibility of an explosion occurring due to the collection of gases within said container;
said foam polyurethane having an apparent specific gravity of from 2g/l to 50 g/l and includes an open cell structure.

5,352,546

HIGH RATE ELECTROCHEMICAL CELL

David L. Chua, Wayne, Pa.; Hsiu-Ping Lin, Princeton, N.J., and Rebecca A. Smith, Chalfont, Pa., assignors to Alliant Techsystems Inc., Hopkins, Minn.

Filed Mar. 10, 1993, Ser. No. 29,080
Int. Cl.[5] H01M *6/14, 4/58*
U.S. Cl. 429—101 **9 Claims**

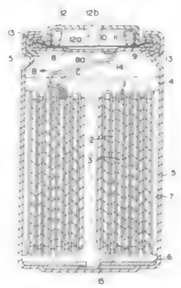
1. A non-aqueous electrochemical cell comprising:
(a) an anode selected from lithium metal and intercalated lithium compounds;
(b) an electrolyte system including SO_2 solvent containing electrolyte salt;
(c) a liquid or gaseous cathode material that is reduced in preference to SO_2, selected from the group consisting of oxyhalides including SO_2Cl_2 and $SOCl_2$, wherein the amount of cathode material is such that it is essentially consumed during a designed normal cell discharge reaction cycle in a manner that renders the cell cathode-limited.

5,352,547

ORGANIC ELECTROLYTIC SOLUTION AND ORGANIC ELECTROLYTIC SOLUTION CELL

Fusaji Kita; Kouji Murakami; Akira Kawakami, all of Osaka; Takaaki Sonoda, and Hiroshi Kobayashi, both of Fukuoka, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Aug. 25, 1993, Ser. No. 111,435
Claims priority, application Japan, Aug. 27, 1992, 4-254172; Sep. 17, 1992, 4-275494; Sep. 17, 1992, 4-275495
Int. Cl.[5] H01M *6/16*
U.S. Cl. 429—194 **10 Claims**



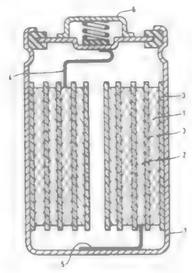
1. An organic electrolytic solution comprising an organic solvent, and a metal salt comprising at least one electron attractive group and an anion which comprises at least one element selected from the elements of the IIIb to VIb group of the Periodic Table and a charge-center atom of which is bonded to said electron attractive group by an intermediate backbone, wherein a maximum distance between the center of said charge-center atom and the center of other atom in said anion is at least 4 Å.

5,352,548

SECONDARY BATTERY

Masahisa Fujimoto; Masatoshi Takahashi, and Koji Nishio, all of Osaka, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jun. 30, 1993, Ser. No. 85,631
Claims priority, application Japan, Jul. 27, 1992, 4-220732
Int. Cl.[5] H01M *6/16, 4/58*
U.S. Cl. 429—197 **7 Claims**



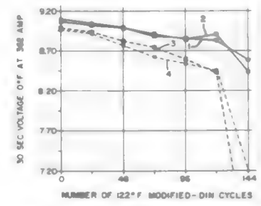
1. A secondary battery, comprising:
a positive electrode;
a negative electrode having a carbon composition intercalating lithium reversibly, said negative electrode comprising a graphite; and
a non-aqueous electrolyte including a lithium salt and a mixture of at least a low boiling point solvent having a boiling point of 150° C. or lower and an organic solvent defined by one of vinylene carbonate and a derivative provided by replacing at least one of two hydrogen atoms of said vinylene carbonate with one selected from a group consisting of a methyl group, an ethyl group and one halogen atom, wherein said low boiling point solvent is selected from a group consisting of dimethyl carbonate, diethyl carbonate, 1,2-dimethoxy ethane, 1,2-diethoxyethane and ethoxymethoxy ethane.

5,352,549

LEAD OXIDE COMPOSITION FOR USE IN LEAD-ACID DATTERIES

Purushothama Rao, Eagan, and Frederick L. Marsh, Fridley, both of Minn., assignors to GNB Battery Technologies Inc., Mendota Heights, Minn.

Filed Aug. 19, 1992, Ser. No. 923,263
Int. Cl.[5] H01M *4/14*
U.S. Cl. 429—228 **13 Claims**



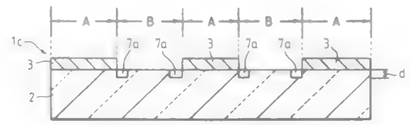
1. A co-doped lead oxide for use in the manufacture of storage battery plates having grids which comprises a co-doped lead oxide wherein the co-dopants comprise, based upon the total weight of the lead oxide, copper in an amount of from about 0.01 to 0.1% and tin in an amount of from about 0.008 to 0.1%.

5,352,550

MASK FOR MANUFACTURING SEMICONDUCTOR DEVICES AND METHOD OF MANUFACTURE THEREOF

Yoshihiko Okamoto, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 730,221, Jul. 15, 1991, abandoned, which is a continuation of Ser. No. 437,268, Nov. 16, 1989, Pat. No. 5,045,417. This application Apr. 23, 1993, Ser. No. 51,238
Claims priority, application Japan, Nov. 22, 1988, 63-295350
The portion of the term of this patent subsequent to Apr. 23, 2010, has been disclaimed.
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 **24 Claims**



1. An integrated circuit device projection exposure method for transferring a circuit pattern, on a first major surface of a transparent mask substrate, onto a photoresist film on an integrated circuit wafer through an optical projection system, the method comprising:
(a) mounting the mask substrate on a first position in the projection system, the circuit pattern having a first light transmission region and a second light transmission region for substantially reversing the phase of a transmitted light without substantially attenuating the amplitude of the transmitted light relative to the first light transmission region, which second light transmission region substantially borders on and is adjacent to the first light transmission region to the extent that destructive interference between light beams from both vicinity sides of a boundary between the second light transmission region and the first light transmission region sufficiently takes place such that resolution is improved;
(b) mounting the wafer having the resist film onto a second position in the projection system;
(c) exposing the mask substrate mounted on the first position to an exposure light beam having a predetermined wavelength, and having the light beam transmit through the mask substrate in such manner that the phase of a transmitted light beam through the first light transmission region is reversed, as compared to that of a transmitted light beam through the second light transmission region, by a first phase-shifting structure disposed at one of the first and second light transmission regions;
(d) focusing the transmitted light beams through the projection system so as to form a real image of the circuit pattern, on the mask substrate, onto the resist film on the wafer in such manner that an edge portion of the real image is made clear on the second light transmission region side of the first light transmission region due to destructive interference between light beams from both vicinity sides of a boundary between the first and second light transmission regions, and exposing the wafer mounted on the second position in the projection system to the focused light beams; and
(e) transferring the circuit pattern, on the mask substrate, onto the resist film on the wafer through the projection system.

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5,352,551

PROCESS FOR STORING INFORMATION WITH HIGH STORAGE DENSITY

Jin Mizuguchi; Alain C. Rochat, both of Fribourg, and Gérald Giller, Bulle, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 805,427, Dec. 11, 1991, abandoned. This application Apr. 30, 1993, Ser. No. 55,641

Claims priority, application Switzerland, Dec. 12, 1990, 3974/90-6

Int. Cl.[5] G11B *7/00, 7/24*

U.S. Cl. 430—17 18 Claims

1. A process for storing information in an organic recording layer, which comprises irradiating the organic recording layer with a laser beam, wherein the organic recording layer consists essentially of an organic recording material and a solid organic solvent or a solid organic precursor, and wherein the absorption spectrum and/or photoconductivity of said organic recording material changes in response to a liquid or vaporized organic solvent which is formed by the decomposition, melting and/or vaporization of the solid organic solvent or the solid organic precursor, which decomposition, melting and/or vaporization is effected by the irradiation of the organic recording layer with the laser beam.

5,352,552

IMAGE-BEARING MEMBER AND APPARATUS INCLUDING SAME

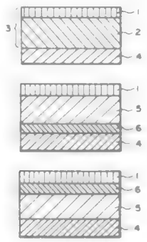
Akio Maruyama, Tokyo; Naoto Fujimura, Yokohama; Kiyoshi Sakai, Hachiohji; Shin Nagahara, Tokyo; Noriko Ohtani, Yokohama, and Seiko Nakano, Tsu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1992, Ser. No. 840,532

Claims priority, application Japan, Feb. 27, 1991, 3-053494

Int. Cl.[5] G03G *5/147, 15/00*

U.S. Cl. 430—18 15 Claims



1. An image-bearing member for electrophotography, comprising a surface layer gapable of repeatedly forming electrophotographic images thereon, said surface layer comprising a polymerized and cured product of a photoionically polymerizable compound having two or more functional groups.

5,352,553

TRANSPARENT FILM AND COLOR IMAGE FORMING METHOD

Tatsuo Takeuchi, Kawasaki, and Koji Amemiya, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 668,149, Mar. 12, 1991, Pat. No. 5,229,188, which is a continuation of Ser. No. 369,851, Jun. 22, 1989, abandoned. This application Dec. 4, 1992, Ser. No. 986,014

Claims priority, application Japan, Jun. 29, 1988, 63-163107; Dec. 23, 1988, 63-326521; Jun. 15, 1989, 1-154193

Int. Cl.[5] G03G *13/14*

U.S. Cl. 430—42 23 Claims

1. A method for forming a light-transmissive color image, comprising:

(a) forming on a transparent laminate film a color toner image employing a toner which comprises at least a binder resin and a chromatic colorant; and

(b) fixing the color toner image on the transparent laminate film by direct contact with a heat fixing roller together with applying heat and pressure wherein said transparent laminate film comprises at least a first transparent resin layer comprising a heat-resistant first transparent resin, and a second transparent resin layer disposed thereon comprising a second transparent resin; said second transparent resin of the second transparent resin layer being compatible with said binder resin of said toner to be fixed thereon, at a fixing temperature of said toner, wherein said second transparent resin and said binder resin being compatible do not form a visible boundary in a resultant toner image after fixing, and said second transparent resin has an elasticity 5 to 1,000 times that of the binder resin of the toner at the fixing temperature of said toner; wherein

(i) said first transparent resin of said first transparent resin layer has a heat distortion temperature of at least 145° C., wherein said first transparent resin is a resin selected from the group consisting of polyethylene terephthalate, polyamide and polyimide; and

(ii) said second transparent resin of said second transparent resin layer has a storage elasticity modulus of 100–10,000 dyne/cm^2 at 160° C.

5,352,554

ORGANIC SILICON COMPOUND, METHOD OF ITS PRODUCTION, AND PHOTORECEPTOR FOR ELECTROPHOTOGRAPHY INCORPORATING IT

Masayuki Mishima; Harumasa Yamasaki; Takashi Matsuse; Tadashi Sakuma, and Hiroyasu Togashi, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

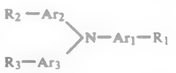
Division of Ser. No. 666,204, Mar. 7, 1991, Pat. No. 5,187,310. This application Oct. 30, 1992, Ser. No. 969,438

Claims priority, application Japan, Mar. 14, 1990, 2-64616; Mar. 14, 1990, 2-64617; Mar. 16, 1990, 2-65725

Int. Cl.[5] G03G *5/047*

U.S. Cl. 430—59 16 Claims

1. A photoreceptor for electrophotography, comprising a conductive substrate having a charge generation layer and a charge transport layer disposed thereon, wherein said charge transport layer comprises a compound represented by the formula (1):



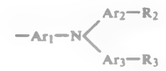
(1)

wherein Ar_1 represents an arylene group;

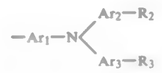
Ar_2 and Ar_3 independently represent an aryl group or an arylene group;

R_2 and R_3, which may be identical or different, independently represent a hydrogen atom or an alkyl group having a carbon number of 4 or less, or R_2 and R_3 both represent —$SiR_4R_5R_6$, wherein R_4, R_5, and R_6, which may be identical or different, independently represent an alkyl group, a substituted or unsubstituted aralkyl group or a substituted or unsubstituted aryl group;

R_1 represents —$SiR_7R_8R_9$ wherein R_7, R_8, and R_9, which may be identical or different, independently represent an alkyl group, a cycloalkyl group, a substituted or unsubstituted aralkyl group or a substituted or unsubstituted aryl group and up to two or R_7, R_8, and R_9 represent the following:



wherein Ar_1, Ar_2, Ar_3, R_2 and R_3 have the same definitions as above with the proviso that when both R_2 and R_3 are not —$SiR_4R_5R_6$, one of two of R_7, R_8 and R_9 represent the following:



wherein Ar_1, Ar_2, Ar_3, R_2 and R_3 have the same definitions as above.

5,352,555

ELECTROPHOTOGRAPHIC PHOTORECEPTOR AND ELECTROPHOTOGRAPHIC PROCESS THEREFOR

Shigeru Yagi; Tsuyoshi Ohta; Taketoshi Higashi; Masao Watanabe; Kazuo Yano; Masato Ono, and Yuzuru Fukuda, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1993, Ser. No. 74,495

Claims priority, application Japan, Jun. 12, 1992, 4-177776

Int. Cl.[5] G03G *5/14*

U.S. Cl. 430—62 16 Claims

1. An electrophotographic photoreceptor comprising:

an electroconductive support at least whose indentation hardness of surface is 100 and over on the Vickers hardness scale;

a photoconductive layer comprising amorphous silicon containing at least one of hydrogen and halogen; and

a surface layer comprising at least one of an amorphous silicon layer containing at least one of nitrogen, oxygen, and carbon, and an amorphous carbon layer containing at least one of not exceeding 50 atm. % of hydrogen and halogen.

5,352,556

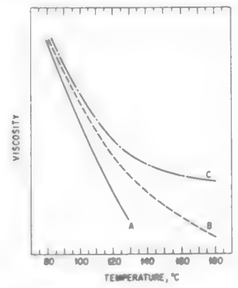
TONERS HAVING CROSS-LINKED TONER RESINS

Hadi K. Mahabadi, Etobicoke; Enno E. Agur, Toronto; Gerald R. Allison, Oakville; Michael S. Hawkins, Mississauga; Stephan Drappel, Toronto; Maria N. V. McDougall, Burlington, all of Canada; Bernard Grushkin, Pittsford, N.Y.; Thomas R. Hoffend, Webster, N.Y., and Angelo J. Barbetta, Penfield, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 814,782, Dec. 30, 1991, Pat. No. 5,227,460. This application Mar. 23, 1993, Ser. No. 35,398

Int. Cl.[5] G03G *9/00*

U.S. Cl. 430—109 18 Claims



1. A low fix temperature toner comprising colorant and toner resin consisting essentially of an uncross-linked phase and highly cross-linked microgel particles.

5,352,557

LIQUID DEVELOPER FOR ELECTROSTATIC PHOTOGRAPHY

Hirotaka Matsuoka; Takako Kobayashi, and Ken Hashimoto, all of Minamiashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

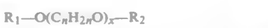
Filed Oct. 15, 1993, Ser. No. 136,757

Claims priority, application Japan, Dec. 11, 1992, 4-352375

Int. Cl.[5] G03G *9/125*

U.S. Cl. 430—116 6 Claims

1. A liquid developer for use in electrostatic photography which comprises toner particles, each containing a resin and a colorant dispersed in a carrier liquid, said carrier liquid comprising at least one ether compound of the following general formula



wherein R_1 and R_2 may be the same or different and represent an alkyl group or an aryl group, n is an integer of 2 or 3, and x is an integer of 1 to 3.

5,352,558

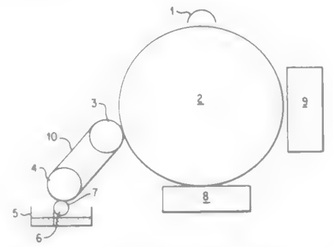
TONER DISPERSANT ABSORPTION BELT SYSTEM

Robert Simms, Downingtown, Pa.; Tab Treas, Henrietta, N.Y., and Dana Smith, Wilmington, Del., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 779,559, Oct. 18, 1991, abandoned. This application Apr. 12, 1993, Ser. No. 82,141

Int. Cl.[5] G03G *21/00*

U.S. Cl. 430—125 34 Claims



1. A method for increasing solids content of an image formed on an image carrying member, the image formed from a liquid developer at a developer station, the image comprising toner particles and liquid toner dispersant, the method comprising:

contacting a belt comprising an absorption material capable of absorbing the liquid toner dispersant to the image formed on the image carrying member, the belt contacting said image carrying member at a location separate from and downstream from the developer station and prior to transfer of the image to an image receiving member, said absorption material absorbing the toner dispersant and maintaining the toner particles on said image carrying member, said belt extending around a contact roller and a back up roller, said belt only contacting said image carrying member at a portion of said belt located between said image carrying member and said contact roller; and

reducing an amount of absorbed liquid toner dispersant carried by said belt before said absorption material is contacted to a subsequent image on said image carrying member by removing said absorbed toner dispersant from said absorption material at said back up roller remote from said contact roller and said image carrying member so that immediately prior to said portion of said belt contacting said image on said image carrying member, said portion is in an uncompressed state having any previously absorbed liquid toner dispersant removed from said belt.

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21. A device for increasing solids content of an image formed on an image carrying member, the image formed using a liquid developer at a developer station, the image comprising toner particles and liquid toner dispersant, the device comprising:

a belt at a location separate from and downstream from the developer station and upstream from a transfer station that transfers the image to an image receiving member, the belt comprising an absorption material capable of absorbing the liquid toner dispersant from the image on the image carrying member and maintaining the toner particles on said image carrying member, said belt extending around a contact roller and a back up roller, said belt only contacting said image carrying member at a portion of said belt located between said image carrying member and said contact roller; and

means for reducing an amount of absorbed liquid toner dispersant carried by said belt after said belt absorbs said liquid dispersant from the image and before said absorption material contacts a subsequent image on said image carrying member by removing said absorbed liquid toner dispersant from said absorption material at said back up roller remote from said contact roller and said image carrying member so that immediately prior to said portion of said belt contacting said image, said portion is in an uncompressed state having previously absorbed toner dispersant removed from said belt.

5,352,559

PHOTOSENSITIVE SHEET AND A METHOD FOR THE FORMATION OF IMAGES USING THE SAME

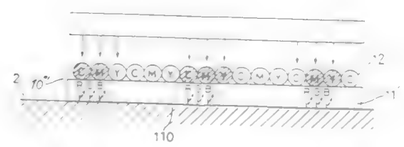
Yoshiharu Tsujimoto, Yamatokohriyama; Kunio Ohashi; Yoshikazu Fujiwara, both of Nara; Hiromu Sasaki, and Syoichi Nagata, both of Yamatokohriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 644,424, Jan. 22, 1991, abandoned, which is a continuation of Ser. No. 432,348, Nov. 6, 1989, abandoned, which is a continuation of Ser. No. 216,577, Jul. 8, 1988, abandoned. This application Dec. 1, 1992, Ser. No. 984,257

Claims priority, application Japan, Jul. 10, 1987, 62-173706; Aug. 25, 1987, 62-210888

Int. Cl.[5] G03C *1/72*

U.S. Cl. 430—138 2 Claims



1. A photosensitive sheet for recording a color image, consisting essentially of:

a sheet-shaped substrate having first and second opposed surfaces, including on said second opposed surface at least one light-reflective surface to reflect light,

said light-reflective surface absorbing at least one component of the red, green, and blue components of the exposed light, said light-reflective surface reflecting light different from said exposed light in at least one of said red, green, and blue light components, to compensate the sensitivities of three kinds of photosensitive materials to substantially the same extent; and

a coating on said first opposed surface of said sheet-shaped substrate of three kinds of pressure-rupturable capsules, each of said three kinds of capsules containing one kind of colorless chromogenic material and one kind of photosensitive material,

said photosensitive materials selected from the group consisting of photosensitive materials individually sensitive to red, green, and blue light, and said photosensitive materials adapted to harden when exposed to light passing directly through said pressure-rupturable capsules or reflected light from said light-reflective substrate surface through said pressure-rupturable capsules.

5,352,560

Patent Not Issued For This Number

5,352,561

THERMAL SOLVENTS FOR HEAT IMAGE SEPARATION PROCESSES

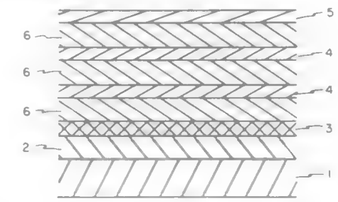
David S. Bailey; Ronald H. White, and John Texter, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 804,868, Dec. 6, 1991. This application Apr. 16, 1993, Ser. No. 49,048

The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.

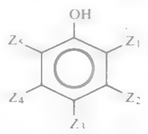
Int. Cl.[5] G03C *5/54*

U.S. Cl. 430—203 11 Claims



1. A process for forming an improved dye image in an aqueous-developable photographic dry dye-diffusion transfer element comprising the steps of:

providing an aqueous-developable chromogenic photographic dry dye-diffusion transfer element comprising radiation sensitive silver halide, an aqueous-developable material containing color coupler wherein said coupler forms or releases a heat-transferable dye upon reaction of said coupler with the oxidation product of a primary amine developing agent, a hydrophilic binder, and a thermal solvent wherein said thermal solvent has the structure I



(I)

wherein

(a) Z_1, Z_2, Z_3, Z_4, and Z_5 are substituents, the Hammet sigma parameters of Z_2, Z_3, and Z_4 sum to give a total, Σ, of at least -0.28 and less than 1.53;

(b) the calculated logP for I is greater than 3 and less than 10;

exposing said dye-diffusion transfer element to actinic radiation;

contacting said dye-diffusion transfer element with an aqueous-developing solution, wherein said aqueous-developing solution comprises a primary amine developing agent;

contacting said dye-diffusion transfer element with an aqueous stop bath;

drying said dye-diffusion transfer element;

providing a dye-receiving layer and contiguous support, where said dye-receiving layer is in physical contact with said dye-diffusion transfer element;

heating said dye-diffusion transfer element and dye-receiving layer to effect dye-diffusion transfer; and

separating said dye-receiving layer and contiguous support from said dye-diffusion transfer element.

5,352,562

IMAGE FORMING PROCESS AND LIGHT-SENSITIVE IMAGE FORMING MATERIAL

Yonosuke Takahashi; Hideyuki Nakamura, and Fumiaki Shinozaki, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 26, 1992, Ser. No. 858,218

Claims priority, application Japan, Mar. 26, 1991, 3-062153; Apr. 26, 1991, 3-125019; Apr. 26, 1991, 3-125020

Int. Cl.[5] G03C *3/00*

U.S. Cl. 430—253 15 Claims

9. An image forming process comprising the steps,

imagewise exposing to a laser beam from a semiconductor laser, a light-sensitive image forming material comprising a support, a light-heat conversion layer provided thereon, an intermediate layer comprising a polymer which produces a gas upon heating provided on the light-heat conversion layer, an image forming layer provided on the intermediate layer, and a cover sheet provided on the image forming layer, to decrease a bonding strength between the light-heat conversion layer and the image forming layer in the exposed area, and

removing the cover sheet from the image forming material together with the image forming layer in the exposed area so as to form a negative image on the cover sheet and to leave a positive image on the light-heat conversion layer which corresponds to the image forming layer in the unexposed area.

5,352,563

BLACK-AND-WHITE SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL AND A METHOD FOR PROCESSING THE SAME

Satomi Kawasaki; Shyouji Nishio, and Hideki Komatsu, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

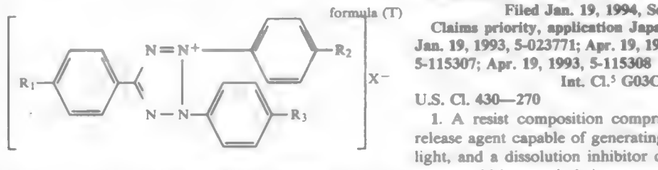
Filed Jan. 19, 1993, Ser. No. 5,657

Claims priority, application Japan, Jan. 21, 1992, 4-008685; Jul. 9, 1992, 4-182623

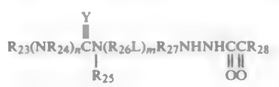
Int. Cl.[5] G03C *1/06*

U.S. Cl. 430—264 15 Claims

1. A silver halide photographic light-sensitive material comprising a support, a silver halide photographic emulsion layer and a protective layer, wherein at least one layer of said emulsion layer and said protective layer contains a cyclodextrin compound and a compound represented by the following formula (T) or a hydrazine compound selected from the group consisting of the following formulae H-a, H-b, H-c and H-d:



wherein R_1, R_2, and R_3 each represent a hydrogen atom or a substituent; and X represents an anion; formula H-a



wherein R_{23} and R_4 each represent a hydrogen atom, an alkyl group, a phenyl group, a naphthyl group, a cyclohexyl group, a pyridyl group, or a pyrrolidyl group; R_{25} represents a hydrogen atom, a benzyl group, an alkyl group or an alkoxy; Y is a sulfur atom or an oxygen atom; R_{26} and R_{27} each represent a divalent aromatic group; L represents a divalent linkage group; R_{28} is —NR′R″ or —OR_{29}, wherein R′, R″ and R_{29} each are a hydrogen atom, an alkyl group, a phenyl group, a naphthyl group, or a heterocyclic group, provided that R′ and R″ may combine together with a nitrogen atom to form a ring; and m and n each are an integer of 0 or 1;

wherein R_5, R_6 and R_7 each represent a hydrogen atom, an alkyl group, a phenyl group, a naphthyl group, a cyclohexyl group, a pyridyl group, a pyrrolidyl group, an alkoxy group or an aryloxy group; Z is a sulfur atom or an oxygen atom; R_9 represents an alkyl group, an alkoxy or an amino group, they may have a substituent of an alkoxy, cyano or aryl group; and R_8 represents a divalent aromatic group;



wherein A represents an aryl group or a heterocyclic group containing a sulfur atom or an oxygen atom; R_{10} and R_{20} each represent a hydrogen atom, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, a heterocyclic group, an alkoxy group, an alkenyloxy group, an alkynyloxy group, an aryloxy group, a hydroxy group or a heterocyclicoxy group, provided that either one of R_{10} and R_{20} represents an alkenyl group, an alkynyl group, a saturated heterocyclic group, an alkoxy group, an alkenyloxy group, an alkynyloxy group, an aryloxy group, a hydroxy group or a heterocyclicoxy group; R_{30} represents an alkynyl group or a saturated heterocyclic group, and H in —NHNH— of formulae H-c and H-d may be substituted by a substituent.

5,352,564

RESIST COMPOSITIONS

Yoshihumi Takeda; Toshinobu Ishihara; Ken'ichi Itoh, and Kazumasa Maruyama, all of Niigata, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

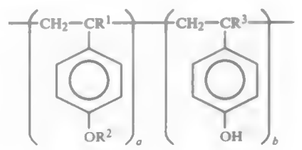
Filed Jan. 19, 1994, Ser. No. 184,171

Claims priority, application Japan, Jan. 19, 1993, 5-023770; Jan. 19, 1993, 5-023771; Apr. 19, 1993, 5-115306; Apr. 19, 1993, 5-115307; Apr. 19, 1993, 5-115308

Int. Cl.[5] G03C *1/492*

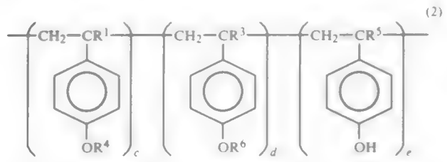
U.S. Cl. 430—270 12 Claims

1. A resist composition comprising a base resin, an acid release agent capable of generating an acid upon exposure to light, and a dissolution inhibitor containing an acid unstable group, said base resin being represented by the following rational formula (1), (2) or (3):



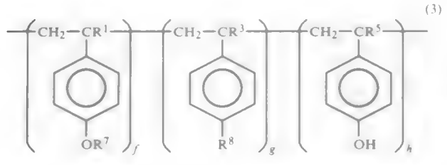
VOL 1167 ISS 1 OC 4 1994 UMI

wherein each of R^1 and R^3 is a hydrogen atom or methyl group, R^2 is a tert-butyl group, and letters a and b satisfy a+b=1,



(2)

wherein each of R^1, R^3 and R^5 is a hydrogen atom or methyl group, R^4 is a tert-butyl group, R^6 is an acid hydrolyzable group selected from the group consisting of methoxymethyl, tetrahydro-pyranyl, trialkylsilyl, isopropoxymethyl, tetrahydrofuranyl, and tert-butoxycarbonyl groups, and letters c, d and e satisfy c+d+e=1,



(3)

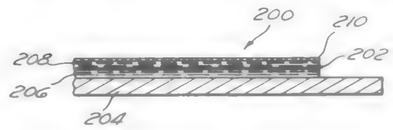
wherein each of R^1, R^3 and R^5 is a hydrogen atom or methyl group, R^7 is selected from the group consisting of tert-butyl, methoxymethyl, tetrahydropyranyl, and trialkylsilyl groups, and R^8 is a lower alkoxy group or a hydrogen atom, and letters f, g and h satisfy f+g+h=1.

5,352,565

METHOD OF FORMING APERTURES INTO THIN METALLIC FOILS

John E. Schroeder, Huntington Beach, Calif., assignor to Lightning Diversion Systems, Huntington Beach, Calif.

Division of Ser. No. 635,391, Jan. 2, 1991, Pat. No. 5,127,601, which is a continuation of Ser. No. 299,137, Jan. 23, 1989, abandoned. This application Mar. 2, 1992, Ser. No. 844,520
Int. Cl.[5] C23F 1/00
U.S. Cl. 430—320 43 Claims



26. A method of photoprinting and etching apertures onto a smooth, thin sheet of metallic foil, comprising:

removing wrinkles from said metallic foil by pressing said foil onto a wetted substantially rigid and smooth base slab;

drying said foil;

laminating said foil using a photosensitive dry film;

photoprinting said foil with an image having a plurality of aperture shapes;

photodeveloping said image; and

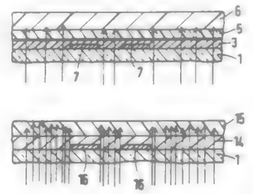
etching said foil to form said apertures on said foil.

5,352,566

METHOD OF MANUFACTURING OPTOELECTRONIC COMPONENTS

Johann Springer, Aichwald; Peter Kersten, Leonberg, and Klaus-D. Matthies, Möglingen, all of Fed. Rep. of Germany, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Feb. 22, 1993, Ser. No. 20,743
Claims priority, application Fed. Rep. of Germany, Feb. 29, 1992, 4206328
Int. Cl.[5] G02B 6/10
U.S. Cl. 430—321 8 Claims



1. A method of manufacturing optoelectronic components in which an optical waveguide is made of an optically nonlinear polymer and which include stripe electrodes arranged above and below the optical waveguide, comprising the steps of:

a) forming on a glass substrate provided with a layer of electrically conductive material, at least one stripe electrode by a photolithographic technique;

b) providing the substrate with a buffer layer of a polymer, which is cured;

c) providing the surface of the buffer layer with a protection resistant to oxygen plasma;

d) depositing a second buffer layer of a polymer and then coating with a positive photoresist;

e) exposing the substrate from below using the at lest one stripe electrode as an optical mask;

f) developing the photoresist and removing the unexposed photoresist;

g) depositing a thin aluminum layer by evaporation;

h) removing the developed photoresist layer with the aluminum layer thereon;

i) etching a channel into the second buffer layer above the stripe electrode, using the aluminum layer as an etch mask;

j) removing the aluminum layer;

k) depositing a layer of an optically nonlinear polymer which fills the channel;

l) forming a third buffer layer; and

m) forming at least one further stripe electrode on the third buffer layer.

2. A method of manufacturing optoelectronic components in which an optical waveguide is made of an optically nonlinear polymer and which include stripe electrodes arranged above and below the optical waveguide, comprising the steps of:

a) forming on a glass substrate provided with a layer of electrically conductive material, at least one stripe electrode by a photolithographic technique;

b) providing the substrate with a buffer layer of a photocuring polymer;

c) forming a second buffer layer of a photocuring polymer;

d) exposing the second buffer layer from an underside of the substrate using the at lest one stripe electrode as an optical mask;

e) developing and removing the unexposed portions of the second buffer layer;

f) depositing a layer of an optically nonlinear polymer which fills a channel created in the second buffer layer;

g) forming a third buffer layer; and

h) forming at least one further stripe electrode on the third buffer layer.

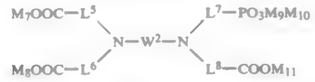
5,352,567

METHOD FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL USING COMPOSITION HAVING A BLEACHING ABILITY

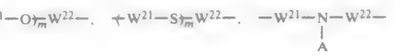
Hisashi Okada; Tadashi Inaba, and Morio Yagihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 643,621, Jan. 22, 1991, abandoned. This application Sep. 22, 1992, Ser. No. 948,318
Claims priority, application Japan, Jan. 22, 1990, 2-12332
Int. Cl.[5] G03C 7/42
U.S. Cl. 430—393 8 Claims

1. A method for processing a silver halide color photographic material comprising color developing an imagewise exposed silver halide color photographic material and then processing the material with a processing solution having a bleaching ability containing at least one bleaching agent; wherein said bleaching agent is a ferric complex of a compound represented by formula (II):



wherein W^2 represents an alkylene group having 2 to 8 carbon atoms, an arylene group having 6 to 10 carbon atoms, a cyclohexane group,



in which W^{21} and W^{22} each represents an alkylene group, and m represents an integer of 1 to 3, and A represents a hydrogen atom, a hydrocarbon group, $—L_A—COOM$, $—L_A—PO_3M_2$, $—L_A—OH$, or $—L_A—SO_3M$, where L_A represents an alkylene group having 1 to 8 carbon atoms or an arylene group having 6 to 10 carbon atoms, and M represents a hydrogen atom or a cation, or a combination thereof; L^5, L^6, L^7, and L^8 each represents an alkylene group; and M_7, M_8, M_9, M_{10} and M_{11} each represents a hydrogen atom or a cation;

wherein said ferric complex of the compound represented by formula (II) is present in an amount of 0.05 to 2.5 mol per liter of the processing solution.

5,352,568

PROCESSING METHOD AND BLEACHING SOLUTION FOR SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Satoru Kuse; Masao Ishikawa; Shigeharu Koboshi, and Masayuki Kurematsu, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 982,015, Nov. 24, 1992, abandoned, which is a continuation of Ser. No. 804,487, Dec. 9, 1991, abandoned, which is a continuation of Ser. No. 626,338, Dec. 13, 1990, abandoned, which is a continuation of Ser. No. 309,817, Feb. 10, 1989, abandoned. This application Aug. 11, 1993, Ser. No. 104,828
Claims priority, application Japan, Feb. 15, 1988, 63-032501; Mar. 25, 1988, 63-072781; Dec. 13, 1988, 63-315958
Int. Cl.[5] G03C 7/40, 7/42
U.S. Cl. 430—393 11 Claims

1. A method for processing a silver halide color photographic light-sensitive material containing color couplers, and a silver chloroiodide or silver iodobromide emulsion, wherein an average silver iodide content of said emulsion is 0.1 mol % to 15 mol %, said method comprising;

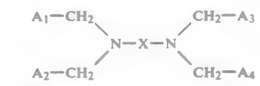
imagewise exposing said light-sensitive material to light;

developing said light-sensitive material with a color developer;

bleaching said light-sensitive material, immediately after said developing, with a bleaching solution; and

treating said light-sensitive material, after said bleaching, with a fixing solution; wherein

said bleaching solution comprises at least one ferric complex salt of a compound represented by Formula A, in an amount of at least 0.01 mol per liter of said bleaching solution;



Formula A

wherein A_1 through A_4 are each individually $—CH_2OH$, —COOM, or $—PO_3M_1M_2$; M, M_1 and M_2 are each hydrogen, sodium, potassium, or an ammonium salt; and X is substituted or unsubstituted alkylene having 3 to 6 carbon atoms,

said bleaching solution further containing at least one halide compound; and at least one buffer agent capable of adjusting a pH of said bleaching solution to a value of 3 to 7, said buffer agent being represented by Formula I:

Formula I



wherein A is hydrogen or an organic group having not less than 2 carbon atoms;

the pH value of said bleaching solution being 3 to 7, said bleaching step being conducted for not more than 90 seconds with a bleaching solution replenishment rate of 30 to 350 ml/m^2 of light-sensitive material.

5,352,569

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Kiyohito Takada, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 23, 1993, Ser. No. 110,730
Claims priority, application Japan, Aug. 26, 1992, 4-248953
Int. Cl.[5] G03C 1/46
U.S. Cl. 430—504 13 Claims

1. A silver halide color photographic material comprising a reflecting support having thereon a cyan color-forming silver halide emulsion layer, a magenta color-forming silver halide emulsion layer, a yellow color-forming silver halide emulsion layer and at least one light-insensitive hydrophilic layer disposed farther from the support than any of these silver halide emulsion layers, wherein said light-insensitive hydrophilic layer contains nonglobular fine-particle powder in a dispersion in an amount of at least 35% by weight based on the whole components therein.

5,352,570

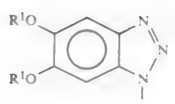
METHOD AND PHOTOGRAPHIC MATERIAL AND PROCESS COMPRISING A BENZOTRIAZOLE COMPOUND

William J. Begley, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 28, 1991, Ser. No. 723,346
Int. Cl.[5] G03C 7/305
U.S. Cl. 430—544 5 Claims

1. A color photographic element comprising a support bearing at least one photographic silver halide emulsion layer and at least one benzotriazole development inhibitor releasing naphtholic wash-out coupler which forms a dye that is capable of being washed out of the photographic element upon processing comprising an amide water solubilizing group in the 2-position of the naphthol moiety wherein the benzotriazole development inhibitor is represented by the formula:

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wherein R^1O is an unsubstituted alkoxy group.

5,352,571

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Makoto Suzuki; Hideaki Naruse, and Takehiko Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 27, 1992, Ser. No. 982,578

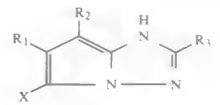
Claims priority, application Japan, Nov. 27, 1991, 3-311213

The portion of the term of this patent subsequent to Nov. 27, 2009, has been disclaimed.

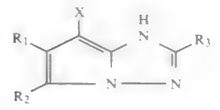
Int. Cl.[5] G03C *7/38, 7/396*

U.S. Cl. 430—545 **15 Claims**

1. A silver halide color photographic light-sensitive material comprising a support having provided thereon at least one silver halide emulsion layer having a cyan color-forming property, wherein the silver halide emulsion layer having the cyan color-forming property is a red-sensitive silver halide emulsion layer which contains at least one cyan coupler represented by the following formula (I-a) or (II-a) and at least one of a sparingly water-soluble homopolymer and/or copolymer:



(I-a)



(II-a)

wherein R_1 and R_2 each are an electron attractive group having a Hammett's substituent constant σ_p of 0.2 or more and the sum of the σ_p values of R_1 and R_2 is 0.65 or more; R_3 represents a hydrogen atom or a substituent; and X represents a hydrogen atom or a group capable of splitting off upon a reaction with an oxidation product of an aromatic primary amine color developing agent.

5,352,572

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Nobuo Seto; Akira Ogawa, and Masakazu Morigaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 17, 1992, Ser. No. 913,946

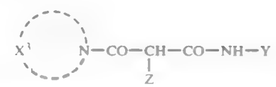
Claims priority, application Japan, Jul. 19, 1991, 3-203545

The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.

Int. Cl.[5] G03C *1/08, 7/26, 7/32*

U.S. Cl. 430—551 **16 Claims**

1. A silver halide color photographic material comprising at least one photosensitive silver halide emulsion layer, at least one yellow dye-forming coupler represented by formula (1) and at least one compound represented by the formula (a-I), (a-II), (a-III), (a-IV), (a-V), or (a-VI):



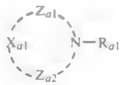
(1)

wherein X^3 represents an organic residue completing a nitrogen-containing heterocyclyl group together with



Y represents an aromatic or heterocyclic group;

and Z represents a group capable of splitting off when the coupler represented by the foregoing formula reacts with the oxidation product of an aromatic primary amine color developing agent;

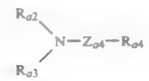


(a-I)

wherein R_{a1} represents $-C(=O)-R_{a21}$, $-S(=O)_{n3}-R_{a21}$, $-C(=O)O-R_{a21}$, $-P(=O)(R_{a22})(R_{a23})$, $-C(=O)N(R_{a21})(R_{a24})$ or $-S(=O)_{n4}N(R_{a21})(R_{a24})$, or a linkage group via which the compound can form a dimer or higher polymer; Z_{a1} and Z_{a2} are the same or different, each being a divalent connecting group attached to the nitrogen atom via its carbon atom, and the nitrogen-containing hetero ring formed by Z_{a1}, Z_{a2}, X_{a1} and the nitrogen atom is a 5- to 8-membered ring; X_{a1} represents —O—, $-S(O)_{n5}-$, $-N(R_{a25})-$, or $-C(R_{a26})(R_{a27})-$; R_{a21} represents an aliphatic, aromatic or heterocyclic group; R_{a22} and R_{a23} are the same or different, each being an aliphatic, aromatic, aliphatic oxy or aromatic oxy group; R_{a24} represents a hydrogen atom, or an aliphatic or aromatic group; R_{a25} represents an aliphatic group, or is the same as R_{a1}; R_{a26} and R_{a27} are the same or different, each being a hydrogen atom, or an aliphatic, aliphatic oxy, aromatic oxy, aliphatic acyloxy or aromatic acyloxy group; n3 and n4 each represent 1 or 2; n5 represents 0, 1 or 2; and R_{a22} and R_{a23}, R_{a21} and R_{a24}, or R_{a26} and R_{a27} may combine to form a 5- to 8-membered ring; but with the proviso that the nitrogen-containing hetero ring constituted of Z_{a1}, Z_{a2}, X_{a1} and N which is a 2,2,6,6-tetraalkylpiperidine ring is excluded;

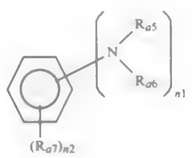
$$X_{a2}—Z_{a3}—X_{a3} \qquad \text{(a-II)}$$

wherein X_{a2} and X_{a3} are the same or different, each being $-N(R_{a35})(R_{a36})$, $-C(=O)N(R_{a31})(R_{a32})$, $-S(=O)_{n6}N(R_{a31})(R_{a32})$, $-P(=O)(R_{a33})N(R_{a31})(R_{a32})$, provided that the total number of carbon atoms contained in X_{a2} and X_{a3} is at least 6; Z_{a3} represents a direct bond or a divalent aliphatic group in which the number of atoms in the chain between X_{a2} and X_{a3} is 7 or less; R_{a36} represents $-C(=O)R_{a34}$, $-S(=O)_{n7}R_{a34}$ or $-P(=O)-(R_{a34})(R_{a35})$; R_{a31} represents $-C(=O)-R_{a34}$, $-S(=O)_{n7}R_{a34}$, $-P(=O)(R_{a34})(R_{a35})$, or an aliphatic or aromatic group; R_{a34} represents an aliphatic, aromatic, aliphatic oxy, aromatic oxy, aliphatic amino or aromatic amino group; R_{a35} represents an aliphatic, aromatic, aliphatic oxy or aromatic oxy group; n6 represents 1 or 2; n7 represents 1 or 2; R_{a32} represents a hydrogen atom, a heterocyclic group, or a group defined as R_{a31}; R_{a33} represents an aliphatic, aromatic, aliphatic oxy or aromatic oxy group; when Z_{a3} represents a bonding hand, the compound may form a dimer or higher polymer via R_{a31} or R_{a32}; and 5- to 8-membered ring(s), excluding a 2,2,6,6-tetraalkylpiperidine ring, may be formed by combining R_{a36} with R_{a32}, or R_{a31} with R_{a32}; and with the further proviso that when both X_{a2} and X_{a3} are $-C(=O)N-(R_{a31})(R_{a32})$, the compounds where Z_{a3} represents methylene or a monosubstituted methylene are excluded;



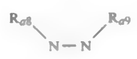
(a-III)

wherein R_{a2} represents a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, $-C(=O)R_{a41}$, $-S(=O)_{n8}R_{a41}$ or $-P(=O)(R_{a41})(R_{a42})$, R_{a3} represents $-C(=O)R_{a41}$, $-S(=O)_{n9}R_{a41}$ or $-P(=O)(R_{a41})(R_{a42})$ and R_{a4} represents a hydrogen atom, an aliphatic group, an aromatic group, $-C(=O)R_{a43}$ or $-S(=O)_{n9}R_{a43}$, provided that the total number of carbon atoms contained in R_{a21}, R_{a3} and R_{a4} is at least 8; Z_{a4} represents —O— or —S—; R_{a41} represents an aliphatic group, an aromatic group, an aliphatic oxy group, an aromatic oxy group, an aliphatic amino group or an aromatic amino group; R_{a42} represents an aliphatic group, an aromatic group, an aliphatic oxy group or an aromatic oxy group; R_{a43} represents an aliphatic group, an aromatic group, an aliphatic amino group or an aromatic amino group; n8 represents 1 or 2; and n9 represents 1 or 2; and a 5- to 8-membered ring, excluding a 2,2,6,6-tetraalkylpiperidine ring, may be formed by combining R_{a2} with R_{a3}; and which may form a dimer or higher polymer via R_{a21}, R_{a3} or R_{a4};



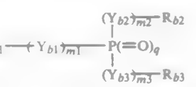
(a-IV)

wherein R_{a5} represents $-C(=O)R_{a51}$, $-S(=O)_{n10}R_{a51}$, or $-P(=O)(R_{a51})(R_{a52})$; R_{a6} represents a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, or one of the groups defined as R_{a5}; R_{a7} represents a halogen atom, an aliphatic group, an aromatic group, a heterocyclic group, a nitro group, a cyano group, $-C(=O)R_{a53}$, or $-S(=O)_{n11}R_{a53}$; n1 represents an integer from 1 to 3 and n2 represents 0 or an integer from 1 to 4, provided that the sum of n1 and n2 is 6 or less; when n1 and n2 are 2 or more, R_{a5}'s, R_{a6}'s and R_{a7}'s each are the same or different; R_{a51} and R_{a53} are the same or different, each being an aliphatic group, an aromatic group, an aliphatic oxy group, an aromatic oxy group, an aliphatic amino group, or an aromatic amino group; R_{a52} represents an aliphatic group, an aromatic group, an aliphatic oxy group, or an aromatic oxy group; n10 and n11 each represent 1 or 2; a 5- to 8-membered ring may be formed by combining R_{a5} with R_{a6}; and when n2 is 2 or more, two adjacent R_{a7}'s may combine with each other to form a 5- to 8-membered ring, and which may form a dimer or higher polymer via R_{a5} or R_{a7};



(a-V)

wherein R_{a8} and R_{a9} are the same or different, each being a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, $-C(=O)R_{a61}$, $-S(=O)_{n12}R_{a61}$ or $-P(=O)(R_{a61})(R_{a62})$, provided that the total number of carbon atoms contained in R_{a8} and R_{a9} is at least 6; Z_{a5} represents nonmetal atoms completing a 5- to 8-membered hetero ring together with the two nitrogen atoms; R_{a61} represents an aliphatic group, an aromatic group, an aliphatic oxy group, an aromatic oxy group, an aliphatic amino group, or an aromatic amino group; and R_{a62} represents an aliphatic group, an aromatic group, an aliphatic oxy group, or an aromatic oxy group, and which may form a dimer or higher polymer via R_{a8} or R_{a9};



(a-VI)

wherein R_{b1}, R_{b2} and R_{b3} are the same or different, each being an aliphatic group or an aromatic group; Y_{b1}, Y_{b2} and Y_{b3} each represent —O—, —S—, or $—N(R_{b4})—$; m1, m2, m3 and q each represent 0 or 1, excluding compounds where m1 = m2 = m3 = 1 when q = 1, and compounds where m1 = m2 = m3 = 0 when q = 0; R_{b4} represents a hydrogen atom, an aliphatic group, or an aromatic group; any two among R_{b1}, R_{b2} and R_{b3} may combine with each other to complete a 5- to 9-membered ring together with the phosphorus atom, wherein the case of m1 = m2 = m3 = 1 is allowed; and further, R_{b4} may combine with R_{b1}, R_{b2} or R_{b3} to form a 5- or 6-membered ring.

5,352,573

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Nobuo Seto; Yasuhiro Yoshioka; Makoto Suzuki, and Masakazu Morigaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 27, 1992, Ser. No. 982,439

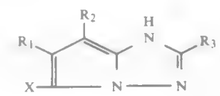
Claims priority, application Japan, Nov. 27, 1991, 3-335851

The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.

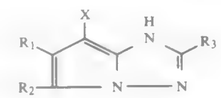
Int. Cl.[5] G03C *7/38, 1/34*

U.S. Cl. 430—551 **17 Claims**

1. A silver halide color photographic light-sensitive material comprising a support having provided thereon at least one red-sensitive silver halide emulsion layer comprising (a) a cyan dye-forming coupler represented by the following formulas (I-a) or (II-a):



(I-a)



(II-a)

wherein

R_1 and R_2 each are an electron attractive group having a Hammett's substituent constant σ_p of 0.20 or more and the sum of the σ_p values of R_1 and R_2 is 0.65 or more;

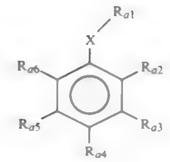
R_3 represents a hydrogen atom or a substituent;

X represents a hydrogen atom or a group capable of splitting off upon a reaction with an oxidation product of an aromatic primary amine color developing agent; and

the group represented by R_1, R_2, R_3 or X may become a divalent group and combine with a monomer higher than a dimer and a high molecular weight chain to form a homopolymer or a copolymer; and

(b) a compound represented by the following formula (A):

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(A)

wherein

R_{a1} represents an aliphatic group, an aromatic group, a heterocyclic group, —Si(R_{a7}) (R_{a8})(R_{a9}), —CO(R_{a10}), —SO_2(R_{a11}), or —P(O)$_n$(R_{a12}) (R_{a13});

R_{a2}, R_{a3}, R_{a4}, R_{a5} and R_{a6} may be the same or different and each represent a hydrogen atom, —X′—R_{a1}, an aliphatic group, an aromatic group, a heterocyclic group, an aliphatic oxycarbonyl group, an aromatic oxycarbonyl group, a halogen atom, an acyl group, a sulfonyl group, a carbamoyl group, a sulfamoyl group, a cyano group, a nitro group, a sulfo group, or a carboxyl group;

—X—represents —O— or —N(R_{a1}′)—;

—X′— represents —O—, —S— or —N(R_{a1})—;

R_{a7}, R_{a8} and R_{a9} may be the same or different and each represent an aliphatic group, an aromatic group, an aliphatic oxy group, or an aromatic oxy group;

R_{a10} and R_{a11} each represent an aliphatic group, an aromatic group, an aliphatic amino group, or an aromatic amino group;

R_{a12} and R_{a13} may be the same or different and each represent an aliphatic group, an aromatic group, an aliphatic oxy group, or an aromatic oxy group;

n represents 0 or 1; and

R_{a1}′ represents a hydrogen atom or a group defined for R_{a1}; of the respective groups of —X—R_{a1} and R_{a2} to R_{a6}, the groups located in an ortho position to each other may be combined to form a 5 to 8-membered ring;

and where —X— or —X′— is —N(R_{a1}′)—, R_{a1} and R_{a1}′ may be combined with each together to form a 5 to 8-membered ring.

5,352,574

SURFACE FUNCTIONALIZED AND DERIVATIZED ELECTROACTIVE POLYMERS WITH IMMOBILIZED ACTIVE MOIETIES

Anthony Guiseppi-Elie, 1017 Randolph Dr., Yardley, Pa. 19067

Continuation of Ser. No. 322,670, Mar. 13, 1989, abandoned. This application Oct. 4, 1991, Ser. No. 771,759

Int. Cl.[5] **C12Q** *1/00, 1/26;* **C12N** *11/08;* **G01N** *33/545*

U.S. Cl. 435—4 **11 Claims**

11. A material comprising; an electroactive polymeric substrate containing a covalently bound indicator reagent, said material being prepared by reacting an electroactive polymeric substrate selected from the group consisting of polyacetylene, polypyrrole, polyaniline and polythiophene having a predetermined electrical conductivity with at least one chemical modification reagent to produce an activated surface on the substrate containing new functional groups capable of covalent bonding on the surface of said substrate and said activated surface having a predetermined electrical conductivity, reacting said activated surface with a linking agent, and reacting the linking agent with an indicator reagent to covalently bond the indicator reagent to the activated surface of said substrate, whereby the predetermined electrical conductivity of the substrate can be altered by reactions of an analyte with the indicator reagent.

5,352,575

PSEUDORABIES VIRUS PROTEIN

Erik A. Petrovskis; Leonard E. Post, both of Kalamazoo, Mich., and James G. Timmins, Naperville, Ill., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 100,817, Jun. 29, 1987, abandoned, which is a continuation-in-part of Ser. No. 886,260, Jul. 16, 1986, abandoned, which is a continuation-in-part of Ser. No. 784,787, Oct. 4, 1985, abandoned, Ser. No. 801,799, Nov. 26, 1985, abandoned, and Ser. No. 844,113, Mar. 26, 1986, abandoned. This application Apr. 20, 1990, Ser. No. 513,282

Int. Cl.[5] **G01N** *33/569*

U.S. Cl. 435—5 **5 Claims**

1. A method for distinguishing an animal vaccinated with a pseudorabies virus (PRV) vaccine lacking glycoprotein gI or gp63 from an animal infected with a virulent wild-type pseudorabies virus without sacrificing the animal comprising:

contacting serum from the animal with PRV glycoprotein gI or gp63, and detecting the presence or absence of antibodies which specifically bind to PRV glycoprotein gI or gp63 wherein the presence of antibodies indicates that the animal has been infected with a virulent wild-type pseudorabies virus.

5,352,576

METHOD OF DETERMINING THE PRESENCE AND TITERS OF ANTI HIV-1 AG27BODIES

Barton F. Haynes, and Thomas J. Palker, both of Durham, assignors to Duke University, Durham, N.C.

Continuation of Ser. No. 589,591, Sep. 28, 1990, abandoned, which is a continuation of Ser. No. 93,854, Sep. 8, 1987, Pat. No. 5,019,387. This application Aug. 24, 1992, Ser. No. 931,416

Int. Cl.[5] **C12Q** *1/70;* **G01N** *33/543, 33/536, 33/00*

U.S. Cl. 435—5 **2 Claims**

1. A method of determining the presence in mammalian serum of antibodies against a specific strain of HIV-1 comprising the steps of: (i) contacting a SP-10 peptide of said HIV-1 strain with said mammalian serum under conditions such that a complex between said peptide and said antibodies present in said mammalian serum can form; and (ii) measuring the formation of said complex.

5,352,577

Patent Not Issued For This Number

5,352,578

METHOD OF SEPARATING OLIGONUCLEOTIDES FROM A MIXTURE

Sudhir Agrawal, and Paul C. Zamecnik, both of Shrewsbury, Mass., assignors to Worcester Foundation for Experimental Biology, Shrewsbury, Mass.

Filed Feb. 15, 1989, Ser. No. 311,111

Int. Cl.[5] **C12Q** *1/68;* **C07H** *21/00;* **C12N** *15/00*

U.S. Cl. 435—6 **9 Claims**

1. A method of separating full length target oligonucleotides from failed sequences in an oligonucleotide mixture resulting from an oligonucleotide synthesis reaction, the method comprising the steps of:

a. covalently binding short oligonucleotides having nucleotide sequences complementary to the 5′ end of the full length target oligonucleotides to a solid support, thereby producing covalently bound oligonucleotides;

b. contacting the covalently bound oligonucleotides and the oligonucleotide mixture resulting from an oligonucleotide synthesis reaction under conditions appropriate for hybridization of complementary nucleotide sequences resulting in hybridization of covalently bound oligonucleotides with full length target oligonucleotides and with nearly full length failed oligonucleotides;

c. subjecting the hybridized products of (b) to a gradient appropriate for disrupting the hybridization of covalently bound oligonucleotides with nearly full length failed oligonucleotides, but not for disrupting the hybridization of covalently bound oligonucleotides with full length target oligonucleotides;

d. recovering full length target oligonucleotides by subjecting the covalently bound oligonucleotide-target oligonucleotide products remaining in (c) to conditions appropriate for disrupting by hybridization.

5,352,579

NUCLEIC ACID PROBES TO HISTOPLASMA CAPSULATUM

Curt L. Milliman, St. Louis, Mo., assignor to Gen Probe, Inc., San Diego, Calif.

Filed Jun. 28, 1991, Ser. No. 720,587

Int. Cl.[5] **C12Q** *1/68;* **C07H** *21/02;* **C12N** *15/00*

U.S. Cl. 435—6 **15 Claims**

1. A nucleic acid hybridization assay probe having sufficient complementarity to the rRNA or rDNA sequences of *Histoplasma capsulatum*, or to sequences complementary thereto, able to distinguish, under hybridization conditions, *Histoplasma capsulatum* from *Blastomyces dermatitidis*.

5,352,580

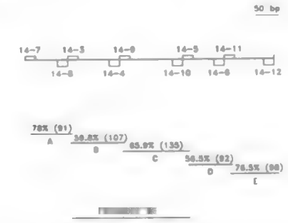
SELECTIVE DETECTION OF MYCOBACTERIA BY NUCLEICACID PROBES DERIVED FROM *MYCOBACTERIUM KANSASII*

Patricia A. Spears, Raleigh, and Daryl D. Shank, Durham, both of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed May 26, 1993, Ser. No. 889,651

Int. Cl.[5] **C12Q** *1/68;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—6 **31 Claims**



1. An oligonucleotide probe capable of selectively hybridizing to Mycobacteria nucleic acid, said oligonucleotide probe selected from the group consisting of:

(a) an oligonucleotide probe consisting of a DNA sequence selected from the group consisting of DNA sequences given herein as SEQ ID NO: 1, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:20, SEQ ID NO:21 and SEQ ID NO:25, and;

(b) an oligonucleotide probe consisting of a DNA sequence selected from the group consisting of the complementary DNA sequence to any of the probes of (a) and are capable of selectively hybridizing to Mycobacteria nucleic acid.

5,352,581

SENSITIVE YEAST GENETIC SYSTEM FOR IDENTIFYING AGENTS CAUSING DOUBLE-STRANDED DNA DAMAGE

Michael A. Resnick, Chapel Hill, N.C., and Torston Nilsson-Tillgren, Copenhagen, Denmark, assignors to United States/-National Institutes of Health, Rockville, Md.

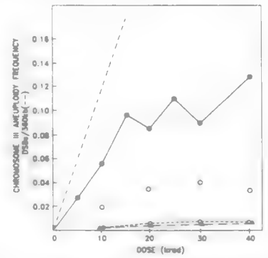
Continuation of Ser. No. 328,168, Mar. 24, 1989, abandoned. This application Jun. 11, 1992, Ser. No. 897,577

Int. Cl.[5] **C12Q** *1/68*

U.S. Cl. 435—6 **4 Claims**

1. A method for determining the ability of an agent to produce chromosome loss comprising:

administering an agent to diploid *Saccharomyces cerevisiae* cells, wherein each of said cells comprise at least one homoeologous chromosome pair, said pair consisting of a first and a second chromosome, said first chromosome comprising a DNA sequence which is sufficiently different from the DNA sequence of said second chromosome such that homologous recombination of said first and second chromosomes is prevented, each of said first and second chromosomes comprising a phenotypic marker



which is distinguishable from any other marker in each of said cells;

plating said cells on a medium suitable for selecting said markers or diagnosing the presence of said markers; and

examining the phenotypes expressed by said cells to determine whether the loss of one of said chromosome pair has occurred in those cells.

5,352,582

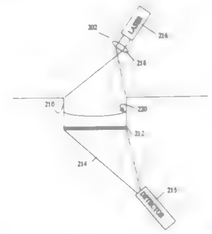
HOLOGRAPHIC BASED BIO-ASSAY

Kay Lichtenwalter, San Jose, and Hewlett E. Melton, Jr., Sunnyvale, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 28, 1993, Ser. No. 144,919

Int. Cl.[5] **C12Q** *1/68;* **G01N** *33/543*

U.S. Cl. 435—6 **19 Claims**



11. A method for detecting a target reactant, said method comprising the steps of:

bringing said target reactant into contact with an immobilized reactant that is immobilized on a support structure at selected locations thereon, said locations corresponding to a predetermined pattern, said immobilized reactant binding said target reactant when said target and immobilized reactants are brought into contact with one another, wherein said predetermined pattern causes a holographic image to be generated at a predetermined image location when said immobilized reactant is bound to said target reactant and said bound reactants are exposed to coherent light;

illuminating said support structure with a coherent light source; and

measuring the intensity of light at said image location.

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5,352,583

HUMAN TISSUE PLASMINOGEN ACTIVATOR-HUMAN PLASMINOGEN ACTIVATOR INHIBITOR COMPLEX IMMUNOASSAY AND KIT THEREFOR

Yoichi Sakata, Utsunomiya; Kazuhiko Itoh, Iwakuni; Shuichiro Hino, Iwakuni; Ryoichi Hasegawa, Iwakuni; Naomi Okamoto, Iwakuni; Atsushi Noro, Hino, and Toshinobu Murakami, Kokubunji, all of Japan, assignors to Teijin Limited, Japan

PCT No. PCT/JP90/01269, § 371 Date Jun. 3, 1991, § 102(e) Date Jun. 3, 1991, PCT Pub. No. WO91/05257, PCT Pub. Date Apr. 18, 1991

PCT Filed Oct. 2, 1990, Ser. No. 687,867

Claims priority, application Japan, Oct. 2, 1989, 1-255307; Oct. 3, 1989, 1-256995

Int. Cl.[5] **G01N** *33/53*

U.S. Cl. 435—7.4 **6 Claims**

1. A method for an immunological assay of a human tissue plasminogen activator-human plasminogen activator inhibitor complex in a human specimen by:

(1) contacting the human specimen with a first antibody linked to an insoluble solid carrier, and then contacting a labeled second antibody therewith, or

(2) simultaneously contacting a first antibody linked to an insoluble solid carrier and a labeled second antibody with the human specimen, steps (1) and (2) being performed in the presence of a surfactant,

(3) and, following step (1) or (2), measuring said labeled second antibody bound to said solid carrier to determine the human tissue plasminogen activator-human plasminogen activator inhibitor complex in the human specimen, which method comprises:

(a) using as the first antibody a monoclonal antibody which specifically binds a human plasminogen activator inhibitor JTI-4 produced by the hybridoma JTI-4 (FERM BP-2318) linked onto an insoluble solid carrier having a specular surface,

(b) using as the second antibody a polyclonal antibody which specifically binds a human tissue plasminogen activator labeled with an enzyme, and

(c) said surfactant being a nonionic surfactant having an HLB (Hydrophilic-Lipophilic Balance) value of at least 16 and a concentration of 0.001–0.1 w/w %, said nonionic surfactant being at least one member selected from the group consisting of polyoxyalkylene alkyl aryl ether series, polyoxyalkylene alkyl ether series, polyoxyalkylene polyhydric alcohol fatty acid ester series and polyoxyethylene polyoxypropylene polyol series.

6. An immunological assay for active human plasminogen activator inhibitor which comprises:

(1) providing two aliquots of a human specimen containing (i) a human tissue plasminogen activator-human plasminogen activator inhibitor complex and (ii) active human plasminogen activator inhibitor,

(2) adding a sufficient amount of free human tissue plasminogen activator to one of the two aliquots to complex the active human plasminogen activator inhibitor,

(3) contacting both the aliquots individually with a first antibody linked to an insoluble solid carrier, and then contacting a labeled second antibody therewith, or

(4) simultaneously contacting the first antibody linked to the insoluble solid carrier and the labeled second antibody with the aliquots individually,

steps (3) and (4) being performed in the presence of a surfactant,

(5) measuring solid phase bound label to determine the amount of human plasminogen activator-human tissue plasminogen activator inhibitor complex in each of the aliquots, and

(6) determining the amount of active human plasminogen activator inhibitor based on the difference between the amount of human tissue plasminogen activator-human plasminogen activator inhibitor complex in the two aliquots,

and wherein

(a) there is used as the first antibody a monoclonal antibody JTI-4 produced by the hybridoma JTI-4 (FERM BP-2318) which specifically binds a human plasminogen activator inhibitor linked to an insoluble solid carrier having a specular surface,

(b) there is used as the second antibody a polyclonal antibody which specifically binds a human tissue plasminogen activator labeled with an enzyme, and

(c) there is used as the surfactant a nonionic surfactant having an HLB (Hydrophilic-Lipophilic Balance) of at least 16 and a concentration of 0.001–0.1 w/w %, said nonionic surfactant being at least one member selected from the group consisting of polyoxyalkylene alkyl aryl ether series, polyoxyalkylene alkyl ether series, polyoxyalkylene polyhydric alcohol fatty acid ester series and polyoxyethylene polyoxypropylene polyol series.

5,352,584

MONOCLONAL ANTIBODIES WHICH BIND (E)-5-(2-BROMOVINYL)-ARABINOFURANOSYLURACIL AND DIAGNOSTIC METHODS BASED THEREON

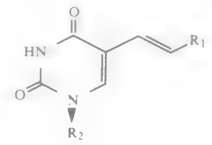
Edward M. Croze, San Ramon, Calif.; Jan-I Tu, Lawrenceville, and Marc D. Ogan, Somerset, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jan. 22, 1990, Ser. No. 468,303

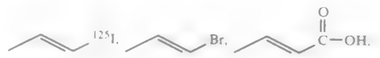
Int. Cl.[5] **G01N** *33/536, 33/543;* **C07K** *15/28;* **C12N** *5/20*

U.S. Cl. 435—7.94 **30 Claims**

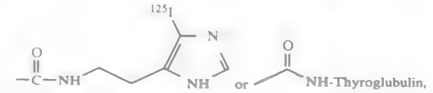
1. A hybrid cell line that produces a monoclonal antibody which binds one or more compounds of the formula:



wherein R_1 is



and R_2 is



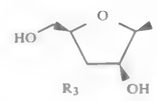
or wherein R_1 is



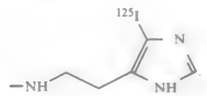
and R_2 is H; or wherein R_1 is



and R_2 is



and R_3 is —NH-Thyroglobulin or



23. An enzyme immunoassay for determining the amount of a compound as defined in claim 1 in a sample comprising:

(a) incubating the sample with a monoclonal antibody which binds the compound and the compound conjugated to a carrier and immobilized on a solid support;

(b) separating any unbound substances from the solid support;

(c) contacting the solid support with an enzyme-labelled antibody which is capable of binding with the monoclonal antibody which binds the compound;

(d) separating any unbound enzyme-labelled antibody from the solid support;

(e) contacting and incubating the solid support with an enzyme substrate capable of reacting with the enzyme of the enzyme-labelled antibody to produce a detectable reaction product;

(f) measuring the amount of detectable reaction product formed; and

(g) correlating the amount of detectable reaction product formed with the amount of the compound in the sample.

5,352,585

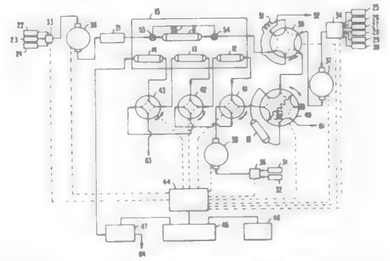
SYSTEM FOR BENZODIAZEPINE DETECTION

Steven R. Binder, Berkeley, and David L. King, Benicia, both of Calif., assignors to Bio-Rad Laboratories, Inc., Hercules, Calif.

Filed Jun. 29, 1993, Ser. No. 84,845

Int. Cl.[5] **G01N** *30/02*

U.S. Cl. 435—18 **19 Claims**



1. A method for analyzing a biological sample for the presence of benzodiazepines, said method comprising:

(a) passing said sample through the following media in the sequence indicated:

(i) a contact medium comprised of an immobilized glucuronosohydrolase to cleave glucuronic acid from any species conjugated with said glucuronic acid;

(ii) a first separation medium comprised of an anion exchange medium, under conditions permitting retention of hydrophobic anions, with substantially no retention of benzodiazepines;

(iii) a second separation medium comprised of a hydrophobic cation exchange medium under conditions permitting retention of basic compounds of stronger basicity than benzodiazepines, with substantially no retention of benzodiazepines; and

(iv) a third separation medium comprised of a reverse-phase medium, under conditions permitting the chromatographic separation of benzodiazepines; and

(b) detecting said benzodiazepines individually upon their emergence from said third separation medium.

5,352,586

METHOD OF DETERMINING THE PRESENCE OF AN ANTIBIOTIC PRODUCED BY *LACTOBACILLUS REUTERI*

Walter J. Dobrogosz, Raleigh, N.C., and Sven E. Lindgren, Uppsala, Sweden, assignors to Biogaia AB, Stockholm, Sweden

Division of Ser. No. 268,361, Sep. 19, 1988, abandoned, which is a continuation-in-part of Ser. No. 102,830, Sep. 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 46,027, May 1, 1987, abandoned. This application Mar. 18, 1991, Ser. No. 670,960

Int. Cl.[5] **C12Q** *1/04;* **C12P** *17/08;* **C12N** *1/20*

U.S. Cl. 435—34 **4 Claims**

1. A method for determining the presence of the antibiotic β-hydroxypropionaldehyde as a detectable end-product in an aqueous solution of *Lactobacillus reuteri* cells comprising the steps of:

(a) placing *Lactobacillus reuteri* cells in an aqueous solution containing a compound selected from the group consisting of glycerol and glyceraldehyde as the carbon and energy source at a concentration of about 20–500 mM, and incubating said cells under anaerobic conditions;

(b) separating the *Lactobacillus reuteri* cells from a sample of the solution;

(c) analyzing the sample using high performance liquid chromatography;

(d) eluting the sample; and

(e) determining the presence of a peak intermediate in elution time to those of 1,3-propanediol and glycerol which is indicative of the presence of β-hydroxypropionaldehyde in the sample.

5,352,587

COMPOSITIONS AND METHODS FOR THE SYNTHESIS OF NATRIURETIC PROTEIN RECEPTOR B AND METHODS OF USE

Ming-Shi Chang, Newbury Park; David V. Goeddel, Hillsborough, and David G. Lowe, Brisbane, all of, assignors to Genentech, Inc., South San Francisco, Calif.

PCT No. PCT/US90/03586, § 371 Date Dec. 19, 1991, § 102(e) Date Dec. 19, 1991, PCT Pub. No. WO91/00292, PCT Pub. Date Jan. 10, 1991

Continuation-in-part of Ser. No. 370,673, Jun. 23, 1989, abandoned. This PCT application Jun. 22, 1990, Ser. No. 778,157

Int. Cl.[5] **C12N** *15/12;* **A61K** *37/02*

U.S. Cl. 435—69.1 **21 Claims**

1. Isolated pure natriuretic protein receptor B (NPRB) selected from the group consisting of NPRB having the amino acid sequence depicted in FIG. 1A–K, NPRB comprising amino acids 1-479 of FIG. 1A–K, NPRB comprising amino acids 1-433 of FIG. 1A–K and porcine atrium NPRB, unaccompanied by associated native glycosylation.

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5,352,588

STREPTOCOCCAL IMMUNOGLOBULIN A BINDING PROTEIN ENCODED BY EMML2.2

Vincent A. Fischetti, West Hempstead, and Debra E. Bessen, New York, both of N.Y., assignors to Rockefeller University, New York, N.Y.

Filed Dec. 24, 1991, Ser. No. 813,584
Int. Cl.[5] C07K *13/00*; C12N *15/31, 1/21*
U.S. Cl. 435—69.1 7 Claims

1. An isolated DNA molecule of DNA encoding the protein represented by SEQ ID NO. 3.

5,352,589

DELETION MUTANT OF EASIC FIBROBLAST GROWTH FACTOR AND PRODUCTION THEREOF

Laura Bergonzoni; Antonella Isacchi; Paolo Sarmientos, all of Milan, and Gilles Cauet, Buccinasco, all of Italy, assignors to Farmitalia Carlo Erba S.R.L., Milan, Italy

Continuation of Ser. No. 863,549, Apr. 6, 1992, abandoned, which is a continuation of Ser. No. 466,441, Jul. 16, 1990, abandoned. This application Jun. 2, 1993, Ser. No. 71,046
Claims priority, application United Kingdom, Sep. 16, 1988, [redacted]
Int. Cl.[5] C12N *15/00, 1/20*; C12P *21/00*; A61K *37/36*
U.S. Cl. 435—69.4 3 Claims



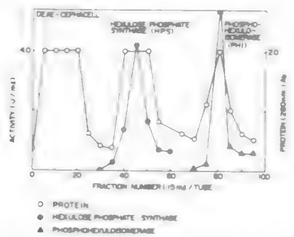
1. A human or bovine basic fibroblast growth factor derivative wherein amino acid residues 27 through 32 (Lys-Asp-Pro-Lys-Arg-Leu) have been deleted, the numbering of the above amino acid residues corresponding to the 155-amino acid form of human or bovine basic FGF.

5,352,590

PROCESS FOR THE PREPARATION OF ^{13}C-LABELLED COMPOUNDS

Nobuo Kato, Tottori; Yoshiyuki Sato, Tokyo, and Kunihiko Shibata, Funabashi, all of Japan, assignors to Tokyo Gas. Co., Ltd., Tokyo, Japan

Filed Mar. 6, 1992, Ser. No. 846,478
Claims priority, application Japan, Mar. 8, 1991, 3-067779; Feb. 27, 1992, 4-075612
Int. Cl.[5] C12P *19/02*
U.S. Cl. 435—105 14 Claims



1. A process for preparing a ^{13}C-labelled compound which comprises reacting a substrate and an aldehyde ^{13}C-labelled carbon source compound at a C-1 position in the presence of an enzyme system consisting of lyase specific to the substrate belonging to EC4 group synthesizing a carbon-carbon bond and at least one of isomerases capable of isomerizing substrates to obtain a ^{13}C-labelled compound specifically labelled with ^{13}C, only in a carbon position C-1.

5,352,591

ALDOLASE ENZYME PROCESS FOR MAKING 5-AZIDO-5-DEOXY-HEXULOSE-1-PHOSPHATE

Chi-Huey Wong, Rancho Santa Fe, and Kun-Chin Liu, San Diego, both of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Division of Ser. No. 835,238, Feb. 13, 1992, Pat. No. 5,229,523, which is a continuation-in-part of Ser. No. 707,594, May 30, 1991, abandoned. This application Jul. 19, 1993, Ser. No. 93,782
Int. Cl.[5] C12P *17/10, 19/02*; C07D *207/30*
U.S. Cl. 435—121 6 Claims

1. A process of making a 5-azido-5-deoxyhexulose-1-phosphate comprising mixing a 2-azido-substituted-propionaldehyde and dihydroxyacetone phosphate in the presence of a catalytic amount of an aldolase to form a reaction mixture and maintaining the reaction mixture under biological reaction conditions for a time period sufficient to form said 5-azido-5-deoxy-hexulose-1-phosphate.

5,352,592

MICROBIOLOGICAL PROCESS FOR THE PRODUCTION OF 5-HYDROXYPYRAZINECARBOXYLIC ACID

Andreas Kiener, Visp, Switzerland, assignor to Lonza Ltd., Gampel/Valais, Switzerland

Filed Jul. 1, 1993, Ser. No. 84,462
Claims priority, application Switzerland, Jul. 8, 1992, 2150/92
Int. Cl.[5] C12P *17/12, 7/42*; C12N *1/20*
U.S. Cl. 435—122 7 Claims

1. A process for the production of 5-hydroxypyrazinecarboxylic acid or a salt thereof, comprising converting the substrate 2-cyanopyrazine to 5-hydroxypyrazinecarboxylic acid or a salt thereof with Agrobacterium sp. DSM 6336 or mutants thereof capable of said conversion and wherein said mutant utilizes 3-cyanopyridine as its sole carbon, nitrogen and energy source, and isolating the 5-hydroxypyrazinecarboxylic acid or salt thereof from the medium.

5,352,593

PRODUCTION OF FUEL ALCOHOL FROM HONEY

Gregory K. Earl, Arlington, Va., assignor to American Apiary Farm Company, Arlington, Va.

Division of Ser. No. 946,572, Sep. 18, 1992, Pat. No. 5,277,647. This application Dec. 3, 1992, Ser. No. 985,140
Int. Cl.[5] C12P *7/06*
U.S. Cl. 435—161 4 Claims

1. A process of producing fuel alcohol comprising:
(A) obtaining honey by a process comprising:
(i) clearing a selected area of land;
(ii) planting a plurality of perennially flowering flora;
(iii) interspersing a plurality of bee colonies among said plurality of perennially flowering flora; and
(iv) harvesting the honey at regular intervals year round;
(B) inoculating said honey with yeast;
(C) fermenting said inoculated honey to produce said fuel alcohol; and
(D) recovering the fuel alcohol.

5,352,594

SELECTION AND METHOD OF MAKING ENZYMES FOR PERHYDROLYSIS SYSTEM AND FOR ALTERING SUBSTRATE SPECIFICITY, SPECIFIC ACTIVITY AND CATALYTIC EFFICIENCY

Ayrookaran J. Poulouse, San Bruno, Calif., assignor to Genecor, Inc., Rochester, N.Y.

Continuation of Ser. No. 668,311, Mar. 11, 1991, abandoned, which is a continuation of Ser. No. 287,316, Dec. 19, 1988, abandoned, which is a continuation-in-part of Ser. No. 86,869, Aug. 21, 1987, abandoned, which is a continuation-in-part of Ser. No. 905,363, Sep. 9, 1986, abandoned, which is a continuation-in-part of Ser. No. 858,594, Apr. 30, 1986, abandoned, which is a continuation-in-part of Ser. No. 614,612, May 29, 1984, Pat. No. 4,760,025, and a continuation-in-part of Ser. No. 614,615, May 29, 1984, abandoned, and a continuation-in-part of Ser. No. 614,617, May 29, 1984, abandoned, and a continuation-in-part of Ser. No. 614,491, May 29, 1984, abandoned. This application Jun. 30, 1992, Ser. No. [redacted]
Int. Cl.[5] C12N *15/10, 15/55, 15/00, 9/20*
U.S. Cl. 435—172.1 11 Claims

1. A method of altering the perhydrolysis/hydrolysis ratio of *Pseudomonas mendocina* lipase ATCC #53552, said lipase characterized in that it comprises a catalytic triad consisting of Ser126, His206 and Asp176, said method comprising:
a) replacing at least one amino acid in said lipase with a different amino acid, at a position within four (4) amino acid residue positions on the amino-terminal side or on the carboxyl-terminal side of Ser126, His206 or Asp176;
b) determining the perhydrolysis/hydrolysis ratio of said lipase of step a); and
c) selecting the lipase of step b) characterized in that the perhydrolysis/hydrolysis ratio of the lipase is increased by a factor of at least 2 when compared to native *Pseudomonas mendocina* lipase ATCC #53552.

5,352,595

MYOD REGULATORY REGION

Stephen J. Tapscott; Harold M. Weintraub, both of Seattle, and Theodore D. Palmer, Kirkland, all of Wash., assignors to Fred Hutchinson Cancer Research Center, Seattle, Wash.

Filed Sep. 3, 1991, Ser. No. 753,520
Int. Cl.[5] C12N *5/10, 15/11, 15/85*
U.S. Cl. 435—172.3 13 Claims

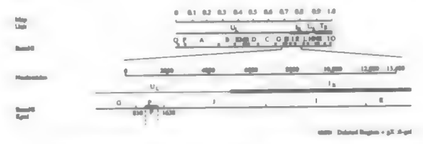
1. An isolated DNA or RNA molecule comprising a myoD proximal regulatory region capable of hybridizing under stringent conditions to the nucleotide sequence from positions 590 to 883 in SEQ ID NO: 1.

5,352,596

PSEUDORABIES VIRUS DELETION MUTANTS INVOLVING THE EPO AND LLT GENES

Andrew K. Cheung, and Ronald D. Wesley, both of Ames, Iowa, assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 11, 1992, Ser. No. 945,283
Int. Cl.[5] A61K *39/245*; C12N *7/04*
U.S. Cl. 424—205.1 19 Claims



1. A pseudorabies virus having a genomic modification selected from the group consisting of a deletion, and insertion or both in: (1) the early protein 0 gene whereby said virus is characterized by the inability to express the early protein 0; or (2) the large latency transcript gene whereby said virus is characterized by the inability to express said large latency transcript, with the provision that the modification to the large latency transcript is in conjunction with another modification which serves to attenuate the virus.

5,352,597

METHOD FOR THE PREPARATION OF A BIOCIDAL FORMULATION CONTAINING STARCH AND *BACILLUS THURINGIENSIS*

Chien-Chun Yang, Hsin-Chu; I-Horng Pan, Tainan; Mei-Hueih Chen, Hsinshu; Suey-Sheng Kao, Taipei, and Yeong-Sheng Tsai, Taichung Hsien, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Nov. 15, 1993, Ser. No. 153,354
Int. Cl.[5] C12N *11/10, 1/20, 1/04*; A01N *63/00*
U.S. Cl. 435—178 5 Claims

1. A method for the preparation of a biocidal formulation comprising the steps of:
(a) blending predetermined amounts of pre-gelatinized starch, unpre-gelatinized starch, biocide and water to form a mass, wherein the ratio between the unpre-gelatinized starch and the pre-gelatinized starch is 8:1 to 1:1, the ratio between water and the total amount of the unpre-gelatinized starch and the pre-gelatinized starch is 0.2:1 to 0.7:1, and the biocide in *Bacillus thuringiensis;*
(b) drying said mass by heating said mass at temperatures between 50° and 100° C. for no more than 30 minutes to form a dried mass; and
(c) crushing the dried mass to form said biocidal formulation.

5,352,598

PURIFIED LUCIFERASE FROM LUCIOLA LATERALIS

Naoki Kajiyama, Noda, Japan; Tsutomu Masuda, Needham, Mass.; Hiroki Tatsumi, Noda, and Eiichi Nakano, Iwatsuki, both of Japan, assignors to Kikkoman Corporation, Noda, Japan

Continuation of Ser. No. 332,978, Apr. 4, 1989, abandoned. This application Aug. 29, 1991, Ser. No. 759,814
Claims priority, application Japan, Apr. 12, 1988, 63-88246
Int. Cl.[5] C12N *9/02, 1/00*
U.S. Cl. 435—189 1 Claim

1. A purified luciferase from *Luciola lateralis* characterized as follows:
(a) action:
said luciferase is a purified enzyme which catalyzes the oxidation of luciferin by an oxygen molecule, as shown by the enzymatic reaction formula: luciferin+ATP+O_2→oxyluciferin+AMP+pyrophosphoric acid+CO_2+light
(b) substrate specificity:
said luciferase does not act on ADP, CTP, UTP and GTP;
(c) optimum pH, and pH range for luciferase stability:
the optimum pH is 7.5 to 9.5 when luciferin is used as a substrate, and the stable pH range is 60 to 10.5;
(d) optimum temperature range for activity:
0° to 50° C.;
(e) conditions of inactivation by pH, temperature;
at pH of 5.0 or lower and 12.0 or higher, said luciferase is completely inactivated when it is exposed to such a condition for four hours,
at pH 7.8, said luciferase is completely inactivated by heat treatment at a temperature of 55° C. for 15 minutes;
(f) thermal stability:
after being treated at a temperature of 40° C. for 15 minutes, said luciferase has a residual enzymatic activity of 78.2%; even after being treated at a temperature of 50° C. for 8 minutes, said luciferase has a residual enzyme activity of 6%.
said purified luciferase having the purity of luciferase purified from *L. lateralis* by:

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dissolving the precipitate formed at 30 to 60% ammonium sulfate saturation from crude *L. lateralis* luciferase enzyme solution in a solution prepared by adding ethylenediaminetetraacetate to 1 mM and ammonium sulfate to 10% to 25 mM tris(hydroxy)aminomethane-hydrochloric acid buffer, pH=7.8;

subjecting said dissolved precipitate solution to gel filtration chromatography and recovering the active fraction;

dialyzing said active fraction against a buffer solution prepared by adding 0.1 M sodium chloride and 10% (V/V) ethylene glycol to a 10 mM sodium hydrogen phosphate-sodium dihydrogenphosphate solution;

absorbing said dialyzed fraction on a hydroxyapatite column equilibrated with 10 mM phosphate buffer; and

collecting the fraction having luciferase activity eluted from said hydroxyapatite column by a linear gradient from 10 to 100 mM phosphate buffer, pH=7.5.

5,352,599

CO-ENZYME-INDEPENDENT L-SORBOSONE DEHYDROGENASE OF GLUCONOBACTER OXYDANS: ISOLATION, CHARACTERIZATION, AND CLONING AND AUTOLOGUS EXPRESSION OF THE GENE

Akiko Fujiwara; Tatsuo Hoshino, both of Kamakura, and Masako Shinjoh, Yokohama, all of Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

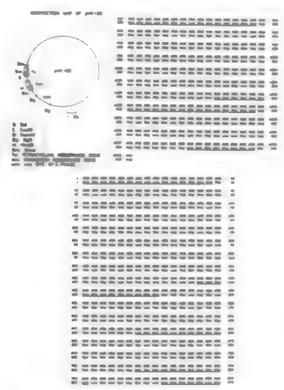
PCT No. PCT/EP89/00010, § 371 Date Jun. 11, 1990, § 102(e) Date Jun. 11, 1990, PCT Pub. No. WO89/06688, PCT Pub. Date Jul. 27, 1989

PCT Filed Jan. 9, 1989, Ser. No. 415,208

Claims priority, application European Pat. Off., Jan. 14, 1988, 88100419.6

Int. Cl.[5] C12N *15/53, 15/63, 15/74*

U.S. Cl. 435—190 **18 Claims**



1. An isolated and purified DNA segment consisting essentially of a region encoding a Gluconobacter, coenzyme independent, L-sorbosone dehydrogenase, said dehydrogenase capable of converting L-sorbosone to 2-keto-L-gulonic acid.

5,352,600

PURIFIED THERMOSTABLE ENZYME

David H. Gelfand, Oakland, and Susanne Stoffel, El Cerrito, both of Calif., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 387,174, Jul. 28, 1989, abandoned, which is a division of Ser. No. 143,441, Jan. 12, 1988, abandoned, which is a continuation-in-part of Ser. No. 63,509, Jun. 17, 1987, Pat. No. 4,889,818, which is a continuation-in-part of Ser. No. 899,241, Aug. 22, 1986, abandoned. This application Nov. 5, 1992, Ser. No. 971,798

The portion of the term of this patent subsequent to Dec. 26, 2006, has been disclaimed.

Int. Cl.[5] C12N *9/12, 15/00, 9/00*

U.S. Cl. 435—194 **4 Claims**

1. A purified thermostable template-dependent DNA polymerase from the species *Thermus aquaticus*, wherein said polymerase is substantially free of contaminating deoxyribonucleases and retains activity at 60° C. to 80° C. for after exposure to a temperature of 90° C. for up to four minutes and has a specific activity of about 200,000 units/mg, wherein one unit corresponds to 10 nmoles of product synthesized on activated salmon sperm DNA in 30 minutes.

5,352,601

METHOD FOR RECOVERING PURIFIED 52,000 DALTON FRACTION OF HUMAN PANCREATIC CHOLESTEROL ESTERASE USING DEAE-CELLULOSE, HYDROXYAPATITE AND HEPARIN-SEPHAROSE

Louis G. Lange, III, 216 S. Kingshighway Blvd., St. Louis, Mo. 63178; Curtis A. Spilburg, St. Louis, and Paula M. Kinnunen, University City, both of Mo., assignors to Louis G. Lange, III, St. Louis, Mo.

Continuation of Ser. No. 655,289, Feb. 14, 1991, abandoned, which is a continuation of Ser. No. 544,212, Jun. 26, 1990, abandoned, which is a continuation of Ser. No. 312,255, Feb. 22, 1989, abandoned, Continuation-in-part of Ser. No. 168,424, Mar. 15, 1988, abandoned. This application Aug. 26, 1992, Ser. No. 936,103

Int. Cl.[5] C12N *9/16;* A61K *37/54*

U.S. Cl. 435—196 **2 Claims**

1. A method for recovering a purified 52,000 dalton molecular weight fraction of a human pancreatic cholesterol esterase comprising passing a solution having a pH of about 8.2 and containing two or more molecular weight fractions of human pancreatic cholesterol esterase including a 52,000 dalton molecular weight fraction over DEAE-cellulose to produce and effluent containing said 52,000 dalton fraction of the esterase, said 52,000 dalton fraction of the esterase not binding to the DEAE-cellulose and the other esterase fractions binding to the DEAE-cellulose, and collecting the 52,000 molecular weight dalton fraction of human pancreatic cholesterol esterase in the effluent.

5,352,602

ISOAMYLASE AND PROCESS FOR PRODUCING THE SAME

Yuzo Yamada; Toshihiro Sato, both of Shizuoka, and Takaichi Ohya, Aichi, all of Japan, assignors to Amano Pharmaceutical Co., Ltd., Aichi, Japan

Filed Mar. 1, 1993, Ser. No. 24,072

Claims priority, application Japan, Feb. 28, 1992, 4-078975

Int. Cl.[5] C12N *9/44;* C12P *19/16*

U.S. Cl. 435—210 **7 Claims**

1. Substantially pure isoamylase produced by cultivating an isoamylase-producing *Xanthomonas maltophilia* strain, said substantially pure isoamylase having the following enzymological and chemical properties:

1) Substrate specificity: actively acts on glycogen, also acts on amylopectin, hardly acts on pullulan,

2) Optimum pH: 3.0 to 5.0,

3) pH Stability: pH 3.5 to 6.0,

4) Optimum Temp.: around 50° C.,

5) Temperature Stability: stable at 45° C. for 10 minutes,

6) Isoelectric point: 6.4, and

7) Molecular weight: about 105,000, as measured by gel-filtration on SUPEROSE 12.

5,352,603

HIGHLY ALKALINE PROTEASES

Roman Vetter, Burgdorf; Detlef Wilke, Wennigsen, both of Fed. Rep. of Germany; Antoine Amory, Rixensart; André Clippe, Brussels, both of Belgium; Dietmar Schomburg, and Wolfgang Aehle, both of Brunswick, Fed. Rep. of Germany, assignors to Kali-Chemie AG, Hanover and Gesellschaft fuer Biotechnologische Forschung mbH, Brunswick, both of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 573,802, Aug. 29, 1990, abandoned. This application Feb. 28, 1991, Ser. No. 661,378

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1989, 3928804; Jul. 24, 1990, 4023458

Int. Cl.[5] C12N *9/54, 9/52;* C11D *7/42, 3/386*

U.S. Cl. 435—221 **16 Claims**

1. Highly alkaline protease, which has an amino-acid sequence having at least 80% sequence similarity with the protease amino-acid sequence illustrated in FIG. 1 (SEQ. ID. NO. 2) commencing at residue number 1 at the 'protease' mark and differing from said FIG. 1 (SEQ. ID. NO. 2) sequence in from one to three of the positions 18, 42, 49, 57, 96, 107, 114, 115, 135, 138, 166, 176, 179, 188, 189, 198, 238, 255, or 266 in FIG. 1 (SEQ. ID. NO. 2), or sequence positions corresponding thereto, in that the amino acid located in the differing position has been replaced by a more strongly basic amino acid selected from the group consisting of lysine and arginine.

5,352,604

ALKALINE PROTEOLYTIC ENZYME AND METHOD OF PRODUCTION

Charles R. Wilson, Santa Rosa; Beth F. Ladin, Benicia, both of Calif.; Jonathan R. Mielenz, Littleton, Colo.; Sherman S. M. Hom, Santa Rosa, Calif.; Dieter Hansen, Langenfeld, Fed. Rep. of Germany; Robert B. Reynolds, St. Louis, Mo.; Nicholas C. T. Kennedy, Duesseldorf, Fed. Rep. of Germany; Joachim Schindler, Hilden, Fed. Rep. of Germany; Michael Bahn, Düsseldorf, Fed. Rep. of Germany; Rolf Schmid, Wolfenbuettel, Fed. Rep. of Germany; Martina Markgraf, Dusseldorf, Fed. Rep. of Germany; Christian Paech, Santa Rosa, Calif., and Karlheinz Maurer, Erkrath, Fed. Rep. of Germany, assignors to Henkel Research Corporation, Santa Rosa, Calif.

Continuation of Ser. No. 398,854, Aug. 25, 1989, abandoned. This application Mar. 10, 1993, Ser. No. 33,080

Int. Cl.[5] C12N *9/54, 15/00, 15/31, 15/74*

U.S. Cl. 435—221 **4 Claims**



1. A composition comprising a mature alkaline proteolytic enzyme from *Bacillus lenius* DSM 5483 and at least one other proteolytic enzyme from *Bacillus licheniformis* ATCC 53926, wherein the amino acid residues of said enzyme from *Bacillus lentus* DSM 5483 at positions 208, 210, 212, 213 and 268 are identical with those of FIG. 1 and wherein the remaining amino acid residues of said enzyme share no less than 95% homology therewith, and with at least one other mature protease of Bacillus.

5,352,605

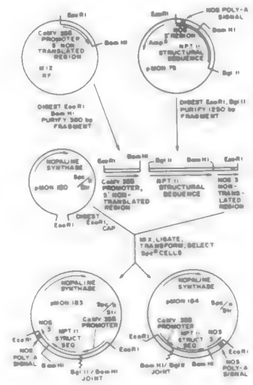
CHIMERIC GENES FOR TRANSFORMING PLANT CELLS USING VIRAL PROMOTERS

Robert T. Fraley, Ballwin; Robert B. Horsch, and Stephen G. Rogers, both of St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 625,637, Dec. 7, 1990, abandoned, which is a continuation of Ser. No. 931,492, Nov. 17, 1986, abandoned, which is a continuation-in-part of Ser. No. 485,568, Apr. 15, 1983, abandoned, which is a continuation-in-part of Ser. No. 458,414, Jan. 17, 1983, abandoned. This application Oct. 28, 1993, Ser. No. 146,621

Int. Cl.[5] C12N *5/00, 15/00;* C07H *21/04*

U.S. Cl. 435—240.4 **19 Claims**



4. A plant cell which comprises a chimeric gene that contains a promoter from cauliflower mosaic virus, said promoter selected from the group consisting of a CaMV (35S) promoter and a CaMV (19S) promoter, wherein said promoter is isolated from CaMV protein-encoding DNA sequences, and a structural sequence which is heterologous with respect to the promoter.

5,352,606

FREEZE RESISTANT BAKERS' YEAST

Hiroyuki Takano; Akihiro Hino, both of Tsukuba; Hisanori Endo, Mishima; Nobuaki Nakagawa, Tagata, and Akio Sato, Mishima, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 757,692, Sep. 11, 1991, abandoned, which is a continuation of Ser. No. 491,248, Mar. 8, 1990, abandoned. This application Dec. 17, 1991, Ser. No.

Claims priority, application Japan, Mar. 14, 1989, 1-59638

Int. Cl.[5] C12N *1/18, 15/04;* A23L *1/105*

U.S. Cl. 435—255.2 **9 Claims**

1. A diploid hybrid yeast strain produced by the process comprising the following steps:

(1) germinating the spores of:

(a) a first diploid strain of *Saccharomyces cerevisiae* which has a non-freeze fermentative ability on non-sugar dough of at least 140 ml, and

(b) a second diploid strain of *Saccharomyces cerevisiae*

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which has a residual fermentative ability rate on non-sugar dough of at least 80%;

(2) recovering haploid yeast strains from said germinated first and second diploid strains, respectively; and

(3) conjugating said haploid yeast strains to provide a diploid hybrid yeast strain having a non-freeze fermentative ability on non-sugar dough of at least 140 ml and a residual fermentative ability rate, using non-sugar dough, of at least 80%, wherein said diploid hybrid yeast strain is a biologically pure culture of *Saccharomyces cerevisiae* having all the identifying characteristics of FTY-3 (FERM BP-2326).

5,352,607

MOLECULAR CLONE OF A CHITINASE GENE FROM VIBRIO PARAHEMOLYTICUS

Roger A. Laine, Baton Rouge, La.; Chin-Yih Ou, Dunwoody, Ga., and Jesse M. Jaynes, Baton Rouge, La., assignors to Louisiana State University and Agricultural College, Baton Rouge, La.

Continuation of Ser. No. 620,909, Dec. 3, 1990, abandoned, which is a continuation of Ser. No. 53,029, May 22, 1987, abandoned. This application Apr. 29, 1992, Ser. No. 876,894

Int. Cl.[5] C12N *1/21, 15/31, 15/52, 15/70*

U.S. Cl. 435—252.33 **8 Claims**

1. A composite DNA molecule comprising:

(a) a fragment of cleaved *Vibrio parahemolyticus* DNA from pC139 containing a chitinase gene which expresses a chitinase of approximately 95 Kd or a fragment of said gene which produces an active chitinase; and

(b) a vector ligated to said fragment wherein said vector is a plasmid or phage.

5,352,608

BIOREDUCTION OF METAL OXIDES AND OXYANIONS BY PHOTOSYNTHETIC BACTERIA

Samuel Kaplan, Kingwood, and Mark D. Moore, Houston, both of Tex., assignors to The Board of Regents, The University of Texas, Austin, Tex.

Filed Jan. 13, 1992, Ser. No. 820,116

Int. Cl.[5] B09B *3/00;* **C12S** *13/00;* **C01B** *19/02;* **C22B** *5/00*

U.S. Cl. 435—262 **26 Claims**

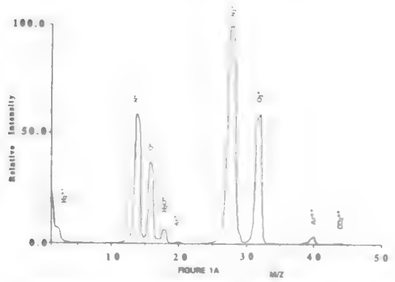


FIGURE 1A

1. A method for the reduction of a metal oxide or oxyanion, comprising contacting the metal oxide or oxyanion with a culture of photosynthetic Proteobacterium selected from a group consisting of Rhodobacter and Rhodopseudomonas in an aqueous medium under conditions facilitating reduction of the metal oxide or oxyanion by said Proteobacterium.

5,352,609

CARTRIDGE, APPARATUS, AND METHOD FOR PREPARING PURIFIED NUCLEIC ACIDS FROM A CELL SAMPLE

Jean Boquet, Le-Perray-en-Yvelines, France, assignor to Bertin & Cie, Plaisir Cedex, France

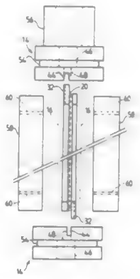
PCT No. PCT/FR92/00646, § 371 Date Feb. 23, 1993, § 102(e) Date Feb. 23, 1993, PCT Pub. No. WO93/01312, PCT Pub. Date Jan. 21, 1993

PCT Filed Jul. 6, 1992, Ser. No. 977,427

Claims priority, application France, Jul. 9, 1991, 91 08579

Int. Cl.[5] B01D *63/00;* **C12Q** *1/68;* **C12N** *1/06, 1/08*

U.S. Cl. 435—270 **15 Claims**



12. A method of preparing purified nucleic acids from cells, by lysis of the cell nuclei, by degrading proteins, and by purifying the nucleic acids by dialysis, comprising:

a step of fixing the nuclei on a filter placed in a dialysis enclosure;

a step of in situ lysis of the nuclei fixed on the filter, and including degradation of proteins and nucleic acids other than looked-for nucleic acids; and

a final step of in situ dialysis to eliminate from said enclosure any constituents other than the looked-for nucleic acids.

5,352,610

TUBULAR MEMBRANE ASSEMBLY

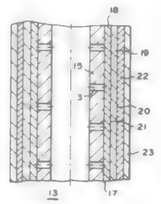
Hans-Juergen Braeutigam, Marmstorferweg 74, DE-2100 Hamburg 90, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 466,344, Mar. 22, 1990, abandoned. This application Dec. 3, 1991, Ser. No. 800,479

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1990, 4038514

Int. Cl.[5] C12M *3/06;* **B01D** *63/06*

U.S. Cl. 435—284 **7 Claims**



1. Membrane assembly of a generally cylindrical configuration, for gas exchange in a liquid for working of biotechnological processes, comprising a dimensionally stable, hollow cylinder having a cylindrical wall with perforations and a tubular silicone membrane having an annular wall wherein the dimensionally stable, hollow cylinder is mounted within the annular wall of the tubular silicone membrane with the annular wall of the tubular silicone membrane covering said perforations, and

wherein the annular wall of said silicone membrane is surrounded by a mechanical fabric reinforcement which is in overlying relationship thereto.

5,352,611

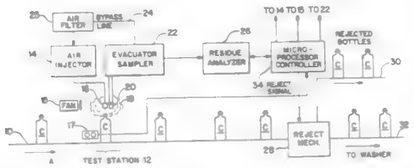
METHOD AND SYSTEM FOR SAMPLING AND DETERMINING THE PRESENCE OF COMPOUNDS IN CONTAINERS

David H. Fine, Sudbury; Freeman W. Fraim, Lexington, both of Mass.; Stephen J. MacDonald, Salem, N.H., and Kenneth M. Thrash, Jr., Decatur, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Jun. 1, 1992, Ser. No. 890,863

Int. Cl.[5] G01N *21/90, 21/76, 35/02*

U.S. Cl. 436—43 **52 Claims**



1. A method of sampling and determining the presence of certain substances in a container comprising the steps of:

injecting fluid into an opening in said container in order to displace at least a portion of the contents thereof to form a sample cloud at a region outside of the container adjacent the opening thereof;

evacuating a sample of said portion of the container contents so displaced by applying suction to the sample cloud in said region outside of the container; and

analyzing the sample evacuated to determine the presence or absence of the certain substances therein.

5,352,612

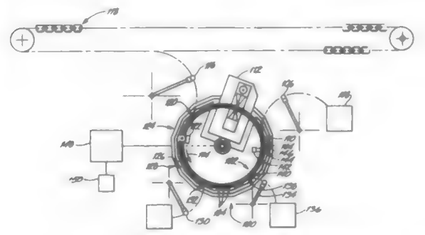
METHOD AND APPARATUS FOR THE STEPWISE MOVEMENT OF ITEMS

Michael D. Huber, San Juan Capistrano; Stephen L. Frye, and John C. Mazza, both of El Toro, all of Calif., assignors to Baxter Diagnostics Inc., Deerfield, Ill.

Filed Feb. 9, 1993, Ser. No. 15,120

Int. Cl.[5] G06F *15/46*

U.S. Cl. 436—47 **20 Claims**



1. A sample analyzer for analyzing a plurality of samples, the analyzer comprising:

a movable sample support for holding M samples arranged in M sample holders in a sequence for movement in a first direction, said samples being arranged in g groups with n samples in each group so that M equals the product of g and n;

an indexing drive means for moving the samples in sample support in the first direction as a sequence of primary shifts and, for n>1, secondary shifts, in which:

each primary shift is a net movement of the sample support in the first direction by P sample holder positions from a current sample group;

each secondary shift is a net movement of the sample support within the current sample group;

the values P and M are relatively prime, that is, they have no factors in common other than unity;

the greatest common factor between the value (P+n−1) and M is n;

whereby each of the g groups is the current group once before the sample support returns to an initial position.

5,352,613

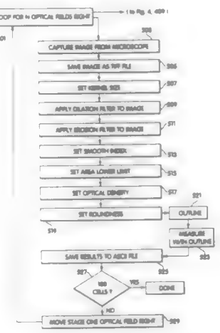
CYTOLOGICAL SCREENING METHOD

Triantafillos P. Tafas, 24 Bouboulinas Street, Ag. Paraskevi, Athens, Greece 15341 , and Petros Tsipouras, 10 Lilac La., Farmington, Conn. 06032

Filed Oct. 7, 1993, Ser. No. 132,804

Int. Cl.[5] G01N *21/59, 33/50*

U.S. Cl. 436—63 **8 Claims**



1. A method for determining the level of a target substance in a plurality of cells from a cell-containing sample, the method comprising the steps of: treating the plurality of cells to make a presence of the target substance optically detectable;

placing the plurality of cells in an optical path of an image detector;

obtaining an image of an optical field including at least one cell as an array of points having optical density values;

filtering the obtained image to moderate optical density values of those points in the image having extreme optical density values;

selecting image objects within the filtered image conforming to a defined parameter set; and

calculating the average optical density of those points which are within the selected image objects taking into account a background optical density.

5,352,614

METHOD OF MANUFACTURING A THIN FILM SEMICONDUCTOR DEVICE

Masato Yamanobe, Machida, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 857,826, Mar. 26, 1992, Pat. No. 5,184,200. This application Oct. 29, 1992, Ser. No. 968,536

Claims priority, application Japan, Mar. 27, 1991, 3-85752

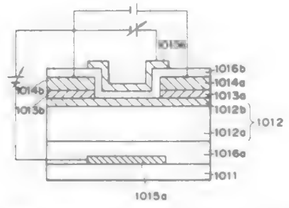
Int. Cl.[5] H01L *31.18*

U.S. Cl. 437—4 **8 Claims**

1. A method of manufacturing a semiconductor device comprising at lest an insulting layer, a semiconductor layer pro-

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vided in contact with said insulating layer, first and second electrodes provided in contact with said semiconductor layer, and a third electrode provided on said insulating layer, wherein said semiconductor layer has a crystalline layer whose average grain diameter lies within a range from 50 to 350 Å and an amorphous layer, and



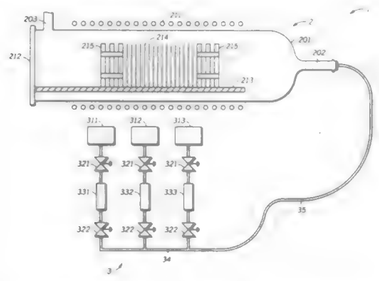
wherein said crystalline layer is formed by alternately executing steps of (a) depositing a non-monocrystalline layer and (b) irradiating the deposited non-monocrystalline layer with a hydrogen plasma.

5,352,615

DENUDING A SEMICONDUCTOR SUBSTRATE

Young Limb, and Philip J. Tobin, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 24, 1994, Ser. No. 185,351
Int. Cl.[5] H01L *21/306*
U.S. Cl. 437—13 **18 Claims**



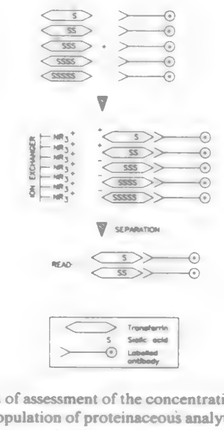
1. A process for forming a denuded zone within a semiconductor substrate comprising the steps of:
providing the semiconductor substrate having a primary surface and an oxygen concentration in a region adjacent to the primary surface;
heating the substrate to a first elevated temperature in a reducing ambient that includes carbon-containing molecules to lower the oxygen concentration within the region.

5,352,616

ANALYTE VARIANT ANALYSIS

Erling Sundrehagen, Oslo, Norway, assignor to Axis Biochemicals AS, Oslo, Norway

PCT No. PCT/EP91/01145, § 371 Date Feb. 19, 1993, § 102(e) Date Feb. 19, 1993, PCT Pub. No. WO91/19993, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 20, 1991, Ser. No. 958,326
Claims priority, application United Kingdom, Jun. 21, 1990, 9013895; Jan. 30, 1991, 9102024
Int. Cl.[5] G01N *33/53, 33/564*
U.S. Cl. 436—501 **15 Claims**



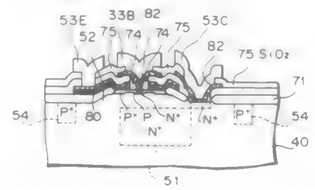
1. A method of assessment of the concentration of a subset of variants in a population of proteinaceous analyte variants capable of separation by a fractionation system, wherein said population of variants is contacted with a population of labelled proteinaceous specific binding partners therefor to form labelled binding partner-analyte complexes therewith, which are then subjected to separation by the said fractionation system into one or more fractions containing said subset of analyte variants in complexed form and assessment of the amount of label in one or more fractions so obtained, the said population of specific binding partners having, prior to reaction, substantially uniform distribution or mobility in said fractionation system, wherein said fractionation system is not SDS-PAGE.

5,352,617

METHOD FOR MANUFACTURING BI-CMOS TRANSISTOR DEVICES

Hiroyuki Miwa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 26, 1993, Ser. No. 51,520
Claims priority, application Japan, Apr. 27, 1992, 4-134300; May 27, 1992, 4-160267
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—34 **8 Claims**



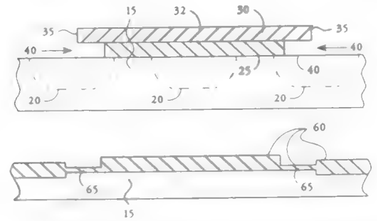
1. A method of manufacturing a semiconductor device having a bipolar transistor and a MOS transistor comprising the steps of:
covering the bipolar transistor formation region with a gate insulating film and also with a first gate formation material at the time of the MOS transistor gate formation;
removing the first gate formation material and gate insulating film covering at least a portion of said bipolar transistor formation region, thus forming an opening in said gate insulating film and first gate formation material;
forming a second gate formation material;
removing other portions of said first and second gate formation materials on said bipolar transistor formation region and the MOS transistor gate formation region;
forming an inter-layer insulating film; and
removing the inter-layer insulating film and first and second gate formation materials on at least a portion of the bipolar transistor formation region, thus forming a second opening in said first-mentioned opening in said inter-layer insulating film and first and second gate formation materials.

5,352,618

METHOD FOR FORMING THIN TUNNELING WINDOWS IN EEPROMS

Bradley J. Larsen, Woodland Park, and Donald A. Erickson, Colorado Springs, both of Colo., assignors to Atmel Corporation, San Jose, Calif.

Filed Jul. 30, 1993, Ser. No. 100,467
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—43 **11 Claims**



1. A method for forming a dielectric tunneling window in an EEPROM device comprising:
patterning an oxide layer over a substrate by photolithography, edges of the oxide layer defining the sides of an EEPROM tunneling window,
masking said window with an etchable mask,
etching under the mask a distance so that at least two sides of said window are spaced apart by a distance less than that resolvable with photolithography,
forming an oxide layer surrounding the tunneling window, to form a window oxide in said EEPROM tunneling window
removing said mask material,
thinning all remaining oxide, including the window oxide, to the extent that the window oxide is removed, and
growing a layer of oxide over the substrate.

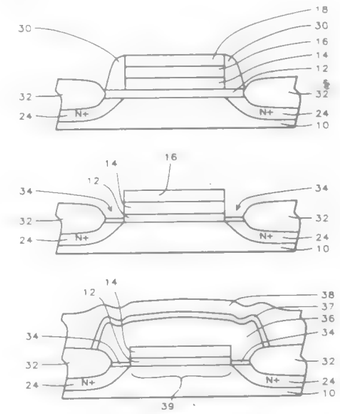
5,352,619

METHOD FOR IMPROVING ERASE CHARACTERISTICS AND COUPLING RATIOS OF BURIED BIT LINE FLASH EPROM DEVICES

Gary Hong, Hsinchu, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Jul. 22, 1993, Ser. No. 94,746
Int. Cl.[5] H01L *21/266*
U.S. Cl. 437—43 **24 Claims**

1. The method of forming a contactless memory cell wherein said memory cell has a consistent controllable tunnel oxide near the source/drain edge comprising:
providing a thick gate oxide layer of between about 150 to 500 Angstroms on a semiconductor substrate;
depositing a first polysilicon layer overlying said thick gate oxide layer;
depositing a silicon nitride layer overlying said first polysilicon layer;
depositing a silicon oxide layer overlying said silicon nitride layer;
patterning and etching said silicon oxide, silicon nitride, and first polysilicon layers;
implanting ions through said thick gate oxide layer into said substrate to form buried bit lines within said substrate wherein said buried bit lines act as source and drain regions;
depositing a second layer of silicon nitride over said patterned silicon oxide, silicon nitride, and first polysilicon layers and anisotropically etching said second silicon nitride layer to form spacers on the sidewalls of said patterned silicon oxide, silicon nitride, and first polysilicon layers overlying the edges of said source and drain buried bit lines;



growing an oxide layer on the surfaces of said substrate over said buried bit line regions;
removing said silicon nitride spacers whereby the portion of said thick gate oxide underlying said spacers is exposed;
removing said silicon oxide layer and said exposed portion of said thick gate oxide whereby said substrate is exposed in the areas underlying said removed portion of said thick gate oxide;
regrowing a tunnel oxide on said exposed areas of said substrate wherein said tunnel oxide has a consistent and controllable thickness and wherein said tunnel oxide is grown at said source and drain edges;
removing said silicon nitride layer;
depositing a second layer of polysilicon overlying said first polysilicon layer;
patterning said second layer of polysilicon to form a floating gate wherein said second polysilicon layer is patterned such that the edges of said floating gate overlie said oxide layer;
depositing an interpoly dielectric layer over said patterned second polysilicon layer; and
depositing and patterning a third layer of polysilicon to form the control gate of the completed memory cell.

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5,352,620
METHOD OF MAKING SEMICONDUCTOR DEVICE WITH MEMORY CELLS AND PERIPHERAL TRANSISTORS

Kazuhiro Komori, Kodaira; Kenichi Kuroda, Tachikawa, both of Japan, and June Sugiura, Troy, N.Y., assignors to Hitachi, Ltd., Chiyoda, Japan

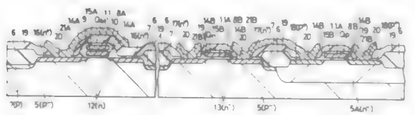
Continuation of Ser. No. 990,763, Dec. 15, 1992, abandoned, which is a division of Ser. No. 781,592, Oct. 23, 1991, Pat. No. 5,194,924, which is a division of Ser. No. 479,151, Mar. 28, 1990, Pat. No. 5,098,855, which is a division of Ser. No. 291,647, Dec. 19, 1988, Pat. No. 4,918,501, which is a continuation of Ser. No. 10,998, Feb. 5, 1987, abandoned, which is a division of Ser. No. 736,770, May 22, 1985, Pat. No. 4,663,645. This application Jun. 2, 1993, Ser. No. 71,343

Claims priority, application Japan, May 23, 1984, 59-102555; Aug. 13, 1984, 59-167825

The portion of the term of this patent subsequent to Jun. 2, 2010, has been disclaimed.

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **14 Claims**



1. A method of manufacturing a semiconductor device, said semiconductor device comprising a first MISFET for a memory cell and a second MISFET for a peripheral circuit, said method comprising the steps of:

providing a semiconductor substrate having a memory cell forming region and a peripheral circuit forming region, floating and control gate electrodes of said first MISFET being provided over said memory cell forming region, said control gate electrode being positioned over said floating gate electrode, and a first gate electrode of said second MISFET being provided over said peripheral circuit forming region;

introducing a first impurity into said memory cell forming region, in self-alignment with both end portions of said floating gate electrode, for forming first regions of a first conductivity type;

introducing a second impurity into said peripheral circuit forming region, in self-alignment with both end portions of said first gate electrode, for forming second regions of said first conductivity type, wherein an impurity concentration of said first regions is higher than that of said second regions;

after the steps of introducing first and second impurities, forming first side wall spacers on both side surfaces of said control and floating gate electrodes, in self-alignment with said control and floating gate electrodes, and second side wall spacers on both side surfaces of said first gate electrode, in self-alignment with said first gate electrode; and

introducing a third impurity into both said memory cell forming region and said peripheral circuit forming region, in self-alignment with said first and second side wall spacers, for forming third regions of said first conductivity type in said memory cell forming region and fourth regions of said first conductivity type in said peripheral circuit forming region, wherein an impurity concentration of said third regions is higher than that of said first regions, and wherein an impurity concentration of said fourth regions is higher than that of said second regions.

5,352,621
METHOD FOR MANUFACTURING AN INTERNALLY SHIELDED DYNAMIC RANDOM ACCESS MEMORY CELL

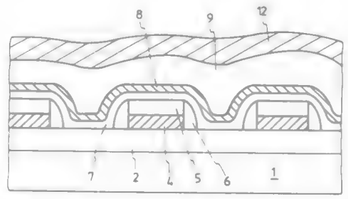
Jae-Kap Kim, and In-Sool Chung, both of Kyoungki-do, Rep. of Korea, assignors to Hyundai Electronics Industries Co. Ltd, Kyoungki-Do, Rep. of Korea

Filed Apr. 14, 1993, Ser. No. 46,201

Claims priority, application Rep. of Korea, Apr. 17, 1992, 92-6456

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **6 Claims**



1. A method for manufacturing an internally shielded Dynamic Random Access Memory cell comprising the steps of:

forming vertically a word line conductively isolated from a silicon substrate;

forming a first insulating layer on said word line;

forming an electrically conducting layer used for preventing the capacitive coupling of said word line and a bit line on said first insulating layer, said conducting layer being conductively isolated from said word line;

forming a second insulating layer used for forming an even surface on said conducting layer;

forming horizontally said bit line conductively isolated from said conducting layer and electrically coupled to a section of said silicon substrate the conductivity of which depends upon a voltage applied to said word line; and

forming a storage electrode electrically coupled to said section of said silicon substrate, said storage electrode being conductively isolated from said conducting layer.

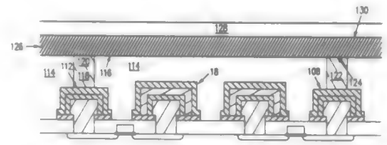
5,352,622
STACKED CAPACITOR WITH A THIN FILM CERAMIC OXIDE LAYER

Henry W. Chung, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 865,337, Apr. 8, 1992, abandoned. This application Sep. 2, 1993, Ser. No. 116,222

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **16 Claims**



1. A method of fabricating a thin-film ceramic oxide stacked capacitor on an underlying semiconductor substrate, the method comprising the steps of:

forming a layer of insulating material on the semiconductor substrate;

forming an opening in the layer of insulating material to expose a surface region of the semiconductor substrate;

forming a pillar of an electrically conductive material within the opening such that a bottom surface of the pillar is in electrical contact with the surface region of the semiconductor substrate and an exposed sidewall surface of the pillar extends above a top surface of the layer of insulating material, the pillar having a top portion of a lower electrode formed thereon;

forming a side portion of the lower electrode on the exposed sidewall surface of the pillar;

forming a temporary layer on a surface of the lower electrode;

forming a layer of molding material around the temporary layer;

removing the temporary layer so that an insulating mold is formed for a subsequent thin-film layer of ceramic oxide;

forming the thin-film layer of ceramic oxide on the lower electrode and in the mold;

forming an upper electrode on the thin-film layer of ceramic oxide, whereby the upper electrode functions as one plate of the thin-film ceramic oxide stacked capacitor, the thin-film layer of ceramic oxide functions as a dielectric, and the lower electrode functions as the other plate of the thin-film ceramic oxide stacked capacitor.

5,352,623
METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

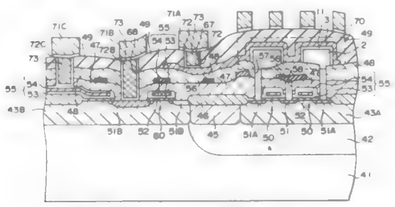
Satoshi Kamiyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 15, 1994, Ser. No. 196,486

Claims priority, application Japan, Feb. 17, 1993, 5-027061

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **11 Claims**



1. A method for manufacturing a semiconductor device including steps of: forming a polysilicon film on an insulating film overlying a substrate; removing any natural oxide film from the surface of said polysilicon film; after said removing, nitriding the surface of said polysilicon film by lamp-heating to form a silicon nitride film; forming a tantalum oxide film on said silicon nitride film; densifying and nitriding consecutively said tantalum oxide film; after said densifying and nitriding, forming a conductive film on said tantalum oxide film.

5,352,624
SOI TYPE SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD THEREFOR

Hiroyuki Miwa, and Norikazu Ouchi, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 7,232

Claims priority, application Japan, Jan. 23, 1992, 4-034402; Jan. 23, 1992, 4-034403; Feb. 4, 1992, 4-047881; Mar. 30, 1992, 4-103738

Int. Cl.[5] H01L *21/86*

U.S. Cl. 437—63 **13 Claims**

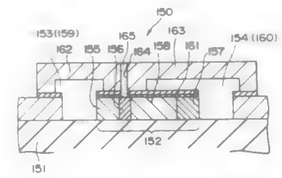
1. A manufacturing method for a lateral bipolar transistors comprising:

the first step of forming a transistor forming region on an upper surface of an insulating substrate;

the second step of forming a first insulating film on an upper surface of said transistor forming region;

the third step of forming a first impurity diffusing region on one side of said transistor forming region; and

the fourth step of introducing a second conduction type of impurity into said first impurity diffusing region, then introducing a first conduction type of impurity into said first impurity diffusing region, then diffusing said second conduction type of impurity from said first impurity diffusing region into a first portion of said transistor forming region near said first impurity diffusing region to form a



base region in said first portion, and simultaneously diffusing said first conduction type of impurity from said first impurity diffusing region into a second portion of said transistor forming region between said first portion and said first impurity diffusing region to form an emitter region in said second portion.

5,352,625
METHOD OF MANUFACTURING SEMICONDUCTOR SUBSTRATE

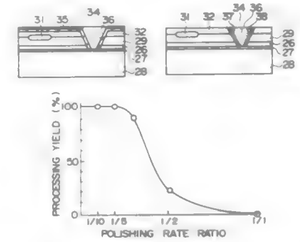
Tadahide Hoshi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 29, 1991, Ser. No. 800,074

Claims priority, application Japan, Nov. 30, 1990, 2-336706

Int. Cl.[5] H01L *21/76*

U.S. Cl. 437—67 **3 Claims**



1. A method of manufacturing a semiconductor substrate comprising:

a first step of bonding first and second semiconductor substrates to each other so that a first dielectric film formed on at least one surface of one of said semiconductor substrates is placed between said semiconductor substrates,

a second step of polishing the exposed surface of said bonded first semiconductor substrate to decrease the thickness of said first semiconductor substrate and form a first semiconductor layer having a thickness,

a third step of forming a second semiconductor layer of a thickness on said first semiconductor layer by epitaxial growth,

a fourth step of forming, in said first and second semiconductor layers, a groove having a depth extending from the upper surface of said second semiconductor layer to said first dielectric film,

a fifth step of forming a second dielectric film on the side surfaces of said groove and on the upper surface of said second semiconductor layer,

a sixth step of depositing filler material into said groove to fill said groove and further depositing said filler material on said second dielectric film to form a filler film thereon,

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a seventh step of grinding said filler film on said second dielectric film to reduce the thickness of said filler film to a thickness,

an eighth step of mechano-chemical polishing said filler film on said second dielectric film, wherein the ratio between the polishing rate for said second dielectric film and the polishing rate for said filler film is less than 1/5, to remove said filler film on said second dielectric film and allow said second dielectric film on said second semiconductor layer to be exposed, and

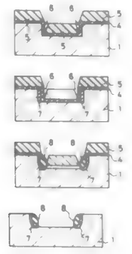
a ninth step of removing said second dielectric film on said second semiconductor layer exposed at said eighth step.

5,352,626

METHOD FOR MAKING A SEMICONDUCTOR DEVICE HAVING AN ISOLATED LAYER REGION ON THE SIDE WALL OF A GROOVE

Takashi Hosaka, Tokyo, Japan, assignor to Seiko Instruments Inc., Tokyo, Japan

Division of Ser. No. 978,461, Nov. 19, 1992, Pat. No. 5,293,061, which is a continuation of Ser. No. 678,874, Apr. 4, 1991, abandoned. This application Nov. 17, 1993, Ser. No. 153,906
Claims priority, application Japan, Apr. 9, 1990, 2-94773
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—67 **2 Claims**



1. A method for making a semiconductor device in a semiconductor substrate having a surface, the device including an isolation layer region formed on a side wall of a groove provided in a portion of the surface of the semiconductor substrate and at least two separate active regions isolated from one another by the isolation layer region, said method comprising the steps of:

forming a pattern of photoresist on said semiconductor substrate surface such that a portion of the surface is exposed;

forming a groove in said substrate at the exposed portion so that the groove has side walls which form an angle with the substrate surface;

removing the photoresist, forming a thin insulation film on the substrate surface and in the groove, and depositing a silicon nitride film on the thin insulation film;

removing the silicon nitride film from the side walls of the groove thereby leaving remaining portions of the silicon nitride film;

forming an inversion protection layer by introducing impurities into the side walls from which the silicon nitride film has been removed;

forming insulation films constituting isolation layer regions on the side walls from which the silicon nitride film has been removed by oxidizing said semiconductor substrate;

removing the remaining portions of the silicon nitride film and the thin insulating film; and

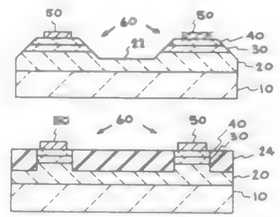
forming impurity diffusion regions constituting separate active regions in portions of the substrate separated by an isolation layer region.

5,352,627

MONOLITHIC HIGH VOLTAGE NONLINEAR TRANSMISSION LINE FABRICATION PROCESS

Gregory A. Cooper, 346 Primrose Dr., Pleasant Hill, Calif. 94523

Filed May 10, 1993, Ser. No. 58,369
Int. Cl.[5] H01L *21/203*
U.S. Cl. 437—105 **24 Claims**



1. A process for fabricating a monolithic, high voltage, nonlinear transmission line, comprising the steps of:

a. epitaxially growing a low doped, active, n-type layer on a heavily doped, n-plus-type substrate;

b. epitaxially growing a heavily doped, p-type layer on said low doped, active, n-type layer;

c. epitaxially growing a heavily doped, n-type layer on said heavily doped, p-type layer;

d. making ohmic contacts on said heavily doped, n-type layer, thereby forming a laminated varactor diode;

e. deactivating a designated volume of portions of each said heavily doped n-type and p-type layers and said low doped, active, n-type layer in a manner to leave independent and electrically isolated islands of laminated varactor diodes with a remaining portion of said low doped, active, n-type layer in common;

f. depositing a nonactive and nonconductive layer within and upon said designated volume enclosing said deactivated n- and p-type layers, exclusive of the volumes above said ohmic contacts; and

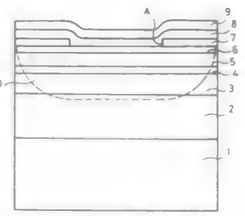
g. depositing a conductive layer on said nonconductive layer including and filling said volumes above said ohmic contacts.

5,352,628

METHOD OF FORMING DIFFUSION REGION OF SEMICONDUCTOR DEVICE BY SOLID PHASE DIFFUSION

Shinji Funaba, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1993, Ser. No. 19,873
Claims priority, application Japan, Feb. 20, 1992, 4-033355
Int. Cl.[5] H01L *21/225*
U.S. Cl. 437—161 **17 Claims**



1. A method of forming a diffusion region of a semiconductor device by solid phase diffusion comprising the steps of:

epitaxially growing on a semiconductor substrate a plurality of semiconductor epitaxial layers sufficient for forming a semiconductor device;

epitaxially growing at least one additional semiconductor layer on an uppermost one of the plurality of semiconductor epitaxial layers sufficient for forming a semiconductor device, said additional semiconductor layer not being essential for the operation of the semiconductor device and having a thermal expansion coefficient different from the thermal expansion coefficient of the uppermost semiconductor epitaxial layer by no more of the uppermost semiconductor epitaxial layer by no more than 3×10^{-6}/°C.;

placing a first solid phase diffusion source material on the additional semiconductor layer;

heat treating the structure including the plurality of semiconductor epitaxial layers, the additional semiconductor layer, and the first solid phase diffusion source material to diffuse the first solid phase diffusion source material through the additional semiconductor layer and into the plurality of semiconductor epitaxial layers to a desired depth; and

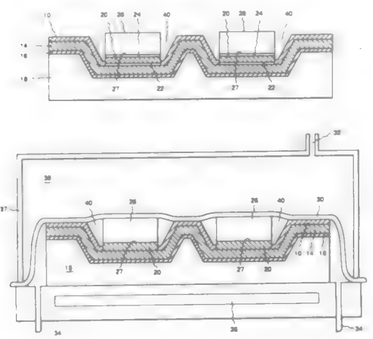
removing at least part of the additional semiconductor layer and the first solid phase diffusion material.

5,352,629

PROCESS FOR SELF-ALIGNMENT AND PLANARIZATION OF SEMICONDUCTOR CHIPS ATTACHED BY SOLDER DIE ADHESIVE TO MULTI-CHIP MODULES

Kyung W. Paik, Clifton Park; William A. Hennessy, Niskayuna, and Wolfgang Daum, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 19, 1993, Ser. No. 6,297
Int. Cl.[5] H01L *21/52, 21/56, 21/603*
U.S. Cl. 437—189 **12 Claims**



1. A method for attaching at least one semiconductor chip, with an electrical conductor disposed on an underside of each of said at least one chip, to a substrate having a surface, to cause self-alignment and PLANARIZATION of said at least one chip, comprising:

providing on said substrate surface an inner layer of electrical conductor having solder wettability;

providing on said inner layer an outer layer of electrical conductor having solder nonwettability and having at least one window therein exposing said inner layer, said at least one window having a length and width substantially equal to an associated length and width of said at least one chip;

placing a solder preform on each respective one of said at least one window;

placing a chip on each respective one of said solder preforms;

placing said substrate into a structure capable of applying isostatic pressure;

overlaying said substrate and said at least one chip with a dielectric film layer;

applying pressure over said dielectric film layer; and subsequently

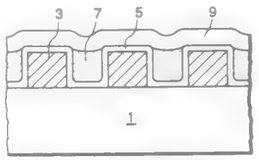
heating said substrate above the melting point of said solder preforms to align each of said at least one chip within said at least one window, and substantially simultaneously to planarize said at least one chip with respect to said surface.

5,352,630

METHOD FOR FORMING INTER-METAL DIELECTRICS IN A SEMICONDUCTOR DEVICE

Chang-Gyu Kim, Kyungki, and Ji-Hyun Choi, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Oct. 2, 1992, Ser. No. 956,853
Claims priority, application Rep. of Korea, Oct. 10, 1991, 1991-17740
Int. Cl.[5] H01L *21/44, 21/48*
U.S. Cl. 437—195 **11 Claims**



1. A method for forming a planarized dielectric layer on a structure comprised of a semiconductor substrate and a patterned conductive layer formed thereon, whereby the topology of the structure consists of raised surface features defining recesses therebetween, the method comprising the steps of:

forming a first insulating layer on said structure;

forming a second insulating layer on said first insulating layer;

etching back said second insulating layer to remove portions of said second insulating layer disposed on said first insulating layer and above said raised surface features, but without removing any of said first insulating layer, to thereby expose portions of said first insulating layer disposed on said raised surface features and to leave remaining portions of said second insulating layer in said recesses; and,

depositing a third insulating layer on said exposed portions of said first insulating layer at a first deposition rate, and depositing said third insulating layer within said recesses at a second deposition rate, wherein the difference between said first and second deposition rates is such as to result in the upper surface of said third insulating layer having a substantially flat profile.

5,352,631

METHOD FOR FORMING A TRANSISTOR HAVING SILICIDED REGIONS

Arkalgud R. Sitaram, and James R. Pfiester, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 16, 1992, Ser. No. 991,801
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—200 **20 Claims**

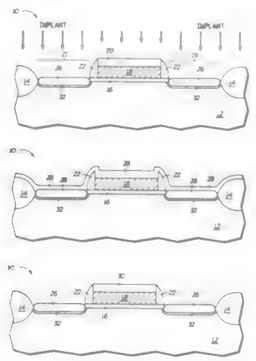
1. A method for forming a transistor comprising the steps of:

providing a substrate;

forming a control electrode overlying the substrate, the

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control electrode having a top portion made of a dielectric material which functions as a masking layer;
forming a sidewall spacer laterally adjacent the control electrode;
forming a source region and a drain region within the substrate and adjacent the control electrode;
forming a first silicided region over the source and the drain regions;



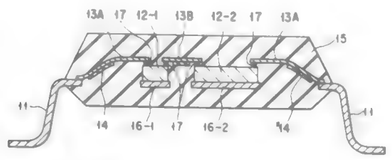
removing the top portion of the control electrode which functions as a masking layer selective to the sidewall spacer to form an exposed portion of the control electrode; and
forming a second silicided region over the exposed portion of the control electrode.

5,352,632

MULTICHIP PACKAGED SEMICONDUCTOR DEVICE AND METHOD FOR MANUFACTURING THE SAME

Hiromichi Sawaya, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 829,388, Feb. 3, 1992, Pat. No. 5,245,215. This application May 17, 1993, Ser. No. 62,013
Claims priority, application Japan, Feb. 8, 1991, 3-018027; Jan. 11, 1992, 4-021857
Int. Cl.[5] H01L *21/60*
U.S. Cl. 437—209 **8 Claims**



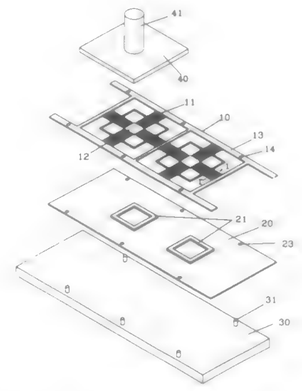
1. A semiconductor device manufacturing method comprising:
a first step of mounting a plurality of semiconductor chips on at least one island formed on a lead frame;
a second step of disposing a flexible resin tape on said lead frame, said resin tape having a plurality of device holes formed in positions corresponding to mounting positions of said semiconductor chips and also having a wiring pattern for electrically connecting an inner lead portion of the lead frame to electrode pads of the semiconductor chips;
a third step of connecting one end of said wiring pattern formed on said flexible resin tape to the electrode pads formed on said plurality of semiconductor chips; and
a fourth step of connecting the another of said wiring pattern formed on said flexible resin tape to an inner lead section of said lead frame.

5,352,633

SEMICONDUCTOR LEAD FRAME LEAD STABILIZATION

Donald C. Abbott, Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 2, 1992, Ser. No. 892,096
Int. Cl.[5] H01L *21/60*
U.S. Cl. 437—211 **10 Claims**



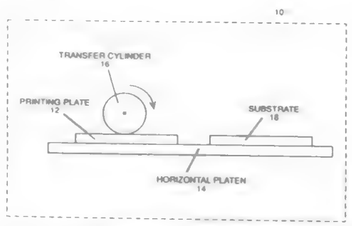
1. A method for stabilizing multiple leads on a lead frame, including a mounting pad and lead fingers, comprising the steps of:
aligning selected portions of the lead fingers, the mounting pad, with a plastic preform; and
applying heat and pressure to the lead frame and plastic preform to melt the plastic causing it to flow around the selected portions of the lead frame leads, securing them in fixed relationship with each other.

5,352,634

PROCESS FOR FABRICATING AN ACTIVE MATRIX CIRCUIT

Thomas P. Brody, 5823 Kentucky Ave., Pittsburgh, Pa. 15232

Filed Mar. 23, 1992, Ser. No. 855,523
Int. Cl.[5] H01L *21/302*
U.S. Cl. 437—228 **13 Claims**



1. A method of manufacturing integrated circuits having at least one layer, comprising the steps of:

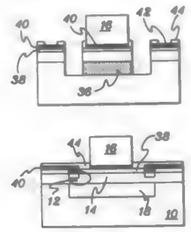
coating a substrate with a conductive material forming a single layer of the circuit;
applying an etch-resist pattern to at least one layer of said coated substrate by printing said resist pattern onto said coated substrate; and
placing said coated substrate with resist pattern in a bath to etch away desired portions of the coated substrate; and further comprising the steps of providing said integrated circuit with a plurality of layers alternating between conductive and insulation layers and applying an etch-resist pattern to said plurality of integrated circuit layers by printing.

5,352,635

SILICON ACCELEROMETER FABRICATION METHOD

Xiang-Zheng Tu, and Yun-Yan Li, both of 14 Beihehutong Dongcheuggu, Beijing, China

Continuation of Ser. No. 830,560, Jul. 12, 1991, abandoned. This application Jan. 28, 1993, Ser. No. 10,500
Claims priority, application China, Jul. 12, 1990, 90103465.7
Int. Cl.[5] H01L *21/465*
U.S. Cl. 437—228 **19 Claims**



1. A process for fabricating a silicon accelerometer comprising the steps of:
providing a low donor concentration silicon substrate,
forming a high donor concentration silicon layer in a predetermined region on the surface of the substrate by diffusion or ion implantation,
forming a low donor concentration silicon layer over the surface of said substrate by vapor phase epitaxy,
forming at least one opening in said low donor concentration layer thereby exposing edges of said high donor concentration layer,
after said forming at least one opening, converting said high donor concentration layer into porous silicon by anodization, said converting of said high donor concentration layer being bounded by said exposed edges of said high donor concentration layer,
mounting a mass onto the low donor concentration layer,
removing the porous silicon by etching between the substrate and the low donor concentration layer to form a cavity between the substrate and the low donor concentration layer, said etching resulting in a complete removal of the porous silicon.

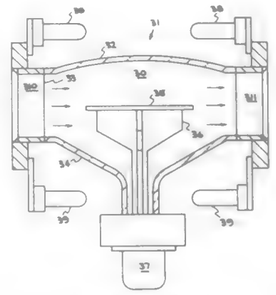
5,352,636

IN SITU METHOD FOR CLEANING SILICON SURFACE AND FORMING LAYER THEREON IN SAME CHAMBER

Israel Beinglass, Sunnyvale, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed Jan. 16, 1992, Ser. No. 821,447
Int. Cl.[5] H01L *21/00, 21/02, 21/302, 21/463*
U.S. Cl. 437—235 **24 Claims**

1. A method for processing a semiconductor wafer having a silicon surface thereon to form a layer over said silicon surface which comprises:
a) heating said silicon surface in a vacuum chamber to a first temperature ranging from about 800° C. to about 950° C.;
b) then flowing hydrogen through said vacuum chamber while maintaining said wafer at said first temperature to thereby clean said silicon surface on said wafer;
c) thereafter, without removing said wafer from said vacuum chamber, cooling said silicon surface down to a second temperature with a range of from about 550° C. to about 750° C.; and
d) then forming a layer on said cleaned silicon surface of said semiconductor wafer in said same vacuum chamber while continuing said heating of said silicon surface to maintain said surface at said second temperature.



5,352,637

PROCESS FOR PRODUCING STORAGE-STABLE SILICON WAFER SURFACES HAVING ADVANTAGEOUS OXIDATION PROPERTIES AND SILICON WAFER FORED THEREBY

Laszlo Fabry; Manfred Grundner; Dieter Graef; Susanne Bauer-Mayer, and Peter John, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft für Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Oct. 14, 1992, Ser. No. 961,083
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1991, 4139205
Int. Cl.[5] H01L *21/302*
U.S. Cl. 437—238 **20 Claims**

1. A process for producing storage-stable polished surfaces for a silicon wafer having advantageous oxidation properties comprising:
hydrophilizing the polished wafer surfaces;
subsequently exposing said polished wafer surfaces to an organosilicon reagent; and
using as said organosilicon reagent a compound selected from the group consisting of haloalkylsilanes having the formula

$$R_x^1SiR_y^2(OR^2)_{4-x-y}$$

haloalkyldisilazanes having the formula

$$(R_x^1R_{3-x}^2Si)_2NH$$

and the mixtures thereof,
where R^1 is a haloalkyl radical, R^2 is an alkyl radical, x is an integer from 1 to 3, and y is the numeral 0 or 1.

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5,352,638

NICKEL ALUMINOSILICATE GLASS-CERAMICS

George H. Beall, Big Flats, and Joseph E. Pierson, Painted Post, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Feb. 22, 1994, Ser. No. 199,753
Int. Cl.[5] C03C *10/02*
U.S. Cl. 501—10 6 Claims

1. A glass-ceramic article containing a nickel spinelloid as the predominant crystal phase, said glass-ceramic article consisting essentially, expressed in terms of weight percent on the oxide basis, of 40–60% SiO_2, 10–35% Al_2O_3, 5–35% NiO, 0–20% MgO, and 0–15% total TiO_2 and/or ZrO_2.

5,352,639

TELLURIUM AND SELENIUM HALIDE-BASED GLASSES, THEIR PREPARATION AND USE

Jacques Lucas, Betton, and Xiang H. Zhang, Rennes, both of France, assignors to Centre National de la Recherche Scientifique (CNRS), Paris, France

PCT No. PCT/FR91/00574, § 371 Date Mar. 11, 1993, § 102(e) Date Mar. 11, 1993, PCT Pub. No. WO92/00926, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 12, 1991, Ser. No. 961,890
Claims priority, application France, Jul. 12, 1990, 90 08892
Int. Cl.[5] C03C *3/32*
U.S. Cl. 501—40 20 Claims

1. Solid vitreous compositions of formula I:

$$Te_wSe_yX_xZ_z \quad (I)$$

wherein

X represents at least one halogen selected from chlorine, bromine and iodine,

Z represents at least one element selected from As, Sb and Bi,

w, x, y and z represent the molar percentages respectively of the elements Te, X, Se and Z,

w being a number varying from 10 to 40,

x being a number varying from 5 to x_1,

y being a number varying from 5 to 65,

z being a number varying from 5 to z_1,

the numbers w, x, y and z being such that the sum (w+x+y+z) is equal to 100,

the numbers x_1 and z_1 being such that:

when X represents greater than 50% iodine, $x_1=50$ and $z_1=60$,

when X represents greater than 50% bromine, $x_1=60$ and $z_1=50$, and

when X represents greater than 50% chlorine, $x_1=60$ and $z_1=40$,

it being understood that the molar percentage of Bi, when it is present, is not greater than 12 and that the molar percentage of the element Sb, when it is present, is not greater than 20.

5,352,640

COLORED GLASS COMPOSITIONS AND GLAZINGS PRODUCED THEREWITH

Pierre Combes, Vanves; Jean-Jacques Massol, Asnieres, both of France, and Pedro C. Alvarez, Salinas, Spain, assignors to Saint-Gobain Vitrage International, Courbevoir, France

Continuation of Ser. No. 682,497, Apr. 9, 1991, abandoned. This application Apr. 7, 1993, Ser. No. 44,554
Claims priority, application France, Apr. 13, 1990, 90 04805
Int. Cl.[5] C03C *3/078, 4/08*
U.S. Cl. 501—71 14 Claims

1. A glass composition for forming colored glazings consisting essentially of, in percent by weight, 64 to 75% SiO_2, 5 to 15% CaO, 10 to 18% Na_2O, at least one of Al_2O_3, B_2O_3, MgO or K_2O, each in an amount of up to 5% by weight and CoO as a coloring agent in an amount of up to 0.05% by weight, wherein the amount of CoO is greater than about 0.02% by weight when Fe_2O_3 is present in said composition in an amount less than 2% by weight, and selenium in an amount up to about 0.005%, and as a coloring agent, 1.4 to 4% Fe_2O_3, wherein the amount of alkaline earth oxides is between about 6–16% by weight and the amount of alkali metal oxides is between about 10–20% by weight and wherein glazings formed of said composition when illuminated under Illuminant C, has a dominant percentage light transmission between about 485–570 nm, and which have a total light transmission factor under illuminant A of less than 20% and a total energy transmission factor of less than 12% when said glazings have a thickness of about 3.85 mm.

5,352,641

SILICON NITRIDE COMPOSITE SINTERED BODY AND PROCESS FOR PRODUCING SAME

Jin-Joo Matsui, and Akira Yamakawa, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

PCT No. PCT/JP92/01032, § 371 Date Dec. 14, 1992, § 102(e) Date Dec. 14, 1992, PCT Pub. No. WO93/04012, PCT Pub. Date Mar. 4, 1993
PCT Filed Aug. 12, 1992, Ser. No. 956,887
Claims priority, application Japan, Aug. 13, 1991, 3-202827; Aug. 14, 1991, 3-204309; Aug. 14, 1991, 3-204312; Dec. 13, 1991, 3-330814; Dec. 20, 1991, 3-355981; Jan. 13, 1992, 4-023206
Int. Cl.[5] C04B *35/58*
U.S. Cl. 501—92 12 Claims

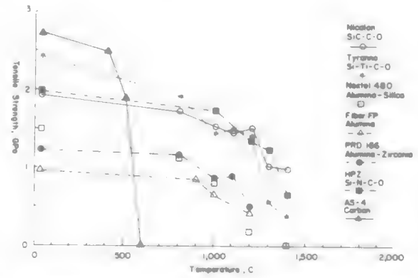
1. A silicon nitride composite sintered body which comprises silicon nitride as a matrix and silicon carbide particles having of 5 to 500 nm as a phase dispersed in the sintered body, wherein the total amount dispersed of silicon carbide is 1 to 40% by volume based on the sintered body, the proportion by volume of the silicon carbide dispersed in the silicon nitride particles is 5 to 99% based on the total amount dispersed, the remainder being present in the grain boundary of the silicon nitride.

5,352,642

FABRICATION OF $Y_3AL_5O_{12}$ FIBERS FROM WATER SOLUBLE POLYMERS

Sung S. Pak, Evington, Va., and R. Allen Kimel, Greensboro, N.C., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Nov. 10, 1992, Ser. No. 974,040
Int. Cl.[5] C04B *35/50*
U.S. Cl. 501—95 18 Claims



1. A method for making an yttrium-aluminum water soluble polymer, comprising the steps of:

mixing an yttrium salt with an aluminum salt in an yttrium to aluminum molar ratio of about 3 to 5;

adding said yttrium and aluminum salt mixture to a solution containing a polar solvent and an acid having at least two carboxyl groups; and

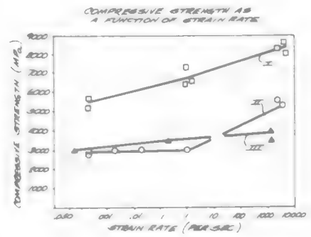
refluxing said yttrium and aluminum salt solution for a time to allow polymerization among the Yttrium and aluminum functional groups, and carboxyl groups for forming the yttrium and aluminum water soluble polymer.

5,352,643

HIGH STRENGTH ALUMINA AND PROCESS FOR PRODUCING SAME

James M. Staehler; William W. Predebon, and Bruce J. Pletka, all of Houghton, Mich., assignors to Board of Control of Michigan Technological University, Houghton, Mich.

Filed Nov. 3, 1992, Ser. No. 970,615
Int. Cl.[5] C04B *35/10*
U.S. Cl. 501—127 19 Claims



1. A vacuum hot pressed alumina material free of sintering agents and organic contaminants and having a compressive fracture strength greater than about 4,400 MPa at a strain rate of $10^{-4}s^{-1}$.

5,352,644

METHOD FOR PREPARING TITANIA-BOUND ZEOLITE CATALYSTS

Hye K. C. Timken, Woodbury, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Aug. 25, 1993, Ser. No. 112,501
Int. Cl.[5] B01J *37/00, 29/00, 21/00*
U.S. Cl. 502—60 19 Claims

1. A method for preparing a titania-bound molecular sieve composition which comprises:

(a) providing a substantially homogenous mixture of molecular sieve material, a low acidity titanium oxide binder material and an aqueous slurry of titanium oxide hydrate to provide a formable mass;

(b) forming the formable mass resulting from step (a); and

(c) calcining the formed product resulting from step (b).

19. The low acidity titania-bound molecular sieve composition resulting from the method of claim 1.

5,352,645

SILICA MICROSPHERES, METHOD OF IMPROVING ATTRITION RESISTANCE AND USE

Jo-Ann T. Schwartz, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 907,962, Jul. 2, 1992, abandoned, which is a division of Ser. No. 587,879, Sep. 25, 1990, Pat. No. 5,128,114, which is a continuation-in-part of Ser. No. 344,975, Apr. 14, 1989, abandoned. This application Nov. 19, 1992, Ser. No. 980,319
Int. Cl.[5] B01J *21/08, 23/00, 23/38*
U.S. Cl. 502—262 8 Claims

1. An attrition resistant catalytic composite consisting essentially of metal crystallites dispersed throughout high-strength, non-agglomerated porous silica microspheres having an average diameter in the range of 1.0 to 50 microns and an average pore size of 2 to 20 nm, which are produced by the process of

(a) mixing an aqueous sol of colloidal silica particles, having a diameter in the range of 5 to 100 nm, with an effective amount of a soluble additive selected from the group consisting of ammonium citrate and urea to inhibit premature formation of an impervious crust;

(b) spray drying the mixture to form a powder consisting of microspherical silica particles, said particles comprising a conglomerate of the original colloidal silica particles and said additive;

(c) calcining the spray dried powder to remove volatile components and to sinter the colloidal silica particles within the microspheres without fusing the microspheres into agglomerates;

(d) preparing an aqueous solution of a metal salt or metal salts;

(e) slurrying said powder with said solution; and

(f) drying, treating in a hydrogen atmosphere the resulting powder.

8. The catalytic composite of claim 1 wherein the metal crystallites comprise platinum, palladium and mixtures thereof.

5,352,646

SUPPORTED CATALYSTS

Gilbert Blanchard, Le Plessis Belleville, and Thierry Chopin, Saint Denis, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Continuation of Ser. No. 831,546, Feb. 5, 1992, Pat. No. 5,232,889, which is a continuation of Ser. No. 618,636, Nov. 27, 1990, abandoned. This application Jan. 11, 1993, Ser. No. 2,670
Claims priority, application France, Nov. 27, 1989, 89 15542
The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[5] B01J *21/08*
U.S. Cl. 502—263 11 Claims

1. A supported catalyst comprising an entirely porous carrier material, said porous carrier material having a catalytically effective amount of at least one catalytically active element essentially homogeneously concentrated throughout a peripheral face surface layer thereof, said at least one catalytically active element comprising cerium and said surface layer having a depth equal to a depth to which reagents are diffused into the catalyst during catalytic conversion thereof by the catalyst.

5,352,647

COMPOSITION FOR SEPARATING OUT NOXIOUS SUBSTANCES FROM GASES AND EXHAUST GASES

Hermann Suchenwirth, Grafrath, Fed. Rep. of Germany, assignor to FTU GmbH, Fed. Rep. of Germany

Division of Ser. No. 517,934, May 2, 1990, Pat. No. 5,209,912.
This application Feb. 17, 1993, Ser. No. 19,198
Int. Cl.[5] B01J *20/04, 20/20, 20/10*
U.S. Cl. 502—417 20 Claims

1. A composition for removing heavy metals from exhaust gases comprising a powder of calcium hydroxide and 0.01 to 5 wt. %, based on the calcium hydroxide, of at least one water-soluble salt of a sulfur containing substance which sulfur-containing substances are selected from the group consisting of polysulfides, polythionates and thiosulfates.

5,352,648

PRESSURE SENSITIVE COPYING PAPER WITH REPOSITIONABLE ADHESIVE PROPERTIES

Hung Y. Chao, Princeton Junction, N.J., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed May 4, 1993, Ser. No. 56,624
Int. Cl.[5] B41M *5/165*
U.S. Cl. 503—206 12 Claims

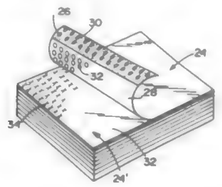
1. A pressure sensitive carbonless copying system comprising:

a) a first sheet having front and back surfaces, said back surface coated at least in part with a composition including a mixture having a pressure sensitive adhesive component and a carbonless coating component including microcapsules containing a colorless dye; and

b) a second sheet having front and back surfaces, said front

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surface coated with a carbonless image transfer material for cooperation with said carbonless coating component to enable an image to be transferred to said second sheet



upon application of localized pressure to said first sheet and wherein said first sheet is temporarily adhered to said second sheet by means of said pressure sensitive adhesive component of said mixture.

5,352,649

THERMOCHROMIC LAMINATE MEMBER, AND COMPOSITION AND SHEET FOR PRODUCING THE SAME

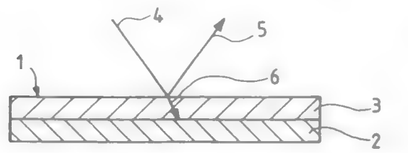
Yutaka Shibahashi, Nagoya, and Michiyuki Yasuda, Gifu, both of Japan, assignors to The Pilot Ink Co., Ltd., Nagoya, Japan

Filed Jul. 2, 1992, Ser. No. 907,577

Claims priority, application Japan, Jul. 4, 1991, 3-190988; Nov. 22, 1991, 3-104113[U]; Nov. 22, 1991, 3-104114[U]; Nov. 22, 1991, 3-333974

Int. Cl.[5] B41M *5/40*

U.S. Cl. 503—207 **20 Claims**



1. A thermochromic laminate member capable of reversible change between a metallic luster color and a colorless state, comprising:

A) a first layer for regulating the wavelength of reflected light, composed of a metallic luster pigment, which consists of natural mica particles surfacially coated with titanium oxide and which has a particle size of 5 to 100 μm, and a film forming material; and

B) a second layer composed of a thermochromic material, which consists of an electron donating compound, an electron accepting compound, and an organic medium enabling a reversible color-forming reaction between said compounds and which has a luminocity of 6 or lower in the color-developed state and a luminocity of 8 or higher in the color-extinguished state, and a film forming material.

5,352,650

THERMAL RECORDING SHEET

Toshiaki Minami, and Toshio Kaneko, both of Tokyo, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1993, Ser. No. 32,026

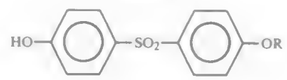
Claims priority, application Japan, Mar. 18, 1992, 4-62001

Int. Cl.[5] B41M *5/28*

U.S. Cl. 503—209 **6 Claims**

1. A thermal recording sheet comprising a substrate and a thermal color developing layer on said substrate, said thermal color developing layer comprising a colorless or pale colored basic chromogenic dye, an organic color developer comprising a compound of Formula (I)

Formula (I)



(I)

wherein R is propyl, isopropyl, or butyl and a sensitizer comprising o-xylylene-bis-(phenylether).

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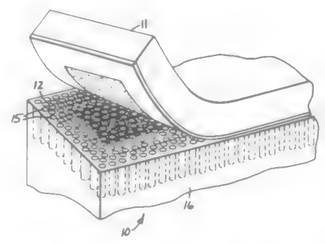
NANOSTRUCTURED IMAGING TRANSFER ELEMENT

Mark K. Debe, Stillwater, Minn.; Kam K. Kam, Woodbury, Md., and Richard J. Poirier, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 23, 1992, Ser. No. 996,124

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **20 Claims**



1. A reusable composite donor medium comprising a nanostructured surface region and an encapsulant containing image forming material such that the nanostructured surface region is at at least one major surface of the medium and the nanostructured surface region absorbs radiation and converts the radiation to heat to thermally transfer the image forming material to a receptor positioned near or adjacent to the medium and the nanostructured surface region has sufficient capillarity to replenish image forming material into the nanostructured surface region between imaging events, and wherein the nanostructured surface region has a spatial inhomogeneity in two dimensions and is comprised of elongated radiation absorbing particles encapsulated exactly at the surface of the encapsulant with sufficient numbers per unit area to achieve efficient light absorption and high capillarity.

5,352,652

HEAT TRANSFER SHEET

Yoshikazu Ito; Masanori Akada; Masaki Kutsukake, all of Tokyo; Mineo Yamauchi, Ichikawa; Masanori Saito, Tokyo; Atsushi Takano, Tokyo; Hideichiro Takeda, Tokyo, and Hitoshi Arita, Tokyo, all of Japan, assignors to Dai Nippon Insatus Kabushiki Kaisha, Japan

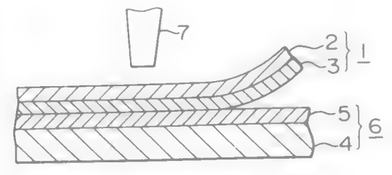
Continuation of Ser. No. 44,613, Apr. 9, 1993, Pat. No. 5,270,285, which is a continuation of Ser. No. 876,415, Apr. 30, 1992, Pat. No. 5,260,258, which is a continuation of Ser. No. 487,184, Mar. 1, 1990, Pat. No. 5,130,292, which is a continuation of Ser. No. 301,989, Jan. 26, 1989, Pat. No. 4,923,847, which is a division of Ser. No. 82,225, Aug. 6, 1987, Pat. No. 4,820,686, which is a division of Ser. No. 833,039, Feb. 26, 1986, Pat. No. 4,720,480. This application Sep. 3, 1993, Ser. No. 116,276

Claims priority, application Japan, Feb. 28, 1985, 60-39934; Feb. 28, 1985, 60-39935; Apr. 15, 1985, 60-79857

The portion of the term of this patent subsequent to Jan. 19, 2005, has been disclaimed.

Int. Cl.[5] B41M *5/035, 5/38*

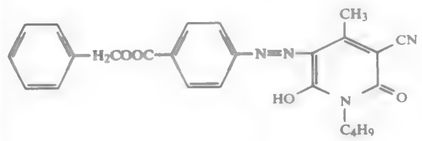
U.S. Cl. 503—227 **5 Claims**



1. A heat transfer sheet comprising:

a base sheet; and

dye layers comprising yellow, magenta and cyan dye layers formed on the base sheet side by side, each dye layer comprising a binder and a dye, the dye of said magenta dye layer comprising C.I. Disperse Red 60 and the dye of said yellow dye layer having the following chemical formula:



5,352,653

CROSSLINKED DYE-DONOR BINDER FOR THERMAL DYE TRANSFER SYSTEMS

Linda S. Flosenzier, Rochester, and George B. Bodem, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 16, 1994, Ser. No. 197,628

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **15 Claims**

6. A process of forming a thermal dye transfer image comprising:

a) contacting at least one dye-donor element comprising a support having thereon a dye layer comprising an image dye dispersed in a binder with a dye-receiving element comprising a support having thereon a polymeric dye image-receiving layer;

b) imagewise-heating said dye-donor element; and

c) transferring a dye image to said dye-receiving element to form said thermal dye transfer image,

wherein said binder contains hydroxyl groups which have been crosslinked with a titanium alkoxide crosslinking agent and the number of carbon atoms in the alkyl moiety of the alkoxide does not exceed four.

5,352,654

PYRIDYL SULFONYLUREA HERBICIDES

Werner Föry, Rieben, and Rolf Schurter, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

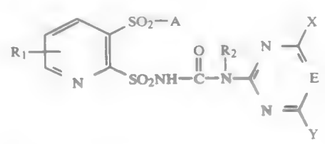
Filed May 30, 1990, Ser. No. 530,690

Claims priority, application Switzerland, Jun. 6, 1989, 2135/89-2; Jul. 18, 1989, 2679/89-9

Int. Cl.[5] A01N *43/66, 43/54;* **C07D** *251/46*

U.S. Cl. 504—230 **23 Claims**

1. An N-pyridinesulfonyl-N'-pyrimidinyl- or -triazinylurea of the formula I



(I)

in which R_1 is hydrogen, halogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4alkylthio, C_1–C_4haloalkoxy or CF_3; R_2 is hydrogen or C_1–C_4alkyl; A is C_1–C_4alkyl which is substituted by C_2–C_4alkenyl, it being possible for the C_2–C_4alkenyl radical to be additionally monosubstituted to trisubstituted by halogen; X is C_1–C_3alkoxy or C_1–C_3alkoxy which is monosubstituted to trisubstituted by halogen; Y is halogen, C_1–C_3alkoxy, C_1–C_3alkoxy which is monosubstituted to trisubstituted by halogen, or is cyclopropyl; and E is nitrogen or the methine group, or a salt thereof.

5,352,655

3-AZABICYCLO[3.1.0]HEXANE-2-ONE DERIVATIVES AND HERBICIDAL COMPOSITIONS CONTAINING THEM AS HERBICIDALLY ACTIVE INGREDIENTS

Koichi Moriyasu; Kanji Tomiya; Hideyuki Akieda; Harumichi Aoki; Makoto Suzuki; Yasunaga Iwasaki, and Sadafumi Koda, all of Mobara, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

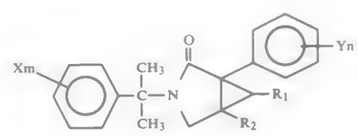
Filed Dec. 6, 1993, Ser. No. 161,478

Claims priority, application Japan, Dec. 4, 1992, 4-325433; Feb. 2, 1993, 5-015140

Int. Cl.[5] C07D *209/52*

U.S. Cl. 504—285 **10 Claims**

1. A 3-azabicyclo[3.1.0]hexane-2-one derivative represented by the formula (I)



(I)

wherein X is a halogen atom, an alkyl group having 1 to 3 carbon atoms, an alkoxy group having 1 to 3 carbon atoms or a haloalkyl group having 1 to 3 carbon atoms; Y is a halogen atom or an alkyl group having 1 to 3 carbon atoms; R_1 is a hydrogen atom or an alkyl group having 1 to 3 carbon atoms; R_2 is a hydrogen atom or an alkyl group having 1 to 3 carbon atoms; m is an integer of 0 to 3; n is an integer of 0 to 2; and when m is 2 or 3, the groups represented by X may be identical or different, and when n is 2, the groups represented by Y may be identical or different.

VOL 1167 ISS 1 OC 4 1994 UMI

5,352,656

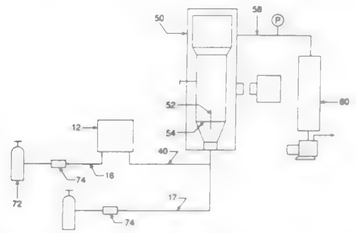
METHOD FOR THE CHEMICAL VAPOR DEPOSITION OF GROUP IB AND GROUP VIIIB METAL BARRIER LAYERS

Walter J. Lackey, Marietta; John A. Hanigofsky, Smyrna; David N. Hill, Chamblee, all of Ga.; Michael J. Shapiro, Fairfax, Va.; E. Kent Barefield, Decatur, Ga., and William B. Carter, Atlanta, Ga., assignors to Georgia Tech Research Corporation, Atlanta, Ga.

Continuation-in-part of Ser. No. 439,843, Nov. 21, 1989, Pat. No. 5,108,983. This application Mar. 17, 1992, Ser. No. 852,813

Int. Cl.[5] B05D *5/12*; C23C *16/00*

U.S. Cl. 505—434 14 Claims



1. A method for applying a metal film barrier layer to a substrate using chemical vapor deposition comprising the steps of:

(a) providing a substrate;

(b) providing metal-bearing reagent particles, said metal being selected from the group consisting of Group IB and Group VIII metals;

(c) providing a furnace means;

(d) providing a powder feeder means for introducing said metal-bearing reagent particles into said furnace means;

(e) placing said substrate within said furnace means;

(f) introducing said metal-bearing reagent particles into said furnace means; and

(g) reacting said metal-bearing reagent particles within said furnace means to deposit from the vapor phase the metal film barrier layer on said substrate.

5,352,657

BISMUTH SYSTEM OXIDE SUPERCONDUCTORS AND PREPARATION THEREOF

Utako Endo, Settsu; Satoshi Koyama, Osaka; Kazuo Okamura, Itami; Tomoji Kawai, Ibaraki, and Koichi Kitazawa, Tokyo, all of Japan, assignors to Daikin Industries Ltd., Osaka, Japan

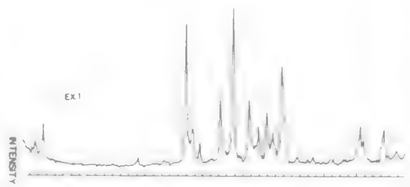
Continuation of Ser. No. 366,687, Jun. 15, 1989, abandoned. This application Apr. 9, 1992, Ser. No. 865,637

Claims priority, application Japan, Jun. 20, 1988, 63-152505; Jun. 20, 1988, 63-152506; Jun. 20, 1988, 63-152507; Aug. 30, 1988, 63-218188; Oct. 28, 1988, 63-273776

Int. Cl.[5] H01B *12/00*; H01L *39/00*

U.S. Cl. 505—501 13 Claims

1. A process for producing a bismuth system oxide superconductor, which comprises mixing a bismuth compound, a strontium compound, a calcium compound, and a copper compound, and



sintering the mixture in an atmosphere that has an oxygen partial pressure in the range of 0.01 to 0.15 atm.

5,352,658

PHILLIPS CATALYST AND ITS USE FOR THE PREPARATION OF ETHYLENE HOMOPOLYMERS AND COPOLYMERS

Kaspar Evertz, Schifferstadt; Roland Saive, Ludwigshafen; Guido Funk, Worms; Peter Koelle, Ludwigshafen; Rainer Konrad, Goennheim, and Hans Gropper, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 11, 1993, Ser. No. 16,277

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1992, 4204259

Int. Cl.[5] B01J *31/00*

U.S. Cl. 502—107 6 Claims

1. A Phillips catalyst for the homopolymerization of ethylene and the copolymerization of ethylene with α-olefins, which comprises: as a catalytically active component, a chromium catalyst supported on a finely divided aluminum silicate gel, modified with at least one fluoride and activated in an oxidizing atmosphere at elevated temperatures of from about 400° to 1100° C., the aluminum silicate gel (carrier gel) having an alumina content of from 0.5 to 6% by weight, the alumina being concentrated in the surface region of the carrier gel particles.

5,352,659

ENDOTHELIN ANALOGS AND USES THEREOF

Mitsuhiro Wakimasu; Takashi Kikuchi, and Kazuki Kubo, all of Ibaraki, Japan, assignors to Takeda Chemical Industries, Osaka, Japan

Filed Feb. 14, 1992, Ser. No. 837,780

Claims priority, application Japan, Feb. 15, 1991, 3-022220; Dec. 19, 1991, 3-337235

Int. Cl.[5] A61K *37/02*; C07K *7/10*

U.S. Cl. 514—9 7 Claims

1. An endothelin-1 (ET-1) analog, which is selected from the group of ET-1 analogs consisting of peptides having the formula of SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:23, SEQ ID NO:24, and SEQ ID NO:25 or a pharmaceutically-acceptable salt thereof.

5,352,660

METHOD FOR ASSAYING FOR A SUBSTANCE THAT AFFECTS A SH2-PHOSPHORYLATED LIGAND REGULATORY SYSTEM

Anthyony J. Pawson, Toronto, Canada, assignor to Mount Sinai Hospital Corporation, Toronto, Canada

Filed Oct. 31, 1991, Ser. No. 786,057

Int. Cl.[5] A61K *37/02*; G01N *33/566*; C12Q *1/48*; C07K *13/00*

U.S. Cl. 514—12 11 Claims

1. A method for assaying a medium for the presence of a substance that affects a Src homology region 2-phosphorylated ligand regulatory system comprising providing a Src homology region 2 having the amino acid sequence of the Src homology region 2 of c-Src, c-Yes, Fgr, Fyn, Lck, Lyn, Hck, Blk, c-Abl, Arg, Dabl, c-fps, Fer, PLC-γ1N, PLC-γ2N, PLC-γ1C, PLC-γ2C, GAP-N, GAP-C, p85α-N, p85β-N, p85α-C, p85β-C, Nck, Tensin, or Vav as shown in FIG. 2, and a phosphorylated ligand, the Src homology region 2 and the phosphorylated ligand being selected so that they bind to form a Src homology region 2-phosphorylated ligand complex which is capable of activating the Src homology region 2-phosphorylated ligand regulatory system, the Src homology region 2 and/or the phosphorylated ligand being present in a known concentration, and incubating with a test substance which is suspected of affecting the Src homology region 2-phosphorylated ligand regulatory system, under conditions which permit the formation of the SH2-phosphorylated ligand complex, and assaying for the SH2-phosphorylated ligand complex, free SH2-domain, or non-complexed phosphorylated ligand and comparing to a control to determine the effect of the substance.

5,352,661

BACILLUS THURINGIENSIS ISOLATE DENOTED B.T. PS81GG, ACTIVE AGAINST LEPIDOPTERAN PESTS, AND A GENE ENCODING A LEPIDOPTERAN-ACTIVE TOXIN

Jewel Payne; August J. Sick, both of San Diego, and Mark Thompson, Del Mar, all of Calif., assignors to Mycogen Corporation, San Diego, Calif.

Division of Ser. No. 265,731, Nov. 1, 1988, Pat. No. 5,169,629. This application Jul. 27, 1992, Ser. No. 920,085

Int. Cl.[5] A61K *37/00*; A01N *63/00*; C07H *19/00, 17/00*

U.S. Cl. 424—93.2 5 Claims

1. Isolated toxin active against lepidopteran insects consisting essentially of the amino acid sequence shown in SEQ ID NO. 2.

5,352,662

INJECTABLE EXTENDED RELEASE FORMULATIONS AND METHODS

Norman D. Brooks, 5923 E. 300 N., and Gregory F. Needham, 1203 Sherwood Dr., both of Greenfield, Ind. 46140

Continuation-in-part of Ser. No. 769,555, Oct. 1, 1991, abandoned. This application Aug. 21, 1992, Ser. No. 934,017

Int. Cl.[5] A61K *37/36, 37/18, 9/10, 37/00*

U.S. Cl. 514—12 60 Claims

1. A composition of matter of an injectable extended release formulation comprising a growth hormone-related substance selected from the group consisting of growth hormones and growth hormone releasing factors in a carrier including a biocompatible hydrophobic vehicle and an effective amount of polyglycerol ester to extend release of the substance in an animal.

5,352,663

Patent Not Issued For This Number

5,352,664

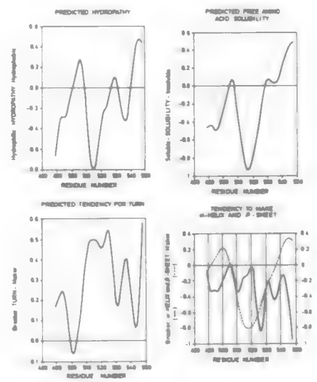
THROMBIN DERIVED POLYPEPTIDES; COMPOSITIONS AND METHODS FOR USE

Darrell H. Carney, Galveston, Tex., and Kevin C. Glenn, St. Louis, Mo., assignors to Board of Regents, The University of Texas System, Austin, Tex. and Monsanto Company, St. Louis, Mo.

Filed Oct. 31, 1986, Ser. No. 925,201

Int. Cl.[5] A61K *37/02, 37/547*; C07K *7/10*; C12N *9/74*

U.S. Cl. 514—13 6 Claims



1. A polypeptide consisting essentially of a thrombin receptor binding domain and a serine esterase conserved sequence wherein said polypeptide comprises 23 amino acids.

5,352,665

METHOD OF TREATING DISEASE CAUSED BY THE INFECTION OF VIRUS

Akira Awaya, Yokohama; Hisashi Kobayashi, Mobara; Yusaku Ishizuka, Yokohama, and Hayao Abe, Mobara, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 827,918, Jan. 31, 1992, abandoned, which is a continuation of Ser. No. 415,332, Aug. 18, 1989, abandoned. This application Jul. 15, 1993, Ser. No. 91,745

Claims priority, application Japan, Nov. 24, 1987, 62-294200

Int. Cl.[5] C07K *7/06*

U.S. Cl. 514—15 8 Claims

1. A method of treating a vital infection in an animal consisting essentially of administering to the animal an anti-viral effective amount of a nonapeptide devoid of zinc and having the amino acid sequence:

pGlu-Ala-Lys-Ser-Gln-Gly-Gly-Ser-Asn

or an ester and an amide at the carboxyl group of the C-terminal of the asparagine or a pharmacologically acceptable salt thereof,

wherein the viral infection is caused by a virus causing diabetes, a digestive disorder, a respiratory disorder or a cerebronervous disorder, and said virus is selected from the group consisting of REO virus, pig Aujeszky's disease virus, hepatitis virus, human T-lymphocyte virus type I, human T-lymphocyte virus type II and human T-lymphocyte virus type III.

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5,352,666

ANTIGLAUCOMA COMPOSITIONS AND METHODS

Robert W. Watkins, Great Meadows, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 795,282, Nov. 5, 1985, Pat. No. 4,906,613. This application Dec. 14, 1989, Ser. No. 450,766

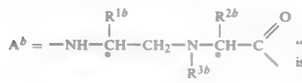
Int. Cl.[5] A61K *37/00, 37/14, 37/16, 37/26*

U.S. Cl. 514—16 **1 Claim**

1. A method of reducing elevated intraocular pressure in a mammal which comprises topically administering a composition comprising an intraocular pressure reducing amount of a renin inhibitor to an eye of said mammal, wherein the renin inhibitor comprises a compound of the formula

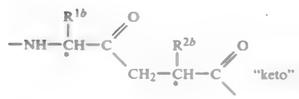
$$X^b\text{—}Y^b\text{—Pro—Phe—His—}A^b\text{—}B^b\text{—}Z^b\text{—}W^b \quad (V)$$
$$\quad 6 \quad 7 \quad 8 \quad 9\ 10,11\ 12 \quad 13$$

where Pro, Phe and His may be in substituted form; X^b=H; or an acyl or other N-protecting group which is acetyl, pivaloyl, t-butyloxycarbonyl (Boc), benzoyl or lower alkyl; or an L- or D-amino-acyl residue, which may itself be N-protected similarly; Y^b=D- or L-His or other D- or L- basic or aromatic amino-acetyl residue, or is absent;



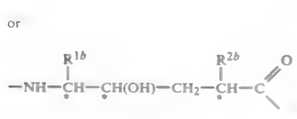
(VI)

or



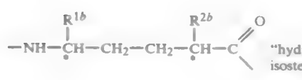
(VII)

or



(VIII)

or



(IX)

5,352,667

NON-PEPTIDIC SURROGATES OF THE ARG-GLY-ASP SEQUENCE AND PHARMACEUTICAL COMPOSITIONS COMPRISING THEM

Ofer Lider, 21 Gordon Street, 76290 Rehovot; Noam Greenspoon, 7 David Elazar Street, 51 905 Givat Shmuel; Rami Hershkoviz, 2 Yigal Alon Street, Herzlia, and Ronen Alon, 39 Jabotinsky Street, 53317 Givataim, all of

Filed Nov. 19, 1992, Ser. No. 978,582

Claims priority, application Israel, Nov. 22, 1991, 100130; Jan. 21, 1992, 100726; Jul. 30, 1992, 102685

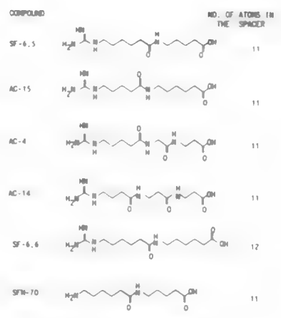
Int. Cl.[5] A61K *37/00, 37/02;* **C07C** *259/06, 279/04*

U.S. Cl. 514—19 **16 Claims**

1. A compound of the formula I

$$H_2N\text{—}C(=NH)\text{—NH—}CH_2\text{—A—}CH_2\text{—}CO_2H \quad (I)$$

and pharmaceutically acceptable salts thereof, wherein A is a chain of 9 atoms selected from the group consisting of:

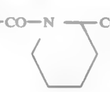


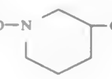
(i) $-(CH_2)_n\text{—CO—NH—}(CH_2)_{7-n}$;

(ii) $-(CH_2)_n\text{—NH—CO—}(CH_2)_{7-n}$;

(iii) $-(CH_2)_x\text{—CO—NH}(CH_2)_n\text{—CO—NH—}(CH_2)_m$;

(iv) $-(CH_2)_x\text{—NH—CO—}(CH_2)_n\text{—NH—CO—}(CH_2)_m$;

(v) $-(CH_2)_n\text{—CO—N}$  $\text{—CO—NH—}(CH_2)_m$;

(vi) $-(CH_2)_n\text{—CO—N}$  $\text{—CO—NH—}(CH_2)_m$;

and

(viii) $-CH_2\text{—CO—N}$  $\text{—CO—NH—}CH_2$

wherein each of x, n and m is at least 1; in chains (i) and (ii) n is at most 6; in chains (iii) and (iv) the sum of x+n+m is 5; and the sum of n+m is 4 in chain (v) and 3 in chain (vi).

5,352,668

PRODUCT AND METHOD FOR IMPROVING KERATINOCYTE ADHESION TO THE DERMIS

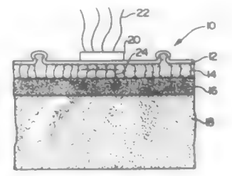
Robnert E. Burgeson, Boston; Gregory P. Lunstrum, Portland, Oreg.; Patricia Rousselle, Lyons, France; Douglas R. Keene, Portland, and M. Peter Marinkovich, Beaverton, both of Oreg., assignors to The State of Oregon Acting By and Through The State Board of Higher Education on Behalf of Oregon Health Sciences University, Portland, Oreg.

Continuation-in-part of Ser. No. 675,563, Mar. 26, 1991, abandoned. This application Aug. 28, 1992, Ser. No. 936,850

Int. Cl.[5] A61F *2/10;* **A61K** *37/12;* **C07K** *15/06, 15/20*

U.S. Cl. 514—21 **9 Claims**

1. A method of improving adhesion of transplanted keratinocytes to a substrate, comprising the step of providing an amount of purified kalinin between the keratinocytes and the substrate wherein the kalinin is of molecular weight about 400 to about 460 kDa and wherein the kalinin provides adhesion between human dermis and epidermis.



5,352,669

O[6]-BENZYLATED GUANINE, GUANOSINE AND 2'-DEOXYGUANOSINE COMPOUNDS POSSESSING O[6]-ALKYLGUANINE-DNA ALKYLTRANSFERASE DEPLETING ACTIVITY

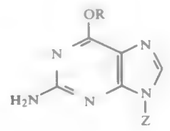
Robert C. Moschel, Frederick, Md.; M. Eileen Dolan, Chicago, Ill., and Anthony E. Pegg, Hershey, Pa., assignors to The of the United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 492,468, Mar. 13, 1990, Pat. No. 5,091,430. This application Nov. 21, 1990, Ser. No. 616,913

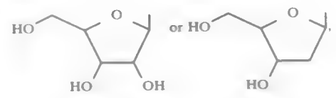
Int. Cl.[5] A61K *31/70, 31/52;* **C07H** *17/02;* **C07D** *473/18*

U.S. Cl. 514—45 **10 Claims**

1. A pharmaceutical composition which comprises compounds of the formula,



wherein Z is



and R is a benzyl group or a substituted benzyl group substituted at the ortho, meta or para position with a substituent selected from the group consisting of halogen, nitro, phenyl, alkyl of 1–4 carbon atoms, alkoxy of 1–4 carbon atoms, alkenyl of up to 4 carbon atoms, alkynyl of up to 4 carbon atoms, amino, monoalkylamino, dialkylamino, trifluoromethyl, hydroxy, hydroxymethyl, and SO_nR_1 wherein n is 0, 1, 2 or 3 and R_1 is hydrogen, alkyl of 1–4 carbon atoms, or phenyl; and a pharmaceutically acceptable excipient.

5,352,670

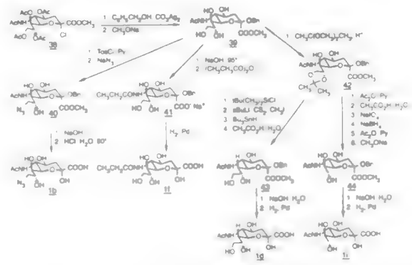
METHODS FOR THE ENZYMATIC SYNTHESIS OF ALPHA-SIALYLATED OLIGOSACCHARIDE GLYCOSIDES

Andre P. Venot, Agoura Hills, Calif.; Frank M. Unger, Vienna, Austria; Mohammed A. Kashem, Agoura Hills, Calif.; Paul Bird, Edmondton, Canada, and M. Abdul Mazid, Novato, Calif., assignors to Alberta Research Council, Edmonton, Canada

Continuation-in-part of Ser. No. 714,161, Jun. 10, 1991. This application Oct. 2, 1991, Ser. No. 771,007

Int. Cl.[5] A01N *43/04;* **A61K** *31/715;* **C12N** *11/18;* **C12P** *21/06*

U.S. Cl. 514—54 **17 Claims**



1. A method for the enzymatic synthesis of an alpha-sialylated oligosaccharide glycoside containing an analogue of sialic acid which method comprises the steps of:

a) selecting a sialyltransferase;

b) selecting a CMP-sialic acid analogue which is compatible with the sialyltransferase selected in, step a) and which is a derivative of a naturally occurring sialic acid;

c) contacting the selected CMP-sialic acid analogue with an oligosaccharide glycoside acceptor of the formula

oligosaccharide-Y-R

in the presence of the selected sialyltransferase under conditions whereby the sialic acid analogue is transferred from the selected CMP-sialic acid analogue to the non-reducing sugar terminus of the oligosaccharide glycoside acceptor so as to form an alpha-sialylated oligosaccharide glycoside containing an analogue of sialic acid wherein R represents an aglycon moiety containing at least one carbon atom with the proviso that R is neither hydrogen, a lipid or a protein, Y is selected from the group consisting of O, NH and S, and oligosaccharide is an oligosaccharide of from 2 to about 10 saccharide units in which the terminal saccharide units at the non-reducing sugar terminus of the oligosaccharide are compatible with the selected sialyltransferase.

5,352,671

HETEROATOMS-CONTAINING TRICYCLIC COMPOUNDS

Karl Baumann, and Gerhart Emmer, both of Vienna, Austria, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 609,280, Nov. 5, 1990, abandoned. This application May 9, 1991, Ser. No. 697,864

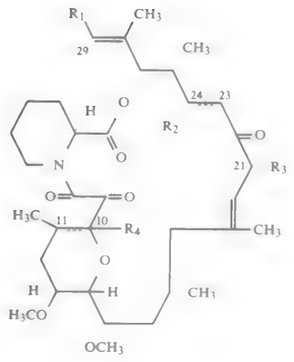
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1989, 3937336; Nov. 16, 1989, 3938132; Dec. 23, 1989, 3942831; Dec. 23, 1989, 3942833; Mar. 5, 1990, 4006819

Int. Cl.[5] A61K *31/695, 31/395;* **C07D** *498/16*

U.S. Cl. 514—63 **13 Claims**

1. A compound of formula

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I

wherein
R_1 is a group (d) of formula



(d)

R_2 is oxo and there is a single bond n 23,24 position; hydroxy or hydroxy protected by a hydroxy protecting group selected from formyl, tert-butoxycarbonyl, and trialkylsilyl and there is a single or a double bond in 23,24 position; or absent and there is a double bond in 23,24 position; and
R_4 is hydroxy and there is a single bond in 10,11 position;
R_3 is methyl, ethyl, n-propyl, or allyl;
in free form or, where such forms exist, in salt form.

7. A method of treating inflammation or inducing immunosuppression or inhibiting cell proliferation or reversing chemotherapeutic drug resistance, which comprises administering to a patient in need of said treatment a therapeutically effective amount of a compound according to claim 1 in free base form or, where such forms exist, in pharmaceutically acceptable salt form.

5,352,672
ACARICIDAL COMBINATIONS OF NEEM SEED EXTRACT AND BIFENTHRIN
Charles A. Staetz, Newtown; H. Robinson Ertelt, West Chester, both of Pa., and Gert P. Volpp, Princeton, N.J., assignors to FMC Corporation, Philadelphia, Pa.
Filed Oct. 20, 1993, Ser. No. 139,252
Int. Cl.[5] A01N *65/00, 43/08, 53/00*
U.S. Cl. 514—65 **6 Claims**

1. A method of controlling pyrethroid resistant mites which comprises applying to the site where control is desired an acaricidally effective amount of an azadirachtin-containing neem seed extract and bifenthrin, the ratio of azadirachtin to bifenthrin being in the range of 10 to 3 to 1 to 4000.

5,352,673
PRODRUGS
Edward A. Dennis, 1921 Hypatia Way, La Jolla, Calif. 92037-3322
Continuation of Ser. No. 713,116, Jun. 10, 1991, Pat. No. 5,308,766, and Ser. No. 399,799, Aug. 29, 1989, abandoned. This application Jun. 10, 1991, Ser. No. 712,968
The portion of the term of this patent subsequent to May 3, 2011, has been disclaimed.
Int. Cl.[5] A61K *31/685*
U.S. Cl. 514—78 **25 Claims**

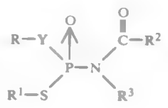
1. A method of inactivating or inhibiting a phospholipase A enzyme, comprising administering to a subject susceptible to or experiencing a condition mediated by the activity of said enzyme an amount sufficient to inactivate or inhibit the activity of said enzyme of a pharmaceutically acceptable form of a compound of the formula:



wherein
R is oxygen or imino,
Each X independently is oxygen, sulfur or imino,
A is a moiety recognized by a phospholipase A enzyme such that said enzyme hydrolyses the bond linking AX with C(0)Y,
B. is a physiologically bioactive leaving group,
Y is an alkylene or alkenylene or alkylene or alkenylene substituted with one or more lower alkyl groups.

5,352,674
CHEMICALLY STABLE GRANULES CONTAINING INSECTICIDAL PHOSPHOROAMIDOTHIOATES
Gary Cummings, Moraga, Calif., assignor to Valent U.S.A., Walnut Creek, Calif.
Continuation-in-part of Ser. No. 674,857, Mar. 25, 1991, abandoned. This application Mar. 24, 1992, Ser. No. 856,485
The portion of the term of this patent subsequent to Mar. 29, 2011, has been disclaimed.
Int. Cl.[5] A01N *57/12*
U.S. Cl. 514—120 **20 Claims**

1. A granular insecticidal composition comprising:
at least about 2 weight percent of an insecticidal compound or mixture of compounds of the formula:



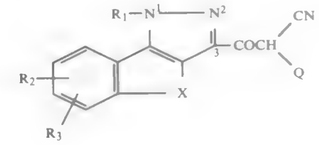
where R and R^1 individually are alkyl, alkenyl or alkynyl containing up to 6 carbons, R^2 is hydrogen, alkyl containing 1 to 18 carbon atoms, cycloalkyl containing 3 to 8 carbon atoms, alkenyl containing 2 to 18 carbon atoms or alkynyl containing 3 to 18 carbon atoms, R^3 is hydrogen or alkyl containing 1 to 6 carbon atoms, and Y is oxygen or sulfur;
at least about 75 weight percent of ammonium sulfate; and
one or more processing aids selected from the group consisting of:
(a) from about 0.5 to about 5 weight percent of one or more flowability agents;
(b) from about 0.5 to about 5 weight percent of one or more lubricants;
(c) from about 1 to about 6 weight percent of one or more binders,
with the proviso that the total weight percent of additives (a), (b) and (c) in said granular composition ranges from at least 1 weight percent to less than about 6 weight percent.

5,352,675

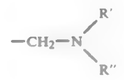
Patent Not Issued For This Number

5,352,676
MORPHALINOMETHYL-SUBSTITUTED 1-PHENYL-INDERO-[1,2-C]PYRAZOL-3-YL DERIVATIVES OF 2-CYANO-3-OXO-PROPANAMIDES USEFUL IN THE TREATMENT OF RHEUMATOID ARTHRITIS
Gianfederico Doria, Milan; Anna M. Isetta, Rho; Rinaldo Ferreccio, Gorgonzola; Mario Ferrari, Milan; Maria C. Fornasiero, Vigevano, and Domenico Trizio, Cassina Rizzardi, all of Italy, assignors to Farmitalia Carlo Erba Srl, Milan, Italy
Division of Ser. No. 972,391, Nov. 6, 1992, Pat. No. 5,260,328, which is a division of Ser. No. 613,482, Oct. 31, 1990, Pat. No. 5,196,445. This application Jul. 1, 1993, Ser. No. 84,470
Claims priority, application United Kingdom, Apr. 6, 1989, GB 8907799.4; PCT Int'l Appl., Apr. 4, 1990, PCT/EP90/00527
Int. Cl.[5] A61K *31/535, 31/115*
U.S. Cl. 514—237.5 **2 Claims**

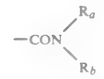
1. A method of treating a mammal suffering from rheumatoid arthritis, which method comprises administering to said mammal a therapeutically effective amount of a heteroaryl-3-oxo-propanenitrile derivative of formula (I)



wherein
X represents a —CH(R_4)—group, wherein R_4 represents hydrogen or C_1–C_6 alkyl;
R_1 represents phenyl, the phenyl being unsubstituted or substituted by a substituent chosen from halogen, trifluoromethyl and C_1–C_6 alkyl;
R_2 represents a



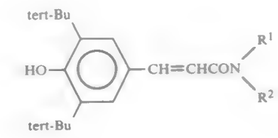
group wherein each of R′ and R″, taken together with the nitrogen atom to which they are linked, form a morpholino ring which is unsubstituted or substituted by C_1–C_6 alkyl;
R_3 is hydrogen;
Q represents a



group wherein R_a represents hydrogen and R_b represents a —$(A)_m$—R_5 group wherein m is zero or 1, A is a C_1–C_6 alkylene chain and R_5 is phenyl, unsubstituted or substituted by one substituent chosen from halogen, CF_3 and C_1–C_6 alkyl; or a pharmaceutically or veterinarily acceptable salt thereof.

5,352,677
CINNAMAMIDE DERIVATIVE
Yoshihide Fuse; Kenji Fujii, both of Takasago; Keiji Kameyama, Mihara; Taizo Kawabe, Takasago; Toshiaki Miwa, and Ikuo Katsumi, both of Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Division of Ser. No. 548,121, Jul. 5, 1990, Pat. No. 5,294,643. This application Jul. 15, 1992, Ser. No. 914,753
Int. Cl.[5] A61K *31/495;* **C07D** *295/104, 401/04*
U.S. Cl. 514—252 **2 Claims**

1. A cinnmamide derivative of formula I or a salt thereof:



(I)

wherein R^1 is selected from the group consisting of

—$(CH_2)_{n1}COR^3$,

Wherein R^3 is



(R^6 is pyridyl or phenyl, and n^3 is an integer of 0 to 3), or

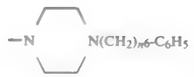
VOL 1167 ISS 1 OCT 4 1994 UMI



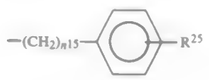
(R^7 is alkyl having 1 to 5 carbon atoms) and n^1 is an integer of 1 to 3;



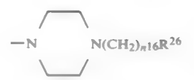
Wherein R^8 is



($n^6$is an integer of 1 to 3), and R^9 is —OH, —OR^{11} (R^{11} is alkyl with 1 to 3 carbon atoms);



wherein R^{25} is



(R^{26} is phenyl or pyridyl, n^{16} is an integer of 1 to 3), and n^{15} is an integer of 0 to 3; and

—$(CH_2)_{n18}R^{28}$.

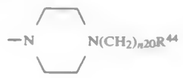
Wherein R^{28} is



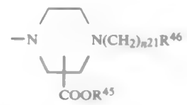
(R^{38} is pyridyl), and n^{18} is an integer of 0 to 3;
R^2 is selected from the group consisting of hydrogen, alkyl having 1 to 5 carbon atoms , and —$(CH_2)_{n19}$—C_6H_5 (n^{19} is an integer of 1 to 3); or
R^1 and R^2 may be linked together with the amide nitrogen to form a ring of



which is selected from the group consisting of



(R^{44} is phenyl or pyridyl, and n^{20} is an integer of 0 to 2),



R^{45} is hydrogen or alkyl having 1 to 3 carbon atoms, R^{46} is phenyl or pyridyl, and n^{21} is an integer of 0 to 2), and



(R^{47} is alkyl having 1 to 5carbon atoms).

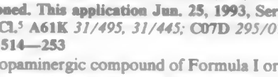
5,352,678

ANTIISCHEMIC PIPERAZINYL- AND PIPERIDINYL-CYCLOHEXANES

Ronald J. Mattson, Meriden, and John D. Catt, Southington, both of Conn., assignors to Bristol-Myers Squibb Co., New York, N.Y.

Continuation-in-part of Ser. No. 848,767, Mar. 11, 1992, abandoned. This application Jun. 25, 1993, Ser. No. 82,587
Int. Cl.[5] A61K *31/495, 31/445;* **C07D** *295/073, 405/10*
U.S. Cl. 514—253 **12 Claims**

1. A dopaminergic compound of Formula I or a pharmaceutically acceptable salt or hydrate thereof:



(I)

wherein
R=R_1 and is independently H or halogen; or R and R_1 may be taken together to form an —$O(CH_2)_mO$— (m=1 or 2);
X=a phenyl residue;
Y=N;
R_2=R_3 and is independently H or C_{1-4} alkyl; and
R_4=phenyl or substituted phenyl wherein the phenyl group is mono-, di- or di-substituted with groups selected from: F, Cl, I and C_{1-4} alkoxy.

5,352,679

USE OF RIFAXIMIN AND PHARMACEUTICAL FORMULATIONS CONTAINING IT IN THE TREATMENT OF GASTRIC DYSPEPSIA CAUSED BY HELICOBACTER PYLORI

Antonella Ferrieri, Tolé, and Leone G. Rotini, Bologna, both of Italy, assignors to Alfa Wassermann S.p.A., Alanno, Italy

Filed Jun. 28, 1993, Ser. No. 83,453
Claims priority, application Italy, Mar. 23, 1993, BO93A 000079
Int. Cl.[5] A61K *31/44*
U.S. Cl. 514—279 **3 Claims**

1. The method of treatment of a patient affected by gastric dyspepsias caused by *Helicobacter pylori,* which consists of orally administering to said patient a composition in unit dosage form containing rifaximin in the amount of 200–2000 mg per dose.

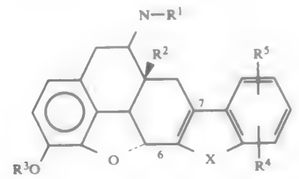
5,352,680

DELTA OPIOID RECEPTOR ANTAGONISTS TO BLOCK OPIOID AGONIST TOLERANCE AND DEPENDENCE

Philip S. Portoghese, St. Paul, and Akira E. Takemori, Edina, both of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Jul. 15, 1992, Ser. No. 914,448
Int. Cl.[5] A61K *31/485*
U.S. Cl. 514—279 **23 Claims**

1. A therapeutic method for treating opiate tolerance in a human undergoing opiate administration comprising administering to said human in need of such treatment an amount of a delta opioid receptor antagonist of the formula I:



wherein R^1 is (C_1–C_5)alkyl, C_3–C_6(cycloalkyl)alkyl, C_5–C_7.(cycloalkenyl)alkyl, aryl, aralkyl, trans(C_4–C_5)alkenyl, allyl or furan-2-ylalkyl, R^2 is H, OH or $O_2C(C_1$–C_5)alkyl; R^3 is H, (C_1–C_5)alkyl; or ((C_1–C_5)alkyl)CO; X is O, S or NY, wherein Y is H or (C_1–C_5)alkyl; and R^4 and R^5 are individually H, F, Cl, Br, NCS, NO_2, NH_2, (C_1–C_5)alkyl or (C_1–C_5)alkoxy, or together are benzo; and the pharmaceutically acceptable salts thereof; wherein said amount is effective to block or reduce the tolerance of said human to an opioid mu receptor agonist.

5,352,681

PHARMACEUTICAL ENEMA PREPARATION

Adrianus Wittebrood, Velserbroek; Adrianus P. De Jong, Driehuis, and Jan Bron, Giessenburg, all of Netherlands, assignors to BYK Nederland BV, Zwanenburg, Netherlands

PCT No. PCT/EP92/01274, § 371 Date Dec. 7, 1993, § 102(e) Date Dec. 7, 1993, PCT Pub. No. WO92/21324, PCT Pub. Date Dec. 10, 1992
PCT Filed Jun. 5, 1992, Ser. No. 157,155
Claims priority, application Switzerland, Jun. 7, 1991, 01690/91-4; Fed. Rep. of Germany, Jul. 5, 1991, 4122337
Int. Cl.[5] A61K *31/60, 31/615, 9/08;* **B65D** *81/24*
U.S. Cl. 514—166 **5 Claims**

1. An aqueous 5-aminosalicylic acid enema suspension preparation which comprises enema suspension preparation, which titanium dioxide in addition to customary enema suspension auxiliaries.

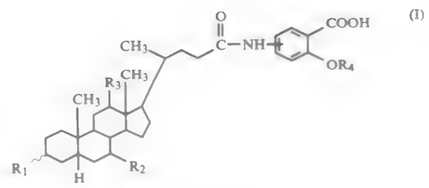
5,352,682

COMPOSITIONS CONTAINING SALTS OF BILE ACID-AMINOSALICYLATE CONJUGATES

Tibor Sipos, Lebanon, N.J., assignor to Digestive Care Inc., Lebanon, N.J.

Filed Mar. 8, 1993, Ser. No. 27,693
Int. Cl.[5] A61K *31/56*
U.S. Cl. 514—182 **4 Claims**

1. A method of treating/preventing bile acid deficiency condition and inflammatory disease in a patient comprising the administration to said patient in need of such treatment/prevention an effective amount of a pharmaceutically acceptable bile acid-aminosalicylic acid conjugate of the formula (I) or a pharmaceutically acceptable salt thereof



(I)

wherein
R_1 is OH either in the α or in the β position;
R_2 is OH;
R_3 is H or OH; and
R_4 is H or acetyl.

5,352,683

METHOD FOR THE TREATMENT OF CHRONIC PAIN

David J. Mayer; Donald D. Price; Jianren Mao, all of Richmond, Va., and John W. Lyle, Belmar, N.J., assignors to Virginia Commonwealth University Medical College of Virginia, Richmond, Va.

Filed Mar. 5, 1993, Ser. No. 27,177
Int. Cl.[5] A61K *31/485*
U.S. Cl. 514—289 **9 Claims**

1. A method of treating chronic pain which comprises administering to a mammal exhibiting chronic pain a chronic pain-alleviating amount of at least one nontoxic N-methyl-D-aspartate receptor antagonist.

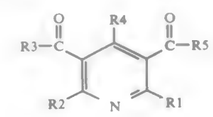
5,352,684

PYRIDINES AS MEDICAMENTS

Peter Zimmermann, and Wolf-Rüdiger Ulrich, both of Konstanz, Fed. Rep. of Germany, assignors to BYK Gulden Lomberg Chemische Fabrik GmbH, Konstanz, Fed. Rep. of Germany

PCT No. PCT/EP91/00661, § 371 Date Oct. 9, 1992, § 102(e) Date Oct. 9, 1992, PCT Pub. No. WO91/15484, PCT Pub. Date Oct. 17, 1991
PCT Filed Apr. 8, 1991, Ser. No. 934,738
Claims priority, application Switzerland, Apr. 10, 1990, 01 222/90
Int. Cl.[5] A61K *31/44, 31/445;* **C07D** *401/06, 401/12*
U.S. Cl. 514—299 **8 Claims**

1. A pyridine compound of formula I

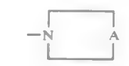


(I)

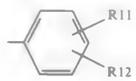
wherein
one of the radicals R1 and R5 denotes 1–6C-alkyl and the other denotes the grouping -E1-E2-N(R6*a*)R6*b*
R2 denotes hydrogen, 1–6C-alkyl or, together with R3, 2–3C-alkylene,
R3 denotes 1–4C-alkyl, 1–4C-alkoxy, 3–5C-alkoxyalkyl, 3–5C-alkoxyalkoxy or, together with R2, 2–3C-alkylene,
R4 denotes phenyl which is substituted by R41 and R42,
R41 denotes hydrogen, hydroxyl, halogen, nitro, cyano, trifluoromethyl, 1–4C -alkyl, 1–4C-alkoxy, 1–4C-alkoxy which is completely or partly substituted by fluorine, 1–4C-alkoxycarbonyl, 2–5C-acyl, amino or mono- or di-1–4—C-alkylamino,
R42 denotes hydrogen, hydroxyl, halogen, nitro, cyano, trifluoromethyl, 1–4C-alkyl, 1–4C-alkoxy, 1–4C-alkoxy which is completely or partly substituted by fluorine,

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1–4C-alkoxycarbonyl, 2–5C-acyl; amino or mono-or di-1–4C-alkylamino,
E1 denotes methylene (CH_2),
E2 denotes straight-chain or branched 1–7C-alkylene, the grouping $-(CH_2)_m-E-(CH_2)_n-$or the grouping -A1-O-A2-,
E denotes vinylene (—CH=CH—) or ethinylene (—C≡C-),
m denotes the number 1 or 2,
n denotes the number 1 or 2,
A1 denotes a bond or 2–4C-alkylene,
A2 denotes 2–4C-alkylene or 2C-alkylenoxy-2C-alkylene,
R6*a l and R6b*, together and including the nitrogen atom to which they are both bonded, represent a radical of the formula



wherein
A denotes $—CH_2—CH_2C(R7)R8—CH_2—CH_2-$, $—CH_2—CH_2CHR9—CH_2—CH_2-$ or $—CH_2—CH_2—CH_2—CHR10-$,
R7 denotes hydrogen (H) or aryl and
R8 denotes aryl,
or
R7 and R8 together denote diarylmethylene,
R9 denotes diaryl-1–4C-alkyl and
R10 denotes aryl-1–4C-alkyl,
wherein
aryl represent a ring of the formula



wherein R11 and R12 are identical or different and denote hydrogen (H), 1–4C-alkyl, 1–4C-alkoxy, halogen, hydroxyl, trifluoromethyl or, together, methylenedioxy, or salt thereof.

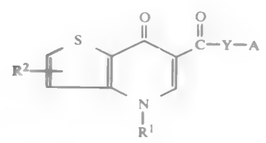
5,352,685

THIENO[3,2-B]PYRIDINE DERIVATIVES

Akira Maruyama, Kashima; Shigeru Ogawa, Machida; Satoshi Yamazaki, Sagamihara, and Akihiro Tobe, Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Mar. 11, 1993, Ser. No. 29,551
Claims priority, application Japan, Mar. 12, 1992, 4-053864
Int. Cl.[5] A61K *31/435;* **C07D** *495/04*
U.S. Cl. 514—301 **21 Claims**

1. A thieno[3,2-b]pyridine derivative represented by formula (I):

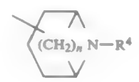


(I)

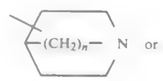
wherein Y represents —O— or



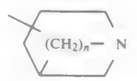
(wherein R^3 represents hydrogen atom or a C_1–C_6 alkyl group); R^1 represents hydrogen atom, a C_1–C_6 alkyl group, a C_2–C_6 alkenyl group, a C_2–C_6 alkynyl group, a C_3–C_8 cycloalkyl group, a C_6–C_{12} aryl group, or a C_7–C_{18} aralkyl group; R^2 represents hydrogen atom, a C_1–C_6 alkyl group, halogen atom, hydroxyl group, a C_1–C_6 alkoxyl group, amino group, a C_1–C_6 alkylamino group, nitro group, mercapto group or a C_1–C_6 alkylthio group; and A is represented by



(II)



(III)



(IV)

(wherein n is an integer of 1 to 4; R^4 represents hydrogen atom, a C_1–C_6 alkyl group, a C_3–C_8 cycloalkyl group or a C_7–C_{18} aralkyl group); a pharmaceutically acceptable salt thereof; an N-oxide derivative or a solvate thereof.

5,352,686

METHOD FOR PRODUCING AN OREXIGENIC EFFECT

John T. Burke, Cincinnati, Ohio, assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 742,951, Aug. 9, 1991, abandoned. This application Jul. 26, 1993, Ser. No. 97,097
Int. Cl.[5] A61K *31/44*
U.S. Cl. 514—306 **2 Claims**

1. A method for producing an orexigenic effect comprising administering to a patient in need thereof an orexigenic amount of endo-hexadro-8-(3-indolycarbonyloxy)-2,6-methano-2H-quinolizin-3(4H-one.

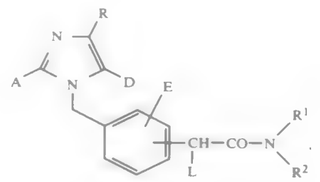
5,352,687

SUBSTITUTED PHENYLACETAMIDES

Ulrich E. Müller, Wuppertal; Matthias Müller-Gliemann, Solingen Ohligs; Jürgen Dressel; Peter Fey, both of Wuppertal; Rudolf Hanko, Duesseldorf; Walter Hübsch; Thomas Kramer, both of Wuppertal; Martin Beuck, Erkrath; Stanislav Kazda, Wuppertal; Stefan Wohlfeil, Hilden; Özkan Yalkinoglu, Wuppertal; Andreas Knorr, Erkrath, and Johannes-Peter Stasch, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

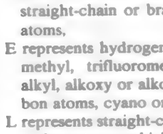
Filed Mar. 3, 1993, Ser. No. 25,479
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1992, 4208051
Int. Cl.[5] A61K *31/535, 31/47;* **C07D** *413/10, 407/10*
U.S. Cl. 514—341 **6 Claims**

1. A substituted phenylacetamide of the formula



(I)

in which
A represents straight-chain or branched alkyl or alkenyl each having up to 8 carbon atoms, or represents cycloalkyl having 3 to 8 carbon atoms,
R represents hydrogen, halogen or perfluoroalkyl having up to 5 carbon atoms,
D represents a group of the formula $—CH_2OR^3$, —CO—R^4, —CO—NR^5R^6,



or



in which
R^3 denotes hydrogen or straight-chain or branched alkyl having up to 8 carbon atoms,
R^4 represents hydrogen, hydroxyl or straight-chain or branched alkoxy having up to 8 carbon atoms,
R^5 and R^6 are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms, or
R^5 has the abovementioned meaning and
R^6 denotes a group of the formula $—SO_2R^{12}$, in which
R^{12} denotes straight-chain or branched alkyl having up to 6 carbon atoms, or benzyl or phenyl which are optionally substituted by straight-chain or branched alkyl having up to 6 carbon atoms,
a and b are identical or different and denote a number 0, 1 or 2,
R^7 denotes hydrogen or straight-chain or branched alkyl having up to 8 carbon atoms or a hydroxyl protective group selected from the group consisting of trimethylsilyl, triethylsilyl, triisopropylsilyl, tert-butyldiphenylsilyl, tert-butyldiphenylsilyl, trimethylsilylethoxycarbonyl, benzyl, triphenylmethyl(trityl), monomethoxytrityl (MMTr), dimethoxytrityl (DMTr), benzyloxycarbonyl, 2-nitrobenzyl, 4-nitrobenzyl, 2-nitrobenzyloxycarbonyl, 4-nitrobenzyloxycarbonyl, tert-butyloxycarbonyl, 4-methoxybenzyl, 4-methoxybenzyloxycarbonyl, formyl, acetyl, trichloroacetyl, 2,2,2-trichloroethoxycarbonyl, 2,4dimethoxybenzyl, 2,4-dimethoxybenzyloxycarbonyl, methoxymethyl, methylthiomethyl, methoxyethoxymethyl, [2-(trimethylsilyl)ethoxy]methyl, 2-(methylthiomethoxy)ethoxycarbonyl, tetrahydropyranyl, benzoyl, 4-methylbenzoyl, 4-nitrobenzoyl, 4-fluorobenzoyl, 4-chlorobenzoyl, and methoxybenzoyl,
R^8 and R^{10} are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 6 carbon atoms, cycloalkyl having 3 to 8 carbon atoms, phenyl or thienyl,
R^9 and R^{11} are identical or different and denote hydrogen or straight-chain or branched alkyl having up to 8 carbon atoms,
E represents hydrogen, halogen, nitro, hydroxyl, trifluoromethyl, trifluoromethoxy, straight-chain or branched alkyl, alkoxy or alkoxycarbonyl each having up to 6 carbon atoms, cyano or carboxyl,
L represents straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by cycloalkyl having 3 to 8 carbon atoms or by phenyl, represents cycloalkyl having 3 to 12 carbon atoms, which is optionally substituted by straight-chain or branched alkyl having up to 6 carbon atoms,
R^1 represents hydrogen or straight-chain or branched alkyl having up to 8 carbon atoms,
R^2 represents pyridyl, morpholinyl, tetrahydropyranyl, tetrahydrofuranyl, quinolinyl, dihydrobenzopyranyl or dihydrobenzofuranyl, which is optionally substituted up to 3 times by identical or different substituents from the group consisting of nitro, cyano, halogen, hydroxyl, trifluoromethyl, carboxyl, straight-chain or branched alkoxy or alkoxycarbonyl each having up to 6 carbon atoms, phenoxy, benzyloxy, phenoxycarbonyl and benzyloxycarbonyl, or represents a radical of the formula

in which
R^{13} denotes phenyl which is optionally substituted up to 3 times by identical or different substituents from the group consisting of halogen, hydroxyl and trifluoromethyl or by straight-chain or branched alkyl or alkoxy each having up to 8 carbon atoms,
c, d, e and f are identical or different and denote a number 0, 1, 2, 3 or 4,
R^{14} denotes hydrogen, trifluoromethyl, carboxyl or straight-chain or branched alkoxycarbonyl having up to 8 carbon atoms or the group —CO—NH_2 or pyridyl or morpholinyl, or a salt thereof.

5,352,688

METHODS FOR THE TREATMENT OF BRADYPHRENIA IN PARKINSON'S DISEASE

Ram Kaminski, Riverdale, N.Y., assignor to The Mount Sinai School of Medicine of the City University of New York, New York, N.Y.

Continuation-in-part of Ser. No. 743,254, Aug. 9, 1991, Pat. No. 5,177,081, which is a division of Ser. No. 655,759, Feb. 15, 1991, Pat. No. 5,070,101. This application Sep. 30, 1992, Ser. No. 954,258
Int. Cl.[5] A61K *31/44, 31/425, 31/415, 31/34*
U.S. Cl. 514—357 **14 Claims**

1. A method for treating the symptoms of bradyphrenia in a patient suffering from Parkinson's Disease comprising administering to the patient a compound selected from the group consisting of famotidine, ranitidine, cimetidine, nizatidine, omeprazole, tiotidine, and aminofurazan compounds, that crosses the blood brain barrier in an amount effective to ameliorate the symptoms of bradyphrenia.

5,352,689

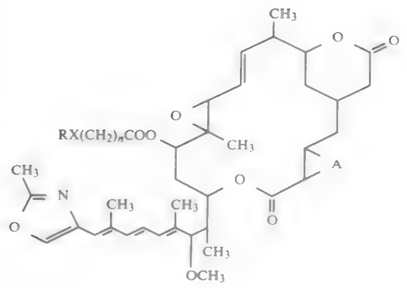
RHIZOXIN DERIVATIVES AND THEIR USE AS ANTI-TUMOR AGENTS

Masakatsu Kaneko; Makoto Kamokari; Tomowo Kobayashi, and Kazuhiko Sasagawa, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Continuation of Ser. No. 931,910, Aug. 18, 1992, abandoned, which is a continuation of Ser. No. 809,108, Dec. 13, 1991, abandoned, which is a continuation of Ser. No. 520,979, May 8, 1990, abandoned, which is a continuation of Ser. No. 375,869, Jul. 5, 1989, abandoned. This application Sep. 27, 1993, Ser. No. 128,046
Claims priority, application Japan, Jul. 6, 1988, 63-168152
Int. Cl.[5] A61K *31/42*
U.S. Cl. 514—374 **32 Claims**

1. A compound of the formula (I):

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(I)

in which:

n represents an integer of from 1 to 25,

A represents an oxygen atom,

X represents a sulfur atom or NR and

when X represents a sulfur atom,

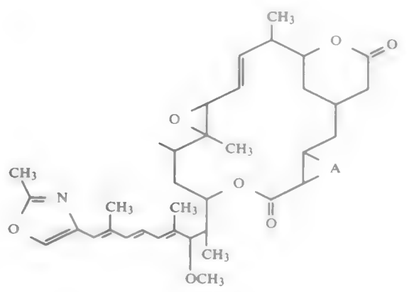
R represents a hydrogen atom; an aliphatic carboxylic acyl group having from 1 to 25 carbon atoms, which group is unsubstituted or has at least one substituent selected from the group consisting of substituents (a), defined below; an alkoxycarbonyl group in which the alkoxy part has from 1 to 25 carbon atoms and is unsubstituted or has at least one substituent selected from the group consisting of substituents (a), defined below; an alkylthio group in which the alkyl part has from 1 to 25 carbon atoms and is unsubstituted or has at least one substituent selected from the group consisting of substituents (a), defined below; or a benzylthio group;

when X represents NR,

R is independently selected from the group consisting of R^1 and R^2, where R^1 and R^2 are independently selected from the group consisting of hydrogen atoms, alkyl groups, aliphatic carboxylic acyl groups, alkoxycarbonyl groups, in which said acyl and alkyl groups and the alkyl part of said alkoxycarbonyl has from 1 to 25 carbon atoms and is unsubstituted or has at least one substituent (a) selected from the group consisting of

a halogen atom, a carboxy group, a hydroxy group, a group of the formula —COO—Rhz, where Rhz is as defined below, a 2,4-dicyclohexylallophanyl group, a phenyl group, a nitrophenyl group, and a cyanophenyl group;

RhZ represents a group of the formula (II):



(II)

and a ring-opened acid corresponding to said compound of formula (I) and salts and esters of said acid.

5,352,690

1,2,4-TRIOXYGENATED BENZENE DERIVATIVES USEFUL AS LEUKOTRIENE ANTAGONISTS

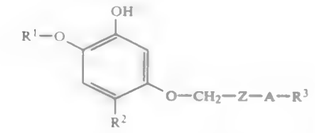
Michael J. Sofia, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jul. 1, 1992, Ser. No. 907,492

Int. Cl.[5] C07D *257/06, 311/74;* **A61K** *31/41, 31/37*

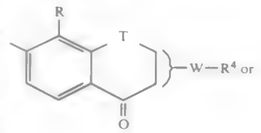
U.S. Cl. 514—381 **23 Claims**

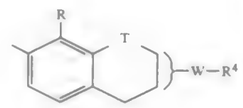
1. A compound of the Formula



Ia

and pharmaceutically accpetable base addition salts thereof, wherein R_1 is C_1–C_6 alky, or C_5–C_6 alkyl, or C_5–C_6 cycloalkyl; R^2 is C_1–C_4 alkyl; Z is C_2–C_4 alkylidene; A is —O—, —CH_2—, or —$C(CH_3)_2$—; R^3 is —COOH, 5-tetrazolyl or a bicyclic group having the structure





where

R is n-propyl,

T is —O—,

W is a bond, and R^4 is —COOH or 5-tetrazolyl.

5,352,691

EFFECTIVE TREATMENT MODALITY FOR ADULT RESPIRATORY DISTRESS SYNDROME USING L-HISTIDINE

Peter G. Thomas, 14 Old Farm Rd., Charlottesville, Va. 22903

Filed Feb. 16, 1993, Ser. No. 17,766

Int. Cl.[5] A61K *31/415*

U.S. Cl. 514—385 **5 Claims**

1. A method for treating adult respiratory distress syndrome, comprising the step of:

administering to a patient in need thereof, a therapeutically effective amount of L-histidine.

5,352,692

THIOPHENE-2-CARBOXYLIC ACID DERIVATIVES

Gerhard Greier, Linz, and Dieter Binder, Vienna, both of Austria, assignors to Laevosan Gesellschaft M. B. H., Linz, Austria

PCT No. PCT/AT92/00044, § 371 Date Feb. 4, 1993, § 102(e) Date Feb. 4, 1993, PCT Pub. No. WO92/17472, PCT Pub. Date Oct. 15, 1992

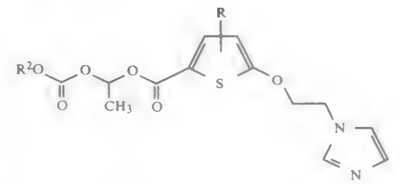
PCT Filed Apr. 1, 1992, Ser. No. 938,166

Claims priority, application Austria, Apr. 4, 1991, 716/91

Int. Cl.[5] A61K *31/415;* **C07D** *409/12*

U.S. Cl. 514—397 **5 Claims**

1. A compound of formula (I)



(I)

in which R in position 3 or 4 is hydrogen, methyl, chlorine or bromine and R^2 is C_1–C_{10}-alkyl, C_3–C_7- cycloalkyl or benzyl, or a pharmaceutically acceptable addition salt thereof with weak organic acids.

5,352,693

PRESERVATIVE MIXTURES

Thomas E. Farina, Flemington, N.J., assignor to Lonza Inc., Fair Lawn, N.J.

Filed Sep. 25, 1992, Ser. No. 951,573

Int. Cl.[5] A61K *31/235, 31/415*

U.S. Cl. 514—398 **9 Claims**

1. A solid preservative composition comprising a dispersion of an alkyl ester of p-hydroxybenzoic acid or mixtures of such esters in a hydroxymethyl-substituted dimethylhydantoin, wherein the aforesaid alkyl group has from 1 to 6 carbon atoms and the weight ratio of the hydantoin to the ester component is from 1:3 to 9:1.

5,352,694

PHARMACEUTICAL AGENTS

Murray W. Cuthbert, Macclesfield, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Sep. 3, 1992, Ser. No. 940,138

Claims priority, application United Kingdom, Sep. 5, 1991, 91109001.7

Int. Cl.[5] C07D *209/08;* **A61K** *31/405*

U.S. Cl. 514—415 **6 Claims**

1. A physical form of (*R*)-3-methoxy-4-[1-methyl-5-(2-methyl-4, 4, 4-trifluorobutylcarbamoyl) indol-3-ylmethyl]-N-(2-methylphenylsulphonyl)benzamide, which form is crystalline, has an X-ray powder diffraction pattern with specific peaks at $2\theta = 14.0$, 19.4, 22.0, 22.4 and 24.7°, has an infra-red spectrum (0.5% in KBr) having sharp peaks at 3390, 1620, 1250 and 885 cm^{-1}, and has a melting point of 180-183°C.

5,352,695

USE OF LYSINE PYRROLIDONE CARBOXYLATE AND/OR OF ARGININE PYRROLIDONE CARBOXYLATE AS AN ANTOXIDANT SUBSTANCE IN COSMETIC OR PHARMACEUTICAL COMPOSITIONS

Lan Quang N'Guyen, Antony, and Etienne Soudant, Fresnes, both of France, assignors to L'Oreal, Paris, France

Filed Apr. 24, 1992, Ser. No. 873,138

Claims priority, application France, Apr. 24, 1991, 91 05062

Int. Cl.[5] A61K *31/40, 31/195*

U.S. Cl. 514—423 **8 Claims**

1. A method of inhibiting oxidation in a cosmetic or pharmaceutical composition intended for the treatment of the skin comprising combining with the cosmetic or pharmaceutical vehicle of said composition an anti-oxidant mixture comprising:

(i) from 0.1 to 20% by weight of an active ingredient selected from the group consisting of lysine pidolate, arginine pidolate and mixtures thereof, and

(ii) from 0.005 to 5% by weight of a phenolic derivative selected from the group consisting of tocopherol and derivatives thereof, butylhydroxytoluene and derivatives thereof, and esters and amides of caffeic acid.

5,352,696

QUATERNARY NITROGEN-CONTAINING VITAMIN E DERIVATIVES AND USES THEREOF

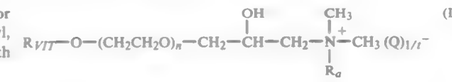
Young D. Kim, Seoul, Rep. of Korea, assignor to Pacific Corporation, Seoul, Rep. of Korea

Filed Jan. 22, 1993, Ser. No. 8,564

Int. Cl.[5] A61K *31/355;* **C07D** *311/72*

U.S. Cl. 514—458 **9 Claims**

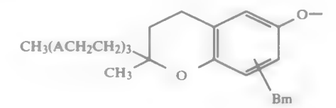
1. A quaternary nitrogen-containing vitamin E derivative represented by formula (I):



(I)

wherein:

R_{VIT}—O— is a vitamin E radical represented by the formula:



wherein:

A is



B is —CH_3 located at the 5-, 7- or 8- position of tocopherol; and

m is an integer from 1 to 3, inclusive,

R_a is an alkyl group having up to 12 carbon atoms, or a hydroxyalkyl group having up to 12 carbon atoms;

n is an integer from 0 to 30, inclusive,

$O^-_{1/t}$ is the anion of a strong inorganic acid of valence t.

5,352,697

STORAGE STABLE PESTICIDE COMPOSITIONS COMPRISING AZADIRACHTIN AND EPOXIDE

Brett J. Butler, Concord, Calif.; William P. Ellenberger, Salem, Utah, and Barry A. Omilinsky, Trenton, N.J., assignors to AgriDyne Technologies, Inc., Salt Lake City, Utah

Filed Jul. 28, 1992, Ser. No. 920,800

Int. Cl.[5] A01N *43/08, 37/00*

U.S. Cl. 514—468 **22 Claims**

1. A storage-stable pesticide composition comprising from about 0.1 percent to about 85 percent azadirachtin and from about 0.1 percent to about 40 percent epoxide, wherein said percentages are on a weight/weight basis.

5,352,698

METHODS OF TREATMENT FOR PATIENTS SUFFERING FROM RILEY-DAY DISEASE

Maurizio Santini, Via Vanvitelli, 19, 20129 - Milan, Italy

Filed Sep. 16, 1992, Ser. No. 945,665

Claims priority, application Italy, Sep. 17, 1991, MI91A-002444

Int. Cl.[5] A61K *31/27, 31/22*

U.S. Cl. 514—478 **4 Claims**

1. A method of treatment of a human subject affected by cutaneous and corneal analgesia, ageusia, anosmia and proprioceptive and vestibular areflexia of the Riley-Day disease which consists of administering supra cutem or i.m. to said human subject a composition containing 0.3–9 mgs of carbachol per

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dose for supra cutem or 0.25–0.75 mgs or carbachol per dose for i.m. administration.

5,352,699

USE OF RETINIOC ACID TO TREAT VAGINAL ATROPHY

Connie Jackson, Brookline, Mass., assignor to University of Massachusetts Medical Center, Worcester, Mass.

Continuation of Ser. No. 876,495, Apr. 30, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 150,763

Int. Cl.[5] A61K *31/20*

U.S. Cl. 514—559 4 Claims

1. A method of treating vaginal atrophy in a human patient comprising topically administering retinoic acid to said patient's vagina, said retinoic acid being administered in a dosage sufficient to ameliorate the symptoms of vaginal atrophy.

5,352,700

USE OF ESSENTIAL FATTY ACIDS FOR THE PREPARATION OF A DRUG FOR THE TREATMENT OF INFANTILE SEBORRHEIC ECZEMA

Anders Frithz, Börjessonsvägen 49, S-161 55 Bromma, and Anders Tolleson, Saltsjöväg 15 A, S-181 62 Lidingö, both of Sweden

PCT No. PCT/SE89/00323, § 371 Date Dec. 9, 1991, § 102(e) Date Dec. 9, 1991, PCT Pub. No. WO90/14824, PCT Pub. Date Dec. 13, 1990

PCT Filed Jun. 7, 1989, Ser. No. 777,306

Int. Cl.[5] A61K *31/20*

U.S. Cl. 514—560 13 Claims

1. A method for the treatment of infantile seborrheic eczema comprising administering to a patient suffering from infantile seborrheic eczema a composition comprising at least one essential fatty acid having 18–20 carbon atoms in an amount sufficient for said treatment.

5,352,701

LEUKOTRIENE-B_4 ANTAGONIST COMPOUNDS AND THEIR USE AS PHARMACEUTICAL AGENTS

Josef Heindl; Werner Skuballa; Bernd Buchmann; Wolfgang Frohlich; Roland Ekerdt, and Claudia Giesen, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin und Bergkamen, Fed. Rep. of Germany

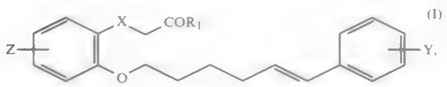
Filed May 5, 1993, Ser. No. 50,195

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1990, 4028866

Int. Cl.[5] C07C *65/40;* A61K *31/19*

U.S. Cl. 514—568 6 Claims

1. A leukotriene-B_4 antagonist of formula I



(I)

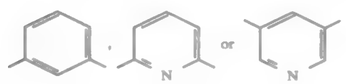
wherein:

X is a CH_2 group or an oxygen atom,

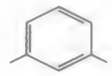
Y is C_1–C_4-alkoxy or —$S(O)_p$—C_1–C_4-alkyl,

p is 0, 1 or 2,

Z is a hydrogen atom or the radical A-B-COOH, with A being a hydroxymethylene group or a carbonyl group and B being an alkylene group with 1–6 atoms in the chain or a radical



with the exception that B is not the radical



if X is a CH_2 group, R_1 is the radical OH, —O—(C_1–C_4)-alkyl, —O—(C_3–C_6)-cycloalkyl, —O—(C_6–C_{10})-aryl, —O—(C_7–C_{12})-aralkyl or the radical NHR_6, where R_4 is hydrogen, (C_1–C_4)-alkyl, (C_3–C_6)-cycloalkyl or (C_7–C_{12})-aralkyl or salts with physiologically compatible bases and cyclodextrin clathrates thereof.

5,352,702

METHOD FOR TREATING GLAUCOMA

Marshall N. Cyrlin, 6200 Northfield Rd., West Bloomfield, Mich. 48322

Filed Feb. 4, 1993, Ser. No. 13,563

Int. Cl.[5] A61K *31/19*

U.S. Cl. 514—571 18 Claims

1. A method for treating glaucoma in an eye of a human patient, the method comprising the step of:

chronically, orally administering to the patient an unsaturated ketone derivative of an aryloxyacetic acid in an amount sufficient to safely and effectively lower intraocular pressure in the human eye.

5,352,703

ANTITUSSIVE AND MUCUS REGULATING AGENT, A PROCESS FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING IT

Giuseppe Quadro, Milan, Italy, assignor to Mediolanum Farmaceutici S.p.A., Milan, Italy

PCT No. PCT/EP91/01023, § 371 Date Nov. 23, 1993, § 102(e) Date Nov. 23, 1992, PCT Pub. No. WO91/18865, PCT Pub. Date Dec. 12, 1991

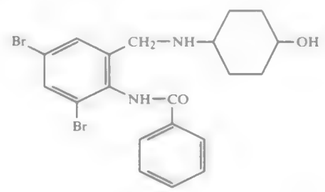
PCT Filed Jun. 3, 1991, Ser. No. 952,838

Claims priority, application Italy, Jun. 6, 1990, 20562 A/90

Int. Cl.[5] A61K *31/165;* C07C *233/66*

U.S. Cl. 514—617 4 Claims

1. 2-Benzoylamino-3,5-dibromo-N-(4-hydroxycyclohexyl)-benzylamine of formula (I)



and pharmaceutically acceptable acid addition salts.

5,352,704

GUANIDINOBENZENE DERIVATIVES

Akira Okuyama; Kyozo Naito; Hidetoshi Ogino; Toshio Nagase; Kiyofumi Ishikawa, and Nobuo Tanaka, all of Meguro, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

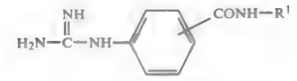
Continuation of Ser. No. 630,985, Dec. 24, 1990, abandoned. This application Oct. 20, 1992, Ser. No. 963,528

Claims priority, application Japan, Dec. 22, 1989, 1-334188

Int. Cl.[5] A61K *31/165;* C07C *233/64*

U.S. Cl. 514—619 2 Claims

1. A guanidinobenzene derivative represented by the formula (I):



(I)

wherein R^1 represents a substituent selected from the group consisting of a phenyl group substituted by an amidino group and a naphthyl group substituted by an amidino group or a pharmaceutically acceptable acid addition salt thereof.

5,352,705

INHIBITORS OF FARNESYL PROTEIN TRANSFERASE

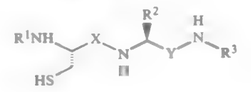
Albert A. Deana, deceased, late of Lansdale by Ermelinda S. Deana, Legal Representative ; S. Jane deSolms, Norristown; Samuel L. Graham, Schwenksville, and Robert L. Smith, Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 26, 1992, Ser. No. 905,927

Int. Cl.[5] A61K *31/16;* C07C *237/06*

U.S. Cl. 514—630 12 Claims

1. A compound of the formula:



wherein:

I is  ;

R^1 is an alkyl group, hydrogen, an acyl group, an alkylsulfonyl group or arylsulfonyl group, wherein alkyl and acyl groups comprise straight chain or branched chain hydrocarbons of 1 to 6 carbon atoms which alternatively may be substituted with an aryl group;

R^2 is the side chains of naturally occurring amino acids, or in the alternative may be substituted or unsubstituted aliphatic, or aromatic groups selected from the group consisting of allyl, cyclohexyl, phenyl, or saturated chains of 2 to 8 carbon atoms which may be branched or unbranched, wherein the aliphatic substitutents may be substituted with an aromatic ring;

R^3 is an aromatic ring or in the alternative, an alkyl group or an aryl substituted alkane, wherein the aromatic ring is unsubstituted or in the alternative, substituted with one or more groups selected from the group consisting of alkyl, halo, alkoxy, trifluoromethyl or sulfamoyl groups, and which may be polycyclic;

or the pharmaceutically acceptable salts thereof.

5,352,706

METHOD AND COMPOSITION FOR CONTROLLING THE GROWTH OF MICROORGANISMS

Deborah K. Donofrio, The Woodlands, Tex., and Wilson K. Whitekettle, Jamison, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Jul. 22, 1993, Ser. No. 95,976

Int. Cl.[5] A01N *41/10, 33/12*

U.S. Cl. 514—643 7 Claims

1. A microbial inhabiting composition comprising (a) diiodomethyl-p-tolylsulfone and (b) alkyl dimethyl benzyl ammonium chloride wherein (a) and (b) are present in an amount synergistically effective to reduce the growth of fungi.

5,352,707

METHOD FOR TREATING AIRWAY CONGESTION

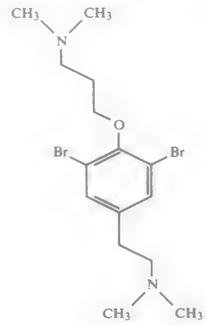
Shirley A. Pompni, Fort Pierce, Fla.; Vincent P. Gullo, Liberty Corner, N.J.; Ann C. Horan, Summit, N.J.; Mahesh G. Patel, Verona, N.J., and Stephen Coval, Clinton, N.J., assignors to Harbor Branch Oceanographic Institution, Inc., Fort Pierce, Fla.

Filed Mar. 26, 1992, Ser. No. 857,889

Int. Cl.[5] A61K *31/135*

U.S. Cl. 514—651 3 Claims

1. A method for treating airway congestion associated with histamine binding to a histamine H_3 receptor which comprises administering an effective amount of the compound



II

or a pharmaceutically acceptable salt thereof.

5,352,708

NON-ACIDIC CYCLOPENTANE HEPTANOIC ACID, 2-CYCLOALKYL OR ARYLALKYL DERIVATIVES AS THERAPEUTIC AGENTS

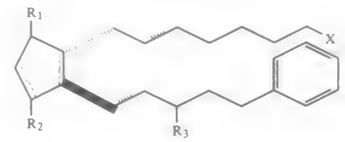
David F. Woodward, El Toro; Steven W. Andrews; Robert M. Burk, both of Irvine, and Michael E. Garst, Newport Beach, all of Calif., assignors to Allergan, Inc., Irvine, Calif.

Filed Sep. 21, 1992, Ser. No. 948,056

Int. Cl.[5] A61K *31/045*

U.S. Cl. 514—729 8 Claims

1. A method of treating ocular hypertension which comprises applying to the eye an amount sufficient to treat ocular hypertension of a compound of formula III.



wherein hatched lines indicate α configuration and solid triangles indicate β configuration, and the dashed bonds represent a single or double bond which can be in the cis or trans configuration; X is hydroxyl; one of R_1 and R_2 is =O, —OH or a —O(CO)R_6 group, and the other one is —OH or —O(CO)R_6, or R_1 is =O and R_2 is H; wherein $R_6$is a saturated or unsaturated acyclic hydrocarbon group having from 1 to about 20 carbon atoms, or —(CH_2)mR_7 wherein m is 0–10, and R_7 is cycloalkyl radical, having from to three seven carbon atoms, or a hydrocarbyl aryl or heteroaryl, wherein the heteroatom is selected from the group consisting of nitrogen, oxygen, and sulfur atoms and R_3 is hydroxyl.

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5,352,709
ALGAL PLASTICS
Laurence B. Tarrant, Harvard, Mass.; Toshimasa Tokuno, Tokyo, Japan, and Satya Shivkumar, Worcester, Mass., assignors to International Technology Management Associates, Ltd., Harvard, Mass.
Filed Jan. 29, 1993, Ser. No. 11,408
Int. Cl.[5] C08J *9/06, 9/12;* C08L *1/08, 3/04*
U.S. Cl. 521—84.1 52 Claims

1. A foamed packing material comprising a foamed and stabilized filamentous algal fiber matrix having substantial dimensional stability.

5,352,710
NEITHER TOXIC NOR ENVIRONMENTALLY NOXIOUS FOAMED-POLYMER PRODUCTS
Leone Lauri, Ponte Nelle Alpi, Italy, assignor to Prima S.p.A., Venezia, Italy
Filed May 15, 1992, Ser. No. 884,737
Claims priority, application Italy, May 17, 1991, MI 91 A 001358; Oct. 15, 1991, MI 91 A 002720
Int. Cl.[5] C08F *14/06*
U.S. Cl. 521—137 10 Claims

1. Cellular, foamed-polymer product characterized in that said product is constituted by:
from 1% to 20% of 4,4,'diphenylmethane-diisocyanate
from 10% to 30% of 2,4/2,6-toluene-diisocyanate
from 5% to 10% of maleic anhydride
from 40% to 60% of poly-(vinyl chloride)
from 3% to 10% of phthalic anhydride
from 0.5% to 7% of azobis-(isobutyronitrile)
from 0.1% to 3% azodicarbonamide
from 1% to 5% of styrene and
from 0.3% to 3% of the mixture consisting essentially of beta-diacetones, calcium stearate and zinc stearate.

5,352,711
METHOD FOR HYDROPHILIZING ABSORBENT FOAM MATERIALS
Thomas A. DesMarais, Norwood, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Aug. 12, 1991, Ser. No. 743,951
Int. Cl.[5] C08J *9/28*
U.S. Cl. 521—149 20 Claims

1. A method for rendering substantially hydrophobic polymeric foam material suitable for absorbing hydrophilic liquids, which method comprises
A) incorporating into a substantially hydrophobic polymeric foam material a substantially water-insoluble surfactant selected from the group consisting of sorbitan fatty acid esters, polyglycerol fatty acid esters and polyoxyethylene fatty acids and esters polyglycerol fatty acid esters and polyoxyethylene fatty acids and esters and a hydrophilizing salt solution formed from a solvent and a dissolved hydrophilizing salt selected from the group consisting of toxicologically acceptable, hydrated or hydratable calcium and magnesium slats; and
B) thereafter drying said polymeric foam material to remove solvent therefrom and to thereby leave incorporated within said polymeric foam material a hydrophilizing amount of said surfactant and said hydrophilizing salt.

5,352,712
ULTRAVIOLET RADIATION-CURABLE COATINGS FOR OPTICAL FIBERS
Paul J. Shustack, West Chester, Ohio, assignor to Borden, Inc., Columbus, Ohio
Continuation-in-part of Ser. No. 742,531, Aug. 8, 1991, Pat. No. 5,146,531, which is a continuation of Ser. No. 350,239, May 11, 1989, abandoned. This application Apr. 16, 1992, Ser. No. 868,933
Int. Cl.[5] B32B *17/02, 17/04;* C08G *18/62;* C08F *2/50*
U.S. Cl. 522—31 50 Claims

1. A radiation-curable primary coating composition for an optical fiber comprising
(A) from about 10 percent to about 90 percent by weight of a reactively terminated urethane oligomer which is the reaction product of (i) a hydrocarbon polyol, the hydrocarbon portion of which is fully or partially hydrogenated and has a weight average molecular weight of from about 500 to about 4,000; (ii) a wholly aliphatic polyisocyanate; and (iii) an endcapping monomer supplying a reactive terminus;
(B) from about 10 percent to about 90 percent by weight of a hydrocarbon monomer containing between 6 and 20 carbon atoms which is terminated with at least one end group reactive with the reactive terminus of (A); and
(C) optionally, from about 0.05 percent to about 10.0 percent by weight of photoinitiator,
wherein all of the stated percentages are percentages by weight based on the total weight of (A), (B), and (C),
wherein the tensile modulus of the coating composition, when cured, is less about 500 psi at 25° C.,
and wherein the refractive index of the cured coating composition is 1.48 or higher.

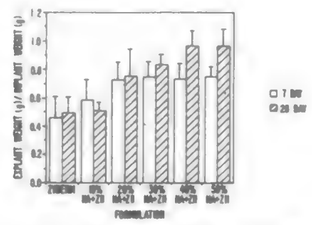
5,352,713
FREE RADICAL CO-POLYMERIZATION OF ACRYLATES AND VINYL ETHERS
James R. Snyder, Chicago; George D. Green, Park Ridge, and John J. Krajewski, Wheeling, all of Ill., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.
Filed Apr. 1, 1992, Ser. No. 862,618
Int. Cl.[5] C08F *2/50*
U.S. Cl. 522—40 13 Claims

1. A radiation curable coating composition consisting essentially of
(a) multifunctional acrylate oligomers and monomers;
(b) vinyl ether monomers in amounts up to 20 equivalent % of the composition;
(c) an effective amount of a derivative of acetophenone or a benzoyl diaryl phosphene oxide as a free radical photoinitiator.

5,352,714
WETTABLE SILICONE HYDROGEL COMPOSITIONS AND METHODS FOR THEIR MANUFACTURE
Yu-Chin Lai, Pittsford; Gary D. Friends, Ontario, and Paul L. Valint, Jr., Pittsford, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Continuation-in-part of Ser. No. 788,067, Nov. 5, 1991, abandoned. This application Jul. 30, 1992, Ser. No. 922,594
Int. Cl.[5] C08F *230/08, 26/06, 30/08*
U.S. Cl. 523—107 23 Claims

1. A method for making a silicone-containing hydrogel composition comprising the steps of a) combining a ring-containing oxazolone monomer in the amount of from about 0.5 to about 10 weight percent able to be converted to a highly polar hydrophilic amino acid upon hydration with an α, ω-bis(methacryloxyalkyl)polysiloxane monomer and at least one additional hydrophilic monomer into a monomer mix and b) curing the monomer mix resulting from step a) to form a silicone-containing hydrogel composition.

5,352,715
INJECTABLE CERAMIC COMPOSITIONS AND METHODS FOR THEIR PREPARATION AND USE
Donald G. Wallace, Menlo Park; Hugh McMullin, Pacifica, and George Chu, Cupertino, all of Calif., assignors to Collagen Corporation, Palo Alto, Calif.
Continuation of Ser. No. 843,646, Feb. 28, 1992, abandoned. This application Aug. 2, 1993, Ser. No. 101,333
Int. Cl.[5] A61F *2/00;* C08K *3/32;* A61M *31/00*
U.S. Cl. 523—115 37 Claims



1. An injectable implant composition comprising collagen and biocompatible ceramic particles present in a pharmaceutically acceptable fluid carrier, wherein the ceramic particles have been size selected to have a size distribution in the range from 50 μm to 250 μm.

5,352,716
DEGRADABLE SYNTHETIC POLYMERIC COMPOUNDS
Graham M. Chapman, and Robert H. Downie, both of Williamsville, N.Y., assignors to Ecostar International, L.P., Tonawanda, N.Y.
Filed Dec. 16, 1992, Ser. No. 991,320
Int. Cl.[5] C08K *3/20*
U.S. Cl. 523—128 28 Claims

1. A synthetic thermoplastic polymeric compound which is degradable into innocuous products under the action of naturally occurring decomposition forces comprised of heat, underwater disposal, and/or microbiological organisms, which comprises:
(a) a thermoplastic polymeric component formed of long chain carbon-to-carbon linkages;
(b) a biodegradable component mixed with the thermoplastic component, wherein the naturally occurring decomposition forces effect decomposition removal of the biodegradable component to increase the exposure area of the carbon-to-carbon linkages of the thermoplastic polymeric component;
(c) an oxidizable component that reacts with the exposed carbon-to-carbon linkages of the thermoplastic component under the action of the naturally occurring forces to sever the linkages and effect degradation of the thermoplastic polymeric component;
(d) a first transition metal component that is soluble in the synthetic thermoplastic polymeric compound and which serves as an initiator for the reaction of the oxidizable component;
(e) a second transition metal component which acts as a catalyst with the first transition metal component to enhance degradation of the thermoplastic polymeric component;
(f) oxidation promoting component which in conjunction with the first and second transition metal components enhances the action of the oxidizable component to degrade the carbon-to-carbon linkages of the thermoplastic polymeric component under the action of the naturally occurring forces; and
(g) a non-metal. Containing stabilizing component, wherein the stabilizing component comprises a hindered phenol that retards commencement of the degradation process until the polymeric component is subjected to the naturally occurring decomposition forces.

5,352,717
ADHESIVES AND SEALANTS
Finn Bergishagen, West Bloomfield, Mich., assignor to American Maize Technology Inc., Dimmitt, Tex.
Division of Ser. No. 952,608, Sep. 28, 1992, Pat. No. 5,258,414, which is a continuation-in-part of Ser. No. 764,347, Sep. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 518,794, May 4, 1990, Pat. No. 5,063,251. This application Jul. 26, 1993, Ser. No. 97,766
Int. Cl.[5] C08L *3/02*
U.S. Cl. 524—48 4 Claims

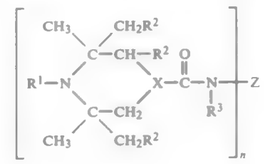
1. A method for increasing the adhesive nature of a polymer adhesive and/or a polymer sealant material comprising the steps of:
(a) adding to said adhesive and/or sealant material an effective amount of an uncomplexed cyclodextrin; and
(b) mixing said polymer adhesive and/or polymer sealant material and uncomplexed cyclodextrin to form an admixture with improved adhesion.

5,352,718
ELECTRORHEOLOGICAL SEMISOLID
Yuichi Ishino, Fuchu; Takayuki Maruyama, Kodaira, and Tasuku Saito, Tokorozawa, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Oct. 21, 1991, Ser. No. 779,906
Claims priority, application Japan, Oct. 24, 1990, 2-284389
Int. Cl.[5] C08J *3/00;* C08K *3/04;* C09K *5/00*
U.S. Cl. 524—66 20 Claims

1. An electrorheological semisolid comprising:
20–70 weight parts of carbonaceous particulates having an average particle size of 0.1–500 μm and a carbon/hydrogen atomic ration (C/H ratio) of 1.2–5 dispersed in 80–30 weight parts of a dispersion medium comprising a partially crosslinked electric insulating polymer having a penetration of 40–475 at 25° C.

5,352,719
HINDERED AMINE LIGHT STABILIZER HYDRAZIDES
Terry N. Myers, Erie, N.Y., assignor to Elf Atochem North America, Inc., Philadelphia, Pa.
Division of Ser. No. 553,923, Jul. 17, 1990, Pat. No. 5,116,976. This application Mar. 12, 1992, Ser. No. 849,904
Int. Cl.[5] C08K *5/3435*
U.S. Cl. 524—102 29 Claims

1. A process for stabilizing a synthetic or natural polymer composition against the degradative effects of heat and light which comprises incorporating into a composition comprising at least one natural or synthetic polymer a stabilizing effective amount of a hindered amine compound of the formula



where
R^1 is hydrogen, oxyl, hydroxyl, substituted or unsubstituted aliphatic of 1–20 carbons, substituted or unsubstituted alicyclic of 5–12 carbons, substituted or unsubstituted carbocyclic araliphatic of 7–22 carbons, substituted or unsubstituted aliphatic acyl of 2–20 carbons, substituted or

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unsubstituted alicyclic acyl of 7–16 carbons, substituted or unsubstituted carbocyclic aromatic acyl of 7–11 carbons, substituted or unsubstituted carbocyclic araliphatic acyl of 7–22 carbons, $—(C(=O))_a—N(R^4)(R^5)$, $—(C(=O))_a—O—R^6$, $—(CH_2)_a—C(=O)—O—R^7$ where a is 1–2, or $—(CH_2—CH(R^8)—O)_b—R^9$ where b is 2–50;

R^2 is hydrogen or aliphatic of 1–4 carbons;

R^3 is hydrogen, substituted or unsubstituted aliphatic of 1–20 carbons, substituted or unsubstituted carbocyclic araliphatic of 7–22 carbons or substituted or unsubstituted alicyclic of 5–12 carbons;

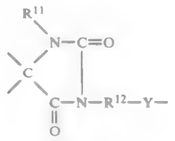
R^4 and R^5 are independently hydrogen, substituted or unsubstituted aliphatic of 1–20 carbons, substituted or unsubstituted carbocyclic aryl of 6–14 carbons, substituted or unsubstituted carbocyclic araliphatic of 7–22 carbons or substituted or unsubstituted alicyclic of 5–12 carbons which may optionally contain $—N(R^{10})—$ as a ring member with the proviso that bonding to the amide nitrogen to which R^4 and R5 are attached is through a carbon atom, or R^4 and R^5 may be linked together through $—N(R^{10})—$ or —O— to form a heterocyclic ring including the nitrogen atom to which they are attached of 5–7 atoms with the proviso that the $—N(R^{10})—$ or —O— linking R^4 and R^5 must be separated from the nitrogen atom to which R^4 and R^5 are attached by at least one carbon atom;

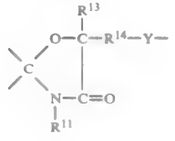
R^6 is substituted or unsubstituted aliphatic of 1–20 carbons, substituted or unsubstituted alicyclic of 5–12 carbons, substituted or unsubstituted carbocyclic aryl of 6–14 carbons or substituted or unsubstituted carbocyclic araliphatic of 7–22 carbons,

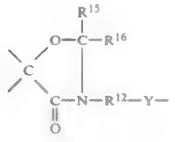
R^7, R^8 and R^9 are independently hydrogen, substituted or unsubstituted aliphatic of 1–20 carbons, substituted or unsubstituted alicyclic of 5–12 carbons, substituted or unsubstituted carbocyclic aryl of 6–14 carbons or substituted or unsubstituted carbocyclic araliphatic of 7–22 carbons,

R^{10} is hydrogen, substituted or unsubstituted aliphatic of 1–20 carbons, substituted or unsubstituted alicyclic of 5–12 carbons, substituted or unsubstituted carbocyclic araliphatic of 7–22 carbons, substituted or unsubstituted aliphatic acyl of 2–20 carbons, substituted or unsubstituted alicyclic acyl of 7–16 carbons, substituted or unsubstituted carbocyclic aromatic acyl of 7–11 carbons, substituted or unsubstituted carbocyclic araliphatic acyl of 7–22 carbons, $—(C(=O))_a—N(R^4)(R^5)$, $—(C(=O))_a—O—R^6$, $—(CH_2)_a—C(=O)—O—R^7$ where a is 1–2, or $—(CH_2—CH(R^8)—O)_b—R^9$ where b is 2–50.

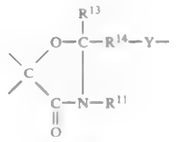
X is a triradical



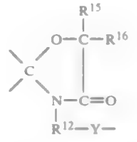




-continued



or



R^{11} is independently of the same definition as R^7 and when alicyclic may optionally contain $—N(R^{10})—$ as a ring member, with the proviso that bonding to the nitrogen atom to which "R" is attached must be through a carbon atom;

R^{12} is substituted or unsubstituted aliphatic diradical of 1–20 carbons, substituted or unsubstituted carbocyclic aryl diradical of 6–12 carbons, substituted or unsubstituted alicyclic diradical of 5–12 carbons or substituted and unsubstituted carbocyclic araliphatic diradical of 7–22 carbons and the diradicals may optionally contain 1–6 heteroatoms —O—, —S—, and $—N(R^{10})—$ with the proviso that multiple heteroatoms must be separated from each other by at least two carbon atoms and from the diradical ends by at least one carbon atom;

R^{13} is independently of the same definition as R^6;

R^{14} is independently of the same definition as R^{12}, and when Y is a direct bond, R^{14} may also be a direct bond;

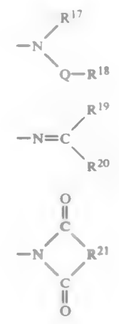
R^{13} and R^{14} together with the carbon atom linking them may form a substituted or unsubstituted cycloalkyl ring of 5–12 carbons,

R^{15} and R^{16} are independently of the same definition as R^{11} and may also be carbamoyl, alkoxycarbonyl of 2–5 carbons or pyridyl, and R^{15} and R^{16} may be linked together to form an alicyclic of 5–12 carbons, or may be linked together through a heteroatom —O—, —S—, and $—N(R^{10})—$ to form a heterocyclic ring including the carbon atom to which they are attached of 5–7 atoms with the proviso that multiple heteroatoms must be separated from each other by at least two carbon atoms;

Y is —O—, $—N(R^{11})—$ or a direct bond;

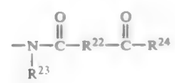
n is 1 or 2;

when n is 1, Z is

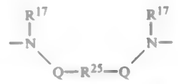


-continued

or



when n is 2, Z is



R^{17} is independently of the same definition as R^{11},

R^{18} is independently of the same definition as R^{11},

Q is $—C(=O)—$, $—S(=O)_2—$, $—C(=O)—O—$, $—[C(=O)]_2—O—$, $—C(=O)—N(R^{10})—$, $—[C(=O)]_2—N(R^{10})—$, $—C(=S)—N(R^{10})—$, $—C(=O)—R^{22}—C(=O)—N(R^{10})—$ or, when n is 1, a direct bond between the nitrogen and R^{18},

R^{19} and R^{20} are independently of the same definition as R^{11}, and R^{19} and R^{20} may be linked together to form a substituted or unsubstituted alicyclic ring of 5–12 carbons or may be linked together through $—N(R^{10})—$, —O— and —S— to form a heterocyclic ring including the carbon atom to which they are attached of 5–12 atoms,

R^{21} is substituted or unsubstituted aliphatic diradical of 2–200 carbons, substituted or unsubstituted carbocyclic aryl diradical of 6–14 carbons, substituted or unsubstituted alicyclic diradical of 5–12 carbons or substituted or unsubstituted carbocyclic araliphatic diradical of 7–22 carbons, and the diradical chain(s) may optionally contain 1–6 heteroatoms —O—, —S— and $—N(R^{10})—$ with the provisos that (a) multiple heteroatoms must be separated from each other by at least two carbon atoms and from the chain ends by at least one carbon atom, and that (b) the cyclic group formed contains 5–6 atoms in the ring,

R^{22} is a direct bond or is a substituted or unsubstituted aliphatic diradical of 1–200 carbons, substituted or unsubstituted carbocyclic aryl diradical of 6–14 carbons, substituted or unsubstituted alicyclic diradical of 5–12 carbons or substituted or unsubstituted carbocyclic araliphatic diradical of 7–22 carbons, and the diradical chain(s) may optionally contain 1–6 heteroatoms —O—, —S—, and $—N(R^{10})—$ with the proviso that multiple heteroatoms must be separated from each other by at least two carbon atoms and from the chain ends by at least one carbon atom,

R^{23} is independently of the same definition as R^{11},

R^{24} is chosen from $—NH(R^{18})$, —OH and O^-M^+, where M^+ is sodium ion, potassium ion or ammonium ion,

R^{25} is substituted or unsubstituted aliphatic diradical of 1–20 carbons, substituted or unsubstituted aryl diradical of 6–12 carbons, substituted or unsubstituted alicyclic diradical of 5–12 carbons or substituted or unsubstituted carbocyclic araliphatic diradical of 7–22 carbons, and the diradical chain(s) may optionally contain 1–6 moieties selected from —O— and $—N(R^{10})—$ with the proviso that multiple heteroatoms must be separated from each other by at least two carbon atoms and from the chain ends by at least one carbon atom,

and optional substitutents for R^1, R^3, R^4, R^5, R^6, R^7, R^8, R^9, R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, R^{18}, R^{19}, R^{20}, R^{21}, R^{22}, R^{23} and R^{25} are one or more of the following: chloro, bromo, alkyl of 1–8 carbons, alkoxy of 1–12 carbons, phenoxy, cyano, hydroxy, epoxy, carboxy, benzoyl, benzoyloxy, dialkylamino of 2–8 carbons total, alkyoxycarbonyl of 2–6 carbons, acyloxy of 1–4 carbons, acryloyl, acryloyloxy, methacryloyl, methacryloyloxy, hydroxymethyl, hydroxyethyl, alkylthio of 1–4 carbons and trialkoxysilyl of 3–12 carbons; and additional optional substituents for R^{21} and R^{22} are alkyl of 5–180 carbons, alkylthio of 5–180 carbons, carbocyclic aralkylthio of 7–20 carbons, carbocyclic arylthio of 6–20 carbons, alkenyl of 2–180 carbons, cycloalkenyl of 5–12 carbons, carbocyclic aryl of 6–16 carbons, carbocyclic aralkyl of 7–17 carbons, carbocyclic aryloxy of 6–16 carbons, alkoxycarbonyl of 7–10 carbons, and (alkoxycarbonyl)alkylthio of 3–30 carbons; and additional substituents for R^{18} are chosen from aliphatic of 1–20 carbons, cycloaliphatic of 5–12 carbons, carbocyclic aryl of 6–14 carbons, carbocyclic aralkyl of 7–22 carbons, alkoxy of 1–20 carbons, cycloalkoxy of 5–12 carbons, carbocyclic aryloxy of 6–14 carbons, carbocyclic aralkoxy of 7–15 carbons, aliphatic acyloxy of 2–20 carbons, alicyclic acyloxy of 6–13 carbons, carbocyclic aromatic acyloxy of 7–15 carbons, and carbocyclic araliphatic acyloxy of 8–16 carbons.

5,352,720

AQUEOUS POLYMER DISPERSION CONTAINING A POLYDISPERSE PARTICLE SIZE DISTRIBUTION

Oral Aydin, Mannheim; Michael Portugall, Wachenheim; Josef Neutzer, Neustadt, and Walter Maechtle, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 29, 1993, Ser. No. 38,863

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1992, 4213967

The portion of the term of this patent subsequent to Sep. 27, 2094, has been disclaimed.

Int. Cl.[5] C08K 5/41

U.S. Cl. 524—162 **10 Claims**

1. A final aqueous polymer dispersion having a solids volume concentration of at least 50% by volume, and a polydisperse particle size distribution, obtained by polymerizing at least one radical polymerizable monomer with the addition of at least one aqueous starting dispersion I of a starting polymer I and with the addition of at least one aqueous starting dispersion II of a starting polymer II in a polymerization vessel by the method of free radical aqueous emulsion polymerization in the presence of surface active substances and free radical polymerization initiators with the proviso that

a) the starting polymer I is present in the at least one aqueous starting dispersion I in the form of dispersed starting polymer particles I whose nonzero weight average particle diameter is equal to or less than 50 nm,

b) the mass of the at least one starting polymer I added relative to the total mass of the at least one radical polymerizable monomer and of starting polymers I and II added in the form of aqueous starting dispersions I and II is from 0.2 to 0.7%,

c) the starting polymer II is present in the at least one aqueous starting dispersion II in the form of dispersed starting polymer particles II of whose total mass not more than 60% have a non-zero particle diameter $\geqq$200 nm and at least 40% have a particle diameter $>$200 nm,

d) the mass of the at least one starting polymer II added relative to the total mass of the at least one radical polymerizable monomer and of the starting polymers I and II added in the form of aqueous starting dispersions and II is from 2 to 20%,

e) of the total amount of the at least one aqueous starting dispersion I to be added the amount introduced into the polymerization vessel as initial charge prior to the start of the free radical aqueous emulsion polymerization is nil,

f) the total amount of the at least one aqueous starting dispersion II to be added is introduced into the polymerization vessel as initial charge prior to the start of the free radical emulsion polymerization,

g) of the total amount of the at least one monomer to be polymerized the proportion introduced into the polymerization vessel as initial charge prior to the start of the free radical aqueous emulsion polymerization is nil,

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h) the total amount of the at least one monomer to be polymerized is added to the polymerization vessel from the start of the free radical aqueous emulsion polymerization in such a way that at any time of this addition the polymerization conversion of the total monomers already added previously to the polymerization vessel is at least 80 mol %,

i) at any time after the start of the free radical aqueous emulsion polymerization the ratio V of the number of moles of the particles of starting polymer I already added previously to the polymerization vessel in the form of the at least one aqueous starting dispersion I to the number of moles of the amount already added previously to the polymerization vessel of the at least one monomer to be radical polymerized, standardized for the ratio of the number of moles of the total starting polymer particles to be added in the form of the at least one aqueous starting dispersion I to the number of moles of the total amount of monomers to be radical polymerized, is within the range from >0 to 10,

j) on completion of the addition of the total amount to be added of the at least one aqueous starting dispersion I additionally at most 20 mol % of the total amount of the at least one monomer to be radical polymerized is added to the polymerization vessel,

k) the at least one aqueous starting dispersion I to be added contains at least 10–50% by weight, based on its starting polymer I content, of surface active substances,

l) the at least one aqueous starting dispersion II to be added contains at least 1–5% by weight, based on its starting polymer II content, of surface active substances,

m) the final aqueous polymer dispersion contains from 1 to 5% by weight of the surface active substances, based on the total mass formed of the mass of the at least one radical polymerizable monomer and of the masses of starting polymers I[,]and II to be added in the form of aqueous starting dispersions I[,]and II,

n) the amount of surface active substances contained in the polymerization vessel at any time from the start of the free radical aqueous emulsion polymerization minus the minimum amounts mentioned under k) and l) of surface active substances introduced into the polymerization vessel is less than 5% by weight, based on the monomers already added previously to the polymerization vessel, and

o) the total amount used of free radical polymerization initiators is from 0.1 to 5% by weight, based on the total amount of the at least one monomer to be radical polymerized, and is added to the polymerization vessel in the course of the free radical aqueous emulsion polymerization in such a way that the free radical aqueous emulsion polymerization continues to a minimum polymerization conversion of the total amount of the at least one monomer to be polymerized of at least 90 mol%.

5,352,721

THERMOPLASTIC RESIN COMPOSITION

Kenjiro Takayanagi; Koji Nishida, and Kiyonori Suzuki, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Aug. 13, 1993, Ser. No. 105,621

Claims priority, application Japan, Aug. 14, 1992, 4-216893

Int. Cl.[5] C08K *5/55*

U.S. Cl. 524—183 **14 Claims**

1. A thermoplastic resin composition which comprises

(a) a polyphenylene ether and

(b) a polyamide resin, and

(c) 0.01 to 5 parts by weight of an acetal and

(d) 0.01 to 5 parts by weight of a Lewis acid based on 100 parts by weight of the sum of (a) and (b) in total.

5,352,722

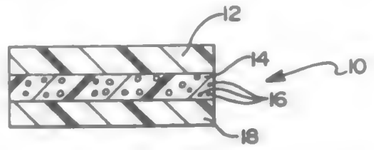
SILICONE PRESSURE SENSITIVE ADHESIVE CONTAINING ALKYLMETHYLSILOXANE WAX AND RELATED METHODS

Randall P. Sweet; Loren Durfee, both of Midland; Katherine L. Ulman, Sanford, and Ross A. Noel, Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 733,573, Jul. 22, 1991, Pat. No. 5,300,299. This application Nov. 8, 1993, Ser. No. 148,495

Int. Cl.[5] C08K *5/54*

U.S. Cl. 524—266 **10 Claims**



1. A hot-melt, silicone pressure sensitive adhesive composition, comprising a mixture of (i) a silicate resin, (ii) a silicone fluid, and (iii) an alkylmethylsiloxane wax which decreases dynamic viscosity of the adhesive composition at temperatures equal to or below about 200° C.

5,352,723

STABILIZED VINYL HALIDE COMPOSITIONS CONTAINING HYDROTALCITES

David M. Tanno, Richmond Heights, Ohio; Richard F. Grossman, Shelton, Conn., and Eric Farone, Mentor, Ohio, assignors to Synthetic Products Company, Shaker Heights, Ohio

Filed Sep. 15, 1992, Ser. No. 945,011

Int. Cl.[5] C08K *5/04, 5/09*

U.S. Cl. 524—399 **8 Claims**

1. A stabilized vinyl halide resin composition comprising a vinyl halide resin and as a heat stabilizer a hydrotalcite having a BET specific surface area greater than about 40 m^2/g, the hydrotalcite in an effective amount to provide heat stability to said vinyl halide resin.

5,352,724

SILICONE RUBBER COMPOSITION WITH IMPROVED FLUIDITY

Hironao Fujiki, Takasaki; Masayuki Ikeno, Maebashi; Masaya Arakawa, Annaka; Kaoru Michimata, Takasaki; Masanobu Miyakoshi, and Takehide Okami, both of Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 15, 1993, Ser. No. 91,298

Claims priority, application Japan, Jul. 16, 1992, 4-212150; Jul. 16, 1992, 4-212151

Int. Cl.[5] C08K *5/56*

U.S. Cl. 524—398 **11 Claims**

1. A silicone rubber composition comprising:

(A) an alkenyl group-containing organopolysiloxane,

(B) an organohydrogenpolysiloxane having at least two silicon-bonded hydrogen atoms in its molecule,

(C) a platinum group metal catalyst,

(D) an inorganic filler,

(E) an organic titanium compound selected from the group consisting of titanic acid esters and silicic acid esters of titanium, and

(F) water,

wherein said organohydrogenpolysiloxane (B) is compounded in an amount such that the amount of said silicon-bonded hydrogen atoms is from 0.4 to 5.0 moles per mole of alkenyl groups in said organopolysiloxane (A).

5,352,725

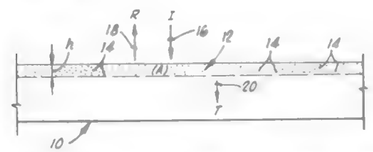
ATTENUATION OF POLYMER SUBSTRATE DEGRADATION DUE TO ULTRAVIOLET RADIATION

Bruce R. Palmer; James W. Kauffman, both of Edmond, Okla., and Penelope Stamatakis, Aurora, Ill., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Continuation of Ser. No. 766,936, Sep. 27, 1991, abandoned. This application Sep. 9, 1992, Ser. No. 942,486

Int. Cl.[5] C08K *3/18, 3/22;* **H01B** *1/06, 1/02*

U.S. Cl. 524—432 **8 Claims**



1. A method of reducing the ultraviolet radiation degradation of a polymer substrate comprising dispersing ultraviolet scattering and absorbing particles in at least a surface layer of said polymer substrate, said particles being formed of a material having a band gap in the range of from about 2.8 eV to about 4.1 eV, being of a size in the range of from about 0.001 micrometer to about 0.20 micrometer in diameter and having low opacity in the visible radiation region of the spectrum wherein the loading of said particles in said surface layer is in the range of from about 1% to about 15% by weight of said layer and particles contained therein and wherein said particles are selected from the group consisting of rutile anatase and amorphous titanium dioxide particles, wurtzite and amorphous zinc oxide particles and mixtures thereof.

5,352,726

AUTODEPOSITING COMPOSITION CONTAINING VINYLIDENE CHLORIDE BASED RESIN

Wilbur S. Hall, Springvale, Me., assignor to Henkel Corporation, Ambler, Pa.

Continuation of Ser. No. 627,897, Dec. 13,1990, abandoned, which is a continuation of Ser. No. 178,625, Apr. 7, 1988, abandoned, which is a continuation of Ser. No. 723,677, Apr. 16, 1985, abandoned, Continuation-in-part of Ser. No. 629,911, Jul. 11, 1984, abandoned, Continuation-in-part of Ser. No. 517,133, Jul. 25, 1983, abandoned. This application Sep. 4, 1992, Ser. No. 940,767

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1984, 3414308

Int. Cl.[5] C08K *3/10*

U.S. Cl. 524—435 **8 Claims**

1. An autodepositing composition comprising an acidic aqueous solution of activator consisting essentially of hydrofluoric acid in an amount sufficient to impart to the composition a pH within the range of about 1.6 to about 5.0 and a soluble ferric iron-containing compound in an amount equivalent to about 0.025 to about 3.5 g/l of ferric iron and having dispersed therein resin solids of an internally stabilized copolymer comprising: (A) at least about 80 wt. % of vinylidene chloride; (B) one or more monomers selected from the group consisting of methacrylic acid, acrylic acid, methyl methacrylate, methyl acrylate, ethyl acrylate, butyl acrylate, acrylonitrile, methacrylonitrile, vinyl chloride, acrylamide and methacrylamide; and (C) a water-soluble ionic material which includes an inorganic ionizable group and which has the formula:

$$R-Z-Q-SO_3M+$$

wherein R is vinyl or alkyl substituted vinyl, Z is a difunctional linking group, Q is a divalent hydrocarbon group, and M is a cation.

5,352,727

SYNDIOTACTIC POLYSTYRENE COMPOSITION

Akihiko Okada, Ichihara, Japan, assignor to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Sep. 9, 1993, Ser. No. 118,334

Claims priority, application Japan, Sep. 10, 1992, 4-241582

Int. Cl.[5] C08K *7/14*

U.S. Cl. 524—495 **16 Claims**

1. A polystyrene composition, comprising: syndiotactic polystyrene and a syndiotactic polystyrene impact modifier; said syndiotactic polystyrene impact modifier being the reaction product of a syndiotactic polystyrene having a first reactive functional group, and a rubbery elastomer containing a second reactive functional group, said first and second reactive functional groups being reactive with each other.

5,352,728

PROCESS FOR PREPARATION OF IMPACT RESISTANCE AND HIGH GLOSS THERMOPLASTIC RESIN

Dong R. Kim, and Chan H. Lee, both of Daejeon-si, Rep. of Korea, assignors to Lucky, Ltd., Seoul, Rep. of Korea

PCT No. PCT/KR91/00006, § 371 Date Dec. 30, 1991, § 102(e) Date Dec. 30, 1991, PCT Pub. No. WO91/13118, PCT Pub. Date Sep. 5, 1991

Continuation of Ser. No. 768,323, Dec. 30, 1991, abandoned. This PCT application Feb. 28, 1991, Ser. No. 71,045

Claims priority, application Rep. of Korea, Feb. 28, 1990, 90-2664

Int. Cl.[5] C08J *3/02*

U.S. Cl. 524—501 **14 Claims**

1. A process for the preparation of impact resistance high gloss thermoplastic resin which comprises blending graft polymer latex (A) and graft polymer latex (B),

wherein said graft latex (A) has a weight average molecular weight, Mw, of 40,000 to 120,000 and a degree of grafting of 60 to 120% and is produced by grafting monomers onto 10 to 40 parts by weight of rubber latices containing small particles consisting of particles having an average particle diameter of 0.03 to 0.2 μm and a gel content of 70 to 95% by weight, and

wherein said graft polymer latex (B) has a weight average molecular weight, Mw, of 40,000 to 120,000 and a degree of grafting of 25 to 45% and is produced by grafting monomers onto 40 to 80 parts by weight of rubber latices containing large rubber particles consisting of particles having an average particle diameter of 0.25 to 1.0 μm, and

wherein said small rubber particles and said large rubber particles are comprised of polybutadiene or a copolymer which contains more than 50% by weight of butadiene.

5,352,729

USE OF PIGMENT FORMULATIONS FOR THE PREPARATION OF PASTES, PRINTING INKS AND COATINGS

Hermann Birkhofer, Ludwigshafen; Walter Denzinger, Speyer; Heinrich Hartmann, Limburgerhof; Juan A. G. Gomez, Muenster; Paul Guenthert, Schifferstadt; Joachim Jesse, Weisenheim; Robert Kreuzer, Ludwigshafen; Knut Oppenlaender, Ludwigshafen; Reinhard U. Roth, Ludwigshafen, and Benno Sens, Netphen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1991, 4137476

Int. Cl.[5] C08L *35/08, 33/02, 23/20, 23/24*

U.S. Cl. 524—549 **4 Claims**

1. A process for the preparation of pastes, printing inks or coatings, comprising

(a) selecting at least one finely divided pigment,

(b) mixing with said finely divided pigment at least one thermoplastic copolymer obtainable by free radical polymerization of

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(α_1) C_8–C_{40}-monoolefins or
(α_2) C_8–C_{40}-alkyl vinyl ethers or
(α_3) a mixture of C_8–C_{40}-alkyl vinyl ethers and up to 50 mol % of C_8–C_{40}-monoolefins with
(β) monoethylenically unsaturated C_4–C_{12}-dicarboxylic acids or C_4–C_{12}-dicarboxylic anhydrides
and having a weight average molecular weight of from 500 to 20,000 g/mol, some or all of whose carboxyl or anhydride groups may be reacted with ammonia, amines, alcohols, amino- or hydroxycarboxylic acids or alkali metal or alkaline earth metal hydroxides, and
(c) if required, further assistants conventionally used in pigment formulations,
wherein the thermoplastic copolymer (b) is present in an amount of from 1 to 30% by weight based on the pigment (a).

5,352,730
COATING SYSTEM FOR MATERIALS WHICH SWELL IN WATER

Erhard Lühmann, Bomlitz; Burkhard Kressdorf, Walsrode; Lutz Hoppe, Walsrode; Klaus Szablikowski, Walsrode; Gunter Weber, Fallingbostel, and Sebastian Meyer-Stork, Bomlitz, all of Fed. Rep. of Germany, assignors to Wolff Walstrode AG, Walsrode, Fed. Rep. of Germany

Filed Jun. 5, 1992, Ser. No. 894,387
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1991, 4119444
Int. Cl.[5] C08L *75/04*
U.S. Cl. 524—37 15 Claims

1. A sheet, film or article molded of regenerated cellulose, or of a cellulose ester which swells in water, the molding optionally including a synthetic polymer, coated with a polyisocyanate.

5,352,731
THERMALLY CONDUCTIVE SILICONE RUBBER COMPOSITION CONTAINING ORGANO POLYSILOXANES WITH HIGH AND LOW POLYMERIZATION DEGREES AND SPHERICAL ALUMINUM OXIDE POWDER

Akio Nakano; Tsutomu Yoneyama, both of Annaka, and Nobumasa Tomizawa, Harunamachi, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 873,147, Apr. 24, 1992, abandoned. This application Sep. 1, 1993, Ser. No. 114,227
Claims priority, application Japan, Apr. 26, 1991, 3-124755
Int. Cl.[5] C08J *5/10*; C08K *3/10*; C08L *83/08*
U.S. Cl. 524—786 18 Claims

1. A thermally conductive silicone rubber composition having thermal conductivity of 5×10^{-3}-cal/cm·sec·°C. or higher which consists essentially of A 95–50 parts by weight of a gummy organopolysiloxane having an average polymerization degree of 6,000–12,000, B) 5–50 parts by weight of an oily organpolysiloxane having an average polymerization degree of 200–2,000 and a viscosity of 600 to 120,000 centistokes, C) 500–1,200 parts by weight of a spherical aluminum oxide powder having an average particle size of 50 μum or less and an average major axis diameter/minor axis diameter ratio of 1.0 to 1.4, and D) a curing agent in an amount sufficient to cure the composition.

5,352,732
HOMOGENEOUS, HIGH MODULUS ULTRAHIGH MOLECULAR WEIGHT POLYETHYLENE COMPOSITES AND PROCESSES FOR THE PREPARATION THEREOF

Edward G. Howard, Hockessin, Del., assignor to E.I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 954,625, Sep. 30, 1992, abandoned, which is a division of Ser. No. 736,539, Jul. 26, 1991, Pat. No. 5,210,130, which is a continuation-in-part of Ser. No. 564,144, Aug. 7, 1990, abandoned. This application Dec. 29, 1992, Ser. No. 997,999
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[5] C08J *5/10*; C08K *3/02, 3/34, 11/00*; C08L *23/06*
U.S. Cl. 524—789 27 Claims

1. A homogeneous composite comprising (a) about 10 to 99.5% by weight of an ultrahigh molecular weight linear polyethylene having a molecular weight of at least about 400,000, a crystalline melting point of greater than 143° C., the reduction of said melting point upon remelting being at least 3° C., and a crystal morphology comprising a bimodal distribution of molecular chain fold spacings reflecting significant populations of both folder and very highly extended molecular chains, and (b) about 0.5 to 90% by weight of at least one filler compound having a neutral-to-acidic surface, said polyethylene being polymerized onto the surface of said filler, and said composite being substantially free of polymer-free filler and of filler-free polymer.

5,352,733
WATER BASED, SOLVENT FREE, TWO COMPONENT ALIPHATIC POLYURETHANE COATING

Richard E. Hart, Irvine, Calif., assignor to R. E. Hart Labs, Inc., Irvine, Calif.

Filed Mar. 10, 1993, Ser. No. 28,966
Int. Cl.[5] C08G *18/34*
U.S. Cl. 524—840 24 Claims

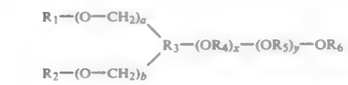
1. A water based, solvent free, two component polyurethane-polyurea dispersion having a solids content of up to 65% by weight comprising the reaction product of an organic solvent free polyester-polyol blend/amine blend aqueous phase component and a 100 percent solids aliphatic polyisocyanate component comprising:
a) a polyester-polyol blend/amine blend aqueous phase component having a solids content of between about 33 and 48%, a viscosity of between about 100 and 250 cps at 25° C. and a polyester-polyol blend to amine blend equivalent ratio of between about 1.75:1 to 2.25:1 comprising an aqueous dispersion of:
1) a polyester-polyol blend containing (a) from 0.33 to 0.67 equivalents of a modified polyester-polyol comprising the reaction product of polyhydric polyols with a member selected from the group consisting of polycarboxyic acids and poycarboxylic anhydrides containing from 1 to 2% by weight of a trihydric polyol and from about 10–15% by weight of a polyfunctional diol containing a carboxylic acid group, said modified polyester-polyol having a molecular weight of between about 1000 to 2000, an equivalent weight of between about 750 to 850 and a hydroxyl number of between about 55 to 100; (b) 0.45 to 0.75 equivalents of a low viscosity polyol comprising a member selected from the group consisting of aliphatic polyether-polyols and polyester-polyols and trihydric polyol modified polyester-polyols having an equivalent weight of between about 150 and 200 and an hydroxyl number of between about 300 and 350; (c) 0.33 to 0.67 equivalents of a low molecular weight chain extending diol or triol having from three to eight carbon atoms and having a equivalent weight of from about 30 to 60; (d) 0.15 to 0.33 equivalents of a first neutralizing amine selected from the group consisting of diethanol amine and triethanol amine and mixtures thereof; (e) 0.15 to 0.33 equivalents of a second neutralizing amine selected from the group consisting of 2-amino-2-methyl-1-propanol and tris(hydroxymethyl-)aminomethane; and (f) 1–5% by weight of a non-reactive non-ionic detergent; said polyester-polyol blend having a solids content of between 90 and 100%, an equivalent weight of between about 165 to 365; an hydroxyl number of between about 180 to 300, an acid number of between about 10 and 50 and a viscosity of between about 600 to 1500 cps at 25° C. and,
2) an aqueous amine blend containing (g) 0.15 to 0.33 equivalents of a first neutralizing amine selected from the group consisting of diethanol amine and triethanol amine and mixtures thereof; (h) 0.15 to 0.33 equivalents of a second neutralizing amine selected from the group consisting of 2-amino-2-methyl-1-propanol and tris (hydroxymethyl) aminomethane; (i) 0.045 to 0.075 equivalents of a first chain extending amine consisting of a lower dialkanolamine containing from about 2 to 4 carbon atoms; (j) 0.045 to 0.075 equivalents of a second chain extending amine comprising a member selected from the group consisting of diethylenetriamine and triethylenetetraamine; (k) 0.15 to 0.25 equivalents of a third chain extending amine consisting of 2-methylpentamethylenediamine; and (l) 0.15 to 0.3 equivalents of a fourth chain extending amine consisting of 1,3-diaminopentane; said amine blend having an equivalent weight of between about 40 and 50 and containing a solids content of between about 40 and 60% by weight, and
b) an aliphatic polyisocyanate having a viscosity of between 1000–3500 cps at 25° C.;
wherein the ratio between isocyanate component equivalents and polyester-polyol/amine component equivalents is between about 1.3:1 to 1.7:1.

5,352,734
POLYMERS CONTAINING COMPLEX HYDROPHOBIC GROUPS

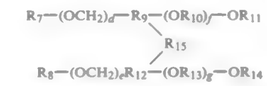
Richard D. Jenkins, Hurricane; David R. Bassett, Charleston, both of W. Va., and Gregory D. Shay, Cary, N.C., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Division of Ser. No. 887,641, May 29, 1992, Pat. No. 5,292,828. This application Dec. 7, 1993, Ser. No. 163,485
Int. Cl.[5] C08L *79/00*
U.S. Cl. 524—845 2 Claims

1. A latex composition containing water and
a water-soluble polymer which comprises hydrophobic segments, each segment containing at least one hydrophobic group or complex hydrophobic group covalently bonded to the polymer, wherein the polymer has an amount of complex hydrophobic groups sufficient to provide for enhanced thickening of aqueous solutions containing the polymer when compared with a polymer of essentially the same structure but which has only hydrophobic groups other than complex hydrophobic groups, wherein said complex hydrophobic group is derived from a compound represented by the formula selected from:



wherein R_1 and R_2 are the same or different and are hydrogen or a substituted or unsubstituted monovalent hydrocarbon residue, R_3 is a substituted or unsubstituted divalent or trivalent hydrocarbon residue, each R_4 is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, each R_5 is the same or different and is substituted or unsubstituted divalent hydrocarbon residue, R_6 is hydrogen, a substituted or unsubstituted monovalent hydrocarbon residue or an ionic substituent, a and b are the same or different and are a value of 0 or 1, and x and y are the same or different and are a value of 0 or greater; provided at least two of R_1, R_2, R_3, R_4, R_5 and R_6 are a hydrocarbon residue having greater than 2 carbon atoms in the case of R_1, R_2, and R_6 or having greater than 2 pendant carbon atoms in the case of R_3, R_4 and R_5; and



wherein R_7 and R_8 are the same or different and are hydrogen or a substituted or unsubstituted monovalent hydrocarbon residue, R_9 and R_{12} are the same or different and are a substituted or unsubstituted divalent or trivalent hydrocarbon residue, each R_{10} is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, each R_{13} is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, R_{11} and R_{14} are the same or different and are hydrogen, a substituted or unsubstituted monovalent hydrocarbon residue or an ionic substituent, R_{15} is a substituted or unsubstituted divalent hydrocarbon residue, d and e are the same or different and are a value of 0 or 1, and f and g are the same or different and are a value of 0 or greater; provided at least two of R_7, R_8, R_9, R_{10}, R_{11}, R_{12}, R_{13}, R_{14} and R_{15} are a hydrocarbon residue having greater than 2 carbon atoms in the case of R_7, R_8, R_{11} and R_{14} or having greater than 2 pendant carbon atoms in the case of R_9, R_{10}, R_{12}, R_{13}, and R_{15}.

5,352,735
POLYMER BLENDS

George H. Hofmann, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 734,769, Jul. 23, 1991, abandoned. This application Aug. 19, 1993, Ser. No. 108,276
Int. Cl.[5] C08L *77/00*
U.S. Cl. 525—63 1 Claim

1. A composition comprising:
a) 40–60 weight parts polyvinyl chloride or polyvinylidene chloride;
b) 40–60 weight parts polyamide;
c) 1–20 weight parts copolymer comprising:
i. 50–70 weight parts ethylene units;
ii. 24–40 weight parts C_1–C_4 alkyl acrylate C_1–C_4 alkyl methacrylate, vinyl acetate, arcylic acid or methacrylic acid units;
iii. 5–15 weight parts carbon monoxide unites; and
iv. 0.1–5 weight parts anhydride graft units, whereby the weight parts of a),b) and c) total 100 and the weight parts of i.,ii,iii, and iv also total 100.

5,352,736
TRANSPARENT LIQUID ABSORBENT MATERIALS

John J. Stofko, Jr., St. Paul, Minn., and Mohammad Iqbal, Austin, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 603,787, Oct. 24, 1990, Pat. No. 5,219,928. This application Apr. 16, 1993, Ser. No. 48,456
Int. Cl.[5] C08G *63/48*
U.S. Cl. 525—57 18 Claims

1. A transparent film comprising a transparent backing bearing on at least one major surface thereof a layer formed from a liquid-absorbent composition consisting essentially of:
(a) a polymeric matrix component comprising crosslinked silanol moieties said silanol moieties being in pendant groups of said matrix component and
(b) an uncrosslinked liquid-absorbent component comprising at least one water-absorbent polymer.

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5,352,737

THERMOPLASTIC RESIN COMPOSITION

Kenji Nagaoka, Ichihara; Yasuro Suzuki, Kisarazu, and Kaoru Kitadono, Ichihara, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Dec. 1, 1993, Ser. No. 159,590
Claims priority, application Japan, Dec. 1, 1992, 4-321631
Int. Cl.[5] C08L *71/12, 77/06*
U.S. Cl. 525—66 10 Claims

1. A thermoplastic resin composition which comprises:
(a) a polyphenylene ether in an amount of 10–90 parts by weight,
(b) a polyamide in an amount of 90–10 parts by weight,
(c) a compatibilizing agent in an amount of 0.01–10 parts by weight based on 100 parts by weight of ((a)+(b)),
(d) an unsaturated acid salt of a metal belonging to Groups I–III of the periodic table in an amount of 0.2–10 parts by weight based on 100 parts by weight of ((a)+(b)), and
(e) a rubber material in an amount of 0–100 parts by weight based on 100 parts by weight of ((a)+(b)).

5,352,738

METHOD FOR PRODUCTION OF THERMOPLASTIC RESIN COMPOSITION AND GRAFT COPOLYMER

Yasuyuki Hiromoto; Hiroyuki Toh; Kouichi Matsuda, and Hideo Goto, all of Ube, Japan, assignors to Ube Cycon, Ltd., Tokyo, Japan

Continuation of Ser. No. 827,155, Jan. 28, 1992, abandoned. This application Mar. 17, 1993, Ser. No. 32,558
Claims priority, application Japan, Mar. 4, 1991, 3-037348
Int. Cl.[5] C08L *23/16, 25/12*
U.S. Cl. 525—70 10 Claims

1. A thermoplastic resin composition comprising 10 to 60 parts by weight of a graft copolymer (A) and 90 to 40 parts by weight of a rigid copolymer (B), both defined below;
(A) the graft copolymer obtained by emulsion graft polymerizing 60 to 20 parts by weight of a monomer mixture containing 60 to 76% by weight of an aromatic vinyl monomer and 40 to 24% by weight of a vinyl chanide monomer, and 40 to 80 parts by weight, as solid components, of an ethylene-propyulene-non-conjugated diene copolymer containing cross-lined latex, which includes 0.1 to 20 parts by weight of an acid-modified low molecular weight polyethylene containing 99.8 to 80% by weight of an alpha-olefin and 0.2 to 20% by weight of an unsaturated carboxylic acid compound, 100 parts by weight of the ethylene-propylene-non-conjugated diene copolymer and 0.1 to 1 parts by weight of polyhydric alcohol so that said acid-modified low molecular weight polyethylene is uniformly mixed in the ethylene-propylene-non-conjugated diene copolymer,
(B) the rigid copolymer containing 60 to 76% by weight of an aromatic vinyl monomer and 40 to 24% by weight of a vinyl cyanide monomer.

5,352,739

COMPATIBILIZATION OF ELASTOMER BLENDS

Palanisamy Arjunan, Houston, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Nov. 6, 1992, Ser. No. 972,652
Int. Cl.[5] C08L *51/00, 51/04, 11/00*
U.S. Cl. 525—75 12 Claims

1. A process for compatibilizing elastomer blends comprising blending:
1) polychloroprene;
2) a nonpolar elastomer of ethylene-propylene rubber (EP) or ethylene-propylene-diene rubber (EPDM); with 0.1 to 60 phr of a compatibilizer having a number average molecular weight in the range of from about 15,000 to 150,000 consisting essentially of the heptane soluble portion of a alkyl methacrylate grafted EP or EPDM, said alkyl group having 1 to 12 carbon atoms.

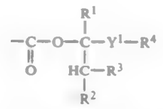
5,352,740

THERMOSETTING COMPOSITIONS, THERMAL LATENT CARBOXYL COMPOUNDS AND METHODS OF PREPARATION THEREOF

Masahiro Ishidoya, Kamakura; Kishio Shibato, Yokohama; Keiji Komoto, Tokyo; Kenji Shibamoto, Yokohama; Mitsuyuki Mashita, Yokohama, and Osamu Ohe, Yokohama, all of Japan, assignors to Nippon Oil and Fats Company, Limited, Tokyo, Japan

Filed Apr. 4, 1991, Ser. No. 680,356
Claims priority, application Japan, Apr. 10, 1990, 2-94267; Sep. 28, 1990, 2-259695; Oct. 26, 1990, 2-288776; Mar. 28, 1991, 3-089510
Int. Cl.[5] C08L *67/02, 33/02*
U.S. Cl. 525—119 24 Claims

1. A thermosetting composition which comprises:
(A) a compound having in the molecule two or more functional groups of the formula (1):



(1)

wherein R^1, R^2 and R^3 are respectively selected from the group consisting of a hydrogen atom and an organic group of 1 to 18 carbon atoms, R^4 is an organic group of 1 to 18 carbon atom, Y^1 is selected from the group consisting of an oxygen atom and a sulfur atom and R^3 and R^4 may be bonded with each other to form a heterocyclic structure which comprises Y^1 as the hetero atom component;
(B) a compound having in the molecule two or more reactive functional groups which can form a chemical bond with the carboxyl functional groups which are generated from the compound (A) by heating; and, optionally,
(C) a thermal latent acid catalyst which is activated during curing of the composition by heating.

5,352,741

ADHESIVE COMPOSITION

Etienne L. Dierickx, Aalst, and Noel M. M. Overbergh, Rotselaar, both of Belgium, assignors to N.V. Raychem S.A., Belgium

Continuation of Ser. No. 302,497, Jan. 27, 1989, abandoned. This application Jun. 5, 1992, Ser. No. 895,569
Claims priority, application United Kingdom, Jan. 27, 1988, 8801813
The portion of the term of this patent subsequent to Oct. 23, 2007, has been disclaimed.
Int. Cl.[5] C08L *77/00*
U.S. Cl. 525—183 16 Claims

1. An adhesive composition comprising a blend of:
(a) polyamide; and
(b) copolymer of ethylene and an ester of an ethylenically unsaturated carboxylic acid, said copolymer having a melt flow index of at least 40 as measured according to ASTM D1238-70; the amount of the copolymer being at least 38% based on the weight of the polyamide.

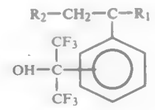
5,352,742

HYDROXYFLUOROALKYL-SUBSTITUTED STYRENES AND POLYMERIC COMPOSITIONS CONTAINING SAME

Charles C. Han, Gaithersburg, Md.; Manjun He, Shanghai, China; Yongming Liu, Shanghai, China; Yi Feng, Shanghai, China, and Ming Jiang, Shanghai, China, assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

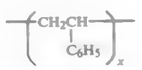
Division of Ser. No. 985,932, Dec. 4, 1992, Pat. No. 5,272,232, which is a division of Ser. No. 822,280, Jan. 21, 1992, Pat. No. 5,241,007. This application Dec. 7, 1993, Ser. No. 162,356
Int. Cl.[5] C08F *259/08*
U.S. Cl. 525—276 4 Claims

1. A block copolymer of a fluorinated styrene of the formula



(I)

wherein R_1 is a C_1–C_6 alkyl and R_2 is the repeating styrene unit



wherein x is zero or any positive integer
with polystyrene blocks.

5,352,743

SOLID ELASTOMERIC BLOCK COPOLYMERS

Thomas S. Coolbaugh, Morrisville; Frederick C. Loveless, Yardley, both of Pa., and Demetreos N. Matthews, Ewing, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 836,577, Feb. 18, 1992, Pat. No. 5,276,100, which is a continuation-in-part of Ser. No. 466,233, Jan. 16, 1990, Pat. No. 5,187,236, and Ser. No. 735,552, Jul. 25, 1991, Pat. No. 5,292,820. This application Nov. 1, 1993, Ser. No. 143,718
Int. Cl.[5] C08F *297/04;* C08L *53/02*
U.S. Cl. 525—314 23 Claims

1. A solid elastomeric star-branched block copolymer wherein either 1) blocks on the free ends of the branches are each a polymer of at least one conjugated diene I (I polymer), said diene containing at least five carbon atoms with at least one of each pair of double-bonded carbon atoms in the polymerized diene I units being additionally single-bonded to two carbon atoms; at least one interior block of each branch is a hydrogenated polybutadiene (B polymer); and at least one interior block of each branch is an essentially straight chain polyethylene (E polymer) resulting from the hydrogenation of a polybutadiene composed of at least 80% of 1,4-units; or 2) the blocks on the free ends of the branches are each a random IB copolymer of at least one diene I and hydrogenated butadiene (B), and at least one interior block of each branch is an essentially straight chain polyethylene (E polymer) as previously defined, the hydrogenated butadiene units in said B polymer or random IB copolymer blocks being composed of not more than about 65% of 1,4-units and at least about 35% of 1,2-units and said B polymer or random IB copolymer blocks containing no more than about 10% of polyethylene crystallinity, and the number of unsaturated polymerized diene I units in said I polymer or random IB polymer blocks being sufficient to vulcanize said block copolymer.

5,352,744

METHOD FOR HYDROGENATING POLYMERS AND PRODUCTS THEREFROM

Frank S. Bates, St. Louis Park; Mark D. Gehlsen, Eagan, both of Minn.; Vincent L. Hughes, Humble, and Patrick Brant, Seabrook, both of Tex., assignors to University of Minnesota, St. Paul, Minn.

Filed Mar. 15, 1993, Ser. No. 31,460
Int. Cl.[5] C08F *8/04*
U.S. Cl. 525—339 14 Claims

1. A method for hydrogenating poly(alkenyl aromatic) polymers and poly(alkenyl aromatic)/polydiene block copolymers to at least 99.5% saturation, said method comprising:
contacting under reaction conditions a poly(alkenyl aromatic) polymer or a poly(alkenyl aromatic)/polydiene block copolymer, said polymers having a Mw of 100,000 or more, with a metal catalyst on an alkali metal salt or alkaline earth metal salt.

5,352,745

CURABLE POLYPHENYLENE ETHER AND CYANURATE RESIN COMPOSITION AND A CURED RESIN COMPOSITION OBTAINABLE THEREFROM

Teruo Katayose, Sakura; Yoshiyuki Ishii, Yokohama, both of Japan, and Hiroji Oda, Shaker Heights, Ohio, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 818,351, Jan. 9, 1992, abandoned. This application Nov. 3, 1993, Ser. No. 145,655
Claims priority, application Japan, Jan. 11, 1991, 3-012581; Jan. 11, 1991, 3-012582
Int. Cl.[5] C08F *283/08*
U.S. Cl. 525—391 23 Claims

1. A curable polyphenylene ether resin composition consisting essentially of:
(a) 98 to 40% by weight, based on the total weight of components (a) and (b), of a curable polyphenylene ether resin comprising a reaction product of a polyphenylene ether with one of an unsaturated carboxylic acid and an acid anhydride;
(b) 2 to 60% by weight, based on the total weight of components (a) and (b), of at least one cyanurate selected from the group consisting of triallyl isocyanurate and triallyl cyanurate;
(c) 0 to 90% by weight, based on the total weight of components (a), (b) and (c), of a resin composition comprising an epoxy resin and a curing agent;
(d) 0 to 30% by weight, based on the total weight of components (a), (b), (c) and (d), of a compound having at least one unsaturated double bond and at least one epoxy group;
(e) 0 to 90% by weight, based on the total weight of components (a), (b), (c), (d) and (e), of at least one reinforcement material selected from the group consisting of glass fabrics, ceramic fiber fabrics, asbestos fabrics, metallic fiber fabrics synthetic or natural inorganic fiber fabrics, woven or non-woven fabrics of synthetic fibers, natural woven fabrics, carbon fiber fabrics and natural cellulosic fabrics.

5,352,746

LIQUID CRYSTAL POLYESTER RESIN COMPOSITION IMPROVED IN FLUIDITY

Kuniaki Asai, Tondabayashi, and Itaru Nitta, Tsukuba, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

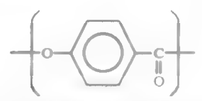
Continuation of Ser. No. 510,188, Apr. 17, 1990, abandoned. This application Mar. 30, 1992, Ser. No. 860,558
Claims priority, application Japan, May 11, 1989, 1-120057; Jan. 19, 1990, 2-011643
Int. Cl.[5] C08L *67/03*
U.S. Cl. 525—444 4 Claims

1. A liquid crystal polyester resin composition improved in fluidity which comprises

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100 parts by weight of a liquid crystal polyester, and

0.5–10 parts by weight of an oligomer of which number average polymerization degree determined from the amount of distilled-out acetic acid is 2.6–8.0, the oligomer having a carboxyl group at one terminal end and a hydroxyl group at the other terminal end, showing optical anisotropy in the molten state, comprising a repeating structure of the formula



and having a flow temperature which is in the range of 160°–350° C. and is at least 20° C. lower than the flow temperature of the liquid crystal polyester to be combined therewith, said flow temperature being the temperature at which a heat-molten polymer or oligomer shows a melt viscosity of 48,000 poises when extruded through a nozzle by using a capillary rheometer fitted with a nozzle 1 mm in inner diameter and 10 mm in length at a temperature-increasing rate of 4° C./minute.

5,352,747

LIGHT-DIFFUSING POLYCARBONATE RESIN COMPOSITIONS CONTAINING POLYMETHYL SILSESQUIOXANE

Yoshio Ohtsuka, Haga; Tomohide Fujiguchi, Utsunomiya, and Katsumi Oishi, Shimodate, all of Japan, assignors to GE Plastics, Japan, Ltd., Tokyo, Japan

Filed Dec. 7, 1993, Ser. No. 163,220

Claims priority, application Japan, Dec. 24, 1992, 4-357435

Int. Cl.[5] C08F *283/02;* C08G *77/06*

U.S. Cl. 525—464 2 Claims

1. A light-diffusing polycarbonate resin composition comprising from about 0.001 to about 10.00 wt. parts polymethyl silsesquioxane dispersed in 100 wt. parts polycarbonate resins.

5,352,748

POLYMER SCALE PREVENTIVE AGENT, POLYMERIZATION VESSEL WHEREIN POLYMER SCALE IS PREVENTED FROM DEPOSITING, AND PROCESS OF PRODUCING POLYMER USING THE SAME

Toshihide Shimizu, Urayasu, and Mikio Watanabe, Kamisu, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1993, Ser. No. 20,978

Claims priority, application Japan, Feb. 20, 1992, 4-070299

Int. Cl.[5] C08F *2/04, 2/12*

U.S. Cl. 526—62 7 Claims

5. A process of producing a polymer by polymerization of a monomer having an ethylenically unsaturated double bond in a polymerization vessel, comprising the step of carrying out said polymerization in a polymerization vessel having, on the inner wall surface, a coating film which is formed by applying and drying an alkaline solution containing

(A) at least one anthraquinone dye selected from the group consisting of an acylaminoanthraquinone compound, an anthrimide compound, an indanthrone compound, an anthraquinonethiazole compound, an anthrapyrazolone compound, an anthrapyrimidine compound, a dibenzanthrone compound, an anzanthrone compound, an anthraquinoneacridone compound, a pyranthrone compound, and an anthraquinonecarbazole compound and

(B) a reducing agent; in water or a mixed solvent of water and an organic solvent miscible with water, the mixed solvent containing the organic solvent in an amount of 50% by weight or less, whereby polymer scale is prevented from being deposited.

5,352,749

PROCESS FOR POLYMERIZING MONOMERS IN FLUIDIZED BEDS

Marc L. DeChellis, Houston, and John R. Griffin, Baytown, both of Tex., assignors to Exxon Chemical Patents, Inc., Linden, N.J.

Continuation-in-part of Ser. No. 854,041, Mar. 19, 1992, abandoned. This application Apr. 26, 1993, Ser. No. 53,067

Int. Cl.[5] C08F *2/34*

U.S. Cl. 526—68 43 Claims

1. A process for polymerizing alpha-olefin(s) in a gas phase reactor having a fluidized bed and a fluidizing medium wherein the fluidizing medium serves to control the cooling capacity of said reactor, the improvement comprising employing a level of liquid in the fluidizing medium entering the reactor which is in the range of from 17.4 to 50 weight percent based on the total weight of the fluidizing medium and maintaining the ratio of fluidized bulk density to settled bulk density above 0.59.

5,352,750

PROCESS FOR PRODUCING ETHYLENE-VINYL ESTER COPOLYMERS, ETHYLENE-VINYL ALCOHOL COPOLYMERS, AND PROCESS FOR PRODUCING SHAPED ARTICLES THEREFROM

Hisamichi Yanai; Takanori Kitamura; Fumio Nakahara; Katsumi Shimizu; Akimasa Aoyama, and Takeshi Moritani, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Division of Ser. No. 818,111, Jan. 8, 1992, Pat. No. 5,240,997. This application May 27, 1993, Ser. No. 67,990

Claims priority, application Japan, Jan. 18, 1991, 3-19415

Int. Cl.[5] C08F *2/00*

U.S. Cl. 526—225 2 Claims

1. A process for producing ethylene-vinyl ester copolymers having an ethylene content ranging from 0.1 to 80 mol % by copolymerizing ethylene and a vinyl ester in a substantially homogeneous liquid phase in the presence of a radical initiator, said process comprising using a dialkyl sulfoxide as a polymerization solvent.

5,352,751

PREPARATION OF END-ALKOXYLATED DIORGANOPOLYSILOXANES

Roger Cocco, Saint-Symphorien D'Ozon, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

Continuation-in-part of Ser. No. 431,788, Nov. 6, 1989, Pat. No. 5,079,324. This application May 2, 1991, Ser. No. 694,487

Claims priority, application France, May 2, 1990, 90/05756

Int. Cl.[5] C08G *77/08*

U.S. Cl. 528—14 14 Claims

1. A process for the preparation of a straight-chain diorganopolysiloxane containing at least one alkoxy group bonded to a silicon atom at each end of its polymer chain, comprising reacting, in the presence of a catalytically effective amount of sodium hydroxide or potassium hydroxide,

(a) 100 parts by weight of at least one straight-chain diorganopolysiloxane containing a hydroxyl group bonded to a silicon atom at each end of its polymer chain, with

(b) 0.35 to 6 parts by weight of at least one polyalkoxysilane of the formula:

$$(R^4)_c(R^1)_aSi(OR^2)_{4-(a+c)} \quad (1)$$

in which a is 0, 1 or 2; c is 0, 1 or 2; a+c is 0, 1 or 2; R^1 is a substituted or unsubstituted, saturated or unsaturated, C_1 to C_{13} aliphatic, cycloalkyl or aromatic monovalent hydrocarbon radical, which may comprise an epoxy, primary, secondary or tertiary amine or mercapto group; the radicals R^2, which may be identical or different, are each an aliphatic radical having from 1 to 8 carbon atoms, or an aralkyl radical having from 7 to 13 carbon atoms; and R^4 is a substituted or unsubstituted, saturated or unsaturated, C^1 to C_{13} aliphatic, cycloalkyl or aromatic monovalent hydrocarbon radical, with the proviso that R^4 may be identical to R^1 and with

(c) 0.5 to 15 parts by weight of at least one alcohol which is added prior to reacting (a) with (b), to yield a straight chain diorganopolysiloxane being viscosity-stable and devoid of silanol groups.

5,352,752

ROOM TEMPERATURE CURABLE COMPOSITION

Noriyuki Koike, Yoshii, and Shinichi Sato, Annaka, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

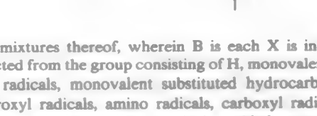
Filed Feb. 9, 1994, Ser. No. 193,864

Claims priority, application Japan, Feb. 9, 1993, 5-044672

Int. Cl.[5] C08F *283/04;* C08G *77/04*

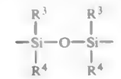
U.S. Cl. 528—26 10 Claims

1. A room temperature curable composition comprising a fluorine-containing organosilicon compound represented by the following general formula (1):



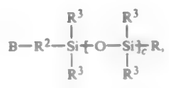
(1)

wherein a is an integer of at least 1, b is 2 or 3, R^1, which may be the same or different where plural R^1 are present, is a monovalent unsubstituted or substituted hydrocarbon group, the plural R^2 may be the same or different and are each a divalent unsubstituted or substituted hydrocarbon group, the plural X may be the same or different and are each an alkoxy group or an alkenyloxy group, the plural R_f may be the same or different and are each a divalent perfluoroalkylene group or a divalent perfluoroalkylether group, and Q is a siloxane group expressed by the following formula (2):

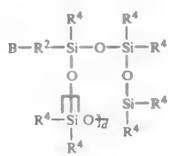


(2)

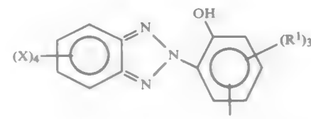
where the plural R^3 and R^4 may be the same or different and are each a monovalent unsubstituted or substituted hydrocarbon group.



(1)



(2)



and mixtures thereof, wherein B is each X is independently selected from the group consisting of H, monovalent hydrocarbon radicals, monovalent substituted hydrocarbon radicals, hydroxyl radicals, amino radicals, carboxyl radicals, alkoxy radicals, substituted alkoxy radicals, and halogen radicals; each R^1 is independently selected from the group consisting of H, alkyl radicals, alkoxy radical, hydroxyl radicals, amino radicals and carboxyl radicals; R^2 is selected from the group consisting of divalent hydrocarbon radicals, divalent substituted hydrocarbon radicals, oxo, divalent oxyhydrocarbon radicals and divalent substituted oxyhydrocarbon radicals; each R^3 is independently selected from the group consisting of alkyl radicals, substituted alkyl radicals, alkoxy radicals, substituted alkoxy radicals, H, alkenyl radicals, substituted alkenyl radicals, R^2-B, aryl radicals, substituted aryl radicals and fluoro radical; R is selected from the group consisting of H, alkenyl radicals, substituted alkenyl radicals, alkenoxy radicals, substituted alkenoxy radicals, acryloxy alkyl radicals and substituted acryloxy alkyl radicals; each R^4 is independently selected from the group consisting of R and R^3, provided that at least one of the R^4s is R; c is an integer in the range of 1 to about 10,000; and d is an integer in the range of 0 to about 100.

5,352,753

ULTRAVIOLET LIGHT ABSORBING COMPOUNDS, SILICONE COMPOSITIONS AND METHODS FOR MAKING SAME

Shih-Liang S. Yang, Laguna Hills, Calif., assignor to Allergan, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 691,149, Apr. 25, 1991, Pat. No. 5,164,462, and a continuation-in-part of Ser. No. 959,394, Oct. 9, 1992. This application Nov. 2, 1992, Ser. No. 969,912

The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.

Int. Cl.[5] C07F *7/10*

U.S. Cl. 528—27 10 Claims

1. An ultraviolet light absorbing silicone composition comprising silicone elastomer and an effective amount of ultraviolet light absorbing component covalently bonded to said silicone elastomer and derived from one or more ultraviolet light absorbing compounds selected from the group consisting of compounds having one of the following structures

5,352,754

HIGH IMPACT POLYURETHANE

Delmer R. Rhodes; James M. Lambert, both of Sandy, Utah, and Donald D. Solomon, Biviers, France, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Oct. 26, 1992, Ser. No. 966,234

The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.

Int. Cl.[5] C08G *18/18, 18/32, 18/73*

U.S. Cl. 528—28 10 Claims

1. A melt processable, non-elastomeric polyurethane consisting essentially of a product from the reaction of a non-aromatic diisocyanate, a diol chain extender of up to 12 carbon atoms and a bis-hydroxyalkyl tertiary amine catalyst, said polyurethane being devoid of leachable heavy metal or leachable tertiary amine materials.

VOL 1167 ISS 1 OC 4 1994 UMI

5,352,755

BLOCKED ISOCYANATES

Anthony H. Hughes, Rossendale, and Arthur Topham, Middleton, both of England, assignors to The Baxenden Chemical Co., Lancashire, England

Division of Ser. No. 930,455, Aug. 19, 1992, Pat. No. 5,246,557, which is a continuation of Ser. No. 769,479, Oct. 1, 1991, abandoned, which is a continuation of Ser. No. 525,713, May 21, 1990, abandoned, which is a division of Ser. No. 892,898, Aug. 1, 1986, Pat. No. 4,975,837, which is a division of Ser. No. 706,391, Feb. 27, 1985, abandoned. This application Jun. 23, 1993, Ser. No. 79,904

Claims priority, application United Kingdom, Feb. 29, 1984, 8405320

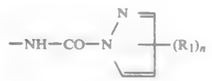
Int. Cl.[5] C08G *18/02*

U.S. Cl. 528—45 **17 Claims**

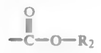
1. In a storage-stable coating composition curable by heat unblocking at 100° C. to 120° C., said composition comprising an active hydrogen-containing compound and a blocked polyisocyanate of the formula:

$$R—Y_m$$

wherein m is an integer greater than 1, Y is a blocking group and R is an m-valent aromatic residue of an isocyanate compound selected from the group consisting of ω, ω'-diisocyanato-1,3-dimethyl benzene, ω, ω'-diisocyanato-1,4-dimethyl benzene, ω, ω'-diisocyanato-diethyl benzene, ω, ω'-diisocyanato-dimethyl toluene, ω, ω'-diisocyanato-diethyl toluene, 1,3-bis-(2-isocyanato-prop-2-yl) benzene, and 1,4-bis-(2-isocyanato-prop-2-yl) benzene or R is an m-valent residue of a polyisocyanate reaction product of an isocyanate and an active hydrogen-containing compound selected from the group consisting of water, a lower molecular weight polyol having a molecular weight less than or equal to 300 and a medium molecular weight polyol having a molecular weight greater than 300 and less than 8000 or R is an m-valent residue of an isocyanurate, the improvement whereby said composition is curable by heat unblocking at 100° C. to 120° C., and each Y, which may be the same or different, is



wherein R_1 is, or, where n is more than 1, each R_1, which may be the same or different, is a C_1–C_4 alkyl, C_1–C_4 alkenyl, phenyl C_1–C_4 alkenyl, phenyl, NO_2, halogen or a



group where R_2 is a C_1–C_4 alkyl group; and n is 0, 1, 2 or 3, provided that, when R is an aromatic residue the groups Y are not directly attached to an aromatic nucleus.

5,352,756

POLY(ETHYLENE OR PROPYLENE GLYCOL)-CONTAINING POLYMER

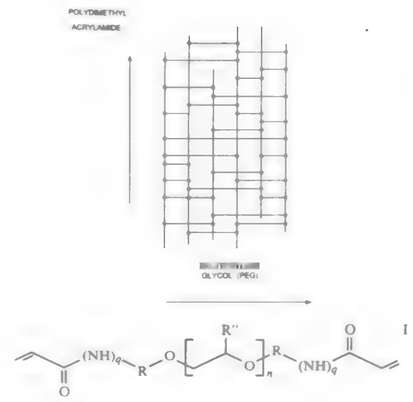
Morten P. Meldal, Maalov, Denmark, assignor to Carlsberg A/S, Copenhagen, Denmark

Continuation-in-part of Ser. No. 835,277, Feb. 13, 1992, abandoned. This application Jun. 11, 1993, Ser. No. 75,758

Int. Cl.[5] C08G *63/48, 63/12*

U.S. Cl. 525—50 **21 Claims**

1. A crosslinked poly(ethylene or propylene) glycol-containing polymer formed by radical copolymerization of a derivatived poly(ethylene or propylene) glycol of the formula



I

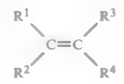
wherein

a) n is an integer of from 4 to 2,000,

b) R'' is H or CH_3,

c) R is $—(CR'_2)_s—(C_6R'_6)_t—(CR'_2)_u—$ wherein each R' is H, alkyl, aralkyl, substituted aralkyl, aryl or substituted aryl, said substituted aralkyl and substituted aryl being ring substituted with alkyl, hydroxy, mercapto, nitro, amino, mono- or dialkylamino, or halogen;

d) q is zero or 1 and s, t and u each is zero or an integer of 1–10, provided that the polymer contains no ester bonds, with an acrylic compound of the formula



III

wherein R^1 is —CY—X—R^5 or —CN, and R^2, R^3 and R^4 each is H, alkyl, aralkyl, aryl, —CY—X—R^5 or —CN, where Y is O or S, X is O, S or NR^6, R^5 is alkyl, aralkyl or aryl, and R^6 is H or H^5.

5,352,757

SULFUR COMPOUNDS AND NEW POLYMERS OBTAINED FROM THESE SULFUR COMPOUNDS

Sylvie Lavault, Lyons, and Gérard Velleret, Paris, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Sep. 16, 1992, Ser. No. 920,363

Claims priority, application France, Dec. 14, 1990, 90 15977

Int. Cl.[5] C08G *18/77*

U.S. Cl. 528—80 **33 Claims**

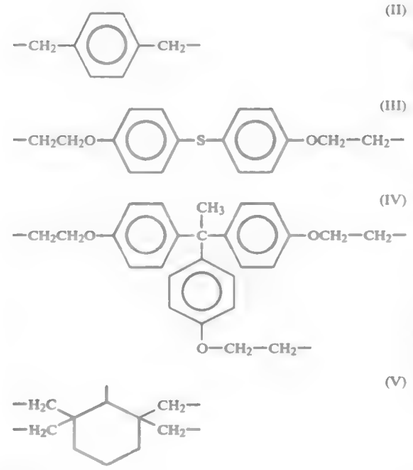
1. Sulfur compounds of general formula (I):

$$[HS—R_1—COO]_n—A \qquad (I)$$

in which:

R_1 denotes a linear or branched alkylene radical containing 1 to 3 carbon atoms,

A denotes a hydrocarbon residue of valency n, chosen from the radicals of formulae:



(II) (III) (IV) (V)

n denotes 2, 3 or 5.

5,352,758

MERCAPTO COMPOUND, ITS PREPARATION PROCESS, AND SULFUR-CONTAINING URETHANE RESINS AND LENSES USING THE SAME

Yoshinobu Kanemura; Katsuyoshi Sasagawa, both of Yokohama, and Seiichi Kobayashi, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Division of Ser. No. 924,454, Aug. 4, 1992, Pat. No. 5,283,312. This application Dec. 20, 1993, Ser. No. 169,708

Claims priority, application Japan, Aug. 8, 1991, 3-199278

Int. Cl.[5] C07C *319/06;* **C08G** *18/08*

U.S. Cl. 528—85 **8 Claims**

1. A sulfur-containing urethane resin obtained by reacting a mercapto compound represented by the following formula (1):



(1)

with at least one cyanate compound selected from the group consisting of polyisocyanate compounds, polyisothiocyanate compounds and isocyanate-group-containing isothiocyanate compounds.

5,352,759

LENS COMPRISING A POLYCARBONATE FORMED BY AN INTERFACIAL POLYCONDENSATION REACTION

Toshimasa Tokuda, Iyo, Japan, assignor to Teijin Chemicals, Ltd., Tokyo, Japan

Division of Ser. No. 830,842, Feb. 4, 1992, abandoned. This application Feb. 4, 1993, Ser. No. 13,660

Claims priority, application Japan, Feb. 5, 1991, 3-035314

Int. Cl.[5] C08G *64/00*

U.S. Cl. 528—198 **2 Claims**

1. A lens comprising a polycarbonate formed by an interfacial polycondensation reaction of 1,1-bis(4-hydroxyphenyl)-1-phenylethane having a purity of at least 99.9% and a coloration preventing effective amount of at least one phosphorous acid ester selected from the group consisting of triphenyl phosphite and tris(4-nonylphenyl)phosphite, wherein said coloration preventing effective amount of the phosphorous acid ester is incorporated into said polycarbonate by being present during the interfacial polycondensation reaction, said polycarbonate having a specific viscosity measured in a solution of 0.7 g of said polycarbonate in 100 ml of methylene chloride at 20° C. of 0.200 to 0.250, and wherein the transmittance of light having a wavelength of 400 nm passing through 3 mm thick member molded from said polycarbonate is 80% or more.

5,352,760

POLYMERIZATION OF OLIGOMERIC MULTIPLE AROMATIC ETHER-CONTAINING PHTHALONITRILES

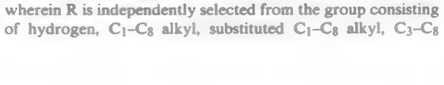
Teddy M. Keller, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 18, 1993, Ser. No. 19,373

Int. Cl.[5] C08G *65/00*

U.S. Cl. 528—206 **9 Claims**

1. A phthalonitrile polymer obtained by heating an oligomeric arylether-containing phthalonitrile monomer having the formula:



wherein

Ar represents an aromatic group, R represents

R' represents

y is an integer having a value of 0 to 4; and

n represents an average value of from 1 to about 100.

5,352,761

NAPHTHALENE DICARBOXYLIC ACIDS AND ESTERS SUBSTITUTED WITH AROYL GROUPS

Allan S. Jones, Church Hill, and Charles E. Sumner, Jr., Kingsport, both of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Dec. 3, 1993, Ser. No. 160,766

Int. Cl.[5] C08G *63/189*

U.S. Cl. 528—298 **5 Claims**

1. A substituted 1,3-H_2 naphtho{1,2-c}furan-3-one compound having the formula:

wherein R is independently selected from the group consisting of hydrogen, C_1–C_8 alkyl, substituted C_1–C_8 alkyl, C_3–C_8

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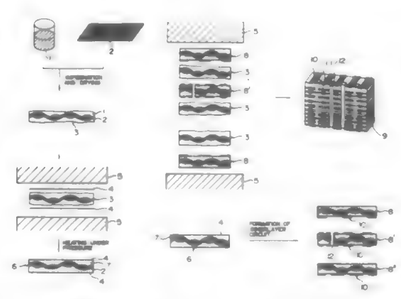
alkoxy group; R^4 is an aryl group; R^5 is independently selected from the group consisting of hydrogen and halogen.

5,352,762

MULTILAYER PRINTED CIRCUIT BOARD AND PRODUCTION THEREOF

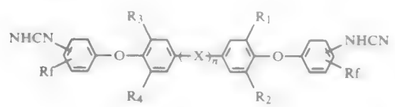
Akira Nagai; Shin Nishimura, both of Hitachi; Masahiro Suzuki, Iwaki; Masao Suzuki, Hitachi; Junichi Katagiri, Ibaraki; Akio Takahashi, Hitachiota, and Akio Mukoh, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 28, 1991, Ser. No. 676,383
Claims priority, application Japan, Mar. 30, 1990, 2-080754
Int. Cl.[5] C08G *83/00, 73/12*
U.S. Cl. 528—322 **4 Claims**



1. A fluorine-containing thermosetting resin composition comprising

100 parts by weight of a biscyanamide compound represented by the formula:



(I)

wherein X is —O—, —S—, —SO—, $—SO_2—$, —CO—, or



R_1, R_2, R_3, R_4, R_5 and R_6 are independently a hydrogen atom, a lower alkylgroup, a lower fluoroalkyl group, or an allylene group; n is zero or an integer of 1; Rf is a perfluoroalkyl group having 1 to 10 carbon atoms; and the cyanamide group is positioned at a m- or p-position with respect to the ether linkage, and

10 to 900 parts by weight of at least one secondary thermosetting component selected from the group consisting of compound having one or more ethylenically unsaturated double bonds, epoxy compounds, phenolic compounds, melamine compounds, compounds having an N-substituted unsaturated imido group, cyanate compounds, and isocyanate compounds.

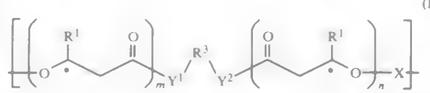
5,352,763

BIODEGRADABLE OPTICALLY ACTIVE POLYMERS AND INTERMEDIATE OLIGOMERS THEREOF, AND PROCESS FOR PRODUCING THEM

Akio Yamaguchi; Yoji Hori, both of Tokyo; Takashi Imai; Motoki Suzuki, both of Kanagawa, and Susumu Akutagawa, Tokyo, all of Japan, assignors to Takasago International Corporation, Tokyo, Japan

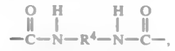
Filed Jan. 15, 1993, Ser. No. 5,081
Claims priority, application Japan, Jan. 17, 1992, 4-026262
Int. Cl.[5] C08G *63/06*
U.S. Cl. 528—361 **2 Claims**

1. An optically active polymer comprising a 3-hydroxyalkanoic acid ester unit represented by formula (II):



(II)

wherein R^1 represents an alkyl group having from 1 to 5 carbon atoms; R^3 represents a branched or straight chain alkylene group having from 2 to 6 carbon atoms, a straight chain alkenylene group having from 4 to 6 carbon atoms, a straight chain alkynylene group having from 4 to 6 carbon atoms, an oxyalkylene group having from 5 to 8 carbon atoms, or a 1,4-phenylenedimethylene group; Y^1 and Y^2 each represent an oxygen atom; X represents



R^4 represents an alkylene group having from 1 to 10 carbon atoms, a substituted or unsubstituted phenylene group, a substituted or unsubstituted biphenylene group, or a substituted or unsubstituted methylenebiphenyl group; and m and n each represents zero or an integer of from 1 to 20, provided that m and n do not simultaneously represent zero.

5,352,764

STEPWISE LINEAR MAGNETIC POLYMERS AND METHODS FOR PREPARATION THEREOF

Jack D. Mackey, Hawthorne, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Continuation of Ser. No. 57,278, May 4, 1993, which is a continuation of Ser. No. 866,913, Apr. 10, 1992, Pat. No. 5,252,730. This application Oct. 26, 1993, Ser. No. 144,163
The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.
Int. Cl.[5] C08G *73/00, 63/44*
U.S. Cl. 528—363 **14 Claims**

1. A process for producing a stepwise linear polymer composition having intense magnetic properties, comprising the steps of:

reacting a phthalimide compound with 1,3-phenylene diacetic acid, in a proportion of about two molar amounts of the phthalimide compound to about one molar amount of the 1,3-phenylene diacetic acid, in the presence of an acetate of a monovalent metal at a temperature of between about 200° to about 260° C. for between about forty-five minutes to about 3 hours, whereby a 1,3-phenylenebis diphthalimidine compound is formed;

cooling, solidifying, and extracting the 1,3-phenylene-bis diphthalimidine compound;

pulverizing, filtering, and washing the extracted 1,3-phenylenebis diphthalimidine compound; and,

reacting the extracted 1,3-phenylenebis diphthalimidine compound, a metal acetate salt selected from the group consisting of metal acetate salts of a divalent metal and metal acetate salts of a trivalent metal, and 3-benzylidine phthalimidine at a temperature of between about 260° and about 380° C. under an inert gas atmosphere, whereby the polymer composition having intense magnetic properties is formed.

5,352,765

PREPARATION OF COPOLYMERS OF CARBON MONOXIDE AND OLEFINICALLY UNSATURATED COMPOUNDS

Eit Drent, and Eric Kragtwijk, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 10, 1993, Ser. No. 150,933
Claims priority, application European Pat. Off., Nov. 17, 1992, 92203534
Int. Cl.[5] C08G *67/02*
U.S. Cl. 528—392 **10 Claims**

1. A process for the preparation of copolymers of carbon monoxide and olefinically unsaturated compounds in the presence of an aprotic solvent and a catalyst system consisting essentially of:

(a) a Group VIII metal,

(b) an acid or an anion thereof having a pKa of less than 2, and

(c) a phosphorus bidentate ligand of the general formula $R^1R^2P\text{-}R\text{-}P\text{-}R^1R^2$, wherein R^1 and R^2 represent identical or different aliphatic alkyl groups and R is a divalent organic bridging group containing at least two carbon atoms

in the bridge connecting the two phosphorus atoms, characterized in that the copolymerization is carried out in the additional presence of hydrogen, while the molar ratio of catalyst components (c) to (a) is in the range of from above 2 to 10.

5,352,766

PREPARATION OF COPOLYMERS

Philip J. M. M. de Smedt; Jan H. Mulder, and Herman M. Muijs, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 17, 1993, Ser. No. 169,090
Claims priority, application European Pat. Off., Dec. 31, 1992, 92204117
Int. Cl.[5] C08G *73/02*
U.S. Cl. 528—392 **20 Claims**

1. A process for the preparation of copolymers of carbon monoxide and one or more ethylenically unsaturated compounds by reacting the monomers under polymerization conditions in the presence of a catalyst system comprising:

a) a source of cations of one or more metals of Group VIII of the Periodic Table, and

b) a source of anions, in the further presence of a diluent in which the copolymers are insoluble or virtually insoluble and of a minor amount of one or more non-ionic surfactants.

5,352,767

ALPHA-OLEFIN/CARBON MONOXIDE ATTENUATING COPOLYMERS AND IMPROVED CATALYST AND METHOD FOR COPOLYMERIZING THE SAME

James C. W. Chien, Amherst, Mass., assignor to University of Massachusetts - Amherst, Mass.

Continuation of Ser. No. 818,061, Jan. 8, 1992, abandoned. This application Jan. 13, 1994, Ser. No. 180,698
Int. Cl.[5] C08G *67/02*
U.S. Cl. 528—392 **14 Claims**

1. An alternating thermoplastic elastomeric copolymer of only an alpha-olefin comonomer and carbon monoxide comonomer formed by high pressure reaction of an acid-free solvent solution of alpha-olefin monomer with carbon monoxide in the presence of a catalyst comprising $[L{\cdot}M{\cdot}S]+2_{2R-}/A$, where M is a transition metal ion selected from groups VIIIa of the periodic table; L is a bidente ligand containing two heteroatoms having a lone pair of electrons and selected from groups Vb and VIb of the periodic table for cis-chelation with M and in which the two heteroatoms in L are linked by alkylene chains of 1 to 7 carbon atoms and linked by alicyclic or spiro moieties to provide both steriorigidity to the said heteroatoms and geometry inducive for said cis-chelation with M; S is a solvent molecule or an electron donating molecule; X^- is an anion selected from the group consisting of Cl^-, BF_4^-, $B(C_6H_5)_4^-$, and $B(C_6F_5)_4$, and A is an activator selected from the alcohol group consisting of linear and branched, primary and secondary alcohols of 1 to 20 carbon atoms, with the copolymer terminated with the radical of the activator alcohol A.

5,352,768

ACID TREATMENT OF POLY(ARYLENE SULFIDE) POLYMER REACTION MIXTURE

John D. Stuber, Austin, Tex.; Wei-Teh W. Shang, and Lacey E. Scoggins, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 23, 1992, Ser. No. 965,644
Int. Cl.[5] C08G *75/16*
U.S. Cl. 528—486 **10 Claims**

1. A process for producing a poly(arylene sulfide) polymer which comprises

contacting reactants comprising at least one sulfur source, at least one dihaloaromatic compound and a polar organic compound to form a polymerization reaction mixture,

subjecting said polymerization reaction mixture to suitable polymerization conditions to form said poly(arylene sulfide) polymer,

contacting said reaction mixture with an acidic solution while maintaining said suitable polymerization conditions, and thereafter

recovering said poly(arylene sulfide) polymer.

5,352,769

ENZYMATIC REMOVAL OF A PROTEIN AMINO-TERMINAL SEQUENCE

Gerald W. Becker; Thomas C. Furman; Warren C. MacKellar, and James P. McDonough, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 349,472, May 9, 1989, Pat. No. 5,126,249. This application Apr. 6, 1992, Ser. No. 864,098
Int. Cl.[5] C07K *7/40;* **A61K** *37/26*
U.S. Cl. 530—303 **10 Claims**

1. A compound of the formula Met-Y-Protein in which Protein comprises three amino acid sequence units designated B, A, and X, in which B represents the B-chain of human insulin or a modified B-chain having one or more of the following amino acid modifications:

(1) replacement of the Pro in position 28 by any of the following: Asp, Val, Leu, Ile, Nle, Arg, His, Lys, Phe, Ala, Gly, citrulline, and ornithine;

(2) replacement of the Lys in position 29 by any of the following: L-Pro, D-Pro, D-hydroxyproline, L-hydroxyproline, L-(N-methyl)Lys, D-Lys, L-(N-methyl)Arg, and D-Arg;

(3) replacement of the His in position 10 by Asp;

(4) deletion of the Thr in position 30; A represents the A-chain of human insulin or a modified A-chain, in which the asparagine in position 21 is replaced by alanine; and X represents a moiety joined to the insulin A-chain or modified A-chain at the amino terminus of the A-chain and to the insulin B-chain or modified B-chain at the carboxy terminus of the B-chain, the amino terminus portion of which sequence does not define a cathepsin C dipeptide removal stop point, and Y is Tyr or Arg.

VOL 1167 ISS 1 OC 4 1994 UMI

5,352,770

PORCINE DERIVED NOVEL PHYSIOLOGICALLY ACTIVE PEPTIDE

Hisayuki Matsuo, 4-24-204, Nishiokamoto 6-chome, Higashinada-ku, Kobe-shi, Hyogo-ken, Japan

PCT No. PCT/JP91/00527, § 371 Date Dec. 20, 1991, § 102(e) Date Dec. 20, 1991, PCT Pub. No. WO91/16342, PCT Pub. Date Oct. 31, 1991

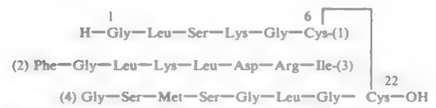
PCT Filed Apr. 20, 1991, Ser. No. 778,847

Claims priority, application Japan, Apr. 20, 1990, 2-105047

Int. Cl.[5] C07K *7/00*

U.S. Cl. 530—326 1 Claim

1. An isolated novel physiologically active peptide having the following structural formula and an acid addition salt thereof:



where (1)/(2) and (3)/(4) are respectively bonded directly and each of the cysteine residues (Cys) at positions 6 and 22 forms an intramolecular S—S bond.

5,352,771

HYDROLYSIS OF PEPTIDE BONDS USING PT (II) AND PD (II) COMPLEXES

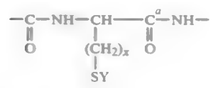
Nenad M. Kostic, and Longgen Zhu, both of Ames, Iowa, assignors to Iowa State University Research Foundation Inc., Ames, Iowa

Filed Aug. 31, 1992, Ser. No. 938,436

Int. Cl.[5] C07K *1/12, 3/10*

U.S. Cl. 530—345 16 Claims

1. A method for peptide cleavage comprising reacting a peptide comprising a subunit of the formula (I):



wherein x is 1 or 2 and Y is H or (C_1–C_4)alkyl; is treated in an aqueous medium with an amount of a tetracoordinate Pd(II) complex, wherein said complex comprises four chloro or 1–3 H_2O ligands, which complex is effective to bind to the SY unit of subunit (I) and to hydrolyze the amide bond designated a, proximal to the carboxy terminus of said subunit.

5,352,772

75 KILODALTON INTERLEUKIN-2 RECEPTOR PROTEINS AND THEIR USES

Kendall A. Smith, Hanover, N.H., assignor to The Trustees of Dartmouth College, Hanover, N.H. and United States of America, Washington, D.C.

Filed Dec. 19, 1986, Ser. No. 944,337

Int. Cl.[5] C07K *15/00*

U.S. Cl. 530—350 4 Claims

1. An interleukin-2 receptor protein, said protein having a specific affinity for interleukin-2 and characterized by having a molecular weight of about 75,000 (Mr) as determined by SDS/PAGE analysis under reducing condition and having an affinity for interleukin-2 of about 10^{-9} molar.

5,352,773

STABLE HEMOGLOBIN BASED COMPOSITION AND METHOD TO STORE SAME

Richard L. Kandler, McHenry, and John C. Spicuzza, Highland Park, both of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 811,887, Dec. 19, 1991, abandoned, which is a continuation of Ser. No. 562,786, Aug. 6, 1990, abandoned. This application Oct. 16, 1992, Ser. No. 962,623

Int. Cl.[5] C07K *13/00;* A61K *35/14, 37/00;* C07C *103/52*

U.S. Cl. 530—385 2 Claims

1. A system for storing hemoglobin at a temperature of −270 to 45 degrees Centigrade comprising

a stable thoroughly deoxygenated hemoglobin solution having a methemoglobin content of less than fifteen percent, and

a nitrogen-purged oxygen impermeable container containing said hemoglobin.

5,352,774

DYES CONTAINING THIOPHENE RADICALS

Guenter Hansen; Ernst Schefczik, both of Ludwigshafen; Karl-Heinz Etzbach, Frankenthal; Helmut Reichelt, Niederkirchen, and Hermann Loeffler, Speyer, all of Fed. Rep. of Germany, assignors to Sandoz AG, Basel, Switzerland

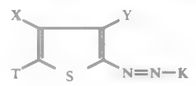
Continuation of Ser. No. 884,472, May 13, 1992, Pat. No. 5,283,326, which is a continuation of Ser. No. 532,663, Jun. 4, 1990, abandoned, which is a division of Ser. No. 205,359, Jul. 27, 1988, abandoned, which is a division of Ser. No. 860,573, May 7, 1986, abandoned. This application Sep. 23, 1993, Ser. No. 125,666

Claims priority, application Fed. Rep. of Germany, May 14, 1985, 3517365; Sep. 20, 1985, 3533546; Oct. 2, 1985, 3535133

Int. Cl.[5] C09B *29/033, 29/40;* D06P *1/18*

U.S. Cl. 534—766 17 Claims

1. A compound of the formula:



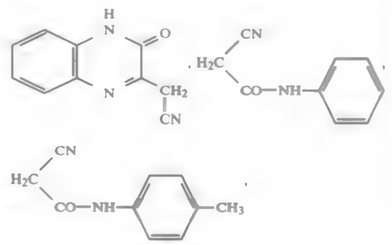
wherein

X is fluorine, chlorine or bromine;

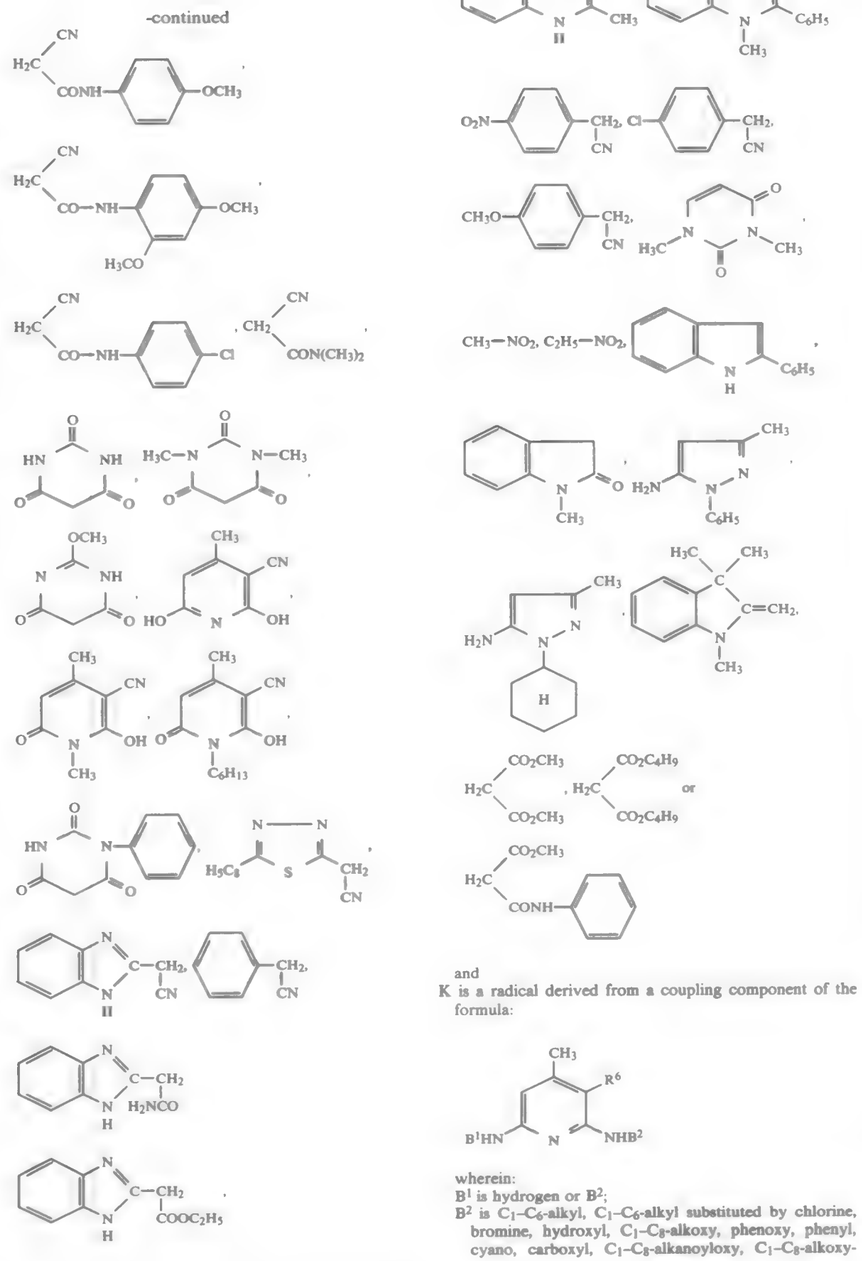
Y is cyano;

T is hydrogen; C_1–C_4-alkyl; Cl; Br; NO; NO_2; SO_3H; CHO; CN; CH_3CO; C_2H_5CO; C_6H_5CO; CH_3SO_2; $C_2H_5SO_2$; $C_6H_5SO_2$; or —CH=B;

B is C(CN) (Z) where Z is cyano; nitro; alkanoyl; aroyl; alkylsulfonyl; arylsulfonyl; carboxyl; a carboxylic ester group; unsubstituted carbamyl; substituted carbamyl; or a radical of a compound of one of the formulae:



-continued



-continued

and

K is a radical derived from a coupling component of the formula:

wherein:

B^1 is hydrogen or B^2;

B^2 is C_1–C_6-alkyl, C_1–C_6-alkyl substituted by chlorine, bromine, hydroxyl, C_1–C_8-alkoxy, phenoxy, phenyl, cyano, carboxyl, C_1–C_8-alkanoyloxy, C_1–C_8-alkoxy-

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C_1–C_4-alkoxy, benzoyloxy, o-, m- or p-methylbenzoyloxy, o-, m- or p-chlorobenzoyloxy, C_1–C_8-alkoxyalkanoyloxy, phenoxyalkanoyloxy, C_1–C_8-alkoxycarbonyloxy, C_1–C_8-alkoxyalkoxycarbonyloxy, benzyloxycarbonyloxy, phenethoxycarbonyloxy, phenoxyethoxycarbonyloxy, C_1–C_8-alkylaminocarbonyloxy, cyclohexylaminocarbonyloxy, phenylaminocarbonyloxy, C_1–C_8-alkoxycarbonyl, C_1–C_8-alkoxyalkoxycarbonyl, phenoxycarbonyl, benzyloxycarbonyl, phenoxy-C_1–C_4-alkoxy, phenylethoxycarbonyl, phenyl, or cyclohexyl; and R^6 is cyano; carbamyl; nitro; acetyl; alkoxycarbonyl; methylaminocarbonyl; dimethylaminocarbonyl; ethylaminocarbonyl; diethylaminocarbonyl; methoxyethoxycarbonyl; ethoxyethoxycarbonyl; n-propoxyethoxycarbonyl; isopropoxyethoxycarbonyl; n-butoxyethoxycarbonyl; isobutoxyethoxycarbonyl; or sec.-butoxyethoxycarbonyl.

5,352,775

APC GENE AND NUCLEIC ACID PROBES DERIVED THEREFROM

Hans Albertsen, Salt Lake City, Utah; Rakesh Anand, Cheshire, England; Mary Carlson; Joanna Groden, both of Salt Lake City, Utah; Philip J. Hedge, Cheshire, England; Geoff Joslyn, Salt Lake City, Utah; Kenneth Kinzler, Baltimore, Md.; Alexander F. Markham, Cheshire, England; Yusuke Nakamura, Tokyo, Japan; Andrew Thliveris, Salt Lake City, Utah; Bert Vogelstein, Baltimore, Md., and Raymond L. White, Salt Lake City, Utah, assignors to The Johns Hopkins Univ., Baltimore, Md.; The Univ. of Utah, Salt Lake City, Utah; Imperial Chemical Industries, London, England and Cancer Institute, Tokyo, Japan

Filed Aug. 8, 1991, Ser. No. 741,940

Claims priority, application United Kingdom, Jan. 16, 1991, 9100962; Jan. 16, 1991, 9100963; Jan. 16, 1991, 9100974; Jan. 16, 1991, 9100975

Int. Cl.[5] C07H *21/00;* C12Q *1/68*

U.S. Cl. 536—23.1 10 Claims

1. A cDNA molecule having the nucleotide sequence shown in SEQ ID NO: 1 or its complement

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5,352,776

Patent Not Issued For This Number

5,352,777

DNA ISOLATION FROM ANIMAL CELLS

Anil K. Jhingan, Fremont, Calif., assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Continuation-in-part of Ser. No. 634,256, Dec. 26, 1990, Pat. No. 5,204,246. This application Mar. 23, 1993, Ser. No. 36,208

Int. Cl.[5] C07H *21/00*

U.S. Cl. 536—25.4 7 Claims

1. A method for isolating DNA from animal cells or tissues, comprising the steps of contacting said cells or tissue with an aqueous solution comprising a compound or compounds that are xanthate-forming compounds, and isolating DNA from the cells.

5,352,778

RECOMBINANT THERMOSTABLE DNA POLYMERASE FROM ARCHAEBACTERIA

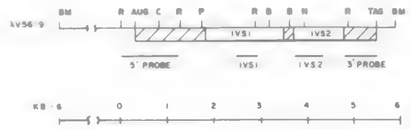
Donald G. Comb, Beverly; Francine Perler, Brookline; Rebecca Kucera, Beverly, and William E. Jack, Wenham, all of Mass., assignors to New England Biolabs, Inc., Beverly, Mass.

Continuation of Ser. No. 117,491, Sep. 7, 1993, which is a continuation of Ser. No. 811,421, Dec. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 686,340, Apr. 17, 1991, which is a continuation-in-part of Ser. No. 626,057, Dec. 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 513,994, Apr. 26, 1990, Pat. No. 5,210,036. This application Dec. 15, 1993, Ser. No. 167,238

The portion of the term of this patent subsequent to Jun. 21, 2011, has been disclaimed.

Int. Cl.[5] C12N *9/10, 15/11, 15/54, 15/00*

U.S. Cl. 536—23.2 12 Claims



1. An isolated DNA which codes for a recombinant DNA polymerase from thermophilic archaebacteria, consisting essentially of a DNA fragment which hybridizes in a Southern blot to an isolated DNA fragment selected from the group consisting of a DNA fragment consisting essentially of nucleotides 1-1274 of SEQ ID NO:1, a DNA fragment consisting essentially of nucleotides 291–1772 of SEQ ID NO: 1, a DNA fragment consisting essentially of nucleotides 3387–3533 of SEQ ID NO:1, a DNA fragment consisting essentially of nucleotides 4704–5396 of SEQ ID NO: 1, and a DNA fragment consisting essentially of nucleotides 4718–5437 of SEQ ID NO:1, wherein hybridization is conduction under the following conditions:

a) hybridization: 0.75M NaCl, 0.15 Tris, 10mM EDTA, 0.1% Sodium Pyrophosphate, 0.1% SLS, 0.03% BSA, 0.03% Ficoll 400, 0.03% PVP and 100ug/ml boiled calf thymus DNA at 50° C. for about 12 hours and;

b) wash: 3×30 minutes with 0.1X SET, 0.1% SDS, 0.1% sodium pyrophosphate and 0.1M phosphate buffer at 45° C.

5,352,779

SITE-DIRECTED MUTAGENESIS MODIFIED DNA ENCODING GLYCOPROTEIN HORMONES AND METHODS OF USE

Scott C. Chappel, and Edward G. Bernstine, both of Boston, Mass., assignors to Applied Research Systems ARS Holding N.V., Curacao, Netherlands

Division of Ser. No. 136,236, Dec. 21, 1987, Pat. No. 5,260,421. This application Sep. 23, 1993, Ser. No. 126,134

Int. Cl.[5] C12N *15/18*

U.S. Cl. 536—23.51 4 Claims

1. A recombinant DNA molecule comprising a nucleotide sequence that encodes a glycoprotein hormone which is a modification of a native glycoprotein hormone selected from the group consisting of luteinizing hormone, follicle stimulating hormone, thyroid stimulating hormone, and chorionic gonadotropin, said modification comprising complete elimination of at least one N-linked oligosaccharide chain such that the modified hormone exhibits approximately the same receptor binding capacity and plasma half-life as the native glycoprotein hormone and has sufficiently low biological activity to permit its use as a competitive antagonist, and wherein said nucleotide sequence differs from the nucleotide sequence of the DNA molecule encoding the corresponding native glycoprotein hormone in a manner which causes said modification in the glycoprotein hormone encoded thereby.

5,352,780

ABSORBENT MATERIAL AND LITTER FROM GROUND CELLULOSE

John L. Webb, Richmond; Robert D. Kilgore, Rosharon, and Shitalprasad N. Patil, Houston, all of Tex., assignors to Ecosorb International, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 746,938, Aug. 19, 1991, Pat. No. 5,195,465, which is a continuation-in-part of Ser. No. 383,167, Jul. 20, 1989, Pat. No. 5,082,563. This application Jun. 26, 1992, Ser. No. 905,021

The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.

Int. Cl.[5] A01K *29/00;* C08B *15/00*

U.S. Cl. 536—56 30 Claims

1. A method for producing absorbent material, the method comprising:

grinding cellulose in sheet form producing ground cellulose, reducing the ground cellulose to pieces, and

conditioning the pieces of cellulose with water and a surface active agent.

5,352,781

PROCESS FOR PRECURSORS TO CALCITRIOL AND RELATED COMPOUNDS

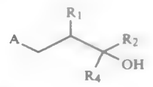
George P. Yiannikouros, Westfield, and Percy S. Manchand, Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 955,540, Oct. 1, 1992, Pat. No. 5,225,569, which is a division of Ser. No. 848,881, Mar. 11, 1992, Pat. No. 5,182,393, which is a continuation of Ser. No. 742,796, Aug. 9, 1991, abandoned. This application Mar. 19, 1993, Ser. No. 35,141

Int. Cl.[5] C07C *401/00*

U.S. Cl. 540—4 9 Claims

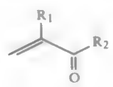
1. A process for the preparation of a compound of the formula



I'

wherein A is a 23,24-bisnorsteroid or a 23,24-bisnor-9,10-secosteroid radical, R_1 is hydrogen, hydroxycarbonyl, lower alkoxycarbonyl, lower alkylcarbonyl or unsubstituted or substituted lower alkyl, R2 is hydroxyl, lower alkoxy, or unsubstituted or substituted lower alkyl, and R4 is lower alkyl,

(1) which comprises reacting a compound of the formula



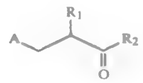
III

with a nickel hydrate or, if unhydrated, in the presence of a proton source and a reducing agent; in the presence of an organic solvent and ligand source, and thereafter,

(2) treating the reaction product of step 1, with a compound of the formula

AX II

wherein A is as previously described, and X is halogen to yield a compound of the formula



IV

(3) reacting the compound of formula IV with an organometallic reagent which adds R_4, to yield the corresponding compound of formula I'.

5,352,782

PROCESS FOR PREPARING CRYSTALLINE β-LACTAM MONOHYDRATE

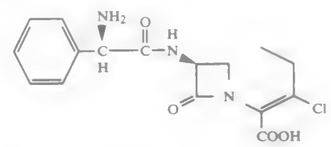
Robert L. Nist, Greenfield, and Marvin E. Wildfeuer, Lafayette, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 4, 1993, Ser. No. 71,552

Int. Cl.[5] C07D *487/04*

U.S. Cl. 540—205 9 Claims

1. A process for the preparation of the crystalline monohydrate form of the compound of the formula (I):



(I)

which comprises the step of

(a) mixing a form of the compound of formula (I), other than the crystalline monohydrate form, in water at a temperature between about 30° to about 60° C.; or

(b) exposing a form of the compound of formula (I), other than the crystalline monohydrate form, to saturated steam at a temperature of between about 90° C. to about 100° C.

5,352,783

MICROBIAL TRANSFORMATION PRODUCT HAVING IMMUNOSUPPRESSIVE ACTIVITY

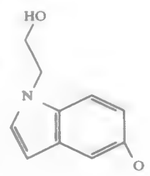
Ali Shafiee, Westfield; Byron H. Arison, Watchung; Shieh-Shung T. Chen, Morganville; Randall R. Miller, Piscataway, and Ralph A. Stearns, Park Ridge, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 9, 1993, Ser. No. 74,258

Int. Cl.[5] C07D *491/16;* A61K *31/345;* C12P *17/14*

U.S. Cl. 540—456 1 Claim

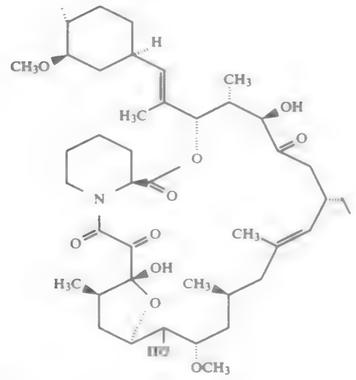
1. A compound of formula I:



I

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-continued



or a pharmaceutically acceptable salt thereof.

5,352,784

FUSED CYCLOALKYLIMIDAZOPYRIDINES

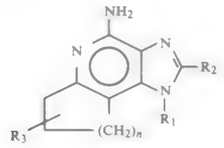
Nick Nikolaides, and John F. Gerster, both of Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 15, 1993, Ser. No. 92,014

Int. Cl.[5] C07D *413/14, 471/04*

U.S. Cl. 594—126 **9 Claims**

1. A compound of the formula:



wherein

n is 1, 2, or 3;

R_1 is selected from the group consisting of hydrogen; cyclic alkyl of three, four, or five carbon atoms; straight chain or branched chain alkyl containing one to about ten carbon atoms and substituted straight chain or branched chain alkyl containing one to about ten carbon atoms, wherein the substituent is selected from the group consisting of cycloalkyl containing three to about six carbon atoms and cycloalkyl containing three to about six carbon atoms substituted by straight chain or branched chain alkyl containing one to about four carbon atoms; fluoro- or chloroalkyl containing from one to about ten carbon atoms and one or more fluorine or chlorine atoms; straight chain or branched chain alkenyl containing two to about ten carbon atoms and substituted straight chain or branched chain alkenyl containing two to about ten carbon atoms, wherein the substituent is selected from the group consisting of cycloalkyl containing three to about six carbon atoms and cycloalkyl containing three to about six carbon atoms substituted by straight chain or branched chain alkyl containing one to about four carbon atoms; hydroxyalkyl of one to about six carbon atoms; alkoxyalkyl wherein the alkoxy moiety contains one to about four carbon atoms and the alkyl moiety contains one to about six carbon atoms; acyloxyalkyl wherein the acyloxy moiety is alkanoyloxy of two to about four carbon atoms or benzoyloxy, and the alkyl moiety contains one to about six carbon atoms, with the proviso that any such alkyl, substituted alkyl, alkenyl, substituted alkenyl, hydroxyalkyl, alkoxyalkyl, or acyloxyalkyl group does not have a fully carbon substituted carbon atom bonded directly to the nitrogen atom; benzyl; (phenyl)ethyl; and phenyl; said benzyl, (phenyl)ethyl or phenyl substituent being optionally substituted on the benzene ring by one or two moieties independently selected from the group consisting of alkyl of one to about four carbon atoms, alkoxy of one to about four carbon atoms, and halogen, with the proviso that when said benzene ring is substituted by two of said moieties, then the moieties together contain no more than six carbon atoms; and $—CHR_xR_y$

wherein

R_y is hydrogen or a carbon-carbon bond, with the proviso that when R_y is hydrogen, R_x is alkoxy of one to about four carbon atoms, hydroxyalkoxy of one to about four carbon atoms, 1-alkynyl of two to about ten carbon atoms, tetrahydropyranyl, alkoxyalkyl wherein the alkoxy moiety contains one to about four carbon atoms and the alkyl moiety contains one to about four carbon atoms, 2-, 3-, or 4-pyridyl, and with the further proviso that when R_y is a carbon-carbon bond, R_y and R_x together form a tetrahydrofuranyl group optionally substituted with one or more substituents independently selected from the group consisting of hydroxy and hydroxyalkyl of one to about four carbon atoms,

R_2 is selected from the group consisting of hydrogen, straight chain or branched chain alkyl containing one to about eight carbon atoms, benzyl, (phenyl)ethyl and phenyl, the benzyl, (phenyl)ethyl or phenyl substituent being optionally substituted on the benzene ring by a moiety selected from the group consisting of methyl, methoxy, and halogen; and $—C(R_S)(R_T)(X)$

wherein

R_S and R_T are independently selected from the group consisting of hydrogen, alkyl of one to about four carbon atoms, phenyl, and substituted phenyl wherein the substituent is selected from the group consisting of alkyl of one to about four carbon atoms, alkoxy of one to about four carbon atoms, and halogen;

X is selected from the group consisting of alkoxy containing one to about four carbon atoms, alkoxyalkyl wherein the alkoxy moiety contains one to about four carbon atoms and the alkyl moiety contains one to about four carbon atoms, haloalkyl of one to about four carbon atoms, alkylamido wherein the alkyl group contains one to about four carbon atoms, amino, substituted amino wherein the substituent is alkyl or hydroxylalkyl of one to about four carbon atoms, azido, alkylthio of one to about four carbon atoms, and morpholinoalkyl wherein the alkyl moiety contains one to about four carbon atoms, and

R_3 is selected from the group consisting of hydrogen, fluoro, chloro, straight chain or branched chain alkyl containing one to about four carbon atoms, and straight chain or branched chain fluoro- or chloroalkyl containing one to about four carbon atoms and at least one fluorine or chlorine atom.

5,352,785

CONTINUOUS PROCESS FOR PURIFYING PERFLUOROCHEMICAL COMPOSITIONS

Thomas C. Herzberg, Afton Township, Washington County; Robert B. Fletcher, St. Paul, and Randall F. Henderson, Cottage Grove, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 30, 1993, Ser. No. 39,861

Int. Cl.[5] C07D *265/00*; C07C *209/84, 41/34, 17/38*

U.S. Cl. 544—178 **20 Claims**

1. A process for purifying a perfluorochemical composition which comprises continuously mixing said perfluorochemical composition, comprising a liquid mixture of inert perfluorochemicals and isomeric fluorohydrochemicals, with a stabilization composition comprising water-miscible alkanol and an aqueous solution of base made by dissolving said base in an amount of water sufficient to dissolve or disperse the fluoride salt by-products of the reaction of said base with said fluorohydrochemicals to form fluoroolefins, the amount of said alkanol in said stabilization composition being in stoichiometric excess of the amount needed to completely convert said fluoroolefins to alkoxyvinyl ethers.

5,352,786

DI(2-PROPYL)ESTERS OF 1-FLUORO-2-PHOSPHONOMETHOXY-3-P-TOLUENESULFONYLOXYPROPANES, THEIR PRODUCING AND UTILIZATION

Jindrich Jindrich, and Antonín Holý, Horní Počernice, both of Czechoslovakia, assignors to Institute of Organic Chemistry and Biochemistry of the Academy of Sciences of the Czech Republic, Praha, Czechoslovakia

PCT No. PCT/CS92/00013, § 371 Date Jan. 13, 1993, § 102(e) Date Jan. 13, 1993, PCT Pub. No. WO92/20691, PCT Pub. Date Nov. 26, 1992

PCT Filed May 19, 1992, Ser. No. 969,852

Claims priority, application Czechoslovakia, May 20, 1991, PV 1475-91

Int. Cl.[5] C07F *9/02*

U.S. Cl. 544—243 **7 Claims**

1. Compounds of the general formula VIII



(VIII)

where R_1 is a reactive chloro, p-toluenesulfonyloxy or methanesulfonyloxy group, R_2 is alkyl, and the absolute configuration at carbon atom C2 is R, S or RS.

5,352,787

PROCESS FOR THE PREPARATION OF 5-(TRIFLUOROMETHYL)-URACIL, AND THE NOVEL COMPOUNDS 2,4-DICHLORO-5-TRICHLOROMETHYL-PYRIMIDINE AND 2,4-DIFLUORO-5-TRIFLUOROMETHYL-PYRIMIDINE

Peter Andres, Leichlingen, and Albrecht Marhold, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 2, 1993, Ser. No. 86,696

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1992, 4222518

Int. Cl.[5] C07D *239/02*

U.S. Cl. 544—309 **6 Claims**

1. A process for the preparation of 5-(trifluoromethyl)uracil, comprising:

a. chlorinating thymine by reacting thymine with phosphorus oxychloride in the presence of a tertiary amine at 20° to 120° C. to yield 2,4-dichloro-5-methylpyrimidine,

b. chlorinating 2,4-dichloro-5-methylpyrimidine by reacting 2,4-dichloro-5-methylpyrimidine with elemental chlorine or sulphuryl chloride at temperatures of 180° to 250° C., in the presence of radical-forming agents, without using a solvent, and optionally under UV irradiation to yield 2,4-dichloro-5-trichloromethylpyrimidines,

c. reacting 2,4-dichloro-5-trichloromethylpyrimidine with a catalytic amount of antimony halides and excess hydrogen fluoride or hydrogen fluoride alone to yield 2,4-fluorinated and/or chlorinated 5-trifluoromethylpyrimidine, and

d. hydrolyzing the 2,4-fluorinated and/or chlorinated 5-trifluoromethylpyrimidines with excess water and in the presence of a fluoride selected from the group consisting of potassium fluoride and sodium fluoride to yield 5-(trifluoromethyl) uracil.

5,352,788

N-SUBSTITUTED HETEROCYCLIC DERIVATIVES

Claude Bernhart, Saint Gely du Fesc; Jean-Claude Breliere, Montpellier; Jacques Clement, Saussan; Dino Nisato, Saint Georges d'Orques; Pierre Perreault, Montpellier; Claude Muneaux, and Yvette Muneaux, both of Les Matelles, all of France, assignors to Elf Sanofi, Paris, France

Division of Ser. No. 794,497, Nov. 20, 1991, Pat. No. 5,270,317.

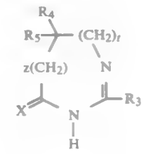
This application Jun. 23, 1993, Ser. No. 79,866

Claims priority, application France, Mar. 30, 1990, 90 03563; Aug. 8, 1990, 90 10144; Sep. 10, 1991, 91 11161

Int. Cl.[5] C07D *239/36, 233/70*

U.S. Cl. 544—319 **16 Claims**

1. A compound of the formula



(II)

in which:

R_3 is a hydrogen, a C_1–C_6 alkyl which is unsubstituted or substituted by one or more halogen atoms, a C_2–C_6 alkenyl, a C_3–C_7 cycloalkyl, a phenyl, a phenylalkyl in which the alkyl is C_1–C_3, or a phenylalkenyl in which the alkenyl is C_2–C_3, said phenyl groups being unsubstituted or monosubstituted or polysubstituted by a halogen atom, a C_1–C_4 alkyl, a C_1–C_4 halogenoalkyl, a C_1–C_4 polyhalogenoalkyl, a hydroxyl or a C_1–C_4 alkoxy; and either

R_4 and R_5 are each independently a C_1–C_6 alkyl, a phenyl or a phenylalkyl in which the alkyl is C_1–C_3, said alkyl, phenyl and phenylalkyl groups being unsubstituted or substituted by one or more halogen atoms or by a group selected from a C_1–C_4 perfluoroalkyl, a hydroxyl and a C_1–C_4 alkoxy;

or R_4 and R_5 together form a group of the formula $=CR_7R_8$, in which R_7 is hydrogen, a C_1–C_4 alkyl or a phenyl and R_8 is a C_1–C_4 alkyl or a phenyl;

or else R_4 and R_5 together are either a group of the formula $(CH_2)_n$ or a group of the formula $(CH_2)_pY—(CH_2)_q$, in which Y is either an oxygen atom, or a sulfur atom, or a carbon atom substituted by a C_1–C_4 alkyl group, a phenyl or a phenylalkyl in which the alkyl is C_1–C_3, or a group N—R_6, in which R_6 is a hydrogen, a C_1–C_4 alkyl, a phenylalkyl in which the alkyl is C_1–C_3, a C_1–C_4 alkylcarbonyl, a C_1–C_4 halogenoalkylcarbonyl, a C_1–C_4 polyhalogenoalkylcarbonyl, a benzoyl, an alpha-aminoacyl or an N-protecting group, or R_4 and R_5, together with the carbon atom to which they are bonded, form an indane or an adamantane;

p+q=m;

n is an integer between 2 and 11;

m is an integer between 2 and 5;

X is an oxygen atom or sulfur atom; and

z and t are zero or one is zero and the other is one;

with the limitation that

if z and t are zero and X is an oxygen atom, R_4 and R_5 are other than

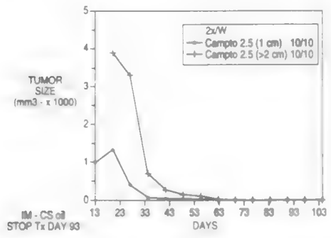
a C_1–C_6 alkyl, a phenyl or a phenylalkyl in which the alkyl is C_1–C_3, said alkyl, phenyl and phenylalkyl groups being unsubstituted or substituted by one or more halogen atoms or by a group selected from a C_1–C_4 perfluoroalkyl, a hydroxyl and a C_1–C_4 alkoxy;

or R_4 and R_5 together are other than a group N—R_6 in

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which R_6 is a hydrogen, a C_1–C_4 alkyl or a phenylalkyl in which the alkyl is C_1–C_3; and
n is other than 6; or
when R_3 represents a substituted phenyl group, R_4 and R_5 together are other than a $(CH_2)_n$ group in which n is between 3 and 5;
and
if z=1 and R_3 is a phenyl, R_4 and R_5 are each other than a methyl; or
R_4 is a C_1–C_6 alkyl which is unsubstituted or substituted by one or more halogen atoms; and
R_5 is a cycloalkyl or a cycloalkylmethyl, said cycloalkyl being C_3–C_7, which is unsubstituted or substituted by one or more halogen atoms;
or R_4 and R_5 are each a cyclopropyl;
X is an oxygen atom or sulfur atom; and
z and t are zero or one is zero and the other is one.

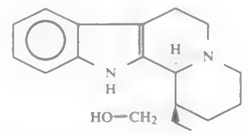
5,352,789
METHODS FOR PURIFYING CAMPTOTHECIN COMPOUNDS
Hellmuth R. Hinz, Kingwood, Tex., assignor to The Stehlin Foundation for Cancer Research, Houston, Tex.
Filed Feb. 25, 1993, Ser. No. 22,091
Int. Cl.[5] C07D *491/22*
U.S. Cl. 546—48 **8 Claims**



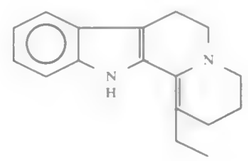
1. A method of purifying 20(S)-camptothecin comprising the steps:
(1) combining an aqueous base containing an hydroxide ion, a water immiscible organic solvent, and a starting natural plant material containing 20(S)-camptothecin to form a mixture having an aqueous phase containing 20(S)-camptothecin and an organic phase, wherein the lactone ring in said 20(S)-camptothecin is converted to a carboxylate salt in the aqueous phase;
(2) separating said organic phase from said aqueous phase containing 20(S)-camptothecin;
(3) acidifying said aqueous phase containing 20(S)-camptothecin to form 20(S)-camptothecin crystals by the addition of an acid whereby the carboxylate salt is reconverted to said lactone ring; and
(4) separating 20(S)-camptothecin crystals obtained in step (3).

5,352,790
PROCESS FOR THE PREPARATION OF 1β-ETHYL-1α-(HYDROXYMETHYL)-1,2,3,4,6,7,12,12Bα-OCTAHYDRO-INDOLO[2,3,-A]QUINOLIZINE AND NOVEL INTERMEDIATES
Janos Kreidl; Laszlo Czibula; György Visky; Maria F. née Kirjak; Ida D. née Juhasz, all of Budapest; Judit Brill, deceased, late of Budapest by Jozsef Meszaros, Jr., Krisztina Erdelyi née Meszaros , and Katalin Nogradi, Budapest, all of Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary
PCT No. PCT/HU91/00046, § 371 Date Jun. 25, 1992, § 102(e) Date Jun. 25, 1992, PCT Pub. No. WO92/07851, PCT Pub. Date May 14, 1992
PCT Filed Oct. 30, 1991, Ser. No. 877,172
Claims priority, application Hungary, Oct. 31, 1990, 6952/90
Int. Cl.[5] C07D *459/00*
U.S. Cl. 546—70 **10 Claims**

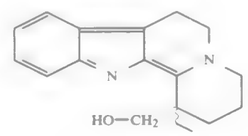
1. A process for the preparation of an optically active compound of the Formula (I)



which comprises the steps of:
(a) treating a compound of the Formula (II)



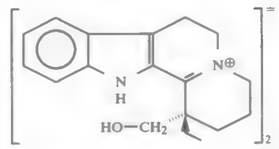
with about an equimolar amount of formaldehyde or with a polymerized form thereof at a temperature near room temperature, to yield a racemic compound of the Formula (III)



which is in dynamic equilibrium with the compound of the Formula (II) and which may optionally be isolated;
(b) asymmetrically transforming the racemic compound of the Formula (III) with (−)-L-dibenzoyl-tartaric acid monohydrate, which is a resolving agent, wherein the compound of the Formula (III) is employed slightly in excess of the equivalent amount of the resolving compound to obtain a crystalline optically active salt of the Formula (IV)

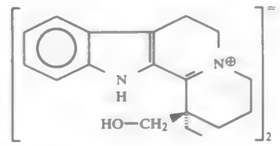
(−)-L-dibenzoyl tartrate

-continued



having a desired optical activity and an optically active salt of the Formula (V)

(−)-L-dibenzoyl tartrate



having an undesired optical active dissolved in a mother liquor; and
(c) separating the crystalline salt of the Formula (IV) from the mother liquor containing the salt of the Formula (V) and reducing the Formula (IV) salt to obtain the compound of the Formula (I) .

5,352,791
HYDRATING OR OXIDIZING PROCESS USING A METAL-CONTAINING, SHAPED ORGANOSILOXANE AMINE COPOLYCONDENSATE CATALYST
Peter Panster, Rodenbach, and Stefan Wieland, Offenbach, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Division of Ser. No. 860,715, Apr. 1, 1992, Pat. No. 5,264,514. This application Sep. 16, 1993, Ser. No. 121,580
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1991, 4110705
Int. Cl.[5] C07D *215/06*; C07C *53/134*; C08G *77/26*
U.S. Cl. 546—165 **3 Claims**

1. A process for hydrogenating or oxidizing a compound, comprising:
subjecting the compound to hydrogenation or oxidation conditions in the presence of a catalyst, wherein the catalyst is a shaped organosiloxane amine copolycondensate, including: at least one metal selected from the group consisting of: palladium, platinum, ruthenium, rhodium, and mixtures thereof, wherein the metal or metals are present predominately in elemental form; optionally promotors, moderators, or both, wherein the shaped organosiloxane amine copolycondensate includes units of formula (I):


(I)

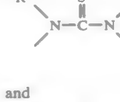
and at least one member selected from the group consisting of units of formula (II) and units of formula (III), wherein the units of formula (II) are represented as follows:


(II)

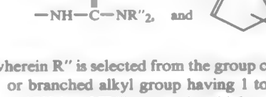
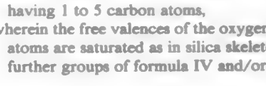
and the units of formula (III) are represented as follows:

(III),

wherein R^2 to R^6 are identical or different and signify a group of formula (IV):


(IV)

wherein R^7 is bound directly to the nitrogen atom or the group X or the group Y, wherein R^7 is selected from the group consisting of: a linear or branched alkylene group with 1 to 10 carbon atoms, a cycloalkylene group with 5 to 8 carbon atoms and a unit of a formula as follows:


or


wherein
"n" and "m" are each a number in the range of 0 to 6, wherein n indicates the number of methylene groups in the N, X and Y position and m indicates the number of methylene groups in the Si position;
R^1 is selected from the group consisting of: formula (IV), H, CH_3, C_2H_5, and C_3H_7,
X is selected from the group consisting of: —S—, —S_2—, —S_3—, —S_4—


and

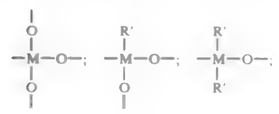
and
Y is selected from the group consisting of: —CN, —SCN, —SH, —S—CH_3, —S—C_2H_5, —S—C_3H_7, —NH_2, —NH—$(CH_2)_2$—NH_2, —NH—$(CH_2)_2$—NH—$(CH_2)_2$—NH_2, —$N(CH_3)_2$, —$N(C_2H_5)_2$, —$N(C_3H_7)_2$,


wherein R'' is selected from the group consisting of: H, a linear or branched alkyl group having 1 to 5 carbon atoms and a —$(CH_2)_n$—NR'''_2 group, in which n signifies a number from 1 to 6, and R''' is H or a linear or branched alkyl group having 1 to 5 carbon atoms,
wherein the free valences of the oxygen atoms bound to the Si atoms are saturated as in silica skeletons by silicon atoms of further groups of formula IV and/or via the metal atoms in

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one or several cross-linking binding links selected from the group consisting of formula (V) represented as follows:

(V)





wherein M is selected from the group consisting of: an Si, Ti and Zr atom, and R′ is selected from the group consisting of: a linear or branched alkyl group with 1 to 5 carbon atoms and a phenyl group, wherein a ratio of the silicon atoms from the groups of formula (IV) to the metal atoms in the cross-linking binding links (V) is in the range of 1:0 to 1:30 and the copolycondensate is present macroscopiccally as spherical particles having a diameter in the range of 0.01 to 3.0 mm, a specific surface in the range of 0.01 to 1000 m^2/g, a specific pore volume in the range of 0.01 to 6.5 ml/g and a bulk density in the range of 50 to 1000 g/l.

5,352,792

THIOALKYLTHIO CEPHALOSPORIN DERIVATIVES

Tadatoshi Kubota, Habikino, and Masaharu Kume, Amagasaki, both of Japan, assignors to Shionogi & Co., Ltd., Japan

Division of Ser. No. 729,413, Jul. 12, 1991, Pat. No. 5,214,037. This application Mar. 2, 1993, Ser. No. 25,628

Claims priority, application Japan, Jul. 19, 1990, 2-191899; Oct. 25, 1990, 2-289772; Nov. 21, 1990, 2-319578; Jun. 19, 1991, 3-147357

Int. Cl.[5] C07D *401/06, 249/04*

U.S. Cl. 548—255 **7 Claims**

1. A compound selected from the group consisting of:

AcSR[2]SR[1]Het and HalR[2]SR[1]Het wherein Ac is C_1–C_{12} acyl; Hal is halogen; R^1 is a single bond or C_1–C_4 alkylene; and R^2 is a straight or branched C_1–C_4 alkylene; Het is 1, 2, 3-triazol-4-yl, or a derivative which is optionally protected at a nitrogen atom by one or more protecting groups selected from C1–C8 alkyl, C7–C19 aralkyl; C1–C8 alkylthio; C6–C12 arylthio; C5–C8 cycloalkylidene; C2–C12 alkoxycarbonyl the alkyl of which is cyclic or acyclic, substituted or unsubstituted and is selected from the group consisting of methyl, ethyl, propyl, cyclopropylmethyl, cyclopropylethyl, isopropyl, butyl, isobutyl, pentyl, hexyl, trichloroethyl, pyridylmethyl, cyclopentyl or cyclohexyl; C8–C19 aralkoxycarbonyl the aralkyl of which is benzyl, benzhydryl or nitrobenzyl, C7–C15 aroyl; C3–C9 trialkylsilyl; C3–C9 alkoxydialkylsilyl; and an acid capable of forming acid addition salt.

5,352,793

SUNSCREEN COMPOUNDS

Graham Bird; Neil Fitzmaurice, both of Victoria; Walter C. Dunlap, Queensland; Bruce E. Chalker, Queensland, and Wickramasinghe M. Bandaranayake, Queensland, all of Australia, assignors to ICI Australia Operations Proprietary Limited, Melbourne, Australia

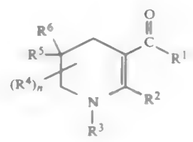
Division of Ser. No. 236,530, May 26, 1988, Pat. No. 5,100,496. This application Nov. 27, 1990, Ser. No. 618,610

Claims priority, application Australia, Sep. 26, 1986, PH8208; Nov. 25, 1986, PH9230

Int. Cl.[5] C07D *213/30, 213/46*

U.S. Cl. 546—315 **11 Claims**

1. A compound of formula I



I

wherein:

R^1 is selected from the group consisting of C_1 to C_{18} alkyl; C_1 to C_9 alkyl substituted with a substituent selected from the group consisting of hydroxy, amino, C_1 to C_9 alkoxy, C_2 to C_9 alkenyloxy, C_1 to C_9 alkanoyl, (C_1 to C_9 alkoxy) carbonyl, carbamoyl, (C_1 to C_6 alkyl)carbamoyl and phenyl; C_2 to C_{18} alkenyl; C_2 to C_9 alkenyl substituted with a substituent selected from the group consisting of hydroxy, amino, C_1 to C_9 alkoxy, C_2 to C_9 alkenyloxy, C_1 to C_9 alkanoyl, carbamoyl, (C_1 to C_6 alkyl)carbamoyl, and phenyl; C_2 to C_{18} alkynyl; phenyl; benzyl; the groups phenyl and benzyl substituted on the benzene ring with a substituent selected from the group of C_1 to C_{12} alkyl, C_1 to C_{12} alkoxy, C_2–C_9 alkylene, C_2 to C_{12} alkenyloxy, C_1 to C_{12} alkylamino N,N-di(C_1 to C_6 alkyl)amino, (C_1 to C_{12} alkoxy)carbonyl and C_1 to C_{12} alkanoyl; C_5 to C_7 cycloalkyl; C_5 to C_7 cycloalkenyl; the groups substituted C_5 to C_7 cycloalkyl and substituted C_5 to C_7 cycloalkenyl wherein the substituent is selected from the group consisting of hydroxy, amino, C_1 to C_9 alkyl, C_1 to C_9 alkoxy, and C_1 to C_9 alkenyloxy;

R^3 is selected from the group consisting of C_2 to C_{18} alkyl; C_1 to C_9 alkyl substituted with a substituent selected from the group consisting of hydroxy, amino, C_1 to C_9 alkoxy, C_2 to C_9 alkenyloxy, C_1 to C_9 alkanoyl, (C_1 to C_9 alkoxy)carbonyl, carbamoyl, (C_1 to C_6 alkyl)carbamoyl and phenyl; C_2 to C_{18} alkenyl; C_2 to C_9 alkenyl substituted with a substituent selected from the group consisting of hydroxy, amino C_1 to C_9 alkoxy, C_2 to C_9 alkenyloxy, C_1 to C_9 alkanoyl, (C_1 to C_9 alkoxy)carbonyl, carbamoyl, (C_1 to C_9 alkyl) carbamoyl and phenyl; C_2 to C_{18} alkynyl; phenyl; benzyl; benzoyl; the groups phenyl, benzyl and benzoyl optionally substituted on the benzene ring with a substituent selected from the group consisting of hydroxy, amino, C_1 to C_{12} alkyl, C_2 to C_{12} alkenyl, C_1 to C_{12} alkoxy, C_2 to C_{12} alkenyloxy, C_1 to C_{12} alkylamino, N,N-di(C_1 to C_6 alkyl)amino, (C_1 to C_{12} alkoxy)-carbonyl, and C_1 to C_{12} alkanoyl; C_5 to C_7 cycloalkyl; C_5 to C_7 cycloalkenyl; the groups substituted C_5 to C_7 cycloalkyl and substituted C_5 to C_7 cycloalkenyl wherein the substituent is selected from the group consisting of hydroxy, amino, C_1 to C_9 alkyl, C_1 to C_9 alkoxy, and C_1 to C_9 alkenyloxy; C_1 to C_{18} alkanoyl; C_2 to C_9 alkanoyl substituted with a substituent selected from the group consisting of hydroxy, amino, C_1 to C_9 alkoxy, C_2 to C_9 alkenyloxy, C_1 to C_9 alkanoyl, carbamoyl, C_1 to C_6 alkyl)carbamoyl, (C_1 to C_9 alkoxy)carbonyl and phenyl; and the group —OROROR^9 wherein R which may be the same or different are bivalent hydrocarbon radicals of 2 to 6 carbon atoms and R^9 is a hydrocarbon radical selected from C_1 to C_6 alkyl, C_2 to C_6 alkenyl phenyl, benzyl, (C_1 to C_6 alkyl) phenyl and (C_1 to C_6 alkyl)benzyl;

R^2 is selected from the group consisting of hydrogen, C_1 to C_6 alkyl, C_1 to C_6 alkoxy;

R^4 is selected from the group consisting of C_1 to C_6 alkyl and C_1 to C_6 alkoxy;

n is an integer selected from 0 to 4 inclusive;

R^5 and R^6 which may be the same or different are selected from hydrogen, C_1 to C_6 alkyl, C_1 to C_6 alkoxy, C_1 to C_{10} alkanoyl, C_1 to C_{10} alkanoyl substituted by carboxyl or (C_1 to C_6 alkoxy) carbonyl;

with the proviso that when R^1 is methyl then R^3 is not selected from the group of hydroxyethyl, methoxymethyl and benzyl and when R^1 is phenol, R^3 is not acetyl or alkyl substituted with phenyl.

5,352,794

PROCESS FOR THE PREPARATION OF N-(2-CHLORO-PYRIDIN-5-YL-METHYL)E-THYLENEDIAMINE

Reinhard Lantzsch, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 3, 1992, Ser. No. 970,907

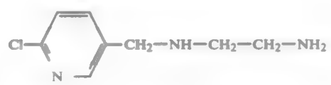
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1991, 4137271

Int. Cl.[5] C07D *207/444*

U.S. Cl. 546—329 **8 Claims**

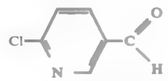
1. Process for the preparation of N-(2-chloro-pyridin-5-yl-methyl)-ethylenediamine, of the formula (I),

(I)



which comprises reacting 6-chloronicotinaldehyde, of the formula (II)

(II)



with about 1 to 5 times its molar amount of 1,2-ethylenediamine of the formula (III)

$$H_2N—CH_2—CH_2—NH_2 \quad \text{(III)}$$

and about 0.5 to 3 times its molar amount of a reducing agent in the presence of an alcohol as diluent at a temperatures between −30° C. and +50° C.

5,352,795

ALPHA-HETEROCYCLE SUBSTITUTED TOLUNITHILES

Robert M. Bowman, Summit, and Leslie J. Browne, Morristown, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

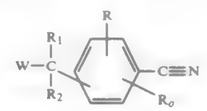
Division of Ser. No. 628,732, Dec. 17, 1990, Pat. No. 5,112,845, which is a continuation-in-part of Ser. No. 240,862, Sep. 6, 1988, Pat. No. 4,978,672, which is a continuation-in-part of Ser. No. 164,696, Mar. 7, 1988, Pat. No. 4,937,250, which is a division of Ser. No. 837,489, Mar. 7, 1986, Pat. No. 4,749,713. This application May 11, 1992, Ser. No. 882,188

Int. Cl.[5] C07D *249/08*

U.S. Cl. 548—262.2 **4 Claims**

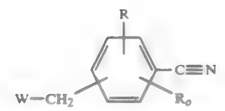
1. A method for preparing a compound of the formula

(I)



wherein R and R_o represent hydrogen or lower alkyl; or R and R_o located on adjacent carbon atoms and together when combined with the benzene ring to which they are attached form a naphthalene or tetrahydronaphthalene ting; R_1 represents hydrogen; R_2 represents 4-cyanophenyl; and W represents 1-(1,2,4)-triazolyl; which comprises condensing under basic conditions using an alkali metal aikoxide a compound of the formula XI

(XI)



wherein R, R_o and W have meaning as defined above, with p-fluorobenzonitrile.

5,352,796

AMINO ACIDS USEFUL IN MAKING GNRH ANALOGS

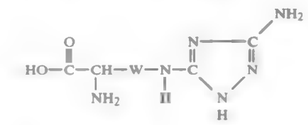
Carl A. Hoeger, San Marcos; Jean E. F. Rivier, La Jolla, and John S. Porter, Leucadia, all of Calif., assignors to The Salk Institute For Biological Studies, San Diego, Calif.

Continuation-in-part of Ser. No. 6,729, Jan. 21, 1993, Pat. No. 5,296,468, which is a continuation-in-part of Ser. No. 669,695, Mar. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 545,239, Jun. 27, 1990, Pat. No. 5,169,932, which is a continuation-in-part of Ser. No. 428,827, Oct. 30, 1989, abandoned. This application Jun. 17, 1993, Ser. No. 78,965

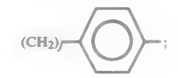
Int. Cl.[5] C07D *249/14*

U.S. Cl. 548—265.2 **7 Claims**

1. An amino acid having the formula:



where W is $(CH_2)_n$ or



n is an integer from 1 to 6; and j is an interger from 1 to 3.

5,352,797

SILANE-TYPE COUPLING AGENT, PROCESS FOR ITS PREPARATION, AND ITS USE FOR THE PRODUCTION OF A CONDUCTING COATING ON GLASS

Bertrand Bloch; André Attias, both of Paris; Jacques Ancelle, Chatenay Malabry; Claude Andrieux, and Pierre Audebert, both of Paris, all of France, assignors to Office National d'Etudes et de Recherches Aerospatiales, Chatillon Sous Bagneux, France

PCT No. PCT/FR91/00770, § 371 Date Mar. 30, 1993, § 102(e) Date Mar. 30, 1993, PCT Pub. No. WO92/06100, PCT Pub. Date Apr. 16, 1992

PCT Filed Oct. 1, 1991, Ser. No. 30,239

Claims priority, application France, Oct. 3, 1990, 90 12201

Int. Cl.[5] C07D *207/325*

U.S. Cl. 548—406 **9 Claims**

1. A compound of formula

$$Py—R^2(—CHOH—CH_2)_{\sigma}—)_xNR_y{}^4[—(CH_2—CHOH)_{1-\sigma}—R^3—Si(—OR^1)3]_y$$

wherein

Py is the pyrrolidyl radical

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which is optionally substituted in at least one of the positions 3 and 4,

R^1 is selected from the group consisting of CH_3 and C_2H_5,

R^2 is selected from the group consisting of CH_2 and $(CH_2)_3$,

R^3 is selected from the group consisting of $(CH_2)_3$ and $CH_2—O—(CH_2)_3$,

R^4 is selected from the group consisting of CH_3 and H,

a is 0 or 1,

x is 1 or 2, with the proviso x is 1 is a is 0,

y is 1 or 2, with the proviso that y is 1 is a is 1, and

p is equal to 2-x-y.

5,352,798

PROCESS FOR PREPARING DITHIO-ETHYLANINO 9A-METHOXYMITOSANES

Daniel A. Benigni, Elbridge, and Kenton L. Shultis, Manlius, both of N.Y., assignors to Bristol-Meyers Squibb Company, New York, N.Y.

Division of Ser. No. 766,299, Sep. 27, 1991, Pat. No. 5,175,303, which is a division of Ser. No. 491,380, Mar. 8, 1990, Pat. No. 5075,454. This application Sep. 16, 1992, Ser. No. 945,793

Int. Cl.[5] C07D *487/14*

U.S. Cl. 548—422 **5 Claims**

1. Process for producing 7-[2-(4-nitrophenyldithio)ethylamino]-9a-methoxymitosane from 7-(diphenylmethyl)oxy-9a-methoxymitosane comprising the steps of

(a) reacting 7-(diphenylmethyl)oxy-9a-methoxymitosane with 2-pyridyldithioethylamine to produce 7-[2-(2-pyridyldithio)ethylamino]-9a-methoxymitosane, and

(b) reacting the product of step (a) with p-nitrothiophenol to produce 7-[2-(4-nitrophenyldithio)ethylamino]-9a-methoxymitosane.

5,352,799

INTERMEDIATE COMPOUNDS USEFUL IN THE SYNTHESIS OF KAINIC ACID

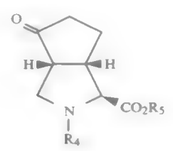
James A. Monn, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 985,986, Dec. 4, 1992. This application Apr. 30, 1993, Ser. No. 56,687

Int. Cl.[5] C07D *209/52*

U.S. Cl. 548—515 **5 Claims**

1. A compound of the formula



II

wherein

R_4 is hydrogen, acyl, alkoxycarbonyl, or arylalkoxycarbonyl; and

R_5 is hydrogen, C_1–C_6 alkyl, aryl, or arylalkyl.

5,352,800

PROCESS FOR THE PRODUCTION OF A NOVEL ENDOTHELIN ANTAGONIST

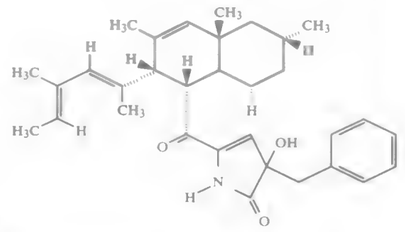
Gerard F. Bills, Cranford; Michael A. Goetz, Fanwood; Robert A. Giacobbe, Lavallette, all of N.J.; Lucia Herranz, Madrid, Spain; E. Tracy Turner Jones, Solana Beach, Calif.; Fernando Pelaez, Madrid, Spain; Yu L. Kong, Edison, N.J.; Sheo B. Singh, Edison, N.J., and Siobhan Stevens-Miles, Jersey City, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 11, 1993, Ser. No. 29,745

Int. Cl.[5] C07D *207/273*

U.S. Cl. 548—539 **1 Claim**

1. A compound of structural formula I:



I

or a pharmaceutically acceptable salt selected from the group consisting of the sodium salt, potassium salt, calcium salt, magnesium salt, dicyclohexylamine salt, N-methyl-D-glucamine salt, salt with arginine, salt with lysine, HCl salt, HBr salt, H_2SO_4 salt, H_3PO_4 salt, methanesulfonic acid salt, toluenesulfonic acid salt, maleic acid salt, fumaric acid salt camphorsulfonic acid salt.

5,352,801

PROCESS FOR THE PRODUCTION OF OPTICALLY-ACTIVE 4-AMINO-3-HYDROXYCARBOXYLIC ACIDS

Markus Bänziger, Brig-Glis; John McGarrity, and Thomas Meul, both of Visp, all of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

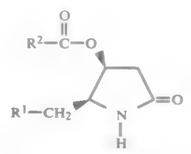
Division of Ser. No. 932,587, Aug. 20, 1992, Pat. No. 5,286,650. This application Sep. 15, 1993, Ser. No. 120,793

Claims priority, application Switzerland, Aug. 22, 1991, 2471/91

Int. Cl.[5] C07D *207/273*

U.S. Cl. 548—544 **4 Claims**

1. (4S, 5S)-4-Acyloxypyrrolidin-2-one of formula:



Vb

wherein R^1 is a branched or a straight chain alkyl group with 1 to 10 C atoms or an aryl, an arylalkyl or a cycloalkyl group and R^2 is a branched or a straight chain alkyl group with 1 to 10 C atoms or an aryl group.

5,352,802

AROMATIC HETEROCYCLIC-SUBSTITUTED CYCLIC SULFONE COMPOUNDS AND ELECTROPHOTOGRAPHIC ELEMENTS CONTAINING THEM

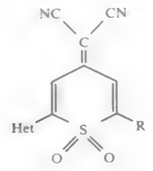
Michael R. Detty; John A. Sinicropi, both of Rochester; J. Robin Cowdery, Webster, and Ralph H. Young, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 976,911, Nov. 16, 1992, Pat. No. 5,300,385. This application Sep. 7, 1993, Ser. No. 117,454

Int. Cl.[5] C07D *335/02*

U.S. Cl. 549—28 **14 Claims**

1. A chemical compound having the structure



(I)

wherein Het is a substituted or unsubstituted heterocyclic ring system containing at least one 5-membered aromatic heterocyclic ring; and R is an alkyl, aralkyl, or cyclalkyl group of 1 to about 10 carbon atoms, or an aryl group of 6 to about 12 carbon atoms, or a substituted or unsubstituted aromatic heterocyclic ring system containing at least one 5-membered heterocyclic ring.

5,352,803

5(6)-METHYL SUBSTITUTED FLUORESCEIN DERIVATIVES

Phillip G. Mattingly, Grayslake, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

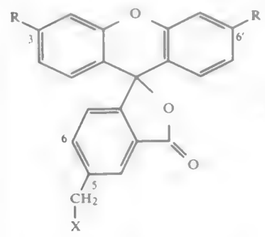
Filed Mar. 30, 1992, Ser. No. 859,775

Int. Cl.[5] C07F *9/06*; **C07D** *311/82*

U.S. Cl. 549—220 **6 Claims**

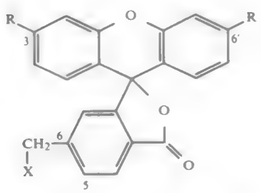
1. Fluorescein derivatives of the following formulas:

FORMULA I



and

FORMULA II



wherein R is selected from the group consisting of hydroxy and protected hydroxy; and

wherein X is selected from the group consisting of hydroxy, protected hydroxy, amino, protected amino, thiol, protected thiol, a leaving group, a Michael acceptor, phosphoramidite, phosphonate and a linking group.

5,352,804

ISOLATION AND STRUCTURE OF HALISTATIN 2

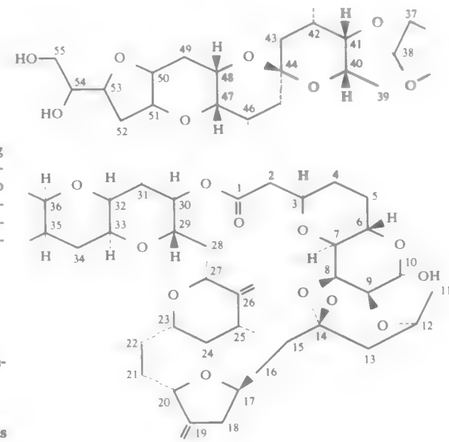
George R. Pettit, Paradise Valley, and Feng Gao, Tempe, both of Ariz., assignors to Arizona Board of Regents, a body corporate, acting on behalf of Arizona State University, Tempe, Ariz.

Filed Jan. 19, 1993, Ser. No. 4,852

Int. Cl.[5] C07D *323/00*

U.S. Cl. 549—264 **2 Claims**

1. A composition of matter denominated halistatin 2 and having the following structural formula:



5,352,805

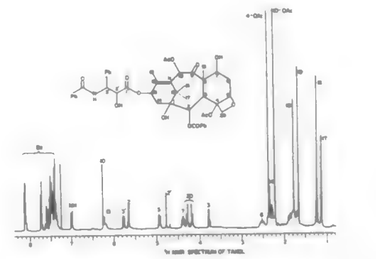
WATER SOLUBLE DERIVATIVES OF TAXOL

David G. I. Kingston, and Zhi-Yang Zhao, both of Blacksburg, Va., assignors to Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.

Division of Ser. No. 573,731, Aug. 28, 1990, Pat. No. 5,059,699. This application May 1, 1991, Ser. No. 694,077

Int. Cl.[5] C07D *305/14*

U.S. Cl. 549—510 **1 Claim**



1. A process, comprising the reaction of a 2'-O-acyl acid taxol with a glycol.

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5,352,806

TAXOL DERIVATIVES

Geewananda P. Gunawardana, Libertyville; Larry L. Klein, Lake Forest, and James B. McAlpine, Libertyville, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 914,720, Jul. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 870,509, Apr. 17, 1992, abandoned. This application Apr. 14, 1993, Ser. No. 46,678

Int. Cl.[5] C07D *305/14*

U.S. Cl. 549—510 1 Claim

1. A compound selected from the group consisting of
(a) 9-dihydro-13-acetylbaccatin III and
(b) 9-dihydrotaxol.

5,352,807

PROPYLENE OXIDE PURIFICATION

T. Thomas Shih, Bryn Mawr, Pa., assignor to ARCO Chemical Technology, L.P., Wilmington, Del.

Continuation-in-part of Ser. No. 936,965, Aug. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 839,985, Feb. 20, 1992, Pat. No. 5,187,287. This application Nov. 4, 1993, Ser. No. 147,253

Int. Cl.[5] C07D *301/32, 303/04*

U.S. Cl. 549—542 1 Claim

1. The method of purifying propylene oxide prepared by reaction of an organic hydroperoxide with propylene and containing less than 0.05 ppm by weight of poly (propylene oxide) having a molecular weight of at least 50,000 and containing contaminating amounts of one or more of methyl formate, acetaldehyde, propionaldehyde and C_4–C_7 hydrocarbon impurities which comprises contacting a liquid mixture of said propylene oxide and impurity with a solid activated carbon absorbent and separating propylene oxide having a reduced impurity content from the absorbent.

5,352,808

PROCESS FOR STEROID PREPARATION

Jean Buendia, Le Perreux sur Marne, and Michel Vivat, Lagny sur Marne, both of France, assignors to Roussel Uclaf, France

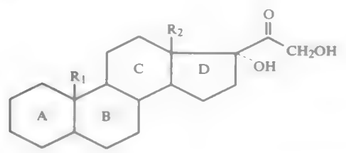
Filed Nov. 5, 1992, Ser. No. 972,228

Claims priority, application France, Nov. 8, 1991, 91 13777

Int. Cl.[5] C07J *7/00, 75/00*

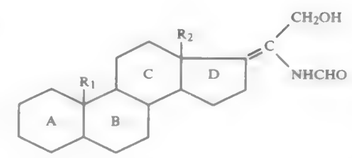
U.S. Cl. 552—557 15 Claims

1. A process for the preparation of a compound of the formula



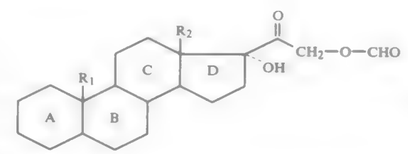
I

wherein R_1 is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms optionally substituted by halogen or a nitrogen or oxygen function and alkenyl and alkynyl of 2 to 4 carbon atoms, R_2 is alkyl of 1 to 4 carbon atoms and the A, B, C and D rings are optionally substituted by at least one member of the group consisting of optionally protected —OH or =O, halogen, alkyl and alkoxy of 1 to 4 carbon atoms and alkenyl and alkynyl of 2 to 4 carbon atoms comprising reacting a compound of the formula



II

wherein R_1 and R_2 and the A, B, C and D rings are defined as above with an oxidizing agent in the presence of water and an at least partially water-miscible solvent to obtain a compound of the formula



III

wherein R_1 and R_2 and the A, B, C and D rings are defined as above, subjecting the latter to a solvolysis in a basic or acidic media and optionally subjecting the product to a deprotection reaction of any protected —OH or =O groups to obtain the compound of formula I.

5,352,809

9-ALPHA-HYDROXY STEROIDS, PROCESS FOR THEIR PREPARATION, PROCESS FOR THE PREPARATION OF THE CORRESPONDING 9(11)-DEHYDRO DERIVATIVES AND PHARMACEUTICAL PREPARATIONS CONTAINING SUCH STEROIDS

Jacobus N. M. Batist, Kwintsheul; Arthur F. Marx, Delft; Willem J. van Zoest, Schiedam, and Jagdish C. Kapur, Delft, all of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Continuation of Ser. No. 221,454, Jul. 13, 1988, abandoned. This application Sep. 25, 1989, Ser. No. 412,557

Claims priority, application Netherlands, Oct. 10, 1986, 86201754; Jul. 13, 1987, 87201340

Int. Cl.[5] C07J *1/00*

U.S. Cl. 552—610 5 Claims

1. 17-Beta-cyano-9-alpha,17-alpha-dihydroxy-16-R-androst-4-en-3-one, where R is hydrogen, hydroxy, alphamethyl, beta-methyl or methylene.

5,352,810

PHOSPHATIDYLINOSITOL ANALOGUES, INHIBITORS OF PHOSPHATIDYLINOSITOL SPECIFIC PHOSPHOLIPASE C

Mario Brufani, Castelgandolfo; Maria Candida Cesta, Rome; Enrico Ferrari, Sesto San Giovanni; Luigi Filocamo; Speranzina Lappa, both of Rome; Stefano Maiorana, Milan, and Pier Giuseppe Pagella, Isola San Antonio, all of Italy, assignors to Mediolanum Farmaceutici S.P.A., Milan, Italy

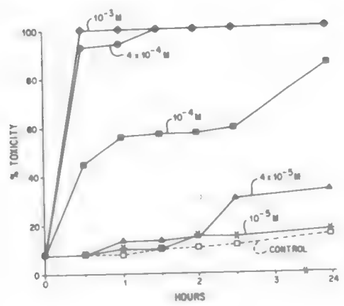
Filed Jan. 23, 1992, Ser. No. 824,318

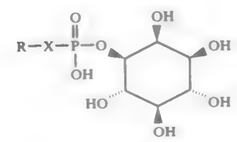
Claims priority, application Italy, Feb. 1, 1991, MI91A000251

Int. Cl.[5] C07F *9/02*

U.S. Cl. 554—79 6 Claims

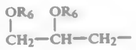
1. Phosphatidylinositol analogues, inhibitors of phosphatidylinositol-specific phospholipase C, having the general formula (I)



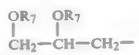


(I)

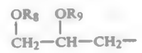
wherein X is S or O, and R has one of the following meanings:
1) a branched or linear alkyl radical selected from the group consisting of octyl, tetradecyl, hexadecyl, octadecyl, and eicosyl;
2) an arylalkyl radical selected from the group consisting of benzyl, phenylethyl, naphthylethyl, phenylpropyl, and phenylhexyl;
3) 2,3 diacyloxypropyl:



wherein R_6 is a saturated or unsaturated acyl radical selected from the group consisting of oleyl, linoleyl, linolenyl, myristoyl, and lauroyl;
4) 2,3 dialkyloxypropyl:



wherein R_7 is a saturated or unsaturated alkyl radical selected from the group consisting of stearyl, palmityl, oleyl, myristyl, and cetyl;
5) 2,3 alkylacyloxypropyl



wherein R_8 is a saturated or unsaturated alkyl radical selected from the group consisting of stearyl, palmityl, oleyl, myristyl, and cetyl and R_9 is acetyl;
6) an alkyl radical containing a carbonyl group of formula:



wherein R_{10} has the same meaning as R at item 1, Z=O, NH, and n ranges from 2 to 6;
7) an alkyl radical containing a carbonyl group of formula:



wherein R_{10} has the same meaning as R at item 5, Y=O, NH, S and m ranges from 1 to 6.

5,352,811

METHOD OF PREPARING ALKANOYLOXYTETRODECANOIC ACID BY ASSYMMETRIC ALLYLBORATRON

Prabhakar K. Jadhav, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

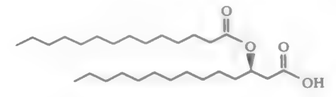
Division of Ser. No. 535,442, Jun. 8, 1990, Pat. No. 5,158,941.

This application Jul. 22, 1992, Ser. No. 916,664

Int. Cl.[5] C07C *51/00*

U.S. Cl. 554—151 4 Claims

1. A process for synthesizing a compound of structure:



(1)

comprising the following steps:
(a) asymmetric allylboration of 1-dodecanal resulting in a homoallylic alcohol;
(b) acylation of the homoallylic alcohol; and
(c) oxidation of the olefinic moiety to carboxylic acid in the optional presence of a phase transfer catalyst.

5,352,812

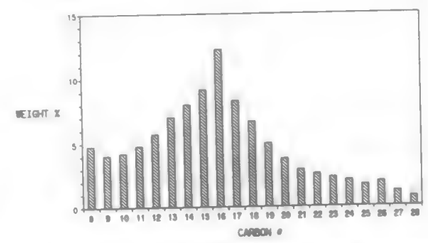
METATHESIS OF ACYCLIC OLEFINS USING AN IRIDIUM/SILVER CATALYST COMPOSITION

Jerald Feldman, Hockessin, Del., and Marcia B. France, Pasadena, Calif., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 8, 1993, Ser. No. 88,712

Int. Cl.[5] C11C *3/00*

U.S. Cl. 554—163 8 Claims



1. A method for the metathesis of acyclic olefin compounds, comprising
reacting a starting acyclic olefin compound containing n carbon atoms, in the presence of a catalyst composition comprising compounds of Formula II and III



II III

wherein the molar ratio of compound III to compound II is at least 3 to 1; and
wherein X is Cl, Br, or I;
R is a C_1 to C_{10} fluorinated hydrocarbyl;
COE is cyclooctene;
L is cyclooctene or $P(C_6F_5)_3$; and
n is an integer between 3 and about 60;
to yield a mixture of acyclic olefin products containing 2 to 3n carbons.

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5,352,813

CARBONYLATION OF METHANOL USING A NOVEL TRANSITION METAL CATALYST

Ronald G. Cavell, Edmonton, Canada, and Kattesh V. Katti, Columbia, Mo., assignors to University of Alberta, Edmonton, Canada

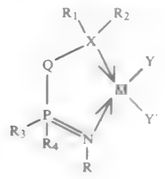
Continuation-in-part of Ser. No. 575,903, Aug. 31, 1990, abandoned. This application Sep. 3, 1991, Ser. No. 752,348

Int. Cl.[5] **C07F** *15/00, 9/02;* **C07C** *51/12*

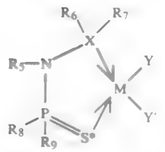
U.S. Cl. 556—21 **19 Claims**

1. In a catalytic process for the carbonylation of methanol to one or more of acetic acid and its esters, the improvement comprising:

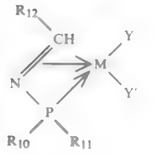
reacting methanol and carbon monoxide using a transition metal catalyst precursor having a phosphorus-nitrogen chelated ligand attached to the metal as a catalyst the catalyst precursor having the general formula:



(I)



(II)



(III)

wherein

M is a Group VIII B transition metal

Y, Y′ are same or different, selected from CO, Cl^-, phosphines and olefinic hydrocarbons

R_{1-4}, R_{6-12} are same or different substituted or unsubstituted aryl groups

Q is selected from a benzene ring connected to P and X in the o-positions, an olefin connected to P and X across the double bond, or $(CH_3)CH$

X is P or As

R=a substituted aromatic ring



where A, B, C or D are selected for F, H, NO_2, CN and alkyl and E is endocyclic nitrogen, a C—NO_2 group of a C—CN group, or isomers thereof, or R=$SiMe_3$ or $TiCl_2Cp$, where Me is methyl, and Cp is cyclopentadienyl, or $P(O)(OPh)_2$, where Ph is a phenyl ring,

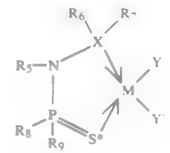
R_5 is aryl or alkyl, and

S° is S, Se, O or N—R, R being as defined hereinabove.

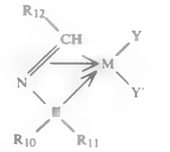
10. A transition metal complex catalyst precursor having a phosphorus-nitrogen chelated ligand attached to the metal and having the general formula



(I)



(II)



(III)

wherein

M is a Group VIII B transition metal

Y, Y′ are same or different, selected from CO, Cl^-, phosphines and olefinic hydrocarbons

R_{1-4}, R_{6-12} are same or different substituted or unsubstituted aryl groups

Q is selected from a benzene ring connected to P and X in the o-positions, an olefin connected to P and X across the double bond, or $(CH_3)CH$

X is P or As

R is a substituted aromatic ring,

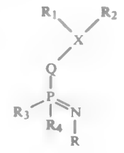


where A, B, C, or D are selected for F, H, NO_2, CN and alkyl and E is endocyclic nitrogen, a C—NO_2 group of a C—CN group, or isomers thereof, or R=$SiMe_3$ or $TiCl_2Cp$, where Me is methyl, and Cp is cyclopentadienyl, or $P(O)(OPh)_2$, where Ph is a phenyl ring,

R_5 is aryl or alkyl, and

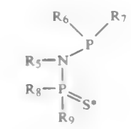
S° is S, Se, O or N—R, R being as defined hereinabove.

16. A phosphorus-nitrogen chelating ligand having the general formula

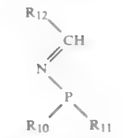


(I′)

-continued



(II′)



(III′)

wherein

R_{1-4}, R_{6-12} are same or different substituted or unsubstituted aryl groups

Q is selected from a benzene ring connected to P and X in the o-positions, an olefin connected to P and X across the double bond, or $(CH_3)CH$

X is P or As

R is a substituted aromatic ring



where A, B, C or D are selected for F, H, NO_2, CN and alkyl and E is endocyclic nitrogen, a C—NO_2 group of a C—CN group, or isomers thereof, or R=$SiMe_3$ or $TiCl_2Cp$, where Me is methyl, Cp is cyclopentadienyl, or $P(O)(OPh)_2$, where Ph is a phenyl ring,

R_5 is aryl or alkyl, and

S° is S, Se, O or N—R, R being as defined hereinabove.

5,352,814

ASYMMETRIC EPOXIDATION REACTION

Tsutomu Katsuki; Naoki Hosoya, and Akira Hatayama, all of Fukuoka, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Aug. 24, 1992, Ser. No. 933,785

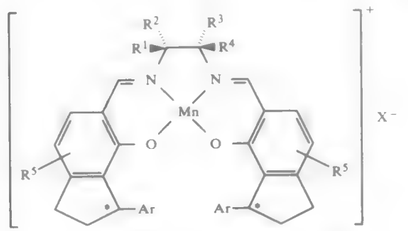
Claims priority, application Japan, Aug. 30, 1991, 3-220087; Feb. 25, 1992, 4-037466; Jul. 31, 1992, 4-205374

Int. Cl.[5] **C07F** *3/02*

U.S. Cl. 556—50 **1 Claim**

1. An optically active manganese complex of the formula:

[IV]



wherein R^1, R^2, R^3, R^4 and R^5 are same or different and represent hydrogen atom or straight chain or branched alkyl group having 1 to 4 carbon atoms , or phenyl group which is unsubstituted or substituted by one or more substituents arbitrarily selected from one or more groups of fluorine atom, chlorine atom, bromine atom, straight chain or branched alkyl group having 1 to 4 carbon atoms and straight chain or branched alkoxyl group having 1 to 4 carbon atoms, Ar represents phenyl group which is unsubstituted or substituted by one or more substituents arbitrarily selected from one or more groups of fluorine atom, chlorine atom, bromine atom, straight chain or branched alkyl group having 1 to 4 carbon atoms and straight chain or branched alkoxyl group having 1 to 4 carbon atoms, and the absolute configuration of the carbon atom shown by asterisks means R or S and X^- represents a counter anion.

5,352,815

AGENT FOR SUPPRESSION AND INTERCEPTION OF MAILARD REACTION

Norihiro Kakimoto, Tokyo, and Kunie Nakamura, Kanagawa, both of Japan, assignors to Asai Germanium Research Institute Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1993, Ser. No. 31,997

Claims priority, application Japan, Mar. 16, 1992, 4-091685

Int. Cl.[5] **C07F** *7/30;* **A61K** *31/28*

U.S. Cl. 556—83 **10 Claims**

1. A method for suppressing or intercepting the Mailard reaction, which comprises administering an effective amount of an organogermanium compound represented by formula (1):

(1)

wherein R_1 to R_3 may be the same or different and each of them represents a hydrogen atom, a lower alkyl group, or a phenyl group; and X represents a hydroxyl group, an O-lower alkyl group, an amino group, or a salt represented by OY, wherein Y is an alkaline metal or a basic group-containing compound.

5,352,816

ORGANOSILICON COMPOUND

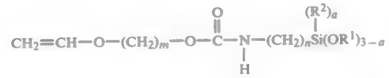
Toru Takeoka, Cincinnati, Ohio, assignor to Three Bond Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1993, Ser. No. 174,238

Int. Cl.[5] **C07F** *7/10*

U.S. Cl. 556—420 **2 Claims**

1. An organosilicon compound represented by the following general formula:



wherein m and n are each an integer of 1 to 5, R^1 and R^2 are each independently an alkyl group having 1 to 3 carbon atoms or allyl, and a is an integer of 0 to 2.

VOL 1167 ISS 1 OC 4 1994 UMI

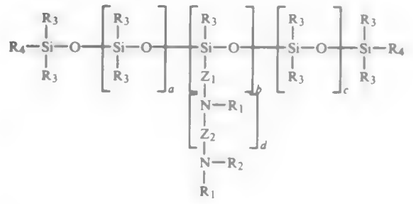
5,352,817

CATIONIC SILICONES

James P. McCarthy, Janesville, Wis.; George H. Greene, Morristown, N.J., and Anthony G. DeWar, Janesville, Wis., assignors to Karlshamns AB, Sweden

Division of Ser. No. 546,372, Jun. 29, 1990, Pat. No. 5,164,522. This application Nov. 16, 1992, Ser. No. 975,335
Int. Cl.[5] C07F 7/10
U.S. Cl. 556—423 3 Claims

1. An aminosilicone compound represented by the following formula:



wherein a and c are 0–300;
b is 1–300;
d is 0–4;
R_1 and R_2, both comprise an oxyalkylene group substituted with P,N, or S moieties;
R_3 and R_4 are the same or different and comprise an alkyl group or an alkyloxyalkylene group;
Z_1 and Z_2 are the same or different and comprise an alkyl group.

5,352,818

Patent Not Issued For This Number

5,352,819

DEHYDROCYANATION OF ALIPHATIC DINITRILES

Michel Gabelmann, Paris; Christian Maliverney, Lyons, and Helene Pernot, Paris, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Filed May 20, 1993, Ser. No. 63,677
Claims priority, application France, May 20, 1992, 92 06391
Int. Cl.[5] C07C 293/30
U.S. Cl. 558—381 20 Claims

1. A process for the dehydrocyanation of a branched saturated aliphatic dinitrile, comprising contacting at least one such branched saturated aliphatic dinitrile capable of forming an ethylenic mono-nitrile through dehydrocyanation, in the vapor phase, with a catalytically effective amount of an at least partially acidified solid cation exchange substrate capable of effecting dehydrocyanization of said dinitrile and having a cation-exchanging capacity of at least 0.001 milliequivalent per gram, and dehydrocyanating said dinitrile to form an ethylenic mono-nitrile.

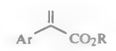
5,352,820

EXPEDIENT ROUTE TO ARYL PROPENOIC ESTERS

Jeremy I. Levin, 190 Treetop Cir., Nanuet, N.Y. 10954

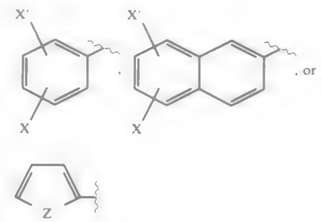
Filed Jun. 28, 1993, Ser. No. 83,817
Int. Cl.[5] C07C 69/76
U.S. Cl. 560—104 40 Claims

1. The process for making a substituted or unsubstituted aryl-2-propenoic ester of formula I:



I

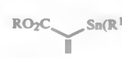
wherein
Ar is



Z is NH, O or S;
X and X' are independently hydrogen, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy, $(C_1–C_4)$alkanoyl, $(C_1–C_4)$alkoxycarbonyl, trifluoromethyl, nitro, bromine, chlorine, fluorine, phenyl, substituted phenyl wherein the substitution is hydrogen, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy, $(C_1–C_4)$alkanoyl, $(C_1–C_4)$alkoxycarbonyl, trifluoromethyl, nitro, bromine, chlorine or fluorine, thiophene, pyridine or furan; and R is $(C_1–C_4)$alkyl;
which comprises:
reacting a substituted or unsubstituted aryl iodide of the formula:



wherein Ar is as defined hereinabove;
with an α-stannyl acrylate ester of the formula:



3

wherein R is as defined hereinabove and R^1 is $(C_1–C_4)$alkyl;
in the presence of palladium(0) or palladium(II), and copper(I or II) catalyst, in a polar-aprotic solvent at room temperature for from 1 to 100 hours and recovering the substituted or unsubstituted aryl-2-propenoic ester so produced.

5,352,821

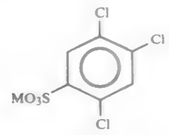
2,5-DICHLOROPHENYLTHIOGLYCOLIC ACID DERIVATIVE AND METHOD FOR ITS PRODUCTION

Hiroshi Goda; Nario Kimura; Naohiro Yoshikawa, and Katsuhiko Yoshida, all of Hyogo, Japan, assignors to Sumitomo Seika Chemicals Co., Ltd., Hyogo, Japan

Division of Ser. No. 824,313, Jan. 23, 1992, Pat. No. 5,210,287. This application Feb. 19, 1993, Ser. No. 19,906
Claims priority, application Japan, Jan. 24, 1991, 3-024027
Int. Cl.[5] C07C 323/62
U.S. Cl. 562—431 13 Claims

1. A process for producing 2,5-dichlorophenylthioglycolic acid which comprises the steps of:

(a) reacting 2,4,5-trichlorobenzenesulfonates represented by the formula:



wherein M represents hydrogen, sodium or potassium, and thioglycolic acid in the presence of base; and
(b). reacting the reaction mixture obtained in the step (a) with mineral acid or an aqueous solution of mineral acid.

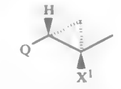
5,352,822

PESTICIDES

Robert J. Blade; George S. Cockerill, and John E. Robinson, all of Hertfordshire, England, assignors to Roussel Uclaf, France

Division of Ser. No. 835,683, Feb. 14, 1992, Pat. No. 5,229,424, which is a continuation-in-part of Ser. No. 729,847, Jul. 12, 1991, Pat. No. 5,202,356, which is a continuation of Ser. No. 436,803, Nov. 15, 1989, abandoned. This application Apr. 7, 1993, Ser. No. 43,817
Claims priority, application United Kingdom, Nov. 16, 1988, [redacted]
Int. Cl.[5] C07C 63/33
U.S. Cl. 562—492 1 Claim

1. A compound of the formula:
$Q^2CR^2{=}CR^3CR^4{=}CR^5{-}C(=O)Z^1$
$Q^2(CR^2{=}CR^3)COR^4$ or
$Q^2(CR^2{=}CR^3)CR^5Z^2$
or a salt thereof wherein Q^2 represents



Q is a monocyclic aromatic ring or a fused bicyclic ring system of which at least one ring is aromatic containing 9 or 10 atoms of which one may be nitrogen and the rest carbon, each ring system being optionally substituted, or Q is a dihalovinyl group or a group $R^6{-}C{\equiv}C{-}$ where R^6 is C_{1-4} alkyl, tri C_{1-4} alkylsilyl, halogen or hydrogen;
X^1 is hydrogen, fluoro or chloro;
R^2, R^3, R^4 and R^5 are the same or different with at least one being hydrogen and the others being independently selected from hydrogen, halo, C_{1-4} alkyl or C_{1-4} haloalkyl;
Z^1 is hydroxy, C_{1-6} alkoxy, halo or a phosphoroimidate ester $-P(O)(O\text{-aryl})NH\text{-aryl}$ where aryl is C_{6-10} aryl; and Z^2 is $(aryl)_3$ P, $(aryl)_2P(O)$ or $(C_{1-4}$ alkoxy$)_2P(O)$ where alkoxy is C_{1-4} alkoxy and aryl is C_{6-10}.

5,352,823

PROCESS FOR IMPROVING FLOW CHARACTERISTICS OF CRYSTALLINE IBUPROFEN

Lloyd E. Goddard, Orangeburg, and George A. Kneesel, Columbia, both of S.C., assignors to Albemarle Corporation, Richmond, Va.

Continuation of Ser. No. 734,910, Jul. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 615,348, Nov. 19, 1990, abandoned. This application Oct. 20, 1992, Ser. No. 963,872
Int. Cl.[5] C07C 51/43, 51/42
U.S. Cl. 562—494 12 Claims

1. In a process for preparing crystalline ibuprofen by forming a saturated solution of ibuprofen in a hydrocarbon solvent seeding such saturated solution with solid ibuprofen; and cooling the seeded saturated solution below the saturation point to effect crystallization and precipitating the crystalline ibuprofen from the solution thereof, the improvement comprising
(a) carrying out said cooling by reducing the temperature of said saturated solution in three sequential steps by about 5% in each step and holding said reduced temperature for about 10 minutes to about 180 minutes for each of said three sequential steps then reducing the temperature of the solution resulting from the third sequential step to about 0° to about −20°, and
(b) precipitating crystalline ibuprofen having a crystal habit characterized by having a particle length larger than 150 microns average and a length to width aspect ratio of from about 4.1 to 1 to about 5 to 1.

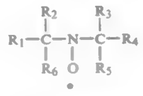
5,352,824

PROCESS FOR THE PREPARATION OF ALKOXYALKANOIC ACIDS

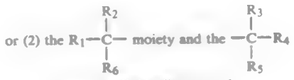
Herbert E. Fried, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 22, 1993, Ser. No. 171,806
Int. Cl.[5] C07C 51/16, 51/27
U.S. Cl. 562—538 19 Claims

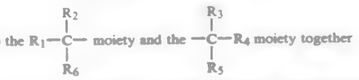
1. A process for the preparation of an alkoxyalkanoic acid of the formula $RO(CH_2CHR'O)_nCH_2CO_2H$ wherein R is an alkyl group of from about 1 to about 22 carbon atoms, R' is hydrogen or methyl or mixtures thereof (on the individual molecule) and n is an integer of from about 1 to about 500, which comprises reacting the corresponding alkoxyalkanol with a stable free radical nitroxide having the formula:



wherein (1) (a) each of R_1, R_2, R_3 and R_4 is an alkyl, aryl or heteroatom substituted alkyl group having 1 to about 15 carbon atoms, and (b) R_5 and R_6 (i) each is an alkyl group having 1 to about 15 carbon atoms provided that R_1–R_6 are not all alkyl groups, or a substituted alkyl group having 1 to about 15 carbon atoms wherein the substituent is hydrogen, cyano, $-CONH_2$, $-OCOCH$, $OCOC_2H_5$, carbonyl, alkenyl wherein the double bond is not conjugated with the nitroxide moiety, or —COOR wherein R of the —COOR group is alkyl or aryl, or (ii) together form part of a ring that contains at least 3 carbon atoms and up to two heteroatoms of O or N,



or (2) the $R_1{-}C{-}$ moiety and the $-C{-}R_4$ moiety individually are aryl,



or (3) the $R_1{-}C{-}$ moiety and the $-C{-}R_4$ moiety together form a bicyclic ring with the proviso that the group directly adjacent to the N—O moiety is a bridgehead C—H, or a fully alkylated carbon, in the presence of a metal salt selected from the group consisting of a copper(I) salt, an iron (II) salt and mixtures thereof, a nitrite compound, a highly polar solvent, an oxidant and water, at a temperature in the range of from about 0° C. to about 100° C. and thereafter separating out the alkoxyalkanoic acid.

VOL 1167 ISS 1 OCT 4 1994 UMI

5,352,825

RECOVERY OF ORGANIC ACID SALTS FROM IMPURE PROCESS STREAMS BY ADDITION OF BASES

Steven W. Feiman, Granger; Chetna Patel, Elkhart; Bhalchandra H. Patwardhan, and David J. Solow, both of Elkhart, all of Ind., assignors to Hoarmann & Reimer Corp., Elkhart, Ind.

Filed Jul. 6, 1993, Ser. No. 87,656
Int. Cl.[5] C07C 51/42
U.S. Cl. 562—580 31 Claims

1. An improved process for recovering an organic acid salt from an impure process stream, comprising the steps of:

step a and step b in either order,

a. obtaining a solution of an organic acid salt of interest, concentrated to within about ten percent (by weight) of the saturation point;

b. adding a sufficient amount of a crystallizing base to the concentrated solution of the organic acid salt to produce crystals of the salt; and

c. separating the crystallized organic acid salt from mother liquor.

5,352,826

SYNTHESIS OF ACYL CYANIDES IN AN ANHYDROUS REACTION MEDIUM

Michel Devic, and Pierre Tellier, both of Saint Foy les Lyon, France, assignors to Atochem, Puteau, France

Continuation of Ser. No. 832,620, Feb. 11, 1992, abandoned, which is a continuation of Ser. No. 525,730, May 21, 1990, abandoned. This application Mar. 23, 1993, Ser. No. 35,879
Claims priority, application France, May 19, 1989, 89 06563
Int. Cl.[5] C07C 255/18, 253/14
U.S. Cl. 562—869 15 Claims

1. A process for the preparation of an acyl cyanide having the formula (I):



(I)

in which R is an alkyl radical having from 1 to 8 carbon atoms, a cycloalkyl radical having from 3 to 12 carbon atoms, an aryl radical, a heterocyclic radical optionally condensed with a benzene nucleus, or substituted such radicals, comprising reacting in the liquid phase an acid halide of the formula (II):



(II)

in which R is as defined above and X is a halogen atom, with an alkali metal cyanide, (a) in an inert anhydrous solvent medium, (b) in the presence of an acyl cyanide yield enhancing amount of a poly(alkylene oxide) compound and (c) in the further presence of a polar compound other than water, wherein the reactants are selected and used in amounts and under conditions which result in the production of said acyl cyanide.

5,352,827

SYNTHESIS OF ACYL CYANIDES IN A HYDROUS REACTION MEDIUM

Michel Devic, and Pierre Tellier, both of Saint Foy les Lyon, France, assignors to Atochem, Puteau, France

Continuation of Ser. No. 832,619, Feb. 11, 1992, abandoned, which is a continuation of Ser. No. 525,728, May 21, 1990, abandoned. This application Mar. 23, 1993, Ser. No. 35,894
Claims priority, application France, May 19, 1989, 89 06564
Int. Cl.[5] C07C 255/18, 253/14
U.S. Cl. 562—869 15 Claims

1. A process for the preparation of an acyl cyanide having the formula (I):

(I)

in which R is an alkyl radical having from 1 to 8 carbon atoms, a cycloalkyl radical having from 3 to 12 carbon atoms, an aryl radical, a heterocyclic radical optionally condensed with a benzene nucleus, or substituted such radicals, comprising reacting in the liquid phase an acid halide of the formula (II):

(II)

in which R is as defined above and X is a halogen atom, with an alkali metal cyanide in the presence of an acyl cyanide yield enhancing amount of a poly(alkylene oxide) compound and a catalytically effective amount of water, wherein the reactants are selected and used in amounts and under conditions which result in the production of said acyl cyanide.

5,352,828

PROCESS FOR STABILIZING AQUEOUS ACRYLAMIDE SOLUTION

Susumu Seki, and Akihisa Furuno, both of Kanagawa, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed May 19, 1992, Ser. No. 885,358
Claims priority, application Japan, May 22, 1991, 3-145180
Int. Cl.[5] C07C 209/90
U.S. Cl. 564—4 6 Claims

1. A process for stabilizing an aqueous acrylamide solution, which comprises adding at least one compound selected from water-soluble monocarboxylic acid salts having at least two carbon atoms to an aqueous solution of acrylamide in an amount of from 20 to 5,000 ppm as acid per acrylamide.

5,352,829

SPIRO(N,N'-DINITROETHYLENEDIAMINO)CYCLOTRIPHOSPHAZENES

Paritosh R. Dave, Little Falls; Farhad Forohar, Flanders, both of N.J.; Michael Chaykovsky, Columbia, and Clifford D. Bedford, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 2, 1993, Ser. No. 42,229
Int. Cl.[5] C07F 9/547
U.S. Cl. 564—13 6 Claims

1. A compound that is 1,1,3,3,5,5-tris-spiro(N,N'-dinitroethylenediamino)cyclotriphosphazene, 1,1,-spiro(ethylenediamino)-3,3,5,5-bis-spiro(N,N'-dinitroethylenediamino)cyclotriphosphazene, 1,1,3,3-bis-spiro(N,N'-dinitroethylenediamino)-5,5-dichlorocyclotriphosphazene, 1,1,3,3-bis-spiro(N,N'-dinitroethylenediamino)-5,5-difluorocyclotriphosphazene, 1,1-spiro(N,N'-dinitroethylenediamino)-3,3,5,5-bis-spiro(ethylenediamino)cyclotriphosphazene, 1,1-spiro(ethylenediamino)-3,3-spiro(N,N'-dinitroethylenediamino)-5,5-dichlorocyclotriphosphazene, 1,1-spiro(ethylenediamino)-3,3-spiro(N,N'-dinitroethylenediamino)-5,5-difluorocyclotriphosphazene, 1,1-spiro(N,N'-dinitroethylenediamino)-3,3,5,5-tetrachlorocyclotriphosphazene, or 1,1-spiro(N,N'-dinitroethylenediamino)-3,3,5,5-tetrafluorocyclotriphosphazene.

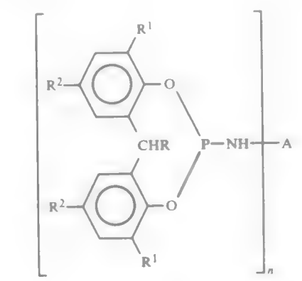
5,352,830

PHOSPHOROUS ORGANIC AMIDES SUITABLE AS STABILIZERS AND POLYMER COMPOSITIONS WHICH COMPRISE THEM

Marco Foá; Sauro Strologo, both of Novara, and Giampiero Sabarino, Vercelli, all of Italy, assignors to Himont Incorporated, Wilmington, Del.

Filed Oct. 28, 1992, Ser. No. 967,892
Claims priority, application Italy, Oct. 31, 1991, MI91 A 002909; Oct. 31, 1991, MI91 A 002908
Int. Cl.[5] C07F 9/02
U.S. Cl. 564—12 4 Claims

1. A phosphorous organic amide compound having the general formula:



(I)

where:

R is H or a C_1–C_{18} alkyl radical,

R^1 and R^2, are the same or different and are selected from linear or branched C_1–C_{10} alkyl radicals,

n is 1, and

A is a radical of formula—$(CH_2)_m$—Cy, where Cy is selected from the group consisting orl abietyl, hydroabietyl, tetrahydroabietyl, dehydroabietyl, d- and 1 pimaryl and m is 0 or 1.

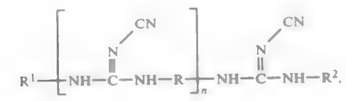
5,352,831

OLIGOMERIC CYANOGUANIDINES

Peter Flury, Himmelried; Martin Roth, Giffers, and Sameer H. Eldin, Fribourg, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 234,778, Aug. 22, 1988, abandoned. This application Jul. 14, 1992, Ser. No. 914,158
Claims priority, application Switzerland, Sep. 2, 1987, 3358/87-2
Int. Cl.[5] C07C 279/28
U.S. Cl. 564—104 8 Claims

1. An oligomeric cyanoguanidine of formula I



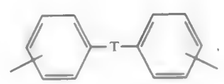
(I)

wherein

R is a divalent C_2–C_{20}aliphatic hydrocarbyl, mono- or polynuclear C_5–C_{20}cycloaliphatic, C_6–C_{20}aromatic radical; or

R is a divalent radical of furan, pyran, pyridine, pyrrole, imidazole or thiophene; or

R is a group of formula II



(II)

wherein

T is methylene, isopropylidene, CO, O, S or SO_2;

R^1 and R^2 are each independently of the other C_1–C_{12}alkyl, C_5–C_{10}cycloalkyl, C_6–C_{10}aryl, C_7–C_2aralkyl or a monovalent radical of furan, pyran, pyridine, pyrrole, imidazole or thiophene; and,

n is an integer from 1 to 20,

which radicals R, R^1 and R^2 are unsubstituted or are substituted by C_1–C_4alkyl, C_1–C_4alkoxy, nitro, halogen, R^3OCO or R^3COO, where R^3 is phenyl or C_1–C_4alkyl, with the proviso that 1,6-hexane-bis(3-cyano-2-isobutylguanidine) is excluded.

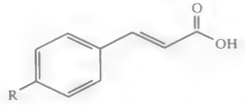
5,352,832

ASYMMETRIC PROCESS FOR PREPARING FLORFENICOL, THIAMPHENICOL CHLORAMPHENICOL AND OXAZOLINE INTERMEDIATES

Guang-Zhong Wu, Somerville, and Wanda I. Tormos, Elizabeth, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Dec. 18, 1992, Ser. No. 993,932
Int. Cl.[5] C07C 233/05, 233/12; C07D 263/08, 301/19
U.S. Cl. 564—212 9 Claims

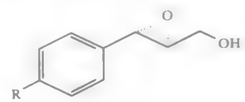
1. A process for the asymmetric synthesis of florfenicol, thiamphenicol or chloramphenicol from a trans cinnamic acid derivative of the formula



wherein R is nitro or methanesulfonyl, comprising the steps:

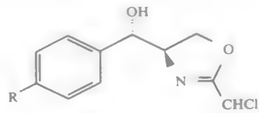
(a) converting the acid to an acid chloride using a chlorinating agent, and reducing the acid chloride to a trans allylic alcohol with a reducing agent;

(b) asymmetrically epoxidizing the allylic alcohol of step (a), by reacting with t-butylhydroperoxide in the presence of a chiral epoxidation catalyst prepared from titanium (IV) isopropoxide and L-diisopropyltartaric acid, to form an epoxide of the formula



wherein R is as defined above;

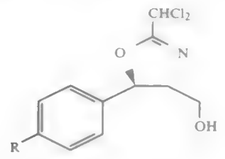
(c) regioselectively opening the epoxide of step (b) by sequentially treating with a strong base, a Lewis acid and dichloroacetonitrile to form an oxazoline of the formula



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wherein R is as defined above;

(d) stereoselective inversion/isomerization of the oxazoline of step (c) by sequentially treating with: (i) a lower alkylsulfonyl chloride and a tertiary amine base; (ii) sulfuric acid and water; and (iii) an alkali metal hydroxide; to form an oxazoline of the formula



wherein R is as defined above; and

(e) either:

(i) wherein R is methanesulfonyl, treating the oxazoline of step (d) with a fluorinating agent, then hydrolyzing the oxazoline with acid to obtain florfenicol; or

(ii) hydrolyzing the oxazoline of step (d) with acid to obtain:

(a) wherein R is methanesulfonyl, thiamphenicol; or

(b) wherein R is nitro, chloramphenicol.

5,352,833

ANTIBACTERIAL POLYMERIC QUATERNARY AMMONIUM COMPOUNDS

John J. Merianos, Middletown, N.J., assignor to ISP Investments Inc., Wilmington, Del.

Filed Oct. 26, 1992, Ser. No. 966,496

The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.

Int. Cl.[5] C07C *217/42;* A61K *31/14*

U.S. Cl. 564—294 4 Claims

1. Antimicrobial polymeric quaternary ammonium compounds having the formula:



where Y is alkylene interrupted with oxygen,

X is selected from chlorine and bromine, and

n is 2–30.

5,352,834

ELECTROPHOTOGRAPHIC MEMBER

Yoshii Morishita; Yasushi Sugimoto; Shigeru Hayashida, all of Hitachi; Hiroko Ishikawa, Katsuta; Yoshiaki Noda, Ichikawa; Shigeru Murakami, Tokyo; Munehiro Sato; Yoshinori Saito, both of Ichikawa; Naoji Kurata, Nishinomiya, and Yoshio Sugita, Chiba, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

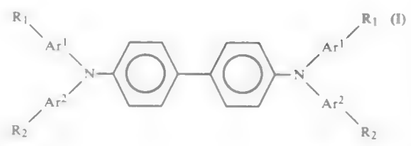
Division of Ser. No. 754,657, Sep. 4, 1991, Pat. No. 5,160,487. This application Jun. 8, 1992, Ser. No. 895,015

Claims priority, application Japan, Sep. 4, 1990, 2-233899; Sep. 4, 1990, 2-234031; Sep. 4, 1990, 2-234032

Int. Cl.[5] G03G *5/06, 5/047;* C07C *211/55, 211/58*

U.S. Cl. 564—309 5 Claims

1. A fluorine-containing N,N,N′,N′-tetraarylbenzidine derivative of the formula:



wherein R_1 and R_2 are independently a hydrogen atom, an alkyl group, an alkoxy group, a fluoroalkyl group or a fluoroalkoxy group, at least one of R_1 and R_2 is a fluoroalkyl group or a fluoroalkoxy group; and Ar^1 and Ar^2 are independently an aryl group which may have one or more substituents other than R_1 and R_2.

5,352,835

SUPPORTED CATALYSTS FOR AMINATION

Pei-Shing E. Dai, Port Arthur; Terry L. Renken, Austin, and Laurence D. Neff, Port Arthur, all of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Feb. 8, 1993, Ser. No. 14,583

Int. Cl.[5] C07C *209/16*

U.S. Cl. 564—480 11 Claims

1. In a process for the amination of alcohols to form primary amines which comprises reacting a polyoxyalkylene alcohol or polyol having a molecular weight of from 230 to 5000 with ammonia in the presence of hydrogen, the improvement comprising reacting said alcohol or polyol with ammonia over a catalyst composition consisting essentially of:

15–30 wt % nickel and 3–20 wt % copper and optionally 0.5–1 wt % molybdenum on a support consisting essentially of γ-alumina characterized by a total pore volume by mercury intrusion of about 0.70 to 1.2 cc/g and a pore mode (diameter) between 70 and 110 Å as measured by nitrogen desorption wherein the total active metal loading is 10–40 wt % of the catalyst as metal and at least 50 wt % of the total catalyst is γ-alumina support.

5,352,836

ENANTIOSELECTIVE LEWIS ACID CATALYSTS OF THE EARLY TRANSITION METALS

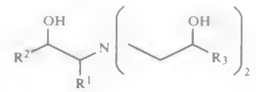
William A. Nugent, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 693,896, May 1, 1991, Pat. No. 5,231,203. This application Apr. 19, 1993, Ser. No. 47,393

Int. Cl.[5] C07C *215/00*

U.S. Cl. 564—506 4 Claims

1. An optically active trialkanolamine comprising formula (2)



(2)

wherein:

R^1 is H or CH_3;

R^2 and R^3 are each independently C_1 to C_{20} hydrocarbyl and may additionally have halogen, ether, or ester groups; provided that R^1 is CH_3 when R^2 and R^3 are each CH_3.

5,352,837

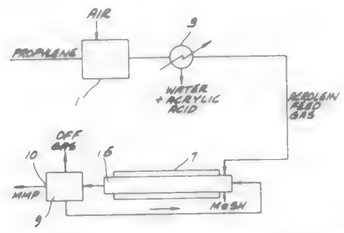
PROCESS FOR THE PREPARATION OF 3-(METHYLTHIO)PROPANAL

Yung C. Hsu, Chesterfield, and Dennis A. Ruest, Manchester, both of Mo., assignors to Novus International, Inc., Chesterfield, Mo.

Filed Jan. 8, 1993, Ser. No. 73,763

Int. Cl.[5] C07C *323/50, 323/51*

U.S. Cl. 568—41 36 Claims



1. A process for the continuous preparation of 3-(methylthio)propanal, comprising:

contacting a liquid reaction medium with a gaseous acrolein feed stream in a gas/liquid contact zone, said reaction medium containing 3-(methylthio)propanal, methyl mercaptan and a catalyst for the reaction between methyl mercaptan and acrolein, said gaseous acrolein feed stream comprising acrolein vapor and non-condensable gas;

causing said feed stream and said reaction medium to flow co-currently through said contact zone, whereby acrolein is transferred from said feed stream to said reaction medium and reacts with methyl mercaptan in said medium to produce a liquid reaction product containing 3-(methylthio)propanal; separating said non-condensable gas from said liquid reaction product;

dividing said reaction product into a product fraction and a circulating fraction; and

recycling said circulating fraction to said gas/liquid contact zone.

5,352,838

SELECTIVE PRODUCTION OF ETHYL MERCAPTAN

William E. Sattich, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 30, 1993, Ser. No. 99,642

Int. Cl.[5] C07C *319/04*

U.S. Cl. 568—72 15 Claims

1. A process for selective production of ethyl mercaptan from a reactant mixture which comprises hydrogen, ethylene and propylene comprising contacting, in the presence of a catalyst, said mixture with hydrogen sulfide at a temperature in the range of from about 225° C. to about 275° C. under a pressure in the range of from about 50 psig to about 450 psig for a period sufficient to produce said ethyl mercaptan.

5,352,839

ISOPHORONE PROCESS

Michael C. Grebinoski, West Deer Township, Allegheny County; Donald Glassman, Mt. Lebanon Township, Allegheny County; Carole L. Elias, New Kensington, and Alain A. Schutz, Penn Township, Westmoreland County, all of Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

Filed Sep. 9, 1993, Ser. No. 118,341

Int. Cl.[5] C07C *45/82*

U.S. Cl. 568—366 19 Claims

1. Method of making isophorone comprising conducting an aldol condensation of acetone in the vapor phase in the presence of an aldol condensation catalyst at a temperature between about 225° C. to about 325° C. to obtain a reaction product in which at least about 10% of the acetone is converted, removing unreacted acetone in an acetone removal zone, removing free water from the reaction product, removing mesityloxide and water in a mesityloxide removal zone, thereafter removing beta isophorone and mesitylene from said reaction product in a beta isophorone and mesitylene removal zone, and purifying the remaining reaction product to obtain an end product of at least 99% purity.

5,352,840

OXIDATION PROCESS

Stephen G. Grundy, Widnes; Kevan M. Reeve, Liverpool, and Michael C. Rocca, Manchester, all of England, assignors to Solvay Interox Limited, Warrington, England

Filed May 10, 1993, Ser. No. 59,157

Claims priority, application United Kingdom, May 9, 1992, 9210017

Int. Cl.[5] C07C *45/27, 45/30*

U.S. Cl. 568—430 10 Claims

1. A process for the production of a 3,5-ditertiaryalkyl-4-hydroxybenzaldehyde from a 2,6-ditertiary alkyl-4-methylphenol by reaction with aqueous hydrogen bromide and hydrogen peroxide characterised by conducting the reaction in the presence of a hydrophobic solvent at a reaction temperature selected between 40° C. and the boiling point of the reaction mixture.

5,352,841

AGENT FOR DOSING AQUEOUS SYSTEMS WITH ACROLEIN, PROCESSES FOR MAKING SAME, AND METHOD OF TREATING AN AQUEOUS SYSTEM

Peter Werle, Gelnhausen; Werner Pahling, Karben, and Martin Trageser, Gelnhausen, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 14, 1993, Ser. No. 165,922

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1993, 4332586

Int. Cl.[5] C07C *45/78, 45/00*

U.S. Cl. 568—449 23 Claims

1. An agent for dosing aqueous systems with acrolein in a biocidally effective concentration comprising 30 to 95% by weight of acrolein and 5 to 70% by weight of at least one inorganic carrier material, wherein said inorganic carrier material is basically inert relative to acrolein and has a pH value of 3 to 7 in a 5% dispersion in water.

5,352,842

PROCESS FOR CLARIFYING ALKOXYLATED ALCOHOLS

Upali Weerasooriya, Austin; Steve V. Orsak, Cedar Park, both of Tex.; Clint Osborne, Salem, Oreg.; John Lin, Cedar Park; Mark W. Hellums, Austin, both of Tex.; Linton LeCompte, and David A. Riley, both of Lake Charles, La., assignors to Vista Chemical Company, Houston, Tex.

Filed Mar. 30, 1993, Ser. No. 39,635

Int. Cl.[5] C07C *41/34, 41/36*

U.S. Cl. 568—621 11 Claims

1. A process for clarifying an alkoxylated alcohol product mixture produced using a calcium-based catalyst system comprising:

heating said alkoxylated alcohol product mixture containing alkoxylated alcohols having the formula:

$$R—O—(C_nH_{2n}O)_x—H$$

wherein R is a hydrocarbon radical containing from 1 to about 30 carbon atoms, n is 2 to 4, and x is an average and is from about 2 to about 20, to a temperature from about 80° C. to about 175° C. to produce a filtration feed; and

passing said filtration feed through a filter medium comprising a material possessing polar groups to produce a clari-

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fied filtrate, said filtration feed being passed through said filter medium within about 5 days of being prepared, said filtration feed being passed through said filter medium until the desired degree of clarification is obtained, the temperature of said filtrate at the end of filtration being less than about 30° C. but above the pour point of the filtrate.

5,352,843

PREPARATION OF β-NAPHTHYL BENZYL ETHER

Rainer Dyllick-Brenzinger, Weinheim, and Ulf Baus, Dossenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 28, 1993, Ser. No. 69,154

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1992, 4218767

Int. Cl.[5] C07C *43/02*

U.S. Cl. 568—632 5 Claims

1. A process for preparing β-naphthyl benzyl ether which comprises:

reacting β-naphthol essentially in the absence of water with an alkali metal carbonate or an alkaline earth metal carbonate and benzyl chloride in an inert water-miscible solvent at from 60° C. to 200° C.; and

after the reaction has ended, admixing the reaction mixture with water at a temperature of 30° C. to 110° C. only to the onset of crystallization of the β-naphthyl benzyl ether product and thereafter cooling the reaction mixture to a temperature of from 0° C. to 25° C. to cause crystallization and precipitation of said ether product.

5,352,844

ISOLATION OF PARTIALLY BROMINATED DIPHENYL ETHER MIXTURES IN CRYSTALLINE FORM WITH HIGHER MELTING RANGE

Bhabatosh Bhattacharya, Lafayette, and Wayne C. Muench, West Lafayette, both of Ind., assignors to Great Lakes Chemical Corporation, W. Lafayette, Ind.

Continuation of Ser. No. 893,376, Jun. 4, 1992, abandoned. This application Jan. 27, 1994, Ser. No. 188,360

Int. Cl.[5] C07C *41/18, 41/34*

U.S. Cl. 568—639 28 Claims

1. A method for the isolation of a solid partially brominated diphenyl ether product from a mixture of partially bromnated diphenyl ethers having an average of from about 7.2 to ab out 8.5 bromine atoms per molecule of diphenyl ether, the method comprising:

a. providing a mixture of partially brominated diphenyl ethers, wherein said mixture has been removed form its bromination medium;

b. dissolving the mixture in an organic solvent selected from the group consisting of benzene, toluene, and xylenes, or mixtures thereof, at a temperature sufficiently high for the partially brominated diphenyl ethers and solvent to form a solution,

c. contacting the solution of step b with a C_1–C_4 alkanol;

d. maintaining the contact of step c, for a sufficient time to allow said diphenyl ether product to precipitate out; and

e. recovering the precipitate.

5,352,845

PROCESS FOR MANUFACTURE OF OPTICALLY ACTIVE SATURATED COMPOUNDS

Seiichi Takano, and Kunio Ogasawara, both of Sendai, Japan, assignors to Asahi Denka Kogyo K.K., Tokyo, Japan

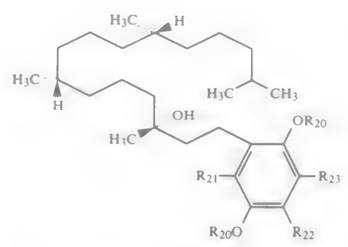
Division of Ser. No. 658,179, Feb. 20, 1991, Pat. No. 5,262,552. This application Mar. 25, 1993, Ser. No. 36,887

Claims priority, application Japan, Feb. 20, 1990, 2-39231; Feb. 20, 1990, 2-39322; Feb. 20, 1990, 2-39323

Int. Cl.[5] C07C *41/08, 41/18*

U.S. Cl. 568—648 9 Claims

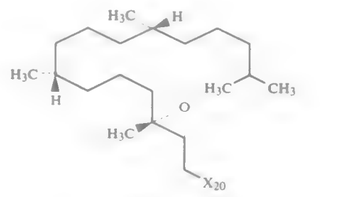
1. A process for manufacturing an optically active saturated compound of the general formula (25):



(25)

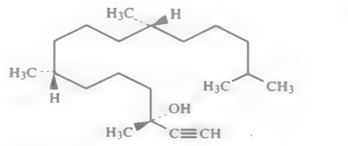
wherein R_{20} represents a group for protecting a hydroxy group, R_{21}, R_{22} and R_{23} independently represent a hydrogen atom or a lower alkyl group having 1 to 4 carbon atoms, said process comprising the steps of:

treating an optically active halogenated compound of the general formula (21b):



(21b)

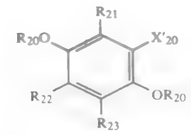
wherein X_{20} represents a halogen atom, with a strong base, to obtain an optically active corresponding acetylene alcohol



(21c)

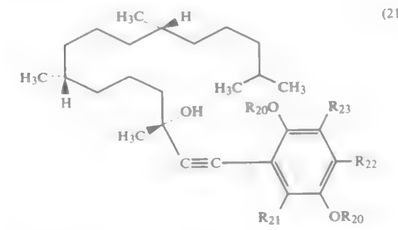
while retaining the chirality;

reacting said optically active acetylene alcohol compound of the formula (21c) with a benzene halide of the general formula (24):



(24)

wherein X'_{20} represents a halogen atom, and R_{20}, R_{21}, R_{22} and R_{23} have the same meanings as above, to obtain an optically active corresponding phenylacetylene compound of the general formula (21d):



(21d)

wherein R_{20}, R_{21}, R_{22} and R_{23} have the same meanings as above, while retaining the chirality; and

reducing said optically active phenylacetylene compound of the general formula (21d) to obtain the optically active corresponding saturated compound of the general formula (25) while retaining the chirality.

5,352,846

PROCESS FOR THE PRODUCTION OF AN OLEFIN-FREE TERT, AMYL ALKYL ETHER-RICH FRACTION AND A N-PENTANE RICH PARAFFIN FRACTION

Patrick Sarrazin, Rueil Malmaison; Jean Cosyns, Maule; Alain Forestiere, Vernaison, and Jean-Paul Boitiaux, Poissy, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Continuation of Ser. No. 932,192, Aug. 21, 1992, abandoned. This application Oct. 28, 1993, Ser. No. 142,107

Claims priority, application France, Aug. 23, 1991, 91 10625

Int. Cl.[5] C07C *41/06*

U.S. Cl. 568—697 12 Claims

1. A process for the simultaneous production of an olefin-free, tert-amyl alkyl ether-rich fraction and an n-pentane-rich paraffin fraction, comprising (a) in a first stage, hydrogenating a charge containing isopentenes (methyl butenes) cyclopentene and cyclopentadiene under hydrogenation and isomerization conditions sufficient to eliminate diolefins, cycloolefins, and straight-chain olefins and to obtain a distribution of the methyl butenes close to thermodynamic equilibrium; (b) in a second stage, feeding at least a fraction of the resultant hydrogenation effluent into an etherification zone for etherifying iso-olefins therein with an alcohol; and (c) distilling the resultant etherified stream from the etherification zone to collect (A) an olefin-free tert-amyl alkyl ether-rich fraction containing cyclopentane and (B) an n-pentane-rich fraction free of straight-chain olefins and cycloolefins.

5,352,847

ONE-STEP SYNTHESIS OF METHYL T-BUTYL ETHER FROM T-BUTANOL USING PILLARED, PHOSPHATED MONTMORILLONITE CLAY CATALYSTS

John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 27, 1993, Ser. No. 126,591

Int. Cl.[5] C07C *41/09*

U.S. Cl. 568—698 16 Claims

1. In a method wherein t-butanol is reacted with methanol in one-step in the presence of a catalyst to provide methyl tert-butyl ether (MTBE), the improvement comprising using as a catalyst a chlorohydrol-treated, phosphated acidic montmorillonite clay and continuously contacting said t-butanol and methanol in a molar amount of about 0.1 to 10 moles of methanol per mole of t-butanol with said catalyst at a temperature of 20° C. to 250° C. and a pressure of atmospheric to 1000 psig to obtain methyl tert-butyl ether product.

5,352,848

NITRILE REMOVAL IN AN ETHERIFICATION PROCESS

Paul R. Cottrell, Arlington Heights, Ill., assignor to UOP, Des Plaines, Ill.

Filed Dec. 29, 1992, Ser. No. 997,830

Int. Cl.[5] C07C *41/04*

U.S. Cl. 568—699 20 Claims

20. A method for fluid catalytic cracking of a hydrocarbon feedstock which method comprises the steps of:

(a) contacting said hydrocarbon feedstock with a fluid catalytic cracking catalyst in a fluid catalytic cracking zone under fluid catalytic cracking conditions to produce a fluid catalytic cracking effluent stream comprising isobutene;

(b) treating said fluid catalytic cracking effluent stream to remove a substantial amount of any sulfur compounds contained therein;

(c) contacting said effluent from step (b) with a selective hydrogenation catalyst at selective hydrogenation conditions in a selective hydrogenation zone to selectively saturate diolefins to monoolefins;

(d) contacting said effluent from step (c) with methanol in the presence of an etherification catalyst comprising a macroporous acid-form sulfonic ion exchange resin in an etherification zone under etherification conditions to react said isobutene with said methanol to produce an etherification effluent stream which comprises methyl tertiary butyl ether;

(e) passing at least a portion of said etherification effluent stream to a distillation zone containing a bed of etherification catalyst comprising a macroporous acid-form sulfonic ion exchange resin and contacting said methanol in said bed of etherification catalyst in said distillation zone at etherification conditions to produce a methyl tertiary butyl ether-rich stream and an overhead raffinate stream comprising isobutane, normal butene, normal butane, methanol and isobutene;

(f) contacting said raffinate stream with a water-containing stream to produce a hydrocarbon-rich raffinate stream and a methanol-containing stream;

(g) fractionating said methanol-containing stream to produce a methanol-rich stream;

(h) monitoring acetonitrile concentration of said methanol-rich stream;

(i) regulating said acetonitrile concentration in said methanol-rich stream by recycling at least a portion of said methanol-rich stream to said fluid catalytic cracking zone; and

(j) recycling any remainder of said alcohol-containing stream to said etherification zone.

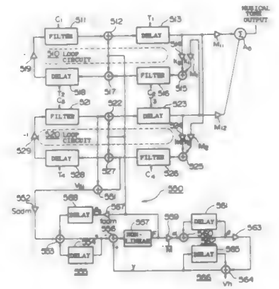
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5,352,849

MUSICAL TONE SYNTHESIZING APPARATUS SIMULATING INTERACTION BETWEEN PLURAL STRINGS

Kaoru Kobayashi, Owariasahi, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed May 31, 1991, Ser. No. 708,480
Claims priority, application Japan, Jun. 1, 1990, 2-143735
Int. Cl.[5] G10H *5/02*
U.S. Cl. 84—659 **18 Claims**



1. A musical tone synthesizing apparatus comprising:

parameter generating means for generating a parameter corresponding to a musical tone to be generated;

a plurality of loop means including (a) a first loop means including at least two delay elements, and (b) at least one additional loop means including at least one delay element, each loop means for circulating a signal therein, wherein a delay time by which a signal circulates through at least a particular one of said loop means is controlled by said parameter;

connection means for connecting said plurality of loop means together such that a signal picked up from said first loop means is introduced into another of said loop means; and

excitation means for inputting an excitation signal into each of said two delay elements of said first loop means, said excitation means receiving a feedback signal from at least one of the loop means to affect the value of the excitation signal,

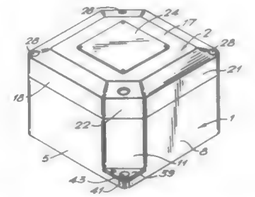
wherein a synthesized musical tone signal is picked up from at least one of a loop means and said connection means.

5,352,850

JUNCTION BOX

Trevor W. Norris, Ashton-under-Lyne, England, assignor to Hawke Cable Glands Limited, West Midlands, England

Filed Nov. 18, 1992, Ser. No. 978,400
Claims priority, application United Kingdom, Nov. 28, 1991, 9125386.4
Int. Cl.[5] H02G *3/08*
U.S. Cl. 174—51 **20 Claims**



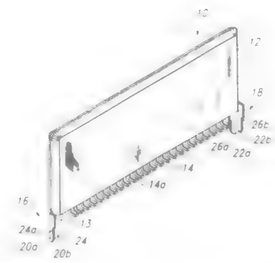
1. A junction box having a base and a cover adapted to be secured together to provide an enclosure for electrical connections of at least two electric cables, said cover being of a non-conductive plastics material and said base being of a non-conductive plastics material and having integrally moulded therein a conductive continuity plate, said continuity plate having at least one lug extending outwardly and externally of said base to provide an earthing terminal to ground, and said continuity plate extending to the regions of entry ports formed in said base through which electric cables are to extend with said continuity plate being exposed at said regions for electrical contact with a cable gland fitting engaged with the cable and said entry port, the arrangement being such that in the assembly, there is a continuous earthing path from the respective cables through said continuity plate to said earthing terminal.

5,352,851

EDGE-MOUNTED, SURFACE-MOUNT INTEGRATED CIRCUIT DEVICE

James S. Wallace, Sugarland; Ernie Russell, Richmond, and Daniel Baudouin, Missouri City, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 8, 1992, Ser. No. 941,996
Int. Cl.[5] H01L *23/02*
U.S. Cl. 174—52.4 **22 Claims**



1. An edge-mounted integrated circuit device, comprising:

a semiconductor die;

a lead frame attached to said semiconductor die, said lead frame including a plurality of leads and at least one support, said leads electrically connected to said semiconductor die;

a package encapsulating said semiconductor die and a portion of said lead frame, each of said leads extending from an edge of said package and bent to present a face for surface-mount connection to a conductor on a substrate, said at least one support extending from said package for insertion into an opening in the substrate to support said edge-mounted integrated circuit device in position for soldering said faces of said leads to the conductors on the substrate.

5,352,852

CHARGE COUPLED DEVICE PACKAGE WITH GLASS LID

Heung S. Chun, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Choongchungbook-do, Rep. of Korea

Filed Aug. 3, 1993, Ser. No. 101,030
Claims priority, application Rep. of Korea, Aug. 28, 1992, 15607/1992
Int. Cl.[5] H02G *3/08;* **H05K** *5/00*
U.S. Cl. 174—52.4 **8 Claims**

1. A charge coupled device package with a glass lid comprising:

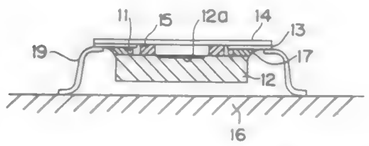
a charge coupled device having a plurality of conductive bumps on bond pads of said charge coupled device;

an insulating tape having a predetermined thickness and a

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predetermined width and bonded to inside portions of said conductive bumps on said charge coupled device; and

a glass lid having a plurality of metal lines on opposite sides of a lower surface thereof and bonded to an upper surface



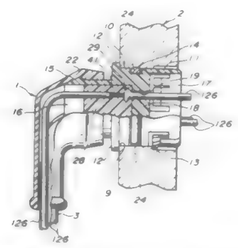
of said insulating tape such that each metal line is electrically connected at one end to a respective one of said conductive bumps and at the other end thereof is adapted to be electrically coupled to a signal terminal of a circuit board.

5,352,853

CABLE MOUNTING STRUCTURE FOR AUTOMATIC TRANSMISSION

Kazuo Takagi, Tokyo, Japan, assignor to Jatco Corporation, Fuji, Japan

Filed Sep. 22, 1992, Ser. No. 948,487
Claims priority, application Japan, Sep. 27, 1991, 3-087006[U]
Int. Cl.[5] H01R *13/52*
U.S. Cl. 174—65 R **14 Claims**



1. An arrangement comprising a transmission case of an automatic transmission, a first electric device arranged outside of said transmission case, a second electric device arranged in said transmission case, a plurality of electric wires extending between said first and second electric devices through an opening formed in said transmission case, and a cable mounting structure including a terminal case sealingly fitted in said opening, said terminal case having therein a partition wall which is formed with a plurality of apertures through which said electric wires extend, wherein:

each of said electric wires is a one-piece wire which includes a one-piece metal wire extending between said first and second electric devices and a plastic cover substantially covering said one-piece metal wire;

said partition wall is integral with said terminal case;

each of said electric wires located within said terminal case has a naked part which is provided by removing a part of said plastic cover; and

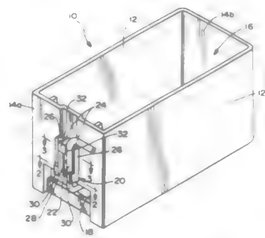
a plastic adhesive material is packed in said terminal case and embeds therein said naked parts of said electric wires.

5,352,854

ELECTRICAL WIRE STRAIN RELIEF AND WIRE MANAGEMENT SYSTEM

Joseph D. Comerci, Elmhurst, and Mark M. Data, Bolingbrook, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Jan. 7, 1993, Ser. No. 1,440
Int. Cl.[5] H02G *3/08*
U.S. Cl. 174—65 R **8 Claims**



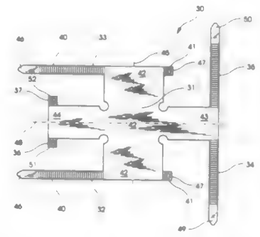
1. In an electrical wire strain relief and wire management system integrally molded with a wall of an electrical receptacle housing to hold up to two electrical wires against the wall of the receptacle housing, wherein the improvement comprises a pair of side-by-side channels extending along the wall of the receptacle housing for receiving the electrical wires, each channel having an outer wall, with an intermediate wall shared by both channels, each outer wall including an inwardly directed ledge overhanging its respective channel, and the shared intermediate wall including common ledge means overhanging both channels at a location spaced longitudinally of the channels from the inwardly directed ledges, the transverse distance between the ledges and the ledge means being less than the cross-dimensions of the wires whereby the inwardly directed ledges and the ledge means define serpentine passages for insertion of the wires into the channels.

5,352,855

JUNCTION CLAMP FOR WIRING HARNESS

Lex B. Potter, Columbus, Ind., assignor to Cumming Electronics Company, Inc., Columbus, Ind.

Filed Mar. 23, 1993, Ser. No. 35,944
Int. Cl.[5] H02G *3/02*
U.S. Cl. 174—135 **6 Claims**



1. A junction clamp for securing the wiring junction between a trunk portion and a split-out branch portion of a wiring harness comprises:

a flexible main panel having a substantially flat trunk section and a substantially flat integral branch section;

a trunk securement joined to said trunk section and including a flexible band portion and a cooperating head portion which is spaced apart from said flexible band portion by said trunk section, said trunk securement in cooperation with said trunk section being designed and arranged to encircle said trunk portion, wherein said flexible band portion is selectively insertable through said head portion to a desired length and said head portion being adapted to interlockingly receive said flexible band portion; and

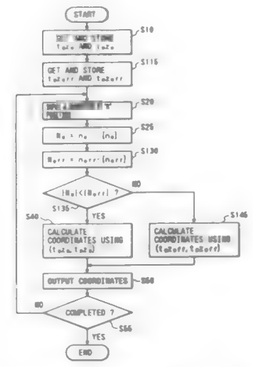
a branch securement joined to said branch section and including a flexible band portion and a cooperating head portion which is spaced apart from said flexible band portion by said branch section, said branch securement in cooperation with said branch section being designed and arranged to encircle said branch portion, wherein said flexible band portion is selectively insertable through said head portion to a desired length and said head portion being adapted to interlockingly receive said flexible band portions.

5,352,856

METHOD AND APPARATUS FOR INPUTTING COORDINATES

Atsushi Tanaka; Shinnosuke Tanishi, both of Kawasaki; Yuichiro Yoshimura; Kiyoshi Kaneko, both of Yokohama; Ryozo Yanagisawa, Matsudo; Katsuyuki Kobayashi, Yokohama, and Takeshi Kamono, Choshi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1991, Ser. No. 779,822
Claims priority, application Japan, Oct. 24, 1990, 2-284446
Int. Cl.[5] G08C *21/00*
U.S. Cl. 178—18 **7 Claims**



1. A coordinates input apparatus in which by indicating an arbitrary point on a vibration transmission plate by a coordinate indicating device for generating a vibration, coordinate values at said arbitrary point are detected, comprising:

a plurality of detecting means, arranged at predetermined positions in the vibration transmission plate, for detecting the vibration which is generated by the indication by the coordinate indicating device, for converting the vibration into electric signals, and for outputting;

measuring means for measuring delay times from a time point when the indication has been performed by the coordinate indicating device until time points when the electric signals are detected;

obtaining means for obtaining origin correction data from a plurality of points on the vibration transmission plate;

memory means for storing the origin correction data; and

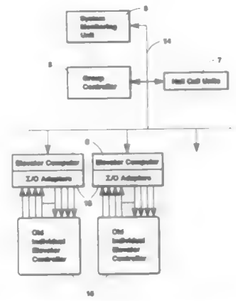
calculating means for reading out the origin correction data from the memory means, for correcting the coordinate values on the basis of the delay times measured by the measuring means and the origin correction data, and for calculating the coordinate values.

5,352,857

PROCEDURE FOR MODERNIZING AN ELEVATOR GROUP

Seppo Ovaska, Kalervontie 2, SF-05830 Hyvinkaa, Finland

Filed Jul. 15, 1992, Ser. No. 913,322
Claims priority, application Finland, Jul. 16, 1991, FI913437
Int. Cl.[5] B66B *1/00*
U.S. Cl. 187—247 **12 Claims**



1. A method for modernizing the control system of a bank of elevators, wherein each elevator is controlled by a respective elevator controller, comprising the steps of:

(a) providing an elevator of said bank with a respective new elevator computer having a parallel communications port and at least one serial communications port, and connecting said new elevator computer to a respective elevator controller by means of a temporary adapter unit connected to said parallel communications port, whereby control of the elevator during modernization can be effected by said respective new elevator computer, at least partially through said respective elevator controller;

(b) providing a new group controller, and connecting said new group controller and said new elevator computer to a serial communications network, whereby operation of each elevator of said bank of elevators can be effected by said new group controller, via said serial communications network and said respective new elevator computer;

(c) connecting a monitoring unit to said serial communications network for monitoring operation of said bank of elevators;

(d) forming a plurality of functional modules comprised of existing elevator components grouped according to the specific function performed by said components;

(e) selecting a functional module to be modernized;

(f) modernizing the selected functional module by:

(f1) providing new elevator components capable of performing the same operation as corresponding old elevator components which comprise the selected functional module, each of said new elevator components being controlled by said respective new elevator computer through said serial communications network; and

(f2) disconnecting the old elevator components which comprise the selected functional module from said respective elevator controller; and

(g) when all operations of an elevator are being performed by new elevator components under the control of said respective new elevator computer through said serial communications network;

(g1) providing at least one new functional unit comprising a safety system interface and elevator electrification circuits;

(g2) removing said temporary adapter unit and said elevator controller; and

(g3) connecting said at least one new functional unit to said respective new elevator computer through said

VOL 1167 ISS 1 OC 4 1994 UMI

parallel communications port of said respective new elevator computer.

5,352,858

HERMETICALLY SEALED SNAP SWITCH ASSEMBLY WITH PRE-USE BACKFILLING OPTION

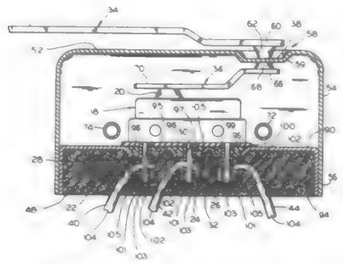
David W. Keck, Michigan City, Ind., assignor to Dwyer Instruments, Inc., Michigan City, Ind.

Continuation-in-part of Ser. No. 900,616, Jun. 18, 1992, abandoned. This application Jul. 19, 1993, Ser. No. 93,767

Claims priority, application Canada, Nov. 30, 1992, 2084119; United Kingdom, Mar. 17, 1993, 9305540; Fed. Rep. of Germany, Apr. 29, 1993, 4314209

Int. Cl.[5] H01H *9/04*

U.S. Cl. 200—302.1 **4 Claims**



1. A hermetically sealed snap switch assembly comprising:
a housing defined by first and second housing members,
said housing members each defining a substantially planar base wall,
said first housing member being formed from imperforate material,
said second housing member being mounted within said first housing member in hermetically sealed relation therewith, and with said base walls of said housing members being disposed in substantial parallelism to form said housing and define a switch chamber between said base walls of said housing members,
said housing second member base wall including a plurality of depending electrically conductive tubes fixed to same in hermetically sealed relation therewith,
said housing second member otherwise being formed from imperforate material,
a snap action switch mounted in said switch chamber between said base walls of said housing members,
said switch having a side that faces said first housing member base wall and is disposed within said chamber,
said switch including an actuating member for said switch on said switch side and within said chamber,
said switch being supported within said chamber by said second housing member base wall,
said tubes each being disposed relative to said housing such that one end of each of said tubes projects away from said chamber,
said switch having a plurality of terminals depending therefrom and that are individually lodged within said tubes, respectively, in slip fit relation thereto,
said base wall of said first housing member having a portion of same indented out of the plane thereof to form a hermetic wall portion,
a first lever disposed externally of said housing,
said first lever extending in general parallelism to said switch side and being fixed to said hermetic wall portion,
a second lever disposed internally of said chamber and being fixed to said hermetic wall portion and engaging said actuating member of said switch, and
including means for fixing the respective tubes to the switch terminals lodged therein and in hermetically sealed relation thereto,
whereby said tubes provide the option of purging said chamber and backfilling same through one of said tubes prior to the application of said fixing means to said one of said tubes, and
including:
an electrically insulating layer interposed between said switch and said second housing member base wall.

5,352,859

ADAPTIVE METHOD AND APPARATUS FOR CONTROLLING MACHINING CURRENT IN ELECTRIC DISCHARGE MACHINES

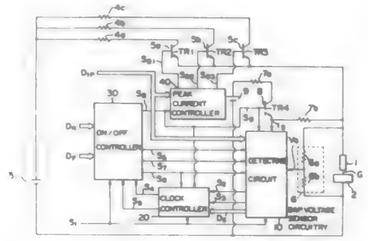
Yuji Kaneko, Yokohama, and Nobuyoshi Nabekura, Sakai, both of Japan, assignors to Sodick Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 861,037, Mar. 31, 1992, abandoned. This application Apr. 29, 1993, Ser. No. 53,806

Claims priority, application Japan, Apr. 1, 1991, 3-094715

Int. Cl.[5] B23H *1/02, 7/20*

U.S. Cl. 219—69.13 **12 Claims**



1. An apparatus for controlling a discharge current through a gap formed between an electrode and a workpiece comprising:
(a) a circuit for applying a voltage pulse having an on time and an off time across said gap;
(b) a monitoring circuit, including means for generating a detection current for monitoring an electrical characteristic of said gap;
(c) means, connected to said monitoring circuit, for comparing the level of said monitored electrical characteristic at least at two predetermined times during said voltage pulse on time with at least two predetermined reference levels and thereby generating comparison output signals;
(d) means for classifying a condition at said gap into at least a first condition or a second condition based upon said comparison output signals; and
(e) means, connected to said first circuit and to said classifying means, for increasing the off time when said gap is classified into said first condition and for decreasing said off time when said gap is classified into said second condition.

5,352,860

METHODS AND APPARATUS FOR SUPPLYING GAS UNDER HIGH PRESSURE TO WELDABLE AIR BAG VESSELS WITH A GAS PASSAGE FORMED THEREIN, AND LIKE PRODUCTS, AND THEN WELD-SEALING THE PASSAGE

Ronald W. Richardson, Essexville, Mich., assignor to RWC, Inc., Bay City, Mich.

Continuation of Ser. No. 790,531, Nov. 12, 1991, Pat. No. 5,196,669. This application Feb. 8, 1993, Ser. No. 14,841

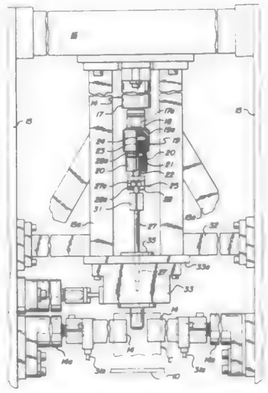
The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.

Int. Cl.[5] B23K *11/00;* **B65B** *31/02;* **F16F** *9/43;* **F17C** *5/06*

U.S. Cl. 219—117.1 **5 Claims**

1. A method for supplying gas under extreme pressure to a

weldable air bag canister, having an opening in a wall thereof through which gas may be charged to the canister, and weld sealing the opening with a weldable welding insert, after the canister has been charged with an inert gas under a heavy pressure measured in thousands of pounds per square inch, the method employing an electrode welding head and weld insert supplying assembly having a lower tubular end surrounding a insert dispensing opening therein, a welding electrode movable from a retracted position through said tubular end to an extended welding position, a reciprocable initial insert delivery element and a second reciprocable insert delivery element, each having insert receiving openings and being operable in an insert delivery passageway system, having upstream and downstream portions, provided in said assembly, and a deformable seal system forming part of the marginal wall of said insert delivery passageway system for sealing said reciprocable elements and passageway system, said initial insert delivery element being movable from a retracted position in which its insert accommodating opening is outside the assembly to a position inside said insert delivery passageway system, said second insert delivery element being disposed in a first retracted position in the downstream portion of said passageway system in which its insert accommodating opening is inboard of said seal system, comprising the steps of:



(a). relatively axially moving the canister and said electrode welding head and weld insert supplying assembly to dispose the insert dispensing opening in said tubular end in abutting sealing relationship with the canister around the opening therein;
(b). separating individual inserts from a supply thereof and furnishing them one at a time to said initial delivery element when its insert receiving opening is outside the assembly;
(c). moving said initial delivery element in a forward path of travel to move its insert receiving opening past said seal system and releasing the insert from said insert receiving opening to said second delivery element when its insert receiving opening is in said first position inboard of said seal system;
(d). only then supplying gas under pressure to said assembly to communicate with the tubular end of the electrode welding head and weld insert supplying assembly and the opening in the canister;
(e). moving said second delivery element in a forward path of travel to a second position in which its insert receiving opening communicates with said tubular end to supply an insert through the insert receiving opening in said second delivery element to the canister opening and then returning said second delivery element to retention position;
(f). moving said welding electrode from retracted to welding position and supplying a welding current to said electrode to weld the insert in said opening and seal said opening; and
(g). depressurizing the said assembly and restoring the initial insert delivery element and electrode to retracted position.

5,352,861

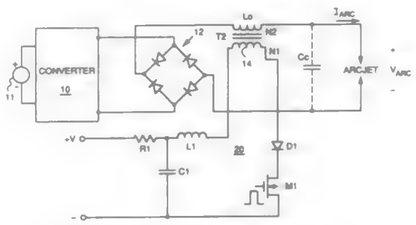
RESONANT HIGH-VOLTAGE PULSER FOR ARCJET THRUSTER IGNITION

Robert L. Steigerwald, Burnt Hills, and John N. Park, Rexford, both of N.Y., assignors to General Electric Co., East Windsor, N.J.

Filed Oct. 2, 1992, Ser. No. 955,970

Int. Cl.[5] B23K *9/06, 9/067, 9/073*

U.S. Cl. 219—121.54 **8 Claims**



1. A power supply for a thruster, comprising a thruster:
a power converter for providing an ac voltage;
a rectifier coupled at the output of said converter for rectifying said ac voltage;
an output filter inductor connected to said rectifier for smoothing current supplied to said thruster, said filter inductor comprising a secondary winding of a step-up transformer;
a resonant starting circuit comprising a primary winding of said transformer, a resonant inductance, a storage capacitance, the capacitance of a cable means coupling said filter inductor to said thruster, and switching means, said switching means being activated to release energy stored in said storage capacitance such that the capacitance of said cable means resonates with said inductance and generates a starting pulse to said primary winding, said starting pulse being stepped-up in voltage via said transformer and applied to said thruster for ignition thereof.

5,352,862

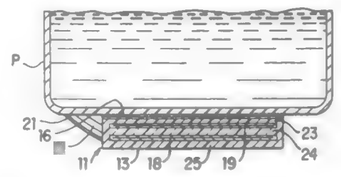
HIGH WATTAGE SURFACE CONTACT RESISTANCE HEATER

George A. Barr, Westminister, Colo., assignor to Five Star Manufacturing Company, Clarksdale, Miss.

Filed Nov. 9, 1992, Ser. No. 973,752

Int. Cl.[5] H05B *1/02;* **F24H** *1/10*

U.S. Cl. 219—205 **16 Claims**



1. A dual operational electrical resistance heater comprising,
a pliable body having an inner contact surface and an outer

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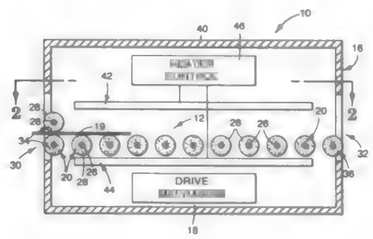
surface, a first heating element disposed within said body and having a first wattage density per unit area, a second heating element disposed within said body, said first and second heating element being in overlapping relationship to one another, said second heating element having a second wattage density per unit area, said first wattage density being greater than said second wattage density, connector means for connecting said first and second heating elements to a source of electrical power supply, said second heating element being non-thermostatically controlled so as to be continuously energized when said connector means is connected to a source of electrical power supply, a thermostat means mounted between said connector means and said first heating element for regulating the power supply to said first heating element, whereby when said connector means is connected to the source of electrical power supply said second heating element is activated to provide a continuous source of heat and said first heating element is activated in response to said thermostat.

5,352,863

FLAT BED THERMOPHOTOGRAPHIC FILM PROCESSOR

John Svendsen, Marine on the St. Croix, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 3, 1992, Ser. No. 862,830
Int. Cl.[5] H05B *1/00*
U.S. Cl. 219—388 38 Claims



1. A developer for sheets of thermophotographic film, including:

an oven having a film entrance and a film exit:

a generally flat and horizontally oriented bed of film support material within the oven along a film transport path between the film entrance and film exit, for engaging and supporting the film; wherein the bed of film support material includes at least three spaced rollers, each of said rollers comprising a cylindrical tube comprising polymeric foam having low density and low thermal conductivity, said tube surrounding a support rod, said rollers rotatably mounted within the oven along the film transport path;

a drive mechanism for driving the bed of material to transport the film through the oven along the transport path, wherein the drive mechanism includes a roller drive mechanism for rotating the rollers and causing the rollers to transport the film through the oven along the transport path; and

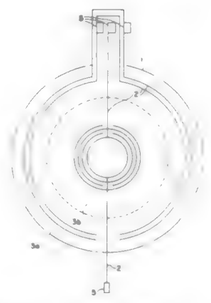
the film support material having a sufficiently low heat capacity to enable visible pattern-free development of the film as the film is transported through the oven.

5,352,864

PROCESS AND DEVICE FOR OUTPUT CONTROL AND LIMITATION IN A HEATING SURFACE MADE FROM GLASS CERAMIC OR A COMPARABLE MATERIAL

Bernd Schultheis, Schwabenheim; Klaus Kristen, Wiesbaden; Martin Tapian, Ingelheim, and Herwig Scheidler, Mainz, all of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Jul. 18, 1991, Ser. No. 731,775
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1990, 4022846
The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.
Int. Cl.[5] H05B *1/02, 3/74;* G05D *23/20*
U.S. Cl. 219—449 18 Claims



1. In an arrangement for controlling the temperature of a glass ceramic heating plate useful for heating the contents of a cooking pot regardless of the quality of the pot, the improvement comprising:

at least on heating zone with a heating device with at least two separately controllable individual heating elements in proximity with the glass ceramic heating plate, the heating elements defining a course of maximum temperature occurrence in the heating zone when the heating zone is energized without a pot thereon and when a pot of inferior quality is used, the heating elements being arranged concentric to one another to delimit associated circular areas in the heating zone of the heating plate which are concentric to one another;

power supply means for the heating elements;

a plurality of temperature sensors arrayed in circular arrays in each of the circular areas of the heating zone of the glass ceramic heating plate the temperature sensors being strip-like, glass ceramic, temperature-measuring resistances which are bonded in the heating zone of the heating plate between parallel strip conductors, the strip conductors being run in proximity with the entire course of maximum temperature occurrence so that the strip-like glass ceramic temperature-measuring resistances indicate the course of maximum temperature in the heating zone in potless operation and when a pot of inferior quality is used.

5,352,865

PROGRAMMABLE LOAD COMPENSATION METHOD AND APPARATUS FOR USE IN A FOOD OVEN

Douglas A. Burkett, and Gary L. Mercer, both of Eaton, Ohio, assignors to Henny Penny Corporation, Eaton, Ohio

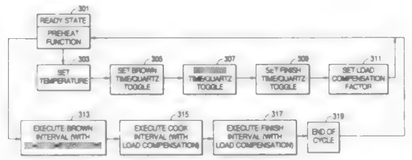
Continuation-in-part of Ser. No. 746,910, Aug. 19, 1991, Pat. No. 5,317,130. This application Nov. 9, 1992, Ser. No. 972,771
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—486 5 Claims

1. A rotisserie oven for cooking food comprising

heating means for heating food located in the rotisserie oven;

air temperature sensing means for sensing the temperature of air in said rotisserie oven; and,

control means, responsive to the air temperature sensing means for selectively controlling said heating means, wherein said control means is programmable with a predetermined cook time, a predetermined cook temperature and a load compensation factor;



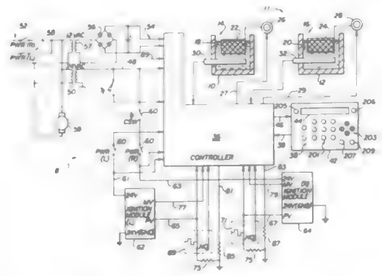
wherein said control means further comprises means for determining an actual cook time derived from said predetermined cook time, the difference between the sensed temperature of the air in said rotisserie oven and the predetermined cook temperature, and the load compensation factor said heating means heating said food for said actual cook time.

5,352,866

FRYER TEMPERATURE CONTROL SYSTEM

Richard W. Cartwright, Piqua; Joseph A. Lang, Jr., Kettering, and Raymond M. Lepore, Troy, all of Ohio, assignors to Premark FEG Corporation, Wilmington, Del.

Filed Oct. 11, 1991, Ser. No. 775,138
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—497 22 Claims



1. A fryer comprised of at least one vat of oil for cooking a product, a heating means for heating the oil and a fryer control comprising:

a. means for storing at least one set of cooking data for a product, said cooking data defining a predetermined oil temperature and a predetermined cooking time;

b. means for producing an oil temperature signal representing a current oil temperature;

c. means responsive to the oil temperature signal and the cooking data for providing a temperature error signal as a function of the difference between the current oil temperature and the predetermined oil temperature;

d. means responsive to the temperature error signal for producing a heater control signal representing a desired duty cycle of the heater, said heater control signal being determined as a function of a current temperature error signal, a sum of a predetermined number of successive temperature error signals and a sum of changes between the successive temperature error signals;

e. means for storing a cooking time control function relating a change in cooking time to temperature error within a predetermined range of temperature error greater than and less than the predetermined oil temperature;

f. means responsive to the temperature error signal and the cooking time control function for providing a cooking time clock signal having a frequency varying proportion to the temperature error signal; and

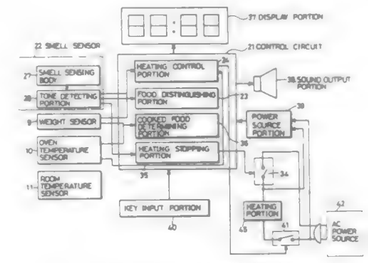
g. means responsive to the predetermined cooking time for counting the predetermined cooking time, said counting means being responsive to the cooking time clock signal whereby the counting means counts the predetermined cooking time at a frequency varying as a function of the temperature error signal.

5,352,867

HEAT COOKING APPARATUS WITH SMELL SENSOR

Minoru Shota, Higashiosaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 11, 1992, Ser. No. 897,105
Claims priority, application Japan, Jun. 11, 1991, 3-138867; Jul. 15, 1991, 3-172926
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—497 10 Claims



1. A heat cooking apparatus comprising:

a heating chamber for storing food,

heating means for heating the food in said heating chamber,

a smell sensor for sensing smell of atmosphere in said heating chamber, and

controlling means for controlling heat cooking of the food by said heating means,

said controlling means including:

food distinguishing means for distinguishing a kind of the food in said heating chamber based on information of the smell detected by said smell sensor, said food distinguishing means having a predetermined heating pattern for specific kinds of food,

heat driving means for driving and controlling said heating means based on information of the kind of the food output from said food distinguishing means said driving means having predetermined heating programs corresponding to the specific kinds of food.

5,352,868

RESISTANCE FEEDBACK CONTROLLED POWER SUPPLY

Dennis J. Denen, Columbus; John J. Knittle, Westerville, and Albert E. Weller, III, Columbus, all of Ohio, assignors to Hemostatic Surgery Corporation, Georgetown, Ky.X

Filed May 1, 1992, Ser. No. 877,699
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—501 19 Claims

1. A power supply for supplying AC power to a surgical instrument having a resistively-heated heating element, the heating element having a resistance that varies with temperature, the power supply comprising:

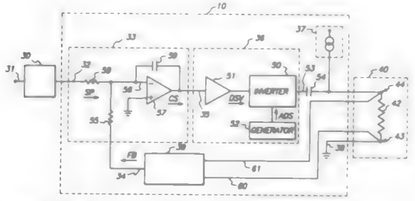
an AC voltage source for providing an AC voltage to the

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heating element, the AC voltage having a waveform with a cyclically varying instantaneous amplitude, the AC voltage responsive to a control signal and sufficient to heat the heating element to an operating temperature;

a DC source for simultaneously providing a predetermined DC signal to the heating element so that the AC voltage and predetermined DC signal produce a composite signal having both an AC voltage component and a DC signal component;

a feedback circuit adapted for receiving the composite signal from a location adjacent the heating element within the surgical instrument, the feedback circuit having means for



filtering the DC signal component from the composite signal, independently of the instantaneous amplitude of the AC voltage, to provide a DC resistance signal, the feedback circuit providing a feedback signal indicative of the instantaneous resistance of the heating element in response to the DC resistance signal;

a set point control for providing a set point control signal indicative of a desired operating temperature; and

a control circuit for providing the control signal in response to the feedback signal and the set point control signal, wherein the AC voltage source supplies an AC voltage to maintain the heating element substantially at the desired operating temperature.

5,352,869

HEATABLE TRANSPARENT PANEL STRUCTURE UTILIZING THERMAL PROBE HAVING RESILIENTLY BIASED TEMPERATURE SENSOR

Barry E. Barsky, Huntingdon Valley, Pa., assignor to Air-Shields, Inc., Hatboro, Pa.

Division of Ser. No. 847,787, Mar. 6, 1992, Pat. No. 5,285,054. This application Feb. 8, 1994, Ser. No. 192,977
Int. Cl.[5] A61G *11/00*; H05B *3/34*; G01K *1/14*
U.S. Cl. 219—543 **4 Claims**

1. An optically transparent, multi-panel assembly comprising:

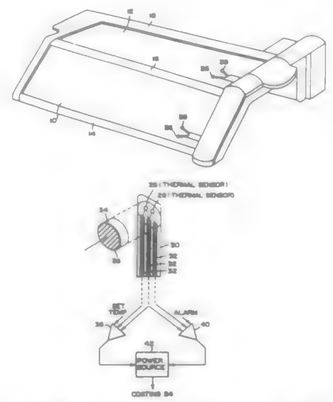
a first rigid, optically transparent panel;

a second rigid, optically transparent panel having an optically transparent, electrically conductive coating on a surface thereof and to which electrical power is supplied;

a strip of dielectric material having conductive traces embedded therein adapted for connection to a utilization circuit, said strip of dielectric material having a first surface bearing against said optically transparent, electrically conductive coating on said second rigid, optically transparent, panel;

sensing means electrically connected to said conductive traces embedded in said strip of dielectric material and disposed at a second surface of said strip of dielectric material opposite from said first surface of said strip of dielectric material for developing signals representative of the temperature of said second rigid, optically transparent, panel;

a resilient spacing member having a first end bearing against said sensing means and compressible along its length and having a length in its uncompressed state which urges said sensing means into proximity with said second rigid, optically transparent, panel when said resilient spacing member, said dielectric material and said sensing means are placed between said first and said second rigid, optically transparent, panels;



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wave field is formed substantially at right angles to a plane defined by said one side opening into said cavity and the magnetic field vector of the microwave field is directed substantially parallel to said plane.

5,352,874

APPARATUS FOR CHANGING COOKING CONTROL DATA OF AUTOMATIC COOKERS

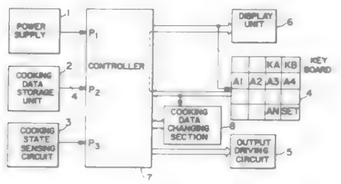
Chun S. Gong, Kyungsangnam-Do, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 21, 1992, Ser. No. 993,834

Claims priority, application Rep. of Korea, Dec. 21, 1991, 23803/1991

Int. Cl.[5] H05B *6/68*

U.S. Cl. 219—704 5 Claims



1. Apparatus for changing cooking data of an automatic cooker comprising:

a controller controlling said cooker in accordance with a cooking control program in order to carry out automatic cooking operation of said cooker;

a keyboard operatively connected to said controller for outputting key signals to said controller, said keyboard including a plurality of automatic cooking control keys and a pair of data up/down keys for changing cooking data;

a cooking data storage unit operatively connected to said controller for storing experimentally determined cooking data for several kinds of foods to be cooked by said cooker;

a cooking state sensing circuit operatively connected to said controller for sensing a cooking state and outputting a cooking state signal corresponding to the cooking state to said controller;

a display unit operatively connected to said controller for displaying, under the control of said controller, the cooking state as well as the selected cooking data;

an output driving circuit operatively connected to said controller for driving a heating device of said cooker under the control of said controller; and

a cooking data changing section operatively connected to said controller for changing the cooking data, which is selected by said controller, in response to data up/down key signal of said keyboard, including

a temporary storage unit for temporarily storing the cooking data selected by said controller and causing said controller to control the cooking operation of said cooker in accordance with the temporarily stored cooking data;

a data control unit for incrementing or decrementing the selected cooking data, being selected by said controller and stored in said temporary storage unit, in response to a data up/down key signal; and

a display control unit causing the incremented or decremented cooking data of said temporary storage to be displayed on said display unit.

5,352,875

TERMINAL FOR AN IC CARD

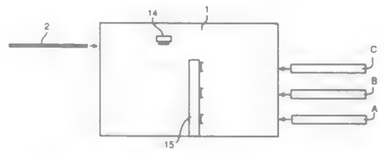
Yoshiharu Enomoto, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 15, 1992, Ser. No. 868,496

Claims priority, application Japan, Apr. 16, 1991, 3-083691

Int. Cl.[5] G06K *5/00*

U.S. Cl. 235—380 6 Claims



1. A terminal for an IC card, the terminal having a terminal body comprising

storage means for storing a monitor program;

IC connection means for electrical connection with an IC card; and

hierarchical modular memory connecting means for providing electrical connection with a plurality of memory cards, said hierarchical modular connection means including a first level application system connection means for providing electrical connection with a memory card storing a library program and electrical connection with a memory card storing a communication program, said hierarchical modular connection means further including a second level application program connection means for electrical connection with a memory card storing an application program.

5,352,876

METHOD AND APPARATUS FOR TRANSACTION SETTLEMENT

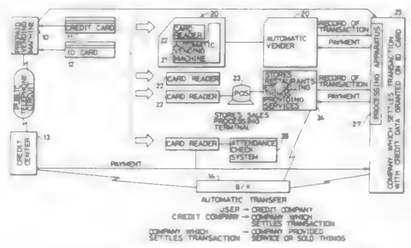
Masakatsu Watanabe, Kyoto, and Yoshiyuki Konno, Tokyo, both of Japan, assignors to Tokyo Coca-Cola Bottling Co., Ltd., Tokyo and Omron Corporation, Kyoto, both of Japan

Continuation of Ser. No. 644,506, Jan. 23, 1991, abandoned. This application May 5, 1993, Ser. No. 57,011

Claims priority, application Japan, Jan. 24, 1990, 2-014372; Oct. 27, 1990, 2-289613

Int. Cl.[5] G06F *7/08*

U.S. Cl. 235—381 17 Claims



1. A system for transaction settlement, said system comprising:

(A) card processing means for receiving a credit card and an ID card, and a telephone circuit for providing communication between said card processing means and a credit center, said card processing means including:

(a) reading means for reading information recorded on the credit card;

(b) determining means for determining whether a margin transaction is possible, said determining means being responsive to the information recorded on the credit card, said determining means also being responsive to information received from the credit center through said telephone circuit; and

(c) writing means for writing a prepaid amount on the ID card, said writing means being responsive to a determination made by said determining means that the margin transaction is possible; and

(B) transaction processing means including means for reading the ID card, subtracting means for subtracting a transaction amount from the prepaid amount on the ID card, and means for performing a transaction responsive to the reading of the ID card.

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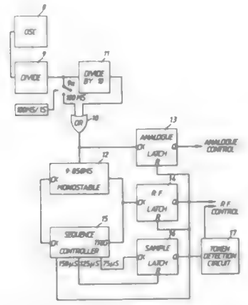
NON-CONTACT TRANSACTION SYSTEM WITH TOKEN PRESENCE DETECTION

Julian D. Morley, Hyde, United Kingdom, assignor to W. & T. Avery Limited, West Midlands, United Kingdom

Continuation of Ser. No. 501,765, Mar. 30, 1990, abandoned. This application Mar. 31, 1992, Ser. No. 860,720

Int. Cl.[5] G06K *7/08*

U.S. Cl. 235—439 9 Claims



1. A transaction system comprising a first body having stand-by and operative modes, said first body being arranged, in said operative mode, for communication inductively with a second body to effect a transaction, said first body including timing means, operable in said stand-by mode, for energizing circuitry of said first body at predetermined intervals each of a first duration of time, said circuitry including generator means for generating and transmitting radio frequency signals of a second duration less than said first duration, said circuitry also including detection means, said detection means being operable for a third duration of time, the third duration of time being coincident with but not greater than said second period of time, said detection means serving to detect the amplitude of the transmitted radio frequency signals and to cause said first body to switch from said stand-by to said operative mode if the detected amplitude is below (indicating the proximity of a second body) a threshold value whereby communication with said detected second body is enabled.

5,352,878

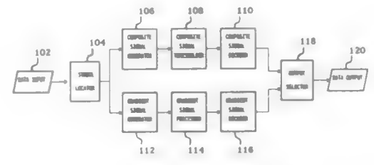
METHOD AND APPARATUS FOR DECODING BAR CODE SYMBOLS USING INDEPENDENT BAR AND SPACE ANALYSIS

Christopher E. Smith, Newtown, and Mihael Klancnik, Brookfield, both of Conn., assignors to United Parcel Service of America, Inc., Atlanta, Ga.

Filed Jan. 29, 1993, Ser. No. 11,458

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—462 16 Claims



1. A method for decoding a character of a bar code symbol, wherein said character comprises one or more spaces and one or more bars, comprising the steps of:

(a) scanning said symbol to determine the widths of said spaces and the widths of said bars;

(b) determining a space-width threshold in accordance with said widths of said spaces;

(c) determining a bar-width threshold in accordance with said widths of said bars, wherein said space-width threshold is different from said bar-width threshold;

(d) comparing each of said spaces to said space-width threshold;

(e) comparing each of said bars to said bar-width threshold; and

(f) decoding said character in accordance with said comparisons of steps (d) and (e).

5,352,879

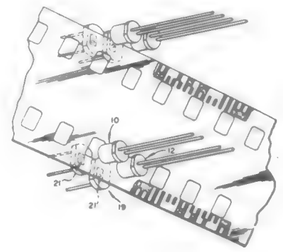
DX BAR CODE READER

James R. Milch, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 30, 1992, Ser. No. 876,311

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—466 9 Claims



1. A barcode reader comprising: first and second light sources; a photodetector device that generates an output signal proportional to the amount of light directed to the photodetector device from the first and second light sources; means for sampling the output signal of the photodetector device to generate digital data signals; and control means for selectively controlling the operation of the first and second light sources in synchronism with said sampling means to generate a stream of digital data signals alternately proportional to the amount of light from each light source.

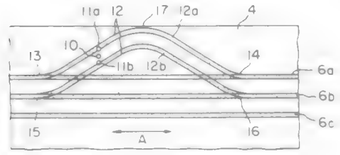
VOL 1167 ISS 1 OC 4 1994 UMI

5,352,880

OPTICAL CARD HAVING A MIRROR SECTION WITH A PAIR OF AUXILIARY GUIDE TRACKS

Koichi Yamazaki, Sakado, and Kazuo Noda, Yokohama, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Jun. 10, 1993, Ser. No. 74,778
Claims priority, application Japan, Jun. 24, 1992, 4-166105
Int. Cl.[5] G06K *19/06*
U.S. Cl. 235—494 **3 Claims**



1. An optical card wherein information is recorded on or reproduced from a prescribed region on a card surface in accordance with optical scanning along guide tracks provided in said card surface, and wherein said optical card is provided with a mirror section arranged adjacent to said prescribed region in the direction parallel to said direction of said optical scanning of said prescribed region, said optical card being characterized in that:

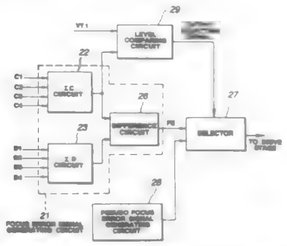
said mirror section is provided with at least one pair of curved auxiliary guide tracks that are connected to said guide tracks in said prescribed region.

5,352,881

FOCUS CONTROL DEVICE IN OPTICAL RECORDING AND REPRODUCING APPARATUS HAVING AN OPTICAL-BEAM-POSITION JUDGING DEVICE

Akira Matsueda, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1993, Ser. No. 54,256
Claims priority, application Japan, May 8, 1992, 4-116257; Jun. 5, 1992, 4-145752
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—201.5 **8 Claims**



1. A focus control device in an optical recording and reproducing apparatus, comprising:

optical detecting means having a plurality of optical detecting sections for detecting reflected light of an optical beam irradiated to an optical recording medium;

error-signal generating means for generating a focus error signal on the basis of an output from said optical detecting means;

focus regulating means for regulating a focusing state on a surface of said optical recording medium of said optical beam on the basis of said focus error signal;

pseudo-focus-error-signal generating means for generating a pseudo focus error signal of a predetermined level which brings back a focusing point of said optical beam to a control target position;

optical-beam-position judging means for judging whether or not the focusing point of said optical beam is spaced by a predetermined quantity from said control target position on the basis of outputs from optical detecting sections in said optical detecting means, said outputs from said optical detecting, sections in said optical detecting means being asymmetrical about said control target position; and

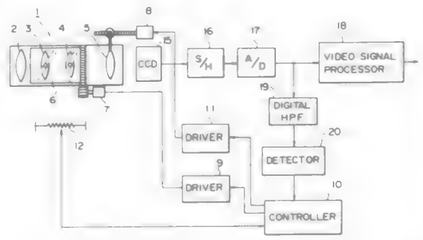
error-signal selecting means for selectively switching and outputting one of said focus error signal that is an output from said error-signal generating means and said pseudo focus error signal as an error signal supplied to said focus regulating means in accordance with the shifting quantity of the focusing point of said optical beam from said control target position, on the basis of an output from said optical-beam-position judging means.

5,352,882

FOCUS ADJUSTING DEVICE FOR ZOOM LENS ASSEMBLY

Masakazu Koyanagi, Chiba; Tatsuo Fujikawa, Saitama, and Hiroyuki Takahashi, Kanagawa, all of Japan, assignors to Sony Corporation, Japan

Filed Feb. 19, 1993, Ser. No. 19,901
Claims priority, application Japan, Feb. 25, 1992, 4-073473
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—201.7 **6 Claims**



1. A focus adjusting device for flange back adjustment of an inner focus lens assembly including a zoom lens, a focus lens, and a compensator lens, comprising:

zoom lens driving means for driving said zoom lens;

zoom lens position detecting means for detecting information on position of said zoom lens;

focus lens driving means for driving said focus lens;

focal condition detecting means for detecting a focal condition; and

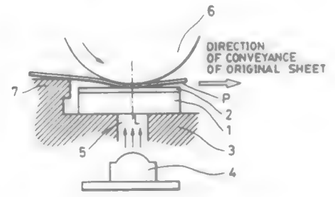
computing means, responsive to said zoom lens position detecting means and said focal condition detecting means and operatively connected with said zoom lens driving means and said focus lens driving means, for computing an optical end of said focus lens using (a) a predetermined ratio of the distance between opposite mechanical ends of said zoom lens to the distance between opposite optical ends of said zoom lens, and (b) a difference between the opposite mechanical ends of said zoom lens measured using said zoom lens position detecting means.

5,352,883

PHOTOELECTRIC CONVERTING DEVICE HAVING ORIGINAL CONVEYANCE GUIDE AND AN IMAGE PROCESSING APPARATUS INCORPORATING THE DEVICE

Masashi Kitani, Yokohama; Toyoki Matsushima, Atsugi; Tetsuya Shimada, Zama; Makoto Ogura, Isehara; Masayoshi Murata, Atsugi; Katsumi Komiyama, Isehara, and Tomokazu Dainobu, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 616,921, Nov. 21, 1990, Pat. No. 5,196,691. This application Jan. 7, 1993, Ser. No. 1,637
Claims priority, application Japan, Nov. 21, 1989, 1-302669; Nov. 21, 1989, 1-302670; Nov. 21, 1989, 1-302671
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **69 Claims**



1. An image processing apparatus comprising:

(a) a photoelectric converting device including:

a plurality of photoelectric converting elements disposed to confront an original sheet the image information of which is to be read;

a protection layer disposed on said photoelectric converting elements;

a light transmissive substrate on which said photoelectric converting elements are disposed; and

flexible guide means disposed on an original-sheet supply side of said light transmissive substrate, said guide means being disposed such that at least a portion of said guide means is positioned in contact with an edge surface of said light transmissive substrate without overlapping a top surface of said substrate;

(b) a light source for illuminating said original sheet;

(c) conveyance means for conveying said original sheet;

(d) communication means for transmitting or receiving an electric signal communicating image information;

(e) an output portion for recording an image on a document in accordance with an electric signal corresponding to image information;

(f) one of (i) recovering means for recovering unpreferable discharge of said output portion and (ii) cleaning means for cleaning said output portion; and

(g) a controller for controlling said photoelectric converting device, said light source, said conveyance means, said communication means, said output portion, and said one of said (i) recovering means and said (ii) cleaning means.

5,352,884

METHOD AND APPARATUS FOR PROVIDING OFFSET FOR LIGHT DETECTOR

Scott W. Petrick, Pewaukee, and Paul R. Granfors, Milwaukee, both of Wis., assignors to General Electric Corporation, Schenectady, N.Y.

Filed Apr. 14, 1993, Ser. No. 48,118
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **20 Claims**

1. A light imaging system comprising:

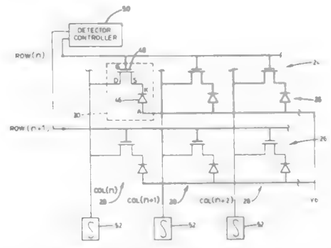
a plurality of row electrodes and column electrodes;

an array of rows and columns of photo detector elements, each said element including a photo diode having an anode and a cathode, and a transistor having first and second power electrodes and a control electrode for controlling current flow between said first and second power electrodes, said control electrode being connected to one of said row electrodes, said first power electrode being connected to one of said column electrodes, said second power electrode being connected to said cathode of said photo diode, and said anode of said photo diode being connected to a negative voltage $-V_b$;

means for charging said photo diodes by connecting said column electrodes to a voltage V_c and connecting said row electrodes to a voltage V_{on} which is positive relative to V_c;

means for exposing said array to photons after said charging means charges said photo diodes;

means for impeding said photo diodes from being recharged, while said exposing means exposes said array to photons and after said exposing means exposes said array to photons, said impeding means including said transistors and including means for connecting said row electrodes, prior to said array being exposed to photons but after said photo diodes are charged, to a voltage which is negative relative to V_c and negative relative to $-V_b$;



means for sequentially connecting the rows to the voltage V_{on}, for a predetermined period of time, after said exposing means exposes said array to photons and after said impeding means impedes said photo diodes from being recharged;

means for respectively measuring, at the column electrode for each photo diode in the row connected to V_{on} by said connecting means, the charge required to restore the photo diode to its voltage before it was exposed to photons and after it was charged by said charging means, for a period of time longer than the predetermined period of time so as to provide a settling period;

means for resetting the measuring means during a reset period after the settling period and before the next row is connected to V_{on}; and

means for providing, on a row other than the row being measured by said measuring means, a negative voltage transition, starting when or before the row being measured is connected to V_{on} and ending during the reset period, so as to provide an offset against charge retention by the transistors in the row being measured.

5,352,885

FREQUENCY CONVERTER FOR VARYING THE FREQUENCY OF A LOCAL SIGNAL OVER A WIDE BAND

Shoji Niki, Saitama, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed Feb. 24, 1993, Ser. No. 21,985
Claims priority, application Japan, Mar. 3, 1992, 4-45200
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 R **5 Claims**

1. A frequency converter comprising:

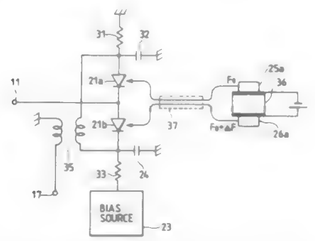
an electrical input terminal for receiving an input electrical signal having a frequency f_0;

photodetector means, connected to said electrical input

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terminal, for receiving said input electrical signal, said photodetector means having a nonlinear characteristic;

local light source means for simultaneously applying two optical signals having different frequencies F_0 and $F_0+\Delta F$ to said photodetector means; and



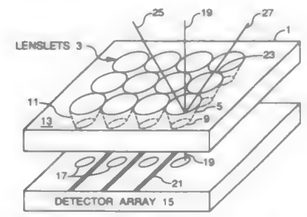
signal extracting means for electrically extracting an electrical intermediate frequency signal from said photodetector means, the electrical intermediate-frequency signal having a frequency which is the difference between the frequency f_0 of said input electrical signal and a frequency difference ΔF between said two optical signals.

5,352,886

MICRO NON-IMAGING LIGHT CONCENTRATORS FOR IMAGE SENSORS WITH A LENSLET ARRAY

Jonathan S. Kane, Wayland, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 30, 1993, Ser. No. 39,656
Int. Cl.[5] H01J *3/14*
U.S. Cl. 260—216 **6 Claims**



1. A light ray concentrating light image sensor device comprising:

(a) an array of light image detectors for detecting picture elements of a light image viewed by said image sensor device;

(b) an array of converging light transmissive channels having light reflective portions therein and upper portions and lower portions smaller than the upper portions, the lower portions thereof being aligned with the light image detectors; and

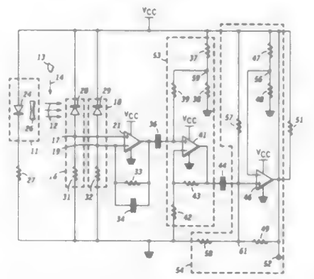
(c) a lenslet array, the lenslets thereof being aligned with said converging light transmissive channels.

5,352,887

CIRCUIT FOR DETECTING A DROPLET IN MOTION AND METHOD THEREFOR

Damon Morgan, and Horst Gempe, both of Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 936,466, Aug. 28, 1992, abandoned. This application Dec. 23, 1993, Ser. No. 171,990
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—222.1 **18 Claims**



1. A circuit for detecting a droplet in motion comprising:

a light source for emitting light;

a first photodetector receiving light directly emitted by said light source for generating a first output voltage and producing a change in said first output voltage as the droplet moves between said light source and said first photodetector;

a second photodetector receiving light directly emitted by said light source for generating a second output voltage and producing a change in said first output voltage as the droplet moves between said light source and said first photodetector;

a second photodetector receiving light directly emitted by said light source for generating a second output voltage and producing a change in said output voltage as the droplet moves between said light source and said second photodetector, said first and second photodetectors are serially aligned such that the substance in motion is sensed by said first photodetector first and said second photodetector second and said light source aligned for projecting a substantially equal light intensity on said first and second photodetectors; and

a first amplifier stage having a first input coupled to said first photodetector and a second input coupled to said second photodetector for producing an amplified single ended output signal corresponding to said changes in said first and second input voltages at an output thereof, said first and second photodetectors being coupled to said first amplifier stage to common mode noise for increasing sensitivity to the droplet.

5,352,888

METHOD AND APPARATUS FOR DETECTING AND UTILIZING FRAME FILL INFORMATION IN A SORTING MACHINE HAVING A BACKGROUND AND A COLOR SORTING BAND OF LIGHT

Joel P. Childress, Sugarland, Tex., assignor to ESM International, Inc., Houston, Tex.

Filed Apr. 26, 1993, Ser. No. 54,160
Int. Cl.[5] G01N *9/04*
U.S. Cl. 250—223 R **23 Claims**

1. A method of producing uniform amplitude signals for products of the same detected color in a product stream that passes through a color sorting machine regardless of the amount of respective frame fill occupied by such products, which comprises

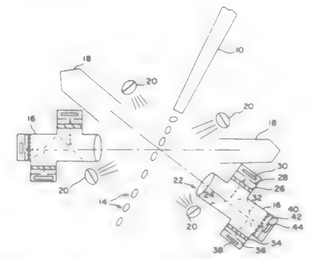
establishing a viewing frame through which light is reflected from the product stream,

establishing a background which contrasts with the product stream,

detecting the reflected light passing through the viewing frame at a plurality of pixel locations spanning the viewing frame on a line transverse to the axis of the reflected light through the viewing frame by using a detector at each pixel location,

each detector that detects background produces an output signal at a level below a predetermined trip line output value and

each detector that detects the presence of a product in the product stream produces an output signal above the predetermined trip line level,



combining the output of the detectors to produce a frame fill percentage output for each detected product that is a percentage of the number of pixel locations that detect the presence of the product to the total number of pixels spanning the viewing frame,

photodetecting for each product in a reflected color sorting band light passing through the viewing frame and producing a raw signal with an amplitude proportional to the total contrasting lightness of the product and background in the viewing frame, and

dividing the photodetected raw signal with the frame fill percentage output to produce a photodetected corrected signal so that the same lightness of photodetected product will produce the same amplitude of signal regardless of frame fill.

5,352,889

POSITIONING MECHANISM OF OPHTHALMOLOGIC APPARATUS

Masanao Fujieda, Toyohashi, and Noriji Kawai, Gamagori, both of Japan, assignors to Nidek Co., Ltd., Gamagori, Japan

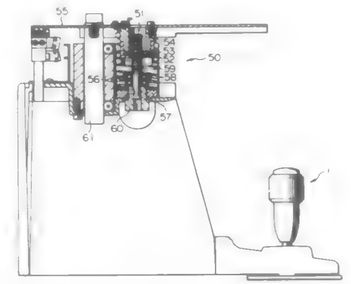
Filed Jan. 15, 1993, Ser. No. 76,745
Claims priority, application Japan, Jun. 30, 1992, 4-197519
Int. Cl.[5] G01D *5/34*
U.S. Cl. 250—229 **8 Claims**

1. A positioning mechanism of an ophthalmologic apparatus for adjusting a height of an optical system of said ophthalmologic apparatus relative to a subject eye, said positioning mechanism comprising:

an operation knob to be operated by an inspector;

a detection means for detecting an operation speed of said operation knob;

a driving source for vertically moving said optical system of said ophthalmologic apparatus; and



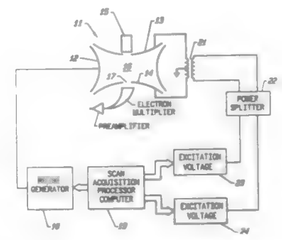
a driving source control means for non-linearly increasing the ratio of the driving speed of said driving source to the operation speed detected by said detection means.

5,352,890

QUADRUPOLE ION TRAP MASS SPECTROMETER HAVING TWO AXIAL MODULATION EXCITATION INPUT FREQUENCIES AND METHOD OF PARENT AND NEURAL LOSS SCANNING

Jodie V. Johnson, Alachua County, Fla.; Randall E. Pedder, Allegheny County, Pa.; Richard A. Yost, Alachua County, Fla., and Michael S. Story, Santa Clara County, Calif., assignors to University of Florida, Gainsville, Fla. and Finnigan Corporation, San Jose, Calif.

Continuation of Ser. No. 645,622, Jan. 25, 1991, Pat. No. 5,171,991. This application Dec. 14, 1992, Ser. No. 990,690
The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.
Int. Cl.[5] B01D *59/44*; H01J *49/00*
U.S. Cl. 250—282 **5 Claims**



1. A mass spectrometry method including the steps of:

a. establishing a trapping field capable of trapping parent ions and daughter ions within a trap region bounded by a set of electrodes;

b. applying a low power supplemental AC voltage signal to the electrodes to induce dissociation of a first trapped parent ion, wherein the low power supplemental AC voltage signal has a first frequency matching a resonant frequency of the first trapped parent ion;

c. applying a high power supplemental AC voltage signal to the electrodes to resonate a first daughter ion to a degree sufficient to enable detection of the first daughter ion, wherein the high power supplemental AC voltage signal has a second frequency matching a resonant frequency of the first daughter ion, wherein the high power supplemental AC voltage signal resonates the first daughter ion to a degree sufficient for detection by a detector comprising,

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or integrally mounted with at least one of the electrodes; and

d. detecting the first daughter ion.

5,352,891

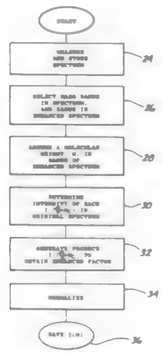
METHOD AND APPARATUS FOR ESTIMATING MOLECULAR MASS FROM ELECTROSPRAY SPECTRA

Curtis A. Mounig, and Jeffrey J. Hagen, both of Riverside, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Jul. 16, 1993, Ser. No. 92,845

Int. Cl.[5] H01J *49/00*

U.S. Cl. 250—282 **20 Claims**



1. A method for identifying the molecular weight of distinct polyatomic parent molecular species in a mass spectrometer comprising the steps of:

generating populations of multiply charged ions on said distinct polyatomic parent molecular species, the number of charges on said ions defining each of said ion's charge state number, said population of ions comprising a plurality of subpopulations, each of said subpopulations corresponding to an intensity peak in a mass-to-charge spectrum of said molecular species, said population including one of said subpopulations for at least one possible integral value of a charged state number;

analyzing subpopulations in said mass spectrometer to produce said mass-to-charge spectrum;

determining a mass-to-charge range to be used with said mass-to-charge spectrum;

determining a range of assumed masses to be used within an enhanced mass spectrum; and

generating for each assumed mass in said enhanced mass spectrum an intensity equal in magnitude to the product of all of said intensity peaks of said subpopulations of said assumed mass,

whereby determination of said molecular weight of said polyatomic parent molecule species is more readily discernible.

5,352,892

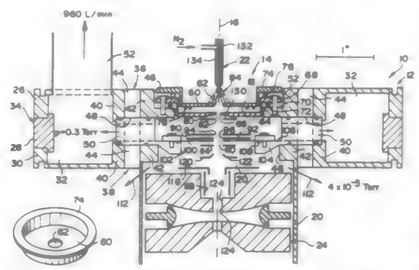
ATMOSPHERIC PRESSURE ION INTERFACE FOR A MASS ANALYZER

Alex Mordehai; Gerard Hopfgartner, both of Ithaca, and John D. Henion, Trumansburg, all of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation-in-part of Ser. No. 889,693, May 29, 1992, abandoned. This application Jan. 26, 1993, Ser. No. 9,063

Int. Cl.[5] B01D *59/44*; H01J *49/00*

U.S. Cl. 250—288 **38 Claims**



1. An atmospheric pressure ion sampling device, comprising:

a housing having a sampling inlet means;

means producing an interface vacuum region and an analyzer vacuum region within said housing;

means adjacent said housing for producing at atmospheric pressure charged particles including ions to be sampled;

liquid shield means interposed between said sampling inlet means and said means producing charged particles and having an aperture aligned with an orifice in said sampling inlet means;

means accelerating said charged particles and ions toward said shield means and transporting selected particles and ions through said aperture and said sampling inlet orifice into said interface vacuum region; and

means transporting said selected ions from said interface vacuum region to said analyzer vacuum region.

5,352,893

ISOTOPIC-RATIO PLASMA SOURCE MASS SPECTROMETER

Philip A. Freedman, Northwich, United Kingdom, assignor to Fisons plc, Ipswich, England

PCT No. PCT/GB92/00429, § 371 Date Jul. 22, 1993, § 102(e) Date Jul. 22, 1993, PCT Pub. No. WO92/16008, PCT Pub. Date Sep. 17, 1992

PCT Filed Mar. 11, 1992, Ser. No. 90,205

Claims priority, application United Kingdom, Mar. 11, 1991, 9105073

Int. Cl.[5] H01J *49/10, 49/32*

U.S. Cl. 250—289 **27 Claims**

1. An isotopic-ratio mass spectrometer comprising ion source means, an electrostatic ion-energy analyzer, a magnetic sector ion-momentum analyzer wherein ions are dispersed at a first potential according to their mass-to-charge ratios, and ion detecting means comprising two or more ion collectors for receiving ions of different mass-to-charge ratios, wherein:

a) said ion source means comprises means for establishing a plasma discharge in an inert gas by the action of an electromagnetic field created by a radio-frequency or microwave generator;

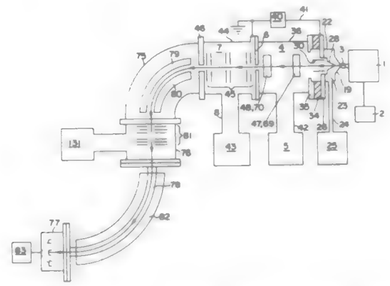
b) means are provided for introducing into said plasma a sample whose isotopic composition is to be determined;

c) an electrically conductive sampling member is provided adjacent to said plasma, said sampling member having an aperture communicating between said plasma and a first vacuum enclosure evacuated by first pumping means;

d) a skimmer member is provided downstream of said sampling member, said skimmer member separating said first vacuum enclosure from a second vacuum enclosure evacuated by second pumping means, and comprising an aperture communicating between said first and said second vacuum enclosures;

e) a differential pumping member is provided downstream of said skimmer member, said differential pumping member separating said second vacuum enclosure from a third vacuum enclosure evacuated by third pumping means, and comprising an aperture communicating between said second and said third vacuum enclosures;

f) an analyzer entrance member is provided downstream of said differential pumping member, said entrance member



separating said third vacuum enclosure from a vacuum envelope in which said electrostatic ion-energy analyzer, said ion-momentum analyzer, and said ion detecting means are disposed, said vacuum envelope being evacuated by fourth pumping means and said entrance member comprising an aperture communicating between said third vacuum enclosure and said vacuum envelope; and

g) means are provided for maintaining said sampling member at a second potential whereby ions generated in said plasma pass through each of said apertures and are accelerated to have a kinetic energy as they enter said ion-momentum analyzer, which energy is suitable for their mass analysis in said ion-momentum analyzer at said first potential.

5,352,894

ELECTRON SPECTROSCOPY ANALYZER AND A METHOD OF CORRECTING A SHIFT OF SPECTRAL LINE IN ELECTRON SPECTROSCOPY

Fumitoshi Yasuo, Ayama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 20, 1993, Ser. No. 123,047

Claims priority, application Japan, Oct. 19, 1992, 4-306536

Int. Cl.[5] H01J *37/26*

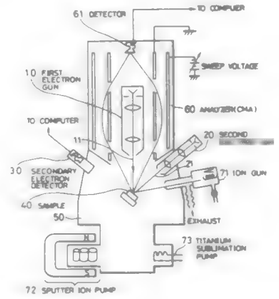
U.S. Cl. 250—305 **19 Claims**

1. An electron spectroscopy analyzer comprising:

a first beam source for causing a sample to emit analytical secondary electrons by applying a main beam to said sample;

spectrum detecting means for detecting an electron spectroscopy spectrum by analyzing an energy of said analytical secondary electrons;

a second beam source for applying to said sample a charging beam having an energy lower than an energy of said main beam; and



shift detecting means for detecting an amount of an energy shift of a reflected beam produced by said charging beam.

5,352,895

PYROELECTRIC DEVICE

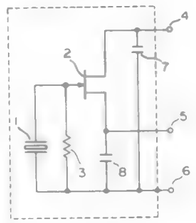
Masao Inoue, Tokyo, Japan, assignor to Nohmi Bosai Ltd., Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 18,530

Claims priority, application Japan, Feb. 19, 1992, 4-080536; May 8, 1992, 4-141925

Int. Cl.[5] G01J *5/10*

U.S. Cl. 250—338.3 **4 Claims**



1. A pyroelectric device for a fire detection, comprising:

a pyroelectric member made of polyvinylidene fluoride for detecting infrared radiation;

a transistor having a gate electrode connected to one terminal of said pyroelectric member;

a drain terminal connected to a drain electrode of said transistor;

a source terminal connected to a source electrode of said transistor;

a grounding terminal connected to another terminal of said pyroelectric member; and

a gate resistor connected between the terminals of said pyroelectric member, said gate resistor having a resistance of about 10 gigaohms.

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5,352,896

HIGH ENERGY RADIATION DETECTOR INCLUDING A RADIATION TO LIGHT CONVERTER HAVING BAFFLE PLATES EXTENDING TOWARD A LIGHT DETECTOR

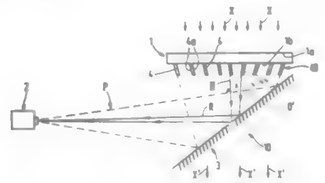
Kevin J. Brown, Crawley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 19, 1993, Ser. No. 19,529

Claims priority, application United Kingdom, Feb. 19, 1992, 9203466.9

Int. Cl.[5] G01T *1/20*

U.S. Cl. 250—368 **19 Claims**



1. Apparatus for detecting high energy radiation, comprising a radiation converter for receiving high energy radiation at a first major surface and for emitting light from a second major surface opposed to the first major surface, a detector for detecting light emitted by the converter, the detector being laterally displaced from the converter so as to be positioned away from the high energy radiation and a deflector for deflecting light emitted by the converter towards the detector, characterised in that a baffle is positioned adjacent the second major surface of the converter, the baffle comprising an array of baffle plates with light absorbing surfaces extending transversely of the second major surface of the converter in a direction generally along the optical path to the detector.

5,352,897

DEVICE FOR DETECTING X-RAYS

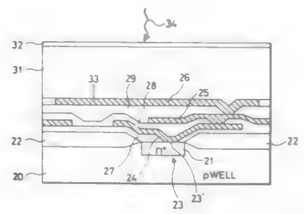
Yoshiaki Horikawa, Hachiouji; Yoshinori Iketaki, Oume; Shoichiro Mochimaru, and Koumei Nagai, both of Hachiouji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1993, Ser. No. 31,470

Claims priority, application Japan, Mar. 16, 1992, 4-058040; Apr. 30, 1992, 4-111620; Jun. 23, 1992, 4-164896; Jun. 23, 1992, 4-164897

Int. Cl.[5] G01T *1/24*

U.S. Cl. 250—370.06 **15 Claims**



1. An X-ray detector comprising: in order from an incidence side of radiation,

a surface electrode layer;

a photoelectric conversion layer; and

a semiconductor detector having an electrode connected to said photoelectric conversion layer, for detecting an electric charge produced in said photoelectric conversion layer,

wherein said photoelectric conversion layer and said surface electrode layer have thicknesses satisfying conditions

$$dA \geqq 0.183\lambda/KA$$

$$dB \leqq 0.183\lambda/KB$$

where dA is a thickness of the photoelectric conversion layer, dB is a thickness of the surface electrode layer, KA is an extinction coefficient of radiation of a wavelength λ in a substance constituting the photoelectric conversion layer, and KB is an extinction coefficient of radiation of the wavelength λ in a substance constituting the surface electrode layer.

5,352,898

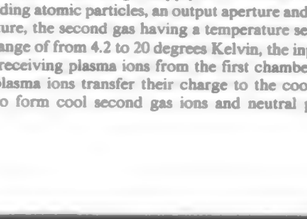
METHOD AND APPARATUS FOR PREPARING SLURRY SPECIMENS FOR CRYO-SCANNING ELECTRON MICROSCOPY

Sudhir Mehta, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 18, 1993, Ser. No. 64,290

Int. Cl.[5] H01J *37/18*

U.S. Cl. 250—443.1 **12 Claims**



1. A method for preparing a specimen comprising, at room temperature, one of a slurry and viscous liquid, for examination by a scanning electron microscope comprising the steps of:

placing a specimen of said slurry in a capsule and freezing said specimen;

removing said frozen specimen from said capsule and transferring said frozen specimen to a specimen holder without exposing said specimen to room temperature, atmospheric pressure and humidity conditions for a substantial period of time;

placing said specimen and said holder in a space exposed to a temperature not greater than about −160° C. and at a pressure less than atmospheric pressure; and

fracturing said specimen to expose an uncontaminated surface of said specimen which has not been exposed to said room temperature, atmospheric pressure and humidity conditions.

5,352,899

METHOD AND APPARATUS FOR FABRICATING A DEVICE/CIRCUIT PATTERN BY A CONVERGING ATOMIC BEAM

Konstantin S. Golovanivsky, Grenoble, France, and Erazm M. Omeljanovsky, New York, N.Y., assignors to Ruxam, Inc., New York, N.Y.

Filed Aug. 18, 1992, Ser. No. 931,697

Int. Cl.[5] H01J *37/30*

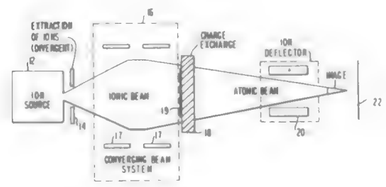
U.S. Cl. 250—492.21 **52 Claims**

1. Apparatus for producing a converging particle beam for lithographic processing of a target comprising:

a first chamber for receiving a first gas and igniting the first gas to form a plasma including ions;

a second chamber having a supply of a neutral second gas including atomic particles, an output aperture and an input aperture, the second gas having a temperature selected in the range of from 4.2 to 20 degrees Kelvin, the input aperture receiving plasma ions from the first chamber so that the plasma ions transfer their charge to the cool second gas to form cool second gas ions and neutral particles,

whereby the cool second gas ions form a cyrogenic ion beam at the output aperture and



a beam system for forming the cryogenic ion beam into a converging cryogenic ion beam for irradiating the target.

5,352,900

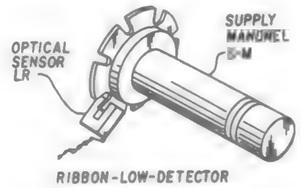
RIBBON TRACKING TECHNIQUE WITH LOW-RIBBON DETECTION

Thomas Dragon, Northville; John Hylan, Birmingham; Robert Reynolds, Milford; Paul McCarthy, Redford; Paul Merchant, Northville, and Kenneth Berkoben, Plymouth, all of Mich., assignors to Unisys Corporation, Blue Bell, Pa.

Division of Ser. No. 821,519, Jan. 3, 1992, Pat. No. 5,274,242, which is a division of Ser. No. 656,649, Feb. 19, 1991, Pat. No. 5,120,977, which is a division of Ser. No. 419,571, Oct. 10, 1989, Pat. No. 5,021,676. This application Aug. 16, 1993, Ser. No. 108,142

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—561 **14 Claims**



1. A "Low-Ribbon" detect means mounted in operative association with a prescribed ribbon-supply Spool means affixed on a prescribed Shaft means to be unspooled therefrom; said detect means comprising:

digital rotation-counter means disposed operatively on, or adjacent, said Shaft means and adapted to output N prescribed rotate-pulses, for every X° of shaft rotation; and

data-interpret means adapted to receive this pulse output and, to responsively indicate when a prescribed minimum-length of ribbon remains on said Spool means.

5,352,901

FORWARD AND BACK SCATTERING LOSS COMPENSATED SMOKE DETECTOR

Richard N. Poorman, Columbus, Ind., assignor to Cummins Electronics Company, Inc., Columbus, Ind.

Filed Apr. 26, 1993, Ser. No. 52,900

Int. Cl.[5] G01N *21/49*

U.S. Cl. 250—574 **17 Claims**

1. A device for detecting particulate levels in a fluid, said device comprising:

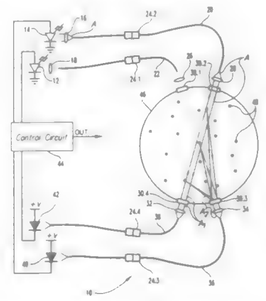
a first light source responsive to signals supplied to a first input to project a first light beam into the fluid;

a second light source responsive to signals supplied to a second input to project a second light beam into the fluid;

a first light detector positioned opposite said first light source to directly receive said first light beam, said first light detector producing a first detector signal corresponding to the intensity of light impinging thereon;

a second light detector positioned opposite said second light source to directly receive said second light beam, said second light detector producing a second detector signal corresponding to the intensity of light impinging thereon; and

a control circuit that supplies a power signal to said first input to activate said first light source, said control circuit monitoring and comparing said first detector signal and



said second detector signal to produce and store a first output signal and a second output signal, respectively, in accordance therewith, said control circuit also supplying said power signal to said second input to activate said second light source, said control circuit monitoring and comparing said first and second detector signals to produce a third output signal and a fourth output signal, respectively, in accordance therewith, and wherein said first, second, third and fourth output signals are combined to produce a ratiometric value indicative of particulate levels in the fluid.

5,352,902

METHOD FOR CONTROLLING PLASMA SURFACE-TREATMENTS WITH A PLURALITY OF PHOTODETECTORS AND OPTICAL FILTERS

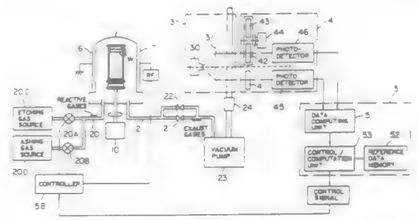
Kazutsugu Aoki, Kanagawa, Japan, assignor to Tokyo Electron Kabushiki Kaisha, Tokyo and Tokyo Electron Tohoku Kabushiki Kaisha, Esashi, both of Japan

Filed Jul. 2, 1993, Ser. No. 84,984

Claims priority, application Japan, Jul. 6, 1992, 3-200125

Int. Cl.[5] G01N *15/06*

U.S. Cl. 250—575 **15 Claims**



1. A method for controlling a plurality of kinds of plasma surface-treatments in which a plurality of kinds of surface-treatments are continuously conducted on objects to be treated in a reaction vessel with plasma discharges, said method comprising the steps of:

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optically detecting, in a first one of the surface-treatments, a concentration of a produced gas generated in the first surface-treatment, which is contained in exhaust discharged from the reaction vessel;

comparing data of the detected concentration of the produced gas with preset reference data of the first surface-treatment to control the first surface-treatment;

optically detecting, in a second one of the surface-treatments, a concentration of a produced gas generated in the second surface-treatment, which is contained in exhaust discharged from the reaction vessel; and

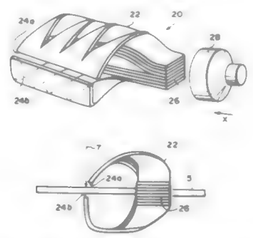
comparing data of the detected concentration of the produced gas with preset reference data of the second surface-treatment to control the second surface-treatment.

5,352,903

RADIATION IMAGE READ-OUT APPARATUS

Katsuhiro Kohda, and Shigeru Saotome, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 10, 1994, Ser. No. 208,380
Claims priority, application Japan, Mar. 11, 1993, 5-050697
Int. Cl.[5] G01N *23/04*
U.S. Cl. 250—586 5 Claims



1. A radiation image read-out apparatus, wherein a stimulable phosphor sheet, on which a radiation image has been stored, is scanned with stimulating rays, which cause the stimulable phosphor sheet to emit light in proportion to the amount of energy stored thereon during its exposure to radiation, the radiation image read-out apparatus comprising:

i) a single light guide member constituted of a light guiding material and comprising;

a) two input end faces for collecting the light, which is emitted along the scanning line of the stimulating rays and from two surfaces of said stimulable phosphor sheet, and

b) output end faces for radiating out the light, which has entered into said light guide member from the two input end faces, and

ii) a single photodetector, which is located in close contact with the output end faces and photoelectrically detects the light having been radiated out of said light guide member,

wherein the input end faces of said light guide member comprise a first input end face for collecting the light, which is emitted from the front surface of said stimulable phosphor sheet, and a second input end face for collecting the light, which is emitted from the back surface of said stimulable phosphor sheet, and

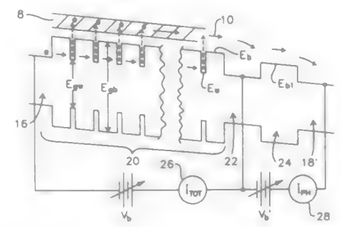
the first input end face and the second input end face of said light guide member stand facing the same scanning line.

5,352,904

MULTIPLE QUANTUM WELL SUPERLATTICE INFRARED DETECTOR WITH LOW DARK CURRENT AND HIGH QUANTUM EFFICIENCY

Cheng P. Wen, Mission Viejo, and Chan-Shin Wu, Torrance, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 457,613, Dec. 27, 1989, Pat. No. 5,077,593. This application Nov. 21, 1991, Ser. No. 792,502
The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.
Int. Cl.[5] H01L *27/14, 31/00*
U.S. Cl. 257—21 15 Claims



1. A multiple quantum well (MQW) radiation detector, comprising:

an MQW superlattice with alternating quantum well and barrier layers,

first and second contact layers on opposite sides of said MQW superlattice for applying a bias voltage across said superlattice, said first contact layer being sufficiently thin to avoid large scale absorption of photoexcited charge carriers flowing from the superlattice under the influence of an applied bias voltage across said contact layers, and

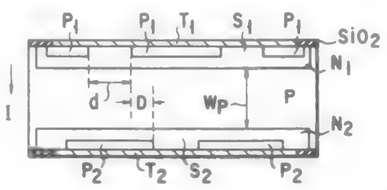
a tunneling current blocking layer on the opposite side of said first contact layer from said superlattice, said blocking layer having a thickness great enough to substantially block the flow of tunneling current from said superlattice, and a barrier energy height sufficiently less than that of said superlattice barrier layers to enable a substantial flow of said photoexcited charge carriers across said blocking layer.

5,352,905

SEMICONDUCTOR SURGE SUPPRESSOR

Koichi Ohta, Saitama, Japan, assignor to Shindengen Electric Manufacturing Co., Ltd., Tokyo, Japan

Filed Sep. 17, 1992, Ser. No. 946,092
Claims priority, application Japan, Nov. 27, 1991, 3-335859
Int. Cl.[5] H01F *29/08, 29/10*
U.S. Cl. 257—38 16 Claims



1. A two-terminal semiconductor surge suppressor comprising:

a semiconductor substrate of a first conductivity type having first and second surface portions opposed to each other;

a first semiconductor layer of a second conductivity type in the first surface portion;

a second semiconductor layer of the second conductivity type in the second surface portion;

a third semiconductor layer of the first conductivity type, in the first semiconductor layer, defining a plurality of first exposed regions of the first semiconductor layer;

a fourth semiconductor layer of the first conductivity type, in the second semiconductor layer, defining a plurality of second exposed regions of the second semiconductor layer, the plurality of the first exposed regions being opposed to the fourth semiconductor layer, and the plurality of second exposed regions being opposed to the third semiconductor layer;

a first electrode over the third semiconductor layer and the plurality of first exposed regions; and

a second electrode over the fourth semiconductor layer and the plurality of second exposed regions,

wherein a distance D between each of the plurality of first exposed regions and one of the plurality of second exposed regions adjacent thereto, a dimension d of each of the plurality of the first and second exposed regions, and a distance Wp between the first and second semiconductor layers satisfy relationships of

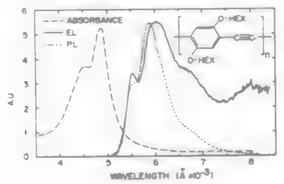
$Wp/2 \leqq D \leqq 2Wp$ and $Wp \leqq d \leqq 4Wp$.

5,352,906

POLY (P-PHENYLENENEACETYLENE) LIGHT-EMITTING DIODES

Joseph Shinar; Leland S. Swanson; Feng Lu; Yiwei Ding; Thomas J. Barton, all of Ames, Iowa, and Zeev V. Vardeny, Salt Lake City, Utah, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jan. 29, 1993, Ser. No. 11,328
Int. Cl.[5] H01L *29/28*
U.S. Cl. 257—40 20 Claims



1. A light-emitting diode comprising:

(a) an electroluminescent acetylene-based polymer layer, having first and second surfaces;

(b) a base electrode layer adjacent to the first surface of the electroluminescent acetylene-based polymer layer;

(c) a second electrode adjacent to the second surface of the electroluminescent acetylene-based polymer layer; and

(d) means for providing an electrical connection between the base electrode layer and the second electrode; wherein:

(i) the electroluminescent acetylene-based polymer layer comprises a poly(p-phenyleneacetylene) polymer of the formula $-[-C{\equiv}C-Ar-C{\equiv}C-Ar-]_n-$, having a number average molecular weight of at least about 2,000, wherein Ar is an arylene group and $n \geqq 5$;

(ii) the second electrode comprises a layer of a material coated on a substram, wherein the material is capable of injecting holes into the electroluminescent polymer; and

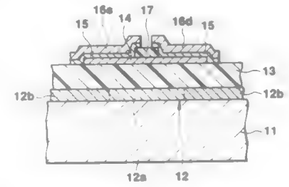
(iii) the layer of hole-injecting material is a layer of an oxide of a metal selected from the group consisting of a Group IIIA metal, a Group IVA metal, and mixtures thereof.

5,352,907

THIN-FILM TRANSISTOR

Kunihiro Matsuda, Sagamihara; Hiromitsu Ishii, Tokorozawa, and Naohiro Konya, Hino, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1992, Ser. No. 856,509
Claims priority, application Japan, Mar. 29, 1991, 3-088992; Mar. 29, 1991, 3-088993; Mar. 29, 1991, 3-088994; Mar. 29, 1991, 3-091724; Jun. 27, 1991, 3-181624
Int. Cl.[5] H01L *27/01, 27/13, 29/78*
U.S. Cl. 257—59 24 Claims



1. A thin-film transistor comprising:

an insulating substrate;

a gate electrode formed on said insulating substrate;

a gate insulating film formed on said gate electrode;

a semiconductor film formed on said gate insulating film facing said gate electrode through the gate insulating film;

ohmic contact layers including n-type semiconductor films doped with an impurity, electrically insulated from each other on said semiconductor film, and electrically connected to said semiconductor film; and

source and drain electrodes arranged above said semiconductor film with a predetermined gap to form a channel portion, and electrically connected to said semiconductor film through said ohmic contact layers, and wherein

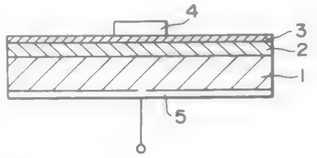
at least one of said gate electrode, said ohmic contact layers, and said source and drain electrodes is formed of a conductive film which extends substantially over an entire element region of the thin-film transistor and which is entirely anodized except a predetermined pattern having a predetermined shape forming the at least one of said gate electrode, said ohmic contact layers, and said source and drain electrodes, so as to form a continuous oxide film by a chemical reaction, the continuous oxide film existing without being removed.

5,352,908

DIAMOND SCHOTTKY DIODE WITH OXYGEN

Koji Kobashi; Koichi Miyata, and Kozo Nishimura, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Continuation of Ser. No. 858,494, Mar. 27, 1992, abandoned.
This application Nov. 3, 1993, Ser. No. 145,307
Claims priority, application Japan, Mar. 29, 1991, 3-066482
Int. Cl.[5] H01L *29/48*
U.S. Cl. 257—73 5 Claims



1. A diamond Schottky diode formed by a process comprising the steps of:

depositing a semiconducting diamond layer on a substrate;

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depositing an insulating diamond layer on the semiconducting diamond layer using a mixture of gases which include at least carbon atoms, hydrogen atoms, and oxygen atoms as constituent atoms, and the oxygen atom concentration is sufficiently high to ensure that said insulating diamond layer is more highly crystalline and has lowered lattice defects than an insulating diamond layer which is grown without oxygen;

depositing an electrode on the insulating diamond layer.

5,352,909

FIELD EFFECT TRANSISTOR AND METHOD FOR MANUFACTURING THE SAME

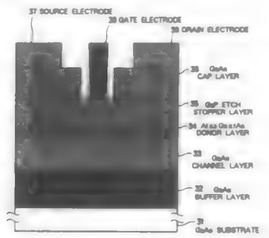
Yasuko Hori, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 14, 1992, Ser. No. 990,343

Claims priority, application Japan, Dec. 19, 1991, 3-335393; Jan. 31, 1992, 4-16060

Int. Cl.[5] H01L *29/161, 21/265*

U.S. Cl. 257—76 **18 Claims**



1. A field-effect transistor comprising: a substrate; a semiconductor active layer carried by said substrate; an etch stopper layer composed of gallium phosphide and a cap layer consecutively formed on said active layer, said cap layer having a recess formed by etching for exposing a portion of said etch stopper layer; a gate electrode formed on the bottom of the recess; and a source and a drain electrodes disposed on said cap layer and adjacent to the gate electrode.

5,352,910

SEMICONDUCTOR DEVICE WITH A BUFFER STRUCTURE

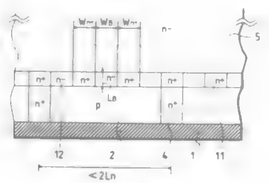
Kimihiro Murasoka, Kanagawa, and Takashige Tamamushi, Tokyo, both of Japan, assignors to Tokyo Denki Seizo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1993, Ser. No. 42,152

Claims priority, application Japan, Apr. 7, 1992, 4-114140; May 11, 1992, 4-144887

Int. Cl.[5] H01L *29/74*

U.S. Cl. 257—148 **30 Claims**



1. A semiconductor device which has an anode region, a cathode region, a gate region and a static induction buffer structure, wherein a buffer layer is provided adjacent to said anode region, said buffer layer includes high and low impurity regions, said low impurity regions are each essentially depleted by a diffusion potential between it and the corresponding one of said high impurity concentration regions, and said high impurity concentration regions are shorted to said anode region at a pitch smaller than 2Ln, where Ln is the diffusion length of electrons.

5,352,911

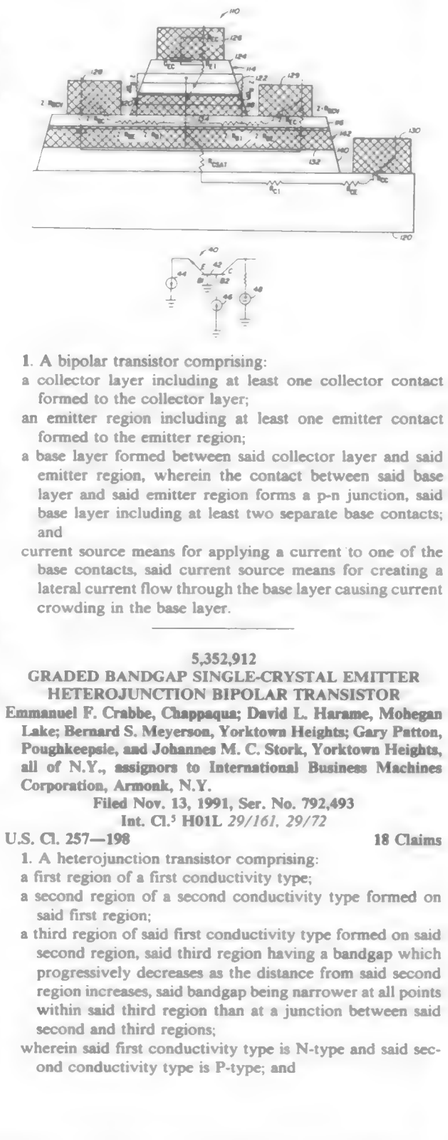
DUAL BASE HBT

Peter C. Grossman, Manhattan Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Oct. 28, 1991, Ser. No. 783,303

Int. Cl.[5] H01L *29/161, 29/205, 29/72*

U.S. Cl. 257—198 **7 Claims**



1. A bipolar transistor comprising:

a collector layer including at least one collector contact formed to the collector layer;

an emitter region including at least one emitter contact formed to the emitter region;

a base layer formed between said collector layer and said emitter region, wherein the contact between said base layer and said emitter region forms a p-n junction, said base layer including at least two separate base contacts; and

current source means for applying a current to one of the base contacts, said current source means for creating a lateral current flow through the base layer causing current crowding in the base layer.

5,352,912

GRADED BANDGAP SINGLE-CRYSTAL EMITTER HETEROJUNCTION BIPOLAR TRANSISTOR

Emmanuel F. Crabbe, Chappaqua; David L. Harame, Mohegan Lake; Bernard S. Meyerson, Yorktown Heights; Gary Patton, Poughkeepsie, and Johannes M. C. Stork, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1991, Ser. No. 792,493

Int. Cl.[5] H01L *29/161, 29/72*

U.S. Cl. 257—198 **18 Claims**

1. A heterojunction transistor comprising:

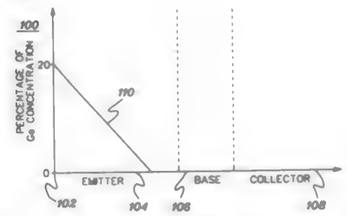
a first region of a first conductivity type;

a second region of a second conductivity type formed on said first region;

a third region of said first conductivity type formed on said second region, said third region having a bandgap which progressively decreases as the distance from said second region increases, said bandgap being narrower at all points within said third region than at a junction between said second and third regions;

wherein said first conductivity type is N-type and said second conductivity type is P-type; and

wherein said first region is a collector region, said second region is a base region and said third region is an emitter



region and wherein said emitter region contains a field-free region of silicon remote from a junction between said second and third regions.

5,352,913

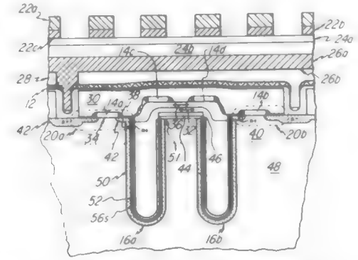
DYNAMIC MEMORY STORAGE CAPACITOR HAVING REDUCED GATED DIODE LEAKAGE

Gishi Chung, Garland; William R. McKee, and Clarence W. Teng, both of Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 963,794, Oct. 20, 1992, abandoned, which is a division of Ser. No. 622,465, Dec. 5, 1990, Pat. No. 5,202,279. This application Mar. 2, 1994, Ser. No. 204,909

Int. Cl.[5] H01L *29/68, 29/92*

U.S. Cl. 257—301 **3 Claims**



1. A dynamic memory storage capacitor formed in a face of a semiconductor body, comprising:

a trench etched into the face of the semiconductor body, said trench having a semiconductor trench wall;

a layer of polysilicon on and directly touching said semiconductor trench wall;

a storage node in the face of the semiconductor body surrounding said trench wall in contact with said polysilicon;

a storage dielectric layer on top of said layer of polysilicon on said trench wall; and

a field plate extending down into said trench.

5,352,914

FIELD-EFFECT TRANSISTOR WITH STRUCTURE FOR SUPPRESSING HOT-ELECTRON EFFECTS, AND METHOD OF FABRICATING THE TRANSISTOR

Joseph E. Farb, Riverside, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 3, 1992, Ser. No. 923,675

Int. Cl.[5] H01L *29/78*

U.S. Cl. 257—345 **10 Claims**

1. A field-effect transistor, comprising:

a semiconductor substrate of a first conductivity type;

a channel region having a surface portion;

a source and a drain formed in the substrate on opposite sides of the channel region respectively, said source and said drain being of a second conductivity type;

gate means formed over the channel region; and

carrier channeling means for urging charge carriers to flow between the source and the drain only through said surface portion of the channel region, wherein said carrier channeling means comprises dopant strata formed between said drain and said substrate for blocking flow of drain current, said dopant strata comprises:

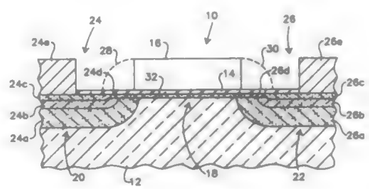
a first doped stratum of said second conductivity type located between the drain and the substrate which has a lower dopant concentration than the drain; and

a second doped stratum of said first conductivity type located to completely separate said drain from said first doped stratum, said first doped stratum and said second doped stratum forming two reverse biased diode junctions, wherein the gate means comprises:

a gate oxide layer formed over the channel region; and

a polysilicon gate formed over the gate oxide layer, the polysilicon gate including:

a central portion of the first conductivity type, and



first and second lateral portions of the second conductivity type which are adjacent to said central portion, said first lateral portion being spaced from said source and said second lateral portion being spaced from said drain; and wherein

the carrier channeling means further comprises:

a dopant of the second conductivity type incorporated into said surface portion of said channel region and extending laterally substantially under said polysilicon gate for adjusting the threshold voltage of said channel region substantially under said central portion of said polysilicon gate to a first predetermined value for enhancement mode operation and for adjusting the threshold voltage of said channel region substantially under said first and second lateral portions of said polysilicon gate to a second predetermined value for depletion mode operation, wherein said channel region under said first and second lateral portions is constantly electrically conductive for urging charge carriers to flow between said surface portion of said channel region and said drain.

5,352,915

SEMICONDUCTOR COMPONENT HAVING TWO INTEGRATED INSULATED GATE FIELD EFFECT DEVICES

Keith M. Hutchings, Groombridge; Andrew L. Goodyear, Redhill, and Paul A. Gough, Smallfield, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 9, 1993, Ser. No. 103,943

Claims priority, application United Kingdom, Aug. 11, 1992, 9216953

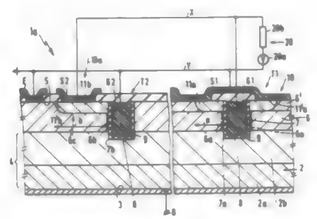
Int. Cl.[5] H01L *29/10, 29/78*

U.S. Cl. 257—361 **12 Claims**

1. A semiconductor component comprising first and second insulated gate field effect devices formed within the same semiconductor body, the first and second insulated gate field effect devices having a common first main electrode and means for providing a resistive connection between a second main electrode of the second insulated gate field effect device and the insulated gate of the first insulated gate field effect device,

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the second insulated gate field effect device comprising means for being susceptible than the first insulated gate field effect device to parasitic bipolar transistor action for causing, when the first and second insulated gate field effect devices are turned off and a voltage exceeding a critical voltage is applied to the common first main electrode, the parasitic bipolar transistor within the second insulated gate field effect device to



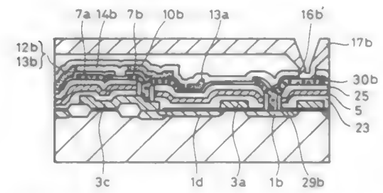
turn on producing a current for causing, by virtue of the resistive connection between the second main electrode of the second insulated gate field effect device and the insulated gate of the first insulated gate field effect device, the voltage at the insulated gate of the first insulated gate field effect device to alter to cause the first insulated gate field effect device to turn on.

5,352,916

FULLY CMOS-TYPE SRAM DEVICE WITH GROUNDING WIRE HAVING CONTACT HOLES

Junji Kiyono, and Yasushi Yamazaki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 28, 1992, Ser. No. 936,336
Claims priority, application Japan, Aug. 30, 1991, 244856
Int. Cl.[5] H01L *27/04*
U.S. Cl. 257—393 **2 Claims**



1. A fully CMOS-type static random access memory device comprising;

MOS transistors of a first conductivity type constituting driver transistors of a flip-flop type memory cell, formed on a main surface of a semiconductor substrate;

MOS thin film transistors of a second conductivity type constituting load transistors of said flip-flop memory cell, formed on the main surface of said semiconductor substrate;

a conductive thin film extending between said MOS transistors and said MOS thin film transistors, said conductive film being connected with a fixed potential power source and having holes opened in its contact hole portions for connecting said MOS transistors with said MOS thin film transistor; and

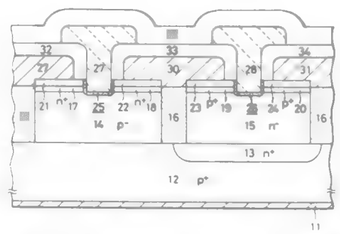
transfer MOS transistors of said first conductivity type having sources connected with drains of said MOS transistors, drains connected with bit lines through drawing electrodes, and a common gate connected to a word line, formed on the main surface of said semiconductor substrate, wherein said conductive thin film extends on said transfer MOS transistors and has holes in its contact hole portions for connecting drains of said transfer MOS transistors and said drawing electrodes.

5,352,917

ELECTRONIC DEVICE PROVIDED WITH METAL FLUORIDE FILM

Tadahiro Ohmi, 1-17-301, Komegakubo 2-chome, Aoba-ku, Sendai-shi, Miyagi-ken 980, Japan

PCT No. PCT/JP91/00902, § 371 Date Jan. 4, 1993, § 102(e) Date Jan. 4, 1993, PCT Pub. No. WO92/01310, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 4, 1991, Ser. No. 966,052
Claims priority, application Japan, Jul. 4, 1990, 2-177039
Int. Cl.[5] H01B *12/00;* **H01L** *39/12, 39/22;* **C04B** *35/02*
U.S. Cl. 257—410 **10 Claims**



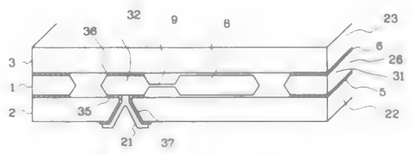
1. A semiconductor device comprising a metal fluoride film in at least part of an insulating film.

5,352,918

CAPACITATIVE MICRO-SENSOR WITH A LOW STRAY CAPACITY AND MANUFACTURING METHOD

Isabelle Thomas; Pierre O. Lefort, and Christophe Legoux, all of Valence, France, assignors to Sextant Avionique, Cedex, France

Filed Feb. 19, 1993, Ser. No. 20,077
Claims priority, application France, Feb. 20, 1992, 92 02191
Int. Cl.[5] H01L *29/84, 29/96*
U.S. Cl. 257—417 **5 Claims**



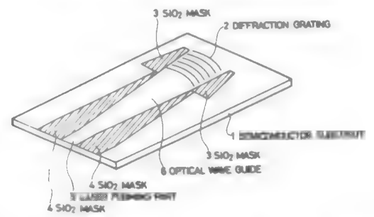
1. A capacitive micro-sensor including a sandwich of three silicon plates (1,2,3), each surface of the frame region (31) of the central plate being assembled to the opposing surface of each external plate through a thin layer forming an insulating stripe (5,6), at least one of the external plates forming a first electrode (22,23), and at least one central portion of said central plate forming a variable capacity with at least one of said external plates, wherein the frame region of said central plate is electrically disconnected from said central portion, first contact means (26) being coupled to the frame portion, and second contact means (21) being coupled to said central portion and forming a second electrode of said variable capacity.

5,352,919

OPTICAL INTEGRATED SEMICONDUCTOR DEVICE

Shinji Takano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 8, 1993, Ser. No. 148,367
Claims priority, application Japan, Nov. 13, 1992, 4-303432
Int. Cl.[5] H01L *31/12, 27/14*
U.S. Cl. 257—431 **4 Claims**



1. An optical integrated semiconductor device comprising:

a semiconductor substrate;

a diffraction grating formed on said semiconductor substrate;

an optical waveguide layer deposited on said semiconductor substrate; and

at least one of a light-emitting element and a light-detecting element formed on said semiconductor substrate;

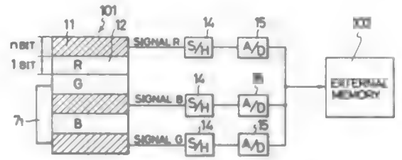
said optical waveguide layer having a thickness and a refractive index in a region where said diffraction grating is formed on said semiconductor substrate, at least one of said thickness and said refractive index having a value which varies along an optical path in said diffraction grating formed on said semiconductor substrate.

5,352,920

PHOTOELECTRIC CONVERTER WITH LIGHT SHIELDING SECTIONS

Masakazu Morishita, Atsugi, and Shin Kikuchi, Isehara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 860,121, Mar. 31, 1992, Pat. No. 5,245,203, which is a continuation of Ser. No. 711,389, Jun. 6, 1991, abandoned, which is a continuation of Ser. No. 600,242, Oct. 22, 1990, abandoned, which is a continuation of Ser. No. 363,058, Jun. 6, 1989, abandoned. This application Apr. 26, 1993, Ser. No. 51,785
Claims priority, application Japan, Jun. 6, 1988, 63-138871; Jul. 27, 1988, 63-185539; Jun. 2, 1989, 1-139264
Int. Cl.[5] H01L *27/14*
U.S. Cl. 257—435 **15 Claims**



1. An image processing apparatus comprising:

a plurality of photoreceiving sections, each of which includes a plurality of photoreceiving elements arranged in a line;

light shielding sections provided along said photoreceiving sections for deriving signals from the photoreceiving sections;

a signal processing section for processing the signal derived from each said photoreceiving section; and

a memory section for storing the signal processed by each said signal processing section;

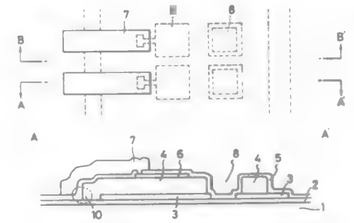
wherein at least two of said photoreceiving sections arranged in the line are adjacent to each other, and said light shielding sections relating to said photoreceiving sections are arranged on sides opposite to a side at which said photoreceiving sections are adjacent each other.

5,352,921

PHOTOELECTRIC CONVERSION DEVICE AND IMAGE SENSOR

Mitsufumi Codama, and Ichiro Takayama, both of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 853,394, Mar. 17, 1992, abandoned. This application Sep. 14, 1993, Ser. No. 120,322
Claims priority, application Japan, Mar. 18, 1991, 3-080801
Int. Cl.[5] H01L *27/14, 31/00*
U.S. Cl. 257—448 **13 Claims**



1. A photoelectric conversion device comprising:

an insulator;

a first electrode comprising a metal and provided on said insulator;

a photoelectric conversion semiconductor layer provided on said first electrode, said semiconductor layer having an upper surface and a lower surface;

a second electrode formed on said semiconductor layer, said second electrode comprising (a) a transparent conductive layer in direct contact with a first portion of the upper surface of said semiconductor layer for constituting a photoelectric conversion region, and (b) a conductive lead extending over a second portion of the upper surface of said semiconductor layer and electrically connected to said transparent conductive layer; and

an insulating film provided at least between said second portion of the upper surface of said photoelectric conversion semiconductor layer and said conductive lead where said conductive lead is connected to said transparent conductive layer at a contact portion and where the contact portion is substantially smaller in size than said second upper portion of the upper surface of the semiconductor layer and where said insulating film is in direct contact with the second portion of the upper surface of the semiconductor layer.

5,352,922

WAND READERS

Edward Barkan, South Setauket; David P. Goren, Ronkonkoma; Joseph Katz, Stony Brook; Yajun Li, Holtsville; Jerome Swartz, Old Field, and Thomas Mazz, Huntington Station, all of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Division of Ser. No. 735,573, Jul. 25, 1991, Pat. No. 5,278,397. This application Aug. 19, 1993, Ser. No. 109,021
Int. Cl.[5] H01L *31/06*
U.S. Cl. 257—459 **4 Claims**

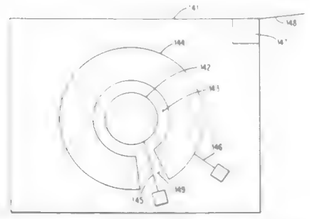
1. A multi-channel photodetector comprising:

a first active optical sensing area on a substrate;

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a second active optical sensing area formed on said substrate such that said second optical sensing area is located around said first optical sensing area;

a first inactive area separating and electrically isolating said first and second active optical sensing areas; and



a second inactive area in contact with said first inactive area and separating and electrically isolating portions of said second optical sensing area from each other.

5,352,923

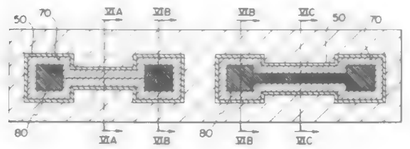
TRENCH RESISTORS FOR INTEGRATED CIRCUITS

John M. Boyd, Woodlawn; Joseph P. Ellul, and Sing P. Tay, both of Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Division of Ser. No. 37,048, Mar. 25, 1993, Pat. No. 5,316,978. This application Aug. 12, 1993, Ser. No. 105,240

Int. Cl.[5] H01L *27/02*

U.S. Cl. 257—536 **13 Claims**



1. An integrated circuit having a plurality of resistors of different resistance values,

each resistor comprising a trench defined in a substrate of the integrated circuit, the trench having steep sidewalls and a bottom, lined with a conformal layer of a dielectric material and the trench being shaped to provide first and second contact portions having a specific lateral dimension, and a resistive portion extending lengthwise therebetween having a relatively narrow lateral dimension, each portion of the trench being filled with conductive material;

said conductive material filling each portion of the trench comprising a semiconductor material having a concentration of dopant in proportion to the lateral dimension of each portion and determining the resistivity of each portion, thereby providing low resistivity contact portions and a higher resistivity resistive portion; and

each individual resistor having a resistive portion of a predetermined lateral dimension providing a corresponding resistance value, whereby individual resistors having a different lateral dimension of the resistive portion provide resistances in inverse proportion to the lateral dimension of the resistive portion.

5,352,924

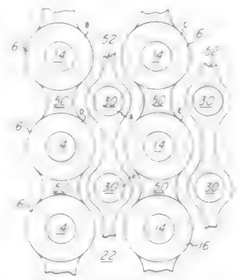
BIPOLAR LAYOUT FOR IMPROVED PERFORMANCE

Shivaling Mahant-Shetti, Richardson, and David B. Scott, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 14, 1993, Ser. No. 48,531

Int. Cl.[5] H01L *29/72*

U.S. Cl. 257—565 **3 Claims**



1. A plurality of integrated circuit devices being arranged in a hexagonal close packed formation in a plane, wherein each said device is of circular symmetry and comprises:

a base;

a collector;

a cylindrically shaped emitter, which during device operation, said base, emitter and collector operate collectively as a transistor; and

a plurality of base contacts spaced apart from said emitter at substantially equal radii from the center of mass of said cylindrically shaped emitter.

5,352,925

SEMICONDUCTOR DEVICE WITH ELECTROMAGNETIC SHIELD

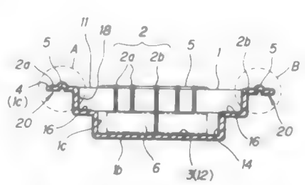
Toru Sudoh, Sendai, and Mikio Takano, Ohme, both of Japan, assignors to Kokusai Electric Co., Ltd. and Goyo Electronics Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1992, Ser. No. 857,420

Claims priority, application Japan, Mar. 27, 1991, 3-085864; Mar. 27, 1991, 3-085865

Int. Cl.[5] H01L *23/02*

U.S. Cl. 257—659 **9 Claims**



1. A semiconductor device having a leadless package so formed as to house therein at least one electronic semiconductor part which is at most only minimally passivated and to be surface-mounted on a circuit board,

said leadless package having an enclosure member formed of a sheet-type laminate, having an insulation layer, and first and second conductive layers on respective opposite sides of the insulation layer, which has been deformed into a one-piece tray shape having a circumferentially bounded concavity with a substantially flat bottom and which is defined by said first conductive layer, wherein said concavity has a substantially flat edge along an opening of said tray shape and houses therein said at least one electronic semiconductor part; and wherein said second conductive layer forms an electromagnetic shielding surface which is held at ground potential;

wherein said first conductive layer has a plurality of wiring conductors formed thereon, first ends of which are connected to respective terminal electrodes of said semiconductor part while second ends thereof extend to a circumferential edge of said concavity so as to be connected to terminal electrodes corresponding to electronic parts on said circuit board;

wherein said semiconductor part is resin-molded in said concavity; and

wherein there is formed between said bottom and circumferential edge of said concavity a substantially flat step correspondingly to the position of terminal electrodes of said semiconductor part, said first ends of said wiring conductors being disposed on said step.

5,352,926

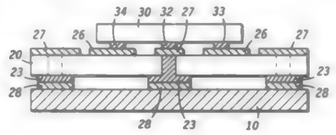
FLIP CHIP PACKAGE AND METHOD OF MAKING

James A. Andrews, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 4, 1993, Ser. No. 80

Int. Cl.[5] H01L *23/48*

U.S. Cl. 257—717 **19 Claims**



1. A semiconductor package, comprising:

a base plate comprised of a thermally and electrically conductive material; and

a semiconductor die having at least a first and a second bump formed thereon, wherein the semiconductor die is rigidly connected to the base plate through the first bump and is flexibly connected to the base plate through the second bump by way of a flexible dielectric material which is disposed on a portion of the base plate.

5,352,927

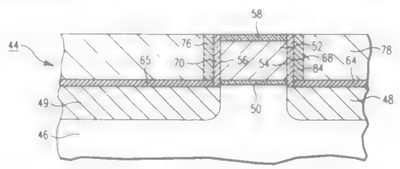
SELF-ALIGNED CONTACT STUDS FOR SEMICONDUCTOR STRUCTURES

Donna R. Cote, Poughquag; David Stanasolovich, Wappingers Falls, both of N.Y., and Ronald A. Warren, Essex Junction, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 784,193, Oct. 29, 1991, Pat. No. 5,216,282. This application Oct. 29, 1992, Ser. No. 968,634

Int. Cl.[5] H01L *29/52, 29/54*

U.S. Cl. 257—752 **3 Claims**



1. A semiconductor device, comprising:

a substrate;

a diffusion region formed in said substrate;

a gate conductor formed over said substrate adjacent to said diffusion region, said gate conductor having a sidewall;

an insulating cap formed on said gate conductor;

an insulating alignment structure formed on said substrate, and aligned with and contacting said sidewall of said gate conductor, said insulating alignment structure having a sidewall, and said insulating alignment structure comprising material which etches at a faster rate than said insulating cap; and

an electrically conducting stud electrically contacting said diffusion region, and being aligned with said sidewall of said insulating alignment structure such that said insulating alignment structure prevents electrical contact between said electrically conducting stud and said gate conductor, and said electrically conducting stud having an exposed top surface which is coplanar with said insulating cap and coplanar with said insulating alignment structure for providing an electrical contact point for allowing electrical connection to said diffusion region.

5,352,928

Patent Not Issued For This Number

5,352,929

APPARATUS AND METHOD FOR REGULATING A GENERATOR OF AN INTERNAL COMBUSTION ENGINE

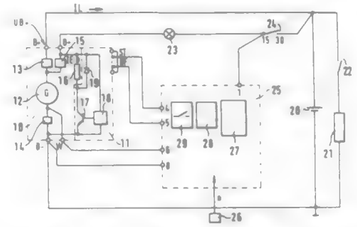
Walter Kohl, Bietigheim; Friedhelm Meyer, Illingen; Rainer Mittag, Kornwestheim, and Helmut Suelzle, Benningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 25, 1993, Ser. No. 83,673

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1992, 4222072

Int. Cl.[5] H02P *9/08;* **F02N** *11/04;* **H02J** *7/16*

U.S. Cl. 290—36 R **18 Claims**



1. Apparatus for controlling an output voltage of a generator of an internal combustion engine having a starter device, comprising a charge control signaling device; an excitation coil of the generator; a voltage regulator circuit means for controlling an excitation current in the excitation coil of the generator; means for detecting expiration of a starting phase (Δt1) of the internal combustion engine; controlling means (25) for limiting the excitation current in the excitation coil during the starting phase (Δt1) of the internal combustion engine to maintain a generator voltage (UD+) at a predetermined fixed value during the starting phase (Δt1); and means for increasing the excitation current after the starting phase (Δt1).

5,352,930

SYSTEM POWERED POWER SUPPLY USING DUAL TRANSFORMER HVAC SYSTEMS

James W. Ratz, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 675,765, Mar. 27, 1991, abandoned. This application Aug. 27, 1993, Ser. No. 112,274

Int. Cl.[5] H02J *3/04*

U.S. Cl. 307—43 **2 Claims**

1. A power supply for a thermostat, the thermostat for controlling a heating system and a cooling system, said power supply receiving power from the heating system and the cool-

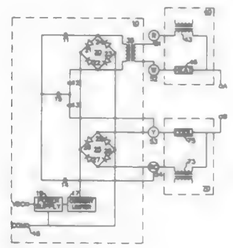
VOL 1167 ISS 1 OC 4 1994 UMI

ing system, the heating system and the cooling system being powered by separate A.C. power sources, said power supply comprising:

a first diode bridge electrically connected to the heating system, said first diode bridge having two input nodes and first and second output nodes wherein said heating system is electrically connected to said input nodes of said first diode bridge;

a second diode bridge electrically connected to the cooling system, said second diode bridge having two input nodes and first and second output nodes, wherein said cooling system is electrically connected to said input nodes of said second diode bridge;

means for providing power to said thermostat, having a current limiter and a power supply means, said first output node of said first diode bridge electrically connected to said first output node of said second diode bridge, said second output node of said first diode bridge electrically connected to said second output node of said second diode



bridge, said first output node of said first diode bridge electrically connected to said current limiter, said second output node of said first diode bridge electrically connected to said power supply means, said current limiter electrically connected to said power supply means, wherein said power supply means converts rectified power from said first diode bridge and said second diode bridge to D.C. power to power the thermostat, wherein said first diode bridge and said second diode bridge electrically isolate said heating system and said cooling system;

an isolation transformer electrically connected between said input nodes of said first diode bridge and said heating system; and

first and second switch means, said first switch means electrically connected across said input nodes of said first diode bridge, said second switch means electrically connected across said input nodes of said second diode bridge, wherein said first and said second switch means activate said heating and cooling systems respectively.

5,352,931

MULTI-VOLTAGE CONTROL CIRCUIT OF TREE BRANCH NETWORK

Tai-Her Yang, 5-1 Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan

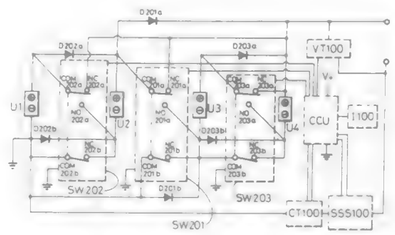
Filed Mar. 17, 1993, Ser. No. 32,132

Claims priority, application United Kingdom, Mar. 18, 1992, 9205903.0

Int. Cl.[5] **H02J** *1/00*

U.S. Cl. 307—81 **1 Claim**

1. A multi-voltage battery circuit, comprising at least four batteries of substantially equal voltage and including first, second, third and fourth batteries, respectively, each of the batteries having a substantially equal terminal voltage and each of the batteries having respective positive and negative terminals, a plurality of switches including a first switch between the first and second batteries, a second switch between the second and third batteries, and a third switch between the third and fourth batteries, respectively, each of the switches having first and second common contacts, first and second normally closed contacts, and a normally open contact, respectively, such that when each switch is actuated, the respective normally closed contacts are opened, and such that the respective first common contact is connected to the respective normally open contact, a plurality of diodes including first, second, third, fourth, fifth and sixth diodes, respectively, each of the diodes having respective positive and negative terminals, a pair of output terminals including a positive output terminal and a negative output terminal, respectively, means for connecting the positive terminal of the first battery to the first common contact of the first switch and to the negative terminal of the first diode, respectively, means for connecting the negative terminal of the first battery to the negative terminal of the second diode, to the second common contact of the first switch, to the second common contact of the second switch, to the negative terminal of the fourth diode, and to the common output terminal, respectively, means for connecting the positive terminal of the second battery to the positive terminal of the first diode, to the negative terminal of the third diode, and to the first common terminal of the second switch, respectively, means for connecting the negative terminal of the second battery to the normally open contact of the first switch, to the positive terminal of the second diode, and to the second normally, closed contact of the first switch, respectively, means for connecting the positive terminal of the third battery to the negative terminal of the fifth diode and to the common contact of the third switch,



respectively, means for connecting the negative terminal of the third battery to the normally open contact of the second switch, to the negative terminal of the sixth diode, to the second normally closed contact of the second switch, to the second common contact of the third switch, and to the positive terminal of the fourth diode, respectively, means for connecting the positive terminal of the fourth battery to the first normally closed contact of the third switch, to the positive terminal of the fifth diode, to the first normally closed contact of the second switch, to the first normally closed contact of the first switch, to the positive output terminal of the third diode, and to the positive output terminal, respectively, means for connecting the negative terminal of the fourth battery to the normally open contact of the third switch, to the positive output terminal of the sixth diode, and to the second normally closed contact of the third switch, respectively; wherein in the normal position of the respective first, second and third switches, the respective first, second, third and fourth batteries are in parallel, and the voltage at the output terminals is the terminal voltage of each battery; wherein, when the first and third switches are actuated, the first and second batteries are connected in series, the third and fourth batteries are connected in series, the series-connected first and second batteries are in parallel with the series-connected third and fourth batteries, and the voltage at the output terminals is twice the terminal voltage of each battery; and wherein, when the first, second and third switches are actuated, the first, second, third and fourth batteries are all in series, and the voltage at the output terminals is four times the terminal voltage of each battery.

5,352,932

TRIGGER CIRCUIT FOR A POWER FET WITH A LOAD ON THE SOURCE SIDE

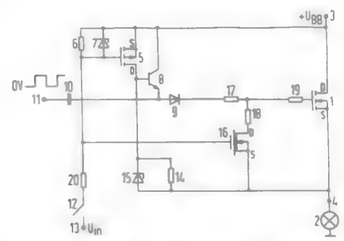
Jenoe Tihanyi, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 7, 1993, Ser. No. 73,095

Claims priority, application European Pat. Off., Jun. 5, 1992, 92109581.6

Int. Cl.[5] **H03K** *19/094, 17/687*

U.S. Cl. 307—248 **9 Claims**



1. In a circuit including a first power FET having a source terminal, a gate terminal and a drain terminal connected to a power supply, and a load connected in series with the source terminal of the first power FET,

a circuit configuration for triggering the first power FET, comprising:

a) a first input terminal;

b) a first diode and a capacitor connected between said first input terminal and the gate terminal of the first power FET;

c) a second FET being of the opposite channel type from that of the first power FET, having a gate terminal and having drain and source terminals defining a drain-to-source path;

d) a second diode being connected between said first diode and said capacitor and being connected through the drain-to-source path of said second FET to the drain terminal of the first power FET;

e) a first resistor connected between the gate and source terminals of said second FET;

f) a controllable switch connected to the gate terminal of said second FET;

g) a third FET having drain and source terminals defining a drain-to-source path connected between the gate terminal and the source terminal of the first power FET for discharging a gate-to-source capacitance of the first power FET;

h) said third FET being a depletion FET;

i) said third FET having a gate terminal connected to said controllable switch; and

j) a second input terminal connected to said controllable switch for receiving a voltage capable of blocking said third FET when said controllable switch is turned on.

5,352,933

HIGH SPEED SAMPLE AND HOLD SIGNAL GENERATOR

Grigory Kogan, Portland, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Jan. 23, 1992, Ser. No. 824,434

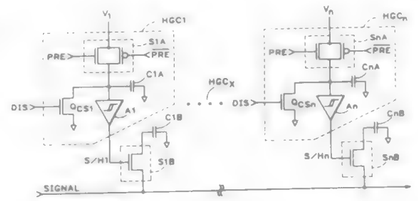
Int. Cl.[5] **H03K** *5/01, 5/15;* **G11C** *27/02*

U.S. Cl. 307—268 **16 Claims**

1. A method for producing a plurality of sequential sample-to-hold signal transitions for controlling the high speed sampling of data, the method comprising the steps of:

upon the occurrence of a precharge signal, charging a plurality of capacitors to a plurality of voltage levels all of the voltage levels being above a threshold voltage of a plurality of amplifiers;

upon the occurrence of a reference timing signal, discharging the plurality of capacitors with a plurality of constant current sources, the plurality of constant current sources are produced by a plurality of saturated transistors under



the control of a plurality of reference voltages so to produce a plurality of characteristic discharge times; and

as each capacitor discharges to the level of the threshold voltage, amplifying a transition across the threshold to produce the plurality of sequential sample-to-hold signal transitions.

5,352,934

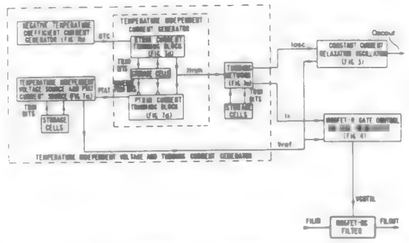
INTEGRATED MOSFET RESISTANCE AND OSCILLATOR FREQUENCY CONTROL AND TRIM METHODS AND APPARATUS

Sakhawat Khan, Santa Clara, Calif., assignor to Information Storage Devices, Inc., San Jose, Calif.

Division of Ser. No. 940,764, Sep. 4, 1992, Pat. No. 5,243,239, which is a continuation of Ser. No. 644,033, Jan. 22, 1991, abandoned. This application Mar. 25, 1993, Ser. No. 38,355

Int. Cl.[5] **H03M** *1/66;* **G05F** *3/16*

U.S. Cl. 307—296.1 **14 Claims**



1. A method of trimming the apparent current to voltage transfer function of a resistor comprising the steps of:

providing a resistor for which the apparent current to voltage transfer function is to be varied;

providing a conduction path parallel to the resistor;

providing a first current on which the current to voltage transfer function of the resistor is to be based;

providing means for generating a plurality of current components, each ratioed to the first current; and,

steering selected ones of the current components through the resistor to provide the voltage drop thereacross for a desired apparent current to voltage transfer function of the resistor, wherein current components not passing through the resistor are passed through the conduction path, and wherein the total current passing through the parallel combination of the resistor and the conduction path has a fixed relation to the first current independent of a fraction thereof passing only through the resistor.

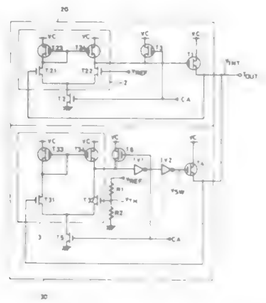
VOL 1167 ISS 1 OCT 4 1994 UMI

5,352,935

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE WITH INTERNAL VOLTAGE CONTROLLING CIRCUIT

Ryuji Yamamura; Tadahiko Sugibayashi, and Takahiro Hara, all of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Oct. 1, 1992, Ser. No. 955,287
Claims priority, application Japan, Oct. 18, 1991, 3-269823
Int. Cl.[5] G05F *1/56*
U.S. Cl. 307—296.4 3 Claims



1. A semiconductor integrated circuit device having a first internal voltage controlling circuit which lowers an external power source voltage supplied through an external voltage input terminal and produces at an internal voltage output terminal a predetermined internal power source voltage said semiconductor integrated circuit device further having a second internal voltage controlling circuit comprising:

an internal-voltage drop detection circuit which detects when said internal power source voltage produced by said first internal voltage controlling circuit becomes lower than a predetermined reference voltage, said internal-voltage drop detection circuit including a differential circuit whose output voltage changes when said internal power source voltage becomes lower than a predetermined threshold voltage, an inverter circuit which amplifies changes in the output voltage from said differential circuit to produce a switching output, and a threshold voltage setter for establishing said predetermined threshold voltage from said predetermined reference voltage; and

a switching circuit which is caused to be conductive by said switching output from said inverter circuit so that said external power source voltage is directly supplied to said internal voltage output terminal.

5,352,936

HIGH VOLTAGE TOLERANT VOLTAGE PUMP CONSTRUCTED FOR A LOW VOLTAGE CMOS PROCESS

Michael J. Allen, Rescue, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jun. 7, 1993, Ser. No. 73,160
Int. Cl.[5] H02J *1/00, 11/00, 15/00*
U.S. Cl. 307—304 18 Claims

1. An integrated circuit charge pump circuit manufactured in a P— substrate material comprising:

a first P channel N well field effect transistor device having source, gate, and drain terminals,

the gate terminal being connected to a first voltage source of a first level,

the source terminal being connected to receive a second voltage of a second level higher than the first level;

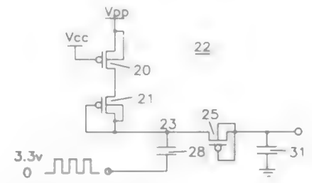
a second P channel N well field effect transistor device having source, gate, and drain terminals,

the gate terminal being connected to the N well and the drain terminal of the second P channel N well field effect transistor device,

the source terminal being connected to the drain terminal of the first P channel N well field effect transistor device;

a third P channel N well field effect transistor device having source, gate, and drain terminals,

the gate terminal being connected to the N well and the drain terminal of the third P channel N a well field effect transistor device,



the source terminal being connected to the drain terminal of the second P channel N well field effect transistor device,

the drain terminal being connected to an output circuit having an input capacitance; and

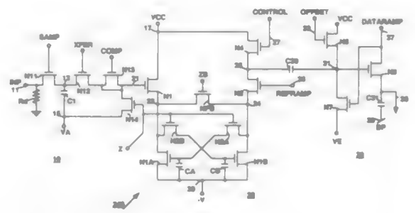
a source of voltage pulses input at the drain of the second P channel N well field effect transistor device whereby the second voltage at the source terminal of the first P channel N well field effect transistor device is increased by a voltage essentially equal to the voltage pulses and furnished to the output circuit by the third P channel N well field effect transistor.

5,352,937

DIFFERENTIAL COMPARATOR CIRCUIT

Andrew G. F. Dingwall, Princeton, N.J., assignor to RCA Thomson Licensing Corporation, Princeton, N.J.

Filed Nov. 16, 1992, Ser. No. 976,607
Int. Cl.[5] H03K *5/22*
U.S. Cl. 307—355 11 Claims



1. A comparator comprising:

first and second transistors, each transistor having first and second electrodes defining the ends of a conduction path and a control electrode and wherein a voltage applied between the control and first electrodes controls the conductivity of the conduction path;

means for coupling the second electrode of the second transistor to an output terminal and for connecting the second electrode of the first transistor to a source of supply potential;

means for applying signals to be compared to the control electrodes Of the first and second transistors;

current source means for providing current to said first and second transistors including:

first and second current sources arranged to provide current to the conduction paths of said first and second transistors respectively, and said first and second current sources having respective control electrodes;

means for alternately coupling and decoupling the control electrodes of the first and second current sources to the first electrodes of the second and first transistors, respectively; and

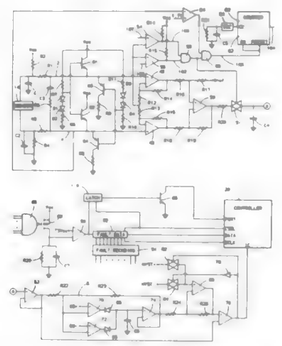
means for selectively coupling the first first and second transistors during intervals said control electrodes of the first and second current sources are not coupled to the first electrodes of the second and first transistors.

5,352,938

ANALOG TO DIGITAL SIGNAL CONVERSION

William D. Wise, Flora; Larry R. Hach, Kokomo, and Clifford L. Carpenter, Greentown, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Dec. 14, 1992, Ser. No. 993,764
Int. Cl.[5] H03K *5/24*
U.S. Cl. 307—358 9 Claims



1. A method for generating a digital representation of an analog signal that periodically fluctuates between maximum and minimum voltages comprising the steps of:

sensing a maximum voltage of the analog signal;

sensing a minimum voltage of the analog signal;

generating a limit signal which is fixed at an upper limit value determined in relation to said maximum voltage between the sensing of said maximum voltage and a point at which said analog signal thereafter falls by a predetermined amount, and at a lower limit value determined in relation to said minimum voltage between the sensing of said minimum voltage and a point at which said analog signal thereafter rises by said predetermined amount;

calculating a reference signal as a sum of a predetermined voltage and the generated limit signal; and

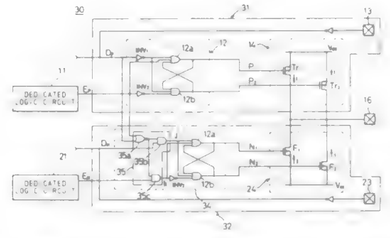
generating a digital signal having a high output level when the analog signal is less than the reference signal and having a low output level when the analog signal is greater than the reference signal.

5,352,939

MASTER SLICE SEMICONDUCTOR INTEGRATED CIRCUIT WITH OUTPUT DRIVE CURRENT CONTROL

Yasuhisa Hirabayashi; Yasuhiro Oguchi; Kazuhiko Ookawa, and Takashi Sakuda, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

PCT No. PCT/JP91/00975, § 371 Date May 7, 1992, § 102(e) Date May 7, 1992, PCT Pub. No. WO92/02052, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 18, 1991, Ser. No. 838,460
Claims priority, application Japan, Jul. 19, 1990, 2-191215; Jul. 19, 1990, 2-191216; Jul. 19, 1990, 2-191217; Jul. 19, 1990, 2-191218; Jul. 19, 1990, 2-191219; Jul. 19, 1990, 2-191220
Int. Cl.[5] H03K *17/16*
U.S. Cl. 307—443 13 Claims



1. A master slice semiconductor integrated circuit comprising:

a chip;

a logic circuit formed from a plurality of basic cells composed of a plurality of transistors on said chip, said logic circuit providing an output signal;

means for providing a current value changing signal;

a power source line providing a power source potential and an output line with an output terminal on said chip;

control signal generating means connected to receive the output signal and the current value changing signal for performing a logical operation on the output signal and the current value changing signal in order to produce control signals; and

a current supplying means having at least two current paths connected in parallel between said power source line and said output line, said current supplying means being connected to receive the control signals so that each current path is opened or closed by a respective control signal,

wherein the output signal and the current value changing signal are binary logic signals each controllable to have a selected one of a first signal value and a second signal value, and said control signal generating means comprise logic means for producing control signals which cause the current supplying means to supply a current having a first non-zero current value when the output signal has said first signal value, independently of the value of the current value changing signal, and to supply a current having a selected one of second and third current values, each different from the first current value dependent on the signal value of the current value changing signal when the output signal has said second signal value.

5,352,940

RAM CONVERTIBLE LOOK-UP TABLE BASED MACROCELL FOR PLDS

James Watson, Santa Clara, Calif., assignor to Altera Corporation, San Jose, Calif.

Filed May 27, 1993, Ser. No. 68,368
Int. Cl.[5] H03K *19/173*
U.S. Cl. 307—465 14 Claims

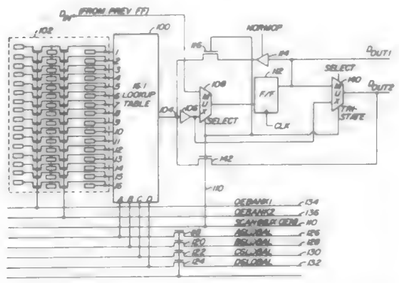
1. A macrocell for use in reconfigurable logic array systems, comprising:

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memory means for storing programming information;

a bidirectional look-up table coupled to the memory means and having an input/output terminal, and a plurality of select inputs; and

means, coupled to the look-up table, for transferring the



programming information via the input/output terminal of the look-up table to a selected address in the memory means in a first mode of operation, and transferring stored programming information from an address in the memory means to the input/output terminal in a second mode of operation.

5,352,941

CMOS/ECL LEVEL CONVERTING CIRCUIT

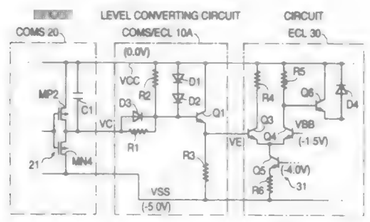
Toyomitsu Matsumoto, and Noboru Yokota, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 10, 1993, Ser. No. 58,250

Claims priority, application Japan, May 12, 1992, 4-118711

Int. Cl.[5] H03K *19/092*

U.S. Cl. 307—475 **20 Claims**



1. A level converting circuit for converting a CMOS level signal received via an input terminal from a CMOS circuit into an ECL level signal supplied via an output terminal to an ECL circuit, said level converting circuit comprising:

a high voltage source;

a low voltage source;

a bipolar transistor coupled between said high voltage source and said low voltage source, having a base connected to the input terminal receiving said CMOS level signal and an emitter connected to the output terminal to supply the ECL level signal;

a clamp circuit, connected between said high voltage source and the base of said bipolar transistor, to clamp a potential level at the emitter when the input signal has a low logic level; and

a first resistor connected in parallel with said clamp circuit.

5,352,942

GATE ARRAY SEMICONDUCTOR CIRCUIT DEVICE, INPUT CIRCUIT, OUTPUT CIRCUIT AND VOLTAGE LOWERING CIRCUIT

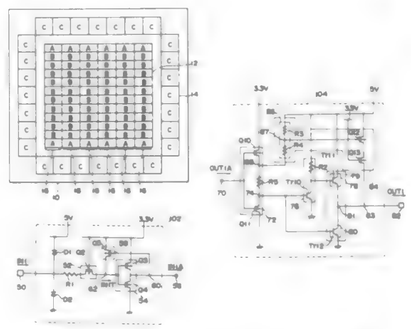
Yasunori Tanaka, Yokohama; Toshikazu Sei, Kawasaki; Teruo Kobayashi, Tokyo, and Kaoruko Yamada, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 24, 1992, Ser. No. 825,516

Claims priority, application Japan, Jan. 29, 1991, 3-026685

Int. Cl.[5] H03K *19/0175, 19/003*

U.S. Cl. 307—475 **19 Claims**



3. A gate array integrated circuit device comprising:

a semiconductor chip;

a voltage lowering means for lowering a first potential to a second potential, said voltage lowering means provided in said chip;

a gate array circuit group provided in said chip and operated by a potential difference between said second potential and a third potential, which is lower than said second potential;

a first peripheral circuit provided in said chip;

a second peripheral circuit provided in said chip;

said first peripheral circuit including an external signal output circuit for converting a first array signal of a first amplitude to a first chip external signal having a second amplitude, said first array signal output from said gate array circuit group, said second amplitude larger than said first amplitude;

said second peripheral circuit including an external signal input circuit for converting a second chip external signal of substantially said second amplitude to a second array signal of substantially said first amplitude, said second chip external signal output from an exterior of said chip;

said external signal output circuit including a first buffer for converting said first array signal to a first internal signal of an amplitude lying in a range of a potential difference between said second and third potentials and outputting said first internal signal, said first buffer operated by a potential difference between said second and third potentials;

said external signal output circuit including a second buffer for converting said first internal signal to said first chip external signal and outputting said first chip external signal to the exterior of said chip, said second buffer operated by a potential difference between said first and third potentials;

said external signal input circuit including a converter for converting said second chip external signal to a second internal signal of an amplitude lying in a range of potential difference between said second and third potentials and outputting said second internal signal;

said external signal input circuit including a third buffer for

converting said second internal signal to said second array signal and outputting said second array signal to said gate array circuit group, said third buffer operated by a potential difference between said second and third potentials;

wherein said third potential is one of binary signal logical levels, and said gate array circuit group, said peripheral circuit and said second peripheral circuit have said one signal logical level in common;

said first and second peripheral circuits are formed in an I/O circuit area and said gate array circuit group is formed in a basic cell area; and

said voltage lowering means includes I/O circuit area voltage lowering means for supplying the third potential to said I/O circuit area and basic cell area voltage lowering means for supplying the third potential to said basic cell

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5,352,943

ECL TO GAAS LOGIC LEVEL SHIFT INTERFACE CIRCUIT

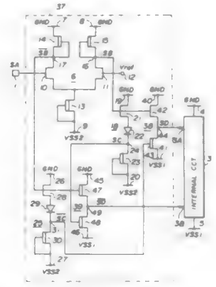
Kazuhisa Tsukahara, Yamanashi; Yoshiaki Kaneko, and Maya Koyanagi, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki and Fujitsu Quantum Devices Limited, Yamanashi, both of Japan

Filed Feb. 4, 1993, Ser. No. 13,641

Claims priority, application Japan, Feb. 6, 1992, 4-021310; Feb. 3, 1993, 5-016074

Int. Cl.[5] H03K *19/092, 17/16*

U.S. Cl. 307—475 **12 Claims**



1. A compound semiconductor integrated circuit adapted to provide an interface with respect to an internal circuit which is driven by first and second power source voltages and operates responsive to a logic signal having a predetermined logic level which is different from an emitter-coupled logic level, said compound semiconductor integrated circuit comprising:

an input terminal for receiving an input logic signal having the emitter-coupled logic level;

input circuit means, coupled to said input terminal and driven by the first power source voltage and a third power source voltage, for receiving the input logic signal via said input terminal, said input circuit means including a differential amplifier circuit which is driven by the first and third power source voltages, and which outputs positive and inverted phase logic signals in response to the input logic signal; and

output circuit means, coupled to said input circuit means and driven by the first and second power source voltages, for converting an output signal of said input circuit means into a signal having the predetermined logic level, said output circuit means including push-pull circuit means, coupled to the differential amplifier circuit and driven by the first and second power source voltages, for generating the output of the output circuit means responsive to the positive and inverted phase logic signals output from the differential amplifier circuit,

said second power source voltage being lower than the first power source voltage,

said third power source voltage being different from the second power source voltage and being lower than the first power source voltage,

said output circuit means supplying an output thereof to the internal circuit.

5,352,944

APPARATUS AND METHOD FOR PRODUCING A TEMPERATURE-INDEPENDENT CURRENT SIGNAL IN AN AUTOMATIC GAIN CONTROL CIRCUIT

Fabrizio Sacchi, Pavia; Maurizio Zaffada, Milan; Gianfranco Vai, Pavia, and David Moloney, Cornaredo, all of Italy, assignors to SGS-Thomson Microelectronics s.r.l., Milan, Italy

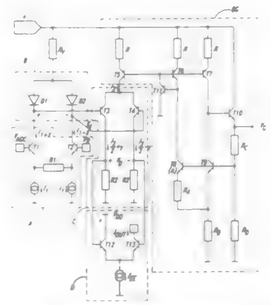
Continuation of Ser. No. 806,905, Dec. 12, 1991, abandoned.

This application Apr. 1, 1993, Ser. No. 41,517

Claims priority, application European Pat. Off., Dec. 12, 1990, 90830579.0

Int. Cl.[5] H03F *3/45*

U.S. Cl. 307—494 **14 Claims**



1. An integrated circuit for the generation of a current proportional to the difference between a signal voltage and a reference voltage and independent of temperature, which comprises:

first means able to drive a bias current directly proportional to temperature and inversely proportional to the value of at least a first integrated resistor comprised therein;

a first differential stage driven by said bias current of said first means and having a first input and a second input and a first and a second output, which is able to carry out a voltage/voltage conversion, in accordance with an exponential law, of a differential input voltage applied to said inputs;

a current generator able to drive a constant bias current essentially independent of temperature variations;

a second differential stage driven by said current generator and having a first input connected to said first output of said first differential stage and a second input connected to said second output of said first differential stage and which is able to carry out a voltage/current conversion, in accordance with an exponential law, in order to generate said output current at an output terminal, as a function of the differential voltage applied to said inputs; and

a differential input circuit having a first input terminal to which is applied said signal voltage and a second input terminal to which is applied said reference voltage essentially independent of temperature, and formed by a pair of transistors connected in a common-emitter configuration, respectively biased by means of two identical generators of current respectively connected between a first supply node of the circuit and the emitters of said transistors and

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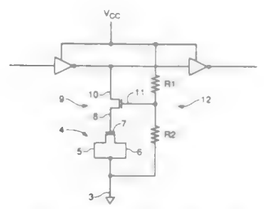
which are able to generate a current inversely proportional to the value of a second integrated resistor, which emitters are interconnected across said second integrated resistor, and which transistors have identical, forward-biased diodes as respective loads, respectively connected between the collectors of said transistors and a second supply node for a virtual supply node of the circuit, the differential output voltage across the collector nodes of said pair of transistors representing a current/voltage conversion provided by said forward-biased diodes, in accordance with a logarithmic law, of the respective currents flowing through the transistors of said pair and being applied to the inputs of said first differential stage, which currents represent a voltage/current conversion, in accordance with a linear/logarithmic law of the difference between said signal voltage and said reference voltage.

5,352,945

VOLTAGE COMPENSATING DELAY ELEMENT

Stephen L. Casper, and Daniel R. Loughmiller, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Mar. 18, 1993, Ser. No. 32,900
Int. Cl.[5] H03K *5/14*
U.S. Cl. 307—603 **8 Claims**



1. In an electronic circuit having a signal path comprising a series of inverters biased by a supply voltage in which a delaying capacitive element is connected in a shunt path at an intermediate node along said signal path at which said signal is being delayed, said shunt path containing said capacitive element between said intermediate node and a reference point, an improvement for compensating for variations in the delaying effect of said capacitive element as a result of variations in the circuit supply voltage, said improvement comprising:

a controllable resistance element connected in said shunt path in series with said capicitive element between said intermediate node and said reference point;

said resistance element having a resistivity controllable by said bias voltage wherein said resistivity increases and said delaying effect at said node increases when said bias voltage is increased; and

means for generating said bias voltage as a function of said supply voltage wherein said bias voltage is increased as the supply voltage increases.

5,352,946

LINEAR MOTOR SUSPENSION SYSTEM

Brian D. Hoffman, Somerville, N.J.; Steven H. Pollack, Washington Crossing, Pa.; Peter Smit, Newton, Pa., and John Woolley, Warrington, Pa., assignors to Megamation Incorporated, Lawrenceville, N.J.

Filed Feb. 4, 1993, Ser. No. 13,295
Int. Cl.[5] H02K *41/00*
U.S. Cl. 310—12 **21 Claims**

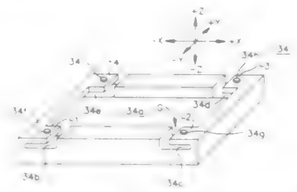
1. A mounting system for linear motors and the like comprising:

a plurality of two-dimensional linear motors;

a common mounting plate;

a plurality of compliance attachment members joined to said mounting plate each for attaching an associated linear motor to said mounting plate; and

each of said attachment members comprising plural means



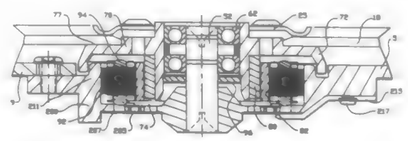
joined to spaced locations on an associated linear motor for providing compliance independently of one another and only in a direction perpendicular to a plane of said mounting plate.

5,352,947

SPINDLE MOTOR ASSEMBLY FOR DISC DRIVES

Donald J. MacLeod, Santa Cruz, Calif., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 424,673, Oct. 27, 1989, abandoned.
This application Aug. 6, 1991, Ser. No. 745,983
Int. Cl.[5] H02K *21/12, 7/14;* **G11B** *17/08, 17/02*
U.S. Cl. 310—67 R **33 Claims**



1. A spindle motor assembly comprising:

a drive housing with a base;

a fixed shaft;

a spindle hub journaled coaxially for rotation about the fixed shaft, the spindle hub having inner and outer surfaces, a spindle flange having an enlarged thickness flange portion with a support surface for supporting a disc stack, and a reduced thickness rotor carrying portion located adjacent at least one of a pair of spaced apart bearings, the bearings rotatably coupling the spindle hub to the fixed shaft and having an inner race secured to the fixed shaft and an outer race secured to the inner surface of the spindle hub;

magnet means carried by an outer surface of the rotor carrying portion of the spindle hub, the magnet means having a plurality of poles, and forming the rotor portion of the spindle motor;

stator means having a plurality of fixed windings for cooperating with the magnet means to rotate the spindle hub with respect to the shaft;

said stator means and said magnet means being horizontally oriented with respect to each other;

an extended portion of said spindle flange extending beyond said enlarged thickness flange portion and down towards the base of said disc drive, and a ring portion of said base extending up from said base towards said flange, said ring and said extended flange overlapping to form a seal to isolate the spindle motor from the disc drive housing; and

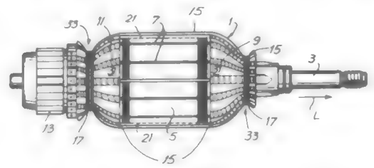
said magnet means are inside an area defined by an outer wall of said enlarged thickness flange portion and said stator means are partially within said area and both said stator means and said magnet means are below said disc stack.

5,352,948

ARMATURE FOR HIGH-SPEED ELECTRIC MOTORS FORCE-VENTILATED IN AIR CONTAINING ABRASIVE DUST

Manfred Kira; Werner Grammer, both of Stuttgart; Gerhard Kraemer, and Meinhard Eule, both of Aichtal-Neuenhaus, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00456, § 371 Date Jan. 11, 1993, § 102(e) Date Jan. 11, 1993, PCT Pub. No. WO92/00626, PCT Pub. Date Jan. 9, 1992
PCT Filed May 28, 1991, Ser. No. 966,164
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1990, 9007029
Int. Cl.[5] H02K *3/48*
U.S. Cl. 310—214 **10 Claims**



1. Armature for a high-speed electric motor force-ventilated in air containing abrasive dust, said armature having end faces and an armature longitudinal direction and comprising:

an armature shaft;

an armature laminate stack on the armature shaft, said armature laminate stack being provided with a plurality of slots;

windings laid in said slots of said armature laminate sack and extended in said armature longitudinal direction to form winding overhangs on both of the end faces of the armature, each of said winding overhangs having a waist corresponding to a smallest diameter of said winding overhangs;

a plurality of elongated, elastic slot seals holding said windings in said slots, connected to said winding overhangs and extending on said winding overhangs to said waists; and

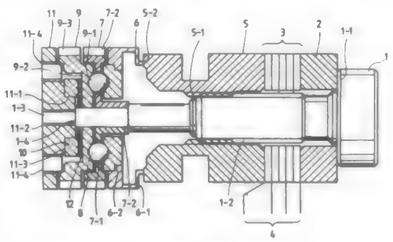
means for securing said slot seals on the end faces of said armature.

5,352,949

VIBRATION DRIVEN ACTUATOR

Masaharu Eguchi, Yokohama, and Mitsuru Shinohara, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,422
Claims priority, application Japan, Aug. 30, 1991, 3-220057; Aug. 30, 1991, 3-220058
Int. Cl.[5] H01L *41/09;* **G02B** *7/04*
U.S. Cl. 310—323 **10 Claims**



1. A vibration driven actuator comprising:

a supporting member;

a vibration member arranged to generate a vibration therein in response to an applied electrical signal, and rigidly fitted on said supporting member;

a first rotary member arranged to be rotated by said vibration, and rotatably fitted on said supporting member;

a second rotary member which can be rotated by an external force, and is rotatably fitted on said supporting member;

a rolling member arranged in contact with said first and second rotary members; and

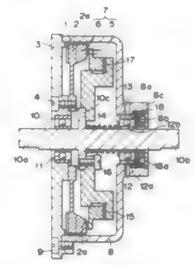
a third rotary member arranged to be rotated by rotation of said rolling, wherein said third rotary member has a gear portion for transmitting a rotational force of said first or second rotary member to an external device.

5,352,950

VIBRATION WAVE DRIVEN MOTOR

Takayuki Shirasaki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 677,422, Mar. 29, 1991, abandoned.
This application Dec. 28, 1992, Ser. No. 996,862
Claims priority, application Japan, Mar. 30, 1990, 2-084491; Mar. 30, 1990, 2-084492; Jun. 7, 1990, 2-149207
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—323 **7 Claims**



1. A vibration wave motor comprising:

a vibration member for generating a vibration wave by an applied electric signal; and

a contacting member having a sliding portion which contacts said vibration member and is adapted to receive the vibration wave generated in said vibration member;

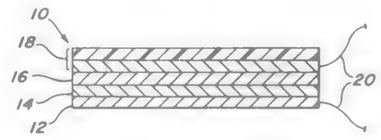
wherein said sliding portion is composed of a thermoplastic resin with a glass transition point at least equal to 100° C., containing non-fibrous reinforcing material and formed by ..ajection molding, and wherein said non-fibrous reinforcing material is composed of glass-like carbon beads.

5,352,951

ELECTROLUMINESCENT DEVICE

Donald R. Kardon, Ardmore; Charles H. Moore, King of Prussia, and Douglas S. Bush, Oaks, all of Pa., assignors to BKL, Inc., King of Prussia, Pa.

Filed Jun. 3, 1991, Ser. No. 709,350
Int. Cl.[5] H05B *33/14;* **C09K** *11/02;* **B05D** *5/06*
U.S. Cl. 313—502 **3 Claims**

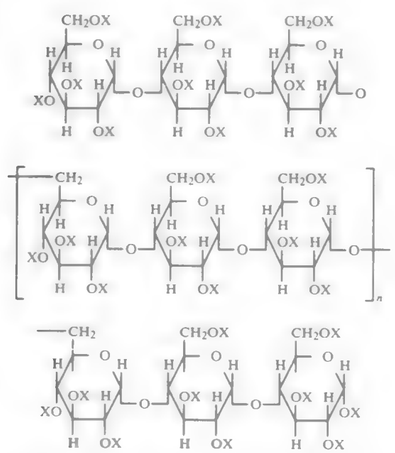


1. In an electroluminescent device comprising a phosphor/-

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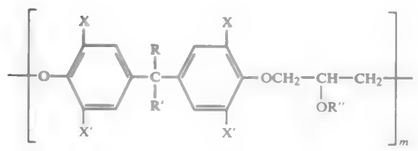
binder layer a barium titanate/binder layer, both said layers disposed between two electrodes electrically joined to a power source, the improvement which comprises employing as the said phosphor/binder layer a composition comprised of alumina encapsulated phosphor particles in which the binder in said phosphor/binder layer contains from about 500 to about 20,000 parts per million of water and the binder in said barium titanate/binder layer contains from about 500 to 20,000 parts per million of water and wherein the binder in each of said layers are the same or different compounds selected from among,

a.) a cyanoalkylated pullulan of the formula:



wherein X is a hydrogen or cyanoloweralkyl and n is an integer having a value of from about 20–4000;

b.) a cyanoalkylated epoxy resin of the formula:



wherein R and R′ are the same or different members selected from the group consisting of hydrogen, lower alkyl and mononuclear aryl; R″ is hydrogen or cyanoloweralkyl; X and X′ are the same or different members selected from the group consisting of hydrogen, lower alkyl and halogen; and m is an integer greater than 1;

c.) a mixture of cyanoalkylated polymers of the group consisting of cyanoalkylcellulose, cyanoalkylpolyvinyl alcohol, cyanoalkylsucrose, cyanoalkylhydroxycellulose and cyanoalkylated epoxy resin;

d.) a mixture of said cyanoalkylated pullulan with said cyanoalkylated epoxy resin; or

e.) a mixture of said cyanoalkylated pullulan with a cyanoalkylated polymer of the group consisting of cyanoalkylcellulose, cyanoalkylpolyvinyl alcohol, cyanoalkylsucrose, and cyanoalkylhydroxycellulose.

5,352,952

HIGH-PRESSURE DISCHARGE LAMP WITH CERAMIC DISCHARGE VESSEL

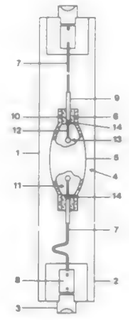
Stefan Juengst, Zorneding, Fed. Rep. of Germany, assignor to Patent-Treuhand-Gesellschaft F. Elektrische Gluehlampen mbH, Munich, Fed. Rep. of Germany

Filed Oct. 1, 1992, Ser. No. 954,815

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1991, 9112690[U]

Int. Cl.[5] H01J *61/36, 9/32, 61/82*

U.S. Cl. 313—623 **20 Claims**



1. High-pressure discharge lamp comprising

a ceramic discharge vessel (**4**) having at least one open end (**6, 6'**);

a ceramic plug (**10**) formed with an axial bore (**14**) therethrough, closing off the open end of the vessel and defining, respectively, a discharge side at the interior of the vessel and an outer side opposite said discharge side;

a lead-through passing through said axial bore (**14**), said lead-through comprising

a solid rod or pin or wire (**9, 21**) essentially consisting of a metal which has a temperature coefficient of expansion at least approximately similar to the temperature coefficient of expansion of the ceramic material of the ceramic plug (**10**);

an electrode (**13**) having an electrode shaft (**12**), said electrode shaft extending towards said lead-through rod, pin or wire and being electrically and mechanically secured to one end of said lead-through rod, pin or wire at the discharge side of the plug; and

current connection means (**7, 22**) connected to the other end of said lead-through rod, pin or wire,

and wherein

the rod, pin or wire (**9, 21**) is gas-tightly sintered into the bore (**14**) of the ceramic plug (**10, 10'**) and the rod, pin or wire (**9, 21**) is recessed into the bore (**14**) at least at the discharge side of the plug.

5,352,953

GAS-FILLED DISCHARGE TUBE

Seiichi Wakabayashi; Takashi Hirano; Yukio Sone, and Toshikazu Ashizawa, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Apr. 1, 1992, Ser. No. 861,732

Claims priority, application Japan, Apr. 5, 1991, 3-072000

Int. Cl.[5] H01J *17/06, 17/10*

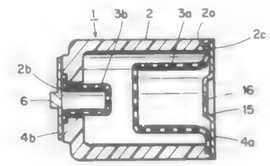
U.S. Cl. 313—631 **4 Claims**

1. A gas-filled discharge tube comprising:

a tubular body formed of an electrically insulating material and having engaging notch portions respectively at opposite open ends thereof;

a pair of electrode bases, at least one of which is formed of an electrically conducting thin metal sheet, airtightly adhered to said open ends of said tubular body, with at least one of said electrode bases being formed with a dented section at the center portion thereof to form a gas-filling bore therein; and

a pair of discharge electrodes respectively having flange portions to be engaged with said respective engaging notch portions and sandwiched between said tubular body and said respective electrode bases, wherein said tubular body is filled with an inert gas through said gas filling bore, said gas filling bore being formed and closed by a laser beam.



5,352,954

PLASMA GENERATOR AND ASSOCIATED IONIZATION METHOD

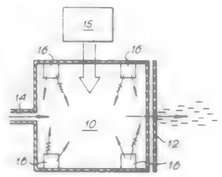
Gianfranco Cirri, Florence, Italy, assignor to Proel Technologie S.p.A., Florence, Italy

Filed Mar. 8, 1993, Ser. No. 27,403

Claims priority, application Italy, Mar. 11, 1992, FI/92/A 61

Int. Cl.[5] H01J *7/24*

U.S. Cl. 315—111.21 **13 Claims**



1. A plasma generator comprising:

a chamber;

a hollow cathode extending into said chamber;

means for introducing gas through said hollow cathode and into said chamber;

an anode positioned in said chamber and spaced from said hollow cathode, said anode defining an opening for plasma to pass through;

ionizing radiation source positioned in said chamber between said hollow cathode and said anode to inject radiation into said gas and to pre-ionize portions of said gas by transferring energy from said radiation to said portions of gas.

13. A method for generating plasma in space vehicles, the method comprising the steps of:

providing a chamber in communication with an outer space environment;

introducing a gas into said chamber;

ionizing said gas in said chamber to form a plasma, said ionizing including injecting radioactive radiation from an ionizing radiation source into said gas to pre-ionize portions of said gas by transferring energy from said radiation to said portions of gas.

5,352,955

HIGH ENERGY IGNITION GENERATOR FOR GAS TURBINES

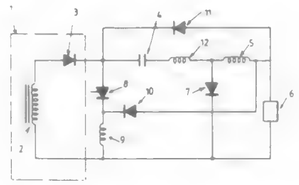
Patrick Balland, Rueil Malmaison, France, assignor to EYQUEM, Nanterre Cedex, France

Filed Sep. 22, 1992, Ser. No. 948,310

Claims priority, application France, Sep. 27, 1991, 91 11933

Int. Cl.[5] H05B *37/02*

U.S. Cl. 315—209 R **6 Claims**



1. A high energy ignition generator for gas turbines comprises and energy source connected to a circuit for charging an energy storage capacity and connection means for connecting said capacitor to a discharge circuit comprising in series two inductors for energy recovery and an igniter, one of said two inductors being connected on one side of said igniter and the other of said two inductors being connected on the other side of said igniter, and two freewheel means, one of said freewheel means being connected in parallel with a series combination of one of said inductors and said igniter and the other of said freewheel means being connected in parallel with a series combination of the other of said inductors and said igniter, so as to generate sparks between electrodes of said igniter by discharge of said capacitor in said igniter through said two inductors for energy recovery and by discharge of said two inductors in said igniter through said two freewheel means, wherein said two inductors are connected in series with said capacitor at the time of said capacitor's discharge and are connected in parallel with said igniter at the time of said inductors' discharge.

5,352,956

POWER SUPPLY FOR GAS DISCHARGE TUBE

David Doss, Overland Park, Kans., assignor to Everbrite Electronics, Inc., Milwaukee, Wis.

Filed Oct. 16, 1989, Ser. No. 422,136

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

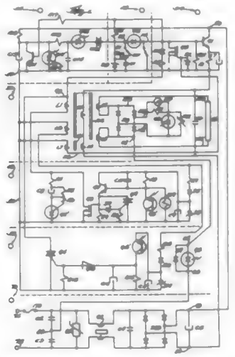
Int. Cl.[5] H05B *41/36*

U.S. Cl. 315—224 **24 Claims**

10. A method of controlling the flow of power to a gas discharge tube from a power supply circuit which includes a first valve means and a transformer having primary winding means in circuit with the first valve means and secondary winding means coupled to the gas discharge tube, said first valve means being operative to control the flow of current to the primary winding means, comprising the steps of: providing an enabling signal to the first valve means, conducting current to the primary winding means through said first valve means, said current being functionally related to the magnitude of the enabling signal for inducing load current flow in the secondary winding means to the discharge tube, disabling said first valve means so that current flow to the primary winding means is

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interrupted, returning energy to said primary winding means from energy storage means, and regulating the magnitude of



the enabling signal so that the current in the secondary winding means is maintained within preselected limits.

5,352,957

APPLIANCE CONTROL SYSTEM WITH PROGRAMMABLE RECEIVERS

Walter Werner, Dornbirn, Austria, assignor to Zumtobel Aktiengesellschaft, Austria

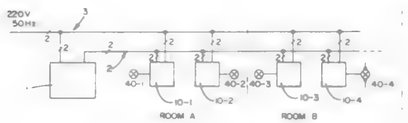
PCT No. PCT/EP90/01133, § 371 Date Jun. 19, 1992, § 102(e) Date Jun. 19, 1992, PCT Pub. No. WO91/10276, PCT Pub. Date Jul. 11, 1991

PCT Filed Jul. 11, 1990, Ser. No. 861,839

Claims priority, application European Pat. Off., Dec. 21, 1989, 89123678.8; Jan. 1, 1990, 90100465.6

Int. Cl.[5] G05F *1/00*

U.S. Cl. 315—291 5 Claims



1. A control system for a plurality of appliances in distributed arrangement, in particular lighting fittings, comprising

one or several command generators,

a receiver associated with each appliance,

a control line which connects the command generator to each receiver,

a first memory in each receiver into which an operational address for the associated appliance can be written by electrical signals, and

a control part provided in each receiver by means of which the appliance associated therewith can be controlled by the command generator if they have been previously activated by selection of the operational address of the appliance associated therewith,

characterized in that

provided in each receiver is an electrically readable second memory that contains a receiver-specific original address, and the original address comprises a production number, and

a sensor part is associated with each receiver which measures a local measured value of a physical property, as brightness or temperature, and in that the detected measured value is communicated by way of the control part provided in the receiver on command of the command generator to the command generator via the control line.

5,352,958

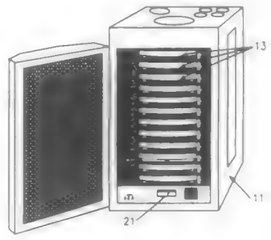
LIGHTING CONTROL SYSTEM DIMMER MODULE WITH PLUG-IN ELECTRICAL CONTACTS

David W. Cunningham, 8442 Hollywood Blvd., Los Angeles, Calif. 99069, and Gregory F. Esakoff, 9131 Santiago Dr., Huntington Beach, Calif. 92646

Filed Nov. 19, 1992, Ser. No. 978,785

Int. Cl.[5] G05F *1/00*

U.S. Cl. 315—291 8 Claims



1. A dimmer module comprising:

a housing having a first end, a second end opposite the first end, a rear, and a front opposite the rear, the housing including a plug-in electrical contact for input power at its rear, adjacent the first end;

a circuit breaker located within the housing, adjacent the first end of the housing and electrically connected to the electrical contact for input power;

a toroidal inductor located within the housing and electrically connected to the circuit breaker; and

a power device located within the housing, adjacent the second end of the housing, the power device including a dimmer circuit, an input lead frame electrically connected to the toroidal inductor, a plug-in electrical contact for a load facing the rear of the housing, and a plurality of plug-in electrical contacts for control signals facing the rear of the housing;

wherein the dimmer module is configured such that it can be slid into a rack and automatically engage the plug-in electrical contacts for input power, the load, and control signals.

5,352,959

METHOD AND CIRCUIT FOR GENERATING THE CONTROL VOLTAGES OF THE DYNAMIC CONVERGENCE IN A COLOR DISPLAY TUBE

Kari Vigelius, Salo, Finland, assignor to Salcomp Oy, Salo, Finland

Filed Oct. 29, 1992, Ser. No. 969,787

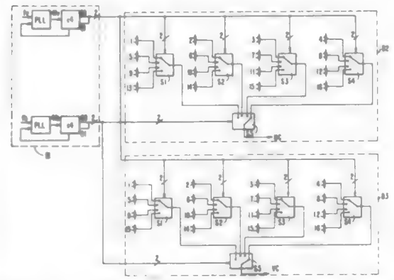
Claims priority, application Finland, Oct. 31, 1991, 915157

Int. Cl.[5] H01J *29/51;* G09G *1/28*

U.S. Cl. 315—368.11 14 Claims

1. A method for generating the control voltages of the dynamic convergence in a color display tube, in which a current in a plurality of convergence coils is controlled and in which an electron beam is controlled by a plurality of horizontal and vertical deflection voltages, characterized in that the control voltages for the plurality of convergence coils are obtained from a plurality of respective controlling means, to which a voltage is coupled from at least one voltage supply, the magnitude of the voltage of the at least one voltage supply being independent of the horizontal and vertical deflection voltages, and that the voltage from each controlling means is switched to said plurality of convergence coils by a plurality of signals

synchronized to the horizontal and vertical deflection voltages, and the convergence of a plurality of different non-over-



lapping parts of the display is controlled by a voltage provided by a separate controlling means for each part of the display.

5,352,960

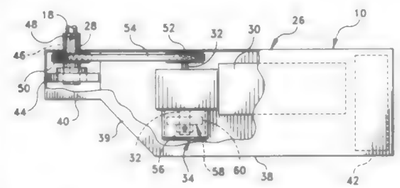
PROGRAMMABLE SPEED SELECTOR FOR A REEVES DRIVE

Donald G. Speice, Westerly, R.I., assignor to Sparro Machine Products, Inc., Westerly, R.I.

Filed Feb. 11, 1993, Ser. No. 16,255

Int. Cl.[5] G05B *19/29*

U.S. Cl. 318—280 14 Claims



1. A programmable speed selector for a Reeves type variable speed transmission unit having a worm screw which is rotatable in clockwise and counterclockwise directions for adjusting a speed setting thereof, said programmable speed selector comprising:

reversible motor means having a drive shaft which is operable for clockwise and counterclockwise rotation, said drive shaft being coupled to said worm screw for rotation thereof;

power means for energizing said motor means;

means for selectively energizing said motor means for clockwise or counterclockwise rotation of said drive shaft to a plurality of preselected rotational positions, said preselected rotational positions corresponding to a plurality of preselected speed settings of said reeves type transmission unit;

means for sensing said rotational positions of said drive shaft, said sensing means sensing a direction of rotation of said drive shaft and a number of full or partial revolutions of said drive shaft with respect to a datum rotational position;

memory means for storing said plurality of rotational positions;

input means for inputting said rotational positions to said memory means and for selecting one of said stored rotational positions from said memory means; and

controller means for controlling said motor means to automatically rotate said drive shaft to said selected rotational position in response to said input means, thereby selecting a speed of said reeves type transmission unit.

5,352,961

CONTROL METHOD AND APPARATUS FOR A SERVO-MECHANISM

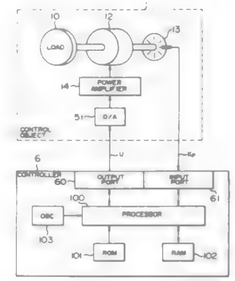
Fujio Tajima, Tsuchiura; Hideki Tanaka, Toyohashi; Kooetsu Okuyama, Tsuchiura; Tomokazu Ishii, Ibaraki, and Kenji Toki, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 948,266

Claims priority, application Japan, Sep. 20, 1991, 3-268777

Int. Cl.[5] G05B *17/02*

U.S. Cl. 318—561 8 Claims



1. A control method for controlling a servo-mechanism, comprising the steps of:

receiving a desired value of a control output of a control object;

detecting the control output of said control object;

calculating an operation value to be applied to said control object from the desired control output and the detected control output such that the detected control output becomes equal to the desired control output;

calculating a model-based control output from the calculated operation value by using a transfer function of a mathematical model of said control object, said transfer function being a ratio of the control output to the calculated operation value based on an assumption that said control object has invariable characteristics and is not subjected to disturbances;

calculating a difference between the model-based control output and the detected control output;

calculating an operation value error from the calculated difference by using an inverse function of the transfer function of the mathematical model of said control object;

storing the calculated operation value error in memory means;

reading out an operation value error from said memory means in response to the detected control output; and

correcting the calculated operation value based on the operation value error read out from said memory means.

5,352,962

BRUSHLESS POLYPHASE REDUCED FORCE VARIATION MOTOR

Daniel N. Galburt, Wilton, Conn., assignor to SUG Lithography Systems, Inc., Wilton, Conn.

Filed Apr. 19, 1993, Ser. No. 48,860

Int. Cl.[5] H02K *41/02*

U.S. Cl. 318—687 1 Claim

1. A brushless three phase electric linear motor having sinusoidal commutation comprising:

a fixed permanent magnet stator;

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a first linear hall effect sensor providing a first commutation signal output associated with a first phase;

a second linear hall effect sensor providing a second commutation signal output associated with a second phase;

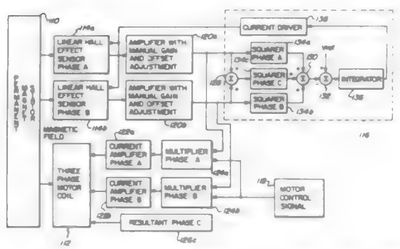
third commutation signal means, associated with said first and second commutation signal outputs, for determining a third commutation signal output associated with a third phase;

squaring means, associated with the first commutation signal output, the second commutation signal output, and the third commutation signal output, for providing a signal representative of the square of each of the first commutation signal output, the second commutation signal output, and the third commutation signal output;

summing means, associated with said squaring means, for providing a signal representative of the sum of the squares of each of the first commutation signal output, the second commutation signal output, and the third commutation signal output;

error signal means, associated with said summing means and a predetermined reference signal, for providing an error feedback signal to said first and second linear hall effect sensors so that the signal representative of the sum of the squares is maintained at a predetermined constant;

first amplifier means, associated with said first linear hall effect sensor, for amplifying the first commutation signal output, said first amplifier means having manual gain and offset adjustments;



second amplifier means, associated with said second linear hall effect sensor, for amplifying the second commutation signal output, said second amplifier means having manual gain and offset adjustments;

a motor control signal means for providing a motor control signal;

first multiplier means, associated with said first amplifier means and said motor control signal means, for multiplying the amplified first commutation signal output with the motor control signal;

second multiplier means, associated with said second amplifier means and said motor control signal means, for multiplying the amplified second commutation signal output with the motor control signal;

a first current amplifier receiving a first multiplied signal from said first multiplier means and amplifying the first multiplied signal;

a second current amplifier receiving a second multiplied signal from said second multiplier means and amplifying the second multiplied signal;

resultant phase means, associated with the first and second phases, for providing an output for the third phase; and

a three phase moving motor coil armature receiving output from said first and second current amplifiers and said resultant phase means,

whereby linear motor force variation is substantially reduced.

5,352,963

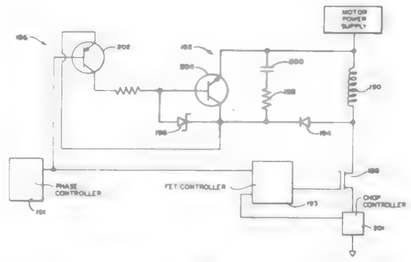
SPECIMEN PROCESSING AND ANALYZING SYSTEMS WITH VARIABLE ZENER-DIODE FLYBACK STEPPER MOTOR CONTROL

Steven A. Garand, Ranco Cordova, and Carl P. Daniel, El Dorado Hills, both of Calif., assignors to Baxter Diagnostics Inc., Deerfield, Ill.

Filed Oct. 31, 1991, Ser. No. 785,553

Int. Cl.[5] A02P *8/00*

U.S. Cl. 318—696 **13 Claims**



1. A control system for a stepper motor coil comprising

phase control means for conducting current to the coil, the phase control means operating in an on phase for supplying current to the coil and in an off phase for interrupting the supply of current to the coil,

primary circuit means for conducting current from the coil when the phase control means operates in its on phase, the primary circuit means including chopping means attached to the coil and operable in a current-enabled mode for conducting current through the primary circuit means and in a current-not-enabled mode for preventing the conduction of current by the primary circuit means,

flyback circuit means including

semiconductor means for conducting current from the coil, said semiconductor means including a first transistor switching on and off in phase with said phase control means for conducting current from said coil when on, and a second transistor conducting current from said coil when said first transistor is off, and

control means for operating the semiconductor means at a first voltage when the phase control means is operating in its on phase and the chopper means switches from its current-enabled mode to its current-not-enabled mode, to thereby recirculate current to the coil without significant dissipation of energy, and for operating the semiconductor means at a second voltage greater than the first voltage when the phase control means switches from its on phase to its off phase, regardless of the mode of the chopping means, to thereby dissipate energy while conducting current from the coil.

5,352,964

CONTROLLING METHOD AND APPARATUS FOR ACTUATING INDUCTION MOTOR

Kosei Nakamura, Oshino; Yukio Katsuzawa, Minamitsuru, and Yasuyuki Nakazawa, Oshino, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

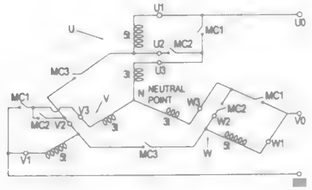
PCT No. PCT/JP92/00855, § 371 Date Feb. 19, 1993, § 102(e) Date Feb. 19, 1993, PCT Pub. No. WO93/01653, PCT Pub. Date Jan. 21, 1993

PCT Filed Jul. 6, 1992, Ser. No. 971,969

Claims priority, application Japan, Jul. 5, 1991, 3-191293

Int. Cl.[5] H02P *7/36*

U.S. Cl. 318—772 **5 Claims**



1. A control apparatus for actuating an induction motor comprising:

respective phase windings of a Y-connection type each having one end connected to an electric power supply terminal and the other end connected to a neutral point;

a first split winding and a second split winding for each said respective phase windings, which are formed by splitting each of said respective phase windings at a predetermined split ratio based on a number of turns of winding, split points of said first and second split windings being respectively connected to a first intermediate terminal and a second intermediate terminal;

a first changeover switch connected between said first intermediate terminals of each said respective phase windings and said electric power supply terminal, to supply electric power to said first split winding only;

a second changeover switch connected between said first and second intermediate terminals of each said respective phase windings, to supply electric power to both said first and second split windings;

a third changeover switch connected between said second intermediate terminals of said second split windings, to supply electric power to said second split winding only; and

a switching control means for on-off controlling said first, second and third switches in accordance with a rotational speed of said induction motor.

2. A control method for controlling an induction motor with an actuation control apparatus for the induction motor comprising: phase windings of a Y-connection type each having one end connected to an electric power supply terminal and the other end to a neutral point; a first and a second split windings for each said phase windings, which are formed by splitting each of said phase windings at a predetermined split ratio based on a number of turns of winding, split points of said first and second split windings being respectively connected to a first and second intermediate terminals; a first changeover switch connected between said first intermediate terminals of each said phase windings and said electric power supply terminal; a second changeover switch connected between said first and second intermediate terminals of each said phase winding; a third changeover switch connected between said second intermediate terminals of said second split windings; and a switching control means for on-off controlling said first, second and third switches based on a rotational speed of said induction motor; said controlling method comprising the steps of:

turning on said second changeover switch and turning off said first and third changeover switches in a case where the rotational speed of the induction motor is in a low speed region;

turning on said third changeover switch and turning off said first and second changeover switches in a case where the rotational speed of the induction motor is in a middle speed region; and

turning on said first changeover switch and turning off said second and third changeover switches in a case where the rotational speed of the induction motor is in a high speed region.

5,352,965

CONTAINER CRANE DRIVING CONTROL SYSTEM

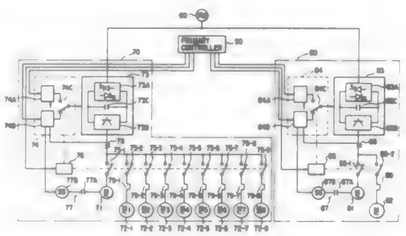
Yoshihiko Kawabata, Ichikawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 29, 1993, Ser. No. 143,065

Claims priority, application Japan, Oct. 29, 1992, 4-290609

Int. Cl.[5] H02P *7/74;* **B66C** *13/40*

U.S. Cl. 318—807 **16 Claims**



1. A container crane driving control system comprising:

a main hoisting squirrel-cage induction motor for lifting and lowering a container;

a plurality of traveling squirrel-cage induction motors for hoisting and lowering a boom;

a first inverter main circuit unit for supplying AC power to the main hoisting squirrel-cage induction motor and the plurality of traveling squirrel-cage induction motors;

a first connecting unit for selectively connecting the main hoisting squirrel-cage induction motor or the plurality of traveling squirrel-cage induction motors with the first inverter main circuit unit;

a first inverter control unit comprising:

a first V/F constant-control circuit for controlling the first inverter main circuit unit so that the ratio of the voltage to the frequency of the AC power supplied to the plurality of traveling squirrel-cage induction motors is maintained in a preset range;

a first vector control circuit for vector-controlling the first inverter main circuit unit so that a torque generated by the main hoisting squirrel-cage induction motor is equal to a preset value; and

a first selection circuit for selectively supplying an output from the first V/F constant-control circuit or an output from the first vector control circuit to the first inverter main circuit unit;

a boom hoisting squirrel-cage induction motor for hoisting and lowering the boom;

at least one trolley squirrel-cage induction motor for causing the container to make a traverse motion;

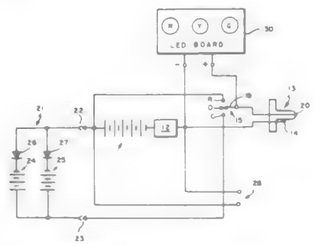
a second inverter main circuit unit for supplying AC power to the boom hoisting squirrel-cage induction motor and the at least one trolley squirrel-cage induction motor;

a second connecting unit for selectively connecting the boom hoisting squirrel-cage induction motor or the at least one trolley squirrel-cage induction motor with the second inverter main circuit unit; and

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a second inverter control unit comprising:
a second V/F constant-control circuit for controlling the second inverter main circuit unit so that the ratio of the voltage to the frequency of the AC power supplied to the at least one trolley squirrel-cage induction motor is maintained in a preset range;
a second vector control circuit for vector-controlling the second inverter main circuit unit so that a torque generated by the boom hoisting squirrel-cage induction motor is equal to a preset value; and
a second selection circuit for selectively supplying an output from the second V/F constant-control circuit or an output from the second vector control circuit to the second inverter main circuit unit.

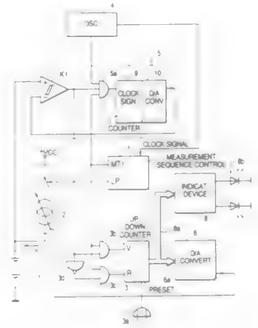
5,352,966
BATTERY CHARGING DEVICE
James W. Irons, South Dartmouth, Mass., assignor to Iron Chargers, Inc., New Bedford, Mass.
Filed Sep. 11, 1992, Ser. No. 943,926
Int. Cl.[5] H01M *10/46;* **H02J** *7/00*
U.S. Cl. 320—3 **13 Claims**



1. A battery charging device comprising
a first low-amperage rechargeable battery source providing a first voltage output;
a second low-amperage non-rechargeable battery source circuit removably connected in series with said first battery source and providing a second voltage output, said first and second voltage outputs providing a charging voltage output;
switching means connected to said charging voltage output, said switching means having a first position for supplying said charging voltage output to an external battery which is to be charged, and a second position for supplying a recharging voltage from an external source to said device for recharging said first battery source.

5,352,967
METHOD AND APPARATUS FOR CHARGING STORAGE BATTERIES TO FULL CAPACITY
Karl-Diether Nutz, Oedheim, and Dieter Hanselmann, Öhringen, both of Fed. Rep. of Germany, assignors to Temic Telefunken microelectronic GmbH, Heilbronn, Fed. Rep. of Germany
Filed Oct. 18, 1993, Ser. No. 136,930
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1992, 4243710
Int. Cl.[5] H02J *7/04*
U.S. Cl. 320—20 **8 Claims**

4. A circuit array for charging a storage battery, in particular for NiCd (nickel cadmium) and NiH (nickel hydride) cells, comprising:
a charging current source for connection to a battery;
means for cyclically separating said charging current source from said battery for a certain period of time in order to generate measurement intervals;
means for cyclically comparing a charging voltage at the source with a stored reference value during said measurement intervals and, if the value of said charging voltage is greater than said reference value, for increasing said reference value by a certain amount to match said reference value to an actual measured value of said charging voltage and for then storing the increased reference value, said means for comparing including a peak value memory and a pulse generator for generating a clock signal for said peak value memory;
means for counting the number of measurement intervals in which the value of the measured charging voltage is consecutively equal to or less than the stored reference value, with said means for counting including an up-down counter that is set at the start of a charging operation to the highest or lowest count and logic circuit means, con-

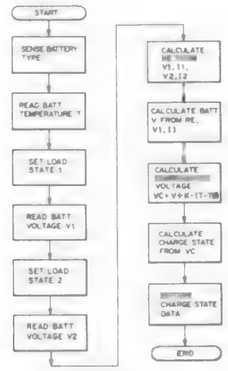


trolled by comparison results from said peak value memory, for switching said up-down counter into its up mode or down mode, respectively, when the increased reference value is stored, and for switching said up-down counter into its down mode or up mode, respectively, when the actual value of said charging voltage is less than said stored reference value; and,
means, responsive to a preset count in said up-down counter, for switching off said charging current source or for reducing charging current step by step depending on said count in said counter, said means for switching including a D/A converter connected behind said up-down counter and supplying a control voltage corresponding to said count of said up-down counter to said charging current source to control the charging current.

5,352,968
BATTERY CHARGE STATE DETERMINATION
Daniele Reni, Provo, Utah, and Michael F. Culbert, Boulder Creek, Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed May 28, 1992, Ser. No. 890,069
Int. Cl.[5] G01N *27/27, 27/04*
U.S. Cl. 320—35 **6 Claims**

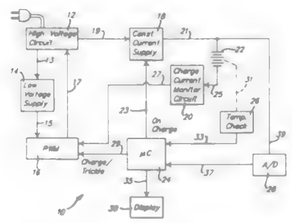
2. The method of determining the charge state of a battery comprising the steps of:
identifying the battery type;
measuring the temperature of the battery;
taking a plurality of battery voltage measurements under known load currents;
calculating the voltage drop due to the internal battery series resistance of the battery from the voltage measurements;
adding the voltage drop due to the internal battery series resistance to the battery voltage to form the equivalent open circuit battery voltage;
compensating the equivalent open circuit battery voltage by

the battery temperature based on the battery type to form a compensated battery voltage; and



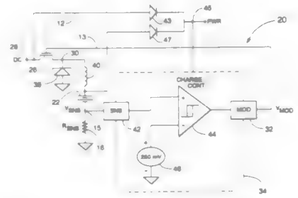
computing the charge state of the battery from the compensated battery voltage.

5,352,969
BATTERY CHARGING SYSTEM HAVING LOGARITHMIC ANALOG-TO-DIGITAL CONVERTER WITH AUTOMATIC SCALING OF ANALOG SIGNAL
Alan A. Gilmore, and Daniele C. Brotto, both of Baltimore, Md., assignors to Black & Decker Inc., Newark, Del.
Filed May 30, 1991, Ser. No. 707,712
Int. Cl.[5] H01M *10/44;* **H02J** *7/04*
U.S. Cl. 320—39 **20 Claims**



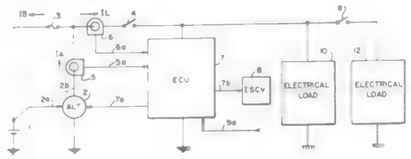
1. A charging device adapted for charging batteries having different voltage ratings, comprising:
a power supply circuit for providing a source of DC charging current;
a microcomputer-based controller circuit for initiating the charging process and controlling application of said charging current to a battery by monitoring the voltage of the battery to obtain an analog battery voltage signal, including analog-to-digital converter means for converting the analog battery voltage signal to a corresponding digital value and a prescaler circuit having associated therewith a settable attenuation level for attenuating said analog battery voltage signal to within a predetermined voltage range from a first voltage value to a second voltage value approximately equal to 150% of said first voltage value, said microcomputer controller circuit being programmed to set the attenuation level of said prescaler circuit so that the attenuated battery voltage signal observed at substantially the initiation of the charging process is approximately equal to but not greater than said first voltage value.

5,352,970
POWER RESOURCE MANAGEMENT SYSTEM
Gene L. Armstrong, II, Garland, Tex., assignor to Benchmarq Microelectronics, Inc., Carrollton, Tex.
Filed Nov. 25, 1992, Ser. No. 981,283
Int. Cl.[5] H02J *7/10*
U.S. Cl. 320—39 **11 Claims**



1. A power management system for managing power distribution between an operating system and the recharging operation of a battery, comprising:
a positive power terminal for being connected to the positive output of the DC power source and the positive input of the operating system;
a battery charge regulating circuit for regulating the current to the battery from the positive terminal of the DC power source as a function of a charge control signal;
a power sensor for sensing the power drawn from the DC power source by the operating system and from the DC power source by the battery through the battery charge regulation circuit; and
a regulation control circuit for generating said charge control signal to control said battery charge regulation circuit to vary the current to the battery to maintain the power drawn from the DC power source below a predetermined level.

5,352,971
ELECTRONIC CONTROL APPARATUS FOR A VEHICLE
Yukinobu Nishimura, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 11, 1993, Ser. No. 29,564
Claims priority, application Japan, Apr. 10, 1992, 4-090944
Int. Cl.[5] H02J *7/14*
U.S. Cl. 322—27 **2 Claims**



1. An electronic control apparatus for a vehicle, comprising:
an alternator for charging a battery and supplying a load current,
means for detecting an output current from the alternator,
means for detecting the load current,
means for comparing the detected output current to a first predetermined value and comparing the detected load current to a second predetermined value, and
means for stopping, for a predetermined time, generation of electricity by the alternator when the comparing means determines that the output current is one of less than and equal to the first predetermined value and for allowing the alternator to resume generating electricity when the com-

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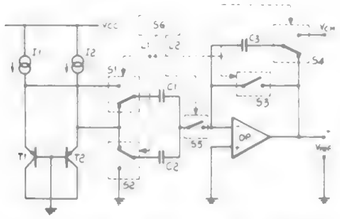
paring means determines that the load current is one of greater than and equal to the second predetermined value.

5,352,972

SAMPLED BAND-GAP VOLTAGE REFERENCE CIRCUIT

Sergio Peruzzi, Bergamo, and Germano Nicollini, Piacenza, both of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Milan, Italy

Filed Mar. 31, 1992, Ser. No. 861,111
Claims priority, application Italy, Apr. 12, 1991, 001026 A/91
Int. Cl.[5] G05F *3/16*
U.S. Cl. 323—313 24 Claims



1. A sampled band-gap reference circuit, comprising:
a first current source and a first diode element joined at a first node and connected in series between first and second voltage terminals,
a second current source and a second diode element joined at a second node and connected in series between said first and second voltage terminals, said first and second diode elements having different current densities therethrough,
a first switch having a first terminal thereof selectively connectable to second and third terminals thereof, said second and third terminals thereof connected respectively to said first and second nodes,
a second switch having a first terminal thereof selectively connectable to second and third terminals thereof, said second and third terminals thereof connected respectively to said second node and said second voltage terminal,
a first capacitor having a first terminal thereof connected to said first terminal of said first switch,
a second capacitor having a first terminal thereof connected to said first terminal of said second switch, wherein second terminals of said first and second capacitors are connected in common to a third node,
a third switch having first and second terminals, said first terminal thereof connected to said third node,
an amplifier having an input and an output, the input thereof connected to said second terminal of said third switch,
a fourth switch having first and second terminals thereof connected between said input and said output of said amplifier, and
a third capacitor having a first terminal thereof connected to said input of said amplifier and a second terminal thereof coupled to said output of said amplifier.

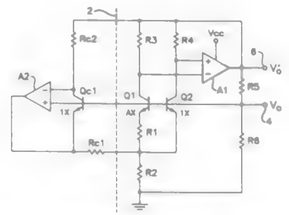
5,352,973

TEMPERATURE COMPENSATION BANDGAP VOLTAGE REFERENCE AND METHOD

Jonathan M. Audy, Campbell, Calif., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Jan. 13, 1993, Ser. No. 4,097
Int. Cl.[5] G05F *3/16*
U.S. Cl. 323—313 11 Claims

1. A bandgap voltage reference circuit with output temperature curvature correction, comprising:
an uncorrected bandgap voltage reference cell that includes a bipolar cell transistor with a collector current that is proportional to absolute temperature (PTAT), and that generates an uncorrected output base voltage over a predetermined temperature range with a temperature curvature component in the form $k_1T - k_2T\ln(k_3T)$, where k_1, k_2 and k_3 are constants and T is absolute temperature,
a bipolar correction transistor,
a current supply circuit for supplying a substantially constant collector current to said correction transistor, and



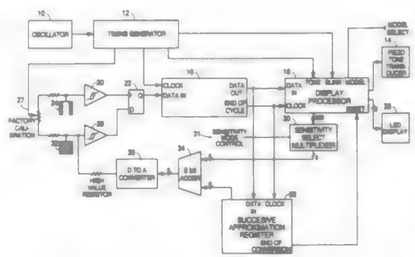
means for generating a correction voltage that varies continuously with temperature over said temperature range, is proportional to the difference between the base-emitter voltages of said cell and correction transistors and has the form $-k_1T + k_2T\ln(k_3T)$, and for combining said correction voltage with said uncorrected output voltage to substantially cancel the output voltage's temperature curvature component over said temperature range.

5,352,974

STUD SENSOR WITH DIGITAL AVERAGER AND DUAL SENSITIVITY

Charles E. Heger, Saratoga, Calif., assignor to Zircon Corporation, Campbell, Calif.

Filed Aug. 14, 1992, Ser. No. 931,189
Int. Cl.[5] G01R *27/26*
U.S. Cl. 324—67 21 Claims



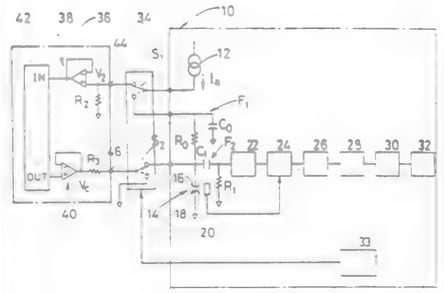
1. A portable device for locating a stud positioned behind a surface comprising:
a sensor sensing additional capacitive loading caused by the stud while said sensor moves along the surface approaching the stud and providing digital data signals as output when said additional capacitive loading is sensed;
a digital averager receiving the data signals from said sensor and averaging them; and
a display processor receiving the averaged data and in response providing an indication of the stud position on a display unit.

5,352,975

CORPUSCLE-DETECTING APPARATUS HAVING SENSITIVITY ADJUSTMENT

Kunio Ueno, Kakogawa, Japan, assignor to Toa Medical Electronics Co., Ltd., Kobe, Japan

Filed Feb. 9, 1993, Ser. No. 15,385
Claims priority, application Japan, Mar. 4, 1992, 4-047139
Int. Cl.[5] G01N *27/02*
U.S. Cl. 324—71.4 8 Claims



1. A corpuscle-detecting apparatus comprising:
a detector portion having an aperture through which corpuscles to be investigated pass, the detector portion acting to produce a signal in response to a change in the electrical impedance that is caused by passage of the corpuscles through the aperture;
a power supply which supplies an electrical current to the aperture for detection of the corpuscles;
a corpuscle signal-processing means which processes the output signal from the detector portion;
a pseudo signal generating means for producing a pseudo signal comprising pulses, said pseudo signal having a peak value corresponding to an amplitude of the electrical current of said power supply;
a signal selector means mounted between (i) the pseudo signal-generating means and (ii) the aperture, the power supply, and the corpuscle signal-processing means, the signal selector means being switched between (i) a first state in which the electrical current from the power supply is supplied to the pseudo signal-generating means and the pseudo signal produced by the pseudo signal-generating means is supplied to the aperture wherein a signal produced by said detector portion in accordance with said pseudo signal is equivalent to the signal produced in response to passage of corpuscles through the aperture and (ii) a second state in which the electrical current from the power supply is supplied to the aperture.

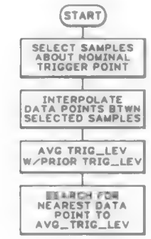
5,352,976

MULTI-CHANNEL TRIGGER DEJITTER

George S. Walker, and Eric P. Etheridge, both of Beaverton, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Jan. 31, 1992, Ser. No. 828,827
Int. Cl.[5] G01R *25/00*
U.S. Cl. 324—121 R 3 Claims

1. A trigger dejitter method comprising the steps of:
acquiring a set of digitized samples from a repetitive waveform signal about a hardware trigger signal, each digitized sample having a magnitude value and a time relative to the hardware trigger signal;
calculating a set of interpolated samples between the digitized samples;
determining one of the digitized and interpolated samples as a hardware trigger point corresponding to the hardware trigger signal;
averaging the magnitude of the one sample with an average magnitude for trigger points from prior acquisitions;
determining another of the samples as an averaged trigger point corresponding to the average magnitude; and



adjusting the time of each digitized sample according to the difference in time between the hardware and averaged trigger points.

5,352,977

Patent Not Issued For This Number

5,352,978

APPARATUS FOR SENSING A MAGNETIC FIELD WITH A SUPERCONDUCTIVE MATERIAL

Hideo Nojima; Hidetaka Shintaku, and Masayoshi Koba, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 773,765, Oct. 10, 1991, Pat. No. 5,254,945, which is a continuation of Ser. No. 544,899, Jun. 28, 1990, abandoned. This application Mar. 19, 1993, Ser. No. 34,877
Claims priority, application Japan, Jun. 30, 1989, 1-170303; Jun. 30, 1989, 1-170306
Int. Cl.[5] G01R *33/035, 33/06;* H01L *39/12, 39/16*
U.S. Cl. 324—248 8 Claims

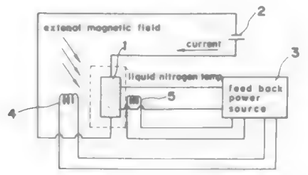
1. An apparatus for sensing externally applied magnetic fields comprising:

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a magneto-resistive element formed of a superconductor material having weak coupling grain boundaries,

means spaced a distance from said element for applying an A.C. bias magnetic field to said element;

means for applying another bias magnetic field to said element;



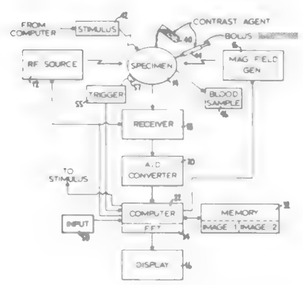
means for outputting an output voltage of the element generated by application of the bias magnetic fields as a signal representing the intensity of the applied magnetic field; and means for receiving a voltage from the element and supplying a controlled current to the means for applying another bias magnetic field.

5,352,979

MAGNETIC RESONANCE IMAGING WITH CONTRAST ENHANCED PHASE ANGLE RECONSTRUCTION

Thomas E. Conturo, 1000 Fell St., #224 Henderson's Wharf, Baltimore, Md. 21231

Filed Aug. 7, 1992, Ser. No. 927,120
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—307 35 Claims



1. A method for imaging a specimen comprising one of a substance traversed by passages and a material having a changeable magnetization, comprising the steps of:

illuminating the specimen along at least one plane traversing the localized area, using a pulsed radio frequency source, and collecting at least one baseline sample representing an electromagnetic response of the specimen to the pulsed radio frequency source;

altering a magnetic property of the specimen by one of perfusing the specimen with an agent having a magnetic property different from a corresponding magnetic property of the specimen at least in a localized area to be imaged, and physically perturbing the specimen to induce a macroscopic change in the magnetic property;

illuminating the specimen along at least one plane traversing the localized area, using the pulsed radio frequency source;

collecting a plurality of data samples representing the electromagnetic response of the specimen, including the agent, to the pulsed radio frequency source;

converting the data samples into a map of phase information for an array of volume elements in said plane to thereby construct an image from variations in the electromagnetic responses of the volume elements as represented by different shifts in one of frequency, phase, real, imaginary and complex signal information between the source illuminating the specimen and the data samples collected therefrom:

correcting phase angles representing the volume elements in the array to cancel variations that are present in both the data samples and the baseline sample; and,

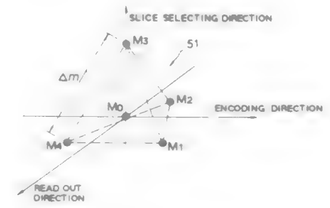
identifying variations in the localized area by corresponding variations in phase information of the volume elements in said map.

5,352,980

MAGNETIC RESONANCE IMAGING APPARATUS

Yoshio Machida, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 25, 1993, Ser. No. 22,956
Claims priority, application Japan, Feb. 27, 1992, 4-041440
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—307 14 Claims



1. A magnetic resonance imaging apparatus for imaging a moving spin in an object being examined, comprising:

means for predetermining sets of pulse sequences corresponding to predetermined moment vectors respectively which impart a phase shift to the moving spin;

means for acquiring echo data by implementing said pulse sequences;

means for calculating a flow-related value of the moving spin using the echo data; and

means for generating image data of the moving spin using the flow-related value,

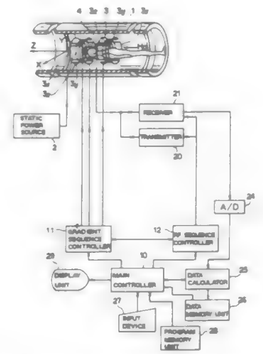
wherein the moment vectors correspond to four vertices and a center of a tetrahedron respectively located in a three-dimensional moment space.

5,352,981

HIGH-RESOLUTION IMAGE RECONSTRUCTION METHOD FOR MRI

Yoshio Machida, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 25, 1992, Ser. No. 981,760
Claims priority, application Japan, Nov. 27, 1991, 3-312623
Int. Cl.[5] G01R *33/00*
U.S. Cl. 324—309 17 Claims



1. An image reconstruction method for magnetic resonance imaging, in which an object to be imaged is placed in a static magnetic field and gradient magnetic fields are applied to the object through gradient coils for obtaining a discrete magnetic resonance signal to reconstruct the image, the method comprising the steps of:

setting a transforming parameter in a discrete oblique Fourier transformation;

collecting the discrete magnetic resonance signal through a radio frequency coil; and

reconstructing the image by applying a discrete oblique Fourier transformation with said transforming parameter to the collected discrete magnetic resonance signal.

5,352,982

METHOD AND APPARATUS FOR DISPLAYING A RESIDUAL ELECTRIC CHARGE OF A BATTERY FOR AN ELECTRICALLY DRIVEN VEHICLE

Yoshihiro Nakazawa; Satoshi Honda; Hiroyuki Suzuki, and Shigemi Sasaki, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1991, Ser. No. 767,650
Claims priority, application Japan, Oct. 16, 1990, 2-277263
Int. Cl.[5] G01N *27/416*
U.S. Cl. 324—427 1 Claim

1. An apparatus for determining a residual electric charge of a battery for an electrically driven vehicle comprising:

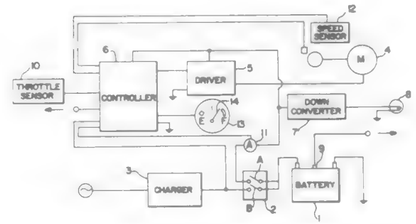
measuring means for initially measuring a charge capacity of the battery after completion of a charging operation;

calculation means for calculating power dissipated by the battery;

control means, operatively connected to said measuring means and said calculation means, for determining a residual electric charge of the battery from a difference between the measured charge capacity and the calculated dissipated power; and

display means, operatively connected to said control means, for displaying said residual electric charge of the battery,

said control means comparing said residual electric charge to a predetermined lower limit and disabling power supply from the battery to the electrically driven vehicle



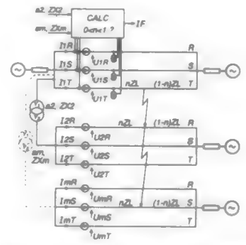
when said residual electric charge is lower than said predetermined lower limit.

5,352,983

METHOD AND APPARATUS FOR DETECTING FLASHOVER BETWEEN CONDUCTORS IN POWER TRANSMISSION LINES OF DIFFERENT VOLTAGE LEVELS SUSPENDED IN PARALLEL FROM THE SAME TOWERS

Leif Eriksson, Sala, and Murari M. Saha, Västerås, both of Sweden, assignors to Asea Brown Boveri AB, Västerås, Sweden

Filed Dec. 1, 1992, Ser. No. 983,728
Claims priority, application Sweden, Dec. 20, 1991, 9103798-6
Int. Cl.[5] G01R *31/08*
U.S. Cl. 324—522 2 Claims



1. Apparatus for detecting a flashover between conductors in power transmission lines of different voltage levels suspended from the same towers, comprising:

a power network comprising the power lines and wherein one of the power lines is a high voltage power line and the other power lines are connected to the high voltage power line via transformers of a known transformer ratio (am) and internal impedance (ZXm), and wherein the line impedances (ZL) are known;

a flashover indicating means (CALC) storing the known transformer ratios (am), the line impedances (ZL) and the internal impedances (ZXm) for determining the occurrence of a flashover;

said flashover indicating means receiving the phase currents I1 and phase voltages U1 of the high voltage line and detecting a current change I1 in any of the phases in the high voltage line and calculating the following parameters:

$$\Delta I1\alpha + I2\beta + I3\gamma + \ldots + Im\phi = 0$$

$$U2\beta = U1\beta/a2 - I2\beta \cdot ZX2$$

$$U3\gamma = U1\gamma/a3 - I3\gamma \cdot ZX3$$

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-continued

$$Um\phi = U1\phi/am - Im\phi \cdot ZXm$$

$$U1\alpha - n \cdot ZL \cdot I1\alpha = n \cdot ZL \cdot I2\beta - U2\beta = 0$$

$$U1\alpha - n \cdot ZL \cdot I1\alpha + n \cdot ZL \cdot I3\gamma - U3\gamma = 0$$

$$U1\alpha - n \cdot ZL \cdot I1\alpha = n \cdot ZL \cdot Im\phi - Um\phi = 0$$

where α, β, ϕ and γ may be R-, S- or t-phase and n·ZL is the line impedance from the measuring station to the fault location (F) at the relative distance to fault n, whereby fault n can be determined; and

said flashover determining means generates a signal IF for indicating that a flashover has occurred within the protective zone if $0<n<1$.

5,352,984

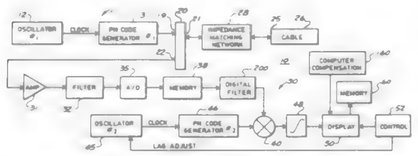
FAULT AND SPLICE FINDING SYSTEM AND METHOD

Gregory H. Piesinger, Cave Creek, Ariz., assignor to Cable Repair Systems Corporation, Coral Springs, Fla.

Filed Nov. 4, 1992, Ser. No. 972,240

Int. Cl.[5] G01R *31/08*

U.S. Cl. 324—532 **11 Claims**



1. A method of finding a fault in an electrical cable comprising the steps of:

introducing a pulsed electrical signal into a near end of an electrical cable, the pulsed electrical signal producing second and third pulses of electrical energy representative of the reflected electrical energy from a fault in the cable and reflected electrical energy from a far end of the cable;

sensing, adjacent the near end of the cable, the pulsed electrical signal and the second and third pulses and providing an indication of a time between the second and third pulses;

sensing the time between the pulsed electrical signal and the third pulse at a plurality of different positions along the electrical cable until a position is reached at which the time between the pulsed electrical signal and the third pulse is approximately equal to the indication of the time between the second and third pulses; and

noting the position of the fault at the position along the electrical cable where the times are equal.

5,352,985

APPARATUS FOR DETERMINING THE RELATIVE POSITIONS OF POWER OUTLETS WITHIN AN ELECTRICAL CIRCUIT

Peter Simon, Darlinghurst, Australia, assignor to H.P.M. Industries PTY Limited, Australia

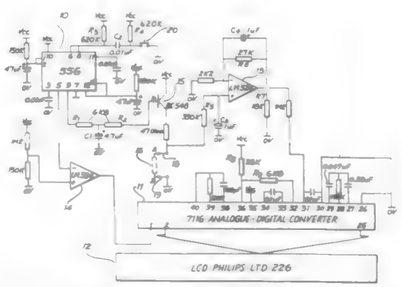
Filed Nov. 27, 1992, Ser. No. 982,515

Claims priority, application Australia, Nov. 29, 1991, PK9795

Int. Cl.[5] G01R *27/02*

U.S. Cl. 324—716 **3 Claims**

1. An apparatus for determining relative positions of power outlets within a multi-outlet electrical circuit in which earth and neutral wires are interconnected, the apparatus comprising: means for generating a periodic current pulse, probe means for injecting the current pulse into a wiring loop which extends between neutral and earth contact terminals of each of the outlets and for sensing voltage across the contact terminals, means for detecting within the period of the current pulse a voltage drop which occurs along the wiring loop as a consequence of current flow through the loop, means for generating a signal which is representative of the voltage drop along the wiring loop, and an indicator device to which the signal representative of the voltage drop is applied for generating an output display which is representative of level of the signal and of length of wiring between each outlet and a junction of the neutral and earth wiring in the electrical circuit, wherein: the means for generating the current pulse includes a ramping circuit for causing the pulse to ramp up and ramp down at leading and trailing ends respectively of the pulse, said apparatus further comprising means for generating an enabling signal for application to the indicator device to inhibit said output display during ramping of said current pulse, and the enabling signal comprises a timing pulse which has a duration shorter than that of the current pulse by an amount at least equal to duration of ramping of the current pulse.



5,352,986

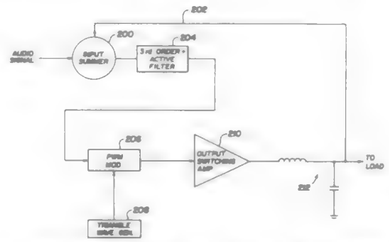
CLOSED LOOP POWER CONTROLLER

Onkar S. Modgil, Mesquite; Robert G. Nelson, and Margaret S. Reif, both of Dallas, all of Tex., assignors to Digital Fidelity, Inc., Plano, Tex.

Filed Jan. 22, 1993, Ser. No. 7,521

Int. Cl.[5] H03F *3/38, 1/36*

U.S. Cl. 330—10 **22 Claims**



1. A closed-loop system, having an input and an output, for controlling power comprising, means to sum an input signal with a derived output signal to produce a difference signal representative of the polarity of the difference between said input signal and said derived output signal,

means for producing an asynchronous digital signal representative of the polarity of said difference signal, at least two switching networks, said switching networks having high energy outputs and being responsive to said asynchronous digital signal to reduce the level of said difference signal in a frequency band of interest at said means of producing the said asynchronous digital signal; and

a low-pass filter at least of the third order between said high energy outputs and said means of producing the said asynchronous digital signal to attenuate high-frequency noise, said low-pass filter being in said closed loop to enhance the signal-to-noise ratio at said output of said closed-loop system and modified to maintain loop stability.

5,352,987

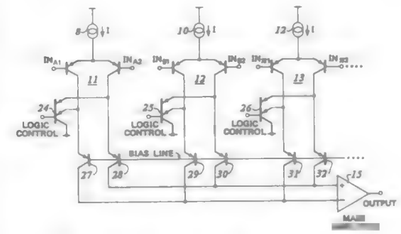
ANALOG MULTIPLEXER

Barry Harvey, Los Altos, Calif., assignor to Elantec, Inc., Milpitas, Calif.

Filed Jul. 21, 1993, Ser. No. 95,285

Int. Cl.[5] H03F *3/68;* **H03K** *17/56*

U.S. Cl. 330—51 **1 Claim**



1. An analog multiplexer comprising:

an amplifier including a pair of inputs for forming an output from signals appearing on the pair of inputs thereof;

a plurality of input stages, each including a pair of transistors of one conductivity type having bases and collectors and having emitters commonly connected to receive bias signal;

logic means including emitter followers of the one conductivity type with emitters connected to the collectors of the transistors in each of the input stages for selectively shunting collector currents therethrough in response to applied logic signals; and

a coupling transistor of the one conductivity type stage, each coupling transistor having an emitter connected to the collector of each transistor in each of the input stages, and having a collector connected to one of the pair of inputs of the amplifier, and having a base connected to a source of bias signal for selectively conducting signal through the coupling transistors to the inputs of the amplifier in response to the associated logic means not conducting signal therethrough.

5,352,988

AUTOMATIC GAIN CONTROLLER

Il-keun Park, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Oct. 19, 1993, Ser. No. 137,771

Claims priority, application Rep. of Korea, Mar. 31, 1993, 1993-5701

Int. Cl.[5] H03G *3/20*

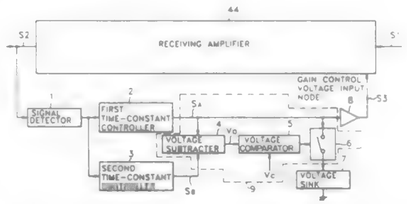
U.S. Cl. 330—141 **11 Claims**

8. An automatic gain controller for controlling an amplifier to produce an output signal of constant amplitude regardless of the amplitude of an input signal to the amplifier comprising:

signal detecting means receiving an output signal having a varying amplitude from an amplifier for converting the output signal into a DC current changing in amplitude according to the amplitude of the output signal;

first and second time-constant controlling means connected in parallel and receiving the DC current to produce first and second pure DC components with different time-response characteristics;

control means receiving the first and second pure DC components for controlling transmission of the first pure DC component;



voltage sinking means connected to said control means; and

control voltage amplifying means receiving the first pure DC component when transmitted by said control means to produce an amplified output signal supplied to the amplifier for regulating gain of the amplifier.

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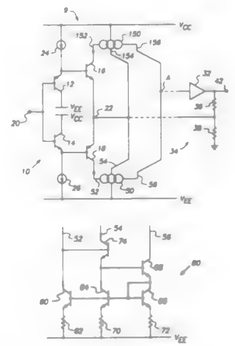
LOW INPUT RESISTANCE AMPLIFIER STAGE

Christofer Toumazou, Oxford, United Kingdom, and Martin Anding, Los Gatos, Calif., assignors to Elantec, Inc., Milpitas, Calif.

Continuation-in-part of Ser. No. 41,936, Apr. 2, 1993. This application May 11, 1993, Ser. No. 62,810

Int. Cl.[5] H03F *3/30*

U.S. Cl. 330—265 **7 Claims**



1. A low input resistance amplifier stage comprising:

a buffer having inverting and non-inverting inputs and a pair of current outputs, for generating current signals at the current outputs in response to a differential signal applied between the inverting and non-inverting inputs; and

a pair of multiple output current mirrors, each multiple output current mirror comprising:

a first transistor having a base, collector and emitter, the emitter being connected to a supply voltage through a first current scaling resistor, and the collector being connected to one of the current outputs of the buffer to form a low impedance input for the current mirror;

a second transistor having a base, collector and emitter, the emitter being connected to the supply voltage through a second current scaling resistor and the collector being connected to the inverting input of the buffer

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through a first isolating transistor to form a high impedance output of the current mirror for providing a feedback current to the inverting input, depending on the ratio of the resistances of the first and second current scaling resistors; and

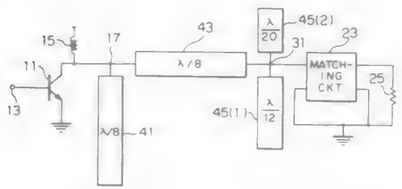
a third transistor having a base, collector and emitter, the emitter being connected to the supply voltage through a third current scaling resistor, the base being connected to the bases of the first and second transistors, and the collector being connected to the base and to a high gain node of the amplifier stage through a second isolating transistor to form a high impedance output of the current mirror for providing an output current to the high gain node, depending on the ratio of the resistances of the first and third current scaling resistors.

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POWER MATCHING NETWORK COMPRISING AN INTERMEDIATE TRANSMISSION LINE BETWEEN A TRANSISTOR AMPLIFIER OUTPUT END AND AT LEAST ONE OPEN-END LINE

Norio Goto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 6, 1994, Ser. No. 178,877
Claims priority, application Japan, Jan. 7, 1993, 5-000903
Int. Cl.[5] H03F *3/60*
U.S. Cl. 330—286 **10 Claims**



1. A power matching network for a transistor amplifier producing at its output end an amplified signal comprising a fundamental frequency signal and odd and even harmonic signals, said power matching network comprising:

an open-end transmission line connected to said output end and having a length of a ⅛ wavelength of said fundamental frequency signal;

an intermediate transmission line connected to said output end and having a line end and a length of said ⅛ wavelength;

at least one open-end transmission line connected to said line end and having a quarter wavelength of said odd harmonic signal; and

a matching circuit connected to said line end for said fundamental frequency signal.

5,352,991

POWER AMPLIFIER ASSEMBLY

Jeffrey S. Lipschultz, Lake Zurich; John N. Lubbe, Chicago, and Marc H. Pullman, Bartlett, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

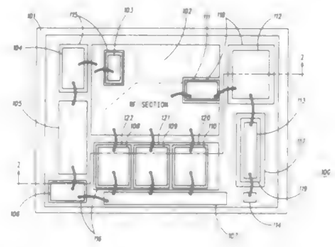
Filed Aug. 12, 1993, Ser. No. 105,243
Int. Cl.[5] H01L *23/36, 23/34*
U.S. Cl. 330—289 **12 Claims**

1. A power amplifier assembly that dissipates a maximum of one thousand one hundred watts, the power amplifier assembly comprises:

a power amplifier circuit that includes at least one power element and a plurality of circuit elements;

at least one thermal coupling device that is thermally coupled to the at least one power element; and

a chassis that includes a heat sink base, wherein the heat sink base includes a mounting pattern for the plurality of circuit elements and the at least one thermal coupling device, wherein the chassis has an overall volume of 0.02 cubic



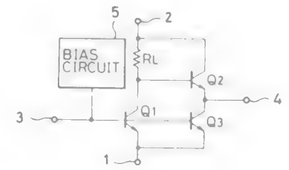
meters, and wherein the heat sink base has a power dissipation of 1,100 watts/0.016 cubic meters.

5,352,992

AMPLIFIER CIRCUIT

Hiroshi Asazawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 7, 1993, Ser. No. 59,061
Claims priority, application Japan, May 7, 1992, 4-114394
Int. Cl.[5] H03G *11/00, 5/00*
U.S. Cl. 330—310 **5 Claims**



1. An amplifier circuit, comprising:

an amplifying stage including a first emitter-grounded bipolar transistor and a load circuitry; and

an output stage including

a second bipolar transistor serving as an emitter-follower having its base connected with the output of said amplifying stage; and

a third bipolar transistor having its base connected with the base of said first bipolar transistor, for driving said emitter-follower, output of said amplifier circuit being taken between the emitter of said second bipolar transistor and the collector of said third bipolar transistor.

5,352,993

VOLTAGE CONTROLLED SAW OSCILLATOR

Heinz B. Mäder, Weinfelden, Switzerland, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Sep. 30, 1992, Ser. No. 954,509
Int. Cl.[5] H03B *5/20*
U.S. Cl. 331—107 A **5 Claims**

1. An oscillator comprising:

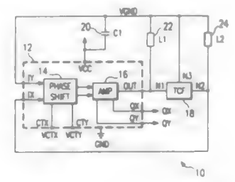
an integrated circuit comprising:

a phase shifting network, and

an amplifier connected to said phase shifting network; and

a resonator having an input port and an output port connected as a feedback element around said integrated circuit, wherein said phase shifting network comprises a multiplier having an input terminal and an output terminal, a first transconductance amplifier connected in circuit

to said output terminal of said multiplier, and a second transconductance amplifier and a third transconductance



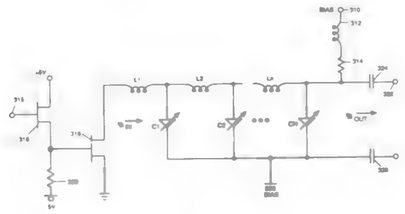
amplifier connected in series and in circuit in parallel to said multiplier and said first transconductance amplifier.

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GALLIUM ARSENIDE MONOLITHICALLY INTEGRATED NONLINEAR TRANSMISSION LINE IMPEDANCE TRANSFORMER

Alistair D. Black, Los Gatos; David M. Bloom, Portola Valley; Robert A. Marsland, Cupertino; Mohammad S. Shakouri, Santa Clara, and Allen F. Podell, Palo Alto, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation-in-part of Ser. No. 686,916, Apr. 16, 1991, which is a continuation-in-part of Ser. No. 558,356, Jul. 26, 1990, which is a continuation-in-part of Ser. No. 259,027, Oct. 17, 1988, which is a continuation-in-part of Ser. No. 106,554, Oct. 6, 1987, Pat. No. 5,014,018. This application May 1, 1991, Ser. No. 695,038
Int. Cl.[5] H03H *7/38;* **H01P** *5/00*
U.S. Cl. 333—33 **32 Claims**



1. A nonlinear impedance transformer, comprising:

an input port for coupling to a signal source having an output impedance, said input port for receiving from said signal source a step signal having a transition between first and second voltage states;

an output port for coupling said impedance transformer to a load having an input impedance; and

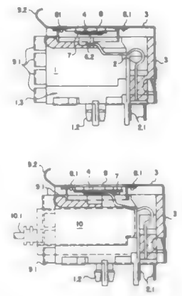
a plurality of L-C sections connected in series to form a nonlinear transmission line, including at least an input L-C section having a characteristic impedance substantially matching said output impedance of said signal source and an output L-C section having an output impedance which substantially matches the input impedance of said load but which is different from said characteristic impedance of said input L-C section, with the characteristic impedances of each said L-C section scaled between the characteristic impedance values of said input and output sections, each said L-C section including means for making the group velocity of a signal propagating down said transmission line voltage dependent.

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MULTIPOLAR JACK FOR ELECTRONIC SIGNAL LINES

Bob Mouissie, Ek Berlicum, Netherlands, assignor to Filtec Filtertechnologie Fuer Die Elektronikindustrie GmbH, Lippstadt, Fed. Rep. of Germany

Filed Jun. 7, 1993, Ser. No. 73,093
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1992, 9207521[U]
Int. Cl.[5] H01R *13/66;* **H03H** *7/00*
U.S. Cl. 333—181 **11 Claims**



1. A multipolar plug connector assembly, comprising:

a plug connector and a plug for a given number of signal lines conducting digitized electronic signals;

said plug connector having a housing in the form of a conductive shielding enclosure;

a plurality of contact springs being at least equal in number with said given number of signal lines, said contact springs having associated conductors and being disposed in said housing;

said plug connector cooperating with said plug for making contact with the contact springs of said plug and for lifting said contact springs from a position of rest into an operating position, when said plug connector and said plug are plugged together; and

a filter configuration being disposed in said plug housing and having contact surfaces, said contact surfaces cooperating with said contact springs, and said conductors being physically disconnected from said contact surfaces when unplugged and physically and electrically connected with said conductors when plugged, by bringing said contact springs from the position of rest into the operating position when said plug is inserted into said plug connector.

5,352,996

INTERDIGITAL BANDPASS FILTER

Ei Kawaguchi, Kanagawa, Japan, assignor to Leader Electronics Corp., Kanagawa, Japan

Filed Jan. 29, 1993, Ser. No. 11,144
Claims priority, application Japan, Jan. 30, 1992, 4-015080
Int. Cl.[5] H01P *1/205*
U.S. Cl. 333—203 **14 Claims**

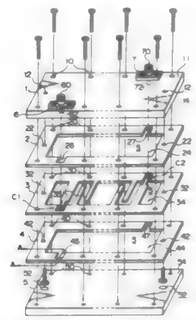
1. An interdigital bandpass filter having a space for accommodating a resonator, said filter comprising:

a plate integrally including a plurality of resonator elements, said resonator elements being arranged to extend in said resonator accommodating space, said plurality of resonator elements extending in a common plane;

an input conductor coupling portion extending in a direction intersecting with said common plane to said resonator accommodating space for coupling an input conductor to one of said plurality of resonator elements; and

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an output conductor coupling portion extending in a direction intersecting with said common plane to said resonator



accommodating space for coupling an output conductor to another one of said plurality of resonator elements.

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DIELECTRIC RESONATOR STRUCTURE HAVING RESONATOR DISPLACEABLE BETWEEN SUPPORT PLATES FOR ADJUSTING RESONANCE FREQUENCY

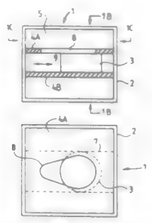
Veli-Matti Särkkä, Oulunsalo, Finland, assignor to Nokia Telecommunications OY, Espoo, Finland

Filed Jan. 7, 1993, Ser. No. 960,396

Claims priority, application Finland, May 9, 1991, 912257

Int. Cl.[5] H01P *7/10*

U.S. Cl. 333—219.1 **12 Claims**



1. A dielectric resonator structure, comprising:

a resonator made of a dielectric material;

a pair of two spaced apart but confronting support plates, said resonator being supported between said plates;

means for displacing said resonator between said support plates, in at least one direction that is parallel to said support plates;

at least one of said support plates being made of a dielectric material and having an opening provided therethrough, the width of said opening crosswise of said direction varying in said direction if relative to said resonator as a result of said resonator being displaced in said direction by said means for displacing.

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MICROWAVE INTEGRATED CIRCUIT HAVING A PASSIVE CIRCUIT SUBSTRATE MOUNTED ON A SEMICONDUCTOR CIRCUIT SUBSTRATE

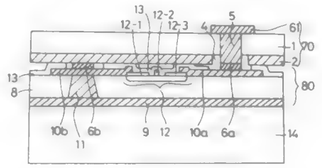
Noriyuki Tanino, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 1, 1993, Ser. No. 130,555

Claims priority, application Japan, Oct. 9, 1992, 4-298137

Int. Cl.[5] H01L *23/12*

U.S. Cl. 333—247 **12 Claims**



1. A microwave integrated circuit comprising:

a passive circuit substrate comprising a thin dielectric film having opposite first and second surfaces, a thin conductive film disposed on the second surface of said thin dielectric film, passive circuit elements having respective terminals disposed on the first surface of said thin dielectric film, the passive circuit elements including at least microstrip lines with said thin conductive film as a grounding conductor, openings penetrating through prescribed portions of said thin conductive film, and through-hole conductors having respective first and second ends and penetrating through portions of said thin conductive film, the first end of each through-hole conductor protruding from a corresponding opening of said thin conductive film and the second end contacting one of a terminal and a grounding conductor of a passive circuit element; and

a semiconductor circuit substrate comprising a semiconductor substrate having opposite first and second surfaces, a thin conductive film disposed on the second surface of the semiconductor substrate, and active circuit elements having respective electrodes disposed on the first surface of the semiconductor substrate, wherein the passive circuit substrate is mounted on said semiconductor circuit substrate with the second surface of said passive circuit substrate facing the first surface of said semiconductor circuit substrate so that said through-hole conductors are electrically connected to electrodes of said active circuit elements.

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ELECTROMAGNETIC RELAY AND METHOD OF ADJUSTING SAME

Wolfgang Hoffmann; André Körner, both of Lippstadt, and Maik Zimmer, Erwitte, all of Fed. Rep. of Germany, assignors to Hella KG Hueck & Co., Lippstadt, Fed. Rep. of Germany

Filed Dec. 2, 1993, Ser. No. 160,196

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1992, 4243852

Int. Cl.[5] H01H *51/22*

U.S. Cl. 335—86 **6 Claims**

1. An unadjusted, and therefore unfinished, electromagnetic relay comprising:

a base plate;

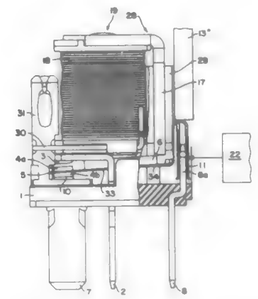
a plurality of terminal tongues extending through and engaging said base plate;

an armature;

a switching contact spring mechanically attached to the armature for supporting the armature with a first portion of the switching contact spring having at least one movable switch contact thereon;

wherein a second portion of the switching contact spring has

a coupling element coupled to a portion of a contact terminal tongue, said coupling element providing a mechanical as well as an electrical connection with said portion of said contact terminal tongue, said coupling element being formed as a spring clamping mechanism for allowing sliding contact between said spring clamping



mechanism and said contact terminal tongue for allowing sliding contact between said spring clamping mechanism and said portion of said contact terminal tongue in a direction for properly adjusting a sensitivity of movement of said movable switch contact, said coupling element including a means for affixing it to the portion of the terminal tongue at a correctly adjusted position.

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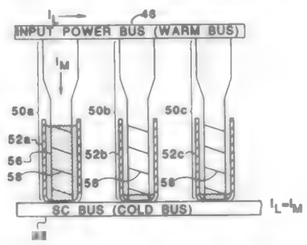
SHUNTABLE LOW LOSS VARIABLE CURRENT VAPOR COOLED LEADS FOR SUPERCONDUCTIVE LOADS

Dean G. Morris, San Diego; Michael Heiberger, Cardiff, and Edward E. Bowles, San Diego, all of Calif., assignors to General Atomics, San Diego, Calif.

Filed Jun. 1, 1993, Ser. No. 69,763

Int. Cl.[5] H01F *7/22*

U.S. Cl. 335—216 **19 Claims**



12. A shuntable low loss variable current vapor cooled lead (VCVCL) system for connecting an input power bus to a superconductive power bus, said system comprising:

a plurality of shuntable low loss variable current vapor cooled lead (VCVCL) assemblies connected in parallel between said superconductive power bus and said input power bus, each of said VCVCL assemblies including:

a superconductive material that is electrically connected between said input power bus and said output power bus,

a containment jacket surrounding said superconductive material, and

filling means for independently and selectively filling said containment jacket with a cryogenic liquid, so as to completely immerse said superconductive material,

said superconductive material exhibiting superconducting properties when immersed within said cryogenic liquid, and not exhibiting superconducting properties when not immersed within said cryogenic liquid; and

control means for selectively controlling each of said filling means as a function of how much current is flowing between said input power bus and said superconductive power bus;

whereby the conduction properties of each of said VCVCL assemblies may be selectively controlled between either a superconducting state exhibiting virtually no resistance, or a non-superconducting state exhibiting a finite resistance, as a function of how much of said superconductive material of each VCVCL assembly is completely immersed within said cryogenic liquid by said filling means; or completely exposed out of said cryogenic liquid by said filling means;

whereby the current flow within each of said VCVCL assemblies may be controlled by said filling means, with the current flow through a given VCVCL assembly that exhibits a finite resistance being effectively shunted to a parallel VCVCL assembly that exhibits a much lower resistance.

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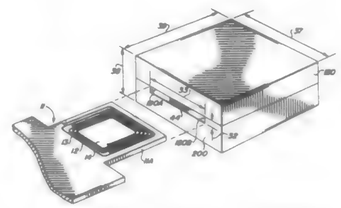
HYBRID INTEGRATED CIRCUIT PLANAR TRANSFORMER

Walter B. Meinel, and R. Mark Stitt, II, both of Tucson, Ariz., assignors to Burr-Brown Corporation, Tucson, Ariz.

Continuation of Ser. No. 645,224, Jan. 24, 1991, abandoned. This application Oct. 30, 1992, Ser. No. 969,508

Int. Cl.[5] H01F *27/26, 27/30*

U.S. Cl. 336—83 **3 Claims**



1. A planar transformer comprising in combination:

(a) a printed circuit board having parallel first and second surfaces;

(b) a first spiral winding on one of the first and second surfaces surrounding a first magnetic flux path area, and a second spiral winding generally concentric with the first spiral winding on one of the first and second surfaces surrounding a second magnetic flux path area that overlaps the first magnetic flux path area, a portion of the printed circuit board with the first and second spiral windings thereon having a maximum thickness; and

(c) a ferrite core assembly including

i. a first core section including a thin, flat first plate,

ii. a second core section including a thin, flat second plate, spaced thin, flat, elongated first and second post sections disposed between the first and second plates abutting inner surfaces of the first and second plates, forming a shallow gap greater than the maximum thickness bounded by the first and second post sections and inner surfaces of the first and second plates, the portion of the printed circuit board with the first and second spiral windings thereon extending entirely into the shallow gap so that magnetic flux passing through the first and second magnetic flux path areas also passes across the gap.

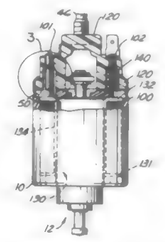
VOL 1167 ISS 1 OC 4 1994 UMI

5,353,002

COIL BOBBIN AND SEALING COUPLER

John Jozefczyk, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 23, 1991, Ser. No. 811,857
Int. Cl.[5] H01F *15/10*
U.S. Cl. 336—192 **11 Claims**



1. An apparatus for sealing with a section of wire communicating through an aperture in a first section of a housing of an automotive electrical component having a cavity therein, comprising:

sealing means having a distended section for coupling into the aperture and sealing with the first section of the housing adjacent the aperture, said distended section also having therein a longitudinal slot for receiving therein, deforming around and sealing with the section of wire responsive to said sealing means being compressed in the longitudinal direction into the aperture within the first section of the housing, and

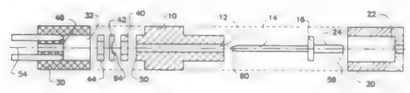
pressure means, carried within the cavity, for compressing said sealing means in said longitudinal direction between the first section of the housing having the aperture therein and a second section of the housing spaced from the first section, whereby the compression causes said sealing means to seal with both the section of wire and the first section of the housing as the section of wire communicates therethrough.

5,353,003

FORCE SENSOR

Dean J. Maurer, Galena, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 16, 1992, Ser. No. 961,994
Int. Cl.[5] H01C *10/10*
U.S. Cl. 338—47 **8 Claims**



1. A force sensor, comprising:

a pressure sensitive device disposed within a housing and comprising means for providing an output signal representative of a pressure imposed on it;

means for transmitting said force to said pressure sensitive device, said transmitting means comprising a shaft slidably disposed in said housing, said shaft being moveable along a first axis and being disposed in force communicating association with said pressure sensitive device, said pressure sensitive device being a silicon device, said pressure sensitive device comprising a diaphragm which is moveable in response to pressure imposed thereon by a first end of said shaft;

a piezoresistor associated with said diaphragm to deform said piezoresistor in response to movement of said diaphragm; and

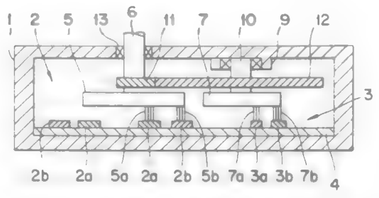
resilient means, disposed between said diaphragm and said first end of said shaft proximate said diaphragm, for exerting pressure on said diaphragm in response to a force exerted against said second end of said shaft, said shaft extending through an opening of said housing, said second end of said shaft being external to said housing.

5,353,004

SENSOR FOR DETECTING STEERING ANGLE

Shuichi Takemoto; Yukihisa Oda, both of Chiryu, and Akio Hashimoto, Anjo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 30, 1991, Ser. No. 784,993
Claims priority, application Japan, Oct. 31, 1990, 2-115034[U]
Int. Cl.[5] H01C *13/00, 10/16*
U.S. Cl. 338—50 **6 Claims**



1. A sensor for detecting a steering angle comprising:

a steering shaft to be rotated by a steering wheel;

a first shaft member operatively connected to the steering shaft so as to be rotated together with the steering shaft;

a first potentiometer operatively connected to the first shaft member for generating first steering angle information in the form of a voltage having one value plural times during rotation of the steering wheel;

a second shaft member operatively connected via a reducer to the first shaft member; and

a second potentiometer operatively connected to the second shaft member for generating second steering angle information which has a one-to-one correspondence with the rotational angle of the steering wheel.

5,353,005

LIQUID-COOLED HIGH-LOAD RESISTOR

Tibor Salanki, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

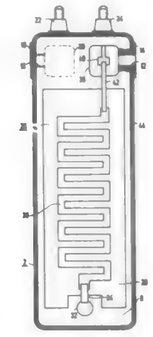
Filed Mar. 5, 1993, Ser. No. 26,945
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1992, 9203354
Int. Cl.[5] H01C *1/082*
U.S. Cl. 338—55 **13 Claims**

1. A liquid-cooled high-load resistor, comprising:

an element carrier having an inlet and an outlet through which cooling liquid passes, a break-through and a first and second electrical terminal connection;

at least one resistor element provided on a flat side of the element carrier, and having an active part wherein a first end of the active part of said at least one resistor element is connected by means of said break-through to said first electrical terminal connection and a second end of the active part of said resistor element is connected to said second electrical terminal connection; and

two covers that each cover a flat side of said element carrier, wherein an enclosed space is respectively formed between each cover and a flat side of said element carrier, and said enclosed space is subdivided to provide a free space in the area of the inlet, the outlet and the break-through, and to provide a cooling channel that embeds the active part of said resistor element.

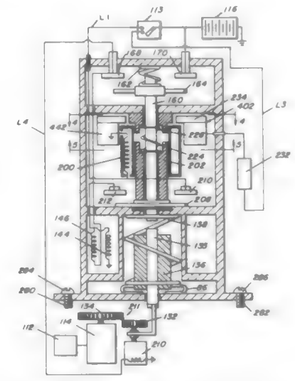


5,353,006

ANTI-THEFT CONTROL TO PREVENT UNAUTHORIZED STARTING OF AN ENGINE

Ricardo Aguilar, 5014 Gateway E., El Paso, Tex. 79905

Filed Aug. 17, 1992, Ser. No. 929,584
Int. Cl.[5] B60R *25/10*
U.S. Cl. 340—426 **7 Claims**



1. A vehicular anti-theft device of a type to prevent the starting of a vehicle's internal combustion engine, comprising:

a first gear connected to said engine for receiving a rotative movement to start said engine;

a starter motor;

a second gear extending from said starter motor having a first position not in engagement with said first gear and a second position in engagement with said first gear;

a source of power;

a first electrical conduit leading from said source;

an ignition switch having an off position, a one-contact position and a two contact position;

a housing having a first chamber, a second chamber and a third chamber intermediate said first and second chambers;

a first switch in said intermediate chamber having an open position and a closed position;

a second switch in said second chamber having an open position and closed position;

a first solenoid means in said first chamber comprised of a push coil and a hold coil about a core plunger;

a second solenoid means having a control coil and a movable core located in said intermediate chamber which when said coil in energized will close said first switch to communicate power from said source to said pull and hold coils;

a controller means having accept and default modes;

keyboard means to enter an authorization code into said controller;

first means to accept or reject said authorization code and place said controller respectively in said accept mode or said default mode;

a second electrical conduit means communicating power from said source to said keyboard means when said ignition switch is moved to said one-contact position;

second means responsive to said accept mode to energize said first solenoid and close said first switch so as to communicate power to said second solenoid means causing movement in said core plunger;

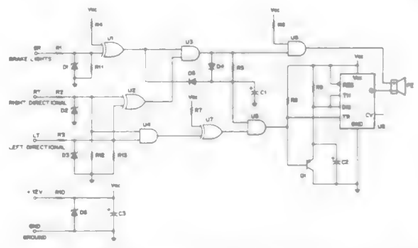
third means responsive to said movement of said core plunger to sequentially move said first gear into said second position and to energize said starter motor upon moving said ignition switch to said third position.

5,353,007

AUTOMOTIVE TURN SIGNAL WARNING DEVICE

Paul M. Gullotti, 67B Sullivan Rd., Hudson, N.H. 03051

Filed Oct. 16, 1992, Ser. No. 962,244
Int. Cl.[5] B60Q *1/40*
U.S. Cl. 340—477 **3 Claims**



1. A turn signal warning device that can operate in a vehicle that has only a first set of lights that are energized for turn signals, brake lights and emergency blinkers; and in a vehicle that utilizes said first set of lights only for turn signals and emergency blinkers, and utilizes a second set of lights only for brakes, said turn signal warning device comprising:

a first circuit sensing power applied to set first set of lights when said turn signals have been activated, said first circuit providing a first signal indicating that said turn signals have been activated;

a second circuit sensing the power applied to said first set of lights, said second circuit providing a second signal only when said first set of lights are energized indicating that said brake pedal has been depressed and when said emergency blinkers have been activated in a vehicle that utilizes said first set of lights for turn signals, brake lights and emergency blinkers;

a third circuit sensing the power applied to said second set of lights, said third circuit providing a third signal only when said second set of lights are energized indicating that said brake pedal has been depressed in a vehicle that utilizes said second set of lights for brake lights;

a timing circuit that is energized responsive to said first signal to time a predetermined period; either said second signal or said third signal preventing said timing circuit

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from being responsive to said first signal to time said predetermined period; and

an alarm responsive to said timing circuit having timed said predetermined period to provide a fourth signal to an operator of said vehicle that the turn signals are activated.

5,353,008

HEADGEAR WITH SAFETY LIGHT

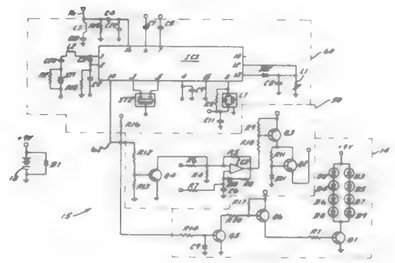
Michael G. Eikenberry; Richard Staats, both of Kokomo; William Baker, Indianapolis, and Raymond G. Benson, Jr., Plainfield, all of Ind., assignors to Adonis Incorporated, Kokomo, Ind.

Continuation of Ser. No. 877,296, May 1, 1992, abandoned. This application Dec. 20, 1993, Ser. No. 169,973

Int. Cl.[5] B60Q *1/44*

U.S. Cl. 340—479 **20 Claims**





1. An apparatus for use with a helmet or other article, comprising:

a duty cycled receiver circuit including a duty cycle generator and a receiver control circuit, the receiver control circuit having a power input, the duty cycle generator having a power output coupled with the power input of the receiver control-circuit and the receiver control circuit having an antennae for receiving an external signal;

a light source coupled to the duty cycled receiver circuit for receiving a light control signal;

a power source terminal for coupling to a power source, the power source terminal coupled to the duty cycle generator;

wherein the receiver control circuit produces the light control signal in response to a presence of the external signal and the light source produces light in response to the light control signal, the duty cycle generator providing a pulse signal at the power output in response to an absence of the external signal and providing a constant signal at the power output in response to the presence of the external signal, whereby power from the power source consumed by said receiver control circuit is reduced by powering the receiver control circuit with the pulse signal in response to the absence of the external signal.

5,353,009

COMMUNICATION SYSTEM

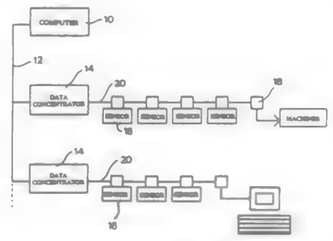
Michael J. C. Marsh, Johannesburg; Raymond C. Atkins, Pretoria, and Trevor M. Hodson, Randburg, all of South Africa, assignors to CSIR, Transvaal, South Africa

Continuation of Ser. No. 816,897, Jan. 3, 1992, abandoned. This application Jul. 7, 1993, Ser. No. 87,123

Claims priority, application South Africa, Jan. 4, 1991, 91/0077

Int. Cl.[5] G08B *26/00*

U.S. Cl. 340—505 **14 Claims**



1. A communication system comprising a control station and a plurality of modular remote stations connected to the control station by a multi-conductor harness, the control station supplying the remote stations with electrical power and communicating bidirectionally with the remote stations via the harness and further being adapted to allocate address codes selectively to the remote stations and to store composite identification codes identifying both a location of each remote station and a function of sensors installed at each remote station; each remote station comprising:

a functional module, selected from a plurality of different types of functional modules, the functional module including a sensor and a memory element which stores a sensor code indicating the function of the sensor;

communication means comprising communication circuitry for receiving data from and sending data to the control station; and

an interface module arranged to function with any of said plurality of different types of functional module and removably connected by plug-in connector means to said functional module, the interface module supplying electrical power to the functional module, transferring data from the functional module to the communication means, and including identification means for retrieving the sensor code from said memory element of the functional module and for generating a composite identification code derived from the sensor code and from an address code allocated to the remote station by the control station and transmitted to the remote station via the harness, and data storage means for storing the composite identification code, so that each remote station is effectively identified both by a remotely allocated address code and a sensor code indicating the function of the sensor of the functional module installed at that remote station.

5,353,010

DEVICE AND A METHOD FOR DETECTING A MAGNETIZABLE MARKER ELEMENT

Juergen Sanetra, Ochtrup, Fed. Rep. of Germany, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 15, 1992, Ser. No. 990,442

Claims priority, application Fed. Rep. of Germany, Jan. 3, 1992, 4200082

Int. Cl.[5] G08B *13/24*

U.S. Cl. 340—572 **11 Claims**

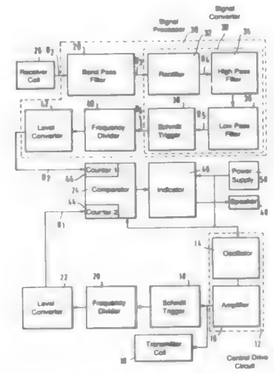
1. A device for detecting a magnetizable marker element,

adapted to be attached to an object to be protected against unauthorized removal, comprising:

(a) a transmitter for generating a periodically alternating magnetic excitation field for reversing the magnetic state of the marker element;

(b) a receiver arranged in said alternating magnetic excitation field for generating an electrical output signal corresponding to a signal received upon a said magnetic state reversal;

(c) a signal processing means including a band pass filter for filtering said output signal of said receiver, the resultant



filtered output signal having a superimposition of signal components, the frequencies of which are integral multiples of the fundamental frequency of the excitation field;

(d) means for comparing the time interval between two successive maximum signal values of different polarities of the filtered output signal to a predetermined tolerance range associated with half the period duration of the excitation field, and for generating a first output signal when the time interval is within said predetermined tolerance range; and

(e) an indicator generating a first indication signal upon receiving a first output signal from said comparing means.

5,353,011

ELECTRONIC ARTICLE SECURITY SYSTEM WITH DIGITAL SIGNAL PROCESSING AND INCREASED DETECTION RANGE

Richard G. Wheeler, Robbinsville, N.J.; Burton S. Abrams, Wyndmoor, Pa.; Joseph M. Cannon, Mantua, N.J.; Stephen J. Casey, Marlton, N.J.; Luke C. Chang, West Deptford, N.J.; Von C. Ertwine, Langhorne, Pa.; Douglas S. Makofka, Willow Grove, Pa.; Louis A. Mastrocola, Blue Bell, Pa., and Calvin R. Waples, Jr., Swedesboro, N.J., assignors to Checkpoint Systems, Inc., Thorofare, N.J.

Filed Jan. 4, 1993, Ser. No. 481

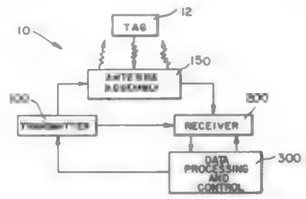
Int. Cl.[5] G08B *13/184, 13/181*

U.S. Cl. 340—572 **101 Claims**

1. In an electronic article security (EAS) system for detecting the presence of a security tag within a detection zone, transmitter means for generating electromagnetic energy, antenna means for emitting electromagnetic energy received from the transmitter means to establish an electromagnetic field within the detection zone and for sensing disturbances within the electromagnetic field, including disturbances resulting from a security tag within the detection zone, receiver means for processing signals from the antenna means relating to sensed disturbances and for providing output signals, and data processing and control means for analyzing the output signals from the receiver means and for determining whether a sensed disturbance within the electromagnetic field is caused by the presence of a security tag within the detection zone, wherein the transmitter means comprises:

a controlled oscillator for receiving control signals from the data processing and control means and for generating electromagnetic output signals which vary in frequency over a predetermined frequency range at a predetermined rate as established by the control signals;

driver means for receiving the oscillator output signals and



for sending the oscillator output signals along a predetermined transmission path;

transmission path receiver means connectable to the transmission path for receiving the oscillator output signals; and

amplifier means connected to the transmission path receiver means for receiving and amplifying the oscillator output signals to provide the electromagnetic energy emitted by the antenna means.

5,353,012

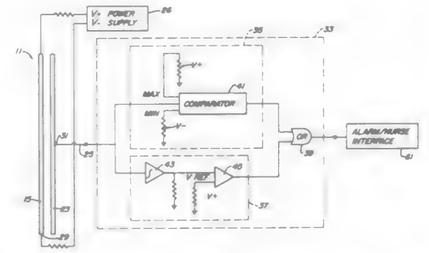
BED POSITION AND ACTIVITY SENSING APPARATUS

Russell Barham, Fort Worth; William B. Basham, Bedford, and Tommy E. Hyde, Grand Prairie, all of Tex., assignors to Bartronix, Inc., Fort Worth, Tex.

Filed May 14, 1992, Ser. No. 882,696

Int. Cl.[5] G08B *23/00*; H01H *3/02*

U.S. Cl. 340—573 **9 Claims**



1. An apparatus for detecting the relative location of a body lying upon a bed, said apparatus comprising:

an electrical power source; and

a single elongate sensor disposed upon said bed and parallel to at least one axis thereof, said elongate sensor having a longitudinal axis defining a plurality of points along said elongate sensor that are at least partially coextensive with a range of motion of said body in said bed, said elongate sensor having first and second electrically conductive members, one of said electrically conductive members being electrically coupled to said electrical power source, said body lying upon said bed and at least partially upon said sensor and urging said electrically conductive members into electrically conductive contact at least one of said plurality of points, wherein said sensor provides a sensor signal whose magnitude depends upon which of said plurality of points along said sensor that said body is

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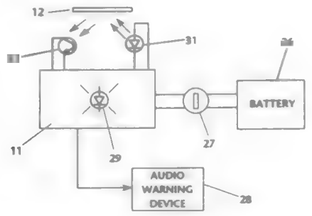
lying upon wherein said sensor detects said body lying upon said at least one of said plurality of points and said sensor signal provides an indication of the relative location of said body in said bed.

5,353,013

VEHICLE OPERATOR SLEEP ALARM

Richard J. Estrada, 758 Arkansas St., San Francisco, Calif. 94107

Filed May 13, 1993, Ser. No. 61,411
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—575 14 Claims



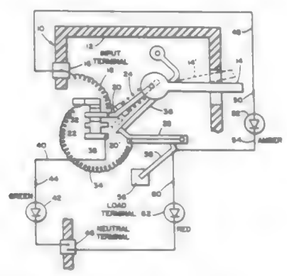
1. An alarm system for a vehicle, including;
light emitter means for generating a light beam;
optical receiver means for detecting reflected light from said light beam;
reflector means supported on the head of a driver of the vehicle to reflect said light beam, said reflector means being oriented to reflect said light beam toward said optical receiver when the head of the vehicle driver is in a position indicative of loss of wakefulness; and
audio warning means responsive to a signal from said optical receiver means to generate an audio alarm signal to waken the driver.

5,353,014

CIRCUIT BREAKER WITH INDICATOR LIGHTS

John T. Carroll, 68 Coldcliff Rd., Malden, Mass. 02148, and Raymond W. Dunbrack, 35 Webster St., #3, Everett, Mass. 02149

Filed Apr. 27, 1992, Ser. No. 874,409
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—638 3 Claims



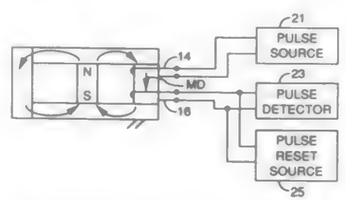
1. In a circuit breaker having a movable contact connected to an input terminal, said movable contact mounted on a contact arm movable between a closed position directly contacting a fixed contact and an open position away from said fixed contact, a neutral terminal, a load terminal from which a load circuit extends through said fixed and said movable contacts during normal conditions and disconnected from said first contact during an overload condition caused by a short circuit condition in the load circuitry, a tripping mechanism including an overload circuit responsive member connected between the movable contact and the load terminal, said tripping mechanism senses the presence of an overload condition, through the overload circuit responsive member to disconnect, by moving said contact arm, said fixed contact from said movable contact; the improvement comprising:
a first blown circuit indicator connected from said input terminal to said load terminal, said blown circuit indicator connected in parallel with said fixed and said movable contacts, said contact arm and said tripping mechanism such that said indicator shows when said circuit breaker has tripped due to an overload short circuit in the load circuitry, said indicator having the full power input voltage across said indicator through said input terminal and through said overload short circuit when said circuit breaker is in the overload condition,
a second indicator connected from said load terminal to said fixed contact, said second indicator showing when said circuit breaker is in the normal—not overloaded—condition, said second indicator having the full power input voltage across said second indicator through said input terminal, through said movable and said fixed contacts and through said neutral terminal, said second indicator showing that said input power is received at said load terminal.

5,353,015

TAMPER DETECTOR

Wesley A. Robinson, San Bernardino, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 23, 1992, Ser. No. 877,954
Int. Cl.[5] G08B *21/00*; H01F *7/00*
U.S. Cl. 340—686 10 Claims



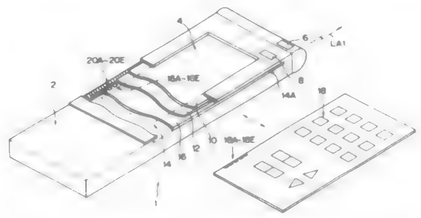
1. A tamper indicator for indicating to monitoring personnel that separation of a first member and a second member which is in contact with said first member upon inspection thereof by said monitoring personnel has occurred prior to said inspection, wherein said first member comprises:
(a) a permanent magnet having a first pole and a second pole of a polarity opposite said first pole;
(b) a first elongated soft magnetic flux conductor magnetically coupled to the first pole of said permanent magnet and having a first terminal portion and a second terminal portion;
(c) a second elongated soft magnetic flux conductor magnetically coupled to the second pole of said permanent magnet and having a first terminal portion and a second terminal portion; and
(d) a square loop magnetic member magnetically coupled between the first terminal portion of said first elongated soft magnetic flux conductor and the first terminal portion of said second elongated soft magnetic flux conductor; and
wherein said second member is made of a soft magnetic material for conducting flux between the second terminal portions of said first and second elongated soft magnetic flux conductors; and
said tamper indicator further including detector means coupled to said square loop magnetic member for detecting the state of magnetization thereof.

5,353,016

REMOTE COMMANDER

Tohru Kurita, and Toshiyuki Ishii, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Jan. 16, 1992, Ser. No. 821,449
Claims priority, application Japan, Jan. 24, 1991, 3-022698
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.22 8 Claims



1. A remote commander for controlling the operation of one or more devices comprising:
coordinates input means including a transparent plate for selecting one or more of a plurality of operating members located on an operating portion of the remote commander, said coordinates input means providing output control signals in response to operation of said operating members;
an operating card receiving space provided under a side of said coordinates input means;
operating card identification means for identifying an operating card which cooperates with said operating card receiving space, said operating card identification means providing control signals in response to the cooperation between said operating card and said operating card receiving space; and
control data sending means for sending control data selectable according to control signals provided by said operating card identification means and said coordinates input means; and
further comprising a cover arranged over said coordinates input means, said cover having a basic operating control on an upper surface for controlling devices other than devices controlled by said coordinates input means.

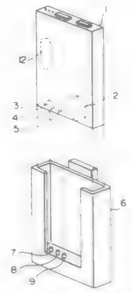
5,353,017

CALL SELECTIVE RECEIVER BUILT IN WITH VIBRATOR

Toru Suzuki, Yokohama, and Tetsuo Matsumura, Tokyo, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 5, 1992, Ser. No. 894,772
Claims priority, application Japan, Aug. 6, 1991, 3-219300
Int. Cl.[5] H04B *1/08*
U.S. Cl. 340—825.46 6 Claims

1. A call selective receiver, comprising:
a receiver body;
a first power source housed in the receiver body and having a first electric capacity;
a first vibrator also housed in the receiver body and having a first vibration amplitude;
a belt clip having a cavity therein configured to receive the receiver body;
a second power source housed in the belt clip and having a second electric capacity greater than the first electric capacity;
a second vibrator also housed in the belt clip and having a second vibration amplitude greater than the first vibration amplitude, whereby a vibration can be transmitted to a user through the belt clip; and



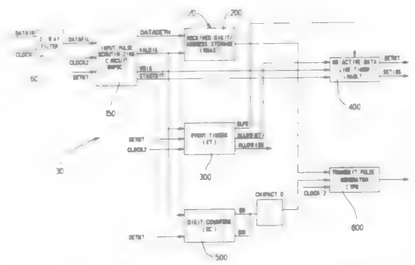
a power source switching means for switching from the first power source in the receiver body to the second power source in the belt clip when the receiver body is inserted into the belt clip.

5,353,018

SYSTEM FOR DEFINING DATA TRANSMISSION PROTOCOLS IN A MULTIPLEXING SYSTEM

Keith J. McKechnie, Harrisburg; Lee W. Steely, Mohnton, and Paul S. Chang, Harrisburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 558,024, Jul. 25, 1990, abandoned. This application Apr. 6, 1992, Ser. No. 864,454
Int. Cl.[5] G08C *19/16*
U.S. Cl. 340—825.57 6 Claims



1. In a data transmission system including a control unit, a plurality of remote stations, a bi-directional transmission line, and means for coupling said control unit and said plurality of remote stations to said transmission line, wherein the control unit sends data to an addressed One of said plurality of remote stations in the form of a first group of data digits each having a defined bit sequence
apparatus in each of the remote stations comprising:
means for receiving signals on the transmission line;
means for validating the received signals as valid data digits when the received signals have the defined bit sequence of each data digit;
first detecting means for detecting a first period of inactivity during which no valid data digits are received on the transmission line;
means responsive to detection of said first period of inactivity for thereafter accepting data on the transmission line and determining whether said each of the remote stations has been addressed by the control unit;

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second detecting means for detecting a second period of inactivity during which no valid data digits are received on the transmission line, said second period having a duration different from the duration of said first period of inactivity; and

means responsive to detection of said second period of inactivity when said each of the remote stations has been addressed for thereafter transmitting data to the control unit in the form of a second group of data digits each having said defined bit sequence.

5,353,019

PROCESS FOR MONITORING THE OUTPUT SIGNALS FROM A TRANSMITTING DEVICE

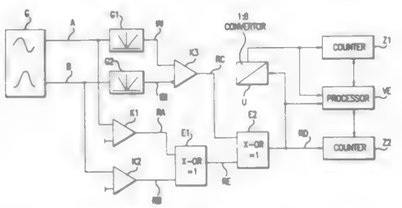
Jürgen Rupp, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 21, 1992, Ser. No. 823,134

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1991, 4101608

Int. Cl.[5] G08B *29/00*; G01R *25/00*

U.S. Cl. 340—870.05 **12 Claims**



1. A process for monitoring a first and a second signal each output from a transmitting device, each being sinusoidal and having a corresponding rotational frequency, offset-free, of the same amplitude, and ideally having a phase difference of 90°, comprising the steps of:

a) producing a first binary auxiliary signal with a logical "1" state with each positive half-wave of the first signal;

b) producing a second binary auxiliary signal with the logical "1" state with each positive half-wave of the second signal;

c) comparing an absolute value of the first signal and an absolute value of the second signal, and producing a third binary auxiliary signal with the logical "1" state when the absolute value of the first signal is greater than the absolute value of the second signal;

d) generating a fourth binary auxiliary signal by X-OR gating the first and the second binary auxiliary signal;

e) generating a first reference signal by X-OR gating the fourth binary auxiliary signal and the third binary auxiliary signal; and

f) monitoring the mark-to-space ratio of the first reference signal for its adherence to a ratio of 1:1, whereby any deviation from this ratio from 1:1 over a specifiable threshold value releases a signal which indicates a disturbance of the first and second signals from the transmitting device.

5,353,020

ARRANGEMENT FOR MONITORING OPERATING PARAMETERS OF VEHICLE PNEUMATIC TIRES MOUNTED ON WHEEL RIMS

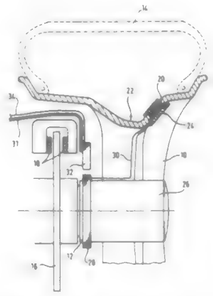
Josef Schurmann, Oberhummel, Fed. Rep. of Germany, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 8, 1992, Ser. No. 818,182

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1991, 4100442

Int. Cl.[5] B60C *23/04*, *23/20*

U.S. Cl. 340—870.31 **9 Claims**



1. An arrangement for monitoring the operating parameters of vehicle pneumatic tires, mounted on rotor members of the vehicle, including wheel rims which have rim wells and openings in the rim wells, and the vehicle pneumatic tires rotated about stator members of the vehicle, and having interiors comprising:

sensors for detecting selected operating parameters and providing said operating parameters to electronic circuitry;

the electronic circuitry for receiving said operating parameters and generating signals representative of said operating parameters and providing said signals to transmitting means;

the transmitting means for transmitting said signals representative of said operating parameters to an evaluating arrangement in said vehicle, and comprising rim-side mounted rotor members and bodywork-side stator members coupled thereto;

a measuring module, which lies within an opening in a rim well of a wheel rim, and comprises a first and a second component, which are detachably connected together, wherein said first component is disposed facing the tire and said second component is disposed remote from the tire on the rim well; and

wherein said sensors and said electronic circuitry are mounted on said first component and said second component is electrically connected to said rim-side mounted rotor members, and wherein further said signals representative of said operating parameters are coupled from said first component by inductive coupling to said second component.

5,353,021

APPARATUS FOR MEASURING MOVING STATE OF VEHICLE IN TUNNEL

Masakazu Toyama, Tokyo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 26, 1992, Ser. No. 935,283

Claims priority, application Japan, Sep. 4, 1991, 3-250277

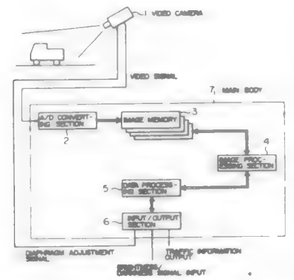
Int. Cl.[5] G08G *1/017*

U.S. Cl. 340—937 **6 Claims**

1. An apparatus for measuring a moving state of a vehicle in a tunnel, the tunnel having an illumination light source installed therein, illumination brightness of the illumination light source being adjusted by an externally applied brightness/darkness adjustment signal, said apparatus comprising:

image pickup means, installed in the tunnel, for generating image data of the vehicle;

image processing means for processing the image data to determine a state of the vehicle;



input means for receiving said externally applied brightness/darkness adjustment signal; and

adjusting means for adjusting data generating operation of said image pickup means or data processing operation of said image processing means in dependence upon said brightness/darkness adjustment signal.

5,353,022

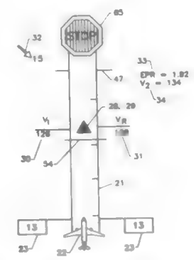
AIRPLANE TAKEOFF AND LANDING PERFORMANCE MONITORING SYSTEM

David B. Middleton; Raghavachari Srivatsan, and Lee H. Person, Jr., all of Yorktown, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 755,248, Sep. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 192,562, May 11, 1988, Pat. No. 5,047,942, which is a continuation-in-part of Ser. No. 82,766, Aug. 6, 1987, Pat. No. 4,843,554. This application Apr. 6, 1993, Ser. No. 45,337

Int. Cl.[5] G08B *21/00*

U.S. Cl. 340—959 **22 Claims**



1. In an airplane takeoff and landing performance monitoring system with a display means for graphically and continuously depicting the position of an airplane on a runway, the improvement comprising:

means for generating a value indicative of a rotation speed of the airplane necessary to achieve take-off;

means for continuously displaying both a stationary symbol indicative of an initial prediction of a position where the rotation speed should occur and a movable symbol indicative of a current prediction of a position where the airplane will reach the rotation speed on the runway wherein the movable symbol is superimposed on the stationary symbol when there is no difference between the initially predicted position of the airplane and currently predicted position of where the airplane will reach the rotation speed and wherein the movable symbol is spatially distanced from the stationary symbol along the runway when there is a difference between the initially predicted position and the currently predicted position;

means for continuously displaying a fixed indicator indicative of a recommended engine operating condition on said display means;

means for continuously displaying a movable indicator indicative of actual engine operating status in a spatial manner on said display means relative to the displayed fixed indicator; and

means for altering the appearance of the movable indicator indicative of actual engine operating status in response to a difference between the actual engine operating status and a computed engine operating exceeding a predetermined tolerance level.

5,353,023

NAVIGATION SYSTEM FOR CARS

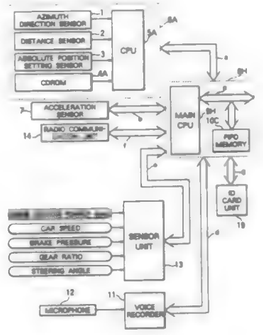
Tatsuya Mitsugi, Sanda, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 25, 1992, Ser. No. 904,026

Claims priority, application Japan, Jun. 27, 1991, 3-156721

Int. Cl.[5] G08G *1//123*

U.S. Cl. 340—989 **8 Claims**



1. A car navigation system, comprising:

car location estimating means for estimating a traveling location of a car based in part on road network maps and generating car information;

car accident detecting means for detecting occurrence of an accident involving the car;

storage means for successively storing and updating the car information from the car location estimating means, the car information including car location based on road network maps and emergency telephone numbers and emergency radio frequencies based on the car location for communicating the accident to nearby emergency rescue stations, said storage means being operable to stop updating the car information when the car accident detecting means detects the occurrence of the accident; and

communication means for transmitting the car information and the emergency numbers and frequencies obtained from the car location estimating means and the updated car information from said storage means via an optimal transmission

when said car accident detecting means detects the occurrence of the accident.

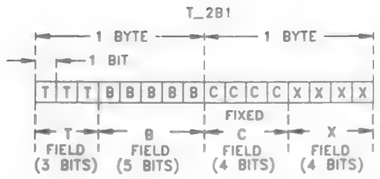
VOL 1167 ISS 1 OC 4 1994 UMI

5,353,024

METHOD FOR DATA COMPRESSION HAVING AN IMPROVED ENCODING ALGORITHM WHICH UTILIZES A TOKEN STACKING TECHNIQUE

Mark D. Graybill, Agoura, Calif., assignor to Intersecting Concepts, Inc., Agoura Hills, Calif.

Filed May 1, 1992, Ser. No. 877,088
Int. Cl.[5] H03M 7/30
U.S. Cl. 341—51 44 Claims



1. An encoding method for use with digital data compression operations which compress an input data string into an output data string containing compressed and uncompressed substrings mixed in series, the encoding method comprising the following steps:

a. constructing a group of stacked tokens each having a plurality of fields including a backward displacement pointer field and a substring length counter field, where the substring length counter field is identical among all stacked tokens in the group for serving as the basis in constructing the group of stacked tokens;

b. assigning a respective range of integers to be encoded in said backward displacement pointer field of each individual one of said stacked tokens, where the individual ranges of said backward displacement pointer field assigned to said group of stacked tokens cover a larger range, and no individual range of said backward displacement pointer field of said stacked tokens overlaps with the individual range of said backwards displacement field of any other stacked token in the group;

c. determining a respective substring length counter for a respective one of said compressed substrings;

d. determining a respective backward displacement pointer for said respective one of said compressed substrings, which backward displacement pointer is a respective integer count of displacement between the respective one of said compressed substrings and a previously processed identical substring in said mixed series;

e. representing said respective one of said compressed substrings with a respective one of said stacked tokens by encoding a plurality of indicators into said plurality of fields respectively, including encoding said respective substring length counter into said substring length counter field of said respective one of said stacked tokens, and encoding said respective backward displacement pointer into said backward displacement pointer field of the respective one of said stacked tokens according to the range assigned, such that said respective backward displacement pointer falls within the range assigned to said backward displacement pointer field of one of said stacked tokens in the group; and

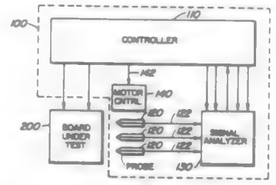
f. repeating steps (c) through (e) until all of said compressed substrings are represented by one of said stacked tokens.

5,353,025

METHODS AND APPARATUS FOR DIGITALLY ENCODING REPETITIVE ANALOG WAVEFORMS

Dan Leonida, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Feb. 4, 1993, Ser. No. 13,560
Int. Cl.[5] H03M 1/00
U.S. Cl. 341—122 5 Claims



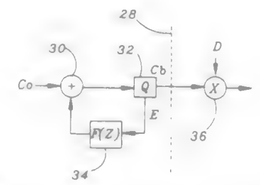
1. A method for encoding a repititive analog waveform as m n-bit digital words, where m and n are positive integers, the method comprising taking analog samples of the repetitive waveform at each of m distinct sampling points, each of the m distinct sampling points having a respective predetermined delay with respect to a reference point on the repetitive waveform and digitally encoding the analog samples, wherein each predetermined delay is a sum of an integer number of fine delay increments defined by a delay lock loop and an integer number of coarse delay increments defined by a counter, each coarse delay increment corresponding to multiple fine delay increments and the delay is incremented through a full cycle of coarse delay increments before each addition of a fine delay increment.

5,353,026

FIR FILTER WITH QUANTIZED COEFFICIENTS AND COEFFICIENT QUANTIZATION METHOD

James Wilson, Sharon, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Dec. 15, 1992, Ser. No. 990,717
Int. Cl.[5] H03M 3/02
U.S. Cl. 341—143 38 Claims



32. A digital-to-analog converter (DAC), comprising:

means for increasing the sample rate of an input digital data signal,

an interpolation finite impulse response (FIR) filter system connected to filter out images of the data signal produced by said sample rate increasing means,

a hardware sigma-delta modulator connected to quantize the output of said FIR filter system to a series of + and − pulses,

an integrator for integrating the output of said hardware sigma-delta modulator into an analog signal, and

a low pass analog filter connected to filter the output of said integrator,

wherein said FIR filter system comprises:

means for providing n-bit FIR filter coefficients,

a software sigma-delta modulator programmed to quantize said n-bit filter coefficients to respective m-bit quantized coefficients, where m is less than n, plus respective quantization error terms, and to shape said quantization error terms to a higher frequency range that is substantially outside the pass band of said low pass filter, and

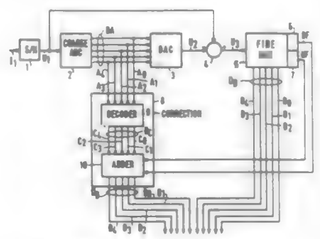
hardware multiplier means connected to convolve said input data signal with said quantized coefficients to produce a filtered output.

5,353,027

MULTISTEP ANALOG-TO-DIGITAL CONVERTER WITH ERROR CORRECTION

Pieter P. M. Vorenkamp; Johannes Verdaasdonk, and Marcellinus J. M. Pelgrom, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 26, 1992, Ser. No. 966,208
Claims priority, application European Pat. Off., Nov. 1, 1991, 91202845.3
Int. Cl.[5] H03M 1/14
U.S. Cl. 341—156 4 Claims



1. Analog-to-digital converter comprising:

a first analog-to-digital converter for converting a first analog signal (U_1) to a first digital signal (D_A) which denotes from a plurality of sub-ranges a sub-range in which the first analog signal is situated,

a digital-to-analog converter for converting the first digital signal to a second analog signal (U_2),

a second analog-to-digital converter (5) for converting a difference signal (U_3) indicative of the difference between the first and second analog signals (U_1, U_2) to a second digital signal (D_B),

detection means for detecting an overflow (OF) and an underflow (UF) if the difference signal is situated above and below respectively, the sub-range denoted by the first digital signal,

correction means for correcting the first digital signal (D_A) in response to the detection of the overflow (OF) and underflow (UF), wherein the correction means comprise:

means for generating a third digital signal (D_C) which represents a value that is one least significant bit less than the value represented by the first digital signal (D_A),

adder means for adding to the third digital signal (D_C) zero and two least significant bits respectively, in the case of a detection of the underflow (UF) and overflow (OF) respectively, and one least significant bit in the case of detection of neither an underflow or an overflow.

5,353,028

DIFFERENTIAL FUSE CIRCUIT AND METHOD UTILIZED IN AN ANALOG TO DIGITAL CONVERTER

Michiel de Wit, Dallas, Tex., and Khen-Sang Tan, Singapore, Singapore, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 14, 1992, Ser. No. 882,775
Int. Cl.[5] H03M 1/38
U.S. Cl. 341—172 30 Claims

20. An analog-to-digital converter circuit comprising:

an array of primary capacitors connected in parallel, each said primary capacitors comprising a top plate and a bottom plate;

a comparator including an input coupled to said primary capacitor top plate;

an array of binary weighted error correcting capacitors, each said error correcting capacitors comprising a top plate and a bottom plate, said top plate of said error correcting capacitors coupled to said top plate of said primary capacitors through an attenuation capacitor;

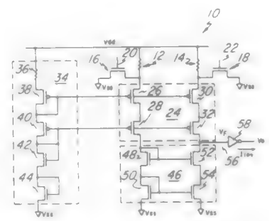
an array of fuse circuits, each said fuse circuits associated with one of said error correcting capacitors and coupled to said associated error correcting capacitor through a switch, each said fuse circuits comprising:

first and second fuses coupled to a supply potential;

a current mirror comprising a first leg and a second leg wherein a current through said first leg will induce a current in said second leg, said first leg coupled between said first fuse and a reference potential and said second leg coupled between said second fuse and said reference potential; and

an output node between said second fuse and said second leg of said current mirror whereby said output node is at a potential substantially near said reference potential when said first fuse has a resistance greater than said second fuse and said output node is at a potential substantially near said supply potential when said first fuse has a resistance less than said second fuse; and

a successive approximation logic switch control circuit for generating a successive approximation logic signal such that each of said error correcting capacitors is selectively switched to obtain a desired capacitor value on said primary capacitor top plate.

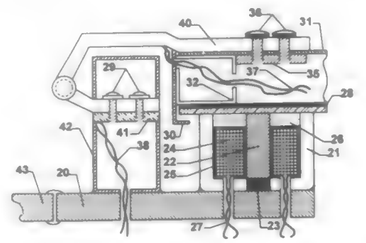


5,353,029

SEPARABLE ELECTROMAGNETIC WAVEGUIDE ATTENUATOR

Beverly R. Johnston, and Everill E. Johnston, both of P.O. Box 1393, Sierra Vista, Ariz. 85635

Filed May 17, 1993, Ser. No. 63,892
Int. Cl.[5] H01Q 17/00
U.S. Cl. 342—4 9 Claims



1. In a shielding enclosure such as a room which has a means to provide a reduction or elimination of radio-frequency wave-

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lengths and electromagnetic emissions leakages into or out of said type assemblies having a casing member composed of portions arranged to define an access opening, members are mounted about said casing member that allows for movement between a first position closing the opening and a second position enabling access through the opening, through said opening it is sought to eliminate or substantially reduce leakage of radio-frequency wavelengths and electromagnetic emissions by an attenuator means across such openings while the door assembly is in the first position closed, said attenuator means comprising,

a separable waveguide attenuator structure means peripherally mounted around said casing member depicting opening and a means to dispose electromagnets therein, attached thereof an electronic means including an electromagnet wiring circuit operatively connected to said electronic control box in which upon activation energizes said electromagnet therein coupling a ferro-magnetic sheet mounted to door leaf assembly in which the composition of said door leaf assembly, being members forming a flexible and twistable structure which spans across said opening, whereby when said door assembly is in the first position it forms said separable waveguide attenuator between said coupling means and thereby providing a means for eliminating the need to insure a shielding interface connection that is free of gaps, with minimum transitional electrical resistance or an efficacious sealing therebetween;

said coupling means comprising;

a ferro-magnetic waveguide structure and electromagnet disposed therein and coupled with pole faces of said structure and ferro-magnetic door leaf structure when said electromagnetic circuit is activated;

a means for reversibly disengaging of separable waveguide attenuator to allow movement of door leaf assembly to second position without assistance from mechanical devices or other magnetic material;

a means provided inwhich the electronic wiring of said electromagnet is adapted to be extended into said enclosure and therein be operatively connected to the electronic control box circuit that energizes and de-energizes said electromagnet without the need of electronic filtering devices or a sealed off pathway therebetween;

a means provided inwhich the electromagnet assumes a dual function by additionally attenuating RFI and EMI radiation by functioning as an electronic filtering device;

a means provided inwhich a dual electromagnet system provides the functional ability to maintain attenuation values by providing an independent secondary electromagnet, in that it continues to function as normal if the primary electromagnet fails operationally and additionally the ferro-magnetic structure ensures re-energization of malfunctioned electromagnet by the propagation of magnetic flux fields into said electromagnet.

5,353,030

METHOD FOR SIMULATING HIGH RESOLUTION SYNTHETIC APERTURE RADAR IMAGERY FROM HIGH ALTITUDE PHOTOGRAPHS

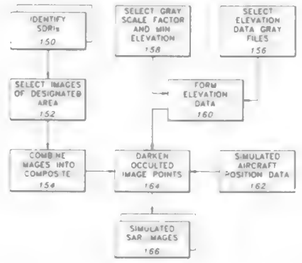
Robert D. Koch, Enon; Harold W. Dean, Beavercreek, and Roger L. Overdorf, New Carlisle, all of Ohio, assignors to Science Applications International Corporation, San Diego, Calif.

Filed Jun. 9, 1993, Ser. No. 71,770
Int. Cl.[5] G01S *13/90*
U.S. Cl. 342—169 9 Claims

1. A method of using photographs of a designated area, characterized by varying gray levels, to develop radar-like images for forming a simulated synthetic aperture radar (SAR) image of the designated area of terrain as would be obtained by a SAR carried by a host aircraft, comprising:

(a) scanning and digitizing the photographs to form a digitized photographic image (DPI) representing the designated area, the DPI comprising a set of minimal resolution picture elements (pixels) each pixel having an associated gray level related to a corresponding terrain feature optical reflectivity;

(b) from the DPI pixels, creating a simulated digitized radar image (SDRI) comprising a set of corresponding SDRI pixels and establishing for each SDRI pixel a gray level which represents a radar reflectivity of the terrain feature



in place of the optical reflectivity represented by the DPI pixels;

(c) determining and assigning a terrain elevation value to each pixel in the SDRI as correlated terrain elevation data and forming an image therefrom; and

(d) creating a terrain data set (TDS) by storing the SDRIs and correlated terrain elevation data image on a medium for subsequent access by an aircraft simulator.

5,353,031

INTEGRATED MODULE CONTROLLER

Dev D. Rathi, Los Angeles, Calif., assignor to ITT Corporation, New York, N.Y.

Filed Jul. 23, 1993, Ser. No. 96,514
Int. Cl.[5] H01Q *3/22, 3/24, 3/26*
U.S. Cl. 342—372 15 Claims



1. In an active array antenna system comprising beam steering computation means, for computing array phase and gain settings, beam shaping means for applying beam shaping and tapering terms to said computed array phase and gain settings, and a transmit/receive means including phase shifting means, gain control means, power amplifying means, low-noise amplifying means and transmit/receive switching means, the improvement therein comprising, in combination therewith:

RF device control means operable to control said operating elements included in said transmit/receive means; and

RF device phase and amplitude correction means operable to compensate for errors associated with said operating elements included in said transmit/receive means;

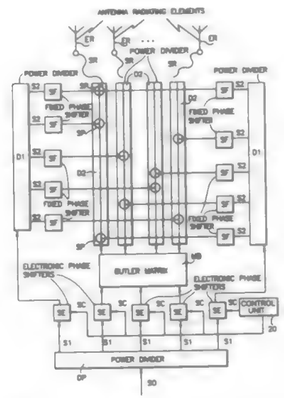
wherein said RF device control means and said RF device phase and amplitude correction means are operationally integrated within a common module.

5,353,032

CIRCUIT INCLUDING A PHASE SHIFTER FOR GENERATING SIGNALS FOR ELECTRONICALLY SCANNED ANTENNAS

Giuseppe Bertocchi, Bergamo, and Paolo Mauri, Gallarate, both of Italy, assignors to Alcatel Italia S.p.A., Milan, Italy

Filed May 5, 1993, Ser. No. 59,090
Claims priority, application Italy, May 5, 1992, MI92 A 001075
Int. Cl.[5] H01Q *3/22, 3/24, 3/26*
U.S. Cl. 342—373 9 Claims



1. A circuit for generating RF signals for an electronically scanned antenna, said antenna comprising a number of independent radiating elements, said circuit receiving an oscillation signal at an input thereof, and generating a plurality of RF signals equal in number to the number of said plurality of radiating elements, said plurality of RF signals differing from each other in phase and amplitude, said circuit comprising:

a first power divider (DP) for receiving said oscillating signal at an input thereof, and for generating a plurality of first electrical output signals (S1) at a plurality of outputs thereof, each of said plurality of first electrical output signals (S1) having a precise power ratio relative to said oscillating signal;

a plurality of electronically controlled phase shifters (SE), respectively connected to receive a different one of said plurality of first electrical output signals (S1) output by said first power divider (DP), each of said plurality of electronically controlled phase shifters (SE) providing a respective time-varying phase shift to each respective one of said plurality of first electrical output signals (S1) responsive to a control signal (SC);

a Butler-matrix (MB) having a plurality of inputs connected to receive a respective output from a limited number, less than all, of said plurality of electronically controlled phase shifters, said Butler-matrix (MB) having a smaller number of outputs than said number of said plurality of radiating elements;

a plurality of second power dividers (D1), each second power divider having an input connected to receive an output of a respective one of said plurality of electronically controlled phase shifters (SE) that is not connected to said Butler-matrix (MB), each of said plurality of second power dividers (D1) generating at a plurality of outputs thereof, a plurality of second electrical output signals (S2) such that each of said plurality of second electrical output signals (S2) has a precise power ratio relative to the signal provided at the input of each of said plurality of second power dividers;

a plurality of fixed phase shifters (SF) respectively connected to said plurality of second power dividers; and

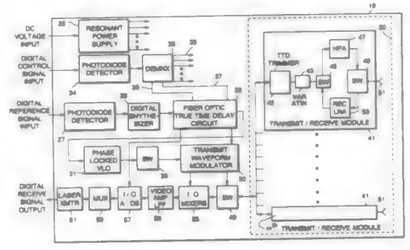
a plurality of power adders (SP), equal in number to said number of said plurality of radiating elements, each of said plurality of power adders having an input connected to receive at least one of the outputs of said Butler-matrix and to receive at least one output of said plurality of fixed phase shifters, each of said plurality of power adders providing at an output thereof, a power adder output signal that is provided to a respective one of said number of radiating elements.

5,353,033

OPTOELECTRONIC PHASED ARRAY WITH DIGITAL TRANSMIT SIGNAL INTERFACE

Irwin L. Newberg, Northridge; Joseph P. Smalanskas, Westchester; Ronald I. Wolfson, Los Angeles; John J. Wooldridge, Manhattan Beach, and Howard S. Nussbaum, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 15, 1993, Ser. No. 48,633
Int. Cl.[5] H01Q *3/22*
U.S. Cl. 342—375 14 Claims



1. A phased array radar system comprising:

signal processing means for providing and processing control, modulation and clocking signals for said phased array radar system;

display means for displaying a representation of one or more of said signals as processed by said signal processing means;

a plurality of subarrays, each of said subarrays having a plurality of transmit/receive modules, each of said transmit/receive modules having at least one radiating element;

reference signal generating means for generating a digital reference signal for each of said subarrays;

reference signal propagating means for propagating said digital signal from said reference signal generating means to each of said subarrays such that said subarrays have a digital interface with said reference signal generating means;

RF carrier signal generating means within each of said subarrays for generating an RF carrier signal in response to said digital reference signal, said RF carrier signal having a phase coherency with said digital reference signal;

fiber optic true time delay circuit means within each of said subarrays for providing an appropriate phase delay to said RF carrier signal, said fiber optic true time delay circuit means further providing an appropriate time delay to said modulation and clocking signals provided by said signal processing means;

transmit waveform modulators within each of said subarrays for modulating said modulation signal from each of said true time delay circuit means onto said RF carrier signal to provide modulated transmit signals;

switching means within each of said subarrays for providing said transmit signal from said transmit waveform modula-

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tor to each of said transmit/receive modules within said subarray such that said transmit signal is radiated from said radiating element within said transmit/receive module;

receive signal processing means within each of said subarrays for receiving and demodulating receive signals received by said radiating element of each of said transmit/receive modules to produce baseband signals, said receive signal processing means further processing said baseband signals in accordance with said clocking signals from said true time delay circuits to provide digitized baseband signals;

receive signal propagating means for propagating said digitized baseband signals from each of said subarrays to said signal processing means such that said subarrays have a digital interface with said signal processing means; and

dc power supply means for providing dc voltage to each of said subarrays, said signal processor and said display.

5,353,034

POSITION INFORMATION INPUTTING APPARATUS FOR A VEHICLE TRAVEL GUIDE SYSTEM

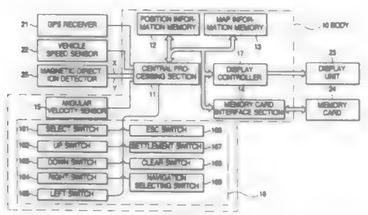
Naoto Sato, and Toshiyuki Teshigawara, both of Maebashi, Japan, assignors to Sanden Corporation, Isesaki, Japan

Continuation-in-part of Ser. No. 789,831, Nov. 8, 1991. This application Feb. 25, 1993, Ser. No. 22,462

Claims priority, application Japan, Feb. 25, 1992, 4-008358[U]

Int. Cl.[5] G01S *3/02*

U.S. Cl. 342—457 **10 Claims**



1. An apparatus for inputting and storing a position of a vehicle for use in a vehicle navigation system, the apparatus comprising:

map information storage means for storing atlas information that corresponds to areas of an associated paper atlas;

spot information storage means for storing spot information corresponding to predetermined points of interest within areas of the associated paper atlas and linked to said atlas information, said spot information including an attribute of each predetermined point of interest;

designating means for designating a specific area of the associated paper atlas and for designating a specific attribute;

means for retrieving from said spot information storage means and displaying spot information which corresponds to points of interest within said specific area and which shares said specific attribute;

selecting means for selecting one of the points of interest corresponding to displayed spot information; and

position information storage means for storing the position of the vehicle according to the one point of interest selected by said selecting means.

5,353,035

MICROSTRIP RADIATOR FOR CIRCULAR POLARIZATION FREE OF WELDS AND FLOATING POTENTIALS

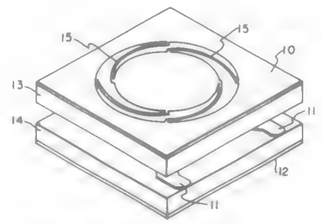
Paloma Del Castillo Cuervo-Arango; Gaspar Lopez Lopez, both of Madrid; Carlos Martin Pascual, Torrelodones; Carlos Montesano Benito, Madrid, and Juan Vassal'lo Sanz, Torrelodones, all of Spain, assignors to Consejo Superior de Investigaciones Cientificas and Construcciones Aeronauticas, S.A., Madrid, Spain

Filed Jan. 17, 1992, Ser. No. 833,832

Claims priority, application Spain, Apr. 20, 1990, 9001127

Int. Cl.[5] H01Q *1/38*

U.S. Cl. 343—700 MS **13 Claims**



1. An antenna comprising:

a first conductive ground layer;

a radiating patch element separated from said first conductive ground layer by a

at least one spiral strip connecting said patch element to said first conductive ground layer;

an input strip terminating at a position vertically below said patch element, said input strip lies in an electrical input layer, a first layer of dielectric material separating said input layer from said patch element, said first layer of dielectric material also separating said input layer from said first conductive ground layer, a second conductive ground layer; and

a second layer of dielectric material separating said second conductive ground layer from said input layer.

5,353,036

DUAL ANTENNA ASSEMBLY WITH ANTENNA RETRACTION INACTIVATION

Frank Baldry, Haslemere, England, assignor to Nokia Mobile Phones (U.K.) Limited, Surrey, United Kingdom

Filed Jul. 8, 1992, Ser. No. 910,652

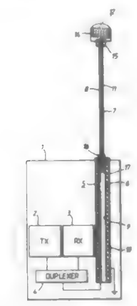
Claims priority, application United Kingdom, Jul. 13, 1991, 9115134

Int. Cl.[5] H01Q *1/24*

U.S. Cl. 343—702 **23 Claims**

1. A dual antenna assembly comprising a first antenna having an elongate antenna element mounted in a support and movable between a retracted position and an extended position, a second antenna having a helical antenna element carried by one end of the elongate antenna element, wherein the elongate antenna element is rendered inactive as a radiating means by movement to the retracted position, coupling means effective when the elongate antenna element is in the retracted position to render the helical antenna element operable as a

radiating means and conductive feed means coupled to said antenna elements, wherein the elongate antenna element is



directly connected to said conductive feed means in the retracted position.

5,353,037

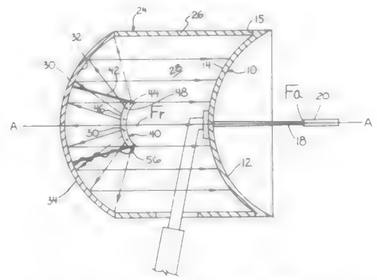
SYSTEM FOR DEICING DISH MOUNTED ANTENNAE

Thad M. Jones, 1302 High St., South Bend, Ind. 46601

Continuation of Ser. No. 829,504, Feb. 3, 1992, abandoned. This application Jan. 7, 1993, Ser. No. 1,187

Int. Cl.[5] H01Q *1/02*

U.S. Cl. 343—704 **11 Claims**



1. An apparatus for deicing an antenna dish having a front surface and a rear surface, said apparatus comprising:

paraboloidal reflector means located behind said dish rear surface for reflecting radiation onto said dish rear surface to uniformly heat said antenna dish,

radiant heating means located between said paraboloidal reflector means and said dish rear surface for emitting said radiation towards said paraboloidal reflector means,

said paraboloidal reflector means having a principal axis and a focal point located on said principal axis,

said heating means positioned on said principal axis between said paraboloidal reflector means and said focal point wherein said paraboloidal reflector means reflects said radiation emitted from said heating means substantially parallel to said principal axis onto said dish rear surface.

5,353,038

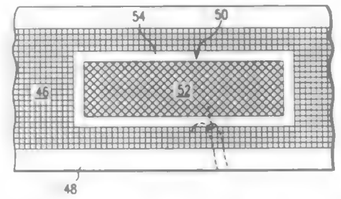
AUTOMATIC DIRECTION FINDER SENSE ANTENNA

Gregory W. Osborne, Mansfield, and Leon Hardman, Bedford, both of Tex., assignors to Bell Helicopter Textron Inc., Fort Worth, Tex.

Continuation of Ser. No. 881,600, May 12, 1992, abandoned, which is a continuation of Ser. No. 571,565, Apr. 8, 1991, abandoned. This application Mar. 3, 1994, Ser. No. 205,350

Int. Cl.[5] H01Q *1/28, 13/12*

U.S. Cl. 343—708 **19 Claims**



1. A conformal antenna for composite aircraft structures, comprising:

a first metallized conductor having a first electrical conductance disposed on an exterior surface of a composite structure said first metallized conductor having an opened area formed therein of a given peripheral shape and circumference, and

a second metallized conductor having a second electrical conductance disposed on the exterior surface of said composite structure being fixed within an opened area of said first metallized conductor wherein said second electrical conductance differs from said first electrical conductance, and having a surface shape generally conforming with the exterior surface of the composite structure, said second metallized conductor being smaller than the circumference of the opened area and being disposed within the opened area such that there is a peripheral gap between the peripheral edge of said opened area of said first metallized conductor and the peripheral edge of the second metallized conductor wherein said gap is generally uniform in width and sufficiently narrow to allow lightning energy to be discharged thereacross.

5,353,039

VEHICLE REAR WINDOW GLASS ANTENNA FOR TRANSMISSION AND RECEPTION OF ULTRASHORT WAVES

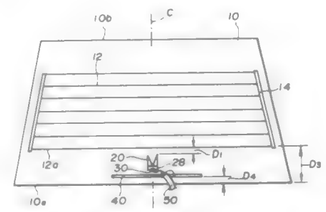
Tokio Tsukada; Yoji Nagayama, and Junichiro Ieiri, all of Matsusaka, Japan, assignors to Central Glass Company, Ube, Japan

Filed May 13, 1992, Ser. No. 882,541

Claims priority, application Japan, Jun. 28, 1991, 3-158710

Int. Cl.[5] H01Q *1/32, 9/38*

U.S. Cl. 343—713 **17 Claims**



1. An antenna attached to a vehicle rear window glass for

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receiving and transmitting ultrashort waves, the window glass being provided with a set of defogging heater strips each of which extends horizontally so as to leave a space between the lowermost heater strip and the lower edge of the window glass, the antenna being arranged in said space and comprising:

a primary antenna section which is a combination of a plurality of elongated elements connected to each other so as to form a closed plane figure having at least one and not more than four vertexes each of which is acutely angled and pointed upward and defines an upper end of the primary antenna section, and a plurality of elongated elements comprising a single horizontally elongated element which defines a bottom side of said closed plane figure;

a secondary antenna section comprising a single horizontally elongated element which extends below said primary antenna section and has a horizontal length in the range from 30 to 400 mm; and

a feeder which is a coaxial cable having an inner conductor and an outer conductor with insulation therebetween, said primary antenna section being connected with said inner conductor and said secondary antenna section being connected with said outer conductor;

wherein said primary antenna section defines the perimeters of at least two triangles arranged in a row, said horizontally elongated element of the primary antenna section defining bottom sides of all of said at least two triangles.

5,353,040

4-WIRE HELICAL ANTENNA

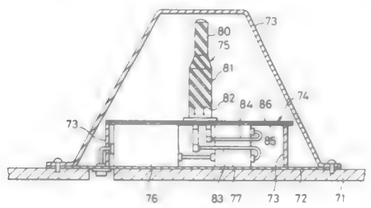
Kenichi Yamada, and Yujiro Taguchi, both of Kanagawa, Japan, assignors to Toyo Communication Equipment Co., Ltd., Samukawa, Japan

Continuation of Ser. No. 761,357, Sep. 9, 1991, abandoned. This application Aug. 16, 1993, Ser. No. 109,001

Claims priority, application Japan, Jan. 8, 1990, 2-1231; Oct. 1, 1990, 2-263331; Nov. 21, 1990, 2-319689

Int. Cl.[5] H01Q *11/08, 1/36, 17/00*

U.S. Cl. 343—895 **3 Claims**



3. A 4-wire helical antenna element comprising:

an antenna supporting member made of a dielectric material, having first and second cylindrical portions and first and second tapered portions, said first tapered portion being provided at a top end of said first cylindrical portion, and said second tapered portion being provided between said first and second cylindrical portions, said second cylindrical portion having a greater diameter than said first cylindrical portion, and said first and second cylindrical portions formed so as to be coaxially aligned with each other; and

a plurality of conductors, each comprising a metal helical winding formed on a surface of said antenna supporting member, each said helical winding completing less than two turns about said antenna supporting member.

5,353,041

DRIVING DEVICE AND DISPLAY SYSTEM

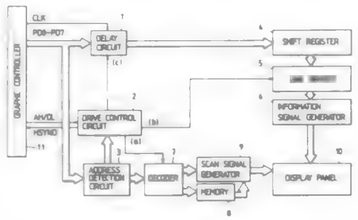
Katsuhiro Miyamoto, Hiratsuka, and Hiroshi Inoue, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 440,321, Nov. 22, 1989, abandoned. This application Nov. 4, 1991, Ser. No. 787,739

Claims priority, application Japan, Aug. 31, 1989, 1-225380

Int. Cl.[5] G09G *3/36*

U.S. Cl. 345—97 **28 Claims**



1. A driving device, comprising:

matrix electrodes composed of scanning lines and information lines;

an information line driving circuit having a delay circuit for delaying the transfer of image information corresponding to writing into pixels of a scanning line, a serial-parallel converting circuit, and a first memory for storing the image information from said serial-parallel converting circuit;

a scanning line driving circuit having a scanning line designating circuit for generating scanning line information which designates a scanning line, and a second memory for storing the scanning line information generated by said scanning line designating circuit; and

control means for controlling said information line driving circuit and said scanning line designating circuit so that the image information stored in said first memory which is used for Nth scanning, the scanning line information from said scanning line designating circuit which is used to designate a scanning line for (N+1)th scanning, and the scanning line information stored in said second memory which is used to designate a scanning line for Nth scanning are synchronously output, and said scanning line information used to designate the scanning line for (N+1)th scanning is output during outputting of the scanning line information for Nth scanning, and pixels on the scanning line designated by the scanning line information used to designate the scanning line for (N+1)th scanning are erased, and pixels on the scanning line designated by said scanning line information for designating Nth scanning stored in said second memory are written according to said image information stored in said first memory used for Nth scanning.

5,353,042

METHOD FOR DETERMINING AN ORIENTATION OF AN OBJECT

Matthew H. Klapman, 9235 N. Menard, Morton Grove, Ill. 60053, and David J. Frerichs, 877 Heatherstone Way #308, Mountain View, Calif. 94040

Division of Ser. No. 984,560, Dec. 2, 1992. This application Dec. 17, 1993, Ser. No. 169,493

Int. Cl.[5] G09G *5/08*

U.S. Cl. 345—156 **14 Claims**

1. A method for determining the orientation of an object comprising the steps of:

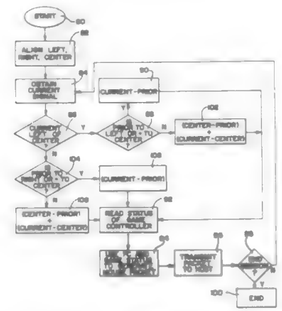
determining a plurality of boundary values defining a predetermined range of movement of the object;

dividing the range into position segments using said plurality of boundary values;

moving a movable portion of the object to a current position;

determining a change in object position by comparing a prior object position to said current position;

determining the number of position segments corresponding to the change of the object position;



outputting a signal corresponding to said number of segments to a control device;

determining a scaling value for any or all of said position segments corresponding to a desired position amplification or position attenuation scheme; and

controlling movement of a selected image or device based on said amplification or attenuation scheme such that movement of the moveable portion of the object causes disporportional movement of said image or device.

5,353,043

PRINTING DATA TRANSFERRING METHOD TO A LINE HEAD

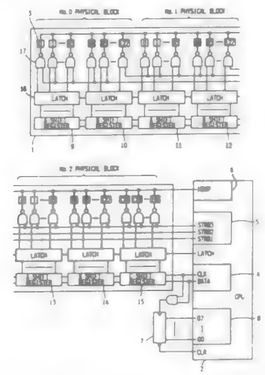
Takao Akiyama, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

Filed Mar. 5, 1992, Ser. No. 846,570

Claims priority, application Japan, Mar. 7, 1991, 3-043714

Int. Cl.[5] B61J *2/325*

U.S. Cl. 346—76 PH **12 Claims**



1. A line thermal head, comprising: a head main body portion having a linear array of heating elements divided into a plurality of physical blocks drivable so as to perform printing on a physical block basis; and a head control portion for performing a printing data transfer process and printing drive control for the head main body portion, the head control portion including transferring means for performing a time division transfer process on printing data in accordance with division units obtained by further dividing the printing data assigned to each of the physical blocks, and driving means for driving each of the physical blocks to effect printing in accordance with the time division transfer process performed on the printing data.

5,353,044

SYSTEM FOR PREVENTING ABNORMAL HEATING OF THERMAL HEAD

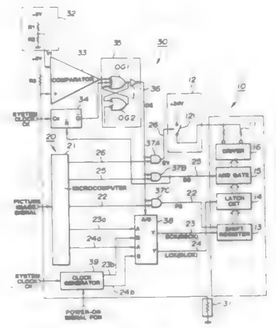
Akira Nakano, Hachioji, and Keiji Ameno, Kunitachi, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 24, 1992, Ser. No. 856,746

Claims priority, application Japan, Mar. 26, 1991, 3-084555

Int. Cl.[5] B41J *2/35, 2/375, 2/36, 2/365*

U.S. Cl. 346—76 PH **27 Claims**



1. An abnormal heating prevention system for preventing abnormal heating of a thermal head including a heating resistor array arranged as associated with picture elements of one line of a picture image, a drive voltage supply circuit for parallelly supplying a drive voltage to each of a plurality of heating resistors in the heating resistor array, a shift register for serially receiving a picture image signal from a printing control microcomputer through a first signal line based on a shift clock received from the microcomputer through a second signal line, a latch circuit for parallelly collectively latching the picture image signal of one line based on a latch clock received from the microcomputer through a third signal line, a gate array for performing a logical "AND" operation of a print-time setting signal cyclically received from the microcomputer through a fourth signal line and the latched picture image signal of one line to put only part of the picture image signal indicative of black pixels in an active state for an active time set by the print-time setting signal and a driver for applying the drive voltage to ones of the plurality of heating resistors corresponding to the active part of the picture image signal only for the active time to heat the ones of the plurality of heating resistors, the system comprising:

a temperature detecting element mounted on the thermal head for detecting a temperature of a thermal head to output a voltage indicative of the detected temperature;

reference voltage output means for outputting a voltage corresponding to a given temperature of the thermal head as a reference voltage;

a comparator for comparing the output voltage of the temperature detecting element with the reference voltage to output a signal having a first logical level when the output

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voltage of the temperature detecting element does not exceed the reference voltage and to output a signal having a second logical level when the output voltage of the temperature detecting element exceeds the reference voltage;

a switch connected to the drive voltage supply circuit for maintaining supply of the drive voltage to the heating resistor array only during output of a power supply control signal from the microcomputer through a fifth signal line; and

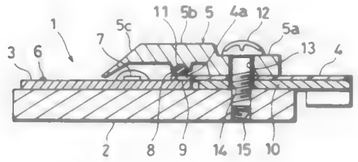
a gate connected to the fifth signal line for opening the fifth signal line during output of the signal having the first logical level from the comparator and for closing the fifth signal line when the signal having the second logical level is output from the comparator.

5,353,045

THERMAL PRINTHEAD

Teruhisa Sako, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Feb. 16, 1993, Ser. No. 18,374
Claims priority, application Japan, Feb. 17, 1992, 4-029269
Int. Cl.[5] B41J *2/335*
U.S. Cl. 346—76 PH **6 Claims**



1. A thermal printhead comprising:

a support plate;

a head substrate mounted on the support plate;

a connector board reinforced by a backing member which rests on the support plate, the connector board having a marginal portion projecting beyond the backing member;

a presser member overlapped on the connector board and pressed by a pressure applying means for pressing the marginal portion of the connector board into contact with the head substrate;

wherein the backing member is made of a material having a glass transition point of not less than 150° C.

5,353,046

DIVISIONAL-TYPE THERMAL PRINTHEAD

Akihiro Tanaka; Teruhisa Sako, and Yoshinobu Kishimoto, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Apr. 15, 1993, Ser. No. 46,748
Claims priority, application Japan, Apr. 17, 1992, 4-098287; Apr. 28, 1992, 4-110342
Int. Cl.[5] B61J *2/335, 2/34, 2/345*
U.S. Cl. 346—76 PH **9 Claims**

8. A divisional-type thermal printhead comprising:

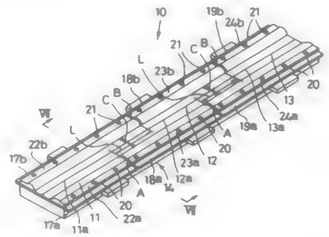
an elongate support member;

a row of unit head substrates fixed on the support member, each of the unit head substrates carrying a resistor line extending longitudinally of the support member;

a first row of presser covers mounted to the support member along one longitudinal edge thereof; and

a second row of presser covers mounted to the support member along another longitudinal edge thereof, wherein the first and second rows of presser covers cover said row of unit head substrates,

wherein a boundary between each adjacent two of the first row presser covers deviates from a boundary between



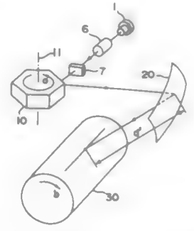
each adjacent two of the second row presser covers in a direction extending longitudinally of the support member.

5,353,047

BEAM SCANNING OPTICAL SYSTEM

Hiromu Nakamura, and Akiyoshi Hamada, both of Toyokawa, Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Nov. 20, 1991, Ser. No. 795,127
Claims priority, application Japan, Nov. 22, 1990, 2-319722
Int. Cl.[5] B41J *2/435*
U.S. Cl. 346—108 **18 Claims**



18. A beam scanning optical system for providing a scan line of a light beam across a surface, comprising:

emitting means for emitting a light beam;

converging means, downstream of the emitting means, for converging the light beam into a substantially straight line;

deflection means, downstream of the converging means, for deflecting the light beam across a field angle at an equiangular velocity in a scanning direction; and

a toroidal mirror means, positioned downstream of the deflection means for directly receiving the deflected light beam, for reflecting the light beam directly to the surface so as to linearly move the light beam at a constant speed across the surface between both edge positions of the scanning line.

5,353,048

IMAGE RECORDING APPARATUS

Makoto Kanai, Saitama, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

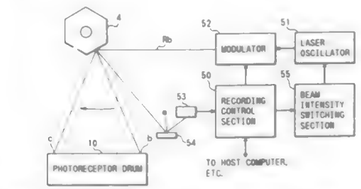
Filed Apr. 27, 1992, Ser. No. 873,755
Claims priority, application Japan, Apr. 30, 1991, 3-126806
Int. Cl.[5] H04N *1/21*
U.S. Cl. 346—108 **6 Claims**

1. An image recording apparatus comprising:

a light source for outputting a beam;

deflection means for deflecting the beam in predetermined directions to scan a scanning surface;

beam detection means for receiving the beam deflected by said deflection means to set a reference timing every scanning operation; and



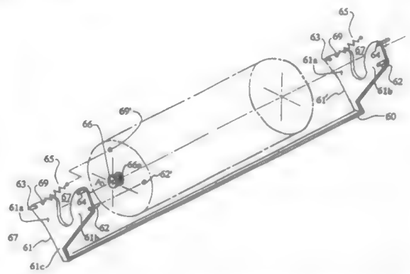
beam intensity switching means for controlling said light source to switch an intensity of the beam irradiated to said beam detection means and an intensity of the beam scanned on the scanning surface by a plurality-of degrees.

5,353,049

PAPER HOLDER OF VIDEO PRINTER

Kwang-Ho Ro, and Moon-Bae Park, both of Suwon, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation-in-part of Ser. No. 808,726, Dec. 17, 1991, abandoned. This application May 5, 1992, Ser. No. 878,522
Claims priority, application Rep. of Korea, Jan. 12, 1991, 367/1991
Int. Cl.[5] B41J *11/02*
U.S. Cl. 346—138 **40 Claims**



1. A process for printing various colors in sequence by using a video printer, comprising the steps of:

inserting a leading edge of a sheet of paper having opposite sides between a circumferential surface of a platen drum and a paper holder, and holding the leading edge along said opposite sides of said sheet of paper;

rotating the platen drum in a counter-clockwise direction to advance the paper to a first position along the platen drum, the first position being sensed by a counter;

stopping rotation of the platen drum and actuating a head motor to lift a thermal print head from the platen drum;

rotating the platen drum in a counter-clockwise direction until the paper is delivered to a second position sensed by the counter;

stopping rotation of the platen drum, and actuating the head motor to impress the paper with the thermal print head;

rotating the platen drum in a counter-clockwise direction and heating the thermal print head to thereby print a first color from a multi-colored ribbon onto the paper until the paper is delivered to the first position;

stopping the platen drum and lifting the thermal print head;

rotating the platen drum to move the paper from the first position to the second position;

stopping the platen drum, applying the thermal print head to press the paper against the platen, and heating the thermal print head while the paper is in the second position, to thereby print a second color from the ribbon onto the paper as the platen drum resumes rotation to move the paper to the first position;

stopping the platen drum and lifting the thermal print head;

rotating the platen drum to move the record paper from the first position to the second position;

stopping rotation of the platen drum and the head motor;

actuating means for lifting the paper holder away from the platen drum at the second position, and thereby releasing the leading edge of the printed paper from the surface of the platen drum;

stopping the actuating means to enable the paper holder to adhere to the platen drum;

rotating the platen drum in a counter-clockwise direction while said thermal print head presses said record paper against said platen drum and heating the thermal print head and thereby printing a final color from the multi-colored ribbon to provide a completed printed paper; and

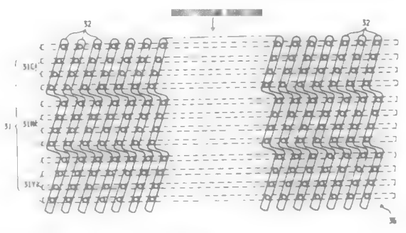
discharging the completed printed paper just after the printing of said final color.

5,353,050

RECORDING ELECTRODE FOR MULTICOLOR RECORDING

Shigeru Kagayama, Owariasahi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 21, 1992, Ser. No. 947,396
Claims priority, application Japan, Nov. 6, 1991, 3-289922
Int. Cl.[5] G01D *15/16*
U.S. Cl. 347—55 **10 Claims**



1. A recording electrode, comprising:

a substrate having an insulative characteristic;

a plurality of first electrodes on one side of said substrate;

a plurality of apertures in said substrate which allow at least two different color, charged toner particles to pass therethrough, each of said plurality of apertures being controlled independently to pass through one of the at least two different color, charged toner particles, said recording electrode directly controlling the charged toner particles and selectively passing the charged toner particles through each aperture in order to record an image on a supporting medium fed toward a predetermined direction, wherein said plurality of apertures from at least two subsets of apertures, each subset of apertures passing exclusively one color of charged toner particles of the at least two different color, charged toner particles.

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5,353,051

RECORDING APPARATUS HAVING A PLURALITY OF RECORDING ELEMENTS DIVIDED INTO BLOCKS

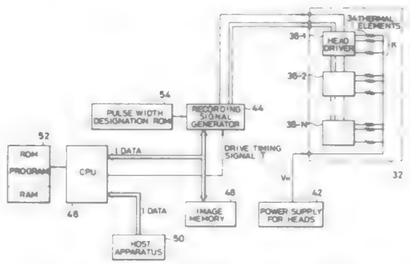
Akira Katayama, Yokohama; Hideaki Kishida, Yamato, and Kimiyuki Hayasaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 648,146, Jan. 30, 1991, abandoned. This application Nov. 19, 1992, Ser. No. 978,463

Claims priority, application Japan, Feb. 2, 1990, 2-22190; Feb. 2, 1990, 2-22196; Mar. 23, 1990, 2-71956

Int. Cl.[5] B41J *2/05*

U.S. Cl. 347—13 12 Claims



1. A recording method which performs image recording on a recording medium by driving a recording head having a plurality of recording elements, said plurality of recording elements being divided into a plurality of blocks and sequentially driven block by block, said recording elements exhibiting different recording characteristics with respect to a same driving signal due to manufacturing variations, the recording characteristics being related to measurable parameters, said recording method comprising the steps of:

prestoring data for correcting a driving signal for a respective one of said plurality of blocks, the data being determined in accordance with an average of the parameters relating to the recording characteristics of the recording elements in each of said plurality of blocks, the data being common to the recording elements in a same block;

selecting a block from among said plurality of blocks;

outputting data corresponding to said selected block from said prestored data; and

simultaneously driving the recording elements in said selected block according to said output data.

5,353,052

APPARATUS FOR PRODUCING UNEVENNESS CORRECTION DATA

Akio Suzuki, Yokohama; Toshimitsu Danzuka, Tokyo; Haruhiko Moriguchi, Yokohama; Yoshihiro Takada; Yasushi Miura, both of Kawasaki; Hisashi Fukushima, Yokohama; Masami Izumizaki, Tokyo; Nobuhiko Takekoshi, Yokohama; Nobuyuki Watanabe, Yokohama; Eiichi Takagi, Yokohama, and Haruhiko Takahashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 10, 1991, Ser. No. 698,561

Claims priority, application Japan, May 11, 1990, 2-119954; May 11, 1990, 2-119955; May 25, 1990, 2-134092; May 25, 1990, 2-134094; May 25, 1990, 2-134095; May 25, 1990, 2-134098; May 25, 1990, 2-134099; Jun. 6, 1990, 2-146185; Jun. 6, 1990, 2-146187; Jun. 7, 1990, 2-151133

Int. Cl.[5] B41J *2/05*

U.S. Cl. 347—19 25 Claims

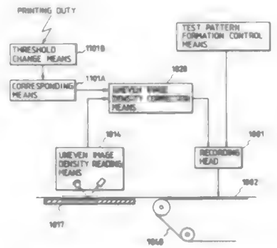
1. A correction data production apparatus comprising:

reading means for reading a test pattern formed by a recording head comprising a plurality of recording elements constituting an array, said test pattern having at least one characteristic;

detecting means for detecting a density distribution of a range of said array of said plural recording elements;

judging means for judging at least one said characteristic of the formed test pattern;

corresponding means for causing the density distribution detected by said detecting means to correspond to said plurality of recording elements based on a reference position where a density of an end portion of the density distribution reaches a predetermined threshold value;



producing means for producing correction data for making uniform an image formation density in correspondence with said plurality of recording elements based on the density distribution corresponded by said corresponding means; and

changing means for changing the threshold value in accordance with said judged at least one said characteristic of the test pattern to adjust the reference position.

5,353,053

METHOD OF CORRECTING A MEASURED IMAGE FORMED BY A TELEVISION CAMERA

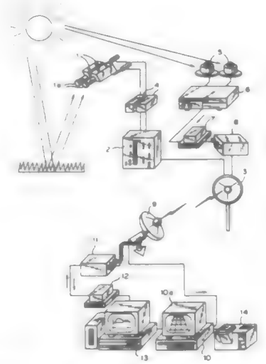
Tetsu Nishioka; Tetsuhisa Minami; Masakazu Okada; Masao Kawamura; Munehiro Ohshiro, and Manabu Ishikawa, all of Tokyo, Japan, assignors to NEC Corporation; Nippon Avionics Co., Ltd. and Tokyu Construction Co., Ltd., all of Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 15,167

Claims priority, application Japan, Feb. 12, 1992, 4-058950

Int. Cl.[5] H04N *7/18*

U.S. Cl. 348—33 22 Claims



1. A measured image correcting method comprising the steps of

obtaining spectral image signals with a television camera for detecting wavelengths of reflected light rays in specified wavelength bands among reflected light rays reflected by an object;

measuring an amount of spectral radiation energy of the wavelengths of reflected light rays in one of said specified wavelength bands emitted by a light source simultaneously with the detection of the wavelengths of the reflected light rays in another of said specified wavelength bands by the television camera;

measuring the size of an aperture stop of the television camera;

and obtaining an evaluating image by electronically correcting the spectral image signals according to the measured amount of spectral radiation energy and the measured size of the aperture stop.

5,353,054

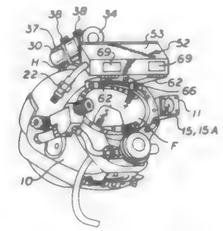
HANDS FREE LIDAR IMAGING SYSTEM FOR DIVERS

Michael B. Geiger, 605 South Richey #123, Pasadena, Tex. 77506

Filed Jul. 15, 1992, Ser. No. 914,841

Int. Cl.[5] H04N *7/18*

U.S. Cl. 348—81 17 Claims



1. A laser imaging and ranging (LIDAR) system for helmets or face masks of the type having a viewing area covered by a transparent face plate, for detecting and imaging a volume in a fluid medium, comprising:

a sealed enclosure adapted to be mounted on a helmet or face mask and containing therein at least one laser transmitter and pulse generating means for generating pulse of light from said at least one laser transmitter;

a sealed enclosure adapted to be mounted on the helmet or face mask and containing therein at least one reflected light detection means for detecting backscattered reflection of light pulses generated by said at least one laser transmitter;

visual display means adapted to be mounted on the helmet or face mask adjacent the face plate;

converting and processing means connected with said light pulse generating means, said reflected light pulse detection means, and said visual display means for converting said detected pulses of light into video signals of said volume and displaying said video images on said visual display means.

5,353,055

IMAGE PICKUP SYSTEM WITH AN IMAGE PICKUP DEVICE FOR CONTROL

Masaru Hiramatsu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 16, 1992, Ser. No. 868,840

Claims priority, application Japan, Apr. 16, 1991, 3-82770

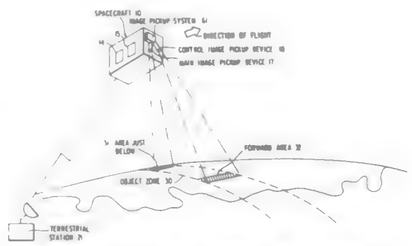
Int. Cl.[5] H04N *7/18*

U.S. Cl. 348—145 9 Claims

1. An image pickup system mounted on a craft which is located above an object zone and flies along an orbit having a predetermined positional relation with said object zone, said system comprising:

a main image pickup device for sequentially picking up the images of unit areas defined by a predetermined swath width of said object zone and a distance in the direction of flight of said craft; and

a control image pickup device for detecting a radiance distribution of a forward area preceding said unit areas which sequentially enter the visual field of said main image pickup device due to the flight of the craft, before the unit area of interest enters said visual field; and



wherein said control image pickup device comprises:

means for comparing predetermined reference values defining a radiance distribution associated with said unit areas and a detected value of radiance distribution of said forward area; and

a data processing section for controlling said main image pickup device in response the result of comparison.

5,353,056

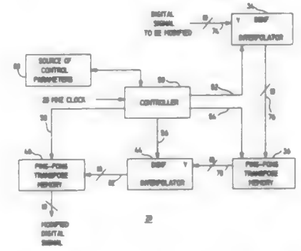
SYSTEM AND METHOD FOR MODIFYING ABERRATION AND REGISTRATION OF IMAGES

Peter H. Westerink, and Thomas J. Leacock, both of Mount Laurel, N.J., assignors to Panasonic Technologies, Inc., Secaucus, N.J.

Filed Oct. 27, 1992, Ser. No. 967,266

Int. Cl.[5] H04N *9/093*

U.S. Cl. 348—263 10 Claims



1. A signal processing system for processing at least one component of a multi-component image, where each of the image components is represented by a signal having spatial rows and columns which define a magnification function, where the magnification function of the at least one image component does not match the magnification functions of the other components of the multi-component image due to light which generates the at least one image component having been processed by a camera system, the signal processing system comprising:

means for generating a plurality of sampled data signals representing, respectively, each component of the multi-component image;

row interpolating means for interpolating along the spatial rows of the at least one image component to generate a

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row corrected sampled data signal having a desired magnification function which is consistent across each row of the image; and

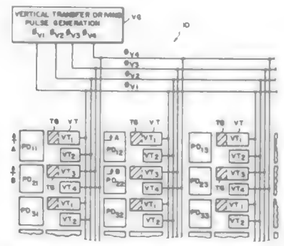
column interpolating means, separate from said row interpolating means, for interpolating along the spatial columns of the image component represented by said row corrected sampled data signal to generate a row and column corrected sampled data signal having a magnification function which is consistent across the image and which is substantially equal to the desired magnification function along both the spatial rows and columns of the image component.

5,353,057

METHOD OF DRIVING INTERLINE TRANSFER TYPE CCD IMAGER

Takashi Watanabe, Kyoto, Japan, assignor to Sharp Kabushiki Kaisha, Abeno, Japan

Continuation of Ser. No. 858,894, Mar. 27, 1992, abandoned.
This application Dec. 7, 1993, Ser. No. 163,600
Claims priority, application Japan, Mar. 29, 1991, 3-067110
Int. Cl.[5] H04N *5/335*
U.S. Cl. 348—322 **13 Claims**



1. A method of driving an interline transfer type CCD imager which comprises a plurality of light receiving pixels arranged in a matrix form and a plurality of vertical transfer units respectively disposed between columns of the light receiving pixels, each of the columns of light receiving pixels having a plurality of first light receiving pixels and a plurality of second light receiving pixels, the first and second light receiving pixels being alternately arranged in each column of light receiving pixels, each of the columns of the vertical transfer units having a plurality of first accumulation regions respectively corresponding to the first light receiving pixels and a plurality of second accumulation regions respectively corresponding to the second light receiving pixels, the first and second accumulation regions being alternately arranged in each column of vertical transfer units, the method comprising the steps of:

reading out a signal charge accumulated in the first light receiving pixels to the corresponding first accumulation regions,

transferring part of the signal charge accumulated in each of the first accumulation regions to the second accumulation region which is disposed adjacent on a prescribed side of the first accumulation region,

reading out another signal charge accumulated in the second light receiving pixels to the corresponding second accumulation region, so as to add the another signal charge to the part of the signal charge which is accumulated in the corresponding accumulation region, and

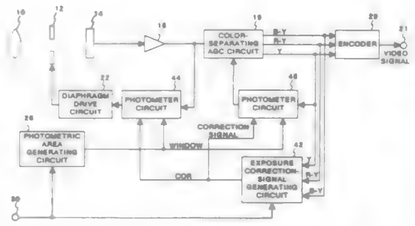
transferring the remaining part of the signal charge which is accumulated in each of the first accumulation regions to the adjacent second accumulation regions, so as to add the remaining part of the signal charge to the added signal charge which is accumulated in the second accumulation region.

5,353,058

AUTOMATIC EXPOSURE CONTROL APPARATUS

Hirofumi Takei, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 783,351, Oct. 28, 1991, abandoned.
This application Aug. 12, 1992, Ser. No. 927,739
Claims priority, application Japan, Oct. 31, 1990, 2-291816
Int. Cl.[5] H04N *5/238*
U.S. Cl. 348—363 **45 Claims**



1. An automatic exposure control apparatus comprising:

photometric means for performing photometry using a signal indicative of a photometric area set at a predetermined position within a frame;

discriminating means for discriminating photographic conditions of a subject by detecting and evaluating levels of luminance components and levels of chromaticity components in a video signal in respective ones of a plurality of divided areas set within the frame; and

correcting means for correcting a photometric control signal of said photometric means in dependence upon results of discrimination performed by said discriminating means.

5,353,059

DATA ERROR CONCEALMENT

Robert J. D. Lawlor, Stillorgan, Ireland, and James H. Wilkinson, Tadley, United Kingdom, assignors to Sony United Kingdom Ltd., Staines, United Kingdom

Filed Nov. 16, 1992, Ser. No. 977,251
Claims priority, application United Kingdom, Jan. 9, 1992, 9200433.2
Int. Cl.[5] H04N *7/137*
U.S. Cl. 348—398 **27 Claims**

Sub-band category	DC [illegible]	[illegible] AC	[illegible] AC	High order AC
Sub-band numbers	0	8,16,24,32,40,48,56	1,2,3,4,5,6,7	9-15,17-23,25-31,33-39,41-47,49-55,57-63	31, 39, 47, 55, 59, 61, 62, 63
Frame concealment	[illegible] concealment	[illegible] concealment	[illegible] concealment	Frame [illegible]	Frame concealment
Type A spatial concealment	[illegible] concealment	[illegible] concealment	Zero [illegible]	Zero [illegible]
Type B spatial concealment	Spatial [illegible]	[illegible] concealment	[illegible] replacement	
[illegible] concealment	Frame replacement	Spatial replacement		
Vertical concealment		Frame replacement		
Spatial replacement				
Previous frame replacement				

1. Error concealment apparatus for concealing corrupted data elements in digital image data having a plurality of elements representing respective spatial frequency components of a frequency separated image in a two-dimensional spatial frequency domain, said error concealment apparatus comprising:

(i) a plurality of error concealment means; and

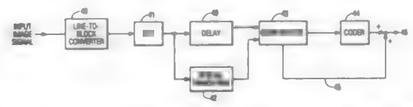
(ii) selecting means for selecting one of said error concealment means to conceal a corrupted data element according to said spatial frequency component represented by said corrupted data element.

5,353,060

PROCESS AND DEVICE FOR THE TRANSFORMATION OF IMAGE DATA

Heinz W. Keesen, Hanover, and Edgar Peters, Ronnenberg, both of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Apr. 13, 1993, Ser. No. 29,250
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1990, 4026523
Int. Cl.[5] H04N *7/133*
U.S. Cl. 348—408 **12 Claims**



1. In a system for encoding image representative data, apparatus including:

means for transforming image data into blocks containing rows and columns of coefficients respectively representing transformed values of image data within each said block;

special transform means for multiplying each column of coefficients by a comparison matrix having rows and columns of predominantly zero values;

means for providing a comparison of (a) a first sum of predetermined coefficient values and (b) a second sum of predetermined modified coefficient values resulting from said multiplying by said comparison matrix, for producing at an output coefficients associated with the smaller of said first and second sums; and

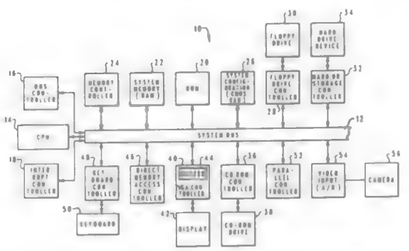
means for coding output coefficients from said comparison means to produce a coded output signal.

5,353,061

SYSTEM AND METHOD FOR FRAME-DIFFERENCING VIDEO COMPRESSION/DECOMPRESSION USING PERCEPTUALLY-CONSTANT INFORMATION AND IMAGE ANALYSIS

Arturo A. Rodriguez, Boca Raton; Mark A. Pietras, Boynton Beach, and Andres J. Saenz, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 8, 1992, Ser. No. 958,423
Int. Cl.[5] H04N *7/137*
U.S. Cl. 348—409 **31 Claims**



1. A method of compressing a color video segment, the method comprising the steps performed by a computer system of:

recording the color video segment as a sequence of frames, each frame comprising a plurality of pixels organized in an M×N array of pixel locations;

determining parameters for a non-linear luminance function from a luminance range for consecutive first and second frames in the sequence of frames;

generating a luminance value for each pixel in the first and second frames by using a color specification value for each pixel as an input to the non-linear luminance function;

comparing the first and second frames by comparing the luminance values at corresponding pixel locations in the frames;

responsive to compared luminance values differing at a pixel location between the first and second frames, marking a corresponding pixel location in an M×N difference map as changed;

generating a data string from the M×N difference map and the second frame comprising a sequential list of color values from the second frame occurring at the marked pixel locations in the M×N difference map; and

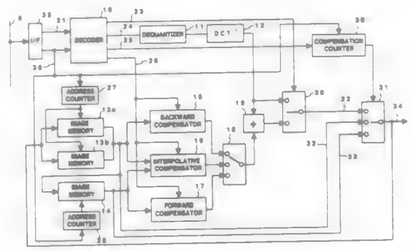
inserting values unused for specification of color values into the data string as decompression control information.

5,353,062

METHOD AND APPARATUS FOR DECODING MOVING IMAGES ENCODED BY INTER-FRAME PREDICTION AND DISPLAYING IT

Mitsuru Maeda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 872,454, Apr. 23, 1992, abandoned.
This application Sep. 16, 1993, Ser. No. 121,452
Claims priority, application Japan, Apr. 25, 1991, 3-095513
Int. Cl.[5] H04N *7/130, 7/133, 7/137*
U.S. Cl. 348—412 **10 Claims**



1. An apparatus for displaying images which performs motion compensation by inter-frame prediction on supplied moving image data and displays it while encoded data obtained by intra-frame encoding within arbitrary frames of a moving image is being decoded, comprising:

decoding means for decoding encoded moving image data;

instruction means for instructing that a moving image be temporarily stopped and displayed as a still image;

identifying means for identifying frame which is being decoded by said decoding means when an instruction for displaying a still image is given by said instruction means; and

display means for displaying an intraframe encoded frame near the frame being decoded by said decoding means when the frame being decoded is identified as being an interpolative frame by said identifying means.

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5,353,063

METHOD AND APPARATUS FOR PROCESSING AND/OR DISPLAYING IMAGE DATA BASED ON CONTROL DATA RECEIVED WITH THE IMAGE DATA

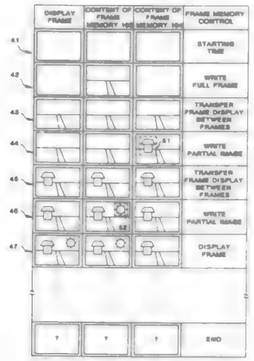
Toshihiro Yagisawa, Yokohama; Ikuo Watanabe, Kawasaki; Motokazu Kashida, Musashino, and Nobuhiro Hoshi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 679,287, Apr. 2, 1991, abandoned. This application Jan. 3, 1994, Ser. No. 176,507

Claims priority, application Japan, Apr. 4, 1990, 2-88182; Apr. 4, 1990, 2-88183

Int. Cl.[5] H04N *1/41, 1/417, 7/15, 5/44*

U.S. Cl. 348—426 13 Claims



12. An image processing apparatus comprising:

first memory means for storing first image data;

second memory means for storing second image data representing a whole image which comprises a plurality of second pictures;

combining means for controlling a reading time of (i) the first image data from said first memory means and (ii) each of the plurality of second pictures of second image data from said second memory means in accordance with predetermined control information, and for sequentially combining the first image data of said first memory means and each of the plurality of second pictures of second image data of said second memory means.

5,353,064

MULTIPAGE TELETEXT DECODER FOR CAPTURING A REQUESTED PAGE DURING A SINGLE CYCLE

Renee Schlink, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 15, 1992, Ser. No. 991,038

Claims priority, application European Pat. Off., Dec. 18, 1991, 91203341.2

Int. Cl.[5] H04N *7/087, 7/08*

U.S. Cl. 348—468 10 Claims

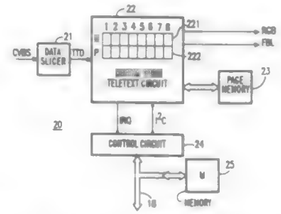
1. A multipage teletext decoder for capturing and storing a plurality of teletext pages, comprising:

a page memory for storing the teletext pages;

at least one acquisition circuit for capturing and storing a teletext page with a supplied request number;

means for fixing a plurality of request numbers of pages to be captured; and

a control circuit for applying a request number to the acquisition circuit and for skipping a predetermined number of page numbers after the number of a received page in a predetermined cyclic series of page numbers to select that request number of the plurality of request numbers which



is the first to succeed the skipped page numbers in the cyclic series.

5,353,065

APPARATUS FOR RECEIVING WIDE/STANDARD PICTURE PLANE TELEVISION SIGNAL

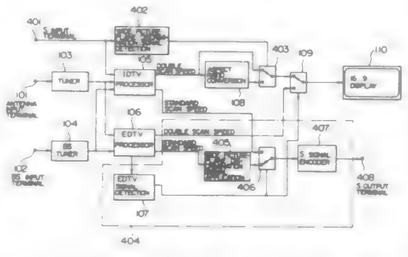
Kenji Katsumata; Shigeru Hirahata; Masato Sugiyama, and Isao Nakagawa, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 552,559, Jul. 16, 1990, abandoned. This application Jun. 16, 1992, Ser. No. 899,040

Claims priority, application Japan, Jul. 17, 1989, 1-182668

Int. Cl.[5] H04N *11/06, 11/20*

U.S. Cl. 348—556 12 Claims



6. A wide picture plane/standard picture plane television signal receiving apparatus capable of receiving a standard system television signal (A) and a wide screen television signal (B) having a wide picture plane aspect ratio and capable of selectively displaying a television picture according to either one of the television signals (A) and (B) on a displaying means having a wide aspect ratio, said apparatus comprising:

a television signal format converting means for converting said wide screen television signal (B) into a converted standard system television signal (C) having a standard television signal format with a wide picture plane aspect ratio;

a wide aspect discriminating signal application means for multiplexing said converted standard system television signal (C) with a discriminating signal indicating a wide picture plane aspect ratio to generate a standard system wide aspect television signal (D);

an output terminal for outputting said standard system wide aspect television signal (D) in which is multiplexed said wide aspect discriminating signal;

wherein said wide screen television signal (B) is a high definition television signal;

a first signal processing means including at least an aspect ratio converting section for converting an aspect ratio of an inputted standard system television signal (A);

a second signal processing means for processing an input high definition television signal to thereby output a processed television signal;

a high definition television signal detection means for detecting an input high definition television signal; and

a signal selection means for selecting one of the respective output signals of said first signal processing means and said second signal processing means on the basis of a detection output of said high definition television signal detection means to thereby supply the selected output signal to a wide aspect display.

5,353,066

METHOD FOR PREVENTING THE DETERIORATION OF PICTURE QUALITY IN A VIDEO PROCESSOR AND CIRCUIT THEREOF

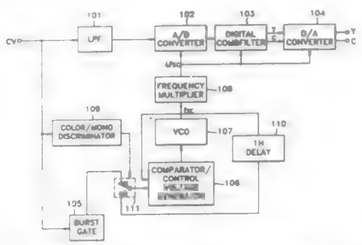
Chan-gu Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 5, 1993, Ser. No. 147,570

Claims priority, application Rep. of Korea, Nov. 5, 1992, 92-20700

Int. Cl.[5] H04N *9/70, 9/455, 5/12*

U.S. Cl. 348—505 13 Claims



1. A method for preventing the deterioration of picture quality in a video processor which has a combfilter for separating a video signal, containing a burst signal, into luminance and chrominance signals and which uses a clock signal to process a signal for said combfilter, said method comprising the steps of:

discriminating whether the video signal is a color signal or a monochrome (mono) signal;

generating said clock signal locked by a reference signal;

generating a quasi-burst signal by delaying said generated clock signal for a predetermined period; and

selecting the burst signal contained on the input video signal when the color signal is discriminated in said discriminating step, and selecting said quasi-burst signal when the mono signal is discriminated in said discriminating step, so as to send the selected signals as said reference signal of said clock signal generating step,

whereby a constant clock signal is generated regardless of whether the input video signal is the color signal or the mono signal, so as to prevent high-band noise due to clock variations created when the mono signal without the burst signal is input.

5,353,067

IMAGE DATA CONVERSION CIRCUIT HAVING A VERTICAL FILTER FOR PREVENTING DETERIORATION IN QUALITY OF A REDUCED IMAGE

Yoshiaki Kaji, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1993, Ser. No. 136,275

Claims priority, application Japan, Nov. 30, 1992, 4-319875

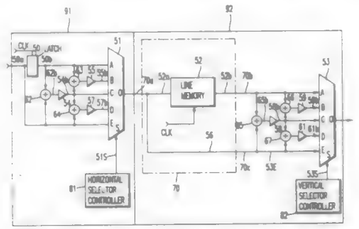
Int. Cl.[5] H04N *3/223*

U.S. Cl. 348—568 17 Claims

1. An image date conversion circuit comprising:

a first decimation circuit for receiving a plurality of original lines of an original image to be reduced, a first number of said original lines being arranged in a first direction to form said original image, each of said original lines consisting of a second number of original dots which are arranged in a second direction which is perpendicular to said first direction, and for outputting reduced lines each consisting of a third number of reduced dots which are arranged in said second direction, said third number being smaller than said second number; and

a second decimation circuit for receiving a plurality of said reduced lines and for outputting a fourth number of determined reduced lines which are arranged in said first direction to form a reduced image, said fourth number being smaller than said first number, wherein said second decimation circuit comprises a line memory which is formed of a plurality of memory elements each capable of storing



one of said reduced lines, a sum of memory capacities of said memory elements being sufficiently large to store one of said original lines, wherein said line memory is partitioned into a first portion which includes at least one of said memory elements and a second portion which includes at least one of said memory elements and which is disposed before said first portion, wherein when a reduction ratio of a size of said reduced image to a size of said original image is larger than a predetermined value, said second portion is combined with said first portion so as to serially store said reduced lines, and wherein when said reduction ratio is equal to or smaller than said predetermined value, said second portion filters said reduced lines to obtain filtered reduced lines and said first portion serially stores said filtered reduced lines.

5,353,068

VIDEO SIGNAL COMBINING APPARATUS AND METHOD

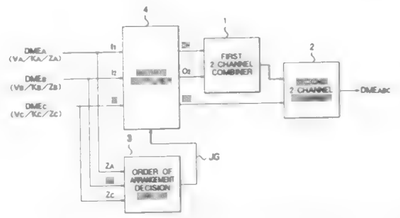
Katsuakira Moriwake, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 17, 1993, Ser. No. 107,062

Claims priority, application Japan, Aug. 31, 1992, 4-255983

Int. Cl.[5] H04N *5/272, 5/265*

U.S. Cl. 348—585 4 Claims



1. Apparatus for combining input video signals, each video signal having an associated depth information signal, said apparatus comprising:

(i) fist combining means for combining a first video signal

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with a second video signal and outputting an intermediate combined video signal;

(ii) second combining means for combining said intermediate combined video signal supplied form said first combining means with a third video signal and outputting an output combined video signal;

(iii) discriminating means for discriminating a depth order of said input video signals in accordance with said depth information signals; and

(iv) switching means connected to said discriminating means and supplied with said input video signals for switching one of said input video signals to form said first video signal, for switching another of said input video signals to form said second video signal and for switching still another of said input video signals to form said third video signal respectively, said switching performed according to a discrimination result of said discriminating means, so that said input video signals are switched to form said first video signal, said second video signal and said third video signal in depth order.

5,353,069

TRANSMITTED TELEVISION SIGNAL WAVEFORM EQUALIZING SYSTEM

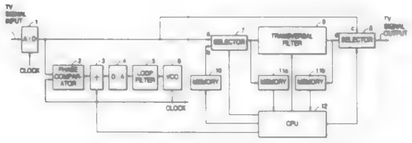
Kazuo Kobo, Sakai; Kazuya Uyeda, Suita; Robert Ho, Osaka, and Takashi Yamaguchi, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co Ltd, Osaka, Japan

Filed May 11, 1993, Ser. No. 59,266

Claims priority, application Japan, May 14, 1992, 4-121624; May 14, 1992, 4-121679

Int. Cl.[5] H04N *5/213*

U.S. Cl. 348—611 **5 Claims**



1. A waveform equalizing system for waveform equalizing a television signal transmitted in the form of sampled values comprising:

a clock reproducing phase locked loop circuit for reproducing a clock signal from the television signal;

a transversal filter;

a first selector circuit for alternatively passing the television signal or an output of a first memory to the transversal filter;

a central processing unit for extracting reference signals contained in the television signal from the input and output of the transversal filter through two second memories respectively and performing a synchronous addition of the extracted reference signals;

the first memory for storing a reference signal processed by the synchronous addition in the central processing unit; and

a second selector circuit for alternatively delivering the television signal or an output of the transversal filter in response to a control signal from the central processing unit;

said central processing unit being arranged for calculating a phase difference between the clock signal of the clock reproducing phase locked loop circuit and the reference signal processed by the synchronous addition and controlling clock signal phase of the clock reproducing phase locked loop circuit to correct the phase difference.

5,353,070

LENS HOLDER WHICH REDUCES INTERNAL REFLECTIONS

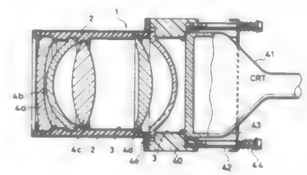
Katsuaki Mitani; Masayuki Takahashi, and Syunsuke Kimura, all of Ibaraki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

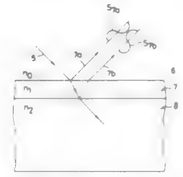
Filed Jun. 4, 1993, Ser. No. 70,912

Claims priority, application Japan, Jun. 8, 1992, 4-147257

Int. Cl.[5] H04N *5/74*

U.S. Cl. 348—781 **4 Claims**





1. A lens holder comprising:

a lens-barrel; and

a thin film formed on an inner surface of said lens-barrel, said thin film being composed of a fluororesin compound having a refractive index lower than a refractive index of a material which constitutes said lens-barrel.

5,353,071

PILOT/SAFETY GLASSES

Ron J. Bradshaw, Meaford, Ontario, Canada N0H 1Y0

Filed Jul. 28, 1992, Ser. No. 920,685

Int. Cl.[5] G02C *1/00*

U.S. Cl. 351—158 **16 Claims**



1. An apparatus for securing a pair of eyeglasses to a headband of a headset worn by a person, comprising:

a) attachment means having a base portion removably connected to said headband via at least one strip of material wound around said base portion and said headband and adjustably secured so as to accommodate different circumferences in cross-section of said headband, and a tube fitting connected to said base portion;

b) flexible boom means received within said tube fitting and adjustably secured therein via an interference fit, such that the length of said flexible boom means extending from said tube fitting may be adjusted to accommodate different sizes of said person's head; and

c) clamp means disposed at an end of said flexible boom means remote from said attachment means having a pair of spring loaded jaws for connection to a nose bridge portion of said pair of eyeglasses, whereby said pair of eyeglasses are adjustably positionable relative to the eyes of said person.

5,353,072

ASPHERICAL SPECTACLE LENS

Yasuyuki Tejima; Moriyasu Shirayanagi, and Yasunori Izawa, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 11,500

Claims priority, application Japan, Jan. 31, 1992, 4-041874

Int. Cl.[5] G02C *7/02;* **G02B** *3/04*

U.S. Cl. 351—159 **7 Claims**



1. An aspherical spectacle lens having a negative power and an aspherical surface of rotational symmetry located on an object side of the lens, a surface power of the aspherical surface of rotational symmetry, at a center portion located on an axis of rotational symmetry, being substantially 0 diopter, the aspherical surface of rotational symmetry being generally of a convex shape and having positive diopter powers of surface power at positive radial distances from the axis thereof, said positive diopter powers increasing with distance from the axis of rotational symmetry towards a pheripheral edge of the lens and decreasing, relatively, at a peripheral edge portion of the lens, said peripheral edge portion being approximately 30 mm to 40 mm from the axis of rotational symmetry, and said positive diopter powers having a maximum surface power of 1.7535 diopter.

5,353,073

THREE-DIMENSIONAL SHAPE MEASUREMENT SYSTEM

Koji Kobayashi, Hino, Japan, assignor to Kowa Company, Ltd., Japan

Filed Sep. 16, 1992, Ser. No. 945,672

Claims priority, application Japan, Sep. 17, 1991, 3-235239

Int. Cl.[5] A61B *3/10;* **G01B** *11/24*

U.S. Cl. 351—221 **20 Claims**

1. A three-dimensional shape measurement system for producing three-dimensional information of an object under examination, the system comprising:

a laser beam source for producing a laser beam;

scanning means for two-dimensionally scanning the object with the laser beam in two scanning directions;

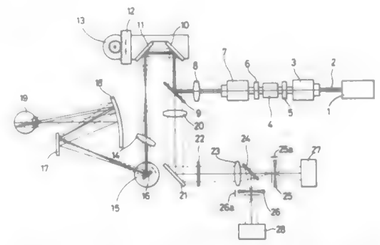
an optical system for directing the laser beam along an optical axis onto the object so that the laser beam is reflected by the object as reflected light;

laser beam control means for focal point shifting in the direction of the optical axis of the optical system which intersects the scanning directions of the scanning means;

detection means for detecting a variation in focal position of the light reflected from the object and deriving, from the detected variation, information regarding shape properties of the object in a direction of the optical axis of the optical system and producing output signals representative of the shape properties of the object;

first signal processing means for processing output signals of the detection means to eliminate the effect of optical reflectance properties of the object; and

second signal processing means for processing the output signals of the detection means to discriminate a condition of the focal position with respect to the object established by the laser beam control means so as to drive the laser beam control means to produce a focused condition.



5,353,074

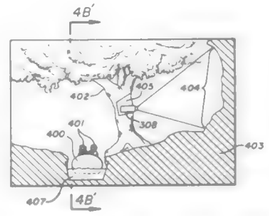
COMPUTER CONTROLLED ANIMATION PROJECTION SYSTEM

Raymond D. Jones, Lake Elizabeth; Christopher M. Wagner, Saugus, and George T. Katanics, Burbank, all of Calif., assignors to The Walt Disney Company, Burbank, Calif.

Filed May 22, 1992, Ser. No. 888,544

Int. Cl.[5] G03B *21/00, 21/00*

U.S. Cl. 353—122 **38 Claims**



25. In a theme park ride having at least one light controlled region and a transportation means for transporting customers to said light controlled region, said light controlled region including a projection surface, a system comprising:

storage means for storing images;

processing means coupled to said storage means for receiving said images stored in said storage means, said processing means generating sequences of said images to create animated images, said processing means generating a video signal of said animated images;

projection means coupled to said processing means for receiving said video signal, said projection means generating a projection image form said video signal, said projection means projecting said projection image on said projection surface;

a sensor coupled to said processing means for detecting the presence and absence of said transportation means; and,

said sensor for providing a signal enabling generation of said video signal when presence of said transportation means is detected.

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5,353,075

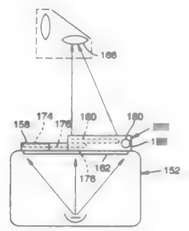
CONVERTIBLE FLAT PANEL DISPLAY SYSTEM

Arlie R. Conner, Tualatin; Jonathon R. Biles, Portland, and Paul E. Gulick, Tualatin, all of Oreg., assignors to In Focus Systems, Inc., Tualatin, Oreg.

Continuation-in-part of Ser. No. 1,055, Jan. 6, 1993, and Ser. No. 701,411, May 15, 1991, abandoned, which is a division of Ser. No. 233,285, Aug. 17, 1988, Pat. No. 5,101,197. This application Sep. 29, 1993, Ser. No. 128,890

Int. Cl.[5] G03B *21/56*

U.S. Cl. 353—122 37 Claims



1. In an information processing device of a unitary configuration having a base section that contains computer circuitry, supports data input keys, and is pivotally coupled to a display panel section with an addressable flat panel display and an opaque backing member in opposed face-to-face relation, the display panel section being selectively positionable between a first position in which the flat panel display is directly observable by a user and a second position in which the backing member covers the flat panel display and the data input keys, the improvement comprising:

the pivotal coupling between the base section and the panel display section allowing the latter to pivot to a third position that is generally nonoverlapping and co-planar with the base section;

a user-operable fastener between the backing member and the panel display section so that the backing member is removable from the panel display section to allow transmissive observation of the flat panel display; and

a light-generating unit included in the display panel section for generating light between the backing member and the flat panel display for direct viewing of it, the light-generating unit being coupled to the backing member to be removable with it from the display panel section.

5,353,076

PHOTOGRAPHIC CAMERA FOR VARIOUS SIZE EXPOSURES USING ONE-PIECE MASKING BLADE ASSEMBLAGE

William H. Goddard, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

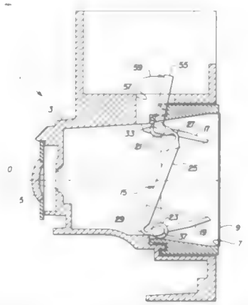
Filed Aug. 24, 1993, Ser. No. 111,244

Int. Cl.[5] G03B *37/00*

U.S. Cl. 354—94 3 Claims

1. A photographic camera capable of taking various size exposures comprises a back frame opening for making a full size exposure on a film in said camera, and masking blades having respective pivot shafts for pivotal movement of said masking blades between a masking position for masking corresponding portions of said back frame opening to allow only a reduced size exposure to be made on the film and a non-masking position not masking said corresponding portions of the back frame opening to allow a full size exposure to be made on the film, and is characterized in that:

said masking blades are connected via a connecting link having a pair of elastic portions which constitute living hinges located proximate said pivot shafts to permit the masking blades to be pivoted between their masking and non-masking positions.



5,353,077

PHOTOGRAPHIC CAMERA HAVING ALSO FUNCTION OF PANORAMIC PHOTOGRAPHING

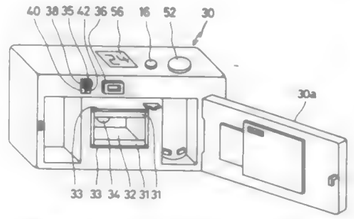
Yasuhiko Tanaka; Ken Ishioka, and Mitsuo Yokota, all of Ohmiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Ohmiya, Japan

Continuation of Ser. No. 868,634, Apr. 14, 1992, abandoned. This application Dec. 20, 1993, Ser. No. 170,442

Claims priority, application Japan, Apr. 15, 1991, 3-33916[U]; Apr. 15, 1991, 3-109753

Int. Cl.[5] G03B *37/00*

U.S. Cl. 354—94 24 Claims



1. A photographic camera having also the function of panoramic photographing, comprising:

a body;

a lens barrel supported on said body;

variable focus means supported on said body and coupled to said lens barrel, said variable focus means including a motor drive to move an objective, and thereby to vary a focal distance, over a continuous range;

an encoder supported between said body and said lens barrel for detecting the relative position of said lens barrel to thereby determine the objective position;

a manipulator on the exterior of said body and externally accessible for selectively switching between a mode of normal photographing in which a picture of normal size is obtained and a mode of panoramic photographing in which a picture of panoramic size is obtained wherein each photograph on a roll may be individually selected for panoramic or normal photography;

panoramic components positioned in said body and including plates for changing the dimensions of an aperture through which film is exposed in said camera whereby the size of a picture taken using the photographic camera may be altered between normal and panoramic dimensions when said manipulator is operated to select a photographic mode; and

means for controlling said motor drive to position said objective at the minimum focal distance position automatically when said externally accessible manipulator is operated to select the mode of panoramic photographing and said encoder indicates that the objective is not at said minimum focal distance.

5,353,078

CAMERA HAVING A MAGNETIC RECORDING DEVICE

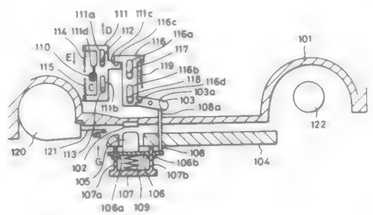
Chikara Aoshima, Zama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 786,850, Nov. 1, 1991, abandoned. This application Jan. 19, 1994, Ser. No. 183,244

Claims priority, application Japan, Nov. 7, 1990, 2-299819; Nov. 14, 1990, 2-306003

Int. Cl.[5] G03B *17/24*

U.S. Cl. 354—105 15 Claims



1. A camera in which a magnetic head writes into and/or reads from a magnetic record carrier provided on a film, comprising:

film-conveying means for conveying the film;

restricting means for restricting a relative position between the magnetic head and the film edge and which is shiftable between a restricting position and a non-restricting position, wherein said restricting means, when in said restricting position, contacts the film edge during the conveying of the film so as to regulate the relative position between the magnetic head and the film edge and, when in said non-restricting position, is maintained out of contact with the film edge during the conveying of the film; and

controlling means for maintaining said restricting means at the restricting position and prohibiting the shift to the non-restricting position during the operation of said magnetic head.

5,353,079

FILM UNIT WITH PHOTOGRAPHIC LENS

Zenji Sakai, and Ken Ishida, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jan. 25, 1993, Ser. No. 8,164

Claims priority, application Japan, Jan. 30, 1992, 4-15209

Int. Cl.[5] G03B *15/03, 15/02*

U.S. Cl. 354—149.11 2 Claims

1. A film unit including a picture-taking lens through which a subject is photographed on an unexposed film, comprising:

a shutter mechanism to open or close an aperture for the picture-taking lens;

a release button to actuate said shutter mechanism so as to open the aperture for the picture-taking lens;

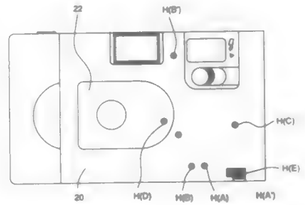
a strobe to irradiate the subject with light;

an electrical circuit electrically coupled to the strobe to supply electric power thereto;

a trigger switch mechanically linked with said shutter mechanism and electrically coupled to said electrical circuit so that the strobe is triggered when said shutter mechanism opens the aperture for the picture-taking lens;

a pair of terminals in said electrical circuit electrically coupled to both sides of said trigger switch, respectively; and

a film unit body on which holes corresponding in position to said pair of terminals are provided so that said trigger switch can be by-passed with a by-pass line in contact with the pair of terminals through said holes, whereby the strobe can be triggered without actuating the shutter mechanism.



5,353,080

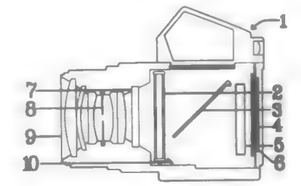
EXPOSURE-EQUALIZING SYSTEM FOR PHOTOGRAPHIC IMAGES

Ernest H. Christman, 1055 Matador SE., Albuquerque, N. Mex. 87123

Filed Nov. 2, 1992, Ser. No. 970,042

Int. Cl.[5] G03B *7/085, 19/12*

U.S. Cl. 354—154 2 Claims



1. An image control device in a photographic apparatus comprising:

(a) a transparent photochromic medium that is interposed in the internal optical path, and

(b) a mirror before said medium that transmits light coming from anterior to posterior but reflects light coming from posterior to anterior, and

(c) a mirror behind said medium that reflects light forward, and

(d) the mirrors in multiple parts which fit together into the optical path when brought together, and

(e) the photochromic medium in multiple parts which fit together into the optical pathway when brought together.

5,353,081

CAMERA ELEMENT POSITION DETECTING ASSEMBLAGE

Thomas J. Quattrini, Byron, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 27, 1993, Ser. No. 68,352

Int. Cl.[5] G03B *5/00*

U.S. Cl. 354—195.1 4 Claims

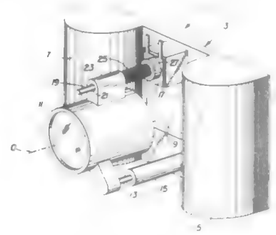
1. A camera element position detecting assemblage for a zoom lens supported for movement to a plurality of positions, is characterized by:

force exerting means for exerting a variable force which is changed in accordance with changes of position of said zoom lens; and

position detecting means for sensing a change of force of said

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force exerting means when said zoom lens undergoes a change of position, and for substantially determining the



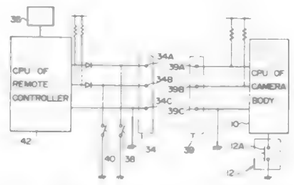
particular position of said zoom lens responsive to the change of force of the force exerting means.

5,353,082

CAMERA SYSTEM HAVING A DETACHABLE REMOTE CONTROLLER WITH DIFFERENT FUNCTIONS

Shinya Suzuka, Saitama, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1992, Ser. No. 854,003
Claims priority, application Japan, Mar. 22, 1991, 3-041503[U]
Int. Cl.[5] G03B *17/38*
U.S. Cl. 354—266 12 Claims



12. A camera system comprising a camera body and a remote controller detachably coupled to said camera body, at least one operation member being provided on said remote controller, a predetermined operation signal being transmitted to said camera body upon operation of said operation member, said camera system further comprising:

means for discriminating whether said remote controller is coupled to said camera;

said at least one operation member being accessible to a user when said remote controller is both coupled to said camera body and detached from said camera body; and

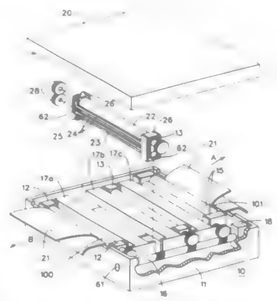
means for initiating a selected one of predetermined operations to be performed by said camera body upon receipt of said predetermined operation signal when said discriminating means determines that said remote controller is coupled to said camera body, and for initiating a different one of said predetermined operations, upon receipt of said predetermined operation signal when said discriminating means determines that said remote controller is detached from said camera body.

5,353,083

CLOSED SOLUTION RECIRCULATION/SHUTOFF SYSTEM FOR AN AUTOMATIC TRAY PROCESSOR

John H. Rosenburgh, Hilton; Joseph A. Manico, Rochester; Ralph L. Piccinino, Jr., Rush, and David L. Patton, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1993, Ser. No. 56,457
Int. Cl.[5] G03D *3/02, 3/08*
U.S. Cl. 354—319 12 Claims



1. An apparatus for processing photosensitive materials, said apparatus comprising:

a processing module comprising a container, at least one processing assembly placed in said container and at least one transport assembly disposed adjacent said at least one processing assembly, said at least one processing assembly and said at least one transport assembly forming a substantially continuous channel through which a processing solution flows, said at least one processing assembly and said at least one transport assembly substantially filling said container and being dimensioned so that a small volume is provided for holding and moving processing solution and photosensitive material through said processing module, at least one discharge opening is provided in said at least one transport assembly or said at least one processing assembly for introducing processing solution through said channel;

means for circulating the processing solution from said small volume in said module to said at least one discharge opening;

means for managing processing solution volume in order to reduce the formation of processing solution disturbances; and

means coupled to said circulating means for maintaining the processing solution level in a small volume at a predetermined level.

5,353,084

CHEMICAL REACTION SYSTEMS

Peter J. Twist, Great Missenden, and David M. Henson, Middlesex, both of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP91/00589, § 371 Date Oct. 2, 1992, § 102(e) Date Oct. 2, 1992, PCT Pub. No. WO91/15806, PCT Pub. Date Oct. 17, 1991
PCT Filed Mar. 27, 1991, Ser. No. 930,669
Claims priority, application United Kingdom, Apr. 2, 1990, 9007361.0
Int. Cl.[5] G03D *3/08, 3/02*
U.S. Cl. 354—321 4 Claims

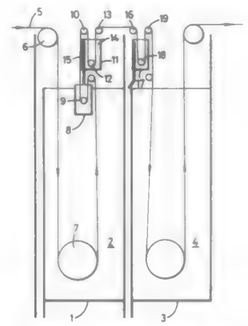
1. A process comprising the steps of:

passing a reactive substrate sequentially through a first main bath containing a first reagent reactive with said substrate, wherein passing the substrate through the first main bath results in a retention of reagent by the substrate as it leaves the bath thereby depleting the first main bath,

passing the substrate from the first main bath through a first auxiliary bath to contact the substrate with a further amount of the first reagent after passage through the first main bath and before contact with the second reagent,

passing the substrate sequentially from said first auxiliary bath through a second auxiliary bath to contact the substrate with a further amount of the first reagent, said second auxiliary bath being adapted to overflow into said first auxiliary bath and said first auxiliary bath being adapted to overflow into said first main bath, with the first reagent being supplied from said second auxiliary bath in an amount generally equivalent to that depleted from the first main bath, and

passing the substrate through a second main bath containing a second reagent reactive with the substrate.

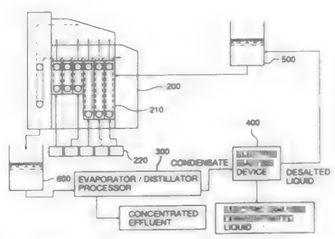


5,353,085

AUTOMATIC PROCESSOR FOR PROCESSING SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Masayuki Kurematsu, and Hideo Tanaka, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 995,584
Claims priority, application Japan, Dec. 28, 1991, 3-358469; Apr. 20, 1992, 4-099463
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—324 17 Claims



1. An automatic processing apparatus for processing photographic light-sensitive material, comprising:

(a) an automatic processor having

(1) a processing tank containing a processing solution with which the photographic light-sensitive material is processed, and

(2) means for replenishing a concentrated processing replenisher chemical solution to said processing tank, a deteriorated processing solution being restored by the concentrated processing replenisher chemical solution so that continuous photographic processing can be maintained;

(b) an evaporator/distillator processor by which waste liquid in photographic processing discharged from said automatic processor is evaporated and concentrated by heating, and vapor generated by the heating is condensed by cooling so that a condensate is produced, wherein said evaporator/distillator processor comprises:

(1) a compressor;

(2) an evaporating vessel having a heating means;

(3) a cooling vessel having a cooling means;

(4) a pressure reducing device for reducing the entire pressure in both said evaporating vessel and said cooling vessel, said vessels being in communication; and

(5) a heat pump device in which heat transfer media is hermetically sealed and circulated through said compressor, said heating means, said pressure reducing device and said cooling means, wherein said heating means and cooling means are used for evaporating and concentrating the waste liquid, and for cooling and liquefying the vapor;

(c) an electric dialysis device for separating the condensate into an electric dialysis concentrated liquid and a desalted liquid, wherein cation exchange membranes and anion exchange membranes are arranged alternately between a positive electrode and a negative electrode, and alternate concentrating chambers and desalting chambers are formed by both said ion exchange membranes and chamber frames; and

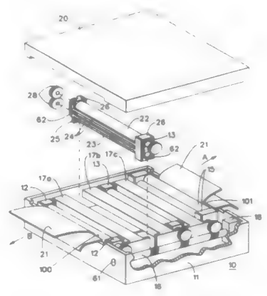
(d) a desalted liquid storage tank for storing the desalted liquid, from which the desalted liquid is supplied to said processing tank.

5,353,086

TEXTURED SURFACE WITH CANTED CHANNELS FOR AN AUTOMATIC TRAY PROCESSOR

Ralph L. Piccinino, Jr., Rush; John H. Rosenburgh, Hilton; David L. Patton, Webster, and Joseph A. Manico, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1993, Ser. No. 56,451
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—324 12 Claims



1. An apparatus for processing photosensitive materials, said apparatus comprising:

a processing module comprising a container, at least one processing assembly placed in said container and at least one transport assembly disposed adjacent said at least one processing assembly, said at least one processing assembly and said at least one transport assembly forming a substantially continuous channel through which a processing solution flows, said at least one processing assembly and said at least one transport assembly substantially filling

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said container and being relatively dimensioned so that a small volume is provided for holding and moving processing solution and photosensitive material through said processing module, at least one discharge opening is provided in said at least one transport assembly or said at least one processing assembly for introducing processing solution to said channel, said channel having at least one surface which is textured so as to facilitate transport of the photosensitive material and processing solution through said channel; and

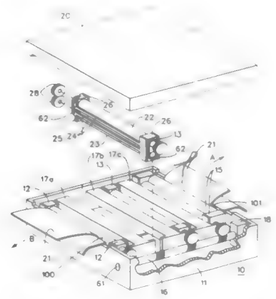
means for circulating the processing solution from said small volume provided in said module directly to said at least one discharge opening.

5,353,087

AUTOMATIC REPLENISHMENT, CALIBRATION AND METERING SYSTEM FOR AN AUTOMATIC TRAY PROCESSOR

John H. Rosenburgh, Hilton; Robert L. Horton, Rochester, and David L. Patton, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1993, Ser. No. 56,730
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—324 **15 Claims**



1. An apparatus for processing photosensitive materials, the apparatus comprising:

a processing module comprising a container and at least one processing assembly placed in said container, said at least one processing assembly forming a channel through which a processing solution flows, said channel having an entrance and an exit;

transport means for transporting the photosensitive material from the channel entrance through the said channel to the channel exit, said at least one processing assembly substantially filling said container and being dimensioned so that a small volume is provided for holding or moving processing solution through said processing module;

means for recirculating the processing solution through the small volume provided in said processing channel, said processing channel and means for recirculating the processing solution being dimension so that a small volume for holding processing solution is provided; and

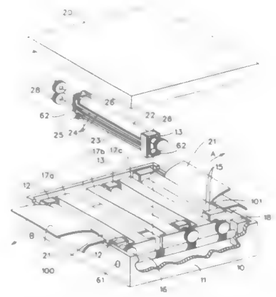
means for replenishing the processing solution in a precisely controlled volume so as to provide a substantially uniform amount of processing solution.

5,353,088

AUTOMATIC TRAY PROCESSOR

John H. Rosenburgh, Hilton; Joseph A. Manico, Rochester; David L. Patton, Webster, and Ralph L. Piccinino, Jr., Rush, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1993, Ser. No. 57,250
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—324 **17 Claims**



1. An apparatus for processing photosensitive materials, the apparatus comprising:

a processing module comprising a container and at least one processing assembly placed in said container, said at least one processing assembly forming a processing channel through which a processing solution flows, said processing channel having an entrance and an exit, said at least one processing assembly substantially filling said container and being dimensioned so that a small volume is provided for holding or moving processing solution through said processing module;

transport means for transporting the photosensitive material from the channel entrance through the said channel to the channel exit; and

means for recirculating the processing solution through the small volume provided in said processing channel.

5,353,089

FOCUS DETECTION APPARATUS CAPABLE OF DETECTING AN IN-FOCUS POSITION IN A WIDE FIELD OF VIEW BY UTILIZING AN IMAGE CONTRAST TECHNIQUE

Tsuyoshi Yaji, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 624,189, Dec. 6, 1990, abandoned. This application Feb. 20, 1992, Ser. No. 839,692
Claims priority, application Japan, Dec. 12, 1989, 1-322884
Int. Cl.[5] G03B *3/00, 13/18*
U.S. Cl. 354—402 **31 Claims**

1. A focus detection apparatus comprising:

distance measurement area setting means for selectively setting one of a plurality of distance measurement areas of a photographing area defined by a photographing lens;

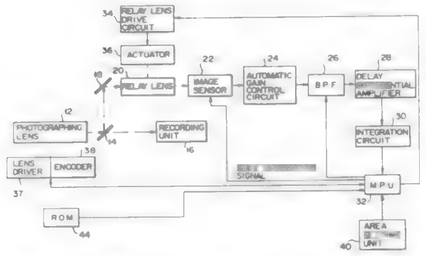
an area type charge storage type photoelectric conversion element for receiving an object light beam and photoelectrically converting the object light beam;

defocusing-amount changing means for changing a defocus amount of the object light beam received by said photoelectric conversion element;

contrast signal peak value detection means for detecting a contrast signal corresponding to a specific detection frequency based on an output signal, corresponding to the set distance measurement area, of outputs from said photoelectric conversion element while said defocusing-amount changing means changes the defocus amount of the object

light beam, and for detecting a defocusing position where the contrast signal exhibits a peak value;

storage means for storing a plurality of deviation amounts of a peak position of a contrast signal detected at a different detection frequency from the defocusing position of the contrast signal detected at said specific detection frequency, for a single object in units of distance measurement areas; and



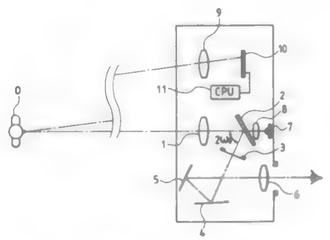
prediction means for correcting the defocusing position where the contrast signal detected at the specific detection frequency exhibits the peak value using the deviation amounts of the peak position of the contrast signal detected at the different detection frequency, thereby predicting an in-focus position.

5,353,090

CAMERA

Shigeru Kato, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1993, Ser. No. 151,828
Claims priority, application Japan, Nov. 17, 1992, 4-306943
Int. Cl.[5] G03B *13/02;* **G01C** *3/04*
U.S. Cl. 354—403 **4 Claims**



1. A camera comprising:

a finder optical system having an objective optical system and an eyepiece optical system, independent of a photographic optical system; and

a range measuring optical system,

wherein a path splitting member is disposed in an optical path of said objective optical system of said finder optical system to make an optical axis of incident light introduced from said objective optical system into said eyepiece optical system coincide with an optical axis of said range measuring optical system and satisfies conditions:

$$650\ \text{nm} \leqq \lambda(R_0) \leqq 850\ \text{nm}$$

$$R_0 = [R(550\ \text{nm}) + R(900\ \text{nm})]/2$$

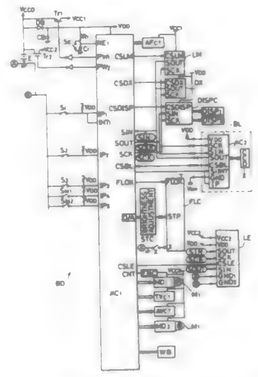
where $\lambda(R_0)$ is a wavelength at which a reflectance of the path splitting member regarding an axial ray becomes R_0, and R(550 nm) and R(900 nm) are reflectances of the path splitting member where wavelengths of axial rays are 550 nm and 900 nm, respectively.

5,353,091

CAMERA HAVING BLURRING CORRECTION APPARATUS

Tokuji Ishida; Masataka Hamada; Eiji Yamakawa; Hiromu Mukai; Hisayuki Masumoto; Takashi Okada; Takehiro Katoh, and Hiroshi Ootsuka, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 817,978, Jan. 8, 1992, Pat. No. 5,220,375, which is a continuation of Ser. No. 540,776, Jun. 20, 1990, abandoned. This application Apr. 16, 1993, Ser. No. 46,741
Claims priority, application Japan, Jun. 21, 1989, 1-160512
Int. Cl.[5] G03B *5/00*
U.S. Cl. 354—410 **8 Claims**



1. An interchangeable lens that can be interchangeably mounted on a camera body which is capable of detecting a degree of movement of an object image in a direction perpendicular to an optical axis of the lens, said lens comprising:

an optical system operable to compensate the movement of the object image in a direction perpendicular to the optical axis of the lens;

means for driving said optical system so as to compensate the movement of the object image; and

means for controlling said driving means by means of a pulse signal.

5,353,092

DATA IMPRINTABLE CAMERA

Yoichi Seki, and Hiroyuki Saito, both of Yotsukaido, Japan, assignors to Seikosha Co., Ltd., Japan

Filed Oct. 15, 1993, Ser. No. 137,458
Int. Cl.[5] G03B *7/00, 17/24*
U.S. Cl. 354—412 **5 Claims**

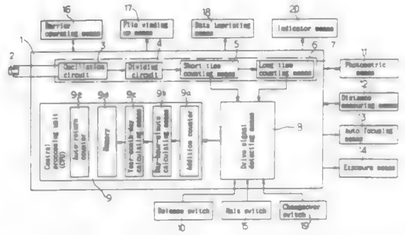
1. A data imprintable camera comprising data imprinting means for imprinting data on a film and a control circuit for controlling photographing operations and for outputting data to said data imprinting means,

said control circuit containing,

drive signal outputting means having an oscillation circuit and at least one time counting means for timing standard clock signals supplied from said oscillation circuit via a dividing circuit and outputting a first drive signal at intervals of a first preset time and a second drive signal at

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intervals of a second preset time which is longer than the first preset time, and



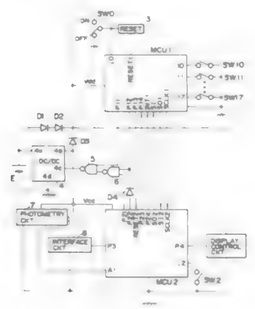
a central processing unit set up so as to select either the first or second drive signal and being driven by the selected drive signal to update date and time data.

5,353,093

CONTROL SYSTEM FOR AN APPARATUS USING A MICROCOMPUTER

Takashi Saegusa, and Seiichi Yasukawa, both of Kawasaki, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Aug. 6, 1993, Ser. No. 102,800
Claims priority, application Japan, Aug. 19, 1992, 4-220262
Int. Cl.[5] G03B *7/26*
U.S. Cl. 354—412 4 Claims



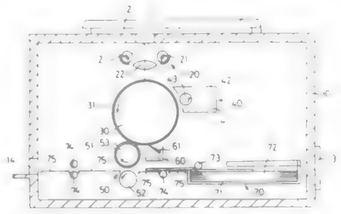
1. A control system for a camera using a microcomputer, comprising:
a first microcomputer; and
a second microcomputer for conducting at least shutter control in a shutter release sequence;
said first microcomputer deactivating said second microcomputer in accordance with a response output of said second microcomputer;
said second microcomputer outputting a response at a predetermined interval in other than the shutter release sequence and outputting a response when a time for the shutter control exceeds a predetermined time in the shutter control in the shutter release sequence.

5,353,094

IMAGE RECORDING APPARATUS

Shigeru Kagayama, Owariasahi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 11, 1993, Ser. No. 59,271
Claims priority, application Japan, Jun. 15, 1992, 4-155225
Int. Cl.[5] G03D *13/00*
U.S. Cl. 355—27 24 Claims



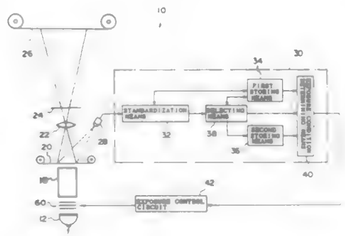
1. An image recording apparatus comprising:
a toner supply supplying charged microcapsule toner particles, each particle including a microcapsule wall having a first hydrological property and flowable contents contained within said wall having a second hydrological property different from said first hydrological property;
image supporting medium holding said charged microcapsule particles from said toner supply by electrostatic force, said supporting medium having a coating thereon having said first hydrological property;
an exposure device for exposing said microcapsule particles according to image information; and
a rupturing device rupturing said microcapsule particles after exposure to release said flowable contents,
wherein upon rupture said microcapsule particle walls are attracted to said support medium due to the same first hydrological properties and said flowable contents are repulsed by said support medium due to the different first and second hydrological properties.

5,353,095

PHOTOGRAPHIC PRINTING APPARATUS AND EXPOSURE CONDITION DETERMINING METHOD

Takaaki Terashita, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 13, 1993, Ser. No. 45,184
Claims priority, application Japan, Apr. 13, 1992, 4-92898; Apr. 20, 1992, 4-99447
Int. Cl.[5] G03B *27/80*
U.S. Cl. 355—38 28 Claims



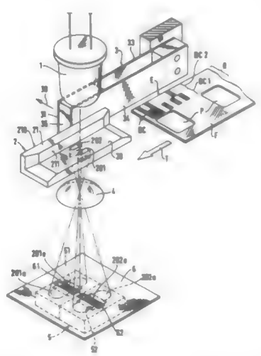
1. A photographic printing apparatus comprising:
photometric measuring means for dividing an image frame recorded on a film into a plurality of portions and photometrically measuring the divided portions;
selecting means for selecting photometric data necessary for determining an exposure condition, from a plurality of photometric data obtained by photometric measuring by said photometric measuring means;
first storing means for storing data obtained by said photometric measuring of a plurality of rolls of film;
second storing means for storing data obtained by said photometric measuring of an image frame of a single film upon which an image frame to be printed is recorded;
weighting factor setting means for setting weighting factors to be applied respectively to selected data of said image frame to be printed, selected by said selecting means, and to data determined from data stored in said first storing means, and to data determined from data stored in said second storing means; and
exposure condition determining means for determining an exposure condition based on a value obtained from respectively weighted data which are weighted by said weighting factors set by said weighting factor setting means.

5,353,096

GUIDE APPARATUS FOR COPY MASTERS

Beat Frick, Buchs, and Wilhelm H. Koch, Otelfingen, both of Switzerland, assignors to Gretag Imaging, AG, Switzerland

Filed Jul. 23, 1992, Ser. No. 917,319
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1991, 91810631
Int. Cl.[5] G03B *27/52*
U.S. Cl. 355—41 13 Claims



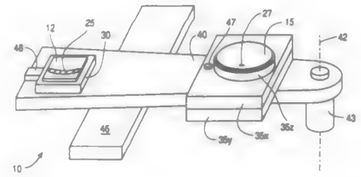
1. Guide apparatus for a photographic copy master comprising:
transport means for transporting the copy master, said transport means defining a transport plane of the copy master and further including:
guide elements having lateral walls essentially perpendicular to the transport plane of the copy master and approximately parallel to a direction of copy master transport for guiding the copy master at its lateral edges, said lateral walls being laterally movable relative to the transport direction of the copy master in the plane of transport;
detection means to detect information applied to the copy master near its lateral edges;
a plate spring having a free end connected with at least one of said lateral walls, said at least one lateral wall being movable laterally against a reset force of the plate spring;
a support surface for supporting a lateral portion of the copy master, the lateral walls being approximately perpendicular to and connected with said support surface;
at least one diaphragm hole for blocking out all of the light transmitted through the lateral portion of the copy master but that part of the light passing through the diaphragm hole; and
optical means located in a light path of said light transmitted through the lateral portion of the copy master for conducting the light having passed through the diaphragm hole.

5,353,097

SCANNER FOR STEP AND SCAN LITHOGRAPHY SYSTEM

Michael R. Sogard, Menlo Park, Calif., assignor to Nikon Precision Inc., Belmont, Calif.

Filed Sep. 22, 1993, Ser. No. 125,601
Int. Cl.[5] G03B *27/53*
U.S. Cl. 355—53 24 Claims



1. Photolithography apparatus comprising:
a projection optical system characterized by an optical axis and first and second parallel conjugate planes such that each point within a predetermined object field in said first plane is imaged with a magnification different from unity at an optically conjugate point within a corresponding image field in said second plane;
a rigid element mounted for rotation over an angular range relative to said optical system about a rotation axis perpendicular to said first and second planes;
said rotation axis being located relative to said optical system so that a given point in said object field at a first radial distance from said rotation axis is imaged at a conjugate point in said image field at a second radial distance from said rotation axis, the ratio between said second and first radial distances being substantially equal to said magnification;
a mask stage, mounted to said rigid element, for holding a mask in said first plane at said object field; and
a substrate stage, mounted to said rigid element, for holding an image-receiving object in said second plane at said image field;
whereby illuminating at least a portion of said object field and rotating said rigid element relative to said optical system causes portions of the mask to be imaged on corresponding portions of the image-receiving object.

5,353,098

IMAGE PRINTING APPARATUS HAVING A ROTATABLE PROTECTIVE COVER FOR A DEVELOPER CARRIER ROLLER THEREIN

Young-tae Lim, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

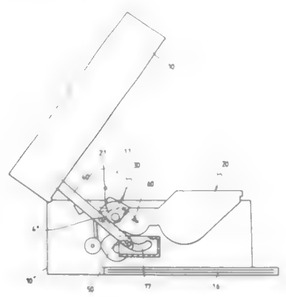
Filed Nov. 24, 1992, Ser. No. 981,128
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—200 12 Claims

1. An image printing apparatus having an upper main body in which a drum, electrifying apparatus, and light-exposure apparatus are provided, and a lower main body in which an image-transferring apparatus and a developing apparatus including a developer carrier roller are provided, said upper main body being pivotally detachable from or attachable to said lower main body, said image printing apparatus comprising:
a protecting cover having a semi-cylindrical body section

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being hinge-combined on each side thereof with said developing apparatus so as to be rotated for enclosing and exposing an upper part of said developer carrier roller of said developing apparatus; and

rotating means for rotating said protecting cover to enclose said upper part of said developer carrier roller to protect said developer carrier roller in response to the pivotal



detachment of said upper main body from said lower main body;

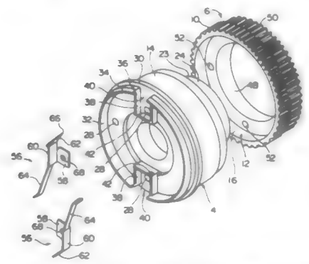
said rotating means rotating said protecting cover to expose said upper part of said developer roller, said protecting cover being rotated into a position for guiding printing paper transferred through said image printing apparatus, in response to the pivotal attachment of said upper main body to said lower main body.

5,353,099

DRIVE DEVICE IN AN IMAGE-FORMING MACHINE

Arihiro Tsunoda, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Mar. 18, 1993, Ser. No. 34,128
Claims priority, application Japan, Apr. 20, 1992, 4-099761
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—200 **4 Claims**



1. A drive device in an image-forming machine, comprising:

a flange member fittable to a rotating photosensitive drum so as to rotate therewith, an outer peripheral support surface being formed along a circumference on one end side of said flange member; and

a transmission member detachably fitted to said flange member, said transmission member being made of a synthetic resin and including a cylindrical portion formed on one end side of said transmission member, an output gear that engages with a drive gear of a transfer drum, said output gear being formed on an outer periphery of said cylindrical portion formed on one end side of said transmission member, and an inner peripheral surface of said cylindrical portion being fitted to, and supported by, said-outer peripheral support surface, and an input gear that is drivably coupled to a rotary drive source, and wherein

said transmission member further includes an annular disk portion, two cylindrical portions that are formed at the ends on the outer peripheral side of said annular disk portion to protrude toward both sides in the axial direction, and a cylindrical portion of a small diameter which is formed at an end on the inner peripheral side of said annular disk portion to protrude toward one side in the axial direction, one of said two cylindrical portions is said cylindrical portion in which said output gear is formed, said input gear is formed on the outer periphery of the other one of said two cylindrical portions, and a plurality of fitting holes are formed in said annular disk portion;

an outer peripheral support surface of a small diameter is formed circumferentially on said end side of said flange member to protrude in the axial direction, an annular fitting surface is formed between said outer peripheral support surface and said outer peripheral support surface of a small diameter, and a plurality of through holes are formed in said flange member in a manner that the ends on one side thereof are open at the other end of said flange member and the ends on the other side thereof are open at said fitting surface;

said transmission member is mounted on said flange member by a bolt means inserted in said fitting holes and through holes that match with each other under the condition where one side of said annular disk portion is brought in contact with said fitting surface of said flange member; and

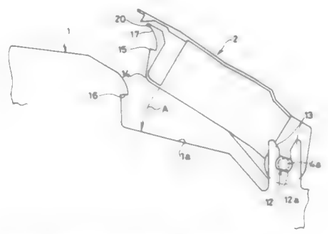
the inner peripheral surface of said cylindrical portion of a small diameter of said transmission member is fitted to, and is supported by, said outer peripheral support surface of a small diameter of said flange member under the condition where said transmission member is mounted on said flange member.

5,353,100

IMAGE APPARATUS WITH REMOVABLE PROCESS KIT ROTATABLE ABOUT A PHOTORECEPTOR SHAFT

Yoshinori Ohtsuka, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 26, 1993, Ser. No. 67,033
Claims priority, application Japan, May 27, 1992, 4-134889
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—200 **19 Claims**



1. An image forming apparatus comprising:

a photoreceptor drum for transferring an image formed on a peripheral surface thereof to a transfer material by rotating;

enclosing means for enclosing said photoreceptor drum said enclosing means provided with a handle on the side of a free end, for carrying said enclosing means;

a main body with a space for said enclosing means in an upper portion, the space enabling an installation and a removal of said enclosing means said main body includes a recessed portion facing said handle for inserting therein a user's hand when said enclosing means is fitted in the space;

a pair of projected members with a central axis thereof set parallel to a rotation shaft of said photoreceptor drum, said pair of projected members being secured to said enclosing means;

a pair of support members for respectively guiding said pair of projected members, and for removably supporting said pair of projected members so as to fit in the space;

said pair of projected member rotatable around an axis parallel to the rotation shaft of said photoreceptor drum with respect to said pair of support members in a state where said enclosing means is installed in said main body; and

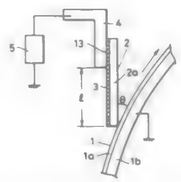
said enclosing means is installed in or removed from the upper portion of said main body by moving a portion of said enclosing means about the rotation shaft of said photoreceptor drum.

5,353,101

CHARGING MEMBER FEATURING A CUT EDGE, AND CHARGING DEVICE EMPLOYING SAME FOR USE IN A DETACHABLE PROCESS UNIT IN AN IMAGE FORMING APPARATUS

Hiroyuki Adachi, Tokyo, and Norihisa Hoshika, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1991, Ser. No. 644,549
Claims priority, application Japan, Jan. 24, 1990, 2-014094; Jan. 24, 1990, 2-014096
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—219 **24 Claims**



1. A method for making a charging member for charging a member to be charged, comprising the steps of:

providing a blade member;

forming an electrode layer being supplied with electric power, on said blade member;

connecting said blade member to a supporting member for supporting said blade member; and

cutting said blade member and said electrode layer at the same time;

wherein said charging member is positioned to contact said member to be charged without said electrode layer contacting said member to be charged.

5,353,102

TWO COMPONENT DEVELOPING APPARATUS IN A PRINTER

Hiroshi Sato; Noriko Kawasaki, both of Kawasaki, and Hiroki Oba, Fuchu, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 11, 1992, Ser. No. 989,536
Claims priority, application Japan, Dec. 13, 1991, 3-330566
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—246 **6 Claims**

1. A two component developing apparatus for an image forming apparatus, said apparatus comprising:

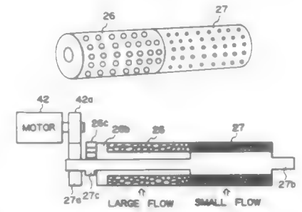
a container,

a developing agent conveying means for conveying a two component developing agent including toner and carrier to an image carrier from the container,

mixing means for mixing the toner and carrier in the container,

toner supply means for supplying the toner to the container and varying the flow of toner from a toner storage section per unit of time, the toner supplying means comprising a plurality of supply rollers which are driven independently from each other and arranged in series on a single axis,

the plurality of supply rollers supplying different quantities of toner per unit time and comprising a plurality of first



supply rollers and a plurality of second supply rollers, each of the first and second supply rollers having a number of cells or holes, whose sizes are different from each other of the toner supply rollers, the first and second supply rollers being arranged alternately on a single axis,

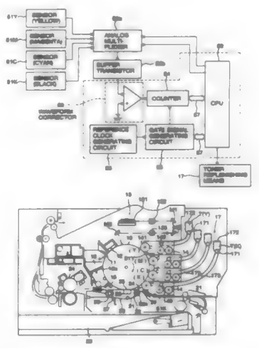
control means for selectively driving the supply rollers on the basis of the detective flow of toner, so that the flow of toner per unit time from the toner storage section is controlled on the basis of a consumption rate of toner.

5,353,103

IMAGE RECORDING APPARATUS WITH TONER CONCENTRATION DETECTING CIRCUIT

Yukio Okamoto, and Toshihiko Nakazawa, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jul. 1, 1993, Ser. No. 86,163
Claims priority, application Japan, Jul. 24, 1992, 4-198669
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—246 **7 Claims**



1. A toner concentration detecting circuit for a two-component developer including a toner and a carrier in a developing device of an image recording apparatus, said toner concentration detecting circuit comprising:

(a) a sensor provided in said developing device, for sensing a change of a magnetic permeability of the developer and for outputting an oscillating frequency based on a sensed change of magnetic permeability;

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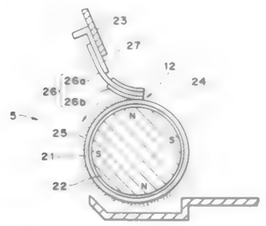
(b) a waveform corrector for generating a square pulse wave based on said oscillating frequency;
(c) a gate signal generating circuit for generating a gate signal;
(d) a counter for counting a number of pulses in said square pulse wave within a first predetermined period of time according to said gate signal, said counter outputting a toner concentration value that is representative of said number of pulses counted by said counter;
(e) a central processing unit including means for detecting a plurality of said toner concentration values within a second predetermined period of time, and means for comparing one of said toner concentration values with a reference value pre-stored in said central processing unit, said central processing unit generating a toner replenishment command signal, said toner replenishment command signal being representative of the comparison by said central processing unit; and
(f) toner replenishing means for replenishing a toner in said developing device based on said toner replenishment command signal.

5,353,104

DEFINING MEMBER FOR DEFINING THICKNESS OF ONE-COMPONENT DEVELOPER AND DEVELOPING DEVICE EQUIPPED WITH IT

Junichi Kato, Sagamihara; Masaharu Ohkubo, Yokohama; Masahiro Watabe, Yokohama; Noriyuki Yanai, Yokohama; Masaki Ojima, Inagi, and Hiroshi Sato, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 18,715
Claims priority, application Japan, Feb. 20, 1992, 4-069330
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—259 **27 Claims**



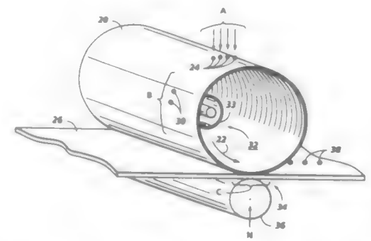
1. A developing device for developing an electrostatic latent image, comprising:
a developer bearing member for bearing and transporting a one-component developer to a developing area, said developer bearing member being adapted to frictionally charge the one-component developer to a predetermined polarity for developing an electrostatic latent image; and
a defining member for limiting a thickness of the one-component developer transported by said developer bearing member to the developing area, said defining member being in contact with the developer bearing member to form a nip therebetween, through which the one-component developer passes;
wherein said defining member includes an elastic base member and a surface layer formed on said elastic base member and serving to form said nip, and said surface layer includes a first substance charged to a polarity opposite to said predetermined polarity by friction with the one-component developer, and a second substance charged to a polarity the same as said predetermined polarity by friction with the one-component developer, and is charged, in total, to a polarity opposite to said predetermined polarity, by friction with said one-component developer.

5,353,105

METHOD AND APPARATUS FOR IMAGING ON A HEATED INTERMEDIATE MEMBER

Robert W. Gundlach, Victor, and Christopher Snelling, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 3, 1993, Ser. No. 55,331
Int. Cl.[5] G03G *15/16, 15/20*
U.S. Cl. 355—279 **16 Claims**



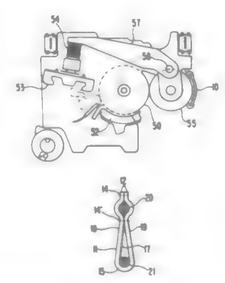
1. A recording apparatus for producing an image on a image on a recording sheet, comprising:
an endless intermediate member having a rigid inner surface and a resilient outer surface;
marking means for depositing marking material on the outer surface of said intermediate member to produce an image thereon;
a heater, disposed within said endless intermediate member and in direct communication with the inner surface of said intermediate member, for heating said intermediate member so as to cause the tackification of the charged marking material deposited on the outer surface thereof prior to contacting the recording sheet; and
means, defining a nip with the outer of said intermediate member, for transferring the tackified marking material image to the recording sheet passing through the nip defined by said intermediate member and said transferring means, whereby the tackified marking material image is cooled upon contact with the recording sheet to become permanently fixed to the surface of the recording sheet.

5,353,106

PRESSURE ROLL CLEANER

Vinod K. Agarwal, Webster, and Harold W. Fletcher, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 3, 1992, Ser. No. 971,034
Int. Cl.[5] G03G *15/20, 21/00*
U.S. Cl. 355—283 **21 Claims**



1. Apparatus for cleaning a cylindrical member rotatable about a longitudinal axis, the apparatus comprising:

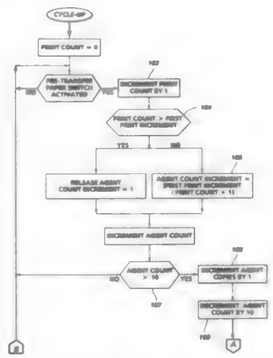
an absorbent sheet having longitudinal sides joined together at a seam, a generally folded edge along a central longitudinal axis of the absorbent sheet, and inner and outer surfaces;
a nonabsorbent barrier layer attached to the inner surface of the absorbent sheet; and
means for supporting the outer surface of the absorbent sheet against the rotatable cylindrical member.

5,353,107

RELEASE AGENT MANAGEMENT CONTROL

Michael J. Sculley; Mark S. Amico, both of Rochester; Wayne D. Drinkwater, Fairport, and David M. Thompson, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 22, 1993, Ser. No. 156,213
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—284 **22 Claims**



1. A method for applying release agent management material to a fuser member for fixing toner imaged prints, said apparatus comprising:
counting a number of prints created and generating signals representative of said number of prints;
calculating and representing print equivalency values for prints counted, said calculated equivalency values being representative of release agent used for fusing said prints;
comparing said print equivalency values to a predetermined print equivalency value;
supplying release agent material to a wick structure for a predetermined period of time only after said predetermined equivalency value is exceeded by said print equivalency values; and
means for varying said predetermined number of print equivalences whereby the amount of release agent material supplied to said wick is varied in accordance with printer usage.

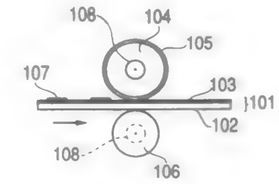
5,353,108

APPARATUS FOR CLEANING PRINTED PAPER

Masahide Tsukamoto, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 3, 1991, Ser. No. 725,667
Claims priority, application Japan, Jul. 5, 1990, 2-177720; Aug. 10, 1990, 2-212873
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—296 **4 Claims**

1. A cleaning apparatus for cleaning an erasable paper having a surface which has been treated with a releasing agent and on which a pattern of a heat-soluble ink has been printed, comprising:
an adhesion roller having an outer surface made of a heat-soluble resin which has been placed in a tacky state by heating; and
a platen for pressing said erasable paper onto the outer surface of said adhesion roller;



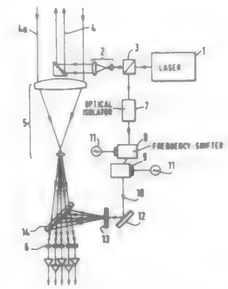
said adhesion roller rotating to transport said erasable paper inserted between the outer surface of said adhesion roller and said platen while peeling off the pattern of the heat-soluble ink from the surface of said erasable paper.

5,353,109

RECEIVER-TRANSMITTER FOR A TARGET IDENTIFICATION SYSTEM

Roger M. Langdon, Colchester, and William R. McKnight, Skelmorlie, both of United Kingdom, assignors to Gec-Marconi Limited, Stanmore, United Kingdom

Filed Mar. 26, 1993, Ser. No. 37,433
Claims priority, application United Kingdom, Mar. 28, 1992, 9206840.1
Int. Cl.[5] G01P *3/36;* **G01B** *9/02*
U.S. Cl. 356—28.5 **20 Claims**



1. A receiver-transmitter for a target identification system, including
laser means for generating and focusing a laser beam for transmission to a reflective surface of a target to be identified;
collection means for collecting a reflected signal from the target and producing a collected signal having collected beams;
an array of photodetectors, at least one of the photodetectors having the collected signal focused thereon;
generation means, connected to an output of the laser means, for generating a frequency-shifted reference beam from the laser beam;
beam division means for dividing the reference beam into a number of separate reference beams each having substantially equal power; and
beam splitting means for causing each of the reference beams to be focused onto a separate one of the photodetectors of the array, the focusing of the collected signal onto the photodetector array being such that the reference and

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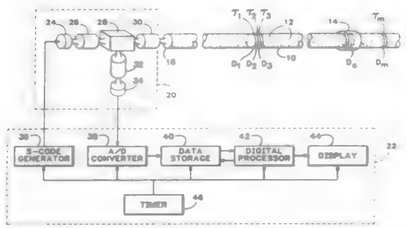
collected beams incident on the same photodetector are collinear.

5,353,110

METHOD AND APPARATUS FOR CARRYING OUT OPTICAL TIME DOMAIN REFLECTOMETRY USING WEIGHING TECHNIQUES

Michael D. Jones, Portland, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Jul. 12, 1991, Ser. No. 729,305
Int. Cl.[5] G01N *21/00, 21/88*
U.S. Cl. 356—73.1 **33 Claims**



17. An apparatus for carrying out a measurement of the power of energy of a selected form reflected within a medium in which that energy propagates, comprising:

(a) source means for applying energy in selected form to the medium, the power at which energy is applied varying as function of time in accordance with a predetermined number N of sequential element codes, each code having N elements;

(b) detector means for receiving energy in said selected form reflected from within said medium;

(c) measurement means for measuring, for each code, the power of said energy reflected from within said medium as a function of time and assigning said power measurements as the sum of the powers reflected from a selected set of points within said medium, the number of points being equal to N; and

(d) processor means for computing the powers reflected at said N points within said medium by solving N equations simultaneously, where each equation represents one said sum of the powers reflected from said selected set of respective points within said medium.

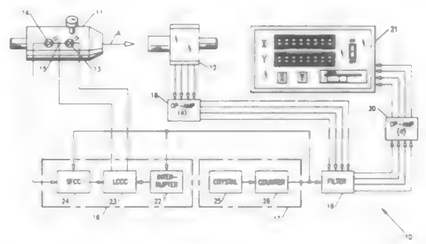
5,353,111

NOISE RESISTANT LASER SYSTEM FOR MACHINE ALIGNMENT

James W. Freese, Canton, and Charles D. Stout, Ann Arbor, both of Mich., assignors to Intra Corporation, Westland, Mich.

Filed Mar. 29, 1993, Ser. No. 38,928
Int. Cl.[5] G01B *11/26;* **G01C** *1/00*
U.S. Cl. 356—152.1 **17 Claims**

1. A noise resistant laser system for machine alignment, comprising: a semiconductor laser for projecting a narrow collimated beam onto a target; a pulsed power supply for supplying power to said laser at a frequency of F=nf, where "F" is the pulse frequency, "f" is a pulse frequency of 50 Hz or 60 Hz, and "n"=2,3, . . . ; an oscillator for generating said pulse frequency having an output coupled to said power supply; a target for receiving said laser beam and producing four output signals at said pulse frequency which are indicative of the horizontal and vertical displacements of said laser beam from the center of said target; a filter for passing the components of said four output signals of said target which are indicative of said displacements of said laser beam from the center of said target and suppressing the components of said four target output signals at frequencies of 50 Hz, 60 Hz and their harmonics, said filter having a sample and hold circuit having a pair of inputs, one of said inputs being coupled to an output of said target and the other of said inputs being coupled to said output



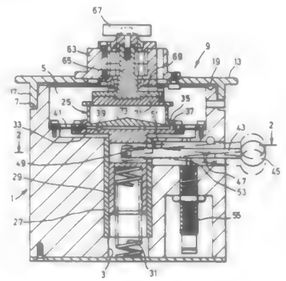
of said oscillator; and a display unit for processing the output signals of said filter to display said horizontal and vertical displacements of said laser beam in alphanumeric form to enable an operator of said laser system to align a machine.

5,353,112

OPTICAL INSPECTION METHOD AND APPARATUS

Martin P. Smith, Wargrave, United Kingdom, assignor to Gersan Establishment, Liechtenstein

PCT No. PCT/GB91/00109, § 371 Date Jun. 15, 1992, § 102(e) Date Jun. 15, 1992, PCT Pub. No. WO91/11699, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 25, 1991, Ser. No. 859,497
Claims priority, application United Kingdom, Jan. 25, 1990, 9001701.3
Int. Cl.[5] G01N *21/01*
U.S. Cl. 356—244 **17 Claims**



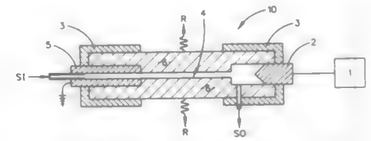
1. A method of preparing a sample of particulate material comprising the steps of placing said material in an open container, providing a reference surface at a predetermined position, moving said container thereby bringing an exposed surface of said particulate material therein into intimate contact with said reference surface, holding said container in the position thus defined, and removing said reference surface, thereby presenting said sample with an exposed surface which is substantially even and located at a predetermined position defined by said reference surface and optically inspecting said exposed surface of said particulate material disposed at said position by optical inspection means disposed in predetermined manner relative to said position.

5,353,113

SINGLE AND MULTIPLE RADIATION TRANSPARENT AFTERGLOW ELECTRIC DISCHARGE DETECTOR SYSTEMS

Arthur P. D'Silva, Ames, Iowa, assignor to Cetac Technologies Incorporated, Omaha, Nebr.

Filed Jul. 15, 1993, Ser. No. 91,264
Int. Cl.[5] G01N *21/66*
U.S. Cl. 356—311 **10 Claims**



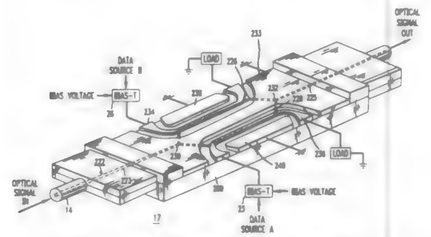
1. An afterglow electric discharge detector system of the type including an afterglow electrical discharge region with electrodes positioned with respect thereto so as to allow creation of an electric discharge in said afterglow electrical discharge region when electrical energy is applied to said electrodes, which also includes means for allowing sample and carrier gas to be caused to flow through said afterglow electrical discharge region; in which the improvement comprises the construction of said afterglow electric discharge detector system predominantly from a block of machinable radiation transparent material, into which is machined at least one hole, said hole serving to form an afterglow electrical discharge region.

5,353,114

OPTO-ELECTRONIC INTERFEROMETIC LOGIC

Per B. Hansen, Middletown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 24, 1992, Ser. No. 981,955
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **21 Claims**



1. A method of using an interferometer which has first and second electrodes controlling the delays of optical signals in first and second associated branches of said interferometer, respectively

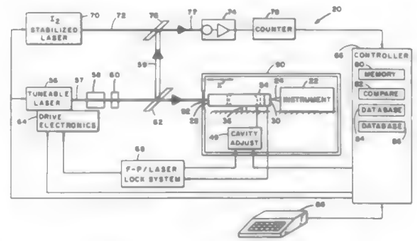
said method comprising step of applying to said first and second electrodes first and second time-varying electrical signals, respectively, said electrical signals being other than substantially identical to each other and being other than substantially in-phase inverses of each other.

5,353,115

SYSTEM AND METHOD FOR GENERATING A DISPLACEMENT WITH ULTRA-HIGH ACCURACY USING A FABRY-PEROT INTERFEROMETER

Timothy J. McIntyre, Knoxville, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed May 20, 1993, Ser. No. 65,285
Int. Cl.[5] G01B *11/02*
U.S. Cl. 356—358 **21 Claims**



1. A system for generating a desired displacement of an object with ultra-nigh accuracy wherein the object is movable from a reference position, the system comprising:

a Fabry-Perot etalon including a tube cavity having two ends, a length between the ends which is adjustable from a reference condition, and a pair of spherical mirrors disposed adjacent the ends thereof having a reflectivity of at least about 99.99% so as to provide the etalon with a relatively high reflectivity finesse, and the tube cavity being disposed in the aconfocal configuration and being arrangable in relation to the object so that an adjustment in length of the tube cavity effects a corresponding displacement of the object from a reference position; and

means for controllably adjusting the length of the etalon cavity so that in order to provide a desired displacement of the object from a reference position, the length of the tube cavity is adjusted by a corresponding amount.

5,353,116

DEFECT INSPECTION SYSTEM FOR PHASE SHIFT MASKS

Makoto Tanigawa, Kita; Hiroki Tabuchi; Hiroyuki Moriwaki, both of Nara, and Takayuki Taniguchi, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 13, 1992, Ser. No. 975,681
Claims priority, application Japan, Nov. 21, 1991, 3-306170
Int. Cl.[5] G01B *11/24*
U.S. Cl. 356—390 **12 Claims**

1. A defect inspection system for phase shift masks comprising:

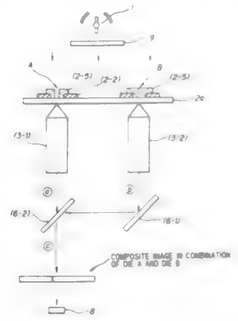
a light source for irradiating light perpendicularly onto a surface of a phase shift mask to be examined, the mask having a pair of dies that are identical except for possible flaws;

a monochromatic light selection means disposed between said light source and the phase shift mask for filtering and separating light having a certain wave length from the light emitted by said light source;

a pair of projection optical systems each of which forms an image pattern of the irradiated light having passed through a corresponding one of the dies and which projects the formed image pattern;

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means for forming a superposed image of the image patterns formed by the pair of projection optical systems; and



a detection section for detecting defects on the phase shift mask to be examined by processing the superposed image.

5,353,117

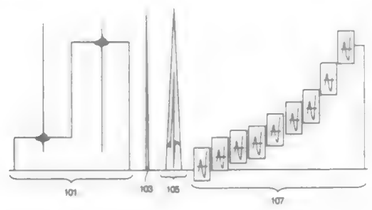
VERTICAL INTERVAL TEST SIGNAL FOR DETECTING VIDEO SYSTEM LOW-LEVEL LUMINANCE LINEARITY AND DIFFERENTIAL GAIN AND PHASE ERRORS

Tomlinson Holman, Culver City, and David Schnuelle, Westlake Village, both of Calif., assignors to LucasArts Entertainment Company, San Rafael, Calif.

Filed Oct. 30, 1992, Ser. No. 969,886

Int. Cl.[5] H04N *17/00*

U.S. Cl. 348—183 **34 Claims**



1. A test signal for use in detecting errors in low-level luminance linearity in a distribution system for distributing a video signal having a vertical interval including a number of lines, the test signal comprising:

plural luminance levels, the luminance levels having a non-linear level relationship with respect to one another, each luminance level having a predetermined level, more than two of the luminance levels being at a luminance level below 20 IRE units;

the test signal being adapted for insertion into a line in the vertical interval of the video signal at an insertion point in the distribution system for testing at a point downstream of the insertion point.

5,353,118

MOTION COMPENSATING SYSTEM USING INTERLACE-TO-SEQUENTIAL SCAN CONVERSION WITH MOTION AND TRANSMISSION COMPENSATION

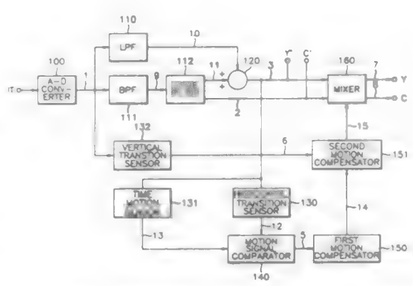
Hyeon-deok Cho, Suwon-city, Rep. of Korea, assignor to Sam-Sung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 12, 1989, Ser. No. 448,854

Claims priority, application Rep. of Korea, Mar. 30, 1989, 4113/1989

Int. Cl.[5] H04N *11/20*

U.S. Cl. 348—451 **5 Claims**



1. A motion compensation system in a digital television including an analog-digital converter for converting an interlaced scanning video signal into a digital video signal, said motion compensating system comprising:

color/brightness signal separating means for separating a first color signal and a first brightness signal from said digital video signal;

picture motion sensing means for detecting an amount of horizontal transition and temporal motion of a picture from said first brightness signal and an amount of vertical transition of the picture from said digital video signal for enabling comparison and compensation of said amounts of horizontal and vertical transition and temporal motion to obtain a motion signal indicative of motion of a picture; and

mixing means for interpolating the first color signal and the first brightness signal to produce an interpolated color signal and an interpolated brightness signal, and for compensating respectively the interpolated color signal and the first color signal, and the interpolated brightness signal and the first brightness signal in dependence upon said motion signal, each set of color signals and brightness signals being mixed to produce a second color signal and a second brightness signal for the interlaced scanning.

5,353,119

FORMAT CONVERSION OF DIGITAL VIDEO SIGNALS, INTEGRATION OF DIGITAL VIDEO SIGNALS INTO PHOTOGRAPHIC FILM MATERIAL AND THE LIKE, ASSOCIATED SIGNAL PROCESSING, AND MOTION COMPENSATED INTERPOLATION OF IMAGES

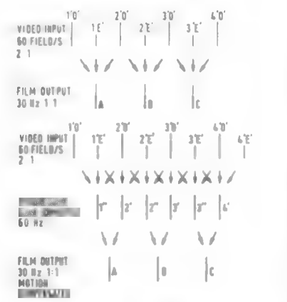
Martin R. Dorricott; Clive H. Gillard, both of Basingstoke; John W. Richards, Stockbridge, all of United Kingdom; Tsuneo Morita, Tokyo, Japan; James J. Galt, Glendale, Calif.; Morgan W. A. David, Farnham, United Kingdom; James E. Burns, and Shima R. Varsani, both of Basingstoke, United Kingdom, assignors to Sony United Kingdom Limited, Staines, United Kingdom

Filed Nov. 8, 1991, Ser. No. 789,754

Claims priority, application United Kingdom, Nov. 15, 1990, 9024816.2; Nov. 15, 1990, 9024817.0; Nov. 15, 1990, 9024818.8; Nov. 15, 1990, 9024825.3; Nov. 15, 1990, 9024826.1; Nov. 15, 1990, 9024827.9; Nov. 15, 1990, 9024828.7; Nov. 15, 1990, 9024829.5; Nov. 15, 1990, 9024835.2; Nov. 15, 1990, 9024836.0; Nov. 15, 1990, 9024837.8; Nov. 15, 1990, 9024838.6; Nov. 15, 1990, 9024838.6

Int. Cl.[5] H04N *7/01*

U.S. Cl. 348—446 **5 Claims**



1. A method of converting an input 60 field/s 2:1 interlace scan format digital video signal to an output 24 frame/s 60 field/s 3232 pulldown format digital video signal, comprising the steps of:

forming a first series of 60 frame/s progressive scan format frames from the fields of the input signal;

forming a second series of 24 frame/s progressive scan format frames from the first series of frames such that at least every other frame in the second series of frames is produced by motion compensated interpolation between a respective pair of successive frames of the first series of frames;

forming alternately odd and even fields from the second series of frames such that one field in every five is a repeat; and

forming said output 24 frame/s 60 field/s 3232 pulldown format digital video signal from the alternately odd and even fields formed from the second series of frames.

5,353,120

VIDEO FIELD MEMORY DEVICE FOR MULTI-BROADCASTING SYSTEM AND MANUFACTURING METHOD THEREFOR

Jang K. Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suweon, Rep. of Korea

Filed Jun. 1, 1992, Ser. No. 891,791

Claims priority, application Rep. of Korea, Oct. 17, 1991, 91-18334

Int. Cl.[5] H04N *5/951*

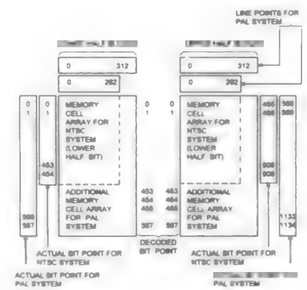
U.S. Cl. 348—555 **12 Claims**

2. An apparatus for processing signals of a memory cell which is combined with a memory cell array of NTSC system and that of PAL system, comprising:

a read address transferring path comprising a read address decoder for decoding read address lines according to a read block selection tag pulse and an output pulse from a read bit counter, and 568 read data registers for storing a signal selected by said read address decoder and through read input and output lines to each read address line; and

a write address transferring path comprising a write address decoder for decoding write address lines according to a write address selection tag pulse and an output pulse from a write bit counter, and 568 write data registers for storing a signal selected by said address write decoder through write input and output lines at each write address line.

7. In a video field memory device having at least one memory cell array for storing an image signal of a TV broadcast system by bits and lines thereof, the improvement for multiple TV broadcasting systems:



wherein the memory cell array has memory cells for a largest number of bits and lines of image signals of the multiple TV broadcasting systems; and

further comprising control means for selecting memory cells of the memory cell array according to the number of bits and lines of the image signal of a selected one of the multiple TV broadcasting systems,

the control means comprising resettable counter means for resetting according to the number of bits and lines of the selected one of the multiple TV broadcasting systems,

the memory cell array being divided into an NTSC TV broadcasting system block and a larger PAL TV broadcasting system block,

the counter means comprising means for producing a tag pulse each time the counter means is reset, and

the control means selecting one of the NTSC and PAL blocks in response to each tag pulse.

5,353,121

TELEVISION SCHEDULE SYSTEM

Patrick Young, San Mateo; John H. Roop, Palo Alto, and Michael W. Faber, Pleasanton, all of Calif., assignors to Star-Sight Telecast, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 579,555, Sep. 10, 1990, which is a continuation-in-part of Ser. No. 916,043, Jul. 17, 1992, which is a continuation of Ser. No. 778,404, Oct. 17, 1991, Pat. No. 5,151,789, which is a continuation-in-part of Ser. No. 428,620, Oct. 30, 1989, abandoned. This application Mar. 19, 1993, Ser. No. 33,773

Int. Cl.[5] H04N *7/00, 5/44*

U.S. Cl. 348—563 **5 Claims**

1. A background television schedule system for displaying television schedule information on a television including a television screen on which is displayed a primary display, said background television schedule system comprising:

means for inputting user selections of operating characteris-

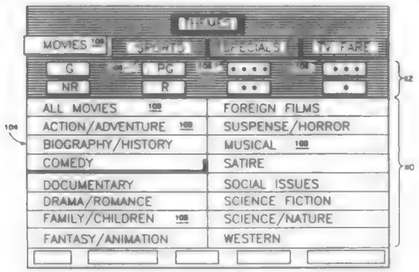
VOL 1167 ISS 1 OC 4 1994 UMI

tics for a session of operating said background television schedule system;

a memory, coupled to said user selection input means, for storing said user selections;

means, coupled to said memory, for activating and suspending operation of said background television schedule system; and

background display means, coupled to said television, to said activation means and to said memory, for displaying background schedule information over a portion of said television screen in response to a first activation of operation of said background television schedule system, said primary television display being displayed on said television screen in conjunction with said background schedule informa-



tion, said displayed background schedule information being determined according to said operating characteristics, wherein said background display means is configured to terminate display of said background schedule information on said television screen upon suspension of said background television schedule system, said background television schedule system having a first status immediately prior to said suspension of said background television schedule system;

wherein said activation means is configured to re-activate said background television schedule system with a second status at least substantially the same as said first status, upon a second activation of said background television schedule system with a same session as said first activation of said background television schedule system.

5,353,122

PRINTING CONTROL APPARATUS COMPATIBLE WITH PRINTING SYSTEMS OF A LASER SCANNING UNIT TYPE AND A LIGHT EMITTING DIODE TYPE

Duk-Soo Kim, Kyungki, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 21, 1993, Ser. No. 123,970

Claims priority, application Rep. of Korea, Sep. 21, 1992, 17159/1992

Int. Cl.[5] H04N *1/21*

U.S. Cl. 358—296 **3 Claims**

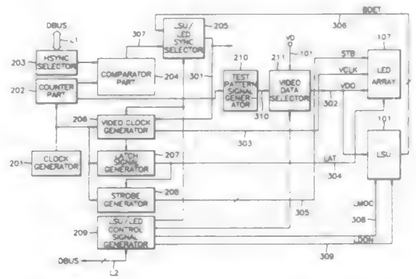
1. A printing control apparatus of an electrophotographic printing system, comprising:

synchronizing signal supplying means for receiving at least one signal out of a light emitting diode horizontal synchronizing signal generated when a period of a horizontal synchronizing signal of a light emitting diode type printing system coincides with a given counting period and a beam detecting signal generated by a laser scanning unit, and supplying a horizontal synchronizing signal corresponding to a printing system in response to a synchronizing select signal;

clock generating means connected to said synchronizing signal supplying means, for determining said counting period, generating a reference clock for the generation of a plurality of signals, for generating a video clock from said reference clock in response to said horizontal synchronizing signal and for generating a latch driving signal from said reference clock in response to said synchronizing select signal;

latch signal generating means connected to said clock generating means, for generating a data latch signal having a given period form said reference clock in response to said latch driving signal;

strobe signal generating means for generating strobe signals for enabling emission of energy from a light emitting



diode array by shifting said reference clock in response to said data latch signal;

data output means for generating video data to be printed according to a mode select signal; and

control signal generating means for providing said synchronizing select signal to said synchronizing signal supplying means by latching an external control signal, providing said mode select signal to said data output means, and providing a laser diode signal and a laser scanning unit motor control signal to a laser scanning unit of a laser scanning type printing system.

5,353,123

APPARATUS FOR PROCESSING STILL PICTURE IN VIDEO LASER DISC PLAYER

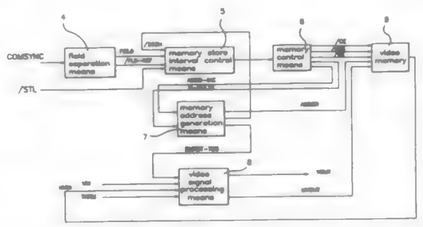
Ui W. Lee, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 3, 1993, Ser. No. 101,193

Claims priority, application Rep. of Korea, Aug. 3, 1992, 13946/1992

Int. Cl.[5] H04N *9/79, 5/92*

U.S. Cl. 358—322 **6 Claims**



1. An apparatus for processing a still picture in a video laser disc player, comprising:

a video memory for storing or outputting a video signal of one frame played back from a laser disc in the unit of field every frame in a still picture mode in response to a write or read address signal and control signals;

field separation means for separating odd and even fields from an external composite synchronization signal and outputting a field signal designating the odd and even fields and a field reference signal designating start points of the odd and even fields in accordance with the separated odd and even fields;

memory store interval control means for outputting a memory store interval control signal in response to the field signal and the field reference signal from said field separation means, an external still picture signal and a signal designating the even field so that an even field portion of a video signal of one frame to be processed as the still picture in the still picture mode can be stored in said video memory;

memory control means responsive to the memory store interval control signal from said memory store interval control means for outputting an address increment signal and a self-horizontal synchronization signal and outputting a chip enable signal, a write/read select signal and a write enable signal as the control signals to said video memory;

memory address generation means for outputting the write or read address signal to said video memory, the even field designating signal to said memory store interval control means and a color burst phase correcting signal in the still picture mode in response to the address increment signal and the self-horizontal synchronization signal from said memory control means; and

video signal processing means responsive to the color burst phase correcting signal from said memory address generation means and an external video switching signal for outputting an input video signal of one frame played back from the laser disc directly as an output video signal in a normal mode and, in the still picture mode, outputting the input video signal from the laser disc as a memory output video signal to said video memory, processing an input video signal of one field from said video memory as a video signal of one frame and then outputting the processed video signal as the output video signal.

5,353,124

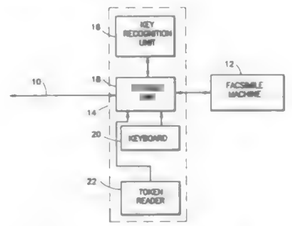
METHOD OF PROVIDING CONFIDENTIAL TREATMENT FOR FACSIMILE TRANSMISSIONS

Wayne W. Chou, Ridgefield, and Joseph M. Kulinets, Stamford, both of Conn., assignors to Software Security, Inc., Darien, Conn.

Filed Oct. 15, 1993, Ser. No. 137,588

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—400 **2 Claims**



1. A method of providing confidential treatment on the receiver end of facsimile transmissions between a sender and a recipient having a standard facsimile machine comprising the steps of

adopting a key having a graphic pattern by the recipient, thereby providing the recipient with a mailbox address,

communicating said key by said recipient to a sender,

incorporating said recipient's graphic pattern of said key by a sender in a predetermined location on the first page of a facsimile message to be treated confidentially,

attaching a security device having a key reader and a storage device between a recipient's telephone line and facsimile machine,

transmitting said message to the recipient,

intercepting said message by the security device on the recipient's end,

searching said message by said key reader of the security device for the presence and recognition of said graphic pattern of said key,

passing said message to said standard facsimile machine of the recipient, if said key is not present,

storing said message in said storage device of said security device together with said key when said key accompanies said message, and

transferring of said stored message to the recipient's facsimile machine upon the recipients entering the predetermined password and/or presenting a required hardware token containing the recipient's key thereby providing the recipient's mailbox address to said storage device for retrieving any messages stored in the storage device at the command of the recipient.

5,353,125

FACSIMILE APPARATUS

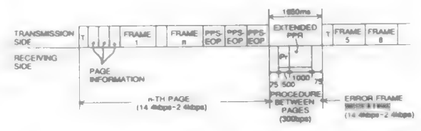
Michihiro Nakagawa; Kazuo Izumi; Hirohiko Yamazaki, and Kunio Shijo, all of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Feb. 2, 1993, Ser. No. 13,017

Claims priority, application Japan, Feb. 5, 1992, 4-019966

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—439 **6 Claims**



1. A facsimile apparatus at one station for transmitting an image signal to or receiving an image signal from another station, via a communication path, said another station having said facsimile apparatus therein, the facsimile apparatus at said one station having an error correction mode to retransmit from said one station, a signal in response to a request of the another station, the facsimile apparatus comprising:

reading means for reading an image on each page of a document and for generating image signals;

transmitting means for-dividing the image signals of each page of said document into plural frames and for transmitting the image signals of each frame of said plural frames as one transmission unit via the communication path to the another station to enable the another station to check for transmission errors in each of said plural frames; and

receiving means for receiving from the another station a signal indicating an error frame number in which a transmission error occurred;

the transmitting means retransmitting image signals of the error frame number and being capable of changing a transmitting speed thereof in accordance with a type of signal being transmitted;

control means for generating page information signals and post message command signals for each page of said document, the page information signals being related to a type of document being transmitted and the post message command signals indicating at least a number of plural frames forming each page; and wherein

the control means controls the transmitting means in the one station such that: the page information signals of a current page to be transmitted, are transmitted before a transmission of the image signals of the current page; and

the post message command signals are transmitted plural consecutive times in place of a "return to control" signal

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at the end of the image signals of a last frame of the current page; and

the page information signals and the post message command signals are transmitted at a speed that corresponds to a speed of the transmission of the image signals of each frame.

5,353,126

IMAGE PROCESSOR HAVING AN EDIT LIMITING FUNCTION

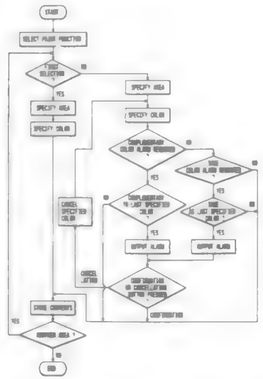
Teruyuki Aoyama, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,619

Claims priority, application Japan, Mar. 28, 1991, 3-064439

Int. Cl.[5] H04N *1/387*

U.S. Cl. 358—452 **9 Claims**



8. A method of operating an image processor having edit functions and subjecting image data obtained by reading a document to an edit processing and outputting the edited image data, the method comprising the steps of:

accepting an edit instruction specifying a color;

judging whether the edit instruction is inappropriate based upon whether a specified color is complementary to the last specified color or a specified color before the last specified color; and

outputting alarm data based on a result of the judging step.

5,353,127

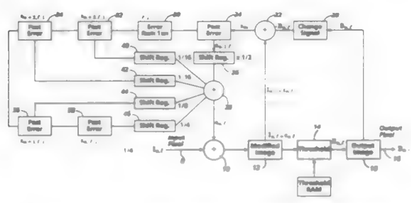
METHOD FOR QUANTIZATION GRAY LEVEL PIXEL DATA WITH EXTENDED DISTRIBUTION SET

Jeng-Nan Shiau, and Zhigang Fan, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 15, 1993, Ser. No. 167,758

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—458 **16 Claims**



13. Apparatus for preparing an electronic document for printing at a printer adapted to printing n level spots for each pixel, the steps comprising:

a document input receiving document images defined in terms of digital electronic input signals, each signal having a magnitude selected from one of m levels (where m is greater than n) and corresponding to a pixel and describing density of the document at position n in a scan line l (n,l);

a summing circuit, adding to each input signal an error signal resulting from quantization of previous signals, if any, to derive a modified input signal;

a comparator, operatively connected to said document input to receive the modified input signals and to a source of threshold signals, and producing an output response selected from one of the n level spots upon comparing each modified input signal with a threshold signal;

a difference circuit receiving as inputs the output response and the modified input signals and deriving an digital electronic error term signal representing the difference in density between the output response and the modified input signal;

a first error term buffer and a corresponding shift register operatively connected to said difference circuit, receiving an error term from quantization of signal (n−1,l) therefrom and shifting the error term for addition of a weighted portion thereof at said summing circuit to input signal n in scan line l (n,l);

a line buffer operatively connected to the first error term buffer, storing a line of error term signals corresponding to signals in scan line l−1;

at least second, third and fourth error term buffers, each having a corresponding shift register, and operatively connected to said line buffer, to receive error terms from the quantization of signals at positions (n,l−1), (n+1,l−1), (n+2,l−1) each shift register shifting the error term for addition of a weighted portion thereof at said summing circuit to input signal n in scan line l (n,l).

5,353,128

METHOD AND ARRANGEMENT FOR PRODUCING RASTERED COLOR SEPARATIONS AND PRINTING FORMS

Rainer Schielke, Fleckeby, Fed. Rep. of Germany, assignor to Linotype-Hell AG, Eschborn, Fed. Rep. of Germany

PCT No. PCT/DE92/00176, § 371 Date Sep. 2, 1993, § 102(e) Date Sep. 2, 1993, PCT Pub. No. WO92/17022, PCT Pub. Date Oct. 1, 1992

PCT Filed Mar. 3, 1992, Ser. No. 108,695

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1991, 4108253

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—456 **10 Claims**

1. A method for producing rastered printing forms having rasters with arbitrary raster angles and raster widths with a recording element moving relatively across a recording medium, and wherein the recording medium is sub-divided into a plurality of surface elements, and wherein raster dots are composed of the surface elements recorded by the recording element, comprising the steps of:

sub-dividing a respective raster angle of a raster printing form to be reproduced into a first sub-angle whose tangent is a rational number and into a second sub-angle whose tangent is an irrational number;

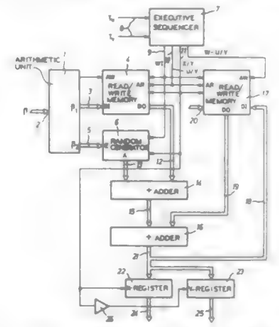
calculating first coordinate parts of surface elements of the recording medium in an orthogonal first coordinate system oriented in a recording direction thereof taking the first sub-angle into consideration, and calculating second coordinate parts of the surface elements taking the second sub-angle into consideration in an orthogonal second coordinate system aligned in a direction of a raster of the printing form being produced;

randomly modifying the second coordinate parts;

adding the first coordinate parts and the randomly modified second coordinate parts;

addressably storing in a memory matrix raster thresholds representing a periodic basic structure of a raster mesh of the raster;

calculating addresses for the memory matrix for coordinate values of the surface elements on the recording medium swept by the recording element, the addresses for the



memory matrix being formed from a result of the addition of the first coordinate parts and the randomly modified second coordinate parts; and

outputting raster thresholds called in by the calculated addresses in the memory matrix and comparing raster thresholds being output to image signal values so that a decision is made on a basis of a comparison whether the surface element is recorded or not as part of a raster dot.

5,353,129

Patent Not Issued For This Number

5,353,130

COLOR IMAGE PROCESSING APPARATUS

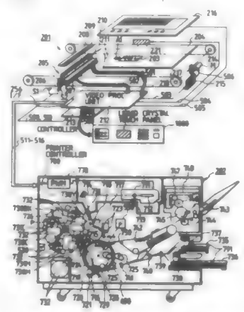
Akiko Hasegawa, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 26, 1991, Ser. No. 813,499

Claims priority, application Japan, Dec. 28, 1990, 2-408921

Int. Cl.[5] H04N *1/46, 1/40*

U.S. Cl. 358—530 **35 Claims**



1. A color image processing apparatus comprising:

input means for inputting a plurality of color component signals representing a color original;

extracting means for extracting a chromatic signal from the plurality of color component signals;

detecting means for detecting an area where the color original is present in accordance with the chromatic signal extracted by said extracting means; and

memory means for storing a detection result of said detecting means at least until a plurality of color component signals for one color original is input by said input means.

5,353,131

Patent Not Issued For This Number

5,353,132

IMAGE PROCESSING DEVICE

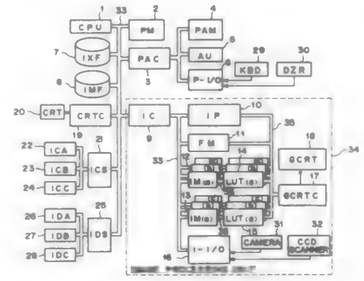
Makoto Katsuma, Wako, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 473,458, Feb. 1, 1990, abandoned. This application Jun. 22, 1992, Ser. No. 902,558

Claims priority, application Japan, Feb. 6, 1989, 1-25750; Feb. 6, 1989, 1-25751

Int. Cl.[5] H04N *1/46, 1/41*

U.S. Cl. 358—539 **21 Claims**



1. An image processing device comprising:

input means for inputting a plurality of color component signals representing a color image;

identification means for identifying a type of the color image on the basis of the plurality of color component signals from said input means;

first compression means for compressing the color component signals from said input means by using an information-preserving-type of encoding method;

second compression means for compressing the color component signals from said input means by using an information-non-preserving-type of encoding method;

selection means for selecting one of said first and second compression means in accordance with the type of the color image identified by said identification means; and

storage means for storing compressed color component signals from said first or second compression means together with identification data representing the type of the color image identified by said identification means.

5,353,133

A DISPLAY HAVING A STANDARD OR REVERSED SCHIEREN MICROPROJECTOR AT EACH PICTURE ELEMENT

Jan Bernkopf, Gibsonia, Pa., assignor to Magnascreen Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 797,060, Nov. 25, 1991, abandoned. This application Jan. 18, 1994, Ser. No. 182,684

Int. Cl.[5] G02F *1/1335, 1/13;* **F21V** *7/04;* **F16C** *29/02*

U.S. Cl. 359—41 **43 Claims**

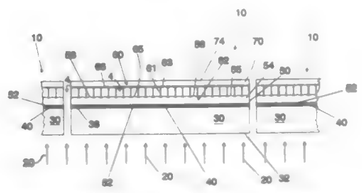
1. A flat-panel display system comprising:

a source of collimated light; and

a substantially flat-panel positioned in front of the light

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source and having an array of standard or reversed Schlieren microprojection means, wherein each one of the mi-



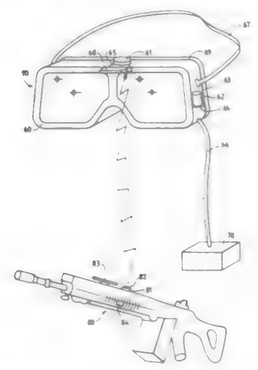
croprojection means corresponds to a respective picture element of the display.

5,353,134

WEAPON AIMING DEVICE

Claude Michel, Asnieres, and Jean-Pierre Le Pesant, Gif S/Yvette, both of France, assignors to Thomson-CSF, Puteaux, France

Filed Nov. 19, 1992, Ser. No. 978,775
Claims priority, application France, Nov. 19, 1991, 91 14221
Int. Cl.[5] G02F 1/13
U.S. Cl. 359—52 5 Claims



1. A control system for a barreled weapon, comprising: substantially transparent goggles including

(a) first layer of transparent material having opposite surfaces, the material having its optical characteristics alterable under the influence of a changeable electric field applied thereacross;

(b) arrays of electrodes formed on each of the surfaces for generating the electric field thereacross;

(c) a third layer, spaced from the first layer and having opposite surfaces and an intermediate transparent polymer matrix therebetween in which micro-cavities are enclosed which serve as micro-lenses having optical axes perpendicular to the two third layer surfaces;

(d) the micro-cavities made from a transparent material different from that of the polymer matrix and having refractive indices which are selectably changeable in response to changes in an electric field passing between the two third layer surfaces;

(e) the material of the micro-cavities having the same refractive index as the matrix material for a first electric field value, and a greater refractive index than the matrix material for a second electric field value;

(f) arrays of electrodes formed on each of the third layer surfaces for generating the electric field thereacross;

(g) a second intermediate layer interposed between the first and third layers and fabricated from a transparent polymer;

means located on the weapon for measuring the direction in which it is pointed;

means for receiving direction measurement data;

means connected to a receiving means output for communicating direction measurement data to a computer; and

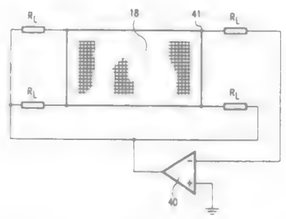
communication means for linking an output of the computer to the electrode arrays.

5,353,135

LIQUID CRYSTAL DISPLAY WITH BLACK MATRIX HELD AT A FIXED POTENTIAL WITH A FEEDBACK CIRCUIT

Martin J. Edwards, Crawley, United Kingdom, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 19, 1993, Ser. No. 64,184
Claims priority, application United Kingdom, May 28, 1992, 9211283
Int. Cl.[5] G02F 1/1343, 1/137
U.S. Cl. 359—55 7 Claims



1. A liquid crystal display device comprising a row and column array a row and column array of liquid crystal display elements defined between two plates which respectively carry sets of row and column address conductors, and a light shielding matrix of electrically conductive material in the form of a grid having portions extending between the display elements which is carried on one of the plates and electrically insulated from the set of address conductors on that plate, characterised in that the display device includes a feedback circuit arrangement connected to the matrix which is responsive to a change in the voltage on the matrix so as to apply a correction voltage to the matrix which tends to maintain the matrix at a predetermined potential level.

5,353,136

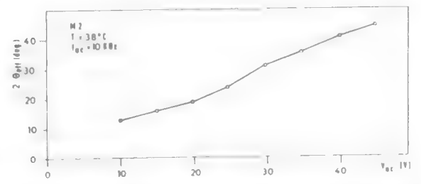
FERROELECTRIC LIQUID CRYSTAL WITH POSITIVE DIELECTRIC ANISOTROPY, CHEVRON STRUCTURE AND GREY SCALE

Claus Escher, Mühltal; Hans-Rolf Dübal, Königstein/Taunus, both of Fed. Rep. of Germany; Takamasa Harada, Inzai, Japan; Gerhard Illian, Frankfurt am Mian, Fed. Rep. of Germany; Mikio Murakami, Kakegawa, Japan, and Dieter Ohlendorf, Liederbach, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP90/00901, § 371 Date Dec. 13, 1991, § 102(e) Date Dec. 13, 1991, PCT Pub. No. WO90/16007, PCT Pub. Date Dec. 27, 1990
PCT Filed Jun. 9, 1990, Ser. No. 778,175
Claims priority, application Fed. Rep. of Germany, Jun. 17, 1989, 3919839
Int. Cl.[5] G02F 1/13, 1/1343, 1/137
U.S. Cl. 359—56 4 Claims

1. A process for enlarging the effective cone angle in a liquid crystal element comprising a housing, which contains an interstice bordered by a sealing material between two transparent

sheets, and additionally at least one polarization film, at least one rubbed orientation layer, furthermore two electrodes on both inner surfaces of the transparent sheets and a liquid-crystalline, ferroelectric smectic material present in the interstice, wherein the liquid-crystalline material firstly forms a chevron structure, and formation of a helix is suppressed, and secondly has spontaneous polarization and a positive dielectric anisot-



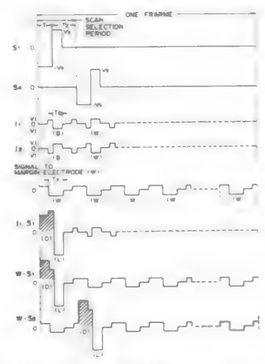
ropy, said process comprising firstly applying a pulse of a high voltage (V_s) and a length τ_s which has the effect that the molecules can be switched from one state to the other, and secondly applying subsequent smaller alternating current pulses (V_{ac}), which have a length τ_{ac}, which is the same or shorter than the length of the first pulse, and which do not allow further switching.

5,353,137

LIQUID CRYSTAL APPARATUS

Akira Tsuboyama, Sagamihara; Akiko Ooki, Atsugi, and Hiroshi Inoue, Kanazawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 847,764, Mar. 4, 1992, abandoned, which is a division of Ser. No. 378,827, Jul. 12, 1989, Pat. No. 5,124,820. This application Jan. 21, 1994, Ser. No. 183,902
Claims priority, application Japan, Jul. 14, 1988, 63-176591
Int. Cl.[5] G02F 1/13
U.S. Cl. 359—56 4 Claims



1. A liquid crystal apparatus, comprising:

a) a liquid crystal device comprising a group of first electrodes, a group of second electrodes intersecting the first electrodes, and a ferroelectric liquid crystal disposed between the group of first electrodes and the group of second electrodes so as to form a pixel at each intersection of the first and second electrodes;

b) first means for sequentially applying a scanning selection signal to the first electrodes;

c) second means for simultaneously applying data signals to the second electrodes in synchronism with the scanning selection signal; and

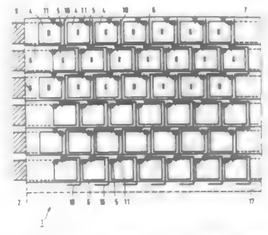
d) third means for controlling the data signals so that a prescribed number of rightmost or leftmost second electrodes is designated among the group of second electrodes to form a marginal region, and other second electrodes among the group of second electrodes are designated to form a display region which forms pixels in a bright state or dark state when supplied with data signals, and said electrodes in the marginal region are supplied with data signals so as to first form a dark state and then form a bright state at the pixels on a particular first electrode under application of the scanning selection signal, thereby (i) forming a bright state in the marginal region including all the pixels formed at the intersections of the first electrodes and the designated prescribed number of second electrodes and (ii) forming a desired display state in the display region including pixels in the bright or dark state depending on given display data signals after the completion of one cycle of scanning of the first electrodes, wherein the bright state at a pixel in the marginal region is identical to the bright state at a pixel in the display region and wherein said data signals applied to the second electrodes in the marginal region include a pulse for forming said bright state in said marginal region, wherein said pulse has a pulse width which is larger than a maximum pulse width of the data signals applied to the second electrodes in the display region.

5,353,138

DISPLAY DEVICE AND SUPPORT PLATE WITH TRANSVERSE ELECTRODE ARRANGEMENT

Jacobus A. Van Winsum, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 862,874, Apr. 3, 1992, abandoned. This application Oct. 18, 1993, Ser. No. 141,490
Claims priority, application European Pat. Off., Apr. 24, 1991, 91200976.8
Int. Cl.[5] G02F 1/1343
U.S. Cl. 359—58 9 Claims



1. A display device comprising an electro-optical medium, disposed between first and second support plates, and a system of pixels arranged in rows and columns, said display device comprising:

a. opposing first and second systems of picture electrodes arranged on facing surfaces of the first and second support plates, respectively, for defining respective ones of the pixels;

b. a system of row electrodes arranged on the first support plate, each of said row electrodes being electrically connected to a multiplicity of the picture electrodes of the first system which define a common row of the pixels;

c. a system of column electrodes arranged on the second support plate, each of said column electrodes being electrically connected through respective switching elements on said second support plate to ones of the picture electrodes of the second system which define a common column of the pixels;

d. a system of reference electrodes arranged on the second support plate, said reference electrodes being arranged

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transversely of and crossing the column electrodes, each of said reference electrodes:

i. being electrically connected through respective switching elements on said second support plate to ones of the picture electrodes of the second system which define a common row of the pixels; and

ii. being separated from the crossed column conductors by nonconductive means.

5,353,139

SPATIAL LIGHT MODULATOR WITH PHOTOCONDUCTOR OF HYDROGENATED AMORPHOUS SILICON WITH 0.1-1.0 PPM BORON

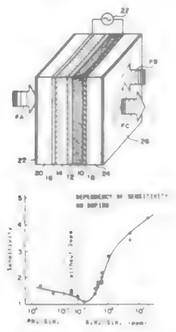
Nozomu Ohkouchi; Hiromitsu Takenaka; Tadayuki Shimada, Yokosuk; Shigeo Shimizu, all of Yokohama; Toshio Konna, Tokyo, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 17, 1992, Ser. No. 977,613

Claims priority, application Japan, Nov. 22, 1991, 3-334022; Mar. 25, 1992, 4-098709

Int. Cl.[5] G02F *1/135; G03G 15/8*

U.S. Cl. 359—72 **2 Claims**



1. A spatial light modulator having a pair of transparent electrodes for forming a driving electric field therebetween and at least one photoconductive member and a photo-modulation member laminated between said pair of transparent electrodes, wherein;

said photoconductive member comprises a hydrogenated amorphous silicon film having thickness of 10 μm to 30 μm; and

said photoconductive member is doped with boron as such that an amount of the boron in said hydrogenated amorphous silicon film in atomic ratio with respect to silicon in said hydrogenated amorphous silicon film is above 0.1 ppm and less than 1 ppm.

5,353,140

LIQUID CRYSTAL DISPLAY

Shunpei Yamazaki, Tokyo; Takashi Inujima, Atsugi; Toshimitsu Konuma, Atsugi; Toshiji Hamatani, Atsugi; Akira Mase, Atsugi; Mitsunori Sakama, Hiratsuka; Minoru Miyazaki, Atsugi; Kaoru Koyanagi, Saku, and Toshiharu Yamaguchi, Zama, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Division of Ser. No. 243,218, Sep. 12, 1988, Pat. No. 5,196,954, which is a continuation of Ser. No. 895,029, Aug. 8, 1986, abandoned. This application Nov. 30, 1992, Ser. No. 982,980

Claims priority, application Japan, Aug. 8, 1985, 60-175193

Int. Cl.[5] G02F *1/337*

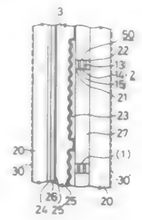
U.S. Cl. 359—75 **15 Claims**

1. A liquid crystal device comprising:

a first substrate having a first electrode arrangement and a plurality of semiconductor devices;

a second substrate opposed to said first substrate and having a second electrode arrangement;

a rubbed orientation control layer provided on said second substrate;



a liquid crystal layer disposed between said first and second substrates,

wherein said first substrate has an unrubbed surface contiguous to said liquid crystal layer.

5,353,141

METHOD FOR ALIGNING TREATMENT OF LIQUID CRYSTAL DEVICE INCLUDING VARYING WITH TIME THE FEEDING SPEED OF THE RUBBING ROLLER

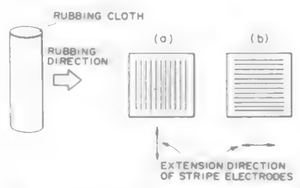
Kenji Onuma, Isehara; Mayumi Yoshioka, Hadano; Yukio Hanyu, Atsugi; Yasuto Kodera, Fujisawa, and Takatsugu Wada, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1992, Ser. No. 956,400

Claims priority, application Japan, Oct. 8, 1991, 3-287236; Jan. 31, 1992, 4-040605

Int. Cl.[5] G02F *1/1337, 1/13*

U.S. Cl. 359—76 **34 Claims**



10. An aligning treatment method for a liquid crystal device including a pair of substrates each provided with stripe electrodes and a liquid crystal disposed between the substrates; the method comprising rubbing the pair of substrates with a rubbing roller such that one substrate having stripe electrodes extending in a direction perpendicular to the rubbing direction is rubbed first, and then the other substrate having stripe electrodes extending in a direction parallel to the rubbing direction is rubbed, wherein the rubbing is repeated while varying a feeding speed of the rubber roller with time, and a feeding speed of the rubbing roller is varied by at least 1% per substrate.

5,353,142

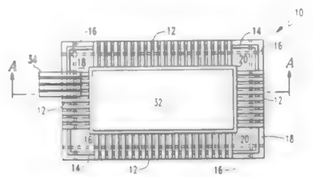
ELECTRO STATIC DISCHARGE PROTECTION FOR PROCESSING ACTIVE MATRIX LIQUID CRYSTAL DISPLAYS

Sonia R. Dodd, Phoenix, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 29, 1993, Ser. No. 55,047

Int. Cl.[5] G02F *1/1343*

U.S. Cl. 359—87 **5 Claims**



1. A method for removing a shorting conductor situated on lead contacts of a liquid crystal display, the shorting conductor shorting the lead contacts .o prevent electrostatic discharge among the lead contacts to the display, the display having first and second planes, each of the first and second planes having approximately parallel first and second surfaces, having a perimeter and having a central area, wherein the lead contacts are situated on the first surface of the first plane of the display, the lead contacts extend from the central area of the first plane toward the perimeter of the first plane, and the lead contacts are for external connections to the display, said method comprising:

cutting at least one slot on the second surface into the first plane, the slot being approximately perpendicular to the second surface, the slot having a depth that goes through a portion of the first plane and the slot is about from two to four mils from the first surface of the first plane, and the slot has a location proximate to the lead contacts in an area between the shorting conductor and the central area of the first plane, and the first plane having a peripheral area extending from the slot to the perimeter of the first plane; and

removing the peripheral area from the first plane, after any desired external connection or attachment to the lead contacts at points between the slot and the central area, any fabrication of the display and any installation of any polarizer, by breaking off the peripheral area at the location of the slot, thereby removing the shorting conductor from the display.

5,353,143

OPTICAL RECEIVER

Donald E. A. Clarke, Colchester, England, assignor to British Telecommunications public Limited company, London, England

PCT No. PCT/GB90/01607, § 371 Date May 26, 1993, § 102(e) Date May 26, 1993, PCT Pub. No. WO91/06157, PCT Pub. Date May 2, 1991

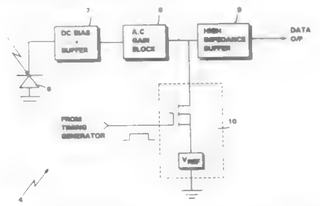
PCT Filed Oct. 18, 1990, Ser. No. 859,413

Claims priority, application United Kingdom, Oct. 18, 1989, [illegible]

Int. Cl.[5] H04J *14/08*; H04B *10/06*

U.S. Cl. 359—135 **4 Claims**

1. A network head-end station arranged to receive an upstream TDMA frame comprising interleaved optical signals from a plurality of terminations connected to the head-end station by a fibre network, the station including an opto-electronic receiver and a DC clamping circuit for the opto-electronic receiver, characterised in that: the terminations are arranged such that none of the terminations transmit in a quiet phase of the upstream TDMA frame; the DC clamping circuit is arranged, when operated, to clamp signals received during the remainder of the TDMA frame to a DC reference level received during the quiet phase; and the station further including a clamping pulse generator arranged to generate a pulse at



a predetermined time falling within the quiet phase to operate the DC clamping circuit.

5,353,144

Patent Not Issued For This Number

5,353,145

OPTICAL DISTRIBUTOR

Emile Le Coquil, and André Hamel, both of Lannion, France, assignors to France Telecom Etablissement Autonome de Droit Public, Paris, France

Filed Nov. 9, 1992, Ser. No. 973,759

Claims priority, application France, Nov. 19, 1991, 91 14227

Int. Cl.[5] H04J *14/08*; H04B *10/02*

U.S. Cl. 359—139 **20 Claims**

1. Optical distributor, characterized in that it comprises:

M inputs (FE1, FE2, FE3, FE4), M being an integer at least equal to 1, each input receiving elementary signals,

M processing modules (MT1, MT2, MT3, MT4) respectively connected to the M inputs, each processing module having N outputs and simultaneously processing N consecutive elementary signals, N being an integer at least equal to 1,

N outputs (FS1, FS2, FS3, FS4),

N optical couplers (10; CS1, CS2, CS3, CS4), each having M inputs respectively associated with the M processing modules (MT1, MT2, MT3, MT4) and an output connected to one of the N outputs of the distributor and

control means (6; G; G1; G2), which control the processing modules (MT1, MT2, MT3, MT4) and enable the distributor to scramble the elementary signals reaching the M inputs thereof, so that a given elementary signal reaches a given output of the distributor, and in that each processing module (MT1, MT2, MT3, MT4):

electronically demultiplexes the N consecutive elementary signals and thus supplies, in electrical form, N demultiplexed elementary signals,

under the control of the control means (6; G; G1, G2) rearranges on a time basis said N demultiplexed signals in accordance with the output of the distributor imposed by the control means (6; G; G1; G2) for each of said N demultiplexed signals and

also under the control of the control means (6; G; G1; G2), transposes the N demultiplexed signals in optical form at N wavelengths (L1, L2, L3, L4) differing from one an-

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other and switches each transposed signal to the desired output of the distributor.

5,353,146

OPTICAL SIGNAL REGENERATOR AND OPTICAL COMMUNICATIONS SYSTEM INCORPORATING SAME

Roderick P. Webb, Woodbridge, England, assignor to British Telecommunications public limited company, London, England

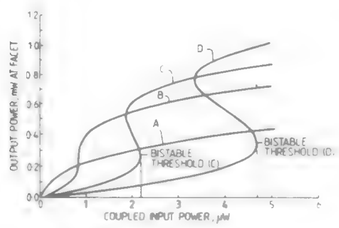
PCT No. PCT/GB91/00732, § 371 Date Nov. 23, 1992, § 102(e) Date Nov. 23, 1992, PCT Pub. No. WO91/17474, PCT Pub. Date Nov. 14, 1991

PCT Filed May 8, 1991, Ser. No. 949,253

Claims priority, application United Kingdom, May 8, 1990, 9010742

Int. Cl.[5] H04B *10/16*

U.S. Cl. 359—158 **13 Claims**



1. An optical signal regenerator comprising:

a resonant, non-linear, optical amplifier including gain material for providing optical gain, and capable of exhibiting bistability at a first wavelength with a power threshold between a first relatively low power output state and a second relatively high power output state;

a clock signal generator for generating optical clock pulses at the first wavelength and at an optical power just below the optical power bistability threshold of the amplifier at the first wavelength;

first coupling means for coupling the optical clock pulses to the resonant amplifier in a resonant mode thereof;

a source of information pulses; and

second coupling means for coupling the information pulses to the amplifier in a non-resonant mode thereof;

whereby bistable switching to one of said power states occurs upon an initial concurrent occurrence of an information pulse and a clock pulse, with subsequent bistable switching to the other of the power states occurring when the clock pulse is terminated.

5,353,147

IDENTIFICATION OF TRANSMISSION CHARACTERISTIC

Gary J. Grimes, Thornton, Colo., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 27, 1991, Ser. No. 800,782

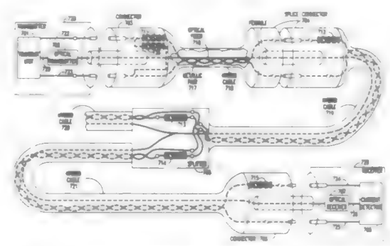
Int. Cl.[5] H04B *10/12, 10/08*

U.S. Cl. 359—173 **38 Claims**

1. A transmission link having a communication path with a plurality of components each effecting performance characteristics of the communication path, comprising:

another communication path in conjunction with the communication path and physically distinct from the communication path;

the another communication path having another plurality of components each corresponding to one of the plurality of components of the communication path; and



each of the another plurality of components identifying one or more characteristics of the corresponding component of the plurality of components.

5,353,148

ELECTROCHROMIC DEVICE

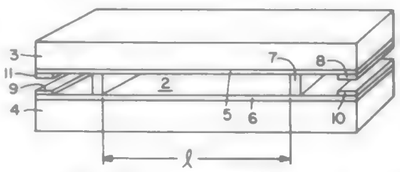
Bernard A. G. Eid, Champagne-Seine, and Jean-Pierre Themont, Montigny/Loing, both of France, assignors to Corning Incorporated, Corning, N.Y.

Filed Aug. 21, 1992, Ser. No. 933,248

Claims priority, application France, Sep. 16, 1991, 91 11374

Int. Cl.[5] G02F *1/15*

U.S. Cl. 359—265 **6 Claims**



1. An electrochromic device comprising an electrochromic layer (2') held between two conducting layers (5',6') and being bounded by at least two essentially straight edges, at least four electrodes (8',9',10,11) of elongated shape extending over facing surfaces of said two conducting layers (5',6') with means for selectively supplying these electrodes with electrical energy, said electrodes being disposed facing two-by-two in parallel in the vicinity of each of the straight edges and being essentially symmetrical with respect to the plane of said electrochromic layer (2'), the distance between said edges of said electrochromic layer (2') being such that $l < 0.5 l_c$ and, preferably $l < 0.3 l_c$ where (l_c) is a critical width defined by the equation

$$l_c = \frac{(2ZS)^{\frac{1}{2}}}{(R_s)}$$

where Z is the real impedance of electrochromic layer (2');

S is the surface of electrochromic layer (2'); and

R_S is the resistance of the surface of conducting layers (5'6') in ohms/square.

5,353,149

APPARATUS FOR AFFECTING TIME-SPACE CONVERSION ON A LIGHT SIGNAL CHANGING AT ULTRA-HIGH SPEED

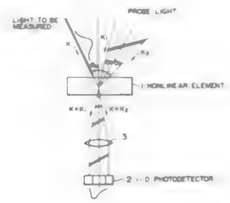
Tsuneyuki Urakami, and Teruo Hiruma, both of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Sep. 16, 1993, Ser. No. 121,899

Claims priority, application Japan, Sep. 17, 1992, 4-248075; Sep. 17, 1992, 4-248077

Int. Cl.[5] G02F *1/35*

U.S. Cl. 359—326 **25 Claims**



1. An optical converter comprising:

a nonlinear element for making two types of light interact with each other so as to cause nonlinear optical effect;

means for guiding light to be measured to said nonlinear element; and

light generating means for generating probe light crossing said light to be measured on said nonlinear element and changing a traveling direction with a time of crossing;

wherein light is produced by interaction between said light to be measured and said probe light in said nonlinear element and the thus produced light leaves said nonlinear element in a traveling direction changing with time.

5,353,150

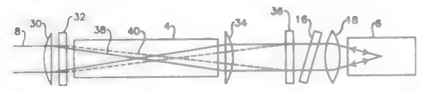
GAIN HOMOGENIZATION APPARATUS AND METHOD FOR USE IN STIMULATED SCATTERING OF BEAMS WITH NON-UNIFORM SPATIAL INTENSITY DISTRIBUTION

Metin S. Mangir, and David A. Rockwell, both of Santa Monica, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 750,665, Aug. 27, 1991, abandoned. This application Dec. 23, 1992, Ser. No. 996,481

Int. Cl.[5] G02B *27/00;* **H01S** *3/098*

U.S. Cl. 359—338 **25 Claims**



1. A phase conjugate mirror (PCM) for an input optical beam that is characterized by a spatially non-uniform optical intensity distribution, comprising:

a stimulated Brillouin scattering (SBS) amplifier medium in the input beam path,

SBS phase conjugator means for phase conjugating an input beam that has been transmitted through the amplifier medium and for returning the phase conjugated beam to said amplifier medium for amplification therein by said input beam along a length of said amplification medium, and

means for spatially mixing said input beam to achieve spatial uniformity of integrated optical intensity along said amplifier medium length, but a local cross-sectional optical intensity distribution that differs from location to location along said amplifier medium length, so that the integrated amplification imparted to different portions of said phase conjugated return beam during transit through said amplifier medium is generally spatially independent of the location of said portions across a cross-section of the return beam and integrated gain homogenization is achieved, while the local spatial amplification pattern imparted to said phase conjugated return beam differs for different locations along said amplification medium length, said mixing means comprising first and second lens sets disposed respectively on the input and phase conjugator sides of said amplifier medium, said lens sets each comprising a plurality of lenses for focusing an input beam in the direction of the amplifier medium to a plurality of line foci that are located within the gain medium and are angularly offset and spaced from each other along the beam path.

5,353,151

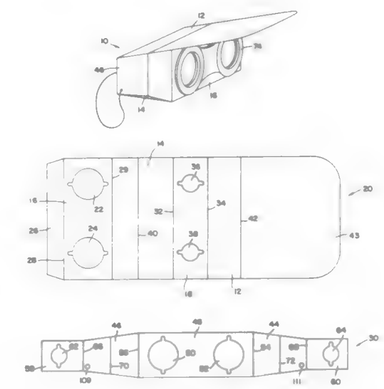
COLLAPSIBLE BINOCULAR

Cynthia A. Schultz, 302 Belin Manor Dr., Houston, Tex. 77024, and Robert H. Schultz, 2100 Bering Dr. #610, Houston, Tex. 77057

Filed Apr. 7, 1993, Ser. No. 44,228

Int. Cl.[5] G02B *7/02*

U.S. Cl. 359—408 **9 Claims**



1. A collapsible binocular comprising:

a substantially rectangular open-sided housing having a front wall formed with a pair of objective lens apertures, a rear wall formed with a pair of eyepiece lens apertures, a bottom wall integrally connected to the rear wall at its lower edge, a top wall integrally connected to the upper edge of the rear wall and extending beyond the front wall to form a visor, a flap integrally connected to the upper edge of the front wall for attaching the top wall to the front wall such that the front and rear wall are parallel to each other, and the walls and the flap being formed from a bland having adjoining edges between each of the walls and the flap defining fold lines and with the top and bottom wall each having an intermediate transverse fold line;

an elongated side wall member having a center portion formed with a pair of objective lens apertures, the center portion integrally connected to a left side wall portion and right side wall portion, each side wall portion integrally

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connected to an end having an eyepiece aperture, and the side wall portions each having a lateral fold line;

the objective lens apertures in the front wall and the center portion aligned such that the center portion is adjacent the front wall at its inner surface;

the eyepiece lens apertures in the rear wall and the ends aligned and the ends adjacent the rear wall at its inner surface so as to place the eyepiece lens apertures in coincidence and in longitudinal alignment with the objective lens apertures;

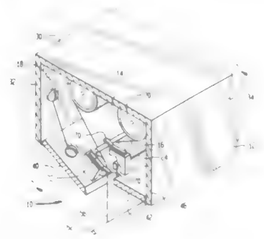
an objective lens means comprising a pair of objective lenses, a unitary objective lens case and a unitary objective lens case clip for providing strength and durability attached to the front wall and center portion such that the objective lenses cover the objective lens apertures, and an eyepiece lens means comprising a pair of eyepiece lenses, a unitary eyepiece lens case and a unitary eyepiece lens case clip for providing strength and durability attached to the rear wall and ends such that the eyepiece lenses cover the eyepiece lens apertures, and the fold lines enabling collapsing the binocular from an extended position to a collapsed position, during which the top and bottom walls move relatively apart and the front and rear walls move relatively toward each other whereby the visor section folds over the objective lens means.

5,353,152

SCREEN PROJECTION APPARATUS

Charles Realmuto, Coram, N.Y., assignor to Vutec Corporation, Bohemia, N.Y.

Filed Sep. 20, 1993, Ser. No. 124,861
Int. Cl.[5] G03B *21/56;* **A47H** *1/00;* **E06B** *9/08*
U.S. Cl. 359—461 **10 Claims**



1. A screen projection apparatus, comprising:

a housing;

a pair of roller means rotatably mounted in said housing and spaced apart;

first and second projection screens with one of said projection screens rolled on one of said roller means;

driving means connected to each of said roller means for unrolling said screens, one at a time, from said roller means and rerolling said projection screens onto said roller means; and

idler roller means mounted on said housing with said projection screens passing over said idler roller means and with said idler roller means establishing a common plane in which each of said projection screens hang when said projection screens are unrolled.

5,353,153

REFLECTING DEVICE

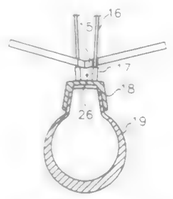
Dennis Craig, P.O. Box 35, Hadlock, Wash. 98339

Filed Oct. 8, 1992, Ser. No. 959,036
Int. Cl.[5] G02B *5/12*
U.S. Cl. 359—523 **1 Claim**

1. An improved bicycle reflector being comprised of a rectangular plate means having a means for attaching said improved bicycle reflector to modern bicycle wheels equipped with spokes, a means for securely holding the bicycle reflector to the spokes of a bicycle wheel, and a reflector means to impart a flashing signal to an approaching automobile driver at night,

said rectangular plate means being comprised of suitably rigid elastic material, such as plastic, being divided at its center apex into a left wing and a right wing, in which said wings diverge in the same direction from said center apex ten to twenty degrees from the horizontal and are of sufficient width so that each wing will extend beyond the diameter of a bicycle tire a distance less than the space between a bicycle tire and a bicycle rear wheel frame, and

said means for attaching the improved bicycle reflector to bicycle wheels equipped with spokes being comprised of two pairs of slots, of sufficient length to accommodate the difference in distance between spokes of a full-sized adult bicycle and on a smaller children's bicycle, having a width slightly less than the outside diameter of a spoke of a bicycle so that the slot is spread to accommodate the spoke and securely holds it, with one of the slots of each pair located adjacent to the center apex and the other slot located on the other side of the center apex a sufficient distance away form the center apex so as to align with the location of spokes on either side of the centerline of a



modern bicycle wheel rim, while the remaining slots of the two pairs are located on the opposite side of the reflector and on the side of the center apex opposite to its mate, the length of the slots being sufficient to accommodate the distance between spokes along the arc of the bicycle wheel rim of full-sized adult bicycles and smaller children's bicycles, so that the improved bicycle reflector rests on the top of standard nut means for attaching spokes to rims of bicycles and is held in place, when the wheel is in motion, by centripetal force in addition to the gripping of the slots on the spokes, and

said reflector means being comprised of, either a suitable reflective material, being applied to both sides of the wings, or by being cast in the material of the wings of the improved bicycle reflector by standard means, with the color of the reflective on two wings of the same face of improved bicycle reflector being of contrasting colors, while the two wings of the reverse side of the improved bicycle reflector have the contrasting colors reversed so that when the improved bicycle reflector is installed on a bicycle spoked wheel and it is in motion, the reflective color changes left to right, and back, so as to impart a flashing presentation which draws the attention of approaching drivers at night.

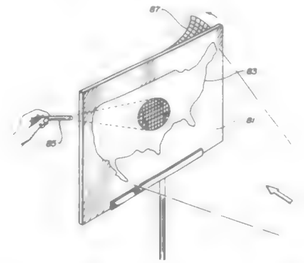
5,353,154

POLYMERIC REFLECTIVE MATERIALS UTILIZING A BACK LIGHT SOURCE

William G. Lutz, Linwood; Gregg A. Motter, and John A. Wheatley, both of Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 2, 1992, Ser. No. 969,907
Int. Cl.[5] G02B *5/28;* **B32B** *7/02*
U.S. Cl. 359—582 **3 Claims**

2. A multilayer reflective polymeric body of at lest first and second diverse polymeric materials arranged in substantially parallel alternating layers wherein said first and second polymeric materials differ from each other in refractive index by at least 0.03, said body having first and second major surfaces, means for projecting an image onto said first major surface of said body, and means for directing light through said body



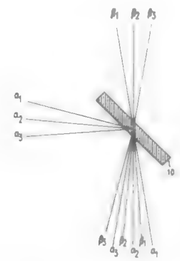
from said second major surface, said body including a sufficient number of layers such that said body reflects at least 40% of light impinging on said first major surface thereof while transmitting at least 5% of light directed through said body from said second major surface so as to illuminate said image on said first major surface.

5,353,155

METHODS AND APPARATUS FOR COMBINING ARRAYS OF LIGHT BEAMS

David A. B. Miller, Fair Haven, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 16, 1992, Ser. No. 991,635
Int. Cl.[5] G02B *27/10, 27/42*
U.S. Cl. 359—618 **15 Claims**



1. Apparatus for directing a plurality of arrays of light beams onto a target surface, each array including at least two light beams, the apparatus comprising:

an angle-variant device having first and second surfaces, said angle-variant device transmitting light incident thereon at a first set of incident angles and reflecting light incident thereon at a second set of incident angles;

means for directing a first array of light beams onto the first surface of the angle-variant device at the first set of incident angles, such that the first array of light beams is transmitted through the angle-variant device and onto the target surface; and

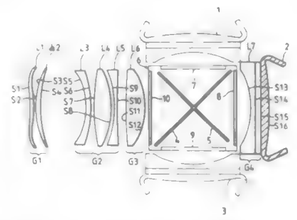
means for directing a second array of light beams onto the second surface of the angle-variant device at the second set of incident angles, such that the second array of light beams is reflected from the angle-variant device and onto the target surface.

5,353,156

PROJECTION LENS SYSTEM

Chong-sam Chung, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 30, 1992, Ser. No. 997,751
Claims priority, application Rep. of Korea, Jul. 31, 1992, 92-13858
Int. Cl.[5] G02B *13/18, 9/64*
U.S. Cl. 359—649 **6 Claims**



1. A projection lens system having a plurality of CRTs each for generating a different monochrome image and at least one dichromatic mirror for chromatically mixing the images, so as to enlarge and project a composite color image onto a screen, said system comprising:

a first lens group for correcting spherical aberration and coma aberration;

a second lens group for correcting chromatic aberration;

a third lens group for providing the main optical power for the whole system; and

a fourth lens group for correcting petzval aberration, wherein said first, second and third lens groups are sequentially disposed forward of said dichromatic mirror, said fourth lens group is disposed between said CRTs and dichromatic mirror, and said first, second, third and fourth lens groups are formed with seven lenses in total and satisfy the following conditions

$0.95 < f/f_6 < 1.05$

$-0.1 < f/(f_3+f_4+f_5) < 0.1$

$v < 40$

where f is the focal length of the optical system; fi is the focal length of ith lens from the screen, where i is a positive interger, and v is the negative dispersion value of the second lens group.

5,353,157

REAR FOCUSING ZOOM LENS

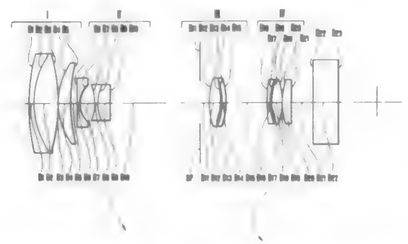
Akihisa Horiuchi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 740,303, Aug. 5, 1991, abandoned. This application Mar. 5, 1993, Ser. No. 27,592
Claims priority, application Japan, Aug. 21, 1990, 2-220793; Aug. 21, 1990, 2-220794
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—676 **12 Claims**

1. A zoom lens comprising, in the order from an object side to an image side, a first lens unit of positive refractive power, a second lens unit of negative refractive power, a third lens unit of positive refractive power and a fourth lens unit of positive refractive power, said second lens unit being made to move along an optical axis to effect zooming, said fourth lens unit being made to move so as to compensate for the shift of an image plane resulting from the zooming and being made to move for focusing, said third lens unit including a bi-convex lens and a negative meniscus lens having a concave surface facing the object side, and said fourth lens unit including a negative meniscus lens having a concave surface facing the image side, a bi-convex lens and a positive lens having a con-

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vex surface facing the object side, wherein in said fourth lens unit an air space is arranged between the negative meniscus



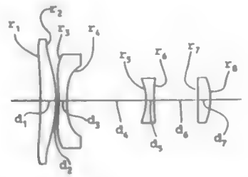
lens and the bi-convex lens, as well as between the bi-convex lens and the positive lens.

5,353,158

ALBADA TYPE ZOOM FINDER

Hirofumi Matsuo, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1992, Ser. No. 836,715
Claims priority, application Japan, Feb. 19, 1991, 3-109945
Int. Cl.[5] G02B *15/14, 13/18*
U.S. Cl. 359—688 **12 Claims**



1. An Albada zoom finder comprising a first lens assembly of positive power, a second lens assembly of negative power, a third lens assembly of negative power and a fourth lens assembly of positive power, arranged in this order from an object side, an Albada frame provided on an object side lens surface of said fourth positive lens assembly, and a reflecting provided on a viewing side lens surface of said third negative lens assembly, wherein only said second negative lens is movable as a variable power lens assembly, and wherein each of said four lens assemblies is comprised of a single lens, said fourth positive lens being provided with an aspheric surface having a positive refractive power which decreases in a radial direction toward a circumferential portion of said aspheric surface, said aspheric surface being provided on a viewing side of said fourth lens assembly.

5,353,159

THREE-UNIT COMPACT ZOOM LENS SYSTEM

Masaru Morooka, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1991, Ser. No. 812,101
Claims priority, application Japan, Dec. 26, 1990, 2-406528
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—689 **11 Claims**

1. A zoom lens system comprising, in order from the object side:

a first lens unit having a positive refractive power,

a second lens unit having a positive refractive power, and

a third lens unit having a negative refractive power,

wherein during zooming from the wide angle end to the telephoto end, said first and third lens units are movable toward the object side and said second lens unit is movable toward the object side at a speed relatively lower than that at which said first and third lens units are moved, and said zoom lens system satisfying the following conditions:

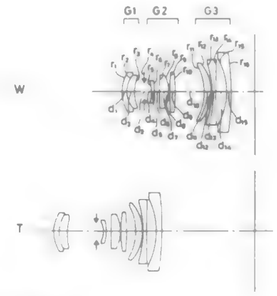
$$0.5<|f_3/f_W|<0.9, \quad (1)$$

$$1.3<\beta_{3W}<2.0, \quad (2)$$

$$1.7<f_1/f_W<5.0, \quad (3)$$

$$0.5<f_2/f_W<1.3, \quad (4)$$

and



$$0.1<E_W/f_W<0.35, \quad (5)$$

wherein:

f_W is the focal length of the total system at the wide angle end,

f_1, f_2 and f_3 are the focal lengths of the first, second and third lens units, respectively,

β_{3W} is the image-formation magnification of the third lens unit, and

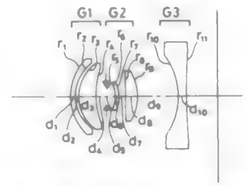
E_W is the distance from the first surface (proximate to the object side) to the entrance pupil of the lens system at the wide angle end.

5,353,160

THREE-UNIT COMPACT ZOOM LENS SYSTEM

Yasuji Ogata, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 24, 1992, Ser. No. 917,999
Claims priority, application Japan, Jul. 24, 1991, 3-182751
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.
Int. Cl.[5] G02B *15/14, 13/18*
U.S. Cl. 359—689 **22 Claims**



1. A zoom lens system comprising in order from the object side;

a first lens unit consisting of a negative meniscus lens convex on the object side and a positive meniscus lens convex on the object side and having a positive refracting power as a whole,

a second lens unit including one positive lens, or one negative lens and one positive lens, and having a positive refracting power as a whole, and

a third lens unit consisting of one negative lens,

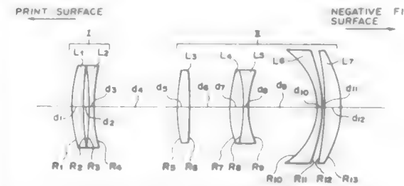
said first and second lens units being movable toward each other for zooming from the wide to tele position.

5,353,161

VARIABLE FOCAL LENGTH LENS

Kuniaki Ono, Ohmiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Feb. 22, 1993, Ser. No. 20,413
Claims priority, application Japan, Mar. 27, 1992, 4-070864
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—691 **2 Claims**



1. A variable focal length lens comprising a first-set lens, which is constituted of two lenses and has a negative refracting power as a whole, and a second-set lens, which is constituted of five lenses and has a positive refracting power as a whole, the first-set lens and the second-set lens being located in this order from the side of a plane of image formation, wherein the variable focal length lens satisfies the following condition formulas

$$44<(\nu_1+\nu_2)/2 \quad (1)$$

$$0.35<D_6/D_8<0.6 \quad (2)$$

$$0.6<|R_2/R_3|<1.0 \quad (3)$$

wherein Ri represents the radius of curvature of an i'th surface of lens, as counted sequentially from the side of the plane of image formation, Di represents the axial air separation or thickness between an i'th surface of lens and an i+1'th surface of lens, as counted sequentially from the side of the plane of image formation, and νi represents the Abbe's dispersion number of an i'th lens, as counted sequentially from the side of the plane of image formation.

5,353,162

ZOOM LENS SYSTEM

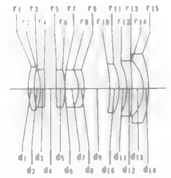
Takayuki Ito, and Sachio Hasushita, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1992, Ser. No. 907,791
Claims priority, application Japan, Jul. 4, 1991, 3-261483
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—692 **8 Claims**

1. A zoom lens system comprising, in order from the object side:

a positive first lens group and a negative second lens group, said first lens group and second lens groups adjusting a magnification factor of the zoom lens system by varying a distance therebetween, said first lens group comprises, in order from the object side, a first positive meniscus lens element having a convex surface that is directed toward an object, a first negative meniscus lens element having a concave surface that is directed toward the object, a second positive lens element having a convex surface that is directed toward an image plane, and a positive cemented lens which includes a third positive lens element and a second negative lens element, said third positive lens element being cemented to a concave surface of said second negative lens element that is directed toward the object;

said first and second lens groups satisfying the following conditions;



$$1.59<fw/f1<2.0, \text{ and}$$

$$1.79<fw/f2<2.5;$$

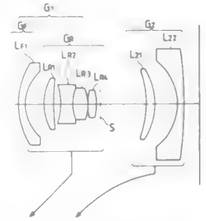
where fw represents a focal length of the overall zoom lens system at a wide-angle end, f1 represents a focal length of said first lens group, and f2 represents a focal length of said second lens group.

5,353,163

WIDE-ANGLE ZOOM LENS

Atsushi Shibayama, and Masahiro Nakatsuji, both of Kawasaki, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jul. 13, 1992, Ser. No. 912,718
Claims priority, application Japan, Jul. 17, 1991, 3-176560; Feb. 21, 1992, 4-034778
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—692 **57 Claims**



1. A wide-angle zoom lens consisting of:

a first lens group having a positive refracting power and a second lens group having a negative refracting power, which are moved relative to each other along an optical axis so as to attain zooming, a lens in the first lens group which is closest to the object side having a convex surface facing the object side,

said first lens group being constituted in turn from the object side by a front group having a negative refracting power and a rear group having a positive refracting power, and being constructed so that the spacing between the front group and the rear group is constant during zooming,

said front group having at least one negative lens, said rear group having at least two positive lenses, and

said zoom lens being constituted to satisfy the following conditions:

$$0.75<|f_F/f_W|\leq 4, \; f_F<0$$

$$0.1<K/f_W<0.4$$

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$0.1<L/f_W<0.7$

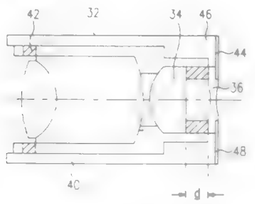
where f_F is the focal length of said front group in said first lens group, f_W is the focal length of said zoom lens at the wide-angle end, K is the axial distance from a lens surface at the extreme image-side end of said first lens group to a rear-side principal point of said first lens group when a direction toward the image side is defined as a positive direction, and L is the axial distance from a lens surface at the extreme object-side end of said front group in said first lens group to a lens surface at the extreme object-side end of said rear group in said first lens group.

5,353,164

OBJECTIVE LENS FOR A FREE-SPACE PHOTONIC SWITCHING SYSTEM

Jose M. Sasian-Alvarado, Naperville, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 30, 1992, Ser. No. 969,495
Int. Cl.[5] G02B *9/12, 9/08*
U.S. Cl. 359—791 **6 Claims**



1. A free-space photonic switching system comprising
an optical source for producing as an output a collimated array of beams;
an array of spatial light modulating devices; and
an objective lens disposed between said optical source and said array of spatial light modulating devices, said objective lens positioned to receive as an input said collimated array of beams and utilized for focusing said array of collimated beams onto said array of spatial light modulating devices, the lens comprising
a positive doublet lens;
a positive lens disposed beyond said positive doublet lens;
a negative lens separated a predetermined distance d from said positive lens; and
an external stop located before the entrance of said positive doublet lens, wherein the collimated array passes through said external stop, enters the positive doublet lens and exits the negative lens, so as to provide a focused spot beam array on said array of spatial light modulating devices.

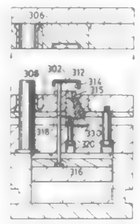
5,353,165

ONE PIECE VIEWFINDER AND FABRICATION PROCESS

Alan V. VanDeMoere; Ralph M. Lyon, and Edward N. Ballin:;, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 15, 1992, Ser. No. 945,186
Int. Cl.[5] G02B *7/02*
U.S. Cl. 359—819 **53 Claims**

1. A unibody viewfinder, comprising:
a support; and
at least two optical lenses aligned along a common principal axis, said lenses being integral with said support by simultaneously molding together said lenses and said support from a common material in a single molding process.
34. A method of making a unibody viewfinder having a plurality of lenses and sharing a common principal axis comprising:
providing a mold having a molding volume corresponding to said unibody viewfinder, said mold including a plurality of lens volumes and a support volume being in fluid communication with said lens volumes,



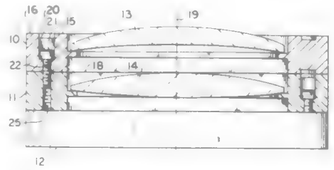
introducing a molding material into said mold to fill said molding volume;
solidifying said molding material in said mold to integrally form the unibody viewfinder with a plurality of lenses and a support,
removing said viewfinder from said mold.

5,353,166

MOUNTING SYSTEM FOR OPTICAL ANNULUS IN LENS ASSEMBLY

Keith E. Hanford, Macedon, and Edward A. Johnson, Churchville, both of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 787,785, Nov. 4, 1991, abandoned. This application Oct. 6, 1992, Ser. No. 957,524
Int. Cl.[5] G02B *7/02*
U.S. Cl. 359—819 **22 Claims**



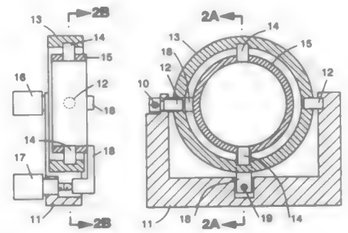
1. A system for mounting an optical annulus supporting an optical element on an axis of said annulus, said mounting system comprising:
a. a pair of continuous engagement surfaces formed on spaced-apart inner and outer rings that extend concentrically around said annulus;
b. said engagement surfaces being disposed in a mounting plane perpendicular to said axis of said annulus;
c. all surfaces of said annulus except said engagement surfaces being disposed clear of said mounting plane;
d. said engagement surfaces having substantially constant width throughout their continuous extent around said annulus;
e. screw holes arranged around said annulus between said inner and outer rings to be clear of said engagement surfaces; and
f. screws disposed in said screw holes for holding said engagement surfaces against a plane support, for mounting said annulus.

5,353,167

MIRROR MOUNT

Thomas C. Kuklo, Oakdale, and Donald A. Bender, Dublin, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 22, 1992, Ser. No. 917,244
Int. Cl.[5] G02B *7/198, 7/182, 7/02*
U.S. Cl. 359—876 **13 Claims**



1. A mount structure for a mirror or lens comprising:
(a) a base having a mounting block, said block having side surfaces;
(b) a first pair of flexures connected to and protruding from opposing portions of said side surfaces of said block in a first plane and defining a first axis of rotation;
(c) a ring mounted to said block via only said first pair of flexures;
(d) a second pair of flexures connected to and protruding from said ring on opposing sides of said ring and at right angles to said first plane, and defining a second axis of rotation;
(e) acceptor means for holding a lens or mirror, mounted to said ring via only said second pair of flexures;
(f) first axis driver means for rotating said acceptor means about said first axis of rotation, said first axis driver means contacting said acceptor means at a point along said first axis of rotation; and
(g) second axis driver means for rotating said acceptor means about said second axis of rotation, said second axis driver means contacting said acceptor means at a point along said second axis of rotation.

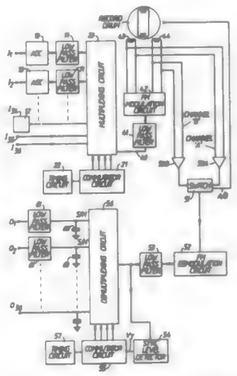
5,353,168

RECORDING AND REPRODUCING SYSTEM USING TIME DIVISION MULTIPLEXING

Neil M. Crick, Hampshire, United Kingdom, assignor to Racal Recorders Limited, Berkshire, United Kingdom

Continuation of Ser. No. 599,843, Oct. 18, 1990, abandoned. This application Nov. 5, 1992, Ser. No. 972,080
Claims priority, application United Kingdom, Jan. 3, 1990, [redacted]
Int. Cl.[5] G11B *5/00, 5/02, 15/12*
U.S. Cl. 360—5 **3 Claims**

1. A recording and reproducing system comprising,
a plurality of individual input channels for receiving respective input signals having respective levels;
time division multiplexing means for sampling the respective input signals cyclically, according to a predetermined sequence of the input channels and for outputting a succession of samples occupying respective time slots, each sample representing a level of an input signal received in a respective input channel during a respective time slot, the samples derived from one of the input channels being used as synchronisation signals;
frequency modulation means for frequency modulating the succession of samples output by said time division multiplexing means to produce frequency-modulated samples;
means for recording the frequency-modulated samples, as an analogue signal, on magnetic recording tape;
means for reading the frequency-modulated samples from the magnetic recording tape;
frequency demodulation means for demodulating the frequency modulated samples read by the reading means to produce a succession of frequency-demodulated samples,
a plurality of output channels, each output channel corresponding to a respective input channel;



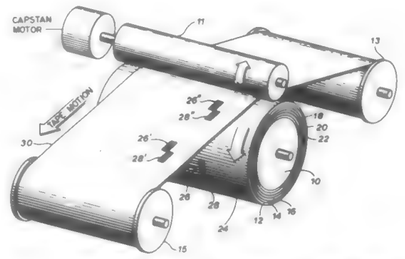
time division demultiplexing means for distributing the frequency-demodulated samples output by said frequency-demodulation means to respective output channels; and
synchronisation signal detection means for detecting the frequency-demodulated samples that are used as synchronisation signals, the time division demultiplexing distributing the frequency-demodulated samples output by said frequency demodulation means to respective output channels in accordance with the timing of the detected synchronisation signals.

5,353,169

CONTACT DUPLICATION OF MAGNETICALLY RECORDED INFORMATION WITHOUT THE USE OF A TRANSFER FIELD

Frederick J. Jeffers, Escondido, Calif., and Charles F. Brucker, Fairport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 11, 1991, Ser. No. 652,972
Int. Cl.[5] G11B *5/86*
U.S. Cl. 360—16 **9 Claims**



1. A system for duplicating magnetically recorded information by contact transfer from a master medium to a slave medium, said system comprising:

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a) said master medium having a sufficiently high coercivity and remanence so that information recorded thereon is productive of a magnetic field the intensity of which, in an external contact-transfer zone, is at least as greater as the remanent coercivity of said slave medium;

b) said slave medium having a demagnetization field that is negligible compared to the magnetic field of said master medium in its contact-transfer zone; and

c) a mechanism for transporting said slave medium through the contact-transfer zone of said master medium in non-slipping engagement therewith, to effect a magnetization of said slave medium that is the mirror image of the magnetization pattern recorded on said master medium by direct magnetization of said slave medium by said magnetic field of said master medium without the use of an independent magnetic transfer field, whereby the absence of an appreciable demagnetization field in said slave medium enables the external magnetic field of said master medium to be virtually unopposed in effecting said magnetization of said slave medium.

5,353,170

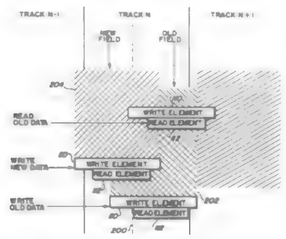
ERROR RECOVERY DATA STORAGE SYSTEM AND METHOD WITH TWO POSITION READ VERIFICATION

Kwok W. Fung, Santa Clara; Robert L. Kwok, San Jose; Arvind M. Patel, San Jose, and Robert A. Rutledge, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 19, 1993, Ser. No. 64,297

Int. Cl.[5] G11B *5/09, 5/584*

U.S. Cl. 360—53 **32 Claims**



1. A data storage system comprising:

a data storage medium having data tracks;

a read element;

a read means connected to the read element for causing the read element to read data from a data track;

a movement means for moving the medium relative to the read element;

a positioning means for moving the read element relative to the data storage medium to different positions across the width of the data tracks; and

a control means connected to the positioning means for controlling the movement of the read element such that two successful reads are made a distance D apart on the same track, the control means further including a comparison means for comparing the data read from the two reads to determine if they are the same.

5,353,171

MAGNETO-OPTICAL RECORDING APPARATUS

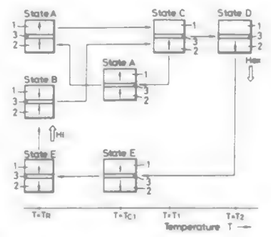
Kayoko Suzuki, Kanagawa; Ariyoshi Nakaoki, and Yoshihiro Muto, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 28, 1992, Ser. No. 920,844

Claims priority, application Japan, Jul. 30, 1991, 3-190143

Int. Cl.[5] G11B *5/02, 5/127, 7/00*

U.S. Cl. 360—59 **2 Claims**



1. A magneto-optical recording apparatus for recording information on a magneto-optical recording medium composed of a substrate, a memory layer and a recording layer which are disposed on the substrate, each of the memory and recording layers being comprising a magnetic thin film of amorphous-rare-earth transition-metal alloy, the memory and recording layers being magnetically coupled directly, or through an intermediate layer therebetween, to each other under an exchange force, said magneto-optical recording apparatus comprising:

recording magnetic field generating means for applying a recording magnetic field to the magneto-optical recording medium; and

initializing magnetic field generating means for applying an initializing magnetic force to the magneto-optical recording medium, said initializing magnetic field generating means having a magnetic pole adapted to be disposed in confronting relationship to a surface of the magneto-optical recording medium, said initializing magnetic force comprising a magnetic field H_V directed perpendicularly to the surface of the magneto-optical recording medium, and a magnetic field H_H directed along the surface of the magneto-optical recording medium, said magnetic fields H_V, H_H being defined as follows:

$$H_V \leq H_{C2} + H_{W2},$$

and

$$H_H > \{(H_{C2} + H_{W2}) - H_V\} \times 1.7$$

where H_{C2} is the coercive force of the recording layer and H_{W2} is the exchange force.

5,353,172

METHOD OF HELICAL TAPE TRACKING ADJUSTMENT USING HISTOGRAM OF SIGNAL QUALITY VERSUS TAPE ADVANCE DISTANCE

Henry L. Alioth, 2402 La Plancha La., Carlsbad, Calif. 92009-9127

Filed Nov. 4, 1992, Ser. No. 971,196

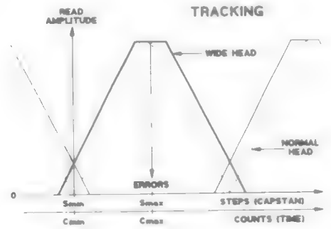
Int. Cl.[5] G11B *15/467, 15/52, 21/04*

U.S. Cl. 360—70 **4 Claims**

1. A method of calibrating information track spacing to produce a reference value to be used in an information tracking system which comprises:

a) a recording step for recording a histogram of playback signal quality versus recording medium advance distance;

b) determining from said histogram the best advance distance value; and



c) storing said advance distance value in a reference memory for use with said information tracking system.

5,353,173

DEVICE OF CONTROLLING HEAD-DRUM ANGLE AND METHOD THEREFOR

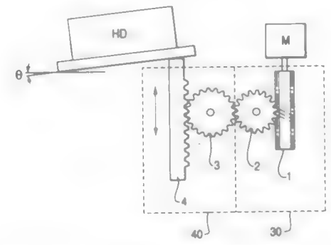
Jae C. Yoo, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Mar. 12, 1992, Ser. No. 849,984

Claims priority, application Rep. of Korea, Mar. 18, 1991, 91-4242; Feb. 29, 1992, 92-3397

Int. Cl.[5] G11B *5/588;* **H04N** *5/783*

U.S. Cl. 360—76 **23 Claims**



1. A device for controlling the head-drum angle, comprising:

a gain detecting portion for detecting a gain of a video signal read by a video head;

a frequency signal detecting portion for providing a revolution frequency signal in dependence upon a revolution speed of a capstan motor;

a microcomputer connected to said gain detecting portion and said frequency signal detecting portion to provide a control voltage according to said gain and said revolution frequency signal;

angle control means connected to said microcomputer for controlling an angle of the head-drum according to said control voltage of said microcomputer, said angle control means comprising:

a motor which is driven by said control voltage;

a speed reducing portion connected to said motor for reducing a revolution speed of said motor, said speed reducing portion comprising:

a worm connected to said motor; and

a worm gear connected to said worm;

an angle control portion connected to said speed reducing portion for changing the angle of the head-drum by a rectilinear movement; and

head tip displacement control means for controlling a head tip position of a head by means of said microcomputer.

4. A method for controlling a head-drum angle according head-drum angle device comprising a gain detecting block, a frequency signal output block, a microcomputer, and an angle control means, said method comprising:

a step for storing a reference gain into a first memory device in the microcomputer;

a first angle control routine for controlling the head-drum angle according to a tape speed which is detected by said frequency signal output portion;

a detected membership function for setting a detected membership function by means of a gain difference of a video signal controlled by head-drum angle control;

a DTF control step for controlling a head tip position of a head when said gain difference is less than a predetermined value;

a compound routine for setting a compound function by compounding a preset membership function up to maximum value into the detected membership function;

a weight center detecting step for producing a weight center of the compound membership function; and

a second angle control routine for controlling said head-drum angle by producing a control voltage according to the weight center.

5,353,174

MOTOR SPEED SENSING SYSTEM FOR MAGNETIC DISK APPARATUS OR THE LIKE

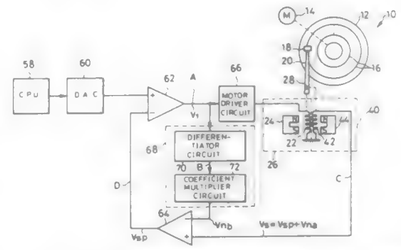
Hisatoshi Uno, Tokyo, Japan, assignor to Teac Corporation, Tokyo, Japan

Filed Mar. 13, 1991, Ser. No. 668,773

Claims priority, application Japan, Mar. 19, 1990, 2-68721

Int. Cl.[5] G11B *5/55*

U.S. Cl. 360—78.06 **13 Claims**



1. A system for sensing the traveling speed of an object driven by an electric motor of the kind having a drive coil, the system comprising:

(a) a speed sensor comprising a speed sensing coil for electromagnetically generating a voltage proportional to the traveling speed of the object, the speed sensing coil being disposed in the vicinity of and magnetically coupled to the drive coil of the motor so that the voltage generated by the speed sensing coil includes a noise component induced by the flow of an electric current through the drive coil;

(b) a noise suppression signal generator circuit for generating a noise suppression signal equivalent to the noise component of the output voltage of the speed sensing coil; and

(c) a noise suppressor circuit connected to both the speed sensing coil and the noise suppression signal generator circuit for eliminating the noise component from the output voltage of the speed sensing coil by the noise suppression signal.

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5,353,175

APPARATUS FOR USING WINDOW SIGNAL GENERATORS TO ENABLE DETECTION OF HEADER INFORMATION SUCH AS AN ADDRESS MARK, SECTOR MARK, OR ADDRESS INFORMATION RECORDED ON EACH SECTOR OF A DISC RECORDING MEDIUM ONLY WHERE SUCH INFORMATION COULD BE PRESENT

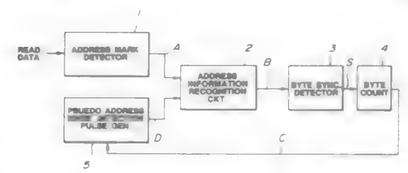
Takayoshi Chiba, Tokyo, Japan, assignor to Sony Corporation, Japan

Filed Dec. 1, 1992, Ser. No. 983,646

Claims priority, application Japan, Dec. 2, 1991, 3-317245; Dec. 3, 1991, 3-318245; Dec. 6, 1991, 3-322233

Int. Cl.[5] G11B *5/09*

U.S. Cl. 360—51 **4 Claims**



1. An apparatus for detecting header information of a plurality of sectors recorded on a disc recording medium, the header information being recorded on each sector of the disc recording medium and being constituted by a sector mark indicating a head position of the corresponding sector, a plurality of address marks and address information data, said apparatus comprising:

a) sector mark detecting means for detecting the sector mark of each sector and outputting a sector mark detection signal when detecting the sector mark;

b) first window signal generating means for generating a first window signal which is in an open state when a predicted head position of the sector mark is reached and which changes to a closed state upon receipt of the sector mark detection signal;

c) address information data detecting means for detecting the address information data from the header of each sector and outputting an address information detection signal when detecting the address information data;

d) second window signal generating means for generating a second window signal which is in the open state when the predicted head position of the sector mark is reached and which changes to the closed state upon receipt of the address information detection signal; and

e) third window signal generating means supplied with both the first window signal and the second window signal for generating a third window signal which is in the open state only when both the first window signal and the second window signal are simultaneously in the open state, and wherein the sector mark detecting means is supplied with the third window signal and is enabled to detect the sector mark only when the third window signal is in the open state.

5,353,176

METHOD OF REPRODUCING MAGNETIC RECORDING DATA AND A MAGNETIC STORAGE SYSTEM USING SWITCHING BETWEEN PLURAL HEADS PROVIDED TO A TRACK

Minoru Kosuge, Odawara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 4, 1992, Ser. No. 986,013

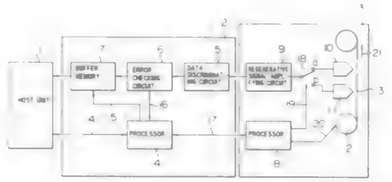
Claims priority, application Japan, Dec. 9, 1991, 3-324179

Int. Cl.[5] G11B *15/12, 5/09*

U.S. Cl. 360—63 **20 Claims**

1. A method of reproducing magnetic recording data used for a magnetic recording/reproducing apparatus for performing recording or reproduction with respect to a plurality of recording tracks provided on a magnetic tape medium using electromagnetic transducers, said method comprising the steps of:

reproducing data from one recording track of said recording tracks using a first reproducing electromagnetic transducer of a plurality of reproducing electromagnetic transducers corresponding to said recording track, respective said reproducing electromagnetic transducers being arranged so as not to overlap with one another in a travel direction of each of said recording tracks;



detecting an error of reproduced data from reproduction using said first reproducing electromagnetic transducer; and

performing, instead of using said reproduced data from said first reproducing electromagnetic transducer performing reproduction when detecting an error of said data, a retry of reproduction for a same portion of a same said recording track by using a second reproducing electromagnetic transducer corresponding to the same said recording track.

5,353,177

METHOD AND APPARATUS FOR POSITIONING A MAGNETIC HEAD UNIT ON A TRACK CENTERLINE

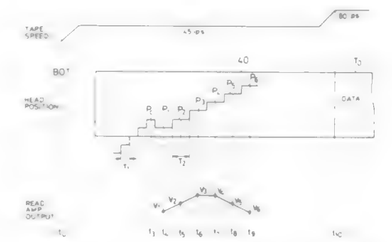
Yoshinobu Yanagibashi, Tokyo, Japan, assignor to TEAC Corporation, Tokyo, Japan

Filed Mar. 4, 1993, Ser. No. 27,205

Claims priority, application Japan, Mar. 9, 1992, 4-085988; Mar. 9, 1992, 4-085989; Mar. 9, 1992, 4-085990

Int. Cl.[5] G11B *5/584*

U.S. Cl. 360—77.12 **6 Claims**



1. A method of controlling the position of a head unit in a transverse direction of magnetic recording tape, comprising:

(a) providing a length of magnetic recording tape having a plurality of parallel data tracks extending longitudinally thereof, and a reference track formed between one end of the tape and a selected one of the data tracks and aligned with the selected data track, the reference track having recorded thereon a reference pattern which, when read by a head unit, provides a corresponding reference signal that differs in level depending upon transverse locations of the head unit on the reference track;

(b) moving the tape from the one end thereof toward another along a predefined guide path where the tape is moved at a lower speed when the reference track is traveling past the head unit or positioning the head unit than when the data tracks are traveling past the head unit for data transfer therewith;

(c) incrementally moving the head unit across the reference track on the tape from one longitudinal edge of the reference track toward another through a series of transverse locations thereon for reading the reference pattern and hence for providing the reference signal, the transverse locations having predetermined spacings one from another in the transverse direction of the tape;

(d) detecting the level of the reference signal at each of the transverse locations; and

(e) positioning the head unit on a centerline of the reference track and hence of the selected data track by moving, if necessary, the head unit from the last of the series of transverse locations back toward the one longitudinal edge of the reference track a distance that is predetermined according to each particular set of reference signal levels detected at the series of transverse locations on the reference track.

5,353,178

METHOD OF DETECTING A CHANNEL SEPARATION PITCH IN A MULTI-TRACK TAPE RECORDER

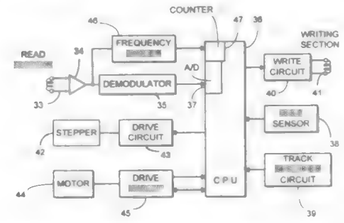
Hitoshi Ono, Nagano, Japan, assignor to Sankyo Seiki Mfg. Co., Ltd., Nagano, Japan

Continuation of Ser. No. 534,963, Jun. 7, 1990, abandoned. This application Aug. 31, 1993, Ser. No. 115,392

Claims priority, application Japan, Jun. 8, 1989, 1-145765

Int. Cl.[5] G11B *5/56*

U.S. Cl. 360—78.02 **5 Claims**



1. A pitch correcting method to be applied to a tape recorder of the type for storing in a memory and retrieving track positional data of a plurality of tracks of a magnetic tape using a magnetic head having a first writing section and separate reading section defining a first channel and a second writing section and separate reading section defining a second channel, said channels being arranged at a given pitch therebetween, said tracks constituting a first track set and a second track set, said first track set corresponding to said first channel and said second track set corresponding to said second channel, each track set having a standard track, said method comprising the steps of:

a) reading the standard track of the first track set with the first channel;

moving the magnetic head across the standard track of the first track set while reading the standard track;

detecting a position of the first standard track from a reading signal; and

correcting positional data of said first track set in the memory based on the difference between said detected position and the positional data;

b) reading the standard track of the second track set with the second channel;

moving the magnetic head across the standard track of the second track set while reading the standard track;

detecting a position of the second standard track from a reading signal; and

correcting positional data of said second track set in the memory based on the difference between said detected position and the positional data.

5,353,179

AUTO-LOADING OF TAPE CARTRIDGES

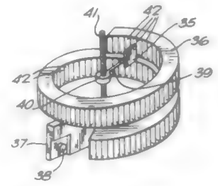
Robert V. Elliott, and Brian K. Hext, both of Wells, United Kingdom, assignors to M4 Data Limited, Wells

Filed Dec. 4, 1992, Ser. No. 986,136

Claims priority, application United Kingdom, Dec. 18, 1991, 9126792

Int. Cl.[5] G11B *15/68, 17/22*

U.S. Cl. 360—92 **5 Claims**



1. Auto-loader apparatus for storing, moving and loading tape cartridges, the apparatus comprising:

a cartridge rack that stores the tape cartridges arranged along a helix;

a cartridge transfer device that

(1) moves one of the tape cartridges along a first, substantially linear path from an initial position in the cartridge rack, while holding the tape cartridge in substantially the same plane as the tape cartridge is oriented in the cartridge rack, and

(2) moves the tape cartridge along a second, helical path that is substantially coaxial with the helix along which the tape cartridges are arranged in the cartridge rack; and

a cartridge deck having an exposed or exposable supply hub that is arranged to receive one of the tape cartridges after movement of the tape cartridge along said second, helical path;

wherein the second, helical path intersects the exposed or exposable supply hub of the cartridge deck and the cartridge transfer device moves said tape cartridge along the helical path until the tape cartridge engages the supply hub.

5,353,180

AIR BEARING MAGNETIC SLIDER WITH WISHBONE-SHAPED RAILS

Stephen S. Murray, Fremont, Calif., assignor to Read-Rite Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 24,476, Mar. 1, 1993, abandoned. This application Sep. 7, 1993, Ser. No. 117,484

Int. Cl.[5] G11B *5/60, 21/21*

U.S. Cl. 360—103 **15 Claims**

1. A substantially rectangular air bearing magnetic head slider having leading and trailing edges and substantially parallel sides comprising:

a nonmagnetic substrate having an air bearing surface;

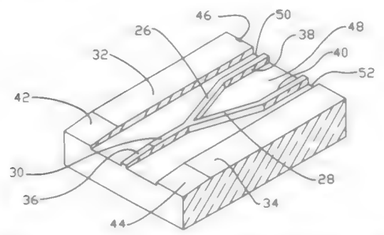
first and second side rails formed along said sides of said surface, said first and said second side rails projecting out from said air bearing surface and having top surfaces;

a wishbone-shaped rail configuration formed between said rails on said substrate surface and projecting out from said air bearing surface, said wishbone shaped rail configuration having spaced first and second branching segments extending substantially parallel to said first and said second side rails, said wishbone shaped rail configuration extending for a portion of the distance between said trail-

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ing edge and said leading edge, said branching segments having top surfaces; and

said wishbone shaped rail configuration having third and fourth branching segments disposed at an angle relative to said substantially parallel first and second sides of said first and second branching segments, said third and fourth branching segments being connected respectively to said first and second branching segments;



a narrow trunk portion having a leading edge taper projecting out from said air bearing surface and extending from said leading edge for connection to the junction of said third and fourth branching segments of said wishbone rail configuration, said wishbone -shaped rail configuration having third and fourth branching segments connected to and between said trunk portion and said first and second branching segments respectively,

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5,353,181

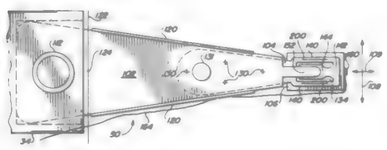
ETCHED SUSPENSION SYSTEM

Norman K. Frater, San Jose, and Alan P. Giorgi, Cupertino, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 10, 1992, Ser. No. 974,043

Int. Cl.[5] G11B *5/48, 21/16*

U.S. Cl. 360—104 **49 Claims**



1. A suspension system comprising:

a support member;

a load member; and

a suspension member connecting the load member to the support member, the suspension member having a first surface having a recess therein at a point where bending is desirable, the recess passing only partially through the suspension member, the recess having a bottom side thickness less than the thickness of the surrounding suspension member, and the recess intersecting only the first surface.

5,353,182

MAGNETIC DISK UNIT HAVING MAGNETIC DISKS AND A MAGNETIC HEAD WITH A HEAD SLIDER WHICH IS IN CONTACT WITH SURFACES OF THE MAGNETIC DISK

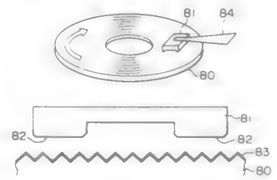
Takao Nakamura; Nobuya Sekiyama, both of Yokohama; Masaki Ohura, Odawara; Yoshiki Kato, Tokyo; Noriaki Okamoto, Ibaraki, and Masami Masuda, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 513,609, Apr. 24, 1990. This application Dec. 2, 1992, Ser. No. 985,176

Claims priority, application Japan, Apr. 27, 1989, 1-105921; Jun. 1, 1989, 1-137555; Jun. 10, 1989, 1-147302

Int. Cl.[5] G11B *5/48, 5/012, 5/82;* **B05D** *5/12*

U.S. Cl. 360—104 **9 Claims**



1. A magnetic disk unit including a plurality of magnetic disks mounted coaxially and equally separated, and a head driving unit for recording data on and retrieving data from the magnetic disks by a contact start-stop driving method in which a head slider on which a magnetic head is mounted is elastically in contact with and slides against at least one surface of each of said magnetic disks under a predetermined pressure in a state where the magnetic disk is stationary and in the initial state of rotation of the magnetic disk, in which the head slider floats up because of the rotation of the magnetic disk at a high speed, and in which the head slider is moved back and forth in the radial direction of the magnetic disk,

the improvement comprising a surface of said magnetic disk against which said head slider slides having a configuration which is a duplicate of a surface configuration of an irregular processed layer on a surface of a substrate of said magnetic disk which is a non-magnetic substrate, and the surface of said disk substrate having protrusions whose surfaces are made flattened, and exhibiting a three-dimensional bearing curve in which a bearing ratio at a section taken at a depth from a top portion of the surface which corresponds to a portion of the surface deformed by a head load during the contact start-stop drive is between 0.1 and 10%.

5,353,183

MAGNETIC HEAD ASSEMBLY FORMED COOPERATING HEAD SECTIONS BONDED TOGETHER USING CAPILLARY ATTRACTION

Jeffrey T. Olson, Encinitas, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 623,848, Dec. 7, 1990, abandoned. This application Aug. 12, 1993, Ser. No. 106,841

The portion of the term of this patent subsequent to Dec. 22, 2009, has been disclaimed.

Int. Cl.[5] G11B *51/127, 5/187*

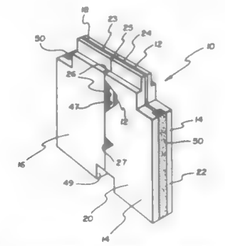
U.S. Cl. 360—125 **14 Claims**

1. A gapped magnetic head comprising a first head section and a second head section abutted against each other at a common interface, said magnetic head further comprising:

(a) two non-magnetic substrates in each of said sections; and

(b) magnetic cores sandwiched between each pair of said non-magnetic substrates, wherein said first head section includes at least one narrow elongated slot extending therethrough, positioned on one side but not in contact with said magnetic core and parallel to and contiguous

with said common interface, for receiving a solidifiable bonding fluid drawn therein under capillary action, the



fluid, upon solidifying, forming a column of solid bonding material which bonds said head sections together.

5,353,184

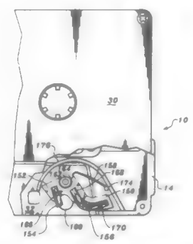
CASSETTE CLEANER HAVING BOTH CAPSTAN AND PINCH ROLLER ELEMENTS

Eivind Clausen, Bellingham, Wash., assignor to Allsop, Inc., Bellingham, Wash.

Continuation-in-part of Ser. No. 977,126, Nov. 16, 1992. This application Apr. 8, 1993, Ser. No. 45,463

Int. Cl.[5] G11B *15/00, 5/41*

U.S. Cl. 360—137 **7 Claims**



1. Apparatus for cleaning a pinch roller and capstan of a magnetic tape player/recorder comprising:

a housing adapted to be inserted in the tape player/recorder in a cleaning position, said housing defining an opening for receiving the drive capstan of the player/recorder; and

a cleaning cartridge including: a cartridge body pivotally mounted in said housing adjacent said drive capstan opening; a first cleaning pad secured to said cartridge body and positioned to abut the drive capstan of the player/recorder when the drive capstan is disposed in said drive capstan opening of said housing; a second cleaning pad secured to said cartridge body and positioned to abut the pinch roller such that contact of the pinch roller against said second cleaning pad moves said first cleaning pad into contact with the capstan; and a biasing member coupled to said cartridge body, said biasing member positioned to contact said housing to pivot said cartridge body so that said first cleaning pad is normally located away from the center of said housing drive capstan opening.

5,353,185

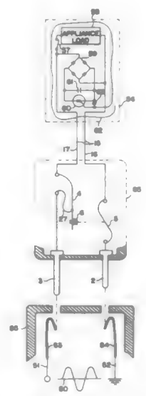
IMMERSION DETECTION CIRCUIT INTERRUPTER

Lawrence E. Bodkin, Jacksonville, Fla., assignor to Rocom Electric Co. Ltd., Hong Kong, Hong Kong

Filed Jan. 6, 1992, Ser. No. 817,054

Int. Cl.[5] H02H *3/16*

U.S. Cl. 361—49 **20 Claims**



1. In a power circuit including at least two conductors for conducting electrical power from a line source to an appliance circuit, within a housing, and having an electrical shock protection device, including a sensor and having automatic means connected to said conductors to initiate an overcurrent in response to an immersion of the appliance circuit in water or other conductive liquid, and further including an interrupting means, the improvement in which said interrupting means comprises at least two fuse links respectively in said at least two conductors, and force means for opening both of said fuse links in a substantially concurrent manner when the overcurrent is initiated to disconnect said appliance circuit from the line source.

5,353,186

REACTOR SWITCH

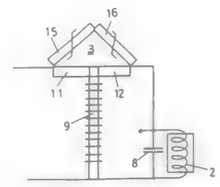
Erich Ruoss, Bündtenstr. 25, 5417 Untersiggenthal, and Georg Schett, Stockenerstr. 64, 8405 Winterthur, both of Switzerland

Filed Mar. 12, 1993, Ser. No. 30,575

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1992, 4207983

Int. Cl.[5] H01H *33/16*

U.S. Cl. 361—117 **10 Claims**



10. A reactor switch for switching a reactor on and off, wherein the reactor is arranged in a multi-phase electrical high-voltage network, the reactor switch including switch poles which are provided phase-by-phase between the reactor and a part of the network, each of the switch poles having at least two series-connected switching chambers and at least two

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series-connected varistors connected directly in parallel across the at least two series-connected switches chambers, the two series-connected switching chambers being mounted on an insulator column and the two series-connected switching chambers being directly bridged by the at least two series-connected varistors.

5,353,187

SAFETY CIRCUITS FOR A TELEVISION RECEIVER

Jean C. Favreau, Tannheim, Fed. Rep. of Germany; Friedrich Meinertz, Singapore, Singapore, and Chon S. Oh, Johore, Malaysia, assignors to Thomson Consumer Electronics S.A., Courbevoie, France

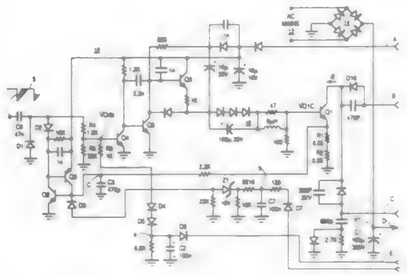
PCT No. PCT/EP90/02274, § 371 Date Oct. 11, 1991, § 102(e) Date Oct. 11, 1991, PCT Pub. No. WO91/10317, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 20, 1990, Ser. No. 768,726

Claims priority, application United Kingdom, Dec. 22, 1989, 8928999; Fed. Rep. of Germany, Dec. 29, 1989, 3943254

Int. Cl.[5] H02H *3/20;* **H01J** *29/56*

U.S. Cl. 361—91 **28 Claims**



1. A power supply and deflection system for a television receiver, comprising:

a first transformer coupled to a deflection yoke and coupled to means for driving a load;

on/off switching means responsive to an on/off signal;

a second transformer having a primary winding coupled to said switching means and couple to a source of DC voltage and having a secondary winding coupled to said first transformer;

sampling means for generating a first feedback signal indicative of current flowing from said secondary winding to said first transformer; and

first control means responsive to said first feedback signal for controlling the effect of said on/off signal on said switching means when said current flowing from said secondary winding to said first transformer exceeds a threshold.

5,353,188

OVERCURRENT DETECTOR CIRCUIT FOR A CIRCUIT-BREAKER

Yoshihiro Hatakeyama, Fukuyama, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 25,945

Claims priority, application Japan, Mar. 4, 1992, 4-047055

Int. Cl.[5] H02H *3/08*

U.S. Cl. 361—97 **6 Claims**

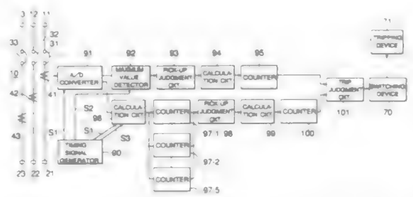
1. An overcurrent detector circuit for a circuit-breaker including at least one contact for disconnecting a line, and a tripping device means for breaking said contact, said overcurrent detector circuit comprising:

current detector means for detecting a current flowing through said line, said current detector generating an output corresponding to a detected current;

analog-to-digital converter means, coupled to said current detector means, for sampling said output of said current detector at a first predetermined period and converting sampled outputs of said current detector to corresponding digital signals;

maximum value detector means, coupled to said analog-to-digital converter means, for determining a maximum value of said digital signals output from said analog-to-digital converter means within a second predetermined period longer than said first period;

first accumulation means, coupled to said maximum value detector means, for accumulating values corresponding to said maximum values determined by said maximum value detector means exceeding a first threshold level;



second accumulation means, coupled to said analog-to-digital converter means, for accumulating values corresponding to said digital signals output from said analog-to-digital converter means during a third predetermined period longer than said second period;

third accumulation means, coupled to said second accumulation means, for accumulating values corresponding to output values of said second accumulation means exceeding a second threshold level; and

judgement means, coupled to said first and third accumulation means, for activating said tripping device means to break said contact when an output of said second accumulation means exceeds a third threshold level or when an output of said third accumulation means exceeds a fourth threshold level.

5,353,189

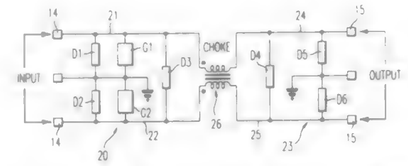
SURGE PROTECTOR FOR VEHICULAR TRAFFIC MONITORING EQUIPMENT

John C. Tomlinson, 892 Maderia Clr., Tallahassee, Fla. 32312

Filed Nov. 2, 1992, Ser. No. 968,976

Int. Cl.[5] H02H *9/04*

U.S. Cl. 361—118 **14 Claims**



1. A surge protection device for use between a roadway traffic sensor and its related monitoring equipment to limit common mode and normal mode transients comprising, first and second stage surge current arrestor circuits, each of said first and second stage surge current arrestor circuits including common mode surge limiting means and normal mode surge limiting means connected with one another, means for connecting said common mode surge limiting means to ground, input means for connecting said first stage surge arrestor circuit to the roadway traffic sensor, output means for connecting said second stage surge arrestor circuit to the monitoring equipment, and a choke means connecting said first and second stage surge arrestor circuits.

5,353,190

ELECTRIC JUNCTION BOX

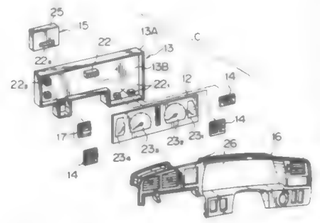
Yoshiaki Nakayama, and Minoru Kubota, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jun. 4, 1993, Ser. No. 71,493

Claims priority, application Japan, Jun. 9, 1992, 4-149324

Int. Cl.[5] H02B *1/10*

U.S. Cl. 361—647 **4 Claims**



1. An electric junction box installed inside an instrument panel of an automobile comprising:

branch circuits provided to an internal circuit of the electric junction box, the branch circuits being directly connected to circuits of a meter-carrying meter board and of at least one switch mounted adjacent to the meter board wherein the meter board and the switch are directly mounted to the electric junction box.

5,353,191

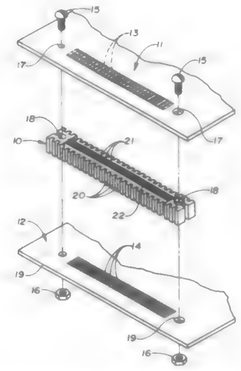
COMBINATION HEAT SINK AND HOUSING FOR FLEXIBLE ELECTRICAL CONNECTOR USED IN AN ELECTRICAL OR ELECTRONIC ASSEMBLY

Keith L. Volz, Jamestown; Frederick R. Deak, Kernersville; David C. Johnson; Warren A. Bates, both of Winston-Salem, and Robert M. Renn, Pfafftown, all of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 8, 1993, Ser. No. 27,969

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—690 **11 Claims**



1. In an electrical assembly, the combination of a first electrical member having at least one first circuit element thereon, a second electrical member having at least one second circuit element thereon, a unitary heat sink and connector housing, made from a material which is thermally conductive but electrically insulative, and disposed between the first and second electrical members, means for securing the first and second electrical members to the unitary heat sink and connector housing, a unitary heat sink and connector housing having a through slot therein, and a flexible electrical connector mounted within said slot for electrical engagement with said first and second electrical members, whereby said flexible electrical connector includes at least one circuit trace thereon providing a circuit interface between the first and second circuit elements on the first and second electrical members, respectively.

5,353,192

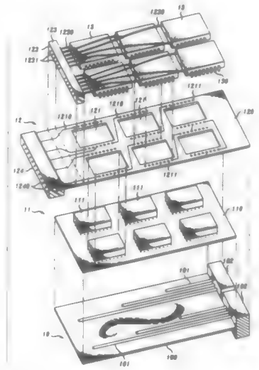
CIRCUIT CARD ASSEMBLY

Ronald A. Nordin, Naperville, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 8, 1993, Ser. No. 14,936

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—700 **9 Claims**



1. A circuit card assembly comprising

a printed wiring circuit mounting a plurality of components and connectors and having conducting paths interconnecting ones of the components and ones of the components with the connectors,

a heat transfer assembly including a heat sink and means, assembled to said printed wiring circuit and engaging ones of the components, for transferring heat generated by the engaged components to the heat sink for dissipation,

said printed wiring circuit comprising a generally rectangular configured board having a plurality of apertures formed therein with each aperture having a plurality of contacts formed around a perimeter of the aperture with each contact engaging a corresponding terminal of a component positioned over the aperture and with at least some of the contacts coupled with an electrical conducting path formed on the printed wiring circuit board, said means for transferring heat comprising a plurality of pedestals each projecting through an aperture and having a first surface and second surface opposite said first surface, said first surface engaging one of said components and said second surface thermally coupled to said heat sink.

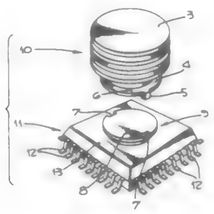
VOL 1167 ISS 1 OC 4 1994 UMI

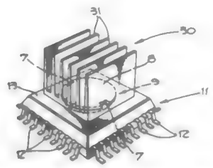
5,353,193

HIGH POWER DISSIPATING PACKAGES WITH MATCHED HEATSPREADER HEATSINK ASSEMBLIES

Chok J. Chia, Campbell; Manian Alagaratnam; Qwai H. Low, both of Cupertino, and Seng-Sool Lim, San Jose, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Feb. 26, 1993, Ser. No. 23,981
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—704 **18 Claims**





1. A heatsink assembly for radiating heat away from a packaged electronic device comprising:

a removable heatsink unit, said unit having at least one fin and a coupling collar;

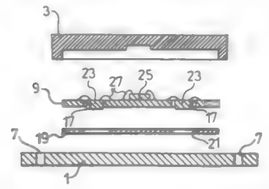
a heatspreader having a platform, at least one tab and an inner collar, said platform being attached to said inner collar and said tab being disposed along the periphery of said platform, said heatspreader adapted to be in thermal contact with the packaged electronic device and adapted to receive a portion of said coupling collar of said heatsink unit within said tab such that when said heatsink unit is turned, said coupling collar removably engages said platform of said heatspreader, thereby removably coupling said heatsink unit to said heatspreader.

5,353,194

MODULAR POWER CIRCUIT ASSEMBLY

Giuseppe Libretti, and Paolo Casati, both of Milan, Italy, assignors to SGS-Thomson Microelectronics s.r.l., Milan, Italy

Continuation of Ser. No. 876,778, Apr. 30, 1992, abandoned. This application Oct. 24, 1993, Ser. No. 142,723
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—707 **22 Claims**



1. A modular construction power circuit assembly comprising;

a thin metal plate with holder and heat sink functions;

a plurality of electronic devices having metallized pads as terminals thereof;

means of electrical interconnection comprising conductors which are connected to said metallized pads;

terminating connectors for connecting the circuit assembly to external electric circuits;

a unitary plastics material body enclosing the electronic devices and the electrical interconnection means and coupled to the thin metal plate to leave at least a surface portion of one of its faces and the terminating connectors exposed and covering the electronic devices; and

a printed circuit board joined to the thin metal plate, the printed circuit on said board carrying some of the interconnection means including the terminating connectors, and having at least one of the electronic devices attached directly to the thin metal plate extending therefrom through an opening in the printed circuit board;

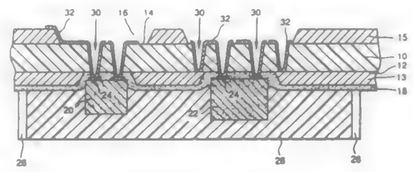
wherein the printed circuit board is joined to the thin metal plate by posts secured to the thin metal plate and the posts providing a gap between the board and the plate, and the plastics body extends in the gap provided between the board and the plate by the posts.

5,353,195

INTEGRAL POWER AND GROUND STRUCTURE FOR MULTI-CHIP MODULES

Raymond A. Fillion, Niskayuna, and Robert J. Wojnarowski, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 9, 1993, Ser. No. 87,433
Int. Cl.[5] H05K *7/02*
U.S. Cl. 361—760 **19 Claims**



1. A multi-chip module comprising:

a substrate;

a plurality of chips including chip pads thereon and supported on said substrate; s a dielectric layer over said chips and said substrate, said dielectric layer having a connection surface and a substrate surface, each of said surfaces having a respective metallization plane thereon with plane openings patterned on each of said surfaces, said dielectric layer further containing a plurality of vias, each of said vias being aligned with a predetermined respective one of said chip pads and a predetermined portion of the metallization plane on the substrate surface;

an adhesive layer situated between said substrate and the substrate surface of said dielectric layer; and

a pattern of electrical conductors extending through said vias to interconnect selected ones of said chips and selected portions of the metallization planes.

5,353,196

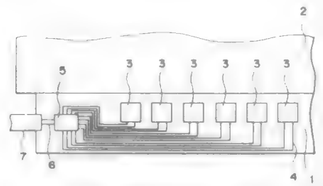
METHOD OF ASSEMBLING ELECTRICAL PACKAGING STRUCTURE AND LIQUID CRYSTAL DISPLAY DEVICE HAVING THE SAME

Masanori Takahashi, Chigasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 957,822, Oct. 8, 1992, Pat. No. 5,299,093. This application Dec. 20, 1993, Ser. No. 169,627
Claims priority, application Japan, Oct. 9, 1991, 3-289509
Int. Cl.[5] H05K *7/02*
U.S. Cl. 361—760 **1 Claim**

1. A method for assembling an electrical circuit assembly comprising the steps of:

preparing a substrate on which a plurality of output wirings and a plurality of input wirings exceeding the output wirings in number are formed;



arranging a plurality of semiconductor chips on the substrate and connecting the chips to the input wirings; and

arranging a wiring board for connecting the input wirings to the output wirings on the substrate.

5,353,197

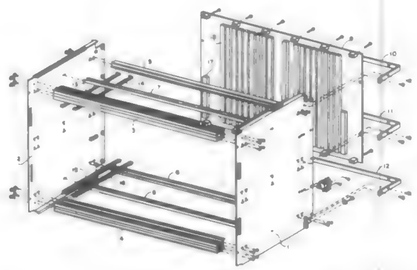
Patent Not Issued For This Number

5,353,198

SIDE PLATES FOR RETROFIT CARD FILE ADAPTER ASSEMBLY

Zbigniew Kabat, Chicago, and Richard A. Walton, Carol Stream, both of Ill., assignors to AG Communication Systems Corporation, Phoenix, Ariz.

Filed Aug. 21, 1992, Ser. No. 933,281
Int. Cl.[5] H05K *7/14;* **A47G** *19/08*
U.S. Cl. 361—802 **5 Claims**



1. A plurality of side plates for use in an adapter for supporting a plurality of printed wiring cards of a first size, adapted for positioning on an electronic equipment rack equipped with means to support a plurality of printed wiring cards of a second size, said adapter including a plurality of parallel positioned extrusions each extending from a first one to a second one of said side plates, said plates positioned vertically and parallel to each other, said side plates each comprising:

a single metal sheet having the thickness of a printed wiring card of said second size and the same vertical dimension as said printed wiring cards of said second size;

each of said side plates further including a top and bottom inward facing lip;

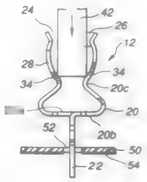
said side plates adapted to be positioned on said support means of said electronic equipment rack as an alternative to printed wiring cards of said second size.

5,353,199

METHOD OF MOUNTING A FUSE HOLDING CLIP FOR A FUSE HOLDER AND A FUSE HOLDING CLIP THEREFOR

Kozi Ohashi, Asaka, Japan, assignor to Kyoshin Kogyo Co., Ltd., Japan

Filed Mar. 18, 1993, Ser. No. 33,496
Claims priority, application Japan, Mar. 25, 1992, 4-097454
Int. Cl.[5] H05K *7/02*
U.S. Cl. 361—809 **5 Claims**



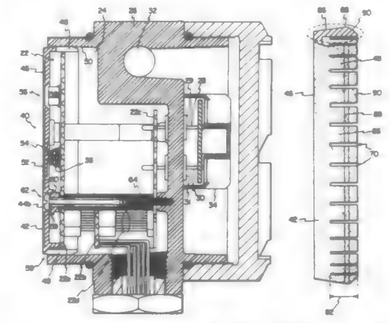
1. A method of mounting a fuse holding clip on a circuit board by an automatic inserting machine, said fuse holding clip comprising a fuse holding clip body including a generally U-shaped curved piece having upwardly extending, opposing side walls and mounting legs integrally provided with said clip body to extend through mounting holes in said circuit board, said method comprising the steps of engaging a leading edge of a pusher of said automatic part inserting machine onto at least partially upwardly facing pusher engaging means provided on inner faces of said side walls which are to support a lower portion of a fuse to be held by said fuse holding clip and pushing down said pusher until an outer bottom of said clip body engages an upper face of the circuit board.

5,353,200

PROCESS TRANSMITTER WITH INNER CONDUCTIVE COVER FOR EMI SHIELDING

Joel J. Bodin, New Hope; Garrie D. Huisenga, Plymouth; Theodore L. Johnson, St. Louis, and William C. Rauth, Bloomington, all of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Filed Feb. 24, 1993, Ser. No. 21,802
Int. Cl.[5] H05K *9/00*
U.S. Cl. 361—816 **9 Claims**



1. A transmitter having an actuatable switch, comprising:

a housing having electrically conductive walls surrounding a cavity, which cavity has an open end;

an electronics assembly adapted to fit within the cavity, the electronics assembly further including the actuatable switch;

an inner cover positionable over the open end to cover the

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electronics assembly, the inner cover including a plate and a sleeve projecting therefrom, the plate including a deflectable button portion alignable with the actuatable switch and accessable from the open end while the electronics assembly is energized; and

an outer cover adapted to removeably screw onto the housing over the inner cover;

wherein the inner cover is electrically conductive, and wherein the sleeve is sized to frictionally mate with the electrically conductive walls of the housing to shield the electronics assembly from electromagnetic interference.

5,353,201

SHIELD DEVICE FOR PRINTED CIRCUIT BOARDS

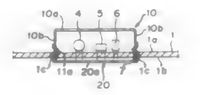
Osamu Maeda, Osaka, Japan, assignor to Funai Electric Co., Ltd., Osaka, Japan

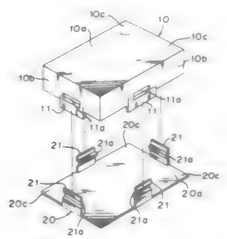
Filed May 22, 1992, Ser. No. 887,070

Claims priority, application Japan, Nov. 25, 1991, 3-104623[U]

Int. Cl.[5] H05K *9/00*

U.S. Cl. 361—816 **3 Claims**





1. A device for shielding electronic parts of a printed circuit board comprising:

said printed circuit board having a working surface adjacent to said electronic parts and a plurality of slits passing therethrough;

a shield body having a cover plate and a plurality of side walls, said cover plate and said side walls forming a covering space for covering said electronic parts, a plurality of legs, each leg extending from a side wall and each said leg having a recess and being connected to a group of said printed circuit boards;

a first plate receiving member facing said shield body, said receiving member having a plurality of engaging parts extending therefrom, each said engaging part having a projection engaging said recess of a corresponding leg of said shield body;

said engaging parts and said legs passing through said slits;

said receiving member having a plurality of sides forming a corner area at a junction of two adjacent sides, each said engaging part extending outwardly from a central portion of a corresponding side, the width of each said engaging part extending along said corresponding side and being smaller than the length of said side, whereby each said corner area of said receiving member is flat and unobstructed so as to provide improved cooperation between said shield body, said printed circuit board, and said receiving member; and

whereby in an assembled condition of said device, said electronic parts of said printed circuit board are shielded by said shield body in such a manner that said printed circuit board is supported by said receiving member so that said engaging parts passing through said plurality of slits engage said recesses above said working surface of said printed circuit board.

5,353,202

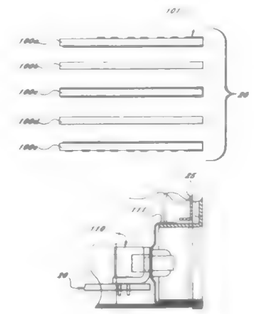
PERSONAL COMPUTER WITH SHIELDING OF INPUT/OUTPUT SIGNALS

Daniel F. Ansell, Coral Springs; Jeffrey W. Benck, Delray Beach; Thomas A. Bocchino; James W. Deiso, both of Boynton Beach; Jose E. Richards, Deerfield Beach; Mark L. Shipley, Lake Worth, and Robert D. Wysong, Boca Raton, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 556,924, Jul. 20, 1990, abandoned. This application Jan. 24, 1994, Ser. No. 185,723

Int. Cl.[5] H05K *9/00*

U.S. Cl. 361—818 **9 Claims**



1. A microcomputer comprising:

a chassis for mounting a multilayer printed circuit board and having a base and a panel, at least portions of said chassis being connected to a system ground for dissipation of electromagnetic interference,

a multilayer printed circuit board mounted on said chassis for interconnecting operating components of the microcomputer and having a side edge portion extending adjacent said panel, certain interior layers of said multilayer printed circuit board defining adjacent said side edge portion conductive pathways for input/output signals flowing to and from the operating components of the microcomputer,

at least one connector mounted on said multilayer printed circuit board for passing input/output signals to and from said conductive pathways, and

a shielding structure having two elements, each of said elements functioning for (i) shielding against adverse effects otherwise possibly arising from passage of input-/output signals to and from said conductive pathways and (ii) structurally reinforcing said side edge portion of said multilayer printed circuit board, said shielding structure being operatively connected to a portion of said chassis connected to a system ground and substantially enclosing a region through which said input/output signals pass between said conductive pathways and said panel.

5,353,203

HEADLIGHT FOR A VEHICLE

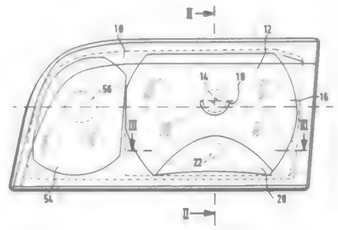
Johannes-Gerhard Bertling, Vaihingen/Enz; Bodo Remus, Reutlingen, and Klaus Jahnel, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep of Germany

Filed Sep. 20, 1993, Ser. No. 124,407

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1992, 4238274

Int. Cl.[5] B60Q *1/04*

U.S. Cl. 362—61 **9 Claims**



1. Headlight for a vehicle, said headlight comprising reflector means including an upper reflector portion associated with a light source for making a low beam and a lower reflector portion associated with another light source from making a fog light beam; and cover means through which said light beams pass, wherein said reflector means includes both said upper and lower reflector portions and is formed as one-piece.

5,353,204

VEHICULAR HEADLAMP ASSEMBLY HAVING AUXILIARY LAMP

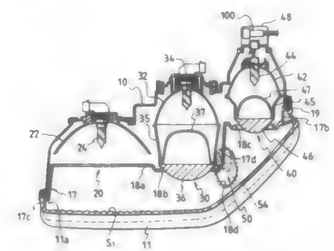
Naoshi Kawamura, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1993, Ser. No. 132,273

Claims priority, application Japan, Mar. 8, 1993, 5-46222

Int. Cl.[5] B60Q *1/18*

U.S. Cl. 362—61 **9 Claims**



1. A vehicle headlamp assembly with an auxiliary lamp, comprising: a lamp body defining a lamp chamber, a transparent front cover applied to a front opening of said lamp body, a lamp for forming a normal running beam, a projection lamp including a projection lens for forming a passing beam, and said auxiliary lamp disposed side by side within said lamp chamber, a mirrored inner cover having an opening through which a front end of said projection lamp is exposed, a bulb for said auxiliary lamp supported by said lamp body and disposed at a position located aslant on a side of said projection lens when viewed from the front in a state such that said bulb is directed forward, a lower edge of said inner cover located adjacent said bulb being substantially horizontally extended to form a horizontal extended part, a hole from which a front end of said bulb for said auxiliary lamp projects being formed in said horizontal extended part, and a lens for said auxiliary lamp having a lens step area formed thereon for guiding light from said bulb in a predetermined direction mounted in said hole.

5,353,205

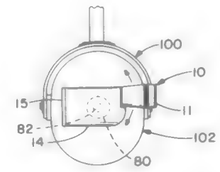
COCKPIT BLACKOUT SEARCH & SURVIVAL LIGHT

H. John Hudak, 2392 E. Market St., Akron, Ohio 44312

Filed Jan. 29, 1993, Ser. No. 11,237

Int. Cl.[5] F21L *15/14*

U.S. Cl. 362—105 **14 Claims**



1. A lighting device, comprising:

front and back portions and sides, an electronic circuit with a light source, said light source positioned near the front of the device, connected in series to a power source and a switch means within the device, the switch means having first and second terminals and open and closed positions;

wherein the light source is a bulb with a lighting portion and a conductive stem portion, said stem having a conductive flange projecting from the stem; said flange serving as a first terminal for the switch means; and

wherein further the power source comprises at least one battery;

a means for attaching associated with a side of the device for rotatably, detachably attaching the lighting device to a headpiece worn by a person;

a hollow case with suitable dimensions for holding the at least one battery and the switch means;

a removable back housing, with inner and outer surfaces, interfitted to the back of the case;

a tubular collar with interior and exterior threading projecting outward at the front of the case;

a hollow switch assembly having a conductive exterior wall to serve as the second terminal for said switch means, and exterior threads whereby said switch assembly is threaded into the collar; said switch assembly further having a non-conductive internal portion; said switch assembly adapted to receive the bulb;

a non-conductive cuff displaced in the switch assembly to surround and insulate the stem and conductive flange of the bulb, whereby the bulb and cuff are adapted for longitudinal movement in the switch assembly;

a switch activator with interior and exterior threads threadably installed on the outside of the collar;

a funnel shaped reflector, with wide and narrow portions, a larger and a smaller opening, said reflector positioned in the switch activator with the bulb projecting through the narrow portion and into the wide portion of the reflector, and the narrow end of the reflector abutting against the non-conductive cuff;

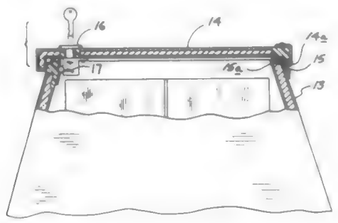
a len- positioned over the wider opening of the funnel;

a lens focusing cap having internal threads, threadably installed over the switch activator for securing the reflector and lens in position at the front of the device; and,

a spring disposed between the back housing and a battery, of said at least one battery, in alignment with the bulk and said non-conductive cuff to bias the aligned battery, of said at least one battery, the bulb and said cuff toward the front of the device.

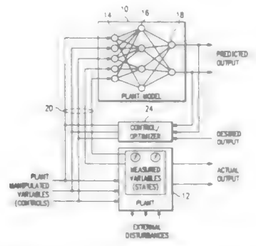
VOL 1167 ISS 1 OC 4 1994 UMI

5,353,206
IN-GROUND STORAGE CONTAINER
James M. Fejes, 1541 W. Crone Ave., Anaheim, Calif. 92802
Filed Jun. 21, 1993, Ser. No. 78,925
Int. Cl.[5] B65D *43/16*; F21V *33/00*
U.S. Cl. 362—154 4 Claims



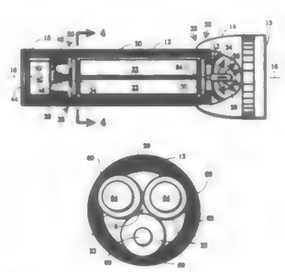
1. An in-ground storage container, comprising,
a container having a truncated, pyramidal configuration, including a container floor, and
a plurality of container side walls, and
a container lid, the lid including a lid hinge hingedly mounting said lid to one of said side walls, the lid including a lid latch mounted to said lid spaced from said lid hinge for cooperation with a further one of said side walls, wherein a further one of said side walls and the one of said side walls are arranged in a facing mirror image relationship relative to one another, and
said lid hinge includes a generally U-shaped first lip mounted to said lid, and a generally U-shaped second lip mounted to said one of said side walls permitting ease of separation of said lid from said one of said side walls, the lid including a lid latch arranged for securement to said further one of said side walls, and
a plurality of central storage housings removably mounted relative to said container positioned within said container, wherein each storage housing includes a storage housing front wall, and each storage housing front wall includes a plurality of slide drawers removably mounted relative to said storage housing front wall, with each storage housing including a storage housing top wall having a top wall handle.

5,353,207
RESIDUAL ACTIVATION NEURAL NETWORK
James D. Keeler; Eric J. Hartman; Kadir Liano, and Ralph B. Ferguson, all of Austin, Tex., assignors to Pavilion Technologies, Inc., Austin, Tex.
Filed Jun. 10, 1992, Ser. No. 896,755
Int. Cl.[5] G06F *15/00*; G05B *13/00*
U.S. Cl. 364—164 13 Claims



1. A control network for controlling a plant having plant control inputs for receiving plant control variables and desired plant outputs, the plant outputs being a function of the plant control variables and external influences on the plant, comprising:
a control network input for receiving as network inputs the current plant control variables and desired plant outputs;
a control network output for outputting predicted plant control variables necessary to achieve the desired plant outputs;
a processing system for processing the received plant control variables through an inverse representation of the plant that represents the dependencies of the plant output on the plant control variables parameterized by an estimation of the external influences to provide the predicted plant control variables to achieve the desired plant outputs, said processing system having:
an estimation network for estimating the external influences on the plant and output estimated external influences,
means for parameterizing the inverse representation of the plant with the estimated influences.
a first intermediate output for providing a predicted plant output,
a first intermediate processing system for receiving the plant control variables from said control network input and the estimated external influences from said estimation network for processing through a predictive model of the plant to generate the predicted plant outputs for output from said intermediate output,
an error generation device for comparing the predicted plant outputs to the desired plant outputs and generating an error representing the difference therebetween,
a second intermediate processing system for processing the error through the inverse representation of the plant that represents the dependencies of the plant output on the plant control variables parameterized by the estimated external influences to output predicted control variable change values,
a control system for inputting said predicted control variable change values to the input of said first intermediate processing system for summing with the control variable input to provide a summed control variable value, and processing the summed control variable through said first processing system to minimize said error and output the summed control variable value as the predicted control variables; and
an interface device for inputting the predicted plant control variables that are output by said control network output to the plant as plant control variables to achieve the desired plant outputs.

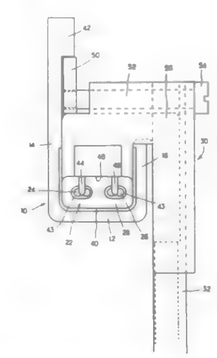
5,353,208
HIGH INTENSITY COMPACT FLASHLIGHT
Larry Moore, 211 Jennifer La., P.O. Box 70, Cottonwood, Ariz. 86326
Filed Dec. 29, 1992, Ser. No. 997,881
Int. Cl.[5] F21L *7/00*
U.S. Cl. 362—202 17 Claims



1. A flashlight comprising:

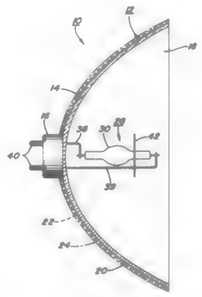
an elongated hollow body means for holding at least three batteries arranged side by side, said hollow body means comprising a single chamber having longitudinal grooves in an interior wall thereof, each groove being shaped to receive a portion of a different battery, said longitudinal grooves being equally spaced around said interior wall, said hollow body means having an exterior surface separated from said single chamber by a wall thickness which is smaller adjacent said longitudinal grooves and larger between said longitudinal grooves;
first electrical interconnection means coupled to first ends of the batteries and aligned thereto for electrically interconnecting first ends of a first pair of the batteries; and
second electrical interconnection means coupled to second ends of the batteries for electrically interconnecting second ends of a second pair of the batteries.

5,353,209
ELECTRICAL DISTRIBUTION AND/OR LIGHTING SYSTEM WITH CONTINUOUS CONNECTION POINT
Roberto Foottit, 61 bis, rue des Peupliers, 92100 Boulogne, France
Filed Aug. 6, 1992, Ser. No. 925,109
Claims priority, application France, Aug. 9, 1991, 91 10196; Aug. 9, 1991, 91 10197
Int. Cl.[5] H01R *33/06*
U.S. Cl. 362—226 10 Claims



1. An electrical distribution system with a variable connection point, comprising:
an elongated supporting channel having a U-shaped cross section defining first and second branches and a bottom, the first and second branches being substantially vertical when the channel is substantially horizontal, said first branch being longer than the second branch and being adapted for fastening with a wall, said second branch having a free edge;
an electric conductor arranged in said channel along the length thereof and lying on the bottom of said channel, said electric conductor including a perforable insulating material and at least two conductive cores encased within said insulating material; and
movable connecting and supporting means comprising:
a seat engagable with said channel between said channel branches, said seat having a first face adapted to face said electric conductor when engaged in said channel, said seat being provided with at least two electrically conductive prongs projecting from said first face, each prong having a perforating free end adapted to perforate the insulating material of the electric conductor;
an electrical connector mechanically connected to said seat;
electrical connecting means for connecting said electrical connector and said prongs; and
locking means connected to said seat and including a manually operable locking member movable between a first position wherein said seat can be readily engaged within said channel and a second position wherein said locking member is applied against said channel, to provide mechanical locking of said seat within said channel and to cause said prongs to perforate the insulating material, whereby an electrical contact is established between said prongs and the cores of the electric conductor.

5,353,210
REFLECTOR LAMP WITH LOW UV EMISSION
Jack M. Strok, Garrettsville; Thomas G. Parham, Gates Mills, and Curtis E. Scott, Mentor, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Continuation-in-part of Ser. No. 419,233, Oct. 10, 1989, Pat. No. 5,143,445, and a continuation-in-part of Ser. No. 669,820, Mar. 15, 1991, abandoned. This application Aug. 27, 1992, Ser. No. 936,157
Int. Cl.[5] F21V *9/00*
U.S. Cl. 362—293 3 Claims



1. A reflector lamp comprising a vitreous, light-transmissive reflector having a visible light-reflecting coating on its exterior surface and containing a source of visible and UV light radiation within, wherein said emitted UV radiation is absorbed by (i) said reflector, (ii) said light-reflecting coating, (iii) a UV absorbing coating disposed between said light-reflecting coating and said exterior reflector surface, or combination thereof.

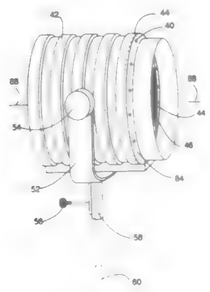
5,353,211
LIGHT MODIFIER
Andrew V. Merko, 1294 Sunny Oaks Cir., Altadena, Calif. 91001
Filed Jul. 20, 1993, Ser. No. 93,652
Int. Cl.[5] F21V *29/00*
U.S. Cl. 362—294 11 Claims

1. A light modifier of the type using a combined modeling/-strobe light source for illumination and capable of being mounted on a stand comprising:
(a) a hollow plastic housing having a longitudinal axis, an open front, an open rear, an inside, and an outside;
(b) a light carrier slidably mounted inside said hollow plastic housing so that said light carrier can move parallel to said longitudinal axis; said carrier being adapted to detachably receive said combined modeling/strobe light source so that light is projected in a direction parallel to said longitudinal axis;
(c) a plastic fresnel lens, having a smooth, frosted side facing the inside light source and a faceted side facing the outside, detachably mounted near said open front, inside said hollow plastic housing, and perpendicular to said longitu-

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dinal axis so as to allow air flow between said plastic fresnel lens and said hollow plastic housing;

(d) a light-baffle plate, slightly smaller than said hollow plastic housing in order to allow free air circulation between said light-baffle plate and said hollow plastic housing, attached to said light carrier so that light is essentially prevented from escaping from said open rear;



(e) means for securing said light carrier at a desired location within said hollow plastic housing; said means for securing being accessible from outside;

(f) means for mounting said hollow plastic housing on said stand; and

(g) means for adjusting the angle of said longitudinal axis relative to said stand

(h) means for securing said longitudinal axis at a particular horizontal rotational angle relative to said stand.

5,353,212

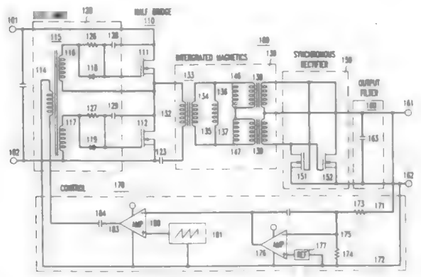
ZERO-VOLTAGE SWITCHING POWER CONVERTER WITH RIPPLE CURRENT CANCELLATION

Thomas P. Loftus, Jr., Garland, Tex., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 20, 1992, Ser. No. 871,364

Int. Cl.[5] **H02M** *3/335*

U.S. Cl. 363—17 **6 Claims**



1. A bridge type power converter in which conduction/non-conduction transitions of its power switching transistors occur at zero voltage,

comprising:

an input circuit for accepting a source of energy;

first and second power switching transistors connected in series circuit and the series circuit connected in shunt with the input circuit; a first conducting interval of the first power switching transistor being substantially less in duration than a second conducting interval of the second power switching transistor,

a power transformer having a primary winding connected to a common node joining the first and second power switching transistors, and a secondary winding;

a rectifier circuit connected to the secondary winding for rectifying the voltage output of the secondary winding;

an output circuit for coupling the rectified voltage of the rectifier circuit to a load to be energized;

WHEREIN THE IMPROVEMENT COMPRISES:

magnetic current ripple cancellation circuitry, including:

first and second inductance devices having inductance values in a ratio equal to a ratio of the first and second conducting intervals;

the first and second inductance devices being connected between the secondary winding and the rectifier circuit; and

the first and second inductance device being included in a loop of three inductance devices having a third inductance device shunting the secondary winding.

5,353,213

CIRCUIT CONFIGURATION FOR A SELF-OSCILLATING BLOCKING OSCILLATOR SWITCHED-MODE POWER SUPPLY

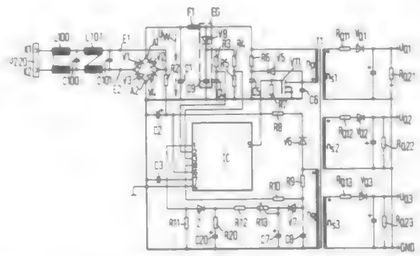
Ernst Paulik, Hilgertshausen, and Rainer Dangschat, Landsham, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 725,631, Jul. 3, 1991, abandoned. This application Aug. 18, 1993, Ser. No. 108,771

Claims priority, application European Pat. Off., Jul. 3, 1990, 90112712

Int. Cl.[5] **H02M** *3/338*

U.S. Cl. 363—19 **9 Claims**



1. A circuit configuration for a self-oscillating blocking oscillator switched-mode power supply for drawing sinusoidal current from a power source, comprising a transformer having a primary winding, a bridge rectifier having an output terminal for providing a positive voltage, a semiconductor switch element for clocked application of an alternating voltage rectified by said bridge rectifier and unsmoothed to said primary winding, a control device having input terminals, an RC element providing a primary current signal, a voltage divider coupled in parallel to said RC element and providing a undervoltage detection signal for said alternating voltage, and a one-way rectifier configuration having an input side and an output side, said primary current signal being applied to one of said input terminals of said control device, said undervoltage detection signal being applied to another one of said input terminals of said control device, said control device triggering in pulse-width modulation mode said semiconductor switch element according to the primary current signal, said input side of said one-way rectifier being connected to said output terminal of said bridge rectifier, said RC element and said voltage divider being connected to said output side of said one-way rectifier.

5,353,214

NEON CIRCUIT INCLUDING A PROTECTIVE STRUCTURE

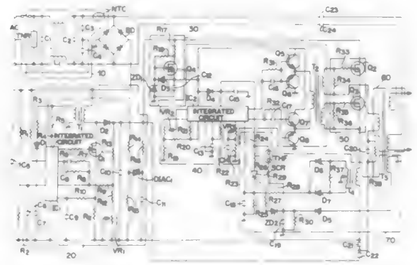
Hyung-Kwang Kim, Seoul, Rep. of Korea, assignor to DNF Electronics Co., Ltd., Kyungbuk, Rep. of Korea

Filed Dec. 14, 1992, Ser. No. 990,240

Claims priority, application Rep. of Korea, Oct. 8, 1992, 92-18443

Int. Cl.[5] **H02H** *7/122;* **H05B** *37/02*

U.S. Cl. 363—56 **10 Claims**



1. A neon circuit including a protective function for providing an adjustable output voltage and luminous intensity comprising:

a line filter including a surge control element, a transformer, a plurality of condensers and a power thermistor, so that in rushing electric current is prevented;

a high power factor compensation circuit operatively connected to said line filter and connected to an output transformer via two condensers, the high power factor compensation circuit being operatively connected to an integrated circuit of a control circuit via a supplementary power source of the control circuit, so that said high power factor compensation circuit oscillates stably;

said control circuit including a field effect transistor which produces constant voltage regardless of an input power source, a zener diode, a diode, a plurality of resistances and a condenser; and

means for connecting said control circuit to an invert circuit, said invert circuit operatively connected to the output transformer, said invert circuit including means to output high current, so that the output transformer discontinues an output by connection to an integrated circuit of the control circuit through a protective circuit.

5,353,215

TRACKING RUN/STANDBY POWER SUPPLIES

Aaron H. Dinwiddie, and William J. Testin, both of Indianapolis, Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Continuation of Ser. No. 890,640, May 29, 1992, abandoned. This application Dec. 6, 1993, Ser. No. 162,817

Int. Cl.[5] **H02M** *7/23;* **H01J** *29/70;* **H04N** *5/63*

U.S. Cl. 363—65 **13 Claims**

1. A power supply system, comprising:

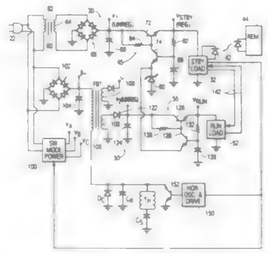
an unswitched voltage source energized during first and second modes of operation;

first voltage regulating means energized by said unswitched voltage source for energizing a first variable load at a first regulated voltage level and generating a first control current which varies with said first variable load;

a source of a reference voltage level coupled to said first voltage regulating means for establishing said first regulated voltage level, said reference voltage level being biased by said first control current;

a switched voltage source energized only during said second mode of operation;

second voltage regulating means energized by said switched voltage source for energizing a second variable load at a second regulated voltage level and generating a second control current which varies with said second variable load; and,



said source of said reference voltage level also being coupled to said second voltage regulating means for establishing said second regulated voltage level, said source of said reference voltage level also being biased by said second control current, each one of said first and second regulated voltage levels tracking variations of the other one of said first and second regulated voltage levels.

5,353,216

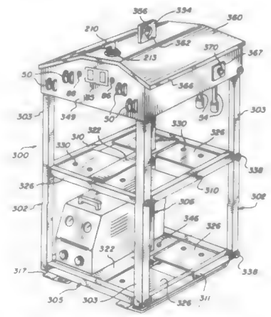
INVERTER POWER SOURCE RACK

James D. Ayers, Bear, and Michael J. Ayers, Wilmington, both of Del., assignors to Urie & Blanton Company, Inc., Chester, Pa.

Continuation-in-part of Ser. No. 855,765, Mar. 23, 1992, abandoned. This application Jun. 22, 1993, Ser. No. 81,430

Int. Cl.[5] **H02M** *1/00*

U.S. Cl. 363—144 **28 Claims**



1. An inverter power source rack comprising:

(a) a light weight moveable first rack consisting of an open frame having a centrally positioned spar therewithin, said open frame having at least one open level shaped to support at least one welding or plasma are inverter power source, comprising:

(i) an electrical enclosure positioned on top of said open frame of said first rack, said enclosure having a detachable cover positioned thereon;

(ii) disconnecting means for receiving an external branch circuit electrical power supply,

(iii) means for providing a main interruptible electrical

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power from the disconnecting means to a first common connection bus,

(iv) means for providing at least one isolated and interruptible electrical power supply from the first common connection bus to at least one means for selectively providing electrical power to at least one said inverter power source; and

(v) mechanical interlocking means to prevent removal of said cover while said disconnecting means are energized by said external branch circuit electrical power supply, said mechanical interlocking means comprising handle means positioned on said cover and detachably engaged with said disconnecting means,

(b) a light weight moveable second rack consisting of an open frame having a centrally positioned spar therewithin, said open frame having at least one open level shaped to support at least one said welding or plasma arc inverter power source, comprising:

(vi) an electrical enclosure positioned on top of said open frame of said second rack;

(vii) means for providing the main interruptible electrical power of the first rack to a second common connection bus, and

(viii) means for providing at least one isolated and interruptible electrical power supply from the common connection bus to at least one means for selectively providing electrical power to at least one said inverter power source, whereby the first rack detachably engages the second rack to provide means for selectively providing isolated and interruptible electrical power to at least two said inverter power sources.

5,353,217

CONTROL SYSTEM WITH PILOT CONTROLLER, ESPECIALLY FOR A ROLL STAND

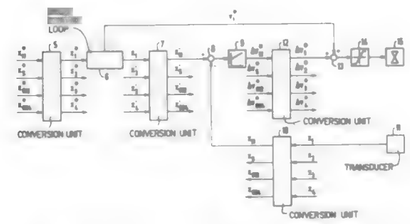
Andre Berghs, Neunkirchen a/Br.; Hans-Peter Tröndle, Forchheim; Peter Hopf, Nürnberg; Georg Bytomski, Baiersdorf, and Hans-Joachim Felkl, Esslingen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 24, 1993, Ser. No. 21,703

Claims priority, application European Pat. Off., Feb. 24, 1992, 92103082.1

Int. Cl.[5] G05B *13/04*; G06F *15/46*

U.S. Cl. 364—149 **25 Claims**



1. A control system for controlling a process, said control system being externally supplied with a guide value, and comprising:

a) an actuator having an input;

b) a transducer adapted to measure an actual value of said process and having an output adapted to provide said measured actual value;

c) a controller, said controller

i) having a first input, and a second input, said second input being coupled to said output of said transducer,

ii) adapted to determine a controller manipulated variable based on its inputs, and

iii) having an output adapted to provide said controller manipulated variable;

d) a model control loop, said model control loop

i) having an input adapted to accept said guide value,

ii) adapted to determine a pilot control value based on said guide value and a predetermined expected value,

iii) adapted to continuously determine an expected value for said actual value, said expected value being based on said pilot control value,

iv) adapted to determine a reference value from said expected value, and

v) having a first output adapted to provide said determined pilot control value, and a second output adapted to provide said determined reference value, said second output being coupled with said first input of said controller; and

e) an adder, said adder

i) having a first input being coupled to said output of said controller, and a second input being coupled with said first output of said model control loop,

ii) adapted to add said pilot control value onto said controller manipulated variable to determine an actuator signal, and

iii) having an output adapted to provide said actuator signal and being coupled to said input of said actuator.

5,353,218

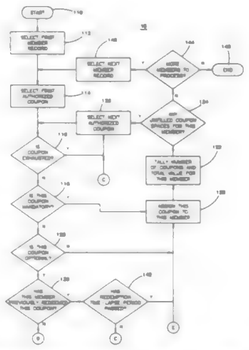
FOCUSED COUPON SYSTEM

James P. De Lapa, Grand Rapids, and Charles F. Howe, Spring Lake, both of Mich., assignors to Ad Response MicroMarketing Corporation, St. Joseph, Mich.

Filed Sep. 17, 1992, Ser. No. 947,285

Int. Cl.[5] G06F *15/21*

U.S. Cl. 364—401 **51 Claims**



1. A computer implemented method of generating and redeeming coupons to provide discounts for particular purchases including:

generating with a computer an original plurality of discount coupons, each encoded with a unique user identification number and a unique coupon identification number;

printing with a printer the generated original plurality of coupons;

transmitting said original plurality of discount coupons to a user corresponding to the user identification number;

scanning said user and coupon identification numbers of redeemed coupons to establish which of said original plurality of discount coupons said user redeems;

generating with said computer another plurality of discount coupons, with at least one of said another plurality of discount coupons selected as a function of at least one of which particular one or ones of said original plurality of discount coupons said user redeems and which particular one or ones of said original plurality of discount coupons said user does not redeem, in order to increase the likelihood of redemption of said another plurality of discount coupons; and

printing with a printer said another plurality of discount coupons and transmitting said another plurality of discount coupons to said user corresponding to the user identification number.

5,353,219

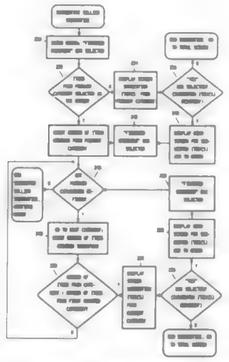
SUGGESTIVE SELLING IN A CUSTOMER SELF-ORDERING SYSTEM

Raymond J. Mueller, Littleton; Christopher K. Neimeister, Golden; John R. Counter, Boulder, and Michael P. Marcus, Lakewood, all of Colo., assignors to Management Information Support, Inc., Lakewood, Colo.

Division of Ser. No. 436,605, Nov. 15, 1989, Pat. No. 5,235,509, which is a continuation-in-part of Ser. No. 373,381, Jun. 28, 1989, abandoned. This application Jun. 10, 1993, Ser. No. 75,180

Int. Cl.[5] G06F *15/24*

U.S. Cl. 364—405 **15 Claims**



1. A method for suggestive selling among a plurality of food items, comprising:

providing processing means and a computer terminal having a display screen;

establishing priority among a plurality of food items that are to be suggested for possible purchase by 1 customer, said plurality of food items including at least a first food item category and a second food item category different from said first food item category, said first food item category being one of sandwiches, fries, drinks and desserts and said second food item category being another one of sandwiches, fries, drinks and desserts, each of said first food item category and said second food item category being represented on said display screen using separate menu indicia and, for each of said first and second food item categories, first and second food indicia, respectively, represent food items thereof;

obtaining a first customer order of one or more food items using said processing means by displaying firstly said first food indicia representative of food items of said first category on said display screen while said display screen is free of said second food indicia;

determining using said processing means that an input was received indicating that the first customer order was finished after at least one food item of said first category of food items was ordered;

comparing the first customer order with said first category of said food items using said processing means;

providing suggestive selling indicia for said second category of food items to the customer using said computer terminal display screen, independently of which one of said sandwiches, fries, drinks and desserts is said first food item category, when at least one food item of said first category is selected by the customer; and

displaying secondly, using said computer terminal display screen, said second food indicia separately from and not at the same time as said first food indicia, said displaying of said second food indicia being an initial display thereof on said display screen in connection with the first customer order and in which said displaying of said second food indicia occurs before any displaying of only said menu indicia representative of said first and second food item categories in connection with the first customer order.

5,353,220

APPARATUS AND METHOD FOR DISPLAYING THREE-DIMENSIONAL IMAGE AND ULTRASONIC DIAGNOSIS APPARATUS USING THE SAME

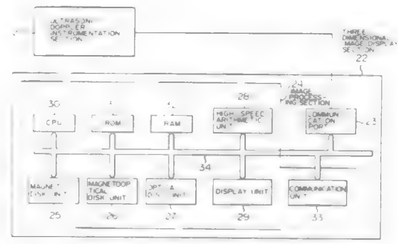
Yukio Ito; Ken Ishikawa, both of Matsudo; Osamu Sasahara, Kashiwa, and Yoshihiro Goto, Tokyo, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Mar. 19, 1993, Ser. No. 34,577

Claims priority, application Japan, Mar. 19, 1992, 4-092434

Int. Cl.[5] G06F *15/00*

U.S. Cl. 364—413.13 **18 Claims**



1. An apparatus for displaying a three-dimensional image based on a plurality of Doppler image data, comprising:

means for receiving said plurality of Doppler image data corresponding to a plurality of sliced planes of an object which are different from one another, respectively, said plurality of Doppler image data showing distributions of moving directions and moving velocities of a moving substance in said object on said plurality of sliced planes, respectively, and said moving directions including a first moving direction and a second moving direction;

means for obtaining each of first data showing distribution corresponding to each of a plurality of velocity ranges of said moving velocities among the distribution of the first moving direction of said moving substance on said each sliced plane based on each of Doppler image data;

means for obtaining each of second data showing distribution corresponding to each of said plurality of velocity ranges among the distribution of the second moving direction of said moving substance on said each sliced plane based on each of said Doppler image data;

means for obtaining each of first three-dimensional image data based on the data corresponding to each of said plurality of velocity ranges and also corresponding to all of said plurality of sliced planes among all of said first data;

means for obtaining each of second three-dimensional image data based on the data corresponding to each of said plurality of velocity ranges and also corresponding to all of said plurality of sliced planes among all of said second data;

means for obtaining third three-dimensional image data by synthesizing all of said first three-dimensional image data and all of said second three-dimensional image data with one another, the data corresponding to said respective

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first three-dimensional image data and said respective second three-dimensional image data among said third three-dimensional image data showing tones of color different from one another; and

means for displaying said three-dimensional image corresponding to said third three-dimensional image data.

5,353,221

TRANSLATION MACHINE CAPABLE OF TRANSLATING SENTENCE WITH AMBIGUOUS PARALLEL DISPOSITION OF WORDS AND/OR PHRASES

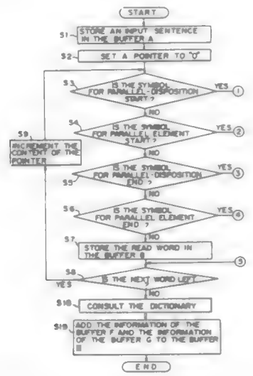
Takeshi Kutsumi, Yamato-Koriyama; Yoji Fukumochi, Ikoma; Shuzo Kugimiya, Nara; Ichiko Sata, Nara, and Tokuyuki Hirai, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 10, 1992, Ser. No. 819,223

Claims priority, application Japan, Jan. 11, 1991, 3-002114

Int. Cl.[5] G06F *15/38*

U.S. Cl. 364—419.05 **8 Claims**



1. A translation machine for translating into a target language a sentence including a plurality of words and/or phrases, a word and/or phrase group of a plurality of other words and/or phrases, a parallel-disposition start symbol just before said word and/or phrase group, and a parallel-disposition end symbol, said start symbol including a part-of-speech specifying symbol, said machine comprising:

a first storing means for storing said sentence in a first buffer;

a second storing means for storing sequentially in a second buffer a first information unit including said words and/or phrases and said other words and/or phrases, and the corresponding word locations thereof;

a third storing means for storing in a third buffer a second information unit including said part-of-speech specifying symbol, a word location just after said start symbol, and the number of said other words and/or phrases between said start symbol and said end symbol; and

an adding means for adding said second information stored in said third buffer to said first information stored in said second buffer.

5,353,222

DOCUMENT PROCESSING APPARATUS FOR CORRECTING ADDRESS AND FORMAT INFORMATION OF DOCUMENT INFORMATION UP TO A DESIGNATED PAGE

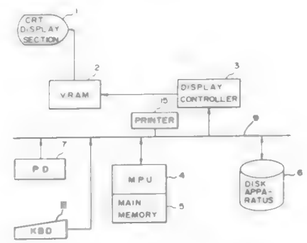
Kikuo Takise, Tokyo; Hiroshi Takakura, Yokohama; Takahiro Kato, Tokyo; Yukari Shibuya, Kawasaki, and Masaki Hamada, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 344,518, Apr. 24, 1989, abandoned, which is a continuation of Ser. No. 935,382, Nov. 26, 1986, abandoned. This application Mar. 2, 1993, Ser. No. 26,205

Claims priority, application Japan, Nov. 28, 1985, 60-267920; Jan. 31, 1986, 61-20524

Int. Cl.[5] G06F *3/14*

U.S. Cl. 364—419.17 **16 Claims**



1. A document processing system comprising:

first memory means for storing document information comprising characters;

second memory means for storing format information of the document information stored in said first memory means;

third memory means for storing address information of the document information and the format information stored in said first and second memory means, respectively, said third memory means storing the address information together in at least one page unit;

page designating means for designating a given page comprising at least part of the document information stored in said first memory means whose format is defined by the format information stored in said second memory means;

means for reading out the document information of the given page designated by said page designating means stored in said first memory means; and

control means for controlling, in response to the page designation by said page designating means, said first, second, and third memory means, and type-setting means and correcting means such that the address and format information of the document information and the document information up to the designated page is corrected by the correcting means and type-setting is executed by the type-setting means for the document information read out by said reading means,

wherein said control means controls said first, second, and third memory means such that type-setting is executed electronically by said type-setting means for the document information read out by said reading means.

5,353,223

MARINE NAVIGATION METHOD FOR GEOPHYSICAL EXPLORATION

John P. Norton; Noel D. Zinn, and Phillip J. V. Rapatz, all of Houston, Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Filed Oct. 26, 1992, Ser. No. 967,673

Int. Cl.[5] G01V *1/28;* **G04B** *17/00*

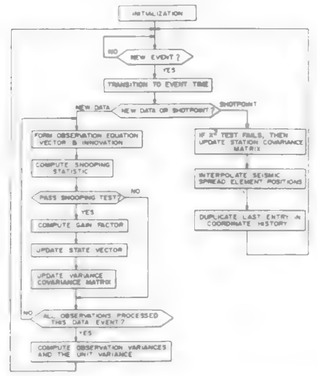
U.S. Cl. 364—421 **8 Claims**

1. A method of determining the location of source and receiver points in a navigation network utilizing a set of observations obtained from the navigation network, the method comprising the steps of:

(a) determining the variance of each observation;

(b) uncorrelating any correlated observation;

(c) computing a statistic or each uncorrelated observation and discarding the observations which fall outside a predetermined norm;



(d) sequentially processing the each uncorrelated observation to obtain estimated coordinates for each station in the network; and

(e) determining the location of the source and receiver points from the estimated station coordinates.

5,353,224

METHOD FOR AUTOMATICALLY CONTROLLING A TRAVELLING AND CLEANING OPERATION OF VACUUM CLEANERS

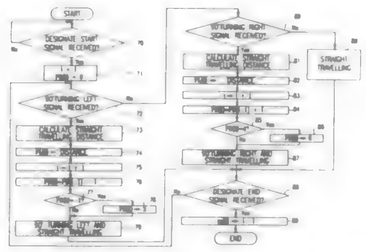
Jang W. Lee, and Jin S. Hwang, both of Busan, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 5, 1991, Ser. No. 804,236

Claims priority, application Rep. of Korea, Dec. 7, 1990, 20100/1990

Int. Cl.[5] G06F *15/50*

U.S. Cl. 364—424.02 **10 Claims**



1. A method for automatically controlling a travelling and cleaning operation of a vacuum cleaner comprising:

a learning travel step for calculating straight travelling distances of respective outline paths of a cleaning region and path directions of next travelling paths after a 90° turning right or left, then storing said straight travelling distances of the outline paths and said path directions of the next travelling paths after the 90° turning right or left in a storage device together with the total number of the outline paths;

a two-dimensional coordinates calculating step for determining respective relative positions of straight division lines on the basis of 90° turning points by using data corresponding to the straight travelling distances and the path directions, each of said straight division lines parallels the x-axis or the y-axis, then calculating two-dimensional coordinates of cleaning blocks which are used to determine positions and areas of respective cleaning blocks which are divided by said straight division lines;

a cleaning block discriminating step for delimiting, on the basis of said two-dimensional coordinates of the cleaning blocks, a plurality of integrated cleaning regions each comprising a plurality of sequential cleaning blocks of which each lower end coincides with an outline path of the cleaning region, and determining a cleaning start block and a cleaning end block of each of said integrated cleaning regions; and

a practical cleaning step for controlling said cleaner to sequentially travel along said integrated cleaning regions such that the cleaner straightly travels along a straight travelling path from said cleaning start block to said cleaning end block of each of said integrated cleaning regions, turns in 180° turning reverse at a turning reverse position, then straightly travels from said cleaning end block to said cleaning start block simultaneously overlapping the cleaning blocks designated by a predetermined overlapping value.

5,353,225

TRACTION CONTROL SYSTEM USING ESTIMATED ROAD SURFACE FRICTION COEFFICIENT

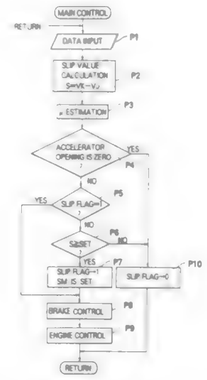
Toshiaki Tsuyama, Higashi-Hiroshima; Toru Onaka, Hiroshima; Kazutoshi Nobumoto, Hiroshima, and Makoto Kawamura, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jun. 21, 1991, Ser. No. 718,959

Claims priority, application Japan, Jun. 21, 1990, 2-163063

Int. Cl.[5] B60K *41/00*

U.S. Cl. 364—426.03 **14 Claims**



1. A traction control system for a motor vehicle, having driving wheels and driven wheels, comprising:

means for detecting a speed of each of the driving wheels of the vehicle and calculating an acceleration of the driving wheels;

means for detecting a speed of each of the driven wheels of the vehicle and calculating an acceleration of the driven wheels;

means for detecting an engine output;

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means for calculating a slip value of the driving wheels based on the speeds of the driving and driven wheels detected;

means for determining whether the vehicle is starting;

traction control means for controlling the driving wheels so that the slip value of the driving wheels is equal to a predetermined desired slip value when the slip value of the driving wheels is greater than a predetermined slip value for starting a traction control operation; and

means for estimating a friction coefficient of a road surface which is employed when the predetermined desired slip value is determined, said friction coefficient estimating means estimating the friction coefficient of the road surface based on the engine output only when the vehicle is starting and the acceleration of the driving wheels is greater than a predetermined value, said friction coefficient estimating means estimating the friction coefficient of the road surface based on the acceleration of the driven wheels after the vehicle has started.

5,353,226

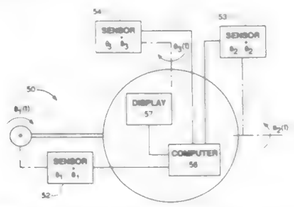
CORIOLIS INDICATOR FOR SITUATIONAL AWARENESS

Daniel W. Repperger, Vandalia, Ohio, assignor to The United states of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 25, 1992, Ser. No. 934,226

Int. Cl.[5] G01P *9/04*

U.S. Cl. 364—433 **2 Claims**



1. A system for indicating the presence of Coriolis accelerations in a moving vehicle, comprising:

(a) a plurality of sensors for measuring angular displacement and angular velocity of a vehicle in a first coordinate system defining said vehicle relative to a second coordinate system relative to which said vehicle moves, said plurality of sensors including means for providing signals defining the measured angular displacements and angular velocities;

(b) means for analyzing said signals and for determining from said measured angular displacements and angular velocities of said vehicle any Coriolis acceleration acting within said vehicle; and

(c) means for displaying any said Coriolis acceleration acting within said vehicle.

5,353,227

Patent Not Issued For This Number

5,353,228

RANGE-FINDING METHOD AND APPARATUS

Wolfgang Geiss; Harald Heinrich, both of Aalen, and Joachim Heppner, Oberkochen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Filed Feb. 26, 1992, Ser. No. 841,984

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1991, 4106892

Int. Cl.[5] G01B *21/00;* **G01C** *3/08*

U.S. Cl. 364—458 **6 Claims**

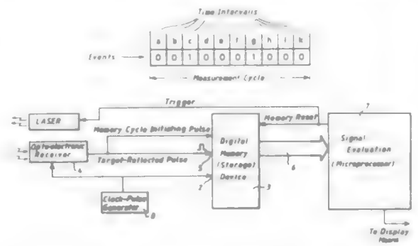
1. A method of measuring range to one or more remote targets which method utilizes a light pulse transmitted in the direction of the target and the round-trip transit time of each target-reflected light pulse is measured upon detection at a measuring device, said method comprising the steps of:

(a) predetermining a duration of a distance measurement period;

(b) subdividing the distance measurement period into a succession of discrete time intervals;

(c) establishing a single-bit serial digital memory wherein an individual storage location is associated with each time interval;

(d) converting each target-reflected light pulse to a logic pulse upon its impingement at the measuring device;



(e) assigning to the logic pulse of step (d) a first event-identifying logic level that is associated with the instantaneous time interval;

(f) associating a complementary second logic level with each time interval within which no light pulse is detected;

(g) storing the logic level associated with each time interval in a different digital-memory location; and

(h) electronically reading and evaluating the digital memory for such locations as contain the first logic level, thus retaining all measurable distance values of targets and enabling their indication.

5,353,229

SYSTEM, UTILIZED IN SCHEDULING, OR THE LIKE, FOR SATISFYING CONSTRAINTS BY ALLOWING RELAXATION OF CONSTRAINTS

Toshikazu Tanaka, Toda, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 30, 1992, Ser. No. 969,074

Claims priority, application Japan, Dec. 26, 1991, 3-345141

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—468 **4 Claims**

1. A system, utilized in scheduling, for satisfying constraints by allowing relaxation of constraints, comprising:

means for obtaining a final solution which specifies values that all variables can assume by repeating a problem solving cycle consisting of generation of a partial solution which refines values that some or all constraints of a constraint group can assume, and a test of checking whether or not the generated solution satisfies each of the constraints;

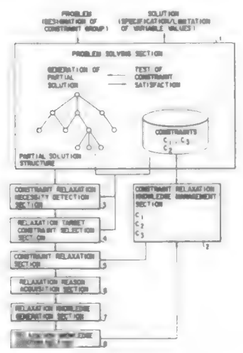
constraint relaxation necessity detection means for detecting necessity of relaxation of some constraints during execution of the problem solving cycle;

constraint relaxation knowledge management means for managing stored information associated with a possibility of relaxation and a method of relaxation, and a procedure to be enabled to know a relaxation condition from an external source in correspondence with each of the constraints;

relaxation target constraint selection means for, when said constraint relaxation necessity detection means detects the necessity of relaxation of some constraint, selecting a constraint to be relaxed from the constraint group; and

constraint relaxation means for checking the possibility of relaxation of the constraint selected by said relaxation

target constraint selection means upon reception of information stored in said constraint relaxation knowledge management means, and for, when it is determined that relaxation is possible, executing relaxation of the constraint.



5,353,230

DATA MANAGING SYSTEM FOR WORK PRODUCTION LINE

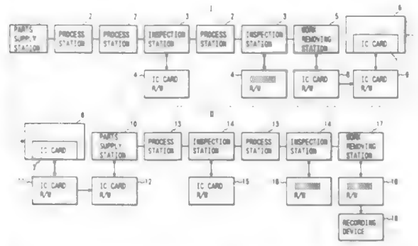
Yasuhira Maejima, and Kenzi Kasuga, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Dec. 15, 1992, Ser. No. 991,540

Claims priority, application Japan, Jan. 17, 1992, 4-26181

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—468 **10 Claims**



1. A data managing system for a workpiece production line comprising a plurality of assembly lines connecting sequentially to the next line, each assembly line comprising:

an assembly pallet for mounting thereon a workpiece, said assembly pallet comprising a data storage means;

a parts supplying station where a workpiece conveyed from outside is mounted on said assembly pallet;

at least one process station where the workpiece mounted on said assembly pallet is processed;

at least one inspection station where the processed workpiece is measured, said inspection station comprising means for reading and writing data of a measurement in said data storage means of said assembly pallet;

a workpiece removing station where the workpiece is removed from said assembly pallet and mounted on a conveying pallet for conveying the workpiece to the next assembly line, said conveying pallet comprising data storage means, said workpiece removing station comprising means for transferring said measurement data stored in said data storage means of said assembly pallet to said data storage means of said conveying pallet.

5,353,231

METHOD OF FABRICATING A REFLECTING MIRROR SUCH THAT MIRROR SEGMENTS CAN BE ARRANGED TO REDUCE THE EFFECTS OF THERMAL DEFORMATION

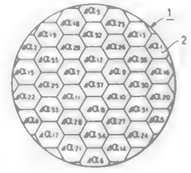
Aki Sasaki; Izumi Mikami, and Kouki Asari, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 854,478, Mar. 17, 1992, abandoned. This application Jan. 12, 1994, Ser. No. 180,504

Claims priority, application Japan, Jul. 11, 1991, 3-196115

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—473 **9 Claims**



1. A method of fabricating a reflecting mirror by sticking a plurality of mirror segments together, said method comprising steps of:

developing a matrix expressing the relation between the displacements of a plurality of sample points on the mirror surface of the reflecting mirror and coefficient of thermal expansion (CTE) vector having the respective CTE values of the mirror segments as components corresponding respectively to the positions of the mirror segments;

selecting a vector among those obtained by rearranging the components of the CTE vector, so as to make the sum of squares of the displacements minimum;

arranging the mirror segments according to positions represented by the components of the selected CTE vector; and

sticking the mirror segments together.

5,353,232

METHOD AND APPARATUS FOR ASCERTAINING TOOL PATH CONTOURS IN NUMERICALLY CONTROLLED MACHINES

Norbert Vollmayr, Traunwalchen, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Sep. 25, 1991, Ser. No. 765,377

Claims priority, application European Pat. Off., Sep. 25, 1990, 90118383.0

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—474.29 **18 Claims**

1. A method for machining a workpiece into a desired part using numerical control comprising the steps of:

defining the desired part as a set theory equation linking one or more simple bodies;

calculating a line contour representing the intersection between the simple bodies and a machining plane;

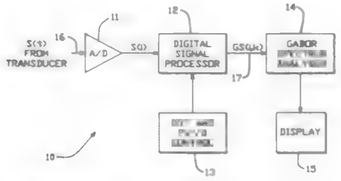
determining intersection points between the line contour and a series of lines intersecting said line contour;

determining whether each intersection point satisfies the same set theory equation as in the initial step;

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machining the workpiece along a path containing said valid peripheral points to create the desired part.

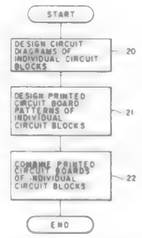
5,353,233
METHOD AND APPARATUS FOR TIME VARYING SPECTRUM ANALYSIS
Shie Qian, and Dapang Chen, both of Austin, Tex., assignors to National Instruments, Inc., Austin, Tex.
Filed Mar. 17, 1992, Ser. No. 851,725
Int. Cl.[5] G06F *15/31*; G01R *23/16*
U.S. Cl. 364—485 **48 Claims**



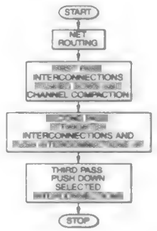
1. A signal analyzer, comprising:
a source of a sequence of digital signals representative of an input signal; and
a processor coupled to the source for computing orthogonal-like discrete Gabor transform coefficients $C_{m,n}$ in response to the sequence, wherein the processor uses the coefficients to compute a time-varying spectrum of input signal energy;
wherein said spectrum is used in analyzing said input signal.

5,353,234
COMPUTER AIDED DESIGNING SYSTEM FOR DESIGNING A PATTERN FOR A PRINTED CIRCUIT BOARD
Koutaro Takigami, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 654,891, Feb. 13, 1991, abandoned.
This application Jun. 17, 1993, Ser. No. 77,494
Claims priority, application Japan, Feb. 15, 1990, 2-32513
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—489 **12 Claims**

1. A computer aided designing (CAD) system for designing a circuit pattern for a single printed circuit board, comprising:
inputting means for inputting circuit data for the single printed circuit board virtually fractioned into a plurality of fractioned circuit blocks each provided with connection information and designing data of circuit components into a storage area;
data processing means for designing in parallel a plurality of virtual printed circuit boards respectively on the basis of the plurality of fractioned circuit blocks, the virtual connection information and the designing data of circuit components being read out of said storage area;
combining means for combining the plurality of virtual printed circuit boards designed into the circuit pattern to be printed as the single printed circuit board in accordance with the virtual connection information read out of said storage area; and
deleting means for deleting the virtual connection information upon completing the combination of the plurality of virtual printed circuit boards.

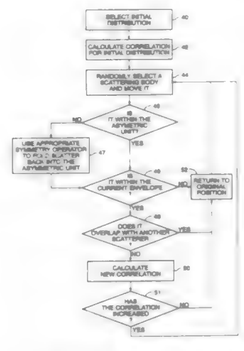


5,353,235
WIRE LENGTH MINIMIZATION IN CHANNEL COMPACTOR
Kieu-Huong Do, and Sunil Ashtaputre, both of San Jose, Calif., assignors to VLSI Technology, Inc., San Jose, Calif.
Filed Jun. 17, 1992, Ser. No. 900,030
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—491 **16 Claims**



1. A machine process for routing interconnections between devices, the process comprising:
defining representations of the devices;
defining columns in a channel bounded by representations of two devices to be interconnected;
defining tracks in the channel, the tracks being substantially parallel to one another and substantially perpendicular to axes of the columns;
defining nets representing interconnections of points on the devices;
compressing the channel by moving all points of a net on a track toward a representation of a first of the devices within each column;
straightening the nets to minimize the number of jogs appearing therein; and
shortening nets which connect points on the second of the devices by moving all points of the net on a track toward a second of the devices.

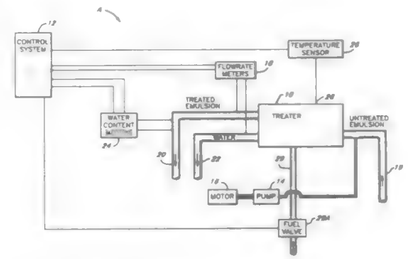
5,353,236
HIGH-RESOLUTION CRYSTALLOGRAPHIC MODELLING OF A MACROMOLECULE
Subramanian Subbiah, Woodside, Calif., assignor to The Board of Trustees of the Leland Stanford University, Palo Alto, Calif.
Filed Apr. 23, 1992, Ser. No. 872,970
Int. Cl.[5] G01N *23/20, 23/00*; G06F *15/20*
U.S. Cl. 364—499 **28 Claims**
MICROFICHE APPENDIX INCLUDED
(5 Microfiche, 255 Pages)



1. A method for constructing an image of a macromolecule crystal with the aid of a digital computer and the crystal's diffraction pattern, said diffraction pattern containing a plurality of reflections, each having an associated resolution, said method comprising the following procedures:
(a) converting the diffraction pattern of macromolecule crystal into computer usable normalized amplitudes, the pattern being produced with a diffractometer;
(b) determining from the diffraction pattern a dimension of a unit cell of the crystal;
(c) providing an envelope defining the region of the unit cell occupied by said macromolecule in the crystal;
(d) distributing a collection of scattering bodies within said envelope, said collection of scattering bodies having various arrangements, each of which has an associated pattern of Fourier amplitudes;
(e) condensing said collection of scattering bodies to a condensed arrangement that results in a high correlation between a diffraction pattern and the pattern of Fourier amplitudes for said collection of scattering bodies;
(f) determining the phase associated with at least one of the reflections of said diffraction pattern from the condensed arrangement of scattering bodies;
(g) calculating an electron density distribution of said macromolecule within said unit cell from the phase determined in procedure f; and
(h) displaying a graphical image of said macromolecule constructed from said electron density distribution.

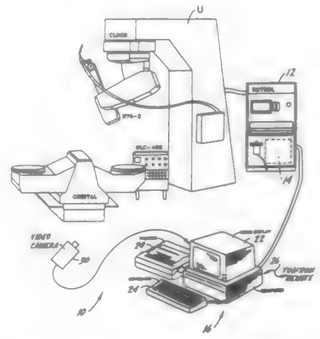
5,353,237
SYSTEM FOR INCREASING EFFICIENCY OF CHEMICAL TREATMENT
G. N. Bass, Sachse; Carl D. McBride; Greg Maddux, both of Garland; John L. Cayias, Richardson; Johnny M. Reinschmidt, Garland, and Kurt P. McCaslin, Carrollton, all of Tex., assignors to Oryx Energy Company, Dallas, Tex.
Filed Jun. 25, 1992, Ser. No. 904,432
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—502 **25 Claims**

1. (amended) Apparatus for controlling the rate of chemical injection into a stream, the chemical being used to control a measurable variable, comprising:
means for measuring the variable controlled by the chemical;
means for comparing the variable controlled with a preset value;



means for timing to determine the number of time units since the variable exceeded the preset value; and
means for producing a control signal for adjusting the chemical injection rate according to an algorithm based on the number of time units since the variable exceeded the preset value.

5,353,238
WELDING ROBOT DIAGNOSTIC SYSTEM AND METHOD OF USE THEREOF
Paul R. Neef, Hoffman Estates; Martin S. Newell, Crystal Lake; David Richards, Barrington, and Ashok Singh, Elgin, all of Ill., assignors to Cloos International Inc., Elgin, Ill.
Filed Sep. 12, 1991, Ser. No. 758,062
Int. Cl.[5] G05B *15/00*
U.S. Cl. 364—551.01 **9 Claims**



1. An operator assisting apparatus for monitoring an ongoing industrial process which generates a plurality of output electrical signals comprising:
means for sensing the plurality of output electrical signals;
means, coupled to said means for sensing the electrical signals, for processing the sensed electrical signals;
means for establishing a priority of trouble conditions from among the processed signals;
said means for establishing a priority of troubled conditions includes means for executing a decision tree so as to determine which of a plurality of trouble conditions has the highest priority;

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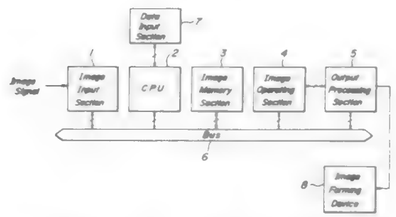
means for storing a plurality of predetermined screens associated with various potential trouble conditions;
means for selecting a prestored screen associated with the highest priority trouble condition and for displaying the selected screen;
means, responsive to operator input, for selecting a different screen;
means, for monitoring amounts of supplies consumed during the process; and
means for automatically displaying a representation of at least some of said supplies consumed.

5,353,239

METHOD OF PROCESSING IMAGE SIGNAL BY OPTICAL GAMMA CORRECTION CURVE AND APPARATUS FOR PERFORMING THE SAME

Kazuhiro Kashiwagi, Hino, Japan, assignor to Kowa Company Ltd., Aichi, Japan

Filed Jun. 26, 1992, Ser. No. 904,697
Claims priority, application Japan, Jul. 4, 1991, 3-189583
Int. Cl.[5] G01B *11/00*
U.S. Cl. 364—551.01 **17 Claims**



1. A method of effecting a gamma correction for an input image signal generated by an image signal generating device and supplying an output image signal to an image output device, said method comprising the following steps:
(a) employing the image output device to form a plurality of density values in response to a plurality of known output data signal values;
(b) forming a density characteristic curve representing a relationship between said plurality of known output data signal values and said plurality of density values;
(c) forming a denoted gamma correction curve from a plurality of denoted gamma characteristic data values which define a denoted gamma correction curve by utilizing said density characteristic curve; and
(d) adjusting said denoted gamma correction curve finely in accordance with a fine correction curve selected from a plurality of previously prepared fine correction curves.

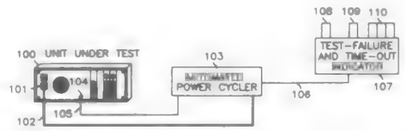
5,353,240

APPARATUS AND METHOD FOR AUTOMATICALLY TESTING COMPUTING EQUIPMENT

Joseph D. Mallory, Cedar Park, and Bryan R. Franklin, Austin, both of Tex., assignors to Dell USA, L.P., Austin, Tex.

Filed Mar. 22, 1993, Ser. No. 35,008
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—552 **26 Claims**

1. A test apparatus for testing computing equipment, comprising:
a switch circuit, coupled to said computing equipment, for interrupting and restoring power to said computing equipment;
a timer, coupled to said switch circuit, for commanding said switch circuit to interrupt power to said computing equipment for a predetermined period of time in response to a control signal asserted by said computing equipment and for causing said switch circuit to restore power to said computing equipment following said predetermined period of time; and
a test circuit, coupled to said timer and said computing



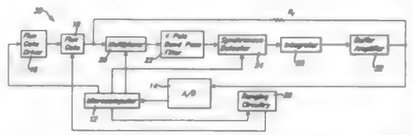
equipment, for determining when said switch circuit has restored power to said computing equipment and whether said computing equipment has successfully restarted following restoration of power.

5,353,241

SHIFTING SYSTEM AND METHOD FOR AN ELECTRONIC COMPASS SYSTEM

Rafi A. Al-Attar, 2325 Atlas Dr., Troy, Mich. 48083

Filed Dec. 27, 1991, Ser. No. 815,267
Int. Cl.[5] G01C *17/38*
U.S. Cl. 364—571.01 **7 Claims**



1. In a control circuit for an electronic compass which includes a microcomputer, a flux gate having first and second sense coils each producing an output signal dependent upon sensed strengths of the earth's magnetic field and of a magnetic field associated with a vehicle upon which the flux gate is mounted, and an integrator having a fixed output voltage range, a shifting compensation circuit for bringing the output voltage of integrator within the fixed, allowable output voltage range of said integrator, the shifting compensation circuit comprising:
a ranging circuit coupled between said microcomputer and said flux gate;
said ranging circuit including a variable direct voltage source, said microcomputer directing said variable direct voltage source to add a designated direct voltage reference in opposition to a signal due to the vehicle's magnetic field, and within said fixed output voltage range of said integrator, to the output signal of the flux-gate.

5,353,242

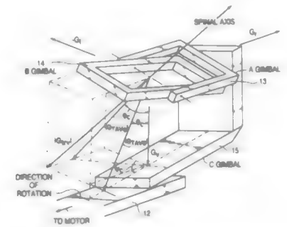
MOTION BASE CONTROL PROCESS AND OPERATOR PERCEPTUAL SIMULATOR

Richard J. Crosbie, Langhorne; Joseph Colombo, Newtown, and W. Graham Tasman, Philadelphia, all of Pa., assignors to Veda Incorporated, Warminster, Pa.

Continuation-in-part of Ser. No. 291,290, Dec. 28, 1988, Pat. No. 5,021,982. This application Jun. 3, 1991, Ser. No. 709,058
Int. Cl.[5] G09B *9/08*
U.S. Cl. 364—578 **15 Claims**

1. A process for controlling an angular velocity of an arm and angular positions of gimbals of a gimbaled motion base system substantially duplicating predicted operator perceptions of angular motion from a simulated moving vehicle, said process including the steps, performed by a data processor of the system, of:
computing the angular velocity of the arm and the positions of the gimbals in accordance with a total linear accelera-

tion vector and a total angular acceleration vector of the simulated vehicle, the total linear acceleration vector having component linear accelerations Gxa, Gya, and Gza, and the total angular acceleration vector having component angular accelerations p_a, q_a, and r_a;
controlling the angular velocity of the arm and the positions of the gimbals in accordance with the computed angular velocity and positions;
determining, for an operator of the motion base system and for an operator of the simulated vehicle, a predicted per-



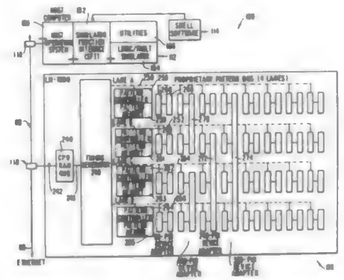
ception of angular motion about the pitch, roll, and yaw axes in accordance with the component linear accelerations and the component angular accelerations of the respective systems;
comparing the predicted perception of angular motion about each axis by the operator of the motion base system to the predicted perception of angular motion about each axis by the operator of the simulated vehicle to determine a difference therebetween; and
modifying the computed gimbal positions to substantially reduce said difference in perceived angular motion.

5,353,243

HARDWARE MODELING SYSTEM AND METHOD OF USE

Andrew J. Read, Sunnyvale; Mark S. Papamarcos; Wayne P. Heideman, both of San Jose; Robert K. Mardjuki, Pleasanton; Robert K. Couch, Santa Cruz; Peter R. Jaeger; William F. Kappauf, both of San Jose; Lawrence C. Widdoes, Jr., and Louis K. Scheffer, both of Los Altos Hills, all of Calif., assignors to Synopsys Inc., Mountain View, Calif.

Continuation of Ser. No. 359,711, May 31, 1989, abandoned. This application Aug. 31, 1992, Ser. No. 939,393
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—578 **111 Claims**



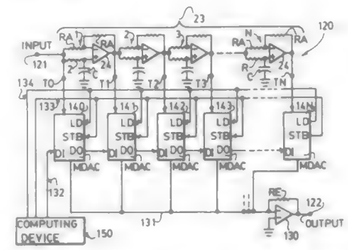
1. A method for use in a hardware modeling system for determining if a pin of an electronic device or circuitry that is electrically coupled to a pin driver of the hardware modeling system is in a driving low state, the pin driver being individually programmable by software means to drive the pin according to one of a predetermined soft-drive high I/V characteristic curve and a predetermined soft-drive low I/V characteristic curve, comprising the steps of:
(a) programming the pin driver of the hardware modeling system to drive the pin according to the predetermined soft-drive low I/V characteristic curve;
(b) driving the pin with the pin driver of the hardware modeling system according to the predetermined soft-drive low I/V characteristic curve; and
(c) while driving the pin, automatically determining if the voltage of the pin is below a reference voltage to indicate that the pin is in a driving low state, or if the voltage of the pin is above the reference voltage to indicate that the pin is in another state.

5,353,244

COMPUTER CONTROLLED TRANSVERSAL EQUALIZER

Richard W. Peters, Algonquin; John G. Christopher, Berkeley, and John W. Staples, Buffalo Grove, all of Ill., assignors to Knowles Electronics, Inc., Itasca, Ill.

Division of Ser. No. 919,742, Jul. 27, 1992, Pat. No. 5,297,025. This application Sep. 13, 1993, Ser. No. 120,614
Int. Cl.[5] G06J *1/00*
U.S. Cl. 364—602 **6 Claims**



1. A simplified equalizer network comprising a series chain of N all pass delay stages having an initial output tap connected to the input to the first stage in the chain and N additional output taps each connected to the output of a succeeding stage in the chain, N+1 scaling circuits each connected to one of the output taps, each scaling circuit including a multiplying digital to analog converter for multiplying an input signal from the associated chain output tap by a digital scaling control signal indicative of a scaling coefficient, in which M+1 frequency control points afford the predetermined frequency response characteristic over the preselected frequency range, summing circuit means for additively combining the outputs of all of the scaling circuits in the polarity relationships determined by the scaling circuits' respective scaling coefficients, and a scaling control signal generator for generating a series of scaling control signals, the scaling control signal generator comprising:
computing means for receiving a series of attenuation numbers, H_O through H_M, conjointly representative of the frequency response characteristic of the equalizer network in accordance with the relationship

$$H(\theta) = \sum_{n=0}^{N} a_n W(n)\, e^{-in\theta}$$

and for generating a series of digital scaling control signals each representative of the scaling coefficient for one scaling circuit in the equalizer network based on the series

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$$a_0 = \exp(b_0) \qquad \text{for } n = 0$$

$$a_n = 2 \sum_{k=1}^{n} \frac{k}{n} b_k a_{(n-k)} \quad \text{for } n > 0$$

where b_k is representative of the Fourier function series

$$b_0 = \Sigma_m \frac{H_m}{\pi} (\Theta_{m+1} - \Theta_m) \qquad \text{for } n = 0$$

$$b_n = \Sigma_m \frac{H_m}{n\pi} (\sin n\Theta_{m+1} - \sin n\Theta_m) \quad \text{for } n > 0$$

and n is the number of one stage in the all pass chain.

5,353,245

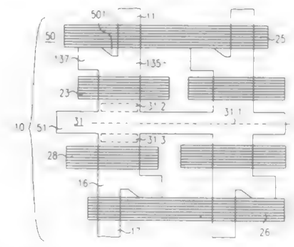
MEMORY INTEGRATED CIRCUIT WITH BALANCED RESISTANCE

Kuo-Hua Lee, and Janmye Sung, both of Lower Macungie Twp., Lehigh County, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 814,951, Dec. 30, 1991, abandoned. This application Aug. 24, 1993, Ser. No. 111,033

Int. Cl.[5] G11C *11/40*; H01L *27/02*

U.S. Cl. 365—63 **3 Claims**



1. A semiconductor integrated circuit comprising:

at least one memory cell, said cell comprising

a buried conductor;

first and second gates positioned on opposite sides of said conductor;

a first junction between said first gate and said buried conductor, said first gate controlling current flow from said first junction to said conductor;

a second junction between said second gate and said buried conductor, said second gate controlling current flow from said second junction to said conductor.

5,353,246

PROGRAMMABLE SEMICONDUCTOR ANTIFUSE STRUCTURE AND METHOD OF FABRICATING

Wai M. Tsang, Beaverton, Oreg.; Daniel C. Hu, Los Altos Hills, Calif., and Dong T. Khong, Singapore, Singapore, assignors to Lattice Semiconductor Corporation, Hillsboro, Oreg.

Division of Ser. No. 781,056, Oct. 18, 1991, Pat. No. 5,272,666. This application Aug. 18, 1993, Ser. No. 108,363

Int. Cl.[5] H01L *29/10, 21/283*

U.S. Cl. 365—96 **4 Claims**

1. The method of forming an electrical programmable read only memory cell having an antifuse structure comprising the steps of:

growing a first insulating layer on a silicon substrate;

depositing a first semiconductor layer on said first insulating layer;

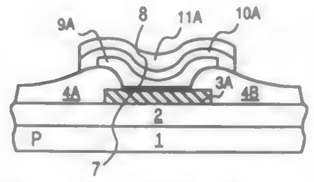
doping said first semiconductor layer to a predetermined conductivity;

etching said first semiconductor layer;

depositing a second insulating layer over said first semiconductor layer and said first insulating layer;

etching said second insulating layer to form an opening which extends to and exposes a portion of said first semiconductor layer;

forming a conductive layer over said first semiconductor layer;



depositing a second semiconductor layer over said second insulating layer and said conductive layer;

etching said second semiconductor layer, wherein said second semiconductor layer overlies said conductive layer and a portion of said second insulating layer;

depositing a metal layer on said second semiconductor layer; and

etching said metal layer to form a contact to said memory cell.

5,353,247

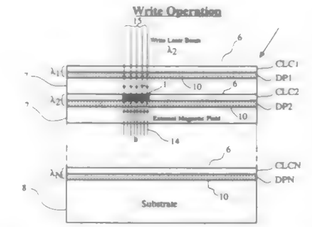
OPTICAL MASS STORAGE SYSTEM AND MEMORY CELL INCORPORATED THEREIN

Sadeg M. Faris, 24 Pocantico River Rd., Pleasantville, N.Y. 10570

Filed May 27, 1992, Ser. No. 889,490

Int. Cl.[5] G11C *13/04*

U.S. Cl. 365—108 **126 Claims**



1. An optical memory comprising an information storage element which includes a plurality of information storage regions at least one of which, in one mode, causes a reflection of incident circularly polarized electromagnetic radiation of a given wavelength and, in another mode, transmits electromagnetic radiation, and, means associated with said storage element for reversibly switching said at least one of said storage regions between said modes.

5,353,248

EEPROM-BACKED FIFO MEMORY

Anil Gupta, San Jose, Calif., assignor to Altera Corporation, San Jose, Calif.

Filed Apr. 14, 1992, Ser. No. 868,174

Int. Cl.[5] G11C *11/40*

U.S. Cl. 365—154 **17 Claims**

1. A static random access memory cell for storing a momentarily applied binary digit and for automatically returning to a

state indicative of said applied binary digit after any interruption in the power supplied to said cell comprising:

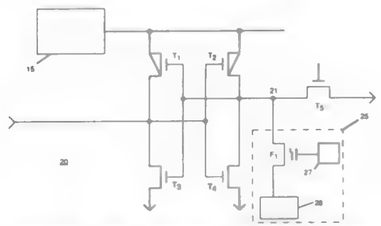
a first relatively strong inverter having an input terminal and an output terminal, said binary digit being momentarily applied to said input terminal;

a second relatively weak inverter having an input terminal connected to the output terminal of said first inverter and an output terminal connected to the input terminal of said first inverter, said second inverter being weak enough to allow said momentarily applied binary digit to control the state of said first inverter, but strong enough to hold said first inverter in the state established by said momentarily applied binary digit even after said binary digit is no longer being applied;

a first controllable potential source;

a second controllable potential source;

an electrically erasable programmable read-only memory (EEPROM) transistor having a gate, a floating gate, a source, and a drain, said gate being connected to said first controllable potential source, said EEPROM transistor being connected between said output terminal of said first inverter and said second controllable potential source via said source and drain, said EEPROM transistor being at



least initially non-conducting as a result of a charge stored on said floating gate of said EEPROM transistor; and

means for momentarily increasing the potential of the output terminal of said first inverter if and only if said momentarily applied binary digit has placed said first inverter in a predetermined state, said increased potential being sufficient to remove said charge from said EEPROM transistor and thereby rendering said EEPROM transistor conducting so that if the power supplied to said cell is interrupted, said EEPROM transistor causes said first inverter to return to a first state when said power is restored if said EEPROM transistor is non-conducting, and causes said first inverter to return to a second state when said power is restored if said EEPROM transistor is conducting; wherein

said first controllable potential source momentarily applies a relatively very high potential to said gate to cause said charge to be stored on said floating gate during a global erase of said EEPROM; and

said first controllable potential source applies a relatively low potential to said gate while said means for momentarily increasing is operating to increase the potential of the output of said first inverter.

5,353,249

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE

Kiyoshi Itano, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 28, 1993, Ser. No. 10,434

Claims priority, application Japan, Jan. 30, 1992, 4-015516

Int. Cl.[5] G11C *7/00, 11/40*

U.S. Cl. 365—185 **16 Claims**

1. A non-volatile semiconductor memory device, comprising:

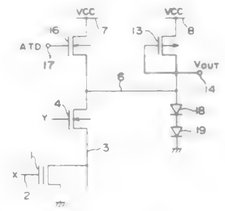
a bus line;

a plurality of bit lines coupled to said bus line;

a cell transistor, connected between each of said bit lines and a word line, for storing electrical information;

an output circuit, coupled to said bus line, for outputting a signal corresponding to the electrical information stored in said cell transistor when said bus line has been charged to a predetermined voltage level;

a constant voltage circuit coupled to said bus line, the constant voltage circuit generating a voltage having an approximately constant level when a current flows through said constant voltage circuit; and



a current supply circuit, coupled to said bus line, for supplying a current to said constant voltage circuit via said bus line in accordance with a control signal supplied from an external unit, wherein

said bus line is charged to a predetermined voltage level by the voltage generated by said constant voltage circuit, said current supply circuit being connected so as to receive the external control signal such that the external control signal controls said current supplied by said supply circuit and wherein said external control signal is a signal corresponding to an address transition detector signal.

5,353,250

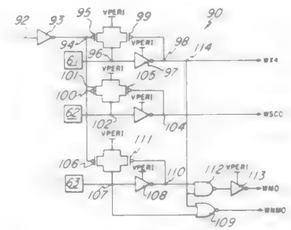
PIN PROGRAMMABLE DRAM THAT PROVIDES CUSTOMER OPTION PROGRAMMABILITY

Hugh P. McAdams, McKinney, Tex., assignor to Texas Instruments Inc., Dallas, Tex.

Continuation of Ser. No. 805,355, Dec. 9, 1991, abandoned. This application Nov. 16, 1993, Ser. No. 154,371

Int. Cl.[5] G11C *13/00*; H03K *17/687*

U.S. Cl. 365—189.03 **4 Claims**



1. A memory control circuit comprising:

a mode programming circuit connected with a group of programming bonding pads and responsive to signals applied to the programming bonding pads for producing a group of mode signals on output terminals;

the group of programming bonding pads including first, second and third pads;

the output terminals including first, second and third terminals;

when the first, second and third pads are left open, the mode programming circuit produces an ×1 mode signal on the first terminal and a page mode signal on the second terminal;

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when the first and third pads are left open and the second pad is held at a voltage V_{ss}, the mode programming circuit produces the ×1 mode signal on the first terminal and a static column decode mode signal on the second terminal; and

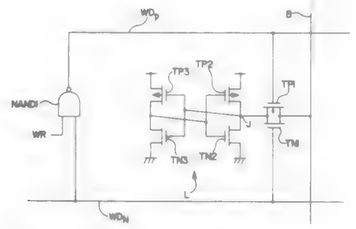
when the second and third pads are left open and the first pad is held at the voltage V_{ss}, the mode programming circuit produces the ×1 mode signal on the first terminal and nibble mode signals on the second and third terminals.

5,353,251

MEMORY CELL CIRCUIT WITH SINGLE BIT LINE LATCH

Munehiro Uratani, Yamatokoriyama, and Aoi Kitaura, Tenri, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 16, 1993, Ser. No. 123,434
Claims priority, application Japan, Sep. 21, 1992, 4-250955
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.05 **15 Claims**



1. A memory cell circuit comprising:

latch means for holding logic high or logic low data depending on the potential of a single bit line; and

transfer gate means having a first terminal connected to said latch means and a second terminal connected to said single bit line, said transfer gate means electrically connecting or disconnecting said first terminal and said second terminal in response to a selection signal,

wherein said transfer gate means includes a first transistor and a second transistor connected in parallel between said first terminal and said second terminal, both of said first transistor and said second transistor being activated during a data write operation, while one of said first transistor and said second transistor being activated during a data read operation.

5,353,252

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING DIGIT LINE BIASING MEANS

Kiyokazu Hashimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 26, 1991, Ser. No. 692,293
Claims priority, application Japan, Apr. 27, 1990, 2-112406
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.09 **5 Claims**

1. A semiconductor integrated circuit device comprising:

a plurality of digit lines;

a plurality of memory elements connected in parallel with said digit lines;

a sense amplifier circuit electrically coupled with a selected one of said digit lines for amplifying data on said digit line and outputting said data after amplification; and

a digit line bias means for biasing all of said digit lines to be a predetermined level during a read-out mode, said digit line bias means including:

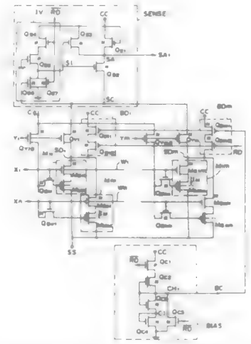
a bias voltage generating circuit for outputting an output voltage of said predetermined level in accordance with a control signal during the read-out mode, said bias voltage generating circuit including:

an output node,

a first enhancement MOSFET of a first conductivity type having a drain, a source connected to a power source, and a gate receiving said control signal,

a second depletion MOSFET of a second conductivity type having a gate and a source commonly connected to said output node, and a drain connected to said drain of said first enhancement MOSFET,

a third enhancement MOSFET of said second conductivity type including a source, and having a drain and a gate commonly connected to said output node,



a fourth enhancement MOSFET of said second conductivity type having a source coupled to a ground, and a drain and a gate connected to said source of said third enhancement MOSFET, and

a fifth enhancement MOSFET of said second conductivity type having a drain connected to said output node, a gate receiving said control signal and a source coupled to said ground, and

a digit line biasing circuit disposed between said power source and each of said digit lines for being conductive responsive to said output voltage from said output node of said bias voltage generating circuit and for biasing all of said digit lines to said predetermined level.

5,353,253

SEMICONDUCTOR MEMORY DEVICE

Michio Nakajima, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1993, Ser. No. 126,636
Claims priority, application Japan, Oct. 14, 1992, 4-275796
Int. Cl.[5] G11C *7/00, 11/40*
U.S. Cl. 365—200 **17 Claims**

1. A semiconductor memory device comprising:

a data input terminal for receiving data for storage;

an address signal input terminal for receiving an address signal which designates an address at which said data is written and from which said data is read;

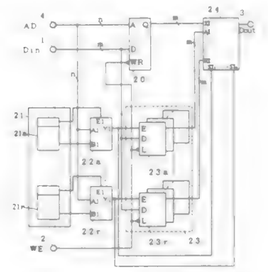
a main memory circuit for receiving said data from said data input terminal and said address signal from said address signal input terminal and for thereafter writing said data at an address which is specified by said address signal or otherwise retrieving said data already stored therein;

a defective address specifying circuit for outputting defective address specifying information which specifies an address which corresponds to a defective portion of said main memory circuit;

a detection circuit for receiving said address signal and said defective address specifying information respectively from said address signal input terminal and said defective address specifying circuit, for detecting whether the address specified by said address signal coincides with the address specified by said defective address specifying information, and for outputting a detection signal indicative of a result of the detection;

a redundancy memory circuit for receiving said detection signal and said data respectively from said detection circuit and said data input terminal and thereafter storing said data of the defective address in response to said detection signal which indicates the coincidence or otherwise outputting said data about the defective address already stored therein; and

a data select circuit for receiving said data which is read from said main memory circuit, said data which is outputted from said redundancy memory circuit and said detection signal from said detection circuit and for selectively outputting said data received frown said main memory circuit or said data received from said redundancy memory circuit, in accordance with said detection signal.

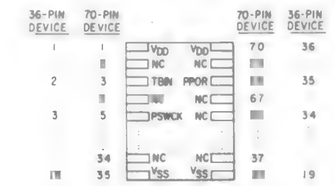


5,353,254

SEMICONDUCTOR MEMORY DEVICE HAVING BURN-IN TEST CIRCUIT

Harumi Sakamoto, Ibaraki, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 21, 1992, Ser. No. 887,442
Int. Cl.[5] G11C *29/00*
U.S. Cl. 365—201 **18 Claims**



1. A system for testing a plurality of types of packaged integrated circuits having a plurality of pin configurations comprising:

a socket capable of receiving said plurality of pin configurations;

a reference voltage terminal provided at a first physical pin location of said socket, each of said integrated circuits having a pin for receiving said reference voltage at said first physical pin location;

a supply voltage terminal provided at a second physical pin location of said socket, each of said integrated circuits having a pin for receiving said supply voltage at said second physical pin location; and

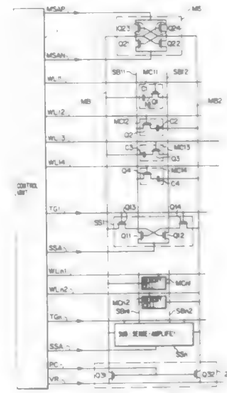
at least one control signal terminal provided at a third physical pin location of said socket, each of said integrated circuits including a test circuit for receiving said control signal source and generating control signals appropriate for that integrated circuit, and each integrated circuit having a pin for receiving said control signal at said third physical location.

5,353,255

SEMICONDUCTOR DYNAMIC RANDOM-ACCESS MEMORY DEVICE

Toshio Komuro, Tokyo, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 1, 1993, Ser. No. 11,776
Claims priority, application Japan, Feb. 27, 1992, 4-040009
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—208 **11 Claims**



1. A semiconductor memory device comprising:

a plurality of memory cells, each comprising a single MOS transistor and a single capacitor;

a main bit line pair comprising first and second main bit lines;

a precharge circuit for precharging each said main bit line to a predetermined potential according to a precharge signal;

a main sense amplifier for amplifying signals between said paired main bit lines;

a sub-bit line pair, provided for said main bit line pair, comprising first and second sub-bit lines, said sub-bit line pair being connected to said plurality of memory cells;

a plurality of word lines for selecting a specified memory cell from among said plurality of memory cells; and

a sub-sense amplifier provided for said sub-bit line pair for amplifying a voltage between said first and second sub-bit lines to provide an amplified voltage to said main bit line pair; wherein,

a word line corresponding to said memory cell is connected to the gate of said MOS transistor; and

some of said memory cells are connected to the first main bit line by said capacitor thereof and connected to the second sub-bit line by said channel of said MOS transistor thereof, and other memory cells are connected to the second main bit line by said capacitor thereof and connected to the first sub-bit line by said channel of said MOS transistor thereof.

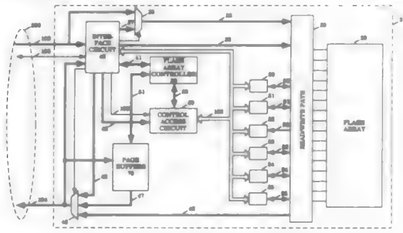
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5,353,256

BLOCK SPECIFIC STATUS INFORMATION IN A MEMORY DEVICE

Mickey L. Fandrich, Placerville; Chakravarthy Yarlagadda, Citrus Heights; Rodney R. Rozman, Placerville, and Geoffrey A. Gould, El Dorado Hills, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 30, 1993, Ser. No. 85,293
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—230.03 34 Claims



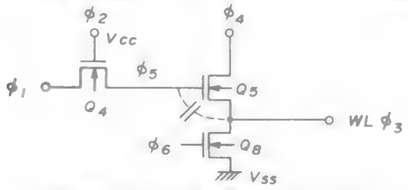
1. A flash memory device, comprising:
a plurality of flash array blocks, each flash array block comprising a plurality of flash cells;
block status register circuit comprising a plurality of block status registers, each block status register storing a block status for one of the flash array blocks;
flash array controller circuit performing program and erase operations on the flash array blocks, the flash array controller maintaining the block status in each block status register;
interface circuit enabling read access of the block status registers over a host bus.

5,353,257

WORD LINE DRIVING CIRCUIT AND SEMICONDUCTOR MEMORY DEVICE USING THE SAME

Makoto Yanagisawa, and Yukinori Kodama, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Feb. 11, 1993, Ser. No. 16,613
Claims priority, application Japan, Feb. 17, 1992, 4-029699
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.06 17 Claims



1. A word line driving circuit coupled to a word line of a memory cell array of a semiconductor memory device, said word line driving circuit comprising:
a first transistor having a first terminal receiving an input signal based on a row address signal applied to the semiconductor memory device; a second terminal, and a control terminal receiving a first timing signal;
a second transistor having a first terminal receiving a second timing signal, a second terminal connected to the word line, and a control terminal connected to the second terminal of the first transistor; and
a third transistor having a first terminal connected to the second terminal of the second transistor, a second terminal set at a predetermined potential, and a control terminal receiving a third timing signal,
the first transistor having a threshold voltage less than that of the third transistor.

5,353,258

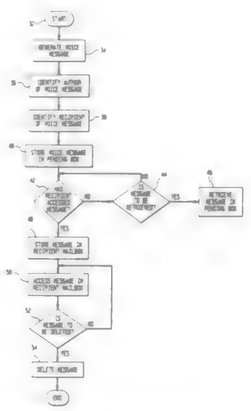
Patent Not Issued For This Number

5,353,259

VOICE MESSAGE RECOVERY SYSTEM AND METHOD

Simon L. Howes, Monroe, and Regina J. Kuhnen, Meriden, both of Conn., assignors to Dictaphone Corporation, Stratford, Conn.

Filed Jun. 19, 1992, Ser. No. 901,470
Int. Cl.[5] G11B *19/02*
U.S. Cl. 369—25 5 Claims



1. A voice processing system comprising:
means for generating a voice message,
voice mailbox means having a pending section and an accessible section in communication with said voice message generating means,
means for storing a voice message in said pending section,
means for logging onto said voice mailbox and transferring a voice message in said pending section to said accessible section,
means for deleting a message in said pending section through said voice message generating means if said voice message had not been transferred to said accessible section.

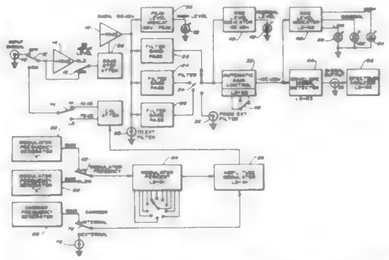
5,353,260

NOISE SIGNAL PROCESSOR

Lawrence C. Pharo, Jr., State College, and John J. Portelli, Boalsburg, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 13, 1982, Ser. No. 378,444
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—135 10 Claims

1. In a signal processing apparatus for providing an output that is a direct quantitative readout of the amplitudes of various frequency lines that constitute the envelope of an amplitude modulated broadband noise signal, the combination comprising:
a source of noise signals containing modulation information of interest,
band pass filter means connected to said noise source for selecting a noise band known to contain modulation information of interest,
circuit control means connected to said band pass filter means and providing an output signal that has a constant amplitude for a period of time that is greater than the period of the modulating signal,
first indicator means connected to the input of said circuit control means for indicating when the excursions of the



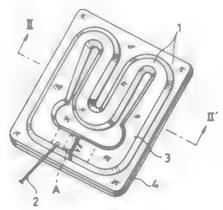
signal into said circuit control means is within the range of said circuit control means, and
detector circuit means connected to said circuit control means for detecting the envelope of said modulating signal.

5,353,261

VIBRATING APPARATUS

Yoshihiko Kakiuchi, Neyagawa; Kimihiro Andoh, Matsusaka; Shingo Tamura, Kitakatsushika, and Ryuzou Ishigaki, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma; Vank Corporation and ECS-88 Company, Limited, both of Tokyo, all of Japan

Filed May 7, 1993, Ser. No. 57,754
Claims priority, application Japan, May 14, 1992, 4-121726
Int. Cl.[5] H04R *23/00*
U.S. Cl. 367—140 7 Claims



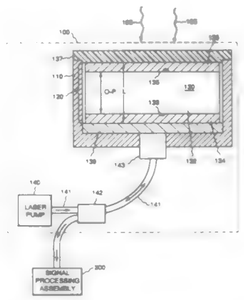
1. A vibrating apparatus comprising:
a flexible hollow member having a continuous cavity forming an air-tight sound-waveguide therein, said hollow member having a strength capable of retaining a formed shape of the sound-waveguide against external forces imposed under usual using situation, and
electrical vibration converting means in said hollow member for irradiating a sound in said sound-waveguide;
wherein said irradiating sound vibrates said hollow member; and
wherein a vertical cross section of said sound-waveguide has an arch shape.

5,353,262

OPTICAL TRANSDUCER AND METHOD OF USE

Christopher P. Yakymyshyn; William T. Lotshaw, both of Schenectady, and Donna C. Hurley, Albany, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 12, 1993, Ser. No. 31,159
Int. Cl.[5] H04R *23/00*
U.S. Cl. 367—149 45 Claims



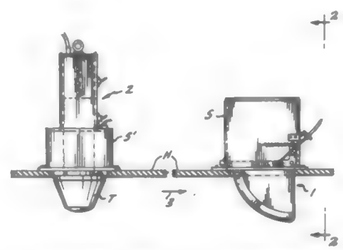
1. An optical transducer for detecting acoustic energy propagated through a medium, the transducer comprising:
a transducer housing, and
a signal laser mounted in said transducer housing,
said signal laser comprising a single optical cavity having an optical path axis, a lasing medium disposed in said optical cavity, and first and second reflectors, said first and second reflectors being respectively disposed immediately adjacent to opposite ends of said lasing medium along said optical path axis such that a single lasing output signal is generated by said signal laser, the optical frequency of said single lasing output signal being modulable in correspondence with acoustic energy incident on said transducer.

5,353,263

SOFT SONAR SUSPENSION SYSTEM

Ulrich Pakker, 8604 Dallas Ave. South, #4, Seattle, Wash. 98108, and Dennis Feragen, P.O. Box 31505, Seattle, Wash. 98103

PCT No. PCT/US90/05954, § 371 Date Apr. 16, 1992, § 102(e) Date Apr. 16, 1992, PCT Pub. No. WO91/06192, PCT Pub. Date May 2, 1991
PCT Filed Oct. 17, 1990, Ser. No. 839,774
Int. Cl.[5] H04R *23/00*
U.S. Cl. 367—173 28 Claims



1. In an in-the-hull mount for an underwater transducer assembly including a sea chest and means for moving the assembly between a protected position retracted into the sea chest and an operative position projected from the sea chest, the improvement comprising the moving means including

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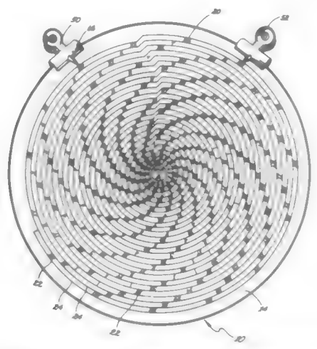
retraction means for normally biasing the transducer assembly to its protected position, a source of fluid under pressure, and projection means operable by fluid from said source to act against and overcome the force of the retraction means so as to move the assembly to its operative position.

5,353,264

TIDE CALENDER DISK AND METHOD

James M. Corbin, III, 17 Elaine Cir., Bellingham, Mass. 02019

Continuation-in-part of Ser. No. 891,237, May 29, 1992, abandoned. This application Jun. 11, 1993, Ser. No. 76,251
Int. Cl.[5] G04B *19/26*
U.S. Cl. 368—19 4 Claims



1. A tide disk apparatus adapted for determining condition of tide at a selected time, at a selected date for a plurality of calendar months with reference to a conventional circular clock face comprising:

a) disk means for providing on a circular disk numeral means for days of each month of a year in a sequentially arranged spiral arrangement;

b) wherein said numeral means designates days of each calendar month, comprising a plurality of numerals radially spaced in a spiral arrangement (comprising Arabic numerals from 1 to 31);

c) angular separation means for radially spacing said numerals by an angular spacing related to a tide cycle arranged in spiral columns radiating outwardly from the central axis comprising an angular spacing of 24.4°;

d) calibration means for establishing a "12 o'clock high position" of a selected calendar date for the timing of condition of tide, comprising a calibration clip;

e) month segment means for displaying different months in a distinct manner, comprising sequential segments of a spiral path distinctly marked to signify a distinct calendar month wherein said months are arranged in a calendar secession; and

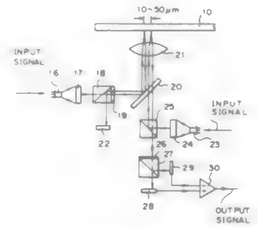
f) geographic variation means for adjusting to different locations having different tides cycles on a given day; wherein angular positioning of the numeral means relates to the "12 o'clock high position" and where the position of numeral designating the calendar date indicates the time of high tide on that calendar date and wherein the geographic variation means is indexed to a regional reference location for adjusting to different locations having different tide cycles on a given day and wherein the geographic variation means includes a hanger means for hanging said disk apparatus in a vertical arrangement.

5,353,265

MAGNETO OPTICAL OVERWRITING METHODS USING A SINGLE OPTICAL HEAD DESIGNED FOR A TWO-BEAM OVERWRITE

Miyozo Maeda, Atsugi; Yuji Inouye, Kawasaki; Yasunobu Hashimoto, Sagamihara; Ken-ichi Itoh, Yamato, and Seiya Ogawa, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 264,906, Oct. 31, 1988, Pat. No. 5,144,601. This application Feb. 7, 1990, Ser. No. 476,588
Claims priority, application Japan, Nov. 2, 1987, 62-275637; Nov. 2, 1987, 62-275638; Dec. 28, 1987, 62-330132
Int. Cl.[5] G11B *13/04, 11/12*
U.S. Cl. 369—13 10 Claims



1. A method for overwriting information in a magneto-optical memory layer, comprising the steps of:

a) providing a magneto-optical memory substrate with the magneto-optical recording layer having a perpendicular magnetization direction characteristic coated thereon, the magneto-optical recording layer having information tracks, each of which carries previously selectively recorded magnetic domains;

b) providing a first optical system including a first laser and an object lens for irradiating the magneto-optical recording layer with an erasing light beam, and a second optical system including a second laser and the object lens for irradiating the magneto-optical recording layer with a writing light beam;

c) irradiating the erasing light beam onto one information track of the information tracks, regardless of the presence or absence of written information in the information tracks, the erasing light beam having a power sufficient to erase the written information but not sufficient for writing information in the information track; and

d) selectively irradiating the writing light beam in accordance with information to be overwritten into the erased information track of the information tracks, the writing light beam having a power sufficient for writing information into the information track, the erasing and writing light beams being focused through the objective lens on the information tracks closely adjacent to each other such that a distance between light beam spots formed on the information track by the erasing and writing light beams is approximately 10 μm to 50 μm.

5,353,266

MAGNETOOPTICAL RECORDING METHOD

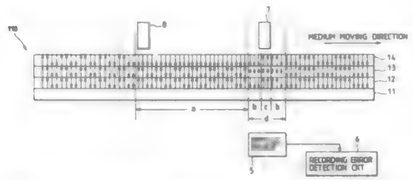
Eiichi Fujii, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1992, Ser. No. 976,340
Claims priority, application Japan, Nov. 15, 1991, 3-326795; Nov. 15, 1991, 3-326796; Nov. 12, 1992, 4-326257
Int. Cl.[5] G11B *13/04*
U.S. Cl. 369—13 4 Claims

1. A magnetooptical recording method for recording information on a magnetooptical recording medium that includes at least a first magnetic layer having a Curie temperature T_1 and a coercive force H_1 and a second magnetic layer having a Curie temperature T_2 higher than the Curie temperature T_1 and a coercive force H_2 smaller than the coercive force H_1 and satisfying the following conditions at room temperature:

$$H_1 > \sigma_{w12}/2M_{s1}h_1,\ H_2 > \sigma_{w12}/2M_{s2}h_2$$

wherein σ_{w12} is the interfacial magnetic wall energy between the first and second magnetic layers; M_{s1} is the saturation magnetic moment of the first magnetic layer; M_{s2} is the saturation magnetic moment of the second magnetic layer; h_1 is the thickness of the first magnetic layer; and h_2 is the thickness of the second magnetic layer, said method comprising the steps of:



initializing the second magnetic layer alone by means of an initializing magnetic field;

irradiating the medium with a light beam after the initialization of the second magnetic layer;

applying a magnetic field, modulated according to the information, to the position irradiated with the light beam;

detecting reflected light generated from the irradiation of the medium with the light beam in said irradiating step, thereby reproducing the information recorded at the position irradiated with the light beam; and

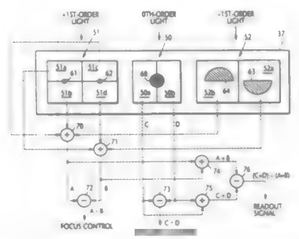
discriminating whether the information has been correctly recorded on the medium, based on the recording information reproduced in said reproducing step.

5,353,267

MAGNETO-OPTICAL LIGHT DETECTOR APPARATUS

Ryuichi Katayama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 2, 1993, Ser. No. 70,224
Claims priority, application Japan, Jun. 2, 1992, 4-140832; Jul. 21, 1992, 4-192554
Int. Cl.[5] G11B *17/32*
U.S. Cl. 369—13 10 Claims



1. A magneto-optical head assembly comprising:

a light source;

optical means for directing light from the light source onto a magneto-optical recording medium and focussing light returning from said medium onto a given plane;

a birefringent member formed with a diffraction pattern located in the path of light from said optical means to said given plane, said diffraction pattern splitting light incident thereon from said optical means into a zeroth-order component and plus and minus first-order components; and

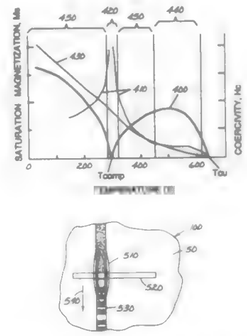
light detector means located on said given plane, said light detector means comprising a first light sensing area having two sensors for receiving the zeroth-order component, a second light sensitive area having a first pair of diagonally arranged sensors and a second pair of diagonally arranged sensors for receiving one of the plus and minus first-order components, and a third light sensitive area having two sensors for receiving the other first-order component.

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THERMOMAGNETIC RECORDING SYSTEM EMPLOYING A MEDIUM HAVING HIGH STORAGE DENSITY AND DIRECT-OVERWRITE CAPABILITY AS A RESULT OF ALONG-TRACK ISOCOERCIVITY

Michael B. Hintz, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 566,048, Aug. 10, 1990, abandoned. This application Nov. 12, 1993, Ser. No. 150,771
Int. Cl.[5] G11B *13/04, 11/10, 11/12*
U.S. Cl. 369—13 24 Claims



1.A thermomagnetic recording medium for use with a heat source which raises temperature of a heated region of the medium from an ambient temperature to an operating temperature, a magnetic field source which imposes a magnetic field upon an area of the medium including a portion of the heated region, and a magnetic field detector which senses remanent magnetic moment of the medium over a substantially rectangular sensing region having longest dimension perpendicular to the direction of a data track on the medium, the medium comprising:

a substrate;

a barrier layer deposited on the substrate;

a magnetizable recording layer deposited on the barrier layer, wherein the recording layer has a net magnetic moment and coercivity dependent upon temperature, such that the net magnetic moment is substantially zero at the ambient temperature and substantially different from zero at the operating temperature, the coercivity decreases with temperature to zero at a Curie temperature which is substantially above the operating temperature, and the portion of the heated region which is exposed to the imposed magnetic field exhibits substantially constant coercivity along the track direction; and

a protective layer deposited on the recording layer.

16.A thermomagnetic recording system, comprising:

a thermomagnetic recording medium having data tracks provided thereon;

a heat source which raises temperature of a heated region of the medium from an ambient temperature to an operating temperature; and

a magnetic assembly comprising a magnetic field source, which imposes a magnetic field upon an area of the me-

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dium including a portion of the heated region, and a magnetic field detector which senses a remanent magnetic moment of the medium over a substantially rectangular sensing region having longest dimension normal to the length of data tracks on the medium;

wherein the medium comprises:

a substrate;

a barrier layer deposited on the substrate;

a magnetizable recording layer deposited on the barrier layer, wherein the recording layer has a net magnetic moment and coercivity dependent upon temperature, such that the net magnetic moment is substantially zero at the ambient temperature and substantially different from zero in the heated region which is at an operating temperature, the coercivity decreases with temperature to zero at a Curie temperature which is substantially above the operating temperature, and the portion of the heated region which is exposed to the imposed magnetic field exhibits substantially constant coercivity along the length of the tracks; and

a protective layer deposited on the recording layer.

5,353,269

DISK STORAGE APPARATUS

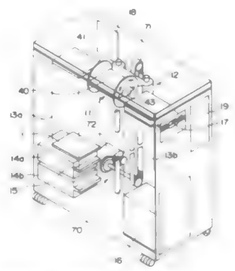
Takashi Kobayashi, Kanagawa, and Tsurayuki Sugiyama, Tokyo, both of Japan, assignors to NKK Corporation and Kabushiki Kaisha Nikkyo Seisakusho, Japan

PCT No. PCT/JP90/01690, § 371 Date Aug. 19, 1992, § 102(e) Date Aug. 19, 1992

PCT Filed Dec. 25, 1990, Ser. No. 920,461

Int. Cl.[5] G11B *17/22*

U.S. Cl. 369—36 9 Claims



1. A disk storage apparatus comprising:

a disk gripper including a holder for horizontally holding a disk cartridge and disk exchange means for selectively introducing onto and removing a disk cartridge from said holder;

a disk transport device including means for vertically moving said disk gripper to stop at a given position;

at least one disk storage device arranged on at least one side of a transport path of said disk gripper and adapted for horizontally storing a plurality of disk cartridges;

a moving storage unit loaded in a lower part of at least one said disk storage device and including a storage pack for horizontally storing a predetermined number of disk cartridges;

a loading door for said moving storage unit formed in an outer wall of a loading portion of said storage apparatus;

locking means for inhibiting opening of said loading door during the transfer of a disk cartridge or the recording or reproduction of a disk;

a door opening/closing detecting switch for sending a power supply turn-off signal in response to the opening of said loading door and a power supply turn-on signal in response to the closing of said loading door; and

a power supply monitoring means for sending an operation inhibiting signal when the power supply is not turned off before the expiration of a predetermined time after the reception of a power supply turn-off signal from said door opening/closing detecting switch upon the opening of said loading door.

5,353,270

WRITABLE OPTICAL DISK RECORDING APPARATUS

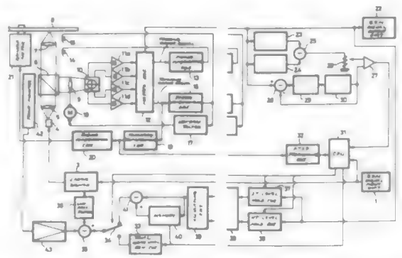
Shinichiro Iimura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 23, 1992, Ser. No. 980,488

Claims priority, application Japan, Nov. 25, 1991, 3-309097

Int. Cl.[5] G11B *7/125*

U.S. Cl. 369—54 4 Claims



1. A writable optical disk recording apparatus for writing arbitrary data on a writable disk by using a laser beam comprising:

(a) means for effecting a trial writing on said writable disk at a recording characteristic check area, reproducing a recorded calibration signal from the recording characteristic check area and using the reproduced calibration signal to thereby control an output power of said laser beam and recording a first signal of a shortest bit length and a second signal of an arbitrary bit length longer than the shortest bit length in the recording characteristic check area using the laser beam whose output power is controlled by using the calibration signal;

(b) means for reproducing and separately storing as a first reference signal and a second reference signal the first signal and the second signal from the characteristic check area; and

(c) means for simultaneously reproducing recorded data signals during subsequent recording of data in a data area of the writable disk and comparing a level of a reflected signal provided when signals of the shortest bit length and the arbitrary longer bit length are recorded with the first reference signal and the second reference signal and accordingly controlling the output power of said laser beam.

5,353,271

METHOD AND APPARATUS FOR RECORDING OR REPRODUCING INFORMATION ON OR FROM RECORDING MEDIUM

Michiharu Abe, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 17, 1992, Ser. No. 930,778

Claims priority, application Japan, Aug. 29, 1991, 3-218560

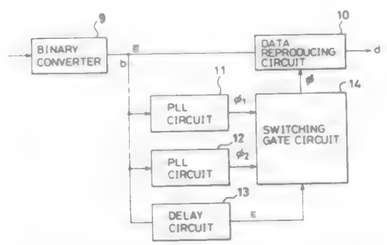
Int. Cl.[5] G11B *7/007*

U.S. Cl. 369—59 3 Claims

1. A method for recording or reproducing information on or from a recording medium, the method capable of reproducing serial data on the basis of signals derived on each of front edges and each of rear edges of a plurality of pieces of recorded information on said recording medium, comprising the steps of:

reproducing first and second bit-synchronization signals respectively corresponding to said front edges and said rear edges from signals derived on said front edges and said rear edges alternately provided in said recorded information, said first and second bit-synchronization signals having individual phases but the same frequency as each other;

alternatively switching the first and second bit-synchronization signals after a predetermined time every time the first or second bit-synchronization signal is detected;



synthesizing the first and second bit-synchronization signals in such a manner that a phase of the synthesized bit-synchronization signal constantly corresponds to phases of said front edges and said rear edges to be detected; and

sequentially reproducing the serial data directly from signals derived on a lot of said front edges and said rear edges by using the synthesized bit-synchronization signal.

5,353,272

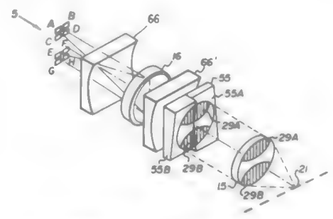
APPARATUS AND METHOD FOR A MODIFIED HALF-APERTURE FOCUS/TRACKING/DATA SENSOR SYSTEM

Edward C. Gage, Fairport, and David B. Kay, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 29, 1992, Ser. No. 997,809

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—120 18 Claims



1. A sensor system for use in conjunction with a read and/or write head of an optical information storage and retrieval systems said sensor system responsive to a resulting radiation beam from a data track on a storage medium of said optical information storage system, said sensor system comprising:

a dual prism having said resulting radiation beam applied thereto for dividing said resulting radiation beam into two resulting radiation beam components, said two resulting radiation beam components divided by a division perpendicular to a projection of said data track on said dual prism;

a sensor array including two four-quadrant sensor components;

a lens for focusing said resulting radiation beam transmitted therethrough on said sensor array wherein a first four-quadrant sensor component of said two four-quadrant sensor components has a first resulting radiation beam component focused thereon and a second four quadrant sensor component of said two four-quadrant sensor components has a second resulting radiation beam component focused thereon; and

astigmatic means for defocusing said first and second resulting radiation beam components on said sensor array in a direction perpendicular to said projection of said data track, wherein signals generated by elements of said first and said second four-quadrant sensor are combined to provide a tracking signal and a focusing signal.

5,353,273

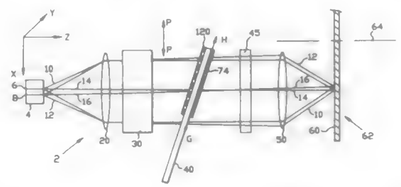
MULTI-CHANNEL OPTICAL HEAD AND DATA STORAGE SYSTEM

James M. Zavislan, Auburn, N.Y., and Bulent N. Kurdi, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 4, 1992, Ser. No. 926,061

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—121 19 Claims



1. A multi-channel laser optical system for reading information on an optical storage medium having machine readable information encoded thereon, the optical system being adapted to transmit a plurality of focused laser output beams to the optical storage medium so that the optical storage medium receives the focused laser output beams at a selected focal distance, and reflects a plurality of information modulated signal beams for processing, the optical system comprising:

a multiple channel laser optical source for generating a plurality of spatially separated laser output beams;

an objective lens positioned to receive said laser output beams and to focus said laser output beams at the selected focal distance from said objective lens, said objective lens also being positioned to receive a plurality of information modulated signal beams reflected by an optical storage medium positioned at said focal distance, and to transmit said information modulated signal beams toward said laser optical source;

a multi-mode optical waveguide structure positioned to receive said information modulated signal beams and to produce a plurality of redirected, spatially separated signal beams;

means for orienting and coupling said information modulated signal beams into said optical waveguide structure in a plurality of different modes; and

a plurality of optical detectors positioned to receive said spatially separated signal beams from said optical waveguide structure and to produce a plurality of output signals representing information contained on said optical data storage medium.

5,353,274

BEAM DIAMETER EXPANSION OF A MULTI-BEAM OPTICAL INFORMATION SYSTEM

Koichiro Nishikawa, Inagi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1992, Ser. No. 961,824

Claims priority, application Japan, Oct. 22, 1991, 3-301241

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—121 6 Claims

1. A plural-beam optical head comprising:

a monolithic semiconductor laser array having a plurality of

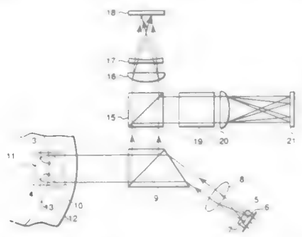
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light emitting points arranged in a predetermined direction

a collimator lens for making parallel a plurality of laser beams emitted from said plurality of light emitting points, each laser beam having a diameter;

an objective lens for imaging said plurality of parallel laser beams on an optical information recording medium; and

means, disposed between said collimator lens and said objective lens, for expanding the diameter of each of said plural-



ity of parallel laser beams in the predetermined direction of said plurality of light emitting points;

wherein the following condition is satisfied:

$$(d \cdot f_0)/(f_{col} \cdot m) < 20\ \mu m,$$

where d is the maximum spacing between adjacent ones of said plurality of light emitting points, f_{col} is the focal length of said collimator lens, f_0 is the focal length of said objective lens, and m is the expansion magnification of said means for expanding the diameters of said laser beams.

5,353,275

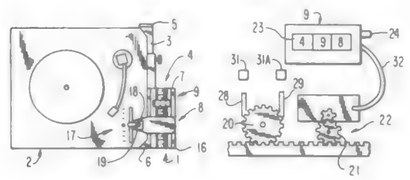
BEAT FINDER

Carlos Almonte, Brooklyn, N.Y., assignor to CT Sound 92, Brooklyn, N.Y.

Filed Oct. 5, 1992, Ser. No. 956,610

Int. Cl.[5] G11B *17/04, 17/08;* **H04B** *1/20*

U.S. Cl. 369—189 **2 Claims**



1. An accessory for a turntable to control speed control and to facilitate beat matching, to synchronize the transition of recorded music sources from one turntable to another turntable of a plurality of turntables, comprising: said recorded music sources containing basic beat rhythm patterns unique to each of said recorded music sources

a means to predict when the synchronization of said basic beat rhythm patterns will occur, said means creating a digital readout when said digital readout displays an index number representative of the position of a speed control member;

a speed control means for matching said basic beat rhythm patterns of successive recorded musical selections from one said turntable to another said turntable of said plurality of turntables;

a beat finder responsive to accurately and repeatedly setting at least one speed on said speed control on at lest one said turntable of said plurality of turntables, said beat finder capable of facilitating a gradual synchronization of two recorded musical selections with different beat rhythm patterns

wherein said beat finder is removably attached to at least one of said turntables of said plurality of turntables by a clamp member with a telescoping section, which said clamp is adjustable to a predetermined depth of said turntable and which said clamp fits to said turntable, said beat finder further including:

a base plate,

a movable control section movably ridable on said base plate, and

a digital display counter,

said base plate including a further rigid base plate, a plurality of raised rails positioned along each side of said base plate,

a gear rack mounted between said raised rails, said movable control section enclosed by a housing,

said movable control section engageable with said speed control through an adjustable extended coupling member which said coupling member is disposed over said speed control means,

said movable control section movable on said side rails on said base plate, said movable control section varying a speed of one of said turntables,

said gear rack on said base plate engageable by at least one gear attachable to said movable control section, and

said at least one gear being coupled to a gear train with a speed-increase ratio, said gear train driving said digital display counter.

5,353,276

PROCESS FOR RECORDING AND/OR REPRODUCING DIGITAL DATA ON A RECORD CARRIER

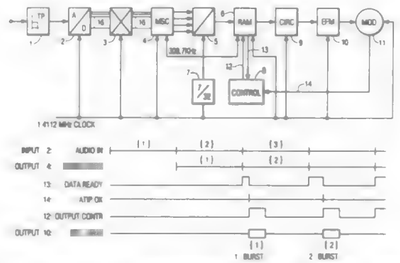
Ernst F. Schröder, Hanover, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 389, Mar. 2, 1991. This application Sep. 21, 1992, Ser. No. 948,082

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1990, 4007814

Int. Cl.[5] G11B *7/007*

U.S. Cl. 369—275.1 **10 Claims**



1. A method of recording bursts of digital data onto a rotating recording medium having a helical data track moving at a fixed linear rate with respect to a read/write unit comprising the steps of:

temporarily storing said data bursts and reducing the data rate of said bursts during said storage;

recording said bursts as clusters at spaced locations around said track while leaving pauses between said clusters;

utilizing said pauses to relocate said read/write head before recording the next burst.

5,353,277

OPTICAL DISK HAVING INTERTRACK HEAT CONDUCTION SUPPRESSION

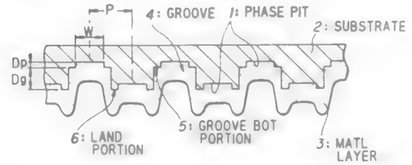
Kouichi Yasuda, Tokyo; Atsushi Fukumoto, and Masumi Ono, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 958,007

Claims priority, application Japan, Oct. 14, 1991, 3-264609

Int. Cl.[5] G11B *7/24*

U.S. Cl. 369—275.4 **2 Claims**



1. An optical disc comprising:

a transparent substrate formed with recording pits optically readable according to information signals;

a material layer formed on said transparent substrate, the reflection factor of said material layer being changeable according to temperature; and

heat conduction suppressing means interposed between respective tracks along which the recording pits are formed; said suppressing means comprising groove bottom portions and land portions formed in said transparent substrate; and wherein the recording pits are formed on both the land and bottom portions, respectively, said land and bottom portions being obtained as a result of the formation of said grooves in said transparent substrate.

5,353,278

MAGNETO-OPTICAL DISK AND METHOD OF MANUFACTURING THE SAME

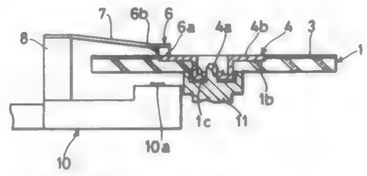
Yoshiteru Murakami, Nishinomiya; Junichiro Nakayama, Shiki; Hiroyuki Katayama; Akira Takahashi, both of Nara; Kenji Ohta, Kitakatsuragi, and Hirotaka Toki, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 2, 1991, Ser. No. 694,990

Claims priority, application Japan, May 8, 1990, 2-119451; May 10, 1990, 2-121472

Int. Cl.[5] G11B *5/54*

U.S. Cl. 369—290 **8 Claims**



1. A magneto-optical disk comprising:

a substrate having a first surface and a second surface;

a depression formed on an inner portion of the first surface;

a magneto-optical recording medium formed on an outer portion of the first surface;

a protective resin layer for covering the magneto-optical recording medium;

a center hub having a guide hole and an outer flange which is mounted on the depression and the second surface so that the center hub outer flange is substantially level with the protective resin layer; said guide hole for a spindle and an area of said flange where a flying head performs sliding and contacting action.

5,353,279

ECHO CANCELER

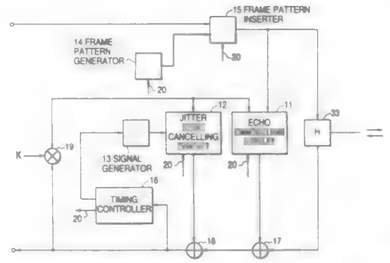
Tetsu Koyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,199

Claims priority, application Japan, Aug. 29, 1991, 3-218999

Int. Cl.[5] H04B *3/23;* **H04M** *1/00*

U.S. Cl. 370—32.1 **3 Claims**



1. An echo canceler for connection between a transmitter and a receiver of a bidirectional digital transmission device connected to a subscriber's line, for generating a pseudoecho from a signal to be transmitted and an error signal to cancel an echo that is reflected from the transmitter toward the receiver, said echo canceler comprising:

frame pattern generating means for generating a frame pattern;

frame pattern inserting means for inserting said frame pattern periodically into said signal to be transmitted;

echo canceling means for generating a pseudoecho from said signal to be transmitted with said frame pattern inserted therein and an error signal;

timing controlling means for extracting from a modified received signal a timing signal to control said frame pattern generating means, said frame pattern inserting means, and said echo canceling means and for outputting a phase signal indicating whether jitter of said timing signal is generated as a leading phase shift or a lagging phase shift;

jitter echo canceling means for generating a pseudojitter echo from said error signal and said phase signal;

first adding means for adding said pseudoecho to a received signal;

second adding means for adding said pseudojitter echo to an output signal from said first adding means to output said modified received signal; and

multiplying means for multiplying said modified received signal by a predetermined value to output said error signal; wherein

said timing controlling means includes means for controlling said timing signal to cause the jitter thereof to be generated immediately after said frame pattern is inserted into said signal to be transmitted.

5,353,280

FULL-DUPLEX START-UP FOR MODEMS

Gottfried Ungerböck, Langnau am Albis, Switzerland, assignor to International Business Machines, Armonk, N.Y.

Filed Apr. 27, 1993, Ser. No. 54,776

Claims priority, application European Pat. Off., Dec. 10, 1992, 92810978.4

Int. Cl.[5] H04L *29/08*

U.S. Cl. 370—32.1 **12 Claims**

1. A method of starting full-duplex communication between a first station with a calling modem and a second station with

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an answering modem, the answering modem, when called, sending an answering tone to the calling modem, the method comprising the following steps:

a1. sending from each of the modems (a sending modem) to the other modem (a receiving modem), intermittently and repetitively:

a set of channel probing tones at predetermined frequencies, and

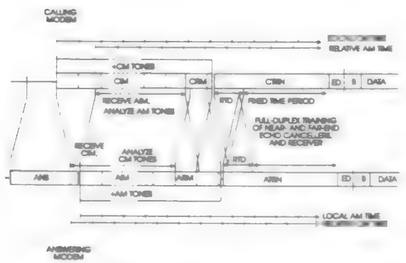
repetitive identification messages in a given frequency range, containing the sending modem's local time when the message is sent, and characterizing the sending modem by its capabilities in terms of parameters including supported modulation rates, center frequencies, and supported coding;

a2. at the receiving modem receiving said probing tones and identification messages:

establishing a running time reference from the sending modem's local time received in said identification message(s), and

determining transmission channel characteristics, in particular determining a useful bandwidth from said received probing tones;

b1. sending from the receiving modem:



repetitive response messages, each containing the running time reference at said receiving modem and transmission parameters selected from the parameters supported by both modems, based on the determined channel characteristics, in particular the modulation rate and center frequency, for subsequent transmission of training and data signals from the sending modem receiving said particular response message;

at the sending modem receiving said response message:

determining the round trip delay by comparing the running time reference and the actual local time at the sending modem;

extracting the information on the transmission parameters to be used for subsequent transmission of training and data signals to the receiving modem sending said response message;

c1. sending from each modem, at the respective determined transmission parameters, full-band training sequences;

c2. determining, at each modem that now sends and receives training sequences, the responses of the respective detected near-end and far-end echo paths and of the signal paths from the other modem to adjust receiver settings, in particular echo cancellors and equalizers as necessary for subsequent data transmission.

5,353,281

INTERMITTENCELESS SWITCHING SYSTEM

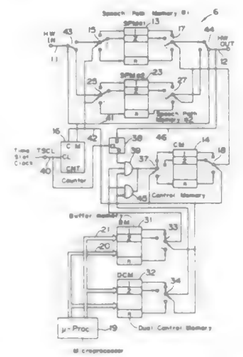
Hiroshi Kuwahara, Kodaira; Kazuhiro Suzuki, Koganei; Toshikazu Sasa; Keazo Urabe, both of Sendai; Arata Nakagoshi; Hideya Suzuki, both of Kokubunji; Yohichi Ogawa, Hayama; Tsuneo Furuya, Yokohama, and Yoshinobu Yamamoto, Fujisawa, all of Japan, assignors to Kokusai Electric Co., Ltd. and Hitachi, Ltd., both of Tokyo, Japan

Filed May 29, 1992, Ser. No. 889,952

Claims priority, application Japan, May 31, 1991, 3-155971

Int. Cl.[5] H04Q *11/04*

U.S. Cl. 370—58.1 **3 Claims**



1. An intermittenceless switching system including a time division switch for providing interconnection between a network communication channel and a plurality of time division multiplex communication channels, comprising:

a system input connectable to receive data from the plurality of time division multiplex communications channels;

a system output connectable to transmit data from the system to the network communication channel;

first and second speech path memories, each having sufficient capacity to store a frame of data comprising a plurality of time slots and each having an input and an output;

first and second write address change switches connected to said input of said first and second speech path memories respectively;

first and second read address change switches connected to said output of said first and second speech path memories respectively;

a memory write switch connected to said system input and said first and second write address change switches to selectively switch data from the system input to one of said first and second write address change switches;

a memory read switch connected to said first and second read address change switches to selectively connect one of said first and second read address change switches to said system output;

memory switch control means for continuously alternating the connections established by said memory read switch and said memory write switch so that data is written to said first speech path memory while it is read from said second speech path memory and read from said first speech path memory while it is written to said second speech path memory;

processing means for generating switch control information specifying desired operation of said first and second read address change switches and said first and second write address change switches;

buffer memory means connected to said processing means and having a buffer memory means output, for receiving switch control information from said processing means, buffering said switch control information, and transmitting said switch control information to said buffer memory means output in synchronism with a time slot clock; and

connection control means connected to said buffer memory means output, said first and second write address change switches, and said first and second read address change switches, for controlling the operation of said read address change switches and said write address change switches according to said switch control information received from said buffer memory means output.

5,353,282

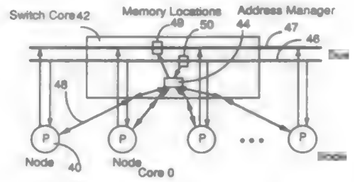
LOCAL AREA NETWORK EMBEDDED IN THE COMMUNICATION SWITCH CORE

Eric J. Dorner, Ottawa, and Ernst A. Munter, Kanata, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Mar. 18, 1993, Ser. No. 33,227

Int. Cl.[5] H04J *3/24;* **H04L** *12/44*

U.S. Cl. 370—58.1 **14 Claims**



1. In a switched communication network containing a common switch core and nodes among which data are switched in framed cells by way of a core memory of said common switch core, each frame being composed of an administration cell and zero or more data cells, a local area network for transmitting LAN data cells among said nodes by using said administration cell, comprising:

said common switch core having at least first and second LAN data memory locations in said core memory, said first and second LAN data memory locations alternately functioning as a collection location for storing a LAN data cell to be broadcast and as a broadcast location for holding a LAN data cell that is being broadcast in each successive frame time; and

said nodes connected to said common switch core and arranged in a physical star fashion relative to said common switch core in a predetermined logical order, so that each node reads said LAN data cell held in said broadcast location and writes its own LAN data cell in said collection location in each successive frame time in said logical order.

5,353,283

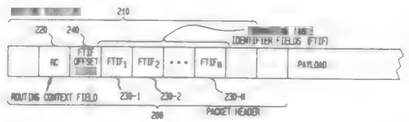
GENERAL INTERNET METHOD FOR ROUTING PACKETS IN A COMMUNICATIONS NETWORK

Paul F. Tsuchiya, Lake Hopatcong, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed May 28, 1993, Ser. No. 69,275

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—60 **24 Claims**



1. A method for transmitting via a sequence of nodes in a network a packet containing a sequence of identifiers and a pointer pointing to a particular identifier in said sequence of identifiers comprising the steps of:

at one of said nodes in which said packet is located, selecting a particular forwarding table from a set of forwarding tables maintained in a memory at said one node,

retrieving an entry from said selected forwarding table in response to said particular identifier pointed to by said pointer, and

transmitting said packet to a second node of said sequence of nodes indicated by said retrieved entry.

5,353,284

DATA TRANSMISSION SYSTEM

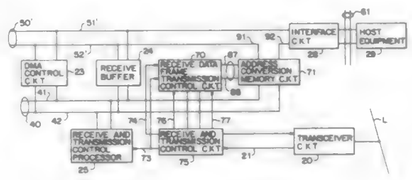
Yasuhisa Shiobara, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 12, 1992, Ser. No. 973,916

Claims priority, application Japan, Nov. 12, 1991, 3-295734

Int. Cl.[5] H04L *12/40;* **H04J** *3/26*

U.S. Cl. 370—85.1 **10 Claims**



1. A data transmission system comprising:

a plurality of nodes connected to a common transmission medium, the nodes periodically transmitting, receiving and storing data, wherein data received at one of the nodes is read out using a specific address common among the plurality of nodes for information exchange, each node further comprising:

a transceiver connected to the common transmission medium, the transceiver receiving a data frame and transmitting the data frame;

receive and transmission control means, the receive and transmission control means receiving the data frame, detecting whether the data frame designates said node and thereafter transmitting a data frame reception start signal and a data frame reception end signal;

received data frame transmission control means, the received data frame transmission control means extracting received data included in the received data frame in response to the data frame reception start signal, and transmitting the received data in response to the data frame reception end signal;

a receive buffer, receiving and storing the received data;

an interface providing the specific address;

an address conversion memory means, the address conversion memory means storing an address of the received data in the receive buffer and generating a conversion address in order to convert the specific address from the interface into the address of the received data and access the received data.

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5,353,285

TIME SLOT MANAGEMENT SYSTEM

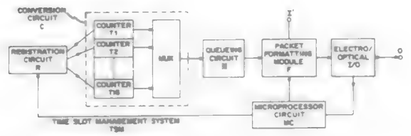
Gert Van Der Plas, Merchtem; Willem J. Verbiest, Sint Gillis Waas; Denis J. Mestdagh, Brussels, and Christiaan H. Sierens, Kontich, all of Belgium, assignors to Alcatel N.V., Rijswijk, Netherlands

Filed Dec. 1, 1992, Ser. No. 983,876

Claims priority, application European Pat. Off., Dec. 5, 1991, 91870197.0

Int. Cl.[5] H04J *3/16*

U.S. Cl. 370—84 **11 Claims**



1. A time slot management system for a digital time division multiple access system including a main station (MS) coupled to each of a plurality of user stations (U1/16) via the cascade connection of a common transmission link (Lc) and an individual user link (L1/16) with respect to the corresponding user stations (U1, U2, . . . , U16), said management system having means for allowing each of said user stations (U1/16) to transfer upstream information packets to said main station (MS) in time slots, the main station having means for associating a current bandwidth with each user station with respect to that user station sending upstream information packets, characterized by means for generating upstream information packets in said user stations (U1/16) to said main station (MS), including information concerning the desired bandwidths required for further transfer of upstream information packets by these stations at least when said bandwidths required are different from the main station respective current bandwidths, said time slot management system including a registration means (R) to store said user stations (U1/16) information indicative of each user station's desired bandwidth and a conversion and transmission means (C) to repetitively convert said user stations (U1/16) information to corresponding occurrences of identities constituting grant signals for the user stations having these identities in a stream of station identities, and packet processing means (I/O) to transmit said stream of identities in downstream information packets to said user stations (U1/16), each user station (U1/16) having means for detecting its own identity in said stream and for transferring a predetermined amount of upstream information packets upon detecting its own identity.

5,353,286

CONFIGURATION CONTROLLER FOR A COMMUNICATIONS NETWORK

Michael W. Patrick, Assonet, and James A. Daly, Chelsea, both of Mass., assignors to Digital Equipment Corporatino, Maynard, Mass.

Filed Apr. 14, 1993, Ser. No. 47,870

Int. Cl.[5] H04J *3/02*

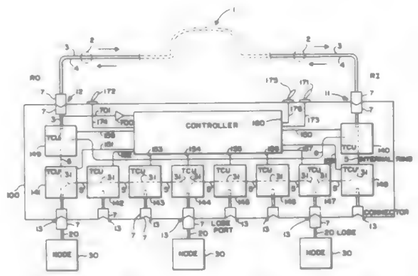
U.S. Cl. 370—85.15 **18 Claims**

1. An apparatus for controlling configuration of a communications network to communicate communications signals, the communications network having nodes for transmitting and receiving the communications signals and a signaling medium for transporting the communications signals, the signaling medium including a plurality of lobes for connecting to the nodes and a trunk circuit having ring segments for connecting to the lobes comprising:

an internal ring segment for connecting a plurality a ports;

said plurality of ports including lobe ports for connecting the nodes via the lobes a ring input port for connecting to an up stream ring segment, and a ring output port for connecting to a downstream ring segment;

a plurality of trunk coupling units, referred to as TCUs, there being one TCU corresponding to each of said plurality of ports, each of said plurality of TCUs for connecting a corresponding port to said internal ring segment, each of said plurality of TCUs having an inserted state to provide signaling continuity for the communications signals between said corresponding port and said internal ring segment, and each of said plurality of TCUs having a wrapped state to provide signaling isolation for the communications signals between said corresponding port and said internal ring segment;



a controller, responsive to the communications signals, for controlling said plurality of TCUs, said controller to switch a corresponding one of said plurality of TCUs to said inserted state white the communications signals at said corresponding port have a first state, or to switch said corresponding one of said plurality of TCU to said wrapped state white the communications signals at said corresponding port have a second state, to enable adjacent portions of the signaling medium to exchange the communications signals having said first state, and to disable adjacent portions of the signaling medium from exchanging communications signals having said second state.

5,353,287

LOCAL AREA NETWORK WITH MESSAGE PRIORITY

David W. Kuddes, Richardson; Anthony J. Mazzola, Plano, and Cecil Mathews, Dallas, all of Tex., assignors to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Mar. 25, 1992, Ser. No. 857,353

Int. Cl.[5] H04J *3/16;* **H04Q** *9/00*

U.S. Cl. 370—85.2 **6 Claims**

1. A method for adding a message priority scheme to a local area network station control unit operating in accordance with carrier sense, multiple access with collision detect (CSMA/CD) bus access protocol, comprising the steps of:

generating a carrier sense signal in response to a carrier to inhibit transmission of a message;

disabling said carrier sense signal when said message is a high priority message;

transmitting said high priority message while said carrier sense signal is disabled;

generating a collision detect signal in response to a collision between said high priority message and another message;

inhibiting a re-transmission of said high priority message for a high priority backoff period in response to said collision detect signal;

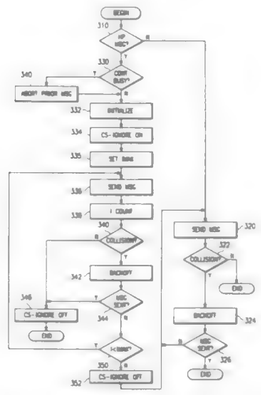
re-transmitting said high priority message, in response to said collision detect signal, after said high priority backoff period has elapsed;

updating a count value in response to said collision detect signal;

repeating the collision detect signal generating, inhibiting, re-transmitting and updating steps until either no collision occurs or said count value equals a predetermined number;

re-enabling said carrier sense signal;

prohibiting transmission of messages while said carrier sense signal is generated; and



re-transmitting said high priority message when said count value equals said predetermined number, when said high priority backoff period has elapsed, and generation of said carrier sense signal has ceased.

5,353,288

DEVICE FOR SELECTING RECEPTION SIGNALS AS A FUNCTION OF THEIR POWER

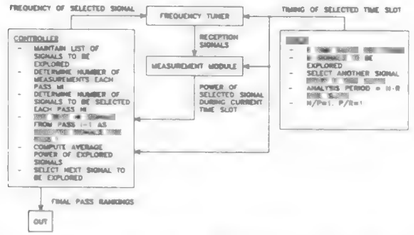
Ouélid Abdesselem, Paris, and Lydie Desperben, Bois Colombes, both of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Aug. 30, 1991, Ser. No. 753,295

Claims priority, application France, Sep. 3, 1990, 90 10940

Int. Cl.[5] H04B *7/212*

U.S. Cl. 370—95.1 **11 Claims**



1. A device for selecting reception signals as a function of their power, said reception signals being identified by their frequency and being structured into frames, each frame consisting of a predetermined integral number p of time slots, each of the p time slots in a frame occupying a respective one of p different time slot positions, data concerning a group of said reception signals being stored in a corresponding table of explored signals, said device comprising:

analysis means for selecting during each analysis period of a succession of repetitive analysis periods at least one individual selected time slot in succession from each of said explored signals in said corresponding table of explored signals to thereby form a sequence of selected time slots, any two successive said selected time slots starting at instants separated by a period corresponding to a predetermined integral number r of time slots,

measuring means for producing the power of each one of said explored signals using as a basis measurements carried out on several said selected time slots that correspond thereto, and

control means for associating individual ones of said group of reception signals with particular entries in said table of explored signals and for identifying the explored signals having the highest power,

wherein the selected time slots of a particular explored signal during any two successive analysis periods occupy different ones of said p time slot positions.

5,353,289

FAULT JUDGING DEVICE COMPRISING A COMPRESSION CIRCUIT FOR COMPRESSING OUTPUT PATTERN SIGNALS OF A CIRCUIT MODEL

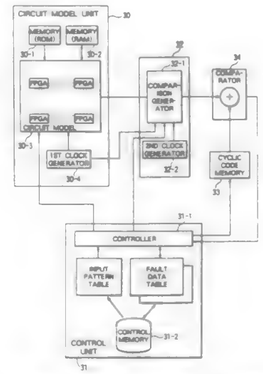
Kenzo Ohkawa, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Oct. 31, 1991, Ser. No. 785,820

Claims priority, application Japan, Oct. 31, 1990, 2-292097

Int. Cl.[5] G06F *11/28*

U.S. Cl. 371—23 **2 Claims**



1. A fault judging device for use in simulating a circuit model which is defined by a fault data signal indicative of one of circuit elements in said circuit model to produce a judging result signal, said circuit model being operable in response to first through n-th input pattern signals and producing first through n-th output pattern signals where n represents a natural number greater than unity, said device comprising:

signal producing means connected to said circuit model for producing said fault data signal for selectively enabling said one of the circuit elements;

a compression circuit connected to said circuit model for compressing said first through said n-th output pattern signals by cyclic coding to produce a compressed signal represented by a cyclic code sequence;

a cyclic code memory for memorizing a specific cyclic code sequence which defines a normal circuit related to said circuit model; and

comparing means connected to said compression circuit and said cyclic code memory for comparing said cyclic code sequence with said specific cyclic code sequence, said comparing means producing a comparison result signal, as said judging result signal, representative of a fault of said one of the circuit elements when said cyclic code se-

VOL 1167 ISS 1 OCT 4 1994 UMI

quence does not coincide with said specific cyclic code sequence.

5,353,290

MAGNETIC RECORDER/REPRODUCER

Kazuhito Endo; Masayuki Ishida, and Yoshinobu Ishida, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

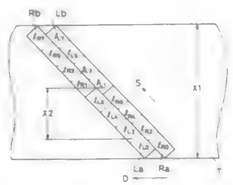
Continuation of Ser. No. 941,012, Sep. 4, 1992, Pat. No. 5,233,480, which is a continuation of Ser. No. 732,020, Jul. 18, 1991, Pat. No. 5,146,370, which is a continuation of Ser. No. 619,625, Nov. 29, 1990, Pat. No. 5,113,293, which is a continuation of Ser. No. 486,499, Feb. 27, 1990, abandoned, which is a continuation of Ser. No. 214,275, Jun. 30, 1988, Pat. No. 4,905,100, which is a continuation of Ser. No. 19,612, Feb. 27, 1987, Pat. No. 4,835,627, which is a continuation of Ser. No. 696,051, Jan. 29, 1985, Pat. No. 4,675,754. This application Jun. 30, 1993, Ser. No. 83,780

Claims priority, application Japan, Feb. 21, 1984, 59-32130; Mar. 16, 1984, 59-51866; Mar. 30, 1984, 59-64584

The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.

Int. Cl.[5] G11B *5/09*

U.S. Cl. 371—37.1 **41 Claims**



1. A rotary head type magnetic recording apparatus for recording an ordered input sequence of words represented by digital signals successively input in a unit time in a plurality of diagonal tracks on a recording medium, wherein each of said tracks includes a first region positioned in a longitudinal direction of the track at a former half thereof relative to a central portion of the track, a second region positioned at a latter half of the track relative to the central portion thereof, and a redundant data region,

said first region including a plurality of m subregions ordered from 0 to m−1 in an arrangement starting from one edge of the track to the center of the track, said second region including m subregions ordered from 0 to m−1 in an arrangement starting from the center of the track to the other edge thereof, and said redundant data region including redundant data for error correction or error detection of the digital signals representing words recorded in said first and second regions on the same track with said redundant data,

wherein said digital signals are recorded such that a plurality of words are arranged in each said subregion, said magnetic recording apparatus comprising:

recording signal processing means for arranging said digital signals input in the unit time to be recorded in first and second tracks, and for:

recording a first word group on the first region of said first track, a first word of said first word group having an input order of 0, said first word group including words having an order of 4n in the input sequence, where n is an integer 0, 1, 2, . . . ,

or recording a second word group on the first region of said second track, said second word group including words having an order of 4n+1 in the input sequence,

for recording a third word group on the second region of said second track, said third word group including words having an order of 4n+2 in the input sequence, and

for recording a fourth word group on the second region of said first track, said fourth word group including words having an order of 4n+3 in the input sequence,

said recording signal processing means supplying said digital signals such that, in each region, words of each said recorded word group are arranged on the 0th to m−1th subregions in a common ordering sequence with respect to the input order thereof, and

redundant data generating means for generating redundant data for error correction or error detection of the digital signals representing words to be recorded on the same track with said redundant data.

5,353,291

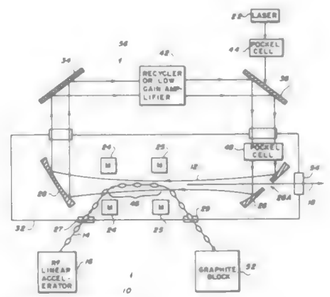
LASER SYNCHROTRON SOURCE (LSS)

Phillip A. Sprangle, Potomac; Antonio Ting, Silver Spring; Eric H. Esarey, Chevy Chase, all of Md.; Amnon Fisher, Alexandria, Va.; Gerard Mourou, Ann Arbor, Mich., and Ravindra Sudan, Ithaca, N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 19, 1993, Ser. No. 20,158

Int. Cl.[5] H01S *3/30*

U.S. Cl. 372—5 **33 Claims**



1. A device comprised of;

means for generating a tunable laser beam;

a plurality of mirrors arranged so as to form a ring resonator for confining the laser beam;

means for generating an electron beam to interact with the laser beam so as to produce photons in the form of hard x-rays by Thompson scattering of the laser beam by the electron beam; and

a vacuum chamber forming an interaction chamber where the laser beam and the electron beam interact to product the hard x-rays.

5,353,292

LASER LIGHT WAVELENGTH CONVERSION APPARATUS CAPABLE OF PROVIDING A UNIFORM TEMPERATURE DISTRIBUTION

Tetsuya Motegi, Tokyo, Japan, assignor to Hoya Corporation, Tokyo, Japan

Filed Nov. 2, 1992, Ser. No. 970,000

Claims priority, application Japan, Oct. 31, 1991, 3-286416

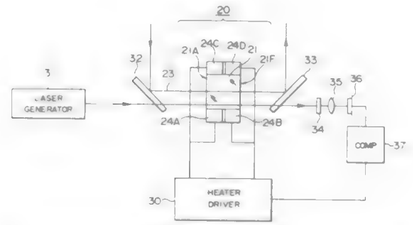
Int. Cl.[5] G02F *1/35;* **H01S** *3/108*

U.S. Cl. 372—21 **11 Claims**

1. A laser light wavelength conversion apparatus for use in responding to an incident light beam of a first wavelength to generate an output light beam which has a second wavelength different from said first wavelength, said apparatus comprising:

a non-linear optical crystal of a thin plate having an incident surface and an output surface opposite said incident surface, said incident surface receiving said incident light beam of said first wavelength and having a center portion and a peripheral portion surrounding said center portion,

said optical crystal generating, through said output surface, said output light beam of said second wavelength and having a temperature distribution between said center portion and said peripheral portion on a sectional surface parallel to said incident surface when said incident light beam is incident onto said incident surface; and



heating means brought into contact with said non-linear optical crystal for forcibly heating said optical crystal without movement of said incident light beam so that said temperature distribution provides a uniform temperature at the center portion of the sectional surface and in a region extending from said center portion to side portions of the crystal.

5,353,293

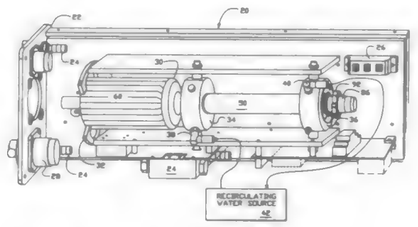
HYBRID COOLED ION LASER

William A. Shull, Aptos, Calif., assignor to Spectra-Physics Lasers, Inc., Mountain View, Calif.

Filed Apr. 27, 1993, Ser. No. 54,313

Int. Cl.[5] H01S *3/04*

U.S. Cl. 372—34 **28 Claims**



1. A high powered laser, comprising:

a laser tube containing a resonator mirror and an output coupler defining a resonator cavity, said tube containing an active medium and said laser tube having a first end defining a first section of said laser tube, and a second end defining a second section of said laser tube;

a first cooling device coupled to a first section of the laser tube made of a ceramic material that has a greater efficiency for removing heat in a high temperature environment than a non-ceramic material, the first section of said laser tube operating at a high temperature, the first cooling device including a circulating liquid coolant to cool said first section;

a second cooling device for cooling, provided to a second section of the laser tube made of non-ceramic material, said second section operating at a lower temperature than the high temperature of the first section of said laser tube, the second cooling device operating substantially by circulating air; and

a power supply coupled to the laser tube.

5,353,294

SEMICONDUCTOR LASER DEVICE AND SEMICONDUCTOR LASER MODULE

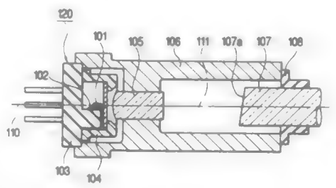
Kazuo Shigeno, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 30, 1992, Ser. No. 954,157

Claims priority, application Japan, Oct. 2, 1991, 3-254041

Int. Cl.[5] H01S *3/18;* **G02B** *6/26*

U.S. Cl. 372—43 **4 Claims**



1. A semiconductor laser device comprising:

a coaxial package having an axis which coincides with an axis of an optical fiber coupled thereto;

a stem, coupled into said package, having a sub-mount portion for incorporating said semiconductor chip, an upper surface of said sub-mount portion being formed to be shifted in a radial direction away from the axis of said package;

a heat-radiation heat sink arranged on the upper surface of said sub-mount portion; and

a semiconductor laser chip, incorporated on said heat sink, having an emission position which is a position for emitting a laser beam, said emission position being set to be vertically shifted in a radial direction away from the axis of said package by a thickness of said heat sink in order to decrease a coupling loss.

5,353,295

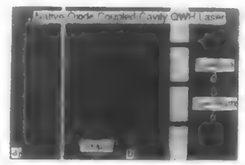
SEMICONDUCTOR LASER DEVICE WITH COUPLED CAVITIES

Nick Holonyak, Jr., Urbana; Nada El-Zein, Champaign, both of Ill., and Fred A. Kish, Sunnyvale, Calif., assignors to The Board of Trustees of the University of Illinois, Urbana, Ill.

Filed Aug. 10, 1992, Ser. No. 927,822

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—50 **34 Claims**



1. A semiconductor laser device, comprising:

a semiconductor active region disposed between first and second semiconductor confining layers;

an electrode array having electrode elements coupled with said first confining layer;

at least one opposing electrode coupled with said second confining layer;

the electrode elements of said array being spaced apart and forming a two-dimensional array that includes a plurality of electrode elements along a line and at least one further electrode element laterally spaced from the electrode elements of said line; and

means for applying electrical signals between said electrode

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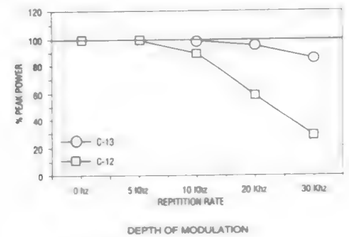
elements and said opposing electrode to effect light emission in active regions defined under said plurality of electrode elements and in at least one active region defined under said at least one further electrode element, and to effect lateral coupling of said emissions.

5,353,296

MATERIALS PROCESSING WITH A HIGH REPETITION RATE ISOTOPIC CARBON DIOXIDE LASER

Dale E. Koop, Sunnyvale, Calif., assignor to Coherent, Inc., Santa Clara, Calif.

Filed Jul. 12, 1993, Ser. No. 90,410
Int. Cl.[5] H01S *3/22*
U.S. Cl. 372—55 **35 Claims**



DEPTH OF MODULATION

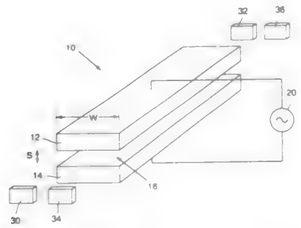
1. A laser for use in materials processing comprising:
a sealed housing for holding a lasing gas mixture;
a resonant cavity defining a gas discharge region;
a pair of electrodes for exciting said gas mixture in said gas discharge region; and
a pulsed RF excitation means for energizing said electrodes and exciting said gas mixture in said gas discharge region to generate a pulsed laser beam and wherein the lasing species in said gas mixture consists primarily of an isotope of carbon dioxide with the remaining constituents and pressure of said gas mixture being selected to provide a depth of modulation of said laser output of at least eighty percent at pulse repetition rates up to 20 Khz.

5,353,297

GAS SLAB LASER WITH FOLDED RESONATOR STRUCTURE

Dale E. Koop, Sunnyvale, and Hartmuth Hecht, Mountain View, both of Calif., assignors to Coherent, Inc., Santa Clara, Calif.

Filed Jul. 12, 1993, Ser. No. 90,810
Int. Cl.[5] H01S *3/03*
U.S. Cl. 372—64 **36 Claims**



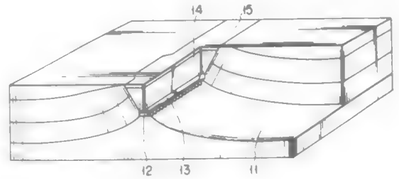
1. A gas laser comprising:
a pair of elongated electrodes, said electrodes being spaced apart to define a discharge region therebetween, said discharge region having a slab configuration with a wide axis and a narrow axis;
a lasing gas disposed between said electrodes;
means for energizing the electrodes to excite the gas and generate a gas discharge; and
resonator means for generating a laser beam, said resonator means including at least two separate mirrors disposed at each end of said electrodes, said mirrors having an angular orientation and curvature to define a waveguide region in the narrow axis between the entire surfaces of said electrodes and free space propagation in the wide axis and wherein the mirrors cooperate to fold the beam along multiple paths in the wide axis with each path extending between mirrors at opposite ends of said electrodes and wherein said beam paths sweep through the entire discharge region bounded by the mirrors.

5,353,298

HIGH POWER DISTRIBUTED FEEDBACK SEMICONDUCTOR LASER EXCELLENT IN LINEARITY OF LIGHT OUTPUT

Akio Makuta, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 2, 1993, Ser. No. 115,145
Claims priority, application Japan, Sep. 7, 1992, 4-238134
Int. Cl.[5] H01S *3/08, 3/19*
U.S. Cl. 372—96 **4 Claims**



1. A high power distributed feedback semiconductor laser which is excellent in the linearity of light output has a periodic structure formed along the laser medium in the axial direction of a cavity and in which one of the end facet of said cavity has high reflectivity and the other end facet has low reflectivity, comprising a phase shifting portion, that is, a phase discontinuous portion of said periodic structure which is disposed in position deviated from the central portion of said resonator towards the high-reflectivity end facet, wherein the phase shift $\Delta\Phi$ of said phase shifting portion is set to exceed $3\pi/4$ which is represented in terms of the phase of waveguiding light (which corresponds to $3\lambda/8$ when the lasing wavelength is λ).

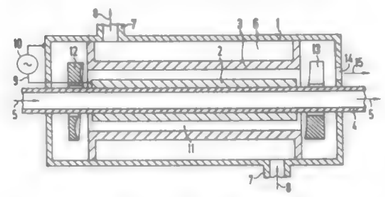
5,353,299

GAS LASER

Hinrich Martinen, Reinbek, and Hermann Hage, Hamburg, both of Fed. Rep. of Germany, assignors to Rofin-Sinar Laser GmbH, Hamburg, Fed. Rep. of Germany

Filed Sep. 21, 1992, Ser. No. 948,023
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1990, 9003331[U]
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—99 **16 Claims**

1. An electrically excited gas laser, comprising:
a) coaxial hollow-cylindrical electrodes defining a discharge space between said electrodes and ends of said discharge space; b) two resonator mirrors each being disposed at a respective one of said ends of said discharge space;
c) at least one of said resonator mirrors forming an intersection line with a cylindrical surface defined coaxially between said electrodes, said intersection line extending obliquely offset from the circumferential direction;
d) said resonator mirrors forming intersection lines with an axial plane of said electrodes, said intersection lines extending substantially at right angles to the axis; and



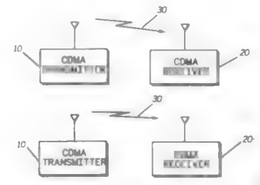
e) at least one of said resonator mirrors extending over only a portion of the circumference of said discharge space.

5,353,300

COMMUNICATION METHOD FOR AN ADAPTIVE DIRECT SEQUENCE CDMA COMMUNICATION SYSTEM

Edward K. B. Lee, Sunrise; Jimmy Cadd, Coral Springs; Tracy L. Fulghum, and Robert S. Babayi, both of Sunrise, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 7, 1993, Ser. No. 71,879
Int. Cl.[5] H04L *27/30*
U.S. Cl. 375—1 **11 Claims**



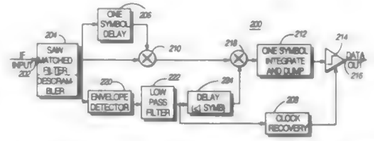
1. In a CDMA communication system having a transmitter for transmitting a direct sequence spread spectrum (DS-SS) communication signal comprising bit sequences coded with spreading chip sequences and a receiver for receiving said communication signal; a communication method comprising the steps of:
at the transmitter:
spreading the bit sequences including a training bit sequence with the chip sequence to produce a spread bit sequence;
modulating the spread bit sequence to produce a DS-SS communication signal;
transmitting the DS-SS communication signal;
at the receiver:
receiving the DS-SS communication signal;
demodulating the received DS-SS communication signal;
adaptively determining an optimal despreading chip sequence using said training bit sequence during a training interval;
determining chip timing offset after the training interval during a chip timing interval to perform bit synchronization;
determining bit timing offset after the chip timing interval during a bit timing interval to perform bit synchronization; and
despreading said modulated DS-SS communication signal.

5,353,301

METHOD AND APPARATUS FOR COMBINING MULTIPATH SPREAD-SPECTRUM SIGNALS

James E. Mitzlaff, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 17, 1993, Ser. No. 123,497
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 **21 Claims**



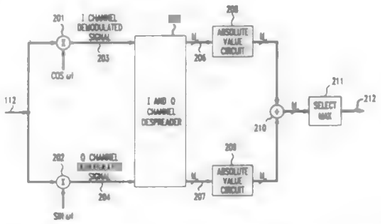
1. A spread-spectrum signal multipath combiner, comprising:
(a) matched filtering means for detecting an envelope of an input differential phase shift keyed signal communicated over a communication channel;
(b) envelope detector means, operatively coupled to the matched filtering means, for detecting a replica of a multipath echo structure for the communication channel within the detected envelope;
(c) combiner means, operatively coupled to the matched filtering means and the envelope detector means, for combining the input differential phase shift keyed signal with the detected replica of the multipath echo structure for the communication channel such that a multipaten echo structure weighted differential phase shift keyed signal is formed; and
(d) integrator means, operatively coupled to the combiner means, for integrating the multipath echo structure weighted differential phase shift keyed signal over a one symbol period centered on a correlation peak such that power from a plurality of signal paths determines an output data bit.

5,353,302

SIGNAL DESPREADER FOR CDMA SYSTEMS

Qi Bi, Morris Plains, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 3, 1993, Ser. No. 12,870
Int. Cl.[5] H04L *27/30*
U.S. Cl. 375—1 **9 Claims**



1. In a CDMA system which transmits a coded signal for each of a plurality of users through a bandlimited channel, each coded user signal being formed by processing that user's symbols using a sequence of code coefficients, said sequence being different for each user, and wherein a received signal includes a composite of all coded user signals, apparatus comprising:
means for receiving samples of said received signal;
means for forming a filtered replica of each sequence of code coefficients: and
means for estimating a user's symbols in response to said

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received signal samples and in response to said filtered replica of the sequence of code coefficients used to from this user's coded signal.

5,353,303

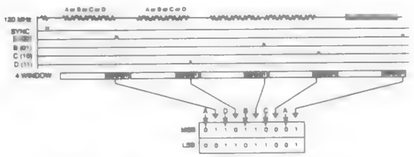
TECHNIQUE FOR INCREASING THE DATA RATE IN A SPREAD SPECTRUM DATA LINK

David E. Walthall, Crestview, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Wright-Patterson Air Force Base, Ohio

Filed Oct. 4, 1993, Ser. No. 134,011

Int. Cl.[5] H04L *27/30;* **H03C** *7/00*

U.S. Cl. 375—1 **5 Claims**



1. A method of spread spectrum encoding digital data on a data link in which information is transmitted and received at a given rate on a waveform, comprising:

synchronizing the waveform by first transmitting a synchronizing fixed pattern of a predetermined number of bits of 1's and 0's, and generating a sync pulse when all bits of this fixed pattern sync code have been received by a sync corrector, and the sync pulse provides all timing references for the duration of a message;

modulating a data portion of the waveform with a pulse position code, where each data pulse represents two bits of information, with each pulse modulated as the final chip of a fixed chip code sequence of a predetermined number of bits, clocked at said given rate, using at least four different data chip codes, designated as A, B, C and D chip code patterns, with each chip code sequence occurring during a window of a predetermined duration, the two-bit data content being modulated with respect to where the chip code correlated in the window, the four data chip code patterns being orthogonal to each other and to the synchronizing fixed pattern; and

having each of the four data chip codes represent data in addition to the two bits represented by said pulse position.

5,353,304

SURFACE ACOUSTIC WAVE DEVICE, AND DEMODULATING APPARATUS AND COMMUNICATION SYSTEM USING THE SURFACE ACOUSTIC WAVE DEVICE

Norihiro Mochizuki, Machida, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 55,347, May 3, 1993, abandoned. This application Jan. 19, 1994, Ser. No. 183,255

Claims priority, application Japan, May 8, 1992, 4-142059; Jun. 29, 1992, 4-192807

Int. Cl.[5] H01L *41/04*

U.S. Cl. 375—1 **70 Claims**

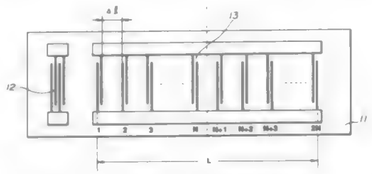
1. A surface acoustic wave device, said device comprising:

a piezoelectric substrate;

an input electrode for generating a surface acoustic wave propagated in a predetermined direction, in accordance with an input signal, said input electrode being formed on said substrate; and

an output electrode for converting the surface acoustic wave to an electric signal, said output electrode being formed on said substrate; and

wherein one of said input and output electrodes comprises a plurality of taps equidistantly arranged in a propagation direction of the surface acoustic wave and satisfies an equation $L+\Delta l=2V/A$ where L is a length of one of said input and output electrodes in the propagation direction,



Δl is a length of a space between said taps, A is a transmission speed of the input signal and V is a propagation velocity of the surface acoustic wave.

5,353,305

INITIAL TRAINING APPARATUS FOR USE IN A TRANSMITTER AND RECEIVER APPARATUS

Misao Fukuda, Tokyo; Shinji Ohta, Kawasaki; Seiji Miyoshi, Yokohama; Seiichi Yamato, Fukuoko; Kazuyoshi Maruyama, Yokohama; Yutaka Awata, Kawasaki, and Kinji Kawada, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

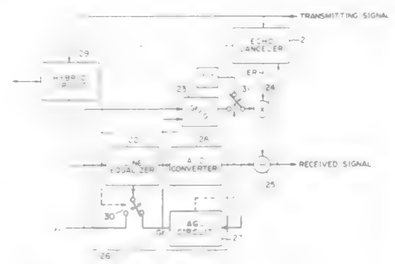
PCT No. PCT/JP89/00595, § 371 Date Feb. 14, 1990, § 102(e) Date Feb. 14, 1990, PCT Pub. No. WO89/12934, PCT Pub. Date Dec. 28, 1989

PCT Filed Jun. 14, 1989, Ser. No. 465,225

Claims priority, application Japan, Jun. 17, 1988, 63-149373; Jun. 17, 1988, 63-149374

Int. Cl.[5] H03H *7/30*

U.S. Cl. 375—13 **32 Claims**



17. An initial training apparatus, comprising:

echo canceler means, connectable to receive a first signal, for producing a replica echo signal based on the first signal;

automatic equalizer means, having an initial gain and connectable to receive the first signal and for providing an adaptive gain based on the first signal and the initial gain;

means for dividing the adaptive gain by the initial gain;

gain correcting means for providing a ratio responsive to the dividing of the adaptive gain by the initial gain by said means for dividing; and

correction means for correcting the replica echo signal based on the ratio and the replica echo signal.

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TAP-WEIGHT CONTROLLER FOR ADAPTIVE MATCHED FILTER RECEIVER

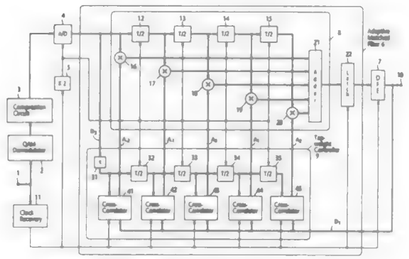
Takeshi Yamamoto, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 28, 1992, Ser. No. 997,183

Claims priority, application Japan, Dec. 27, 1991, 3-360196

Int. Cl.[5] H03H *7/30*

U.S. Cl. 375—14 **2 Claims**



1. A receiver comprising:

an equalizer;

analog-to-digital (A/D) converter means for receiving signals at symbol rate and converting the signals into digital samples at a rate which is n times higher than the symbol rate, where n is an integer equal to or greater than 2;

a transversal filter having a first tapped delay line of a series of delay elements for receiving the digital samples from the A/D converter means, a plurality of tap-weight multipliers connected respectively to successive taps of the delay line, and means for summing outputs of the tap-weight multipliers to produce a matched filter output and supplying the matched filter output to said equalizer at the symbol rate;

a tap-weight controller having a second tapped delay line of a series of delay elements for receiving the digital samples from the A/D converter means so that a digital sample at a center tap of the second delay line is substantially time coincident with a digital sample from the equalizer, and a plurality of cross-correlators corresponding respectively to the tap-weight multipliers of said transversal filter, each of the cross-correlators being connected to a corresponding one of successive taps of the second delay line, each of the cross-correlators comprising:

latch means for receiving a digital sample from the corresponding tap of the second delay line and latching the digital sample at the symbol rate;

a multiplier for multiplying the latched digital sample with the digital sample from the equalizer to produce a digital sample of a correlation value;

averaging means for successively summing the digital sample from the multiplier to produce an output digital sample representing an average of a summed correlation values and supplying the output digital sample as higher significant bits of a tap-weight coefficient to a corresponding one of said tap-weight multipliers; and

inverter means for inverting a most significant bit of the output digital sample of the averaging means, producing a group of bits each having the same binary value as the inverted most significant bit, and supplying the group of bits to the corresponding tap-weight multiplier as lower significant bits of the tap-weight coefficient.

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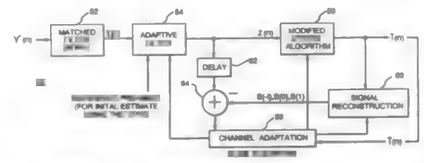
AUTOMATIC SIMULCAST ALIGNMENT

Howard L. Lester, Aiplaus, N.Y., and Sandeep Chennakeshu, Cary, N.C., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 754,471, Sep. 3, 1991, abandoned. This application Jul. 20, 1993, Ser. No. 95,367

Int. Cl.[5] H03H *7/30, 7/40*

U.S. Cl. 375—14 **36 Claims**



1. Apparatus for simultaneously receiving a plurality of identical RF signals asynchronously from a plurality of transmitter means without mutual interference, each of the RF signals being modulated to convey identical digitally encoded information, comprising:

receiving means, including a single receiving antenna, for simultaneously receiving the plurality of RF signals from said antenna, said RF signals being Of amplitude dependent upon distance of the receiving means from each of the respective transmitter means; and

adaptive equalizer means, having an input coupled to the receiving means, for adaptively equalizing the plurality of received RF signals to correct for a misalignment in time between the received signals, the misalignment in time being due in part to a non-simultaneous transmission of the identical digitally encoded information from each of the plurality of transmitter means.

5,353,308

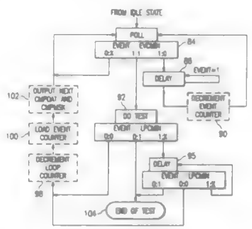
EVENT QUALIFIED TEST METHODS AND CIRCUITRY

Lee D. Whetsel, Jr., Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 78,491, Jun. 17, 1993, abandoned, which is a continuation of Ser. No. 833, Jan. 5, 1993, abandoned, which is a continuation of Ser. No. 563,573, Aug. 6, 1990, abandoned. This application Oct. 8, 1993, Ser. No. 134,510

Int. Cl.[5] G01R *31/28*

U.S. Cl. 371—22.3 **42 Claims**



1. A method of testing a circuit comprising the steps of:

providing at least one event qualification cell having an internal memory and having compare circuitry for comparing data input into the compare circuitry with data stored in said internal memory;

operating said event qualification cell for detecting each occurrence of a specified event;

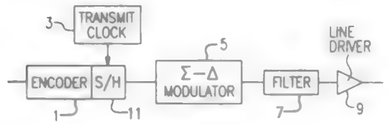
counting the number of occurrences of the specified event;

executing a test responsive to detecting a predetermined number of occurrences of the specified event; and

executing said test for a predetermined number of clocks.

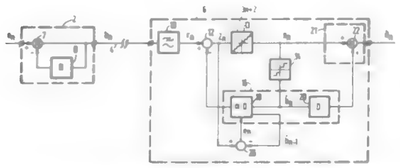
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5,353,309
ISDN TRANSMITTER
Oscar E. Agazzi, Florham Park, N.J., and Steven R. Norsworthy, Emmanus, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed May 1, 1992, Ser. No. 877,902
Int. Cl.[5] H04B *14/06*
U.S. Cl. 375—59 9 Claims



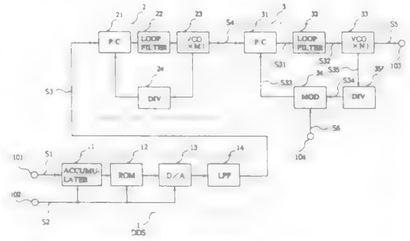
1. A transmitter comprising:
an encoder for receiving an incoming digital data stream at a first clock rate and converting it into digital PCM levels at a second clock rate;
a transmit clock which is connected to the encoder and comprises means for adjusting the phase of the data stream;
a sigma-delta modulator which receives the data stream from the encoder and operates at a third clock rate; and
a filter, said filter comprising means for sample-hold at a third-clock rate connected to said modulator, and an analog filter which receives the output from said sigma-delta modulator.

5,353,310
DATA TRANSMISSION SYSTEM WITH REDUCED ERROR PROPAGATION
Mark A. Russell; Johannes W. M. Bergmans; Antonius J. P. Bogers, and Eric Kathmann, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 4, 1992, Ser. No. 971,380
Claims priority, application European Pat. Off., Dec. 11, 1991, 91203256.2
Int. Cl.[5] H03D *1/06, 11/04;* H03K *5/01, 6/04;* H04B *1/10;* H04L *1/00, 25/08*
U.S. Cl. 375—101 7 Claims



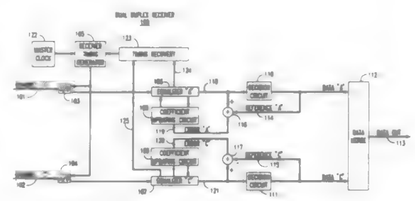
1. Transmission system for transmitting signals from a source to a destination, comprising
a) a channel, for providing a channel output signal;
b) a transmitter coupled to the channel, which transmitter includes coding means for converting input symbols into channel symbols;
c) a receiver coupled to an output of the channel, which receiver includes
i) subtracter means for determining a difference signal between the channel output signal and a feedback signal,
ii) quantizing means for obtaining a quantized difference signal from said difference signal,
iii) filter means for deriving the feedback signal and a feed-forward signal from the quantized difference signal, which filter means includes
A) a first filter for deriving the feedback signal, which first filter is channel-adaptive, and
B) a second filter, differing from the first filter, for deriving the feed-forward signal, and
iv) decoding means for detecting output symbols in the difference signal and the feed-forward signal.

5,353,311
RADIO TRANSMITTER
Minoru Hirata, and Osamu Yamamoto, both of Tokyo, Japan, assignors to NEC Corporation, Japan
Filed Jan. 11, 1993, Ser. No. 2,147
Claims priority, application Japan, Jan. 9, 1992, 4-001904; Mar. 5, 1992, 4-083405
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 14 Claims



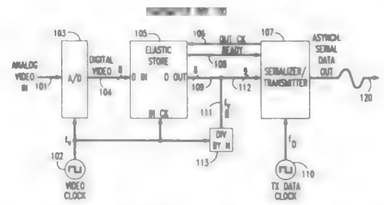
1. A radio transmitter comprising:
reference signal inputting means for receiving a reference signal;
modulating signal inputting means for receiving a modulating signal;
transmit signal outputting means for outputting a transmit signal;
voltage controlled oscillating means responsive to a control signal for generating the transmit signal phase locked to the reference signal; and
phase locking means responsive to the reference signal, the modulating signal and the transmit signal for generating the control signal;
said phase locking means comprising phase modulating means for generating a phase modulated signal by modulating a phase of a signal associated with the transmit signal by the modulating signal.

5,353,312
EQUALIZER-BASED TIMING RECOVERY
Robert L. Cupo, Eatontown, and Cecil W. Farrow, Highlands, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 27, 1991, Ser. No. 815,010
Int. Cl.[5] H03H *7/30*
U.S. Cl. 375—106 24 Claims



1. Apparatus comprising
means responsive to a received signal for forming a succession of received signal samples using a sampling clock, said received signal having at least one preselected non-zero frequency component,
means for filtering said samples, said filtering means having an amplitude and a delay response, and
means for generating said sampling clock as a function of said delay response to said frequency component, said generating means being unresponsive to said amplitude response.

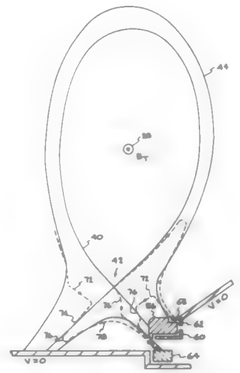
5,353,313
TRANSMISSION OF A CLOCK SIGNAL OVER AN ASYNCHRONOUS DATA CHANNEL
William K. Honea, Denver, Colo., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Apr. 10, 1992, Ser. No. 866,721
Int. Cl.[5] H04L *7/00, 25/36*
U.S. Cl. 375—118 12 Claims



1. Transmitter apparatus for communicating an input digital data word and an input clock signal over a communication channel at a data word transmission rate which operates asynchronously with respect to said input clock signal, said transmitter comprising
means for generating said input data word from an input analog signal sampled by said input clock signal, said input clock signal being derived independently of said input analog signal,
means for dividing said input clock signal by a predetermined integer to obtain a sub-rate frequency clock signal which is less than or equal to one-half of the data word transmission rate of said transmitter and
means for combining a logic state sample of said sub-rate clock signal together with said input data word to form each data word to be transmitted in a packet data format from said transmitter.

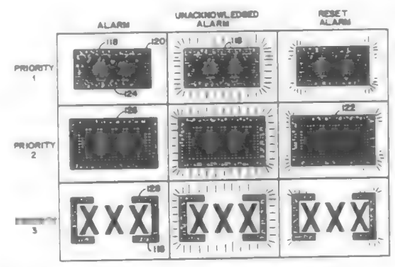
5,353,314
ELECTRIC FIELD DIVERTOR PLASMA PUMP
Michael J. Schaffer, San Diego, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Sep. 30, 1991, Ser. No. 769,633
Int. Cl.[5] G21B *1/00*
U.S. Cl. 376—134 14 Claims

13. A method for removing plasma exhaust from a tokamak system, said tokamak system including a vessel and means for generating a magnetic field B that confines plasma within a toroidal volume within said vessel; said tokamak system further including a poloidal divertor having a separatrix X-point and scrape-off layer (SOL) associated therewith, with plasma being diverted by said poloidal divertor along said SOLs to a strike position adjacent said X-point; said tokamak system further having duct means for collecting plasma exhaust; said method comprising the steps of:
(a) positioning a ring electrode near a strike position such that said ring electrode makes contact with plasma in a SOL and such that the separatrix of a poloidal divertor is incident upon said ring electrode:
(b) insulating a plasma-facing side of said ring electrode from the vessel walls and duct means of the tokamak system with a first insulator;
(c) insulating a portion of a wall of the vessel adjacent said strike position but spaced apart from said ring electrode with a second insulator;



(d) positioning an entrance aperture of said duct means intermediate to said ring electrode and said second insulator; and
(e) applying an electric field E between said ring electrode and said vessel wall, whereby an E×B drift is developed which drives plasma being diverted towards said strike position through said entrance aperture.

5,353,315
PRIORITY CODING FOR CONTROL ROOM ALARMS
Kenneth Scarola; David S. Jamison, both of Windsor; Richard M. Manazir, North Canton; Robert L. Rescorl, Vernon, and Daryl L. Harmon, Enfield, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.
Continuation of Ser. No. 927,057, Aug. 6, 1992, Pat. No. 5,287,390, which is a division of Ser. No. 430,792, Nov. 2, 1989, Pat. No. 5,267,277. This application Dec. 29, 1993, Ser. No. 174,990
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—259 14 Claims



10. A method of controlling the presentation of abnormal condition alarms in an alarm system for use by an operator of a nuclear power plant, comprising:
activating at least two of a multiplicity of alarm tiles on an alarm tile array such that each activated tile presents an activated descriptor of the source of an abnormal condition in the plant;
for one of said activated tiles, presenting a shape coded

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indication that the associated source requires attention with high priority;
for the other of said activated tiles, presenting a shape coded indication that the associated source requires attention with a low priority;
wherein the operator can respond to each activated alarm tile so each tile is in one of four statuses consisting of,
a new alarm associated with an abnormal condition and unacknowledged tile,
an existing alarm associated with an abnormal condition and acknowledged tile,
a cleared alarm associated with a normal condition and unacknowledged tile, and
a reset alarm condition associated with a normal condition of an acknowledged alarm;
generating a first, momentary audible tone upon the activation of a new alarm;
generating a second, momentary audible tone upon the occurrence of a cleared alarm; and
generating a third, periodically repeating audible tone during a new alarm and a cleared alarm.

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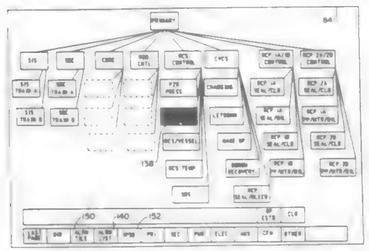
ALARM ACKNOWLEDGEMENT IN A NUCLEAR PLANT CONTROL ROOM

Kenneth Scarola; David S. Jamison, both of Windsor; Richard M. Manazir, North Canton; Robert L. Rescorl, Vernon, and Daryl L. Harmon, Enfield, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Continuation of Ser. No. 927,057, Aug. 6, 1992, Pat. No. 5,287,390, which is a division of Ser. No. 430,792, Nov. 2, 1989, Pat. No. 5,267,277. This application Dec. 29, 1993, Ser. No. 175,284

Int. Cl.[5] G21C *17/00*

U.S. Cl. 376—259 **11 Claims**



4. In a nuclear power plant including a nuclear steam supply system constituted by a multiplicity of components which operatively interact to control a plurality of system operating variables; means for measuring the operating variables and generating parameter signals commensurate therewith; means for comparing the parameter signals with preestablished set point values and generating an alarm signal when the parameter signal exceeds the set point; a control room containing alarm display means including a multiplicity of alarm tiles, wherein each parameter signal is associated with one tile; means for activating the associated tile to display an active state when an alarm signal is generated for a particular parameter signal; and means responsive to action by the control room operator, for converting the active state of said activated tile to an acknowledged state; wherein the improvement comprises:
at least one of a first type of display device spatially and functionally dedicated in the control room, for displaying alarm information including alarm tiles and being responsive to touch by the operator for acknowledging an activated alarm tile;
a plurality of a second type of display device distributed in the control room for selectively displaying monitoring information about the operation of the plant including information about the alarm signal associated with any activated tile; and
means responsive to the touch of the operator on any one of the second display devices, for the operator to convert the active status of an activated tile on the dedicated alarm tile display of the first display device, into an acknowledged status.

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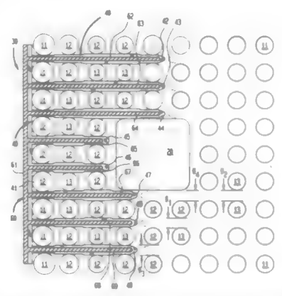
SHIPPING SHIM FOR NUCLEAR REACTOR FUEL ASSEMBLIES

David J. Barkhurst, Pasco, Wash., assignor to Siemens Power Corporation, Richland, Wash.

Filed Dec. 15, 1993, Ser. No. 168,108

Int. Cl.[5] G21C *19/06*

U.S. Cl. 376—261 **10 Claims**



10. A fuel assembly for a nuclear reactor comprising:
(a) an upper tie plate;
(b) a lower tie plate;
(c) a plurality of spaced apart fuel rods retained at their ends between the upper tie plate and the lower tie plate;
(d) a plurality of spacer grids mounted along the length of said fuel assembly and spaced from one another, for positioning said plurality of fuel rods in a predetermined configuration;
(e) means for permitting coolant moderator to flow from said lower tie plate through said fuel assembly and out of said upper tie plate; and
(f) a shipping shim for restraining the spaced apart fuel rods, the shipping shim comprising:
(1) a main fork having a plurality of flexible and substantially tines for inserted between ones of said nuclear fuel rods and means for permitting coolant moderator to flow from said lower tie plate through said fuel assembly and out of said upper tie plate, the plurality of tines extending from a base, at least one of the plurality of tines being adapted to have a hollow portion which hollow portion extends into the base;
(2) a locking fork having at least one rib inserted into the at least one hollow tine, the at least one rib extending from a web and being adapted to fit into the hollow portion of the base and the at least one of the plurality of tines of the main fork, so that when the at least one rib is inserted into the at least one hollow tine, the at least one hollow tine and the inserted at least one rib becomes substantially rigid restraining ones of said nuclear fuel rods and means for permitting coolant moderator flow.

5,353,318

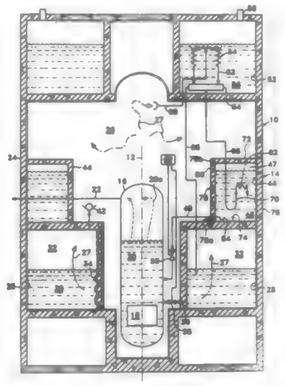
PRESSURE SUPPRESSION SYSTEM

Douglas M. Gluntz, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Filed May 3, 1993, Ser. No. 55,997

Int. Cl.[5] G21C *15/18*

U.S. Cl. 376—283 **18 Claims**



12. In a passive emergency cooling system of a boiling water reactor having a primary containment vessel, a reactor pressure vessel surrounded by said primary containment vessel with a drywell therebetween, a nuclear fuel core arranged inside said reactor pressure vessel, and a suppression pool containing water located inside said primary containment vessel and outside said reactor pressure vessel, said passive emergency cooling system comprising:
a gravity-driven cooling system pool containing water having an elevation which is higher than the elevation of said fuel core, a drainage path by which water can flow by gravity from said gravity-driven cooling system pool to said reactor pressure vessel, valve means for opening said flow path from said gravity-driven cooling system pool to said reactor pressure vessel to allow gravity-driven water flow in response to an emergency condition, a condensate inlet flow path for receiving condensate from outside said gravity-driven cooling system pool, a first loop seal in flow communication with said condensate inlet flow path, and a steam inlet for channeling steam from said drywell into a gravity-driven cooling system plenum above the water contained by said gravity-driven cooling system pool; and
a condenser pool containing water, a condenser submerged in said water in said condenser pool, a condenser inlet flow path for coupling steam from said drywell into said condenser, a first condenser outlet flow path for coupling non-condensable gases from said condenser into said suppression pool, and a second condenser outlet flow path for coupling condensate from said condenser into said condensate inlet flow path in said gravity-driven cooling system pool,
the improvement wherein means for condensing steam are arranged inside said gravity-driven cooling system pool, said steam condensing means receiving condensate via said condensate inlet flow path and said first loop seal, and wherein said drainage path comprises a second loop seal in flow communication with water in said gravity-driven cooling system for preventing the flow of non-condensable gas from said gravity-driven cooling system plenum to said reactor pressure vessel.

5,353,319

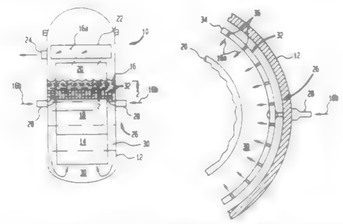
REMOVABLE FEEDWATER SPARGER ASSEMBLY

Roy C. Challberg, Livermore, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Jul. 16, 1993, Ser. No. 92,098

Int. Cl.[5] G21C *9/00*

U.S. Cl. 376—286 **18 Claims**



1. A removable feedwater sparger assembly comprising:
an arcuate feedwater sparger having an inlet distal end;
a supply pipe having an outlet end for receiving said inlet pipe distal end in flow communication therewith for channeling feedwater from said supply pipe to said inlet pipe to feed said sparger;
an annular, radially outwardly extending retention flange disposed on one of said supply pipe outlet end and said inlet pipe distal end;
a tubular coupling having an annular band at a proximal end fixedly joined coaxially with the other said supply pipe outlet end and said inlet distal end, and a plurality of circumferentially spaced elongate fingers extending longitudinally from said band, said fingers being flexibly removably joined to said retention flange for maintaining said sparger inlet pipe in flow communication with said supply pipe, wherein said retention flange comprises an annular outer ledge for capturing said coupling fingers thereon; and
an annular release collar slidably disposed around said one of said supply pipe outlet end and said inlet pipe distal end adjacent to said fingers, and including a conical cam surface for selectively engaging said fingers upon longitudinal translation of said release collar to displace said fingers radially outwardly from said retention flange for disengagement therefrom, wherein each of said fingers includes an elongate, flexible beam extending integrally from said band and spaced parallel to adjacent ones of said beams, and a hook disposed at a distal end of said beam, said hook being defined by a seat disposed parallel to said outer ledge for retention thereon and a ramp inclined radially outwardly for abutment with said release collar, said ramp being configured to expand said fingers over said retention flange upon coupling of said inlet pipe to said supply pipe until said hooks contract and latch said outer ledge, and said ramp also being effective for engagement with said release collar cam surface upon translation thereof to expand said fingers to disengage said hooks from said outer ledge for removing said inlet pipe from said supply pipe.

5,353,320

REACTOR PRESSURE VESSEL NOZZLE

Roy C. Challberg, Livermore, and Hubert A. Upton, Morgan Hill, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Apr. 5, 1993, Ser. No. 43,068

Int. Cl.[5] G21C *13/02*

U.S. Cl. 376—294 **16 Claims**

1. In a water-cooled nuclear reactor comprising:
a core of nuclear fuel;

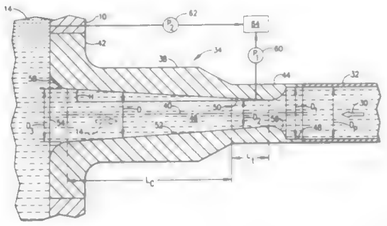
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a reactor pressure vessel containing said nuclear fuel core therein and comprising an inlet;

containment spaced outwardly from and surrounding said reactor pressure vessel;

a pool of water located within said containment and outside said reactor pressure vessel at an elevation which is higher than an elevation of said nuclear fuel core; and

means for channeling water from said pool to said inlet of said reactor pressure vessel by the force of gravity in response to a predetermined condition inside said reactor, said water channeling means comprising a supply pipe having a flow passage of first diameter extending from a first end to a second end thereof, said second end of said supply pipe flow passage being in flow communication with said pool via said first end of said supply pipe flow passage; and a nozzle having a flow passage extending from a first end to a second end, said first end of said



nozzle flow passage being in flow communication with said first end of said supply pipe flow passage via said second end of said supply pipe flow passage and being in flow communication with said inlet of said reactor pressure vessel via said second end of said nozzle flow passage, the improvement wherein:

said nozzle flow passage comprises a throat and first and second sections in flow communication with said throat, said throat having a second diameter which is smaller than said first diameter, said first section having the shape of a bell mouth which changes gradually in diameter from said first diameter to said second diameter, and said second section having the shape of a truncated cone having a minimum diameter substantially equal to said second diameter, said first section being situated between said throat and said supply pipe and said second section being situated between said throat and said inlet of said reactor pressure vessel.

5,353,321

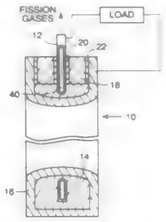
PLASMA THERMOELEMENT

Aleksandr Rybnikov, 79-06 35th Ave., #5K, Jackson Heights, N.Y. 11372

Filed Jun. 21, 1993, Ser. No. 79,505

Int. Cl.[5] G21D *7/00*

U.S. Cl. 376—320 **8 Claims**



1. A plasma thermoelement which is built into the immediate volume of a nuclear fuel mass of a nuclear fuel element, comprising:

(a) a snorkel,

(b) a nuclear fuel mass having an intercommunicative porosity and surrounding the most part of said snorkel,

(c) a cladding surrounding both said nuclear fuel mass and most of said snorkel and connected electrically with said snorkel only via external load,

(d) an insulator insulating the exit end of said snorkel from said cladding.

5,353,322

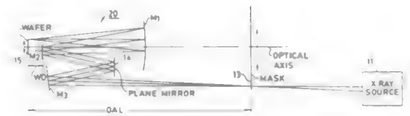
LENS SYSTEM FOR X-RAY PROJECTION LITHOGRAPHY CAMERA

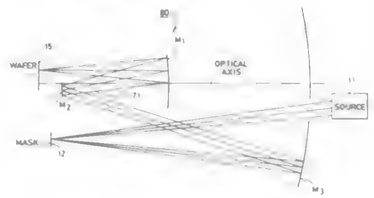
John H. Bruning, Pittsford; Anthony R. Phillips, Jr., Fairport, both of N.Y.; David R. Shafer, Fairfield, Conn., and Alan D. White, Berkeley Heights, N.J., assignors to Tropel Corporation, Fairport, N.Y.

Continuation-in-part of Ser. No. 880,080, May 5, 1992, Pat. No. 5,220,590. This application May 20, 1993, Ser. No. 65,116

Int. Cl.[5] G21K *5/00*

U.S. Cl. 378—34 **10 Claims**





1. A lens system for a projection lithography camera having a source of x-ray radiation, a wafer, and a mask to be imaged on the wafer, the lens system having a convex mirror M_2 arranged optically between concave mirrors M_1 and M_3 to form an imaging system, and the lens system comprising:

a. the mask is reflective and is arranged on the same side of the mirrors as the wafer;

b. a chief ray angle of the radiation at the mask is up to 10°; and

c. a chief ray of the radiation incident on the mask is inclined away from the optical axis of the lens system in a direction from the source toward the mask.

5,353,323

X-RAY EXPOSURE APPARATUS

Toshio Hirokawa, Kawasaki, and Norio Uchida, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 2, 1994, Ser. No. 190,531

Int. Cl.[5] G21K *5/00*

U.S. Cl. 378—34 **12 Claims**

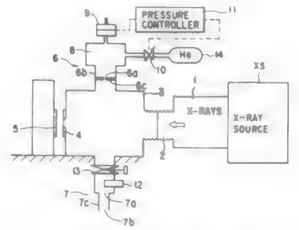
1. An X-ray exposure apparatus comprising:

X-ray generating means for generating X-rays;

a main chamber having an X-ray window for passing said X-rays and an X-ray mask attached thereto facing said X-ray window, and filled with X-ray low attenuation gas, for guiding said X-rays from said X-ray window to said X-ray mask;

gas supplying means for supplying X-ray low attenuation gas into said main chamber and having a portion with a small-diameter passage cross section formed at least at a part thereof;

gas discharging means for discharging gas from said main chamber and having a portion with a small-diameter passage cross section formed at least at a part thereof; and



flow-rate control means for controlling a flow rate of gas to be supplied to said gas supplying means to thereby control pressure in said main chamber, and

wherein a diameter of said small-diameter portion of said gas supplying means is set at a value smaller than that of said gas discharging means so that pressure in said main chamber is substantially equal atmospheric pressure.

5,353,324

TOTAL REFLECTION X-RAY DIFFRACTION MICROGRAPHIC METHOD AND APPARATUS

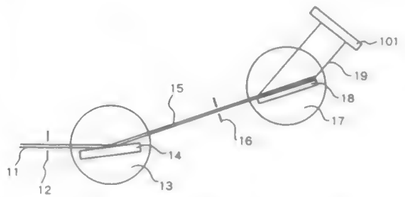
Tomohisa Kitano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 8, 1992, Ser. No. 865,269

Claims priority, application Japan, Apr. 22, 1991, 3-118111

Int. Cl.[5] G01N *23/207*

U.S. Cl. 378—73 **7 Claims**



1. A total reflection X-ray diffraction micrographic method of detecting and evaluating defects present within a crystal specimen comprising the steps of:

utilizing continuous wavelength spectrum synchrotron radiation;

making said synchrotron radiation monochromatic in order to generate monochromatic X-ray beam;

directing said monochromatic X-ray beam first into said crystal specimen at a glancing angle greater than the critical angle of said crystal specimen relative to said monochromatic X-ray beam, and then directing said monochromatic X-ray beam into said crystal specimen at a glancing angle smaller than said critical angle by turning said crystal specimen and by successively changing the wavelength of the monochromatic X-ray while continuously satisfying Bragg's condition; and

detecting diffracted X-rays from said crystal specimen due to asymmetrical reflection in order to observe the resulting diffracted image.

5,353,325

X-RAY FLUOROGRAPH AND RADIOGRAPH APPARATUS FOR OBTAINING X-RAY IMAGE HAVING HIGH X-RAY LATITUDE

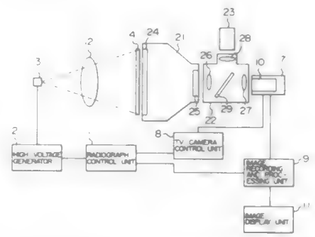
Ken Ueda, Ome; Hisatake Yokouchi, Tokyo; Keiji Umetani, Hino, and Yoichi Onodera, Hachioji, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Nov. 30, 1992, Ser. No. 983,058

Claims priority, application Japan, Nov. 29, 1991, 3-315770

Int. Cl.[5] H05G *1/64*

U.S. Cl. 378—98.2 **9 Claims**



1. An X-ray fluorograph and radiograph apparatus comprising:

(a) an X-ray generator;

(b) a means for controlling generation of X-rays;

(c) a means for converting an X-ray image into a light image;

(d) a television camera including an avalanche multiplication operation type image pick-up tube, and having a non-linear input/output relation in which an increment of an output with respect to an increment of an input of light intensity is controlled so as to reduce gradually with an increasing input light intensity, and having said light image inputted thereto;

(e) a means for setting a radiograph condition; and

(f) a means for controlling said input/output relation of said image pick-up tube on a basis of a set radiographic condition.

5,353,326

METHOD FOR PERFORMING CONTINUITY CHECK IN AN ELECTRONIC EXCHANGE SYSTEM

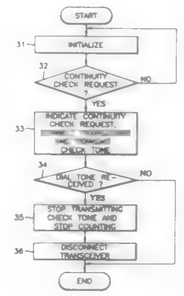
Jin-Su Jung, Kumi, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 20, 1992, Ser. No. 871,026

Claims priority, application Rep. of Korea, Apr. 23, 1991, 1991-6511

Int. Cl.[5] H04M *1/24, 3/08;* **H04J** *1/16*

U.S. Cl. 379—6 **17 Claims**



1. A method of performing a continuity check on a speech

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channel in an electronic exchange system, comprising the steps of:

indicating and transmitting a continuity check request on a continuity check indicator located in a head address message if characteristics of a trunk module turn out the continuity check request while handling an outgoing call to a counterpart, and connecting the speech channel with a continuity check tone transceiver generate and to transmit a from a first subscriber through a transmission channel to a second subscriber continuity check tone;

monitoring whether the continuity check tone generated from said first subscriber and transmitted through said transmission channel to said second subscriber is received back through a reception channel within a predetermined time, said transmission channel and said reception channel forming said speech channel in said electronic exchange system; and

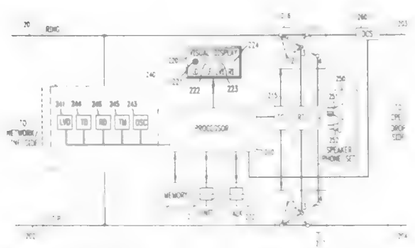
if said continuity check tone is received back within said predetermined time, terminating transmission of said continuity check tone, causing a timer to stop counting, and disconnecting said continuity check tone transceiver, wherein said predetermined time within which said continuity check tone is received back is two second.

5,353,327

MAINTENANCE TERMINATION UNIT

Seva nanda Adari, Red Bank; Marilyn C. Chiang, Manalapan; Anthony M. DeSanto, Somerville; R. Earl Fenley, Jr., Point Pleasant; Anand K. Javvaji, and Ramadevi Sreedhara, both of Iselin, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 4, 1992, Ser. No. 878,376
Int. Cl.[5] H04M *1/24*
U.S. Cl. 379—22 26 Claims



26. Telecommunications testing apparatus for use near the demarcation point between a telecommunications network and Customer Premises Equipment (CPE) connected to said telecommunications network, said apparatus comprising

means operative to isolate said CPE from said network only in response to local actuation by a user of said testing apparatus,

means responsive to receipt of Touch-Tone sequences generated in a remote test center for performing a series of performance measurements on said CPE and said network, and

means for deriving power to operate said testing apparatus from said telecommunications network.

5,353,328

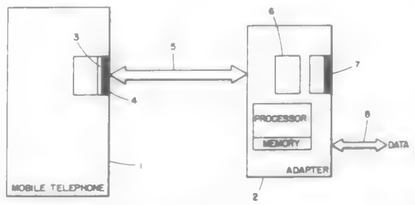
DATA ADAPTER FOR A RADIOTELEPHONE

Matti Jokimies, Salo, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Feb. 3, 1993, Ser. No. 12,878
Claims priority, application Finland, Feb. 14, 1992, 920651
Int. Cl.[5] H04M *11/00;* H04B *1/38*
U.S. Cl. 379—58 9 Claims

1. A data adapter for connection to a radiotelephone, said radiotelephone having first receiving means for removably receiving a Subscriber Identity Module (SIM) to enable information to be transferred between the radiotelephone and a SIM present in the receiving means, the data adapter comprising:

means for coupling the data adapter to the first receiving means in said radiotelephone to enable data to be transferred between the telephone and the data adapter, the means for coupling including a connector adapted to mate with the first receiving means in said radiotelephone;



second receiving means in said data adapter for removably receiving a SIM card to enable data to be transferred between said SIM card and the means for coupling; and

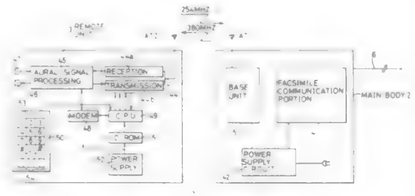
means for processing data transferred to the data adapter.

5,353,329

FACSIMILE APPARATUS AND ALARM SYSTEM WITH CORDLESS TELEPHONE SET

Motohiko Hayashi, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 684,864, Apr. 15, 1991, abandoned.
This application Apr. 21, 1993, Ser. No. 50,735
Claims priority, application Japan, Apr. 18, 1990, 2-104192; Apr. 18, 1990, 2-104193
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—58 8 Claims



1. A facsimile apparatus comprising:

first communication means for transmitting and receiving an aural signal via a telephone line, said first communication means further including an internal line voice communication device capable of voice communication without said telephone line,

second communication means for transmitting and receiving an image signal via said telephone line,

calling signal detecting means for detecting a calling signal to at least one of said first and second communication means from said telephone line,

determining means for determining whether or not said internal line voice communication device is available when said calling signal detecting means detects said calling signal,

alarm means for generating an alarm when said determining means determines that said internal line voice communication device is not available,

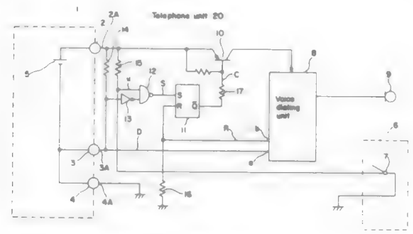
connection means for automatically connecting said at least one of the first and second communication means, for which a calling signal was detected to said telephone line when said alarm means fails to generate an alarm; and switching means for allowing a user to manually switch from an internal line to the external line when said alarm means generates an alarm.

5,353,330

POWER CONSERVING MOBILE TELEPHONE USABLE AS A PORTABLE PHONE AND AS AN INSTALLED PHONE

Ryuhei Fujiwara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 5, 1992, Ser. No. 831,431
Claims priority, application Japan, Feb. 6, 1991, 3-036849
Int. Cl.[5] H04M *11/00, 1/64;* H04B *7/15, 1/40*
U.S. Cl. 379—58 3 Claims



1. A mobile telephone comprising:

a voice-dialing telephone unit and a battery pack, usable both as a portable telephone when the battery pack is attached to the voice-dialing telephone unit and as an installed telephone when the voice-dialing telephone unit is attached to a vehicle battery;

discrimination means for discriminating the battery pack currently attached to the voice-dialing telephone unit;

voice-dialing means for creating a telephone number through speech recognition, the voice-dialing means delivering a reset signal when voice dialing processing ends, provided that the battery pack is attached to the voice-dialing telephone unit;

manual start-up means for manually commanding a start-up of the voice-dialing means, provided that the battery pack is attached to the voice-dialing telephone unit; and

switching means for electrically connecting the voice-dialing means to the battery pack or to the vehicle battery to actuate the voice-dialing means, wherein, when the battery pack is attached to the voice-dialing telephone unit, the switching means turns on in response to a start-up command supplied from the manual start-up means and turns off when the reset signal is supplied from the voice-dialing means, and, when the voice-dialing telephone unit is attached to the vehicle battery, the switching means is retained in the on-state,

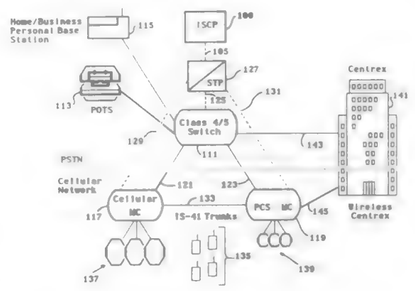
wherein attaching the battery pack to the voice-dialing telephone unit, or the voice-dialing telephone unit to the vehicle battery is effected with first and second terminals of the voice-dialing telephone unit being electrically connected to first and second electrodes of the battery pack or vehicle battery respectively, and the discriminating means comprises a center tap provided in the battery pack having a predetermined potential with respect to the first or second electrode of the battery pack, a discriminating-signal terminal provided in the voice-dialing telephone unit, which couples with the terminal of the center tap when the battery pack is attached to the voice-dialing telephone unit, but does not couple with any electrode terminal in the vehicle battery when the voice-dialing telephone unit is attached to the vehicle battery, and a first resister connected between the first and discriminating-signal terminals of the voice-dialing telephone unit, whereby the discriminating means provides at the discriminating-signal terminal a discriminating signal of a first logic level corresponding to the potential of the center tap when the battery pack is attached to the voice-dialing telephone unit, and provides a discriminating signal of a second logic level corresponding to the potential of the first electrode of the vehicle battery.

5,353,331

PERSONAL COMMUNICATIONS SERVICE USING WIRELINE/WIRELESS INTEGRATION

Mark J. Emery, Herndon, Va.; Brenda N. Tucker, Mitchellville, and Laurie D. Schwartz, Garrett Park, both of Md., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Filed Mar. 5, 1992, Ser. No. 845,924
Int. Cl.[5] H04M *11/00, 1/64;* H04Q *7/00;* H04B *1/00*
U.S. Cl. 379—58 44 Claims



1. An integrated wired and wireless communication network, comprising:

a central office switching system connected to the communication lines including at least one service switching point for selectively providing switched communications between the communication lines;

a mobility controller, connected to the central office switching system, arranged for selectively providing wireless communications between said central office switching system and wireless mobile communication units by using control data conveyed to at least one service switching point through a service transfer point; and

a network controller arranged for selectively providing control data to effect land line communications, and arranged separately from the central office switching system and the mobility controller, said network controller being connected to both said mobility controller and said at least one service switching point through at least one service transfer point arranged to convey control data to effect communications, said network controller storing preprogrammed call processing data associated with subscribers who are associated with one of the communication lines connected to the central office switching system and said network controller further storing preprogrammed call processing data associated with subscribers who are associated with one of the mobile communication units;

wherein call processing by both the central office switching system and the mobility controller to establish a completed communication link between one of the communication lines and one of the mobile communication units is controlled in response to the stored preprogrammed call processing data associated with at least one of the subscribers and transmitted through said service transfer point.

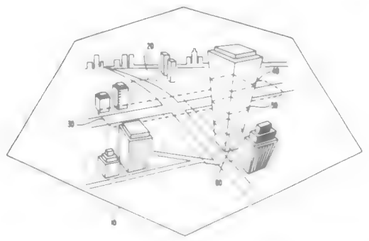
VOL 1167 ISS 1 OC 4 1994 UMI

5,353,332

METHOD AND APPARATUS FOR COMMUNICATION CONTROL IN A RADIOTELEPHONE SYSTEM

Alex K. Raith, and Walter G.A. Muller, both of Kista Sweden, assignors to Ericsson GE Mobile Communications Inc., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 945,468, Sep. 16, 1992. This application Oct. 2, 1992, Ser. No. 955,591
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—59 14 Claims



1. A method for using control channels in a wireless communications system including a mobile station and a plurality of cells, each cell having a respective control channel, the method comprising the steps of:

in a first cell, broadcasting relative information about at least one other cell on the first cell's control channel, wherein the relative information concerns the characteristics of the at least one other cell; and

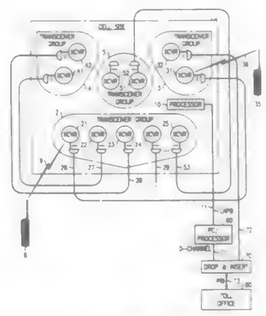
in the mobile station, analyzing the relative information and locking onto the at least one other cell based on the relative information.

5,353,333

SMALL WIRELESS TELECOMMUNICATIONS SYSTEM

James J. Fuentes, South Barrington, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 30, 1992, Ser. No. 998,311
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—59 9 Claims



1. A wireless switching system comprising:

a wireless cell site, for serving a plurality of wireless stations, said wireless cell site comprising a first plurality of wireless transceivers;

a plurality of predisposed switchless connections, each wireless transceiver of said first plurality of wireless transceivers includes a single predisposed switchless connection, of said plurality of predisposed switchless connections, with one other wireless transceiver resulting in a directly connected pair of transceivers; and

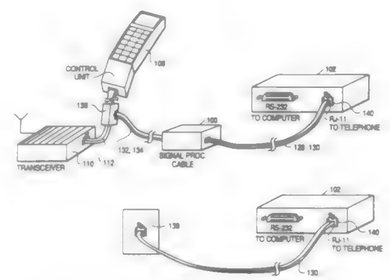
control means, responsive to receipt of a first telephone number supplied by a first wireless calling station served by said wireless cell site, for assigning a connected pair of said first plurality of wireless transceivers of said wireless cell site to said first wireless calling station and to a first wireless called station, said first called station served by said wireless cell site and identified by said first telephone number, for connecting said first calling and first called stations.

5,353,334

INTERFACE FOR CONNECTING COMPUTERS TO RADIO TELEPHONE NETWORKS

Harry M. O'Sullivan, Red Oak, Tex., assignor to Spectrum Information Technologies, Inc., Manhasset, N.Y.

Continuation of Ser. No. 866,879, Apr. 10, 1992, abandoned, which is a division of Ser. No. 531,762, Jun. 1, 1990, Pat. No. 5,127,041. This application Jan. 6, 1994, Ser. No. 178,474
The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—59 29 Claims
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 33 Pages)



5. A modem interface for connecting a modem to facilitate data transmission over one of at least two types of public communications networks including at least one radiotelephone network which can be selectively accessed through associated communications network access devices connectable to the interface, comprising:

a telephone connector having a plurality of pin connections including tip and ring pins located to operatively connect to a standard landline telephone cable carrying tip and ring lines;

a first information bus for transmitting data signals between the modem and the access device and connected through said telephone connector to said tip and ring pins;

a second information bus for carrying digital control signals from the modem for controlling dialing operations on said radiotelephone network, and connected to pin connections of said telephone connector other than said tip and ring pins;

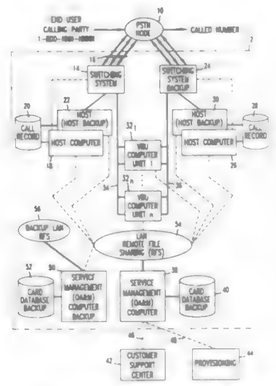
whereby said telephone connector provides a tip and ring interface between said modem and said communications network access device when said standard landline telephone cable is connected therebetween and provides a digital interface permitting the modem to control dialing operations of said communications network access device associated with said radiotelephone network when a cable providing connections to said second information bus is connected therebetween.

5,353,335

MULTILINGUAL PREPAID TELEPHONE SYSTEM

Anthony D. D'Urso, Long Valley; Orlando S. King, Edison; Arthur G. Martin, Bernardsville; Christine P. Peterson, Fords, and David G. Unger, Morristown, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 3, 1992, Ser. No. 923,645
Int. Cl.[5] H04M *17/00*
U.S. Cl. 379—67 34 Claims



23. A multilingual prepaid telephone apparatus comprising:

a means for receiving one of a plurality of telephone numbers from a prepaid user, each of the telephone numbers representing operation of the multilingual prepaid telephone apparatus in one of a plurality of languages;

a means for storing a group of announcements in the plurality of languages;

a means responsive to a received one of the plurality of telephone numbers for directing at least one of the group of announcements to the prepaid user in the language represented by the received telephone number;

a means for receiving at least one signal from the prepaid user representing a user's account number in response to an announcement sent to the user in the language represented by the received telephone number;

a means for verifying the validity of the account number;

a means for determining if there is a predetermined amount of available credit associated with the account number;

a means for receiving a destination telephone number from the prepaid user;

a means for determining if there is sufficient credit available for a telephone call to the destination number for a predetermined minimum time;

a means for determining an available duration of a telephone call to the destination number in light of the available credit and nature of the destination telephone number;

a means for completing a telephone call from the prepaid user to the destination number if there is sufficient available credit for a telephone call to the destination number for the predetermined minimum time;

a means for setting a timer with the available duration of a telephone call to the destination number;

a means for starting the timer and running it during the telephone call to the destination number;

a means for disconnecting the telephone call to the destination number when the timer runs out; and

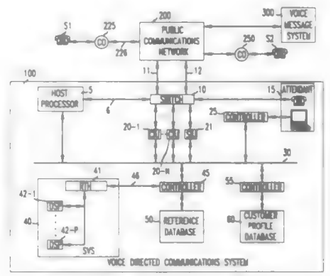
a means for computing a new available credit balance if the telephone call to the destination number ends prior to the timer running out.

5,353,336

VOICE DIRECTED COMMUNICATIONS SYSTEM ARCHETECTURE

Michael M. Hou, Aberdeen, and Sally B. Muir, Bridgewater, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 24, 1992, Ser. No. 935,080
Int. Cl.[5] H04M *3/42*
U.S. Cl. 379—67 15 Claims



15. A voice directed communications system architecture comprising:

a plurality of voice directed communications system platforms each associated with a telecommunications network node,

a centralized voice verification system, and

a data network for interconnecting each of said voice directed communications system platforms with said centralized voice verification system, and wherein said centralized voice verification system comprises a plurality of voice verification units, each of said voice verification units being associated with a respective range of subscriber identifiers and including

a database for storing a plurality of voice templates characterizing respective ones of the associated range of subscriber identifiers, and

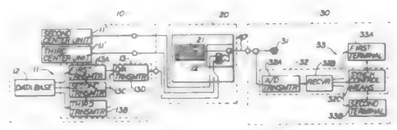
at least one digital signal processor operative for verifying a subscriber's identity based on the subscriber's associated stored template and associated speech signals received from a particular one of said platforms via said network and for returning the results of said verification to said one of said platforms via said network.

5,353,337

DEVICE FOR THE TRANSMISSION OF DATA BY TELEPHONE LINE

Mihoji Tsumura, and Shinnosuke Taniguchi, both of Osaka, Japan, assignors to Ricoh Co., Ltd., Osaka, Japan

Filed Apr. 28, 1992, Ser. No. 875,126
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—93 3 Claims



1. A system for transmission and reception of data over a telephone line, said system making use of idle time on said telephone line, said telephone line connecting a switching system of a telephone exchange with a telephone in a user's home, to transmit signals by way of said telephone line from a

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center independent of said telephone exchange to said user's home, said system comprising:

said center having

(a) a database for the storage of mode control data and a plurality of items of compound data, each of said items consisting of a specified number of interrelated data groups, and

(b) transmission means including a plurality of transmitters which access said database, and read out and output said interrelated data groups in order from an item of said compound data; transmission control means for reading said mode control data from said data base and issuing transmission instructions to said transmitters to read and selectively output said data groups based upon the contents of said mode control data; and a D/A converter which converts digital signals received from each of said transmitters to analog form and outputs said analog signals as groups of broadcast data signals to said telephone line; and

receiving means located in said user's home, said receiving means having

(c) an A/D converter which converts said analog signals received from said telephone line to digital form;

(d) a receiver which receives and stores said groups of broadcast data signals output from said A/D converter and, with input of a final one of said data groups acting as a trigger, outputs each of said data groups to an appropriate terminal; and

(e) a specified number of terminals which operate in accordance with said data groups received from said receiving means.

5,353,338

MULTI-MODE MODEM FOR AUTOMATICALLY SWITCHING BETWEEN DATA TRANSMIT AND CONTROL COMMAND MODES

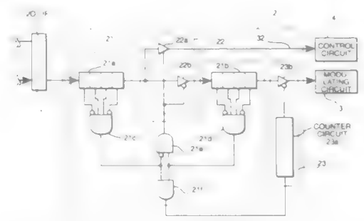
Takahiko Nakano, Ikoma, and Shuichi Yoshikawa, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 16, 1992, Ser. No. 869,501

Claims priority, application Japan, Oct. 25, 1991, 3-279947

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—99 **6 Claims**



1. A modem having at least two modes, one of said at least two modes being a control command accept mode for accepting an input signal as a control command and performing prescribed control processing based on said control command, and another of said at least two modes being a data transmit mode for accepting an input signal as transmit data and modulating said transmit data for output, the modem comprising:

a modulation circuit for receiving said input signal and modulating a carrier signal with said input signal;

a control circuit for interpreting a command input signal; and

identification signal processing means directly connected to said modulation circuit and said control circuit, said identification signal processing means including:

identification signal detection means for detecting a specific identification signal appearing singly or successively in said input signal during said data transmit mode;

mode switching means for switching said mode from said data transmit mode to said control command accept mode when said identification signal detection means detects said specific identification signal appearing singly; and

identification signal deleting means for deleting one specific identification signal and accepting another specific identification signal as transmit data when said identification signal detection means detects two successive specific identification signals.

5,353,339

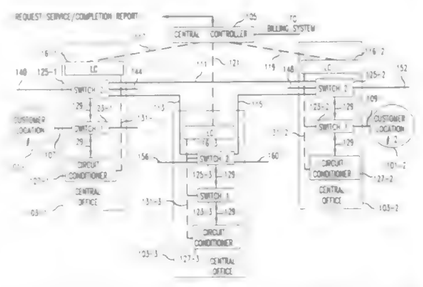
SIMPLIFIED UNIFORM NETWORK PROVISIONING AND RESTORATION

John D. Scobee, St. Louis, Mo., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 20, 1992, Ser. No. 886,570

Int. Cl.[5] H04M *3/42*

U.S. Cl. 379—207 **27 Claims**



13. A system for use in automatically provisioning customer-specified communication special services, which are dedicated communications capabilities selected from a plurality of predefined special service types that are provided for the exclusive use of said customer, in a network that has predetermined network resources, each of said resources belonging to a particular level of a predetermined plurality of levels of a transmission hierarchy and each of said special services being provided over a special service circuit made up of said resources and also belonging to a level from said predetermined plurality of levels, said system comprising:

means for making a determination if a special service circuit can be provisioned from network resources that are currently listed in an inventory of network resources that are available at the level of said special service circuit, said means for making a determination being responsive to at least both i) the network resources listed in said inventory and ii) the resources required to make up the special service circuit, an identification of said resources required having been derived in response to a request for a special service that specifies requirements which are particular to said special service, said determination being such that said special service circuit can be provisioned only if there is listed in said inventory sufficient network resources to meet said requirements of said special service request;

means, responsive to said determination, for adding to said inventory additional resources at said level of said special service circuit if the available network resources in said inventory are insufficient to support said special service circuit, said additional resources being obtained from a level higher than said level; and

means for controlling and sequencing the operations of said means for making and said means for adding until sufficient inventory to provision said special service is available at said level or no further resources are available at any level higher than said level.

5,353,340

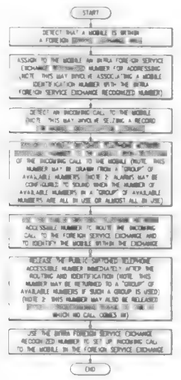
DYNAMIC ALLOCATION OF ROAMER ROUTING NUMBERS SYSTEM AND METHOD

David P. Kunz, Montreal, Canada, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation of Ser. No. 490,480, Mar. 8, 1990, abandoned. This application Jun. 18, 1992, Ser. No. 900,457

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—60 **28 Claims**



5. A method of providing telecommunications service within a network of exchanges to a mobile subscriber located in a foreign service exchange having means for optionally assigning either a temporary routing number or a fixed registered visitor subscriber number to a visiting mobile transceiver present within its coverage area as a number to be used for routing calls to the transceiver from outside its coverage area, comprising the steps of:

a) selecting within said foreign service exchange said optionally assignable temporary routing number over said fixed registered visitor subscriber number;

b) assigning to said mobile subscriber an intra foreign service exchange recognized number for addressing a call to said mobile subscriber;

c) searching through a group of public switched telephone network accessible numbers within said foreign exchange for a number which is not in use;

d) returning a congestion signal to said network in response to a failure to locate a public switched telephone network accessible number;

e) assigning to said mobile subscriber a public switched telephone network accessible number in response to locating an idle number within said group for routing a call to said mobile subscriber;

f) associating said intra foreign service exchange number and said public switched telephone network accessible number with one another to enable completion of a call from outside said foreign service exchange to said mobile subscriber; and

g) disassociating said intra foreign service exchange number and said public switched telephone network accessible number from one another and de-assigning said public switched telephone network accessible number from said mobile subscriber in response to the completion of a call from said network outside said foreign service exchange to said mobile subscriber.

5,353,341

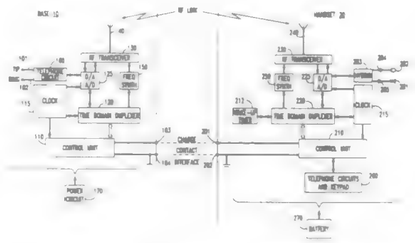
CORDLESS TELEPHONE ARRANGED FOR OPERATION IN A FREQUENCY HOPPING SYSTEM

Mark E. Gillis, Eatontown; Kenneth W. Leland, Toms River; William J. Nealon, Ocean Grove, and Hon Yu, Aberdeen, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 21, 1991, Ser. No. 779,754

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—61 **15 Claims**



1. An arrangement for providing communications between a base unit and a handset unit in a cordless telephone employed in a frequency hopping system, the base unit including a first transmitter and a first receiver and the handset unit including a second transmitter and a second receiver for respectively transmitting to the first receiver and receiving from the first transmitter in the base unit over any one of a plurality of communication channels, the arrangement comprising:

means for deactivating the second transmitter and the second receiver while the handset unit is located remote from the base unit and in a standby state;

means for selecting one from a plurality of available channels in a frequency hopping band for initiating communications between the base unit and the handset unit while the handset unit is in the standby state; and

means for communicating a start time over the selected one of the plurality of channels for the base unit and the handset unit to begin a frequency hopping cycle, the start time communicating means including means for generating in the base unit a series of data messages and for providing these data messages to the handset unit, the handset unit comprising means for acknowledging receipt of the data messages, the data messages being indicative of the start time for the base unit and the handset unit to begin the frequency hopping cycle, the data messages linearly decreasing in value with time to a predetermined value at which the base unit and handset unit begin the frequency hopping cycle.

5,353,342

ADAPTIVE MULTITONE SIGNALING METHOD

Stanley Pietrowicz, Jersey City, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Dec. 8, 1992, Ser. No. 987,518

Int. Cl.[5] H04M *3/18*

U.S. Cl. 379—257 **10 Claims**

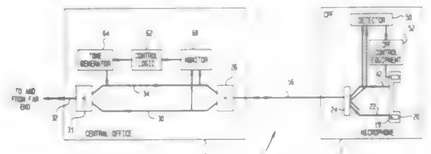
7. An inband tone signaling method comprising the steps of receiving a voiceband signal at a central office switch of a telephone network,

monitoring the power level in one or more guard bands of said voiceband signal,

generating an inband tone signal whose tone power levels are dependent on the power level in a selected one or more of said guard bands,

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transmitting said inband tone signal from said central office switch to a unit of customer premises equipment, and



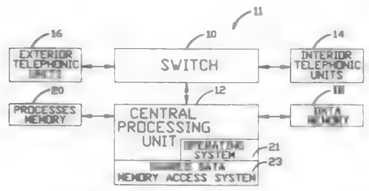
detecting said inband tone signal at a detector located at said customer premises equipment.

5,353,343

TELEPHONIC SWITCHING SYSTEM WITH A USER CONTROLLED DATA MEMORY ACCESS SYSTEM AND METHOD

Darryl P. Hymel, Batavia, Ill., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 30, 1992, Ser. No. 876,535
Int. Cl.[5] H04M *3/42*
U.S. Cl. 379—268 **26 Claims**



1. In a telephonic switching system having a switch controlled by a central processing unit to interconnect interior communication units with exterior communication units, said central processing unit controls the switch in accordance with communication data in a communication data memory which is alterable in response to signals initiated by said communication units in accordance with an operating system of the central processing unit having a plurality of special processes which share the data, the improvement being a shared data memory access system, comprising:

means for periodically shifting access to shared data in the data memory successively between said plurality of special processes;

means for controlling the access shifting means to prevent said access shifting means from shifting access to the data memory from one of said plurality of special processes to another one of said plurality of special processes during a period when the one of said plurality of special processes with access to the data memory is enabled to access shared data; and

means for stopping the special process accessing data from continuing to access data after a preselected time period.

5,353,344

METHOD OF DETERMINING LEVELS AT GIVEN FREQUENCIES OF A VF SIGNAL

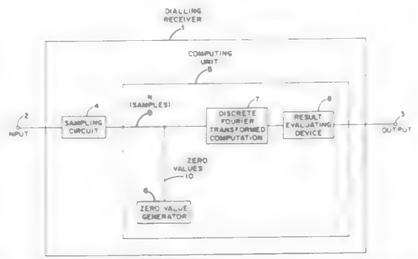
Martin A. Knitsch, Bonstetten, Switzerland, assignor to Alcatel STR AG, Zurich, Switzerland

Filed Sep. 18, 1992, Ser. No. 947,069
Claims priority, application Switzerland, Sep. 24, 1991, 02 832/91-3
Int. Cl.[5] G06F *15/31;* **H04M** *3/00*
U.S. Cl. 379—386 **16 Claims**

6. A dialing receiver for determining multifrequency dialing signals on an incoming signal in a telecommunication switching system, comprising;

A) a sampling circuit for taking N values of the incoming signal N times at a given sampling rate, where N is a positive integer;

B) a zero value generator circuit for supplementing at the given sampling rate the N values with M successive zero values so as to yield N+M values, where M is a positive integer;



C) a discrete Fourier transformation circuit for performing a discrete Fourier transform (DFT) of said N+M values in accordance with a Goertzel algorithm and providing a result in form of a series of Fourier coefficients; and

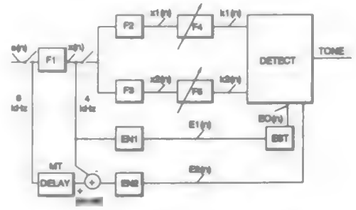
D) a result evaluating circuit for directly evaluating the results of the discrete Fourier transform (DFT) processing of the N+M values without interpolation so as to determine an identity of the multifrequency dialing signals.

5,353,345

METHOD AND APPARATUS FOR DTMF DETECTION

Claude Galand, Cagnes sur Mer, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 14, 1992, Ser. No. 960,744
Claims priority, application European Pat. Off., Dec. 20, 1991, 91480189.9
Int. Cl.[5] H04M *3/00*
U.S. Cl. 379—386 **8 Claims**



1. A method for detecting a Dual Tone Multi Frequency (DTMF) signal in a received sampled input signal x(n) derived from a band-limited signal s(n), said tone including two predefined single frequency components being taken respectively within one out of two groups of predefined frequencies, said method including:

setting a so-called tunnel for each one of said group frequencies, each tunnel being limited by an upper and a lower threshold derived from said one of said group frequencies;

feeding the input signal x(n) into a first filtering means splitting x(n) frequency bandwidth into two bands each including one of said predefined groups of frequencies and deriving therefrom signals x1(n) and x2(n) respectively;

feeding each said x1(n) and x2(n) into an adaptive digital filter each including one varying coefficient k1(n) and k2(n) respectively;

tuning each of said adaptive filters and tracking said filter coefficients k1(n) and k2(n), said tracking including comparing each of said filter coefficients k1(n) and k2(n) with said upper and lower thresholds corresponding to one of said set tunnels to determine if said filter coefficients k1(n) and k2(n) each remain within one of said set tunnels for a minimum predefined time length;

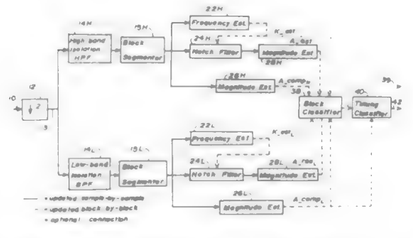
whereby a tone is being detected and identified.

5,353,346

MULTI-FREQUENCY SIGNAL DETECTOR AND CLASSIFIER

Neil B. Cox, and Edwin L. Froese, both of Burnaby, Canada, assignors to MPR Teltech, Limited, Burnaby, Canada

Filed Dec. 22, 1992, Ser. No. 994,910
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—386 **34 Claims**



1. Apparatus for detecting and classifying signals on a source line that are the additive combination of a few constant-amplitude sinusoidal components, herein called N-tones, comprising:

(a) means for rejecting extraneous signal components from said source line signals, the output of which is one or more separate output streams;

(b) means for producing blocks of successive data samples from each of said output streams;

(c) means for estimating the magnitude of data within each said block from each of said output streams;

(d) means for identifying the dominant spectral components within each of said blocks of each of said output streams;

(e) means for removing the identified dominant spectral components from each of said blocks from each of said output streams without regard to previous blocks;

(f) means for estimating the magnitude of data within each said block from each of said output streams after the identified dominant spectral components have been removed;

(g) means for comparing the magnitude estimates that were obtained both before and after removal of the identified dominant spectral components as a test for partially determining if the corresponding signal on said source line has the requisite properties of an N-tone;

(h) means for testing the frequencies of the identified dominant spectral components to partially ascertain if the corresponding signal on said source line has the requisite properties of an N-tone;

(i) means for deriving a running estimate of the duration of time that the signal on said source line is an N-tone;

(j) means for deriving a running estimate of the duration of time that the signal on said source line is not an N-tone;

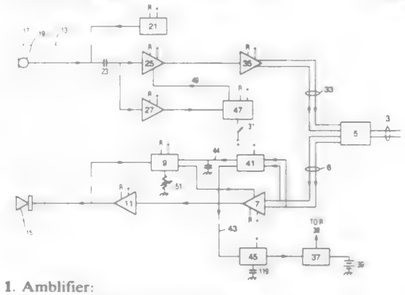
(k) means for testing the durations of candidate N-tones and intervening non-N-tone segments for conformance with signal persistence and longevity requirements.

5,353,347

TELEPHONE HEADSET AMPLIFIER WITH BATTERY SAVER, RECEIVE LINE NOISE REDUCTION, AND CLICK-FREE MUTE SWITCHING

Pierre R. Irissou, Sunnyvale; Shu-Ren Chen, Santa Cruz; Dwight D. Lynn, Santa Cruz, and Kirk A. Reid, Santa Cruz, all of Calif., assignors to ACS Communications, Inc., Scotts Valley, Calif.

Filed Feb. 4, 1992, Ser. No. 830,712
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—395 **19 Claims**



1. Amblifier:

a current source having an output,

a current mirror

a long-tail pair including a first transistor and a second transistor connected to the current mirror

a third transistor including:

a collector connected via a first resistor to be output of the current source

a base being connected via a second resistor to the collector of the first transistor

an emitter

the base of the first transistor being connected to the junction of the current generator and the first resistor

a fourth transistor including:

a base connected to the collector of the first transistor,

a collector connected to the base of the second transistor and

an emitter

a capacitor having two electrodes, the first electrode being connected to the base of the second transistor, the second electrode being connected to the emitters of the third and fourth transistor and wherein

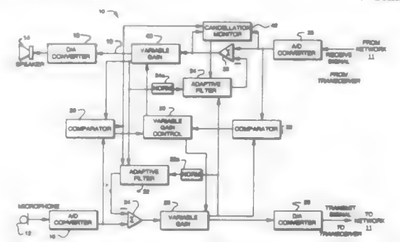
the control signal is connected to the collector of the third transistor and pulls the collector voltage of the third transistor close to the emitter voltage of the third transistor to reset the timer means.

5,353,348

DOUBLE ECHO CANCELLING SYSTEM

Andrzej Sendyk, and Jahangir E. Austin, both of Calgary, Canada, assignors to JRC International, Inc., Ft. Worth, Tex.

Filed May 14, 1993, Ser. No. 61,431
Int. Cl.[5] H04M *9/08*
U.S. Cl. 379—410 **7 Claims**



7. A double echo cancellation system for a hands-free tele-

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phone which includes a loudspeaker for broadcasting signals associated with far end speech signals received from a network and a microphone for producing near end speech signals for transmission to the network, the system including:

A. first comparator for comparing near end signals and modified far end signals directed to the loudspeaker, the first comparator producing a signal indicating near end speech when the near end signals exceed the modified far end signals by more than a predetermined amount;

B. a second comparator for comparing far end signals and modified near end signals, the second comparator producing a signal indicating far end speech is present when the far end signals exceed the modified near end signals by more than a predetermined amount;

C. first echo cancellation means, including

i. a first adaptive filter for receiving the modified far end signals and producing corresponding far end echo cancellation signals, and

ii. a first subtraction circuit for subtracting the far end echo cancellation signals from the near end signals to produce near end residue signals, and

iii. first control means for receiving the near end residue signals and adjusting the first adaptive filter if the near end residue signals are not equal to zero, and

iv. means for inhibiting the first control means, said means inhibiting the first control means in response to the receipt of a signal from the first comparator indicating near end speech is present;

D. second echo cancellation means, including

i. a second adaptive filter for receiving the modified near end signals and producing corresponding near end echo cancellation signals, and

ii. a second subtraction circuit for subtracting the near end echo cancellation signals from the far end signals to produce far end residue signals, and

iii. second control means for receiving the far end residue signals and adjusting the second adaptive filter if the far end residue signals are not equal to zero, and

E. a cancellation monitor for monitoring the second echo cancellation means, the cancellation monitor comparing the power of the far end signals and the power of the far end residue signals, the cancellation monitor enabling the second control means when the power of the far end residue signals exceeds a predetermined percentage of the power of the far end signals by, and otherwise inhibiting the second control means, wherein the first comparator enables the cancellation monitor when near end speech is detected and disables the cancellation monitor when near end speech is not detected;

F. a first attenuator for attenuating modified near end signals;

G. a second attenuator for attenuating modified far end signals; and

H. an attenuator controller for receiving signals from the first and second comparators and controlling the gain of the first and second attenuators by

i. reducing the gain of the first attenuator when the second comparator determines that far end speech is present and the first comparator determines that near end speech is not present;

ii. reducing the gain of the second attenuator when the first comparator determines that near end speech is present and the second comparator determines far end speech is not present;

iii. reducing the gains of both of the first and the second attenuator when neither of the first and the second comparators determine speech is present; and

iv. refraining from adjusting the gain of either the attenuators if both the first and the second comparators determine that speech is present.

5,353,349

TELEPHONE SECURITY SHIELD

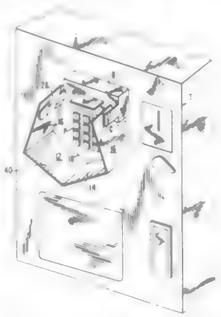
Lester Brown, 142-18 Booth Memorial Ave., Flushing, N.Y. 11355

Filed May 10, 1993, Ser. No. 59,101
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—450 **16 Claims**

1. An opaque blank for forming a telephone security shield, the telephone including a housing, and a key pad mounted in said housing, the blank comprising:

a plurality of hingedly connected panels which form the shield and define an interior area having an open end, said plurality of panels including first and second base panels hingedly attached at a central score line, said first and second base panels having first and second scored edges, and side panels hingedly attached to said first and second score edges; and

retention means for removably securing said plurality of panels in surrounding and outwardly projecting relation to the key pad, and the open end of the shield in overlying relation to the key pad, such that when the shield is secured, the keypad is in full view only to a user directly in front of the telephone keypad.

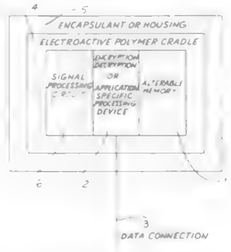


5,353,350

ELECTRO-ACTIVE CRADLE CIRCUITS FOR THE DETECTION OF ACCESS OR PENETRATION

Joseph Unsworth, Broadway, and Michael Mapson, Sydney, both of Australia, assignors to University of Technology, Sydney, Australia

PCT No. PCT/AU90/00475, § 371 Date Jun. 2, 1992, § 102(e) Date Jun. 2, 1992, PCT Pub. No. WO91/05306, PCT Pub. Date Apr. 18, 1991
PCT Filed Oct. 3, 1990, Ser. No. 847,062
Claims priority, application Australia, Oct. 3, 1989, PJ6685; Aug. 3, 1990, PK1574; Aug. 23, 1990, PK1910
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—3 **29 Claims**



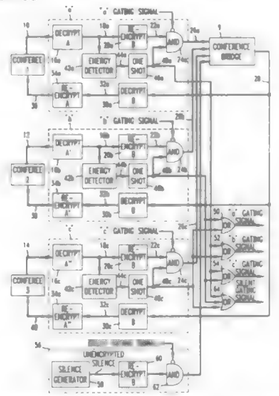
19. A method of protecting an electronic apparatus from hardware hacking intended to gain access to confidential information contained in the electronic apparatus, the method comprising enveloping the apparatus with a polymeric transducer adapted to output a voltage to the apparatus when hardware hacking is attempted to gain access to the apparatus, wherein the voltage acts upon the apparatus to alter the apparatus, thereby preventing disclosure of the confidential information.

5,353,351

SECURE TELECONFERENCING

Paul D. Bartoli, Red Bank, and Bruce E. McNair, Holmdel, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 9, 1992, Ser. No. 896,520
Int. Cl.[5] H04L *9/18;* **H04M** *3/56*
U.S. Cl. 380—33 **23 Claims**



1. A secure teleconferencing apparatus, comprising:

a decryption circuit for decrypting at least three encrypted information streams;

a re-encryption circuit for m-encrypting the decrypted information streams; and

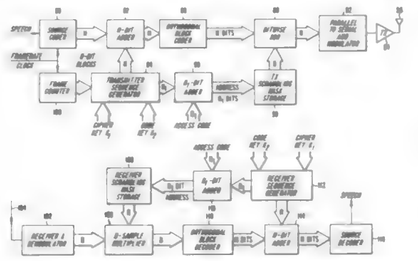
a conference bridge for combining the re-encrypted information streams.

5,353,352

MULTIPLE ACCESS CODING FOR RADIO COMMUNICATIONS

Paul W. Dent, Stehag, Sweden, and Gregory E. Bottomley, Cary, N.C., assignors to Ericsson GE Mobile Communications Inc., Research Triangle Park, N.C.

Filed Apr. 10, 1992, Ser. No. 866,865
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—37 **67 Claims**



1. In a communications system for simultaneous communication of spectrally overlapping information signals, a transmitter comprising:

means for encoding individual information signals into blocks of codewords;

means for generating a scrambling mask for each codeword from a set of scrambling masks that have optimal correlation properties;

means for combining a different scrambling mask with each codeword to obtain uniquely scrambled codewords; and

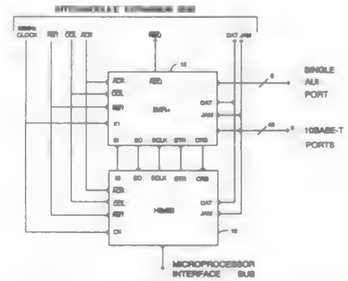
means for transmitting the scrambled codewords over a communication channel.

5,353,353

REPEATER SECURITY SYSTEM

Nader Vijeh, Sunnyvale, and William Lo, Santa Clara, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 26, 1993, Ser. No. 53,797
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—29 **6 Claims**



1. A system for providing security for a network that includes a plurality of ports for transmitting and receiving data, the data including a bit that indicates the start of a data stream and a bit corresponding to each port that is to receive the data the system comprising;

a plurality of disrupt circuits means coupled to the plurality of ports, there being one disrupt circuit means for each port, each of the disrupt means being coupled in a serial fashion;

a detect circuit means coupled between a first disrupt circuit means and a last disrupt circuit means to detect when the start bit has reached to last disrupt circuit means; and

means for providing a jam sequence of data that will block a data bitstream from reaching a particular port responsive to the detect circuit means.

5,353,354

ACQUISITION AND DISPLAY OF ULTRASONIC IMAGES FROM SEQUENTIALLY ORIENTED IMAGE PLANES

Philip Keller, Seattle; Larry J. Augustine, Bothell, and Ronald E. Daigle, Redmond, all of Wash., assignors to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed Nov. 21, 1991, Ser. No. 795,604
Claims priority, application United Kingdom, Nov. 22, 1990, 9025431.9
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—6 **4 Claims**

1. An ultrasonic imaging system for providing planar image information, said system including means for providing spatially identified planar images comprising:

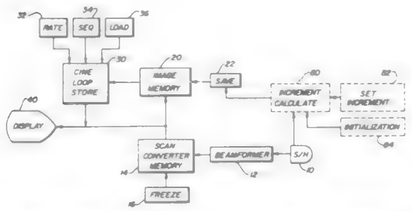
a scanhead including means for ultrasonically scanning a plane of a subject;

means connected to said scanhead for determining the spatial location of said plane; and

display means connected to said scanhead and said determining means for displaying reference plane information and real time image plane information in an orientationally relational projection to each other,

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wherein the information of one of said planes contains information concerning the structure of said subject and the



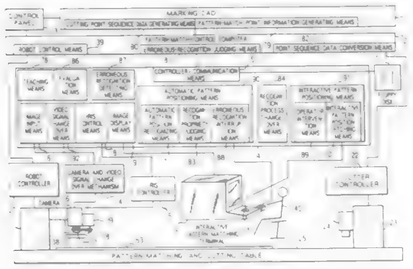
information of the other of said planes comprises the outline of an image plane.

5,353,355

IMAGE RECOGNITION DEVICE AND PATTERN-MATCH CUTTING DEVICE

Yoichi Takagi, and Masayasu Kato, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 24, 1992, Ser. No. 825,139
Claims priority, application Japan, Jan. 24, 1991, 3-6854
Int. Cl.[5] G06K *9/00;* **G06F** *15/46;* **G01N** *21/00*
U.S. Cl. 382—8 **4 Claims**



1. An image recognition device having a pattern recognition device for recognizing, with respect to predetermined regions of cloth having patterns thereon, positional relationships between said predetermined regions and said patterns through image analysis according to preliminarily taught conditions, wherein said pattern recognition device comprises:

recognition means for performing automatic pattern recognition on the basis of said image analysis for each of said predetermined regions of said cloth;

means for giving said operator an instruction to conduct manual pattern matching and for displaying conditions necessary for the manual pattern matching selected from among said preliminarily taught conditions, when a pattern matching point at which automatic pattern recognition by said recognition means is impossible appears;

recognition priority means for judging that a preliminarily taught pattern position cannot be determined by said recognition means according to said image analysis;

means for informing an operator of said judgment by said recognition priority means;

erroneous recognition monitoring means for automatically detecting erroneous pattern recognition by said recognition means;

erroneous recognition interruption means for interrupting pattern recognition operation to allow for manual pattern recognition when said erroneous pattern recognition is detected by said erroneous recognition monitoring means; and

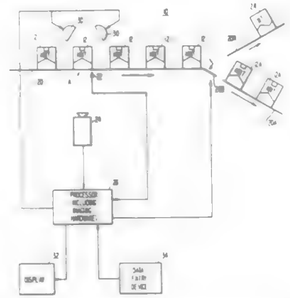
recognition process changeover means for determining a pattern position when changing from automatic pattern recognition to manual pattern recognition, and for switching back to automatic pattern recognition.

5,353,356

PRODUCT GAUGE METHODS AND APPARATUS FOR USE IN THE OPTICAL DETERMINATION OF THE ACCEPTABILITY OF PRODUCTS

Richard M. Waugh, 12332 Winfree St., Chester, Va. 23831, and Robert J. Maher, 2919 Glendower Cir., Midlothian, Va. 23113

Continuation-in-part of Ser. No. 661,809, Feb. 27, 1991, Pat. No. 5,146,510, which is a continuation-in-part of Ser. No. 308,739, Feb. 9, 1989, Pat. No. 5,046,111. This application Jun. 29, 1992, Ser. No. 905,898
Int. Cl.[5] G06K *9/00;* **H04N** *7/00*
U.S. Cl. 382—8 **38 Claims**



1. A method of determining the acceptability of a product, comprising the steps of:

superimposing a product gauge image over an image of the product;

identifying an acceptable image by comparing the product gauge image with the image of the product;

generating a filter from a first set of acceptable images of said product;

comparing said filter with a member of a second set of images of said product to produce a processed value, said second set including at least some acceptable images;

repeating said comparing step to produce a distribution of processed values;

generating from said distribution of processed values a first range (A) of processed values, said first range comprising processed values associated with acceptable images of said product;

generating from said distribution of processed values a second range (B) of processed values, said second range comprising processed values associated with unacceptable images of said product;

comparing said filter with a further image of said product so as to produce a further processed value;

generating an indication of acceptability or unacceptability of said further image by comparing said further processed value to said first and second ranges;

if said further processed value is outside both said first and second ranges, selecting said further image only if said further image is acceptable; and

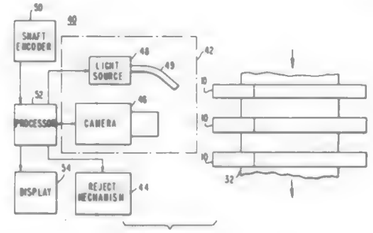
adaptively training said filter with said selected further image to produce a modified filter such that comparing said modified filter with said selected further image produces a modified processed value which is within said first range.

5,353,357

METHODS AND APPARATUS FOR INSPECTING THE APPEARANCE OF SUBSTANTIALLY CIRCULAR OBJECTS

H. Cary Longest, Jr., Midlothian, and Barry S. Smith, Hopewell, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Dec. 4, 1992, Ser. No. 985,875
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—8 **33 Claims**



1. Apparatus for determining whether an end surface of a cigarette has an acceptable appearance, said apparatus comprising:

means for forming an image of said end surface against a contrasting background;

means for digitizing said image as a plurality of pixels, each of said pixels having an initial digital value indicative of the brightness of a corresponding portion of said image;

means for processing said pixels so that each pixel having an initial digital value which has a first polarity relative to a predetermined threshold value is assigned a first of two processed digital values, and so that all other pixels are assigned a second of said two processed digital values, said threshold values being selected so that said background and substantially discolored area of said end surface are assigned said first processed digital value and substantially undiscolored areas of said end surface are assigned said second processed digital value;

means for identifying as edge pixels those pixels which are adjacent to transitions between pixels having said first and second processed digital values;

means for associating edge pixels which are adjacent to one another so as to identify a boundary of each blob in said image;

means for identifying each blob as a first type of blob or a second type of blob by determining whether each boundary surrounds pixels having said first processed digital value or said second processed digital value, respectively;

means for calculating a characteristic of any blob of at least one of said blob types; and

means for determining acceptability of said image by comparing said calculated characteristic to a predetermined value.

5,353,358

METHOD FOR DETERMINING ARTICLE ORIENTATION IN AN ARTICLE HANDLING SYSTEM USING A SAMPLING OF A CCD ARRAY

Randy K. Baird, Bolivar, and Stanley P. Turcheck, Jr., Homer City, both of Pa., assignors to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 586,939, Sep. 24, 1990, abandoned. This application Jul. 12, 1993, Ser. No. 90,443
Int. Cl.[5] G06K *9/62;* **G01B** *11/00*
U.S. Cl. 382—8 **5 Claims**

1. In a method for determining orientation of singulated articles on a conveyor by sensing article orientation with an array of optical sensors effective to provide information data relating to a pattern of article edge points via successive linear scans of said article the steps comprising:

during a setting-up procedure;

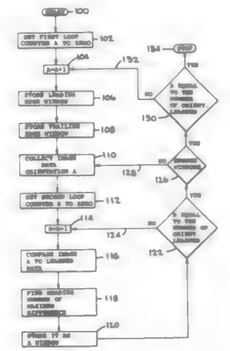
a) storing image edge point data for a plurality of predetermined possible article orientations;

b) determining a maximum data difference between each pair of possible orientations based on image edge point data stored in step a; and

c) identifying at least one linear scan of the article which corresponds to a maximum image edge point data difference between each different pair of orientations;

during a running procedure;

d) acquiring image edge point data from singulated work articles which is compared with the stored image edge point data at each of said maximum image edge point data identified in step "b" hereof; and



(e) determining an orientation mismatch of the work article orientation and the stored article orientation if the image edge point data difference between said stored image edge point data and said scan image edge point data identified in step "b" hereof is greater than or less than a predetermined value; and

f) determining a plurality of linear scans of image edge point data along the article length where major differences occur for each of the possible orientations; and

g) totaling the sum of the difference at each of said plurality of linear scans of image edge point data determined in step "f" hereof; and

using said sum of differences for identifying work article orientation.

5,353,359

METHODS FOR GENERATING CHARACTER PATTERN DATA AND MAKING IMAGE

Akio Urabe; Koji Kinoshita; Hideaki Kitagawa; Noriyuki Kaneyasu, and Akira Nihei, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 476,038, Feb. 6, 1990, abandoned. This application Dec. 30, 1993, Ser. No. 175,671
Claims priority, application Japan, Feb. 9, 1989, 1-30724; Apr. 17, 1989, 1-97018
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—41 **5 Claims**

1. A method for generating character pattern data using an apparatus having an electronic memory, an electronic processor, and an output device having n gradations per picture element, the method comprising the steps of:

a) reading from the electronic memory point data representing contour information of a character stored in the electronic memory and having $m_1 \times m_2$ coordinate values in a

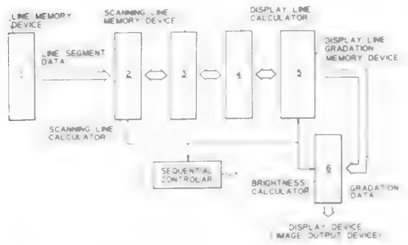
VOL 1167 ISS 1 OC 4 1994 UMI

coordinate space from the electronic memory, wherein m_1 and m_2 are positive integers;

b) using the electronic processor:

1) virtually making character data of $(\sqrt{n} \times l_1) \times (\sqrt{n} \times l_2)$ picture elements from the point data read from the electronic memory; and

2) forming gradated character pattern data of $l_1 \times l_2$ picture elements for the output device that has n gradations per picture element by converting the virtually made



character data of $(\sqrt{n} \times l_1) \times (\sqrt{n} \times l_2)$ picture elements to data of $l_1 \times l_2$ picture elements, the gradated character pattern data also having n gradations per picture element; wherein:

i) l_1, l_2 and n are positive integers; and

ii) $\sqrt{n}$ designates a minimum integer not less than $\sqrt{n}$; and

c) outputting to the output device that has n gradations per picture element the gradated character pattern data.

5,353,360

COMPACT OPTICAL CHARACTER READING APPARATUS HAVING MULTIPLE PIVOTING PARTS

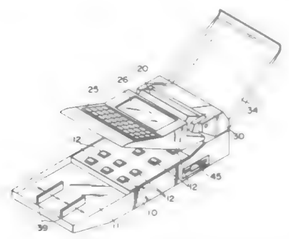
Tadashi Obara, Tokyo, Japan, assignor to Kabushiki-Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 14, 1991, Ser. No. 791,325

Claims priority, application Japan, Nov. 16, 1990, 2-308480; Nov. 16, 1990, 2-308481

Int. Cl.[5] G06K *9/00;* **B41J** *3/36, 29/13*

U.S. Cl. 382—65 **6 Claims**



1. An image processing apparatus having means for reading objects, comprising:

an upper unit including display means for displaying data and input means for inputting data;

a lower unit including an input table for stacking the objects to be read;

a protective cover for protecting at least the display means and the input means when the protective cover is in a closed position and for stacking the objects after having been read when the protective cover is in an open position;

a conveying path formed between the upper unit and the lower unit when the lower unit is covered by the upper unit; and

a common axis on which the upper unit, the lower unit and the protective cover are coaxially pivotable.

5,353,361

METHOD FOR ASSEMBLING A LIGHT WAVE GUIDE SWITCH

Christoph Maczey; Joachim Schulze, and Klaus Schulz, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

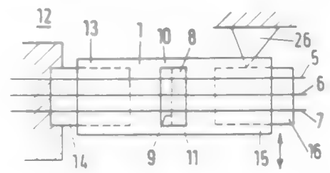
PCT No. PCT/DE91/00130, § 371 Date Dec. 8, 1992, § 102(e) Date Dec. 8, 1992, PCT Pub. No. WO91/16651, PCT Pub. Date Oct. 31, 1991

PCT Filed Feb. 15, 1991, Ser. No. 941,063

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1990, 4012510

Int. Cl.[5] G02B *6/26;* **B65H** *69/02;* **H01H** *11/00;* **B23K** *26/00*

U.S. Cl. 385—16 **12 Claims**



1. A method for assembling a light wave guide switch having two groups of end faces of light wave guides, each group of end faces facing the other group of end faces and each group being disposed on opposite sides of a coupling plane running perpendicular to a longitudinal axis of each of the light wave guides, said switch further having a base plate with centering devices that extend parallel to each other from a first end of the base plate to a second end of the base plate, each centering device securing a light wave guide that extends through the coupling plane when each of said wave guides forms a single component, said method comprising the steps of:

coupling the first end of the baseplate to a stationary part of the switch while the switch is in a given switching position;

coupling a second end of the base plate to a drivable part of the switch while the switch is in the given switching position;

cutting the light wave guides with a laser in the coupling plane; and

cutting the base plate in the region of the coupling plane, wherein the two coupling steps are completed before either of the cutting steps is performed.

5,353,362

METHOD OF GENERATION OF TWO ELECTROMAGNETIC MODES USING SQUEEZERS

Robert R. Tucci, P.O. Box 226, Bedford, Mass. 01730

Filed May 17, 1993, Ser. No. 62,316

Int. Cl.[5] G02B *6/10*

U.S. Cl. 385—27 **15 Claims**

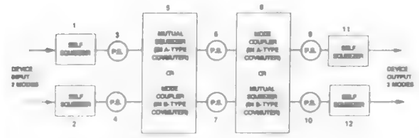
1. A method for transforming a travelling electromagnetic wave comprising two initial modes lying in an initial 2-mode state into a travelling electromagnetic wave comprising two final modes lying in a final 2-mode state, said method comprising the steps of:

STEP (1) obtaining said two initial modes, and using them as the two input modes for the next step,

STEP (2) inducing a self-squeezer to act on one of the two input modes for this step, to produce the two input modes for the next step,

STEP (3) inducing a mutual squeezer to transform the two input modes for this step into the two input modes for the next step,

STEP (4) inducing a mode coupler to transform the two



input modes for this step into the two input modes for the next step,

STEP (5) obtaining the two input modes for this step, and identifying them as said two final modes.

5,353,363

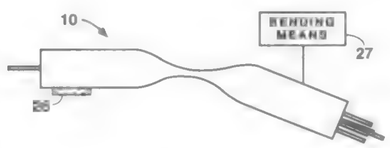
OPTICAL FIBER BENDABLE COUPLER/SWITCH DEVICE

Donald B. Keck, Big Flats; Mark A. Newhouse, and David L. Weidman, both of Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Nov. 1, 1993, Ser. No. 143,753

Int. Cl.[5] G02B *6/24*

U.S. Cl. 385—46 **20 Claims**



1. A fiber optic device comprising

a coupler having at least a first optical fiber and a plurality of optical fibers, portions of said plurality of fibers being situated adjacent a portion of said first fiber in a narrowed region where said fibers are elongated and said plurality of fibers are optically coupled with said first optical fiber, and

means for changing the propagation constant of each of said plurality of fibers with respect to the propagation constant of said first fiber to vary the amount of light coupled from said first fiber to any of said plurality of fibers.

5,353,364

OPTICAL MODULE WITH IMPROVED GROUNDING OF AN OPTICAL ELEMENT

Hiromi Kurashima, Kanagawa, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 10, 1993, Ser. No. 104,012

Claims priority, application Japan, Aug. 11, 1992, 4-214347; Aug. 20, 1992, 4-221436

Int. Cl.[5] G02B *6/00, 6/36*

U.S. Cl. 385—88 **13 Claims**

1. An optical module comprising:

an optical connector for receiving an end of an optical fiber to be connected to the optical module;

an optical functional element to be optically coupled with the optical fiber;

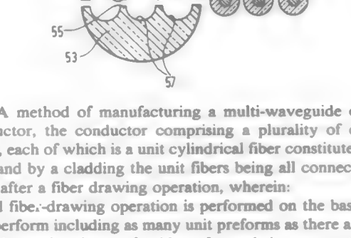
a metal package fixed to the optical connector and containing the optical functional element, the optical functional element being grounded to the metal package;

electronic circuit parts electrically connected to the optical functional element;

a circuit board on which the electronic circuit parts are mounted;

a plurality of lead pins electrically connected to the electronic circuit parts;

at least one grounding member electrically connected to the metal package;



a grounding lead pin electrically connected to the grounding lead member; and

a resin mold member holding the metal package, electronic circuit parts, circuit board, lead pins, grounding member and grounding lead pin.

5,353,365

MULTI-WAVEGUIDE CYLINDRICAL OPTICAL CONDUCTOR FOR TELECOMMUNICATIONS CABLE AND METHOD OF MAKING SAME

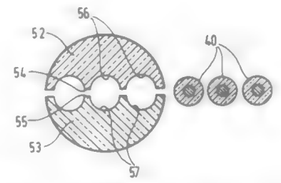
Jean-Pierre Dumas, Villemoisson sur Orge, and Robert Jocteur, Lyons, both of France, assignors to Alcatel Cable, Clichy Cedex, France

Filed Mar. 5, 1993, Ser. No. 26,833

Claims priority, application France, Mar. 6, 1992, 92 02728

Int. Cl.[5] G02B *6/44, 6/22;* **C03C** *25/02*

U.S. Cl. 385—102 **6 Claims**



1. A method of manufacturing a multi-waveguide optical conductor, the conductor comprising a plurality of optical fibers, each of which is a unit cylindrical fiber constituted by a core and by a cladding the unit fibers being all connected by silica after a fiber drawing operation, wherein:

said fiber-drawing operation is performed on the basis of a perform including as many unit preforms as there are unit fibers, the shape of said performs being geometrically similar to that of said waveguide;

said preform is made from a cylindrical silica rod having a plurality of fluting-grooves in its outside surface extending along generator lines and having said unit preforms received partially therein; and

said preform is given a regular cylindrical outside shape by coating it with grains of silica using a plasma technique coating method.

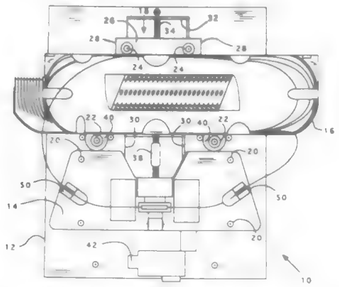
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5,353,366

OPTICAL FIBER SPLICING STATION

Ronald G. Boesard, Austin, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 5, 1993, Ser. No. 131,691
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—134 21 Claims



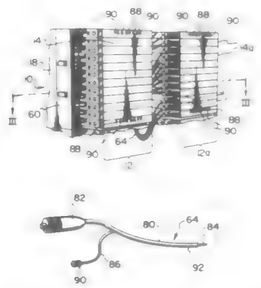
1. An apparatus for facilitating the installation of a fiber optic splice onto a splice management device, comprising:
a generally planar base member having an upper surface;
a fiber optic splicing tool removably attached to said upper surface of said base member; and
means for releasably affixing a splice management device to said upper surface of said base member.

5,353,367

DISTRIBUTION FRAME AND OPTICAL CONNECTOR HOLDER COMBINATION

W. Michal Czosnowski, Pointe Claire, and Michel J. Thomassin, Otterburn Park, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Nov. 29, 1993, Ser. No. 158,540
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—135 7 Claims



1. A distribution frame and optical connector holder combination comprising:
distribution frame means for receiving a plurality of optical connector holders;
a plurality of optical connector holders receivable within the frame means, the holders having mounting means for positioning a plurality of optical connectors which, when mounted, have first ends which, in different holders, are for selective optical interconnection from one connector to another, and second ends for connection to optical fibers in the holders and each holder the mounting positions for a plurality of optical connectors extend, in an array across the holder, the holder having test locations corresponding to the mounting positions located forwardly of the array of mounting positions, the test locations also being relatively disposed to form an array with each test location and its mounting position being correspondingly disposed in their associated arrays;
and a plurality of optical patch cords each having a signal transmission optical fiber for the selective optical interconnection of first ends of the connectors, and a test means comprising a test optical fiber extending along the patch cord, the test optical fiber having light transmission and light receiving ends disposable in test locations in the holders carrying the selected connectors to enable the passage of light along the test optical fiber and provide an indication of the ends of the optical patch cord.

5,353,368

OPTICAL FIBER COMPRISING A CLADDING MADE OF AMORPHOUS COPOLYMERS OF TWO FLUORINATED RING MONOMERS

Paul R. Resnick, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 65,044, May 24, 1993, which is a division of Ser. No. 878,481, May 5, 1992, Pat. No. 5,276,121. This application Nov. 9, 1993, Ser. No. 149,402
Int. Cl.[5] G02B *6/00*
U.S. Cl. 385—145 4 Claims

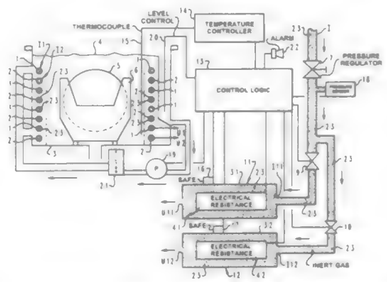
1. An optical fiber consisting of a core and a cladding, the cladding being an amorphous copolymer of 1–99.5 mole % of perfluoro(2,2-dimethyl-1,3-dioxole) with a complementary amount of 99–0.5 mole % of at least one other comonomer, said copolymer being selected from the group consisting of dipolymers with perfluoro(butenyl vinyl ether) and terpolymers with perfluoro(butenyl vinyl ether) and with a third comonomer, wherein the third comonomer can be (a) a perhaloolefin in which halogen is fluorine or chlorine, but at least one half of the halogen atoms must be fluorine, or (b) a perfluoro(alkyl vinyl ether); the amount of the third comonomer, when present, being at most 40 mole % of the total composition.

5,353,369

DEVICE FOR HEATING A CHEMICAL TANK WITH AN INERT HEAT EXCHANGE FLUID USING LINEAR AND IMPULSIVE CONTROL

Cirino Scarpa; Giuseppe Musco, both of Leatini, and Alberto Falzone, Aci Catena, all of Italy, assignors to SGS-Thomson Microelectronics s.r.l., Agrate Brianza, Italy

Filed Apr. 1, 1992, Ser. No. 862,003
Claims priority, application Italy, Apr. 5, 1991, MI91 A 000947
Int. Cl.[5] H04B *1/02*; F28D *1/047*; F24H *1/10*
U.S. Cl. 392—441 11 Claims



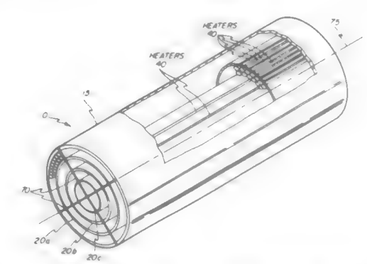
1. A device for heating chemical tanks, comprising at least one heat-exchanger coil located in the proximity of walls of a chemical tank and immersed inside of it, the tank containing a solution to be heated, wherein in said at least one coil there is made to circulate a flow of inert gas, and further wherein said at least one coil comprises at least one pair of coils, intercalated one with respect to the other, said coils being connected respectively with means feeding the inert gas through respective heating units each receiving an inlet inert gas under pressure and an outlet connected to the inlet of a respective coil, at least one of said at least one heating units being driven by a control unit in a linear manner for maintaining an operating temperature of the solution and at least one other of said at least one heating unit being driven in an impulsive manner by said control unit for the recovery of said operating temperature, respectively.

5,353,370

NON-UNIFORM TEMPERATURE PROFILE GENERATOR FOR USE IN SHORT DURATION WIND TUNNELS

Jungho Kim, Denver, Colo.; Michael G. Dunn, and Charles W. Haldeman, both of East Aurora, N.Y., assignors to Calspan Corporation, Buffalo, N.Y.

Filed Mar. 11, 1993, Ser. No. 30,592
Int. Cl.[5] H05B *3/10*
U.S. Cl. 392—485 3 Claims



1. Apparatus for producing a non-uniform temperature profile in a short duration wind tunnel, said apparatus having an inlet end and an out end, said apparatus comprising
a plurality of spaced apart, nested cylindrical elements each having an inlet end and an outlet end corresponding to said inlet end and said outlet end of said apparatus, and each having a different diameter,
a plurality of heater elements extending axially along a surface of each of said cylindrical elements,
a plurality of honeycomb elements occupying the space between said cylindrical elements,
means for controlling individually each of said heater elements to control a temperature profile at the outlet end of said apparatus.

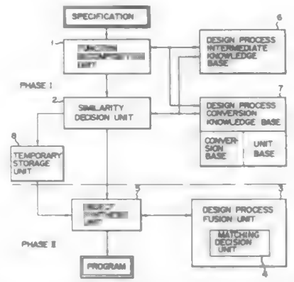
5,353,371

APPARATUS AND METHODS FOR GENERATING A PROGRAM BY SYNTHESIZING AN OBJECT DESCRIBED IN AN OBJECT-ORIENTED LANGUAGE

Shinichi Honiden, Tokyo, and Takeshi Kohno, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 23, 1991, Ser. No. 763,587
Claims priority, application Japan, Sep. 28, 1990, 1-256866
Int. Cl.[5] G06F *15/18, 15/20*
U.S. Cl. 395—1 7 Claims

1. A program synthesis computer system comprising:
a design process intermediate knowledge base for storing a plurality of intermediates which are obtained in a given design process, the intermediate being data transformers wherein a function of each data transformer is described in an algebraic specification description language;
a design process conversion knowledge base for storing a first conversion knowledge detailing a given specification, a second conversion knowledge specifying the relationship of said intermediate, and a minimum unit knowledge used for performing a desired processing having an input and output, wherein the given specification is defined as data transformers;
a function decomposition unit for decomposing a function according to said given specification on the basis of said first conversion knowledge so as to obtain detailed specifications of the given specification;



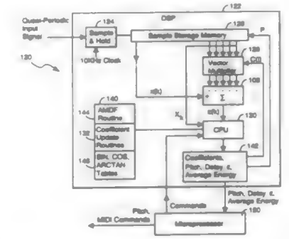
a similarity decision unit for retrieving intermediates stored in said design process intermediate knowledge base similar to the detailed specifications detailed by said function decomposition unit;
a design process fusion unit for merging a plurality of design processes, said design process fusion unit including a matching decision unit for deciding matching between a plurality of design processes having high similarities with respect to an intermediate retrieved by said similarity decision unit on the basis of said second conversion knowledge and said minimum unit knowledge; and
an object synthesis unit for synthesizing an object oriented program on the basis of a new design process obtained by said design process fusion unit.

5,353,372

ACCURATE PITCH MEASUREMENT AND TRACKING SYSTEM AND METHOD

Perry R. Cook, and Julius O. Smith, both of Palo Alto, Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Jan. 27, 1992, Ser. No. 825,932
Int. Cl.[5] G10L *9/02, 9/14, 9/08*
U.S. Cl. 395—2.16 17 Claims



1. A pitch measurement system which determines the pitch of a quasi-periodic input signal, comprising:

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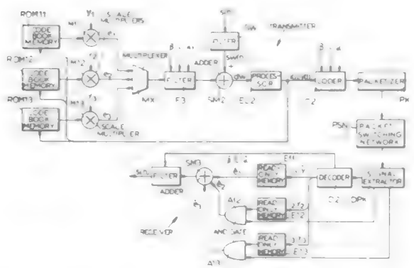
a signal sampler which samples said input signal's value x(t) during a sequence of sample periods;
signal storage, coupled to said signal sampler, which stores a sequence of signal sample values representing said input signal's value during said sequence of sample periods;
means, coupled to said signal storage, for generating an initial estimate $P \cdot T_s$ of said input signal's period T_0 where T_s is the length of each said sample period and P is an integer;
means for storing a ordered set of N coefficient values, where N is a positive integer;
a finite impulse response (FIR) filter coupled to said signal storage for generating a predicted signal value x(k) for a sampling period k by multiplying each of N of said stored signal sample values, selected in accordance with said initial estimate $P \cdot T_s$ of said input signal's period, by corresponding ones of said N coefficient values and summing the resulting values;
eror means for generating an error signal $\epsilon(k)$ corresponding to the difference between the actual stored signal value x(k) for sampling period k and the predicted signal value x(k);
coefficient updating means for periodically updating said coefficient values so as to minimize said error signal $\epsilon(k)$'s mean square value; and
measurement output means for generating an output measurement equal to $P \cdot T_s$ plus a phase delay value that is equal to a predefined function of said updated coefficient values.

5,353,373

SYSTEM FOR EMBEDDED CODING OF SPEECH SIGNALS

Rosario Drogo de Iacovo, Rocca Imperiale Marina; Roberto Montagna, and Daniele Sereno, both of Turin, all of Italy, assignors to SIP - Societa Italiana per l'Esercizio delle Telecomunicazioni P.A., Turin, Italy

Filed Dec. 4, 1991, Ser. No. 803,484
Claims priority, application Italy, Dec. 20, 1990, 68029 A/90
Int. Cl.[5] G10L *9/14*
U.S. Cl. 395—2.32 **2 Claims**



2. A device for coding and decoding speech signals by analysis-by-synthesis techniques, comprising:
a coder including:
a first excitation source supplying a set of excitation signals (e_1, e_2, e_3) from which an excitation to be used for coding operations for a frame of samples of the speech signal is chosen,
a first filtering system for applying to the excitation signals short-term and long-term spectral characteristics of the speech signal and supplying a synthesized signal,
means for carrying out a perceptually significant measurement of the distortion of the synthesized signal in comparison with the speech signal, for searching an optimum excitation which is the excitation minimizing the distortion, and for generating coded signals comprising information relevant to the optimum excitation, and means to organize a transmission of coded signals as a packet flow; and
a decoder including:
means for extracting the coded signals from a received packet flow, a second excitation source supplying a set of excitation signals e1, e2, e3) corresponding to the set supplied by the first source, an excitation corresponding to the one used for coding during a frame being chosen in said set on the basis of the excitation information contained in the coded signal, and
a second filtering system identical to the first filtering system which generates a synthesized signal during decoding, and wherein:
the first source of excitation signals comprises a plurality of partial sources each arranged to supply a different subset of the excitation signals, the subset (e_1) supplied by a first partial source contributing the coded signal with a bit stream necessary to obtain a packet transmission at a minimum bit rate, while the subsets (e_2, e_3) of the other partial sources contribute to the coded signal with bit streams that, successively added to the contribution supplied by the first partial source, originate an increase of the bit rate by discrete steps up to a maximum bit rate;
the second source of excitation signals comprises a plurality of partial sources supplying respective subsets of the excitation signals corresponding to the subsets supplied by the partial sources of the first excitation source;
the first and second filtering systems comprise each a first filtering structure which is fed with the excitation signals belonging to the first subset (e_1, e_1) and, during the filtering relevant to a frame, processes them exploiting the memory of the filterings relevant to preceding frames, and further filtering structures, which are each associated with one of the other subsets of excitation signals and which, during the filtering relevant to a frame, process the relevant signals without exploiting the memory of the filtering relevant to the preceding frames;
the means for measuring distortion and searching the optimum excitation supply the means generating the coded signal with an excitation comprising contributions from all subsets of excitation signals; the means for organizing the transmission into packets introduce into different packets the excitation information originating from different subsets of excitation signals; and
the second filtering system supplies the signal synthesized during decoding by processing an excitation always comprising a contribution from the first subset of excitation signals (e1), and comprising contributions from one or more further subsets (e2, e3) only if the packet flow relevant to a frame of samples of speech signal is received at a higher rate than the minimum rate the first filtering structure containing a cascade of a short term synthesis filter and a long-term synthesis filter, and the further filtering structures consisting of a short-term synthesis filter.

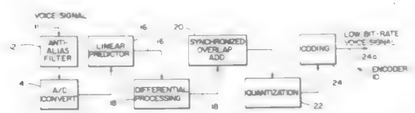
5,353,374

LOW BIT RATE VOICE TRANSMISSION FOR USE IN A NOISY ENVIRONMENT

Dennis L. Wilson, Palo Alto, and James L. Wayman, Pebble Beach, both of Calif., assignors to Loral Aerospace Corporation, New York, N.Y.

Filed Oct. 19, 1992, Ser. No. 963,101
Int. Cl.[5] G10L *9/14, 3/02*
U.S. Cl. 395—2.35 **17 Claims**

1. A method for processing an audio signal, comprising the steps of:
digitizing an input signal that includes an audio signal component, a coherent noise signal component, and a non-coherent noise component;
applying the digitized audio signal to a linear predictor means, the linear predictor means having a plurality of serially coupled time delay elements wherein a time delay between adjacent time delay elements is selected for attenuating the coherent noise component of the input signal, said linear predictor means having a residual output signal that is representative of the audio signal component and the non-coherent noise component, less the coherent noise component;



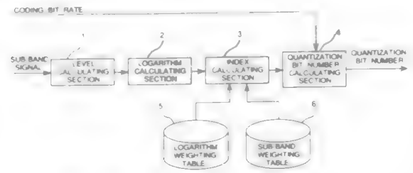
applying the residual output signal to a synchronized overlap add processor means for compressing the audio signal component in accordance with a compression ratio, the synchronized overlap add processor means furthermore attenuating the non-coherent noise component of the input signal; and
further compressing the audio signal component with encoder means to provide a digital output signal that is expressive of the audio signal component.

5,353,375

DIGITAL AUDIO SIGNAL CODING METHOD THROUGH ALLOCATION OF QUANTIZATION BITS TO SUB-BAND SAMPLES SPLIT FROM THE AUDIO SIGNAL

Michiyo Goto, Osaka, and Yoshinori Matsui, Katano, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 30, 1992, Ser. No. 922,179
Claims priority, application Japan, Jul. 31, 1991, 3-191602; Dec. 3, 1991, 3-318962
Int. Cl.[5] G10L *9/00*
U.S. Cl. 395—2.38 **14 Claims**



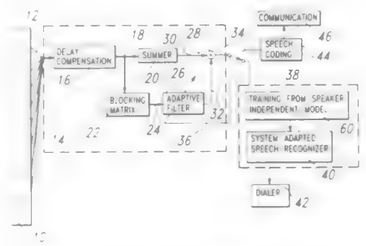
1. A digital audio signal coding method for reducing the number of quantization bits allocated to each sample of each of a plurality of sub-band signals in order to code the samples, said method comprising the steps of:
splitting a digital audio signal into said plurality of sub-band signals each being sampled and each having a specified frequency;
calculating a level for each of said plurality of sub-band signals;
calculating a logarithm value of the level of each sub-band signal;
calculating an index by multiplying the logarithm value of the level by a weight which is dependent on the level and by weight which is dependent on the specified frequency allocated to each sub-band; and
determining the number of quantization bits to be used for each sample according to the calculated index and a prescribed coding bit rate permitted to the entire band for coding the sub-band signals.

5,353,376

SYSTEM AND METHOD FOR IMPROVED SPEECH ACQUISITION FOR HANDS-FREE VOICE TELECOMMUNICATION IN A NOISY ENVIRONMENT

Sang G. Oh, Richardson, and Vishu R. Viswanathan, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 20, 1992, Ser. No. 854,161
Int. Cl.[5] G10L *5/06*
U.S. Cl. 395—2.42 **22 Claims**



1. A system for an improved acquisition of speech comprising:
a plurality of linearly arrayed sensors to detect spoken input and to output signals in response thereto;
a highpass filter to filter a preselected first noise portion from said signals received from said linearly arrayed sensors;
a beamformer, connected to said highpass filter, to cancel a preselected second noise portion from said filtered signals thereby producing a processed signal; and
a speech application system, connected to receive said processed signal from said beamformer, for receiving and responding to said processed signal, wherein said beamformer is a generalized sidelobe canceler, comprising a delay and sum beamformer, an adaptive noise canceler and an adder which produces said processed signal,
and wherein said adaptive noise canceler comprises a blocking matrix, an adaptive filter and an adder, and wherein said adaptive filter comprises enable/disable circuitry for selectively adapting said adaptive filter for a predetermined period of time.

5,353,377

SPEECH RECOGNITION SYSTEM HAVING AN INTERFACE TO A HOST COMPUTER BUS FOR DIRECT ACCESS TO THE HOST MEMORY

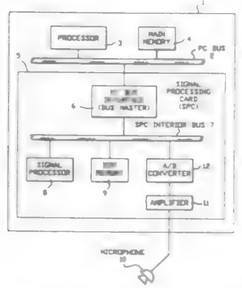
Akihiro Kuroda, Tokyo; Masafumi Nishimura, Yokohama, and Koichi Toshioka, Kawasaki, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 17, 1992, Ser. No. 931,240
Claims priority, application Japan, Oct. 1, 1991, 3-278896
Int. Cl.[5] G10L *9/00*
U.S. Cl. 395—2.65 **9 Claims**

1. A speech recognition system for storing information on probability values of Markov models defining speech models of vocabulary words and information on a set of labels indicating phone types assignable to a micro period of time, for sequentially generating corresponding labels in response to an input speech to generate a label stream of said input speech, for accumulating said probability values of said Markov models on the basis of said speech models of said words and said label stream, and for performing speech recognition on the basis of the accumulated values, comprising:
a bus;
a processor coupled to said bus;
a main memory for said processor for storing said probability values of said Markov models accessibly to each of said labels, said main memory being coupled to said bus; and

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a signal processing unit coupled to said bus,
said signal processing unit comprising:
means for storing information on said set of labels;
means for converting an input speech into said label stream on the basis of said information on the set of labels;
means for fetching said probability values of a Markov model related to each of labels contained in said label



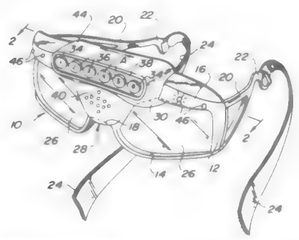
stream by direct memory access transfer from said main memory;
means for accumulating said probability values thus fetched for each of said vocabulary words; and
means for determining one or more words to be the result of the recognition on the basis of accumulated probability values.

5,353,378

SOUND AND LIGHT EMITTING FACE APPAREL

Donald L. Hoffman, Wynnewood, and Neil M. Cohen, Lafayette Hill, both of Pa., assignors to Hilco Corporation, Norristown, Pa.

Filed Apr. 16, 1993, Ser. No. 48,624
Int. Cl.[5] G10L *3/00*
U.S. Cl. 395—2.81 **17 Claims**



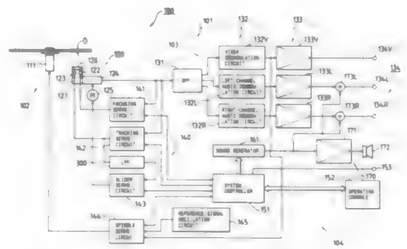
1. A sound-emitting apparel to be worn on the face of a user, the apparel comprising:
(a) means for storing and retrieving sound signals;
(b) actuation means for selecting an individual sound signal, the selected sound signal being retrieved from the means for storing and retrieving upon selection thereof; and
(c) speaker means disposed on the apparel so as to be located in a central region of the user's face upon wearing the apparel, the speaker means emitting the selected sound signal outward from the face apparel.

5,353,379

INFORMATION REPRODUCING APPARATUS AND GAME MACHINE INCLUDING THE SAME

Tooru Nakajima, and Takeo Tobe, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 920,521, Jul. 28, 1992, which is a continuation of Ser. No. 492,502, Mar. 13, 1990. This application Sep. 10, 1993, Ser. No. 118,688
Claims priority, application Japan, Mar. 31, 1989, 1-82679
Int. Cl.[5] G10L *3/00*
U.S. Cl. 395—2.83 **12 Claims**



1. An apparatus for reproducing information in a recording medium comprising:
signal reproducing means for reading out an information signal recorded in a recording medium and demodulating a reproduction audio signal from said information signal;
control means for controlling said signal reproducing means to provide an operation mode corresponding to an operating command, and for generating an output control signal indicating one of an improper operating command and an operating state of said apparatus;
sound generating means for generating an indication audio signal, which is independent from said information and reproduction signals, in response to said output signal from said control means;
amplifying means for amplifying said indication audio signal; and
a loudspeaker electrically coupled to said amplifying means for generating an audible sound in response to amplification of said indication audio signal.

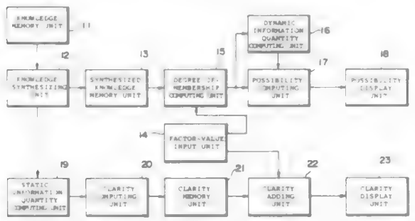
5,353,380

APPROXIMATE REASONING APPARATUS

Hongmin Zhang, Sunnyvale, Calif., assignor to APT Corporation, Kyoto, Japan

Continuation of Ser. No. 684,261, Apr. 11, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 47,367
Claims priority, application Japan, Apr. 17, 1990, 2-101454; Apr. 17, 1990, 2-101455
Int. Cl.[5] G06F *9/44*
U.S. Cl. 395—3 **3 Claims**

1. An approximate reasoning apparatus comprising:
a knowledge memory for storing relationships between factors and conclusions expressed as membership functions;
a knowledge synthesizing unit for combining said membership functions which express identical factors and conclusions as synthesized membership functions;
a degree-of-membership computing unit which converts inputted data into values representing the degrees of membership which inputted data has to said synthesized membership functions;
a dynamic information quantity computing unit which determines a dynamic information quantity, which is the identification capability of a factor in deciding a conclusion, for every factor using said degrees of membership values; and



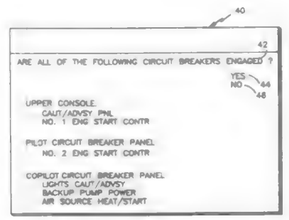
a possibility computing unit for determining a possibility of a conclusion using said degrees of membership values and said dynamic information quantities.

5,353,381

INTELLIGENT TEST SELECTION FOR MACHINE FAILURE ISOLATION USING QUALITATIVE PHYSICS

Thomas P. Hamilton, South Windsor; Kevin J. Perveiler, Monroe, and Carol E. Jacobsen, Shelton, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 549,520, Jul. 6, 1990, abandoned. This application Sep. 28, 1993, Ser. No. 128,255
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—10 **5 Claims**



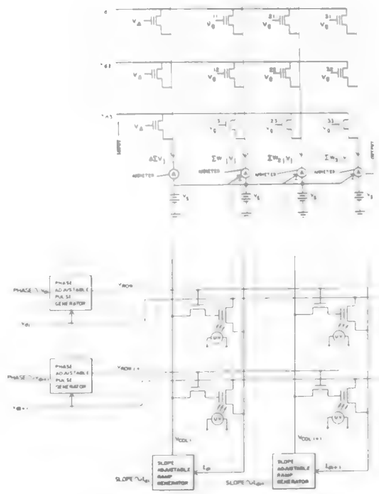
1. A method of using a processor for analyzing machine signals to determine the presence of particular machine faults, comprising the steps of:
the processor generating a plurality of pending hypotheses wherein each hypothesis has associated therewith a set of confluences using variables and equations to describe operation of components of the machine which are assumed not to have failed;
the processor forming a type I set of hypothesis variables wherein for each variable of said type I set, every possible value of said variable will render at least one of said hypotheses invalid;
the processor receiving machine signals indicative of values of machine parameters wherein at least one of said signals corresponds to said type I set of hypothesis variables;
the processor propagating values indicative of said machine signals through said confluences to produce a set of predictions for values of confluence variables;
the processor discarding hypotheses which produce an inconsistent set of predictions;
the processor saving hypotheses which produce a consistent set of predictions; and
the processor indicating the presence of one or more particular machine faults in response to there remaining a single hypothesis corresponding to failure of one or more particular machine components.

5,353,382

PROGRAMMABLE SYNAPSE FOR NEURAL NETWORK APPLICATIONS

Amnon Yariv, San Marino; Charles F. Neugebauer, and Aharon J. Agranat, both of Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Oct. 15, 1990, Ser. No. 597,390
The portion of the term of this patent subsequent to Aug. 4, 2010, has been disclaimed.
Int. Cl.[5] H03K *19/21*
U.S. Cl. 395—24 **14 Claims**



1. In a vector-matrix multiplier of the type having a plurality of input lines and output lines corresponding to elements of input and output vectors, respectively, and a plurality of matrix elements, one such respective matrix element corresponding to each combination of a respective input line and a respective output line;
each such matrix element comprising a single transistor operating in its triode region, having a drain-source difference voltage proportional to the value of said input vector element corresponding to said matrix element, having a gate-voltage proportional to the value of said matrix element and having a drain current proportional to the product of said input vector element value and said matrix element value;
each such output line being connected to a plurality of matrix elements such that said drain currents proportional to the product of said input line values and said matrix element values are summed to form a total output line current proportional to one element of said output vector; and
a programmable plurality of said matrix elements having constant values and providing an offset drain current in their common output line; said offset drain current being subtracted from each respective drain current in the remaining ones of said output lines for providing four quadrant vector-matrix multiplication.

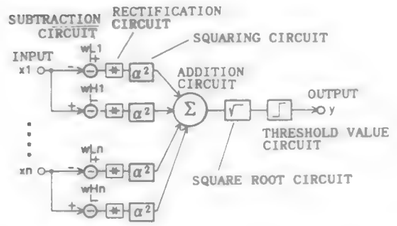
VOL 1167 ISS 1 OCT 4 1994 UMI

5,353,383

NEURAL NETWORK CIRCUIT

Kuniharu Uchimura; Osamu Saito, both of Kanagawa; Yoshihito Amemiya, and Atsushi Iwata, both of Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Division of Ser. No. 727,065, Jul. 8, 1991, Pat. No. 5,166,539.
This application Jul. 7, 1992, Ser. No. 909,993
Claims priority, application Japan, Jul. 9, 1990, 2-179665; Jul. 9, 1990, 2-179666; Jul. 13, 1990, 2-186528; Sep. 3, 1990, 2-232914; Sep. 3, 1990, 2-232915; Sep. 7, 1990, 2-235700; Oct. 22, 1990, 2-281891; Mar. 25, 1991, 3-60384; Apr. 24, 1991, 3-94220
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—24 5 Claims



1. A neural network circuit including a plurality of neuron circuits, comprising:

a plurality n of input terminals for receiving input signals, where n is an integer greater than 1;

two weight coefficients corresponding to each of said input terminals;

a first subtraction circuit for calculating a first difference between a larger one of said two weight coefficients and a corresponding input signal;

a first rectification circuit for discriminating and passing only positive value results of said first subtraction circuit;

a first non-linear circuit producing a non-linear output according to results from said first rectification circuit;

a second subtraction circuit for calculating a second difference between a smaller one of said two weight coefficients and a corresponding input signal;

a second rectification circuit for discriminating and passing only positive value results of said second subtraction circuit;

a second non-linear circuit producing a non-linear output according to results from said second rectification circuit;

an addition circuit for adding and accumulating outputs of said first and second non-linear circuits for each of said plurality n of input terminals;

a threshold value circuit having a predetermined threshold value for determining a magnitude of a result of said accumulation in accordance with said predetermined threshold value, and outputting said accumulation result, wherein said neuron circuits use the output results of said threshold value circuit as output signals; and

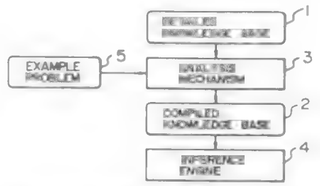
means of connecting input and output terminals of said neuron circuits, said neuron circuits having independent said weight coefficients with respect to a plurality of said input signals inputted into each of said network circuits for executing calculations, an output value of at least one of said neuron circuits being an output signal of said network circuit, and said two weight coefficients and a size of said threshold value of said threshold value circuit controlling said network circuit.

5,353,384

EXPERT SYSTEM

Kenichi Yoshida, Kitamoto, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 22, 1992, Ser. No. 872,140
Claims priority, application Japan, Apr. 22, 1991, 3-090308
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—51 3 Claims



1. An expert system, comprising:

a detailed knowledge base for storing detailed knowledge and knowledge that is frequently used independently;

an anlysis mechanism for extracting knowledge having high utilization from said detailed knowledge base and outputting said extracted knowledge;

a compiled knowledge base for storing said extracted knowledge from said analysis mechanism as compiled knowledge; and

an inference engine for obtaining said compiled knowledge from said compiled knowledge base for solving an example problem;

wherein said analysis mechnaism analyzes a problem solving process example and stores, based solely on said analysis, a combination of said detailed knowledge having high utilization used to solve said example problem and said knowledge which is frequently used independently from said detialed knowledge base into said compiled knowledge base.

5,353,385

INFERENCE METHOD AND APPARATUS FOR USE WITH KNOWLEDGE BASE SYSTEM AND KNOWLEDGE BASE SYSTEM SUPPORT METHOD AND APPARATUS USING THE INFERENCE METHOD AND APPARATUS

Shunichi Tano, Pittsburgh, Pa.; Shoichi Masui, Kawasaki, and Toshihiko Nakano, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 29, 1991, Ser. No. 677,577
Claims priority, application Japan, Apr. 3, 1990, 2-88835
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—64 34 Claims

1. An inference method for use with a knowledge base system utilizing frames and a rule,

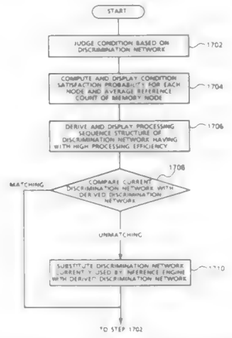
each of said frames representing an associated object by a slot comprising an attribute name of the associated object and a value of the slot, said rule comprising a condition description part including a plurality of conditions each stipulating a state of an associated one of the frames and an operation description part stipulating an operation to be executed when the plurality of conditions stipulated by the condition description part are satisfied, the method comprising:

a step of specifying a sequence of condition judgements for satisfaction of the respective conditions associated with the respective frames of the condition description part of the rule;

a step of checking whether or not a frame which satisfies the sequence of condition judgements is stored in an inference memory means;

storing a frame which previously satisfied the sequence of condition judgements in the inference memory means;

judging, according to the specified sequence of the condition judgments whether or not the conditions of the condition description part respectively associated with the frames are satisfied, and executing the operation described in the operation description part when it is judged that all the conditions of the condition description part are satisfied;



analyzing a result of an execution of the judging achieved on a condition related to each frame associated with the rule; and

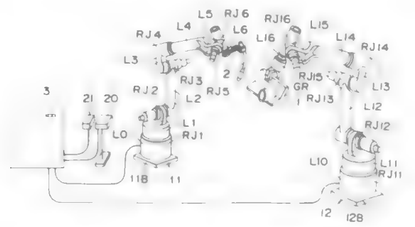
deriving an optimal judging sequence for judging satisfaction of conditions respectively related to the frames of the condition description part of the rule based on the analyzed result.

5,353,386

APPARATUS FOR CONTROLLING INDUSTRIAL ROBOT SYSTEM TO PERFORM COORDINATED OPERATION USING TEACHING PLAYBACK METHOD AND METHOD THEREOF

Fumio Kasagami, Ikoma, and Seisuke Kugumiya, Kitsuki, both of Japan, assignors to Daihen Corporation, Osaka, Japan

Filed Jul. 6, 1992, Ser. No. 909,159
Claims priority, application Japan, Jul. 6, 1991, 3-166018
Int. Cl.[5] G06F *15/46*
U.S. Cl. 395—82 14 Claims



1. An apparatus for controlling an industrial robot system comprising a workpiece handling apparatus having first revolute joint means for moving a workpiece, and a tool moving apparatus having second revolute joint means for moving a tool, so as to coordinately move said tool on a first trajectory located between adjacent first and second points and said workpiece on a second trajectory located between adjacent third and fourth points, said first, second, third, and fourth points being predetermined as teaching points, the apparatus comprising:

(a) first memory means for storing at least four sets of teaching data at said first, second, third, and fourth points, each set of teaching data including

(1) a tool position defined as a position and an attitude of said tool based on a workpiece reference point predetermined in said workpiece,

(2) a workpiece position defined as a position and an attitude of said workpiece based on a predetermined reference coordinate system, and

(3) a tool speed defined as a translational speed of a tool reference point predetermined in said tool based on said workpiece reference point upon a translational movement of said tool on said first trajectory;

(b) first interpolation means, operatively connected with said first memory means, in response to said tool positions and said tool speeds at said first and second points which are stored in said first memory means, for calculating a time required for said translational movement of said tool position from said first point to said second point, and a plurality of pairs of positions and attitudes of said tool based on said workpiece reference point, at a plurality of first interpolation points obtained by dividing said first trajectory by a predetermined number of interpolation intervals, using a predetermined interpolation method;

(c) second interpolation means, operatively connected with said first memory means and said first interpolation means, in response to said workpiece positions at said third and fourth points which are stored in said first memory means and said required time calculated by said first interpolation means, for calculating a plurality of pairs of positions and attitude of said workpiece based on said predetermined reference coordinate system, at a plurality of second interpolation points obtained by dividing said second trajectory by said predetermined number of interpolation intervals, using another predetermined interpolation method;

(d) first calculation means, operatively connected with said second interpolation means, in response to said plurality of pairs of positions and attitudes of said workpiece based on said reference coordinate system at said plurality of second interpolation points which are calculated by said second interpolation means, for calculating a position and an attitude of a predetermined coordinate system of a predetermined workpiece attachment reference point based on a coordinate system of a baseplane of said workpiece handling apparatus, said calculated position and attitude of said coordinate system corresponding to each of said second interpolation points;

(e) second calculation means, operatively connected with said first and second interpolation means, in response to said plurality of positions and attitudes of said workpiece based on said reference coordinate system at said plurality of second interpolation points which are calculated by said second interpolation means, and said plurality of positions and attitudes of said tool based on said workpiece reference point which are calculated by said first interpolation means, for calculating a position and an attitude of a predetermined coordinate system of a predetermined tool attachment reference point based on a coordinate system of a baseplane of said tool moving apparatus, said calculated position and attitude of a predetermined coordinate system corresponding to each of said first interpolation points;

(f) third calculation means, operatively connected with by said first calculation means, in response to the position and attitude of said coordinate system of said workpiece attachment reference point which are calculated by said first calculation means, for calculating joint variables of said first revolute joint means for moving said workpiece on said second trajectory;

(g) fourth calculation means, operatively connected with said second calculation means, in response to the position and attitude of said coordinate system of said tool attachment reference point which are calculated by said second calculation means, for calculating joint variables of said second revolute joint means for moving said tool on said first trajectory; and

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(h) driving means, operatively connected with said first and second revolute joint means and said third and fourth calculation means, in response to said joint variables of said first revolute joint means calculated by said third calculation means and said joint variables of said second revolute joint means calculated by said fourth calculation means, for simultaneously driving said first revolute joint means of said workpiece handling apparatus and said second revolute joint means of said tool moving apparatus, to coordinately move said tool on said first trajectory and said workpiece on said second trajectory.

5,353,387

PROCESS FOR REDUCING THE QUANTITY OF INK APPLIED TO RECORDING SUBSTRATES BY INK PRINTING DEVICES TO PREVENT IMAGE DEGRADATION

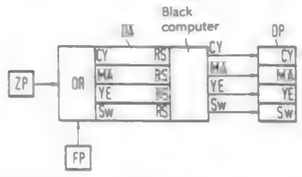
Benno Petschik, Markt Schwaben, and Stefan Scherdel, München, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 30,028, May 10, 1993. This application May 10, 1993, Ser. No. 59,839

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1990, 90117406

Int. Cl.[5] G06F *3/12, 15/62*

U.S. Cl. 395—109 **10 Claims**



1. A method of printing characters on a print media using a reduced quantity of ink forming each said character with a print head as a plurality of individual pixels, each formed by applying to the media at an individual pixel location one or a plurality of superposed ink color liquids to define a print pixel or by an absence of ink color liquid at the pixel location to define a white pixel, said method comprising the steps of:

(A) arranging the plural pixels for each said character as a series of successive pairs of adjacent pixels and processing each pair of pixels so as to define, from original print information supplied for each pair of pixels, a print pixel and a white pixel to be printed for each said pair of pixels; and

(B) for each said pair of pixels, applying one or a plurality of superposed ink color liquids to the media in accordance with said print pixel and said white pixel defined in said step (A) to form a checkerboard pattern on the print media.

5,353,388

SYSTEM AND METHOD FOR DOCUMENT PROCESSING

Tetsuro Motoyama, San Jose, Calif., assignor to Ricoh Company, Ltd., Tokyo, Japan and Ricoh Corporation, San Jose, Calif.

Filed Oct. 17, 1991, Ser. No. 778,578

Int. Cl.[5] G06F *3/12*

U.S. Cl. 395—117 **4 Claims**

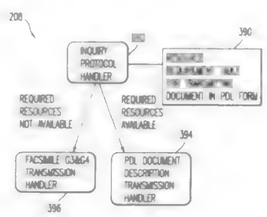
1. A method of printing a document, the steps of the method comprising:

receiving a document represented by a stream of page description language elements which define said document as a hierarchical tree structure, said received document including a hierarchically ordered set of prologue sections containing prologue elements and content sections containing image defining token elements; wherein said prologue elements in each of said prologue sections are applicable only to those of said content sections subtended by said prologue section in the document's hierarchical tree structure;

converting image defining token elements in said content sections of said received document into corresponding imaging instructions for a predefined remotely located printer device;

decoding said prologue elements and storing representations thereof in a computer memory so that stored representations of only those prologue elements applicable to each content section of said document are utilized by said converting step while converting image defining token elements in each of said content sections of said document;

generating a required resource list representing a set of resources which are required for said remotely located



printer device to print said received document when said received document to be transmitted to said remotely located printer device is represented by high level page description language commands;

querying said remotely located printer device to determine whether said remotely located printer device has resources corresponding to those represented by said required resource list;

transmitting said imaging instructions to said remotely located printer device using high level page description language commands, after said querying step, when said remotely located printer device responds affirmatively to said querying; and

converting said imaging instructions into an image bit representation and then transmitting said image bit representation to said remotely located printer device, after said querying step, when said remotely located printer device does not respond affirmatively to said querying.

5,353,389

METHOD AND APPARATUS FOR TRIMMING B-SPLINE DESCRIPTIONS OF PATCHES IN A HIGH PERFORMANCE THREE DIMENSIONAL GRAPHICS SYSTEM

James G. Fiasconaro, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 526,410, May 18, 1990, abandoned, which is a continuation of Ser. No. 11,667, Feb. 5, 1987, Pat. No. 4,999,789. This application Dec. 6, 1991, Ser. No. 804,863

The portion of the term of this patent subsequent to Mar. 12, 2008, has been disclaimed.

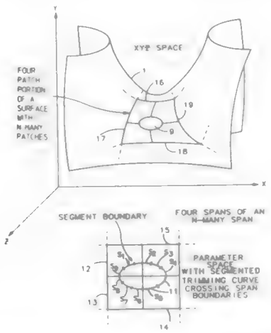
Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—119 **1 Claim**

1. In a graphics display system where the shape of a polygon upon a surface in XYZ space is determined by a corresponding subspan, the subspan described by a collection of original vertices in a parameter space and trimmed according to a piecewise linear trimming curve having a sequence of consecutive segments in the parameter space, a method of polygon rendering comprising the steps of:

a. traversing the consecutive segments of the trimming curve in sequential order to find for each segment any points of intersection in the parameter space between the trimming curve and the boundaries of the subspan;

b. classifying those points of intersection as new vertices of the subspan and also as either points of entrance into the subspan, as points of exit from the subspan or as middle points between points of entrance and points of exit;



c. rendering a trimmed polygon described by the new vertices and those original vertices that lie upon that portion of the subspan remaining after being cut by the trimming curve; and

d. displaying upon a graphics system a visual image of the trimmed polygon rendered in step (c).

5,353,390

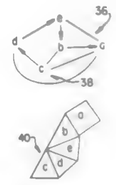
CONSTRUCTION OF ELEMENTS FOR THREE-DIMENSIONAL OBJECTS

Steven J. Harrington, Holley, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 21, 1991, Ser. No. 795,607

Int. Cl.[5] G06F *15/72*

U.S. Cl. 395—120 **20 Claims**



1. A method of constructing elements for a three-dimensional object having a plurality of flat polygonal surfaces, said method comprising:

providing a visual model of the object;

constructing a graph from the visual model, said graph comprising a plurality of nodes connected by lines, each node representing one of the polygonal surfaces and each line connecting the nodes corresponding to an edge of the visual model located between corresponding polygonal surfaces;

selecting one of said nodes and traversing the graph beginning at the selected node, said traversing comprising successively traveling from previously selected nodes to previously unselected nodes along said lines without processing any node more than once; and

creating elements of the three-dimensional object on a page by drawing a corresponding polygon for each node as the nodes are visited.

5,353,391

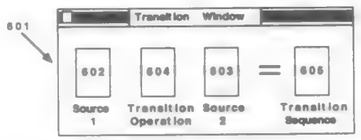
METHOD APPARATUS FOR TRANSITIONING BETWEEN SEQUENCES OF IMAGES

Jonathan R. Cohen, San Francisco, and Michael Mills, Cupertino, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed May 6, 1991, Ser. No. 696,353

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—125 **21 Claims**



19. A computer controlled display system for creating a transition from a first sequence of images to a second sequence of images, said system comprising:

a first storage means for storing said first sequence of images;

a second storage means for storing said second sequence of images;

a third storage means for storing a transition template, said transition template comprised of one of more frames;

transition resource means for creating said transition template;

processing means for combining said first sequence of images, said second sequence of images and said transition template to create a transition sequence;

means for changing a time duration of said transition, said means for changing being coupled to said transition resource means; and

displaying means for displaying said first sequence of images; said second sequence of images, and said transition sequence of images.

5,353,392

METHOD AND DEVICE FOR MODIFYING A ZONE IN SUCCESSIVE IMAGES

André Luquet, Paris, and Michel Rebuffet, Rueil Malmaison, both of France, assignors to Multi Media Techniques, Paris, France

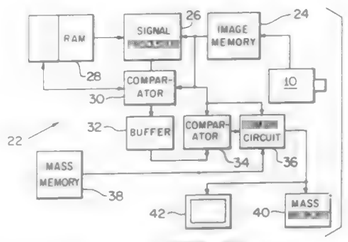
PCT No. PCT/FR91/00296, § 371 Date Jul. 20, 1992, § 102(e) Date Jul. 20, 1992, PCT Pub. No. WO91/15921, PCT Pub. Date Oct. 17, 1991

PCT Filed Apr. 10, 1991, Ser. No. 776,416

Claims priority, application France, Apr. 11, 1990, 90 04663

Int. Cl.[5] H04N *5/262*

U.S. Cl. 395—135 **43 Claims**



2. Method for modifying the content of a sequence of images of the same shot, representing an evolutionary scene and having a high degree of correlation between successive images of said same shot, the images being represented as a material arrangement of pixels, comprising the steps of:

(a) identifying a non-deformable target zone to be replaced

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in the scene by a set of reference marks distributed within said target zone;

(b) in each current one of said images, searching for said current image and recognizing said set of reference marks in said current image by pattern recognition process;

(c) identifying the position and dimensions of said target zone in said current image by referring to said reference marks;

(d) determining a position, with respect to said reference marks, to give to a pattern superimposable on the target zone, stored in digital form as pixels;

(e) for each said current image of said sequence, automatically computing a geometrical transformation to be undergone by the pattern to make it match the variable appearance of the target zone by a correlation based on the reference marks, in all successive images of the same shot; and

(f) substituting the pixels representative of the pattern in the image for the pixels representative of the target zone.

5,353,393

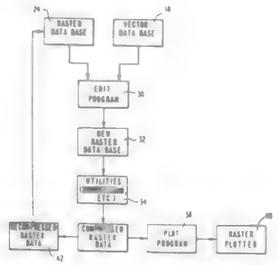
APPARATUS AND METHOD FOR MANIPULATING SCANNED DOCUMENTS IN A COMPUTER AIDED DESIGN SYSTEM

Paul M. Bennett, Highlands Ranch, Colo.; William A. Opincar, and Wylie W. McDonald, both of Plano, Tex., assignors to Sunwest Trading Corporation, Dallas, Tex.

Continuation of Ser. No. 782,876, Oct. 17, 1991, abandoned, which is a continuation of Ser. No. 366,665, Jun. 14, 1989, abandoned. This application Nov. 30, 1992, Ser. No. 984,009

Int. Cl.[5] G06F *15/70*

U.S. Cl. 395—135 **42 Claims**



1. In an electronic data processing system, apparatus for manipulating a scanned document, comprising, in combination:

first means for electronically displaying a first image representing the scanned document, said first image being a raster image comprised of a plurality of discrete picture elements defining at least one graphic element having a first shape;

second means for electronically displaying in response to user input commands, simultaneously with the display of said raster first image, a second image, said second image being a vector-based image comprised of a plurality of vectors having respective defined starting and ending points having predetermined positions relative to said picture elements of said raster first image and representing user-generated alterations to the first shape of said at least one graphic element; and

merging means for merging said first and second images to provide an edited raster image wherein said at least one graphic element has a second shape differing from said first shape in accordance with at least one of said plurality of vectors displayed responsive to the user input commands.

5,353,394

EDGE LIST CONSTRUCTOR FOR DIGITAL IMAGE PROCESSOR

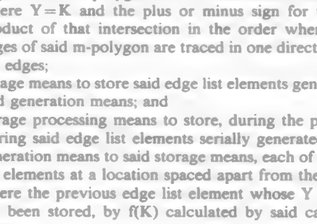
Kazuhiro Kubota, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 24, 1992, Ser. No. 933,941

Claims priority, application Japan, Aug. 23, 1991, 3-212258

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—141 **5 Claims**



1. An edge list constructor comprising:

a calculation means for advance calculation of f(K), which is the number of intersections made by a horizontal straight line whose Y value equals K and an edge of an m-polygon, the m-polygon being formed by m segments (edges) ending at two adjacent vertex elements (Xn, Yn) as the starting point and (Xn+1, Yn+1) as the terminating point and being defined by a coordinate vertex sequence {Xn, Yn} (where m is a natural number not less than 3, n is a natural number not more than m, Xm+1=X1 and Ym+1=Y) on the two-dimensional X-Y plane, and the greatest and the smallest Y coordinate values among the elements in said coordinate vertex sequence {Xn, Yn} being Ymax and Ymin, respectively, and K being an integer not less than Ymin but not more than Ymax;

a generation means to generate a plurality of edge list elements including coordinates of intersections made by an edge of said m-polygon and the horizontal straight line where Y=K and the plus or minus sign for the outer product of that intersection in the order where all the edges of said m-polygon are traced in one direction along the edges;

a storage means to store said edge list elements generated by said generation means; and

a storage processing means to store, during the process of storing said edge list elements serially generated by said generation means to said storage means, each of said edge list elements at a location spaced apart from the location where the previous edge list element whose Y equals K has been stored, by f(K) calculated by said calculation means.

5,353,395

PATTERN PROCESSING METHOD

Shinji Tokumasu; Shiro Nonaka; Yasumasa Kawashima, all of Hitachi; Tomotoshi Ishida, Katsuta; Norihiro Nakajima, Hitachi; Misato Nio, Hitachi; Yoshio Kunitomo, Hitachi, and Kenichi Anjyo, Hitachiohta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 801,606, Dec. 5, 1991, abandoned, which is a continuation of Ser. No. 460,092, Jan. 29, 1990, abandoned. This application Oct. 6, 1992, Ser. No. 956,964

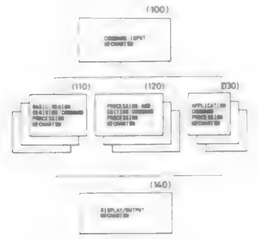
Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—141 **12 Claims**

1. A pattern processing method for processing patterns for a computer-aided design system or a computer graphics system to generate patterns on a display device of the computer-aided design system or computer graphics system, wherein the pattern processing method comprises performing the following steps with regard to a region in an n-dimensional space (where n is a natural number):

(1) means for providing a relative expression procedure for generating relative positional data of any desired point P in the space with respect to said region in a fixed format by the use of a series of data determining said region, thereby identifying said region as a relatively expressed region with said procedure, and thus unitarily determining said relatively expressed region;

(2) means for generating a new relative expression procedure for a new region from the relative expression



procedure(s) of one or more of said relatively expressed regions, the new relative expression procedure for the new region being obtained by configurationally processing and editing the one or more of said relatively expressed regions, thereby identifying the new region as a new relatively expressed region; and

(3) means for expressing configurational characteristics of each relatively expressed region by the use of the relative expression procedure of said region.

5,353,396

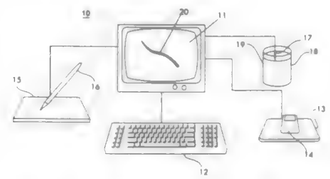
SYSTEM AND METHOD FOR GENERATING COMPLEX CALLIGRAPHIC CURVES

John B. Ahlquist, Jr., Garland; James R. Von Ehre, II, and Samantha Seals-Mason, both of Plano, all of Tex. assignors to Altsys Corporation, Richardson, Tex.

Filed Jun. 4, 1992, Ser. No. 894,272

Int. Cl.[5] G06F *15/40*

U.S. Cl. 395—142 **49 Claims**



1. A method of creating a calligraphic image of a line, said method comprising the steps of:

accepting data representative of the width of the line to be created, and an input pen angle for said calligraphic image of a line;

accepting data representative of a direction of the line to be created;

constructing said calligraphic image of said line concurrently as said line direction is accepted, said constructed line moving at a constant constructed pen angle in accordance with said accepted input pen angle data; and

generating a spine of said direction data, said spine being the longitudinal center line of said constructed calligraphic image, said spine containing points there along, each said point having data associated therewith pertaining to said width and said pen angle for said calligraphic line image,

wherein said spine angle data is expressed in Cartesian coordinates representative of said angle at said point, said coordinates used in conjunction with said width data at said point to generate one point along a top peripheral outline of said direction and one point along the bottom peripheral outline of said direction, said peripheral points movable to modify said calligraphic image.

5,353,397

REGISTRATION/SEARCH SYSTEM FOR REGISTERING AND SEARCHING IMAGE DATA USING VECTOR DATA ATTRIBUTES

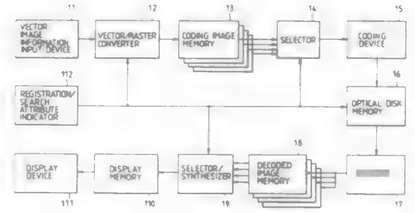
Yoshihiro Yokoyama, Yokohama; Yasuo Kurosu, Yokosuka; Seiichi Kanema, Yokohama; Hajime Uchiyama; Masahiro Okumura, both of Odawara; Naoaki Kubushiro, Minamiashigara; Masaaki Fujinawa, Hinodemachi, and Hirowo Shimizu, Kumagaya, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 15, 1990, Ser. No. 480,667

Claims priority, application Japan, Mar. 17, 1989, 1-63625

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—145 **21 Claims**



1. An image data registration and search system for an electronic file device, comprising:

input means for inputting vector data of a drawing having a plurality of output primitive attributes each defining one of a plurality of different display properties of said drawing;

conversion means for converting said vector data into image data by respective output primitive attributes;

coding means for coding said image data to code data by respective output primitive attributes;

storage means for registering said code data with respective output primitive attributes;

code data deriving means for searching said storage means with respective output primitive attributes and deriving said code data corresponding to respective output primitive attributes from said storage means;

decoding means for decoding said code data derived from said storage means to restore said image data corresponding thereto by respective output primitive attributes; and

output means for outputting said restored image data to display by respective output primitive attributes.

5,353,398

GROUP WORKING SYSTEM HAVING OPERATOR DISCRIMINATING FUNCTION

Chiho Kitahara, Yokohama; Takeshi Ishizaki, Sagamihara; Yoshiyuki Nakayama, Yokohama; Kenjiro Mori, Sagamihara; Tadashi Yamamitsu, and Masami Kameda, both of Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 24, 1993, Ser. No. 36,235

Claims priority, application Japan, Mar. 24, 1992, 4-065746

Int. Cl.[5] G06F *3/14*

U.S. Cl. 395—153 **16 Claims**

1. A group working system including a plurality of terminal apparatuses interconnected through a communication network, each of said terminal apparatuses having a multi-window function for generating a plurality of windows on a dis-

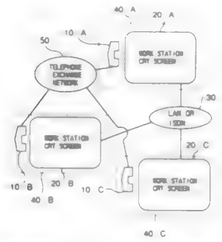
VOL 1167 ISS 1 OC 4 1994 UMI

play screen and executing application programs on window-by-window basis, comprising:

input means for designating one of said plural windows generated on said display screen and inputting information of data or command for said designated window;

storage means for storing for each of said plural windows generated on a display screen state information indicating whether each of said plural windows is in a state of group working mode in which data processing for a group work is executed in cooperation with the other terminal apparatuses or in a state of local mode in which data processing for a local work is executed independent of other terminal apparatuses;

control means responsive to inputting of information for one window in said group working mode for transferring said input information to an application program running within said one window and generating a message having a predetermined format and including said input information, which message is sent to at least one of the other



terminal apparatuses, while upon reception of a message containing input information for said group work from other terminal apparatuses, said input information contained in said received message is delivered to an application program running within one of said plural windows specified by header information of said received message;

each of said messages containing at least a first identifier indicating a source node issued said message and a second identifier for specifying an application program which is to execute data processing conforming to the input information contained in said message or corresponding window within which said application program is to run; and

interface means for receiving the first identifier indicating the source node issued the message, said first identifier being contained in said message received from the other terminal apparatus, and outputting identification indication for indicating a terminal apparatus or user who is performing input operation to the window of said group working mode.

5,353,399

METHOD AND SYSTEM FOR SELECTING DEVICES IN INFORMATION NETWORKS, INCLUDING INPUTTING/OUTPUTTING DATA TO A SPECIFIED DEVICE SELECTED BY POINTING TO A CORRESPONDING INDICATOR ON A SCREEN

Hideki Kuwamoto; Tadashi Kuwabara; Keiichi Nakane, all of Yokohama, and Masaki Fujiwara, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 2, 1990, Ser. No. 608,392

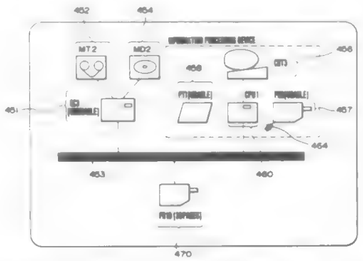
Claims priority, application Japan, Nov. 8, 1989, 1-290424

Int. Cl.[5] G06F *13/00, 15/62*

U.S. Cl. 395—159 **24 Claims**

1. An input/output method for at least one of a plurality of I/O devices for an information network shared by a plurality of information processing units connected to said information network via one of said information processing units, said method comprising the steps of:

displaying the connection among said I/O devices graphically and corresponding indicators representing said I/O devices with respective current operating states on a screen of said information processing unit to enable a user to locate said I/O devices and corresponding operating states of said I/O devices; and



inputting/outputting data to a specified one of said I/O devices selected by pointing to a corresponding indicator on said screen,

wherein the operating state of said I/O device indicates that said I/O device is currently in use.

5,353,400

CONTROL SYSTEM FOR AN INDUSTRIAL PLANT, A DISPLAY DEVICE FOR SUCH A CONTROL SYSTEM, AND A METHOD OF CONTROLLING AN INDUSTRIAL PLANT

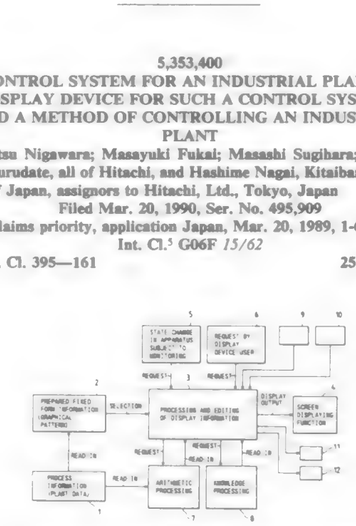
Seiitsu Nigawara; Masayuki Fukai; Masashi Sugihara; Kazuo Furudate, all of Hitachi, and Hashime Nagai, Kitaibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 20, 1990, Ser. No. 495,909

Claims priority, application Japan, Mar. 20, 1989, 1-66227

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—161 **25 Claims**



1. A control system for an industrial plant, comprising:

means for receiving a multiplicity of plant data representing operating parameters of said plant;

means for storing a plurality of graphical patterns representing said plant;

means for generating a plurality of prepared displays, each of said prepared displays including at least one of said graphical patterns and at least some of said plant data;

means for selecting one of said prepared displays;

means for modifying said selected one of said prepared displays to generate a modified display, said modifying means including means for performing at least one of masking and reducing an intensity of unnecessary information in said selected one of said prepared displays to generate said modified display; and

means for displaying said modified display.

5,353,401

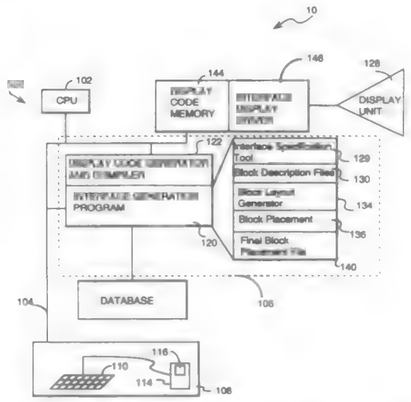
AUTOMATIC INTERFACE LAYOUT GENERATOR FOR DATABASE SYSTEMS

Atsushi Iizawa, Tokyo; Yukari Shirota, Saitama, both of Japan, and Arturo Pizano, Milpitas, Calif., assignors to Ricoh Company, Ltd., Japan and Ricoh Corporation, San Jose, Calif.

Filed Nov. 6, 1992, Ser. No. 973,057

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—161 **13 Claims**



1. An automatic interface layout generator for database systems comprising:

means for specifying a set of block descriptions representative of specified portions of a database;

means for providing interface objects to be included within an interface of said database wherein each of said interface objects corresponds to one of said block descriptions and includes a plurality of layout fields and each of said block descriptions has associated therewith a set of said interface objects, said set of interface objects associated with each of a plurality of said block descriptions including a plurality of interface objects having varying placements of said plurality of layout fields and/or varying layout field attributes that affect the size and shade of said plurality of interface objects such that said plurality of interface objects associated with each said block description have a plurality of distinct shapes;

means for determining a layout quality parameter for each of said interface objects based on layout of said layout fields within said interface objects;

block placement means for arranging sets of said interface objects into block configurations within said interface, said block placement means including means for placing, in a first of said block configurations, a first one of said plurality of interface objects associated with a first one of said block descriptions, and for placing, in a second of said block configurations, a second one of said plurality of interface objects associated with said first one of said block descriptions; and

means for determining a placement quality parameter for each of said block configurations based on a set of block placement rules and on said layout quality parameters, including means for selecting a final block configuration by comparing said placement quality parameters.

5,353,402

COMPUTER GRAPHICS DISPLAY SYSTEM HAVING COMBINED BUS AND PRIORITY READING OF VIDEO MEMORY

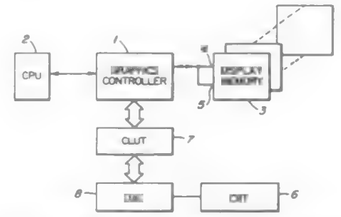
Benny C. W. Lau, Thornhill, Canada, assignor to ATI Technologies Inc., Scarborough, Canada

Filed Jul. 10, 1992, Ser. No. 911,704

Claims priority, application Canada, Jun. 10, 1992, 2070934

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—162 **12 Claims**



1. A graphics display system for a computer comprising:

(a) a display memory having a dynamic random access memory (DRAM) port and a serial port,

(b) a video controller including a host graphics controller having a bus port, a lookup table and a digital-to-analog converter for receiving lookup table data from the lookup table and converting it into signals reproducible by a display, and a register means for receiving said data as serial data from the serial port of the display memory on said combined bus and for providing said data to the lookup table,

(c) the DRAM and serial ports being multiplexed to a combined bus, the combined bus being connected to the bus port of the host graphics controller,

(d) the lookup table having an input for receiving data from the combined bus,

(e) means for causing passage of serial data along the bus from the display memory in higher priority than any other data for provision of display data to the lookup table whereby said lookup table provides said lookup table data to the digital-to-analog converter.

5,353,403

GRAPHIC DISPLAY PROCESSING APPARATUS AND METHOD FOR IMPROVING THE SPEED AND EFFICIENCY OF A WINDOW SYSTEM

Tomohisa Kohiyama; Jun Kitahara, both of Yokohama; Sunao Hirata; Seiji Oyama, both of Seto; Takumi Soen, Kochi, and Ichiro Ote, Yokohama, all of Japan, assignors to Hitachi Chubu Software, Ltd., Nagoya; Hitachi, Ltd., Tokyo and Hitachisoftware Eng. Co., Ltd., Yokohama, all of Japan

Filed Mar. 23, 1992, Ser. No. 856,172

Claims priority, application Japan, Mar. 22, 1991, 3-058561

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—164 **21 Claims**

1. A graphic display processing apparatus having a central processing unit (CPU), a video random access memory (VRAM) having a plane structure of one or more planes and adapted to store data, a memory controller adapted to generate an access timing for said VRAM, a drawing controller for transferring the data to said VRAM, and a display system comprised of display means, display address generator means for generating a display address for said VRAM, and display controller for generating a display timing for display of the data on said display means, said graphic display processing apparatus comprising:

sequential transfer sequence means, coupled to said CPU, for generating an access request timing at set times;

access cycle generator means for expanding the access re-

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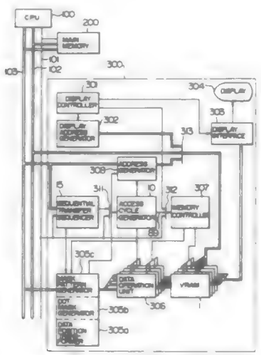
quest timing from said sequential transfer sequence means into one or more accesses and transferring the accesses to said memory controller;

a data control unit for designating a processing operation of the data on the basis of an instruction from said CPU under the control of said sequential transfer sequence means and access cycle generator means;

a data operation unit for performing a processing operation of the data to be drawn on said VRAM on the basis of a command from said data control unit under the control of said access cycle generator means; and

drawing address generator means for generating a drawing address of the data on the basis of a signal from said access cycle generator means;

wherein said drawing address generator includes a source address register for holding an address of a source area on said VRAM, a destination address register for holding an address of a destination area, a pattern address register for holding an address of a pattern area, a source offset regis-



ter for holding a value added to the contents of said source address register to update the same when a read access cycle by said access cycle generator ends, a destination offset register for holding a value added to the contents of said destination address register to update the same when a write access cycle by said access cycle generator ends, a pattern offset register for holding a value added to the contents of said pattern address register to update the same when the read access cycle by said access cycle generator ends, a first address adder for adding the contents of source address register and that of source offset register, the contents of destination address register and that of destination offset register or the contents of pattern address register and that of pattern offset register so as to update the value of each register, and a second address adder for adding the write data of said CPU and the contents of source address register, destination address register or pattern address register so as to update the value of each register.

5,353,404

INFORMATION PROCESSING SYSTEM

Hitoshi Abe; Toshimitsu Ando; Shigeko Yazawa; Yoshio Kiriu, and Yasuhiko Hatakeyama, all of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 22, 1990, Ser. No. 468,271

Claims priority, application Japan, Jan. 23, 1989, 1-12011

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—164 **83 Claims**

81. An apparatus for producing a motion picture on a real time basis, comprising:

a computer system having a main memory and, a higher speed extended memory;

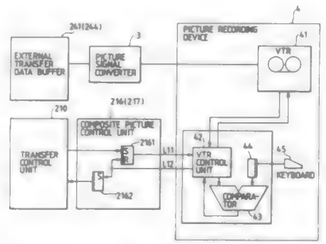
an instruction processor, input/output processor and storage control device operatively interconnected with the main memory within the computer system, and with the instruction processor and storage control device operatively connected to directly control the extended memory independently of the input/output processor;

means for generating frames of digital data from digital data stored in said main memory, with each frame being of a length to completely provide display information of one complete picture of the display;

means storing all of the generated frames of digital data in the extended memory in sufficient number to provide the motion picture;

means retrieving the frames of digital data from the extended memory in order of the motion picture;

means buffering retrieved frames of digital data from the extended memory by writing the retrieved frames of digital data in high speed bursts according to a high reading speed of the extended memory to a buffer storage.; and



means reading the buffer storage at a speed slower than writing of the buffer at a continuous data rate for all of the frames, and thus continuously outputting a data stream of uniform data rate serially containing all of the frames of digital data to an output device; and

means for transmitting a clock between the output device and the computer system for matching the readout speed of the buffer storage with the input speed of the display;

a separate high speed interface of the extended storage;

said means bypassing the input/output processor of the computer system and performing said outputting through said interface;

said means conducting said reading and writing of the buffer storage simultaneously and in parallel;

means performing computer operations with the instruction processor, storage control, input/output processor and main memory simultaneously and in parallel with the functions of all of said means; and

means providing a frame size greater than one megabyte and said means buffering reading data out of the buffer at the rate of at least about 30 frames per second.

5,353,405

METHOD OF CONTROLLING IMAGE MEMORY SYSTEM FOR NON-INTERLACE/INTERLACE CONVERSION

Kiyotaka Doi; Kanji Masuyama, both of Yokohama; Tsutomu Takagi, Fujisawa; Hitoshi Abe, Isehara; Katsutoshi Tajima, Chigasaki, and Tamotsu Hirota, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo; Hitachi Video & Information System, Inc., Yokohama and Hitachi Computer Electronics, Co., Ltd., Hadano, all of Japan

Filed May 22, 1992, Ser. No. 887,716

Claims priority, application Japan, May 27, 1991, 3-121104

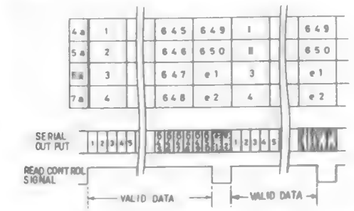
Int. Cl.[5] G11C *11/00*

U.S. Cl. 395—164 **5 Claims**

1. A method of controlling an image memory system in

which non-interlace image data is written into an odd field memory and an even field memory, and the contents of the odd field memory and the even field memory are separately read out so as to convert the non-interlace image data to interlace image data, the method comprising the steps of:

writing each line of the non-interlace image data alternately into the odd field memory and the even field memory a plurality of dots by dots;



writing image data of the plurality of dots simultaneously into both the odd field memory and the even field memory, when the plurality of dots include both dots for the odd field and dots for the even field;

invalidating the image data of the dots for the odd field memory written in the even field memory when the image data is read out from the even field memory; and

invalidating the image data of the dots for the even field memory written in the odd field memory when the image data is read out from the odd field memory.

5,353,406

IMAGE COMMUNICATION APPARATUS

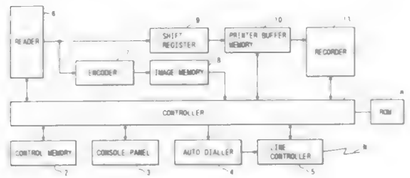
Makoto Mikuni, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 559,332, Jul. 30, 1990, abandoned. This application Dec. 1, 1993, Ser. No. 159,694

Claims priority, application Japan, Jul. 31, 1989, 1-196631

Int. Cl.[5] G06F *3/153*

U.S. Cl. 395—165 **10 Claims**



1. An image communication apparatus comprising:

receiving means for receiving image data;

an image memory for storing the image data received by said receiving means;

a buffer memory for temporarily storing received image data of one page or more read out from said image memory;

recording means for recording received image data read out from said buffer memory, for each page;

detecting means for detecting whether or not said recording means is capable of recording the received image data; and

control means for controlling storage of the received image data in said image memory and said buffer memory, in accordance with a detection result obtained by said detecting means,

wherein, when said recording means is incapable of recording the received image data, said control means discriminates whether available memory capacity of said image memory has reached a predetermined amount, and causes said buffer memory to store therein the received image data of said image memory in accordance with a result of such discrimination.

5,353,407

Patent Not Issued For This Number

5,353,408

NOISE SUPPRESSOR

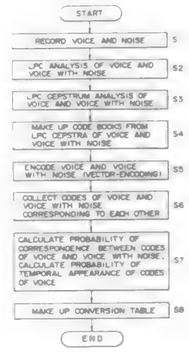
Yasuhiko Kato; Masao Watari, and Makoto Akabane, all of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Dec. 30, 1992, Ser. No. 998,724

Claims priority, application Japan, Jan. 7, 1992, 4-018478

Int. Cl.[5] G10L *9/14*

U.S. Cl. 395—2.35 **9 Claims**



7. A noise suppressor apparatus for reducing noise accompanying a spoken voice comprising:

input means for providing an analog electrical signal corresponding to the spoken voice, said electrical signal including a component corresponding to said noise;

an analog to digital converter for converting said analog electrical signal to a corresponding first digital signal;

a linear predictive analyzer for calculating first linear predictive coefficients (LPCs) associated with said digital signal and supplying said first LPCs to a predictive filter and to a cepstrum calculator which calculates cepstrum coefficients based on said first LPCs according to recursive relationships, said predictive filter calculating a residual signal based on said first digital signal and said first LPCs;

code generating means for vector-quantizing said cepstrum coefficients according to first and second code tables stored in memory to provide first codes associated with said cepstrum coefficients, said first code table being formulated from a voice digital signal pattern which substantially lacks noise and said second code table being formulated from a digital signal pattern which is comprised of noise components;

code converting means for providing second codes based on said first codes according to a code conversion table stored in memory;

decoder means for inverse vector-quantizing cepstrum coefficients vector quantized with said code generating means;

a linear predictive calculator for calculating second LPCs according to cepstrum coefficients inverse vector-quantized by said decoder means;

synthesis filter means for providing a second digital signal corresponding to said spoken voice, said synthesis filter means calculating said second digital signal from said second LPCs and from said residual signal obtained from said predictive filter.

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5,353,409

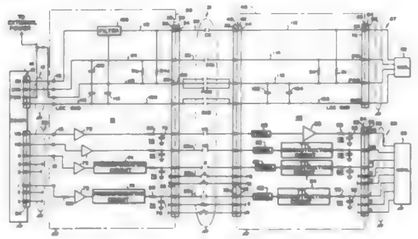
COMPUTER-MONITOR EXTENDED RANGE COMMUNICATIONS LINK

Robert R. Asprey, Harvest, and Remigius G. Shatas, Huntsville, both of Ala., assignors to Cybex Corporation, Huntsville, Ala.

Continuation-in-part of Ser. No. 447,010, Dec. 5, 1989, which is a continuation-in-part of Ser. No. 95,140, Sep. 11, 1987, Pat. No. 4,885,718. This application Jul. 19, 1990, Ser. No. 555,580

Int. Cl.[5] G06F *15/02*

U.S. Cl. 395—275 **26 Claims**



1. A communications link for coupling a computer to a remotely located monitor comprising:

a cable having a plurality of discretely insulated inner conductors and first and second ends;

one of said conductors at said first end of said cable being couplable and responsive to a vertical synchronization signal from a computer terminal;

a second one of said conductors at said first end of said cable being couplable and responsive to a horizontal synchronization signal from a computer terminal;

a first type signal conditioning circuit being couplable and responsive to at least one of a discrete TTL type primary R, G, And B and secondary r, g, and b video signals from a computer terminal, and each said first type signal conditioning circuit including reduction means for reducing amplitude of said signal and further including signal emphasis means for boosting the rising and trailing edges of a video signal and coupling a boosted signal to a discrete one of said conductors at said first end of said cable;

a plurality of second type signal conditioning circuits, one of each responsive to a TTL video signal of a said conductor at said second end of said cable and including amplification means for raising the level of a video signal to a raised level signal and supplying the raised level signal to a monitor; and

coupling means for coupling synchronization signals from conductors of said cable at said second end to said monitor.

5,353,410

METHOD AND SYSTEM FOR DEFERRED READ IN LAZY-WRITE DISK CACHE SYSTEMS

James F. Macon, Jr., Boynton Beach, Fla.; Shauchi Ong, Pleasantville, N.Y., and Feng-Hsien Shih, Hsien, Taiwan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 18, 1992, Ser. No. 853,219

Int. Cl.[5] G06F *13/00*

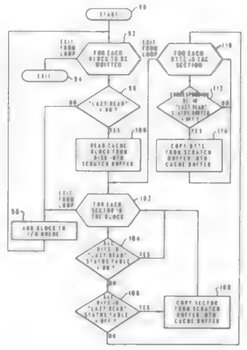
U.S. Cl. 395—275 **8 Claims**

1. A method in a computer system for improving the efficiency of disk storage input/output performance in a sector-based disk storage system, said method comprising the steps of:

temporarily writing new data to be stored within said disk storage system within selected bytes in one or more cache memory blocks, each cache memory block associated with at least one sector of said disk storage system;

recording within an associated status table an indication of the writing of each byte of new data within each cache memory block;

deferring the writing of said new data within said one or more cache memory blocks into said disk storage system until a subsequent time; and



at said subsequent time reading from said disk storage system existing data within each sector associated with a cache memory block having new data written therein prior to writing said new data into said disk storage system, wherein data within a sector of said disk storage system may be updated.

5,353,411

OPERATING SYSTEM GENERATION METHOD

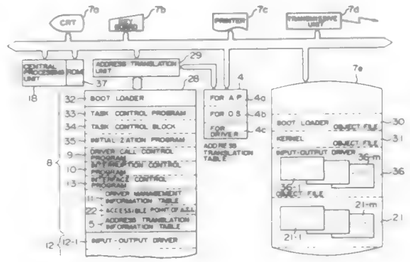
Yoshitake Nakaosa, Sagamihara, and Megumu Kondo, Kawasaki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 412,506, Sep. 26, 1989, abandoned. This application Sep. 28, 1992, Ser. No. 951,949

Claims priority, application Japan, Sep. 28, 1988, 63-240974

Int. Cl.[5] G06F *9/00, 13/10*

U.S. Cl. 395—275 **1 Claim**



1. A driver program control method executed by an operating system of a computer in which input-output driver programs can be incrementally added to said operating system, the method comprising the steps of:

storing in a main memory of the computer indicator information indicating whether or not an update is enabled for a program or data in a kernel program of the operating system stored in a first area of the main memory;

receiving, by the kernel program, an update request from an arbitrary input-output driver program stored in a second area of the main memory specifying an arbitrary program or data in the kernel program for updating;

detecting a content of the indicator information in the main memory responsive to the received update request; and,

preventing the arbitrary input-output driver program from updating the program or data in the kernel program operative depending on the content of the indicator information in the main memory.

5,353,412

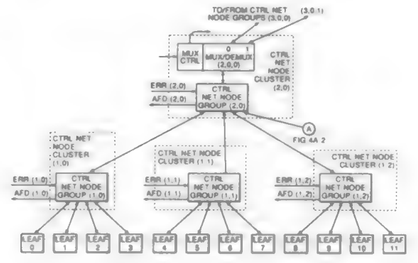
PARTITION CONTROL CIRCUIT FOR SEPARATELY CONTROLLING MESSAGE SENDING OF NODES OF TREE-SHAPED ROUTING NETWORK TO DIVIDE THE NETWORK INTO A NUMBER OF PARTITIONS

David C. Douglas, Concord; John J. Earls, Newton; W. Daniel Hillis, Cambridge, and Mahesh N. Ganmukhi, Littleton, all of Mass., assignors to Thinking Machines Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 592,029, Oct. 3, 1990, abandoned. This application Aug. 16, 1991, Ser. No. 746,035

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—325 **19 Claims**



1. A digital computer comprising:

A. a plurality of message generating elements each generating and receiving messages;

B. a network for transferring messages generated by said message generating elements among said message generating elements, said network comprising a plurality of node clusters interconnected in a tree pattern from a lower leaf level to an upper root level, each said node cluster including at least one node group said node clusters in a level above at least one predetermined level having a larger number of said node groups than said node clusters of said predetermined level,

node groups of the lower leaf level receiving messages from, respectively, at least one message generating element and a high-level node group and generating in response messages for transfer to, respectively, a high-level node group and a message generating element,

ii. the respective node groups between the lower leaf level and the upper root level receiving messages from, respectively, at least one lower-level node group and a higher-level node group and generating in response messages for transfer to, respectively, a higher level node group and a lower level node group,

iii. node groups of said upper root level receiving messages from at least one lower-level node group and generating in response messages for transfer to said at least one lower-level node group,

each said node group in the node clusters of said predetermined level including a selective message coupling circuit, in response to a partition control signal, for selectively coupling messages between the node group and a selected one of the upper-level node groups; and

C. a partition control circuit, coupled to each of the message coupling circuits of each of the node groups, for generating said partition control signal to separately control said message coupling circuits thereby to establish at least one partition comprising selected ones of said message generating elements in which said network transfers messages generated by said selected message generating elements only among said selected message generating elements.

5,353,413

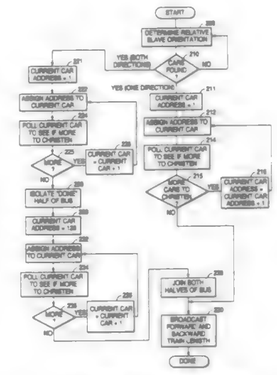
METHOD AND APPARATUS FOR CHRISTENING A TRAINLINE MONITOR SYSTEM

Michael R. Novakovich, and Joseph S. Majewski, both of Pittsburgh, Pa., assignors to AEG Transportation Systems, Inc., Pittsburgh, Pa.

Filed Mar. 19, 1992, Ser. No. 853,796

Int. Cl.[5] G06F *13/00, 11/16*

U.S. Cl. 395—325 **18 Claims**



6. A method for initializing a communication network in a train including a plurality of cars, the network comprising a train bus, a train bus master on one of the cars and a train bus slave on each other car for connection to the train bus master by the train bus for communicating with the train bus master, comprising the steps of:

(a) determining whether the one car with the train bus master is located at an end of the train or is in between other cars of the train by transmitting a test message from the train bus master onto the train bus and determining whether a train bus slave response is received from one or both directions relative to the location of the one car in the train;

(b) transmitting first messages between the train bus master and each train bus slave, respectively, located in the one direction for assigning an address to each train bus slave located in that one direction and acquiring data at the train bus master uniquely identifying the respective train bus slaves in that one direction; and

(c) transmitting, when said determining step determines that the ode car is located in between other cars of the train, second messages between the train bus master and each train bus slave, respectively, located in the other direction for assigning an address to each train bus slave located in the other direction and acquiring data at the train bus master uniquely identifying the respective slaves in the other direction;

wherein the train bus constitutes a first bus and the communication network includes a second train bus, and said method further includes:

(d) determining whether the one car with the train bus master is located at an end of the train or is in between other cars of the train by transmitting a test message from the train bus master onto the second train bus and deter-

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mining whether a train bus slave response is received from one or both directions relative to the location of the one car in the train;

(e) transmitting first messages between the train bus master and each train bus slave, respectively, located in the one direction for assigning an address to each train bus slave located in that one direction and acquiring data at the train bus master uniquely identifying the respective train bus slaves in that one direction; and

(f) transmitting, when said determining step determines that the one car is located in between other cars of the train, second messages between the train bus master and each train bus slave, respectively, located in the other direction for assigning an address to each train bus slave located in the other direction and acquiring data at the train bus master uniquely identifying the respective slaves in the other direction;

comparing the addresses and the unique identifying data assigned and acquired on the first and second train buses; and

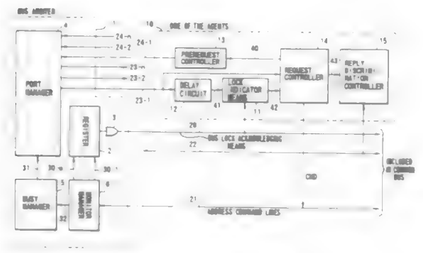
selecting one of the first and second train buses as a primary train bus and the other train bus as a back-up train bus based upon results of said comparing step.

5,353,414

BUS LOCK CONTROL APPARATUS CAPABLE OF CONTROLLING WITHOUT STOPPING BUS ARBITERS

Hiroshi Iida, Tokyo, and Tsutomu Ban, Ehime, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 544,864, Jun. 28, 1990, abandoned.
This application Sep. 29, 1992, Ser. No. 953,205
Claims priority, application Japan, Jun. 30, 1989, 1-166923
Int. Cl.[5] G06F *13/366*
U.S. Cl. 395—325 **1 Claim**



1. A bus lock control apparatus having a common bus, a plurality of agents connected to said common bus and a single bus arbiter, said single bus arbiter being connected to receive initial resource use request signals one by one from each of said agents and to send bus use enable signals one by one to each of said agents, to receive initial resource use requests from each of said agents and to send a bus use enable signal only to one specific agent serving as a bus master agent, to utilize resources connected to said bus, the lock control apparatus comprising:

a monitor manager for acknowledging a bus lock request, a bus lock release request and a requesting agent from a resource use request sent to address command lines in said common bus from said agent serving as a bus master, and outputting to each agent a set signal in the case of a bus lock request and a reset signal in the case of a bus lock release request,

said bus arbiter having a register means comprising a plurality of bits corresponding to a plurality of agents for registering bus lock enable information in accordance with a set or reset signal from said monitor manager, and an OR circuit for executing a logical sum for all information bits of said register means,

said common bus having a lock acknowledging means for connecting an output of said OR circuit to all said agents in a single line, and

each one of said agents having a delay circuit for delaying a bus use enable signal from said bus arbiter for a constant period of time, and a lock indicator means inputting an output of the delay circuit and a bus lock/bus lock release signal and for latching a logical complement of the content of said lock acknowledging means in said common bus, when the output of said delay circuit and said bus lock/bus lock release signal are valid, said bus lock/bus lock release signal being outputted from a request controller outputting a resource use request signal to address command lines in said common bus;

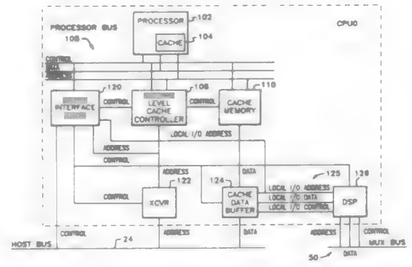
wherein said delay circuit generates a timing signal one clock faster than a timing of said lock acknowledging means in said common bus, by means of said a bus use enable signal from said bus arbiter, and an agent having a lock indicator means for latching a logical complement of the content of the lock acknowledging means in said common bus when said bus lock/bus lock release signal from said request controller and a signal from said delay circuit become valid.

5,353,415

METHOD AND APPARATUS FOR CONCURRENCY OF BUS OPERATIONS

Jeff W. Wolford, and Walter G. Fry, both of Spring, Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Oct. 2, 1992, Ser. No. 955,477
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—325 **8 Claims**



1. A computer system which performs concurrent bus cycle operations, comprising:

a host bus;

an expansion bus coupled to said host bus;

expansion bus memory coupled to said expansion bus, said expansion bus memory storing data;

a processor;

a cache system coupled to said processor and to said host bus, said cache system including a cache controller and cache memory, wherein said cache controller snoops said host bus when said cache controller does not control said host bus and generates write-back cycles when a snoop hit occurs to a dirty line in said cache memory, wherein said cache controller generates expansion bus read cycles when said processor requests data residing in said expansion bus memory that does not reside in said cache memory;

cycle generation means coupled to said cache system and said host bus for generating an expansion bus read cycle after said processor requests data residing in said expansion bus memory that does not reside in said cache memory;

a bus master coupled to said host bus which generates cycles onto said host bus which must be snooped by said cache controller; and

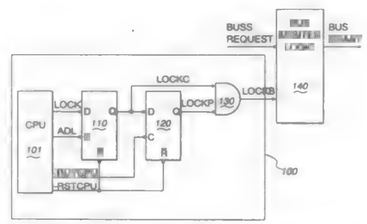
an expansion bus controller coupled between said host bus and said expansion bus which latches the address of said expansion bus read cycle and obtains said requested data from said expansion bus memory, wherein said expansion bus controller obtains said requested data concurrently with said cache controller snooping said bus master host bus cycle.

5,353,416

CPU LOCK LOGIC FOR CORRECTED OPERATION WITH A POSTED WRITE ARRAY

Anthony M. Olson, Stevensville, Mich., assignor to Zenith Data Systems Corporation, Buffalo Grove, Ill.

Continuation of Ser. No. 426,902, Oct. 25, 1989, abandoned.
This application Dec. 30, 1992, Ser. No. 999,189
Int. Cl.[5] G06F *13/00, 13/36*
U.S. Cl. 395—325 **7 Claims**



1. A shared bus arbitration system comprising:

a processor having a self-contained bus lock arbitration capability providing a processor bus lock output, a cycle start output, and a cycle end output, said self-contained bus lock arbitration capability being operative to provide a first processor bus lock signal on said processor bus lock output, a first cycle start signal on said cycle start output, and a first cycle end signal on said cycle end output during a first locked processor cycle and a second processor bus lock signal on said processor bus lock output, a second cycle start signal on said cycle start output and a second cycle end signal on said cycle end output during a second locked processor cycle;

a write buffer, coupled to a shared bus and to said processor, for asychronously buffering data writes from said processor to said shared bus; and

logic means coupled to said processor bus lock output, said cycle start output, and said cycle end output and responsive to said first processor bus lock signal, said second processor bus lock signal, said first cycle start signal, said second cycle start signal, said first cycle end signal, and said second cycle end signal for selectively providing a shared bus lock signal to said shared bus when data from two consecutive locked processor cycles is written to said shared bus from said write buffer that was written to said write buffer from said processor during consecutive locked processor cycles; and

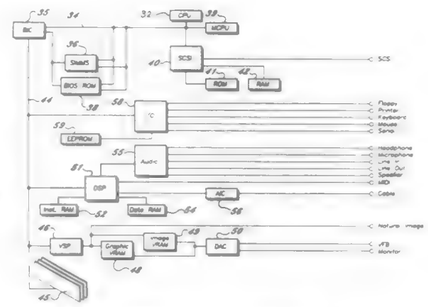
control means coupled to said shared bus lock signal for granting exclusive access to said shared bus by said write buffer in response to said shared bus lock signal.

5,353,417

PERSONAL COMPUTER WITH BUS INTERFACE CONTROLLER COUPLED DIRECTLY WITH LOCAL PROCESSOR AND INPUT/OUTPUT DATA BUSES AND FOR ANTICIPATING MEMORY CONTROL CHANGES ON ARBITRATION FOR BUS ACCESS

Daniel P. Fuoco; Luis A. Hernandez; Eric Mathisen, all of Boca Raton; Dennis L. Moeller, Delray Beach, all of Fla.; Jonathan H. Raymond, Essex Junction, Vt., and Esmaeil Tashakori, Delray Beach, Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed May 28, 1991, Ser. No. 706,534
Int. Cl.[5] G06F *13/00, 12/00*
U.S. Cl. 395—325 **15 Claims**



1. A personal computer system comprising:

a high speed local processor data bus;

an input/output data bus;

a microprocessor coupled directly to said local processor data bus and functioning as a first master device;

a second master device coupled directly to said local processor data bus;

volatile memory coupled to said local processor data bus for volatile storage of data; and

a bus interface controller coupled directly to said local processor data bus and directly to said input/output data bus for providing communications between said local processor data bus and said input/output data bus,

said bus interface controller providing for (a) arbitration among said microprocessor and said second master device coupled directly to said local processor data bus for grant of access to said local processor data bus, and (b) arbitration among any devices coupled directly to said input/output data bus and said local processor data bus for grant of access to said input/output data bus,

said bus interface controller being coupled to said volatile memory for supplying row address select signals to said volatile memory and thereby selecting data storage areas to be accessed,

said bus interface controller responding to a change in grant of access to said local processor data bus to one of said microprocessor and said second master device coupled directly to said local processor data bus by providing an anticipatory precharge of memory addresses and changing the row address select signal supplied to said volatile memory in preparation for access to potentially different data storage areas of said volatile memory more likely to be used by the one of said microprocessor and said second master device coupled directly to said local processor data bus which has won an arbitration for grant of access to said local processor data bus and thus minimizing wait states during changes in memory access as arbitration occurs.

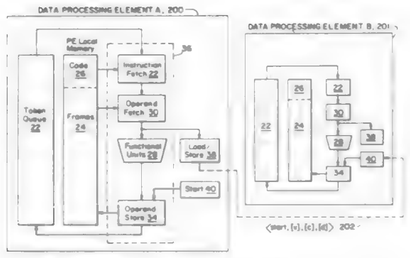
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5,353,418

SYSTEM STORING THREAD DESCRIPTOR IDENTIFYING ONE OF PLURAL THREADS OF COMPUTATION IN STORAGE ONLY WHEN ALL DATA FOR OPERATING ON THREAD IS READY AND INDEPENDENTLY OF RESULTANT IMPERATIVE PROCESSING OF THREAD

Rishiyur S. Nikhil, and Arvind, both of Arlington, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 358,937, May 26, 1989, abandoned. This application May 21, 1990, Ser. No. 527,122
Int. Cl.[5] G06F *9/30*
U.S. Cl. 395—375 19 Claims



1. A data processing system comprising:

plural processing elements, each having a thread descriptor storage, for imperative processing of each of plural threads of computation in response to thread descriptors from the thread descriptor storage, each of said thread descriptors identifying a next instruction to be processed in one of said plural threads of computation and a frame of storage locations on which the next instruction is to operate;

a memory for storing data and instructions for the plural processing elements in executing the plural threads of computation;

a memory controller for controlling the memory, the controller responding to request messages from respective ones of the plural processing elements for memory access to the memory by returning a response message to the respective one of said processing elements, the response message including requested data and also including one of said thread descriptors;

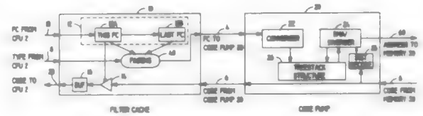
wherein each of the plural processing elements responds to a load instruction to retrieve data from the memory by generating one of said request messages comprised of a thread descriptor that is not retained by said processing element and by transmitting said request message to the memory controller which, in turn, generates a response message that includes the thread descriptor of the request message and the requested data, said processing element processing the response message by storing the requested data in the frame identified in the thread descriptor, said processing element storing the thread descriptor of the response message in said thread descriptor storage only upon the storing of all data required for processing of the next instruction identified by the thread descriptor, such that the storing of the thread descriptors in the thread descriptor storage and resultant imperative processing of the plural threads of computation are independently performed by the plural processing elements.

5,353,419

MEMORY-SIDE DRIVEN ANTICIPATORY INSTRUCTION TRANSFER INTERFACE WITH PROCESSOR-SIDE INSTRUCTION SELECTION

Joseph D. Touch, Willingboro, N.J., and David J. Farber, Landenberg, Pa., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Jan. 9, 1992, Ser. No. 819,100
Int. Cl.[5] G06F *9/00, 9/30*
U.S. Cl. 395—375 12 Claims



1. In a computer system including a central processing unit (CPU) and a program memory wherein the CPU experiences a latency delay between requesting an instruction from the program memory and receiving the requested instruction, apparatus which reduces the latency delay comprising:

instruction preprocessor means, located in proximity to the program memory, for fetching instructions for a program running on the CPU from the program memory and for providing the instructions to the CPU without any CPU driven pre-fetching, said preprocessor means comprising:

instruction decoder means for assigning a type value to each of the instructions fetched from the program memory;

instruction path diverger means, responsive to the type value provided by the instruction decoder means, for detecting all instructions which indicate a possible change in an execution sequence of the program and for causing the preprocessor to concurrently provide instructions from execution sequences determined from the detected instructions, the instruction path diverger means comprising:

branch handling means, for detecting a conditional branch instruction and for identifying a pair of next instructions, of which pair the CPU requests one next instruction following the conditional branch instruction, and

call handling means, for detecting a call instruction, and for identifying a further instruction which the CPU executes after the CPU executes a return instruction that follows the call instruction;

storage means coupled to the branch handling means and call handling means for storing a plurality of indicators, the indicators identifying any of the conditional branch instruction, the pair of next instructions, the call instruction and the further instruction, that are detected by either one of the branch handling means and the call handling means; and

memory access control means coupled to the storage means and the program memory for fetching from the program memory a plurality of instruction streams, and for transmitting the plurality of instruction streams without waiting to receive a request from the CPU, the plurality of instruction streams including any of the conditional branch instruction, the pair of next instructions, the call instruction and the further instruction that are identified by the indicators in the storage means; and

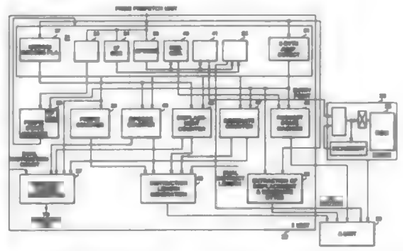
means, responsive to instruction requests from the CPU, for selecting and providing the requested instructions to the CPU from among the instruction streams transmitted by the preprocessor means.

5,353,420

METHOD AND APPARATUS FOR DECODING CONDITIONAL JUMP INSTRUCTIONS IN A SINGLE CLOCK IN A COMPUTER PROCESSOR

Syed A. A. Zaidi, Santa Clara, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Aug. 10, 1992, Ser. No. 927,707
Int. Cl.[5] G06F *9/38*
U.S. Cl. 395—375 10 Claims



1. In a pipelined microprocessor which includes a prefetch unit for obtaining a plurality of instructions to be processed;

a decode unit having a prefix state machine for decoding prefixes to instructions and determining their lengths, a decode circuit for decoding instructions and generating microcode vectors to be executed, the decode circuit being responsive to signals from the prefix state machine to vary the microcode vector generated, and means for counting the length of an instruction; and

a microcontroller for sequencing microcode vectors; the improvement comprising:

means for detecting the appearance of a particular prefixed instruction,

means responsive to the detection of the particular prefixed instruction for disabling the prefix state machine,

means in the decode circuit for decoding the particular prefixed instruction and causing the decode circuit to generate microcode vectors for the instruction, and

means for generating a request to the microcontroller for microcode vectors generated.

5,353,421

MULTI-PREDICTION BRANCH PREDICTION MECHANISM

Philip G. Emma, Danbury, Conn.; Joshua W. Knight, Mohegan Lake; James H. Po merene, Chappaqua, both of N.Y.; Thomas R. Puzak, Ridgefield, Conn.; Rudolph N. Rechtschaffen, Scarsdale, and James R. Robinson, Clinton Corners, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

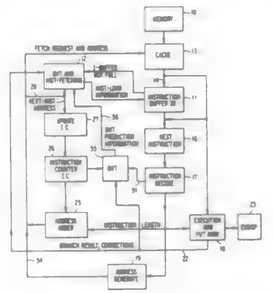
Continuation of Ser. No. 594,529, Oct. 9, 1990, abandoned. This application Jul. 13, 1993, Ser. No. 91,416
Int. Cl.[5] G06F *9/38*
U.S. Cl. 395—375 9 Claims

7. A multi-prediction branch prediction mechanism for predicting the outcome of branch instructions in a computer having a pipeline processor including an instruction buffer connected to a memory for temporarily storing fetched instructions, an instruction decode circuit connected to said instruction buffer and decoding instructions temporarily stored in said instruction buffer, an address generate circuit responsive to said decoded instructions from said instruction decode circuit addressing said memory to fetch instructions to said instruction buffer, and an execution unit responsive to decoded instructions from said instruction decode circuit for performing operations in accordance with decoded instructions, said multi-branch prediction mechanism comprising:

at least two, independent branch prediction means connected to said pipeline processor for independently predicting branch instructions at different stages of said pipeline, said at least two, independent branch prediction mean comprising an instruction-fetch branch prediction means connected to said instruction buffer and to said address generate circuit for generating an initial branch prediction based on a limited history of branches taken and supplying to said address generate circuit a target address, and a decode-time branch prediction means connected to said instruction decoded circuit and to said instruction-fetch branch prediction means for generating a branch prediction based on a history of branches executed;

means responsive to said two, independent branch prediction means for resolving those instances when prediction from each of said two, independent branch prediction means differ, said means responsive to said branch prediction means comprising comparing means for comparing said initial branch prediction from said instruction-fetch branch prediction means and said branch prediction from said decode-time branch prediction means, and selection means responsive to said comparing means for accepting said initial branch prediction from said instruction-fetch branch prediction means when a match occurs between said initial branch prediction and said branch prediction from said decode-time branch prediction means but overriding said initial branch prediction by selecting said branch prediction from said decode-time branch prediction means and restarting said pipeline when said initial branch prediction and said branch prediction from said decode-time branch prediction means do not match; and

means responsive to said execution unit for updating said two, independent branch prediction means based on execution of a branch instruction.



5,353,422

METHOD AND SYSTEM FOR STORING AND MANAGING A PLURALITY OF INFORMATION MEDIA USED BY RECORDING/REPRODUCING UNITS

Takashi Kobayashi, Kawasaki; Kenzo Kurihara, Tokyo; Takashi Doi, Hadano; Michio Miyazaki, and Minoru Kosuge, both of Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

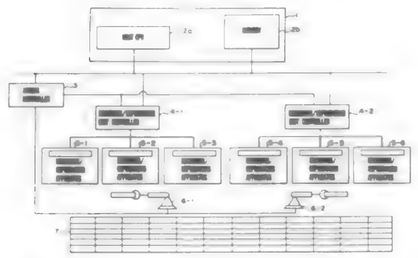
Filed Oct. 1, 1990, Ser. No. 591,233
Claims priority, application Japan, Oct. 6, 1989, 1-260022; Apr. 6, 1990, 2-90319
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—425 28 Claims

21. A data processing system including an information media storage and management system, comprising:

a plurality of recording/reproducing units each capable of accessing any one of a plurality of information media, on each of which at least one file can be recorded; and

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relocation means for selectively relocating files recorded in each of information media accessed by jobs in accordance



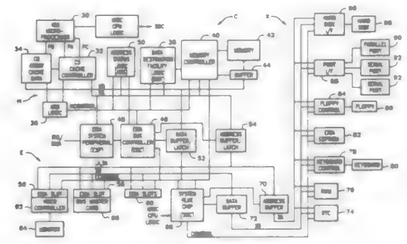
with file information representing the number of conflicts upon access to each information medium by the jobs.

5,353,423

MEMORY CONTROLLER FOR USE WITH WRITE-BACK CACHE SYSTEM AND MULTIPLE BUS MASTERS COUPLED TO MULTIPLE BUSES

Mustafa A. Hamid, Irving, and Gary W. Thome, Houston, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Jun. 21, 1991, Ser. No. 719,030
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—425 **3 Claims**



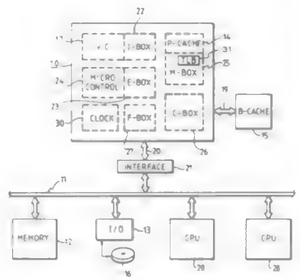
1. A computer system, comprising:
a system bus including address, data and control bus portions;
a processor;
a write-back cache system connected to said processor and coupled to said system bus for controlling operations on said system bus, said write-back cache system including a cache controller and data memories;
a plurality of memory devices coupled to said system bus;
a memory controller coupled to said system bus and said memory devices for controlling operation of said memory devices;
an external bus including address, data and control bus portions;
an external bus interface and controller coupled to said system bus and said external bus for converting system bus operations to external bus operations and external bus operations to system bus operations;
an external bus master coupled to said external bus for controlling operations on said external bus, some of which may be directed to said memory devices on said system bus; and
wherein said memory controller includes means for pausing operations of said external bus master directed to said memory devices during write-back operations of said write-back cache system to said memory devices,
wherein said memory controller includes means for controlling memory device operation when said write-back cache system is controlling said system bus and means for controlling memory device operation when said external bus master is controlling said system bus via said external bus interface and controller,
wherein said external bus master memory device operation controlling means is paused while said write-back cache system is controlling said system bus and said write-back cache system memory device operation controlling means is paused while said external bus master is controlling said system bus, and
wherein external bus master memory device operation controlling means is temporarily paused during a cycle and said write-back cache system device operation controlling means is temporarily activated to allow a write-back operation to occur.

5,353,424

FAST TAG COMPARE AND BANK SELECT IN SET ASSOCIATIVE CACHE

Hamid Partovi, Westboro; William R. Wheeler, Hudson; Michael Leary, Jefferson; Michael A. Case, Grafton; Steven Butler, Marlboro, and Rajesh Khanna, Westboro, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Nov. 19, 1991, Ser. No. 794,865
Int. Cl.[5] G06F *12/08*
U.S. Cl. 395—425 **15 Claims**



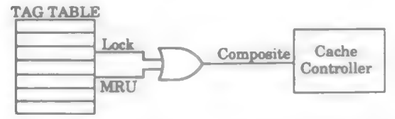
1. A tag compare circuit for detecting comparison of tags in a set-associative cache having a plurality of banks, comprising:
first and second comparators, each of the comparators receiving a tag value from a processor, said first comparator receiving a first stored tag for a first of said plurality of banks and producing a plurality of first match-bit signals, said second comparator receiving a second stored tag for a second of said plurality of banks and producing a plurality of second match-bit signals, the tag value, the first stored tag and the second stored tags, each including multiple address bits;
first and second NOR gates, the first NOR gate receiving said first match-bit signals at a plurality of inputs and producing a first output responsive to whether all of said first match-bit signals indicate a match between all bits of said tag value and said first stored tag, the second NOR gate receiving said second match-bit signals at a plurality of inputs and producing a second output responsive to whether all of said second match-bit signals indicate a match between all bits of said tag value and said second stored tag;
a bank selector receiving said first and second outputs, said bank selector generating a first bank select signal to said first bank if said first and second outputs indicate that said tag value matches said first stored tag and does not match said second stored tag, said bank selector generating a second bank select signal to said second bank if said first and second outputs indicate that said tag value matches said second stored tag and does not match said first stored, said bank selector including first and second NAND gates and first and second inverters, said first output being connected to an input of said first NAND gate and connected through said first inverter to an input of said second NAND gate, said second output being connected to an input of said second NAND gate and connected through said second inverter to an input of said first NAND gate, each of said first and second inverters introducing a delay to provide a margin in self-timed paths of signals on said first output of said first NOR gate and said second output on said second NOR gate.

5,353,425

METHODS AND APPARATUS FOR IMPLEMENTING A PSEUDO-LRU CACHE MEMORY REPLACEMENT SCHEME WITH A LOCKING FEATURE

Adam Malamy, Winchester, Mass.; Rajiv N. Patel, San Jose, and Norman M. Hayes, Sunnyvale, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Apr. 29, 1992, Ser. No. 875,357
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—425 **13 Claims**



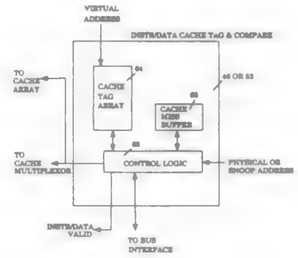
1. In a computer system comprising master devices including a central processing unit (CPU), and a memory system comprising a main memory having a plurality of lines and a cache memory wherein a subset of the lines of main memory are stored in the cache memory for fast access by a master device issuing a request for access to said memory system, an apparatus for securing selected lines of main memory in cache memory comprising:
a tag table comprising tag bits for each cache line, at least one replacement bit for each cache line, and at least one lock bit for each cache line of the cache memory, said tag bits identifying the line of main memory located in cache memory;
a composite bit for each cache line, each composite bit comprising a logical OR of said at least one replacement bit for a cache line and said at least one lock bit for a cache line;
replacement bit circuitry for controlling the states of the at least one replacement bit for each cache line located in the tag table, said replacement bit circuitry setting the at least one replacement bit for a cache line when said cache line is accessed;
lock bit circuitry for controlling the states of the at least one lock bit for each cache line located in the tag table;
composite bit circuitry for monitoring the composite bits to prohibit all composite bits from being set by clearing the at least one replacement bit for each cache line to avoid deadlock;
cache memory replacement circuitry for replacing a line of memory located in the cache memory with a different line of memory, said cache memory replacement circuitry prohibited from replacing a line of cache memory if the corresponding composite bit is set, said cache memory replacement circuitry controlled such that by setting the corresponding at least one lock bit for a cache line in the tag table, a line of memory located in the cache memory is secured in the cache memory regardless of a cache replacement algorithm, and by setting the corresponding at least one replacement bit for a cache line in the tag table, a cache memory line is not replaced regardless of the lock bit.

5,353,426

CACHE MISS BUFFER ADAPTED TO SATISFY READ REQUESTS TO PORTIONS OF A CACHE FILL IN PROGRESS WITHOUT WAITING FOR THE CACHE FILL TO COMPLETE

Rajiv N. Patel, San Jose, Calif.; Adam Malamy, Winchester, Mass., and Norman M. Hayes, Sunnyvale, Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Apr. 29, 1992, Ser. No. 875,983
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—425 **18 Claims**



17. A computer system comprising:
a) at least one execution function unit;
b) a main memory; and
c) a cache memory coupled to said at least one execution function unit and said main memory for caching instructions and data, said cache memory comprising at least one cache array, at least one cache tag array, at least one cache miss buffer and at least one cache control logic, said cache memory satisfying an instruction/data request requesting an instruction/data that is part of a memory block frame of a cache fill in progress without having to wait for said cache fill in progress to complete.

5,353,427

SEMICONDUCTOR MEMORY DEVICE FOR SIMPLE CACHE SYSTEM WITH SELECTIVE COUPLING OF BIT LINE PAIRS

Kazuyasu Fujishima; Yoshio Matsuda, and Mikio Asakura, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

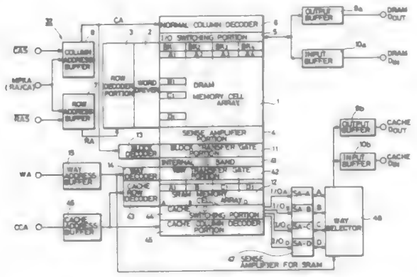
Division of Ser. No. 564,657, Aug. 9, 1990, Pat. No. 5,226,147, which is a continuation of Ser. No. 266,601, Nov. 3, 1988, abandoned. This application May 19, 1993, Ser. No. 63,487
Claims priority, application Japan, Nov. 6, 1987, 62-281619; Dec. 17, 1987, 62-322126
Int. Cl.[5] G06F *12/08*
U.S. Cl. 395—425 **22 Claims**

1. A semiconductor memory device containing a cache memory, comprising, on a single chip:
a first memory cell array comprising a plurality of word lines, a plurality of bit line pairs perpendicular to said plurality of word lines and a plurality of memory cells arranged in a matrix of a plurality of rows corresponding to said word lines and columns corresponding to said bit line pairs, said first memory cell array being divided into a plurality of blocks each comprising a plurality of columns,
a cache memory including a second memory cell array comprising a plurality of static type memory cells arranged in a plurality of rows and a plurality of columns, said second memory cell array being divided into a plurality of blocks each comprising a plurality of columns, each said static type memory cell being structurally aligned with a column of said first memory cell array and connectable to each one of a subset of said plurality of bit line pairs

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of said first memory cell array in response to a predetermined selecting signal,

first access means responsive to a cache miss indicating signal for accessing data at a memory cell of said first memory cell array selected by a first row address signal and a column address signal, said first access means comprising block selecting means responsive to a block selecting signal for selecting any of said plurality of blocks in said first memory cell array,



second access means responsive to a cache hit indicating signal for accessing data at a static type memory cell selected by a second row address signal and a column address signal, and

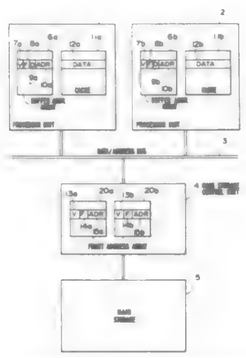
data transfer means for transferring data between a column in said first memory cell array and a respective column in said second memory cell array.

5,353,428

INFORMATION PROCESSING APPARATUS IN WHICH A CACHE MEMORY CAN BE OPERATED IN BOTH STORE-IN AND STORE-THROUGH MODES

Masabumi Shibata, Kawasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 549,074, Jul. 6, 1990, abandoned. This application May 20, 1993, Ser. No. 63,953
Claims priority, application Japan, Jul. 6, 1989, 1-174405
Int. Cl.[5] G06F *12/12*
U.S. Cl. 395—425 19 Claims



1. An information processing apparatus comprising:

(a) two or more processor units each including a cache memory and a processor which accesses stored data via the cache memory, and

(b) a main storage coupled to said processor units;

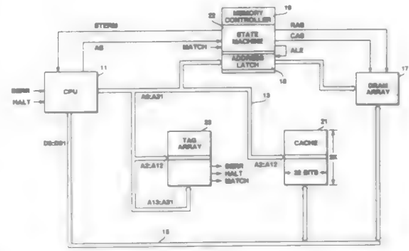
(c) each of said processor units including (i) a control status register for storing information about the processor's control status; (ii) discriminating means for discriminating, based on information in said control status register when data is loaded into the cache memory from said main storage, which one of store-through and store-in systems is to be used to write data in said cache memory, said discriminating means giving to the data an attribute indicating the store-through or the store-in system in accordance with the discriminating results by said discriminating means, and (iii) writing means for writing the loaded data in the cache memory using the discriminated one of said systems.

5,353,429

CACHE MEMORY SYSTEMS THAT ACCESSES MAIN MEMORY WITHOUT WAIT STATES DURING CACHE MISSES, USING A STATE MACHINE AND ADDRESS LATCH IN THE MEMORY CONTROLLER

Jonathan M. Fitch, Cupertino, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 670,697, Mar. 18, 1991, abandoned. This application Aug. 20, 1993, Ser. No. 109,694
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—425 5 Claims



1. A computer system including a cache memory system comprising:

a) a central processing unit coupled to a data bus and an address bus;

b) a main memory having a predetermined access time coupled to said data bus and to an address latch bus, said main memory for storing data and instructions for use by said central processing unit;

c) a memory controller means for controlling accesses to said main memory, said memory controller means including i) an address latch coupled to said address bus and said address latch bus, and ii) state machine means for controlling the operation of the memory controller means and the address latch;

d) a cache memory means coupled to said address bus and said data bus for storing a predetermined subset of said data and instructions for use by said central processing unit;

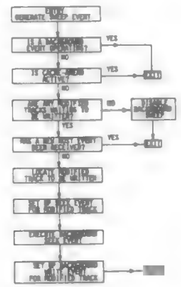
e) a cache tag array means coupled to said address bus for storing portions of addresses from said address bus corresponding to addresses of data and instructions stored in said cache memory means and for generating signals indicating for an address on said address bus whether data corresponding to the address on the address bus is stored within said cache memory means, such that if said data corresponding to the address on the address bus is not stored within said cache memory means, said state machine operates to cause the access time of said main memory to be overlapped with resynchronization of said central processing unit and memory cycle reinitialization required to obtain the data from said main memory.

5,353,430

METHOD OF OPERATING A CACHE SYSTEM INCLUDING DETERMINING AN ELAPSED TIME OR AMOUNT OF DATA WRITTEN TO CACHE PRIOR TO WRITING TO MAIN STORAGE

Marvin Lautzenheiser, San Jose, Calif., assignor to Zitel Corporation, Fremont, Calif.

Continuation of Ser. No. 860,731, Feb. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 665,021, Mar. 5, 1991, abandoned. This application Oct. 20, 1993, Ser. No. 139,559
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—425 28 Claims



1. A method for operating a cache system which serves as a data storage device for a host device, said cache system having a mass storage device, a segmented cache memory, and a background data transfer mechanism for writing data from said cache memory to said mass storage device, said method comprising the steps of:

dynamically assigning logical tracks of said cache memory to correspond to logical tracks of said mass storage device;

accepting data written by said host device into portions of the assigned logical tracks of said cache memory;

calculating the time period which has elapsed since the oldest of the modified data existing in said cache memory was written to said cache memory and which said modified data has not yet been written to said mass storage device; and

if said calculated time period equals or exceeds a predefined time period:

determining the number of logical tracks containing modified data in said cache memory which have not been written to said mass storage device; and

causing said background data transfer mechanism to write the modified portions of at least some of those modified tracks of data from said cache memory to said mass storage device.

5,353,431

MEMORY ADDRESS DECODER WITH STORAGE FOR MEMORY ATTRIBUTE INFORMATION

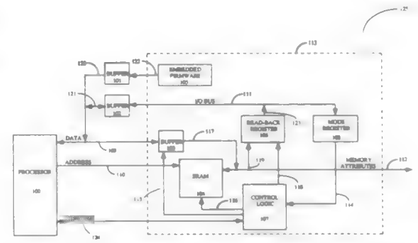
Patrick F. Doyle, Hillsboro; Leonard W. Cross, Beaverton, and Roger Noar, Tigard, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 692,483, Apr. 29, 1991, abandoned. This application Feb. 8, 1994, Ser. No. 193,516
Int. Cl.[5] G06F *12/02*
U.S. Cl. 395—425 25 Claims

1. An improved memory address decoder comprising: means for receiving addressing signals;

memory means for storing a Software programmable memory map, said memory means coupled to said receiving means, said memory map for storing memory attribute information associated with said addressing signals received by said receiving means, said memory attribute information for defining at least one state of a plurality of memory attributes associated with a corresponding block of system memory indicated by said addressing signals;

control logic coupled to said memory means for controlling access to said memory means and controlling an output of



said memory attribute information from said memory means, said control logic further including means for programming said software programmable memory map according to at least one processor instruction; and

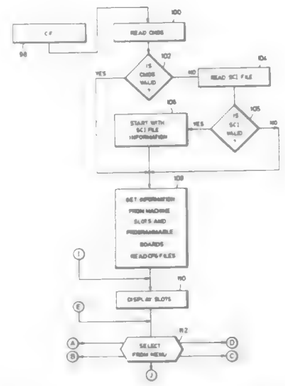
means for outputting said memory attribute information, said means for outputting coupled to said memory means.

5,353,432

INTERACTIVE METHOD FOR CONFIGURATION OF COMPUTER SYSTEM AND CIRCUIT BOARDS WITH USER SPECIFICATION OF SYSTEM RESOURCES AND COMPUTER RESOLUTION OF RESOURCE CONFLICTS

Martin D. Richek; Robert S. Gready, both of Houston, and Curtis R. Jones, Cypress, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 403,297, Sep. 5, 1989, Pat. No. 5,257,387, which is a continuation-in-part of Ser. No. 293,315, Jan. 4, 1989, Pat. No. 5,263,148, which is a continuation-in-part of Ser. No. 242,734, Sep. 9, 1988, abandoned. This application Apr. 23, 1991, Ser. No. 690,065
Int. Cl.[5] G06F *9/22, 9/32, 9/455, 11/28*
U.S. Cl. 395—500 6 Claims



1. For use with a computer system that provides for circuit boards to be interchangeably inserted in a plurality of system slot locations, the circuit boards capable of being configured to utilize one or more common computer resources, the common computer resources comprising interrupt request lines, direct

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memory access channels, input/output port addresses and memory address ranges, an interactive method for an operator using the computer system for configuring a circuit board in a computer system the steps comprising:

the computer determining the common computer resources allocated to the computer system or circuit boards in the computer system, said determining step comprising the computer reading a computer system or circuit board configuration file, said configuration file having various statements which follow a defined file format to assemble an array of statements for the computer system and all boards in the computer system in statement hierarchial order;

the operator selecting a circuit board to be installed in the computer system;

the operator determining the common computer resources required by said selected circuit board;

the operator specifying the common computer resources to be assigned said selected board;

the computer allocating the common computer resources to be utilized by the computer system and circuit boards, including the computer allocating the common computer resources specified by the operator to said selected board;

the computer detecting conflicts as to the common computer resources to be utilized by the computer system or circuit boards in the computer system and said selected board;

the computer resolving conflicts as to the common computer resources to be utilized by the computer system or circuit boards in the system and re-allocating resources based on the computer allocating the common computer resources specified by the operator to said selected board; and

the computer storing configuration information for each circuit board based on the assignment of common computer resources to be utilized after the last of allocation, conflict resolution and reallocation.

5,353,433

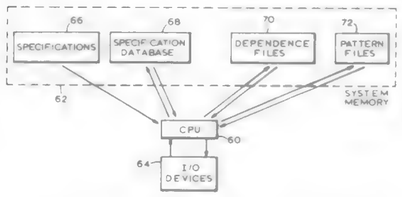
METHOD AND APPARATUS FOR ORGANIZING AND ANALYZING TIMING INFORMATION

Steven K. Sherman, Marlborough, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Sep. 6, 1990, Ser. No. 578,723

Int. Cl.[5] G06F *15/60*

U.S. Cl. 395—550 **7 Claims**



1. A method for generating signal pattern and dependence information from a plurality of timing specifications, each specification including a classification, a reference to at least one source signal and at least one destination signal, a time interval having magnitude and direction and a comparison expression, the method comprising the steps of:

a. analyzing the specifications the determine whether:

i. any timing inconsistencies exist among the specifications, and if so, recording the identity of each specification with respect to which an inconsistency exists;

ii. if the specifications designate any clock signals, a valid period for each such clock signal is set forth, and if not, generating at least one additional specification to set forth such a valid period;

iii. if the specifications designate any clock signals, a valid pulse width for each such clock signal is set forth, and if not, generating at least one additional specification to set forth such a valid pulse width;

b. generating dependences from the specifications, each dependence including a type designation, a permissible timing interval, designation of at least one location on at least one signal, and a priority attribute;

c. resolving inconsistencies among dependences generated from specifications identified as inconsistent by lowering the priority attribute of at least one dependence;

d. generating at least one preliminary signal pattern that specifies a sequence of non-transition states separated by state boundaries, and which are consistent with the dependences, the state boundaries corresponding to signal locations of the dependences;

e. replacing at least some of the state boundaries with transition states, each transition state including a permissible time interval and two transitions, to produce at least one final signal pattern; and

f. replacing each dependence signal location with a designation of a transition.

5,353,434

NON-CONTACT IC RECORDING MEDIUM

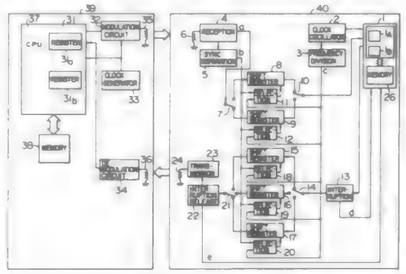
Yosuke Katayama, Toride, Japan, assignor to Hitachi Maxell, Ltd., Osaka and NTT Data Communications Systems Corporation, Tokyo, both of Japan

Filed Jun. 4, 1991, Ser. No. 710,155

Claims priority, application Japan, Jun. 5, 1990, 2-145507

Int. Cl.[5] G06K *7/00*

U.S. Cl. 395—550 **10 Claims**



1. A non-contact integrated circuit recording medium having a receiving coil and a transmission coil and a signal processing circuit which outputs, during a data transmission, data at least provided with a start bit and a stop bit for every m (where m is an integer of 2 or greater) items of transfer information, and wherein during data transmission and reception, a synchronization signal is received from a reader/writer through the receiving coil, comprising:

first means for detecting a sync signal sent from the reader/writer and generating therefrom a first clock signal having a frequency corresponding to a data transfer rate between a recording medium and the reader/writer;

second means for generating a second clock signal having a frequency greater than the first clock signal for driving a signal processing circuit at a higher rate than said first clock signal;

third means including temporary transfer information storage means for writing m (where m is an integer of 2 or greater) number items of transfer information from the signal processing circuit into said temporary storage means using the second clock signal, reading said items out of said temporary storage means using the first clock signal and transferring said m number of items of transfer information to said reader/writer in synchronism with said first clock signal;

fourth means for generating an interruption signal from the start bit in at least a first item of transfer information of the m number of items of transfer information output from said signal processing circuit to place subsequent items of transfer information of the m number of items of transfer information in a wait state; and

fifth means for generating an interruption signal for each stop bit in a (m−1)th item of transfer information of the m number of items of information output from the third means, thus terminating the wait state of the subsequent number of items of transfer information by said fourth means so as to permit their serial output from the signal processing circuit,

whereby said transfer information output from said third means is transferred to said reader/writer through said transmission coil.

5,353,435

MICROCOMPUTER WITH CIRCUIT FOR GENERATING MULTIPLE PULSES EACH HAVING DIFFERENT FREQUENCIES

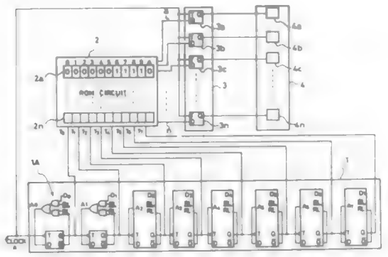
Hirokazu Kitagawa, and Naoki Yamauchi, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1992, Ser. No. 864,999

Claims priority, application Japan, Apr. 12, 1991, 3-108952

Int. Cl.[5] G06F *1/08*

U.S. Cl. 395—550 **4 Claims**



1. A microcomputer comprising:

a timer circuit having a clock as a count source;

a memory circuit to store output pulse waveforms represented as bit strings;

wherein said bit strings correspond to respective addresses output from said timer circuit;

a latch circuit to latch each bit read from said memory circuit in synchronism with said clock; and

a port output circuit to output each bit latched by said latch circuit to a corresponding port.

5,353,436

METHOD AND APPARATUS FOR SYNCHRONIZING A PLURALITY OF PROCESSORS

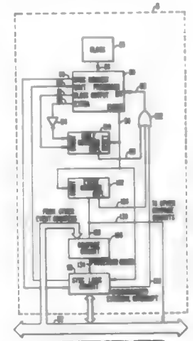
Robert W. Horst, Cupertino, Calif., assignor to Tandem Computers Incorporated, Cupertino, Calif.

Continuation of Ser. No. 657,990, Feb. 20, 1991, which is a continuation of Ser. No. 118,503, Nov. 9, 1987. This application Dec. 9, 1992, Ser. No. 988,202

The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.

Int. Cl.[5] G06F *1/00*

U.S. Cl. 395—550 **13 Claims**



1. An apparatus for synchronizing a plurality of processors, each of said processors executing an instruction stream at varying speeds in accordance with respective independent clock cycles, comprising:

event indicating means for detecting prescribed events within each processor and providing an indication thereof;

event counting means, connected to the event indicating means, for counting the number of events indicated for each processor;

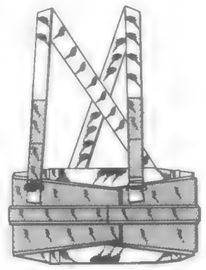
clock cycle counting means for separately counting the clock cycles of each processor and for issuing a synchronization request upon reaching a predetermined count value for any processor;

means for detecting extra clock cycles, not normally present during execution of the instruction, while the clock cycle counting means is counting and preventing said clock cycle counting means from counting said extra clock cycles; and

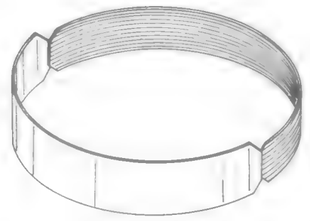
suspension means, connected to the event counting means, the clock cycle counting means and to each processor, for receiving said synchronization request and for suspending processing of a processor when the number of events counted for that processor is greater than the number of events for another processor.

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351,051
SUSPENDER SUPPORTED BELT
David P. Pearson, 861 Boxthorn Ave., Newbury Park, Calif. 91320, and Conrad W. Tanner, 3140 Del Vina St., Pasadena, Calif. 91107
Filed May 4, 1993, Ser. No. 7,896
Term of patent 14 years
U.S. Cl. D2—626



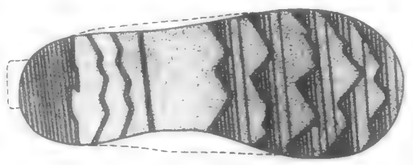
351,052
HEADBAND
John P. Russell, Center Point, Ala., assignor to Infection Control Products, Inc., Gardendale, La.
Filed Aug. 19, 1991, Ser. No. 747,254
Term of patent 14 years
U.S. Cl. D2—894



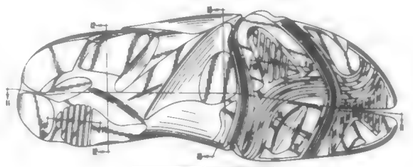
351,053
SLIPPER
Stuart Kessler, 3952 Bayberry La., Seaford, N.Y. 11783
Filed Aug. 25, 1993, Ser. No. 12,164
Term of patent 14 years
U.S. Cl. D2—900



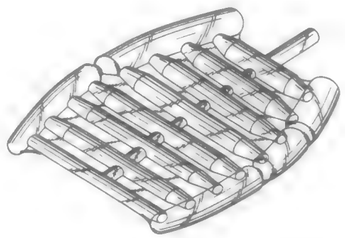
351,054
SHOE SOLE
Amy S. Minkin, Canton, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Oct. 12, 1993, Ser. No. 14,109
Term of patent 14 years
U.S. Cl. D2—953



351,055
SHOE SOLE
Calvin M. Buck, IV, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Oct. 19, 1993, Ser. No. 14,293
Term of patent 14 years
U.S. Cl. D2—953

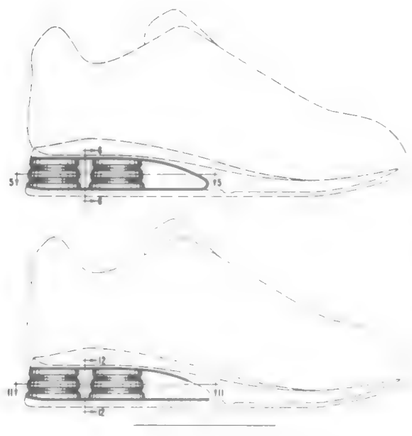


351,056
BLADDER FOR A SHOE SOLE
Perry W. Auger, Tigard, Oreg., and Forland, David M., Battle Ground, Wash., assignors to Nike, Inc., Beaverton, Oreg.
Filed Sep. 17, 1993, Ser. No. 13,623
Term of patent 14 years
U.S. Cl. D2—961

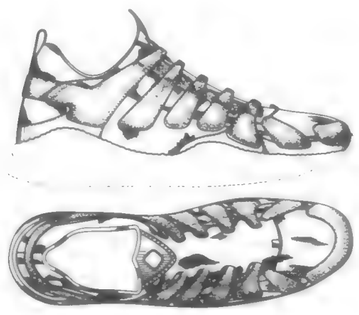


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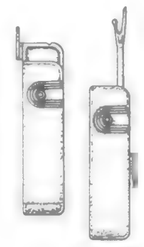
351,057
HEEL INSERT FOR A SHOE SOLE
Bruce J. Kilgore, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Division of Ser. No. 786,931, Nov. 1, 1991, Pat. No. Des. 344,399. This application Jan. 19, 1994, Ser. No. 17,642
Term of patent 14 years
U.S. Cl. D2—964



351,058
SHOE UPPER
Tinker L. Hatfield, and William Dieter, both of Portland, Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Filed Sep. 17, 1993, Ser. No. 13,085
Term of patent 14 years
U.S. Cl. D2—969



351,059
SEAM RIPPER
Hartwig Kahlcke, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechstmass Balzer GmbH, Fed. Rep. of Germany
Division of Ser. No. 836,619, Feb. 18, 1992, Pat. No. 5,297,340. This application Jul. 15, 1992, Ser. No. 914,693
Term of patent 14 years
U.S. Cl. D3—18

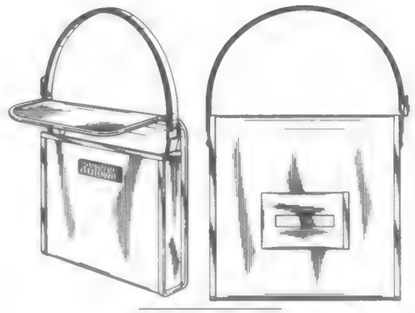


351,060
BELT FOR SUPPORTING CASSETTES AND A CASSETTE PLAYER
Richard Randazzo, 727 Bradley St., Mamaroneck, N.Y. 10543
Filed Mar. 23, 1993, Ser. No. 6,246
Term of patent 14 years
U.S. Cl. D3—218

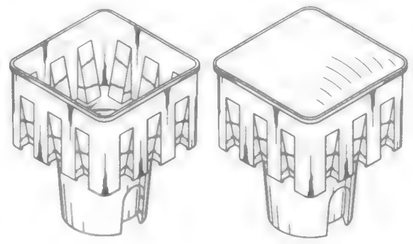
351,061
BINOCULAR CARRIER
Dale L. Coons, 3040 Birch St., Bishop, Calif. 93514
Filed Jun. 17, 1991, Ser. No. 716,330
Term of patent 14 years
U.S. Cl. D3—219



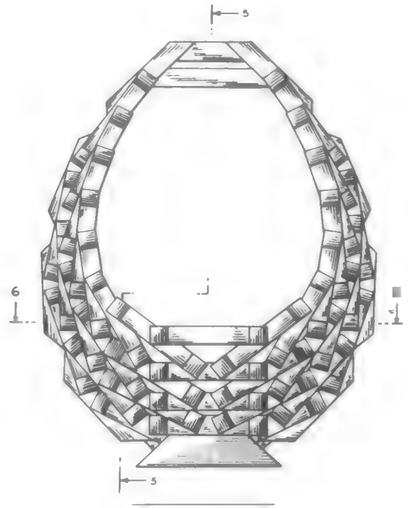
351,062
HANDBAG WITH TISSUE DISPENSER
Orville Shapland, 2701 Cactus Dr., Big Spring, Tex. 79720, and Tom Guess, 4119 Dixon, Big Spring, Tex. 79721
Filed Jan. 21, 1993, Ser. No. 3,875
Term of patent 14 years
U.S. Cl. D3—233



351,063
BULK MATERIAL DISPENSING HOUSING
Terrance P. Fenelon, Lilydale, Minn., assignor to Spec Mix, Inc., Vadnais Heights, Minn.
Filed Sep. 14, 1993, Ser. No. 12,938
Term of patent 14 years
U.S. Cl. D3—304



351,064
BASKET
Edward Dunn, 766 Brooklyn Mountain Rd., Hopatcong, N.J. 07843
Filed May 14, 1992, Ser. No. 883,417
Term of patent 14 years
U.S. Cl. D3—306

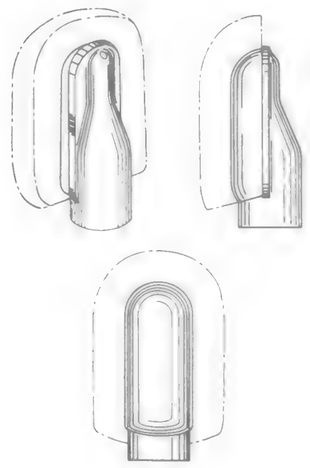


351,065
PAINTBRUSH
Terry Lee, Hong Kong, Hong Kong, assignor to Berni Beauty Products, Ltd., Hong Kong
Filed Jun. 14, 1993, Ser. No. 9,477
Term of patent 14 years
U.S. Cl. D4—135

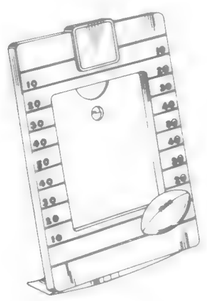


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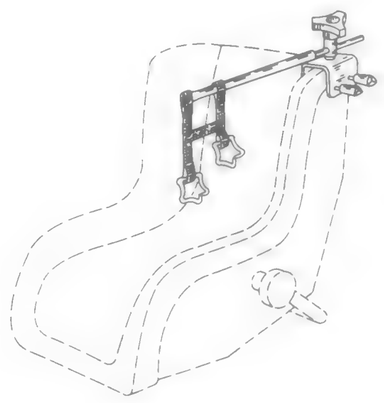
351,066
DISPENSING BRISTLE SUPPORT FOR ATTACHMENT TO A BOTTLE
Robert J. Libman, Champaign, Ill., assignor to The Libman Company, Arcola, Ill.
Filed Jan. 27, 1992, Ser. No. 825,856
Term of patent 14 years
U.S. Cl. D4—199



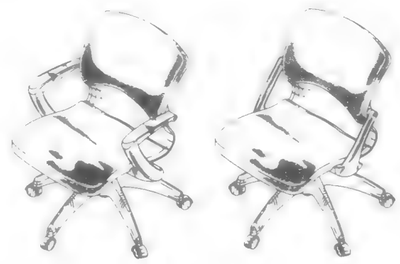
351,067
FOOTBALL MOTIF PICTURE FRAME
Susan M. Masterson, 7916 W. 116th Ter., Overland Park, Kans. 66210
Filed Jun. 23, 1993, Ser. No. 9,766
Term of patent 14 years
U.S. Cl. D6—303



351,068
CAR SEAT TOY HOLDER
John J. Grimes, 525 "A" Kimble St., Modesto, Calif. 95354
Filed Sep. 21, 1992, Ser. No. 949,052
Term of patent 14 years
U.S. Cl. D6—341



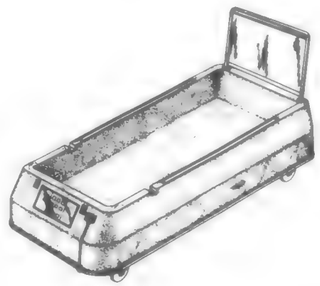
351,069
CHAIR
Paolo Orlandini, and Roberto Lucci, both of Milan, Italy, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 1, 1993, Ser. No. 4,294
Term of patent 14 years
U.S. Cl. D6—366



351,070
CHAIR
Robert M. Scheper, Grand Rapids; Dale M. Groendal, Jenison; James E. Abraham, Grandville; Thomas R. Hahn, Kentwood; Cheryl D. Baumgartner, East Grand Rapids; Douglas A. Smith, Grand Rapids, and Brian L. Scholten, Jenison, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed May 7, 1993, Ser. No. 8,029
Term of patent 14 years
U.S. Cl. D6—366



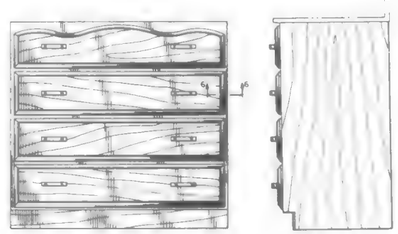
351,071
FLOTATION THERAPY BED
Mark Hagopian, Indian Rocks Beach, Fla., assignor to Biologics, Inc., St. Petersburg, Fla.
Filed Apr. 25, 1991, Ser. No. 691,592
The portion of the term of this patent subsequent to Jan. 25, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—393



351,072
PLANT TERRACE CENTER SECTION
Seymour Emalfarb, 1585 Saunders Rd., River Woods, Ill. 60015, and Bradley S. Emalfarb, 26529 N. Highway 83, Mundelein, Ill. 60060
Filed Aug. 17, 1992, Ser. No. 930,303
Term of patent 14 years
U.S. Cl. D6—405



351,073
VANITY CABINET
James J. Palka, 22351 W. Thornridge Dr., Kildeer, Ill. 60047
Filed Jul. 19, 1991, Ser. No. 732,691
Term of patent 14 years
U.S. Cl. D6—446

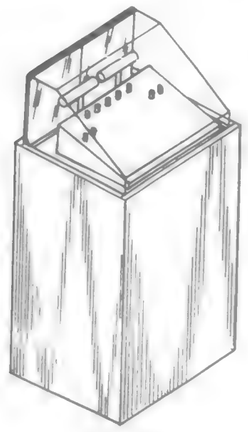


351,074
DRESSER
Darrell C. Ferguson, Charleston, S.C., assignor to Lineage Home Furnishings, Inc., High Point, N.C.
Filed May 19, 1992, Ser. No. 885,215
Term of patent 14 years
U.S. Cl. D6—446

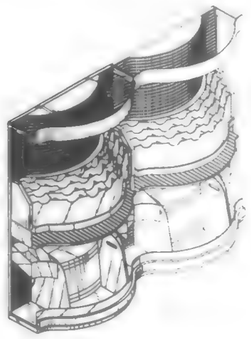


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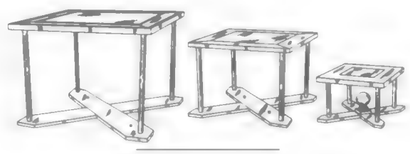
351,075
REFLECTIVE JEWELRY DISPLAY CASE
Robert I. Rubin, St. Louis, and Wayne P. Drewes, Creve Coeur, both of Mo., assignors to The Jewelry Works, Inc., St. Louis, Mo.
Filed Apr. 12, 1993, Ser. No. 7,088
Term of patent 14 years
U.S. Cl. D6—471



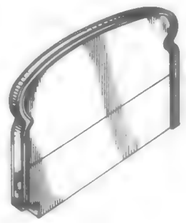
351,076
MERCHANDISE DISPLAY
Luke Eliadis, Stow; James R. Melton, Huron, and John Walters, Westlake, all of Ohio, assignors to American Greetings Corporation, Cleveland, Ohio
Filed May 14, 1992, Ser. No. 883,711
Term of patent 14 years
U.S. Cl. D6—476



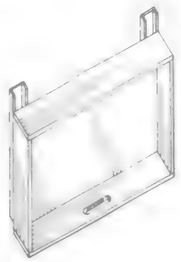
351,077
NESTED TABLE
Kenneth P. Bressler, 1207 Momarte La., St. Louis, Mo. 63146
Filed May 7, 1993, Ser. No. 8,111
Term of patent 14 years
U.S. Cl. D6—480



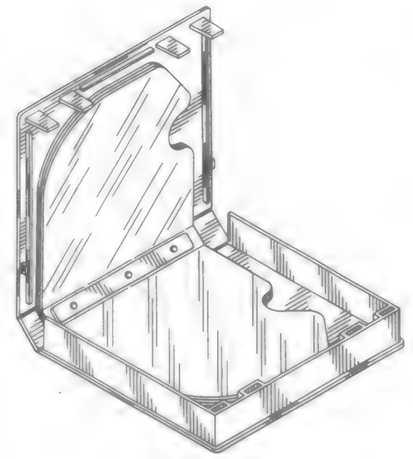
351,078
RESTAURANT BOOTH BACKING
Christos Livieratos, Chicago, Ill., assignor to Chicago Booth Manufacturing, Inc., Chicago, Ill.
Filed Sep. 11, 1992, Ser. No. 943,584
Term of patent 14 years
U.S. Cl. D6—502



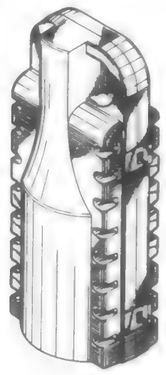
351,079
ROLLER DRAWER
Colin Brown, 1510 Boyle Ave., Escondido, Calif. 92027
Filed Oct. 13, 1992, Ser. No. 314
Term of patent 14 years
U.S. Cl. D6—510



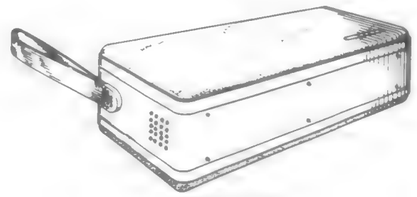
351,080
STORAGE CASE FOR COMPACT DISCS
Philip K. Sykes, 209 Stonecliffe Aisle, Irvine, Calif. 92715, and Dennis B. Barnett, 321 Catalina Dr., Newport Beach, Calif. 92663
Filed Jan. 4, 1993, Ser. No. 3,187
Term of patent 14 years
U.S. Cl. D6—629



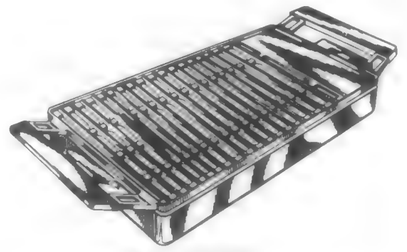
351,081
BOX FOR TAPE CASSETTES
Stephen Duddy, and Gordon Miller, both of Edinburgh, Scotland, assignors to Twelve Islands Shipping Company Limited, London, England
Filed Mar. 30, 1993, Ser. No. 6,539
Claims priority, application United Kingdom, Oct. 9, 1992, 2026350
Term of patent 14 years
U.S. Cl. D6—631



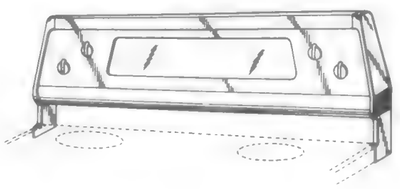
351,082
CASSETTE STORAGE CONTAINER
Jerry M. Long, Stockton; Christopher G. Palmer, Tracy, and Palmer, Peter J., San Jose, all of Calif., assignors to Creative Point, Inc., Fremont, Calif.
Filed Aug. 20, 1992, Ser. No. 933,046
Term of patent 14 years
U.S. Cl. D6—633



351,083
GRILL
William J. O'Brien, Vaucluse, and Stephen J. McClean, Beverly Hills, both of Australia, assignors to Breville R & D Pty Limited, Pyrmont, Australia
Filed Jan. 5, 1993, Ser. No. 3,337
Claims priority, application Australia, Oct. 8, 1992, 2817/92
Term of patent 14 years
U.S. Cl. D7—363

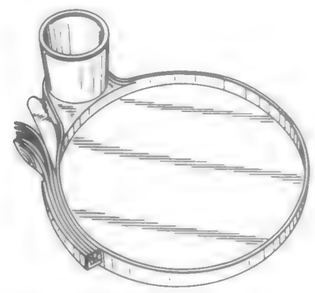


351,084
CONTROL PANEL FOR A FREESTANDING RANGE
Ned N. Ivanovich, Brampton, Canada, assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Aug. 24, 1992, Ser. No. 933,506
Term of patent 14 years
U.S. Cl. D7—406

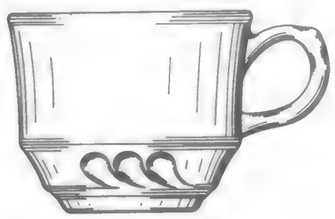


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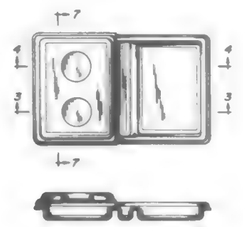
351,085
STACKING PLASTIC BUFFET WARE
George Schmidt, 11 Melrose La., Douglaston, N.Y. 11363
Filed Mar. 22, 1993, Ser. No. 6,486
Term of patent 14 years
U.S. Cl. D7—507



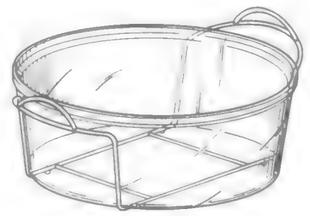
351,086
CUP
Michele M. Jaworski, New Castle, Pa., assignor to The Pfaltzgraff Co., York, Pa.
Filed May 14, 1992, Ser. No. 881,562
The portion of the term of this patent subsequent to Apr. 12, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—536



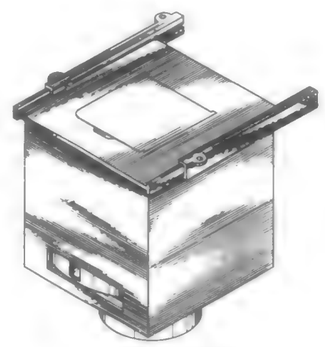
351,087
FOOD TRAY WITH COVER
John W. Anderson, Springfield, Mass., assignor to Temp-Tech Co. Inc., Springfield, Mass.
Filed Jan. 22, 1993, Ser. No. 4,001
Term of patent 14 years
U.S. Cl. D7—541



351,088
COMBINED BRACKET AND CONVECTION OVEN BOWL
Cary Hsiao, 3rd Fl., No. 162, Sec. 2, Chung Shan N. Rd., Taipei, Taiwan
Filed Feb. 24, 1993, Ser. No. 5,127
Term of patent 14 years
U.S. Cl. D7—543



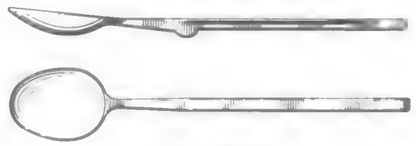
351,089
CABINET MOUNTED COFFEE DISPENSER
Troy L. Blevins, Jr., P.O. Box 116, Packs Mill, W. Va. 25547
Filed Feb. 5, 1993, Ser. No. 4,489
Term of patent 14 years
U.S. Cl. D7—589



351,090
CONTAINER
Joellen N. Narsutis, Oak Park, Ill., assignor to Kraft General Foods, Inc., Northfield, Ill.
Continuation-in-part of Ser. No. 694,991, Apr. 12, 1991, Pat. No. D. 334,114. This application Nov. 30, 1992, Ser. No. 2,010
The portion of the term of this patent subsequent to Mar. 23, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—629



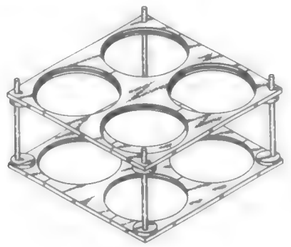
351,091
SPOON
Bruce Burdick, and Susan K. Burdick, both of San Francisco, Calif., assignors to The Burdick Group, San Francisco, Calif.
Filed Dec. 24, 1992, Ser. No. 3,012
The portion of the term of this patent subsequent to Mar. 22, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—653



351,092
BARBECUE FORK
Jonathon J. Weber, Bloomfield Hills, Mich., assignor to Que Pro, Inc., Mich.
Filed Jan. 29, 1993, Ser. No. 4,246
Term of patent 14 years
U.S. Cl. D7—683



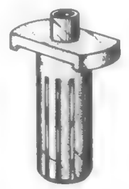
351,093
ICE CREAM TUB HOLDER
Thomas J. Calcaterra, 1141 West Swain Rd. - No. 132, Stockton, Calif. 95207
Filed Jun. 18, 1993, Ser. No. 9,569
Term of patent 14 years
U.S. Cl. D7—708



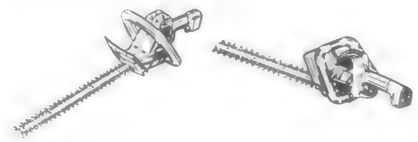
351,094
GRASS BURNER
Isao Inoue, Shizuoka, Japan, assignor to Tokai Corporation, Kanagawa, Japan
Filed Aug. 4, 1993, Ser. No. 11,445
Claims priority, application Japan, Feb. 10, 1993, 5-3660
Term of patent 14 years
U.S. Cl. D8—1



351,095
CUTTING TIP WRENCH
Peter D. Casica, San Juan Capistrano; Hardy A. Feierabend, Lake Elsinore; James R. Deanewill, Lakewood, and Stephen W. Haines, Santa Ana, all of Calif., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.
Filed Feb. 2, 1993, Ser. No. 4,350
Term of patent 14 years
U.S. Cl. D5—21

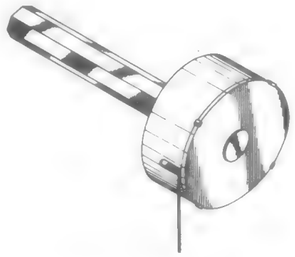


351,096
HEDGE TRIMMER
Martin P. Gierke, Baltimore, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Apr. 6, 1992, Ser. No. 864,000
Term of patent 14 years
U.S. Cl. D8—8



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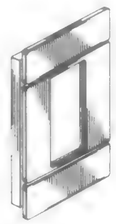
351,097
POWERED FLOWER TRIMMER
Charles H. Green, 252 Sprague Ave., Liberty, N.Y. 12754
Filed Aug. 5, 1993, Ser. No. 11,462
Term of patent 14 years
U.S. Cl. D8—8



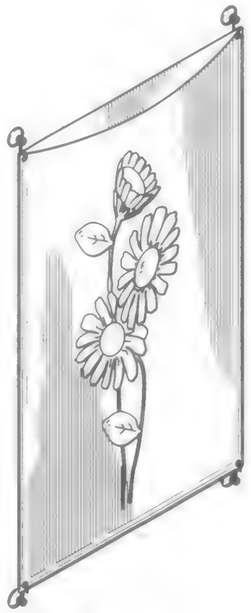
351,098
SCREW DRIVER HANDLE
Chien-Lang Tsai, No. 19, Jen Ho Rd., Nantou City, Nantou Hsien, Taiwan
Filed Mar. 31, 1993, Ser. No. 6,558
Term of patent 14 years
U.S. Cl. D8—83



351,099
WALL PLATE FOR DIMMER SWITCH
Igor Flasz, Centro Plaza, Torre A Piso 9 Avenida, Francisco de Miranda Caracas, Venezuela
Filed Aug. 12, 1992, Ser. No. 929,774
Term of patent 14 years
U.S. Cl. D8—353



351,100
COMBINED BAG AND SUCTION HOOKS
Kimberly A. Bradley, 301 Hammond, Westernport, Md. 21562
Filed Jun. 1, 1993, Ser. No. 8,930
Term of patent 14 years
U.S. Cl. D9—305



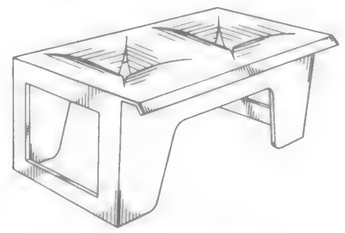
351,101
TUBE
Hans Linnér, Kalmar, Sweden, assignor to Norden Pac Development AB, Sweden
Division of Ser. No. 859,141, Mar. 27, 1992, Pat. No. Des. 344,888. This application Dec. 22, 1993, Ser. No. 16,705
Claims priority, application France, Jan. 20, 1992, 920316; Feb. 26, 1992, 921201
Term of patent 14 years
U.S. Cl. D9—302



351,102
BOTTLE
Tirso Olivares; Jeff Harding, both of Chicago, Ill., and Michael W. J. Godden, Doraville, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Filed Jan. 6, 1993, Ser. No. 3,433
Term of patent 14 years
U.S. Cl. D9—329



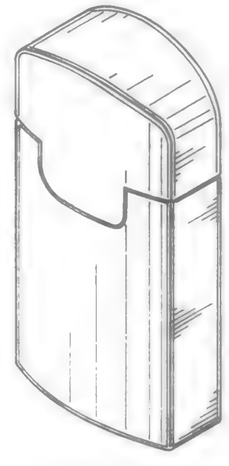
351,103
INVERTED BOTTLE HOLDER
John S. Reynolds, 1989 Angelico Cir., Stockton, Calif. 95207
Filed May 12, 1992, Ser. No. 883,404
Term of patent 14 years
U.S. Cl. D9—455



351,104
BOX WITH COLLECTIBLE CARD
Mort Kapp, 4141 W. Belmont #408, Chicago, Ill. 60641
Filed Feb. 5, 1993, Ser. No. 4,493
Term of patent 14 years
U.S. Cl. D9—423



351,105
COMBINED BOTTLE AND CAP
John A. Grip, Vernon, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Continuation of Ser. No. 965,516, Oct. 23, 1992, abandoned, which is a continuation of Ser. No. 357,436, May 26, 1989, abandoned. This application Oct. 26, 1993, Ser. No. 14,595
Term of patent 14 years
U.S. Cl. D9—529



351,106
ELECTROSTATIC DISCHARGE WRIST BAND
Thomas G. Frazier, Waterside Industrial Park, Box B113, R.D.2, New Hope, Pa. 18938
Filed Aug. 11, 1992, Ser. No. 928,964
Term of patent 14 years
U.S. Cl. D10—32



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351,107
WRISTWATCH
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Nov. 25, 1992, Ser. No. 1,939
Term of patent 14 years
U.S. Cl. D10—32



351,108
WRISTWATCH
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Nov. 25, 1992, Ser. No. 1,940
Term of patent 14 years
U.S. Cl. D10—32



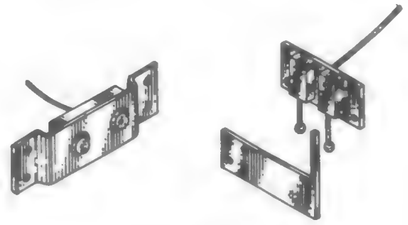
351,109
WRISTWATCH
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Nov. 25, 1992, Ser. No. 1,941
Term of patent 14 years
U.S. Cl. D10—32



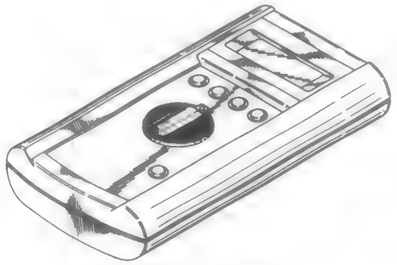
351,110
WRISTWATCH
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Nov. 25, 1992, Ser. No. 1,963
Term of patent 14 years
U.S. Cl. D10—32



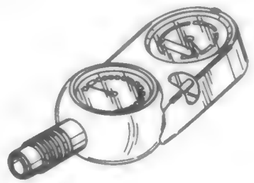
351,111
LEVEL CONDITION SENSING AND INDICATING UNIT FOR FORKLIFTS
John W. Sheakley, 709 Williamson Rd., Meadville, Pa. 16335
Filed Mar. 5, 1993, Ser. No. 5,584
Term of patent 14 years
U.S. Cl. D10—69



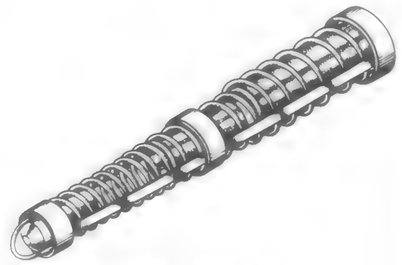
351,112
LOCAL AREA NETWORK TESTING INSTRUMENT
Steven W. Fisher, Edmonds, and Carl J. Ledbetter, Lynnwood, both of Wash., assignors to John Fluke Mfg. Co., Inc., Everett, Wash.
Filed Aug. 12, 1993, Ser. No. 11,716
Term of patent 14 years
U.S. Cl. D10—78



351,113
PIVOTAL DIVERS GAUGE
Frank Hermansen, Newport Beach, Calif., assignor to U.S. Divers Co., Inc., Santa Ana, Calif.
Filed Jan. 19, 1993, Ser. No. 3,956
Term of patent 14 years
U.S. Cl. D10—85



351,114
PITOT TUBE COVER
H. Burk Wright, Grand Junction, Colo., assignor to Western Filament, Inc., Grand Junction, Colo.
Filed Jan. 6, 1993, Ser. No. 3,427
Term of patent 14 years
U.S. Cl. D10—103



351,115
COMBINED GUIDE AND INDICATOR SIGNAL LIGHT FOR ATTACHMENT TO A TOWING BOAT TRAILER
Sostenes Valdez, 1305 Hudson St., Ogden, Utah 84404
Filed Feb. 11, 1993, Ser. No. 4,693
Term of patent 14 years
U.S. Cl. D10—114

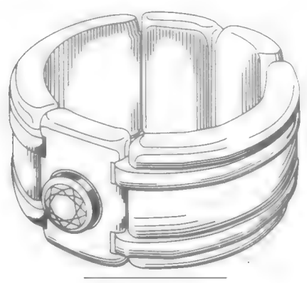


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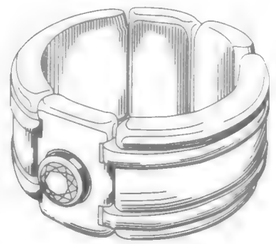
351,116
WATCH DIAL
Misato Kamei, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jul. 1, 1992, Ser. No. 907,439
Term of patent 14 years
U.S. Cl. D10—126



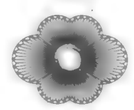
351,117
RING
Christiane Pandel, Chambesy, Switzerland, assignor to Rolex Watch U.S.A., Inc., New York, N.Y.
Filed Jan. 19, 1993, Ser. No. 3,852
Term of patent 14 years
U.S. Cl. D11—35



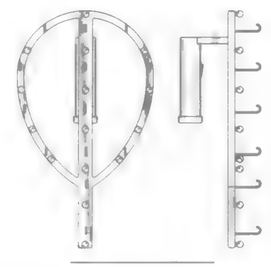
351,118
RING
Christiane Pandel, Chambesy, Switzerland, assignor to Rolex Watch U.S.A., Inc., New York, N.Y.
Continuation-in-part of Ser. No. 3,852, Jan. 19, 1993. This application Apr. 1, 1993, Ser. No. 6,591
Term of patent 14 years
U.S. Cl. D11—35



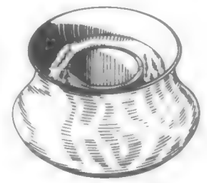
351,119
ORNAMENTAL BADGE FOR A WATCHBAND
Tami M. McMullin, 6406 Barre Rd., Loveland, Ohio 45140
Filed Oct. 4, 1993, Ser. No. 13,810
Term of patent 14 years
U.S. Cl. D11—96



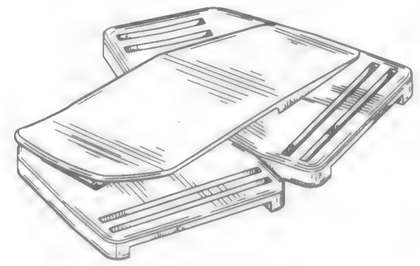
351,120
BRIDAL LIGHTED BOUQUET
Katie V. Webb, 4252 Hickory Grove Dr., Memphis, Tenn. 38141-6967
Filed Mar. 17, 1992, Ser. No. 853,169
Term of patent 14 years
U.S. Cl. D11—143



351,121
VASE FOR UMBRELLA TABLE
Sylvie Lauchlan, 41 Oxford, Baie d'Urfe, Quebec H9X 2T6, Canada
Filed Aug. 25, 1993, Ser. No. 12,153
Term of patent 14 years
U.S. Cl. D11—143



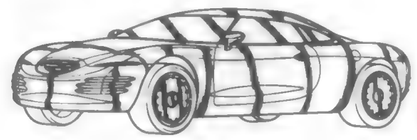
351,122
BUCKLE FOR A HARNESS OF A CLEARING SAW
Rolf G. Janeke, Huskvarna, Sweden, assignor to Aktiebolaget Electrolux, Sweden
Filed Aug. 28, 1992, Ser. No. 938,464
Claims priority, application Sweden, Mar. 2, 1992, 920455
Term of patent 14 years
U.S. Cl. D11—216



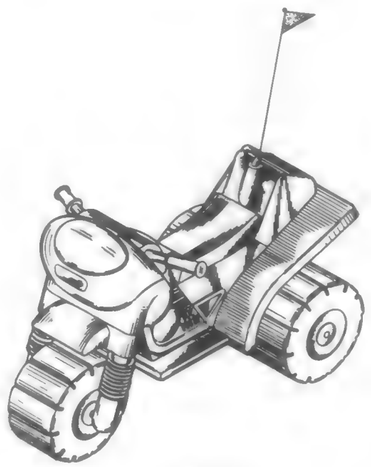
351,123
LOCOMOTIVE BRAKE MAINTENANCE LOCK-OUT CLAMP
Richard Graham, 898 Provinceline Rd., Allentown, N.J. 08501
Filed Apr. 29, 1993, Ser. No. 7,667
Term of patent 14 years
U.S. Cl. D12—51



351,124
AUTOMOBILE
Joseph S. Dehner, Auburn Hills, Mich.; John C. Sodano, Carlsbad, Calif.; Kevin R. Verduyn, Oceanside, Calif., and Thomas G. Tremont, San Diego, Calif., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Nov. 17, 1992, Ser. No. 1,536
Term of patent 14 years
U.S. Cl. D12—92



351,125
CHILDREN TRICYCLE
Ting-Hsing Chen, Tainan Hsien, Taiwan, assignor to Far Great Plastics Co., Ltd., Tainan Hsien, Taiwan
Filed Apr. 20, 1993, Ser. No. 6,646
Term of patent 14 years
U.S. Cl. D12—112

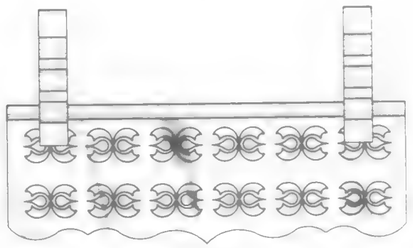


351,126
TIRE
Miroslav Manestar, Barberton, Ohio, assignor to Reebok International Ltd., Stoughton, Mass.
Filed May 13, 1993, Ser. No. 8,275
Term of patent 14 years
U.S. Cl. D12—146

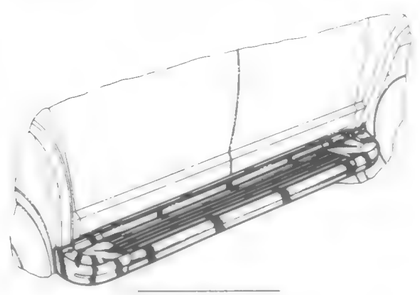


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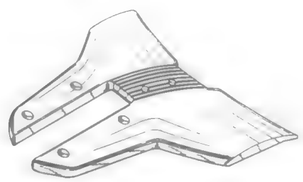
351,127
AUXILIARY SUN VISOR
Romeo C. Baylon, 6907 Prospect Ave., Bell, Calif. 90201
Filed Jan. 21, 1993, Ser. No. 3,912
Term of patent 14 years
U.S. Cl. D12—191



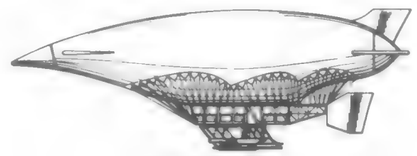
351,128
VEHICLE RUNNING BOARD
Donald R. Waddington, Huntsville, and Robert J. Boulard, HammerBay, both of Canada, assignors to Algonquin Industries International, Inc., Huntsville, Canada
Filed Apr. 19, 1993, Ser. No. 7,324
Term of patent 14 years
U.S. Cl. D12—203



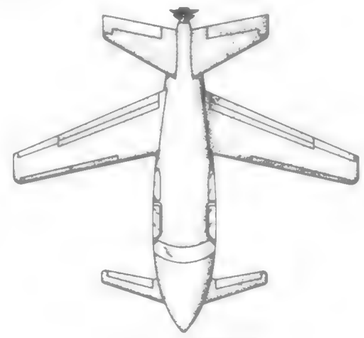
351,129
BOAT STABILIZER
Arthur R. Templeman, Overland Park, Kans., assignor to Marine Dynamics, Inc., Overland Park, Kans.
Continuation-in-part of Ser. No. 210,697, Jun. 23, 1988, Pat. No. D. 308,851. This appliation Feb. 6, 1990, Ser. No. 476,029
The portion of the term of this patent subsequent to Feb. 4, 2008, has been disclaimed
Term of patent 14 years
U.S. Cl. D12—317



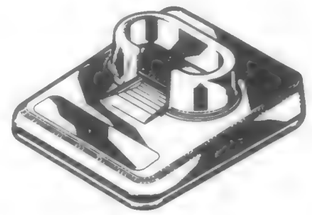
351,130
AMUSEMENT AIRSHIP
Timothy J. Delaney, Northridge, Calif., assignor to The Walt Disney Company, Burbank, Calif.
Filed Mar. 20, 1992, Ser. No. 855,338
Term of patent 14 years
U.S. Cl. D12—323



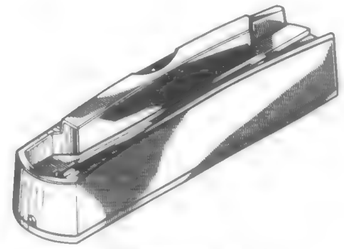
351,131
AIRPLANE
Kazuo Inoue, Tokyo, and Michimasa Fujino, Komae, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 6, 1992, Ser. No. 846,446
Term of patent 14 years
U.S. Cl. D12—331



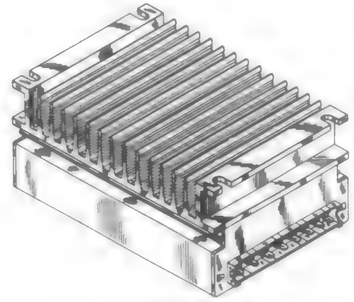
351,132
INTERFACE FOR A PAGER
Dwight D. Brooks, Boynton Beach; Ronald S. Friday, Jupiter, and Brian V. Conti, Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 5, 1992, Ser. No. 1,165
Term of patent 14 years
U.S. Cl. D13—108



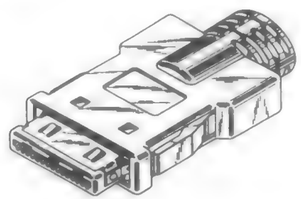
351,133
BATTERY CHARGER FOR A PERSONAL WIRELESS COMMUNICATOR
Polly S. Jungels-Butler, Gilberts, Ill.; Mark B. Friesen, and Daniel K. Harden, both of Palo Alto, Calif., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 8, 1993, Ser. No. 15,100
Term of patent 14 years
U.S. Cl. D13—108



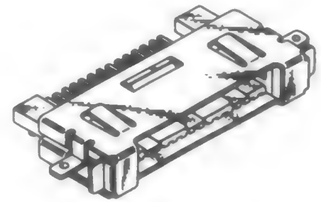
351,134
POWER CONVERTER CASING
Hansjuerg Hunziker, Embrach, Switzerland, assignor to Melcher AG, Uster, Switzerland
Filed Apr. 8, 1993, Ser. No. 6,911
Term of patent 14 years
U.S. Cl. D13—110



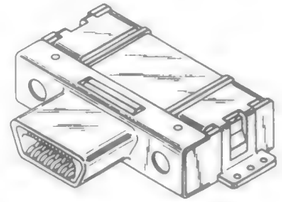
351,135
FEMALE CABLE CONNECTOR
Takashi Kurata, Tokyo, Japan, assignor to Honda Tsushin Kogyo Kabushiki Kaishacala, Tokyo, Japan
Filed Feb. 25, 1993, Ser. No. 5,483
Claims priority, application Japan, Aug. 31, 1992, 4-25785
Term of patent 14 years
U.S. Cl. D13—147



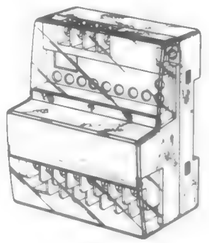
351,136
MALE CONNECTOR FOR PRINTED WIRING BOARD
Takashi Kurata, Tokyo, Japan, assignor to Honda Tsushin Kogyo Kabushiki Kaishacala, Tokyo, Japan
Filed Feb. 25, 1993, Ser. No. 5,485
Claims priority, application Japan, Aug. 31, 1992, 4-25786
Term of patent 14 years
U.S. Cl. D13—147



351,137
FEMALE CONNECTOR FOR SURFACE MOUNTING
Kiyoshi Sato, Tokyo, Japan, assignor to Honda Tsushin Kogyo Kabushiki Kaishacala, Tokyo, Japan
Filed Feb. 25, 1993, Ser. No. 5,486
Claims priority, application Japan, Aug. 31, 1992, 4-25788
Term of patent 14 years
U.S. Cl. D13—147

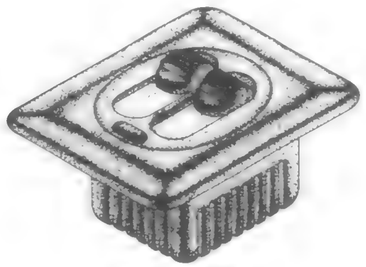


351,138
SUB-UNIT FOR DATA TRANSMISSION
Norio Shimizu, and Shingo Iwasawa, both of Tokyo, Japan, assignors to Koyo Electronics Industries Co., Ltd., Tokyo, Japan
Filed Feb. 2, 1993, Ser. No. 4,476
Claims priority, application Japan, Aug. 3, 1992, 4-23215; Aug. 3, 1992, 4-23216
Term of patent 14 years
U.S. Cl. D13—152

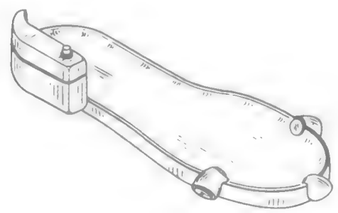


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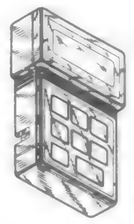
351,139
FAN SPEED AND LIGHT DIMMER CONTROLLER
Jen-Far Ko, Taichung, Taiwan, assignor to Wil Tec Precision Industry Co., Ltd., Taichung, Taiwan
Filed Jan. 11, 1993, Ser. No. 3,628
Term of patent 14 years
U.S. Cl. D13—162



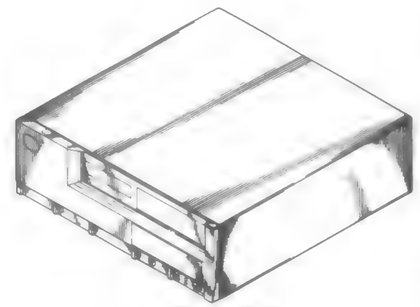
351,140
SHOE-ATTACHED REMOTE CONTROL FOR OPERATING A TROLLING MOTOR
Shayne A. Davis, P.O. Box 455, Madison, Nebr. 68748
Filed Jun. 29, 1993, Ser. No. 10,126
Term of patent 14 years
U.S. Cl. D13—167



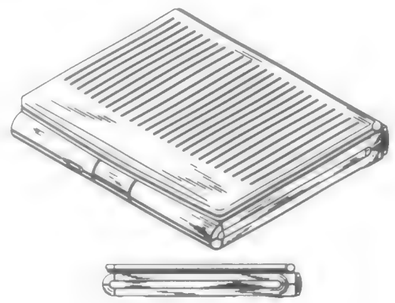
351,141
CAB MODULE FOR AN AGRICULTURAL IMPLEMENT CONTROL SYSTEM
John Van Akkeren, Milwaukee; Carter Thomas, Bay View; Rizaldy Mata, Shorewood; George Cicci, West Bend, and Steven J. Henderson, Hartford, all of Wis., assignors to Gehl Company, West Bend, Wis.
Filed May 28, 1993, Ser. No. 8,890
Term of patent 14 years
U.S. Cl. D13—168



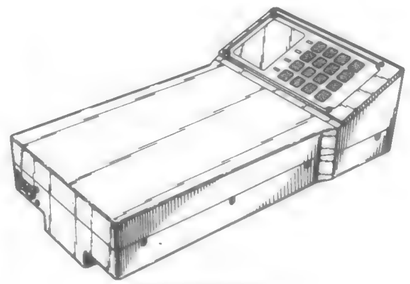
351,142
PERSONAL COMPUTER ENCLOSURE
Hunter T. Foy, Boca Raton; Joseph E. Jasinski, Delray Beach, both of Fla., and Richard F. Sapper, Milan, Italy, assignors to International Business Machines Corp., Armonk, N.Y.
Filed Sep. 15, 1992, Ser. No. 945,304
Term of patent 14 years
U.S. Cl. D14—100



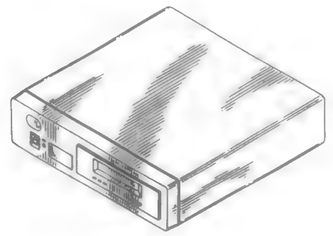
351,143
LAPTOP COMPUTER HOUSING
Robert D. Brunner, San Jose; Gavin R. Ivester, Palo Alto, and Lawrence Lam, Cupertino, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Oct. 14, 1992, Ser. No. 411
Term of patent 14 years
U.S. Cl. D14—106



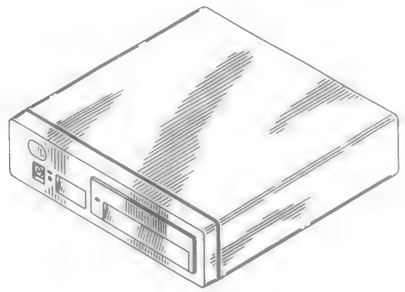
351,144
HANDHELD FINGER PRINT SCANNER FOR IMAGING AND CAPTURING A PHOTOGRAPHIC IMAGE
Glenn M. Fishbine, Eden Prairie, and Robert J. Withoff, Minnetonka, both of Minn., assignors to Digital Biometrics, Inc., Minnetonka, Minn.
Division of Ser. No. 828,704, Jan. 31, 1992, Pat. No. D. 348,445.
This application Dec. 7, 1993, Ser. No. 16,321
Term of patent 14 years
U.S. Cl. D14—107



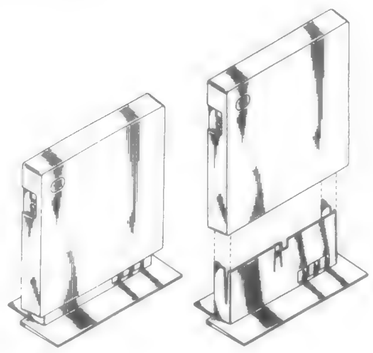
351,145
TAPE DRIVE FOR A DATA PROCESSING SYSTEM
David W. Hill, and Tim K. Murphy, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.N.Y.
Filed Aug. 27, 1992, Ser. No. 936,958
Term of patent 14 years
U.S. Cl. D14—108



351,146
MAGNETIC DISK DRIVE FOR A DATA PROCESSING SYSTEM
David W. Hill, and Tim K. Murphy, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 27, 1992, Ser. No. 936,959
Term of patent 14 years
U.S. Cl. D14—109

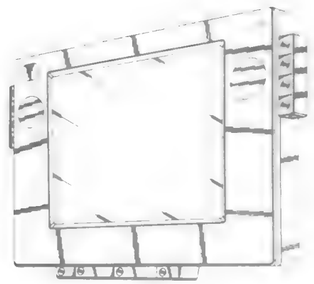


351,147
COMBINED TERMINAL CONTROLLER AND STAND FOR A DATA PROCESSING SYSTEM
David W. Hill, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 31, 1992, Ser. No. 939,621
Term of patent 14 years
U.S. Cl. D14—109

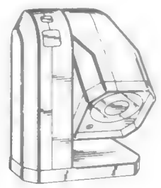


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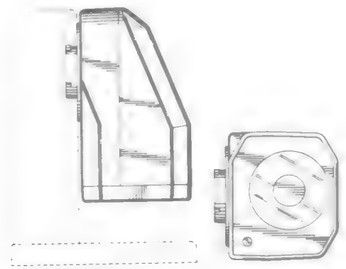
351,148
VIDEO DISPLAY
Timothy J. Rodd, Romsey, England, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 12, 1993, Ser. No. 5,321
Claims priority, application United Kingdom, Sep. 12, 1992, 2025641
Term of patent 14 years
U.S. Cl. D14—113



351,149
LASER SCANNER HOUSING
Craig H. Bontly; David L. Bolen, and Michael L. Duncan, all of Eugene, Oreg., assignors to Spectra-Physics Scanning Systems, Inc., Eugene, Oreg.
Filed Apr. 17, 1992, Ser. No. 870,701
Term of patent 14 years
U.S. Cl. D14—116

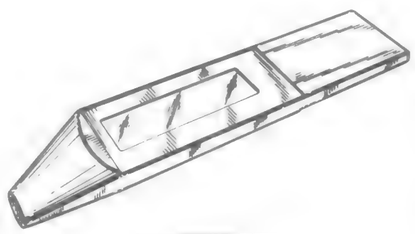


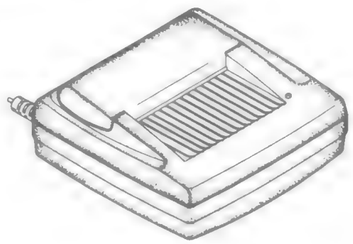
351,150
LASER SCANNER HEAD
Craig H. Bontly; David L. Bolen, and Michael L. Duncan, all of Eugene, Oreg., assignors to Spectra-Physics Scanning Systems, Inc., Eugene, Oreg.
Filed Apr. 17, 1992, Ser. No. 870,706
Term of patent 14 years
U.S. Cl. D14—116



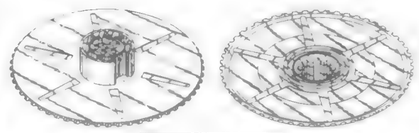
351,151
PORTABLE INTERROGATOR
Chinsoo Park, Rutherford, and Neil Campbell, Hasbrouck Heights, both of N.J., assignors to Bio Medic Data Systems, Inc., Maywood, N.J.
Filed Nov. 6, 1992, Ser. No. 1,274
Term of patent 14 years
U.S. Cl. D14—116

351,152
NAME CARD SCANNER
Ted Liu, Taipei, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan
Filed Nov. 18, 1992, Ser. No. 1,544
Term of patent 14 years
U.S. Cl. D14—116



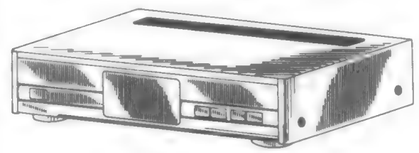


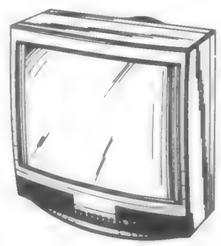
351,153
REEL-DOWN FOR A VIDEO CASSETTE
Seong-Han Kim; Sung-Pyo Hong, and Gi-Hoon Yang, all of Cheonan, Rep. of Korea, assignors to SKC Limited, Suwan, Rep. of Korea
Filed May 17, 1993, Ser. No. 8,479
Claims priority, application Rep. of Korea, Nov. 17, 1992, 92-19380
Term of patent 14 years
U.S. Cl. D14—122



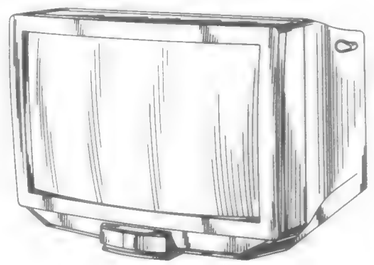
351,154
SATELLITE COMMUNICATION RECEIVING DEMODULATOR
Yoshio Fujino, Kobe, Japan, assignor to DX Antenna Company, Ltd., Kobe, Japan
Filed Apr. 10, 1992, Ser. No. 867,785
Term of patent 14 years
U.S. Cl. D14—125

351,155
TELEVISION SET
Seiji Usami; Yoshito Fujii, and Kazumi Osaka, all of Tochigi, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 9, 1993, Ser. No. 5,688
Claims priority, application Japan, Oct. 8, 1992, 4-29769
Term of patent 14 years
U.S. Cl. D14—126

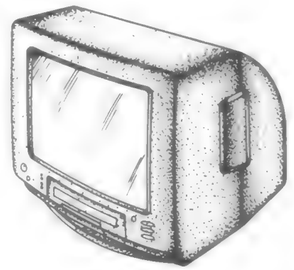




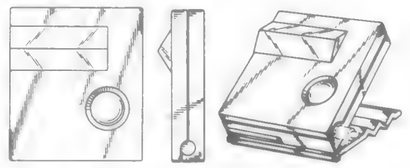
351,156
TELEVISION SET
Seiji Usami; Yoshito Fujii, and Keiichi Koyama, all of Tochigi, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jul. 8, 1993, Ser. No. 12,211
Term of patent 14 years
U.S. Cl. D14—126



351,157
COMBINED VIDEO TAPE RECORDER AND TELEVISION SET
Seiji Usami; Yoshito Fujii, and Yasushi Fukuda, all of Tochigi, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 16, 1993, Ser. No. 16,404
Claims priority, application Japan, Jul. 8, 1993, 5-21115
Term of patent 14 years
U.S. Cl. D14—129

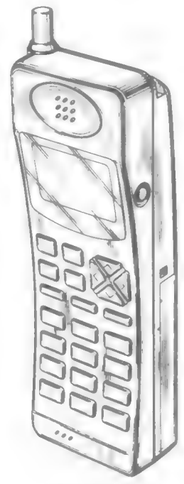


351,158
INFRARED DIGITAL TRANSCEIVER
Jim Sacherman, Palo Alto, and Dallas R. Grove, Mountain View, both of Calif., assignors to Photonics Corporation, Campbell, Calif.
Filed Mar. 10, 1992, Ser. No. 849,122
Term of patent 14 years
U.S. Cl. D14—137

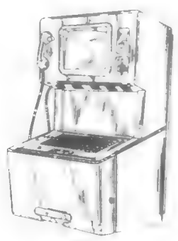


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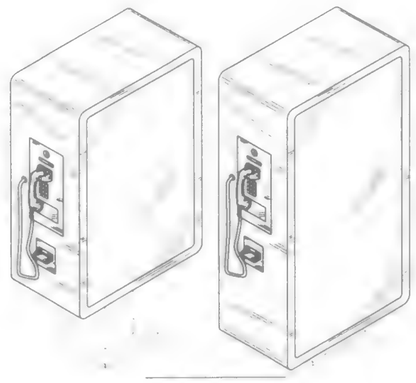
351,159
PORTABLE TELEPHONE
Takashi Nakano, Shiga, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Filed Jun. 3, 1993, Ser. No. 9,078
Claims priority, application Japan, Dec. 4, 1992, 4-35869
Term of patent 14 years
U.S. Cl. D14—138



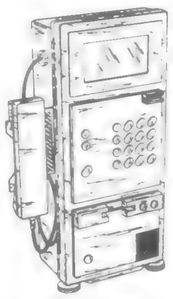
351,160
PUBLIC COMMUNICATION TERMINAL
John C. Massey, Olathe, and Daniel J. Toughey, Shawnee, both of Kans., assignors to Touchfax Information Systems, Inc., Lenexa, Kans.
Filed Oct. 14, 1992, Ser. No. 431
The portion of the term of this patent subsequent to Nov. 17, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—146



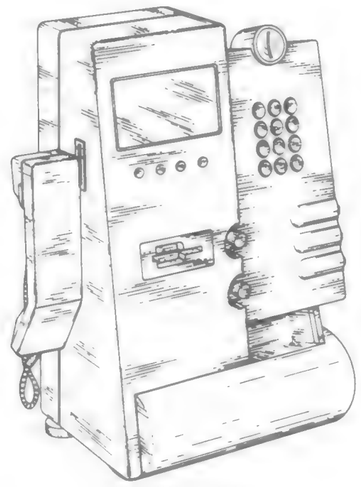
351,161
PAY TELEPHONE STATION WITH ADVERTISING PANELS
Jerry Perotka, 206 Hickory Tree La., St. Louis, Mo. 63011
Filed Jan. 5, 1993, Ser. No. 1,514
Term of patent 14 years
U.S. Cl. D14—146



351,162
PUBLIC TELEPHONE
Sun H. Kwon; Eun H. Kim, and Byung W. Chin, all of Seoul, Rep. of Korea, assignors to Korea Telecommunication Authority, Seoul, Rep. of Korea
Filed Nov. 9, 1992, Ser. No. 2,191
Claims priority, application Rep. of Korea, May 8, 1992, 92-7357
Term of patent 14 years
U.S. Cl. D14—146



351,163
PUBLIC TELEPHONE
Sun H. Kwon; Eun H. Kim, and Byung W. Chin, all of Seoul, Rep. of Korea, assignors to Korea Telecommunication Authority, Seoul, Rep. of Korea
Filed Nov. 9, 1992, Ser. No. 2,192
Claims priority, application Rep. of Korea, May 8, 1992, 92-7358
Term of patent 14 years
U.S. Cl. D14—146



351,164
CORDLESS PHONE BASE STATION
Craig F. Siddoway, Davie, Fla., and Khoo B. Lay, Johor Bakru, Malaysia, assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 26, 1993, Ser. No. 11,091
Term of patent 14 years
U.S. Cl. D14—149



351,165
TELEPHONE STATION
Stefan Hillenmayer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed May 7, 1993, Ser. No. 7,990
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1992, 9208364
Term of patent 14 years
U.S. Cl. D14—151

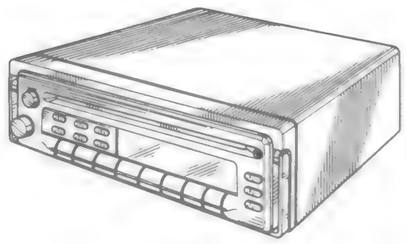


351,166
TELEPHONE TERMINAL
Chi S. Wan, London, United Kingdom, assignor to Amstrad Public Limited Company, Essex, United Kingdom
Filed Jul. 6, 1993, Ser. No. 10,442
Claims priority, application United Kingdom, Jan. 8, 1993, 2019237
Term of patent 14 years
U.S. Cl. D14—151

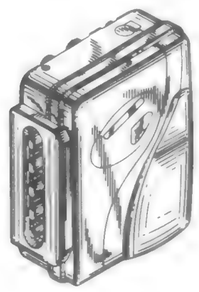


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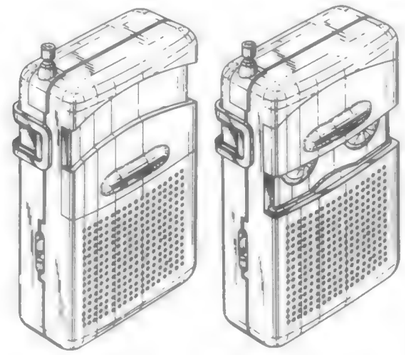
351,167
COMPACT DISK PLAYER
Jin S. Yun, Inchon, Rep. of Korea, assignor to Goldstar Co., Ltd, Seoul, Rep. of Korea
Filed Jan. 3, 1993, Ser. No. 9,076
Claims priority, application France, Dec. 30, 1992, 22533/1992
Term of patent 14 years
U.S. Cl. D14—156



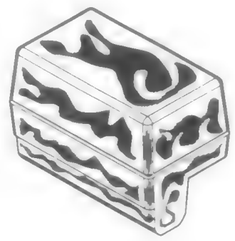
351,168
TAPE PLAYER
Shinichi Sumikawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sep. 14, 1992, Ser. No. 938,658
Claims priority, application Japan, Apr. 21, 1992, 4-11798
Term of patent 14 years
U.S. Cl. D14—165



351,169
RADIO
Lai T. Leung, Aberdeen, Hong Kong, assignor to Eric Beare Associates Ltd., Kowloon, Hong Kong
Filed May 19, 1993, Ser. No. 8,611
Claims priority, application United Kingdom, Nov. 19, 1992, 2027200
Term of patent 14 years
U.S. Cl. D14—188



351,170
INTERFACE FOR A PORTABLE COMMUNICATION RECEIVER
Scott J. Hanlon, Lantana, and Anthony M. Potts, Lauderdale Lakes, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 12, 1993, Ser. No. 10,615
Term of patent 14 years
U.S. Cl. D14—191



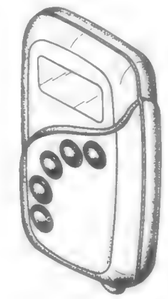
351,171
HEADPHONE
Shintaro Tanaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 20, 1992, Ser. No. 915,195
Claims priority, application Japan, Jan. 29, 1992, 4-2137
Term of patent 14 years
U.S. Cl. D14—205



351,172
HEADPHONE
Mitsuhiro Nakamura, and Hidefumi Goto, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Aug. 12, 1992, Ser. No. 928,241
Term of patent 14 years
U.S. Cl. D14—205



351,173
REMOTE CONTROLLER
Tsun-Tsai Yeh, No. 476, Ming-Hu Rd., Hsinchu City, Taiwan
Filed Apr. 19, 1993, Ser. No. 7,303
Term of patent 14 years
U.S. Cl. D14—218



351,174
ROOF DRILL BIT FOR MINING MACHINE
William J. Brady, 1767 Wishingwell Dr., Creve Coeur, Mo. 63141
Continuation-in-part of Ser. No. 706,113, May 23, 1991, Pat. No. D. 340,248. This application Jul. 19, 1993, Ser. No. 10,851
Term of patent 14 years
U.S. Cl. D15—139



351,175
FRAME FOR EYEGLASSES
Linda Celentano, 325 Haywood Dr., Paramus, N.J. 07653
Filed Apr. 8, 1991, Ser. No. 681,384
Term of patent 14 years
U.S. Cl. D16—317

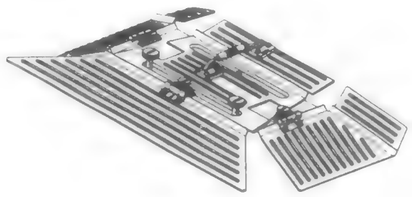


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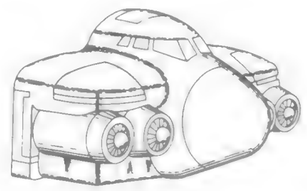
351,176
DARKFIELD LOUPE
Richard C. Agnew, Norwalk, and Robert Van Den Heuvel, Culver City, both of Calif., assignors to GIA Gem Institute Corporation, Santa Monica, Calif.
Filed Oct. 27, 1992, Ser. No. 854
Term of patent 14 years
U.S. Cl. D16—135



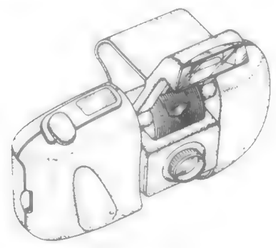
351,177
COMBINED STUDIO AND FIELD TELEVISION CAMERA LENS SHADE
Blaine Lentz, 21900 Marylee St. #262, Woodland Hills, Calif. 91367, and C. Martin Smith, 10978 Ayers Ave., Los Angeles, Calif. 90064
Filed Feb. 20, 1991, Ser. No. 658,371
The portion of the term of this patent subsequent to Feb. 4, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D16—136



351,178
CAMERA CASING
Ron Pijlman, Bothell, Wash., assignor to ID Traders Limited, Kowloon, Hong Kong
Filed May 18, 1992, Ser. No. 884,570
Term of patent 14 years
U.S. Cl. D16—200



351,179
CAMERA WITH FLIP-UP FLASH
Joseph J. Schappler, Bedford, N.H., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 17, 1992, Ser. No. 948,968
Term of patent 14 years
U.S. Cl. D16—209



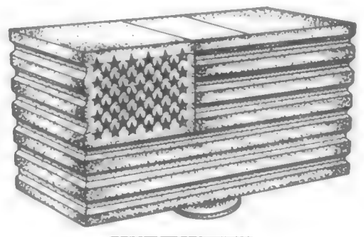
351,180
PORTABLE PLATFORM FOR CAMERAS AND REMOTE SENSING EQUIPMENT
Shawn P. O'Neal, 9536 S. Spring Hollow La., Germantown, Tenn. 38139, and J. Steven Garner, 1881 York St., Memphis, Tenn. 38104
Filed Sep. 23, 1992, Ser. No. 949,115
Term of patent 14 years
U.S. Cl. D16—242



351,181
ERGONOMIC GUITAR
Willis Whiteside, 527 Chase Common Dr., Norcross, Ga. 30071
Filed Jan. 15, 1993, Ser. No. 3,800
Term of patent 14 years
U.S. Cl. D17—14



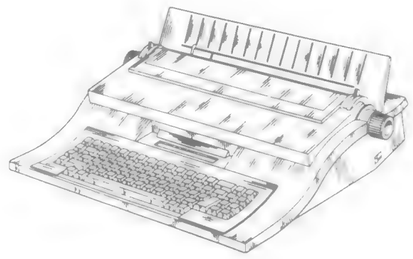
351,182
MUSIC BOX
Allen B. Mage, P.O. Box 42801, Los Angeles, Calif. 90042
Filed May 15, 1991, Ser. No. 701,958
Term of patent 14 years
U.S. Cl. D17—24



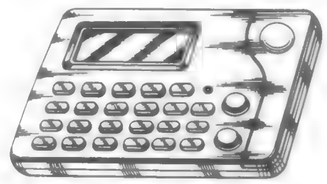
351,183
WORD PROCESSOR
Ryoichi Ishiura, Matsudo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 21, 1992, Ser. No. 948,884
Claims priority, application Japan, Jun. 29, 1992, 4-19007
Term of patent 14 years
U.S. Cl. D18—1



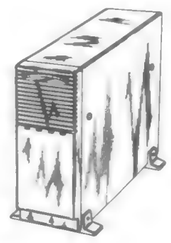
351,184
ELECTRONIC TYPEWRITER
Mario Bellini, Milan, Italy, assignor to Ing. C. Olivettie & C., S.p.A., Ivrea, Italy
Filed Jan. 5, 1993, Ser. No. 3,203
Claims priority, application Italy, Jul. 13, 1992, TO02 0 000157
Term of patent 14 years
U.S. Cl. D18—1



351,185
COMBINED ELECTRONIC CALCULATOR AND BATTERY TESTER
Makoto Matsuda, Matsudo, and Yuichi Onumata, Ome, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jun. 25, 1992, Ser. No. 903,879
Term of patent 14 years
U.S. Cl. D18—2

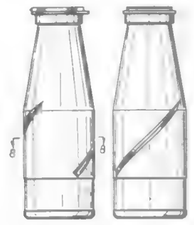


351,186
FUNCTION EXTENDING MACHINE FOR ELECTRONIC COPYING MACHINE
Nobuyuki Agata, Soka, and Takeshi Komada, Yokosuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 6, 1992, Ser. No. 127
Claims priority, application Japan, Apr. 17, 1992, 4-11545
Term of patent 14 years
U.S. Cl. D18—40

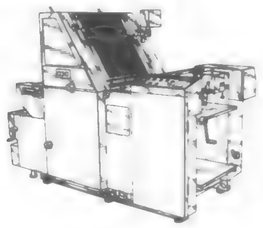


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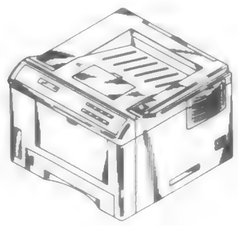
351,187
TONER CONTAINER FOR A COPYING MACHINE
Takayuki Suga, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 9, 1992, Ser. No. 2,467
Claims priority, application Japan, Oct. 8, 1992, 4-29224
Term of patent 14 years
U.S. Cl. D18—43



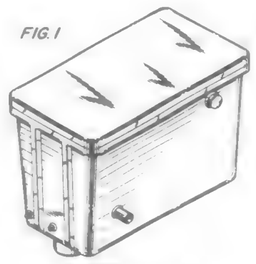
351,188
OFFSET PRINTING MACHINE
Etsuo Hiraishi, Tokyo; Hideo Aoyama, and Katsushi Hirokawa, both of Hiroshima, all of Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Dec. 17, 1992, Ser. No. 2,717
Claims priority, application Japan, Jun. 19, 1992, 4-18228
The portion of the term of this patent subsequent to Sep. 13, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—53



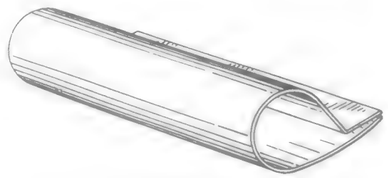
351,189
PRINTER FOR A COMPUTER
Mahina Yamaguchi, Chiba, and Katsumi Kishi, Kanagawa, both of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan
Filed Nov. 16, 1993, Ser. No. 15,385
Claims priority, application Japan, Sep. 2, 1993, 5-26434
Term of patent 14 years
U.S. Cl. D18—55



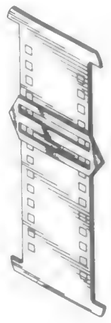
351,190
INK CARTRIDGE
Keiichi Oshima; Seiji Mochizuki; Masanori Yoshida, and Masahiro Nakamura, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Mar. 16, 1993, Ser. No. 5,876
Claims priority, application Japan, Sep. 16, 1992, 4-27232
Term of patent 14 years
U.S. Cl. D18—56



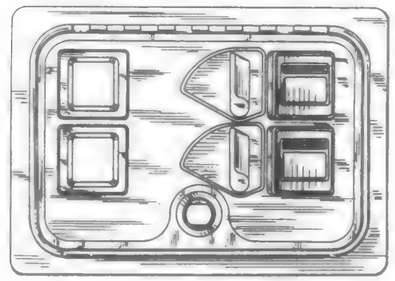
351,191
PRINTING SCREEN FRAME PROTECTOR
Ervin V. Barocas, 1197 Ragley Hall Rd., Atlanta, Ga. 30319, and Lewis C. McLemore, III, 702 Park St., Port Barre, La. 70577
Filed Mar. 18, 1993, Ser. No. 5,944
Term of patent 14 years
U.S. Cl. D18—56



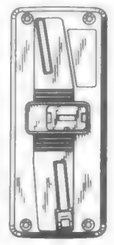
351,192
COMBINED BOOK MARK AND LINE INDICATOR
Milton L. Klein, 30 E. 208th St., Bronx, N.Y. 10467
Filed Jan. 2, 1992, Ser. No. 816,053
Term of patent 14 years
U.S. Cl. D19—34



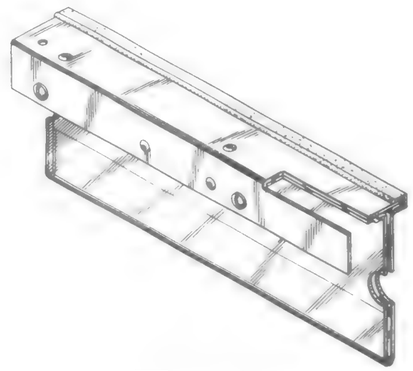
351,193
COIN DOOR BRACKET FOR A VENDING MACHINE
Hiroshi Abe, Tokyo, Japan, assignor to Asahi Seiko Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 29, 1992, Ser. No. 953,575
Claims priority, application Japan, Apr. 1, 1992, 4-9646
Term of patent 14 years
U.S. Cl. D20—9



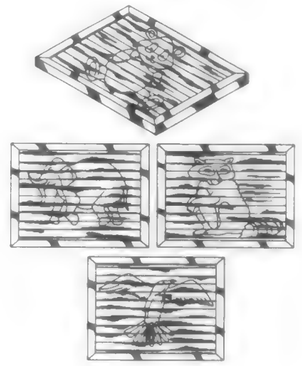
351,194
FRONT PLATE UNIT FOR A COIN OR TOKEN RECEIVING APPARATUS
Alan Gorst; Gary Anderson, and Dennis Wood, all of Lancashire, England, assignors to Coin Controls Limited, Royton, England
Filed Apr. 19, 1993, Ser. No. 7,330
Claims priority, application United Kingdom, Oct. 26, 1992, 9226082
Term of patent 14 years
U.S. Cl. D20—9



351,195
ILLUMINABLE TAXI CAB RATE CARD HOLDER
Moshe Altman, New York, N.Y., assignor to MetroMeter Shop, Inc., N.Y.
Filed Jan. 25, 1994, Ser. No. 18,247
Term of patent 14 years
U.S. Cl. D20—40

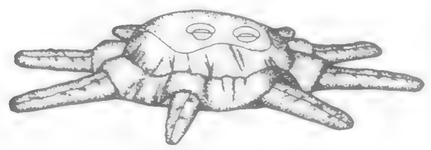


351,196
PUZZLE
Dominick Baray, 328 Angola By The Bay, Lewes, Del. 19958
Filed Mar. 5, 1993, Ser. No. 5,540
Term of patent 14 years
U.S. Cl. D21—104

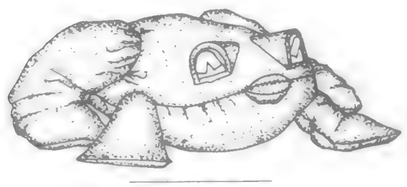


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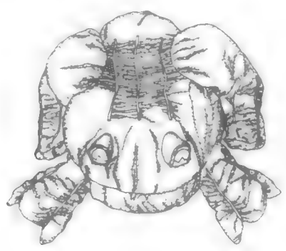
351,197
STUFFED ANIMAL
Bertrand Vigeron, Paris, France, assignor to Wesco, S.A., Cerizay, France
Filed May 13, 1993, Ser. No. 8,293
Claims priority, application France, Jan. 4, 1993, 0930023
Term of patent 14 years
U.S. Cl. D21—157



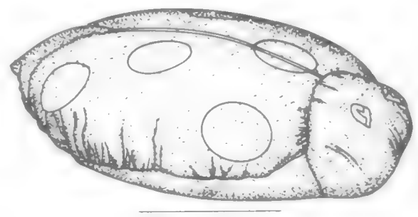
351,198
STUFFED ANIMAL
Bertrand Vigneron, Paris, France, assignor to Wesco, S.A., Cerizay, France
Filed May 13, 1993, Ser. No. 8,294
Claims priority, application France, Jan. 4, 1993, 0930023
Term of patent 14 years
U.S. Cl. D21—158



351,199
STUFFED ANIMAL
Bertrand Vigneron, Paris, France, assignor to Wesco, S.A., Cerizay, France
Filed May 13, 1993, Ser. No. 8,295
Claims priority, application France, Jan. 4, 1993, 0930023
Term of patent 14 years
U.S. Cl. D21—158



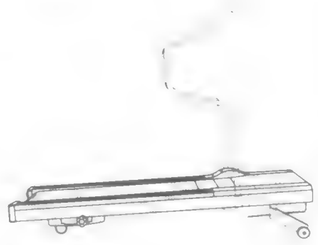
351,200
STUFFED ANIMAL
Bertrand Vigneron, Paris, France, assignor to Wesco, S.A., Cerizay, France
Filed May 13, 1993, Ser. No. 8,296
Claims priority, application France, Jan. 4, 1993, 0930023
Term of patent 14 years
U.S. Cl. D21—185



351,201
END PIECE FOR A SLIDING EXERCISER
E. Kevin Schopfer, Weston, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Mar. 30, 1993, Ser. No. 6,461
Term of patent 14 years
U.S. Cl. D21—191



351,202
TREADMILL BASE
Curt G. Bingham, Salt Lake City, Utah, assignor to Proform Fitness Products, Inc., Logan, Utah
Continuation-in-part of Ser. No. 954,299, Sep. 30, 1992, abandoned, and Ser. No. 13,637, Feb. 4, 1993, Pat. No. 5,282,776. This application Apr. 8, 1993, Ser. No. 6,863
Term of patent 14 years
U.S. Cl. D21—192



351,203
RIBBED DODGE BALL
John N. Handy, Long Beach, Calif., assignor to Mattel, Inc., El Segundo, Calif.
Filed Aug. 15, 1991, Ser. No. 747,225
Term of patent 14 years
U.S. Cl. D21—205



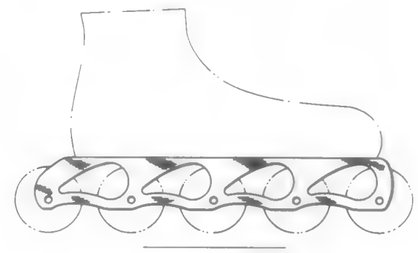
351,204
GOLF TEE
Lars Eriksson, Sveagatan 50, S-361 31 Emmaboda, Sweden
Filed Jun. 21, 1993, Ser. No. 9,759
Claims priority, application Sweden, Dec. 21, 1992, 92-2695
Term of patent 14 years
U.S. Cl. D21—208



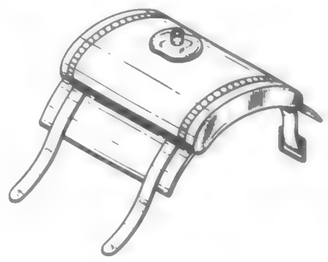
351,205
TENNIS RACKET
Patrick Stennett, Springfield, Mass., assignor to Lisco, Inc., Tampa, Fla.
Filed Feb. 4, 1993, Ser. No. 4,412
Term of patent 14 years
U.S. Cl. D21—212



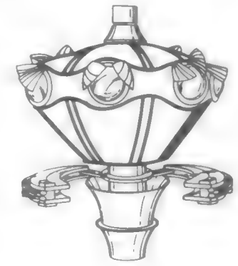
351,206
WHEEL BRACKET FOR IN LINE ROLLER SKATE BOOT
Michael Galarde, 1520 S. Ridge La., Cincinnati, Ohio 45231, and William Galarde, 1540 Elkton Pl., Cincinnati, Ohio 45224
Filed Sep. 24, 1992, Ser. No. 951,411
Term of patent 14 years
U.S. Cl. D21—226



351,207
WRIST-WORN AIR TANK FOR SCUBA DIVERS
Mark Chestnut, 617 Chestnut Rd., Myrtle Beach, S.C. 29572
Filed Nov. 20, 1992, Ser. No. 1,679
Term of patent 14 years
U.S. Cl. D21—236

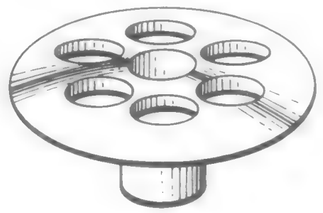


351,208
ROBOTIC FIGURE
Timothy J. Delaney, Northridge, and Mark W. Stutz, Calabasas, both of Calif., assignors to The Walt Disney Company, Burbank, Calif.
Filed Apr. 3, 1992, Ser. No. 864,913
Term of patent 14 years
U.S. Cl. D21—240



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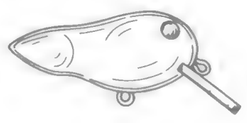
351,209
KISSER FOR ARCHERY BOW
Charles A. Saunders, Columbus, Nebr., assignor to Saunders Archery Co., Columbus, Nebr.
Filed Nov. 23, 1992, Ser. No. 1,737
Term of patent 14 years
U.S. Cl. D22—107



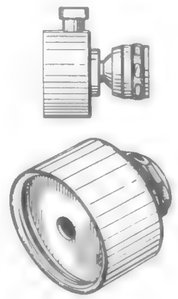
351,210
COMMEMORATIVE KNIFE
Jorma J. Koskinen, Kalliokuja 6, 21200 Raisio, Finland
Filed Sep. 21, 1992, Ser. No. 948,995
Term of patent 14 years
U.S. Cl. D22—118



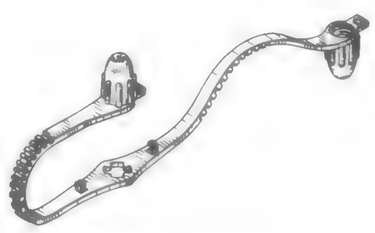
351,211
FISHING LURE
Jim Gowing, Altus, Ark., assignor to EBSCO Industries, Inc., Birmingham, Ala.
Filed Oct. 15, 1992, Ser. No. 480
Term of patent 14 years
U.S. Cl. D22—133



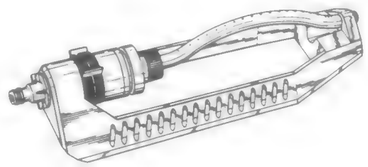
351,212
FITTING FOR A SHOWER HEAD
Jerome Warshawsky, Hewlett Harbor, N.Y., assignor to I. W. Industries, Inc., Melville, N.Y.
Filed Nov. 27, 1992, Ser. No. 1,998
Term of patent 14 years
U.S. Cl. D23—213



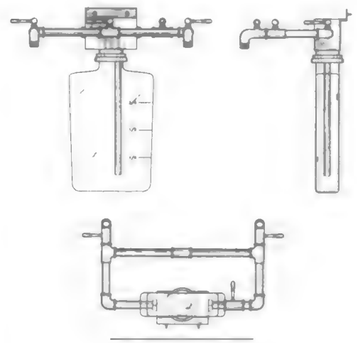
351,213
MULTIPLE NOZZLE ON A FLEXIBLE STRAP FOR A GARDEN SPRAYER
Robert C. Hudson, Jr., Northbrook, Ill., assignor to H. D. Hudson Manufacturing Company, Chicago, Ill.
Filed Jul. 19, 1993, Ser. No. 10,809
Term of patent 14 years
U.S. Cl. D23—213



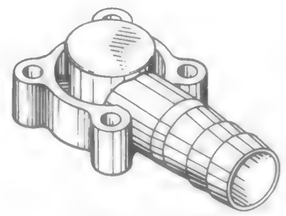
351,214
OSCILLATING SPRINKLER
Franco Clivio, Erlenbach, Switzerland, assignor to Gardena Kress & Kastner GmbH, Fed. Rep. of Germany
Filed Jan. 6, 1994, Ser. No. 17,125
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1993, 9305346
Term of patent 14 years
U.S. Cl. D23—216



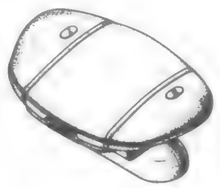
351,215
COMBINED MIXING AND DISPENSING UNIT FOR GRASS FERTILIZER
Jose A. Camara, 17 Valewood Drive, Caledon East, Ontario, Canada L0N,1E0
Filed Oct. 30, 1992, Ser. No. 977
Term of patent 14 years
U.S. Cl. D23—225



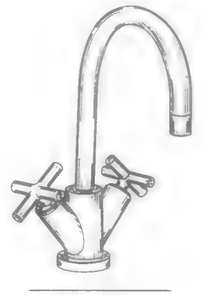
351,216
RIGHT ANGLE VALVE END CONNECTION
James A. Millett, Ramona, Calif., assignor to R. C. Products Corp., Rancho Santa Margarita, Calif.
Filed Jan. 13, 1992, Ser. No. 819,943
Term of patent 14 years
U.S. Cl. D23—233



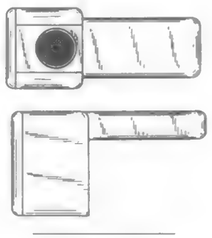
351,217
FAUCET
Wan-Pao Lu, Taipei City, Taiwan, assignor to Hocheng Pottery Mfg. Co., Ltd., Taipei City, Taiwan
Filed Nov. 30, 1992, Ser. No. 2,037
Term of patent 14 years
U.S. Cl. D23—241



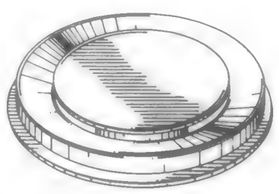
351,218
WATER FAUCET
Dieter Sieger, Sassenberg, Fed. Rep. of Germany, assignor to Aloys F. Dornbracht GmbH & Co. KG, Iserlohn, Fed. Rep. of Germany
Filed Mar. 5, 1993, Ser. No. 5,503
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1992, M9206452.3
Term of patent 14 years
U.S. Cl. D23—241



351,219
FLUSH VALVE SENSOR CASE
Robert E. Saadi, and Brian N. Creager, both of Erie, Pa., assignors to Zurn Industries, Inc., Erie, Pa.
Filed Oct. 12, 1993, Ser. No. 14,030
Term of patent 14 years
U.S. Cl. D23—249

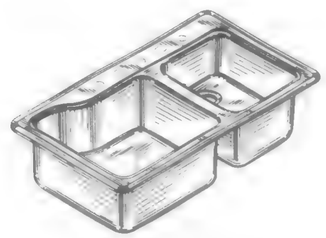


351,220
SWIMMING POOL DRAIN
Steven R. Barnes, Phoeniz, Ariz., assignor to Caretaker Systems, Inc., Scottsdale, Ariz.
Filed Jul. 6, 1992, Ser. No. 909,433
Term of patent 14 years
U.S. Cl. D23—260

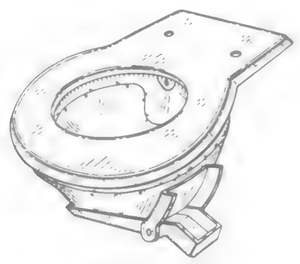


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351,221
KITCHEN SINK
David R. Berge, Saint Lazare, and Jeff P. Walz, Toronto, both of Canada, assignors to American Standard Inc., New York, N.Y.
Division of Ser. No. 691,589, Apr. 23, 1991, Pat. No. Des. 346,014. This application Dec. 9, 1993, Ser. No. 16,193
Term of patent 14 years
U.S. Cl. D23—290



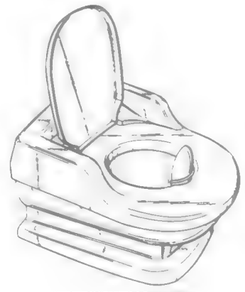
351,222
TOILET BOWL
Randy R. Zenner, Maple Grove, Minn., assignor to Satellite Industries, Inc., Plymouth, Minn.
Filed Feb. 26, 1993, Ser. No. 5,202
Term of patent 14 years
U.S. Cl. D23—295



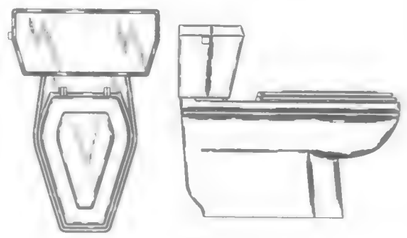
351,223
CHILD'S TOILET TRAINER
Robert D. Wise; Joel W. Wennerstrom, both of Akron, Ohio, and Peter J. Myers, Plano, Tex., assignors to Century Products Company, Macedonia, Ohio
Filed Oct. 1, 1993, Ser. No. 13,765
Term of patent 14 years
U.S. Cl. D23—296



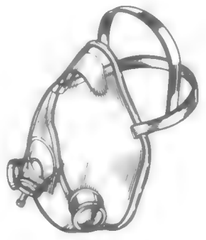
351,224
CHILD'S TOILET TRAINER
Robert D. Wise, Akron, and Hope E. Wentling, Bath, both of Ohio, assignors to Century Products Company, Macedonia, Ohio
Filed Oct. 1, 1993, Ser. No. 13,766
Term of patent 14 years
U.S. Cl. D23—296



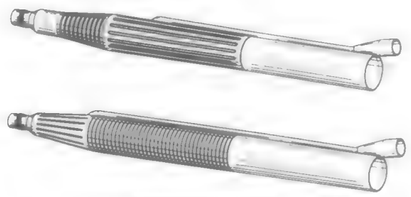
351,225
TOILET
Paul J. Boisvert, 6170 rue Primeau, Laval - Québec, Canada H0A 1G0
Filed Feb. 18, 1992, Ser. No. 839,215
Term of patent 14 years
U.S. Cl. D23—301



351,226
ADJUSTABLE OXYGEN FACE MASK
Regina K. Parvatharaj, 22773 SW. 65th Ave., Boca Raton, Fla. 33428
Filed Oct. 20, 1993, Ser. No. 14,367
Term of patent 14 years
U.S. Cl. D24—110



351,227
SURGICAL HANDPIECE SHELL
Douglas M. Patton, Irvine, and Steven T. Ewing, South Pasadena, both of Calif., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.
Filed Feb. 9, 1993, Ser. No. 4,594
Term of patent 14 years
U.S. Cl. D24—112



351,228
COMBINED CONTAINER AND HANGING TAB
Gerhard H. Weiler, South Barrington, and Henry Komendowski, Des Plaines, both of Ill., assignors to Automatic Liquid Packaging, Inc., Woodstock, Ill.
Filed Mar. 22, 1993, Ser. No. 6,057
Term of patent 14 years
U.S. Cl. D24—118



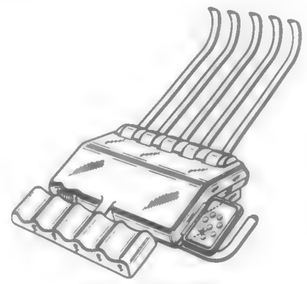
351,229
SURGICAL SOLUTION APPLICATOR
David F. Wirt, Oak Grove Heights, Wis., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Nov. 23, 1992, Ser. No. 1,761
Term of patent 14 years
U.S. Cl. D24—119



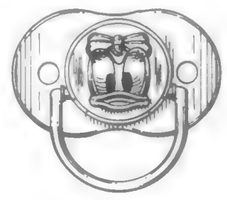
351,230
FILTER FOR I.V. ADMINISTRATION
Irina A. Rakin, Buffalo Grove; Steven K. Neuenfeldt, Vernon Hills; Birendra K. Lal, Lake Zurich, and Joseph B. Loria, Cary, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.
Filed Jun. 30, 1992, Ser. No. 907,194
Term of patent 14 years
U.S. Cl. D24—162



351,231
CONTROL UNIT FOR DENTAL INSTRUMENTS
George K. Austin, Jr., Newberg; Carl G. Nordstrom, Lake Oswego; Bruno Zadnik, Aloha, and David L. Curtis, Tigard, all of Oreg., assignors to A-Dec, Inc., Newberg, Oreg.
Filed Feb. 2, 1993, Ser. No. 5,493
Term of patent 14 years
U.S. Cl. D24—177

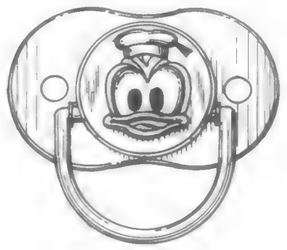


351,232
PACIFIER
Meredith Spence, Jr., Cuyahoga Falls, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed Aug. 27, 1993, Ser. No. 12,210
Term of patent 14 years
U.S. Cl. D24—195



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351,233
PACIFIER
Meredith Spence, Jr., Cuyahoga Falls, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed Aug. 27, 1993, Ser. No. 12,230
Term of patent 14 years
U.S. Cl. D24—195



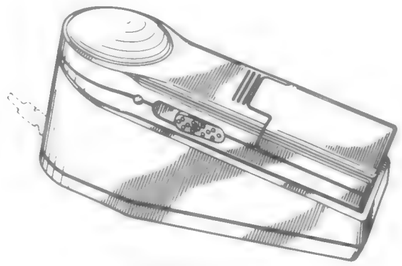
351,234
BODY COOLING JACKET
Bradford R. Coyle, 913 Chestnut Hill Rd., Marietta, Ga. 30064
Filed Nov. 9, 1992, Ser. No. 1,298
Term of patent 14 years
U.S. Cl. D24—206



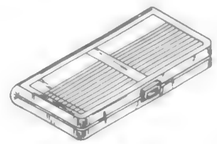
351,235
ACUPRESSURE STIMULATOR
Tae W. Yoo, 807, 1-Dong, Hanyang Apt. San 189-1, Seocho-dong, Seocho-ku, Seoul, Rep. of Korea
Filed Jun. 8, 1990, Ser. No. 534,859
Claims priority, application Rep. of Korea, Feb. 21, 1990, 90-1594
Term of patent 14 years
U.S. Cl. D24—211

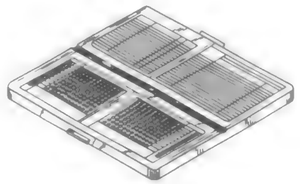


351,236
COMBINED HEAT MASSAGER AND RECEPTACLE
Wolfgang Held, Hard, Austria, assignor to Metronic Electronic GmbH, Fed. Rep. of Germany
Filed May 5, 1992, Ser. No. 878,889
Claims priority, application Fed. Rep. of Germany, Jan. 10, 1992, M9200106.8
Term of patent 14 years
U.S. Cl. D24—215

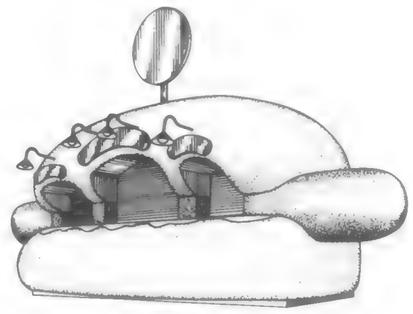


351,237
POCKET MEDICATION CONTROLLER
Sydney Dock, 1215 12th St., Northfield, Ill. 60093
Filed Aug. 10, 1992, Ser. No. 926,954
Term of patent 14 years
U.S. Cl. D24—229

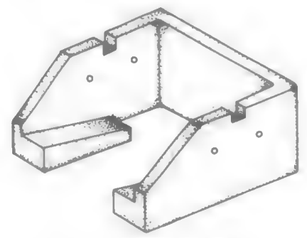




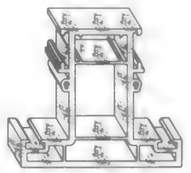
351,238
FAST FOOD STAND
John Liotine, 24 Dodge St., Arlington, Mass. 02174
Filed May 13, 1993, Ser. No. 8,298
Term of patent 14 years
U.S. Cl. D25—10



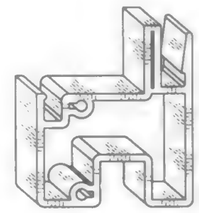
351,239
EARTH-RETAINING MODULE
Oskar H. Klenert, P.O. Box 249, N. Easton, Mass. 02356-0249
Filed Dec. 23, 1993, Ser. No. 16,807
Term of patent 14 years
U.S. Cl. D25—113



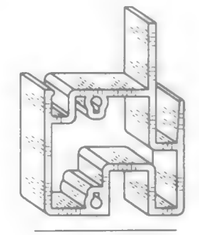
351,240
WINDOW COMPONENT EXTRUSION
Douglas L. Cole, Seattle, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Apr. 22, 1993, Ser. No. 7,428
Term of patent 14 years
U.S. Cl. D25—122



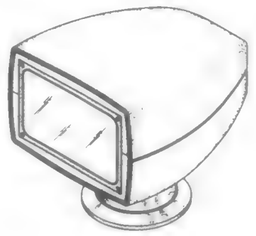
351,241
WINDOW COMPONENT EXTRUSION
Douglas L. Cole, Seattle, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Apr. 22, 1993, Ser. No. 7,426
Term of patent 14 years
U.S. Cl. D25—124



351,242
WINDOW COMPONENT EXTRUSION
Douglas L. Cole, Seattle, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Apr. 22, 1993, Ser. No. 7,427
Term of patent 14 years
U.S. Cl. D25—124

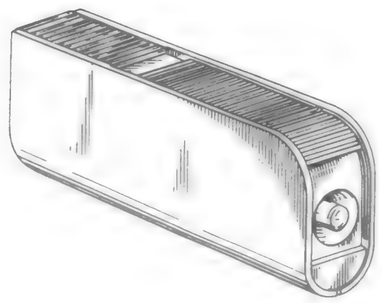


351,243
REMOTE CONTROLLED SINGLE LAMP SEARCHLIGHT FOR VEHICLE OR BOAT
Jack L. Williams, Orange, Calif., and James G. Budd, Calgary, Canada, assignors to ITT Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 5,713, Mar. 10, 1993, abandoned. This application Sep. 3, 1993, Ser. No. 12,559
Term of patent 14 years
U.S. Cl. D26—28



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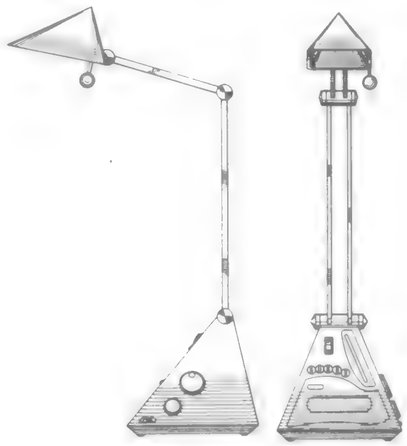
351,244
FLASHLIGHT
Peter K. C. Lee, Kowloon, Hong Kong, assignor to Hip Shing Fat Co., Ltd., Kowloon, Hong Kong
Filed Mar. 31, 1993, Ser. No. 6,545
Claims priority, application United Kingdom, Feb. 19, 1993, 2029232
Term of patent 14 years
U.S. Cl. D26—37



351,245
FLASHLIGHT
Anthony Maglica, Anaheim, Calif., assignor to Mag Instrument, Inc., Ontario, Calif.
Filed Jan. 23, 1992, Ser. No. 826,166
Term of patent 14 years
U.S. Cl. D26—49



351,246
COMBINED AJUSTABLE DESK LAMP AND RADIO
Se-Kit Yuen, Hong Kong, Hong Kong assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Feb. 8, 1993, Ser. No. 4,525
Claims priority, application United Kingdom, Sep. 21, 1992, 2025830
Term of patent 14 years
U.S. Cl. D26—52

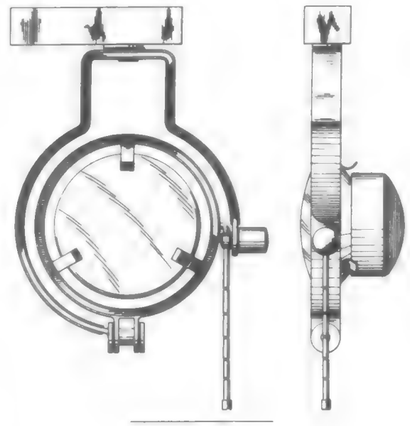


D. 351,247
Patent Not Issued For This Number

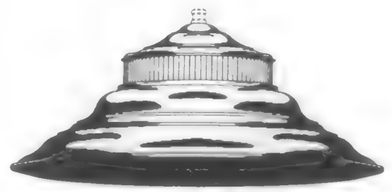
351,248
ADJUSTABLE DESK LAMP
Se-Kit Yuen, Hong Kong, Hong Kong, assignor to John Manufacturing Limited, Kwun Tong, Hong Kong
Filed Feb. 8, 1993, Ser. No. 4,529
Claims priority, application United Kingdom, Sep. 21, 1992, 2025821
Term of patent 14 years
U.S. Cl. D26—65



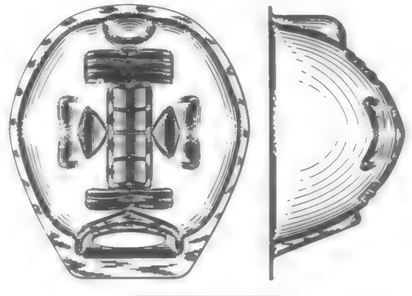
351,249
ADJUSTABLE TRACK LIGHT
Phillip J. Snoke; Lionel D. Gillespie, and Steven C. Gamper, all of Atlanta, Ga., assignors to Cooper Industries, Houston, Tex.
Division of Ser. No. 830,244, Feb. 4, 1992. This application Feb. 8, 1994, Ser. No. 18,496
Term of patent 14 years
U.S. Cl. D26—65



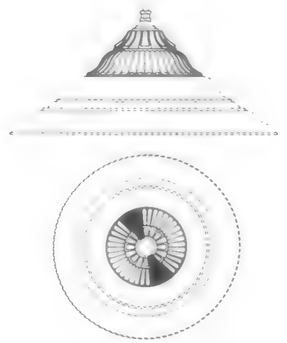
351,250
PENDANT LIGHTING FIXTURE
Patrick Dolan, 1020 SW. Westwood Ct., Portland, Oreg. 97201
Filed Mar. 10, 1993, Ser. No. 5,718
Term of patent 14 years
U.S. Cl. D26—88



351,251
REFLECTOR FOR LIGHTING APPARATUS
Francis J. E. Schreder, Linkebeek, Belgium, assignor to Financière des Applications de L'Electricité S.A., Brussels, Belgium
Filed Dec. 30, 1992, Ser. No. 3,213
Claims priority, application Benelux, Jul. 2, 1992, NR DM/023231
Term of patent 14 years
U.S. Cl. D26—118

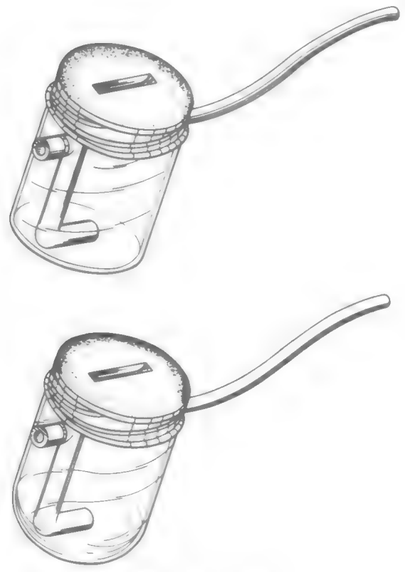


351,252
CANOPY FOR LIGHTING FIXTURE SHADE
Patrick Dolan, 1020 SW. Westwood Ct., Portland, Oreg. 97201
Filed Mar. 10, 1993, Ser. No. 5,744
Term of patent 14 years
U.S. Cl. D26—149



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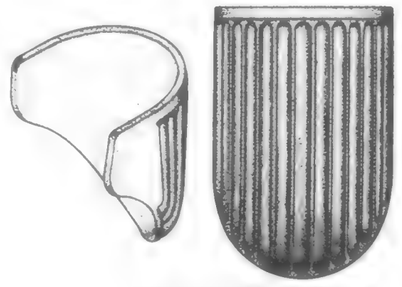
351,253
WATER PIPE
Mirza H. A. Baig, and Mukarram M. Baig, both of 2305 Kaywood La., Silver Spring, Md. 20904
Filed Dec. 8, 1993, Ser. No. 16,123
Term of patent 14 years
U.S. Cl. D27—162



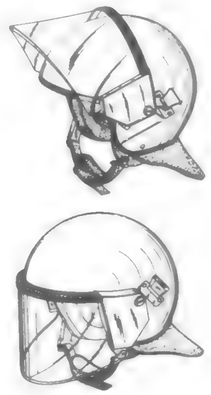
351,254
FRAME FOR A HAND-HELD MIRROR
Victor Carranza, Colonia Independencia, Mexico, assignor to Godinger Silver Art Co., Ltd., Brooklyn, N.Y.
Division of Ser. No. 724,955, Jul. 2, 1991, Pat. No. D. 341,722.
This application Jun. 22, 1993, Ser. No. 9,833
Term of patent 14 years
U.S. Cl. D28—64.1



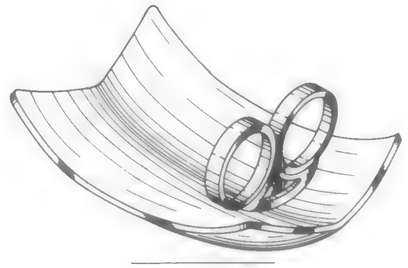
351,255
KNEE PAD
Walter W. Pytlewski, E. 5255 Seltice Way, Post Falls, Id. 83854
Filed Dec. 15, 1992, Ser. No. 2,774
Term of patent 14 years
U.S. Cl. D29—100



351,256
HELMET
Adrien Gallet, Chatillon sur Chalaronne, France, assignor to Gallet S.A., Chatillon sur Chalaronne, France
Filed Apr. 17, 1992, Ser. No. 870,718
Claims priority, application World Int. Prop. O., Dec. 23, 1991, DM/021527
Term of patent 14 years
U.S. Cl. D29—105



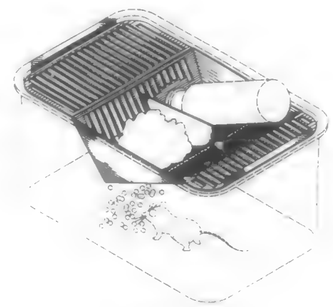
351,257
FINGER SHIELD FOR USE WHILE CUTTING AND DICING FOOD
Michael E. Roberts, 121 Weeden Dr., Warwick, R.I. 02818; David I. Muller, P.O. Box 275, Scituate, R.I. 02857, and Edward Colozzi, Jr., 2710 Pinewood Dr., Smithfield, R.I. 02917
Filed Dec. 4, 1992, Ser. No. 2,238
Term of patent 14 years
U.S. Cl. D29—113



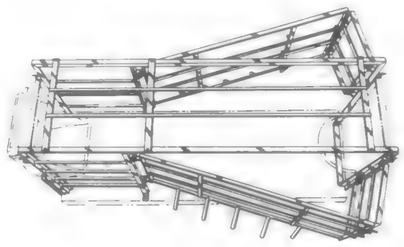
351,258
CAT HOUSE FOR CATS OR OTHER SMALL ANIMALS
Michael L. Berger, 5916 Griffith Rd., Laytonsville, Md. 20882
Filed Feb. 26, 1992, Ser. No. 841,493
Term of patent 14 years
U.S. Cl. D30—108



351,259
LID FOR THE CAGE OF A LABORATORY ANIMAL
Michael D. Semenuk, and Ida L. Semenuk, both of Baltimore, Md., assignors to Mitesha, Inc., Baltimore, Md.
Filed Jun. 5, 1992, Ser. No. 894,183
Term of patent 14 years
U.S. Cl. D30—119



351,260
FARROWING CRATE
Ian A. Taylor, and Thomas E. Hummel, both of Quincy, Ill., assignors to Quincy Design & Manufacturing, Inc., Quincy, Ill.
Filed Jun. 8, 1993, Ser. No. 9,250
Term of patent 14 years
U.S. Cl. D30—119

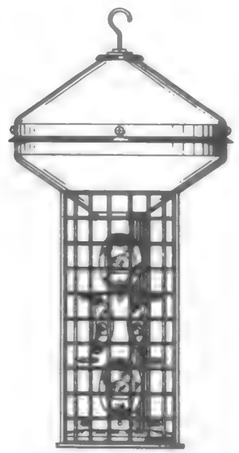


351,261
AUTOMATIC ANIMAL FEEDER
Jae M. Woo, Seoul, Rep. of Korea, assignor to Tae Lim Electronics Co., Ltd., Kyunggi, Rep. of Korea
Filed Oct. 21, 1992, Ser. No. 585
Claims priority, application Rep. of Korea, Jul. 30, 1992, 1992-13035
Term of patent 14 years
U.S. Cl. D30—122

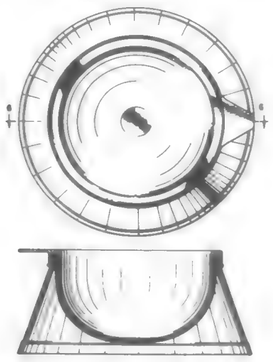


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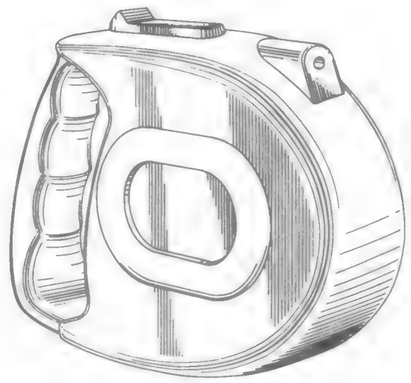
351,262
CAGED, CYLINDRICAL BIRD FEEDER
Victor Fasino, 62 Oneida Ave., Landing, N.J. 07850
Filed Jan. 14, 1993, Ser. No. 3,693
Term of patent 14 years
U.S. Cl. D30—127



351,263
LINED PET FOOD DISH
David S. Evans, 2572 Riva Rd., Apt. #15B, Annapolis, Md. 21401
Continuation-in-part of Ser. No. 1,085, Nov. 2, 1992, abandoned. This application Jan. 26, 1993, Ser. No. 4,079
Term of patent 14 years
U.S. Cl. D30—129



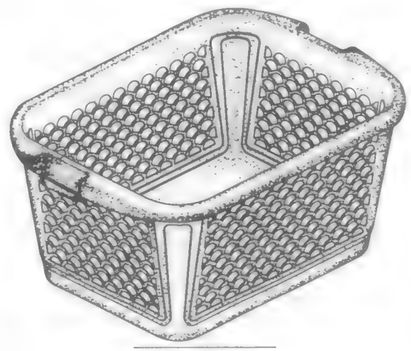
351,264
HOUSING FOR A RETRACTABLE PET LEAD
James G. Stout, Alliance, Ohio, assignor to Coastal Pet Products, Inc., Alliance, Ohio
Filed Feb. 1, 1993, Ser. No. 4,319
Term of patent 14 years
U.S. Cl. D30—153



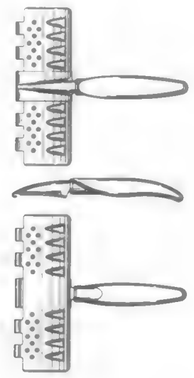
351,265
TOOL FOR PICKING UP PET DROPPINGS
Don C. Pierce, Port Clinton, Ohio, assignor to Hueter Toledo, Inc., Bellevue, Ohio
Filed Mar. 26, 1993, Ser. No. 6,379
Term of patent 14 years
U.S. Cl. D30—162



351,266
LAUNDRY BASKET
Yaffa Licari, 875 Ocean Ave., Elberon, N.J. 07740
Filed Jan. 7, 1993, Ser. No. 3,461
Term of patent 14 years
U.S. Cl. D32—37



351,267
SPONGE MOP SQUEEZE PLATE WITH HANDLE GRIP
Robert J. Libman, Champaign, Ill., assignor to The Libman Company, Arcola, Ill.
Filed Oct. 22, 1992, Ser. No. 630
Term of patent 14 years
U.S. Cl. D32—44



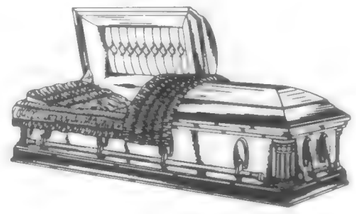
351,268
TRASH BAG HOLDER
Kenneth D. Kittredge, 1236 S. Grove Ave., Park Ridge, Ill. 60068
Filed Feb. 26, 1993, Ser. No. 5,248
Term of patent 14 years
U.S. Cl. D34—5



351,269
RECEPTACLE FOR LAWN DEBRIS
Sharon B. Moran, 7040 W. Gardiner St., Milton, Fla. 32570
Filed Jun. 24, 1993, Ser. No. 9,798
Term of patent 14 years
U.S. Cl. D34—5



351,270
BURIAL CASKET
Michael L. Beardsley, Chittenango, N.Y., assignor to Marsellus Casket Co., Syracuse, N.Y.
Filed Jul. 19, 1993, Ser. No. 10,797
Term of patent 14 years
U.S. Cl. D99—1



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF OCTOBER, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Raymond GmbH & Co. KG: *See*—
Schafer, Holger; Escher, Lothar; and Busch, Martin, 5,351,611, Cl. 100-30.000.

Aakeroy, Christer B.: *See*—
Seddon, Kenneth R.; Aakeroy, Christer B.; Blagden, Nicholas; and Patell, Yasmin, 5,352,388, Cl. 252-582.000.

Aandalen, Ernst. Helicopter deck. 5,351,915, Cl. 244-114.00R.

Aaron, Jack, to Gradco (Japan) Ltd. Sheet sorting apparatus. 5,351,947, Cl. 271-293.000.

Aarts, Mathias L. C., to Sara Lee/DE N.V. Method and apparatus for making a filled and closed vacuum pak. 5,351,463, Cl. 53-434.000.

Aasak Enterprises, Ltd.: *See*—
Liberman, Isak, 5,351,357, Cl. 15-245.100.

Abayasekara, Dilip R.; and Henn, Robert L., to W. L. Gore & Associates, Onc. Hydrophilic compositions with increased thermal resistance. 5,352,511, Cl. 428-308.400.

ABB Flakt, Inc.: *See*—
Byam, Matthew D., 5,351,715, Cl. 137-607.000.

ABB Henschel Waggon Union GmbH: *See*—
Ahlborn, Gunter; Bieker, Guido; Kampmann, Gerhard; and Lohmann, Alfred, 5,351,624, Cl. 105-185.000.

Abbott, Donald C., to Texas Instruments Incorporated. Semiconductor lead frame lead stabilization. 5,352,633, Cl. 437-211.000.

Abbott, Kenneth E.; and Lyons, Patrick J., to Stripping Technologies, Inc. Control system for cleaning systems. 5,351,832, Cl. 209-139.100.

Abbott Laboratories: *See*—
Gunawardana, Geewananda P.; Klein, Larry L.; and McAlpine, James B., 5,352,806, Cl. 549-510.000.
Kruger, Robert J.; Frederick, Warren P.; Larkin, Mark E.; Mayoral, Joaquin; and Wecker, Sheldon M., 5,352,364, Cl. 210-652.000.
Mattingly, Phillip G., 5,352,803, Cl. 549-220.000.

Abdelmalek, Fawzy T. High efficiency natural gas engine driven cooling system. 5,351,487, Cl. 60-618.000.

Abdesselem, Ouelid; and Desperben, Lydie, to Alcatel N.V. Device for selecting reception signals as a function of their power. 5,353,288, Cl. 370-95.100.

Abe, Hayao: *See*—
Awaya, Akira; Kobayashi, Hisashi; Ishizuka, Yusaku; and Abe, Hayao, 5,352,665, Cl. 514-15.000.

Abe, Hitoshi; Ando, Toshimitsu; Yazawa, Shigeko; Kiriu, Yoshio; and Hatakeyama, Yasuhiko, to Hitachi, Ltd. Information processing system. 5,353,404, Cl. 395-164.000.

Abe, Hitoshi: *See*—
Doi, Kiyotaka; Masuyama, Kanji; Takagi, Tsutomu; Abe, Hitoshi; Tajima, Katsutoshi; and Hirota, Tamotsu, 5,353,405, Cl. 395-164.000.

Abe, Katsushi: *See*—
Kobayashi, Tetsuro; Kawahara, Kazuo; Abe, Katsushi; Yamazaki, Kiyoshi; Iijima, Tomoko; Yokota, Koji; Doi, Haruo; and Iwahara, Hiroyasu, 5,352,337, Cl. 204-59.00R.

Abe, Masahiro; Okada, Kazuhisa; and Fukuda, Shuzo, to NKK Corporation. Method of chemical vapor deposition in a continuous treatment line. 5,352,490, Cl. 427-251.000.

Abe, Michiharu, to Ricoh Company, Ltd. Method and apparatus for recording or reproducing information on or from recording medium. 5,353,271, Cl. 369-59.000.

Abidin, Michael R.; and Lehmbeck, Steven P., to Bloom, Leonard, a part interest. Guarded skin book for surgical purposes and method thereof. 5,352,220, Cl. 606-1.000.

Abrams, Burton S.: *See*—
Wheeler, Richard G.; Abrams, Burton S.; Cannon, Joseph M.; Casey, Stephen J.; Chang, Luke C.; Ertwine, Von C.; Makofka, Douglas S.; Mastrocola, Louis A.; and Waples, Calvin R., Jr., 5,353,011, Cl. 340-572.000.

ACF Industries: *See*—
Culligan, Laurence E.; and Dumser, Paul J., 5,351,625, Cl. 105-362.000.

Ackerbloom, T. Robert. Power boat hull. 5,351,642, Cl. 114-291.000.

ACS Communications, Inc.: *See*—
Irissou, Pierre R.; Chen, Shu-Ren; Lynn, Dwight D.; and Reid, Kirk A., 5,353,347, Cl. 379-395.000.

Ad Response MicroMarketing Corporation: *See*—
De Lapa, James P.; and Howe, Charles F., 5,353,218, Cl. 364-401.000.

Adachi, Hideyuki: *See*—
Kami, Kuniaki; Adachi, Hideyuki; Umeyama, Koichi; Kosaka, Yoshihiro; Yamaguchi, Seiji; Fuse, Eiichi; Sato, Michio; Nakamura, Masakazu; Tanaka, Yasundo; Fukaya, Takashi; Matsuno, Kiyotaka; and Suzuki, Katsuya, 5,351,677, Cl. 128-6.000.

Adachi, Hiroyuki; and Hoshika, Norihisa, to Canon Kabushiki Kaisha. Charging member featuring a cut edge, and charging device employing same for use in a detachable process unit in an image forming apparatus. 5,353,101, Cl. 355-219.000.

Adachi, Kaoru: *See*—
Takeda, Toshihide; and Adachi, Kaoru, 5,352,538, Cl. 428-553.000.

Adam, Jean-Marie, to Ciba-Geigy Corporation. Anthraquinone dyes, their preparation and their use. 5,352,247, Cl. 8-676.000.

Adam, William R.: *See*—
Riley, James E.; Bazil, Thomas E.; Adam, William R.; Creutz, Hans P.; McCabe, Robert W.; and Gandhi, Haren S., 5,351,483, Cl. 60-274.000.

Adams, Hugh L.: *See*—
Allen, J. Dewayne; Luebke, Ralph C.; and Adams, Hugh L., 5,352,063, Cl. 404-84.100.

Adari, Seva nanda; Chiang, Marilyn C.; DeSanto, Anthony M.; Fenley, R. Earl, Jr.; Javvaji, Anand K.; and Sreedhara, Ramadevi, to AT&T Bell Laboratories. Maintenance termination unit. 5,353,327, Cl. 379-22.000.

Adfiltech Corporation: *See*—
Reichert, Ralph, 5,352,347, Cl. 204-302.000.

Adhesives Research, Inc.: *See*—
Therriault, Donald J.; and Zajaczkowski, Michael J., 5,352,516, Cl. 428-355.000.

Adonis Incorporated: *See*—
Eikenberry, Michael G.; Stants, Richard; Baker, William; and Benson, Raymond G., Jr., 5,353,008, Cl. 340-479.000.

Advanced Environmental Recycling Technologies, Inc.: *See*—
Brooks, Joe G.; Goforth, Billy D.; Goforth, Charles; and Brooks, J. Douglas, 5,351,895, Cl. 241-41.000.

Advanced Magnetics, Inc.: *See*—
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Advanced Micro Devices, Inc.: *See*—
Vijeh, Nader; and Lo, William, 5,353,353, Cl. 380-29.000.

Advanced Technology Laboratories, Inc.: *See*—
Keller, Philip; Augustine, Larry J.; and Daigle, Ronald E., 5,353,354, Cl. 382-6.000.

Advanced Technology Materials, Inc.: *See*—
Stevens, Ward C.; Sturm, Edward A.; and Roman, Bruce C., 5,352,519, Cl. 428-389.000.

Advantest Corporation: *See*—
Niki, Shoji, 5,352,885, Cl. 250-214.00R.

AEG Transportation Systems, Inc.: *See*—
Novakovich, Michael R.; and Majewski, Joseph S., 5,353,413, Cl. 395-325.000.

Aehle, Wolfgang: *See*—
Vetter, Roman; Wilke, Detlef; Amory, Antoine; Clippe, Andre ; Schomburg, Dietmar; and Aehle, Wolfgang, 5,352,603, Cl. 435-221.000.

Aequitron Medical, Inc.: *See*—
Lura, David B., 5,351,522, Cl. 73-24.010.

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Bulman, Melvin J., 5,351,917, Cl. 244-117.00A.

AFT Atlas Fahrzeugtechnik GmbH: *See*—
Krohm, Harald; and Holscher, Ludger, 5,351,526, Cl. 73-40.000.

AG Communication Systems Corporation: *See*—
Kabat, Zbigniew; and Walton, Richard A., 5,353,198, Cl. 361-802.000.

Agarwal, Vinod K.; and Fletcher, Harold W., to Xerox Corporation. Pressure roll cleaner. 5,353,106, Cl. 355-283.000.

Agazzi, Oscar E.; and Norsworthy, Steven R., to AT&T Bell Laboratories. ISDN transmitter. 5,353,309, Cl. 375-59.000.

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Nagel, Erich; Wagner, Karl-Heinz; Himmelsbach, Lothar; Zwischenberger, Alfred; and Vichrig, Wolfgang, 5,351,870, Cl. 226-92.000.

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Ragazzini, Giovanna; and Venturini, Carlo, 5,351,525, Cl. 73-38.000.

Agranat, Aharon J.: *See*—
Yariv, Amnon; Neugebauer, Charles F.; and Agranat, Aharon J., 5,353,382, Cl. 395-24.000.

Agrawal, Rakesh; Modi, Ajay K.; and Kleinberg, William T., to Air Products and Chemicals, Inc. Distillation strategies for the production of carbon monoxide-free nitrogen. 5,351,492, Cl. 62-24.000.

Agrawal, Sudhir; and Zamecnik, Paul C., to Worcester Foundation for Experimental Biology. Method of separating oligonucleotides from a mixture. 5,352,578, Cl. 435-6.000.

AgriDyne Technologies, Inc.: *See*—
Butler, Brett J.; Ellenberger, William P.; and Omilinsky, Barry A., 5,352,697, Cl. 514-468.000.

Aguilar, Ricardo. Anti-theft control to prevent unauthorized starting of an engine. 5,353,006, Cl. 340-426.000.

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Agur, Enno E.: *See—*
Mahabadi, Hadi K.; Agur, Enno E.; Allison, Gerald R.; Hawkins, Michael S.; Drappel, Stephan; McDougall, Maria N. V.; Grushkin, Bernard; Hoffend, Thomas R.; and Barbetta, Angelo J., 5,352,556, Cl. 430-109.000.

Ahlborn, Gunter; Bieker, Guido; Kampmann, Gerhard; and Lohmann, Alfred, to ABB Henschel Waggon Union GmbH. Bogie for high-speed rail vehicles. 5,351,624, Cl. 105-185.000.

Ahlquist, John B., Jr.; Von Ehre, James R., II; and Seals-Mason, Samantha, to Altsys Corporation. System and method for generating complex calligraphic curves. 5,353,396, Cl. 395-142.000.

Aida Engineering, Ltd.: *See—*
Matsui, Akira; and Imanishi, Shozo, 5,351,576, Cl. 74-600.000.

Aigner, Gary D., to Strombecker Corporation. Toy guns. 5,351,427, Cl. 42-57.000.

Aikawa, Haruhiko; Nagayama, Katsuya; and Danzuka, Toshio, to Sumitomo Electric Industries, Ltd. Apparatus for the production of hermetically coated optical fiber. 5,352,261, Cl. 65-530.000.

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Air-Ride Packaging of America: *See—*
Batsford, Charles A., 5,351,829, Cl. 206-522.000.

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Barsky, Barry E., 5,352,869, Cl. 219-543.000.

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Ando, Masahiko; Noda, Koji; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Hojo, Yasuo; Taga, Yutaka; and Oba, Hidehiro, 5,351,577, Cl. 477-11.600.

Aisin Seiki Kabushiki Kaisha: *See—*
Takemoto, Shuichi; Oda, Yukihisa; and Hashimoto, Akio, 5,353,004, Cl. 338-50.000.

Akabane, Makoto: *See—*
Kato, Yasuhiko; Watari, Masao; and Akabane, Makoto, 5,353,408, Cl. 395-2.350.

Akada, Masanori: *See—*
Ito, Yoshikazu; Akada, Masanori; Kutsukake, Masaki; Yamauchi, Mineo; Saito, Masanori; Takano, Atsushi; Takeda, Hideichiro; and Arita, Hitoshi, 5,352,652, Cl. 503-227.000.

Akagi, Hitoshi: *See—*
Mori, Shigemi; and Akagi, Hitoshi, 5,351,667, Cl. 123-510.000

Akamatsu, Masahiro; Tohya, Osamu; and Yukumoto, Tohru, to Idemitsu Petrochemical Co., Ltd. Multilayered structural body 5,352,536, Cl. 428-522.000.

Akerlund, Staffan: *See—*
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Akieda, Hideyuki: *See—*
Moriyasu, Koichi; Tomiya, Kanji; Akieda, Hideyuki; Aoki, Harumichi; Suzuki, Makoto; Iwasaki, Yasunaga; and Koda, Sadafumi, 5,352,655, Cl. 504-285.000.

Akioka, Koji: *See—*
Takagi, Fumio; Kobayashi, Osamu; Arai, Akira; Ihara, Seiji; and Akioka, Koji, 5,352,302, Cl. 148-101.000.

Akiyama, Takao, to Seiko Instruments Inc. Printing data transferring method to a line head. 5,353,043, Cl. 346-76.0PH.

Akutagawa, Susumu: *See—*
Yamaguchi, Akio; Hori, Yoji; Imai, Takashi; Suzuki, Motoki; and Akutagawa, Susumu, 5,352,763, Cl. 528-361.000.

Al-Attar, Rafi A. Shifting system and method for an electronic compass system. 5,353,241, Cl. 364-571.010.

Alagaratnam, Manian: *See—*
Chia, Chok J.; Alagaratnam, Manian; Low, Owai H.; and Lim, Seng-Sooi, 5,353,193, Cl. 361-704.000.

Albemarle Corporation: *See—*
Beaver, Phillip R., 5,352,335, Cl. 203-11.000.
Goddard, Lloyd E.; and Knesel, George A., 5,352,823, Cl. 562-494.000.

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Mizuguchi, Jin; Rochat, Alain C.; and Giller, Gerald, to Ciba-Geigy Corporation. Process for storing information with high storage density. 5,352,551, Cl. 430-17.000.

Mizunuma, Wataru; Yahata, Mitsumasa; Watanabe, Kaoru; Nakajima, Kensaku; Kato, Jun; Masuko, Yukihiro; and Shimada, Yoshihiko, to Mitsubishi Jukogyo Kabushiki Kaisha. Electronically controlled automatic transmission for vehicles. 5,351,570, Cl. 74-335.000.

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Zamecnik, Paul C.: *See*—
Agrawal, Sudhir; and Zamecnik, Paul C., 5,352,578, Cl. 435-6.000.
Zaragueta, Juan J. L. Method of fabricating ceramic tile. 5,352,396, Cl. 264-62.000.
Zavislan, James M.; and Kurdi, Bulent N., to International Business Machines Corporation. Multi-channel optical head and data storage system. 5,353,273, Cl. 369-121.000.
Zedalis, Michael S.: *See*—
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Zenith Data Systems Corporation: *See*—
Olson, Anthony M., 5,353,416, Cl. 395-325.000.
Zenoni, Pietro; Pedrini, Giovanni; and Castelli, Rosario, to L.G.L. Elettronica S.p.A. Electropneumatic device for the automatic threading of a weft feeding apparatus. 5,351,724, Cl. 139-452.000.
Zeuner, Kenneth W.; and Heisig, Charles, to Control Concepts, Inc. Hydraulic control system. 5,351,601, Cl. 91-445.000.
Zhang, Hongmin, to APT Corporation. Approximate reasoning apparatus. 5,353,380, Cl. 395-3.000.
Zhang, Hongyong; and Kusumoto, Naoto, to Semiconductor Energy Laboratory Co., Ltd. Method of annealing a semiconductor. 5,352,291, Cl. 117-8.000.
Zhang, Xiang H.: *See*—
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Zhao, Zhi-Yang: *See*—
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Ziegenbein, Botho; Kippelt, Ulrich; and Foell, Uwe, to Robert Bosch GmbH. Sensor for measuring acceleration and tilt with a bubble level. 5,351,539, Cl. 73-500.000.
Ziegler, Werner E.: *See*—
Karpf, Hellfried; Leiner, M. Jean-Pierre; Mostl, Anton; Reichenberger, Klaus; Schaffar, Bernhard; and Ziegler, Werner E., 5,351,563, Cl. 73-864.840.
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Zimmer, Maik: *See*—
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Zimmerbeutel, Gerd: *See*—
Lenk, Erich; Sievering, Ralph; Zimmerbeutel, Gerd; and Nickisch, Gerhard, 5,352,106, Cl. 425-131.500.
Zimmermann, Peter; and Ulrich, Wolf-Rudiger, to BYK Gulden Lomberg Chemische Fabrik GmbH. Pyridines as medicaments. 5,352,684, Cl. 514-299.000.
Zingel, Richard M.: *See*—
Suthergreen, David B.; Cotton, Fredrick W.; and Zingel, Richard M., 5,351,725, Cl. 141-1.000.
Zinn, Noel D.: *See*—
Norton, John P.; Zinn, Noel D.; and Rapatz, Phillip J. V., 5,353,223, Cl. 364-421.000.
Zircon Corporation: *See*—
Heger, Charles E., 5,352,974, Cl. 324-67.000.
Zitel Corporation: *See*—
Lautzenheiser, Marvin, 5,353,430, Cl. 395-425.000.
Zody, Charles R. Adjustment tool for telescoping members. 5,352,057, Cl. 403-109.000.
Zoroufy, Aboolhassan. Portable hair collecting furniture device for cats and carrier. 5,351,646, Cl. 119-19.000.
Zuffada, Maurizio: *See*—
Sacchi, Fabrizio; Zuffada, Maurizio; Vai, Gianfranco; and Mooney, David, 5,352,944, Cl. 307-494.000.
Zuma Coffee Technologies, Inc.: *See*—
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Werner, Walter, 5,352,957, Cl. 315-291.000.
Zun, Hong-Fu. Caster-supporting device for a stroller. 5,351,364, Cl. 16-35.00R.
Zuraw, Michael J.: *See*—
Telfer, Stephen J.; and Zuraw, Michael J., 5,351,965, Cl. 273-260.000.
Zurecki, Zbigniew; Hayduk, Edward A., Jr.; North, John G.; Swan, Robert B.; and Mitchell, David L., Jr., to Air Products and Chemicals, Inc. Graphite/carbon articles for elevated temperature service and method of manufacture. 5,352,523, Cl. 428-408.000.
Zushi, Shizuo: *See*—
Takahashi, Tatsuya; and Zushi, Shizuo, 5,351,498, Cl. 62-99.000.
Zwischenberger, Alfred: *See*—
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546401 Ontario Limited: *See*—
Reuber, Douglas A.; and Buehler, Amsey, 5,351,339, Cl. 2-9.000.
878953 Ontario Inc. and Rodarun Investments, Ltd.: *See*—
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF OCTOBER, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Brown, Keith, to Hymatic Engineering Company Limited, The. Cryogenic cooling apparatus. Re. 34,748, Cl. 62-51.200.
Columbia Gas Service Corporation: *See*—
Petty, Stephen; and Cook, Bert F., Re. 34,747, Cl. 62-238.300.
Cook, Bert F.: *See*—
Petty, Stephen; and Cook, Bert F., Re. 34,747, Cl. 62-238.300.
Eaton Corporation: *See*—
Schutten, Herman P.; Stephenson, Dwight B.; and Haarstad, Donald M., Re. 34,746, Cl. 60-384.000.
Gillette Company, The: *See*—
Thompson, Harold R., Re. 34,751, Cl. 401-175.000.
Groiso, Jorge A. Orthopedic rigid splint-plate orthosis. Re. 34,753, Cl. 602-7.000.
Haarstad, Donald M.: *See*—
Schutten, Herman P.; Stephenson, Dwight B.; and Haarstad, Donald M., Re. 34,746, Cl. 60-384.000.
Hasegawa, Heiichi: *See*—
Oshitani, Masahiko; Hasegawa, Heiichi; and Yufu, Hiroshi, Re. 34,752, Cl. 429-223.000.
Hymatic Engineering Company Limited, The: *See*—
Brown, Keith, Re. 34,748, Cl. 62-51.200.
Leong, Kenneth; and Stewart, Donald, to Softac Systems Ltd. Apparatus for determining the distances of points on a surface from a reference axis. Re. 34,749, Cl. 250-237.00G.
Minolta Camera Kabushiki Kaisha: *See*—
Ohmori, Naoto, Re. 34,750, Cl. 346-160.000.
Ohmori, Naoto, to Minolta Camera Kabushiki Kaisha. Laser printing system. Re. 34,750, Cl. 346-160.000.
Oshitani, Masahiko; Hasegawa, Heiichi; and Yufu, Hiroshi, to Yuasa Corporation. Alkaline battery with a nickel electrode. Re. 34,752, Cl. 429-223.000.
Petty, Stephen; and Cook, Bert F., to Columbia Gas Service Corporation. Absorption refrigeration and heat pump system with defrost. Re. 34,747, Cl. 62-238.300.
Schutten, Herman P.; Stephenson, Dwight B.; and Haarstad, Donald M., to Eaton Corporation. Open-center steering control unit with flow amplification. Re. 34,746, Cl. 60-384.000.
Softac Systems Ltd.: *See*—
Leong, Kenneth; and Stewart, Donald, Re. 34,749, Cl. 250-237.00G.
Stephenson, Dwight B.: *See*—
Schutten, Herman P.; Stephenson, Dwight B.; and Haarstad, Donald M., Re. 34,746, Cl. 60-384.000.
Stewart, Donald: *See*—
Leong, Kenneth; and Stewart, Donald, Re. 34,749, Cl. 250-237.00G.
Thompson, Harold R., to Gillette Company, The. Cosmetic product. Re. 34,751, Cl. 401-175.000.
Yuasa Corporation: *See*—
Oshitani, Masahiko; Hasegawa, Heiichi; and Yufu, Hiroshi, Re. 34,752, Cl. 429-223.000.
Yufu, Hiroshi: *See*—
Oshitani, Masahiko; Hasegawa, Heiichi; and Yufu, Hiroshi, Re. 34,752, Cl. 429-223.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Brauman, Daniel. Implantable prosthetic device. B1 4,963,150, 10-4-94, Cl. 623-8.000.
Dow Corning Toray Silicone Company, Limited: *See*—
Okawa, Tadashi; and Yamada, Shuji, B1 5,262,555, Cl. 556-440.000.
Meitzner, Erich F.; and Oline, A., to Rohm & Haas Company. Process for preparing macroreticular resins, copolymers and products of said process. B1 4,382,124, 10-4-94, Cl. 521-38.000.
Okawa, Tadashi; and Yamada, Shuji, to Dow Corning Toray Silicone Company, Limited. Method for the preparation of acryloxy group-containing or methacryloxy group-containing organosilicon compounds. B1 5,262,555, 10-4-94, Cl. 556-440.000.
Oline, A.: *See*—
Meitzner, Erich F.; and Oline, A., B1 4,382,124, Cl. 521-38.000.
Rohm & Haas Company: *See*—
Meitzner, Erich F.; and Oline, A., B1 4,382,124, Cl. 521-38.000.
Yamada, Shuji: *See*—
Okawa, Tadashi; and Yamada, Shuji, B1 5,262,555, Cl. 556-440.000.

LIST OF DESIGN PATENTEES

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A-Dec, Inc.: *See*—
Austin, George K., Jr.; Nordstrom, Carl G.; Zadnik, Bruno; and Curtis, David L., 351,231, Cl. D24-177.000.
Abe, Hiroshi, to Asahi Seiko Kabushiki Kaisha. Coin door bracket for a vending machine. 351,193, 10-4-94, Cl. D20-9.000.
Abraham, James E.: *See*—
Scheper, Robert M.; Groendal, Dale M.; Abraham, James E.; Hahn, Thomas R.; Baumgartner, Cheryl D.; Smith, Douglas A.; and Scholten, Brian L., 351,070, Cl. D6-366.000.
Agata, Nobuyuki; and Komada, Takeshi, to Canon Kabushiki Kaisha. Function extending machine for electronic copying machine. 351,186, 10-4-94, Cl. D18-40.000.
Agnew, Richard C.; and Van Den Heuvel, Robert, to GIA Gem Institute Corporation. Darkfield loupe. 351,176, 10-4-94, Cl. D16-135.000.
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Alcon Laboratories, Inc.: *See*—
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Algonquin Industries International, Inc.: *See*—
Waddington, Donald R.; and Boulard, Robert J., 351,128, Cl. D12-203.000.
Aloys F. Dornbracht GmbH & Co. KG: *See*—
Sieger, Dieter, 351,218, Cl. D23-241.000.
Altman, Moshe, to MetroMeter Shop, Inc. Illuminable taxi cab rate card holder. 351,195, 10-4-94, Cl. D20-40.000.
American Cyanamid Company: *See*—
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American Greetings Corporation: *See*—
Eliadis, Luke; Melton, James R.; and Walters, John, 351,076, Cl. D6-476.000.
American Standard Inc.: *See*—
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Anderson, John W., to Temp-Tech Co. Inc. Food tray with cover. 351,087, 10-4-94, Cl. D7-541.000.
Aoyama, Hideo: *See*—
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Apple Computer, Inc.: *See*—
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Austin, George K., Jr.; Nordstrom, Carl G.; Zadnik, Bruno; and Curtis, David L., to A-Dec, Inc. Control unit for dental instruments. 351,231, 10-4-94, Cl. D24-177.000.
Automatic Liquid Packaging, Inc.: *See*—
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Baig, Mirza H. A.; and Baig, Mukarram M. Water pipe. 351,253, 10-4-94, Cl. D27-162.000.
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Tardiff, Albert N., Jr.: *See*—
Grove, Corey M.; Scavnicky, John A.; and Tardiff, Albert N., Jr., H1360, Cl. 128-201.250.
Toeppen, John S., to United States of America, Energy. Fluorescent fiber diagnostics. H1364, 10-4-94, Cl. 372-6.000.
United States of America
Army: *See*—
Grove, Corey M.; Scavnicky, John A.; and Tardiff, Albert N., Jr., H1360, Cl. 128-201.250.
Tardiff, Albert N., Jr.; and Grove, Corey M., H1361, Cl. 128-206.120.
Energy: *See*—
Toeppen, John S., H1364, Cl. 372-6.000.

CLASSIFICATION OF PATENTS

ISSUED OCTOBER 4, 1994

NOTE—First number, class; second number, subclass; third number, patent number

CLASS 2
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CLASS 8
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155.1 5,351,351
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CLASS 28
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CLASS 47
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145 5,351,862
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CLASS 227
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92 5,351,870

CLASS 227
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164 5,351,882

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17 5,351,883

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157 R 5,351,957
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170 5,351,959
177 B 5,351,960
186.2 5,351,961
5,351,962
187.4 5,351,963
201 5,351,964
260 5,351,965
311 5,351,966
344 5,351,967
346 5,351,968
438 5,351,969
439 5,351,970

CLASS 277
53 5,351,971
59 5,351,972
209 5,351,973

CLASS 280
11.2 5,351,974
14.3 5,351,975
47.35 5,351,976
87.051 5,351,978
254 5,351,979
281.1 5,351,980
293 5,352,403
5,351,981
416.1 5,351,982
5,351,983
655 5,351,984
675 5,351,985
712 5,351,986
728 A 5,351,987
737 5,351,988
5,351,989
738 5,351,977
789 5,351,990

CLASS 281
2 5,351,991
31 5,351,992

CLASS 283
62 5,351,993
117 5,351,994
5,351,995

CLASS 285
64 5,351,996
105 5,351,997
382.7 5,351,998
404 5,351,999
405 5,352,000

CLASS 290
36 R 5,352,929

CLASS 291
57 5,352,001
155 5,352,002
323 5,352,003
347 5,352,004

CLASS 294
142 5,352,006
149 5,352,007

CLASS 296
50 5,352,008
146.9 5,352,009
192 5,352,010
203 5,352,011

CLASS 297
113 5,352,012
119 5,352,013
142 5,352,014
157 5,352,015
201 5,352,016
5,352,017
284.4 5,352,018
341 5,352,019
423.26 5,352,020
452.1 5,352,021
452.15 5,352,022
452.21 5,352,023
5,352,024

CLASS 300
21 5,352,025

CLASS 301
105.1 5,352,026

CLASS 303
20 5,352,028

CLASS 305
39 5,352,029

CLASS 307
43 5,352,930
81 5,352,931
248 5,352,932
5,352,933
296.1 5,352,934
296.4 5,352,935
304 5,352,936
355 5,352,937
358 5,352,938
443 5,352,939
465 5,352,940
475 5,352,941
5,352,942
5,352,943
494 5,352,944
603 5,352,945

CLASS 310
12 5,352,946
67 R 5,352,947
214 5,352,948
323 5,352,949
5,352,950

CLASS 312
221 5,352,030
235.1 5,352,031
265.3 5,352,032
312 5,352,033
334.27 5,352,034

CLASS 313
5,352,951
623 5,352,952
631 5,352,953

CLASS 315
111.21 5,352,954
209 R 5,352,955
224 5,352,956
291 5,352,957
5,352,958
368.11 5,352,959

CLASS 318
280 5,352,960
561 5,352,961
687 5,352,962
696 5,352,963
772 5,352,964
807 5,352,965

CLASS 320
3 5,352,966
20 5,352,967
35 5,352,968
39 5,352,969
5,352,970

CLASS 322
27 5,352,971

CLASS 323
313 5,352,972
5,352,973

CLASS 324
67 5,352,974
71.4 5,352,975
121 R 5,352,976
158.1 5,352,977
5,352,978
307 5,352,979
5,352,980
5,352,981
427 5,352,982
522 5,352,983
532 5,352,984
716 5,352,985

CLASS 330
10 5,352,986
51 5,352,987
141 5,352,988
265 5,352,989
286 5,352,990
289 5,352,991
310 5,352,992

CLASS 331
107 A 5,352,993

CLASS 333
33 5,352,994
181 5,352,995
203 5,352,996
219.1 5,352,997
247 5,352,998

CLASS 335
5,352,999
216 5,353,000

CLASS 336
83 5,353,001
192 5,353,002

CLASS 338
47 5,353,003
5,353,004
55 5,353,005

CLASS 340
426 5,353,006
477 5,353,007
479 5,353,008
505 5,353,009
572 5,353,010
5,353,011
573 5,353,012
575 5,353,013
638 5,353,014
5,353,015
825.22 5,353,016
825.46 5,353,017
825.57 5,353,018
870.05 5,353,019
870.31 5,353,020
937 5,353,021
959 5,353,022
989 5,353,023

CLASS 341
51 5,353,024
122 5,353,025
143 5,353,026
156 5,353,027
172 5,353,028

CLASS 342
4 5,353,029
169 5,353,030
372 5,353,031
373 5,353,032
375 5,353,033
457 5,353,034

CLASS 343
700 MS 5,353,035
702 5,353,036
704 5,353,037
708 5,353,038
713 5,353,039
895 5,353,040

CLASS 345
97 5,353,041
156 5,353,042

CLASS 346
76 PH 5,353,043
5,353,044
5,353,045
5,353,046
5,353,047
5,353,048
138 5,353,049
160 Re.34,750

CLASS 347
13 5,353,051
19 5,353,052
55 5,353,050

CLASS 348
33 5,353,053
81 5,353,054
145 5,353,055
183 5,353,117
263 5,353,056
322 5,353,057
363 5,353,058
398 5,353,059
5,353,060
5,353,061
412 5,353,062
426 5,353,063
5,353,119
451 5,353,118
5,353,064
5,353,066
555 5,353,120
556 5,353,065
563 5,353,121
568 5,353,067
585 5,353,068
611 5,353,069
781 5,353,070

CLASS 281
158 5,353,071
159 5,353,072
221 5,353,073

CLASS 383
122 5,353,074
5,353,075

CLASS 354
94 5,353,076
5,353,077
105 5,353,078
149.11 5,353,079
154 5,353,080
195.1 5,353,081
266 5,353,082
319 5,353,083
321 5,353,084
324 5,353,085
5,353,086
5,353,087
5,353,088
5,353,089
402 5,353,090
403 5,353,091
410 5,353,092
412 5,353,093

CLASS 355
27 5,353,094
38 5,353,095
41 5,353,096
53 5,353,097
200 5,353,098
5,353,099
5,353,100
219 5,353,101
246 5,353,102
5,353,103
259 5,353,104
279 5,353,105
283 5,353,106
284 5,353,107
296 5,353,108

CLASS 356
28.5 5,353,109
73.1 5,353,110
152.1 5,353,111
244 5,353,112
311 5,353,113
345 5,353,114
358 5,353,115
390 5,353,116

CLASS 358
296 5,353,122
322 5,353,123
5,353,124
439 5,353,125
452 5,353,126
456 5,353,128
5,353,127
530 5,353,130
539 5,353,132

CLASS 359
41 5,353,133
52 5,353,134
55 5,353,135
56 5,353,136
5,353,137
58 5,353,138
72 5,353,139
75 5,353,140
76 5,353,141
87 5,353,142
135 5,353,143
139 5,353,145
158 5,353,146
173 5,353,147
265 5,353,148
326 5,353,149
338 5,353,150
408 5,353,151
461 5,353,152
523 5,353,153
582 5,353,154
618 5,353,155
5,353,156
676 5,353,157
5,353,158
5,353,159
690 5,353,160
691 5,353,161
692 5,353,162
5,353,163
791 5,353,164
819 5,353,165
5,353,166
876 5,353,167

CLASS 385
5,353,168
16 5,353,169
51 5,353,175
53 5,353,170
59 5,353,171
63 5,353,176
70 5,353,172
76 5,353,173
77.12 5,353,177
78.02 5,353,178
78.06 5,353,174
92 5,353,179
103 5,353,180
104 5,353,181
5,353,182
125 5,353,183
137 5,353,184

CLASS 361
49 5,353,185
91 5,353,187
97 5,353,188
117 5,353,186
118 5,353,189
647 5,353,190
5,353,191
700 5,353,192
704 5,353,193
707 5,353,194
760 5,353,195
5,353,196
5,353,198
5,353,199
816 5,353,200
5,353,201
818 5,353,202

CLASS 362
61 5,353,203
5,353,204
5,353,205
154 5,353,206
5,353,208
226 5,353,209
293 5,353,210
294 5,353,211

CLASS 363
17 5,353,212
19 5,353,213
56 5,353,214
65 5,353,215
144 5,353,216

CLASS 364
5,353,217
164 5,353,207
401 5,353,218
405 5,353,219
413.13 5,353,220
419.05 5,353,221
419.17 5,353,222
421 5,353,223
424.02 5,353,224
426.03 5,353,225
433 5,353,226
458 5,353,228
468 5,353,229
5,353,230
5,353,231
474.29 5,353,232
485 5,353,233
489 5,353,234
491 5,353,235
499 5,353,236
5,353,237
551.01 5,353,238
5,353,239
552 5,353,240
571.01 5,353,241
578 5,353,242
5,353,243
602 5,353,244

CLASS 365
63 5,353,245
5,353,246
5,353,247
154 5,353,248
185 5,353,249
189.03 5,353,250
189.05 5,353,251
189.09 5,353,252
5,353,253
5,353,254
5,353,255
230.03 5,353,256
230.06 5,353,257

CLASS 366
15 5,352,035
130 5,352,036
219 5,352,037

CLASS 367
135 5,353,260
5,353,261
149 5,353,262
173 5,353,263

CLASS 368
19 5,353,264

CLASS 369
13 5,353,265
5,353,266
5,353,267
5,353,268
25 5,353,259
36 5,353,269
5,353,270
59 5,353,271
120 5,353,272
121 5,353,273
5,353,274
189 5,353,275
275.1 5,353,276
275.4 5,353,277
290 5,353,278

CLASS 370
32.1 5,353,279
5,353,280
58.1 5,353,281
5,353,282
5,353,283
5,353,285
85.1 5,353,284
85.15 5,353,286
85.2 5,353,287
95.1 5,353,288

CLASS 371
22.3 5,353,308
23 5,353,289
37.1 5,353,290

CLASS 372
5,353,291
21 5,353,292
34 5,353,293
43 5,353,294
5,353,295
55 5,353,296
5,353,297
96 5,353,298
99 5,353,299

CLASS 374
45 5,352,038
121 5,352,039
131 5,352,040

CLASS 375
1 5,353,300
5,353,301
5,353,302
5,353,303
5,353,304
5,353,311
13 5,353,305
14 5,353,306
5,353,307
59 5,353,309
101 5,353,310
106 5,353,312
118 5,353,313

CLASS 376
134 5,353,314
259 5,353,315
5,353,316
261 5,353,317
283 5,353,318
286 5,353,319
294 5,353,320
320 5,353,321

CLASS 378
34 5,353,322
5,353,323
73 5,353,324
98.2 5,353,325

CLASS 379
5,353,326
22 5,353,327
58 5,353,328
5,353,329
5,353,330
5,353,331
5,353,332
5,353,333
5,353,334
5,353,340
61 5,353,341
67 5,353,335
5,353,336
93 5,353,337
99 5,353,338
5,353,339
257 5,353,342
5,353,343
5,353,344
5,353,345
5,353,346
395 5,353,347
410 5,353,348
5,353,349

CLASS 380
3 5,353,350
29 5,353,353
33 5,353,351
37 5,353,352

CLASS 381
6 5,353,354
8 5,353,355
5,353,356
5,353,357
5,353,358
41 5,353,359
65 5,353,360

CLASS 383
5 5,352,041
6 5,352,042
104 5,352,043

CLASS 384
5,352,045
140 5,352,044
492 5,352,046
572 5,352,047

CLASS 385
16 5,353,361
27 5,353,362
46 5,353,363
88 5,353,364
102 5,353,365
134 5,353,366
135 5,353,367
145 5,353,368

CLASS 392
441 5,353,369
5,353,370

CLASS 395
1 5,353,371
2.16 5,353,372
2.32 5,353,373
2.35 5,353,374
5,353,408
2.38 5,353,375
2.42 5,353,376
2.65 5,353,377
2.81 5,353,378
2.83 5,353,379
3 5,353,380
10 5,353,381
24 5,353,382
5,353,383
51 5,353,384
5,353,385
82 5,353,386
109 5,353,387
117 5,353,388
119 5,353,389
120 5,353,390
125 5,353,391
135 5,353,392
5,353,393
141 5,353,394
5,353,395
142 5,353,396
145 5,353,397
153 5,353,398
159 5,353,399
161 5,353,400
5,353,401
162 5,353,402
164 5,353,403
5,353,404
5,353,405
165 5,353,406
275 5,353,409
5,353,410
325 5,353,411
5,353,412
5,353,413
5,353,414

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5,353,415
5,353,416
5,353,417
375 5,353,418
5,353,419
5,353,420
5,353,421
425 5,353,422
5,353,423
5,353,424
5,353,425
5,353,426
5,353,427
5,353,428
5,353,429
5,353,430
5,353,431
[illegible] 5,353,432
[illegible] 5,353,433
5,353,434
5,353,435
5,353,436

CLASS 408

[illegible] 5,352,048
5,352,049
[illegible] 5,352,050

CLASS 409

48 5,352,051
175 Re.34,751
199 5,352,052
202 5,352,053
269 5,352,054

CLASS 410

24 5,352,055
79 5,352,056
109 5,352,057
110 5,352,058
122 5,352,059
233 5,352,060
338 5,352,061

CLASS 414

17 5,352,062
84.1 5,352,063

CLASS 405

229 5,352,064
259.2 5,352,065
259.6 5,352,066

CLASS 407

5 5,352,067
15 5,352,068

CLASS [illegible]

1 R 5,352,069
102 5,352,070
204 5,352,071

CLASS 406

126 5,352,072
232 5,352,073
5,352,074
234 5,352,075
287 5,352,076

CLASS 411

43 5,352,077
337 5,352,078
518 5,352,079

CLASS 414

24.5 5,352,080
266 5,352,081
412 5,352,082
477 5,352,083
517 5,352,084
796 5,352,085
797 5,352,086

CLASS 415

115 5,352,087
175 5,351,732
182.1 5,352,088
[illegible] 5,352,089

CLASS 416

61 5,352,090
96 A 5,352,091
223 A 5,352,092
234 5,352,093
247 R 5,352,094

CLASS 417

12 5,352,095
5,352,096
42 5,352,097
282 5,352,098
366 5,352,099
[illegible] 5,352,100
410.1 5,352,101

CLASS 418

101 5,352,103

CLASS 419

31 5,352,404
45 5,352,405

CLASS 420

49 5,352,406
561 5,352,407

CLASS 422

7 5,352,408
14 5,352,409
58 5,352,410
5,352,411
78 5,352,412
100 5,352,413
101 5,352,414
105 5,352,415
108 5,352,416
111 5,352,417
122 5,352,418

CLASS 423

126 5,352,419
210 5,352,420
220 5,352,421
224 5,352,422
235 5,352,423
237 5,352,424
244.07 5,352,425
263 5,352,426
328.1 5,352,427
360 5,352,428
[illegible] 5,352,429
[illegible] 5,352,430
574.1 5,352,433

CLASS 424

4 5,352,431
5,352,434
[illegible] 5,352,432
5,352,435
5,352,436
45 5,352,437
5,352,438
52 5,352,439
59 5,352,440
[illegible] 5,352,441
70 5,352,442
72 5,352,443
76.5 5,352,444
78.04 5,352,445
93.2 5,352,451
5,352,661
94.64 5,352,452
5,352,453
150.1 5,352,446
183.1 5,352,447
187.1 5,352,449
190.1 5,352,450
205.1 5,352,596
278.1 5,352,462
410 5,352,454
436 5,352,455
438 5,352,448
[illegible] 5,352,456
5,352,457
450 5,352,458
[illegible] 5,352,459
490 5,352,460
493 5,352,461
551 5,352,463

CLASS 425

58.1 5,352,104
129.2 5,352,105
131.5 5,352,106
141 5,352,107
174.4 5,352,108
192 R 5,352,109
237 5,352,110
351 5,352,111
352 5,352,112
458 5,352,113

CLASS 426

18 5,352,464
87 5,352,465
123 5,352,466
316 5,352,467
330.2 5,352,468
478 5,352,469
515 5,352,470
518 5,352,471
5,352,472
549 5,352,473
[illegible] 5,352,474
603 5,352,475
657 5,352,476

CLASS 427

[illegible] 5,352,477
68 5,352,478
[illegible] 5,352,482
175 5,352,483
202 5,352,480
212 5,352,481
226 5,352,485
228 5,352,484
5,352,486
248.1 5,352,487
250 5,352,488
5,352,489
251 5,352,490
387 5,352,491
397.7 5,352,492
530 5,352,493
562 5,352,494
[illegible] 5,352,495

CLASS 428

31 5,352,496
34.1 5,352,497
35.5 5,352,498
35.7 5,352,500
[illegible] 5,352,501
172 5,352,502
195 5,352,503
216 5,352,504
225 5,352,506
245 5,352,507
264 5,352,508
288 5,352,509
304.4 5,352,510
308.4 5,352,511
311.5 5,352,512
315.5 5,352,513
330 5,352,514
355 5,352,516
357 5,352,499
5,352,515
5,352,517
373 5,352,518
389 5,352,519
402 5,352,520
5,352,521
403 5,352,522
[illegible] 5,352,523
5,352,524
418 5,352,525
422 5,352,526
423.1 5,352,527
426 5,352,528
[illegible] 5,352,529
442 5,352,530
[illegible] 5,352,531
447 5,352,532
472 5,352,533
[illegible] 5,352,534
511 5,352,535
522 5,352,536
549 5,352,537
553 5,352,538
558 5,352,539
623 5,352,540
628 5,352,541
673 5,352,542
[illegible] 5,352,543

CLASS 429

4 5,352,544
57 5,352,545
101 5,352,546
194 5,352,547
197 5,352,548
223 Re.34,752
228 5,352,549

CLASS [illegible]

5 5,352,550
17 5,352,551
18 5,352,552
42 5,352,553
59 5,352,554
62 5,352,555
109 5,352,556
116 5,352,557
125 5,352,558
138 5,352,559
203 5,352,561
253 5,352,562
264 5,352,563
270 5,352,564
320 5,352,565
321 5,352,566
393 5,352,567
5,352,568
504 5,352,569
544 5,352,570
545 5,352,571
551 5,352,572
5,352,573

CLASS 431

7 5,352,114

CLASS 432

181 5,352,115

CLASS 433

19 5,352,116
60 5,352,117
82 5,352,118
125 5,352,119

CLASS 434

95 5,352,120
403 5,352,121

CLASS 435

4 5,352,574
5 5,352,575
5,352,576
6 5,352,578
5,352,579
5,352,580
5,352,581
5,352,582
7.4 5,352,583
7.94 5,352,584
18 5,352,585
34 5,352,586
69.1 5,352,587
5,352,588
69.4 5,352,589
105 5,352,590
121 5,352,591
122 5,352,592
161 5,352,593
172.1 5,352,594
172.3 5,352,595
178 5,352,597
189 5,352,598
190 5,352,599
194 5,352,600
196 5,352,601
210 5,352,602
221 5,352,603
5,352,604
240.4 5,352,605
252.33 5,352,607
255.2 5,352,606
262 5,352,608
270 5,352,609
284 5,352,610

CLASS 436

43 5,352,611
47 5,352,612
63 5,352,613
501 5,352,616

CLASS 437

4 5,352,614
5 5,352,615
34 5,352,617
43 5,352,618
5,352,619
52 5,352,620
5,352,621
5,352,622
5,352,623
63 5,352,624
67 5,352,625
5,352,626
5,352,627
105 5,352,628
161 5,352,629
189 5,352,630
195 5,352,631
200 5,352,632
209 5,352,633
211 5,352,634
228 5,352,635
5,352,636
238 5,352,637

CLASS 439

13 5,352,122
61 5,352,123
70 5,352,124
83 5,352,125
[illegible] 5,352,126
188 5,352,127
5,352,128
5,352,129
266 5,352,130
5,352,131
346 5,352,132
357 5,352,133
584 5,352,134
607 5,352,135
719 5,352,136

CLASS 440

1 5,352,137
5,352,138
6 5,352,139
67 5,352,140
80 5,352,141

CLASS 445

2 5,352,142
3 5,352,143

CLASS 446

176 5,352,144
227 5,352,145
397 5,352,146
409 5,352,147
475 5,352,148
478 5,352,149

CLASS 451

28 5,351,446
69 5,351,444
271 5,351,445
[illegible] 5,351,447

CLASS 452

30 5,352,150
32 5,352,151
127 5,352,152
157 5,352,153

CLASS 454

365 5,352,154

CLASS 462

25 5,352,155

CLASS [illegible]

67 5,352,156
89 5,352,157

CLASS 472

92 5,352,158

CLASS 474

110 5,352,159
117 5,352,160

CLASS 475

123 5,352,161
169 5,352,162
178 5,352,163
223 5,352,164

CLASS 477

11.6 5,351,577
96 5,351,795

CLASS 482

51 5,352,165
52 5,352,166
54 5,352,167
55 5,352,168
57 5,352,169
83 5,352,170
96 5,352,171
120 5,352,172
123 5,352,173
129 5,352,174
146 5,352,176

CLASS 493

23 5,352,177
316 5,352,178
407 5,352,179

CLASS 501

10 5,352,638
40 5,352,639
71 5,352,640
92 5,352,641
95 5,352,642
127 5,352,643

CLASS 502

60 5,352,644
107 5,352,658
262 5,352,645
263 5,352,646
417 5,352,647

CLASS 503

206 5,352,648
207 5,352,649
209 5,352,650
227 5,352,651
5,352,652
5,352,653

CLASS 504

230 5,352,654
285 5,352,655

CLASS [illegible]

434 5,352,656
501 5,352,657

CLASS 514

9 5,352,659
12 5,352,660
5,352,662
13 5,352,664
15 5,352,665
16 5,352,666
19 5,352,667
21 5,352,668
45 5,352,669
54 5,352,670
63 5,352,671
65 5,352,672
78 5,352,673
120 5,352,674
166 5,352,681
182 5,352,682
210 5,352,675
237.5 5,352,676
252 5,352,677
253 5,352,678
279 5,352,679
5,352,680
289 5,352,683
299 5,352,684
301 5,352,685
[illegible] 5,352,686
341 5,352,687
357 5,352,688
374 5,352,689
381 5,352,690
385 5,352,691
397 5,352,692
398 5,352,693
415 5,352,694
423 5,352,695
458 5,352,696
[illegible] 5,352,697
478 5,352,698
559 5,352,699
560 5,352,700
568 5,352,701
571 5,352,702
617 5,352,703
619 5,352,704
630 5,352,705
643 5,352,706
651 5,352,707
729 5,352,708

CLASS 521

38 B1 4,382,124
84.1 5,352,709
137 5,352,710
149 5,352,711

CLASS 522

31 5,352,712
40 5,352,713

CLASS 523

107 5,352,714
115 5,352,715
128 5,352,716

CLASS 524

37 5,352,730
[illegible] 5,352,717
[illegible] 5,352,718
102 5,352,719
162 5,352,720
183 5,352,721
266 5,352,722
398 5,352,724
399 5,352,723
432 5,352,725
435 5,352,726
495 5,352,727
501 5,352,728
549 5,352,729
786 5,352,731
789 5,352,732
[illegible] 5,352,733
[illegible] 5,352,734

CLASS 525

50 5,352,756
57 5,352,736
63 5,352,735
[illegible] 5,352,737
70 5,352,738
75 5,352,739
119 5,352,740
183 5,352,741
276 5,352,742
314 5,352,743
339 5,352,744
391 5,352,745
[illegible] 5,352,746
464 5,352,747

CLASS 526

62 5,352,748
[illegible] 5,352,749
225 5,352,750

CLASS 528

14 5,352,751
26 5,352,752
27 5,352,753
28 5,352,754
45 5,352,755
[illegible] 5,352,757
[illegible] 5,352,758
[illegible] 5,352,759
206 5,352,760
298 5,352,761
322 5,352,762
361 5,352,763
363 5,352,764
392 5,352,765
5,352,766
5,352,767
[illegible] 5,352,768

CLASS 530

303 5,352,769
326 5,352,770
345 5,352,771
350 5,352,772
385 5,352,773

CLASS 534

766 5,352,774

CLASS 536

23.1 5,352,775
23.2 5,352,778
23.51 5,352,779
25.4 5,352,777
56 5,352,780

CLASS 540

[illegible] 5,352,781
205 5,352,782
456 5,352,783

CLASS 544

178 5,352,785
243 5,352,786
309 5,352,787
319 5,352,788

CLASS 546

48 5,352,789
70 5,352,790
165 5,352,791
315 5,352,793
329 5,352,794

CLASS 548

255 5,352,792
262.2 5,352,795
265.2 5,352,796
406 5,352,797
422 5,352,798
515 5,352,799
539 5,352,800
544 5,352,801

CLASS 549

28 5,352,802
220 5,352,803
264 5,352,804
510 5,352,805
5,352,806
542 5,352,807

CLASS 552

557 5,352,808
610 5,352,809

CLASS 554

79 5,352,810
151 5,352,811
163 5,352,812

CLASS 556

21 5,352,813
[illegible] 5,352,814
83 5,352,815
420 5,352,816
423 5,352,817
440 B1 5,262,555

CLASS [illegible]

91 5,352,818
381 5,352,819

CLASS [illegible]

104 5,352,820

CLASS 562

431 5,352,821
492 5,352,822
494 5,352,823
538 5,352,824
580 5,352,825
869 5,352,826
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CLASS 564

4 5,352,828
12 5,352,830
13 5,352,829
104 5,352,831
212 5,352,832
252 5,352,400
294 5,352,833
309 5,352,834
[illegible] 5,352,835
[illegible] 5,352,836

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41 5,352,837
72 5,352,838
366 5,352,839
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37 5,352,184

CLASS 601

32 5,352,185
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134 5,352,187

CLASS 602

7 Re.34,753
23 5,352,189
26 5,352,190

CLASS [illegible]

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179 5,352,209
180 5,352,210
5,352,211
198 5,352,208
246 5,352,213
250 5,352,214
[illegible] 5,352,215
312 5,352,216
378 5,352,217
407 5,352,218

CLASS 606

1 5,352,219
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15 5,352,221
37 5,352,222
51 5,352,223
61 5,352,224
5,352,225
5,352,226
63 5,352,227
64 5,352,228
72 5,352,229
[illegible] 5,352,230
5,352,231
159 5,352,232
167 5,352,233
170 5,352,234
174 5,352,235
194 5,352,236
206 5,352,237
220 5,352,238

CLASS 607

5 5,352,239

CLASS 623

2 5,352,240
[illegible] B1 4,963,150

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D2— 626 351,051
[illegible] 351,052
900 351,053
953 351,054
351,055
961 351,056
964 351,057
969 351,058
D3— [illegible] 351,059
218 351,060
219 351,061
233 351,062
304 351,063
306 351,064
D4— 135 351,065
199 351,066
D5— 21 351,095
D6— 303 351,067
341 351,068
366 351,069
351,070
393 351,071
405 351,072
446 351,073
351,074
471 351,075
476 351,076
[illegible] 351,077
502 351,078
510 351,079
629 351,080
631 351,081
633 351,082
D7— 363 351,083
406 351,084
507 351,085
536 351,086
541 351,087
543 351,088
589 351,089
629 351,090
653 351,091
[illegible] 351,092
[illegible] 351,093
D8— 1 351,094
[illegible] 351,096
351,097
83 351,098
353 351,099
D9— 302 351,101
305 351,100
329 351,102
423 351,104
455 351,103
529 351,105
D10— 32 351,106
351,107
351,108
109 351,109
351,110
113 351,111
116 351,112
78 351,112
[illegible] 351,113
103 351,114
114 351,115
126 351,116
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351,118
96 351,119
143 351,120
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216 351,122
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203 351,128
317 351,129
323 351,130
331 351,131
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351,133
110 351,134
147 351,135
351,136
218 351,173
351,137
D15— 139 351,174
D16— 135 351,176
136 351,177
200 351,178
209 351,179
242 351,180
317 351,175
D17— 14 351,181
24 351,182
D18— 1 351,183
351,184
2 351,185
40 351,186
43 351,187
53 351,188
55 351,189
56 351,190
D19— 34 351,192
D20— 9 351,193
351,194
40 351,195
D21— 104 351,196
157 351,197
158 351,198
351,199
185 351,200
191 351,201
192 351,202
205 351,203
208 351,204
212 351,205
226 351,206
236 351,207
240 351,208
D22— 107 351,209
118 351,210
133 351,211
D23— 213 351,212
351,213
216 351,214
225 351,215
233 351,216
241 351,217
D24— 110 351,226
301 351,225
249 351,219
260 351,220
290 351,221
295 351,222
[illegible] 351,223
351,224
55 351,189
56 351,190
D24— 110 351,226
112 351,227
118 351,228
119 351,229
162 351,230
177 351,231
195 351,232
351,233
206 351,234
211 351,235
215 351,236
229 351,237
D25— 10 351,238
113 351,239
122 351,240
124 351,241
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49 351,245
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88 351,250
118 351,251
149 351,252
122 351,261
127 351,262
129 351,263
153 351,264
162 351,265
D32— 37 351,266
44 351,267
D34— 5 351,268
351,269
D99— 1 351,270

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P.— 7.1 8,918
10 8,919
11 8,920
20 8,921
38.1 8,922
41.3 8,923
78 8,924
87.4 8,925
8,926
8,927
88.9 8,928
8,929

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01 :	5,353,409		5,351,708		5,352,347		5,353,013		5,352,190		5,352,836
02 :	5,351,435		5,351,712		5,352,358		5,353,015		5,352,197		5,353,216
04 :	5,351,409		5,351,757		5,352,360		5,353,024		5,352,218		5,353,368
	5,351,549		5,351,764		5,352,365		5,353,031		5,352,371	12 :	5,351,358
	5,351,590		5,351,774		5,352,414		5,353,033		5,352,445		5,351,422
	5,351,674		5,351,791		5,352,428		5,353,074		5,352,469		5,351,524
	5,351,832		5,351,792		5,352,456		5,353,097		5,352,618		5,351,593
	5,351,847		5,351,793		5,352,470		5,353,117		5,352,862		5,351,642
	5,351,856		5,351,809		5,352,481		5,353,121		5,353,147		5,351,700
	5,351,934		5,351,814		5,352,502		5,353,150		5,353,219		5,351,781
	5,351,977		5,351,843		5,352,512		5,353,167		5,353,313		5,351,842
	5,352,061		5,351,861		5,352,517		5,353,169		5,353,370		5,351,857
	5,352,134		5,351,868		5,352,565		5,353,170		5,353,389		5,351,863
	5,352,435		5,351,887		5,352,582		5,353,172		5,353,393		5,351,890
	5,352,540		5,351,889		5,352,584		5,353,180	09 :	5,351,516		5,351,911
	5,352,804		5,351,903		5,352,585		5,353,181		5,351,518		5,351,920
	5,352,887		5,351,917		5,352,587		5,353,183		5,351,548		5,351,950
	5,352,926		5,351,947		5,352,591		5,353,193		5,351,607		5,351,960
	5,352,984		5,351,958		5,352,594		5,353,206		5,351,616		5,351,982
	5,353,001		5,351,969		5,352,600		5,353,211		5,351,725		5,352,083
	5,353,029		5,351,995		5,352,604		5,353,235		5,351,760		5,352,092
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05 :	5,351,853		5,352,026		5,352,627		5,353,248		5,351,913		5,352,177
	5,351,895		5,352,036		5,352,636		5,353,256		5,351,916		5,352,200
	5,352,056		5,352,042		5,352,661		5,353,293		5,351,951		5,352,202
	5,352,063		5,352,069		5,352,670		5,353,296		5,351,970		5,352,223
	5,352,309		5,352,070		5,352,673		5,353,297		5,352,050		5,352,332
06 :	5,351,341		5,352,090		5,352,674		5,353,314		5,352,087		5,352,465
	5,351,343		5,352,101		5,352,697		5,353,318		5,352,091		5,352,510
	5,351,356		5,352,113		5,352,708		5,353,319		5,352,237		5,352,707
	5,351,388		5,352,116		5,352,715		5,353,320		5,352,238		5,352,890
	5,351,393		5,352,120		5,352,733		5,353,347		5,352,443		5,353,061
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	5,351,426		5,352,149		5,352,764		5,353,372		5,352,519		5,353,189
	5,351,429		5,352,172		5,352,777		5,353,374		5,352,678		5,353,202
	5,351,434		5,352,173		5,352,796		5,353,380		5,352,878		5,353,300
	5,351,440		5,352,174		5,352,871		5,353,382		5,352,962		5,353,303
	5,351,452		5,352,181		5,352,891		5,353,388		5,353,124		5,353,410
	5,351,455		5,352,182		5,352,904		5,353,391		5,353,259		5,353,417
	5,351,481		5,352,196		5,352,911		5,353,420		5,353,315	13 :	5,351,371
	5,351,507		5,352,201		5,352,914		5,353,426		5,353,316		5,351,413
	5,351,508		5,352,226		5,352,934		5,353,429		5,353,381		5,351,640
	5,351,546		5,352,230		5,352,936		5,353,430		5,353,421		5,351,704
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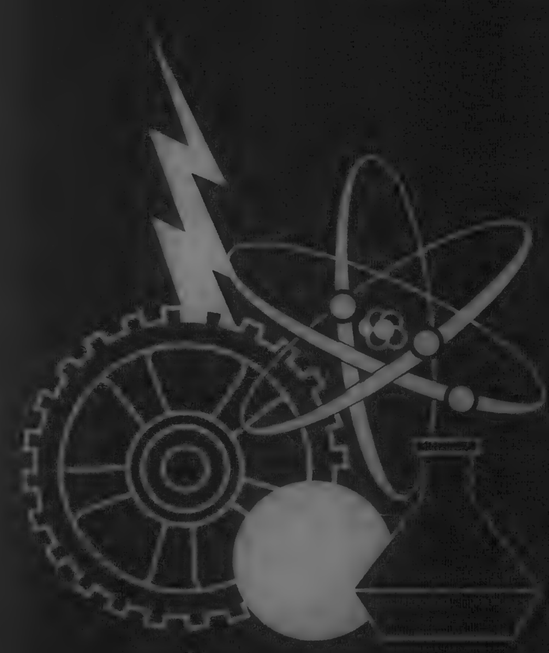
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OFFICIAL GAZETTE

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PATENTS
October 11, 1994



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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1166 O.G. 94, on Sept. 27, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1994, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1165 O.G. 81, on Aug. 23, 1994.

International fees were changed, effective on May 1, 1993, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1994, and were announced in the *Official Gazette* at 1165 O.G. 132, on Aug. 30, 1994.

The schedule of PCT fees (in U.S. dollars), effective Oct. 1, 1994, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	210.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	640.00
—Corresponding prior U.S. national application filed	420.00
—Supplemental search fee, per additional invention (payable only upon invitation	180.00
European Patent Office as ISA	1537.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
—For the first 10 national or regional offices designated	128.00
—For each designation in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee	128.00
—Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	460.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	690.00
—Additional examination fee, per additional invention (payable only upon invitation)	240.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4)	46.00	92.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	330.00	660.00
USPTO was ISA but not IPEA	365.00	730.00
USPTO was neither ISA nor IPEA		
—Filed without a search report from the European Patent Office or the Japanese Patent Office	490.00	980.00
—Filed with a search report from the European Patent Office or the Japanese Patent Office	425.00	850.00
Other National fees		
—For each independent claim in excess of 3	38.00	76.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	120.00	240.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Sept. 9, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on October 8, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

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Utility Patents 5,054,121 through 5,056154
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 6, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,697,285 through 4,698,843
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 4, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,407,021 through 4,408,354
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f))	$480.00
By other than a small entity	$960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f))	$965.00
By other than a small entity	$1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f))	$1,450.00
By other than a small entity	$2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f))	$65.00
By other than a small entity	$130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable	$640.00
(2) unintentional	$1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED August 3, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,342,165	06/249,952	08/03/82
4,342,187	06/220,502	08/03/82
4,342,205	06/260,985	08/03/82
4,342,231	06/217,025	08/03/82
4,342,234	06/216,648	08/03/82
4,342,270	06/264,992	08/03/82
4,342,281	06/278,787	08/03/82
4,342,321	06/224,645	08/03/82
4,342,326	06/230,002	08/03/82
4,342,353	06/268,520	08/03/82
4,342,395	06/230,604	08/03/82
4,342,403	06/243,058	08/03/82
4,342,412	06/240,891	08/03/82
4,342,453	06/256,035	08/03/82
4,342,455	06/245,652	08/03/82
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4,342,557	06/271,504	08/03/82
4,342,567	06/280,616	08/03/82
4,342,572	06/222,285	08/03/82
4,342,575	06/305,193	08/03/82
4,342,578	06/255,984	08/03/82
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4,342,589	06/230,024	08/03/82
4,342,596	06/253,259	08/03/82
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4,944,251	07/318,734	07/31/90
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4,944,262	07/333,316	07/31/90
4,944,268	07/406,934	07/31/90
4,944,280	07/372,602	07/31/90
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4,944,319	07/282,306	07/31/90
4,944,323	07/133,613	07/31/90
4,944,328	07/285,720	07/31/90
4,944,338	07/252,455	07/31/90
4,944,339	07/329,951	07/31/90
4,944,340	07/410,648	07/31/90
4,944,343	07/210,651	07/31/90
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4,944,353	07/110,716	07/31/90
4,944,354	07/334,454	07/31/90
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4,944,367	07/283,617	07/31/90
4,944,368	07/357,496	07/31/90
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4,944,382	07/043,847	07/31/90
4,944,383	07/292,946	07/31/90
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4,944,422	07/442,851	07/31/90
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4,944,424	07/462,468	07/31/90
4,944,427	07/247,230	07/31/90
4,944,429	07/090,490	07/31/90
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4,944,472	07/247,212	07/31/90
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4,944,481	07/213,356	07/31/90
4,944,483	07/288,527	07/31/90
4,944,484	07/372,231	07/31/90
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4,944,521	07/371,838	07/31/90
4,944,528	07/376,827	07/31/90
4,944,530	07/328,680	07/31/90
4,944,532	07/354,565	07/31/90
4,944,534	07/252,770	07/31/90
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4,944,863	07/409,374	07/31/90
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4,944,872	06/732,803	07/31/90
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4,944,954	07/271,002	07/31/90
4,944,961	07/228,985	07/31/90
4,944,966	07/232,933	07/31/90
4,944,971	07/326,739	07/31/90
4,944,985	07/180,367	07/31/90
4,944,991	07/216,890	07/31/90
4,945,016	07/300,899	07/31/90
4,945,020	07/374,491	07/31/90
4,945,027	07/112,797	07/31/90
4,945,032	07/429,561	07/31/90
4,945,046	07/057,143	07/31/90
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4,945,130	07/408,473	07/31/90
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4,945,143	07/383,114	07/31/90
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4,945,153	07/362,513	07/31/90
4,945,158	07/232,333	07/31/90
4,945,160	07/275,149	07/31/90
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4,945,173	07/223,079	07/31/90
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4,945,196	07/386,163	07/31/90
4,945,202	07/300,459	07/31/90
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4,945,208	07/255,462	07/31/90
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4,945,318	07/162,631	07/31/90
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4,945,458	07/314,163	07/31/90
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4,945,476	07/161,188	07/31/90
4,945,483	07/174,900	07/31/90
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4,945,522	07/203,474	07/31/90
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4,945,561	07/301,609	07/31/90
4,945,563	07/247,844	07/31/90
4,945,566	07/274,093	07/31/90

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,797,442, Re. S.N. 08/289,147, Aug. 9, 1994, Cl. 524/394, MELT PROCESSABLE CPVC BLENDS AND ALLOYS THEREOF, Richard C. Neuman, Owner of Record: *B.F. Goodrich Co., Akron, Ohio,* Attorney or Agent: Daniel J. Hudak, Ex. Gp.: 1511

5,019,463, Re. S.N. 08/290,141, Aug. 15, 1994, Cl. 429/12, FUEL CELL SYSTEM, Hisayoshi Matsubara, et. al., Owner of Record: *Yamaha Hatsudoki Kabushiki Kaisha DBA Yamaha Motor Co., Ltd., Iwata-Shi, Japan,* Attorney or Agent: Ernest A. Beutler, Ex. Gp.: 1111

5,134,968, Re. S.N. 08/285,221, Aug. 3, 1994, Cl. 119/57.8, BIRD FEEDER DEVICE, William C. Yancy, Owner of Record: *Inventor,* Attorney or Agent: Tom R. Nestal, Ex. Gp.: 3303

5,138,859, Re. S.N. 08/289,189, Aug. 11, 1994, Cl. 72/110, METHOD AND APPARATUS FOR SMOOTH-ROLLING AND DEEP-ROLLING MULTI-STROKE CRANKSHAFTS, Rudolf Winkens, Owner of Record: *Firma Wilhelm Hegenscheidt Gesellschaft MBH, Erkelenz, Federal Republic of Germany,* Attorney or Agent: Charles R. White, Ex. Gp.: 3201

5,142,637, Re. S.N. 08/287,147, Aug. 8, 1994, Cl. 395/425, DYNAMIC VIDEO RAM INCORPORATING SINGLE CLOCK RANDOM PORT CONTROL, Roy E. Harlin, Owner of Record: *Solbourne Computer, Inc., Longmont, Colo.,* Attorney or Agent: Mark D. Saralino, Ex. Gp.: 2307

5,169,037, Re. S.N. 08/296,145, Aug. 26, 1994, Cl. 222/402.1, PRODUCT BAG FOR DISPENSING AND METHOD FOR PRODUCING THE SAME, Robert J. Davies, Owner of Record: *CCL Industries Inc., Markham, Canada,* Attorney or Agent: Frank Pietrantonio, Ex. Gp.: 3104

5,173,970, Re. S.N. 08/296,925, Aug. 31, 1994, Cl. 002, COMBINED VISORED CAP TYPE PROTECTIVE HELMET AND POUCH FOR BICYCLISTS OR THE LIKE, Roy R. Shifrin, Owner of Record: *Inventor,* Attorney or Agent: Robert V. Sloan, Ex. Gp.: 2407

5,216,735, Re. S.N. 08/296,609, Aug. 29, 1994, Cl. 385/78, METAL CORE FIBEROPTIC CONNECTOR PLUG FOR SINGLE FIBER AND MULTIPLE FIBER COUPLING, Michel Y. Rondeau, Owner of Record: *Fibotech, Inc., San Jose, Calif.,* Attorney or Agent: Eric B. Meyertons, Ex. Gp 2501

5,249,413, Re. S.N. 08/285,222, Aug. 3, 1994, Cl. 56/400.16, RAKE APPARATUS, John T. McDonough, Jr., Owner of Record: *Inventor,* Attorney or Agent: Robert E. Kleve, Ex Gp.: 3506

5,294,201, Re. S.N. 08/289,359, Aug. 11, 1994, Cl. 384/45, LINEAR MOTION ROLLING CONTACT GUIDE UNIT USING A ROD RAIL, Norimasa Agari, Owner of Record: *Nippon Thomson Co., Ltd., Tokyo, Japan,* Attorney or Agent: Thomas S. MacDonald, Ex. Gp.: 2403

5,303,581, Re. S.N. 08/286,148, Aug. 4, 1994, Cl. 73/118.1, METHOD OF AND APPARATUS FOR DETECTING A FAULT IN A RETURN SYSTEM, Alastair M. McQueen, Owner of Record: *Lucas Industries, Solihull, England,* Attorney or Agent: James D. Rynclak, Ex. Gp.: 2605

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,637,967, Reexam. No. 90/003,410, Apr. 15, 1994, Cl. 429/101, ELECTRODES MADE WITH DISORDERED ACTIVE MATERIAL AND METHODS OF MAKING THE SAME, John E. Keem, et. al., Owner of Record: *Ovonic Battery Co., Troy, Mich.,* Attorney or Agent: Richard M. Goldman, IBM Corp., Endicott, N.Y., Ex. Gp.: 1111, Requester: Ryan, Kees & Hohenfeldt, Milwaukee, Wis.

4,917,706, Reexam. No. 90/003,417, Apr. 25, 1994, Cl. 008/652, LIQUID COMPOSITIONS OF PRE-REDUCED SULFUR DYES AND PRODUCTION THEREOF, Laszlo A. Meszaros, Owner of Record: *Sandoz, Ltd., Basle, Switzerland,* Attorney or Agent: Gerald D. Sharkin, c/o Sandoz, Ltd., East Hanover, N.J., Ex. Gp.: 1105, Requester: George F. Helfrich, Newport News, Va.

5,068,534, Reexam. No. 90/003,385, Apr. 1, 1994, Cl. 250/288, HIGH RESOLUTION PLASMA MASS SPECTROMETER, Neil Bradshaw, et. al., Owner of Record: *Fisons, PLC, Ipswich, England,* Attorney or Agent: Merchant, Gould, Smith, Edell, Welter & Schmidt, Ex. Gp.: 2506, Requester: Jerry G. Wright, Flehr, Hohbach, Test, Albritton & Herbert, San Francisco, Calif.

5,197,978, Reexam. No. 90/003,416, Apr. 22, 1994, Cl. 623/001, REMOVABLE HEAT-RECOVERABLE TISSUE SUPPORTING DEVICE, Robert L. Hess, Owner of Record: *Advanced Coronary Technology, Inc., Menlo Park, Calif.,* Attorney or Agent: Alan E. Kopecki, Burns, Doane, Swecker & Mathis, Alexandria, Va., Ex. Gp.: 3308, Requester: Owner

5,211,849, Reexam. No. 90/003,411, Apr. 15, 1994, Cl. 210/645, HEMOFILTRATION SYSTEM AND METHOD, Yuli Kitaevich, et. al., Owner of Record: *Children's Hospital Medical Center, Cincinnati, Ohio,* Attorney or Agent: Gregory F. Ahrens, Wood, Herron & Evans, Cincinnati, Ohio, Ex. Gp.: 1306, Requester: COBE Laboratories, Inc., Aurora, Colo.

5,282,859, Reexam. No. 90/003,418, Apr. 25, 1994, Cl. 623/011, COMPOSITE LIVING SKIN EQUIVALENT, Mark Eisenberg, Owner of Record: *Inventor,* Attorney or Agent: Ralph T. Lilore, Clifton, N.J., Ex. Gp.: 3308, Requester: Hollie L. Baker, Hale & Dorr, Washington, D.C.

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Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED AUGUST 22, 1994 DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
41,487	70/041,487	11/17/1903
41,497	70/041,497	11/17/1903
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972,692	72/441,578	11/13/1973
972,694	72/433,584	11/13/1973
972,695	72/441,923	11/13/1973
972,697	72/445,297	11/13/1973
972,700	72/450,558	11/13/1973
972,701	72/424,641	11/13/1973
972,703	72/409,468	11/13/1973
972,705	72/437,762	11/13/1973
972,708	72/440,372	11/13/1973
972,711	72/441,430	11/13/1973
972,717	72/430,658	11/13/1973
972,718	72/430,900	11/13/1973
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972,737	72/436,891	11/13/1973
972,738	72/435,276	11/13/1973
972,739	72/412,430	11/13/1973
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972,777	72/412,146	11/13/1973
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972,805	72/446,345	11/13/1973
972,806	72/446,346	11/13/1973
972,808	72/446,462	11/13/1973
972,816	72/399,185	11/13/1973
972,817	72/410,189	11/13/1973
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972,860	72/411,436	11/13/1973
972,863	72/437,109	11/13/1973
972,864	72/439,383	11/13/1973
972,866	72/421,302	11/13/1973
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972,875	72/410,865	11/13/1973
972,876	72/411,628	11/13/1973
972,877	72/411,626	11/13/1973
972,878	72/414,879	11/13/1973
972,879	72/414,880	11/13/1973
972,880	72/415,390	11/13/1973
972,882	72/418,649	11/13/1973
972,884	72/440,895	11/13/1973
972,886	72/416,190	11/13/1973
972,888	72/420,778	11/13/1973
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972,905	72/408,007	11/13/1973
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972,921	72/442,243	11/13/1973
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972,926	72/415,255	11/13/1973
972,927	72/416,254	11/13/1973
972,928	72/420,891	11/13/1973
972,929	72/434,540	11/13/1973
972,930	72/435,424	11/13/1973
972,943	72/415,622	11/13/1973
972,944	72/430,698	11/13/1973
972,945	72/435,502	11/13/1973
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973,036	72/441,125	11/13/1973
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973,041	72/443,924	11/13/1973
973,048	72/408,214	11/13/1973
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973,060	72/428,539	11/13/1973
973,061	72/428,547	11/13/1973
973,063	72/440,174	11/13/1973
973,064	72/440,216	11/13/1973
973,066	72/451,261	11/13/1973
973,067	72/451,262	11/13/1973
973,068	72/406,697	11/13/1973
973,070	72/408,805	11/13/1973
973,071	72/410,958	11/13/1973
973,073	72/416,651	11/13/1973
973,076	72/423,696	11/13/1973
973,079	72/427,785	11/13/1973
973,082	72/435,324	11/13/1973
973,085	72/440,380	11/13/1973
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973,125	72/428,104	11/13/1973
973,133	72/413,635	11/13/1973

Erratum

"All reference to Patent No. 5,346,346 to Gerald D. Martin et. al., of Ohio for 'CARGO SHORING ASSEMBLY FOR A FREIGHT TRANSPORT VEHICLE' appearing in the *Official Gazette* of September 13, 1994 should be deleted since no patent was granted."

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5,345,624
Contact:
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Thomas G. Brown III
2547 8th Street, Suite 27
Berkeley, CA 94710
Fax: (510) 845-4889

Trademark Seminar

The Office of the Assistant Commissioner for Trademarks is organizing a seminar to be held Thursday, November 10, 1994, at the Hyatt Regency in Crystal City (2799 Jefferson Davis Highway, Arlington, Va. 22202) concerning the telecommunications industry. The seminar will inform the Examining Attorneys of the Trademark Examining Groups about the recent advances in the industry and will discuss the new terminology that is being used to identify and describe these new technologies. The program will last the entire day, from about 10:00 AM until about 4:00 PM. The morning segment will consist of presentations by invited representatives from various facets of the telecommunications industry with the goal of educating the attorneys in the new technologies that have developed in the field over the last few years. The afternoon session will be less formal and will consist of a round-table discussion between industry representatives and Examining Attorneys during which actual identifications of goods or recitations of services will be considered.

This seminar will be open to individuals other than Trademark Office employees. Participation will be limited to approximately 50 non-PTO attendees due to space constraints of the meeting room. Admission will be on a first come, first serve basis. The seminar is being held for informational purposes only and active participation will be limited to invited industry representatives and PTO employees only. For further information, contact Jessie Marshall, Administrator for Trademark Classification and Practice at (703) 308-8900.

Sept. 12, 1994

PHILIP G. HAMPTON, II
Assistant Commissioner for Trademarks

Certificates of Correction
For Week of October 11, 1994

P. 8,356	5,141,875	5,240,239	5,275,538
P. 8,451	5,142,178	5,242,057	5,275,548
P. 8,459	5,142,616	5,244,478	5,275,834
P. 8,460	5,142,641	5,244,509	5,276,637
P. 8,516	5,147,876	5,244,595	5,276,727
P. 8,545	5,149,399	5,244,617	5,277,786
P. 8,597	5,152,824	5,245,009	5,277,919
P. 8,623	5,153,044	5,245,151	5,278,234
P. 8,624	5,155,253	5,245,215	5,278,322
P. 8,740	5,156,645	5,245,814	5,278,718
P. 8,777	5,163,943	5,246,332	5,278,757
Re. 34,505	5,164,328	5,246,868	5,279,183
Re. 34,602	5,165,944	5,247,434	5,280,172
D. 313,642	5,173,079	5,247,691	5,280,358
D. 335,103	5,173,546	5,248,275	5,280,392
D. 335,620	5,173,634	5,248,631	5,280,677
D. 344,815	5,175,266	5,249,057	5,281,246
D. 346,813	5,182,579	5,249,358	5,281,712
D. 349,328	5,182,657	5,249,507	5,282,055
4,452,817	5,184,001	5,249,597	5,282,215
4,611,453	5,187,336	5,250,295	5,282,443
4,694,064	5,188,885	5,250,308	5,282,564
4,868,967	5,191,216	5,250,897	5,283,313
4,879,144	5,192,349	5,251,049	5,283,361
4,884,065	5,192,799	5,252,086	5,283,481
4,908,688	5,194,113	5,252,251	5,283,657
4,916,650	5,194,646	5,252,466	5,284,723
4,961,728	5,197,998	5,252,877	5,284,897
4,999,799	5,199,027	5,254,189	5,285,059
5,004,410	5,200,777	5,254,441	5,285,198
5,014,207	5,203,731	5,254,638	5,285,829
5,015,718	5,206,154	5,254,747	5,285,888
5,016,110	5,208,211	5,255,603	5,286,499
5,016,117	5,208,303	5,258,016	5,286,952
5,030,227	5,208,389	5,258,245	5,286,961
5,030,259	5,210,313	5,258,779	5,287,072
5,039,620	5,213,225	5,259,750	5,287,127
5,047,523	5,215,472	5,259,893	5,287,669
5,051,961	5,215,859	5,260,002	5,287,724
5,053,105	5,216,176	5,262,083	5,287,756
5,057,498	5,216,795	5,262,735	5,287,806
5,061,234	5,217,905	5,263,119	5,288,447
5,068,507	5,218,432	5,263,221	5,288,541
5,070,483	5,218,637	5,264,925	5,288,692
5,075,744	5,220,133	5,265,507	5,289,269
5,079,098	5,220,205	5,265,800	5,289,369
5,086,379	5,223,633	5,266,395	5,289,452
5,089,509	5,224,775	5,266,700	5,289,487
5,091,632	5,225,296	5,266,718	5,290,262
5,094,224	5,225,428	5,267,158	5,290,294
5,094,778	5,227,035	5,267,777	5,290,412
5,097,010	5,227,457	5,268,135	5,290,669
5,098,101	5,227,470	5,268,326	5,290,776
5,098,263	5,229,409	5,268,398	5,290,813
5,101,167	5,233,038	5,269,769	5,290,905
5,101,784	5,233,058	5,270,061	5,291,104
5,107,930	5,233,486	5,270,225	5,291,249
5,108,827	5,233,692	5,270,990	5,291,261
5,114,581	5,235,233	5,271,883	5,291,980
5,115,321	5,235,687	5,272,856	5,292,392
5,118,207	5,236,413	5,273,039	5,292,635
5,122,606	5,236,921	5,273,625	5,293,475
5,128,586	5,237,337	5,274,240	5,293,531
5,137,019	5,237,342	5,274,413	5,293,790
5,139,798	5,238,835	5,274,769	5,293,810
5,140,742	5,239,495	5,275,090	5,294,210
5,141,235	5,239,529	5,275,363	5,294,393
5,294,523	5,310,910	5,321,465	5,330,994
5,294,548	5,311,073	5,321,700	5,331,006
5,294,728	5,311,086	5,321,722	5,331,476
5,294,836	5,311,093	5,321,723	5,331,543
5,295,239	5,311,124	5,321,745	5,331,544
5,295,646	5,311,264	5,322,014	5,331,630
5,295,686	5,311,518	5,322,301	5,331,812
5,296,190	5,311,703	5,322,341	5,331,910
5,296,761	5,311,779	5,322,405	5,332,013
5,297,137	5,311,813	5,322,505	5,332,101
5,297,259	5,312,011	5,322,789	5,332,244
5,297,370	5,312,495	5,322,819	5,332,540
5,297,415	5,312,884	5,322,936	5,332,557
5,297,831	5,313,086	5,322,944	5,332,730
5,298,095	5,313,713	5,323,178	5,332,828
5,298,384	5,313,895	5,323,248	5,333,106
5,298,417	5,314,465	5,323,489	5,333,419
5,298,832	5,314,593	5,323,657	5,333,435
5,299,059	5,314,704	5,323,780	5,333,949
5,300,421	5,314,816	5,324,458	5,334,072
5,300,850	5,314,907	5,324,637	5,334,198
5,300,964	5,314,912	5,324,658	5,334,208
5,300,999	5,315,137	5,325,202	5,334,213
5,302,271	5,315,379	5,325,475	5,334,222
5,302,460	5,315,410	5,325,622	5,334,410
5,302,716	5,315,640	5,325,673	5,334,416
5,302,757	5,315,755	5,325,821	5,334,561
5,302,781	5,316,014	5,326,326	5,334,879
5,302,979	5,316,063	5,326,920	5,334,998
5,303,192	5,316,077	5,327,027	5,335,198
5,303,351	5,316,341	5,327,031	5,335,252
5,303,626	5,316,430	5,327,038	5,335,262
5,303,916	5,316,635	5,327,131	5,335,469
5,304,331	5,316,725	5,327,193	5,335,833
5,304,631	5,316,730	5,327,877	5,336,043
5,304,685	5,316,781	5,327,884	5,336,047
5,304,751	5,316,904	5,327,955	5,336,066
5,304,906	5,316,985	5,328,075	5,336,085
5,304,923	5,317,100	5,328,517	5,336,145
5,305,189	5,317,343	5,328,592	5,336,267
5,305,250	5,317,538	5,328,601	5,336,431
5,305,329	5,317,721	5,328,718	5,336,468
5,305,359	5,318,071	5,328,822	5,336,660
5,305,549	5,318,184	5,328,830	5,336,718
5,305,569	5,318,258	5,328,858	5,336,807
5,305,759	5,318,410	5,328,968	5,336,832
5,306,720	5,318,507	5,328,981	5,336,946
5,307,050	5,318,533	5,329,273	5,337,025
5,307,079	5,318,583	5,329,288	5,337,038
5,307,127	5,318,962	5,329,340	5,337,181
5,308,737	5,319,634	5,329,362	5,337,385
5,309,275	5,320,111	5,329,552	5,337,456
5,309,360	5,320,312	5,329,657	5,337,571
5,309,466	5,320,397	5,329,963	5,338,504
5,309,467	5,320,857	5,330,079	5,338,522
5,309,819	5,320,947	5,330,176	5,338,746
5,309,829	5,320,953	5,330,231	5,339,385
5,310,408	5,321,022	5,330,285	5,339,641
5,310,642	5,321,246	5,330,557	5,339,648
5,310,739	5,321,289	5,330,789	

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Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

August 29-September 2, 1994

Date Issued	Type of Case*	Proceeding or Appl'n No.	Party/Parties	Issue	TTAB Decision
8/29	I-X	74/084,383	Murata Mfg. Co., Ltd.	2(d)	Refusal Reversed
8/29	OPP	81,016	Comptoir Nouveau de la Parfumerie v. Northwest Packaging, Inc.	2(d)	Opposition Dismissed

(1)EX-EX PARTE APPEAL; OPP-OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ FOR RECONSIDERATION

Date Issued	Type of Case*	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
8/29	I-X	"REMEMBER" [perfume, cologne, dusting powder, eau de toilette, bath soaps, bath bubbles, hand soaps, shaving cream, aftershave, lipstick, blush, nail polish, mascara, and eye shadow]	"HOLIDAYS TO REMEMBER" [natural air fresheners, namely, potpourri]		No

(1)EX-EX PARTE APPEAL; OPP-OPPOSITION; C-CANCELLATION; CU-CONCURRENT USE; (R)-REQ FOR RECONSIDERATION

Date Issued	Type of Case*	Proceeding or Appl'n No.	Party/Parties	Issue	TTAB Decision
8/29	I-X	74/056,280	Romar Int'l Corp	whether the matter asserted for registration functions as a trademark for the goods recited in the application [ornamentation]	Refusal Affirmed
8/29	I-X	74/121,985	Mitsui Sekiyu Kagaku Kogyo Kabushiki Kaisha	2(d)	Refusal Reversed
8/30	I-X	74/274,025	SeniorTours Int'l., Inc.	2(e)(1)	Refusal Affirmed

Date Issued	Type of Case*	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
8/29	I-X		"UNITED KIDS" [and design] [children's, adults' and infants' back packs, back packs in the shape of animals, all purpose sport bags, tote bags, belt bags, diaper bags]		No
8/29	I-X		"ARLON" [unprocessed synthetic resins, namely, glass fiber reinforced polyamide 6T resins and other polyamide 6T resins for use in manufacturing in the automotive, electronic and electronic industries]	"ARLON" [engineering plastics made of polyketone thermoplastic materials all soley for use in fluid handling equipment; machine parts made of polyketone thermoplastic materials all soley for use in fluid handling equipment, etc.]	No
8/30	I-X		"SENIORTOURS" [franchising, namely, offering technical assistance in the establishment and operation of travel and tour agencies, travel agency services]		No

(1)EX-EX PARTE APPEAL; OPP-OPPOSITION; C-CANCELLATION; CU-CONCURRENT USE; (R)-REQ FOR RECONSIDERATION

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Date Issued	Type of Case	Proceeding or Appln No	Party/Parties	Issue	TTAB Decision	Recommended for Publication
Opposer's/ Petitioner's Mark and Goods/Services		Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney			
8 30	C CNC	17,641	West Florida Seafood Inc. v. Jet Restaurants Inc.	2(d) motion for remand from the Fed. Cir.	Petition to Cancel Granted	No
"FAST EDDIE'S PLACE" [restaurant services]		"FAST EDDIE'S FAMOUS HAMBURGERS" [restaurant services]				
8 30	F X	74/043,986	Norcia, Inc.	2(d)	Refusal Affirmed	No
"BRUNO ROSSI" [shoes]		"FIRE AND WATER DESIGN" [beverage receptacles, made of metal and fabric, having fire and waterproof properties]				
8 30	F X	74/190,145	SafeSupplies, Inc.	whether applicant complied with drawing requirements	Refusal Affirmed	No
"BRUNO ROSSI COLLECTION" [shoes]		"ULTRAPERM" [permanent hair wave lotions for cold, warm and hot permanents, hair fixatives, hair styling preparations; hair relaxers, and dyes for hair eyebrows, and eyelashes]				
8 30	F X	74/221,951	Kuebler GmbH & Co. KG	2(d)	Refusal Affirmed	No
"ULTRA WAVE" [preparation for straightening the hair, hair cream oil and hair moisturizer]						
8 30	F X	74/195,254	Johnson Controls, Inc.	whether as evidenced by the specimens of use the mark is in use in commerce for the listed services	Refusal Affirmed	Yes
"ULTRA CLIK," [hair gel activator, curling cream, neutralizing solution, curl booster, waving lotion, detangling shampoo and protein conditioner] et. al.						
"IRON VALVE EXPRESS" [and design] [manufacture of third custom products to the order and specifications of consumer request]						

(DEX = EX PARTE APPEAL, OPP = OPPOSITION, C = CANCELLATION, CUE = CONCURRENT USE, (R) = REQ. FOR RECONSIDERATION

Date Issued	Type of Case	Proceeding or Appln No.	Party/Parties	Issue	TTAB Decision	Recommended for Publication
Opposer's/ Petitioner's Mark and Goods/Services		Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney			
8 31	F X	74/272,584	Danskin, Inc.	2(d)	Refusal Affirmed	No
"DANSKO" [footwear, namely, clogs]		"DANSKO" [men's, women's and children's clothing, namely, leotards, bodysuits, tights, headwear, and dance and theatrical costumes]				
8 31	F X	74/316,770	Health Power Management Corp.	2(d)	Refusal Reversed	No
"HEALTH POWER" [and design] [health care providing facilities; health care services, namely, management of health maintenance organizations]		"HEALTHPOWER" [providing temporary services, namely, personnel for the health care industry]				
8 31	F X	74/118,729	Harold Mangelsen & Sons, Inc.	2(d)	Refusal Affirmed	No
"TOUCH OF GLITZ" [metallic gift wrapping items]		"GLITZ" and "PUTTIN' ON THE GLITZ" [products used in gift wrapping]				
9 1	F X	74/305,921	Joseph Saavedra	2(d)	Refusal Affirmed	No
"SANTA FE SANDS COSMETICS" [and design] [palette of face powders concealers and foundations, lipsticks, make up brushes, sold exclusively in beauty trade shows, salons, spas, studios and similar channels of trade]		"SANTA FE" [after shave lotion, cologne, hair shampoo, antiperspirant, deodorant for personal use, shave cream, after shave balm, and toilet soap]				

(DEX = EX PARTE APPEAL, OPP = OPPOSITION, C = CANCELLATION, CUE = CONCURRENT USE, (R) = REQ. FOR RECONSIDERATION

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Box ITU	All intent to use documents, excluding the initial application and amendments to allege use.
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In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

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PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	10/18/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	08/12/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	12/28/93
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	10/28/93
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/08/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—JOSEPH J. ROLLA, JR., Director	308-1782	10/09/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	03/08/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—GERALD GOLDBERG, Director	305-9600	09/14/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—CARLTON CROYLE, Director	308-0771	09/19/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/06/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—BOBBY R. GRAY, Director	305-4700	02/24/93
DESIGN, GROUP 2900—ROBERT E. GARRETT, Director	308-0511	12/22/92
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	09/27/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—N. GODICI, Director	308-1148	09/07/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	10/14/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	04/23/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	08/19/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during September 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.
Patents.....Numbers 4,045,824 to 4,051,551 inclusive
Plant Patents.....4,097 to 4,116

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TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of Sept. 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/22/94	07/07/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/12/94	06/28/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/21/94	07/11/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/07/94	05/25/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/07/94	04/06/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/06/94	06/27/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/15/94	05/11/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/09/94	07/20/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/13/94	05/07/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/21/94	07/25/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/01/94	05/06/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/24/94	07/13/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/31/94	05/24/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	03/11/94	0—
Renewals (All Classes)	06/03/94	0—
Section 12(C) Publications (All Classes)	0—	0—

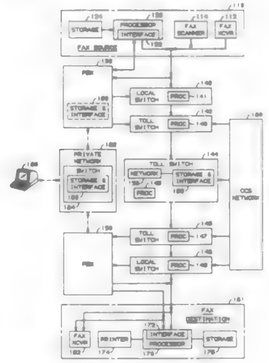
1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

OCTOBER 11, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,922,348 (2409th)
FACSIMILE SERVICE
Alexander C. Gillon, Bedminister; Adam V. Reed, Morganville, and John M. Scanlon, Mendham, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Reexamination Request No. 90/003,020, Apr. 5, 1993.
Reexamination Certificate for Patent No. 4,922,348, issued May 1, 1990, Ser. No. 309,586, Feb. 10, 1989.
Int. Cl.[5] H04N *1/32, 1/21*
U.S. Cl. 358—407



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **15–18** is confirmed.

Claims **1**, **20**, and **22–25** are cancelled.

Claims **2–6**, **8–13**, **19** and **21** are determined to be patentable as amended.

Claims **7** and **14** dependent on an amended claim, are determined to be patentable.

New claims **26–28** are added and determined to be patentable.

2. In a switched communications network connectable to a plurality of *communication terminals, including* facsimile sources and facsimile destinations, the network comprising *a program controlled switching system providing* storage, *and the network further comprising a plurality of local switches for serving originating and terminating telephone requests,* a method of transmitting facsimile image signals, comprising the steps of:

[in response to receiving from a communication source an identification of a communication destination,]

in a first local switch controlled by a processor means under the control of a program, receiving from a communication source that is one of said communication terminals a normal destination number, without a special facsimile prefix, for identifying a communication destination;

in said processor means of said first local switch, under the control of said program, determining a class of service of said communication source;

responsive to determining that [the] *said class of service is for a* communication source *that* is a source of facsimile image signals[;] *, under the control of said program,* **171** in response to said determining,] establishing a connection in the switched communications network, from said source to [said storage] *said program controlled switching system;*

transmitting said normal destination number to said program controlled switching system;

in said program controlled switching system, extending said connection to said storage;

responsive to establishing said *extended* connection, transmitting the image signals over the connection from the facsimile source to the storage; and

subsequently, transmitting, *under the control of said program controlled switching system,* the image signals over the network from the storage to [the identified] *a facsimile* destination *served by a second local switch and identified by said normal destination number.*

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,754

FLUID SAMPLING APPARATUS

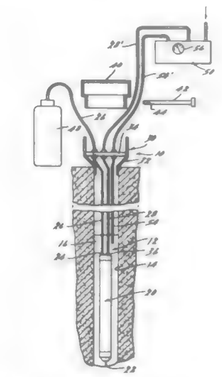
William D. Dickinson, Ypsilanti; David Mioduszewski, and Frederick E. Bernardin, Jr., both of Ann Arbor, all of Mich., assignors to QED Environmental Systems, Inc., Ann Arbor, Mich.

Original No. 4,489,779, dated Dec. 25, 1984, Ser. No. 470,305, Feb. 28, 1983. Application for reissue May 9, 1988, Ser. No. 192,289

Int. Cl.[5] E21B *49/08*

U.S. Cl. 166—64

11 Claims



4. A groundwater sampling apparatus [according to claim 1] *for withdrawing groundwater samples from a groundwater monitoring well, said apparatus having dedicatable inground components to prevent the apparatus from contaminating another well, said apparatus comprising:*

a gas-actuated pump adapted to be submerged in the groundwater within said well for pumping a portion of said groundwater therefrom, said pump being permanently dedicatable to said well and having a pump body portion including a gas chamber, a groundwater chamber having an inlet and an outlet, and a flexible bladder for isolating said gas chamber from said groundwater chamber, said groundwater chamber being in communication with said groundwater in said well through said inlet when said pump is submerged therein;

a wellhead assembly permanently dedicatable to said well and including a wellhead body portion adapted to be secured to said well to isolate the interior of said well from the above ground surroundings, said wellhead assembly further including a gas conduit having one end sealingly connected to said gas chamber and an opposite end fixedly and sealingly connected to said wellhead body portion, a substantially continuous groundwater conduit having one end sealingly connected to said outlet of said groundwater chamber, said groundwater conduit substantially uninterruptedly passing through said wellhead assembly to an opposite end in communication with the above ground surroundings for collecting a sample quantity of said groundwater from said well prior to substantial contact with the above ground air, wherein said wellhead assembly further comprises a static head conduit having an open end extending below the surface of said groundwater in said well and a second end connected to said body portion, said controller apparatus further including means selectively connectable to, and disconnectible [form] *from,* said static head conduit for supplying a measuring fluid thereto at a pressure sufficient to force substantially all of said groundwater out of said open end of said static head conduit, said controller apparatus further including means for measuring the pressure of said measuring fluid in order to determine the level of said groundwater in said well; *and*

controller apparatus including means selectively connectable to, and disconnectable from, said wellhead assembly in fluid communication with said gas conduit for supplying an actuating gas to said gas chamber of said pump and for alternately pressurizing and relieving the pressure of said actuating gas in said gas chamber in order to cause said bladder to alternately contract and relax and actuate said pump, said pump relying substantially upon the natural hydraulic head of said well to urge groundwater into said groundwater chamber upon relaxation of said bladder, said controller apparatus including a source of pressurized actuating gas, control valve means for connecting said pressurized gas source to said gas conduit and disconnecting said pressurized gas source therefrom in response to predetermined actuating gas pressure levels in said gas chamber, said controller apparatus being portable and transportable so as to be selectively connectable from, the gas conduit of said monitoring well or to the gas conduit of correlative dedicated inground components in similar monitoring wells. 40

* * * * *

The questions raised in reexamination request No. 90/001,494, filed Apr. 18, 1988, have been considered and the results thereof are reflected in this reissue patent which constitutes the reexamination certificate required by 35 U.S.C. 307 as provided in 37 CRF 1.570(e).

Re. 34,755

INTERCONNECT FABRIC PROVIDING CONNECTIVITY BETWEEN AN INPUT AND ARBITRARY OUTPUT(S) OF A GROUP OF OUTLETS

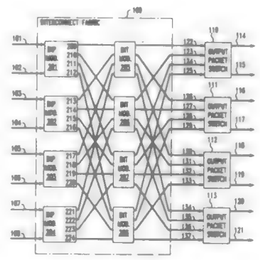
Kai Y. Eng, Middletown; Mark J. Karol, Fair Haven, and Yu S. Yeh, Freehold, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Original No. 4,955,016, dated Sep. 4, 1990, Ser. No. 400,184, Aug. 29, 1989. Application for reissue Sep. 4, 1992, Ser. No. 940,425

Int. Cl.[5] H04L *12/56;* H04Q *11/04*

U.S. Cl. 370—60

12 Claims



8. An interconnect fabric comprising:

a plurality of input ports for receiving data packets;

a plurality of groups of output ports, each group comprising a separate number of one or more output ports, each of said output ports for supplying data packets as an output and each

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output port of a particular group being assigned to a common destination which is different from a destination assigned to output ports of at least another group, where the separate number of output ports comprised in a group of output ports may be the same as or different from the number of output ports comprised in other groups of output ports, at least one of the groups comprising more than one output port; and

means for mapping each received data packet to a group of output ports and for mapping concurrently received data packets destined for a particular one of said destinations to respective output ports in a particular group assigned to the particular destination, said meawns for mapping including means for establishing a separate communications path from each separate input port at which each data packet is received to a separate output port of the group of output ports to which the data packet is mapped and for transmitting each data packet over the separate established communications path, (*a*) *a plurality of input modules, each input module comprising* (*1*) *at least one input, each input being coupled to a separate interconnect fabric input port,* (*2*) *a plurality of outputs and* (*3*) *means for selectively connecting any input to any output for forming a first portion of the established communications path for each data packet,* (*b*) *a plurality of intermediate modules, each intermediate module comprising* (*1*) *a plurality of inputs, each input is coupled to a separate input module output,* (*2*) *a plurality of outputs, each output being coupled to a separate interconnect fabric output port of a predetermined number of groups of interconnect fabric output ports, and* (*3*) *means for selectively connecting any intermediate module input to any intermediate module output for forming a second portion of the established communications path for each data packet.*

Re. 34,756

EXCRETION OF POTASSIUM ION BY PROSTANOIC ACID DERIVATIVES

Ryuji Ueno, and Hiroyoshi Osama, both of Hyogo, Japan, assignors to Kabushikikaisha Ueno Seiyaku Oyo Kenkyujo, Osaka, Japan

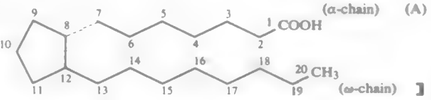
Original No. 5,075,334, dated Dec. 24, 1991, Ser. No. 557,834, Jul. 26, 1990. Application for reissue Sep. 30, 1992, Ser. No. 953,756

Claims priority, application Japan, Jul. 27, 1989, 1-197090

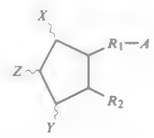
Int. Cl.[5] A61K *31/215, 31/557*

U.S. Cl. 514—530 **16 Claims**

1. A method for inducing decrease in potassium ion concentration in the blood which comprises administering, to a subject having an increased potassium ion concentration in the blood, [a derivative of a prostanoic acid having the skeleton]



a 15-keto-16-mono- or di-haloprostaglandin represented by formula (*I*) in an amount effective in inducing decrease in potassium ion concentration in the blood [wherein said concentration is increased]:



(*I*)

wherein X and Y are independently selected from the group consisting of hydrogen, hydroxy, halo, lower alkyl, hydroxy(lower)alkyl and oxo, with the proviso that at least one of X and Y is not hydrogen; the five-membered ring shown in structural formula (*I*) *may contain at least one double bond; Z is hydrogen or halogen; A is —CH2OH, —COCH2OH, —COOH or a functional derivative thereof: R1 is a bivalent saturated or unsaturated, lower or medium aliphatic hydrocarbon residue which is unsubstituted or substituted with halo, oxo or aryl; R2 is a saturated or unsaturated, lower or medium aliphatic hydrocarbon residue which is unsubstituted or substituted with oxo, hydroxy, halo, lower alkoxy, lower alkanoyloxy, cyclo(lower)alkyl, aryl or aryloxy; R2 contains at least four carbon atoms, with the proviso that the third carbon atom of R2 removed from the five-membered ring being substituted with an oxo group and the fourth carbon atom of R2 removed from the five-membered ring being substituted with one or two halogen atoms.*

PLANT PATENTS

GRANTED OCTOBER 11, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,930

MINIATURE ROSE PLANT NAMED SAVASCHOOL

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Nov. 4, 1993, Ser. No. 148,824

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—8.2 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described.

8,931

HYBRID TEA ROSE PLANT NAMED DEVSPILIO

Stanley G. Marciel, and Jeanne A. Marciel, both of Aptos, Calif., assignors to DeVor Nurseries, Inc., Watsonville, Calif.

Filed Nov. 4, 1993, Ser. No. 148,826

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—14 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea rose class, substantially as shown and described.

8,932

APRICOT TREE (GOLDENSWEET)

Lowell G. Bradford, 12439 E. Savana Rd., and Norman G. Bradford, 11875 E. Savana Rd., both of Le Grand, Calif. 95333

Filed Jan. 24, 1994, Ser. No. 185,390

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—39 **1 Claim**

1. A new and distinct variety of apricot tree, substantially as illustrated and described, which most nearly resembles the Patterson apricot (U.S. Plant Pat. No. 2,877) by being self-fertile and by producing fruit that is medium in size, orange in color, and firm in texture, but is distinguished therefrom and an improvement thereon by blooming about 7 days later and by producing fruit that matures about seven days earlier and is much sweeter in flavor.

8,933

HEATHER PLANT NAMED *ERICA PERSOLUTA* RUBY

Bruno L. Imazio, Watsonville, Calif., assignor to Imazio Nursery, Inc., Watsonville, Calif.

Filed Nov. 16, 1993, Ser. No. 153,458

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—54.1 **1 Claim**

1. A new and distinct cultivar of heather plant, substantially as herein shown and described, characterized by its vibrant red-magneta flowers and by a blooming period which begins earlier than *Erica persoluta* 'Sunset' and later than *Erica persoluta* 'Flame.'

8,934

PETUNIA PLANT NAMED CAS 42

Gabriel Danziger, Post Beit Dagan, Israel, assignor to Florfis AG, Binningen, Switzerland

Filed Dec. 7, 1993, Ser. No. 162,360

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of petunia plant named Cas 42, as illustrated and described.

8,935

CHRYSANTHEMUM PLANT NAMED EFFECT

Cornelius P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Sep. 23, 1993, Ser. No. 125,240

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—74.1 **1 Claim**

1. A new and distinct Chrysanthemum plant named Effect, as described and illustrated.

8,936

CHRYSANTHEMUM PLANT NAMED CINDERELLA

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed May 18, 1993, Ser. No. 63,071

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—80 **1 Claim**

1. A new and distinct Chrysanthemum plant named Cinderella, as described and illustrated.

8,937

NEW GUINEA IMPATIENS NAMED BSR-266 APPLE STAR

Scott C. Trees, Arroyo Grande, Calif., assignor to George J. Ball, Inc., West Chicago, Ill.

Filed Oct. 14, 1993, Ser. No. 135,543

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct cultivar of New Guinea Impatiens named BSR-266 Apple Star, substantially as herein shown and described, which:

(a) exhibits attractive bicolored pale pink/red star-patterned blossoms,
(b) exhibits a good basal branching character, and
(c) exhibits an open-branching compact small mounded growth habit.

8,938

IMPATIENS PLANT NAMED TEMPEST

Lyndon W. Drewlow, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Dec. 13, 1993, Ser. No. 165,589

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct cultivar of Impatiens plant named Tempest, as illustrated and described.

8,939

FICUS BENJAMINA CV. 'TOOLITTLE'

James K. Atchison, 1247 Gondola Ct., Boyton Beach, Fla. 33426

Filed Nov. 19, 1993, Ser. No. 156,290

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—88.9 **1 Claim**

1. A new and distinct variety of *Ficus benjamina* plant named 'TooLittle' as herein illustrated and described.

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PATENTS

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ERRATA

For CLASS	See PATENT NO.
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451-005	5,353,551
451-048	5,353,552
451-032	5,353,553
451-096	5,353,554
072-363	5,353,639
528-392	5,354,340
095-101	5,354,346
118-050	5,354,370
118-410	5,354,373
117-099	5,354,412
505-433	5,354,535
429-059	5,354,576
512-017	5,354,737
426-053	5,354,818
427-079	5,354,819
562-444	5,354,892
560-155	5,354,895
560-209	5,354,896
562-470	5,354,897
562-485	5,354,898
562-488	5,354,899
514-012	5,354,900
562-507	5,354,901
562-601	5,354,902
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564-086	5,354,904
564-186	5,354,905
554-052	5,354,906
564-325	5,354,907

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ERRATA—CONTINUED

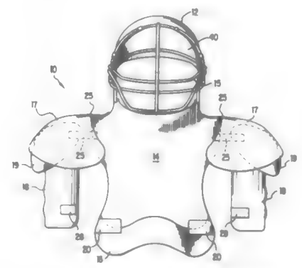
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558-270	5,354,923
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523-206	5,354,939
504-136	5,354,944
523-310	5,354,945
235-494	5,355,001
347-061	5,355,151
358-336	5,355,166
347-108	5,355,190
359-631	5,355,224
348-645	5,355,225
346-107	5,355,303
371-022	5,355,369
310-071	5,355,373
392-342	5,355,456
395-024	5,355,528

PATENTS

GRANTED OCTOBER 11, 1994

GENERAL AND MECHANICAL

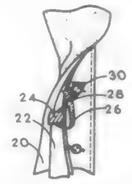
5,353,437
COMBINATION HELMET AND BODY PROTECTION DEVICE
Michael R. Field, and Gregory D. Caldwell, both of Glenview, Ill., assignors to Protec Field Gear, Inc., Des Plaines, Ill.
Filed May 24, 1993, Ser. No. 66,712
Int. Cl.[5] A41D *13/00;* **A42B** *1/00*
U.S. Cl. 2—2 **10 Claims**



1. A body and head protection unit comprising
a) an upper torso unit shaped to cover a wearer's chest, back and shoulder sections and supported primarily by the wearer's chest and back, and composed of an impact resistant material, said upper torso unit having an opening and for said wearer's neck, a generally flat surface extending around said neck opening, and a first lip extending upward from said flat surface, wherein said first lip and said flat surface are substantially coextensive;
b) an outer helmet composed of an impact resistant material and having an inner surface and an outer surface, said outer helmet having a face opening and an opening at the bottom thereof and a flat ledge formed substantially around the sides and back of said opening and a second lip extending down from said ledge;
c) an inner helmet securable to the wearer's head, and having an inner surface corresponding to the shape of a human head and an outer surface corresponding to the inner surface of said outer helmet such that when said inner helmet is located inside said outer helmet said wearer's head can move freely inside said outer helmet; and
d) means for removably securing said outer helmet to said upper torso unit so that said outer helmet cannot move with respect to said upper torso unit, and said flat surface and said first lip of said upper torso unit are in contact with said ledge and said second lip of said outer helmet such that the forces applied to said outer helmet are transferred to said upper torso unit and to the chest and back of said wearer.

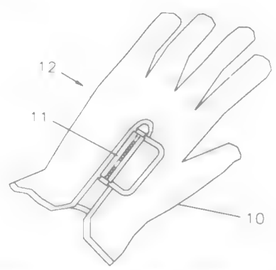
5,353,438
NECKTIE RESTRAINT
Reggie Voiles, Great Falls, Mont., assignor to Tie-Mate, Inc., Helena, Mont.
Filed Apr. 12, 1993, Ser. No. 47,653
Int. Cl.[5] A41F *17/00*
U.S. Cl. 2—145 **1 Claim**

1. A method for securing a necktie on a shirt having a plurality of spaced apart buttons comprising the steps of:
providing a necktie having a relatively wide tail with a sewn in place label and a relatively narrow tail being knotted in any suitable well known manner;
placing the relatively narrow tail through the sewn in place label on the relatively wide tail;
placing a removable, reusable necktie restraint having a longitudinal strip of flexible material, a sewn button hole on one end and a circular hole on the other end longitudinally through the sewn in place label;
looping the removable, device around the sewn in place



label such that the end with the sewn button hole passes through the circular hole on the other end; and
attaching the end with the button hole to a most proximate button on the shirt having a plurality of spaced apart buttons.

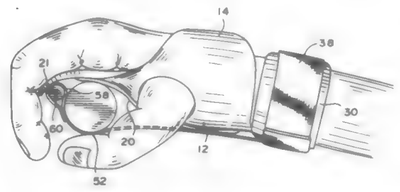
5,353,439
GOLF SCORING DEVICE
John G. Kurtz, 102 Hoffman Rd., Rochester, N.Y. 14622, and Edward L. Zabelny, 198 Bayway Dr., Webster, N.Y. 14580
Filed Nov. 5, 1992, Ser. No. 972,217
Int. Cl.[5] D05B *19/00*
U.S. Cl. 2—160 **1 Claim**



1. In combination, a glove, a golf scoring device, and means for attaching and detaching said scoring device to and from said glove, said glove having a flap joined by a first end to said glove, said flap having a loop fabric strip affixed on the side facing said glove, said glove having a fabric hook strip affixed to said glove beneath said flap, said golf scoring device comprising:
a fabric hook strip, and
a flexible plastic strip having plastic beads strung together and connected thereto by a linkage of nylon thread, said nylon thread being inserted in end holes of said flexible plastic strip and knotted and said flexible plastic strip being affixed to said fabric hook strip with adhesive,
and means for attaching and detaching said scoring device to and from said glove comprising extending said fabric hook strip partly around said glove flap and attaching said fabric hook strip to said fabric loop strip of said glove flap and then fastening said loop fabric strip of said glove to said fabric hook strip fastened to said glove beneath said flap.

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5,353,440
GRIP GLOVE
William B. Meldeau, 200 Pacific Coast Hwy., #245, Huntington Beach, Calif. 92648
Filed Feb. 3, 1993, Ser. No. 12,650
Int. Cl.[5] A41D *19/00*
U.S. Cl. 2—161.1 13 Claims



1. The combination of a glove and auxiliary grip for grasping a cylindrical object exerting a pulling force on a user comprising:

said glove having an upperside and an underside;

a palm section forming a covering for the palm of the hand of the user and extending from the fingers to the heel of the hand of the user;

a pair of tab panels, one of each of said pair being integrally connected to said palm section, said tab panels including an adjustable tab panel separable fastener for connecting said panels together, said tab panels overlaying each other and forming a backhand portion of the glove when in place on the hand of a user;

a wrist band connected to said palm section adjacent the heel of a hand when worn; said wrist band including an adjustable wrist band separable fastener for securing the wrist band around the user's wrist;

a wrist strap having a fixed end secured to said wrist band and a free end;

a wrist strap separable fastener including a separable fastener element connected adjacent said fixed end of said wrist strap and a complimentary separable fastener element connected to said free end of said wrist strap, whereby said wrist strap is wrapped around and overlays said wrist band to provide a rigid connection to a user's wrist; and,

an auxiliary grip including a grip strap having one end fixed to said wrist strap and a free end extending longitudinally proximate a midline of said palm section, said free end terminating in a protuberance forming a bearing surface for said cylindrical object exerting a pulling force.

5,353,441
SOCK SUPPORT DEVICE
M. Denise Lazorchak, 35 Winterlane Cir., Essex Junction, Vt. 05452-3433
Filed Sep. 13, 1993, Ser. No. 120,057
Int. Cl.[5] A41F *11/16*
U.S. Cl. 2—303 3 Claims

1. A sock support device, comprising,

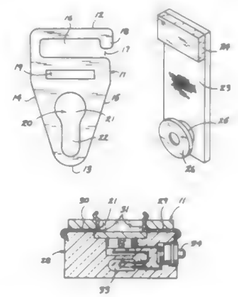
a rigid support plate having a first end spaced from a second end, and a first side spaced from a second side, the support plate having a front wall spaced from a rear wall, with a support slot directed through the support plate extending through the front wall and the rear wall and extending through the second side spaced from and in adjacency to the first end, with the support slot spaced from the first side, a slot entrance directed through the second side into the support slot, and

an abutment flange extending from the first end along the second side, with the abutment flange extending to the slot entrance, and

a support loop received within the support slot between a support slot first side and the abutment flange, and

a keyhole slot, the keyhole slot including an entrance opening having a predetermined diameter, with the entrance opening spaced between the first side and the second side, with an extension slot in communication with the entrance opening, having a slot width less than said predetermined diameter, the extension slot extending from the entrance opening to the second end in a spaced adjacency such that the extension slot is orthogonally oriented relative to the support slot, and

a support web mounted to the support plate between the support slot and the entrance opening, with the support web having a projecting boss mounted to the support web, with the projecting boss having a boss width less than said



slot width, and the projecting boss including a boss head integrally mounted to the projecting boss in a coaxially aligned relationship, with the boss head spaced from and extending parallel to the support plate front wall, with the boss head having a head diameter less than said predetermined diameter for reception through the entrance opening, and

the support plate includes an intermediate slot between the support slot and the keyhole slot, with the support web having an anchor lug received through the intermediate slot.

5,353,442
RAPID ACTION PLUNGER
Karl Rotter, Dartmouth, Canada, assignor to Rapid Action Equipment Limited, Halifax, Canada
Filed Jan. 6, 1994, Ser. No. 178,111
Int. Cl.[5] E03D *11/00*
U.S. Cl. 4—255.11 5 Claims

1. A drain or pipe clearing devise comprising:

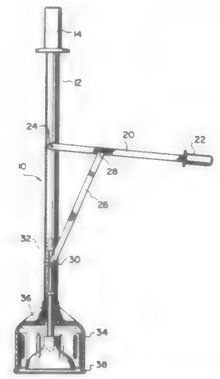
a plunger-rod guide-pipe;

a suction cup rod with attached suction cup, wherein the upper portion of said suction cup rod is mounted internally and coaxially with the lower portion of said plunger-rod guide-pipe;

a lever arm pivotally connected to the upper portion of said plunger-rod guide-pipe;

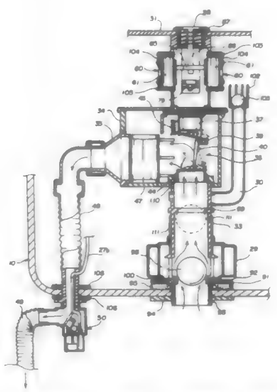
a link arm operatively connected at one end to the lever arm, at a position distal to the connection of the lever arm to the plunger-rod guide-pipe, and connected at the other end to the suction cup rod, wherein said connection to the suction cup rod is through an aperture cut in the lower end of the plunger-rod guide-pipe;

whereby actuation of the lever arm causes said suction cup rod to move telescopically relative to said plunger-rod guide-pipe,



thereby causing motion of said suction cup to clear the drain or pipe.

5,353,443
TOILET ASSEMBLY HAVING A COMBINED AUTOMATIC VENTILATION AND FLUSHING SYSTEM
Jae K. Sim, 5021 Crescent Dr., Anaheim, Calif. 92807
Filed Jul. 23, 1993, Ser. No. 95,003
Int. Cl.[5] E03D *9/04*
U.S. Cl. 4—216 18 Claims



1. A toilet assembly having a combined ventilation and flushing system, said toilet assembly comprising:

a toilet stool including a toilet bowl, a water flush guiding pipe communicating with said bowl for allowing flush water to be flushed into the toilet bowl, a seat ring disposed on said bowl, a toilet seat cover disposed on the peripheral top of said seat ring, a sensor aperture disposed on said toilet seat cover and a siphon passage disposed in said toilet bowl for discharging waste products and associated objectionable odor directly from the toilet bowl to a sewer discharge line;

a toilet water holding tank containing flush water, said toilet water holding tank having a water intake valve, a flapper valve, a flapper tube having a plurality of vertical channels disposed on the interior thereof, a float ball, a first water hose, and a second water hose;

a multifunctional tube disposed in said toilet water holding tank, said multifunctional tube communicating with said toilet bowl and said flapper valve at one end, and connected to said siphon passage at another end thereof, said multifunctional passage including:

a vertical main tube having a circumferential raised portion disposed on an interior surface thereof, a plurality of vertical slits disposed on a wall thereof, and a plurality of legs insertable into said plurality of vertical channels of said flapper tube,

an odor air valve member disposed in an upper portion of said vertical main tube, said odor air valve member containing an electromagnet, a lever having two inwardly hooked ends, an air valve plate, and an air valve handle,

a pocket extending from a side wall of the upper portion of said vertical main tube and communicating with said opening of said vertical main tube,

a fan motor disposed in said pocket, and

an L-shaped downward tube extending from said pocket;

a solenoid member disposed on the top of said multifunctional tube, said solenoid member including:

a pair of returnable solenoids having a solenoid pivot lever attached to an armature plate thereof, respectively,

a pair of Y-shaped solenoid levers having a pair of chains attached to both outside ends thereof for connecting to said flapper valve, and a pair of Y-shaped upper wings for contacting said solenoids and a lower wing, respectively whereby when said pair of returnable solenoids are actuated by the electric source, said pair of solenoid levers push said pair of Y-shaped upper wings so as to lift said flapper valve for automatically flushing the toilet assembly;

a manual push button supported on the top of said multifunctional tube, said manual push button having a push button support whereby when the user pushes said push button, said push button support pushes said both lower wings so as to lift said flapper valve for manually flushing the toilet assembly;

a trap way valve member connected to said L-shaped downward tube at a top opening thereof and to an air tube and a trap way connected to said siphon passage at a side wall opening thereof, said trap way valve including:

a piston having a piston shaft and a piston head, both disposed in a piston housing,

a water hole disposed on the side wall of the lower portion of said piston housing and connected to said second water hose,

a trap way valve having a valve lever operatively supported by said piston head whereby said trap way valve is opened or closed by the water pressure of the second water hose, said second water hose having an air aperture disposed on the upper portion thereof and located over the water surface of the toilet water holding tank,

a movable ball valve disposed to move between a first position adjacent said flapper valve to a second position in a lower portion of said vertical main tube for allowing exhaust gas to flow from the bowl to the siphon passage in said first position or flush water to flow from the toilet water holding tank via said legs to the toilet bowl in said second position, and

a motion sensor disposed on the front exterior of said toilet water holding tank, said motion sensor being operable independently of the opening and closing of the toilet seat cover due to said sensor aperture of the toilet seat cover, whereby with the toilet seat cover open, while the user sits on the seat ring, the motion sensor actuates for ventilation and allowing the electromagnet to be operated so that the contacting plate moves upwardly to the electromagnet, both ends of the inwardly hooked lever push the odor air valve handle and the odor air valve handle is open, and simultaneously the fan motor

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and fan operate for ventilating the objectionable odor through the opened trap way valve to the sewer discharge line through the trap way and siphon passage, and in turn when the user stands up, the motion sensor actuates for flushing and allowing the pair of returnable solenoids to be operated so that the flapper valve moves upwardly through the pair of solenoid pivot levers and the pair of chains, and simultaneously the piston moves up by the water pressure of the second water hose for allowing the trap way valve to be closed so that the flush water discharges the waste products and associated objectionable odor directly to the sewer discharge line through the trap way and siphon passage.

5,353,444

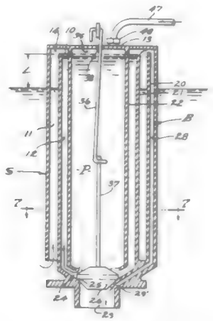
PRIMER ACTIVATED WET LEG-CONTROL VENTED LOW LEVEL SYPHON FLUSH FOR TOILETS

John S. Osmond, 731 Cedar St., Santa Monica, Calif. 90405

Continuation-in-part of Ser. No. 951,837, Sep. 28, 1992, Pat. No. 5,243,714, which is a continuation-in-part of Ser. No. 695,402, May 3, 1991, Pat. No. 5,230,102. This application May 12, 1993, Ser. No. 62,132

Int. Cl.[5] E03D *1/06*

U.S. Cl. 4—370 **13 Claims**



1. A primer tank activated syphon flusher for toilets having a flush tank and a flush pipe opening into a toilet bowl, and having a water level control means responsive to depletion of water in said flush tank to refill said primer tank and said flush tank to predetermined water levels, and including;

a syphon within the flush tank and comprised of a suction leg opening within the bottom of the flush tank and extending upward to a bridge substantially above the aforesaid predetermined waterlevel, and a discharge leg continuing from the suction leg and extending downward from the bridge and discharging through a jet opening and into the flush pipe,

a header spaced above the bridge to define a closed transfer passage connecting the suction leg and discharge leg of the syphon, there being a breather passageway communicating the transfer passage so as to allow air flow to the atmosphere external of the tank and bowl while permitting free exhaust of air for refilling the two legs of the syphon,

the primer tank being passively closed at a bottom discharge opening into the flush pipe by a flush valve seated on said flush pipe, and closed at its top to outside atmosphere by a header, there being a vent-control means for restricting air flow into the primer tank to permit refilling with primer water and to create a partial vacuum to retard discharge of said primer water,

and means for opening the flush valve to initiate syphoning by discharge of primer water over the jet opening for inducing a suction effect causing suction leg water to rise over the bridge from said predetermined water level and into the discharge leg and from said jet opening into the flush pipe, and continuing until the flush tank water is depleted.

5,353,445

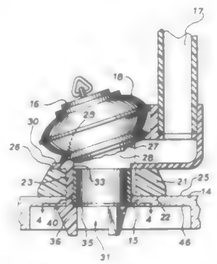
CONDUIT ATTACHMENT SYSTEM

Peter W. Denzin, Glenbeulah, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Feb. 16, 1993, Ser. No. 17,589

Int. Cl.[5] E03D *1/34*

U.S. Cl. 4—378 **7 Claims**



6. A flush valve assembly connectable to a wall of a toilet tank, the wall having an outlet formed therein, the assembly comprising:

a resilient seal positionable against an interior side of the wall such that the seal surrounds the outlet, the seal also having a central bore which is alignable with the outlet;

a flush valve housing positionable in the seal bore and the outlet, the housing having a first flange extending radially outwardly inboard of the seal to trap the seal against the wall when the valve and seal are installed in the tank, the housing also having a resilient extension member that can extend through the seal bore and outlet, the extension member having a second flange that can extend radially outwardly on the exterior side of the wall;

said extension member being radially compressible between an assembly position in which the extension member can pass through the outlet and a locking position in which the second flange can catch on the exterior side of the wall; and

a blocking ring receivable within the housing adjacent the extension member so as to assist in maintaining the extension member in its rest position, the extension member having a first fastener element and the blocking ring having a second fastener element, the first and second fastener elements cooperating to retain the ring in a locked position adjacent the extension member;

wherein the extension member also has a radially inwardly extending flange outboard of the blocking ring that limits outboard movement of the blocking ring inside the connector.

5,353,446

MEANS FOR FACILITATING THE ENTRY AND EXIT OF A PERSON IN A WHEELCHAIR INTO AND OUT OF A POOL OR BODY OF WATER

Edwin M. Baranowski, 75 Marrus Dr., Gahanna, Ohio 43230

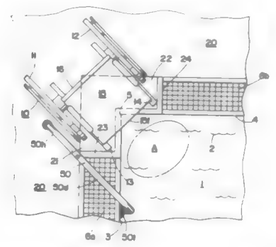
Filed Oct. 5, 1993, Ser. No. 132,098

Int. Cl.[5] E04H *4/14*

U.S. Cl. 4—496 **10 Claims**

1. A platform for facilitating the entry and exit of a person in a wheelchair (a) from the wheelchair and into a pool and (b) out of the pool back into the wheelchair, the wheelchair including a pair of front and rear wheels and a seat, the pool including substantially vertical sides and a substantially horizontal deck defining an upper edge, said platform comprising:

a platform support adapted to be secured to the pool deck adjacent the upper edge, said platform having two spaced apart front sections defining an opening therebetween, each section capable of receiving a respective one of the front wheels of the wheelchair, such that when the wheelchair is disposed thereon, at least a portion of the front edge of the seat of the wheelchair can be positioned,



vertically with respect to the water surface, over the water and spaced from the pool edge, said platform including means for preventing movement of the wheelchair beyond a front edge portion of the front sections, whereby movement of the person from the seat of the wheelchair entering into the pool, and exiting from the pool back into the seat of the wheelchair, is an essentially direct vertical movement with respect to the water facilitated by the opening between the front sections.

5,353,447

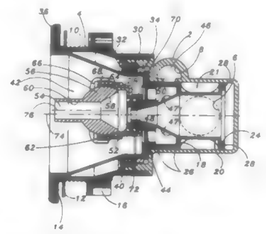
ROTATING HYDROTHERAPY JET WITH ADJUSTABLE OFFSET OUTLET NOZZLE

Eugene M. Gravatt, Valencia, Calif., assignor to B&S Plastics, Inc., Oxnard, Calif.

Continuation-in-part of Ser. No. 970,638, Nov. 2, 1992, abandoned. This application Feb. 17, 1994, Ser. No. 197,616

Int. Cl.[5] A61H *33/00*

U.S. Cl. 4—541.6 **26 Claims**



1. A rotatable hydrotherapy jet, comprising:

a jet housing,

a water inlet to said housing,

a tapered water nozzle within said housing for forming water flowing through said inlet into a jet,

a single outlet nozzle having an entrance port that is generally in-line with said water nozzle for receiving a water jet directly from said water nozzle, and

a support structure for holding said outlet nozzle downstream from said water nozzle to receive said jet and discharge it along an outlet axis, said support structure being mounted to said housing, rotatable relative to the housing about a rotation axis and holding said outlet nozzle so that it can be oriented with its outlet axis offset from and at a non-intersecting and non-parallel orientation with respect to said rotation axis, such that the flow of said jet through the outlet nozzle at said non-intersecting and non-parallel axis orientation imparts a turning moment to said support structure, causing it to rotate along with said outlet nozzle.

5,353,448

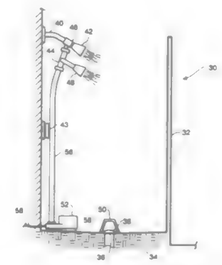
WATER RECYCLING SYSTEM USING SPENT RECYCLED WATER WITH FRESH WATER

Gary M. Lee, 4008 Van Noord, Studio City, Calif. 91604

Filed Jun. 30, 1992, Ser. No. 906,418

Int. Cl.[5] A47K *3/22*

U.S. Cl. 4—597 **17 Claims**



1. A water recycling system for reissuing spent and recycled water in combination with fresh water from a fresh water source in a shower bathing environment, said system comprising:

a) means for issuing fresh water from the fresh water source in a shower bathing facility,

b) first water dispensing head means connected to the means for issuing fresh water from the source thereof for dispensing the fresh water and where the water may collect in a catchment area of the shower bathing facility,

c) recycling means comprising a recycle tube for recycling water collected in the water catchment area of said facility for reuse thereof,

d) a second water dispensing head means located in close proximity to said first water water dispensing head means and being operatively connected to said recycle tube for using the water recycled from the catchment area thereby allowing water from the catchment area to be reused in the shower bathing environment,

e) a manifold interposed between the means for issuing fresh water and the first water dispensing head means and the second water dispensing head means for receiving fresh water from the means for issuing fresh water,

f) a pumping means adapted to be located in the water catchment area of the shower bathing facility and being connected to a lower end of the recycle tube for pumping spent water in the water catchment area up to the manifold under pressure,

g) a diverter valve connected to and operating in conjunction with said manifold and being connected to said recycle tube, for selectively diverting and allowing fresh water from the fresh water source to issue through the first water dispensing head means or the second water dispensing head means, and

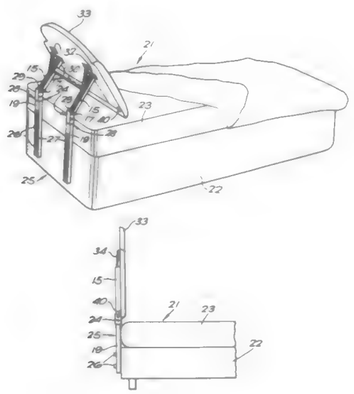
h) manually actuable means on said diverter valve manipulatable by an operator of said recycling system to selectively divert water between the first and second water dispensing head means and to also control the amount of fresh water and recycled water to simultaneously issue from the second water dispensing head means.

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5,353,449
TOILET TRAINING METHOD
Clifford T. Rubenstein, Carmel, Ind.; Sharon L. Harrell, and James R. Hunt, both of Dunwoody, Ga., assignors to Tinkle Magic, Inc., Carmel, Ind.
Filed Jul. 16, 1993, Ser. No. 93,072
Int. Cl.[5] A63B *69/00*
U.S. Cl. 4—661 12 Claims

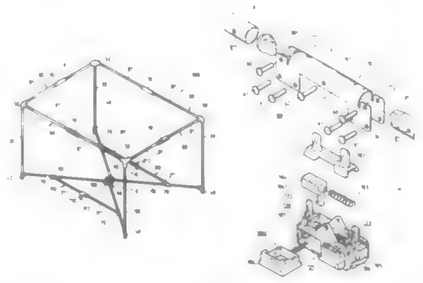
1. A method for toilet training a person, such as a toddler, comprising the steps of:
(a) providing a toilet bowl having toilet bowl water therein;
(b) combining a chromotrophic indicator with said toilet bowl water to provide an aqueous chromotrophic indicator, wherein said aqueous chromotrophic indicator changes from a first coloration to a second coloration when contacted with urine;,
(c) urinating in said aqueous chromotrophic indicator in said toilet bow, thereby changing said indicator from said first coloration to said second coloration; and
(d) providing a positive training stimulus to the person being trained by the person observing the color change of the indicator in the toilet bowl.

5,353,450
HEADBOARDS
Joseph M. Katan, 13C St. Mary's Avenue, Finchley, London N3 1SN, Great Britain
Filed Mar. 16, 1993, Ser. No. 910,142
Claims priority, application United Kingdom, Jan. 17, 1990, 9001040; Jul. 31, 1990, 9016748
Int. Cl.[5] A47C *20/04*
U.S. Cl. 5—53.2 10 Claims



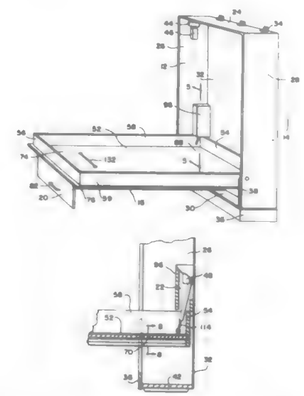
1. A bed headboard comprising:
a headboard panel having a top and a bottom;
supporting means for supporting said panel in a substantially vertical position and an inclined position, said supporting means comprising mounting means for mounting said panel at one end of a bed, said mounting means having an upper end for disposition substantially at the level of the surface of the bed, and struts each having upper and lower ends and being pivotally connected at said lower end to said upper end of said mounting means and being pivotally connected at said upper end to said panel at a position distant from said top and bottom of said panel, said struts being positioned to extend substantially at right angles to said panel when said panel is in said inclined position.

5,353,451
PLAYPEN FRAME STRUCTURE
Yu-Kuang Hsiung, No.1-1 Hsi-Keng, Tsao Chiao Hsiang, Miao Li Hsien
Filed Jun. 3, 1993, Ser. No. 71,918
Int. Cl.[5] A47D *9/00*
U.S. Cl. 5—99.1 7 Claims



1. A playpen frame structure comprising:
a rectangular top rail structure which is defined by four top rails pivotally connected by four corner joints to form a closed-loop structure; and
four upright, elongated, primary legs corresponding to the corner joints, each having an upper end pivotally connected to an associated one of the corner joints and a lower end with a ground support member mounted thereon to support on the ground;
primary reinforcement bars each of which has a first end pivoted to one of the ground support members and diagonally extends therefrom to have a second end thereof pivotally connected to a common central joint;
each of the top rails comprising two elongated bar members having first ends pivotally connected to a common mid-joint and second ends connected to the corner joints, said mid-joint comprising a joint body having two side plates which are substantially parallel and connected together at a top side thereof by a connecting portion to define a space for receiving the first ends of the two elongated bar members therein, pivots being provided to secure the first ends of the elongated bar members to the joint body to allow the elongated bar members to be rotatable relative to the joint body between an expanded position and a collapsed position, said side plates each having a notch formed thereon in an opposite manner;
each of said mid-joints comprising retaining means which has a base disposed in the notches formed on the side plates of the joint body, said base having two partitioned chambers formed therein, inside each of which chambers a paw is disposed in a sideward movable manner and biased by first resilient means to partially protrude out of a side opening of the chamber to engage and abuttingly support the first end of one of the elongated bar members in the expanded position;
each of said mid-joints further comprising release means to move said paw against the first resilient means into the chamber to break the abutting engagement between the paw and the elongated bar member;
said central joint comprising two side members each having two of said primary reinforcement bars pivotally connected thereto to allow said two primary reinforcement bars to be rotatable relative to the side member about axes substantially parallel with the length of said primary legs, the two side members being connected together by two spaced-apart but parallel link members, each of said link members having two ends respectively pivoted to the two side members to allow said side members to be rotatable relative to the link members about axes substantially normal to the length of said primary legs.

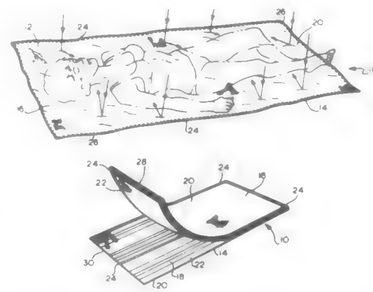
5,353,452
FOLDING BED ASSEMBLY
Robert A. Rulis, 3510 Larimer St., Denver, Colo. 80205
Filed Sep. 8, 1993, Ser. No. 117,627
Int. Cl.[5] A47C *17/40*
U.S. Cl. 5—136 4 Claims



3. A folding bed assembly for selectively and alternatively moving between a horizontal position and a vertical position adjacent to a vertical support surface, comprising:
a cabinet support assembly operatively connected to the vertical support surface;
a bed pad comprising upper and lower panels each with a head and foot end and opposed sides said pad encasing an unitary transverse axle between said upper and lower panels and projecting from both sides of the bed pad for pivotally connecting the bed pad axle into bushings housed by the cabinet support assembly, said axle positioned adjacent to and offset a predetermined distance from the head end of the bed pad to afford a mechanical advantage to a counterbalance mechanism mounted on the head end of the bed pad.

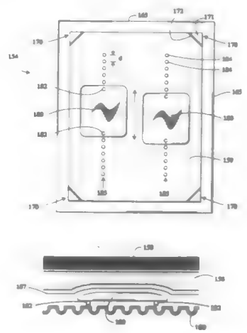
5,353,453
TANNING TOWEL WITH REFLECTIVE SURFACE
Mary D. Naumann, 4048 Plumbrook Dr., Toledo, Ohio 43623
Filed Aug. 6, 1993, Ser. No. 103,284
Int. Cl.[5] A47G *9/06*
U.S. Cl. 5—417 9 Claims

1. A suntanning towel comprising a front surface and a back surface, said front surface of a reflective, pliant fabric material



and said back surface of a moisture-absorbent fabric material.

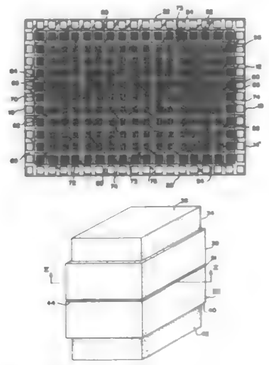
5,353,454
ADJUSTABLE LUMBAR SUPPORT FOR FLOTATION SYSTEMS
Milton A. Callaway, Dahlonega; Charles E. Steed, Alpharetta, both of Ga., and Lynn D. Larson, Lincoln, Nebr., assignors to Simmons Company, Atlanta, Ga.
Division of Ser. No. 850,480, Mar. 12, 1992, Pat. No. 5,245,716, which is a continuation-in-part of Ser. No. 673,203, Mar. 21, 1991, Pat. No. 5,144,707. This application Aug. 24, 1993, Ser. No. 110,890
Int. Cl.[5] A47C *27/08*
U.S. Cl. 5—451 3 Claims



1. A water mattress construction, comprising:
an elongate base having a longitudinal axis;
a tray having a longitudinal axis and disposed atop said base such that the longitudinal axis of said tray is substantially parallel to said longitudinal axis of said base;
a top portion disposed atop said tray portion, said top portion combining with said tray and base portion to define an inner cavity;
a liquid-filled bladder; and
at least one lumbar support member positioned intermediate said bladder and said tray said lumbar support being slidably adjustable along the longitudinal axis of said tray.

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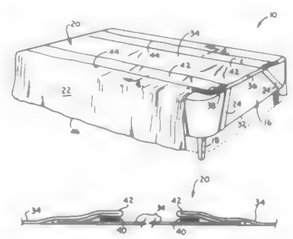
5,353,455
PADDING BODY WITH INDIVIDUAL MODULAR ELEMENTS
George Loving, and Douglas M. Wilson, both of Richmond, Va., assignors to Carpenter Co., Richmond, Va.
Filed May 12, 1993, Ser. No. 59,604
Int. Cl.[5] A47C *27/14, 27/16*
U.S. Cl. 5—481 31 Claims



1. A padding body, comprising:
a flexible grid member having an upper surface and a lower surface and apertures extending between said upper and lower surfaces, and said apertures being defined by bordering sections of said grid member with each bordering section having an upper and a lower surface;
individual modular elements with each modular element being resilient and each having an intermediate section, said individual modular elements each including a peripheral recess formed in said intermediate section and defined by a lower contact surface and an upper contact surface of said intermediate section, and each of said individual modular elements being releasably fixed within a respective one of the apertures formed in said grid member with the bordering sections of said grid member extending into the peripheral recesses formed in said modular elements such that the upper and lower surfaces of said bordering sections are positioned between the upper and lower contact surfaces of said intermediate section; and
an external frame structure formed of a resilient material and encompassing said grid member, said frame structure being secured to said grid member to maintain said grid member in a suspended state between an upper and a bottom surface of said external frame structure.

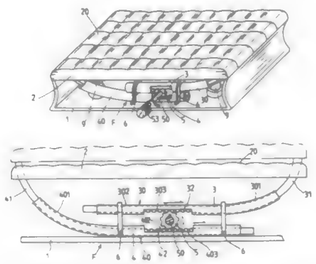
5,353,456
HEIGHT-ADJUSTABLE BEDSKIRT ASSEMBLY
Martha Evans, 1245 Ann Ave., Kansas City, Kans. 66102
Filed Oct. 16, 1992, Ser. No. 962,417
Int. Cl.[5] A47G *9/02*
U.S. Cl. 5—493 9 Claims

1. An adjustable bedskirt assembly for use beneath a mattress on a bed, comprising:
(a) a generally rectangular support sheet presenting a top surface and a perimeter margin, said perimeter margin including coupling means;
(b) an elongate ruffle presenting upper and lower margins, said upper margin including coupling means for removably coupling said ruffle with said support sheet perimeter margin in a depending relationship between said mattress and a floor surface;
(c) said support sheet top surface including coupling means for adjustably coupling together a longitudinal fold in said



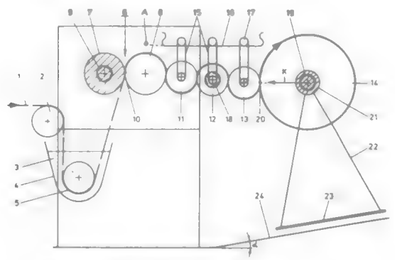
sheet surface for varying the height of said bed ruffle relative to said floor surface.

5,353,457
PILLOW WITH A HEIGHT ADJUSTMENT DEVICE
Hsu M. Chu, No. 26, Lane 47, Hwai Tei Street, Taipei, Taiwan
Filed Oct. 6, 1993, Ser. No. 132,673
Int. Cl.[5] A47C *20/00*
U.S. Cl. 5—640 4 Claims



1. A height adjustable pillow comprising a base, a cover cushion having a pillow face, said cover cushion supported on said base, and a height adjustment device mounted on said base for lifting said cover cushion,
said height adjustment device comprising a front rack assembly, a rear rack assembly, and a driving mechanism, in which
each one of said front and rear rack assemblies comprises a first rack, a second rack parallelly disposed below said first rack, locating frames bridged over said first and second racks,
and guide tubes adapted to have the first and second racks slidably mounted therein and extended therethrough,
said first and second racks being formed with teeth on opposing surfaces, said first and second racks each being attached to the bottom surface of said cover cushion opposite the pillow face, said guide tubes being curved upwards at an outer portion near the end of the racks attached to the cover cushion in order to guide and support the racks mounted and extended therethrough to curve upwards,
said driving mechanism comprising an axle supported on spaced bearings, two spaced driving gears, adapted to be fitted to the axle, respectively meshed between the first and second racks of either rack assembly, and a knob mounted on one end of said axle for turning said axle and said driving gears,
said locating frames constraining movement of said first and second racks to an axial direction, whereby turning said knob in either direction will cause the first and second racks of said front and rear rack assemblies to move the racks to lift said cover cushion, or downwards to lower said cover cushion.

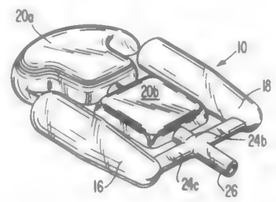
5,353,458
METHOD FOR TRANSPORTING KNIT FABRIC WEB BETWEEN THE SQUEEZE ROLLERS OF A PADDING DEVICE AND A TAKE UP ROLL
Hanspeter Singler, Monchen-Gladbach, Fed. Rep. of Germany, assignor to A. Monforts GmbH & Co., Moenchengladbach, Fed. Rep. of Germany
Filed Jan. 16, 1992, Ser. No. 821,222
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1991, 4101357
Int. Cl.[5] D06B *3/18*
U.S. Cl. 8—151 3 Claims



1. A method for pad batch handling a web of knit fabric, comprising:
transporting the web of knit fabric through a pad liquor bath, the web having a directional curl bias such that the edges of the web, to the extent that they are susceptible to curling, tend to curl in the same predetermined direction relative to one surface of the web once wetted in the bath;
further transporting the web of knit fabric from the bath and then through a nip formed by a pair of squeeze rollers located at a distance from the bath to effect squeezing of excess pad liquor from the web;
traveling the web of knit fabric in a trained relation around a selected one of the pair of squeeze rollers following travel of the web through the nip;
orienting the web of knit fabric such that any tendency of the web edges to curl will be in a radially inward direction relative to the selected one of the pair of squeeze rollers;
further traveling the web of knit fabric about at least one intermediate support roller in a trained relation thereto;
maintaining substantially constant peripheral contact between the web of knit fabric and the at least one intermediate support roller;
taking up the traveling web onto a take up roll while maintaining the take up roll in substantially constant peripheral contact with the at least one intermediate support roller; and
orienting the web of knit fabric such that any tendency of the web edges to curl will be in a radially inward direction relative to the take up roll.

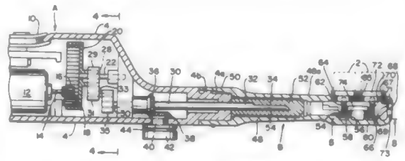
5,353,459
METHOD FOR INFLATING A BLADDER
Daniel R. Potter, Forest Grove; Joel L. Passke, Portland, both of Oreg., and David M. Foriand, Battle Ground, Wash., assignors to Nike, Inc., Beaverton, Oreg.
Filed Sep. 1, 1993, Ser. No. 114,223
Int. Cl.[5] A43B *13/20*
U.S. Cl. 12—146 R 12 Claims

1. A method for inflating a bladder, the bladder comprising at least a first and a second distinct chamber, the chambers linked in fluid communication by an interconnecting port, and a fluid fill inlet linked in fluid communication with the first chamber, said method comprising the steps of:
inserting a first nozzle set at a first predetermined pressure level and connected to a first fluid pressure source into the fluid fill inlet to thereby inflate the first and second chambers to the first predetermined pressure;



sealing said interconnecting port to isolate the first chamber from the second chamber out of fluid communication with each other such that the second chamber is isolated at the first predetermined pressure;
removing the first nozzle from the fluid fill inlet; and
sealing the fluid fill inlet.

5,353,460
POWER DRIVEN TOOTHBRUSH
Gary C. Bauman, Ridgewood, N.J., assignor to Ohio Health Care Products, Inc., North Bergen, N.J.
Filed Sep. 24, 1993, Ser. No. 125,784
Int. Cl.[5] A61C *17/34;* A46B *13/02*
U.S. Cl. 15—22.1 16 Claims



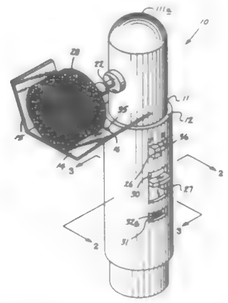
1. A power-driven toothbrush comprising a housing, first and second adjacently spaced brush elements rotatably mounted on and exposed with respect to said housing, drive means in said housing for driving said brush elements in rotary oscillation, said drive means comprising a drive shaft extending toward said brush elements, operatively drivingly connected to a first one of said brush elements, and effective to drive said first brush element into rotary oscillation, and crank linkage means between said brush elements to drive the other of said brush elements into rotary oscillation when said first brush element is driven in rotary oscillation.

5,353,461
ROTARY SCRUBBER APPARATUS
Kevin Enriquez, 1864 Madison St., #1 Right, Queens, N.Y. 11385
Filed Sep. 20, 1993, Ser. No. 123,054
Int. Cl.[5] A46B *13/02;* A47L *15/37*
U.S. Cl. 15—23 3 Claims

1. A rotary scrubber apparatus, comprising,
an elongate housing symmetrically oriented about a housing axis, with the housing including an exterior surface, said exterior surface having a resilient sheath positioned thereabout, with the housing having a shield mounting rod fixedly mounted to the housing, with the shield mounting rod formed of a flexible shape retentive material, with a

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U-shaped splash guard mounted to the shield mounting rod, the splash guard having a first rigid plate fixedly mounted to the mounting rod, the first plate having a first side and a second side, with a second plate mounted to the first side and a third plate mounted to the second side, with the second plate and the third plate formed of a resilient material,



drive means mounted within said housing, said drive means including an output shaft directed through the housing in a fluid sealing relationship relative to the housing, with a rotary brush mounted to the output shaft said shield being positioned circumferentially relative to said brush to deflect fluid therefrom, and

switch means for effecting selective actuation of said drive means.

5,353,462

GLASS PLATE WASHING MACHINE

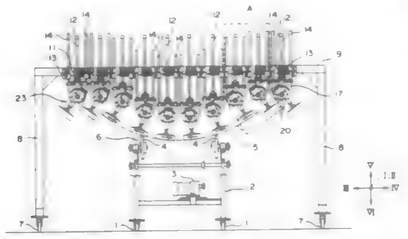
Yasushi Ueno, Matsusaka, and Masato Nakamura, Obata, both of Japan, assignors to Central Glass Co., Ltd., Yamaguchi, Japan

Filed May 18, 1993, Ser. No. 63,031

Claims priority, application Japan, May 18, 1992, 4-032555[U]

Int. Cl.[5] B08B *11/04*

U.S. Cl. 15—102 **27 Claims**



1. A glass plate washing machine comprising transferring means for transferring glass plates, a plurality of electric motors disposed above the transferring means, the motors being disposed in rows across the transferring means, the motors which belong to any one of the rows being staggered relative to the motors which belong to the next row, each of the motors being provided with a buff grinder at the lower end of an output shaft thereof, first positioning means for positioning each of the motors in the vertical direction independently of the other motors, and second positioning means for positioning each of the motors around an axis parallel to the transferring direction of the transferring means independently of the other motors.

5,353,463

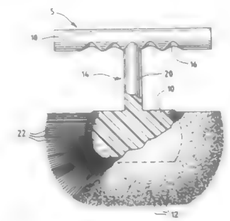
BRUSH FOR CLEANING SINK DRAIN RECESSES AND THE LIKE

Bonnie C. Bracy, Jr., 1509 State St., Calumet City, Ill. 60409

Filed Jul. 16, 1993, Ser. No. 93,268

Int. Cl.[5] A46B *5/00, 9/00*

U.S. Cl. 15—160 **8 Claims**



1. A brush for abrading the surface of a cylindrical recess having a concave bottom surface, said brush comprising:

a truncated spheroidal base, said base comprising a top outer surface, a substantially planar bottom outer surface, and a substantially convex side outer surface interconnecting said top outer surface and said bottom outer surface;

a plurality of side bristles extending substantially radially from said side outer surface of said base;

a plurality of bottom bristles extending substantially perpendicularly from said bottom outer surface of said base; and

a handle extending substantially perpendicularly from said top outer surface of said base;

whereby rotation of said handle about its longitudinal axis rotates said base about an axis extending through the centroid of said base and correspondingly rotates said side bristles and said bottom bristles.

5,353,464

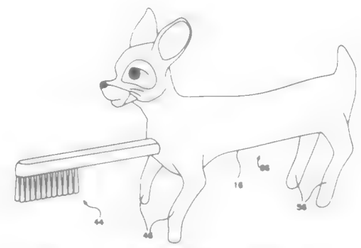
TOOTHBRUSH CONSTRUCTION

Marie B. Atkins, and Richard Atkins, both of 7070 Goodwood Ave., Baton Rouge, La. 70806

Continuation of Ser. No. 640,989, Jan. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 519,418, May 4, 1990, Pat. No. 5,187,829. This application Jan. 8, 1993, Ser. No. 2,072

Int. Cl.[5] A46B *9/04*

U.S. Cl. 15—167.1 **20 Claims**



1. A toothbrush construction which comprises:

(a) a handle portion; and

(b) a brush head portion having bristles extending at an angle therefrom,

said toothbrush construction being further characterized in that:

(c) said handle portion is in the form simulating an animal and includes

(i) body (trunk) portion which includes a lower part and an upper part, said body portion being sized and shaped to be manually encircled and grasped by the hand with the thumb extending under and around the lower part of the body portion and with the palm and fingers extending over and around the upper part of the body portion as in a fist,

(ii) a head/neck portion attached to a first part of said body portion,

(iii) a front leg portion attached to a second part of said body portion, and

(iv) a rear leg portion attached to a third part of said body portion;

(d) said brush head portion is connected to and extends outwardly from a further part of said body portion;

(e) at least one of (ii) and (iii) extends outwardly generally transversely relative to said body portion to form a first restraining member, and (iv) extends outwardly generally transversely relative to said body portion to form a second restraining member spaced apart from the first restraining member;

(f) said front leg portion and said rear leg portion terminate below said respective second and third parts of said body portion from which said front leg portion and said rear leg portion extend, at a distance greater than any distance by which the lowest portion of said brush head portion may extend below said body portion;

(g) said restraining members are disposed on said handle portion such that when said body portion is grasped as in a fist as hereinbefore described, one of said restraining members is in a position to be proximate or adjacent to the thumb and forefinger side of the hand of the user and the other of said restraining members is in a position to be proximate or adjacent to the fourth finger side of the hand of the user;

(h) said brush head portion includes a stem which extends substantially longitudinally from an end of said handle portion;

(i) said front leg portion and said rear leg portion are shaped, sized and attached to said body portion so that so that said leg portions can support the toothbrush, when not in use, and when on a flat horizontal supporting surface with the bristles of said brush head portion remotely spaced from such supporting surface, with said body portion in a substantially horizontal position, and with said body portion spaced from said flat supporting surface by a sufficient distance to enable the hand of the user to encircle and grasp said body portion between said restraining members with the thumb of said hand extending under and around the lower part of said body portion and with the palm and fingers of said hand extending over and around the upper part of said body portion as in a fist; and

(j) said first restraining member and said second restraining member each extends outwardly generally transversely relative to said body portion a sufficient distance to restrain the hand of the user against sliding over either of said restraining members while the hand of the user encircles and grasps said body portion between said restraining members with the thumb of said hand extending under and around the lower part of said body portion and with the palm and fingers of said hand extending over and around the upper part of said body portion as in a fist.

5,353,465

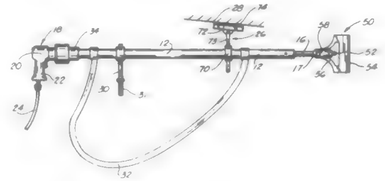
SCRAPER APPARATUS

Webster Pierce, 233 W. 58th St., and Mack Cheramie, 2415 E. Main, both of Cut Off, La. 70345

Filed Sep. 30, 1992, Ser. No. 954,493

Int. Cl.[5] A47L *11/12*

U.S. Cl. 15—236.01 **17 Claims**



1. A scraper apparatus, comprising:

a) a principal elongated housing;

b) a handle member integral to a first end of the housing;

c) blade means extending from the second end of the housing;

d) drive shaft means within the housing upon which the blade is mounted;

e) pneumatic power means for powering reciprocating movement of the drive shaft means to impart reciprocating movement of the scraping blade;

f) means interconnecting the power means and the reciprocating drive shaft to provide the reciprocating motion of the shaft when power is applied thereto; and

g) support means secured along the length of the housing for securing the housing to a surface to support the weight of the apparatus during use.

5,353,466

REARVIEW MIRROR WIPER

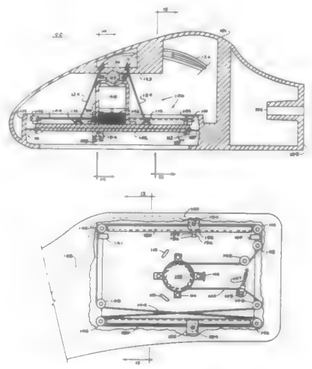
Darrel L. Smith, 3435 NW. 155 St., Reddick, Fla. 32686, and Donnie Knight, 4207 E. Louisiana Ave., Tampa, Fla. 33610

Continuation-in-part of Ser. No. 802,316, Dec. 4, 1991, Pat. No. 5,179,758. This application Oct. 26, 1992, Ser. No. 966,284

The portion of the term of this patent subsequent to Jan. 19, 2010, has been disclaimed.

Int. Cl.[5] B60S *1/56, 1/20, 1/44*

U.S. Cl. 15—250.003 **15 Claims**



1. An exterior rearview mirror wiper system for use on a vehicle, comprising:

(a) a rearview mirror, said rearview mirror comprising a

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reflective surface and having top, bottom, left, and right side edges;

(b) means for mounting said rearview mirror to said vehicle;

(c) a pair of runner tracks mounted on said mirror, one of said runner tracks at each of two opposite edges of said rearview mirror and said pair of runner tracks being parallel;

(d) a wiper assembly, said wiper assembly being elongated and including a flexible wiper blade or squeegee for wiping said rearview mirror and backing means for delivering substantially even pressure along said flexible wiper blade against said rearview mirror, said flexible wiper blade being attached to said backing means and said backing means having two opposite ends;

(e) movable holding means, on each end of said two opposite ends of said backing means, for holding and pressing said wiper assembly against said rearview mirror, each said movable holding means movable engaged to one of said runner tracks;

(f) a plurality of pulleys and an elongated flexible member threaded around said pulleys, said elongated flexible member being attached to each said movable holding means for constraining both said movable holding means to move synchronously back and forth along said runner tracks according to said elongated flexible member's movements;

(g) bidirectional motor means;

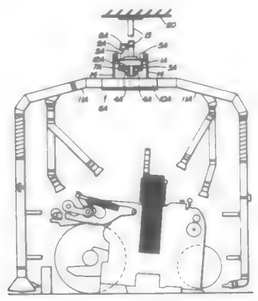
(h) drive pulley means for urging said elongated flexible member to move responsive to said bidirectional motor means, said drive pulley means including a drive pulley operationally connected to said bidirectional motor means and said drive pulley having frictional contact with said elongated flexible member to urge said elongated flexible member to move responsive to said bidirectional motor means and said elongated flexible member not being fixedly attached to any portion of said drive pulley;

(i) power control means for applying electric power to said bidirectional motor means and periodically reversing the polarity of said electric power applied to said bidirectional motor means.

5,353,467
SUSPENDED CLEANING DEVICE FOR TEXTILES MACHINES

Reiner Junger, Griesbachstrasse 20, D-8904 Friedberg, Fed. Rep. of Germany

Filed Mar. 5, 1993, Ser. No. 26,583
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1992, 9207902[U]
Int. Cl.[5] B08B *5/00*
U.S. Cl. 15—312.2 **4 Claims**

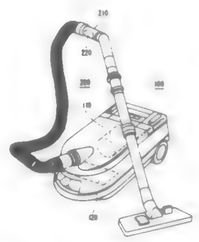


1. A cleaning device for textile machines having a duct running along and above the textile machines, the duct being fastened to a ceiling and having a longitudinal slot located on an underside of the duct, the slot being covered by sealing lips and engaged by a nozzle of a cleaning carriage travelling on rollers, the rollers being supported on a top side of the duct and the cleaning carriage being suspended from the rollers and travelling below the duct.

5,353,468
VACUUM CLEANER COMPRISING A SUCTION TUBE AND SUCTION TUBE PROVIDED WITH A REMOTE-CONTROL CIRCUIT COMPRISING A CAPACITIVE SENSOR

Kok K. Yap; Boon C. Ler, and Swee G. Lim, all of Singapore, Singapore, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 13, 1992, Ser. No. 959,812
Claims priority, application European Pat. Off., Oct. 17, 1991, 91202696.0; Aug. 12, 1992, 92202488.0
Int. Cl.[5] A47L *9/28*
U.S. Cl. 15—319 **12 Claims**



1. A vacuum cleaner comprising a housing (**100**) provided with an electric motor (**110**) and with an electronic circuit (**120**) for controlling the electric motor (**110**), and a suction tube (**200**) coupled to the housing (**100**) and comprising a grip (**210**) with a remote control circuit (**220**) for controlling the electronic circuit (**120**), at least one of said electronic circuit (**120**) and said remote control circuit (**220**) comprising a signal processing unit (SPU), wherein the remote control circuit (**220**) comprises a capacitive sensor (CS) for detecting the presence of a part of a human body in the proximity of the grip (**210**), said presence of a part of the human body giving rise to a capacitance variation which is detected by the capacitive sensor (CS), which detection enables the signal processing unit (SPU) to process a control signal related to the capacitance variation detected and the electronic circuit (**120**) to be controlled by the remote control circuit (**220**).

5,353,469
WET/DRY VACUUM CLEANER WITH NOISE REDUCING HOUSING STRUCTURE

Jeffery R. Fellhauer, Toledo, Ohio, assignor to National Super Service Company, Toledo, Ohio

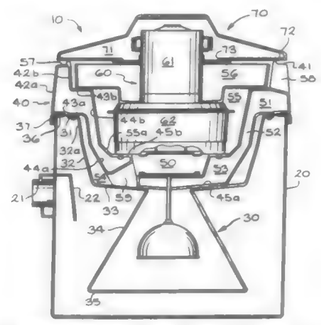
Filed Jul. 1, 1992, Ser. No. 907,237
Int. Cl.[5] A47L *9/00*
U.S. Cl. 15—326 **12 Claims**

1. A floor cleaning device comprising:

a hollow canister having a closed end, an opened end, and a suction inlet;

a hollow lid mounted on said opened end of said hollow canister and having an interior which defines a first annular chamber, a second annular chamber, and a third annular chamber, said second chamber providing communication between said first and third chambers and being smaller in volume than said first and third chambers, said first chamber communicating with the atmosphere through a first passageway formed through said lid, an enclosed space being defined between said lid and said closed end of said hollow canister; and

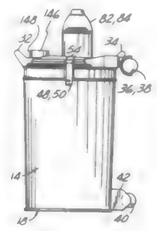
a blower motor assembly mounted on said lid and operative to draw air through said suction inlet and said enclosed space, said blower motor assembly operative to exhaust air through said third chamber, said second chamber, and said first chamber to the atmosphere.



5,353,470
HORIZONTAL CANISTER VACUUM

Michael D. Bartlett, Pickens, S.C., assignor to Ryobi Motor Products Corporation, Easley, S.C.

Filed Mar. 10, 1993, Ser. No. 29,023
Int. Cl.[5] A47L *5/36*
U.S. Cl. 15—328 **10 Claims**



1. A vacuum cleaner comprising:

an elongated canister including an open end and a closed end, adapted to rest upon a generally flat surface to support the canister in a generally vertical orientation and a tubular wall portion sealingly cooperating with the closed end to define an interior cavity;

a cover removably attachable to the open end of the canister, the cover having an air inlet and an air outlet;

a motor/fan assembly affixed to the cover and cooperating with the air outlet to evacuate air from the interior cavity;

a filter element affixed to the cover and oriented within the interior cavity and cooperating with the motor/fan assembly for filtering the evacuated air and for separating and retaining dust particles within the portion of the internal cavity bounded by the canister walls and the filter element;

wherein the filter element further comprises a filter bag formed of porous media and a bag support integrally formed with the cover and sized to extend into the bag to prevent collapse, said bag support surrounding a fan intake and projecting outward from the cover into the canister interior cavity; and

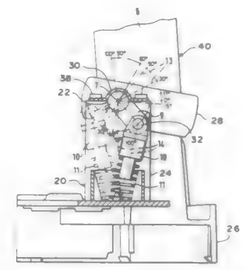
a plurality of wheels spaced apart for solidly supporting the canister and the attached cover in a horizontal orientation when placed upon a flat surface,

wherein the vacuum cleaner is operable in either the horizontal or vertical orientation, and the accumulated dust particles can be emptied from the canister by removing the cover from the canister when positioned in the vertical orientation.

5,353,471
APPARATUS FOR PERFORMING WORK ON A FLOOR SURFACE

Wieland Gühne, Remscheid; Heinz-Jürgen Ahlf, Bergisch-Gladbach, both of Fed. Rep. of Germany; Gentile Marafante, Carnate, and Mario Tecchiati, Villa Raverio, both of Italy, assignors to Vorwerk & Co. Interholding GmbH, Wuppertal

Filed Dec. 17, 1992, Ser. No. 992,526
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1991, 9115602
Int. Cl.[5] A47L *9/32*
U.S. Cl. 15—339 **5 Claims**



1. An apparatus for performing work on a floor surface, the apparatus comprising:

a chassis;

floor working means mounted in said chassis for performing work on the floor surface over an area of said floor surface as said apparatus is moved on said floor surface;

said chassis and said floor working means conjointly defining a first center of gravity;

a wand assembly extending outwardly from said chassis and defining a second center of gravity producing a weight force which causes said floor working means to act on said floor surface with an uneven force distribution over said area;

said wand assembly being elongated and having a first end adapted to be held by an operator and a second end;

pivot means for pivotally connecting said second end to said chassis so as to permit said want to be pivotally moved between a work position wherein the operator holds said second end during the performance of the work on the floor surface and a rest position wherein said wand assembly stands substantially upright on said chassis; and,

resilient biasing means for developing a first resilient force when said wand is in said work position to shift at least a portion of said weight force to said first center of gravity whereby said force distribution becomes substantially uniform while said second end is held by the operator during said performance of said work and for developing a second resilient force less than said first resilient force when said wand assembly is in said rest position.

5,353,472
GROMMET/PLUG

Steven J. Benda, P.O. Box 782, Cokato, Minn. 55321; James H. Benda, 36480 Howard Rd., Farmington, Mich. 48331, and Gary Thompson, 23 Skyview Ridge, St. Peter, Minn. 55082

Filed Dec. 28, 1992, Ser. No. 997,022
Int. Cl.[5] B65D *55/00*; **F16L** *5/00*
U.S. Cl. 16—2 **13 Claims**

1. A grommet for placement in a penetration hole in a panel

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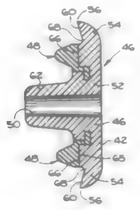
having an outer surface and an inner surface, and a panel axis perpendicular to the panel,

said grommet comprising,

a first, sealing member of plastic material and a second, locking member of rigid plastic material, these members being soft and hard respectively relative to each other and constituting the entire grommet,

said members being secured together concentrically about a central axis, and said first member having an axially outer surface and an axially inner surface, said central axis being parallel to the panel axis when the grommet is mounted in the penetration hole.

said first member constituting the main portion of the grommet and having a main body circumferentially continuous and defining said axially outer surface and having a peripheral sealing edge directed, to an extent, axially inwardly,



said second member being positioned on the axially inner surface of the first member radially inwardly from said sealing edge and being secured thereto on an annular surface of said first member lying in a plane transverse to the central axis, and also on a cylindrical surface of said first member concentric to the central axis,

said second member being slitted at least partially therethrough in radial directions from its axially inner edge toward its axially outer edge, t a plurality of locations in circumferential direction, thereby forming a corresponding plurality of circumferentially spaced segments, the segments being spaced apart at their axially inner ends,

said segments being flexible radially for facilitating yielding thereof in response to the grommet being inserted into the penetration hole in axial direction,

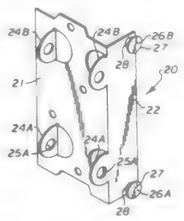
the peripheral edges of the first member and the second member respectively engaging the outer and inner surfaces of the panel for performing sealing and locking functions respectively.

5,353,473

BOTTOM FIXTURE FOR OVERHEAD GARAGE DOORS

Thomas G. Sherick, 6931 Prairie Village, Katy, Tex. 77449

Filed Apr. 12, 1993, Ser. No. 45,302
Int. Cl.[5] E05D *13/00, 15/24*
U.S. Cl. 16—97 15 Claims



1. A bottom fixture to be mounted near the bottom of an overhead garage door on either the right or left hand side thereof comprising;

a bracket member having top and bottom ends and a generally L-shaped transverse cross section defining a wide flat side and a narrow flat side at right angles to one another,

said wide flat side adapted to be secured on a surface of the overhead garage door with said narrow flat side disposed on an outer side edge of the overhead garage door,

first and second sheave means near said top and bottom ends, respectively, extending perpendicularly to an outer surface of said narrow flat side spaced apart in parallel relation on opposite sides of a median plane extending perpendicularly to said flat sides of said bracket and configured to receive a cable, and

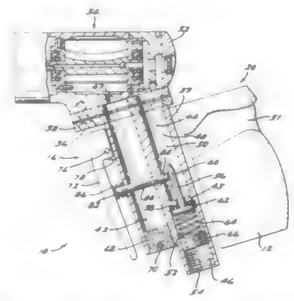
said bracket member capable of being selectively inverted to be secured on either the right hand side or left hand side of the overhead garage door with said first and second sheave means disposed on the outer side edge of the overhead garage door and the cable slidably engaged with the lowermost said sheave means.

5,353,474

TRANSFERRABLE PERSONALIZED GRIP FOR A HANDLE ASSEMBLY AND METHOD FOR MAKING SAME

Wayne T. Good, 4440 Walton Blvd., Waterford, Mich. 48329; Albert C. DeClerck, 3124 S. Adams Rd., Auburn Hills, Mich. 48326; Harold F. Burden, 629 S. Edgeworth, Royal Oak, Mich. 48967, and John A. Watson, 2253 Equestrian Ct., Lapeer, Mich. 48446

Continuation-in-part of Ser. No. 877,665, May 1, 1992, abandoned. This application Aug. 23, 1993, Ser. No. 110,378
Int. Cl.[5] A47B *95/02;* A47J *45/10;* B65D *25/28;* E05B *1/00*
U.S. Cl. 16—111 R 13 Claims



1. A handle assembly for a hand tool of the type having a trigger actuated motor, said handle assembly comprising:

a main body portion having an upper end and a lower end and substantially parallel and substantially planar sides, said lower end adapted for communication with a power supply;

a removable member adapted to removably attach to said main body portion, said removable member including a gripping portion adapted to receive a hand of a specific user, and a substantially rigid sleeve portion having a substantially U-shaped cross section with an open side and including first and second substantially parallel and substantially planar sides adapted to be forced onto said substantially planar and substantially parallel sides of said main body portion in a direction substantially normal to said open side, said sleeve portion further having an inner surface at least partially defined by said first and second substantially parallel sides;

whereby said removable member is removable as a unit for transfer to another hand tool and is adapted to attach and detach to said main body portion without interfering with said power supply.

6. A removable member for a hand tool of the type having a main body portion having an upper and a lower end and substantially parallel and substantially planar sides, said lower end adapted for communication with a power supply, and a trigger actuated motor, said removable member comprising:

a gripping portion adapted to receive a hand of a specific user; and

a sleeve portion having a substantially U-shaped cross section with an open side and including first and second substantially parallel sides adapted to be forced onto said substantially normal to said open side, said sleeve portion further having an inner surface at least partially defined by said first and second substantially parallel and substantially planar sides, said sleeve being substantially rigid but permitting elastic deformation sufficient to allow said open side to slightly widen as said sleeve is forced onto said main body portion;

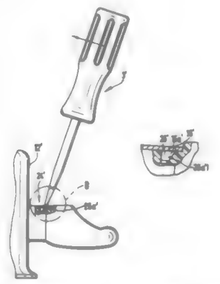
whereby said removable member is removable as a unit for transfer to another hand tool and is adapted to attach and detach to said main body portion without interfering with said power supply.

5,353,475

HANDLE ATTACHMENT FOR COOKING UTENSILS OR THE LIKE

Wolfgang Fischbach, Daaden, Fed. Rep. of Germany, assignor to Heinrich Baumgarten KG Spezialfabrik fuer Beschlagteile, Neunkirchen, Fed. Rep. of Germany

Filed Dec. 30, 1992, Ser. No. 998,432
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1992, 9205573[U]
Int. Cl.[5] A47J *45/07*
U.S. Cl. 16—114 A 12 Claims



1. In a handle assembly for a cooking utensil, such as a cooking pot or fry pan, which extends outwardly from the cooking utensil along a handle assembly axis, the handle assembly including a hollow sheet metal sleeve rigidly fastened to and extending from the cooking utensil along the axis, and handle having a first end portion extending coextensively with the sleeve and being positioned entirely within the sleeve, a function element positioned between the cooking utensil and the first end portion which releasably couples the handle to the utensil and which permits the handle to be relatively easily moved into engagement with the sleeve but can only be released with great difficulty from the sleeve, and at least one means for facilitating removal of the handle from the sleeve provided on a side of the handle assembly, the improvement wherein said means for facilitating removal of the handle from the sleeve comprises:

at least one first recess provided in a portion of a side surface of the sleeve and defining a first surface;

at least one second recess provided in the first end portion of the handle, said second recess being positioned radially inwardly of and axially underlying the at least one first recess relative to the handle assembly axis, said second recess defining a second surface which is axially and radially inwardly offset from the first surface relative to the handle assembly axis; and

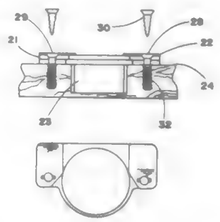
said first and second surfaces being oriented in separate planes which extend transversely of the handle assembly axis, each said first and second surfaces being accessible from outside the handle attachment by a separating tool in such a manner that a pair of forces effective for releasing the handle from the sleeve can be applied to the surfaces by the separating tool whereby the first surface serves as a metal fulcrum engaged by the separating tool so that a primary force applied to the separating tool moves from the separating tool through the sheet metal sleeve to apply a secondary force greater than said primary force to the second surface to thus effect a release of the handle from the sleeve along the handle assembly axis.

5,353,476

HINGE CUP POSITIONING DEVICE

Georg Domenig, Kernersville, N.C., assignor to Grass America Inc., Kernersville, N.C.

Filed Mar. 23, 1993, Ser. No. 35,416
Int. Cl.[5] E05D *7/04*
U.S. Cl. 16—247 3 Claims



1. In a configured hinge comprising a hinge cup having a flange with elongated apertures therein for mounting the hinge cup on a surface provided with a hinge cup bore hole of less than standard depth, the improvement comprising a substantially flat annular spacer having a selected uniform thickness and an inner periphery conforming to an outer configuration of the hinge cup for mounting beneath the hinge cup flange and adjacent the bore hole to compensate for the less than standard depth of the bore hole required because of the thickness of the surface, the spacer having elongated apertures coinciding with the flange apertures and an enclosed circular opening to cooperatively receive the hinge cup when the spacer is positioned beneath the hinge cup flange.

5,353,477

PROCESS FOR LAYING A NONWOVEN OR THE LIKE, AND NONWOVEN LAYING DEVICE

Eduard Hille, Duelmen, Fed. Rep. of Germany, assignor to Hergeth Hollingsworth GmbH, Duelmen, Fed. Rep. of Germany

PCT No. PCT/EP91/00590, § 371 Date Sep. 29, 1992, § 102(e) Date Sep. 29, 1992, PCT Pub. No. WO91/15618, PCT Pub. Date Oct. 17, 1991
PCT Filed Mar. 27, 1991, Ser. No. 927,400
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1990, 4010174
Int. Cl.[5] D01G *15/44, 25/00*
U.S. Cl. 19—163 16 Claims

4. A device for laying a stretchable nonwoven, comprising:

a support structure;

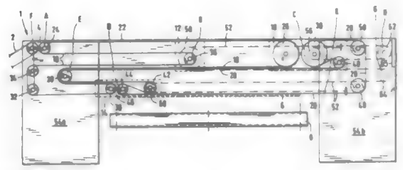
a reciprocatable upper carriage and a reciprocatable laying carriage associated with said support structure, said upper carriage being configured for intaking nonwoven and said

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laying carriage being configured for laying the nonwoven, said upper and laying carriages being configured for moving at varying speeds and at varying speed relationships with respect to one another; said upper and laying carriages being configured for transporting nonwoven material, said laying carriage allowing for stretching of the nonwoven material during laying;

drive means associated with said upper and laying carriages for reciprocating said upper and laying carriages;

a main conveyer belt and a guide conveyor belt, each being carried by said upper and laying carriages for transporting



the nonwoven from about said upper carriage to said laying carriage;

at least one guide roller associated with each of said upper and laying carriages for guiding said main and guide conveyer belts;

electronic control means associated with said drive means for controlling said drive means; and

means associated with said drive means for selectively varying the speed of said upper carriage independently of the speed of said laying carriage, depending on the stretching desired in the nonwoven during laying of the nonwoven.

5,353,478

HOSE CLAMP

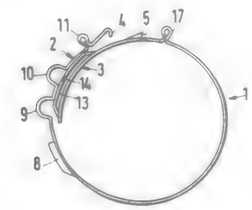
Ralf Spors, Bruchkobel, Fed. Rep. of Germany, assignor to Rasmussen GmbH, Maintal, Fed. Rep. of Germany

Filed Nov. 2, 1993, Ser. No. 145,872

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1992, 4237330

Int. Cl.[5] B65D *63/00*

U.S. Cl. 24—20 R **7 Claims**



1. A clamp comprising:

a band having a radial outer end portion overlapping a radial inner end portion;

the outer end portion having a first closure element and a slot, the slot extending in a circumferential direction along the clamp and having a predetermined length, the slot having a pair of clips disposed on opposite edges of the slot and protruding into the slot;

the inner end portion having a second closure element and a bar, the bar protruding in a radial outward direction and extending in a circumferential direction along the clamp and having a predetermined length that is shorter than the length of the slot, the bar having a first end adjacent to said second closure element and a second end remote from said second closure element, the bar having a pair of openings disposed on opposite edges of the bar and protruding into the bar;

the outer end portion being radially movable with respect to the inner end portion to a pre-locked position when the pair of clips are radially aligned with the pair of openings to allow the bar to be inserted into the slot, the outer end portion being circumferentially movable with respect to the inner end portion to a locked position where the first closure element is in contact with the second closure element and said pair of clips are in contact with said bar adjacent to said first end of said bar.

5,353,479

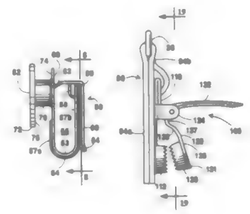
SUSPENDER CLIP CARRIER

Cyril Lucier, Niantic, Conn., assignor to Amity Leather Products Co., West Bend, Wis.

Filed Mar. 19, 1993, Ser. No. 34,737

Int. Cl.[5] A41F *9/00*

U.S. Cl. 24—326 **4 Claims**



1. In a suspender comprising shoulder straps and suspender clips for attachment to clothing, a suspender clip carrier for concealment of said suspender clip, said carrier comprising a planar body having a front side and a rear side, securing means for securing said carrier to said shoulder straps, and means for attaching a corresponding suspender clip to said rear side of said carrier, said suspender clip carrier being substantially larger in size than said suspender clip whereby said front side of said suspender clip carrier conceals said suspender clip wherein said planar body portion comprises double ply flexible material formed by a single piece of flexible material horizontally folded down and sewn upon itself.

5,353,480

DECORATIVE SLIDER FOR SLIDE FASTENERS

Keiichi Keyaki, Kurobe, and Hitomi Kawamura, Tateyama, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Sep. 2, 1993, Ser. No. 114,923

Claims priority, application Japan, Sep. 16, 1992, 4-074601[U]

Int. Cl.[5] A44B *19/00*

U.S. Cl. 24—429 **3 Claims**

1. A decorative slider for slide fasteners comprising:

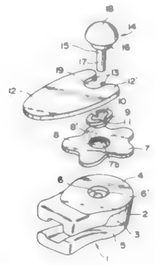
a slider body having an upper wing and a lower wing spaced by a guide post joining the upper wing and the lower wing at one end, the slider body having a mounting hole extending therethrough formed in a recess at the guide post;

a decorative plate having a through hole formed therethrough and placed on the upper wing with the through hole aligned with the mounting hole, the decorative plate mounted without requiring separate attachment;

an annular joint member having a guide hole formed therethrough and placed on the decorative plate with the guide hole aligned with the through hole;

a pull tab pivotally connected to the annular joint member; and

a retainer pin having an enlarged head and shank extending from a lower side of the head, the shank extending loosely through the guide hole, through the through hole and



fitted in the mounting hole to join the retainer pin with the slider body.

5,353,481

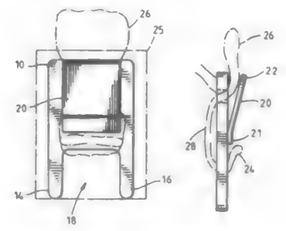
SCARF HOLDER

Claude T. Farris, Jr., 6653 Navigation, Houston, Tex. 77011

Filed Mar. 5, 1993, Ser. No. 27,102

Int. Cl.[5] A44B *21/00*

U.S. Cl. 24—545 **5 Claims**



1. A scarf holder for fixably positioning a pocket scarf within a suit jacket pocket comprising:

(a) a generally rectangular frame member shaped to fit flatly and snugly witin suit coat pocket having a horizontal opening near the top and two leg members extending from the bottom; and

(b) a flexible clip member secured to said frame member and, said clip member being biased against said frame member.

5,353,482

RELEASABLE LATCHING APPARATUS WITH AN ELECTRICAL ENGAGEMENT MONITORING MEANS

Theodore Ziaylek, Jr., 140 Riverview Dr., and Michael P. Ziaylek, 3 Brook La., both of Yardley, Pa. 19067

Filed Mar. 31, 1993, Ser. No. 40,773

Int. Cl.[5] A44B *11/00*

U.S. Cl. 24—603 **18 Claims**

1. A releasable latching apparatus with an electrical engagement monitoring means comprising:

A. a tab member defining a tab slot means therein;

B. a main housing means defining a trigger opening and a tab receiving channel means therein, said tab receiving channel means adapted to receive said tab member and said tab slot means thereof selectively extending therein, said main housing means further defining an ejector pin opening means therein;

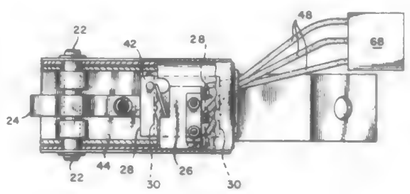
C. a trigger pin means rotatably mounted in said main housing means adjacent said trigger opening defined therein;

D. a trigger member pivotally mounted on said trigger pin means to be pivotally moveable with respect to said main housing means and extending through said trigger opening thereadjacent, said trigger member adapted to selectively engage said tab slot means of said tab member extending into said tab receiving channel means for retaining thereof, said trigger member being responsive to pivotal movement thereof to selectively release engagement with respect to said tab slot means;

E. an ejector member movably positioned within said main housing means adjacent said tab receiving channel means and engageable with a tab member extending therein, said ejector member being movably to an engagement position responsive to engagement between said tab slot means and said trigger member and being moveable to a released position responsive to disengagement between said tab slot means and said trigger member;

F. an ejector biasing means positioned between said ejector member and said main housing means to urge said ejector means to push said tab member out of said tab receiving channel means responsive to pivotal movement of said trigger member for disengagement of said trigger member from said tab slot means;

G. a switch means fixedly mounted upon the exterior of said main housing means, said switch means including a switch lever means movably mounted thereon, said switch lever means being moveable to urge said switch means between a first position and second position, said switch lever



means being positioned adjacent said ejector pin opening means defined in said main housing means;

H. an ejector pin means fixedly mounted in said ejector member and extending through said ejector pin opening means adjacent said switch lever means, said ejector pin means being selectively in abutment with respect to said switch lever means for urging movement thereof, said switch lever means being moveable to the first position responsive to movement of said ejector member to the engagement position, said switch lever means being moveable to the second position responsive to movement of said ejector member to the released position, said switch means providing indication of whether said tab member is engaged with respect to said trigger member; and

I. an external switch housing means extending about said main housing and around said switch means and said switch lever means, said external switch housing means being pivotally mounted upon said trigger pin means to be pivotally movably with respect to said main housing means to selectively provide access to said switch means and said switch lever means, said external switch housing means including a detachable clamping means to detachable affix said external switch housing means with respect to said main housing means, said external switch housing means further defining a line opening means therein to facilitate electrical communication with respect to said switch means therein.

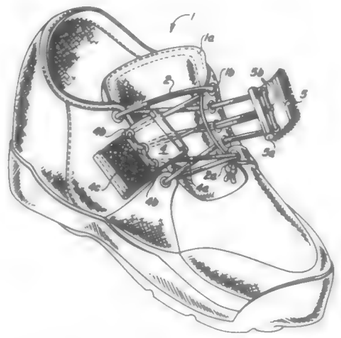
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5,353,483

METHOD AND APPARATUS FOR QUICKLY SECURING A LACED SHOE

Donald L. Louviere, 1141 Cooper Dr., Naples, Fla. 33940

Filed Jul. 6, 1993, Ser. No. 85,624
Int. Cl.[5] A43B *11/00*; A43C *1/00*
U.S. Cl. 24—712.1 4 Claims



1. In a method of lacing and securing onto the foot a shoe having an elongated lace and at least five spaced apart holes in the shoe's collar on each side of the shoe's tongue designed to receive the lace,

a solid rectangular clip base having near one side of the base three eyelets spaced apart similar to the spacing between the holes in the shoe's collar and on its opposite side having an elongated slot,

a solid rectangular clip lever designed to mate in hinged relation with the clip base by insertion of an enlarged cylindrical edge portion of the clip lever into the elongated slot of the clip base,

said slip lever also having three eyelets spaced similar to the eyelets in the slip base,

the shoe lace passing through one pair of the shoe's holes on opposite sides of the tongue and then one end of the shoe lace passing through the next adjacent hole on the opposite side of the tongue, then through one of the eyelets in the clip base, then through the middle eyelet in the base, then through the next adjacent hole in the coller, then through the adjacent hole on the opposite side of the tongue, then through the middle eyelet in the clip lever, then through an adjacent eyelet in the clip lever, then through the next adjacent hole on the same side of the collar,

the opposite end of the lace being put through the lower most adjacent hole in the collar on the opposite side of the tongue, then through the lowermost eyelet in the clip lever, then through the middle eyelet in the clip lever, then through the adjacent hole in the same side of the collar, then through the hole on the opposite side of the tongue, then through the middle eyelet in the clip base, then through the adjacent eyelet in the clip base, and finally through the adjacent hole in the shoe collar,

then the two ends of the lace are securely tied together leaving sufficient slack in the lacing of the shoe to permit the foot to be inserted into the shoe,

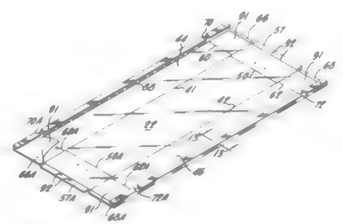
then the clip base and clip lever are hingedly joined together by inserting the clip lever's enlarged cylindrical edge into the slot in the slip base and the clip lever is secured flat against the clip base by locking means, thereby securing the laced shoe onto the foot.

5,353,484

CASKET, CASKET PRECURSOR, AND METHOD OF MAKING SAME

Stephen D. Woedl, Oxford, Ohio; John D. Soroka, Rochester Hills, Mich., and Gerald H. Davis, Lynn, Ind., assignors to Elder-Davis, Inc., Richmond, Ind.

Filed Mar. 16, 1993, Ser. No. 33,203
Int. Cl.[5] A61G *17/00*
U.S. Cl. 27—4 17 Claims



9. A casket precursor which can be folded up to form a casket, comprising:

(a) a flat blank of corrugated fiberboard having a first set of score lines along which side portions of said blank can be folded up as side flaps to form a casket trough, and having additional score lines and cuts at each end to form at each end a bottom end flap and a pair of side end flaps, all foldable to provide end closures for said trough;

(b) rigid framing members secured along the side edges of said blank; and

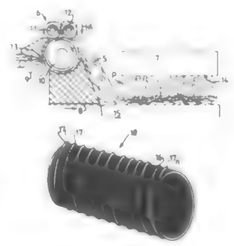
(c) a continuous, flexible and foldable cloth-like decorative covering adhered to and extending completely over a face of said blank which forms the exterior of said casket when folded up.

5,353,485

METHOD AND AN ARRANGEMENT FOR PRODUCING SPUNLACE MATERIAL, AND MATERIAL PRODUCED THEREBY

Tomas Billgren, Kullavik, and Jeanette Hellström, Göteborg, both of Sweden, assignors to Molnlycke AB, Goteborg, Sweden

PCT No. PCT/SE91/00779, § 371 Date May 11, 1993, § 102(e) Date May 11, 1993, PCT Pub. No. WO92/08832, PCT Pub. Date May 29, 1992
PCT Filed Nov. 18, 1991, Ser. No. 50,105
Claims priority, application Sweden, Nov. 19, 1990, 9003676-5
Int. Cl.[5] D04H *1/46*
U.S. Cl. 28—104 5 Claims



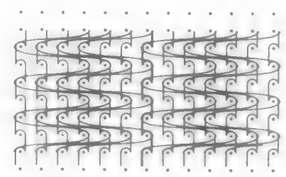
1. A method for producing spunlace material which comprises: forming a fibrous web by air-laying a layer of fibres of staple length on a forming wire and by air-laying a layer of short fibres on top of the layer of staple fibres, providing an entangling wire on which there is arranged at least one elongated element whose diameter is significantly greater than the diameter of the wires from which the entangling wire is constructed, and wherein said at least one elongated element comprises a helically wrapped longitudinally extending wire forming mutually parallel wires (17_1–17_n) of circular cross section arranged on the entangling wire (**18**), transferring the fibrous web to said and subsequently entangling wire, entangling the fibre web.

5,353,486

NARROW FIBERGLASS KNIT TAPE

Jacquelyn A. Schmidt, St. Paul, Minn.; John M. Kokorudz, Lake Forrest, Calif.; Matthew T. Scholz; Miroslav M. Tochacek, both of Woodbury, Minn., and F. Andrew Ubel, III, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 13, 1992, Ser. No. 976,402
Int. Cl.[5] F16C *29/00*; A61F *5/04*; D04B *39/00*
U.S. Cl. 28—167 10 Claims



1. A method of making narrow fiberglass fabrics, comprising the steps of:

knitting a fiberglass fabric comprising: at least one removable connecting yarn in the warp direction of the fabric, said removable connecting yarn being dissoluble or combustible; and a plurality of fiberglass fabric yarns;

winding said connected knit fabric into a wide roll; and then

removing said removable connecting yarn from said wide roll to thereby separate said roll into two or more rolls of narrower fiberglass fabric, wherein at least one of said narrow fiberglass fabrics is less than about 50 mm wide after removing said removable connecting yarn.

5,353,487

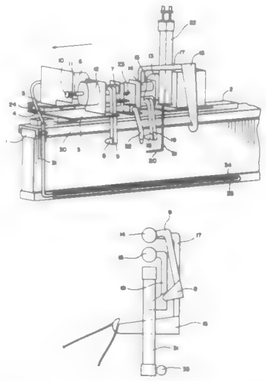
AUTOMATIC REEDING APPARATUS AND AUTOMATIC REEDING METHOD

Hitoshi Choh, and Tomoyoshi Ikeda, both of Tokorozawa, Japan, assignors to Nippon Filcon Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1993, Ser. No. 27,329
Claims priority, application Japan, Feb. 10, 1992, 4-067872
Int. Cl.[5] D03J *1/14*; B65H *1/00*
U.S. Cl. 28—204 15 Claims

1. An automatic reeding apparatus comprising:

a reed frame, a main chassis running rail mounted on the upper section of the reed frame, a main chassis slidably mounted on the main chassis running rail, a subchassis running rail mounted on the main chassis, a subchassis slidably mounted on said subchassis running rail, a first air cylinder positioned on said subchassis, a first heald feed arm having first and second ends provided at the first end with a first heald feed pawl for inserting into reed spaces, and the second end being coupled to a first shaft rotatably connected to the first air cylinder so that the heald feed arm is arcuately rotatable, a heald feed length adjusting device provided on the subchassis, a heald feed air cylinder provided thereto with a second shaft abutting against the heald feed length adjusting device and mounted on the main chassis, a second air cylinder provided on the main chassis, wherein the main chassis further comprising: third and fourth shafts rotatably connected to the second air cylinder, a threading arm having third and fourth ends provided at the third end with a threading pawl and the fourth end being coupled to the third shaft so that the threading arm is arcuately rotatable, a second heald feed arm having fifth and sixth ends provided at the fifth end with a second heald feed pawl for inserting into reed spaces and the sixth end being coupled to the fourth shaft so that the second heald feed arm is arcuately rotatable, a yarn sweep cylinder with a yarn sweep rod having a bent yarn sweep part so that the bent yarn sweep part is positioned below the threading arm, and an air jet pipe for depressing the yarn having an opening for jetting air, wherein said apparatus further comprising a vacuum suction device extending substantially over the length of the reed frame and provided below the yarn sweep part, and a heald feed spring connecting the main chassis and the subchassis together, for urging the heald second feed arm toward the first heald feed arm.

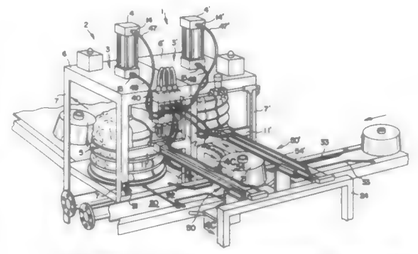


5,353,488

YARN CONDITIONING APPARATUS

Kiyohiro Tsuzuki, Greenville, S.C., assignor to TNS Mills, Inc., Greenville, S.C.

Continuation-in-part of Ser. No. 974,232, Nov. 10, 1992, Pat. No. 5,269,052. This application Oct. 14, 1993, Ser. No. 137,281
Int. Cl.[5] B65H *54/00*; F26B *5/04*
U.S. Cl. 28—290 18 Claims



1. An automated yarn conditioning apparatus comprising:

a yarn conditioning station;

a first motor driven conveyor adjacent said yarn conditioning station for moving unconditioned yarn packages from a source to said conditioning station;

said yarn conditioning station having a vessel that can be

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opened to ambient atmosphere or closed in order to define an airtight chamber, said vessel being opened or closed by a first motor, said vessel further having a vessel port for allowing yarn conditioning conditions to be created within said vessel by manipulating the conditions within said airtight chamber;

a ram mechanism mounted adjacent said yarn conditioning station for moving, when said vessel is open, unconditioned yarn packages into said vessel and conditioned yarn packages out of said vessel, said ram mechanism being operated by a second motor;

a source of power for operating said first and second motors; and

a control system associated with said first and second motors and said first driven conveyor for controlling said apparatus by sending signals to said first and second motors and said first driven conveyor in a predetermined operating sequence;

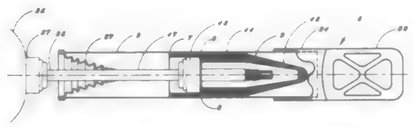
whereby an automated yarn conditioning system is created in which unconditioned yarn packages are brought to the yarn conditioning station by the first driven conveyor, the vessel is opened, the ram moves an unconditioned yarn package into said vessel while pushing a conditioned yarn package out of said vessel, said vessel is closed, and the conditions within said airtight chamber are manipulated to condition said yarn package while the first driven conveyor moves another unconditioned yarn package to the yarn conditioning station.

5,353,489

CONSTANT VELOCITY JOINT BOOT POSITIONING DEVICE

Bruce W. Weaver, 412 W. Butternut Rd., Summerville, S.C. 29483

Filed Mar. 12, 1993, Ser. No. 30,810
Int. Cl.[5] B23P *19/02*
U.S. Cl. 29—235 12 Claims



1. A device for positioning a flexible constant velocity joint boot to a shaft, said device comprising:

a. a conical sleeve being of sufficient interior diameter to allow it to cover the outside constant velocity joint and the end of the drive shaft protruding from the outside constant velocity joint;

b. stretching means, roughly circular in cross-section, for expanding a flexible constant velocity joint boot over said sleeve, said stretching means being of sufficient interior diameter to slide over said sleeve and the outside constant velocity joint;

c. handle means attached to said stretching means.

5,353,490

MODULAR PRODUCT ASSEMBLY PLATFORM

Z. Val Kukuljan, Milwaukee County, Wis., assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Sep. 8, 1993, Ser. No. 118,074
Int. Cl.[5] B23Q *1/08*; B23P *21/00*
U.S. Cl. 29—564 17 Claims

1. A modular manufacturing platform for use in automated industrial plants, comprising:

a) a raised deck having a perimeter and including means for detachably anchoring a plurality of automated manufacturing units anywhere onto said deck;

b) a plurality of automated manufacturing units secured onto said deck by said means for detachably anchoring;

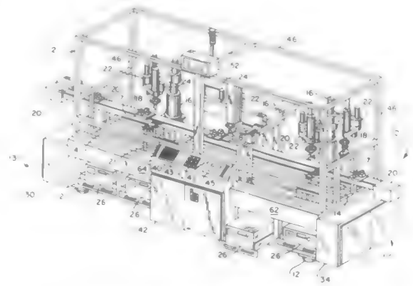
c) a plurality of mounting bays located under said deck for removably mounting special purpose machine controllers;

d) a plurality of special purpose machine controllers mounted in said bays for controlling said manufacturing units;

e) a power supply cabinet attached to one side of said deck for housing power distribution and switching gear;

f) a set of power distribution and switching gear adapted for providing power and switching functions for equipment on said platform;

g) a control console attached to one side of said deck in proximity to said power supply cabinet for providing and enabling control of said manufacturing units by a human operator;



h) one or more elongate conduits attached along the perimeter of said deck for housing electrical connection gear for interconnecting equipment on said platform;

i) a conveyance system for transporting products under assembly across said deck past said manufacturing units;

j) a control cabinet attached to one end of said deck for housing a general purpose programmable controller; and

k) a general purpose programmable controller housed in said control cabinet and coupled to said manufacturing units, special purpose machine controllers, control console and conveyance system for regulating and coordinating the overall operation and interaction of said manufacturing units and said conveyance system.

5,353,491

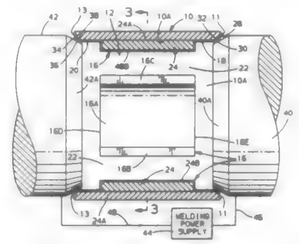
METHOD OF MAKING FRAME AND MAGNET ASSEMBLY FOR A DYNAMOELECTRIC MACHINE

Ronald D. Gentry, Cicero; Kenneth P. Heuer, Greenfield, and Richard A. Van Sickle, Anderson, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 22,585, Feb. 25, 1993, Pat. No. 5,281,881.
This application Sep. 20, 1993, Ser. No. 122,984
Int. Cl.[5] H02K *15/14*
U.S. Cl. 29—596 5 Claims

1. A method of securing a tubular metallic magnet retainer to a tubular metallic frame of a dynamoelectric machine, the tubular frame having an annular internal surface, the steps comprising, forming an annular end surface at an end of said tubular frame that is located at an angle to said annular internal surface of said frame, an intersection of said annular end surface and said internal annular surface of said frame forming an annular first ridge, inserting said magnet retainer into said tubular frame, bending an annular end portion of said magnet retainer into engagement with said annular surface on said frame to thereby form a second annular ridge on said magnet retainer that is aligned with said first annular ridge, moving a welding electrode that has an annular tapered surface into engagement with said second ridge, a shape of said tapered surface on said welding electrode being such that there is

annular line contact between a portion of said tapered surface on said welding electrode and said second ridge, and causing a



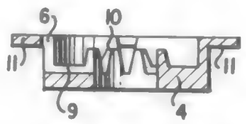
welding current to flow through said electrode and through said first and second ridges to cause an annular imperforate weld to be developed between said first and second ridges.

5,353,492

METHOD FOR PRODUCING A MOLDED PLASTIC FLAT ROTARY SWITCH

Jože Potočnik, and Boris Kogej, both of Idrija, Slovenia, assignors to Kolektor D.O.O., Idrija, Slovenia

Filed Dec. 8, 1992, Ser. No. 987,190
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1991, 4140475
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—597 8 Claims



1. Method for producing a molded plastic and copper flat rotary switch or commutator having a plurality of segments and a plurality of connecting elements at the free end of those parts of the segments lying in a cylindrical surface of said commutator, comprising the steps of:

a) providing a cup-shaped unfinished piece having a flat part and a plurality of axial grooves in its cylindrical part open on the inside and uniformly distributed around the periphery of the cylindrical part;

b) forming an annular flange and opening the grooves on the outside of the cylindrical part of the unfinished piece by pushing toward the free end of the cylindrical part an outer layer of the cylindrical part having a thickness according to the thickness of one of a plurality of material parts occluding said grooves wherein said flange is formed of the material displaced from said grooves;

c) filling the inside chamber of the unfinished piece with a plastic material;

d) removing portions of the annular flange, as required, to form the connecting elements; and

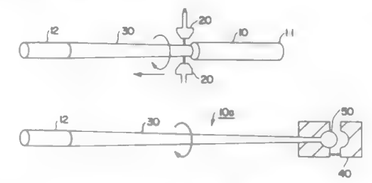
e) subdividing the unfinished piece by forming radial slots into the flat part.

5,353,493

METHOD FOR MANUFACTURING WHIP ANTENNA

Jiro Harada, Tokyo, and Heizo Tsuchida, Kanagawa, both of Japan, assignors to Harada Kogyo Kabushiki Kaishi, Tokyo, Japan

Division of Ser. No. 504,236, Apr. 4, 1990, abandoned. This application Jun. 12, 1992, Ser. No. 898,187
Int. Cl.[5] H01P *11/00*
U.S. Cl. 29—600 4 Claims



1. A method for manufacturing a whip antenna characterized in that said method comprises the steps of:

working a rod-form material having high tensile strength into a continuous taper shape by swaging, with one end thereof left unworked, while said rod-form material is pulled in one direction along its own axis, a resultant continuous tapered rod being longer and higher in tensile strength than said rod-form material; and

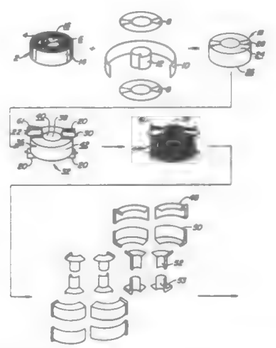
forming an antenna top section from said unworked portion of said rod-form material by header working.

5,353,494

METHOD FOR ASSEMBLING A DISTRIBUTION TRANSFORMER WITH CONFORMING LAYERS

Phillip I. Bisbee; Eric S. Richardson, both of Versailles, and Stephen D. Smith, Lawrenceburg, all of Ky., assignors of Kuhlman Corporation, Lexington, Ky.

Filed Nov. 3, 1992, Ser. No. 970,712
Int. Cl.[5] H01F *41/08*
U.S. Cl. 29—605 23 Claims



1. A method for assembling a distribution transformer comprising:

assembling a core having a core surface, the core surface including an inner circumferential surface defining an open eye region, an outer circumferential surface, and first and second end surfaces connecting the inner and outer circumferential surfaces;

selecting a core support capable of supporting the weight of the assembled distribution transformer, the core support having a first portion and a second portion;

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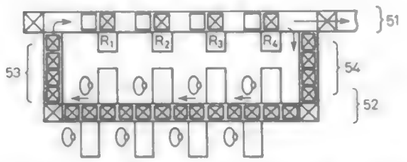
fixedly securing the first portion of the core support to at least one of the end surfaces of the core, and thereafter;
winding a first conductor directly onto the core surface by:
passing the first conductor through the open eye region;
directing the first conductor against the core surface; and
conforming the first conductor to the core surface;
providing electrical insulation to the first conductor;
winding a second conductor directly onto the electrical insulation by:
passing the second conductor through the open eye region;
directing the second conductor against the electrical insulation and any exposed core surface; and
conforming the second conductor to the electrical insulation and said any exposed core surface; and
maintaining the second portion of the core support free of overlying material.

5,353,495

PARTS SUPPLY SYSTEM APPLIED TO A VERSATILE PRODUCTION LINE

Eiichi Terabayashi; Kazumi Miyasaka; Katsunao Sasaki, all of Kahoku; Hiroyoshi Terashima; Keisuke Oyanagi, both of Kanazawa, and Toshio Sasano, Kahoku, all of Japan, assignors to PFU Limited, Ishikawa, Japan

Filed Feb. 25, 1993, Ser. No. 22,640
Claims priority, application Japan, Nov. 16, 1992, 4-305551
Int. Cl.[5] B23P *21/00*
U.S. Cl. 29—714 **14 Claims**



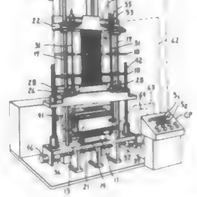
11. A versatile production system for producing products, each product comprising an assembly of at least two units, the versatile production system comprising:
a plurality of trays, each tray having at least two blocks which are equivalent in number to at least two units, the at least two blocks fitting, respectively, the at least two units;
a unit assembling site where parts are assembled into units and at least two units are placed into one of the plurality of trays;
a product assembling site where at least two units, delivered to the product assembling site in a corresponding tray, are removed from the tray and assembled into a product the tray thus being empty after the at least two units are assembled into a product;
a unit conveyer which conveys trays containing units from the unit assembling site;
a product conveyer which conveys products assembled at the product assembling site to a remote location and returns empty trays from the product assembling site to the unit assembling site;
a first tray stocker, coupled between the product conveyer and the unit conveyer, which stocks empty trays returning from the product assembling site and conveys the empty trays to the unit assembling site;
a second tray stocker, coupled between the product conveyer and the unit conveyer, which stocks trays containing units, being conveyed from the unit assembling site and conveys the trays containing units to the product assembling site;
wherein a closed production loop is formed so that a tray can continue to circulate through the product assembling site, through the first tray stocker, through the unit assembling site, through the second tray stocker, and back to the product assembling site; and
wherein the trays each include at least two different sized blocks and each block has a corresponding resistance connecting the block to another block in the tray so that all blocks in a tray are connected together by resistances and a test can be performed on a tray by measuring the resistances.

5,353,496

MECHANICAL TUBE EXPANDER WITH FOUR AXIS CONTROL

Galen B. Harman, La Grange, Ind.; James G. Milliman, Fawn River Township, St. Joseph County, and Derrick S. Small, Sturgis, both of Mich., assignors to Burr Oak Tool & Gauge Company, Sturgis, Mich.

Continuation of Ser. No. 898,215, Jun. 12, 1992, abandoned. This application Aug. 6, 1993, Ser. No. 103,731
Int. Cl.[5] B23P *15/26*
U.S. Cl. 29—727 **18 Claims**



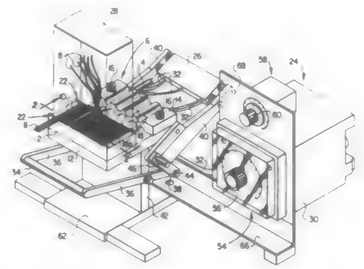
1. A mechanical tube expander for simultaneously expanding straight leg portions of plural hairpin tubes or plural straight tubes into interlocked relationship with plural fins, said tube expander comprising:
a frame means;
a receiver means mounted on said frame means for supporting one end of the straight leg portions of the tubes in an assembly of fins loosely stacked on the straight leg portions;
a support means for engaging and supporting a first endmost fin that is oriented immediately adjacent to said receiver;
a pressure plate carrying a plurality of expander rods which are aligned with the straight leg portions of the tubes, said expander rods each having a tube-expanding means at a distal end thereof for enlarging the diameter of the straight leg portions of the tubes;
a stripper plate means having plural guide openings therethrough through which extend said expander rods, said stripper plate means engaging a second endmost fin at an end of the assembly of fins remote from said receiver;
separate drive means for effecting a selective and coordinated movement of each of said pressure plate, said stripper plate means and said support means relative to each other and in response to a movement of said expander rods and said tube expanding means thereon into said straight leg portions of the tubes to effect an enlarging of the diameter of the straight leg portions to effect a fixing of each of said fins to said tubes.

5,353,497

APPARATUS FOR FORMING BUNDLED CONDUCTORS TO A PLANAR ARRAY ORIENTATION

Jack D. Hecker, Duncanville, Tex., assignor to E.D. Design Manufacturing, Inc., Dallas, Tex.

Continuation of Ser. No. 667,556, Mar. 11, 1991, abandoned, which is a continuation of Ser. No. 432,558, Nov. 6, 1989, Pat. No. 5,005,611. This application Dec. 28, 1992, Ser. No. 997,656
Int. Cl.[5] H01R *43/28;* **B21F** *1/02*
U.S. Cl. 29—750 **7 Claims**



1. An apparatus for separating and orienting conductors from a bundled array into a planar array wherein said conductors are fixedly connected in a side-by-side fashion, said apparatus comprising:
means for rigidly holding separated conductors of said bundled array, said means for rigidly holding being substantially planar, said means for rigidly holding comprising
a template having portions defining continuous grooves, said continuous grooves each having two ends and a middle portion therebetween, and
walls at the two ends of said continuous grooves, said walls extending above said continuous grooves and having notches therein, said notches being aligned with said continuous grooves and said notches permitting said continuous grooves to extend through said walls;
bonding means for fixedly uniting said separated conductors of said bundled array;
heating means for applying heat to said bonding means in order to create said planar array, wherein said conductors are fixedly connected in a side-by-side fashion;
means for removably physically engaging said means for rigidly holding separated conductors of said bundled array with said heating means for applying heat to said bonding means, said means for removably physically engaging aligned so as to wholly direct said heating means toward points where said separated conductors are rigidly held by said means for rigidly holding; and
means for holding said bundled array of conductors.

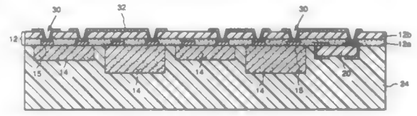
5,353,498

METHOD FOR FABRICATING AN INTEGRATED CIRCUIT MODULE

Raymond A. Fillion, Niskayuna; Robert J. Wojnarowski, Ballston Lake; Michael Gdula, Knox; Herbert S. Cole, Burnt Hills; Eric J. Wildi, Niskayuna, and Wolfgang Daum, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 14,481, Feb. 8, 1993. This application Jul. 9, 1993, Ser. No. 87,434
Int. Cl.[5] H05K *3/34*
U.S. Cl. 29—840 **46 Claims**

1. A method of fabricating an integrated circuit module substrate on a base, comprising the steps of:
applying an insulative base sheet over said base, said base sheet comprising a polymer film having an adhesive coating situated on the side of the polymer film opposite said base;
placing a plurality of chips having contact pads face down on said base sheet;
positioning a mold form around said chips;
adding substrate molding material within said mold form;
hardening said substrate molding material;
separating said base from said base sheet;



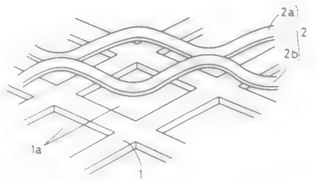
forming a plurality of vias through said base sheet, some of said plurality of vias being aligned with predetermined ones of said contact pads; and
providing a pattern of electrical conductors extending through selected ones of said plurality of vias in said base sheet to form an integrated circuit module.

5,353,499

METHOD OF MANUFACTURING A MULTILAYERED WIRING BOARD

Hisao Hattori; Tomohiko Ihara; Hiroshi Yoshino, and Shosaku Yamanaka, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 47,492, Apr. 19, 1993. This application Jul. 19, 1993, Ser. No. 92,883
Claims priority, application Japan, Apr. 20, 1992, 4-099427; Apr. 20, 1992, 4-099579; Feb. 4, 1993, 5-017517
Int. Cl.[5] H01K *3/10*
U.S. Cl. 29—852 **8 Claims**



1. A method of manufacturing a multilayered wiring board, comprising:
a first step of forming a first mesh wiring layer having a plurality of holes therein;
a second step of forming a plurality of protrusions on said first wiring layer by reducing the thickness of portions thereof;
a third step of forming an insulating layer on said first wiring layer; and
a fourth step of forming a second wiring layer on said insulating layer, said second wiring layer comprising a plurality of wirings that extend between said protrusions formed on said first wiring layer.

5,353,500

MAKING A FRACTURED POWDER METAL CONNECTING ROD

Peter Y. Hoag, 320 Scott's Hill Rd., Milford, Mich. 48042, and David A. Yeager, 9650 Pino Ct., Plymouth, Mich. 48170

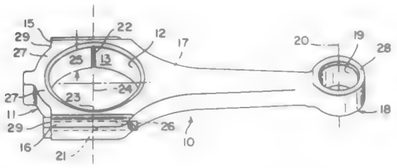
Continuation of Ser. No. 640,717, Jan. 14, 1991, Pat. No. 5,131,577. This application Jul. 20, 1992, Ser. No. 916,567
The portion of the term of this patent subsequent to Feb. 9, 2008, has been disclaimed.
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—888.091 **2 Claims**

1. A method of making a connecting rod for attachment to a

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bearing journal by separation of the connecting rod, comprising the steps of:

(a) forging a powder metal sintered preform to provide a one-piece connecting rod having an annular wall defining a crank opening with a center axis and with stress risers for establishing a cracking plane that extends across said crank opening, said stress risers being provided during or subsequent to forging;



(b) while at ambient conditions, applying tension substantially uniformly across said cracking plane to propagate fracture from said stress risers along said cracking plane and thereby separate said connecting rod into a cap and body with cracked surfaces; and

(c) remating said cap and body by applying a compression coupling to effect substantially an exact rematch of said cracked surfaces.

5,353,501

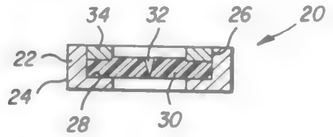
METHOD OF MANUFACTURING VARIABLE ORIFICE DEVICES

Robert A. Naugle, Scottsville; Philip E. Stoneham, and John R. Tinney, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 629,788, Dec. 19, 1990, Pat. No. 5,141,029. This application May 4, 1992, Ser. No. 878,193

Int. Cl.[5] B23P *15/00*

U.S. Cl. 29—840.126 **3 Claims**



1. A method of manufacturing a variable orifice device comprising:

providing a piece of resilient material, the piece of resilient material having opposed first and second surfaces and a finite thickness between the first and second surfaces and having a first unstressed position wherein the first surface is concave and the second surface is convex and having a second stressed position wherein the first and second surfaces are planar so that the first surface is subjected to tensile stresses and the second surface is subject to compressive stresses;

forming a slit in the piece of resilient with one end of the slit being at the first surface and the other end of the slit being at the second surface; and

mounting the piece of material in the second position whereby said one end of the slit opens and said other end of slit is forced closed.

5,353,502

METHOD OF PRODUCING A HONEYCOMB PANEL INSERTS FOR FIXING A MEMBER IN AN OPENING

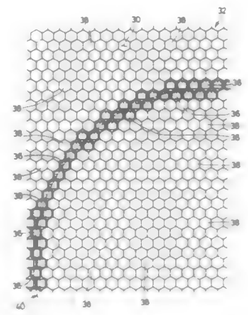
Morishige Hattori; Mamoru Ohara; Sumio Okuno, all of Kuda-matsu; Koichiro Okuto, Setagaya, and Hiroshi Irie, Nagoya, all of Japan, assignors to Sumitomo Light Metal Industries, Ltd, Japan and Hitachi, Ltd, Japan

Filed Jan. 10, 1992, Ser. No. 819,333

Claims priority, application Japan, Jan. 14, 1991, 3-014858; Nov. 6, 1991, 3-319784

Int. Cl.[5] B23P *15/00*

U.S. Cl. 29—897.2 **17 Claims**



1. A method of producing a honeycomb panel, comprising the steps of:

preparing a honeycomb structure comprising first and second face plates which sandwich therebetween a honeycomb core having a plurality of honeycomb cells;

placing inserts between said face plates along a predetermined cutting line;

bonding said honeycomb structure and inserts together to form a bonded assembly;

cutting at least through said face plates along said predetermined cutting line so as to form an opening through said honeycomb structure, said inserts being exposed to said opening so as to form bonding surfaces for a frame member; and

securing a frame member to said bonded assembly by bonding said frame member to said inserts at said bonding surfaces of said inserts.

5,353,503

METHOD OF PROVIDING A FIRE-PROOF AND/OR WEAR RESISTANT LINING

Wouter Garot, Sportlaan 99 NL-2566GN, The Hague, Netherlands

Filed Aug. 25, 1992, Ser. No. 935,036

Claims priority, application Netherlands, Aug. 26, 1991, 9101436

Int. Cl.[5] B23P *19/04*

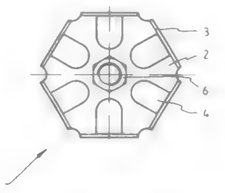
U.S. Cl. 29—897.3 **7 Claims**

1. A method of providing a fireproof and/or wear-resistant lining on an object made of metal, comprising:

welding pins to the object, each pin having a threaded end remote from the object;

screwing anchoring means on said pins;

applying the fireproof and/or wear-resistant lining material,



in a plastic form, to the object and around the anchoring means; and

curing the fireproof and/or wear-resistant lining material.

5,353,504

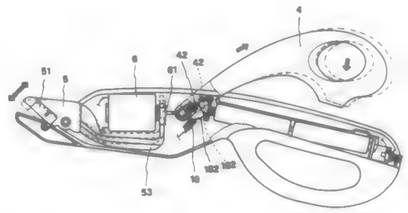
MOTORIZED SCISSORS

Chung-Jen Pai, No. 309, Lien Cheng Rd., Chung Ho City, Taipei Hsien, Taiwan

Filed Apr. 30, 1993, Ser. No. 55,186

Int. Cl.[5] B26B *15/00*

U.S. Cl. 30—228 **1 Claim**



1. A motorized scissors comprising:

a bottom casing having an interior, an exterior, a middle portion, a bottom, a rear end, a top and a front end, a battery chamber at said rear end thereof, said chamber having an interior for holding a battery, said battery having two terminals, a cutter blade fixed to a cutter blade mounting hole on said exterior of said casing at a front end thereof by a screw, two motor supports spaced behind said cutter blade mounting hole, a stub rod with a screw hole disposed on said interior of said chamber near said cutter blade mounting hole, a coil spring mounted around said stub rod, a top pin and an internally threaded top column bilaterally disposed on said interior of said chamber in said middle portion of said casing, a post with a top screw hole disposed between said motor supports and said internally threaded top column, a protruded block with a top groove disposed between said motor supports and said top pin, two opposite battery power supply contacts respectively connected to said two terminals of said battery being received in said battery chamber, a V-shaped contact metal spring fastened in said top groove on said protruded block and controlled to make a contact with said battery power supply contacts;

a looped handle having a pin hole on one end thereof, said top pin on said bottom casing fitting within said pin hole from said bottom of said casing for allowing said looped handle to be pivoted thereon;

a top casing having a top, a front end and a rear end and fitting over said bottom casing at said top of said bottom casing, said top casing having a bottom pin fitted into said pin hole of said looped handle from said top of said bottom casing, a small bottom block with a through hole near said rear end of said top casing fixed to a screw hole on said bottom casing by a screw, a lever mounting hole formed of two linked round holes and disposed above said top screw hole on said post of said bottom casing, a front through hole near said front end of said top casing disposed above said screw hole on said stub rod of said bottom casing;

a looped switching lever having a front end and a rear end and having a hollow downward pivot on said front end thereof inserted through said lever mounting hole on said top casing and connected to said top screw hole on said post of said bottom casing by a screw, and a finger hole on said rear end thereof for inserting fingers;

a movable cutter holder having a front end, a middle portion and a curved rear end and pivotably connected between said top casing and said bottom casing, said movable cutter holder having said front end fixed with a cutter blade opposing to the cutter blade on said bottom casing for cutting, a pivot hole in said middle portion pivotably connected to said screw hole on said stub rod of said bottom casing, and an oval hole on said curved rear end thereof; and

a motor having an eccentric rotor coupled to an output shaft thereof and disposed in said oval hole on said movable cutter holder;

whereby said eccentric rotor imparts a reciprocating movement to said movable cutter holder, as said looped switching lever is pulled backwards and depressed to connect said contact metal spring and said battery power supply contacts in turning on said motor, said motor is turned on, causing the cutter blades to close and open.

5,353,505

GRIP SCISSORS

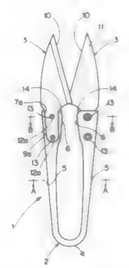
Hidekazu Okada, Osaka, Japan, assignor to Clover Mfg. Co., Ltd., Osaka, Japan

Continuation of Ser. No. 967,116, Oct. 27, 1992, abandoned. This application Aug. 12, 1993, Ser. No. 112,781

Claims priority, application Japan, Aug. 7, 1992, 4-055740[U]; Aug. 7, 1992, 4-055741[U]

Int. Cl.[5] B26B *13/18*

U.S. Cl. 30—253 **7 Claims**



1. A pair of grip scissors comprising:

a generally U-shaped spring member integrally made of a resin, the spring member having a web portion and an opposed pair of grip portions extending from the web portion, each grip portion having a free end; and

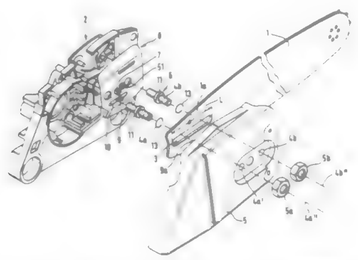
a pair of metallic blade members each having a cutting edge and an inner blade face, said each blade member further having a connecting portion attached to the free end of said each grip portion, the inner blade faces of the respective blade members being held in contact with each other even in a natural state of the spring member;

wherein the free end of said each grip portion has an exterior mounting side face and an opposing exterior non-mounting side face; and

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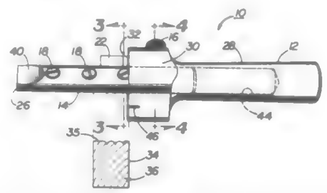
the connecting portion of said each blade member is attached laterally to the exterior mounting side face of said each grip portion with the inner blade face of said each blade member directed toward the exterior non-mounting side face of each said grip portion, and wherein the connecting portion of each blade member is in direct contact with the exterior mounting side face of said each grip portion.

5,353,506
MOTOR-DRIVEN CHAIN SAW HAVING A GUIDE BAR
Wilfried Müller, Rudersberg, and Helmut Zimmermann, Kernen, both of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany
Filed Dec. 23, 1992, Ser. No. 996,076
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1991, 4142751
Int. Cl.[5] B27B *17/02*
U.S. Cl. 30—386 **25 Claims**



1. A motor-driven chain saw defining a longitudinal axis and being equipped with a saw chain and a drive motor for driving the saw chain via a sprocket wheel, the motor-driven chain saw comprising:
a housing for accommodating the drive motor therein;
a guide bar having a guide groove for guiding the saw chain; said guide bar having a rearward end facing toward the housing where said guide bar is mounted on said housing so as to extend forwardly from said housing in the direction of said axis;
said guide bar having an elongated slot formed in said rearward end;
at least one threaded bolt fixedly mounted on said housing and extending through said elongated slot transversely to said axis when said guide bar is mounted on said housing;
a sprocket-wheel cover for covering the sprocket wheel;
threaded clamping means for threadably engaging said threaded bolt for clamping said rearward end of said guide bar between said housing and said cover;
said guide bar having a predetermined position on said housing when mounted and held on said housing;
a holding device for holding said rearward end in said predetermined position on said housing when said cover is removed;
said holding device being separate from said cover;
said holding device including said guide bar having an inner surface defining said elongated slot and said inner surface having an edge; a latching member being displaceable between a first position wherein said guide bar can be lifted off said housing and a second position wherein said guide bar is latched onto said housing; and, said latching member extending beyond said edge when in said second position thereby latching said guide bar to said housing in said predetermined position thereof.

5,353,507
BEADING TOOL
Leonard G. Lee; Robin C. Lee, both of Ottawa, and Francis A. McLean, Oxford Station, all of Canada, assignors to Lee Valley Tools Ltd., Ottawa, Canada
Filed Aug. 12, 1993, Ser. No. 105,594
Int. Cl.[5] B26B *5/00, 9/02*
U.S. Cl. 30—484 **10 Claims**

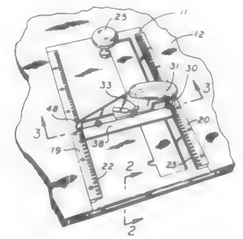


1. A tool for removing material from a wood workpiece face located adjacent to an edge of the workpiece to form a profile in the face, comprising:
(a) a cylindrical blade holder having a longitudinal slot separating a portion of the holder into two arms between which a blade may be grasped for contact with the workpiece face and at least one screw passing through one arm and into the other arm to draw the arms together to grasp the blade,
(b) a handle having
(1) a generally cylindrical grip,
(2) a face penetrated by a slot for receiving a portion of the blade and
(3) a longitudinal bore for telescopically receiving a portion of the holder, and
(c) means for adjustably fixing the holder within the bore during use.

6. A tool for removing material from a wood workpiece face located adjacent to an edge of the workpiece to form a profile in the face, comprising:
(a) a cylindrical blade holder having a longitudinal slit separating a portion of the holder into two arms between which a blade may be grasped for contact with the workpiece face and
(b) a handle having:
(1) a generally cylindrical grip having a longitudinal axis,
(2) attached to the grip, a head having a fence surface normal to the longitudinal axis for contact with the workpiece edge during use of the tool,
(3) coaxial with the longitudinal axis, a longitudinal bore penetrating the fence surface for receiving a first portion of the holder so that a second, remaining portion of the holder projects from the handle,
(4) penetrating the fence surface, two radial slots to receive a portion of the blade when the holder is inserted into the handle, and
(5) means for adjustably fixing the holder within the bore during use.

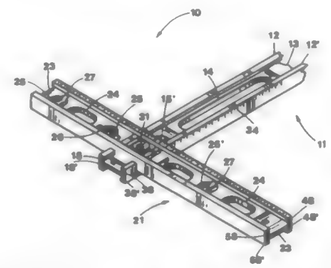
5,353,508
BORDER CUTTER
David H. Baker, Garden Grove, Calif., assignor to Roberts Consolidated Industries, Inc., City of Industry, Calif.
Filed Apr. 29, 1993, Ser. No. 53,472
Int. Cl.[5] B26B *29/06*
U.S. Cl. 33—42 **4 Claims**

1. A border cutter for cutting a strip of carpet, said border cutter including
a single surface plate for resting on and moving along a piece of carpet, said surface plate having a guide edge for engaging and moving along an edge of a carpet and a cutting blade opening spaced from said guide edge,
said surface plate having spaced guides with a plurality of aligned slots in said guides providing a plurality of locations on said surface plate for receiving a carrier blade plate supporting a cutting blade for positioning and retaining said carrier blade plate on said surface plate parallel to said guide edge with a cutting blade at said blade opening,



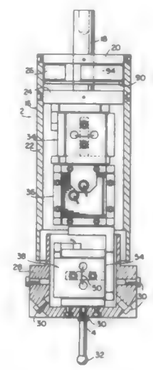
said border cutter further including blade carrier supports for mounting a cutter blade carrier on said border cutter surface plate in said aligned slots wherein said border cutter is placed on and pushed along the carpet so that said surface plate rests on the carpet with said cutter guide edge engaging the edge of the carpet.

5,353,509
MULTI-PURPOSE T-SQUARE AND LEVEL COMBINATION TOOL
Daniel C. Black, 829 Belgrade Ave., Atlanta, Ga. 30067
Filed Jul. 27, 1993, Ser. No. 97,553
Int. Cl.[5] B43L *7/02;* **G01C** *9/26*
U.S. Cl. 33—451 **5 Claims**



1. A multi-purpose tool for simultaneously measuring a workpiece along two directions which are oriented perpendicularly to each other, comprising:
(a) an elongated arm, the arm having first and second longitudinally extending flanges disposed parallel to each other and a first central web portion interconnecting the first and second flanges, the first and second flanges defining first and second inwardly facing grooves, respectively, which face each other on opposite sides of the first central web portion;
(b) at least one level vial fixedly attached to the arm;
(c) a cross member, the cross member having third and fourth longitudinally extending flanges disposed parallel to each other and a second central web portion interconnecting the third and fourth flanges, the third and fourth flanges defining third and fourth inwardly facing grooves, respectively, which face each other on opposite sides of the second central web portion;
(d) at least one level vial fixedly attached to the cross member;
(e) means for removably attaching the arm and the cross member in such a way that their longitudinal centerlines are disposed perpendicular to each other, the arm and the cross member defining a shoulder which projects outwardly a substantial distance form the arm when the arm and the cross member are attached with their longitudinal centerlines disposed perpendicular to each other; and
(f) means for removably joining the arm and the cross member in such a way that their longitudinal centerlines are disposed parallel with each other, the cross member forming an extension of the arm when the arm and the cross member are joined with their longitudinal centerlines disposed parallel with each other, the joining means being slideably engageable with the arm and with the cross member when the arm and the cross member have their respective first and third grooves and their respective second and fourth grooves, respectively, disposed in parallel alignment with each other.

5,353,510
PROBE, MOTION GUIDING DEVICE, POSITION SENSING APPARATUS, AND POSITION SENSING METHOD
Klaus Ulbrich, Flanders, N.J.
Continuation of Ser. No. 18,998, Feb. 26, 1987, Pat. No. 5,154,002. This application Oct. 13, 1992, Ser. No. 959,373
Int. Cl.[5] G01B *5/20*
U.S. Cl. 33—502 **5 Claims**



1. A method of measuring with a coordinate measuring apparatus which has a movable head, a probe rigidly affixed to the head, and a stylus with a workpiece-contacting tip supported by the probe, said probe having members which are movable relative to each other and are arranged to enable the tip of the stylus to move relative to the head in at least two directions, said apparatus including at least two signal generating means for producing signals which represent displacements of the stylus relative to the head,
displacing the tip of the stylus relative to the movable head of the apparatus by a known displacement which has a known distance and a known direction, said method including the following steps:
producing with said signal generating means a set of sensed values for said known displacement,
repeating said displacing step and said producing step to obtain sets of sensed values for a plurality of known displacements,
producing a mathematical model from said sets of sensed values and said known displacements,
measuring a workpiece by moving said tip into contact with the workpiece so that said signal-generating means produces a set of measurement signals, and
determining the distance and direction of tip displacement

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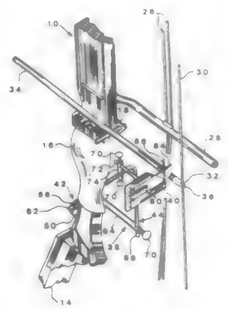
occurring during said measuring of said workpiece by correlating the set of measurement signals to said mathematical model.

5,353,511

MULTIPLE TUNING GAUGE AND METHOD FOR ARCHERY BOWS

William R. Boll, 8418 96th St. NW., Gig Harbor, Wash. 98335, and Martin A. Mullins, 1637 E. 32nd St., Tacoma, Wash. 98404

Filed Dec. 11, 1992, Ser. No. 989,567
Int. Cl.[5] F41B *5/00*
U.S. Cl. 33—506 **21 Claims**



1. A multiple tuning gauge for archery bows mountable to a archery bow for registering vertical and horizontal movement, from the undrawn to the drawn state, of an arrow shaft on a bow, the multiple tuning gauge comprising:

an adjustable mounting assembly having means adapted to secure said mounting assembly to the bow having a threaded stabilizer hole, said securing means comprising a fully threaded bolt, said stud bolt threaded so as to be secured into the threaded stabilizer hole of said archery bow wherein said adjustable mounting assembly further comprises;

a support frame releasably secured to said mounting assembly;

means adapted to contact the arrow shaft that is attached to a bow string, wherein said contact means is releasably secured to said support frame;

wherein said adjustable mounting assembly further comprises:

a protective washer slidably received on said stud bolt;

a stationary plate provided with a centered hole slidably received on said stud bolt and secured in a stationary position;

a cushion washer slidably received on said stud bolt; and

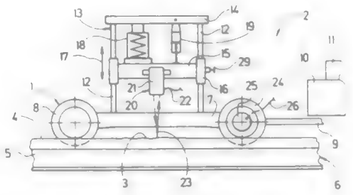
a pivot plate provided with two mounting holes, one of said holes on each end of said pivot plate, the first of said mounting holes centered proportionally between four threaded holes, slidably received and secured firmly against said cushion washer and said stationary plate on to said stud bolt.

5,353,512

MEASURING ARRANGEMENT FOR CONTINUOUSLY MEASURING UNDULATORY IRREGULARITIES OF A RAIL

Josef Theurer, Wien, and Bernhard Lichtberger, Leonding, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Wien, Austria

Filed Nov. 4, 1992, Ser. No. 972,173
Claims priority, application Austria, Nov. 13, 1991, A 2249/91
Int. Cl.[5] B61K *9/08*
U.S. Cl. 33—523.2 **9 Claims**



1. A measuring arrangement for continuously measuring undulatory irregularities in a running surface of a rail of a track, comprising

a measuring trolley having flanged wheels which roll on said track, and a trolley frame,

a distance detector located on said trolley frame above said rail for contactless measurement of the distance of said detector to said rail, and

means connected to said distance detector for recording, processing and issuing measurement signals,

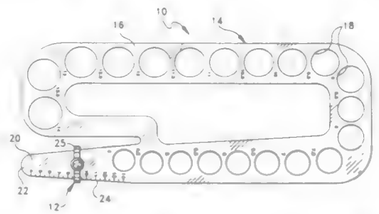
wherein said distance detector is mounted on a linear guide connected to said trolley frame so as to be displaceable in a vertical direction relative to said trolley frame and, said measuring arrangement further including means for vibration-damping of the distance detector along the linear guide during a measuring operation.

5,353,513

COMBINATION FINGER AND RING SIZING DEVICE

Stephen A. Round, Foster, R.I., assignor to S. Round's, Inc., North Scituate, R.I.

Filed Jul. 6, 1993, Ser. No. 85,625
Int. Cl.[5] G01B *3/34*
U.S. Cl. 33—555.2 **2 Claims**



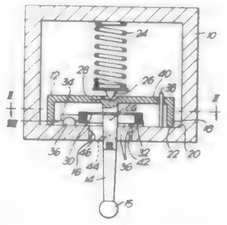
1. A finger and ring sizing device comprising a one-piece planular body that includes a first body portion that is defined by spaced narrow strips that are interconnected at adjacent ends thereof by a narrow interconnecting strip, a plurality of circular openings being formed in said narrow and interconnecting strips, said openings graduating in diametrical size and defining sequentially graduated ring sizes and being formed in said narrow strips so that each opening has open areas at the sides thereof, wherein any one of the openings in the first body portion is slidable over a selected finger without having to bend backwardly the fingers that are adjacent to said selected finger, said openings being identified as to ring size by indicia imprinted on said first body portion adjacent to said openings, wherein a user's ring size for said selected finger is obtained by the user inserting the selected finger in successive openings until a proper fit is obtained, thereby indicating the correct ring size for the selected finger, said body further including a second elongated body portion that is integrally joined to one of said narrow strips of said first body portion and that extends outwardly therefrom and terminating in a free end, said second elongated body portion being formed with an increasing tapered configuration that extends away from the free end thereof, and ring size indicia imprinted on said second tapered body portion for designating ring sizes, wherein the size of a shank of a selected finger ring is determined by mounting the ring shank on said second tapered body portion and moving it to the innermost possible position at which the corresponding indicia designates the size of the ring shank being measured.

5,353,514

TOUCH PROBE

David R. McMurtry, Wotton-Under-Edge, United Kingdom, assignor to Renishaw, plc, Gloucestershire, United Kingdom

Continuation of Ser. No. 944,341, Sep. 14, 1992, Pat. No. 5,253,428, which is a continuation of Ser. No. 660,048, Feb. 25, 1991, Pat. No. 5,146,691. This application Aug. 25, 1993, Ser. No. 111,601
Claims priority, application United Kingdom, Feb. 23, 1990, 9004117
The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.
Int. Cl.[5] G01B *5/20*
U.S. Cl. 33—559 **55 Claims**



1. A touch probe for position determining apparatus, comprising:

a fixed member having an axis;

a movable member for carrying a workpiece-contacting stylus;

a spring biasing the movable member into a rest position relative to the fixed member, the movable member being movable out of the rest position against the action of the spring when a force is applied to the stylus;

a detector for providing a signal when said stylus contacts a workpiece; and

a constraint mechanism between the fixed and movable members for constraining movement of the movable member when it is biased into the rest position; the constraint mechanism including:

an intermediate member which is movable relative to the fixed and movable members;

a kinematic support between the intermediate member and the fixed member, comprising elements on one of the intermediate and fixed members which are engageable with corresponding surfaces on the other one of the intermediate and fixed members, thereby to constrain movement of the intermediate member relative to the fixed member when said elements and surfaces are engaged, the intermediate and fixed members being relatively rotatable when said elements and surfaces are disengaged; and

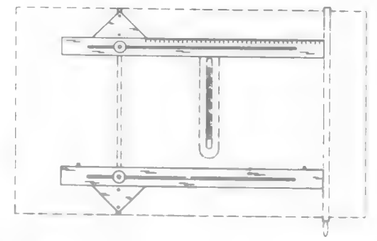
a planar spring between the intermediate member and the movable member, for preventing relative rotation therebetween, but permitting axial and tilting movements therebetween while said elements and surfaces of the kinematic support remain engaged.

5,353,515

PRECISION RIP FENCE ALIGNMENT GAUGE

Rudd A. Alvis, and Paulette J. Alvis, both of 2075 Easthaven Dr., Columbus, Ohio 43232

Filed Mar. 28, 1994, Ser. No. 219,072
Int. Cl.[5] B23Q *17/22*; B27B *27/04*
U.S. Cl. 33—640 **6 Claims**



1. In a table saw having a rip fence and a miter slot, a new precision rip fence alignment gauge for quickly positioning the rip fence a precise distance from the saw blade by referencing from the miter slot whereby the rip fence is maintained substantially parallel with the saw blade for accurately cutting a workpiece, the precision rip fence alignment gauge comprising:

a first gauge half assembly comprising: an elongated flat rod having a planar top and bottom and square opposing ends, the rod also having first and second straight parallel edges, the rod additionally having a central longitudinal slot therethrough extending nearly the entire length thereof, the rod further having a pair of spaced apart lateral holes extending into the first edge thereof, each hole being proximal an opposing end of the rod, the rod moreover having measuring indicia recorded along the top adjacent the second edge thereof; an elongated flat locator bar having dimensions to slidably engage the miter slot of a conventional table saw, the locator bar also having a threaded stud projecting upwardly therefrom proximal one end thereof, the threaded stud being fixedly connected to the locator bar so the longitudinal axis of the stud lies normal the plane of the locator bar, the threaded stud slidably extending through the longitudinal slot of the elongated flat rod such that the bottom of the elongated flat rod is in facing touching sliding relationship with the top of the locator bar; an alignment plate having at least one straight edge formed thereon, the bottom of the alignment plate being fixedly connected to the top of the locator bar such that the locator bar bisects the straight edge of the alignment plate at a 90° angle thereto, the straight edge of the alignment plate slidably abutting the second edge of the elongated flat rod such that cooperatively with the threaded stud the angular displacement of the longitudinal axes of the elongated flat rod and the locator bar is constrained to 90° while longitudinal displacement of the elongated flat rod relative the locator bar is allowed and lateral displacement of the elongated flat rod relative the locator bar is prevented; a thumbnut threadedly engaging the threaded stud whereby longitudinal displacement of the elongated flat rod relative the locator bar may be prevented; and

a second gauge half assembly laterally separably connected with the first gauge half assembly, the second gauge half assembly comprising: an elongated flat rod dimensionally

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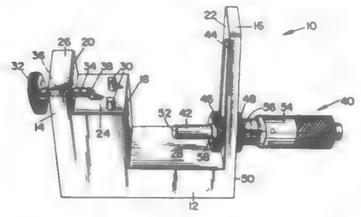
identical to the elongated flat rod of the first gauge half assembly, the rod having a pair of spaced apart alignment pins projecting laterally from the first edge thereof, the pair of pins separably engaging the pair of holes of the first gauge half assembly such that the elongated flat rods of the first and second gauge half assemblies are laterally juxtaposed, the ends of the rods being flush with each other; an elongated flat locator bar, having dimensions to slidably engage the miter slot of a conventional table saw, the locator bar also having a threaded stud projecting upwardly therefrom proximal one end thereof, the threaded stud being fixedly connected to the locator bar so the longitudinal axis of the stud lies normal the plane of the locator bar, the threaded stud slidably extending through the longitudinal slot of the elongated flat rod such that the bottom of the elongated flat rod is in facing touching sliding relationship with the top of the locator bar; an alignment plate having at least one straight edge formed thereon, the bottom of the alignment plate being fixedly connected to the top of the locator bar such that the locator bar bisects the straight edge of the alignment plate at a 90° angle thereto, the straight edge of the alignment plate slidably abutting the second edge of the elongated flat rod such that cooperatively with the threaded stud the angular displacement of the longitudinal axes of the elongated flat rod and the locator bar is constrained to 90° while longitudinal displacement of the elongated flat rod relative the locator bar is allowed and lateral displacement of the elongated flat rod relative the locator bar is prevented; a thumbnut threadedly engaging the threaded stud whereby longitudinal displacement of the elongated flat rod relative the locator bar may be prevented.

5,353,516

TURBINE PACKING RING MEASURING DEVICE

William S. Dalton, Chesterfield, Mass., assignor to IMO Industries, Inc., Quabbin Division, Chicopee, Mass.

Filed Feb. 5, 1993, Ser. No. 14,140
Int. Cl.[5] G01B *5/14, 3/18*
U.S. Cl. 33—821 **1 Claim**



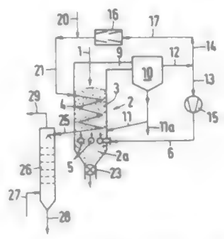
1. A measuring device for measuring the distance between the hook fit slot and the free ends of the packing ring teeth of a turbine packing ring having a hook fit slot and a plurality of teeth comprising: a frame having stabilizing means for engagement with the packing ring hook fit slot, the stabilizing means being a pair of pins on the frame, locking means comprising a thumb-screw on the frame for locking the packing ring relative to the frame, and a calibrated micrometer on the frame for measuring the distance between the packing ring hook fit slot and the free ends of the packing ring teeth, the calibrated micrometer being slidably adjustable relative to the frame and comprising an outer rotatable calibrated cylinder, an inner stationary calibrated cylinder sleeved by the outer cylinder and having an axially aligned exteriorly threaded sleeve extending outwardly therefrom, a micrometer stem fixed at one end relative to the outer cylinder and passing freely through the inner cylinder and threaded sleeve and locking means on the threaded sleeve for locking the micrometer relative to the frame, wherefore appropriate rotation of the outer cylinder effects transverse movement of the micrometer stem relative to the frame.

5,353,517

PROCESS OF DRYING WATER-CONTAINING SOLIDS IN A FLUIDIZED BED

Hans-Jurgen Weiss, Oberursel, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 17, 1993, Ser. No. 78,372
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1992, 4220953
Int. Cl.[5] F26B *3/08*
U.S. Cl. 34—363 **10 Claims**



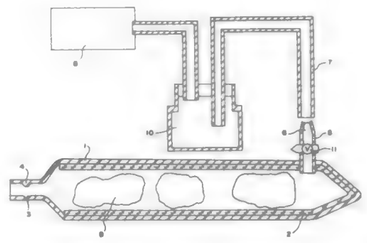
1. A method of drying water-containing solids in a fluidized bed, including the steps of indirectly heating the bed by heat exchange means and withdrawing from the bed vapors having a high content of water vapor, passing part of said vapors as a fluidizing fluid through the fluidizing bed and cooling the remainder or another part of said vapors to form an aqueous condensate, directly contacting at least a part of the aqueous condensate in a purification zone with a gaseous or vaporous tripping fluid, and separately withdrawing from said purification zone partly purified condensate and contaminated stripping fluid.

5,353,518

IMPLEMENT TO BLOT GREASE FROM SOLID FOODSTUFF

Ling H. Lee, 6496 Heather Dr., Memphis, Tenn. 38119

Filed Jun. 7, 1993, Ser. No. 72,053
Int. Cl.[5] F26B *19/00*
U.S. Cl. 34—89.1 **6 Claims**



1. An implement to blot coated grease from prepared solid foodstuff articles comprising:
(a) a openable and closable bag, for purpose of containing said prepared foodstuff articles, said bag being made of flexible plastic,
(b) for purpose of blotting grease from said foodstuff, a layer of soft and flexible liquid-absorbing material adhering to interior surfaces of said bag,

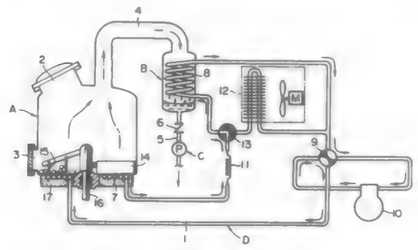
(c) at one edge of said bag, a nipple having a hollow lumen communicating with interior space of said bag, and
(d) for purpose of creating vacuum in said bag, an air-evacuating pump means connectable to and disconnectable from said nipple, such that, after said closed bag being filled with greasy said solid foodstuff articles, and after connecting said pump means to said nipple, activation of said pump means causes said layer of liquid-absorbing material and said bag to collapse tightly against said foodstuff articles and to blot grease from said foodstuff articles.

5,353,519

VACUUM DRYING EQUIPMENT

Toshihisa Kanamaru, and Shinichi Ito, both of Fukuoka, Japan, assignors to Saibu Gas Co., Ltd., Fukuoka, Japan

Filed Oct. 30, 1992, Ser. No. 969,570
Claims priority, application Japan, Oct. 30, 1991, 3-285042
Int. Cl.[5] F26B *13/30*
U.S. Cl. 34—92 **14 Claims**



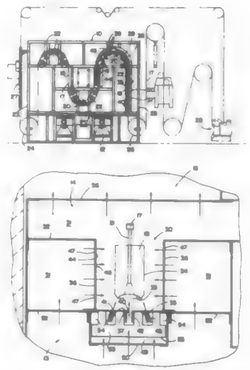
1. A vacuum drying apparatus comprising:
a drying vessel which is formed as a pressure-resistant closed vessel and which receives therein a material to be dried;
a steam discharge passage connected to an upper portion of said drying vessel to discharge steam which is produced within said drying vessel;
a heat recoverer connected to said drying vessel through said steam discharge passage;
means for exhaust and drainage mounted to said heat recoverer for exhausting gases formed upon drying the material to be dried, and for draining condensation products formed by condensation of the gases formed upon drying the material to be dried;
a heat pump comprising a closed circulation piping with a refrigerant sealed therein as well as a compressor and a capillary tube which are disposed in line with said piping;
a radiator provided in said heat pump;
heat exchange means for said drying vessel which introduce heat from the refrigerant flowing through said piping of said heat pump into said drying vessel by exchanging heat with said drying vessel; and
heat exchange means for said heat recoverer which introduce heat from the refrigerant flowing through said piping of said heat pump into said heat recoverer by exchanging heat with said heat recoverer, said piping of said heat pump being provided with flow path switching means to switch the flow of the refrigerant which is fed under pressure by said compressor between a circulation system for heating, wherein the refrigerant is circulated in the order of said compressor, said heat exchange means for the drying vessel, said capillary tube, said heat exchange means for the heat recoverer and the compressor; and a circulation system for cooling, wherein the refrigerant is circulated in the order of said compressor, said radiator, said capillary tube, said heat exchange means for the drying vessel and said compressor.

5,353,520

PIN OVEN SYSTEM FOR CANS

Steven E. Gougé, Sussex, and Edward S. Napoleon, Milwaukee, both of Wis., assignors to Oven Systems, Inc., Milwaukee, Wis.

Filed Jun. 4, 1993, Ser. No. 72,604
Int. Cl.[5] F26B *25/00*
U.S. Cl. 34—105 **13 Claims**



1. A can drying system for open-ended cylindrical cans mounted on generally horizontal elongate carrier pins attached to a conveyor chain in spaced relation therealong for movement in a serpentine chain path defined by a series of straight runs connected by generally curved turn sections, the path disposed in a generally vertical plane, said system comprising:
an open-faced generally U-shaped duct for each straight run positioned parallel to and spaced from the conveyor chain forming the run such that the carrier pins and cans mounted thereon extend into the duct, said duct having an end wall and a pair of opposing side walls extending generally perpendicularly from the end wall, the end wall positioned generally parallel to and spaced from the closed bottom walls of the cans and the side walls positioned generally parallel to and spaced from the cylindrical walls of the cans;
the end wall and side walls of said duct each having a pattern of orifices extending uniformly along the length of the duct for directing pressurized heated air through the duct walls in generally perpendicular directions against the bottom and cylindrical walls of the cans;
the end wall orifice pattern comprising a series of parallel slots extending along the length of the duct, including a center slot aligned with the straight run of the chain to direct a flow of heated air directly against the bottom walls of the can, and a side slot positioned on each side of the center slot to direct converging flows of heated air against the corners of the cans defined by the junctures of the can bottoms and cylindrical walls; and,
means for driving said conveyor chain and for carrying the cans through the serpentine path.

5,353,521

METHOD AND APPARATUS FOR DRYING WEB

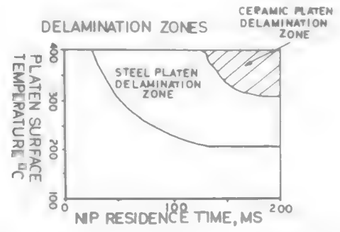
David I. Orloff, Atlanta, Ga., assignor to Institute of Paper Science and Technology, Inc., Atlanta, Ga.

Division of Ser. No. 417,261, Oct. 15, 1989, Pat. No. 5,101,574.
This application Sep. 12, 1991, Ser. No. 758,775
Int. Cl.[5] F26B *11/02*
U.S. Cl. 34—110 **3 Claims**

1. An apparatus for impulse drying of a web of paper, the apparatus comprising at least two rolls defining a nip through

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which the web of paper is passed with the rotation of the rolls, at least one of said rolls being a heated roll which is adapted for heating to a temperature of from about 200° C. to about 400° C., the heated roll being provided with a solid surface material having a thermal diffusivity of less than about 1×10^{-6} m^2/s,



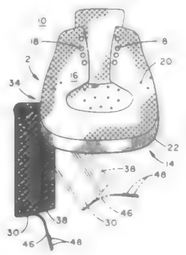
said surface of said heated roll being a material selected from the group consisting of ceramics and cermets, the rolls being disposed to define a nip to provide a compressive force on the web of paper in the range of from about 0.3 MPa to about 5.0 MPa.

5,353,522

SHOE HAVING A REMOVABLE SOLE PORTION

Cameron B. Wagner, 6521 Indian Wells Dr., Casper, Wyo. 82604 Germaine Wagner, legal guardian

Filed Jul. 19, 1993, Ser. No. 95,561
Int. Cl.[5] A43B *13/00*
U.S. Cl. 36—15 **1 Claim**



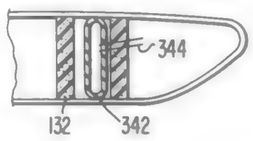
1. A shoe, said shoe comprising:
a rear heel portion;
a forward toe portion;
a first side portion;
a second side portion;
a shoe length extending from said rear heel portion to said forward toe portion;
a shoe width extending from said first side portion to said second side portion;
an upper;
a sole, said sole comprising:
a bottom face;
a welt extending around a periphery of said bottom face and encircling said upper;
at least one fixed sole portion, said welt of said fixed sole portion being fixedly attached to said upper; and
at least one removable sole portion, said removable sole portion being movable between a first position substantially adjacent to said fixed sole portion and a second position substantially separated from said fixed sole portion, wherein said removable sole portion extends across said shoe width, said at least one fixed sole portion comprising:
at least two fixed sole portions;
a fixed forward sole portion; and
a fixed rear sole portion;
wherein said removable sole portion is disposed intermediate between said fixed forward sole portion and said fixed rear sole portion;
an interior foot chamber formed by said upper and said sole;
means for pivoting said removable sole portion to said second position to provide access to the interior foot chamber of said shoe without removable of said shoe from the foot of a wearer, comprising:
hinge means for providing a pivotal movement between said shoe and said removable sole portion, said hinge means comprising:
an attachment of one side portion of said removable sole portion to said upper of said shoe;
a first cut extending through said sole of said shoe and positioned between said removable sole portion and said fixed forward sole portion;
a second cut extending through said sole of said shoe and positioned between said removable sole portion and said fixed rear sole portion;
an insole, said insole being disposed within said interior foot chamber of said shoe and overlaying said sole, and wherein each of said first and second cuts extends through said insole; and
attachment means for releasably securing said removable sole portion in said first position, said attachment means comprising a buckle apparatus interconnecting said removable sole portion and said upper.

5,353,523

SHOE WITH AN IMPROVED MIDSOLE

Bruce J. Kilgore, Lake Oswego, Oreg.; Thomas McMahon, Wellesley, Mass.; John C. Tawney, Portland, and Gordon Valiant, Beaverton, both of Oreg., assignors to Nike, Inc., Beaverton, Oreg.

Division of Ser. No. 738,031, Aug. 2, 1991, abandoned. This application Oct. 13, 1993, Ser. No. 134,886
Int. Cl.[5] A43B *13/20, 21/28, 13/18*
U.S. Cl. 36—29 **18 Claims**



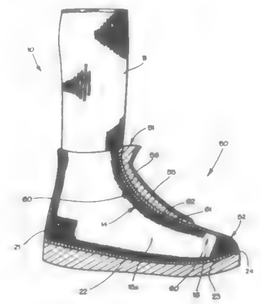
1. A shoe having an upper and a sole connected to said upper, said sole including an outsole and a midsole, said midsole comprising a layer of resilient material and a substantially open space defined by an upper boundary and a lower boundary, a two-element cushioning component disposed within said open space between said upper boundary and said lower boundary and including a first compressible cushioning element made of a resilient material having an open space and a second compressible cushioning element comprising a pressurized bladder disposed within the open space of said first compressible element, an upper surface of said first compressible element secured at the location of said upper boundary, wherein, said open space between said upper boundary and said lower boundary is maintained substantially about said two-element cushioning component.

5,353,524

MOISTURE-MANAGEMENT SOCK AND SHOE FOR CREATING A MOISTURE MANAGING ENVIRONMENT FOR THE FEET

Daniel L. Brier, 33 Angelfish Cay Dr., Key Largo, Fla. 33037

Division of Ser. No. 67,469, May 25, 1993. This application Nov. 10, 1993, Ser. No. 150,597
Int. Cl.[5] A43B *23/07*
U.S. Cl. 36—55 **5 Claims**



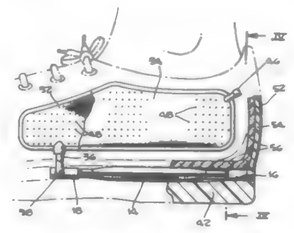
1. A moisture-management shoe having a shoe tongue, a toe box area, and a moisture wicking inner liner residing adjacent said tongue and said toe box area for moving moisture from the foot and through the shoe for evaporation, said moisture wicking liner comprising:
(a) an first fabric layer including hydrophobic wicking yarn for residing next to the foot of the wearer, and for wicking moisture outwardly away from the foot of the wearer;
(b) a second fabric layer constructed of hydrophilic yarn residing adjacent said first fabric layer for receiving and dispersing moisture wicked outwardly from said first fabric layer; and
(c) attachment means for attaching said moisture wicking liner to an interior surface of said shoe tongue and said toe box area.

5,353,525

VARIABLE SUPPORT SHOE

Tracy E. Grim, Broken Arrow, Okla., assignor to Vistek, Inc., Calabassas, Calif.

Continuation-in-part of Ser. No. 310,836, Feb. 14, 1989, Pat. No. 4,999,932. This application Feb. 4, 1991, Ser. No. 650,765
The portion of the term of this patent subsequent to Mar. 19, 2008, has been disclaimed.
Int. Cl.[5] A43B *7/06, 7/14*
U.S. Cl. 36—88 **19 Claims**



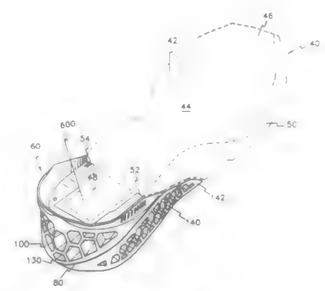
1. In a variable air support shoe for providing .support to an ankle and an upper foot and ankle area of a user, said Support shoe including a sole having a lower surface, sidewalls secured to said sole, and laces for securing the sidewalls of said shoe together, said shoe including a tongue and upper portions of said side walls constituting means for enclosing the upper portion of said shoe and said ankle;
the improvement comprising:
inflatable bladders;
means for mounting said inflatable bladders on said means for enclosing the upper portion of said shoe and said ankle, for applying supporting pressure to the upper foot and ankle area;
pump means mounted in the sole of the shoe;
said sole being substantially continuous on its lower surface in the area where said pump means is located and is free of any recess exposing said pump from below said shoe;
said shoe including means for automatically actuating said pump means by the foot during normal walking or running for supplying air to said bladders; and
relief means for selectively releasing air from said bladders;
whereby walking or running activity increases the air pressure in said shoe and provides additional support against possible injury to the foot or ankle.

5,353,526

MIDSOLE STABILIZER FOR THE HEEL

Peter M. Foley, Needham, and Steven F. Smith, Taunton, both of Mass., assignors to Reebok International Ltd., Stoughton, Mass.

Continuation of Ser. No. 65,064, May 24, 1993, abandoned, which is a continuation of Ser. No. 741,336, Aug. 7, 1991, abandoned. This application Jan. 31, 1994, Ser. No. 189,288
Int. Cl.[5] A43B *7/16*
U.S. Cl. 36—92 **7 Claims**



1. An article of footwear having a lateral and a medial side comprising:
an upper, said upper consisting of a forefoot portion, a midfoot portion, and a rearfoot portion;
a foot support disposed beneath said upper and formed of a lightweight cushion material for cushioning and supporting a portion of a foot of a wearer, said foot support extending beneath said rearfoot portion of said upper from said lateral to said medial side of said article of footwear, said foot support including a heel area positioned beneath said rearfoot portion of said upper, and an exterior sidewall extending along the periphery of said foot support in said heel area of said foot support;
an outsole disposed beneath said heel area of said foot support;
a recessed sidewall formed within said exterior sidewall of said foot support in said heel area of said foot support along one of said medial and lateral sides of said article of footwear under the area of foot impact upon heel strike, said recessed sidewall forming a recess in said foot support; and
a stabilizer disposed within said recess in said foot support and formed of an elastomeric plastic for prevention said

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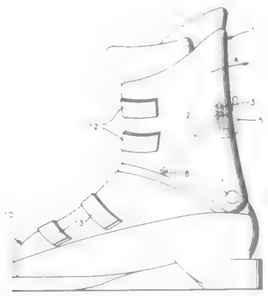
foot of said wearer from rolling, said stabilizer including a heel terminus disposed adjacent said rearfoot portion of said upper, a forward terminus disposed adjacent the junction of said midfoot portion of said upper with said rearfoot portion of said upper, a top surface for supporting the force of the weight of the wearer upon impact, a bottom surface spanning the entire length of said stabilizer, and an exterior side surface including a plurality of cells when viewed from the side of said stabilizer, said cells being opened to the atmosphere at said exterior side surface of said stabilizer.

5,353,527

SKI BOOT WITH COLLAR RESTRAINING DEVICE

Kurt Hilgarth, Graz, Austria, assignor to Dynafit Skischuh Gesellschaft m.b.H., Graz, Austria

Filed Oct. 5, 1993, Ser. No. 131,385
Claims priority, application Austria, Oct. 23, 1992, 2108/92
Int. Cl.[5] A43B 5/04
U.S. Cl. 36—121 **6 Claims**



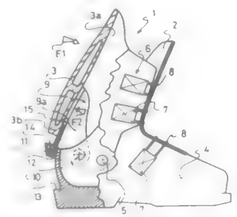
1. A ski boot in the form of a rear-entry construction, said ski boot comprising:
a boot body,
a collar pivotally connected to said boot body in a direction of travelling by a linkage positioned in a heel portion of said boot body and at a lower and rearward end of said collar, said collar being openable and closeable in a front portion of said collar by at least one clasp,
a guide extending substantially in a vertical direction along a rear side of said collar above said linkage of said collar to said boot body,
a connecting element in the form of a substantially U-shaped strap extending in a longitudinal direction of said boot body, each leg of said connecting element extending along one side of said boot body, thereby embracing said heel portion of said boot body, and a front end of said connecting element being pivotally connected to said boot body at a position located in front of said linkage of said collar to said boot body, a rear end of said connecting element being movably connected with said guide only in a direction of extension of said guide, and
a lever pivotally mounted at one end of said guide for movement in a direction of travel, said lever being movable between two positions with said lever, in a first position, entering said guide to block movement of said connecting element, thereby limiting the movement of said connecting element along the guide and moving away from said guide and setting the connecting element free to move along the guide in a second position of said lever.

5,353,528

ALPINE SKI BOOT WITH AN ENERGY STIRRUP JOURNALLED ON THE REAR SPOILER

Jean-Louis Demarchi, Saint-Jorioz, France, assignor to Salomon S. A., Annecy Cedex, France

Continuation of Ser. No. 854,907, Mar. 20, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 150,797
Claims priority, application France, Mar. 21, 1991, 91 03668
Int. Cl.[5] A43B 5/04
U.S. Cl. 36—121 **18 Claims**



1. A ski boot comprising:
a rigid shell base;
an upper;
means for mounting said upper for at least limited pivotal movement about a first transverse axis with respect to said shell base to an open position of the boot to enable insertion of a foot of a skier in said open position;
said upper comprising at least one front portion and at least one rear portion;
a closure assembly for closing said upper on the lower leg of a skier, said closure assembly comprising a tightening system at least partially encircling said upper, said tightening system including a tensioning lever fixed on at least one of said front portion of said upper and said rear portion of said upper; and
a flexion control device, for both flexion amplitude of movement and flexion magnitude of force, said flexion control device comprising:
a stirrup affixed to said rear portion of said upper between said upper and said shell base;
means for enabling said rear portion of said upper to drive said stirrup pivotally in a forward direction with respect to said shell base along a path delimited, at an uppermost point, by an upper fixed abutment area of said shell base in cooperation with a complementary movable abutment area of said stirrup in a closed position of the boot, whereby in said closed position of the boot, said upper is directed against the lower leg of a skier; and
means for mounting said stirrup for journalled pivotal movement on said rear portion of said upper about a second transverse axis, said second transverse axis being rearwardly spaced from said first transverse axis.

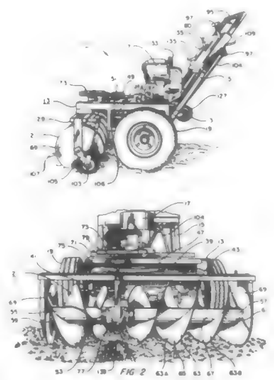
5,353,529

APPARATUS FOR BACKFILLING

Charles E. McCullough, 1112 Quail Run, Burk Burnett, Tex. 76354

Continuation-in-part of Ser. No. 813,209, Dec. 23, 1991, abandoned. This application Aug. 30, 1993, Ser. No. 113,975
Int. Cl.[5] E02F 5/22
U.S. Cl. 37—142.5 **12 Claims**

1. An apparatus for use in backfilling, comprising:
a) a frame having front and rear ends, said frame having a handle extending from said rear end, said handle allowing an operator to maneuver said apparatus as said operator walks behind said apparatus;
b) engine means for providing mechanical power, said engine means being mounted onto said frame;
c) drive wheels rotatably mounted to said frame such that said frame is supported by said drive wheels, said drive wheels being coupled to said engine means such that said drive wheels are rotated by said engine;
d) an auger rotatably mounted to said frame, said auger having a shaft with a double row of solid wall flighting extending radially outward therefrom, said shaft being oriented horizontally, said auger and said flighting having respective ends, said auger being for filling a trench with dirt;



e) guide wheels rotatably mounted to said frame, said guide wheels being located adjacent to ends of said auger, said guide wheels contacting the ground beneath said apparatus to allow said apparatus to be easily steered by said operator with the handle;
f) end plates coupled to the ends of said flighting at said ends of said auger to close off the ends of the auger to prevent dirt from spilling to the outside of the auger.

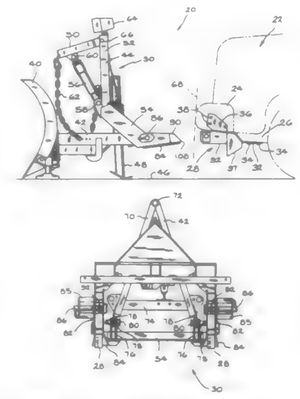
5,353,530

QUICK MOUNTING SNOW PLOW ASSEMBLY

James C. Pieper, Spruce Head, Me., assignor to Douglas Dynamics, Inc., Milwaukee, Wis.

Filed Sep. 2, 1992, Ser. No. 939,331
Int. Cl.[5] E01H 5/04
U.S. Cl. 37—231 **11 Claims**

10. For use with a vehicle having a frame and a front bumper, a snow plow assembly, comprising:
a mount frame for connection to the vehicle frame behind the bumper,
a lift assembly including an A-frame, a lift frame and a snow blade,
the snow blade mounted on the forward end of the A-frame,
the lift frame including means for pivotally connecting the rear end of the A-frame to the lift frame whereby the A-frame is free to rotate relative to the lift frame to the lift frame whereby the A-frame is free to rotate relative to the lift frame and means for releasably connecting the lift frame to the mount frame affording removal of the lift assembly from the mount frame as a single unit so as to leave the mount frame on the vehicle,
the releasably connecting means located at a position behind the vehicle bumper when the lift frame is connected to the mount frame and including a channel having a pair of spaced guides tapering in an outwardly direction for horizontally aligning the mount frame relative to the channel when connecting the channel to the mount frame.

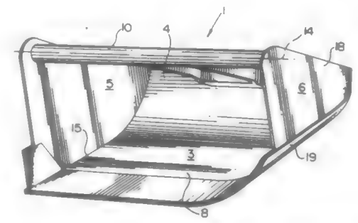


5,353,531

DITCH DIGGING APPARATUS AND METHOD

Rene P. Doucette, 2537 Evergreen Dr., Penticton, British Columbia, Canada V2A 7Y2

Filed Aug. 21, 1992, Ser. No. 933,177
Int. Cl.[5] E02F 3/00
U.S. Cl. 37—444 **4 Claims**



1. A bucket for use on a mechanical ditch digging apparatus comprising top wall means; bottom wall means; rear wall means integral with said bottom wall means, the rear wall means and the bottom wall means defining a curve extending downwardly and forwardly from a rear edge of said top wall to an open front end of the bucket; first side wall means extending forwardly from one end of said rear wall means and interconnecting one end of said top wall means and one end of said bottom wall means; and second side wall means extending forwardly from the other end of said rear wall means and interconnecting the other end of said top wall means and the other end of said bottom wall means, said first and second side wall means diverging forwardly from said rear wall means; said top wall means, bottom wall means and side wall means having front edges defining an open front end for receiving earth; said first side wall means defining an angular corner with said one end of said bottom wall means, whereby the bucket can be dragged through the earth with the angular corner extending downwardly to form an angular ditch; and said second side wall means defining a convex corner at said other end of said bottom wall means, said convex corner tapering rearwardly toward said rear wall means, whereby, when the

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bucket is rotated 180° around an axis extending between said side walls, the convex corner extends downwardly for dragging through the angular ditch to form a round bottom ditch.

5,353,532

TOOTH OF ACTIVE-ACTION EXCAVATOR BUCKET

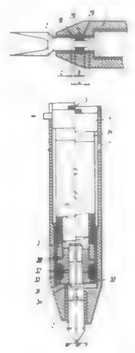
Leonid L. Lysenko; Alfred R. Mattis; Sergei V. Shishaev, all of Novosibirsk; Genrikh K. Boiko, Ekaterinburg; Alexandr V. Tolmachev, Ekaterinburg; Vladimir N. Tsvetkov, Ekaterinburg, and Mikhail S. Druzhinin, Novosibirsk, all of Russian Federation, assignors to Institut Gornogo Dela Sibirskogo Otdelenia Rossiiskoi Akademii Nauk, Novosibirks, Russian Federation and Proizvodstvennoe Obiedinenie "Uralmash", Ekaterinburg, both of

Filed Jun. 23, 1992, Ser. No. 902,918

Claims priority, application U.S.S.R., Jun. 19, 1991, 4942600; Jun. 19, 1991, 4942601

Int. Cl.[5] E02F *5/00*

U.S. Cl. 37—447 10 Claims



1. A tooth of an active-action excavator bucket comprising:
a hollow casing,
an impact tool mounted inside said casing with a possibility of axial motion,
a pneumatic hammer installed inside said casing with a possibility of axial motion,
an automatic starting mechanism connected to said pneumatic hammer,
a housing with a piston incorporated into said automatic starting mechanism of said pneumatic hammer, and
a damping means arranged between said casing, impact tool and elements of the pneumatic hammer for providing damping therebetween, said damping means comprising a damping unit comprising two rigid bodies spaced apart in the direction of axial motion of the impact tool and located to respectively receive impact force in opposite directions of travel of said tool to limit said travel, and an elastic member sandwiched between said rigid bodies, said rigid bodies facing respective contact surfaces of said tool for contacting said surfaces and receiving impact forces therefrom during opposite directions of travel of said impact tool, said elastic member absorbing the impact forces applied to said rigid bodies during travel of said tool in said opposite directions.

5,353,533

IRONING BOARD AND LEG STRUCTURES FOR FLAT, COLLAPSED CONFIGURATION

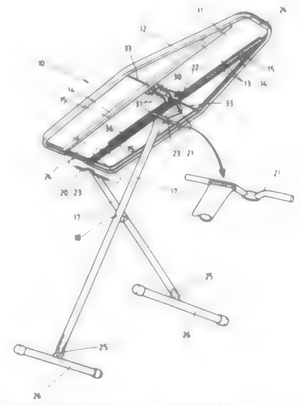
Ronald G. Meade, Seaton, Australia, assignor to Hills Industries Limited, Edwardstown, Australia

Filed Jan. 19, 1993, Ser. No. 4,911

Claims priority, application Australia, Jan. 17, 1992, PL 0480

Int. Cl.[5] D06F *81/02;* A47B *3/02*

U.S. Cl. 38—103 6 Claims



1. An ironing table assembly comprising
an elongated flat table top having a peripheral depending framing member extending therearound in a direction away from an underside of the table top;
a pair of spaced apart intermediate channels extending longitudinally of said table top and secured to the underside of the table top, said intermediate channels having vertical webs and parallel flanges, the flanges of each channel being in the same planes as and facing the flanges of the other channel; and
a pair of diagonally-crossed pivotal support legs supporting the table top and movable between an extended position wherein the legs support the table top in an elevated condition and a retracted out-of-use position wherein the legs occupy a position adjacent the underside of the table top, each said leg having one end secured to a leg hinge member which extends between and is supported by the intermediate channels, with one of said leg hinge members being guided for movement lengthwise along said intermediate channels;
wherein the peripheral framing member, the pivotal support legs and the leg hinge members are shaped, dimensioned and arranged with respect to each other so that the table is collapsible to an approximately flat storage position in which the diagonally crossed pivotal legs assume an approximately horizontal position alongside one another in close proximity to the underside of the table top, with the legs, when thus collapsed, being nested between said intermediate channels, with an outer end portion of each said pivotal leg projecting a short distance beyond a respective end of the table top, and
wherein said outer end portion of each said pivotal leg has a reduced thickness leg portion engaging in a recessed portion formed in the peripheral framing member and which extends inwardly from its lower edge, such that each said pivotal leg, when fully collapsed, has its projecting outer end portion approximately horizontally aligned with said peripheral framing member.

5,353,534

DEVICE FOR HOLDING A VARIABLE NUMBER OF REAR-ILLUMINATED ADVERTISEMENT CARRIERS FORMED OF POSTER-LIKE BLANKS

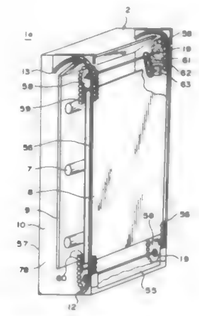
Angelika Fassauer, and Peter Haluszka, both of An der Grenzkehre 10, DE - 2105 Seevetal 2, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 700,129, Jul. 19, 1991, abandoned. This application Mar. 30, 1992, Ser. No. 860,138

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1989, 8911618[U]; European Pat. Off., Nov. 4, 1989, 89120448.9; Fed. Rep. of Germany, Sep. 11, 1991, 9111283[U]

Int. Cl.[5] G09F *11/12*

U.S. Cl. 40—524 39 Claims



1. Device for holding a variable number of rear-illuminated advertisement carriers, each of which is a poster-like blank comprising two guide rollers spaced at a distance from one another, an illumination device disposed between the guide rollers, a front transparent guide wall, a rear dividing wall, a chamber for receiving advertisement carriers that is located behind said rear dividing wall, and a drive device for removing an advertisement carrier from said chamber and positioning it in front of said guide wall; wherein a slot-like intake opening and a slot-like outlet opening extend across width of the chamber in an upper and a lower area in proximity to a respectively one of the guide rollers; wherein a number of pockets is provided in each of which a respective advertisement carrier is mounted, each pocket being formed of a transparent flexible sheet having an opening on one side and stiffening strips on opposite end sections of the flexible sheet; and wherein connection means is provided for enabling said pockets to be conveyed by said drive device in an endless series from said chamber, through said outlet opening, into a display position and from said display position back to said chamber via said intake slot, while also enabling a plurality of said pockets to be temporarily contained within said chamber, in successive order, one behind another in a substantially parallel relationship to each other.

5,353,535

FLOOR TYPE ADVERTISING APPARATUS

George W. Plumly, 3451 Boston Ave., Boston Bldg., Fort Worth, Tex. 76116

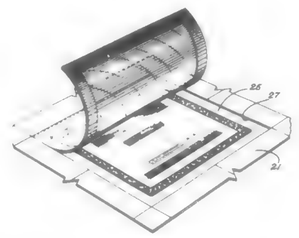
Continuation-in-part of Ser. No. 707,695, May 30, 1991, Pat. No. 5,167,087, which is a continuation-in-part of Ser. No. 609,195, Nov. 5, 1990, abandoned. This application Oct. 16, 1992, Ser. No. 962,465

The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.

Int. Cl.[5] G09C *7/04*

U.S. Cl. 40—600 28 Claims

1. A floor type advertising apparatus, comprising:
a floor,
a cavity formed in said floor,
said cavity having a lower portion,
a thin lower holding layer located in and secured in the lower portion of said cavity,
said lower holding layer having an upper side,
a thin upper holding layer located in said cavity and having an opening formed therethrough,
said upper holding layer having an upper side and a lower side,
a thin transparent layer of material in sheet form having a bottom side securely coupled to the upper side of said upper holding layer and having dimensions such that said transparent layer of material covers the opening of said upper holding layer,
said transparent layer of material having an upper side,
said transparent layer of material and said upper holding layer being located in said cavity with the lower side of said upper holding layer facing the upper side of said lower holding layer and the upper side of said transparent layer of material facing upward and being about flush with the level of the floor when located in said cavity,



an advertising layer located in said cavity below said transparent layer of material,
said transparent layer of material and said upper holding layer being movable relative to said lower holding layer for receiving said advertising layer below said transparent layer of material,
said opening formed through said upper holding layer being sufficient to allow the desired advertisement of said advertising layer to be seen through said opening and through said transparent layer of material when viewed from above,
said upper and lower holding layers each comprising magnetic material forming magnetic lines of force for removably holding said upper and lower holding layers together when said upper and lower holding layers are located next to each other.

5,353,536

DISPLAY ASSEMBLY

Roger Erber, Mount Prospect, and Jonathan E. Kane, Chicago, both of Ill., assignors to Kane Graphical Corporation, Chicago, Ill.

Filed Aug. 28, 1992, Ser. No. 937,237

Int. Cl.[5] G09F *7/02*

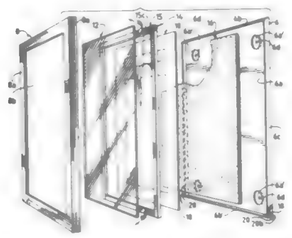
U.S. Cl. 40—611 21 Claims

1. A sealed display assembly for displaying a sign or poster sheet and mountable on a front vertical support surface, said assembly comprising, in combination:
a poster and sign-receiving rear member in the form of a pan-shaped structure including a main vertical wall having top, bottom and side margins, and top, bottom and side peripheral walls extending forwardly, respectively, to said margins to define an insertion aperture;
a front cover frame mounted over and secured to the rear member and having a front vertical wall with top, bottom and side margins and a viewing opening therein, and top, bottom and side peripheral walls extending rearwardly from respective margins of said front wall and shaped and

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sized to interfit with the forwardly extending peripheral walls of the rear members;

a compressible sandwich of elements between said front vertical wall of said cover frame and the vertical wall of said rear member, said compressible assembly of elements including a transparent panel mounted behind said front wall of said cover frame and behind which said sign or poster sheet is to be placed, a compressible sealing gasket along the margins of the rear surface of said panel, and a body of compressible material behind said panel and within said gasket and to be located behind said sign or poster sheet when inserted into the assembly, said compressible sealing gasket being in spaced relation to the side peripheral walls of said rear member to define water passage spaces therebetween, said bottom peripheral walls of said rear member and said cover frame having water-draining apertures where water entering said cover frame can drain from the assembly, said sealing gasket being pressed by said cover frame against said vertical wall of said rear member to form a water-sealed space enclosing said body of compressible material and said sign or poster sheet when inserted in front of said body of compressible material being pressed by said cover frame against said rear wall of said rear member so that the sign or poster sheet is held neatly in place within the display assembly.

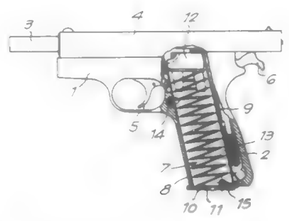


5,353,537

FIRE ARM WITH MOBILE LOADER AND LOADER FOR SUCH AN ARM

Marc Mercenier, Ans, Belgium, assignor to Browning, societe anonyme, Herstal, Belgium

Filed Oct. 7, 1993, Ser. No. 132,898
Claims priority, application Belgium, Oct. 7, 1992, 09200872
Int. Cl.[5] F41A *9/25*
U.S. Cl. 42—7 **6 Claims**



1. A fire arm comprising:

a casing;

a recoil slide slidably mounted about said casing;

a barrel positioned within said recoil slide;

a trigger mechanism carried by said casing;

a loader including a case closed at one end by a bottom, a mobile feeder inside said case and a feeder spring between said feeder and the bottom;

a grip formed with said casing, said grip defining a cavity for receiving the loader which extends from an opening of said cavity to inside of the fire arm;

a loader stop mounted on the casing; and

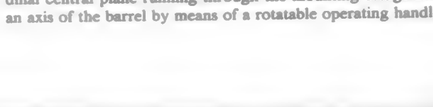
an ejection spring carried by said loader, said electron spring being situated at the opening of the cavity, projecting at least partly outside of the case and engaging said grip when the loader is fully inserted in said cavity, wherein said ejection spring is stretched when the loader is inserted within the cavity so as to provide a preload for ejection of the loader from the cavity.

5,353,538

RIFLE SLING

Jon Håkedal, Svend Foynsgt. 35, N-3100 Tønsberg, and Egil Nystuen, Hjemsengvn. 89, N-3133 Duken, both of Norway

Continuation of Ser. No. 22,139, Feb. 25, 1993, abandoned. This application Jan. 5, 1994, Ser. No. 177,436
Claims priority, application Norway, Mar. 2, 1992, 920813
Int. Cl.[5] F41C *23/02*
U.S. Cl. 42—85 **22 Claims**



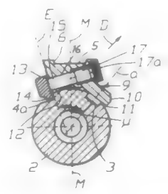
11. A rifle sling made of band or strap material (**1**), which in common shooting positions may form a steadying connection between the upper part and the lower part of the shooter's arm, comprising an upper arm loop (**8**) which is adjustable for attachment about the upper arm of the shooter by the aid of tightening buckle means (**2**), an end portion (**6**) for cooperation with the outer part of the shooter's arm without being attached to the rifle, and a length adjustable middle portion inter-connecting the upper arm loop (**8**) and the end portion (**6**), characterized in that said end portion comprises a hand loop (**6**) for receiving the middle hand of the shooter.

5,353,539

MOUNTING DEVICE FOR A TELESCOPIC SIGHT ON A RIFLE

Meinrad Zeh, Isny, Fed. Rep. of Germany, assignor to Horst blaser Jagdwaffenbarik, Isny, Fed. Rep. of Germany

Filed Aug. 24, 1993, Ser. No. 110,885
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1992, 9211742[U]
Int. Cl.[5] E41G *1/387*
U.S. Cl. 42—101 **7 Claims**



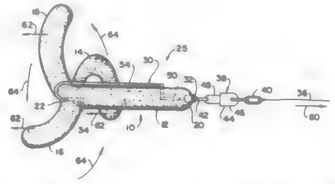
1. A mounting device for a telescopic sight on a rifle having a receiver on the barrel, comprising a mounting bridge which carries a holder for the telescopic sight and on one side, at each of the front and the rear ends, a fixed jaw and, on the opposite side, at least one movable jaw movable transverse to a longitudinal central plane running through the mounting bridge and an axis of the barrel by means of a rotatable operating handle and a threaded pin engaging in a nut, and a plurality of clamping surfaces provided on the receiver of the barrel, extending at an angle to a longitudinal central plane and on which the jaws engage in the mounted position, wherein the clamping surfaces on one side of the barrel are formed by two blind bores running substantially radially relative to the barrel axis and offset from one another in a direction of the barrel axis, and wherein opposite each said blind bore, on another side of the barrel, there is provided an approximately half-moon shaped notch, a bottom surface of the notch running in a barrel direction forming a clamping surface for the movable jaw, wherein the fixed jaws at each end of the mounting bridge each comprise a cylindrical retaining pin which fits in one of the blind bores, and wherein each fixed jaw has associated therewith a movable jaw in the form of a locking nose provided on a pivoting lever, wherein the pivoting lever is fixedly connected to a threaded pin which is axially movable in a bore in the mounting bridge running substantially tangentially to the peripheral surface of the receiver and can be screwed into a nut fixed in the mounting bridge.

5,353,540

ROTATABLE FISHING LURE

Fred L. Ward, 1009 E. LeMarche Ave., Phoenix, Ariz. 85022

Continuation of Ser. No. 982,628, Nov. 27, 1992, abandoned. This application Sep. 22, 1993, Ser. No. 126,098
Int. Cl.[5] A01K *85/12*
U.S. Cl. 43—42.24 **20 Claims**



1. A rotatable fishing lure for use in connection with a fish hook having a point and an eyelet formed at opposite ends, said lure comprising:

an elongate, central member having a longitudinal axis, upper and lower end portions, and a side portion interconnecting said end portions, said central member being engaged by said fish hook such that a part of said hook proximate said eyelet is embedded in said upper end portion of said central member and said point of said hook is embedded in said lower end portion of said central member; and

spiral arm means including at least one elongate spiral arm that has a proximal longitudinal end attached to and engaging said side portion of said central member and extending longitudinally radially outwardly to a distal longitudinal end that is spaced apart from said side portion, each said elongate spiral arm spirally winding around said longitudinal axis at least when said lure is at rest, said spiral arm means being responsive to a pulling force exerted on a fishing line secured to said eyelet of said hook for causing said lure to rotate about said longitudinal axis of said central member.

5,353,541

COLLAPSIBLE CRAB TRAP WITH A CENTER BAIT FEEDER AND WEIGHTED SIDE DOORS

John O. Jonasson, and Estelle Jonasson, both of 186 Grove St., South Amboy, N.J. 08879

Filed Jan. 3, 1994, Ser. No. 176,434
Int. Cl.[5] A01K *69/10*
U.S. Cl. 43—105 **15 Claims**

1. A crab trap and bait feeder made of mesh material and movable between a collapsed configuration and an assembled configuration, comprising:

a) a bottom member made of mesh material;

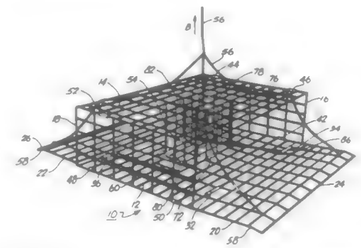
b) a top member made of mesh material;

c) two end panels made of mesh material movably connecting said top and bottom members;

d) two side panels made of mesh material, each pivotally connected to opposite side edges of said bottom member;

e) each of said two side panels having weights thereon to positively open said side panels when disposed in water for catching crabs;

f) a bait feeder made of mesh material and disposed within said crab trap and being movably connected to said top and bottom members;



g) said bait feeder including a plurality of sidewalls for enclosing bait therein;

h) said bait feeder having an access door for loading and unloading bait;

i) strings connected to said crab trap for operating same; and

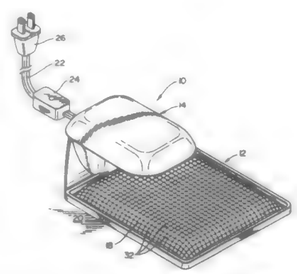
j) said crab trap and bait feeder being movable between a collapsed configuration, wherein said end panels, side panels, and bait feeder sidewalls lie in a plane substantially parallel to said top and bottom members, and an assembled configuration, wherein said end panels, side panels, and bait feeder sidewalls are substantially perpendicular to said top and bottom members.

5,353,542

APPARATUS AND METHODS FOR TRAPPING INSECTS

Alan Vaudry, 98-C Burnside Road West, Victoria, British Columbia, Canada V9A 1B5

Filed Feb. 25, 1993, Ser. No. 23,937
Int. Cl.[5] A01M *1/04*
U.S. Cl. 43—113 **6 Claims**



1. An apparatus for trapping fleas, comprising:

a. a base portion having a trapping surface;

b. adhesive means placed on the trapping surface;

c. means for so mounting a light source above the trapping surface that fleas are attracted to the trapping surface and trapped by the adhesive means, where the mounting

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means extends over no more than 60% of the trapping surface; wherein

d. the mounting means comprises:

i. a support structure attached to the base portion along a first section of the peripheral edge of the trapping surface,

ii. a cover means for covering the light source, the cover means being attached to the support structure such that the cover means extends over the trapping surface from the first section of the peripheral edge of the trapping surface, and

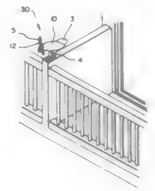
iii. at least one side member connected between the base portion and the support structure, where the support structure comprises first and second side walls, where the at least one side member is substantially horizontal at the point where the side member is connected to the base portion and substantially vertical at the point where the side member is connected to the support structure.

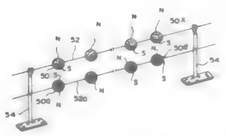
5,353,543

DETERRING BIRD INTRUSION OF SPACES

Katsumi Teraoka, No. 8-19, Uyama, 3-Chome, Sumoto-shi, Hyogo-ken 656, Japan

Filed Feb. 10, 1993, Ser. No. 16,040
Int. Cl.[5] A01M *1/10*
U.S. Cl. 43—124 **21 Claims**





1. A device for deterring bird intrusion of a space, said device comprising

a carrier,

magnet means mounted on the carrier, said magnet means comprising at least one permanent magnet establishing a magnetic field zone therearound and having a magnetic force magnitude which is physiologically discomforting to birds, and

a carrier support element for supporting the carrier proximal the space, the carrier being rotatable on the support element so that when the carrier rotates on the support element, at least one of magnetic field intensity and orientation changes in correspondence with the rotation.

5,353,544

FUMIGATION APPARATUS

Teruyuki Tsutsumi, Mihara; Tetsunori Sato, and Akira Arita, all of Mihara, Japan, assignors to Teijin Chemicals Ltd., Tokyo, Japan

Filed Dec. 14, 1992, Ser. No. 990,237
Claims priority, application Japan, Dec. 16, 1991, 3-351853
Int. Cl.[5] A01M *13/00*
U.S. Cl. 43—125 **7 Claims**

1. Apparatus for fumigating the interior of a fumigation chamber with a mixed gas of hydrogen phosphide and methyl bromide, said apparatus comprising

(a) a supply of pressurized hydrogen phosphide gas;

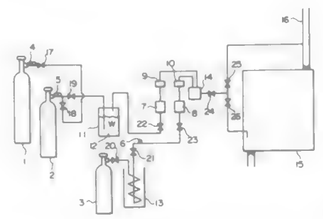
(b) a supply of pressurized methyl bromide gas;

(c) a supply of a pressurized inert gas;

(d) a humidifier;

(e) a conduit for transporting hydrogen phosphide gas from said supply (a) to said humidifier;

(f) a mixer for mixing hydrogen phosphide gas from said supply (a) and methyl bromide gas from said supply (b) to form a mixed gas;



(g) conduit means for transporting hydrogen phosphide gas from said humidifier to said mixer;

(h) conduit means for transporting methyl bromide gas from said supply (b) to said mixer;

(i) conduit means for transporting said mixed gas from said mixer to the fumigation chamber, and;

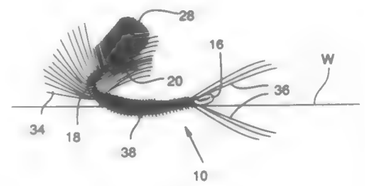
(j) conduit means for transporting said inert gas from said supply (c) through said conduit means (e), said humidifier, said conduit means (g), said mixer and said conduit means (i) to the fumigation chamber to replace air in conduit means (e), (g) and (i) and in the humidifier and mixer with the inert gas.

5,353,545

REVERSE, INVERSE FLY, HOOK AND METHOD OF TYING

Guiliano Masetti, Nairobi, Kenya, assignor to Green Mountain Sports Center, Inc., Eureka, Mont.

Continuation-in-part of Ser. No. 915,437, Jul. 17, 1992, abandoned. This application Jun. 30, 1993, Ser. No. 86,327
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.25 **30 Claims**



1. A fishing fly comprising:

a hook having a shank, an eye at a first end of the shank, a curved shape portion at a second end of the shank opposite the eye, and a spear connected to the shape portion and having a point directed generally parallel to the shank; and

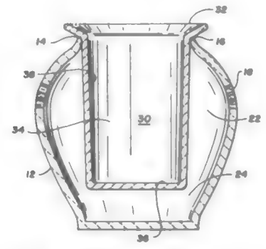
a hackle wound axially around the shape portion of the hook to form a radial pattern of hackle fibers protruding outward from a segment of the shape portion of the hook extending at least from a point midway between the shank and the spear toward the spear.

5,353,546

COMBINATION VASE AND AIR FRAGRANCE DISPENSER

Ronald F. Bock, 4660 Dahlia Ave., St. Louis, Mo. 63116

Filed Jun. 23, 1993, Ser. No. 81,982
Int. Cl.[5] A01G *9/02*
U.S. Cl. 47—66 **2 Claims**



1. A vase and air fragrance dispenser comprising,

an outer vessel having a top opening defined by an annular wall, a plurality of vent holes, and an upper and lower chamber with the lower chamber including a bottom wall, said lower chamber providing means for holding a liquid or solid air treatment material, and said upper chamber providing means for venting fragrance from said air treatment material to atmosphere through said vent holes, and

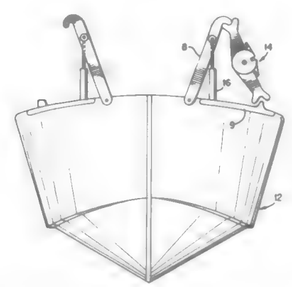
an inner vessel inserted in said top opening of said outer vessel and being suspended from said annular wall with a base of said inner vessel being spaced from said bottom wall, said inner vessel having imperforate side walls and base, and enclosing a chamber providing means for holding liquid, dirt, plants, flowers, or artificial flowers, and means for preventing their passage into said outer-vessel, or passage of said air treatment material into said inner vessel, whereby said vase and air fragrance dispenser provides a means to attractively display the real or artificial flowers while simultaneously providing means for release of fragrance from said air treatment material and means for complete separation of said air treatment material from said flowers.

5,353,547

WATER ACTIVATED HATCH CLOSURE

Colin Foster, 910 Mullet Rd., Cape Canaveral, Fla. 32920

Filed Jul. 30, 1993, Ser. No. 99,317
Int. Cl.[5] E05F *15/20*
U.S. Cl. 49—22 **16 Claims**



1. An assembly used to automatically close a hatch from an open position to a pivoted closed position against a frame, when it begins to rain; comprising:

first and second arm members pivotally connected to one another, said first arm member provided with a first extremity portion for supporting the hatch in the opened position and a first hinge portion opposite said extremity portion, said first hinge portion provided with a first slot, said second arm member provided with a second extremity portion supported by the frame and a second hinge portion opposite said extremity portion, said second hinge portion provided with a second slot;

a pivot pin connected to the hinge portion of said first arm member and the hinge portion of said second arm member which would allow said first and second arm members to freely rotate, allowing said first and second slots to align, as well as said first and second extremity portions to form a straight line with said slots;

a soluble restraining element inserted into said first and second slots when said first and second slots are aligned;

a tension member connected between said first and second arm members to provide a force on said soluble restraining element;

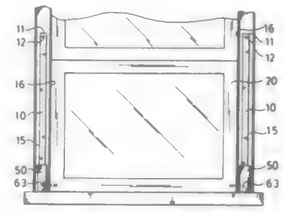
wherein when said soluble restraining element becomes wet and softens, said tension member forces said arms to pivot, thereby moving said first and second extremity portions out of line such that said first extremity portion no longer supports the hatch, allowing the hatch to close by the force of gravity.

5,353,548

CURL SPRING SHOE BASED WINDOW BALANCE SYSTEM

Norman R. Westfall, Rochester, N.Y., assignor to Caldwell Manufacturing Company, Rochester, N.Y.

Filed Apr. 1, 1993, Ser. No. 40,457
Int. Cl.[5] E05D *13/00, 15/22*
U.S. Cl. 49—446 **63 Claims**



1. A window sash balance system having a pair of sash shoes running vertically within jamb shoe channels with a sash that runs vertically in jamb sash runs separate from the shoe channels, the sash shoes being biased upward by the force of curl springs, and connections between the shoes and the sash transmitting the upward bias force from the shoe channels to the sash in the sash runs, the balance system comprising:

a. free end regions of the curl springs being fastened in the shoe channels in regions above the vertical travel of the shoes, and uncurled lengths of the curl springs being laid against walls of the shoe channels above the shoes without sliding frictionally up and down against the shoe channel walls when the shoes move;

b. the uncurled lengths of the curl springs passing through openings in the shoes to containment regions within the shoes where variable lengths of the springs curl up in convolutions; and

c. containment of the curled convolutions of the springs within the shoes being arranged for applying the upward bias force to the shoes from a recurling force of the curl springs which is exerted in the shoe containment regions.

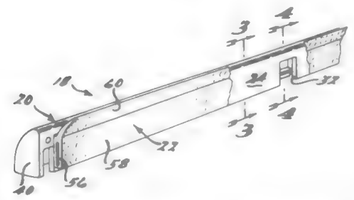
VOL 1167 ISS 2 OCT 11 1994 UMI

5,353,549

MOLDED WEATHERSTRIP AND METHOD

Jack V. Henderson, Bloomfield Hills, and Paul J. Fair, Troy, both of Mich., assignors to The Standard Products Company, Cleveland, Ohio

Filed Nov. 6, 1992, Ser. No. 972,592
Int. Cl.[5] E06B 7/16
U.S. Cl. 49—490.1 16 Claims



1. A weatherstrip for attachment to a vehicle having a flange edge at an interface between said edge and a movable window, comprising:

an elongated unitary molding formed of a single material by an injection molding process and having, in cross-section, a first and second leg joined together by a web to define a U-shape having a first channel between said first and second legs;

at least one retainer clip integrally formed with said molding and defining a second channel being smaller than said first channel for accepting said flange edge; and

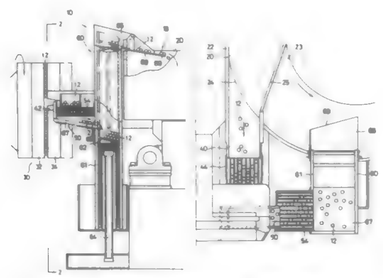
wherein said first leg is formed with a notch opposite said clip, such that said second channel is defined between a portion of said clip and a longitudinally spaced portion of said first leg.

5,353,550

STEEL BALL POLISHING APPARATUS

Tatsuo Iwai, and Isao Fujiwara, both of Nara, Japan, assignors to Isubakimoto Precision Products Co. Ltd., Osaka, Japan

Continuation of Ser. No. 899,541, Jun. 16, 1992, abandoned. This application Feb. 3, 1994, Ser. No. 191,359
Claims priority, application Japan, Jun. 18, 1991, 3-171853
Int. Cl.[5] B24B 11/04
U.S. Cl. 451—124 12 Claims



5. A steel ball machining apparatus comprising:

a cylindrical ball storing vessel at a first level, said vessel having a central axis, a cylindrical outer wall, a cylindrical inner wall coaxial with said outer wall, an upper opening for receiving balls and a discharge opening for discharging balls outwardly across said outer wall, and means for moving balls around said central axis in a circular path between said inner and outer walls;

a steel ball machining mechanism;

means providing a steel ball supply path for supplying steel balls to said machining mechanism from the discharge opening in said vessel;

means providing a discharge path for discharging said balls from said machining mechanism;

an elevating conveyor provided between said discharge path and said cylindrical vessel, said elevating conveyor having a ball receiving vessel movable between a lower position in which said ball receiving vessel is aligned with said discharge path and an upper position above said first level;

means for lifting said ball receiving vessel; and

means providing a ball return path for feeding said balls from said ball receiving vessel over to said cylindrical vessel when said ball receiving vessel is located at said upper position;

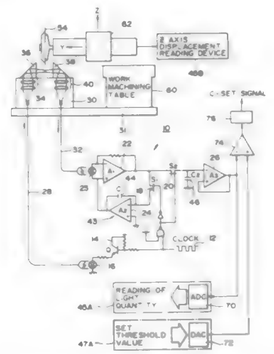
in which said return path comprises a plate extending from the exterior of said cylindrical vessel inwardly across said outer wall in a direction toward a location above said upper opening, said plate having a width, transverse to said direction, sufficient to accommodate multiple steel balls in side-by-side relationship, and means for discharging balls from said lifting means onto said plate such that the balls discharged onto the plate travel along the plate, in said direction, toward said location above said upper opening, at multiple, different positions across the width of the plate, said plate having ball exit means for discharging said balls to said cylindrical vessel, said ball exit means comprising an edge of the plate, said edge having first and second ends, the first end of said edge being closer than the second end of said edge to said inner wall, whereby balls rolling on said plate at said different positions therein are discharged, over said edge, into said cylindrical vessel between said inner and outer walls, at radially different positions relative to the central axis of the storing vessel.

5,353,551

BLADE POSITION DETECTION APPARATUS

Tetsuro Nishida, Mitaka, Japan, assignor to Tokyo Seimitsu Co., Ltd., Tokyo, Japan

Filed Aug. 21, 1992, Ser. No. 933,752
Claims priority, application Japan, Aug. 21, 1991, 3-209624; Aug. 21, 1991, 3-209625
Int. Cl.[5] B24B 49/00
U.S. Cl. 451—5 10 Claims



9. A blade position detection apparatus having light emitting means having a transparent emitting surface and emitting light via said emitting surface, light receiving means having a transparent incidental surface positioned to oppose said emitting surface at a predetermined interval and receiving light made incident via said incidental surface so as to photoelectrically convert said light, first detection means for detecting a front portion of a rotational blade to be inserted into a position between said light emitting means and said light receiving means, second detection means for detecting that said rotational blade has been inserted into a predetermined position between said light emitting means and said light receiving means in response to an output from said light receiving means; and means for receiving said position of the front portion of said rotational blade detected by said first detection means at the time of the detection performed by said second detention means, so that said front portion of said rotational blade is located with respect to a subject to be machined in accordance with said received position of the front portion of said rotational blade, said blade position detection apparatus comprising:

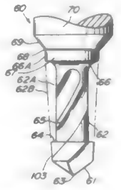
washing means for jetting water and air to said emitting surface and said incidental surface, wherein said washing means jets water at the time of machining so as to form a water film on said emitting surface and said incidental surface, so that an adhesion of cutting dust generated at the time of machining is prevented, and jets air at the time of detecting the position of said front portion of the rotational blade so as to remove water droplets adhering to the emitting surface and said incidental surface.

5,353,552

ROOT-STRENGTH DRILL BIT AND METHOD OF MAKING

David T. Hemmings, Orange, Calif., assignor to Megatool, Inc., Buena Park, Calif.

Division of Ser. No. 609,429, Nov. 5, 1990, Pat. No. 5,184,926.
This application Dec. 22, 1992, Ser. No. 994,787
Int. Cl.[5] B24B 1/00
U.S. Cl. 451—48 5 Claims



1. A method for making a twist drill bit comprising;

a. rotating a circularly symmetric drill blank about its own longitudinal axis,

b. rotating a first, generally disc-shaped fluting grinding wheel about its own rotational axis, the plane of said fluting wheel being included at an angle A with respect to the longitudinal axis of said drill blank,

c. moving said fluting wheel longitudinally into said blank at a linear speed of the proper relationship to the rotational speed of said blank about its own longitudinal axis so as to form helically disposed groove or flute in the cylindrical wall surface of said blank,

d. repeating steps b and c a number of times equal to the number of additional flutes desired,

e. rotating a second, generally disc-shaped, circular relieving grinding wheel about its own rotational axis, the plane of said relieving wheel being inclined at an angle B with respect to the longitudinal axis of said drill blank,

f. engaging one of said flutes rearward from the front end of said flute with said relieving wheel, and moving said relieving wheel longitudinally into said blank at a linear speed of the proper relationship to the rotational speed of said blank about its own longitudinal axis so as to maintain a fixed circumferential relationship to said flute, said angle B being sufficiently smaller than angle A wherein the difference between the magnitudes of angle A and B is further defined as lying in the approximate range of 9 degrees to 17 degrees so as to reduce the diameter of all portions of said blank rearward of said forward end of flute, thereby forming a rearward directed cutting tooth at the junction of said forward end of said drill blank with said reduced diameter portion, and

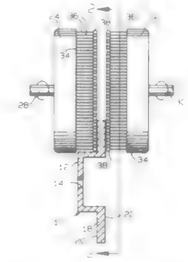
g. repeating step f on each desired additional flute.

5,353,553

METHOD AND APPARATUS FOR TREATING BRAKE ROTORS

William R. Miller, Jackson, Mich., assignor to Miller Industrial Products, Jackson, Mich.

Filed Jan. 10, 1994, Ser. No. 179,264
Int. Cl.[5] B24B 7/17
U.S. Cl. 451—32 14 Claims



1. The method of finishing the brake pad engaging surfaces of disc brake rotors wherein the rotor includes a hub having an axis of rotation and a pair of annular brake pad engaging surfaces defined on the opposite sides of a flange radially extending from the hub comprising the steps of:

(a) rotating the brake rotor and flange about their axis of rotation;

(b) rotating a plurality of abrasive hone elements mounted upon flexible resilient stems about an axis;

(c) engaging said rotating abrasive hone elements with a pad engaging surface in such a manner as to deflect said stems of said elements to finish the pad engaging surface to the desired surface finish, and

(d) removing said hone elements from the engaged pad engaging surface upon the desired pad engaging surface finish being attained.

5,353,554

INJECTOR DOSING MEANS

Sigrid Keizers, Konigsberger Str. 2-4 D-4280, Borken/Westf., Fed. Rep. of Germany

Continuation of Ser. No. 894,048, Jun. 4, 1992, abandoned. This application Nov. 4, 1993, Ser. No. 147,920
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1992, 4209552
Int. Cl.[5] B24C 7/00
U.S. Cl. 451—96 10 Claims

1. An injector for use in combination with a sandblaster apparatus for providing a liquid anticorrosive agent to a stream produced by the sandblaster apparatus, the sandblaster apparatus of the type having a switch-on means for activating and deactivating the sandblaster apparatus and having an outlet pipe for carrying the stream, the injector comprising:

a container for holding the liquid anticorrosive agent;

a connecting pipe having a plurality of branches extending from the container to the outlet pipe of the sandblaster apparatus to provide fluid communication between the container and the sandblaster apparatus;

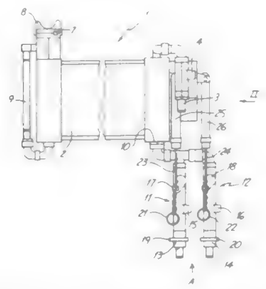
a plurality of control valves disposed in the connecting pipe, with at least one control valve disposed in each branch of the connecting pipe, the valves being capable of opening to allow flow of the liquid agent through the connecting pipe to the outlet pipe of the sandblaster apparatus and

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capable of closing to prevent flow of the liquid agent through the connecting pipe to the outlet pipe of the sandblaster apparatus;

a plurality of nozzles with at least one nozzle disposed on each branch of the connecting pipe, wherein each nozzle has a different diameter; and

a switching means for separately controlling each of the control valves and having a first mode for selectively



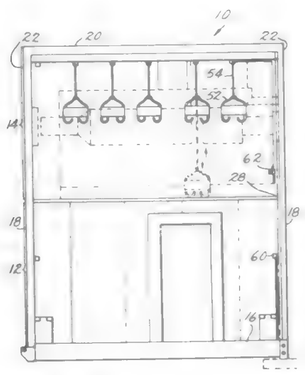
opening the control valves and a second mode for selectively closing the control valves, the switching means being coupled to the switch-on means so that the switching means is in the first mode and opens the control valves when the switch-on means activates the sandblaster apparatus, and the switching means is in the second mode and closes the control valves when the switch on means deactivates the sandblaster apparatus.

5,353,555

ROAD TRANSPORTABLE LOCKER ROOM

J. Thomas Moore, Charleston, W. Va., assignor to The Moore Company, Charleston, W. Va.

Filed Sep. 25, 1992, Ser. No. 950,995
Int. Cl.[5] E04H *1/12*
U.S. Cl. 52—79.1 **13 Claims**



1. A road transportable locker room comprising:

(a) a base module, said base module including a floor and side walls extending generally transverse to said floor;

(b) a stack module, said stack module including a roof and side walls extending generally transverse to said roof, said stack module being removably mounted on said base module; and

(c) an aligning means for automatically aligning said stack module on said base module when said stack module is being mounted on said base module, said aligning means including at least one guide plate affixed to said base module and at least one aligning plate affixed to said stack module, said guide plate and aligning plate cooperating to provide a substantially equal and opposite corrective force upon said base module and said stack module during mounting of said stack module on said base module,

said side walls of said stack module including a base and a first perimeter channel located adjacent said base of said side walls of said stack module, said first perimeter channel having an interior side, said aligning plate being mounted on said interior side of said first perimeter channel and protruding toward said interior side of said stack module.

5,353,556

METHOD AND APPARATUS FOR PREVENTING CRAWLING INSECTS OR OTHER CRAWLING PESTS FROM GAINING ACCESS TO PLANTS

Herbert H. Hand, 223 Tram Rd., Columbia, S.C. 29201, and Herbert G. Hand, 5426 Richenbacher Ave., Apt. #301, Alexandria, Va. 22304

Continuation-in-part of Ser. No. 436,412, Nov. 14, 1989, abandoned, which is a continuation-in-part of Ser. No. 271,040, Nov. 15, 1988, Pat. No. 4,905,629, which is a continuation-in-part of Ser. No. 133,171, Dec. 11, 1987, Pat. No. 4,784,086, which is a continuation-in-part of Ser. No. 914,335, Oct. 2, 1986, abandoned. This application Aug. 21, 1990, Ser. No. 570,339
Int. Cl.[5] A01M *1/00;* **A01K** *1/00*
U.S. Cl. 52—101 **21 Claims**



1. A crawling pest barrier for attachment to the trunk of a tree between the ground and the upper portion of the tree, which prevents a crawling pest of a predetermined size from reaching the upper portion of the tree without the need for chemical repellents, comprising:

a generally cylindrical support member which closely conforms to the trunk of the tree preventing crawling pests from passing between the support member and the tree and extending along the trunk of the tree from a ground side end to an upper end and having an outer surface facing outwardly from the tree;

a projecting member extending outwardly from the outer surface of the support member, the projecting member having an underside surface, an edge surface, and a topside surface, and said protecting member surfaces and said outer surface forming a first pathway for movement there along by the crawling pest from beneath said projecting member to the upper end of the outer surface;

an obstacle member secured to the support member above the projecting member for blocking movement of a crawling pest along the first pathway, the obstacle member having an inside surface ending in an edge separated from the topside surface by a distance greater than the predetermined size, the inside surface providing a second pathway leading in a direction away from the upper end of the support member and away from the first pathway, the obstacle member being spaced from the outer surface a sufficient distance to form a phototactic barrier along the first pathway by shadowing thereof to discourage continued movement by a pest along the first pathway toward the upper portion of the tree; and

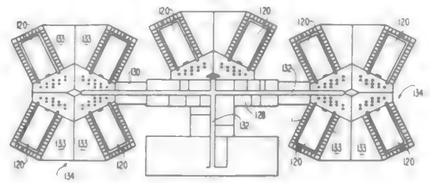
second obstacle means having a surface depending toward the ground and being spaced from said inside surface forming a second barrier area for providing multiple -tactic and ultraviolet light barriers.

5,353,557

MODULAR JAIL SYSTEM AND METHOD OF PREPARING SAME

Marc Lerner, Swan Lake, and William A. Bertolini, West Coxsackie, both of N.Y., assignors to Quickway Metal Fabricators, Inc., Monticello, N.Y.

Filed Dec. 1, 1992, Ser. No. 983,631
Int. Cl.[5] E04H *1/00, 3/00, 3/08*
U.S. Cl. 52—106 **26 Claims**



1. A modular jail structure comprising:

a plurality of removable cells in adjacent relation arranged in a configuration to form an open area;

a plurality of support columns removably coupled to said plurality of cells; and

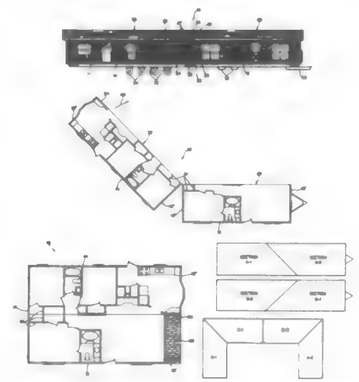
a roof supported by said plurality of support columns, covering at least said open area, wherein said roof remains in place, supported by said support columns, when said plurality of cells are removed.

5,353,558

MANUFACTURED HOUSE UNIT

James F. Shea, Sr., and Brian J. Shea, both of Nappanee, Ind., assignors to Fairmont Homes, Inc., Nappanee, Ind.

Filed Dec. 23, 1992, Ser. No. 996,319
Int. Cl.[5] E04B *1/343, 7/16*
U.S. Cl. 52—143 **10 Claims**



1. A manufactured house formed from a plurality of sections matingly connected to form at least one enclosure therebetween, comprising:

a first pair of sections initially formed with a common structural member that is adapted to be subsequently separated to allow movement of the sections independent of each other; and

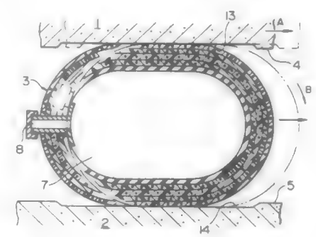
a second pair of sections initially formed with a common structural member that is adapted to be subsequently separated to allow movement of the sections independent of each other, one section of said first pair being matable with both sections of said second pair, and one section of said second pair being matable with both sections of said first pair.

5,353,559

ANTI-EARTHQUAKE BEARING APPARATUS

Nobuo Murota; Keizo Tatsunami, both of Yokohama; Koji Ishii, Kanagawa; Atsuhiko Yasaka, Tokyo; Masao Iizuka, Inagi, and Jun Tagami, Tama, all of Japan, assignors to Bridgestone Corp. and Kajima Corp., both of Tokyo, Japan

Filed Aug. 22, 1991, Ser. No. 748,628
Claims priority, application Japan, Aug. 22, 1990, 2-220863
Int. Cl.[5] E04H *9/02*
U.S. Cl. 52—167 E **14 Claims**



1. An anti-earthquake bearing apparatus having bearing bodies disposed between an upper structure and a foundation to reduce vibration energy propagating therebetween, said anti-earthquake apparatus comprising:

a plurality of spherical bag-like bearing members used as said bearing bodies as a sole support of said upper structure, said bearing members being filled therein with fluid material, and said bearing members comprising rubber-like sheet material reinforced with fiber,

a plurality of recesses for allowing limited positional shift of said bearing members within said recesses, said recesses being provided in said foundation, and

said bearing members being deformed in a vertical direction in response to the weight of said upper structure and vibrations caused by said earthquake, and said bearing members rolling in a horizontal direction within said recessed following a displacement between said upper structure and said foundation.

5,353,560

BUILDING STRUCTURE & METHOD OF USE

John J. Heydon, Big Bear Lake, Calif., assignor to Heydon Building Systems International, Limited, London, United Kingdom

Filed Jun. 12, 1992, Ser. No. 897,909
Int. Cl.[5] E04B *2/00*
U.S. Cl. 52—281 **19 Claims**

1. An improved building system including a dimensionally stable, monolithic wall structure, said wall structure comprising:

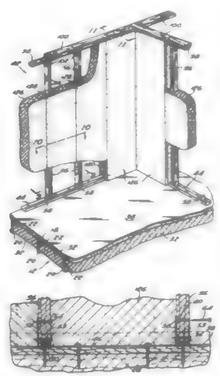
an elongate, generally U-shaped track defining a bottom wall which is extended along and attached to a horizontal foundation means and opposing side walls extending up-

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wardly from said bottom wall, said bottom wall including a plurality of preformed, linearly aligned bottom wall apertures disposed therein at predetermined locations along the track;

a plurality of elongate, vertical posts of predetermined lengths having top ends and bottom ends, said bottom ends being attached to said track at said predetermined locations along the length thereof and including recesses disposed therein to receive portions of fasteners;

at least one elongate, horizontal header beam attached to the top ends of said posts; and



a plurality of pre-fabricated wall sections, each of said wall sections being disposed between a pair of adjacent posts and including first and second vertical edges which each abut a respective post of the post pair;

said posts and said wall sections being fabricated from materials having selected compressive, tensile and shear force properties so that when interacted with each other by the abutment of said first and second vertical edges of the wall sections against the posts, a monolithic wall structure is formed.

5,353,561

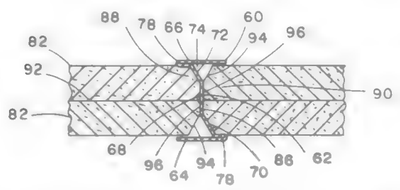
AREA SEPARATION WALL AND STUD THEREFOR

Robert J. Menchetti, Buffalo, N.Y., assignor to National Gypsum Company, Charlotte, N.C.

Filed Jun. 4, 1993, Ser. No. 71,093

Int. Cl.[5] **E04B** *2/76;* **E04C** *3/32*

U.S. Cl. 52—282.1 **22 Claims**



1. An H-stud for an area separation wall comprising an elongate formed sheet metal web and a pair of parallel, spaced apart, elongate, formed sheet metal flanges, said web connecting said flanges and having a center portion and two side portions, said center portion being in a plane which is perpendicular to said flanges, and said side portions extending angularly from said center portion to said respective flanges and being adjoined to said respective flanges, each of said flanges having opposite edges, said plane intersecting each of said flanges at a location which is between said opposite edges, and each of said side portions being adjoined to one of said flanges at an acute angle and at a location which is between said plane and one of said opposite edges.

5,353,562

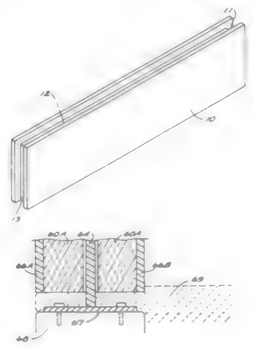
FOAM PANEL FOR CONSTRUCTION

Wendell T. Decker, 5719 E. Linden St., Tucson, Ariz. 85712

Continuation-in-part of Ser. No. 2,644, Jan. 11, 1993, abandoned, which is a continuation of Ser. No. 725,575, Jul. 3, 1991, abandoned. This application Jan. 10, 1994, Ser. No. 179,511

Int. Cl.[5] **E04C** *1/00*

U.S. Cl. 52—309.7 **21 Claims**



1. A construction assembly comprising:

a) a plurality of foam panels, each of said foam panels having a top groove being less than half an inch in width and extending along a top face of said foam panel, a bottom groove being less than half an inch in width and extending along a bottom face of said foam panel, and a side groove extending along a side face of said foam panel, each of said foam panels being at least two feet high, at least seven feet long, and three to eight inches wide;

b) a key member matably engaged with the top groove of a first foam panel and the bottom groove of a second foam panel; and,

c) a post member positioned in said side groove and attached to said key member.

5,353,563

PLASTIC STRUCTURALLY REINFORCED PANEL

Jack White, 305 Grove Ave., Cleveland, Tenn. 37311

Filed Jun. 8, 1992, Ser. No. 895,125

Int. Cl.[5] **E04C** *2/24*

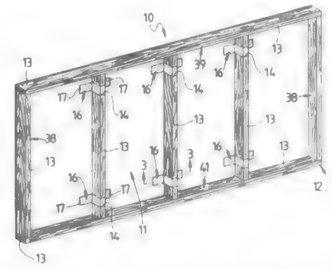
U.S. Cl. 52—309.13 **20 Claims**

1. A prefabricated panel for use in construction comprising:

(a) a sheet of reinforced plastic;

(b) a rigid frame partially immersed within said plastic sheet for reinforcing said plastic sheet, wherein said plastic sheet is bonded to said frame, said frame comprising a plurality of interconnected beam members partially immersed within said plastic sheet and bonded thereto; and

(c) a plurality of straps having end portions immersed in secured engagement within said plastic sheet, wherein each said strap traverses one of said plurality of beam members in spaced relation to said plastic sheet thereby securing said beam members to said plastic sheet, wherein each said strap includes a strip of woven mesh and a strip of matting, each soaked in plastic similar to that forming



said plastic sheet and laminated across said beam member in normal stacked relation thereto.

5,353,564

THERMODYNAMIC AIR ENVELOPE FOR FOOD STORAGE STRUCTURE

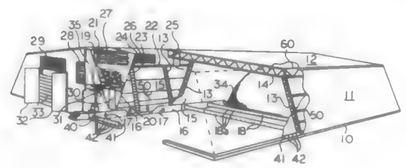
Daniel B. Hansen, Nampa, Id., assignor to Hansen-Rice, Inc., Nampa, Id.

PCT No. PCT/US90/03448, § 371 Date Oct. 10, 1991, § 102(e) Date Oct. 10, 1991

Continuation of Ser. No. 761,966, Oct. 10, 1991, abandoned. This PCT application Jun. 18, 1990, Ser. No. 186,102

Int. Cl.[5] **F04B** *2/28*

U.S. Cl. 52—407.1 **7 Claims**



1. A food storage building

for storing potatoes or the like, comprising:

(a) means including side (**11**) and top (**12**) walls defining an enclosed food storage chamber, at least one of said walls being formed of sheet metal;

(b) means defining an air envelope (E) adjacent the inner surfaces of said side and top walls for at least partially enclosing said food storage container, including:

(1) pairs of parallel spaced outer (**51,63**) and inner (**52,64**) layers of thermal insulating material said pairs of layers defining cavities (C_2,C_1) therebetween;

(2) at least one layer of each pair being lined with metal foil;

(3) the thickness (t_1, t_2') of the outer layer of each pair of being greater than the thickness (t_2,t_2') of the inner layer of each pair, thereby to cause the outer layers to be more resistive to thermal transfer than said inner layers; and

(4) means (**53**, **62**, **60**, **50**) connecting said insulating layers with said side and top walls; and

(c) controlled temperature circulating means (**30**, **40**, **41**) for circulating through said air envelope air having such a controlled temperature relative to the ambient temperature and to the temperature and humidity conditions within said food storage chamber as to maintain the temperature of said inner insulating layers above the dewpoint temperature of the storage atmosphere.

5,353,565

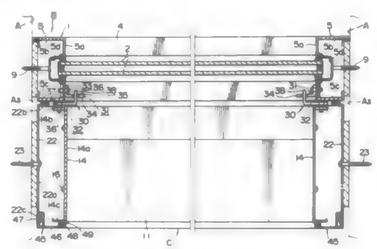
LOUVERED WINDOW ASSEMBLY

Shinji Tanikawa, Marietta, Ga., assignor to YKK Corporation, Lyndhurst, N.J.

Filed Sep. 2, 1992, Ser. No. 939,732

Int. Cl.[5] **E06B** *7/08*

U.S. Cl. 52—473 **6 Claims**



1. A louvered window assembly, comprising:

a fixed window unit (B) fixedly fitted on a rear side of a window opening (A), a louver unit (C) being slightly less in height and width than the window opening (A) and to be fitted on a front side of the window opening (A), and means for releasably fitting the louver unit (C) within the window opening (A);

the louver-unit fitting means comprising a support bracket (**31**) fastened to the front side of the fixed window unit (B), a hanger bracket (**32**) fastened to a rear side of the louver unit (C) and coming into engagement with the support bracket (**31**), a louver header (**20**) fastened to a front side of a vertical inside surface (**A3**) of the window opening (A), a pair of louver jambs (**22, 22**) fastened on the front side of each vertical inside surface (**A3**), an upper horizontal clip (**40**) joined to the front side of the header (**20**) so as to cover the front side of an upper edge of the louver unit (C), and a pair of vertical clips (**45**) joined one to the outside of each louver jamb so as to cover the outside of a lateral edge of the louver unit (C);

the fixed window unit (B) comprising a window frame (**1**) including a window header (**3**), a window sill (**4**) and a pair of window jambs (**5, 5**) each having its opposed ends joined to the corresponding ends of the window header (**3**) and the window sill (**4**), a glass pane (**2**) fitted into the window frame (**1**), and a pair of the support brackets (**31, 31**) being fastened to the front side of each window jamb (**5**); and

the louver unit (C) comprising a louver frame (**10**) including a pair of upper and lower louver rails (**12, 13**), a pair of louver stiles (**14, 14**) each having its opposed ends joined to the corresponding ends of the upper and lower louver rails (**12, 13**), a plurality of louver slats (**11**) joined to the opposed louver stiles (**14, 14**) at substantially uniform intervals, a pair of the hanger brackets (**32**) fastened to a rear side of each louver stile (**14**), the upper horizontal clip (**40**) having on a lower edge a gasket (**44**) which comes into pressing engagement with the upper louver rail (**12**), and each vertical clip (**45**) having on an inner longitudinal edge a gasket (**49**) which comes into pressing engagement with the corresponding louver stile (**14**).

5,353,566

MOUNTING MEMBER TO ELIMINATE VIBRATION AND ELECTROSTATIC DISCHARGES

Anthony J. Boon, Kitchener, and Scott A. Wishart, Waterloo, both of Canada, assignors to NCR Corporation, Dayton, Ohio

Filed Jun. 1, 1993, Ser. No. 69,881

Int. Cl.[5] **E04B** *9/00*

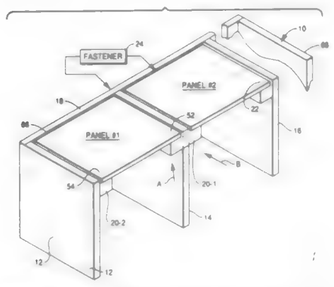
U.S. Cl. 52—474 **12 Claims**

1. A connecting device for connecting a first panel to a

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second panel, said first panel having first and second substantially parallel fingers extending therefrom, said connecting device comprising:

a male member having a head and a cylindrical section having an associated longitudinal axis, with said male member secured to said second panel and with said cylindrical section upstanding from said second panel; and



a tolerance ring made from a strip of stainless steel which is formed into a band which is less than a complete circle, said tolerance ring positioned on said cylindrical section;

said tolerance ring having corrugations thereon which are aligned with said longitudinal axis of said cylindrical section; and

said cylindrical section with said tolerance ring thereon forming an interference fit with said first and second parallel fingers.

5,353,567

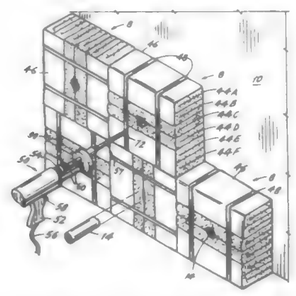
INSULATION MODULE ASSEMBLY AND APPARATUS FOR INSTALLATION

Curtis L. Knight, Edmond, and Robert W. Caffey, Cleveland, both of Okla., assignors to Premier Refractories and Chemicals, Inc., Pa.

Continuation of Ser. No. 510,718, Apr. 18, 1990, abandoned. This application Apr. 12, 1993, Ser. No. 47,034

Int. Cl.[5] E04B *1/62, 1/80;* **F23M** *5/00*

U.S. Cl. 52—506.03 **36 Claims**



1. An apparatus in combination with an insulation module and a stud, the apparatus for attaching the insulation module to a wall with the stud, the combination comprising:

A) the stud;

B) the insulation module, the module being formed of insulation material having a cold face for presentation to the wall and a substantially hot face opposite to the cold face, the module including,

1) an anchor to anchor the insulation module to the wall, the anchor adapted to receive the stud, and

2) an electrically non-conductive tube member to guide the stud into functional relationship with the anchor and the wall through the hot and cold faces of the insulation module, the tube member including a first open end and an opposing second open end, and substantially extending from the cold face to the hot face of the insulation module; and

C) the apparatus, the apparatus including,

1) a ferrule for electrically insulating the stud from the anchor;

2) a stud-welder for welding the stud to the wall, the stud-welder including a chuck capable of movement between a non-retracted position and a retracted position;

3) a tube adapter received by the tube member to support the stud-welder and to align the stud-welder in the proper axial position relative to the wall and the insulation module; and

4) an electrically conductive stud adapter to operatively engage the chuck of the stud-welder and the stud through the tube member, the stud adapter being so constructed and arranged for movement so that when the chuck is in the non-retracted position the stud is in contact with the wall and when the chuck is in the retracted position the stud is displaced away from the wall a predetermined amount sufficient to allow an electric arc to be initiated between the stud and the wall.

5,353,568

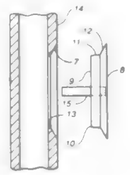
WALL AND DOOR REPAIR KIT AND METHOD

Gilbert E. Silva, 3325 Fronda Dr., San Jose, Calif. 95122

Continuation of Ser. No. 811,655, Dec. 23, 1991, abandoned. This application Jul. 1, 1993, Ser. No. 85,884

Int. Cl.[5] E02D *37/00*

U.S. Cl. 52—514 **6 Claims**



1. A repair kit for repairing a hole in the surface of a double panel door having front and rear panels comprising;

said repair kit having a first flat surface opposite a second flat surface with a boundary surface therebetween;

said boundary surface having a first area forming a first angle with said first surface, and a second area forming a second angle with said second surface;

said first angle being acute;

said second angle being obtuse;

said areas meeting along a line that is between said first and second surface,

a dowel having a length and two ends;

said second flat surface having a recess hole for securingly engaging one end of said dowel; and

said dowel having a length such that when one end of said dowel is inserted in said recess hole in said second flat surface and said repair kit is positioned in said hole in said front door panel with said first surface of said kit flush with an outside of said front door panel, the other end of said dowel abuts said rear door panel.

5,353,569

CONSTRUCTION BLOCK WITH GUIDING SYSTEM FOR WALLS

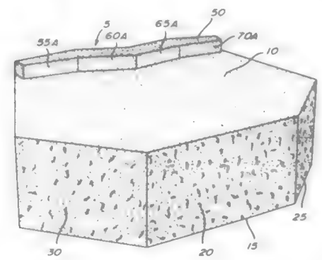
Jacques Rodrique, Mont eal-Nord, Canada, assignor to Transpave Inc., Quebec, Canada

Filed Nov. 27, 1992, Ser. No. 983,061

Claims priority, application Canada, Jul. 10, 1992, 2073638

Int. Cl.[5] E04C *1/10*

U.S. Cl. 52—589.1 **13 Claims**



1. An interlocking block for use in the construction of a mortarless retaining wall wherein a plurality of said interlocking blocks are stacked in a number of successive offset courses of blocks, a block in an upper row being in overlapping relation with respect to the joint between blocks in an immediately underlying row, said interlocking block comprising

a block body; and

an interlocking member, said block body having top and bottom support surfaces and rear, front and side surfaces, said interlocking member projecting from the bottom surface of the interlocking block adjacent the rear surface thereof, the rear surface of the interlocking block having an upper edge surface portion adjacent the top surface, said interlocking member having an interlock surface configured so that when said interlocking block is disposed over the joint between two said underlying interlocking blocks, the interlock surface is able to engage said upper edge surface portion of each such underlying block such that the front surface of the block is offset rearwardly with respect to the front surfaces of the underlying blocks, characterized in that said upper edge surface portion has a bevelled portion adjacent each side surface of the block and a recessed portion disposed between the bevelled portions, said bevelled and recess portions being configured such that

i) when said interlocking block is disposed over the joint between two underlying said interlocking blocks so as to define a curved wall segment having a concave exterior wall surface, a portion of said interlock surface adjacent each side surface of the interlocking block is able to engage a respective bevelled portion of the said upper edge surface portion of each such underlying interlocking block such that the front surface of the interlocking block is offset rearwardly with respect to the front surfaces of the underlying interlocking blocks; and

ii) when said interlocking block is disposed over the joint between two underlying said interlocking blocks so as to define a curved wall segment having a convex exterior wall surface, a portion of said interlock surface adjacent each side surface of the interlocking block is able to engage a respective recessed portion of the said upper edge surface portion of each such underlying interlocking block such that the front surface of the interlocking block is offset rearwardly with respect to the front surfaces of the underlying interlocking blocks.

5,353,570

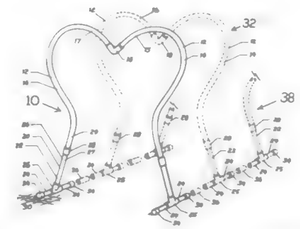
BRIDAL ARCH

Leroy Cooper, Jr., 1157 Emporia, Aurora, Colo. 80041

Filed Mar. 15, 1993, Ser. No. 30,916

Int. Cl.[5] E04H *12/00*

U.S. Cl. 52—653.2 **16 Claims**



1. A free standing portable arch for use in weddings, different types of ceremonies and other occasions, the arch is adapted for a bride and groom to stand under while taking wedding vows, posing for wedding pictures, for walking through during the ceremony and suspending items therefrom, the arch comprising:

an upper portion having a first half and a second half, said second half a mirror image of said first half, said first half and second half joined together to form an outline of a geometric shape;

a lower portion connected to said upper portion, said lower portion formed into a pair of stands, said stands having a bottom horizontal member used to support the arch on a ground surface or a floor surface; and

said upper portion and said lower portion made of a rigid opaque plastic material, said upper portion heated and formed into the outline of a free standing geometric shape.

5,353,571

MOUNTING OF BODY MOULDING AND RELATED ASSEMBLIES

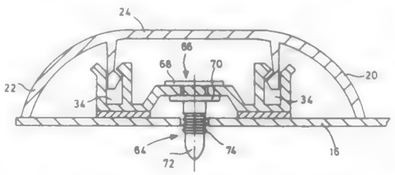
Karl Berdan, and Luis Mendes, both of Ontario, Canada, assignors to Pebra, Inc., Ontario, Canada

Filed May 29, 1992, Ser. No. 889,702

Claims priority, application United Kingdom, May 29, 1991, 9111491

Int. Cl.[5] B60J *1/00*

U.S. Cl. 52—716.5 **10 Claims**



1. A system for attaching a trim piece to a panel, comprising a trim piece including a cover having a first set of formations directed toward said panel, and a retaining strip including a second set of formations complementary to the first and adapted to engage releasably the first set of formations, one of said sets of formations including a channel having a pair of spaced limbs and the other of said sets of formations including a leg to be received within said channel between said limbs, said leg and one of said limbs each having a head formed at the respective distal ends thereof, said heads having complementary inclined surfaces extending away from said panel and juxtaposed when said leg is received between said limbs, the other of said limbs being outwardly flared away from said one

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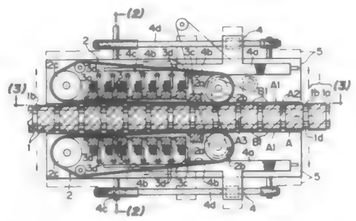
limb to direct said head of said leg into said channel during movement of said cover toward said retaining strip, said system further comprising a planar surface on said retaining strip directed oppositely to the second set of formations, an adhesive strip secured to the planar surface and having an outer adhesive surface directed toward the panel to which the trim piece is to be attached.

5,353,572

SEALING DEVICE OF PACKAGING DEVICE

Toshio Shigeta, Chiba, Japan, assignor to Tokyo Automatic Machinery Works, Ltd., Tokyo, Japan

Filed Dec. 30, 1992, Ser. No. 998,583
Claims priority, application Japan, Jan. 28, 1992, 4-013335
Int. Cl.[5] B65B 7/04, 51/18
U.S. Cl. 53—371.5 11 Claims



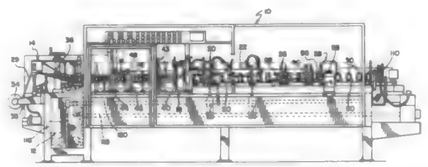
1. A sealing device for a packaging device comprising a plurality of annular belts being wound in opposition to right and left side surfaces of box-like items along both right and left sides of a transferring passage for continuously transferring the box-like items, said annular belts being moved toward a transferring direction of the box-like items in synchronism with a transferring speed of the items, a plurality of heater blocks being arranged inside of each of said annular belts along a transferring direction and heat from said heater blocks being transmitted to folded parts of a packaging-sheet folded along right and left side surfaces of the box-like items through inside parts of each of the annular belts to thermally adhere the folded parts; each of said plurality of heater blocks being supported against the inside parts of each of said annular belts so that each of said heater blocks may be moved towards or away in a direction perpendicular to the transferring direction of each of the box-like items, and heater moving mechanisms for moving each of said heater blocks toward or away from the inside parts of each of said annular belts in synchronism with a transferring speed of the box-like items, said heater moving mechanisms including a plurality of cams extending along outer surfaces of said plurality of heater blocks in a transferring direction and a counter-transferring direction of the box-like items and mounted for reciprocation, each cam including a surface inclined to said passage and extending along the transferring direction for contacting said heater block outer surfaces, means for biasing the outer surfaces of said heater blocks toward said inclined surface of each of said cams, and means for reciprocating said cams in synchronism with the transferring speed of the box-like items, wherein said inclined surfaces of each of said cams become spaced apart a greater distance from each other as said cams extend along the transferring direction of the box-like items.

5,353,573

APPARATUS AND METHOD FOR FORMING, FILLING AND SEALING CLOSED INDIVIDUAL PINCH POUCHES

William J. Durrant, Oak Forest, Ill., assignor to Unique Packaging, Inc., Ill.

Filed Sep. 16, 1992, Ser. No. 948,838
Int. Cl.[5] B65B 7/06, 43/04, 57/02, 61/00
U.S. Cl. 53—410 38 Claims



1. A method of forming, filling, and sealing closed individual pinch pouches of board material having a thickness greater than 7 mils comprising the steps of: removing from a source of supply a continuous web of board material having a thickness greater than 7 mils and having a heat sealable surface on one side and indicia on the other side, moving the web of board material in one direction, folding the board material along the direction of movement of the web with portions of the heat sealable surface facing to form a gusset at the fold, heating and squeezing a selected area of a portion of the heat sealable surface to form a seal in the area between opposed portions of the heat sealable material extending to the gusset across the direction of movement of the web of board material and terminating prior to an edge opposite the gusset, mounting a portion of the material on a carrier, cutting the material through the seal to form a folded blank having sealed opposed edges extending to the gusset and an open margin opposite the gusset, moving the gusset inward to force outward opposed portions of the heat sealable outface of the blank to expand the sides of the blank, spreading apart the opposed portions of the heat sealable surface of the blank at the open margin opposite the gusset, injecting a flowable substance into the blank at the open margin, and heating and squeezing the blank at the margin opposite the gusset to seal a second selected area of the opposed portions of the heat sealable surface to form a sealed closed pinch pouch.

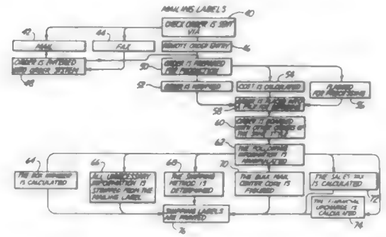
5,353,574

SYSTEM AND DEVICE FOR PREPARING CHECKS FOR DELIVERY

David L. Copham, Forest Lake, Minn.; Shawn M. Dolan, Simi Valley, Calif., and Christopher D. Edmonson, Andover, Minn., assignors to Liberty Share Draft & Check Printers, Inc., Arden Hills, Minn.

Filed Mar. 31, 1993, Ser. No. 40,554
Int. Cl.[5] B65B 11/58, 3/04; B65D 5/52
U.S. Cl. 53—428 14 Claims

1. A method of preparing a pad of checks for delivery to a customer, the method comprising:
- receiving a check request order requesting the pad of checks having a particular check style;
- grouping the check request order with a plurality of check request orders requesting the particular check style into a matrix having M rows and N columns, wherein M and N are integers;
- printing a plurality of sheets of checks, wherein each sheet of the plurality of sheets includes a plurality of checks corresponding to the plurality of check request orders requesting the particular check style thereby creating a plurality of stacks of checks wherein each stack of the plurality of stacks of checks corresponds to a corresponding check request order;
- printing a sheet of shipping labels, wherein the sheet of shipping labels includes a plurality of shipping labels corresponding to the plurality of check request order;
- placing the sheet of shipping labels on top of the plurality of sheets of checks, wherein each shipping label of the sheet of shipping labels is placed on top of a corresponding stack of checks;
- separating the stack of checks having a corresponding shipping label attached thereto;
- stitching the stack of checks having a shipping label attached thereto into a check pad;



- placing the check pad into a check container, the check container comprising: a box bottom; a box top having a first aperture; and a transparent material fastened to an inside surface of the box top immediately surrounding the first aperture;
- placing the check container into a shipping carton, the shipping carton having a second aperture; and
- wherein the shipping label is visible through the first aperture of the top check container cover and the second aperture of the shipping carton.

5,353,575

TAB CLOSING DEVICE IN A QUICK SHEET FOR WRAPPING

Stephen Stepanek, Amerherst, N.H., assignor to Hampshire Paper Corp., Milford, N.H.

Filed May 3, 1993, Ser. No. 56,175
Int. Cl.[5] B65B 11/48, 11/56
U.S. Cl. 53—461 8 Claims



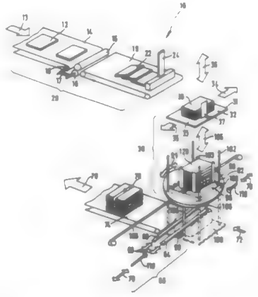
1. A method for wrapping an object comprising the steps of:
- providing a sheet of material having an upper surface and a lower surface, a first end and a second end;
- providing a tab closure element for said sheet, said tab closure element comprising two sides and having at least two sections, said tab closure element being adhered firmly by the first side of the first section of said tab closure element on said upper surface at said second end of said sheet of material;
- coating the second section of the second side of the second section of said tab closure element with a pressure sensitive adhesive and folding said section so as to contact said first section on the second side thereof;
- placing the object on said upper surface of said sheet and between said first and said second ends thereof;
- wrapping said object by disposing said sheet about said object;
- pulling the second section of the tab closure element from said first section leaving the pressure sensitive adhesive coated thereon; and,
- closing said sheet by unfolding said second section of said tab element from said first section of said tab element and contacting said adhesive on said second section with the second end of said sheet of material, so that said sheet is closed firmly around said object.

5,353,576

DEVICE FOR PACKAGING PRINTED MATTER

Sesto Palamides, Weissenburgstrasse 20, D-7000 Stuttgart 1; Aldo Palamides, Dornierstrasse 16, D-7253 Renningen 1, and Stefano Palamides, Weissenburgstrasse 20, D-7000 Stuttgart 1, all of Fed. Rep. of Germany

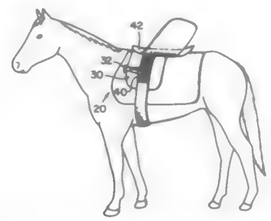
Filed Dec. 12, 1988, Ser. No. 283,198
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1987, 3742787
Int. Cl.[5] B65B 35/50, 35/56, 63/02
U.S. Cl. 53—540 10 Claims



1. Device for packaging preferably folded, glued or stitched copies of printed matter, comprising:
- loading means for receiving said copies which arrive from a preceding station;
- stacking means for receiving and for holding a stack of said copies, said stacking means follows said loading means and said stacking means are provided with lateral guides by which said stacks are held in such a position so that they cannot get dislodged horizontally; and
- banding means for banding said stacks with a banding element, said banding means is arranged immediately below said stacking means, wherein said stacking means comprises a bottom which is adapted for being lifted and/or lowered vertically and on which bottom the said copies can be stacked, said bottom is provided with an opening exposing at least that bottom area of a lowermost copy of the said stack where said banding element is to be applied, said stacking means being provided with a base plate that can be turned horizontally by 180° and which accommodates the said bottom, for rotation therewith.

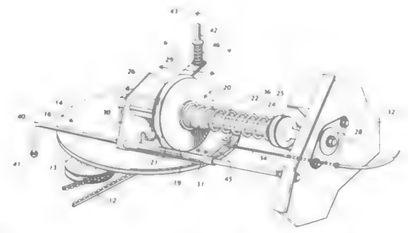
VOL 1167 ISS 2 OCT 11 1994 UMI

5,353,577
REVERSIBLE SADDLE PAD
Christene Thurston, 361 Sweetman Rd., Ballston Spa, N.Y. 12020
Filed Aug. 12, 1993, Ser. No. 106,044
Int. Cl.[5] B68C *1/12*
U.S. Cl. 54—66 8 Claims



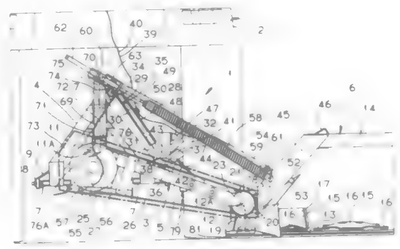
5. A reversible saddle pad comprising:
a fabric pad having first and second opposing sides and a pair of billet keeper straps;
means for permanently attaching a first end portion of each billet keeper strap to said fabric pad; and
means for removably attaching a second end portion of each billet keeper strap to a billet on a saddle;
said fabric pad further including means for removably receiving the second end portion of each billet keeper strap therethrough, said receiving means extending between the first and second sides of said fabric pad.

5,353,578
DRIVE SYSTEM FOR LAWN MOWERS
Robert W. Irby, McDonough, and Richard A. Schaff, Conyers, both of Ga., assignors to Fuqua Industries, Inc., McDonough, Ga.
Filed Mar. 2, 1993, Ser. No. 25,025
Int. Cl.[5] F16H *15/08*
U.S. Cl. 56—11.1 5 Claims



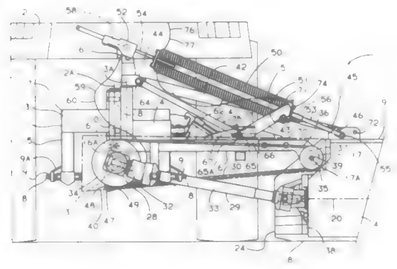
1. A lawn mower having a self-propelling feature, comprising:
a frame including a blade housing;
a motor;
at least one drive wheel rotatably mounted relative to said frame; and
a self-propelling assembly intermediate said motor and said wheel, said assembly itself comprising:
a friction plate rotatably mounted relative to said frame and driven by said motor;
a guide bar rigidly mounted relative to said frame, said guide bar having a first portion having a longitudinal axis;
a flange mounted to said first portion of said guide bar, said flange being pivotably and slidably mounted relative to said guide bar such that said flange may pivot about and slide substantially along said longitudinal axis of said first portion of said guide bar;
a drive shaft having a longitudinal axis substantially parallel to the longitudinal axis of said first portion of said guide bar, said drive shaft being rotatably mounted relative to said frame and having a first end rotatably and pivotably mounted relative to said frame, and a second end rotatably and pivotably mounted relative to said flange;
a friction disk slidably but not rotatably mounted to said drive shaft and rotatably driven by said friction plate such that said drive shaft is rotatably driven;
a first bias means for pivotably biasing said flange and said friction disk about said guide bar such that said friction disk tends to frictionally engage said friction plate;
a second bias means for biasing said friction disk in a first direction along the length of said drive shaft; and
a speed selection means for moving said friction disk along said drive shaft, such that operation of said speed selection means in a first mode causes said friction disk to move in said first direction against said second bias means, and operation of said speed selection means in a second mode causes said friction disk to move in a second direction along said drive shaft with the assistance of said second bias means.

5,353,579
MOWER WITH DYNAMIC LOAD-LIGHTENING
Michel Wolff, Waltenheim sur Zorn, France, assignor to Kuhn, S.A., Saverne Cedex, France
Filed Jan. 19, 1993, Ser. No. 5,845
Claims priority, application France, Jan. 17, 1992, 92 00624
Int. Cl.[5] A01D *34/66*
U.S. Cl. 56—15.2 42 Claims



1. A mower comprising:
a cutting mechanism which extends, during work, crosswise to direction of work;
a hitching structure for connection to a power-driven vehicle;
a support beam connected at a first end to the hitching structure by a first hinge having a first forwardly directed geometric axis, and connected at a second end to the cutting mechanism with a second hinge having a second forwardly directed geometric axis, said first hinge being able to pivot in relation to the hitching structure around a third upwardly directed geometric axis; and
a retaining element extending at least approximately in a vertical plane directed in the direction of work and placed between the support beam and the hitching structure for preventing, under normal work conditions, a pivoting of the support beam around said third geometric axis, a connection of said retaining element to the support beam extending during work at a height lower than that of the first geometric axis of the first hinge;
wherein said retaining element is installed so that during work the retaining element has an upward and forward inclination with respect to the direction of work.

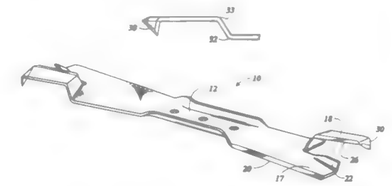
5,353,580
MOWER WITH AN IMPROVED LOCKING DEVICE
Michel Wolff, Waltenheim sur Zorn, France, assignor to Kuhn S.A., Saverne Cedex, France
Filed Feb. 3, 1993, Ser. No. 12,901
Claims priority, application France, Feb. 12, 1992, 92 01735
Int. Cl.[5] A01D *34/66*
U.S. Cl. 56—15.2 17 Claims



1. A mower comprising:
a cutting mechanism which extends, during work, crosswise to a direction of work;
a hitching structure for connection to a raising device of a power-driven vehicle;
a support beam having a first end connected to the hitching structure by a first hinge having a first forwardly directed geometric axis, and a second end connected to the cutting mechanism with a second hinge having a second forwardly directed geometric axis;
a limiting device installed between the hitching structure and the support beam for limiting a pivoting of the support beam in relation to the hitching structure around the first geometric axis of the first hinge;
an operating element for pivoting the cutting mechanism into a raised position for transport in relation to the support beam around the second geometric axis of the second hinge; and
a locking device for locking the cutting mechanism in the raised position for transport;
wherein:
during work, the limiting device is connected to the hitching structure by a third hinge having a third geometric axis that is at least approximately parallel to the first geometric axis of the first hinge, and the limiting device is slidably connected to the support beam so as to slide in relation to the support beam, and for transport, the sliding of the limiting device in relation to the support beam can be blocked by said locking device.

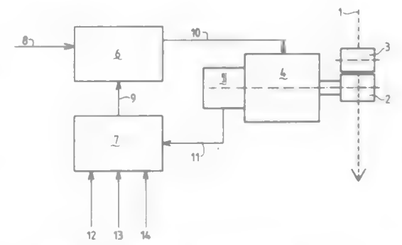
5,353,581
MULCHING BLADE INCLUDING MULTIPLE CUTTING EDGES
Russell V. Rouse, Conyers; Frank H. Hancock, Jr., McDonough, and James R. Powers, Conyers, all of Ga., assignors to Fuqua Industries, Inc., McDonough, Ga.
Continuation of Ser. No. 810,816, Dec. 19, 1991, Pat. No. 5,199,251. This application Feb. 2, 1993, Ser. No. 12,619
The portion of the term of this patent subsequent to Jan. 6, 2010, has been disclaimed.
Int. Cl.[5] A01D *34/72, 34/73*
U.S. Cl. 56—255 9 Claims

1. A grass cutting blade for cutting grass or other vegetation, comprising:
an elongate body for mounting relative to said rotating shaft;
a first end defining at least one cutting edge;
a second end opposing said first end and defining at least one cutting edge and including an inwardly and downwardly directed portion located proximate the outer edge of said second end,



such that as said blade rotates, grass is clipped by at least one of said cutting edges and directed downwardly and inwardly toward the rotational axis of said blade.

5,353,582
SYSTEM FOR CONTROLLING THE MOVEMENT OF AN ELONGATED TEXTILE STRUCTURE
Giorgio Citterio, Horgen; Stefan Huppi, Baar; Urs Meyer, Niederglatt, and Walter Slavik, Horgen, all of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland
Continuation of Ser. No. 604,998, Oct. 25, 1990, abandoned, which is a continuation of Ser. No. 336,160, Apr. 11, 1989, abandoned. This application Aug. 9, 1991, Ser. No. 746,005
Claims priority, application Switzerland, Apr. 14, 1988, 01385/88
Int. Cl.[5] D01H *4/50*
U.S. Cl. 57—263 11 Claims



1. A system for controlling the movement of a yarn comprising
first means including a pair of rollers defining a nip for moving a yarn longitudinally of the length thereof to move an end thereof from an initial position to a target position;
drive means connected to said first means for actuating said first means, said drive means being connected to one of said rollers to rotate said one roller for movement of the yarn through said nip;
a suction tube extending from said rollers to receive a length of the yarn;
a yarn severing means for severing a yarn within said tube to establish a yarn end; and
a control circuit connected with said drive means for continuously controlling the position of said yarn end between said intial position and said target position, said control circuit controlling the speed of said drive means in dependence on the position of said yarn end between said initial position and said target position.

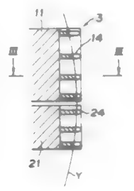
VOL 1167 ISS 2 OC 11 1994 UMI

5,353,583

APPARATUS FOR HEAT TREATING SYNTHETIC YARN

Fumio Tanae, Iyo, and Shunzo Naito, Matsuyama, both of Japan, assignors to Teijin Seiki Co., Ltd., Osaka, Japan

Continuation of Ser. No. 855,916, Mar. 23, 1992, abandoned, which is a continuation of Ser. No. 650,467, Feb. 4, 1991, Pat. No. 5,138,829. This application Mar. 17, 1993, Ser. No. 32,559
Claims priority, application Japan, Feb. 10, 1990, 2-029804; Feb. 10, 1990, 2-029805
Int. Cl.[5] D01H *7/46, 1/42*
U.S. Cl. 57—288 5 Claims



1. Apparatus for heat-treating synthetic yarn in a twisting zone comprising:

a) a single heater member for at least partially encircling synthetic yarn which is being textured by false twisting in a non-contacting manner,

b) the heater member being longitudinally divided into at least two sections in the direction of travel of the synthetic yarn,

c) a separate heater disposed in each of the sections of the heater member for heating the yarn passing the heater member to a temperature necessary to set twists in the yarn,

d) yarn guides disposed in a yarn passage surrounded by a heating wall of the heater member,

e) temperature control means for controlling the heaters in the different sections of the heater member separately such that the temperature of each of the separate heaters is independently controlled in accordance with a characteristic of the yarn so as to heat the yarn to a temperature for heat setting the yarn at an exit of the heater member and so as to provide a self-cleaning capability for the apparatus upon breakage of the yarn,

f) a cooling means for cooling the yarn leaving the heater member after the yarn has been heated to the heat setting temperature by the heater member, the cooling means being located downstream from the heater member in the direction of yarn travel, and

g) false twisting means for twisting the yarn, the false twisting means being located downstream from the cooling means in the direction of yarn travel.

5,353,584

HOLLOW DIAMOND CUT ROPE CHAIN WITH MULTI-FACETED SURFACES

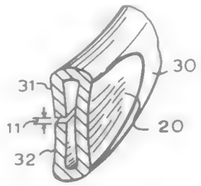
Kalman Strobel, New York, N.Y., and Godofredo M. Briceno, Santiago, Chile, assignors to Oroamerica, Inc., Burbank, Calif.

Continuation-in-part of Ser. No. 792,291, Nov. 14, 1991, Pat. No. 5,125,225, which is a continuation-in-part of Ser. No. 792,002, Nov. 14, 1991, Pat. No. 5,129,220. This application Jun. 25, 1992, Ser. No. 903,894
The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.
Int. Cl.[5] B21L *5/02*
U.S. Cl. 59—80 21 Claims

1. A jewelry rope chain made of a number of intertwined links forming a double helix and resembling a rope, comprising:

a plurality of segmented hollow links, said links having an annular configuration interrupted by an inner gap extending along an inner circumference of said hollow links,

each of said hollow links having an outer surface wall portion generally curved in cross section which is spaced apart from, and has a center opposite, said inner gap, and,



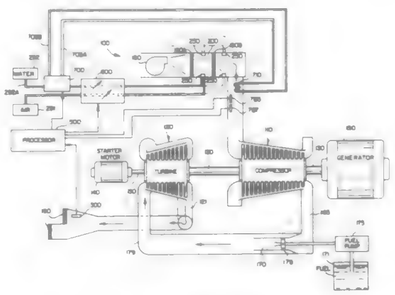
each of said hollow links having further at least one flattened portion formed in said curved outer surface wall portion, said at least one flattened portion extending inwardly toward said inner gap from said outer surface wall portion, said at least one flattened portion adjacent to at least one further flattened portion.

5,353,585

CONTROLLED FOG INJECTION FOR INTERNAL COMBUSTION SYSTEM

Michael Munk, 130 Gun Club Rd., Stamford, Conn. 06903

Filed Mar. 3, 1992, Ser. No. 845,374
Int. Cl.[5] F02G *3/00*
U.S. Cl. 60—39.05 12 Claims



1. For use in a combustion-based system including a combustion chamber having an exhaust, a source of input air for said combustion chamber, a source of fuel for said combustion chamber, and means communicating with said combustion chamber for obtaining power from said combustion; a method comprising the steps of:

heating and humidifying said input air;

sensing dewpoint of the heated and humidified input air, and generating a control signal in response thereto; and

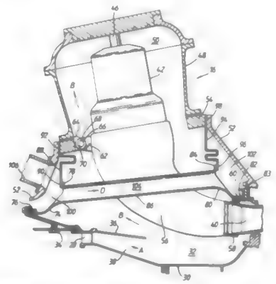
cooling the heated and humidified input air before it is input to said combustion chamber.

5,353,586

COMBUSTION CHAMBER ASSEMBLY WITH HOLLOW SUPPORT STRUT FOR CARRYING COOLING AIR

David H. Taylor, Warwickshire, and Arthur B. Griffin, Leicestershire, both of England, assignors to Rolls-Royce plc, London, England

PCT No. PCT/GB92/00017, § 371 Date Oct. 1, 1993, § 102(e) Date Oct. 1, 1993, PCT Pub. No. WO92/18760, PCT Pub. Date Oct. 29, 1992
PCT Filed Jan. 6, 1992, Ser. No. 122,595
Claims priority, application United Kingdom, Apr. 17, 1991, 9108235.4
Int. Cl.[5] F02C *3/14*
U.S. Cl. 60—39.37 24 Claims



1. A combustion chamber assembly (16) for a gas turbine engine (10) comprising a plurality of elongate combustion chambers (42) extending generally radially with respect to a longitudinal axis of the gas turbine engine (10) the radially inner ends of the elongate combustion chambers (42) are arranged to discharge combustion gases into a turbine (18, 20) through an annular array of nozzle guide vanes (40), characterised in that a first stiff frustoconical casing member (74) is located at the upstream end of the combustion chamber assembly (16), a second stiff frustoconical casing member (80) is connected to the nozzle guide vane array (40) at the downstream end of the combustion chamber assembly (16), a plurality of hollow members (86) with opposing ends secured to the first and second frustoconical casing members (74, 80) and extending between adjacent ones of the combustion chambers (42) to transfer tensile and compressive stresses through the assembly between the first and second frustoconical casing members (74, 80), the ends of the hollow members (86) are connected to passage means (100, 102) associated with the frustoconical casing members (74, 80) for the transfer of pressurised cooling fluid across the assembly.

5,353,587

FILM COOLING STARTER GEOMETRY FOR COMBUSTOR LINES

Ely E. Halila, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 897,699, Jun. 12, 1992, abandoned. This application Feb. 16, 1994, Ser. No. 221,972
Int. Cl.[5] F23R *3/50*
U.S. Cl. 60—39.37 8 Claims

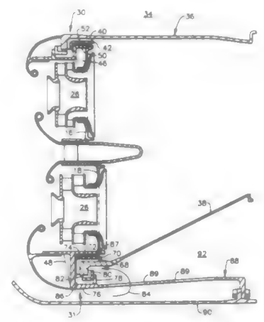
1. An improved film starter structure for a combustor of a gas turbine engine, the combustor having an outer annular liner and an inner annular liner, an axially forward section of each of the inner and outer liners being coupled to a combustor dome, high pressure compressor air being directed onto the combustor dome and the liners for mixing with fuel for combustion and for cooling the surfaces of the liners by establishing a uniform insulative film of cooling air on the internal liner surfaces, the structure comprising:

a plurality of circumferentially spaced, axially extending ribs formed on a radially inner surface of the forward section of the outer liner generally adjacent the combustor dome, said ribs defining a plurality of spaced slots;

a first annular ring overlaying said ribs and slots for defining a plurality of air passages between said ribs and said ring;

first support means extending from the combustor dome for supporting the outer liner about the dome;

means for defining an air chamber for introducing the compressor discharge air into said air passages, the compressor discharge air exiting said air passages along the inner



surface of the outer liner for establishing a cooling film barrier on the outer combustor liner surface; and

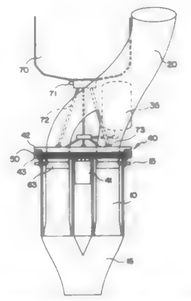
a first spring seal between the combustor dome and said inner ring for urging said ring against said ribs and establishing a seal between said ring and the dome for preventing leakage air there between and allowing independent radial expansion of the outer liner and the combustor dome by compressing said spring seal without causing any leakage and also providing concentricity positioning between the outer liner and the combustor dome.

5,353,588

ROTARY VALVE MULTIPLE COMBUSTOR PULSE DETONATION ENGINE

Bussing T. Richard, Issaquah, Wash., assignor to Adroit Systems, Inc., Alexandria, Va.

Division of Ser. No. 45,771, Apr. 14, 1993. This application Mar. 7, 1994, Ser. No. 206,162
Int. Cl.[5] F02C *5/02;* F02K *5/02*
U.S. Cl. 60—39.38 9 Claims



1. A solid fuel pulse detonation engine comprising:

at least one detonation chamber, having an inlet end and an outlet end;

a solid fueled gas generator;

a fuel manifold for supplying fuel from said solid fueled gas

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generator to said at least one detonation chamber at said inlet end;

an inlet air duct manifold for supplying air to said at least one detonation chamber at said inlet end; and

means for initiating a pulsed supersonic shock wave-triggered detonation combustion wave in said at least one detonation chamber.

5,353,589

GAS TURBINE PLANT HAVING A WATER OR STEAM COOLED ENERGY EXCHANGER

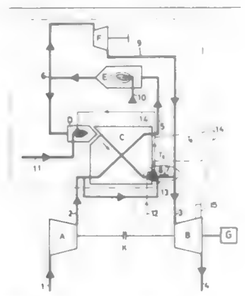
Rolf Althaus, Flawil, and Erwin Zauner, Baden, both of Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Jun. 10, 1993, Ser. No. 74,657

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1992, 4220073

Int. Cl.[5] **F02C** *3/20*

U.S. Cl. 60—39.45 **2 Claims**



1. A gas turbine plant, comprising:

a compressor;

a dynamic pressure machine which operates as an energy exchanger connected downstream of the compressor;

a first combustion chamber downstream of a high pressure outlet of the energy exchanger;

a high pressure turbine connected to a first branch downstream of the first combustion chamber;

a second combustion chamber connected on a second branch downstream of the first combustion chamber, the second combustion chamber connected to a high pressure inlet of the energy exchanger, wherein a portion of the heated gases from the first combustion chamber is directed to the high pressure turbine and a portion to the second combustion chamber;

a basic turbine connected downstream of a low pressure outlet of the energy exchanger, wherein an exhaust gas stream from the high pressure turbine is mixed with gas from the low pressure outlet of the energy exchanger to drive the basic turbine; and,

means for cooling the low pressure outlet of the energy exchanger with one of a water and steam medium and injecting the heated medium into the second combustion chamber.

5,353,590

EXHAUST HEATING CONTROL

William H. Pettit; Daniel F. Kabasin, both of Rochester; Donald D. Stoltman, Henrietta, and Kenneth J. Dauer, Avon, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 19, 1993, Ser. No. 108,252

Int. Cl.[5] **F01N** *3/20*

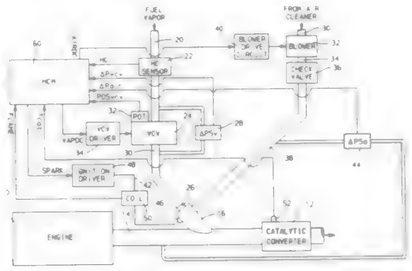
U.S. Cl. 60—274 **8 Claims**

1. A method for controlling a commanded fuel vapor quantity and a commanded air quantity admitted to an exhaust gas heater, comprising the steps of:

providing for combustion in the heater by setting a desired air quantity to a predetermined lighting air quantity and by setting a desired heater air/fuel ratio to a predetermined lighting air/fuel ratio;

sensing combustion in the heater;

providing for a rapid increase in heater energy output upon sensing combustion in the heater by setting the desired air



quantity to a predetermined ramp air quantity and setting the desired heater air/fuel ratio to a predetermined ramp air/fuel ratio;

adjusting the commanded air quantity in accord with the set desired air quantity; and

adjusting the commanded fuel vapor quantity in accord with the set desired heater air/fuel ratio and a predetermined one of the set desired air quantity and the adjusted commanded air quantity.

5,353,591

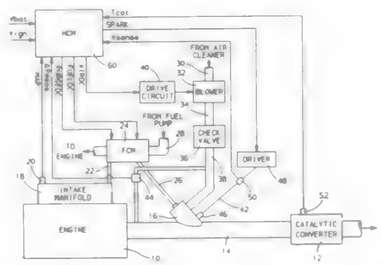
EXHAUST HEATING CONTROL

Daniel F. Kabasin, Rochester; Donald D. Stoltman, Henrietta; William H. Pettit, Rochester; Kenneth J. Dauer, Avon, and James F. Burkhard, Spencerport, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 19, 1993, Ser. No. 108,926

Int. Cl.[5] **F01N** *3/20*

U.S. Cl. 60—274 **8 Claims**



1. A method for controlling an air rate at which air is passed through an air line and a fuel rate at which fuel is passed through a fuel line to an exhaust gas heater for heating internal combustion engine exhaust gas during heater operating periods, comprising the steps of:

sensing a start of a first heater operating period;

controlling the air rate and the fuel rate during the first heater operating period;

sensing an end of the first heater operating period;

reducing the fuel rate toward a zero fuel rate upon sensing the end of the first heater operating period; and

removing a quantity of fuel from the fuel line after reducing the fuel rate.

5,353,592

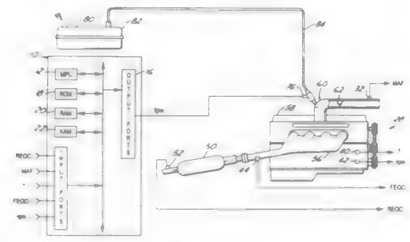
ENGINE AIR/FUEL CONTROL WITH MONITORING

Glenn A. Zimlich, Dearborn Heights; Daniel V. Orzel, Westland, and Tri T. Truong, Inkster, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 26, 1993, Ser. No. 157,548

Int. Cl.[5] **F01N** *3/20*

U.S. Cl. 60—274 **16 Claims**



1. A method for controlling engine air/fuel ratio and concurrently monitoring efficiency of a catalytic converter positioned in the engine exhaust, comprising the steps of:

adjusting the engine air/fuel ratio in response to a feedback variable derived from an output of an upstream exhaust gas oxygen sensor positioned upstream of the converter;

accumulating one of a plurality of airflow values upon each transition in output states of a downstream sensor positioned downstream of the converter, each of said airflow values being related to one of a plurality of inducted airflow ranges inducted into the engine and said airflow value which is accumulated upon said downstream sensor output transition is related to said airflow range in which said downstream sensor output transition occurred; and

averaging said accumulated airflow values over a test period and providing an indication of converter degradation when said average falls below a preselected average.

5,353,593

BOOTSTRAP HYDRAULIC SYSTEMS

Edward H. Phillips, Troy, Mich., assignor to Techco Corporation, Troy, Mich.

Continuation of Ser. No. 712,954, Jun. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 698,601, May 10, 1991, Pat. No. 5,226,290. This application Mar. 9, 1993, Ser. No. 28,526

The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.

Int. Cl.[5] **F16D** *31/02*

U.S. Cl. 60—393 **4 Claims**

1. A hydro-mechanical control system operable to selectively control the flow of hydraulic fluid to first and second ports of a power output transducer for controlling the movement of a mechanical device in response to an input torque, said hydro-mechanical control system comprising:

a fluid reservoir;

pump means in fluid communication with said reservoir and operable for providing a source of pressurized hydraulic fluid;

a control valve assembly having torque receiving means for receiving said input torque, an inlet port, a return port and first and second output ports; said control valve assembly further having a first set of variable control orifices connecting said inlet port with said first and second output ports and a second set of variable control orifices connecting said first and second output ports with said return port;

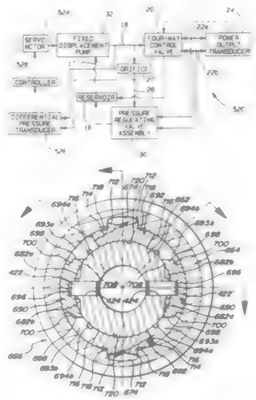
supply line means for delivering said pressurized hydraulic fluid from said pump means to said inlet port of said control valve assembly;

return line means for fluidly interconnecting said control valve return port to said fluid reservoir;

first and second load lines fluidly interconnecting said first and second output ports of said control valve assembly with said first and second ports of said power output transducer, respectively, said first and second sets of control orifices being operable to control fluid flow through each of said first and second load lines for actuating said power output transducer in response to said input torque, said power output transducer concurrently causing a difference in fluid pressure between said first and second load lines for defining a load pressure;

pressure regulating means in fluid communication with said supply line means and said fluid reservoir, said pressure regulating means operable for regulating the fluid pressure in said supply line means to be nominally equal to the absolute value of said load pressure summed with a preselected supplemental fluid pressure; and

said control valve assembly includes a homogenous valve sleeve selectively rotatable within a central bore of a valve housing, and wherein said torque receiving means is a



homogenous valve spool selectably rotatable within a central bore of said valve sleeve, and a reaction torque device operatively associated with said valve sleeve and said valve spool, said reaction torque device operable for providing a vehicle operator with a tactile feedback signal, said reaction torque device comprising:

a first reaction chamber in fluid communication with said first output port formed in said valve sleeve;

a second reaction chamber in fluid communication with said second output port formed in said valve sleeve; and

piston means including a first movable piston directly coupled to said valve spool and a second fixed piston operably coupled to said valve sleeve, said piston means disposed between said first and second reaction chambers such that said load pressure is differentially applied to said piston means, said piston means operably associated with said input torque receiving means for generating said tactile feedback signal in response thereto, said first and second pistons having surface means operable for generating radially directed forces whereby said first piston is urged toward said valve spool and said second piston is urged toward said valve sleeve for inhibiting frictional drag therebetween.

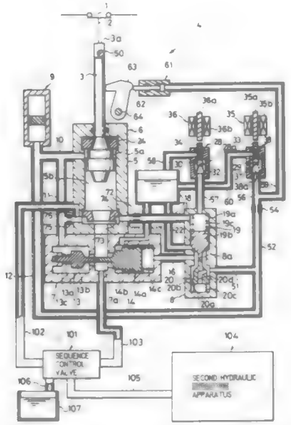
VOL 1167 ISS 2 OCT 11 1994 UMI

5,353,594

DRIVING MECHANISM OF A CIRCUIT BREAKER

Toru Yamashita, and Yoshiki Hirano, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1993, Ser. No. 51,096
Claims priority, application Japan, May 29, 1992, 4-138227; Oct. 6, 1992, 4-267124
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—413 5 Claims



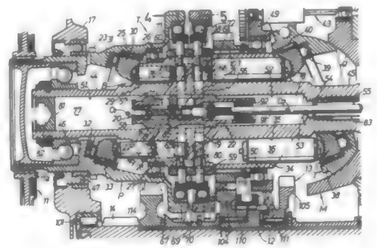
1. A driving mechanism of a circuit breaker comprising:
(A) first and second hydraulic operation apparatuses for, respectively, driving a main contact and a resistor contact of said circuit breaker and having:
an accumulator supplying a predetermined high-pressure oil;
a driving device having a differential piston for driving said main contact or said resistor contact, a first pressure chest provided on a smaller piston area side of said differential piston whereto said high-pressure oil is always supplied and a second pressure chest provided on a larger piston area side of said differential piston;
a main valve for controlling the pressure in said second pressure chest of said driving device; and
a pressure discharge part disposed between a cylinder and a dashpot ring, whereto said high-pressure oil is always supplied from said accumulator; and
(B) a sequential control valve provided between said first and second hydraulic operation apparatuses, said sequential control valve comprising control means for detecting the difference between said pressure of the oil in said pressure discharging part and that in said second pressure chest in said first hydraulic operation apparatus after discharging the pressure in said second pressure chest in said first hydraulic operation apparatus for moving said differential piston of said first hydraulic operation apparatus in a direction to open said main contact, and opening an oil-pressure port in said sequential control valve when the pressure in said second pressure chest becomes smaller than the pressure in said pressure discharging part of said first hydraulic apparatus, thereby in said second hydraulic operation apparatus, making a pressure in said second pressure chest of said driving device of said second hydraulic operation apparatus discharge for moving said differential piston of said second hydraulic operation apparatus in a direction to open said resistor contact.

5,353,595

NONSTEP HYDROSTATIC TRANSMISSION

Tsutomo Hayashi; Mitsuru Saito, and Yoshihiro Nakajima, all of Tokyo, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1993, Ser. No. 79,122
Claims priority, application Japan, Jun. 17, 1992, 4-158214
Int. Cl.[5] F16D *39/00*
U.S. Cl. 60—489 5 Claims



1. A nonstep hydrostatic transmission comprising
a cylinder block including a pump cylinder having circularly arranged therein a plurality of pump cylinder holes and a motor cylinder arranged coaxially with said pump cylinder and having circularly arranged therein a plurality of motor cylinder holes; and
a casing rotatably supporting said cylinder block;
characterized in further comprising a clutch valve including a bore in said cylinder block and a valve cylinder in said bore, said cylinder block further including a first ring-shaped oil passage extending circumferentially about said cylinder block, a second ring-shaped oil passage coaxial with said first ring-shaped oil passage between said valve cylinder and said cylinder block, said cylinder block further including a plurality of radially arranged first distributing valves between said plurality of pump cylinder holes and said plurality of motor cylinder holes to communicate said pump cylinder holes alternately with said first and second, ring-shaped oil passages and a plurality of radially arranged second distributing valves between said plurality of pump cylinder holes and said plurality of motor cylinder holes to communicate said motor cylinder holes alternately with said first and second ring-shaped oil passages, a third ring-shaped oil passage between said valve cylinder and said cylinder block, a valve body slidably fitted into the valve cylinder to allow selective communication between said second and third oil passages, said valve body including a first check valve permitting flow from one end of said valve body to said third ring-shaped oil passage and a second check valve permitting flow from the other end of said valve body to said second ring-shaped oil passage.

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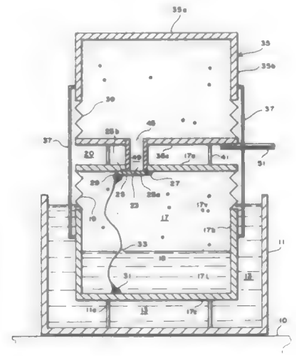
LOW TEMPERATURE HEAT ENGINE

Israel Siegel, 2980 Point East Dr., Apt. D-612, N. Miami Beach, Fla. 33160

Filed Feb. 22, 1993, Ser. No. 20,791
Int. Cl.[5] F01C *5/02*
U.S. Cl. 60—531 8 Claims

1. A heat engine, said engine includes at least one relatively hot evaporator chamber and one relatively cold condenser chamber,
a low boiling point liquid in said chambers,
means to obtain a temperature differential between said chambers, wherein said temperature differential results in a vapor pressure differential between the chambers,
a movable wall in each of said chambers,

said movable walls adapted to respond to inside and outside pressures on said walls,
a linkage between said movable walls to obtain a transmission of vector forces from one of said movable wall to another,
said movable walls placed in positions which cause the walls to include a transmission of opposing vector forces to each other, wherein the positions of said walls are determined by the resultants of said forces,
means to fix the distance between said chambers to prevent a movement of said chambers towards and away from each other during the operation of said engine,
a communication between said chambers,



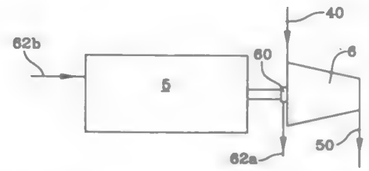
means to intermittently open and close said communication between the chambers, to intermittently change said resultant and said position of said walls,
means to translate said changes in said positions of the movable walls to useful work,
said opening of said communication adpated to allow a transfer of vapor from said evaporator chamber to said condenser chamber, to decrease the vapor pressure in said evaporator chamber and to re-condense said transferred vapor into a liquid,
and means to return re-condensed liquid from said condenser chamber to said evaporator chamber.

5,353,597

INLET AIR COOLING SYSTEM

Henry B. Faulkner, Dover, and Michael C. Swarden, Cambridge, both of Mass., assignors to Northern Research & Engineering Corporation, Woburn, Mass.

Continuation-in-part of Ser. No. 991,604, Dec. 16, 1992, Pat. No. 5,259,196. This application Oct. 28, 1993, Ser. No. 144,911
Int. Cl.[5] F02B *29/04*
U.S. Cl. 60—599 10 Claims



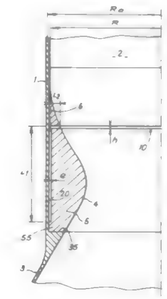
1. In combination:
an internal combustion engine having inlet air and exhaust gas conduits and an intake system;
an inlet compressor for compressing inlet air;
a source of compressed hydrocarbon gas;
an exhaust turbine connected to the exhaust gas conduit and driven by exhaust gas flowing from the engine; and
a gas turbine for expanding the compressed hydrocarbon gas; the inlet compressor being mechanically driven by the exhaust turbine and the gas turbine.

5,353,598

DAMPING SYSTEM FOR HIGH FREQUENCY COMBUSTION INSTABILITIES IN A COMBUSTION CHAMBER

André Huck, Saint Just; Alain Kernilis, Paris; Jean-Paul Druart, Notre Dame de L'Isle, and Georges Dorville, Rouen, all of France, assignors to Societe Europeenne de Propulsion, Suresnes, France

Filed Dec. 18, 1992, Ser. No. 993,013
Claims priority, application France, Dec. 20, 1991, 91 15944
Int. Cl.[5] F02C *7/24*
U.S. Cl. 60—725 30 Claims



1. A damping system for high frequency combustion instabilities in a combustion chamber of a rocket engine comprising an injection head and an outer wall extending from said injection head downwardly around said combustion chamber, said outer wall comprising means forming a nozzle throat and said outer wall extending further downwardly from said nozzle throat to define an open ejection cone,
wherein the system comprises at least one resonant acoustic cavity disposed around the combustion chamber and having a shape and dimensions such that it functions as a quarter-wave resonator damping both longitudinal and tangential components of pressure waves, and wherein said resonant acoustic cavity comprises:
a) a main annular part whose half axial section has an elongate shape with a width dimension "e" which is smaller than its longitudinal dimension "L_1" which extends substantially parallel to the axis of symmetry of the combustion chamber, the mean radius "R" of the main annular part being close to the equivalent radius of modes of oscillation to be damped, and
b) an annular coupling part which originates from the main annular part and which opens into the combustion chamber downstream from said injection head and upstream from said nozzle throat near to a longitudinal or radial pressure anti-node, the annular coupling part having a length "L_2" in a half axial section and a width dimension "h" which is substantially less than the sum of the longitudinal dimension "L_1 of the main annular part and the length "L_2" of the annular coupling part.

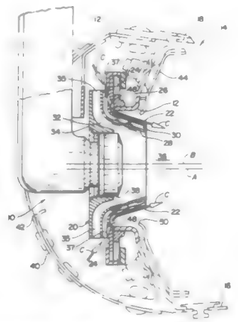
VOL 1167 ISS 2 OCT 11 1994 UMI

5,353,599

FUEL NOZZLE SWIRLER FOR COMBUSTORS

Thomas G. Johnson, Palm Beach Gardens, Fla., and Cheng-Chang Ling, Tainan, Taiwan, assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 29, 1993, Ser. No. 55,151
Int. Cl.[5] F23R *3/04*
U.S. Cl. 60—748 **5 Claims**



1. For a combustor mounted about the longitudinal axis of a gas turbine engine including a dome at the forward end of the combustor and a plurality of fuel nozzles mounted in each of a plurality of apertures formed in the forward end of said dome and a plurality of bodies defining frusto-conically shaped air swirlers concentrically mounted relative to and supported to each of said fuel nozzles and the alignment of the fuel nozzles relative to said apertures causing said air swirlers to be offset relative to the longitudinal axis of the combustor, said bodies having an outer surface having a portion thereof exposed to the gasses of said combustor, means for uniformly cooling said bodies of said air swirlers independent of the position of the fuel nozzle including a plurality of drilled air cooling holes formed on the outer periphery of each of the bodies of said frusto-conically shaped air swirlers having an inlet disposed upstream of said dome and an outlet adjacent the surface of each of the bodies of the air swirler on the downstream end of the dome for leading cooling air along the surface of the portion of each of said bodies exposed to said combustion gasses, and said drilled holes being acutely angled relative to said longitudinal axis.

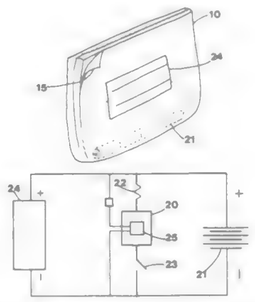
5,353,600

SOLAR POWERED THERMOELECTRIC COOLED COSMETIC CASE

Thomas D. Merritt, N. Miami Beach, Fla., and James R. Merritt, Northridge, Calif., assignors to Flori-Cal Inc., Miami, Fla.

Filed Nov. 30, 1993, Ser. No. 159,385
Int. Cl.[5] F25B *21/02*
U.S. Cl. 62—3.7 **3 Claims**

1. A cosmetics bag including means to provide and replenish an electric power source for a thermoelectric refrigeration device whereby the temperature in said cosmetics bag can be maintained at a predetermined level comprising:
a) a means for opening and closing said cosmetics bag;
b) a rechargeable electric storage device;
c) a thermoelectric device in electrical feedback communication with said storage device said thermoelectric device having its relatively cold element inside of said cosmetics bag and said thermoelectric device having its relatively hot side located exterior of said cosmetics bag;
d) means for detecting temperature changes in said cosmetics bag and controlling temperature by interrupting electric current to said thermoelectric device;
e) a photovoltaic device mounted exterior of said cosmetics bag in electrical communication with said storage device providing means to produce electrical power to recharge said storage device;



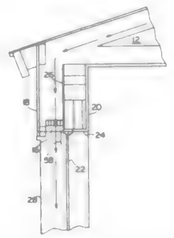
f) a thermocouple device in direct contact with said thermoelectric refrigeration device providing means to enable a portion of heat being transferred to said hot element to be used to generate electric power to replenish electric power to said storage device.

5,353,601

STRUCTURAL COOLING SYSTEMS AND METHODS

Gerald R. Palmer, 7162 E. Stetson Dr., Scottsdale, Ariz. 85251

Filed Feb. 16, 1993, Ser. No. 18,044
Int. Cl.[5] F25D *17/08*
U.S. Cl. 62—171 **20 Claims**



1. A temperature-control system for a structure comprising:
(a) first cooling means for applying evaporatively cooled air to a select, enclosed chamber inside a structure;
(b) second cooling means for cooling air in areas inside the structure other than the select chamber; and
(c) venting means including an outlet oriented to direct evaporatively cooled air from the select, enclosed chamber in at least one of the following directions;
i) into a flat, partially enclosed volume adjoining the outside of a window in an exterior wall of the structure; and
ii) into a select, otherwise uncooled, area of the structure that is at least partially enclosed.

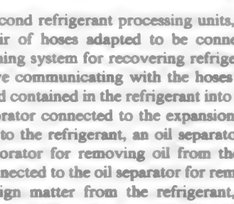
5,353,602

NON-STEADY-STATE SELF-REGULATING INTERMITTENT FLOW THERMODYNAMIC SYSTEM

Steven J. Pincus, New York, N.Y., assignor to Calmac Manufacturing Corporation, Englewood, N.J.

Filed Mar. 25, 1993, Ser. No. 36,901
Int. Cl.[5] F25B *1/00*
U.S. Cl. 62—115 **17 Claims**

1. A thermodynamic system comprising a compressor or pump, at least one heat exchanger, a conduit recirculating a heat exchange fluid through the system, at least one nozzling device including a valve and a nozzle, the valve having only fully open and closed binary positions with no intermediate positions and causing minimal restriction to fluid flow when open, the nozzle being configured to accelerate fluid flow to a



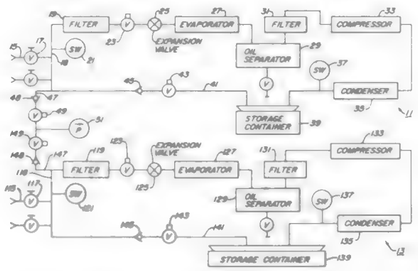
maximum attainable velocity with minimum restriction to fluid flow, and means sensing the pressure of the heat exchange fluid in said conduit to open fully or close the valve in response to a change in pressure in the conduit to impart an intermittent operation to the valve and permit intermittent substantially unrestricted acceleration of bursts of fluid flow through the nozzling device.

5,353,603

DUAL REFRIGERANT RECOVERY APPARATUS WITH SINGLE VACUUM PUMP AND CONTROL MEANS

George R. Outlaw, Arlington; Fred L. Ptacek, Joshua; Charles R. Smith, Grapevine, and Steven R. Kouzes, Southlake, all of Tex., assignors to Wynn's Climate Systems, Inc., Fort Worth, Tex.

Filed Feb. 23, 1994, Ser. No. 200,647
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—149 **9 Claims**



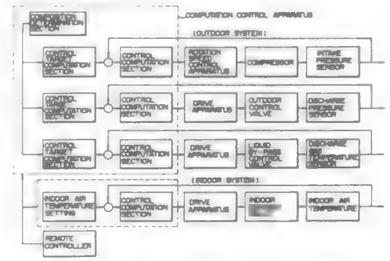
1. A refrigerant recovery apparatus for recovering incompatible first and second refrigerants, comprising in combination:
first and second refrigerant processing units, each unit having a pair of hoses adapted to be connected to an air conditioning system for recovering refrigerant, an expansion valve communicating with the hoses for converting any liquid contained in the refrigerant into a gaseous state, an evaporator connected to the expansion valve for adding heat to the refrigerant, an oil separator connected to the evaporator for removing oil from the refrigerant, a filter connected to the oil separator for removing moisture and foreign matter from the refrigerant, a compressor connected to the filter for recovering refrigerant from the air conditioning system and compressing the refrigerant, a condenser connected to the compressor for condensing the refrigerant, a storage container connected to the condenser for storing the refrigerant, an outlet conduit leading from the storage container to the pair of hoses, and an outlet valve connected into the outlet conduit;
a single vacuum pump connected to both pairs of hoses; and
vacuum pump valve means for selectively controlling the vacuum pump for evacuating one of the air conditioning systems after refrigerant has been recovered by one of the refrigerant processing units, so that one of the outlet valves may then be opened to recharge said one of the air conditioning systems.

5,353,604

REFRIGERATION CYCLE

Kensaku Oguni, Shimizu; Kazumoto Urata, Shizuoka, and Hiroaki Matsushima, Ryugasaki, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 17, 1993, Ser. No. 107,155
Claims priority, application Japan, Aug. 31, 1992, 4-230868
Int. Cl.[5] F25B *41/00*
U.S. Cl. 62—207 **17 Claims**



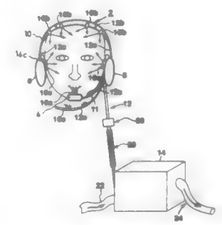
1. A refrigeration cycle, comprising a compressor; a heat-source side heat exchanger; a use-side heat exchanger; a refrigerant pressure reducing apparatus; a non-azeotrope refrigerant; and
detecting means for detecting a value of the composition of the non-azeotrope refrigerant; said control apparatus controlling said compressor and said refrigerant pressure reducing apparatus based on the detected value of the composition of the non-azeotrope refrigerant.

5,353,605

PERSONAL AIR COOLING DEVICE

Chibbi Naaman, Yavne, Israel, assignor to Coolight Research & Development Ltd., Petah Tikva, Israel

Filed Aug. 30, 1993, Ser. No. 113,129
Claims priority, application Israel, Oct. 28, 1992, 103574
Int. Cl.[5] F25D *23/12*
U.S. Cl. 62—259.3 **19 Claims**

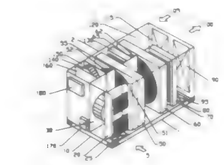


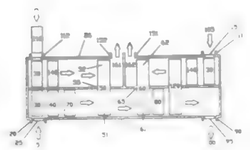
1. An air cooling device, comprising: a headband to be worn by a user by applying the headband across the top of the user's head leaving the user's face uncovered; a nozzle carried by said headband such as to be located in the user's mouth-nose region

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when the headband is worn; and air tubing connected at one end to said nozzle and connectible at the opposite end to a source of cooled air for directing a localized stream of the cooled air via said nozzle to the user's mouth-nose region to cool the air inhaled by the user.

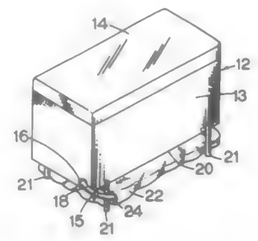
5,353,606
DESICCANT MULTI-FUEL HOT AIR/WATER AIR CONDITIONING UNIT
Robert W. Yobo, and Robert W. Yotto, Jr., both of 2091-Mass. Ave. NE., St. Petersburg, Fla. 33703
Continuation of Ser. No. 983,279, Nov. 30, 1992, abandoned, which is a continuation of Ser. No. 776,646, Oct. 15, 1991. This application Oct. 4, 1993, Ser. No. 131,853
Int. Cl.[5] F25B *25/00*
U.S. Cl. 62—271 **10 Claims**





1. An improved air conditioning system for admitting air from a space, adjusting the temperature and humidity of the air, delivering the adjusted air to an interior space of a structure, removal of exhaust air therefrom and return of the exhaust air to the space, comprising:
- a first path for conditioning air including a first air intake means for admitting air to be conditioned;
- an air supply first blower means communicating with said first air intake means for receiving, pressurizing and moving the air from said first air intake means;
- a desiccant means rotatable through a first zone and second zone, the first zone communicating with said air supply first blower means and receiving the pressurized exterior air from said exterior air supply first blower means for reducing the humidity by means of reducing the water vapor content of the air passing therethrough;
- a heat exchanger means having a first area for accepting heat and a second area for rejecting heat, wherein said first area of said heat exchanger means communicates with said desiccant means for receiving the air with reduced water vapor content from said desiccant means for downwardly adjusting the temperature of air displaced therethrough;
- a heating means communicating with said heat exchanger means for receiving the cooled reduced water vapor content air from said heat exchanger means for optionally upwardly adjusting the temperature of air displaced therethrough;
- a conditioned first air exit means communicating with said heating means for receiving the temperature and humidity adjusted air from said heating means and communicating with the interior space of a structure for delivery thereto;
- a second path independent of the first path for indirect evaporative cooling of air including a second air intake means for accepting air from a space with said second area of said heat exchanger thereadjacent wherein the accepted air passes over said second area and removes heat from said second area of said heat exchanger means;
- a second air blower means communicating with said second area for receiving and moving air from said second area of said heat exchanger means;
- a second air exit means communicating with said second air blower means for receiving second air from said second air blower means and communicating with the exterior of the structure for delivering of the second air thereto;
- a third path, independent of the first path and second path for regeneration of desiccant air including a third air intake means, a heater associated therewith and the second zone of said desiccant means wherein said desiccant means communicates with said regenerated third air intake means for regeneration of said desiccant means by transfer of water vapor and subsequent removal; and
- a third regeneration air exit means communicating with said second zone of said desiccant means for receiving regeneration air from said second zone of said desiccant means for delivery of the regeneration air thereto.

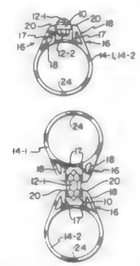
5,353,607
COMBINATION COOLER AND RESERVOIR
Carla G. McBride, P.O. Box 20133, St. Louis, Mo. 63123
Filed Jan. 7, 1993, Ser. No. 1,324
Int. Cl.[5] F25D *3/08*
U.S. Cl. 62—457.7 **15 Claims**



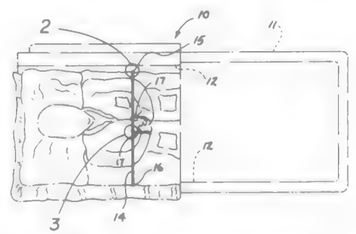
1. A combination ice container and liquid reservoir comprising:
- an ice container means having a drainage port,
- a liquid reservoir means having an inlet port, the reservoir means being a collapsible waterproof reservoir bladder,
- a means to connect the container means to the reservoir means to allow liquid to flow from the container means into the reservoir means, and
- a container means support platform to allow reservoir means to be located under the container means and facilitate drainage from the container means into the reservoir means.

5,353,608
MULTI-USE JEWELRY PIECE
Jeffrey Berkowitz, Brooklyn, N.Y., assignor to Dufonte Industries, Ltd, Wacchai, Hong Kong
Filed Jan. 8, 1993, Ser. No. 2,267
Int. Cl.[5] A44C *13/00*
U.S. Cl. 63—1.1 **10 Claims**

1. A multi-use jewelry device comprising:
- setting means for holding first and second separate and different display objects opposite each other and each with a portion thereof extending outwardly of said setting means, and
- first and second continuous hoops each with a truss extending radially outwardly therefrom, said trusses being connected to said setting means between the two display objects, each of said hoops is pivotable by substantially 180° in opposite directions above and below said setting means to be adjacent to each other for selectively orienting said first and second display objects for selective display of the extending portion thereof.



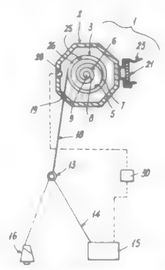
5,353,609
CASKET JEWELRY GUARD APPARATUS
Ruby E. Hall, Rte. 1, Box 308, Summerville, Ga. 30747
Filed Feb. 3, 1993, Ser. No. 12,763
Int. Cl.[5] A44C *25/00;* **A61G** *17/00*
U.S. Cl. 63—2 **4 Claims**



1. A casket jewelry guard apparatus arranged in combination with a casket container, wherein the casket container includes spaced side walls and a casket floor, with an anchor rod mounted within the casket container in adjacency to the side walls, and
- an anchor cable, the anchor cable including a first loop mounted at a first end of the anchor cable, and a second loop mounted at a second end of the anchor cable, wherein the first loop and the second loop receive the anchor rod therethrough,
- and
- at least one tether cable, the tether cable having a tether cable first loop slidingly receiving the anchor cable, and a tether cable second loop arranged for securement about a jewelry member within the casket container.

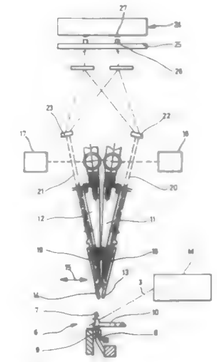
5,353,610
DEVICE FOR CONTROLLING THE FEED OF AT LEAST ONE YARN TO A TEXTILE MACHINE SO AS TO COMPENSATE ANY PULLING AND EXCESS TENSION EXERTED ON THE YARN
Tiziano Barea, Busto Arsizio, Italy, assignor to International Trading S.r.l., Italy
Filed Jul. 21, 1993, Ser. No. 95,694
Claims priority, application Italy, Jul. 28, 1992, MI92 A 001536
Int. Cl.[5] D04B *35/12*
U.S. Cl. 66—161 **21 Claims**

1. A device for controlling the feed of at least one yarn from a bobbin to a textile machine and compensating for pulling and excess tension exerted on the yarn, comprising
- support means for supporting the yarn as the yarn is fed to the textile machine,
- a rotary member coupled to said support means for rotation upon movement of said support means,
- compensation means coupled to said rotary member for compensating for movement of said support means and consequently rotation of said rotary member,



- sensor means coupled to said rotary member for sensing the rotation of said rotary member and thus the movement of said support means, and
- control means connected to said sensor means and controlling the textile machine to halt the textile machine when a predetermined movement limit for said support means is reached.

5,353,611
APPARATUS AND METHOD FOR MAKING STABLE FABRIC WITH A WARP KNITTING MACHINE
Heinz Wade, Rodgau, and Gerhard Bergmann, Heusenstamm, both of Fed. Rep. of Germany, assignors to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany
Filed Jun. 24, 1991, Ser. No. 719,785
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1990, 4020550
Int. Cl.[5] D04B *23/00*
U.S. Cl. 66—207 **15 Claims**



1. Warp knitting machine for forming fabric from weft threads and warp threads, comprising:
- a needle bed having a plurality of needles;
- a magazine weft thread arrangement for providing said weft threads to said needle bed;

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first and second jacquard guide bars operative with said needle bed for providing a system of said warp threads;

first and second shogging control arrangements for reciprocating said first and second jacquard guide bars in a sequence for a tricot stitch;

first and second plurality of guides mounted on said first and second jacquard guide bars, respectively, and each of said first and second plurality of guides having separately mounted adjacent to each a displacing element operable to individually and selectively displace ones of said first and second plurality of guides to move their effective positions over one needle space;

a jacquard control arrangement means for (a) controlling said displacing element in said first and second plurality of guides in accordance with a predetermined pattern that sequentially reserves for successive wales, reserved ones of the needles in said needle bed, (b) selectively and sequentially displacing, in substantially each knitting cycle, a sequentially selected portion of the first plurality of guides to produce a pillar stitch, (c) altering motion of the sequentially selected portion of said guides to avoid the reserved ones of said needles and to cause said reversed ones of said needles to be devoid of warp threads from said first jacquard guide bar, and (d) controlling the guides of the second jacquard guide bar to lay warp threads about the reserved ones of said needles, together with other ones of said needles.

5,353,612

SINGLE-TUB WASHING MACHINE

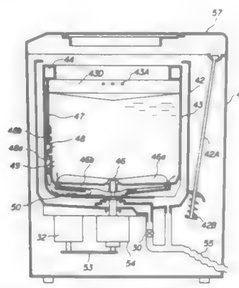
Takeo Noguchi, Sakai; Miwa Yoshida, and Kazuo Katayama, both of Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 3, 1993, Ser. No. 101,316

Claims priority, application Japan, Aug. 3, 1992, 4-206402; Aug. 4, 1992, 4-207796; May 19, 1993, 5-117420

Int. Cl.[5] D06F *33/02*

U.S. Cl. 68—12.02 **3 Claims**



3. A single-tub washing and dehydrating machine, comprising:

a washing/dehydrating tub, having a peripheral wall with no hole except with dehydration holes or dehydrating clearance disposed in the vicinity of the upper boundary thereof, having a drain hole disposed in the bottom portion thereof, and being spun when dehydration is effected;

a pulsator having a pumping impeller on the back side thereof, disposed in the bottom of said washing/dehydrating tub for agitating water with laundries to be washed when washing is effected; and

a dehydrated water-receiving tub holding and enclosing said washing/dehydrating tub;

said drain hole discharging water while being communicated with a drain pipe sealingly against said dehydrated water-receiving tub,

said single-tub washing and dehydrating machine, further comprising a microcomputer control means which, when said drain hole is blocked with laundries to be dehydrated in a dehydrating process to cause reduction of pressure inside an air trap and thereby a reset water level is detected erroneously, provides an error indication immediately after the detection, or controls said pulsator to effect a predetermined corrective operation for correcting the position of the laundries to be dehydrated inside said washing/dehydrating tub and thereafter provides an error indication if the correction is judged as impossible,

being characterized in that said washing/dehydrating tub has a plurality of vertical grooves on the peripheral wall thereof, said grooves has a taper ratio different from and larger than a taper ratio of said peripheral wall, both the taper ratios of said grooves and said peripheral wall are limited within 1/60 to 1/40, and said washing/dehydrating tub with grooves is constructed such that a relation between the total width NL of all the grooves and the inside circumference ($2\pi R$) of said washing/dehydrating tub suffices $NL \geqq 2\pi R/9$, or the ratio of NL to $2\pi R$ is 1/9 or more, where N and L indicate the number of the grooves and a width of each groove, respectively, and R is a radius of said washing/dehydrating tub.

5,353,613

ELECTRIC MOTOR FOR CLOTHES WASHING MACHINE DRIVE

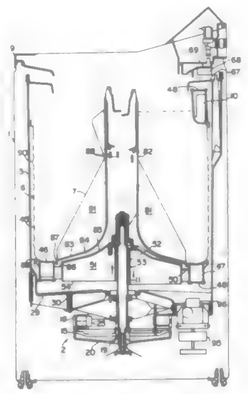
Dennis E. Smith; John J. A. Williams; Gerald D. Duncan; Graeme D. Thomas; John G. Borrows, and Frank W. Shacklock, all of Auckland, New Zealand, assignors to Fisher & Paykel, Limited, Auckland, New Zealand

Division of Ser. No. 566,844, Aug. 14, 1990, Pat. No. 5,266,855, which is a continuation of Ser. No. 361,593, Jun. 2, 1989, abandoned, which is a division of Ser. No. 153,935, Feb. 9, 1988, Pat. No. 4,853,571, which is a division of Ser. No. 22,894, Mar. 6, 1987, abandoned. This application Apr. 27, 1993, Ser. No. 45,981

Claims priority, application New Zealand, Mar. 6, 1986, 215389; Sep. 18, 1986, 217623; Nov. 21, 1986, 218356

Int. Cl.[5] D06F *37/40*

U.S. Cl. 68—23.7 **13 Claims**



1. A drive for a clothes washing machine of the type having a cabinet in which an agitator is mounted on a vertical shaft so as to rotate therewith and to be oscillated back and forth within a coaxially mounted perforated spin tub for washing action, the spin tub and the agitator being rotatable continuously in one direction for providing a spin action, and the perforated spin tub and agitator in turn being mounted within a stationary water tight container, said cabinet containing driving means acting through said shaft for selectively oscillating said agitator back and forth or rotating said spin tub continuously in one direction, said shaft being rotatably mounted on a single pair of protected bearings which in use are protected from water in said container by sealing means positioned between said shaft and said container and said spin tub being rotatably mounted on said shaft by an exposed bearing which in use is exposed to water in said container, said shaft rotatably carrying said spin tub and driving said spin tub when desired through interconnecting means, interconnection actuating means being provided to actuate said interconnecting means by relative axial movement to interconnect said spin tub and said agitator for conjoint rotation in one direction for spinning and to disconnect said agitator from said spin tub, by opposite relative axial movement, for said washing action to take place.

5,353,614

VEHICLE STEERING-WHEEL LOCK

Alexander B. Anderson, Lane Cove NSW, Australia, assignor to A.B.A. Marketing PTY Limited, Edgecliff New South Wales, Australia

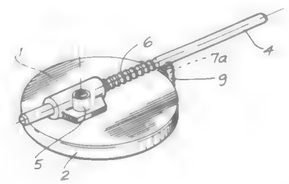
PCT No. PCT/AU91/00415, § 371 Date Mar. 8, 1993, § 102(e) Date Mar. 8, 1993, PCT Pub. No. WO92/04211, PCT Pub. Date Mar. 19, 1992

PCT Filed Sep. 6, 1991, Ser. No. 984,582

Claims priority, application Australia, Sep. 6, 1990, PK2173

Int. Cl.[5] B60R *25/02*

U.S. Cl. 70—209 **6 Claims**



1. A cover device for locking a steering wheel of a vehicle, said cover device comprising:

a cover means for positioning over the steering wheel and having a size and a shape such that the cover means extends substantially completely across a face of the steering wheel when the cover means is positioned over the steering wheel;

a lip connected with the cover means substantially continuously about a perimeter of the cover means, said lip extending out of a general plane of the cover means a distance defining a shallow region for accommodating the steering wheel;

securing means for entrapping the steering wheel between the cover means and the securing means; and

a lock means operatively associated with the cover means and having:

an obstruction means for preventing full rotation of the steering wheel by collision with a surrounding vehicle structure, the obstruction means being movable between an extended position, in which the cover means is locked to the steering wheel and prevents steering of the steering wheel while allowing partial rotation of the cover means relative to the steering wheel, and a retracted position, in which the cover means can be mounted on the steering wheel or dismounted therefrom, and

a lock part for locking the obstruction means in the extended position thereof.

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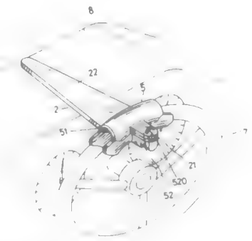
AUTOMOBILE STEERING LOCK

Tian-Yuan Chen, 95-4, Min-Hsiang Street, Chung-Ho, Taipei Hsien, Taiwan

Filed Oct. 12, 1993, Ser. No. 133,917

Int. Cl.[5] B60R *25/02*

U.S. Cl. 70—209 **1 Claim**



1. An anti-theft device for attachment of a steering wheel to an automobile comprising;

an elongate plate member having (1) two parallel lateral vertical plates spaced apart to define a lateral opening for a portion of a steering wheel of an automobile to fit therein and (2) a flat elongate plate extending rearward from a hind one of said two parallel lateral vertical plates and gradually narrowing to a rear end, having a trapezoidal hole in a front portion for a trapezoidal block of a swingable cap to fit therein;

a lock base connected with a front one of said two parallel lateral vertical plates of said elongate plate member, having (1) a vertical hole near said front lateral vertical plate, (2) a longitudinal through hole extending from a front side to a rear side, and (3) a lock hole in a right side for a lock to fit therein, said vertical hole, said longitudinal through hole and said lock hole crossing one another in a right angle;

a locating member inserting in said longitudinal through hole, having (1) a locating bolt, (2) a spring and (3) a stopper, said locating bolt having a sloped surface at one side of an inner end, an L-shaped surface at another side of the inner end, a flat recess in an intermediate portion, and a projection on an outer end surface for said spring to fit around the projection, and said stopper fitting firmly in an opening of said longitudinal through hole to keep the locating bolt and the spring in said hole;

a lock fitting in said lock hole, having a semi-circular actuator extending rearward to fit in said recess of said locating bolt to move said locating bolt backward and forward so that the inner end of said locating bolt may engage one of grooves of a locating rod to lock a swingable cap immovable;

a swingable cap covering on said lateral opening defined by said two parallel lateral vertical plates and on said lock base, having (1) a curved portion to cover on said lateral opening, and (2) a flat portion extending forward from said curved portion to cover on said lock base, said curved portion having a trapezoidal block fixed on an inner side to fit in the trapezoidal hole in said elongate plate of said elongate plate member, a lateral through hole provided in said trapezoidal block to communicate with a lateral through hole in said elongate plate and a non-through hole of said elongate plate in a straight line, a pivot pin inserting through said lateral through hole of said elongate plate, said lateral through hole in said trapezoidal block and through said non-through hole of said elongate plate to function as a pivot to enable said swingable cap to swing up and down to open or close said lateral opening of said plate member;

a locating rod fixed on a lower surface of said flat portion of

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said swingable cap, extending down to fit in said vertical hole in said lock base, and having a plurality of grooves spaced apart in a straight line, each said groove having a lower horizontal surface and an upper inclined surface; and

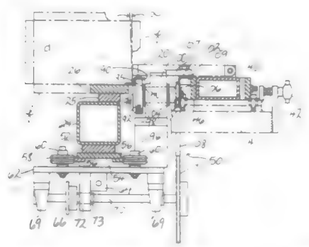
said swingable cap being swung upward to a unlocked position so as to allow a portion of a steering wheel to fit in said lateral opening of said elongate plate member, then said swingable cap being swung down to cover on said portion of the steering wheel and said two lateral vertical plates, said lock being in a locked condition, forcing said semi-circular actuator to rotate to lock said locating bolt with its inner end to engage one of said grooves of said locating rod preventing said locating rod together with the swingable cap from being pulled up, said elongate plate being extended on an upper surface of a gauge panel of an automobile to prevent the steering wheel from being rotated after this lock is locked.

5,353,616

PITTSBURGH SEAM CLOSER HAVING SINGLE SEAMING ROLL

Herbert J. Fischer, Imperial; Dale R. Foster, Barnhart, and John A. Fahland, Desoto, all of Mo., assignors to Engel Industries, Inc., St. Louis, Mo.

Filed Apr. 24, 1991, Ser. No. 690,528
The portion of the term of this patent subsequent to Dec. 11, 2009, has been disclaimed.
Int. Cl.[5] B21D *39/02*
U.S. Cl. 72—51 **10 Claims**



1. For closing the outstanding margin of the pocketed member of a rectilinear Pittsburgh-type joint against a longitudinal wall member of such joint, the wall member having a substantially 90° flange inserted in the pocket of such pocketed member, the pocketed member including an originally outstanding planar margin portion to be seamed from such original plane to a closed position against such wall member,

a seaming machine of the closer-roll type comprising

support structure including means to clamp together thereon an end of such pocketed and wall members along a longitudinal line of seaming,

track means parallel to such line of seaming,

a carriage operable along said track means, bearing a single rotatable forming roll,

means to drive said carriage in a initial stroke therealong and in a return stroke,

means to so present a forming surface of said roll against such outstanding margin as to form it at least substantially 45° from such original plane during at least a portion of said forward stroke, and

means to present against such margin a forming surface of said roll at such angle through said return stroke to form such margin substantially the remainder of 90°,

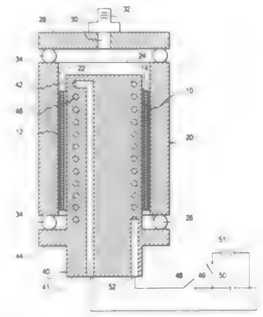
whereby to press such margin firmly against such wall member.

5,353,617

METHOD OF SIZING METAL SLEEVES USING A MAGNETIC FIELD

Abraham Cherian, Webster, and William Herbert, Williamson, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 14, 1992, Ser. No. 990,852
Int. Cl.[5] B21D *26/14*
U.S. Cl. 72—56 **14 Claims**



1. A method of sizing a sleeve of electrically conductive material, the sleeve having inner and outer surfaces, comprising the steps of:

inserting the sleeve in a die having a seamless inner surface;

positioning a magnetic field generating means inside the sleeve in the die;

sealing the die after the insertion of the sleeve and the positioning of the magnetic field generating means;

creating a vacuum inside the die to avoid air pockets between the outer surface of the sleeve and the inner surface of the die;

energizing the magnetic field generating means to create a magnetic field to expand the sleeve against the inner surface of the die; and

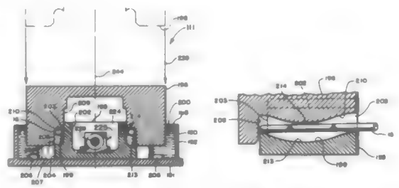
extracting the sized sleeve from the die.

5,353,618

APPARATUS AND METHOD FOR FORMING A TUBULAR FRAME MEMBER

Ralph E. Roper, Indianapolis, Ind.; Gary A. Webb, West Bloomfield, Mich., and Douglas W. Tyger, West Chester, Ohio, assignors to Armco Steel Company, L.P., Middletown, Ohio and Price Enterprises, Ltd., Madison Heights, Mich.

Division of Ser. No. 837,081, Feb. 13, 1992, Pat. No. 5,239,852, which is a continuation-in-part of Ser. No. 398,272, Aug. 24, 1989, abandoned. This application Aug. 23, 1993, Ser. No. 77,616
Int. Cl.[5] B21D *26/02*
U.S. Cl. 72—58 **11 Claims**



1. An apparatus for forming a complex-shaped frame member from a cylindrical tube blank having first and second opposite ends, comprising:

a base;

a die mounted upon said base and defining a pair of vertical parallel punch engaging surfaces and a horizontal upwardly facing lower stuffing ledge therebetween;

a punch defining a pair of vertical parallel die engaging surfaces and a horizontal downwardly facing upper stuffing ledge therebetween, and wherein said punch is suspended above said die such that said die and punch engaging surfaces are constantly parallel and such that said upper and lower stuffing ledges are in constant vertical alignment along a path parallel to said punch and die engaging surfaces;

wherein said punch has a retracted, non-engaging position above and away from said die;

wherein said die is adapted to receive a tube blank upon its lower stuffing ledge when said punch is in the retracted position;

wherein said punch has a fully extended position wherein said die engaging surfaces are in substantially complete mutually cooperating engagement with said punch engaging surfaces so as to surround a tube blank and wherein said upper and lower stuffing ledges together define the desired complex-shaped frame member configuration;

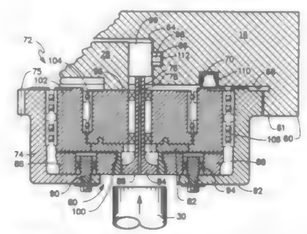
wherein the apparatus further includes punch moving means for reciprocating said punch between said retracted position and said fully extended position.

5,353,619

APPARATUS AND METHOD FOR NECKING TUBULAR MEMBERS SUCH AS CONTAINERS

Richard Chu, 10641 Dale Ct., Westminster, Colo. 80234, and Roger A. Hahn, 6469 Iris St., Arvada, Colo. 80004

Filed Dec. 1, 1992, Ser. No. 983,825
Int. Cl.[5] B21D *19/04*
U.S. Cl. 72—121 **26 Claims**



1. An apparatus for necking an end portion of a tubular member which has an interior and a selected diameter, said apparatus operative to form a neck having a reduced diameter and comprising:

(a) an inner die relatively insertable into the interior of said tubular member at said end portion thereof said inner die having a circumferential first working surface configured in a shape corresponding to the neck to be formed and including a plurality of cooperative first die elements movable between an expanded state wherein said first die elements are positioned in a common cylindrical configuration to provide the working surface and a retracted state wherein selected ones of said first die elements are nested within other ones of said first die elements in an offset relationship to one another so that said inner die can be removed from the interior of said tubular member after the neck is formed;

(b) an inner die drive assembly operative to reciprocally drive said first die elements between the expanded state and the retracted state;

(c) an outer die having a second working surface configured in a shape complementary to the first working surface and positioned in closely-spaced relation to the first working surface when said first die elements are in the expanded state to provide a necking channel therebetween, said necking channel operative to receive the end portion of said tubular member; and

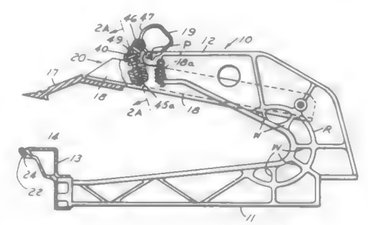
(d) an outer die drive assembly operative to advance said outer die around said inner die when said first die elements are in the expanded state and when said end portion of said tubular member is in the necking channel thereby to conform said end portion into said neck.

5,353,620

PORTABLE SHEET BENDING BRAKE

David B. Olsen; Douglas J. Chubb, both of Dearborn, and Arthur B. Chubb, Romulus, all of Mich., assignors to Tapco Products Company, Inc., Plymouth, Mich.

Filed Aug. 25, 1993, Ser. No. 111,978
Int. Cl.[5] B21D *5/04*
U.S. Cl. 72—319 **12 Claims**



1. A sheet bending brake comprising

a frame having a fixed jaw and a movable jaw,

said fixed jaw defining a clamping surface,

said movable jaw having a clamping surface movable between workpiece clamping and non-clamping positions relative to the clamping surface on the fixed jaw,

a bending member hingedly connected to the fixed jaw,

means for releasably locking the movable jaw in workpiece clamping position comprising

a plurality of axially extensible links,

a handle pivoted to said frame,

each said link being pivoted at one end to said handle and at the other end to said movable jaw such that in one position of said handle, said links move said movable jaw out of clamping position, and in another position of said handle, said movable jaw is in clamping position,

each said link including an upper block connected to said frame,

said upper block having an upper surface and a lower surface,

a shaft extending from said upper block and rotatable therein,

a lower block pivoted to said movable jaw,

said shaft having an upper end and a lower end,

said lower end being threaded into said lower block,

said upper end of said shaft being spaced from the upper surface of said upper block such that the upper end is both recessed in said upper block and accessible from said upper surface

said shaft having a socket connection in the upper end thereof accessible through an opening in said upper block for connecting a socket tool.

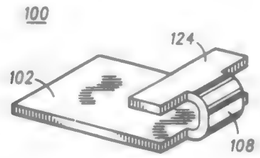
VOL 1167 ISS 2 OCT 11 1994 UMI

5,353,621

PIEZOELECTRIC COMPONENT MOUNTING FOIL AND FOIL-MAKING METHOD

Thomas A. Knecht, Crystal Lake, and Jean-Robert Achille, Bloomingdale, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 582,067, Sep. 14, 1990, abandoned. This application Jun. 29, 1993, Ser. No. 84,751
Int. Cl.[5] B21C *37/02*
U.S. Cl. 72—379.2 7 Claims



1. A method for making at least one substantially "C" shaped piezoelectric component mounting metallic foil the at least one metallic foil having a shape, comprising at least the steps of:

A) cutting at least a portion of the metallic foil shape from a source of conductive metallic foil material;

B) bending the metallic foil shape such that a first portion of the metallic foil is formed in a first plane, having the first portion suitable for conductively attaching to a conducting medium and having a first area comprising a first linking area;

C) bending the metallic foil such that a central portion of the metallic foil is formed, the central portion being at least in a second plane not parallel to the first plane of the first portion, the central portion having at least a first side, at least one thickness dimension, at least one length dimension, at least one width dimension, and at least a second area comprising a second linking area, wherein the first side is opposite the second linking area and is linked to the first linking are, such that at least a part of the central portion has at least one width dimension less than at least one length dimension of the central portion; and such that a second portion of the metallic foil is linked to the central portion of the metallic foil at the second linking area, and such that the second portion of the metallic foil is in a third plane parallel to the first plane of the first portion of the metallic foil, the second portion being suitable for conductively attaching and at least partially supporting at least one piezoelectric component;

such that the at least one metallic foil is detachably attached to the metallic foil source in a manner facilitating detachment from the metallic foil source and subsequent conductive mount attachment.

5,353,622

ARTICULATED THREE POINT PIPE BENDING APPARATUS

Ronald E. Theener, HCR #64, Box 290, Duchesne, Utah 84021-9501

Filed Nov. 10, 1993, Ser. No. 150,516
Int. Cl.[5] B21D *7/06*
U.S. Cl. 72—380 7 Claims

1. A pipe bending apparatus for bending a section of pipe; wherein, the apparatus comprises:

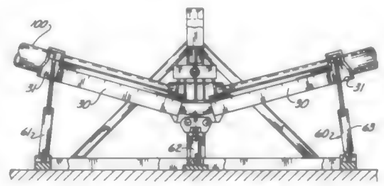
a base member provided with a pair of vertical support arms disposed proximate the midpoint of the base member;

a carriage member operatively associated with said support arms;

a template member attached to the bottom of said carriage member and further provided with a contoured recess dimensioned to engage the top surface of said section of pipe;

a floating hinge plate member mounted for both pivotal and vertical reciprocation relative to said pair of vertical support arms;

a pair of bending bed members provided with moveable pipe dies and pivotally connected on opposite ends of said hinge plate member; and,



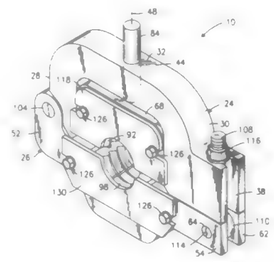
means for moving said bending bed members and said floating hinge plate member relative to both one another and said template member to produce a bend in said section of pipe.

5,353,623

PORTABLE ELASTOMERIC HOSE CRIMPING TOOL

Larry F. Bobenhausen, 7117 Date Palm Ave., S., St. Petersburg, Fla. 33707-2013

Filed Apr. 15, 1994, Ser. No. 228,412
Int. Cl.[5] B21D *41/00*
U.S. Cl. 72—402 20 Claims



1. A portable tool for crimping a ferrel portion of a tube fitting around an end portion of an elastomeric hose, the tool comprising,

an upper frame having opposed first left and right side portions, a middle portion, a top surface, a first cavity located below the middle portion and intermediate the first left and right side portions, and a compression shaft aperture formed through the middle portion, the compression shaft aperture defining a vertical axis of the tool,

a lower frame having opposed second left and right side portions and a trough located intermediate the second left and right side portions,

an upper die carrier having a depression formed in a top surface and a second cavity located below the depression, the upper die carrier moveable within the first cavity of the upper frame along the vertical axis, the depression axially aligned with the compression shaft aperture,

an upper die insert positioned within the second cavity of the upper die carrier and moveable along the vertical axis of the tool in communication with the upper die carrier,

a lower die insert positioned within the trough of the lower frame,

a compression shaft having a lower end and a shoulder portion located at an upper end, the compression shaft inserted through the compression shaft aperture such that the lower end engages the depression formed in the top surface of the upper die carrier for moving the upper die carrier along the vertical axis within the first cavity of the upper frame, the shoulder portion abutting the top surface of the upper frame when the compression shaft has reached a lower limit,

means for locating the upper die insert within the second cavity of the upper die carrier,

means for locating the lower die insert within the trough of the lower frame,

means for stabilizing the upper die carrier within the first cavity of the upper frame,

means for pivoting the upper frame in relation to the lower frame, and

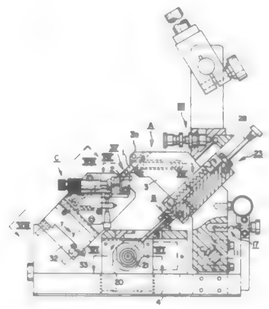
means for locking the upper frame to the lower frame.

5,353,624

CRIMPING APPARATUS FOR ATTACHING A SUTURE TO A EYELESS NEEDLE

Kanji Matsutani, Tochigi, Japan, assignor to Kabushiki Kaisha Matsutani Seisakusho, Tochigi, Japan

Filed Jan. 26, 1993, Ser. No. 9,114
Claims priority, application Japan, Jan. 27, 1992, 4-034025
Int. Cl.[5] B21G *1/00;* B23P *11/00*
U.S. Cl. 72—413 6 Claims



1. A crimping apparatus for crimping a root end of an eyeless needle, said root end having an axis, said apparatus comprising,

a lower mold mounted on a frame and having a crimping surface for crimping the root end of said eyeless needle, said crimping surface arranged to crimp said root end of said eyeless needle so that said root end axis extends along an axis of said crimping surface, said crimping surface having a crimping length as measured along said crimping surface axis,

an upper mold mounted on an arm and pivotal on a shaft about an axis towards said lower mold, said upper mold having a crimping surface cooperating with said crimping surface of said lower mold, said crimping surface of said upper mold arranged to crimp said root end of said eyeless needle so that said root end axis extends along said crimping surface axis, said crimping surface of said upper mold having a crimping length as measured along said crimping surface axis, said axis of said shaft extending parallel to said axes of said crimping surfaces and to said axis of the root end of said eyeless needle,

said shaft having a length substantially longer than the crimping surfaces as measured along said crimping surfaces' axes,

said shaft having conical ends which are journaled in bearings mounted on said frame;

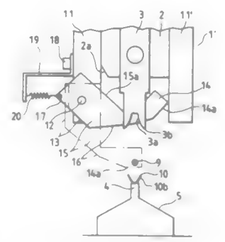
said bearings being movable in the length direction of said axis, whereby the axis can be positioned by adjusting both ends of the bearings.

5,353,625

TERMINAL CRIMPING MACHINE

Atsushi Hoshino, and Toshihiro Inoue, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Oct. 22, 1993, Ser. No. 139,827
Claims priority, application Japan, Oct. 23, 1992, 4-285933
Int. Cl.[5] H01R *43/048*
U.S. Cl. 72—416 6 Claims



4. A terminal crimping apparatus for crimping a terminal to a cable, comprising:

a guide frame;

an anvil;

a crimper (3) disposed above said anvil and secured to a ram;

moving means for moving said ram, and attendantly said crimper, along said guide frame in a first direction from an uppermost position to a lowermost position at which said terminal is crimped between said crimper and said anvil so as to crimp said terminal to said cable, as a result of which said terminal is retained by said crimper; and

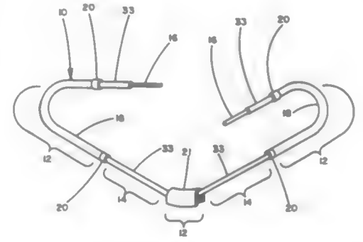
a stopper for disconnecting said terminal from said crimper as said crimper is moved in an opposite second direction, said stopper including a pivot arm having a terminal disconnecting portion which is rotatable from a first position to a second position at which said terminal abuts against said disconnecting portion when said crimper is moved in said second direction by a predetermined first distance, wherein movement of said terminal disconnecting portion from said first position to said second position is effected by movement of said crimper in said first direction.

5,353,626

MECHANICAL CONTROL CABLE SYSTEM

Daniel F. Davidson, Flagstaff; David J. Myers, Camp Verde, and Jerry L. Johnson, Flagstaff, all of Ariz., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Continuation of Ser. No. 62,476, May 13, 1993, abandoned, which is a continuation of Ser. No. 806,526, Dec. 13, 1991, abandoned. This application Jan. 31, 1994, Ser. No. 191,740
Int. Cl.[5] F16C *1/10*
U.S. Cl. 74—502.6 8 Claims



1. A mechanical control cable system of the push-pull type comprising a cable having a length wherein a portion of said

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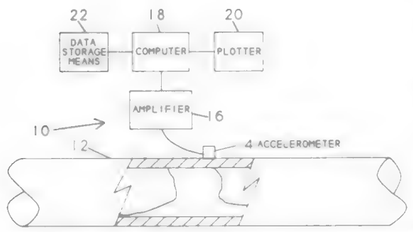
length is enclosed by a flexible supporting housing having a flexible polymeric tubular liner, said mechanical control cable system having at least one substantially curved portion and at least one substantially straight portion, wherein the at least one substantially straight portion of the mechanical control cable system consists essentially of the cable enclosed by the flexible polymeric tubular liner not enclosed by the flexible supporting housing, and wherein the flexible polymeric tubular liner is continuous between the ends of the mechanical control cable system.

5,353,627

PASSIVE ACOUSTIC DETECTION OF FLOW REGIME IN A MULTI-PHASE FLUID FLOW

Victor Diatschenko, Houston; Winthrop K. Brown, Bellaire, and James R. Stoy, Missouri City, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 19, 1993, Ser. No. 109,064
Int. Cl.[5] G01N *29/02*
U.S. Cl. 73—19.03 **10 Claims**



1. A method for determining the flow regime of a multiphase fluid flowing in a pipe comprising the steps of:

providing at least one acoustical detection means in physical contact with a pipe surface;

providing means to receive and amplify signals generated by said acoustical detection means;

providing means to receive and analyze said amplified signals originating from said acoustical detection means;

taking a continuous series of acoustical signals from said acoustical detection means and generating a corresponding series of time dependent wave form signals; and

analyzing said time dependent wave form signals by comparison with known fingerprints of various flow regimes whereby the current flow regime of multiphase fluid is determined.

5,353,628

STEAM PURITY MONITOR

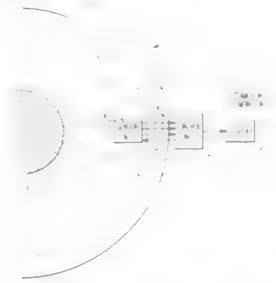
James C. Bellows, Maitland, Fla., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jul. 26, 1991, Ser. No. 736,363
Int. Cl.[5] F01K *13/00;* **G01N** *27/04*
U.S. Cl. 73—25.01 **20 Claims**

1. A method of detecting contaminants in a steam turbine, comprising the steps of:

(a) measuring conductance, temperature and pressure in the steam turbine; and

(b) indicating sodium hydroxide if the conductance exceeds a minimum conductance and the steam is at a superheat



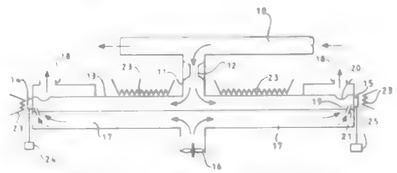
level as determined by the measured temperature and pressure.

5,353,629

SMOKE METER

Colin Hunter, Dunstable, England, assignor to L. L. Churchill Limited, England

Filed Jul. 1, 1992, Ser. No. 907,393
Claims priority, application United Kingdom, Jul. 5, 1991, 9114588; Sep. 3, 1991, 9118822
Int. Cl.[5] G01N *21/59*
U.S. Cl. 73—28.01 **7 Claims**



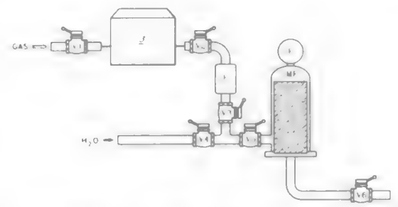
1. A smoke meter comprising a measuring tube communicating with a source of smoke laden gas to be sampled, light emitting means disposed at one end of the tube, light detection means remote from the light emitting means for detecting light from the light emitting means passing through the gas, air flow generating means for generating an air flow, air flow guidance means communicating between the air flow generating means and the measuring tube for guiding the air flow to the measuring tube, air flow inlet means defined by first openings in the measuring tube for admitting air from the air flow guidance means into the measuring tube adjacent each of the light emitting means and the light detection means to pass the admitted air over the light detection and the light emitting means and to inhibit the deposition of smoke content on the light detection and light emitting means, and outlet means defined by further openings in the measuring tube for discharging the gas and the air from the measuring tube, said first and further openings lying at different sides of the tube, wherein said further outlet openings have a larger size than said first inlet openings, said first openings being upstream from said further openings with regard to the air flow passing along the air guidance means, the air guidance means extending around said first and further openings and around the measuring tube to permit an air flow around said first and further openings and around the measuring tube, to thereby induce a flow of smoke laden gas along the measuring tube for discharge through said further openings.

5,353,630

APPARATUS FOR TESTING MEMBRANE FILTER INTEGRITY

Fusso Soda, Koshigaya, and Hidenobu Sawa, Suzuka, both of Japan, assignors to Memtec Japan Limited, Kanagawa and Filtec Corporation, Mie, both of Japan

Filed Apr. 30, 1993, Ser. No. 56,252
Claims priority, application Japan, May 1, 1992, 4-139831
Int. Cl.[5] G01N *15/08*
U.S. Cl. 73—38 **6 Claims**



1. An apparatus for testing the perfection of a membrane filter, said apparatus comprising:

a large-flow controller for supplying a primary side of said membrane filter rapidly with a larger amount of a fluid;

a pressure detecting sensor for detecting the pressure at said primary side of said membrane filter and for responsively generating a detection signal;

a small-flow controller for supplying the primary side of said membrane filter with a smaller amount of said fluid;

a switching member for forming a fluid path for said fluid from said large-flow controller and said small-flow controller to said membrane filter, said switching member disconnecting said fluid path and forming an exhaust path for withdrawing said fluid in said primary side of said membrane filter

a main control unit responsive to the detection signal from said pressure detecting sensor to stop the operation of said large-flow controller when the pressure at the primary side of said membrane filter reaches a predetermined level, the main control unit then controlling said small-flow controller in a proportional/integral control manner to compensate the pressure decrease caused by said membrane filter to maintain said predetermined level, said main controller monitoring the amount of fluid flowing from said small-flow controller to said membrane filter to determine diffusion flow in said membrane filter.

5,353,631

ANALYZING INTERNAL PRESSURE OF A SEALED CONTAINER USING FREQUENCY SPECTRA

Charles Woringer, Cataumet, and John H. Waygan, Falmouth, both of Mass., assignors to Benthos, Inc., North Falmouth, Mass.

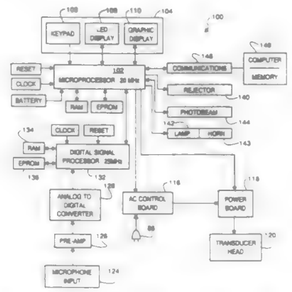
Filed May 29, 1992, Ser. No. 891,843
Int. Cl.[5] G01M *3/24*
U.S. Cl. 73—52 **12 Claims**

1. Apparatus for characterizing internal pressure of a sealed container, comprising

a tapper for causing vibration of a wall of said container,

circuitry for providing a signal indicative of a frequency spectrum of said vibration,

digital storage for holding said frequency spectrum and for holding data obtained from vibrating other sealed containers and sufficient to characterize said internal pressure based on said frequency spectrum, and



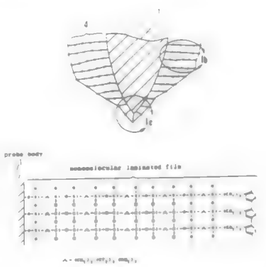
a processor for characterizing said internal pressure based on said frequency spectrum and said data.

5,353,632

PROBE FOR ATOMIC FORCE MICROSCOPE USABLE FOR SCANNING TUNNELING MICROSCOPE

Tohru Nakagawa, Kusatsu, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 25, 1992, Ser. No. 934,272
Claims priority, application Japan, Sep. 26, 1991, 3-247970
Int. Cl.[5] H01J *37/26*
U.S. Cl. 73—105 **7 Claims**



1. A probe for an atomic force microscope comprising a tunneling current measuring means having a probe body having a metal tip covered with a monomolecular film, wherein the probe body is covered with a monomolecular laminated film and conductive molecules are fixed on the monomolecular film and/or the monomolecular laminated film, and wherein the monomolecular film is fixed on the metal tip by covalent bonds comprising siloxane (—SiO—) groups, and the monomolecular laminated film is chemically fixed on the metal tip by covalent bonds comprising siloxane (—SiO—) groups.

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5,353,633

PRESSURE SENSOR FOR DETECTING THE PRESSURE IN COMBUSTION CHAMBER OF COMBUSTION ENGINE

Walter Benedikt, Korwestheim; Manfred Vogel, Ditzingen; Werner Herden, Gerlingen; Johann Konrad, Tamm; Wolfgang Schmidt, Vaihingen/Enz; Josef Teoch, Schwieberdingen, and Matthias Küsell, Kornstal-Münchingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

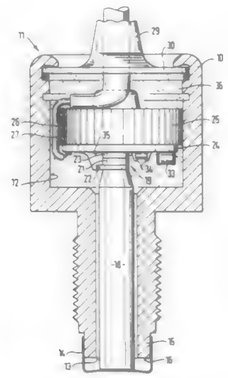
PCT No. PCT/DE91/00161, § 371 Date Oct. 29, 1991, § 102(e) Date Oct. 29, 1991, PCT Pub. No. WO91/14929, PCT Pub. Date Oct. 3, 1991

PCT Filed Feb. 27, 1991, Ser. No. 773,902

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1990, 4009377

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—115 **11 Claims**



1. A pressure sensor for detecting pressure in a combustion chamber of an internal combustion engine of a motor vehicle, comprising a housing; a sensor block arranged in said housing; at least one plunger arranged in said housing; at least one abutment arranged in said housing; a diaphragm closing said housing and contacting said plunger; an electrical evaluating circuit arranged in said housing and including electrical components; and a ceramic plate arranged in said housing so that said sensor block and said electronic components of said evaluating circuit are arranged on said ceramic plate and said ceramic plate at least partially contacts said abutment, said ceramic plate having a first side which faces toward said diaphragm and a second side which faces away of said diaphragm, said electrical components of said evaluating circuit being located at said first side of said plate which faces toward said diaphragm.

5,353,634

CONTROL SYSTEM WITH MISFIRE DETECTION FUNCTION FOR INTERNAL COMBUSTION ENGINE

Yasutoshi Baba, Oobu; Masaaki Nakayama, Toyoake, and Hideki Yukumoto, Oobu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 764,340, Sep. 23, 1991, Pat. No. 5,222,392. This application Apr. 8, 1993, Ser. No. 43,937

Claims priority, application Japan, Sep. 21, 1990, 2-253494; Sep. 21, 1990, 2-253495; Jul. 26, 1991, 3-187439; Jul. 26, 1991, 3-187610

Int. Cl.[5] G01M *15/00*

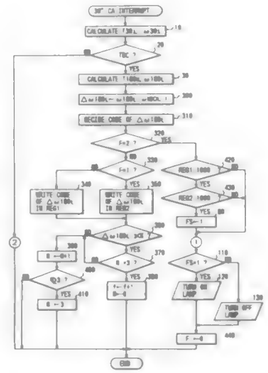
U.S. Cl. 73—116 **8 Claims**

1. A control system for an internal combustion engine comprising:

rotational speed determining means for determining a length of time required for said internal combustion engine to rotate a predetermined sampling interval;

variation determining means for determining variations in rotational speed based on said length of time determined by said rotational speed determining means;

first storage means for storing a history of a predetermined number of said variations in rotational speed over said predetermined number of sampling intervals;



second storage means for storing a preselected reference history of a predetermined number of said variations in rotational speed, said preselected reference history being characteristic of when a misfire occurs in said internal combustion engine; and

misfire determining means for determining an occurrence of a misfire when said history stored in said first storage means coincides with said preselected reference history stored in said second storage means.

5,353,635

APPARATUS FOR DETECTING THE ROTATIONAL DISPLACEMENT OF A ROTATING MEMBER

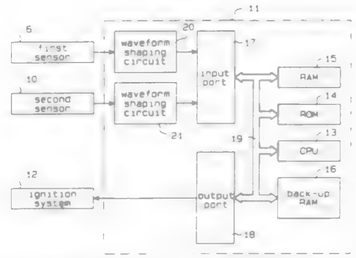
Toshinari Saiki, and Yuji Takeda, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 10, 1993, Ser. No. 15,935

Claims priority, application Japan, Apr. 10, 1992, 4-091244

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—117.2 **9 Claims**



1. An apparatus for detecting a rotational displacement of a rotary shaft comprising:

a first rotary shaft;

a first signal generating means for generating unit angular signals at predetermined angular displacements of said first rotary shaft, and for generating a first reference signal having a different timing from the unit angular signals;

a second rotary shaft capable of completing one revolution while said first rotary shaft completes two revolutions;

a second signal generating means for generating a second reference signal for each revolution of said second rotary shaft;

counting means for counting said unit angular signals, for storing the counted value, and for initializing the counted value every time said first reference signal is generated; and

detecting means for determining whether said second reference signal is generated by said second signal generating means when the counted value of unit angular signals reaches a predetermined value, and for detecting the rotational displacement of said first rotary shaft in response to the determination.

5,353,636

DEVICE FOR DETERMINING MISFIRING OF CYLINDERS IN MULTI-CYLINDER ENGINES

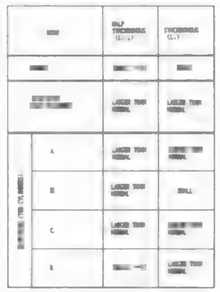
Kazuhiro Sakurai, Gotenba; Yutaka Obuchi, Susono; Yuji Nishibe, Toki; Yutaka Nonomura, Nagoya; Kouji Tsukada, Seto; Masaharu Takeuchi, Owariasahi, and Masanori Miyashita, Aichi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Tokyo and Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, both of Japan

Filed Jul. 21, 1993, Ser. No. 95,620

Claims priority, application Japan, Aug. 7, 1992, 4-211595

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—117.3 **7 Claims**



1. A device for determining misfiring of cylinders in a multi-cylinder engine, comprising:

a torque sensing means for detecting an output torque of the engine and generating an output signal representing the output torque of the engine;

a frequency analyzing means for extracting specific frequency components from said output signal of said torque sensing means;

a misfiring mode determining means for determining a mode of the misfiring of the engine characterized by number of the misfiring cylinders and the intervals thereof in the firing order based on at least the amplitude of said specific frequency components of said output signal of said torque sensing means; and

a misfiring cylinder determining means for determining the misfiring cylinders based on said misfiring mode and said specific frequency components of the output signal of said torque sensing means.

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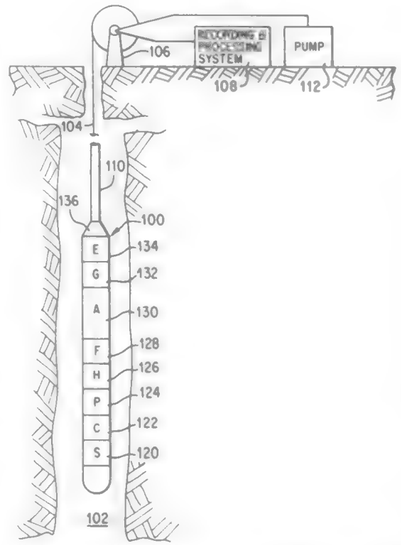
METHODS AND APPARATUS FOR BOREHOLE MEASUREMENT OF FORMATION STRESS

Richard A. Plumb, 14 Webb Rd., North Tarrytown, N.Y. 10591, and Yogesh S. Dave, 100-31 Hope St., Stamford, Conn. 06906

Filed Jun. 9, 1992, Ser. No. 896,116

Int. Cl.[5] E21B *47/00*

U.S. Cl. 73—151 **37 Claims**



1. A system for obtaining measurements in a borehole (**102**) from which in-situ stress of an underground formation can be estimated, wherein the system comprises a sonde (**100**) and an electric wireline cable (**104**) connected to the sonde for conveying the sonde in the borehole, and wherein the sonde comprises:

a. an accumulator module (**130**) having a reservoir (**210**) for storing hydraulic energy, a flow line (**202**), and a controllable valve (**218**) coupled to the reservoir and to the flow line for controlling transfer of hydraulic energy between the reservoir and the flow line;

b. a stress/rheology module (**120**) coupled to the accumulator module and having:

i. force applying means (**312**) coupled to the flow line for receiving hydraulic energy from the flow line and applying to the formation at a controlled rate a force opposing in-situ stress in the formation;

ii. pressure sensing means (**344**) for monitoring a pressure related to the force applied to the formation by the force applying means; and

iii. an acoustic sensor (**342**) for detecting acoustic emissions in the borehole as the force is applied to the formation;

c. force reducing means (**314**) coupled to the force applying means for controllably reducing the force applied to the formation; and

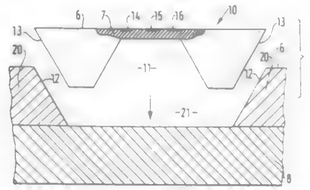
d. a flow control means (**122, 324**) in hydraulic communication with the borehole for withdrawing formation fluid from the formation at a controlled rate for pressure drawdown pre-test.

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5,353,638
PROCESS FOR MANUFACTURING MICRO-MECHANICAL SENSORS

Jiri Marek, Reutlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00260, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO91/16604, PCT Pub. Date Oct. 31, 1991
PCT Filed Mar. 23, 1991, Ser. No. 930,703
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1990, 4012080
Int. Cl.[5] G01F *1/68;* **H01L** *21/306;* **B44C** *1/22*
U.S. Cl. 73—204.26 **9 Claims**

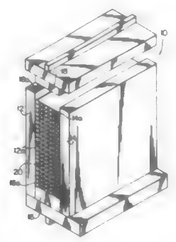


5. A sensor for measuring air flow comprising
a central thin, thermally responsive region (7) of monocrystalline semiconductor material;
a heating resistor (15) on said thermally responsive region;
at least one sensing resistor (14, 16) on said thermally responsive region;
a thicker supporting element of semiconductor material surrounding said thermally responsive region (7) and having inclined sidewalls (13);
a further semiconductor element (20) surrounding said thicker supporting element and having sidewalls (12) inclined at an angle complementary to inclination of said sidewalls (13) of said thicker supporting element and an upper surface co-planar with upper surfaces (6) of said thermally responsive region (7) and of said thicker supporting element; and
a substrate (8) secured to a lower major surface of said further semiconductor element (20).

5,353,639
METHOD AND APPARATUS FOR SIZING MULTIPLE TUBES

James R. Brookins, and James D. Gowan, both of Montgomery, Ala., assignors to Thermalex, Inc., Montgomery, Ala.

Filed May 20, 1993, Ser. No. 63,742
Int. Cl.[5] B21C *37/30*
U.S. Cl. 72—363 **5 Claims**

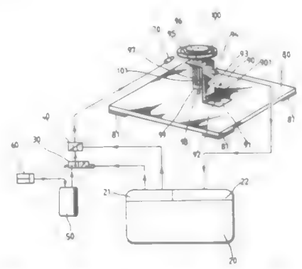


1. A method of sizing tubes, comprising the following steps:
providing a plurality of tubes having a predetermined length and width, each of the tubes having a flattened oval cross-section, a pair of substantially planar side surfaces, and at least one internal longitudinal web extending therein perpendicular to the planar side surfaces;
providing a sizing die having a box-like cavity for receiving the tubes, the sizing die having a pair of parallel, spaced apart side fences having inner surfaces extending at least the full length of the sides of the tubes being sized, at least one of the side fences being movable relative to the other side fence between and open position and a closed position, and a base fence, the base fence being disposed adjacent to and extending perpendicular to ends of the side fences, the cavity being at least in part defined by the inner surfaces of the side fences and the base fence;
stacking the tubes in a stack in the box-like cavity of the sizing die between the side fences and aligning the internal webs of tubes throughout the stack, the stack having a bottom end adjacent the base fence and a top end opposite the bottom end;
moving the movable side fence toward the other side fence to fix the tubes against lateral movement; and
applying pressure equally across the entire planar side surface of the top end of the stack of tubes in a direction towards the base fence, thereby sizing and flattening the tubes consistently and evenly.

5,353,640
AIR-JET DRIVEN DYNAMIC BALANCE TEST APPARATUS

Wen-Wang Jiang, San Chung; Shih-Chou Chen, and Chang-Ming Chen, both of Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed May 3, 1993, Ser. No. 56,667
Int. Cl.[5] G01M *1/00*
U.S. Cl. 73—471 **7 Claims**

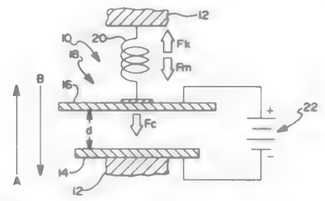


1. A dynamic balance test apparatus comprising:
a resilient supporting steel sheet having a horizontal bottom portion fastened to a base and an elongated upright body portion extended upwardly from the horizontal bottom portion of carry a sample to be tested,
an air-jet generating device controlled to produce a continuous stream of compressed air for spinning the sample mounted on said resilient supporting steel sheet, and
detector means mounted on said resilient supporting steel sheet to detect the vibration as the sample is being spun, wherein said resilient supporting steel sheet containing a resilient section for increasing sensitivity of said test apparatus, and said resilient section comprising at least one through hole in the upright body portion of said resilient supporting steel sheet near the intersection between the horizontal bottom portion and the upright body portion.

5,353,641
DIGITAL CAPACITIVE ACCELEROMETER

William C. Tang, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 7, 1992, Ser. No. 925,828
Int. Cl.[5] G01P *15/125*
U.S. Cl. 73—517 R **19 Claims**



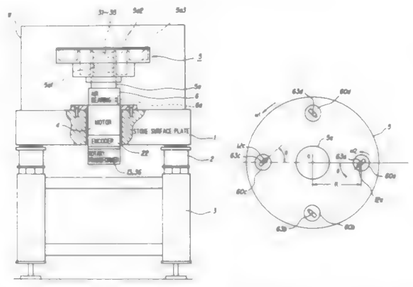
1. A digital capacitive accelerometer comprising:
a support member;
a fixed plate mounted on said support member;
a sprung plate;
resilient means for resiliently supporting said sprung plate to said support member at a rest position in spaced relationship to said fixed plate, and biasing said sprung plate for resisting an externally applied acceleration force;
a source for applying voltage across said fixed and sprung plates;
incrementing means for incrementally increasing the voltage applied across said fixed and sprung plates to incrementally increase the electrostatic force thereacross until a pull-in voltage is reached that is capable of producing an electrostatic force strong enough to overcome the resilient bias of said resilient means and pull said sprung plate against said fixed plate resulting in the generation of a current pulse;
sensing means for sensing the current pulse as a pull-in detection signal;
wherein said incrementing means includes means for generating a representative signal for the voltage level applied across said fixed and sprung plates as said pulse is generated.

5,353,642
CENTRIFUGAL TYPE ACCELERATION MEASURING DEVICE

Osamu Hasegawa; Hisashi Andoh; Kohichi Satoh; Youji Miura, and Keinosuke Shirota, all of Chofu, Japan, assignors to Kyowa Electronic Instruments, Ltd., Tokyo, Japan

Filed Jan. 28, 1992, Ser. No. 827,167
Claims priority, application Japan, Feb. 1, 1991, 3-032249; Feb. 12, 1991, 3-039033
Int. Cl.[5] G01P *3/16, 15/02*
U.S. Cl. 73—535 **4 Claims**

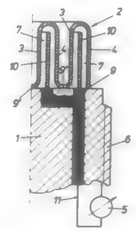
1. A centrifugal type acceleration measuring device comprising a turn-table directly driven by a brushless motor and having an acceleration transducer mounting part for fixing a measured acceleration transducer formed at a location displaced from a rotational center thereof; an air bearing rotatably supporting the turn-table; an amplifier for individually amplifying outputs of the acceleration transducer fixed to said acceleration transducer mounting part of said turn-table; and a rotary transformer for transmitting a signal outputted from the amplifier characterized in that the rate of revolution of said brushless motor is varied to apply a predetermined acceleration to said measured acceleration transducer and the output of said measured acceleration transducer at that time is fed to the fixed side of said rotary transformer through said rotary transformer.



5,353,643
PRESSURE SENSOR

Josef Glaser, Graz, Austria, assignor to AVL Gesellschaft für Verbrennungskraftmachinen und Messtechnik mbH Prof. Dr.Dr.h.c. Hans List, Graz, Austria

Filed Dec. 15, 1992, Ser. No. 990,799
Claims priority, application Austria, Dec. 16, 1991, 2492/91
Int. Cl.[5] G01L *9/12, 19/04*
U.S. Cl. 73—708 **26 Claims**



1. A pressure sensor comprising a membrane part which is attached to a supporting base and is deformed by the pressure to be measured, wherein said membrane part is provided with at least one pair of concentrical cylindrical surfaces positioned at a small radial distance from each other, a first cylindrical surface of said pair of cylindrical surfaces defining a first diameter and a second cylindrical surface of said pair of concentric cylindrical surfaces defining a second diameter, both of said first and second cylindrical surfaces being closed along their circumference, wherein both of said first and second cylindrical surfaces undergo radial deformation, said first cylindrical surface increasing said first diameter and said second cylindrical surface decreasing said second diameter upon being subjected to pressure, and wherein both of said first and second diameters undergoing changes in the same direction upon being subjected to a temperature change, said radial deformation being a measure for pressure to be determined.

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METHOD AND SYSTEM FOR EVALUATING A SIGNAL FROM A VIBRATIONALLY-SENSITIVE PRESSURE SENSOR IN A MOTOR VEHICLE

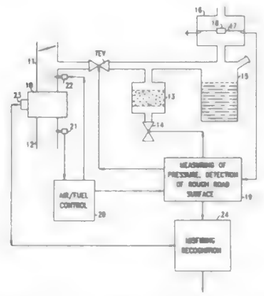
Rainer Frank, Sachsenheim; Alfred Kratt, Schweiberdingen; Manfred Mezger, Markgroeningen-Unterriex, and Klaus Ries-Mueller, Bad Rappenau, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 28, 1993, Ser. No. 98,664

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1992, 4229487

Int. Cl.[5] G01L *9/00*

U.S. Cl. 73—714 **11 Claims**



1. A method for evaluating a signal from a vibrationally-sensitive pressure sensor in a motor vehicle, comprising the steps of:

filtering the sensor signal with a low-pass filter to provide a pressure signal; and

filtering out of the sensor signal at least one first portion of the sensor signal having a first frequency lower than a first preselected threshold frequency to provide an acceleration signal.

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DEVICE TO MEASURE THE DEFORMATION OF A STRUCTURAL COMPONENT

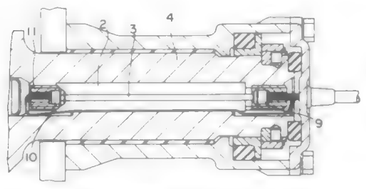
Joachim Feldman, Neustadt, and Axel Stender, Hameln, both of Fed. Rep. of Germany, assignors to Wabco Standard GmbH, Hanover, Fed. Rep. of Germany

Filed Dec. 17, 1992, Ser. No. 991,985

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1991, 4142671

Int. Cl.[5] G01B *7/16*

U.S. Cl. 73—768 **11 Claims**



1. A device for measuring deformation of a structural component, comprising a sensor installed at an open first end of a hollow bore in said structural component, said sensor closing off said hollow bore and having a measuring surface which is arranged substantially perpendicular to a longitudinal axis of said hollow bore, said sensor producing an electrical signal as a function of deformation of said measuring surface, and

a transmission element passing through said hollow bore, said transmission element having a first end which bears upon said structural component and a second end which bears upon said measuring surface.

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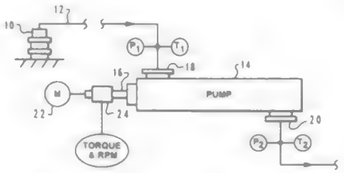
MULTIPHASE FLUID FLOW MEASUREMENT

Miroslav M. Kolpak, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 10, 1994, Ser. No. 179,411

Int. Cl.[5] G01F *1/68*

U.S. Cl. 73—861.04 **3 Claims**



1. A method for measuring the liquid flow rate and the gas flow rate of a multiphase fluid mixture flowing through a pump having an inlet port and a discharge port wherein the pressure and temperature of the fluid mixture undergo a change between said inlet port and said discharge port of said pump, respectively, said method comprising the steps of:

measuring the power input to said pump while pumping said fluid mixture;

measuring the pressures and temperatures of said fluid mixture entering and leaving said pump, respectively;

determining calibration constants of said pump comprising at least one of friction power absorbed by said pump while pumping said fluid mixture, and internal fluid leakage in said pump;

determining the specific heat and density of the fluids in said mixture, respectively; and

determining the volumetric flow rate of the liquid in said fluid mixture based on the power input to said pump, the pressures and temperatures of the fluid mixture entering and leaving said pump, respectively, the specific heat and density of the gas and liquid in said fluid mixture, the polytropic compression exponent of said gas in said fluid mixture and at least one calibration constant of said pump which accounts for one of friction power loss in said pump, volumetric efficiency of said pump and the rate of heat transfer in said fluid mixture in said pump.

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APPARATUS FOR MEASURING CORIOLIS FORCES FOR ASCERTAINING A MASS FLOW, ESPECIALLY A BULK MATERIAL FLOW

Ludger Toerner, Eppertshausen, Fed. Rep. of Germany, assignor to Carl Schenck AG, Darmstadt, Fed. Rep. of Germany

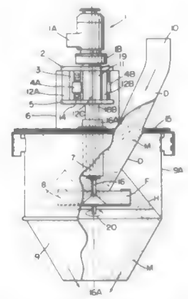
Filed Jul. 16, 1993, Ser. No. 93,205

Claims priority, application European Pat. Off., Sep. 30, 1992, 92116705

Int. Cl.[5] G01F *1/82*

U.S. Cl. 73—801.37 **10 Claims**

1. An apparatus for measuring a bulk material mass flow by measuring Coriolis forces, comprising a wheel housing (9A, 15), a winged wheel (8) in said wheel housing for diverting an incoming mass flow in a radial direction relative to a rotational axis (7) of said winged wheel (8), a drive motor (1) having a motor housing (1A) and a drive shaft (16) for driving said winged wheel, a torsion joint (3) for supporting said motor housing on said wheel housing and for driving said winged wheel (8) through said drive shaft (16), means for measuring a reaction torque moment when said motor drive shaft drives said winged wheel (8), said torsion joint (3) comprising a stationary member (2), first means (6) for mounting said stationary member (2) to said wheel housing, a force introduction member (5), spring means (12A, 12B, 12C) mounting said force introduction member (5) to said stationary member (2) for introducing said reaction torque moment from said motor housing to said reaction torque moment measuring means when said drive shaft (16) drives said winged wheel (8), and second means (1B, 11) for securing said motor housing (1A) to said force introduction member (5), said spring means (12A, 12B, 12C) being stiff in a longitudinal axial direction and flexible in a rotational direction (20), whereby said force introduction member (5) can yield in said rotational direction (20) relative to said stationary member (2) to an extent permitted by said spring means, said reaction torque moment measuring means comprising at least two load cells (4A, 4B) operatively interposed between said stationary member (2) and said force introduction member (5) for measuring said torque reaction moment and to provide a respective torque signal, said at least two load cells being arranged symmetrically on opposite sides relative to a central apparatus axis (16A).



5,353,648

TORQUE TRANSMITTER

Franz Hrubes, Rotthalmunster, and Karlheinz Timtner, Bad Homburg, both of Fed. Rep. of Germany, assignors to Ringspann GmbH, Bad Homburg and Micro-Epsilon Messtechnik GmbH & Co. KG, Ortenburg, both of Fed. Rep. of Germany

Filed Apr. 2, 1992, Ser. No. 862,386

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1991, 4110727

Int. Cl.[5] G01L *3/00*

U.S. Cl. 73—862.322 **15 Claims**

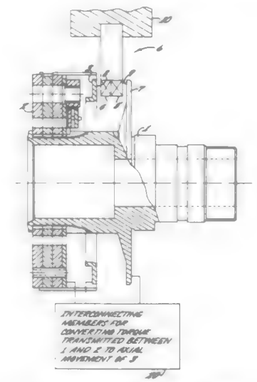
1. A torque transmitting apparatus which is characterized by the ability to continuously measure the torque being transmitted and comprising

first and second torque transmitting members which are rotatable about a common axis, with one of said first and second members including a first reference surface,

a transducer member which includes a second reference surface,

means interconnecting said first and second members and said transducer member such that said first and second surfaces are substantially parallel to each other and axially aligned with respect to each other and including means for causing an axial movement of said transducer member and said second reference surface relative to said first reference surface in response to a torque being transmitted between said first and second members, and

sensor means mounted at a fixed location which is axially aligned with said first and second reference surfaces for sensing an axial movement of said surfaces relative to each other, said sensor means comprising a first sensor for sensing only the axial position of said first reference surface, and a second sensor for sensing only the axial position of said second reference surface.



5,353,649

NON-CONTACT DETECTING TYPE TORQUE SENSOR

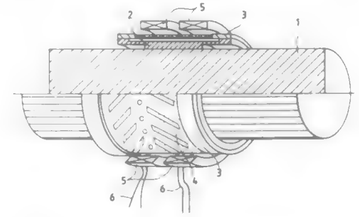
Hiroyuki Hase; Rihito Shoji, both of Kyoto, and Masayuki Wakamiya, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Continuation of Ser. No. 845,978, Mar. 4, 1992, abandoned. This application Feb. 24, 1994, Ser. No. 201,153

Claims priority, application Japan, Mar. 4, 1991, 3-37205

Int. Cl.[5] G01L *1/00*

U.S. Cl. 73—862.335 **10 Claims**



1. A torque sensor comprising:

a shaft for transmitting a torque exerted thereon;

a tubular torque transmission member mounted on said shaft along at least a part of its entire length, so as to form an inner joint portion between said shaft and said torque transmission member, said inner joint portion extending in a longitudinal direction of said shaft and having first and second longitudinal ends;

a tubular joining member fitted over said torque transmission member and having two longitudinally spaced portions separated by a metal cylindrical member and firmly connected to said torque transmission member to form two outer joint portions between said torque transmission member and said tubular joining member;

said torque transmission member and said joining member jointly constituting a range enlarging element, at least one of said first and second longitudinal ends of said inner joint portion being disposed between said two outer joint portions along the longitudinal direction of said shaft, at least a part of said tubular joining member including a magnetic

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alloy having magnetostrictive properties, said magnetic alloy formed on an outer peripheral surface of said metal cylindrical member, a surface of said magnetic alloy including a plurality of slits extending at a preselected angle to an axis of said metal cylindrical member and between said outer joint portions; and

means for detecting a change in magnetic permeability of said magnetostrictive magnetic alloy to determine said torque.

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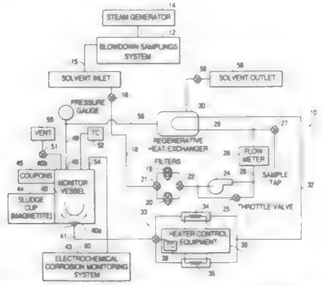
METHOD AND APPARATUS FOR CORROSION MONITORING DURING STEAM GENERATOR CLEANING

Stephen S. Barshay, W. Hartford; Gordon L. Key; James L. Key, both of Lebanon, all of Conn.; Laura Kwapien, Sunderland, Mass., and Stanley L. Klein, Cromwell, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 31, 1992, Ser. No. 999,407

Int. Cl.[5] G01N *1/20*

U.S. Cl. 73—863.02 **21 Claims**



1. A self-sampling monitor for corrosion monitoring during chemical cleaning of a steam generator, comprising:

receiving means structurally adapted for connection directly to a steam generator for receiving cleaning solvent therefrom during chemical cleaning;

means for pumping said solvent from said receiving means through treatment and monitoring portions of said monitor which are remote from said steam generator;

said treatment portion of the monitor including a heat exchanger means for preheating said solvent to a first temperature, heater means for heating said solvent to a second higher temperature, and means associated with said heater means for controlling said second temperature of said solvent; and

said monitoring portion of the monitor comprising corrosion monitoring means, including a corrosion monitoring vessel for receiving said solvent from said treatment portion of the monitor and providing a parameter indicative of said corrosion, and a corrosion monitoring system for converting said parameter into a corrosion measurement.

5,353,651

METHOD AND APPARATUS FOR SAMPLING WATER QUALITY IN A MUNICIPAL WATER SYSTEM

W. Richard Pate, 3508-B Sherry La., Tallahassee, Fla. 32303

Filed May 29, 1992, Ser. No. 890,698

Int. Cl.[5] G01N *1/10*

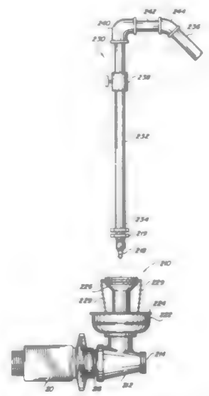
U.S. Cl. 73—863.81 **30 Claims**

1. A system for sampling water quality in a municipal water system, comprising in combination:

at least one residential meter box; and

a water sampling station having means dimensioned for coupling with a pipe in a municipal water system, the sampling station including a housing, a cover removably fitted to the housing, a quick connect-disconnect coupler within the housing and communicating with the coupling means, and means for preventing cross-contamination between the municipal water supply and the coupler;

an elongated probe rod having first and second ends with a quick connect-disconnect key at the first end and dimensioned for mating with the coupler of the sampling station,



back-flow preventing means adjacent the first end, and a discharge opening at the second end;

means for dimensioning the water sampling station for an installation into the residential meter box; and wherein

said water sampling station is installed in at least said one residential meter box.

5,353,652

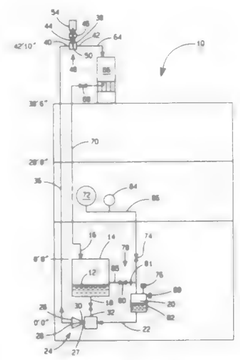
FLUID SAMPLING SYSTEM

Edward D. Houck, Idaho Falls, Id., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 3, 1993, Ser. No. 100,952

Int. Cl.[5] G01N *1/14*

U.S. Cl. 73—864.34 **17 Claims**



1. A substantially sealed system for sampling a fluid comprising:

a feed tank for the storage of said fluid to be sampled;

a pumping chamber in fluid communication with and located at least partially lower than said feed tank;

said pumping chamber being connected to and in fluid communication with said system for pumping said fluid through said system;

transfer jet means in fluid communication with said chamber and said feed tank for selectively allowing the flow of said fluid through said system, said transfer jet means including a venturi nozzle;

cyclic control means for alternately expelling said fluid from said pumping chamber and permitting said chamber to refill with fluid through said venturi nozzle;

means for pressurizing said system for expelling fluid from said pumping chamber through said transfer jet means;

venting means for venting air from said pumping chamber as said pumping chamber is refilled;

a fluidic sampler jet having an inlet, an outlet, a port having selectable sealing means, said fluidic sampler being in fluid communication with said pumping chamber and located substantially above said feed tank;

means for piercing said sealing means of said fluidic sampler jet and withdrawing a portion of said fluid as a sample; and

means connected to the outlet of said fluidic sampler for returning the remainder of said fluid to said feed tank.

5,353,653

HEAT EXCHANGER ABNORMALITY MONITORING SYSTEM

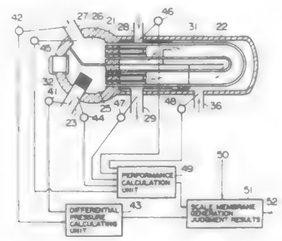
Michio Watanabe, Ayase; Kazuo Nogami, Yokohama; Yuji Muronosono, Kawasaki, and Kanemitu Ohashi, Yamato, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 9, 1991, Ser. No. 697,777

Claims priority, application Japan, May 10, 1990, 2-120682; Feb. 25, 1991, 3-053428

Int. Cl.[5] G01M *19/00;* **G01N** *17/00*

U.S. Cl. 73—865.9 **6 Claims**



1. A system for monitoring abnormalities in a heat exchanger having heat-exchange tubes for heating feed water with an extraction steam, an inlet and an outlet for the feed water, and a drain cooling zone, said monitoring system comprising:

pressure means for calculating a differential pressure between the feed water pressures at said inlet and outlet;

calculation means for computing a heat exchange performance of the heat exchanger; and

judgment means for monitoring said differential pressure and said heat exchange performance, thereby judging the presence or absence of a scale accretion within the heat exchanger and, whenever said scale accretion is present, judging the specific locations of the scale accretion in the inner and outer surfaces of the heat-exchange tubes, fluid flow distribution passageways in said system and devices other than the heat-exchange tubes in said system and wherein a feed water inlet pressure measuring unit and a feed water outlet pressure measuring unit are respectively installed at places where the pulsation of the feed water inlet and the pulsation of the feed water outlet of the heat exchanger are respectively, as small as possible.

5,353,654

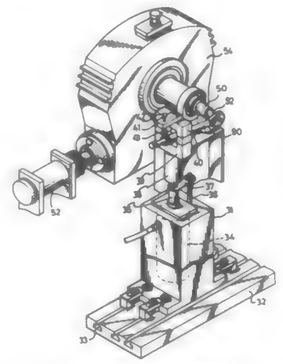
TESTING FACILITY FOR WRENCHES

Chi Y. Lin, No. 5-11, Lane 42, Jen Hua Rd., Ta Li Hsiang, Taichung Hsien, Taiwan

Filed Aug. 31, 1992, Ser. No. 938,406

Int. Cl.[5] G01M *19/00*

U.S. Cl. 73—865.9 **4 Claims**



1. A facility for testing a wrench, comprising:

a housing, a testing mechanism including a base fixed on said housing, a cylinder disposed in said base and including a piston rod extending upward therefrom, a support fixed on top of said piston rod for supporting a handle portion of said wrench, a shaft disposed in said housing and engaged in a socket of said wrench to be tested, wherein said handle portion of said wrench is pushed upward in a repeated action by said piston rod of said cylinder in order to test the working life of said wrench, and wherein a post is slidably engaged in said base and including an upper end coupled to an upper end of said piston rod, wherein said post moves upward and downward in concert with said piston rod in order to prevent the rotation of said piston rod.

5,353,655

GYROSCOPIC DEVICE AND PROCESS OF GENERATING ELECTRICITY THEREBY

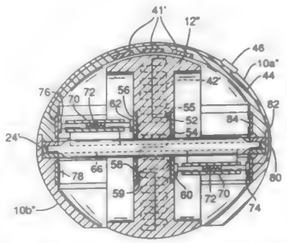
Frederick H. Mishler, 38561 Tindle Creek Rd., Willamina, Oreg. 97396

Continuation of Ser. No. 638,337, Jan. 7, 1991, Pat. No. 5,150,625. This application Sep. 15, 1992, Ser. No. 945,811

The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.

Int. Cl.[5] A63B *69/00, 11/04*

U.S. Cl. 74—5 R **4 Claims**



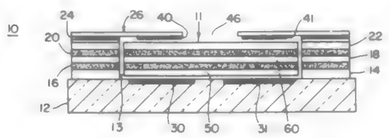
1. A hand-operated gyroscopic device comprising:

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a housing,
a balanced gyroscopic rotor in said housing,
shaft means integrated with said rotor providing a spin axis for said rotor,
support means in said housing receiving opposite ends of said shaft means for rotation of said shaft means and rotor about said spin access and providing for rotation of said shaft means and rotor relative to said housing about a second axis at right angles to said spin axis,
said support means including circumferential slot means in said housing concentric with said second housing and positioned on opposite sides and adjacent the ends of said shaft means for rolling contact in said circumferential slot means by end portions of said shaft means when the device is held in the hand of a person and said device is manipulated selectively to produce driving power for the rotor by applying a torque to said housing about a third axis at right angles to both said spin axis and second axis wherein to cause precession of said shaft means and rotor about said second axis,
and cooperating permanent magnet and coil means in said housing and rotor capable of generating electricity in an output circuit therefor by means of rotation of said shaft means and rotor about said spin axis due to said precessional movement of said shaft means and rotor in said slot means about said second axis upon the hand-held and manipulated driving precessed rotation of said rotor in said housing.

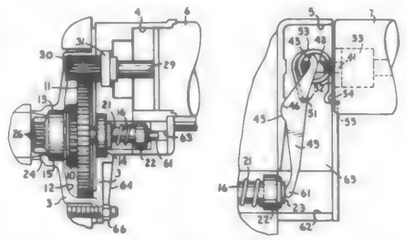
4. A process of generating electricity comprising:
providing a housing that can be held in a person's hand with a balanced gyroscopic rotor therein capable of rotary precessing movement with rolling contact of shaft means thereof in circumferential slot means in said housing to produce driving power for the rotor,
combining with said housing rotary electrical generating means arranged to be operated by rotation of said rotor,
combining with said generating means electrical operating means,
and driving said generating means by manually moving said housing with the hand in a selected twisting pattern of operation to provide rotation of said shaft means and rotor about said spin axis due to precessing motion of said rotor and shaft means to drive said generating means.

5,353,656
ELECTROSTATICALLY CONTROLLED MICROMECHANICAL GYROSCOPE
Timothy Hawkey, Salt Lake City, Utah; Richard Torti, Burlington, Mass., and Bruce Johnson, Monument, Colo., assignors to SatCon Technology Corporation, Cambridge, Mass.
Filed Aug. 18, 1992, Ser. No. 931,836
Int. Cl.[5] **G01C** *19/24*
U.S. Cl. 74—5.41 **19 Claims**



1. An electrostatically-controlled micromechanical gyroscope, comprising:
a disc-shaped rotor;
a rotor cavity encompassing said rotor;
means for electrostatically spinning said rotor within said rotor cavity;
a plurality of axial electrostatic rotor actuators above and below said rotor for providing exclusive control of the axial and tilt position of said rotor within said rotor cavity;
a plurality of radial electrostatic actuators spaced circumferentially around said rotor for providing exclusive control of the radial and tilt position of said rotor within said rotor cavity; and
means for resolving the position of said rotor within said cavity to determine the external forces acting on said rotor.

5,353,657
AIRPLANE ENGINE STARTER SYSTEM AND HOUSING
William C. Bainbridge, III, 123 E. 4th St., Newton, Kans. 67114
Filed Feb. 19, 1993, Ser. No. 19,677
Int. Cl.[5] **F02N** *15/06*
U.S. Cl. 74—7 A **9 Claims**

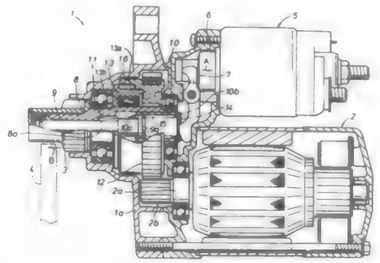


1. In a starter system comprising a starter motor driving a gear, a reduction gear meshing with said gear, a pinion gear adapted to turn with said reduction gear and adapted to mesh with an engine flywheel ring gear, and an electromechanical actuator means for extending said pinion gear into engagement with said ring gear when power is supplied to said starter motor, the improvement comprising:
(a) a housing means containing a central chamber for said reduction gear and pinion gear and first and second receptacles which are physically separate;
(b) said starter motor being mounted on said housing within said first receptacle;
(c) said electromechanical actuator means being mounted on said housing within said second receptacle;
(d) an elongate enclosed space within said housing, said enclosed space extending between said second receptacle and said central chamber; and
(e) a lever arm extending between said electromechanical actuator and a pinion gear shaft through said elongate enclosed space, said lever arm being responsive to said electromechanical actuator to selectively cause said pinion gear to mesh with said ring gear.

5,353,658
STARTER
Shinichi Nagashima, and Hitoshi Ono, both of Gumma, Japan, assignors to Mitsuba Electric Mfg. Co., Ltd., Gumma, Japan
Filed Jun. 10, 1993, Ser. No. 75,078
Claims priority, application Japan, Jun. 12, 1992, 4-046851[U
Int. Cl.[5] **F02N** *15/06*
U.S. Cl. 74—7 A **5 Claims**

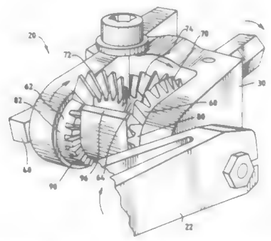
1. A starter for an internal combustion engine, comprising:
a casing (1*a*);
a motor (2) attached to said casing (1*a*);
a tubular pinion gear support shaft (8) rotatably supported by said casing, and coupled to a drive shaft of said motor so as to be rotatively driven by said motor;
an annular pinion gear (3) fitted on said pinion gear support shaft in axially slidable but rotatively drivable relationship, said pinion gear being slidable between a retracted position and an extended position adapted for engagement with a ring gear of said internal combustion engine;
a return spring (11) for urging said pinion gear toward said retracted position;

a push rod (9) axially slidably received in said tubular pinion gear support shaft and provided with a free end engaged with a free end of said pinion gear for transmitting a shifting force for driving said pinion gear from said retracted position to said extended position;



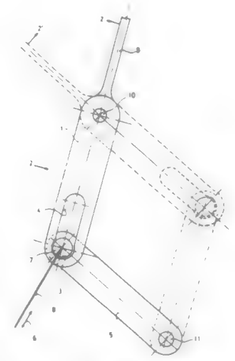
a shift lever (7) pivotablly supported by said casing for transmitting said shifting force from a magnetic switch to said push rod; and
a shift spring (15) consisting of a compression coil spring coaxially received in said pinion gear support shaft and interposed between an associated end of said shift lever and a base end of said push rod.

5,353,659
MECHANISM FOR CONVERTING OSCILLATORY ROTATION OF INPUT SHAFT TO UNIDIRECTIONAL ROTATION OF OUTPUT SHAFT
Andrzej M. Chudy, Grayslake; Janusz Figiel, Mount Prospect, and Peter Drabarek, Chicago, all of Ill., assignors to Signode Corporation, Glenview, Ill.
Filed Oct. 8, 1993, Ser. No. 133,284
Int. Cl.[5] **F16H** *27/02, 55/17*
U.S. Cl. 74—88 **6 Claims**



1. A mechanism for converting oscillatory rotation of an input shaft to unidirectional rotation of an output shaft, the mechanism comprising
(a) a frame,
(b) an input shaft journalled to the frame, the input shaft defining an input axis and being rotatable about the input axis, over a range of rotational positions of the input shaft relative to the frame, between a forward limit of the range and a reverse limit of the range,
(c) an output shaft journalled to the frame, the output shaft defining an output axis and being rotatable about the output axis, the output axis being normal to the input axis,
(d) three bevel gears, namely a first gear coupled to the input shaft so as to enable conjoint rotation of the first gear and the input shaft, a second gear coupled to the input shaft so as to enable conjoint rotation of the second gear and the input shaft, and a third gear coupled to the output shaft so as to enable conjoint rotation of the third gear and the output shaft, the first and second gears being spaced axially from each other along the input shaft, the first gear having a peripheral array of bevel teeth, the second gear having a peripheral array of bevel teeth, said teeth being arranged so that the bevel teeth of the third gear intermesh only with the bevel teeth of one of the first and second gears at any time when the input shaft rotates between the forward and reverse limits.

5,353,660
LOCKING MECHANISM
Thomas Heck, Mainz, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 24, 1993, Ser. No. 22,041
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1992, 420662298
Int. Cl.[5] **G05G** *5/06;* **E05C** *17/16;* **E05F** *3/22*
U.S. Cl. 74—96 **1 Claim**



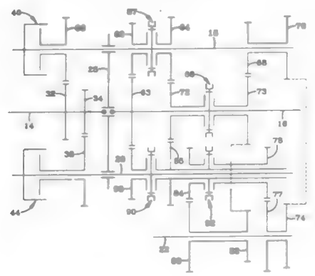
1. Locking mechanism consisting of a guide lever arm and sliding lever arm, in which one end of each of the lever arms pivots about a bearing at a certain distance from the other lever arm, in which the other end of the sliding lever arm is slidingly coupled with a slot in the other end of the guide lever arm by a pin connected with the sliding lever arm, and in which the lever arms can be swiveled into two end positions, characterized by the fact that a force (2) exerted on the guide lever arm (1) in one of the end positions for the purpose of swiveling the guide lever arm (1) into the other end position is compensated in a self-locking way in the slot (4) by a recess (3) in the area of the other end of the guide lever arm (1), said recess having an arc-shaped surface with a sectoral cutout angle greater than 180 degrees and a diameter which is only slightly greater than the width of the slot (4), so that the recess (3) merges with the slot (4), and that this self locking effect can be removed only by a force (6) exerted on the sliding lever arm (5) in the direction of the other end position.

5,353,661
POWER TRANSMISSION WITH COAXIAL INPUT AND OUTPUT SHAFTS SUPPORTED AT ONE END OF EACH SHAFT BY A FLOATING BEARING SUPPORT
Richard A. Ordo, Greenwood, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 9, 1993, Ser. No. 15,718
Int. Cl.[5] **F16H** *3/08*
U.S. Cl. 74—331 **5 Claims**

1. A power transmission comprising:
a housing;
an end cover;
countershaft means rotatably supported in said housing and said end cover;

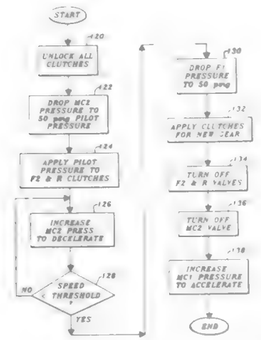
VOL 1167 ISS 2 OCT 11 1994 UMI

a bearing support member positioned axially and supported radially only by said countershaft means; an input shaft rotatably supported by said bearing support member and one of said end cover and housing; and,



an output shaft rotatably supported in said bearing support member and one of said end cover and housing.

5,353,662
TRANSMISSION SHUTTLE SHIFT DECELERATION METHOD
Kevin L. Vaughters, Altamont, Kans., assignor to Deere & Company, Moline, Ill.
Filed Jan. 29, 1993, Ser. No. 10,942
Int. Cl.[5] B60K *20/10*
U.S. Cl. 74—336 R 3 Claims



1. A method of decelerating an output shaft of a vehicle powershift transmission during a shuttle shift whereby rotation of the output shaft is reversed from a first direction to a second direction, the transmission having a plurality of hydraulic pressure operated clutch elements for shifting the transmission, including a set of directional clutches, the method comprising the following steps:

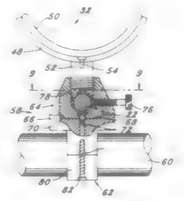
disengaging all the clutch elements, including all the directional clutches;

applying pressurized fluid to only to both a first directional clutch and to a second directional clutch to lock up the transmission;

when the output shaft speed is less than a threshold value, applying pressurized fluid to at least one selected clutch other than a directional clutch to engage a desired gear and to cause the output shaft to rotate in the second direction; and

releasing pressure from at least the first directional clutch.

5,353,663
COMBINATION BICYCLE LOCK/HANDLEBAR ASSEMBLY
Robert N. Samuelson, Munson Rd., Middlebury, Conn. 06762
Continuation-in-part of Ser. No. 952,589, Sep. 28, 1992, abandoned. This application Oct. 18, 1993, Ser. No. 137,803
Int. Cl.[5] B62K *21/12*; B62H *5/00*
U.S. Cl. 74—551.8 12 Claims



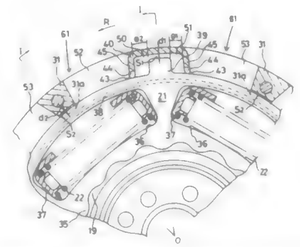
1. A combination bicycle lock/handlebar assembly for a bicycle, said bicycle having handlebars, which comprises:

means for locking the bicycle comprising a U-shaped member having a bight portion and spaced parallel legs, and an elongated bar member capable of being releasably locked across the spaced parallel legs of said U-shaped member;

releasable mounting means for releasably mounting said locking means on the handlebars of the bicycle, wherein said releasable mounting means supports said legs of said U-shaped member on the handlebars of the bicycle with a portion of said U-shaped member disposed forwardly of the bicycle handlebars into an auxiliary handlebar position and wherein said releasable mounting means comprises two spaced-apart releasable mounting mechanisms each including bracket means for receiving respective ones of the legs of the U-shaped member; each of said bracket means being adapted to allow angular adjustment of one of said legs of said U-shaped member with respect to the handlebars; and

arm rest disposed means on each of said bracket means for supporting arms of a rider.

5,353,664
TORSIONAL VIBRATION DAMPING DEVICE
Kozo Yamamoto, Neyagawa, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan
Filed Nov. 5, 1992, Ser. No. 972,233
Claims priority, application Japan, Nov. 8, 1991, 3-292953
Int. Cl.[5] F16F *15/10*
U.S. Cl. 74—573 F 26 Claims



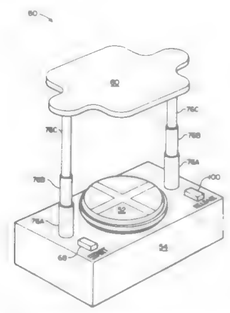
1. A torsional vibration damping device for use in a power transmission including an input rotation member and an output member rotatably connected to said input rotation member and to which power is transmitted from said input rotation member, comprising:

a pair of drive plates connectable to said input rotation member, said pair of drive plates being situated so as to contain a space therebetween, and including engagement projections extending toward each other;

a driven element connectable with said output member, said driven element being located between said drive plates and being recessed for engagement with said engagement projections in order to seal said fluid chamber; and

a damping means including a fluid chamber formed by said input rotation member, said drive plates, and said driven element, for damping torsional vibration through fluid in said fluid chamber in response to twisting of said drive plates and said driven element relative to each other.

5,353,665
AUTOMATED CONTAINER CLOSURE OPENER
William D. Heebner, 3513 Edencroft Dr., Raleigh, N.C. 27612
Continuation-in-part of Ser. No. 815,339, Dec. 27, 1991, Pat. No. 5,167,172. This application Oct. 21, 1992, Ser. No. 964,646
Int. Cl.[5] B67B *7/18*
U.S. Cl. 81—3.2 18 Claims



1. A bottle or container closure opener for use with screw-type bottle or container caps comprising:

a housing comprising a base portion with a rotatably mounted platform for rotatably supporting a bottle, and a relatively vertically movable top portion positioned above said base portion;

at least one telescoping shaft operatively connecting said top portion to said bottom portion of said housing;

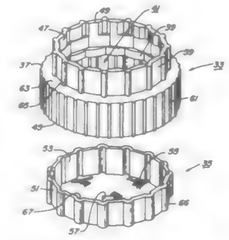
first motorized drive means carried by said base portion of said housing for actuating said telescoping shaft so as to vertically lower and raise said top portion of said housing relative to said base portion;

a bottle cap engagement member fixedly depending from said top portion of said housing and comprising a bottle cap friction engaging surface;

second motorized drive means carried by said base portion of said housing for actuating said rotatably mounted platform in the bottle cap loosening direction; and

circuit means for actuating said first motorized drive means so as to lower said bottle cap engagement member from an inoperative position above a bottle cap into engaging contact with the cap of a bottle positioned on said base portion of said housing and to then deactuate said first motorized drive means and to actuate said second motorized drive means so that said rotatably mounted platform at least partially removes the cap from said bottle.

5,353,666
OIL FILTER WRENCH
James F. Rogers, P.O. Box 723, Dallas, Tex. 75221-0723
Filed Feb. 26, 1993, Ser. No. 23,890
Int. Cl.[5] B25B *13/00*
U.S. Cl. 81—124.4 7 Claims

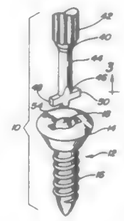


1. An improved oil filter wrench, comprising:

a wrench body having a stepped exterior surface, a stepped interior surface and an initially open interior which defines a larger aperture at one extent thereof and a relatively small aperture at an opposite extent thereof, the larger and smaller apertures being sized to accommodate different sized oil filters; and

a driver adapter having an external sidewall and an internal sidewall, both of which terminate in a drive flange adapted to matingly engage a drive tool for imparting rotational energy to the wrench body, the driver adapter being selectively sized to be matingly engaged within the larger aperture of the wrench body to accommodate one size oil filter and to be matingly engaged about the exterior surface of the wrench body adjacent the smaller aperture to accommodate a second size oil filter.

5,353,667
COMBINATION TOOL AND FASTENER
David W. Wilner, 2622 Oakview Dr., Walled Lake, Mich. 48390
Filed Apr. 23, 1993, Ser. No. 53,630
Int. Cl.[5] B25B *15/02*
U.S. Cl. 81—436 4 Claims



1. A combination tool and fastener, comprising:

said fastener having a heat having a top surface and a threaded screw portion;

an aperture formed in said head, said aperture having a first portion comprised of a pair of rectangular slot-shaped portions;

said aperture having a second portion extending under said top surface and defining a pair of recesses, each recess having a pair of side walls which are angularly offset from said slot-shaped portions; and

said tool having an engaging portion, said engaging portion including a shaft portion and a pair of oppositely extending wing portions having parallel planar walls which are insertable through said first portion of said aperture and

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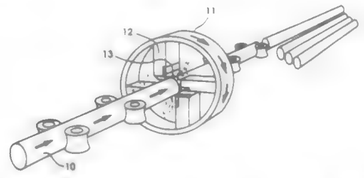
are rotatable in a selected rotational direction within said second aperture portion so that said wing portions abut against two of said of side walls, said engaging portion lockingly engaging with said second aperture portion whereby accidental disengagement of said engaging portion from said aperture is prevented during turning of said fastener by said tool.

5,353,668

TOOLHOLDER FOR PEELING OPERATION

Yngve Dahllöf, Sandviken, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Filed May 19, 1993, Ser. No. 63,295
Claims priority, application Sweden, May 25, 1992, 9201637
Int. Cl.[5] B23B *27/06;* **B23D** *13/00*
U.S. Cl. 82—130 **8 Claims**



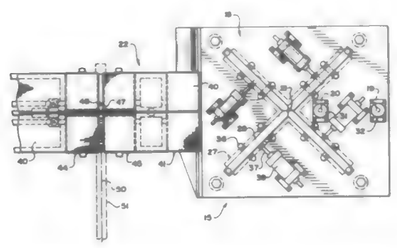
1. A tool for bar peeling comprising a rotatable cutter head having a plurality of holder shafts, each holder shaft carrying at the free end thereof a toolholder provided with at least one insert of wear resistant material, each said toolholder being secured to said holder shaft by releasable locking means, a wedge shaped element being releasably arranged and longitudinally displaceable with a wedge surface in sliding engagement with a corresponding surface of the toolholder and with an opposite surface slidably engaged with a support surface in the holder shaft, said wedge element having a protrusion at one end that extends substantially perpendicular to said wedge element, a right and left hand threaded screw being received in the protrusion and said toolholder in order to actuate the wedge element so that, the insert carried by the toolholder is subjected to radial adjustment upon a longitudinal displacement of said wedge shaped element.

5,353,669

SHEAR FOR SHEET MATERIAL AND METHOD FOR FORMING A TRANSFORMER CORE FROM THE SHEET MATERIAL

Kenneth Booth, and John Barris, both of 116 Sanford Street, Winnipeg, Manitoba R3E 2Z9, Canada

Filed Feb. 2, 1993, Ser. No. 12,399
Int. Cl.[5] B26D *1/09*
U.S. Cl. 83—132 **6 Claims**



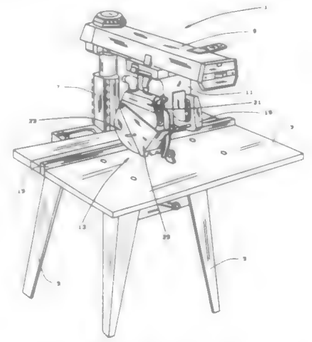
1. A shear for cutting reeled sheet material comprising an unreeling station having a stand for receiving a reel of the sheet material and feed means for withdrawing the sheet material from the reel and forwarding the sheet material in a feed direction, control means for controlling actuation of the feed means for intermittent forwarding movement of the sheet material, and a shear head for acting on the sheet material downstream of the feed means, the shear head having four separate shear blades lying in a plane parallel to the sheet material and moveable at fight angles thereto to effect a shearing action thereon, the shear blades being arranged in an X-shape meeting at a central point of the shear blades with each shear blade extending outwardly from the central point at an angle to the feed direction to a position beyond an outside edge of the sheet material and with the blades being arranged in two pairs with each of the pairs lying in a common line at an angle to the common line of the other of the pairs, and means for selectively operating each of the shear blades independently, said control means being arranged to actuate selected ones of the shear blades simultaneously to simultaneously cut a required shape in the sheet material.

5,353,670

INDEPENDENTLY AND JOINTLY OPERABLE RADIAL SAW GUARDS

James I. Metzger, Jr., County of St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Mar. 15, 1993, Ser. No. 38,681
The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.
Int. Cl.[5] B27B *5/20;* **B27G** *19/02*
U.S. Cl. 83—471.3 **18 Claims**



1. A radial saw for rip cutting and cross cutting workpieces comprising:

a motor driven saw blade mounted on a yoke depending from a supporting arm that overhangs a worktable, said motor driven saw blade being movable relative to a worktable mounted fence to enable said motor driven saw blade to be operated for rip cutting workpieces longitudinally relative to the fence and for cross cutting transverse relative to the fence;

an upper blade guard mounted in fixed position relative to said yoke mounted motor driven saw blade for covering at least approximately an upper half of the motor driven saw blade;

a lower rear blade guard pivotally mounted to the upper blade guard and configured to cover a lower half rear area on at least one side of the motor driven saw blade;

a lower front blade guard independently pivotally mounted to the upper blade guard and configured to cover a lower half front area on at least one side of the motor driven saw blade guard; and

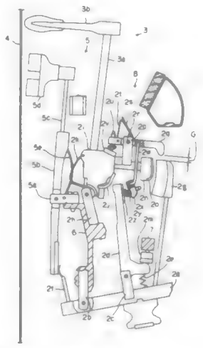
said lower rear blade guard including a wrong way feed barrier during rip cutting.

5,353,671

UPRIGHT PIANO WITH KEY ACTION MECHANISM RESPONSIVE TO REPETITION WITHOUT DOUBLE STRIKE AND LOSS OF SOUND

Satoshi Inoue, and Hajime Hayashida, both of Shizuoka, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Aug. 24, 1993, Ser. No. 111,289
Claims priority, application Japan, Aug. 31, 1992, 4-255642
Int. Cl.[5] G10C *3/18*
U.S. Cl. 84—236 **9 Claims**



1. An upright piano comprising:

a) a keyboard having at least one key swingable between a rest position without any force and an end position, a capstan button projecting from a rear portion of said at least one key;

b) at least one string associated with said at least one key;

c) at least one hammer assembly for striking said at least one string;

d) a key action mechanism linked with said at least one key for driving said at least one hammer assembly, and having

d-1) a whippen assembly pivotaly supported by a stationary structure, and rotated by said capstan button between a first initial position corresponding to said rest position and a first terminal position corresponding to said end position through a first intermediate position,

d-2) a jack pivotaly supported by said whippen assembly, and moved from a second initial position to a restricted position without any pivotal motion when said whippen assembly is swung from said first initial position to said first intermediate position, said jack being rotated around said whippen assembly from said restricted position through an escape position to a second terminal position when said whippen assembly is rotated from said first intermediate position to said first terminal position,

d-3) a butt pivotaly supported by said stationary structure, and connected with said hammer assembly, said butt being rotated by said jack in a forward direction from a third initial position corresponding to said second initial position to a released position corresponding to said escape position, said butt being kicked by said jack at said released position for rushing said at least one hammer assembly toward said at least one string, said at least one hammer assembly rebounding on said at least one string so that said butt being rotated in a backward direction through a second intermediate position to a third terminal position,

d-4) a back check projecting from said whippen assembly, and

d-5) a catcher backwardly projecting from said butt, and brought into contact with said back check when said butt reaches said third terminal position; and

e) a repetition mechanism having

e-1) a repetition lever rotatably supported by said butt, and rotated by said jack due to the escape so as to produce a gap between a leading end thereof and said back check when said jack reaches said second terminal position and before said at least one hammer assembly rotates backwardly, then said leading end being brought into contact with said back check when said butt reaches said second intermediate position,

e-2) a driving rod means projecting from said repetition lever, brought into contact with said jack, and rotating said repetition lever over said back check on the way from said escape position to said second terminal position through the rotation of said jack due to the escape, and

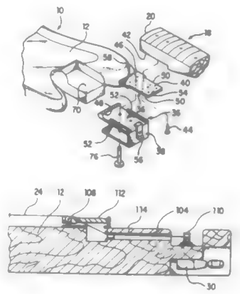
e-3) an elastic means urging said repetition lever for allowing said driving rod means to be brought into contact with said jack.

5,353,672

COLLAPSIBLE GUITAR WITH QUICK DISCONNECT NECK AND SUBMERGED STRING TUNNELS

Leland W. Stewart, Swansboro, N.C., assignor to Stewart Guitar Co., Swansboro, N.C.

Filed Jan. 26, 1993, Ser. No. 9,116
Int. Cl.[5] G10D *3/00*
U.S. Cl. 84—291 **29 Claims**



1. A musical instrument, comprising:

a neck;

a body having a longitudinal axis, said body comprising:

a storage cavity, formed within said body, which can hold said neck at an angle to said longitudinal axis; and

a plurality of string tunnels formed within said body; and

a quick-release neck clamp, adjacent said neck and said body, said quick-release neck clamp comprising:

a neck plate attached to said neck;

a body assembly, attached to said body, said body assembly comprising an elongated body assembly pocket formed on said body assembly; and

at least one releasable fastener adjacent said neck plate and said body assembly wherein said body further comprises a front surface formed on said body, said front surface defining a front surface plane, and said elongated body assembly pocket defines an axis along the elongation that is parallel to said front surface plane.

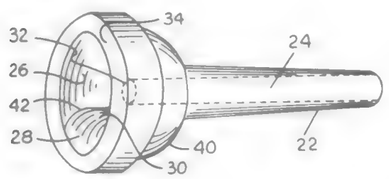
VOL 1167 ISS 2 OC 11 1994 UMI

5,353,673

BRASS-WIND MUSICAL INSTRUMENT MOUTHPIECE WITH RADIALLY ASYMMETRIC LIP RESTRICTOR

John H. Lynch, 6020 Liberty Ave., Vermilion, Ohio 44089

Filed Sep. 7, 1993, Ser. No. 116,913
Int. Cl.[5] G10D *9/02*
U.S. Cl. 84—398 3 Claims



1. A mouthpiece for brass-wind musical instruments, said mouthpiece comprising:

(A) an enlarged head portion forming and comprising a cavity, hereinafter called a cup, said cup comprising upper and lower interior cup surfaces, and an annular rim surface that smoothly, circumferentially and continuously abuts said upper and lower interior cup surfaces, said upper interior cup surface being an essentially conventional, concave, and inwardly tapered surface of revolution,

(B) a convex, radially asymmetric lower-lip restrictor comprising a radially asymmetric bulge in said lower interior cup surface, said radially asymmetric bulge being relatively wide circumferentially of the cup, disposed essentially toward the front of the lower half of the cup, occupying up to essentially one half of the cup volume, horizontally spanning the cup, smoothly merging with said annular rim surface and configured so as to preferentially contact and compress a user's lower lip only, and

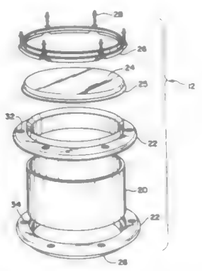
(C) an elongated, tapered, substantially tubular shank adjacent to and connected to said enlarged head portion and adapted to be connected to one of said brass-wind musical instruments, said elongated, tapered, substantially tubular shank containing an air passageway extending into said cup for passing air and lip vibrations of a user's lips into one of said brass-wind musical instruments.

5,353,674

SHELL RESONANT MEMBRANOPHONE

Steven W. Volpp, Hart, Mich., assignor to Peavey Electronics Corp., Meridian, Miss.

Filed Jan. 13, 1993, Ser. No. 2,753
Int. Cl.[5] G10D *13/02*
U.S. Cl. 84—411 R 34 Claims



1. A drum comprising:

an annular bridge having a bearing edge for securing a drum head on an outer end thereof, a drum head fitting over the bearing edge such that a peripheral bead on the drum head is positioned radially outwardly from the bearing edge;

a rim that fits over the outer end of the bridge and is slidable axially inwardly with respect to the bridge, the rim engaging the bead on the head and stretching the head taut over the bridge as the rim is moved inwardly on the bridge;

drum head tension means for tightening the drum head on the bearing edge including a plurality of tension members spaced around the periphery of the rim and being connected between the rim and a portion of the bridge positioned inward of the rim, the tension members being tightenable between the bridge and the rim to urge the rim to move inward on the bridge to tighten the drum head on the drum; and

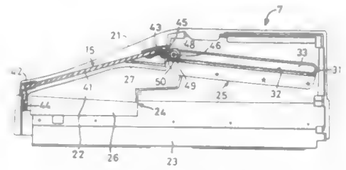
an annular resonant shell non-releasably attached to an inner end of the bridge and extending inwardly therefrom, the tensioning of the drum head taking place on the bridge and not by placing stress on the shell, whereby the acoustic characteristics of the shell are enhanced.

5,353,675

OPEN-CLOSE STRUCTURE FOR A KEYED INSTRUMENT

Masaji Kimura, and Yoshiaki Shimoda, both of Hamamatsu, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka, Japan

Filed Apr. 6, 1993, Ser. No. 42,774
Claims priority, application Japan, Apr. 7, 1992, 4-29361[U]
Int. Cl.[5] G10C *3/12, 3/02*
U.S. Cl. 84—423 R 4 Claims



1. An open-close structure for a keyed instrument having a main body having a front and a pair of sides with a keyboard at the front of the main body, and an arm member at each of said pair of sides of the main body, said open-close structure comprising:

an inside plate adapted to be attached on each of said arm members, the inside plates being arranged at each of said sides of the keyboard and extending therefrom into the main body;

a slide lid having a pair of sides, said slide lid being slidable between a closed position in which the slide lid covers the keyboard and an opened position in which the slide lid is retracted into the main body;

a pinion-shaped member arranged at each of said pair of sides of the slide lid;

a rack-shaped member arranged at each of said pair of sides of the slide lid and attached to the inside plates;

a pair of guide paths, each of the guide paths being arranged near and extending along one of the rack-shaped members; and

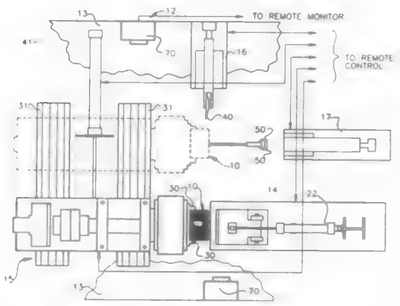
a pair of roller means, one of the roller means being arranged at each of said pair of sides of the slide lid and supporting the slide lid by engagement with the guide path so that the pinion-shaped members mesh with the rack-shaped members in a condition in which no weight is applied to the rack-shaped members through the pinion-shaped members.

5,353,676

APPARATUS AND METHOD FOR REMOTE DISASSEMBLY OF FAILED HIGH EXPLOSIVE TYPE MINE

Michael E. King, Madison; Scott D. Spencer, Scottsburg; Marvin C. Eades, Madison, all of Ind.; Ronald A. Jasper, Yuma, Ariz., and Gabe B. Hammond, Madison, Ind., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 27, 1993, Ser. No. 172,794
Int. Cl.[5] F42B *33/00*
U.S. Cl. 86—50 10 Claims



1. An apparatus for remotely disassembling a failed high explosive type mine having a body, a safe and arming device, an electronic assembly and a high explosive filler, the body of the mine having an outer portion, an appendage being connected to the outer portion of the body of the mine, the apparatus comprising:

a stripper assembly having a tube mounted therein, the tube having a cross section to receive therein the mine with the appendage, the tube having a wall having a circular opening therein, the circular opening having a diameter to receive therein the body of the mine, a movable cylinder disposed transversely to the tube and opposite to the opening in the wall of the tube wherein the movable cylinder may press the body of the mine through the circular opening in the wall of the tube to strip the appendage from the outer portion of the body of the mine;

a chuck assembly having chuck jaws to receive the body of the mine after the mine has passed through the stripper assembly, the chuck assembly having means therein to move the chuck jaws from a first position adjacent to the stripper assembly to a second position removed from the stripper assembly and adjacent to a cutter assembly, the chuck assembly further having means to rotate the chuck jaws holding the body of the mine;

the cutter assembly having a cutter blade rotatably mounted thereon, the cutter assembly being movable, wherein the cutter blade may engage the body of the mine as the body of the mine rotates with the chuck jaws, such that the electronics assembly of the mine may be severed from the high explosive in the mine;

a puller assembly disposed adjacent to the second position of the chuck assembly, the puller assembly having a jaw means to grasp the safe and arming device in the mine after removal of the electronics assembly, means for retracting the jaw means holding the safe and disarming device such that the safe and disarming device is separated from the high explosive in the mine;

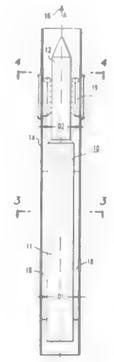
and means for remotely controlling the stripper assembly, the chuck assembly, the cutter assembly and the puller assembly.

5,353,677

SHOCK ISOLATION SYSTEM

Robert E. Kennedy, Scotts Valley, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 31, 1993, Ser. No. 114,884
Int. Cl.[5] F41F *3/04*
U.S. Cl. 89—1.816 11 Claims



1. In a shock isolation system for a structure having at least a first cylinder and a second cylinder of a smaller diameter, both having a common longitudinal axis and being joined by a conical transition member and adapted for axial movement in a container, with the second cylinder leading, the improvement comprising:

a) a flexible elastomeric pad adapted to be folded over on itself and being coupled to said container and positioned to contact and cushion said second cylinder during periods of non-axial movement;

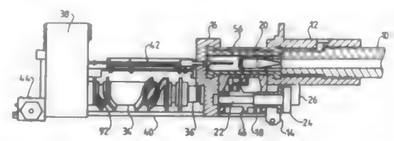
b) the folded over portion of said pad being in the travel path of said first cylinder and being adapted to unroll when contacted by said first cylinder during said travel to allow passage of said first cylinder.

5,353,678

AUTOMATIC GUN WITH A SWINGING CHAMBER FOR FIRING TELESCOPED CYLINDRICAL ROUNDS

Marc Rochelle; Jean-François Lescure, and Julien Jimenez, all of Bourges, France, assignors to Giat Industries, Versailles, France

Filed May 20, 1993, Ser. No. 64,960
Claims priority, application France, May 22, 1992, 92 06278
Int. Cl.[5] F41A *9/45, 9/50, 15/00*
U.S. Cl. 89—9 13 Claims



1. An automatic gun for firing telescoped cylindrical ammunition, the gun comprising a barrel, a breech, a round-receiving chamber disposed between the breech and the barrel, an eccentric pivot shaft parallel with the barrel and mounting said chamber for pivoting movement about the pivot shaft between a loading position and a firing position, means for displacing the chamber between said two positions, means for feeding ammunition to the chamber, electric motor means for driving

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the chamber displacing means and the ammunition feed means, and a rigid structure that carries the breech, the barrel, the pivot shaft, the ammunition feed means and the electric motor means in a stationary manner, the chamber displacing means comprising means driven by the electric motor means for rotating the pivot shaft about its own axis and transmission means connecting the pivot shaft to the chamber for transforming the rotation of the pivot shaft into a reciprocating oscillation of the chamber between its loading position and its firing position, the ammunition feed means being disposed behind the chamber and being in axial alignment therewith when the chamber is in its loading position, and comprising means for displacing a round of ammunition in axial translation between a feed position and the chamber while the chamber is in its loading position, insertion of a round via a rear end of the chamber causing an empty case of a previously fired round to be extracted via a front end of said chamber.

5,353,679

CIRCULATING AMMUNITION MAGAZINE

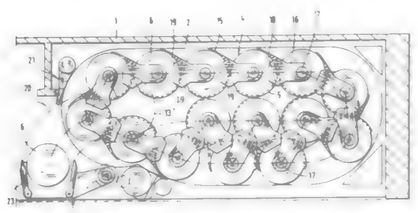
Adolf Nordmann, Erkrath, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Oct. 29, 1992, Ser. No. 968,349

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1991, 4136186.5

Int. Cl.[5] F41A *9/79*

U.S. Cl. 89—34 **16 Claims**



1. A circulating magazine comprising: a housing defined by housing walls including at least two oppositely disposed end walls; a plurality of parallely arranged ammunition containers for accommodating ammunition walls disposed in said housing and extending transverse to said two oppositely disposed end walls; means for articulatively connecting said containers together to form an endless transporting belt; drive means for rotating said endless transporting belt; and guide means, provided in said two oppositely disposed end walls of said housing, for guiding, and at least partially supporting, said ammunition containers such that said ammunition containers are disposed in two linearly extending layers, with said containers in one of said two layers being essentially folded and nested in a zigzag pattern.

5,353,680

MACHINE GUN APPARATUS

Michael Tiomkin, deceased, late of Beersheva, Israel by Sara Tiomkin, executor , and Refael Jhan, Beersheva, both of Israel, assignors to Israel Aircraft Industries Ltd., Lod, Israel

Continuation of Ser. No. 800,505, Nov. 27, 1991, abandoned. This application Nov. 24, 1993, Ser. No. 158,804

Claims priority, application Israel, Dec. 3, 1990, 96527

Int. Cl.[5] F41A *27/10*

U.S. Cl. 89—37.03 **10 Claims**

1. A weapons system comprising:

a weapons support element having upper and lower sides;

a machine gun having a longitudinal axis;

gun mounting means defining first and second axes mutually perpendicular to each other and to said longitudinal axis and means for selectably rotating said machine gun about said first and second mutually perpendicular axes;

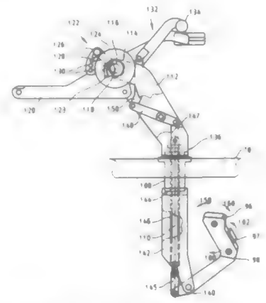
said gun mounting means comprising:

base means mounted on the upper exterior side of the weapons support element defining said first axis so that it is perpendicular to said support element,

gun support means rigidly supporting said machine gun for rotating about said first axis, rotatably mounted on said base means to define therewith said second axis such that it is parallel to the upper side of the weapons support element,

means for damping oscillation of said gun support means about said second axis,

handle means on said lower side of said weapons support element, for pivoting said gun mounting means about said first and second axis,



means for limiting the rotation of said means for selectably rotating said machine gun to predetermined first and second arcs of rotation about said respective first and second axes and with respect to respective first and second datum positions, said first arc of rotation extending for approximately minus 15° to plus 60° relative to said first datum position, and said second arc of rotation extending from approximately minus 15° to plus 65° relative to said second datum position,

means for aiming and for firing said machine gun from said upper side of said support element; and

means for aiming and for firing said machine gun from said lower side of said support element comprising means for selectably rotating said gun support means about said first and second axes.

5,353,681

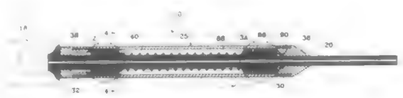
RECOIL DAMPENING DEVICE FOR LARGE CALIBER WEAPONS

Ronald E. Sugg, 7800 Castlecomb Rd., Knoxville, Tenn. 37849

Filed Mar. 16, 1993, Ser. No. 31,961

Int. Cl.[5] F41A *25/16*

U.S. Cl. 89—43.01 **16 Claims**



1. A recoil dampening device for a large caliber weapon, said large caliber weapon having a frame, a firing mechanism and a recoiling barrel having an exterior surface, said frame having a member for being held by a shooter, wherein when said firing mechanism discharges a round a recoil impulse is generated causing said recoiling barrel to travel rearwardly, wherein said recoil dampening device comprises:

a tube body carried by said frame, wherein said tube body is coaxial with said recoiling barrel, said tube body having a substantially cylindrical interior surface, a forward end and a rearward end wherein said interior surface is provided with at least one longitudinal groove;

a forward end cap threadably secured to said forward end of said tube body and a rearward end cap threadably secured to said rearward end of said tube body, wherein said recoiling barrel extends through said forward and said rearward end caps;

at least one longitudinal groove carried by said exterior surface of said recoiling barrel;

an index ring coaxial with said recoiling barrel and with said tube body, wherein said index ring is provided with at least one internal spline which is registered with and engages said at least one longitudinal groove carried by said exterior surface of said recoiling barrel and at least one external spline which is registered with and engages said at least one longitudinal groove provided on said interior surface of said tube body;

a spring carried within said tube body wherein said spring is coaxial with said recoiling barrel wherein said spring has a forward end and a rearward end;

a spring retainer threadably secured to said recoiling barrel adjacent to said forward end of said spring wherein said spring retainer engages and compresses said spring as said recoiling barrel travels rearwardly during recoil and wherein said spring returns said recoiling barrel to battery after said recoil;

a dynamic brake assembly coaxial with said recoiling barrel and adjacent to said rearward end of said spring wherein as said recoiling barrel travels rearwardly during said recoil, said spring retainer engages said spring and compresses said spring against said dynamic brake assembly thereby exerting an increasing amount of pressure against said dynamic brake assembly whereby said dynamic brake assembly produces an increasing amount of frictional braking force against said exterior surface of said recoiling barrel and against said interior surface of said tube body; and

a constant force brake assembly for maintaining a constant frictional force against said exterior surface of said recoiling barrel and against said interior surface of said forward end of said tube body, wherein said constant force brake assembly is coaxial with said recoiling barrel thereby maintaining said forward end of said tube body in coaxial alignment with said recoiling barrel.

5,353,682

CLOSING AND OPENING MEANS FOR CASTING MACHINE

Lucelio Sulprizio, 3059 Frandoras Cir., Oakley, Calif. 94561

Division of Ser. No. 817,772, Jan. 8, 1992, Pat. No. 5,246,059. This application Jun. 18, 1993, Ser. No. 80,067

Int. Cl.[5] F15B *15/22*

U.S. Cl. 91—395 **4 Claims**

1. A cylinder for removable attachment to a casting machine comprising a cylinder sleeve which houses a piston with a piston rod, said cylinder sleeve including a head member mounted in one end of said cylinder, said head member having integral vertical side grooves for mounting on said casting machines and further comprising a fluid flow line slidably passing through a center of said piston into said piston rod, wherein the fluid flow line is moveable within said cylinder when said piston reaches the opposite ends of its stroke, said fluid flow line further including separate means for contacting said piston at opposite ends of its stroke to move said fluid flow line.

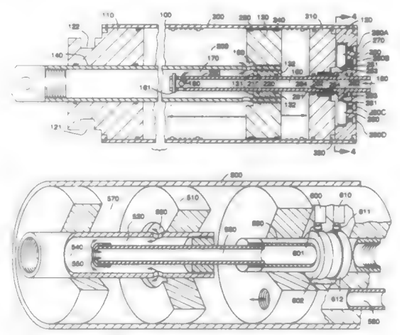
3. A hydraulic cylinder for removable attachment to a casting machine comprising:

a cylinder;

a piston slidably mounted in said cylinder;

a hollow piston rod connected to said piston and projecting from one end of said cylinder;

a fluid flow line projecting from the other end of said cylinder and slidably passing through said piston into said piston rod;



said fluid flow line moveable within said cylinder when said piston reaches the opposite ends of its stroke;

said fluid flow line including separate means for contacting said piston at opposite ends of its stroke to move said fluid flow line; and

fluid flow switching means responsive to movement of said fluid flow line for changing the fluid flow in said cylinder.

5,353,683

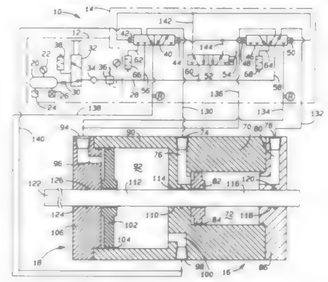
PNEUMATIC TRANSFORMER

Joseph D. Snitgen, 18828 Hillcrest, Beverly Hills, Mich. 48025

Filed Jul. 20, 1993, Ser. No. 95,159

Int. Cl.[5] F15B *11/08*

U.S. Cl. 91—444 **19 Claims**



1. A fluid operated device comprising:

output means operatively associated with said fluid operated device;

a first extensible fluid motor means having first means therein for transmitting power from said first fluid motor to said output means;

a second extensible fluid motor means having second means therein for transmitting power from said second fluid motor to said output means, said second power transmitting means being operatively connected to said first power transmitting means;

a first control valve in fluid communication with said first and second fluid motor means, said first control valve

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being movable to a first position and a second position, said first control valve operable in said first position to place one side of said first power transmitting means in fluid communication with a pressurized source of fluid and one side of said second power transmitting means in fluid communication with atmosphere, said first control valve operable in said second position to place said one side of said first power transmitting means in fluid communication with said one side of said second power transmitting means;

a second control valve in fluid communication with said first and second fluid motor means, said second control valve being movable to a first position and a second position, said second control valve operable in said first position to place the opposite side of said first power transmitting means in fluid communication with the opposite side of said second power transmitting means, said second control valve operable in said second position to place said opposite side of said first power transmitting means in fluid communication with said pressurized source of fluid and said opposite side of said second power transmitting means in fluid communication with atmosphere; and

a third control valve in fluid communication with said first and second control valves, said third control valve being movable to a first position and a second position, said third control valve operable in said first position to place said first and second control valves in said first positions such that the power transmitted to said output means by said first and second power transmitting means in additive in a first direction, said third control valve operable in said second position to place said first and second control valves in said second positions such that the power transmitted to said output means by said first and second power transmitting means is additive in a second direction.

5,353,684

HYDRAULIC CONTROL DEVICE FOR WORKING CYLINDERS WITH UNEQUAL PISTON SPEEDS

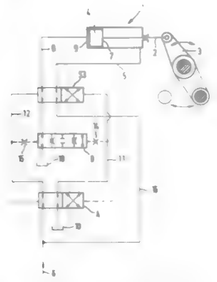
Friedrich Schwing, Gelsenkirchen, Fed. Rep. of Germany, assignor to Friedrich Wilh, Schwing, GmbH, Herne, Fed. Rep. of Germany

Filed Mar. 11, 1993, Ser. No. 29,796

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1992, 4208755

Int. Cl.[5] F15B *11/08, 13/04*

U.S. Cl. 91—446 **5 Claims**



1. A hydraulic control device comprising:

a working cylinder having a piston end and a rod end, a piston movable in the working cylinder between the piston end and the rod end, a piston rod attached to the piston and extending from the rod end of the working cylinder, the piston being movable by a volume of hydraulic medium in the working cylinder acting on the piston;

a hydraulically pilot-operated redirecting valve for redirecting the flow of the hydraulic medium in the working cylinder for controlling the direction of movement of the piston;

a pilot valve for operating the redirecting valve, the pilot valve being operatively connected to the redirecting valve through pilot control paths; and

a hydraulically pilot-operated control valve positioned between the pilot control paths for controlling the volume of hydraulic medium flowing into and out of the working cylinder, the hydraulic medium flowing through selected positions of the control valve such that the speed of the piston is adjusted by the position of the control valve, each position of the control valve having a piston speed associated therewith.

5,353,685

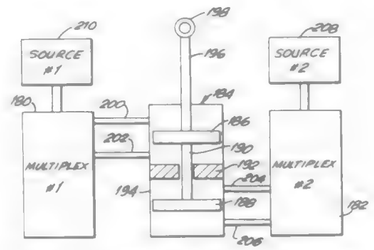
REDUNDANT FLUIDIC MULTIPLEXER

Barton H. Snow, Wyoming, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 571,043, Aug. 22, 1990, abandoned. This application Oct. 7, 1993, Ser. No. 133,683

Int. Cl.[5] F15B *13/044;* **F16D** *31/02*

U.S. Cl. 91—459 **7 Claims**



1. A system for distributing fluid pressure, comprising:

source means of fluid pressure;

a plurality of pressure lines connecting said source means to respective fluid-operated devices;

first fluid multiplexing means for applying different fluid pressures to each line in a repeating sequence of line connections;

second fluid multiplexing means for applying different fluid pressures to each line in a repeating sequence of line connections;

valve means connected to the first and second multiplexing means; and

control means for actuating the valve means so as to selectively operate said first and second fluid multiplexing means.

5,353,686

HYDRAULIC CIRCUIT FOR FOUR-POSITION CLOSED-CENTER SELECTOR VALVE CONTROLLED BY PRESSURE PROPORTIONAL CONTROL VALVE

Mitsuaki Nakamura, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 25, 1993, Ser. No. 67,785

Claims priority, application Japan, May 25, 1992, 4-156132

Int. Cl.[5] F15B *13/06, 13/042*

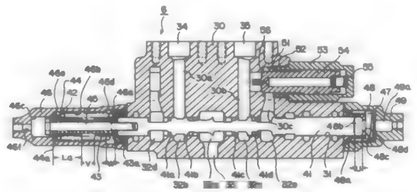
U.S. Cl. 91—461 **15 Claims**

1. Apparatus comprising:

a four-position closed-center selector valve, said four-position closed-center selector valve having a valve body and a valve spool; said valve body having an elongated spool bore therein, said spool bore having a longitudinal axis; said valve body having a fluid inlet port, a fluid outlet port, a first control port, a second control port, a first chamber, a second chamber, and a third chamber; said

first chamber being connected to and positioned between said spool bore and said second chamber, said second chamber being connected to and positioned between said first and third chambers, the diameter of said first chamber being greater than the diameter of said spool bore so as to form a first annular shoulder at the joindure of said first chamber and said spool bore, the diameter of said first chamber being greater than the diameter of said second chamber so as to form a second annular shoulder at the joindure of said first and second chambers, the diameter of said second chamber being greater than the diameter of said third chamber so as to form a third annular shoulder at the joindure of said second and third chambers;

said valve spool having first and second opposing ends and being slidably positioned within said spool bore for movement along said longitudinal axis of said spool bore, said valve spool having four positions spaced along the longitudinal axis of said spool bore including a closed-center position as a "hold" position, a "first direction of operation" position, a "second direction of operation" position, and a "floating" position; wherein in said "hold" position the structure of said valve body and said valve spool blocks fluid communication between any of said fluid inlet port, said fluid outlet port, said first control port, and said second control port; wherein in said "first direction of operation" position the structure of said valve body and said valve spool provides a fluid communication passageway between said fluid inlet port and said first control port and a fluid communication passageway between said second control port and said fluid outlet port; wherein in said "second direction of operation" position the structure



of said valve body and said valve spool provides a fluid communication passageway between said fluid inlet port and said second control port and a fluid communication passageway between said first control port and said fluid outlet port; wherein in said "floating" position the structure of said valve body and said valve spool provides a fluid communication passageway between said fluid outlet port and each of said first control port and said second control port while blocking fluid communication between said fluid inlet port and each of said first control port and said second control port;

a first spring retainer, a second spring retainer, and a spool extension element; said spool extension element extending outwardly at the first end of said valve spool and having a retaining element at the outer end thereof; each of said first and second spring retainers having an annular axial portion and an outwardly extending annular flange, the annular axial portion of each of said first and second spring retainers being slidably positioned on said spool extension element;

said annular flange of said first spring retainer being slidably positioned in said first chamber and having a diameter greater than the diameter of said spool bore and greater than the diameter of said second chamber, said annular flange of said second spring retainer being slidably positioned in said second chamber and having a diameter greater than the diameter of said third chamber;

a source of pilot pressure, a pressure proportional control valve, a first conduit connecting said source of pilot pressure to said pressure proportional control valve for producing a pilot pressure signal, a second conduit connecting said pressure proportional control valve to said third chamber, and a third conduit connecting said pressure proportional control valve to said spool bore adjacent said second end of said valve spool, so that said pressure proportional control valve can selectively apply said pilot pressure signal to one of said first and second opposing ends of said valve spool to cause said valve spool to change from one of its said positions to another of its said positions;

a first spring positioned between the annular flange of said first spring retainer and the annular flange of said second spring retainer to bias said valve spool to said "hold" position in the absence of a pilot pressure signal applied to either end of said valve spool;

wherein said valve spool is changed over from said "hold" position to said "first direction of operation" position by the application of said pilot pressure signal to said third chamber, wherein said valve spool is changed over from said "hold" position to said "second direction of operation" position by the application of a first value of said pilot pressure signal to said second end of said valve spool, and wherein said valve spool is changed over from said "hold" position to said "floating" position by the application of a second value of said pilot pressure signal to said second end of said valve spool;

whereby in said "hold" position said first spring biases said annular flange of said second spring retainer against said third annular shoulder and biases said annular flange of said first spring retainer against said first annular shoulder, with said first and second spring retainers being spaced apart from each other;

whereby in said "first direction of operation" position said annular flange of said first spring retainer is moved against said second annular shoulder while said first spring biases said annular flange of said second spring retainer against said third annular shoulder, with said first and second spring retainers being spaced apart from each other;

whereby in said "second direction of operation" position said first spring biases said annular flange of said second spring retainer against said retaining element at the outer end of said spool extension element and biases said annular flange of said first spring retainer against said first annular shoulder, with said first and second spring retainers being spaced apart from each other; and

whereby in said "floating" position said first spring biases said annular flange of said second spring retainer against said retaining element at the outer end of said spool extension element and biases said annular flange of said first spring retainer against said first annular shoulder, with said first and second spring retainers being in contact with each other.

5,353,687

POCKET CYLINDER FOR SLIDING DOOR

Larry E. Koenig, c/o Komar Industries, Inc. 4425 Marketing Pl., Groveport, Ohio 43125

Filed Dec. 18, 1992, Ser. No. 993,123

Int. Cl.[5] B65D *43/20;* **F01B** *1/02*

U.S. Cl. 92—61 **20 Claims**

1. For use in a door slidably mounted on support structure, a fluid cylinder assembly comprising:

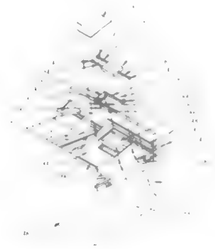
an elongate, unitary housing having two pairs of opposing, substantially planar side walls enclosing first, second and third substantially parallel longitudinal bores adapted to receive pressurized fluid, said housing including removable end caps having a plurality of fluid passages interconnecting said bores for conveying said pressurized fluid to said bores substantially simultaneously;

first rod means displaceable within said first bore in response to fluid pressurization therein and extending through a first one of said end caps of said housing; and

second and third rod means displaceable within said second and third bores in response to fluid pressurization therein

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and extending through a second one of said end caps at an opposite end of said housing, said rod means being positioned relative to each other in said housing such that extension of said rod means from said first and second end



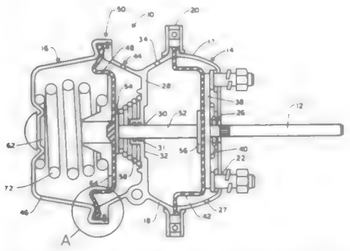
caps of said housing in response to said pressurization does not develop rotational torque on said housing, and said side walls are shaped to engage a recess formed in said door such that said housing and said cylinders are reinforced and provided with columnar strength thereby.

5,353,688

TAMPER-RESISTANT BRAKE ACTUATOR

William C. Pierce, and William J. Hicks, both of Muskegon, Mich., assignors to Nai Anchorlok, Inc., Muskegon, Mich.

Filed Jun. 26, 1992, Ser. No. 905,004
Int. Cl.[5] F16D *65/24*
U.S. Cl. 92—63 **20 Claims**



1. In a fluid-operated brake actuator of the type having a generally cylindrical head with a first annular flange, said first annular flange having a radially outwardly protruding shoulder and an annular rim extending axially from the shoulder, said rim having an inward face and a terminal annular edge, said actuator further having a flange case with a second annular flange, said second annular flange having an axially disposed outward face in confronting relationship to the inward face, said head and flange case thereby defining a chamber, and a power spring compressed within the chamber, the force of said power spring tending to separate the head from the flange case, the improvement comprising:

a first annular groove in the inward face, said first annular groove being disposed axially from the terminal annular edge,

an opposing second annular groove in the outward face, a portion of the outward face being in confronting relationship to the inward face between the first annular groove and the terminal annular edge, and

a ring having a radial outward portion disposed in the first annular groove and a radial inward portion disposed in the second annular groove,

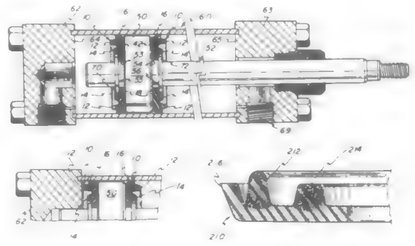
whereby the head is securely fixed to the flange case and the ring is substantially inaccessible from the exterior of the brake actuator thereby deterring manual separation of the head from the flange case.

5,353,689

IMPACT DAMPING MEANS FOR POWER CYLINDERS

David J. Bolt, West Alexandria, Ohio, and Ray H. Herner, Alpena, Mich., assignors to Mosier Industries, Inc., Brookville, Ohio

Continuation-in-part of Ser. No. 912,299, Jul. 13, 1992, Pat. No. 5,224,413. This application Jul. 2, 1993, Ser. No. 86,733
Int. Cl.[5] F01B *11/02*
U.S. Cl. 92—85 R **22 Claims**



1. An impact damping element for use with a power cylinder having a piston positioned for reciprocating movement within a cylinder having opposing cylinder ends, said element being adapted to be mounted within said cylinder to cushion impact forces between said piston and said cylinder ends, said element comprising:

a bumper portion for forming a cushioning element between said piston and one of said cylinder ends;

a seal portion for engaging a surface of said power cylinder in sliding and sealing contact; and

wherein said bumper portion and said seal portion are formed integrally with each other and the material properties of said bumper portion are different from the material properties of said seal portion.

16. An impact damping element for use with a piston positioned for reciprocating movement within a cylinder having opposing cylinder ends, said element being adapted to be mounted within said cylinder to cushion impact forces between said piston and said cylinder ends, said element comprising:

an annular bumper portion for engaging one of said cylinder ends;

an annular seal portion located radially outwardly from said bumper portion for extending around the periphery of said piston and engaging a wall of said cylinder in sealing contact; and

wherein said bumper portion and said seal portion are formed integrally with each other and have different material characteristics such that the material forming said bumper portion has a greater capacity for dissipating impact energy than the material forming said seal portion and said material forming said seal portion has lower friction and better wear characteristics than said material forming said bumper portion.

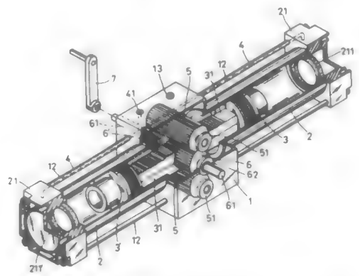
5,353,690

ACTUATOR TYPE RECIPROCATING MECHANISM

Guo S. Shin, 6F2, No. 216, San Do 3rd Rd., Kao Hsiung, Taiwan

Filed Mar. 4, 1993, Ser. No. 26,433
Int. Cl.[5] F01B *7/04*; **F16H** *19/04*
U.S. Cl. 92—86 **3 Claims**

1. A reciprocating mechanism comprising a housing, a pair of cylinders oppositely extended outwards from said housing and each including a free end, a piston slidably engaged in each of said cylinders, a cap fixed to said free end of each of said cylinders and communicated with the respective cylinders, a pair of gears rotatably supported in said housing and arranged in perpendicular to said cylinders, a pair of pinions engaged between said gears and each including an axle extended outwards of said housing, a pair of racks disposed in parallel with each other and disposed between said pinions and each engaged with a respective gear and each including one end secured to the respective pistons, said pinions and said axles being rotated by said gears and said racks when said pistons move toward each other and move away from each other.



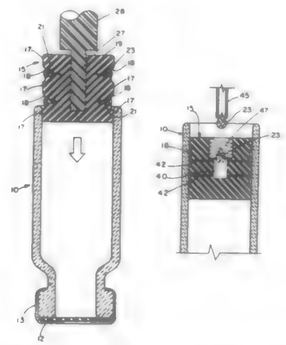
2. A mechanism according to claim **1**, wherein said housing includes a first hole formed therein and communicated with an interior thereof, at least one tube coupling said housing to each of said caps, a second hole formed in said housing and communicated with said caps via said tubes respectively, said pistons are caused to move toward each other when pressurized air is supplied into said caps via said second hole and said tubes, and said pistons are caused to move away from each other when said pressurized air is supplied into said housing via said first hole.

5,353,691

SELF-LUBRICATING PISTON FOR PHARMACEUTICAL CONTAINER

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corp., Laguna Hills, Calif.

Filed Apr. 14, 1993, Ser. No. 47,976
Int. Cl.[5] F01B *31/10*
U.S. Cl. 92—159 **11 Claims**



1. A piston for a pharmaceutical container comprising:

a container having an open end, a closed end, and a wall structure having an inner surface, the container having a longitudinal axis;

a seal member having an upper side, comprising a compressible material, and being at least partially positioned within the container between the open end and closed end, the seal member also having an outer periphery and means for retaining a lubricant, the outer periphery being dimensioned to provide sealing engagement with said inner surface of said wall structure;

a lubricant contained within said means for retaining a lubricant; and

means for exerting a longitudinally-directed force on the seal member and at least partially compressing the seal member in the direction of the longitudinal axis, said exerting means compressing said retaining means and forcing said lubricant from said retaining means and into contact with said inner surface of said container when said seal member is at least partially compressed in the direction of the longitudinal axis.

7. A piston for a pharmaceutical container comprising:

a container having an open end, a closed end, and a wall structure having an inner surface;

a seal member positioned within the container, comprising;

means for retaining a lubricant,

an outer periphery dimensioned to provide sealing engagement with said inner surface of said wall structure,

a lubricant reservoir in fluid communication with ambient,

a plurality of lubricant channels fluidly coupled to the lubricant reservoir, the lubricant channels extending between said lubricant reservoir and said outer periphery; and

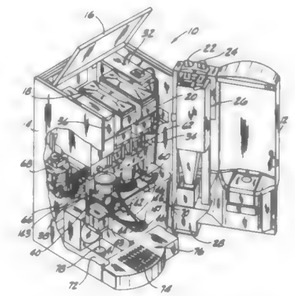
a plunger configured to drivingly engage the seal member, the plunger including means for displacing a lubricant introduced into the lubricant reservoir so that said lubricant is forced through said plurality of lubricant channels and into contact with said inner surface of said container.

5,353,692

HOT BEVERAGE BREWING APPARATUS

Robert J. Reese, St. Charles; Gerald J. Podgorny, St. Louis; Franklin D. Newkirk, Florissant; Mark S. Schmitz, St. Charles, and George R. Fink, St. Louis, all of Mo., assignors to Unidynamics Corporation, Stamford, Conn.

Filed Sep. 29, 1993, Ser. No. 129,249
Int. Cl.[5] A47J *31/00*
U.S. Cl. 99—289 T **17 Claims**



1. A beverage brewing and dispensing machine, comprising:

a brewing cylinder providing a brewing chamber therein for receiving a hot liquid and a beverage product for brewing;

a base member disposed beneath the brewing cylinder and having a brewed liquid outlet therein through which beverage brewed in the brewing chamber can flow;

means for sealing between the base member and a bottom end of the brewing cylinder with a filter material therebe-

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tween for sealing the cylinder during brewing when the brewing cylinder is brought into engagement with the filter material;

means for feeding filter material between the bottom edge of the brewing cylinder and the base member when the brewing cylinder is disengaged from the base member;

means for supplying liquid and beverage product to an upper portion of the brewing cylinder; and

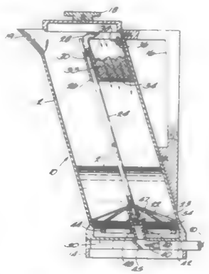
a dispersing surface disposed at the upper portion of the brewing cylinder upon which the liquid and beverage product impinge from their supply means and which disperses the liquid and beverage product as they fall to a bottom portion of the brewing chamber.

5,353,693

COFFEE MAKER

Martin Verhoven, 166 Robert St., Clintonville, Wis. 54929

Filed Jun. 1, 1993, Ser. No. 69,783
Int. Cl.[5] A47J *31/10*
U.S. Cl. 99—308 6 Claims



1. A coffee percolator comprising

a base containing a heating element,

a chamber extending upwardly and inclined at an oblique angle from the vertical toward a spout located on the upper end of said chamber,

a cupped member centrally connected to a tube for conveying heated water upwardly from the bottom of said chamber, said tube being formed of and upper portion and a lower portion and being inclined and centrally located within said chamber, the upper end of said tube being bent away from said spout,

a basket for containing coffee grounds spaced from said spout, whereby coffee percolated through said basket drains across the surface of the liquid at the bottom of said chamber, and wherein said upper portion of said tube is integral with said basket and said lower portion of the tube is tightly fitted into said upper portion.

5,353,694

HEATING AND COOKING APPARATUS

Todd Fins, 232 Saddlebow Rd., Westhills, Calif. 91370

Continuation-in-part of Ser. No. 921,061, Jul. 29, 1992, Pat. No. 5,237,912. This application Aug. 11, 1993, Ser. No. 105,510
Int. Cl.[5] A47J *37/07*
U.S. Cl. 99—393 6 Claims

1. A combination heating and food cooking apparatus comprising:

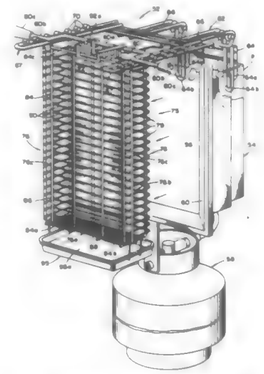
(a) a container for containing combustible gases;

(b) a gas operated burner panel connected to said container for radiating heat in an outward direction;

(c) connector means for connecting said burner panel to said container, whereby said panel is superimposed over said container;

(d) a supporting frame connected to said burner panel, said supporting frame having a support arm extending in an outward direction from said burner panel; and

(e) a food holding rack assembly connected to said support arm, said rack assembly including a food receiving basket



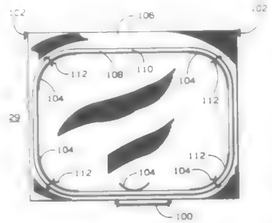
having a back portion and a front food engaging rack adjustably connected to said food receiving basket in a generally parallel spaced relationship with said back portion, said food holding rack assembly being disposed in the path of the heat radiating from said burner.

5,353,695

SELF-EXPANDING GASKET

Brent A. Ledet, Metairie, La., assignor to The Laitram Corporation, Harahan, La.

Continuation-in-part of Ser. No. 887,832, May 26, 1992, Pat. No. 5,184,538. This application Feb. 8, 1993, Ser. No. 14,713
Int. Cl.[5] A23L *3/00;* A23N *12/00;* A47J *27/16*
U.S. Cl. 99—443 C 10 Claims



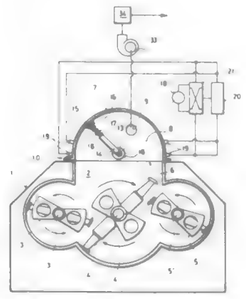
1. A self-expanding gasket for forming a seal between a first surface having an opening therethrough and a second surface covering the opening, said self-expanding gasket comprising an endless tube positioned between the first surface and the second surface and surrounding the opening, a gaseous mixture entrapped within said endless tube, said gaseous mixture exhibiting a pressure increase with temperature from a low-temperature pressure to a greater high-temperature pressure, said gaseous mixture expanding against said tube and said tube expanding against said to form a seal between the first surface and the second surface by the self-expanding gasket at a high temperature.

5,353,696

CONCHING DEVICE

Max Stadelmann, Salmsach, Switzerland, and Hans-Joachim König, Bad Salzuflen, Fed. Rep. of Germany, assignors to Bühler AG, Uzwil, Switzerland

Continuation of Ser. No. 921,924, Jul. 29, 1992, abandoned. This application Sep. 23, 1993, Ser. No. 126,721
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1991, 4125629
Int. Cl.[5] A23G *1/00, 1/10, 1/16;* B01F *7/08*
U.S. Cl. 99—472 24 Claims



1. A conching machine for treating chocolate paste by kneading and mixing comprising

wall means surrounding a treatment chamber and forming a trough for containing said chocolate paste, said

trough having at least two compartments parallel to each other, and

an upper wall disposed above said trough and having an opening;

a covering hood for covering at least a portion of said opening, said hood having an outer and inner surface as well as a lower edge to join said upper wall;

at least two rotors within said trough, each one of the said rotors having

an axis of rotation,

a shaft extending along said axis of rotation, and kneading elements radially projecting from said shaft,

each rotor being located within one of said compartments;

motor means for driving said rotors; and

cleaning means for cleaning said inner surface of said hood.

5,353,697

ELECTRICAL APPLIANCE FOR THE TREATMENT OF FOOD PRODUCTS, WITH IMPROVED SAFETY DEVICE

Gerard Venturati, Collonges; Pierre Selves, Bron; Christian Burgel, Chaponost; Jacques Fouquet, Lyon, and Michael Bertrand, deceased, late of Luzinay, all of France by Maxime Bertrand, Julien Bertrand, Christiane Bertrand, Jean-David Bertrand, heirs , assignors to Santos S.A., Vaulx en Velin, France

Filed Jun. 17, 1993, Ser. No. 77,512
Claims priority, application France, Jun. 17, 1992, 92 07607
Int. Cl.[5] A23N *1/00;* B01F *13/04;* A47J *27/09*
U.S. Cl. 99—492 22 Claims

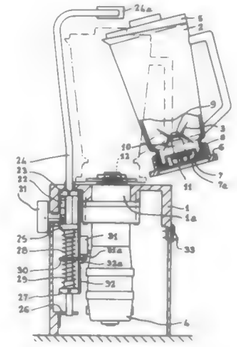
1. An appliance for the treatment of food products including a rotatable tool driven by an electric motor mounted within a frame and wherein the tool is positioned adjacent a base portion of a bowl having an upper opening selectively closed by a lid, the appliance comprising:

a safety device including engaging means for engaging the lid to force the lid to close the upper opening of the bowl;

an electrical circuit for supplying power to the motor and including a switch means having a contact movable from a first position, wherein power is disconnected from the motor, to a second position, wherein power is disconnected from the motor, to a second position, wherein power is supplied to the motor, said contact of said switch means being normally in said first position;

a drive shaft assembly rotatably driven by the motor and means for connecting said drive shaft assembly to the tool;

a brake means mounted in opposition with respect to said drive shaft assembly and being movable between a first position to prevent rotation of said drive shaft assembly and a second position wherein rotation of said drive shaft assembly is permitted, and resilient means normally urging said brake means toward said first position;



a can means, means extending from the frame for rotating said can means between first and second positions; and

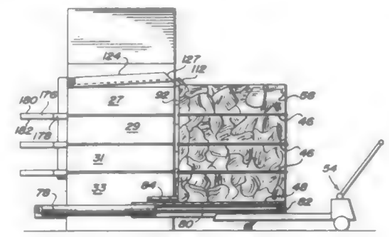
connecting means connecting said cam means to said locking means and said contact of said switch means, said connecting means being operable so that when said can means is in said first position, said brake means and said contact of said switch means will be in their first positions, and when said cam means is in said second position, said engaging means will force the lid to close the upper opening in the bowl as said brake means and said contact of said switch means are moved to their second position thereby, allowing the drive shaft assembly to rotate the tool.

5,353,698

METHOD FOR COMPACTING MATERIAL USING A HORIZONTAL BALER WITH MOVABLE BOTTOM SUPPORT EJECTOR

James K. Robbins, Fayette, Ala., assignor to Marathon Equipment Company, Vernon, Ala.

Division of Ser. No. 858,070, Mar. 26, 1992, Pat. No. 5,247,880. This application Sep. 27, 1993, Ser. No. 126,644
Int. Cl.[5] B30B *15/32;* B65B *13/20*
U.S. Cl. 100—3 18 Claims



1. The method of baling material, comprising the steps of:

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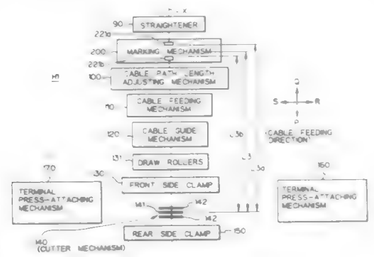
a) placing material to be baled into a receiving chamber;
b) reciprocating a ram between first and second ends of the receiving chamber and thereby transferring the material into an adjacent compaction chamber limited by the ram when at the first end;
c) continuing to place material into the receiving chamber and to transfer the material into the compaction chamber and thereby causing the material in the compaction chamber to be compacted into a bale;
d) placing straps about the bale while in the compaction chamber after a desired degree of compaction has been achieved;
e) relieving the compaction pressure on the bale by moving the ram from the first end toward the second end and thereby allowing the bale to expand against the straps; and
f) moving a first door defining a portion of the compaction chamber, the first door being selectively movable between a first orientation closing the compaction chamber and a second orientation providing a first opening communicating with the compaction chamber;
g) moving a second door defining the top of the compaction chamber, the second door being selectively movable between a first orientation closing the compaction chamber and a second orientation providing a second opening communicating with the compaction chamber; and
h) moving a support which defines a portion of the compaction chamber bottom through the first opening for discharging said compacted and strapped bale of material therethrough.

5,353,699

HARNESS PRODUCING APPARATUS AND METHOD

Yoshikazu Tamura, Ishikawa, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Nov. 12, 1993, Ser. No. 151,002
Claims priority, application Japan, Nov. 13, 1992, 4-328829
Int. Cl.[5] B41F *17/00*
U.S. Cl. 101—35 **2 Claims**



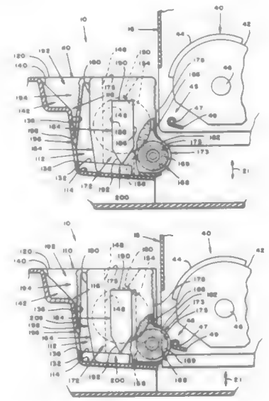
1. A harness producing apparatus comprising:
a cable feeding mechanism for intermittently feeding an electrical cable by a given length in its longitudinal direction;
a marking mechanism disposed on an upper stream along a cable feeding direction of said cable feeding mechanism for applying a distinctive mark on said electrical cable during a feed resting period of said cable feeding mechanism;
a cable end treating unit disposed on a lower stream in said cable feeding direction of said cable feeding mechanism for cutting said cable fed by the given length to form a cut electrical cable having a given length during said feed resting period of said cable feeding mechanism; and
a cable path length adjusting mechanism for adjusting a cable path length between said marking mechanism and said cable end treating mechanism in accordance with the length of said cut cable.

5,353,700

MAILING MACHINE INCLUDING MOVABLE INKING CARTRIDGE

David Privin, Stamford, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed May 20, 1991, Ser. No. 703,306
Int. Cl.[5] B41F *31/00*
U.S. Cl. 101—91 **20 Claims**



1. A mailing machine comprising:
a. a base;
a postage meter removably mountable on the base;
the base and meter respectively including means for guiding the meter in a path of travel to a predetermined position on the base when mounting the meter thereon; and
d. a disposable inking cartridge comprising:
i. a generally rectangularly-shaped hollow housing movably connected to the base, the housing having opposed side walls and having an elongate perimeter edge wall extending between the side walls, each of the side walls including an arcuately-shaped cam surface oppositely spaced from the cam surface of the other side wall, the cam surfaces and edge wall defining a substantially arcuately-shaped aperture formed in the housing; and
ii. a transfer roller impregnated with printing ink and rotatably connected to the side walls so as to extend therebetween and be accessible via the housing aperture, and the cam surfaces located in the path of travel of the meter for engagement thereby to move the housing out of the path of travel and carry therewith the transfer roller as the postage meter is mounted on the base.

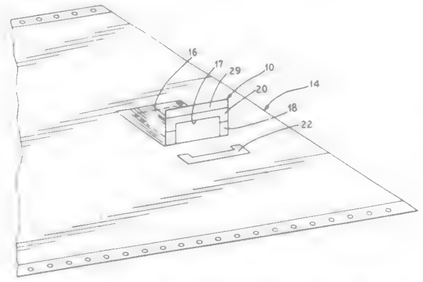
5,353,701

STENCIL APPARATUS

Charles L. Casagrande, 423 S. Elmwood, Aurora, Ill. 60506

Continuation of Ser. No. 844,144, Mar. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 545,473, Jun. 27, 1990, abandoned. This application Aug. 5, 1993, Ser. No. 102,700
Int. Cl.[5] B41N *1/24*
U.S. Cl. 101—127 **38 Claims**

1. A stencil apparatus which can be releasably secured to an upper surface of a substrate, the stencil apparatus comprising:
stencil material having a top surface and a bottom surface, the stencil material comprising a deformable means for accepting impression of indicia thereon and enabling the reproduction of the impressed indicia on an other surface when a fluid medium is applied on the top surface such that the fluid medium can pass through the impressed indicia to reproduce the impressed indicia on the other surface; and
b) substrate attachment means for releasably securing the bottom surface of the stencil material on the substrate with the bottom surface of the stencil material in the desired location on the substrate, the substrate attachment means being cooperatively mounted on the bottom surface of the stencil material and comprised of a tack-free material characterized by cleanly separating the stencil material from the substrate, such that each of the stencil material and the substrate are tack free after separating, said substrate attachment means including



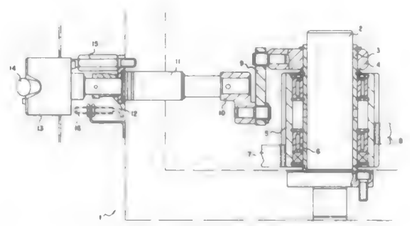
a first film affixed to the bottom surface of the stencil material by first adhesive means, the first film covering a portion of the stencil material, and
a second film releasably secured to the first film, the second film being sufficient to substantially cover the first film, the second film being secured to the substrate by second adhesive means, a release liner being stripably mounted to the second adhesive means, the release liner being stripped from the second adhesive means prior to securing the second film to the substrate with the second adhesive means, the first film cleanly separating from the second film and the first film and the second film are tack free after such release.

5,353,702

DEVICE FOR ENGAGING AND DISENGAGING AN INKING UNIT AND DAMPENING UNIT DRIVE

Uwe Dengel, Dielheim, and Rudi Junghans, Wilhelmsfeld, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Sep. 16, 1993, Ser. No. 122,763
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1992, 4230937
Int. Cl.[5] B41F *7/40, 31/32;* **B41L** *27/32*
U.S. Cl. 101—148 **9 Claims**



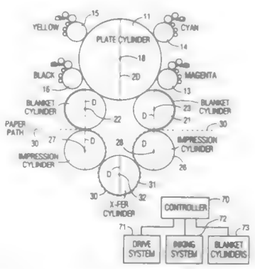
1. A device for engaging and disengaging an inking unit and dampening unit drive in a rotary printing machine, comprising:
an operator-accessible control knob mounted at a printing unit and defining switching positions;
a sensor assembly mounted at the printing unit for detecting a safety rest or safety release movement of said control knob preceeding a switching movement of said control knob;
a control shaft connected to and being rotatable by said control knob, a cam member with a cam surface disposed on said control shaft, cam follower means in the form of sensing devices for continuously sensing said cam surface;
a traverser bushing axially movably mounted in the printing unit; and
transmission means connected between said control knob and said traverser bushing for converting a switching movement of said control knob to an axial movement of said traverser bushing.

5,353,703

MULTI-COLOR, SINGLE-PLATE PRINTING PRESS

Paul T. Rieker, P.O. Box 911, Murrieta, Calif. 92564

Filed Sep. 29, 1992, Ser. No. 952,689
Int. Cl.[5] B41F *5/16, 5/22*
U.S. Cl. 101—177 **10 Claims**



1. A printing unit comprising a single plate cylinder of a first diameter and first and second blanket cylinders of a second diameter equal to one-half of said first diameter, said plate cylinder including means for connecting to the surface thereof a plate including a sequence of first, second, third and fourth images each of said images being in a fixed position with respect to one another and occupying one-quarter of the circumference of said plate cylinder, each of said blanket cylinders having a recessed surface over half of it's circumference, said printing unit including means for rotating synchronously said plate cylinder and said blanket cylinders about respective axes such that said first blanket cylinder contacts said plate cylinder only at the position of said first and third images and said second blanket cylinder contacts said plate cylinder only at the positions of said second and fourth images, said printing unit also including first and second impression cylinders juxtaposed and associated, respectively, with said first and second blanket cylinders and having a paper path therebetween, said impression cylinders also having said second diameter, said printing unit also including first, second, third and fourth inking means and means for applying ink from said inking means to respective ones of said images controllably.

5,353,704

STAMPING APPARATUS AND METHOD FOR FORMING A STAMP AND STAMPING USING ELONGATED MEMBERS

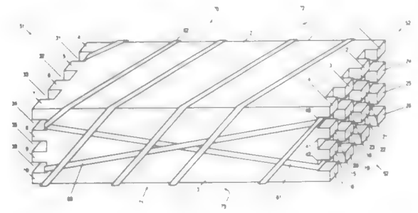
Karen J. Canto, Sonora, Calif., assignor to WildeWood Creative Products, Inc., Sonora, Calif.

Filed Jul. 9, 1993, Ser. No. 89,731
Int. Cl.[5] B41F *17/00*
U.S. Cl. 101—372 **30 Claims**

1. A stamp having a stamp body, said stamp body having a

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surface and a plurality of grooves formed within said stamp body for securing an elongated flexible member to said stamp body, said stamp further comprising a elongated flexible member, said elongated flexible member extended across said surface of said stamp body so as to form a stamp surface, a portion of said elongated flexible member passing through at least one



of said grooves so as to secure said elongated flexible member to said stamp body and wherein said stamp body has a rectangular shape including a top surface, a bottom surface and four side surfaces and wherein at least one of said plurality of grooves is formed within said top surface and wherein at least one of said grooves is cut within said bottom surface.

5,353,705

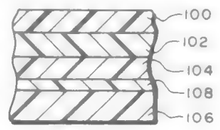
LITHOGRAPHIC PRINTING MEMBERS HAVING SECONDARY ABLATION LAYERS FOR USE WITH LASER-DISCHARGE IMAGING APPARATUS

Thomas E. Lewis, E. Hampstead; Michael T. Nowak, Leominster, and Kenneth T. Robichaud, Fitchburg, all of Mass., assignors to Presstek, Inc., Hudson, N.H.

Continuation-in-part of Ser. No. 62,431, May 13, 1993, Pat. No. 5,339,737, which is a continuation-in-part of Ser. No. 917,481, Jul. 20, 1992, abandoned. This application Sep. 22, 1993, Ser. No. 125,319

Int. Cl.[5] B41N *1/14*

U.S. Cl. 101—453 **18 Claims**



1. A lithographic printing member directly imageable by laser discharge, the member comprising:

a. a topmost first layer; and

b. a second layer underlying the first layer, the second layer being characterized by ablative absorption of laser radiation;

c. a third layer underlying the second layer, the third layer:

i. being substantially transparent to the laser radiation;

ii. being ablated only partially in response to ablation of the second layer; and

iii. differing from the first layer in its affinity for at least one printing liquid selected from the group consisting of ink and a fluid that repels ink.

5,353,706

METHOD OF PRINTING ON NATURAL FIBER FABRICS USING A RESIN-FREE VARNISH

Thomas Kerle, Plauener Strasse 4, 8510 Furth/Bayern BR, Fed. Rep. of Germany

Filed Jul. 30, 1992, Ser. No. 922,154

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1991, 4126096

Int. Cl.[5] B41F *1/16*

U.S. Cl. 101—492 **11 Claims**

1. A transfer print method for printing dyes on woven fabrics which do not demonstrate sufficient affinity for the dyes to be transferred to the fabric, said method comprising the steps of:

(a) selecting a transparent varnish which is at least free of natural resins; then

(b) treating the fabric in such a manner that the transparent varnish is applied to surfaces of the fabric to which dye transfer is to be effected; and then

(c) transfer printing the dye on the treated surfaces of the fabric.

5,353,707

PRIMING CHARGE WITH ANNULAR PERCUSSION AND PROCESS FOR ITS MANUFACTURE

Jean-René Duguet, Orry-La-Ville, France, assignor to NCS Pyrotechnie et Technologies, Fosses, France

Filed Jul. 19, 1993, Ser. No. 93,820

Claims priority, application France, Jul. 20, 1992, 92 08945

Int. Cl.[5] C06D *5/06*; **C06B** *25/34*

U.S. Cl. 102—290 **16 Claims**

1. A priming charge with annular percussion, free from any toxic metal, having the following weight composition:

40 to 90% of an explosive mixture of a dinitrobenzofuroxan salt and of tetrazene,

5 to 30% of a pulverulent oxidizing agent,

5 to 25% of a pulverulent reducing agent.

5,353,708

METHOD FOR PRODUCTION OF ULTRADISPERSED DIAMOND

Starvri Y. Stavrev, JK Mladost 1, Bl. 9, Entr. A, App 4; Slavcho B. Lazarov, JK Lyulin Bl. 135; Khristo L. Stoev, Planinetz #30; Lyudmil G. Markov, JK Druzba 2, Bl. 211, Entr. A, App 28, and Valeri I. Ivanov, Bl. 309, Entr. A, all of Sofia, Bulgaria

Filed Nov. 8, 1991, Ser. No. 790,635

Claims priority, application Bulgaria, Nov. 9, 1990, 93185

Int. Cl.[5] F42B *3/00*

U.S. Cl. 102—301 **5 Claims**

1. A method of producing ultradispersed diamond particles, which involves decomposition of an explosive as a result of a detonation process, the process comprising the steps of exploding in a confined space, at least one organic explosive or a mixture of organic explosives surrounded by water, wherein the organic explosive or explosives have a stoichiometrically negative oxygen balance, which explosion is initiated, in a normal environment, or in a low-vacuum environment, said confined space being an explosively unrelieved, confined space when the explosive is located in a hard shell with radial-axial control of the detonation process from its center to its periphery or in a soft shell with radial-axial control from the periphery to its center, purifying and recovering ultradispersed diamond particles.

5,353,709

METHOD FOR IMPROVING THE MECHANICAL STRESSABILITY OF AMMUNITION BODIES WITH SHAPED CHARGES

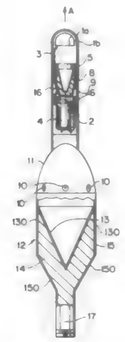
Anton Emmenegger, and Ralph Eller, both of Altdorf, Switzerland, assignors to Schweizerische Eidgenossenschaft Vertreten Durch Die Eidg. Munitionsfabrik Altdorf Der Gruppe Fuer Ruestungsdienste, Altdorf, Switzerland

Filed Aug. 5, 1992, Ser. No. 925,074

Claims priority, application Switzerland, Aug. 16, 1991, 02426/91

Int. Cl.[5] F42B *1/02*

U.S. Cl. 102—309 **14 Claims**



1. A method for the improvement of the mechanical stressability of tandem shaped ammunition bodies having at least one cavity charge mounted between a metallic case and a lining, which are subject to high acceleration and/or are subjected to shock waves, comprising coating at least one of the outer surfaces of the lining and the inner surface of the case with a styrene-containing copolymer lacquer adhesive to a coating thickness of 1 to 100 μm and a broad temperature range modulus of elasticity of about 3 N/mm^2; allowing the adhesive to dry; and placing an explosive charge into the cavity between the case and the lining.

5,353,710

CONTAINER FITTED WITH ELECTRICAL CONNECTING MEANS

Nicolas Eches; Bernard Brion, both of Bourges; Michel Brule, Lury, and Rene Laurensou, Bourges, all of France, assignors to Giat Industries, France

Continuation-in-part of Ser. No. 832,304, Feb. 7, 1992, Pat. No. 5,241,909. This application Oct. 8, 1992, Ser. No. 957,550

Claims priority, application European Pat. Off., Jan. 22, 1992, 92400170.4

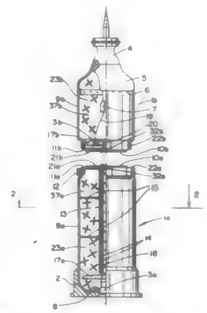
Int. Cl.[5] F42B *5/16*

U.S. Cl. 102—443 **47 Claims**

1. A container assembly for propelling a projectile from a weapon, comprising:

first and second containers which are separable from each other, said first container comprising a casing and a contact pin for receiving an electrical signal from a weapon, said casing of said first container having first and second ends, said first end being closed by a top cover, said second container comprising a casing having said projectile at least partially housed therein, said casing of said second container having first and second ends, said first end being closed by a bottom cover;

electrical connection means for electrically connecting said contact pin to said projectile such that an electrical signal may be transmitted to said projectile from said weapon when said first and second containers are assembled together with said top and bottom covers in contact with each other, said electrical connection means comprising: a first conductor extending through said first container, a first end of said first conductor being connected to said contact pin; a second conductor extending through said second container, a first end of said second conductor being connected to said projectile; and connector means



for electrically connecting said first and second conductors to each other; and

a flame-transmitting device extending axially along substantially the entire length of said first container, said first conductor being secured to said flame-transmitting device.

5,353,711

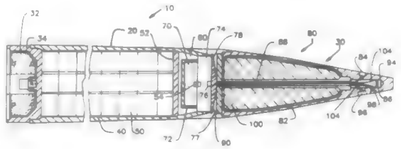
EXTENDED RANGE ARTILLERY PROJECTILE

Richard D. Botticelli, Beach Haven; Frank A. Brody, Rockaway, and Francis Ottaviano, Denville, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 4, 1993, Ser. No. 130,944

Int. Cl.[5] F42B *10/40*

U.S. Cl. 102—490 **2 Claims**



1. An artillery projectile comprising:

a body in aerodynamic form and having a front end and a rear end,

a payload in said body,

a rocket motor assembly at the forward end of said body, and a multi-functional fuzing system having a first initiator for said rocket motor and a second initiator for said payload.

5,353,712

MARKING PELLET GUN AND RIGID, FRACTURABLE PELLET THEREFOR

Christy L. Olson, 5500 74th St., NE. #A, Marysville, Wash. 98270

Continuation of Ser. No. 808,205, Dec. 31, 1991, abandoned. This application Jan. 13, 1993, Ser. No. 4,193

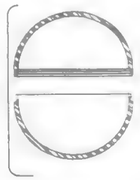
Int. Cl.[5] F42B *10/00*

U.S. Cl. 102—513 **8 Claims**

1. In the combination of an air powered gun for discharging

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projectiles and a projectile therefor, the improvement wherein said projectile comprises a rigid body shell of sufficient strength to not fracture on being discharged from the gun but not of sufficient strength to not fracture on contact with a target, said rigid body shell being formed of injection molded



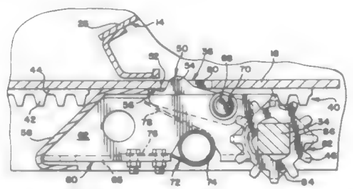
plasticized water soluble starch with negligible reversible elastic deformation and an ASTM Shore-Durometer hardness in the range from 30 to 80, said projectile further comprising a non-toxic target marking material contained within said rigid body shell.

5,353,713

APPARATUS FOR CONTROLLING OPERATION OF A RAILCAR DISCHARGE GATE ASSEMBLY HAVING A LOST MOTION MECHANISM FOR UNLOCKING THE GATE PRIOR TO MOVEMENT

Jeremy J. Dohr, Milwaukee, and Robert S. Toms, Racine, both of Wis., assignors to White Welding and Mfg., Inc., Kenosha, Wis.

Filed Oct. 1, 1993, Ser. No. 130,250
Int. Cl.[5] B61D *7/24*
U.S. Cl. 105—310 **20 Claims**



1. An apparatus for controlling operation of a railway hopper car discharge gate assembly including a frame defining a generally rectangular discharge opening with a generally rectangular discharge gate mounted on said frame for movement between open and closed positions along a predetermined path of travel, said apparatus comprising:

an operating shaft rotatably supported on said frame adjacent a rear end of said gate, said operating shaft being connected to said gate whereby said gate slidably moves forwardly and rearwardly between open and closed positions in response to rotation of said operating shaft;

a lock assembly carried on said frame and including a displacable stop member which, when said gate is in its closed position, extends into the predetermined path of travel to positively engage an edge of said gate thereby preventing movement of the gate relative to said frame; and

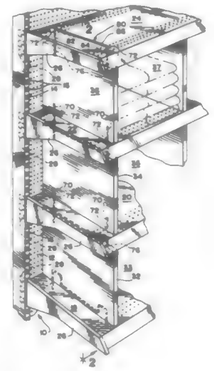
wherein a drive is provided between said lock assembly stop member and said operating shaft for positively displacing said stop member from said path of travel of said gate upon rotation of said operating shaft prior to movement of the gate toward an open position.

5,353,714

DISPLAY SYSTEM

Stephen N. Hardy, Copely, Ohio, assignor to RTC Industries, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 973,176, Nov. 9, 1992. This application Mar. 19, 1993, Ser. No. 34,501
Int. Cl.[5] A47B *9/00*
U.S. Cl. 108—108 **12 Claims**



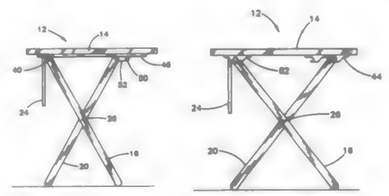
1. A display system comprising a plurality of vertically spaced shelves defining openings and transversely spaced rows of dividers including an initial and additional vertically spaced dividers and an uppermost divider forming a bin construction, means for supporting the shelves in position relative to a shelf support, means for retaining a plurality of transversely spaced dividers in position relative to vertically spaced shelves, the initial divider in each row being retained in position by a wire bracket constructed and arranged to fit into shelf openings and including projections extending above said shelf, the dividers forming one wall of a bin and extending between said shelf and an adjacent vertically disposed shelf and defining a slot at one end for receiving said projections and defining holes for receiving pin means at its other end, pin means extending through openings defined by said adjacent vertically disposed shelf into the holes defined by said divider for retaining said divider in place relative to said adjacent shelves whereby the shelves and dividers define storage bins for the storing of articles therein.

5,353,715

LEG ATTACHMENTS FOR A HEIGHT ADJUSTABLE FOLDING TABLE

Harley E. Luyk, Grand Rapids, Mich., assignor to William S. Wilburn, Grand Rapids, Mich.

Filed Aug. 3, 1992, Ser. No. 924,712
Int. Cl.[5] A47B *9/16*
U.S. Cl. 108—116 **26 Claims**



1. An article of furniture supported on a supporting surface comprising:

a table top;

first and second legs pivotally mounted at upper ends thereof to an underside of the table top;

third and fourth legs pivotally connected respectively to the first and second legs at an intermediate position of each of the first, second, third and fourth legs;

a guide track mounted to the underside of the table top;

a slide bar slidably mounted in the guide track; and

a shackle bar having a first end pivotally mounted to the slide bar and a second end pivotally mounted to the upper end of the third and fourth legs, the shackle bar selectively supporting an upper end of the third and fourth legs in one of two positions relative to the table top, a first of the two positions supporting the table top a first distance from the supporting surface and a second of the two positions supporting the table top a second and different distance from the supporting surface; and

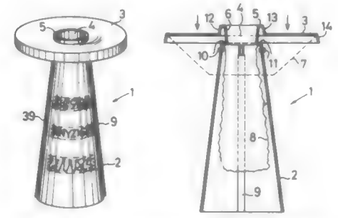
the slide bar being further slidably mounted to the guide track such that the third and fourth legs are moveable from the first and second table top supporting positions to a collapsed position wherein the legs are substantially parallel to the underside of the table top.

5,353,716

STANDING TABLE WITH A HOLLOW FORMED PEDESTAL AND A TABLE TOP

Bruno Wilbert, Hainburg, Fed. Rep. of Germany, assignor to B.W.M. Import and Export GmbH & Co. Warenvertriebs KG, Weiden, Fed. Rep. of Germany

Filed Mar. 19, 1992, Ser. No. 854,426
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1991, 4108940; May 3, 1991, 4114422
Int. Cl.[5] A47B *13/00*
U.S. Cl. 108—150 **21 Claims**



1. A standing table comprising a hollow formed pedestal including an inner surface and defining a longitudinal axis, and a table top, wherein the pedestal is comprised of a film formed into a truncated cone and having abutment sites which are connected with one another, wherein the inner surface of the pedestal is substantially conical, and wherein the table top is connected as a form fit with the pedestal and against perpendicular displacement relative to the longitudinal axis of the pedestal.

5,353,717

TABLE STRUCTURE

Ward Taylor, Hickory, N.C., assignor to Autumn House Incorporated, Granite Falls, N.C.

Filed Aug. 12, 1993, Ser. No. 104,918
Int. Cl.[5] A47B *3/06*
U.S. Cl. 108—157 **5 Claims**

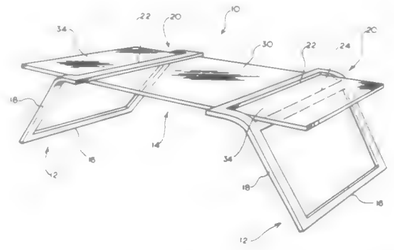
1. A self-supporting table that is supported by the combined locking action of its legs with its top comprising in an assembled and erect mode:

a) a table top having a pair of opposed end portions, a top surface and a bottom surface;

b) a pair of laterally spaced legs supporting the table top with each leg being inclined with respect to the top;

c) an opening formed in the top portion of each leg for receiving an end portion of the table top and wherein an end portion of the table top extends completely through a respective opening in the leg;

d) each opening within a respective leg including a pair of spaced apart engaging edges that cooperate to lock against the upper and lower surfaces of the top so as to generally form a fixed and supported relationship between the top and the respective leg; and



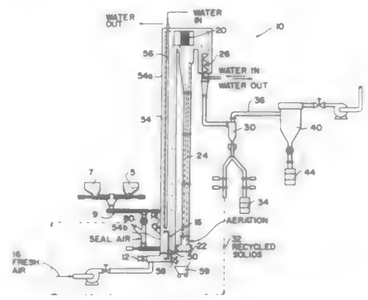
e) wherein the spaced apart engaging edges of the opening formed in each leg includes an upper edge that bears downwardly onto the top surface of the table and a lower edge that bears upwardly against the lower surface of the table so as to effectively lock the respective leg about the end portion of the top such that the same cannot rotate about the top and thereby forms a fixed and supported relationship between the top and the respective leg.

5,353,718

REMEDIATION OF LOW LEVEL RADIOACTIVE MIXED WASTE IN A FLUIDIZED BED INCINERATOR

James J. Warchol; Daniel R. Rowley, both of Alliance, and Thomas J. Flynn, North Canton, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Nov. 3, 1992, Ser. No. 970,726
Int. Cl.[5] F23B *7/00*
U.S. Cl. 110—237 **6 Claims**



1. A method for concentrating a low level radioactive portion of a mixed waste and simultaneously combusting the organic portion in a circulating fluidized bed combustor, the method comprising the steps of:

feeding the mixed waste into the circulating fluidized bed combustor for combusting any hazardous organic portion into a flue gas;

channeling the flue gas through a primary separator for entraining and collecting large particles from the flue gas;

channeling the flue gas from the primary separator to a secondary separator which is a variable efficiency separa-

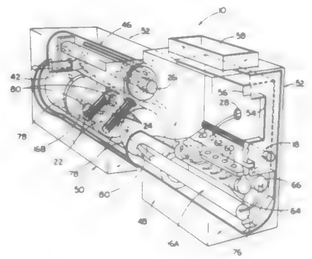
VOL 1167 ISS 2 OCT 11 1994 UMI

tor for entraining and collecting smaller particles from the flue gas;
channeling the flue gas from the secondary separator to a tertiary separator for collecting fine particles from the flue gas;
recycling the particles collected at the primary separator back into the circulating fluidized bed combustor for further combusting;
recycling the particles collected at the secondary separator back into the circulating fluidized bed combustor for further combusting; and
removing the fine particles which include low level radioactive waste collected at the tertiary separator for disposal as low-level radioactive waste.

5,353,719
APPARATUS AND METHOD FOR CONTROLLED PROCESSING OF MATERIALS

Roger D. Eshleman, 506 Clayton Ave., Waynesboro, Pa. 17268, and Paul H. Stevers, 147-A Binscarth Avenue, Kitchener, Ontario, Canada N2M 3E4

Filed Dec. 9, 1992, Ser. No. 987,928
Int. Cl.[5] F23G *5/00*; B09B *3/00*
U.S. Cl. 110—188 **31 Claims**



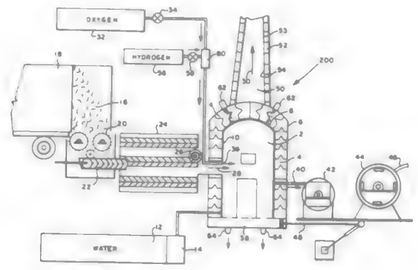
1. An apparatus for controlled processing of materials, comprising:
(a) a casing having outer and inner spaced walls forming an airtight vessel inside of said inner walls thereof and a channel between said outer and inner walls surrounding said vessel and containing a flow of coolant fluid through said channel;
(b) means for forming a first chamber in said airtight vessel of said casing being capable of receiving feed materials to be processed;
(c) means in communication with said first chamber for producing heating in said first chamber to cause pyrolyzing of the feed materials into fluid materials;
(d) means for forming a second chamber in said airtight vessel of said casing communicating with said first chamber;
(e) a discharge location formed through said walls of said casing communicating said second chamber to the exterior of said casing, said second chamber being capable of receiving the fluid materials from said first chamber and communicating the fluid materials to said discharge location;
(f) means in communication with said second chamber for producing heating in said second chamber to cause oxidizing of the fluid materials into discharge gases;
(g) means for producing separate variable flows of primary and secondary air through said walls of said casing and respectively into and through said first and second chambers and from said second chamber to said discharge location, said variable air flow producing means including
(i) first air flow regulating means connected in communication with said first chamber for regulating the flow of air into said first chamber,
(ii) second air flow regulating means connected in communication with said second chamber for regulating the flow of air into said second chamber, and
(iii) air flow generating means coupled in flow communication between said second chamber and the exterior of said casing and being operable to draw said primary flow of air through said first air flow regulating means into and through said first chamber and therefrom through said second chamber to said air flow generating means and said discharge location and to draw said secondary flow of air through said second air flow regulating means into and through said second chamber to said air flow generating means and said discharge location;
(h) means for sensing the temperatures in said first and second chambers;
(i) means for sensing the temperature of said coolant flow through said channel between said outer and inner walls of said casing;
(j) means for sensing the concentration of a predetermined gas in the discharge gases;
(k) air flow proportioning means coupled to said respective first air flow regulating means and second air flow regulating means and being operable to control said respective first air flow regulating means and second airflow regulating means so as to proportion the respective amounts of primary and secondary flows of air drawn through said respective first air flow regulating means and second air flow regulating means into said respective first and second chambers to said air flow generating means and said discharge location; and
(l) means responsive to the temperatures sensed in said first and second chambers and in said coolant flow through said channel between said outer and inner walls of said casing and to the concentration of the predetermined gas sensed in the discharge gases for controlling speed of operation of said air flow generating means to control the amount of flow of air drawn through said respective first air flow regulating means and second air flow regulating means into said respective first and second chambers and for controlling said airflow proportioning means to proportion the respective amounts of primary and secondary air flows drawn through said respective first air flow regulating means and second air flow regulating means into said respective first and second chambers and thereby to control the heating in the first and second chambers in order to maintain effective pyrolyzing and oxidizing of the feed materials therein.

5,353,720
REFUSE INCINERATOR

John E. Berg, 5286 Coldbrook Dr., Mantua, Ohio 44255

Continuation of Ser. No. 17,515, Feb. 12, 1993. This application Jun. 17, 1993, Ser. No. 77,379
Int. Cl.[5] F23M *5/06*
U.S. Cl. 110—235 **13 Claims**

1. An incinerator for burning combustible refuse comprising:
a primary combustion chamber having an inlet and a depository for residue and an outlet for discharging exhaust heat;
means for conveying the refuse into the combustion chamber inlet at a controlled rate,
a pressurized oxygen source,
a pressurized hydrogen source, means for mixing the pressurized oxygen and pressurized hydrogen together outside of the combustion chamber, and
means for conveying the pressurized oxygen and the pressurized hydrogen mixture into the combustion chamber at a rate corrrelated with the refuse input rate to create a burn

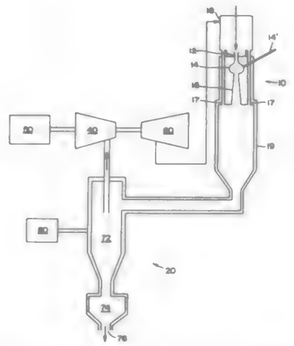


temperature within the combustion chamber of at least 4000° F.

5,353,721
PULSE COMBUSTED ACOUSTIC AGGLOMERATION APPARATUS AND PROCESS

Momtaz N. Mansour, Columbia, and Ravi Chandran, Ellicott City, both of Md., assignors to Manufacturing and Technology Conversion International, Columbia, Md.

Continuation-in-part of Ser. No. 730,245, Jul. 15, 1991, Pat. No. 5,197,399. This application Mar. 29, 1993, Ser. No. 41,213
Int. Cl.[5] F23J *11/00, 15/00*
U.S. Cl. 110—345 **37 Claims**

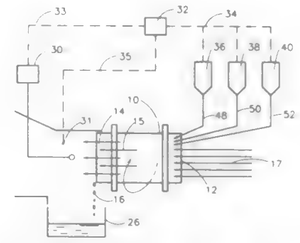


1. Improved apparatus for removal of particulates entrained in a gas stream comprising:
means for receiving a gas stream having particulates therein and for allowing passage of said gas stream therethrough;
pulse combustor means in communication with said gas stream receiving means for producing a pulsating stream of hot combustion products and an acoustic wave having a frequency within the range of from about 20 to about 1500 Hz which acts on said gas stream so that acoustically-enhanced agglomeration of particulate materials entrained in said gas stream occurs permitting enhanced removal of said agglomerated particulate materials.

5,353,722
PREVENTIVE SLAG VISCOSITY CONTROL BY DETECTION OF ALKALI METALS IN THE OFF-GASES

Eustathios Vassiliou, Newark, Del.; David A. Kliauga, Egg Harbor City, and Robin K. Baynes, Sewell, both of N.J., assignors to Rollins Environmental Services, Inc., Wilmington, Del.

Filed Aug. 16, 1993, Ser. No. 106,536
Int. Cl.[5] F23G *5/00*
U.S. Cl. 110—346 **30 Claims**

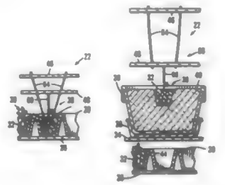


1. An incinerating device comprising a kiln adaptable to contain a quantity of molten slag, the molten slag being characterized by a viscosity, the kiln having
an inlet end for feeding waste;
an outlet end opposite the inlet end for collecting solid products of incineration,
means for introducing into the kiln an incinerating stream of gases, which incinerating gases, after coming into contact with the waste, produce a stream of off-gases;
alkali detection means within the stream of the off-gases for determining alkali content of the off-gases;
addition means for introducing additives into the kiln at a variable predetermined rate in order to influence the slag viscosity; and
control means for processing data received from the alkali detection means and biasing the addition means in a manner to change the predetermined rate and force the slag viscosity toward a desirable range.

5,353,723
SEEDLING ARRAY TRANSPLANTER HEAD

Sylvester M. Tesch, Jr., S9023 Timbercrest Trail, Prairie du Sac, Wis. 53578, and Bruce L. Bierman, Prairie du Sac, Wis., assignors to Sylvester M. Tesch, Jr., Praire du Sac, Wis.

Division of Ser. No. 728,197, Jul. 1, 1991, Pat. No. 5,215,550. This application Mar. 18, 1993, Ser. No. 34,221
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.
Int. Cl.[5] A01C *11/02*
U.S. Cl. 111—105 **10 Claims**



1. A transplant head for an apparatus for transplanting an array of plants from a first array of containers to a second array of containers, comprising:
a) an upper plate, the upper plate having portions defining a plurality of pinholes spaced a determined width apart;

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b) a lower plate spaced beneath the upper plate and having portions defining a plurality of pinholes corresponding to the upper plate pinholes, wherein the lower plate pinholes are spaced from one another a distance less than the width of the upper plate pinhole spacing;

c) a plurality of pins extending between the upper plate pinholes and the lower plate pinholes;

d) a frame to which the upper and lower plates are adjustably mounted such that the distance between the plates may be adjusted such that when the plates are spaced a first distance apart the pins protrude from the lower plate pinholes to engage with a plant to be transplanted, and when the plates are spaced a greater distance apart the pins will disengage from the plant;

e) a plurality of rods rigidly fixed to the lower plate and extending vertically upwardly, wherein portions of the upper plate define rod holes and the rods extend therethrough;

f) a vertical member pivotally connected to the lower plate;

g) a link having a top end, a bottom end, and a center between the top and bottom ends, wherein the center is pivotally mounted to the upper plate and the vertical member is pivotally connected to the bottom end of the link; and

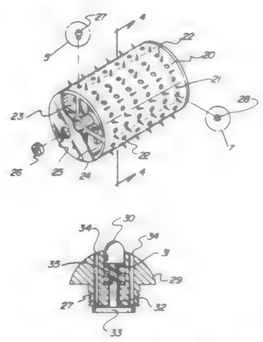
h) a means for moving the top end of the link horizontally pivotally connected between the top end of the link and the upper plate, wherein the link moving means is adapted to bring the upper and lower plates closer together and farther apart.

5,353,724

ROTO-TILLER ATTACHMENT

Robert B. Wheeley, Jr., 317 Horace Ave., Virginia Beach, Va. 23462

Filed Jun. 1, 1993, Ser. No. 69,736
Int. Cl.[5] A01C *23/02*
U.S. Cl. 111—128 **3 Claims**



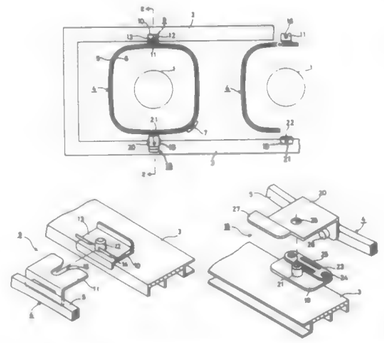
1. A new and improved roto-tiller attachment which comprises: a pair of rotating hollow cylinders adapted to be mounted on and rotate with a drive shaft of a roto-tiller machine; a plurality of aerating spikes extending from the periphery of said cylinders and spaced there around; a plurality of ports extending through said periphery and interspersed with said aerating spikes; means to close said hollow cylinders in fluid-tight configuration; means to introduce fluid into said hollow cylinders and a means to dispense measured amounts of fluid from the interior of said cylinders, mounted within said plurality of ports, as said cylinders rotate in contact with the ground.

5,353,725

FRONT AND REAR EMBROIDERY FRAME MOUNTING MEMBERS

Hisato Sakakibara, Ichinomiya, Japan, assignor to Kabushikikaisha Barudan, Ichinomiya, Japan

Filed Nov. 2, 1992, Ser. No. 970,134
Claims priority, application Japan, Nov. 7, 1991, 3-321210; Feb. 26, 1992, 4-076344
Int. Cl.[5] D05C *9/04*
U.S. Cl. 112—103 **13 Claims**



1. An embroidery frame mounting device for an embroidering machine, comprising:

a rear mounting member for mounting a rear portion of the embroidery frame on a frame which is disposed on a table of the embroidering machine; and

a front mounting member for mounting a front portion of said embroidery frame on the same frame,

wherein said rear mounting member includes a rear bracket mounted on said embroidery frame, a rear positioning unit including a notch having a widened end portion and a pin engaging the notch for positioning said rear bracket transversely with respect to said frame, and a spring for urging and holding said rear bracket on said frame, and

wherein said front mounting member includes a front bracket mounted on said embroidery frame, a front positioning unit including a hole and a pin engaging the hole for positioning said front bracket longitudinally and transversely with respect to said frame, and a magnet for attracting and holding said front bracket on said frame.

5,353,726

METHOD OF MONITORING THE SUPPLY OF LOOPER THREAD OF A DOUBLE LOCK-STITCH SEWING MACHINE

Wolfgang Bruder; Horst Bohl, both of Bielefeld, and Reinhard Backmann, Heimbuchenthal, all of Fed. Rep. of Germany, assignors to Dürkopp Adler Aktiengesellschaft, Fed. Rep. of Germany

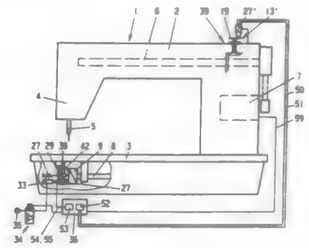
PCT No. PCT/EP91/01320, § 371 Date Dec. 15, 1992, § 102(e) Date Dec. 15, 1992, PCT Pub. No. WO92/02673, PCT Pub. Date Feb. 20, 1992
PCT Filed Jul. 13, 1991, Ser. No. 949,808
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1990, 4024989; Jun. 3, 1991, 4118158
Int. Cl.[5] D05B *59/02*
U.S. Cl. 112—262.1 **7 Claims**

1. A method of monitoring the looper-thread supply in a double lock-stitch sewing machine in which, by detection of a marking provided on the outside of a bobbin present in the looper, pulses are produced by a sensor upon the winding due to the rotation of the bobbin and are given off to at least one counter and in which, furthermore, pulses are produced during the sewing by the intermittent rotation of the bobbin by a further sensor and given off to at least one counter, the method comprising the steps of:

—identifying the bobbin by a marking on the outside of a flange on the bobbin,

—detecting, upon winding, by a first sensor, further marks on the outside of the flange of the bobbin to produce pulses which influence a degree of filling F of the bobbin and are incremented by the counter to a number of pulses Z_{max},

—detecting, during sewing, by a second sensor, the marks to produce pulses which affect the consumption of looper thread and are decremented in the counter to a pulse number Z_{act},



—inputting via a keyboard forming part of a computer unit the diameter D of the bobbin as well as the diameter d of a bobbin hub,

—calculating in the computer unit, by subtraction of Z_{max} and Z_{act}, a number of pulses Z_R influencing the instantaneous degree of filling F of the bobbin

—determining values of a thread length L_{max} corresponding to the number of pulses Z_{max} and a remaining length of thread L_R from the diameter D of the bobbin and the diameter d of the bobbin hub, and

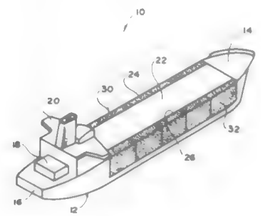
—indicating on a display forming part of the computer unit the number of pulses Z_{max} and the corresponding thread length L_{max}, as well as the number of pulses Z_{act} and, at the end of the sewing, the number of pulses Z_R as well as the remaining length of thread L_R still present at this time on the bobbin.

5,353,727

COLLISION GUARD FOR A VESSEL

Jerome L. Goldman, 935 Gravier St., New Orleans, La. 70112

Filed Apr. 10, 1992, Ser. No. 866,577
Int. Cl.[5] B63B *43/18*
U.S. Cl. 114—74 A **27 Claims**



18. A marine vessel, comprising:

a floatable hull having opposing side walls and defining a cargo space portion;

a collision guard means mounted on exterior of each of the opposing side walls, forming an outer shell which extends fore and aft substantially along said cargo space portion of said hull, said hull having recessed portions for mounting said collision guard means, so as to retain streamline qualities of the hull, said collision guard means extending at least some distance below a water line, said collision guard means comprising at least one buoyant module having an inner wall surface which conforms to the exterior surface of a hull side wall; and

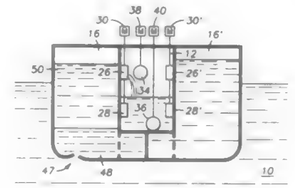
means for securing the collision guard means to the hull, said securing means comprising an upwardly extending post fixedly attached to an upper part of said at least one module and a structural restraint assembly carried by a hull side wall, said structural restraint assembly including means for fixedly securing the restraint assembly to the hull, said restraint assembly engaging the post so as to prevent any significant displacement of said at least one module in relation to the hull.

5,353,728

CENTRALLY-LOCATED-BALLAST-TANK VESSEL

Booth B. Strange, Houston, Tex., assignor to Marine Safety Systems Inc., Houston, Tex.

Filed Dec. 17, 1993, Ser. No. 168,764
Int. Cl.[5] B63B *39/03*
U.S. Cl. 114—74 R **12 Claims**



1. An improved tanker ship construction method, the ship including a hull marked by a Plimsoll line, comprising:

constructing a plurality of cargo tanks for containing liquid cargo, the tanks being distributed in two longitudinal sets, one set of cargo tanks along each side of said hull;

constructing a plurality of ballast tanks that are distributed in a row longitudinally along the centerline of said hull midships between said sets of cargo tanks, said ballast tanks being separated from each other by transverse bulkheads and from adjacent cargo tanks by longitudinal bulkheads; and

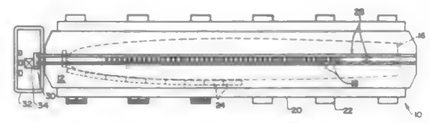
installing a passive, gravity-responsive liquid transfer system means between each said ballast tank and selected ones of said plurality of cargo tanks.

5,353,729

APPARATUS AND METHOD FOR PERFORMING EXTERNAL SURFACE WORK ON SHIP HULLS

Richard A. Goldbach; William A. Wagner; Frank E. McConnell, all of Norfolk, Va., and Joseph H. Hoffman, Plano, Tex., assignors to MMC Compliance Engineering, Inc., Norfolk, Va.

Filed Jul. 30, 1993, Ser. No. 99,434
Int. Cl.[5] B63B *59/00*
U.S. Cl. 114—222 **16 Claims**



1. A process for abrasive blast-cleaning a generally vertical

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external surface of a ship hull supported on a deck of a dry-dock, comprising:

(a) supplying dry abrasive grit from at least one supply hopper disposed at at least one elevated location through a respective hose to a respective work head controlled by a respective operator on a respective tower-supported elevatable work platform, each operator directing the respective work head towards the external surface of the ship hull as abrasive grit is propelled therefrom, thereby impacting and rebounding from said external surface together with removed debris and falling as spent abrasive mixed material;

(b) collecting the spent abrasive mixed material and subjecting the collected spent abrasive mixed material to classification into undersize dust, oversize trash and reuseable dry abrasive grit; and

(c) refilling each said supply hopper with said reuseable dry abrasive grit.

5,353,730

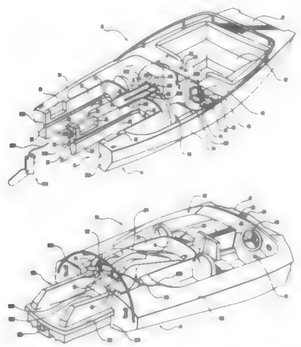
MULTI-USE WATERCRAFT

Dennis W. Talbot, 5220 S. 935 East, Salt Lake City, Utah 84117

Filed Jul. 22, 1993, Ser. No. 97,080

Int. Cl.[5] B63B *7/04*

U.S. Cl. 114—248 **21 Claims**



1. In a boat intended to float in a water medium while coupled and powered by a personal watercraft, the personal watercraft having a bow, a stern, a starboard, and a port, the bow of the personal watercraft having a hull configuration thereat, the bow and stern of the personal watercraft having a keel configuration therebetween, the keel configuration of the personal watercraft having an intake port for taking in a stream of water of the water medium and also having an output port aft of the intake port for outputting the stream of water, the personal watercraft further having a jet pump for pumping the stream of water from the intake port to the output port so as to impel the personal watercraft while floating in the water medium, and having a power plant for driving the jet pump, the personal watercraft also having a steering mechanism for controlling the angle of the output port with respect to both the port and starboard of the personal watercraft so as to control the impelled direction of the personal watercraft, the personal watercraft further having a jet pump throttle mechanism for controlling the jet pump to vary the flow rate of the water stream exiting the output port so as to control the rate of propulsion of the personal watercraft in the water medium, said boat comprising:

a bow, a stern, a starboard, a topside comprising a cargo area and a port, said stern of said boat comprising:

docking means for slidably receiving and at least in part circumscribing a portion of the hull configuration of the personal watercraft, said docking means comprising:

a forward portion;

releasable attachment means for holding the hull configuration of the personal watercraft within said docking means;

means for maintaining the intake port of the personal watercraft within the water medium while the boat is underway comprising:

a plate having a longitudinal length and a trailing edge which extends in width from one side to the other of said docking means, said plate when the hull configuration of the personal watercraft is received within the docking means such that the bow of the personal watercraft is in contact with the forward portion of the docking means, is in contact with and supports a portion of the keel configuration of the personal watercraft and the width of said trailing edge is located forward of said intake port of the personal watercraft;

said boat further comprising:

steering means for a user to control the impelled direction of the boat in the water medium, comprising:

a user steering interface situated in the cargo area; and

a steering linkage means, connected to the steering mechanism of the personal watercraft and also connected to the user steering interface, for moving the steering mechanism of the personal watercraft so as to control the angle of the output port;

throttle means for a user to control the jet pump, comprising:

a user throttle interface located in the cargo area; and

a throttle linkage means, connected to the jet pump throttle mechanism and also connected to the user throttle interface, for moving the jet pump throttle mechanism via the user throttle interface.

5,353,731

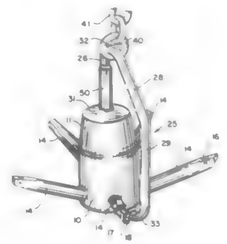
MARINE ANCHOR

Rayohl E. Richter, 2727 S. 15th St., Sheboygan, Wis. 53081

Filed Apr. 26, 1994, Ser. No. 233,237

Int. Cl.[5] B63B *21/46*

U.S. Cl. 114—299 **7 Claims**



1. A marine anchor comprising:

a. a hub member,

b. a plurality of peripherially spaced fluke members extending radially outwardly from said hub member and proximate to one end of said hub member,

c. a rod-like supporting handle member for said hub member and being of a length substantially coextensive of the length of the hub member, said supporting handle having a plurality of integrally formed sections and comprising;

(i) a first end section secured to one end of said hub member and extending substantially coaxially from a first end section of the hub member,

(ii) a first intermediate section intersecting said first end section and extending angularly outwardly therefrom,

(iii) a second intermediate section extending from said first intermediate section, radially spaced from said hub member and lying in a plane parallel with the axis of said hub member,

(iv) a third intermediate section intersecting said second intermediate section and extending angularly outwardly therefrom, and

(v) a second end section formed to bend inwardly relative to said third intermediate section and being secured proximate to the opposite end of said hub member;

d. said first end section and said intersecting first intermediate section of the supporting handle member defining a first integrally formed bail, and said third intermediate section and said intersecting second end section of said handle member defining a second integrally formed bail; and

e. a ring member slidably received along the length of said handle member,

whereby said ring is arranged to be alternately received in said first and second bails of said handle member, depending upon the position of the anchor during anchor lowering or retrieving activity.

5,353,732

ANCHOR FOR HEAVY LOADS

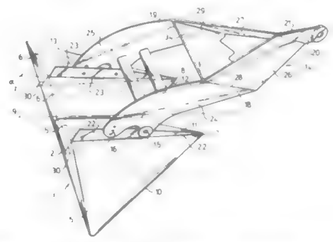
Jean C. Gramet, La Turbie, and Samy Alhayari, Menton, both of France, assignors to Single Buoy Moorings Inc., Marly, Switzerland

Filed Nov. 2, 1993, Ser. No. 144,534

Claims priority, application European Pat. Off., Nov. 2, 1992, 92203370

Int. Cl.[5] B63B *21/32*

U.S. Cl. 114—304 **2 Claims**



1. Anchor with a fluke (3) having an underside (2) lying in one flat geometrical plane and comprising two fluke parts (5, 6) which each have a forwardly pointed tip (7, 8) on either side of the central plane (9) of symmetry which is perpendicular to the said geometrical plane (2) of the underside, which two fluke parts (5, 6) form an integral unit at the said central plane (9), have their front edges (10, 11, 12, 13) in said geometrical plane (2) tapering towards the respective tips (7, 8) and from each tip (7, 8) extend rearwardly with a cross section in each plane perpendicular to the said underside plane (2) and perpendicular to said plane (9) of symmetry, which is substantially triangular up to and beyond the point where the inner front edges (11, 12) of the fluke parts (5, 6) meet, which triangular cross sections (10, 11, 12, 13) have their apex (22, 23) according to a straight ridge line which from each tip (7, 8) extends rearwardly at a sharp angle (α) with the underside plane (2), whilst said triangular cross sections merge into each other at said central plane of symmetry, which fluke (3) has adjustably connected therewith a shank (14) which by means of a transfer pin (15) and a spaced apart adjustable point of connection (16) can be placed at a predetermined sharp angle with respect to said plane (2) of the underside, characterized in that,

the entire fluke (3) has a box-like structure in that the plane (2) at the underside is formed by a flat plate (2), that at the top ridge of each box-like structure part of substantially triangular cross section at least one vertical ridge plate (22', 23') has been secured, and that

the shank (14) is a double shank i the two arms (18, 19) of which are interconnected at their front ends (20, 21) and from said front ends (20, 21) extend towards the top ridges (22, 23) of each fluke part (18, 19), have their pivotable points of connection by means of said transfer pin (15) between one third and two thirds of each ridge (22, 23) away from the tip (7, 8) and have their adjustable points of connection (16) between two thirds and the rear end of said ridge (22, 23), each of said arms (18, 19) having a rear part (24, 25) which curves downwardly towards said points (15, 16) of connection and which lie in planes parallel to each other and to the said central plane (9) of symmetry, whereas the forwardly extending parts (26, 27) of said arms (18, 19), between said rear parts (24, 25) and the interconnected front ends (20, 21) each extend in a plane, which forms a sharp angle with respect to said plane (9) of symmetry and which meet each other at the front end connection according to the double of said sharp angles and that the two arms (18, 19) of the shank (14) are interconnected with each other at the transition between each rear part (24, 25) and the front parts (26, 27) by a flat plate (34) which lies in a plane which is substantially parallel to the plane (2) of the ridges (22, 23).

5,353,733

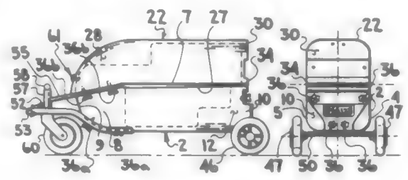
FOLDING BOAT WITH DETACHABLE LAND WHEELS

Forrest B. Evans, 13171 W. Florida Dr., Lakewood, Colo. 80228

Filed Apr. 6, 1993, Ser. No. 43,405

Int. Cl.[5] B63B *7/00*

U.S. Cl. 114—353 **17 Claims**



1. A folding boat comprising:

a bow section having a bottom, first and second side walls joined to said bottom including a keel and upstanding to respective first and second gunwales, said side walls terminating at a forward end forming an upward-curving prow and said bottom and side walls joined to an upstanding transverse bow section bulkhead at an aft end and having a thwart connecting the side wall gunwales;

a stern section having a bottom including a keel, first and second side walls joined to said bottom and upstanding to respective first and second gunwales, said side walls terminating at an upward-curving stern end and said bottom and side walls joined to a transverse stern section bulkhead at a forward end of said stern section and having a thwart connecting the side wall gunwales;

a hinge extending across and hingedly attaching the thwarts of the bow section bulkhead and the stern section bulkhead, permitting the stern section to be folded with respect to the bow section, whereby the respective gunwales are juxtaposed and which may be unfolded again to an extended configuration wherein the respective bow section and stern section gunwales and keels are contiguously aligned;

fastening means for rigidly fastening the bow section to the stern section with the bow and stern sections in contiguous alignment;

an axle parallel to the hinge and supporting a pair of ground-engaging wheels outboard of each side wall and employing the fastening means for rigidly fastening the bow

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section to the stern section as fastening means of the axle to the bow section aft bulkhead with the boat in the folded configuration; and

a tow bar extending from the prow and having fastening means thereto, whereby the folded boat may be towed manually or with a vehicle.

5,353,734

SEAT FOR WATERCRAFT

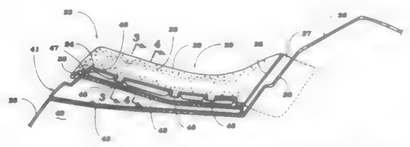
Satoshi Tani, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Aug. 5, 1992, Ser. No. 927,054

Claims priority, application Japan, Aug. 8, 1991, 3-199094; Jan. 27, 1992, 4-012341

Int. Cl.[5] B63H *11/00*

U.S. Cl. 114—363 19 Claims



1. A seat for a watercraft comprising a hull, said seat consisting of an open celled foam cushion defining a recess therein, a generally rigid bottom plate extending across a lower surface of said cushion and into said recess, a generally water impervious skin sealingly engaged around the periphery of said bottom plate and covering the portion of said cushion not covered by said bottom plate, means including said recess defining a cavity beneath said seat, means forming a hermetic seal between the periphery of said cavity and said bottom plate, and at least one air flow opening in the portion of said bottom plate which extend into said recess through which air may flow upon compression and expansion of said cushion.

5,353,735

INDICATING INSTRUMENT SYSTEM

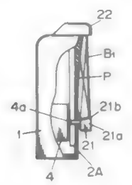
Yoichi Arai; Yasuhiro Miyazawa; Makoto Takashima, and Kunimitsu Aoki, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Apr. 22, 1992, Ser. No. 872,198

Claims priority, application Japan, Apr. 23, 1991, 3-028011[U]; Jul. 19, 1991, 3-179376

Int. Cl.[5] G01D *11/28*

U.S. Cl. 116—286 6 Claims



1. An indicating instrument comprising:

a dial having graduations;

a light source disposed in front of and out of said graduations; and

a pointer forming portion attached to a shaft which is rotated by a mechanism, said pointer forming portion having an inclined surface relative to said shaft for reflecting a beam from said light source to said dial to form a pointer image on a front surface of said dial, wherein

said front surface of said dial having said graduations is concavedly curved such that an outer periphery of said front surface of said dial curves outwardly relative to said pointer forming portion, whereby said inclined surface and said concavedly curved front surface form the pointer image.

5,353,736

INSTRUMENT FOR VEHICLE

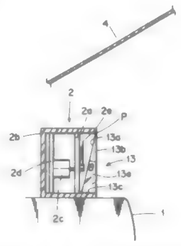
Kazuyuki Sasaki, and Yoshihiro Tsuji, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 947,483

Claims priority, application Japan, Sep. 26, 1991, 3-077978[U]; Feb. 19, 1992, 4-006736[U]

Int. Cl.[5] G01D *11/26*

U.S. Cl. 116—304 17 Claims



1. An instrument for a vehicle, comprising:

a meter;

a case for accommodating said meter;

a prism means disposed at a front portion of said case for regulating light which is emitted through said prism means upward by bending light emitted from said meter downward, said prism means including a prism which also acts as a front cover of said case;

said prism having a substantially planar front surface and having a rear surface facing a front surface of said meter, said front surface of said meter having indicia and being located within said case behind said prism and facing said rear surface of said prism, the light emitted from said meter being transmittable from said meter through said rear surface and through said front surface, at least a portion of said rear surface being inclined from said front surface, said front surface and said portion of said rear surface being closer together at an upperside of said portion of said rear surface than at a bottom of said portion of rear surface such that at least a portion of said prism tapers towards the upperside of the prism; and

means for absorbing light incident on a bottom face of said prism which includes that said bottom face is made dark.

5,353,737

METHOD FOR FORMING BORON-DOPED SEMICONDUCTING DIAMOND FILMS

Hisashi Koyama; Koichi Miyata, and Koji Kobashi, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

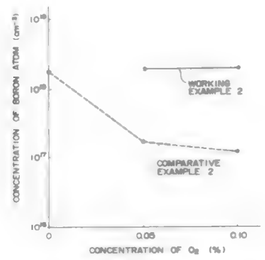
Filed Apr. 16, 1993, Ser. No. 46,804

Claims priority, application Japan, Apr. 16, 1992, 4-96500

Int. Cl.[5] C30B *29/04*

U.S. Cl. 117—90 2 Claims

1. A method for forming a p-type semiconducting diamond film on a substrate by vapor-phase synthesis using a reaction gas which contains B_2H_6 and O_2 with a gas concentration ratio



(volume %) of $([B_2H_6]/[O_2]) \geqq 1 \times 10^{-4}$ in addition to at least a hydrocarbon gas in hydrogen.

5,353,738

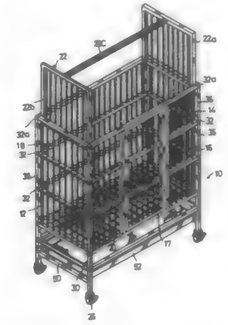
PET CAGE

Hsien-Yao Chiu, No. 14, Alley 11, Lane 25, Ching Li St., Tu Chen Hsiang, Taipei Hsien, Taiwan

Filed Feb. 22, 1993, Ser. No. 20,679

Int. Cl.[5] A01K *31/08*

U.S. Cl. 119—17 2 Claims



1. A pet cage comprising two side grids, a front grid, a rear grid, a bottom grid, a top grid, a door in one of said side, front and rear grids and four connecting post means each with a caster provided at a bottom end thereof,

each said connecting post means having a plurality of aligned tubular members, a top connecting means, and a plurality of connecting members said top connecting means having a base block with a first engaging protrusion projecting from a bottom surface of said base block for engaging with an associated one of said tubular member and a second engaging protrusion projecting from a side surface of said base block for engaging with one of said side grids, a recess being formed in a second side of said base block and extending perpendicular to said first and second engaging first and protrusions, said recess receiving an engaging end of one of said front and rear grids, said base block having a countersink in the other side which is opposite to said second side of said base block, said countersink communicating with said recess and receiving a countersink bolt which engages with a threaded hole in said engaging end of said front and rear grids;

each of said connecting members having a second base block with third and fourth engaging protrusions respectively projecting from bottom and top surfaces of said second base block for engaging with associated ones of said tubular members and a fifth engaging protrusion projecting from a side surface of said second base block for engaging with one of said side grids, a second recess being formed in a second side of said second base block and extending perpendicular to said third, fourth, and fifth engaging protrusion, said second recess receiving an engaging end of one of said front and rear grids, said second base block having a second countersink in the other side which is opposite to said second side of said second base block, said second countersink communicating with said second recess and receiving a second countersink bolt which engages with a second threaded hole in said engaging end of said front and rear grids.

5,353,739

AUTOMATIC ANIMAL FOOD FEEDING APPARATUS

King Ming Chu, No. 6, Lane 86, An Chung Road, Hsintien, Taipei Hsien, Taiwan

Filed Sep. 27, 1993, Ser. No. 126,889

Int. Cl.[5] A01K *5/00*

U.S. Cl. 119—51.03 6 Claims

1. An automatic animal food feeding apparatus, comprising:

a base member having a top surface, a circular recess extending downwardly from the top surface, and a slot extending into the top surface and around a portion thereof;

a removable cover;

a food container having a bottom plug portion extending from one end thereof, said bottom plug portion being fitted into said slot, a top opening defined at the other end thereof covered with said removable cover, and a bottom opening disposed above said base member;

a bottom cap covering said bottom opening of said food container, said bottom cap having a sloping bottom wall and a food outlet situated at the lowest point of said sloping bottom wall;

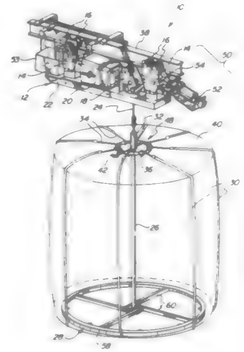
a rotary table supported for rotation within said circular recess of said base member, said rotary table having a top surface, a conical center shaft upstanding from the center of said top surface of said rotary table, and a plurality of blades mounted around said conical center shaft in the axial direction thereof; and

a plurality of steel balls retained in said circular recess of said base member to support said rotary table within said base member and permit said rotary table to be turned on said base member by the tongue of an animal upon licking;

whereby turning said rotary table causes said blades to propel a grained food in said food container out of said food container through said food outlet.

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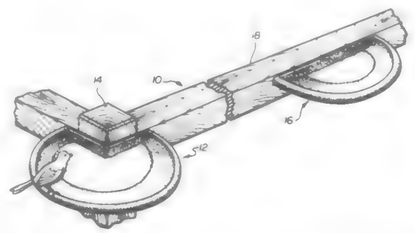
5,353,740
HAY DISTRIBUTING APPARATUS
Romain Pellerin, St-Adrien-de-Ham, Canada, assignor to A. Pellerin Et Fils Ltee, St-Adrien-de-Ham, Canada
Filed Jan. 14, 1994, Ser. No. 181,990
Claims priority, application United Kingdom, Jan. 20, 1993, 93/010320
Int. Cl.[5] A01K *5/00*
U.S. Cl. 119—57.92 18 Claims



1. An automatic hay distributing apparatus for feeding livestock scattered along a predetermined path along which an overhead beam extends, said apparatus comprising:
a driving unit for moving said apparatus along said beam, said driving unit including:
a base;
a carriage mounted onto said base and provided with wheels adapted to be mechanically connected to said beam for allowing translation of said base along said beam; and
driving means mechanically connected to said wheels for moving said apparatus along said beam;
supporting means for supporting a hay bale, said supporting means including a rod for insertion into said hay bale, said rod having a first end for connection with said driving unit and a second end for connection with a supporting member provided for supporting said hay bale;
lifting means mounted onto said driving unit for lifting and lowering said hay bale, said lifting means comprising connecting means for connection with said rod; and
means for controlling movement of said driving unit along said overhead beam.

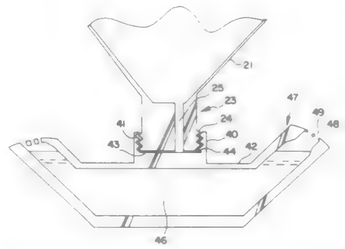
5,353,741
BIRD BATH ASSEMBLY
Joseph M. Gryzlak, West Dundee, Ill., assignor to Gris Pottery, Carpentersville, Ill.
Filed Apr. 29, 1993, Ser. No. 55,145
Int. Cl.[5] A01K *7/00*
U.S. Cl. 119—695 13 Claims

1. A bird bath assembly adapted to mount on a deck rail corner formed at an angular intersection two substantially planar deck rail surfaces, said bird bath assembly comprising: a shallow container for receiving and retaining liquid and other substances having an open top, an irregular continuous wall member and an integral bottom; an exterior portion of said continuous wall member of said shallow container form in a mountain surface having an angle therein which is substantially equal to an angle formed at the angular intersection forming said deck rail corner; said mounting surface comprising an upstanding wall portion having a length and width; means for fastening said shallow container to said deck rail corner, and; a gasket means located between said deck rail corner and said mounting surface; said gasket means extending along substantially the entire length and width of said upstanding wall portion, a portion of said gasket means being exposed, said gasket means eliminating the effects of surface imperfections existing



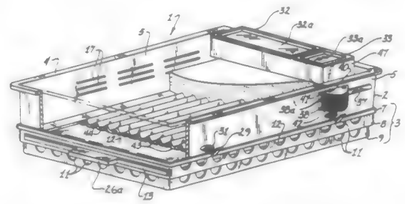
on either the deck rail corner or the shallow container mounting surface to give the appearance of a uniform connection between the bird bath and the deck rail corner.

5,353,742
LIQUID FEEDER FOR BIRDS
John G. Mauritz, Chanhassen, Minn., assignor to William R. Dahlke, Naples, Fla.
Filed Oct. 12, 1993, Ser. No. 134,722
Int. Cl.[5] A01K *39/00*
U.S. Cl. 119—77 7 Claims



1. A bird feeder for feeding liquid food to birds having a food reservoir, a cover integrating a hanger and a shipping container, and a detachable dispenser comprising, in combination;
a. the reservoir further being an elongate container having a downwardly tapered first end terminating in a rotatable attachment means for attaching the reservoir to the dispenser and a second closed end, the reservoir further having a means for detachably attaching the reservoir to the cover in either a hanging or a shipping position;
b. the cover further having a hanger extending from the one end of the cover, the hanger extending outwardly therefrom in an open loop, the cover also having an attachment means for cooperatively attaching the reservoir to the cover in either a hanging or shipping position;
c. the dispenser having a neck and a base, the neck facing upwardly and having a central opening terminating in a planar face, the neck further being adapted for rotatable attachment to the dispenser rotatable attachment means, and having an openable passage through the planar face selectively cooperating with the rotatable attachment means of the reservoir for controlling the flow of liquid food therebetween, the base being attached below the neck and having a hollow metering receptacle formed therein and at least one outwardly extending feeding station terminating in an upturned feeding receptacle, the feeding receptacle located a small distance above the planar face and having at least one feeding orifice.

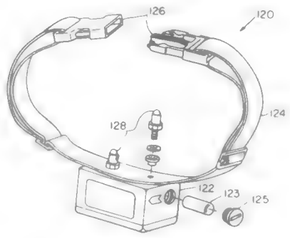
5,353,743
URINE COLLECTION DEVICE FOR PET ANIMALS
Robert W. Walton, 4 Chapel St. South, Thorold, Ontario, Canada L2V 3Y7
Continuation-in-part of Ser. No. 793,126, Nov. 18, 1991, Pat. No. 5,193,488. This application Mar. 2, 1993, Ser. No. 25,126
The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.
Int. Cl.[5] A01K *1/01*
U.S. Cl. 119—166 9 Claims



1. A urine collection device to assist in the maintenance and monitoring of the health of pets through urine analysis comprising in combination:
a. a substantially rectangular top tray compartment;
b. a substantially rectangular bottom tray assembly; and
c. a urine collection tray interposed horizontally parallel between said top tray compartment and bottom tray assembly and extending longitudinally and transversely therebetween suspended in the bottom tray assembly, said urine collection tray having a hole located at approximately its center; and
d. a urine collection cup located under the hole in the collection tray; wherein said top tray compartment possesses a screen in the bottom thereof parallel to and above the urine collection tray for supporting a particulate material is which the cat's waste is deposited and through which screen and particulate material the cat's urine passes for deposit upon the urine collection tray; and wherein
said bottom tray assembly posses aeration openings in its sides and at least one of its ends to assist in evaporation of the excess urine deposited upon the particulate material contained in said top tray compartment.

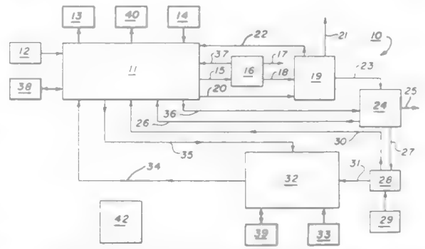
5,353,744
ANIMAL CONTROL APPARATUS
Daniel A. Custer, Southborough, Mass., assignor to Dogwatch, Inc., Wayland, Mass.
Continuation of Ser. No. 998,878, Dec. 29, 1992, abandoned, which is a continuation of Ser. No. 884,843, May 13, 1992, abandoned, which is a continuation of Ser. No. 700,015, May 14, 1991, abandoned. This application Jun. 16, 1993, Ser. No. 79,205
Int. Cl.[5] A01K *15/04*
U.S. Cl. 119—719 16 Claims

1. An apparatus for confining the movement of an animal to a defined areas, comprising:
a) a transmitter having means for generating a continuous, coded radio signal through an antenna defining said area, said means for generating said continuous, coded radio signal including
i) means for modifying the amplitude of said continuous, coded radio signal, and
ii) means for modifying the code of said continuous, coded radio signal, thereby modifying the type and rate of a stimulus provided to said animal;
b) a portable radio receiver for detecting the amplitude of the continuous, coded radio signal and for decoding said continuous, coded radio signal for the rate and type of stimulus provided to said animal;
c) means for delivering said stimulus to said animal in response only to said detected continuous, coded radio signal; and



d) means for attaching to said animal said portable radio receiver and said means for delivering said stimulus.

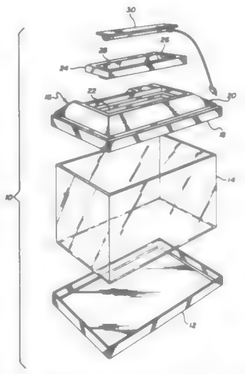
5,353,745
AQUACULTURE SYSTEM AND METHODS FOR USING THE SAME
Richard W. Fahs, II, 71 Overlook Dr., Danville, Pa. 17821
Filed Sep. 29, 1992, Ser. No. 953,432
Int. Cl.[5] A01K *63/00*
U.S. Cl. 119—226 31 Claims



1. A closed aquaculture system for maintaining and growing a single primary cultured species and secondary organisms essential to growth and survival of the primary species comprising
(a) a tank for holding an aqueous medium, the primary species and any essential secondary organisms;
(b) means for adding nutrients to the tank;
(c) means for selectively removing the aqueous medium from the tank;
(d) means for removing particulate matter from the aqueous medium removed from the tank;
(e) means for sterilizing the aqueous medium removed from the tank;
(f) non-biological means for removing toxins from the aqueous medium removed from the tank;
(g) means for bringing the aqueous medium removed from the tank to a steady state suitable for the growth and survival of the primary species; and
(h) means for returning the aqueous medium to the tank after the aqueous medium is treated by any or all of the means of components (d), (e), (f) and (g).

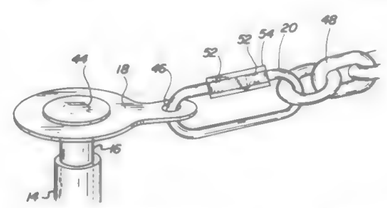
VOL 1167 ISS 2 OC 11 1994 UMI

5,353,746
AQUARIUM WITH LIGHT FIXTURE ISOLATED FROM TANK
Luis Del Rosario, 4524 Brazil St., Los Angeles, Calif. 90039
Filed May 18, 1993, Ser. No. 63,877
Int. Cl.[5] A01K *63/00*
U.S. Cl. 119—266 17 Claims



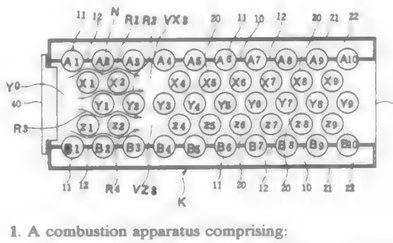
1. An aquarium including a tank, a canopy forming a top for said tank, an opening in the center of said canopy with a vertical wall defining a well, a narrow ledge at the bottom of said well,
a hollow hinged door member normally resting on said ledge and pivotable to provide access to said tank, said door member having a sidewall, a transparent bottom panel sealed to said sidewall, a removable top panel, and lighting means fastened to said top panel for directing light through said transparent panel into said tank.

5,353,747
SYSTEMS FOR LEASHING DOGS AT ANY ONE OF A PLURALITY OF LOCATIONS
Bob C. Fain, 5 Utley St., So. Dartmouth, Mass. 02748
Filed Mar. 7, 1994, Ser. No. 206,330
Int. Cl.[5] A01K *3/00*
U.S. Cl. 119—780 5 Claims



1. A system for leashing dogs at any one of a plurality of locations comprising:
a first exterior hollow post having a circular cross-section positionable in the ground with a lower end beneath the ground and an upper end adjacent to ground level;
a second interior hollow post slidably receivable within the exterior post, the interior post being of a length no greater than the length of the exterior post;
a carriage bolt slideably receivable within the interior post the carriage bolt having a head of a diameter greater than the external diameter of the interior post; and
a coupling component having a large aperture adapted to be received by the carriage bolt and to be retained in position between the upper edge of the interior post and the head of the carriage bolt, the coupling component also including a small aperture and an associated chain link, the chain link having screw threads at its opposed ends with a threaded exterior member adapted to be rotated to expose and close an opening between the link ends thereadjacent for coupling to a leash.

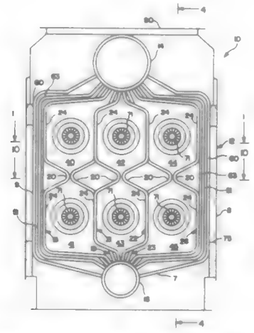
5,353,748
COMBUSTION METHOD AND APPARATUS FOR REDUCING EMISSION CONCENTRATIONS OF NO_x AND CO
Toshihiro Kayahara; Osamu Tanaka; Akinori Kawakami; Tetsushi Nakai, and Kazuhiro Ikeda, all of Matsuyama, Japan, assignors to Miura Co., Ltd., Ehime, Japan
Filed Aug. 18, 1993, Ser. No. 107,597
Claims priority, application Japan, Sep. 9, 1992, 4-268055
Int. Cl.[5] F22B *5/02*
U.S. Cl. 122—18 17 Claims



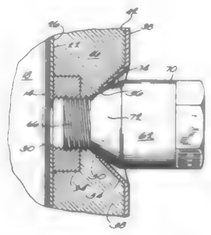
1. A combustion apparatus comprising:
a pair of substantially parallel heat absorbing tube walls defining a section;
a burner disposed on a first side of said section;
a combustion exhaust gas outlet disposed on a second side of said section;
a plurality of heat absorbing tubes disposed in said section so that said heat absorbing tubes cross a combustion flame produced by said burner, said heat absorbing tubes being substantially parallel with one another and arranged at specific intervals, at least one heat absorbing tube at a predetermined one of said specific intervals being decimated to locally form a specific temperature zone in said section for suppressing generation of NO_x and accelerating oxidation of CO.

5,353,749
BOILER DESIGN
Robert V. Seibel, and Theodore C. Fuhrman, Jr., both of Erie, Pa., assignors to Zurn Industries, Inc., Erie, Pa.
Filed Oct. 4, 1993, Ser. No. 130,744
Int. Cl.[5] F22B *31/00*
U.S. Cl. 122—240.1 27 Claims

1. A boiler comprising a front wall, a rear wall, a top, a bottom, and side walls forming an enclosure;
hollow partitions made of first boiler tubes and second boiler tubes defining combustion chambers;
an upper header and a lower header supported on said enclosure and connected to each of said boiler tubes;
each of said boiler tubes being curved in a serpentine form each having at least two cycles;
each of said cycles having at least one base and one crest;
said base of each of said first boiler tubes being disposed between said base of two adjacent said second boiler tubes forming a first combustion chamber and a second combustion chamber between said crests of two said boiler tubes; and,
a burner disposed in each said combustion chamber.



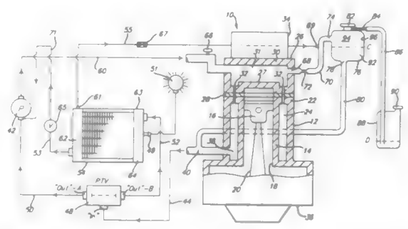
5,353,750
APPARATUS FOR SEALING A FOAM INSULATED WATER HEATER
Gary S. Threatt, Kershaw, S.C., assignor to AOS Holding Company, Milwaukee, Wis.
Filed May 27, 1993, Ser. No. 68,495
Int. Cl.[5] F22B *37/36*
U.S. Cl. 122—494 11 Claims



1. A water heater comprising a tank including a threaded opening, an outer jacket spaced from said tank, said jacket including an indented portion which is closer to the tank and which has therein an opening aligned with said tank opening, and a fitting threaded into said tank opening, said fitting having an enlarged portion outside said jacket, a reduced portion inside said jacket, and a connecting portion between said enlarged portion and said reduced portion, said connecting portion narrowing from said enlarged portion to said reduced portion and engaging said indented portion of said jacket so as to form a foam seal between said jacket and said fitting.

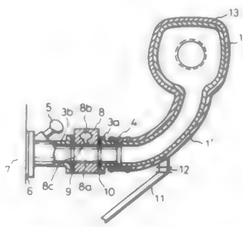
5,353,751
ENGINE COOLING SYSTEM AND RADIATOR THEREFOR
John W. Evans, 253 Rte. 41 North, Sharon, Conn. 06069
Filed Sep. 18, 1992, Ser. No. 946,909
Int. Cl.[5] F01P *9/00*
U.S. Cl. 123—41.01 1 Claim

1. In a reverse flow aqueous cooling system for an internal combustion engine comprising a cylinder head coolant chamber, a radiator and a coolant pump, the improvement comprising:



engine coolant flow control means disposed between said radiator and said pump for precluding gravity flow of coolant from said engine to said radiator comprising a one-way check valve.

5,353,752
INTAKE SYSTEM FOR INTERNAL COMBUSTION ENGINE
Makoto Suzuki, Mishima, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Aug. 27, 1993, Ser. No. 113,160
Claims priority, application Japan, Aug. 31, 1992, 4-231890
Int. Cl.[5] F02B *75/18*
U.S. Cl. 123—184.61 12 Claims



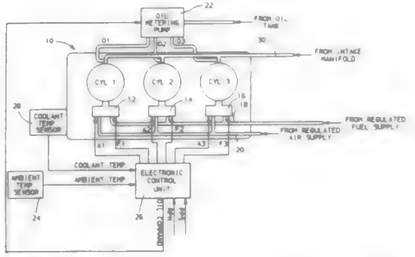
1. An intake system for an internal combustion engine comprising an intake passage which extends from an upstream end to a downstream end which is coupled to the engine and an exhaust gas recirculation passage which merges into said intake passage at a merging point, wherein the portion of said intake passage upstream of the merging point has a substantially increased thermal insulation relative to the portion of the intake passage downstream of the merging point.

5,353,753
TWO-STROKE ENGINE LUBRICATION
Phillip B. McGrath, Sterling Heights, and Kenneth J. Buslepp, Shelby Township, Macomb County, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Jun. 15, 1993, Ser. No. 76,671
Int. Cl.[5] F01M *1/18*
U.S. Cl. 123—73 AD 6 Claims

1. A method for providing an adjustment to the rate at which lubricant is provided to a two-stroke internal combustion engine, comprising the steps of:
estimating an amount of time the engine has not been operating following a startup of the engine;
determining a lubrication rate adjustment as a predetermined

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function of the estimated amount of time the engine has not been operating; and



adjusting the rate at which lubricant is provided to the engine by the determined lubrication rate adjustment.

5,353,754

FUEL-INJECTION ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE

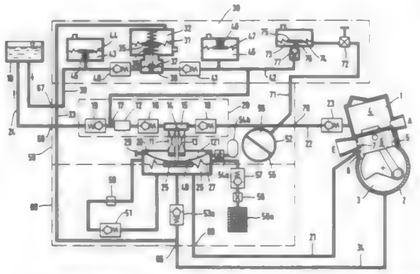
Michael Wissmann, Mettmann; Hans Nickel, Cotteneweiler; Roland Schierling, Affalterbach; Roland Adam, Besigheim; Manfred Thaiss, Winnenden, and Werner Geyer, Waiblingen, all of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Jul. 19, 1993, Ser. No. 93,155

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1992, 4223757

Int. Cl.[5] F02B *33/04*

U.S. Cl. 123—73 C **22 Claims**



1. A fuel-injection arrangement for an internal combustion engine such as a two-stroke engine of a portable handheld work apparatus such as a motor-driven chain saw and the like, the engine having a crankcase wherein a crankcase pressure is developed during operation of the engine, the fuel-injection arrangement comprising:

a fuel tank for supplying fuel for the engine;

a suction line communicating with said fuel tank for conducting fuel away therefrom;

a base housing;

an ancillary housing;

an injection pump disposed in said base housing for pumping fuel to the engine and including a pump chamber formed in said ancillary housing;

a suction valve disposed in said ancillary housing upstream of said pump chamber and connected to said suction line for passing fuel therefrom into said pump chamber;

said injection pump further including: a pump cylinder; and, a pump piston delimiting said pump chamber and being axially displaceable in said cylinder for pumping the fuel entering said pump chamber;

a pressure valve disposed in said ancillary housing downstream of said pump chamber for passing the fuel pumped by said injection pump;

said ancillary housing incorporating said pump chamber, said suction valve and said pressure valve to define a preassembled unit;

said base housing having a seat formed therein for receiving and accommodating said preassembled unit in said base housing;

an injection line connected to said pressure valve for conducting the pumped fuel to the engine;

said base housing having a space formed therein and said injection pump further including: a membrane mounted in said base housing and delimiting a work chamber in said space; and, means for connecting said membrane to said piston;

conduit means for connecting the crankcase of said engine to said work chamber for charging said work chamber with said crankcase pressure thereby driving said membrane and said piston;

interface sealing means for providing a seal-tight interface between said base housing and said ancillary housing;

receptacle means formed on said ancillary housing for providing a seal-tight connection with said injection line; and,

said connecting means including a membrane plate holding said membrane and said membrane plate being connected to said piston.

5,353,755

ARRANGEMENT OF VARIABLE VALVE TIMING CONTROL SYSTEM ON V-TYPE ENGINE

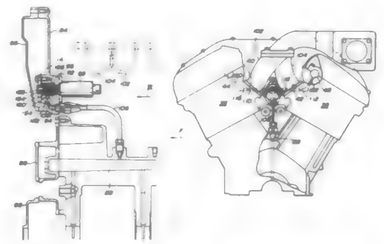
Isaya Matsuo, Yokohama, and Kaoru Haga, Kawasaki, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 18, 1994, Ser. No. 183,439

Claims priority, application Japan, Jan. 18, 1993, 5-006085

Int. Cl.[5] F01L *1/02*

U.S. Cl. 123—90.13 **23 Claims**



1. A V-type internal combustion engine, comprising:

first and second cylinder banks arranged to form the letter V;

a plurality of camshafts including two camshafts for said first and second cylinder banks, respectively;

a casing adapted to receive a drive system connecting said four camshafts to a crankshaft of the engine for turning said camshafts by rotation of the crankshaft;

a plurality of hydraulically actuable valve operation mode control actuators for said first and second cylinder banks;

a source of pressurized hydraulic fluid;

a hydraulic fluid network fluidly disposed between said source of pressurized hydraulic fluid and said plurality of hydraulically actuable valve operation mode control actuators;

said hydraulic fluid network including a control valve fluidly disposed between said source of pressurized hydraulic fluid and said plurality of hydraulically actuable valve operation mode control actuators;

said control valve being attached to said casing and disposed between said first and second cylinder banks; and

said casing having internal passage means forming a part of said hydraulic fluid network between said control valve and said plurality of hydraulically actuable valve operation mode control actuators.

5,353,756

VALVE OPERATING SYSTEM STRUCTURE WITH VARIABLE VALVE TIMING MECHANISM

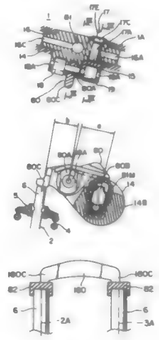
Shinichi Murata; Noriyuki Miyamura, both of Kyoto; Hirofumi Higashi, Kameoka, and Masahiko Kubo, Kyoto, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1993, Ser. No. 92,439

Claims priority, application Japan, Jul. 16, 1992, 4-189760; Jul. 16, 1992, 4-189761; Jul. 16, 1992, 4-189762; Jul. 17, 1992, 4-189789; Jul. 17, 1992, 4-189792; Jul. 17, 1992, 4-191099

Int. Cl.[5] F01L *1/34, 1/32, 1/24*

U.S. Cl. 123—90.16 **20 Claims**



1. A valve operating system structure with a variable valve timing mechanism, comprising:

an intake valve or an exhaust valve provided for an engine;

a low speed cam having a cam profile for a low speed valve timing and rotatable in response to rotation of a crankshaft of said engine;

a high speed cam having a cam profile for a high speed valve timing and rotatable in response to rotation of said crankshaft;

a main rocker arm for contacting with said low speed cam so as to be operated by said low speed cam;

a sub rocker arm for contacting with said high speed cam so as to be operated by said high speed cam;

mode change-over means for changing over the mode of said sub rocker arm between a non-interlocking mode in which said sub rocker arm is not interlocked with said main rocker arm and an interlocking mode in which said sub rocker arm is interlocked with said main rocker arm;

a swing arm supported for pivotal motion and for adjustment in phase relative to said main rocker arm and having a valve contacting portion for contacting with said valve to drive said valve: and

a hydraulic lash adjuster for adjusting the relative phase between said main rocker arm and said swing arm.

17. A valve operating system structure with a variable valve timing mechanism, comprising:

an intake valve OF an exhaust valve provided for an engine;

a low speed cam having a cam profile for a low speed valve timing and rotatable in response to rotation of a crankshaft of said engine;

a high speed cam having a cam profile for a high speed valve timing and rotatable in response to notation of said crankshaft;

a main rocker arm for contacting with said low speed cam so as to be operated by said low speed cam to operate said valve;

a sub rocker arm for contacting with said high speed cam so as to be operated by said high speed cam; and

mode change-oven means foe changing even the mode of said sub rocker arm between a non-interlocking mode in which said sub rocker arm is not interlocked with said main rocker arm and an interlocking mode in which said sub rocker arm is interlocked with said main rocker arm;

said main rocker arm having a valve contacting portion for contacting with said valve to drive said valve;

the center of contact of said valve contacting portion of said main rocker arm being located at a position displaced from the axis of said valve.

5,353,757

VEHICULAR USE COOLING APPARATUS

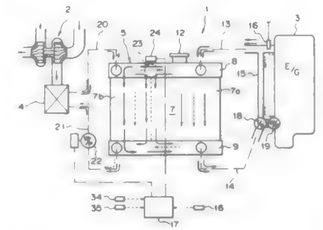
Sumio Susa, Anjo; Akihito Tanaka, Toyohashi; Tatsuo Sugimoto, Kariya; Atsushi Katoh, Nagoya, and Kazutaka Suzuki, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 13, 1993, Ser. No. 90,694

Claims priority, application Japan, Jul. 13, 1992, 4-184888; Nov. 30, 1992, 4-320618

Int. Cl.[5] F01P *3/00*

U.S. Cl. 123—41.29 **14 Claims**



1. A vehicular use cooling apparatus including a radiator having upper and lower tanks, comprising:

a first cooling water circuit comprising:

a first inlet passage for guiding the cooling water flowing out from a water-cooled internal combustion engine,

a first radiator portion being a part of said radiator and having at the upper tank a first inlet which is connected to said first inlet passage and receives cooling water from said engine and at the lower tank a first outlet which discharges the cooled cooling water exchanging heat with air,

a first outlet passage for returning the cooled cooling water from said first outlet of said first radiator portion to said water-cooled internal combustion engine, and

a first water circulating means for circulating the cooling water of said water-cooled internal combustion engine to said first radiator portion,

a second cooling water circuit comprising:

a second inlet passage for guiding the cooling water flowing out from another water-cooled cooling apparatus different from said water-cooled internal combustion engine,

a second radiator portion being a part of said radiator and having at the upper tank a second inlet which is connected to said second inlet passage and receives cooling water from said another water-cooled cooling apparatus and at the lower tank a second outlet which discharges the cooled cooling water exchanging heat with

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air, said portion formed as an integral radiator with said first radiator portion,

a second outlet passage for returning the cooled cooling water from said second outlet of said second radiator portion to said other water-cooled cooling apparatus, and

a second water circulating means for circulating the cooling water of said other water-cooled cooling apparatus to said second radiator portion,

a connection means provided between said first radiator portion and said second radiator portion and in one of the upper and lower tanks, and for being able to selectively block the exchange of cooling water in said first radiator portion and the cooling water in said second radiator portion; and

a control means for operating said connection means in accordance with the state of operation of said water-cooled internal combustion engine and/or said other water-cooled cooling apparatus.

5,353,758

WIRING ARRANGEMENT FOR OUTBOARD MOTOR

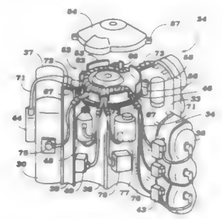
Tatsuya Masuda, and Kazuhiro Nakamura, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 19, 1992, Ser. No. 901,428

Claims priority, application Japan, Jun. 21, 1991, 3-175903

Int. Cl.[5] F02P *7/00*

U.S. Cl. 123—143 C **20 Claims**



1. A wire harness assembly for an outboard motor having an engine disposed with an output shaft rotatable about a vertically disposed axis and a plurality of electrical components comprising a wire harness having a body portion mounted on an upper portion of the engine at a position above an upper end of said output shaft, and a plurality of branch wires attached to the body portion of said wire harness and extending outwardly for connection with said electrical components.

5,353,759

CRANK CHAMBER COMPRESSION TYPE TWO CYCLE ENGINE

Koji Abe; Kimihiro Nonaka, and Osamu Nagabora, all of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

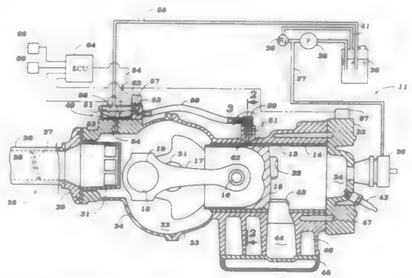
Filed Mar. 19, 1993, Ser. No. 33,871

Claims priority, application Japan, Mar. 19, 1992, 4-093459

Int. Cl.[5] F02N *17/00*; F02M *1/10*

U.S. Cl. 123—179.15 **24 Claims**

1. A system for facilitating the starting of an internal combustion engine comprised of a cylinder bore, a piston reciprocating in said cylinder bore, a port communicating with said cylinder bore in an area swept by said piston, a starter for starting said engine, a temperature sensor for sensing temperature, a lubricating system for supplying lubricant to said engine including the sliding surfaces of said piston and said cylinder bore, a charge former for supplying a fuel air charge to said engine for combustion during starting and running, and means for supplying a fluid less viscous than the lubricant supplied by said lubricating system to said port only upon the starting of said engine for reducing the viscosity between said cylinder



bore and said piston when the temperature sensed is below a predetermined value.

5,353,760

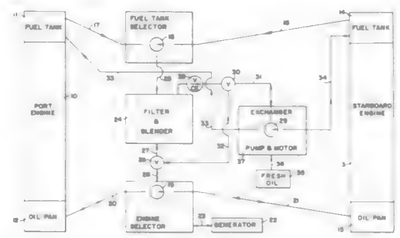
MULTIPLE ENGINE OIL AND FUEL SYSTEM

Raymond Zager, Ponte Vedra Beach, Fla., assignor to Ray Zager & Company, Ponte Vedra Beach, Fla.

Filed Mar. 15, 1993, Ser. No. 31,559

Int. Cl.[5] F01M *11/04*

U.S. Cl. 123—196 S **18 Claims**



1. In an internal combustion power plant for a marine vessel having a plurality of engines consuming from fuel tanks a blend of used crankcase oil and diesel oil, a system for preparing said blend comprising a filter/blender means for periodically receiving used crankcase oil from selected said engines and diesel oil from selected said fuel tanks of said engines, said filter/blender filtering said used crankcase oil and mixing same with said diesel oil and feeding the mixture to said selected fuel tank.

5,353,761

ENGINE ENHANCER

Calvin Kalishman, 7034 Arbor View La., New Port Richey, Fla. 34653

Filed Jun. 2, 1993, Ser. No. 71,181

Int. Cl.[5] F02B *77/00*

U.S. Cl. 123—198 A **10 Claims**

1. An apparatus for use with an engine system with a fuel injection system, the engine system having a crankcase and an intake manifold, said apparatus comprising:

a container for holding a liquid;

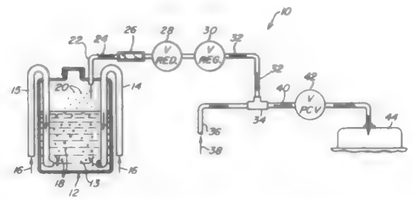
an inlet conduit extending into the container below the level of the liquid for allowing a gas to enter the liquid in the container and for causing particles to form above the level of the liquid forming an enriched air;

an outlet conduit for carrying the enriched air from the container;

a conduit for carrying gas from the crankcase;

means for combining the enriched air and the gas from the crankcase; and

means, coupled to the combining means, for providing the



combined enriched air and the air from the crankcase to the intake manifold without passing through a carburetor, the providing means including a PCV valve intermediate the combining means and the intake manifold.

5,353,762

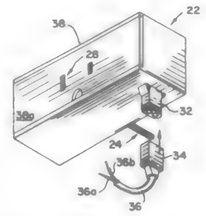
MODULAR AUTOMATIC SPEED CHANGING SYSTEM

Richard A. Dykstra, Cedar Grove, and John A. Fiorenza, II, Slinger, both of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed May 10, 1993, Ser. No. 59,995

Int. Cl.[5] F02D *31/00*

U.S. Cl. 123—352 **15 Claims**



1. An automatic speed changing system for a device that powers a load, said device having a device output connector, and said load having a load input connector that is detachably connectable to said device output connector, said speed changing system comprising:

a housing;

a first input connector, interconnected with said housing, that is detachably connectable to said device output connector;

a first output connector, interconnected with said housing, that is detachably connectable to said load input connector;

means for sensing a parameter functionally related to said load; and

means for generating an output signal to said device to change the speed of said device if said sensed parameter differs from a threshold value.

5,353,763

METHOD OF SUPPLYING A COMBUSTIBLE GAS INTO THE COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE IN TWO PHASES

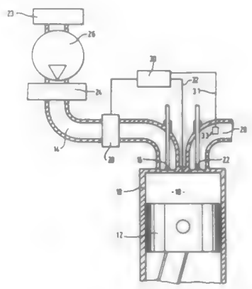
Oskar Schatz, Waldpromenade 16, D-8035 Gauting, Fed. Rep. of Germany

Filed Dec. 15, 1992, Ser. No. 990,428

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1991, 4141482

Int. Cl.[5] F02D *9/02, 41/14*

U.S. Cl. 123—403 **21 Claims**



1. A method of supplying a combustible gas into a combustion chamber of an internal combustion engine during a first phase and during a second phase following said first phase, a supply of combustible gas being restricted at least towards the end of said first phase and restricting the supply of the combustible gas being terminated at least during the beginning of said second phase which ends when a piston associated with the combustion chamber begins to compress a charge of combustible gas in the combustion chamber, and restricting the supply of combustible gas and timing of starting and terminating the supply of combustible gas and timing of terminating the supply of combustible gas are coordinated such that the resultant piston work corresponds to feed and compression work necessary for filling the combustion chamber with a desired amount of combustible gas plus an additional amount of energy necessary to increase the temperature of said charge above a temperature value the combustible gas would attain when it were compressed in an adiabatic manner.

5,353,764

ELECTRONICALLY CONTROLLED FUEL SUPPLY METHOD AND DEVICE FOR INTERNAL COMBUSTION ENGINE

Naoki Tomisawa, Isesaki, Japan, assignor to Japan Electronic Control Systems Co., Ltd., Isesaki, Japan

Filed Jan. 15, 1993, Ser. No. 2,849

Claims priority, application Japan, Jan. 16, 1992, 4-5846

Int. Cl.[5] F02D *41/06*

U.S. Cl. 123—435 **10 Claims**

1. An electronically controlled fuel supply method for an internal combustion engine comprising: the steps of

detecting an engine temperature;

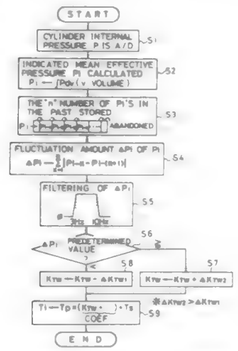
increasingly correcting a fuel supply amount to the engine according to said detected engine temperature;

detecting a fluctuation level of an engine output; and

modifying an increasing correction amount of fuel according

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to said engine temperature to a minimum value so that the fluctuation level of the engine output falls within a permissible range, based on said detected fluctuation level of the engine output.

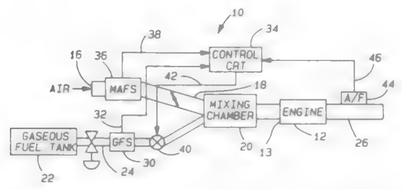


5,353,765

FUEL MANAGEMENT SYSTEM FOR A GASEOUS FUEL INTERNAL COMBUSTION ENGINE

George Saikalis, West Bloomfield, and Masatoshi Sugiura, Novi, both of Mich., assignors to Hitachi America, Ltd., Research and Development Division, Tarrytown, N.Y.

Filed May 10, 1993, Ser. No. 58,373
Int. Cl.[5] F02M 7/00, 21/04
U.S. Cl. 123—438 15 Claims



1. For use in conjunction with an internal combustion engine having an air intake, a source of gaseous fuel, an internal combustion chamber, fuel flow means for fluidly connecting said gaseous fuel source to said combustion chamber, air flow means for fluidly connecting said air intake to the combustion chamber, said gas and said air forming a combustible charge for the combustion chamber and valve means in said fuel flow means for variably controlling the rate of flow of fuel through said fuel flow means, a fuel management system comprising:

means for measuring the mass of gas flow through said fuel flow means and for generating a fuel output signal representative thereof,

means for measuring the mass of air flow through said air flow means and for generating an air output signal representative thereof,

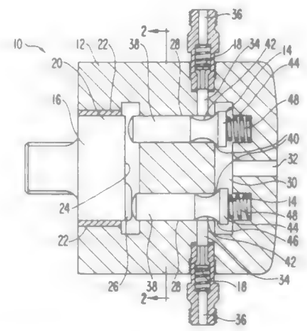
control circuit means responsive to said fuel output signal and said air output signal for calculating an air/fuel ratio, for comparing said calculated air/fuel ratio with a target air/fuel ratio and for generating an output signal to the valve means to actuate the valve means so that said calculated air/fuel ratio approximates said target air/fuel ratio.

5,353,766

DISTRIBUTOR FOR A HIGH PRESSURE FUEL SYSTEM

Lester L. Peters; Bai M. Yen, and Julius P. Perr, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Sep. 8, 1993, Ser. No. 117,697
Int. Cl.[5] F02M 41/00
U.S. Cl. 123—450 17 Claims



1. A high pressure fuel injection system for distributing fuel at a predetermined pressure through plural fuel injection lines to the corresponding cylinders of a multi-cylinder internal combustion engine, comprising:

a high pressure fuel supply means for supplying fuel at high pressure for delivery to the cylinders of the engine;

a fuel transfer circuit communicating said high pressure fuel supply means with the engine cylinders and including a plurality of fuel injection lines each associated with a respective engine cylinder;

a fuel distributor means positioned along said fuel transfer circuit for enabling sequential periodic fluidic communication between said high pressure fuel supply means and the engine cylinders through said plurality of fuel injection fines, said fuel distributor means including a plurality of distributor valves, each of said plurality of distributor valves being positioned in fluidic communication with a respective one of said plurality of fuel injection lines and adapted to be placed in an open position to define a fuel injection period during which high pressure fuel may flow through said distributor valve to the respective engine cylinder and a closed position blocking fuel flow through said respective fuel injection fine, wherein each of said plurality of distributor valves is adapted to receive a force from the high pressure fuel flowing from said high pressure supply means which urges said distributor valve into the closed position;

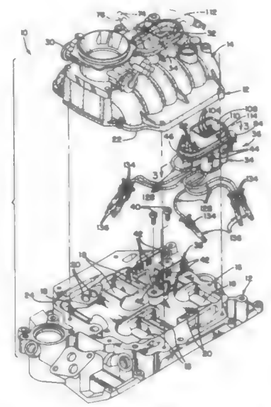
a control valve means positioned along said fuel transfer circuit between said high pressure fuel supply means and said fuel distributor means for controlling the flow of fuel to said distributor means, wherein said control valve means is movable between a first position wherein fuel may flow therethrough to said distributor means during said injection period and a second position wherein fuel flowing therethrough to said distributor means is blocked, said control valve means being movable from said second position to said first position and from said first position to said second position within said injection period to define a fuel injection event during which high pressure fuel may flow from said high pressure supply means through one of said plurality of distributor valves to a respective engine cylinder.

5,353,767

FUEL AND AIR INDUCTION SYSTEM

Donald T. Carbone, Troy, Mich.; Thomas R. Schaenzer; Scott A. Geiger, both of Rochester, N.Y., and Roger M. Brisbane, Spencerport, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 17, 1993, Ser. No. 168,306
Int. Cl.[5] F02M 55/02
U.S. Cl. 123—470 2 Claims



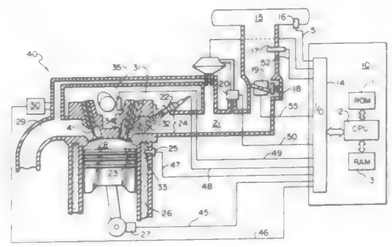
1. An integrated fuel and air system for an internal combustion engine comprising an intake manifold having upper and lower men, bets, said lower member having air passages for the transfer of air from said manifold to the engine, fuel nozzle openings in communication with said air passages, and fuel meter body mounting means, said upper member comprising an air plenum having a first opening configured to receive intake air through an associated throttle body and a second opening configured to receive a portion of a fuel meter body disposed in said fuel meter body mounting means in said lower member, said upper and lower members sealingly engageable along mating surfaces to enclose said air plenum, said integrated fuel and air system further comprising said fuel meter body having a top, sides and a bottom defining a fuel plenum therebetween, mounting means depending from said sides and engageable with said fuel meter body mounting means in said lower member to fix said fuel meter body within said air plenum, and a flanged sealing platform depending from said top and configured for mating engagement with said second opening in said upper member when said upper member is sealingly engaged with said lower member of said intake manifold, said fuel plenum having a pressurized fuel inlet and a fuel outlet opening through said flanged sealing platform and, therefore, out of said second opening in said air plenum, and fuel regulating means operable, between said inlet and said outlet, to regulate fuel pressure within said fuel plenum, a plurality of cylindrical openings extending through said bottom and opening into said fuel plenum and, a plurality of openings located in said top, in the region of said sealing platform and in coaxial relationship to each of said cylindrical openings, wherein each of said cylindrical openings is in fluid communication with said other cylindrical openings in said fuel plenum and is configured to receive a fuel injector therein for communication with said fuel plenum such that said injectors are each in fluid communication with said other injectors, said injectors comprising an injector body having a first end and a second end, said first end having electrical connection means extending out of said plurality of openings in said top of said fuel plenum in the region of said sealing platform and, therefore, out of said second opening in said air plenum, for attachment to energizing means external of said manifold and, said second end having an outlet extending outwardly of said plurality of cylindrical openings in said bottom of said fuel plenum, said injectors further comprising fuel inlets, between said first and said second ends, in communication with said fuel plenum for receiving fuel therefrom and valve means operable, upon energization of said injector, to meter fuel through said outlets, and a plurality of fuel lines each having a first end connected to one of said fuel injector outlets and terminated at a second end by a pressure pulse activated nozzle, said nozzles configured for engagement with said fuel nozzle openings in said lower member of said intake manifold, said fuel lines and nozzles facilitating fuel delivery from each of said fuel injectors in said fuel plenum of said fuel metering body to said individual cylinders of said internal combustion engine.

5,353,768

FUEL CONTROL SYSTEM WITH COMPENSATION FOR INTAKE VALVE AND ENGINE COOLANT TEMPERATURE WARM-UP RATES

Isis A. Messih, Troy, and Charles F. Aquino, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 15, 1993, Ser. No. 151,680
Int. Cl.[5] F02M 51/00
U.S. Cl. 123—491 20 Claims



1. In an internal combustion engine including an induction system comprised of an intake port, an intake valve for opening and closing the intake port and injector means for delivering fuel to a combustion chamber of the engine in an amount controlled by a fuel injector signal generated by an engine control means, a method for controlling delivery of fuel to the intake port, comprising the steps of:

measuring a temperature value indicative of the temperature of the induction system;

determining a valve effect value indicative of the effect of intake valve temperature on the vaporization of fuel in the induction system;

generating a transient fuel compensation value in response to the temperature value and the valve effect value; and

generating the fuel injector signal in response to the transient fuel compensation value.

5,353,769

FUEL SUPPLY CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Kenichi Maeda; Yuichi Shimasaki; Eitetsu Akiyama; Takashi Hisaki; Shigeru Maruyama; Masaki Kanehiro; Takuji Ishioka, and Kazutomo Sawamura, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1993, Ser. No. 51,678
Claims priority, application Japan, Apr. 24, 1992, 4-131500
Int. Cl.[5] F02D 41/14; F02P 17/00
U.S. Cl. 123—492 6 Claims

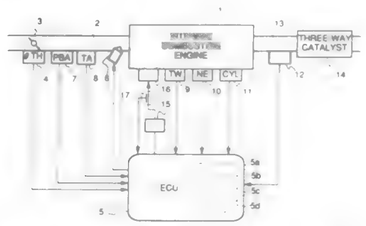
1. A fuel supply control system for controlling an amount of fuel supplied to an internal combustion engine having at least one cylinder, comprising:

combustion ion-detecting means for detecting a value re-

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lated to an amount of combustion ions generated within said at least one cylinder;

engine operating condition-detecting means for detecting whether said engine is in a transient operating condition; and



correcting means for comparing the value related to said amount of combustion ions detected by said combustion ion-detecting means with a predetermined value and for correcting an amount of fuel supplied to said engine, based upon a result of the comparison, when it is detected that said engine is in said transient operating condition.

5,353,770

APPARATUS FOR CONTROLLING FLOW OF EVAPORATED FUEL FROM CANISTER TO INTAKE PASSAGE OF ENGINE USING PURGE CONTROL VALVES

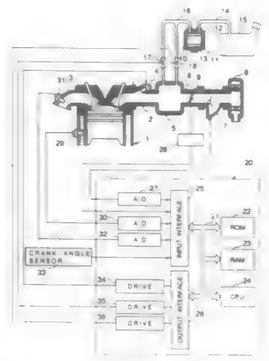
Akinori Osanai; Takaaki Itoh; Yoshihiko Hyodo, and Toru Kidokoro, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed May 18, 1993, Ser. No. 63,080

Claims priority, application Japan, May 21, 1992, 4-129077; Jun. 1, 1992, 4-140711; Jun. 26, 1992, 4-169433

Int. Cl.[5] F02M *33/02*

U.S. Cl. 123—520 **18 Claims**



1. An apparatus for controlling a flow of evaporated fuel from a canister being fed into an intake passage of an engine through a plurality of purge control valves arranged in a purge passage between the canister and the intake passage, said apparatus comprising:

the plurality of purge control valves arranged in parallel in the purge passage between the canister and the intake passage, the purge passage having two outlets into the intake passage with a first one of the plurality of purge control valves controlling flow through one outlet and a second one of the plurality of purge control valves controlling flow through another outlet independently of the first valve, said first valve being switched on and off based on a control factor, the control factor comprising a driving duty ratio value indicating an on-time within a duty cycle of a total duty-cycle time for said first valve, and said second valve being switched on and off based on a control factor indicating one of an on-state and an off-state of the second valve for a total duty-cycle time;

first control means for setting a first control factor for said first valve so that the first valve is switched on and off at a rate indicated by said first control factor, said first control factor comprising a driving duty ratio value indicating an on-time within the duty cycle; and

second control means for setting a second control factor for said second valve so that the second valve is switched on and off at a timing different from a timing at which the first valve is switched on and off.

5,353,771

METHOD AND ARRANGEMENT FOR DIAGNOSING A TANK-VENTING SYSTEM OF A MOTOR VEHICLE

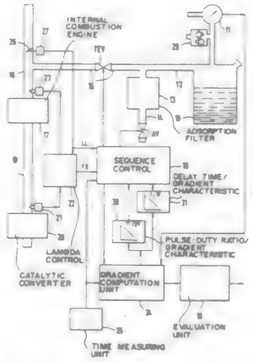
Andreas Blumenstock, Ludwigsburg, and Helmut Denz, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 10, 1994, Ser. No. 194,263

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1993, 4303997

Int. Cl.[5] F02M *33/02*

U.S. Cl. 123—520 **7 Claims**



1. A method of checking the operability of a tank-venting system of a motor vehicle having an internal combustion engine, the tank-venting system including: a tank having a tank-pressure sensor; an adsorption filter connected to the tank by a tank-supply line and having a venting line closeable by a shut-off valve; and, a tank-venting valve connected to the adsorption filter via a valve line; the method comprising the steps of:

(a) determining the fill level of the tank and setting a pulse-duty factor on the basis of the determined fill level so that the tank-venting valve can be opened with said pulse-duty factor during a subsequent check for tightness of the tank-venting system;

(b) conducting said check for tightness with at least the following steps:

(b1) opening the tank-venting valve at said pulse-duty factor and closing the shutoff valve;

(b2) closing the tank-venting valve as soon as a pregiven pressure condition is satisfied;

(b3) determining the underpressure decay gradient for the underpressure decaying in the tank; and,

(b4) evaluating the tightness of the tank-venting system using the determined underpressure decay gradient.

5,353,772

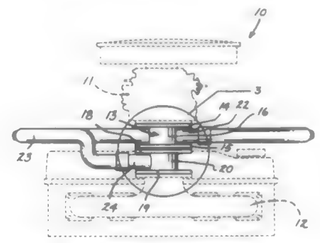
CARBURETOR FUEL CHARGE HEATING APPARATUS

William K. Wallace, and Florence W. Wallace, both of P.O. Box 1436, Pahoa, Hi. 96778

Filed Oct. 20, 1993, Ser. No. 138,722

Int. Cl.[5] F02M *31/00*

U.S. Cl. 123—545 **8 Claims**



1. A fuel charge heating apparatus for positioning between a carburetor and an intake manifold, wherein the apparatus comprises,

a first chamber housing and a second chamber housing, the first chamber housing including a first housing top flange spaced from a first chamber bottom flange and a first housing side wall extending between the first housing top flange and first housing bottom flange, the second chamber housing having a second housing top flange spaced from a second housing bottom flange, and a second housing bottom wall extending between the second housing top flange and the second housing bottom flange, and

an impermeable block-off plate mounted coextensively between the first housing bottom flange and the second housing top flange, with a central conduit extending between the first chamber housing and the second chamber housing.

5,353,773

AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

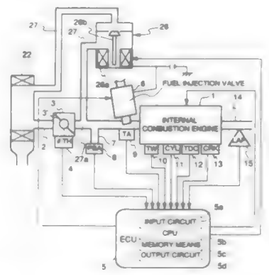
Ken Ogawa; Yoshikazu Oshima, and Kei Machida, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1993, Ser. No. 51,877

Claims priority, application Japan, May 7, 1992, 4-142217

Int. Cl.[5] F02D *41/14*

U.S. Cl. 123—681 **5 Claims**



1. In an air-fuel ratio control system for an internal combustion engine having at least one combustion chamber, an intake passage having an inner surface, fuel injection means arranged in said intake passage, and an exhaust passage, the air-fuel ratio control system including fuel supply amount-calculating means for calculating an amount of fuel to be supplied to said engine in response to the rotational speed of said engine and a parameter indicative of load on said engine, direct supply ratio-calculating means for calculating a direct supply ratio defined as a ratio of a fuel amount directly drawn into said combustion chamber during intake stroke in a present cycle of said engine to the whole fuel amount injected in the same cycle, carry-off ratio-calculating means for calculating a carry-off ratio defined as a ratio of a fuel amount carried off said inner surface of said intake passage and drawn into said combustion chamber during intake passage in the present cycle to the whole fuel amount which adhered to said inner surface of said intake passage in an immediately preceding cycle, air-fuel ratio-detecting means arranged in said exhaust passage for detecting an air-fuel ratio in exhaust gases from said engine, feedback correction value-setting means for setting a feedback correction value to a value such that the air-fuel ratio detected by said air-fuel ratio-detecting means becomes equal to a desired value, and fuel supply amount-correcting means for correcting said amount of fuel calculated by said fuel supply amount-calculating means by said direct supply ratio, said carry-off ratio, and said feedback correction value, wherein an amount of fuel corrected by said fuel supply amount-correcting means is injected by said fuel injection means into said intake passage,

the improvement wherein said feedback correction value-setting means includes control speed-setting means for setting a control speed at which said feedback correction value is corrected, based upon at least one of said direct supply ratio and said carry-off ratio.

5,353,774

DAMAGE PREVENTING METHOD AND DEVICE FOR SENSOR ELEMENT OF AIR/FUEL RATIO SENSOR WITH HEATER

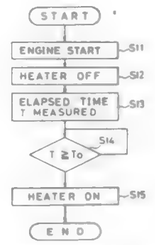
Junichi Furuya, Isesaki, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Feb. 22, 1993, Ser. No. 24,178

Claims priority, application Japan, Feb. 20, 1992, 4-007148[U]

Int. Cl.[5] F02D *41/14*

U.S. Cl. 123—685 **4 Claims**



1. A damage preventing method for a sensor element of an air/fuel ratio sensor with heater wherein

an air/fuel ratio sensor is provided facing an exhaust passage of an internal combustion engine and comprises a sensor element whose output value is changed in response to a concentration of a specific component in exhaust changed by an air/fuel ratio in an engine intake mixture and an electric heater for promoting activation of the sensor element at a low temperature by heating the sensor element,

a state where a deviation of the air/fuel ratio sensor output becomes more than a predetermined value after starting of the engine is detected by detecting the output of the air/fuel ratio sensor; and

the heater is turned on after detecting the state.

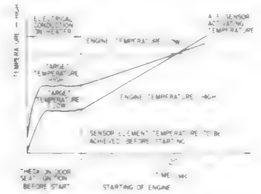
VOL 1167 ISS 2 OC 11 1994 UMI

5,353,775

AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Yukihiro Yamashita, Kariya, Japan; Kenji Ikuta, Rolling Hills Estates, Calif., and Shigenori Isomura, Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 26, 1993, Ser. No. 9,199
Claims priority, application Japan, Jan. 27, 1992, 4-012359
Int. Cl.[5] F02D *41/14*; G01N *27/26*
U.S. Cl. 123—686 8 Claims



1. An air-fuel ratio control system for an internal combustion engine, comprising:

a gas density detector unit for detecting an exhaust gas density of said internal combustion engine;

a heater for heating said gas density detector unit to raise a temperature thereof;

engine temperature detection means for detecting an engine temperature of an ambient environment of said gas density detector unit;

pre-start condition detection means for detecting a preparatory operation for driving before starting said internal combustion engine; and

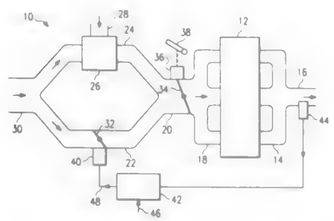
target temperature setting means for, upon detection of said preparatory operation for driving by said pre-start condition detection means, setting a target temperature for heating by said heater to a relatively low level if said engine temperature detected by said engine temperature detection means is relatively high and for setting said target temperature to a relatively high level if said engine temperature is relatively low.

5,353,776

METHOD AND APPARATUS FOR CONTROLLING FUEL FLOW TO LEAN BURN ENGINES

Robert W. Burrahm, and David P. Meyers, both of, San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Continuation of Ser. No. 853,500, Mar. 18, 1992, abandoned. This application Mar. 22, 1993, Ser. No. 34,605
Int. Cl.[5] F02D *41/14*; F02M *23/04*
U.S. Cl. 123—700 10 Claims



1. A fuel control system for lean burn engines having intake and exhaust manifolds comprising:

a carburetor for mixing fuel and air;

an intake conduit connecting the carburetor with the intake manifold;

an air by-pass conduit connected with said intake conduit;

a by-pass throttle valve located in said by-pass conduit for controlling the air flow through said by-pass conduit to said intake conduit;

a main throttle valve located in said intake conduit between the connection of said by-pass conduit with said intake conduit and said intake manifold for controlling the air/fuel mixture from said intake conduit and by-pass conduit into said engine;

first control means for changing the position of said main throttle valve to vary the quantity of the mixture supplied to said engine;

second control means for changing the position of said by-pass throttle valve to change the ratio of the mixture supplied to said engine independent from the position of said main throttle valve, and

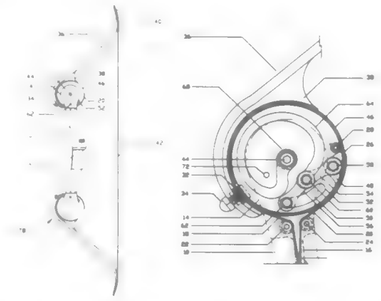
wherein the position of said by-pass throttle valve remains essentially unaffected by changes in the position of the main throttle valve.

5,353,777

COMPOUND BOW WITH DIMINISHING DRAW WEIGHT AND QUICK TAKE DOWN FEATURES

Hollis W. Fincher, Rte. #5 Box 443, Fayetteville, Ark. 72701

Filed Dec. 28, 1992, Ser. No. 997,598
Int. Cl.[5] F41B *7/00*, *5/10*
U.S. Cl. 124—16 5 Claims



1. An archery bow comprising:

a riser with a hand grip, and upper and lower bifurcated ends; a hole through the upper and lower bifurcated ends adapted to receive an axle;

rigid upper and lower bow limbs with outer ends joined to each other with a bow string, and inner ends joined to said riser by energy storage means, each said energy storage means comprising:

a housing rotatably received in each of said upper and lower bifurcated ends by a support axle (**44**) passing through said housing and captured in said holes;

said inner ends of said limbs affixed directly to a respective upper or lower housing;

a thrust axle (**62**) anchored to said riser and extending into said housing through a slot (**50**);

a spring means (**64**) connected between said support axle and a connecting axle (**60**);

a first energy transmitting link (**54**) connected between a primary link axle (**58**) fixed to the housing, and said connecting axle (**60**);

a second energy transmitting link (**56**) connected between said connecting axle and said thrust axle;

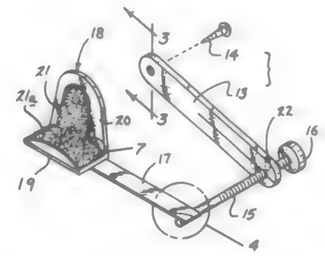
whereby, as said bowstring is pulled, said limbs rotate along with their associated housings, to store energy in the spring means.

5,353,778

ADJUSTABLE ARROW REST APPARATUS

Harry J. Blankenship, Rte. 1, Box 229, Callaway, Va. 24067

Filed May 24, 1993, Ser. No. 65,365
Int. Cl.[5] F41B *5/22*
U.S. Cl. 124—44.5 2 Claims



1. An adjustable arrow rest apparatus for mounting to an archery bow, having an archery bow handle, wherein the apparatus comprises,

a mounting plate, the mounting plate having a mounting plate first end spaced from a mounting plate second end, with a mounting plate fastener orthogonally directed through the mounting plate adjacent the mounting plate first end for reception within the archery bow handle, and

an externally threaded adjuster rod threadedly directed through the mounting plate adjacent the mounting plate second end, and

the adjuster rod having adjuster rod first end including an adjuster handle, and the adjuster rod having an adjuster rod second end, wherein the adjuster rod second end includes a support plate fixedly mounted relative to the adjuster rod second end, with the support plate having a support plate first end fixedly secured to the adjuster rod, and a support plate second end, wherein the support plate second end includes an L-shaped support bracket secured to the support plate adjacent the support plate second end, whereupon rotation of the adjuster rod effects pivoting of the support bracket about the adjuster rod, and

the support bracket includes a first plate fixedly mounted in a parallel relationship relative to the support plate, and a second plate integrally mounted to the first plate at an oblique angle, and a fibrous liner mounted onto the first plate and the second plate, with the fibrous liner of a generally L-shaped configuration and including a convex arcuate liner portion projecting from the first plate, and

a clamp fastener directed through the mounting, plate intersecting the adjuster rod permitting fixed securement of the adjuster rod relative to the mounting plate, and

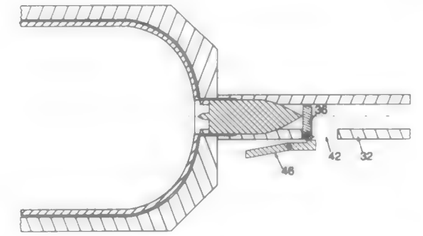
the adjuster rod is coaxially aligned along a predetermined axis arid includes a sleeve having the adjuster rod second end, the sleeve coaxially aligned along the axis, and a sleeve fastener having a sleeve head arranged for abutment with the sleeve, and wherein the sleeve fastener is coaxially aligned along the axis, and the sleeve fastener threadedly received within the adjuster rod, and the support plate having a support plate track longitudinally aligned relative to the support plate, with the track including a track slot directed through the track, and a follower plate slidably mounted within the track, the follower plate having a follower fastener integrally securing the follower plate to the sleeve, and the support plate including at least one follower fastener threadedly directed through the support plate intersecting the follower plate within the track.

5,353,779

SELF-CONTAINED CARTRIDGE FOR LAUNCHING A LOW SPEED PROJECTILE

David H. Lyon, Belcamp, Md., assignor to The United States of Americas as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 23, 1993, Ser. No. 35,866
Int. Cl.[5] F41B *11/06*
U.S. Cl. 124—57 4 Claims



1. Gun weapon apparatus for a gas charged cartridge for launching a projectile of a relatively low mass at a low velocity, comprising in combination:

a chamber having an opening at one end,

a diaphragm means seated within the opening,

the opening also adapted to receive said projectile, vale means mounted in an aperture at the opposite end of the chamber for permitting the charging of the chamber with compressed gas and also for preventing the gas from escaping through the aperture,

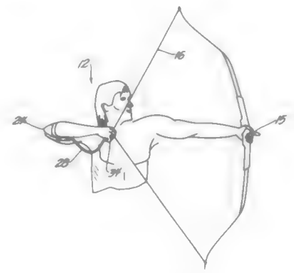
means for interacting with the diaphragm means for releasing the compressed gas whereby the projectile is accelerated through a barrel of said gun weapon wherein the interacting means includes a spring-biased pivotally mounted hammer being operationally releasable through a sear mechanism upon the activation of the gun weapon whereby the hammer strikes the nose of the projectile for forcing it in a backward direction toward said diaphragm to rupture the diaphragm means.

5,353,780

ARCHERY TRAINING DEVICE

Richard F. Carella, 35572 Strathcona Dr., Clinton Township, Mich. 48035

Continuation-in-part of Ser. No. 913,862, Jul. 15, 1992, Pat. No. 5,277,170. This application Sep. 23, 1993, Ser. No. 125,925
Int. Cl.[5] F41B *5/00*; A63B *21/00*
U.S. Cl. 124—86 11 Claims



1. An archery training device for teaching an archer proper upper body muscular control and body positioning of the archer's back, shoulders, string arm, bow arm and bow hand

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along a rigid plane, said muscular control providing a push-pull balance that prevents collapse of said string arm and bow arm during and after release of a bowstring, said archery training device comprising:

a string arm connector having an upper securing means and a lower securing means, said upper securing means being securable to an upper arm portion of said string arm, said lower securing means being securable to a forearm portion of said string arm, said upper securing means and said lower securing means together cooperating to prevent shifting of said string arm connector upon said string arm;

an inelastic draw force carrying member having:

one end attached to said string arm connector;

an opposite end extending in a direction away from said string arm connector;

first means for attaching said one end of said draw force carrying member to said string arm connector; and

second means for attaching said opposite end of said draw force carrying member to said bowstring such that when said archery training device is mounted to said upper portion of said archer's string arm by said upper securing means and said lower portion of said string arm by said lower securing means and said opposite end of said draw force carrying member is attached to said bowstring and said bowstring is drawn to the full draw position, said first and second attaching means establishes a predetermined slack in said draw force carrying member to avoid any external forces other than said bowstring draw force to be applied to said archer's back, shoulders, string arm, bow arm, or bow hand while in said full draw position and whereby further after the bow string fingers release said bowstring and said archer experiences a complete release of said bowstring, the muscles associated with said upper body instantaneously experience the forces associated with said full draw position by said draw force carrying member instantaneously extending to a predetermined fixed length position so that the muscles associated with said upper body continue to work after release of said bowstring to maintain said muscular control of said archer's back, shoulders, string arm, bow arm and bow hand along said rigid frame plane and to maintain said push-pull balance, said push-pull balance preventing collapse of said string arm and bow arm after normal release of said bowstring, said collapse otherwise affecting said archer's ability to accurately shoot an arrow with a bow.

5,353,781

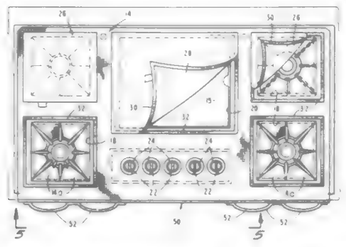
COOK TOP PROTECTOR

Max Calvillo, 5020 Blackpool Ave., Agoura, Calif. 91301

Filed Aug. 9, 1993, Ser. No. 103,568

Int. Cl.[5] F24C *3/00*

U.S. Cl. 126—39 M **15 Claims**



1. A protective cover for use with a stove top of the character having at least two burner locations surrounded by a top surface, said cover comprising:

(a) a flexible, fabric-like body portion generally corresponding in size and shape to the stove top, said body portion having burner overlay portions adapted to overlay the burner locations, each of said burner overlay portions comprising a plurality of segments adapted to depend downwardly from said body portion; and

(b) at least two panels removably connected to said body portion, said panels being adapted to overlay said burner overlay portion.

5,353,782

ROOFING TORCH

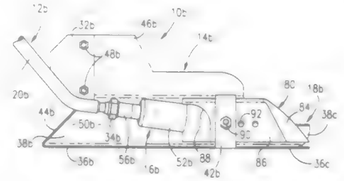
Paul L. Morris, 8815 W. 104th St., Overland Park, Kans. 66212

Continuation-in-part of Ser. No. 880,235, May 8, 1992, Pat. No. 5,211,158. This application May 17, 1993, Ser. No. 62,191

The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.

Int. Cl.[5] F23C *5/00*

U.S. Cl. 126—271.2 R **9 Claims**



1. A torch assembly for use in fabricating roof joints or the like, said assembly comprising:

an elongated handle presenting an upper end and a lower end;

an elongated shoe element operably coupled to said handle adjacent the lower end thereof and presenting upper and lower wall sections cooperatively defining a torch-receiving cavity therebetween, said lower wall section being substantially planar and having a rearward trailing edge, said trailing edge defining a portion of an open rearward end of said elongated shoe element;

a torch located within said cavity and oriented for delivery of a flame rearwardly within the shoe element;

a diverter carried by said shoe element at said open rearward end rearwardly of said torch and including walls for diverting said flame in a direction substantially transverse to the longitudinal axis of shoe element;

a means for mounting said diverter onto said shoe, and for permitting fore and aft adjustment of the diverter on said shoe; and

a means for delivering fuel to said torch.

5,353,783

ENDOSCOPIC METHOD USING SHEATH

Naomi L. Nakao, 303 E. 57th St., New York, N.Y. 10022, and Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023

Division of Ser. No. 803,569, Dec. 9, 1991, Pat. No. 5,217,001. This application Jun. 7, 1993, Ser. No. 72,774

Int. Cl.[5] A61B *1/00*

U.S. Cl. 128—4 **3 Claims**

1. A method for performing an endoscopic surgical operation, comprising the steps of:

providing an endoscope having an insertion member with means for transmitting visual information from a distal end of said insertion member to a proximal end thereof;

providing a tubular sheath defining a chamber;

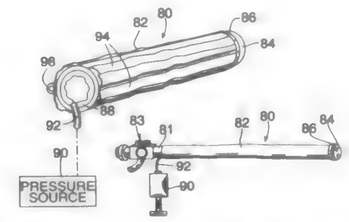
sliding said insertion member into said chamber to enclose at least a distal end portion of said insertion member inside said chamber;

upon the sliding of said insertion member into said chamber, inflating an annular balloon component of said sheath, said annular balloon surrounding at least a portion of said chamber;

inserting said insertion member with said sheath into a patient;

maintaining said balloon in an inflated state during said step of inserting;

using visual information obtained via said insertion member to locate a surgical site within the patient;



upon the locating of said surgical site, withdrawing said insertion member together with said sheath from the patient; and

upon withdrawal of said sheath and said insertion member from the patient, removing said sheath from said insertion member.

5,353,784

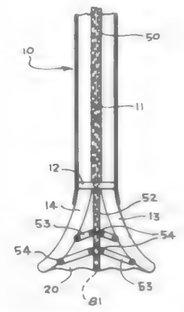
ENDOSCOPIC DEVICE AND METHOD OF USE

Nady E. Nady-Mohamed, Williamsville, N.Y., assignor to The Research Foundation of Suny, Albany, N.Y.

Filed Apr. 2, 1993, Ser. No. 42,295

Int. Cl.[5] A61B *17/02*

U.S. Cl. 128—20 **8 Claims**



1. A device for engaging the lumen of a patient's uterus, comprising:

a tube, having a single longitudinal bore, for insertion through a patient's cervix into the uterus;

arm means for engaging the uterus, said arm means including two opposing, flexible arms slidably disposed within the distal end of said tube, said arms being curved such that they diverge to attain a shape which generally conforms to the contours of the lumen of the uterus upon extension of said arms from within said tube;

a plunger, provided with a longitudinal bore and open at both ends, and being slidably disposed within said tube and fixed near its distal end to said arms, for extending and retracting the arms relative to the distal end of said tube; within said tube, such that said arms and said membrane firmly engage the walls of the lumen of the uterus.

5,353,785

METHOD FOR LIFTING ABDOMINAL WALL DURING LAPAROSCOPIC SURGERY

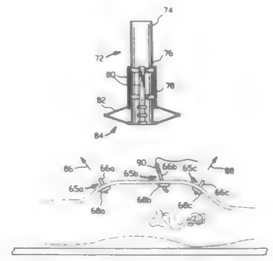
Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023

Continuation of Ser. No. 895,018, Jun. 8, 1992, Pat. No. 5,318,012, which is a division of Ser. No. 729,553, Jul. 15, 1991, Pat. No. 5,183,033. This application Sep. 23, 1993, Ser. No. 125,652

The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.

Int. Cl.[5] A61B *17/02*

U.S. Cl. 128—20 **5 Claims**



1. A method for use in laparascopic surgery to expand an abdominal cavity without positively pressurizing that cavity, comprising the steps of:

piercing an abdominal skin surface of a patient to form a plurality of spaced holes in said skin surface;

inserting through said holes respective tensile members;

lifting the abdominal wall of said patient away from a backside of said patient by exerting tension on said tensile members;

drawing air into the abdominal cavity of said patient during said step of lifting;

inserting a laparoscopic instrument through at least one of said holes so that a distal end of said instrument projects into the patient's abdomen;

maintaining tension on said tensile members, and thereby a predetermined elevation of the abdominal wall of said patient, during the insertion of said instrument through said one of said holes and during a subsequent surgical operation by said laparoscopic instrument; and

maintaining the patient's abdomen at essentially atmospheric pressure during said surgical operation.

5,353,786

SURGICAL LIGHTING METHOD

Peter J. Wilk, 185 West End Ave., New York, N.Y. 10023

Division of Ser. No. 825,551, Jan. 24, 1992, abandoned. This application Jun. 30, 1993, Ser. No. 84,753

Int. Cl.[5] A61B *1/06;* **F21V** *8/00*

U.S. Cl. 128—23 **12 Claims**

1. A method for use in surgery to illuminate a surgical site on a patient, comprising the steps of:

providing a substantially flexible elongate carrier member with at least one linear tubular end segment having a free end and a plurality of colinearly disposed individual light outlets spaced from one another longitudinally along said end segment;

forming at least a portion of said carrier member end segment into an arcuate configuration conformed to said surgical site;

fastening said free end of said end segment to a middle portion of said end segment, said end segment being maintained in said arcuate configuration at least in part by virtue of said step of fastening;

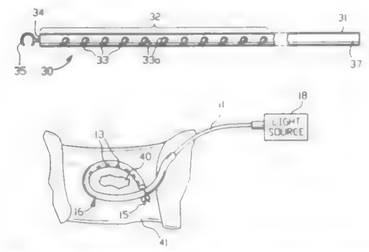
disposing at least said portion of said end segment on the patient so that said portion is at least partially juxtaposed

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to the surgical site and so that said light outlets can effectively illuminate said surgical site;

surgically operating on organic tissues at said surgical site;

during the step of operating, transmitting electromagnetic radiation from a light source through said carrier member



and out through said light outlets to illuminate the surgical site; and

exerting a force on said portion of said end segment to maintain said portion of said end segment in said arcuate configuration during said steps of operating and transmitting.

5,353,787

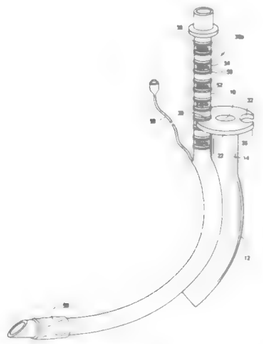
ENDOTRACHEAL TUBE AND ORAL AIRWAY CONNECTOR

Evelyn C. Price, 5831 Rue Burgundy, San Antonio, Tex. 78240

Filed Jun. 10, 1993, Ser. No. 74,792

Int. Cl.[5] A61M *16/00, 5/32;* **A62B** *9/06*

U.S. Cl. 128—200.26 **4 Claims**



1. A system for providing fluid communication for the passage of a gas from a patient's mouth to the throat and into the treachea, the system comprising:

an oral airway consisting essentially of an elongated tubular body having a first open end defining a first orifice and a second open end defining a second orifice and an annular plate, integral with the first open end of said tubular body, the plate having a top surface and a bottom surface, the top surface and the bottom surface joined by a perimeter, the perimeter having walls defining means for demountably attaching an endotracheal tube thereto, wherein the attaching means of the plate has a first pair of resilient lips and a second pair of resilient lips, each pair formed into a "C" shape, each one lip of each pair being oppositely disposed from the other lip of the pair and having a distance between them that is less than the outside diameter of an endotracheal tube;

said endotracheal tube consisting essentially of an elongated, hollow, tubular body having a first open end and a second open end, the body of said endotracheal tube having means engageable with said "C"-shaped openings of said oral airway for preventing longitudinal and lateral displacement of said endotracheal tube with respect to said oral airway when said endotracheal tube is engaged with the "C"-shaped opening of said oral airway; and

wherein said preventing means of said endotracheal tube includes a multiplicity of pairs of annular alternating ribs and bays integral with the body of said endotracheal tube, the bays being dimensioned to fit snugly within the "C"-shaped opening of the plate, the ribs dimensioned to exceed the diameter of the "C"-shaped opening of the plate of said oral airway.

5,353,788

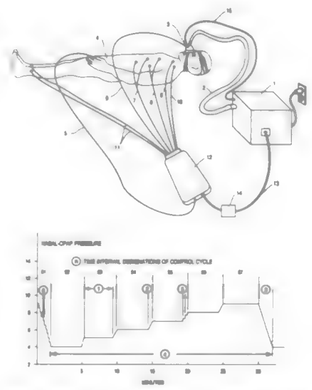
CARDIO-RESPIRATORY CONTROL AND MONITORING SYSTEM FOR DETERMINING CPAP PRESSURE FOR APNEA TREATMENT

Laughton E. Miles, 1335 Alma St., Palo Alto, Calif. 94301

Filed Sep. 21, 1992, Ser. No. 948,170

Int. Cl.[5] A61M *16/00;* **A61B** *5/08*

U.S. Cl. 128—204.23 **36 Claims**



1. A cardio-respiratory apparatus for monitoring physiological signs and controlling breathing air pressure of a person comprising

monitoring means for gathering one or more types of physiological information from said person;

means for sensing the pressure of the breathing air being supplied to said person;

recording means for recording said physiological information and said breathing air pressure;

base value control means determining a base value for said breathing air pressure based upon said physiological information;

air supply means for supplying breathing air at determined pressure levels relative to said base value;

air pressure control means for maintaining said air pressure at one of said pressure levels for a predetermined first time interval, increasing said air pressure at a first predetermined rate during a predetermined second time interval to another one of said pressure levels, repeating said process of maintaining and increasing air pressure for a predetermined number of times, and reducing said air pressure at a predetermined second rate during a predetermined third time interval to said base pressure level,

said first, second and third time intervals constituting a control cycle of a predetermined fourth time interval; and

means for repeating said control cycle; wherein said third time interval is at least five times smaller than the sum of said first time intervals plus the sum of said second time intervals.

5,353,789

A FLACCID MASK WITH STRAPS AND A SUPPORTING ELEMENT THAT FORCE THE MASK INTO SEALING ENGAGEMENT WITH THE WEARER'S FACE IN RESPONSE TO FORCE EXERTED BY THE STRAPS ON THE SUPPORTING ELEMENT

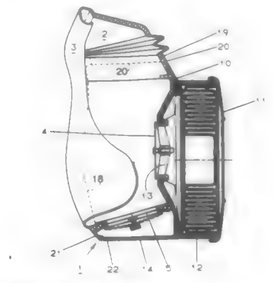
Joachim Schlobohm, Bad Oldesloe, Fed. Rep. of Germany, assignor to Dragerwerk AG, Lubeck, Fed. Rep. of Germany

Filed Nov. 16, 1992, Ser. No. 977,285

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1991, P4138172

Int. Cl.[5] A62B *18/08, 18/02, 19/00*

U.S. Cl. 128—206.24 **6 Claims**



6. Half mask, comprising:

a flexible half mask body formed of a flaccid elastomer with a sealing edge for engagement with a face of a user and with a connection opening for a filter;

a solid filter holder surrounding a front portion of said half mask body, said filter holder having front sides pointing in a direction towards said sealing edge;

a strap engaging said solid filter holder; and

supporting means extending around a section of said flexible half mask body, said flexible half mask body including a cheek area, said supporting means including first step means extending along said sealing edge in said cheek area, said front side of said solid filter holder including a first front side with a portion shaped corresponding to said first step means, said first step means for transferring forces exerted by said strap, from said first front side to said sealing edge in said cheek area to facilitate a sealing between said sealing edge in said cheek area and the face of the user, said flexible half mask body further includes a nose area, said supporting means including second step means provided along said nose area, said filter holder including a second front side in contact with said second step means, said second step means for transferring forces exerted by said strap from said second front side to said sealing edge in said nose area.

5,353,790

METHOD AND APPARATUS FOR OPTICAL MEASUREMENT OF BILIRUBIN IN TISSUE

Steven L. Jacques; David G. Oelberg, and Iyad Saidi, all of Houston, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Jan. 17, 1992, Ser. No. 822,461

Int. Cl.[5] A61B *6/00*

U.S. Cl. 128—633 **13 Claims**

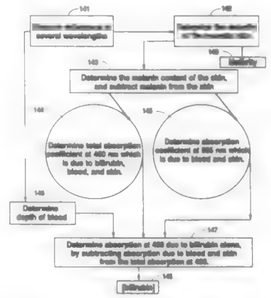
1. A method for the transcutaneous determination of bilirubin concentration in tissue, comprising:

illuminating said tissue with light;

detecting a frequency spectrum of light reflected from said tissue;

calculating, from a first portion of said spectrum, a first parameter indicative of a maturity of said tissue;

calculating, from a second portion of said spectrum, a second parameter indicative of an amount of melanin in said tissue;



calculating, form a third portion of said spectrum, a third parameter indicative of a blood content of said tissue;

calculating, from a fourth portion of said spectrum, a fourth parameter indicative of an uncorrected bilirubin concentration in said tissue; and

calculating a connected bilirubin concentration in said tissue as a function of said first, second, third and fourth parameters.

5,353,791

OPTICAL ORGANISM MEASURING APPARATUS

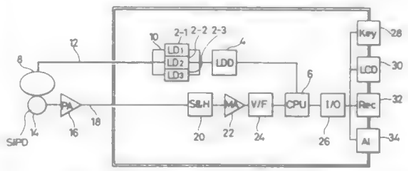
Tomomi Tamura, and Hideo Eda, both of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Feb. 21, 1992, Ser. No. 838,848

Claims priority, application Japan, Feb. 28, 1991, 3-17688

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—633 **8 Claims**



1. An optical organism measuring apparatus for applying light of one or more specific wavelengths to an organism and detecting said light being transmitted through or reflected by said organism thereby obtaining vital information, said apparatus comprising:

a light application means, including:

a plurality of semiconductor lasers of different wavelengths;

a plurality of single core optical fibers coupled with said semiconductor lasers, respectively;

a light application probe means containing light emitting ends of said plurality of said single core optical fibers;

a light detection means, including a light detection probe means with a solid state detector integrated with a preamplifier for receiving said light from said organism;

a cable connecting said light application probe means to a light detection circuit;

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a sample-and-hold circuit adapted to sample and hold a signal from said light detection probe means, which is amplified by said preamplifier; and

a main amplifier adapted to amplify an output signal from said sample-and-hold circuit.

5,353,792

SENSING DEVICE

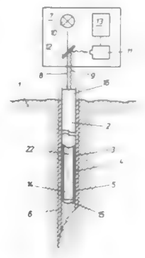
Dietrich W. Lübbers, Dortmund, Fed. Rep. of Germany, and Hellfried Karpf, Graz, Austria, assignors to AVL Medical Instruments AG, Schaffhausen, Switzerland

Filed Jul. 26, 1993, Ser. No. 96,409

Claims priority, application Austria, Sep. 25, 1992, A 1914/92

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—634 **16 Claims**



1. An optical sensing device comprising a thin biocompatible tube having a tube wall and a longitudinal axis, said tube being insertable into human or animal tissue, wherein said biocompatible tube operates as a single light guide and has several areas axially displaced which contain different optically excitable and readable indicating substances, and further comprising means for exciting and reading said indicating substances.

5,353,793

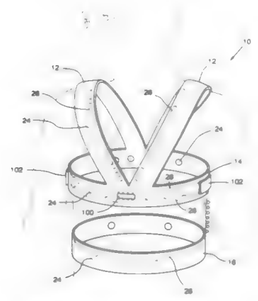
SENSOR APPARATUS

Robert Bornn, Los Altos, Calif., assignor to Oishi-Kogyo Company, Tokyo, Japan

Filed Nov. 25, 1991, Ser. No. 797,538

Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—642 **57 Claims**



1. A sensor support apparatus, suitable for wearing by a patient, comprising:

chest band means for forming a compliant loop having a selected circumference such that when said chest band means is worn around the patient's chest, substantially all of said chest band means elongates and produces a resilient tension, said chest band means formed of a gel-like core, and having a front portion and a back portion;

shoulder band means for forming a compliant band having a first end connected to the back portion of said chest band means and a second end connected to the front portion of said chest band means, said shoulder band means having a selected length and being formed of a gel-like core, such that when said shoulder band means is worn over the patient's shoulder and said chest band means is worn around the patient's chest substantially all of said shoulder band means elongates and produces a resilient tension; and

a plurality of sensor means for sensing at least one physiological parameter of the patient, wherein said sensor means are positioned on said chest and shoulder band means, and further wherein resilient tensioning provided by said chest and shoulder band means operates to maintain the sensor means in proper physical orientation with respect to the patient's body for proper operation.

5,353,794

MAGNETIC RESONANCE IMAGING METHOD AND SYSTEM CAPABLE OF MEASURING SHORT "T2" SIGNAL COMPONENTS

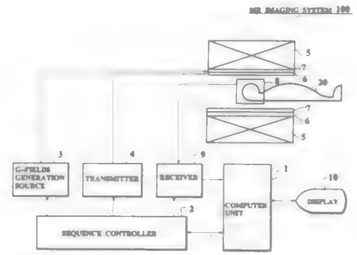
Mitsue Miyazaki, Tochigiken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 10, 1992, Ser. No. 927,808

Claims priority, application Japan, Aug. 12, 1991, 3-201880

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653.2 **15 Claims**



1. A magnetic resonance (MR) imaging method comprising the steps of:

applying a slice-selecting gradient field to a biological body under medical examination located in a static field;

applying a spin excitation pulse to the biological body while said slice-selecting gradient field is being applied thereto;

applying a refocusing pulse to the biological body after the application of said slice-selecting gradient field;

applying to the biological body, a rephasing gradient field having the same polarity of that of said slice-selecting gradient field Just after the application of said refocusing pulse; and

acquiring a spin echo signal induced in a slice of the biological body excited by said spin excitation pulse to obtain MR information of said excited slice.

5,353,795

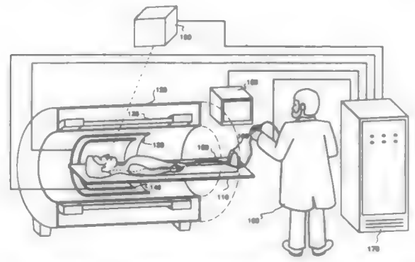
TRACKING SYSTEM TO MONITOR THE POSITION OF A DEVICE USING MULTIPLEXED MAGNETIC RESONANCE DETECTION

Steven P. Souza, Williamstown, Mass.; Charles L. Dumoulin, Ballston Lake, and Robert D. Darrow, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 10, 1992, Ser. No. 989,283

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653.2 **17 Claims**



1. A magnetic resonance tracking system for monitoring a location of a device within a subject, comprising:

a) a device adapted to be inserted within said subject;

b) magnetic field means adapted for applying a homogeneous magnetic field having substantially uniform amplitude over said subject;

c) radiofrequency (RF) transmitter means adapted for transmitting RF energy of a selected duration, amplitude and frequency into said subject to cause nutation of a selected ensemble of nuclear spins in said subject;

d) gradient means adapted for varying the amplitude of the magnetic field in a selected number of spatial dimensions to form a magnetic field gradient in a selected direction;

e) detection means attached to the device adapted for detecting a magnetic resonance (MR) response signal from the selected ensemble of spins;

f) calculation means responsive to the detection means adapted for calculating a location of said device from the detected MR response signals;

g) controller means coupled to the transmitter means, the detection means, the calculation means and the means for varying the magnetic field, said controller means being adapted for activating the transmitter means, the detection means, the calculation means and the means for varying the magnetic field according to a zero reference magnetic resonance tracking sequence; and

h) display means responsive to the calculation means adapted for displaying the location of said device to an operator.

5,353,796

NON-INVASIVE DEVICE AND METHOD FOR GRADING MEAT

Aubrey L. Schroeder, Greenfield; James T. Whitehead, Carmel, both of Ind.; Thomas E. Michel, Centerville, and David L. Petricola, Dayton, both of Ohio, assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 28, 1991, Ser. No. 722,914

Int. Cl.[5] A61B *8/00*

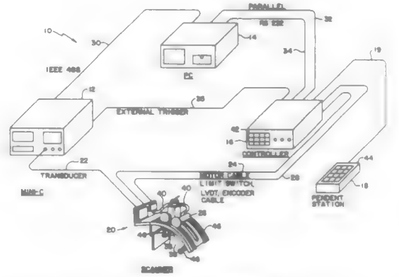
U.S. Cl. 128—660.01 **26 Claims**

7. A non-invasive device for grading a live animal or carcass comprising:

an ultrasonic transducer including means for emitting ultrasonic signals and means for detecting ultrasonic signal reflections and producing a corresponding ultrasound signal;

means for supplying an excitation signal to said ultrasonic transducer, said means for supplying having an excitation input and responding to signals supplied to said excitation input producing said excitation signal;

positioning means attached to said transducer, said positioning means including a position input, said positioning means disposed in close proximity to the live animal or carcass so that said ultrasonic transducer is ultrasonically coupled to the live animal or carcass, said positioning means moving said transducer relative to said live animal or carcass in response to signals supplied to said position input;



encoder means coupled to said positioning means for providing a position feedback signal in accordance with the position of said positioning means; and

processor means for monitoring said position feedback signal and supplying a position signal to said position input so that said positioning means moves said transducer to one of a plurality of predetermined positions adjacent the live animal or carcass, said processor means also monitoring said corresponding ultrasound signal and calculating the area of a longissimus muscle of the live animal or carcass and the thickness of fat layers adjacent the longissimus muscle at a predetermined rib/loin area cross-sectional location of said live animal or carcass.

5,353,797

ULTRASONIC DIAGNOSTIC APPARATUS

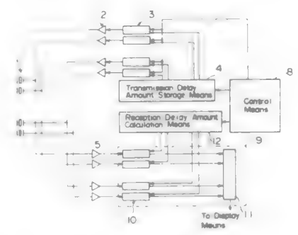
Tetsuya Matsushima; Atsuo Iida; Keiichi Murakami, and Takuya Noda, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 8, 1993, Ser. No. 88,057

Claims priority, application Japan, Jul. 15, 1992, 4-187932; Jul. 15, 1992, 4-187934

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—661.01 **15 Claims**



1. An ultrasonic diagnostic apparatus comprising:

an ultrasonic probe having a number of ultrasonic transducers arrayed in a specified direction for transmitting ultrasonic waves into a subject and receiving ultrasonic waves

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reflected inside said subject to obtain respective received signals,

delaying/adding means for delaying said respective received signals and adding delayed signals to make an added signal which indicates a focus which is shifted in sequence in said subject,

delay time control means for controlling respective delay times of said respective received signals in said delaying-/adding means, and

display means for displaying a tomographic image of an inner part of said subject in accordance with said added signal which is outputted from said delaying/adding means,

wherein said delay time control means controls said delaying/adding means so that respective delay times for respective received signals corresponding to said respective ultrasonic transducers may be adaptively changed at respective change times to sequentially shift the focus, said change times being changed on the basis of respective array positions of a number of said ultrasonic transducers and a lapse of time from time when ultrasonic waves are transmitted from said ultrasonic transducers.

5,353,798

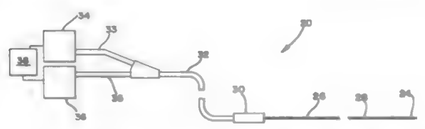
INTRAVASCULAR IMAGING APPARATUS AND METHODS FOR USE AND MANUFACTURE

Wayne Sieben, Alexandria, Minn., assignor to Scimed Life Systems, Incorporated, Maple Grove, Minn.

Continuation-in-part of Ser. No. 668,919, Mar. 13, 1991, abandoned. This application Feb. 21, 1992, Ser. No. 840,917

Int. Cl.[5] A61B *8/12*

U.S. Cl. 128—662.06 **61 Claims**



1. An imaging guide wire for navigating into small vessels of a person's vasculature and imaging the small vessels from within, comprising:

an elongate drive shaft at least a portion thereof defining an outside surface of said imaging guide wire and having dimensions suitable for positioning into small vessels of the person's vasculature via a guide wire lumen of a conventional catheter, said elongate shaft having a size to be positioned in and advanced via the guide wire lumen of the conventional catheter into the small vessels of the person's vasculature;

a transducer portion connected to the distal portion of the elongate shaft, said transducer portion also sized to be positioned into the small vessels of the person's vasculature via the guide wire lumen of the conventional catheter;

said drive shaft and said transducer portion being removable with respect to the guide wire lumen of the conventional catheter;

a proximal section connected to the proximal end of the elongate shaft for transmission of electrical signals from a proximal control apparatus to the transducer via the elongate drive shaft and also to transmit mechanical energy from a proximal drive apparatus to the elongate drive shaft to rotate the transducer for imaging.

5,353,799

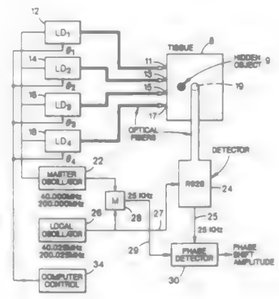
EXAMINATION OF SUBJECTS USING PHOTON MIGRATION WITH HIGH DIRECTIONALITY TECHNIQUES

Britton Chance, Marathon, Fla., assignor to Non Invasive Technology, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 644,090, Jan. 22, 1991, Pat. No. 5,187,672, and a continuation-in-part of Ser. No. 645,590, Jan. 24, 1991, abandoned. This application Jun. 17, 1992, Ser. No. 900,197

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—664 **39 Claims**



1. A method of spectroscopic examination of a subject positioned between input and detection ports of a spectroscopic system applied to the subject, said method comprising:

(a) providing multiple input ports placed at selected locations on the subject to probe a selected quality of the subject,

(b) introducing into the subject, simultaneously at said input ports, electromagnetic non-ionizing radiation of at least one wavelength selected to be scattered and absorbed while migrating in the subject, said radiation at each of said input ports having a known time-varying pattern of photon density,

(c) the time relationship of said patterns being selected to form resulting introduced radiation that possesses substantial gradient in photon density as a result of the interaction of the simultaneously introduced patterns emanating from said input ports, said resulting radiation being scattered and absorbed in migration paths in the subject,

(d) detecting over time, at a detection port placed at a selected location on the subject, said radiation that has migrated in the subject,

(e) processing signals of said detected radiation in relation to said introduced radiation to create processed data indicative of the influence of said subject upon said gradient of photon density, and

(f) examining said subject by correlating said processed data with the locations of said input and output ports.

5,353,800

IMPLANTABLE PRESSURE SENSOR LEAD

Peter J. Pohndorf, Stillwater, and Peter M. Mulier, St. Paul, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Dec. 11, 1992, Ser. No. 989,298

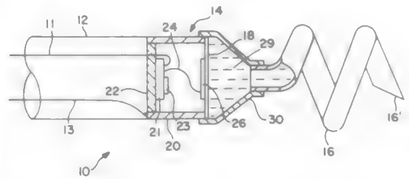
Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—673 **17 Claims**

1. A pressure sensor lead comprising:

an elongated implantable lead body having proximal and distal ends and having at least one electrical conductor wire therein extending between said proximal and distal ends;

a pressure sensor means for generating an electrical output signal corresponding to pressure applied thereto, said pressure sensor means being disposed near said distal end of said lead and coupled to said at least one electrical conductor wire;



a tissue piercing hollow needle having a base and a tip and an internal lumen, mounted to said pressure sensor means such that lumen serves as means to communicate pressure to said pressure sensor means, wherein said needle is electrically conductive and is electrically coupled to said at least one electrical conductor wire.

5,353,801

METHOD FOR PROCESSING AN ELECTRICAL SIGNAL, PARTICULARLY A SIGNAL DERIVED FROM A HEART

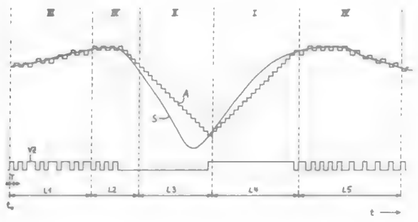
Kurt Hoegnelid, Västerhaninge, Sweden, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 30, 1993, Ser. No. 100,043

Claims priority, application European Pat. Off., Jul. 31, 1992, 92113112.4

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—696 **7 Claims**



1. A method for processing an electrical signal comprising the steps of:

converting said electrical signal by delta modulation into a binary operational sign signal composed of a pulse sequence having time-discrete logic operational sign values of zero or one;

converting said pulse sequence into four different data words respectively generated in immediate succession in a sequence of appearance of four possible statuses of said pulse sequence;

generating said first data word to indicate said first status and the length of said first status wherein the operational sign of said pulse sequence continuously has a logic value of zero for a selected, first minimum duration;

generating said second data word to indicate said second status and the length of said second status wherein the operational sign value of said pulse sequence continuously has the logic value of one for a selected, second minimum duration;

generating said third data word to indicate a third status and the length of said third status wherein the operational sign of said pulse sequence changes within a selected one of said first or second minimum durations and the sum of all operational sign values of one upwardly exceeds the sum of all operational sign values of zero by a selected, first amount; and

generating said fourth data word to indicate said fourth status and the length of said fourth status wherein the operational sign value of said pulse sequence changes within a selected one of said first or second minimum durations and the sum of all operational sign values of zero upwardly exceeds the sum of all operational sign values of one by a selected, second amount.

5,353,802

DEVICE FOR MEASUREMENT OF ELECTRICAL IMPEDANCE OF ORGANIC AND BIOLOGICAL MATERIALS

Stig Ollmar, Huddinge, Sweden, assignor to Centrum för Dentalteknik och Biomaterial, Huddinge, Sweden

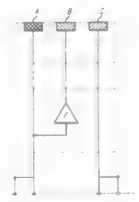
PCT No. PCT/SE91/00703, § 371 Date Apr. 16, 1993, § 102(e) Date Apr. 16, 1993, PCT Pub. No. WO92/06634, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 18, 1991, Ser. No. 39,361

Claims priority, application Sweden, Oct. 18, 1990, 9003336-6

Int. Cl.[5] A61B *5/05*

U.S. Cl. 128—734 **17 Claims**



1. A device for depth-selective measurement of electrical impedance in a test portion of organic or biological materials comprising:

a probe having a plurality of measuring electrodes and a control electrode located between at least two of the measuring electrodes, one of the measuring electrodes also forming a predetermined reference electrode;

voltage and impedance measuring means for applying electrical potential over the measuring electrodes and for measuring electrical impedance of the test portion between the measuring electrodes; and

an amplifier that has a high-impedance input that is electrically connected to the reference electrode, the reference electrode remaining substantially unloaded by the amplifier, the amplifier also having a low-impedance output that is electrically connected to the control electrode;

an electric control field being adapted to extend from the control electrode into the test portion; and

a dynamic electrical potential of the control electrode being maintained during impedance measuring of the test portion.

5,353,803

APPARATUS AND METHOD FOR IMMEDIATE DIAGNOSIS OF VAGINAL YEAST INFECTIONS

Michael C. Cerra, 3052 Marston Way, San Jose, Calif. 95148

Filed Jun. 18, 1993, Ser. No. 79,329

Int. Cl.[5] A61B *10/00*

U.S. Cl. 128—749 **20 Claims**

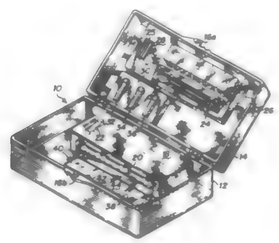
1. A test kit for detecting the presence or absence of levels of yeast associated with vaginal yeast infections comprising:

(a) a test kit body;

(b) a specimen slide to which a sample of vaginal exudate may be applied;

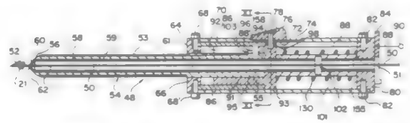
VOL 1167 ISS 2 OC 11 1994 UMI

(c) a dye for staining yeast in said sample of vaginal exudate, said dye capable of fluorescing in the presence of a light source;
(d) a light source mounted within said test kit body for exciting fluorescence in said dye;
(e) a control specimen which when exposed to said light source has a level of fluorescence corresponding to the fluorescence from a known concentration of yeast; and



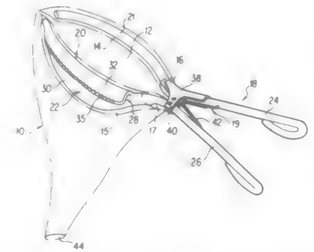
(f) means for positioning said specimen slide and said control specimen with respect to said light source, whereby fluorescence may be detected from a dye-stained sample of vaginal exudate and compared with fluorescence from said control specimen, to determine whether said sample of vaginal exudate contains levels of yeast associated with vaginal yeast infections.

5,353,804
METHOD AND DEVICE FOR PERCUTANEOUS EXISIONAL BREAST BIOPSY
Elliot Kornberg, Cocoa Beach, Fla., and William R. Tarello, Bethesda, Md., assignors to PEB Biopsy Corporation, Cocoa Beach, Fla.
Continuation of Ser. No. 880,208, May 8, 1992, Pat. No. 5,197,484, which is a continuation-in-part of Ser. No. 584,614, Sep. 18, 1990, Pat. No. 5,111,828. This application Mar. 17, 1993, Ser. No. 33,785
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—754 **21 Claims**



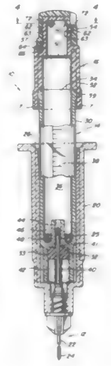
1. An apparatus for removing suspect breast tissue, comprising:
a stylet having a tapered forward end, a rear end and an exterior surface;
a cannula having an internal cavity defined by an interior surface, an open front end and a rear end, and said stylet extending within said internal cavity;
a driving assembly for rotating and driving said cannula forward of the forward end of said stylet such that suspect breast tissue is receivable within said internal cavity;
a cutting device for cutting suspect breast tissue positioned within said internal cavity, said cutting device being in contact with said cannula and adapted to form a cut in the suspect breast tissue forward of the forward end of the styler.

5,353,805
AID FOR USE BY WOMEN IN DISCHARGE OF BODILY WASTES
Gregory L. Mojena, Calle 10 B7-1, Sabana Gardens, P.R. 00983
Filed Dec. 14, 1993, Ser. No. 166,013
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—761 **9 Claims**



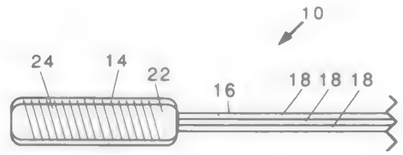
1. Aid for use by persons for the elimination of bodily waste comprising, in combination, a first flexible waterproof bag having an adjustable opening at one end, a pair of substantially parallel open ended seams on opposite sides of said opening, tongs comprising a pair of legs having inner ends and free outer ends insertable into open ends of the respective seams on the opposite sides of said bag opening, a handle integral with the inner end of each leg, and a common pivotal connection joining together said legs intermediate the inner ends thereof and said handles, said handles being operable in unison for controlling relative movement of said legs including the free outer ends thereof towards and away from each other about said common pivotal connection for adjusting the size of said bag opening when said legs are received in the respective seams on opposite sides of said bag opening.

5,353,806
LIQUID COLLECTION DEVICE
Bert D. Heinzelman, Tenafly, N.J., and Donald R. Lamond, Long Beach, N.Y., assignors to The Venture Fund of Washington, Washington, D.C.
Filed Mar. 4, 1993, Ser. No. 27,287
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—763 **15 Claims**



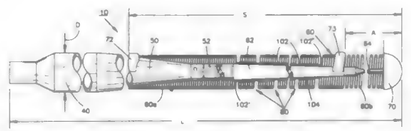
1. A liquid collection device, comprising;
a liquid collection tube defining a chamber for receiving a liquid, and having an inlet which receives the liquid to be collected and an outlet through which a gas in said chamber may be exhausted to the outside of said chamber;
a valve supported by said liquid collection tube and including at least one vent, said valve being rotatable between a first position when said vent is in communication with said chamber and the outside and a second position when said vent is not in communication with said chamber and the outside.

5,353,807
MAGNETICALLY GUIDABLE INTUBATION DEVICE
Thomas J. DeMarco, 921 Denmeade Walk, Marrietta, Ga. 30064
Filed Dec. 7, 1992, Ser. No. 985,670
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—772 **30 Claims**



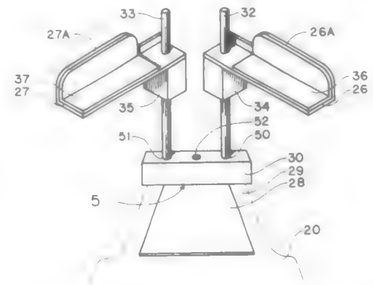
1. A magnetically guidable intubation device, comprising:
performing means for performing a medical procedure; a magnetically guidable member connected with the performing means and effective to be introduced into a body and magnetically guided within the body by an externally applied magnetic field; a flexible retrieving member fixedly attached to the magnetically guidable member; an external magnetic field applying means for applying the external magnetic field effective to guide the magnetically guidable member within the body so that the performing means can perform the medical procedure; and a plurality of urging plates each disposed around the flexible retrieving member, the plurality of urging plates effective to transfer an externally applied urging force to the magnetically guidable head for urging the magnetically guidable head within the interior of the body.

5,353,808
GUIDEWIRE HAVING DISTALLY LOCATED MARKER SEGMENT
Fernando M. Viera, Hialeah, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.
Continuation of Ser. No. 845,551, Mar. 4, 1992, abandoned. This application May 21, 1993, Ser. No. 65,453
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—772 **9 Claims**



1. A guidewire for insertion into a subject comprising:
a) an elongated core wire having a first, uniform diameter portion and a second reduced diameter portion at a distal end of the elongated core wire;
b) a marker member attached to the second reduced diameter portion of the core wire comprising a first, proximal highly radiopaque marker band attached to the core wire and multiple additional highly radiopaque marker bands on the core wire spaced from each other by coiled wire segments on the core wire of less radiopaque material and including a distal marker band attached to the core wire; and
c) a spring member constructed of multiple coils of wire overlying the marker member and attached to the core wire at connection regions distal and proximal to the marker member;
d) whereby each of said marker bands appears as a distinct band when viewed on a radiographic viewing screen outside the subject.

5,353,809
HOSPITAL BARCCHIAL SUPPORT
Germain Faucher, 26 Rue Thibault, Lévis (Que), Canada G6V 2J7
Filed Apr. 12, 1993, Ser. No. 46,192
Int. Cl.[5] A61G *13/12*
U.S. Cl. 128—845 **4 Claims**



1. A brachial support for supporting a patient's arms beyond his head while lying on a table, comprising a header, means to fix said header to one end of said table, a pair of posts upstanding from said header and spaced from each other transversely of said table, said posts having an upper end portion forming a hand grip, a pair of elongated arm rests, each defining an external and an internal side, each arm rest extending from one of said posts in cantilever fashion below said hand grip, above said header and towards the other end of said table, said external side of each arm rest being remote from the external side of the other arm rest, an arm restraining flange secured to and upstanding from said arm rest along said external side thereof, clamping means carried by said arm rests and engageable with said posts to adjustably clamp said arm rests in a horizontally rotated position about said posts and at a desired level between said hand grips and said header.

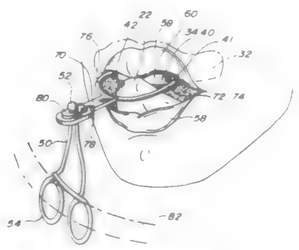
5,353,810
WISHBONE TETHER FOR MOUTHGUARD ASSEMBLIES
Jon D. Kittelsen, Fridley, and Paul C. Belvedere, Edina, both of Minn., assignors to E-Z Gard Industries, Inc., Minneapolis, Minn.
Filed May 14, 1993, Ser. No. 62,788
Int. Cl.[5] A61C *5/14*
U.S. Cl. 128—862 **4 Claims**

1. A wishbone tether and a thermoplastic protective athletic activity mouthguard assembly for protecting the teeth, gums, tongue and lips, the tether for remote attachment of the mouthguard assembly to an anchor, the mouthguard assembly having a mouthguard portion with a forward protective flange, a rearward protective flange and a connecting protective web for receiving and protectively engaging the incisor, canine, bicuspid and molar teeth of the wearer to protect the teeth, tongue and lips of the user, the mouthpiece portion having a

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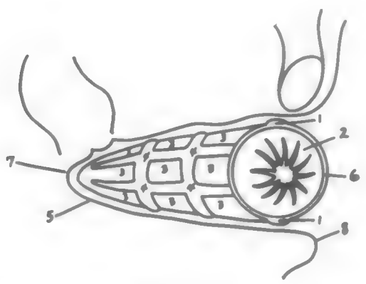
forward end and two canine regions, the wishbone tether comprising:

(a) a flexible thermoplastic U-shaped portion having left and right legs each extending from one of the canine regions to permit clearance at the forward end of the mouthguard portion for the unhindered movement of the tongue and lips for clear speaking while wearing the mouthguard assembly; and



(b) a flexible thermoplastic tab remote connecting portion extending forwardly and joining the left and right legs of the U-shaped portion and having attachment means releasably attachable to a remote anchor chosen from a group consisting of a helmet, a headgear, or a facemask for remote flexible attachment of the wishbone tether and mouthguard assembly.

5,353,811
TRAP
Sandra L. Davis, 3325 Cherokee Ave., San Diego, Calif. 92104-4412, and Michael G. Kielty, 3023 Bunker Hill St., Ste. 201, San Diego, Calif. 92109
Filed Mar. 4, 1992, Ser. No. 845,400
Int. Cl.[5] A61F *5/37*
U.S. Cl. 128—883 **1 Claim**

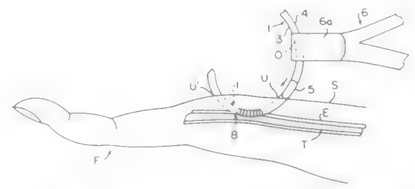


1. An intra-vaginal anti-rape device comprising an elongated pocket having a longitudinal axis, said pocket is made of a thin rubber, and reinforced along its longitudinal axis with a cage-shaped thicker rubber;

a circular, metal rim attached to an open end of said pocket, said rim having sharp, curved, plastic spears attached within its circumference;

a lip including two flat extensions that extend outwardly from opposite sides of said rim, wherein said device can be removed from the vagina through prying the lip away from the mouth the vagina, wherein said device is adapted to act as a trap during rape.

5,353,812
TRIGGER FINGER RELEASE SURGICAL METHOD
James C. Y. Chow, 3001 Caroline St., Mount Vernon, Ill. 62864
Filed Oct. 12, 1993, Ser. No. 135,453
Int. Cl.[5] A61B *17/00*
U.S. Cl. 128—898 **20 Claims**



1. A method of performing trigger finger release surgery comprising:

identifying a route of a flexor tendon through a palm of a hand to a finger or thumb of said hand suffering from a trigger finger condition, constriction of a protective sheath around said flexor tendon causing said trigger finger condition;

locating along an identified route a puncture site for insertion of a hollow surgical instrument into said palm;

inserting a leading end of said surgical instrument through a segment of skin covering the palm of said hand and pushing said leading end of said instrument back through said skin whereby a first puncture hole is made in said skin at an entry site and a second puncture hole at an exit site, said surgical instrument being inserted through said palm of said hand such that an insertion path of said instrument passes through said sheath;

leaving said surgical instrument in place and inserting therein a surgical knife by which said sheath can be cut to relieve said trigger finger condition;

cutting said sheath with said knife through an opening in said surgical instrument; and,

withdrawing said knife and said surgical instrument from said palm, said surgical instrument being of a size such that after withdrawal of said instrument, said first and second puncture holes do not require stitches to close them, and, as said holes heal, no scars are formed.

5,353,813
REINFORCED CARBON HEATER WITH DISCRETE HEATING ZONES
Seetharama C. Deevi; Grier S. Fleischhauer, both of Midlothian, and Billy J. Keen, Jr., Chesterfield, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Aug. 19, 1992, Ser. No. 931,997
Int. Cl.[5] A24F *47/00*
U.S. Cl. 131—194 **62 Claims**

1. A heating element of an electrical smoking article, said heating element comprising:

a tubular support member;

a tubular array of spaced-apart, electrically conductive blades, said tubular support member received concentrically within said tubular array of blades and being non-unitary with said tubular array of blades;

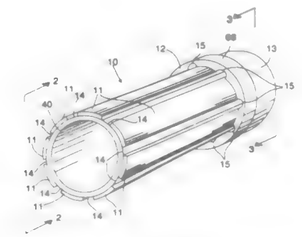
a tobacco medium located adjacent said tubular array of blades;

said tubular array of blades including an electrically conductive ring portion, each of said blades fixed at one end to said ring portion, each of said blades including a free end remote from said ring portion;

a common electrical connection operative at said ring portion; and

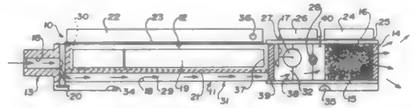
a second, electrical connection operative at each of said free ends;

whereby, upon electrical communication of any blade to a power source through said common electrical connection



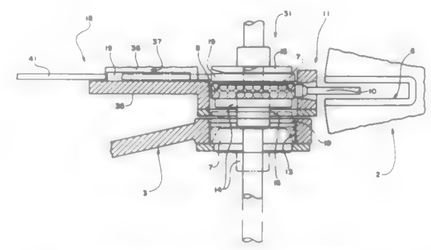
and a respective second electrical connection, said blade becomes electrically heated to produce tobacco flavor from said tobacco flavor medium.

5,353,814
CIGARETTE SMOKE CLEANSING SMOKING DEVICE
Mark J. Martin, 2713 E. 4th Ave., Spokane, Wash. 99202
Filed Mar. 26, 1993, Ser. No. 37,308
Int. Cl.[5] A24F *13/06*
U.S. Cl. 131—215.2 **15 Claims**



15. In a pocket sized tobacco smoke cleansing smoking device comprising an elongated tubular housing, the housing having a tobacco receiving chamber, a mouthpiece at one end of the housing adjacent to said tobacco receiving chamber, a tobacco smoke outlet end of the device positioned at an opposite end of the housing, a filter receiving chamber is at a downstream end of said device adjacent said tobacco smoke outlet end, a tobacco smoke filter in said filter receiving chamber immediately adjacent to said tobacco smoke outlet end, a fan and motor assembly in said housing between said tobacco receiving chamber and filter receiving chamber for propelling smoke fumes from said tobacco receiving chamber axially through said filter to atmosphere, a tobacco smoke exhalation passageway on the device in a parallel relationship with said tobacco receiving chamber and extending from said mouthpiece axially along the length of said housing and being in axial exhaled smoke receiving communications with said fan and motor assembly and with said filter for discharging exhaled filtered smoke to atmosphere, and a finger operated two-way valve assembly positioned between said mouthpiece and said tobacco receiving chamber and said axially extending tobacco smoke exhalation passageway, said valve assembly having one position connecting said mouthpiece to said tobacco receiving chamber for enabling exhaled tobacco smoke to be received through the mouthpiece for transport through said axially extending tobacco smoke exhalation passageway through said tobacco smoke filter for cleansing the tobacco smoke before reentry to atmosphere through said tobacco smoke outlet end of the device.

5,353,815
CIGARETTE PACKAGING MACHINE
Antonio Gamberini, Bologna, and Marco Brizzi, Zola Predosa, both of Italy, assignors to G. D. Societa Per Azioni, Bologna, Italy
Filed Sep. 30, 1988, Ser. No. 251,398
Claims priority, application Italy, Oct. 2, 1987, 3627 A/87
Int. Cl.[5] A24C *5/35*
U.S. Cl. 131—283 **8 Claims**



1. A cigarette packaging machine, comprising:

first conveyor means, by which single groups of cigarettes are supplied in succession to a work station, each group being a parallelopiped comprising at least one layer of cigarettes and having two opposite faces, two opposite sides and two opposite ends;

a feed device, designed to position a corrugated paper distance piece in contact with one face of a group of cigarettes occupying the work station;

second conveyor means, by which the single groups of cigarettes are carried away in succession from the work station together with their respective distance pieces;

infeed means, serving to advance a continuous strip of paper along a path toward the work station, the continuous strip of paper having a leading edge;

corrugating means serving to provide the continuous strip of paper with a uniformly undulated profile and thereby converting said continuous strip of paper into a continuous corrugated strip;

cutting means, by which the continuous corrugated strip is severed into discrete corrugated paper distance pieces;

means by which the distance pieces are transferred to the work station for positioning by said feed device.

5,353,816
FOIL FILAMENTS CONTAINING TOBACCO AND METHOD AND APPARATUS FOR THE PRODUCTION THEREOF
Uwe Ehling, Elmshorn; Jürgen Nüsslein, Wedel, and Wilfried Stiller, Holm, all of Fed. Rep. of Germany, assignors to B.A.T. Cigarettenfabriken GmbH, Hamburg, Fed. Rep. of Germany
Filed May 6, 1992, Ser. No. 878,998
Claims priority, application Fed. Rep. of Germany, May 27, 1991, 4117307
Int. Cl.[5] A24B *3/00;* **A24C** *5/18*
U.S. Cl. 131—367 **14 Claims**

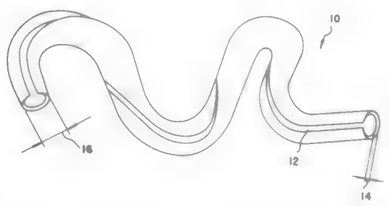
1. Tobacco-containing foil filaments, comprising:

a plurality of foil filament bodies;

each of said plurality of foil filament bodies being composed of tobacco particles, water, binding agents and moisturizing agents, wherein each of said plurality of foil filament

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bodies has a substantially hollow, partially circular cross-section; and



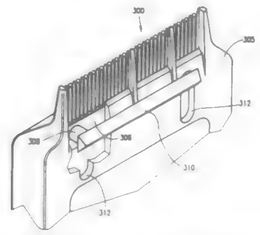
wherein each of said plurality of foil filament bodies has a hollow tubular shape having a longitudinal slit therein.

5,353,817

HAIR GROOMING DEVICE

Isaak Kantor, Rosh Pina; Moshe Fish, Kibbutz Ma'ayan Baruch, and Yoel Zur, Korazim, all of Israel, assignors to Mepro Epilady Ltd., Upper Galilee, Israel

Filed Mar. 15, 1993, Ser. No. 31,557
Claims priority, application Israel, Mar. 15, 1992, 101234
Int. Cl.[5] A45D *24/00*
U.S. Cl. 132—219 **7 Claims**



1. A hand-held hair grooming device comprising:
a housing adapted to be held in the hand of the user:
an array of a plurality of electrically conductive tines;
support means mounting the plurality of tines in the housing such that the tines extend outwardly from the housing;
means for applying an electric potential between adjacent tines whereby lice or other pests suitably disposed between adjacent tines are electrocuted;
said support means including means securing a first group of tines to said housing in fixed position and means securing a second group of tines to said housing for displacement between a first position in which the second group of tines are aligned with the first group of tines and a second position in which the second group of tines are displaced away from the first group of tines; and
means for moving the second group of tines as a common assembly between said first and second positions.

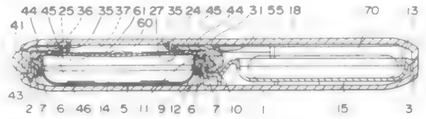
5,353,818

AIRTIGHT COMPACT CASE

Kazuo Suzuki; Masahiro Sumise, and Kazuo Suzuki, all of Tokyo, Japan, assignors to KOSÉ Corporation and Yoshino Kogyosho Co., Ltd., both of Tokyo, Japan

Filed Dec. 27, 1993, Ser. No. 172,729
Claims priority, application Japan, Mar. 12, 1993, 5-10812[U]; Nov. 8, 1993, 5-59905[U]
Int. Cl.[5] A45D *33/24*
U.S. Cl. 132—300 **12 Claims**

1. An airtight compact case comprising:
a case body having a cosmetic container section surrounded by a peripheral wall;
a cover pivotably attached to a rear end of said case body;
an elastic inner cover attached to a lower portion of said cover for sealing an open edge of said peripheral wall;
a cavity defined between a lower surface of said cover and said inner cover;
a ring rotatably and unreleasably attached to the lower portion of said cover and externally fitted to the peripheral wall of said case body;
a plurality of male thread portions intermittently formed as a multiple thread on an outer surface of the peripheral wall of said case body;



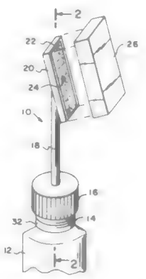
a plurality of unthreaded portions formed on the outer surface of the peripheral wall of said case body between said male thread portions; and
a plurality of female thread portions intermittently formed as a multiple thread on an inner peripheral surface of said ring to be engageable with and disengageable from said male thread portions so that said cover is allowed to be opened when said female thread portions meet said unthreaded portions and that said cover is brought into press contact with said case body and said inner cover is put into press contact with said peripheral wall when said ring is rotated with said female thread portions engaged with said male thread portions.

5,353,819

LOTION WAND

Michael N. Kahn, 11 Juheau Blvd., Woodbury, N.Y. 11797, and George Spector, 233 Broadway Rm 702, New York, N.Y. 10279

Filed Apr. 19, 1993, Ser. No. 47,955
Int. Cl.[5] A45D *40/26*
U.S. Cl. 132—320 **1 Claim**



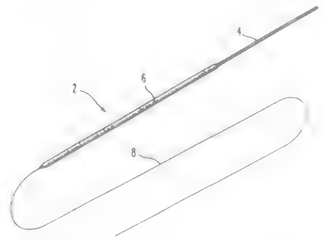
1. A lotion wand for dispensing suntan lotion from a suntan lotion squeeze bottle having a neck, said wand comprising:
a) a cap adapted to fit over and engage with said neck of said suntan lotion squeeze bottle;
b) a hollow tube extending upwardly from said cap;
c) a holder with a central hole communicating with said tube, slightly angularly positioned on an upper end of said hollow tube;
d) a sponge having a through central aperture aligned with said hole carried fully within said holder so that when said squeeze bottle is compressed said suntan lotion will travel through said hollow tube into said sponge from said central aperture to allow a user to reach their entire body to apply said suntan lotion thereto; further in combination with a squeeze bottle including a snap on sleeve to engage with said cap and sized to fit over and protect said hollow tube, said holder with said sponge and said cover with said plug for storage purposes; wherein said neck of said suntan lotion squeeze bottle is externally beaded and said cap includes:
e) a plurality of bendable fingers extending radially about said cap, each of said fingers having perforations extending into said cap so that said fingers can engage with various sized externally beaded necks; and
f) a segmented sealing flap extending radially about said cap between said bendable fingers to prevent leakage from said cap.

5,353,820

FLAVORED DENTAL CLEANING ARTICLE AND METHOD

Christopher H. Suhonen, San Jose, Calif., and Pedro L. Jusino, Yauco, P.R., assignors to Gillette Canada Inc., Kirkland, Canada

Filed Feb. 6, 1992, Ser. No. 832,151
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—321 **20 Claims**



1. A flavored interproximal dental cleaning article having an open, porous brush portion, matrix particles comprising flavor particles encapsulated in a water-soluble matrix being bound to the surfaces of the brush portion by a first water-insoluble, matrix particle encapsulating hard, flexible polymeric film formed from a coating solution in which the water-insoluble matrix is substantially insoluble.

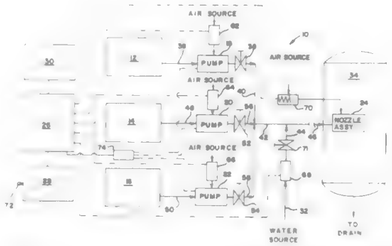
5,353,821

CLEANING APPARATUS AND METHOD

Robert V. Franklin, Burbank, Ill., assignor to Dober Chemical Corporation, Midlothian, Ill.

Division of Ser. No. 864,556, Apr. 7, 1992, Pat. No. 5,282,556, which is a division of Ser. No. 347,283, May 4, 1989, abandoned, which is a division of Ser. No. 853,860, Apr. 4, 1986, Pat. No. 4,915,119. This application Oct. 22, 1993, Ser. No. 141,396
Int. Cl.[5] B08B *3/04*
U.S. Cl. 134—57 R **17 Claims**

1. An apparatus useful for providing a chemical composition useful to treat a piece of equipment comprising:
a reservoir for containing a concentrated form of said chemical composition, said reservoir having an outlet through which said concentrated form of said chemical composition exists said reservoir;
a concentrate pump adapted to pump, at a time rate and at a controlled time, the concentrated form of said chemical composition from said reservoir;
a flow assembly coupled to said concentrate pump and a source of diluent and being adapted (1) for providing, at a time rate and at a controlled time, diluent from said source of diluent directly to a piece of equipment to be treated, and (2) for providing, at a time rate and at a controlled time, a chemical composition comprising diluent directly from said source of diluent and said concentrated form of said chemical composition directly from said reservoir directly to the piece of equipment to be treated; and
a control assembly associated with said concentrate pump and said flow assembly and structured to be preset to, automatically and independently of the diluent flow, control the time during which said concentrated form of said chemical composition exists said reservoir and to automatically and independently control the flow of diluent in said flow assembly, provided that said reservoir, said concentrate pump, said flow assembly and said control assembly are included in a portable system adapted to be moved to another location to treat another piece of equipment using said portable system in said another location, and provided further that said source of diluent is not included in said portable system.

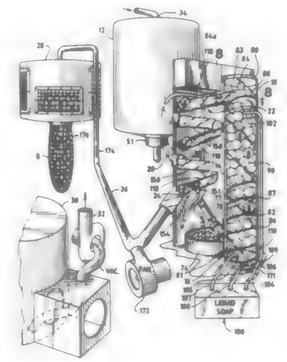


5,353,822

APPARATUS AND METHOD FOR WASHING BALLS

Bernard Gutterman, Greensboro, N.C.; Duane Acker, Mundelein, Ill.; Richard J. Walter, Arlington Heights, Ill., and Joe L. Solling, Libertyville, Ill., assignors to Restaurant Technology, Inc., Oak Brook, Ill.

Filed Jan. 29, 1992, Ser. No. 827,773
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—65 **61 Claims**



1. An apparatus for washing plastic balls with a fluid, comprising:
a housing comprising an elongated chamber suitable for receiving the balls and the fluid, said chamber having ball inlet and outlet openings spaced longitudinally in said chamber;
conveyor means for conveying balls within the housing from the ball inlet towards and eventually into the ball outlet;
a conveyor-free volume located between the ball inlet and

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ball outlet openings for permitting the balls to rub against each other in a washing action;

the conveyor means including a first screw conveyor means disposed in said chamber between the ball inlet and conveyor-free volume for conveying balls from said ball inlet opening and into the conveyor free volume and a second screw conveyor means disposed between the conveyor-free volume and the ball outlet opening and away from said first screw conveyor means, for conveying balls from said conveyor free volume to said ball outlet opening for discharging the balls from the chamber through said ball outlet opening.

5,353,823

DEVICE FOR CLEANING THE FASTENING SHANK OF A TOOL OR OF A TOOLHOLDER

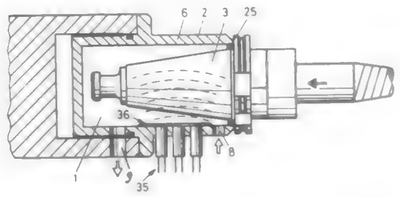
Novak Peter, Tägerwilen, Switzerland, assignor to Starrfräs Maschinen AG, Rorschacherberg, Switzerland

Continuation of Ser. No. 912,044, Jul. 9, 1992, abandoned, which is a continuation of Ser. No. 588,137, Sep. 26, 1990, abandoned. This application Jul. 12, 1993, Ser. No. 90,982

Claims priority, application Switzerland, Sep. 29, 1989, 3557/89-0

Int. Cl.[5] **B08B** *3/12, 3/02*

U.S. Cl. 134—186 **3 Claims**



1. Device for cleaning a shank part of a tool or of a toolholder receiving a tool, comprising:

a housing defining a cleaning chamber, said housing being dimensioned so as to be only slightly larger than the shank part, and having a run-in orifice and a run-off orifice for an in-flow and an out-flow of a fluid through the cleaning chamber, the shank part being insertable into said housing, said cleaning chamber having a closed end and a circular open end, said open end being adapted for receiving said shank part; at least one ultrasonic generator for cleaning the shank part of the tool or of the toolholder by means of the cleaning liquid set in high-frequency vibration and flowing through the cleaning chamber is attached to a portion of a wall of the housing; and sealing means at said open end of said chamber for sealing the shank part into the cleaning chamber so that the shank part closes the open end of the cleaning chamber during cleaning.

5,353,824

BIFOLD SEAT FOR FOLDING WALKER

Carlton M. Woods, and Nancy R. Woods, both of 270 Whidah Rd., North Chatham, Mass. 02650

Filed Dec. 14, 1993, Ser. No. 166,700

Int. Cl.[5] **A45B** *3/00*

U.S. Cl. 135—66 **8 Claims**

1. A folding walker and folding seat in combination comprising:

a) a folding walker comprising:

i) frame means comprising a left side A-frame and a right side A-frame with each side A-frame having a fixed vertically extending front leg, a folding vertically extending rear leg and a side brace connecting the front and rear legs;

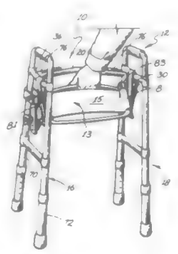
ii) cross brace means for pivotally connecting the left side A-frame to the right side A-frame comprising at least one transverse horizontally extending rib member pivotally connected at opposite ends thereof to the left and right side A-frames in a manner that enables said side A-frames to be moved between closed folded and open positions; and

iii) corner brace means for bracing the frame means in the open position comprising a first and a second corner brace connected respectively between the cross brace means and the left and right side A-frames.

b) seat means comprising:

i) a bifold seat divided in two seat panels mounted on a pair of articulated arms pivotally attached to the frame means, said panels comprising front and back seat panels each consisting of fabric material fastened to said arms;

ii) the pair of articulated arms each having a central pivot point, a connected end and an opposite free end and each pivotally mounted at the connected end on a support means located on a front leg; and



iii) cross rod means for connecting a right articulated arm to a left articulated arm comprising a front arched cross rod, a back arched cross rod and a combination handle and center cross rod extending transversely between said arms;

c) support means for supporting the seat means on the frame means comprising:

i) back support means for pivotally supporting the back of the bifold seat comprising a pair of brackets, each bracket having a clamp fastened to the front leg of a side A-frame; and

ii) front support means for supporting the front of the bifold seat comprising a belt connected to the walker frame having buckle means for adjusting the belt level, wherein the seat may be moved from a flat seat position to an raised folded position supported by the support means against the front of the walker permitting use as a walker.

5,353,825

RADIAL CRUTCH TIP ASSEMBLY

Richard C. Davis, Palm Harbor, Fla., assignor to TREK Medical Corporation, Tampa, Fla.

Filed Feb. 17, 1993, Ser. No. 18,550

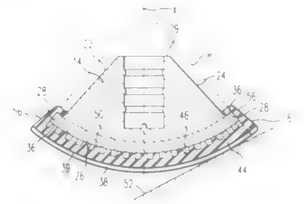
Int. Cl.[5] **A45B** *1/00*

U.S. Cl. 135—78 **11 Claims**

1. An improved radial crutch tip assembly comprising:

a crutch tip base having outwardly and downwardly tapered front and rear surfaces, side surfaces and a convex base bottom surface forming an approximate arc which curves in a direction of elongation, said base further including a lip protruding laterally outwardly adjacent said base bottom surface, said base being molded of a solid material, but defining at least one hollowed-out cavity, surrounded by a skirt being open at said base bottom surface;

a resilient boot having the shape of a rocker, said resilient boot defining a mounting cavity for receiving said base bottom surface and said lip for holding said boot on said base, said boot further having a sole forming a bottom wall thereof, said sole having a sole top surface in said cavity directed towards said base bottom surface, said sole top surface having protruding portions thereon, positioned between said base bottom surface and said sole top surface for providing a resilient cushion between said sole and said base



wherein said crutch tip is molded to define at least one hollowed-out cavity therein, said hollowed-out cavity being open at said base bottom surface;

wherein said crutch tip base has a supporting web extending through said hollowed-out cavity, a bottom surface of said supporting web forming a part of said convex base bottom surface impinging on said protruding portions.

5,353,826

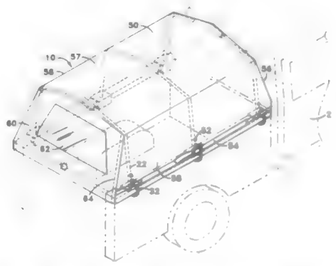
TENT TOPPER

James W. Davis, Sr., Louisville, Ky., assignor to Noble Enterprises, Inc., Louisville, Ky.

Filed Jan. 21, 1993, Ser. No. 7,198

Int. Cl.[5] **E04H** *15/06*

U.S. Cl. 135—88 **9 Claims**



1. A tent topper which is easily installable on and easily removable from a vehicle having an open bed, comprising:

(a) a plurality of roll bar shaped assemblies, each said roll bar shaped assembly having a pair of detachable roll bar assembly supports and means to connect said pair of supports;

(1) each said detachable roll bar assembly support including means to connect said support to a vehicle; an upward support arm having a first and a second end, said first end connected to said connection means; an inward support arm having a first and a second end, said first end connected to said second end of said upward support arm; and, means to tautly retain a tent; and,

(2) each said means to connect said pair of supports including an inward support arm connector having a first and second hollowed end, said first hollowed end receiving said second end of said inward support arm of one of said pair of detachable roll bar assembly supports and said second hollowed end receiving said second end of said inward support arm of other of said pair of detachable roll bar assembly supports;

(b) a foldable tent supportable by said plurality of roll bar shaped assemblies and tautly retainable on a vehicle by said detachable roll bar assembly support means to tautly retain a tent, wherein said foldable tent has at least one opening therethrough for each roll bar assembly support, said openings being at preselected locations on said tent and,

(c) wherein said means to tautly retain a tent of each said detachable roll bar assembly support includes:

(1) a threaded bolt having a pivotally connected adjustable pin at a first end and a turnable adjustment knob connected at a second end; and,

(2) a downward extender arm having a top and a bottom portion, said top portion being connected to said upward support arm, said bottom portion having a threaded bore therein, said bottom portion having a slot opening therethrough, said threaded bolt being threadably received into said threaded bore such that said pivotally connected adjustable pin extends from said threaded bore in a direction outward through said slot opening;

whereby, when said plurality of roll bar shaped assemblies are connected to a vehicle using said connection means and when said tent is supported by said plurality of roll bar shaped assemblies, each said adjustable pin extends outward through one said tent opening and each said turnable adjustment knob being rotatable to move said respective adjustable pin in a direction toward said downward extender arm bottom portion to taut said tent.

5,353,827

PROCESS FOR PRODUCING PASTY PARAFFIN

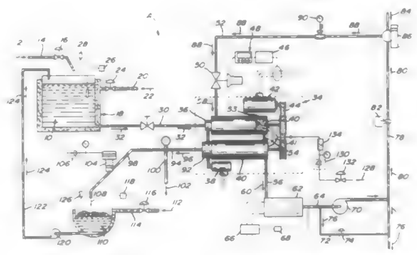
Paul-André Bouchard, Lac Beauport; Réal Lafrance, Repentigny, and Pierre Perrault, Terrebonne, all of Canada, assignors to Chandelles Tradition Candle LTEE, Laval, Canada

Filed Nov. 18, 1992, Ser. No. 978,438

Claims priority, application Canada, Nov. 18, 1991, 2055792

Int. Cl.[5] **G05D** *24/02*

U.S. Cl. 137—1 **1 Claim**



1. A process for producing pasty paraffin comprising the steps of:

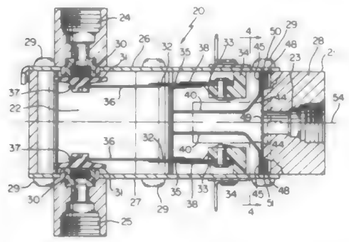
a) supplying liquid paraffin to a solidification means comprising agitator means and cooling means for the liquid paraffin, said agitator means being driven by motor means;

b) cooling the liquid paraffin in said solidification means by way of said cooling means while the liquid paraffin is mixed by said agitator means for producing pasty paraffin, a temperature of said cooling means being controlled by monitoring the power required from said motor means for driving said agitator means in such a way so as to obtain pasty paraffin of proper viscosity;

c) extracting from said solidification means the pasty paraffin having proper viscosity for subsequent use in the production of selected articles.

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5,353,828
VALVE CONSTRUCTION AND METHOD OF MAKING THE SAME
David W. Troscinski, Latrobe, Pa., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Oct. 19, 1993, Ser. No. 139,535
Int. Cl.[5] F16K *31/70, 43/00*
U.S. Cl. 137—15 **20 Claims**



11. In a method of assembling a valve construction comprising a housing means provided with a chamber therein and with an inlet leading to said chamber and an outlet leading from said chamber, a valve seat carried by said housing means and leading to said outlet, a movable bimetallic lever means carried by said housing means and having an operating bimetallic part and an ambient temperature compensating bimetallic part, a valve member carried by said bimetallic lever means for opening and closing said valve seat under the control of said operating part of said bimetallic lever means, deflector means carried by said housing means for directing said fluid flow from said inlet away from said operating part of said bimetallic lever means when fluid flows through said chamber from said inlet through said outlet, another bimetallic lever means carried by said housing means in spaced apart parallel relation relative to the first mentioned bimetallic lever means, said deflector means having a first part thereof disposed intermediate said bimetallic lever means, and a screen having top and bottom edge means and being carried by said housing means so as to cover said inlet at said chamber, the improvement comprising the steps of providing said deflector means to have a second part engaging one of said top and bottom edge means of said screen to hold said first part of said deflector means in a cantilevered manner in said chamber between said bimetallic lever means, and providing said second part of said deflector means to extend over said one of said top and bottom edge means of said screen and to engage a portion of the interior of said housing means adjacent said inlet for suspending said deflector means solely between said one of said top and bottom edge means of said screen when that one of said top and bottom edge means of said screen is above the other of said top and bottom edge means of said screen and the portion of the interior of said housing means adjacent said one of said top and bottom edge means of said screen.

5,353,829
APPARATUS FOR MIXING HAZARDOUS GAS WITH AN AIRFLOW
Samir S. Shiban, 1420 NW. 178th Pl., Beaverton, Oreg. 97006
Filed Jan. 10, 1994, Ser. No. 179,067
Int. Cl.[5] B01F *5/04*
U.S. Cl. 137—88 **7 Claims**

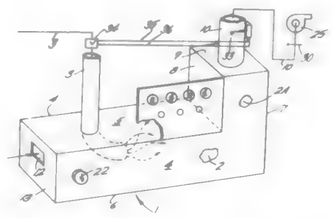
1. An apparatus for mixing hazardous gas with air to render the gas inert, said apparatus comprising,

a housing defining a chamber, air inlet means admitting an airflow into said chamber,

a rotor assembly including blades in said chamber, each of said blades having a rotational path into the airflow to disperse the airflow,

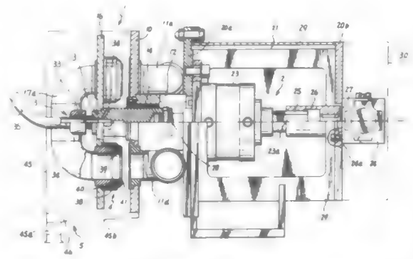
a hazardous gas inlet conduit having an outlet in said chamber and in the dispersed airflow,

an outlet conduit in communication with said chamber, and



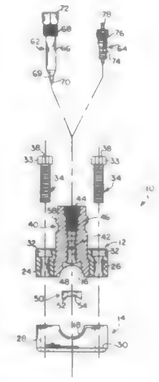
means inducing a flow of mixed air and hazardous gas through said outlet conduit.

5,353,830
APPARATUS FOR AUTOMATICALLY SWITCHING CONDUIT PIPES OF LIQUID TREATING PLANT
Shigetoshi Mochizuki; Hironori Kitazaki; Masaaki Mori, all of Fujieda; Michio Nagasawa, Tokyo; Yoshihiko Akiyama, Fujieda; Hiroaki Naruse, Fujieda; Mitsunori Miyazawa, Fujieda, and Kiyoshi Mochizuki, Fuji, all of Japan, assignors to Tsumura Co., Ltd., Tokyo, Japan
PCT No. PCT/JP90/01476, § 371 Date Mar. 10, 1992, § 102(e) Date Mar. 10, 1992, PCT Pub. No. WO92/01182, PCT Pub. Date Jan. 23, 1992
PCT Filed Nov. 14, 1990, Ser. No. 838,257
Claims priority, application Japan, Jul. 10, 1990, 2-182454
Int. Cl.[5] B08B *3/02, 9/06*
U.S. Cl. 137—240 **8 Claims**



1. An apparatus for automatically switching conduit pipes of a liquid treating plant, including a fixed plate supporting a plural number of conduit pipes thereon in communication with corresponding switch ports opened on one side of the fixed plate in spaced positions on a predetermined circle, a movable switch member supporting thereon U-shaped switch pipes with opposite open ends thereof in face to face relation with the switch ports on the fixed plate at predetermined switch points, and a drive mechanism having a drive shaft extended through the center of said circle of switch port positions on said fixed plate and adapted to drive said movable switch member for linear reciprocating movements toward and away from said fixed plate and either one of rotational and angular rocking movements about the axis of said drive shaft, switching connections between said conduit pipes by a combination of the linear reciprocating movements and rotational movements of said movable switch plate relative to said fixed plate, characterized in that said automatic switching apparatus comprises: a washer assembly mounted on the drive shaft and having a number of nozzles for spraying a washing liquid to wash said switch points; and a cover enclosing switch points on the side of said switch ports on said fixed plate; said drive mechanism having a fluid cylinder and a rotary actuator located on the other side of said fixed plate away from said switch ports to impart linear reciprocating movements and rotational movements to said movable member; said fixed plate also having a function as a partition wall for protecting said drive mechanism against intrusion of the washing liquid from said washer assembly.

5,353,831
TUBE-PIERCING CLAMP ON VALVE ASSEMBLY
Marcus J. Roth, Hallandale, Fla., assignor to Watsco Components, Inc., Hialeah, Fla.
Filed Feb. 25, 1994, Ser. No. 202,393
Int. Cl.[5] F16L *41/06;* **F16K** *51/00*
U.S. Cl. 137—318 **9 Claims**



1. A line-piercing valve assembly, comprising:

a first clamp housing formed with a first recess, and a second clamp housing formed with a second recess, said first and second clamp housings being releasably connected to one another so that said first and second recesses thereof form a cylindrical bore adapted to receive and clamp a section of tubing therebetween;

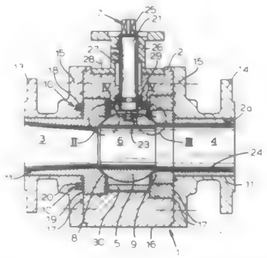
said first clamp housing being formed with a projection having an internal bore, one end of said internal bore being formed with at least one threaded portion and the opposite end of said internal bore being formed with a seat which terminates at said first recess;

a piercing pin having a shaft formed with a threaded portion and a piercing tip, said piercing pin being insertable within said internal bore of said projection of said first clamp housing so that said threaded portion of said shaft mates with said threaded portion of said internal bore, said piercing pin being axially movable in a first direction within said internal bore so that said piercing tip thereof can engage and puncture the wall of a section of tubing held between said first and second clamp housings forming an access port therein, said piercing pin thereafter being axially movable in a second direction to completely remove said piercing pin from said internal bore;

a one-way valve removably threadably insertable within said threaded portion of said internal bore of said projection of said first clamp housing to replace said removed piercing pin and to introduce and to discharge fluid through said internal bore and said one-way valve; and

a gasket insertable within said seat of said first clamp housing in position to contact the section of tubing clamped in said cylindrical bore between said first and second clamp housings and to create a substantially air-tight seal around said access port in the tubing wall.

5,353,832
BALL VALVE OR COCK
Rütger Berchem, Essen, Fed. Rep. of Germany, assignor to Cerpraecis Anwendungen fur Ingenieurkeramik GmbH, Gelsenkirchen, Fed. Rep. of Germany
Filed Dec. 1, 1993, Ser. No. 160,508
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1992, 9216543[U]
Int. Cl.[5] F16L *7/00;* **F16K** *25/00*
U.S. Cl. 137—375 **9 Claims**



1. A ball valve for control of a flowable medium containing finely divided solids, comprising:

a housing;

means in said housing forming an inlet passage for said flowable medium;

a valve ball in said housing adjacent said inlet passage and having a ball passage communicating with said inlet passage upon alignment of said ball passage with said inlet passage in a flow-permitting position of said ball, said valve ball being rotatable in said housing to disalign said ball passage from said inlet passage into a flow-blocking position of said ball;

means forming an outlet passage in said housing, said outlet passage being aligned with said ball passage in said flow-permitting position of said ball, said ball being sealingly engaged between seating rings defining a downstream end of said inlet passage and an upstream end of said outlet passage, respectively;

spring means in said housing for resiliently engaging said ball between said seats; and

control means in said housing coupled with said ball and actuatable from an exterior of said housing to rotate said ball between said positions,

said inlet passage opening at said downstream end into said ball passage at a smaller flow cross section than that of said ball passage at a mouth thereof,

said ball passage opening at a downstream end thereof into said outlet passage at said upstream end with a smaller flow cross section than the flow cross section of said upstream end of said outlet passage, and

differences of flow cross section between said downstream end of said inlet passage and said mouth of said ball passage and between said downstream end of said ball passage and said upstream end of said outlet passage exceeding manufacturing and assembly tolerances in said housing.

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5,353,833

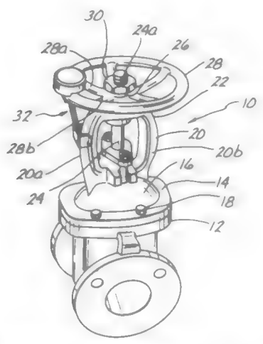
GATE VALVE LOCKING ARRANGEMENT

Louis Martinez, 3521 Summerdale St., Corona, Calif. 91719, assignor to Louis Martinez, Corona, Calif.

Continuation-in-part of Ser. No. 41,674, Apr. 1, 1993. This application Oct. 22, 1993, Ser. No. 141,271

Int. Cl.[5] F16K *35/02*

U.S. Cl. 137—385 6 Claims



1. A gate valve locking combination for securing a gate valve against unauthorized turning from a predetermined setting, said gate valve comprising a housing for the valve, a bonnet capping said housing, a U-shaped truss the open ends of which U-shaped truss are secured to the bonnet and the center of which U is orificed, a valve spindle extending upwardly through the bonnet and through the orifice in the truss to project an end of said spindle above said orifice, and a spoked wheel secured on the projecting end of said spindle for opening and closing the valve upon being turned, said combination comprising

a bracket said bracket having a base portion adapted to embrace at least one side of the truss, said bracket including an elongated rigid element extending angularly and upwardly from said base portion and supporting an L-shaped member, said L-shaped member comprising a horizontal shelf portion and an inner vertically rising wall portion, said wall portion being transversely orificed adjacent its upper end; and

cylindrical lock means, said lock means including a cylindrical body with an upper face and a lower face, said body being slotted from its lower face toward its upper face, the slotting in said body being configured to receive the transversely orificed portion of the vertical wall of said L-shaped member, the lower face of said cylindrical body having a lower shelf parallel to its said slotting, and said cylindrical body having a transverse locking passage and a lock with a locking pin extendable through said locking passage into said slotting; and removable key means insertable into the lock in said transverse locking passage to press said pin into the slotting;

whereby when the bracket is mounted on one side of said truss and moved upwardly to place said L-shaped member against the underside and inside of the wheel between its spokes, and said cylindrical lock means is placed over the wheel with its slotting receiving the vertical wall of the L-shaped member and the orifice of the L-shaped member is aligned in register with the locking passage and the key is pushed into the lock to press the locking pin through the orifice of the L-shaped member, and the lock is locked and the key removed, the wheel of the gate valve is secured against movement relative to its truss.

5,353,834

CHECK VALVE

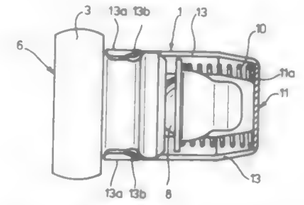
Edgar Schmitt, Vaihingen/Enz; Heinz Siegel, Stuttgart; Manfred Wilhelm, Nussdorf, and Georg Kehl, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 24, 1993, Ser. No. 127,034

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1992, 4236481

Int. Cl.[5] F16K *15/04*

U.S. Cl. 137—539.5 6 Claims



1. A check valve for ABS and ASR applications having a valve body (**6**), said valve body includes a valve seat (**7***a*) on one end and a recess embodied as an annular groove (**12**) in an outer jacket face of said valve housing (**6**), a retaining element (**11**) embodied as a retaining bracket, having at least two retaining arms (**13**) having a T-shaped form and provided with arcuate curved end pieces on free ends which extend from a support face (**11***a*) which supports an associated end of a valve spring (**10**), a valve element (**8**) is prestressed against the valve seat by means of the valve spring, said valve spring is supported by the support face (**11***a*) of said retaining element (**11**) on one end of the valve spring (**10**) remote from the valve element (**8**), said valve element is pressed by said valve spring onto said valve seat, said arcuate curved end pieces substantially defining a circle having a radius substantially complementing said annular groove, which part is inside said retaining arms (**13**) and adjacent to said annular groove (**12**), and the annular groove (**12**) is embodied as an undercut with a relatively steep shoulder (**15**) on one side of said undercut toward the support face (**11***a*) of the retaining element (**11**), and for cooperation with the steep shoulder (**15**), a radial inward protrusion (**13***b*) is formed arcuate on the curved end pieces (**13***a*) of the retaining arms (**13**) and protrude inwardly in said annular groove (**12**) and toward said steep shoulder to resiliently lock said retaining element onto said valve body.

5,353,835

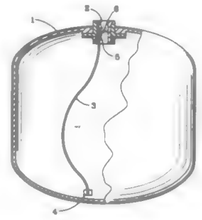
AIR TANK DRAIN

Floyd D. Mills, Southern Pines, N.C., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Sep. 23, 1993, Ser. No. 126,844

Int. Cl.[5] B65D *25/38*

U.S. Cl. 137—590 9 Claims



1. A tank venturi drain comprising:

a tank for receiving and storing a compressible pressure fluid;

a port means in said tank for delivery of said pressure fluid to a conduit extending from said tank;

a deployable suction conduit extending from said port means to a selected deployed point within said tank;

a venturi means formed in said port means for producing suction to educt liquid from said suction conduit and said selected point within said tank; and

said suction conduit being provided with a weight at one end extending to said selected point within said tank to assist its deployment proximit to said selected point and wherein said selected point is the low end of the tank interior.

5,353,836

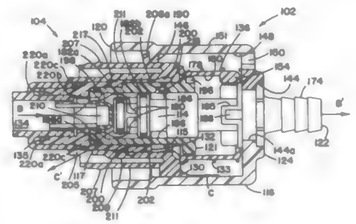
DISPENSING VALVE

C. Peter deCler, St. Paul, and David W. Meyer, Jordan, both of, assignors to Colder Products Company, St. Paul, Minn.

Filed Aug. 19, 1992, Ser. No. 932,320

Int. Cl.[5] F16K *21/00;* B67D *5/37*

U.S. Cl. 137—614.05 20 Claims



1. A valve assembly, comprising:

a receptor valve assembly defining a normally closed fluid passage;

an insert valve assembly defining a normally closed fluid passage;

the insert and receptor valve assemblies including means for connecting the insert and receptor valve assemblies, and further including sleeve means disposed in the insert valve assembly and receivable in hollow insert means disposed in the receptor valve assembly operable upon rotation of the insert valve assembly relative to the receptor valve assembly for opening the receptor valve assembly and insert valve assembly when the insert and receptor valve assemblies are connected.

5,353,837

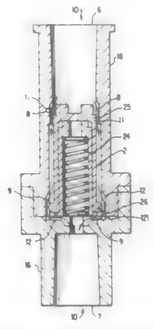
QUICK-DISCONNECT VALVE

Valentine Faust, Bow, N.H., assignor to Deka Products Limited Partnership, Manchester, N.H.

Continuation-in-part of Ser. No. 748,341, Aug. 22, 1991, Pat. No. 5,116,021, which is a continuation-in-part of Ser. No. 674,813, Mar. 22, 1991, abandoned, Ser. No. 673,835, Mar. 22, 1991, abandoned, Ser. No. 674,818, Mar. 22, 1991, Pat. No. 5,193,990, and Ser. No. 673,834, Mar. 22, 1991, abandoned, said Ser. No. 674,813, Ser. No. 673,835, Ser. No. 674,818, and Ser. No. 673,834, each is a continuation-in-part of Ser. No. 615,612, Nov. 19, 1990, abandoned, and Ser. No. 614,806, Nov. 19, 1990, abandoned, said Ser. No. 615,612, and Ser. No. 614,806, each is a continuation-in-part of Ser. No. 523,801, May 15, 1990, Pat. No. 5,088,515, and Ser. No. 345,387, May 1, 1989, Pat. No. 4,976,162, which is a continuation-in-part of Ser. No. 92,481, Sep. 3, 1987, Pat. No. 4,826,482, which is a continuation-in-part of Ser. No. 22,167, Mar. 5, 1987, Pat. No. 4,808,161, and Ser. No. 836,023, Mar. 4, 1986, Pat. No. 4,778,451. This application May 22, 1992, Ser. No. 887,732

Int. Cl.[5] F16K *3/24;* A61M *39/00*

U.S. Cl. 137—614.18 3 Claims



1. A valve for permitting flow of a fluid therethrough when actuated by a cannula, and otherwise preventing flow of fluid therethrough, the valve comprising:

a fluid passageway bounded by a wall and having first and second ports, the first port adapted to receive a cannula;

a movable member having first and second ends and a perimeter surface, the movable member being disposed in the fluid passageway, and being displaceable, in a direction parallel to overall fluid flow through the valve, to an open position, wherein fluid may pass through the valve, and to a closed position, wherein fluid is prevented from passing through the valve, such that when the movable member is in the closed position it is closer to the first port than when it is in the open position, and such that the movable member may be moved from the closed position to the open position by a cannula inserted through the first port;

biasing means for urging the movable member away from the open position towards the closed position;

first sealing means, located between the movable member and the passageway wall, for preventing flow between the passageway wall and the perimeter surface of the movable member when the movable member is in the closed position; and

first channel means for permitting flow between the first sealing means and the passageway wall when the movable member is in its opened position;

wherein the first sealing means is mounted on the perimeter surface of the movable member, and the first channel means is mounted in the passageway wall; and further including

second sealing means, mounted on the perimeter surface of the movable member, for preventing flow between the

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passageway wall and the perimeter surface of the movable member when the movable member is in the closed position, the first sealing means being mounted closer to the first end of the movable member and the first port than the second sealing means; and

second channel means, mounted in the passageway wall, for permitting flow between the second sealing means and the passageway wall when the movable member is in the open position.

5,353,838

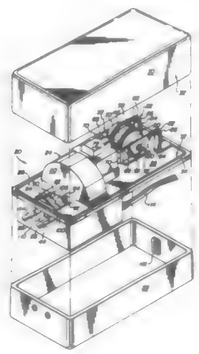
PRESSURIZED DIAPHRAGM PUMP AND DIRECTIONAL FLOW CONTROLLER THEREFOR

Benton H. Grant, 126 Chestnut Hill Rd., Stamford, Conn. 06903

Division of Ser. No. 817,145, Jan. 6, 1992, Pat. No. 5,232,353. This application Mar. 29, 1993, Ser. No. 35,718

Int. Cl.[5] F16K *11/074*

U.S. Cl. 137—624.13 **11 Claims**



1. A valve for fluid comprising:

a chamber having at least first and second fluid conduits;

means, located within said chamber and operating in conjunction with said first fluid conduit, for regulating a first pressure within said chamber at a different level than a second pressure without said chamber;

a first plate mounted within said chamber, said plate including said second fluid conduit;

a second plate having a surface, said surface having a slot, said surface sealingly engaged with said first plate, said slot immersed in fluid within said chamber at the first pressure; and

means for moving said second plate against said first plate alternately to permit and prevent passage of fluid at the first pressure through said slot and between said second fluid conduit and said chamber;

wherein said first plate includes a vent extending without said chamber; and wherein said surface of said second plate includes a hollow located in fluid communication with said vent, and said second plate surface seals said vent and hollow from said chamber; and wherein, as said second plate moves, said hollow periodically brings said vent and said second fluid conduit into fluid communication.

5,353,839

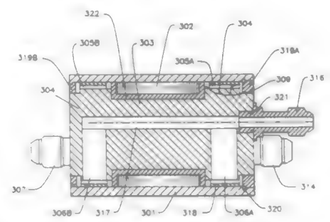
MAGNETORHEOLOGICAL VALVE AND DEVICES INCORPORATING MAGNETORHEOLOGICAL ELEMENTS

William I. Kordonsky; Sergei R. Gorodkin; Alexander V. Kolomentsev; Vladimir A. Kuzmin; Alexander V. Lak'ianovich; Nikolay A. Protasevich; Igor V. Prokhorov, and Zinovii P. Shulman, all of Minsk, Belarus, assignors to Byelocorp Scientific, Inc., New York, N.Y.

Filed Nov. 6, 1992, Ser. No. 973,113

Int. Cl.[5] F15B *21/00*

U.S. Cl. 137—806 **11 Claims**



1. A magnetorheological valve comprising:

a magnetoconducting body, at least a portion of which is adapted to contain a magnetic field, connected to a fluid inlet port and a fluid outlet port;

an induction coil winding positioned within the magnetoconducting body;

a magnetic core located in the portion of the magnetoconducting body adapted to contain a magnetic field;

an hydraulic channel located between the outside of the core and the inside of the body, having a first end connected to the inlet port and a second end connected to the outlet port; and

a partition comprising a nonmagnetic material positioned in the hydraulic channel to form a fluid barrier therein between the inlet port and the outlet port.

5,353,840

PRESSURE RESPONSE TYPE PULSATION DAMPER NOISE ATTENUATOR AND ACCUMULATOR

Edward D. Paley, Grosse Pointe; Gregory E. Leemhuis, Auburn Hills, and Kerry A. Machesney, Farmington, all of Mich., assignors to Hydraulic Power Systems, Inc., Oak Park, Mich.

Continuation of Ser. No. 15,318, Feb. 9, 1993, abandoned, which is a division of Ser. No. 749,127, Aug. 23, 1991, Pat. No. 5,205,326. This application Aug. 10, 1993, Ser. No. 104,283

Int. Cl.[5] F16L *55/04*

U.S. Cl. 138—31 **7 Claims**

1. A pulsation damper and noise attenuator assembly for use in a liquid flow path of a fluid flow system comprising:

an elongated housing having a cross sectional area and a longitudinal axis with first and second ends;

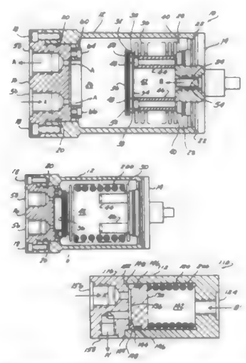
a base mounted to said housing at one end defining an internal chamber in cooperation with said housing;

a rigid movable member having a pressure response surface extending substantially parallel to the cross sectional area of said housing, said movable member disposed within said internal chamber of said housing for longitudinal reciprocation, said movable member separating said internal chamber of said housing into an expandable first chamber and an expandable second chamber;

a fluid tight sealing member between said movable member and said housing for preventing fluid communication between said first and second chambers;

said first chamber of said housing having a gas pressurized to a predetermined level, such that said movable member is normally disposed, during a stable steady liquid flow, in an intermediate position between said first and second ends of said housing;

an inlet port and an outlet port formed in said base, said inlet port and said outlet port fluidly communicating with said second chamber of said housing and adapted to connect said second chamber to the liquid flow path of said fluid flow system, such that said liquid flow directly impacts the pressure response surface of said movable member;



stop means connected to one of the movable member and the base for restraining forward movement of said movable member toward said ports, such that said first chamber is prevented from fully expanding within said housing and said ports are always in fluid communication with said second chamber; and

said assembly is mounted directly in the liquid flow path of said fluid flow system and said liquid flow path is directed normal to the pressure response surface of said movable member.

5,353,841

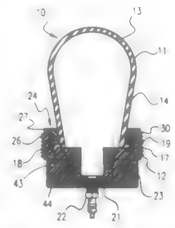
PNEUMATIC PLUG FOR CLEAN-OUT TEES

Allen D. Mathison, Richfield; Marc P. Bevacco, New Hope, and Bryan R. Benson, North Branch, all of Minn., assignors to Cherne Industries Incorporated, Minneapolis, Minn.

Filed May 21, 1993, Ser. No. 64,378

Int. Cl.[5] F16L *55/124*

U.S. Cl. 138—93 **19 Claims**



1. A pneumatic test plug for clean-out tees comprising:

a) an elastomeric semirigid inflatable body having a closed top, an inwardly converging side wall and an open bottom end having a peripheral shoulder extending therefrom, said peripheral shoulder further having a downwardly extending peripheral ridge,

b) a molded end cap structure having a cylindrical wall with exteriorly disposed threads and an inwardly disposed circular retention area adjacent said cylindrical wall, said retention area further having a circular groove of a predetermined width to receive said peripheral ridge of said inflatable body shoulder, said end cap structure further having inflation and deflation means, and

c) a retention collar having a bottom surface with a width larger than the width of said groove for placement within said molded end cap and being for positioning between said cylindrical wall and said inflatable body bottom end, said collar fixing said peripheral shoulder and said downwardly extending peripheral ridge in said circular retention area and said circular groove of said end cap and compressing said peripheral shoulder and ridge of said inflatable body into said end cap.

5,353,842

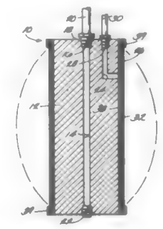
INFLATABLE PLUG FOR USE IN PLUGGING A LARGE DIAMETER PIPE

Philip L. Lundman, 3631 Fredonia-Kohler Dr., Fredonia, Wis. 53021

Continuation of Ser. No. 839,327, Feb. 20, 1992, abandoned. This application Aug. 9, 1993, Ser. No. 103,820

Int. Cl.[5] F16L *55/12*

U.S. Cl. 138—93 **16 Claims**



1. An inflatable plug comprising:

a cylinder having first and second ends, a central longitudinal axis, and an outer surface;

an inflatable sleeve of elastomeric material surrounding said outer surface of said cylinder, said sleeve having opposite ends and being formed by winding a sheet of cured elastomer material circumferentially around said cylinder to form plural layers;

means for clamping one end of said sleeve to said first cylinder end;

means for clamping the opposite end of said sleeve to said second cylinder end;

and means for supplying pressurized fluid between said cylinder outer surface and said sleeve for inflating said sleeve with respect to said cylinder.

5,353,843

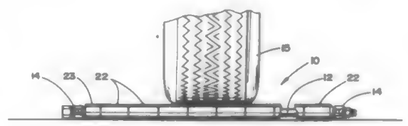
METHOD AND APPARATUS FOR PROTECTING A HOSE

Robert L. Hoag, Grand Rapids, Mich., assignor to Crown Industries, Inc., Grand Rapids, Mich.

Filed Dec. 10, 1992, Ser. No. 988,748

Int. Cl.[5] F16L *11/00*

U.S. Cl. 138—110 **14 Claims**



1. A hose jacket for protecting a flexible resilient fluid conveying hose from external damage or crushing, the hose jacket

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comprising a plurality of separate tubular segments of generally uniform diameter that fit over the hose in end-to-end fashion, the tubular segments being formed of a tough, crush resistant nylon material that restrains the hose from damage when a forklift truck drives over the hose jacket, the jacket resiliently resisting deflection under the weight of a fork lift truck and having sufficient memory to substantially return to its original shape after the weight of the fork lift truck is removed, the tubular segments being retained in a closely spaced relationship on the hose by fixed position fittings mounted on the hose at opposite ends of the hose jacket, the fittings restraining the segments from sliding past the fittings, the tubular segments having an external beveled surface at one end thereof and an internal beveled surface at an opposite end thereof, the segments being positioned on the hose with the external beveled surface of one segment abutting an internal beveled surface of the adjoining segment, the beveled surfaces mating and facilitating angular articulation of the hose and hose jacket while limiting open gaps between articulated segments, the segments being shaped and sized such that they fit loosely over the hose and do not interlock together, the segments being individually rotatable on the hose.

14. A process for protecting a flexible fluid conveying hose from external damage from crushing or puncture wherein the hose has connection fittings attached to the ends thereof, comprising:

removing one of the fittings from one end of the hose;

installing over the one end thereof a series of relatively short tubular segments of generally uniform diameter and formed of a tough, crush resistant plastic resin, the segments each having an internally tapered end and an externally tapered end and being arranged such that the externally tapered end of one segment is positioned opposite the internally tapered end of the adjacent segment, the tapered ends mating and facilitating articulation of the hose and segments without producing wide gaps of exposed hose between the articulated segments, the segments being installed on the hose until they substantially fill the space between the ends of the hose; and

affixing a hose connector fitting on the one end of the hose, the fittings being large enough and the segments being small enough such that the fittings retain the segments on the hose between the fittings.

5,353,844

WARP HANDLING ARRANGEMENT FOR WEAVING A MULTI-DIMENSIONAL THICK FABRIC

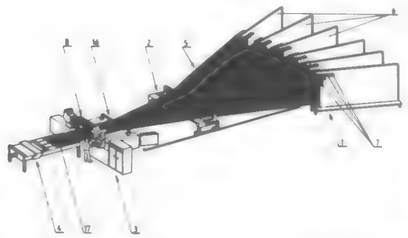
Francois Monget, Merignac, and Michel Hee, Castelnau du Medoc, both of France, assignors to Societe Nationale Industrielle et Aerospatiale, Paris, France

Filed May 14, 1993, Ser. No. 61,075

Claims priority, application France, May 15, 1992, 92 06154

Int. Cl.[5] **D03D** *13/00, 41/00;* **D03J** *1/00*

U.S. Cl. 139—20 **18 Claims**



1. A process for weaving a thick woven reinforcement comprising a plurality of noncleaving layers having a structure comprising at least one member selected from the group consisting of 2.5 D and 3 D, and warp yarns interlacing weft yarns of at least two layers, said plurality of layers comprising a number of superimposed parallel planes of weft yarns, said process comprising the steps of:

moving said warp yarns successively into a yarn joining comb, a calibrating comb comprising a plurality of teeth, and a dobby weaving unit;

separating said warp yarns upstream of said calibrating comb into n superimposed laps, wherein

$$n = \frac{N-1}{2},$$

and N, a positive odd integer, represents a number of layers of the reinforcement, and

N-1/2 warp yarns pass into each of said teeth of said calibrating comb, and

threading two adjacent warp yarns of said teeth into eyes of two heddles of a same row of two heddle frames, said two heddles of said same row are aligned along a vertical plane slanted with respect to an axis of said two adjacent warp yarns, and said two heddles are selected so that, during a formation of a shed, displacement planes of said two adjacent warp yarns form an angle sufficient to prevent said yarns from becoming caught up with one another.

5,353,845

RAPID RELEASE SYSTEM FOR FALSE SELVEDGE AND FABRIC EDGE BINDING MEMBERS

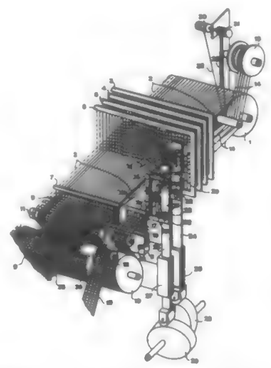
Luciano Corain, and Gianni Maitan, both of Venice, Italy, assignors to Nuovopignone-Industrie Mecaniche e Fonderia SpA, Florence, Italy

Filed Jan. 29, 1993, Ser. No. 55,208

Claims priority, application Italy, May 5, 1992, MI92 A 001072

Int. Cl.[5] **D03D** *47/40*

U.S. Cl. 139—54 **1 Claim**



1. A shuttleless loom for producing a fabric that has side edges from false selvedge yarns and binding yards, comprising a warp yarn feed beam, heddle eyes through which the warp yarns pass, grids having grid eyes through which the false selvedge yarns pass, feed bobbins for the false selvedge yarns and binding yarns for the side edges of the fabric under formation, these yarns connecting to the edge of the fabric by passing through said heddle eyes and through said eyes in the grids, and through corresponding teeth of a reed mounted on a sley, through which teeth there also pass the warp yarns, two movable grid supports which move linearly with opposing reciprocating movement, guides fixed to the loom for establishing said linear movement, said reed having a part that is traversed by the false selvedge yarns and the yarns for the fabric side

edges, means for releasably attaching said reed to said sley, said grids being mounted on two rigid frameworks, and quick-break connection means on said two supports for selectively removing said grids therefrom.

5,353,846

LIFTER MECHANISM FOR JACQUARD MACHINE

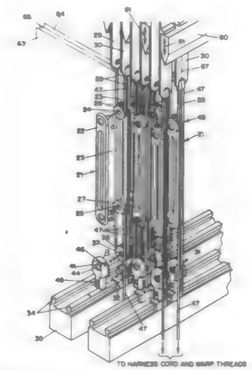
Nico Gheysen, Sint-Eloois-Winkel; Puype Lode, Kortrijk; Carlos Derudder, Heule, and André Dewispeleare, Kortrijk-Marke, all of, Belgium, assignors to N.V. Michel Van De Wiele, Kortrijk-Marke, Belgium

Filed May 19, 1993, Ser. No. 63,931

Claims priority, application Belgium, May 19, 1992, 09 200461

Int. Cl.[5] **D03C** *3/00*

U.S. Cl. 139—65 **19 Claims**



1. Arrangement of one or more lifter mechanisms on a Jacquard machine, each lifter mechanism being connected to first and second complementary hooks, each of which, on each cycle of movement in a direction of a plurality of knives, can either be carried along by one of said knives moving up and down in counterphase or can be held in a top or a bottom position, said hooks being connected by means of lifter cords passed over lifter rollers to one or more warp threads, so that, on two successive cycles of movement of said knives, said warp threads can be moved to three different levels through selection possibilities of the hooks, said hooks forming a plurality of rows, said lifter mechanism comprising:

at least one lifter element having top and bottom rollers and a roller element having one roller, said roller element being fixedly located under first and second complementary hooks,

a first lifter cord connected by one end to said first hook, which extends downwards, passes around under said top roller of said lifter element and extends back up, where it is connected by the other end to said second hook, said lifter element hanging below said first and second hooks and above said roller element, and

a second lifter cord connected by one end to said second hook next to said first lifter cord, which extends downwards, passes around under the roller of said roller element, extends back up, passes around over said bottom roller of said lifter element, and extends back down, where it is connected to one or more harness cords carrying along the warp threads lower down than said roller element.

5,353,847

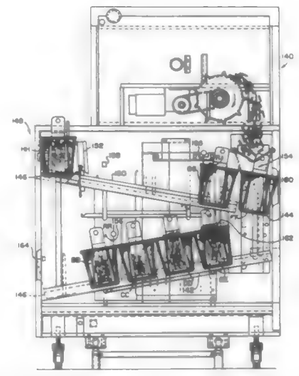
FOOD DISPENSER, DISPENSER CONTAINER AND METHOD

Robert L. Cahlander, Red Wing; David W. Carroll, Cannon Falls, both of Minn.; Alfred C. Hollingsworth, Naperville, Ill.; Gregory A. Lawrence, Red Wing, and Brian R. Rudesill, St. Paul, both of Minn., assignors to Restaurant Technology, Inc., Oak Brook, Ill.

Division of Ser. No. 864,115, Apr. 6, 1992, Pat. No. 5,282,498, which is a continuation-in-part of Ser. No. 519,068, May 4, 1990, Pat. No. 5,191,918. This application Jan. 31, 1994, Ser. No. 189,211

Int. Cl.[5] **B65B** *43/42;* **B67C** *3/00*

U.S. Cl. 141—1 **3 Claims**



1. A method of dispensing portions of bulk food products comprising the steps of:

loading bulk food products into a storage bin;

discharging food items from the storage bin into a secondary bin;

weighing the secondary bin to determine when a desired portion of food products has accumulated in the secondary bin;

emptying the secondary bin into a basket, located at a filling station beneath said secondary bin, when the desired portion of food products have accumulated in the bin; and

using at least two inclined ramps to convey baskets to and away from said filling station.

5,353,848

METHOD OF FILLING GAS CYLINDERS

Robert G. Gates, Mendham; Shuen-Cheng Hwang, Chester, and Ramachandran Krishnamurthy, Piscataway, all of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Filed Apr. 27, 1993, Ser. No. 53,983

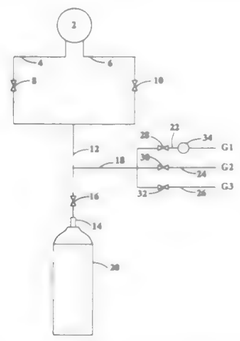
Int. Cl.[5] **B65B** *3/04*

U.S. Cl. 141—9 **18 Claims**

1. A method of introducing two or more gases of different densities into a vessel wherein the quantity introduced and density of one gas is greater and lower, respectively, than the

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quantity introduced and density of one other gas, comprising successively introducing the gases into said vessel in the order



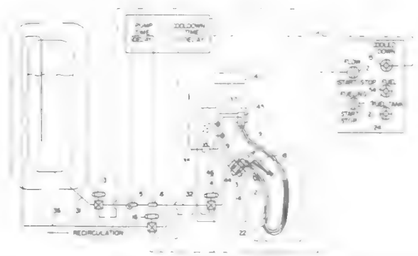
of their increasing densities while said vessel is in the upright position.

5,353,849

APPARATUS FOR METERING AND TRANSFER OF CRYOGENIC LIQUIDS

Harold E. Sutton, Fort Collins, Colo., and Roy E. Adkins, Catlett, Va., assignors to Cryogenic Fuels Inc., Manassas, Va.

Filed May 27, 1992, Ser. No. 888,851
Int. Cl.[5] B65B *3/04*
U.S. Cl. 141—44 18 Claims



1. Apparatus for transferring a cryogenic liquid from a storage vessel to a receiving vessel comprising:

a motor-driven pump;

a first conduit providing a flow path for conducting a cryogenic liquid from a storage vessel to the intake of said pump, said first conduit having a first end adapted for coupling to a storage vessel and a second end coupled to the intake of said pump;

a delivery nozzle incorporating first and second valved fittings adapted for coupling with valved fittings on a receiving vessel;

a second conduit providing a flow path between the discharge of said pump and said delivery nozzle, said second conduit having a first end coupled to the discharge of said pump and a second end coupled to said delivery nozzle in communication with said first valved fitting;

a third conduit providing a vapor return flow path, said third conduit having a first end coupled to said delivery nozzle in communication with said second valved fitting and a second end adapted for coupling to a vapor recovery system;

a nozzle support assembly, said nozzle support assembly comprising third and fourth valved fittings and a conduit providing a flow path between said third and fourth valved fittings; and

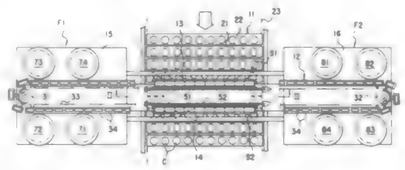
means for effecting a coupling of said first and second valved fittings of said delivery nozzle with said third and fourth valved fittings of said nozzle support assembly for thereby establishing a flow path between said second and third conduits through said conduit of said nozzle support assembly.

5,353,850

APPARATUS FOR DISTRIBUTEDLY FILLING PARTICULATE OR GRANULAR MATERIAL INTO CONTAINERS

Michio Ueda; Tetsuya Iuchi; Takao Miki, and Hisanori Hamada, all of Tokushima, Japan, assignors to Shikoku Kakoki Co., Ltd., Tokushima, Japan

Filed Oct. 8, 1993, Ser. No. 133,256
Claims priority, application Japan, Oct. 8, 1992, 4-70227[U]
Int. Cl.[5] B65B *43/42*
U.S. Cl. 141—129 2 Claims



1. An apparatus for distributedly filling a particulate or granular material into containers comprising:

an intermittently drivable container conveyor having a plurality of parallel container transport paths extending through a first filling station and a second filling station, the container conveyor having first holders and second holders arranged alternately in the direction of transport and each adapted to hold containers C equal in number to the number of container transport paths, the container conveyor being operable to feed one first holder to the first filling station and one second holder to the second filling station and simultaneously stop the two fed holders at the respective stations at a time,

a continuously drivable particulate or granular material conveyor having a first material transport path and a second material transport path extending across and positioned above the container transport paths at the first filling station and the second filling station respectively,

first chutes arranged at the first filling station between the first material transport path and the container transport paths and equal in number to the number of container transport paths and second chutes arranged at the second filling station between the second material transport path and the container transport paths and equal in number to the number of container transport paths,

a first particulate or granular material feeder provided for the first material transport path and disposed upstream from the first filling station and a second particulate or granular material feeder provided for the second material transport path and disposed upstream from the second filling station, and

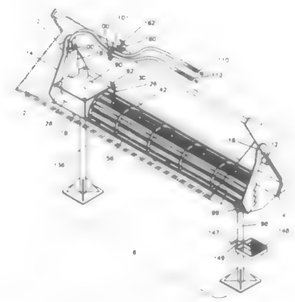
means for transferring the particulate or granular material from the material conveyor to the container conveyor through the first chutes and the second chutes when the container conveyor is stopped.

5,353,851

MATERIAL BAGGING APPARATUS

Richard W. Cline, Southport, Fla., assignor to Grantech Technologies, Inc., Lynn Haven, Fla.

Filed Sep. 9, 1993, Ser. No. 118,876
Int. Cl.[5] B67C *3/26, 3/34*
U.S. Cl. 141—256 10 Claims



1. Apparatus for filling containers from a bucket assembly having front and rear jaws defining an interior chamber therebetween comprising

an attachment adapted to be secured within the interior chamber of the bucket assembly for receiving free flowing solid material, said bucket assembly including means to transmit power to the attachment,

said attachment including a rotatable auger having a distal and a terminal end for conveying said free flowing materials along its rotational axis toward its distant end and means for rotating said auger, said rotating means being attachable to said means to transmit power,

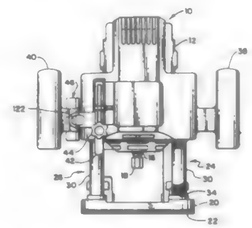
said auger being supported on a base plate located below said auger and upstanding end members located at the opposite ends of said base plate, said end members being provided with openings that rotatably support said auger, said base plate being provided with a discharge opening adjacent to the distal end of said auger and adjacent to one of said upstanding end members and a cage defining an enclosure enclosing said auger, said cage being provided with openings to screen the size of said materials entering said enclosure.

5,353,852

DEPTH OF CUT LOCKING MECHANISM FOR A PLUNGE-TYPE ROUTER

J. Timothy Stolzer, Pickens, and Ronald C. McCurry, West Union, both of S.C., assignors to Ryobi Motor Products Corporation, Easley, S.C.

Filed Sep. 16, 1993, Ser. No. 122,390
Int. Cl.[5] B27C *5/10*
U.S. Cl. 144—134 D 21 Claims



1. A depth of cut locking mechanism for a plunge-type router which locks the position of a router relative to a base plate, the router having a motor housing connected to the base plate by a pair of spatially separated telescoping guides, each of the telescoping guides having a guide sleeve fixedly disposed in the motor housing and a guide tube attached to the base plate, the guide tube is slidably received in the guide sleeve, said locking mechanism comprising:

a release lever pivotably connected to the motor housing, said release lever displaceable between a lock position and a release position;

a mounting bracket securing said guide sleeve in said motor housing, said mounting bracket having a threaded aperture provided therethrough normal to the guide sleeve;

a lock disc having a threaded boss threadably received in said threaded aperture, said lock disc rotatable about an axis concentric with said threaded boss between a lock position and a release position, said lock disc being axially displaced toward said guide sleeve when rotated from said release position toward said lock position and axially displaced away from said guide sleeve when said lock disc is rotated from said lock position toward said release position;

biasing means for producing a torque urging said lock disc to rotate toward said lock position;

connector means for pivotably connecting said lock disc to said release lever to rotate said lock disc from said locked position to said release position against the torque produced by said biasing means in response to a manual displacement of said release lever from said lock position to said release position; and

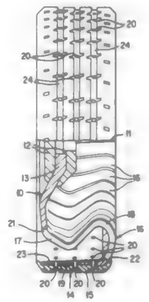
means for frictionally locking said guide tube in said guide sleeve in response to said axial displacement of said lock disc when said lock disc is rotated to said locked position.

5,353,853

SUPPORTING WHEEL

Hans-Erik Hansson, FinspÅng, Sweden, assignor to He Hansson Aktiebolag, Finspang, Sweden

PCT No. PCT/SE91/00457, § 371 Date Jan. 5, 1993, § 102(e) Date Jan. 5, 1993, PCT Pub. No. WO92/00858, PCT Pub. Date Jan. 23, 1992
PCT Filed Jun. 25, 1991, Ser. No. 956,494
Claims priority, application Sweden, Jul. 10, 1990, 9002405-0
Int. Cl.[5] B60C *7/10*
U.S. Cl. 152—11 11 Claims



1. A non-pneumatic supporting wheel comprising:

a central; and

a wheel-rim, having an inner wheel-rim part and an outer wheel-rim part, carried by said central part, said outer wheel-rim part rolling on an underlying surface and said inner wheel-rim part located radially inwards of the outer wheel-rim part;

said inner wheel-rim part including a plurality of curved, elongated, bendable elements which consist of a resilient

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material and are separated from one another in a circumferential direction of the wheel;

each of said curved, elongated, bendable elements having the shape of a recumbent S so that (a) one end of a radially outwardly convex portion of each of said curved, elongated, bendable elements is located on one side of the wheel and is connected with said central part of the wheel and (b) a remote end of a radially inwardly convex portion of each of said curved, elongated, bendable elements is located on an opposite side of the wheel and is connected with said outer wheel-rim part of said wheel-rim;

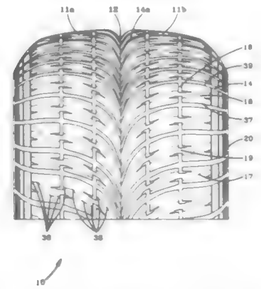
wherein said curved, elongated, bendable elements, in order to take up forces which, when the wheel is subjected to load, act substantially radially between said central part of the wheel and said outer wheel-rim part, are elastically resilient in a radial direction of said wheel during increased bending of said curved, elongated, bendable elements, and wherein said curved, elongated, bendable elements are constructed so that both a sum of each longitudinal bending increment ($\Delta 1_k$, $\Delta 1_m$, $\Delta 1_j$, $\Delta 1_n$) of the curved, elongated, bendable elements and a sum of a product of each longitudinal bending increment ($\Delta 1_j$, $\Delta 1_n$) and a distance (h_j, h_n) between each longitudinal bending increment, respectively, and the underlying surface is zero when the wheel is subjected to normal load in the radial direction.

5,353,854

PNEUMATIC TIRE HAVING LATERALLY CONNECTED LUGS

Samuel P. Landers, Uniontown; William E. Glover, Akron, and John S. Attinello, Hartville, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 8, 1991, Ser. No. 666,327
Int. Cl.[5] B60C *11/11*
U.S. Cl. 152—209 R 18 Claims



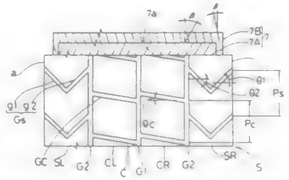
1. A pneumatic automobile tire for high speed use on paved surfaces having a footprint net-to-gross ratio of 50% to 80% and an aspect ratio of 0.35 to 0.80 which has a directional read divided into two annular portions, each said annular portion comprising a plurality of block elements separated by lateral grooves, said block elements extending continuously from a shoulder area of the tire to a midportion of the tread, wherein said block elements have substantially circumferentially aligned notches in leading and trailing lateral groove walls, each said substantially circumferentially aligned notch being defined laterally by a narrow bridge of rubber in said block element, said substantially circumferentially aligned notches and lateral grooves defining lugs, and wherein slots containing tie bars are present in each lug, said slots and substantially circumferentially aligned notches permitting limited independent movement of lugs.

5,353,855

PNEUMATIC RADIAL TIRE

Shinzo Kajiwara; Yoshio Konii, and Minao Yanase, all of Kobe, Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Continuation of Ser. No. 441,973, Nov. 28, 1989, abandoned.
This application Jan. 21, 1992, Ser. No. 825,787
Claims priority, application Japan, Nov. 30, 1988, 63-302983; Nov. 30, 1988, 63-302984; Nov. 30, 1988, 63-302985; Nov. 30, 1988, 63-302988; Nov. 30, 1988, 63-302990
Int. Cl.[5] B60C *11/11*
U.S. Cl. 152—209 R 4 Claims



1. A pneumatic radial tire comprising

a pair of bead portions,

a bead core disposed in each of said bead portions,

a carcass extending between the pair of bead portions and turned up around each of the bead cores,

a tread portion disposed radially outside the carcass and having a pair of tread edges, and

a belt comprising at least two plies of steel cords disposed radially outside the carcass,

said steel belt cords in each of said at least two belt plies laid at an angle of 21 degrees or more with respect to the tire equator,

each of said at least two belt plies having a cord quantity NS smaller than 15.0 mm^2 wherein the cord quantity NS is defined as the total cross sectional area of the steel belt cords S (mm^2) per 10 centimeters width of belt ply,

said tread portion being divided in the axial direction of the tire by three circumferential grooves, the three circumferential grooves including a continuous substantially straight central circumferential groove and a pair of continuous substantially straight side circumferential grooves, into four circumferential regions having substantially equal widths made up of a pair of axially inner circumferential regions, each of said inner circumferential regions being between the central circumferential groove and one of the pair of side circumferential grooves and

a pair of axially outer circumferential regions, one of said outer circumferential regions being between one of the pair of side circumferential grooves and one of said pair of tread edges,

said tread being provided with a plurality of first lateral grooves in regions selected from a group consisting of said inner circumferential regions and said outer circumferential regions, each of said plurality of said first lateral grooves extending across each of the selected circumferential regions,

each of said first lateral grooves having only two ends and a V-shaped configuration formed by only an axially inner portion and an axially outer portion wherein, with respect to the axial direction of the tire, said inner portion is inclined at an angle $\theta 2$ and said outer portion is inclined reversely to the inclination of said inner portion at an angle θ,

the difference between the inclination angles $\theta 1$ and $\theta 2$ being 5 degrees or less,

said V-shaped configurations of all said first lateral grooves being oriented in the same direction, and

at least one end of each said first lateral groove being connected to one of the three circumferential grooves, with each said first lateral groove connecting only at the ends thereof with any one of the three circumferential grooves, wherein

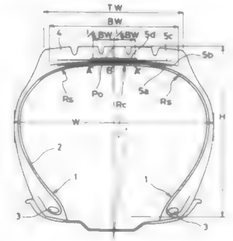
said tread is further provided with a plurality of second lateral grooves, each of said plurality of second lateral grooves being a straight groove, said first lateral grooves are provided in said outer circumferential regions, and said inner circumferential regions are provided with said second lateral grooves extending thereacross.

5,353,856

PNEUMATIC RADIAL TIRE

Atsuo Kishi, and Kazuyuki Kabe, both of Hiratsuka, Japan, assignors to The Yokohama Rubber Company, Ltd., Tokyo, Japan

Filed Jun. 4, 1993, Ser. No. 70,997
Claims priority, application Japan, Jun. 8, 1992, 4-147310
Int. Cl.[5] B60C *3/00, 9/02, 9/20, 11/00*
U.S. Cl. 152—209 R 6 Claims



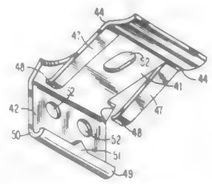
1. A pneumatic radial tire having a tread, at least one carcass ply inscribed on said tread and extending to left and right beads, and a plurality of belt plies disposed on the tread side of an outer circumferential portion of said at least one carcass ply, the tire being characterized in that, when said tire is inflated from a non-inflated state, in which the inner pressure thereof is 5% of a normal level, to a normal inner pressure: a central region of the outer surface of said tread in a meridional cross section of said tire which is between two points P_1, P_1' axially spaced from the center P_0 of a tread width to the left and right along the outer surface of said tread by a distance L, which is expressed by the formula $0.25TW \leqq L < 0.50TW$, with respect to an axial tread width TW of a ground contacting portion of said tread grows outward in the radial direction of said tire; shoulder regions on both axially outer sides of said two points P_1, P_1' contracting inward in the radial direction of said tire; a radius of curvature R_2 of a mid region formed between two intermediate points P_2, $P_2$40 , axially positioned halfway respectively between the center P_0 of said tread width and shoulder end portions on the left and right sides thereof along the outer surface of the tread, in such a manner that this mid region includes said two intermediate points P_2, P_2', and becomes smaller than a radius of curvature R_1 of the same mid region in a non-tire-inflated state; and a radius of curvature Rc in mm of a carcass line in said central region formed between two points A,A′, which are spaced from a point B at an axial position on said at least one carcass ply corresponding to said center P_0 of the tread width to left and right by a distance equal to 1/6 of a maximum width BW of said belt plies, in such a manner that said central region includes said point B and said two points A,A′, has, when said tire is in a non-inflated state, a value defined by the equation $Rc = C \cdot (W/H)^6$, wherein C is constant in the range of 500–700, W a maximum width in mm of said tire filled with air to a normal inner pressure, and H the height in mm in cross section of said tire filled with air to a normal inner pressure, a radius of curvature Rs of carcass lines in said shoulder regions on the outer sides of both of said two points A, A′ being smaller than said radius of curvature Rc.

5,353,857

BRACKET AND HEADRAIL COMBINATION FOR A BLIND

Richard N. Anderson, Whitesville, Ky., assignor to Hunter Douglas, Inc., Upper Saddle River, N.J.

Continuation of Ser. No. 854,341, Mar. 18, 1992, abandoned.
This application Oct. 20, 1993, Ser. No. 139,976
Int. Cl.[5] E06B *9/30*
U.S. Cl. 160—178.1 14 Claims



1. A bracket for supporting a headrail and a blind in a window opening, said bracket comprising:

a rear body portion, said rear body portion having longitudinally extending top and bottom edges;

a top body portion extending horizontally from said top edge of said rear body portion;

mounting means associated with at least one of said body portions for mounting said bracket to said window opening;

support means for restricting said headrail from downward movement;

restraining means for restricting movement of said headrail horizontally toward or away from said rear body portion;

a restraining barb associated with said support means for engaging said headrail at a point, said restraining barb being substantially triangular in shape and ending in a point;

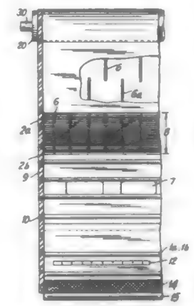
spring means for engaging said headrail and for urging said headrail into said restraining barb, said spring means and said restraining barb creating friction restricting said headrail from lateral movement in said bracket.

5,353,858

CLOSING ELEMENT FOR ROOMS

Jörg Hartmann, Moers, Fed. Rep. of Germany, assignor to Frank Lange, Siegen, Fed. Rep. of Germany

Filed Jul. 27, 1992, Ser. No. 919,790
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1991, 4125269
Int. Cl.[5] A47G *5/02*
U.S. Cl. 160—264 23 Claims



1. A closing element for rooms, the closing element extending over a surface area and capable of being rolled up in a

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rolling direction, the closing element comprising a core zone and outer portions on both sides of the core zone, bending resistant reinforcement layers for increasing transverse stiffness being embedded within the closing element on both sides of the core zone, the reinforcement layers including individual members extending transversely of the rolling direction, wherein at least the core zone is of a flexible material of middle-soft formulation of approximately 70–85 shore A having a high resistance against shear stress and elongation so as to be resistant to shifting of the reinforcement members.

5,353,859

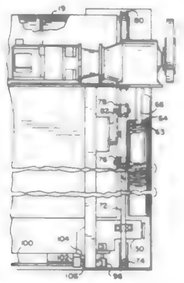
ROLLER DOOR APPARATUS

John Oltahfer; Glenn Nicol, both of Dickeyville, Wis.; David Noon, Dubuque, Iowa; David Leppert, Zwingle, Iowa; Mark Ungs, Dubuque, Iowa; Peter S. Schulte, East Dubuque, Ill., and Richard J. Dunkin, Dubuque, Iowa, assignors to Rite-Hite Corporation, Milwaukee, Wis.

Filed Sep. 14, 1992, Ser. No. 944,487

Int. Cl.[5] E06B *9/56*

U.S. Cl. 160—310 **15 Claims**



1. Door apparatus comprising: a roller, means journaling the roller for reversible rotation about a central longitudinal roller axis, an end rail for reciprocable movement in a linear path between a first position in adjacent relation to the roller and a second position away from the roller, a flexible curtain for closing a door opening in the second position of the end rail and having one end secured to the end rail and having an opposite end portion secured to the roller to be wound on the roller during movement of the end rail from the second position to the first position and to be unwound from the roller during movement of the end rail from the first position to the second position, a reversible, variable-speed electric motor drive coupled to the roller and operable in a servo configuration, and also operable for dynamic braking of the roller, and a solid state electrical controller for varying the speed of the motor drive during each movement of the end rail in either direction for rapid acceleration of the curtain to a high speed during an initial portion of each movement and for control of deceleration of the curtain to zero velocity during a final portion of each movement, the solid state controller also comprising means for controlling dynamic braking of the electric motor drive for control of the deceleration.

5,353,860

CASTING UNIT FOR THE MANUFACTURING OF A PLURALITY OF CAST PARTS

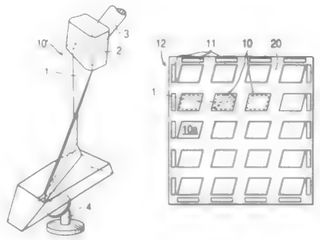
Fritz Staub, Seuzach; Daniel Stahl, Ossingen, both of Switzerland, and Jürgen Wortmann, Weichs, Fed. Rep. of Germany, assignors to Sulzer-MTU-Casting Technology GmbH, Fed. Rep. of Germany

Filed Apr. 6, 1993, Ser. No. 43,481

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1992, 4212410

Int. Cl.[5] B22D *27/04*

U.S. Cl. 164—122.1 **10 Claims**



1. A casting unit for manufacturing a plurality of cast parts by one of directed solidification and monocrystal formation, comprising:

a mold shell including a plurality of individual molds corresponding to the cast parts, said mold shell having a cooling plate forming a lower end of the mold shell;

wherein the individual molds are arranged in an array maintaining narrow distances between the individual molds; and

a ring of heat sources integrated in the mold shell surrounding the array of individual molds.

7. A process for manufacturing cast parts by directed solidification or monocrystal formation in a vacuum casting installation, the process comprising the steps of:

using a casting unit including a mold shell including a plurality of individual molds corresponding to the cast parts, said mold shell having a cooling plate forming a lower end of the mold shell; wherein the individual molds are arranged in an array maintaining narrow distances between the individual molds; a ring of heat sources integrated in the mold shell surrounding the array of individual molds; and

adapting the heat capacity of the heat sources to the heat capacity of the casting unit in such a manner that the lateral heat flow to the edge-standing individual molds of the mold shell of the exterior side and of the interior side is at least approximately the same.

5,353,861

ROLL CASTING PROCESS

Rudolf Roder, Thun, and Bruno Frischknecht, Gwatt/Thun, both of Switzerland, assignors to Lauener Engineering AG, Gwatt/Thun, Switzerland

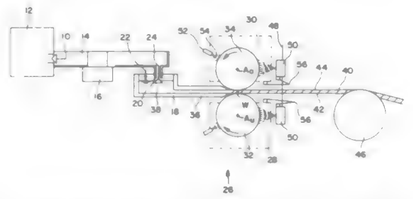
Filed Apr. 9, 1992, Ser. No. 865,492

Claims priority, application Switzerland, Apr. 10, 1991, 01069/91

Int. Cl.[5] B22D *11/06, 11/07, 11/20*

U.S. Cl. 164—454 **16 Claims**

1. Process for the early detection and prevention of sticking when roll casting metals, which comprises: roll casting metal strip in a roll nip of casting rolls to provide a roll cast metal strip with a strip surface; passing the roll cast metal strip from the roll nip to a deflection roller downstream of the roll nip; measuring strip movements in a direction perpendicular to the strip surface between the roll nip and the deflection roller by continuously measuring said movements over small intervals



of time; and altering process parameters in a program-controlled manner when strip movements occur.

5,353,862

HUMIDITY CONTROL DEVICE OF AIR CONDITIONER

Kazuhiko Akiyama, Fuji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 30, 1993, Ser. No. 83,540

Claims priority, application Japan, Aug. 26, 1992, 4-227261

Int. Cl.[5] F24F *3/14*

U.S. Cl. 165—21 **30 Claims**

OPERATION MODE / SET TEMPERATURE BY REMOTE CONTROLLER	DRYING	HEATING
HIGH	70%	50%
STANDARD	60%	40%
LOW	50%	30%

1. A humidity control device of an air conditioner having an air conditioner body and being capable of controlling a humidity as well as conditioning air during heating, drying and like operations, said humidity control device comprising:

means for detecting a humidity in a room to be subjected to air conditioning operation;

means for manually setting a humidity in the room in a plurality of operation setting modes;

a target humidity setting means for setting a target humidity in accordance with operation modes of the humidity manually setting means;

control means for comparing the humidity detected by the humidity detecting means with the humidity set by the humidity manually setting means and controlling the compared humidity.

5,353,863

PENTIUM CPU COOLING DEVICE

Chi T. Yu, 9F-1, No. 1, Lane 115, Sec. 3, Ming Chuan E. Rd., Taipei, Taiwan

Filed Mar. 7, 1994, Ser. No. 206,941

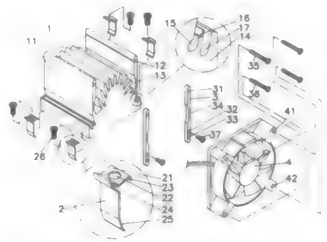
Int. Cl.[5] H01L *23/467*

U.S. Cl. 165—80.3 **2 Claims**

1. A pentium CPU cooling device comprising:

a radiating flange mounted on the CPU of a computer system to dissipate heat from the CPU, said radiating flange comprising two upward extension walls longitudinally and vertically disposed at two opposite sides and having a respective screw hole longitudinally disposed at one end, two curved chambers longitudinally disposed at two opposite sides within the upward extension walls, and two mounting portions longitudinally and symmetrically disposed at two opposite sides, each mounting portion of said radiating flange comprising an inner longitudinal groove disposed at an inner side near the root of either upward extension wall, an outer longitudinal groove disposed at an outer side, and an intermediate longitudinal groove spaced between said inner longitudinal groove and said outer longitudinal groove;

a plurality of clamping plates to fasten said radiating flange to said CPU, each clamping plate comprising a hooked portion at one end hooked in the intermediate longitudinal groove on either mounting portion of said radiating flange, a turn in the middle, a flat mounting portion connected between said hooked portion and said turn and covered on the respective mounting portion of said radiating flange at the top, a center through hole on the flat mounting portion of the respective clamping plate through which a screw is threaded into the outer longitudinal groove of the respective mounting portion of said radiating flange to hold down the flat mounting portion of the respective clamping plate, and a clamping tail extended from said turn at an opposite end and clamped on said CPU at one side;



two locating strips respectively connected to the two upward extension walls of said radiating flange at one end, each locating strip comprising a first mounting hole at one end fastened to the screw hole on either upward extension wall by a screw, a second mounting hole spaced from said first mounting hole and fastened to the inner longitudinal groove of either mounting portion of said radiating flange by a screw, a third mounting hole at an opposite end, and an arched notch spaced between said first and second mounting holes and fitting over the periphery of either curved chamber of said radiating flange at an outer side for permitting currents of air to pass; and

an electric fan controlled to cause currents of air in carrying heat away from said radiating flange and said CPU, said electric fan comprising two first mounting holes bilaterally disposed at the top and respectively fastened to the first mounting hole of either locating strip and the screw hole of either upward extension wall, and two second mounting holes bilaterally disposed at the bottom and respectively fastened to the third mounting hole of either locating strip by a respective screw.

5,353,864

MASS FLOW COOLER

Harvey R. Greenland, Hatboro, and John A. Canterbury, Doylestown, both of Pa., assignors to FMC Corporation, Chicago, Ill.

Filed Mar. 1, 1993, Ser. No. 24,702

Int. Cl.[5] F28F *27/00;* **F28D** *7/00*

U.S. Cl. 165—96 **5 Claims**

1. An apparatus for cooling particulate material comprising:

a vertical bin having a top end, a bottom end, a material inlet near the top end and a material discharge in the bottom end;

the material discharge comprising a plurality of orifices through which the particulate material may flow;

a plurality of vertical, tubular heat exchanger elements, each having an open top end and a sealed bottom end and

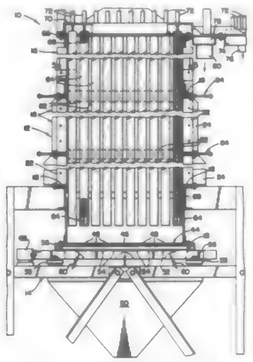
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extending from the top of the bin toward the bottom of the bin;

a plurality of fluid distribution tubes corresponding to the number of heat exchanger elements, each fluid distribution tube having an open top end and an open bottom end and extending through the top end of a corresponding heat exchanger element toward the bottom end of the heat exchanger element;

the top end of each fluid distribution tube being connected to a source of cooling fluid;

means positioned below the material discharge for controlling the rate at which the material flows through the bin;



wherein the means for controlling comprises a discharge plate having a plurality of orifices extending therethrough;

wherein the means for controlling further comprises means for vibrating the discharge plate;

wherein the means for vibrating is selectively adjustable to control the frequency or amplitude of the vibrations; and

means for sensing the amount of material within the bin and controller means responsive to the sensing means for controlling the means for vibrating.

5,353,865

ENHANCED IMPINGEMENT COOLED COMPONENTS

Eugene F. Adiutori, W. Chester; Byron A. Pritchard, Jr., Loveland, and Stephen Aleshin, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Mar. 30, 1992, Ser. No. 860,397

Int. Cl.[5] F28F *13/18*

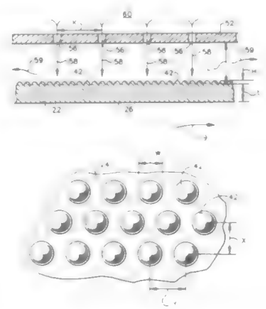
U.S. Cl. 165—133 **5 Claims**

1. An improved component heat transfer assembly for use in a gas turbine engine, the assembly comprising:

a. a component including a textured surface: and

b. impingement means spaced from the textured surface for directing an impinging fluid to directly impinge upon the textured surface; and

c. wherein the textured surface comprises an array of protuberances extending from a first surface and wherein the impingement means is spaced from the protuberances for directing an impinging fluid to directly impinge upon a plurality of the protuberances;



d. wherein the protuberances are generally semi-spherical in shape.

5,353,866

HEAT TRANSFER FINS AND HEAT EXCHANGER

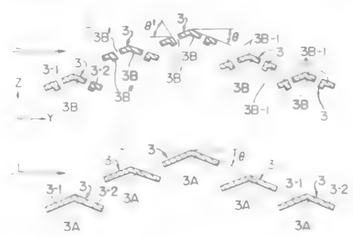
Hironobu Ueda, Kudamatsu; Toshio Hatada, Tsuchiura; Yoshifumi Kunugi, Nirasaki; Tomihisa Oouchi, Tsukuba; Sigeo Sugimoto, Ushiku; Tamio Shimizu, and Kyoji Kohno, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 574,526, Aug. 28, 1990, abandoned, which is a continuation of Ser. No. 279,120, Dec. 2, 1988, abandoned. This application Mar. 29, 1993, Ser. No. 38,190

Claims priority, application Japan, Dec. 4, 1987, 62-305804; Apr. 20, 1988, 63-95614

Int. Cl.[5] F28F *1/32*; **F28D** *9/00*

U.S. Cl. 165—151 **10 Claims**



1. A heat transfer fin for a heat exchanger having at least two heat transfer tubes for a first fluid flowing therethrough, said fin comprising a fin plate including at least two tube mounting sections spaced from each other and a louvered section extending between and connected to said two tube mounting sections;

said tube mounting sections having collars defining therein tube mounting holes for receiving therein said heat transfer tubes in heat transfer contact with said collars so that a second fluid can flow through a passage between said heat transfer tubes and across said louvered section in heat transfer relationship therewith;

said louvered section having a plurality of elongated and substantially parallel louver segments arranged in the direction of the flow of said second fluid and extending substantially in parallel with a line extending between axes of said tube mounting holes in said at least two tube mounting sections;

said louver segments having substantially parallel longitudinal side edges separated from each other;

each of said elongated louver segments having longitudinal end portions respectively integrally connected to said two tube mounting sections and a longitudinal central portion extending between and integrally connected to said longitudinal end portions;

said louver segments being arranged so that adjacent louver segments delimit an opening therebetween over at least said longitudinal end portions;

each of said elongated louver segments having an angled configuration as viewed in its section taken in a plane substantially parallel to the direction of the flow of said second fluid and substantially parallel to said axes of said tube mounting holes, so that each of said louver segments imparts a resistance to the flow of said second fluid across said louvered section;

each of said longitudinal end portions of each of said elongated louver segments having an upper surface and a lower surface and at least one slit extending from the upper surface tot he lower surface between said openings defined between adjacent louver segments which allows a part of said second fluid flow to pass therethrough so that the resistance imparted by each louver segment to said second fluid flow is reduced in each of said longitudinal end portions by the presence of said at least one slit to allow said second fluid to flow at a higher speed at zones of said passage adjacent said heat transfer tubes than at a central zone of said passage adjacent said longitudinal central portions of each louver segment;

and said longitudinal central portions of each of said elongated louver segments is a solid non-slitted member between said openings defined between adjacent segments.

5,353,867

HEAT EXCHANGER, A METHOD OF MANUFACTURING SAME, AND APPLICATIONS

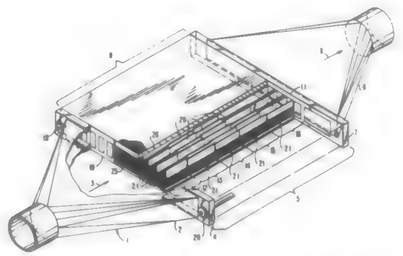
Martinus J. Jaspers, Nuenen, Netherlands, assignor to Akzo Nobel nv, Arnhem, Netherlands

Filed Mar. 26, 1993, Ser. No. 37,942

Claims priority, application Netherlands, Mar. 31, 1992, 9200590

Int. Cl.[5] F28F *3/12*

U.S. Cl. 165—165 **32 Claims**



1. A heat exchanger having on a first and a second side inlets and outlets, respectively, for a heat exchanging medium and having a heat exchanging component made of a high thermal conductive material, in which the heat exchanging component has a structure permeable to the heat exchanging medium, and in which component channels positioned side by side and passing from the inlet side to the outlet side are formed, such that medium flowing in via the inlet channels can flow to adjacent outlet channels at an angle to the direction of entry, via the heat exchanging component, said high thermal conductive material being in the form of a number of lamellae assembled in the form of a package, the lamellae individually being permeable to the heat exchanging medium.

5,353,868

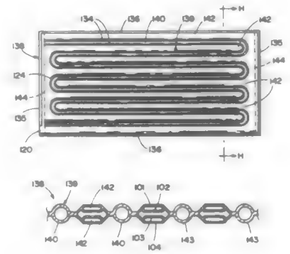
INTEGRAL TUBE AND STRIP FIN HEAT EXCHANGER CIRCUIT

Roy W. Abbott, 450 N. Hubbards La., Louisville, Ky. 40207

Filed Apr. 19, 1993, Ser. No. 49,823

Int. Cl.[5] F28F *1/32*

U.S. Cl. 165—171 **25 Claims**



1. A roll bonded integral tube and strip fin heat exchanger circuit comprising:

a first thermally conductive sheet of material roll bonded at preselected points to a second sheet of thermally conductive material bonding said first sheet and said second sheet together at said preselected points defining a generally serpentine pattern forming an integral roll bonded laminate, said integral roll bonded laminate being expanded with a fluid such as gas integrally forming a refrigerant conduit and at least one air circuit adjacent thereto; and

said air conduit being lanced forming at least two fin strips having a plurality of strip fins with slits thereinbetween, whereby air circulates through said air conduit and said slits, and around said fins and said refrigerant conduit to increase heat transfer between said air and said refrigerant conduit.

5,353,869

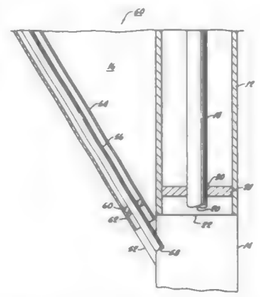
METHOD AND APPARATUS FOR PRODUCING EXCESSIVELY HOT HYDROGEOTHERMAL FLUIDS

William C. Allen, Pasadena, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Mar. 12, 1993, Ser. No. 30,795

Int. Cl.[5] E21B *36/00, 43/00*

U.S. Cl. 166—302 **6 Claims**



1. A method for reducing the temperature of a produced hydrogeothermal fluid, the method comprising the steps of:

(a) contacting a self-rising, heated hydrogeothermal fluid with a cooling fluid proximate to or below the intake portion of a production tubing to cool the hydrogeothermal fluid rising in the production tubing, at least a portion

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of the production tubing being axially positioned within a well casing of a production well; and

(b) producing the cooled hydrogeothermal fluid from the production well,

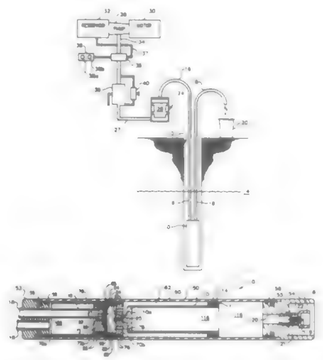
wherein step (a) includes the step of introducing the cooling fluid through an injection well that intersects the well bore of the production well.

5,353,870

WELL PURGING AND SAMPLING PUMP

Richard K. Harris, 13457-64th Pl. NE., Kirkland, Wash. 98034

Filed May 28, 1993, Ser. No. 68,143
Int. Cl.[5] E21B *43/12*; F04B *19/02*
U.S. Cl. 166—68 8 Claims



1. A variable flow rate, non-contaminating, well purging and sampling pump, comprising:

a substantially hollow cylindrical pump housing closed at its first and second ends and having an intake port opening radially through the housing cylindrical wall intermediate the first and second closed ends;

a hydraulically actuated rim driven substantially hollow cylindrical pumping piston substantially closed at one end and mounted coaxially within said pump housing for reciprocating between a delivery stroke and an intake stroke, a one-way intake valve disposed on the substantially closed end of said pumping piston for opening to draw fluid into a pumping chamber during an intake stroke;

a stationary annular head disposed in coaxially slideably sealed engagement with the interior wall of said hollow cylindrical pumping piston adjacent its open end, said stationary annular head is supported by an end of a delivery conduit that passes through said first end of said pump housing;

a one-way delivery valve mounted in said stationary annular head for opening to discharge fluid in said pumping chamber between said annular head and the substantially closed end of said pumping piston during a delivery stroke;

a hydraulic actuating fluid inlet passing through said first closed end of said housing so as to communicate a source of alternately pressurized and vented hydraulic actuating fluid into said housing so as to drive said pumping piston at the rim of its substantially open cylindrical end away from said first end of said pump housing in an intake stroke; and

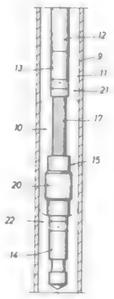
a gas spring return piston mounted for coaxial sliding sealed reciprocation within said pump housing adjacent its second closed end so as to trap compressible gas in a variable volume chamber therebetween, said pumping piston forcing said gas spring return piston to compress gas in said variable volume chamber during an intake stroke to store energy and said compressed gas powering said gas spring return piston to drive said pumping piston in a delivery stroke when the hydraulic drive pressure acting on the pumping piston is vented.

5,353,871

INFLATABLE PACKER WITH PROTECTIVE RINGS

David M. Eslinger, Broken Arrow, Okla., and Robert M. Sorem, Sugar Land, Tex., assignors to Dowell Schlumberger Incorporated, Sugar Land, Tex.

Filed Sep. 28, 1993, Ser. No. 128,353
Int. Cl.[5] E21B *33/127*
U.S. Cl. 166—187 4 Claims



1. An inflatable well packer apparatus comprising: a tubular body member carrying upper and lower connector sleeves; armoring means extending between and connected to said connector sleeves; an inner elastomer sleeve member between said body member and said armoring means; an outer elastomer sleeve member covering at least a portion of said armoring means; an upper stress ring mounted adjacent said upper connector sleeve and a lower stress ring mounted adjacent said lower connector sleeve, each of said stress rings surrounding an end portion of said armor means; and protective ring means positioned inside each of said stress rings for distributing localized loads applied by said end portions of said armor means to said stress rings during inflation and expansion of said packer apparatus to prevent the formation of cracks in said stress rings in response to said loads.

5,353,872

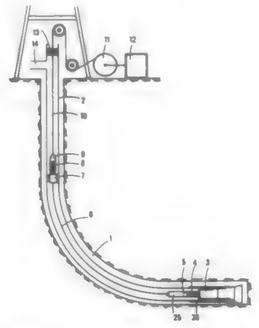
SYSTEM, SUPPORT FOR CARRYING OUT MEASURINGS AND/OR SERVICINGS IN A WELLBORE OR IN A WELL IN THE PROCESS OF BEING DRILLED AND USES THEREOF

Christian Wittrisch, Rueil-Malmaison, France, assignor to Institut Francais du Petrole, Malmaison Cedex, France

Filed Aug. 3, 1992, Ser. No. 923,560
Claims priority, application France, Aug. 2, 1991, 91 09916
Int. Cl.[5] E21B *47/12*
U.S. Cl. 166—250 18 Claims

1. A system for carrying out measurements and/or services in a wellbore or in a well in the process of being drilled, said system comprising, at the end of a drill string, an assembly comprising a sub adapted to receive a sonde comprising measuring and/or servicing means, said drill string extending up to the surface, said sonde being fastened mechanically to a lower end of a cable section comprising electrical conductors and having another end fastened to a support which is adapted to be made integral with said drill string and which is integrally connected to a first intermediate electrical connector; a second intermediate electrical connector adapted to cooperate with said first intermediate connector; said second intermediate electrical connector being fastened mechanically to a lower end of a cable comprising electrical conductors and being

linked electrically to the surface; said support being actuated within said drill string by remote control from the surface.; the support connected to the first intermediate electrical connector being placed in an inner channel of a conduit of the drill string and exhibiting two states wherein in a first state said



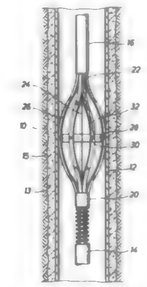
support is anchored to said channel and in a second state said support is freely displaceable in said channel; a change from one state to the other being achieved through control from said cable linked to the surface and said support being adapted to be anchored in any zone of the inner channel of said conduit.

5,353,873

APPARATUS FOR DETERMINING MECHANICAL INTEGRITY OF WELLS

Claude E. Cooke, Jr., 8720 Memorial Dr., Houston, Tex. 77024

Filed Jul. 9, 1993, Ser. No. 89,047
Int. Cl.[5] E21B *47/06, 47/10*
U.S. Cl. 166—253 21 Claims



1. Apparatus for detecting flow of a fluid at a selected depth outside a casing of a well comprising:

means for positioning a plurality of temperature sensors at fixed points in contact with the inside wall of the casing at the selected depth, the sensors being in proximity to a plane transverse to the axis of the casing;

means for deflecting fluid flow inside the casing away from the sensors; and

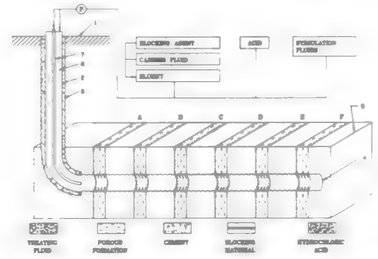
electronic means for measuring differences in temperature of the casing wall at the points of contact.

5,353,874

HORIZONTAL WELLBORE STIMULATION TECHNIQUE

Matthew C. Manulik, 1902 N. "I", Midland, Tex. 79705

Filed Feb. 22, 1993, Ser. No. 20,641
Int. Cl.[5] E21B *43/25*
U.S. Cl. 166—281 7 Claims



1. A method of treating a downhole formation in a horizontal or deviated wellbore having multiple zones of porosity comprising the steps of:

step 1; flowing or pumping a carrier fluid downhole to the lowermost zone of porosity, thereby subjecting each of the multiple zones of porosity to the carrier fluid;

step 2; admixing a blocking agent with said carrier fluid and thereby translocating the blocking agent to a location where the blocking agent is free to flow along the lower end of the borehole and seal the zones of porosity, wherein

said blocking agent comprises a mixture of acid soluble material which is relatively insoluble in said carrier fluid; that is of a size to block the pores or fractures of the zones of porosity and thereby prevent or restrict flow into the zones;

step 3; opening a selected zone of said multiple zones of porosity by spotting a solution of acid downhole within said selected zone of porosity to be opened whereby the solution of acid degrades the blocking agent and the solubilized blocking agent becomes admixed with the carrier fluid and is translocated from the borehole by the carrier fluid;

step 4; conveying a treatment fluid to the selected zone downhole and pressuring the treatment fluid into the opened selected zone until the zone is treated.

5,353,875

METHODS OF PERFORATING AND TESTING WELLS USING COILED TUBING

Roger L. Schultz, Richardson, Tex., and Gary O. Harkins, Wassenaar, Netherlands, assignors to Halliburton Company, Houston, Tex.

Division of Ser. No. 938,066, Aug. 31, 1992, Pat. No. 5,287,741.
This application Nov. 8, 1993, Ser. No. 148,294
Int. Cl.[5] E21B *43/116*
U.S. Cl. 166—297 6 Claims

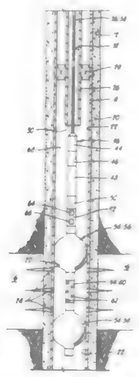
1. A method of perforating a new subsurface zone of a production well, said well having a casing set in a borehole intersecting said new subsurface zone and a pre-existing subsurface zone, said casing having a casing bore and having pre-existing perforations communicating said casing bore with said pre-existing subsurface zone, said well further having a production tubing string received within said casing and having a production tubing bore, and a production packer sealing between said casing bore and said production tubing string above said pre-existing perforations, said well having previously been on production by flowing well fluid from said pre-existing subsurface zone through said pre-existing perfora-

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tions and through said production tubing bore, said method comprising:

(a) shutting down production of said well through said production tubing bore;

(b) leaving said production tubing string in place in said well and running a coiled tubing test string downward into said production tubing string, said coiled tubing test string including a coiled tubing string and a perforating gun carried by said coiled tubing string;



(c) placing said perforating gun adjacent said new subsurface zone;

(d) firing said perforating gun and thereby forming new perforations communicating said casing bore with said new subsurface zone;

(e) after step (d), removing said coiled tubing test string from said production tubing; and

(f) resuming production of said well up through said production tubing bore.

5,353,876

METHOD AND APPARATUS FOR SEALING THE JUNCTURE BETWEEN A VERTICLE WELL AND ONE OR MORE HORIZONTAL WELLS USING MANDREL MEANS

Alfred R. Curington, The Woodlands; L. Cameron White, Houston, and Daniel S. Bangert, Kingwood, all of Tex., assignors to Baker Hughes Incorporated, Del.

Filed Aug. 7, 1992, Ser. No. 926,893

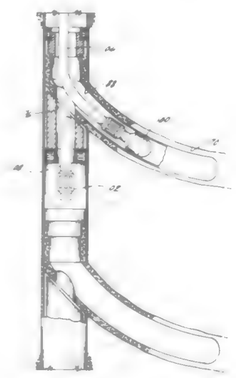
Int. Cl.[5] E21B *33/10*

U.S. Cl. 166—313 **46 Claims**

1. A method for sealing the intersection between a primary borehole and a branch borehole comprising the steps of:

installing guide means in said primary borehole, said guide means being defined by at least one housing positioned at a location proximate to the intersection between a primary borehole and a selected branch borehole previously formed or to be formed, said housing having at least one upper passageway and at least two lower passageways, a first of said lower passageways being associated with diverter means attached to said guide means;

establishing communications between said first lower passageway and said selected branch borehole, wherein said selected branch borehole communicates with said first



lower passageway to thereby effect a seal between said primary and branch boreholes.

5,353,877

ELECTRICALLY CONTROLLED LATCH FOR WELL APPLICATIONS

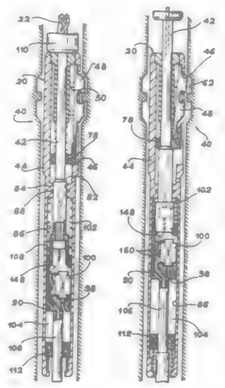
Jean-Luc DeCorps, Anthony, and Ting Lau, Fontainebleau, both of France, assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Mar. 4, 1993, Ser. No. 26,344

Claims priority, application France, Mar. 5, 1992, 92 02642

Int. Cl.[5] E21B *23/04, 31/20*

U.S. Cl. 166—385 **19 Claims**



1. A device for unlatching a wireline assembly suspended from a cable end latched via outwardly resiliently urged locking means to a downhole assembly placed in a well, comprising:

control means engageable with said locking means for retracting the locking means operable by tension exerted on the cable; and

unlatching authorization means normally occupying a state in which said control means are locked, said unlatching authorization means being responsive to an unlatching authorization signal transmitted via the cable from the surface to take up a state in which the control means are unlocked and tension exerted on the cable is effective to operate said control means to retract said locking means.

9. A method of operating a wireline assembly suspended from a cable relative to a downhole assembly placed in a well, wherein

latching of a wireline assembly into the downhole assembly is performed automatically by co-operation between complementary abutment surfaces extending perpendicularly to a longitudinal axis common to said assemblies and formed respectively on outwardly resiliently urged retractable keys of the wireline assembly and in a complementary recess of the downhole assembly and unlatching comprises the steps of:

transmitting an unlatching authorization signal from the surface to the wireline assembly via the cable to unlock a control means disposed in said wireline assembly for retracting said keys; and

exerting tension on the cable so as to actuate said control means to cause the keys to be retracted, thereby disengaging the complementary abutment surfaces.

5,353,878

HORSESHOES AND METHOD FOR THEIR PREPARATION

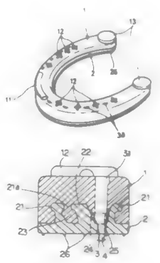
Byung S. Lee, Seoul, Rep. of Korea, assignor to Nova Horseshoe Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 11, 1992, Ser. No. 990,788

Claims priority, application Rep. of Korea, Dec. 12, 1991, 91-22096; Apr. 22, 1992, 92-6709; Oct. 20, 1992, 92-19266

Int. Cl.[5] A01L *1/00, 7/02*

U.S. Cl. 168—13 **11 Claims**



7. A horseshoe comprising:

a shock absorbing layer constituting a bottom layer of said horseshoe and being adapted to absorb shock generated in racing of a horse, said shock absorbing layer being made of a shock absorbing material and including a plurality of protrusions on its bottom surface in order to improve abrasion resistance thereof, said protrusions of the shock absorbing layer comprising an arc-shaped protrusion which is formed at the front of said bottom surface and a pair of circular protrusions which are downwardly formed on both ends of said layer, and

a metal frame for directly contacting a horse's hoof, said metal frame being coupled to an upper surface of said shock absorbing layer and including on its lower surface three types of protrusions providing two types of depressions therebetween with a plurality of nail holes formed in one of said two types of depressions, whereby nails may be driven through said metal frame, the material of said shock absorbing layer filling said depressions so that said protrusions and depressions improve the coupling force between said shock absorbing layer and said metal frame.

5,353,879

DOOR HAVING SMOKE REDUCING APPARATUS ASSOCIATED THEREWITH

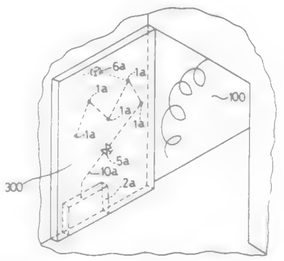
Shigeo Watanabe, Gifu; Kenji Okazaki, Ichinomiya; Niichi Hayashi, Hashima, and Teruo Yamada, Nagoya, all of Japan, assignors to Kabushiki Kaisha Nagao Kogyo, Nagoya, Japan

Division of Ser. No. 629,627, Dec. 18, 1990, abandoned. This application Aug. 25, 1993, Ser. No. 111,399

Claims priority, application Japan, Dec. 18, 1989, 1-327796; Dec. 18, 1989, 1-327797; Dec. 18, 1989, 1-327798; Dec. 18, 1989, 1-327800

Int. Cl.[5] A62C *2/06*

U.S. Cl. 169—52 **13 Claims**



1. A door including an apparatus for reducing smoke, the door comprising:

a door body;

at least one nozzle mounted upon said door body;

a source of a de-smoking liquid; and

means for connecting said at least one nozzle to said source of the de-smoking liquid.

5,353,880

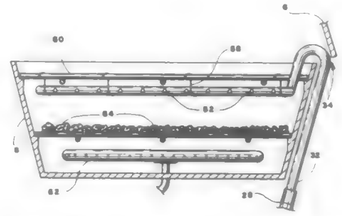
FLAME EXTINGUISHER SYSTEM FOR A BARBECUE

Carroll D. Green, 193 High St., Wakefield, R.I. 02879

Filed Sep. 3, 1993, Ser. No. 116,580

Int. Cl.[5] A62C *3/00*

U.S. Cl. 169—65 **9 Claims**



1. A barbecue grill in combination with a flame extinguishing system, comprising:

(a) a firebox having a lower shell;

(b) an upright frame supporting the lower shell of the firebox;

(c) a reservoir for containing a flame extinguishing fluid, said reservoir being supported on the upright frame;

(d) a fluid discharge conduit, said conduit having an inlet end in fluid communication with the reservoir and a distal end disposed within said lower shell; and,

(e) means for delivering the flame extinguishing fluid from the reservoir to said distal end of said fluid discharge conduit, whereby said flame extinguishing fluid is delivered into said lower shell.

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5,353,881

COUNTER-ROTATING TWIN SHAFT SYSTEM FOR GARDENING MACHINES

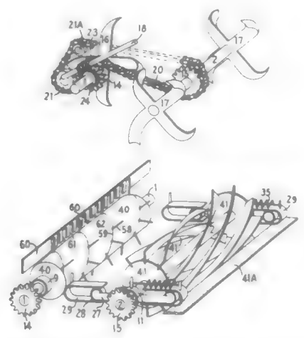
Kai S. Lee, and Esther W. Lee, both of 5235 Raborn, Kalamazoo, Mich. 49005

Continuation-in-part of Ser. No. 789,063, Nov. 7, 1991, Pat. No. 5,224,552, which is a continuation-in-part of Ser. No. 672,380, Mar. 20, 1991, Pat. No. 5,101,911. This application Jul. 6, 1993, Ser. No. 88,152

The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.

Int. Cl.[5] A01B *33/02*

U.S. Cl. 172—52 23 Claims



1. A counter rotating twin shaft gardening system comprising:

two shafts rotatably mounted on a frame, one of said two shafts being mounted forward of the other of said two shafts;

a driven member provided on each of said two shafts, said shafts being drivingly connected together to rotate in directions opposite to each other;

one of a material working device and a material shearing device connected with at least one of said two shafts; and

a driving shaft operatively connected to drive each said driven member.

5,353,882

SCREWING APPARATUS

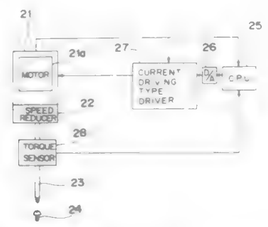
Hiroyuki Inoue, Uji; Keiji Fujiwara, Hirakata; Tomomi Ogawa, Kofu, and Masumi Tezuka, Yamanashi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 17, 1993, Ser. No. 168,361

Claims priority, application Japan, Dec. 18, 1992, 4-338197

Int. Cl.[5] B25B *23/14*

U.S. Cl. 173—176 8 Claims



1. A screwing apparatus comprising:

a multi-phase motor for rotating a bit, installed on the multi-phase motor, for rotating a screw; and

a control device for controlling a rotational speed of the multi-phase motor by calculating a rotational speed of the bit based on commutation signals outputted from sensors installed on the multi-phase motor; and controlling a torque value of the bit by outputting instructions to the motor so that the bit is rotated at a predetermined torque value.

5,353,883

DRILLING TOOL OF THE DISPLACING TYPE

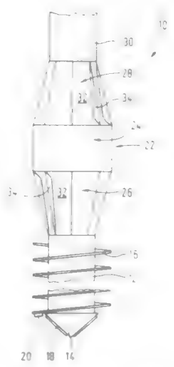
Hinrich Kattentidt, Darmstadt-Eberstadt, and Magnus Mauch, Göppingen, both of Fed. Rep. of Germany, assignors to DEL-MAT Maschinenfabrik Reihnold Dornfeld GmbH, Esslingen, Fed. Rep. of Germany

Filed Jun. 28, 1993, Ser. No. 83,334

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1992, 4220976

Int. Cl.[5] E21B *7/00*

U.S. Cl. 175—19 4 Claims



1. A drilling tool of the displacing type, comprising

a) a lower drill portion (**12**) having a cylindrical core and a helical rib (**16**) carried thereby, a drill bit (**14**) being carried by the lower drill portion (**12**),

b) a displacing head (**22**) connected no the lower drill portion (**12**) and in turn including a mid head portion (**24**) of axially constant cross section, the radial dimension of which is larger than the radial dimension of the lower drill portion (**12**) and a lower downwardly converging head portion (**26**), and

c) an upper drill portion (**30**) connected to the displacing head (**22**) and being connectable to a drive unit,

wherein the lower head portion (**26**) is of essentially frustoconical geometry and the surface thereof carries a plurality of angularly spaced displacing ribs (**32**, **34**), an outer working surface of which is of spiroconical geometry.

5,353,884

POSITIONING DEVICE FOR A MEMBER AND DRILLING SYSTEM EMPLOYING SAID POSITIONING DEVICE

Toshiaki Misawa; Yoshihide Kiyosawa; Jun Sakata, all of Nagano, and Akio Ikeda, Osaka, all of Japan, assignors to Harmonic Drive Systems, Inc and Sumitomo Metal Industries, Ltd., Osaka, Japan

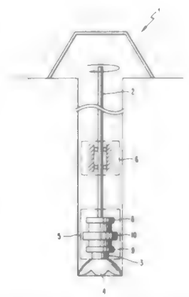
PCT No. PCT/JP93/00068, § 371 Date Nov. 29, 1993, § 102(e) Date Nov. 29, 1993, PCT Pub. No. WO93/15300, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 20, 1993, Ser. No. 117,204

Claims priority, application Japan, Jan. 23, 1992, 4-032591

Int. Cl.[5] E21B *7/00*

U.S. Cl. 175—26 2 Claims



1. A positioning device for a member characterized in that it comprises a cylindrical member, a first annular member which is rotatably supported by a circular inner circumferential surface of said cylindrical member and has a circular inner circumferential surface formed in a position deviated from said circular member, a second annular member which is rotatably supported by said circular inner circumferential surface of said first annular member and has a circular inner circumferential surface formed in a position deviated from said circular inner circumferential surface of said first annular member, and a hollow type harmonic drive mechanism for rotating said first and second annular member about their axes relative to each other, wherein a degree of deviation of said circular inner circumferential surface of said first annular member from said cylindrical member is set equal to that of deviation of said circular inner circumferential surface of said second annular member from said first annular member, and wherein a member to be positioned is connected to said second annular member so that it moves integrally with a center of said circular inner circumferential surface of said annular member, whereby said first and second annular members are rotated relative to each other, to thereby carry out a positioning of said member to be positioned.

5,353,885

ROCK BIT

Michael E. Hooper, Spring, Tex., and David P. Crockett, Moorpark, Calif., assignors to Smith International, Inc., Houston, Tex.

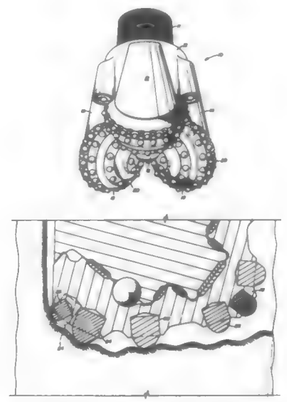
Continuation of Ser. No. 906,999, Jul. 1, 1992, abandoned, which is a continuation of Ser. No. 693,900, May 1, 1991, abandoned. This application Jul. 9, 1993, Ser. No. 89,356

Int. Cl.[5] E21B *10/16*

U.S. Cl. 175—378 5 Claims

1. A rock bit for drilling a borehole having a plurality of cutters each mounted thereon to rotate about an axis, each cutter having a generally frusto-conical support surface for rolling contact with the bottom of the borehole, each cutter further having a heel surface at the base thereof for rolling contact with the sidewall of the borehole, a plurality of wear resistant inserts positioned on said support surface and being arranged in circumferential rows, each insert being generally cylindrical and having a central axis, the improvement comprising:

one of the rows of inserts being positioned next to the heel surface defining a row of gage inserts, with each gage insert oriented to have its axis extend outwardly and having a crown area adapted to engage the borehole bottom, each gage insert further defining a cutter surface profile taken through a section of the cone through the centerline; and



a plurality of heel inserts located near said gage inserts at an acute angel with respect to the gage inserts in a direction away from the apex of the cone, each heel insert having a crown area adapted to engage the sidewall of the borehole and further defining a cutting surface profile taken through a section of the cone through the centerline, said heel profile taken through a section of the cone through the centerline, said heel profile, when rotated around the cone to be overlapped on the same plane as a gage insert profile having its crown area slightly overlapping on one side with the crown area of the gage insert profile, said heel inserts are the only inserts or cutting elements on the heel surface of the cutter.

5,353,886

SWINGING ARM

Marko Paakkunainen, Tampere, Finland, assignor to Plustech OY, Tampere, Finland

PCT No. PCT/FI91/00251, § 371 Date Feb. 16, 1993, § 102(e) Date Feb. 16, 1993, PCT Pub. No. WO92/03328, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 14, 1991, Ser. No. 969,313

Claims priority, application Finland, Aug. 14, 1990, 904009

Int. Cl.[5] B62D *57/02*

U.S. Cl. 180—8.1 9 Claims

1. A load-bearing swinging arm for causing an advance movement of a mobile device by means of its pivoting movement, said arm having a first end, a second end, and a pivot;

an arm support structure to which said arm at its first end is pivotally connected through said pivot about a first axis of rotation, said arm support structure comprising a part surrounding the first axis of rotation and affixed to the support structure in a non-rotating relationship thereto;

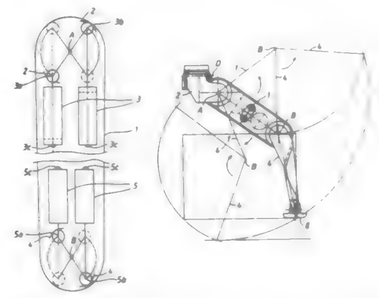
bearings positioned between the swinging arm and the arm support structure;

a pair of actuators each having a first end and a second end and positioned between the arm and the support structure at the pivot;

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points of action for acting on the arm support structure on both sides of the axis of rotation for effecting a moment simultaneously about the axis of rotation during said pivoting movement

the actuators being positioned in the swinging arm in such a manner that their first ends are pivotally connected to the



support arm and their second ends at the points of action to said part fixed on the support structure; and

wherein the swinging arm at its second end through a second pivot is connectable to another swinging arm in a pivotal relationship thereto about a second axis of rotation.

5,353,887

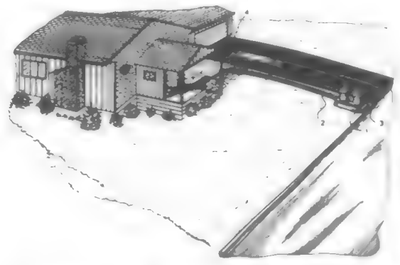
HOUSEHOLD TRASH DELIVERY SYSTEM

John Putnam, 417 E. Broadway, Port Jefferson, N.Y. 11777

Filed Feb. 4, 1993, Ser. No. 13,581

Int. Cl.[5] **B60T** *7/16*

U.S. Cl. 180—168 **9 Claims**



1. A household trash delivery system, comprising:

A shuttle cart for shuttling back and forth at ground level between a destination at a house and a curbside trash delivery destination, to permit convenient and automatic delivery of trash at any time and under most weather conditions, said shuttle cart being capable of locomotion and obstacle avoidance; said shuttle cart being controlled by electrical and mechanical means; and said shuttle cart being directionally guided by a guidance system;

said device further having a reversible electric motor and a drivewheel mechanically connected thereto, wherein locomotion of said shuttle cart is provided by the drive wheel, the drive wheel being forced to turn when energy is supplied to the reversible electric motor;

said reversible electric motor being capable of driving said shuttle cart in a forward and a backward direction, the forward direction being from the house destination to the trash delivery destination, and the backward direction being from the trash delivery destination to the house destination;

wherein said shuttle cart is provided with a rechargeable battery, the battery for supplying energy to the reversible electric motor; the trash delivery system further having a battery recharger disposed in the house, the recharger for recharging the battery when the shuttle cart is located at the house;

said shuttle cart having a plurality of bumper safer switches capable of delivering an electric impulse, and a plurality of electrical relays each relay comprising a switch, the relay switch being for connecting and disconnecting the energy supply from the rechargeable battery with the reversible electric motor; the electrical relays being responsive to impulses delivered by a timer and further responsive to electrical impulses delivered by the bumper safety switches;

wherein said plurality of electrical relays includes a first and a second electrical relay, each comprising an electric switch for connecting and disconnecting the energy supply from the rechargeable battery with the reversible electric motor; said electric relays responding to electric impulses from the timer by closing the reversible motor switch and thereby supplying current to the reversible motor; said device further having a first and a second bumper safety switch, said first and second bumper safety switches being electrically connected to said respective first and second electric relays, said bumper safety switches being further capable of producing an electric impulse when mechanically impacted; the electric impulses from said first and second bumper safety switches being electrically transmitted to said respective first and second electric relays; the first and second electric relays responding to electric impulses from said respective first and second bumper safety switches by opening the reversible electric motor switch, thereby disconnecting current flowing to the reversible electric motor;

said first and second electric relays being directional relays; said first relay being for the forward direction and said second relay being for the backward direction; and first relay comprising an electric switch for connecting and disconnecting the energy supply from the rechargeable battery with the reversible electric motor to produce forward motion of said shuttle cart; said second relay comprising an electric switch for connecting and disconnecting the energy supply from the rechargeable battery with said reversible electric motor to produce backward motion of said shuttle cart; and, said first bumper safety switch being a forward direction bumper safety switch; and said second bumper safety switch being a backward direction bumper safety switch; and further where said forward bumper safety switch is capable of stopping the forward motion of said shuttle cart when said forward bumper safety switch is mechanically impacted; and, further, where said backward bumper safety switch is capable of stopping the backward motion of said shuttle cart when the backward bumper safety switch is mechanically impacted; said shuttle cart electrical control means comprising said first and second electric relays, said first and second bumper safety switches, and said timer;

wherein the guidance system comprises a pair of elongated, substantially vertical steering posts having an upper end and a lower end, the steering post lower end comprising a rolling end member, the steering post rolling end members further being provided with a plurality of freely turnable wheels, the freely turnable wheels being horizontally mounted upon the steering post rolling end members to permit substantially frictionless contact of the rolling end member with surrounding surfaces; the guidance system further comprising an elongated track, the track comprising a path along which the shuttle cart moves in forward and backward directions; the track further comprising a hollow channel-like enclosure for accepting and contacting the freely turnable horizontally mounted wheels

mounted upon the steering post rolling end members, the hollow enclosure further having a top side, the top side being provided with an open passageway for permitting the through-insertion of the steering posts and allowing the continuous movement of the steering posts along the length of the hollow channel-like enclosure as the shuttle cart moves forward and backward along the elongated track, the open passageway disposed on the top side of the hollow channel-like enclosure extending along the entire length of the enclosure.

5,353,888

BODY FRAME FOR VEHICLES

Takeshi Tsukahara, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

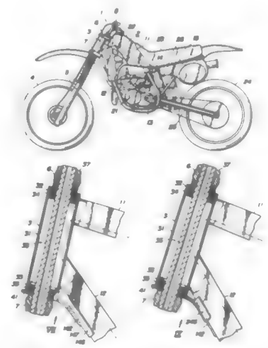
Filed Nov. 6, 1984, Ser. No. 668,707

Claims priority, application Japan, Nov. 7, 1983, 58-171995

The portion of the term of this patent subsequent to Dec. 11, 2008, has been disclaimed.

Int. Cl.[5] **B62K** *11/02, 19/02, 21/04*

U.S. Cl. 180—219 **3 Claims**



1. A body frame for a vehicle of a straddle type having a front wheel and a suspension for suspending said front wheel, comprising:

a head tube for steerably supporting said suspension;

a substantially rearwardly extending pipe member connected at the front end thereof to said head tube; and

a reinforcement portion integrally formed on said head tube and adapted for reinforcing the fastening of said pipe member to said head tube;

said reinforcement portion and a part of said head tube being a unitary forged member;

said reinforcement portion being welded to said pipe member;

said reinforcement portion comprising a tongue portion extending rearwardly so as to asymptotically approach, to be contacted with, said pipe member;

said tongue portion being adapted to mate with the underside surface of said pipe member;

said vehicle being equipped with an engine;

said pipe member being adapted to bear the weight of said engine;

said pipe member is substantially rectangular in cross section;

said tongue portion is substantially flat and has a distal end edge formed substantially straight;

said tongue portion has a fish piece fitted thereon from outside; and

said fish piece is welded to said pipe member and said tongue portion.

5,353,889

POWER TRANSMITTING DEVICE FOR FOUR-WHEEL DRIVE VEHICLE

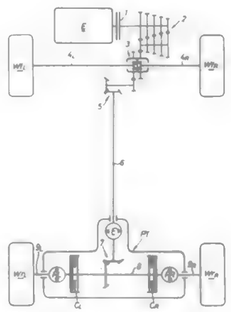
Tetsurou Hamada, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1993, Ser. No. 32,953

Claims priority, application Japan, Mar. 17, 1992, 4-060612

Int. Cl.[5] **B60K** *17/348*

U.S. Cl. 180—242 **25 Claims**



1. A power transmitting device for a four-wheel drive vehicle which includes main driven wheels driven directly by an engine and speed-change transmission, comprising;

a left sub-driven wheel driven through a first hydraulic pressure clutch,

a right sub-driven wheel driven through a second hydraulic pressure clutch,

a first hydraulic pump driven in operative association with the main driven wheels,

a second hydraulic pump driven in operative association with the left sub-driven wheel,

a third hydraulic pump driven in operative association with the right sub-driven wheel,

a first oil passage which connects a discharge port of the first hydraulic pump to intake ports of the second and third hydraulic pumps, and

a second oil passage which connects the first oil passage to a working chamber in the first hydraulic pressure clutch and a working chamber in the second hydraulic pressure clutch.

5,353,890

LOCKING HUB CLUTCH SYSTEM

Kip Clohessy, Milwaukie, Oreg., assignor to Warn Industries, Milwaukie, Oreg.

Filed Nov. 5, 1992, Ser. No. 972,425

Int. Cl.[5] **B60K** *17/26*

U.S. Cl. 180—247 **6 Claims**

1. In a part-time four-wheel drive vehicle having a clutch mechanism associated with a wheel mounting and wheel axle for engaging and disengaging the wheel mounting and wheel axle to convert between two-wheel and four-wheel drive, a mechanism comprising;

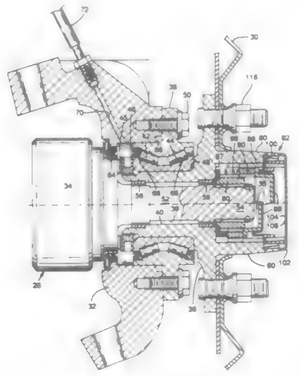
a knuckle fixed to the frame of a vehicle and defining a bearing enclosure, a spindle rotatably mounted within the bearing enclosure of the knuckle and defining a further bearing enclosure, and an axle rotatably mounted within the further bearing enclosure of the spindle,

a hub for mounting a vehicle wheel and a hub clutch housing protruded from said hub and the combined hub and hub clutch housing affixed rotatively to the spindle and independent rotatively of the axle, said axle extended into the housing, and a clutch mechanism including overlapping portions of an axle exterior and a housing interior and

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splines provided on said overlapping portions, a clutch member slidably mounted relative to the housing and axle overlapping portions and being slidably movable between a first position wherein the splines of both portions are interengaged for interlocking the axle and housing and a second position wherein the splines of one of the portions are disengaged from said clutch member for permitting relative free rotative movement therebetween, and actuator means for actuating slidable movement of said clutch member between said first and second positions,

said spindle having a tubular section extended partially into the bearing enclosure and extended partially outside the bearing enclosure and defining an exterior end, said hub comprising a flange formed integral with the tubular section of the spindle at the exterior end and flared radially outwardly from the axis of the tubular section and including means for attaching a wheel to the flange,



and said hub clutch housing having a cylindrical section integral with the spindle and hub and extending axially outwardly of said hub flange through the center of a wheel mounted on said flange, said spindle, hub, hub flange, and hub housing including the portion of the housing provided with splines accordingly integrally formed and requiring no fasteners for affixing the hub and hub clutch housing rotatively to the spindle,

said cylindrical section of said hub clutch housing having an open end, and a removable cap normally closing said open end, said mechanism and hub clutch housing cooperatively structured whereby installation and maintenance of the clutch mechanism are provided through said open end.

5,353,891

STANCHION ASSEMBLY

Cornelis J. Griek, Belgrave South, and Anthony K. Mitchinson, Mooroolbark, both of Australia, assignors to DGS Property Pty. Ltd., Australia

PCT No. PCT/AU89/00291, § 371 Date Mar. 1, 1991, § 102(e) Date Mar. 1, 1991, PCT Pub. No. WO90/00657, PCT Pub. Date Jan. 25, 1990

PCT Filed Jul. 10, 1989, Ser. No. 646,776

Claims priority, application Australia, Jul. 11, 1988, PI9230/88; Dec. 2, 1988, PJ1756/88; May 10, 1989, PJ4105/89

Int. Cl.[5] B21F *27/00*; E04H *17/14*

U.S. Cl. 182—45 28 Claims

1. An adjustable stanchion assembly for use with a frame building which has an elongate frame member, said elongate frame member having an elongate flange and a distal lip extending along said flange, said stanchion assembly comprising:

(A) a support post for a safety barrier or the like;

(B) a clamping mechanism for clamping the support post to a frame building, the clamping mechanism comprising:

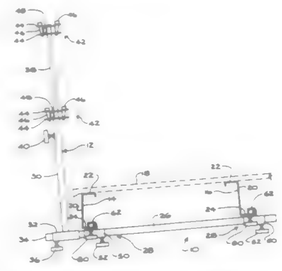
(B1) an elongate connection member of non-circular cross-sectional shape; and

(B2) at least two clamps which are adapted to be clamped to said frame member of said frame building, each of said clamp comprising;

(B2a) a sleeve,

(B2ai) said connection member extending through said sleeve thereby making said clamp slidably mounted on said connection member and selectively relatively adjustable along said connection member, and

(B2aii) said sleeve having an internal configuration of a non-circular cross-sectional shape that, in combination with the non-circular cross-sectional shape of said connection member, makes said clamp non-rotatable with respect to said connection member; and



(B2b) a pair of opposed jaws which are affixed to said sleeve, said jaws defining:

(B2bi) a mouth of restricted width, said distal lip having a greater height than the restricted width of said mouth; and

(B2bii) a throat portion behind the mouth having a height and a width substantially parallel to the width of the mouth and which is greater than said restricted width of said mouth and at least as high as said distal lip,

(B2biii) whereby the frame member can only be received in and removed from the jaws by relative rotation of the clamp around said flange with a distal lip;

(B2biv) the axis of said pair of jaws being substantially parallel to the axis of said sleeve; and

(C) means for securing said support post to the connection member such that said support post is supported in cantilevered manner from the frame member by the clamping mechanism.

5,353,892

LADDER JOINT FOR A FOLDING COLLAPSIBLE LADDER

Feng-Hui Lu, No. 8, Alley 8, Lane 136, Yu-Le Rd., Kaohsiung, Taiwan

Filed Oct. 14, 1993, Ser. No. 136,124

Int. Cl.[5] E06C *1/28*

U.S. Cl. 182—163 1 Claim

1. A ladder joint comprising:

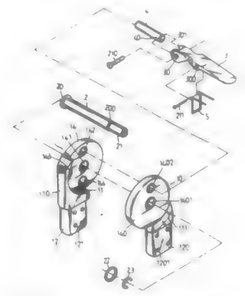
a first base plate molded from glass fibers, said first base plate comprising a circular connecting portion at one end, a socket portion at an opposite end fastened to a first side rail section of one side rail of a folding collapsible ladder, and a substantially L-shaped block therebetween, the circular connecting portion of said first base plate comprising a center through hole, and a plurality of eccentric holes spaced around the border;

a second base plate molded from glass fibers, said second base plate comprising a circular connecting portion at one end, a socket portion at an opposite end fastened to a second side rail section of said side rail of said folding collapsible ladder, and a substantially L-shaped block therebetween, the circular connecting portion of said second base plate comprising a center through hole, and an eccentric hole near the border;

a pivot inserted through the center through holes on said first and second base plates to connect them together for permitting said first and second sections of said side rails to be respectively pivoted about said pivot;

a lever having a middle part pivotably connected to said pivot by a first pin;

a lock bolt having one end pivotably connected to one end of said lever by a second pin, and an opposite end inserted



through the eccentric hole on said second base plate into either eccentric hole on said first base plate; and

spring means mounted on said first pin and retained to said lever, said spring means giving a pressure to said lever for permitting said lock bolt to be retained engaged into either eccentric hole on said first base plate;

whereby said lock bolt is released from one eccentric hole on said first base plate and then engaged into another eccentric hole on said first base plate to change the angular positions of said first and second sections relative to each other by pressing said lever and then rotating said lever on said second base plate.

5,353,893

ELEVATOR CAB AND/OR COUNTERWEIGHT COMPENSATION ROPE HITCH ASSEMBLY

Lu Sun, Simsbury, and Joseph R. Faust, Southington, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Jul. 12, 1993, Ser. No. 90,380

Int. Cl.[5] B66B *9/00*

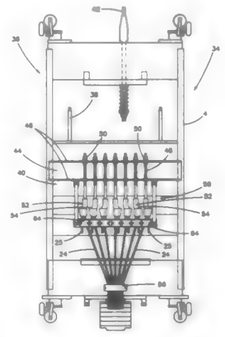
U.S. Cl. 187—412 6 Claims

1. A hitch assembly for connecting elevator ropes to a component in an elevator, said hitch assembly comprising:

a) a one piece hitch block mounted on said component, said hitch block including a through passage extending therethrough from a top surface thereof to a bottom surface thereof, said through passage having opposed side walls adapted to engage an elevator rope, said opposed side walls converging toward each other from said top surface to said bottom surface of the hitch block, and said side walls being spaced apart from each other at said bottom surface of the hitch block by a distance which is greater than two times the diameter of the elevator rope;

b) a wedge-shaped insert dimensioned so as to fit within said hitch block through passage, said insert having an upper generally rounded surface and side surfaces merging into said upper surface, said side surfaces tapering toward each other in a downward direction; and

c) said hitch block and insert combining to form a releasable entrapment for the elevator rope when a free end of the latter is passed upwardly into said hitch block through passage, looped over said upper surface of said insert, and passed downwardly through said hitch block through passage past the bottom surface of the hitch block, and



said insert is positioned in said hitch block through passage within the rope loop.

5,353,894

GEARED ELEVATOR MACHINE

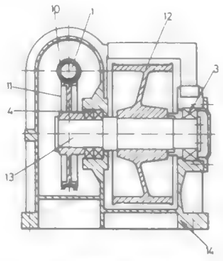
Alfonso Garrido, and Jose Sevilleja, both of Madrid, Spain, assignors to Otis Elevator Company, Farmington, Conn.

Filed Apr. 7, 1993, Ser. No. 44,335

Claims priority, application Spain, Apr. 14, 1992, 9200810

Int. Cl.[5] B66B *11/04*

U.S. Cl. 187—254 4 Claims



1. A roped elevator machine comprising:

a motor

an input axle driven by said motor at a first rotational speed,

a sheave,

an output axle for supporting said sheave, said output axle rotating at a second rotational speed,

means for cooperating with said input and output axles to alter the speed of rotation of said output axle relative to said input axle,

a monoblock housing having only two seats for supporting said output axle, one of said seats being disposed on a first side of said sheave upon the output axle the other of said seats being disposed on a second side of said sheave upon said output axle, said output axle extending axially beyond one of said seats to attach to said means for cooperating.

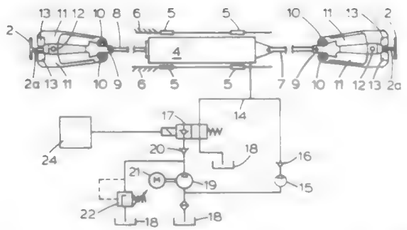
VOL 1167 ISS 2 OCT 11 1994 UMI

5,353,895

EMERGENCY BRAKING SYSTEM FOR HOISTS

Dermot E. Camack, 24 Allangrove Cres., Scarborough, Ontario, Canada MIW 1T2 ; Shawn Clyne, 3 Henley Cres., Scarborough, Ontario, Canada M9W 2W8 , and Kelvin Lo, 10 Greenhedges Crt., Scarborough, Ontario, Canada M1B 1T2

Filed Jun. 10, 1993, Ser. No. 74,425
Claims priority, application Canada, Jun. 23, 1992, 2072187
Int. Cl.[5] B61H *7/12*; B66B *5/16*
U.S. Cl. 187—369 8 Claims



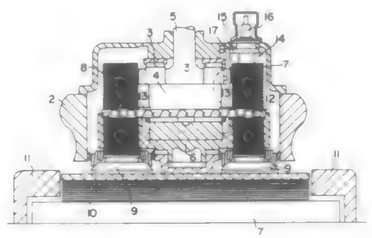
1. An emergency braking system for a hoist for preventing unauthorized movement of a hoist cage guided by opposed cage-side guide rails wherein the guide rails are each provided with an inwardly projecting web with a braking surface on each side of the web, comprising two pairs of opposed, pivoted, brake application arms, each pair of arms having outer ends provided with oppositely disposed brake pads associated, in clamping arrangement, with the braking surfaces of one of the webs and inner ends provided with oppositely disposed cam follower surfaces, the pivot points of each said pair of arms being located intermediate the ends of the said pair of arms and secured to the cage, two camming means, each provided with oppositely disposed camming surfaces, each one of the said camming means being individually and operatively associated in cooperating arrangement with the cam follower surfaces of one of said pair of arms, a hydraulic-fluid-operated cylinder, located between the said two pairs of arms and secured to the cage to allow limited lateral movement of the cylinder with respect to the cage, the cylinder being provided with a piston with an associated, projecting, piston rod, the said cylinder being mechanically connected to one of the said camming means and the said piston rod mechanically connected to the other of the said camming means, spring pressure means being associated with the said cylinder to pressure bias the piston rod to a retracted position with respect to the cylinder whereat the said camming means are each pulled laterally inward, with respect to the cage, to move the oppositely disposed cam follower surfaces of each pair of arms with respect to each other to produce spring pressure application of the said brake pads to the web associated therewith and wherein means is provided to pressurize the said cylinder with hydraulic fluid to extend the said piston rod from the said cylinder, against spring pressure, to release the spring pressure on the said brake pads, there being control means provided to release the fluid pressure from the cylinder.

5,353,896

DISK BRAKES FOR MOTOR VEHICLES

Hans Baumgartner, Moosburg; Klaus Hirschler, Neu-Esting-/Olching; Johann Iraschko, Reisdorf, and Otto Schullerus, München, all of Fed. Rep. of Germany, assignors to Knorr-Bremse Systeme Feur Nutzfahrzeuge, Munich, Fed. Rep. of Germany

PCT No. PCT/DE91/00402, § 371 Date Feb. 8, 1993, § 102(e) Date Feb. 8, 1993, PCT Pub. No. WO91/19115, PCT Pub. Date Dec. 12, 1991
PCT Filed May 15, 1991, Ser. No. 952,502
Int. Cl.[5] F16D *65/56*, *65/16*
U.S. Cl. 188—71.9 23 Claims



1. A disk brake for motor vehicles comprising:

a caliper which reaches over a brake disk, said caliper being provided on one side thereof with a clamping mechanism;

said clamping mechanism comprising a cam lever which can be swivelled around an axis of rotation extending parallel to a plane of said brake disk, said cam lever comprising a cam which is coupled to at least one adjusting spindle which extends within said caliper at least approximately at right angles to said plane of said brake disk;

said at least one adjusting spindle extending at least approximately at right angles to said plane of said brake disk and being adjustably screwed to said cam or to a spacer;

said spacer being movable by said cam for bracing a brake lining against a a brake disk-sided end of said spacer;

said brake lining being movable relative to said caliper transversely to said brake disk, wherein a rotating drive is provided for adjustment of release play between said brake disk and said brake lining, said rotating drive being actuatable by a swivel stroke of said cam lever, said rotating drive being disposed in an axial recess of said adjusting spindle which is open at least on a side facing away from said brake disk; and

wherein an output member of said rotating drive is coupled relatively non-rotatably, but axially movably to said adjusting spindle.

5,353,897

VIBRATION DAMPER

Felix Woessner, Schweinfurt, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Sep. 18, 1992, Ser. No. 947,166
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1991, 4131532
Int. Cl.[5] F16F *9/53*
U.S. Cl. 188—267 23 Claims

1. A vibration damper of variable damping effect comprising:

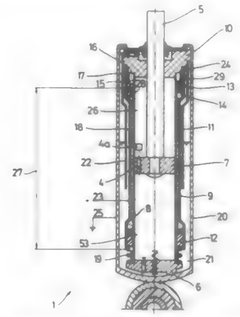
a cylindrical tube member having an axis, two ends and a cavity between said two ends,

a piston rod member extending into said cavity through piston rod guiding and sealing means and being movable relative to said tube member along said axis,

a piston unit connected with said piston rod member inside said cavity and separating two working chambers from each other, said working chambers containing a damping fluid,

a damping fluid flow channel system connected with said working chambers permitting a flow of damping fluid therethrough in response to axial movement of said piston rod member relative to said tube member,

damping fluid throttling means allocated to said damping fluid flow channel system for throttling said flow of damping fluid and thereby providing a damping effect on said axial movement of said piston rod member relative to said tube member, said damping fluid throttling means providing an electrically controllable flow resistance, said flow resistance being controlled by a volume of an electrorheological control fluid separated from said damping fluid,



said electrorheological control fluid providing a control force for controlling said flow resistance of said damping fluid throttling means, said control force depending on the viscosity of said electrorheological fluid flowing through a control flow path, said electrorheological fluid being within said control flow path exposed to an electrical field of variable field intensity, said viscosity being responsive to variation of said field intensity, variation of the field intensity in a predetermined sense of one of a lowering sense and an increasing sense, providing a variation of the damping effect in a corresponding predetermined sense of one of a lowering sense and an increasing sense irrespective of the direction of movement of said piston rod member relative to said tube member.

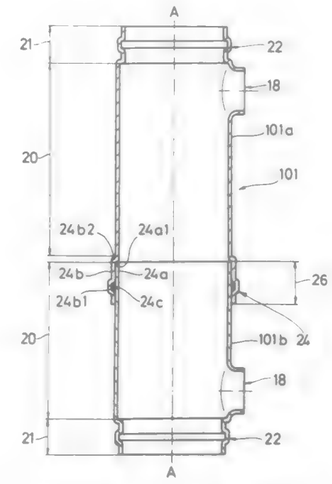
5,353,898

VIBRATION DAMPER UNIT

Günther Handke, Euerbach; Rolf Wengenroth, Schweinfurt; Günther Braun, Geldersheim, and Helmut Baalmann, Bergrheinfeld, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 2, 1992, Ser. No. 909,072
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1991, 9108291[U]; May 14, 1992, 9206586[U]
Int. Cl.[5] F16F *9/46*
U.S. Cl. 188—294 48 Claims

1. A vibration damper unit, the damping behavior of which is variable through at least one damping behavior control unit (15), said vibration damper unit comprising a cylinder member (5) having an axis (A-A) and two ends and defining a cavity (5*a*) therein, a piston rod member (6) sealingly guided through at least one of said two ends, a piston rod guiding and sealing unit (11) adjacent said at least one of said two ends, a bottom unit (10) adjacent the other one of said two ends, a piston unit (9) combined with said piston rod member (6) within said cavity (5*a*), a plurality of spaces (8, 8*a*, 14, 16) inside and outside said cavity (5*a*), a damping fluid within at least part of said spaces, flow path defining means defining flow paths interconnecting respective spaces, at least one (17, 14, 15, 16) of said flow paths containing said at least one damping behavior control unit (15), said flow path defining means including a flow path defining flow path tube unit (1), said flow path tube unit (1) surrounding said cylinder member (5) and cooperating with said cylinder member (5) to define radially between said cylinder member (5) and said flow path tube unit (1) a fluid flow chamber (14) having a radial height (h2), said flow path tube unit (1) having axially spaced flow path tube end portions (21), said flow path tube unit (1) having at least one transverse joint tube member (18) extending substantially radially outward from said flow path tube unit (1) and being adapted to be adjoined to said at least one damping behavior control unit (15), said at least one flow path tube end portion (21) comprising a sealing means receiving groove (22*a*) having a radial depth (h1), said sealing means receiving groove (22*a*) accommodating annular sealing means for substantially sealing said fluid flow chamber (14), said at least one flow path tube end portion (21) being an integral portion of a tube section (20) of said flow path tube unit (1) and being formed by cold-shaping without swarf-cutting of the sealing means receiving groove (22*a*), said sealing means receiving groove (22*a*) being located in said flow path tube end portion (21) in an axially intermediate area of said flow path tube end portion (21), said axially intermediate area (21*a*) of said flow path tube end portion (21) being located axially between a terminal area (21*b*) of said flow path tube end portion (21) and a transition area (21*c*) of said flow path tube end portion (21), said transition area (21*c*) being coherent with said adjacent tube portion (21') by a shoulder portion (21*d*), said flow path tube end portion (21) having in said transition area (21*c*) and in said terminal area (21*b*) respective internal diameters (Dbci) corresponding to an external diameter (De) of an external engagement face (5*e*) of one of said cylinder member (5), said piston rod sealing and guiding unit (11) and said bottom unit (10), the wall thicknesses (t21*c*, t21*b*, t21*a*) in said transition area (21*c*), said terminal area (21*b*) and said axially intermediate area (21*a*), being substantially equal to the wall thickness (t21') of an adjacent portion of said portion (21') of said tube section (20), said axially intermediate area (21*a*) having an outer diameter (Dao) larger than respective outer diameters (Dbco) of said transition area (21*c*) and said terminal area (21*b*), said shoulder portion (21*d*) having a radial height (h2) substantially corresponding to said radial height (h2) of said fluid flow chamber (14).



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5,353,899

DAMPER MECHANISM

Kazuyoshi Ohshima, Tokyo, Japan, assignor to Sugatsune Industrial Co., Ltd., Tokyo, Japan

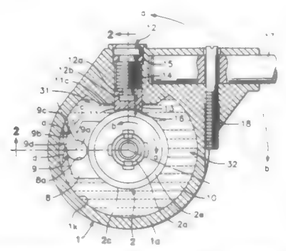
PCT No. PCT/JP91/01681, § 371 Date Mar. 1, 1993, § 102(e) Date Mar. 1, 1993, PCT Pub. No. WO93/01425, PCT Pub. Date Jan. 21, 1993

PCT Filed Nov. 30, 1991, Ser. No. 980,795

Claims priority, application Japan, Jul. 4, 1991, 3-190740

Int. Cl.[5] F16F *9/14*

U.S. Cl. 188—310 9 Claims



1. A damper mechanism comprising a cylinder having an inner peripheral surface, a movable shaft having an outer peripheral surface and a movable valve, said cylinder including an internal volume filled with functional oil, said movable valve being disposed along said movable shaft and swingable on the outer peripheral surface of said movable shaft for movement toward and away from the inner peripheral surface of said cylinder, said movable shaft being inserted into said cylinder with said movable valve and rotatable relative to said cylinder, a front end of said movable valve being disposed vis-a-vis the inner peripheral surface of said cylinder and contacting the inner peripheral surface of said cylinder to form a nonreturn valve disposed between the inner peripheral surface of said cylinder and the outer peripheral surface of movable shaft to dampen movement of the shaft when the shaft is rotated in one rotational direction, the front end of said movable valve being moved out of engagement with the inner peripheral surface of the cylinder to form a return valve to enable unrestricted movement of the shaft when the shaft is rotated in an opposite direction of rotation, a partitioning member disposed between the inner peripheral surface of said cylinder and the outer peripheral surface of said movable shaft and longitudinally disposed therebetween, an inner space of said cylinder being divided by the nonreturn valve and the partitioning member into a plurality of chambers having volumes variable relative to each other, said chambers being communicated with each other by an oil passage through a boundary of the chambers to control flow of functional oil between the chambers when the shaft is rotated in said one direction to dampen rotation of the shaft when the shaft is rotated in said one direction.

5,353,900

WHEELED GARMENT BAG

Russell L. Stilley, 1113 Abrams Rd., Apt. 261, Richardson, Tex. 75081

Filed Mar. 1, 1993, Ser. No. 24,511

Int. Cl.[5] A45C *5/14, 13/04, 13/26, 13/30*

U.S. Cl. 190—18 A 21 Claims

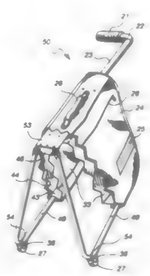
1. A garment bag, comprising:

an enclosure for holding garments, said enclosure being constructed of a pliable material that can be folded to define first and second portions with a foldable section therebetween;

a hingeable frame structure for supporting each portion of the garment bag, said frame structure having frame parts hinged together at the foldable section of the enclosure;

a releasable fastener attached to the garment bag for holding the garment bag in a compact storage arrangement such that one garment bag portion is overlaid on the other portion, said fastener being releasable for allowing the garment bag portions to be unfolded and separated from each other;

means for supporting the garment bag in a partially unfolded manner for transportability thereof, whereby each garment bag portion is spaced from each other so that one portion of the garment bag is not overlaid on the other portion;



at least one wheel being attached to an end of each garment bag portion that is opposite the foldable section of the garment bag so that when the partially unfolded garment bag is oriented with the foldable section of the garment bag at a top and the wheels at a bottom, the garment bag can be transported in the partially unfolded manner; and

a handle attached to the garment bag for pulling the garment bag.

5,353,901

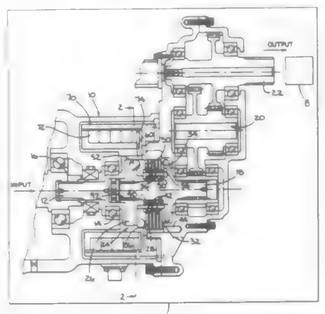
PILOT OPERATED NO-BACK

David L. Jacques, and David J. Lang, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 24, 1992, Ser. No. 950,196

Int. Cl.[5] B60T *7/12*

U.S. Cl. 192—8 R 15 Claims



14. A no-back apparatus, comprising: an input shaft means for receiving first motive power from a controllable source;

an output shaft means for transferring said first motive power therethrough and for receiving second motive power from a load source;

a coupling means for interconnecting said input shaft means to said output shaft means to allow the transfer of said first or second motive power therebetween;

said coupling means including a brake means for connection to said output shaft means to permit transfer of said first motive power from said input shaft means to said output shaft means, and to prevent transfer of said second motive power from said output shaft means to said input shaft means; and

said coupling means including pilot means, having a connection to said brake means, for selectively preventing connection of said brake means to said output shaft such that transfer of said second motive power to said input shaft means from said output shaft means is permitted.

5,353,902

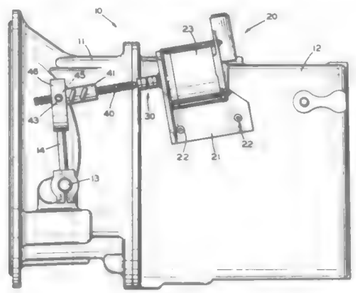
ELECTRIC ACTUATOR ASSEMBLY FOR CLUTCH

Richard A. Flowtow, Butler; Curtis L. Fee, Auburn, and J. Michael Lewis, Corunna, all of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Jun. 16, 1992, Ser. No. 899,351

Int. Cl.[5] F16D *23/14, 23/00*

U.S. Cl. 192—84 R 23 Claims



1. A clutch for selectively connecting an input shaft to an output shaft comprising:

A flywheel adapted to be secured to the input shaft for rotation therewith;

a cover connected to said flywheel for rotation therewith;

said slots being formed in said legs, said yoke adapted to be secured to said shift arm for movement therewith.

18. An actuator assembly for effecting movement of a release bearing of a clutch to cause engagement and disengagement thereof comprising:

a housing;

a pivot support arm connected to said housing;

a pivot member including a first end having at least one upper yoke leg portion extending only partially about a portion of said pivot support arm to pivotably support said pivot member on said pivot support arm, said pivot member further including a second end; and

means connected to said second end of said pivot member for effecting pivoting movement of said pivot member, said pivot member adapted to engage the release bearing between said first and second ends thereof so as to move it to cause engagement and disengagement of the clutch.

5,353,903

TRANSFER BRIDGE FOR LETTER SORTING SYSTEMS

Otmar Kechel, Stockach; Dieter Altenburg, Allensbach; Werner Frank, Reichenau, and Armin Zimmermann, Constance, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Fed. Rep. of Germany

Filed Oct. 29, 1993, Ser. No. 143,143

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1992, 4236507

Int. Cl.[5] B65G *37/00*

U.S. Cl. 193—3 11 Claims

1. A letter sorting system comprising

(a) a row of juxtaposed stack compartments;

(b) a material intake device arranged along and spaced from the compartments;

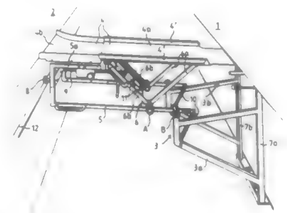
(c) a carriage arranged for travel along the compartments; and

(d) a transfer bridge mounted on the carriage to be displaced thereby along the compartments; said transfer bridge including

(1) an exterior frame pivotally attached to said carriage for pivotal motions into first and second positions of said exterior frame;

(2) an interior frame pivotally attached to said exterior frame for pivotal motions into first and second positions of said interior frame; and

(3) a slide having a first part attached to said interior frame and a second part attached to said exterior frame; said first and second parts each having a sliding surface;



when said exterior frame and said interior frame are simultaneously in said first positions, said transfer bridge is in a first operating position in which said sliding surfaces of said first and second parts form a continuous, upwardly facing surface for guiding material thereon between a selected said compartment and said material intake device; when said exterior frame is in said first position and simultaneously said interior frame is in said second position, said transfer bridge is in a second operating position in which a part of said interior frame is oriented upwardly and is adapted to accommodate a container thereon; and when said exterior frame is in said second position and simultaneously said interior frame is in said first position, said transfer bridge is in a third operating position in which said first and second parts of said slide are substantially in a vertical position.

5,353,904

BINOCULAR VENDING APPARATUS AND METHOD

David J. Tacke, Polson, Mont., and Leslie Perhacs, Fallbrook, Calif., assignors to Binoptic International Systems, Inc., Polson, Mont.

Continuation of Ser. No. 340,129, Apr. 18, 1989, Pat. No. 5,148,905. This application Sep. 21, 1992, Ser. No. 948,292

The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.

Int. Cl.[5] C07F *7/00, 17/02*

U.S. Cl. 194—210 24 Claims

17. A vending apparatus for attachment to a structure, said apparatus comprising:

(a) view enhancing equipment;

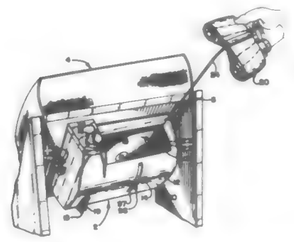
(b) housing means for removably retaining said view enhancing equipment; and

(c) an elongated tether for interconnecting said view enhancing equipment with said housing means;

said housing means including tether retraction means for retracting a portion of the elongated tether, said tether retraction means including biasing means for placing a bias upon the tether, said biasing means including bias actuation means for actuating said biasing means upon the

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occurrence of a predetermined event, wherein said biasing means can place a bias upon the tether toward retraction



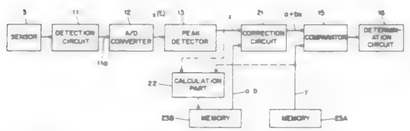
of the tether when the tether is withdrawn from said housing means and the predetermined event occurs.

5,353,905

COIN SORTING DEVICE

Shinji Yokomori, Matsumoto, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 4, 1992, Ser. No. 845,698
Claims priority, application Japan, Mar. 4, 1991, 3-037079
Int. Cl.[5] G07D *5/08*
U.S. Cl. 194—317 **7 Claims**



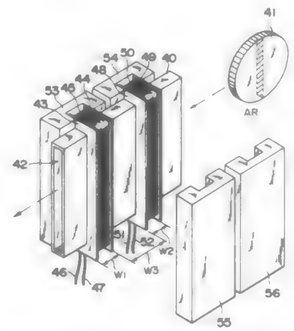
1. A coin sorting device comprising:
a coin path;
a sensor on the coin path for producing a time-dependent, quantitative sensor-output signal in response to a coin traversing the coin path, the sensor-output signal here being designated as x(t);
processing means connected to the sensor, for processing the sensor-output signal, comprising peak detector means for determining the peak value of x(t);
first memory means connected to the processing means, for storing at least three reference values, here designated as $y_1, y_2, \ldots, y_n$, $n \geq 3$;
second memory means connected to the processing means, for storing linear-regression coefficient values, here designated as a and b;
wherein the processing means further comprises:
calibration means for producing the linear regression coefficient values such that, for peak values $x_1, x_2, \ldots, x_n$ corresponding to n coins, the sum, from $i=1$ to n, of $(y_i - a - bx_i)^2$ is minimized; and
validation means for producing a signal, here designated as y_{max}, which at least approximately represents the peak value of $a \cdot x(t) + b$, and for comparing y_{max} with at least one of the reference values.

5,353,906

METAL BODY DISCRIMINATING APPARATUS

Kaihei Takamisawa, Saku, and Masakazu Tokumura, Minamisaku, both of Japan, assignors to Takamisawa Cybernetics Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 757,468, Sep. 10, 1991, Pat. No. 5,199,545. This application Jan. 15, 1993, Ser. No. 17,707
Claims priority, application Japan, Feb. 28, 1991, 3-034620; Jul. 27, 1992, 4-199702; Aug. 13, 1992, 4-216172
Int. Cl.[5] G07D *5/08*
U.S. Cl. 194—319 **4 Claims**



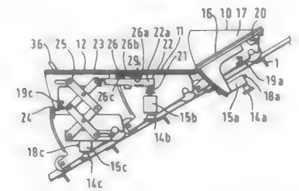
4. An apparatus for discriminating a metal body, said apparatus comprising:
a sensor portion including;
a coil having a plurality of winding portions electrically connected in series and formed at a predetermined interval, said coil allowing a target coin to pass through hollow portions of said winding portions;
a self-oscillator for generating an oscillation signal in cooperation with said coil; and
a structure in which the winding portions of said self-oscillators are arranged at a predetermined interval, and a target coin is caused to pass through hollow portions of the respective winding portions; and
discriminating means for detecting specific changes in frequency and amplitude of an AC signal, as feature data of the coin, which changes occur with changes in impedance and inductance of each of the winding portions due to the influence of an eddy current generated in the coin by lines of magnetic force from each of the winding portions when the coin passes through the hollow portion of each of the winding portions, and discriminating a denomination of the coin on the basis of the feature data,
said discriminating means including
storage means for storing ratios of an amplitude of an AC signal, generated in said self-oscillator in a state in which no target coin is present at a given reference time point, to feature data of all denominations, as gauge data of the respective denominations, and
compensation control means for obtaining discrimination reference data of the respective denominations by calculating products of amplitude data of an AC signal, generated in said self-oscillator in a state in which no target coin is present in an actual coin detecting operation, and the gauge data of the respective denominations, and comparing feature data of a target coin, obtained when the coin passes through the winding portions of said sensor portion, with the discrimination reference data, thereby discriminating a denomination whose discrimination reference data exhibits highest consistency, as a denomination of the coin.

5,353,907

DUAL-PURPOSE ESCALATOR FOR WHEELCHAIR

Yoshio Ogimura, Saitama, and Megumi Ookubo, Kanagawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 18, 1993, Ser. No. 153,969
Claims priority, application Japan, Nov. 18, 1992, 4-307432; May 21, 1993, 5-119415; Jun. 30, 1993, 5-160665
Int. Cl.[5] B66B *23/12*
U.S. Cl. 198—333 **9 Claims**



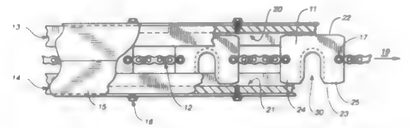
1. A dual-purpose escalator for a wheelchair, comprising:
a plurality of steps linked in an endless form;
a main-frame including a running path for said steps;
said steps including a plurality of specialized steps for loading a wheelchair; and
activation means provided on said running path for causing said specialized steps to alter a configuration thereof to a first state for a wheelchair loading operation mode or to restore said configuration to a second state for normal operation mode;
each of said specialized steps including a toothed rotor;
said activation means including an engagement member for engaging with said toothed rotor;
each of said toothed rotors being rotated by engaging with said engagement member for causing one of said specialized steps to alter said configuration to said first state when said steps are running in said running path in said wheelchair loading operation mode;
said engagement member including a base and a plurality of pins set in parallel on said base at a specified pitch for engaging with said toothed rotor; and
said pin engaging firstly with said toothed rotor being set on said base so as to be capable of displacement from said toothed rotor.

5,353,908

SUSPENDED CONVEYANCE APPARATUS

Daryl E. Wiblidal, Modesto, Calif., assignor to Shibuya Kogyo Company, Ltd., Japan

Filed Feb. 12, 1992, Ser. No. 836,063
Int. Cl.[5] B65G *47/00*
U.S. Cl. 198—339.1 **79 Claims**



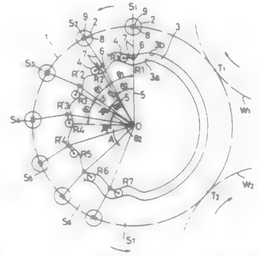
1. A conveyance apparatus for transporting containers, the containers having an annular neck projection formed thereon, comprising:
means for suspending the containers by their respective annular neck projections comprising a plurality of support elements;
linking means for flexibly linking said support elements to form an endless conveyor chain; and
guide means engaging said support elements and defining a path of travel for said endless conveyor chain; said support elements each defining a "U" shaped recess having a pair of substantially parallel sides oriented transverse to the path of travel of said endless conveyor chain so that said "U" shaped recess is accessible from the side of said path of travel, said "U" shaped recess being sized to receive the container neck and being sized smaller than the annular neck projection of the container, said "U" shaped recess further being sized so that said substantially parallel sides of said "U" shaped recess extend beyond the container neck of any container received therein to suspend the container in said "U" shaped recess.

5,353,909

FEEDING AND INDEXING APPARATUS

Takahiro Mukai; Toshikazu Nakayama, and Shoji Yamagishi, all of Yokohama, Japan, assignors to Kirin Techno-System Corporation, Yokohama, Japan

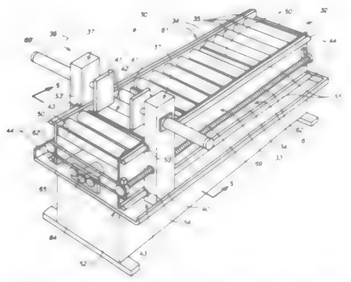
Filed Aug. 26, 1993, Ser. No. 111,902
Claims priority, application Japan, Aug. 29, 1992, 4-254138; Jul. 22, 1993, 5-201826
Int. Cl.[5] B65G *17/00*
U.S. Cl. 198—343.2 **7 Claims**



1. A feeding and indexing apparatus comprising:
a plurality of article feed units spaced along and movable in a circular path for carrying articles, respectively;
cam means disposed radially inwardly of and concentrically with said circular path, said cam means having a wavy cam profile including a plurality of mountains and a plurality of valleys alternating with said mountains;
a plurality of cam followers movable in contact with said cam means;
drive arm means rotatable about a center of said cam means for moving said article feed units;
a plurality of driven arms operatively coupled to said drive arm means and to said cam followers at respective junction points; and
a plurality of connecting members operatively coupled to said driven arms, and to corresponding article feed units, each of said connecting members being provided for allowing the respective distance between a rotating axis of said driven arm and a corresponding article feed unit to vary;
wherein said article feed units can start and atop along said circular path at specific intervals when said drive arm means is rotated at a constant speed; and
wherein a pitch angle defined between adjacent ones of said mountains or valleys is different from a pitch angle defined between adjacent ones of said junction points of said drive arm means and said driven arms.

VOL 1167 ISS 2 OC 11 1994 UMI

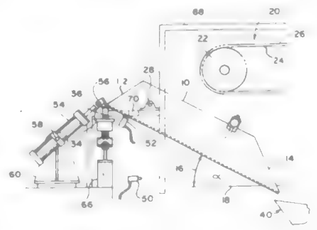
5,353,910
SHUTTLE VISE ASSEMBLY FOR A FEED TABLE APPARATUS
Gerald R. Harris, Chouteau, and Richard H. Porterfield, Pryor, both of Okla., assignors to Hem, Inc., Pryor, Okla.
Filed Dec. 23, 1992, Ser. No. 995,878
Int. Cl.[5] B65G *15/64*
U.S. Cl. 198—345.1 22 Claims



1. A feed table apparatus for clamping a workpiece for cutting by a machine tool comprising:
(1) a roller assembly including;
(a) an elongated roller framework having a longitudinally extending first wall and an oppositely facing longitudinally extending second wall,
(b) at least one cross-member rigidly mounted to and transversely extending between said first wall and said second wall, and
(c) roller means rotatably mounted between said first wall and said second wall for rolling support of said workpiece along said framework assembly; and
(2) a vise assembly including
(a) a reaction frame having a first post adjacent said first wall and a second post adjacent said second wall,
(b) two opposed jaws mounted to said reaction frame assembly between said first post and said second post, said jaws defining a workpiece gripping channel therebetween proximate and above said roller means, and at least one of said jaws being mounted to said reaction frame assembly for movement toward the other of said jaws to clamp said workpiece therebetween, and
(c) coupling means mounting said reaction frame to said elongated roller framework for transfer of substantially the entire reaction forces along the direction of clamping said workpiece from said reaction frame to said elongated roller framework and said cross-support.

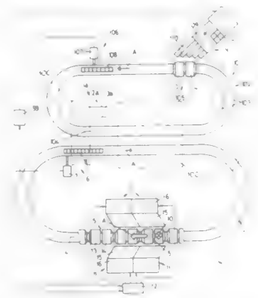
5,353,911
METHOD AND APPARATUS FOR MONITORING THE FLOW OF SOLID MATERIALS
David J. Akers, and Jurgen Brat, both of Indiana, Pa., assignors to CQ Inc., Homer City, Pa.
Filed Sep. 7, 1993, Ser. No. 118,395
Int. Cl.[5] B65G *37/00*
U.S. Cl. 198—360 51 Claims

1. In a method of operating a materials handling system comprising moving a flowable bulk material which is subject to variations in flowability through a system comprising a plurality of successive handling stages at a desired throughput rate, wherein the improvement comprises:
(a) identifying from said plurality of stages a critical stage in which variations in the flowability of the bulk material may result in the existence of flow conditions in said critical stage which would result in the overall system throughput rate not being achieved;
(b) providing an additional test stage upstream from said critical stage and inducing in said additional test stage flow of said bulk material which simulates the flow of the bulk material in the critical stage; and



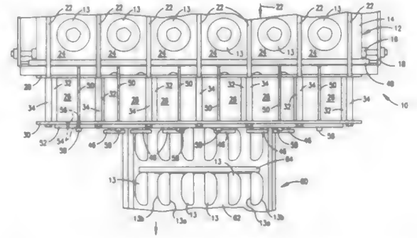
(c) sensing flow conditions in said additional test stage and ascertaining the existence of flow conditions which would prevent the overall system throughput rate from being achieved.

5,353,912
ARRANGEMENT FOR THE SORTING OF PIECE GOODS
Viktor Killer, Riedikon, and Willy Maier, Kloten, both of Switzerland, assignors to Grapha-Holding AG, Hergiswil, Switzerland
Filed Jan. 28, 1993, Ser. No. 10,633
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1992, 4203799
Int. Cl.[5] B65G *47/10*
U.S. Cl. 198—365 39 Claims



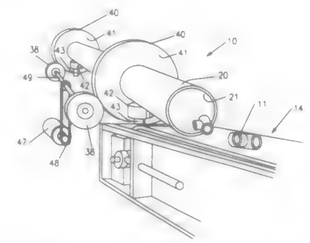
1. A sorting plant for unit loads that comprises:
a first closed rail that forms a first loop; several first carts that move on said first rail and are coupled to form a first endless cart chain, wherein each of said first carts has a first receptacle that can be tilted in at least one direction from a horizontal starting position into a tilting position about an axis that extends along the longitudinal direction of said cart, and each of said first carts has a first activation element to tilt said first receptacle;
a first drive to drive said first cart chain;
at least one loading station along said first loop to load said first receptacles with unit load;
at least one second closed rail, said at least one second closed rail forming a second loop;
several second carts that move on said at least one second rail and are coupled to form a second endless cart chain, wherein each of said second carts has a second receptacle that can be tilted from a horizontal starting position into a tilting position, and each of said second carts has a second activation element to tilt said second receptacle;
a second drive to drive said second cart chain;
a plurality of transfer stations on each of said second loops in which said second carts of said second loops move parallel to said first carts;
a synchronizing device that synchronizes the speed and relative position of said first and second cart chains in such a way that one of said first carts rolls into one of said transfer stations adjacent to one of said second carts at the same speed, but offset by a predetermined longitudinal distance; and
at least one switching element per each of said transfer stations that can be switched between an active and inactive state, whereby said switching element activates said activation element of one of said passing first carts in the active state and tilts said first receptacle in such a way that the unit load transported on said receptacle slides onto said second receptacle of said second cart moving adjacent to the same.

5,353,913
PACKAGING MACHINE FOR BAKERY PRODUCTS
Leslie J. Steiger, Grandview; Laclede L. Hill, Kansas City, both of Mo.; William E. Norton, Edwardsville, Kans.; Randyl C. Hanson, Lake Lotawana, Mo.; Eric C. Scheier, Lenexa, Kans., and Paul M. Bastasch, Overland Park, Kans., assignors to United Bakery Equipment Company, Lenexa, Kans.
Filed Sep. 30, 1993, Ser. No. 129,584
Int. Cl.[5] B65G *47/30*
U.S. Cl. 198—418.6 10 Claims



1. A machine for use in the packaging of bakery products, comprising:
an infeed conveyor for conveying the bakery products in successive rows each containing a plurality of the bakery products lying flatly side by side with the other bakery products in the row and each oriented transverse to the direction of movement of the bakery products;
a plurality of chutes at an end of said infeed conveyor, each chute having an open top for receiving one of the bakery products in each row;
a deflector for each chute for rotationally deflecting each bakery product that enters the chute to an orientation in which an edge of the bakery product faces generally downwardly;
means for retaining each deflector adjacent the open top of the corresponding chute at two different alternative positions located on opposite sides of the transverse center of the bakery product entering the chute, thereby allowing each deflector to be selectively located to deflect the bakery products in opposite rotational directions; and
conveyor means underlying said chutes for receiving the bakery products discharging from the chutes on edge and for conveying the bakery products on edge in groups containing the bakery products arranged generally face to face.

5,353,914
MECHANISM AND METHOD FOR ORIENTING ARTICLES
John E. Stephen, Twinsburg, and John R. Baclawski, Streetsboro, both of Ohio, assignors to R&G Sloane Mfg. Co., Little Rock, Ark.
Filed Apr. 27, 1993, Ser. No. 52,759
Int. Cl.[5] B65G *47/12*
U.S. Cl. 198—443 7 Claims



1. Mechanism for orienting articles of uniform size and asymmetrical shape, comprising:
a base;
a platform disposed above said base;
means adjustably positioning the platform relative to said base including a hinge at one end of the platform supporting the platform for tilting movement about a transverse hinge axis, and an adjustable support for the opposite end portion of the platform holding the platform in a preselected angular position about the hinge axis with the opposite end portion of the hopper elevated;
a supply hopper mounted on the elevated end portion of the platform and having a discharge opening for releasing articles downwardly toward the platform;
an elongated, hollow tube disposed above said platform and having an open upper end adjacent said hopper to receive articles from the discharge opening and an open lower end adjacent the lower end of the platform for releasing the articles, said tube having a relatively smooth-walled bore of circular cross-section of a preselected size substantially larger than the articles to be oriented;
means supporting said tube on said platform for rotation about the longitudinal axis of the tube, including two rollers positioned along said tube and spaced apart transversely thereof, and a circular support surface coaxial with said tube having an outside diameter larger than said preselected distance and nested between said rollers to be supported thereby with the underside of the tube at a preselected level above the platform;
a variable speed motor drivingly coupled to one of said rollers to rotate said tube at a selected rate of rotation thereby to agitate the articles laterally as the articles gravitate down the tube;
and at least one additional elongated tube similar to, and interchangeable with, the first-mentioned tube and having a bore of substantially different size for use in orienting articles of a substantially different size, said additional tube also having a coaxial circular support surface having an outside diameter larger than said preselected distance and different from the outside diameter of the surface of the first-mentioned tube to support the underside of the additional tube at said preselected level above the platform;
the angle of said platform and the rate of rotation of said drive rollers being adjustable to provide selected gravitation and agitation rates and said tubes being interchangeable for different sizes of parts.

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5,353,915

METHOD AND APPARATUS FOR CONVERTING A MULTIPLE ROW STREAM OF CONTAINERS INTO A SINGLE FILE STREAM

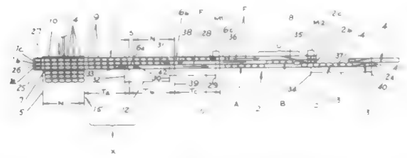
Egon Schneider, Neutraubling, Fed. Rep. of Germany, assignor to Krones AG Hermann Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Germany

Filed Jun. 9, 1993, Ser. No. 73,888

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1992, 4219506; Sep. 24, 1992, 4231993

Int. Cl.[5] B65G *47/12*

U.S. Cl. 198—447 **25 Claims**



1. A method of converting a plurality of parallel rows of containers into a single file stream, comprising:

depositing on adjacent parallel infeed conveyors a group of parallel rows of containers with one row on each conveyor,

conveying on the infeed conveyor one of the rows initially through a distance substantially equal to the length of said row and conveying successively adjacent rows through distances, respectively equal to increasing multiples of the length of a row to arrange the rows in series and in straight lines and parallel and successively staggered relative to each other with said one of the rows being the last row in the series and another of the rows being the first row in the series in the direction of conveyance with at least one row being intermediate said first and last rows in the series,

continuing conveyance of the rows to a conversion region while maintaining the containers in each row in a straight line for said first row and intermediate row or rows to remain in order and in staggered relation to impact in the stated order a deflector angulated to the direction of conveyance for shifting the staggered rows of containers into a single file stream with said one row.

5,353,916

CONVEYER APPARATUS

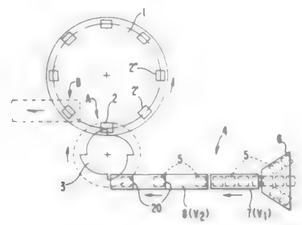
Martin Lehmann, Obere Farnbühlstrasse 1, 5610 Wohlen, Switzerland

Filed Mar. 16, 1993, Ser. No. 31,869

Claims priority, application Switzerland, Mar. 16, 1992, 831/92-9

Int. Cl.[5] B65G *47/31*

U.S. Cl. 198—461 **10 Claims**



1. A conveyor apparatus for a plurality of individual articles, the conveyer apparatus including a means for spatially separating the articles being conveyed along a conveying path of the conveyer apparatus, said conveying path comprising an inflow path section and a directly subsequent outflow path section disposed in substantially a common horizontal plane, wherein each path section includes an independent conveyor device having an endless article supporting conveyor belt, each of the conveyer belts include conveying members extending transversely of the respective conveyer belts for facilitating conveying of the respective articles, whereby a running speed of the conveyor belt of the inflow path section is less than a running speed of the outflow path section, such that, upon the transfer of the articles being conveyed from the inflow path section to the outflow path section, a spatial separation of the articles is produced which closely follow each other on the inflow path section.

5,353,917

MULTIPLE-CHANNEL VIBRATING FEEDING TABLE

Roberto Maggioni, Largo Mozart 7, 20064 Gorgonzola (Province of Milan), Italy, assignor to Roberto Maggioni, Gorgonzola, Italy

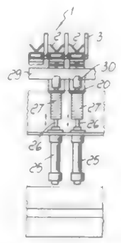
Continuation of Ser. No. 911,573, Jul. 10, 1992, Pat. No. 5,190,139. This application Jul. 9, 1993, Ser. No. 91,135

Claims priority, application Italy, Jul. 23, 1991, MI91A002032

The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.

Int. Cl.[5] B65G *43/10*

U.S. Cl. 198—570 **8 Claims**



1. Multiple-channel vibrating feeding table comprising: a table provided with a plurality of mutually adjacent troughs which define channels for conveying loose parts in general, motor means including a single motor for vibrating said table, and means for connecting each of said troughs to said motor means which can be activated individually for the vibratory actuation of only selected trough or troughs.

5,353,918

RECIPROCATING CONVEYOR WITH REINFORCED FLOOR MEMBERS

Raymond K. Foster, P.O. Box 1, Madras, Oreg. 97741

Division of Ser. No. 54,533, Apr. 28, 1993. This application Jan. 25, 1994, Ser. No. 186,173

Int. Cl.[5] B65G *25/00*

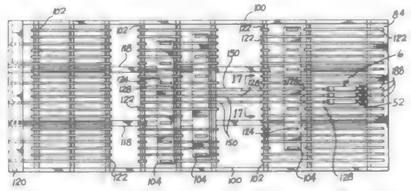
U.S. Cl. 198—750 **34 Claims**

1. In a reciprocating floor conveyor, the combination comprising:

a plurality of floor members divided into sets and groups, each group including at least two adjacent independent floor members, and each set including one floor member from each group;

a plurality of linear motors, one for each set of floor members; each said motor including a rear end attached to a fixed support, and an opposite forward end attached to one of the floor members in the corresponding set; and each said one of the floor members including a top portion and opposite side portions defining a downwardly opening channel;

a plurality of reinforcing bars, one for each motor; each said bar being attached to and extending forwardly from said forward end of its corresponding motor, said bar being received into said channel of the corresponding floor member and being attached to said top portion to reinforce said corresponding floor member; and



a plurality of transverse drive beams, one for each set of floor members; each drive beam being positioned below each floor member of its set of floor members, and being attached to, and positioned below, the reinforcing bar for its set of floor members.

5,353,919

DEVICE FOR SUPPORTING A CONVEYING ROLLER OF A ROLLER KILN

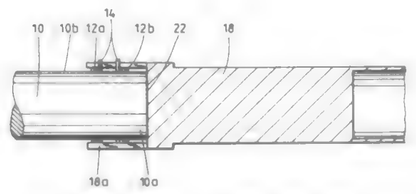
Günter Buchner, Nürnberg; Volker Rieck, Schwanstetten, and Friedherz Becker, Wendelstein, all of Fed. Rep. of Germany, assignors to Riedhammer GmbH und Co. KG, Nuremberg, Fed. Rep. of Germany

Filed Nov. 10, 1993, Ser. No. 150,459

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1992, 4237862

Int. Cl.[5] B65G *13/06*

U.S. Cl. 198—789 **13 Claims**



1. Device for supporting a conveying roller (**10**) of a roller kiln, the conveying roller (**10**) having a drive-side free end (**10***a*), said device having the following characteristics:

at least one annular body (**12***a*, **12***b*), which has at least one, radially outwardly projecting, pin-like projection (**14**), is arranged around the drive-side free end (**10***a*) of the conveying roller (**10**),

the free end (**10***a*) of the conveying roller (**10**) is enclosed by a tubular adapter (**18**),

the adapter (**18**) has axially extending grooves (**16**), whose number and position correspond to the number and position of the pin-like projections (**14**),

each groove extends from the free end of the adapter (**18**),

along its longitudinal extension, each groove (**16**) has at least one tangential bulge (**20***b*) extending in a direction opposite the direction of rotation of the conveying roller (**10**), for receiving the corresponding pin-like projection (**14**) of the body (**12***a*, **12***b*), and

the adapter (**18**) can be coupled at its opposite end with a drive mechanism.

5,353,920

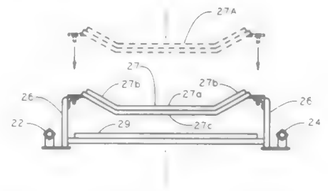
EXTENSIBLE CONTINUOUS HAULAGE SYSTEM

James J. Szalankiewicz, Indiana; Alan R. Polka, Slickville, and Scott A. Walter, Kittanning, all of Pa., assignors to S&S Slides, Inc., Kittanning, Pa.

Filed Sep. 23, 1993, Ser. No. 125,598

Int. Cl.[5] B65G *15/08*

U.S. Cl. 198—823 **16 Claims**



1. An extensible conveyor apparatus for a continuous haulage system, comprising:

a. a continuous conveyor belt for carrying mined material discharged from a continuous miner in an underground mine;

b. a top slider for supporting said continuous conveyor belt;

c. a bottom belt return for supporting said continuous conveyor belt on its return cycle;

d. a slider holding frame for holding said top slider, said slider holding frame comprising a plurality of floor-supported frame members held in position by belt tension, said slider holding frame capable of rapid and nimble extendable, retractable construction in the mine; and

e. rails for connecting and holding adjacent frame members in position by press-fit attachment of said rails to said frame members, wherein said rails are quickly rotatable to change the top wear surface.

5,353,921

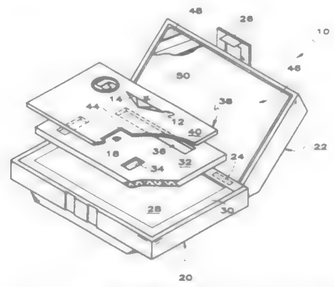
INSIGNIA CASE

D. Lee Tyra, P.O. Box 937, Portland, Tex. 78374

Filed Aug. 30, 1993, Ser. No. 112,935

Int. Cl.[5] B65D *81/00*

U.S. Cl. 206—6.1 **10 Claims**



1. A case for holding insignia of the type comprising a relatively flat section having at least one prong perpendicular to the flat section, comprising

a bottom, a top and means connecting the top and bottom together allowing movement between a closed position and an open position;

a first foam layer in the bottom having a first recess therein;

a second layer having a first covering of felt like material capable of passing the prong therethrough and having a second recess therein for receiving keepers attachable to the prongs, the second recess being out of registry with

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the first recess and extending through the second foam layer to provide an opening through the second foam layer and exposing the first foam layer, the second foam layer lying upon and being unconnected to the first foam layer; and

a third foam layer in the top having a second covering of felt like material, the first and second coverings abutting in the closed position of the top and bottom.

7. A case for holding insignia of the type comprising a relatively flat section having at least one prong perpendicular to the flat section, comprising

a bottom, a top and means connecting the top and bottom together allowing movement between a closed position and an open position;

a first foam layer in the bottom having a first covering of felt like material capable of passing the prong therethrough;

a second foam layer in the top having a second covering of felt like material, the first and second coverings abutting in the closed position of the top and bottom; and

a plurality of insignia including a relatively flat central section and at least one prong extending from the central section, the prong extending into the first foam layer and through the first felt covering, the second felt covering abutting the central section in the closed position of the case.

5,353,922

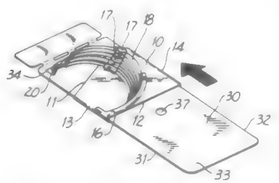
RETAINER FOR A COMBINED SURGICAL NEEDLE-SUTURE DEVICE POSSESSING A NEEDLE SHIELD WITH NEEDLE TIP STOP FEATURE

Hans-Jurgen F. Sinn, Fairfield, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 816,101, Jan. 2, 1992, abandoned. This application Jul. 28, 1993, Ser. No. 98,742

Int. Cl.[5] A61B *17/06*

U.S. Cl. 206—63.3 **15 Claims**



12. A retainer for a combined surgical needle-suture combination, the retainer comprising:

a) a base panel having means for enclosing at least one suture of a combined needle-suture device; and

b) a needle shield configured and dimensioned to be mounted on said base panel, said needle shield and base panel defining a cavity for enclosing at least the pointed tip of at least one needle between the needle shield and the base panel, the needle shield having a projection formed thereon, said projection defining a stop positioned to contact a pointed tip of a surgical needle and thereby retain at least a pointed tip of a needle of a combined surgical needle-suture device between said base panel and said needle shield.

5,353,923

SOAP HANGER DEVICE

Roger E. Skeels, 356 Fells Rd., Essex Fells, N.J. 07021

Filed Jan. 19, 1994, Ser. No. 183,490

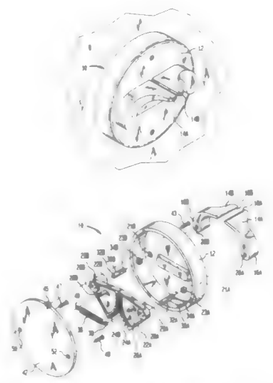
Int. Cl.[5] A47K *5/08*

U.S. Cl. 206—77.1 **29 Claims**

1. A soap holder comprising:

a housing having an interior and an exterior;

a plurality of coacting arms rotatably connected to said housing and being disposed for synchronous movement with each other from a first position at which said plurality of coacting arms are normally biased to a nonengaged configuration and a second position at which said plurality of coacting arms are biased to an engaged configuration upon insertion of a bar of soap therebetween; and



phase control means operatively connected to said plurality of coacting arms and being rotatably mounted at said interior of said housing for synchronizing rotatable movement of said plurality of coacting arms.

5,353,924

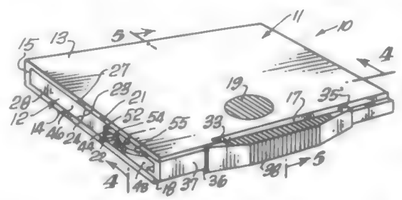
COIN CASSETTE

Max Jaffee, Studio City, Calif., assignor to Edmund Amzallag, Encino, Calif.

Filed Jun. 18, 1993, Ser. No. 80,476

Int. Cl.[5] A45C *1/00*; **B65D** *43/20*

U.S. Cl. 206—0.83 **45 Claims**



1. A coin cassette comprising

a sleeve having spaced panels joined together by a spacer member at a bottom of the sleeve, said panels having edges forming an open top and at least one set of side edges forming at least one extending from the open top towards the spacer member,

a cartridge including at least one slotted formation for coins and being slidably mounted within said spaced panels, and

means for maintaining the relative sliding between said sleeve and said cartridges in a direction towards and through said one open end.

5,353,925

PRESERVATION METHOD AND DEVICE FOR A COLLECTABLE ARTICLE

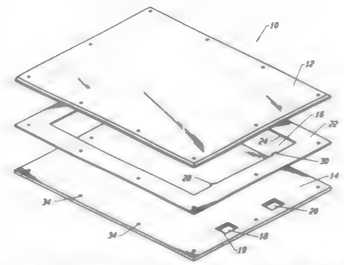
Christopher K. Leanen, 352 Elwood St., Redwood City, Calif. 94062; Richard A. Leanen, Campbell, Calif.; Rory W. Fuerst, Atherton, Calif., and Horace C. Jones, Mountain View, Calif., assignors to Christopher K. Leanen, Redwood City, Calif.

Continuation of Ser. No. 856,471, Mar. 24, 1992, abandoned.

This application Jun. 28, 1993, Ser. No. 84,762

Int. Cl.[5] B65D *81/26*

U.S. Cl. 206—204 **11 Claims**



1. A device adapted for preserving a collectable article, comprising:

(a) a front panel;

(b) a back panel;

(c) a spacing sheet sandwiched between said front and back panels, which sheet includes a peripheral interior edge, said interior edge together with said front and back panels defining a cavity for receiving said article, positioning means on said interior edge for positioning and retaining said article spaced from said edge when said article is located in said cavity, in order to create a channel between said article and said edge;

(d) exposing means in gaseous communication with said channel when the article is in said cavity; and

(e) a desiccant contained within a recess for absorbing moisture vapor from a gaseous substance.

3. A device adapted for preserving a collectable article, comprising:

(a) a front panel;

(b) a back panel;

(c) a spacing sheet sandwiched between said front and back panels, which sheet includes a peripheral interior edge, said interior edge together with said front and back panels defining a cavity for receiving said article, positioning means on said interior edge for positioning and retaining said article spaced from said edge when said article is located in said cavity in order to create a channel between said article and said edge and

(d) exposing means in gaseous communication with said channel when the article is in said cavity,

said exposing means including at least one recess in one of said panels which is partially coextensive with said cavity and partially coextensive with the width of said spacing sheet, said recess being adapted to be in gaseous communication with said channel when said article is in said cavity.

5,353,926

MUG AND COASTER ASSEMBLY

Frank Yeh, 1019 N. Mayflower St., Anaheim, Calif. 92801

Filed Nov. 19, 1993, Ser. No. 155,575

Int. Cl.[5] B65D *23/08*

U.S. Cl. 206—217 **11 Claims**

1. A coaster adapted to be removably attached to a receptacle, the coaster comprising:

a flat bottom, the flat bottom comprising an outer edge, an upper surface, a lower surface, and a plurality of openings spaced apart around the flat bottom, the flat bottom further comprising a plurality of protrusions disposed on the lower surface for providing frictional engagement with a supporting surface; and

a straight, resilient and flexible annular side wall formed integrally with the outer edge of the flat bottom, the side wall extending radially outwardly at an angle from the outer edge of the flat bottom and terminating at a resilient annular lip, the annular lip extending radially inwardly from the side wall.

5. A coaster and receptacle assembly, the assembly comprising:

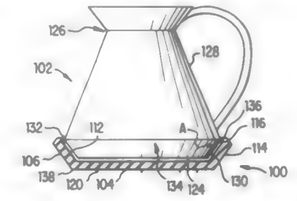
(a) a coaster, the coaster comprising:

(i) a flat bottom, the flat bottom comprising an outer edge, an upper surface, and a lower surface; and

(ii) a straight, resilient and flexible annular side wall formed integrally with the outer edge of the flat bottom, the side wall having an inner surface and outer surface, the annular side wall extending radially outwardly at an angle from the outer edge of the flat bottom and terminating at a resilient annular lip, the annular lip extending radially inwardly from the side wall; and

(b) a receptacle, the receptacle comprising a bottom and a lower straight, annular side wall extending radially outwardly at an angle from the bottom of the receptacle and terminating at a bend where it is integrally connected with an annular upper side wall, the annular upper side wall extending radially inwardly at an angle from the bend;

(c) wherein the receptacle is snugly fitted inside the coaster with the annular lip of the coaster resiliently gripping the bend of the receptacle to hold the coaster securely to the receptacle.



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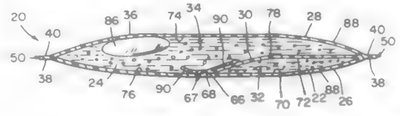
PLURAL COMPARTMENT PACKAGE

Jeffrey M. Stupar, West Dundee; Donald L. Van Erden, Wildwood, and Guenther R. Kram, Bartlett, all of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Feb. 24, 1993, Ser. No. 21,787

Int. Cl.[5] B65D *25/08*

U.S. Cl. 206—219 **20 Claims**



1. A plural compartment package for mixing materials therein, comprising:

a first sheet of packaging material;

a second sheet of packaging material overlapping said first sheet of packaging material;

said first and second sheets of packaging material being joined together such that an area is defined therebetween;

a third sheet of packaging material located between and

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joined to said first and second sheets of packaging material such that a first compartment for holding a first material is defined between said third sheet of packaging material and said first sheet of packaging material, and a second compartment for holding a second material is defined between said second and third sheets of packaging material;

said third sheet of packaging material having a weakened area which is rupturable upon the application of pressure thereto for enabling said first and second materials to mix together; and

non-porous, rupturable cap means secured to said third sheet of packaging material and overlying said weakened area of said third sheet of packaging material for preventing discharge of said first material from said first compartment until said application of said pressure ruptures both said weakened area of said third sheet of packaging material and said cap means whereby said first material is discharged from said first compartment into said second compartment for mixing with said second material.

5,353,928

MULTICOMPONENT PACKAGE

Clemens Schumacher, Sundern, Fed. Rep. of Germany, assignor to Robert Finke GmbH & Co. KG, Finnentrop, Fed. Rep. of Germany

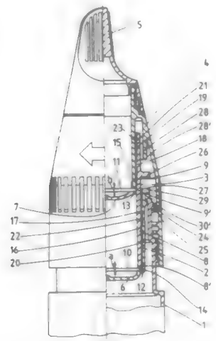
PCT No. PCT/EP91/00943, § 371 Date Feb. 13, 1992, § 102(e) Date Feb. 13, 1992, PCT Pub. No. WO91/17930, PCT Pub. Date Nov. 28, 1991

PCT Filed May 21, 1991, Ser. No. 834,337

Claims priority, application Fed. Rep. of Germany, May 21, 1990, 4016282

Int. Cl.[5] B65D *25/08*

U.S. Cl. 206—222 **25 Claims**



1. A multi-component package having an outer container with a neck opening in a top of the container, and a screw cap attachable to said container for covering said opening;

a first cup formed by a first bottom wall integrally connected to a first sidewall, there being an annular step between said first bottom wall and said first sidewall defining a line of weakness to enable separation of said first bottom wall from said first sidewall, said first cup being located within said container with a bottom of said first cup being adjacent to a bottom of a neck said container;

an impact collar having an annular sidewall with an open bottom edge coaxial to said container and to said first cup;

a second cup disposed in said container between said first cup and the top of said container, said second cup having a second bottom wall and a second sidewall connecting with the second bottom wall via a line of weakness, said second cup being connected to an inside surface of said annular sidewall of said impact collar, said impact collar extending from said first cup to encircle said second cup, and an outer surface of said annular sidewall of said impact collar being sealed to said first cup;

wherein rotation of said screw cap relative to said container causes separation of the connection between said second cup and said annular sidewall of said impact collar to force said second sidewall of said second cup towards said second bottom wall to separate said second bottom wall of said second cup from said second sidewall; and

upon further movement of said impact collar away from the top of said container, said bottom edge of said impact collar engages with said annular step of said first cup to separate the first bottom wall of said first cup from said first sidewall.

5,353,929

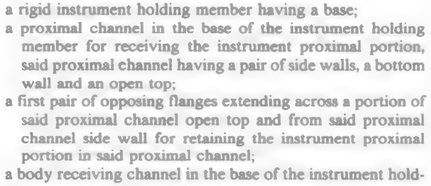
PACKAGE FOR SURGICAL INSTRUMENT

Brian W. Foster, Trumbull, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Apr. 19, 1993, Ser. No. 49,483

Int. Cl.[5] B65D *83/10*

U.S. Cl. 206—364 **12 Claims**



1. A package for an elongated instrument having a proximal portion, an elongated body portion and a distal end, the package comprising:

a rigid instrument holding member having a base;

a proximal channel in the base of the instrument holding member for receiving the instrument proximal portion, said proximal channel having a pair of side walls, a bottom wall and an open top;

a first pair of opposing flanges extending across a portion of said proximal channel open top and from said proximal channel side wall for retaining the instrument proximal portion in said proximal channel;

a body receiving channel in the base of the instrument holding member for receiving the instrument body portion, said body receiving channel defined by a pair of side walls, a bottom wall and an open top;

a distal end receiving channel in the base of the instrument holding member for receiving the instrument distal end; and

a second pair of opposing flanges extending from said body channel side walls across a portion of said body channel open top for retaining the instrument body portion in said body receiving channel wherein a first distance separates said first pair of flanges and a second distance separates said second pair of flanges, such that the distance between the said first pair of flanges is greater than the distance between said second pair of flanges.

5,353,930

VACUUM-FORMED ENCLOSURE WITH VACUUM-FORMED APERTURES

Bernie B. Berry, Jr., Indianapolis, Ind., assignor to Carr Metal Products, Inc., Indianapolis, Ind.

Filed Aug. 6, 1993, Ser. No. 102,720

Int. Cl.[5] B65D *81/18*

U.S. Cl. 206—370 **4 Claims**

1. A vacuum-formed storage tray comprising:

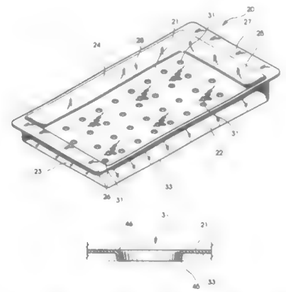
a base panel having an outer surface and opposite thereto an interior surface;

a plurality of side panel integrally joined with and around said base panel and each of said plurality of side panels

extending in a first direction away from said interior surface;

a plurality of side panel flanges, one each of said plurality of side panel flanges being integrally formed with a corresponding one of said side panels; and

a plurality of sterilant passageways disposed in said base panel, each passageway of said plurality of sterilant passageways being defined in part by a vacuum-formed sidewall and in part by a radiused edge portion which integrally connects the corresponding vacuum-formed sidewall with said base panel, each sterilant passageway having a first aperture which is generally coincident with the base panel and a second aperture defined by said vacuum-formed sidewall, each vacuum-formed sidewall extending in a second direction away from said outer surface, said second direction being opposite to said first direction and wherein the outermost extent of each of said vacuum-formed sidewalls in said second direction creating a free edge, each free edge defining its corresponding second aperture.



5,353,931

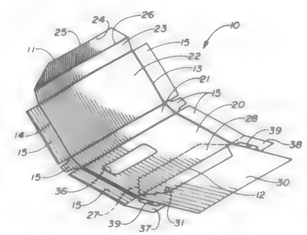
PACKAGE FOR RECORDED VIDEO DEVICE

Alan L. Antik, 6 Sunny Meadow Ct., Baltimore, Md. 21209

Continuation-in-part of Ser. No. 836,354, Feb. 18, 1992, which is a continuation-in-part of Ser. No. 679,211, Apr. 2, 1991, abandoned. This application Sep. 3, 1992, Ser. No. 940,043

Int. Cl.[5] B65D *5/66, 85/57*

U.S. Cl. 206—387 **8 Claims**



1. A package for containing a video recording, comprising:

a box portion having adjoining first, second, third and fourth sidewalls and first and second end walls, the sidewalls and the end walls being closable to retain therein the video recording,

a covering flap having a first end and a second opposite end, the second end of the covering flap being joined to the fourth sidewall, the covering flap being folded and being extended partially over the first sidewall, the first end of the covering flap being removably attached to the first sidewall thereby providing an envelope appearance for the package, the first sidewall having an edge having a recessed portion on said edge, wherein when the first end of the covering flap is removably attached to the first sidewall, the recessed portion of the edge on the first sidewall is covered by the covering flap and the package is closed, and when the first end of the covering flap is disconnected from the first sidewall, the package may be opened to permit, access to the video recording within the package being facilitated by the recessed portion on the edge of the first sidewall, a panel foldably joined to the edge of the first sidewall, the panel being disposed inside the package adjacent to the first sidewall, wherein a written material may be removably inserted between the first sidewall and the panel such that a recipient of the package may be provided with advertising, informational or instructional material related to the video recording.

5,353,932

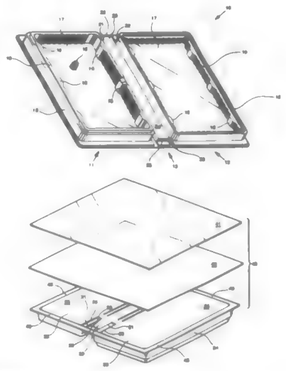
VIDEO CASE AND METHOD OF MANUFACTURING

Kurt Kollinek, Wayne, N.J., assignor to American Sealcut Corporation, South Hackensack, N.J.

Filed Sep. 3, 1993, Ser. No. 117,400

Int. Cl.[5] B65D *85/672*

U.S. Cl. 206—387 **15 Claims**



1. A foldable case comprising:

a) first and second case sections joined by an integral flexible spine to form an integral body, the first and second case sections on a first major side defining a well for receiving an object such that the case sections can be closed with the object inside,

b) said first and second case sections and integral flexible spine comprising a sandwich made up of a thermoformed member of relatively rigid thermoplastic material forming said first major side of said first and second case sections and integral flexible spine and having an opposite second major side, a stiffener sheet-like member on the second major side, and at least one relatively flexible sheet of thermoplastic material over the stiffener member and heat-sealed around a substantial part of its periphery to the periphery of the thermoformed member so as to enclose the stiffener member,

c) said flexible spine having on said second major side a generally elongated rectangular well defined by long sides and short sides,

d) said flexible spine further having along its well sides means for forming an interference fit with edge portions of the stiffener member thereby to hold temporarily the stiffener member properly aligned with the thermoformed member during manufacture.

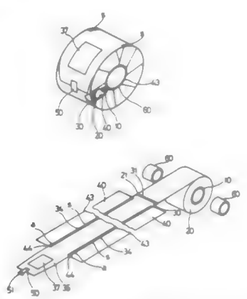
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5,353,933

PACKAGE OF ROLLED PHOTOSENSITIVE MATERIAL

Hisashi Takahashi; Shigehisa Shimizu; Satoshi Mino; Hiroyuki Osanai, and Koji Kudo, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Jul. 14, 1993, Ser. No. 91,031
Claims priority, application Japan, Jul. 15, 1992, 4-049601[U]
Int. Cl.[5] B65D *85/67*
U.S. Cl. 206—398 9 Claims



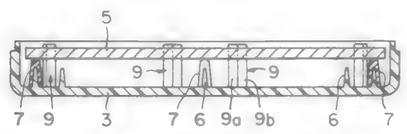
1. A package of a rolled photosensitive material comprising a core, a photosensitive strip material having an end and wound around the core to provide a peripheral surface, a light-shielding leader connected to the end of the photosensitive material to shield the peripheral surface of the photosensitive material from light and side light-shielding covers connected to both sides of the light-shielding leader so that the boundary between the side light-shielding covers and the light-shielding leader corresponds to the boundary between the peripheral surface and the side surface of the photosensitive strip material, said core being formed by laminating at least 2 sheets of a moistureproof base paper.

5,353,934

SUBSTRATE HOLDING CASE

Takashi Yamauchi, Tokyo, Japan, assignor to Dai Nippon Printing Co., Ltd., Japan

Filed Aug. 3, 1993, Ser. No. 99,927
Claims priority, application Japan, Aug. 6, 1992, 4-229382
Int. Cl.[5] B65D *85/30*
U.S. Cl. 206—454 25 Claims



1. A substrate holding case for holding a substrate of a quadrangular plate shape having opposite major surfaces and four side edges, comprising:

a case body including a top cover and a bottom cover, said top and bottom covers each having an inner surface, each inner surface opposing the other;

substrate holding means adapted for holding a substrate inside the case body with its major surfaces in confronting relation with said inner surfaces of the top and bottom covers, respectively, said substrate holding means comprising a plurality of holding protrusions extending from each of said inner surfaces toward respective confronting major surfaces of a held substrate, and caps replaceably fitted on at least some of said protrusions, each of said caps being made of an elastic material and having a round tip adapted for abutting contact with its associated major surface of a held substrate; and

substrate positioning means provided on at least one of said inner surfaces, said substrate positioning means comprising projections extending toward a held substrate inside the case body and being disposed for abutment with the four side edges of a held substrate so as to position the substrate with respect to directions along the major surfaces of the substrate.

12. A substrate holding case for holding a substrate of a rectangular plate shape having opposite major surfaces, four corners and four side edges, comprising:

a case body including a top cover and a bottom cover, said top and bottom covers each having an inner surface, each inner surface opposing the other substrate holding means adapted for holding a substrate inside the case body with its major surfaces in confronting relation with said inner surfaces of the top and bottom covers, respectively, said substrate holding means comprising a plurality of holding protrusions extending from each of said inner surfaces toward respective confronting major surfaces of a held substrate, said protrusions including first protrusions disposed in a rectangular configuration on each of said inner surfaces of the covers, said first protrusions being positioned at the four corners of the rectangular configuration, and second protrusions disposed at positions adjacent to, and displaced toward the center of the rectangular configuration from said first protrusions;

substrate positioning means provided on at least one of said inner surfaces, said substrate positioning means comprising positioning projections extending toward a held substrate inside the case body and being disposed for abutment with said four side edges of a held substrate so as to position the substrate with respect to directions along the major surfaces of the substrate; and

said projections being provided in pairs, each of the pairs being disposed on two adjoining side edges adjacent to each corner of the rectangular configuration, each of said projections of each pair being of an angled shaped having a first portion extending along the associated side edge of the rectangular configuration and a second portion integrally extending angularly from the first portion in a direction away from the associated side edge of the rectangular configuration and parallel to a diagonal line, subtending each corner of the rectangular configuration, said first portion being adapted to abut a side edge of a first substrate corresponding in size and orientation to said rectangular configuration, said second portion being adapted to abut a side edge of a second substrate of a size different from a said first substrate and of an orientation turned, in the plane of a held substrate, by 45° relative to the orientation of a held first substrate.

5,353,935

BLISTER PACKAGE WITH RECLOSABLE CARD

Robert W. Yeager, and Andy Talbot, both of Goodlettsville, Tenn., assignors to Anchor Wire Corporation, Goodlettsville, Tenn.

Filed Jan. 31, 1994, Ser. No. 188,919
Int. Cl.[5] B65D *73/00*
U.S. Cl. 206—470 9 Claims

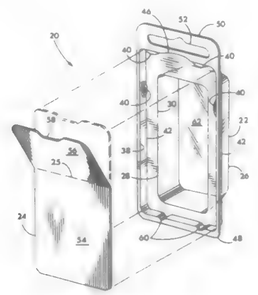
1. A recloseable package comprising:

a) a thermoformed thermoplastic blister having a forwardly extending bubble which defines a container cavity;

b) portions of the blister extending sidewardly from the bubble to define a flange having a rearwardly extending skirt;

c) a card positioned adjacent the blister flange rearwardly of the bubble and within the skirt, wherein one portion of the card is affixed to the blister flange while another portion of the card is pivotable with respect to the affixed portion; and

d) detents formed integrally with and extending inwardly from the blister skirt rearwardly of the card, wherein the detents retain the pivotable portion of the card within the



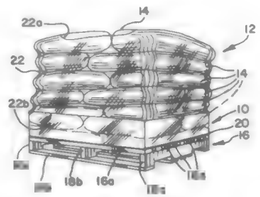
skirt, and wherein the blister is deformable to allow the pivotable portion of the card to be pivoted past the detents and enable recloseable uncovering of the container cavity.

5,353,936

PROTECTIVE TRAY DEVICE FOR PALLETIZED LOADS

Randal W. Dockstader, 9724 S. Merrimac, Oak Lawn, Ill. 60453, and Richard D. Dockstader, 801 S. Plymouth Ct., Chicago, Ill. 60605

Continuation of Ser. No. 908,965, Jul. 6, 1992, abandoned. This application Nov. 8, 1993, Ser. No. 148,882
Int. Cl.[5] B65D *19/06*
U.S. Cl. 206—597 11 Claims



1. A palletized load system comprising, in combination, a pallet having an upwardly facing support surface defined by spaced apart slats, a sheet of relatively low-friction material disposed on said pallet support surface and substantially covering same, a protective tray supported on said low-friction sheet, said protective tray having a bottom panel substantially equal in area to said pallet support surface and having upstanding side and end panels secured to an outer rectangular periphery of said bottom panel in generally upstanding relation thereto, a load supported on said bottom panel of said protective tray so as not to extend laterally outwardly substantially beyond the planes of the side and end panels, said load comprising a plurality of packages of material, and an outer wrap extending about the periphery of said load and protective tray, said wrap overlying said upstanding side and end panels of said protective tray and at least partially overlapping the uppermost stacked packages but not overlying said pallet, said protective tray being laterally movable with the load when subjected to lateral movement relative to the pallet and being operative to substantially prevent tearing of said packages by said slats when the load and tray are moved laterally to reposition the load on the pallet.

6. A method of creating a palletized load of packaged material on a pallet having a generally rectangular upwardly facing support surface defined by generally parallel spaced slats, said method comprising the steps of:

placing a sheet of low-friction material on the pallet slats so as to substantially cover the pallet support surface,

placing a protective tray on the low-friction sheet, said protective tray having a rectangular bottom panel of a size substantially equal to the pallet support surface, laterally opposite upstanding side panels integral with said bottom panel, and upstanding end members integral with said bottom panel and interconnected to said side panels so as to establish upstanding corners between said side panels and end members;

placing a plurality of packages of material on the bottom panel of the protective tray in generally stacked relation so that the packages do not extend laterally outwardly substantially beyond the planes of the side panels and end members;

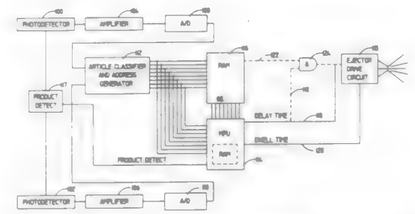
and applying a wrap circumferentially about the stacked packages so that a lower edge of the wrap overlies at least a portion of the tray side panel and end members but does not overlie the pallet, and an upper edge of the wrap at least partially overlaps the uppermost stacked packages, said protective tray being operative to move laterally with the stacked packages when subjected to lateral shifting relative to the pallet, and being adapted to prevent tearing of the lowermost packages in the stack by the slats upon lateral movement of the tray and stacked packages to reposition them on the pallet support surface.

5,353,937

AUTOMATIC VARIABLE EJECTOR DELAY TIME AND DWELL TYPE MECHANISM IN A SORTING APPARATUS

Joel P. Childress, Sugarland, Tex., assignor to ESM International, Inc., Houston, Tex.

Filed May 17, 1993, Ser. No. 62,949
Int. Cl.[5] B07C *5/00*
U.S. Cl. 209—563 37 Claims



1. A sorting machine for sorting unacceptable articles from a stream of products and articles passing through the sorting machine, comprising

an optical viewing station including

means for reflecting light in first and second wavelengths off the products and articles passing through the viewing station, and

light receiving means adapted to generate first and second electrical signals respectively representative of the intensity of light reflected in the first and second wavelengths from the products and articles passing through the viewing station,

an article classifier responsive to the signals from said light receiving means for classifying the products and articles into respective classifications on the basis of the intensity of light reflected from the products and articles at the first and second wavelengths,

an ejector for ejecting unacceptable articles from the stream of products and articles determined to require a long dwell ejector time in excess of a normal predetermined

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period representative of dwell time necessary to eject unacceptable product, and

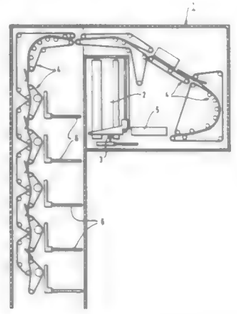
means for generating a long dwell ejector signal for activating said ejector for a dwell time in excess of the normal predetermined period when an unacceptable article from the stream of products and articles is aligned opposite said ejector by comparing the classification thereof to a predetermined acceptable classification map and determining that the classification of the unacceptable article is in a predetermined zone outside of the predetermined acceptable classification map.

5,353,938

METHOD OF SORTING OBJECTS

Hervé LaGrange, Paris, and Patrick Harrouet, Bagneux, both of France, assignors to Compagnie Generale d'Automatisme CGA-HBS, Bretigney sur Orge, France

Filed Sep. 17, 1992, Ser. No. 945,949
Claims priority, application France, Sep. 18, 1991, 91 11510
Int. Cl.[5] B07C *5/02*
U.S. Cl. 209—584 **14 Claims**



1. A method of sorting objects in N passes of physical distribution into R receptacles of a sorting machine controlled by control means, N being at least equal to two, characterized in that the method comprises the following steps:

reading and storing in memory in said control means coded information carried by said objects, said information comprising N distinct criteria per object,

classifying said objects in memory in said control means in a given order such that each said object is assigned to a destination,

calculating in said control means the distribution of said objects in said receptacles, during an (N−1)'th canonical pass, such that all the objects which have the same value of a first of said criteria will be assigned to the same receptacle,

calculating in said control means the distribution of said objects in said receptacles, during an N'th canonical pass, such that all the objects which have the same value of a second of said criteria will be assigned to the same receptacle, and that their order preserves said given order,

making a first modification by said control means to said distribution of said N'th canonical pass, such that the number of objects in each of said receptacles will be made equal to P at the most, where P is the maximum number of said objects which can be contained in each of said receptacles,

determining the contents of each of the receptacles in which said objects should be found at the end of a provisional (N−1)'th pass, performed in such a maretar as to achieve said modified distribution of the N'th pass,

making a second modification of said distribution of the N'th modified pass, providing a definitive distribution of the N'th pass, if the contents of one of said receptacles should be found to exceed P at the end of said provisional (N−1)'th pass, such that the order of said objects stays the same as said given order and that the distribution of a definitive (N−1)'th pass is performed in such a manner as to allow said distribution of the definitive N'th pass to lead to the receptacles each containing at most P objects,

repeating all the preceding steps with N replaced by N−1 and N−1 by N−2, and so on until the last two of the passes to be modified,

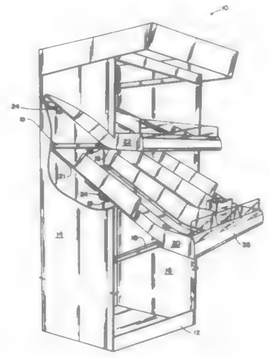
sorting said objects by means of said machine according to the definitive distributions which have been determined.

5,353,939

VARIABLE PUSHER POINT OF PURCHASE DISPLAY

Mark T. Beeler, and Brian H. Welker, both of Winston-Salem, N.C., assignors to Decision Point Marketing, Inc., Winston-Salem, N.C.

Filed Sep. 28, 1992, Ser. No. 952,245
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—59.3 **49 Claims**



1. An apparatus for displaying goods in a retail environment comprising

a tray,

a divider insert including a plurality of parallel upright divider walls, said divider insert being sized to releasably fit within said tray, thereby forming channels atop said tray, and

a plurality of product pushers releasably connected to said tray in said channels,

whereby goods to be displayed may be positioned in said channels for said product pusher to urge them to one end of said tray for retail purchase and the apparatus may be disassembled to arrange a different divider insert and a plurality of pushers differently in said tray.

5,353,940

ALIGNMENT SYSTEM FOR CRANE WORKS AND METHOD OF ALIGNMENT

David J. Pech, and Jeff J. Jeske, both of Manitowoc, Wis., assignors to The Manitowoc Company, Inc., Manitowoc, Wis.

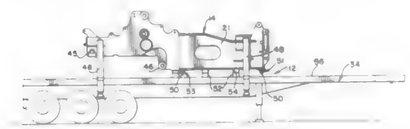
Filed Jan. 8, 1993, Ser. No. 1,835
Int. Cl.[5] B66C *23/26*
U.S. Cl. 212—180 **28 Claims**

25. A method for aligning a crane upper works with a crane lower works for redecking the upper works with the lower works, the method comprising the steps of:

a) providing an upper works having a longitudinal axis;

b) providing a lower works having a longitudinal axis;

c) gravitationally aligning the upper works with the lower works such that the longitudinal axis of the upper works is parallel to the longitudinal axis of the lower works; and



d) thereafter translating the lower works with respect to the upper works to vertically align the upper works with the lower works.

5,353,941

ADJUSTABLE FLOATING ROOF SUPPORTS FOR REDUCED VAPOR LOSS

John A. Benvegnu, Spring; Reginald E. Edwards, Houston, both of Tex.; James M. Gleason, Horseheads, N.Y., and Joel D. McDaniel, Grant Park, Ill., assignors to Chicago Bridge & Iron Technical Services Company, Oak Brook, Ill.

Filed May 26, 1993, Ser. No. 67,233
Int. Cl.[5] B65D *88/40*
U.S. Cl. 220—220 **13 Claims**

1. A floating roof support for reducing tank vapor loss, extending through and supporting a floating roof in a low position and a high position above a tank bottom, the floating roof support comprises:

a) a substantially vertical long inner column having a lower end for bearing on the tank bottom;

b) a substantially vertical short outer column defining a vertical bore in which the long inner column is disposed, the short outer column being slidable relative to the long inner column between the low position and the high position, and having a lower end for bearing on the tank bottom in the low position;

c) means for joining the floating roof to the short outer column at an elevation above the lower end to define the low position;

d) a seal plate joined to the top end of the short outer column, the seal plate defining a hole through which the long inner column is slidably disposed;

e) a cap plate joined to the top end of the long inner column;

f) means for locking the seal plate to the cap plate for hanging the short outer column from the long inner column in the high position; and

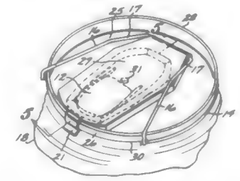
g) a seal secured to the seal plate, defining a hole having an inner sealing surface in wiping engagement with the long inner column, the seal also having a bearing surface to engage the cap plate in the high position.

5,353,942

DEVICE FOR COVERING A CONTAINER OPENING

Oscar Dominguez, 26200 Frampton Ave., Apt. 68, Harbor City, Calif. 90710-3442

Filed Aug. 3, 1993, Ser. No. 101,035
Int. Cl.[5] B65D *51/18*
U.S. Cl. 220—254 **2 Claims**



1. A device for covering an opening formed in a first surface of a container, said container having a longitudinally extending cylindrical surface and including a rim portion having upper and lower edges, said rim portion extending about the periphery of said first container surface comprising:

a member for covering said opening, said covering member having upper and lower surfaces, said lower surface defining means for contacting the first surface of the container, said lower surface having a recess, the recess defining means for enclosing said opening when said lower surface is in contact with the first surface of said container, said covering member having a coupling member at one end thereof and a member at the other end for engaging the upper edge of said rim portion; and

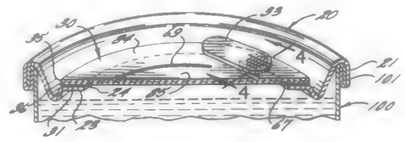
means for supporting said covering member and securing it to said container comprising a first member encircling a portion of said container cylindrical surface and in contact therewith and positioned below said container rim portion and in contact with the lower edge to secure the covering member to the container, a second member coupled to said first member and extending in a direction toward the coupling member of said covering member, and a third member coupled to said second member, said third member engaging the coupling member of said covering member in a manner whereby said covering member can rotate between fist and second positions, said first, second and third members being joined together to form a internal member.

5,353,943

EASY-OPENING COMPOSITE CLOSURE FOR HERMETIC SEALING OF A PACKAGING CONTAINER BY DOUBLE SEAMING

Donald W. Hayward, Waterville, Ohio, assignor to Sonoco Products Company, Hartsville, S.C.

Filed Mar. 15, 1993, Ser. No. 31,804
Int. Cl.[5] B65D *17/40*
U.S. Cl. 220—276 **10 Claims**



1. An easy-opening closure for hermetic sealing of the open end of a packaging container and comprising:

an end member of desired construction for being double-seamed to the open end of the container and having an interior ledge portion defining a large central opening to allow access therethrough to the interior of the container,

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a composite lidding member including at least two polymer layers defining a predetermined peel strength at an interfacial plane thereof for controlled delamination of said two layers, said composite lidding member being of desired configuration for covering said central opening and having a portion overlapping said ledge portion and bonded to said ledge portion of said end member to define a predetermined bond strength greater than said peel strength of said two polymer layers of said composite lidding member;

said composite lidding member having a first notch of generally continuous ring-shaped configuration corresponding to the desired opening to be produced in said closure after easy-opening thereof and cut into the bottom one of said polymer layers overlying said central opening and adjacent said ledge portion, and a second notch of generally discontinuous ring-shaped configuration and cut into the top one of said polymer layers and spaced radially inwardly from said first notch and defining a small unnotched portion between ends thereof and defining with said first notch a ring member therebetween which is connected at said unnotched portion to a central portion of said lidding member overlying said opening in said end member; and

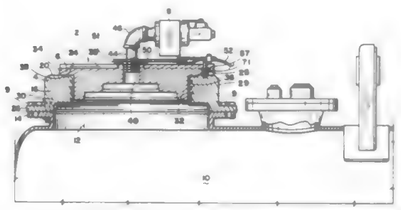
whereby, the force required to open said closure from the inside of the container when double-seamed to the container is greater than the force required to open said closure from the outside of the container and wherein said closure is easily-opened circumferentially by upwardly pulling of said bonded overlapping portion of said composite lidding member to cause delamination and peeling of the portion of said top polymer layer from said bottom layer bonded to said end member in an area between said first notch and an outside circumference of said lidding member and removal of said ring member between said first and second notches.

5,353,944

NON-METALLIC HATCH APPARATUS

Gail F. Davis, and James F. Matthews, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Aug. 19, 1992, Ser. No. 932,388
Int. Cl.[5] B65D *51/16*
U.S. Cl. 220—303 **29 Claims**



1. A hatch apparatus for a container having a container opening defined therein with a container flange surrounding said container opening, comprising:

a non-metallic base comprising: a collar having a passageway extending therethrough; a threaded cylindrical bore defining at least a portion of said passageway, said threaded cylindrical bore having an inside diameter D_1; and a base flange connected to said collar, said base flange having an inside diameter D_3 and said base flange being complementary to said container flange such that said base flange can be sealingly bolted to said container flange and

a non-metallic lid including a male threaded portion threadedly receivable in said threaded cylindrical bore,

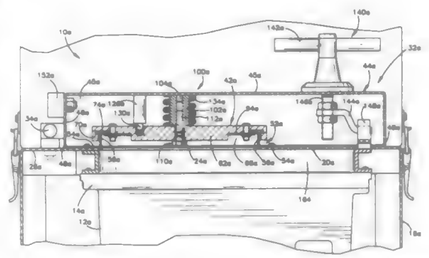
wherein the radial thickness of said collar is substantially greater than the thickness of the connection between said collar and said base flange and the inside diameter D_3 of said base flange is substantially greater than the inside diameter D_1 of said threaded cylindrical bore such that, when said container flange is an uneven container flange, said base flange can be sealingly bolted to said container flange without causing said threaded cylindrical bore to be pulled substantially out-of-round.

5,353,945

THERMOPLASTIC MATERIAL MELTING APPARATUS

Paul S. Frates, Lawrenceville; Charles P. Ganzer, Cumming; Kenneth E. Rothrauff, Suwanee, and Luis F. Pareja, Stone Mountain, all of Ga., assignors to Nordson Corporation, Westlake, Ohio

Filed Sep. 22, 1992, Ser. No. 949,572
Int. Cl.[5] B65D *45/00*
U.S. Cl. 220—314 **24 Claims**



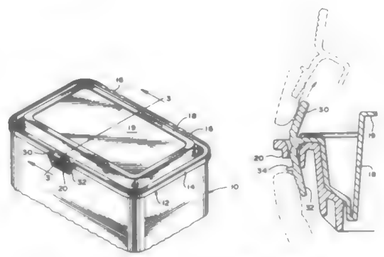
1. An apparatus for use in converting solid thermoplastic material to molten thermoplastic material to facilitate application of the thermoplastic material to an article, said apparatus comprising tank means for receiving the thermoplastic material, said tank means having an open upper end portion through which solid thermoplastic material moves into said tank means, housing means for at least partially enclosing said tank means, said housing means having an upper wall with an opening through which solid thermoplastic material moves into said tank means, a rim extending along the periphery of the opening in said upper wall of said housing and extending upwardly from said upper wall of said housing, said rim having an upper edge portion which is disposed above said upper wall of said housing to enable said rim to block liquid from flowing along said upper wall of said housing and through the opening in said upper wall of said housing into said tank means, and cover means connected with said housing means and movable between an open condition and a closed condition blocking the open upper end portion of said tank means, said cover means including an inner cover which sealingly engages said upper edge portion of said rim when said cover means is in the closed condition and an outer cover which cooperates with said housing means to enclose said inner cover, said outer cover having an upper wall which overlies said inner cover and extends outward of a peripheral edge portion of said inner cover throughout the extent of the peripheral edge portion of said inner cover, said outer cover having a continuous array of side walls which extends downward from said upper wall and extends along the peripheral edge portion of said inner cover throughout the extent of the peripheral edge portion of said inner cover.

5,353,946

CONTAINER WITH RECLOSABLE LID LATCH

Grace A. Behrend, Englishtown, N.J., assignor to Church & Dwight Co., Inc., Princeton, N.J.

Filed Jul. 26, 1993, Ser. No. 97,764
Int. Cl.[5] B65D *45/02*
U.S. Cl. 220—326 **8 Claims**



1. A container comprising a reclosable lid having a lower frame secured to a top of the container and an upper frame mating with said lower frame to close the container,

hinge means connecting rear portions of said upper and lower frames for relative movement therebetween,

a childproof latch having a keeper means for engaging a latching means fixed to a front portion of said lower frame, and said latching means fixed to a front portion of said upper frame,

said latching means including a projection extending from a front edge of said upper frame and having top and bottom finger grips extending in opposite directions from said projection, and a retainer block on said bottom finger grip placed to interfere with movement of said keeper means whereby said upper and lower frames are locked in a closed position on said container top,

said latch being operable by flexing the top and bottom finger grips in a direction generally toward the rear portions of said upper and lower frames and thence upwardly to displace said retainer block past said keeper means.

5,353,947

CASE HAVING A SLIDABLE AND PIVOTABLE COVER

Gerald B. Zinnbauer, Charlotte, N.C., and Jennifer S. Wittkop, Reisterstown, Md., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 28, 1993, Ser. No. 10,105
Int. Cl.[5] B65D *43/14*
U.S. Cl. 220—331 **11 Claims**

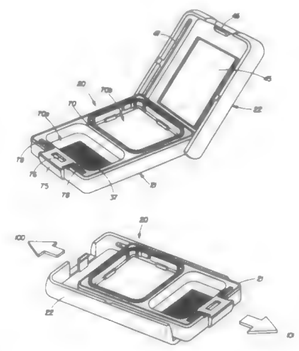
1. A case having front and rear portions comprising:

(a) a base having a front wall, a rear wall, a pair of side walls, and a common bottom wall which together define an interior compartment, each of said side walls having an interior surface and an exterior surface;

(b) a cover having a front wall, a pair of side walls, and a common top wall, each of said walls having an interior surface and an exterior surface;

(c) a pair of pivot pins protruding from the rear portion of said base on the exterior surfaces of said side walls;

(d) a pair of grooves extending substantially the entire length of the interior surfaces of said side walls of said cover, said grooves having a rib member at one end and a pivot pin receptacle at the opposing end, said pivot pins being positioned within said grooves such that said rib members releasably secure said base to said cover in a first position permitting said base and said cover to be moved axially and pivoted with respect to one another, and said pivot pins being positioned within said pivot pin receptacles permanently securing said base to said cover in a second position such that said base and said cover are pivotable with respect to one another about said pivot pins positioned within said pivot pin receptacles; and



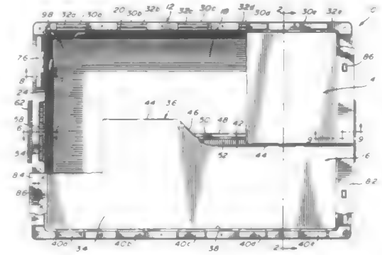
(e) means for latching said base and said cover together, said means being located in said front portion of said case.

5,353,948

PLASTIC CONTAINER WITH HINGED LIDS

Michel Lanoue, Ste-Foy, and Roch Nolet, St-Joseph-de-Beauce, both of Canada, assignors to IPL Inc., Quebec, Canada

Filed May 4, 1993, Ser. No. 57,707
Int. Cl.[5] B65D *43/16*
U.S. Cl. 220—343 **8 Claims**



1. A container comprising:

a) a unitary body made of injection molded plastic material having a bottom wall, opposite side walls and opposite end walls, each said side wall displaying, along an upper edge thereof, a series of longitudinally spaced recessed areas, each area displaying, lengthwise thereof, a hinge portion integrally formed with said upper edge of the respective side wall; and

b) a pair of lids made of injection molded plastic material and hingedly connected to said upper edges of said side walls of said body to move from an open position to an inter-engaging body-covering position; each said lid having an inner longitudinal edge inter-engaging, when in the body-covering position, with a complementarily shaped inner longitudinal edge of the other lid, and an outer longitudinal edge having a series of longitudinally spaced C-shaped integral projections snappily engaged with the hinge portions integral with the upper edge of the respective side wall, said lids having opposite end edges which rest on corresponding upper edges of said end walls;

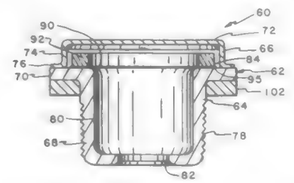
said inner longitudinal edge of each lid including:

a first half portion defining a water collecting trough; and

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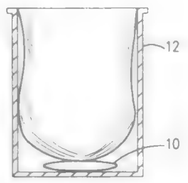
a second half portion defining a covering extension which lies over the first half portion of the other lid when in the body-covering position, wherein the upper edges of the end walls each define L-shaped recessed areas; said troughs of said lids having opposite ends thereof terminating over said recessed areas; said recessed areas each having a bottom wall provided with an opening therethrough.

5,353,949
VENT FILTER ASSEMBLY
Jeffrey M. Seibert, Cortland, and Riazuddin S. Rahimi, Town of Homer, both of N.Y., assignors to Pall Corporation, East Hills, N.Y.
Filed Sep. 21, 1992, Ser. No. 947,384
Int. Cl.[5] B65D *51/16*
U.S. Cl. 220—371 **18 Claims**



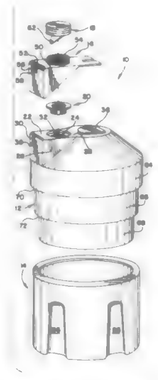
1. A container assembly for transporting or storing waste comprising:
a container;
a housing coupled to the container and having a first opening communicating with an interior of the container and a second opening communicating with an exterior of the container, the housing defining a gas flow path between the first and second openings; and
a filter including a porous metal hydrophobic filter medium and arranged with the housing across the gas flow path such that gas flowing between the openings flows through the filter.

5,353,950
COLLAPSIBLE TRASH BAG DISPENSER FOR DISPENSING TRASH BAGS FROM THE BOTTOM OF A TRASH CONTAINER
Richard S. Taylor, 2798 Beach Rd., Port Huron, Mich. 48060, and Dennis P. Forhan, 1025 Hayfield, Rochester Hills, Mich. 48306
Filed Sep. 13, 1993, Ser. No. 119,618
Int. Cl.[5] B65D *25/16*
U.S. Cl. 220—407 **3 Claims**



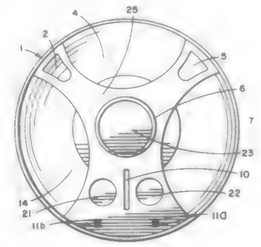
1. A trash bag dispenser for use in a trash container, comprising:
a collapsible trash bag pouch having an internal compartment with an opening;
a plurality of trash bags detachably connected to one another to form a string of bags including a first bag at one end of the string, and a last bag at the opposite end of the string, the plurality of bags being disposed in the internal compartment of the pouch, each trash bag being individually removable through the pouch opening to an expanded position in the trash container for receiving trash;
means attaching the last bag to the interior of the pouch to prevent the separation of the last trash bag from the pouch but permitting the other trash bags to be individually removed from the pouch;
adhesive means for releasably connecting the pouch to the bottom of the trash container, such that the connection between the pouch and the container is weaker than the attachment between the pouch and the last bag to prevent removal of the last bag from the pouch;
whereby the weight of one of the bags from the pouch and expanded in the trash container collapses the pouch by substantially removing all the air from the pouch.

5,353,951
SERVICEABLE STORAGE AND TRANSPORT CONTAINER
John P. Kusz, Park Ridge, and Gustavo Cuveas, Aurora, both of Ill., assignors to Safety-Kleen Corp., Elgin, Ill.
Filed Aug. 11, 1992, Ser. No. 928,497
Int. Cl.[5] B65D *21/02*
U.S. Cl. 220—571 **1 Claim**



1. A serviceable storage and transport container, for used anti-freeze solutions, said container comprising, in combination, a fluid-tight primary receptacle and a secondary containment and support vessel for said primary receptacle, said fluid-tight primary receptacle having a generally conical top surface portion, a shoulder formed in said top surface portion, said shoulder being defined at least in part by a shoulder top wall extending outwardly from the center of said conical top surface portion, and a pair of shoulder sidewalls extending between and joining said conical top surface portion to said shoulder top wall, and a front shoulder wall joined to said shoulder top wall and said shoulder sidewalls, with a contents access opening being formed in said shoulder top wall, said primary receptacle also including at least upper and lower sidewall sections of circular cross-section, and a compound closure system for said primary receptacle, said closure system including a contoured shoulder cover and cap support unit having walls overlying and closely spaced from said shoulder top wall and said shoulder sidewalls, said shoulder cover including a cap-receiving collar portion with a collar access opening therein, said collar access opening being registrable with said access opening when said shoulder cover is in the closed position, a cap received over said collar access opening on said shoulder cover, with said container also including cooperating means on said shoulder cover and said container for preventing removal of said cap relative to said collar portion and of said shoulder cover from said shoulder, said secondary containment and support vessel including a bottom wall and a continuous outer sidewall section, a support shoulder joined to an upper margin of said outer sidewall section and extending at least partially upwardly and inwardly therefrom to define a center opening in said secondary vessel for receiving said primary receptacle, said containment vessel further including wall panel surfaces forming portions of said bottom wall and being contoured so as to register with fork lift tines on their outer surfaces and to engage a bottom surface of said primary receptacle on their inner surfaces.

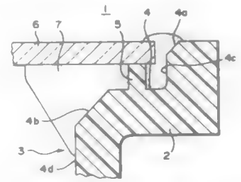
5,353,952
ONE-HANDED PARTY AND UTILITY PLATE
Mark L. Douche, 5000 Jumper St., Port St. John, Fla. 32927
Filed Jun. 25, 1993, Ser. No. 82,447
Int. Cl.[5] B65D *25/30*
U.S. Cl. 220—575 **7 Claims**



1. A plate for carrying a variety of food, a beverage, utensils, napkins, towelettes and other items comprising:
a rigid platform having a bottom surface and a top surface, said top surface having a plurality of recesses therein for holding various types of food, condiments and other objects; and
a central recess in the top surface for holding a beverage container; and
wherein the bottom surface contains a sleeve, said sleeve comprising a substantially horseshoe-shaped flat base attached to the bottom surface of the plate a sufficient distance from said bottom surface to allow insertion of one hand, said base having two legs and a cross member, the legs being attached at a free end to the bottom surface of the plate by two pillars extending perpendicular from the base, only one of said pillars fits between a thumb and a first index finger of the one hand, and the cross member being attached to the bottom surface by supports and a wedge extending perpendicular to the base and which spaces the base from the bottom surface.

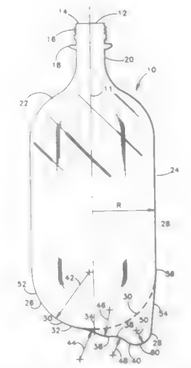
5,353,953
SEALED METER ASSEMBLY SUCH AS FOR A SPEEDOMETER, TACHOMETER, ODOMETER OR THE LIKE
Masafumi Sakaemura, Mori, Japan, assignor to Moriyama Kogyo Kabushiki Kaisha, Mori, Japan
Filed Apr. 30, 1993, Ser. No. 54,298
Int. Cl.[5] B65D *13/02*
U.S. Cl. 220—602 **4 Claims**

1. A sealed display device comprising:
a case for encasing a meter, said case having a display opening through which the meter may be viewed;
a transparent cover sealed over said opening;
said case having an annular lip surrounding said opening and receiving a peripheral edge of the transparent cover, the annular lip being recessed into a face of said case, defining a step between an outer vertical wall section and an inner vertical wall section;
a sealant placed between the lip and the cover to seal the cover to the case with a sloped surface being formed between the outer wall section and the face of the case to provide for accommodating a thicker layer of said sealant between the cover and the case than could otherwise be accommodated; and
support means supporting the cover in spaced relationship to



the lip so that a sufficiently thick layer of said sealant extends between the cover and the lip to prevent breakage of the seal due to difference in thermal expansion and contraction between the case and cover, said support means including a plurality of spaced projections integral with said case and extending between the lip and a marginal edge of the cover.

5,353,954
LARGE RADIUS FOOTED CONTAINER
Sterling L. Steward, Douglasville; Paul R. Kaufman, Atlanta, both of Ga., and David A. Brunson, Lee's Summit, Mo., assignors to Constar Plastics, Inc., Atlanta, Ga.
Filed Jun. 16, 1993, Ser. No. 77,856
Int. Cl.[5] B65D *1/02*
U.S. Cl. 220—608 **19 Claims**



1. A plastic container comprising a tubular body portion generally symmetric about a vertical axis, and a base portion unitary with the body portion having a plurality of feet for supporting the container upright on a horizontal surface, with the feet in the base portion being defined in cross-section by a lower portion of respective first lines, each respective first line comprising a series of curves continuously connected and having serially diminishing radius from the body portion through the axis to a portion of the respective foot, with said foot portion touching the horizontal surface, the series of curves having centers of curvature alternating between positions inside the container and positions outside the container.

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5,353,955

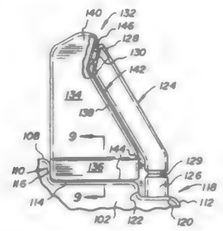
BEVERAGE CONTAINER

Richard H. Kaufman, Chappaqua; Theodore J. Kovacic, Bedford, both of N.Y.; Hideyoshi Okita, Huntington Beach, Calif.; Martin M. Bostwick, Norwalk, Conn.; Andrew T. Kostanecki, Darien, Conn.; Robert H. Brainard, Danbury, Conn., and Patrick B. Nolan, Norwalk, Conn., assignors to Kraft General Foods, Inc., Northfield, Ill.

Continuation-in-part of Ser. No. 958,670, Oct. 8, 1992, Pat. No. 5,280,844, and a continuation-in-part of Ser. No. 958,408, Oct. 8, 1992, and a continuation-in-part of Ser. No. 898,114, Jun. 12, 1992, which is a continuation-in-part of Ser. No. 776,444, Oct. 17, 1991, abandoned. This application Oct. 8, 1992, Ser. No. 958,396

Int. Cl.[5] B65D *25/00*

U.S. Cl. 220—710 33 Claims



1. A unitary beverage container comprising:

a main body defining a container volume in which a beverage is contained, said main body including a bottom, a flat top, and an indentation in said flat top;

a bendable conduit having a proximal end which is fluidly connected with the container volume of said main body and a distal end having a drinking aperture therein; and

a closing means for closing said drinking aperture of said distal end of said bendable conduit and for removably attaching said bendable conduit to said top of said main body, said closing means including

a hollow piece which, together with and adjacent said bendable conduit, fills a substantial portion of said indentation when said hollow piece and bendable conduit are in a folded down position,

a connection means for weakly attaching said hollow piece to said top and to said bendable conduit such that said hollow piece and bendable conduit are movable between the folded down position in which said hollow piece and said bendable conduit are contained in said indentation and the upright position where said hollow piece and said bendable conduit extend perpendicularly from said top, and

a short hollow bridge extending from said distal end of said bendable conduit and about said drinking aperture to said hollow piece;

whereby said hollow bridge is broken during pivoting and removal of said hollow piece from said indentation of said top and from said bendable conduit, and thereby said drinking aperture of said bendable conduit is uncovered prior to use.

5,353,956

CHEWING GUM DISPENSER

Edwin P. Wilson, 99 Cedar Grove Rd., Southbury, Conn. 06488-1930

Filed Mar. 1, 1993, Ser. No. 25,164

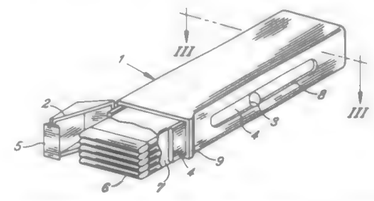
Int. Cl.[5] B65H *1/00*

U.S. Cl. 221—198 5 Claims

1. A dispenser for dispensing product comprising;

a one piece molded rectangular container of sufficient size to accommodate, product having four adjacent side walls, one side wall having a slot through which an actuator protrudes, a bottom wall connected on one end of each of the four adjacent side walls, a hinged cap wall attached to a side wall opposite the bottom wall said walls forming a sealed container;

a latch effective to latch the cap wall to at least one side wall, a sliding ejector being of a shape and size to fit in said rectangular container, having two sides and a bottom each proximate the respective container walls with its open end facing the open end of the said container and slidebly inserted in the container with the actuator protruding through the said slot in the container, said ejector three outside surfaces flush with the inside surfaces of two



opposite side and the bottom of said container and slidable back and forth in a direction toward and away from the open end of said container under manual actuator operation and having sufficient length to provide a seal of said slot in the container side wall;

the said actuator being connection to the ejector and protruding through the said slot to the outside of the container, said dispenser adapted for one thumb disengagement of the latch, opening the hinged cap wall and sliding the actuator toward the open end to expose product and thereafter returning the actuator to rest position and latching the hinged end.

5,353,957

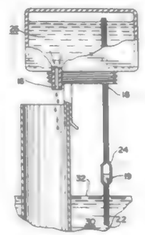
APPARATUS AND METHOD FOR CONTROLLED DISPENSING OF A LIQUID

Daniel N. Campau, Grand Rapids, Mich., assignor to Flow-Rite Controls, Ltd., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 882,169, May 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 833,831, Feb. 18, 1992. This application Apr. 30, 1993, Ser. No. 56,431

Int. Cl.[5] B67D *3/00*

U.S. Cl. 222—1 14 Claims



1. A liquid dispensing apparatus, comprising:

a container adapted to hold a dispensable liquid, thereby defining a liquid level within said container;

a dispensing nozzle having a discharge port, said nozzle being positioned on said container below the liquid level within the container; and

a sensing tube terminating at a first open end positioned above said liquid level within said container and at a second open end positioned outside said container below said nozzle discharge port, said second open end of said sensing tube also being immersible in a control liquid, and said sensing tube having an internal diameter at said open end such that the surface tension of liquid within said sensing tube at said second open end prevents the passage of air through said sensing tube into said container, whereby the periodic fall and rise of said control liquid level between low and high control liquid levels results in the controlled discharge of said dispensable liquid from said dispensing nozzle.

5,353,958

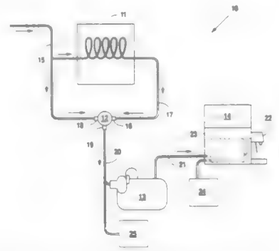
CARBONATED BEVERAGE DISPENSER WITH CONSTANT TEMPERATURE MIXING VALVE

John T. Hawkins, San Antonio, Tex., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Apr. 30, 1993, Ser. No. 56,303

Int. Cl.[5] B67D *5/62, 5/56*

U.S. Cl. 222—54 3 Claims



1. A carbonated beverage dispensing apparatus, comprising:

a first cooling means connected at an inlet to a water source;

a mixing valve connected at a first inlet to said water source and at a second inlet to an outlet of said first cooling means, said mixing valve mixing the water received from said water source with the water received from said first cooling means to produce a constant temperature water stream at an output thereof;

a carbonator connected to said output of said mixing valve for carbonating the constant temperature water stream;

a second cooling means connected to a beverage syrup source and said carbonator for cooling the carbonated water and the beverage syrup; and

a dispensing means connected to said second cooling means for dispensing the cooled carbonated water and the cooled beverage syrup to form a carbonated beverage.

5,353,959

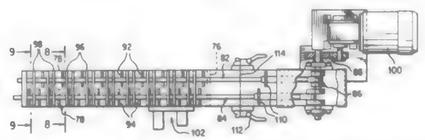
APPARATUS FOR DISPENSING POWDERED OR GRANULAR SEASONING MATERIALS

John L. Center, and Patrick J. Bierschenk, both of Dallas, Tex., assignors to Recot, Inc., Wilmington, Del.

Filed Dec. 11, 1992, Ser. No. 989,362

Int. Cl.[5] B67D *5/08*

U.S. Cl. 222—66 12 Claims



1. An apparatus for dispensing powdered or granular seasoning materials, comprising:

a seasoning bin including a bottom having a plurality of perforations for dispensing seasoning material;

first and second drive rods disposed within the seasoning bin above the perforated bottom;

at least one first sifter rod attached to a lower portion of the first drive rod, and at least one second sifter rod attached to a lower portion of the second drive rod, said first sifter rod extending transversely to said first drive rod and said second sifter rod extending transversely to said second drive rod, said first and second sifter rods each being disposed adjacent the perforate bottom so that as the first and second drive rods are moved within the seasoning bin the first and second sifter rods force seasoning through the plurality of perforations in the bottom of the seasoning bin, and wherein seasoning is only dispensed through the perforated bottom of the seasoning bin when at least one of the first and second drive rods are moving; and

a drive device for oscillating said drive rods back and forth in a phase-lagged manner with respect to each other within the seasoning bin.

5,353,960

GRAVIMETRIC METERING APPARATUS FOR POURABLE MATERIALS

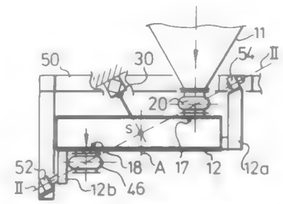
Hans W. Häfner, Aichach-Walchshofen, Fed. Rep. of Germany, assignor to Pfister GmbH, Augsburg, Fed. Rep. of Germany

Filed Jul. 23, 1991, Ser. No. 734,649

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1990, 4026043; European Pat. Off., Mar. 26, 1991, 91104733.0

Int. Cl.[5] G01G *13/00*

U.S. Cl. 222—77 8 Claims



1. An apparatus for continuous gravimetric metering of pourable material comprising:

support means;

a housing mounted on said support means pivotally about a first axis;

a rotor means arranged in said housing rotatably about a second axis, and having a plurality of peripherally arranged pockets;

charging means connected to said housing for supplying said pourable material to said pockets of said rotor;

discharging means connected to said housing opposite and offset in respect of said charging means in direction of rotation of said rotor for receiving and feeding away of said material out of said pockets;

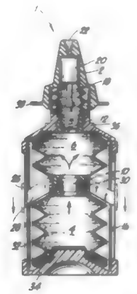
elastic coupling means included in said charging means and said discharging means for preventing any force transmission from said charging means and said discharging means to said housing, said first axis extending through centers of all of said elastic coupling means;

force measuring means connected between said housing and said support means, remote from said first axis; and

wherein said first axis is inclined to the horizontal.

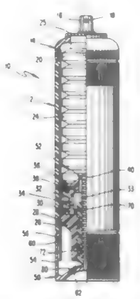
VOL 1167 ISS 2 OC 11 1994 UMI

5,353,961
DUAL CHAMBER DISPENSER
George Debush, Hamden, Conn., assignor to ReSeal International Limited Partnership, New York, N.Y.
Continuation of Ser. No. 4,830, Jan. 15, 1993, abandoned. This application Nov. 19, 1993, Ser. No. 156,952
Int. Cl.[5] B65D *35/22, 25/08*
U.S. Cl. 222—94 **30 Claims**



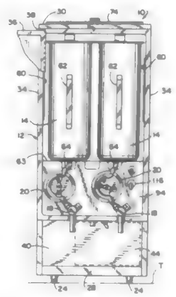
1. A dispenser comprises a first collapsible member for holding a flowable first component to be mixed with a second component, a second collapsible member for holding the second component to be mixed with the first component for forming a mixture to be dispensed, a first one-way valve connecting the first collapsible member to the second collapsible member so that the first component can be forced into the second collapsible member but flow of the mixture from the second member into the first member is prevented, means for dispensing the mixture from the second member, and said dispensing means comprises a second one-way valve for delivering the mixture to a dispensing outlet and for preventing any backflow of the mixture or of contaminants from the ambient atmosphere through said outlet into said second member.

5,353,962
DISPENSER WITH AN ENERGY STORAGE MEMBER
Michael P. Scholz, San Clemente; Joe J. Lones, San Diego, and Franz Rank, Inglewood, all of Calif., assignors to Williams Dispenser Corporation, Los Angeles, Calif.
Filed Jan. 19, 1993, Ser. No. 5,275
Int. Cl.[5] N65D *35/00, 83/00*
U.S. Cl. 222—95 **9 Claims**



1. A spray dispenser, comprising:
an outer body;
a flexible bag containing liquid product disposed in said outer body;
a valve disposed at an upper end of said outer body and communicating with the interior of said bag;
an elastic energy-storing member disposed below said bag and mounted for vertical movement in said outer body;
an energizing member disposed below said energy-storing member and being mounted for vertical movement in said outer body relative to said energy-storing member for compressing said energy-storing member and thereby pressurizing the product in said bag, said energizing member and said outer body being interconnected by vertical guide means permitting said energizing member to move vertically relative to said outer body while preventing said energizing member from rotating relative to said outer body; and
actuating means for vertically raising said energizing member in said outer body, comprising:
a manually rotatable member mounted to said outer body, and
a post connected to said manually rotatable member and projecting vertically centrally upwardly within said outer body, said post including a plurality of screws threadedly interconnected in telescoping relationship, one of said screws being connected to said manually rotatable member for rotation therewith, and another of said screws being threadedly connected with said energizing member such that said another screw and said energizing member move vertically together relative to said one screw during one stage of dispensing operation, and said energizing member moves vertically relative to said another screw during another stage of dispensing operation, said screws moving from a retracted to an extended relationship as said energizing member moves upwardly.

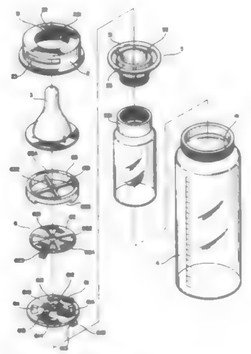
5,353,963
POST MIX DISPENSER
Chris W. Gorski, Fort Atkinson, and Michael Heinz, Watertown, both of Wis., assignors to Karma, Inc., Watertown, Wis.
Filed Jun. 2, 1993, Ser. No. 71,726
Int. Cl.[5] B67D *5/56*
U.S. Cl. 222—129.1 **2 Claims**



1. A liquid post mix dispensing apparatus for proportioning a concentrate with a diluent, said apparatus comprising:
a main housing;
first container means self-contained within aid main housing for dispensing said concentrate;
conduit means operatively connected with said first container means;
second container means self-contained within said main housing and completely open to atmosphere for dispensing said diluent;
mixing valve means in said main housing for combining said concentrate and said diluent in various proportions prior t dispensing;

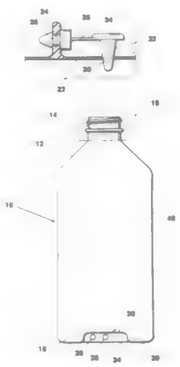
concentrate pump means in said main housing for non-invasively forcing said concentrate into said mixing valve means, said concentrate pump means including a fixed race, a plurality of rollers cooperating with a rotor rotatably driven within said racy by a motor, said rotor including a central hub, a U-shaped wire clip connecting each of said rollers with said hub, said rollers being spring biased into and out of clamping engagement with said conduit means during rotation of said rotor; and
diluent pump means in said main housing for forcing said diluent into said mixing valve means.

5,353,964
TWIN-BOTTLE NURSING BOTTLE
Yin-Peng Liu, No. 149 Charng Show Street, and Miin-Tsang Sheu, No. 156 Cheng Kung Road, both of Chang Hua City, Taiwan
Filed Feb. 16, 1994, Ser. No. 197,764
Int. Cl.[5] B67D *5/60*
U.S. Cl. 222—134 **3 Claims**



1. A nursing bottle comprising:
an outer bottle having a mouth at the top;
an outer cap fastened to the mouth of said outer bottle through a screw joint to hold a nipple, said outer cap comprising an elongated horizontal slot and a vertical inside groove;
an inner bottle disposed inside said outer bottle, said inner bottle comprising a bottle body having a mouth at the top, a cup-like inner cap fastened to the mouth of the bottle body of said inner bottle, said cup-like inner cap comprising a cap body, a locating ring spaced around the cap body of said cup-like inner cap and retained between the mouth of said outer bottle and said nipple by said outer cap, and radial ribs connected between the cap body and locating ring of said cup-like inner cap, the cap body of said cup-like inner cap having a top mouth disposed at an elevation not lower than the topmost surface of said locating ring; and
switch means received within said outer cap between said nipple and said locating ring and controlled to let a first fluid in said outer bottle or a second fluid from said inner bottle flow into said nipple for suction by the baby or to let both said first and second fluids flow into said nipple simultaneously.

5,353,965
CONTAINER FOR DISPENSING CONDIMENTS
Gary K. Lee, 5827 S. 81st East Pl., Tulsa, Okla. 74145
Filed Nov. 1, 1993, Ser. No. 146,405
Int. Cl.[5] B67D *5/60, 5/06*
U.S. Cl. 222—143 **5 Claims**



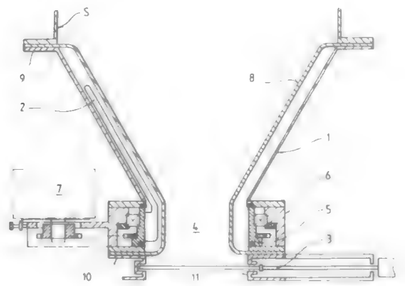
1. A container for dispensing condiments which comprises:
a bottle having a tubular section, a neck section, and a bottom and in which the tubular section has smooth walls and is rectangular in cross-section and has a width W and a depth D, said neck having a threaded extension adapted to be alternately closed by a cap and placed in an operating condition with a dispensing nozzle;
said bottle including on its bottom parallel ridge members and a web connecting the two members in the centerline of said bottom, said web having a first hanging hole in the center thereof;
said bottom having a vent hole between said ridge members;
a tethered plug for opening and closing said vent hole, said tethered plug tethered to said web.

5,353,966
APPARATUS FOR DISCHARGING DOSED QUANTITIES OF A BULK MATERIAL
Edwin Stutz, Reinach, and Jean Cuennet, Düdingen, both of Switzerland, assignors to Anag A. Nussbaumer AG., Düdingen, Switzerland
Filed May 31, 1991, Ser. No. 710,369
Claims priority, application Switzerland, Jun. 1, 1990, 1873/90
Int. Cl.[5] B65D *83/00*
U.S. Cl. 222—145 **20 Claims**

1. An apparatus for discharging dosed quantities of a bulk material from a bin having a discharge end, the apparatus comprising material loosening means adapted to extend below said discharge end; foil means covering said material loosening means and extending so as to form a conical surface for contacting directly the bulk material filled in the bin, so that said loosening means contact the bulk material indirectly through said foil means; and a shutter associated with said foil means and movable between an open position and a closed position to open and close said discharge end of the bin, said material

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loosening means including stripper means rotatably mounted outside said foil means and extending substantially parallel to



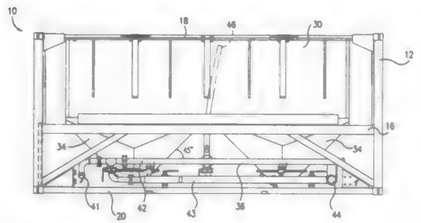
said surface for stripping and loosening the bulk material by rotating along said surface.

5,353,967

DRY BULK PRESSURE DIFFERENTIAL CONTAINER

John J. Toth, Danbury, Conn., and Richard McNealy, Sand Springs, Okla., assignors to Northbrook Rail Corporation, Arlington Heights, Ill.

Filed Apr. 20, 1993, Ser. No. 48,518
Int. Cl.[5] B65D *88/30, 88/72*
U.S. Cl. 222—181 11 Claims



1. A container for storing and transporting dry bulk product, comprising

a) a vessel for holding and storing said dry product, said vessel comprising at least one non-cylindrical hopper having a top, bottom and plurality of sides;

b) means for unloading said product from the bottom of said vessel; and

c) an external frame secured to said vessel, wherein said frame is comprised of

i) a first end piece and a second end piece located opposite of said first end piece, each said end piece having a top portion, a bottom portion and at least a first and second side portions connecting said top portion to said bottom portion;

ii) a plurality of longitudinal members connecting said end pieces;

iii) at least one longitudinal member having a sill securely connected thereto, and said sill being securely connected to one of said sides of said vessel; and

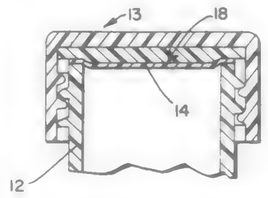
iv) an attaching means securely fastened to each of said end pieces and to a portion of said vessel.

5,353,968

FLEXIBLE LIQUID CONTAINER WITH SPILL PREVENTING SQUEEZE OPENABLE SEAL

James L. Good, Jr., Rte. 1, Box 428-55, Stoneville, N.C. 27048

Filed Jul. 30, 1992, Ser. No. 922,217
Int. Cl.[5] B65D *47/10*
U.S. Cl. 222—212 12 Claims



7. A container for a liquid, comprising:

(a) a flexible chamber having a mouth with a lip;

(b) a closure for the mouth, said closure being sealed to the lip at the perimeter of the closure and extending over the mouth;

(c) wherein the closure has a thinned central portion which occupies more than an insubstantial fraction of the area of the closure, the thickness of the thinned central portion being thick enough that the closure will retain liquid as the container is rotated into pouring position but thin enough that the closure will fail irreversibly and release the liquid when the container is squeezed while in pouring position; and

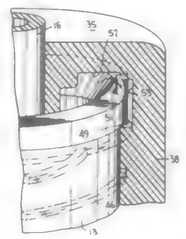
(d) wherein said thinned central portion is made substantially of a material which liquifies when immersed in the liquid if the liquid is at least at temperature of crankcase oil in a normally operating internal combustion engine.

5,353,969

INVERTIBLE PUMP SPRAYER HAVING SPIRAL VENT PATH

Mark A. Balderrama, Colton, Calif., assignor to Calmar Inc., City of Industry, Calif.

Filed Oct. 13, 1993, Ser. No. 135,438
Int. Cl.[5] B67D *5/42*
U.S. Cl. 222—321 6 Claims



1. A liquid dispensing pump, comprising a pump body containing a pump cylinder and a pump piston having an annular depending piston skirt arranged for reciprocating sliding engagement with the wall of said cylinder during piston downstroke and upstroke movements, said piston and said cylinder together defining a pump chamber having a valve controlled inlet opening, said piston having an upstanding piston stem, a depressible discharge head mounted on said piston stem and having a discharge orifice, a discharge passage extending through said piston and said head extending from said chamber and terminating in said orifice an invertible adaptor extending

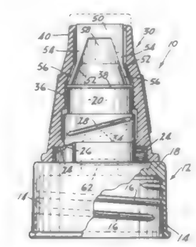
from a lower end of said pump body to permit dispensing in an inverted position upon actuation of the piston, said adaptor supporting a depending dip tube to permit dispensing in an upright position upon actuation of the piston, a closure cap having an upstanding annular wall coupled to said cylinder for supporting the pump body within the interior of a container of liquid to be dispensed, said wall having an inner surface in contact with an outer surface of said cylinder, means defining a vent path extending between the interior of said closure cap and the ambient, and vent valve means acting between said closure cap and said pump piston for sealing said vent path closed at the end of said upstroke movement of said piston and for opening said vent path during the piston upstroke and downstroke movements, said vent path means comprising a spiral vent groove of at least one complete turn formed in one of said inner and outer surfaces for restricting the free flow of liquid therethrough in one direction to avoid leakage while dispensing in the inverted position, and said spiral vent groove being sized so that while dispensing in the inverted position the rate of liquid discharge from the container is greater than the flow of air through said vent groove in an opposite direction which thereby creates a vacuum in the container and effects a suck-back of air through said vent path means into the container for venting.

5,353,970

RIBBON-TYPE DISPENSER CAP

Gene Stull, Far Hills, and William C. Horwath, Garfield, both of N.J., assignors to Stull Closure Technologies, Inc., Randolph, N.J.

Filed Jan. 27, 1994, Ser. No. 186,996
Int. Cl.[5] B65D *47/00*
U.S. Cl. 222—321 20 Claims



1. A dispensing cap construction for containers, comprising in combination:

a) a cap body and means for attaching the cap body to a container neck, said cap body having a discharge spout portion,

b) a closure cap turnably carried by the cap body and overlying said spout portion,

c) said closure cap having a non-round orifice,

d) a stopper blade located in said closure cap and receivable in said orifice to close off said orifice, and

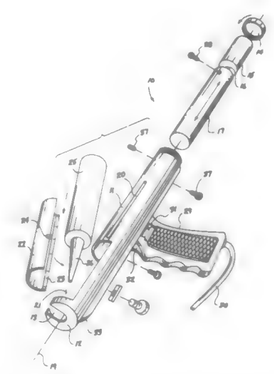
e) resilient means comprising a pair of oppositely-disposed spaced-apart, resilient support legs connected with said stopper blade and mounting the latter on the spout portion, said means retaining the stopper blade against outward axial movement with respect to the spout portion of the cap body while simultaneously enabling limited rotary movement of the stopper blade with the closure cap as the latter is shifted axially outward on the cap body to thereby raise the orifice from the stopper blade.

5,353,971

ELECTRIC CAULKING GUN APPARATUS

Bijan Vaziri, 8902 Central Ave., Morton Grove, Ill. 60053

Filed May 10, 1993, Ser. No. 58,148
Int. Cl.[5] B05C *17/01*
U.S. Cl. 222—326 6 Claims



1. An electric caulking gun apparatus, comprising,

a tubular housing, the tubular housing including a housing front wall and a rear end wall portion, with a housing end wall cap arranged for securement to the end wall portion, and

the front wall having a receiving slot directed into the front wall,

and

an electric reversible drive motor mounted within the tubular housing in adjacency to the end wall cap, with the drive motor having a drive screw rotatably and operably mounted to the drive motor, with a piston, the piston having a piston internally threaded central bore, with the central bore threadedly receiving the drive screw,

and

the tubular housing symmetrically oriented about a housing axis, with the drive motor, the drive screw, the piston, and the piston bore coaxially aligned along the housing axis,

and

a housing wall opening, with the wall opening including a door, the door having a door hinge pivotally mounting the door to the opening, with the door including a door latch for selective securement of the door to the housing,

and

a caulk tube arranged for reception within the opening, with the caulk tube having an end plate arranged for abutment with the piston.

5,353,972

METHOD AND APPARATUS FOR INSERTING A DRAWSTRING

Jack Mandel, 4511 Chesapeake St., NW., Washington, D.C. 20016

Filed Jun. 4, 1993, Ser. No. 70,928
Int. Cl.[5] A41H *43/00;* D05B *85/00*
U.S. Cl. 223—50 7 Claims

1. A method for inserting a drawstring into an article having a channel for the drawstring, the drawstring being operable to vary the size of an entry opening formed in the article, the method comprising the steps of:

providing a drawstring inserting device including a hollow elongated member having two ends and a central passage with a longitudinal slit extending substantially over the length of the hollow member, the hollow member com-

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posed of a material which is resilient so that force can be applied to spread the member apart at the longitudinal slit and the member will resist the spreading force;

placing a tip end of a drawstring adjacent one end of the hollow member and forcing the tip end of the drawstring into the longitudinal slit at said one end of the hollow member;

moving the drawstring adjacent one end of the hollow member while grasping the tip end of the drawstring such that a portion of the drawstring adjacent the tip end is pulled into said passage within the hollow member;



placing said tip end of the drawstring adjacent the other end of the hollow member with said portion of the drawstring sheathed in the passage;

inserting the combination of the drawstring and the drawstring inserting device into one end of the channel of the article and moving said combination within said channel in the article until the combination has been passed through the length of the channel and out another end of the channel; and

removing the drawstring inserting device from the drawstring while leaving the drawstring in said channel to permit the drawstring to be operated to vary the size of said entry opening in the article.

5,353,973

WIRE BASKET MOUNTING STRUCTURE

David K. McMurtrey, Maysville, Ky., assignor to Wald Manufacturing Co., Inc., Maysville, Ky.

Filed Mar. 23, 1993, Ser. No. 35,738

Int. Cl.[5] B62J *7/06*

U.S. Cl. 224—36 **6 Claims**



1. A structure for mounting a wire basket on a bicycle handle bar having a pair of generally opposed horizontal branch portions and upwardly extending risers, said basket including upper front, rear, and side edges defined by a circumferential top frame, and two sets of generally U-shaped webs, each said web having a pair of upstanding legs joined by a lower leg, an upper end of each said upstanding leg being joined to said top frame, said upstanding legs of the first set of said webs defining front and rear walls, said upstanding legs of the second set of said webs defining side walls, said lower leg of each said web of each said first and second sets combining to form a bottom of said basket;

clamp means for detachably anchoring the top frame of the basket to each of the handle bar risers; and

support means engaging the basket bottom for detachably bracing the basket bottom on the handle bar branch portions.

5,353,974

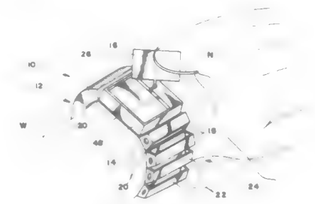
SURGICAL NEEDLE SYSTEM

Cortale Maurizio, Via Lovisato, Trieste, Italy 34100

Filed Jun. 7, 1993, Ser. No. 72,996

Int. Cl.[5] A45C *11/00*

U.S. Cl. 224—219 **16 Claims**



1. A surgical needle system comprising:

a bracelet for releasably attaching to a wrist;

a holder supported by said bracelet;

a support body for releasably engaging a surgical needle; and

means for pivotally connecting said support body to said holder.

5,353,975

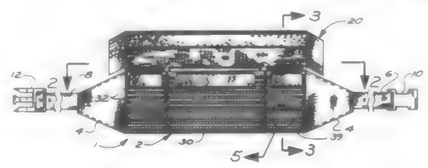
CARRIER FOR A PORTABLE STEREO UNIT

Michael Libertucci, P.O. Box 549, Amsterdam, N.Y. 12010

Filed Apr. 6, 1993, Ser. No. 43,366

Int. Cl.[5] A45F *3/00*

U.S. Cl. 224—224 **9 Claims**



1. A carrier for a portable stereo, said carrier comprising:

a belt;

belt fastening members for releasably securing ends of said belt;

support members, secured to said belt; and

a plurality of stereo receiving compartments positioned between said support members, said compartments including:

a first compartment of a size adapted for receiving a receiver/player unit of a portable stereo, wherein said first compartment includes at least one cover member adapted to removably cover a top opening of said first compartment; and

a second compartment of a size adapted for receiving a speaker, said second compartment having a rear wall and a front face, at least a portion of said rear wall made of a first material construction and at least a portion of said front face made of a second material construction, wherein said second material construction includes a foraminous region which allows sound to pass more freely therethrough than through said first material construction.

5,353,976

Patent Not Issued For This Number

5,353,977

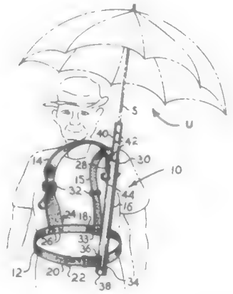
UMBRELLA HOLSTER

Frank P. Schiro, Jr., and Patricia T. Schiro, both of 9134 Teal St., Bay St. Louis, Miss. 39520-7110

Filed Jan. 11, 1994, Ser. No. 179,675

Int. Cl.[5] A45F *5/00*

U.S. Cl. 224—251 **9 Claims**



1. An umbrella holster comprising:

a waist belt including a front portion having length adjusting means and a back portion;

a first shoulder strap and a second shoulder strap, each having a waist belt attachment end secured to said back portion of said waist belt, a support tube attachment end, and length adjusting means therebetween, said second shoulder strap including lateral adjustment means at said waist belt attachment end; and

a support tube including a lower end, an upper end, and means providing for the retention of an umbrella handle therein;

said support tube lower end including a slot and a cap installed over said support tube lower end, wherein said front portion of said waist belt passes through said slot and is secured therein by said cap, and

said support tube upper end being secured to said tube attachment end of each said shoulder strap; wherein

said support tube is positioned on the front portion of the waist belt adjacent said length adjustment means of said waist belt.

5,353,978

MOVABLE UPPER TOOL FOR A BLANK SEPARATING MACHINE

Charly Varidel, Le Mont, and Marcel Yerly, Jouxtens, both of Switzerland, assignors to Bobst SA, Lausanne, Switzerland

Filed Apr. 10, 1991, Ser. No. 682,952

Claims priority, application Switzerland, Apr. 12, 1990, 01274/90

Int. Cl.[5] B26F *3/02*

U.S. Cl. 225—97 **13 Claims**

1. In a movable upper tool for a blank separating station situated within a machine for processing sheets of blanks for producing packages, said upper tool including blank separating blocks, a horizontal plate having a lower surface on which an upper surface of each of the blank separating blocks is mounted, the improvements comprising the plate being provided with numerous apertures to allow air to pass through the plate during the motion of the plate, each of the blocks having an opening extending from the upper surface of the block to a lower surface of the block and in fluid communication with at least one of said apertures, the lower surface of the plate being substantially covered with one of a first layer and a second layer of a fastening system with the first layer being a layer of thread-like loops and the second layer being a layer of thread-like catches for engaging the loops, and the upper surface of each block being covered at least partially with the other of said first and second layers of the fastening system so as to insure the mounting of the block on the plate.



5,353,979

DIRECTING APPARATUS FOR GUIDING, DEFLECTING AND/OR DIVERTING A WEB OF MATERIAL

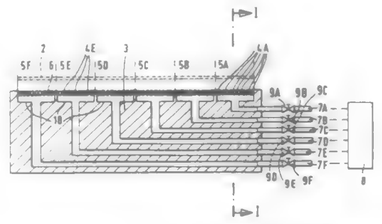
Uwe Gartmann, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 778,274, Oct. 17, 1991, abandoned. This application Jun. 17, 1993, Ser. No. 77,504

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1990, 4033642

Int. Cl.[5] B65H *23/00*

U.S. Cl. 226—196 **19 Claims**



1. A directing apparatus for guiding, transversely deflecting, and diverting a web of material which is guided over a number of rollers, said directing apparatus comprising:

a block which is connected to a medium supply device for supplying a medium, said block having a curved surface over which said web can be led, said curved surface having a plurality of bores provided in each of separate sections and which extend transversely to said web, a plurality of said separate sections being provided for said web of material and forming fluid bearings for said web; lines which extend through said block and connect said separate sections to said medium supply device whereby through said lines said medium can flow out of said bores and against said web from said medium supply device; and control valves, located in said lines outside of said block, for controlling the flow of said medium into the respective lines at variable velocities and variable volumes to supply a different fluid pressure to each separate section to create a pressure gradient across the web's width to deflect and divert said web from a first guided direction of travel to a second guided direction of travel depending on said pres-

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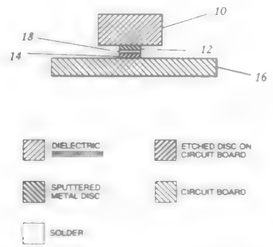
sure gradient which urges said web from the surface of the block.

5,353,980

AFFIXING DIELECTRIC RESONATOR ON PCB

Susan C. Miller, Galmpton, United Kingdom, assignor to Northern Telecom Limited, Montreal, Canada

Filed May 18, 1993, Ser. No. 63,492
Claims priority, application United Kingdom, Jul. 7, 1992, 9214386.6
Int. Cl.[5] H05K *3/30*
U.S. Cl. 228—124.1 4 Claims



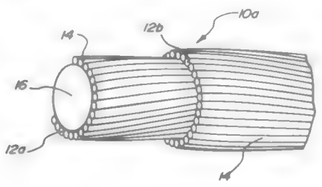
1. A method of affixing a passive dielectric component to a printed circuit board comprising the steps of forming a metallised area on the printed circuit board, forming a similar metallised area on a flat surface of the component, applying solder to one of the metallised areas, placing the metallised area of the component on the metallised area on the board and reflowing the solder to create a metal-solder-metal bond between the component and the printed circuit board, whereby the component is accurately aligned with respect to the printed electrical circuitry on the printed circuit board.

5,353,981

NEAR-AMBIENT PRESSURE BRAZE CONSOLIDATION (LPC) PROCESS FOR FIBER REINFORCED MAGNESIUM METAL MATRIX

Donald B. Evans, and Rex C. Claridge, both of Redondo Beach, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Dec. 1, 1992, Ser. No. 983,917
Int. Cl.[5] B23K *35/28*
U.S. Cl. 228—190 16 Claims



1. A low pressure process for producing graphite fiber reinforced magnesium metal matrix composites (Gr/MgMMC) structures comprising the steps of

sandwiching Gr/MgMMC precursors with metal soldering alloy forms consisting essentially of magnesium with one or more of aluminum, zinc, lithium and silver having a liquidus temperature between about 300° C. and about 450° C. and soldering temperature between about 325° C. and about 475° C. which are below the metal matrix melting temperature, the soldering temperature being greater than the liquidus temperature to form a Gr/MgMMC metal soldering alloy lay-up; and

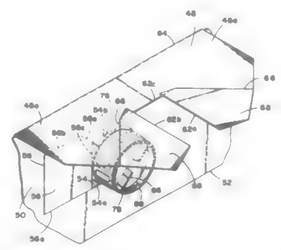
soldering the Gr/MgMMC metal soldering alloy lay-up by compressing the lay-up at moderate pressures while heating the lay-up to the soldering temperature of the metal soldering alloy to melt the metal soldering alloy in the lay-up and have the molten soldered alloy flow, wet and solder the Gr/MgMMC precursors of the lay-up to form the Gr/MgMMC structure.

5,353,982

FLUENT CONTAINER

David W. Perkins, Hiawatha, and William L. Chase, Des Moines, both of Iowa, assignors to Paper Systems, Inc., Des Moines, Iowa

Continuation-in-part of Ser. No. 898,927, Jun. 12, 1992, abandoned. This application Jan. 21, 1993, Ser. No. 6,694
Int. Cl.[5] B65D *13/00*
U.S. Cl. 229—23 R 7 Claims



1. A container for large quantities of fluent material, comprising:

a side member with a plurality of walls, said side member having open first and second ends;

a cover member having a top which extends across said first end of said side member;

a flexible bag with a discharge fitting, said fitting having an inner portion and an outer portion;

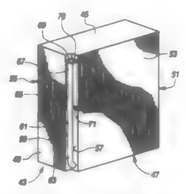
means for extending across said second end of said side member, said extending means including a formed formable from a square piece of material, said formed member further including means for locking the fitting, the locking means comprising a flap portion and a flap extension portion which bendably extends from a first edge of said flap portion, said flap extension portion being formed from said corner of said square piece in material which would otherwise be waste, said locking means further including first means in said flap portion and second means in said flap extension portion for cooperating with one another to secure said inner portion of said discharge fitting with respect to said formed member.

5,353,983

BEVERAGE CONTAINER

Ronald A. Miller, 2223 Valley Mill, Carrollton, Tex. 75006-1909

Filed Jan. 3, 1994, Ser. No. 176,531
Int. Cl.[5] B65D *5/74*
U.S. Cl. 229—103.1 15 Claims



1. A beverage container, comprising:

a receptacle for containing a beverage, the receptacle having an outer surface and an interior defined by a top, a bottom, and at least one side;

a drinking tube having a lower portion and an upper portion, the upper portion having an opening at one end of the upper portion, and the lower portion being located within the interior of the receptacle and having an opening to the interior of the receptacle at a point near the bottom of the receptacle;

a seal attached across the opening of the upper portion of the drinking tube for sealing the drinking tube, wherein the seal can be broken to open the tube, providing access to the interior of the receptacle only through the tube; and

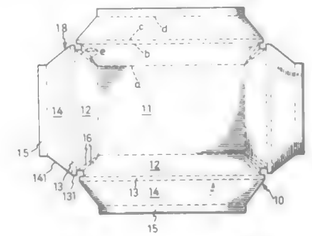
a connector for connecting the upper portion of the drinking tube to the outer surface of the receptacle, wherein the drinking tube can be broken away from the connector to allow the upper portion of the tube to be moved away from the receptacle.

5,353,984

FOLDABLE PAPER BOARD FOR FORMING A CONTAINER

Yuan-Hsin Liu, 11th-1 Floor, No. 90, Fu Hsin S. Road, Sec. 1, Tah An District, Taipei, and Richard C. H. Chang, 19, Alley 2, Lane 685, Chung Cheng Road, Fuan Yuan City, Taichung Hsien, both of Taiwan

Filed Oct. 13, 1993, Ser. No. 135,600
Int. Cl.[5] B65D *5/20*
U.S. Cl. 229—104 3 Claims



1. A paper board cut into a pattern of predetermined configuration and embossed with a plurality of folding lines for permitting the board to be folded into a container, which paper board comprises:

a) a bottom section having at least three peripheral edges, each of which being defined by a first folding line;

b) an inner peripheral wall section adjoining each first folding line and extending outwardly from the bottom section and terminating at a second folding line;

c) an extended section extending outwardly from each second folding line, each extended section further including third and fourth folding lines defining, respectively, from the second folding line a wall edge section, an outer wall section and a plate section, each wall edge section having two outer projections, each outer wall section having two inclined sides tapering outwardly from the outer projections, and each plate section being of a size substantially equal to the size of a corresponding portion of the bottom section;

d) a corner section disposed between two adjacent inner peripheral wall sections, each corner section being defined by three folding lines which form two corner connection sections for heat sealing together; and

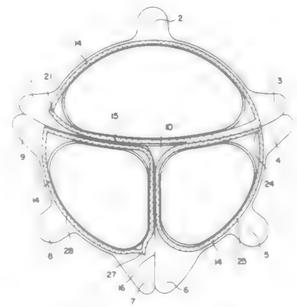
e) whereby each extended section may be folded outwardly and downwardly for attaching the plate section to the underside of the bottom section and form a hollow wall of the container.

5,353,985

PACKAGE

Hans-Rudolf Nägeli, Neuhausen; Hans Schindler, Schaffhausen, and Heinz Oster, Feuerthalen, all of Switzerland, assignors to Alusuisse-Lonza Services Ltd., Zurich, Switzerland

Filed Jan. 17, 1992, Ser. No. 822,633
Claims priority, application Switzerland, Feb. 4, 1991, 332/91
Int. Cl.[5] B65D *43/02*
U.S. Cl. 229—123.1 17 Claims



1. Package which comprises: a bottom portion having at least two compartments, with each compartment having compartment edges and a compartment circumference, wherein the bottom portion is a single unitary bottom portion with non-separable compartments interconnected along said bottom portion, and a peel-off lid having an outer circumference and mounted on the compartment edges, said lid divided into lid segments, with each lid segment covering at least one compartment and each lid segment being sealed onto the bottom portion along the compartment circumference by a seal seam, with the lid divided into individual lid segments by weakening adjacent the seal seam, and wherein each lid segment can be at least partially peeled by the seal seam along the compartment circumference and at least partially pulled off separately from the other lid segments by said weakening, wherein the package in plan view has a shape selected from the group consisting of round and oval, and each lid segment contains a tear-off tab, and wherein the package is sterilizable and the bottom portion and the lid comprise a layer selected from the group consisting of polyolefin and polyester, at least on the side facing towards the inside of the container, wherein the seal seam includes an initial tearing aid in the form selected from the group consisting of a curve of small radius and a spur adjacent the tear-off tab and wherein the tear-off tab is spaced from a compartment and adjacent the outer circumference of the lid, whereby each lid segment can be at least partially peeled and pulled off separate from the other lid segments by the seal seam and weakening by means of the tear-off tab and initial tearing aid.

5,353,986

DEMAND RADIANT HEATING SYSTEM

Joseph B. Wortman, Grosse Pointe, and Cory A. Weiss, Detroit, both of Mich., assignors to Detroit Radiant Products Company, Detroit, Mich.

Filed Jun. 15, 1993, Ser. No. 77,558
Int. Cl.[5] F24C *3/04*
U.S. Cl. 237—2 R 15 Claims

1. A demand radiant heating system comprising:

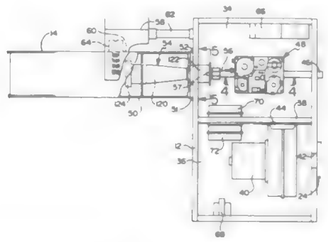
an elongated radiant heating tube having an inlet end and an exhaust end;

a burner tube connected to said inlet end of said radiant heating tube;

a housing defining an air tight compartment connected to said burner tube;

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a blower for continually forcing air into said air tight compartment;
a burner at least partially disposed in said burner tube, said burner having an inlet end to receive air and fuel, means for mixing air and fuel, and an exit end for emitting the air/fuel mixture for combustion closely adjacent thereto; and
single fuel means disposed in said air tight compartment and



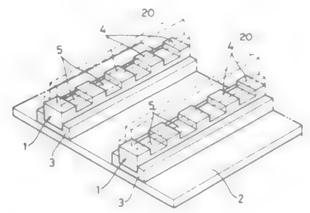
operatively connected to said inlet end of said burner for providing regulation of fuel to said burner at a plurality of predetermined pressures for demand heating, whereby fuel and air is mixed and burned by said burner to heat said radiant heating tube and exhaust gases exit said exhaust end; and
temperature means connected to said fuel means for triggering said predetermined pressures at a plurality of temperature settings.

5,353,987

RAILROAD TRACK SYSTEM HAVING VERTICALLY ADJUSTABLE RAILROAD TIE AND METHOD OF CONSTRUCTION THEREFOR

Yoshio Kusakabe, Ibaraki, and Toshiaki Doi, Chigasaki, both of Japan, assignors to Fudo Construction Co., Ltd., Osaka and Central Japan Railway Company, Aichi, both of Japan

Filed Aug. 11, 1992, Ser. No. 927,966
Int. Cl.[5] E01B *3/28*
U.S. Cl. 238—25 **2 Claims**



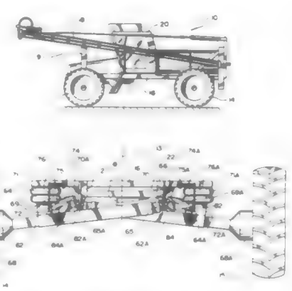
1. Rail-supporting structure of a railroad track system, said structure comprising: a concrete roadbed; a pair of track beams secured to said roadbed and extending longitudinally in parallel, each of said track beams comprising a concrete casting, and each of said track beams having a top portion defining a series of protrusions and recesses, the protrusions and recesses being alternately disposed in the longitudinal direction of each of said track beams, and each of said track beams having bolt holes in first respective surfaces thereof, said first respective surfaces defining bottoms of said recesses; and adjusting ties disposed in the recesses defined in the top portions of said track beams, said adjusting ties having bolt holes therein, said adjusting ties being bolted to said track beams, respectively, via said bolt holes in said first respective surfaces of the track beams and the bolt holes in said adjusting ties, and said adjusting ties protruding above second respective surfaces of said top portions of the track beams, said second respective surfaces defining tops of said protrusions.

5,353,988

SUSPENSION ASSEMBLY FOR VEHICLE

Ronald J. Gallenberg, W9120 Cherry Rd., Antigo, Wis. 54409

Continuation of Ser. No. 624,042, Dec. 7, 1990, abandoned. This application Aug. 27, 1993, Ser. No. 113,728
Int. Cl.[5] B60G *17/00, 25/00*
U.S. Cl. 239—164 **18 Claims**



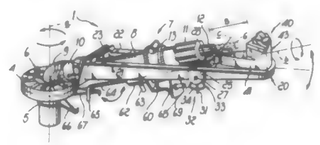
17. A boom sprayer comprising:
a chassis with a longitudinal center and a first chassis portion disposed on a first lateral side of the longitudinal center and a second chassis portion disposed on a second lateral side of the longitudinal center;
first and second front, steerable wheels;
first and second rear wheels;
an extendable spray boom mounted to said chassis and extending outwardly from said chassis on each side thereof;
a first elongated front axle member having one end connected with said first front wheel on said first lateral side and the other end pivotally connected with said chassis on said second lateral side at a first front point vertically above the point at which said first elongated axle member is connected with said first front wheel;
a second elongated front axle member having one end connected with said second front wheel on said second lateral side and the other end pivotally connected with said chassis on said first lateral side at a second front point vertically above the point at which said second elongated axle member is connected with said second front wheel;
a first elongated rear axle member having one end connected with said first rear wheel on said first lateral side and the other end pivotally connected with said chassis on said second lateral side at a first rear point vertically above the point at which said first elongated axle member is connected with said first rear wheel;
a second elongated rear axle member having one end connected with said second rear wheel on said second lateral side and the other end pivotally connected with said chassis on said first lateral side at a second rear point vertically above the point at which said second elongated axle member is connected with said second rear wheel;
fluid spring means operatively positioned between a portion of each axle member and said chassis; and
fluid control means associated with each of said fluid spring means for maintaining said chassis at a desired orientation relative to the terrain.

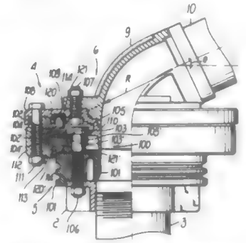
5,353,989

ROTATING IMPACT SPRINKLER

Arno Drechsel, Via Castel Mareccio 4, 39100 Bolanzo, Italy

PCT No. PCT/EP91/01324, § 371 Date Feb. 19, 1993, § 102(e) Date Feb. 19, 1993, PCT Pub. No. WO92/03230, PCT Pub. Date Mar. 5, 1992
PCT Filed Jul. 15, 1991, Ser. No. 983,539
Claims priority, application Italy, Aug. 21, 1990, 85608A90
Int. Cl.[5] B05B *3/16*
U.S. Cl. 239—230 **40 Claims**





35. A rotating impact sprinkler, comprising:
a tubular body rotatable in a direction about a first axis having a first end in fluid communication with a pressurized water pipe and a second end;
a nozzle secured to said second end from where a fluid jet exits;
an oscillating arm pivotally secured to said tubular body in a direction substantially perpendicular to said first axis;
a deflector pivotally secured to said oscillating arm such that said deflector pivots about an axis substantially parallel to the first axis of said tubular body; and
said deflector is positioned in front of said nozzle distal from said tubular body to periodically interact with said jet to cause rotation of said tubular body.

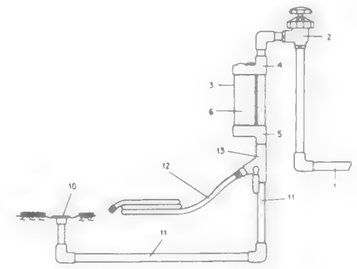
5,353,990

LIQUID ADDITIVES DISPENSER FOR SPRINKLER SYSTEMS

Richard Williams, 2538 Westford Way, Mountain View, Calif. 94040

Continuation of Ser. No. 802,602, Dec. 5, 1991, Pat. No. 5,246,168. This application Mar. 22, 1993, Ser. No. 34,148
Int. Cl.[5] B05B *7/32*
U.S. Cl. 239—313 **8 Claims**

1. A dynamic water flow controlled apparatus for dispensing liquid additives into a water flow comprising
a unrestricted water flow-through pipe;
a cylinder including
a first storage area for storing said liquid additives,
a second storage area for receiving displacement water, and
a piston separating said first storage area from said second storage area;
said piston and second storage area providing an air storage space sufficient to float said piston when said second storage area contains displacement water;
access means for filling said additives into said first storage area;
a water scoop protruding into said pipe for directing water from said water flow entering said pipe into said second storage area thereby filling said second storage area with said displacement water;
dispensing means interconnecting said first storage area with said pipe for dispensing said liquid additives stored in said first storage area into said flow of water, and including a



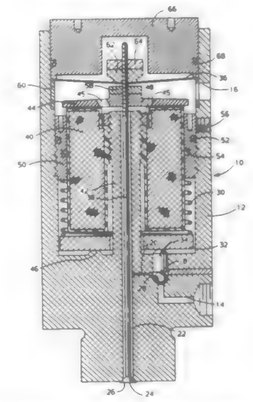
plurality of selectable flow channels of different sizes, and selection means for selecting one of said flow channels for releasing said additives into said water flow at a desired rate;
whereby said selected desired rate is proportional to said water flow.

5,353,991

SOLENOID ACTUATED VALVE ASSEMBLY

Stephen F. De Nagel, Warren; Edward D. Klomp, Mt. Clemens, and Andrzej M. Pawlak, Troy, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 549,188, Jul. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 369,509, Jun. 21, 1989, abandoned. This application Feb. 26, 1992, Ser. No. 841,909
Int. Cl.[5] F02M *69/08, 51/08*
U.S. Cl. 239—409 **1 Claim**



1. An injector for delivering a charge of fuel and air directly into an engine combustion chamber, the injector having an air inlet, a fuel inlet, a valve seat associated with the fuel inlet, a fuel metering valve member, a spring biasing the fuel metering valve member to engage the fuel inlet valve seat, a valve seat through which a charge of fuel and air is delivered to the engine, a charge delivery valve member, a spring biasing the charge delivery valve member to engage the charge delivery

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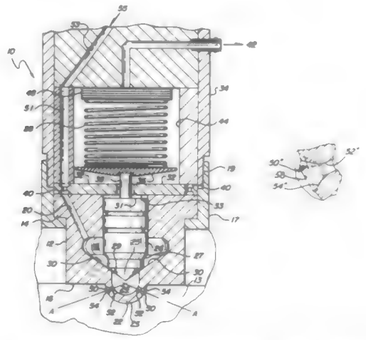
valve seat, a solenoid coil, a permanent magnet fuel metering armature disposed at one end of the coil and attracted toward the coil when the coil is energized with a positive current to permit displacement of the fuel metering valve member from the fuel inlet valve seat to meter fuel into the injector, the fuel metering armature further being repelled from the coil when the coil is energized with a negative current to maintain the fuel metering valve member in engagement with the fuel inlet valve seat, and a permanent magnet charge delivery armature disposed at the other end of the coil and attracted toward the coil when the coil is energized with a negative current to displace the charge delivery valve member from the charge delivery valve seat to deliver a charge of fuel and air to the engine, the charge delivery armature further being repelled from the coil when the coil is energized with a positive current to maintain the charge delivery valve member in engagement with the charge delivery valve seat.

5,353,992

MULTI-HOLE INJECTOR NOZZLE TIP WITH LOW HYDRAULIC PLUME PENETRATION AND LARGE CLOUD-FORMING PROPERTIES

Jose F. Regueiro, Rochester Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 30, 1993, Ser. No. 112,930
Int. Cl.[5] F02M *61//16*
U.S. Cl. 239—533.12 **2 Claims**



1. A fuel injector with a fuel discharge nozzle operative to form and radially inject a plurality of clouds of particles of combustible fuel into a combustion chamber of an internal combustion engine, the combustion chamber having a predetermined shape defined in part by a centralized vertical axis and internal cylindrical wall means spaced from and disposed around said axis, said injector comprising:

a nozzle tip body having a distal end wall including a centralized annular protuberance which has an annular exterior surface and which projects into said combustion chamber,

said body having a fuel sump and a sac chamber formed therein,

a fuel feed passage in said body for transmitting a quantity of fuel into said sump,

a second fuel feed passage connecting said sump to said sac chamber and an annular fuel sealing seat in said fuel sump and in said tip body surrounding a portion of said second fuel feed passage,

valve element means operatively disposed in said body having a fluid sealing head movable between a first position in which said head is in seating and fluid sealing engagement with said sealing seat so as to block the flow of fuel from said sump into said sac chamber and thereby into said combustion chamber and a second position in which said head is disposed from said valve seat so that fuel can be injected from said sac chamber into said combustion chamber,

said annular protuberance having at least four fuel flow controlling and flow directing and cloud forming discharge orifices arcuately spaced from one another and arranged adjacent to one another in a circular path encompassing said protuberance,

each of said discharge orifices includes a flow control orifice portion to regulate the amount of fuel passing through said discharge orifice, said flow control orifice portion being a cylindrical passageway extending from said sac chamber to a terminal end within said protuberance space from the exterior surface thereof, each said nozzle discharge orifice further including a fuel dispersing and cloud forming passageway extending with a progressively increasing cross-section directly and outwardly from said terminal end of said flow control orifice portion, said fuel dispersing and cloud forming passageway terminating with an oval shaped opening in said exterior surface of said protuberance to shape the cloud of particles of fuel discharged by the injector,

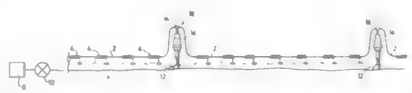
said fuel flow controlling and flow directing and cloud forming discharge orifices extending radially from said sac chamber through said protuberance to form and radially direct said fuel as a plurality of equally shaped clouds of fuel particles toward said cylindrical wall means of said combustion chamber that completely overspread said chamber and combine to match the shape of said chamber with minimized wetting of said wall means of said chamber by said combustible fuel particles thereby improving the combustion thereof within said chamber.

5,353,993

IRRIGATION SYSTEM, DRIP IRRIGATION DEVICES, AND SADDLE CLAMPS PARTICULARLY USEFUL THEREIN

Peretz Rosenberg, Moshav Beit Sha'arim, Israel

Continuation of Ser. No. 863,886, Apr. 6, 1992, abandoned. This application Oct. 25, 1993, Ser. No. 141,501
Claims priority, application Israel, May 2, 1991, 98039
Int. Cl.[5] A01G *25/02*
U.S. Cl. 239—542 **19 Claims**



1. An irrigation system, comprising:

a continuous, non-interrupted irrigation line having irrigation devices connected along the length of the line;

a continuous, non-interrupted water supply line separate from and extending parallel to the irrigation line;

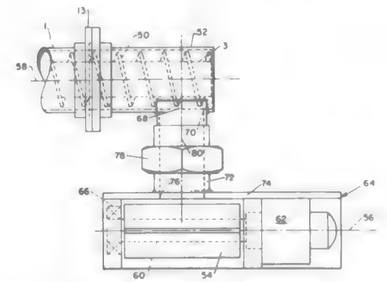
and a plurality of feeding lines extending in parallel to each other from the water supply line to the irrigation line for feeding water into the irrigation line via a plurality of feeding points each spaced from the next by a plurality of irrigation devices, such that all said irrigation devices are connected in series with each other in said irrigation line, and said continuous, non-interrupted irrigation line is supplied by said plurality of feeding lines with water from the water supply line at said plurality of feeding points.

5,353,994

DISPENSER FOR FLAVORING FOOD PRODUCTS

Gordon A. Clark, Ivydene, Burnt Yates, Harrogate, Great Britain

Continuation-in-part of Ser. No. 923,419, Jul. 31, 1992, Pat. No. 5,287,801. This application Mar. 12, 1993, Ser. No. 31,169
Int. Cl.[5] B05B *5/04*; E01C *19/20*
U.S. Cl. 239—700 **20 Claims**



1. A foodstuffs flavoring dispenser, comprising:

a screw conveyor in a cylindrical barrel for conveying flavoring from an inlet end to an outlet end of said conveyor;

first motor means for rotating said screw conveyor;

a rotor means positioned below said conveyor outlet end for ejecting flavoring; and

second motor means for independently rotating said rotor;

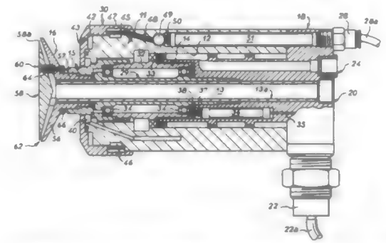
a transfer conduit having opposite ends, said conduit being positioned between said barrel and said rotor, said barrel having a first opening therein at said conveyor outlet end, one said conduit end communicating with said first barrel opening, whereby flavoring conveyed to said outlet end by said screw conveyor is discharged through said first opening and through said conduit to engage said rotor.

5,353,995

DEVICE WITH ROTATING IONIZER HEAD FOR ELECTROSTATICALLY SPRAYING A POWDER COATING PRODUCT

Pierre Chabert, Crolles, France, assignor to Sames S.A., Meylan, France

Filed Jun. 4, 1993, Ser. No. 71,060
Claims priority, application France, Jun. 10, 1992, 92 06962
Int. Cl.[5] B05B *5/04*
U.S. Cl. 239—701 **9 Claims**



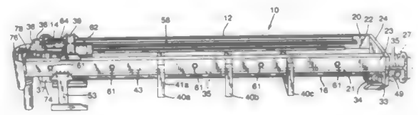
1. Device for electrostatically spraying a powder coating product to coat objects comprising: an ionizer head having a back and composed of a first part constituted by a generally bowl-shaped member having a periphery and a second part constituted by a deflector, said deflector having an edge at which is defined a charging electrode, and said deflector being spaced from said bowl-shaped member and extending as far as said periphery of said bowl-shaped member to define with said bowl-shaped member an annular ejector outlet for an air-powder mixture, wherein at least one of said parts of said ionizer head is rotatable about an axis; a passage for feeding the air-powder mixture, said passage having an outlet orifice for discharging the air-powder mixture along the axis of rotation at the back of said ionizer head and into said annular ejector outlet, said orifice being located such that said deflector is coaxial with, and in front of, said orifice; and a counter-electrode set back from said ionizer head along said axis of rotation.

5,353,996

SOOTBLOWER FRAME AND DRIVE ASSEMBLY

William S. Gallacher, Walla Walla; Steven Ginter, Pasco, and Steven Pavel, Kennewick, all of Wash., assignors to Boise Cascade Corporation, Boise, Id.

Filed Feb. 18, 1993, Ser. No. 19,747
Int. Cl.[5] F23J *3/02*
U.S. Cl. 239—752 **17 Claims**



1. A sootblower frame and drive assembly, comprising:

a pair of parallel tracks;

frame means mounting and maintaining the tracks in parallel alignment, the frame means comprising a pair of side-by-side transversely spaced-apart rigid parallel beams coextensive in length, and the frame means being open at its top and bottom between the beams substantially throughout the length of the frame means, one of the open top and bottom being substantially unobstructed throughout its length, and one track of the pair being affixed to an inside face of each beam;

a carriage mounted on the parallel tracks for movement between an extended and retracted position between the beams; and

a lance tube rotatably connected to the carriage for rotation about the longitudinal axis of the lance tube as the lance tube moves between the extended and retracted position the lance tube operably connected to the carriage so that movement of the carriage between its extended and retracted position moves the lance tube between its extended and retracted position.

5,353,997

PROCESS FOR CRUSHING RAW LIGNITE

Klaus Kasseck, Korschenbroich; Werner Karpus, Neuss, and Gerhard Salewski, Essen, all of Fed. Rep. of Germany, assignors to Loesche GmbH, Korschenbroich, Fed. Rep. of Germany

Filed Jul. 13, 1993, Ser. No. 91,835
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1992, 4223151
Int. Cl.[5] B02C *21/00, 23/30*
U.S. Cl. 241—17 **11 Claims**

1. Process for crushing raw lignite to fine coal in an air-swept roller mill, comprising:

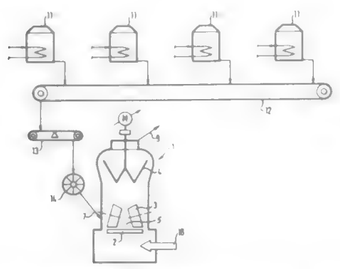
supplying previously dried raw lignite to an air-swept roller mill having a temperature of approximately 70° to 85° C.;

blowing cold air and/or air at ambient temperature through the air-swept roller mill;

crushing the dried raw lignite to form lignite particles at the

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same time as cooling the particles with the cold air and/or ambient air to a temperature below 60° C., and



controlling the cooling of the lignite particles by controlling inflow speed and/or temperature of the cold air and/or ambient air.

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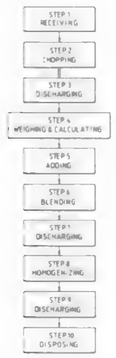
METHOD FOR MIXING SOLID OR SEMI-SOLID WASTES WITH ADDITIVES

Donald R. Sansing, Commerce, Tex., assignor to Itex Enterprises, Inc., Addison, Tex.

Continuation of Ser. No. 681,863, Apr. 5, 1991, abandoned, which is a division of Ser. No. 452,223, Dec. 18, 1989, Pat. No. 5,028,010. This application Jan. 8, 1993, Ser. No. 2,093

Int. Cl.[5] B02C *23/00*

U.S. Cl. 241—21 **18 Claims**



1. A method for treating solid or semi-solid waste material containing lumps of solid material, said method comprising the steps of:

reducing the size of said lumps in said waste material with a plurality of paddle-type chopping augers; said paddle-type chopping augers being mounted in a waste receiving hopper;

transferring said waste material to a batch hopper, weighing the batch hopper including the waste material transferred to it, weighing the batch hopper while adding at least one selected additive to said waste material in said batch hopper in order to add a predetermined amount of said additive to said waste material, mixing said waste material with said additive by operating two pair of paddle-type mixing augers in said batch hopper; and

homogenizing said waste material and aid selected additive in a pin blender.

5,353,999

PARTICULATE AMORPHOUS PRECIPITATED SILICA

James T. Dew; Larry R. Evans, both of Jeannette, and Walter H. Waddell, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 16, 1993, Ser. No. 17,082

Int. Cl.[5] B02C *4/08*

U.S. Cl. 241—30 **11 Claims**

1. A method for reducing the size of amorphous precipitated silica particles, which method comprises cracking amorphous precipitated silica particles between the textured rolls of at least one roll pair wherein said rolls are textured with crests and valleys and wherein the crests and valleys of one roll of said roll pair do not intermesh with the crests and valleys of the other roll of said roll pair.

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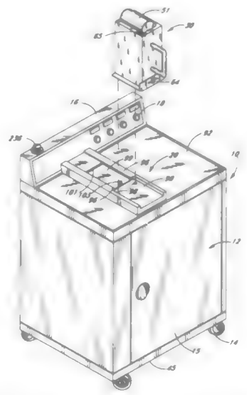
SHARPS DISPOSAL SYSTEM

Glenn A. Wright, 22101 Rockport La., Huntington Beach, Calif. 92648; Philip F. Fritz, Ontario, Calif., and Tuan Q. Nguyen, Anaheim, Calif., assignors to Glenn Albert Wright, Huntington Beach, Calif.

Continuation of Ser. No. 876,314, May 5, 1992, abandoned. This application Oct. 25, 1993, Ser. No. 143,491

Int. Cl.[5] B02C *23/36*

U.S. Cl. 241—33 **16 Claims**



1. A disposal apparatus for processing and sterilizing medical waste including sharps, said disposal apparatus comprising:

a disposer for processing the medical waste into small particles, said disposer comprising a grinding chamber which receives the medical waste;

disposable waste receptacle means for receiving said processed medical waste from said disposer through at least one influent port and for allowing excess sterilant, not adhering to the processed medical waste, to flow freely through said processed medical waste so that the processed medical waste is not immersed in said excess sterilant, said waste receptacle means comprising a containing cavity for holding said processed medical waste, said containing cavity being constructed of a fluid impermeable material which is resistant to puncture by processed sharps, said waste receptacle means further comprising an effluent port and a filter positioned between said containing cavity and said effluent port, said influent port and said effluent port being sealable to provide a closed container when removed from said disposal apparatus, wherein said waste receptacle means comprises a first cap and a second cap, said first cap being configured to fasten to said influent port and said second cap being configured to fasten to said effluent port to seal said waste receptacle means; and

a sterilant recirculation system defining a fluidic path between said waste receptacle and said disposer grinding chamber in which said excess sterilant flows freely through said waste receptacle means and into said recirculation system.

5,354,001

DISPOSAL DEVICE FOR READING, STORING INFORMATION FROM, AND SHREDDING PAPER DOCUMENTS

Takanori Hasegawa, Tokyo, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

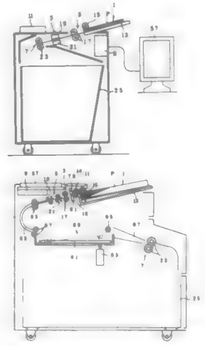
Filed Mar. 12, 1992, Ser. No. 850,133

Claims priority, application Japan, Mar. 13, 1991, 3-48456; Feb. 7, 1992, 4-22324

The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.

Int. Cl.[5] B02C *25/00*

U.S. Cl. 241—34 **3 Claims**



1. A device for disposing paper and other information carrying media, comprising:

means for reading information printed on each sheet of paper, said information reading means comprising a first information reading means for reading information from one side of each sheet of paper, and second information reading means for reading information from the other side of each sheet of paper;

information storage means for storing information read by said information reading means; and

paper shredding means for shredding said paper sheet from which said information has been read by said information reading means.

5,354,002

DOUBLE SEPARATOR FOR SORTING PARTICULATE MATERIAL

Jan Folsberg, Valby, Denmark, assignor to F. L. Smidth & Co. A/S, Denmark

PCT No. PCT/DK91/00340, § 371 Date May 14, 1993, § 102(e) Date May 14, 1993, PCT Pub. No. WO92/09376, PCT Pub. Date Jun. 11, 1992

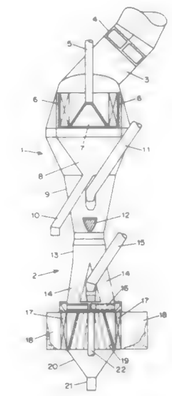
PCT Filed Nov. 13, 1991, Ser. No. 50,379

Int. Cl.[5] B07B *7/083;* **B02C** *23/08*

U.S. Cl. 241—79.1 **8 Claims**

1. A double separator of the air separator type for sorting particulate material suspended in a conveying gas, the double separator comprising two separators coupled in series wherein each separator is provided with rotors, rotatable about vertical shafts and having adjustable louvre blades, and wherein at least one of the separators comprises a horizontal centrifugal impact pulverizer functioning as a disagglomerator of coarse material containing agglomerates supplied from a crushing unit, the double separator further comprising a housing having a plurality of inlet ducts for receiving supplied material, a plurality of outlet ducts for separating out coarse fractions of material, an upper end outlet duct disposed at the upper end of the housing for separating out the separated fine fraction of material, and a tangential inlet disposed at the lower circumference of the housing for supplying a conveying gas, characterized in that

the two separators of the double separator comprises a lower coarse separator (**2**) and an upper fine separator (**1**), the lower part (**9**) of the upper separator being directly connected to the upper part (**13**) of the lower separator,



the lower coarse separator (**2**) is provided with an inlet duct (**15**) for supplying the material load of coarse material from a roller press into the coarse separator,

the horizontal centrifugal impact pulverizer is disposed within the lower coarse separator (**2**) and comprises arms (**16**) and spaces provided between the arms of the impact pulverizer of the lower coarse separator functioning as a disagglomerator, the spaces allowing the separated fine parts of the coarse fraction of material suspended in the conveying gas to be conveyed upwards through double separator housing parts (**14**, **13** and **9**) into the upper fine separator (**1**) for further treatment in the fine separator and

the outlet duct (**21**) of the coarse separator (**2**) for sorting the separated coarse fraction of material is connected to the roller press.

5,354,003

TRASH PLANT STEM SHREDDING APPARATUS

Ralph E. Stokes, P.O. Box 79 WeeWaa, NSW 2388, Australia

Filed Oct. 15, 1993, Ser. No. 137,839

Int. Cl.[5] B02C *9/02, 21/02;* **A01D** *35/26*

U.S. Cl. 241—101.7 **10 Claims**

1. A plant stem shredding apparatus which is movable forwardly along the ground into engagement with a vertically extending plant stem to be shredded, comprising:

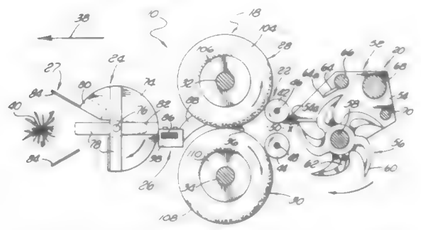
a pair of parallel, frictionally engaged contra-rotating uprooting rollers for uprooting and moving said stem rearwardly upon entry of said stem into a nip defined between the uprooting rollers;

a shredder which is disposed rearwardly of the uprooting rollers for shredding said stem; and

feed roller means in abutting relationship with one of said

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uprooting rollers and in contra-rotation therewith for preventing said stem from moving past said feed roller



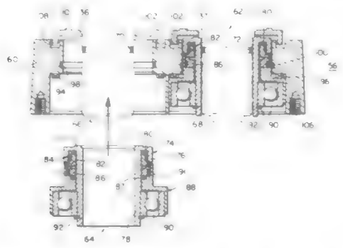
means when it engages the same and conveying said stem from the uprooting rollers directly to the shredder.

5,354,004

SOLID WASTE COMMINUTOR

Joseph W. Chambers, Sr., Rancho Mirage; Robert T. Sabol, Aliso Viejo, and Craig J. Fennessy, Huntington Beach, all of Calif., assignors to Disposable Waste Systems, Inc., Santa Ana, Calif.

Filed Jun. 16, 1993, Ser. No. 77,106
Int. Cl.[5] B02C *7/04*
U.S. Cl. 241—236 **20 Claims**



1. Apparatus for comminuting solid waste material comprising:

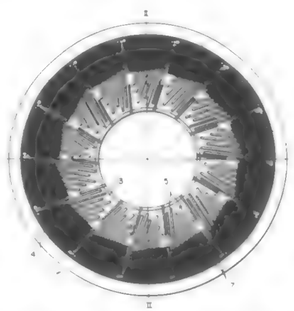
drive means for providing rotary motion, a pair of cutter stacks with cutter elements of one stack interleaved with cutter elements of the other, and gear means to transmit the rotary motion of said drive means into counter-rotation of cutter elements of one stack with cutter elements of the other, each of said cutter stacks comprising a central shaft journaled for rotation proximate each end, a seal-bearing assembly at each end comprising an end housing, a pair of insertable pre-assembled bearing elements mountable in each of said end housings, one bearing element having a thru-hole for journaling a first shaft for rotation and a second bearing element having a thru-hole for journaling a second shaft for rotation and a seal for each of said first and second bearing elements to provide fluid isolation between said bearing element and said end housing.

5,354,005

GRINDING EQUIPMENT FOR A JORDAN REFINER

John Mladota, Lausanne, Switzerland, assignor to Bematec S.A., Lausanne, Switzerland

PCT No. PCT/EP90/00811, § 371 Date Mar. 18, 1991, § 102(e) Date Mar. 18, 1991, PCT Pub. No. WO90/14464, PCT Pub. Date Nov. 29, 1990
PCT Filed May 18, 1990, Ser. No. 635,114
Claims priority, application Fed. Rep. of Germany, May 19, 1989, 3916393
Int. Cl.[5] B02C *19/00*
U.S. Cl. 241—261.1 **14 Claims**



1. Grinding equipment of a Jordan refiner for grinding paper pulp, comprising:

a rotating part formed as a truncated cone having an outer shell surface and a plurality of bar-shaped knives secured thereon at predetermined angles to a conical shell generating line, and

a stationary part formed as a hollow truncated cone having an inner shell surface and a plurality of bar-shaped knives secured thereon at predetermined angles to a conical shell generating line,

wherein the stationary part has an inner conical pre-grinding zone and at least one outer conical fine grinding zone in which the configuration and arrangement of the bar-shaped knives in the pre-grinding zone and in the fine grinding zone substantially differ from one another,

wherein the bar-shaped knives in the pre-grinding zone and the fine grinding zone extend linearly in a planar layout and at least in the stationary part, the average knife angle to the conical shell generating line in the pre-grinding zone amounts to at least approximately 10° and in the fine grinding zone to at least approximately 20°,

wherein the bar-shaped knives on the stationary part have a surface area in the pre-grinding zone which amounts to at most, 25 to 30% of a total shell surface and approximately 50% of a total shell surface in the fine grinding zone, and

wherein the depth of the channels between the bar-shaped knives in the pre-grinding zone is substantially greater than the depth of the channels between the bar-shaped knives in the fine grinding zone.

5,354,006

PAPER WEB SUPPLY ASSEMBLY

Klaus W. Röder, Würzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Oct. 23, 1992, Ser. No. 965,869
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1991, 4135101
Int. Cl.[5] B65H *19/14*
U.S. Cl. 242—555.3 **8 Claims**

1. A paper web supply assembly which is usable to accomplish a flying paper web splice in a rotary printing press, said paper web supply assembly comprising:

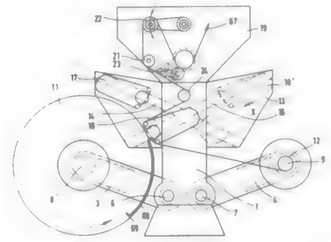
spaced first and second side frames;

first and second paper roll support arm assemblies positioned between said first and second side frames and usable to support first and second paper rolls for rotation about first and second paper roll receiving rods;

a first movable gluing carriage cooperable with said first paper roll and a second movable gluing carriage cooperable with said second paper roll;

first and second gluing carriage guide plates secured to said spaced first and second side frames above said first and second paper roll support arm assemblies;

first and second downwardly extending guide ribs in each of said first and second gluing carriage guide plates, said first guide ribs supporting said first gluing carriage and said second guide ribs supporting said second gluing carriage;



means to move said first gluing carriage along said first guide ribs downwardly toward, and upwardly away from said first paper roll receiving rod and means to move said second gluing carriage along said second guide ribs downwardly toward, and upwardly away from said second paper roll receiving rod; and

a gluing roller on each of said first and second gluing carriages, each said gluing roller being movable with its associated one of said first and second gluing carriages to contact a paper web from a depleting one of said first and second paper rolls during selective movement of said first or second gluing carriage downwardly toward a full one of said first or second paper rolls supported on said first or second paper roll receiving rods and to move said depleting paper web into contact with a surface of said full one of said first and second paper rolls to effect a flying paper web splice.

5,354,007

WEB LEADER GUIDING DEVICE UTILIZING TURBULENCE-GENERATING NOZZLES

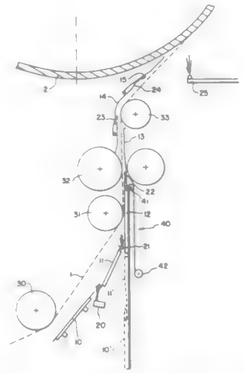
Hans-Joachim Fissmann; Hans Weiss, and Hans-Albrecht Ruff, Heidenheim, all of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Continuation of Ser. No. 714,860, Jun. 13, 1991, abandoned. This application May 24, 1993, Ser. No. 66,621
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1990, 4018883
Int. Cl.[5] B65H *19/28*
U.S. Cl. 242—532.7 **15 Claims**

1. A device for feeding the leader of a running web upwardly to a rolling machine roll from a position originating below said machine roll, comprising:

a plurality of successively arranged guide plates for guiding said web leader in said upward direction toward said machine roll, said guide plates being positioned so that successive guide plates beginning with the lowermost of said guide plates are tilted at increasingly steep angles until a guide plate is positioned vertically, successive guide plates positioned relative to one another to define a slot opening between adjacent guide plates; and

a plurality of blowing organs, each of said blowing organs having a hollow body arranged transverse to the web running direction and having a plurality of bores arranged longitudinally along said hollow body, each of said blowing organs being arranged in a respective slot opening, wherein turbulent air flow is generated by the bores of the



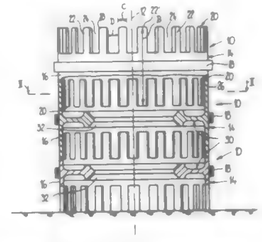
blowing organ immediately preceding said vertically positioned guide plate from below; said device further being structured and arranged so that an opening is disposed between said blowing organ immediately preceding said vertically positioned guide plate from below and said vertically positioned guide plate.

5,354,008

STACKABLE WINDING CORE HAVING AXIAL PROJECTIONS

Werner Honegger, Tann Ruti, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Continuation of Ser. No. 698,471, Apr. 26, 1991, abandoned. This application Dec. 21, 1993, Ser. No. 170,637
Claims priority, application Switzerland, Apr. 26, 1990, 1427/90
Int. Cl.[5] B65H *75/18*
U.S. Cl. 242—580 **12 Claims**



1. A rotatable winding core for receiving a plurality of individual printed products, wound up together to form a tightly wound up roll of printed products, which comprises:

a ring-shaped winding body defining an axis and a median plane extending at right angles with respect to said axis;

a winding band provided for said rotatable winding core and, said winding band being wound in coils between coils of the wound-up printed products and said band being connected at one end with said winding body and being would on said winding body in the median plane thereof;

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said winding body having a central portion about which said winding band is would to support the coils of the winding band and a substantially cylindrical circumferential outer surface on each side of said central portion to support the tightly wound up roll of printed products;

an inner peripheral web located in the inner periphery of central region of the winding body, said web running in a circumferential direction and protruding inwardly from the winding body in a radially inward direction;

the outer surface of at least one end of said winding body having a plurality of recessed formed therein extending in the axial direction toward said central portion and defining a plurality of projections, the circumferential width of said recesses being greater than the circumferential width of said projections for receiving the projections of a neighboring winding core;

wherein a plurality of winding cores are coaxially stacked one on top of the other in a tower-like manner, the projections of one winding core bearing against the central portion of an adjacent winding core when the winding cores are empty, and the end faces of the rolls of printed products bearing one against the other when the cores have wound up printed products wound thereon.

5,354,009

RELOADABLE LIGHTTIGHT PLASTIC CASSETTE

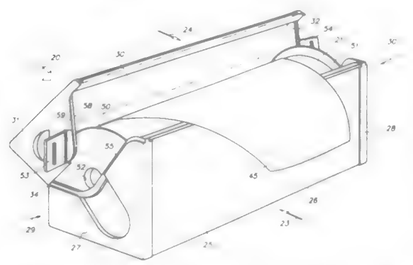
Edward Buelens, Kontich, and Lieven Dirx, Oud-Turnhout, both of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed Mar. 10, 1993, Ser. No. 28,361

Claims priority, application European Pat. Off., Mar. 19, 1992, 92200791.9

Int. Cl.[5] B65H *16/06;* **G03B** *1/02, 17/26*

U.S. Cl. 242—348.4 **16 Claims**



1. A reloadable lighttight cassette for holding a roll of light sensitive web material and dispensing it therefrom, said cassette comprising an elongated hollow open-ended housing of substantially uniform generally square cross-section throughout its length with a lengthwise slot therein for dispensing said web material therethrough and two generally square end caps fitted to margins of the open ends of the housing to close the same in a lighttight manner, each said end cap having flanges around its perimeter edges overlapping with said housing end margins, the housing being made of plastic by extrusion molding in two sections cooperating to form said square cross-section, said sections being hingedly connected together on one side of the housing by a lighttight hinge and generally opposite said hinge having longitudinal edges which meet together in lighttight relation, said hinge and meeting edges defining base and lid sections of said housing, said lid section being swingable on said hinge to open the cassette for loading of a fresh roll of light sensitive material therein, each of said caps being molded in two mating sections interconnected by a integral hinge, said hinge extending from a location on one side edge of the cap proximate to the hinge of said housing generally normally of said cap edge to the opposite side edge, one section of each end cap being fixedly attached to the base section of said housing and the other section being swingable from and to a position co-planar with the fixedly attached end cap section wherein its edge flanges overlap with the end margins of the lid section of the housing to close the cassette, to and from a position out of the plane of the fixedly attached cap section to free said housing lid section for swinging movement relative to the base section to open the cassette for reloading.

5,354,010

WINDING SHAFT WITH CLAMPING DEVICE FOR CARDBOARD WINDING TUBES

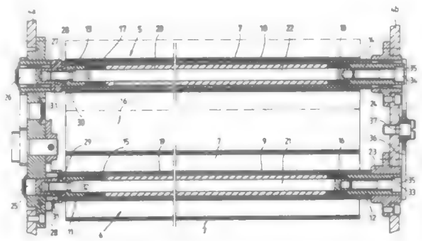
Gerhard Loos, Horrenberg, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Nov. 2, 1992, Ser. No. 970,291

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1991, 4135892

Int. Cl.[5] B65H *75/24*

U.S. Cl. 242—571.8 **8 Claims**



1. In combination, a winding shaft and a clamping device for a cardboard winding tube slid onto the winding shaft, the clamping device comprising a clamping rod received in respective first and second end parts so that said end parts are braced axially opposite to one another by said clamping rod, a sleeve formed of rigid material mounted coaxially on said clamping rod, and at least one radially directed and elastically deformable annular clamping element for frictionally locking together the winding shaft and a winding tube slid onto the winding shaft, said clamping element being of annular shape and being disposed coaxially on said clamping rod between said first end part and said sleeve, first bearing means, for supporting said first end part, mounted in a first side part of a housing having two side parts, a plug-in coupling having means for connecting said first end part to said first bearing means, and second bearing means mounted in a second side part of said housing for supporting said second end part, said connecting means of said plug-in coupling comprising mating complementary elements, respectively, formed on said first end part and on said first bearing means.

5,354,011

TAKE-UP REEL FOR WINDOW BLIND CORDS

David P. Rozon, Russel, Canada, assignor to 2844788 Canada Ltée, Quebec, Canada

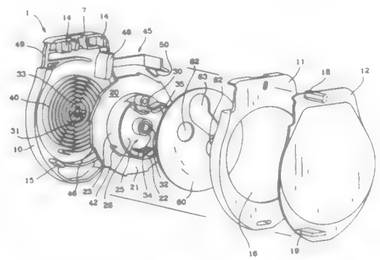
Filed Feb. 26, 1993, Ser. No. 22,891

Int. Cl.[5] B65H *75/48*

U.S. Cl. 242—402 **6 Claims**

1. A cord retraction device comprising a rotatably driven spool having cord attachment means to retain a cord to said spool, a cord receiving surface, and a retainer rotably engaged to an end of said spool and adapted to retain said cord on said cord-receiving surface, said retainer being rotatable between

first and second positions, wherein in said first position the attachment means is exposed for user access thereto, and in



said second position, the retainer cooperates with said spool to retain the cord on the cord receiving surface thereof.

5,354,012

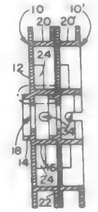
BOBBIN FOR ROTATABLE, RELEASABLE ATTACHMENT TO IDENTICAL BOBBINS

James D. Vincent, 180 Ridge St., Blackfood, Id. 83221

Filed Feb. 25, 1993, Ser. No. 22,484

Int. Cl.[5] B65H *75/18*

U.S. Cl. 242—118.41 **10 Claims**



1. A bobbin for winding and dispensing filamentary material and adapted for releasable, side-by-side connection to identical bobbins on each side, said bobbin comprising:

a) a substantially flat disc having a central axis, an outer perimeter and first and second sides;

b) substantially cylindrical wall means extending outwardly from said disc first side to a first free end and having an outer surface tapering inwardly from a first diameter at said first end toward said disc;

c) substantially cylindrical hub means extending outwardly from said disc second side to a second free end and having an inner surface tapering inwardly from a second diameter at said second end toward said disc;

d) drum means extending outwardly from said disc second side in spaced, surrounding relation to said hub means, said drum means having a substantially cylindrical, outer surface inwardly of said disc outer perimeter upon which said filamentary material may be wound; and

e) said second diameter being slightly smaller than said first diameter to provide snap-fit engagement means on said wall means of a first bobbin and said hub means of a second, identical bobbin for releasable engagement upon axial movement of said first bobbin with said second bobbin coaxially aligned therewith and said first side of said disc of said first bobbin facing said second side of said disc of said second bobbin.

5,354,013

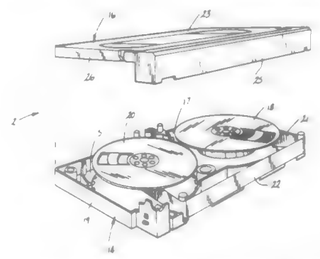
TAPE CASSETTE FAST FORWARD CLUTCH

Thomas C. Ouellette, 114 E. Candlewick, Apt. 909, Kalamazoo, Mich. 49001

Filed Jun. 11, 1993, Ser. No. 76,014

Int. Cl.[5] G11B *23/087*

U.S. Cl. 242—342 **24 Claims**



1. A tape cassette adapted to be received in a tape cassette player, the cassette comprising:

a housing;

a base reel rotatably mounted in the housing;

a take-up reel rotatably mounted in the housing beside the base reel;

a length of tape having a first end, a second end and a body intermediate the first and second ends, the first end being mounted to the base reel, the second end being mounted to the take-up reel and the body being adapted to be transferred between the base reel and take-up reel through rotation of the base reel and take-up reel, the force of rotation being supplied to at least one of the base reel and take-up reel by a driving means in the cassette player; and

a clutch mounted in said housing in a position to permit rotation of one of the base reel and take-up reel in a first direction by the driving means at and below a predetermined speed of rotation and effectively disable rotation of said one of the base reel and take-up reel in the first direction above the predetermined speed of rotation, wherein the clutch does not contact the tape.

5,354,014

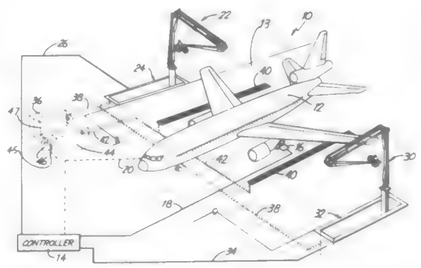
SYSTEM FOR DE-ICING AIRPLANES

Thomas M. Anderson, Hugo, Minn., assignor to Schwing America, Inc., Minneapolis, Minn.

Filed Apr. 27, 1993, Ser. No. 54,044

Int. Cl.[5] B64D *15/10*

U.S. Cl. 244—134 C **22 Claims**



1. A system for de-icing aircraft in a de-icing area, the system comprising:

a first recessed storage area, the first recessed storage area

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being located substantially below ground level on a first side of the de-icing area;

a first spraying boom for use in applying de-icing solution to surfaces of aircraft, the first spraying boom having at least one boom section;

first means for applying de-icing solution to surfaces of aircraft, the first means for applying being supported by the first spraying boom; and

at least one piston/cylinder combination for raising the first spraying boom out of the first recessed storage area when an aircraft needs de-icing and for lowering the first spraying boom into the first recessed storage area for storage when aircraft de-icing is completed, each piston/cylinder combination being connected to at least one boom section so that the first spraying boom may be raised out of or lowered into the first recessed storage area by moving each piston to a predetermined position within its respective cylinder.

5,354,015

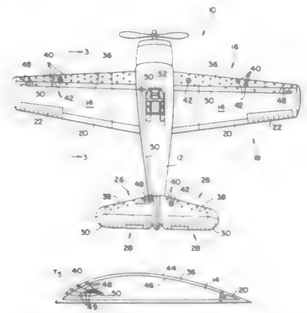
SYSTEM FOR WARNING THE FLIGHT CREW ON BOARD AN AIRCRAFT OF PRE-FLIGHT AIRCRAFT ICING

Robert H. Meador, 550 Center Rd., Akron, Ohio 44319-4273

Filed Aug. 10, 1993, Ser. No. 105,350

Int. Cl.[5] B64D *15/20*

U.S. Cl. 244—134 F **19 Claims**



1. A warning system for detecting pre-flight aircraft icing, comprising:

parameter sensing means located at a plurality of locations along an aircraft structure, each of said sensing means positioned to sense an outer skin temperature of the aircraft structure at each of said locations and producing signals indicative thereof;

signal averaging means for averaging said signals produced by said sensing means to produce signals representative of the average value of the outer skin temperature in a predefined area;

relative humidity sensing means for producing a signal representative of the ambient relative humidity surrounding the aircraft structure prior to takeoff;

comparing means for comparing the outputs of said averaging means and said humidity sensing means with predetermined values of same defining an icing susceptibility region and producing a signal when the value of the sensed parameters falls within said region; and

indicating means, connected to said comparing means and activated by a signal from the comparing means indicative of icing susceptibility.

5,354,016

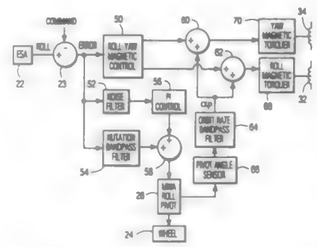
PIVOTED WHEEL ROLL CONTROL WITH AUTOMATIC OFFSET

Neil E. Goodzeit, East Windsor; Michael A. Paluszek, Lawrenceville, both of N.J., and Eric V. Wallar, New York, N.Y., assignors to General Electric Co., East Windsor, N.J.

Filed Jul. 30, 1992, Ser. No. 922,306

Int. Cl.[5] B64G *1/32*

U.S. Cl. 244—165 **20 Claims**



1. A system for three-axis control of a spacecraft in an orbit about a heavenly body having a center of mass, which orbit defines an orbit plane, said system comprising:

a spacecraft body associated with a pitch axis nominally orthogonal to said orbit plane, a roll axis parallel to the direction of orbital motion, and a yaw axis extending between the centers of mass of said spacecraft body and said center of mass of said heavenly body;

a wheel adapted for being spun about a spin axis, and for producing torques about said spin axis in response to angular acceleration;

wheel mounting means for supporting said wheel with said spin axis orthogonal to said roll axis, said wheel mounting means being pivotable about said roll axis;

wheel mounting drive means coupled to said body and to said wheel mounting means for driving said wheel about said roll axis in response to a wheel drive signal, whereby said body may be torqued about said roll axis, said wheel mounting means being movable about said roll axis from a nominal position to at least one travel limit;

roll attitude sensing means coupled to said body for generating roll attitude signals representative of a desired positioning of said yaw axis of said body relative to inertial space;

roll control means coupled to said roll attitude sensing means and to said wheel mounting drive means for comparing said roll attitude signals with signals representing said desired positioning of said yaw axis for forming a roll error signal, and for applying said roll error signal to said wheel mounting drive means, whereby said yaw axis may be positioned by control of said roll, but said wheel mounting drive means may eventually reach said travel limit, whereupon further roll control may not be possible;

yaw torquing means coupled to said body and controllable in response to yaw torquer drive signals, for producing torques about said yaw axis in response to said drive signals;

spin axis position determining means responsive to the position of said wheel mounting means about said roll axis for generating an unload error signal representative of at least the direction in which said wheel mounting means departs from said nominal position;

unload control signal processing means coupled to said spin axis position determining means and to said yaw torquing means, for processing said unload error signal by at least high-pass filtration for generating said yaw torquer drive signals, and for applying said yaw torquer drive signals to said yaw torquing means for unloading said wheel mounting means toward a position in which the constant roll torque generated by the offset of said spin axis from a normal to said orbital plane counteracts the constant component of environmental roll torque.

5,354,017

METHOD FOR CONTROLLING TURBULENCE

Evgeny Levich, Tel-Aviv, Israel, assignor to Orlev Scientific Computing, Ltd., Yavne, Israel

Continuation of Ser. No. 54,837, Apr. 30, 1993, abandoned, which is a continuation of Ser. No. 550,020, Jul. 9, 1990, abandoned. This application Dec. 30, 1993, Ser. No. 176,284

Int. Cl.[5] B64C *21/00*; **F41F** *3/04*

U.S. Cl. 244—204 **51 Claims**

1. A method for controlling turbulence in a flow field in a medium having relatively large scale eddies of size L characterized by a Reynolds number Re_L much greater than unity containing most of the turbulent energy, there being a consequent transmission of energy to relatively small scale eddies having a size comparable to the Kolmogorov scale l_k and a Reynolds number R_e equal to unity, at which dissipation of energy occurs, the scales L and l_k being relates by the expression $L=l_k*(Re_L)$ 0.75, said method comprising introducing into the medium a broad spectrum stochastic external disturbance a plurality of whose wavelengths are in the range of scales intermediate the scales L and l_k thus reducing energy dissipation.

5,354,018

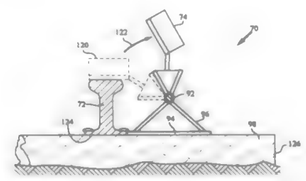
RAILWAY FROG SYSTEM

Edwin deS. Snead, 701 E. University Ave., Georgetown, Tex. 78626

Filed Jun. 24, 1991, Ser. No. 719,991

Int. Cl.[5] E01B *7/08*, *7/16*

U.S. Cl. 246—383 **10 Claims**



1. An apparatus for switching a railroad car wheel from a first rail to a second rail comprising:

a base;

a ramp member hingedly connected to said base member, said ramp member having a length suitable for extending from the first rail to the second rail, said ramp member having a first angled portion at one end, said ramp member having a second angled portion at another end, said ramp member having a generally flat surface between said first and second angled portions, said flat surface having a thickness of greater than one and one-half inches; and

a frame extending upwardly from said base, said frame rigidly supporting a hinge, said hinge extending in parallel relation to said base, said ramp member arranged in parallel relation to said hinge, said ramp member connected to said hinge by a plurality of struts, said hinge having a lever-receiving receptacle attached thereto, said lever-receiving receptacle rotatable with respect to said frame, a movement of said lever-receiving receptacle causing a corresponding movement of said ramp member, said lever-receiving receptacle opening toward said ramp member, said lever-receiving receptacle comprising a V-shaped receptacle having a narrow end fastened adjacent to said hinge, said V-shaped receptacle opening adjacent said ramp member.

5,354,019

HOLDING MEANS FOR MOUNTING AN ELECTRICAL COMPONENT ACTUATED BY A ROTATING SPINDLE ON AN OBJECT

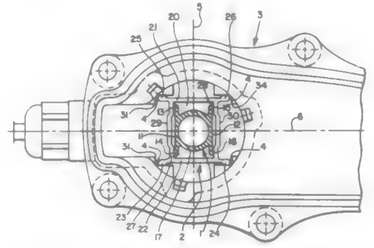
Dieter Braun, Brunnthal, Fed. Rep. of Germany, assignor to Wilhelm Ruf KG, Munich, Fed. Rep. of Germany

Filed Jun. 25, 1993, Ser. No. 83,022

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1992, 4221024

Int. Cl.[5] G12B *9/00*

U.S. Cl. 248—27.1 **12 Claims**



1. Apparatus for mounting an electrical component having a housing on an object, said electrical component being actuatable by a rotating spindle comprising:

means for guiding said electrical component displaceably relative to the object in a first displacement direction and in a second displacement direction perpendicular to said first displacement direction, the two displacement directions being offset by 90 degrees in relation to the axis of said spindle;

a first guideway;

a second guideway on said object;

a first and second displaceable slide components;

said second displaceable slide component being displaceably guided in said second displacement direction by said second guideway on said object;

said second displaceable slide component having a substantially rectangular recess having at least one pair of opposing side walls adapted for receiving said first slide component;

said pair of opposing side walls of said second slide component forming a first guideway;

said first displaceable slide component being secured to said housing of said electrical component; and

said first displaceable slide component being displaceably guided in said first displacement direction by said first guideway on said second displaceable slide component.

5,354,020

CABLE RESTRAINT SYSTEM

William J. Richards, 330 Webster St., Rockland, Mass. 02370

Filed May 28, 1993, Ser. No. 69,124

Int. Cl.[5] F16L *3/22*

U.S. Cl. 248—68.1 **11 Claims**

1. A cable restraint system for mounting a plurality of cables adjacent a wall, the system comprising:

a stanchion having a receptacle, the stanchion including means for securely attaching the stanchion to the wall;

an arm having, at one end, means for engaging the receptacle;

separator means for holding and separating the cables, the separator means including

a base slipped onto the arm so that the base rests on the arm,

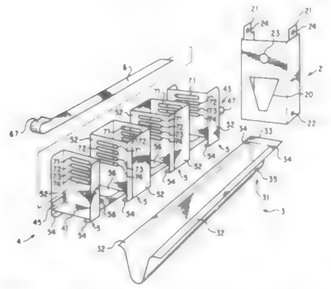
at least three integrally formed uprights extending upwardly from the base, the uprights being fixedly attached to the base and being arranged so that each cable has an upright on both sides of it, the height of each

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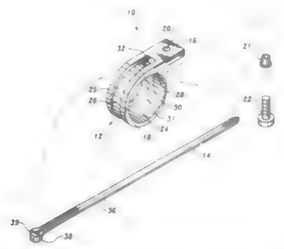
upright being greater than the diameter of each cable, each of the uprights having a slot, the slots being substantially the same distance from the bottom of the uprights, and

means, located at one end of the separator means, for engaging the receptacle of the stanchion, so that the separator means is locked into the receptacle; and

a capture bar for insertion through the slots over the cables so as to hold each cable between a pair of uprights, the capture bar including locking means for holding it in place in the slots.



5,354,021
AN ADJUSTABLE CLAMP
Darvel B. Farrell, 8211 116th Ave. SE., Renton, Wash. 98056
Filed Jan. 4, 1994, Ser. No. 177,284
Int. Cl.[5] F16L *3/08*
U.S. Cl. 248—74.3 **9 Claims**



1. An adjustable clamp for securing a bundle of wires or the like in close engagement, the clamp comprising:

a base portion adapted for mounting to a structure,

a loop portion, including an inner surface, an outer surface, and a free end extending from the base portion, the loop portion having sufficient flexibility so that the free end can engage the inner surface and be moved progressively inwardly of the loop in engagement with the inner surface thereof in order to contract the size of the loop, and can be moved away from the inner surface of the loop to create a gap for the insertion and removal of wires, and

a clamp mechanism for securing around the outer surface of the loop portion in order to contract the size of the loop.

5,354,022
PATIENT ASSISTANT DEVICE
Betty J. Coonrod, 8317 Spring Valley Rd., Belton, Mo. 64012
Filed Jan. 19, 1993, Ser. No. 5,629
Int. Cl.[5] A45A *19/04*
U.S. Cl. 248—127 **24 Claims**

1. A patient assist apparatus for assisting movement of a patient to or from an article of furniture such as a bed or chair, the article of furniture presenting an access edge, said apparatus comprising:

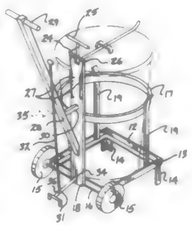
a base; and

a patient support structure coupled with said base including a substantially horizontal handrail spaced above said base, said base presenting a support section adjacent said handrail, said support section of said base presenting opposed side portions,



said base and support structure being configured to cooperate with the article of furniture to present said handrail spaced therefrom and substantially parallel to the edge of the article of furniture with said support section of said base therebetween for allowing the patient to grasp said handrail while standing on said support section, at least one of said side portions of said base and the space thereabove being devoid of structure for allowing entry to and exit from said support section and thereby the article of furniture.

5,354,023
REFUSE CONTAINER CADDY APPARATUS
Lewis M. Meeks, Rte. 2, Box 164, Lexington, Miss. 39095
Filed Feb. 19, 1993, Ser. No. 19,679
Int. Cl.[5] A47K *1/04*
U.S. Cl. 248—129 **6 Claims**



1. A refuse container caddy apparatus arranged for receiving a container therewithin, wherein the container includes a removable lid, and the apparatus comprises,

a base member having a wall fixedly and orthogonally mounted to the base member extending in a surrounding relationship relative to the base member, with a plurality of wheel members mounted to the base member, and a plurality of spaced forward legs mounted to the base member spaced from the wheel members, and

a support plate fixedly and orthogonally mounted to the base member, and

a hoop member fixedly and orthogonally mounted to the support plate extending above the base member, where the hoop member is symmetrically oriented about a predetermined axis, and the axis is oriented medially of the base member, and

the support plate having a support plate top end, the top end having a top end recess, and a positioning leg, the positioning leg including a leg axle directed through the support plate adjacent the top end projecting through the top end recess pivotally mounting the positioning leg within the top end recess, with the positioning leg having a first end secured to the lid, and having a second end positioned within the top end recess, and

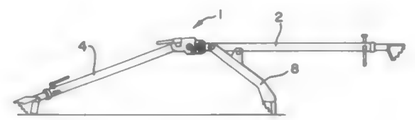
a handle leg fixedly and orthogonally mounted to the positioning leg at the positioning leg second end, and

a grasp bar fixedly and orthogonally mounted the handle leg spaced from the positioning leg, and

a spring mounting bar fixedly and orthogonally mounted to the handle leg spaced from the positioning leg axle, and

the spring mounting bar including a plurality of spring members extending from the spring mounting bar and secured to the spring mounting bar and to the support plate below the top end recess.

5,354,024
TRIPOD FOR FIREARMS
Geir Vinghog, Duken, and Arne Hagen, Asgardstrand, both of Norway, assignors to Vinghogs Mek. Versted As, Duken, Norway
Continuation of Ser. No. 861,782, Jun. 18, 1992, abandoned.
This application Aug. 5, 1993, Ser. No. 102,595
Claims priority, application Norway, Dec. 15, 1989, 895080
Int. Cl.[5] F41A *23/00*
U.S. Cl. 248—168 **3 Claims**

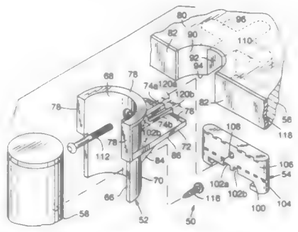


1. A tripod for firearms comprising a pivot support disposed about a vertical axis and including first, second, and third flanges defining first, second, and third openings, respectively; first, second and third telescoping and adjustable legs, respectively, having resting points and being secured to said first, second, and third flanges, respectively; the axis of the first flange opening being disposed substantially horizontally and means supporting the first leg to said first flange whereby the first leg secured to said first flange is rotatable in a vertical plane, the axes of said second and third flange openings being arranged symmetrically to the vertical plane of the first leg and in a ground view, front view, and side view being arranged in acute angles to the vertical plane of the first leg, means rotatably mounting said second and third legs relative to said second and third flanges, respectively, whereby the rotating of the second and third leg will amend the angles thereof in the ground view relative to the plane of the first leg, the three legs having the same length and the distance between the axis of the pivot support and the resting points of the second and third legs on the surface may be decreased substantially when the second and third legs are adapted to be at an acute angle to each other to insure support when firing at ground level in a direction substantially in a vertical plane through the longitudinal axis of the first leg, and including a fourth leg having a substantially shorter length the other three legs, means connecting the fourth leg to the first leg such that the fourth leg can be moved downward to create a support point substantially nearer the vertical rotation axis of the pivot support than the resting points of the other legs.

5,354,025
FURNITURE SHELF SUPPORT BRACKET
Jeffrey T. McCaffrey, Portland, Oreg., assignor to Anthro Corporation, Portland, Oreg.
Filed Dec. 15, 1992, Ser. No. 991,063
Int. Cl.[5] A47G *29/00*
U.S. Cl. 248—188 **13 Claims**

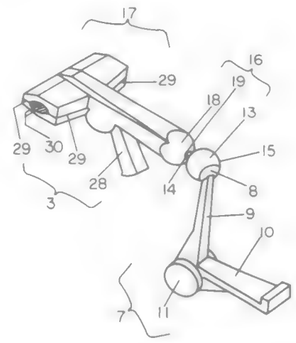
1. A combination furniture shelf and furniture shelf support bracket for supporting the furniture shelf and connecting it to a vertical furniture member, comprising:

a furniture shelf support bracket having a semi-tubular cuff with an upper marginal edge, an inner surface for engaging the vertical furniture member, an outer surface from which a platform projects, a first alignment ridge centrally positioned on an upper surface of and extending along the platform, and a top lip extending from the upper marginal edge of the outer surface of the cuff, the platform and the top lip extending from the outer surface of the cuff by respective first and second distances, the first distance being substantially greater than the second distance; and



a furniture shelf having side edges that extend between corners, a slot in a side edge apart from a corner of the furniture shelf into which slot the first alignment ridge fits, and a top surface and a bottom surface that are engaged by the top lip and the platform, respectively.

5,354,026
PORTABLE SELF-LEVELING CLAMP-ON UTILITY HOOK
Wesley A. Bulla, 2113-B Elliott Ave., Nashville, Tenn. 37204
Filed Apr. 29, 1993, Ser. No. 53,477
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—229 **3 Claims**



1. A portable clamp-on hook-type device suitable for holding audio headphones and associated electronic cables, comprising a spring-loaded clamp assembly which can be manipulated with one hand and temporarily attached to any stable device of suitable shape and size; a ball-and-socket assembly attached to said spring-loaded clamp assembly; and a counterweighted and balanced hook assembly attached to said ball-and-socket ball assembly; said clamp assembly provides for attachment to circular as well as flat support members; wherein said ball-and-socket assembly provides for universal adjustability between the hook assembly and the clamp assembly.

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5,354,027

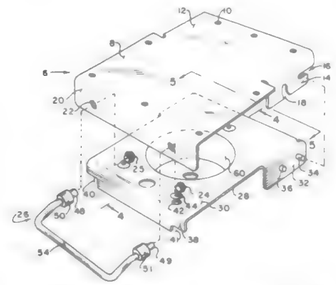
FLIP TOP REMOVABLE TABLE SYSTEM

Lewis D. Cox, Knoxville, Tenn., assignor to Falcon Products, Inc., Newport, Tenn.

Continuation of Ser. No. 879,183, May 5, 1992, abandoned. This application Apr. 26, 1994, Ser. No. 233,227

Int. Cl.[5] A47B *3/00*

U.S. Cl. 248—291 **7 Claims**



1. A mechanism for permitting movement of a planar tabletop with respect to at least one vertical support, comprising:

a top plate, said top plate having a base, a front wall, a first side and a second side, each of said first and second sides having an open-mouth pivot groove and an open-mouth arcuate guide channel formed in it, said front including at least one plunger assembly for locking said top plate to a bottom plate in a horizontal position of said table top, said plunger assembly having a plunger housing mounted to said top plate along the front wall thereof and a plunger biased to extend outwardly of said housing;

a bottom plate having a base, a front, a pair of sides, said front having a seat for engaging said plunger, said pair of sides having means for pivotally engaging said top plate, a stud protruding from each of said sides, each of said studs being positioned to engage said arcuate guide channel in the side of said top plate to provide alignment and stability when said top plate is lowered to a superimposed position over said bottom plate; and

means for attaching said bottom plate to said at least one vertical support.

5,354,028

ANGLE ADJUSTING DEVICE FOR A DISPLAY DEVICE

Yoshiharu Kitamura, Komagane, Japan, assignor to NHK Spring Co., Ltd., Yokohama, Japan

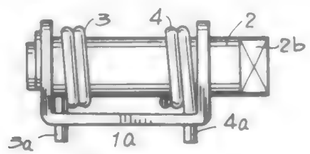
Filed Dec. 27, 1990, Ser. No. 633,365

Claims priority, application Japan, Dec. 28, 1989, 1-340397

The portion of the term of this patent subsequent to Dec. 11, 2009, has been disclaimed.

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—292.1 **10 Claims**



1. An angle adjusting device for a display device comprising:

a channel type bearing means provided with a fixing portion having at least two slits in projected positions of a pair of coil springs to be mounted on the bearing;

a rotatable axis rotatably mounted on said bearing means; and

at least a pair of coil springs, closely wound on said rotatable axis and each having a hook portion inserted in a slit of said bearing, wherein each of the springs is dimensioned to provide a locking force on said rotatable axis when the axis is turned in one direction relative to the respective spring and to release said force when the axis is turned in an opposite direction relative to the respective spring.

5,354,029

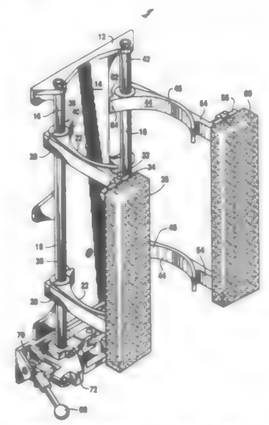
QUICK RELEASE TANK SUPPORT BRACKET WITH POSITIVE LOCKING ENGAGEMENT MEANS

Theodore Ziaylek, Jr., 140 Riverview Dr., and Michael P. Ziaylek, 3 Brook La., both of Yardley, Pa. 19067

Filed Mar. 12, 1993, Ser. No. 30,963

Int. Cl.[5] A47C *7/62*; **A62C** *39/00*; **A47F** *5/00*

U.S. Cl. 248—313 **20 Claims**



1. A quick release tank support bracket with positive locking engagement means and operative supportive seat back assembly comprising:

A. a frame means,

B. a first support bar means pivotally mounted within said frame means and extending vertically therealong;

C. a first clamp arm means attached to said first support bar means to be pivotally movably therewith, said first clamp arm means extending outwardly from said first support bar means and defining a first tank engaging surface means thereon, said first clamp arm means and said first support bar means being pivotable between a tank retaining position and a tank releasing position;

D. a first crank arm means secured to said first support bar means to be pivotable therewith, said first crank arm means extending outwardly from said first support bar means to define a first distal end means thereof;

E. a first closure lug means attached to said first support bar means and extending outwardly therefrom to be moveable therewith, said first closure lug means including a first tank abutment surface thereon adapted to be contacted by a tank during movement thereof into engagement with the tank support bracket to facilitate urging of said first support bar means and said first clamp arm means to the tank retaining position;

F. a second support bar means pivotally mounted within said frame means and extending vertically therealong;

G. a second clamp arm means attached to said second support bar means to be pivotally movably therewith, said second clamp arm means extending outwardly from said second support bar means and defining a second tank engaging surface means thereon, said second clamp arm means and said second support bar means being pivotable between a tank retaining position and a tank releasing position;

H. a second crank arm means secured to said second support bar means to be pivotable therewith, said second crank arm means extending outwardly from said second support bar means to define a second distal end means thereof;

I. a second closure lug means attached to said second support bar means and extending outwardly therefrom to be moveable therewith, said second closure lug means including a second tank abutment surface thereon adapted to be contacted by a tank during movement thereof into engagement with the tank support bracket to facilitate urging of said second support bar means and said second clamp arm means to the tank retaining position;

J. interengagement means connecting said first distal end means of said first clamp arm means and said second distal end means of said second clamp arm means to facilitate cooperative movement of said first clamp arm means attached to said first support bar means and said second clamp arm means attached to said second support bar means between the tank releasing position and the tank retaining position simultaneously;

K. a first seat back means fixedly secured with respect to said first clamp arm means and being moveable therewith between a tank retaining position and a tank releasing position and adapted to provide a seat back rest responsive to said first clamp arm means being in the tank retaining position; and

L. a second seat back means fixedly secured with respect to said second clamp arm means and being moveable therewith between a tank retaining position and a tank releasing position and adapted to provide a seat back rest responsive adapted to provide a seat back rest responsive to said second clamp arm means being in the tank retaining position.

5,354,030

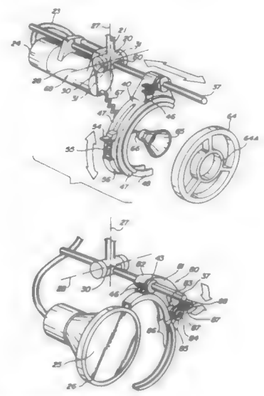
RETAINER RING

Ronald P. Harwood, 31110 Applwood, Farmington Hills, Mich. 48331

Division of Ser. No. 905,786, Jun. 29, 1992. This application Aug. 12, 1993, Ser. No. 105,610

Int. Cl.[5] A47G *1/10*

U.S. Cl. 248—316.1 **11 Claims**



1. A split retaining ring including:

(a) a semi-circular housing including a circumferentially extending slot and a boss;

(b) a semi-circular ring section slidably mounted to said semi-circular housing, including a mounting portion protruding through the slot in said semi-circular housing;

(c) a handle mounted to the mounting portion of said semi-circular ring section; and

(d) a spring interposed between said handle and the boss of said semi-circular housing.

5,354,031

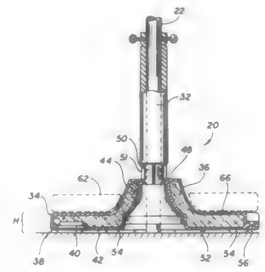
LOW-PROFILE UMBRELLA BASE

Alfred J. Bilotti, Huntington Beach, Calif., assignor to Dayva International, Inc., Huntington Beach, Calif.

Filed Mar. 29, 1993, Ser. No. 38,708

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—519 **11 Claims**



1. An umbrella base, comprising:

a base portion comprising a disc having a top surface and a bottom surface, an upturned annular collar communicating with and extending from the top surface of the disc, and an annular flange extending along the circumference of the collar, the disc and the collar having hollow interiors filled with a heavy material, the base portion further comprising a central bore provided through the disc and the collar; and

a neck portion comprising an outer surface and a neck, wherein the neck is adapted to be fitted through the central bore of the base portion, the neck portion further comprising an annular groove formed on the outer surface thereof, and a plurality of ribs formed in the annular groove for engaging the annular flange of the collar.

5,354,032

SYSTEM FOR CONTROLLING FLUID FLOW

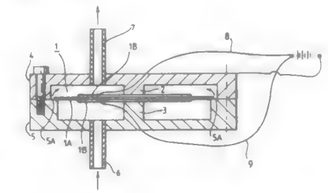
Charles R. Sims, Royston; Victor C. Humberstone, and Adrian M. Woodward, both of Cambridge, all of United Kingdom, assignors to The Technology Partnership Ltd., United Kingdom

Filed Oct. 23, 1992, Ser. No. 965,337

Claims priority, application United Kingdom, Oct. 25, 1991, 9122739

Int. Cl.[5] F16K *31/02*

U.S. Cl. 251—129.06 **20 Claims**



1. A shut-off and flow control valve for controlling fluid flow, the valve comprising a housing, a cavity within the

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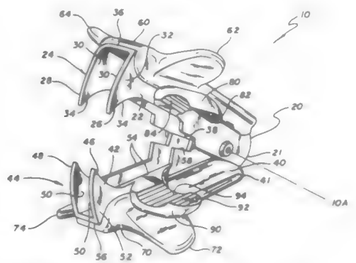
housing, a valve disc element made from an electro-strictive material and a valve seat disposed within the cavity between an inlet and an outlet, the valve seat having a peripheral shape corresponding to a peripheral shape of the valve disc element, the valve disc element comprising a metal substrate having a piezoelectric layer bonded to at least one face thereof, the inlet and outlet leading fluid into and out from the cavity and being disposed on opposite sides of the valve disc element, and means for supporting the valve disc element at a central region of the element with the peripheral region of the disc disposed for cooperation with the valve seat so that, upon actuation of the valve disc element by a voltage applied thereto, the periphery of the disc is displaceable away from the valve seat to permit fluid to flow from the inlet over the periphery of the disc to the opposing outlet.

5,354,033

DOUBLE-JAWED STAPLE REMOVER

Erwin Cheldin, 22907 Collins St., Woodland Hills, Calif. 91367

Filed May 10, 1993, Ser. No. 59,638
Int. Cl.[5] B25C *11/00*
U.S. Cl. 254—28 **9 Claims**



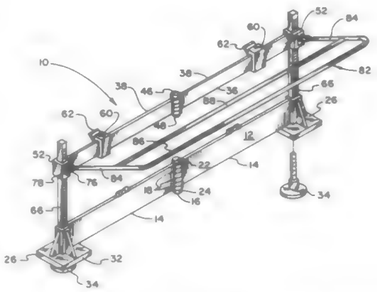
1. An apparatus for removing staples comprising:
first and second jaws which are pivotably connected for rotation about an axis;
a first wedging element connected to said first jaw and a second wedging element connected to said second jaw which can cooperate to pry a staple away from a stapled article;
a first gripping element connected to and extending laterally from said first jaw, said first gripping element having a primary gripping surface at the free end thereof and a secondary gripping surface disposed between said first jaw and said primary gripping surface;
a second gripping element connected to and extending laterally from said second jaw, said second gripping element having a primary gripping surface at the free end thereof and a secondary gripping surface disposed between said second jaw and said primary gripping surface;
said primary gripping surfaces being configured such that, upon rotation of said first and second jaws towards one another, said primary gripping surfaces can cooperate to grasp an object as small as a partially removed staple;
said secondary gripping surfaces being concave such that, when said primary gripping surfaces are rotated into engagement with one another, an aperture is defined therebetween which extends between said first and second jaws, on the one hand, and said primary gripping surfaces, on the other hand, said aperture being sufficiently large to facilitate the grasping of objects which are substantially larger than an partially removed staple.

5,354,034

FOLDABLE CAR JACKING SYSTEM

Dennis Simko, 181 Park Rd., Painesville, Ohio 44077

Filed Nov. 1, 1993, Ser. No. 144,253
Int. Cl.[5] B66F *7/12*
U.S. Cl. 254—89 R **3 Claims**



1. A foldable jack system for lifting a car during the changing of a tire comprising, in combination:
a lower support bar formed of separable halves, each half having an intermediate end with hinge attachments formed of spaced holes mutually alignable to receive a bolt for coupling the halves and the nut for securing the bolt, each half having a support block at its exterior end with a vertical recess at its upper end and a support plate at its lower end and an adjustment bolt therebeneath;
an upper support bar formed of separable halves, each half having an interior end with a hinge attachment formed of spaced holes mutually alignable to receive a bolt for coupling the halves and a nut for securing the bolt, each half having a jack block at its exterior end with a vertical aperture extending therethrough;
a slide adjuster slidable secured to each half of the upper support bar and a hook extension extending outwardly and upwardly from each slide adjuster for positioning in a bumper hole of a car to be jacked;
a pair of rigid bars, each rigid bar having a lower end received in the recess of its associated support block, each rigid bar having a series of teeth facing in a common direction opposite from the hook extension;
activating mechanisms including a jack crank and release pin for each jack block for raising and lowering the jack blocks, upper support bars, slide adapters, the activating mechanisms also including a common hand crank coupling the jack cranks through parallel side bars and a common cross bar for concurrent operation upon the actuating mechanism, the release pin movable between a first orientation wherein the hand crank raises the jack blocks and a second orientation wherein the hand crank lowers the jack blocks.

5,354,035

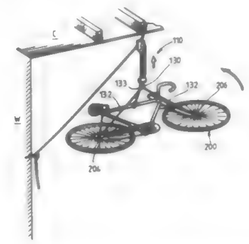
OBJECT ROTATING, LIFTING AND STORAGE SYSTEM

R. Hayes Helgren, 289 Banbury Rd., Mundelein, Ill. 60060

Continuation-in-part of Ser. No. 590,765, Oct. 1, 1990, abandoned. This application Jul. 10, 1992, Ser. No. 911,948
Int. Cl.[5] B66F *11/00*
U.S. Cl. 254—399 **13 Claims**

1. A system for first rotating and then lifting a bicycle to an overhead stationary surface, said system comprising:
a continuous rope segment having first, second, third and fourth sections;
first, second and third pulleys;
said continuous rope segment and said first, second, and third pulleys constructed and arranged to include:

said first rope section having a first end and a second end, said first end having means for connecting to the bicycle attached thereto;
means for altering the length of said first rope section located between said first and second ends;
said first pulley mounted to the overhead stationery surface and receiving the second end of said first rope section;
said second pulley positioned beneath said means for altering the length of said first rope section, said second pulley further including means to connect said second pulley to the bicycle;
said second rope section passing between said first pulley and said second pulley;



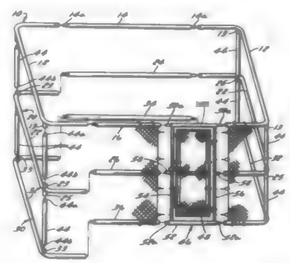
said third pulley located at substantially the same height as said first pulley, said third pulley being mounted to the overhead stationary surface;
said third rope section passing between said second and third pulleys;
a fourth rope section extending from said third pulley and constructed and arranged for the application of force;
whereby when a force is placed on said fourth rope section, so that said continuous rope segment is in tension, said second pulley moves upwardly until said second pulley is substantially even with said means for altering the length of said first rope section and said second pulley and said means for altering the length of said first rope section will then move upwardly at the same rate.

5,354,036

PORTABLE UTILITY PEN HAVING DUAL FUNCTION COMPONENTS

Burgess J. Brown, Eubank, Ky., assignor to Stephens Pipe and Steel, Inc., Russell Springs, Ky.

Filed Apr. 26, 1993, Ser. No. 53,513
Int. Cl.[5] E04H *17/00*
U.S. Cl. 256—25 **9 Claims**



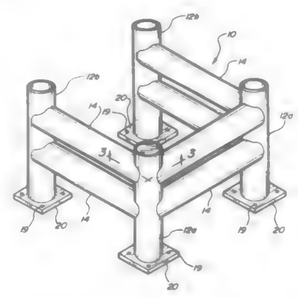
6. In combination, a parallelpiped shaped container with a predetermined internal length and components of a fence assembly, said components capable of being disassembled and packaged within said container in which a portion of said components form an internal frame structure abutting the sides of said container, said portion of said components comprising
(a) a first set of a plurality of hollow tubes each having an elongated section having elbows at each end thereof extending into a pair of arms terminating at distal ends, said tubes having an elbow length between the elbows of said tubes about equal to said internal length, said first set of tubes being arranged in a plurality of spaced apart rows by cooperating connecting elements mounted on each of said first set, said elongated sections of said first set of tubes abutting substantially the entire internal length of one side on said container;
(2) a second set of a plurality of each having an elongated section having elbows at each end thereof extending into a pair of arms terminating at distal ends, said second set of tubes having an elbow length between said elbows about equal to said internal length, and said second set of tubes being arranged in a spaced apart relationship by cooperating connecting elements mounted on each of said second set of tubes, said elongated sections of said second set of tubes abutting a side opposite said first side substantially the along the entire length thereof, said arms of said first set of tubes being interleaved with said arms of said second set of tubes wherein said first and second sets of tubes collectively form a rectangularly shaped perimeter.

5,354,037

MULTIPLE DESIGN GUARDRAIL SYSTEM

Frank Venegas, Jr., 4165 Homestead, Howell, Mich. 48843, assignor to Frank Venegas, Jr., Hamburg, Mich.

Filed Aug. 28, 1992, Ser. No. 936,793
Int. Cl.[5] E04H *17/00*
U.S. Cl. 256—59 **3 Claims**



1. A knockdown guardrail assembly comprising:
at least one center vertically oriented support stanchion, said center stanchion including a tubular plastic sheath and a tubular metal post said tubular metal post having an outside dimension less than or equal to the inside dimension of said tubular plastic sheath, said tubular metal post further having at least two pairs of apertures, one pair of apertures being in a horizontally aligned relationship and the other pair of apertures being in a vertically aligned relationship, said tubular plastic sheath having at least two apertures through said tubular plastic sheath, said tubular post being located in said tubular plastic sheath such that said apertures in said tubular plastic sheath and at least one pair of apertures in said tubular metal post align with each other;
receiving means in said center stanchion for receiving a fastener;
at least two outer vertically oriented support stanchions, said outer stanchions including a tubular plastic sheath and a tubular metal post, said tubular metal post having an outside dimension less than or equal to the inside dimension of said tubular plastic sheath said tubular plastic

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sheath having at least on aperture through one side of said tubular plastic sheath, said tubular metal post having at least one aperture through one side of said tubular metal post, said tubular metal post being located in said tubular plastic sheath such that said apertures in said tubular plastic sheath and said tubular metal post align with each other;

additional receiving means within said outer stanchion for receiving a fastener;

at least two horizontal rails, said horizontal rails including a plastic pipe and a metal pipe, said metal pipe having an outside dimension less than or equal to the inside dimension of said plastic pipe said metal pipe being located in said plastic pipe said metal pipe having a first end and a second end; and

a fastener fixed at each of said first and second metal pipe ends of said horizontal rails for fitting into one of said pairs of apertures of said center stanchion and said apertures of said outer stanchions whereby said receiving means positioned in said center and outer stanchions removably receive said fasteners and said assembly may be arranged in different angular configurations;

wherein said fastener is a threaded fastener;

wherein each of said receiving means is a threaded nut positioned in the interior of said tubular metal stanchion posts said nut having an aperture for removably receiving said threaded fastener.

5,354,038

HEAT TREATMENT OF METAL CASTINGS AND IN-FURNACE SAND RECLAMATION

Scott P. Crafton, Kennesaw, Ga., assignor to Consolidated Engineering Company, Inc., Kennesaw, Ga.

Continuation of Ser. No. 930,193, Aug. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 705,626, May 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 415,135, Sep. 29, 1989, abandoned. This application Feb. 18, 1994, Ser. No. 198,879

Int. Cl.[5] **B22C** *13/02*

U.S. Cl. 266—44 **48 Claims**



1. An apparatus for heat treating a casting with sand core, comprising sand bound by a combustible binder, attached thereto and for reclaiming sand from the sand core, said apparatus comprising:

a furnace for receiving the casting therewithin;

furnace heating means for heating said furnace to a temperature sufficient to loosen portions of sand core from the casting, while the casings is in said furnace; and

means for reclaiming, within said furnace, sand of loosened portions of sand core, wherein said means for reclaiming includes, at least,

a collection means for collecting loosened portions of sand core within said furnace to define a bed of loosened portions of sand core, and

a fluidizer so positioned and so constructed to fluidize, within said furnace, the bed of loosened portions of sand core.

5,354,039

GAS DISPERSION NOZZLE APPARATUS FOR FLUIDIZED BED FURNACE

Hidemitsu Takenoshita; Hisashi Hattori, and Yoichiro Hanada, all of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Japan

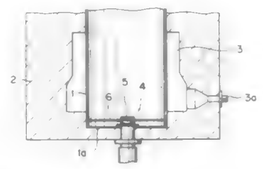
PCT No. PCT/JP87/00615, § 371 Date Apr. 12, 1989, § 102(e) Date Apr. 12, 1989, PCT Pub. No. WO88/02839, PCT Pub. Date Apr. 21, 1988

Continuation of Ser. No. 340,005, Apr. 12, 1989, abandoned. This PCT application Aug. 19, 1987, Ser. No. 159,936

Claims priority, application Japan, Oct. 14, 1986, 61-242055

Int. Cl.[5] **F27B** *15/00*

U.S. Cl. 266—251 **10 Claims**



1. A gas dispersion nozzle apparatus for use in a fluidized bed furnace with a cylindrical-shaped retort wherein the apparatus includes a gas supply pipe means whose upper end is closed and whose lower end is connected to a pipeline installed outside the bottom portion of the retort and which extends vertically through the central part of the inner bottom surface of the retort; and

a gas dispersion pipe means comprising a plurality of nozzle pipes each having a plurality of downwardly directed fluidizing gas nozzles formed along the longitudinal direction thereof, said nozzle pipes including a first nozzle pipe arranged at a radially outermost position of the retort in the vicinity of a side wall surface thereof and a second nozzle pipe arranged radially inside of said first nozzle pipe, said first nozzle pipe being connected to said gas supply pipe means via a first supply circuit so as to communicate with the latter in such a manner that the first nozzle pipe extends to a predetermined position near the inner side wall surface of the retort at a first level spaced away from the inner bottom surface of the retort and in a parallel relationship with the inner bottom surface of the retort, and said second nozzle pipe being connected to said gas supply pipe means via a second supply circuit which is independent of said first supply circuit so as to communicate with the latter in such a manner that the second nozzle pipe extends to a predetermined position within the retort at a second level spaced away from the inner bottom surface of the retort and axially shifted from said first level of said first nozzle pipe;

said gas supply pipe means further comprising a connection pipe extending parallel to the inner bottom surface of the retort, and said dispersion pipe means further comprising a plurality of additional nozzle pipes each having a first end connected to said connection pipe and extending at right angles therefrom and in a parallel relationship with one another such that the outer ends of the additional nozzle pipes extend to a predetermined diameter near said second nozzle pipe.

5,354,040

APPARATUS FOR CLOSED CYCLE HYDROGENATION RECOVERY AND REHYDROGENATION

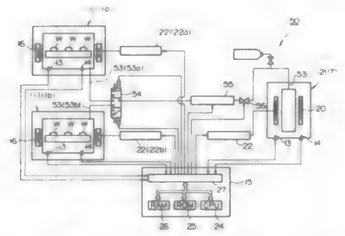
Ryoji Nakayama; Takuo Takeshita, and Shouichi Kubo, all of Omiya, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Nov. 25, 1992, Ser. No. 981,223

Claims priority, application Japan, Nov. 28, 1991, 3-339840; Dec. 19, 1991, 3-337315; Dec. 27, 1991, 3-347443; Dec. 27, 1991, 3-347444; Jan. 13, 1992, 4-004227; Jan. 30, 1992, 4-015578

Int. Cl.[5] **B22F** *1/00;* **C01B** *6/00*

U.S. Cl. 266—252 **26 Claims**



1. An apparatus for heating treating one or more metallic materials to adjust a physical and/or chemical property thereof, comprising:

a heat treating furnace for effecting hydrogenation of causing said metallic material to absorb hydrogen and dehydrogenation of releasing the absorbed hydrogen from said metallic material to thereby adjust the physical and/or chemical property of the metallic material; and

a recovery device connected to said heat treating furnace and including at least one hydrogen absorbing material therein, said recovery device being constructed so that said hydrogen absorbing material retrieves the hydrogen released from said heat treating furnace and returns the same to said heat treating furnace.

5,354,041

TORSION BAR STIFFENER

Roger W. Edwards, 3307 220 Ave. SE., Issaquah, Wash. 98027

Filed Dec. 30, 1992, Ser. No. 998,622

Int. Cl.[5] **B60G** *11/18*

U.S. Cl. 267—277 **8 Claims**



1. For use with an elongated torsion bar spring having an outer surface, a stiffener for the torsion bar spring, comprising:

elongated first and second stiffener sections together forming an elongated, axially divided tubular sleeve adapted to concentrically surround a longitudinal portion of the torsion bar spring,

said first stiffener section comprising axially spaced apart clamp pads, each said clamp pad having an inner surface substantially conforming to the outer surface of the torsion bar spring, and a longitudinal torsional resistive section between the clamp pads having an inner surface that is spaced radially outwardly from the outer surface of the torsion bar spring,

said second stiffener section comprising axially spaced apart clamp pads, each said clamp pad having an inner surface substantially conforming to the outer surface of the torsion bar spring, and a longitudinal torsional resistive section between the clamp pads having an inner surface that is spaced radially outwardly from the outer surface of the torsion bar spring,

each clamp pad inner surface confronting a clamp pad inner surface on the other stiffener section; and

fasteners extending transversely of the stiffener, for securing the two stiffener sections together, and pulling the clamp pad inner surfaces into tight clamping engagement with the torsion bar spring.

5,354,042

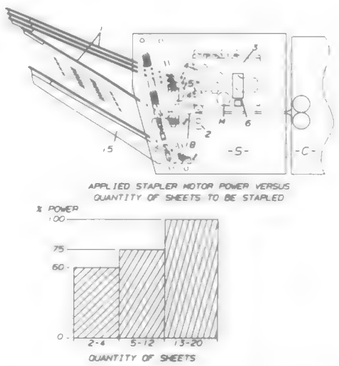
IN-BIN STAPLING SORTER WITH VARIABLE POWER STAPLER

Peter M. Coombs, Tustin, Calif., assignor to Gradco (Japan) Ltd., Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 16,450

Int. Cl.[5] **B31B** *1/70;* **B27F** *7/36;* **B25C** *1/06*

U.S. Cl. 270—53 **3 Claims**



1. In an in-bin stapling sorter comprising a plurality of trays for receiving sets of sheets, a stapler, means for relatively moving the stapler and the sets of sheets between a non-stapling and a stapling position, and drive means for said stapler to insert a staple in a set of sheets in said stapling position, the improvement wherein said drive means for said stapler includes an electric motor and control means for said motor for selectively energizing said motor to operate said stapler at higher or lower power depending upon the thickness of sets of sheets, said control means including means for counting the sheets in said sets to selectively energize said motor depending upon the number of sheets constituting a set.

5,354,043

PROCESS AND DEVICE FOR OPENING FOLDED PRINT PRODUCTS

Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Apr. 5, 1993, Ser. No. 44,782

Claims priority, application Switzerland, Jun. 4, 1992, 01116/92

Int. Cl.[5] **B65H** *39/02, 29/04*

U.S. Cl. 270—54 **19 Claims**

1. A process for opening folded printed products, in particular newspapers, magazines and parts thereof, having a first

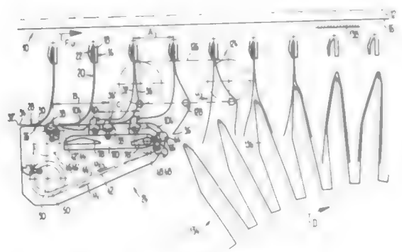
VOL 1167 ISS 2 OCT 11 1994 UMI

product part which, in the end area, facing away from the fold of the print product, protrudes with a marginal section over a second product part, the process comprising the steps of:

conveying the printed products such that they are supported at their end area;

suspending the printed products by the fold running transversely to their direction of conveyance;

opening the printed products, such that the first product part is temporarily held, by its end edge lying opposite the fold, by a gripper driven approximately in the direction of conveyance and the second product part is moved away



from the held product part approximately in the direction of conveyance;

lifting apart the two product parts which bear against each other in the end area transversely to the direction of conveyance;

grasping and temporarily holding the second product part at its end edge by a further gripper; and

driving the grippers at different velocities to move the end edges of the printed products away from each other in the direction of conveyance to thereby open the printed products.

5,354,044

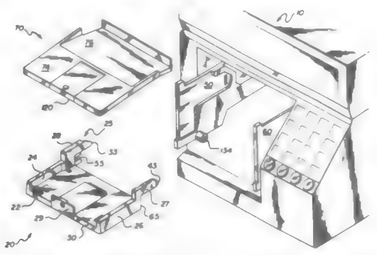
PAPER TRAYS FOR COMPUTER DRIVEN PRINTER

Gerold Firl, Poway; Lance Cleveland, San Diego, both of Calif., and Timothy Zantow, deceased, late of Elm Grove, Wis. by Scott W. Zantow, administrator , assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 30, 1993, Ser. No. 55,650

Int. Cl.[5] **B65H** *5/22*

U.S. Cl. 271—4 **17 Claims**



1. A computer printer paper tray system comprising: a paper input tray; a paper output tray; and means for supporting said output tray on said input tray cantilevered from a printer; said input tray comprising a generally horizontal paper shelf, a pair of upstanding sidewalls and a front endwall having a portion extending upwardly from said shelf, each of said sidewalls having a cantilevered tray support arm extending rearwardly therefrom, said arms each having an upper edge for supporting said paper output tray and a hook at a free end thereof, at least one of said arms being resilient, each hook being receivable in a pocket in said printer to retain said input tray therein.

5,354,045

DEVICE FOR FEEDING BLANKS TO A USER MACHINE

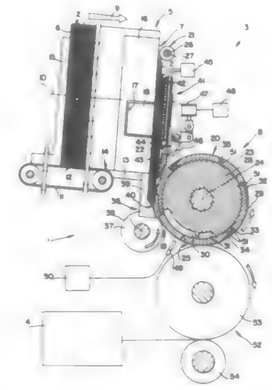
Fulvio Boldrini, Ferrara, and Antonio Gamberini, Bologna, both of Italy, assignors to G.D. Societa' Per Azioni, Bologna, Italy

Filed Mar. 24, 1993, Ser. No. 36,511

Claims priority, application Italy, Mar. 26, 1992, B092A 000109

Int. Cl.[5] **B65H** *5/08*

U.S. Cl. 271—11 **9 Claims**



1. A device (**3**) for feeding blanks (**2**) to a user machine (**1**), the device (**3**) comprising a feedbox (**5**) for a stack (**6**) of blanks (**2**), the feedbox (**5**) having an output end (**7**); and a conveyor unit (**8**) for successively withdrawing the blanks (**2**) from said output end (**7**) and feeding them to a user station (**4**); the conveyor unit (**8**) comprising a blank withdrawal station (**19**) offset in relation to said output end (**7**); thrust separating means (**21**) cooperating with said stack (**6**) for successively feeding the blanks (**2**) from said output end (**7**) to the withdrawal station (**19**) along a first path (**22**); means (**20**) for withdrawing said blanks (**2**); said withdrawing means (**20**) moving about a first fixed axis (**24**) and along a second path (**25**) substantially tangent to the first path (**22**) at said withdrawal station (**19**) and extending through said user station (**4**); and timing means (**41**) cooperating with the withdrawal station (**19**) at a given phase and frequency; said timing means (**41**) being parallel to said first path (**22**), cooperating with the withdrawal station (**19**), and comprising a stationary retaining plate (**42**) parallel to the first path (**22**), suction means (**43, 44, 45**) extending through the retaining plate (**42**), and valve means (**46, 47, 48**) controlling the suction means (**43, 44, 45**).

5,354,046

PAPER STACKING APPARATUS FOR SHEET-FED PRESS

Hirotaka Hattori, Ibaragi, Japan, assignor to Komori Corporation, Tokyo, Japan

Filed Oct. 25, 1993, Ser. No. 142,788

Claims priority, application Japan, Oct. 26, 1992, 4-079938

Int. Cl.[5] **B65H** *1/14*

U.S. Cl. 271—147 **11 Claims**

1. A paper stacking apparatus for a sheet-fed press, comprising:

a horizontal lower plate free to move in a vertical direction;

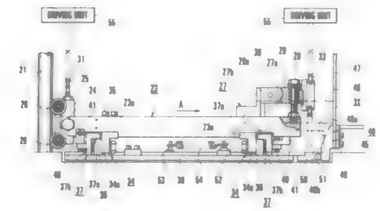
driving means for vertically moving said lower plate;

an upper plate, mounted on said lower plate to be movable in a paper feed direction and rotatable about an axis perpendicular to a surface of said upper plate, for stacking paper sheets;

a front gauge, vertically fixed on a machine frame, for aligning a leading end of the paper sheets stacking on said upper plate in the paper feed direction;

a pair of biasing members, provided at two side portions of said upper plate, having biasing forces for biasing said upper plate in a direction to be pressed to said front gauge;

a positioning member provided to be coupled with one of said upper plate and said front gauge, said positioning



member having an inclined surface inclined in the paper feed direction in correspondence with an upward portion; and

an engaging member provided to be coupled with the other of said upper plate and said front gauge and to be engaged with said positioning member,

wherein a distal end of said upper plate is separated away from said front gauge in opposition to the biasing forces of said biasing members when said engaging member is engaged with a lower portion of said positioning member and comes closer to said front gauge by means of said biasing means in accordance with an upward movement of said lower plate.

5,354,047

METHOD FOR SEPARATING A SHEET FROM AN ARRAY OF SHEETS CONVEYED ALONG A VACUUM CONVEYOR USING DIVERTING NOZZLES

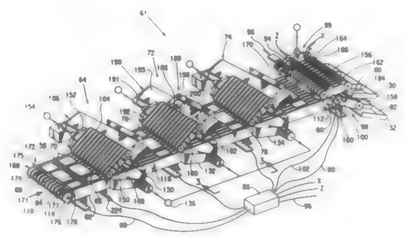
Doyle D. Chesnutt, Williamsville; James A. Holler, Tonawanda, both of N.Y.; William J. Hommes, Hockessin, Del., and Arnold C. Sheldon, II, Hendersonville, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 809,150, Dec. 16, 1991, Pat. No. 5,295,586.

This application Jul. 14, 1993, Ser. No. 89,024

Int. Cl.[5] **B65H** *29/24*

U.S. Cl. 271—195 **4 Claims**



1. A method of diverting a selected flexible sheet from a row of sheets as they are transported past a separating conveyor, comprising the steps of:

a. supporting and transporting the row of sheets with a plurality of belts positioned with spaces therebetween, said belts traveling at the same speed and having holes in each belt in communication therethrough with a source of vacuum, there being a plurality of belts under each sheet with the sheet continuously engaged by the vacuum therethrough;

b. providing a plurality of nozzles positioned at the spaces between the belts and aligned with the leading edge of the row of sheets and directed at the side of the sheets supported by the belts;

c. directing a flow of air through selected nozzles aligned with the selected sheet in the row as the leading edge of the selected sheet reaches the selected nozzles, to thereby peel the leading edge of the sheet away from the belts and separate it therefrom; and

d. engaging the peeled leading edge of the selected sheet with a source of vacuum at a transport surface of a separating conveyor placed adjacent the belts such that said nozzles are also positioned directly beneath said transport surface, the transport surface traveling at the same speed and general direction as the belts and in a diverging path away from the belts, the flow of air continuing until the selected sheet is disengaged from the belts and engaged by the transport surface, thereby separating the selected sheet from the row of sheets.

5,354,048

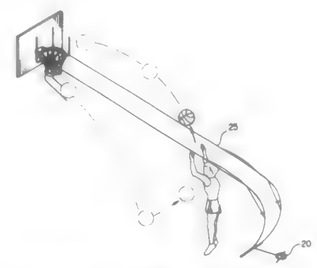
BASKETBALL SHOOTING TEACHING DEVICE

Cornelius Winesberry, Jr., 2714 Tyee Ct., Steilacoom, Wash. 98388-1510

Filed Jul. 19, 1993, Ser. No. 92,891

Int. Cl.[5] **A63B** *69/00*

U.S. Cl. 273—1.5 A **6 Claims**



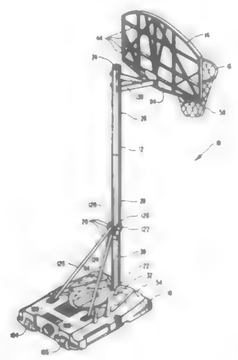
1. A target apparatus for connection to a hoop for providing a target for shooting a ball, said apparatus comprising: a support rod of oval construction and having a diameter at least that of said ball, said support rod having at least one means for connection to said hoop, at least two upright target rods in connection with said support rod and extending above said hoop, said upright target rods spaced apart from one another a distance of at least the diameter of said ball, said upright rods about 18″ apart and said upright rods at least about 18″ in height.

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5,354,049
APPARATUS AND METHOD FOR PACKAGING A PORTABLE BASKETBALL SYSTEM

Lonny R. Matherne, #10 Chimes Cir., Ogden, Utah 84405, and Barry D. Mower, 3310 E. Twin Peaks Dr., Layton, Utah 84040

Continuation-in-part of Ser. No. 13,611, Feb. 4, 1993, Pat. No. 5,248,140, and a continuation-in-part of Ser. No. 941,989, Sep. 8, 1992, Pat. No. 5,259,612. This application Jul. 30, 1993, Ser. No. 100,054
Int. Cl.[5] A63B *63/08*
U.S. Cl. 273—1.5 R **24 Claims**



1. A basketball packaging and shipping assemblage for disposition within an outer relatively flat container and capable of assembly with a backboard and basketball goal into a basketball system, the packaging and shipping assemblage comprising:

a plurality of pole sections capable of assembly to form a pole having a proximate end and a distal end;

a hollow ballast-receiving base capable of assembly with said pole and with the backboard and the basketball goal to form the basketball system wherein said base supports said pole in a stationary, substantially upward position and is connected to said pole near the proximate end of said pole and the basketball goal is connected to the backboard which is connected to said pole so that the basketball goal is suspended at an elevation above said base, said base having an exterior contour for receiving and retaining said pole sections within the container and impeding shifting movement of said pole sections within the container during shipping, the exterior contour of said base comprising at least one notch for receiving and retaining at least one of said pole sections within the container.

5,354,050
ALARM DEVICE FOR TEACHING THE CORRECT MECHANICS FOR THROWING A BASEBALL

Robert L. McCarthy, 357 Knight Way, La Canada, Calif. 91011

Filed Apr. 1, 1994, Ser. No. 221,782
Int. Cl.[5] A63B *69/40*
U.S. Cl. 273—26 C **8 Claims**

1. A method of instruction for baseball pitching, comprising the steps of:

providing a training device having a central body and a circuit mounted therein, said circuit including at least a source of power, a gravity activated switch and an alarm connected in series;

fastening said training device to the wrist of an athlete at a specific orientation so that said gravity activated switch is open when a vector projecting from and normal to an upper surface of the wrist forms at least a five degree upward angle with a horizontal plane; and

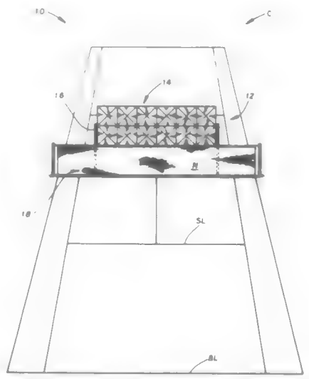


throwing a baseball utilizing the conventional backswing and forward thrust phases without closing said switch and activating said alarm between the instant the hands break and the release of the ball.

5,354,051
BALL RETURN PRACTICE DEVICE

Donald E. Fehrenbach, 4200 M Rd., Escanaba, Mich. 49829, and Allan J. Waeghe, 7710 Summit 19.55 Dr., Gladstone, Mich. 49837

Filed May 6, 1993, Ser. No. 57,493
Int. Cl.[5] A63B *69/00*
U.S. Cl. 273—29 A **4 Claims**



1. A ball return practice device having a pair of substantially vertical back to back ball rebounding surfaces characterized by a plurality of rectangular panels, each said panel including means defining an array of inclined facets arranged in pyramid style and projecting from a vertical plane, whereby said facets meet at a central point of each said panel, said rebounding surfaces each facing in opposite directions, one of said ball rebounding surfaces having inclined facets inclined from a vertical surface in a first range between two and six degrees, and the other of said two rebounding surfaces having inclined facets inclined from a vertical surface in a second range between five and nine degrees.

5,354,052
HOLE-IN-ONE DETECTOR

David Nicholls, 2 Cromwell Street, Burwood, Victoria 3125, and Glenn D. Pywell, Burwood, both of Australia, assignors to David Nicholls, Victoria, Australia

Filed Mar. 18, 1993, Ser. No. 32,980
Claims priority, application Australia, Mar. 26, 1992, PL1536
Int. Cl.[5] A63B *57/00, 69/36*
U.S. Cl. 273--34 R **7 Claims**

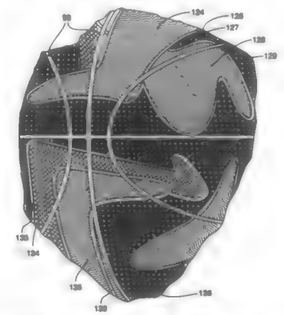


1. A device for detecting the presence of a golf ball in a ball-receiving cup, said cup also receiving a lower portion of a flag pole, comprising a multiplicity of photoemitters and corresponding photodetectors mounted in or on said lower portion of said flag pole whereby detection beams are emitted from each photoemitter substantially radially from the flag pole lower portion into the cup to ensure that the detection beam from a photoemitter is reflected off a golf ball lodged in the cup and is received by one of the photodetectors irrespective of the position of the ball in the cup, and circuit means for causing a visual and/or audible display or alarm to be activated in response to the receipt of the reflected beam by said one of the photodetectors.

5,354,053
PLAY BALL

Donald Ratner; Paul Feinsinger, both of Westlake Village, Calif., and Frank Hsieh, Taipei, Taiwan, assignors to Kransco, San Francisco, Calif.

Filed Jul. 1, 1993, Ser. No. 86,617
Int. Cl.[5] A63B *41/08, 45/00*
U.S. Cl. 273—65 EG **3 Claims**

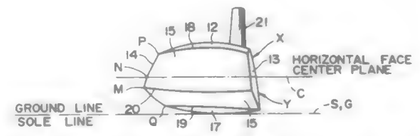


1. An inflatable ball including an outer surface of elastomer material extending thereabout, said surface having bonded thereto irregularly shaped patches of substantial surface area distributed thereabout, said patches being distinctly colored and significantly different from each other in color, significantly different tactile patterns on said surface of the ball and said patches, with at least some tactile patterns generally corresponding in surface area and shape to that of selected patches to provide a variety of distinguishable gripping regions on a striking and attractive appearing ball which enables a user to rapidly grip the ball at the gripping regions preferred and selected by the user.

5,354,054
GOLF CLUB AND GOLF CLUB SET

Tsuneo Akatsuka, Saitama; Yoshihiro Motoki, Misato; Takashi Harada, Soka, and Akira Suzawa, Koshigaya, all of Japan, assignors to Somar Corporation, Japan

Filed Nov. 4, 1993, Ser. No. 145,561
Claims priority, application Japan, Mar. 31, 1993, 5-096780
Int. Cl.[5] A63B *53/00*
U.S. Cl. 273—77 A **4 Claims**



1. A golf club having a club number in the range of Nos. 1 through 5 and comprising a club shaft, and a head connected to one end of said club shaft,

said head comprising a top surface, a sole disposed opposite said top surface, a toe portion, a heel portion opposite said toe portion, a front, impact face located between said toe and heel portions, a rear portion located opposite said face and between said toe and heel portions, said toe and rear portions forming a smooth, continuous, enlarged side surface so that an upper section of said club head above the horizontal center plane, which passes through the half height of said face portion, has a volume smaller than that of a lower section of said club head below said horizontal center plane,

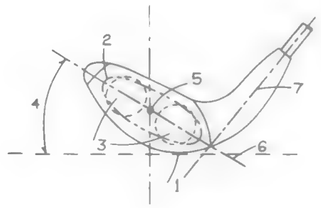
said club shaft having not greater than 2 g/in. of a ratio of the weight thereof to the length thereof,

said club shaft having a kick point located at a position spaced apart from said one end a distance equal to 44% or more of the total length thereof.

5,354,055
GOLF CLUB HEAD WITH REARWARD CENTER OF GRAVITY AND DIAGONAL ORIENTATION

Robert F. MacKeil, 193 Linden St., S. Hamilton, Mass. 01982

Filed Oct. 27, 1992, Ser. No. 967,039
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—80 C **3 Claims**



1. A golf club comprising:

a golf club shaft and a "wood" type golf club head;

said club head including a hollow, solid, or partially hollow

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main body having a toe, a heel, a top, a sole, ball striking face and back portion;

said heel including a neck portion having an opening adapted to receive said golf club shaft;

said main body, when viewed from a top view, having a generally teardrop shape extending rearwardly from a plane containing said ball striking face towards said back portion; the depth of said main body as measured from said ball striking face to said back portion being nearly as deep as the width of said main body as measured from said heel to said toe;

said main body being shaped such that a longitudinal centerline of the front profile, as viewed looking at the striking face, is substantially perpendicular to a longitudinal axis passing through said shaft, and said longitudinal centerline is diagonal to a horizontal plane approximating the ground when the club is in the ball striking or address position.

5,354,056

GOLF CLUB AND METHOD

Joseph J. Cornish, III, Marietta, Ga., assignor to Bradley K. Stone, Roswell, Ga.

Filed Mar. 18, 1993, Ser. No. 32,376

Int. Cl.[5] A63B *53/04, 53/10*

U.S. Cl. 273—81.6 **27 Claims**



12. A golf club for minimizing wind drag, comprising:

a head for striking a golf ball;

a shaft connected to said head at a first end and having a handle at a second end, said shaft tapering from said second end to said first end so that said first end is narrower in width than said second end; and

spiral means associated with said shaft, said spiral means for minimizing air vortices generated behind said shaft when said golf club is in motion to thereby decrease air resistance to said golf club, said spiral means comprising a rib protruding outwardly from the surface of said shaft and spirally running about said shaft with a pitch which increases in the direction from said first end to said second end.

5,354,057

SIMULATED COMBAT ENTERTAINMENT SYSTEM

Ralph T. Pruitt, 3868 S. Fraser, Apt. M10, Aurora, Colo. 80014, and Michael B. Kinder, Dream Park Corporation, 5575D Arapahoe Rd., Boulder, Colo. 80303

Filed Sep. 28, 1992, Ser. No. 952,924

Int. Cl.[5] F41J *5/02*

U.S. Cl. 273—85 G **40 Claims**

1. A simulated combat entertainment system comprising:

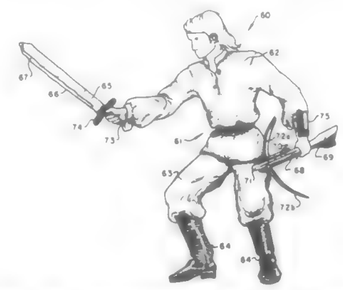
(a) a plurality of targets each an emanating an ongoing unique signal differing from signals emanated by the others of said plurality of targets;

(b) a simulated weapon;

(c) means for operating said simulated weapon;

(d) target identification means interconnected with said simulated weapon responsive to deployment of said simulated weapon immediately adjacent one of said targets and responsive to the unique signal emanated from said one of said targets for identifying said one of said targets; and

(e) contact verification means interconnected with said target identification means and responsive to physical contact by said simulated weapon with said one of said targets for verifying a valid hit thereupon.



5,354,058

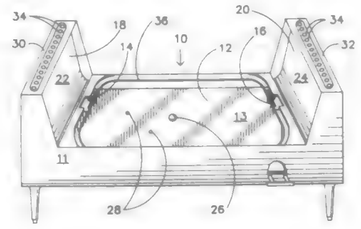
BOARD GAME

David R. Crecelius, 3563 Byers Rd., Delaware, Ohio 43015

Filed Nov. 19, 1993, Ser. No. 154,511

Int. Cl.[5] A63D *3/00*

U.S. Cl. 273—120 R **14 Claims**



1. A board game comprising:

(a) a game board having a planar playing surface having a length, a width and two opposite ends;

(b) a pair of goals, one goal at each of the two opposite ends of the game board;

(c) a pair of centrally facing ramps, one ramp at each of the two opposite ends of the game board, each ramp having a surface transverse to the planar playing surface, a lower edge of each ramp surface positioned near an edge of the planar playing surface;

(d) a target ball for positioning on the planar playing surface and having a diameter adapted to permit it to pass through the goals;

(e) a plurality of projectile balls for rolling down the ramp surfaces and onto the planar playing surface; and

(f) a pair of projectile ball guide frames, attached above a ramp surface, each frame having a plurality of spaced holes formed through it.

5,354,059

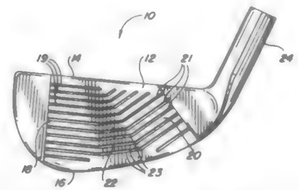
GOLF CLUB HEADS WITH MEANS FOR IMPARTING CORRECTIVE ACTION

Alfred O. Stuff, 8000 S. Orange Ave., Orlando, Fla. 32809

Continuation-in-part of Ser. No. 474,512, Feb. 2, 1990, Pat. No. D. 327,931, and a continuation-in-part of Ser. No. 498,593, Mar. 26, 1990, Pat. No. D. 327,932. This application Jul. 10, 1992, Ser. No. 911,650

Int. Cl.[5] A63B *53/04*

U.S. Cl. 273—167 J **17 Claims**



1. A golf club head comprising a hosel for receiving a club shaft, a club face with plural grooves extending along the face for imparting a desired action to a golf ball when struck by the face, the face defining a toe portion spaced from the hosel, a heel portion adjacent the hosel and a sweet spot between the heel and the toe portions, and wherein the grooves include a first set of parallel grooves extending along a first direction across the toe portion, a second set of parallel grooves extending along a second direction across the sweet spot, and a third set of parallel grooves extending along the heel portion, the first, second and third directions all being non-parallel with each other, the first and third groove sets parallel groove directions upwardly angled from the direction of the second set parallel groove, the first groove set for imparting a draw spin to a struck ball, the third groove set for imparting a fade spin to a struck ball.

5,354,060

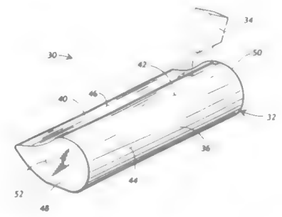
GOLF PUTTER

Richard W. Wooten, Hazlehurst, Ga., assignor to The Teardrop Putter Corporation, Hilton Head, S.C.

Continuation-in-part of Ser. No. 936,246, Aug. 27, 1992, which is a continuation-in-part of Ser. No. 837,430, Feb. 18, 1992. This application Mar. 4, 1993, Ser. No. 19,531

Int. Cl.[5] A63B *53/04*

U.S. Cl. 273—169 **19 Claims**



1. A putter for putting a golfball, the putter comprising:

a shaft (**34**) having a handle end and a mounting end; and

a putter head (**32**) rigidly attached to said mounting end of said shaft and including, at least,

a laterally elongated vertically thickened forward portion (**36**),

a laterally elongated tail portion (**40**) generally extending rearward from said forward portion, generally coextensive therewith, and terminating in a rearmost tail tip, and opposite ends (**48,50**),

wherein in an end elevational view, said putter head defines, generally, a teardrop shape in which said forward portion defines the vertically thickened portion of said teardrop shape and said tail portion tapers and extends from said vertically thickened portion of said teardrop shape to define said rearmost tip of said teardrop shape.

5,354,061

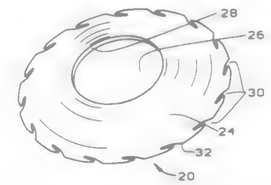
YARD-GOLF GAME APPARATUS

Peter M. Gubany, St. Louis, Mo., assignor to Leisure Master Incorporated, St. Louis, Mo.

Filed May 18, 1993, Ser. No. 63,243

Int. Cl.[5] A63B *69/36*

U.S. Cl. 273—178 R **11 Claims**



1. A hole apparatus adapted to be secured on a lawn to simulate a hole for a yard-golf game, the apparatus comprising:

a ring having a frusto-conical surface with a generally central opening for receiving a ball, a plurality of teeth defining generally circumferentially elongated openings on the outer perimeter of the ring for gripping the lawn and holding the outer edge of the ring against the lawn upon rotation of said ring to provide a smooth transition between the lawn and the apparatus for a ball to roll from the lawn up the surface of the ring and into the opening.

5,354,062

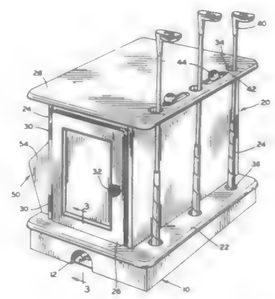
COMBINATION PUTTING TARGET AND TABLE WITH STORAGE MEANS

Sidney A. Lenger, 1549 Squire Davis Rd., Kernsville, N.C. 27284

Filed Jun. 22, 1993, Ser. No. 81,394

Int. Cl.[5] A63B *69/36*

U.S. Cl. 273—179 A **4 Claims**



1. An article of manufacture adapted to be positioned on a floor for use as a cabinet table, and for use in practicing putting and storing putters and golf balls, said article of manufacture comprising:

a) a base for engaging a floor, said base including at least one generally verticle wall and a horizontal, planar panel at the upper end thereof;

b) a storage enclosure mounted on said horizontal, planar

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panel of said base, said enclosure including a top panel positioned parallel to said horizontal, planar panel of said base;

c) means for securing at least one putter to said article of manufacture;

d) means for storing at least one golf ball in said article of manufacture;

e) target means formed in said base, said target means including an aperture in the lower edge of said generally vertical wall for receiving a golf ball putted on said floor; and

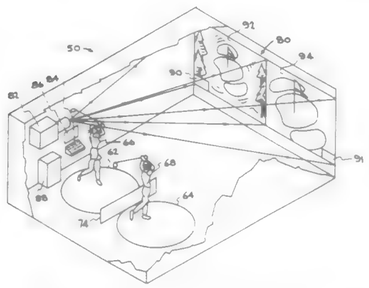
f) a ball return mechanism mounted in said base and aligned with said aperture for receiving an returning golf balls through said aperture.

5,354,063

DOUBLE POSITION GOLF SIMULATOR

Donald B. Curchod, Portola Valley, Calif., assignor to Virtual Golf, Inc., Mt. View, Calif.

Filed Dec. 4, 1992, Ser. No. 984,948
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—185 B **26 Claims**



1. A multi-user golf simulation system, comprising:

a booth having a first portion of a tee area for use by a first golfer and a second portion of the tee area for use by a second golfer;

means for determining the flight parameters of a first golf ball hit by a first golfer using a first golf club from the first portion of the tee area and of a second golf ball hit by a second golfer using a second golf club from the second portion of the tee area;

computer means for computing the distance and location of the first golf ball from a first simulated golf hole and of the second golf ball from a second simulated golf hole as a function of the determined flight parameters of each of said first and second golf balls.

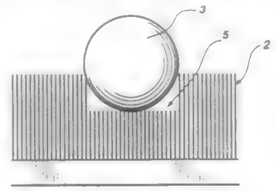
5,354,064

GOLF BALL STRIKING MAT

Ari Toikka, Helsinki, Finland, assignor to Optronics, Ltd., Salt Lake City, Utah

Filed Jan. 12, 1993, Ser. No. 3,390
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—195 A **2 Claims**

1. A striking mat for use in practicing golf strokes, said mat having an artificial grass surface of erect fibers, on which a golf ball is placed for striking, characterized in that a hollow for receiving and holding the ball is formed in the grass surface of the mat, so that a golf club, before striking the ball, has to push aside said fibers in front of the ball in the path of the club, the hollow having generally vertical sides defined by taller erect fibers, and a bottom side formed by shorter erect fibers, a



width across the hollow being a distance about the diameter of a golf ball.

5,354,065

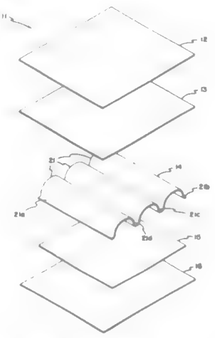
Patent Not Issued For This Number

5,354,066

PROJECTILE TARGET

Dale A. Swanson, 6106 Birch Rd., Prior Lake, Minn. 55372, and Mark A. Solberg, 4051 Glacier La., Plymouth, Minn. 55446

Filed Dec. 21, 1993, Ser. No. 170,711
Int. Cl.[5] F41J *3/00*
U.S. Cl. 273—408 **23 Claims**



1. A projectile target comprising:

front layer means formed from a woven material having laterally displaceable strands to permit penetration of a projectile;

back layer means formed from material which resists penetration of a projectile;

means defining a plurality of pockets between said front and back layer means; and

stuffing material compressibly packed into each of said pockets;

said pockets being sized and configured to substantially resist lateral displacement of said stuffing material and to cause said stuffing material to be compressed forwardly by said projectile.

5,354,067

TOSSING GAME APPARATUS AND METHOD

David E. Junemann, 5522 Robin Rd., Wisconsin Rapids, Wis. 54494

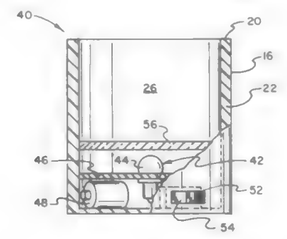
Filed Jul. 1, 1993, Ser. No. 84,618
Int. Cl.[5] A63B *67/06*
U.S. Cl. 273—400 **2 Claims**

1. An apparatus for playing a tossing game, said apparatus comprising:

at least one cup member;

at least one puck having a center aperture therethrough, said puck being operable to fit within an interior of said cup member;

a light assembly mounted within the interior of said cup member;



and,

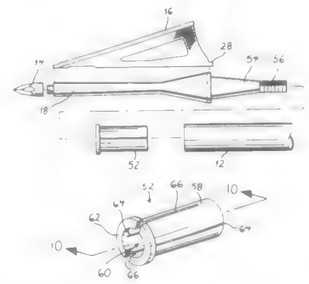
a diffuser releasably coupled to a top rim of said cup member for diffusing light radiating from said light assembly.

5,354,068

BROADHEAD FOR AN ARROW AND METHOD OF SECUREMENT

Richard Maleski, 4 South St., Plymouth, Conn. 06782

Continuation-in-part of Ser. No. 637,452, Jan. 4, 1991, Pat. No. 5,145,186. This application Oct. 22, 1991, Ser. No. 781,114
Int. Cl.[5] F42B *6/08*
U.S. Cl. 273—422 **28 Claims**



1. An arrow comprising a hollow shaft, a broadhead, and means for securing said broadhead to said shaft, said securing means defining a body having a first diameter when inserted into one of said broadhead and said shaft and including at least one longitudinal slot extending from each opposed end of said body and terminating beyond a point intermediate said opposed ends for facilitating uniform radial expansion of said body to a second diameter to frictionally secure said broadhead to said shaft.

5,354,069

LOTTERY EMULATION SYSTEM

Uri Guttman, Arlington; Avi N. Nelson, North Reading; Robert A. Piankian, Brighton, and Joseph Scally, Westwood, all of Mass., assignors to Ahbrew Company, New York, N.Y.

Filed Jan. 21, 1992, Ser. No. 823,185
Int. Cl.[5] A63F *9/22*
U.S. Cl. 273—439 **12 Claims**

1. A system for playing a lottery by signals from a telephone, for use with a lottery computer that ordinarily accepts digital input in proper form from staffed remote terminals as bet transactions, that records bet transactions that have been completed, and that provides digital output confirming that a bet transaction has been completed, the system including:

response means for interacting with a telephone bettor, coupled to said lottery computer, including:

instruction means for giving pre-selected messages in response to first selected telephone signals,

input means for transferring data to said lottery computer



as a bet transaction in response to second selected telephone signals,

confirmation means for confirming to a telephone bettor that a bet transaction has been completed by said lottery computer,

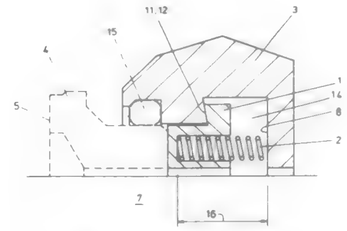
said confirmation means including error detection and correction means for deleting and correcting aborted bet transactions while a telephone bettor is on the line.

5,354,070

SPLIT MECHANICAL SEAL

Christopher J. Carmody, Conisbrough, England, assignor to AES Engineering Limited, South Yorkshire, England

Filed Oct. 8, 1992, Ser. No. 959,934
Claims priority, application United Kingdom, Oct. 12, 1991, 9121683.5
Int. Cl.[5] F16J *15/34*
U.S. Cl. 277—9 **17 Claims**



1. A split mechanical seal, comprising:

a seal housing;

rotary and stationary seal faces;

a spring acting to urge said rotary and stationary seal faces into contact with one another;

a spring retainer for retaining said spring in position inside said seal housing, said spring retainer being split into two separate pieces and comprising spring receiving means for receiving and holding said spring in such a position that, in use, one end of said spring is free to rest against an internal wall of said seal housing and said spring, when compressed, acts to urge said spring retainer away from the internal wall of said seal housing and towards said rotary

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and stationary seal faces, and a radially projecting member projecting from said spring retainer;

a projecting element projecting inwardly from said seal housing, with said projecting member and projecting element being arranged so that, in use, movement of said spring retainer under action of said compressed spring, away from the internal wall, is stopped by said projecting member abutting said projecting element before said spring is fully extended to an unloaded state, for preventing said spring from fully extending and thus retaining said spring in position between said spring retainer and the internal wall of said seal housing, said projecting member and said projecting element being correspondingly shaped so that once said projecting member has abutted said projecting element in use, radially inward movement of either of the two separate pieces of said spring retainer inwardly of said seal housing requires recompression of said spring.

5,354,071

WELDED WEAR SLEEVE FOR LUBRICANT SEALS

Philip R. McClure, Van Wert, Ohio, assignor to Federal-Mogul Corporation, Southfield, Mich.

Continuation of Ser. No. 837,502, Feb. 18, 1992, abandoned. This application Mar. 11, 1993, Ser. No. 33,063

Int. Cl.[5] F16J *15/32*

U.S. Cl. 277—35 **7 Claims**



1. A radially-expanded annular tubular blank forming a plurality of seal-engagement wear sleeves; said tubular blank comprising an elongated cylindrical tube formed from sheet metal and having a machined inner surface, a machined outer surface, and a pair of abutted end portions; and an axial weld interconnecting said end portions; a plurality of evenly spaced grooves on the tube inner surface, and a number of grooves on the tube outer surface; said grooves being radially aligned so that, when the tube is cut on radial planes passing through the grooves, the grooves will form chamfers on the ends of the sleeves; said tubular blank comprising a predetermined circularity defined by a permanent set plastically deformed in said sheet metal by radial expansion of said inner surface and said outer surface and said machined outer surface comprising a seal-engaging surface machined to a RMS surface finish of about 10 to 20 microinches.

5,354,072

HOLLOW METAL SEALING RINGS

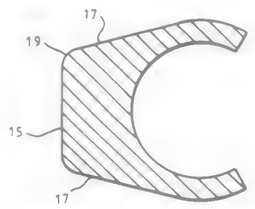
Terence P. Nicholson, Hexham, Great Britain, assignor to Specialist Sealing Limited, Jersey, Channel Islands

Continuation of Ser. No. 937,447, Aug. 27, 1992, abandoned, which is a continuation of Ser. No. 754,165, Sep. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 630,041, Dec. 19, 1990, abandoned. This application Jan. 18, 1994, Ser. No. 181,964

Claims priority, application United Kingdom, Dec. 19, 1990, 9029648.3

Int. Cl.[5] F16J *15/08*

U.S. Cl. 277—206 R **18 Claims**



1. A seal ring adapted to be compressed and decompressed in the axial direction of the ring between first and second axially spaced sealing surfaces substantially parallel to each other, said seal ring comprising a resilient metal sealing ring having a radial cross-section which is hollow and is open at the radially innermost side of the ring cross-section and comprises axially spaced first and second limbs resiliently compressible and decompressible axially towards each other, each said limb having a respective axially outwardly facing convex arcuate contact line intermediate its radial extent for sealingly contacting a respective said surface, wherein the configuration of said seal ring is such that each said limb does not substantially deform upon use, and having a respective radially inner region, said limbs being joined together in the radially outermost region of said ring cross-section; said radially outermost region being of increased thickness relative to the limbs such as to increase the hoop strength of the ring locally at said radially outermost region so as not to permit the permanent deformation of said seal ring, and having a substantially cylindrical radially outermost external surface; each said radially inner region having an axially outwardly facing convex arcuate external surface, with the respective said external surfaces being mutally convergent with decreasing radius towards said radially innermost side of said ring cross-section, said limbs defining in cross-section an internal profile which is of smoothly blended, concave arcuate form at least in the radially outer portion thereof.

5,354,073

HOUSING COVER HAVING DEFORMATION PREVENTING MEANS

Rainer Ecker, Leverkusen; Bernd Stephan, Remscheid, and Hans-Joachim vom Stein, Wermelskirchen, all of Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Aug. 17, 1992, Ser. No. 929,951

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1991, 4127067

Int. Cl.[5] F16J *15/10*

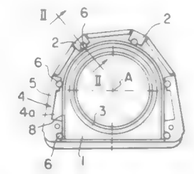
U.S. Cl. 277—235 R **9 Claims**

1. A housing cover for closing an open side of a housing; the housing cover comprising

(a) a dish-shaped sheet metal cover body provided with a central opening having a plane and an axis oriented perpendicularly to said plane; said central opening providing a passage for a shaft;

(b) a bottom plate forming part of the cover body and being oriented radially relative to said axis; said bottom plate having opposite first and second radial surfaces;

(c) a plurality of spaced holes in said bottom plate for providing passages for respective bolts, each bolt having a bolt head with an underface, for securing the cover body to the housing; in an installed state of the housing cover said first radial surface of said bottom plate being oriented towards the housing and the second radial surface of said bottom plate being oriented towards the underface of the respective bolt; each hole being bounded by an annular zone of said bottom plate; each annular zone having an annular surface portion of said second radial surface and



being covered by the underside of the respective bolt in the installed state of the housing cover; each annular zone having an annular surface portion of said first radial surface;

(d) a static sealing strip supported on said first radial surface for engagement with a housing face in an installed state of the housing cover on a housing; said sealing strip covering a part of each said annular surface portion of said first radial surface; and

(e) a sheet metal insert connected to said sheet metal body and being in a face-to-face engagement with one of the radial surfaces of said bottom plate in said annular zone.

5,354,074

METAL GASKET HAVING FIRST AND SECOND DIVERSELY VULCANIZED COATINGS

Osamu Jinno, Nagoya, Japan, assignor to Taiho Kogyo Co., Ltd., Toyota, Japan

Filed Dec. 23, 1992, Ser. No. 995,969

Claims priority, application Japan, Dec. 27, 1991, 3-359037

Int. Cl.[5] F16J *15/10*

U.S. Cl. 277—235 A **6 Claims**



1. A metal gasket comprising:

a metallic base plate having at least one opening formed therein;

a first coating layer having a first vulcanizing agent, said first coating layer being deposited on said base plate; and

a second coating layer having a second vulcanizing agent, said second coating layer being deposited on said first coating layer, said second coating layer having a different vulcanization rate than a vulcanization rate of said first coating layer, so that said second coating layer is vulcanized at a rate different from the vulcanization rate at which said first coating layer is vulcanized.

5,354,075

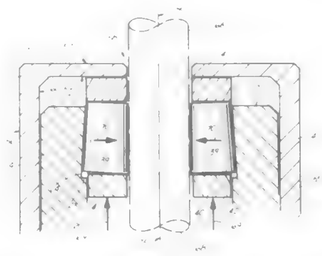
KEYLESS DRILL CHUCK

Gregory C. Marik, Collierville, and Raymond H. Roberson, Jr., Bartlett, both of Tenn., assignors to Smith & Nephew Richards Inc., Memphis, Tenn.

Filed Nov. 2, 1993, Ser. No. 145,818

Int. Cl.[5] B23B *31/171*

U.S. Cl. 279—72 **20 Claims**



1. A keyless chuck apparatus for holding cylindrically shaped drill bits of different diameters, comprising:

a) a tool housing that has proximal and distal end portions;

b) the tool body having a tool body wall with an inner surface that defines a central longitudinal bore that extends from a position adjacent the proximal end of the tool body toward the distal end thereof, the bore including a smaller diameter section near said distal end and a larger diameter adjacent said proximal end;

c) a first smaller bearing holder that registers the smaller diameter section of the bore;

d) a second larger bearing holder that registers the larger diameter section of the bore;

e) at least one bearing carried in the first and second bearing holders;

f) cam means carried by the tool body wall at the inner surface for moving each of the bearings to grip the tool bit when the tool body is torqued relative to the tool bit;

g) means for pre-loading the interface between each bearing and the tool bit;

h) wherein smaller diameter tool bits are gripped by bearings of the smaller bearing holder and larger diameter tool bits are gripped by bearings of the larger bearing holder during use.

5,354,076

CHUCK DRAW ROD CONNECTOR

Gary L. Yeo, Seneca Falls, and Dennis W. Walowsky, Auburn, both of N.Y., assignors to Goulds Pumps, Incorporated, Seneca Falls, N.Y.

Continuation of Ser. No. 980,683, Nov. 24, 1992, abandoned. This application Nov. 1, 1993, Ser. No. 146,456

Int. Cl.[5] B23B *31/26*

U.S. Cl. 279—110 **13 Claims**

1. An assembly for operation of the jaws of an automatic chuck attached to a spindle of a machine lathe, the assembly comprising:

a machine draw rod slidably disposed in an orifice extending within the spindle;

chuck draw rod means operatively attached to the jaws for general radial advancement and retraction of the jaws;

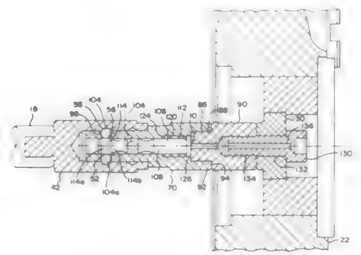
connection means for removably connecting the machine draw rod to said chuck draw and rod and positively locating said machine draw rod relative to said chuck draw rod means, said connection means including:

a female member having a first end operatively attached to one of said machine draw rod and said chuck draw rod means and having an inner surface and an outer surface,

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said inner surface defining a receptacle, said receptacle including at least one locking recess,

a male member having a first and operatively attached to the other of said machine draw rod and said chuck draw rod means and including an insertion member opposite said first end and adapted to be inserted into said receptacle, said insertion member defining at least one detect opening extending from an inner surface to an outer surface of said



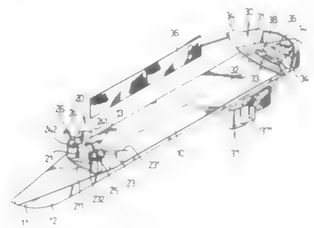
insertion member, at least one detent means within said at least one detent opening movable from an unlocked position to a locked position with respect to said at least one locking recess when said insertion member is inserted into said receptacle, said male member including lunger means for moving said detent means from said unlocked position into said locked position and for allowing said detent means to move from said locked position into said unlocked position.

5,354,077

UNIVERSALLY ADJUSTABLE ICE SKATE BASE

Mike Soo, No. 403, Chung Shan Rd., Jen Teh Hsiang, Tainan Hsien, Taiwan

Filed May 19, 1993, Ser. No. 64,503
Int. Cl.[5] A63C *1/06*
U.S. Cl. 280—11.12 **5 Claims**



1. An ice skate base comprising:

a base having front and rear portions:

a front and rear holder assemblies respectively mounted on said front and rear portions of said base, defining a space therebetween for receiving a skater's footwear, at least one of said front and rear holder assemblies being adjustable in position along a longitudinal direction of said base; said front holder assembly including a block and a pair of arcuate members pivotally mounted to both sides of said block; and

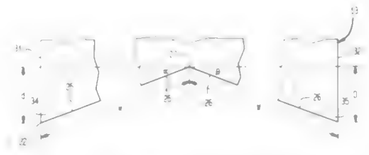
front and rear fastening means for respectively mounting said front and rear holder assemblies in said longitudinal position; said front fastening means including a pair of spaced elongate holes provided in said front portion and extending along said longitudinal direction of said base, said block having a vertical hole in each side thereof, and screw and nut fasteners for fastening said block in position.

5,354,078

SKATE BLADE

Merritt E. Belleisle, 76 Parish Rd., Needham, Mass. 02194

Filed Feb. 4, 1993, Ser. No. 13,388
Int. Cl.[5] A63C *1/32*
U.S. Cl. 280—11.18 **14 Claims**



1. An elongated integrally formed one piece blade for an ice skate and comprising:

a longitudinally curved first cutting edge formed on a lower of one side of said blade and for providing cutting engagement with an ice surface;

a longitudinally curved second cutting edge formed on a lower of an opposite side of said blade and for providing cutting engagement with the ice surface, said second cutting edge being substantially parallel to said first cutting edge;

a longitudinally extending, substantially planar first bottom face projecting transversely inwardly and upwardly from said first cutting edge and forming with the horizontal an angle of between 1.5° and 2°;

a longitudinally extending, substantially planar second bottom face projecting transversely inwardly and upwardly from said second cutting edge and forming with the horizontal an angle between 1.5° and 2°, said second face intersecting said first face so as to form therewith an elongated trough having a V-shaped cross section; and

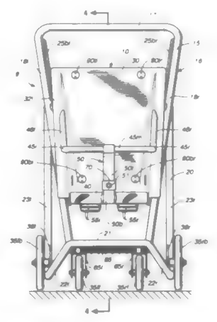
mounting means for attachment of said blade to a boot.

5,354,079

NESTABLE ADJUSTABLE STROLLER

Stephen Hettenbach, San Francisco, Calif., assignor to The Taubman Company Limited Partnership, Bloomfield Hills, Mich.

Filed Jan. 7, 1993, Ser. No. 1,494
Int. Cl.[5] B62B *7/06*
U.S. Cl. 280—33.991 **13 Claims**



1. A stroller, comprising:

a chassis having a front end and a rear end;

a first engagement surface mounted on said chassis;

a second engagement surface mounted on said chassis above said first engagement surface;

a plurality of wheels rotatably mounted on said chassis; and

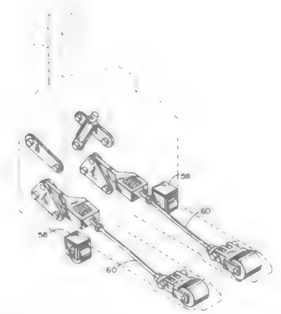
a seat adjustably constrained to said chassis and having a base, a backrest, a third engagement surface on said base permitting releasable engagement with said first engagement surface such that the orientation of the entirety of said seat relative to said chassis may be changed, and a fourth engagement surface on said backrest, said seat being movable between first, second, and third stable positions, in said first position said first engagement surface contacts said third engagement surface at a first location and said seat is in a relatively upright position, in said second position said first engagement surface contacts said third engagement surface at a second location and said seat is in a more reclined orientation than in said first position, and in said third position said second engagement surface is in contact with said fourth engagement surface such that a portion of said base is closer to said rear end than when in said second position and said stroller may be nested with another stroller of similar construction.

5,354,080

INDUSTRIAL TRUCK FOR DOUBLE-FACED PALLETS

Robert E. Jones, 2519 Larkin Dr., Sun City Center, Fla. 33573

Filed May 20, 1993, Ser. No. 65,198
Int. Cl.[5] B62D *33/08*
U.S. Cl. 280—43.12 **9 Claims**



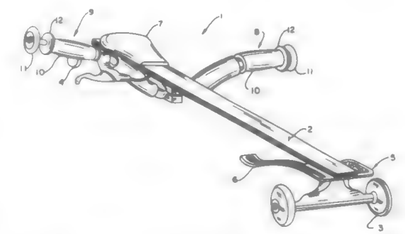
1. A low lift pallet truck comprising: a fixed frame; a lift frame having a lift fork and fork wheels; two support wheel assemblies one on each side of and beneath a battery compartment of said lift frame; a battery; a lift linkage including a linear actuator, an upper link, two lower links, and two rod assemblies each having a forward end and a rearward end, and further having means at the forward end of each said rod assembly for fully retracting said fork wheels, said means comprising a rod having a forward end and a rearward threaded end, a link clevis pivotally connected to one of said lower links and having a sliding connection along the longitudinal axis of the rod, a stop collar attached near the forward end of the rod and contacting a retraction spring assembled concentrically over said stop collar whereby said stop collar and retraction spring are both contained within said link clevis, and a hex collar fixed concentrically to said rod between said link clevis and the rearward end of said rod at a point where the threaded end of said rod connects with a mating threaded hole in a lever clevis, said lever clevis pivotally mounting a fork wheel lever to said lift fork, said fork wheel being rotatably mounted on said fork wheel lever; whereby said means for fully retracting provides a gap between said fork wheels and the truck supporting surface when said lift frame is fully lowered thereby carrying the truck rear vertical loadings on said support wheel assemblies.

5,354,081

STUNT RIDING TOY

Michael L. Huffman, and Michael D. Commerford, both of Jefferson County, Mo., assignors to High Tech Toys, Inc., Festus, Mo.

Continuation-in-part of Ser. No. 702,711, May 20, 1991, Pat. No. Des. 332,977. This application Jan. 29, 1993, Ser. No. 11,214
Int. Cl.[5] B62B *19/04*
U.S. Cl. 280—87.01 **11 Claims**



1. A stunt riding toy, for use by a rider in providing downhill movement over a surface, comprising an elongated structural means extending for a length sufficient to accommodate the emplacement of the rider thereon, movement means provided at opposite ends of the structural means and allowing for movement of the stunt riding toy over a surface, seat means provided upon the structural means at a location rearwardly thereof, and provided for accommodating the sitting of the rider thereon, hand gripping means extending laterally from each side of the structural means, said hand gripping means disposed in proximity just forwardly of the seat means, and positioned to provide for grasping of the hand gripping means by the rider at both sides of the toy thereof, foot emplacement means provided at the frontal end of the structural means and allowing for emplacement of the feet of the rider thereat, said hand gripping means having surface contacting means provided at the outer ends thereof, and useful for riding upon the surface due to tilting of the stunt riding toy during movement, brake means operatively associated with the structural means and providing for braking action in the movement of the toy during downhill riding, said movement means comprising wheel means structurally connecting to the structural means at opposite ends thereof, and disposed for rolling engagement over a surface during a downhill ride, said surface contacting means of the hand gripping means comprising further wheel means provided at the outer ends of each of the hand gripping means, said further wheel means disposed for contacting the ground and rolling thereon to prevent further tilting of the stunt riding toy during a downhill ride.

5,354,082

MUDGUARD FOR A BICYCLE

Buron Tsai, Taichung Hsien, Taiwan, assignor to Topeak, Inc., Taichung, Taiwan

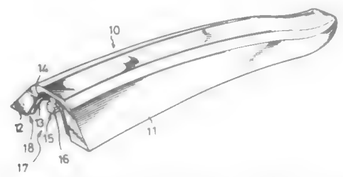
Filed Dec. 1, 1993, Ser. No. 159,531
Int. Cl.[5] B62J *15/02*
U.S. Cl. 280—152.1 **1 Claim**

1. A mudguard for a bicycle of the type with a brake reinforcing plate mounted to a seat stay of said bicycle by a fixing means, said mudguard comprising:

an elongate shell which is arc-shaped in section and has a front end and a rear end, a recess being formed along a longitudinal direction of an underside of said shell, a slot being formed along a transverse direction of said front end of said shell and defining a first panel and a second panel

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which are parallel to each other, said first panel and said second panel being engaged on said brake reinforcing plate with said brake reinforcing plate at least partially received in said slot, and a pair of grooves being formed in



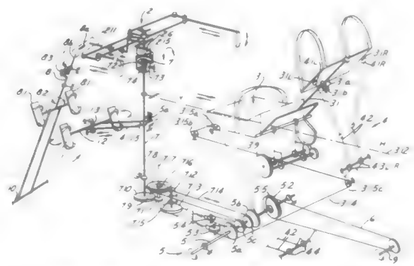
a mediate portion of said second panel and extending downwardly, and thus defining a flexible snap fastener which has a hook end in a distal end thereof for engaging with an underside of said brake reinforcing plate and for securing said mudguard to said brake reinforcing plate.

5,354,083

DRIVE SYSTEM FOR MUSCLE-POWERED EQUIPMENT AND VEHICLES, IN PARTICULAR BICYCLES

Qingshan Liu, Bogenstrasse 11, D-8000 Munchen 80, Fed. Rep. of Germany

PCT No. PCT/EP90/02230, § 371 Date Jun. 18, 1992, § 102(e) Date Jun. 18, 1992, PCT Pub. No. WO91/08943, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 18, 1990, Ser. No. 861,855
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1989, 3941768
Int. Cl.[5] B62M *1/00*
U.S. Cl. 280—233 43 Claims



1. A muscle-powered drive mechanism for vehicles and other equipment with at least two drive components operated independently from each other and the drive movements of which are adapted to be transmitted to a drive shaft using a movement transmission system, comprising:

a first drive component formed by a seat backrest drive mechanism whose drive movement is generated by a rotational movement of a seat backrest relative to a seat surface; and at least one of

(a) a drive component formed by a seat surface drive mechanism whose drive movement is generated by a reciprocating translation movement of the seat surface on a track extending in a longitudinal direction of the muscle-powered drive mechanism, whereby the rotational movement of the seat backrest is superimposed on the translation movement of the seat surface using a transmission means and a freewheel system for a combined drive of the drive shaft;

(b) a drive component formed by a foot-powered drive mechanism whose drive movement is generated by a reciprocating movement of at least one pedal, whereby the rotational movement of the seat backrest is superimposed on the reciprocating movement of the pedal using a transmission means and a freewheel system for a combined drive of the drive shaft; and

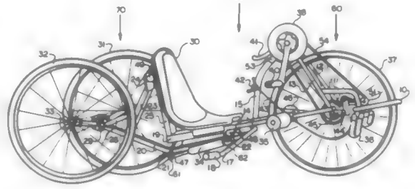
(c) a drive component formed by a hand-powered drive mechanism with hand-operated rods (operating rods) whose drive movement is generated by a reciprocating movement of the operating rods whereby the swivel movement of the seat backrest is superimposed on the reciprocating movement of the operating rods using a transmission means and a freewheel system for a combined drive of the drive shaft.

5,354,084

HAND PROPULSION AND STEERING DAMPENING FOR THREE-WHEEL VEHICLE

Mike Lofgren, and Brian Stewart, both of 20589 SW. Elkhorn Ct., Tualatin, Oreg. 97062

Filed May 15, 1992, Ser. No. 884,524
Int. Cl.[5] B62M *1/14*
U.S. Cl. 280—250 5 Claims



1. A three-wheel vehicle comprising:

a front frame portion and a rear frame portion, said front frame portion and said rear frame portions assembled together in overlapping relation, a front pivot and rear pivot elevated relative to the front pivot cooperatively connecting the front and rear frame portions whereby the front frame portion pivots relative to the rear frame portion around an inclined axis, front to rear,

a single front wheel mounted on the front frame portion and a pair of wheels mounted on the rear frame portion whereby pivoting of the front frame portion relative to the rear frame portion causes pivoting of the front frame portion and the front wheel for turning the vehicle,

a seat is provided on the front frame portion, pedals are provided on the front frame portion and a drive line extends between the front wheel and pedals said pedals have a pedal axis of rotation, said pedal axis is positioned rearward of a front wheel axle to make the pedals accessible to a rider seated in the seat and said seat, pedals, drive line and front wheel have a fixed relationship during operation of said vehicle whereby pivoting of the front frame portion simultaneously pivots the seat, pedals, drive line and front wheel to maintain said relationship, and

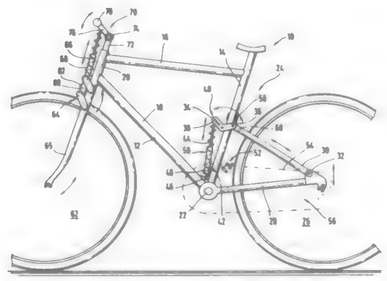
a stabilizing dampener between said front and rear frame portions to inhibit undesired inadvertent side-to-side movement of rider's body and thereby repetitive back and forth turning of the vehicle.

5,354,085

SPRUNG BICYCLE

Otto Gally, Oberauer Strasse 4, Farchant, Fed. Rep. of Germany W105

Filed Dec. 20, 1991, Ser. No. 811,499
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1990, 4041375
Int. Cl.[5] B62K *25/04*
U.S. Cl. 280—285 15 Claims



1. A bicycle, comprising:

a frame;

a first wheel mounted to the frame;

a second wheel mounted to the frame;

at least one pedal rotatably mounted to the frame;

a resilient wheel suspension secured to the frame, having a spring mechanism resiliently coupling the frame and one of said first and second wheels, and an inhibiting device acting on the spring mechanism;

a drive train coupled to the at least one pedal and to the second wheel so that a driving force can be transferred from the at least one pedal to the second wheel; and

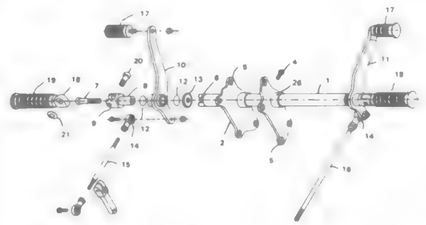
a driving-force sensor having means for sensing the driving force transmitted to the second wheel through the drive train, the driving-force sensor being operatively coupled to the inhibiting device.

5,354,086

FOOTREST HOLDER FOR MOTORCYCLES

Werner Mueller, Koenigsmoos, Fed. Rep. of Germany, assignor to Motorrad Mueller GmbH, Fed. Rep. of Germany

Filed Feb. 25, 1993, Ser. No. 22,302
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1992, 9202600[U]
Int. Cl.[5] B62J *25/00*
U.S. Cl. 280—291 18 Claims



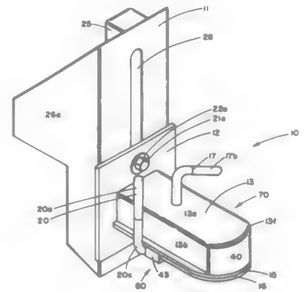
1. A footrest holder for a motorcycle comprising an arm, two mounting plates for attachment to a vehicle frame of the motorcycle carried by the arm, the arm being formed by a continuous rod and lever for a gearshift or brake on a free end, the lever being pivotable about a horizontal swivel axis, a footrest extending from the arm in such a way that it can be folded about an axis at right angles to the swivel axis of the lever, one of the plates being movably mountable on the arm, the other plate being firmly attached to the arm.

5,354,087

ADJUSTABLE TRAILER HITCH

Harold W. Head, Cameron, Tex., assignor to Gooseneck Trailer Mfg. Co., Inc., Bryan, Tex.

Filed Apr. 14, 1993, Ser. No. 62,847
Int. Cl.[5] B60D *1/46*
U.S. Cl. 280—490.1 11 Claims



1. An adjustable trailer hitch for hitching a trailer to a vehicle, comprising:

a first member attached to the trailer;

second member attached to a means for coupling the trailer to the vehicle; and

a means for unlimited vertical adjustment within a predefined range for securing and setting a position between the first member and the second member wherein said means for unlimited vertical adjustment within a predefined range comprises:

the first member having an upright slot;

the second member having two vertically aligned bolt holes spaced apart by a distance less than the length of the upright slot;

a locking member having two bolt holes;

the first member being placed between the second member and the locking member; and

two bolts inserted through the bolt holes in the second member and the locking member and through the upright slot in the first member whereby the bolts can be secured to set the position of the first member relative to the second member and the bolts can be loosened to adjust the first member relative to the second member within the predefined range determined by the length of the upright slot and the distance between the bolt holes in the second member.

5,354,088

BOOT BINDING COUPLING FOR SNOW BOARDS

Dennis A. Vetter, 6644 South 196th St., Ste. T-104, Kent, Wash. 98032, and Eric L. Eaton, 6646 South Prospect, Tacoma, Wash. 98409

Filed Mar. 15, 1993, Ser. No. 34,826
Int. Cl.[5] A63C *9/08*
U.S. Cl. 280—618 14 Claims

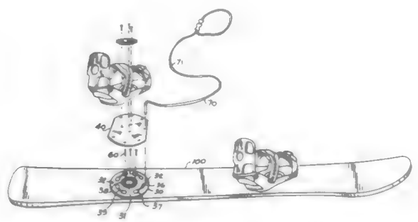
1. In combination with a snowboard having a plurality of threaded screw holes, a releasable snowboard boot binding coupling comprising:

a circular turntable ring with a center hole, the turntable ring having a plurality of arcuate mounting slots on a circular arc concentric with the center hole, each of the slots having a first large slot opening on one end thereof,

a boot binding plate having a plurality of lock pins extending

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downwardly from the boot binding plate and located opposite the arcuate mounting slots of the turntable ring, each lock pin having a flange secured to the binding plate, a shoe sized to fit into and through a respective one of the turntable arcuate slot large openings, and a narrowing waist between the flange and the shoe sized such that upon partial rotation of the boot binding plate, the narrowing waist of the lock pin slidably passes into the turntable ring arcuate slot,



a spacer plate secured to the turntable to separate the turntable from the snowboard,

means to adjustably secure the turntable with the spacer plate to the snowboard, and

latching mans for releasably latching the turntable ring to the boot binding plate with the boot binding plate lock pin held in the turntable arcuate slot.

5,354,089

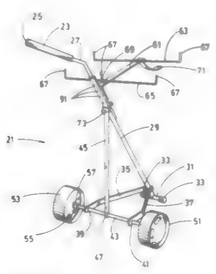
MOBILE CARRIER FOR AUGMENTATIVE COMMUNICATION

Thomas M. Sohrt; Carrie A. Sohrt, both of 2732 Juniper #1, Santa Ana, Calif. 92704, and James E. Holliday, 1118 Sierra Ave., Santa Ana, Calif. 92707

Filed May 14, 1993, Ser. No. 62,112

Int. Cl.[5] B62B *1/04, 1/12*

U.S. Cl. 280—645 **17 Claims**



1. A carrier comprising:

wheel means for providing rolling support;

a back support having a first end pivotally engaging said wheel means, and a second end;

a main support having a first end and a second end and engaging said back support near said first end of said main support;

a first aperture in said back support near the second end of said back support and a second aperture in said back support near a central portion of said back support;

selectable attachment means for enabling said back support to be selectably, manually attached to or detached from engagement with said first end of said main support at the second end of said back support or near the central portion of said back support, said selectable attachment means including a nut carried on said main support and a manually operable bolt for engaging said nut; through one of said first and second apertures;

at least one strut having a first end pivotally engaging said main support near said second end of said main support and a second end engaging said wheel means;

handle means, engaging said main support near said first end of said main support to facilitate movement of said carrier; and

object carriage means, supported by said main support, for securing objects to be carried.

5,354,090

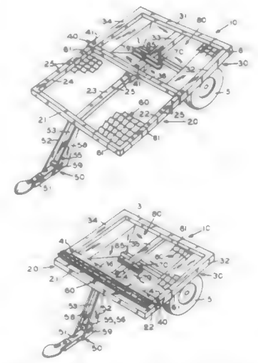
COLLAPSIBLE PORTABLE TRAILER FOR ALL TERRAIN VEHICLES

Douglas Grovom, Rte. 1 Box 116, Lenore, Id. 83541

Filed Nov. 5, 1993, Ser. No. 147,308

Int. Cl.[5] B62D *21/14*

U.S. Cl. 280—656 **19 Claims**



1. A collapsible portable trailer for a tow vehicle, said trailer comprising:

a fixed framework, substantially rectangular in configuration, having a laterally disposed front rail and two laterally and parallel spaced side rails affixed to and rearwardly extending from said front rail;

a telescoping framework, also substantially rectangular in configuration, having a laterally disposed back rail and two laterally and parallel spaced side rails, each of said side rails in registry with and telescopically engageable with a respective side rail of said fixed framework for varying the length and hence the surface area of said trailer;

latch means for holding said side rails of said fixed framework and respective side rails of said telescoping framework in fixed relationship with one another;

a pair of laterally spaced wheels rotatably mounted to said telescoping framework;

a hitch assembly for connecting said trailer to said tow vehicle; and

a floor constructed of flexible fabric for folding and unfolding upon shortening and lengthening, respectively, of said trailer.

5,354,091

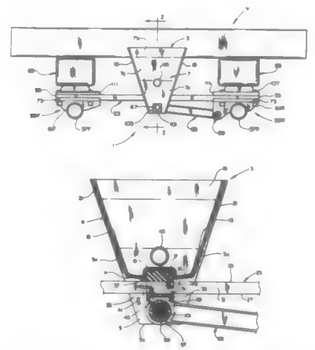
WHEELED VEHICLE SUSPENSIONS

Bobby G. Baxter, and Jeffrey E. Ditto, both of Warrenton, Mo., assignors to The Binkley Company, Warrenton, Mo.

Filed Sep. 1, 1992, Ser. No. 938,607

Int. Cl.[5] B60G *5/00*

U.S. Cl. 280—683 **32 Claims**



1. An air-ride suspension for a vehicle comprising:

at least one pair of hangers, one for the left side and the other for the right side of the vehicle;

each hanger comprising a head and a pair of side members at opposite sides of the head extending down from the head,

one of the hangers being mounted extending down from the bottom of the vehicle adjacent its left side and the other being mounted extending down from the bottom of the vehicle adjacent its right side, the hangers being aligned transversely with respect to the vehicle and with the side members of the hangers spaced transversely with respect to the vehicle,

at least one pair of composite leaf springs, one for the left and one for the right side of the vehicle, each having an upwardly facing surface and a downwardly facing surface;

each composite leaf spring comprising fibers embedded in a resin matrix, the fibers extending lengthwise of the spring;

means for resiliently mounting each leaf spring in a respective hanger with the leaf spring extending longitudinally of the vehicle between the side members of the hanger below the head,

said resilient mounting means comprising a lower elastomeric cushion retained in the hanger below the leaf spring engaged by the downwardly facing surface of the leaf spring and an upper elastomeric cushion retained in the hanger above the leaf spring and between the leaf spring and the head of the hanger and engaging the upwardly facing surface of the leaf spring;

the portion of the leaf spring extending between said elastomeric members being resiliently cushioned therebetween and thereby resiliently yieldable up and down in the hanger;

the leaf springs having free ends spaced longitudinally with respect to the vehicle from the hangers and aligned transversely with respect to the vehicle;

an axle secured to the leaf springs adjacent their free ends and extending transversely with respect to the vehicle;

air springs interposed between the leaf springs and the vehicle adjacent the free ends of the leaf springs; and

means limiting the longitudinal movement of each leaf spring in the respective hanger comprising link means pivotally connected at one end to the respective hanger and at the other end to the leaf spring adjacent the free end of the leaf spring where the axle is secured to the leaf spring,

wherein said head of each hanger has a downwardly opening recess therein and the upper elastomeric cushion is pocketed in the recess to limit the longitudinal movement of the upper elastomeric cushion.

5,354,092

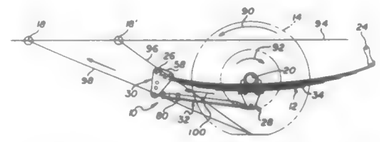
TRACTION DEVICE FOR MOTOR VEHICLES

John Calvert, 43615 - 24th W., Lancaster, Calif. 93536

Filed Apr. 23, 1993, Ser. No. 52,256

Int. Cl.[5] B60G *11/02*

U.S. Cl. 280—718 **15 Claims**



1. A traction device for a motor vehicle, comprising:

a rear support assembly positioned proximate to a rear axle and an adjacent portion of a leaf spring;

a front support assembly pivotally attached to a front end of the leaf spring and including attachment means for interconnecting the rear support assembly and the front support assembly at a spaced location from the front end of the leaf spring, a pivot stop extending across the upper surface of the leaf spring, for engaging an upper surface of the leaf spring to limit pivotal movement of the front support assembly relative to the front end of the leaf spring, and a pair of facing plates pivotally attached to the front end of the leaf spring and which support the pivot stop in a fixed spacial relationship to the front end of the leaf spring; and

a rigid link extending between the rear support assembly and the attachment means of the front support assembly.

5,354,093

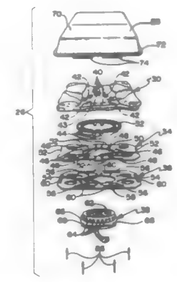
AIR BAG MODULE HAVING INTEGRAL COVER ATTACHMENT

David P. Schenck, Miamisburg; Robert E. Huffman, Tipp City, and Jeffrey A. Shepherd, Fairborn, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 5, 1993, Ser. No. 41,594

Int. Cl.[5] B60R *21/16*

U.S. Cl. 280—728 A **16 Claims**



1. An air bag module comprising a support plate for an

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inflator, a cover for confining an air bag, and means for attaching the cover to the support, comprising

a plurality of latch surfaces mounted on the support,

a plurality of resilient latch hooks spaced about the periphery of the cover which engage the latch surfaces when the cover is assembled to the support,

a plurality of latch shoulders on the support plate adjacent each latch surface which force the latch hooks to deflect and snap over the latch shoulders and engage the latch surfaces when the cover is assembled to the support plate,

a slot adjacent each latch shoulder on the support plate which enables the latch hooks to pass through the plate into engagement with the latch shoulders, and

locking means for thereafter preventing disengagement of the hooks from the latch surfaces to prevent separation of the cover from the support.

5,354,094

AIR-BAG ARRANGEMENT

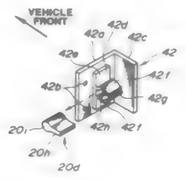
Minoru Matano, and Akio Oikawa, both of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 27, 1991, Ser. No. 799,826

Claims priority, application Japan, Nov. 27, 1990, 2-320932

Int. Cl.[5] B60R *21/20*

U.S. Cl. 280—728 B **16 Claims**



6. A method for arranging an air bag device in a motor vehicle having a passenger space and an instrument panel, said panel having a recess for receiving therein an air bag module having an air bag, said method comprising the steps of:

securing a lid member to said instrument panel so as to cover said recess and to be openable in response to inflation of said air bag to accommodate expansion of said air bag into said passenger space;

assembling a bracket, comprised of first and second bracket members which can be pulled apart by the application of a predetermined force, in a sliding manner wherein distortion of both of first and second bracket members is absent; and

detachably connecting the lid member to said instrument panel using the assembled bracket.

5,354,095

OCCUPANT RESTRAINT SYSTEM HAVING AN AIRBAG

Manfred Müller, Deizisau; Luigi Brambilla, Böblingen; Wolfgang Henseler, Tübingen, and Guido Wetzel, Böblingen, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

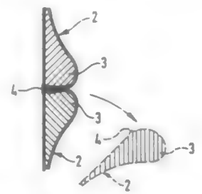
Filed Sep. 7, 1993, Ser. No. 116,989

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1992, 4229565

Int. Cl.[5] B60R *21/20, 21/22, 21/16*

U.S. Cl. 280—728 B **1 Claim**

1. Occupant restraint system having an air bag which is automatically inflated by means of a gas generator in the event of an accident and, during this process, emerges from a housing or accommodation compartment whilst opening a padded flap which normally closes the housing or the accommodation compartment, an intended tearing point, arranged at the edge of the flap remote from the pivot axis, being undone, which intended tearing point connects the flap in the normal closed position to one of a stationary part and to an edge of a further padded flap remote from the pivot axis and is arranged offset towards the inside of the flap next to a pad swelling forming the edge of the flap remote from the pivot axis with a large cross-section in the direction of the thickness of the flap, said



pad swelling being elastically prestressed against one of the pad swelling of the other flap and the stationary part in such a way that, when the flap is opened, the pad swelling projects beyond the intended tearing point radially relative to the pivot axis of the flap.

5,354,096

INFLATABLE SEATBELT SYSTEM

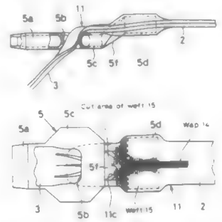
Yoshihiko Tanaka, Tokyo, and Tsuneo Chikaraishi, Hikone, both of Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Jul. 30, 1993, Ser. No. 99,464

Claims priority, application Japan, Aug. 6, 1992, 4-210354

Int. Cl.[5] B60R *21/08*

U.S. Cl. 280—733 **7 Claims**



1. An inflatable seatbelt system for a vehicle including at least: means for generating a gas when deceleration acting on the vehicle upon occurrence of an emergency situation, for example, a collision of the vehicle, exceeds first set deceleration; a webbing having a portion brought into contact with an occupant's body, at least a part of said contact portion being formed as a bag-shaped portion, said webbing being arranged such that when no gas is generated from said gas generating means, said webbing is maintained in the shape of a strap having a predetermined width, whereas, when a gas is generated from said gas generating means, said bag-shaped portion is inflated by the gas; a retractor operating such that when the deceleration on the vehicle is not higher than second set deceleration, which is lower than said first set deceleration, said retractor allows said webbing to be freely wound up and unwound, whereas, when the deceleration on the vehicle exceeds said second set deceleration, said retractor prevents unwinding of said webbing; a tongue connected to said webbing; and a buckle device with which said tongue is disengageably engaged;

wherein said tongue has an engagement portion engageable with said buckle device and having a gas inlet port to which the gas generated by said gas generating means is introduced through said buckle device when said tongue is in engagement with said buckle device, an operating portion having a webbing receiving hole through which said webbing extends and used to engage and disengage said tongue in relation to said buckle device, a gas outlet portion formed with a width larger than a width of said bag-shaped portion and connected to said webbing and having a gas outlet port for said gas, and a gas flow hole providing communication between said gas inlet and outlet ports, and wherein said webbing is formed of a webbing base fabric made out of a woven fabric, said webbing base fabric having warp disposed in a longitudinal direction of the seatbelt and weft disposed in a lateral direction of the seatbelt, said weft being formed of spandex threads made of a material having a relatively low modulus of elasticity and stretchable in a rubber-like manner, for example, urethane, said weft being cut in a predetermined region including one end of said bag-shaped portion, the gas outlet portion of said tongue being inserted into said bag-shaped portion from the weft cut area so that a part of said bag-shaped portion is brought into close contact with said gas outlet portion by elastic force of the weft which is not cut, said webbing extending through said webbing receiving hole at a portion thereof which extends in a direction opposite to the direction of insertion of said gas outlet portion so that said gas outlet portion is prevented from slipping out of said bag-shaped portion by at least the portion of said webbing which lies in said webbing receiving hole.

5,354,097

SECURITY OF OBJECTS OR DOCUMENTS

Teunis Tel, Verlengde Hereweg 192, 9722 AM Groningen, Netherlands, assignor to Teunis Tel, Groningen, Netherlands

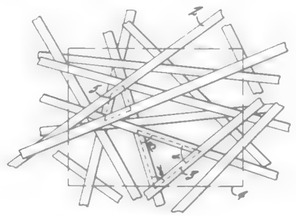
PCT No. PCT/NL91/00098, § 371 Date Dec. 15, 1992, § 102(e) Date Dec. 15, 1992, PCT Pub. No. WO91/19614, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 14, 1991, Ser. No. 955,711

Claims priority, application Netherlands, Jun. 15, 1990, 9001369

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—72 **6 Claims**



1. A product having provision for verifying the legitimacy of the product against forgery and comprising

a body member including a surface, a plurality of overlying individual fibers which are randomly disposed so as to define a number of differing geometrical configurations, and a transparent base material completely encasing and fixedly supporting said fibers so that said fibers are visible on said surface and such that said surface is optically scannable through the transparent base material so as to permit the geometrical configurations of the fibers to be scanned.

5,354,098

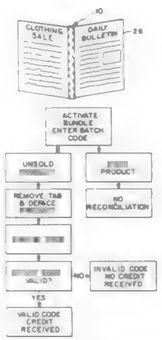
AUTOMATED RECONCILIATION SYSTEM

William B. Mills, 65 E. Washington St., Apartment 4207, North Attleboro, Mass. 02760

Filed Nov. 26, 1993, Ser. No. 157,418

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—67 **26 Claims**



14. A method of reconciling a publication, comprising the steps of:

affixing a sheet of material to a publication with hidden data disposed between said sheet of material and said publication;

separating said sheet of material from said publication;

defacing said publication to render it unsalable;

exposing said hidden data;

entering said hidden data into a computer;

confirming validity of said hidden data; and

providing reconciliation credit for entry of valid hidden data.

5,354,099

MAGNETIC METALLIC SAFEGUARDING THREAD WITH NEGATIVE WRITING

Wittich Kaule, Emmering, and Michael Boehm, Heimstetten, both of Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation Und Organisation MBH, Munich, Fed. Rep. of Germany

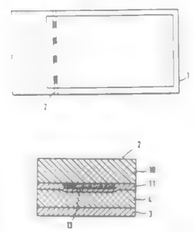
PCT No. PCT/EP91/02437, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO92/11142, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 18, 1991, Ser. No. 920,574

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1990, P4041025.0

Int. Cl.[5] B42D *15/02;* **B05D** *5/12*

U.S. Cl. 283—85 **29 Claims**



1. A method for producing a security element to be incorporated into a security document and provided with indicia that

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are readily visible, both in transmitted light and in incident light, and machine testable, comprising the steps of:

providing one side of a transparent carrier film with a machine testable substance in mutually spaced regions with gaps between said spaced regions,

printing the carrier film in the gaps between the regions with an activatable ink in the form of the readable indicia,

providing the side of the carrier film bearing the activatable ink with a metallic layer over the entire carrier film,

then activating the activatable ink, giving rise to recesses in the form of the indicia in the metallic layer, and

cutting the film into strips of suitable width.

5,354,100

WELDABLE PIPE FITTINGS AND PIPE JOINTS FORMED THEREWITH

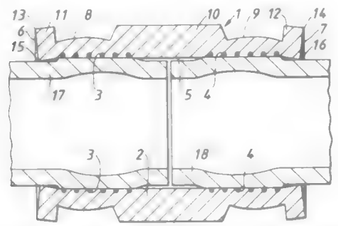
David J. Wall, Caldecott, and Robert E. Beechey, Oakham, both of England, assignors to Victaulic PLC and Rutland Plastics Limited, Leicestershire, United Kingdom

Filed Mar. 20, 1992, Ser. No. 854,289

Claims priority, application United Kingdom, Mar. 20, 1991, 9105937

Int. Cl.[5] H05B *3/58*; **F16L** *47/02*

U.S. Cl. 285—21 **10 Claims**



1. A weldable pipe fitting including a sleeve member of thermoplastic material, the sleeve member having a stress resistant portion of greater wall thickness, a terminal portions of greater well thickness, and a fusion accommodating portion of lesser wall thickness between the stress resistant portions and the terminal portion, wherein the stress resistant portion inclines to the fusion accommodating portion by means of a tapered portion, and wherein the stress resistant portion is arranged in use to overlie an end of a pipe to be connected to the pipe fitting; the stress resistant portion of the sleeve has a standard dimensional ratio within the range of 8:1 to 12:1 inclusive, the terminal portion of the sleeve has a standard dimensional ratio within the range of 8:1 to 12:1 inclusive, and the fusion accommodating portion has a standard dimensional ratio within the range of 14:1 to 19:1 inclusive; and the internal wall of the sleeve is provided with an electric heating wire or wires along and within the wall and disposed circumferentially thereof adjacent the radially inner surface of the wall, said heating wire or wires being disposed over a length of the sleeve at least the majority of which is within the fusion accommodating portion thereof.

5,354,101

SEALING WASHER BLOCK CONNECTION

Russell C. Anderson, Jr., North Tonawanda, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 13, 1993, Ser. No. 119,300

Int. Cl.[5] F16L *39/02*

U.S. Cl. 285—25 **2 Claims**

1. In an evaporator connection assembly for connection of an evaporator to a condenser and compressor, and said assembly having:

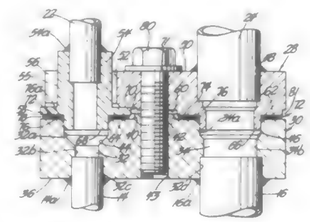
supply and return lines operatively connected to a condenser and compressor;

evaporator lines for connection with the evaporator;

connection means for receiving and sealingly interconnecting said evaporator lines and said supply and return lines; and

said connection means comprising plate means for receiving said supply and return lines block means for receiving said evaporator lines, and securing means for securing said plate means against said block means for sealingly allowing communication of fluid between said evaporator lines and said supply and return lines the improvement comprising;

said plate means including first and second sides, and having an aperture therethrough for fixedly receiving at least one of the supply and return lines and an opening to receive



the other of the supply and return lines at said first side thereof, said plate means having raised faces circumferentially about said aperture and said opening on said second side;

said block means having first and second surfaces, and a pair of passages therethrough for fixedly receiving said evaporator lines at said first surface, and providing a pair of planar seal seats extending about said passages at said second surface thereof wherein a gap is provided between said raised faces and said seal seats for allowing visual inspection of said sealing means therebetween; and

sealing means providing first and second opposing parallel surfaces for sealing between said raised faces and said seal seats.

5,354,102

QUICK CONNECTOR

Anthony K. Carman, Waterford, Mich., assignor to ITT Corporation, New York, N.Y.

Filed Feb. 3, 1993, Ser. No. 12,715

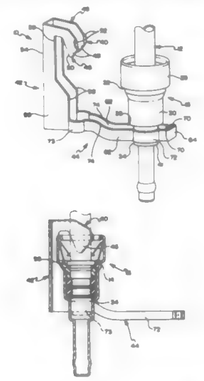
Int. Cl.[5] F16L *35/00*

U.S. Cl. 285—81 **20 Claims**

1. A locking clip for use in retaining a male member within a female connector, said male member having an upset portion and said female connector having a recess for receiving said male member and said upset, said locking clip comprising:

a retaining head adapted to engage the upset of said male member when said male member is positioned within said recess of said female member;

a base portion spaced from said retaining head, said base portion being defined by spaced leg members which are spaced apart a distance slightly less than the outer diameter of said female connector, such that said legs bias against said female connector, said leg members each have a top edge that defines a cam surface for engaging said female connector with said cam surface being further spaced from said head toward ends of said leg members to



facilitate the insertion of said retaining head into said recess of said female member.

5,354,103

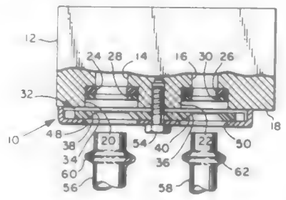
QUICK CONNECT CONDUIT COUPLING

Robert J. Torrence, Addison; Kathryn D. Loew, Bensenville; Anthony M. Oliver, Northlake, and Peter J. Malone, Mount Prospect, all of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 28, 1994, Ser. No. 188,508

Int. Cl.[5] F16L *39/00*

U.S. Cl. 285—137.1 **7 Claims**



1. A quick connect assembly for plural tubular conduits comprising:

(a) a block or valve having a plurality of fluid ports on a common side thereof with an annular seal disposed about the inner periphery of each port;

(b) a spring lock member having a plurality of apertures therethrough corresponding to the plurality of fluid ports, each of said apertures including camming surfaces thereabout on a common side thereof and having portions of the periphery thereof relieved to permit resilient enlargement thereof, said spring lock member disposed against said common side of said block or valve with said apertures each aligned with one of said ports;

(c) retaining plate means received over said spring lock member and releasably fastened to said block or valve, said plate means having a plurality of clearance cut-outs formed therein, with one of said cut-outs aligned with each of said fluid ports, said plate means securing said spring lock member in place on said block or valve; and,

(d) a plurality of tubular conduits each having an annular convoluting or bulge thereon spaced from one end thereof wherein said end of each of said conduits is inserted in said aperture with said convolution contact said camming surface and enlarging said aperture until said convolution passes through said aperture with said seal sealing about the periphery of said conduit and said spring lock member camming surfaces return to their original position preventing withdrawal of said conduit.

5,354,104

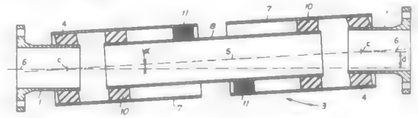
FLEXIBLE COUPLING FOR PIPEWORK

René Senes, Merignac, and Jean Lebrun, Le Bouscal, both of France, assignors to Techlam, Cedex, France

Filed Jan. 15, 1993, Ser. No. 4,927

Int. Cl.[5] F16L *33/28, 27/10*

U.S. Cl. 285—235 **8 Claims**



1. A flexible coupling for pipework, the coupling comprising a sleeve assembly for circular section coaxially engaged around the ends of the pipes to be coupled together, and being connected to each of them in sealed manner by means of respective annular gasket of flexible and resilient material that are received coaxially in corresponding annular gaps between said ends and respective ends of the sleeve assembly, said sleeve assembly being constituted by at least one assembly of rigid tubes in alignment on the same longitudinal axis and assembled together in sealed manner by connection means which hold them in alignment along said axis, but which allow them limited amplitude mutual displacement along said axis, said at least one assembly of rigid tubes comprising two end tubes spaced apart along the axis and an intermediate tube of different diameter that bridges a gap between the two end tubes, with the connection means between the tubes comprising, between two consecutive tubes, an annular gasket of flexible and resilient material; wherein said connection means are designed to provide resiliency along the above-mentioned axis and further include a set of laminated blocks regularly distributed around said axis, each of the blocks being made up of alternating superposed layers that are rigid and layers that are flexible and resilient, the layers being in the form of cylindrical surfaces centered on said axis, said annular gasket and said set of laminated blocks being inserted side by side in the gap between the two tubes that they connect together, and being fixed to respective facing surfaces belonging to said tubes.

5,354,105

Patent Not Issued For This Number

5,354,106

CONNECTOR FOR CONNECTING A PIPE OF SMALL DIAMETER WITH BLOCK EXPANSION PREVENTION SURFACES

Katsushi Washizu, Shizuoka, and Yuuji Miyauchi, Tagata, both of Japan, assignors to Usui Kokusai Sangyo Kaisha Ltd., Japan

Filed May 27, 1992, Ser. No. 889,607

Claims priority, application Japan, May 30, 1991, 3-155682

Int. Cl.[5] F16L *37/00*

U.S. Cl. 285—319 **2 Claims**

1. A connector for connecting a thin pipe, said pipe having a connecting end and an outwardly bulged wall spaced from said connecting end, said connector comprising:

a connector body having opposed front and rear ends, a flow bore extending rearwardly into the front end of the connector body, a peripheral wall extending forwardly from the rear end of the connector body and defining at least one chamber extending forwardly into the rear end of the connector body and communicating with the flow bore,

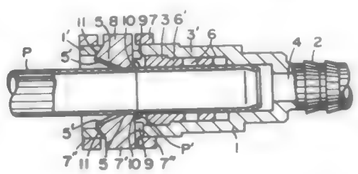
VOL 1167 ISS 2 OC 11 1994 UMI

the peripheral wall including an inner surface defining the chamber and an opposed outer surface, opposed windows extending through the peripheral wall from the outer surface to the inner surface at locations spaced forwardly from the rear end of the connector body, each said window defining a forwardly and inwardly facing expansion prevention surface on the peripheral wall and a rearwardly facing surface;

annular seal members disposed in the chamber for sealing engagement around portions of the pipe intermediate the connecting end of the pipe and the outwardly bulged wall thereof;

a bush member mounted in the connector body rearwardly of the seal members; and

a unitarily formed socket body having a cylindrical wall slidably disposed over the peripheral wall of the connector body, a pair of resiliently deflectable arms extending circumferentially from opposed locations on the socket body and engaging the outer surface of the peripheral wall of the connector body, blocks defined on deflectable ends of the respective arms and extending into the respective windows of the connector body, each said block including a rearwardly and outwardly facing expansion prevention



surface engageable with the forwardly and inwardly facing expansion prevention surface on portions of the peripheral wall of the connector body defining the respective window, a front surface on each said block engageable with the rearwardly facing surface of the respective window for axially positioning the socket body on the connector body, said front surface of each said block, extending into the chamber for engagement with the outwardly bulged wall of the pipe, and a rearwardly and inwardly facing tapering wall radially inwardly from the expansion prevention surface of the corresponding block;

whereby the blocks and the corresponding arms deflect outwardly in response to forces exerted by the outwardly swelling annular wall of the pipe on the tapering surface of the block during insertion of the pipe into the connector body, and whereby the engagement of the front surface of each said block with the outwardly bulged wall and the engagement of the rearwardly and outwardly facing expansion prevention surface of the block with the forwardly and inwardly facing expansion prevention surface of the peripheral wall securely retains the pipe in the connector body and prevents outward deflection of said arms in response to rearwardly directed forces on the pipe.

5,354,107

FLARED DOUBLE-WALL STRUCTURE FOR CONNECTING METAL PIPES

Kazunori Takikawa, Numazu, Japan, assignor to Usui Kokusai Sangyo Kaisha Ltd., Japan

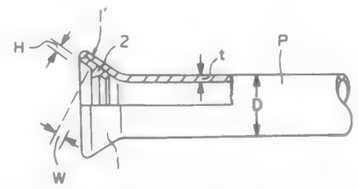
Continuation-in-part of Ser. No. 952,577, Sep. 28, 1992, abandoned. This application Dec. 9, 1993, Ser. No. 164,394

Claims priority, application Japan, Oct. 2, 1991, 3-088515[U]

Int. Cl.[5] F16L *19/02*

U.S. Cl. 285—334.5 **5 Claims**

1. A metal pipe having a substantially cylindrical fluid carrying portion with a substantial uniform wall thickness consisting of a single layer of metal having a thickness t, said pipe further comprising a connecting end, said connecting end including an outwardly flared outer pipe wall extending from said cylindrical fluid carrying portion of said pipe to an outer end of said pipe and an inner pipe wall extending from said outer end inwardly toward said cylindrical fluid carrying portion, said inner and outer pipe walls of said connecting end being disposed in abutting face-to-face relationship with one another, said inner pipe wall having an inwardly facing surface including an inner conical surface substantially adjacent the cylindrical fluid carrying portion and an outer conical surface adjacent the outer end, the inner and outer conical surfaces having the



same axis and angle of generation, and an inwardly projecting annular brim therebetween, said annular brim defining a height measured perpendicular to adjacent portions of said inner pipe wall of between approximately 0.3 t and 1.0 t, and a width measured parallel to adjacent portions of said inner pipe wall of between 1.0 t and 3.0 t, said annular brim being engageable by a generally conical surface of a mating pipe connector for effectively concentrating mating forces at the brim and isolating mating forces from regions of said cylindrical fluid carrying portion adjacent said outer pipe wall of said connecting end.

5,354,108

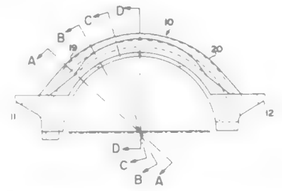
REINFORCED PIPE COUPLING

Joseph J. Sandor, Lawrenceville, Pa., assignor to Ward Manufacturing, Inc., Blossburg, Pa.

Filed Mar. 5, 1993, Ser. No. 27,010

Int. Cl.[5] F16L *23/032*

U.S. Cl. 285—414 **14 Claims**



1. A pipe coupling for joining adjoining ends of pipes, comprising:

a pair of oppositely disposed arcuate collar halves, each of said collar halves having an integral body defining inner and outer sides and a length, the inner sides having a pair of parallel ridges disposed on axial ends of said halves, the ridges being adapted for reception in a respective groove on each of the adjoining pipe ends;

a pair of connecting tabs, each of said tabs defining an extension extending radially adjacent respective circumferential ends of said collar half; and,

a pair of parallel wings extending radially outwardly from and substantially traversing a circumferential length of said collar half along axial boundaries of the body, and wherein the wings vary in radial height along the circumferential length;

wherein each said wing is relatively smaller in height near the circumferential ends, adjacent said tabs, and relatively larger in height at a point in a center of said collar half.

5,354,109

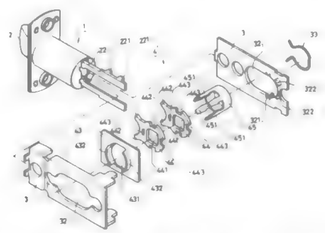
DEAD BOLT ASSEMBLY FOR TUBULAR DOOR LOCKS

Jui-Chang Lin, No. 55-10, Been-Chou Rd., Kangshan, Kaohsiung Hsien, Taiwan

Continuation-in-part of Ser. No. 980,976, Nov. 24, 1992, Pat. No. 5,257,838. This application Aug. 13, 1993, Ser. No. 105,969

Int. Cl.[5] E05C *1/16*

U.S. Cl. 292—1.5 **8 Claims**



1. A dead bolt assembly comprising a lock case including a cylinder, a dead bolt slidably received in said cylinder and including a pair of extensions extended outward beyond said cylinder, each of said extensions including a pair of protrusions extended therefrom, a pair of plates fixed to said cylinder and each including an oblong hole formed therein, each of said oblong holes including two end portion, and a rotatable actuating means slidably engaged in said oblong holes of said plates and slidable between said end portions of said oblong holes and slidable between said extensions of said dead bolt, said actuating means comprising a cylindrical barrel and a pair of plate-shaped actuators engaged with the barrel, each actuator having a pair of projecting pawls for engagement with said protrusions of said extensions when said actuating means rotates and each actuator further including a central aperture for imparting rotation to the actuating means.

5,354,110

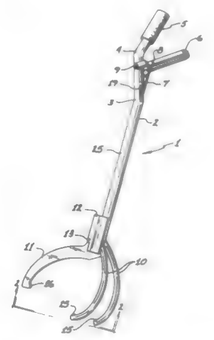
FIREPLACE TONGS

Francis S. Licata, 8783 Chestnut Ridge Rd., Gasport, N.Y. 14067

Filed Oct. 21, 1993, Ser. No. 139,014

Int. Cl.[5] A47J *49/00*

U.S. Cl. 294—11 **16 Claims**



1. A fireplace tending tool, said tool comprising a hollow metal tube about three feet long; a handle at one end of the tube; a gripping mechanism at the other end of the tube; a lever affixed to the outer surface of the tube near the handle and located near enough to the handle that the person using the tool can grip both the lever and the handle with one hand; a solid metal rod attached at one end to the lever a distance of about 1 ½ inches from where the lever is attached to the tube and attached at its other end to a portion of the gripping mechanism, said rod being axially moveable a distance of only about ¼ to about ¾ inches within the hollow metal tube by the person using the tool when the user squeezes the lever toward the handle or forces the lever away from the handle by releasing his grip; and wherein axial movement of the solid rod within the metal tube causes desirable adjustable opening or closing of the gripping mechanism controlled by the single-handed gripping of the tool by the user; said gripping mechanism consisting of two fixed jaws and a moveable jaw fixed about the center line or axis of the tube, and the center of the gripping mechanism being substantially co-axial with the axis of the tube when the tool is used to grip an object by the tool's user.

5,354,111

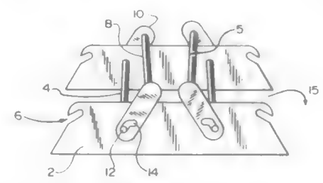
DISH TRANSPORT APPARATUS WITH DUAL POSITIONABLE HANDLES

Charles S. Parks, P.O. Box 127, Greenwood, Del. 19950

Filed Aug. 5, 1993, Ser. No. 102,247

Int. Cl.[5] A47J *45/10;* **A45F** *5/00*

U.S. Cl. 294—27.1 **2 Claims**



1. An apparatus for transport of articles comprising: a pair of base members each base member having outer and inner sides and a front and a rear face, front and rear cross members connected to said inner sides of each base members so that said inner sides face one another and said base members define a plane, a front and rear handle, each said handle comprising a gripping portion and a pair of arms in connection with said gripping portion, each of said arms in pivotal connection with said outer sides of said base members, each said base member having a front channel in connection with said front face and a rear channel in connection with said rear face, said channels having an axis along said front and rear faces and a lateral opening parallel to said axis in said front and rear faces so as to allow said gripping portions of said handles to be secured into said channels for placement about parallel to said plane of said base members and so that said handles may be removed from said channels for placement above said plane of said base members.

5,354,112

GUIDE DEVICE FOR SIFTING AND TRANSPORTING CONTAINERS

Shinji Hara; Kiyoshi Fujiwara; Toru Takehara; Masaharu Kawaguchi, and Masayasu Miyake, all of Tamano, Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1992, Ser. No. 987,841

Claims priority, application Japan, Dec. 9, 1991, 3-101080[U]; Dec. 10, 1991, 3-101522[U]; Jun. 11, 1992, 4-152096; Oct. 2, 1992, 4-068945[U]; Oct. 23, 1992, 4-290322

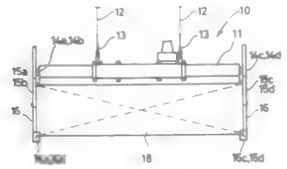
Int. Cl.[5] B66C *1/66*

U.S. Cl. 294—81.41 **11 Claims**

1. A guide device for lifting and transporting a container, said device comprising:

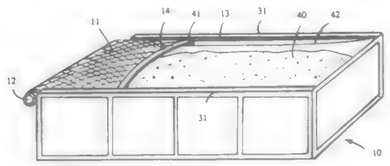
VOL 1167 ISS 2 OC 11 1994 UMI

a spreader body;
two pairs of guides arranged on both longitudinal sides of the spreader body, each guide having at least one inclined surface which makes contact with an edge of the container;
a raising/lowering device for raising and lowering the guides; and



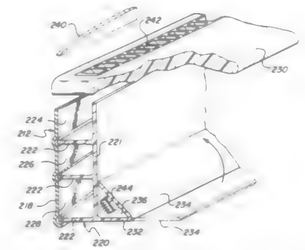
a member for securing the guides to the container arranged on the spreader body;
wherein the guides project slightly from the bottom of the spreader body, and wherein the guides are movable to be lowered and stopped at a lower part of the container such that the guides project slightly from the bottom of the container, and wherein the guides are movable to move to and from the sides of the container.

5,354,113
PLATFORM BODY COVERING MECHANISM
Kalervo Pettersson, SF, 31500 Koski TL, Finland
PCT No. PCT/FI91/00288, § 371 Date Mar. 10, 1993, § 102(e) Date Mar. 10, 1993, PCT Pub. No. WO92/05047, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 23, 1991, Ser. No. 30,097
Claims priority, application Finland, Sep. 21, 1990, 904648; Apr. 10, 1991, 911732
Int. Cl.[5] B60J *11/00*
U.S. Cl. 296—98 **17 Claims**



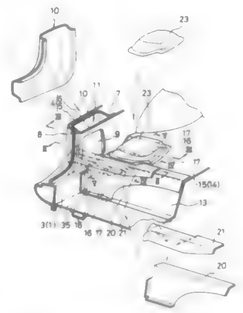
16. A platform body covering mechanism for pulling a cover over and off a platform body, comprising:
a flexible cover having a leading edged;
at least a first cable connected to said flexible cover;
at least a first cable wheel engaging said first cable for effecting movement thereof;
a drum rotatable about an axis of rotation substantially parallel to said leading edge, and around which said flexible cover is wound and from which it is unwound;
a drive mechanism operatively connected to said first cable wheel to effect movement thereof to cause said first cable wheel to move said first cable and thereby pull said flexible cover over or off a platform body; and
a flexible wind shield attached to said flexible cover remote from said leading edge thereof and windable on and unwindable from said rum with said flexible cover, said flexible wind shield hanging down substantially perpendicular to said first axis for rotation when, and only when, said leading edge of said flexible cover is at a position remote from said drum.

5,354,114
INTEGRATED CROSS CAR STRUCTURAL DUCT CLUSTER
Josh Kelman, Dover, and John Gray, Union, both of N.H., assignors to Davidson Textron Inc., Dover, N.H.
Filed Jun. 21, 1993, Ser. No. 78,348
Int. Cl.[5] B60R *27/00*
U.S. Cl. 296—192 **24 Claims**



1. An integrated cross car structural duct cluster comprising;
a composite that is adapted for connection to side pillars located on opposite sides of a vehicle body so as to act as a cross beam, the composite including at least one metal member that extends from one end of the composite to an opposite end of the composite to provide cross car stiffness and at least one molded plastic body that extends from the one end to the opposite end for defining at least one wall that extends from the one end to the opposite end of the composite for a duct that extends from the one end to the opposite end of the composite.

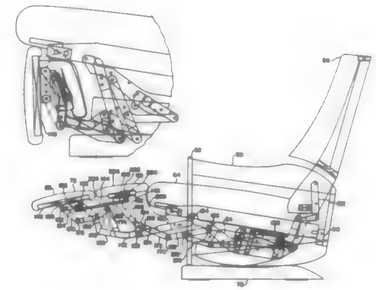
5,354,115
STRUCTURE OF SIDE BODIES OF AN AUTOMOTIVE VEHICLE
Toshikatsu Esaki, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan
Filed Mar. 1, 1993, Ser. No. 24,452
Claims priority, application Japan, Feb. 28, 1992, 4-018921[U]; Feb. 28, 1992, 4-018922[U]
Int. Cl.[5] B62D *23/00*
U.S. Cl. 296—203 **23 Claims**



1. A structure of a side body of an automotive vehicle having a side sill extending in a longitudinal direction of said side body in a lower position at each of left and right side portions of the body, a floor panel connected at left and right side end sections to said side sill, a rear fender connected at a lower end portion to said side sill, said rear fender comprising a rear fender inner panel and a rear fender outer panel, and a pillar section, said structure comprising:

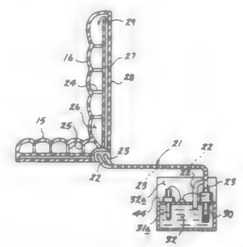
a first closed section formed by a pillar reinforcement and said rear fender inner panel, said pillar reinforcement disposed in said rear fender to reinforce said pillar section;
at least one second closed section formed by said side sill, a side frame, and said floor panel, said side frame disposed below said floor panel and adjacent to said side sill; and
a third closed section formed by a floor reinforcement and said floor panel, said third closed section disposed above said floor panel and above said second closed section;
wherein said second closed section and said third closed section are located in the region of said first closed section and are inside said side body in a region extending transversely from said first closed section toward the inside of said side body.

5,354,116
RECLINING CHAIR WITH ARTICULATING LINKAGE FOR PADDED INTERMEDIATE OTTOMAN
Teddy J. May, Tupelo, Miss., and Walter C. Rogers, Denton, N.C., assignors to The Lane Company, Inc., Altavista, Va.
Filed Oct. 1, 1992, Ser. No. 956,078
Int. Cl.[5] A47C *1/02*
U.S. Cl. 297—85 **11 Claims**



1. A reclining chair comprising:
a base for supporting the reclining chair on a floor;
an upholstered seat and arm frame unit comprising a generally horizontal seat frame supporting a seat cushion having a front edge;
a recliner mechanism of assembled elements, including a left side linkage, a right side linkage, and a transversally horizontally extending torque tube journalled on respective ones of said elements of said left and right side linkages for rotation about its own longitudinal axis;
corresponding ones of said elements of said left and right side linkages being mounted to said seat and arm frame unit, and to said base, for mounting said seat and arm frame unit on said base;
said left and right side linkages each including pantographic linkage subassemblies arranged to extend forwardly and upwards relative to said base to an extended position when said torque tube is rotated about said axis in one angular direction, and to retract downwards and rearwardly to a stowed position adjacent said base and below said front edge of said seat cushion;
a primary ottoman member mounted to corresponding elements of said pantographic linkage subassemblies of said left and right side linkages, which elements are located most distant from said base upon extension of said pantographic linkage subassemblies to said extended position;
a secondary ottoman member mounted to corresponding elements of said pantographic linkage subassemblies of said left and right side linkages, which elements are located intermediate said base and the pantographic linkage subassembly elements on which said primary ottoman member is mounted, said secondary ottoman member being rotatable about a transversally extending horizontal axis relative to the pantographic linkage subassembly elements on which said secondary ottoman member is mounted;
said primary ottoman including a board which is padded on one side, which side is presented generally upwards when said pantographic linkage subassemblies are disposed in said extended position, and is presented generally forwards when said pantographic linkage subassemblies are disposed in said stowed position;
said secondary ottoman member including a board which is padded on one side; and
an auxiliary control mechanism mounted to said board of said primary ottoman member and to said board of said secondary ottoman member and arranged to constrain spatial orientation of said secondary ottoman member relative to said transversally extending horizontal axis about which said secondary ottoman member is rotatable to an arc arranged so that said secondary ottoman member is disposed with said padded side thereof presented generally upwards when said pantographic linkage subassemblies are disposed in said extended position, and is disposed ranked closely behind said primary ottoman member and with said padded side presented thereof generally vertical when said pantographic linkage subassemblies are disposed in said stowed position.

5,354,117
VEHICULAR SEAT CONSTRUCTION
Terri M. Danielson, and Nicholas R. Harwath, both of W. 6177 Hwy. 569, Iron Mountain, Mich. 49801
Filed Jun. 14, 1993, Ser. No. 75,613
Int. Cl.[5] A47C *7/74*
U.S. Cl. 297—180.15 **4 Claims**



1. A vehicular seat construction, comprising,
a vehicle seat, having a vehicle seat back and a vehicle seat base, and a seat member, having a seat member base and a seat member back, with the seat member base including seat base strap members secured about said vehicle seat base, and seat back strap members secured about said vehicle seat back, with the seat member including a continuous L-shaped fluid cavity directed through the seat member through the seat member base and the seat member back, with the L-shaped cavity having apertured first baffles positioned within the seat member back, and with apertured second baffles positioned within the seat member base, and
a control housing, the control housing including a fluid chamber, and a fluid pump mounted within the fluid chamber, and
a fluid conduit directed between the seat member and the control housing, with the fluid conduit having an outlet fluid tube in fluid communication with the fluid pump and the L-shaped fluid cavity, and
a return fluid tube directed from the L-shaped fluid cavity to the fluid chamber, and
the fluid chamber further includes a heater unit, with the

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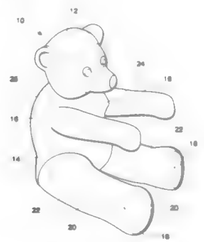
heater unit including a thermostat member to effect heating of fluid within the fluid chamber, and

the seat member back includes a seat back rear wall and a seat back conduit in fluid communication with the outlet fluid tube, said conduit extending along the seat member back, with the seat member back having an uppermost distal end spaced from the seat member base, said conduit in fluid communication with the L-shaped fluid cavity and directing fluid from the fluid chamber into the L-shaped fluid cavity.

5,354,118
STUFFED FIGURE CHAIR

Timothy P. Barry, Fishers, Ind., assignor to TSB, Inc., Fishers, Ind.

Filed Jul. 21, 1993, Ser. No. 95,871
Int. Cl.[5] A47D *1/00*
U.S. Cl. 297—181 **3 Claims**



1. A chair, for use on a support surface such as a floor, the chair comprising:

a cushioned figure including a tom and first and second limbs, wherein the limbs are connected to said torso and extend forward from and generally perpendicular to said torso, the limbs and torso each having an underside surface, wherein at least a portion of the underside surfaces of the first and second limbs contact the support surface when the cushioned figure is without a seat and is positioned upright;

a removable seat structured to be received between the first and second limbs, the seat having a bottom surface; and

means for removably fastening the removable seat to the cushioned figure, said seat fastening means comprising a plurality of first fastening components and a plurality of cooperating second fastening component, wherein at least one first fastening component is attached to the underside surface of the first limb, at least one first fastening component is attached to the underside surface of the second limb, at least one first fastening component is attached to the torso, at least one cooperating second fastening component is attached to the removable seat, at least one cooperating second fastening component is attached to the removable seat, and the at least one first fastening components on the limbs being engagable with the at least one cooperating second fastening component to secure the removable seat to the cushioned figure limbs such that the bottom surface of the seat contacts the support surface when the secured removable seat is occupied, and the at least one first fastening component attached to the torso being engagable with at least one cooperating second fastening component to further secure the removable seat to the cushioned figure, wherein the at least one first fastening components attached to the underside surfaces of the limbs and the at least on first fastening component attached to the torso each comprise a loop, and wherein each of the cooperating second fastening components attached to the removable seat comprises a strap receivable by the loops.

5,354,119
STORAGE CONTAINER MOUNTED TO A BACK OF A SEAT OR CHAIR

Mary J. Nicholas, 1209 Oldwanus Dr., Mt. Pleasant, S.C. 29464

Filed Jun. 21, 1993, Ser. No. 79,405
Int. Cl.[5] A47C *7/62*
U.S. Cl. 297—191 **6 Claims**



1. A storage container mounted to a seat back or chair back, comprising:

a. a tubular sleeve having a stretch property;

b. a first elastic band attached to a top opening of said tubular sleeve about a perimeter of said top opening;

c. a second elastic band attached to a bottom opening of said tubular sleeve about a perimeter of said bottom opening; and

d. a seat back or chair back over which said tubular sleeve is placed, wherein said seat back or chair back extends generally vertically from a support member, and wherein said seat back or chair back has one or more surfaces thereof which are sleeve;

wherein said second elastic band and said first elastic band are positioned over said seat back or chair back with said first elastic band positioned above said second elastic band, and wherein said seat back or chair back extends through said first elastic band and said second elastic band, and said first elastic band and said second elastic band surround said seat back or chair back, and said first elastic band and said second elastic band are displaced by said seat back or chair back, and said tubular sleeve is held in place on said host by elastic means of said first elastic band and said second elastic band.

5,354,120
RECLINING CHAIR

Rolf Völkle, Hohenholz 1, W-7298 Lossburg, Fed. Rep. of Germany

Filed Oct. 21, 1992, Ser. No. 964,025
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1991, 4135948; Mar. 14, 1992, 4208227
Int. Cl.[5] A47C *1/032, 3/021, 3/026, 7/44*
U.S. Cl. 297—301 **24 Claims**

1. In a reclining chair comprising

a frame,

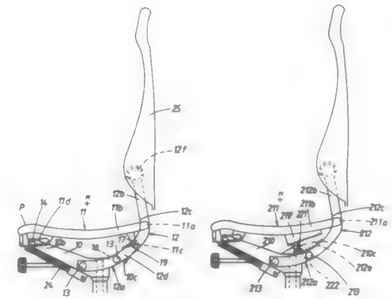
a seat carrier having a rear portion and movably mounted on said frame,

a backrest carrier, which has a bottom portion extending under said seat carrier and an intermediate portion adjacent to said rear portion of said seat carrier and is movably mounted on said frame and is adapted to perform a shifting movement between a relatively steep position and reclined position, in which said bottom portion is on a lower level than in said steep position, and

connecting means connected to said seat carrier and to said backrest carrier and arranged to impart to said seat carrier relative to said frame a forward movement and to lower at least said rear portion of said seat carrier in response to and during said shifting movement to said reclined position,

the improvement residing in that

said seat carrier and said backrest carrier are connected to said connecting means at respective spaced apart points of said connecting means, and

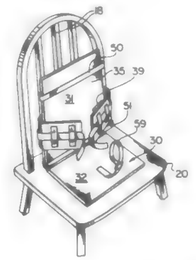


guiding means are provided for guiding said seat carrier and said backrest carrier independently of each other relative to said frame along mutually independent paths during said shifting movement.

5,354,121
SUPPORT AND RESTRAINT DEVICE FOR SMALL CHILD

Rita J. Allum, 1413 Bourcier Drive, Orleans, Ontario, Canada K1E 3K9

Filed Feb. 18, 1993, Ser. No. 19,428
Int. Cl.[5] A47D *15/00;* **A62B** *35/00*
U.S. Cl. 297—485 **17 Claims**

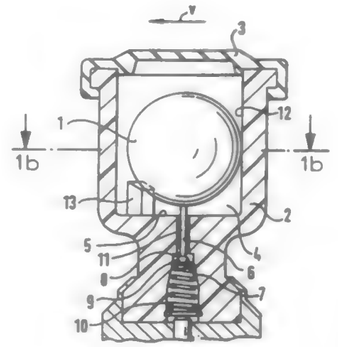


1. A support and restraint device for a small child comprising a body member including a back portion, a seat portion and hinge means joining said back portion and said seat portion, a wide belt having first and second arm portions attached to said back portion, said arm portions being provided with means for releasably securing them together, said seat portion, said back portion and said first and second arm portions comprising cloth covered padding material, said arm portions having padding formed of blocks of solid foam material having sufficient stiffness that said arm portions, when secured together around a small child's upper body, help to hold said child in an upright seated position on said seat portion when said back portion is secured in a substantially vertical position.

5,354,122
SEATING FOR AN INERTIA BALL OF A DECELERATION-SENSITIVE BRAKE POWER CONTROL

Juergen Schonlau, Walluf, and Holger von Hayn, Bad Vilbel, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

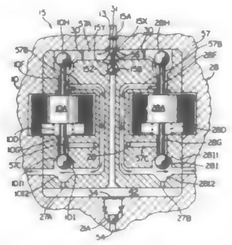
PCT No. PCT/EP91/01694, § 371 Date May 18, 1992, § 102(e) Date May 18, 1992, PCT Pub. No. WO92/05055, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 6, 1991, Ser. No. 857,938
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1990, 4029597; Aug. 16, 1991, 4127044
Int. Cl.[5] B60T *8/28, 8/32*
U.S. Cl. 303—9.68 **10 Claims**



1. A seating for an inertia ball of a brake power control for an automotive vehicle sensitive to deceleration along a forward direction of movement of said vehicle, said brake power control including a housing having a first chamber and a second chamber positioned beneath said first chamber, said inertia ball located in said first chamber, a bottom area forming a bottom of said first chamber, a hole being formed in said bottom area which provides a fluid connection of said first chamber to said second chamber, a valve actuating pin extending through said hole in said second chamber into said first chamber, a valve controlled by the position of said valve actuating pin in said hole, said valve actuating pin position controlled by said inertia ball, said valve able to close said fluid connection from said first chamber to said second chamber, and inertia ball seating means engaging the surface of said inertia ball, said inertia ball seating means including a plurality of stepped protrusions spaced apart inn a horizontal plane and raised above said bottom area, said inertia ball held on said pair of protrusions with only the weight thereof maintaining engagement therewith, each protrusion formed with a stepped edge lying in a horizontal plane located above the bottom of said inertia ball when said inertia ball is resting thereon, each protrusion stepped edge engaging a limited portion of said surface of said inertia ball, said plurality of protrusions including a pair of protrusions spaced on either side of a vertical plane aligned with said direction of movement of said vehicle and passing through the center of said inertia ball, said pair of protrusions engaging said inertia ball on the forward side, said seating means further including a fixed surface aligned with the center of said inertia ball and engaging said inertia ball when said inertia ball is resting on said pair of protrusions on a side of said inertia ball opposite said forward side, thereby preventing free horizontal motion of said inertia ball from a position of rest of said inertia ball on said pair of protrusions.

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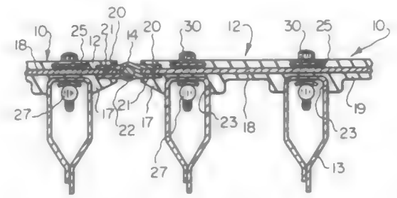
5,354,123
ANTI-SKID SYSTEM INCLUDING PRESSURE DIFFERENTIAL AND SOLENOID ACTUATED TRIPLE SEAT, DUAL VALVES
Timothy J. Albert, Niles, Mich., assignor to Allied-Signal Inc., Morristown, N.J.
Filed Nov. 5, 1992, Ser. No. 971,750
Int. Cl.[5] B60T *8/36*
U.S. Cl. 303—119.2 **19 Claims**



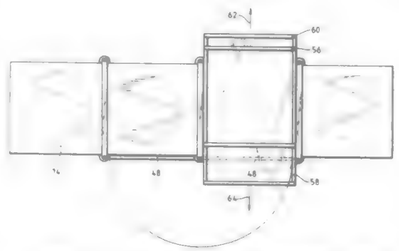
1. A combined brake and anti-skid system for a wheeled vehicle comprising:
an operator controlled hydraulic pressure source;
a hydraulically actuated wheel brake which responds to applied hydraulic pressure to apply a braking force to a wheel of the vehicle;
a pressure return line;
pressure source means for communicating pressurized hydraulic fluid; and
modulator means comprising a pressure differential actuated triple seat, dual valve effective in a first position to pass hydraulic fluid from the pressure source to the brake to apply the braking force and in a second position responsive to the pressurized hydraulic fluid to block the flow of hydraulic fluid from the pressure source to the brake, a flow control solenoid valve located between the pressure source, the return line, and the brake for directing selectively fluid from the pressure source to the brake and from the brake to the return line, the flow control solenoid valve comprising a solenoid actuated triple seat, dual valve assembly, the modulator means containing both the pressure differential actuated valve and the flow control solenoid valve, and a fluid restriction for providing a limited flow of pressurized hydraulic fluid from the pressure source means to the brake, the pressure source means supplying the pressurized hydraulic fluid to the brake by way of the fluid restriction to rebuild the braking force subsequent to the flow control solenoid valve having directed, at initial actuation fluid from the brake to the return line.

5,354,124
WATER SEALED, CABLE REINFORCED VEHICLE ENDLESS TRACK AND CLEAT ASSEMBLY
M. Elmer James, Mendon, Utah, assignor to LMC Operating Corp., Logan, Utah
Filed Sep. 7, 1993, Ser. No. 116,998
Int. Cl.[5] B62D *55/24*
U.S. Cl. 305—35 EB **11 Claims**

1. A vehicle endless track having at least one endless flexible belt assembly carrying ground engaging grousers, said belt assembly comprising:
at least two parallel steel cables each running longitudinally to the belt assembly substantially the full distance thereabout, each having a pair of opposing ends;
means releasably securing each of the pairs of opposing ends together;
elongate clamping plates installed across the endless belt assembly at intervals therealong, each having a pair of opposite ends;
a continuous cover of rubberlike material cast about and vulcanized to the cables, the cable end securing means and the clamping plates, opposite end portions of each clamping plate however extending outside said cover of rubberlike material uncovered thereby; and
means securing the grousers of the endless track to each of the clamping plates at the uncovered end portions thereof, to secure the grousers to the belt assembly.

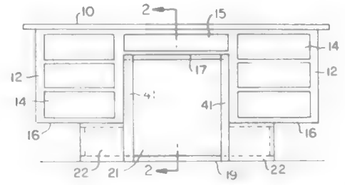


5,354,125
SHELF KIT
Simon Desanta, Borgholzhausen, Fed. Rep. of Germany, assignor to Flötotto Einrichtungssysteme GmbH & Co.KG, Gütersloh, Fed. Rep. of Germany
Filed Jan. 11, 1993, Ser. No. 2,388
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1992, 4200338
Int. Cl.[5] A47B *47/00, 57/00*
U.S. Cl. 312—109 **6 Claims**



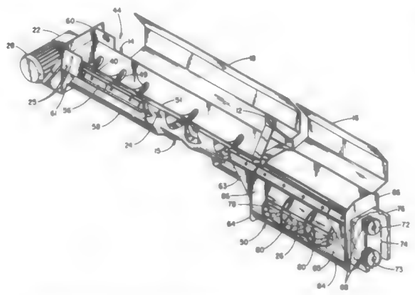
1. A shelf kit for producing a shelf arrangement, said shelf arrangement having a height and further including:
a plurality of vertical upright members, said upright members being composed of a plurality of upright segments, each of said upright segments having a height, each of said upright segments further having a front end region and a rear end region, said front end region and said rear end region of each of said upright segments including vertical passages therein;
a plurality of compartment bases, each of said compartment bases having a length and a width; and
a plurality of vertical rods, each of said vertical rods extending over the height of said shelf arrangement and being adapted to be received within said vertical passages;
said upright members and said compartment bases being adapted for forming said shelf compartments, each of said shelf compartments having a height and a length;
the height of each of said upright segments corresponding to the height of each of said shelf compartments;
the length of each of said compartment bases being longer than the length of each of said shelf compartments; and
the front end region and the rear end region of each of said upright segments projecting beyond the compartment bases in a direction defined by the width of said compartment bases.

5,354,126
EARTHQUAKE-RESISTANT PROTECTIVE ENCLOSURE
Albert Pedrego, 1450 Locust Ave. Unit 105, Long Beach, Calif. 90813
Filed Jan. 7, 1993, Ser. No. 1,749
Int. Cl.[5] A47B *83/00*
U.S. Cl. 312—237 **13 Claims**



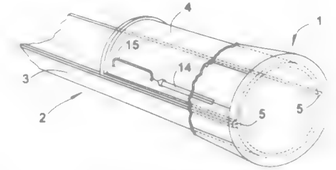
1. A protective enclosure for a human during an earthquake, comprising a rectangular housing that includes a floor, rear wall, two side walls, and a roof wall; said floor and said walls being formed of rigid earthquake-resistant panels; said side walls having front edges defining an access opening; two L-shaped door guidance tracks extending along the roof wall and front edges of said side walls; a flexible door spanning said side walls for opening or closing the access opening; said flexible door comprising a plurality of rigid slats hingedly connected together, and a plurality of rollers carried by said slats within said door guidance tracks; said door having an open position extending along the roof wall and a closed position located within the access opening; and resilient cushion means on the inner surfaces of said rear wall, side walls, floor, roof and flexible door, whereby a human being within the housing is at least partially protected from injury during an earthquake.

5,354,127
SEGMENTED MIXING AUGER
William Del Zotto, 1601 SW. 27th Ave., Ocala, Fla. 32674, and William Ackerson, Rte. 2, Sturgeon Lake, Minn. 55783
Continuation of Ser. No. 815,568, Dec. 26, 1991, abandoned, which is a continuation of Ser. No. 506,778, Apr. 10, 1990, abandoned. This application Jan. 21, 1994, Ser. No. 185,315
Int. Cl.[5] B28C *5/16, 7/16*
U.S. Cl. 366—27 **9 Claims**



1. Conveyor apparatus comprising:
a) a housing including bottom, side and end walls, wherein said walls define a single, uninterrupted mixing cavity having first and second continuous sections, wherein said first section extends from a first end wall to a region of said cavity where a second end wall depends from a bottom wall of said first section, wherein said second section extends from said first section and between said second end wall and a third end wall, and wherein a bottom wall of said second section includes an outlet port, and further including a plurality of hinged covers which mount over said first and second sections, except in the region of an inlet port where a charge of mixture components is received;
b) a first auger mounted to extend between said first and third end walls and including a first shaft and a first web, wherein said first web helically projects from said first shaft, wherein said first web includes a plurality of voids intermittently spaced along the length of said first shaft and one of which voids spans said second section;
c) a second auger mounted beneath and parallel to said first auger to extend between said second and third end walls and including a second shaft and a second web, wherein said second web helically projects from said second shaft;
d) drive means for rotatively driving said first auger; and
e) coupling means mounted to said third end wall for coupling said first auger to said second auger such that said second auger rotates at a different rate of rotation than said first auger and whereby the charge of mixture components are blended by both of said first and second augers.

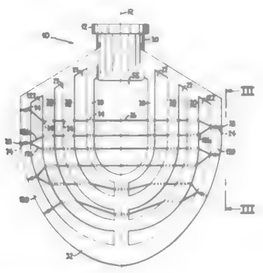
5,354,128
CONCRETE MIXER CHUTE CAP
Thomas W. Lewis, 1267 Fremont St., San Jose, Calif. 95126
Filed Jul. 19, 1993, Ser. No. 93,354
Int. Cl.[5] B28C *7/16*
U.S. Cl. 366—68 **1 Claim**



1. An apparatus for capturing the unintentional discharge from a concrete mixer discharge chute of the type having a first generally concave section and a second generally concave section, said sections being connected by a hinged connection such that the concave sections face one another when the second section folds back onto the first section for storage or travel, said apparatus comprising:
a flexible cap of an impermeable material, said cap having a first open end, and a second closed end, the open end having a flexible, elastic edge .having a dimension when contracted which will snugly fit over the folded concrete mixer chute at the hinged end, and which when expanded will allow the installation of the cap over the folded end of the chute;
a plurality of elastic retaining means having a first end engaged to said elastic edge, and having a second end, said elastic retaining means having a sufficient length such that the second end will reach the discharge end of the discharge chute when the cap is installed on the folded end of the chute;
engagement means affixed to the second end of the elastic retaining means, for removably engaging the end of the elastic retaining means to the end of the discharge chute or to an intermediate fixed point.

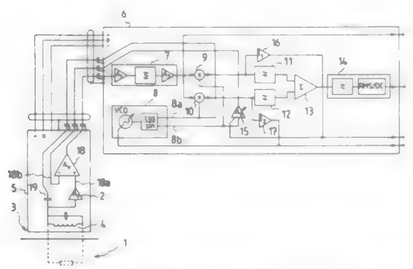
VOL 1167 ISS 2 OC 11 1994 UMI

5,354,129
MIXING-CUTTING PADDLE
Donald H. Yowell, 1520 Lindberg Rd., Bethlehem, Pa. 18017
Continuation-in-part of Ser. No. 105,118, Aug. 12, 1993. This application Mar. 10, 1994, Ser. No. 208,737
Int. Cl.[5] B01F *7/18*
U.S. Cl. 366—343 14 Claims



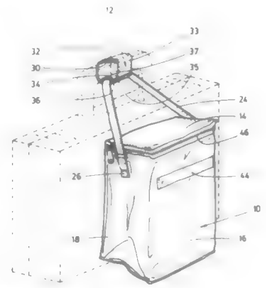
1. A mixing-cutting paddle comprising:
a hub at one end of the paddle;
a plurality of mixing paddle arms including a fan-like array of interconnected arms defining a plurality of slots therebetween, outermost ones of the arms being at opposite sides of the paddle; and
a cutting wire member secured to the mixing arms, the cutting wire member extending across a slot defined between the outermost arm and an adjacent one of the mixing arms, whereby the combination of mixing arms, and cutting wire member extending across the slot as aforesaid, forms a plurality of multidirectional mixing and cutting components of the paddle for producing an essentially dry, homogeneous, powdery-type mixture.

5,354,130
METHOD AND APPARATUS FOR MEASURING THE TEMPERATURE OF AN ELECTRICALLY CONDUCTIVE MATERIAL
Heikki Seppä, and Lauri Holappa, both of Espoo, Finland, assignors to Valtion teknillinen tutkimuskeskus, Espoo, Finland
PCT No. PCT/FI90/00046, § 371 Date Jul. 30, 1992, § 102(e) Date Jul. 30, 1992, PCT Pub. No. WO91/12503, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 14, 1990, Ser. No. 917,116
Int. Cl.[5] G01K *7/30*
U.S. Cl. 374—175 2 Claims



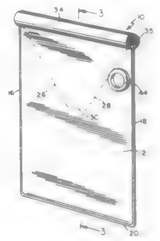
1. Method for measuring the temperature of an electrically conductive material, based on the measurement of the thermal noise of the material, characterized in that the fluctuation of the magnetic field generated by the random motion of the charge carriers in the conductive material is measured using a resonant circuit (3) without contact with the material (1) under measurement;
wherein the measured high-frequency noise is mixed down with low frequencies and detected;
wherein the mixed noise signal ($<U^2>$) is detected, the resonant frequency (ω_o) and impedance of the resonant circuit (3) are measured and the temperature (T_x) of the object under measurement is calculated from these results;
wherein the impedance of the resonant circuit (3) is measured by supplying the circuit with a current (I) and a voltage (U) of inverted phase relative to the current, that the frequency and the current amplitude are so adjusted that the signals generated by the current and voltage will cancel each other, so that in the balanced state the resonant frequency (ω_o) is obtained directly from the frequency and the voltage/current ratio (U/I) is directly proportional to the impedance of the resonant circuit (3).

5,354,131
BAG HANDLE WITH SUPPORT LOOP
Melvin S. Mogil, Toronto, Canada, assignor to California Innovations Inc., Willowdale, Canada
Filed Mar. 18, 1993, Ser. No. 34,385
Int. Cl.[5] A45C *3/00, 11/20, 13/26*
U.S. Cl. 383—24 15 Claims



11. A container system, comprising:
a flexible bag having a zipper for sealing the bag;
a flexible handle attached to the bag; and
a flexible clasp coupled to the handle and having first and second ends and a middle section disposed therebetween, the first end including a hook portion of a hook and loop fastening system and the second end including a loop portion of a hook and loop fastening system;
wherein the clasp is looped around another article and the hook and loop portions on the ends are engaged so that the bag is supported thereby; and
wherein the bag includes an exterior surface having a portion of a hook and loop fastening system disposed thereon and a top portion having an interior surface with a corresponding portion of a hook and loop fastening system disposed thereon, such that the top portion of the bag can be folded over the exterior surface so that the hook or loop portion on its interior surface is engaged by the corresponding hook or loop portion on the exterior surface.

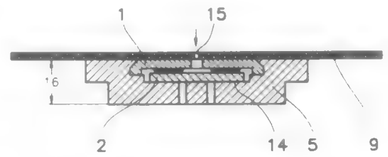
5,354,132
FLUID CONTAINMENT BAG
Ruth E. Young; Daniel L. Young, both of Escondido; Richard E. Warrick, Encinitas, and Clarence A. Cassidy, Carlsbad, all of Calif., assignors to American Innotek, Inc., San Marcos, Calif.
Division of Ser. No. 657,354, Feb. 15, 1991, Pat. No. 5,116,139, and a continuation-in-part of Ser. No. 404,734, Sep. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 3,848, Jan. 14, 1987, abandoned. This application Apr. 9, 1992, Ser. No. 865,454
The portion of the term of this patent subsequent to May 26, 2009, has been disclaimed.
Int. Cl.[5] B65D *30/24*
U.S. Cl. 383—49 49 Claims



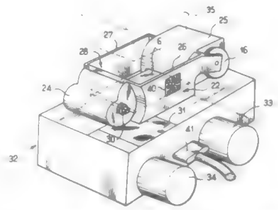
1. A containment bag for bodily fluids which comprises:
a bag having a hollow interior defined by two sides meeting at opposite edges, a bottom and a top, with said edges and bottom sealed and said top at least partially open to receive said bodily fluids;
stiffening means aligned with and adjacent to said top of said bag for resiliently biasing said top into an opened position, said stiffening means comprising at least one flexible, resilient elongated member in contact with said bag sides adjacent said top;
funnel means within said interior and having an open top, said funnel means being secured to said bag at said top of said bag, and extending downwardly within said interior to an open bottom for conduction of fluid entering said open top through said funnel means and into said bag, with the open bottom of said funnel being disposed intermediate between said top and bottom of said bag, said open bottom being free from attachment to said sides of said bag such that flow of fluid within said bag back toward said funnel means acts to close said funnel means to prevent escape of said fluid from said bag.

5,354,133
RELIEF VALVE
Gino Rapparini, viale Roma 17, 40139 Bologna, Italy
Filed Dec. 14, 1993, Ser. No. 166,044
Claims priority, application Italy, Jun. 18, 1991, BO 91 A 000213
Int. Cl.[5] B65D *33/01*
U.S. Cl. 383—103 15 Claims

1. A relief valve comprising
a valve body having in part an upper flat surface, having a valve seal seat disposed on its upper side outside of said flat surface, having a valve body venting hole disposed in the area of the valve seal seat, and having a peripheral groove recessed into the upper side of the valve body and surrounding the valve seal seat;
a covering disk having an upper flat surface having a venting hole and having a slanted edge fitted into the peripheral groove, wherein the upper flat surface of the covering disk is coplanar with the upper flat surface of the valve body thereby forming a coplanar plane;
a membrane resting on the valve seal seat of the valve body;
a viscous layer disposed between the membrane and the valve seal seat, wherein the axial overall dimension of the assembled relief valve is defined by the thickness of the valve body, and wherein the coplanar plane, formed by the upper flat surface of the covering disk and by the upper flat surface of the valve body, is provided for thermosealing said relief valve to an inner sidewall of a flexible container, wherein the inner sidewall is provided with a relief hole, and wherein said relief valve thereby presents a flat facing surface toward the inner sidewall of said flexible container.



5,354,134
DEVICE FOR REGISTERING THE OPERATIONS OF A THERMAL TRANSFER PRINTER
Bernard Patry, Orsay, France, assignor to Axiohm, Montrouge, France
Filed Jun. 16, 1993, Ser. No. 77,107
Claims priority, application France, Jun. 24, 1992, 92 07726; Apr. 21, 1993, 93 04683
Int. Cl.[5] B41J *3/42, 35/28*
U.S. Cl. 400—73 5 Claims



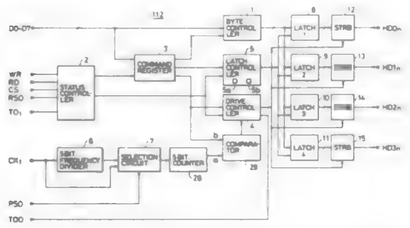
1. A device for reading printing formed by a thermal transfer printer having a cassette in which a film carrying transfer ink is unwound from a first spool, passed over a heating print head and thereafter wound onto a second take-up spool, each spool including coupling means for coupling the spools to a drive member, comprising a window in the cassette between the two spools in which faces of the film are uncovered, a stand, drive means support by the stand and including coupling members complementary to the coupling means carried by each of the spools, and printing reader means situated to look at the window of the cassette when the cassette is installed on the stand.

5,354,135
RECORDER AND DOT PATTERN CONTROL CIRCUIT
Wataru Sakagami, and Akira Nagatomo, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 1, 1985, Ser. No. 761,503
Claims priority, application Japan, Aug. 3, 1984, 59-162802; Dec. 27, 1984, 59-281621; Dec. 27, 1984, 59-281623
Int. Cl.[5] B47J *5/30*; G06K *3/00*
U.S. Cl. 400—124 8 Claims

1. A recorder comprising:
interface means adapted to be connected to an external unit for entering dot pattern data and command data;

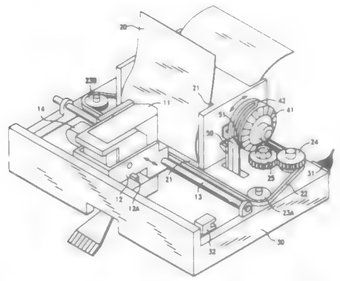
VOL 1167 ISS 2 OCT 11 1994 UMI

first memory means for storing the dot pattern data;
second memory means for storing the command data;
recording means for recording the contents of said first memory means; and
control means for writing command data in said second



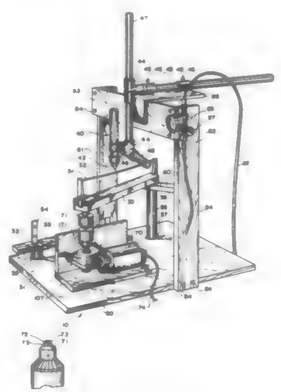
memory means upon receipt of a writing instruction signal, for reading command data out of said second memory means upon receipt of a reading instruction signal, and for initiating recording by said recording means upon receipt of either the writing instruction signal or the reading instruction signal.

5,354,136
PRINTER FEED MECHANISM
Hiroshi Takizawa, and Toshiaki Watanabe, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Oct. 14, 1992, Ser. No. 961,553
Claims priority, application Japan, Oct. 14, 1991, 3-264308; Apr. 1, 1992, 4-79951
Int. Cl.[5] B41J *19/70*
U.S. Cl. 400—185 **15 Claims**



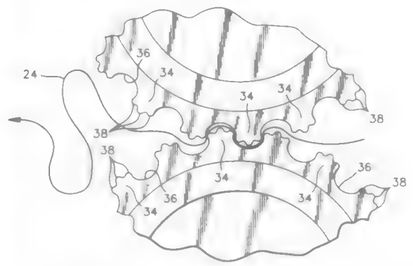
1. A printer that prints on an output medium by moving a print head mounted on a carriage adjacent to a platen supporting the medium, comprising:
a single reciprocatable motor drive source for generating a rotational force;
a drive gear coupled to said motor drive source comprising first and second coupling means for transferring the rotational force generated by said motor drive source;
carriage reciprocation means coupled to said first coupling means of said drive gear for reciprocating the print head carriage laterally across the output medium adjacent to the platen;
paper feeding means for feeding the output medium past said print head;
rotary transfer means coupled to said second coupling means of said drive gear comprising a cylindrical cam wheel coupled to said second coupling means of said drive gear having a first preselected cam profile formed on one face surface thereof and one first cam follower lever, said rotary transfer means being configured to vary the relative magnitude of rotation transferred in response to reciprocating motion for said motor drive source; and
transmission means coupled to said rotary transfer means and said paper feeding means, said first cam follower lever being coupled between said cam wheel and said transmission means and configured to interact with said first cam profile so as to rotate about a fixed axis and transfer rotary motion of at least two different magnitudes to said transmission means, said transmission means for transferring rotation in one preselected direction to the paper feeding means.

5,354,137
RIBBON RE-INKING METHOD AND APPARATUS
Barry L. Verdun, 1266 B Highway 1, and Nelson A. Verdun, Jr., 313 Hermitage Dr., both of, Thibodaux, La. 70301
Filed Nov. 25, 1992, Ser. No. 981,235
Int. Cl.[5] B41J *31/14*
U.S. Cl. 400—197 **13 Claims**



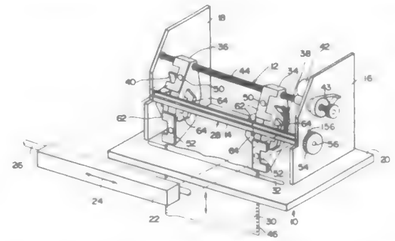
1. Apparatus for re-inking ribbons in ribbon cartridges having an exposed portion of ribbon and a ribbon driver, the apparatus comprising:
(a) a base means;
(b) securing means for securing a ribbon cartridge including a protruding ribbon driver to the base means;
(c) a drive means for turning a ribbon driver of a ribbon cartridge;
(d) coupling means for coupling the drive means and a ribbon driver of a ribbon cartridge, the coupling means having a variable-diameter receiving means for receiving ribbon drivers of various diameters without removing the receiving means from the apparatus;
(e) means for adjusting the variable-diameter receiving means so as to clamp ribbon drivers of various diameters;
(f) an ink-dispensing means for dispensing ink onto ribbon in a ribbon cartridge; and
(g) adjusting means for moving the ink-dispensing means away from and relative to a ribbon cartridge which has a ribbon driver coupled to the drive means after the ribbon driver is coupled to the drive means.

5,354,138
SELF ADJUSTING, LOW TORQUE RIBBON DRIVE SYSTEM
Robert W. Daggs, Simi Valley, Calif., assignor to General Ribbon Corporation, Chatsworth, Calif.
Continuation-in-part of Ser. No. 989,339, Dec. 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 985,002, Dec. 2, 1992, abandoned. This application Feb. 9, 1993, Ser. No. 15,342
Int. Cl.[5] B41J *33/24*
U.S. Cl. 400—223 **10 Claims**



1. A ribbon cartridge and self adjusting, low torque ribbon drive system, comprising:
a housing having a top, a bottom and a plurality of sides extending between said top and said bottom;
a ribbon chamber disposed in said housing;
a ribbon outlet disposed in said housing in communication with a first end of said ribbon chamber;
a ribbon inlet disposed in said housing in communication with a second end of said ribbon chamber;
an endless ribbon arranged partially in said housing and partially outside said housing along a ribbon path extending sequentially through said chamber, said ribbon outlet, said ribbon inlet and back to said chamber;
a gear system disposed in said housing for driving said ribbon along said ribbon path, said gear system having a plurality of spur gears including a drive gear and an idler gear arranged in intermeshing engagement, each said gear having a compound curvilinear tooth configuration, at least one of said gears being slideably mounted in said housing for positioning relative to an adjacent intermeshing gear in response to tension on said ribbon;
said drive gear and said idler gear each including a primary tooth configuration defined by a plurality of generally semicircular teeth separated by opposing generally semicircular gaps;
said drive gear and said idler gear further having a secondary tooth configuration defined by a plurality of ribs arranged on and extending about radii of each primary gear tooth, each primary tooth of said drive gear and said idler gear including at least one or more such ribs, said ribs being generally radially shaped;
said slideably mounted gear being mounted in a slot in said housing, and an adjacent intermeshing gear being mounted on a fixed axis, said slot having a first end and a second end, said first end being further away from said fixed axis than said second end, said slot being oriented so that the distance between said slot-mounted gear and the adjacent intermeshing gear changes as the slot-mounted gear moves from one end to the other end of said slot;
said ribbon extending around a side of said slot-mounted gear closest to said first end of said slot and thereafter between said slot-mounted gear and the adjacent intermeshing gear.

5,354,139
PAPER FEED SYSTEM HAVING MECHANISMS ENGAGING OPPOSITE EDGES OF PRINT PAPER ABOVE AND BELOW PRINT STATION OF PRINTER
Gordon B. Barrus, San Juan Capistrano, and Leo J. Emenaker, El Segundo, both of Calif., assignors to Printronix, Inc., Irvine, Calif.
Filed Apr. 7, 1989, Ser. No. 335,104
The portion of the term of this patent subsequent to Dec. 11, 2008, has been disclaimed.
Int. Cl.[5] B41J *11/26*
U.S. Cl. 400—616.1 **11 Claims**



1. A paper feed mechanism for feeding a length of paper through a print station comprising the combination of an endless paper feed member for engaging a length of paper to feed the length of paper through a print station, means defining an endless path of movement for the paper feed member, the endless path of movement including a pair of side portions disposed adjacent the print station on opposite sides of the print station, means for varying the length of the endless path of movement between the pair of side portions thereof, and means within the endless path of movement for resiliently biasing and thereby tensioning the endless paper feed member, the means for varying the length of the endless path of movement between the pair of side portions thereof comprising a rotatable cam, a pivotable lever arm assembly engaging the cam and a pulley rotatably mounted on the pivotable lever arm assembly and engaging the endless paper feed member.

5,354,140
COVERED WRITING INSTRUMENT, AND PROCESS FOR MAKING SUCH WRITING INSTRUMENT
Michael J. Diakoulas, 132 Othoridge Rd., Lutherville, Md. 21093
Filed Oct. 18, 1993, Ser. No. 138,756
Int. Cl.[5] B43K *29/00, 7/00*
U.S. Cl. 401—6 **6 Claims**



1. In a writing element having a front portion and a rear portion and including a hollow barrel further having a reser-

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voir of ink therebetween, a writing tip at the front portion of the barrel and connected to the reservoir, and a cap at the rear portion of the barrel, the improvement which comprises at least one strand of coated wire wound spirally around the barrel, the strand having a pair of ends, one end of which being bent back into the hollow barrel and being retained between the writing tip and the barrel, and the other end of which being bent back into the hollow barrel and being retained between the cap and the barrel, thereby providing a decorative ball-point pen with an improved gripping surface.

5,354,141

MECHANICAL PENCIL WITH SHAKING TYPE LEAD-FEEDING MECHANISM

Hiroyuki Watanabe, Hiratsuka, Japan, assignor to Pilot Precision Kabushiki Kaisha, Kanagawa, Japan

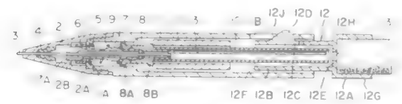
PCT No. PCT/JP92/00255, § 371 Date Nov. 3, 1992, § 102(e) Date Nov. 3, 1992, PCT Pub. No. WO92/15462, PCT Pub. Date Sep. 17, 1992

PCT Filed Mar. 4, 1992, Ser. No. 946,292

Claims priority, application Japan, Mar. 4, 1991, 3-18730; Mar. 6, 1991, 3-19647; Mar. 11, 1991, 3-21359; Mar. 11, 1991, 3-70623; Mar. 29, 1991, 3-28751; Jun. 13, 1991, 3-53041

Int. Cl.[5] **B43K** *21/16, 29/02*

U.S. Cl. 401—65 **9 Claims**



1. A mechanical pencil comprising:

a cylindrical casing having a front end portion and a rear end portion, and an opening extending through the rear end portion of the casing in the longitudinal direction thereof;

a lead holding chuck disposed in said cylindrical casing adjacent said front end portion;

a tightening member disposed in the casing adjacent to said lead holding chuck and by which tightening member said chuck is opened when the chuck is in a first position so that lead held thereby can be fed and by which tightening member said chuck is closed to fix lead in place when the chuck is in a second position located rearwardly of said first position in the casing

spring means disposed in said casing for resiliently urging said chuck rearward to said first position;

a lead reservoir connected to a rear portion of said lead holding chuck, said lead reservoir defining a chamber used to store a pencil lead to be fed to said chuck;

a weight reciprocally movable along said lead reservoir in the longitudinal direction of said casing so as to apply an inertial force to said chuck when said cylindrical casing is shaken, said inertial force acting in a direction extending from said second position to said first position, whereby when said casing is shaken hard enough said chuck is moved to said first position thereof by said weight; and

a knock member disposed at said rear end portion of said cylindrical casing and freely slidable in said casing in said longitudinal direction between a first position and a second position in abutment against said lead reservoir,

said knock member including a rear cylindrical portion, a front cylindrical portion protruding forward from said rear cylindrical portion and freely slidable in said rear end portion of the casing, said rear cylindrical portion having a larger outer diameter than said front cylindrical portion, an eraser fitted in said rear cylindrical portion and exposed rearwardly thereof, and a resilient member disposed on said front cylindrical portion and having a stop portion protruding radially outwardly from said front cylindrical portion into said opening in the rear end portion of said casing, said stop portion being freely movable over a predetermined distance in said longitudinal direction of the casing so as to allow said knock member to slide freely in the longitudinal direction, said front cylindrical portion having a recess therethrough which extends around and forms said resilient member having said stop portion, and said front cylindrical portion having a forward end which is in a longitudinally opposing relation to said weight, the weight being slidable into abutment with the forward end of the front cylindrical portion of said knock member.

5,354,142

RING BINDER

Cheng H. Yu, Hong Kong, Hong Kong, assignor to World Wide Stationery Manufacturing Company Limited, United Kingdom

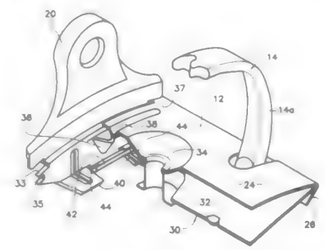
Continuation-in-part of Ser. No. 696,240, May 6, 1991, Pat. No. 5,180,247. This application Dec. 4, 1991, Ser. No. 803,339

Claims priority, application European Pat. Off., May 3, 1991, 91304057.2

The portion of the term of this patent subsequent to Jan. 19, 2010, has been disclaimed.

Int. Cl.[5] **B42F** *3/04*

U.S. Cl. 402—41 **19 Claims**



1. A ring binder including a base member supporting a plurality of ring members, the base member comprising a rigid upper structure supporting a pivotable lower structure to which the ring members are mounted, an opening mechanism at one or each end of the base member for opening the plurality of ring members, There wherein the sides of the opening mechanism are permanently in contact with and pivotably supported on and by the lower structure, and lock means to lock the opening mechanism in its closed position.

5,354,143

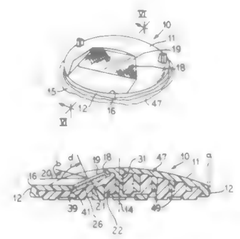
PAVEMENT MARKERS AND METHOD FOR MAKING

Henry Lindner, Elgin, Ill., assignor to Elgin Molded Plastics, Inc., Elgin, Ill.

Filed Nov. 19, 1992, Ser. No. 978,907

Int. Cl.[5] **E01F** *9/00*

U.S. Cl. 404—9 **5 Claims**



1. A pavement marker comprising:

(A) a unitarily molded flattened based block having:

(1) a transversely extending central channel defined therethrough,

(2) a generally convex upper surface that has a plurality of troughs defined therein,

(3) a generally convex thickened side perimeter,

(4) a generally planar bottom surface, and

(5) said base block having defined in said upper surface a first flattened recessed area; and

(B) a flattened lenticular retro-reflective reflector means with a smooth planar front face, a prismatically surfaced back face, and a perimetrically extending side wall, and said side wall rests upon said first flattened area so that said back face is in spaced relationship to said first flattened recessed area; and

(C) a unitary molded cap structure that clads said base block and said reflector side wall, said cap structure having:

(1) a protrusion that fills said channel,

(2) a dish-configured portion which

(a) has a generally concave inner surface that extends over said upper surface and fills said troughs,

(b) has a generally convex outer surface,

(3) a generally convex side portion that extends over said side perimeter, and

(4) an aperture defined therein that is located over and adjacent to said reflector means and through which said reflector means is visible, said cap structure having edge portions extending around said aperture that abut against and overlap upon portions of said side wall of said reflector means,

said cap structure having been so molded in situ by flowing a thermoplastic resin through said central channel and over said upper surface and said side perimeter;

whereby the interrelationship between said base block, said cap structure and said reflector means is such that said cap structure is mechanically interlocked with said base block and said reflector means is sealed in, not separatable from, and not replaceable in said pavement marker with a space being located between said reflector back face and said first flattened recessed area.

5,354,144

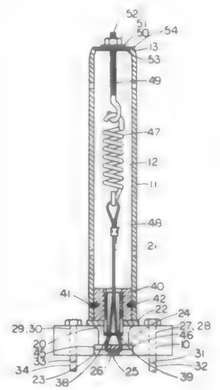
ADJUSTABLE AND RECOVERABLE VERTICAL ASSEMBLY

Allen J. Lizakowski, 4414 Black Walnut Woods, San Antonio, Tex. 78249

Filed Oct. 29, 1993, Ser. No. 146,443

Int. Cl.[5] **E01F** *9/00*

U.S. Cl. 404—10 **6 Claims**



1. A self uprighting vertical assembly comprising:

(a) a base having a center and being adapted to be attached to any suitable surface, said base comprising

(1) an orifice disposed approximately in the center of said base,

(2) a rectangular plate having a bottom, two longitudinal sides, and two extremities, said rectangular plate being approximately centered on said orifice and recessed in the bottom of said base, said rectangular plate being provided with an orifice at each of the extremities of said rectangular plate for attachment with fasteners to said base, and said rectangular plate being provided with a concave groove located at an approximate center of each of the two longitudinal sides of said rectangular plate and a plurality of orifices disposed on the extremities of said rectangular base through which fasteners or a bonding material may be passed to attach said rectangular base to any suitable surface, and

(b) an alignment flange having a vertical tube with a lower end sealed by a lower sealing plate, approximately an upper half of said vertical tube being threaded with standard pipe threads, and said upper half of said tube being distinguished from a lower half by a washer placed over and secured to said vertical tube, the lower sealing plate of said vertical tube having two lower orifices, and

(c) a tubular adapter of polymer material having an inside surface threaded with standard pipe threads, designed to accept insertion of said vertical tube, and

(d) a tubular post of polymer composition having side walls and a top and having an inside diameter of equal proportion to an exterior diameter of said tubular adapter, a plurality of orifices through the side walls of said tubular post, said orifices being provided to be fitted with fasteners to permit attachment of signage to said tubular post and to secure said tubular post to said tubular adapter, and said tubular post containing and supporting an internal load cell having a lower termination point, and

(e) an interconnecting cable looped around said rectangular plate in said base then entering said lower orifices in said lower sealing plate, then entering said tubular post, looping through the lower termination point of said load cell in said tubular post and thereafter, terminating with a cable stop sleeve, said cable thereby securing all elements of said vertical assembly.

5,354,145

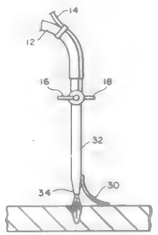
COLD-APPLIED FAST-SETTING ROAD REPAIR MATERIAL, APPLICATOR, AND METHOD

Carl L. Sterner, 3860 Nord Rd., Bakersfield, Calif. 93312-9215

Filed Dec. 10, 1991, Ser. No. 804,650

Int. Cl.[5] **E01C** *7/06, 23/02, 23/08*

U.S. Cl. 404—75 **3 Claims**



1. A method of filling cracks in a traffic-bearing surface comprising the steps of:

a) applying an anionic emulsion including water, asphalt, latex, and ground rubber into a crack to be filled;

b) adding a hardening agent with the anionic emulsion as it is being applied, wherein the step of adding a hardening

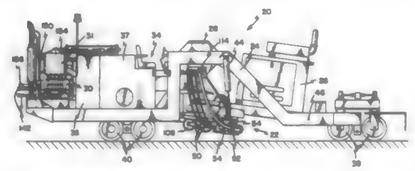
VOL 1167 ISS 2 OCT 11 1994 UMI

agent comprises the step of mixing salt water with the anionic emulsion as it is being applied.

5,354,146
PAVEMENT DIAMOND GRINDER

Dusten C. O'Konek, South Haven, Minn., assignor to Diamond Surface, Inc., Maple Grove, Minn.

Continuation-in-part of Ser. No. 546,417, Jun. 29, 1990, Pat. No. 5,161,910. This application Jul. 7, 1992, Ser. No. 909,648
The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.
Int. Cl.[5] E01C *23/08*
U.S. Cl. 404—90 **16 Claims**

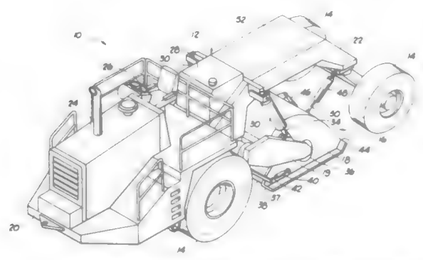


1. A grinding apparatus, comprising:
a) a rotating arbor having an annular end portion including an interior surface having threads thereon;
b) a multiplicity of radial blades mounted along said arbor;
c) a motor at each end of said arbor, each of said motors having a splined motor shaft;
d) adapters directly connecting said ends of said arbor to said splines of said motor shafts, wherein said adapters have an exterior threaded surface threading to the threads of the annular end portion of the arbor and an end portion having radially inward extending projections inserting between the splines for engaging the motor shaft; and
e) a vacuum intake shroud extending along the arbor including a deflecting plate and lower flap extending to the ground for deflecting debris up and away from the arbor to a vacuum source.

5,354,147
PULVERIZING MACHINE HAVING A CUTTER ASSEMBLY TOWED IN BOTH FORWARD AND REVERSE DIRECTIONS

George W. Swisher, Jr., 1500 Dorchester Dr., Oklahoma City, Okla. 73120

Filed Jul. 8, 1993, Ser. No. 88,937
Int. Cl.[5] E01C *23/12*
U.S. Cl. 404—90 **13 Claims**

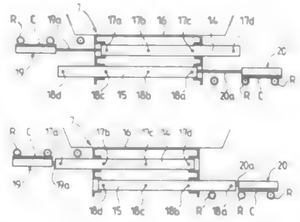


1. A machine for pulverizing a surface, the machine comprising:
a frame having a front end and a rear end;
a plurality of wheels rotatably mounted to said frame for supporting and moving said frame in a forward or a reverse direction;
a cutter assembly carried by said frame, said cutter assembly including:
a cutter housing having a front end, a rear end and a cutter opening disposed toward a surface to be pulverized; and
a cutter drum rotatably mounted within the cutter housing, the cutter drum having a plurality of teeth for pulverizing the surface while said frame is moving in either the forward or the reverse direction;
front tow means for towing the cutter housing while said frame is moving in the forward direction; and
rear tow means for towing the cutter housing while said frame is moving in the reverse direction.

5,354,148
APPARATUS FOR SPREADING A BONDING EMULSION, OR SIMILAR FLUIDS, AND ROAD-BUILDING MACHINE

Jean-Pierre Reymonet, Le Chesnay, France, assignor to Colas, Boulogne Billancourt Cedex, France

Filed Sep. 30, 1992, Ser. No. 953,797
Claims priority, application France, Oct. 1, 1991, 91 12068
Int. Cl.[5] E01C *23/07*
U.S. Cl. 404—102 **21 Claims**

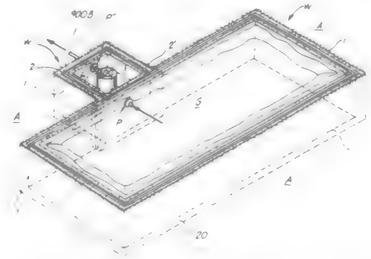


1. Apparatus for spreading a bonding emulsion for road asphalt, a bituminous fluid substance or a similar fluid substance onto the surface of a road, comprising:
a moving machine;
two spreading booms positioned on said moving machine and capable of moving transversely, in a to-and-fro motion, relative to a direction of movement of said moving machine, the to-and-fro motion of said two spreading booms being adjustable as a function of road width over which spreading is to occur to enable said two spreading booms to effect spreading over the entire road width;
a plurality of ejection nozzles on said two spreading booms;
feed circuits for feeding a substance to said plurality of ejection nozzles; and
motor elements to transversely drive each of said two spreading booms in the to-and-fro motion, so that said plurality of ejection nozzles are capable of performing continuous dynamic spreading on the road surface.

5,354,149
IN-GROUND BARRIER SYSTEM WITH PASS-THROUGH

Louis B. Breaux, Gretna, La., assignor to Barrier Member Containment Corp., Gretna, La.

Continuation-in-part of Ser. No. 985,944, Dec. 4, 1992, which is a continuation-in-part of Ser. No. 831,555, Feb. 5, 1992, Pat. No. 5,240,348, which is a continuation of Ser. No. 398,613, Aug. 25, 1989, Pat. No. 5,106,233. This application Jul. 19, 1993, Ser. No. 93,524
The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.
Int. Cl.[5] B09B *3/00;* **C02F** *11/12;* **E02D** *27/00*
U.S. Cl. 405—128 **10 Claims**

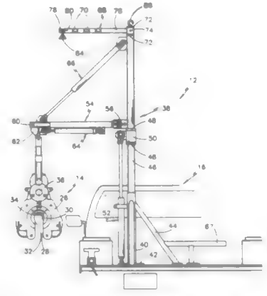


1. A method of producing an in-ground lateral containment barrier system, preventing the lateral migration of fluid contaminants in an area in the ground, while allowing controlled removal of some of the fluid contaminants from the contained area, comprising the following steps:
a. making an excavation around the area to be contained;
b. forming a fluid impermeable barrier wall in the ground around the contaminants by placing a series of elongated barrier members within the excavation and slidingly engaging and interconnecting them in a vertical manner, connecting them together, including the sub-steps of:
i. placing a first guide box assembly, having at least one longitudinal slot formed therein of a width to accommodate a barrier member, in the excavation,
ii. placing a subsequent series of guide box assemblies in the excavation adjacent to a preceding one of said guide box assemblies, each guide box assembly having at least one longitudinal slot formed therein of a width to accommodate a barrier member, the interiors of said series of guide box assemblies forming a continuous, open area communicating with said slot of said first guide box assembly, providing a temporary, open, protected work space for the insertion and assembly of the barrier members in the longitudinal slots of respective ones of said guide box assemblies,
iii. inserting a first barrier member in the longitudinal slot of said first guide box assembly, and
iv. slidingly engaging and connecting together, in longitudinal fashion, a further series of barrier members to said first barrier member in the temporary, open, protected work space formed by said guide box assemblies, forming a fluid impermeable barrier in the ground;
c. including a restricted, piped, pass-through through at least one of said barrier members, allowing the controlled removal of some of the fluid materials in the contained area through said pass-through; and
d. filling the excavation with material, laterally containing the contaminated area with the fluid impermeable barrier members, and ultimately removing at least the main structure of at least some of said guide box assemblies from said excavation.

5,354,150
TECHNIQUE FOR MAKING UP THREADED PIPE JOINTS INTO A PIPELINE

Joe M. Canales, P.O. Box 6, Benavides, Tex. 78341

Filed Feb. 8, 1993, Ser. No. 14,851
Int. Cl.[5] F16L *1/00*
U.S. Cl. 405—154 **29 Claims**

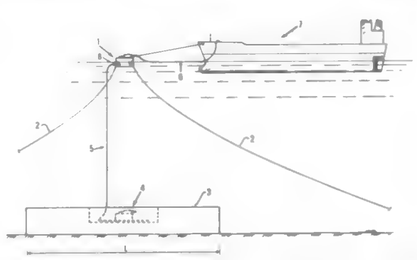


1. Apparatus for making up threaded pipe joints into a pipeline, comprising
a vehicle having a plurality of wheels and a direction of movement;
a mast on the vehicle;
a set of casing tongs having a movable central C-shaped member providing an axis, a pipe die for gripping a pipe joint and rotating the pipe joint about the axis; and
means suspending the casing tongs from the mast with the axis being
generally horizontal,
spaced from the vehicle and
extending in the direction of movement of the vehicle.

5,354,151
SYSTEM FOR LOADING AT SEA

Jean-Francois Giannesini, Saint Cloud, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

Filed Oct. 28, 1992, Ser. No. 924,050
Claims priority, application France, Dec. 28, 1990, 90 16440
Int. Cl.[5] E02D *23/02, 27/38*
U.S. Cl. 405—205 **13 Claims**



1. Loading system for transferring a fluid from a bottom structure positioned on a sea bed to a submersible transfer structure comprising means for anchoring said transfer structure, means for maneuvering said transfer structure to said bottom structure, said bottom structure comprising a receptacle, wherein said maneuvering means includes said anchoring means connected to a floating structure and ballasting means located between said transfer structure and said bottom structure, said anchoring means and said ballasting means being

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constructed so as to enable a displacement of said transfer structure into the receptacle of said bottom structure.

5,354,152

METHOD AND APPARATUS FOR CONVEYING ICE LUMPS

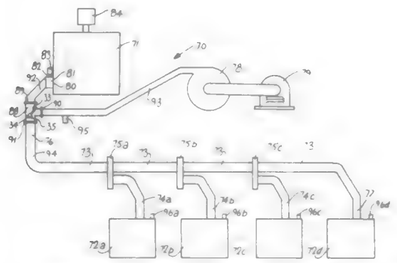
Robert C. Reinhardt, Shannon, and Richard M. Humphreys, Mount Merrion, both of Ireland, assignors to EOLAS - The Irish Science and Technology Agency, Dublin, Ireland

Filed Jul. 8, 1991, Ser. No. 726,679

Claims priority, application Ireland, Jul. 6, 1990, 2451/90; Jul. 6, 1990, 2454/90; Mar. 4, 1991, 704/91; Apr. 24, 1991, 1362/91

Int. Cl.[5] B65G *53/06*

U.S. Cl. 406—3 **15 Claims**



1. A method for conveying ice lumps from an ice lump source to a remote location through a conveying conduit means by a conveying medium, the method comprising the steps of sequentially:

delivering a batch of ice lumps into the conveying conduit means at an upstream end of the conveying conduit means, with the conveying medium isolated from the conveying conduit means,

supplying the conveying medium to the conveying conduit means after the batch of ice lumps has been delivered into the conveying conduit means for conveying the batch of ice lumps to the remote location,

the supply of conveying medium being cut off to the conveying conduit means on each batch of ice lumps having been delivered to the remote location, and

the next batch of ice lumps being delivered into the conveying conduit means on the previous batch having been delivered to the remote location.

5,354,153

MACHINE TOOL PART LOADING AND UNLOADING METHOD AND DEVICE PARTICULARLY FOR MACHINING PRINTED CIRCUIT BOARDS

Renato Ottone, Ivrea; Luigi Piovano, S. Giusto Canavese, and Guido Gaida, Ponderano, all of Italy, assignors to Pluritec Italia S.p.A., Borgomanero, Italy

Filed Nov. 6, 1992, Ser. No. 972,975

Claims priority, application Italy, Nov. 8, 1991, T091 A 001155

Int. Cl.[5] B23B *35/00, 47/18*

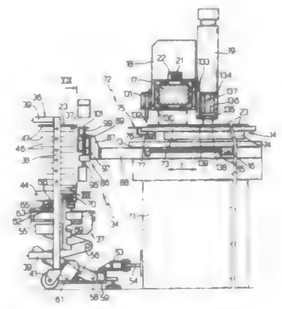
U.S. Cl. 408—1 R **21 Claims**

2. A method of loading and unloading a part (23) between a support (47) and a machine tool workpiece table (14) movable along at least one axis in a forward direction and in a return direction, including the following steps for loading said part (23):

engaging a first pin (32) of said part (23) with said table (14);

extracting from said support (47) the so engaged part (23) by moving said table (14) in said forward direction;

retaining a second pin (33) of said part (23) while said table (14) is moved in said return direction;



re-engaging said first pin (32) with said table (14); and additionally moving said table (14) in said forward direction.

5,354,154

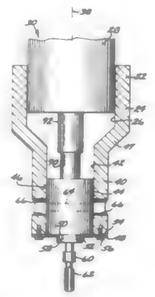
ATTACHMENT OF A TAPPING HEAD TO A DRIVE UNIT

Robin Hartley, 4082 Epanow Ave., San Diego, Calif. 92117

Filed Sep. 17, 1992, Ser. No. 946,968

Int. Cl.[5] B23B *47/00*

U.S. Cl. 408—139 **13 Claims**



1. A stabilizing support for attaching a tapping head to a drive having a spindle rotatable within a quill, the tapping head comprising a rotating portion and a nonrotating portion, the stabilizing support comprising:

a substantially cylindrically symmetric hollow tubular housing axially divided into two sections

a first section having a first bore sized to slip over and lock to a quill of a rotating drive, and

a second section having a second bore sized to receive a tapping head therein in a close sliding fit;

first means for releasably locking the housing to the drive quill; and

second means for releasably locking the nonrotating portion of the tapping head to the housing and for permitting the rotating portion of the tapping head to turn freely relative to the housing while holding the nonrotating part stationary against rotational movement.

5,354,155

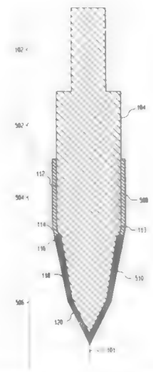
DRILL AND REAMER FOR COMPOSITE MATERIAL

Larry G. Adams, Arvada, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Nov. 23, 1993, Ser. No. 155,782

Int. Cl.[5] B23B *51/00*

U.S. Cl. 408—145 **13 Claims**



1. A drill bit, having a first end and second end, for creating a hole in a composite material, the drill bit comprising:

a tip at said first end;

a shank portion at said second end;

a grinder adjacent to said tip, for initiating the hole, said grinder portion having a substantially rectangular cross-section with substantially cylindrical surfaces on one pair of opposite sides, said substantially cylindrical surfaces of said grinder portion axially tapering towards said tip, said grinder portion having a grinding means on said substantially cylindrical surfaces; and

a reamer portion disposed between said grinder portion and said shank portion, for finishing said initiated hole, said reamer portion having a substantially rectangular cross section with substantially cylindrical surfaces of substantially constant diameter on one pair of opposite sides, said reamer portion having a reaming means on said substantially cylindrical surface.

5,354,156

DRILLING TOOL

Rainer von Haas, Geesthacht, and Manfred Wegener, Essen, both of Fed. Rep. of Germany, assignors to Krupp Widia GmbH, Essen, Fed. Rep. of Germany

PCT No. PCT/DE91/00425, § 371 Date Dec. 4, 1992, § 102(e) Date Dec. 4, 1992, PCT Pub. No. WO91/18700, PCT Pub. Date Dec. 12, 1991

PCT Filed May 22, 1991, Ser. No. 955,860

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1990, 4018043

Int. Cl.[5] B23B *51/00*

U.S. Cl. 408—223 **16 Claims**

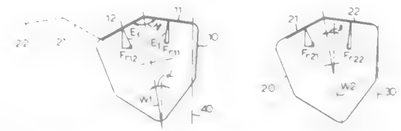
1. A drilling tool for drilling a bore in a solid metal workpiece, said tool comprising:

a shank having a central axis of rotation and formed with a frontal end;

a plurality of geometrically similar indexable inserts mounted on said frontal end and staggered angularly equidistantly in a direction of a tool rotation from one another on said end,

said inserts being spaced radially from said central axis at different radial distances, so that at least one of said plurality of inserts is an inner insert and another is an outer insert, each of said inner and outer inserts being formed with:

a respective pair of contiguous cutting edges of a uniform length engaging a workpiece, defining thereby a respective working area therein which overlaps another respective working areas defined by respective pairs of cutting edges of other inserts, the cutting edges of the respective pair extending toward one another at an obtuse angle having a respective axis of symmetry, a respective engaged cutting edge of said pair of the inner insert extending slightly beyond said central axis, at least one of the axes of symmetry of the respective pair



of cutting edges of said inner and outer inserts being inclined at a respective bisector angle not greater than 25° with respect to said central axis and being inclined to the axis of symmetry of the other of said inner and outer inserts at a sector angle differing from 0°, all of the effectively engaged cutting edges of said inner and outer inserts generating a resulting horizontal force component which substantially equals zero upon rotation of the tool and a cumulative residual radial force component forming with said resulting horizontal force component a residual force resultant directed radially toward the outer insert at a force angle differing therefrom by a maximum of 45°.

5,354,157

DEVICE FOR CONNECTING A SHANK TO A PROBE

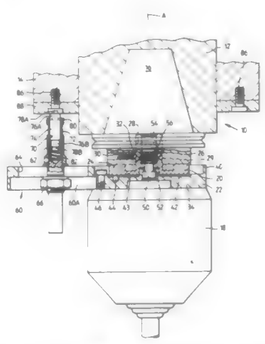
Peter J. Wells, Stonehouse; Andrew G. Butter, and Brian C. R. Henning, both of Bristol, all of United Kingdom, assignors to Renishaw plc, Gloucestershire, United Kingdom

Filed Dec. 6, 1993, Ser. No. 161,800

Claims priority, application United Kingdom, Dec. 12, 1992, 9225994.4

Int. Cl.[5] B23C *9/00;* **G01B** *7/28*

U.S. Cl. 409—133 **8 Claims**



1. A device for connecting a shank which is retainable in the rotating shaft of a spindle on a machine tool to a probe for inspecting the position or contour of a surface, the device including a first part fixable to the shank, a second part fixable

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to the probe, means for providing a retaining force to urge said first and second parts into stable engagement and means for permitting relative rotation of said first and second parts about an axis extending in the direction of the retaining force between the two parts, and wherein an arm on the second part is engageable with the spindle housing relative to which said shaft is rotatable, in order to rotationally constrain movement of the second part and thus the probe.

5,354,158

SIX AXIS MACHINE TOOL

Paul C. Sheldon, Mequon; Edward E. Kirkham, Brookfield; Lyle D. Ostby, West Allis, and Bruce P. Konkel, Muskego, all of Wis., assignors to Kearney & Trecker Corporation, Milwaukee, Wis.

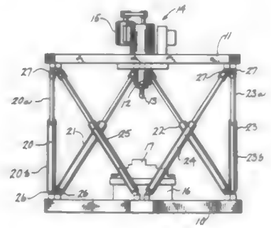
PCT No. PCT/US90/04797, § 371 Date Feb. 20, 1992, § 102(e) Date Feb. 20, 1992, PCT Pub. No. WO91/03145, PCT Pub. Date Mar. 21, 1991

PCT Filed Aug. 28, 1990, Ser. No. 835,949

The portion of the term of this patent subsequent to Jan. 29, 2008, has been disclaimed.

Int. Cl.[5] B23C *1/06*; B25J *11/00*

U.S. Cl. 409—201 **31 Claims**



1. A machine tool for locating a tool relative to a workpiece, comprising the combination of:

a pair of spaced supports, the tool being located with respect to one of the supports and the workpiece being located with respect to the other of the supports;

six leg members with each leg member being joined at a first point to one of the supports and being joined to the other support at a second point that is spaced along the leg member from the first point, the six leg members being arranged in circumferentially sequential pairs with the leg members of certain of the pairs crossing each other; and

means for individually manipulating at least certain of the leg members to vary the position of the points of such leg members relative to each other.

5,354,159

CABLE DRIVE FOR DRILLING MACHINE Z-AXIS

William V. Smith, Tustin, Calif., assignor to Excellon Automation, Torrance, Calif.

Filed Dec. 9, 1993, Ser. No. 164,463

Int. Cl.[5] B23B *47/18*

U.S. Cl. 409—235 **20 Claims**

1. Art apparatus for machining workpieces, comprising:

a work unit for securing a cutting tool;

a frame supporting said work unit permitting movement of said work unit along a vertical axis;

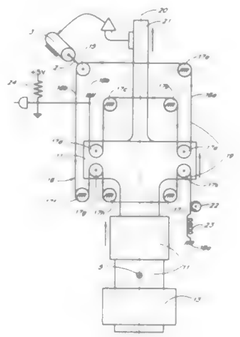
a drive mechanism for vertically reciprocating said work unit relative said frame along said vertical axis, said drive mechanism comprising:

at least four work unit pulleys attached to said work unit, said work unit pulleys arranged symmetrically about said axis;

at least four frame pulleys attached to said frame, said frame pulleys arranged symmetrically about said axis, wherein least two of said frame pulleys are attached to said frame above said work unit and at least two of said frame pulleys are attached to said frame below said work unit;

a flexible cable frictionally engaging each of said pulleys; and

a motor frictionally connected to said cable capable of selectively moving said cable in a first direction and a second direction, wherein said pulleys are arranged and said cable has a path such that when said cable is moved in said first direction said work unit is raised upward and when said cable is moved in said second direction said work unit is moved downward; and



a worktable defining a work station positioned beneath said work unit and adapted to secure a workpiece to said table during a machining operation, said worktable being movable in at least one direction in a horizontal plane so as to position a workpiece secured to said table at desired locations beneath said work unit.

5,354,160

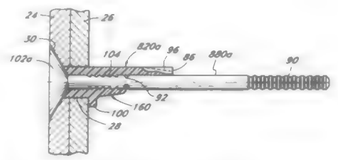
COMPOSITE FASTENER

John D. Pratt, Laguna Niguel, and Clyde D. Simmons, Riverside, both of Calif., assignors to Textron Inc., Providence, R.I.

Continuation-in-part of Ser. No. 742,636, Aug. 8, 1991, abandoned, and a continuation-in-part of Ser. No. 682,880, Apr. 8, 1991, Pat. No. 5,153,978, which is a continuation of Ser. No. 475,155, Feb. 5, 1990, abandoned. This application Aug. 7, 1992, Ser. No. 927,075

Int. Cl.[5] F16B *19/08*

U.S. Cl. 411—501 **6 Claims**



1. A composite fastener, comprising:

a tubular body having a shank and a tail of thermoplastic material, said tail being made deformable by a rotating die pressed against the tail;

a stem extending axially through said body, having a head at one end abutting and extending radially beyond one end of said shank, and a pulling end extending beyond said tail, said stem being made of a different material than said body.

5,354,161

CHECK BOOK ISSUING MACHINE

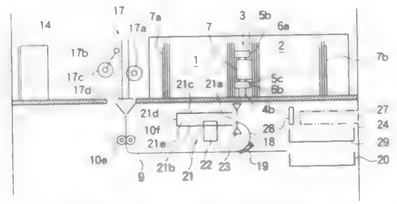
Hiroshi Chiba, and Hideyuki Ebihara, both of Kawaguchi, Japan, assignors to Laurel Bank Machines Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1993, Ser. No. 149,790

Claims priority, application Japan, Nov. 12, 1992, 4-302292

Int. Cl.[5] B42C *11/00*

U.S. Cl. 412—9 **36 Claims**



1. A check book issuing machine comprising a blank storing means for storing blanks including a plurality of check blanks, front covers and back covers, blank take-out means for taking out blanks stored in the blank storing means two or more times in an order such as a front cover, a predetermined number of check blanks and a back cover, thickness detecting means for detecting the thickness of the blanks taken out by the blank take-out means and outputting detection signals, read-out means for reading out a surface characteristics of the blanks taken out by the blank take-out means and outputting read-out signals, MICR character printing means for printing visually unrecognizable data consisting of MICR characters, printer means for printing visually recognizable predetermined data on a surfaces of at least the check blanks among said blanks, printed data read-out means for reading out data consisting of MICR characters printed on the surfaces of the check blanks by the MICR character printing means, blank stacking and transferring means for stacking a predetermined number of checks, one front cover and one back cover therein and holding the stacked checks, front cover and back cover for transferring them, staple means for binding one end portions of the predetermined number of check blanks, the one front cover and the one back cover stacked in and held between the blank stacking and transferring means, adhering means adapted for sticking an adhesive tape on the one end portions of the predetermined number of check blanks, the one front cover and the one back cover whose one end portions are bound by the stapler means and producing a check book, collecting box means for collecting blanks therein which are not suitable for being stacked in the blank stacking and transferring means, blank transporting means for transporting blanks between the blank storing means, the thickness detecting means, the read-out means, the MICR character printing means, the printer means and the printed data read-out means, and the blank stacking and transferring means and the collecting box means, fork means disposed among the printed data read-out means, the blank stacking and transferring means and the collecting box means and adapted for feeding the blanks to either the blank stacking and transferring means or the collecting box means, and control means for judging based upon the detection signals input from the thickness detecting means whether or not double feed of blanks occurs, judging based upon the read-out signals input from the read-out means whether or not a predetermined blank has been taken out, judging based upon the read-out signals input from the printed data read-out means whether or not print data consisting of the MICR characters have been printed on the check blanks by the MICR character printing means in a desired manner, driving the fork means to thereby feed to the collecting box double fed blanks, any blank other than a predetermined one and any check blank whose surface is not printed with the print data consisting of the MICR characters by the MICR character printing means in a desired manner, causing the blank stacking and transferring means to hold the predetermined number of check blanks, the one front cover and the one back cover when the predetermined number of check blanks, the one front cover and the one back cover have been stacked in the blank stacking and transferring means, causing the stapler means to bind one end portions of the predetermined number of check blanks, the one front cover and the one back cover held by the blank stacking and transferring means, causing the blank stacking and transferring means to transfer the predetermined number of check blanks, the one front cover and the one back cover to the adhering means, causing the adhering means to stick an adhesive tape on one end portions thereof so as to produce a check book and causing the blank stacking and transferring means to feed out the thus produced check book into take-out box means.

5,354,162

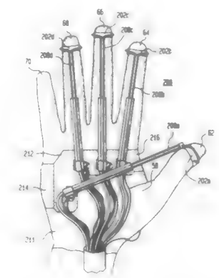
ACTUATOR SYSTEM FOR PROVIDING FORCE FEEDBACK TO PORTABLE MASTER SUPPORT

Grigore C. Burdea, Highland Park, and Daniel Gomez, Piscataway, both of N.J., assignors to Rutgers University, New Brunswick, N.J.

Continuation-in-part of Ser. No. 661,515, Feb. 26, 1991, Pat. No. 5,143,505. This application Aug. 31, 1992, Ser. No. 937,654

Int. Cl.[5] B25J *13/02*

U.S. Cl. 414—5 **16 Claims**



1. An actuator system for placement in a hand comprising:

a first digit support connectable to a first digit of said hand;

a palm support spaced from said first digit and positionable on the palm surface of said hand;

a first sensor means for generating electrical signals attached to said first digit support and a first actuator means and responsive to movement of said first digit;

said first actuator means extending between said first digit support and said palm support for providing force feedback to said first digit support as a result of said electrical signals generated by said first sensor means;

a first mount for connecting said first actuator means to said palm support; and

a first rotary sensor means attached to said first mount for measuring rotation of said first actuator means wherein said first rotary sensor measures an azimuthal angle ψ and a declination angle ϕ.

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5,354,163

THREE-DIMENSIONAL PARKING FACILITY

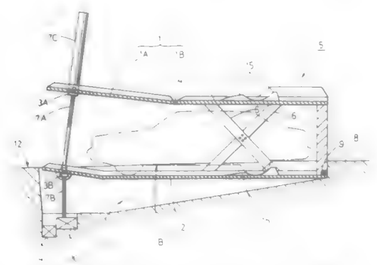
Kunio Mori, Mie; Sigeru Suzuki, Osaka; Fusako Suzuki, Osaka; Hisayo Minamide, Osaka; Yusako Sakai, Osaka; Nobuo Suzuki, Osaka; Takayo Hamazaki, Osaka; Makoto Takahashi, Hyogo, and Michiko Kume, Tokyo, all of Japan, assignors to Shin-Ichi Suzuki, Osaka, Japan

Continuation of Ser. No. 705,973, May 28, 1991, abandoned. This application Jan. 12, 1993, Ser. No. 3,214

Claims priority, application Japan, May 25, 1990, 2-136245; Feb. 15, 1991, 3-022095

Int. Cl.[5] **E04H** *6/06*

U.S. Cl. 414—229 **10 Claims**



1. A three-dimensional parking facility, comprising:

an upper parking member and lower parking member respectively coupled to opposing ends of an upstanding member so as to form a substantially C-shaped member extending from a front portion of said upper parking member through said upstanding member and a front portion of said lower parking member, a vehicle entering or exiting to or from at least one of said front portions of said upper and lower parking members;

means for swinging said upper parking member and said lower parking member, said C-shaped member being pivoted on a first horizontal axis on a solid foundation, said upper parking member having a front portion and a rear portion which are separated by a second horizontal axis; and

means, operably coupled to said solid foundation, for swinging said front portion of said upper parking member, wherein the first horizontal axis is at a lower end of the upstanding member, and is substantially at ground level, and wherein the foundation has a portion that is downwardly sloped toward an open end of the C-shaped member and the downwardly sloped portion of the foundation originates from substantially ground level proximate the first horizontal axis.

5,354,164

BOAT LAUNCHING APPARATUS

Stuart A. Goss, deceased, late of Salisburg, N.H. by Shirley A. Goss, heir , and Robert W. Bentley, P.O. Box 22, Salisbury, N.H. 03268, assignors to Robert W. Bentley, Salisbury, N.H.

Filed Jan. 21, 1993, Ser. No. 7,077

Int. Cl.[5] **B60P** *3/10*

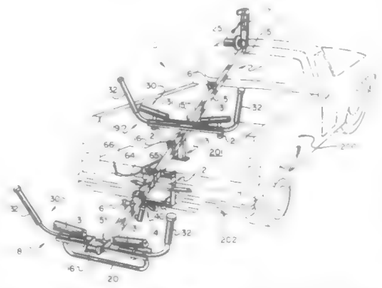
U.S. Cl. 414—462 **18 Claims**

13. A boat launching apparatus for use with a pick-up truck having a truck bed with a cab end and a tailgate end, the apparatus comprising:

a boat-carrying framework including an elongated main support beam having an inboard end and an outboard end, and a plurality of generally U-shaped cross beam members located at predetermined positions along a length of the main support beam for engaging sides of a boat;

a main support comprising a support bracket having an upper portion and a lower portion, the lower portion rigidly secured to, and centrally located on, the tailgate end of the bed of the pick-up truck; and

a main pivot operatively attached to both the main support beam and the upper portion of the support bracket, the main pivot passing through the main support beam along a direction substantially transverse to a direction of elongation of the support beam, the main pivot being positioned on the support beam so that the inboard end is



located substantially adjacent the cab end of the bed and the outboard end is located remote from, and outwardly of, the tailgate end of the bed, the main pivot being constructed and arranged so that the beam rotates on the main pivot from a boat-carrying position wherein the beam is substantially parallel with the bed to a boat-unloading position wherein the inboard end is located above the bed and the outboard end is located at a level below a level of the bed.

5,354,165

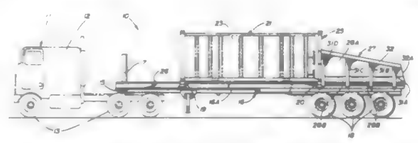
FRAMELESS CONTAINER TRANSPORT DUMP TRAILER

Howard Booher, 1871 State Rte. 44, Randolph, Ohio 44265

Filed Jun. 11, 1993, Ser. No. 76,201

Int. Cl.[5] **B60P** *1/04*

U.S. Cl. 414—498 **7 Claims**



1. In combination a dump trailer adapted for attachment to a tractor for transporting removable containers used to move irregular bulk material to a dump site and discharging same without removing said containers from said dump trailer, said containers comprises opposite sidewalls, interconnected bottom, front and end walls, and a hinged door assembly between said sidewalls, said dump trailer comprises an elongated unitized bed frame having distal and free ends, wheel assemblies disposed adjacent said unitized bed frame's free end, a support plate adapted for selective engagement with a fifth wheel on said tractor, draft arms pivotally secured at opposite ends to said support plate and said unitized bed frame, a dump guide for said irregular bulk material within said container positioned on said unitized bed frame adjacent said free end, said dump guide having a pair of oppositely disposed guide walls extending outwardly and upwardly from said unitized bed frame and a guide floor therebetween, said guide walls comprises a plurality of longitudinally spaced arms extending outwardly from said unitized bed frame and upstanding extensions extending at right angles from said arms defining said guide wall, a wall support rail interconnected and secured to respective free ends of said upstanding extensions defining a support frame, means

for selectively raising said unitized bed frame pivotally about said wheel assembly, means for securing said container to said dump trailer.

5,354,166

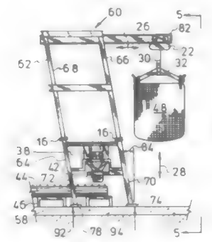
LEANING TRANSFER DEVICE

Charles E. De Crane, 802 Janna St., West Monroe, La. 71291

Filed Sep. 21, 1992, Ser. No. 947,580

Int. Cl.[5] **B65G** *9/00*; **B66C** *5/00, 11/12*

U.S. Cl. 414—561 **9 Claims**



9. A counterweight free transfer device including a substrate, the device being used for transferring the contents of a filled bulk material container from the container to a hopper that discharges bulk material onto a transporting device, comprising:

(a) an upstanding frame having a base portion rigidly attached to the substrate;

(b) a lifting beam fixedly attached to the frame, the lifting beam being positioned partially inside the frame and partially outside of the frame;

(c) a lifting means associated with the lifting beam for raising and lowering the filled bulk material container, the lifting means being designed without using a counterweight on the lifting means;

(d) a moving means attached to the lifting means to move the lifting means along the lifting beam so that the filled bulk material container can be moved along the lifting beam to a hopper located inside the frame; and

(e) the upstanding frame comprising in part at least four frame members with said at least four frame members being inclined in the same direction upwardly from the base portion to a top of the frame, the at least four frame members being fixedly attached to said substrate and extending upwardly at said incline from the substrate.

5,354,167

SINGLE-POWERED UNDERLIFT TOWING APPARATUS

John M. Cullum, and Hans G. Ogren, both of Germantown, Tenn., assignors to Vulcan International, Inc., Olive Branch, Miss.

Continuation of Ser. No. 893,105, Jun. 3, 1992, Pat. No. 5,284,415. This application Sep. 13, 1993, Ser. No. 121,022

The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.

Int. Cl.[5] **B60P** *3/12*

U.S. Cl. 414—563 **7 Claims**

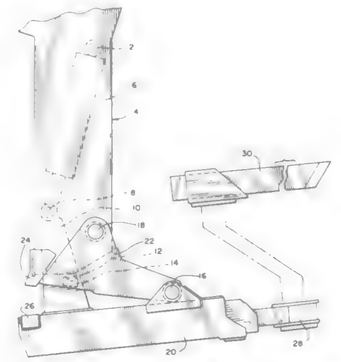
1. A vehicle-transporting apparatus comprising:

a supporting member mountable onto a transporting vehicle;

a boom extending from said supporting member and having a distal end adapted for lifting a vehicle to be transported;

a single power-actuated means operative to rotate said boom about first and second axes of rotation with respect to said supporting member such that said boom may be moved by said single power-actuated means to:

(i) a lowered load-lifting position by rotating said boom about said first axis of rotation independent of said second axis of rotation; and



(ii) a generally upright stored position by rotating said boom about said second axis of rotation independent of said first axis of rotation.

5,354,168

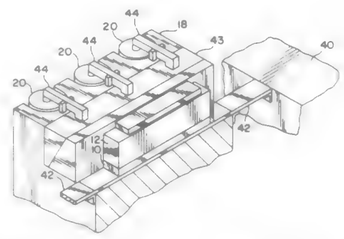
APPARATUS FOR RESTRAINING AND TRANSPORTING DIES

James W. Allison, Monroeville, and Timothy L. LaBarre, Pittsburgh, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 3, 1992, Ser. No. 970,883

Int. Cl.[5] **B65G** *35/00*

U.S. Cl. 414—676 **9 Claims**



1. In a punch press combination including a press, a die, a punch for applying pressure to said die, a platen having an upper surface adjacent said die and a lower surface resting on a support plate, a plurality of work stations, and restraining means for holding said die in place on said platen during a compacting process, the improvement comprising:

a plurality of flotation ports located on the lower surface of said platen;

a source of gas in communication with said flotation ports for providing a flow of gas through said ports to allow said die to be moved from one work station to another on a cushion of gas; and wherein said restraining means is hydraulically driven to provide firm lateral support for said die on said platen when hydraulic pressure is applied to said restraining means during a compacting process of the press, and said restraining means is movable to allow easy release of said die on said support plate when hydraulic pressure on said restraining means is reversed.

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5,354,169

STORAGE SYSTEM FOR RODS

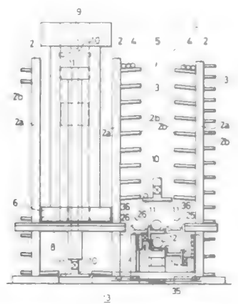
Isomi Washio, Aichtal/Aich, and Werner Latten, Reutlingen, both of Fed. Rep. of Germany, assignors to Advanced Technik GmbH, Fed. Rep. of Germany and Amada Company, Ltd., Japan

Filed Nov. 10, 1992, Ser. No. 974,845

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1991, 4137169; Dec. 20, 1991, 4142355

Int. Cl.[5] B65G *1/04*

U.S. Cl. 414—745.7 **20 Claims**



1. A conveyor device for feeding rods into a working machine such as a cutting-off machine, and in particular for supplying and discharging rods to and from a roller path for feeding the rods into the working machine, the conveyor device comprising receiver means arranged at both sides of said roller path for conveying said rods between a handling device of a stock of rods and said roller path, each of said receiver means (**21**, **22**) comprising at least one receiver arm, (**25**, **26**) which is independently movable substantially vertically, a vertical guide means (**23**, **24**) for said receiver arms (**25**, **26**), and a basic frame (**35**) which accommodates said vertical guide means (**23**, **24**) and is horizontally displaceable in a direction transverse to a longitudinal direction of the roller path.

5,354,170

STACKING AND TURNING DEVICE FOR A MACHINE PRODUCING PACKAGING BOX BLANKS

Hermann Schweingruber, Sullens, and Emile Gut, Crissier, both of Switzerland, assignors to Bobst S.A., Lausanne, Switzerland

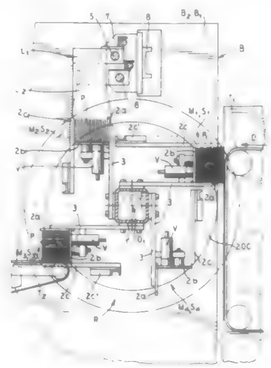
Filed May 12, 1992, Ser. No. 881,646

Claims priority, application Switzerland, May 14, 1991, 01428/91-2

Int. Cl.[5] B65G *57/00*

U.S. Cl. 414—790 **4 Claims**

1. A blank stacking and turning device for a printing/cutting machine producing packaging boxes, said device comprising a frame consisting of two lateral members connected to one another by profiled pieces; means for forming a closed circuit situated in a vertical plane, said means including a circular rotary support being mounted in said frame; four movable stores being capable of containing one stack of blanks being arranged at 90° on the periphery of the support of the means for forming a closed circuit; four fixed stations being arranged at regular distances around the rotary support to be aligned with the four stores with the support in a stopped position, said fixed stations including a first station for forming a stack in a store positioned at said first station, a second station for aligning blanks in a stack, a third station for removing the stack from the store and fourth station being a standby stations with no stacks in the corresponding store; and means for achieving a simultaneous transfer of all stores from one station to the next following station and including indexing means for controlling a 90° stop-and-go rotation of the support in order to insure the transfer of stores between stations so that in the course of said transfer between adjacent stations, every stack will carry out a revolution through approximately 90° around an essentially horizontal axis and that in this way, beginning with the essentially flat position of the blanks within the first station, the stack, when in the second station, will rest on the edges of the blanks in the store, and in the third station the blanks will be in a flat position that will be turned 180° with regard to the position of the blanks in the first station.



5,354,171

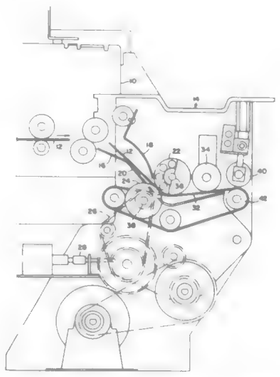
METHOD AND APPARATUS FOR REVERSE ACCUMULATION OF FOLDED DOCUMENTS

John J. Mercede, Jr., Easton, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 21, 1993, Ser. No. 140,807

Int. Cl.[5] B65G *57/00*

U.S. Cl. 414—790.2 **13 Claims**



1. Apparatus for reverse accumulation of folded documents, comprising:

means for feeding folded documents seriatim along a path of travel;

an entrance deck adjacent and downstream of said feeding means for receiving said folded documents from said feeding means, said entrance deck forming an angle with said path of travel between 5 and 10 degrees;

an accumulation deck extending downwardly from said entrance deck, said accumulation deck forming an angle between 25 and 35 degrees with respect to said entrance deck;

a curved deflector situated above said entrance deck for guiding said folded documents onto said entrance deck;

a pair of pinch rollers situated downstream of said accumulation deck for receiving a plurality of folded documents in the same order as said folded documents are fed by said feeding means, wherein the length of said accumulation deck is between 75% and 85% of the length of said folded documents; and

means for cyclically driving said pinch rollers to feed an accumulation of folded documents away from said pinch rollers.

5,354,172

MOLECULAR DRAG VACUUM PUMP

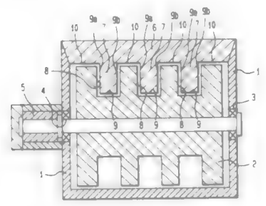
Nigel P. Schofield, Horsham, England, assignor to The BOC Group plc, Windlesham, England

Filed Dec. 3, 1992, Ser. No. 985,473

Claims priority, application United Kingdom, Dec. 4, 1991, 9125848.3

Int. Cl.[5] F01D *1/36*

U.S. Cl. 415—90 **5 Claims**



1. A vacuum pump of the molecular drag type comprising a pump body, a cylindrical element for rotation within the pump body about its longitudinal axis and having a plurality of circumferential slots defined in its surface which are substantially perpendicular to the longitudinal axis, a comb-like stator element held stationary with regard to the pump body and having projections extending into the slots substantially to fill the slots with a sufficiently fine clearance that possible contact exists, between the projections and the cylindrical element, each of said projections having opposed side surfaces and an end surface connecting said side surfaces, said side and end surfaces of said projections located adjacent complimentary side and end surfaces defining said slots, and an abradable material coating said side surfaces of said projections so that said abradable material wears upon the possible contact between said projections and said cylindrical element.

5,354,173

TURBINE SCROLL

Graham A. Reynolds, Coventry, England, assignor to Rolls-Royce Business Ventures Limited, Derby, England

PCT No. PCT/GB91/01774, § 371 Date Nov. 4, 1993, § 102(e) Date Nov. 4, 1993, PCT Pub. No. WO92/10649, PCT Pub. Date Jun. 25, 1992

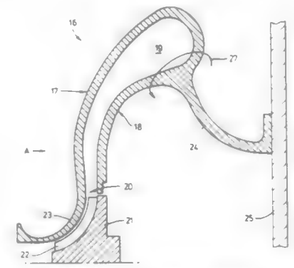
PCT Filed Oct. 11, 1991, Ser. No. 70,340

Claims priority, application United Kingdom, Dec. 14, 1990, 9027168.5

Int. Cl.[5] F01D *25/24*

U.S. Cl. 415—205 **5 Claims**

1. A scroll for directing hot gas into a radial inflow turbine comprising an annular chamber defined by two coaxial confronting, axially spaced apart annular members interconnected at their radially outer extents, said chamber having an inlet, the radially inner extents of said members cooperating to define an annular exhaust outlet from said chamber to operationally direct said hot gases on to the radial inflow turbine, the major portions of said members converging in a generally radially inward direction towards said annular outlet, wherein both of said major portions of said members are of generally curved cross-sectional shape so as to be curved in the same generally axial direction whereby the major portion of one of said members is located inwardly of the other annular support means coaxial with said members being provided to support said scroll, said support means being attached to said inward member intermediate its radially inward and outward extents and arranged at said attachment to be locally normal to said inward member.



5,354,174

BACKBONE SUPPORT STRUCTURE FOR COMPRESSOR

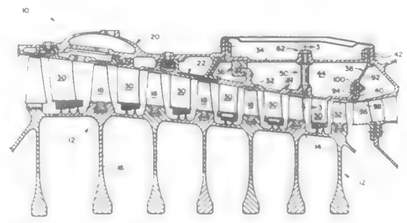
James T. Balkcum, and Jack W. Wilson, Jr., both of West Palm Beach, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 581,228, Sep. 12, 1990, abandoned. This application Nov. 9, 1992, Ser. No. 19,801

The portion of the term of this patent subsequent to Jun. 2, 2009, has been disclaimed.

Int. Cl.[5] F04D *29/60*

U.S. Cl. 415—209.2 **5 Claims**



1. Mounting apparatus for an axial compressor for a gas turbine engine including a drum rotor having a plurality of rows of circumferentially spaced compressor blades and a stator supporting a plurality of rows of circumferentially spaced vanes with each row being disposed adjacent a row of compressor blades, said stator defining an inner case, said inner case and said drum rotor defining a boundary for the gas turbine engine's gas path, a concentrically disposed cylindrically shaped outer case, support means for supporting the aft end relative to the flow of said gas path of said stator to said cylindrically shaped outer case, said support means being generally annular shaped and having a relatively straight section extend-

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ing through a plane in close proximity to its points of attachment wherein said support means is a load carrying member.

5,354,175

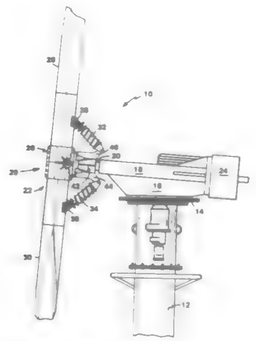
WIND TURBINE ROTOR HUB AND TEETER JOINT

Clint Coleman; William T. Kurth, both of Warren, and Joseph Jankowski, Stowe, all of Vt., assignors to Northern Power Systems, Inc., Moretown, Vt.

Continuation of Ser. No. 851,904, Mar. 16, 1992, abandoned. This application Aug. 30, 1993, Ser. No. 113,963

Int. Cl.[5] **F03D** *1/06*

U.S. Cl. 416—9 **17 Claims**



1. A wind turbine comprising:

a rotor hub for connecting a rotor blade which rotates in a plane to a drive shaft, said rotor blade having a lengthwise dimension and a center relative to the lengthwise dimension, and a central portion which includes said center, said hub comprising

a yoke assembly comprising

a body attached to said drive shaft at a rearward end of said body,

two extension portions, each extending from said body, and

two teeter blocks, each connected at the end of said extension portions, each of said teeter blocks coupled to said rotor blade at said central portion in a manner which allows said rotor blade to teeter in a plane normal to the plane in which said rotor blade rotates,

said wind turbine further comprising two selectively damping teeter control mechanisms, each connected to said yoke assembly and each coupled to said rotor blade, wherein one mechanism is coupled on either side of said center of said blade, said teeter control mechanisms selectively providing a damping force to said rotor blade.

5,354,176

FAN BLADE MOUNT

Jan C. Schilling, Middletown, and Charles E. Steckle, Loveland, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 935,502, Aug. 26, 1992, abandoned, which is a division of Ser. No. 658,273, Feb. 20, 1991, Pat. No. 5,165,856, which is a division of Ser. No. 201,232, Jun. 2, 1988, Pat. No. 5,102,302. This application Sep. 29, 1993, Ser. No. 129,005

Int. Cl.[5] **F04D** *29/34*

U.S. Cl. 416—204 R **9 Claims**

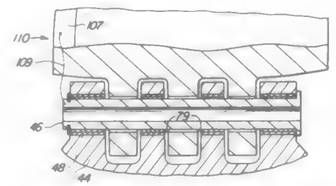
1. A system for fastening an aircraft propeller of the variable-pitch type to a rotor, comprising:

a) a clevis near the base of the propeller;

b) a mating clevis on the rotor;

c) a pin for journaling through bores in the clevises for joining the two clevises; and

d) elastic bushing means for reducing play of the pin in the



bores, said pin being anchored and non-rotating relative to said elastic bushing means to resist pivotal movement of the propeller about a hinge formed by said two clevises and said pin.

5,354,177

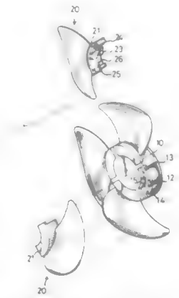
FAN

Song H. Chang, No. 23, Lane 420, Min An Rd., Hsin Chuang City, Taipei Hsien, Taiwan

Filed Nov. 30, 1993, Ser. No. 159,811

Int. Cl.[5] **F01D** *5/30*

U.S. Cl. 416—219 A **5 Claims**



1. A fan comprising a plastic hub linked to several plastic fins which are formed in a mold wherein the hub comprises several female engaging devices each comprising a T-shaped slot formed in the hub and two L-shaped slots formed in the hub, wherein the fins each comprise a male engaging device comprising a T-shaped slide and two L-shaped slides formed on a corresponding fin, whereby the T-shaped slide is engageable in the T-shaped slot and each L-shaped slide is engageable in a corresponding L-shaped slot.

5,354,178

LIGHT WEIGHT STEAM TURBINE BLADE

Jurek Ferleger, Longwood, and Daniel R. Cornell, Winter Springs, both of Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 157,714, Nov. 24, 1993. This application Dec. 9, 1993, Ser. No. 164,372

Int. Cl.[5] **F01D** *5/14*

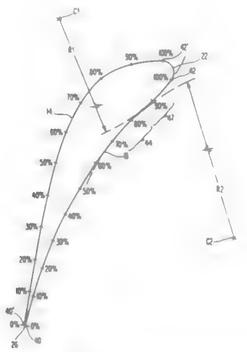
U.S. Cl. 416—223 A **7 Claims**

1. A steam turbine comprising a stationary cylinder for containing a steam flow, and a rotor enclosed by the cylinder, and a row of blades, each of said blades having a root portion attached to said rotor and an airfoil portion, each of said airfoil portions having:

a) a base portion and a tip portion defining an airfoil height therebetween;

b) a rounded leading edge portion and a trailing edge portion;

c) a pressure surface and a generally concave suction surface extending between said rounded leading edge portion and said trailing edge portion and defining a thickness of said airfoil therebetween, (i) each of said airfoils having first, second and third transverse sections disposed radially outward from said root by distances equal to approximately 25%, 50% and 75%, respectively, of said height of said airfoil, a first portion of said airfoil height extending between said first and third sections, and (ii) said pressure surface over at least said first portion of said airfoil height having a curvature undergoing an inflection at a location



disposed within said pressure surface, a first portion of said pressure surface extending over said first portion of said airfoil height having a concave curvature and being disposed between said inflection location and said rounded leading edge portion, a second portion of said pressure surface extending over said first portion of said airfoil height having a convex curvature and being disposed between said inflection location and said trailing edge, said concave curvature in said first portion of said pressure surface having a maximum negative value greater than $-1.0\ mm^{-1}\times10^{-2}$, and said convex curvature in said second portion of said pressure surface having a maximum positive value greater than $1.0\ mm^{-1}\times10^{-2}$.

5,354,179

FLUID ROTATING APPARATUS

Teruo Maruyama, Hirakata; Tatsuhisa Taguchi, Katano; Yoshikazu Abe, and Mikio Hasegawa, both of Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 738,902, Aug. 1, 1991, Pat. No. 5,197,861. This application Dec. 10, 1992, Ser. No. 988,694

Claims priority, application Japan, Aug. 1, 1990, 2-204912; Sep. 25, 1990, 2-255798; Nov. 28, 1990, 2-332358

The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.

Int. Cl.[5] **F04C** *23/00;* **F04D** *19/04*

U.S. Cl. 417—42 **10 Claims**

1. A vacuum pump for broad-band use, comprising:

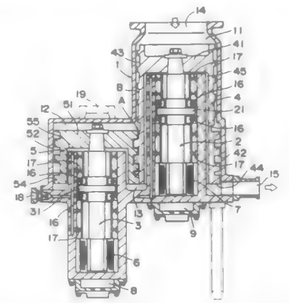
a housing having a first chamber and a second chamber communicating with the first chamber;

a first rotary shaft rotatably accommodated in the first chamber;

a second rotary shaft rotatably accommodated in the second chamber, the first and second rotary shafts being synchronously rotated;

positive displacement vacuum pump structure sections formed at outer peripheries of the first and second rotary shafts where the first chamber communicates with the second chamber;

a kinetic vacuum pump structure section formed at an outer periphery of the first rotary shaft and spaced from the positive displacement vacuum pump structure sections;



a first suction port formed at a part of the first chamber where the kinetic vacuum pump structure section of the first rotary shaft is formed; and

a discharge port formed at a part of one of the first and second chambers where the positive displacement vacuum pump structure section is formed.

5,354,180

HYDROSTATIC ASSEMBLY HAVING MULTIPLE PUMPS

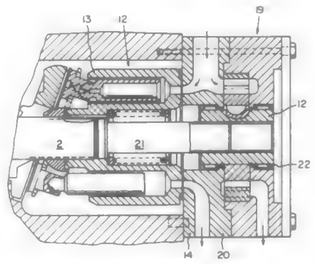
Franz Forster, Karlstadt-Muhlbach, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 9, 1993, Ser. No. 89,790

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1992, 4225380

Int. Cl.[5] **F04B** *1/12, 23/08*

U.S. Cl. 417—199.1 **18 Claims**



1. A hydrostatic assembly including a primary pump formed by a swash plate type axial piston motor having a cylindrical drum with a substantially closed end and at least one coaxial secondary pump formed by a swash plate type axial piston motor having a cylindrical drum, an elongated input shaft extending through said cylindrical drum of said primary pump and connected to said cylindrical drum of said primary pump, a control base axially aligned with said cylindrical drum of said primary pump and having a control surface opposite said substantially closed end of said cylindrical drum of said primary pump, a recess formed in said control base by an end wall and an annular wall and having an open end, means for closing said open end of said recess, and said cylindrical drum of said secondary pump connected to said elongated input shaft, whereby said input shaft drives said primary pump and said secondary pump.

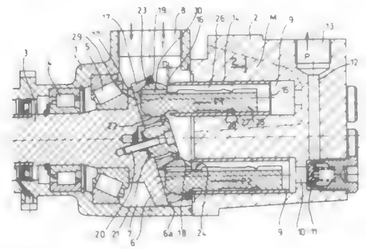
VOL 1167 ISS 2 OC 11 1994 UMI

5,354,181

HYDRAULIC PISTON PUMPS EQUIPPED WITH SUCTION VALVE

Louis-Claude Porel, Rambervillers, France, assignor to Hydro Rene Leduc, Azerailles, France

Filed Feb. 26, 1993, Ser. No. 23,951
Claims priority, application France, Feb. 28, 1992, 92 02334; Jun. 5, 1992, 92 06827
Int. Cl.[5] F04B 1/12
U.S. Cl. 417—269 26 Claims



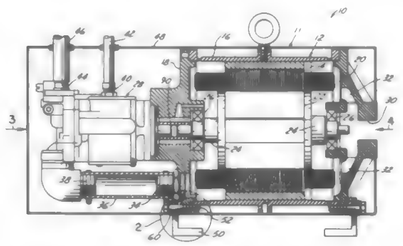
1. A hydraulic piston pump comprising:
a housing having a fluid entrance and a fluid exit,
a skew plate rotated by a drive shaft within said housing,
a plurality of pistons each having an inlet and an outlet,
a respective stud adjacent the inlet of each piston having a face supported on said skew plate for rotating each said piston with a reciprocating motion to provide communication of each piston inlet with the housing fluid entrance and each piston outlet with the housing fluid exit with the fluid being compressed by a piston as it is moved from a fluid intake to a fluid discharge position to the housing fluid outlet, said stud having an opening to the face of said skew plate,
and non-return feed valve means for each piston including means for feeding the compressed fluid at the pump fluid exit back to the stud of the piston and through the stud opening to the skew plate to balance the hydrostatic pressure.

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UNITARY ELECTRIC-MOTOR/HYDRAULIC-PUMP ASSEMBLY WITH NOISE REDUCTION FEATURES

Albin J. Niemiec, Sterling Heights; George M. Russell, St. Clair Shores; Ronald B. Schweiger, Clawson, and Otto P. Langosch, Rochester, all of Mich., assignors to Vickers, Incorporated, Maumee, Ohio

Filed May 17, 1993, Ser. No. 61,237
Int. Cl.[5] F04B 19/00
U.S. Cl. 417—363 2 Claims



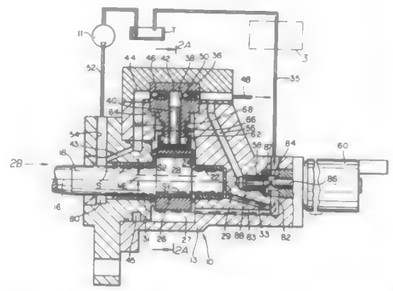
1. An electric-motor/hydraulic-pump assembly that comprises:
an electric motor having a motor housing and a motor shaft accessible at one end of said housing,
a hydraulic pump coupled to said shaft and mounted to said one end of said motor housing to form a unitary assembly in which vibration generated by operation of said pump is transmitted to said motor housing,
fluid passage means including inlet passage means for receiving fluid and directing such fluid through said motor housing to cool said motor and thence to said pump, and outlet passage means extending from said pump,
support feet affixed to and extending from said motor housing for mounting said motor housing to a housing support structure,
vibration damping means operatively interposed between said motor housing and said support feet to inhibit transmission of structure-borne noise from said motor housing to the housing support structure through said support feet, and
a sound deadening enclosure surrounding and spaced from said pump and said motor housing to inhibit radiation of airborne noise from said pump and said motor housing, said sound deadening enclosure having apertures through which said support feet extend, said vibration damping means being disposed within said sound deadening enclosure.

5,354,183

PUMPING DEVICE WITH A MAIN PUMPING STAGE AND A SUPPLY PUMP

Egon Eisenbacher, Karlstadt; Franz Pawellek, Marktheidenfeld, and Bernhard Arnold, Roden-Ansbach, all of Fed. Rep. of Germany, assignors to Elasis Sistema Ricerca Fiat Nel Mezzogiorno Societa Consortile per Azioni, Pomigliano d'Arco, Italy

Filed Feb. 11, 1993, Ser. No. 16,735
Int. Cl.[5] F04B 39/02
U.S. Cl. 417—366 11 Claims



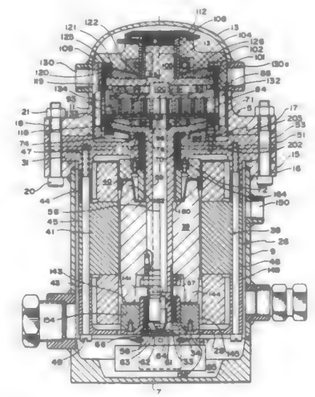
7. A pumping device for the fuel supply of an internal combustion motor, comprising a tank (T) containing a fluid to be pumped, a main pumping stage (10) for pumping a controlled amount of said fuel at a high pressure included in the range of 300 to 1600 bar, a supply pump (11) for supplying said fuel from said tank (T) to said main pumping stage (10) in excess to said controlled amount, and feedback means (35) for feeding the excess fluid back to said tank (T) from a given drain path (52, 54, S, S1, S2, 33, 82); wherein said main pumping stage (10) is housed in a hollow body (13) and includes at least a piston (40), a pump shaft (18), sleeve bearings (20, 22) mounted in said body (13) for rotatably mounting said shaft (18), and cam means (28) mounted on said shaft (18) for operating said piston (40) subjected to at least one severe thermal and mechanical stress; wherein the improvement includes at least part (S, S1, S2, 33, 82) of said drain path (52, 54, S, S1, S2, 33, 82) running through said hollow body (13) in regions (20, 22, 26–28, 40, 70, 84) subjected to severe thermal and/or mechanical stress to enable the drain fuel to remove heat therefrom, said part (S, S1, S2, 33, 82) including said sleeve bearings (20, 22) and said cam means (28).

5,354,184

WINDAGE LOSS REDUCTION ARRANGEMENT FOR SCROLL FLUID DEVICE

Ronald J. Forni, Lexington, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Feb. 20, 1992, Ser. No. 837,964
Int. Cl.[5] F01C 1/04, 21/00; F04B 35/04
U.S. Cl. 417—410.5 8 Claims



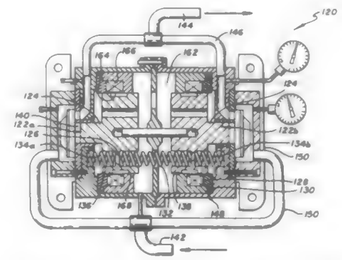
1. A scroll fluid device comprising:
a housing including a fluid inlet port;
a pair of opposed, rotatable scroll elements including axially extending, opposed, meshed, involute scroll wraps, said scroll elements including an axially extending scroll fluid inlet port, associated with and rotatable with said scroll elements, and being mounted in said housing so as to orbit relative to each other about an orbit axis within the housing to generate fluid transport chambers having progressively and cyclically varying volumes between the scroll wraps resulting from the relative orbital motion of the scroll wraps;
at least one rotating member in the housing associated with the scroll elements and having at least one generally radially extending surface, said radially extending surface extending along an adjacent fixed surface within the housing;
means for reducing windage at least between said radially extending surface and said adjacent fixed surface, said means for reducing windage being positioned between said scroll fluid inlet port and said housing.
5. A scroll fluid device comprising:
a housing;
a pair of opposed scroll elements including axially extending, opposed, meshed, involute scroll wraps, said scroll elements being mounted in said housing so as to orbit relative to each other about an orbit axis within the housing to generate fluid transport chambers having progressively and cyclically varying volumes between the scroll wraps resulting from the relative orbital motion of the scroll wraps;
a drive assembly including a rotor rotatably mounted within said housing and a drive shaft drivingly connected to at least one of said scroll elements, said rotor being drivingly connected to said drive shaft and including upper and lower radially and axially extending end surfaces; and
means for reducing windage between said rotor and an adjacent fixed surface within said housing, said windage reducing means being carried by said housing and including a first annular member extending between one of said upper and lower radially and axially extending end surfaces of said rotor and said drive shaft and further extending about the axially extending end surface of said one of said upper and lower radially and axially extending end surfaces, said windage reducing means providing a predetermined gap clearance dimensioned to produce a reduction of windage between the rotating rotor and drive shaft and the adjacent fixed surface within said housing as compared to the windage that would be developed therebetween without said windage reducing means.
7. A scroll fluid device comprising:
a housing
a pair of opposed scroll elements including axially extending, opposed, meshed involute scroll wraps carried by respective wrap support plates, said scroll elements being mounted in said housing so as to orbit relative to each other about an orbit axis within the housing to generate fluid transport chambers having progressively and cyclically varying volumes between the scroll wraps resulting from the relative orbital motion of the scroll wraps;
a drive assembly including a drive shaft rotatably mounted in said housing and a drive plate carried by said drive shaft so as to rotate in unison therewith, said drive plate extending radially within said housing substantially parallel to at least one of said wrap support plates so as to define a radially extending drive plate surface and being drivingly connected to at least one of said scroll elements; and
means for reducing windage between said drive plate and an adjacent fixed surface within said housing, said windage reducing means including a disc carried by said housing and extending closely adjacent to and along a substantial portion of said radially extending drive plate surface so as to define a predetermined gap clearance dimensioned to produce a reduction of windage between said drive plate and the adjacent fixed surface within said housing as compared to the windage that would be developed therebetween without said windage reducing means.

5,354,185

ELECTROMAGNETICALLY ACTUATED RECIPROCATING COMPRESSOR DRIVER

Fernando B. Morinigo, Los Angeles, and Keith O. Stuart, Cypress, both of Calif., assignors to Aura Systems, Inc., El Segundo, Calif.

Division of Ser. No. 15,182, Feb. 1, 1993, which is a continuation-in-part of Ser. No. 988,280, Dec. 9, 1992, which is a continuation-in-part of Ser. No. 957,194, Oct. 5, 1992, Pat. No. 5,222,714. This application Sep. 17, 1993, Ser. No. 122,694
Int. Cl.[5] F04B 17/00
U.S. Cl. 417—410.1 5 Claims



1. A dual piston compressor having two compression cylinders at opposing ends of said compressor, each cylinder defining an aperture and having a piston disposed within the aper-

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ture for axial movement between an upper end of the aperture and a lower end of the aperture, said compressor comprising:

a first and a second electromagnetic actuator for driving each of the pistons, said first and second actuators each further comprising;

an electromagnetic element, said electromagnetic element including a core and a coil, said core having an electromagnet surface and an opening at said electromagnet surface extending through said core, said opening defining a channel, said coil being disposed in said channel; and

an axially reciprocating armature element interconnected with each of said pistons, said armature element defining an axial stroke having a stroke midpoint, and further having an armature surface dimensioned to align with and correspond to said electromagnet surface;

a primary biasing element for biasing the armature element of both the first and second actuator in opposing axial directions; and

two secondary biasing elements, each of said secondary biasing elements biasing one of the first and second actuators in an opposing axial direction from the primary biasing element;

wherein said first and second actuators are biased to resonate at a pre-determined frequency 180 degrees out of phase from each other, and further wherein applying current to the coil in the electromagnetic element when the armature passes through the stroke midpoint accelerates the armature surface, allowing the armature surface to overcome frictional and compression forces, and causing the armature surface to continue resonating at the predetermined frequency.

5,354,186

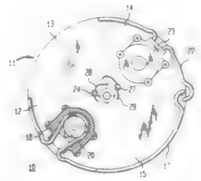
MACHINE BALANCER WITH PERISTALTIC FLUID PUMP

Syed Murtuza, W. Bloomfield, and Luiz V. Boffi, Dearborn, both of Mich., assignors to The Board of Regents of the University of Michigan, Ann Arbor, Mich.

Filed Aug. 12, 1993, Ser. No. 105,738

Int. Cl.[5] F04B *43/08*; B24B *41/04*

U.S. Cl. 417—474 **21 Claims**



1. A balancer arrangement for a rotating machine element, the balancer arrangement being of the type which employs a mass balancing fluid which is deposited into a plurality of balancing chambers associated with the rotating machine element, the balancer arrangement comprising:

a plurality of peristaltic pump means disposed in a balanced arrangement on the rotating machine element, each of said peristaltic pump means being provided with a rotatable impeller; and

a plurality of tubing means each for transferring the mass balancing fluid between a respectively associated pair of the balancing chambers in response to a respectively associated one of said peristaltic pump means, said tubing means each being formed of a flexible material and having first and second ends and a central portion therebetween, said first and second ends being disposed in respective ones of the associated pair of the balancing chambers, and said central portion between said first and second ends being disposed in communication with said rotatable impeller of said respectively associated one of said peristaltic pump means.

5,354,187

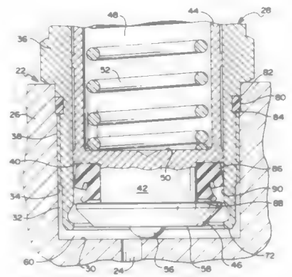
PISTON FOR USE IN A FLUID PUMP LOW PRESSURE ACCUMULATOR ASSEMBLY

Russ W. Holland, Holly, and Ken Garrigues, Orion Twp., Oakland County, both of Mich., assignors to ITT Corporation, New York, N.Y.

Filed Aug. 16, 1993, Ser. No. 107,531

Int. Cl.[5] F16L *55/04*

U.S. Cl. 417—540 **8 Claims**



1. A low pressure fluid accumulator assembly for a pump, comprising:

a pump housing with a longitudinally extending chamber having a base;

a fluid flow opening, said fluid flow opening formed at said base of said pump housing chamber;

a fluid accumulator housing, said accumulator housing received in said pump housing chamber and including a longitudinally extending bore;

an accumulator piston received in said bore, said piston including an upper piston body and a lower piston head, said piston head being biased outwardly of said bore to selectively engage said base of said pump housing chamber; and

a protrusion means fixed in and extending longitudinally outwardly from said piston head for limiting an area of engagement between said piston head and said base so that fluid flowing from said opening into said chamber engage a greater area of said piston head, allowing said chamber to receive the fluid at a more rapid rate, wherein said protrusion means has a partial spherical outer surface, adapted to contact said base at a single point of contact.

5,354,188

SICKLELESS INTERNAL GEAR PUMP WITH RADIALLY MOVABLE SEALING ELEMENTS FOR RADIAL COMPENSATION

Franz Arbogast, and Peter Peiz, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Mar. 17, 1993, Ser. No. 33,296

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1992, 4208767

Int. Cl.[5] F01C *19/08*

U.S. Cl. 418—132 **4 Claims**

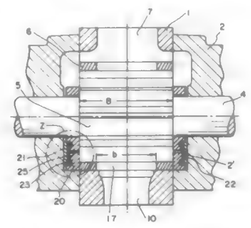
1. A sickleless internal gear pump, comprising:

an internal ring gear having a plurality of teeth and radial ports;

a pinion having a plurality of teeth and meshing with said ring gear;

a housing rotatably carrying said ring gear and said pinion, said housing including a suction port and a pressure port, said housing having an axial expanse corresponding to the width of said ring gear teeth and said pinion teeth, said housing defining a pressure region;

an axially movable disk disposed in said pressure region at an axial end of said ring gear and pinion between said housing and said ring gear and pinion, said axially movable disk exerting an axial force against said ring gear and said pinion which is dependent upon fluid pressure within said pressure region, said axially movable disk sealing between said housing and said ring gear and pinion; and



a sealing disk disposed between said housing and said axially movable disk, and a seal disposed between said housing and said sealing disk, said housing, sealing disk and seal defining a pressure space therebetween, said axially movable disk and said sealing disk including a connecting bore for fluidly connecting said pressure space with said pressure region.

5,354,189

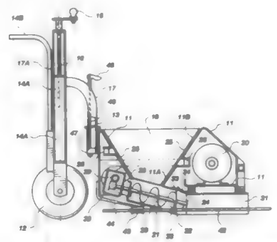
CURB FORMING AND EXTRUDING APPARATUS

Paul M. McKinnon, 807 W. Forest, Brigham City, Utah 84302

Filed Dec. 30, 1992, Ser. No. 998,690

Int. Cl.[5] E01C *11/22*

U.S. Cl. 425—64 **9 Claims**



9. A manually maneuverable curb forming apparatus including a feed hopper having a lower segment defined by walls of a chassis frame and an upper segment attached above the lower segment, the feed hopper having a bottom outlet communicating with a compaction assembly, the compaction assembly including double counter-rotating augers mounted to the chassis frame and a compaction chamber having a rear opening communicating with a removable slip form, vibration means associated with the double counter-rotating augers and the feed hopper lower segment such that the augers and the lower segment of the feed hopper vibrate in opposite directions, and a drive motor associated with the augers and the vibration means to vibrate and turn the augers.

5,354,190

DEVICE FOR MAKING TUBING FOILS

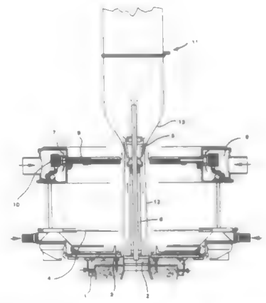
Werner R. Hofer, Friedberg; Franz Mahler, Augsburg; Manfred Goellner, Augsburg, and Andreas Gumpert, Augsburg, all of Fed. Rep. of Germany, assignors to Alpine Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 25, 1993, Ser. No. 8,589

Claims priority, application European Pat. Off., Jan. 27, 1992, 92101237.3

Int. Cl.[5] B29D *23/22*

U.S. Cl. 425—72.1 **11 Claims**



1. Apparatus for manufacturing tubing foils made of high density polyethylene (HDPE) thermoplastic synthetic material, the tubing foil forming a long neck prior to its expansion, comprising a blow head having a ring nozzle and an outer blow ring, an air nozzle ring disposed in a region of the end of the long neck and outside the tubing foil, an inner pin being located in the region of the end of the long neck, and a measuring device for measuring the foil thickness of the tubing foil whereby the air flow through the nozzles of the air nozzle ring is controlled dependent on measurement results of the measuring device, the blow head supporting an inner cooling device, the outer diameter of the pin being slightly less than the inside diameter of the tubing foil in said region, and means for causing the cooling effect of the outer blow ring to be at least ten times greater than the cooling effect in said region.

5,354,191

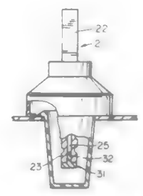
MOLDING APPARATUS FOR FORMING FROZEN FOOD PRODUCT AND COMPOSITE COVER AND HOLDER FOR USE THEREIN

Daniel H. Bobis, 568 Scotland Rd., Union, N.J. 07083

Filed Oct. 1, 1993, Ser. No. 131,403

Int. Cl.[5] A23G *9/26*

U.S. Cl. 425—118 **13 Claims**



1. In molding apparatus for forming a frozen food product from liquids, the combination of at least one freezing compartment having an open end for receiving the liquids to be frozen with an associated cover and holder assembly operatively connectible to each said freezing compartment, said cover and holder assembly comprising,

a. generally cup-shaped wall means defining a main chamber

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having an open end which fits the open end of said freezing compartment, and having a space defining a reservoir means,

b. elongated means so connected to the cup-shaped wall means that the portion thereof at the exterior of the cup and holder assembly defines a handle section and the portion that extends through and beyond the interior of the open end of the main chamber defined by the cup-shaped wall means forms an anchor section,

c. the portion of said elongated means extending through and beyond the interior of the wall means provides the anchor section on which the frozen food product is formed when the cover and holder assembly is in assembled position in the freezing compartment so that the cover and holder assembly can be removed with the formed frozen food product for consumption,

d. passage means in at least the anchor section of the elongated means having one end communicating with the reservoir means, and a second end forming an access opening to be exposed during the consumption of the frozen food product to enable the consumer to withdraw any portion of the melted frozen food product collected in said reservoir, and

e. means for generally sealing said passage means to maintain said passage means normally closed and to permit the passage means to be opened when the access opening end of the passage means is exposed during the consumption of the frozen food product.

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INDIRECT EXTRUSION PRESS

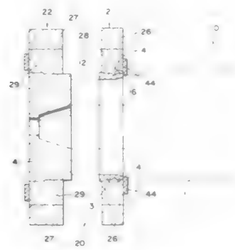
Munenori Soejima, and Kazutaka Uehara, both of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Nov. 9, 1992, Ser. No. 973,978

Claims priority, application Japan, Nov. 14, 1991, 3-299156

Int. Cl.[5] B21C *23/00*; **B29C** *47/00*

U.S. Cl. 425—190 **6 Claims**



1. An indirect extrusion press, comprising:

a die stem:

a container;

a cleaning ring removably fitted at an end portion of said die stem for cleaning the inner face of said container;

a loose die removably mounted at the end of said die stem; and

a handling apparatus including first and second pairs of clamp members for clamping therebetween and handling said cleaning ring and said loose die, respectively;

said cleaning ring having a circumferential groove formed on an outer periphery thereof;

each of said first pair of clamp members for clamping said cleaning ring therebetween having a projection formed thereon for engaging said circumferential groove of said cleaning ring,

further comprising a letting off preventing plate mounted on a side face of each of said first pair of clamp members remote from said loose die for engaging an end face of said cleaning ring.

5,354,193

APPARATUS FOR MAKING A FOOD CONTAINING PACKAGE WITH INTEGRAL HANDLE

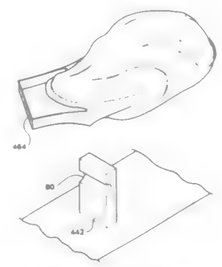
Vytautas Kupcikevicius, Oaklawn, Ill., assignor to Viskase Corporation, Chicago, Ill.

Division of Ser. No. 882,730, May 14, 1992, Pat. No. 5,286,503.

This application Aug. 27, 1993, Ser. No. 112,524

Int. Cl.[5] B29C *51/42*; **B65D** *67/00*; **B65B** *53/00*

U.S. Cl. 425—403 **5 Claims**



1. Apparatus for forming a food package having an integral handle comprising:

a) a movable support for receiving a food containing package including a food product encased in a heat shrinkable film and the package having a limp skirt at one end composed of the heat shrinkable film and said skirt having an opening therethrough;

b) a rigid handle-shaping member upstanding from the movable support, the member being adapted to extend through said skirt opening so a skirt section is disposed about the member;

c) means for moving the support through a shrink zone; and

d) heating means in the shrink zone for heating and shrinking the film encasing the food product and drawing the skirt section tight about said handle-shaping member.

5,354,194

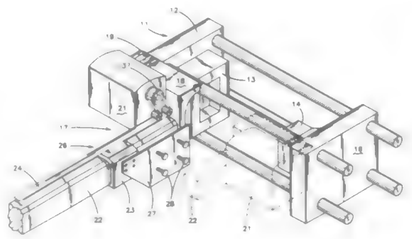
HIGH SPEED MOLDED PRODUCT RETRIEVAL DEVICE

Paul F. Kresak, Newmarket, Canada, assignor to Husky Injection Molding Systems Ltd., Ontario, Canada

Filed Jan. 28, 1993, Ser. No. 10,155

Int. Cl.[5] B29C *45/42*

U.S. Cl. 425—436 R **19 Claims**



1. A high speed light weight, retrieval device or robot for unloading molded product from an injection molding machine including a machine frame supporting a plurality of fixed and movable mold platens supporting at least one mold means wherein the mold opens and closes in cyclic and continuous fashion comprising:

boom means defining a single elongated piecepart having opposed sides mounted rigidly to one of said platens.

trolley means carried by said boom means,

said trolley means defining a single composite piecepart,

said trolley means including at least two rollers which straddle said boom means and engage said opposed sides of said boom means whereby said boom means is the sole support and sole guide for said trolley means,

product pick up means carried by said trolley means operable independently of said boom means,

belt means connected directly to said trolley means for actuating said trolley means, and

power means including a reversible servo motor for driving said belt means and thus said trolley means to and fro in synchronism with the cyclic and continuous operation of said at least one mold means.

5,354,195

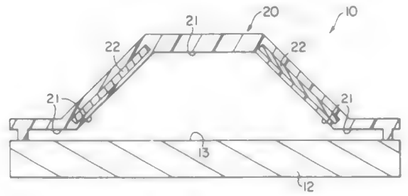
COMPOSITE MOLDING APPARATUS FOR HIGH PRESSURE CO-CURE MOLDING OF LIGHTWEIGHT HONEYCOMB CORE COMPOSITE ARTICLES HAVING RAMPED SURFACES UTILIZING LOW DENSITY, STABILIZED RAMPED HONEYCOMB CORES

Alex C. Dublinski, Northford; Thomas A. Carstensen, Shelton, and Philip J. Ramey, Milford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 23, 1992, Ser. No. 995,437

Int. Cl.[5] B29C *33/18*

U.S. Cl. 425—504 **3 Claims**



1. A composite molding apparatus for high pressure co-cure molding of a lightweight honeycomb core composite article having at least one ramped surface, comprising:

a rigid base member having a molding surface; and

a complementary semi-rigid mold member having molding surfaces and at least one internal rigid reinforcement insert, said semi-rigid mold member comprising a combination of layers of reinforced tooling material and unreinforced elastomeric material with said at least one rigid reinforcement insert interleaved between layers of said reinforced tooling material and said unreinforced elastomeric material wherein said semi-rigid mold member exhibits flexibility during high pressure co-cure molding such that said molding surfaces conform to and define the outer mold line surface of the lightweight honeycomb core composite article to be fabricated;

said composite molding apparatus having a configuration for high pressure co-cure molding of the lightweight honeycomb core composite article to be fabricated, wherein composite prepregs and a low total density, stabilized ramped honeycomb core having at least one ramped surface are laved up in said composite molding apparatus to form the lightweight honeycomb core composite article having a least one ramped surface, said at least one rigid reinforcement insert of said complementary semi-rigid mold member having a configuration that matches the at least one ramped surface of the low total density, stabilized ramped honeycomb core and being disposed in opposed, parallel relation to the at least one ramped surface of the laved-up low total density, stabilized ramped honeycomb core such that said at least one rigid reinforcement insert is operative to provide symmetric pressure distributions over the at least one ramped surface of the low total density, stabilized ramped honeycomb core and overlayed composite prepregs during high pressure co-cure molding.

5,354,196

CLAMPING ASSEMBLY FOR AN INJECTION MOULDING APPARATUS

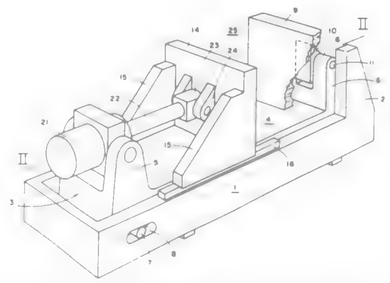
Amir Ziv-Av, Petach Tikva, Israel, assignor to Zeev Wertheimer, Nahariya, Israel

Filed Feb. 1, 1993, Ser. No. 12,272

Claims priority, application Israel, Jan. 31, 1992, 100832

Int. Cl.[5] B29C *45/64*

U.S. Cl. 425—589 **19 Claims**



1. A clamping assembly for an injection moulding installation comprising:

a rigid, elongated positioning structure and a rigid elongated clamping structure with one of said structures substantially embracing another of said structures;

a fixed platen rigidly coupled to said positioning structure and articulatedly coupled to a first end portion of said clamping structure;

longitudinal, axially directed sliding bearings formed integrally with said positioning structure;

a movable platen slidably supported on said bearings for free, axially directed displacement with respect to said positioning structure towards and away from said fixed platen; and

platen drive means articulatedly coupled to a second end portion of the clamping structure, opposite to said first end portion, and to the movable platen for imparting said displacement to said movable platen.

5,354,197

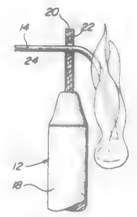
COMBINATION IGNITION FUSE AND CANDLES

Joseph I. Barone, 555 Cox Rd., San Marcos, Calif. 92609, assignor to Joseph I. Barone, Long Beach, Calif.

Filed Jun. 21, 1993, Ser. No. 78,635

Int. Cl.[5] F23D *3/16*

U.S. Cl. 431—287 **12 Claims**



1. In combination, a multiplicity of candles threaded on an

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elongated fuse line for progressively lighting the candles, wherein the improvement comprises:

a multiplicity of candles, each of said candles having a wax body member and an elongated wick positioned within said wax body member, wherein an upper portion of said wick extends outwardly and upwardly from said wax body member, said wick being formed having an aperture of a predetermined diameter disposed therein; and wherein said wick is formed with a substantially flat cross-sectional configuration, whereby enlarged oppositely disposed surfaces are defined in which said aperture is positioned therethrough;

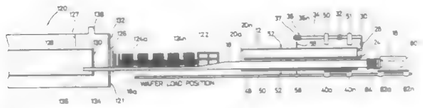
said elongated fuse line threaded through said aperture to allow said fuse line to burn through each said aperture of each wick to progressively ignite each wick at the flat portion in a timed sequence without the flame affecting the wax body of each candle during the igniting of said wick, whereby said wick is ignited without the lit fuse being snuffed out as it progresses from one wick to the other through said apertures formed therein so as to allow each wick to be selectively positioned along said fuse line.

5,354,198

MOVABLE CANTILEVERED PURGE SYSTEM

Cleon R. Yates, Austin, Tex., assignor to Cyrco Twenty-Two, Inc., Austin, Tex.

Filed Dec. 5, 1988, Ser. No. 279,844
Int. Cl.[5] F27D *3/06;* **F27B** *9/26*
U.S. Cl. 432—5 **7 Claims**



1. Elephant tube for processing of substrates for positioning between a substrate processing furnace and a cantilevered paddle clamping vehicle comprising:

a. a movable quartz elephant tube;

b. gas purge injector means positioned within said elephant tube;

c. a first sealing door means for engaging against a substrate processing tube; and,

d. a second door means for engaging against said substrate processing furnace, whereby said first door means is supported on biased members and said second door means is fixedly secured about said elephant tube.

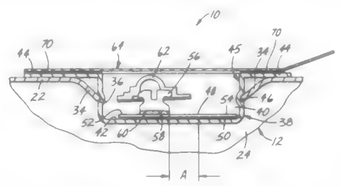
5,354,199

ADHESIVE FOR PACKAGED ORTHODONTIC APPLIANCE

Dwight W. Jacobs, River Falls, Wis., and Sumita B. Mitra, West St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 739,816, Aug. 2, 1991, abandoned. This application Jun. 19, 1992, Ser. No. 902,444
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—9 **18 Claims**

1. An article comprising a container with a cover, an orthodontic appliance received in said container with an adhesive on said appliance, wherein said adhesive includes an adhesively effective quantity of EBDA and is substantially free of TEGDMA so that a storage-stable adhesive is obtained, wherein the adhesive includes a resin system comprising the EBDA and a quantity of Bis-GMA, and wherein the ratio of



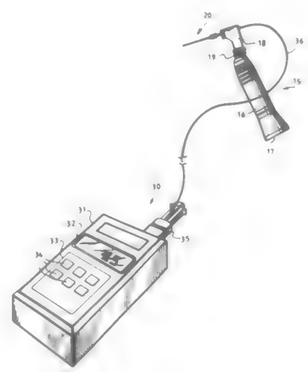
Bis-GMA to EBDA is in the range of about 5/95 to about 80/20 by weight.

5,354,200

TEMPERATURE GAUGE FOR DENTAL DRILLS AND METHOD EMPLOYING SAME

Michael Klein, 1100 Peninsula Blvd., Hewlett, N.Y. 11557, and Miles J. Yacker, 285 Central Ave., Lawrence, N.Y. 11559

Filed Sep. 27, 1993, Ser. No. 127,014
Int. Cl.[5] A61C *19/04, 3/02, 5/00*
U.S. Cl. 433—72 **5 Claims**



1. A temperature gauge assembly for dental drills of the type having a dental head to which a drill bur is removably mounted comprising:

a drill bur having a throughbore extending to a drill bur tip;

temperature sensor means receivable in the drill bur throughbore for sensing and measuring the temperature at the drill bur tip; and

thermometer means coupled to said temperature sensor means for displaying the temperature at the drill bur tip.

5,354,201

DENTURE RETAINING DEVICES

Christopher M. Wilson, R.R. 2, Box 1230, Morrisville, Vt. 05661, and Bryan S. Booth, R.R. 1, Box 710, Bethel, Vt. 05032

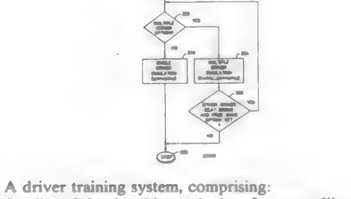
Filed Dec. 7, 1993, Ser. No. 163,751
Int. Cl.[5] A61C *13/12, 13/225, 13/02*
U.S. Cl. 433—177 **20 Claims**

1. A denture comprising:

a body portion formed from a substantially rigid material, including at least one rigid flanged section shaped to cover gums in a mouth, said flanged section having at least one bevelled face adjacent to an edge thereof;

at least one rigid flange extension formed from a substantially rigid material, having one side shaped to contact intraoral tissue overlying a fossa proximate to a substantially linear bone ridge inside the mouth, and having at least one bevelled face adjacent to an edge thereof;

means for hingedly attaching said flanged section of said body portion to said flange extension such that said at least one bevelled face adjacent said edge of said flanged section is adjacent to said at least one bevelled face adjacent said edge of said flange extension;



wherein said bevelled faces of said flanged section and said flange extension define at least one groove;

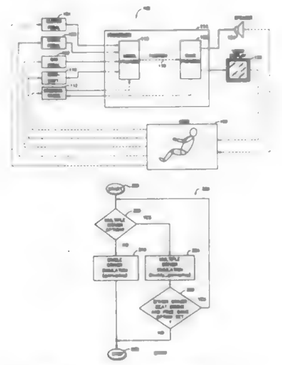
wherein said means for hingedly attaching said flanged section to said flange extension includes at least one substantially resilient wedge disposed inside said at least one groove, whereby said flanged section of said body portion and said flange extension are hingedly attached.

5,354,202

SYSTEM AND METHOD FOR DRIVER TRAINING WITH MULTIPLE DRIVER COMPETITION

Rick L. Moncrief; Stephanie J. Mott, both of San Jose; Max L. Behensky, Hayward, and Jed Margolin, San Jose, all of Calif., assignors to Atari Games Corporation, Milpitas, Calif.

Continuation of Ser. No. 739,906, Aug. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 561,087, Aug. 1, 1990, abandoned. This application Jun. 18, 1993, Ser. No. 80,582
Int. Cl.[5] G09B *9/04*
U.S. Cl. 434—69 **10 Claims**



1. A driver training system, comprising:

a plurality of simulated input devices for controlling a simulated vehicle;

a video display for presenting a view of a simulated environment;

modeling means responsive to said input devices for determining position information of said simulated vehicle in said simulated environment;

first training means having a buffer, wherein the first training means stores and replays a first preprogrammed route through said simulated environment on said video display;

second training means having a buffer, wherein the second training means is representative of a first user and responsive to the position information provided by the first user, and wherein the second training means stores a second route of said simulated vehicle taken by the first user through said simulated environment in the buffer, replays the second route on said video display, and stores at least one parameter indicative of a performance characteristic of the second route in the buffer; and

third training means, representative of a second user, wherein the third training means is responsive to the position information provided by the second user, and wherein the third training means displays a third route of said simulated vehicle taken by the second user through said simulated environment and determines at least one parameter indicative of a performance characteristic of the third route;

wherein said first preprogrammed route is independent of the routes taken by the users;

wherein said first route and said second route are replayed simultaneously with said display of said third route on said video display; and

wherein a best route through the simulated environment is selected by comparing route parameters.

9. A method of driver training in a driving simulator having a video display, a memory, a set of simulated input controls, and means for displaying a simulated vehicle in a simulated environment, the method comprising the steps of:

storing a preprogrammed route of a first simulated vehicle through the simulated environment;

receiving changes in the position of the simulated input controls as manipulated by a first user;

calculating position information of a second simulated vehicle based on the position changes of the simulated input controls;

storing the calculated position information indicative of the first user's route through the simulated environment in the memory;

displaying the first simulated vehicle, the second simulated vehicle and simulated environment on the video display;

receiving changes in the position of the simulated input controls as manipulated by a second user;

calculating position information of a third simulated vehicle based on the position changes of the simulated input controls as manipulated by the second user; and

displaying the stored positions indicative of the first simulated vehicle and the first user's route of the second simulated vehicle on the video display simultaneously with the position of the third simulated vehicle.

5,354,203

PORTABLE HYDRAULICS TRAINER

Richard J. Kotch, Macomb, and John A. O'Brien, Waterford, both of Mich., assignors to Vickers, Incorporated, Maumee, Ohio

Filed Jul. 23, 1993, Ser. No. 96,930
Int. Cl.[5] G09B *9/00, 19/00, 25/00*
U.S. Cl. 434—126 **18 Claims**

1. Apparatus for training an operator in use of hydraulic and electrohydraulic systems comprising:

a vertical panel upstanding from a base,

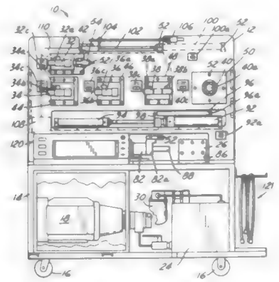
a first plurality of electrohydraulic devices mounted on one side of said panel,

a second plurality of hydromechanical devices mounted on an opposing side of said panel,

both of said pluralities including fluid flow control devices

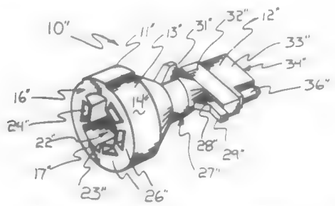
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distinct from each other between the respective pluralities and fluid load devices shared by the respective pluralities, a fluid power source carried by said base, and



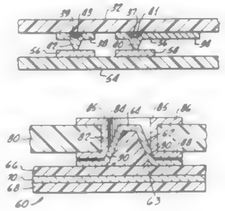
means for selectively connecting said fluid power source to devices among either or both of said first and second pluralities.

5,354,204
WIRING HARNESS ADAPTER AND METHOD AND APPARATUS FOR FABRICATING THE SAME
Michael T. Hughes, 504 Second St., Berthoud, Colo. 80513
Continuation of Ser. No. 920,835, Jul. 28, 1992, abandoned. This application Nov. 1, 1993, Ser. No. 143,655
Int. Cl.[5] H01R *23/02*
U.S. Cl. 439—35 **2 Claims**



1. A wiring harness adapter body comprising a dielectric housing having a substantially round first end spaced from a second end, said front end having a plurality of four electrical terminals, said four electrical terminals being spaced and configured so as to form a shape of four sides of a hexagon with at least two said terminals being parallel to each other, gaps being located in the housing between one of said parallel terminals and respective adjacent said terminals, said gaps extending substantially the entire distance along said hexagon between said one parallel connector and the respective adjacent said connectors; said second end having three female barrel shaped electrical terminals and one male electrical terminal in a linear configuration in a first tier, a plurality of wires electrically connecting each of the four electrical terminals at said first end to a respective said terminal at said second end.

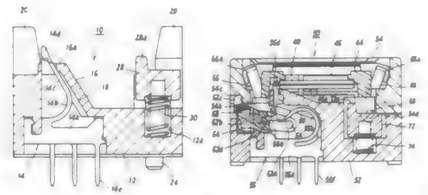
5,354,205
ELECTRICAL CONNECTIONS WITH SHAPED CONTACTS
Haim Feigenbaum, Irvine; William R. Crumly, Anaheim, and Christopher M. Schreiber, Newport Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Continuation of Ser. No. 750,842, Aug. 26, 1991, abandoned.
This application Apr. 23, 1993, Ser. No. 51,598
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—67 **6 Claims**



1. A method of testing an integrated circuit having a pattern of contact pads, said method comprising the steps of:
providing an indentation tool having a base and a shaped tapered projection, said projection having a projection shape defined by revolution of a line about an axis that intersects the line,
employing said indentation tool to form in a mandrel depressions having said projection shape,
forming on said mandrel a test probe circuit having a plurality of circuit traces and a plurality of connector pads, at least a group of said connector pads having integral shaped contact features that have said projection shape, said shaped contact features being in a pattern that matches said pattern of contact pads on said integrated circuit, said step of forming comprising the steps of:
electrodepositing a single layer of conductive material on said mandrel, said single layer forming circuitry that comprises said plurality of circuit traces, said plurality of connector pads and said shaped contact features on said mandrel, such that said shaped contact features are integrally electroformed with their respective connector pads and circuit traces,
laminating a dielectric substrate over said single layer of circuitry, and
removing said laminated circuitry and substrate from said mandrel to form said test probe with said shaped contact features projecting therefrom, and
pressing said shaped contact features of said test probe circuit against said integrated circuit pads, wherein at least one of said integrated circuit contact pads has a surface bearing a foreign material of poor electrical conductivity such that said shaped contact features penetrate said foreign material to complete a temporary electrical connection with said integrated circuit contact pads until said testing of said integrated circuit is completed.

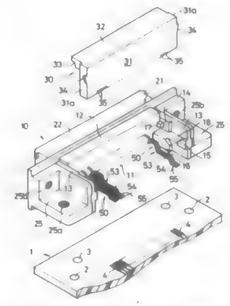
5,354,206
SPRING BALANCED SOCKET
Ikuo Mori, Oizumi, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Oct. 4, 1993, Ser. No. 131,066
Claims priority, application Japan, Oct. 5, 1992, 4-290752
Int. Cl.[5] H01R *23/72*
U.S. Cl. 439—68 **13 Claims**

1. A socket for mounting in a freely detachable manner an electrical part having a plurality of sides with terminal leads provided only on one side of the part, the socket comprising a base member having a center line, a plurality of contact members spring mounted in said base member positioned on one side of said center line of said base member adapted to make electrical contact with said plurality of terminal leads with each contact member making contact with a respective terminal lead, said plurality of contact members having a preselected total spring force and spring means having no electrical



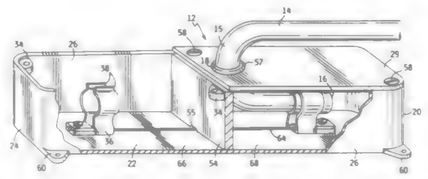
function of a preselected spring force equal to the spring force of the plurality of contact members mounted on said base adapted to support said electrical part on the opposite side of said center line so as to generally balance the spring force of said plurality of contact members to ensure reliable electrical contact is made.

5,354,207
ELECTRICAL CONNECTOR WITH CONTACT ALIGNING MEMBER
Koji Chikano, Tokyo, Japan, assignor to KEL Corporation, Tokyo, Japan
Filed Sep. 16, 1992, Ser. No. 947,113
Claims priority, application Japan, Sep. 17, 1991, 3-265293
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—79 **4 Claims**



1. An electrical connector for mounting on a surface of a circuit board comprising an insulating housing body having an upper face and a lower, circuit board engaging face, a series of electrical contacts having portions anchored in the body and respective contact legs extending from the body between the upper and lower faces with respective free contact ends thereof located spaced apart from each other for connection to respective conductive paths of a series of conductive paths located at a predetermined pitch on the circuit board, a contact aligning member molded in one piece from insulating material and comprising a contact engaging portion formed with a series of contact engaging grooves with downwardly opening outwardly divergent mouths and located at the predetermined pitch, and a mounting portion located above the contact engaging portion, attachment means on the housing body and on the mounting portion interengageable to attach the contact aligning member to the housing by movement of the contact aligning member from a location above the free contact ends into depressing engagement with portions of respective contact legs adjacent the free contact ends bringing them into respective grooves thereby accurately locating the free contact ends in the same pitch as the conductive paths on the circuit board and in a common circuit board engaging plane.

5,354,208
NEON TUBE CONNECTOR ASSEMBLY
Michael A. Salaski, 929 5th St. South, Sauk Rapids, Minn. 56379, and Charles E. Kalscheuer, 207 4th Ave. Northeast, St. Cloud, Minn. 56379
Filed Jan. 7, 1993, Ser. No. 1,185
Int. Cl.[5] H01R *33/02*
U.S. Cl. 439—230 **8 Claims**



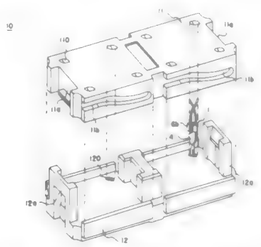
1. A neon tube connector assembly for mechanically securing and electrically connecting neon tubes, the neon tubes having a J-shaped end with a semicircular portion, a midpoint of the semicircular portion, and a conducting end cap, the connector assembly comprising:
a housing with an open top formed of a rigid, nonporous material;
a cover removably mounted on the housing and closing the open top, the cover having a tube aperture, the housing and cover configured so that the neon tube exits through the aperture at the midpoint of the semicircular portion of the neon tube, the aperture sized to fit the neon tube at the midpoint;
a neon tube holder affixed within the housing comprising two clamping pieces electrically conductive and opposing each other, with a space between the clamping pieces sized to radially secure the neon tube end cap and to electrically connect with the neon tube end cap, and a connecting lug with an electrical attachment means; and
an elastomeric material completely covering and adhering to the cover and wherein the elastomeric material extends a distance from the surface of the aperture allowing insertion and removal of the tube and providing a sealing engagement with the tube after insertion.

5,354,209
CONNECTOR AND METHOD OF ASSEMBLING THE SAME
Akira Tamura; Hidehisa Sakai; Mikio Nishihara, and Kyoichiro Kawano, all of Kawasaki, Japan, assignors to Fujitsu Limited, Nakahara, Japan
Filed Jul. 29, 1993, Ser. No. 98,852
Claims priority, application Japan, Dec. 18, 1992, 4-339102
Int. Cl.[5] H01R *13/193*
U.S. Cl. 439—263 **3 Claims**

1. A connector wherein a press-fitted part, formed in each of a plurality of contact pins into which a plurality of external electrode terminals are fitted, is inserted into each of a plurality of pin terminal through-holes provided in a stationary base part, and said plurality of electrode terminals attached to said plurality of contact pins are releasably locked thereto in response to movement of a movable lock part movably assembled to said stationary base part,
wherein an auxiliary plate reinforcing said press-fitted part and engaged with said movable lock part is provided in each of said plurality of contact pins, and a force caused by the movement of said movable lock part is transmitted to said press-fitted part via said auxiliary plate, when said

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press-fitted part of each of said plurality of contact pins is press-fitted into each of said plurality of pin terminals



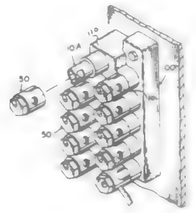
through-holes in correspondence with the movement of said movable lock part.

5,354,210

SEALANT COMPOSITIONS AND SEALED ELECTRICAL CONNECTORS

Francis F. Koblitz, York, and Ricky C. Mellinger, Seven Valleys, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 23, 1991, Ser. No. 749,373
Int. Cl.[5] H01R *13/52*; **C08L** *83/00, 83/04*
U.S. Cl. 439—276 **25 Claims**



1. A moisture and temperature resistant electrical connector for sealingly connecting transmission means comprising:

(a) a connector body having a terminal means for accepting and electrically connecting with the transmission means; and

(b) a sealant composition disposed along or adjacent to said terminal means, said sealant composition having an elastic memory at break of at least about 200%, an adhesive strength of at least about 5 g at temperatures of from about −40° C. to about +80° C., and a cohesive strength of no greater than about 0.2 g at temperatures of from about −40° C. to about +80° C. as measured by removal weight and comprising:

(i) organic block copolymer having elastomeric properties at about room temperature and thermoplastic properties at above about room temperature, said block copolymer comprising at least one block selected from the group consisting of non-aromatic polyolefins, polyesters, polyethers, poly(alkenyl arenes), polyurethanes and combinations of these;

(ii) extender for said organic polymer; and

(iii) cross-linked silicon-based polymer,

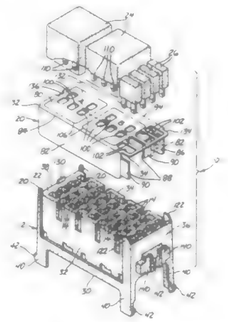
said silicon-based polymer being cross-linked in the presence of said organic polymer, said organic polymer and said silicon-based polymer together comprising less than about 35% by weight of said composition.

5,354,211

ALIGNMENT OVERLAY FOR CONNECTOR HOUSING BLOCK

Joseph A. Svette, Jr., Newton Falls; Jeffrey A. Reeves, Cortland; Richard L. Kidd, Stow, and Thomas M. Jackson, Canfield, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 17, 1993, Ser. No. 122,675
Int. Cl.[5] H01R *13/629*
U.S. Cl. 439—381 **4 Claims**



1. In combination, an electrically insulated connector housing block having a cable receiving end and a mating end,

said housing block having a plurality of spaced terminal cavities extending longitudinally there through from said cable receiving end to said mating end,

a plurality of electrical terminals crimped onto electrical cables and which are positioned within said cavities adjacent said mating end of said housing block,

an alignment overlay overlying said mating end of said block and which is adhesively secured to said block,

said overlay having openings therethrough which are arranged in a plurality of predetermined patterns and which are aligned with certain ones of said terminal cavities,

said housing block having projections extending from said mating end thereof at certain locations and said alignment overlay having notches at certain locations for receiving said projections to insure that said overlay can only be adhesively secured to said housing block if properly oriented relative to said housing block,

a plurality of electrical devices for connection with terminals in said block housing, said electrical devices having projecting terminals arranged in a pattern which can only be inserted through a predetermined pattern of openings in said alignment overlay and mated to proper terminals in said block housing whereby said alignment overlay prevents said electrical devices from being misconnected to said housing block.

5,354,212

MODULAR PLUG AND COVER THEREFOR

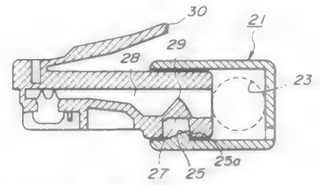
Alden S. Bartle, Lawrenceville; Michael A. Wise, Duluth, both of Ga.; Masao Sasaki, Kawasaki, Japan; Hironori Ishizuka, Kawasaki, Japan, and Hideharu Kajizuka, Kawasaki, Japan, assignors to OKI Electric Cable Co., Ltd., Kawasaki, Japan and OKI Telecom, Suwanee, Ga.

Filed Mar. 11, 1993, Ser. No. 29,566
Int. Cl.[5] H01R *13/58*
U.S. Cl. 439—468 **23 Claims**

1. A modular plug and cover arrangement, comprising:

a plug body, said plug body having an insert portion and a rear portion extending outwardly of said insert portion, said rear portion receiving therein a cable for connection to said insert portion;

a cover portion of substantially enclosed configuration having an open end engageable with said plug body such that an enclosed space having a dimension substantially equal to a diameter of said cable is defined between an end of said rear portion and an opposing wall of said cover portion;



means for retaining said cover portion on said plug body; and

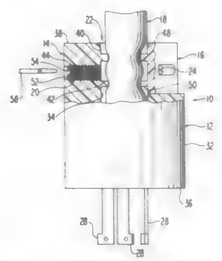
an access opening in said cover portion and receivable of a cable therethrough.

5,354,213

ADJUSTABLE ELECTRICAL CORD CLAMP

Ernest G. Hoffman, Middlefield, Conn., assignor to Hubbell Incorporated, Orange, Conn.

Filed Mar. 31, 1993, Ser. No. 40,993
Int. Cl.[5] H01R *13/595*
U.S. Cl. 439—469 **45 Claims**



1. An electrical cord clamp comprising:

a main body having a outer wall and an inner wall, said inner wall defining an axial passage for receiving an electrical cord;

means on said inner wall defining a first clamping jaw;

a second clamping jaw opposing said first clamping jaw and being movable perpendicular to said axial passage;

connecting means for interconnecting said first and second clamping jaws and for applying clamping forces to an electrical cord in said axial passage;

said first clamping jaw having a radial bore therethrough extending radially with respect to said axial passage; and

projecting means, disposed in said radial bore and being axially movable therein from a first position to a second position projecting radially inward from said inner wall into said axial passage for engaging said electrical cord and biasing said electrical cord against said second clamping jaw,

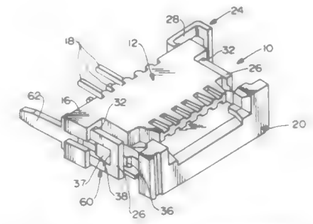
said first and second clamping jaws engaging a large diameter cord when said projecting means is in said first position and said projecting means and said second clamping jaw engaging a smaller diameter cord when said projecting means is in said second position.

5,354,214

PRINTED CIRCUIT BOARD ELECTRICAL CONNECTOR WITH MOUNTING LATCH CLIP

Akira Aso; Russell J. Leonard, both of Naperville, Ill., and George M. Simmel, Kawasaki, Japan, assignors to Molex Incorporated, Lisle, Ill.

Filed Jul. 23, 1993, Ser. No. 97,347
Int. Cl.[5] H01R *9/07*
U.S. Cl. 439—492 **19 Claims**



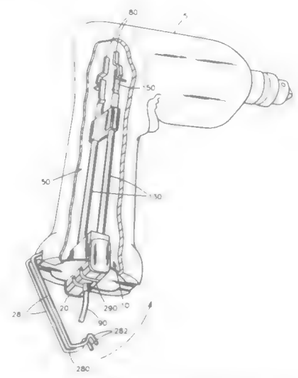
1. In an electrical connector for interconnecting a flat flexible circuit to a printed circuit board, including a dielectric housing having an elongated mouth for receiving the flat flexible circuit, terminal means mounted in the housing and adapted for coupling appropriate conductors of the flat flexible circuit with circuit traces on the printed circuit board, and an actuator having an elongated tongue for insertion into the mouth of the housing to maintain the flat flexible circuit in engagement with the terminal means, wherein the improvement comprises at least one discrete latch/mounting clip mounted on the housing, complementary interengaging latch means between a first portion of the clip and the actuator to hold the actuator in its inserted position on the housing, and a second portion of the clip being adapted for operative association with the printed circuit board.

5,354,215

CIRCUIT INTERCONNECT FOR A POWER TOOL

Joseph R. Viracola, 11120 Queensland, #B-17, Los Angeles, Calif. 90034

Filed Jun. 24, 1993, Ser. No. 82,232
Int. Cl.[5] H01R *3/00*
U.S. Cl. 439—500 **8 Claims**



1. A circuit interconnecting device for a power tool of the type having a compartment for a replaceable battery, the device comprising:

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a base means adapted for mounting in the battery compartment including power cord receiving means, and extension means receiving means, the base means including power tool asymmetrical engagement means for engaging an asymmetrical receiving means of the battery compartment, said engagement means being engagable with said receiving means only when the device is inserted into the battery compartment in a preferred orientation and otherwise preventing the full insertion of the device into the battery compartment;

an extension means, having a proximal end and a distal end, the proximal end adapted for plug-in engagement with the extension means receiving means, the distal end adapted for electrical interconnection with a pair of electrical contacts of the power tool, the proximal and distal ends being in electrical communication;

a power cord including, at one end, a plug for electrical interconnection with a power source socket, the other end adapted for engagement with the power cord receiving means of the base means such that engagement of the proximal end of the extension means with the extension means receiving means provides electrical interconnection between the power cord and the proximal end of the extension means whereby the device may be inserted into the battery compartment of the power tool to provide power from the power source socket to the power tool electrical contacts.

5,354,216

MOUNTING SYSTEM FOR ELECTRICAL CONNECTORS

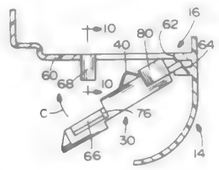
Tom Cruise, Batavia, Ill., and Matthew Wilhite, Dooravoyle, Ireland, assignors to Molex Incorporated, Lisle, Ill.

Continuation of Ser. No. 71,549, Jun. 4, 1993, abandoned. This application Feb. 3, 1994, Ser. No. 191,447

Claims priority, application Ireland, Aug. 19, 1992, S922598

Int. Cl.[5] H01R *13/74*

U.S. Cl. 439—553 **4 Claims**



1. In a mounting system for readily mounting an electrical connector in an opening in a panel for interconnecting an electrical component on one side of the panel with an electrical component on the other side of the panel, said connector including a dielectric housing having a nose at one end with side walls extending therefrom, said mounting system including complementary interengaging pivot means between the nose of the connector and the panel near the opening whereby the pivot means can be interengaged and the connector can be rotated to an operative position in the opening in the panel, wherein the improvement comprises complementary interengaging latch means integral with the connector and the opening on at least one side of the connector and on at least one portion of the opening between the connector and the panel near the opening remote from the pivot means for holding the connector in its operative position, said interengaging latch means including a cam latch member extending on and parallel to each said connector housing side wall and a resilient latch arm on the panel extending perpendicular from the panel near the opening for snap lock receiving the cam latch member, and abutment means integral with the cam latch members projecting outwardly away from the connector housing sidewalls adapted to contact a side of said resilient latch arm for preventing disengagement of said connector from said pivot means in a direction parallel to the plane of the panel.

5,354,217

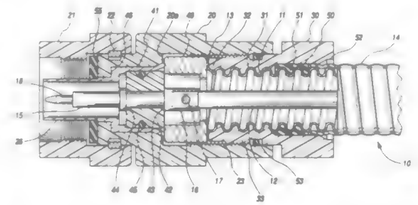
LIGHTWEIGHT CONNECTOR FOR A COAXIAL CABLE

Lee R. Gabel, Orland Hills; Sitaram Rampalli, Orland Park, and James A. Wu, Lockport, all of Ill., assignors to Andrew Corporation, Orland Park, Ill.

Filed Jun. 10, 1993, Ser. No. 71,762

Int. Cl.[5] H01R *17/04*

U.S. Cl. 439—583 **7 Claims**



1. A connector assembly for a coaxial cable having a corrugated outer conductor and an inner conductor, said connector assembly comprising:

a flaring ring and a clamping member for engaging opposite sides of an outwardly flared end portion of the outer conductor of the coaxial cable, said flaring ring being made of an electrically conductive material, said clamping member having a threaded inner surface for threadingly engaging the corrugated outer conductor, and said clamping member being made of a polymeric material;

a body member having means for holding said flaring ring and said clamping member together, against opposite sides of the flared end portion of the outer conductor of the cable, said body member being made of a polymeric material; and

an electrically conductive insert secured within said body member, in electrical contact with said flaring ring.

5,354,218

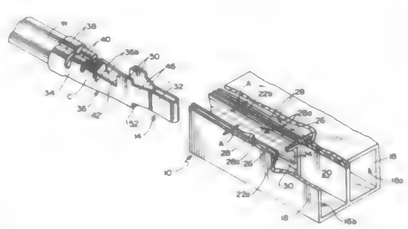
ELECTRICAL CONNECTOR WITH IMPROVED TERMINAL LATCHING MEANS

Rupert J. Fry, Des Plaines, and John S. Luthy, Naperville, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Sep. 16, 1993, Ser. No. 122,260

Int. Cl.[5] H01R *13/40*

U.S. Cl. 439—595 **10 Claims**



1. In an electrical connector which includes,

a dielectric housing having generally rigid wall means defining an elongated terminal-receiving passageway,

a terminal adapted to be inserted longitudinally into the passageway, the terminal having a longitudinal axis and a mating portion adapted to mate with a complementary terminal inserted into the passageway, and

latch means to hold the terminal in the terminal-receiving passageway in the housing,

wherein the improvement in said latch means comprises:

at least one latch wall disposed within and extending longitudinally of the terminal-receiving passageway of the housing, the latch wall defining opposite longitudinal edges thereof, one longitudinal edge being joined to the generally rigid wall means of the housing, the other longitudinal edge being free and projecting into the passageway for transverse flexing about the one joined edge and a latch shoulder on the latch wall at least on a flexing portion of the wall, the latch wall adapted to be located between said rigid wall means and said terminal when said terminal is inserted into said passageway, and

said terminal including a latch shoulder for snapping behind the latch shoulder of the latch wall when said terminal is inserted longitudinally into said passageway to prevent removal of the terminal from the passageway.

5,354,219

MULTIPOLAR SCREENED CONNECTOR HAVING A COMMON EARTH

Gunter Wanjura, Kungsängen, Sweden, assignor to Vemako AB, Kungsangen, Sweden

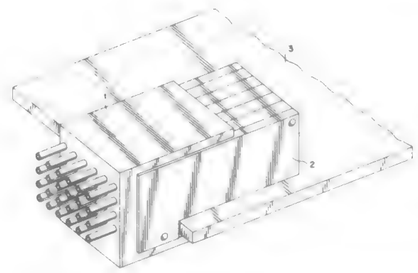
PCT No. PCT/SE91/00835, § 371 Date Jun. 15, 1993, § 102(e) Date Jun. 15, 1993, PCT Pub. No. WO92/11671, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 5, 1991, Ser. No. 75,584

Claims priority, application Sweden, Dec. 21, 1990, 90041252

Int. Cl.[5] H01R *13/648*

U.S. Cl. 439—608 **20 Claims**



1. A multipolar, screened connector having a common earth and comprising a male part and a female part, wherein the male part comprises a body which is made from an electrically insulating material and which has surrounding parts which are adapted to the female part and surround said female part at least partially, and wherein said body includes rows and columns of connector pins which extend through the base part of said body parallel with the surrounding parts, and wherein the female part includes a body which is made from an electrically insulating material and which is intended for insertion between the surrounding parts of the body of the male part and which is provided with hole parts which are adapted to receive the pins of the male part, and channels intended for contact lines which extend from said hole parts to contact devices connecting said pins, wherein the body of the female part is constructed from a plurality of plates having mutually facing sides and each plate defining a pitch which corresponds to the columns of pins; in that each of the mutually facing sides of the plates is provided with a recess which forms half of the hole parts corresponding to a column of pins and the channels for the contact lines; and in that outer defining surfaces of both the body of the male part and the plates of the female part are metallized with the exception of areas immediately around the pins and in the hole parts and the channels respectively.

5,354,220

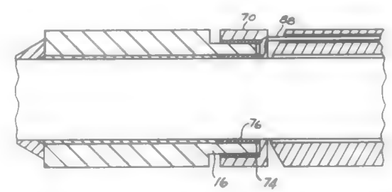
ELECTRICAL COUPLER FOR COUPLING AND ULTRASONIC TRANSDUCER TO A CATHETER

Dipankar Ganguly, Redmond, and Faina Pulvermakher, Bellevue, both of Wash., assignors to Diagnostic Devices Group, Limited, Kirkland, Wash.

Division of Ser. No. 837,724, Feb. 18, 1992, Pat. No. 5,286,259, which is a continuation of Ser. No. 494,109, Mar. 15, 1990, Pat. No. 5,108,369. This application Sep. 30, 1993, Ser. No. 130,118

Int. Cl.[5] H01R *17/04*

U.S. Cl. 439—675 **6 Claims**



1. A connector providing support for a transducer attached to a catheter comprising:

(a) a supporting collar that is mechanically coupled to the catheter and supported thereby;

(b) a pair of spaced-apart electrical clips that are mechanically coupled to the collar and supported thereby; and

(c) a plurality of fingers defined in each of the electrical clips by spaced-apart; substantially parallel slots, said fingers providing electrical contacts and a flexible support for the transducer when it is removably attached to the catheter.

5,354,221

RELEASABLE CONNECTOR ASSEMBLY FOR CATHODE RAY TUBE

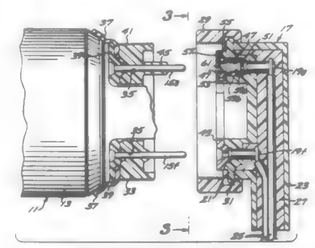
Patrick D. Doherty, II, and David M. McCormick, Camarillo, both of Calif., assignors to Reynolds Industries, Incorporated, Los Angeles, Calif.

PCT No. PCT/US91/01825, § 371 Date Sep. 21, 1992, § 102(e) Date Sep. 21, 1992, PCT Pub. No. WO91/15039, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 19, 1991, Ser. No. 927,416

Int. Cl.[5] H01R *33/76*

U.S. Cl. 439—683 **25 Claims**



1. A releasable connector assembly for a cathode ray tube having a glass stem and a plurality of electrical contacts projecting from the stem, with at least one of the contacts being adapted to carry a high voltage, the connector assembly comprising:

a substantially rigid dielectric sleeve encircling a base por-

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tion of the high-voltage contact of the cathode ray tube, leaving exposed the contact's remote end;

a plug assembly including a plurality of electrical contacts adapted to mate with the plurality of contacts of the cathode ray tube, the plug assembly further including a cylindrical wall that defines cylindrical recess encircling a high-voltage contact thereof, wherein the plug assembly is adapted to be selectively attachable to, and releasable from, the cathode ray tube stem, and wherein the high-voltage contacts of the plug assembly and the cathode ray tube mate with each other when the plug assembly is selectively attached to the cathode ray tube stem; and

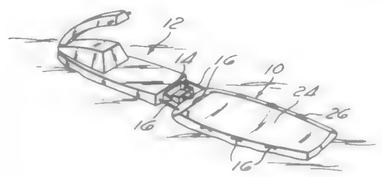
a resilient dielectric sleeve located within the plug assembly's cylindrical wall recess and sized to be slidable over the substantially rigid dielectric sleeve when the plug assembly is selectively attached to the cathode ray tube stem, whereupon the resilient sleeve is radially compressed and deformed between, and substantially fills a space between, the substantially rigid dielectric sleeve and the cylindrical wall recess, such that a high-voltage seal is provided between the mating high-voltage contacts and the other contacts of the cathode ray tube and the plug assembly.

5,354,222

WATER RESCUE SLED

Daniel S. Elias, 212 Lolita St., Encinitas, Calif. 92024

Filed Oct. 26, 1993, Ser. No. 144,888
Int. Cl.[5] B63B *21/56*
U.S. Cl. 441—80 **10 Claims**



1. A water rescue sled for towing an incapacitated person behind a personal water craft, the water rescue sled comprising:

a buoyant body configured to support a recumbent person thereupon;

a coupling for attaching said buoyant body to the personal water craft;

wherein an incapacitated person disposed upon said buoyant body is towable by the personal water craft to which said buoyant body is attached;

wherein said coupling comprises a first coupling member pivotally attached to said buoyant body so as to move horizontally with respect to said buoyant body and a second coupling member rigidly attachable to the personal water craft and pivotally attachable to said first coupling member so as to move vertically with respect to said first coupling member;

wherein said buoyant body is formed having a buoyant foam core and a resinous skin substantially covering said foam core; and

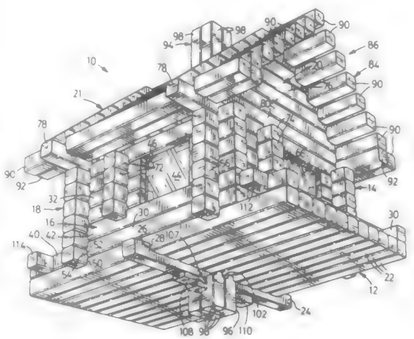
a resinous bow formed forward of said core and further comprising a durable sleeve formed through said resinous bow, said first coupling member being attached to said buoyant body via a pin passing through said first coupling member and said sleeve.

5,354,223

MINIATURE BUILDING

Stanley Wawzonek, R.R. #1, Jerseyville, Ontario, Canada L0R 1R0

Filed Dec. 2, 1993, Ser. No. 160,625
Int. Cl.[5] A63H *33/08;* **A01K** *31/00, 1/10;* **A47G** *29/00*
U.S. Cl. 446—106 **4 Claims**



1. A miniature building having a floor comprising a series of horizontal side-by-side floor members,

walls mounted on the floor, said walls surrounding an area and forming corners where pairs of adjacent walls meet, each wall comprising a series of horizontal elongated walls members stacked one upon the other, the wall members of each wall being interlocked with adjacent wall members of an adjacent wall at each corner formed by a pair of adjacent walls,

a pair of opposed walls having upper portions extending above at least one other wall,

a roof mounted on the upper portion of said pair of opposed walls,

said roof comprising a series of horizontal elongated roof members located one above the other in stepped formation, said wall members of said upper wall portions being interlocked with the elongated roof members,

said upper wall portions extending above a further pair of opposed walls, said roof comprising a first roof portion with elongated roof members in stepped formation extending upwardly from the one of said further opposed walls and a second roof portion with elongated members in stepped formation extending upwardly from the other of said further opposed walls, said roof portions meeting at an apex,

said building also including a retaining assembly retaining the elongated members of the roof, walls and floor in position,

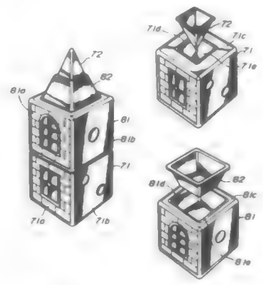
said retaining assembly comprising a shaft member extending from the apex of the roof centrally through the building and through the floor, said shaft member protruding from the roof, a first releasable retaining member passing through an upper aperture in the shaft member to service as an upper retaining member, and a second elongated retaining member extending transversely of and below the elongated floor members and passing through a lower aperture in the shaft member to serve as a lower retaining member.

5,354,224

BLOCK TOY INCLUDING A PLURALITY OF BLOCKS THAT CAN BE VARIOUSLY ASSEMBLED TO CREATE DIFFERENT GRAPHICAL IMAGES AND INCLUDING APERTURED BLOCKS HAVING ENGAGEMENT SURFACES WHICH EXTEND FROM EDGES OF THE APERTURES INTO THE BLOCKS

Sozo Ishiyama, Chiba, Japan, assignor to Kabushiki Kaisha Gakushu Kenkyusha, Tokyo, Japan

Filed Jan. 11, 1993, Ser. No. 2,710
Int. Cl.[5] A63H *33/04, 33/08*
U.S. Cl. 446—117 **22 Claims**



1. A block toy which may be assembled in various manners to create different graphical images, comprising:

a plurality of regular hexahedral blocks each having at least one side bearing graphic information, and an apertured side; and

a plurality of smaller blocks having sizes smaller than said regular hexahedral blocks, each of said smaller blocks being positionable in a first predetermined position on the apertured side of one of said regular hexahedral blocks in secure engagement with an engagement surface of said regular hexahedral block when the smaller blocks are oriented in one direction, and fittable in a second predetermined position within the apertured side of said one of said regular hexahedral blocks in secure engagement with said engagement surface when the smaller blocks are oriented in an opposite direction;

the apertured side of each said regular hexahedral block including a substantially flat surface extending perpendicularly from all adjacent sides of the regular hexahedral block and an aperture defined in a central portion of said substantially flat surface, and the engagement surface of each said regular hexahedral block extending inwardly from said substantially flat surface defining an edge of the aperture.

5,354,225

TOY WATER GRENADE

Scott G. Hix, 1028 Morrell Ct., Kingsport, Tenn. 37664-3451

Filed Oct. 22, 1993, Ser. No. 139,763
Int. Cl.[5] A63H *33/30;* **F42B** *8/00;* **A63B** *65/00*
U.S. Cl. 446—180 **5 Claims**

1. A toy water grenade, comprising,

a housing, the housing symmetrically oriented about a housing axis, and having a housing side wall, a first end wall and a housing second end, with the second end having a second end central opening directed into the housing from the second end, the first end wall including a first end plug removably mounted through the first end wall into the housing,

and

a second end plug fixedly mounted within the second end central opening,

and

a cover head fixedly secured onto the second end plug, with the second end plug including a plug bore, and the cover head having a cover head bore, with the cover head bore and the plug bore coaxially aligned in pneumatic communication relative to one another,

and

the housing further having an air chamber within the housing between the second end plug,

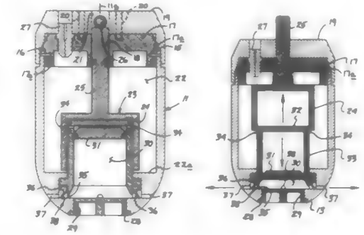
and

an air chamber floor within the housing spaced from the housing first end wall,

and

a cup-shaped fluid chamber fixedly mounted within the air chamber in facing relationship relative to the first end plug,

and



a piston cup complementarily and slidably mounted over the cup-shaped fluid chamber, with the piston cup having a piston rod slidably received through the plug bore and the cover head bore,

and

air valve means mounted through the cover head and the second end plug permitting pneumatic pressurization of the air chamber,

and

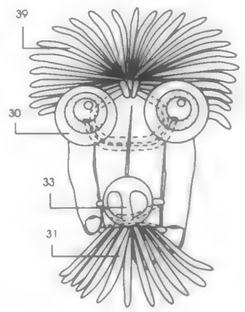
release means slidably received within the cover head arranged for abutment with the piston rod for permitting reciprocation of the piston rod through the cover head and the second end plug upon removal of the release means relative to the cover head.

5,354,226

HAND PUPPET WITH TWO EYE SPHEROIDS CONNECTED BY CORD

David F. Ruppert, Clark Rd., Cape Neddick, Me. 03902

Filed Oct. 6, 1993, Ser. No. 132,189
Int. Cl.[5] A63H *3/14, 33/00*
U.S. Cl. 446—328 **2 Claims**



1. A method of making a hand puppet upon a human hand

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having an index finger, a middle finger, a ring finger, a pinkie finger, and a thumb, comprising the steps of:

wrapping a flexible cord under both the middle finger and the ring finger of the hand such that said cord is substantially hidden from a front view and at least seventy five percent of the length of the cord is substantially perpendicular to the fingers, said cord connecting a first spheroid and a second spheroid that each have an eye illustration upon their respective faces;

extending said first spheroid above and between the middle finger and the index finger;

extending said second spheroid above and between the ring finger and the pinkie finger;

extending the fingers of the hand substantially straight;

attaching a ring with a mustache connected thereto around both the middle finger and the ring finger, between said flexible cord and the fingertips of said finger; and

attaching a ring with scalp hair connected thereto around both the middle finger and the ring finger, between said flexible cord and the base of said fingers.

5,354,227

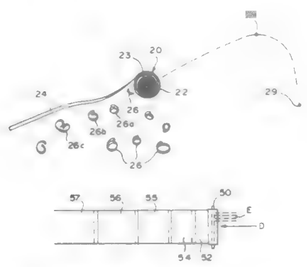
STREAMERS AND BUBBLES

James O. Watkins, 14920 Mt. Nebo Rd., Poolesville, Md. 20837

Filed Aug. 25, 1993, Ser. No. 111,609

Int. Cl.[5] A63H *33/30, 33/00*

U.S. Cl. 446—475 **12 Claims**



1. A roll of confetti elements which, when deployed in the air, form individual rings which simulate bubbles as they fall through the air consisting of:

(a) a plurality of separate, individual strips of lightweight, non-metallic material having overlapping ends rolled in multiple coiled layers such that, when deployed in the air, each individual strip separates from the roll of adjacent strips,

(b) the diameter of the roll being related to individual strip lengths such as to cause a memory to be formed in each strip so that each strip forms a substantial ring shape upon deployment in the air, and

(c) said individual strips being composed of material to accept said memory such that said strips tend to return to said ring shape after being separated from the roll so as to form a plurality of bubble simulations as the ring-shaped strips tumble and float slowly downwardly.

5,354,228

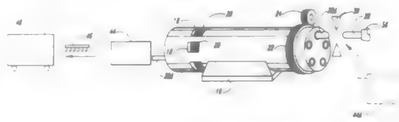
APPARATUS AND METHOD FOR ROTATING A FRAGILE EXTRUDED STRAND OF MEAT PRODUCT FOR LINKING PURPOSES

David W. Smith, West Des Moines, Iowa, and Theo R. Bruinsma, Rijn, Netherlands, assignors to Townsend Engineering Company, Des Moines, Iowa

Filed Aug. 11, 1992, Ser. No. 928,842

Int. Cl.[5] A22C *11/10*

U.S. Cl. 452—47 **9 Claims**



1. An apparatus for rotating a fragile strand of meat product for linking purposes, comprising,

a support means,

an elongated barrel rotatably mounted on said support means, and having a plurality of elongated axial bores therein,

elongated tubes rotatably mounted in said bores,

indexing means secured to said barrel for rotating said barrel in predetermined increments of rotation, and

power means in said support means for selectively rotating said tubes in said bores, whereby rotational motion can be imparted to said strand when said strand is loaded into said tubes.

5,354,229

PROCESS AND A DEVICE FOR SUSPENDING CHAINS OF SAUSAGES IN LOOPS

Klaus Markwardt, Laatzen; Reinhardt K. Ristau, Verden/Aller, and Ledger Sprehe, Muhlen, all of Fed. Rep. of Germany, assignors to VEMAG Maschinenbau GmbH, Aller, Fed. Rep. of Germany

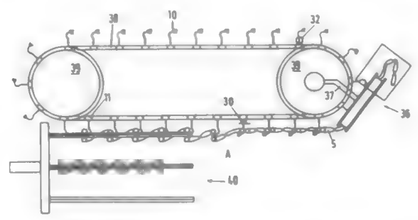
PCT No. PCT/EP92/01464, § 371 Date Apr. 22, 1993, § 102(e) Date Apr. 22, 1993, PCT Pub. No. WO93/00821, PCT Pub. Date Jan. 21, 1993

PCT Filed Jun. 30, 1992, Ser. No. 980,809

Claims priority, application Fed. Rep. of Germany, May 7, 1991, 4122370

Int. Cl.[5] A22C *15/00*

U.S. Cl. 452—51 **29 Claims**



1. A device for suspending a chain of sausage links or the like, wherein adjacent links are connected by twist points, said device comprising:

a chain carrying a plurality of hooks, said hooks each having a first member extending outwardly from said chain and including an interception point, said hooks each further including at least one prong extending from said first member at a spaced location from said interception point;

a feed mechanism disposed adjacent said chain and said hooks for depositing links onto said hooks such that predetermined twist points between adjacent links are engaged and carried by said interception point of said first member; and,

a displacement mechanism disposed adjacent said chain, said displacement mechanism moving each engaged twist point carried by said interception point onto said prong to form said links into a spiral loop adapted to be deposited on a skewer.

5,354,230

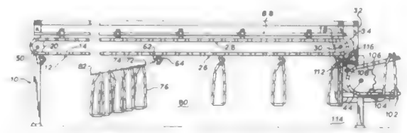
FOOD PROCESSING SYSTEM WITH SIMPLIFIED LOADING AND TRANSFER

Claude L. McFarlane, Madison, and David E. Lukens, Lodi, both of Wis., assignors to DEC International, Madison, Wis.

Filed Jul. 30, 1993, Ser. No. 99,735

Int. Cl.[5] A22C *15/00*

U.S. Cl. 452—51 **16 Claims**



1. A food processing system comprising a continuous conveyor having first and second spaced chains engaging spaced sprockets and extending along a loading run and a return run, a support bar mounted to said chains and extending transversely therebetween, first and second hooks mounted to said support bar, said first hook being slidable along said support bar, a food stick for supporting a food product, said food stick having a first end engageable with said first hook for pushing said first hook toward said first chain and away from said second hook, said food stick having a second end engageable with said second hook, such that said food stick is suspended from said first and second hooks.

5,354,231

DEVICE FOR REMOVING THE ANUS OF SLAUGHTERED ANIMALS

Wilhelmus A. B. Te Dorsthorst; Sander A. Van Ochten, both of Lichtenvoorde, and Fransiscus M. Waanders, Haaksbergen, all of Netherlands, assignors to Stork R.M.S. B.V., Lichtenvoorde, Netherlands

PCT No. PCT/NL92/00157, § 371 Date Sep. 22, 1993, § 102(e) Date Sep. 22, 1993, PCT Pub. No. WO93/07759, PCT Pub. Date Apr. 29, 1993

PCT Filed Sep. 11, 1992, Ser. No. 75,480

Claims priority, application Netherlands, Oct. 17, 1991, 9101742

Int. Cl.[5] A22B *5/00*

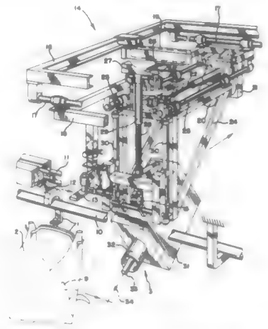
U.S. Cl. 452—122 **20 Claims**

1. An apparatus for removing the anus of slaughtered animals, comprising:

a cutting device for cutting out the anus of a slaughtered animal, which cutting device comprises a displaceable carriage and a rotatably drivable and axially displaceable, substantially cylindrical blade carried by the carriage and having a leading cutting edge and a blunt locating pin placed coaxially to the blade, wherein during removal of an anus a centre line of the blade is substantially stationary relative to the slaughtered animal being processed;

a positioning device for positioning the carriage such that the centre line of the blade extends through the anus of the slaughtered animal, which positioning device comprises two drives which can move the carriage in two respective non-parallel directions;

a measuring device for measuring the position of the anus of the slaughtered animal for processing; and



a control device which receives position information from the measuring device and controls the two drives on the basis of the position information.

5,354,232

FISH PROCESSING MACHINE

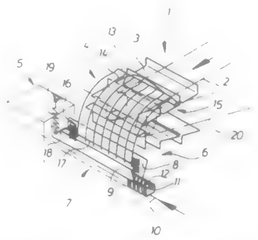
Hugo Pontow, Lübeck, Fed. Rep. of Germany, assignor to Nordischer Maschinenbau Rud. Baader GmbH & Co. KG, Lubeck, Fed. Rep. of Germany

Filed Sep. 21, 1993, Ser. No. 124,042

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1992, 9212788[U]

Int. Cl.[5] A22C *25/08*

U.S. Cl. 452—182 **18 Claims**



1. An apparatus for processing fish, said fish defining a longitudinal axis and having a thickness according to which a smallest and a largest of said fish to be processed are defined, said apparatus comprising:

a) a first processing section, which has an end portion and defines fish supporting surface means and a first fish path section along which said fish are conveyed on said fish supporting surface means in a direction essentially transverse to said longitudinal axes towards said end portion;

b) a transfer station located at said end portion of said first processing section and including cover means arranged above said first fish path section, said cover means having an intake portion and an outlet portion and defining guiding inner surface means directed towards said first fish path section, said outlet portion of said cover means extending essentially vertically;

c) a second processing section adjoined at an angle to said first processing section and defining a second fish path section along which the fish are conveyed in a direction essentially parallel to said longitudinal axis;

wherein said cover means are formed to be resiliently yielding

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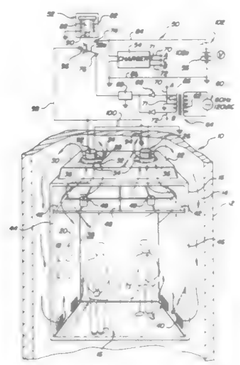
with respect to said first fish path section at said intake portion, and non-yielding with respect to said first fish path section at said outlet portion, the distance of said cover means from said fish supporting surface means being, at the intake portion, smaller than the thickness of said smallest fish specified for processing and, at said outlet portion, larger than the thickness of said largest fish specified for processing.

5,354,233

EMERGENCY VENTILATION SYSTEM FOR ELEVATOR CAB

Terry R. Mandy, Troy; Robert R. Mandy, Bingham Farms, and Nazar Bally, Southfield, all of Mich., assignors to Man-D-Tec, Inc., Scottsdale, Ariz.

Filed Oct. 2, 1992, Ser. No. 955,416
Int. Cl.[5] F24F *7/007*
U.S. Cl. 454—68 **2 Claims**



1. An emergency ventilation system for use in elevator cabs, said emergency ventilation system being of the type having one or more motor driven fans, the improvement comprising:

means connectable to a main power supply for maintaining said motor driven fan(s) continuously operative to supply ventilation through said elevator cab during normal operation and when the main power supply fails;

a stepdown transformer having a primary winding for connection to the main power supply and having a secondary winding;

an emergency battery and a battery charger;

said secondary winding providing power to said one or more fans when the main power supply is operative; said secondary winding also providing power to said battery charger when the main power supply is operative to maintain the charge on said emergency battery for use during emergency ventilating;

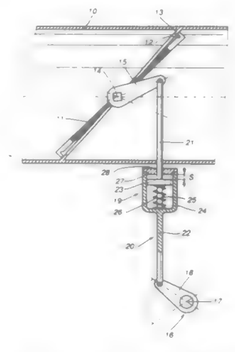
and a thermistor coupled to said one or more fans operative to reduce current flow to said one or more fans in accordance with the temperature in the elevator cab so as to regulate airflow while reducing fan noise and the power requirements during emergency operation thereby to extend the time during which said emergency battery will be operative following failure of the mai power source.

5,354,234

ACTUATING DEVICE FOR A MOTOR VEHICLE REGULATING FLAP

Klaus Arold, and Otto Plajer, both of Sindelfingen, Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Jun. 4, 1993, Ser. No. 70,987
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1992, 4220668
Int. Cl.[5] B60H *1/24*
U.S. Cl. 454—69 **16 Claims**



16. A method of actuating a motor vehicle regulating flap selectively to expose and close an air-passage cross-section, comprising the steps of

moving a remote actuator through a maximum actuating stroke;

moving the regulating flap about a pivot through a pivoting distance smaller than a maximum actuating stroke for the remote actuator during transfer of the regulating flap from a maximum opening position to a fully closed position against a stop so as to sealingly rest the regulating flap against the stop associated with the air-passage cross-section, and

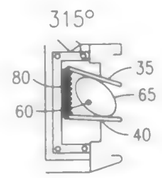
providing a required compressive force between the regulating flap and the remote actuator which is greater than the actuating force to be transmitted over closing travel of the regulating flap.

5,354,235

AIR SWEEP MECHANISM

Jon D. Rittle, 85 Tappan St., Baldwinsville, N.Y. 13027, and Richard D. Dennis, 1429 Lestina Rd., Bridgeport, N.Y. 13030

Filed Dec. 10, 1993, Ser. No. 164,866
Int. Cl.[5] F24F *13/075*
U.S. Cl. 454—285 **11 Claims**



1. An improved air sweep mechanism of the type disposed in an air discharge opening of an air conditioner system for automatically directing and sweeping the airflow emanating therefrom, wherein the improvement comprises:

a shaft extending across the air discharge opening and rotatably mounted therein;

drive means operatively connected to said shaft for rotating said shaft on its axis;

a plurality of discs disposed in spaced relationship on said shaft such that for each disc, the distance between at least one point on its periphery and the axis of said shaft is larger than the distance between another point on its periphery and the axis of said shaft;

a pair of adjacent louver blades extending across the air discharge opening, each louver blade having first and second edges and being pivotally mounted in the air discharge opening about its first edge; and

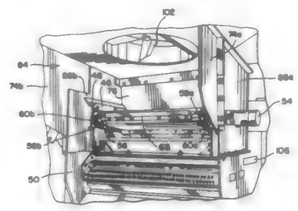
biasing means for biasing said louver blade second edges toward each other to thereby cause an engaging relationship between said discs and said pair of louver blades such that as said discs rotate, the louver blades are caused to pivot about their first edges thus causing a change in the direction of airflow emanating from the discharge opening.

5,354,236

METHOD OF CONVERTING CORN PICKER/HUSKER TO REDUCE KERNEL LOSS AND DAMAGE

Dale C. Opheim, Graettinger, Iowa, assignor to Charles Dee, Waukon, Iowa

Filed Apr. 5, 1993, Ser. No. 42,511
Int. Cl.[5] A01F *11/06*
U.S. Cl. 460—149 **33 Claims**



1. A method for converting a corn picker which is designed to remove corn husks into a corn picker which is designed to leave the corn husks substantially on the ears of corn comprising:

a. providing a corn picker which is designed to harvest the ears of corn while removing the husks from the ears of corn said corn picker comprising:

(i) a harvesting means for removing the ears of corn from their stalks;

(ii) a husking means used to remove husks from the ears of corn; and

(iii) an air moving means for removing debris from the ears of corn after said ears have been husked;

b. replacing said husk removal means with a conveyor means to transport the ears of corn toward a storage area;

c. placing a suction means above the end of said conveyor means to increase the efficiency with which said suction means draws air over the ears of corn;

d. mounting air damming means around said conveyor means to draw air over the ears of corn and debris away from the ears of corn;

e. providing an air inlet means to allow air to be drawn through the ears of corn thereby pulling debris away from the ears of corn and toward said suction means; and

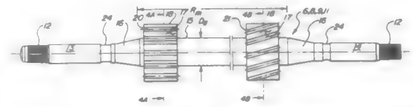
f. providing an exhaust means for removing waste and air pulled through the ears of corn to increase the efficiency of said suction means and decrease problems associated with said debris accumulating and interfering with the operation of said suction fan.

5,354,237

DRIVESHAFT INCLUDING DAMPING SLEEVE FOR BENDING AND TORSIONAL FREQUENCY IMPROVEMENT

Peter Amborn, Neunkirchen, and Klaus Greulich, Hollig, both of Fed. Rep. of Germany, assignors to GKN Automotive AG, Siegburg, Fed. Rep. of Germany

Filed Jun. 19, 1991, Ser. No. 717,393
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1990, 4020998
Int. Cl.[5] F16C *3/00*
U.S. Cl. 464—180 **9 Claims**



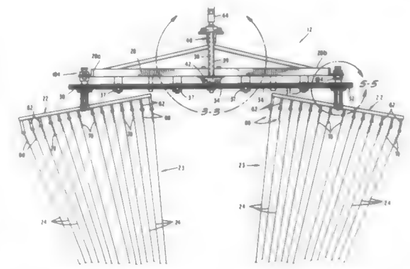
1. A one piece driveshaft for torque transmitting purposes especially for use in the drive of a motor vehicle, and which comprises a tubular shaft with end regions provided at respective ends and a central region having a smooth exterior surface, wherein at least one damping sleeve is slid onto the smooth exterior surface of the driveshaft in the central region covering a small portion of the central region and firmly attached thereto and that the damping sleeve comprises a material with a high modulus of elasticity and a low specific gravity, said at least one damping sleeve has indentations on its surface.

5,354,238

LEVITATION APPARATUS

John Gaughan, 5223 San Fernando Rd., Los Angeles, Calif. 90039

Continuation-in-part of Ser. No. 858,095, Mar. 26, 1992, abandoned. This application Jun. 7, 1993, Ser. No. 72,886
Int. Cl.[5] A63J *5/12*
U.S. Cl. 472—68 **29 Claims**



1. A theatrical apparatus for performing a levitation type illusion for the benefit of an audience looking in a viewing direction toward a stage upon which a performer is being located, said apparatus comprising:

(a) harness means for supportable interconnection with the performer, said harness means including a first connector element disposed in a plane extending substantially perpendicular to the viewing direction of the audience; and

(b) performer support means interconnected with said harness means for moving said harness means relative to the audience, said performer support means comprising:

(i) a second, elevated connector element disposed in said plane;

(ii) a support array comprising a plurality of spaced apart, fine wires disposed in said plane and interconnecting said first and second connector elements; and

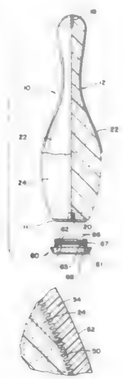
VOL 1167 ISS 2 OCT 11 1994 UMI

(c) rotator means for controllably rotating said performer support means.

5,354,239
BOWLING PIN WITH INTERLOCKING SHELL TO FOAM CORE AND BASE

Alvin W. Mueller, St. Louis, Mo., assignor to Mueller-Perry Co., Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 735,001, Jul. 22, 1991, Pat. No. 5,240,248, which is a continuation-in-part of Ser. No. 438,048, Nov. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 294,654, Jan. 9, 1989, abandoned. This application Jun. 21, 1993, Ser. No. 79,040
Int. Cl.[5] A63B *63/00*
U.S. Cl. 473—119 11 Claims



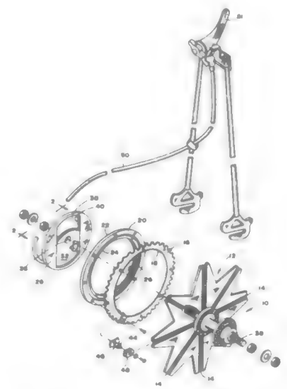
1. In the manufacture of a bowling pin having a core of rigid plastic foam, such core having interior cells and a surface skin, such pin also having a shell cast from a liquid plastic which hardens without foaming during curing, the method of forming such shell onto such core comprising the steps of:
(a) substantially removing such core surface skin, whereby to transect cells therebeneath,
(b) so molding such shell around such core to provide substantial axial concentricity of such core and such shell, and
(c) causing such shell to cure,
whereby such liquid non-foamed plastic of such shell fills said transected cells prior to such curing and forms highly interlocking projections into such core upon such curing, thereby to withstand the shocks of use and the force applied during resurfacing.

5,354,240
VARIABLE TRANSMISSION

Harold A. Hunter, Jr., 336 W. Oakdale St., Mt. Airy, N.C. 27030

Continuation-in-part of Ser. No. 9,739, Jan. 27, 1993. This application Sep. 24, 1993, Ser. No. 126,309
Int. Cl.[5] F16H *9/26*
U.S. Cl. 474—57 13 Claims

1. In a power transmission system having a standard rear axle and a rotatable chain sprocket engaging an endless chain for receiving an input torque and transmitting an output torque, an improvement for varying the torque transmission ratio comprising: shifter means having a circular shifter ring with a diametrical slot and shifter plate means including a shifter plate configured for slidable movement within the diametrical slot and movable with respect to the sprocket; means selectively displacing the shifter plate within the diametrical slot and with respect to the sprocket whereby the

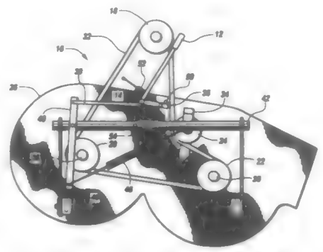


shifter ring and sprocket are eccentrically offset from the rear axle to vary the torque transmission ratio.

5,354,241
BELT CLUTCH CONTROL APPARATUS

Harlin J. Trefz, and Joe Deschamps, both of Jackson, Tenn., assignors to Murray Outdoor Products Inc., Jackson, Tenn.

Filed May 4, 1993, Ser. No. 57,524
Int. Cl.[5] F16H *7/08*
U.S. Cl. 474—101 11 Claims



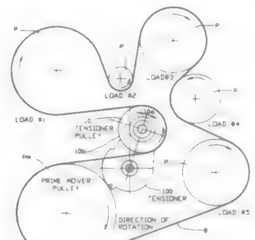
1. A belt clutch control apparatus for controlling the transmission of power from a driving pulley to a driven pulley operatively connected by a drive belt, said apparatus being operative to selectively move an idler pulley between engaged and disengaged positions relative to the belt, said apparatus comprising:
a control handle, selectively moveable between on and off positions, having a shaft extending therefrom at a substantially right angle and rotatable about an axis upon movement thereof, said shaft having a distal end;
linkage means, including a connecting link attached to said distal end of said shaft and moveable between first and second under-center positions relative to said axis in response to movement of said handle between said on and off positions, respectively, said linkage means interconnecting said distal end of said shaft and said idler pulley, operative to move said idler pulley to said engaged position upon rotation of said shaft resulting from movement of said control handle to said on position, and
biasing means for urging said connecting link into said first

under-center position, thereby maintaining said handle in said on position.

5,354,242
AUTOMATIC BELT TENSIONER WITH AN ENCLOSED FLAT WIRE POWER SPRING AND IMPROVED ZEROING AND DAMPING MEANS

Richard C. St. John, 731 Bachtel St., SE., North Canton, Ohio 44720

Filed Oct. 8, 1992, Ser. No. 958,089
Int. Cl.[5] F16H *7/12*
U.S. Cl. 474—135 15 Claims

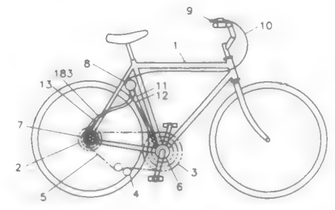


1. An automatic belt tensioner for use in a serpentine belt drive system located on a machine, comprising:
a) a tensioner arm;
b) a tensioner pulley attached to said tensioner arm for engagement with the belt;
c) a housing pivotally attached to said tensioner arm and fixed to the machine;
d) a slotted power spring disposed within said housing and having its one end secured to the inner wall of said housing and its other end operatively connected to said tensioner arm; and
e) an insertable lug selectively positioned in the wall of said housing to secure said one end of said spring whereby the point of securement of said spring to said housing is variable.

5,354,243
VARIABLE RATIO CHAIN DRIVE EMPLOYING SYNCHRONOUS FLEXIBLE SPROCKET SHIFTING

Albert P. Kriek, 161 Chestnut Ridge Rd., Arden, N.C. 28704

Filed Nov. 9, 1993, Ser. No. 150,415
Int. Cl.[5] F16H *55/30, 7/00*
U.S. Cl. 474—160 27 Claims

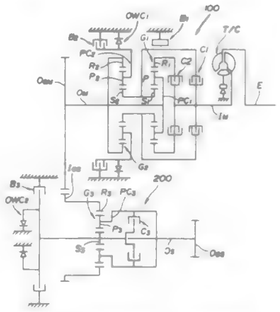


1. A variable ratio chain drive, comprising:
a sprocket ring stack including at least two adjacent sprocket rings of differing diameters mounted for co-rotation on a sprocket axis;
said sprocket rings being radially split in a common plane defined by the sprocket axis and a radial such that each sprocket ring has a leading and trailing resilient sector on either side of a sprocket ring split; and
an actuator element for selectively deflecting said leading resilient sectors in one axial direction to a deflected position while deflecting said trailing resilient sectors in the opposite axial direction to a deflected position such that the leading resilient sector of one sprocket ring is in alignment with the trailing resilient sector of another sprocket ring at the common plane.

5,354,244
AUTOMATIC TRANSMISSION

Hirobumi Shirataki, Fuji, Japan, assignor to Jatco Corporation, Fuji, Japan

Filed Oct. 5, 1992, Ser. No. 956,861
Claims priority, application Japan, Oct. 3, 1991, 3-256482
Int. Cl.[5] F16H *3/62*
U.S. Cl. 475—205 2 Claims



1. An automatic transmission comprising a main speed changing device and an auxiliary speed changing device drivingly connected to said main speed changing device, said auxiliary speed changing device comprising a planetary gear set, a brake shaft having first and second ends, a frictional coupling device disposed at said first end of said brake shaft, and a clutch disposed at said second end of said brake shaft, said brake shaft including a plurality of splines integrally formed as a part of said brake shaft, said splines functioning as a sun gear for said planetary gear set thereby allowing a greater range of gear ratios.

5,354,245
CONTINUOUSLY VARIABLE SPEED PLANETARY GEAR APPARATUS

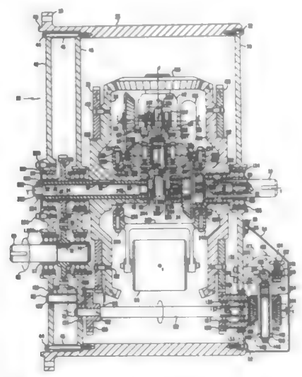
Henry W. Wallace, Bradenton, Fla., assignor to Wallace Associated Research, Lakewood, Colo.

Division of Ser. No. 962,404, Oct. 16, 1992, Pat. No. 5,273,497. This application Jul. 9, 1993, Ser. No. 89,242
Int. Cl.[5] F16H *37/08*
U.S. Cl. 475—207 10 Claims

1. An apparatus for holding a first, orbital torque member rotationally fixed about an axis thereof while allowing the first member to orbit about an orbital axis, comprising:
a first interconnecting assembly for interconnecting said first member to a second, longitudinal member, said second member being coaxial with said orbital axis, said first interconnecting assembly including a first longitudinal portion which is interconnected to said first and second members such that orbital motion of said first member about said orbital axis is coupled to radial reciprocating motion of said first longitudinal portion;
a second interconnecting assembly for interconnecting said first member to said second member, said second intercon-

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necting assembly including a second longitudinal portion which is interconnected to said first and second members such that orbital motion of said first member about said orbital axis is coupled to radial reciprocating motion of said second longitudinal portion; and



means for rotatably interconnecting said first and second longitudinal portions of said first and second interconnecting assemblies so as to allow for relative reciprocating motion therebetween.

5,354,246

MECHANISM IN A POWERED HAND-HELD ROTARY DRIVER FOR COUNTERACTING REACTION TORQUE

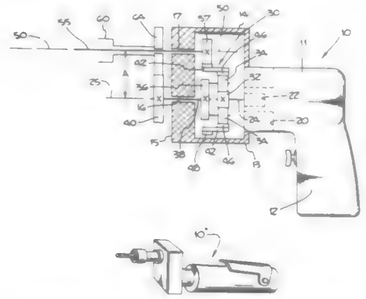
Alexander S. Gotman, Santa Monica, Calif., assignor to Gene W. Arant, Santa Paula, Calif., a part interest

Continuation of Ser. No. 653,682, Feb. 11, 1991, Pat. No. 5,238,461. This application Mar. 1, 1993, Ser. No. 24,432

The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.

Int. Cl.[5] F16H *1/42*

U.S. Cl. 475—248 **17 Claims**



1. In a hand operated rotary power tool having a housing, a mechanism for counteracting reaction torque that would otherwise be exhibited directly on the housing, said mechanism comprising:

a powered rotor rotatable on a defined axis with respect to the housing;

a planetary differential mechanism including a ring gear rotatably supported from the housing, a sun gear rotatably supported from the housing being coaxial with said rotor, and a set of planetary gears coacting with both said sun gear and said ring gear, said sun gear being rotatably driven by said rotor;

an output coaxial with both said rotor and said sun gear and drivingly coupled to said set of planetary gears so as to be rotatably driven thereby;

a shaft rotatably supported from the housing on an axis that is laterally offset from the axis of said rotor, said ring gear being drivingly coupled to said laterally offset shaft; and

means for inhibiting rotation of said laterally offset shaft relative to the housing in the direction that said output rotates relative to the housing.

5,354,247

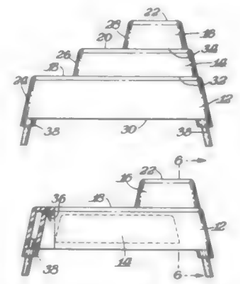
MODULAR STEP EXERCISE UNIT

William T. Wilkinson, P.O. Box 572, Crownsville, Md. 21032-0572

Continuation-in-part of Ser. No. 82,099, Jun. 28, 1993, which is a continuation-in-part of Ser. No. 967,711, Oct. 28, 1992, Pat. No. 5,275,579, and Ser. No. 69,740, Jun. 1, 1993, which is a continuation-in-part of Ser. No. 891,178, May 29, 1992, Pat. No. 5,248,286, which is a division of Ser. No. 718,754, Jun. 21, 1991, Pat. No. 5,118,696, which is a division of Ser. No. 588,449, Sep. 26, 1990, abandoned, said Ser. No. 69,740, is a continuation-in-part of Ser. No. 967,711, Sep. 26, 1990, which is a continuation-in-part of Ser. No. 754,075, Sep. 3, 1991, Pat. No. 5,162,028, and Ser. No. 698,392, May 10, 1991, Pat. No. 5,184,987. This application Jul. 26, 1993, Ser. No. 96,408

Int. Cl.[5] A63B *5/00*

U.S. Cl. 482—52 **14 Claims**



1. A modular step exercise unit comprising a first step having a horizontal upper surface to comprise a stepping platform with depending side walls terminating in a lower edge parallel to said upper surface, a second step having a horizontal upper surface to comprise a stepping platform with depending side walls terminating in a lower edge parallel to its said upper surface, said side walls of said first step being of a size and shape sufficiently larger than the size and shape substantially larger than said second step of said second step to permit said second step to be selectively nested within said side walls of said first step during periods of non-use of said second step, said upper surface of said first step being of a size and shape to support said second step when said lower edge of said second step is mounted on said upper surface of said first step and to leave a substantial portion of said upper surface of said first step exposed, said unit selectively having a plurality of possible height elevations, one of said height elevations being said upper surface of said first step when said second step is nested in said first step, another of said height elevations being said upper surface of said second step and said exposed portion of said upper surface of said first step when said second step is mounted on said first step whereby the user may step on said exposed portion of said first step and on said upper surface of said second step, and another of said height elevations being said upper surface of said first step and said upper surface of said second step when said second step is mounted near said first step.

5,354,248

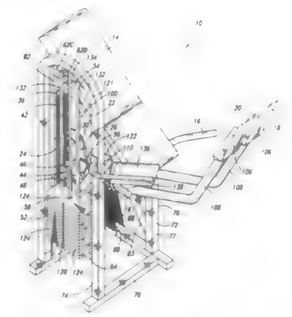
EXERCISE APPARATUS

R. Lee Rawls, Woodinville, and James A. Duncan, Renton, both of Wash., assignors to Stairmaster Sports/Medical Products, Inc., Kirkland, Wash.

Filed Mar. 19, 1993, Ser. No. 33,870

Int. Cl.[5] A63B *23/04*

U.S. Cl. 482—6 **70 Claims**



51. An exercise apparatus, comprising:

a movable resistance member applying a resistance force;

an input mechanism engaged by the user to input an input power with a unidirectional exercise force at a user-selected velocity, the exercise force being determined by the resistance force;

a speed control applying an apparatus-controlled power with a unidirectional apparatus force opposing the exercise force, the apparatus-controlled power having a selected constant velocity, the apparatus force being determined by the resistance force, with the combined exercise force and apparatus force being in balance with the resistance force, the speed control applying the apparatus-controlled power at the selected constant velocity for at least a selected portion of the user's exercise time; and

a differential member coupled to the resistance member and receiving the input power from the input mechanism and the apparatus-controlled power from the speed control, the differential member determining a differential between the user-selected velocity and the selected constant velocity, and applying the resultant to the resistance member so that if the user-selected velocity is greater than the selected constant velocity the resistance member is moved in a first direction, and if the user-selected velocity is less than the selected constant velocity the resistance member is moved in a second direction.

5,354,249

EXERCISE APPARATUS

Teresa M. Raley, 7 E. First St., Cumberland, Md. 21502

Filed Nov. 16, 1993, Ser. No. 152,695

Int. Cl.[5] A63B *22/06, 69/16*

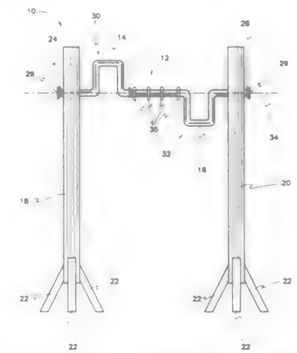
U.S. Cl. 482—57 **2 Claims**

1. An exercise device comprising:

two support members engaging an environmental surface, each one of said support members defining a plurality of holes therein;

a crank member having an axial shaft with two ends removably extending through two of said plurality of holes, whereby the height of said crank member with respect to said support members is adjustable, said two ends each having a retaining cap;

two throw members radially displaced from said axial shaft, said throw members being separably attached to and linearly disposed along said axial shaft of said crank member, said throw members further including telescoping members, each including an alignable hole; and



a nut and bolt assembly insertable into said alignable holes, said bolt preventing relative rotation of said throw members about said axial shaft of said crank member, whereby said throw members are securable selectively on the same side of said axial shaft and on opposite sides of said axial shaft.

5,354,250

APPARATUS FOR TRAINING THE MUSCLES OF THE FEMALE PELVIC DIAPHRAGM

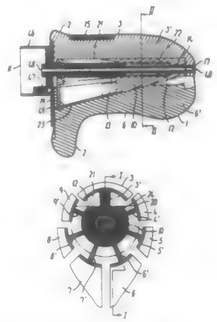
Jane N. Christensen, Vandmøllevej 27, 5220 Odense SØ, Denmark

Filed Apr. 8, 1993, Ser. No. 44,206

Claims priority, application Denmark, Apr. 15, 1992, 505/92

Int. Cl.[5] A63B *21/002*

U.S. Cl. 482—91 **7 Claims**



1. An apparatus for insertion into a vagina for a controllable training and treatment of the muscles of the female pelvic diaphragm around the vagina and of the vaginal wall muscle, in particular for dilation of adjacent tissue structure, which apparatus is slightly conical and mechanically dilatable along a circumference thereof, an outer surface of said apparatus being made of or covered with a material which is non-allergen and harmless to human tissue, which apparatus has the form of a

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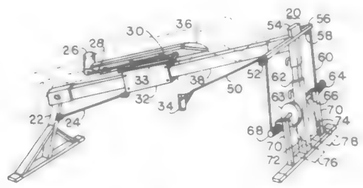
single unit with an external shell (1) which in the starting position of the apparatus has a length and circumference corresponding to the female vagina in a normal relaxed state, and at one end of the apparatus has a rounded corbel (2) which during use of the apparatus rests against a vaginal entrance, which external shell (1) in a longitudinal direction of the apparatus is divided into a number of mutually separated segments (3–9) connected with a displacement mechanism (10) mounted around an axis of the apparatus, said mechanism being non-rotatably displaceable in the longitudinal direction of the axis, by internal, radially mounted connecting pieces formed as cams or connecting arms on the individual segment (3–9) in such a manner that an axial movement in one direction of the displacement mechanism (10) causes a radial movement of the cams or the connecting arms and hence a dilation and that an axial movement of the displacement mechanism in the opposite direction permits retraction of the segments, by a manual operation of a rotation mechanism (11) for adjustment of the dilation degree of the apparatus, which rotation mechanism consists of a grip (46) mounted on a portion of the apparatus facing outwards during use and a shaft (12, 30) mounted rotatably in the apparatus, and wherein the outer surface of the shaft is provided with external threads (13) meshing with corresponding internal threads on the displacement mechanism (10), thereby imparting an axial movement to the displacement mechanism (10), through turning of the shaft wherein a said segment facing the public bone during use is radially fixed compared to the axis of the apparatus.

5,354,251

MULTIFUNCTION EXCERCISE MACHINE WITH ERGOMETRIC INPUT-RESPONSIVE RESISTANCE

Robert H. Sleamaker, 372 Governor Chittenden Rd., Williston, Vt. 05495

Filed Nov. 1, 1993, Ser. No. 144,336
Int. Cl.[5] A63B *21/00*
U.S. Cl. 482—96 **20 Claims**



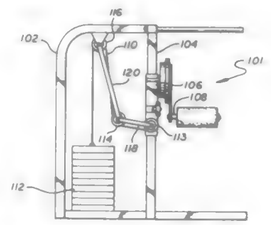
1. A multifunction sports simulation exercise machine with ergometric input-responsive variable resistance comprising:
- a front stanchion assembly;
- a rear stanchion assembly;
- an inclined monorail secured between the two stanchions with a front stanchion end of the monorail generally higher than a rear stanchion end of the monorail;
- wherein the angle of incline of the monorail is adjustable;
- a roller carriage assembly having top and bottom pairs of rollers to engage the monorail, wherein the roller carriage is movably mounted on the monorail to roll along the length of the monorail, wherein a mounting means on the roller carriage permits the attachment and detachment of a variety of user body support assemblies;
- attached to the front stanchion, at least one pair of pulleys, through which pulleys pass at least one pair of pull cables, wherein the pull cables have, at a first end, mounting means for the attachment and detachment of pull means simulating sports equipment, and the pull cables attach, at a second end, to one-way clutch drivers which drive a rotating shaft having an ergometric input-responsive variable resistance assembly; wherein a tension means is attached to the one-way clutch drivers, which tension means retracts the pull cables after each pull.

5,354,252

MULTI-HIP EXERCISER

Theodore G. Habing, Long Beach, Calif., assignor to Pacific Fitness Corporation, Cypress, Calif.

Division of Ser. No. 918,251, Jul. 22, 1992, Pat. No. 5,308,304.
This application Feb. 3, 1994, Ser. No. 190,994
Int. Cl.[5] A63B *21/062*
U.S. Cl. 482—100 **4 Claims**



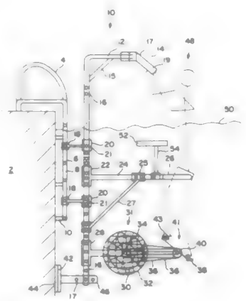
4. An exercising apparatus, comprising;
- a frame having a bar;
- a sleeve adapted to slide over said bar;
- attachment means for detachably connecting said sleeve to said frame such that said sleeve can be positioned at one of at least two locations on said bar;
- a cam selector plate coupled to said sleeve, said cam selector plate being adapted to rotate relative to said sleeve and said frame;
- an actuator arm connected to said cam selector plate such that movement of said actuator arm rotates said cam selector plate;
- a first linkage arm pivotally connected to said sleeve;
- a second linkage arm pivotally connected to said frame;
- a first pulley pivotally connected to said first and second linkage arms;
- a second pulley connected to said frame and said second linkage arm;
- a weight adapted to move relative to said frame; and,
- a cable attached to said actuator arm and said weight, and coupled to said first and second pulleys such that said weight moves when said actuator arm is rotated.

5,354,253

WATER FITNESS AND THERAPY DEVICE

Brian J. Awbrey, and Kipp K. Dye, both of 122 Jason St., Arlington, Mass. 02174

Filed May 19, 1992, Ser. No. 885,182
Int. Cl.[5] A63B *31/00*
U.S. Cl. 482—111 **15 Claims**



1. A water fitness, exercise and therapy device for use in a pool and mounted on a pool wall, comprising:

(a) vertically adjustable frame means removably attached to a pool wall, said adjustable means having a plurality of positions on said pool wall, wherein the frame means may be positioned with at least a portion of the device out of the water at a desired height relative to the water surface, and

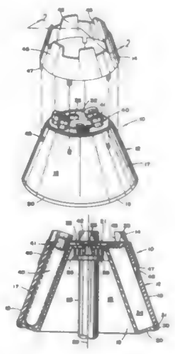
(b) hand gripping means extending generally parallel to the water surface from said frame means, said gripping means being detachably arranged and constructed with at least one portion directed downwardly away from the pool wall, and canted downwardly and sideways away from one another so that the gripping means provides for a plurality of horizontal and angled hand gripping positions, from both arms being directly over the user with the hands together to both arms being about 180 degrees apart, whereby the user exercises by grasping the gripping means and lifting himself upwardly working against gravity and water resistance, thereby decreasing body buoyancy, as more of the user's body exits the water, and then resisting gravity as the user lowers himself back downwardly.

5,354,254

CENTRIFUGE ROTOR HEAD WITH TUBE NECK SUPPORT

B. Dale Zabriskie, Longwood, and Randall L. Morrison, Oviedo, both of Fla., assignors to Separation Technology, Inc., Altamonte Springs, Fla.

Filed Apr. 15, 1993, Ser. No. 47,748
Int. Cl.[5] B04B *7/06, 5/02*
U.S. Cl. 494—12 **19 Claims**



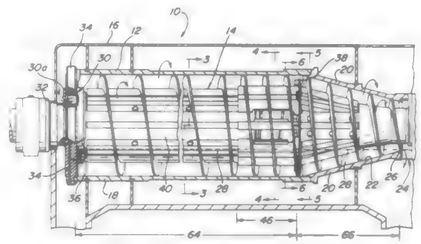
1. In a rotor head for a centrifuge having a vertical drive shaft; said rotor head comprising a body having a top, a rotor axis, a centrally disposed hub portion, an annular portion depending peripherally from said hub portion, means located on said hub portion for mounting said head to said drive shaft for rotation about said rotor axis, and a plurality of cavities formed in said body at angular spacings about said rotor axis, said cavities having top openings and being dimensioned for receiving a corresponding plurality of sample tubes respectively therein, so that necks of the tubes protrude out from said cavity openings when the tubes are fully inserted, the improvement comprising:
- said body comprising a hollow frusto-conical body and a central disc portion closing off said conical body at said top;
- said annular portion having an outer wall inclined upwardly and inwardly toward said rotor axis;
- said cavities being formed in said body at orientations likewise inclined upwardly and inwardly toward said rotor axis; and
- said rotor head further including a crown-shaped configuration of circumferentially angularly-spaced alternating projections and voids at the top of said body; said projections being directed upwardly beyond said openings and being dimensioned, configured and adapted for abuttingly supporting said tube necks during centrifugation; and said voids being dimensioned, configured and adapted to provide empty spaces between said projections for enabling said tube necks to be grasped for insertion of said tubes into, and removal of said tubes from, said cavity openings.

5,354,255

DECANTER CENTRIFUGE WITH CONVEYOR CAPABLE OF HIGH SPEED AND HIGHER FLOW RATES

Leonard Shapiro, Doylestown, Pa., assignor to Alfa Laval Separation Inc., Warminster, Pa.

Filed Dec. 17, 1992, Ser. No. 992,327
Int. Cl.[5] B04B *1/20*
U.S. Cl. 494—53 **24 Claims**



1. A centrifuge comprising: a bowl adapted for rotation about its central longitudinal axis, the bowl having a solids discharge located at a radial position with respect to the longitudinal axis; a rotatable conveyor coaxially mounted within the centrifuge bowl, the conveyor comprising a central hub extending for at least a portion of the longitudinal length of the bowl, the conveyor hub located radially inward of the radial position of the solids discharge and including a discontinuity along its length, an open feed zone formed in the discontinuity of the hub, a series of radially extending support ribs attached to the periphery of the central hub, the ribs being formed and located on the hub to maximize the bending moment of inertia of the conveyor, the series of ribs extending across the discontinuity within the hub and forming the structural integrity of the conveyor in the area of the feed zone, the conveyor further comprising a helical flight attached to the ribs and extending to a position adjacent the bowl; and feed means for introducing feed liquid into the bowl.

5,354,256

APPARATUS FOR SEPARATING INTERMIXED MATERIALS OF DIFFERENT SPECIFIC GRAVITY

Benjamin V. Knelson, 20321-86th Avenue, R.R.#11, Langley, British Columbia, Canada V3A 6Y3

Filed Apr. 28, 1993, Ser. No. 53,259
Int. Cl.[5] B04B *1/04*
U.S. Cl. 494—80 **17 Claims**

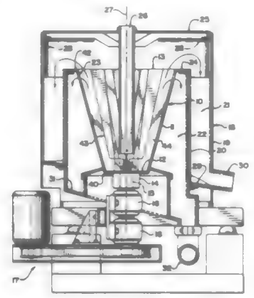
1. Apparatus for separating intermixed materials of different specific gravity comprising a drum having a peripheral wall surrounding a central axis of the drum and defining an inner surface facing inwardly toward the central axis;
- means mounting the drum for rotation about the central axis;
- the inner surface of the peripheral wall increasing in radius relative to the central axis from one axial end to an opposed axial end of the peripheral wall;
- means defining a plurality of angularly spaced channels on the inner surface each channel extending from a feed end

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at said one axial end of the peripheral wall to a discharge end of the opposed axial end of the peripheral wall;

means for feeding the intermixed materials into the drum at said one end of the peripheral wall and arranged to direct the materials into the channels at the feed end thereof such that a portion of the intermixed materials enters each of the channels to flow therealong to the discharge end thereof;

each channel having a base and two sides defining a cross-section of the channel, the cross-section of the channel varying along the length of the channel such that a transverse width of the channel angularly of the peripheral



wall decreases and a depth of the channel radially of the peripheral wall increases along the channel from the feed end toward the discharge end thereof, a first opening in the base at the discharge end for release of heavier materials and a second discharge opening from the channel for discharge of remaining materials after the heavier materials have discharged through the first opening;

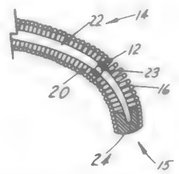
first collecting means for receiving the heavier materials from the first discharge openings of the channels and second collecting means for receiving the remaining materials discharged from the second discharge openings of the channels.

5,354,257

MINIMALLY INVASIVE MEDICAL DEVICE FOR PROVIDING A RADIATION TREATMENT

Gareth S. S. Roubin, Birmingham, Ala., and Neal E. Fearnot, West Lafayette, Ind., assignors to MED Institute, Inc., West Lafayette, Ind.

Filed Jan. 29, 1991, Ser. No. 647,280
Int. Cl.[5] A61M *36/12*
U.S. Cl. 600—7 **14 Claims**



1. A minimally invasive intravascular medical device for providing a radiation treatment, comprising:

a cylindrical first wire having a first uniform outer diameter and a longitudinally tapered distal end;

a wire coil including a distal end, a proximal end, and a passageway extending longitudinally therebetween, said tapered distal end of said first wire extending longitudinally in said passageway of said wire coil, said proximal end of said wire coil being attached to said first wire, said coil having a second outer diameter within a predetermined tolerance of said first uniform outer diameter, said wire coil having a predetermined longitudinal curvature;

a second wire having a distal end attached to said wire coil and a proximal end and extending longitudinally in said passageway to said tapered distal end of said first wire, said proximal end of said second wire being attached to said wire coil and said first wire in said longitudinal passageway; and

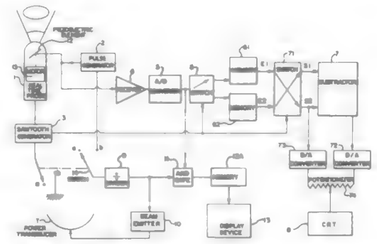
a sleeve of radioactive material fixedly positioned at least partially around said second wire in said passageway a predetermined distance from said distal end of said wire coil.

5,354,258

ULTRA-HIGH-SPEED EXTRACORPOREAL ULTRASOUND HYPERTHERMIA TREATMENT METHOD

Jacques Dory, Coupvray, France, assignor to EDAP International, Marne la Vallee, France

Filed Jan. 7, 1993, Ser. No. 1,988
Claims priority, application France, Jan. 7, 1992, 92 00051
Int. Cl.[5] A61B *5/00*
U.S. Cl. 601—3 **12 Claims**



1. A method of effecting an ultra-high-speed hyperthermia treatment of a region of a subject located at a known depth within the body, with compressional wave energy derived from ultrasonic transducer means for applying to said region a focussed beam transmitted in the form of periodic bursts of oscillations having a predetermined frequency and a predetermined peak power, each burst having a predetermined duration and the successive bursts being separated by time intervals, said method comprising the steps of:

a) effecting tests with said ultrasonic transducer means on a target located at said depth within the body for determining the curve of temperature increase of said target as a function of the time of application of said compressional wave energy, said curve having a quasi-linear portion which starts at time zero and ends at a time t_o;

b) determining the particular peak power of said burst of oscillations which will provide at least a substantial destruction of said region of the subject in a single burst of oscillations having a duration equal to the time t_o; and

c) selecting a peak power of treatment at least equal to said particular peak power and a duration of the treatment bursts at most equal to the time t_o.

5,354,259

MICROFIBER FILLERS FOR ORTHOPEDIC CASTING TAPES

Matthew T. Scholz, Woodbury, and Worku A. Mindaye, Cottage Grove, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 25, 1993, Ser. No. 8,755
Int. Cl.[5] A61F *5/01;* **A61L** *15/08, 15/10, 15/12, 15/14*
U.S. Cl. 602—8 **35 Claims**

1. An article, comprising:

a fabric sheet;

a curable liquid resin coated onto said fabric sheet; and

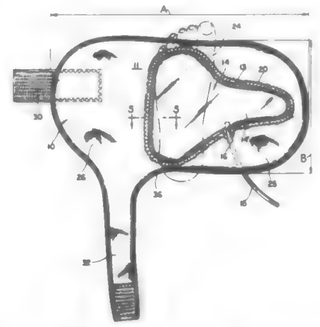
a microfiber filler, having an aspect ratio at least 5:1, associated with said resin.

5,354,260

SLIPPER WITH AN INFLATABLE FOOT PUMP

Gordon J. Cook, Andover, United Kingdom, assignor to Novamedix, Ltd., Walworth, United Kingdom

Filed May 13, 1993, Ser. No. 62,437
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—13 **13 Claims**



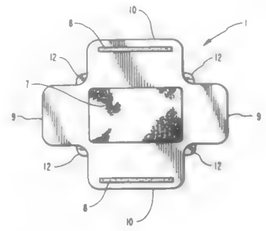
1. A medical appliance, comprising an elongate generally rectangular and flexible wrap having between upper and lower surfaces a length dimension (A) which is approximately twice its width dimension (B), wherein said width dimension is adapted to approximate but extend short of the length dimension of a human foot that is to be subjected to foot-pump therapy for enhancement of venous and arterial flow; a relatively stiff reinforcement panel that is adapted to be sufficiently elongate to lap the span between the ball and heel of the foot, securing means retaining said relatively stiff reinforcement panel in assembly with said wrap at the lower surface of said wrap and at a location that is generally central with respect to said length dimension (A), with the elongate direction of said reinforcement panel transverse to said length dimension (A); an inflatable bladder comprising two peripherally sealed panels of impervious flexible plastic material, said bladder being secured to the upper surface of said wrap at least in substantial register with said reinforcement panel and said bladder being adaptively shaped for active force application to the plantar region substantially only between the ball and heel of the foot; said securing means including a flexible reinforcing panel of tightly woven essentially non-stretch fabric adhered to said relatively stiff panel and having a perimeter which overlaps said relatively stiff panel and which has at least lapping conformance to the periphery of said bladder, said flexible reinforcement panel having peripherally stitched retention to said wrap in substantial conformance with the periphery of said bladder; said wrap having laterally extending remainder portions with means for removably securing the same in lapped circumferentially tied relation to each other over the dorsi-medial region of a foot that has been placed in register with said bladder and said reinforcement panel; and an elongate heel strap connected to said wrap, said strap extending from one to the exclusion of the other of said remainder portions and from one to the exclusion of the other of the elongate sides of said wrap and generally parallel to but laterally offset from alignment with said reinforcement panel; whereby when said wrap has been circumferentially tied around the foot, said strap may be secured around the back of the heel to the other of the lateral remainder portions of said wrap.

5,354,261

FLUID-RETENTIVE BANDAGE

Francis S. Clark, 5838 Club View Dr., Ogden, Utah 84403, and Warren D. Hansen, 8378 Azul Way, Sandy, Utah 84093

Filed Jun. 22, 1992, Ser. No. 902,687
Int. Cl.[5] A61F *13/00, 15/00*
U.S. Cl. 602—58 **8 Claims**



1. A bandage comprising:

a base portion,

an aperture located on said base portion,

means for releasably holding a dressing comprising a plurality of flaps, each of said flaps being attached at a proximal edge to said base portion and each of said flaps protruding from said base portion, said plurality of flaps having an open position in which said flaps are folded away from said aperture to permit access to said aperture from a distal side of the bandage, and said plurality of flaps having a closed position in which said flaps are folded toward said position in which said flaps are folded toward said aperture to cover said aperture, said plurality of flaps comprising at least one closable side flap and at least one closable end flap, at least one flap being releasably attachable to another flap when in said closed position such that said attached flaps form a protective closure over said aperture, said flaps being connected to each other only when in said closed position, and

means for attaching the bandage to the body of a patient,

said bandage further comprising a flat pad attached to a proximal side of said holder, said flat pad being oriented such that it protrudes beyond the sides of said holder when said flaps are in said closed position, said flat pad having adhesive on a proximal side for attaching to a patient's body, said flat pad being adapted to firmly anchor the bandage to a patient's body such that the bandage resists removal from a patient's body to which it is attached during manipulation of said flaps.

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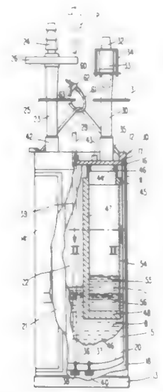
APPARATUS FOR REMOVAL OF INSOLUBLE FAT FROM BLOOD OF A PATIENT

John R. Boehringer, Wynnewood, and John Karpowicz, Glenmoore, both of Pa., assignors to Boehringer Laboratories, Norristown, Pa.

Division of Ser. No. 778,583, Oct. 17, 1991, Pat. No. 5,203,778, which is a continuation-in-part of Ser. No. 626,895, Dec. 13, 1990, which is a continuation-in-part of Ser. No. 406,820, Sep. 13, 1989, which is a continuation of Ser. No. 264,444, Oct. 28, 1988, abandoned, which is a continuation of Ser. No. 906,750, Sep. 12, 1986, Pat. No. 4,781,707, which is a continuation-in-part of Ser. No. 830,533, Feb. 18, 1986, Pat. No. 4,767,417. This application Feb. 22, 1993, Ser. No. 20,637

Int. Cl.[5] A61M *37/00, 1/00, 1/14, 1/34*

U.S. Cl. 604—4 17 Claims



1. Apparatus for treating blood of a patient for reuse comprising:

(a) a container for receiving blood from a body of the patient; and

(b) including fat removal means disposed in the container, for removing essentially insoluble lipids from the blood; said fat removal means including a lipophilic discriminating means, that discriminates between essentially insoluble lipids in the blood and essentially aqueous components of the blood that includes soluble lipids, said fat removal means including means for accumulating essentially insoluble lipids separately from the essentially aqueous components of the blood that include soluble lipids by discriminating between said essentially soluble lipids and said essentially aqueous components of the blood that include soluble lipids.

5,354,263

URETERAL STENT-CATHETER HAVING VARYING DIAMETER STENT

Milton E. Coll, 6 Pear Tree La., Lafayette Hill, Pa. 19444

Continuation-in-part of Ser. No. 885,789, May 20, 1992, Pat. No. 5,221,253, which is a continuation of Ser. No. 704,718, May 20, 1991, Pat. No. 5,116,309, which is a continuation of Ser. No. 301,090, Jan. 25, 1989, abandoned. This application Jun. 21, 1993, Ser. No. 78,816

The portion of the term of this patent subsequent to May 26, 2009, has been disclaimed.

Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—8 21 Claims

1. A flexible ureteral stent for implantation in a ureteral meatus, comprising:

a flexible tubular drain passage segment having a plurality of drain passages and a first fluid passage channel extending substantially the entire length of said drain passage segment, said channel communicating with the outside of said drain passage segment, said drain passage segment having a first outer width and said first fluid passage channel having a first channel width, one end of said drain passage segment being closed and a portion of said passage segment forming a preformed curl; and

a flexible tubular ureteral catheter receiving segment having a second fluid passage channel extending the entire length thereof, said catheter receiving segment being collinearly integral with said passage segment, with said second fluid passage channel also being collinear with said first fluid



passage channel, said catheter receiving segment having a second outer width, said second passage channel having a second channel width, said second outer and channel widths being larger than said first outer and channel widths, respectively,

wherein the junction between said catheter receiving segment and said drain passage segment being gradually tapered to form a continuous, non-abrupt outer surface, a portion of said catheter receiving segment forming another preformed curl, and

wherein said length of said drain passage segment being substantially longer than said catheter receiving segment.

5,354,264

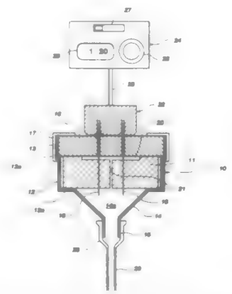
GAS PRESSURE DRIVEN INFUSION SYSTEM BY HYDROGEL ELECTROLYSIS

You H. Bae, and Ick C. Kwon, both of Salt Lake City, Utah, assignors to Insutech, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 783,634, Oct. 24, 1991, abandoned. This application Feb. 17, 1993, Ser. No. 18,937

Int. Cl.[5] A61M *1/30*

U.S. Cl. 604—21 40 Claims



1. A gas driven drug delivery device for dispensing a liquid drug at a predetermined rate, which comprises

(a) a gas generation unit for producing oxygen and hydrogen gases by the electrolysis of water comprising a housing having affixed therein a solid water swollen negatively charged polymeric hydrogel possessing strength and rigidity, electrodes inserted into said water swollen negatively charged hydrogel and extending outwardly of said housing and means attached to said electrodes outwardly of said housing for applying an electric current to said electrodes said electrodes being positioned in said hydrogel such that oxygen and hydrogen produced will migrate out of said hydrogel along said electrodes;

(b) a non-expandable fluid container comprising a variable volume gas compartment and a variable volume drug delivery reservoir said compartment and reservoir being separated by a fluid tight septum the position of which determines the volume of said gas compartment and drug delivery reservoir, said gas compartment being in sealed fluid communication with said gas generation unit for receiving oxygen and hydrogen produced at said electrodes under pressure and said drug delivery reservoir having an outlet passageway; and

(c) delivery means communicating with said outlet passageway in said drug delivery reservoir for receiving displaced drug solution from said reservoir and directing said solution into the body of a patient.

5,354,265

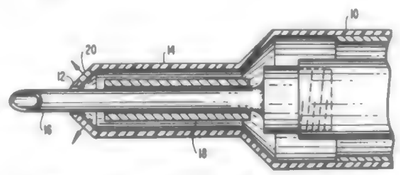
FLUID INFUSION SLEEVE

Richard J. Mackool, 31-27 41st St., Astoria, N.Y. 11103

Continuation-in-part of Ser. No. 998,442, Dec. 30, 1992, Pat. No. 5,286,256. This application Nov. 15, 1993, Ser. No. 148,521

Int. Cl.[5] A61B *17/20*

U.S. Cl. 604—22 5 Claims



1. A surgical instrument for removing a cataract through an incision in a patient's eye, comprising:

a hollow, compressible infusion sleeve;

said hollow, compressible infusion sleeve having a tapered, ported, distal end portion and having an extreme end portion;

said hollow, compressible infusion sleeve further including a cylindrical portion;

said cylindrical portion intersecting with and extending away from said tapered, ported, distal end portion;

a hollow, vibrating needle, having an inner needle diameter, an outer needle diameter and a wall thickness,

said hollow, vibrating, needle extending into a patient's eye during the removal of a cataract;

a needle support;

said cylindrical portion and said tapered, ported, distal end portion surrounding said hollow, vibrating needle with there being a space between the extreme end portion of said tapered, ported distal end portion and the hollow, vibrating needle;

a rigid, hollow, sleeve surrounding a portion of said hollow, vibrating needle with said rigid, hollow, sleeve having a sleeve body, an outer sleeve diameter, and an inner sleeve diameter,

said inner sleeve diameter being larger than said outer needle diameter, thereby defining a path of fluid between said hollow vibrating needle and said rigid, hollow, sleeve;

said rigid, hollow, sleeve being surrounded by said cylindrical portion whereby said rigid, hollow, sleeve prevents the hollow, compressible infusion sleeve from collapsing against said hollow, vibrating needle; and an inhibitor for inhibiting the distal migration of said rigid, hollow, sleeve.

5,354,266

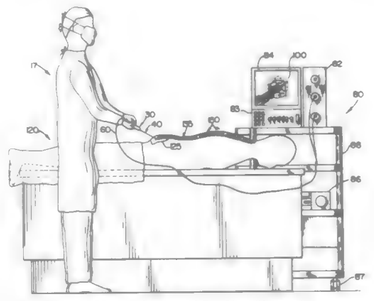
METHOD OF EPIDURAL SURGERY

Phillip J. Snoke, Atlanta, Ga., assignor to Catheter Imaging Systems, Atlanta, Ga.

Continuation-in-part of Ser. No. 908,403, Jul. 6, 1992, and a continuation-in-part of Ser. No. 963,431, Oct. 19, 1992, and a continuation-in-part of Ser. No. 970,490, Nov. 2, 1992. This application Sep. 30, 1993, Ser. No. 129,331

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—28 30 Claims



1. A method of epidural surgery that improves visibility in the epidural space of a patient for more effectively conducting therapeutic surgery therein, the method comprising the steps of:

distending a portion of the epidural space of a patient by filling the portion of the epidural space with a fluid supplied from a catheter; and

positioning a portion of an optical scope in the distended portion of the epidural space by inserting the portion of the optical scope through the same catheter that supplies the distending fluid to thereby provide a visual image of the epidural space.

5,354,267

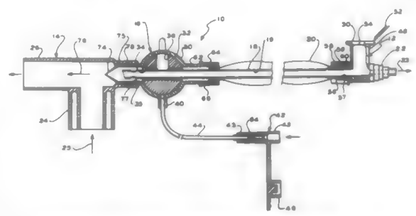
IRRIGATION AND SUCTION APPARATUS

Volker Niermann, Garden City, N.Y., and Dennis H. Iribeck, Jr., Hazlet, N.J., assignors to Vital Signs Inc., Totowa, N.J.

Filed Sep. 20, 1993, Ser. No. 123,058

Int. Cl.[5] A61M *1/00, 5/00, 16/00*

U.S. Cl. 604—32 17 Claims



1. Irrigation and suction apparatus, comprising:

a catheter for suctioning of a patient, said catheter having an internal lumen and first and second end portions, said first end portion for being connected to suction apparatus to suction said patient; and

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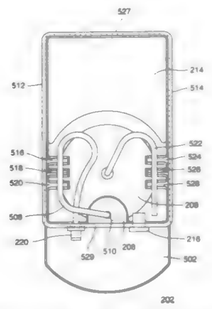
valve means mounted proximate said second end portion of said catheter, said valve means provided with an input port for receiving irrigation fluid and said valve means having at least three positions, said first position providing a passageway through which said second portion of said catheter may be extended for insertion into said trachea to suction said patient and through which at least said catheter can be retracted for irrigation of said patient, said second position providing a passageway for directing said irrigation fluid solely to the trachea of said patient and said third position providing a passageway for directing said irrigation fluid solely to said second end portion of said catheter to flush said internal lumen.

5,354,268

METHODS AND APPARATUS FOR CONTROL OF VACUUM AND PRESSURE FOR SURGICAL PROCEDURES

Erik W. Peterson, Walnut Creek, and Donald C. Stenger, Pleasanton, both of Calif., assignors to Medical Instrument Development Laboratories, Inc., San Leandro, Calif.

Filed Nov. 4, 1992, Ser. No. 971,416
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—35 7 Claims



1. A container for aspirating fluids from a surgical site comprising:
a first chamber having a flexible membrane, said flexible membrane operative to transmit pressure and vacuum to said first chamber;
a second chamber having a volume larger than that of said first chamber, said second chamber selectively connected to said first chamber to allow the transfer of aspirated fluids from said first chamber to said second chamber when pressure is applied to said flexible membrane;
a port operative to provide vacuum from said first chamber to a surgical instrument when vacuum is applied to said flexible membrane; and
valve means operative to connect said first chamber to said port when vacuum is applied to said flexible membrane and to connect said first chamber to said second chamber when pressure is applied to said flexible membrane.

5,354,269

METHOD FOR TREATING CANCER RESECTIONS

Clyde R. Goodheart, Lincolnshire; Ralph H. Silverman, Morton Grove; M. Satya Murthy, Glenview, and Edward F. Scanlon, Northbrook, all of Ill., assignors to Fibrogenex, Inc., Morton Grove, Ill.

Filed Dec. 20, 1991, Ser. No. 811,269
Int. Cl.[5] A61M *31/00*; A61K *37/02*
U.S. Cl. 604—49 20 Claims

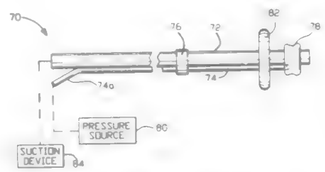
1. A process for treating cancer resections which prevents or reduces local recurrences of cancer in procedures in which cancerous tissues are resected comprising the steps of:
mixing a pharmaceutical fibronectin with a suspending medium to provide a fibronectin composition;
applying said fibronectin composition to a surgically exposed tissue from a cancer resection; and
closing the surgically exposed tissue using conventional suturing techniques.

5,354,270

SURGICAL CLOSURE DISK AND BALLOON METHOD

Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023, and James Z. Cinberg, 167 N. Ridgewood Rd., South Orange, N.J. 07079

Continuation-in-part of Ser. No. 803,582, Dec. 9, 1991, Pat. No. 5,211,624. This application Mar. 22, 1993, Ser. No. 34,097
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—49 6 Claims



1. A surgical closure method, comprising the steps of:
disposing a laparoscopic trocar sleeve in an aperture in an abdominal wall of a patient;
providing an elongate rod-like member provided at a distal end with an expandable balloon in a collapsed configuration and a substantially rigid disk located proximally of said balloon;
moving said distal end of said rod-like member, said balloon in said collapsed configuration and said disk through said trocar sleeve into the patient's abdominal cavity;
subsequently inserting said distal end of said rod-like member and said balloon through an opening in a selected internal body organ or tissue of the patient inside said abdominal cavity;
maintaining said disk on an outer side of said internal body organ or tissue of the patient during said step of inserting; and
inflating said balloon from said collapsed configuration to an expanded configuration so that a portion of the selected internal body organ or tissue is sandwiched between said balloon and said disk, thereby at least temporarily closing the opening.

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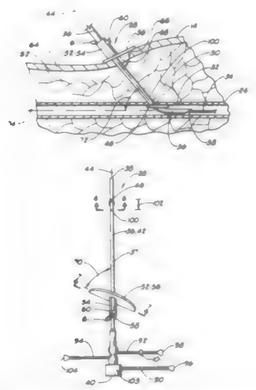
VASCULAR SHEATH

Jan K. Voda, 1404 Camden Way, Oklahoma City, Okla. 73116

Filed Aug. 5, 1993, Ser. No. 102,420
Int. Cl.[5] A61M *31/00, 29/00*
U.S. Cl. 604—49 53 Claims

1. A vascular sheath apparatus for placement of a medical device through a perforation in a side wall of a patient's blood vessel, comprising:
an elongated cylindrical sheath having a distal end portion constructed to be received through said perforation and in said blood vessel, said sheath having a generally cylindrical outer surface and having a longitudinal axis;
an annular expandable sealing means disposed about said sheath and expandable radially outward beyond said outer surface of said sheath, said sealing means lying generally in a plane oriented at an acute angle to said longitudinal axis of said sheath where said sheath passes through said sealing means; and
a clamp slidably disposed on said sheath proximally of said sealing means, said sealing means and said clamp being so

arranged and constructed that with said distal end portion of said sheath extending through said perforation into said vessel and said sealing means expanded inside said vessel, said clamp is slidable along said sheath toward said sealing



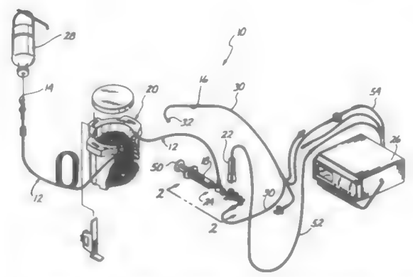
means to sandwich said vessel side wall and the patient's body tissue external of said vessel between said sealing means and said clamp to reduce bleeding through said perforation around said sheath.

5,354,272

IMPROVED INJECTATE DELIVERY SYSTEM

David L. Swendson, Garden Grove, and Lucien Attal, Anaheim, both of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Filed Mar. 2, 1993, Ser. No. 25,002
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—65 18 Claims



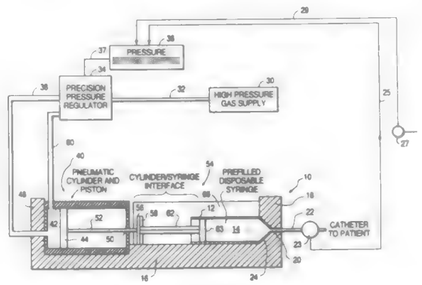
1. A fluid flow delivery system for delivering injectate fluid to a patient comprising:
fluid flow means having a proximal and a distal end, wherein said proximal end comprises a first port having fluid inlet means for connecting said flow means to a source of fluid injectate and a second port connected to a syringe means, and said distal end comprises a port for connecting said fluid flow means to a fluid delivery means for delivering the injectate to the patient;
wherein said syringe means is in fluid-flow communication with said injectate source through said fluid inlet means and is in fluid-flow communication with said fluid flow means through said second port, and said fluid flow means is in fluid-flow communication with said fluid delivery means;
sensing means disposed within said fluid flow means at its distal end for sensing a characteristic of fluid flowing therethrough; and
fluid flow regulating means interposed between said fluid inlet means and said sensing means, for delaying said injectate from contacting said sensing means;
wherein said fluid flow means, said sensing means and said fluid flow regulating means are part of an integral fluid flow assembly.

5,354,273

DELIVERY APPARATUS WITH PRESSURE CONTROLLED DELIVERY

Ronald W. Hagen, St. Charles, Mo., assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed Dec. 14, 1992, Ser. No. 988,266
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—66 10 Claims



1. A delivery apparatus for delivering a stored medium from a variable volume delivery device in which mechanical actuating means are provided for expelling the stored medium from the delivery device through a delivery tip at one end thereof, said delivery apparatus comprising:
fixture means for receiving and positioning said delivery device;
said fixture means including force generating and application means for applying an actuating force to said mechanical actuating means of said delivery device to subject the stored medium in said variable volume chamber to a pressure for the expulsion of said medium from said chamber through said delivery tip;
said fixture means further including an opening therein for receiving said delivery tip and positioning the same for connection to a use application;
pressure sensing means for sensing and generating a signal proportional to the magnitude of the pressure in said medium resulting from the force applied by said force generating and application means;
reference pressure generating means for generating a reference pressure signal representing a preselected desired reference pressure magnitude for the pressure in said medium resulting from the actuating force applied by said applicator means;
comparator means for comparing the signal generated by said pressure sensing means with said reference pressure signal and for generating a difference signal proportional to the difference between the signal generated by said pressure sensing means and said reference pressure signal;
control means for controlling the magnitude of the force applied by said applicator means; and
means connecting said difference signal to said control means for controlling the magnitude of the force applied by said applicator means in a direction to reduce the

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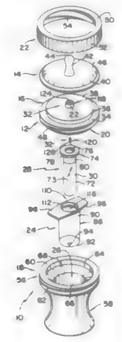
magnitude of said difference signal to zero, whereby said applied force is automatically regulated to maintain a pressure in said medium at the level represented by said reference pressure signal.

5,354,274

DEVICE FOR ORAL ADMINISTRATION OF LIQUIDS

Robert J. Demeter, Mooresville; Stephen F. Badylak, West Lafayette; Kirk S. Foster, West Lafayette, and Leslie A. Geddes, West Lafayette, all of Ind., assignors to Methodist Hospital of Indiana, Inc., Indianapolis and Purdue Research Foundation, West Lafayette, both of Ind.

Filed Aug. 20, 1992, Ser. No. 932,790
Int. Cl.[5] A61M *31/00*; A61J *17/00*
U.S. Cl. 604—77 **20 Claims**



1. A device to facilitate oral administration of a liquid formulation from a sealed cartridge, the device comprising
a hollow nipple,
a hollow handle formed to include a cavity having a mouth,
a base positioned between the nipple and the handle and arranged to cover the mouth of the cavity,
means for coupling the nipple to the handle to trap the base therebetween,
a cartridge holder positioned in the cavity of the hollow handle for holding the liquid formulation-containing sealed cartridge, and
means for communicating liquid formulation between the cartridge and the hollow nipple, the communicating means including means for breaching the liquid formulation-containing sealed cartridge.

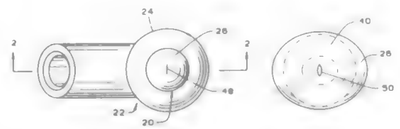
5,354,275

INJECTION OR SAMPLING SITE

Brett A. Behnke, Hastings; Jon M. Nornberg, Woodbury, and Gary A. Thill, White Bear Lake, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 13, 1993, Ser. No. 121,065
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—86 **24 Claims**

1. An injection or sampling site adapted to receive a blunt cannula, the injection or sampling site comprising:
a housing having an outside end and a passageway extending inwardly from the outside end, the passageway defining an axial direction and having a septum-receiving portion; and
an elastomeric septum closely received in the passageway of the housing, the septum having inside and outside ends relative to the outside end of the housing, a slit extending through the septum generally in the axial direction, the slit being formed by a hole through the septum that is flattened against itself to seal against itself when the septum is assembled in the housing, wherein, before assembly of the septum into the septum-receiving portion of the housing, the hole in the septum has a generally elliptical cross-section, having a longer dimension and a shorter dimension; one of the septum-receiving portion and the septum having



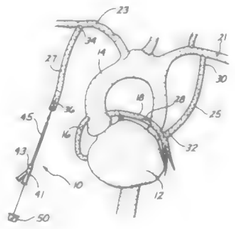
a relatively elliptical cross-section and the other of the septum-receiving portion and the septum having a relatively circular cross section to preferentially compress the hole in the direction between either the corresponding shorter dimension of the elliptical septum-receiving portion or the corresponding longer dimension of the elliptical septum.

5,354,276

INTERNAL MAMMARY ARTERY CATHETER AND METHOD

James D. Fonger, Wayland, Mass., and Mark P. Ashby, Laguna Niguel, Calif., assignors to Applied Medical Resources Corporation, Laguna Hills, Calif.

Filed Mar. 18, 1993, Ser. No. 32,375
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **8 Claims**



1. A device for relieving spasm in a blood vessel, the device having a generally longitudinal configuration and extending between a proximal end and an opposing distal end, including:
a hub disposed at the proximal end of the device and having portions defining a channel through the hub;
an elongate spring extending from the hub to the distal end of the device and having a multiplicity of convolutions defining a passage through the spring;
a stylet disposed to extend through the channel of the hub and the passage of the spring in sliding engagement with the portions of the hub and the convolutions of the spring;
a balloon having an elongate configuration with a proximal end of the balloon in a fixed relationship and fluid communication with the hub, and a distal end of the balloon in a fixed relationship with the stylet in proximity to the distal end of the device; and
means for advancing the stylet through the channel of the hub and the passage of the spring to stretch the balloon from an axially shortened, radially expanded state to an axially extended, radially contracted state.

5,354,277

SPECIALIZED PERFUSION PROTOCOL FOR WHOLE-BODY HYPERTHERMIA

Joseph A. Guzman, Atlanta, Ga., and Miguel P. Cosio, Piso, Mexico, assignors to Biocontrol Technology, Inc., Pittsburgh, Pa.

Filed Sep. 4, 1992, Ser. No. 940,546
Int. Cl.[5] A61M *1/03*
U.S. Cl. 604—113 **18 Claims**

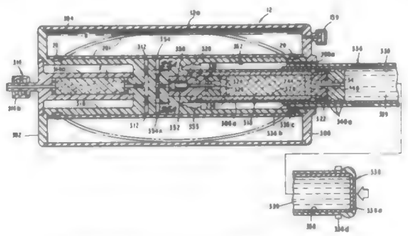
1. A method for the extracorporeal heating of blood in a human in which extracorporeal hyperthermia is indicated, comprising the steps of:
catheterizing a blood vessel of a patient and creating an extracorporeal blood circuit;
heating at least some of the blood in the extracorporeal blood circuit; and
subjecting at least some of the blood in the extracoporeal blood circuit to hemodialysis, wherein said heating step further comprises heating at least some of the blood in the extracorporeal blood circuit by elevating the temperature of a dialyzing solution used in the hemodialysis step to about 48° C.

5,354,278

FLUID DISPENSER

Marshall S. Kriesel, Bloomington, Minn., assignor to Science Incorporated, Bloomington, Minn.

Continuation-in-part of Ser. No. 870,521, Apr. 17, 1992, Pat. No. 5,263,940. This application Apr. 26, 1993, Ser. No. 53,723
The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—132 **39 Claims**



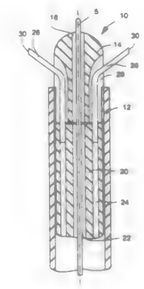
1. A fluid dispensing device comprising:
(a) a housing having walls defining an internal chamber and support means for supporting a stored energy source within said internal chamber, said support means having a fluid inlet and a fluid outlet;
(b) filling means for introducing fluid into said fluid inlet of said support means;
(c) a generally tubular shaped elastomeric member connected proximate its ends of said support means, said elastomeric member having a central portion disposed within said internal chamber of said housing and overlaying said fluid inlet and said fluid outlet of said support means, said central portion of said elastomeric member being distendable by fluid flowing through said fluid inlet of said support means from a first position in proximity with said support means to second position; and
(d) adding means carried by said support means for adding an additive to fluid introduced by said filling means, said adding means comprising container means for containing said additive.

5,354,279

PLURAL NEEDLE INJECTION CATHETER

Berthold Höfling, Wessling, Fed. Rep. of Germany, assignor to Bavaria Medizin Technologie GmbH, Wessling/Oberpfaffenhofen, Fed. Rep. of Germany

Filed Oct. 7, 1993, Ser. No. 132,876
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1992, 4235506
Int. Cl.[5] A61M *5/178, 5/00*
U.S. Cl. 604—164 **16 Claims**



1. A catheter for the injection of a fluid, such as a medicine, into body cavities such as veins or hollow organs, comprising: a catheter head with a catheter shank having a longitudinal axis and being insertable into said body cavity through an insertion passage, a plurality of needles distributed in a predetermined pattern around, and disposed in, the catheter head movably between a retracted position in which the needles are disposed within the catheter head and an extended position in which the front ends of the needles project from the catheter head through openings formed therein, said needles being mounted on a multi-lumen hose which is longitudinally movably supported within the catheter, said catheter being provided at its end opposite the catheter head with an operating mechanism including two spaced relatively movable parts, said catheter shank being connected to one part of said operating mechanism and said multi-lumen hose with a plurality of with a plurality of individual passages being connected to the other part, said parts being held in spaced relationship by a spring opposing their compression, said multi-lumen hose moving the needles connected thereto from their retracted positions to their extended positions upon compression of the two parts against the force applied by said spring, said needles being hollow so as to form needle passages and being in communication with the individual passages in said multilumen hose, said other part including a distribution chamber in communication with said individual passages and connected to means for supplying said fluid or medicine for transmitting it to said needles for injection into the walls of said cavity.

5,354,280

TROCAR AND SEAL ARRANGEMENT

Terry M. Haber, Lake Forest; William H. Smedley, Lakes Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

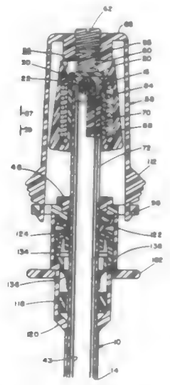
Filed Feb. 19, 1993, Ser. No. 19,548
Int. Cl.[5] A61M *5/18*
U.S. Cl. 604—167 **21 Claims**

1. A medical device, designed for minimally invasive surgical procedures, comprising:
a body having proximal and distal ends and a hollow interior defining a path between the proximal and distal ends;
an object sized to pass along the path; and
a seal mounted within the body and fluidly sealing the path

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with and without the object directed along the path and into the hollow interior, the seal including:

first and second flexible, elastomeric barriers positioned along the path, the barriers having opposed convex surfaces, the barriers being positioned so the center of the opposed surfaces abut and deflect each other, the barriers each having at least one normally closed slit formed therein, said slit in the first barrier being at a



different orientation from the slit in the second barrier, said barriers configured to permit the object to pass therethrough and to provide a fluid seal when the object is not positioned along the path; and

an object seal, positioned along the path, configured to sealably engage the object when the object is directed along the path to provide a fluid seal between the object and the hollow interior.

5,354,281

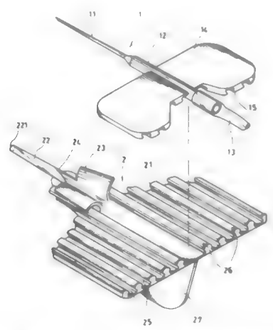
SAFETY DISPOSABLE INFUSION SET

Shih-Shuan Chen, P.O. Box 55-1670, Taipei (104), Taiwan

Filed Mar. 25, 1994, Ser. No. 217,543

Int. Cl.[5] A61M *25/02, 5/32*

U.S. Cl. 604—177 **3 Claims**



1. A safety disposable infusion set comprising: an infusion needle means (1) including a hollow needle mounted on a holding tube which is connected to an infusion bottle by a delivery tube, a wing portion disposed on two opposite sides of the holding tube and adapted to be adhered on a patient's skin for infusion use; and

a disposal carrier means (2) including a carrying base plate securable with the wing portion of said infusion needle means, and a sleeve protruding forwardly from the base plate for inserting the hollow needle into said sleeve for shielding the needle therein for safety disposal of the needle means combined with the carrier means.

5,354,282

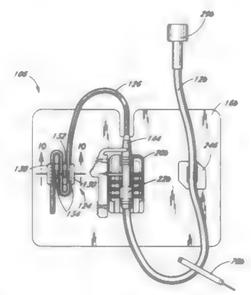
CATHETER ANCHORING SYSTEM

Steven F. Bierman, 143 Eighth St., Delmar, Calif. 92014

Continuation-in-part of Ser. No. 695,549, May 3, 1991, which is a continuation-in-part of Ser. No. 518,694, May 4, 1990, Pat. No. 5,192,273, which is a continuation-in-part of Ser. No. 384,326, Jul. 24, 1991, abandoned. This application Mar. 19, 1993, Ser. No. 34,340

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—180 **20 Claims**



1. A retainer for securely anchoring a catheter adaptor of the type having an elongated tubular body, a support arm attaching a clip to the adaptor body, and a protuberance disposed on the clip proximal of the support arm, said retainer comprising:

a pair of opposing longitudinal walls, each wall defining a series of slots with each slot being sized to receive a portion of the support arm of the catheter adaptor which extends through the slot, and to prevent the support arm from moving in a direction parallel to a longitudinal axis of the retainer; and

a central channel extending through said retainer about an axis which is generally parallel to said retainer longitudinal axis, said channel being interposed between said opposing longitudinal walls and having a truncated circular cross-sectional shape which extends through an angle greater than 180° about said channel axis, such that with the adaptor tubular body positioned within the central channel, said longitudinal walls prevent the adaptor from moving either in transverse or lateral directions which are normal to the longitudinal axis of the retainer.

5,354,283

TROCAR RETENTION APPARATUS

Jeffrey E. Bark, Green Bay; Andrea Potokar, and Patrick G. Lennon, both of De Pere, all of Wis., assignors to Little Rapids Corporation, Green Bay, Wis.

Filed Jan. 7, 1994, Ser. No. 179,017

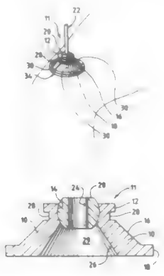
Int. Cl.[5] A61M *25/02*

U.S. Cl. 604—180 **31 Claims**

1. A trocar retention apparatus for stable but adjustable positioning of a trocar inserted through the skin of a patient comprising:

a stabilizing member having a base, an exterior wall and a top;

a rotatable spheroid rotatably affixed to said top of said stabilizing member having an aperture adapted to slidably receive a trocar inserted through said aperture;



an interior wall forming a trocar receptacle chamber to slidably receive said trocar inserted through said aperture; and

means for securing said stabilizing member to the patient.

5,354,284

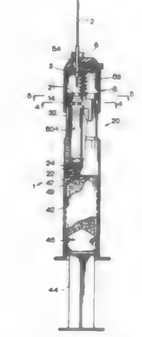
MULTIPLE INJECTION SYRINGE SYSTEM

Terry M. Haber, El Toro, and Clark B. Foster, Laguna Niguel, both of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Jun. 9, 1992, Ser. No. 895,904

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—191 **23 Claims**



1. A multiple injection syringe system, comprising:

a hypodermic needle cannula having proximal and distal ends;

cartridge carrier means in which a plurality of fluid filled cartridges are loaded, said cartridge carrier means having a space therein for receipt of said needle cannula;

a manifold coupled to said cartridge carrier means, said needle cannula releasably retained by said manifold such that the distal end of cannula projects from said manifold in spaced alignment with the cartridges of said cartridge carrier means, said manifold being rotated relative to said cartridge carrier means to cause a corresponding displacement of said cannula;

means for moving said cannula towards and away from said cartridge carrier means, said cannula moved towards said carrier means such that the proximal end of said cannula is placed into fluid communication with a selected cartridge from the plurality of cartridges in said cartridge carrier means, and said cannula moved away from said carrier means and out of fluid communication with the selected cartridge;

means coupled to said cartridge carrier means for expulsing the fluid contents of the selected cartridge so that an injection may be administered by way of the distal end of said cannula when said cannula is in fluid communication with said cartridge; and

needle releasing means carried by said manifold to release the needle cannula from said manifold and to position said cannula to be received within and shielded by said cartridge carrier means at the space therein after the injection has been administered and said cannula has been moved out of fluid communication with the selected cartridge.

5,354,285

INJECTION SYRINGE

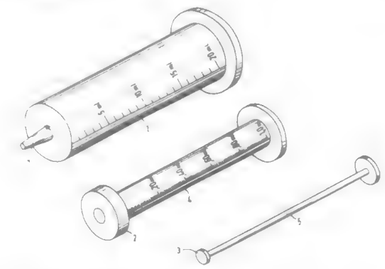
Sergej M. Mazurik, Lenina Str. 92/57, Poltava, Ukraine 314022; Andrej N. Sokolov, and Marat M. Kashlykov, all of Poltava, Ukraine, assignors to Sergej Mikhailovich Masurik, Poltava, Ukraine

Continuation of Ser. No. 851,391, Mar. 16, 1992, abandoned. This application Aug. 30, 1993, Ser. No. 113,354

Claims priority, application U.S.S.R., Nov. 29, 1991, 5015271

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—191 **6 Claims**



1. A syringe comprising:

a tubular body having a first longitudinal axis, a first inner diameter and a first gradation on a side of the tubular body;

a first cylindrical piston disposed within the tubular body and having a first end, a second end and a central channel passing through the first cylindrical piston from the first end to the second end, the central channel having a second inner diameter, the first cylindrical piston having a second longitudinal axis substantially aligned with the first longitudinal axis and a second gradation on a side of the first cylindrical piston;

a first piston element coupled to the first end of the first cylindrical piston and having a first outer diameter corresponding to the first inner diameter of the tubular body, wherein the first cylindrical piston and the first piston element are displaceable within the tubular body in a direction along the first longitudinal axis with displacement indicated by a position of the first piston element with respect to the first gradation on the side of the tubular body;

a second cylindrical piston disposed within the central channel of the first cylindrical piston and having a first end, a second end, and a third longitudinal axis substantially aligned with the first longitudinal axis; and

a second piston element coupled to the first end of the second cylindrical piston and having a second outer diameter corresponding to the second inner diameter of the central channel, wherein the second cylindrical piston and second piston element are displaceable within the central channel in a direction along the first longitudinal axis with dis-

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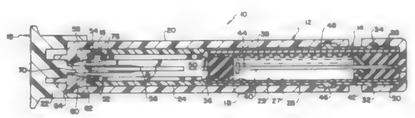
placement indicated by a position of the second piston element with respect to the second gradation on the side of the first cylindrical piston.

5,354,286

INJECTION DEVICE HAVING POLYPARAXYLYLENE COATED CONTAINER

C. Michael Mesa, Boyds, Md.; N. Lawrence Dalling, Cross Junction, Va.; Sandra A. Lowery, St. Charles, Mo., and O. Napoleon Monroe, Bethesda, Md., assignors to Survival Technology, Inc., Rockville, Md.

Filed Dec. 7, 1993, Ser. No. 162,294
Int. Cl.[5] A61M *5/315*
U.S. Cl. 604—230 16 Claims



1. An automatic injector comprising:

a housing;

a metallic cartridge contained within said housing, said cartridge having at least an inner surface thereof coated with polyparaxylylene to reduce the coefficient of friction of said inner surface;

a charge of medicament contained in said metallic cartridge and in communication with said polyparaxylylene coating, said polyparaxylylene coating preventing ions from being extracted from said metallic cartridge into said medicament;

a plunger normally disposed in a generally rearward end of said metallic cartridge and movable through said metallic cartridge toward a generally forward end thereof in response to a predetermined actuating procedure, said movable plunger rearwardly confining said medicament within said metallic cartridge and being in slidable sealed relation with said polyparaxylylene coating provided on said metallic cartridge, said polyparaxylylene coating sufficiently reducing the coefficient of friction of said inner surface to reduce the time required for said plunger to travel from said generally rearward end to said generally forward end of said metallic cartridge;

a needle normally disposed within said housing, said needle being projectable from a forward end of said housing and communicable with said medicament so that movement of said plunger through said cartridge forces said medicament through said needle and into the flesh of an individual in response to said predetermined actuating procedure; and

a releasable energy source releasable in response to said predetermined actuating procedure to project said needle from the forward end of the housing and slidingly drive said plunger through said metallic cartridge in sealed relation to expel said medicament through said needle and into the flesh of an individual.

5,354,287

INJECTOR FOR DELIVERING FLUID TO INTERNAL TARGET TISSUE

Jonathan L. Wacks, Forest Hills, N.Y., assignor to Senetek PLC, St. Louis, Mo.

Filed Jan. 16, 1991, Ser. No. 641,752
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—232 14 Claims

1. A fluid injector actuated by a plunger, said fluid injector comprising:

(A) a tubular cartridge having an upper end and a lower end, said cartridge having an interior bore wall which widens at said lower end of said cartridge to form a needle housing assembly residence chamber for receiving a needle housing assembly;

(B) a puncturable end cap sealing said lower end of said cartridge;

(C) an ampule slidably disposed within the upper end of said cartridge bore wall, said ampule having an upper end and a lower end and being suitable for storing a fluid charge to be expelled therefrom;

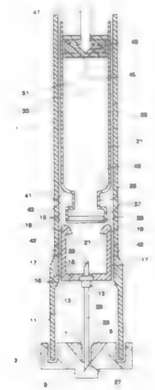
(D) a piston slidably seated within said ampule and engageable by said plunger from said upper end of said ampule;

(E) a puncturable ampule end stopper rigidly attached to and sealing said lower end of said ampule; and

(F) a needle housing assembly slidably disposed within said upper end of said cartridge below said ampule, said needle housing assembly comprising:

a housing having a housing bottom and flexible upstanding housing walls attached to the periphery of said housing bottom, said housing walls extending toward said lower end of said ampule and having upper edges thereon,

a hollow injection needle extending through and rigidly engaged by said housing bottom and having an internal section, and an external section, said internal section of said hollow injection needle extending from said housing bottom, upwardly within said housing walls, toward



said puncturable ampule end stopper, and said external section of said hollow injection needle extending from said housing bottom downwardly toward said puncturable end cap of said cartridge, said needle being within said cartridge between said puncturable ampule end stopper and said puncturable end cap,

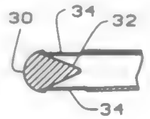
the upper edges of said housing walls being engageable with said lower end of said ampule as said ampule slides downwardly within said cartridge bore, whereby actuation by said plunger moves said ampule downwardly within said interior bore wall in said upper end of said cartridge toward said lower end of said cartridge thus engaging said upper edges of said housing walls and moving said needle housing assembly from said upper end of said cartridge into said needle housing assembly residence chamber at said lower end of said cartridge causing said external section of said hollow injection needle to protrude through said puncturable end cap and allowing said flexible housing walls to expand outwardly in said needle housing assembly residence chamber, the further downward movement of said ampule causing the internal section of said hollow injection needle to pass through said puncturable ampule end stopper thereby allowing fluid to be injected outwardly through said hollow injection needle.

5,354,288

LOW VELOCITY AORTIC CANNULA

Delos M. Cosgrove, Hunting Valley, Ohio; Nelson L. Huldin, Pittsfield Township, Washtenaw County; William G. O'Neill, Ann Arbor, both of Mich.; J. Fredrick Cornhill, Worthington, Ohio, and Christopher M. Boykin, Saline, Mich., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 24, 1993, Ser. No. 21,811
Int. Cl.[5] A61M *5/00, 25/00, 31/00*
U.S. Cl. 604—264 11 Claims



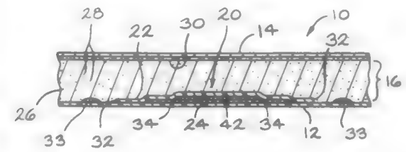
1. An improved aortic cannula having a sidewall with a proximal end, a distal end, and a lumen therebetween for conducting blood, the distal end being adapted for insertion into the aorta during heart surgery to provide blood to the aorta, the improvement comprising: a cap for blocking axial flow from the distal end of the cannula, a diffuser in the distal end of the lumen for diverting at least part of the flow through the cannula, the diffuser extending generally upstream in the lumen toward the proximal end of the cannula, and tapering in the upstream direction; and at least two outlet openings in the sidewall of the cannula, adjacent the diffuser, the outlet openings comprising slots in the sidewall of the cannula, adjacent the distal end; and a deflector distally below each outlet opening for deflecting at least a portion of the flow from each outlet opening radially outwardly.

5,354,289

ABSORBENT PRODUCT INCLUDING SUPER ABSORBENT MATERIAL AND A FLUID ABSORPTION CAPACITY MONITOR

Winalee G. Mitchell, Perrysburg; Andrew J. Szypka, Cartice, and Michael Plotka, Waterville, all of Ohio, assignors to Principle Business Enterprises Inc., Dunbridge, Ohio

Filed Jul. 23, 1993, Ser. No. 96,552
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—361 12 Claims



1. A diaper including a capacity monitor, said diaper comprising an absorbent core including super absorbent material, a hydrophilic cover sheet and a water impervious, translucent or transparent backing sheet, said core being positioned between said cover sheet and said backing sheet and said super absorbent material in said diaper having a given in-situ capacity for synthetic urine, said capacity monitor comprising

an indicator extending longitudinally a substantial distance, said indicator being operable to provide a visually perceptible change when wet, said indicator being positioned in said diaper adjacent to said backing sheet so that the change of the indicator is visually perceptible through said sheet and

a substantially water impervious baffle positioned inside the diaper between said backing sheet and said absorbent core so as to cover said indicator and separate it from said absorbent core, said baffle having a width which is greater than that of said indicator and a free edge around which synthetic urine can migrate from said absorbent core to said indicator, said baffle being operable to prevent the flow of synthetic urine into wetting relationship with said indicator when the diaper contains an amount of synthetic urine which is less than a given percent of the in-situ capacity of the super absorbent, and ineffective to prevent such flow when the diaper contains an amount of synthetic urine which is greater than the given percent of the in situ capacity of the super absorbent, the given percent being at least 20.

5,354,290

POROUS STRUCTURE OF AN ABSORBENT POLYMER

James R. Gross, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 662,518, Feb. 28, 1991, abandoned, which is a continuation of Ser. No. 359,470, May 31, 1989, abandoned. This application Oct. 5, 1993, Ser. No. 132,423
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—367 10 Claims



1. A porous polymeric structure, said porous polymeric particle comprising a water-swellable, water-soluble polymeric material selected from the group consisting of polymers formed from alkali metal and ammonium salts of acid-group containing monomers, polyvinyl alcohol, hydroxyethyl cellulose, hydroxypropyl cellulose, polyvinyl pyrrolidone, polyvinyl pyridine, polyvinyl morpholinone, and copolymers and mixtures thereof, said polymeric material being capable of absorbing at least 10 times its own weight in water, said polymeric material defining a plurality of chambers, said chambers being in open communication with the ambient atmosphere and a majority of said chambers having a diameter of at least about 20 microns.

5,354,291

PROBE FOR ENDOSCOPIC SUCTION-IRRIGATION INSTRUMENTS HAVING A PROXIMAL PORT FOR RECEIVING AN ADDITIONAL PROBE THERETHROUGH

Thomas O. Bales; Jurgen A. Kortenbach, both of Miami; Dana W. Ryan, Davie; Matthew S. Solar, Cooper City; Kevin W. Smith, and David Turkel, both of Miami, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

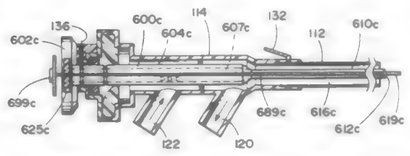
Filed Oct. 9, 1992, Ser. No. 959,241
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—35 20 Claims

15. In an endoscopic instrument, said instrument having a first cannula, a fluid chamber having at least one port selected from the group consisting of a suction port and an irrigation port, said fluid chamber having a distal end communicating with said first cannula and a proximal end having an opening, and a first sealing means in said proximal end of said fluid chamber for sealing said proximal end of said fluid chamber, a

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probe insertable into said endoscopic instrument, said probe comprising:

a) a second cannula having a proximal end, a distal end, and an outer diameter shaped to contact said first sealing means such that said proximal end of said fluid chamber is sealed, and shaped to be smaller than an inner diameter of said fluid chamber;



b) a proximal handle coupled to said proximal end of said second cannula for handling said probe, said proximal handle including second sealing means for sealing said proximal end of said second cannula; wherein

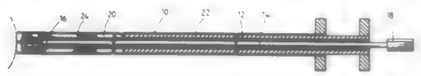
said probe is removably insertable through said first sealing means into said fluid chamber and said first cannula and said second sealing means and said second cannula are adapted to receive another probe.

5,354,292

SURGICAL MESH INTRODUCE WITH BONE SCREW APPLICATOR FOR THE REPAIR OF AN INGUINAL HERNIA

Harry L. Braeuer, 1007 Cragmore, Seabrook, Tex. 77586, and James L. Youngblood, 1514 Neptune La., Houston, Tex. 77062

Filed Mar. 2, 1993, Ser. No. 24,934
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—1 **5 Claims**



1. Apparatus for repairing an inguinal hernia, comprising:

a) an outer sleeve including a distal end positionable within a patient proximate an inguinal hernia and the pubic bone, and a proximal end adapted to extend through an incision in the patient;

b) an inner sleeve having distal and proximal ends corresponding to said distal and proximal ends of said outer sleeve, said inner sleeve positioned within the outer sleeve and defining an annular space between said outer sleeve and said inner sleeve:

c) a piece of surgical mesh stored within said annular space, a portion of said piece of surgical mesh covering said distal end of said inner sieve:

d) a surgical fastener positioned proximate said distal ends of said inner and outer sleeves and coupled to said piece of surgical mesh, said surgical fastener being actuatable to fasten said piece of surgical mesh to the pubic bone; and

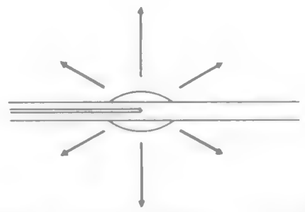
e) a fastener actuating tool inserted within said inner sleeve, said fastener actuating tool having a distal end configured to engage said surgical fastener, and a proximal end adapted to receive and transmit actuating power to said surgical fastener to fasten said piece of surgical mesh and said surgical fastener to the cubic bone.

5,354,293

APPARATUS FOR THE ISOTROPIC IRRADIATION OF CAVITY WALLS

Wolfgang Beyer, Munich; Armin Heinze, Ismaning; Dieter Jocham, Munich; Klaus Schmitt, Remshalden-Grunbach, and Eberhard Unsoeld, Oberschleissheim, all of Fed. Rep. of Germany, assignors to Gesellschaft fur Strahlen-und Umweltforschung mbH, Neuherberg, Fed. Rep. of Germany

Continuation of Ser. No. 620,899, Dec. 3, 1990, abandoned. This application Feb. 13, 1992, Ser. No. 833,827
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1989, 3941705
Int. Cl.[5] A61N *5/06*
U.S. Cl. 606—15 **5 Claims**



1. Apparatus for isotropic irradiation of cavity walls, said apparatus comprising an axially rigid catheter including a first channel, a light conducting fiber disposed in said first channel so as to be movable therein, said fiber having a conically shaped tip with a cone angle adapted to deflect a light beam supplied through said conducting fiber essentially in radial outward direction, a resiliently expandable sleeve tightly surrounding said catheter and being at opposite ends thereof in sealing engagement with said catheter so that, upon expansion of said sleeve, the fiber tip remains in the center thereof, said catheter having a second channel in fluid communication with the space surrounded by said sleeve for admission of fluid thereto to expand said sleeve, depending on the amount of fluid admitted, to an oval to torus shape so as to form a light scattering structure whose distribution characteristic for light emitted from the light conductor tip disposed within the expanded sleeve is adjustably dependent on the degree of sleeve expansion.

5,354,294

COMBINATION REFLECTANCE FIBER OPTIC LASER BEAM ANGLE DELIVERY

Marilyn M. Chou, Piedmont, Calif., assignor to Xintec Corporation, Oakland, Calif.

Continuation-in-part of Ser. No. 67,566, May 26, 1993. This application Jul. 7, 1993, Ser. No. 87,981
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—16 **30 Claims**

12. A combination reflectance fiber optic laser beam angle delivery device, said device comprising:

an optical fiber, said fiber having:

a receiving end,

a central axis, and

a transmitting end, said transmitting, end having a bias cut end surface, said end surface defining a predetermined operative angle with said central axis of said fiber;

a reflecting cap, said transmitting end disposed within said reflecting cap, said reflecting cap having at least one reflective surface, said end surface being positioned adjacent to but not in physical contact with said reflective surface, thereby defining a chamber interposed between said end surface of said fiber and said reflective surface of said reflecting cap;



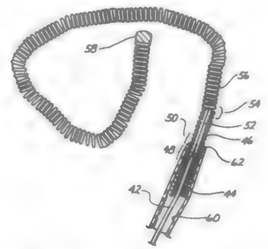
and an attaching means securing said reflecting cap to said fiber.

5,354,295

IN AN ENDOVASCULAR ELECTROLYTICALLY DETACHABLE WIRE AND TIP FOR THE FORMATION OF THROMBUS IN ARTERIES, VEINS, ANEURYSMS, VASCULAR MALFORMATIONS AND ARTERIOVENOUS FISTULAS

Guido Guglielmi, Santa Monica, and Ivan Sepetka, Redwood City, both of Calif., assignors to Target Therapeutics, Inc., Fremont, Calif. and The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 492,717, Mar. 13, 1990, Pat. No. 5,122,136. This application Feb. 24, 1992, Ser. No. 840,211
The portion of the term of this patent subsequent to Jun. 16, 2009, has been disclaimed.
Int. Cl.[5] A61B *17/38, 17/00*
U.S. Cl. 606—32 **24 Claims**



1. A method for forming an occlusion within a vascular cavity having blood disposed therein comprising the steps of:

endovascularly disposing a relaxed coil wire near an endovascular opening into said vascular cavity, said relaxed coil wire having no substantial memory of its predisposed shape other than at most a relaxed, simple helical shape;

disposing a distal tip of said wire into said vascular cavity to substantially space fill said cavity to mechanically form said occlusion within said vascular cavity about said distal tip; and

nonthermally detaching said distal tip from said wire to leave said distal tip within said vascular cavity, wherein nonthermal detachment is defined as a detachment without substantially increasing the temperature of said distal tip and wire,

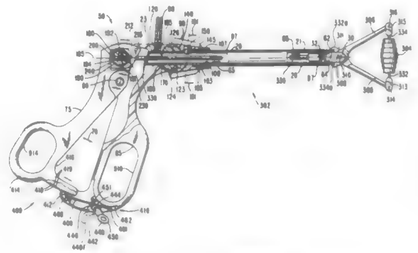
whereby said vascular cavity is occluded by said distal tip, and any thrombus formed by use of said tip.

5,354,296

ELECTROCAUTERY PROBE WITH VARIABLE MORPHOLOGY ELECTRODE

David Turkel, Miami, Fla., assignor to Symbiosis Corporation, Miami, Fla.

Filed Mar. 24, 1993, Ser. No. 36,458
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—41 **20 Claims**



1. An electrocautery probe, comprising:

a) a first and second probe arm each having a distal end and a proximal end;

b) an electrode of variable morphology mounted between said distal ends of said first and second probe arm;

c) voltage supply means coupled to said electrode for supplying an electrical potential to said electrode; and

d) actuation means coupled to at least one of said first and second probe arm for moving at least one of said distal ends relative to the other of said distal ends,

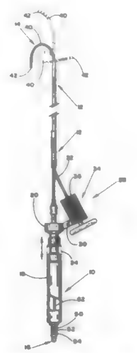
wherein the morphology of said electrode is changed when at least one of said distal ends is moved.

5,354,297

BIPLANAR DEFLECTABLE CATHETER FOR ARRHYTHMOGENIC TISSUE ABLATION

Boaz Avitall, 4868 N. Ardmore Ave., Milwaukee, Wis. 53217

Continuation-in-part of Ser. No. 835,553, Feb. 14, 1992, abandoned. This application Jul. 7, 1992, Ser. No. 909,867
Int. Cl.[5] A61B *5/04*; A61N *1/05*
U.S. Cl. 606—45 **20 Claims**



1. A deflectable catheter system for use in performing tissue mapping/ablation comprising:

(a) a central catheter comprising an elongated, flexible plastic tube having a proximal end and a distal end, having an outside diameter small enough to pass through an arterial

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vascular system from an introducer site, and further describing an internal lumen of a relatively large size extending from the proximal end to the distal end and having a tube wall providing stiffness required to enable routing of the catheter through the arterial vascular system;

(b) a relatively short flexible distal catheter section connected to the distal end of the central catheter comprising a flexible plastic tube having an electrode segment and having an external surface and terminating in a distal tip and having an outside diameter able to pass into any cardiac chamber, having a proximal and a distal end and further describing a continuous internal distal lumen extending from the proximal end to the distal end of the distal catheter section and having a flexible tube wall;

(c) electrode means for providing electrical connection with encountered surfaces of adjacent tissue comprising at least one electrode carried by said electrode segment of the distal catheter section connected through the catheter system and in communication with the external surface of the distal catheter section;

(d) an axial deflection control element threaded within the internal lumen and the distal lumen and having a distal end anchored at a point at or near the distal end of the distal catheter section in a manner such that the reciprocal movement of the axial deflection control element in the distal catheter section lumen deflects the distal tip of the distal catheter section in a plane substantially parallel the direction of element movement;

(e) means for longitudinally displacing the axial deflection control element along the distal lumen;

(f) a radial deflection control element threaded within lumen of the distal catheter section and having a distal end anchored at or near the distal tip of the distal catheter section in a manner such that the application of rotational torque to the radial deflection control element produces a corresponding deflection of the distal tip of the distal catheter section in a plane substantially parallel to the direction of the applied rotational torque; and

(g) means fox applying the rotational torque to the radial deflection control element.

5,354,298

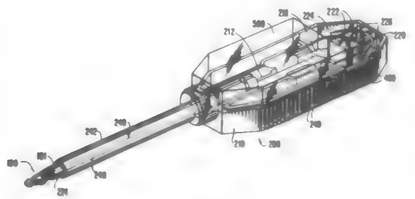
SUTURE ANCHOR INSTALLATION SYSTEM

Daniel R. Lee, Warsaw, and Thomas W. Sander, Winona Lake, both of Ind., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 898,799, Jun. 15, 1992, which is a continuation-in-part of Ser. No. 673,953, Mar. 22, 1991, abandoned. This application Feb. 17, 1993, Ser. No. 19,149

Int. Cl.[5] A61B *17/04*

U.S. Cl. 606—72 **15 Claims**



1. A suture anchor insertion tool comprising:

a body portion having proximal and distal ends;

an elongated shaft portion having proximal and distal ends extending distally from a distal end of said body portion, the distal end of said shaft portion including a projecting annular portion for engaging a two-piece suture anchor comprising a setting pin engaged within engagement means and having at least one suture operatively associated therewith;

a channel extending the length of said elongated shaft portion, said channel receiving a portion of the at least one suture extending from the suture anchor;

at least one needle-retaining assembly, said needle-retaining assembly comprising a pair of needle-retaining projections extending from said body portion; and

a suture-retaining member positioned on the body portion of said suture anchor insertion tool, said suture-retaining member including suture-retaining tabs to grip the at least one suture extending from the suture anchor to maintain the setting pin within the engagement means of the two-piece suture anchor.

5,354,299

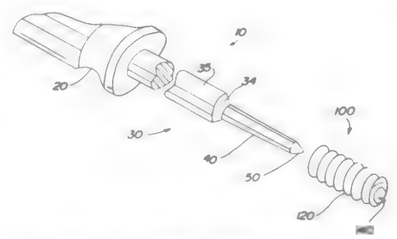
METHOD OF REVISING A SCREW IN A TUNNEL

R. Glen Coleman, Clearwater, Fla., assignor to Linvatec Corporation, Largo, Fla.

Filed Dec. 7, 1992, Ser. No. 987,477

Int. Cl.[5] A61F *2/08*

U.S. Cl. 606—73 **7 Claims**



1. The method of revising a surgical screw disposed in a tunnel in bone tissue, the screw having been previously inserted into the tunnel through a first opening in an advancing longitudinal direction with a first end of the screw in a leading position and a second end of the screw in a trailing position, the second end of the screw having been engaged by a driver to rotate the screw in a first rotational direction during insertion, said method comprising the steps of:

(a) configuring said first and second ends of said screw to be alternatively engageable by said driver to thereby permit said screw to be rotated from each end selectively in both said first rotational direction and a second rotational direction opposite said first rotational direction;

(b) engaging the first end of the screw with said driver; and

(c) rotating the screw in said first rotational direction to drive the screw with the engaged driver from said first end in said advancing longitudinal direction until the screw is removed from said tunnel via a second opening.

5,354,300

DRILL GUIDE APPARATUS FOR INSTALLING A TRANSVERSE PIN

E. Marlowe Goble, Logan, Utah, and Jerry L. Lower, Bourbon, Ind., assignors to Depuy Inc., Warsaw, Ind.

Filed Jan. 15, 1993, Ser. No. 4,958

Int. Cl.[5] A61F *5/04*

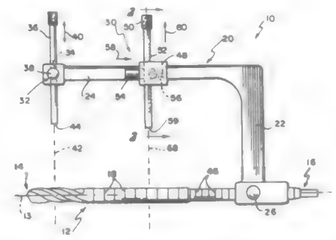
U.S. Cl. 606—80 **27 Claims**

21. A drill guide for locating and installing a transverse pin for holding a replacement ligament in a tunnel drilled through a bone by a tunnel drill, the drill guide comprising:

a tunnel drill insertable into the bone for drilling a straight tunnel along an axis into the bone to house the ligament replacement;

an arm member extending substantially parallel to the longitudinal axis of the tunnel drill;

means for guiding a drill to form a guide hole in the bone including a drill guide sleeve aligned to intersect the tunnel axis and the replacement ligament therein transversely and to receive said transverse pin, the guiding means being coupled to the arm member; and



means for coupling the arm member to the tunnel drill for rotational and axial shifting along the tunnel drill to position the drill guide sleeve while in the tunnel drill is still in the bone to align the drill guide sleeve at a selected anatomical location using the tunnel drill in the bone as a reference.

5,354,301

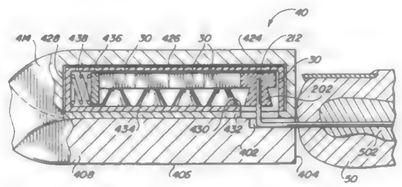
HAMMER TOE OPERATION TOOL SYSTEM AND METHOD

Bradley D. Castellano, 1306 LaFaunce Way, Fort Myers, Fla. 33919

Filed Mar. 19, 1993, Ser. No. 33,582

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—103 **9 Claims**



4. A tool system useful in preparing a surgical wire pin extending axially outward from a toe, the tool system comprising:

a shearing tool for dimensioning a surgical wire pin for receiving a protective cap, the shearing tool comprising:

an elongated first lever arm having a proximal end and a distal end;

an elongated second lever arm having a proximal end and a distal end, the second lever arm pivotally connected to the first lever arm at a location proximate to the distal ends;

a fixed jaw extending from the first lever arm distal end, the fixed jaw having a slot sized for receiving the wire pin, the fixed jaw further having a bending edge proximate to an end of the jaw;

a cutting edge formed at the end of the fixed jaw; and

a movable jaw extending from the second arm distal end, the moveable jaw having a groove sized for receiving the wire pin, the moveable jaw dimensioned to guide the wire pin over the bending edge so as to form

a substantially right angle in the wire pin and guide the wire pin onto the cutting edge; and

a capping tool dimensioned to receive a surgical wire pin formed by the shearing tool and affixing a protective cap thereto, the capping tool comprising:

an elongated first lever arm having a proximal end and a distal end;

an elongated second lever arm having a proximal end and a distal end, the second lever arm pivotally connected to the first lever arm at a location proximate to the distal ends;

a fixed jaw extending from the first lever arm distal end, the fixed jaw having a notch sized for receiving the formed surgical wire pin;

a movable jaw extending from the second lever arm distal end; and

means for storing at least one protective cap, the storing means affixed to the moveable jaw so as to position the cap for receiving an end of the formed wire pin when the jaws are brought together through the action of bringing the lever arms together under pressure.

5,354,302

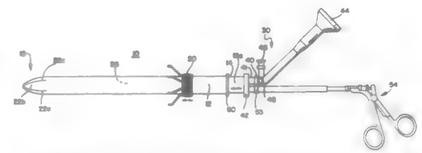
MEDICAL DEVICE AND METHOD FOR FACILITATING INTRA-TISSUE VISUAL OBSERVATION AND MANIPULATION OF DISTENSIBLE TISSUES

Sung-Tao Ko, 42 Baybrook La., Oak Brook, Ill. 60521

Filed Nov. 6, 1992, Ser. No. 973,082

Int. Cl.[5] A61F *2/32, 2/34;* **A61B** *17/58, 17/60*

U.S. Cl. 606—104 **19 Claims**



1. A medical device for insertion into body tissue comprising:

an outer sleeve member;

penetration means disposed at a first end of said sleeve member for facilitating entry of said sleeve into the body tissue and effecting intra-tissue distension to provide an open area within the tissue in communication with said first end; and

observation means operatively coupled with said penetration means for facilitating intra-tissue visual observation through said first end of said sleeve member and of said open area.

5,354,303

DEVICES FOR ENCLOSING, MANIPULATING, DEBULKING AND REMOVING TISSUE THROUGH MINIMAL INCISIONS

Edmund E. Spaeth, Orange; Alexander S. Borsanyi, Newport Beach; Alex Bowie, Irvine, and John T. Sorensen, Costa Mesa, all of Calif., assignors to EndoMedix Corporation, Irvine, Calif.

Continuation-in-part of Ser. No. 639,494, Jan. 9, 1991, abandoned, and a continuation-in-part of Ser. No. 779,443, Oct. 18, 1991. This application Feb. 14, 1992, Ser. No. 836,087

Int. Cl.[5] A61B *17/22*

U.S. Cl. 606—128 **59 Claims**

1. A device usable, in combination with a standard forcep/-grasper instrument, to deploy a surgical containment sac within a body cavity and to subsequently retrieve said containment sac from said body cavity, said device comprising:

a tubular introducer sheath having a distal end, a proximal end, and a hollow lumen extending longitudinal therethrough;

a flexible containment sac comprising:

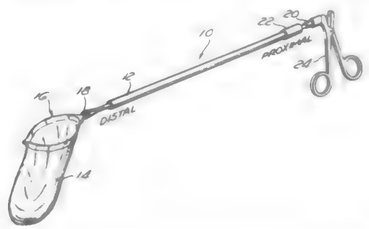
(a) a flexible sac body having at least one opening thereinto; and

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(b) a rigid grasping member connected to said sac body, said grasping member being sized and configured to be graspable by said standard forcep/grasper instrument;

said containment sac and said tubular introducer sheath being sized and configured relative to one another so as to permit said containment sac to be alternately deployable in:

(a) a first "pre-operative" position wherein said containment sac body is fully disposed within a lumen of said introducer sheath with said grasping member extending



at least partially out of the proximal end of said introducer sheath;

(b) a second "deployed" position whereby said containment sac is expelled out of the distal end of said introducer sheath; and

(c) a third "retraction" position whereby a portion of said containment sac is withdrawn into the lumen of the introducer sheath, while a portion of said containment sac remains disposed beyond the distal end of said introducer sheath.

5,354,304

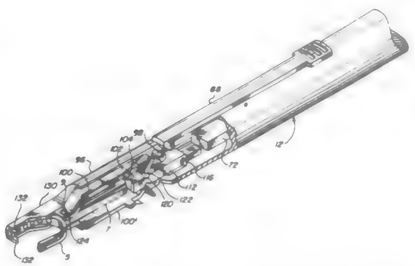
MODULAR LIGATION CLIP APPLICATOR

William J. Allen, Stratford; George Jessup, Brookfield; Frederick F. Ahari, Southport, all of Conn., and Lawrence Crainich, Charlestown, N.H., assignors to American Cyanamid Co., Wayne, N.J.

Filed Oct. 13, 1992, Ser. No. 960,080

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—142 **23 Claims**



1. A module for mounting a two-part ligation clip having a first part formed to be closed about a vessel and a second part movable relative to the first part to cause the first part to close, said module being operable in conjunction with a ligation clip applicator and comprising:

a cartridge housing;

holding means, mounted in said cartridge housing, for holding the first part of the ligation clip in a stationary position relative to said housing; and

sliding means, mounted for advancing movement in said cartridge housing, for advancing the second part of the ligation clip relative to the first part to close the first part, wherein

said sliding means includes a pusher axially slidable in said housing, and said latch includes a spring for biasing said latches against said pusher, said pusher holding said latches in position to grip the first part of the ligation clip.

5,354,305

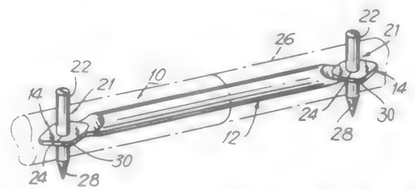
NERVE REPAIR DEVICE

Royce C. Lewis, Jr., Lubbock, Tex., and Daniel R. Lee, Winona Lake, Ind., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 767,111, Sep. 26, 1991, abandoned. This application Dec. 17, 1992, Ser. No. 993,965

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—152 **24 Claims**



1. A nerve repair device for repairing severed nerve ends, comprising:

a substantially solid implant, said implant configured and dimensioned for insertion longitudinally into the severed nerve ends to align them in close approximation;

anchoring means associated with said implant for holding the severed nerve ends in close approximation; and

penetration means positioned at opposite end portions of said implant wherein at least one of said penetration means comprises a flattened end portion for penetrating nerve tissue.

5,354,306

SURGICAL CLIP

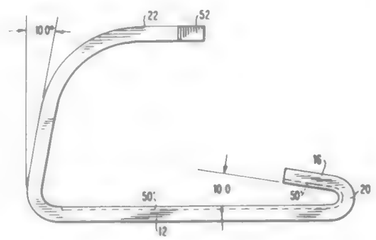
Thomas Q. Garvey, III, 10125 Gary Rd., Potomac, Md. 20854; Kathleen Ruddy, 50 Green Village Rd., Madison, N.J. 07940, and Frank V. Gates, 9 Yale Dr., Succasunna, N.J. 07876

Continuation-in-part of Ser. No. 843,755, Feb. 28, 1992, Pat. No. 5,219,353. This application Jun. 14, 1993, Ser. No. 76,404

The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—157 **11 Claims**



1. A surgical clip comprising a thin metallic unitary member comprising a lower arm terminating in a forward end in an upwardly and rearwardly extending tail section, said upwardly and rearwardly extending tail section terminating in a lower free-end, a corner formed between said tail and said forward

end of said lower arm, said clip further comprising an upwardly and forwardly extending intermediate elbow section extending from the rearward end of said lower arm, said upwardly and forwardly extending intermediate elbow section terminating in an upper arm, said upper arm terminating in a forwardly extending tip, said surgical clip having an open position with said upper and lower arms being coplanar, said surgical clip deformable to a closed position by pressure applied to said upper arm and lower arm to move said tip to be captured in said corner under said tail section to form a circumferential closure on a duct to be sealed by said clip, said tip and the upper surface of said lower arm having engaging surfaces along the direction of relative movement between them as said tip moves to be captured in said corner, said tip being moved into and along said interlocking surface of said lower arm as said clip is being closed and the tip is moving forwardly toward said corner, said engaging surfaces guiding the proper closure to maintain the ends within said initial plane as said clip is being closed and preventing said tip and the end of said tail from projecting out from the closed clip to prevent piercing of surrounding tissue, said engaging surface on said lower arm comprising means formed along the upper portion thereof extending across substantially the entire width of the lower arm to hold said vessel.

5,354,307

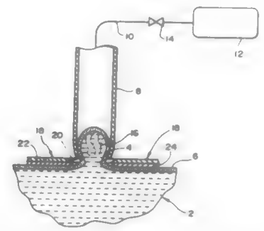
SURGICAL MEANS FOR REMOVING A PORTION OF A BODY

Jan S. Porowski, 534 Glen Ardea Dr., Pittsburgh, Pa. 15236, and Edward J. Hampton, 4100 Verner Dr., Murrysville, Pa. 15668

Continuation of Ser. No. 863,742, Apr. 6, 1992, abandoned. This application Oct. 14, 1993, Ser. No. 136,096

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—171 **12 Claims**



1. Surgical device for removing a portion of a body, which comprises:

means for applying a vacuum upon the portion of the body sufficient to move the portion of the body to be removed away from the remainder of the body immediately adjacent thereto; and

cutting means for cutting the portion of the body so moved by said means for applying a vacuum to sever the portion of the body so moved from the remainder of the body, said cutting means including an opening therethrough through which the portion of the body is moved away from the remainder of the body by said means for applying a vacuum,

said means for applying a vacuum comprising a vacuum source connected to a single elongated tube having a first end and a second end with a cross-section sufficiently large to surround the portion of the body to be removed, one of said ends of said elongated tube being attached to said cutting means so that said elongated tube forms an angle relative to said cutting means with said elongated tube extending over and outwardly from said opening in said cutting means and the body and said other end of said elongated tube being coupled to said vacuum source.

5,354,308

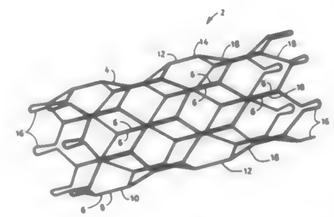
METAL WIRE STENT

Morris Simon, Boston; Dmitry J. Rabkin, Brookline, and Stephen Kleshinski, Scituate, all of Mass., assignors to Beth Israel Hospital Association, Boston, Mass.

Filed May 1, 1992, Ser. No. 878,184

Int. Cl.[5] A61M *29/00*

U.S. Cl. 606—198 **11 Claims**



1. A stent comprising a wire skeletal frame, said frame being adapted to assume a first condition in which said frame is expanded, relatively rigid, and substantially tubular in configuration, and being further adapted to assume a second condition in which said frame is flexible, of reduced stress, and collapsible, said wire frame comprised of a metallic compound of nickel and titanium, said compound in said second condition indefinitely retaining said flexibility and said reduced stress and retaining memory of said first condition, said wire frame upon heating to a selected body temperature, assuming said first condition in which said frame is greatly expanded relative to said second condition and assuming said rigidity, such that in said second condition walls of said frame are adapted to be positioned in their collapsed disposition, and further adapted to be dispositioned against each other to form a stent diameter substantially equal to the combined thickness of the frame walls in abutting engagement with each other, and further adapted to be configured between said expanded disposition and said walls abutting disposition, said frame in said second condition being substantially devoid of bias present therein urging said frame to assume said first configuration, said skeletal frame comprising only a single wire round in cross-section, said frame including straight axially-extending portions of said wire joined together along the lengths of said straight axially-extending portions and circumferentially side by side, wherein in said substantially tubular configuration said frame includes a substantially tubular body portion and finger portions extending from an end of said tubular body portion, said finger portions extending axially of said tubular body portion and comprising endless looped portions of said single wire.

5,354,309

APPARATUS FOR WIDENING A STENOSIS IN A BODY CAVITY

Wolfram Schnepp-Pesch, and Josef Lindenberg, both of Karlsruhe, Fed. Rep. of Germany, assignors to Angiomed AG, Karlsruhe, Fed. Rep. of Germany

Filed Oct. 13, 1992, Ser. No. 959,616

Claims priority, application European Pat. Off., Oct. 11, 1991, 91117330.0

Int. Cl.[5] A61M *29/00*

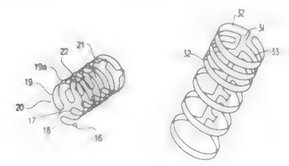
U.S. Cl. 606—198 **20 Claims**

1. An apparatus for widening a stenosis in a body cavity, such as in an artery, a bile duct, a ureter or the like comprising:

a wire part having a substantially cylindrical jacket-shaped outer contour made from a shape memory alloy, said part widening radially while maintaining a cylindrical outer contour at a transition temperature which is above an ambient temperature, but below a body temperature, a diameter of the cylindrical outer contour at a temperature below the transition temperature being smaller than a

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diameter of the body cavity, wherein the wire part with a substantially cylindrical jacket-shaped outer contour has a



circular knitted structure made from one single wire with at at least one end of the wire having a ball used for removal of the wire part after placement in the body cavity.

5,354,310

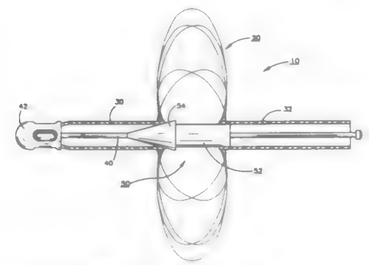
EXPANDABLE TEMPORARY GRAFT

J. Daniel Garnic, LaCanada, Calif.; Ernesto Avellanet, Miami Lakes, Fla., and Michael L. O'Hara, Salt Lake City, Utah, assignors to Cordis Corporation, Miami Lakes, Fla.

Filed Mar. 22, 1993, Ser. No. 34,253

Int. Cl.[5] A61M *29/00*

U.S. Cl. 606—198 **14 Claims**



1. A medical implant device comprising:
a pair of axially spaced apart flexible tubes;
a tubular mesh connected between said tubes, said tubular mesh expandable from a first position to a second position having an outer diameter greater than the outer diameters of said tubes upon relative axial movement of said tubes toward one another;
a flexible core extending through said tubes and said mesh, said core having an end portion attached to one of said tubes; and
a locking device located at least partially within the axial extent of said mesh for fixing said tubes in a relative axial position to maintain said mesh in the second position.

5,354,311

DEFLECTING FORCEPS

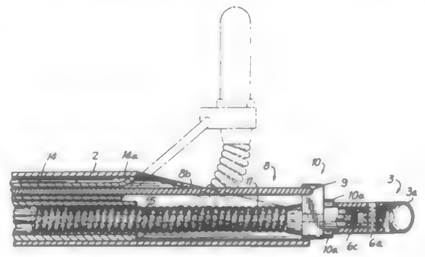
Parviz Kambin, Devon, Pa., and Douglas D. Sjostrom, Wakefield, Mass., assignors to Smith & Nephew Dyonics Inc., Memphis, Tenn.

Continuation of Ser. No. 737,223, Jul. 29, 1991, abandoned. This application Sep. 8, 1993, Ser. No. 117,986

Int. Cl.[5] A61B *17/28*

U.S. Cl. 606—205 **10 Claims**

1. A forceps apparatus comprising:
(a) an elongated rigid tubular housing having a bore with a longitudinal axis, the housing having proximal and distal end and a length which is nearly the entire length of the forceps apparatus portions;
(b) a pair of jaws extending beyond the distal end portion of the elongated tubular housing;
(c) manually operable handle means positioned at the proximal end portion of said housing for operating said jaws, each handle having a portion that is spaced laterally away from the housing's longitudinal axis;
(d) linkage means extending through said bore between said handle means and said jaws for transmitting force between said handle means and said jaws during the operation of opening or closing the jaws;
(e) cable means positioned within the housing bore for moving said jaws from a first position wherein said jaws extend in a direction parallel to and generally aligned with the longitudinal axis of said housing bore to a second position



wherein said jaws are positioned laterally away from said longitudinal axis, a cable end portion being permanently attached to the jaws for movement therewith;
(f) a manually operable actuator means positioned at the proximal end of said housing and connected to said cable means for operating said cable means;
(g) said handle means and actuator means being arranged for operation by the hands of a user; and
(h) said linkage means including biasing means rigidly supported at the distal end portion of the housing, extending from the bore for returning the jaws to a position aligned with the longitudinal axis of the housing bore.

5,354,312

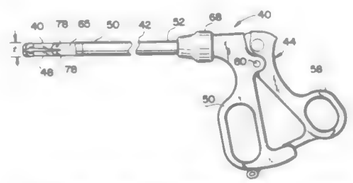
ENDOSCOPIC ANVIL GRASPING INSTRUMENT

Ronald J. Brinkerhoff, New Richmond; Edward J. Biehle, IV, Westchester; Richard W. Flaker, Fairfield, and Julia C. Putnam, Cincinnati, all of Ohio, assignors to Ethicon, Inc., Somerville, N.J.

Filed Sep. 18, 1992, Ser. No. 947,197

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—207 **9 Claims**



1. An endoscopic surgical instrument that is extendable into an anatomical cavity through a trocar cannula having an inner diameter for grasping a shaft of the anvil portion of a circular surgical stapling device, said anvil grasping surgical instrument comprising:
an elongated shaft describing a longitudinal axis and having an outer diameter that is less than the inner diameter of the trocar cannula so as to permit said elongated shaft to extend through the trocar cannula, said elongated shaft having a distal end and a proximal end;

a pair of jaw members having a length and defining a width therealong, said jaw members disposed at and extending from the distal end of said elongated shaft, said jaw members similarly defining a jaw axis extending in a distal direction along said jaw member length from the distal end of said elongated shaft and said jaw members including distal jaw portions defining semi-cylindrical surfaces formed along the entire width of said jaw members for grasping a rod-like anvil shaft therebetween, said jaw members including proximal portions that are pivotally mounted adjacent to the distal end of said elongated shaft so as to permit movement of said jaw portions between: (i) a first position wherein said jaw portions are positioned adjacent one another in grasping relation to an anvil shaft positioned on said semi-cylindrical surfaces; and (ii) a second position wherein said jaw portions are separated to permit an anvil shaft to pass therebetween, said jaw portions when in their first position having an outer dimension that is no greater than the outer diameter of said elongated shaft; and
wherein said jaw portions are oriented such that said jaw axis intersects the longitudinal axis of said elongated shaft at an acute angle in the range from about 40 degrees to about 60 degrees; and
actuation means extending through said elongated shaft having a proximal end portion and a distal end portion that is connected to said proximal portions of said jaw members for moving said jaw portions between their first and second positions.

5,354,313

FORCEPS HAVING ADJUSTABLE GRIPPING FORCE

Manfred Boebel, Oetisheim, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed May 21, 1993, Ser. No. 65,628

Claims priority, application Fed. Rep. of Germany, May 22, 1992, 4216971

Int. Cl.[5] A61B *17/28*

U.S. Cl. 606—208 **15 Claims**



1. Forceps comprising:
a support;
a pair of jaws mounted on said support, at least one for pivoting relative to the other between respective gripping and disengaging positions thereof;
an elongated control rod having a longitudinal axis, mounted on said support for axial movement relative thereto, and including a distal first rod part directly connected to said one jaw and a second rod part extending proximally from and being mounted on said support for turning about said axis relative to said first rod part between respective angular positions thereof;
at least one lever mounted on said support for movement relative thereto between a released and a locked position;
means for locking said lever in said locked position thereof; and
adjusting means for operatively connecting said lever with said first rod part for transmitting forces acting on said lever through said first and second rod parts to said one jaw, including
a plurality of link assemblies interposed between said first and second rod parts, and
axially spaced angularly offset cams secured to said second rod part for joint turning therewith and selectively engaging different ones of said link assemblies each in different ones of said angular positions of said second rod part to link said second rod part to said first rod part.

5,354,314

THREE-DIMENSIONAL BEAM LOCALIZATION APPARATUS AND MICROSCOPE FOR STEREOTACTIC DIAGNOSES OR SURGERY MOUNTED ON ROBOTIC TYPE ARM

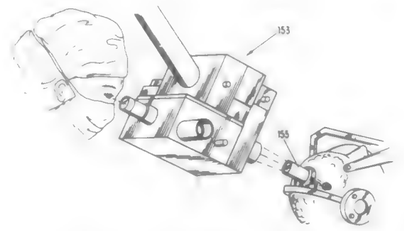
Tyrone L. Hardy, and Laura D. Brynildson, both of Albuquerque, N. Mex., assignors to Medical Instrumentation and Diagnostics Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 552,256, Jul. 11, 1990, Pat. No. 5,176,689, which is a continuation-in-part of Ser. No. 428,242, Oct. 27, 1989, abandoned, which is a continuation-in-part of Ser. No. 290,316, Dec. 23, 1988, Pat. No. 5,099,846. This application Aug. 28, 1992, Ser. No. 936,797

The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.

Int. Cl.[5] A66B *19/00*

U.S. Cl. 606—130 **27 Claims**



1. A surgical beam locatization and surgical microscope apparatus, the apparatus comprising:
a surgical reference device defining a three-dimensional space;
a surgical microscope;
objective lens means disposed on said surgical microscope positioned within said three-dimensional space;
beam emitting means comprising laser means for emitting at least two beams from two separate and spaced points;
means for movably adjusting relative positions of said beam emitting points with respect to one another;
means for aiming said beams at user selected locations on a selected volumetric entity of a body; and
means for ascertaining desired information about the selected volumetric entity of the body mathematically from positions of said beam emitting means in said apparatus, relative positions to one another of said beam emitting means, and aiming directions of said beams from said beam emitting points.

5,354,315

CARDIAC STIMULATOR WITH DATA CONVERTER FOR CARDIAC SIGNAL

Randolph K. Armstrong, Missouri City, Tex., assignor to Intermedics, Inc., Angleton, Tex.

Filed Jun. 4, 1993, Ser. No. 72,471

Int. Cl.[5] A61N *1/362*

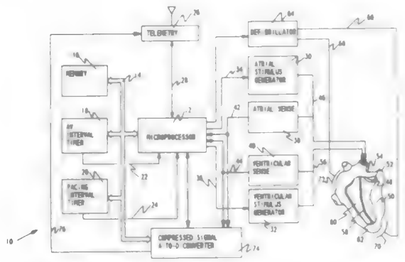
U.S. Cl. 607—4 **22 Claims**

1. An implantable cardiac stimulator comprising:
means for stimulating the heart;
means for sensing intrinsic cardiac waveforms in the heart;
means for converting said intrinsic cardiac waveforms from analog to digital form, said converting means consisting of timing means for defining measurement cycles;
sampling means for sampling the analog value of said cardiac waveform in a measurement cycle;

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means for comparing at least two sampled analog values of said cardiac waveforms;

means for determining an analog difference having a predicted probability of occurrence between said two sampled cardiac waveforms;



means for assigning a digital code to said analog difference, said digital code being of predetermined, variable size, said size being proportional to the predicted probability of occurrence of said difference.

5,354,316

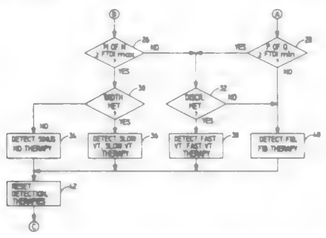
METHOD AND APPARATUS FOR DETECTION AND TREATMENT OF TACHYCARDIA AND FIBRILLATION

John G. Keimel, New Brighton, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jan. 29, 1993, Ser. No. 10,920

Int. Cl.[5] A61N *1/00*

U.S. Cl. 607—15 **20 Claims**



1. An apparatus for detection and treatment of arrhythmias, comprising:

means for sensing depolarizations of a patient's heart;

means for measuring intervals separating successive depolarizations of said patient's heart;

means for defining first and second overlapping interval ranges;

means for determining numbers of said measured intervals falling within said first and second interval ranges, over a first series of measured intervals;

first means for detecting occurrence of an arrhythmia when said number of intervals in said first interval range equals a first predetermined number;

identifying means responsive to said first detecting means for identifying said arrhythmia detected by said detecting means, comprising means for determining a number of said measured intervals falling within said second interval range within a second series of said measured intervals preceding detection of said arrhythmia by said detecting means, said identifying means comprising means for identifying occurrence of a first type of arrhythmia in response to said number of said measured intervals, occurring within said second series of said measured intervals and falling within said second interval range, meeting a first predetermined value;

means for delivering at least two anti-arrhythmia therapies; and

means responsive to said identifying means for triggering delivery of one of said arrhythmia therapies.

5,354,317

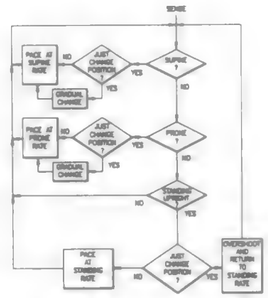
APPARATUS AND METHOD FOR CARDIAC PACING RESPONSIVE TO PATIENT POSITION

Eckhard Alt, Ottobrunn, Fed. Rep. of Germany, assignor to Intermedics, Inc., Angleton, Tex.

Filed Apr. 3, 1992, Ser. No. 863,166

Int. Cl.[5] A61N *1/365*

U.S. Cl. 607—19 **13 Claims**



1. A cardiac pacing device adapted to be implanted in a patient and to have a variable pacing rate adaptive to patient exercise, comprising:

sensor means adapted to respond to a plurality of preselected distinct and different static physical positions of the patient for producing electrical output signals uniquely representative of the distinct and different physical positions,

pulse generator means responsive to each said uniquely representative electrical output signal produced by said sensor means for generating pacing pulses at a rate which is different from the rates generated in response to each of the other uniquely representative electrical output signals produced by said sensor means, so that each preselected distinct and different physical position among said plurality of preselected distinct and different static physical positions of the patient has its own representative pacing pulse rate, to stimulate the patient's heart, said pulse generator means including transitioning means responsive to a change from a static physical position of lying to a static physical position of standing for abruptly increasing the rate to a value exceeding the rate representative of standing and for thereafter gradually reducing the rate to the rate representative of standing.

5,354,318

METHOD AND APPARATUS FOR MONITORING BRAIN HEMODYNAMICS

Robert T. Taepke, Coon Rapids, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 30, 1993, Ser. No. 56,695

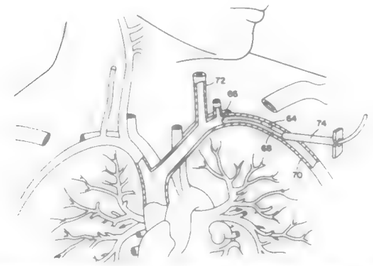
Int. Cl.[5] A61N *1/365*

U.S. Cl. 607—22 **10 Claims**

1. A method of measuring a blood parameter in a jugular vein, comprising:

positioning a sensor which provides an output which varies as a function of said blood parameter on transvenous lead having a lead body having a "V" shaped bend near its distal end, such that said sensor is located distal to said bend;

folding said lead at said bend such that said distal end is folded back against said lead body and advancing said folded lead through a vein which intersects said jugular vein, until the distal end of said lead reaches said jugular vein;



withdrawing said lead to position said sensor in said jugular vein; and employing said sensor to measure said blood parameter.

5,354,319

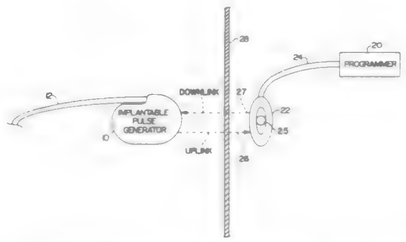
TELEMETRY SYSTEM FOR AN IMPLANTABLE MEDICAL DEVICE

Paul B. Wyborny, Coon Rapids; Glenn M. Roline, Anoka; Lucy M. Nichols, Maple Grove, and David L. Thompson, Fridley, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 896,643, Jun. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 765,475, Sep. 25, 1991, Pat. No. 5,127,404, which is a continuation of Ser. No. 468,407, Jan. 22, 1990, abandoned. This application Jan. 29, 1993, Ser. No. 10,921

Int. Cl.[5] A61N *1/00*

U.S. Cl. 607—32 **10 Claims**



1. An apparatus for transferring data between two medical devices while one of said medical devices is implanted within a patient's body, comprising:

(a) means within a first of said medical devices for defining a plurality of parameters;

(b) first encoding means within said first medical device for initially encoding said plurality of parameters in a first numerical base;

(c) second encoding means within said first medical device for further encoding said plurality of initially encoded parameters in said first numerical base in a second, higher numerical base wherein said second encoding means comprises means for encoding said plurality of parameters as a single value in said second numerical base;

(d) means coupled to said second encoding means for transferring said further encoded parameters in said second numerical base to a second of said medical devices;

(e) means within said second medical device for receiving said further encoded parameters in said second numerical base;

(f) first means coupled to said receiving means for decoding said parameters from said further encoded parameters in said second numerical base.

5,354,320

NEUROSTIMULATOR FOR PRODUCTION OF PERIODIC STIMULATION PULSES

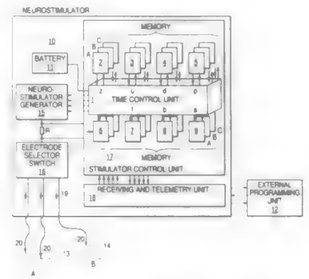
Max Schaldach, Erlangen, and Helmut Hutten, Mainz, both of Fed. Rep. of Germany, assignors to Biotronik Mess- Und Therapiegerate GmbH & Co., Ingenieurburo Berlin, Berlin, Fed. Rep. of Germany

Filed Sep. 14, 1992, Ser. No. 943,250

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1991, 4130597

Int. Cl.[5] A61N *1/34*

U.S. Cl. 607—46 **11 Claims**



1. A neurostimulator for generating stimulation pulses for the central or peripheral nervous system, particularly against pain in the region of the spinal cord, comprising:

stimulation electrodes and

a control circuit including pulse generator means for generating stimulation pulses to the stimulation electrodes at periodic intervals with an activity period corresponding essentially to an effective duration corresponding to a biological half-lifetime of a body's own active substances and means for creating a respective rest period, the respective rest period corresponding to a time required by the body's own active substances to regenerate themselves for a corresponding activity period.

5,354,321

PATCH ARRANGEMENT FOR GALVANIC TREATMENT

Mario Berger, Gartenstrasse 15, 5788 Winterberg, Fed. Rep. of Germany

PCT No. PCT/DE91/00772, § 371 Date Jun. 10, 1992, § 102(e) Date Jun. 10, 1992, PCT Pub. No. WO92/06736, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 1, 1991, Ser. No. 859,691

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1990, 4032109; May 6, 1991, 4114677

Int. Cl.[5] A61N *1/04*

U.S. Cl. 607—75 **8 Claims**

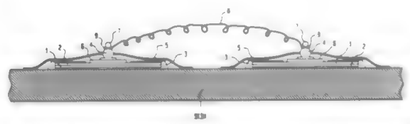
1. A patch arrangement for application onto the skin for galvanic treatment, comprising:

a first double-layered electrode including a skin-proximate layer of a noble metal and a skin-distant layer of a noble metal;

a second double-layered electrode including a skin-proximate layer of a noble metal differing from the noble metal of said skin-proximate layer of said first electrode and a

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skin-distant layer of a noble metal differing from the noble metal of said skin-distant layer of said first electrode; and



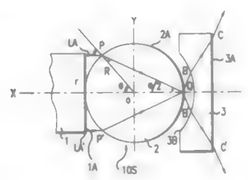
connection means for electrically connecting said first and second electrodes.

5,354,322

OPTICAL ILLUMINATION SYSTEM FOR ENDOSCOPE

Hitoshi Miyano, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Jan. 19, 1993, Ser. No. 2,872
Claims priority, application Japan, Jan. 17, 1992, 4-001245[U]
Int. Cl.[5] A61B 1/06
U.S. Cl. 607—88 7 Claims



1. An illumination optical system for an endoscope, comprising:

a sheath;

a light guide fiber bundle, received in said sheath and having a circular light exit end, for emitting light rays in parallel with its optical axis;

a transparent spherical element, positioned adjacent said circular light exit end of said light guide fiber bundle, for focusing said light rays on a preselected point on the surface of the spherical element remote from said circular light exit end of said light guide fiber bundle; and

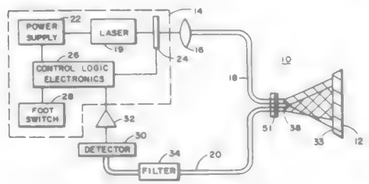
mounting means for mounting said bundle and spherical element with a center of the spherical element lying on the optical axis of the bundle.

5,354,323

OPTICAL HEATING SYSTEM

Mark E. Whitebook, Dana Point, Calif., assignor to Premier Laser Systems, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 963,470, Oct. 20, 1992, abandoned. This application Dec. 28, 1992, Ser. No. 997,554
Int. Cl.[5] A61N 5/06
U.S. Cl. 607—89 25 Claims



1. An apparatus for heating tissue comprising:

means for projecting a beam of optical radiation energy having a first wavelength on a surface of a region to be welded so as to heat the region;

means for detecting changes in temperature of the region by sensing variations of a characteristic of black body radiation emitted by the region due to the beam heating the region, said black body radiation having a wavelength different from the first wavelength; and

means for controlling the projection of the beam as a function of the detected variations of the characteristic.

5,354,324

LASER INDUCED PLATELET INHIBITION

Kenton W. Gregory, Boston, Mass., assignor to The General Hospital Corporation, Boston, Mass.

Filed Oct. 18, 1990, Ser. No. 600,014
Int. Cl.[5] A61N 5/00
U.S. Cl. 607—92 35 Claims

1. A method for inhibiting platelet adhesion to a mammalian blood vessel surface having a known thermal relaxation time, said method comprising the steps of:

a. inserting, into a blood vessel, an elongate liquid core laser catheter having a liquid carrying lumen extending longitudinally therethrough such that a flow of laser transmitting liquid may be infused through said catheter;

b. passing a laser transmitting liquid through the liquid carrying lumen of said catheter such that said liquid passes through said catheter and into contact with said blood vessel surface;

c. causing a pulse of laser energy to be transmitted into said liquid passing through the lumen of said catheter such that said liquid will carry said laser energy into contact with said blood vessel wall, thereby causing irradiation of said blood vessel wall; and

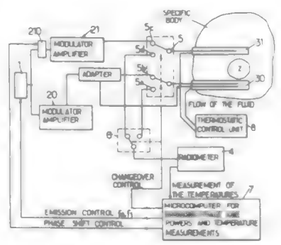
d. maintaining the pulse duration of said pulse of laser energy such that the elapsed time from the beginning of said pulse to the end of said pulse is less than the thermal relaxation time of the irradiated blood vessel surface.

5,354,325

SYSTEM FOR INTERNAL HEAT TREATMENT OF A SPECIFIC BODY AND ITS USE

Maurice Chive, Villeneuve d'Ascq; Jean-Pierre Sozanski, Thumeries; Yves Moschetto, Haubourdin, and Daniel Vanloot, Calais, all of France, assignors to Institut National de la Sante et de la Recherche Medicale and Universite des Sciences et Technologies de Lille, both of Paris, France

PCT No. PCT/FR92/00729, § 371 Date Mar. 15, 1993, § 102(e) Date Mar. 15, 1993, PCT Pub. No. WO93/02747, PCT Pub. Date Feb. 18, 1993
PCT Filed Jul. 23, 1992, Ser. No. 30,247
Claims priority, application France, Jul. 26, 1991, 91 09521
Int. Cl.[5] A61N 5/00
U.S. Cl. 607—101 14 Claims



1. System for the internal heat treatment of specific bodies by application of microwave energy to an area to be treated, said system comprising a generator of microwave energy at a first defined frequency, at least two transmission channels for transmitting said microwave energy emitted by said generator, each transmission channel generating a microwave treatment signal modulated in amplitude according to a defined, periodic modulation law at a second defined frequency, a carrier wave of said microwave energy of said two transmission channels exhibiting a phase shift, at least one microwave applicator associated with each of said at least two transmission channels for applying said microwave treatment signal delivered by said transmission channels at separate points in the vicinity of the area to be treated, and means for calculating and displaying microwave powers radiated and instantaneous temperatures of said separate points, wherein said system further comprises:

a dual-temperature-reference radiometer selectively interconnected to each of said at least one microwave applicator, for measuring an absolute temperature of a separate point of said separate points associated with an interconnected microwave application;

a three-output calibration module linked to said dual-temperature-reference radiometer,

a first output of said calibration module being linked to an electrical short-circuit in a microwave frequency band of said radiometer,

a second output of said calibration module being linked to a first calibrated resistor of defined value in said microwave frequency band of said radiometer, said first resistor being brought, in operation, to a first temperature T1, and

a third output of said calibration module being linked to a second calibrated resistor of said defined value in said frequency band of said radiometer, said second resistor being, in operation, brought to a second temperature T2; and

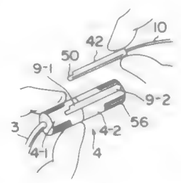
a multichannel microwave changeover switch forming a measurement input of said dual-temperature-reference radiometer, said multichannel microwave changeover switch being selectively linked to either one of said microwave applicators associated with said transmission channels, or one of the outputs of said calibration module.

5,354,326

SCREENING CABLE CONNECTOR FOR INTERFACE TO IMPLANTED LEAD

Richard H. Comben, St. Paul, Minn.; Barry J. Grant, Roberts, Wis.; Michael D. Serfling, St. Louis Park, Minn.; Thomas E. Cross, Jr., St. Francis, Minn., and David J. Stanton, Anoka, Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Jan. 27, 1993, Ser. No. 9,607
Int. Cl.[5] A61N 1/02
U.S. Cl. 607—115 5 Claims



1. A connector for coupling an implantable lead having a plurality of spaced-apart electrical lead contacts disposed on its proximal end to a multiple-conductor cable, said connector comprising:

a first, substantially cylindrical connector half, adapted to be disposed at a first end of the multiple-conductor cable, said first connector half having a first longitudinal slot therein;

a second, substantially cylindrical connector half, coaxially coupled to said first connector half and axially rotatable with respect to said first connector half from a first, open position to a second, closed position, said second connector half having a second longitudinal slot therein, said second longitudinal slot being aligned with said first longitudinal slot when said second connector half is rotated to said open position;

a plurality of spaced-apart electrical contacts disposed within said first connector half, each one of said plurality of electrical contacts being adapted to be electrically coupled to a conductor in said multiple-conductor cable, said plurality of spaced-apart electrical contacts being exposed in said second slot when said second connector half is rotated to said open position;

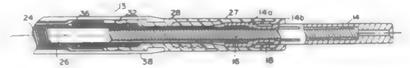
an end piece disposed in said first and second longitudinal slots when said second connector half is in said open position, said end piece being adapted to engage the proximal end of the lead such that the plurality of spaced-apart electrical lead contacts are at least partially exposed, the connector being further adapted to permit said second connector half to be rotated into said closed position over said end piece, such that each one of the plurality of spaced-apart electrical lead contacts is held in contact with a respective one of said plurality of spaced-apart electrical contacts in the connector.

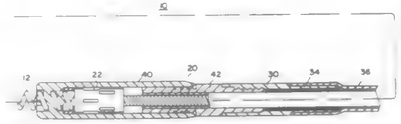
5,354,327

CONDUCTOR COIL WITH SPECIFIC RATIO OF TORQUE TO BENDING STIFFNESS

Karel F. A. A. Smits, Oirsbeek, Netherlands, assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 7, 1993, Ser. No. 43,885
Int. Cl.[5] A61N 1/05
U.S. Cl. 607—116 18 Claims





1. A body-implantable, intravascular lead comprising:

(a) a length of coiled conductor sheathed within a nonconductive body-compatible material wherein said conductor comprises a filar having a proximal end, a distal end a longitudinal axis and a non-circular cross-section, said cross-section having a major dimension generally perpendicular to the longitudinal axis of said length of coiled conductor and a minor dimension generally parallel to the longitudinal axis of said length of coiled conductor;

(b) an electrode attached to said distal end of said length of coiled conductor; and

(c) a connector pin attached to said proximal end of said coiled conductor.

5,354,328

PATCH ELECTRODE FOR AN IMPLANTABLE DEFIBRILLATOR

Phong D. Doan, Stevenson Ranch; Gabriel Mouchawar, Newhall, and James D. Causey, III, Simi Valley, all of Calif., assignors to Siemens Pacesetter, Inc., Sylmar, Calif.

Filed Jan. 19, 1993, Ser. No. 5,694
Int. Cl.[5] A61N 1/05
U.S. Cl. 607—129 27 Claims

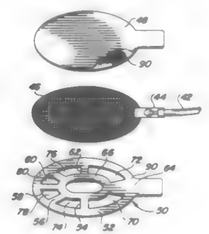
1. A patch electrode for use with an implantable defibrillator and connected thereto by an electrical conductor, said patch electrode comprising:

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a generally oval-shaped wire mesh electrically connected to the electrical conductor;

a generally oval-shaped insulation backing sheet similarly shaped and slightly larger than said wire mesh bonded to one side of said wire mesh; and

a facing sheet of insulation material bonded to an opposite side of said wire mesh, said facing sheet including a peripheral rim portion matching a peripheral edge of said



backing sheet, said facing sheet further including a plurality of lattice elements converging radially inward from said peripheral rim to define therebetween a plurality of windows of exposed wire mesh, said windows having varying area and perimeter, wherein the area of said windows decreases and the perimeter to area ratio increases with increasing distance from the point of connection of said wire mesh with the conductor.

5,354,329

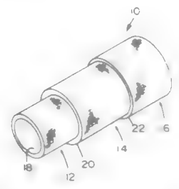
VASCULAR PROSTHESIS HAVING ENHANCED COMPATIBILITY AND COMPLIANCE CHARACTERISTICS

Robert L. Whalen, Cambridge, Mass., assignor to Whalen Biomedical, Inc., Cambridge, Mass.

Continuation of Ser. No. 869,944, Apr. 17, 1992, abandoned. This application Aug. 31, 1993, Ser. No. 114,607

Int. Cl.[5] A61F *2/06, 2/02, 2/04*

U.S. Cl. 623—1 **8 Claims**



1. A circulatory system non-pyrogenic vascular prosthesis having variable radial elasticity, which prosthesis comprises:

a multilaminar tubular member comprising an interior stratum, a unitary medial stratum having an internal and external diameter, and an exterior stratum wherein

said interior stratum bears a pseudoneointima-facilitating lumen surface;

said exterior stratum bears a stabilization promoter surface;

said interior and exterior strata being separated solely by said unitary medial stratum;

said unitary medial stratum being a solid, non-porous, non-communicative exclusionary boundary which prohibits communication between the pseudoneointima-facilitating lumen surface and the stabilization promoter surface and which has a thickness that can vary such that said internal diameter varies while said external diameter remains constant;

said variable radial elasticity varying inversely with the thickness of said unitary medial stratum.

5,354,330

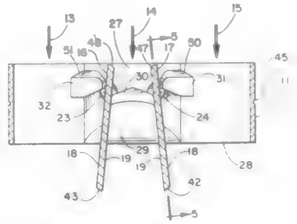
HEART VALVE PROSTHESIS

Donald W. Hanson, Chanhassen; Richard W. Kramp, Arden Hills, and Manuel A. Villafana, Minneapolis, all of Minn., assignors to ATS Medical Inc., Plymouth, Minn.

Continuation of Ser. No. 973,938, Nov. 10, 1992, abandoned, which is a continuation of Ser. No. 786,253, Oct. 31, 1991, abandoned. This application Sep. 16, 1993, Ser. No. 122,802

Int. Cl.[5] A61F *2/24;* **F16K** *15/00*

U.S. Cl. 623—2 **6 Claims**



1. Heart valve prosthesis means comprising:

(a) a generally annular body member having an interior surface defining a central passageway having a central axis for blood flow therethrough;

(b) occlude means supported on said annular body for alternately blocking and then allowing the flow of blood through said passageway in a predetermined direction;

(c) said occlude means having generally planar upstream and downstream major surfaces and being formed with aligned concavities at opposed locations along the periphery thereof;

(d) a pair of opposed flat surfaces with parallely disposed inwardly facing surfaces formed along the interior surface of said annular body;

(e) oppositely disposed pairs of spherical segments extending convexly inwardly from each of said flat surfaces of said annular body to form pivot areas engageable within said concavities formed in said occlude means with the axes of said spherical segments being arranged along and generally coincidental with the axis of said concavities;

(f) first and second stop means extending inwardly of said flat surface and being disposed laterally of said convexly inwardly extending spherical segments and cooperating with said occlude means and pivot areas to control the extent of pivotal motion of each of said occlude means and to limit the extent of angular pivotal movement in the opening and closing of said occlude means, each of said first and second stop means including first and second abutment pad means;

(g) said first stop means comprising a radially inwardly extending abutment pad having in relation to a downstream direction and to said central axis an angularly inwardly flared profile surface at the upstream flow end and an angularly outwardly flared profile surface at the downstream flow end, and further having a pair of relatively elongated occlude opening contact surfaces arranged along the edge surfaces thereof and being disposed intermediate individual ones of said first and second pairs of pivot areas and with said occlude opening contact surfaces being arranged to contact the outflow surfaces of said occlude means to limit extent of angular opening thereof; and

(h) said second stop means comprising a pair of laterally disposed abutment pads, each pad having in relation to a downstream direction and to said central axis an angularly

inwardly flared profile surface at the upstream flow end thereof, each pad having a relatively elongated occlude closure contacting surface arranged along an edge surface of said angularly flared profile surface and with each abutment pad being disposed arcuately outwardly of said pivot areas for contacting the inflow surfaces of said occlude means to guide said occlude means and control the disposition thereof upon closure.

5,354,331

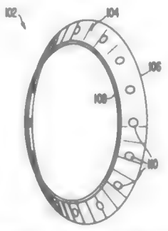
TREATMENT OF PRESBYOPIA AND OTHER EYE DISORDERS

Ronald A. Schachar, P.O. Box 1039, Denison, Tex. 75020

Filed Jul. 15, 1992, Ser. No. 913,486

Int. Cl.[5] A61F *2/14, 2/16*

U.S. Cl. 623—4 **63 Claims**



1. A scleral expansion band adapted for fastening to the sclera of a human eyeball in the region of the ciliary body, said band comprising an anterior rim and a posterior rim, said anterior rim being sized to lie adjacent the anterior portion of a segment of the sclera of the human eyeball overlying the ciliary body of said eyeball and said posterior rim being sized to lie adjacent the posterior portion of said scleral segment, and rigid structural means extending between said rims and spacing said rims apart so that said anterior rim will lie outside said anterior portion of said scleral segment when said posterior rim lies outside said posterior portion of said scleral segment, at least one of said anterior rim, said posterior rim and said rigid structural means having a diameter greater than the exterior diameter of said scleral segment adjacent thereto.

5,354,332

ATIFICIAL CORNEA

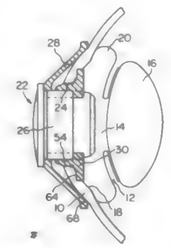
Emmanuel Lacombe, 78, Avenue de la Grande Armée, 75017 Paris, France

Continuation of Ser. No. 739,901, Aug. 2, 1991, abandoned. This application Feb. 26, 1993, Ser. No. 23,873

Claims priority, application France, Aug. 2, 1990, 90 09915

Int. Cl.[5] A61F *2/14*

U.S. Cl. 623—5 **18 Claims**



1. An artificial cornea consisting of:

an optical part of which at least a portion is transparent, and which is generally in the form of a cylinder, said optical part having a first end and a second end, wherein said second end is situated inside the anterior chamber of the eye when said optical part has been put into place; and

a support part made of a material adapted to have the posterior face of the cornea adhere thereto after said artificial cornea has been put into place, said support part at least fixed to said second end of said optical part, surrounding said second end, and having a bearing face facing the posterior face of the cornea when said support part has been put into place, the outside dimensions of said support part being greater than the outside dimensions of said cylinder, said support part having a posterior face turned towards the anterior chamber of the eye for receiving the pressure of the aqueous humor when said artificial cornea has been put into place, said support part being provided with orifices adapted to receive suture threads, wherein said support part is adapted to provide the sole support for said artificial cornea after said artificial cornea has been put into place and the posterior face of the cornea has adhered to said support part.

5,354,333

APPARATUS FOR IMPLANTING A FOLDING INTRAOCULAR LENS

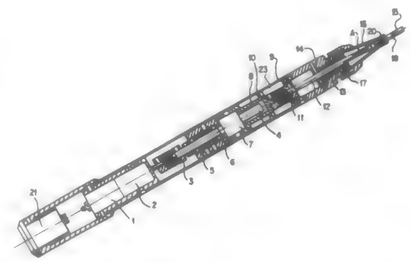
Jochen Kammann; Ulrich Dretzler, and Otmar Kanert, all of Dortmund, Fed. Rep. of Germany, assignors to adatomed Pharmazeutische und medizintechnische Gesellschaft mbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 727,938, Jul. 10, 1991, abandoned. This application Nov. 20, 1992, Ser. No. 979,368

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1990, 4030492

Int. Cl.[5] A61F *2/16*

U.S. Cl. 623—6 **3 Claims**



1. Apparatus for implanting an intraocular lens of resilient material in the lens capsule of an eye combined with the intraocular lens being implanted, comprising:

a tubular housing having a front end and a rear end;

a push rod means disposed in the housing slidably in a longitudinal direction thereof and having first and second ends, the first end being disposed towards the front end of said housing;

an electrical rotary drive means disposed in the housing, for generating rotary movement;

a spindle-nut drive assembly including a spindle upon which the rotary movement is transmitted and which is guided in a female screw thread of a nut, said nut being screwed to a sleeve in said housing, thereby converting the rotary movement into a longitudinal movement of the sleeve;

guidance means for longitudinal movement of the sleeve in the tubular housing;

transmitting means for transmitting the longitudinal movement of the sleeve to the push rod means;

an implantation instrument mounted to said front end of said housing, said implantation instrument accommodating an

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intraocular lens therein in a folded condition, in alignment with said push rod means; and

a stem member operatively associated with said first end of said push rod means and adapted to displace said folded intraocular lens from said implantation instrument by displacement of said push rod means toward said front end of said housing.

5,354,334

INTRAOCULAR PROSTHETIC LENS AND A METHOD FOR SURGICAL CORRECTION OF DISEASES OF THE CENTRAL SECTION OF THE RETINA

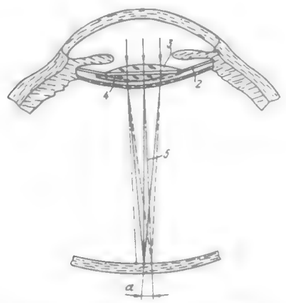
Svyatoslav N. Fedorov; Albina I. Ivashina; Andrei V. Zolotorevsky; Vladimir G. Kiselev; Anatoly N. Bessarabov, and Almazbek O. Ismankulov, all of Moscow, Russian Federation, assignors to Komplex "Mikrokhirurgia Glaza" Mezhotraslevoi Nauchno-Tekhnicheskiy, Moscow, Russian Federation

Filed Dec. 8, 1992, Ser. No. 986,831

Claims priority, application Russian Federation, Jun. 29, 1992, 5049933

Int. Cl.[5] A61F 2/16

U.S. Cl. 623—6 5 Claims



1. An intraocular prosthetic lens, comprising an optic body and supporting members, wherein the optic body is made up of a first planoconvex optic element and a second planoconvex optic element, both being interconnected by plane surfaces, and the optic axes of both elements are substantially parallel to the optic axis of the eye and offset relative to each other in a direction perpendicular to the optic axis of the eye.

5,354,335

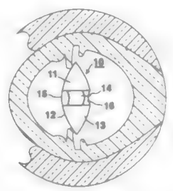
INTRAOCULAR INSERT FOR IMPLANTATION IN THE HUMAN EYE

Isaac Lipshitz, 89A Hanassi Street, 46 399 Herzlia, and Joseph Gross, 73 160 Moshav Mazor, both of Israel

Filed Feb. 4, 1993, Ser. No. 13,387

Int. Cl.[5] A61F 2/16

U.S. Cl. 623—6 20 Claims



1. An intraocular insert for implantation in the interior of a human eye having an anterior side and a posterior side, characterized in that said insert includes:

a converging lens carried by the insert to face the anterior side of the eye;

and a diverging lens carried by the insert in alignment with and spaced behind said converging lens to face the posterior side of the eye.

5,354,336

METHOD FOR BONDING SOFT TISSUE WITH COLLAGEN-BASED ADHESIVES AND SEALANTS

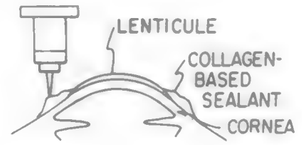
Charles D. Kelman, New York, N.Y., and Dale P. DeVore, Chelmsford, Mass., assignors to Autogenesis Technologies, Inc., Action, Mass.

Division of Ser. No. 646,944, Jan. 29, 1991, Pat. No. 5,219,895.

This application Mar. 15, 1993, Ser. No. 31,665

Int. Cl.[5] A61F 2/16

U.S. Cl. 623—6 42 Claims



1. A method for bonding soft tissues comprising the steps of:

applying a polymerizable collagen composition onto at least a portion of a surface of at least one of a first tissue and a second tissue;

exposing said polymerizable collagen composition to an initiator so as to initiate polymerization of said polymerizable collagen composition; and

contacting said first tissue and said second tissue, wherein said exposed polymerizable collagen composition forms a bond between said first tissue and said second tissue.

5,354,337

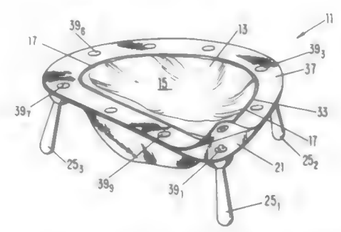
BREAST PROSTHESIS SUPPORT

Asa T. Hoy, 1134 Gardner, Las Cruces, N. Mex. 88001

Filed Mar. 10, 1994, Ser. No. 208,473

Int. Cl.[5] A61F 2/52

U.S. Cl. 623—7 5 Claims



1. A support for a breast prosthesis, said prosthesis having a surface simulating a female breast and a surface engagable with the chest of a female, said engagable surface having a perimeter, said support comprising:

a. a substantially flat support member having first and second opposing sides and an opening therein, said opening having an irregularly shaped perimeter, said perimeter being slightly larger than and approximating said perimeter of said engagable surface of said prosthesis;

b. a fabric cup configured to support said surface of said prosthesis simulating said breast, said fabric cup having a flange portion;

c. means for securing said flange portion of said fabric cup to one of said first and second sides;

d. means for positioning said flat support member a distance relative to a horizontal surface whereby said fabric cup, when holding said prosthesis, does not touch said horizontal surface; and

e. means for detachably attaching said positioning means to said support member.

5,354,338

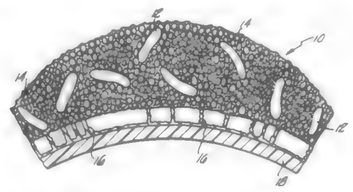
TEXTURIZED COVERING FOR IMPLANTS

Walter J. Ledergerber, 31 Morningwood, Laguna Niguel, Calif. 92677

Filed Feb. 22, 1991, Ser. No. 660,291

Int. Cl.[5] A61F 2/12

U.S. Cl. 623—8 6 Claims



1. A method for forming a texturized coating for an implant comprising the steps of:

affixing microtexturized globules onto a mandrel,

coating the globules and mandrel with silicone rubber, curing the rubber, and

removing the cured rubber from the mandrel and globules.

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FABRIC STABILIZER

George Bodnar, 61 Rodney Drive, Knoxfield, Victoria 3180, Australia

PCT No. PCT/AU91/00139, § 371 Date Sep. 2, 1992, § 102(e) Date Sep. 2, 1992, PCT Pub. No. WO91/16490, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 12, 1991, Ser. No. 924,043

Claims priority, application Australia, Apr. 12, 1990, PJ9625; Jun. 8, 1990, PK0536

Int. Cl.[5] C08K *5/06*

U.S. Cl. 8—115.6 19 Claims

1. A method of treating a textile material for needlework, embroidery, or any other sewing operation comprising, impregnating a section of the textile material to be subjected to the sewing operation with a stiffening agent comprising an aqueous solution of a polyvinyl alcohol (PVA), allowing the impregnated textile material to dry for subsequent use in the sewing operation, performing the sewing operation on the textile material with the stiffening agent providing the only stiffening for the textile material, and after the sewing operation has been completed, removing at least a portion of the stiffening agent.

5,354,340

PREPARATION OF COPOLYMERS

Peter A. A. Klusener; Petrus W. N. M. Van Leeuwen, and Hans A. Stil, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 10, 1993, Ser. No. 150,934

Claims priority, application European Pat. Off., Nov. 20, 1992, 92203588.6

Int. Cl.[5] C08G *67/02*

U.S. Cl. 528—392 13 Claims

1. A process for the preparation of copolymers of carbon monoxide and one or more ethylenically unsaturated compounds by contacting the monomers, under polymerization conditions, with a catalyst system comprising a) a source of cations of one or more metals of Group VIII of the Periodic Table and b) a bidentate ligand, and c) a minor amount of a compound containing at least one metal hydride wherein said metal is selected from the group consisting of tin, germanium, and lead.

5,354,341

PROCESS FOR DYEING LEATHER WITH DYE MIXTURES

Peter Moser, Binningen; Thomas P. Campbell, Basel, and Alois Püntener, Rheinfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 26, 1993, Ser. No. 37,194

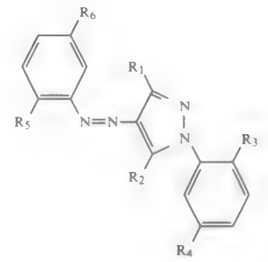
Claims priority, application Switzerland, Apr. 1, 1992, 1053/92

Int. Cl.[5] D06P *3/32;* C09B *67/00*

U.S. Cl. 8—437 26 Claims

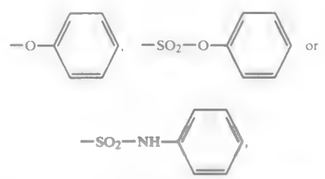
1. A process for dyeing leather, which comprises applying a dye mixture to the leather wherein the dye mixture comprises at least two dyes selected from the group consisting of

a) a yellow dye of formula



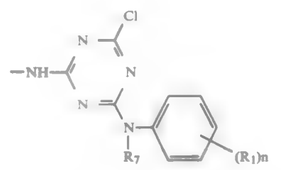
(1)

wherein R_1 is C_1–C_4alkyl, R_2 is OH or NH_2, R_3 is hydrogen or halogen, R_4 is hydrogen or sulfo, R_5 is hydrogen, halogen, sulfo or a group



the phenyl rings of which last three mentioned groups may be substituted by halogen, and

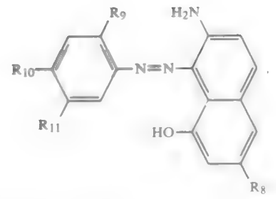
R_6 is hydrogen, halogen or a group



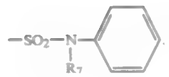
wherein R_7 is hydrogen or C_1–C_4alkyl, R_1 is C_1–C_4alkyl and n is 0, 1, 2 or 3,

b) a red dye of formula

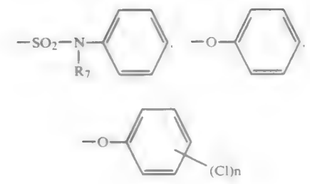
VOL 1167 ISS 2 OC 11 1994 UMI



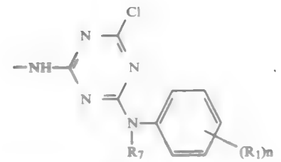
wherein R_8 is sulfo or



R_9 is sulfo,



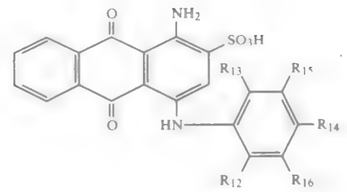
or a group



wherein R_7 is hydrogen or C_1–C_4alkyl, R_1 is C_1–C_4alkyl and n is 1, 2 or 3, R_{10} is hydrogen, C_1–C_4alkylcarbonylamino or halo-C_1–C_4alkylcarbonylamino, and R_{11} is hydrogen or halogen, and

c) a blue dye of formula

(2)



(3)

wherein R_{12}, R_{13} and R_{14} are each independently of one another hydrogen or C_1–C_4alkyl, R_{15} is hydrogen, methyl, —SO_2—NH—R_{17} or —CH_2—NH—CO—R_{18}, and R_{16} is hydrogen, C_1–C_4alkyl or R_{15}, and R_{17} is hydroxy-C_1–C_4alkyl and R_{18} is phenyl or halo-C_1–C_4alkyl.

5,354,342

STAIN RESISTANT MULTICOLOR TEXTURED CUT PILE CARPET

William G. Jenkins, Lexington, Va., assignor to Burlington Industries, Greensboro, N.C.

Continuation of Ser. No. 925,113, Aug. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 732,201, Jul. 19, 1991, Pat. No. 5,199,958, which is a continuation-in-part of Ser. No. 552,178, Jul. 12, 1990, Pat. No. 5,085,667, which is a continuation-in-part of Ser. No. 519,237, May 4, 1990, abandoned. This application Aug. 12, 1993, Ser. No. 104,926

Int. Cl.[5] D06P *5/00*

U.S. Cl. 8—481 **10 Claims**

1. A process of preparing a stain resistant, multicolored, cationic dyeable nylon carpet comprising the successive steps of:

(a) space dyeing a yarn of cationic-dyeable nylon fibers with an acid dye or a premetalized acid dye at a pH of about 4.0 to 6.5 and fixing the dye to the fibers, the cationic dyeable nylon yarn dyed to intermittently dye the yarn different colors along the length thereof;

(b) heat setting the space dyed fibers of step (a) by heating them under dry or very low moisture conditions to a temperature of about 160° C. to about 220° C. for a time sufficient to impart dye and stain resistance to the fibers;

(c) tufting the heat set yarns of step (b) and an undyed cationic dyeable nylon yarn into a carpet; and

(d) dyeing the carpet prepared in step (c) with an amount of acid dye or premetalized acid dye sufficient to selectively dye only the previously undyed cationic dyeable nylon fibers and not the previously space dyed, heatset cationic dyeable nylon fibers, to produce a multicolored stain resistant carpet.

5,354,343

GASOLINE COMPOSITION

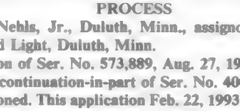
Thomas H. Johnson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 938,914, Aug. 31, 1992, abandoned. This application Nov. 19, 1993, Ser. No. 156,525

Int. Cl.[5] C10L *1/22; C07C 217/42*

U.S. Cl. 44—433 **3 Claims**

3. An unleaded fuel composition comprising a major amount of a hydrocarbon base fuel of the gasoline boiling range containing an amount effective to reduce formation of deposits in electronic port fuel injected engines when combusted in said engines of a compound of the formula



where R′ is hydrogen, an alkyl, or aryl group; R″O is derived from R″OH which is a polyether mono-ol or hydrocarbyl mono-ol; and R‴ is hydrogen.

5,354,344

GASOLINE FUEL COMPOSITION CONTAINING 3-BUTYN-2-ONE

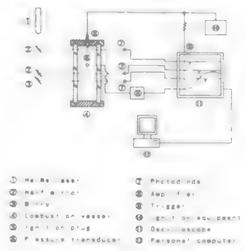
Haruo Takizawa, Tochigi; Akihiro Shimizu, Saitama; Shigehisa Yamada, Saitama; Hiromichi Ikebe, Saitama, and Hiroaki Hara, Saitama, all of Japan, assignors to Cosmo Research Institute and Cosmo Oil Co., Ltd., both of Tokyo, Japan

Filed Jul. 30, 1992, Ser. No. 921,695

Claims priority, application Japan, Aug. 1, 1991, 3-215868

Int. Cl.[5] C10L *1/18*

U.S. Cl. 44—439 **2 Claims**



1. A fuel composition comprising gasoline and 3-butyn-2-one, wherein the 3-butyn-2-one is present in an amount of from 5 to 50% by volume based on the volume of the gasoline.

5,354,345

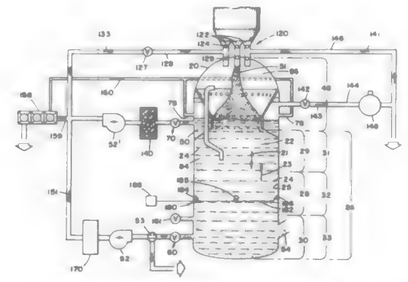
REACTOR ARRANGEMENT FOR USE IN BENEFICIATING CARBONACEOUS SOLIDS; AND PROCESS

George R. Nehls, Jr., Duluth, Minn., assignor to Minnesota Power and Light, Duluth, Minn.

Continuation of Ser. No. 573,889, Aug. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 400,276, Aug. 29, 1989, abandoned. This application Feb. 22, 1993, Ser. No. 20,167

Int. Cl.[5] C10L *9/08*

U.S. Cl. 44—626 **14 Claims**



1. A process for thermochemical beneficiation of carbonaceous solids including a fraction of particles of a size of less than ¼ inch in diameter; said process including the steps of:

(a) feeding carbonaceous solids into a reactor vessel having:

(i) an internal sidewall defining a lower reaction region;

(ii) said lower region including a process liquid inlet port extending through the internal sidewall; and, an upper region including a process liquid outlet port extending through the internal sidewall;

(iii) a solids discharge opening in the reactor vessel lower region;

(iv) a retaining structure constructed and arranged to operably support a section of carbonaceous solids, within the reactor vessel, that is spaced from the reactor vessel outer sidewall with a freestanding liquids region therebetween; said retaining structure including an outer wall defining: an upper funnel portion; a lower ring; and, a bottom edge; wherein said freestanding liquids region is positioned between said lower ring and wherein said reactor vessel outer sidewall; said upper funnel portion is constructed and arranged to support carbonaceous solids therein;

(b) directing a flow of process liquid: into the process liquid inlet port; upwardly through the reactor vessel; into the freestanding liquids region; and, outwardly through the process liquid outlet port; said process liquid having an uppermost level;

(c) directing a downward flow of carbonaceous solids, including a fraction of carbonaceous particles having a size of less than ¼ inch in diameter, along a path countercurrent to the flow of process liquid; said step of directing a flow of carbonaceous solids including:

(i) charging the carbonaceous into the retaining structure, with: a portion of the carbonaceous solids retained above the uppermost level of the process liquid; and, with a portion of the carbonaceous solids spaced from the reactor vessel sidewall, with the retaining structure and the freestanding liquids region positioned between a portion of the carbonaceous solids and the reactor vessel sidewall; and,

(ii) moving the carbonaceous solids downwardly from the retaining structure, through the reactor vessel and outwardly through the solids discharge opening; and,

(d) beneficiating the carbonaceous solids as they move downwardly from the retaining structure to the solids discharge opening, by hydrothermal reforming at a temperature and pressure sufficient to achieve expulsion of surface and inherent water from the carbonaceous solids, including expulsion from the fraction of carbonaceous solids of less than ¼ inch in diameter, into the process liquid;

(e) and settling at particulates of less than ¼ inch in diameter from the process liquid in the freestanding liquids region.

5,354,346

PURGE EFFLUENT REPRESSURIZED ADSORPTION PROCESS

Ravi Kumar, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 1, 1992, Ser. No. 955,630

Int. Cl.[5] B01D *53/04*

U.S. Cl. 95—101 **8 Claims**

1. In a pressure swing adsorption process for the recovery of two gas products at high recovery and high purity from a feed gas stream containing said products wherein a first gas product is one or more, less strongly adsorbed components and a second gas product is one or more, more strongly adsorbed components, and wherein said process comprises the steps of:

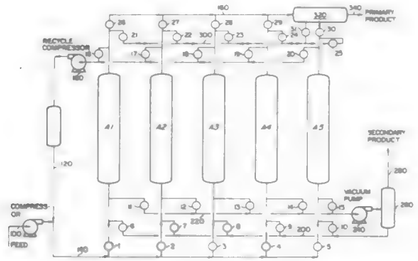
(a) introducing a feed gas stream at elevated pressure containing said one or more, less strongly adsorbed components and said one or more, more strongly adsorbed components into one of a plurality of parallel adsorptive beds filled with one or more adsorbents selective for said one or more, more strongly adsorbed components, so as to retain

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said one or more, more strongly adsorbed components on said one or more adsorbents and allow said one or more, less strongly adsorbed components to pass through said bed for recovery as said first gas product at high recovery and high purity;

(b) terminating the introduction of said feed gas stream into said bed before said one or more, more strongly adsorbed components break through the downstream end of said bed and depressurizing said bed to approximately ambient pressure to remove said one or more, less strongly adsorbed components from said bed and recycling at least a portion of the resulting depressurization effluent to said feed gas stream;

(c) passing a low pressure purge gas stream of one or more, more strongly adsorbed components through said bed to



remove any residual one or more, less strongly adsorbed components from said bed;

(d) evacuating said bed to a subambient pressure to recover said one or more, more strongly adsorbed components as said second gas product at high recovery and high purity; and

(e) repressurizing said bed with one or more, less strongly adsorbed components to approximately the pressure of the feed gas stream, wherein the steps (a) through (e) are performed on said plurality of beds to result in a continuous process; the improvement to increase the energy efficiency of the process comprising a purge effluent repressurization step wherein said bed is partially repressurized after step (d) and prior to step (e) with the effluent from one of said parallel beds presently undergoing step (c).

5,354,347

VACUUM CLEANER UTILIZING WATER TO CAPTURE DIRT AND DEBRIS

Stephen T. McCoy, Missouri City, and Jack G. Clark, Jr., Houston, both of Tex., assignors to E. B. S. Equipment Broker Services, Inc., Houston, Tex.

Filed Mar. 29, 1993, Ser. No. 38,896

Int. Cl.[5] B01D *47/00*

U.S. Cl. 55—245 **6 Claims**

1. A vacuum cleaner comprising:

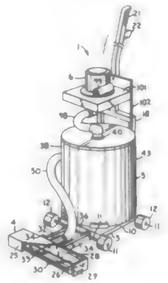
(a) blower means for drawing a vacuum;

(b) air intake means;

(c) debris collection means flow connected with said air intake means and said blower means comprising:

(i) cylindrical tank means having an output port flow connected to said blower means and an intake port flow connected to said air intake means, said tank means including a water basin wherein said intake means is submerged under water within said water basin such that substantially all intake air is directed through said water and a substantial portion of any accompanying debris is captured by said water, said tank means further including an axially aligned central column sealably joined with a bottom of said tank means and surrounded by said water basin; and

(ii) flow control means positionable within said tank means above said water basin, said flow control means directing airflow from the surface of said water through a serpentine path toward said output port whereby water entrained in said airflow is substantially removed therefrom, said flow control means comprising insert means adapted to be removably placed within said tank means, said insert means comprising a series of generally parallel annular plates positioned about said central column and spaced longitudinally along said tank means; said plates comprising first and second plates, the first plate having an outer diameter slightly smaller than the inside diameter of said tank means so as to



snugly fit thereagainst and an inside diameter substantially larger than the outside diameter of said central column to leave a first gap therebetween; and the second plate having an inside diameter slightly larger than the outside diameter of said central column so as to snugly fit thereagainst and an outside diameter substantially smaller than the inside diameter of said tank means to leave a second gap therebetween; said plates being vertically spaced and arranged on said insert such that the first and second plates alternate along the longitudinal axis of said tank means such that said first and second gaps and the spacing between said plates forms said serpentine path.

5,354,348

METHOD FOR PRODUCING SILICA GLASS OPTICAL FIBER WITH CARBON COATING

Toshihiro Zushi, Amagasaki; Shigeru Nakahara, Itami; Tetsuya Takeda, Itami; Nobusada Nagae, Itami; Masaaki Morisawa, Itami; Tamotsu Kaide, Amagasaki, and Hiroyuki Tanaka, Itami, all of Japan, assignors to Mitsubish Cable Industries, Ltd., Amagasaki, Japan

Filed Jul. 14, 1992, Ser. No. 913,171

Claims priority, application Japan, May 12, 1991, 3-349239; Jul. 15, 1991, 3-201484; Sep. 12, 1991, 3-262708; Sep. 12, 1991, 3-262709; Sep. 25, 1991, 3-274791; Oct. 8, 1991, 3-289286

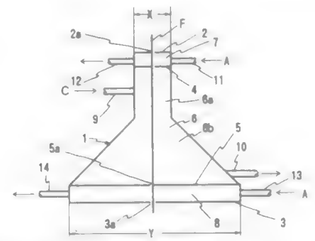
Int. Cl.[5] C03B *37/023*

U.S. Cl. 65—423 **6 Claims**

1. A method for producing a silica glass optical fiber, which comprises:

contacting an optical fiber immediately after heat drawing thereof from an optical fiber preform having a temperature of between 800° C. and 1900° C. with a carbon coat-forming gas; said carbon coat-forming gas containing dichloromethane, and

thermally decomposing said carbon coat-forming gas and forming a carbon layer on said optical fiber having a



temperature of between 800° C. and 1900° C. only by use of heat contained in said optical fiber.

5,354,349

METHOD FOR MANUFACTURING OF ORGANIC FERTILIZERS

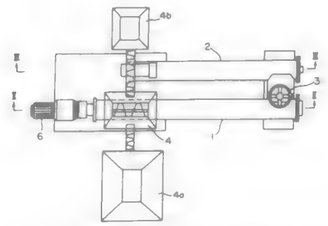
Satoshi Inoue, 1214, Oiso, Oiso-Machi, Naka-Gun, Kanagawa, Japan

Filed Mar. 27, 1992, Ser. No. 858,946

Claims priority, application Japan, Mar. 28, 1991, 3-090057

Int. Cl.[5] C05F *9/04, 11/08*

U.S. Cl. 71—9 **3 Claims**



1. In a continuous method for manufacturing organic fertilizers by fermentation of a waste containing organic materials or mixture of said waste with cellulose-containing organic materials in the presence of thermophilic and aerobic microorganisms comprising the steps:

a. adjusting the moisture content of said waste or mixture to 45–65 wt %,

b. shearing and kneading said waste or mixture at a temperature elevated to 40° C.–90° C. by pressure and friction of said shearing and kneading, whereby thermophilic microorganisms are caused to be activated, and

c. pulverizing the thus-treated waste or mixture while contacting it with air, whereby said aerobic microorganisms are caused to be activated,

the improvement which comprises subjecting a part of the product of step c. to fermentation by thermophilic microorganisms at a temperature of higher than 40° C. for more than 5 hours, and recycling the thus treated product with fresh raw materials to step a., the recycled amount of product of step c. being 5 to 60 weight % of the total amount of manufactured product.

5,354,350

CITRATE SOLUBLE SLOW RELEASE IRON HUMATE

William P. Moore, Hopewell, Va., assignor to The Vigoro Corporation, Chicago, Ill.

Filed Dec. 14, 1993, Ser. No. 165,958

Int. Cl.[5] C05F *11/02;* **C05B** *21/00;* **C05G** *3/00*

U.S. Cl. 71—24 **18 Claims**

1. A method of preparing a slow releasing particulate iron humate agricultural nutrient composition which contains between 5 and 25 percent iron which is practically insoluble in water and substantially completely soluble in soil solutions, the method comprising:

(a) admixing iron humate, amounting to between 20 and 70 percent of the agricultural nutrient composition, with a divalent metal oxide;

(b) admixing and coreacting with the mixed divalent metal oxide and iron humate, an aqueous hydroxide of a monovalent Lewis acid;

(c) admixing and coreacting the iron humate, divalent metal oxide, and hydroxide of monovalent Lewis acid with a water soluble inorganic phosphate;

(d) providing the divalent metal oxide, the hydroxide of monovalent Lewis acid, and the water soluble inorganic phosphate moieties in about equimolar amounts so that they coreact to form between 30 and 80 percent of the agricultural nutrient composition;

(e) continuing the admixing, and reaction at temperatures between 60° and 150° C. until homogeneous particles of iron humate agricultural nutrients are formed which are practically water insoluble and substantially completely soluble in soil solutions.

5,354,351

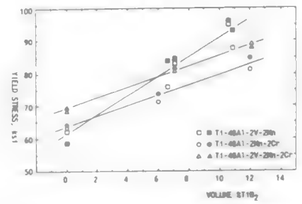
CR-BEARING GAMMA TITANIUM ALUMINIDES AND METHOD OF MAKING SAME

Stephen L. Kampe, Laurel; Leontios Christodoulou, Baltimore, both of Md., and Donald E. Larsen, Jr., Muskegon, Mich., assignors to Howmet Corporation, Greenwich, Conn. and Martin Marietta Corporation, Bethesda, Md.

Filed Jun. 18, 1991, Ser. No. 716,951

Int. Cl.[5] C22C *1/10*

U.S. Cl. 75—244 **13 Claims**



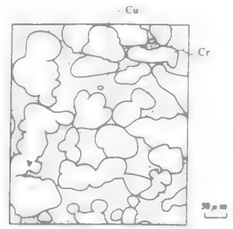
1. An article comprising a predominantly gamma titanium aluminide matrix including about 0.5 to about 5.0 atomic % Cr and about 0.5 to about 5.0 atomic % Mn and having second phase dispersoids present in the matrix in an amount of at least about 0.5 volume % to increase both the strength and the ductility thereof as compared to the strength and ductility of the matrix devoid of the dispersoids.

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5,354,352
CONTACT MATERIAL FOR VACUUM CIRCUIT BREAKERS

Tsuneyo Seki; Tsutomu Okutomi; Atsushi Yamamoto; Mikio Okawa, and Kiyofumi Otobe, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Apr. 14, 1992, Ser. No. 868,114
Claims priority, application Japan, Jun. 21, 1991, 3-150558
Int. Cl.[5] C22C *9/00*
U.S. Cl. 75—245 **3 Claims**



1. An alloy composition including a copper component, a chromium component and a bismuth component, and having a metallographic structure comprising:

a first phase including said copper component and said bismuth component; and

a second phase including said chromium component and interposed among said first phase so as to have a boundary surface between said first phase and said second phase, said boundary surface appearing in a structural cross section of said alloy composition as a substantially smooth boundary line, such that when a segment of said boundary line is defined by two arbitrary points which lie on said boundary line at a straight distance of 10 μm, the ratio of the length of said segment to said straight distance of 10 μm lies within a range of approximately 1.0 to 1.4.

wherein the amount of said bismuth component divided by the sum of the amounts of said bismuth component and said copper component, lies within a range of approximately 0.05% to 1.0% by weight.

5,354,353
AMALGAMABLE COMPOSITION AND METHOD OF PRODUCTION

Richard W. Fountain, Pinckney, and Kamal Asgar, Ann Arbor, both of Mich., assignors to Special Metals Corporation, New Hartford, N.Y.

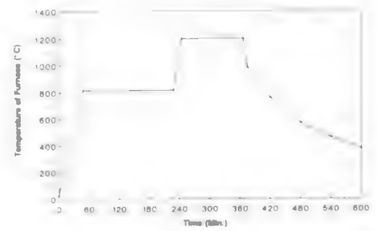
Filed Oct. 28, 1993, Ser. No. 142,021
Int. Cl.[5] B22F *9/02*
U.S. Cl. 75—338 **6 Claims**

1. A method for producing a multi-component composition suitable for amalgamation with mercury to form a dental material, which method comprises the steps of: producing a melt of a first component containing, by weight, at least 30% silver, at least 20% tin and at least 10% copper; atomizing said melt of said first component, thereby forming particles of said first component; collecting said particles of said first component; heat treating the particles of said first component thereby obtaining a desired carve time; producing a melt of a second component containing, by weight, at least 30% silver, at least 20% tin and at least 10% copper; atomizing said melt of said second component thereby forming particles of said second component; collecting said particles of said second component; mechanically working said particles of said second component so as to increase the surface area to volume ratio of the particles of the second component, the surface area to volume ratio of the worked particles of the second component being greater than the surface area to volume ratio of the particles of the first component; heat treating the particles of said second component thereby obtaining a desired carve time; and blending said particles of said first component with said particles of said second component so as to produce a multi-component composition containing from 30 to 90%, by weight, of said first component and from 10 to 70%, by weight, of said second component.

5,354,354
METHOD FOR PRODUCING SINGLE-PHASE, INCONGRUENTLY MELTING INTERMETALLIC PHASES

Martin Edeling, Essen; Horst Eggert, Dorsten, and Michael Steinhorst, Essen, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Oct. 2, 1992, Ser. No. 955,952
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1991, 4134793; Feb. 13, 1992, 4204173
Int. Cl.[5] B22F *9/26*
U.S. Cl. 75—351 **5 Claims**



1. A method for preparing single-phase intermetallic phases of $Nd_2Fe_{14}B$, Sm_2Fe_{17} and TiAl capable of melting incongruently, within a temperature range of about 900° to 2,000° K., said phases having a homogeneity range of ≦10 atom % at room temperature, said preparation being accomplished by

a) reducing calciothermally a finely divided, homogeneous mixture of alloying components, of which at least one is present in the form of an oxide, the reduction being an exothermic reaction,

b) subsequently diffusing the alloying components, and

c) separating the formed calcium oxide and, optionally, the excess calcium, said method comprising the combination of the following steps:

i) adjusting the exothermic reaction of calcio thermal reduction by adjusting the oxide content of reaction mixture, the composition of which corresponds to the desired single-phase alloy so that the temperature condition $T_m > T_R \geqq 0.9\ T_m$ (in ° K.) is fulfilled, T_m being the melting temperature of the intermetallic phase and $T_R$the reaction temperature;

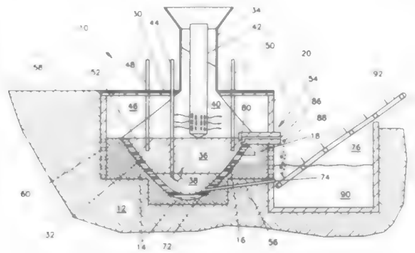
ii) carrying out the method with the reaction mixture, the components of which, with the exception of calcium, have an average particle size of ≦75 μm; and

iii) tempering the reaction product obtained at the end of the exothermic reaction at a temperature at least 0.7 times the melting temperature T_m in ° K. of the single-phase alloy but less than the melting temperature T_m during a period sufficient for the diffusion of the components.

5,354,355
EARTH MELTER AND METHOD OF DISPOSING OF FEED MATERIALS

Christopher C. Chapman, Richland, Wash., assignor to Battelle Memorial Institute, Richland, Wash.

Continuation of Ser. No. 805,444, Dec. 9, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 24,886
Int. Cl.[5] C22B *9/20, 9/21*
U.S. Cl. 75—414 **41 Claims**



1. An apparatus for melting feed materials for subsequent use or safe disposal in a relatively harmless condition, said apparatus comprising:

(a) side walls defining an excavated area in a quantity of soil or rock comprising a melt zone for melting the feed materials;

(b) a cover extending over the side walls and defining an air-filled space between a quantity of melted feed materials and the cover;

(c) feed material inlet means extending through the cover to permit feed materials to be introduced onto the melt zone;

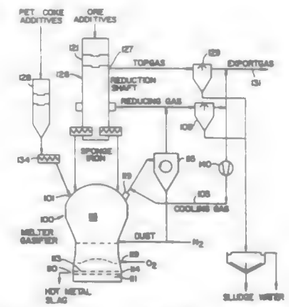
(d) means for heating the feed material such that a molten pool of feed materials is produced in the melt zone; and

(e) means to withdraw the molten pool of feed materials from the melt zone.

5,354,356
METHOD OF PROVIDING FUEL FOR AN IRON MAKING PROCESS

Richard B. Greenwalt, Danville, Calif., assignor to Bechtel Group Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 958,043, Oct. 6, 1992, Pat. No. 5,259,864. This application Dec. 17, 1992, Ser. No. 991,914
The portion of the term of this patent subsequent to Dec. 17, 2009, has been disclaimed.
Int. Cl.[5] C21B *13/14*
U.S. Cl. 75—445 **15 Claims**

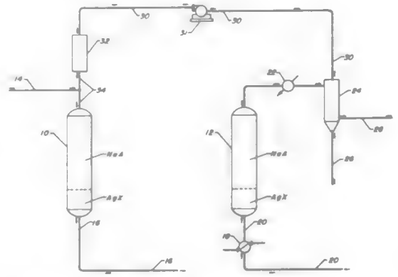


1. An improvement to a molten iron making process which substantially reduces slag formation and increases the contained carbon level in the iron comprising the steps of introducing petroleum coke into a melter gasifier; blowing oxygen containing gas into said melter gasifier and combusting petroleum coke to form at least a first fluidized bed of coke particles from said petroleum coke; introducing reduced ferrous material into said melter gasifier through an entry port in the upper portion thereof; reacting petroleum coke, oxygen and reduced ferrous material in said melter gasifier to combust the major portion of said petroleum coke to produce reduction gas and molten iron containing heavy metals freed from combustion of the petroleum coke and a reduced slag containing sulfur freed from combustion of the petroleum coke; injecting CO_2 into said melter gasifier and mixing CO_2 with said reduction gas to form a combined reduction gas having a CO level of about 85% of the gas; flowing said combined reduction gas out of said melter gasifier; combining said combined reduction gas with a side stream of cool reducing gas to form a cooled reduction gas; directing said cooled reduction gas to a reduction furnace which is operably connected to said melter gasifier and mixing said cooled reduction gas with ferrous material in said reduction furnace to convert the ferrous material to direct reduced iron and to increase the carbon content of the direct reduced iron to above 5% prior to discharging the direct reduced iron to the melter gasifier for further processing.

5,354,357
REMOVAL OF MERCURY FROM PROCESS STREAMS

John Markovs, Yorktown Hts.; Richard T. Maurer, Nanuet; Andrew S. Zarchy, Amawalk, and Ervine S. Holmes, Yorktown Hts., all of N.Y., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 24,036, Mar. 1, 1993, Pat. No. 5,271,760. This application Nov. 12, 1993, Ser. No. 151,240
Int. Cl.[5] C22B *43/00;* **B01D** *53/04*
U.S. Cl. 75—670 **12 Claims**



1. Process for removing mercury impurities from fluid streams which comprises the steps of:

(a) providing a fluid stream containing at least 0.02 $\mu g/nm^3$ of elemental mercury;

(b) passing said fluid stream into a regenerable fixed adsorption bed containing an adsorbent on which said mercury is preferentially adsorbed whereby mercury is adsorbed, a mercury mass transfer front is established and a purified product effluent is recovered;

(c) terminating the flow into said regenerable bed prior to breakthrough of the mercury mass transfer front;

(d) regenerating said regenerable bed by passing therethrough a purge desorbent whereby mercury is desorbed and removed from said bed in a regenerant effluent stream;

(e) cooling said regenerant effluent stream to condense out a portion of the mercury content thereof and recovering a liquid mercury condensate;

(f) passing the remaining portion of the regenerant effluent stream into a non-regenerable adsorption bed containing an adsorbent for mercury and recovering a non-regenera-

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ble bed effluent stream further depleted in mercury content; and

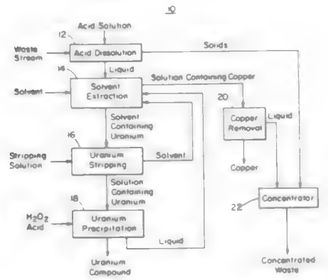
(g) combining the non-regenerable bed effluent stream with the fluid stream provided in step (a).

5,354,358

PROCESS FOR REMOVING URANIUM AND OTHER METALS FROM WASTES

John Litz, Lakewood; Nicholas J. Lombardo, Boulder, and Robert L. Schwartz, Denver, all of Colo., assignors to IC Technologies, Wheat Ridge, Colo.

Filed Aug. 31, 1993, Ser. No. 114,670
Int. Cl.[5] C01G *43/00*
U.S. Cl. 75—711 22 Claims



1. A process for removing uranium and a non-actinide second metal contained in a waste, comprising:

dissolving the uranium and the second metal in a first acidic aqueous solution;

removing the dissolved uranium from the first acidic aqueous solution by extraction using an organic solvent;

stripping the uranium from the organic solvent by redissolving in a second aqueous solution;

precipitating the uranium from the second aqueous solution; and

removing the second metal from the first aqueous solution.

5,354,359

HYDROMETALLURGICAL PROCESS FOR THE RECOVERY OF PRECIOUS METAL VALUES FROM PRECIOUS METAL ORES WITH THIOSULFATE LIXIVIANT

Rong-Yu Wan; K. Marc LeVier, and Richard B. Clayton, all of Salt Lake City, Utah, assignors to Newmont Gold Co. and Newmont Mining Corp., Denver, Colo.

Continuation-in-part of Ser. No. 861,563, Apr. 1, 1992, This application Jul. 28, 1993, Ser. No. 94,791
Int. Cl.[5] C22B *3/42, 11/08*
U.S. Cl. 75—744 46 Claims

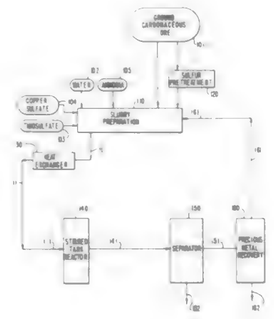
1. A hydrometallurgical process for the recovery of precious metal values from a refractory precious metal ore material comprising

a. providing a static heap of particles and/or particulates comprising an ore material having precious metal values and a preg-robbing carbon content said heap having a pH of at least about 9;

b. passing a thiosulfate lixiviant solution through the static heap of particles and/or particulates;

c. recovering the thiosulfate lixiviant solution pregnant with extracted precious metal values after it has passed through the static heap;

d. recycling the recovered thiosulfate lixiviant solution to step b.; and



e. at least periodically recovering the precious metal values from the thiosulfate lixiviant solution.

5,354,360

MAGNESIUM A-ZEOLITE FOR NITROGEN ADSORPTION

Charles G. Coe, Macungie; James E. MacDougall, Emmaus, both of Pa., and Scott J. Weigel, Goleta, Calif., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 11, 1993, Ser. No. 3,191
Int. Cl.[5] B01D *53/04*
U.S. Cl. 95—101 16 Claims

1. A process for selectively adsorbing nitrogen from a gas mixture containing nitrogen and at least one less strongly adsorbed component in a bulk gas separation which comprises contacting the gas mixture at a temperature above 20° C. at an adsorption pressure in the range of 17.4 psia to 65 psia with a zone of an adsorbent which is selective for the adsorption of nitrogen, comprising an A-zeolite having an ion exchange of the exchangeable ion content with between approximately 60% and 80% magnesium, selectively adsorbing nitrogen on the adsorbent, passing the gas mixture less the adsorbed nitrogen out of the zone and desorbing the adsorbed nitrogen from the adsorbent at a desorption pressure lower than an adsorption pressure in the range of 1.55 psia to 16.7 psia wherein the zeolite is thermally activated to remove a substantial portion of its zeolitic water in such a manner as to produce a preponderance ofa its magnesium ions in a dehydrated/dehydroxylated state under conditions to minimize the water vapor pressure in the gaseous environment in contact with said zeolite throughout the thermal activation step to less than about 6 psia at temperatures above 150° C. such that the resulting component recovery and bed size factor of the resulting zeolite for the separation of a mixture of said component and nitrogen is substantially improved over a zeolite that has not undergone such a thermal activation step.

5,354,361

ENERGY RECOVERING PRESSURE BALANCE SCHEME FOR A COMBINATION PRESSURE SWING ABSORBER WITH A BOOST COMPRESSOR

Kelly M. Coffield, Davenport, Iowa, assignor to Litton Industries, Inc., Beverly Hills, Calif.

Filed May 28, 1993, Ser. No. 68,762
Int. Cl.[5] B01D *53/04*
U.S. Cl. 95—103 4 Claims

1. A method for maximizing the efficiency of a pressure swing adsorption apparatus and a booster compressor having a drive cylinder in which the compressor is coupled to the output of the pressure swing adsorption apparatus to increase the pressure of the output product gas comprising the steps of:

cycling a pair of valves to control the flow of feed air to a pair of molecular sieve beds during time interval T_0 to T_4;

cycling a pair of valves to control the flow of feed air to a pair of molecular sieve beds during time interval T_0 to T_4;

flowing feed air to the first sieve bed during the time interval T_0 and T_1;

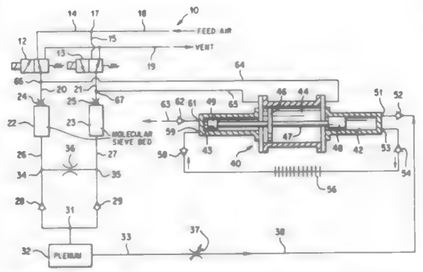
flowing air to the second sieve bed during time interval T_3 and T_4;

flowing air to both sieve beds during time intervals T_0 and T_1, and T_2 and T_3; and

equalizing the pressure between the two sieve beds and the two sides of the drive cylinder during time intervals T_0 to T_1, and T_2 to T_3; whereby both valves are open during time intervals T_0 to T_1, and T_2 to T_3.

2. A pressure swing adsorption apparatus and a booster compressor for generating and increasing the pressure of enriched product gas comprising:

a pair of beds of molecular sieve material;



means for directing feed air to the pair of beds of molecular sieve material;

means for coupling the outputs of the molecular sieve beds to a booster compressor;

valve means for controlling the flow of feed air to the molecular sieve beds, said valve means opening and closing according to a predetermined valve cycle to alternately pressurize and exhaust the pair of molecular sieve beds;

a pneumatic drive cylinder for the booster compressor having opposed sides which are alternately pressurized in order to drive the booster compressor;

means for coupling a portion of the feed air from the valve means to the opposed sides of the drive cylinder;

means for equalizing the pressure between the two sieve beds and the opposed sides of the drive cylinder for a short period of time during the valving cycle; and

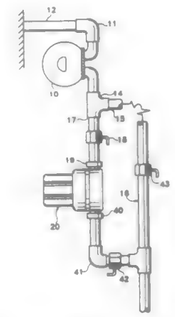
means for determining whether gas from the pressurized sieve bed or the pressurized side of the drive cylinder arrives at the exhausted sieve bed first; whereby, the efficiency of the system is increased.

5,354,362

METHOD FOR FILTERING ODORANT FROM A GAS STREAM

Richard F. Sowinski, P.O. Box 20006, Martinez, Calif. 94553

Continuation-in-part of Ser. No. 926,457, Aug. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 660,352, Feb. 22, 1991, Pat. No. 5,139,543, and a continuation-in-part of Ser. No. 660,343, Feb. 22, 1991, Pat. No. 5,141,533, and a continuation-in-part of Ser. No. 660,346, Feb. 22, 1991, Pat. No. 5,139,542, and a continuation-in-part of Ser. No. 660,345, Feb. 22, 1991, Pat. No. 5,145,494, and a continuation-in-part of Ser. No. 660,350, Feb. 22, 1991, Pat. No. 5,149,343. This application Jul. 15, 1993, Ser. No. 92,282
Int. Cl.[5] B01D *53/04, 27/04, 39/08*
U.S. Cl. 95—127 20 Claims



1. A method of filtering, adjacent to an end user-customer's residence or business in which at least a single gas appliance is located, a natural gas stream in which natural gas odorants have been concentrated at sufficient levels to be an adverse environmental threat in a natural gas gathering and distributing network, comprising the steps of:

(a) introducing the natural gas stream to a filter selected from a group that includes impingement, absorbing and adsorbing media whereby natural gas odorants concentrated in the gas stream at sufficient levels to be an adverse environmental threat by aperiodic loading of the natural gas within the gathering and distributing network, are filtrated from the gas stream and captured irrespective of mode of transport,

(b) passing the filtered natural gas stream to the customer's gas appliance wherein safe use of the energy associated with the stream occurs,

(c) periodically and safely removing the filter of step (a) for disposing of captured natural gas odorants,

(d) inserting a new filter in place of the removed filter of step (c).

5,354,363

HEAVY METAL/PARTICULATE TRAP FOR HOT GAS CLEAN-UP

Jesse J. Brown, Jr., and Nancy R. Brown, both of 414 Miller St., Christiansburg, Va. 24073

Filed Jul. 22, 1993, Ser. No. 95,794
Int. Cl.[5] B01D *53/02*
U.S. Cl. 95—134 10 Claims

1. A method for cleaning up a hot gas stream, comprising the steps of:

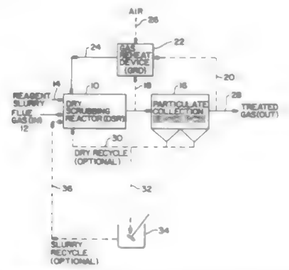
delivering a gaseous stream to liquid gallium metal;

adsorbing constituents from said gaseous stream into a mixture with said liquid gallium metal; and

separating said constituents from said mixture.

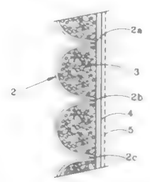
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5,354,364
HIGH EFFICIENCY ADVANCED DRY SCRUBBER
Dennis W. Johnson, Barberton; Robert B. Myers, Copley, and George B. Watson, Alliance, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Jun. 23, 1993, Ser. No. 81,765
Int. Cl.[5] B01D *47/06, 47/16*
U.S. Cl. 95—197 17 Claims



1. An improved method for spraying a liquid in a flue gas, comprising the steps of:
providing a housing with an inlet and an outlet in a duct supplying a flue gas stream;
positioning at least one atomizer in the housing for spraying a liquid into the flue gas passing therethrough to condition it; and
supplying a boundary layer of gas along a perimeter of the housing for preventing deposition of wet material on sidewalls of the housing.

5,354,365
AIR FILTER ASSEMBLY
Kun C. Youn, 647 Shartle Cir., Houston, Tex. 77024
Filed Apr. 22, 1993, Ser. No. 50,587
Int. Cl.[5] B01D *53/04*
U.S. Cl. 96—135 6 Claims



1. An improved air filter assembly for removing particulates and undesirable gases from a stream of contaminated air, said filter assembly comprising:
a first layer of air permeable filter fabric formed by parallel elongated semi-cylindrical surfaces joined at common parallel edges;
a second flat layer of air permeable filter fabric contacting said first layer of filter fabric and continuously cemented thereto along said common parallel edges leaving isolated elongated parallel semi-cylindrical voids therebetween; and
gas sorbing material filling said semi-cylindrical voids.

5,354,366
INK COMPOSITION AND RESINS AND METHODS RELATING THERETO
Thomas J. Peanasz, Brooklyn Park, and Paul F. Schacht, Oakdale, both of Minn., assignors to Deluxe Corporation, St. Paul, Minn.
Filed Sep. 27, 1993, Ser. No. 127,753
Int. Cl.[5] C09D *11/08, 11/10;* B08B *3/00*
U.S. Cl. 106—20 R 36 Claims

1. A substantially water insoluble ink composition comprised of a resin component wherein said resin component includes a solubility controlling component comprising a water reducible resin whose water solubility is pH dependent and is present in an amount sufficient to cause said ink composition to be water insoluble at an alkaline pH and water washable at an acidic pH having sufficient acid strength to convert said water reducible resin to a water washable form.

5,354,367
RADIATION CURABLE INK COMPOSITION AND METHOD OF MAKING AND USING SUCH COMPOSITION
Thomas J. Peanasz, Brooklyn Park, Minn., assignor to Deluxe Corporation, St. Paul, Minn.
Continuation-in-part of Ser. No. 946,762, Sep. 17, 1992, abandoned. This application Jul. 14, 1993, Ser. No. 92,741
The portion of the term of this patent subsequent to Aug. 16, 2011, has been disclaimed.
Int. Cl.[5] C09D *11/08, 11/10*
U.S. Cl. 106—20 R 20 Claims

1. A substantially water insoluble vehicle for a radiation curable ink composition comprising a substantially unneutralized water reducible resin which is water insoluble at an acidic pH and water washable at an alkaline pH having sufficient basic strength to convert said water reducible resin to a water washable form, said water reducible resin being present in an amount sufficient to cause said vehicle to be water washable at said alkaline pH.

5,354,368
HOLT MELT JET INK COMPOSITION
Richard J. Larson, Jr., Walpole, N.H., assignor to Markem Corporation, Keene, N.H.
Filed May 4, 1993, Ser. No. 57,088
Int. Cl.[5] C09D *11/08*
U.S. Cl. 106—22 A 70 Claims

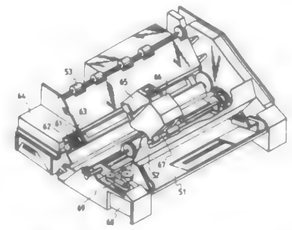
1. A hot melt jet ink composition comprising a tall oil rosin and a rheology modifier comprising an ester of benzoic acid wherein the tall oil rosin has an acid number of at least 55.

5,354,369
INK, INK-JET RECORDING PROCESS MAKING USE OF THE INK, AND EQUIPMENT THEREFOR
Masako Shimomura, Yokohama, and Hiromichi Noguchi, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 4, 1993, Ser. No. 56,410
Claims priority, application Japan, May 13, 1992, 4-120712; Apr. 20, 1993, 5-093189
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—22 H 18 Claims

1. An ink containing a dye or a pigment as a recording agent and a liquid medium capable of dissolving or dispersing the recording agent, wherein said ink comprises a compound represented by the formula

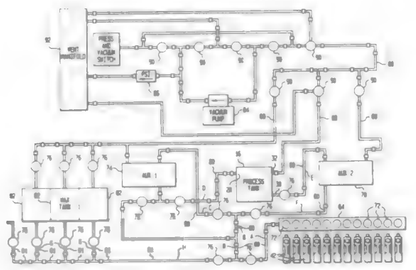
$$R_1R_2NCONHCH_2CH_2OH$$

wherein R_1 and R_2 each represent hydrogen or $C_nH_{2n}OH$, where n is 2 or 3, provided that R_1 and R_2 are not hydrogen at the same time, said compound being provided in an amount of from 0.1 to 10% by weight based on the total weight of said ink, and 2-oxo-oxazolidine is provided in an amount of from 0.5



to 30% by weight based on the total weight of said ink, and said ink has a pH value ranging from 7 to 10.

5,354,370
TISSUE PROCESSOR
Stewart Schmehl, Montclair, N.J., assignor to Hacker Industries, Inc., Fairfield, N.J.
Filed Apr. 15, 1992, Ser. No. 870,052
Int. Cl.[5] B05C *3/02*
U.S. Cl. 118—50 17 Claims



1. A tissue processor apparatus comprising:
a support frame;
a tissue processor process chamber supported on the frame;
at least one liquid reservoir;
at least one first auxiliary reservoir connected between the process chamber and the at least one liquid reservoir;
at least one second auxiliary reservoir connected between the process chamber and the at least one liquid reservoir;
means to drive liquid from the at least one liquid reservoir to the first auxiliary reservoir, from the first auxiliary reservoir to the process chamber, from the process chamber to the second auxiliary reservoir, and from the second auxiliary reservoir to the at least one liquid reservoir.

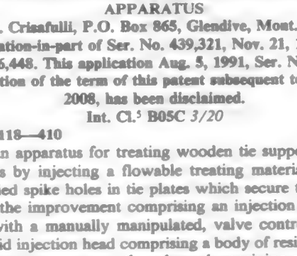
5,354,371
TRANSPORT OF SOLUTIONS OF CELLULOSE THROUGH PIPES
Katharine A. Wykes, Wellesbourne, and Michael C. Quigley, Meriden, both of United Kingdom, assignors to Courtaulds Fibres (Holdings) Limited, London, England
Filed May 28, 1993, Ser. No. 69,184
Int. Cl.[5] C08L *1/00;* C09D *101/00*
U.S. Cl. 106—198 46 Claims

1. A method for transporting a solution of cellulose in aqueous N-methylmorpholine N-oxide through a pipe, the temperature in degrees Centigrade of said solution in the centre of said pipe being controlled at

$$1000/(X+0.98x\sqrt{D})$$

where D represents the internal diameter of said pipe in inches and X represents a value equal to or greater than 5.0.

16. A method for transporting a solution of cellulose in aqueous N-methylmorpholine N-oxide through a pipe, the



temperature in degrees Centigrade of said solution at the interior wall of said pipe being controlled at

$$1000/(Y+1.15x\sqrt{D}),$$

where D represents the internal diameter of said pipe in inches and Y represents a value equal to or greater than 5.4.

5,354,372
UNDERCOATING COMPOSITION
Shigeki Ebayashi; Hiromichi Tomihari; Tsutomu Hattori; Hiroaki Tamura, and Toshio Hayashi, all of Kanagawa, Japan, assignors to Yushiro Chemical Industry Co., Ltd., Tokyo and Nissan Motor Co., Ltd., Kanagawa, both of Japan
Continuation-in-part of Ser. No. 908,266, Jul. 2, 1992, abandoned. This application Nov. 5, 1992, Ser. No. 972,103
Claims priority, application Japan, Jul. 4, 1991, 3-190689
Int. Cl.[5] C02D *191/06, 191/08*
U.S. Cl. 106—271 11 Claims

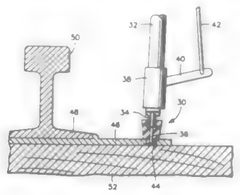
1. An undercoating composition which comprises (a) 100 parts by weight of a wax, (b) 10–200 parts by weight of a basic organic-inorganic dispersion comprising a metal salt of an organic sulfonic acid, a basic alkaline earth metal salt, and an organic solvent, (c) 2–50 parts by weight of an α-olefin oligomer, and (d) 2–50 parts by weight of a metal salt of a lanolin fatty acid,
wherein the total amount of organic solvents in the undercoating agent composition is from 33 to 44 parts by weight based on 100 parts by weight of the undercoating agent composition and wherein the viscosity of the undercoating agent composition is from 12,000 to 18,000 mPa s.

5,354,373
INJECTION HEADS FOR RAILROAD TIE TREATING APPARATUS
Joseph T. Crisafulli, P.O. Box 865, Glendive, Mont. 59330
Continuation-in-part of Ser. No. 439,321, Nov. 21, 1989, Pat. No. 5,046,448. This application Aug. 5, 1991, Ser. No. 740,430
The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.
Int. Cl.[5] B05C *3/20*
U.S. Cl. 118—410 10 Claims

1. In an apparatus for treating wooden tie supporting railroad rails by injecting a flowable treating material through unoccupied spike holes in tie plates which secure the rails to the ties, the improvement comprising an injection head connected with a manually manipulated, valve controlled rigid wand, said injection head comprising a body of resilient material having a passageway therethrough receiving pressurized treating material from the wand, said body having a bottom surface thereon in sealing engagement with the tie plate pe-

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ripherally of the unoccupied hole with the passageway in communication with the hole for passage of pressurized treating fluid into the hole and between the tie plate and the upper surface of the wooden tie, the bottom surface on said body including a downwardly facing shoulder, a projection depend-



ing from the shoulder and telescopically received in the hole in the tie plate, said projection including means at its lower end discharging treating material peripherally thereof to enable treating material to flow along the upper surface of the wooded tie and between the tie plate and the wooden tie.

5,354,374

IRON OXIDE PIGMENTS

Constanze Prengel, Nienw-Vennep, Netherlands, assignor to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Nov. 16, 1992, Ser. No. 975,340

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1991, 4137764

Int. Cl.[5] C09C *1/22*

U.S. Cl. 106—459 **16 Claims**

1. A pigment comprising a non platelet-shaped silica, zirconium dioxide and/or titanium dioxide particle substrate coated with iron oxide, wherein the iron oxide content is at least 350% by weight, relative to the weight of the substrate.

5,354,375

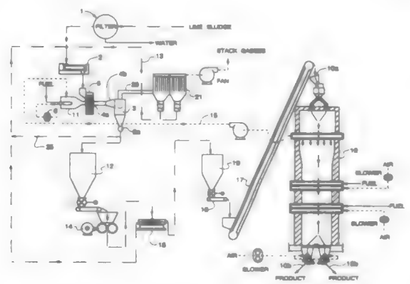
LIME SLUDGE TREATMENT PROCESS

Sidney M. Cohen, Allentown, Pa., assignor to Fuller Company, Bethlehem, Pa.

Filed Oct. 12, 1993, Ser. No. 134,366

Int. Cl.[5] C04B *28/22*

U.S. Cl. 106—792 **8 Claims**



1. A method of heat treating lime sludge ($CaCO_3$) to form burnt lime (CaO), comprising the steps of:

a. feeding fresh lime sludge to a flash dryer means, wherein said fresh lime sludge is entrained in heated gases, to thereby produce a dried lime sludge, wherein said dried lime sludge has a moisture content of less than about 2% (by weight);

b. separating the dried lime sludge from the heated gases in which said dried lime sludge is entrained;

c. feeding the separated, dried lime sludge to a compacting apparatus to thereby compact the dried sludge into a plurality of briquettes of a size suitable to be fed to a shaft kiln;

d. feeding the compacted dried lime sludge to a shaft kiln wherein the dried lime sludge is converted to active burnt lime at temperatures that ranges from about 1650° F. to about 2200° F.

5,354,376

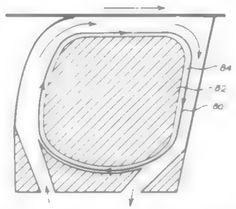
FLOTATION COATING DEVICE FOR TRAVELING WEBS

Cyrus K. Aidun, Marietta, Ga., assignor to Institute of Paper Science and Technology, Atlanta, Ga.

Continuation-in-part of Ser. No. 881,512, May 12, 1992, which is a continuation-in-part of Ser. No. 849,530, Mar. 11, 1992, abandoned. This application Oct. 15, 1993, Ser. No. 137,957

Int. Cl.[5] B05C *5/00*

U.S. Cl. 118—410 **18 Claims**



1. A flotation coating device for coating a traveling web of material comprising:

a coating composition application chamber having upstream and downstream side walls and an interior bottom wall, said upstream side wall and said interior bottom wall defining an entrance plenum therebetween for receiving a flowing coating composition and said downstream side wall and said interior bottom wall defining an exit plenum therebetween for discharge of said flowing coating composition;

means for guiding a traveling web of material over received flowing composition and said interior bottom wall thereunder; and

flotation means for levitating said interior bottom wall allowing said interior bottom wall to move in the same direction as the received flowing composition.

5,354,377

WINDOW FRAME SELF-SUPPORTING WINDOW PANE PAINT SHIELD

Louis R. Jeffrey, Jr., 50 Gloucester Rd., Summit, N.J. 07901

Filed Dec. 23, 1993, Ser. No. 173,154

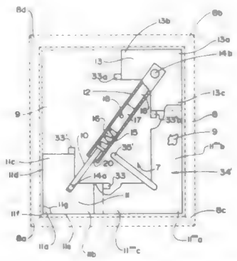
Int. Cl.[5] B05C *21/00*

U.S. Cl. 118—505 **23 Claims**

1. A portable window paint shield comprising in combination:

a) separate first and second paint-shield means for concurrently being pressed and self-supporting against an adjoining window pane portion such that the first and second paint shield means are self-supportingly wedged between frame diagonally opposite corners when bias mounted against and fitted into diagonally opposite corners of an adjoining framing window frame whereby the adjoining framing window frame at diagonally opposite corners thereof is protectable against accidental painting, the first paint-shield means forming a first right-angled outer edge with a first right-angle corner and the second paint-shield means forming a second right-angled outer edge with a second right angle corner, the first and second right-angled outer edges each having an outwardly-directed edge of a predetermined thickness the thickness thereby not

obstructing a paint brush thereabove; and each of said first and second paint-shield means including first and second interconnected right and left flanges extending at a right angle to one-another, the right flange of each of the first and second paint-shield means having a right bottom face including a right lower edge portion angled downwardly toward and culminating as said right linear edge portion, and the left flange of each of said first and second paint-shield means having a left bottom face including a left lower edge portion angled downwardly toward and cul-



minating as said left linear edge portion; and relative to a plane extending along each of and between said right and left linear edge portions, there is formed an angle with each of said right and left lower edge portions, said angle ranging from about 5 degrees to about 55 degrees; and

b) spring-biasing means for mounting onto and between and biasing said first and second paint-shield means in substantially opposite directions oppositely toward and against said diagonally opposite corners when the first and second right-angled outer edges are pressed against said window pane portions.

5,354,378

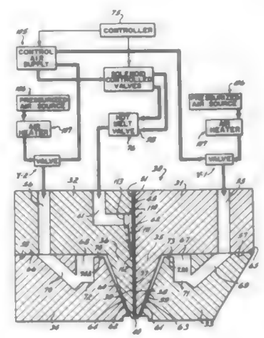
SLOT NOZZLE APPARATUS FOR APPLYING COATINGS TO BOTTLES

Larry Hauser, Suwanee, Ga.; Jurgen Benecke, Brandenburger, Fed. Rep. of Germany; Arthur Cieplik, Luneburg, Fed. Rep. of Germany; Thomas Burmester, Bleckede, Fed. Rep. of Germany; Michael L. Gill, Westlake, Ohio; Kerry Washington, Stone Mountain, Ga., and Ron Evans, Neutral Bay, Australia, assignors to Nordson Corporation, Westlake, Ohio

Filed Jul. 8, 1992, Ser. No. 910,686

Int. Cl.[5] B05B *12/02, 13/02*

U.S. Cl. 118—696 **28 Claims**



1. Apparatus operable for producing a coating onto the top and the neck of a bottle having an elongated axis extending from a bottle bottom through the neck and the top thereof, said apparatus comprising:

means for spinning a bottle about said axis;

a slot nozzle having an elongated slot outlet with two ends sand operable such that a coating material can be extruded through said outlet toward the neck of said bottle to coat the neck, said slot outlet being vertically oriented from one end to the other;

at least one air slot proximate said slot outlet and operable for impinging at least one air stream onto a coating material exuding horizontally from said slot outlet for carrying said extruded coating material to said bottle neck to coat said neck;

means for starting said one air stream prior to extrusion of coating material from said slot outlet; and

means for applying coating material to a top of said bottle neck,

coating material on said bottle neck and on said bottle top merging to form a seal over the top portion of the neck of said bottle.

3. Apparatus as in claim 1 further including means for stopping the air stream after extrusion of coating material through said slot outlet has ceased.

4. Apparatus as in claim 3 including at least two air slots, one proximate each side of said slot outlet for impinging air therefrom onto coating material exuding from said slot outlet.

5,354,379

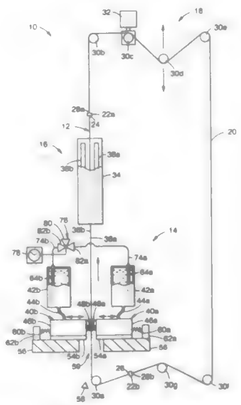
APPARATUS FOR APPLYING A PROTECTIVE COATING TO A FILM STRIP

Thomas M. Milbourn, Mahtomedi, and Ashwani K. Mehta, Shoreview, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 8, 1993, Ser. No. 14,768

Int. Cl.[5] B05C *11/00*

U.S. Cl. 118—696 **19 Claims**



1. An apparatus for applying a coating of a liquid material to opposite surfaces of a film strip, comprising:

a base member having an aperture therethrough;

means for moving said film strip through said aperture;

a pair of housing members attached to said base member and positioned such that each of said pair of housing members is adjacent one of said opposite surfaces of said film strip, each of said pair of housing members having an internal cavity with a first and second opening thereto, said first opening of each housing member facing an opposing one of said opposite surfaces of said film strip;

a pair of coating applicators, each comprising a substantially rigid, porous matrix having therein a plurality of intercon-

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nected pores, each of said pair of coating applicators being housed within one of said pair of housing members and having an enclosed portion and a contact portion, said enclosed portion being enclosed within the internal cavity of a corresponding one of said pair of housing members and said contact portion extending outside of said internal cavity via said at least one opening, said coating applicators storing said liquid material within the internal pores thereof and transferring a coating of said liquid material to each of the opposite surfaces of said film strip upon contact therewith;

means for supplying said liquid material to each of said pair of coating applicators at a substantially constant rate, said supplying means comprising:

at least one reservoir having top, bottom, and side portions to define an internal volume containing a quantity of said liquid material, said at least one reservoir having an opening in said top portion and a fluid outlet in said bottom portion communicating with each of said second opening into the internal cavity of each of said pair of housing members, and

a tube extending substantially vertically into said reservoir via said opening, said tube having a first end terminating near said bottom portion of said reservoir and a second end communicating with a gas source, gas from said source displacing said liquid material as said liquid material is supplied to said coating applicators such that the flow rate of liquid material from said reservoir is substantially constant when the level of said liquid material in said reservoir is above that of said first end of said tube;

means for controlling the rate at which said liquid material is supplied to said coating applicators, said means for controlling the rate comprising:

a valve communicating with said second end of said tube, said valve being operable between an open position and a closed position such that gas enters said second end of said tube when said valve is in said open position and is prevented from entering said second end of said tube when said valve is in said closed position, and

a control device for controlling operation of said valve between said open position and said closed position to control the rate at which gas enters said second end of said tube, thereby controlling the rate at which said liquid material is supplied to said coating applicators; and

means for engaging said contact portion of each of said pair of coating applicators with a different one of said opposite surfaces of said film strip to thereby apply a coating of said liquid material to each of said opposite surfaces of said film strip.

5,354,380

APPARATUS FOR THE INSERTION AND REMOVAL OF A MASK THROUGH THE AIRLOCK OF A VACUUM COATING APPARATUS

Jaroslav Zejda, Rodenbach, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Dec. 7, 1993, Ser. No. 163,855

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1993, 4302794

Int. Cl.[5] **C23C** *14/00*

U.S. Cl. 118—719 **4 Claims**

1. Apparatus for transporting a substrate into and out of a vacuum chamber, said substrate being of the type comprising a disk having a central hole, said apparatus comprising

a vacuum chamber;

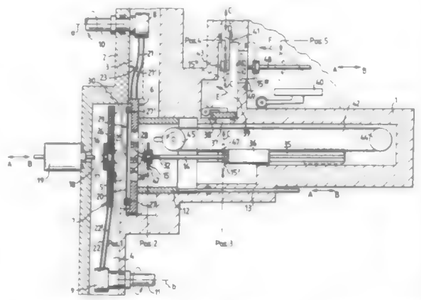
a mask having a blind central bore, means for engaging said central hole of said substrate, and an annular flange concentric to said bore;

a first plunger movable on a first linear path in said vacuum chamber, said first plunger having an end which is receivable in said bore as said plunger moves on said path,

an airlock chamber adjacent to said vacuum chamber;

first valve means which can be opened to connect said airlock chamber to said vacuum chamber;

slide means movable transversely to said first linear path from said airlock chamber through said first valve means and into said vacuum chamber when said first valve means



is opened, said slide means having fork means which receives said annular flange to transfer said mask from said vacuum chamber to said airlock chamber; and

second valve means which can be opened to remove said mask from said airlock chamber.

5,354,381

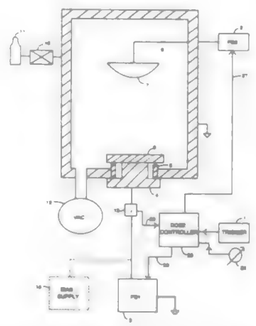
PLASMA IMMERSION ION IMPLANTATION (PI^3) APPARATUS

Terry T. Sheng, San Jose, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed May 7, 1993, Ser. No. 59,036

Int. Cl.[5] **C23C** *16/50;* **H01J** *37/317*

U.S. Cl. 118—723 E **11 Claims**



1. In a non-raster scan implantation apparatus comprising,

a vacuum chamber, said chamber having walls, one said wall having mounted therein an electrode, said electrode having at least one planar surface to support a wafer thereon for implantation of positive ions into said wafer;

an electron source for neutralizing a positive charge on said wafer, said electron source being mounted in said chamber for providing a large cross sectional area flow of electrons toward said planar surface of said electrode;

means to provide a source of ionizable gas to said chamber, said gas containing a desired dopant for implantation into said wafer;

means for providing a first and second high voltage pulse, said first high voltage pulse being connected between said electrode and said chamber for creating a cold cathode ionizing field to produce positive ions from said ionizable gas of said dopant and for accelerating said dopant toward said electrode, and wherein said second high voltage pulse is connected between said electron source and said chamber for providing electrons from said electron source in response to said second pulse; and

synchronizing trigger means, said synchronizing trigger means being connected to said means for providing said first and second high voltage pulse for permitting a synchronizing relationship between said first and second high voltage pulses.

5,354,382

ELECTRON CYCLOTRON RESONANCE APPARATUS COMPRISING WAFER COOLING PEDESTAL

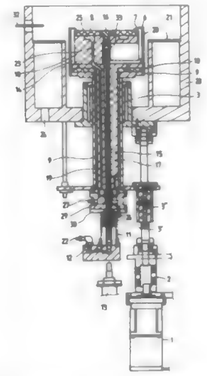
Roh Y. Sung; Chel S. Park; Sang Y. Lee; Cheong D. Lee, and Dae H. Kim, all of Ichonkun, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Filed Feb. 7, 1994, Ser. No. 192,390

Claims priority, application Rep. of Korea, Feb. 6, 1993, 1993-1635

Int. Cl.[5] **C23C** *16/50;* **H01L** *21/00*

U.S. Cl. 118—723 MR **12 Claims**



1. An electron cyclotron resonance apparatus comprising:

a circular wafer pedestal having a central hole and an O-ring disposed on an upper surface of said wafer pedestal and adapted to support a wafer;

a wafer lifter slidably fitted in said central hole of the wafer pedestal and adapted to lift said wafer laid on said O-ring;

a longitudinally extending hollow shaft having at an upper end thereof an upward extension adapted to receive a lower portion of said wafer lifter and having an axial passage for a heat transfer gas for transferring heat from the wafer to a refrigerant, said upper end of said hollow shaft defining a gap with a lower end of said wafer lifter;

a refrigerant circulating member provided in the wafer pedestal and adapted to absorb said heat transferred to the wafer pedestal by said heat transfer gas;

a refrigerant circulating line longitudinally extending in parallel to the hollow shaft, said refrigerant circulating line being adapted to supply the refrigerant to said refrigerant circulating member;

a supporting housing surrounding both the hollow shaft and the refrigerant circulating line;

a clamp lifter operatively connected to the hollow shaft and provided at an upper end with a plurality of spaced clamps adapted to clamp the wafer laid on the wafer pedestal when said clamp lifter is vertically moved by a vertical movement of the hollow shaft;

an outer housing surrounding both the supporting housing and the wafer pedestal and having a chamber for treating the wafer laid on the wafer pedestal by plasma and a vacuum channel for venting said plasma used; and

a stepping motor adapted to adjust a vertical position of said outer housing.

5,354,383

PROCESS FOR PICKLING AND PASSIVATING STAINLESS STEEL WITHOUT USING NITRIC ACID

Marco Bianchi, Milan, Italy, assignor to ITB, S.r.l., Milan, Italy

Continuation-in-part of Ser. No. 770,632, Oct. 3, 1991, abandoned. This application Jan. 11, 1993, Ser. No. 2,942

Claims priority, application Italy, Mar. 29, 1991, MI 91 A 000879

Int. Cl.[5] **C23G** *1/02*

U.S. Cl. 134—3 **5 Claims**

1. A process for pickling and passivating stainless steel, said process consisting of contacting the material to be treated with a bath maintained at a temperature of between 30° and 70° C. and preferably between 45° and 55° C. and having the following initial composition:

a) H_2SO_4 at least 150 g/l

b) Fe^{3+} at least 15 g/l

c) HF at least 40 g/l

d) H_2O_2 1–20 and preferably 2–5 g/l

e) additives of the non-ionic surfactant type acid attack inhibitor type about 1 g/l in total; continuously feeding into said bath:

an air flow of at least 3 m^3/h per m^3 of bath, using a suitable distributor device for diffusing the flow into the liquid mass;

a quantity of stabilized H_2O_2 of between 0.3 and 1 g/l per hour, controlled on the basis of the Redox potential of the bath, which must be maintained at ≧350 mV;

and possibly sufficient quantities of ingredients a), c) and e) to maintain their concentration in the bath at optimum levels and the bath pH between 0 and 0.5.

5,354,384

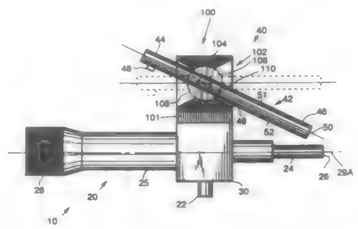
METHOD FOR CLEANING SURFACE BY HEATING AND A STREAM OF SNOW

John D. Sneed, Long Beach; Wilfried Krone-Schmidt, Fullerton; Michael J. Slattery, Gardena, and Howard S. Bowen, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 30, 1993, Ser. No. 56,684

Int. Cl.[5] **B08B** *7/04*

U.S. Cl. 134—6 **16 Claims**



1. In a method for cleaning the surface of substrates wherein a stream of cleaning snow is directed against a portion of a substrate surface to remove contaminants located thereon, the improvement comprising the step of heating with heating gas said portion of the substrate surface before application of said stream of cleaning snow to said portion of said substrate surface to a first elevated temperature which is above the temperature of said cleaning snow or after application of said stream of cleaning snow to said portion of said substrate surface to a

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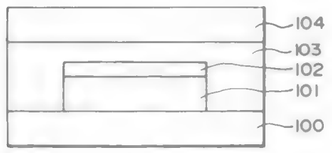
second elevated temperature which is above the dew point of ambient vapors.

5,354,385

SOLAR CELL

Yuichi Hashimoto, Tokyo; Teigo Sakakibara, and Hisami Tanaka, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1992, Ser. No. 953,009
Claims priority, application Japan, Sep. 30, 1991, 3-251896
Int. Cl.[5] H01L *31/048*
U.S. Cl. 136—259 16 Claims



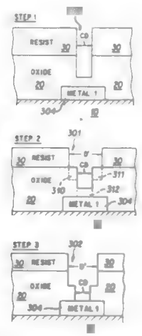
1. A solar cell, comprising a solar cell unit and an outer surface protective layer formed on the solar cell unit and exposed to incident solar radiation when said solar cell is in use, wherein the outer surface protective layer comprises conductive particles.

5,354,386

METHOD FOR PLASMA ETCHING TAPERED AND STEPPED VIAS

David W. Cheung, Foster City; Norman E. Abt, Burlingame, both of Calif., and Peter A. McNally, Austin, Tex., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 24, 1989, Ser. No. 328,179
Int. Cl.[5] H01L *29/12, 21/00, 21/02*
U.S. Cl. 148—33.3 1 Claim



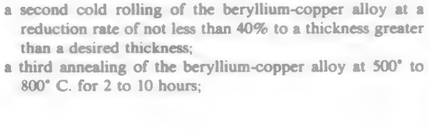
1. A coated semiconductor substrate, including:
a semiconductor substrate; and
a plasma etched coating, including an oxide layer coated on the semiconductor substrate and a resist coated on the oxide layer, where the coating has ben plasma etched with a plasma comprising CF_4 to define a tapered via which extends through the resist, said via having a non-tapered bottom portion with a bottom diameter and an upper portion having a sloping profile and an opening diameter substantially larger than the bottom diameter, wherein the upper portion of the via extends through the resist, and the lower portion extends through a portion of the oxide layer.

5,354,387

BORON PHOSPHORUS SILICATE GLASS COMPOSITE LAYER ON SEMICONDUCTOR WAFER

Peter W. Lee, Fremont; David N.K. Wang, Saratoga, both of Calif.; Makoto Nagashima, Machida; Kazuto Fukuma, Osaka, and Tetsuya Sato, Narita, all of Japan, assignors to Applied Materials, Inc., Santa Clara, Calif.

Division of Ser. No. 649,172, Feb. 1, 1991, Pat. No. 5,166,101, which is a continuation of Ser. No. 413,800, Nov. 13, 1989, abandoned. This application Aug. 25, 1992, Ser. No. 935,951
Int. Cl.[5] H01L *29/12, 21/00, 21/02, 21/302*
U.S. Cl. 148—33.3 19 Claims



1. A composite layer of boron phosphorus silicate glass (BPSG) on a semiconductor wafer comprising an essentially void-free first BPSG layer and a non-hygroscopic BPSG top layer formed by
(a) depositing a first CVD base layer of BPSG on said wafer, in a vacuum chamber, using a mixture of gases comprising one or more gaseous sources of boron, one or more gaseous sources of phosphorus, a gaseous source of oxygen, and tetraethylorthosilicate as the gaseous source of silicon; and
(b) depositing a plasma assisted CVD capping layer of BPSG over said CVD layer, in a vacuum chamber, using a mixture of gases comprising one or more gaseous sources of boron, one or more gaseous sources of phosphorus, a gaseous source of oxygen, and tetraethylorthosilicate as the gaseous source of silicon.

5,354,388

PRODUCTION OF BERYLLIUM-COPPER ALLOYS AND BERYLLIUM COPPER ALLOYS PRODUCED THEREBY

Keigo Nojiri, and Takaharu Iwadachi, both of Handa, Japan, assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 835,540, Feb. 14, 1992, abandoned.
This application Jun. 11, 1993, Ser. No. 74,999
Claims priority, application Japan, Feb. 21, 1991, 3-047475
Int. Cl.[5] C22C *9/00*
U.S. Cl. 148—554 8 Claims

8. A process for producing beryllium-copper alloy having a mean grain size not more than 20 μm and a natural logarithm of a coefficient of variation of the grain size not more than 0.25, consisting essentially of sequential steps of:
casting a beryllium-copper alloy composed essentially of 1.00 to 2.00% by weight of Be and 0.18 to 0.35% by weight of Co, the balance being Cu;
a first hot rolling of the alloy;
a first cold rolling of the alloy;
a first annealing of the alloy at 500° to 800° C. for 2 to 10 hours;
a second cold rolling of the beryllium-copper alloy at a reduction rate of not less than 40% to a thickness greater than a desired thickness;
a third annealing of the beryllium-copper alloy at 500° to 800° C. for 2 to 10 hours;

a third cold rolling of the beryllium-copper alloy to said desired thickness; and



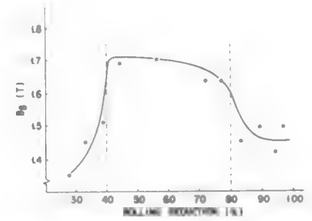
subjecting the beryllium-copper alloy to a final solid solution treatment.

5,354,389

METHOD OF MANUFACTURING SILICON STEEL SHEET HAVING GRAINS PRECISELY ARRANGED IN GOSS ORIENTATION

Kenichi Arai; Kazushi Ishiyama, both of Sendai; Yasushi Tanaka, Tokyo; Akira Hiura, Tokyo, and Misao Namikawa, Tokyo, all of Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Jul. 24, 1992, Ser. No. 920,127
Claims priority, application Japan, Jul. 29, 1991, 3-210363; Jul. 29, 1991, 3-210364; Jul. 29, 1991, 3-210365; Jul. 13, 1992, 4-185374; Jul. 13, 1992, 4-185375; Jul. 13, 1992, 4-185376
Int. Cl.[5] H01F *1/04*
U.S. Cl. 148—111 10 Claims



1. A method of manufacturing a silicon steel sheet having grains precisely arranged in Goss orientation, comprising the steps of:
(a) preparing a steel material containing 0.01 wt. % or less of C, 2.5 to 7.0 wt. % of Si, 0.01 wt. % or less of S, 0.01 wt. % or less of Al, 0.01 wt. % or less of N;
(b) subjecting the steel material at a temperature of 1000° C. or higher to hot rolling such that the temperature of the resultant rolled material at an end of the hot rolling is 700° to 950° C.;
(c) subjecting the steel material from step (b) to a primary cold rolling process at a rolling reduction of 30 to 85%;
(d) annealing the steel material from step(c) at a temperature of 600° to 900° C.;
(e) subjecting the steel material from step (d) to a secondary cold rolling process at a rolling reduction of 40 to 80%;
(f) annealing the steel material from step (e) at a temperature of 600° to 900° C.;
(g) subjecting the steel material from step (f) to a tertiary cold rolling process at a rolling reduction of 50 to 75%; and
(h) annealing the steel material from step (g) in a reducing atmosphere, or in a non-oxidizing atmosphere having an oxygen partial pressure of 0.5 Pa or less, or in a vacuum having an oxygen partial pressure of 0.5 Pa or less, at a temperature of 1000° to 1300° C.

5,354,390

PROCESS FOR OBTAINING TISSUE-PROTECTIVE IMPLANTS PREPARED FROM TITANIUM OR A TITANIUM-BASE MICROALLOY

Károly Haszmann; Lajos Kovács; Kálmán Vargha, all of Budapest; Imre Juhász, Hódmezóvás/ rhely, and György Szabó, Budapest, all of Hungary, assignors to Tavkozlesi Kutato Intezet, Budapest, Hungary

Filed Mar. 31, 1993, Ser. No. 41,441
Claims priority, application Hungary, Apr. 10, 1992, P92 01220
Int. Cl.[5] C21D *11/00*; C23F *13/00*
U.S. Cl. 148—518 9 Claims

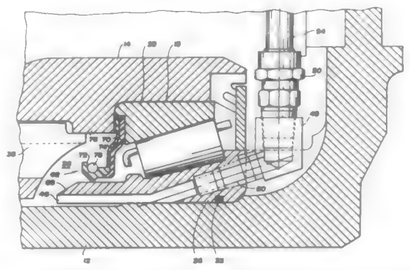
1. A process for obtaining tissue-protective devices of bone surgery, especially cheek bone, mandible and common surgery, implants prepared from a medical-purity metal, titanium and/or a titanium-base microalloy containing at least 98% by weight of titanium, by establishing a bio-compatible (tissue-protective) coating on the metal surface of the implant by anodic oxidation after degreasing and chemical or electrochemical etching, which comprises carrying out the anodic oxidation of the implant surface in an aqueous solution of a phosphate concentration lower than 20% by weight with a current density of 2 to 50 mA/cm^2 until reaching a voltage of at least 105 V, then, after washing to ion-free, heat-treating the implants at a temperature between 120° C. and 750° C. for 5 to 120 minutes, and repeating once or twice the anodic oxidation and heat-treatment with the phosphate concentration, current density and temperature values as given above for the first step.

5,354,391

VEHICLE WHEEL END ASSEMBLY

Fred L. Goodell, Dublin, Ohio, and Michael J. Ellison, West End, N.C., assignors to AM General Corporation, South Bend, Ind.

Continuation of Ser. No. 750,436, Aug. 20, 1991, Pat. No. 5,236,028, which is a division of Ser. No. 143,022, Jan. 12, 1988, abandoned, which is a continuation of Ser. No. 752,576, Jul. 8, 1985, Pat. No. 4,730,656. This application Jul. 6, 1993, Ser. No. 88,229
The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.
Int. Cl.[5] B60C *23/00*
U.S. Cl. 152—417 39 Claims



1. A vehicle wheel end assembly adapted for use with an

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automated system for controlling tire pressurization comprising:

a spindle mounted in non-rotary relation to the vehicle;

a hub having a first air path portion for communication between the automated system and the respective tire;

bearing means for rotatably supporting said hub to said spindle disposed between the spindle and the hub;

a second air path portion associated with said non-rotary spindle;

rotary seal means for communicating the first air path portion in the rotational hub to said second air path portion, said rotary seal means being positioned in fixed relation to said bearing means; and

wherein the bearing means comprises first and second axially spaced bearing sets, each bearing set having an inner race and an outer race, and at least one of said races includes means for locating and seating the rotary seal means.

5,354,392

METHOD FOR CONNECTING A WIRING ARRANGED ON A SHEET WITH ANOTHER WIRING ARRANGED ON ANOTHER SHEET BY ULTRASONIC WAVES

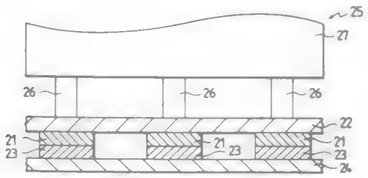
Kouichi Santo, Osaka; Naohiro Nishioka, Kyoto; Kenji Otomo; Kouji Tanabe, both of Osaka, and Futoshi Matsui, Tsuyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 13, 1993, Ser. No. 3,913

Claims priority, application Japan, Jan. 24, 1992, 4-010681; Jan. 27, 1992, 4-011690

Int. Cl.[5] B32B *31/16*

U.S. Cl. 156—73.1 **22 Claims**



1. A method for electrically connecting an upper wiring with a lower wiring, comprising the steps of:

mixing thermo-softening material with conductive material to make wiring material;

arranging the wiring material on an upper insulating sheet to form the upper wiring;

arranging the wiring material on a lower insulating sheet to form the lower wiring;

putting the upper insulating sheet on the lower insulating sheet to bring the upper wiring into contact with the lower wiring;

providing ultrasonic vibration to the upper and lower wirings and the upper insulating sheet positioned on the upper wiring to melt the upper and lower wirings and the upper insulating sheet by frictional heat while pushing the upper insulating sheet toward the lower insulating sheet; and

deforming the upper and lower wirings and the upper insulating sheet to mechanically connect the upper insulating sheet with the lower insulating sheet; and

tightly bonding the upper wiring to the lower wiring by cooling the upper and lower wirings to electrically connect the upper wiring with the lower wiring.

5,354,393

METHOD FOR MANUFACTURING MAGNETIC TAPE CASSETTE

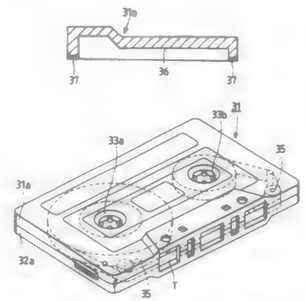
Hidetoshi Hirata, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 848,925, Mar. 10, 1992, abandoned. This application Oct. 25, 1993, Ser. No. 140,899

Claims priority, application Japan, Apr. 16, 1991, 3-109539

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—192 **10 Claims**



1. A method for manufacturing a magnetic tape cassette incorporating and holding therein a tape winding member with a magnetic tape wound therearound in a cassette case comprising a combination of upper and lower half cases formed from a synthetic resin, said method comprising the steps of:

injection molding at least one of said upper and lower half cases with a resin material mixed with a conductive filler;

putting said upper and lower cases one upon another; and

exposing said upper and lower half cases to induction heating to thereby heat at least a joint which joins each of said half cases to bond and fix said upper and lower half cases together.

6. A method for manufacturing a magnetic tape cassette incorporating and holding therein a tape winding member with a magnetic tape wound therearound in a cassette case comprising upper and lower half cases formed from a synthetic resin and respectively including side walls, comprising the following steps:

closing a moveable mold half with a first stationary mold half to define a first mold cavity having a shape corresponding to the end portion of the side wall of the upper half case;

injecting a contact resin including a first resin material mixed with a conductive filler into said first mold cavity to form a contact layer along said end portion;

cooling said contact resin to a cured state;

moving the moveable mold half and the molded contact layer away from the first stationary mold and closing said moveable mold half and the molded contact layer with a second stationary mold, said moveable mold, said molded contact layer and said second stationary mold defining a second mold cavity;

injecting a second resin material into said second mold cavity to form the remaining portion of said upper case half;

cooling said second resin material into a cured state;

removing said upper case from said moveable mold half and said second stationary mold half;

putting said upper and lower half cases upon one another with said contact layer contacting said lower case half; and

exposing said upper and lower half cases to induction heating to thereby heat at least said contact layer to bond and fix said upper and lower case halves together.

5,354,394

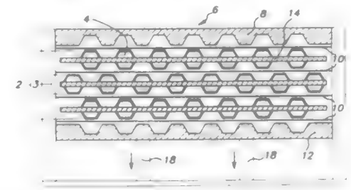
APPARATUS AND METHOD FOR FORMING HONEYCOMB CORE

H. Freeman Seebo, Tacoma, and Robert E. Holeton, Redmond, both of Wash., assignors to Seeton Technologies, Auburn, Wash.

Continuation-in-part of Ser. No. 974,247, Nov. 10, 1992. This application Feb. 22, 1993, Ser. No. 20,624

Int. Cl.[5] B32B *31/02, 31/12, 31/20;* **B29C** *33/02*

U.S. Cl. 156—358 **9 Claims**



1. An apparatus for forming a honeycomb core comprising a compressible array comprising three or more levels of heater rods, wherein said heater rods are connected to a controlled heat source and are able to controllably generate and transmit heat and pressure to two or more layers of formable material interleaves between said heater rods and wherein a non-meltable rod material comprises substantially all of each of said heater rods with each of said heater rods including a surface layer of a meltable rod material having a melting point higher than the forming point of said formable material and lower than the melting point of said formable material.

5,354,395

PROCESS FOR THE MANUFACTURE OF A TOURISTIC AND/OR PERSONAL VISITING CARD ORNAMENTED WITH PLANTS OR ANY SIMILAR MATERIAL

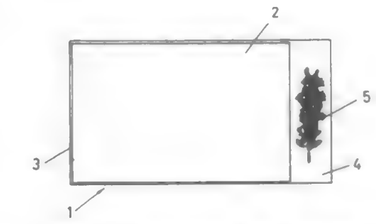
Jose M. Fernandez, and Angeles Albanchez, both of Mayor, 90, 02440 Molinicos (Albacete), Spain

Filed Jun. 22, 1993, Ser. No. 81,425

Claims priority, application Spain, Jul. 9, 1992, 9201422

Int. Cl.[5] A01N *3/00;* **B44C** *3/02*

U.S. Cl. 156—57 **7 Claims**



1. A process for manufacturing a card ornamented with a plant comprising:

collecting a plant to be applied on the card; applying a pressure of approximately 10 kg/cm^2 to the plant, drying the plant;

applying the plant on a flexible sheet; covering the opposite sides of the flexible sheet with a plastic sheet; and thermowelding together the sheets with the plant on the flexible sheet at a temperature of 165° C. and under a pressure of 20 kg/cm^2.

5,354,396

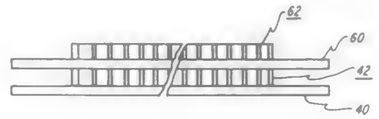
METHODS OF MAKING TILE DESIGNS

Richard Danico, and Kathleen Danico, both of 620 Palm Dr., Satellite Beach, Fla. 32937

Division of Ser. No. 128,723, Dec. 4, 1987, Pat. No. 4,889,572. This application Feb. 25, 1993, Ser. No. 22,570

Int. Cl.[5] B44C *1/00*

U.S. Cl. 156—63 **6 Claims**



1. A method of making tile designs comprising the steps of:

(a) providing a molding material that is initially flexible and then later hardens with time;

(b) placing a pattern tile design having a front face and a back face in said molding material while flexible with the front face of the tile design extending into the molding material so that said molding material conforms with said tile design;

(c) removing said pattern tile design from said molding material when said molding material hardens so that cavities are formed therein corresponding to the pattern tile design;

(d) placing pieces of tile of corresponding shape and size in the cavities formed in said molding material with the front faces of the pieces of tile facing the molding material;

(e) securing a substrate to the back faces of said tile pieces; and

(f) separating the substrate and the tile pieces as a unit from said molding material to provide a tile design comparable to said pattern tile design on said substrate.

5,354,397

SHEET FOR COVERING A SUBSTRATE AND A METHOD FOR PRODUCING A MOLDING USING THE SAME

Akitaka Miyake, Ibaraki; Hiroshi Abe, Amagasaki, and Yosuke Oshikawa, Miyazaki, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

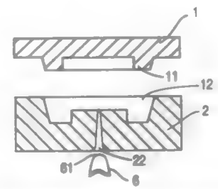
PCT No. PCT/JP92/00230, § 371 Date Oct. 28, 1992, § 102(e) Date Oct. 28, 1992, PCT Pub. No. WO92/15636, PCT Pub. Date Sep. 17, 1992

PCT Filed Feb. 28, 1992, Ser. No. 940,944

Claims priority, application Japan, Feb. 28, 1991, 3-34234; Jun. 21, 1991, 3-150214

Int. Cl.[5] B29C *51/10*

U.S. Cl. 156—77 **29 Claims**



1. A sheet for covering a substrate comprising a soft touch layer formed from a resin composition and a foamed resin layer which is formed on one surface of the soft touch layer, wherein the resin composition contains, as its main components, a urethane resin with a glass transition temperature in the range of −50° C. to 20° C. and at least one substance selected from the group consisting of elastic beads and a porous inorganic material.

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5,354,398

METHOD OF MANUFACTURING FIBER-REINFORCED COMPOSITES HAVING A GRADIENT FUNCTION

Chihiro Kawai, Hyogo, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 10, 1992, Ser. No. 896,205
Claims priority, application Japan, Aug. 21, 1991, 3-233873
Int. Cl.[5] C03B *29/00*; C04B *33/34*; F27B *9/14*; C23C *16/00*
U.S. Cl. 156—89 14 Claims

1. A method of manufacturing a fiber-reinforced composite comprising the steps of:

forming a plurality of base sheets comprising a first matrix comprising ceramics reinforced with carbon fibers, wherein at least two base sheets have a different volume percentage of said carbon fibers;

forming a surface portion sheet comprising a second matrix comprising ceramics reinforced with ceramic fibers;

forming a laminated body by laminating said plurality of base sheets so that the carbon fiber volume percentage of said base sheets decreases from a center base sheet to one outside base sheet and also laminating said surface portion sheet on said outside base sheet; and

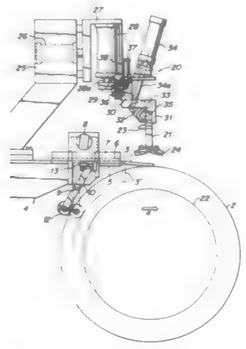
subjecting said laminated body to heat treatment and then pressure sintering.

5,354,399

METHOD FOR SETTING BLADDER OUTER DIAMETER OF TIRE FORMING DRUM IN A METHOD FOR ATTACHING BELT-SHAPED MEMBER TO THE BLADDER

Seiichiro Nishide, Kodaira, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 16,248
Claims priority, application Japan, Feb. 21, 1992, 4-070001
Int. Cl.[5] B29D *30/30*
U.S. Cl. 156—133 4 Claims



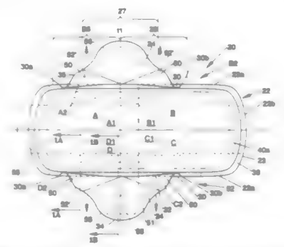
1. A method for attaching a belt member to the outer circumerential surface of at least one bladder of a tire forming drum, comprising steps of positioning the forward end of at least one belt member proximate the outer circumferential surface of the bladder, filling pressurized air into the bladder while said bladder is rotated, detecting the outer diameter of the bladder, stopping the filling of the pressurized air when the bladder has been inflated to a predetermined outer diameter and stopping the rotation of the bladder when the bladder has been inflated to the predetermined outer diameter as detected, fixing the forward end of the belt member on the bladder by means of a fixture, rotating the bladder together with said fixture to wind and attach the belt member around and to the outer circumferential surface of the bladder, and removing said fixture from the bladder after completion of the attaching of the belt member to the bladder.

5,354,400

METHOD OF MAKING ABSORBENT ARTICLE HAVING FLAPS AND ZONES OF DIFFERENTIAL EXTENSIBILITY

Bruce W. Lavash, West Chester; Thomas Henrich, Cincinnati; Carl L. Bergman, Loveland; Raymond J. Dirk, Cleves; Thomas W. Osborn, III; Jeffrey V. Bamber, both of Cincinnati, all of Ohio, and Kaoru Niihara, Ashiya, Japan, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 769,607, Oct. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 734,392, Jun. 23, 1991, abandoned, Ser. No. 734,404, Jun. 23, 1991, abandoned, Ser. No. 734,405, Jun. 23, 1991, and Ser. No. 707,233, May 21, 1991, which is a continuation of Ser. No. 431,009, Nov. 1, 1989, abandoned. This application Apr. 5, 1993, Ser. No. 42,840
Int. Cl.[5] A61F *13/16*
U.S. Cl. 156—227 12 Claims



1. A method Of making an absorbent article having flaps and zones of differential extensibility, said method comprising the steps of:

(a) providing an absorbent article comprising a main body portion, said main body portion having a body-facing side, a garment side, a principal longitudinal centerline, a principal transverse centerline, two spaced apart longitudinal edges, said main body portion comprising a liquid pervious topsheet, a liquid impervious backsheet joined to said topsheet, and an absorbent core positioned between said topsheet and said backsheet, said absorbent core having a pair of spaced apart longitudinal side edges that define a widest portion of said absorbent core at least at one place between said longitudinal side edges of said absorbent core, said absorbent article comprising:

(i) a pair of flaps, said flaps having a garment side, and each flap being associated with said main body portion at a juncture and extending laterally outward beyond a longitudinal edge of said main body portion, said junctures each having a pair of ends, said flaps being divided into a front half and a back half by a flap transverse centerline, and having a fastener located on the garment side of said flaps for attaching each flap to the underside of an undergarment or to the other flap; and

(ii) two corner regions for each flap, said corner regions being located in the regions of the ends of each juncture, wherein portions of said flaps lie along said flap transverse centerline and portions of said flaps lie in said corner regions, and the portions of said flaps that lie along said flap transverse centerline lie transversely further outward from the principal longitudinal centerline than the longitudinal side edges of the absorbent core at the widest portion of said absorbent core and are disposed further outward in the transverse direction from the longitudinal side edges of said main body portion than the portions of said flaps located in said corner regions; and

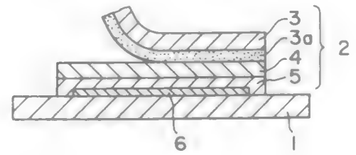
(b) forming zones of differential extensibility in said corner regions of said absorbent article, said zones comprising portions of at least one of said topsheet, backsheet, absorbent core, and flaps, said zones of differential extensibility being capable of greater extensibility outward in a generally transverse direction than the surrounding portions of said absorbent article whereby said zones of differential extensibility provide material to cover a wearer's undergarment to prevent exudates from soiling the wearer's undergarment through said zones of differential extensibility.

5,354,401

IMAGE TRANSFER METHOD FOR CARDS

Koichi Asahi, Urawa, and Noritaka Egashira, Ichikawa, both of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Continuation of Ser. No. 957,056, Oct. 6, 1992, abandoned, which is a continuation of Ser. No. 465,200, Mar. 1, 1990, abandoned. This application Sep. 2, 1993, Ser. No. 115,260
Claims priority, application Japan, Jul. 1, 1988, 63-164239
Int. Cl.[5] B44C *1/165*
U.S. Cl. 156—230 5 Claims



1. A method for transferring an image to a card, comprising the steps of:

preparing a thermal transfer sheet comprising a base layer, a separation layer formed on said base layer and an image receiving layer, for receiving dyes that move from a dye transfer sheet, formed on said separation layer;

forming an image by a sublimation transfer recording method on said image receiving layer;

placing said thermal transfer sheet on said card in an overlapping relation, such that said image receiving layer directly contacts said card;

passing the overlapped thermal transfer sheet and card through a pair of opposed, individually heated rubber rollers of a laminating machine, said rubber rollers having a hardness selected in a range of 70° to 90°, said rubber rollers being heated in a range of 130° C. to 180° C. and being urged against each other under a pressure of 3 to 15 kg/cm^2; and

separating at least said base layer away from said separation layer so that at least said image receiving layer is transfer laminated to said card.

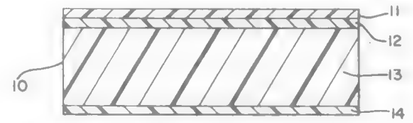
5,354,402

METHOD OF PRODUCING A THERMOPLASTIC FOAM SHEET

Melvin L. Luetkens, Jr., Batavia, Ill.; Robert D. Pischke, Duluth, and John C. Schubert, Marietta, both of Ga., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 892,764, Jun. 3, 1992, Pat. No. 5,221,395, which is a division of Ser. No. 495,279, Mar. 16, 1990, Pat. No. 5,128,196. This application Jan. 21, 1993, Ser. No. 80,555
Int. Cl.[5] B29C *47/06*
U.S. Cl. 156—244.11 3 Claims

1. A method of producing a thermoplastic foam sheet comprising the step of (a) foaming, by extrusion, a mixture comprising polystyrene and a thermoplastic reclaim material obtained from a multi-layer sheet manufacturing process, wherein said thermoplastic reclaim material comprises polystyrene and a thermoplastic barrier resin selected from the group consisting of (i) copolymers of ethylene and vinyl alcohol, and (ii) polymers comprising a copolymer of acrylonitrile, to produce a foam sheet having an upper and lower surface.

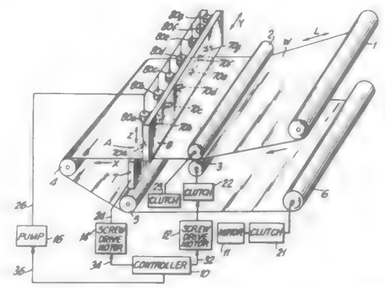


5,354,403

METHOD AND APPARATUS FOR APPLYING ORNAMENTS TO A WEB OF MATERIAL

Kenneth Stier, 220-55 46th Ave., Bayside, N.Y. 11361

Continuation of Ser. No. 961,237, Oct. 15, 1992, abandoned. This application Feb. 28, 1994, Ser. No. 203,844
Int. Cl.[5] B32B *31/04*
U.S. Cl. 156—297 11 Claims



1. A method of applying ornaments to a web of material, comprising the steps of:

(a) providing a web of material to which ornaments are to be applied to at least one surface and having a longitudinal axis;

(b) step-wise advancing the web along the longitudinal axis into an application zone perpendicular to the longitudinal axis by alternately moving and stopping the web including maintaining the web in a taut condition and preventing backward movement when stopped; and

(c) applying ornaments to at least one surface of the web in the application zone when the web is stopped by providing a plurality of applicators and opposing dies, holding an ornament in each applicator by suction, moving each applicator and die perpendicularly along a width of the web to a desired application position and moving each applicator perpendicularly toward the at least one surface of the web to apply a held ornament to the web in conjunction with an opposing die.

5,354,404

CONTROL FOR INTEGRATED TIRE BUILDING SYSTEM

Gary H. Benjamin, Kenton, Ohio, assignor to Cooper Tire & Rubber Company, Findlay, Ohio

Filed May 25, 1990, Ser. No. 529,097
Int. Cl.[5] B29D *30/20*
U.S. Cl. 156—362 10 Claims

1. In a tire building system
a carcass building drum,

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a carriage supporting said carcass building drum for rotation about its central axis,

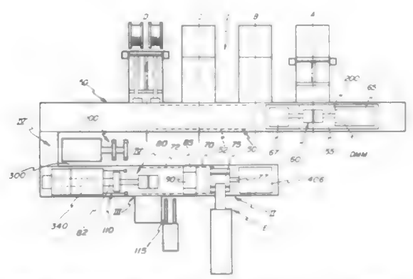
servo motor means on said carriage and connected to rotate said carcass building drum,

means including a way defining a carcass building path and supporting said carriage for movement along the path,

a plurality of programmable automatic carcass component servers arranged seriatim along one side of said way,

each said server being adapted to deliver a tire carcass component to said drum,

programmable carriage motor means for moving said carriage along said way and stopping said carriage successively in predetermined positions precisely aligned with components on said servers and to a carcass unloading position for automated sequential transfer of components from said servers onto said carcass building drum in a predetermined order,



bead ring assembly placers supported on said carriage at the ends of said carcass building drum for holding and manipulating bead ring assemblies to be incorporated into a carcass,

placer motor means for moving said placers toward the ends of said carcass building drum to set bead ring assemblies onto the ends of components overlapping the ends of said carcass building drum whereby a tire carcass of generally cylindrical shape and having inwardly extending bead areas at its ends is assembled and presented at the unloading position, and

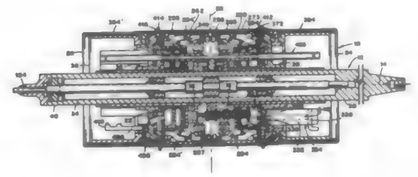
a programmable controller connected to control said carriage motor means, said placer motor means and said servers in sequential fashion to automatically construct a first stage tire carcass.

5,354,405

BEAD LOCK DRUM FOR USE IN THE MANUFACTURE OF VEHICLE TIRES

Mark S. Byerley, Greenback, Tenn., assignor to Wyko, Inc., Greenback, Tenn.

Filed Nov. 18, 1993, Ser. No. 154,813
Int. Cl.[5] B29D *30/24*
U.S. Cl. 156—415 **11 Claims**



1. A bead lock drum useful in the manufacture of preform carcasses in the process of manufacturing a vehicle tire comprising

a central shaft means

first carriage means movably mounted on one end of said shaft means,

second carriage means movable mounted on the opposite end of said shaft means,

third carriage means movably mounted on said first carriage means for independent movement of said third carriage means with respect to said first carriage means, but being capable of being carried longitudinally of said drum upon longitudinal positioning of said first carriage means with respect to said shaft means,

fourth carriage means movably mounted on said second carriage means for independent movement of said fourth carriage means with respect to said second carriage means, but being capable of being carried longitudinally of said drum upon longitudinal positioning of said second carriage means with respect to said shaft means,

fifth carriage means movably mounted on said first carriage means for independent movement of said fifth carriage means with respect to said first carriage means, but being capable of being carried longitudinally of said drum upon longitudinal positioning of said first carriage means with respect to said shaft means,

sixth carriage means movably mounted on said second carriage means for independent movement of said sixth carriage means with respect to said second carriage means, but being capable of being carried longitudinally of said drum upon longitudinal positioning of said second carriage means with respect to said shaft means,

a plurality of circumference-defining segments, said segments being divided into at least first and second sets of said segments, the segments of each of said sets being of a length which is less than one-half the overall desired width of said drum, said first set of said segments defining the outer circumference of said drum on one side of a transverse plane through said drum and said second set of said segments defining the outer circumference of said drum on the opposite side of said transverse plane,

linkage means mounting said first set of said circumference-defining segments to said first and third carriage means and mounting said second set of said circumference-defining segments to said second and fourth carriage means respectively whereby movement of said carriage means relative to one another and acting through said linkage means effects radial movement of said circumference-defining segments,

carcass means disposed about the outer circumference of said drum,

first and second ring beads disposed about said carcass adjacent respective ones of the opposite ends of said drum with one of said ring beads being in substantially circumferential alignment with, but radially spaced-apart from, respective ones of said fifth and sixth carriage means,

first and second radially expandable means disposed between said fifth and sixth carriage means, respectively, and respective ones of said first and second ring beads,

first and second camming means associated with respective ones of said fifth and sixth carriage means for urging respective ones of said expandable means radially outwardly of said drum and into engagement with said respective ones of said ring beads to thereby lock said ring beads in spaced apart relationship to one another, in concentric alignment with said shaft means, in parallelism with one another, and in a transverse plane passing through said shaft means at right angles to the length of said shaft means,

motive power means associated with said fifth carriage means for moving said fifth carriage means toward said third carriage means whereupon said first camming means associated with said fifth carriage means is urged into expanding engagement with said first radially expandable means which, in turn, expands into locking engagement with its respective ring bead,

means effecting movement of said third carriage means longitudinally inwardly of said drum to activate said first linkage means to radially expand said first set of said circumference-defining segments and simultaneously carry said ring bead locked to said fifth carriage means longitudinally inwardly of said drum,

motive power means associated with said sixth carriage means for moving said sixth carriage means toward said fourth carriage means whereupon said second camming means associated with said sixth carriage means is urged into expanding engagement with said second radially expandable means which, in turn, expands into locking engagement with its respective ring bead,

means effecting movement of said fourth carriage means longitudinally inwardly of said drum to activate said second linkage means to radially expand said second set of said circumference-defining segments and simultaneously carry said ring bead locked to said sixth carriage means longitudinally inwardly of said drum,

means for moving said first and second carriage means along the length of said shaft means simultaneously but in opposite directions whereby longitudinal movement of said first and second carriage means away from one another in a longitudinal direction serves to longitudinally separate said first and second sets of said circumference-defining segments, and longitudinal movement of said first and second carriage means toward one another serves to bring said first and second sets of segments toward one another longitudinally of said drum, and

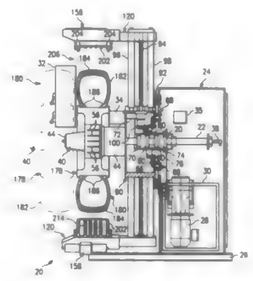
spacer means disposed about the outer circumference of said drum and between and longitudinally aligned with said sets of segments, said spacer means being removable from said drum when said sets of segments are moved away from one another and being captured between said sets of segments when said sets of segments are moved inwardly of said drum.

5,354,406

APPARATUS FOR RETREADING A TIRE

Michael J. King, Concord; Robert A. Flynn, San Francisco, and Henry Torrez, San Leandro, all of Calif., assignors to Oliver Rubber Company, Oakland, Calif.

Continuation-in-part of Ser. No. 908,228, Jul. 2, 1992, abandoned. This application Apr. 12, 1993, Ser. No. 45,914
Int. Cl.[5] B29D *30/52;* **B29C** *35/00*
U.S. Cl. 156—421.6 **19 Claims**



12. Apparatus for loading a tread mold on a prepared tire carcass having uncured retreading material located around the exterior of the tire carcass comprising:

a main axle extending longitudinally through the apparatus with an expandable hub secured to one end of the main axle;

the expandable hub providing means for releasably mounting the tire carcass on the longitudinal axle;

a plurality of arms extending radially from the main axle;

means for rotating the radial arms in unison relative to the main axle;

a plurality of tread mold supporting arms and each tread mold supporting arm engaged with an associated radial arm, each tread mold supporting arm further comprising means for moving the tread mold supporting arm radially with respect to the main axle in response to rotation of the radial arms;

means for releasably securing a mold segment to each tread mold supporting arm;

a plurality of mold segments releasably secured to a respective tread mold supporting arm and capable of being located on the retreading material; and

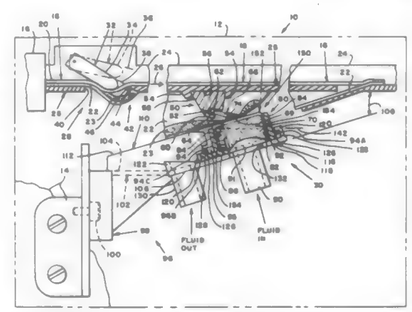
resilient retaining means encircling the mold segments for retaining the mold segments and urging the mold segments toward the retreading material.

5,354,407

ENVELOPE FLAP MOISTENING APPARATUS

David W. Hubbard, Stamford; Susan E. Perrin, Seymour; Steven A. Supron, New Haven, and Leo L. Wologodzew, Shelton, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 2, 1993, Ser. No. 85,370
Int. Cl.[5] B43M *5/00*
U.S. Cl. 156—442.1 **18 Claims**



1. Apparatus for supplying moisture to an envelope, having a body portion and a flap portion, the apparatus comprising:

(a) a substantially solid-rectangle-shaped pad made of a material capable of upwardly transferring fluid by capillary action;

(b) means for supplying fluid to the pad, the fluid supplying means including a source of supply of fluid, the fluid supplying means including an elongate well having an elongate substantially rectangularly-shaped base wall, the well including a fluid inlet tube depending from the base wall and removably connected in fluid flow communication with the fluid supply source, the well including a pair of elongate substantially rectangularly-shaped and oppositely spaced side walls, the well including a pair of substantially rectangularly-shaped and oppositely-spaced end walls extending between the side walls, the side and end walls extending upwardly from the base wall, the well including a plurality of upright posts located at spaced intervals longitudinally of the length of the base wall, the posts dividing the well into an elongate receptacle for receiving the pad and an elongate fluid inlet channel connected in fluid communication with the inlet tube, the pad removably mounted in the receptacle;

(c) means for supporting the well, the supporting means including a bracket, the well and fluid inlet channel being supported so as to be at an angle across the well and

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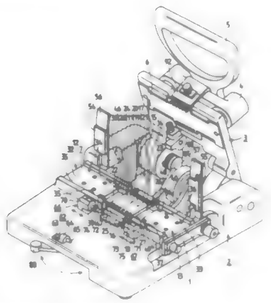
channel of about three (3) degrees from horizontal and the well removably slidably connected to the bracket to facilitate disconnecting the well therefrom, the depending inlet tube extending beneath the bracket to permit manual grasping thereof to permit slidable movement and the bracket including a base wall section to which the well is removably slidably connected, the base wall including a fluid outlet tube depending therefrom for guiding fluid overflow from the well away therefrom.

5,354,408

FILM SPLICER

Yuzo Otomine, Kanagawa; Eiji Takamizawa, and Wataru Narukawa, both of Saitama, all of Japan, assignors to Somar Corporation, Tokyo, Japan and Yugengaisha Tokyo Seiki Seisa kusho, Tokyo, Japan

Filed Dec. 9, 1993, Ser. No. 163,698
Claims priority, application Japan, Dec. 11, 1992, 4-353074
Int. Cl.[5] B65H *21/00;* **B31F** *5/06*
U.S. Cl. 156—505 **10 Claims**



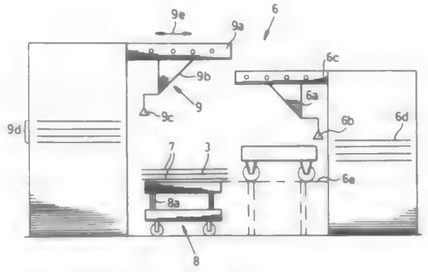
1. A film splicer comprising;
a base platform having a cutter disposed on the one side thereof for cutting each film to be spliced,
a film guiding mechanism arranged on the upper surface of said base platform,
an arm member adapted to be turnably depressed against said film guiding mechanism on the upper surface of said base platform by turnably actuating a handle for a cutter holder, the base end of said arm member being pivotally supported on said base platform,
an adhesive tape feeding mechanism for feeding an adhesive tape by unrolling a roll of adhesive tape, said adhesive tape feeding mechanism being composed of an adhesive tape unrolling member for unrolling said adhesive film from the rear position of a film splicing operation region of said film guiding mechanism, a holding member for temporarily holding the foremost end part of the unrolled adhesive film at a predetermined position forwardly spaced away from said film splicing operation region by a predetermined distance, and an opposing pair of adhesive tape folding-back members for folding back the unrolled adhesive tape at a predetermined position located directly in front of said film splicing operation region, and
a pair of tape cutters arranged on the lower surface of said arm member for cutting the unrolled adhesive tape in said film splicing operation region corresponding to the width of each film to be spliced, said tape cutters being operatively connected to said cutter holder.

5,354,409

APPARATUS FOR PRODUCING LAMINATE BOARDS

Wolfgang Götz, Krefeld-Fischeln, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Division of Ser. No. 774,962, Oct. 9, 1991. This application Sep. 25, 1992, Ser. No. 951,479
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1990, 4032400
Int. Cl.[5] B32B *31/08, 31/10, 31/20*
U.S. Cl. 156—552 **1 Claim**



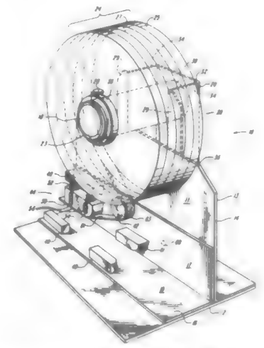
1. An apparatus for making laminate board, the apparatus comprising:
supply means including a plurality of rolls for feeding respective core-forming flexible webs in a feed direction along a transport path;
an upstream set of rollers at a first stacking location downstream of said supply means for stacking the webs to form a core having upper and lower surfaces and for pinching said core;
a downstream set of rollers pinching the core downstream of a pressing location, which is located downstream of the first stacking location, for maintaining a tension along a path over which the core extends continuously from the first stacking location through the pressing location, the tension being sufficient to prevent substantial sag of the core along the path;
control means connected to the sets of rollers for intermittently advancing the core in the feed direction along the path in steps having a length equal to a length of laminate boards to be fabricated while maintaining the tension;
means at a second stacking location between the upstream set of rollers and the pressing location for applying to at least one of the upper and lower surfaces of the core a decor cover foil of plastic or metal having substantially said length of said laminate boards to be fabricated by shifting the cover foil onto the core transversely to the feed direction during an interval between advances of the core to form a press stack from the cover foil and the core, said means for applying a cover foil including:
a platform disposed below said core,
means for depositing a cover foil on said platform from a supply of cover foils, and
means for shifting said platform beneath said core and raising said platform toward said core;
a single-level platen press at said pressing location for receiving the press stack and hot pressing the press stack to produce a laminate board from each of the press stacks between advances of the core; and
means downstream of the pressing station for cutting the laminate board from the core.

5,354,410

APPARATUS FOR APPLYING TAPE TO A FRAME FOR GLAZING

Lewis S. Cohen, Hingham, Mass.; Reid Davies, Huntington, Calif.; Michael J. Powell, Kingston, and Steve Forti, Norwell, both of Mass., assignors to Venture Tape Corporation, Rockland, Mass.

Filed Feb. 26, 1993, Ser. No. 23,324
Int. Cl.[5] B22B *31/10*
U.S. Cl. 156—552 **10 Claims**



1. Apparatus for applying tape having an adhesive layer to a member forming a component of a frame for glazing, the member having a shelf on which glazing rests when the frame is assembled, said apparatus comprising:
a spindle onto which a roll of tape is mounted, said spindle passing through a central core of the roll of tape, the roll of tape being permitted to rotate about said spindle;
means for urging the layer of adhesive of the tape against the shelf of the member as the member is advanced through said apparatus, said member being positioned such that the tape is applied only to the shelf of the member;
a first guide for aligning the shelf with the urging means with respect to a direction transverse to a direction of movement of the member through said apparatus past the roll of tape;
a second guide for guiding the shelf beneath said urging means as the member moves through said apparatus; and
a stationary lower wall spaced from said urging means and said second guide, the member being disposed between said second guide and said lower wall as the member moves through said apparatus.

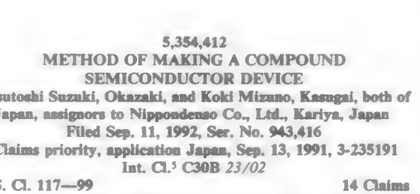
5,354,411

METHOD AND APPARATUS FOR MANUFACTURE OF WOODEN I-BEAMS

Jerry L. Lines, Tacoma, Wash., assignor to Globe Machine Manufacturing Company, Tacoma, Wash.

Continuation of Ser. No. 645,450, Jan. 24, 1991, abandoned. This application Jul. 1, 1993, Ser. No. 84,454
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—556 **21 Claims**

1. A production line assembly for manufacturing a wooden I-beam from a pair of elongated wooden chord members each having a longitudinal groove formed in one of the faces of the chord and planar wooden web members having opposite longitudinal edges, comprising:
(a) a chords and webs assembly machine including an assembly machine frame and a web conveyor arrangement connected to said assembly machine frame for conveying said web members in end-to-end relationship as a continuous web;
(b) a driving arrangement connected to said frame for driving a pair of said chords respectively along opposite sides of the continuous web with longitudinal grooves of said chords facing said web;
(c) a directing arrangement connected to said frame for directing said pair of chords towards said continuous web so that opposite sides of said web are respectively inserted into the grooves of said chords to form an interconnecting joint therebetween and thereby said wooden I-beam; and
(d) a beam driving arrangement connected to said frame for driving said wooden I-beam out of said assembly machine to effect cutting of the I-beam into a desired length;
and further including a chord feeding arrangement for feeding a pair of chords to a pair of chord infeed locations respectively disposed at an entrance end of the assembly machine along said opposite sides, said chord feeding arrangement including:



(i) a pair of chutes respectively disposed at left and right hand sides of the entrance end of the assembly machine;
(ii) a cam type flange feeder and a resiliently mounted hold-down jointly defining an inlet to the chute;
(iii) conveyor means for conveying said chords to each inlet;
(iv) means for rotating the cam type flange feeder to enable a pushing surface of each cam to engage a trailing lengthwise surface of the endmost chord on the cam and thereby simultaneously direct two or more said chords into the chute against resilient yielding movement of the hold-down, wherein said pushing surface, prior to rotation, is spaced a distance from said chute which is greater than twice the chord thickness to push said two or more chords into said chute.

5,354,412

METHOD OF MAKING A COMPOUND SEMICONDUCTOR DEVICE

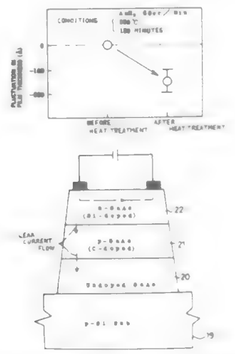
Yasutoshi Suzuki, Okazaki, and Koki Mizuno, Kasugai, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 11, 1992, Ser. No. 943,416
Claims priority, application Japan, Sep. 13, 1991, 3-235191
Int. Cl.[5] C30B *23/02*
U.S. Cl. 117—99 **14 Claims**

1. A process for fabricating a compound semiconductor device, which comprises epitaxially growing a compound semiconductor layer containing at least arsenic on a single

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crystal silicon substrate in an atmosphere obtained as an atomic or a molecular arsenic, said atmosphere being at a temperature



in the range of from 400° to 650° C. and a vacuum degree of about 0.1 Pa.

5,354,413

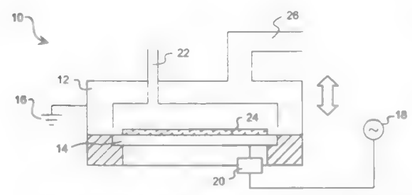
ELECTRODE POSITION CONTROLLER FOR A SEMICONDUCTOR ETCHING DEVICE

Greg A. Smesny; Roger A. Sikes, both of Austin, and Michael R. Conboy, Buda, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 18, 1993, Ser. No. 33,025

Int. Cl.[5] G01C *5/00;* **H01L** *21/00*

U.S. Cl. 156—627 **20 Claims**



1. A method for calibrating the position of an electrode within a semiconductor etching device, comprising the steps of:

providing four motors having threaded shafts placed through four corners of a moveable upper electrode and a stationary lower electrode of a semiconductor etching device;

providing a maximum upper limit and a maximum lower limit range of movement for said upper electrode;

providing four linear encoders, each linear encoder having a base and an elongated body, wherein said base is connected to said lower electrode and said body extends a spaced distance beyond an outside edge of said upper electrode;

moving said upper electrode toward said maximum lower limit until at least one of said four motors stalls;

determining how many of the four motors have stalled;

restarting the motors which have not stalled and repeating the immediately preceding two steps until all four motors have stalled;

moving said upper electrode to said maximum upper limit;

producing a cold start z-reference pulse from each said linear encoder and a cold start stream of pulses from each said linear encoder, wherein said cold start stream of pulses represents a distance between a point in which said cold start z-reference pulse is produced and said maximum upper limit; and

moving said upper electrode toward said maximum lower limit to ensure all four motors stall simultaneously at the same position and said four corners of said upper electrode are equally spaced from said lower electrode and substantially parallel to said lower electrode.

5,354,414

APPARATUS AND METHOD FOR FORMING AN INTEGRAL OBJECT FROM LAMINATIONS

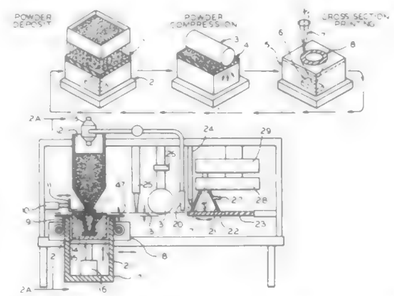
Michael Feygin, 2301 205th St., Suite 107, Torrance, Calif. 90501

Continuation-in-part of Ser. No. 253,845, Oct. 5, 1988, abandoned. This application Apr. 4, 1991, Ser. No. 671,720

The portion of the term of this patent subsequent to Jun. 21, 2005, has been disclaimed.

Int. Cl.[5] B32B *31/00;* **B27N** *3/00;* **B23K** *9/00;* **B29C** *67/00*

U.S. Cl. 156—630 **24 Claims**



1. A method of forming an integral three-dimensional object from laminations, comprising the steps of:

positioning a platform in proximity to means for forming a material into a plurality of individually contoured laminations and providing a support structure for said laminations;

providing electronic means for controlling the operation of said lamination forming and support structure providing means;

entering data representing the geometry of said three-dimensional object into said electronic means and thereafter instructing electronic means to manipulate said lamination forming and support structure providing means in a preselected sequence to perform sequential bonding and cutting of said laminations in precise registration to one another and to form a bonded support structure for said laminations, each of said individually contoured laminations representing a cross-section of said three-dimensional object; and

separating said individually contoured laminations from said support structure, obtaining as a result said three-dimensional object represented by one of said support structure and said individually contoured laminations;

said individually contoured laminations being defined by said lamination forming means through ablative removal of areas of said individually contoured laminations in a raster fashion.

5,354,415

METHOD FOR FORMING A CERAMIC CIRCUIT BOARD

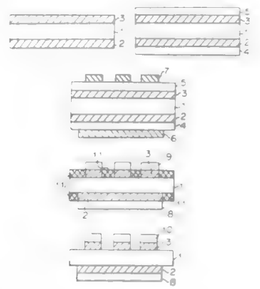
Yasuhito Fushii; Miyuki Nakamura; Yukihiko Nakajima, all of Omuta; Kazuo Kato, Machida; Akira Miyai, Machida, and Kazuyuki Hiruta, Machida, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 778,211, Dec. 16, 1991, abandoned. This application Jan. 4, 1993, Ser. No. 584

Claims priority, application Japan, Apr. 16, 1990, 2-97523

Int. Cl.[5] C23F *1/00*

U.S. Cl. 156—630 **25 Claims**



1. A method for forming a ceramic circuit board, comprising forming a metal circuit pattern on a ceramic board by means of an active metal ingredient-containing brazing material and removing an unnecessary part of the brazing material by chemical liquor treatment.

5,354,416

DRY ETCHING METHOD

Sadayuki Okudaira, 164-15, Chigasemachi-2-chome, Ome-shi; Kazunori Tsujimoto, 44-17, Sakuragaoka-3-chome, Higashiyamato-shi, and Shinichi Tachi, Sayama Niyu Taun 47-11, 2520-62, Kashiwabara, Sayama-shi, all of Japan

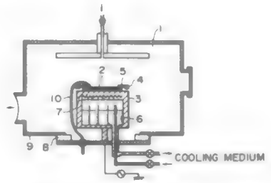
Continuation of Ser. No. 302,123, Jan. 26, 1989, abandoned, which is a continuation of Ser. No. 84,806, Aug. 13, 1987, abandoned. This application Apr. 2, 1990, Ser. No. 503,124

Claims priority, application Japan, Sep. 5, 1986, 61-207832; Apr. 24, 1987, 62-99739

The portion of the term of this patent subsequent to Jul. 24, 2007, has been disclaimed.

Int. Cl.[5] H05H *1/00*

U.S. Cl. 156—643 **26 Claims**



1. A dry etching method for etching an article, the article having a patterned photoresist mask thereon, portions of the article thus being exposed through openings in said patterned photoresist mask, comprising:

placing said article in a vessel containing an etching gas and having a predetermined overall gas pressure of 1–100 mTorr; and

etching said article, in the presence of said patterned photoresist mask, to vertically etch said portions of said article to form patterns having sidewall portions, by contacting plasma of said etching gas with said portions of said article which are exposed through said openings in said photoresist mask, while maintaining the temperature of said article above a temperature at which the vapor pressure of said etching gas molecules becomes equal to said overall gas pressure, below a temperature at which the vapor pressure of reaction product produced from the reaction of (a) neutral radicals contained in said plasma and (b) material of said sidewall portions formed during said etching of said article becomes $10^4\times$ the pressure of said overall gas pressure, wherein said particle is maintained while being contacted with said plasma of said etching gas at a temperature of −50° c. or below, so as to substantially avoid etching of said sidewall portions due to neutral radicals in the plasma of the etching gas.

5,354,417

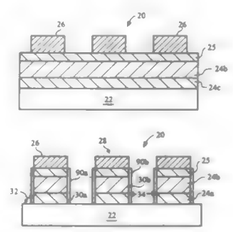
ETCHING $MOSI_2$ USING SF_6, HBR AND O_2

Ernest L. Cheung, Cupertino, and Patty H. Tsai, San Jose, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Oct. 13, 1993, Ser. No. 135,715

Int. Cl.[5] H01L *21/306;* **B44C** *1/22*

U.S. Cl. 156—643 **17 Claims**



1. A method for selectively etching a substrate having a molybdenum silicide layer with a resist material on the portions of the molybdenum silicide layer, the method comprising the steps of:

(a) placing a substrate into an etch zone;

(b) introducing a process gas comprising SF_6 and HBr into the etch zone, the volumetric flow ratio of SF_6:HBr being from about 1:10 to about 1:1; and

(c) generating a plasma in the etch zone to form an etch gas from the process gas, wherein the etch gas selectively etches the molybdenum silicide layer on the substrate.

5,354,418

METHOD FOR DRY ETCHING

Takao Kumihashi, Musashino; Kazunori Tsujimoto, Higashiyamato, and Shinichi Tachi, Sayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 34,126, Mar. 18, 1993, which is a continuation-in-part of Ser. No. 859,336, Mar. 27, 1992, Pat. No. 5,242,539. This application Jan. 3, 1994, Ser. No. 176,461

Claims priority, application Japan, Apr. 4, 1991, 3-071464; Jan. 13, 1992, 4-003675; Mar. 18, 1992, 4-061736; Mar. 26, 1992, 4-068098

Int. Cl.[5] H01L *21/306;* **B44C** *1/22;* **C03C** *15/00;* **C23F** *1/00*

U.S. Cl. 156—643 **12 Claims**

1. A dry etching method, comprising the steps of:

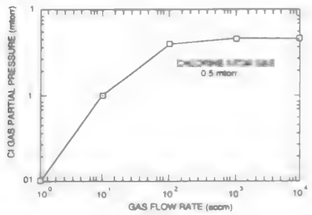
providing a body to be etched in a vacuum chamber;

supplying etching gas to the vacuum chamber; and

controlling the effective pumping speed of the vacuum

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chamber to change between a condition in which a deposit film is produced on an etching pattern side wall and



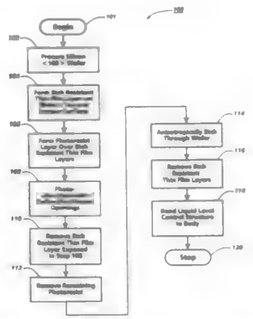
a condition in which a deposit film is not produced on an etching pattern side wall of the body.

5,354,419

ANISOTROPICALLY ETCHED LIQUID LEVEL CONTROL STRUCTURE

Babur B. Hadimioglu, Mountain View, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 7, 1992, Ser. No. 927,103
Int. Cl.[5] H01L *21/306*; B44C *1/22*
U.S. Cl. 156—644 **3 Claims**



1. A method of fabricating a liquid level control structure comprising the steps of:

procuring a wafer having crystalline planes and opposed top and bottom surfaces;

depositing resist layers on said top and bottom surfaces;

exposing a section of said bottom surface to chemical action;

anisotropically etching said wafer from said bottom surface to said top surface to form a channel having inwardly sloping side walls and

removing the resist from said top surface.

5,354,420

METHOD FOR LASER-ASSISTED ETCHING OF III-V AND II-VI SEMICONDUCTOR COMPOUNDS USING CHLOROFLUOROCARBON AMBIENTS

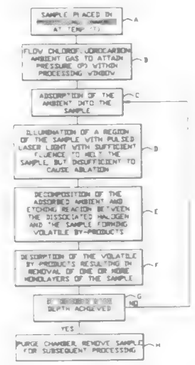
Stephen D. Russell; Douglas A. Sexton, and Richard J. Orazi, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 501,707, Mar. 29, 1990. This application Apr. 10, 1990, Ser. No. 508,317
Int. Cl.[5] B44C *1/22*
U.S. Cl. 156—643 **45 Claims**

1. A method of performing a maskless laser-assisted etching of a III-V semiconductor compound sample such as InP or GaAs in a gaseous chlorofluorocarbon ambient comprising:

placing said III-V semiconductor compound sample in contact with said gaseous chlorofluorocarbon ambient;

directing radiant energy onto said III-V semiconductor compound sample within said gaseous chlorofluorocarbon



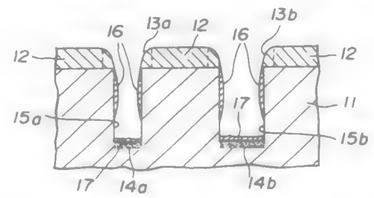
ambient to create a melted portion of said III-V semiconductor compound where the radiant energy impinges; and etching away only said melted portion of said III-V semiconductor compound within said gaseous chlorofluorocarbon ambient which have said radiant energy impinging thereon.

5,354,421

DRY ETCHING METHOD

Tetsuya Tatsumi; Shingo Kadomura, and Tetsuji Nagayama, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 22, 1992, Ser. No. 824,130
Claims priority, application Japan, Jan. 22, 1991, 3-020360
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—662 **19 Claims**



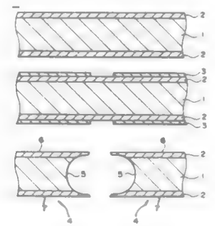
1. A dry etching method comprising etching a layer of a silicon based material using an etching gas consisting essentially of a sulfur fluoride selected from the group consisting of S_2F_2, SF_2, SF_4 and S_2F_{10}, and said etching including protecting side walls by depositing sulfur thereon.

5,354,422

PROCESS FOR PRODUCING LEADFRAME MATERIAL FOR SEMICONDUCTOR

Kazunori Kato, and Hideo Hotta, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1992, Ser. No. 849,343
Claims priority, application Japan, Mar. 12, 1991, 3-046635
Int. Cl.[5] C23F *1/02*
U.S. Cl. 156—664 **2 Claims**



1. A process for producing a leadframe for a semiconductor, comprising the steps of:

(i) providing nickel or nickel-base alloy plating layers on both sides of a base material comprising an iron-base material or a copper-base material by electroplating or chemical plating so as to have a single layer thickness in the range of from 3 to 20 μm;

(ii) applying a photoresist on both sides of the leadframe material produced in the step (i) and forming a leadframe pattern by a patterning process; and

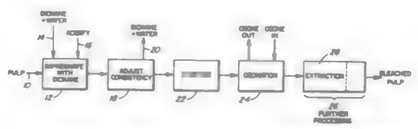
(iii) subjecting the leadframe material patterned in said step (ii) to etching.

5,354,423

OZONE DIOXANE BLEACHING OF CHEMICAL PULPS

Adriaan R. P. van Heiningen, Mouth of Keswick, and Yonghao Ni, Fredericton, both of Canada, assignors to University of New Brunswick, Fredericton, Canada

Filed Mar. 1, 1993, Ser. No. 24,058
Int. Cl.[5] D21C *9/10, 9/153*
U.S. Cl. 162—65 **5 Claims**



1. A totally chlorine-free method of bleaching a chemical pulp with ozone comprising uniformly impregnating said pulp with an aqueous medium containing at least 25% dioxane to provide an impregnated pulp, subjecting said impregnated pulp to the action of ozone at a pH of between 1.5 and 5 in an ozone bleaching stage substantially free of acetic acid to produce a totally chlorine-free bleached pulp having a viscosity equivalent to a viscosity of at least 21 mPa.s at a kappa no. of 5 for northern softwood pulps.

5,354,424

PAPER COMPOSITION AND METHODS THEREFOR

Chokyun Rha, 285 Commonwealth Ave., Boston, Mass. 02114, and Maritta Timonen, Kantelettarentie 8E 57, Helsinki, Finland

Continuation-in-part of Ser. No. 743,152, Aug. 9, 1991, and a continuation-in-part of Ser. No. 566,013, Aug. 10, 1990, abandoned, and a continuation-in-part of Ser. No. 565,346, Aug. 10, 1990, abandoned, and a continuation-in-part of Ser. No. 730,029, Jul. 12, 1991, abandoned, and a continuation-in-part of Ser. No. 464,291, Jan. 12, 1990, abandoned, and a continuation-in-part of Ser. No. 370,629, Jun. 23, 1989, abandoned, and a continuation-in-part of Ser. No. 309,387, Feb. 10, 1989, abandoned. This application Jan. 24, 1992, Ser. No. 825,037
Int. Cl.[5] D21H *17/25*
U.S. Cl. 162—135 **67 Claims**

1. A paper product treated with a degradation product of a cellulose derivative comprising a mixture of oligomers of the cellulose derivative, a majority of said oligomers having a degree of polymerization of between about 5 and about 50.

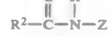
5,354,425

TISSUE PAPER TREATED WITH POLYHYDROXY FATTY ACID AMIDE SOFTENER SYSTEMS THAT ARE BIODEGRADABLE

Larry N. Mackey; Saeed Ferershtehkhou, both of Fairfield, and Jeffrey J. Scheibel, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 13, 1993, Ser. No. 165,768
Int. Cl.[5] D21H *21/22*
U.S. Cl. 162—135 **26 Claims**

1. A process for softening a tissue paper web which comprises the step of treating the web with from about 0.1 to about 3% by weight of a softener system comprising a polyhydroxy fatty acid amide having the formula:



wherein R^1 is H, C_1–C_6 hydrocarbyl, 2-hydroxyethyl, 2-hydroxypropyl, methoxyethyl, methoxypropyl or a mixture thereof; R^2 is a C_5–C_{31} hydrocarbyl group; and Z is a polyhydroxyhydrocarbyl moiety having a linear hydrocarbyl chain with at least 3 hydroxyls directly connected to the chain.

5,354,426

APPARATUS AND METHOD FOR REMOVING DEBRIS FROM FORMING WIRE

Kevin S. Rucker, Pasco, Wash., assignor to Boise Cascade Corporation, Boise, Id.

Filed Mar. 29, 1993, Ser. No. 38,009
Int. Cl.[5] D21F *1/30, 1/32*
U.S. Cl. 162—199 **19 Claims**

1. A turn-guide assembly for guiding and turning a forming wire at a wet end of a papermaking machine, the turn-guide assembly comprising:

a support structure adjacent the wet end;

at least one turn-guide mounted to the support structure upstream of and adjacent to the wet end, the turn-guide having a convex guide surface;

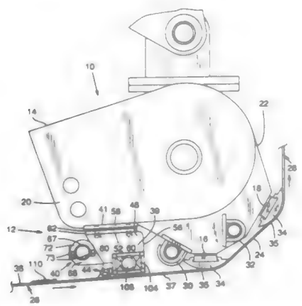
an endless forming wire movably mounted on the support structure for unidirectional travel over the convex guide surface of the turn-guide toward the wet end, the path of travel of the forming wire including a straight path portion upstream of the turn-guide and a curved path portion over the turn-guide where the wire changes direction such that the inner surface of the wire and the convex surface of the turn-guide define a nip therebetween, the nip tending to collect any debris carried into the nip on the inner surface of the wire, the forming wire along the

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straight path portion being relatively dry compared to the forming wire downstream of the straight path portion at the wet end; and

a stationary blade carried by the support structure and spaced upstream from the turn-guide along the straight path portion, the blade including a leading edge extending transversely of the forming wire throughout substantially the entire width of the wire and engaging the inner surface of the wire to remove debris from the wire as the wire moves past the blade and toward the nip of the turn-guide.

19. A method of removing debris from the inner surface of a relatively dry section of a forming wire as the wire moves toward a wet end of a papermaking machine just before the forming wire travels over a convex surface portion of a guide surface of a stationary turn-guide just upstream from the wet end in transitioning from a straight path of travel to a curved



path of travel such that a nip is formed between the inner surface of the forming wire and the guide surface of the turn-guide, the method comprising the steps:

positioning a stationary blade upstream of the turn-guide with at least an upstream-directed leading edge of the blade in contact with the inner surface of the forming wire and extending transversely across the inner surface upstream of the nip;

moving the forming wire past the blade and toward the nip while maintaining contact between the inner surface of the forming wire and the leading edge of the blade;

fluidizing the debris on the inner surface of the forming wire just upstream of the leading edge of the blade; and

thereby causing the fluidized debris to be deflected by the leading edge from the forming wire and upwardly along a leading surface of the blade.

5,354,427

MANUFACTURE OF MOULDED OBJECTS FROM A FLUIDIZED FIBER RAW MATERIAL

Torben Rasmussen, Christoffersalle 63, Lyngby, Denmark DK-[illegible]

Continuation of Ser. No. 678,995, Jun. 25, 1991, abandoned. This application Jan. 11, 1993, Ser. No. 3,213

Claims priority, application Denmark, Oct. 25, 1988, 5922/88

Int. Cl.[5] D21B *1/06, 1/08*

U.S. Cl. 162—218 **8 Claims**

1. A method for the manufacture of objects from a starting material containing fibres according to the following steps:

(a) dry grinding the starting material to break down the starting material into fibres;

(b) treating dry ground material from step (a) with liquid in a pulper to form a resultant fluidized fibre pulp material;

(c) adding additional dry ground material of the dry grinding step in portions to the pulp material already formed in the pulper, and then subjecting both of them to a pulping treatment in the pulper; and

(d) forming discrete moulded objects from said fluidized fibre pulp material by suction removal of liquid contained in said pulp material.

5,354,428

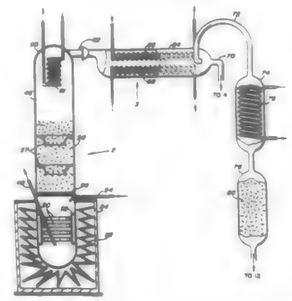
APPARATUS FOR THE CONTINUOUS ON-SITE CHEMICAL REPROCESSING OF ULTRAPURE LIQUIDS

R. Scot Clark, Fallbrook; Joe G. Hoffman, Carlsbad; John B. Davison, Mission Viejo; David W. Persichini, Oceanside; Wallace I. Yuan, Irvine; Bruce A. Lipisko, Encinitas, all of Calif.; Alan H. Jones, Scotsdale, Ariz., and Alan W. Jones, Mountain View, Calif., assignors to Athens Corp., Oceanside, Calif.

Continuation-in-part of Ser. No. 183,089, Apr. 19, 1988, Pat. No. 4,855,023, which is a division of Ser. No. 915,776, Oct. 6, 1986, Pat. No. 4,828,660. This application Jul. 25, 1989, Ser. No. 385,302

Int. Cl.[5] B01D *3/28*

U.S. Cl. 202—154 **18 Claims**



1. Distillation apparatus for the distillat on of liquids comprising;

a distillation chamber having walls;

means for heating said distillation chamber;

at least one porous annular ring within said distillation chamber and spaced from said chamber walls to act as nucleation sites and to provide smooth convective upward flow of liquid and vapor proximate to said side walls during distillation; and,

smooth convective downward flow of liquid and vapor substantially centrally of said distillation chamber during distillation.

5,354,429

NATURAL CRESYLIC ACID PROCESSING

David H. Duncan, Mandan; Gene G. Baker, Hazan; Dana J. Maas, Golden Valley; Kevin M. Mohl, Hazen, and Robert G. Todd, Dickinson, all of N. Dak., assignors to Dakota Gasification Company, Beulah, N. Dak.

Continuation of Ser. No. 802,221, Dec. 4, 1991, abandoned. This application Jul. 2, 1993, Ser. No. 86,753

Int. Cl.[5] B01D *3/14, 3/40;* **C07C** *37/74, 37/80*

U.S. Cl. 203—59 **6 Claims**

1. A process for producing a plurality of discrete fractions from a natural cresylic acid feedstock containing at least one member selected from the group consisting of a tar base substances and neutral oil substances and mixtures thereof and producing at least one of said discrete fractions substantially free of said member comprising the steps of:

a. fractionally distilling said feedstock to yield a plurality of discrete fractions each containing said member, said discrete fractions selected from the group consisting of a phenol fraction, an ortho-cresol fraction, a m,p-cresol fraction, a 2,4-2,5-xylenol fraction and a high boiling xylenols fraction, and

b. separately extractively distilling at least one of said discrete fractions with a polyhydric alcohol solvent, said solvent having a boiling point sufficiently higher than said fraction with which it is used to permit subsequent separating whereby said member is separated from said fraction in said solvent, and

c. subsequently separating said fraction from said solvent by distilling to provide a purified fraction as an overhead product and said solvent as a bottom product and recycling said solvent to step b.

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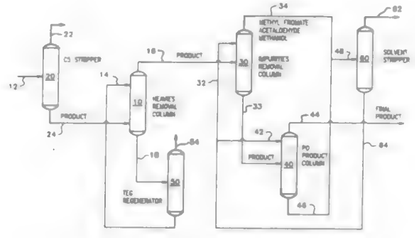
STAGED PURIFICATION OF CONTAMINATED PROPYLENE OXIDE

William K. Calbreth, III, Beaumont, Tex.; Yu-Hwa E. Sheu, Hsinchu, Taiwan, and David G. Pottratz, Austin, Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Oct. 26, 1993, Ser. No. 140,995

Int. Cl.[5] B01D *3/40;* **C07D** *301/32*

U.S. Cl. 203—64 **17 Claims**



1. A process for separating contaminating quantities of hexenes, hexanes, pentenes, pentanes, butenes, methanol, water and oxygen-containing impurities from impure propylene oxide which comprises:

fractionating said impure propylene oxide in a first distillation column under distillation conditions selected to provide a first overhead distillation fraction comprising essentially all of the pentenes, pentanes and butenes and most of the oxygen-containing and hydrocarbon impurities boiling above propylene oxide and a partially purified first propylene oxide bottoms fraction comprising propylene oxide, hexenes, hexanes, water and only residual quantities of pentenes and pentanes,

extractively distilling said first propylene oxide bottoms fraction in a second extractive distillation column in the presence of a C_2 to C_6 alkylene glycol extractive distillation agent to form a second overhead fraction comprising propylene oxide, hexenes, hexanes, water, residual quantities of pentenes and pentanes and oxygen-containing impurities boiling above propylene oxide, and a second bottoms fraction comprising the extractive distillation agent, water, methanol and oxygen-containing impurities boiling below propylene oxide,

extractively distilling said second overhead fraction in a third extractive distillation column in the presence of a C_7 to C_{10} alkane hydrocarbon extractive distillation agent to form a third overhead fraction comprising the extractive distillation agent and propylene oxide enriched with the oxygen-containing impurities boiling above propylene oxide and a third bottoms fraction comprising the extractive distillation agent, propylene oxide, hexenes, hexanes, and residual quantities of pentenes and pentanes, and

extractively distilling said third bottoms fraction in a fourth extractive distillation column in the presence of a C_7 to C_{10} alkane hydrocarbon extractive distillation agent to form a fourth overhead fraction consisting essentially of propylene oxide and a fourth bottoms fraction comprising the extractive distillation agent, hexenes, and hexanes.

5,354,431

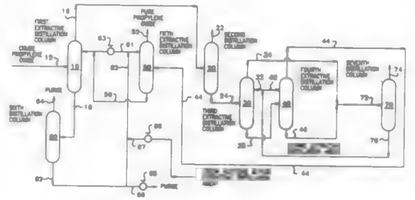
PLURAL STAGE DRYING AND PURIFICATION OF PROPYLENE OXIDE

Mark E. Taylor, Orange, Tex., assignor to Texaco Chemical Company, White Plains, N.Y.

Filed Sep. 23, 1993, Ser. No. 125,276

Int. Cl.[5] B01D *3/40;* **C07D** *301/32*

U.S. Cl. 203—64 **21 Claims**



1. A method for the purification of crude propylene oxide contaminated with minor amounts of water, C_5 and C_6 hydrocarbons and oxygen-containing impurities which comprises the steps of:

extractively distilling said crude propylene oxide in the presence of a C_2 to C_6 alkylene glycol extractive distillation agent in a first extractive distillation zone under extractive distillation conditions selected to provide a first lighter distillation fraction comprising propylene oxide, water and said hydrocarbon and said oxygen-containing impurities and a first heavier distillation fraction comprising said extractive distillation agent and a portion of the water present in the crude propylene oxide;

distilling said first lighter distillation fraction in a second distillation column, a third extractive distillation column and a fourth extractive distillation column in the presence of a C_8 to C_{10} alkane hydrocarbon extractive distillation agent under distillation conditions selected to remove said hydrocarbon and oxygen-containing impurities and to provide a fourth distillation fraction consisting essentially of propylene oxide and a minor amount of water; and

extractively distilling said fourth fraction in a fifth distillation column in the presence of a C_2 to C_6 alkylene glycol extractive distillation agent under distillation conditions selected to provide a final fifth lighter distillation fraction consisting essentially of dehydrated propylene oxide and a final fifth heavier distillation fraction comprising said extractive distillation agent, water and a minor amount of propylene oxide.

5,354,432

PROCESS FOR THE PRODUCTION OF ISOCYANATES AND FOR WORKING UP THE RESIDUE

Javier C. Arribas, Cambrils; Ciriaco D. Arribas, La Granja, and Salvador V. Rodriguez, Tarragona, all of Spain, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 15, 1992, Ser. No. 991,011

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1991, 4142769

Int. Cl.[5] B01D *3/34*

U.S. Cl. 203—68 **5 Claims**

1. A process for the production of isocyanates comprising

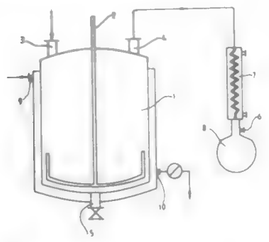
a) reacting an amine with phosgene in the presence of a solvent,

b) distilling the reaction product of a) to obtain isocyanate, solvent and a residue,

c) introducing the residue from b) into a heated vessel in which a high boiling bitumen that is inert under the distillation conditions and has a boiling point at 15 mbar which

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is at least 150° C. higher than that of the isocyanate distilled off in b) is present with stirring,

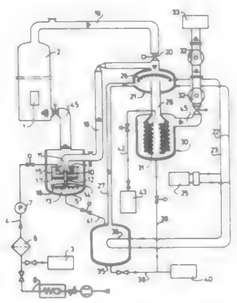


d) distilling isocyanate from the contents of the heated vessel used in c) and
e) discharging solid residue from the vessel.

5,354,433
METHOD FOR PRODUCING A FLOW OF TRIISOBUTYLALUMINUM FROM LIQUID TRIISOBUTYLALUMINUM CONTANING ISOBUTENE

Ernst H. A. Granneman, Hilversum; Laurens F. T. Kwakman, Zeist; Hans W. Piekaar, Utrecht, and Boudewijn G. Sluijk, Bilthoven, all of Netherlands, assignors to ASM International N.V., Bilthoven, Netherlands

PCT No. PCT/NL90/00042, § 371 Date Nov. 19, 1991, § 102(e) Date Nov. 19, 1991, PCT Pub. No. WO90/12900, PCT Pub. Date Nov. 1, 1990
PCT Filed Apr. 30, 1990, Ser. No. 768,319
Claims priority, application Netherlands, Apr. 9, 1989, 8900990
Int. Cl.[5] B01D *3/00*
U.S. Cl. 203—71 2 Claims

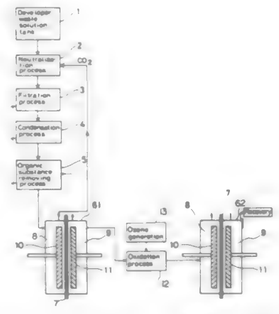


1. Method for producing a gas flow consisting essentially of triisobutylaluminum from liquid triisobutylaluminum having isobutene admixed therein, comprising preheating said liquid triisobutylaluminum to a first temperature of 30°–40° C. to evaporate said isobutene therefrom but leave said triisobutylaluminum substantially in liquid phase, separating said vaporized isobutene from said liquid triisobutylaluminum at said temperature of 30°–40° C., subsequently vaporizing at a second temperature of 40°–60° C. said triisobutylaluminum from which isobutene has been removed, said second temperature being substantially higher than said first temperature whereby an industrial grade triisobutylaluminum is obtained.

5,354,434
METHOD FOR REGENERATING TETRAALKYLAMMONIUM HYDROXIDE

Hitoshi Satoh, Okayama; Motoko Fukui, Tamano, and Chisako Kawakami, Kurashiki, all of Japan, assignors to Chlorine Engineers Corp. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 912,541, Jul. 13, 1992, abandoned. This application Dec. 15, 1993, Ser. No. 168,277
Claims priority, application Japan, Jul. 12, 1991, 3-172831; Oct. 16, 1991, 2-267677
Int. Cl.[5] C02F *1/461;* C25B *1/00*
U.S. Cl. 204—72 4 Claims



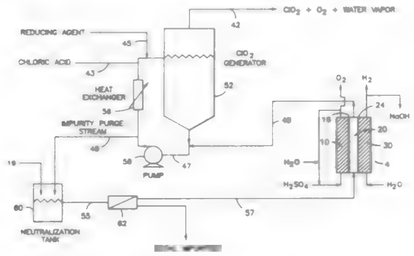
1. A method for regenerating tetraalkylammonium hydroxide by electrolysis in accordance with the following steps, wherein an aqueous solution of used tetraalkylammonium compound containing organic substances as impurities is neutralized, and after removing insoluble components by a separation membrane, said solution is supplied to an anode chamber of a first stage electrolytic cell, and electrolysis is performed, and further wherein an aqueous solution of tetraylammonium hydroxide obtained in the cathode chamber of the first stage electrolytic cell is supplied to an oxidation process to decrease the content of organic substances as impurities, and said oxidized aqueous solution is then supplied to an anode chamber of a next stage electrolytic cell.

5,354,435
EFFLUENT TREATMENT IN A PROCESS FOR PRODUCING CHLORINE DIOXIDE FROM CHLORIC ACID

Jerry J. Kaczur; David W. Cawlfield; Kenneth E. Woodard, Jr., all of Cleveland; Budd L. Duncan, Athens, and Sudhir K. Mendiratta, Cleveland, all of Tenn., assignors to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 765,078, Sep. 24, 1991, Pat. No. 5,223,101, which is a division of Ser. No. 475,603, Feb. 6, 1990, Pat. No. 5,084,148. This application Dec. 31, 1992, Ser. No. 999,419
The portion of the term of this patent subsequent to Jan. 28, 2009, has been disclaimed.
Int. Cl.[5] C25B *1/24;* C01B *11/02*
U.S. Cl. 204—95 13 Claims

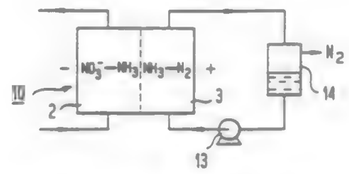
1. A process for producing chlorine dioxide which comprises:
a) feeding an aqueous solution of chloric acid to a chlorine dioxide generator,
b) reacting said aqueous solution of chloric acid with a reducing agent in the chlorine dioxide generator to produce chlorine dioxide and a spent chloric acid solution containing metallic impurities,
c) reacting a portion of said spent chloric acid solution containing metallic impurities with a basic compound selected from the group consisting of alkali metal hydroxides and alkali metal carbonates in a neutralizing zone to form a precipitate of the metallic impurities and an alkali metal chlorate solution,
d) separating said precipitate of the metallic impurities from the alkali metal chlorate solution,
e) feeding said alkali metal chlorate solution to an ion exchange compartment of an electrolytic cell having an anode compartment, a cathode compartment, and at least one ion exchange compartment between the anode compartment and the cathode compartment,
f) electrolyzing an anolyte in the anode compartment to generate hydrogen ions,
g) passing the hydrogen ions from the anode compartment through a cation exchange membrane into the ion exchange compartment to displace alkali metal ions and produce an aqueous solution of chloric acid and alkali metal chlorate,
h) passing alkali metal ions from the ion exchange compartment through a cation exchange membrane into the cathode compartment,
i) returning the aqueous solution of chloric acid and alkali metal chlorate to said chlorine dioxide generator, and
j) reacting said aqueous solution of chloric acid and alkali metal chlorate with additional aqueous solution of chloric acid and a reducing agent to produce chloride dioxide and a spent chloric acid and alkali metal chlorate solution containing metallic impurities.



5,354,436
PROCESS FOR REMOVING NITROGEN COMPOUNDS FROM A LIQUID

Daniel Van Velzen, Brebbia; Heinrich Langenkamp, Cadrezzate, both of Italy, and Ariel Moryoussef, Paris, France, assignors to European Atomic Energy Community (Euratom)

PCT No. PCT/EP90/01285, § 371 Date Jan. 31, 1992, § 102(e) Date Jan. 31, 1992, PCT Pub. No. WO91/01947, PCT Pub. Date Feb. 21, 1991
PCT Filed Aug. 6, 1990, Ser. No. 829,032
Claims priority, application European Pat. Off., Aug. 7, 1989, 89114525.2
Int. Cl.[5] C02F *1/76;* C25B *1/24*
U.S. Cl. 204—102 9 Claims

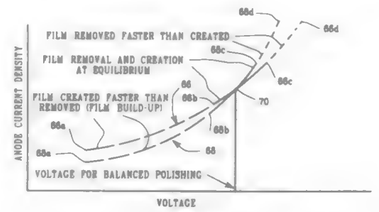


1. A process for removing nitrogen compounds from an aqueous liquid containing at least one of nitrogen oxides (NO_x) and nitrates (NO_3^-), using a device comprising an electrolytic cell divided into a cathode compartment and an anode compartment by a cation selective membrane constituted by a microporous fabric, comprising the steps of:
i) supplying the liquid to be treated as a catholyte to the cathode compartment of the electrolytic cell;
ii) circulating an anolyte containing an aqueous solution of an alkali or hydrogen halide through the anode compartment of the cell; and
iii) applying an electric current to the cell,
wherein nitrogen oxide and nitrates contained in the liquid to be treated are reduced to ammonia at the cathode, halogen gas is formed at the anode by electrolytic oxidation of the halide, ammonia formed in the cathode compartment is transported through the cation selective membrane to the anode compartment, and the transported ammonia electrolytically reacts with halogen gas in the anode compartment to form nitrogen.

5,354,437
MULTI-ELEMENT MICROELECTROPOLISHING METHOD

Peter J. Lee, Middleton, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Aug. 16, 1993, Ser. No. 107,241
Int. Cl.[5] C25F *3/16*
U.S. Cl. 204—129.1 10 Claims

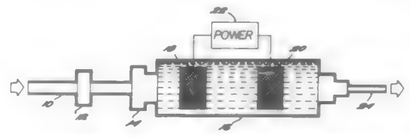


1. A method for microelectropolishing a transmission electron microscopy nonhomogeneous multi-element compound foil, comprising electrolyzing said foil at a first voltage providing faster polishing of a first element of said foil than a second element of said foil, and electrolyzing said foil at at least a second voltage providing faster polishing of said second element than said first element.

5,354,438
SEPARATION OF METAL IONS FROM AQUEOUS SOLUTIONS

Amy C. Almon, Augusta, Ga., assignor to United States Department of Energy, Washington, D.C.

Division of Ser. No. 798,779, Nov. 27, 1991, abandoned. This application Jun. 7, 1993, Ser. No. 72,408
Int. Cl.[5] G01N *27/26;* C25F *1/00*
U.S. Cl. 204—140 16 Claims



1. The method of quantitatively and selectively separating metal ions present in mixtures of said ions in an aqueous ion-containing solution, said method comprising the steps of:
passing said ion-containing solution at a controlled flow rate,

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into a flowing bulk electrolyte solution to form a combined solution;

passing said combined solution through, in sequence, a working electrode and a counter electrode located downstream from said working electrode, said electrodes each having a working surface and each being connected to an independent variable power source of an electrical potential;

maintaining said electrical potential initially at a negative value to reduce said metal ions onto said surface of said working electrode;

increasing the potential of said working electrode linearly to selectively oxidize off the plated metal ions from said working surface of said working electrode as the oxidation potential of said plated metal ions is reached, thereby separating metal ions selectively;

passing said separated metal ions away from said working electrode as effluent; and

recovering said separated metal ions as fractions.

5,354,439

PROCESS FOR THE SYNTHESIS OF FLUORINATED DERIVATIVES

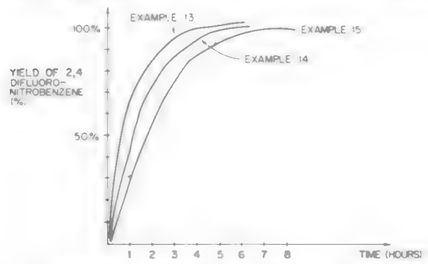
Gerard Forat; Laurent Gilbert, and Bernard Langlois, all of Lyons, France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Jul. 16, 1991, Ser. No. 730,171

Claims priority, application France, Jul. 16, 1990, 90 09023; Jul. 16, 1990, 90 09025

Int. Cl.[5] C07C *17/00*

U.S. Cl. 204—157.6 **46 Claims**



1. (Amended) A process for the synthesis of a fluorinated organic compound comprising reacting an organic compound and a fluoride compound under conditions to exchange fluorine for an atom bonded to said organic compound, wherein ultrasonic sound *in the range of from 10 to 100 kHz* is applied to said organic compound during said process *and wherein the power transmitted to the mixture via an active surface of the probe is at least 20 W/cm2.*

5,354,440

CAPILLARY ELECTROPHORESIS TECHNIQUE

Robert W. Allington, Lincoln, Nebr., assignor to Isco, Inc., Lincoln, Nebr.

Filed Nov. 29, 1988, Ser. No. 277,566

Int. Cl.[5] G01N *27/26, 27/447*

U.S. Cl. 204—180.1 **37 Claims**

1. Apparatus that includes means for detecting bands having a predetermined direction of motion in a separation medium comprising:

a light source;

a light detector;

means for positioning said light source and light detector on opposite sides of said separating medium;

said light source including a first slit through which light passes;

said detector means including a second slit for receiving light after it has passed through said medium;

said first and second slits being aligned with the predetermined direction of motion of said bands;

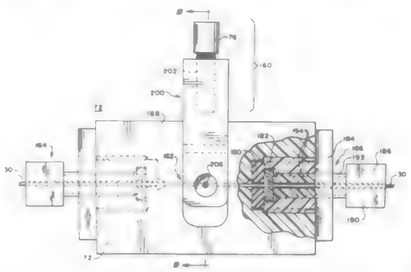
the maximum width of said first and second slits in said predetermined direction being no greater than three times the diameter of said separation medium; the minimum width of said first and second slits being no less than one-half the diameter of said separation medium;

the maximum length of said slit transverse to said predetermined direction being no greater than one hundred times the diameter of said separating medium;

the maximum length of each of said first and second slits being less than 500 micrometers, the maximum width being less than 200 micrometers, and the first and second slits being positioned at distances no greater than 1500 micrometers from each other;

a capillary tube;

means for adjusting at least one of the slits with respect to the capillary tube and means for detecting light passing through said second slit;



said separation medium being within the capillary tube and in which the distance between the slits is between one and three times the outside diameter of the capillary tube;

said capillary tube having a diameter no greater than 700 micrometers;

means for injecting samples into a first end of said tube;

said tube being substantially horizontal for a continuous portion between said means for injecting and said means for detecting with no vertical lengths having a dimension greater than one third of its length between the injecting means and the detecting means; said portion including said means for detecting at least up to the point on said capillary tube where the sensing takes place.

5,354,441

COATING COMPOSITION AND PROCESS FOR THE PRODUCTION OF COATED METAL ARTICLE

Katsuhiko Matsuo, Ibaraki; Akio Ikehira, Kobe, and Takeshi Kuninori, Sakai, all of Japan, assignors to Shinto Paint Co., Ltd., Amagasaki, Japan

Continuation of Ser. No. 600,985, Oct. 23, 1990, abandoned. This application Jul. 26, 1993, Ser. No. 96,860

Claims priority, application Japan, Oct. 30, 1989, 1-282508

Int. Cl.[5] C25D *13/00*

U.S. Cl. 204—181.1 **8 Claims**

5. A method comprising forming a coating film by the use of a coating composition and further subjecting said coating film to electrodeposition coating, said coating composition containing a resin and fine particles of an electrically semiconductive substance present in amounts sufficient to impart varistor properties to the coating film, said coating films exhibiting varistor properties represented by the following equation (1):

$$I=(V/V_1)^n \quad (1)$$

wherein I a current density (mA/cm^2); V_1 is a voltage at which a current of 1 mA begins to flow when a voltage applied to the coating film is increased; V is an applied voltage; and n is an exponent showing the non-linearity between I and V and is 1.5 or more.

5,354,442

MATRIX MODIFICATION IN THE ELECTROPHORETIC SEPARATION OF NUCLEIC ACIDS

Robert C. Allen, Palms, S.C., and Dennis J. Reeder, Gaithersburg, Md., assignors to The United States of America as represented by the Secretary of the Commerce, Washington, D.C.

Filed May 21, 1992, Ser. No. 886,289

Int. Cl.[5] G01N *27/26, 27/447*

U.S. Cl. 204—182.8 **10 Claims**

1. A method of increasing resolution and decreasing mobility of polynucleotides on an electrophoretic support for conducting electrophoresis comprising:

adding to an electrophoretic support for conducting electrophoresis, a polynucleotide resolution increasing concentration of a compound selected from the group consisting of alcohols, polyols, and monosaccharides in the presence of an ionic buffer comprising an ion selected from the group consisting of sulphate, chloride and phosphate ions of a pH of range 6–9, wherein increased resolution and decreased mobility of said polynucleotide on said electrophoretic support results.

5,354,443

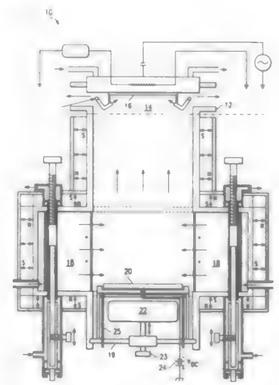
METHOD AND APPARATUS FOR PHYSICAL-VAPOR DEPOSITION OF MATERIAL LAYERS

Mehrdad M. Moslehi, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 923,193, Jul. 31, 1992, abandoned. This application Jan. 26, 1994, Ser. No. 187,777

Int. Cl.[5] C23C *14/34, 14/35*

U.S. Cl. 204—192.12 **24 Claims**



14. An apparatus for physical-vapor deposition of material layers, comprising:

a distributed electron cyclotron resonance ECR microwave plasma processing device having a process chamber and a plasma formation region;

a target stage connected to said plasma processing device, said target stage having a sputtering target material in fluid communication with said process chamber and said plasma formation region and substantially in a line of sight with a location for a semiconductor substrate within said plasma processing device, said target stage having a voltage source connected to said sputtering target material, said target stage having a magnet to generate an electromagnetic field in conjunction with said voltage source at a surface of said sputtering target material, wherein a radially inwardly directed plasma from said distributed ECR plasma device induces particles to separate from said sputtering target material, said particles move into plasma formed in said plasma formation region, and said plasma deposits said particles onto a semiconductor substrate within said process chamber.

5,354,444

ELECTRODE FOR ELECTROLYTIC PROCESSES

Takayuki Shimamune, and Yasuo Nakajima, both of Tokyo, Japan, assignors to Permelec Electrode Ltd., Kanagawa, Japan

Filed Nov. 6, 1992, Ser. No. 972,630

Claims priority, application Japan, Nov. 28, 1991, 3-338011

Int. Cl.[5] C25B *11/04*

U.S. Cl. 204—290 R **4 Claims**

1. An electrolytic electrode, comprising:

(a) an electrode substrate comprising an electrically conductive substrate and a flame sprayed oxide layer formed on the electrically conductive substrate, the flame sprayed oxide layer having a thickness of from 10 to 200 μm;

(b) an intermediate thin layer formed on the flame sprayed oxide layer, the intermediate thin film layer comprising titanium, tantalum, and platinum; and

(c) an electrode active material layer covering the intermediate thin layer,

wherein the oxide in the flame sprayed oxide layer comprises a non-stoichiometric composition containing oxygen and at least one metal selected from the group consisting of titanium, tantalum, and niobium.

5,354,445

THIN FILM-FORMING APPARATUS

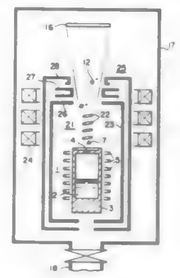
Hiroki Ito, and Naoyuki Kajita, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 806,326, Dec. 13, 1991, abandoned. This application Jul. 22, 1993, Ser. No. 95,046

Claims priority, application Japan, Dec. 19, 1990, 2-403585; Feb. 25, 1991, 3-029812

Int. Cl.[5] C23C *16/00*

U.S. Cl. 204—298.05 **17 Claims**



1. A thin film apparatus, comprising:

a crucible for holding a substance for deposition having an opening at a top portion;

a heating means for heating the crucible and vaporizing the substance therein;

an ionization means, disposed above the opening of the crucible, for generating electrons for ionizing clusters of the vaporized substance;

anode means, disposed circumferentially around the ionization means, the anode means having a positively charged voltage relative to the ionization means, the anode means for attracting the electrons generated by the ionization means, and causing the generated electrons to collide with the vaporized substance;

an acceleration means, disposed above the ionization means, for drawing ionized clusters of the vaporized substance

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towards a substrate for receiving the ionized clusters of the vaporized substance.

5,354,446

CERAMIC ROTATABLE MAGNETRON SPUTTERING CATHODE TARGET AND PROCESS FOR ITS PRODUCTION

Otojiro Kida; Akira Mitsui, and Atsushi Hayashi, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 671,801, Apr. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 318,330, Mar. 3, 1989, Pat. No. 5,110,637. This application Aug. 28, 1992, Ser. No. 936,281

Claims priority, application Japan, Mar. 3, 1988, 63-48765; Mar. 31, 1988, 63-76202; Jun. 14, 1988, 63-144827; Oct. 21, 1988, 63-264163; Aug. 1, 1989, 1-197993; Sep. 1, 1989, 1-224484; Jun. 21, 1990, 2-161413; Aug. 28, 1991, 3-242557; Aug. 28, 1991, 3-242558

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—298.22 3 Claims

1. A ceramic rotatable magnetron sputtering cathode target, comprising:

a cylindrical target holder having an outer surface and a ceramic layer as a sputtering target, which is formed on the outer surface of the cylindrical target holder, said sputtering cathode target having placed on the outer surface of the cylindrical target holder under the ceramic layer, a layer (i) of a metal or alloy having a thermal expansion coefficient of an intermediate level between the thermal expansion coefficients of the ceramic layer and the target holder, and a layer (ii) of a metal or alloy having a thermal expansion coefficient approximating the thermal expansion coefficient of the ceramic layer.

5,354,447

BIOSENSOR AND METHOD OF QUANTITATIVE ANALYSIS USING THE SAME

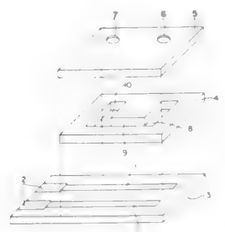
Harumi Uenoyama, and Hisashi Okuda, both of Kyoto, Japan, assignors to Kyoto Daiichi Kagaku Co., Ltd., Kyoto, Japan

Filed Dec. 11, 1992, Ser. No. 989,590

Claims priority, application Japan, Dec. 12, 1991, 3-328657

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—403 11 Claims



1. A biosensor for electrochemically detecting an electrochemically active material which is generated by a reaction of a compound in a liquid sample to be analyzed and at least a first compound which specifically reacts with said compound to be analyzed, wherein a working electrode has at least two electrode parts and the liquid sample contacts said electrode parts successively in time.

5,354,448

ELECTROCHEMICAL SENSOR

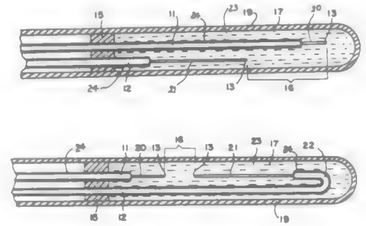
David R. Markle, Paoli, and Stuart P. Hendry, Aylesbury, England, assignors to Biomedical Sensors Ltd., High Wycombe, England

Continuation-in-part of Ser. No. 887,615, May 22, 1992, Pat. No. 5,262,037. This application Jul. 20, 1993, Ser. No. 95,232

The portion of the term of this patent subsequent to Nov. 16, 2010, has been disclaimed.

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—415 7 Claims



1. An electrochemical sensor for the determination of the partial pressure of oxygen in a blood stream comprising a cathode and an anode immersed in an electrolyte contained in a chamber defined by an oxygen gas permeable membrane, wherein each of the cathode and anode comprises an exposed, uninsulated distal portion of an elongate insulated conductor having an exposed uninsulated distal end surface and a proximal end; the elongate insulated conductors being associated with a support which positions each conductor with the insulated portion in parallel; and wherein the insulated portion of each conductor has an additional layer of insulation applied over the original insulation.

5,354,449

PH ELECTRODE

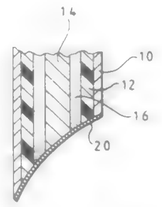
David M. Band, 88 Ditton Road, Surbiton, Surrey; David G. Penman, No. 1 Brief Street, Myatts Field, London, both of United Kingdom, and Jiri Kratochvil, 3551 S. Canyon Way, Salt Lake City, Utah

PCT No. PCT/GB92/00049, § 371 Date Oct. 13, 1992, § 102(e) Date Oct. 13, 1992, PCT Pub. No. WO91/18549, PCT Pub. Date Dec. 12, 1991

PCT Filed Jan. 2, 1992, Ser. No. 927,676

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—433 14 Claims



1. A pH electrode comprising an internal reference electrode, a layer of internal reference material and a pH sensitive polymer-based membrane, characterized in that the membrane has a limited range of pH response, and in that the internal reference material has a pH outside the range of pH response of the membrane.

5,354,450

PHOSPHOROTHIOATE COKING INHIBITORS

Youdong Tong, Houston, and Michael K. Poindexter, Sugar Land, both of Tex., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Apr. 7, 1993, Ser. No. 44,183

Int. Cl.[5] C10G *9/16*

U.S. Cl. 208—48 AA 19 Claims

1. A method for inhibiting coke formation on heat transfer surfaces used to heat or cool a petroleum feedstock at coke-forming conditions, comprising:

contacting the heat transfer surfaces with an effective amount to inhibit coke formation of a phosphorothioate of the formula $(RX)_3P{=}Y$ wherein X and Y are chalcogen, provided that when X is oxygen Y is sulfur, and each R is independently an alkyl, aryl, alkylaryl or arylalkyl group having from 1–15 carbon atoms, and two or more of R taken together can form a heterocyclic moiety.

5,354,451

FIXED-BED/MOVING-BED TWO STAGE CATALYTIC REFORMING

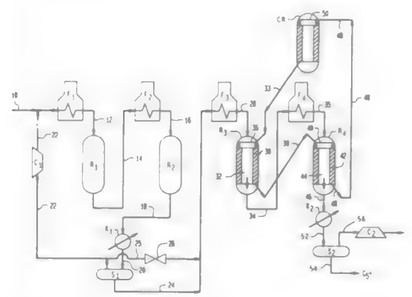
Stuart S. Goldstein, Ewell, England; Paul W. Kamienski, Basking Ridge, N.J.; David W. Staubs, Morris Plains, N.J.; Gerrit S. Swart, Westfield, N.J., and George A. Swan, III, Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Dec. 9, 1991, Ser. No. 805,360

The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.

Int. Cl.[5] C10G *35/04*

U.S. Cl. 208—65 7 Claims



1. A process for catalytically reforming a gasoline boiling range hydrocarbon reactant stream in the presence of hydrogen in a reforming process unit comprised of a plurality of serially connected reforming zones wherein each of the reforming zones contains a reforming catalyst comprised of at least one Group VIII noble metal on a refractory support, which process comprises;

(a) reforming the reactant stream in a first reforming stage comprised of one or more serially connected reforming zones containing a fixed-bed of catalyst comprised of one or more Group VIII noble metals on a refractory support, which one or more reforming zones are operated at reforming conditions which includes a pressure of about 100 to 500 psig, thereby producing a first effluent stream;

(b) passing said first effluent stream to a separation zone wherein a hydrogen-rich predominantly C_4^- hydrocarbon gaseous stream and a predominantly C_5^+ effluent stream; are produced

(c) recycling a portion of the hydrogen-rich gaseous stream to said first reforming stage;

(d) reforming the C_5^+ effluent stream, with the remaining portion of the hydrogen-rich gaseous stream, in a second reforming stage operated, in once-through hydrogen gas model and at a pressure which is at least about 50 psig lower than that of the first reforming stage, which second reforming stage is comprised of one or more serially connected reforming zones which are operated in a moving-bed continual catalyst regeneration mode, which catalyst is comprised of at one or more Group VII noble metals on substantially spherical refractory support particles, wherein the catalyst continually descends through the reforming zone, exits, and is passed to a regeneration zone where it is regenerated by burning-off at least a portion of any accumulated carbon, and wherein the regenerated catalyst is continually recycled back to the one or more reforming zones.

5,354,452

SYNTHESIS OF ZEOLITES

Eugene P. Dai; David E. Sherwood, Jr., and Burton H. Bartley, all of Port Arthur, Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 463,650, Jan. 11, 1990, abandoned. This application Oct. 19, 1992, Ser. No. 962,549

Int. Cl.[5] C10G *47/16, 45/12*

U.S. Cl. 208—111 1 Claim

1. A hydrocarbon conversion process for converting a heavy hydrocarbon vacuum bottoms charge oil into lighter products which comprises passing said heavy hydrocarbon vacuum bottoms charge oil at hydrocarbon conversion conditions into contact with a hydrocarbon conversion catalyst containing a zeolite selected from the group consisting of ultrastable Y-zeolites and superultrastable Y-zeolites characterized by

(i) a decreased unit cell size of from about 24.05 Å to less than 24.15 Å,

(ii) a Secondary Pore Size of 105 Å–190 Å,

(iii) a Secondary Pore Volume of 0.11–0.14 cc/g,

(iv) a Secondary Pore Mode of 125 Å–155,

(v) a Surface Silicon to Aluminum Atom Ratio of 24–30, and

(vi) an Acid Site Density of about 1–6.

5,354,453

REMOVAL OF H_2S HYDROCARBON LIQUID

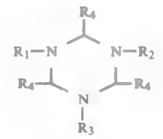
Kishan Bhatia, Katy, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Apr. 13, 1993, Ser. No. 48,358

Int. Cl.[5] C10G *29/20*

U.S. Cl. 208—236 14 Claims

1. A method of reducing H_2S and reactive S in a petroleum liquid which comprises adding to the petroleum liquid an oil soluble scavenging composition comprising a hexahydro triazine having the following formula:



where R_1, R_2, and R_3 are each independently CH_3 or alkyl groups containing from 2 to 22 C atoms, wherein at least one is an alkyl group containing from 7 to 22 carbon atoms and each R_4 is independently H, CH_3, or $CH{=}CH_2$.

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5,354,454

CONTINUOUS PROCESS FOR DEASPHALTING AND DEMETALLATING A RESIDUE FROM CRUDE OIL DISTILLATION

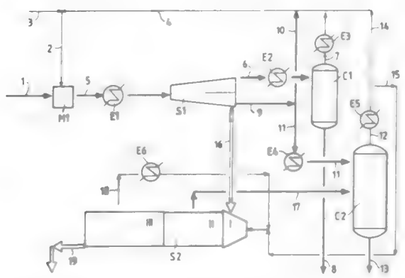
Cesar Savastano, Zelo Buon Persico; Roberto Cimino, Milan, and Salvatore Meli, Paullo, all of Italy, assignors to Eni Chem Synthesis S.p.A., Palermo, Italy

Continuation of Ser. No. 851,092, Mar. 13, 1992, abandoned. This application Apr. 19, 1993, Ser. No. 49,614

Claims priority, application Italy, Mar. 22, 1991, 000776 A/91

Int. Cl.[5] C10G *21/00*

U.S. Cl. 208—309 **11 Claims**



1. A continuous process for deasphalting and demetallating a residue, from a crude oil distillation, containing asphaltenes in an amount up to 20% by weight, which comprises the steps of:

(a) feeding a liquid stream of the residue from the crude oil distillation, the stream having an API oil gravity of about 5° to 35°, and a recycled liquid stream consisting essentially of dimethyl carbonate and optionally oil up to 10% by weight to a mixing means operating at a temperature higher than about 60° C. in order to form a homogeneous solution;

(b) cooling the homogeneous solution from step (a) to a temperature lower than about 60° C. so that phase separation occurs;

(c) feeding the cooled solution from step (b) to a decanter means in order to separate a refined light liquid phase, an extracted middle liquid phase, and a heavy liquid phase consisting essentially of the asphaltenes;

(d) submitting the light liquid phase from step (c) to a treatment in order to separate the dimethyl carbonate from a primary deasphalted and demetallated oil;

(e) partially recycling to step (a) the middle liquid phase from step (c) which phase consists essentially of dimethyl carbonate and a secondary deasphalted oil, the residual portion thereof being submitted to a treatment in order to separate dimethyl carbonate from the secondary deasphalted and demetallated oil;

(f) submitting the heavy liquid phase from step (c) to a treatment for separating the asphaltenes;

(g) recycling the dimethyl carbonate streams separated in the preceding steps to step (a); and

(h) recovering the streams consisting essentially of the asphaltenes and the primary and secondary deasphalted oils.

5,354,455

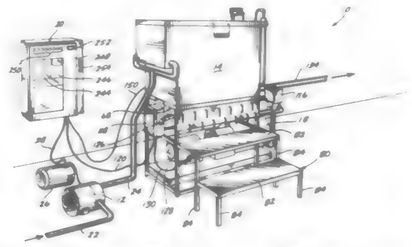
DOUBLE-DENSITY COMMERCIAL FILTERING SYSTEM

Sidney A. Burklund, Bothell, and Terry D. Olson, Auburn, both of Wash., assignors to Filtercorp Partners L.P., Woodinville, Wash.

Continuation-in-part of Ser. No. 827,944, Jan. 29, 1992, which is a continuation-in-part of Ser. No. 695,580, May 3, 1991, Pat. No. 5,143,604, which is a continuation-in-part of Ser. No. 527,566, May 22, 1990, Pat. No. 5,075,000. This application Aug. 13, 1992, Ser. No. 930,233

Int. Cl.[5] B01D *24/46, 24/48*

U.S. Cl. 210—104 **8 Claims**



1. A double-density filtering system for filtering a contaminated fluid, the double-density filtering system comprising:

a filter tank;

a variable-speed first pump for delivering an inlet flow of contaminated fluid into said filter tank;

a plurality of double-density filter cassettes removably supported within said filter tank, each of said double-density filter cassettes housing a pair of spaced filter pads to help minimize the volume of said filter tank;

a variable-speed second pump in cooperative engagement with said plurality of removable double-density filter cassettes, said second pump providing a vacuum to said double-density filter cassettes to draw the contaminated fluid through said filter pads and further providing a return flow of filtered fluid; and

a level control mechanism interactively coupled to said first pump capable to adjusting the flow rate of said first pump to maintain a substantially uniform level of fluid in said filter tank.

5,354,456

METHOD OF CONTROLLING POROSITY OF WELL FLUID BLOCKING LAYERS AND CORRESPONDING ACID SOLUBLE MINERAL FIBER WELL FACING PRODUCT

Frank Montgomery, P.O. Box 2354, Casper, Wyo. 82602; Steve Montgomery, and Paul Stephens, both of P.O. Box 31853, Lafayette, La. 70593

Division of Ser. No. 870,346, Apr. 17, 1992, Pat. No. 5,222,558. This application Mar. 26, 1993, Ser. No. 40,928

Int. Cl.[5] B01D *39/20*

U.S. Cl. 210—170 **1 Claim**

1. A fluid mineral fiber well formation face filter and plugging product for disposing on a down well geological formation face to control porosity comprising in combination, pellets of a chemical constituency including highly acid soluble mineral fibers of between 5 to 15 microns in diameter, with pellets of an average range being between 1/16 inch to ¼ inch in diameter and with fiber lengths between 1/64 inch to ¾ inch, which align fibers within the pellets to form with the pellets a down well filter mat at the formation face having a porosity controllable by down well treatment of an acid, and further comprising a binding material of the class including polymers, colloid and resins that form and stabilize quickly to form a dense mat with the soluble mineral fibers.

5,354,457

WATER TREATMENT EQUIPMENT

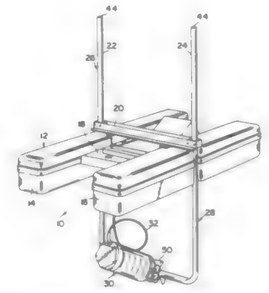
Silvano Becchi, Via Augera No. 5/A - Cadelbosco, Sopra (Reggio Emilia), Italy

Filed Mar. 9, 1993, Ser. No. 328,253

Claims priority, application Italy, Mar. 23, 1992, RE92A000020

Int. Cl.[5] C02F *7/00*

U.S. Cl. 210—170 **7 Claims**



1. A water treatment device comprising:

a floating structure;

an operative unit comprised of a propeller and a motor, said motor acting to drive said propeller;

a decompression chamber, said decompression chamber defining an air inlet and an air outlet, said propeller being located outside said decompression chamber and connected to the decompression chamber air outlet through a hollow hub; and

a suction pipe having a substantially horizontal portion and a substantially vertical portion attached to said air inlet and extending through and attached to said floating structure, wherein said operative unit is connected to said suction pipe in such a manner that the operative unit revolves about the suction pipe permitting angular adjustment in a vertical plane on said suction pipe.

5,354,458

SEQUENCING BATCH LIQUID TREATMENT

Lawrence K. Wang, Latham, N.Y.; Lubomyr Kurylko, New Providence, N.J., and Mu H. S. Wang, Latham, N.Y., assignors to International Environmental Systems, Inc., USA, Latham, N.Y.

Continuation-in-part of Ser. No. 551,543, Jul. 11, 1990. This application Apr. 20, 1992, Ser. No. 871,041

Int. Cl.[5] B01D *53/02*

U.S. Cl. 210—180 **2 Claims**

1. A manually or automatically operated sequencing batch apparatus for liquid treatment and air pollution control comprising the following means:

(a) an inlet pipe leading a contaminated liquid to an enclosed reactor of said apparatus;

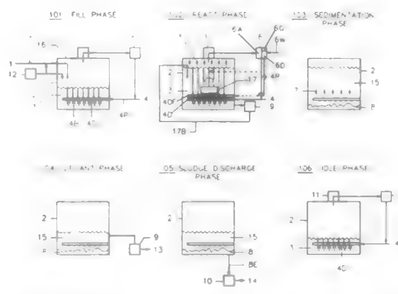
(b) said reactor connected to said inlet pipe and having vertical side walls, a removable enclosure and a bottom thereof as an outside wall of said apparatus;

(c) a chemical feeder means connected to said inlet pipe and said reactor for feeding chemicals, microorganisms, exchangers, powdered activated carbon slurry or combinations thereof to said contaminated liquid; said exchangers further comprising ferrous sulfide, or ion exchange resin, or both;

(d) mechanical mixing means inside said reactor and/or recirculating mixing means connected to said reactor for mixing the contaminated liquid with chemicals, microorganisms, powdered activated carbons, exchangers or combinations thereof inside said reactor;

(e) coarse bubbles distribution means positioned inside said reactor for generating coarse gas bubbles with diameter greater than 80 microns for biological liquid treatment in the presence of microorganisms and soluble gas required by said microorganisms, and/or for physical gas stripping of volatile organic compounds and volatile inorganic compounds from said contaminated liquid inside said reactor;

(f) fine bubbles distribution means positioned inside said reactor for generating extremely fine gas bubbles with diameter smaller than 80 microns for floating suspended substances including microorganisms, chemical flocs, oil, particulates, or combinations thereof to the liquid surface inside said reactor, thereby producing a treated reactor



effluent, a gas stream, and a sludge; said sludge further comprising microorganisms, spent exchangers, spent powdered activated carbons, contaminants, or combinations thereof;

(g) gas moving means with gas pipe and flow meter, connected to the enclosure on the top of said reactor for measuring, collecting, and moving the gas stream from the top of said reactor to a gas purification means, then to said reactor, completing a cycle,

(h) said gas purification means connected to said gas moving means and comprising a built-in adsorption unit, a built-in gas compressing unit, and a built-in gas dissolving unit, for purifying the gas stream, as well as for recycling a purified gas stream to said reactor,

(i) liquid discharge means connected to said reactor for discharging the treated reactor effluent, and

(j) sludge discharge means connected to said reactor for discharging the sludge from said reactor.

5,354,459

APPARATUS AND METHOD FOR REMOVING ODOROUS SULFUR COMPOUNDS FROM POTABLE WATER

Jerry Smith, 11673 Tank Farm Rd., Cygnet, Ohio 43413

Filed Mar. 19, 1993, Ser. No. 33,861

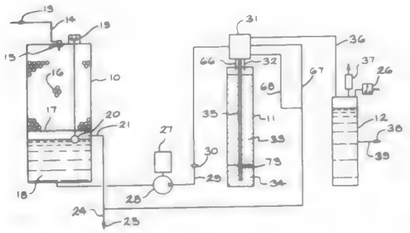
Int. Cl.[5] C02F *1/20*

U.S. Cl. 210—188 **2 Claims**

2. Apparatus for treating potable water to remove odorous sulfur compounds therefrom, said apparatus comprising a treating tank, a fogging nozzle connected to an upper portion of said treating tank and having a water inlet and an outlet for fogged water, the outlet of said fogging nozzle being operable to discharge water into the interior of said treating tank, means for directing water to be treated into the water inlet of said fogging nozzle, means for injecting compressed air into the water directed into the water inlet of said fogging nozzle at a

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pressure sufficiently high that 70 to 80 micron water droplets leave the outlet of said fogging nozzle and are discharged into the interior of said treating tank, means for controlling said means for directing the water to be treated into the inlet of said fogging nozzle to maintain a body of water in the bottom of said treating tank, a filter vessel connected to said treating tank,



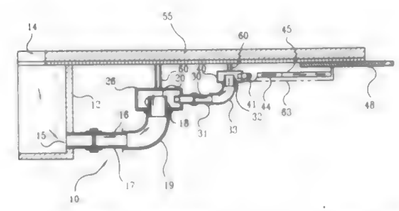
a bed of a filter medium which forms a loose bond with H_2S in said filter vessel, a de-aerating tank connected to said filter vessel, means for directing water from said treating tank through said filter bed and into said de-aerating tank, means for injecting air into water withdrawn from said treating tank before it flows through said filter bed, and means for venting gases from said de-aerating tank.

5,354,460

FLUID TRANSFER SYSTEM WITH UNIFORM FLUID DISTRIBUTOR

Michael M. Kearney; Kenneth R. Petersen, both of Twin Falls; Teunis Vervloet, Nampa, and Michael W. Mumm, Kimberly, all of Id., assignors to The Amalgamated Sugar Company, Ogden, Utah

Filed Jan. 28, 1993, Ser. No. 10,606
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—198.2 **7 Claims**



1. A uniform fluid distributor for use with a liquid transfer manifold system for maintaining an interface between liquid phases within a large scale separator system including a cell of circular cross-section into which liquid is introduced as discrete phases at an inlet zone occupying a first approximately transverse cross-sectional region of said cell whereby to develop a discrete liquid phase plug which migrates approximately longitudinally in a direction normal said first cross-sectional region towards an outlet zone occupying a second approximately transverse cross-sectional region of said cell, said manifold system including a center well, positioned approximately at the center of one of said transverse cross-sectional regions and a plurality of approximately hydraulically identical recursive step-down fluid distribution conduit systems, each including a plurality of terminal discharge ends; wherein said uniform fluid distributor, comprises:

a plurality of fan-shaped step-down nozzles connected to respective said discharge ends, a flow path in each said step-down nozzle including a fluid flow channel constructed and arranged to receive fluid flow from a said discharge end, and a plurality of orifices through which liquid entering said step-down nozzle is distributed to said cell, said orifices being arranged in a recursive pattern with respect to said flow channel whereby each orifice discharges an approximately equal portion of fluid received from said terminal end and wherein said step-down nozzles are arranged substantially engaging, side-by-side relationship in adjacent successive rings encircling said center well.

5,354,461

PACKINGS COMBINING PROTEIN TO A SUPPORT VIA A SPACER

Naoki Asakawa; Yoshiya Oda, both of Ibaraki; Yutaka Yoshida, Saitama, and Tadashi Sato, Chiba, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 837,290, Feb. 18, 1993, abandoned. This application Mar. 29, 1993, Ser. No. 39,511
Claims priority, application Japan, Feb. 20, 1991, 3-045655; May 20, 1991, 3-142724; Jul. 31, 1991, 3-213173
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—198.2 **7 Claims**



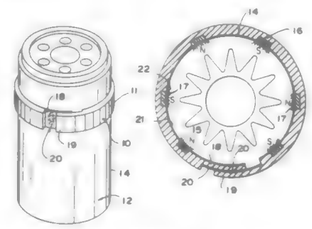
1. A packing comprising a protein bound to one end of a spacer via an amide bond and another end of the spacer bound via an amide bond to a support wherein said support is silica gel, said protein is avidin, and said spacer is a straight C_6 to C_{10} chain.

5,354,462

MAGNETIC FILTER STRAP

Richard G. Perritt, Kelowna, B.C., Canada assignor to Shane Marie Owen, Vernon, B.C., Canada

Continuation of Ser. No. 974,928, Nov. 12, 1992, which is a continuation-in-part of Ser. No. 866,985, Apr. 10, 1992, abandoned. This application Feb. 15, 1994, Ser. No. 196,798
Int. Cl.[5] B01D *35/06*
U.S. Cl. 210—223 **9 Claims**



3. A magnetic strap assembly for detachable application about the exterior of a fluid filter unit comprising:

a) a fluid filter unit having a housing and a filter means, said

housing including a cylindrical imperforate wall defining an outer peripheral surface and an inner peripheral surface, said housing further including a fluid inlet and a fluid outlet, wherein said filter means is disposed in said housing between said inlet and said outlet for filtering fluid;

b) an annular elastic, flexible band formed from nonmagnetic elastomeric material which is sized to be secured around the outer peripheral surface of said wall in an elastically stretched condition, said band comprising an elongated elastic, flexible strap having a first end and a second end, and means to attach said first and second ends to form said band; and,

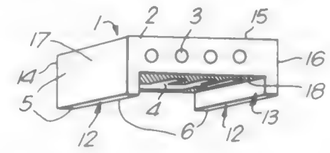
c) a plurality of permanent bar magnets secured to said elastic, flexible band at spaced intervals along a circumference of the band for attracting metal particles to said inner peripheral surface of said wall on which the band is secured.

5,354,463

DIELECTRIC FILTER

Aimo Turunen; Pauli Näppä, and Tapio Takalo, all of Oulu, Finland, assignors to LK Products OY, Kempele, Finland

Filed Jun. 25, 1992, Ser. No. 904,403
Claims priority, application Finland, Jun. 25, 1991, 913082
Int. Cl.[5] H01P *1/202*
U.S. Cl. 210—232 **11 Claims**



1. A filter (1) comprising a body of dielectric material having an upper surface (2), a lower surface (14), two side surfaces (4, 15), two end surfaces (16, 17) and at least one hole (3) which extends from the upper surface to the lower surface and an electrically conductive layer (5) covering major portions of the lower surface; one side surface, both end surfaces and the surface of said hole thereby forming a transmission line resonator, the uncoated side surface extending in a plane and having an electrode pattern (18) thereon for providing electrical signal coupling to and from the transmission line resonator, first and second parallel flanges (6) extending from the two opposing end surfaces and extending beyond the patterned side surface so as to bound the patterned side surface on two sides, said flanges each having multiple flange surfaces with one side flange surface (12) arranged for mounting said filter on a substrate (9) such that the patterned side surface spaces away from the substrate, each of the one side flange surfaces extending in a plane parallel to that of the plane of the patterned side surface and being coated with an electrically conductive material.

5,354,464

MULTI-PORT CONNECTING DEVICE

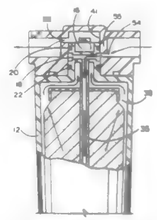
Jack P. Slovak, Incline Village, Nev.; Laurence W. Bassett, Westminster, Calif.; Robert A. Slovak, Incline Village, Nev., and David R. Spears, Laguna Niguel, Calif., assignors to Water Factory Systems, Irvine, Calif.

Filed Mar. 14, 1990, Ser. No. 494,142
Int. Cl.[5] B01D *27/08*
U.S. Cl. 210—240 **15 Claims**

1. An improved connection device for interfacing a canister having a unitary multiple-flow-path port and commonly used to house a reverse osmosis membrane or filtering media for filtering a liquid such as water in a water purification system, the unitary dual flow-path port of the canister having an input flow path and an output flow path, access to respective flow-paths being segregated by an "O"-ring seal on the canister port; the connection device comprising:

a cylindrical barrier wall configured for engaging said canister port, respective portions of said barrier wall being positioned on either side of said "O"-ring;

a plurality of flow ports extending radially outward from said barrier wall, said flow ports having respective fluid passages the axes of which are substantially co-planar; and



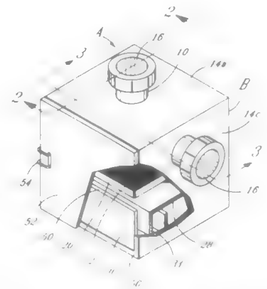
an aperture in said barrier wall in each of said flow ports in which liquid flow is enabled between said connection device and said canister, the position of each such aperture relative to the position of said "O"-ring being determinative of whether a corresponding flow port is in fluid communication with said input flow path or with said output flow path.

5,354,465

LARGE CAPACITY FILTER SYSTEM

John W. Tollison, P.O. Box 1089, Anderson, S.C. 29622

Filed Jun. 21, 1993, Ser. No. 78,631
Int. Cl.[5] B01D *35/02*
U.S. Cl. 210—305 **19 Claims**



1. A large capacity filter assembly for the removal of food particles and the like from an industrial drain line and associated water flow, said assembly comprising:

a housing having an interior and at least one housing inlet for receiving said water from said industrial drain line and a housing outlet for delivering said water from said housing interior;

a filter chamber disposed within said housing interior having a chamber outlet for delivering said water from said filter chamber;

a removable filter disposed generally horizontal in said filter chamber coextending generally across said chamber outlet for removing and collecting said food particles from said water flow;

a filter removal opening included in said housing allowing for the removal of said filter from said filter chamber;

a horizontal trap chamber disposed below said chamber outlet having an odor containment reservoir, said horizon-

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tal trap chamber being in fluid communication with said housing outlet;

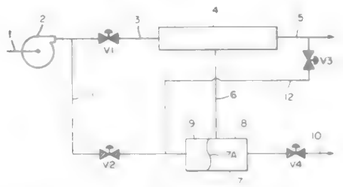
a plurality of baffles disposed within said horizontal trap chamber defining said odor containment reservoir whereby a residual amount of water flowing into said housing is retained by said baffles in said odor containment reservoir;

an airspace defined by said plurality of baffles between said odor containment reservoir and said housing outlet.

5,354,466
FILTRATION SYSTEM WITH IMPROVED BACKWASHING CAPABILITY

Toru Yunoki, Chigasaki, Japan, assignor to Millipore Corporation, Bedford, Mass.

Filed Sep. 15, 1993, Ser. No. 122,863
Claims priority, application Japan, Sep. 16, 1992, 4-270728
Int. Cl.[5] B01D *63/00*
U.S. Cl. 210—321.69 **2 Claims**



1. A system for back pulsing membrane modules which comprises:

a liquid supply source;

a feed pump in fluid communication with the supply source;

a membrane module receiving liquid from said pump through a feed conduit;

a retentate conduit receiving the unfiltered portion of the feed stream;

a filtrate conduit receiving filtrate from the membrane module;

said filtrate conduit is connected to a collection reservoir having at least two isolated liquid compartments movably separated from one another, a first compartment adapted for receiving and accumulating filtrate from said membrane module, a second compartment being connected through a conduit with said feed pump to receive fluid for driving said first compartment; means for diverting the liquid from the feed conduit into said conduit in communication with said second compartment;

an effluent conduit in fluid communication with said filtrate conduit and with said first compartment;

means for draining liquid from said second compartment; and

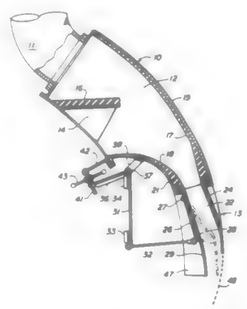
means for reversing the flow of filtrate in said first chamber back into the membrane filtration module through the filtrate conduit.

5,354,467
SIEVE BEND

Robert G. Moorhead, Blairsville, Pa., assignor to Electric Power Research Institute, Palo Alto, Calif.

Continuation of Ser. No. 343,425, Apr. 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 246,314, Sep. 12, 1988, Pat. No. 4,981,587. This application Sep. 24, 1990, Ser. No. 587,524
Int. Cl.[5] B01D *33/80*
U.S. Cl. 210—420 **15 Claims**

1. Apparatus of the bend type for separating solid particles from a liquid medium, comprising body means forming a passage extending from an upper inlet to a lower outlet end, a throat of decreasing cross sectional area at the outlet end, the side walls at the lower end of the passage having a configuration such that a substantial length of the passage is arcuate, a movable plate having a nip flap depending therefrom forming one wall of the throat, means for adjusting said plate to vary

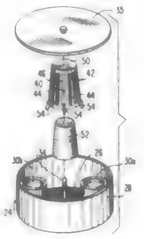


the cross-sectional flow area of the throat, and a sieve assembly depending from the lower end of the passage and disposed to receive flow from the throat.

5,354,468
SANITIZING, DEODORIZING AND CLEANING UNITS FOR EVACUATION SYSTEM FILTER TRAPS

Jeffrey H. Richards, Suffern, N.Y., assignor to Sultan Dental Products, Inc., Englewood, N.J.

Filed May 11, 1992, Ser. No. 880,933
Int. Cl.[5] B01D *27/08*
U.S. Cl. 210—448 **17 Claims**



1. A sanitizing, cleaning and/or deodorizing unit for use in an evacuation system filter trap which includes a mesh screen through which waste material passes, comprising:

a housing defining an interior space bounded by at least side wall means having openings providing fluid communication between said interior space and the ambient atmosphere;

a body of material for sanitizing, cleaning and/or deodorizing said waste material situated in said interior space of said housing; and

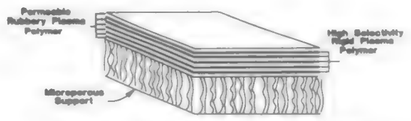
means for connecting said housing with said body of material situated in said interior space thereof to one side of said mesh screen of said filter trap, said means for connecting said housing to said mesh screen comprising at least one hook member integrally formed on one end of said housing, each of said hook members adapted to pass through a respective mesh of said mesh screen and grasp a side of said screen opposite from said screen side to which said housing is connected,

whereby waste material entering said filter trap can pass through said openings in said side wall means of said housing into contact with said body of material prior to passing through said mesh screen.

5,354,469
LAYERED PLASMA POLYMER COMPOSITE MEMBRANES

Walter C. Babcock, Bend, Oreg., assignor to Bend Research, Inc., Bend, Oreg.

Filed Jun. 14, 1993, Ser. No. 76,386
Int. Cl.[5] B01D *53/22*
U.S. Cl. 210—490 **7 Claims**



1. A laminated permselective membrane comprising alternating selective and permeable layers on a support membrane, said permeable layers having a permeability of at least twice the permeability of each adjacent selective layer, said selective layer having a selectivity of at least 50% greater than the selectivity of the adjacent permeable layer, at least 2n layers where n is ≧2 and is the number of selective layers, the thickness of each layer is less than 5 microns, the selective layers are prepared by plasma polymerization, and wherein the cumulative resistance of said selective layers is greater than or equal to 50% of the overall membrane resistance to permeation.

5,354,470
POROUS POLYPROPYLENE MEMBRANE AND METHOD FOR PRODUCTION THEREOF

Yukio Seita; Shoichi Nagaki; Ken Tatebe, all of Fuji, and Kousuke Kido, Fukuoka, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 392,988, Aug. 25, 1989, Pat. No. 5,139,529. This application Jan. 14, 1992, Ser. No. 820,481
Claims priority, application Japan, Jan. 20, 1987, 62-8982; Mar. 13, 1987, 62-56728
Int. Cl.[5] B01D *69/08*
U.S. Cl. 210—500.23 **16 Claims**

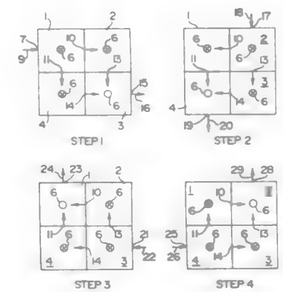


1. A porous polypropylene hollow fiber membrane constructed and arranged for artificial lung use having an oxygen gas flux in the range of 100 to 1,500 liters/mm.m^2.atom comprising a solid phase in an inner surface region thereof formed with particles of polypropylene closely fused and joined to give rise to a continuous phase while partially exposed through the surface thereof, a solid phase in an interior and an outer surface region thereof formed with particles of polypropylene interconnected in the direction of axis of fiber to give rise to a multiplicity of lumps of polypropylene, and an interstice between said solid phases having continuous pores interconnected in the form of a three-dimensional network, wherein pores on the outer surface of said membrane consist essentially of pores having a pore diameter of 1 μm or less.

5,354,471
METHOD OF TREATING WASTEWATER

Peter L. Timpany, 428 Oakridge Way SW., Calgary, Alberta, Canada T2V 1T4 , and Chester Q. Yang, 55 - 4936 Dalton Drive NW., Calgary, Alberta, Canada T3A 2E4

Filed Oct. 19, 1992, Ser. No. 963,478
Int. Cl.[5] C02F *9/00*
U.S. Cl. 210—607 **19 Claims**



1. A method of biologically treating wastewater in a system including a basin with partition means therein subdividing the basin into at least four cells arranged as a pair of contiguous cells with discrete aeration means in each cell, the method comprising the steps of: introducing the wastewater into a first said cell; discharging the wastewater from said first cell into at least two contiguous second cells, and through said at least two contiguous second cells; subjecting the wastewater in at least three cells (said first cell and second cells) to aerobic treatment by use of said aeration means; feeding the aerobically treated wastewater to the remaining (last) cell which after presettling operates as a clarifier to settle active biological solids while said aeration means is "off"; discharging the thus treated wastewater from the system; and cyclically changing the flow of wastewater through the system, whereby one said second cell on each subsequent step becomes the first cell and the other said second cell becomes the settling cell until each cell has performed each function in the sequential pattern of feed, second position, settle, second position for a total of four steps for the at least four cells.

5. A system for biological treatment of wastewater comprising: basin means; partition means subdividing said basin means into a plurality of at least four cells which are contiguous with at least two of the said cells and are connected by hydraulic connection means through said partition means; inlet means for introducing untreated wastewater selectively into each of said plurality of cells from a source thereof; discrete aerator means in each said plurality of cells for selectively aerating and then settling the contents of any said cell; outlet means in each said cell for discharging treated wastewater from the system; flow and aeration on/off schedule central control means for said system capable of directing said untreated wastewater sequentially into a first said contiguous cell, means for controlling said aeration means on for both the feed cell and said at least two contiguous cells as the wastewater flows through the feed cell and at least said two contiguous cells in opposite directions and for providing biological treatment in at least three cells prior to flowing through said hydraulic connection means to the last clarifier cell with the aeration means off for presettling and settling of biological solids prior to discharge of said treated wastewater through said outlet means; and sequential rotation means for said inlet and outlet means so that all cells function in the same four step operation pattern of feed, second position, settle, second position for each cycle of operation for said at least four cell basin means.

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5,354,472

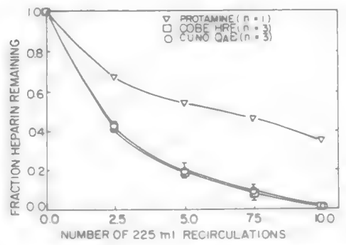
ANION EXCHANGE MATERIALS COMPRISED OF DERIVATIZED CELLULOSE-POLYESTER COMPOSITES

Marc Voorhees, Arvada; Ben F. Brian, III, Littleton, and Lloyd Forrestal, Boulder, all of Colo., assignors to Cobe Cardiovascular, Inc., Arvada, Colo.

Continuation of Ser. No. 802,185, Dec. 4, 1991, abandoned. This application Nov. 23, 1992, Ser. No. 981,912

Int. Cl.[5] **B01D** *15/08; C02J 5/20*

U.S. Cl. 210—635 **25 Claims**



1. A biocompatible anion exchange material comprised of:
polyester;
cellulose comprising a plurality of hydroxyl groups, said cellulose and polyester forming a heat entangled nonwoven blend;
quaternary ammonium functionalities covalently attached to said cellulose at least some of said hydroxyl groups; and
polyethylene oxide covalently attached to said cellulose at least some of said hydroxyl groups.

5,354,473

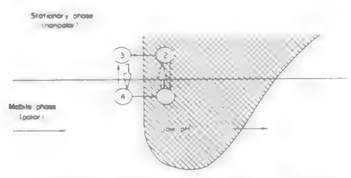
METHOD FOR CONCENTRATING A SOLUTE BY COUNTERCURRENT CHROMATOGRAPHY

Yoichiro Ito, and Hans J. Cahnmann, both of Bethesda, Md., assignors to The United States of America as represented by the Departent of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 946,613, Sep. 18, 1992, abandoned. This application Sep. 20, 1993, Ser. No. 123,033

Int. Cl.[5] **B01D** *15/08*

U.S. Cl. 210—635 **19 Claims**



14. A method for concentrating on organic solute from a mixture by countercurrent chromatography, comprising:
(a) introducing a stationary phase, comprising a non-polar organic solvent into a countercurrent chromatographic centrifuge;
(b) introducing a sample of a mixture containing an organic solute into said countercurrent chromatographic centrifuge;
(c) introducing a sufficient quantity of an acidic or basic elution peak sharpening agent that causes a pH profile to form across the stationary phase-mobile phase boundary that traps solute molecules in a sharp edge of a pH curve, so that the solute molecules elute as a sharp peak into said countercurrent chromatographic centrifuge;
(d) introducing a mobile phase into said countercurrent chromatographic centrifuge;
(e) performing countercurrent chromatographic centrifugation of said mobile phase and eluting fractions of said mobile phase from said countercurrent chromatographic centrifuge;
(f) monitoring the pH of said eluting fractions; and
(g) identifying and collecting those eluting fractions containing said concentrated solute.

5,354,474

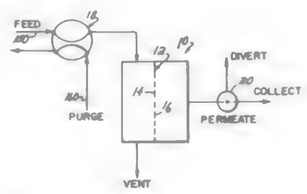
DYNAMIC MEMBRANE SEPARATION PROCESS FOR IMPROVED SELECTIVITY

Mark A. LaPack, Midland, Mich., and P. Foppe Dupuis, Axel, Netherlands, assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 772,619, Oct. 8, 1991, abandoned, which is a continuation of Ser. No. 455,471, Dec. 22, 1989, abandoned. This application Jan. 25, 1993, Ser. No. 8,104

Int. Cl.[5] **B01D** *65/08*

U.S. Cl. 210—637 **21 Claims**



1. A membrane separation process in which a non-porous semi-permeable membrane having a first side and a second side is used to separate components in a multi-component fluid feed mixture wherein a first component of said feed mixture approaches steady-state permeation of said membrane at a faster rate than a second component of said mixture, said membrane comprising at least two phases, said process comprising the steps of:
(a) introducing said feed mixture to said first side of said membrane so that said first and second components begin to approach their steady-state permeation of said membrane; and
(b) collecting from said second side of said membrane for a predetermined period of time a new mixture enriched in said first component relative to said feed mixture as a function of a difference in dynamic membrane permeability rates of said first and second components, the predetermined period of time beginning before said second component attains steady-state permeation of said membrane.

5,354,475

PROCESS FOR SEPARATING POLAR AND NON-POLAR CONSTITUENTS FROM COAL TAR DISTILLATES

Hendrik J. Bakker, Weesp, Netherlands, assignor to Cindu Chemicals B.V., Uithoorn, Netherlands

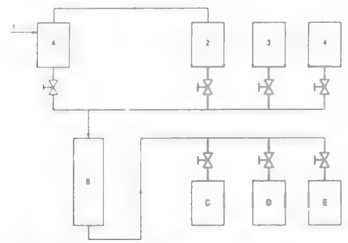
Continuation of Ser. No. 732,654, Jul. 18, 1991, abandoned. This application Jul. 1, 1993, Ser. No. 86,353

Int. Cl.[5] **B01D** *15/08*

U.S. Cl. 210—656 **10 Claims**

1. A process for separating polar and non-polar constituents from coal tar distillates, comprising passing said distillates over a separation column together with an eluting agent, which comprises mixing a tar oil distillate with a non-polar solvent,

passing this mixture over a separation column which contains a silica gel or alumina stationary phase and eluting with a non-polar solvent, the eluting agent being collected together with the substances dissolved therein, followed by eluting with a more polar eluting agent or with a plurality of eluting agents of increasing polarity, and separately collecting the more polar eluting agent or the plurality of eluting agents of increasing



polarity, together with the substances dissolved therein, followed by isolating the substances dissolved in the non-polar solvent and in the polar eluting agent, respectively, utilizing known techniques with the proviso that the polar eluting agent is not a halogenated aromatic hydrocarbon, and that the polarity of the nonpolar solvent and the polar eluting agent provides that a wide range of polarity can be obtained.

5,354,476

METHOD OF TREATING WATER

Nami Kubo, Otsu; Masaru Noyori, Moriyama; Shigeki Mori, Kusatsu, and Tsukasa Ito, Inabe, all of Japan, assignors to Toray Industries, Inc., Japan

Continuation of Ser. No. 646,718, Mar. 11, 1991, abandoned. This application Dec. 11, 1992, Ser. No. 989,926

Claims priority, application Japan, May 24, 1989, 1-130777; Jun. 27, 1989, 1-164177

Int. Cl.[5] **C02F** *1/42*

U.S. Cl. 210—679 **12 Claims**

1. A method of treating water using a precoated filter which includes a precoating material coated on a support element comprising:
a) forming a coating on said support element by
i) applying a cation-exchange resin in the form of power to the support element,
ii) applying anion-exchange resin in the form of power to the support element,
iii) applying ion-exchange fibers each of which includes an ion exchange polymer having a reinforcing polymer to the support element, and
b) passing water through the resins, the fibers and the support element.

5,354,477

LOW MOLECULAR WEIGHT AMINES AND AMINE QUATERNARIES FOR THE REMOVAL OF SOLUBLE ORGANICS IN OIL FIELD PRODUCED WATER

Thomas E. Rush, Richmond, Tex., assignor to Champion Technologies, Houston, Tex.

Filed Apr. 7, 1992, Ser. No. 864,943

Int. Cl.[5] **C02F** *1/54*

U.S. Cl. 210—708 **11 Claims**

1. A method of removing water soluble organics from a flowing mixture of oil and water produced from a flowing oil well which method comprises the steps of:
(a) adding a blend of a strong acid with an amine to the flowing commingled oil and water from the producing well;
(b) adjusting the pH of the water in the flowing oil and water mixture to a pH of about 6.0 or less;
(c) intimately mixing the added acid and amine in the flowing water; and
(d) separating the oil and water while holding water soluble organics in the oil phase on separation.

5,354,478

ALKALI METAL BOROHYDRIDE/ANIONIC POLYMER SOLUTIONS

Jeffrey A. Ulman, Beverly, Mass.; Walter Verstraeten, Mechelen, Belgium; Michael A. Cook, Boxford, Mass.; Willy Verleye, Brasschaat, Belgium, and Lawrence J. Guilbault, Topsfield, Mass., assignors to Morton International, Inc., Chicago, Ill.

Filed Jun. 9, 1993, Ser. No. 74,173

Int. Cl.[5] **C02F** *1/62, 1/70*

U.S. Cl. 210—716 **21 Claims**

1. A composition consisting essentially of, by weight, at least about 5% alkali metal borohydride, at least about 20% alkali metal hydroxide, water, and from about 0.05 to about 1.0% anionic polymer or oligomer.

5,354,479

METHOD FOR PURIFYING PROCESS WATER OR WASTEWATER CONTAINING WOOD RESIN

Magnus Wretborn; Arne Andersson, both of Stenungsund, and Gunnar Göransson, Lilla Edet, all of Sweden, assignors to EKA Nobel AB, Surte, Sweden

Filed Apr. 30, 1993, Ser. No. 54,251

Claims priority, application Sweden, May 5, 1992, 9201398-6

Int. Cl.[5] **C02F** *1/56*

U.S. Cl. 210—728 **9 Claims**

1. A method for purifying a process water or a wastewater which contains a wood resin, the method comprising:
adding a high-molecular-weight polyethylene oxide and a water-soluble non-ionic cellulose ether to the process water or the wastewater in an amount sufficient to flocculate the wood resin therein, wherein said polyethylene oxide has a molecular weight above 500,000, and is added in an amount of at least 1 mg/l of water to the process water or the wastewater, and the non-ionic cellulose ether is added in an amount of at least 3 mg/l of water to the process water or the wastewater, and
separating the flocculated wood resin from the process water or the wastewater.

5,354,480

IMPROVED METHOD OF DEWATERING SLUDGE

Peter M. Robinson, Columbus, and Nguyen Van-Det, Midland, both of Ga., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 747,302, Aug. 19, 1991, Pat. No. 5,110,864, which is a division of Ser. No. 488,312, Mar. 5, 1990, Pat. No. 5,081,182, which is a continuation-in-part of Ser. No. 864,365, May 19, 1986, abandoned. This application Feb. 18, 1992, Ser. No. 837,742

Int. Cl.[5] **C02B** *1/20;* **C02C** *3/00*

U.S. Cl. 210—734 **11 Claims**

1. A method of dewatering sludge which comprises contacting sludge with a dewatering effective amount of a flocculant comprising a water-soluble cationic copolymer in the aqueous phase of a water-in-oil emulsion wherein the copolymer comprises (a) at least 30 mole % of repeating units derived from a water-soluble nonionic monomer and (b) repeating units derived from a cationic monomer, wherein the copolymer is prepared by (i) preparing an aqueous solution of the nonionic monomer and about 15 to about 85 weight percent of the total cationic monomer, (ii) emulsifying the aqueous solution in a sufficient quantity of hydrocarbon oil to form a water-in-oil emulsion at an emulsion temperature, (iii) adding the balance of the cationic monomer to the emulsion in the substantial absence of polymerization during the addition, and (iv) polymerizing the monomers at a polymerization temperature.

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5,354,481

WATER-SOLUBLE HIGHLY BRANCHED POLYMERIC MICROPARTICLES

Roger E. Neff, Stamford, and Roderick G. Ryles, Milford, both of Conn., assignors to Cytec Technology Corp., Stamford, Conn.

Continuation of Ser. No. 552,958, Jul. 16, 1990, abandoned, which is a division of Ser. No. 285,931, Dec. 19, 1988, abandoned. This application May 13, 1993, Ser. No. 65,793

Int. Cl.[5] C02F *1/56*

U.S. Cl. 210—734 **8 Claims**

1. A method of releasing water from a dispersion of suspended solids which comprises (a) adding to the dispersion from about 0.1 to about 50,000 parts, per million parts of dispersion solids, of an aqueous solution of a branched, water-soluble, high molecular weight polymer derived from an inverse microemulsion which contains aqueous droplets containing said polymer, said droplets having an average diameter of less than about 0.1 micron and said polymer having a solution viscosity of greater than 1.8 mPa.s, a solubility quotient of at least about 30 percent, and a branching agent content of at least about 4 molar parts per million, based on the monomeric solids units in the polymer, and (b) dewatering the mixture of the dispersion of suspended solids and the flocculant.

5,354,482

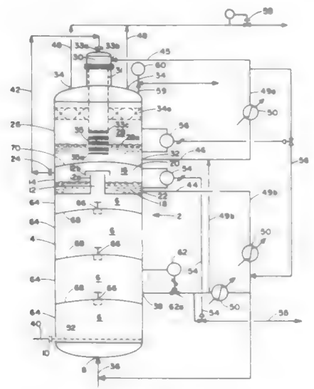
PROCESS AND APPARATUS FOR OXIDIZING INDUSTRIAL SPENT CAUSTIC AND EFFECTING GAS-LIQUID MASS TRANSFER AND SEPARATION

Tamas Varadi, Houston, Tex., assignor to Merichem Company, Houston, Tex.

Filed May 7, 1993, Ser. No. 59,454

Int. Cl.[5] C02F *1/74*

U.S. Cl. 210—742 **20 Claims**



1. In the process of oxidizing industrial spent caustic in a processing tower of the type wherein an oxidation zone chamber provides contact between the spent caustic and an oxidizing gas, the improvement comprising:

oxidizing the spent caustic in a lower chamber of a unitary processing tower providing an oxidation zone wherein the spent caustic is contacted with an oxidizing gas;

communicating the caustic and gas from the lower chamber to a middle chamber; separating the spent caustic and gas in the middle chamber, wherein the caustic collects in the bottom of the chamber and the gas collects above the caustic; transporting the gas from the middle chamber through a conduit to an upper chamber;

transporting the caustic from the middle chamber into a lower recycle conduit with means for cooling the caustic before it is transported to a destination selected from a group consisting of an upper recycle conduit, the lower chamber, and an offloading conduit;

introducing the gas and cooled caustic from the upper recycle conduit into the upper chamber through a mass transfer apparatus that effects contact between the gas and cooled caustic and cleans the gas;

allowing the caustic and cooled gas to separate in a gas-liquid separation zone in the upper chamber;

transporting the clean gas from the upper chamber; and

transporting the caustic from the upper chamber into the upper recycle conduit.

5,354,483

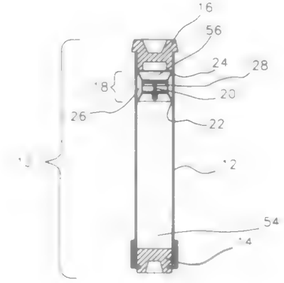
DOUBLE-ENDED TUBE FOR SEPARATING PHASES OF BLOOD

Martin L. Furse, Vancouver, Canada, assignor to Andronic Technologies, Inc., Mississauga, Canada

Filed Oct. 1, 1992, Ser. No. 955,341

Int. Cl.[5] B01D *21/26*

U.S. Cl. 210—789 **5 Claims**



1. A method of partitioning a pre-selected phase of a sample of liquid having a plurality of phases of differing densities, comprising the steps of:

(a) introducing said sample of liquid through a first end of a tube and into a first chamber of said tube, said first chamber being separated from a second chamber located at a second opposed end of said tube by a separating element, said second chamber being initially free of the liquid, said separating element slidably engaging the interior surface of the tube in an essentially fluid-tight manner and having a valved flow-restriction orifice therein to permit fluid flow communication between the first and second chambers;

(b) ordering the phases of the sample within the tube and about the long axis of the tube using axial centrifugation; and

(c) while the phases are ordered, reducing the volume of the first chamber by movement of the separating element within the tube, and

(d) moving the valve relative to the orifice such that one phase of the liquid in the first chamber flows through the flow-restriction orifice and into the second chamber as the volume of the first chamber is reduced, said phase in the second chamber being removable therefrom through the second end of the tube.

5,354,484

PHOSPHORUS-CONTAINING LUBRICANT AND FUNCTIONAL FLUID COMPOSITIONS

James J. Schwind, Eastlake, and Stephen A. Di Biase, Euclid, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 874,267, Jun. 13, 1986, abandoned. This application Jun. 7, 1990, Ser. No. 534,830

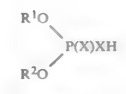
Int. Cl.[5] C01M *141/10, 141.12*

U.S. Cl. 252—32.5 **57 Claims**

1. A lubricating or functional fluid composition having improved high temperature stability comprising

(A) a major amount of an oil of lubricating viscosity, and a minor amount of

(B-1) at least one soluble tertiary aliphatic primary amine salt of a substituted phosphoric acid composition characterized by the formula



(I)

wherein R^1 is hydrogen or an aliphatic hydrocarbyl group, R^2 is an aliphatic hydrocarbyl group, and both X groups are either O or S, and

(C) at least one soluble nitrogen- and boron-containing compound prepared by the reaction of

(C-1) at least one boron compound selected from the class consisting of boron trioxide, boron halides, boron acids, boron anhydrides, boron amides and esters of boron acids with

(C-2) at least one soluble acylated nitrogen intermediate prepared by the reaction of a hydrocarbon-substituted succinic acid-producing compound with at least about one-half equivalent, per equivalent of acid producing compound, of an amine containing at least one hydrogen attached to a nitrogen atom.

5,354,485

LUBRICATING COMPOSITIONS, GREASES, AQUEOUS FLUIDS CONTAINING ORGANIC AMMONIUM THIOSULFATES

Craig D. Tipton, Perry; Daniel E. Barrer, Euclid; Nai Z. Huang, Mayfield Heights, and John M. Cahoon, Mentor, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Mar. 26, 1993, Ser. No. 37,916

Int. Cl.[5] C10M *133/52, 133/54*

U.S. Cl. 252—34 **25 Claims**

1. A lubricating composition comprising a major amount of an oil of lubricating viscosity, and (A) an organic ammonium thiosulfate, wherein said lubricating composition is free of additives which contain lead.

5,354,486

PHENOL GROUP-CONTAINING COMPOUNDS AS ANTI-OXIDANTS IN ORGANIC MATERIALS

Samuel Evans, Marly, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 8,060, Jan. 22, 1993, abandoned, which is a continuation of Ser. No. 827,907, Jan. 30, 1992, abandoned, which is a continuation of Ser. No. 423,167, Oct. 18, 1989, abandoned. This application Aug. 30, 1993, Ser. No. 114,115

Claims priority, application Switzerland, Oct. 25, 1988, 3959/88

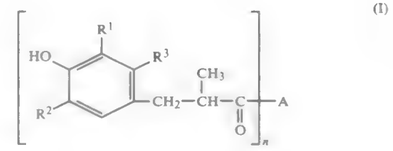
Int. Cl.[5] C10M *129/76*

U.S. Cl. 252—57 **6 Claims**

1. A composition comprising

(a) at least one functional fluid subject to oxidative, thermal or actinic degradation, and

(b) at least one compound of formula I



(I)

wherein

R^1 is alkyl having 1 to 8 carbon atoms, cyclohexyl or phenyl,

R^2 is hydrogen, alkyl having 1 to 8 carbon atoms, cyclohexyl or phenyl,

R^3 is hydrogen,

n is 1, and

A is $—OR^4$ where R^4 is hydrogen or alkyl having 9 to 18 carbon atoms.

5,354,487

SOLID LUBRICANT AND COMPOSITION

Nobuo Aoki; Shinichiro Suzuki, and Hisatake Sato, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Japan

Filed Apr. 5, 1991, Ser. No. 681,874

Claims priority, application Japan, Apr. 6, 1990, 2-91500; Apr. 6, 1990, 2-91501

Int. Cl.[5] C10M *107/14, 107/38;* **C08L** *5/00*

U.S. Cl. 252—58 **8 Claims**

1. A solid lubricant comprising a fluorinated cured product resulting from crosslinking more than 10% of vinyl bonds in a butadiene polymer having a vinyl bond content of not less than 20% by mol in terms of its monomeric unit and subsequently from treating with a fluorinating agent, said butadiene polymer having a number-average molecular weight from 500 to 100,000 and said fluorinated cured product being fluorinated to have a fluorine atom content in the range of 0.1 to 50% by weight.

5. A composition comprising a lubricating oil, a synthetic resin or a rubber and a solid lubricant comprising a fluorinated cured product resulting from crosslinking more than 10% of vinyl bonds in a butadiene polymer having a number-average molecular weight from 500 to 100,000 and a vinyl bond content of not less than 20% by mol in terms of its monomeric unit and subsequently from treating with a fluorinating agent, said fluorinated cured product being present in the range of 0.01 to 50 parts by weight of said lubricating oil, in the range of 0.01 to 60 parts by weight per 100 parts by weight of said synthetic resin, or in the range of 0.01 to 60 parts by weight per 100 parts by weight of said rubber.

5,354,488

FLUID RESPONSIVE TO A MAGNETIC FIELD

Emil M. Shtarkman, Southfield, Mich.; John A. Starkovich, Redondo Beach; William W. Davison; Hsiao-Hu Peng, both of Los Angeles, and Thomas J. Fitzgerald, Rossmoor, all of Calif., assignors to TRW Inc., Lyndhurst, Ohio

Filed Oct. 7, 1992, Ser. No. 957,693

Int. Cl.[5] H01F *1/28;* **F16F** *6/00*

U.S. Cl. 252—62.56 **19 Claims**

1. A rheological fluid composition which is responsive to a magnetic field, said fluid comprising:

a vehicle;

magnetizable particles suspended in said vehicle; and

a dispersant comprising small, non-magnetizable, dispersant particles which are insoluble in the vehicle, having no dimension greater than 10 nanometers, in an effective amount to provide a thin coating of dispersant particles on the surface of each of the magnetizable particles;

said dispersant particles being reversibly bonded to the surface of the magnetizable particles.

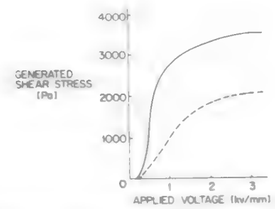
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5,354,489

METHOD FOR CHANGING THE VISCOSITY OF A FLUID COMPRISING A LIQUID CRYSTAL COMPOUND

Akio Inoue, and Syunji Maniwa, both of Shizuoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 28, 1991, Ser. No. 751,052
Claims priority, application Japan, Aug. 30, 1990, 2-226653; Feb. 20, 1991, 3-026283; Feb. 21, 1991, 3-027371
Int. Cl.[5] C10M *171/00;* C09K *19/00*
U.S. Cl. 252—73 18 Claims



1. A method for changing the viscosity of a fluid of a liquid crystal compound comprising a molecular chain having at least two liquid crystal groups bonded thereto either directly or via a spacer, which comprises applying a voltage to said liquid crystal compound under a shear rate within a temperature range where said liquid crystal compound exhibits a liquid crystal phase.

5,354,490

SLURRIES FOR CHEMICAL MECHANICALLY POLISHING COPPER CONTAINING METAL LAYERS

Chris C. Yu, and Trung T. Doan, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Division of Ser. No. 893,448, Jun. 4, 1992, Pat. No. 5,225,034. This application Mar. 29, 1993, Ser. No. 38,460
Int. Cl.[5] C09K *13/00*
U.S. Cl. 252—79.1 4 Claims

1. A chemical mechanical polishing slurry comprising:
a liquid semiconductor processing chemical-mechanical polishing slurry having suspended solids, the slurry comprising $AgNO_3$ at from about 2% to 15% by volume, H_2O_2, H_2O, and the suspended solids comprising a solid abrasive material.

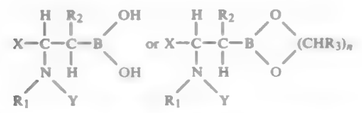
5,354,491

LIQUID DETERGENT COMPOSITIONS CONTAINING PROTEASE AND CERTAIN β-AMINOALKYLBORONIC ACIDS AND ESTERS

David W. Bjorkquist, Wyoming, and Rajan K. Panandiker, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 14, 1992, Ser. No. 931,190
Int. Cl.[5] C11D *3/386, 3/02*
U.S. Cl. 252—135 18 Claims

1. A liquid laundry detergent composition, comprising:
a. from about 0.001 to 10 weight % of a β-nitrogen-containing alkylboronic compound of the following structure:



where R_1, R_2, and R_3 are independent hydrogen or C_1–C_4 alkyl; X is aryl, substituted aryl or C_1–C_6 alkyl; Y is selected from the group consisting of hydrogen, amine protecting group, and amino acid, dipeptide or tripeptide linked through the C-terminal carboxylic acid; and n is 2–4;
b. from about 0.0001 to 1.0 weight % of active proteolytic enzyme; and
c. from about 1 to 80 weight % of detersive surfactant.

5,354,492

AQUEOUS CLEANING SOLUTIONS FOR REMOVING UNCURED URETHANE RESIN SYSTEMS FROM THE SURFACES OF PROCESSING EQUIPMENT

Sidney M. Short, Fredonia, Wis., assignor to Cook Composites and Polymers Company, Port Washington, Wis.

Filed Sep. 4, 1992, Ser. No. 940,677
Int. Cl.[5] C11D *7/22*
U.S. Cl. 252—162 8 Claims

1. An aqueous cleaning solution for removing an uncured polyurethane resin system comprising an isocyanate and a polyol from a surface, the aqueous solution consisting of, based on the weight of the solution, between about:
A. 60 and about 98 wt % water;
B. 1 and 12 wt % of at least one dibasic ester; is of the formula:

$$R_1COO—R—COOR_1$$

wherein: R is an alkylene or an inertly-substituted alkylene radical of 1 to about 12 carbon atoms, and each R_1 is independently an alkyl or an inertly-substituted alkyl radical of 1 to 6 carbon atoms.
C. a catalytic amount and about 25 wt % of a catalyst comprising at least one of a primary, secondary or tertiary amine, a five-membered ring lactam, and a six-membered, primary, secondary or tertiary morpholine ring for promoting a reaction between the isocyanate and water; and
D. 1 and 10 wt % of a surfactant comprising at least one of ethoxylated alkyl phenols, polyethoxylated alcohols and linear aliphatic ethoxylates.

5,354,493

PROCESS FOR THE PRODUCTION OF SURFACTANT-CONTAINING GRANULATES

Elmar Wilms, Dormagen, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP89/01206, § 371 Date Jun. 21, 1991, § 102(e) Date Jun. 21, 1991, PCT Pub. No. WO90/04629, PCT Pub. Date Mar. 5, 1990
PCT Filed Oct. 12, 1989, Ser. No. 678,358
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1988, 3835918
Int. Cl.[5] C11D *11/00, 1/72, 3/12*
U.S. Cl. 252—174.21 21 Claims

1. A process for the production of free flowing granulates having a high apparent density containing a nonionic surfactant selected from the group consisting of polyglycol ether derivatives, a finely-divided solid at least 65% by weight of which is water-insoluble, and water, consisting essentially of (a) mixing said nonionic surfactant with water until a viscous gel phase is formed, and (b) thereafter adding to said gel phase said solid in powder form and mixing the resulting mixture at room temperature until granulates are formed, wherein the ratio by weight of said nonionic surfactant and said water in the gel phase to said solid, as anhydrous substance, is from about 25:75 to about 65:35.

5,354,494

REACTIVE SILANE COMPOSITION AND PROCESS FOR ENHANCED DRAINAGE OF RESIDUAL AQUEOUS RINSE ON THE EXTERNAL SURFACES OF PLASTIC PARTS

Barry P. Gunagan, Hatboro; Jeffrey I. Melzer, Lansdale; Edward A. Rodzewich, Flourtown, all of Pa., and Robert A. Iezzi, Vincentown, N.J., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Jan. 21, 1992, Ser. No. 823,217
Int. Cl.[5] C11D *3/02, 3/43;* C09D *183/16*
U.S. Cl. 252—174.15 6 Claims

1. A process for enhancing the drainage of residual aqueous rinse water from the external surfaces of plastic parts comprising contacting an aqueous solution from about 0.01% to about 50% by weight to said plastic parts of an amine functional silane compound wherein the amino-functional silane reacts with and remains attached to the surface of the plastic thereafter subjecting the plastic parts to at least one subsequent rinse stage, wherein said aqueous solution remains bound to the surfaces as a continuous film of water of said plastic parts during subsequent rinse stages.

5,354,495

ALKENOYLCARBAMATE COMPOUNDS AS ELASTICITY, ADHESION, AND DISPERSIBILITY ENHANCER

Satoshi Urano; Ryuzo Mizuguchi, both of Kyoto; Noriyuki Tsuboniwa, Osaka; Kei Aoki, Nara; Yuji Suzuki, Osaka, and Takeyasu Itoh, Kyoto, all of Japan, assignors to Nippon Paint Co., Ltd., Japan

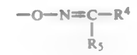
Division of Ser. No. 58,782, Jun. 5, 1987, Pat. No. 4,935,413, which is a continuation of Ser. No. 751,698, Jul. 2, 1985, abandoned. This application Mar. 1, 1990, Ser. No. 486,864
Claims priority, application Japan, Jul. 3, 1984, 59-138298; Jul. 3, 1984, 59-138299; Jul. 3, 1984, 59-138300; Aug. 23, 1984, 59-176176; Sep. 14, 1984, 59-193424; May 27, 1985, 60-114481; May 28, 1985, 60-117303; May 28, 1985, 60-117304; May 28, 1985, 60-117305; May 28, 1985, 60-117313
Int. Cl.[5] C09K *3/00;* C08F *20/58, 20/60, 226/02, 18/22*
U.S. Cl. 252—182.18 19 Claims

1. An elasticity, adhesion or dispersibility enhancer which comprises an alkenoylcarbamate compound dissolved in an organic solvent and having the formula:



(I-14)

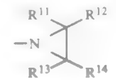
wherein R is a hydrogen atom or a lower alkyl group and —X—Y is the radical of an active hydrogen-atom containing compound of the formula:
a) —O—R^2 wherein R^2 is glycidyloxy(lower)alkyl;
b) —O—R^3 wherein R^3 is di(lower)-alkylamino(lower)alkyl, di(lower) alkylaminophenyl, lower alkylphenylamino(-lower)alkyl, lower alkyl-phenyl(lower)-alkylamino(lower)alkyl, pyrrolidino, piperidino, morpholino, pyrrolidino(lower)alkyl, piperidino(lower)alkyl, morpholino(lower)-alkyl, di(lower)alkylamino(lower)alkoxy(lower)alkyl or 2-(8-methyl-8-azabicyclo{3.2.1}oct-3-yloxycarbonyl)-2-phenylethyl;
c)



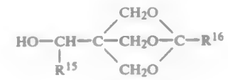
wherein R^4 and R^5 are each independently hydrogen, lower alkyl, lower alkenyl, phenyl(lower)alkyl, phenyl or lower alkanoyl, or R^4 and R^5 are taken together to form a lower alkylene chain;
d) —S—R^6 wherein R^6 is lower alkyl, stearyl, cyclo(lower-)alkyl, lower alkenyl, phenyl(lower)alkyl, phenyl or naphthyl;
e)



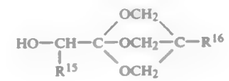
wherein R^7 and R^8 are each independently lower alkyl, stearyl, cyclo(lower)alkyl, lower alkenyl, phenyl(lower-)alkyl, or thiazolyl, or R^7 and R^8 are taken together with the nitrogen atom to which they are attached to form a morpholino group;
f) —NR^{10}—CO—R^9 wherein $R^9$and R^{10} are taken together to form a lower alkylene chain;



wherein R^{11}, R^{12}, R^{13} and R^{14} are each independently hydrogen or lower alkyl;
h) —Rb wherein Rb is a blocking group effected by excluding an active hydrogen atom from etherified alcohols, aromatic alcohols, active methylene compounds, lactams, N-hydroxyimides, oximes, imidazoles, triazoles or amines;
i) —Rf wherein Rf is a fluorine atom-containing group effected by excluding an active hydrogen atom from o-aminobenzotrifluoride, m-aminobenzotrifluoride, p-aminobenzotrifluoride, 2-amino-5-bromobenzotrifluoride, 3-amino-4-bromobenzotrifluoride, 5 amino-2-bromotrifluoride, 2-amino-5-chlorobenzotrifluoride, 3-amino-4-chlorobenzotrifluoride, 5-amino-2-chlorobenzotrifluoride, 2-amino-5-fluorobenzotrifluoride, 3-amino-4-fluorobenzotrifluoride, 5-amino-2-fluorobenzotrifluoride, 3-amino-5-methoxybenzotrifluoride, 2-amino-5-nitrobenzo-trifluoride, 4-amino 3-nitrobenzotrifluoride, 5-amino-2-nitrobenzotrifluoride, 4 amino-2,3,5,6-tetrafluorobenzamide, 4-amino-2,3,5,6-tetrafluorobenzoic acid, 4-amino-2,3,5,6-tetrafluorobenzonitrile, bis(trifluoromethylacetamide), chlorodifluoroacetamide, chlorodifluoroacetic acid, 3-chloro-4-fluoroaniline, 2-chloro-6-fluorobenzoic acid, 3-chloro-4-fluorobenzoic acid, 2-chloro-6-fluorobenzyl alcohol, 2-chloro-4-fluorophenol, 2-chloro-6-fluorophenylacetic acid, 4-chloro-3-hydroxybenzotrifluoride, decafluorobenzhydrol, 3,4-diaminobenzo-trifluoride, 3,5-diaminobenzotrifluoride, 4,4,-diamino-octafluorobiphenyl, 1,3-dichlorotetrafluoroisopropanol, difluoroacetic acid, 2,4-difluoroaniline, 2,5-difluoroaniline, 2,6-difluoroaniline, 2,4-difluorobenzamide, 2,5-difluorobenzamide, 2,6-difluorobenzamide, 3,4-difluorobenzamide, 2,4-difluorobenzoic acid, 2,5-difluorobenzoic acid, 2,6-difluorobenzoic acid, or 3,4-difluorobenzoic acid;
j) —Rm wherein Rm is a triazine skeleton-containing group effected by excluding an active hydrogen atom from melamine, methylolated melamines, lower alkoxymethylolmelamines or guanamines;
k) —Rnc wherein Rnc is a non-contractive structure-containing group effected by excluding an active hydrogen atom from the compounds of the formulas:



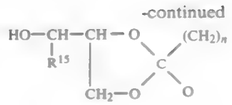
(III-a)



(III-b)

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-continued



(III-c)

wherein R^{15} and R^{16} are each hydrogen or lower alkyl and n is an integer of 3 to 5; or

l) —Rp wherein Rp is a photosensitive group or structure effected by excluding an active hydrogen atom from an olefin, cinnamoyl, cinnamylidene, cinnamylideacetyl, furylacryloyl, coumarine, pyron, benzalacetophenone, styrilpyridine, anthracene, stilben, alpha-phenylmaleimide, azide, phenylazide, sulfonylazide, carbonylazide, diazo, alpha-quinonediazide, benzophenone, benzoin, 1,3-dioxane, dithiocarbamate, xanthete, 1,2,3-thiadiazole, cyclopropene, azadioxabicyclo or spiropyran.

5,354,496

LYOTROPIC LIQUID CRYSTAL SALT/INORGANIC COMPOUND COMPLEXATION PRODUCTS

Stanley B. Elliott, 7125 Conelly Blvd., Walton Hills, Ohio 44146

Continuation-in-part of Ser. No. 642,009, Jan. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 562,017, Aug. 2, 1990, Pat. No. 5,082,588, which is a division of Ser. No. 444,559, Dec. 1, 1989, Pat. No. 4,975,249, which is a continuation-in-part of Ser. No. 78,186, Jul. 27, 1987, abandoned. This application Jan. 16, 1992, Ser. No. 821,084

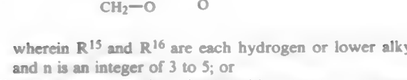
Int. Cl.[5] C09K *19/52;* **B01D** *9/00*

U.S. Cl. 252—299.01 **22 Claims**

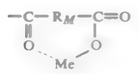
1. A lyotropic liquid crystal complexation product comprising a lyotropic liquid crystal precursor salt complex that is an alkali metal salt of an aryl substituted keto organic acid, the salt having an, ionic polar ring complex phase having

(A) an organic aryl ring structure, and

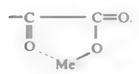
(B) a ring formed from the keto group of the organic acid portion, intervening ring-members, and the alkali metal ion, the ring having at least 5 members in which the alkali metal ion is a ring member that bonds to the keto group to form the ring complex, complexed with 1% to 98% by weight of a finely divided inorganic superconducting oxide compound, the ring complex having the general structure:



in which the 5 to 13 member ring is formed from the alkali metal (Me) ring member that bonds to the keto group according to the following structure:



where R_m is one or more ring members when the complex ring is a 6 to 13 member ring; and the following structure represents the 5 member ring:



5,354,497

LIQUID CRYSTAL DISPLAY

Shunsei Fukuchi, Nara; Kenji Nishida, Fushimi; Makoto Iwamoto; Hiroyuki Nagano, both Yamatokoriyama; Kenji Misono, Nara, and Kyouhei Isohata, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 19, 1993, Ser. No. 49,269

Claims priority, application Japan, Apr. 20, 1992, 4-099261

Int. Cl.[5] G09K *19/52;* **G02F** *1/1333*

U.S. Cl. 252—299.01 **9 Claims**

1. A liquid crystal display comprising a pair of plastic substrates opposing each other and a liquid crystal sandwiched therebetween,

wherein a hard coat layer made from a resin composition including fine particles of silicon oxide and an organic resin, an undercoat layer and a transparent electrode which are respectively made from an inorganic oxide are formed in this order on the inner opposing surface of each plastic substrate and the hard coat layer includes the fine particles of silicon oxide in the proportion of 20 to 60 wt %.

5,354,498

PHASE SEPARATION LIQUID CRYSTAL POLYMER

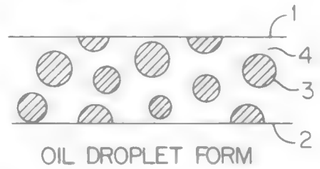
Ryojiro Akashi; Akinori Inoue, and Yutaka Akasaki, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 670,319, Mar. 15, 1991, abandoned. This application Dec. 9, 1992, Ser. No. 987,991

Claims priority, application Japan, Mar. 16, 1990, 2-67982

Int. Cl.[5] C09K *19/52, 19/56, 19/54;* **G02F** *1/13*

U.S. Cl. 252—299.01 **14 Claims**



1. An optical modulation element having (a) a liquid crystal polymer containing side chains comprising on the side chains thereof at least one liquid crystal component and at least one non-liquid crystal component, said liquid crystal component and non-liquid crystal component being present in separate phases and (b) a means for applying an electric field to said polymer, wherein said polymer is a polymer obtained by copolymerizing a liquid crystal vinyl monomer and a non-liquid crystal vinyl monomer.

5,354,499

REACTION PRODUCTS OF LYOTROPIC LIQUID CRYSTAL SALT COMPLEXES

Stanley B. Elliott, 7125 Conelly Blvd., Walton Hills, Ohio 44146

Continuation-in-part of Ser. No. 821,084, Jan. 16, 1992, which is a continuation-in-part of Ser. No. 642,009, Jan. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 562,017, Aug. 2, 1990, Pat. No. 5,082,588, which is a division of Ser. No. 444,559, Dec. 1, 1989, Pat. No. 4,975,249, which is a continuation of Ser. No. 78,186, Jul. 27, 1987, abandoned. This application Sep. 30, 1992, Ser. No. 954,556

Int. Cl.[5] C09K *19/54, 19/52;* **B01D** *9/00*

U.S. Cl. 252—299.5 **36 Claims**

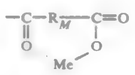
20. A chemical complex comprising:

(a) a lyotropic liquid crystal salt complex that is an alkali metal salt of an acid having an organic ring structure portion that is hydrophobic and an ionic polar head ring complex phase portion that is hydrophilic, the acid having a main chain of carbon atoms or carbon atoms and a

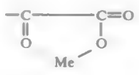
nitrogen atom, the polar ring complex phase having a ring formed from the keto group of the acid portion, intervening ring members, and an alkali metal ion, the complex having the general structure:



in which the 5 to 13 member ring is formed from the alkali metal (Me) ring member that bonds to the keto group according to the following structure:



where R_m is one or more ring members when the ring is a 6 to 13 member ring; and the following structure represents the 5 member ring:



(b) a non-aqueous non-polymeric ligand solvent that forms a coordinate bond are a donor by donating an electron to an acceptor metal of the metal salt complex of (a); and

(c) a polymeric ligand that is a polymer containing repetitive oxygen groups along a substantially linear chain, the polymer being a donor and the salt complex of (a) being an acceptor to form a coordination bond.

5,354,500

OPTICALLY ACTIVE CARBOXYLIC ESTERS OF OXYGEN-CONTAINING HETEROCYCLES AS DOPING SUBSTANCES IN LIQUID CRYSTAL MIXTURES AND LIQUID CRYSTAL MIXTURES CONTAINING THEM

Wolfgang Hemmerling, Sulzbach; Ingrid Müller, Hofheim am Taunus; Hans-Rolf Dübal, Königstein; Claus Escher, Mühltal; Gerhard Illian, Frankfurt am Main; Mikio Murakami, Königstein; Dieter Ohlendorf, Liederbach, and Rainer Wingen, Hattersheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main

Continuation of Ser. No. 410,829, Sep. 22, 1989, abandoned, and a continuation-in-part of Ser. No. 199,101, May 26, 1988, Pat. No. 4,988,459. This application Apr. 17, 1992, Ser. No. 870,111

Claims priority, application Fed. Rep. of Germany, May 29, 1986, 3718174; Sep. 24, 1988, 3832502

The portion of the term of this patent subsequent to Jan. 29, 2008, has been disclaimed.

Int. Cl.[5] C09K *19/34*

U.S. Cl. 252—299.61 **7 Claims**

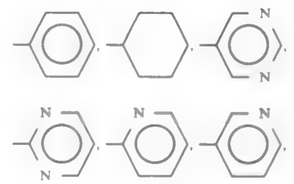
1. An optically active doping substance for liquid crystal mixtures, which comprises a compound of the formula (I)

$$R^1(-A^1)_j(-M^1)_k(-A^2)_l(-M^2)_m(-A^3)_n-X-Ac \quad (I)$$

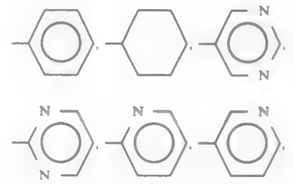
in which

R_1 is —X—Ac; H; a straight-chain or branched alkyl or alkyloxy chain having 1–16 carbon atoms; a straight-chain or branched alkenyl or alkenyloxy chain having 3–16 carbon atoms, it being possible for one or more non-adjacent $—CH^2—$groups to be replaced by —O—, —S—, —CO—, —O—CO— or —CO—O— and one or more hydrogen atoms to be replaced by F, Cl, Br or CN; or R^1 is F, Cl, Br or CN,

$—A^1$, $—A^2$ are



$—A^3$ is



$—M^1$, $—M^2$ are —CO—O, —O—CO,

j and l are zero, 1 or 2,

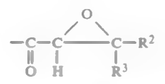
k and m are zero or 1,

n is zero, 1 or 2,

with the following proviso: if j and/or l are zero, k is zero; if n is zero, m is zero; the sum of j+l+n is 2 or 3,

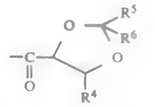
x is oxygen,

Ac is the acyl radical of an oxirane-2-carboxylic acid (II)



(II)

or of a 1,3-dioxolane-4-carboxylic acid (III)



(III)

where

R^2 is H or C_1–C_{16}-alkyl or cyclohexyl or bi-cyclohexyl, each of which can also be substituted in the 4- or 4'-position by an alkyl chain of 1 to 16 carbon atoms,

R^3 is H or alkyl having 1 to 16 carbon atoms,

R^4 is H or an alkyl radical having 1 to 10, or an alkenyl radical having 2 to 10, carbon atoms,

R^5 and R^6 are each H or an alkyl radical having 1 to 10 carbon atoms, in which one or more hydrogen atoms of the alkyl radical can be replaced by F, or R^2 and R^3 together with the C (2) atom of the dioxolane ring form a cyclopentane, cyclohexane or cycloheptane ring,

with the proviso that at least one of the radicals $—A^1$, $—A^2$ and $—A^3$ is at least monosubstituted by F, or Cl.

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5,354,501

MESOMORPHIC COMPOUND, LIQUID CRYSTAL COMPOSITION, LIQUID CRYSTAL DEVICE, DISPLAY APPARATUS AND DISPLAY METHOD

Shinichi Nakamura, Hadano; Takao Takiguchi, Tokyo; Kenji Shinjo, Atsugi; Takashi Iwaki, Machida; Takeshi Togano, Yokohama, and Yoko Yamada, Isehara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

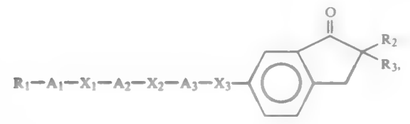
Filed Feb. 10, 1993, Ser. No. 15,826

Claims priority, application Japan, Feb. 12, 1992, 4-057259; Feb. 10, 1993, 4-044356

Int. Cl.[5] C09K *19/32, 19/52;* **C07C** *13/45;* **G02F** *1/13*

U.S. Cl. 252—299.62 **72 Claims**

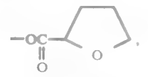
1. A mesomorphic compound represented by the following formula (I):



(I)

wherein

R_1, R_2 and R_3 independently denote hydrogen, halogen,



or a linear or branched alkyl group having 1–18 carbon atoms capable of including one or non-neighboring two or more —CH_2— groups which can be replaced with —O—, —S—,

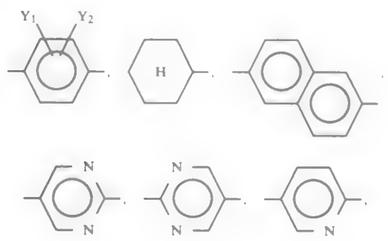
—CH=CH— or —C≡C— said linear or branched alkyl group being capable of including hydrogen which can be replaced with fluorine, with the proviso that R_2 and R_3 cannot be hydrogen simultaneously;

X_1, X_2 and X_3 independently denote a single bond,

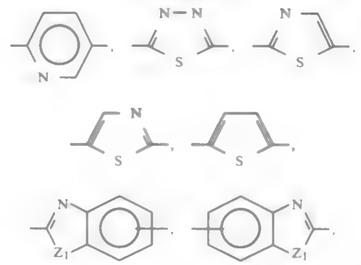


—CH_2O— or —OCH_2—;

A_2 and A_3 independently denote a single bond,

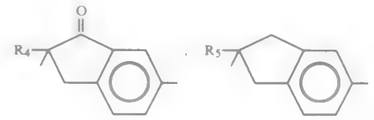


-continued



wherein Y_1 and Y_2 independently denote H, F, Cl, Br, CH_3, CF_3 or CN, and Z_1 denotes O or S; and

A_1 denotes



or A_2, wherein R_4 and R_5 independently denote hydrogen, or a linear or branched alkyl group having 1–18 carbon atoms, with the proviso that A_1 cannot be a single bond.

5,354,502

1,3-DIOXANE DERIVATIVE AND LIQUID CRYSTAL COMPOSITIONS CONTAINING IT

Tsuyoshi Obikawa; Shuji Ikukawa, and Jitsuko Nakayama, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

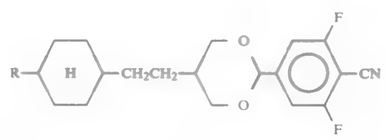
Division of Ser. No. 651,269, Apr. 12, 1991, abandoned. This application Dec. 8, 1992, Ser. No. 986,653

Claims priority, application Japan, Oct. 12, 1989, 1-265664; Oct. 20, 1989, 1-273078; Dec. 19, 1989, 1-329056

Int. Cl.[5] C09K *19/34;* **C07D** *319/06, 407/00*

U.S. Cl. 252—299.61 **3 Claims**

1. A 1,3-dioxane derivative having the general formula



wherein R is a straight chain alkyl group of carbon number 1 to 10, and the cyclohexane ring and 1,3-dioxane ring are respectively in trans form.

5,354,503

LIQUID CRYSTAL COMPOSITION AND LIQUID DISPLAY USING SAID COMPOSITION

Shinichi Sawada, and Akiko Fukuda, both of Ichiharashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation of Ser. No. 508,361, Apr. 12, 1990, abandoned. This application Aug. 28, 1992, Ser. No. 935,346

Claims priority, application Japan, Apr. 17, 1989, 1-96686

Int. Cl.[5] C09K *19/30, 19/12, 19/06*

U.S. Cl. 252—299.63 **34 Claims**

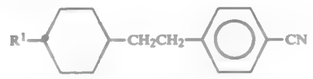
1. A liquid crystal composition consisting essentially of:

at least one compounds represented by the general formula (I) (first component);

at least one compound represented by the general formula (II) (second component); and

at least one compound represented by the general formula (III) (third component) as main components:

General Formula (I):



wherein R^1 is an alkyl group having 1 to 10 carbon atoms;

General Formula (II):



wherein R^2 is an alkyl group having 1 to 10 carbon atoms; R^3 is an alkyl group or an alkoxy group having 1 to 10 carbon atoms, and



General Formula (III):



wherein R^4 is an alkyl group having 1 to 10 carbon atoms; R^5 is H; R^6 is a CN group, and



5,354,504

METHOD OF PREPARATION OF EMULSIONS OF VISCOUS HYDROCARBON IN WATER WHICH INHIBITS AGING

Hercilio Rivas; Maria L. Ventresca, and Gerardo Sanchez, all of Caracas, Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed Aug. 19, 1991, Ser. No. 746,985

Int. Cl.[5] B01J *13/00;* **F17D** *1/16*

U.S. Cl. 252—314 **17 Claims**

1. A method for the preparation of a low viscosity, non-aging hydrocarbon in water emulsion from a viscous hydrocarbon wherein aging of the emulsion over time is substantially eliminated comprising the steps of:

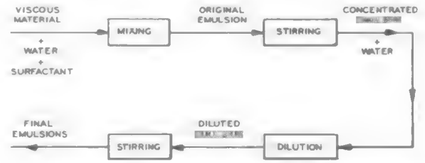
(a) forming a concentrated emulsion by:

(1) admixing said viscous hydrocarbon with an emulsifying additive comprising a non-ionic surfactant, a phenol-formaldehyde ethoxylated resin in an amount of between 1 to 5%/wt. based on the total weight of the emulsifying additive and water wherein a water content is less than or equal to 15%/wt.;

(2) heating said mixture to a temperature of between about 120° F. to about 200° F.; and

(3) stirring said heated mixture under controlled conditions so as to obtain a concentrated hydrocarbon in water emulsion having an average oil droplet size of less than or equal to 4 microns;

(b) forming a final emulsion by:



(1) diluting said concentrated hydrocarbon in water emulsion with water so as to obtain a water content greater than the water content of the concentrated emulsion and less than or equal to 30%/wt.;

(2) heating said diluted mixture to a temperature of between about 140° F. to about 220° F.; and

(3) stirring said heated mixture under controlled conditions so as to obtain a final hydrocarbon in water emulsion having an average oil droplet size of greater than or equal to 15 microns wherein the viscosity of the final emulsion is less than or equal to 1500 centipoise at 1 s^{-1} and 80° F.

5,354,505

COMPOSITION FOR THE CONDITIONING OF GAS CONTAINING ENTRAINED ASPHALTENES

Alberto L. Mendoza, Monagas, Venezuela, assignor to Corpoven, S.A., Caracas, Venezuela

Filed Apr. 6, 1992, Ser. No. 864,334

Int. Cl.[5] B01D *17/05, 19/04, 47/00*

U.S. Cl. 252—358 **14 Claims**

14. A surface active composition for conditioning gas containing entrained asphaltenes, consisting essentially of from 5–15% by volume as a demulsifying agent a sulphonated phenolic resin, 1–3% by volume antifoaming agent, 10–40% by volume dispersant, 10–60% by volume aromatic solvent, and 20–60% by volume alcohol solvent.

5,354,506

PRECERAMIC COMPOSITIONS AND CERAMIC PRODUCTS

Leonard M. Niebylski, Birmingham, Mich., assignor to Albemarle Corporation, Richmond, Va.

Filed Sep. 28, 1989, Ser. No. 413,965

Int. Cl.[5] C07K *3/00;* **C08F** *283/12;* **C04B** *35/52*

U.S. Cl. 252—387.31 **13 Claims**

1. A process which comprises reacting about 0.2–5.0 parts by weight of a bis- or tris(dialkylamino)borane with one part by weight of a polysilazane.

5,354,507

INHIBITION OF STEEL CORROSION

Viviana De Maldé; Luigi Rivola; Arnaldo Roggero, and Alberto Gandini, all of Milan, Italy, assignors to Enitricerche S.p.A, Milan, Italy

Filed Jan. 21, 1993, Ser. No. 7,116

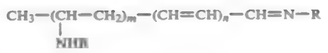
Claims priority, application Italy, Jan. 22, 1992, MI92 A 000107

Int. Cl.[5] C23F *11/14*

U.S. Cl. 252—390 **15 Claims**

1. A corrosion inhibiting composition comprising an aqueous or aqueous-alcoholic solvent and at least one corrosion inhibiting compound having the formula:

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(I)

a dimer thereof having the formula:
where R is a linear or branched C_1–C_{20} alkyl radical, m is either 0 or 1, and n is from 1 to 10, the corrosion inhibiting compound being useful to protect high- and medium-strength manganese steels and low-alloy steels against corrosion and brittlening in the presence of hydrogen sulfide and being present in a corrosion inhibiting amount of 1–500 ppm.

13. A method for inhibiting general corrosion and stress brittlening, in the presence of hydrogen sulfide, and in the presence or absence of carbon dioxide, of medium-strength and high-strength manganese steels and low-alloy steels used in a petrochemical facility and in natural gas or petroleum drilling operations, transport and processing systems, which comprises injecting the corrosion inhibiting composition of claim 1 into the facility or the systems which are to be protected from corrosion.

5,354,508

ORGANOTIN STABILIZER MIXTURE

Donald F. Anderson, Ossining, N.Y., and Steven Walter, Mt. Laurel, N.J., assignors to Akzo Nobel N.V., Arnhem, Netherlands

Filed Dec. 1, 1993, Ser. No. 160,534
Int. Cl.[5] C08K *5/58*
U.S. Cl. 252—400.1 **12 Claims**

1. An organotin stabilizer mixture comprising:
(a) a monoalkyltin mercaptoalcohol of the formula $RSn(SR'OH)_3$, wherein R is lower alkyl and R′ is lower alkylene.
(b) a monoalkyltin mercaptoacid ester of the formula $RSn(SR'CO_2R'')_3$, where R is lower alkyl, R′ is lower alkylene, and R″ is C_6 to C_{10} alkyl, and
(c) a monoalkyltin sulfide which comprises a lower alkyl group.

5,354,509

BASE METAL RESISTORS

Charles C. Y. Kuo, Elkhart, Ind., assignor to CTS Corporation, Elkhart, Ind.

Filed Oct. 26, 1993, Ser. No. 142,783
Int. Cl.[5] H01B *1/02*
U.S. Cl. 252—512 **4 Claims**

1. A base metal resistor composition having a low TCR (Temperature Coefficient of Resistance), said low TCR defined as having both CTCR (Cold Temperature Coefficient of Resistance) and HTCR (Hot Temperature Coefficient of Resistance) less than 200 parts per million per degree Centigrade, comprising:
a first alloy comprising nickel and chromium, said first alloy having said low TCR;
a second alloy of titanium and silicon; and
a non-volatile binder.

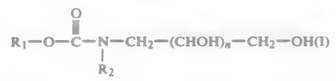
5,354,510

USE IN SURFACE-ACTIVE AGENT SOLUTIONS OF AMINOPOLYOL CARBAMATES AS THICKENING AGENTS AND COMPOSITIONS CONTAINING THEM

Guy Vanlerberghe, Villevaudé ; Claude Mahieu, Paris, and Jean L. Morangais, Ozoir la Ferriére, all of France, assignors to L'Oreal, Paris, France

Filed Jul. 1, 1993, Ser. No. 84,156
Claims priority, application France, Jul. 2, 1992, 92 08176
Int. Cl.[5] C11D *3/32, 1/02, 1/66*
U.S. Cl. 252—548 **19 Claims**

8. Washing or cleaning composition containing, in an aqueous medium, surface-active agents and at least one aminopolyol carbamate of formula:



(I)

in which:
R_1 represents a linear, saturated C_8–C_{13} alkyl radical;
R_2 represents a hydrogen atom or a C_1–C_{10} alkyl radical; and
n is an integer between 1 and 5.

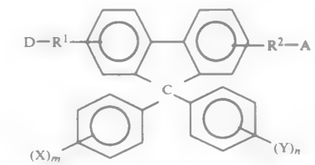
5,354,511

UNSYMMETRICALLY SUBSTITUTED FLUORENES FOR NON-LINEAR OPTICAL APPLICATIONS

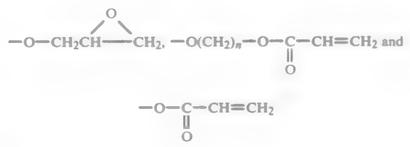
Chengjiu Wu, Morristown; Jianhui Shan, Highbridge, and Ajay Nahata, Rahway, all of N.J., assignors to AlliedSignal Inc., Morristownship, N.J.

Filed Nov. 27, 1992, Ser. No. 983,065
Int. Cl.[5] F21V *9/00;* **C07C** *321/00, 211/00, 255/00, 315/00, 321/00;* **C07D** *303/08*
U.S. Cl. 252—582 **12 Claims**

1. Compounds of the general formula



wherein
m and n are independently integers of from 1 to 4;
R^1 and R^2, which are the same or different in different $D—R^1—$ and $A—R^2—$ groups, are independently $—Ar—$, $—Ar—CH=CH—$ or $—Ar—C\equiv C—$ wherein Ar is a divalent bridging group selected from the group consisting of a direct bond phenylene, biphenylene, naphthalene and thienylene;
A, which is the same or different in different $—A—R^2—$ groups, is $—NO_2$, —CN, $—SO_2R$, $—SO_2R_F$, —COOR, $—C(CN)=C(CN)_2$ and $—CH=C(CN)_2$ wherein
R_F is $—C_nF_{2n+1}$ wherein n is an integer of from 1 to 10;
R is alkyl, straight chain, branched or cyclic, having from 1 to about 10 carbons;
D, which is the same or different in different $D—R^1—$ groups, is $—NH_2$, —NHR, $—NR_2$, —OH, —OR, —SH or —SR, wherein
R is alkyl, straight chain, branched or cyclic, having from 1 to about 10 carbons;
X and Y are independently selected from the group consisting of H, $—NH_2$, —NHR, $—NR_2$, —OH, —OR, —SH, —SR, —COOH, —NCO,



wherein
is an integer of from 1 to about 10, and

R is alkyl, straight chain, branched or cyclic, having from 1 to about 10 carbons.

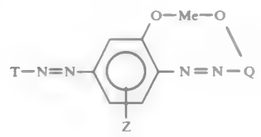
5,354,512

DYE-CONTAINING POLARIZING FILM

Kazuya Ogino; Setsuko Aoki, and Koji Higashi, all of Osaka, Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Filed Aug. 27, 1992, Ser. No. 935,248
Claims priority, application Japan, Aug. 29, 1991, 3-218530; Aug. 29, 1991, 3-218540
Int. Cl.[5] F21V *9/14*
U.S. Cl. 252—585 **16 Claims**

1. A dye-containing polarizing film comprising a polarizing film material and a metal-containing dye therein, wherein said metal-containing dye is represented by the following formula (I) in the form of a free acid:



(I)

wherein
Me is a transition metal selected from the group consisting of copper, nickel, zinc and iron;
Z is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, sulfo, unsubstituted amino and amino substituted with C_1–C_4 alkyl, C_1–C_4 alkylcarbonyl, C_1–C_4 alkylsulfonyl or carbamoyl; and
Q is a 1-naphthol or 2-naphthol residue in which a hydroxy group is adjacent to the azo group bonding to the benzene ring having Z and is linked with the transition metal denoted by Me to form the complex,
said 1-naphthol or 2-naphthol residue is unsubstituted or has at least one substituent selected from the group consisting of sulfo, hydroxy, unsubstituted amino and amino substituted with C_1–C_4 alkyl, C_1–C_4 alkylcarbonyl, carbamoyl, sulfamoyl, benzoyl which may be substituted by sulfo, amino or C_1–C_4 alkoxy, or phenyl which may be substituted by sulfo, amino of C_1–C_4 alkoxy,
said 1-naphthol or 2-naphthol residue has no or a sole additional phenylazo or naphthylazo group,
said additional phenylazo group is unsubstituted or has at least one substituent selected from the group consisting of hydroxy, sulfo, C_1–C_4 alkyl, C_1–C_4 alkoxy, carboxy, unsubstituted amino and amino substituted by methyl, ethyl, hydroxyethyl, cyanoethyl, acetyl or carbamoyl, and
said additional naphthylazo group is unsubstituted or has at least one substituent selected from the group consisting of hydroxy, sulfo, unsubstituted amino and amino substituted with methyl, ethyl, hydroxyethyl, cyanoethyl, acetyl, carbamoyl, phenyl, sulfophenyl, disulfophenyl or benzoyl,
provided that when Q is said 1-napthol or 2-naphthol residue having no said additional phenylazo or naphthylazo group, then T is naphthyl which is unsubstituted or has at least one substituent selected from the group consisting of hydroxy and sulfo and
that when Q is said 1-naphthol or 2-naphthol residue having said additional phenylazo or naphthylazo group, then T is phenyl which is unsubstituted or has at least one substituent selected from the group consisting of nitro, sulfo, sulfamoyl, C_1–C_4 alkyl, C_1–C_4 alkoxy, carboxy, halogeno, unsubstituted amino and amino substituted by C_1–C_4 alkyl or hydroxyethyl, or T is naphthyl which is unsubstituted or has at least one substituent selected from the group consisting of hydroxy and sulfo.

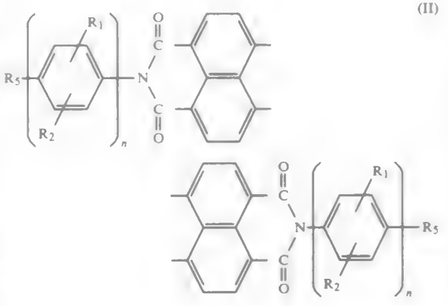
5,354,513

POLARIZING FILM

Katsuji Nakamura, Yokohama; Junichi Fujio; Shin Hosonuma, both of Nagoya; Masakatsu Nakatsuka, and Tsutomu Nishizawa, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

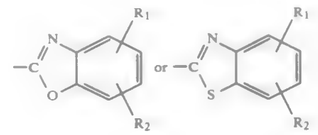
Division of Ser. No. 725,641, Jul. 3, 1991, Pat. No. 5,286,418, which is a division of Ser. No. 579,246, Sep. 6, 1990, Pat. No. 5,059,356, which is a continuation of Ser. No. 308,031, Feb. 27, 1989, abandoned, which is a division of Ser. No. 866,492, May 20, 1986, Pat. No. 4,824,882. This application Oct. 13, 1993, Ser. No. 135,420
Claims priority, application Japan, Oct. 5, 1984, 59-210067
The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.
Int. Cl.[5] F21V *9/14;* **G02B** *5/30*
U.S. Cl. 252—585 **2 Claims**

1. A polarizing film comprising a hydrophobic polymer containing a dichroic organic colorant in an oriented state which is characterized in that the dichroic organic colorant, which is a compound of the formula:



(II)

where R_1 and R_2 independently represent hydrogen atoms, halogen atoms, methyl groups or methoxy groups; R_5 represents —COOH, $—COOCH_3$, $—COOC_2H_5$, $—COOR_6$, alkyl groups of 1 to 10 carbon atoms, alkoxy groups of 1 to 10 carbon atoms,



in which R_6 is a phenyl radical that may be substituted by R_1 and R_2; and n represents a whole number equal to 1, 2 or 3, has a solubility in water, organic solvents and liquid crystals of not greater than 0.05 percent by weight at about 25° C., and the dichroic ratio of the colorant is not less than 7 when it is measured with the film obtained by blending the colorant intimately with polyethylene terephthlate, melting and resulting blend and forming it into a film.

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5,354,514

NEAR INFRARED ABSORBING COMPOSITION AND MATERIAL AND PRODUCT CONTAINING SAME

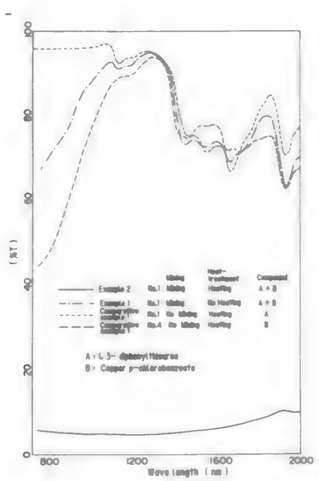
Toshimi Satake, and Tomoaki Nagai, both of Tokyo, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 383,176, Jul. 21, 1989, abandoned. This application May 22, 1992, Ser. No. 887,606

Claims priority, application Japan, Jul. 22, 1988, 63-183329

Int. Cl.[5] F21V *9/04*

U.S. Cl. 252—587 **3 Claims**



1. A near IR-absorbing composition stable at room temperature obtained by heating to a temperature of from about 40° to 400° C. a mixture comprising at least one thioamide compound having the formula:



wherein R_1 and R_2 are the same or different, and represent a hydrogen atom, an alkyl group, a cycloalkyl group, an aryl group, an aralkyl group, an alkenyl group, a monovalent group selected from the group consisting of penta and hexa heterocyclic rests, or R_2 represents an alkoxy; in addition, each group may have a substituent selected from the group consisting of chlorine, together with the nitrogen and carbon atoms to which they are attached may form a ring containing four carbon atoms, and at least one compound having the formula:



wherein R represents a hydrogen atom, an alkyl group, a cycloalkyl group, an aryl group, an aralkyl group or a heterocyclic rest (where said group or rest may have at least one substituent selected from the group consisting of alkyl, chlorine, bromine, iodine, phenyl, benzoyl, nitro and amino), and X represents —COO, $—SO_4$, $—SO_3$, $—PO^4$ or —O, and n represents an integer of 1 to 4, and M is Cu or Pb;

wherein, in said heating, said at least one thioamide compound and said at least one copper compound and/or said at least one lead compound are contacted with one another in the form of solid, melted liquid or a mixture of solid and melted liquid.

5,354,515

DOMESTIC ELECTRIC APPLIANCE

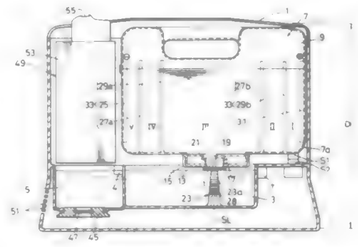
Shigeo Ushimaru, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 8, 1993, Ser. No. 1,776

Claims priority, application Japan, Jan. 13, 1992, 4-003554

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—72.1 **5 Claims**



1. A domestic electric appliance comprising:

a removable tank for reserving water;

water purifying means employing an electrodialytic mechanism having an anode, a cathode, cation exchange films, and anion exchange films, the cation and anion exchange films being alternately arranged between the anode and the cathode and serving as partition walls; and

means for using the water purified by said water purifying means wherein said water purifying means is located inside of said removable tank.

5,354,516

GAS FEEDER

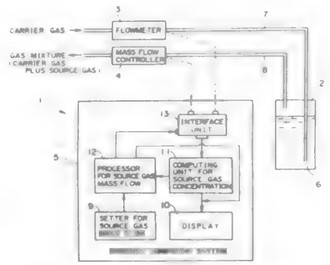
Munenori Tomita, Annaka, Japan, assignor to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1993, Ser. No. 30,864

Claims priority, application Japan, May 28, 1992, 4-162225

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—121.1 **9 Claims**



1. A gas feeder, comprising:

a bubbler holding a source liquid and passing a carrier gas through the source liquid to bubble the source liquid to produce a gas mixture of the carrier gas and a source gas derived from the source liquid;

a first sensor sensing the flow of the carrier gas;

a second sensor sensing the flow of the gas mixture;

a computer comprising means for computing the concentration of the source gas from the carrier gas flow and the gas mixture flow;

said computer comprising means for producing a product of the computed concentration of the source gas and the flow of the carrier gas;

said computer comprising means for computing the flow of the source gas from said product;

said computer comprising means for producing a difference from a predetermined flow of the source gas and the computed flow of the source gas; and

means for controlling the flow of the gas mixture in response to said difference to adjust the flow of the source gas fed to a destination to the predetermined flow.

5,354,517

PROCESS FOR THE PREPARATION OF SUBSTRATES FOR OPTICAL DISK

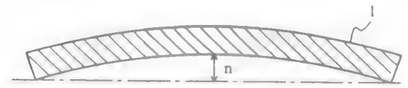
Kazuyuki Yamasaki, Tokyo, and Takehiko Kitamura, Chiba, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd. and Sumitomo Heavy Industries, Ltd., both of Tokyo, Japan

Continuation of Ser. No. 894,347, Jun. 4, 1992, abandoned. This application Apr. 27, 1993, Ser. No. 54,033

Claims priority, application Japan, Jun. 5, 1991, 3-134462

Int. Cl.[5] B29C *45/73*

U.S. Cl. 264—1.1 **7 Claims**



1. A process for the preparation of a substrate for an optical disk comprising the steps of

(A) melting pellets of 4-methyl-1-pentene polymer or copolymer having a melt flow rate, MFR, of about 240 to about 1200 g/10 min as measured according to ASTM D1238 under a load of 5 kg at a temperature of 260° C., and a melting point of 234° to 240° C., as measured by a differential scanning calorimeter,

(B) retaining the molten polymer or copolymer in a container heated at least in part from 320° to 370° C.; and

(C) injection molding the molten polymer or copolymer of step (B) into a mold having a temperature of not more than 55° C.

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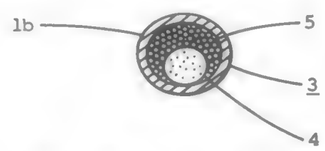
METHOD FOR MANUFACTURING A FIBERSCOPIC CATHETER

Yosuke Okada, and Yumiko Suzuki, both of Shizuoka, Japan, assignors to Sherwood Medical Company, St. Louis, Mo.

Filed Feb. 11, 1993, Ser. No. 16,924

Int. Cl.[5] B29C *61/08*

U.S. Cl. 264—1.25 **12 Claims**



1. A method of making a fiberscopic catheter having an internal lumen for receiving an optical fiber bundle, comprising the steps of:

heating the catheter and lumen in a heating device to a predetermined temperature;

introducing a pressurized fluid into the catheter's lumen to expand the internal diameter of the lumen;

cooling the catheter and lumen while under pressure to maintain the expanded internal diameter of the lumen;

releasing the internal fluid pressure within the lumen of the catheter;

inserting the optical fiber bundle into the lumen of the catheter to a predetermined position; and

reheating the catheter and lumen to contract the internal diameter of the lumen about the optical fiber bundle to provide a fiberscopic catheter having a tightly fitted fiber optic bundle.

5,354,519

METHOD AND APPARATUS FOR THE QUASI-ISOSTATIC PRESSURE-FORMING OF THERMOPLASTICALLY-BONDED PRECISION EXPLOSIVE CHARGES

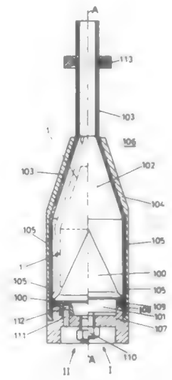
Rudolf Kaeser, Thun, Switzerland, assignor to Schweizerische Eidgenossenschaft Vertreten Durch Die Eidg. Munitionsfabrik Thun der Gruppe fur Ruestungsdienste, Thun, Switzerland

Filed Mar. 16, 1993, Ser. No. 31,590

Claims priority, application Switzerland, Mar. 18, 1992, 874/92

Int. Cl.[5] C06B *21/00*

U.S. Cl. 264—3.1 **17 Claims**



1. A method for the quasi-isostatic pressure-forming of precision explosive charges of high density and homogeneity, wherein the inner or outer mold (**100**) is given by a nondeformable body of high surface quality and is at least partly rotationally symmetrical, which body has a finite slope relative to the axis of rotation (A) and wherein in a first method step the inner or outer mold is delimited by an elastic envelope (**103**), which envelope, in a positive locking relationship with respect to the largest edge zone (**100'**), is attached to the inner or outer mold and mechanically pressed thereonto, so that a chargeable pressing mold (**106**) is created, the hollow space in which, in a second method step, is filled with a pulverulent or granular explosive (**102**) and wherein the inner space and the explosive (**102**) as well as the space outside of the pressing mold are evacuated, and wherein in a third method step the inner space is closed off and the filled pressing mold (**106**) is introduced into a pressure chamber (**33**) and the interior of the pressing chamber (**33**) is subjected to a pressure (P), wherein the pressure (P) is continuously increased up to the attainment of a value predetermined by the density and mechanical strength of the explosive to be achieved in this method step, and wherein subsequently the filled pressing mold (**106**) is returned to normal pressure by a continuous pressure relief,

characterized in that in the third method step the mass (**1**) to be pressure-formed is preheated and, in an autoclave (**30**), is exposed to a pressure of 500 to 5000 bar during a pressure-holding time of 0.5 to 5 min, and that, after a pressure relief, the pressure-formed mass (**1**), in a cooling phase of a duration of 10 to 180 min, is exposed to a pressure of 50 to 500 bar, and that, after a further pressure relief, the

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pressure-formed mass (1) is withdrawn from the autoclave (30) and the pressure-formed article (1') is removed for final mechanical working and/or mounting.

5,354,520

PRILL PROCESS

Raymond Oliver, Cleveland, England, and Ronald O. Peddie, Transvaal, South Africa, assignors to ICI Chemical Industries PLC, London, United Kingdom and ICI Canada Inc., Canada

Filed May 5, 1993, Ser. No. 58,984

Claims priority, application United Kingdom, May 5, 1992, 9209621.3

Int. Cl.[5] **C06B** *21/00*

U.S. Cl. 264—3.4 **4 Claims**

1. A process for producing explosive grade ammonium nitrate (EGAN) prills which process comprises the steps of:

a. continuously spraying an ammonium nitrate containing liquid, 95 to 98% by weight, selected from the group consisting of a solution containing ammonium nitrate, a melt containing ammonium nitrate and mixtures thereof with minor proportions of at least one other nitrate in/-with water under spray-head conditions causing the emergent jets to break into cascades of substantially mono-sized droplets;

b. allowing the formed droplets to fall within a vertical duct;

c. continuously feeding a stream of cooling gas upwards through the duct, thus providing a countercurrent flow regime to effect cooling and solidification of the falling droplets and some removal of moisture so as to form substantially mono-sized EGAN prills of up to about 4 mm diameter, and

d. continuously withdrawing the EGAN prills collecting at the base of the duct which are then further cooled and/or dried in a forced draught regime,

the process further comprising intensification of the upward gas flow regime in the duct such that:

(i) the temperature difference of the gas flow between its inlet to the duct and its outlet from the duct is at least about 60 C.; and

(ii) the falling velocity of the prills in the duct is at most about 3 meters/second relative to ground (i.e. a stationary observer external to the duct) the upward gas flow velocity being e.g. 6 m/s relative to ground for 2 mm prill and 9 m/s for 3 mm prill and,

(iii) recycling the gas stream after washing and cooling and addition of any required make-up gas.

5,354,521

METHOD OF MAKING A MAGNETICALLY DETECTABLE PLASTIC PIPE

William L. Goodman, Mountain View, Calif., assignor to Gas Research Institute, Chicago, Ill.

Filed Feb. 5, 1992, Ser. No. 831,160

The portion of the term of this patent subsequent to Jul. 30, 2008, has been disclaimed.

Int. Cl.[5] **B29C** *47/00;* **B29D** *23/22*

U.S. Cl. 264—24 **9 Claims**

1. A method of producing magnetically detectable plastic pipe for underground use, comprising;

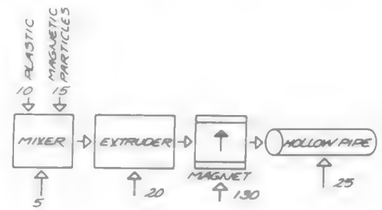
providing an organic plastic for extrusion,

providing particles of magnetic material comprising electrically-nonconductive, highly-magnetizable iron oxide, barium ferrite or strontium ferrite,

mixing said particles of electrically-nonconductive, highly-magnetizable iron oxide, barium ferrite or strontium ferrite uniformly with said organic plastic,

heating and extruding said mixture of organic plastic and particles of electrically-nonconductive, highly-magnetizable iron oxide, barium ferrite or strontium ferrite to produce a hollow tubular plastic pipe with said particles distributed continuously around and within the wall thereof,

moving said pipe through a magnet to magnetize selected portions of said pipe diametrically across the pipe so that in any lateral cross section of the pipe a north pole is at



one side of the pipe and a south pole is diametrically opposite it.

5,354,522

METHOD OF BENDING A LAMINATE HAVING A THERMOPLASTIC CORE LAYER AND METAL SHEETS ON EACH SIDE

Reinier Baartman, Alkmaar, Netherlands, assignor to Hoogovens Groep BV, IJmuiden, Netherlands

Continuation of Ser. No. 766,272, Sep. 27, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 89,643

Claims priority, application Netherlands, Oct. 1, 1990, 9001134

Int. Cl.[5] **B29C** *35/00, 53/00*

U.S. Cl. 264—25 **8 Claims**

1. Method of bending a metal-thermoplastic-metal-laminate having a thermoplastic core layer and outside metal sheets adjoining the core layer on both sides to a bending radius of the same order as the thickness of the laminate, comprising the steps of heating the laminate so as to effect softening of not more than 25% of the thermoplastic core layer of at least one boundary region of the thermoplastic core layer adjoining the metal sheets while a central region of the core layer remains unsoftened, and then bending the heated laminate.

5,354,523

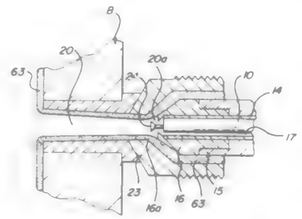
METHOD FOR DUAL FLUID INJECTION MOLDING

Chandrakant C. Shah, 4433 Clarke, Troy, Mich. 48098

Filed Jul. 29, 1992, Ser. No. 922,683

Int. Cl.[5] **B29C** *35/16, 45/72, 45/78*

U.S. Cl. 264—28 **17 Claims**



16. A method for molding thermoplastic or thermoset material comprising:

providing a nozzle body through which molten thermoplastic or thermosetting material flows with a valve member having a bore through which fluid flows;

providing within the valve member bore an adjustable fluid pin to establish an orifice through which fluid flows;

communicating the nozzle body with a mold space into which the molten thermoplastic or thermosetting material flows;

actuating the valve member to allow the molten thermoplastic or thermosetting material to flow through the nozzle body into the mold space;

maintaining the adjustable fluid pin in a closed position to prevent molten thermoplastic or thermosetting material from entering the fluid orifice and bore;

subsequently opening the fluid pin and adjusting said pin to allow a first pressurized fluid selected from the group consisting of carbon dioxide, nitrogen, and Freon to flow through the valve member bore and fluid orifice into the thermoplastic or thermosetting material to form a hollow cavity in said material;

subsequently allowing air in gas phase to flow through the valve member bore and fluid orifice into the hollow cavity wherein the air mixes with the first pressurized fluid;

actuating the valve member to terminate the flow of thermoplastic or thermosetting material in the nozzle body;

cooling the thermoplastic material or curing the thermosetting material until the material has set;

subsequently venting the mixture of pressurized fluids from the hollow cavity in the thermoplastic or thermoset material through the fluid orifice and valve member bore.

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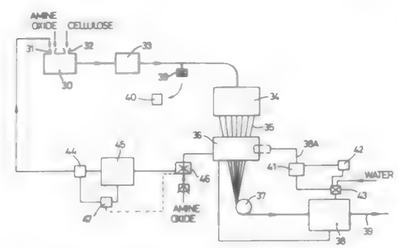
MONITORING CONCENTRATION OF DOPE IN PRODUCT MANUFACTURE

Alan Sellars, 2 Trinity Close, Goxhill, South Humberside DN19 7NN, and Michael C. Quigley, 41 Bonneville Close, Meriden, Coventry CV5 9QH, both of United Kingdom

Filed May 24, 1993, Ser. No. 67,431

Int. Cl.[5] **B29C** *47/92;* **D01F** *2/02, 13/02*

U.S. Cl. 264—38 **42 Claims**



1. A method of monitoring the concentration of a dope of cellulose/amine oxide/water solution for use in the manufacture of continuous filaments of solvent-spun cellulose in which the cellulose, amine oxide and water are mixed to form a hot dope and the dope is passed to a die assembly to be extruded into strands, in which the refractive index of the dope is measured and the concentration of the dope is adjusted when the refractive index of the dope varies from a predetermined value by more than a predetermined amount.

5,354,525

INJECTION AND COMPRESSION MOLDING APPARATUS AND MOLDING METHODS THEREFOR

Satoshi Fujimoto; Makoto Nogawa, and Hideaki Okubo, all of Hiratsuka, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Division of Ser. No. 499,453, Jan. 15, 1991, Pat. No. 5,221,509. This application May 11, 1993, Ser. No. 60,311

Claims priority, application Japan, Oct. 27, 1988, 63-272122; Oct. 31, 1988, 63-275472

Int. Cl.[5] **B29C** *45/80*

U.S. Cl. 264—40.5 **7 Claims**

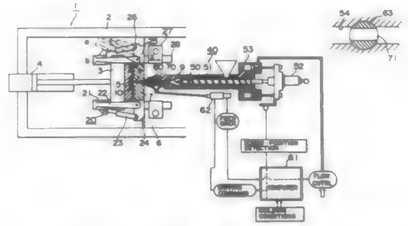
1. In an injection and compression molding method where molten resin is injected into at least one mold cavity formed by a movable mold and a stationary mold, and the thus injected resin is compressed and cooled to form a molded article, the improvement comprising:

moving said movable mold toward said stationary mold,

detecting a predetermined position of said movable mold during such movement wherein said movable mold and said stationary mold are separated a predetermined amount,

stopping said movable mold responsive to the detection of said predetermined position,

mechanically fixing said movable mold in the thus stopped position to restrict the tendency of said movable mold to move backwardly due to the resin injection pressure,



detecting the mechanical fixing of said movable mold at said stopped position;

opening a gate between a supply of molten resin and said at least one cavity responsive to the detection of the fixing of said movable mold in said stopped position,

moving said movable mold from said stopped position towards said stationary mold while maintaining said movable mold parallel to said stationary mold to initiate the compression molding of the resin contained in said at least one cavity, and

closing said gate when a predetermined amount of resin has flowed into said at least one cavity.

5,354,526

PROCESS FOR MANUFACTURING REINFORCED DUROPLASTIC PIPES IN A CENTRIFUGAL PROCESS AND INSTALLATION FOR CARRYING OUT THE PROCESS

Ralf Jost, Füllinsdorf, Switzerland, and Reinhart Ratheiser, Guttaring, Austria, assignors to Hobas Engineering AG, Birsigstrasse, Switzerland

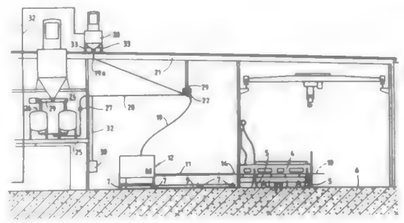
PCT No. PCT/CH92/00212, § 371 Date Jun. 10, 1993, § 102(e) Date Jun. 10, 1993, PCT Pub. No. WO93/08009, PCT Pub. Date Apr. 29, 1993

PCT Filed Oct. 20, 1992, Ser. No. 75,540

Claims priority, application Switzerland, Oct. 23, 1991, 3096/91

Int. Cl.[5] **B29C** *41/04*

U.S. Cl. 264—40.4 **16 Claims**



1. A process for producing a composite pipe, this process comprising the steps of:

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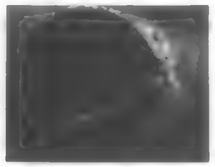
providing a pipe mold;
providing a movable injection carriage with a working bin;
providing a stationary bin;
moving filler from said stationary bin to said working bin to maintain a level of filler in the working bin substantially constant;
moving said injection carriage in an injection direction into and out of said mold;
feeding said filler from said working bin into said mold when said injection carriage is in said mold.

5,354,527

PROCESS FOR MAKING SILICON CARBIDE CERAMIC FIBERS

Francis J. Frechette, Tonawanda; Roger S. Storm, Clarence; Viswanathan Venkatswaren, Amherst; Michael J. Andrejcak, Niagara Falls, and Jonathan J. Kim, Williamsville, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Feb. 21, 1992, Ser. No. 838,960
Int. Cl.[5] C04B *35/69;* **D01F** *1/02*
U.S. Cl. 264—63 **11 Claims**



1. A process for producing a sintered polycrystalline silicon carbide fiber which comprises blending about 5 to about 25 weight percent polymer, and about 70 to about 95 weight percent silicon carbide, thereby producing a blend, and then forming a fiber from said blend, pre-sintering said fiber at a first temperature of about 1700° C. to about 2300° C., and then sintering said pre-sintered fiber at a second temperature greater than said first temperature.

5,354,528

PROCESS FOR PRODUCING PREFORM FOR METAL MATRIX COMPOSITE

Masaru Akiyama, Abiko, and Kenji Maniwa, Chigasaki, both of Japan, assignors to Tokai Carbon Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1991, Ser. No. 811,340
Claims priority, application Japan, Dec. 26, 1990, 2-414316
Int. Cl.[5] B28B *1/26, 1/52;* **B29C** *43/02*
U.S. Cl. 264—87 **5 Claims**

1. A process for producing a preform having a buffer layer for use in compositing a metal matrix composite where said buffer layer is provided at a boundary between a composited portion and a non-composited portion of a metallic material in said metal matrix composite, said process comprising the steps of:

(a) subjecting a first dispersion comprising a liquid medium and a ceramic whisker having a fiber diameter and a fiber length homogeneously dispersed in said liquid medium to filtration under pressure to form a primary processed preform having a volume fraction of 12 to 30% of said whisker,

(b) depositing on a surface of said primary processed preform a second dispersion comprising a liquid medium and, homogeneously dispersed therein, a binder and at least one member selected from the group consisting of a short fiber and a ceramic whisker, said at least one member having a fiber diameter and a fiber length larger than said fiber diameter and said fiber length of said ceramic whisker of said primary processed preform, and

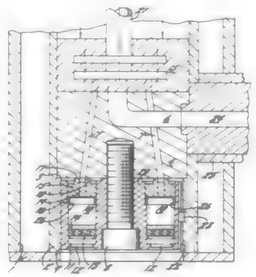
(c) drying said primary processed preform, having said second dispersion deposited thereon, to form said buffer layer of said preform on said surface of said primary processed preform, said buffer layer having a volume fraction of said at least one member lower than said volume fraction of said whisker in said primary processed preform and in a range from 2 to 10% of said at least one member.

5,354,529

MELT SPINNING APPARATUS AND METHOD

Hans-Peter Berger, Remscheid, and Ralph Sievering, Wermelskirchen, both of Fed. Rep. of Germany, assignors to Barmag AG, Fed. Rep. of Germany

Filed Nov. 23, 1990, Ser. No. 617,143
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1989, 3939138
Int. Cl.[5] D01D *5/092*
U.S. Cl. 264—176.1 **17 Claims**



1. A method of simultaneously melt spinning a plurality of monofilaments, with each having a denier which is maintained within close tolerances, and comprising the steps of

providing a nozzle head having a plurality of vertical bores therein, with a nozzle assembly positioned in each of said bores, and with each nozzle assembly comprising a melt delivery duct communicating with the upper portion of the bore and a spinning nozzle positioned at the lower portion of the bore and having one opening extending vertically therethrough, and

delivering a pressurized melt to said delivery duct of each of said nozzle assemblies from a separate melt delivery means, and such that the pressurized melt is extruded downwardly through the spinning nozzle of each nozzle assembly to form a new filament therefrom, with all of said melt delivery means being synchronously driven by a single shaft, and with said separate melt delivery means being arranged circularly about said shaft so that substantially the same torque is delivered to all of said melt delivery means.

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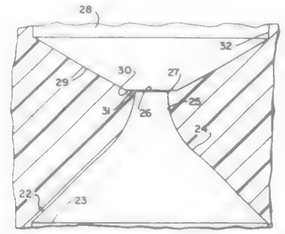
PRESSURE FLUID STABILIZED REGULATOR WITH LEAKAGE ORIFICE AND METHOD OF FORMING PRECISE MOLDED ORIFICE UNITS

Louis D. Atkinson, New Berlin; Ronald L. Daggett, Madison, and Dean C. Vandeberg, Middleton, all of Wis., assignors to Airtrol Components, Inc., New Berlin, Wis.

Filed Jan. 21, 1993, Ser. No. 7,087
Int. Cl.[5] B29C *33/38, 33/44*
U.S. Cl. 264—219 **5 Claims**

1. The method of forming a flow orifice unit of a rigid and high strength plastic, comprising forming a mold having a two piece core of an inlet member and an outlet member, said inlet member being a cylindrical member having an orifice end, said orifice end having a finished flat end surface and a precise constant diameter round portion extending from said end surface toward an outer portion, said round portion being joined

to said outer portion by smooth curved wall portion, said outlet member having a finished flat end of a diameter larger than flat end surface of said inlet member, and mounting said core members in alignment with said finished end surfaces in opposed relation with said end surfaces in precise parallel



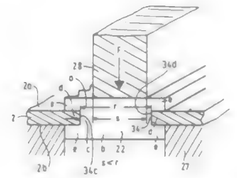
relationship and spaced from each other at a distance to establish a flash free step change at the end face of said molded orifice and defining a mold cavity adapted to be filled with a plastic for molding a flow orifice unit as a single piece plastic element, said plastic forming a rigid and high strength flow orifice unit.

5,354,531

METHOD FOR PRODUCING FUNCTIONAL PARTS ON A LOAD-BEARING PLATE OF AN ELECTROMECHANICAL DEVICE

Hans Gumbert, Ballersbacher Weg 30, 6349 Sinn/Dillk, Fed. Rep. of Germany

Division of Ser. No. 573,430, Aug. 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 507,947, Apr. 16, 1990, abandoned. This application Jan. 8, 1992, Ser. No. 895,573
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1989, 3911746
Int. Cl.[5] B29C *53/02, 53/84*
U.S. Cl. 264—242 **10 Claims**



1. In the method of manufacturing an electromechanical device, by forming by injection molding plastic control rod (22) and plastic shaft (36) on a metal load-bearing plate (2) provided with at least one plate opening (34), plastic retention pieces (a,b) on both surfaces of said plate (2) having overlapping parts (e) overlapping edges (d) of said opening (34) and a plastic bridge (c) formed integrally with said retention pieces (a,b) and connecting said pieces (a,b) through said opening (34) in a manner such that said control rod (22) and said shaft (36) are held in the region of at least one plate opening (34) by means of said plastic retention pieces (a,b) and said control rod (22) and shaft (36) are capable of moving relative to said plate (2), the improvement wherein, after said injection molding, said control rod (22) and said shaft (36) are subjected to a deformation action to thereby cause said control rod (22) and said shaft (36) to be so deformed that overlapping plastic parts (e) of said plastic retention pieces (a, b) are moved away from overlapped edges (d) of said opening so that sufficient clearance is obtained of the overlapping parts (e) with respect to the overlapped edges (d) so that the mobility of said control rod (22) and said shaft (36) with respect to said plate (2) corresponds to that of a sliding bearing.

5,354,532

METHODS FOR MOLDING COMPOSITE POLYESTER ARTICLES HAVING RIGID AND FLEXIBLE REGIONS

Masakazu Nakai; Masato Takashima, and Seizi Yamamoto, all of Shizuoka, Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed Sep. 10, 1991, Ser. No. 756,850
Claims priority, application Japan, Sep. 10, 1990, 2-240412
Int. Cl.[5] B29C *45/16, 65/70*
U.S. Cl. 264—259 **3 Claims**

1. A method of molding a composite molded article having discrete regions of relatively rigid and flexible resins bonded to one another along an interfacial fusion zone, said method comprising the steps of:

positioning within a mold cavity a solid preform which will constitute said discrete region of said relatively rigid resin of said composite article and which consists essentially of a thermoplastic polyalkylene terephthalate resin selected from the group consisting of homopolymers of polybutylene terephthalate or polyethylene terephthalate, and copolymers mainly comprised of recurring polybutylene terephthalate or polyethylene terephthalate units and no greater than 30% by weight of other comonomeric units; and then

forming said discrete regions of said flexible resin of said composite article which is bonded to said rigid region by introducing, into said mold cavity at a temperature which is between 10° C. to 70° C. greater than the melt temperature of said polyester resin forming said solid preform, a thermoplastic polyester elastomer resin which is the polycondensation reaction product of (a) a dicarboxylic acid or its ester-forming derivative, (b) a low molecular weight glycol or its ester-forming derivative, and (c) a polyoxyalkylene glycol having an average molecular weight of between 400 to 6000 or its ester-forming derivatives;

establishing an interfacial fusion zone between said thermoplastic polyester and a surface region of said solid preform by allowing said introduced thermoplastic polyester elastomer resin to contact and at least partially melt said surface region of said solid preform by virtue of said thermoplastic polyester elastomer resin being at a temperature which is between 10° C. to 70° C. greater than the melt temperature of said polyester resin forming said solid preform thereby to establish said interfacial fusion zone and to cause said polyester elastomer resin to coalesce with said at least partially melted surface region of said polyester resin; and then

allowing said at least partially melted surface region of said thermoplastic polyester resin and said molten polyester elastomer to solidify thereby fusing said solid preform and said polyester elastomer along said interfacial fusion zone, whereby said discrete regions of relatively rigid and flexible resins of said composite article are bonded one to another with increased fusion strength along said interfacial fusion zone.

5,354,533

METHOD FOR THE HOT DEFORMATION OF A WORK PIECE

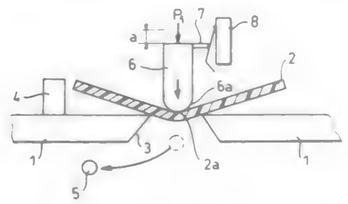
Jean-Claude Antoine, Sainte-Adresse, France, assignor to La Tolerie Plastique, Octeville-Sur-Mer, France

Filed Dec. 2, 1992, Ser. No. 984,511
Int. Cl.[5] B29C *53/00*
U.S. Cl. 264—296 **16 Claims**

1. A method for hot deformation of a work piece comprising: exerting on one side of said work piece, in a zone of said work piece to be deformed, a controlled deforming first positive pressure, P1, while simultaneously heating in a controlled manner an opposite side of said work piece, at least in said zone

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to be deformed, until said work piece reaches a temperature such that said work piece has sufficient plasticity to deform under said first positive pressure and start of deformation of said work piece occurs; stopping said heating upon said start of



deformation; and then subjecting the work piece to a controlled second positive pressure, P2, on said one side of said work piece and in said zone to be deformed until said work piece is deformed into a desired final state.

5,354,534

METHOD FOR MANUFACTURING SINTERED PARTS

Nobuyuki Kitagawa; Toshio Nomura, both of Itami, and Katuyosi Saito, Kyoto, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 18, 1992, Ser. No. 946,858
Int. Cl.[5] B22F *3/00*
U.S. Cl. 419—10 **3 Claims**

1. A method for manufacturing sintered parts which includes the steps of:

injection molding into a metal mold, of a sintered part configuration, a composition obtained by mixing one or more kinds of sinterable inorganic powers having an average particle diameter of 10 μm or less and including 20% or more of a fine powder having an average particle diameter of 1 μm or less and comprising powders selected from a carbide, a carbon-nitride and a nitride of a metal of IVb group, Vb group and VIb group metals in the Periodic Table, including WC, with an organic binder composed of an organic substance soluble in an alcohol series solvent and an organic substance insoluble in an alcohol series solvent;

immersing the composition into an alcohol series solvent to elute and remove part of the organic binder from the component; and thereafter

heating the composition to remove the residual organic binder and sintering the composition,

characterized in that a portion of the organic binder soluble in an alcohol series solvent accounts for 30 to 70% of the organic binder and wherein polyethylene glycol having a molecular weight of 800 or more accounts for at least 50% of said portion of the organic binder soluble in an alcohol series solvent, and wherein the alcohol series solvent employed for immersing the composition is heated to temperatures of 45° C. up to 60° C.

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SYNTHESIS OF HIGHLY PHASE PURE (BI, PB)-SR-CA-CU-O SUPERCONDUCTOR

Stephen E. Dorris, La Grange Park; Roger B. Poeppel, Glen Ellyn, both of Ill.; Barton C. Prorok, Harrisville, Pa.; Michael T. Lanagan, Woodridge, and Victor A. Maroni, Naperville, both of Ill., assignors to University of Chicago, Chicago, Ill.

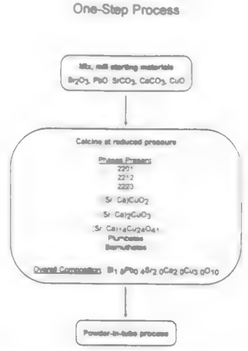
Filed Apr. 6, 1993, Ser. No. 43,652
Int. Cl.[5] B22F *1/00, 3/12*
U.S. Cl. 505—433 **16 Claims**

1. A method of manufacturing a (Bi,Pb)-Sr-Ca-Cu-O compound consisting essentially of a 2223 superconductor, comprising the steps of:

(a) preparing a first powdered mixture including bismuth oxide, lead oxide, strontium carbonate, calcium carbonate and copper oxide;

(b) preparing a second powdered mixture including strontium carbonate, calcium carbonate and copper oxide;

(c) calcining separately each of said first and second powdered mixtures;



(d) mixing said calcined first and second powdered mixtures; and

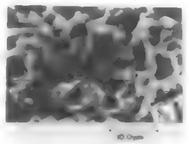
(e) carrying out a deformation process and thermal process to produce a substantially phase pure form of said 223 (Bi,Pb)-Sr-Ca-Cu-O superconductor.

5,354,536

MONOLITHIC, FULLY DENSE SILICON CARBIDE MATERIAL, METHOD OF MANUFACTURING AND END USES

Andre Ezis, Vista, Calif., assignor to Cercom Inc., Vista, Calif.

Division of Ser. No. 29,715, Mar. 11, 1993. This application Sep. 3, 1993, Ser. No. 115,678
Int. Cl.[5] B22F *3/14*
U.S. Cl. 419—48 **11 Claims**



1. A process for making a silicon carbide ceramic material including the steps of:

a) preparing a powder mix consisting of at least 92%, by weight, pure Silicon Carbide powder, said Silicon Carbide powder comprising alpha-type SiC or beta-type SiC, said powder having an average particle diameter of 0.3 to 3 micrometers;

b) adding to said powder a densification agent in a ratio of from 0.1% up to 0.25%, by weight, of densification agent for each m^2/g of surface area of said powder to form a powder mix;

c) homogenizing said powder mix and densification agent utilizing either a dry procedure or a wet mill process;

d) subjecting homogenized powder mix and densification agent to a hot pressing operation including the step of obtaining a state of substantially closed porosity of said material before temperature exceeds 1900° C. whereby said densification agent is precluded from volatizing and is thereby captured within said material; and

e) cooling said homogenized powder mix and densification agent, said material exhibiting intergranular fracture.

5,354,537

PIERCING AND SAMPLING PROBE

Mario Moreno, Durham, N.C., assignor to Akzo N.V., Arnhem, Netherlands

Filed Apr. 27, 1992, Ser. No. 874,371
Int. Cl.[5] B01L *3/02;* **A61M** *5/158*
U.S. Cl. 422—100 **10 Claims**



1. A needle suitable for piercing a septum of a vacuum sealed container and through which a measured fluid sample from the container may be withdrawn, comprising:

an elongated body having a longitudinal axis, an unobstructed bore therethrough along the longitudinal axis, a free end, and an end region adjacent said free end which has a conical taper toward said free end at a predetermined angle relative to the longitudinal axis, said free end comprising an oblique cut through the conically tapered end region at an angle relative to the longitudinal axis, said free end further comprising a toe portion which initially encounters a septum and slices a path therethrough and a heel portion which follows the path of the toe portion, said toe portion and said heel portion each having a respective height measured along the longitudinal axis, said heel portion being passivated so as to prevent septum coring, and said angle being substantially larger than the predetermined angle of the conical taper so as to produce an elliptical opening at the free end on a plane diagonal to the longitudinal axis whereby said toe portion is reduced in height relative to said heel portion height.

5,354,538

LIQUID TRANSFER DEVICES

Roger A. Bunce, Bouraville; Gary H. G. H. Thorpe, Handsworth; John E. C. Gibbons, Hall Green; Louise J. Keen, Balsall Heath, and Matthew R. Walker, Selly Oak, all of England

Continuation of Ser. No. 601,697, Oct. 29, 1990, Pat. No. 5,198,193. This application Oct. 15, 1992, Ser. No. 961,542
Claims priority, application United Kingdom, Mar. 23, 1989, 8906833; Oct. 6, 1989, 8922513
Int. Cl.[5] G01N *30/00*
U.S. Cl. 422—100 **12 Claims**

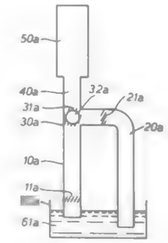
1. A liquid transfer device for use in assay procedures, comprising:

a first, second and third liquid flow channel each having a first and second end and being of porous material for liquid flow therethrough by capillary action from the first to the second end;

respective connections being provided between the second ends of said first and second channels and the first end of said third channel to deliver liquid flow from the former to the latter as a common channel;

said first and second channels having mutually different structural forms to cause respective simultaneously-initiated liquid flows therethrough to arrive at said third channel first end one after the other; and

the connection to said third channel first end of said second



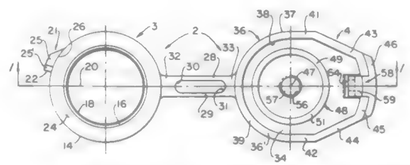
end of at least said one flow channel defining a liquid delivery flow path therebetween which is substantially symmetrically disposed across the width of said third channel.

5,354,539

MICROTUBE HAVING PRESS-TO-SEAL AND TWIST-TO-LOCK CLOSURE CAP

Kenneth R. Hovatter, 1901 Ackerman Dr., Lodi, Calif. 95240

Filed Nov. 12, 1993, Ser. No. 150,716
Int. Cl.[5] B01L *3/00*
U.S. Cl. 422—102 **15 Claims**



1. A microtube and selectively lockable closure cap assembly, comprising:

a) a microtube symmetrical about a longitudinal axis and having inner and outer peripheries and open and closed ends, said open end being symmetrical with respect to a plane including said longitudinal axis;

b) a closure cap symmetrical when in open and in initially closed and sealed positions with respect to said plane including said longitudinal axis and pivotally connected to the open end of the microtube and selectively manipulable between open and closed positions, said closure cap including a tubular cylindrical skirt portion having a seal flange thereon constructed and positioned so as sealingly engage the inner periphery of the microtube to seal the open end thereof when said tubular cylindrical skirt portion is inserted into said open end of the microtube;

c) a lock lug on said microtube positioned on the open end thereof and offset laterally from said plane that includes said longitudinal axis;

d) a lock housing on said closure cap symmetrically positioned thereon with respect to said plane that includes said longitudinal axis and laterally offset from said lock lug on said microtube in unlocked position when said closure cap is manipulated into said initially closed and sealed position and selectively laterally movable into interengagement with said lock lug by selective relative rotation of said closure cap and said microtube when in said closed and sealing position; and

e) means flexibly interconnecting said closure cap and said microtube and enabling said relative rotation of said closed and sealed closure cap in relation to said microtube about the longitudinal axis of said microtube.

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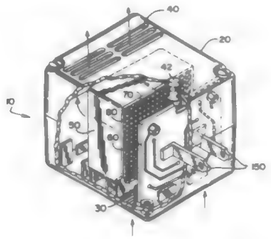
CATALYTIC REDUCTION OF VOLATILE ORGANIC CONTAMINANTS IN INDOOR AIR

Phillip J. Neumiller, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation of Ser. No. 765,608, Sep. 25, 1991. This application Jun. 21, 1993, Ser. No. 80,400

Int. Cl.[5] B01D *53/00*

U.S. Cl. 422—174 8 Claims



1. A convection-based catalytic air purification device for removing volatile organic compounds from ambient room air in a living space at atmospheric pressure, said device consisting essentially of:

a ventilated housing having a top side and a bottom side, the ventilated housing having at least one ambient room air inlet port formed within and through the bottom side, and at least one ambient room air outlet port formed within and through the top side and an airflow passage connecting the air inlet port and the air outlet port,

a catalyst containing structure, located upon a substrate within the ventilated housing in the airflow passage, having an air inlet side and an air outlet side and a plurality of structural air passages running between the air inlet and air outlet sides such that all ambient room air entering the at least one air inlet port must pass through the catalyst containing structure before the air exits the at least one air outlet port at atmospheric pressure, the catalyst containing structure comprising a catalytic composition that will convert volatile organic compounds to reduction products such as carbon dioxide and water, at a temperature between 80° C. and 150° C.,

means for heating the catalyst containing structure to and maintaining it at a temperature of between 80° C. and 150° C. to effectively convert volatile organic compounds to reduction products in ambient room air flowing by convection through the airflow passage of the ventilated housing, and

means for connecting the heating means to an energizing means external to the device,

the device being designed and configured so that airflow through the device is maintained solely by convection of ambient room air in a living space at atmospheric pressure.

5,354,541

OZONE GENERATOR

Louis Sali, 4709 Orange River Loop Rd., Fort Myers, Fla. 33905, and Anthony P. LeBoutillier, 2031 Mission Valley Blvd., Nokomis, Fla. 34275

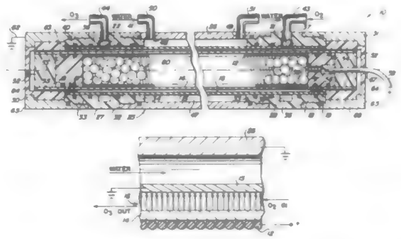
Filed Jun. 9, 1993, Ser. No. 74,212

Int. Cl.[5] C01B *13/11;* B01J *19/12*

U.S. Cl. 422—186.07 13 Claims

1. In an ozone generator having a first tubular electrode; a second tubular electrode coaxial with and spaced from said first electrode; a tubular dielectric coaxially interposed between said first and second electrodes and spaced from said second electrode by a gap; means for flowing oxygen at a speed in an axial direction within said gap; and means connecting said first electrode to a source of high voltage and said second electrode to ground; the improvement comprising:

one of said first and second electrodes being a conductive member defined by a series of axially-displaced contacting turns of wire, coaxial with each other and with said other of said electrodes, said member having respective wire centers and interstitial gaps between said centers spaced in said axial direction; said means connecting said first electrode to said source functioning to generate a corona



discharge electric field whose intensity varies cyclically and repeatedly in said axial direction, from maximums occurring above said centers to minimums occurring above said interstitial gaps; and said means for flowing oxygen comprising means for flowing said oxygen in a path through said corona discharge so that said oxygen flow will experience a fluctuating field strength of frequency determined by said flow speed and the axial spacing of said centers.

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MOVABLE TANK TYPE MULTI-PURPOSE BATCH PRODUCTION SYSTEM

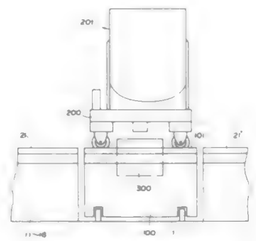
Kazuo Tanaka, Yokohama; Kaneo Masuda, Yachiyo; Mituo Eziri, Yotsukaido; Mamoru Sindome, Yokohama; Yositomo Hujiwara, Tokyo, and Tomohiro Kiyoda, Takatsuki, all of Japan, assignors to Asahi Engineering Co., Ltd., Osaka, Japan

PCT No. PCT/JP91/00531, § 371 Date Dec. 10, 1992, § 102(e) Date Dec. 10, 1992

PCT Filed Apr. 22, 1991, Ser. No. 956,876

Int. Cl.[5] B01J *8/00, 10/00*

U.S. Cl. 427—187 22 Claims



21. A movable vessel type multi-purpose batch production system which comprises:

a plurality of station means for performing respective unit operations; a guidance course;

a guided vehicle means for moving along said guidance course between said plurality of station means;

a movable vessel mounted on said guided vehicle means, said movable vessel being moved between said plurality of station means; and

washing means for washing said movable vessel after discharge of contents of said movable vessel on completion of one of said unit operations,

said washing means comprising,

a drive shaft provided with a washing fluid passage internally formed in a longitudinal direction of said drive shaft,

a follower shaft fitted externally to said drive shaft so as to rotate about said drive shaft,

a drive arm provided on said drive shaft,

a follower arm provided on said follower shaft, and

a brush holder linked to said follower arm so as to turn about said follower arm, an end of said drive arm being slidably fitted in said brush holder, said drive arm and said follower arm being constructed and arranged such that,

when an angular difference between said drive arm and said follower arm changes in accordance with an increase or decrease in rotation of said drive shaft, said brush holder automatically extends or retracts respectively, and washing fluid from said washing fluid passage inside said drive shaft is sprayed outward from said drive shaft.

5,354,543

APPARATUS FOR USE IN PRODUCING HYDROGEN CYAMIDE

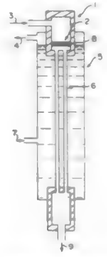
Kengo Tsukahara; Takeshi Otake, both of Niigata; Masao Saito, Yachiyo, and Toshio Koseki, Abiko, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan

Division of Ser. No. 337,404, Apr. 13, 1989, Pat. No. 4,965,060. This application Aug. 10, 1990, Ser. No. 566,533

Claims priority, application Japan, Apr. 13, 1988, 63-89305

Int. Cl.[5] F28D *7/00, 7/02;* C22C *19/05;* B01J *19/00*

U.S. Cl. 422—201 1 Claim



1. An apparatus for producing hydrogen cyanide by reacting methane or a gas containing methane as a main component, ammonia and an oxygen-containing gas, comprising a reactor and an indirect heat-exchanger therein, the heat-exchanging portion of the heat-exchanger being made of a nickel alloy which consists of (a) 60 to 80% by weight of nickel, (b) 5 to 25% by weight of chromium, (c) 0 to 3% by weight of iron and (d) 0 to 25% by weight of other metals, the total amount of the component (a), (b), (c) and (d) being 100% by weight, said heat-exchanger being adapted to be used for quenching the reaction gases without quenching them directly with water.

5,354,544

SELECTIVE REDUCTION OF NITRIC OXIDE

Anthony D. Logan, Chandler, Ariz., and Clifford N. Montreuil, Dearborn, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1993, Ser. No. 173,230

Int. Cl.[5] B01D *47/00, 53/34*

U.S. Cl. 423—213.7 9 Claims

9. A method of treating exhaust gas emissions from an internal combustion engine, the treatment providing for the staged conversion of HC, CO, and NO_x comprising the steps of:

(a) introducing an organic hydrocarbon compound containing nitro or nitroso functional groups into said emissions as a reductant and at a location adjacent the source of emission generation thereby forming a reductant/emission mixture;

(b) substantially immediately exposing said reductant/emission mixture to a transition metal exchanged silica ZSM5 zeolite catalyst having a SiO_2/Al_2O_3 ratio of about 10–1000 at a compatible space velocity; and

(c) sequentially exposing the effluent from said zeolite catalyst to an oxidation catalyst comprised of noble or base metals.

5,354,545

PROCESS FOR THE REMOVAL OF SULPHUR COMPOUNDS FROM GASES

Cees J. N. Buisman, Harich, Netherlands, assignor to Paques B.V., Harich, Netherlands

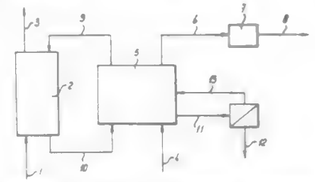
PCT No. PCT/NL91/00250, § 371 Date May 26, 1993, § 102(e) Date May 26, 1993, PCT Pub. No. WO92/10270, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 4, 1991, Ser. No. 70,336

Claims priority, application Netherlands, Dec. 4, 1990, 9002661

Int. Cl.[5] C01B *17/00*

U.S. Cl. 423—242.1 7 Claims



1. Process for the removal of sulphur compounds selected from hydrogen sulfide, alkyl mercaptans and carbon disulfide from a gaseous effluent, comprising the steps of:

a) contacting the gaseous effluent with an aqueous solution wherein sulphur compounds are dissolved;

b) adjusting the concentration of buffering compounds selected from carbonate, bicarbonate and phosphate in the aqueous solution to a value between 20 and 2000 meq/l and maintaining the pH of the aqueous solution to between 6 and 9 throughout the process;

c) subjecting the aqueous solution containing sulphides to sulphide-oxidizing bacteria in the presence of oxygen in a reactor wherein sulphide is oxidized to elemental sulphur;

d) separating elemental sulphur from the aqueous solution, so that the aqueous solution contains 0.1–50 g of elemental sulphur per 1; and

d) recycling the aqueous solution to step a).

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Patent Not Issued For This Number

5,354,547

HYDROGEN RECOVERY BY ADSORBENT MEMBRANES

Madhukar B. Rao, Allentown; Shivaji Sircar, Wescosville; Joseph M. Abrardo, Schnecksville, and William F. Bauer, Breinigsville, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 436,566, Nov. 14, 1989, abandoned. This application Aug. 3, 1992, Ser. No. 923,768

Int. Cl.[5] B01D *59/10*

U.S. Cl. 423—650 14 Claims

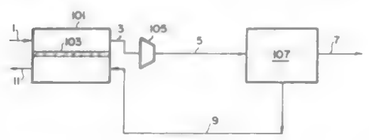
1. A method for the recovery of one or more primary components from a gaseous feed mixture comprising said primary components and one or more secondary components, wherein said secondary components are more strongly adsorbed on an adsorbent material than said primary components, said method comprising:

(a) passing said feed mixture into a separator containing a

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composite semipermeable membrane comprising microporous adsorbent material supported by a porous substrate, said membrane having a feed side and a permeate side, and withdrawing from said separator a nonpermeate intermediate product stream enriched in said primary components, wherein portions of said secondary components are selectively adsorbed by said microporous adsorbent material and diffuse from the feed side to the permeate side of said membrane as an adsorbed fluid phase;

(b) withdrawing from the permeate side of said membrane a permeate comprising said secondary components;



(c) separating said nonpermeate intermediate product stream into a high-purity product stream comprising said primary components and a reject stream comprising an additional portion of said secondary components; and

(d) passing at least a portion of said reject stream across the permeate side of said membrane as a sweep gas and withdrawing from said separator a sweep gas/permeate effluent stream, thereby increasing the recovery of said primary components and increasing the permeation rate of said secondary components through said membrane.

5,354,548

POROUS THREE-DIMENSIONAL INORGANIC OXIDE STRUCTURE WITH MYRIAD CAVITIES INTERCONNECTED BY HOLES

Abraham Araya, Merseyside, England, and Anthony L. Lovell, Clwyd, Wales, assignors to Unilever Patent Holdings B.V., Rotterdam, Netherlands

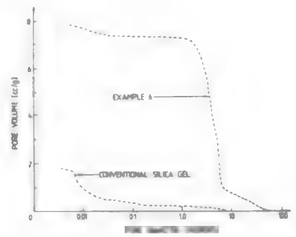
Continuation of Ser. No. 857,257, Apr. 30, 1986, abandoned. This application Nov. 2, 1992, Ser. No. 970,237

Claims priority, application United Kingdom, May 1, 1985, 8511048

The portion of the term of this patent subsequent to Dec. 19, 2006, has been disclaimed.

Int. Cl.[5] C01B *13/14, 33/12, 33/26;* **C01F** *7/02*

U.S. Cl. 423—700 **9 Claims**



1. A three-dimensional porous inorganic oxide structure having a void space in the form of a three-dimensional network of a myriad of cavities separated from each other by thin walls of inorganic oxide and interconnected by holes through said walls, in which the diameters of the cavities are in the range from 1 to 50 μm and the holes have a narrow pore size distribution and have diameters in the range 1 to 10 μm, the structure having a pore volume in the range 1 to 10 μm of at least 2 cc/g and the inorganic oxide being selected from alumina, silica, titania, zirconia and mixtures thereof.

5,354,549

IODINATED ESTERS

Jo Klaveness, Skoyen Terrasse, and Per Strande, Nordengveien, both of Norway, assignors to Nycomed Imaging AS, Oslo, Norway

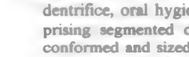
Continuation of Ser. No. 458,631, Jan. 18, 1990, abandoned. This application Dec. 5, 1991, Ser. No. 802,529

Claims priority, application United Kingdom, Jul. 24, 1987, 8717625

Int. Cl.[5] A61K *49/04, 49/00*

U.S. Cl. 424—5 **7 Claims**

1. An injectable contrast medium having a reduced tendency to cause lung era boll following intravascular administration to a human or non-human animal subject of an X-ray or ultrasound image enhancing amount of the medium, wherein the medium comprises a water-insoluble iodinated ester of the formula (I):



in which

R^1 is a substituted or unsubstituted C_{1-20} aliphatic, C_{7-20}-araliphatic or C_{6-20} aryl group or a C_{1-20} heterocyclic group having one or more hetero atoms selected from O, S and N;

R^2 is hydrogen or a substituted or unsubstituted aliphatic, aryl or araliphatic group; and

R^3 is as defined above for R^1, and may be the same as or different from R^1;

or R^2 and R^3 together represent a substituted or unsubstituted C_{1-4} alkylene group,

the molecule containing at least one iodine atom and being metabolizable to products which are soluble in body fluids;

said ester being in particulate form in suspension in a liquid for injection and having a mean particle size within the range 0.01 to 3 microns.

5,354,550

VISUALLY CLEAR GEL DENTIFRICE

Michael A. Collins, Keyport, and Joan M. Duckenfield, North Brunswick, both of N.J., assignors to Colgate Palmolive Company, New York, N.Y.

Continuation of Ser. No. 812,511, Dec. 20, 1991, Pat. No. 5,253,313. This application Apr. 12, 1993, Ser. No. 44,690

The portion of the term of this patent subsequent to Jul. 16, 2008, has been disclaimed.

Int. Cl.[5] A61K *7/16, 7/18*

U.S. Cl. 424—49 **14 Claims**

1. A visually clear gel dentifrice comprising about 5–50% by weight of a dentally acceptable dentifrice polishing agent having a refractive index in the range of about 1.41 to about 1.47, an effective antiplaque amount of a substantially water-insoluble non-cationic antibacterial agent, about 0.1%–10% by weight of a gelling agent to provide a gel consistency to said dentifrice, a liquid vehicle comprising an amount of at least 25% up to 30% by weight of said dentifrice of total water and about 30%–45% by weight of said dentifrice on a net basis of sorbitol humectant material wherein sorbitol is present as the main or only humectant component in neat amount of at least about 30% by weight of said dentifrice and other humectant, if present, is in neat amount up to 15% by weight and about 1%–4% neat amount by weight of dentifrice of a water-swellable synthetic anionic polycarboxylate polymer, wherein the visual clarity of said gel dentifrice is and remains stable.

5,354,551

ORAL AND DENTAL HYGIENE PREPARATION

Wolfgang Schmidt, Hamburg, Fed. Rep. of Germany, assignor to Desitin Arzneimittel GmbH, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 689,862, Aug. 13, 1991, abandoned. This application Apr. 16, 1993, Ser. No. 47,067

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1989, 3934416

The portion of the term of this patent subsequent to Jul. 18, 2006, has been disclaimed.

Int. Cl.[5] A01N *1/02;* **A45D** *44/18;* **C11D** *17/00*

U.S. Cl. 424—49 **6 Claims**

1. A mouth and tooth care preparation comprising foaming agents, polishing agents, aromatizing agents and other additives wherein said foaming agents, polishing agents, and aromatizing agents and said additives are mixed with at least one binding agent or a mixture thereof, said binding agent including a water-soluble, physiologically acceptable film forming substance;

said mixture is in the form of a pre-segmented film or foil dentrifice, oral hygiene mouth and toothcare strip comprising segmented dosage units, said dose units being conformed and sized to be fitted on, or placed between, the moistened bristles or on the moistened free bristled end on the moistened bristle block of a toothbrush;

said dosage unit strip being adhered to a carrier film, release film or release paper and can be peeled off said carrier film, release film or release paper and thereby utilized independent of other dosage units present on said carrier film, release film, or release paper; and

each of said dose units, subsequent to fitting, adheres, swells, and dissolves upon moisture contact such that no remains are retained in the mouth after usage and subsequent mouthwashing.

5,354,552

PROCESS FOR PREPARING CLEANSING EMULSIONS FOR BEAUTY TREATMENT AND COSMETIC PRODUCTS THEREOF

Giovanni Pantini, Milan, and Mario Visca, Alessandria, both of Italy, assignors to Ausimont S.r.L., Milan, Italy

Continuation of Ser. No. 727,699, Jul. 10, 1991, abandoned, which is a division of Ser. No. 411,312, Sep. 22, 1989, Pat. No. 5,093,023. This application Jan. 29, 1993, Ser. No. 13,478

Claims priority, application Italy, Sep. 23, 1988, 22053 A/88

Int. Cl.[5] A61K *7/50*

U.S. Cl. 424—401 **3 Claims**



1. Cleansing emulsions for skin and hair to reduce the redistribution of sebum on skin and hair of normal and seborrheic subjects and to normalize the redistribution of sebum on skin and hair of asteatosic persons, consisting of:

(1) a perfluoropolyether with perfluoroalkyl end groups having a molecular weight of about 500 to 20,000, in an amount from about 0.01 up to about 20% by weight;

(2) at least one surfactant having an interface tension less than or equal to 15 dynes/cm with the perfluoropolyether;

(3) at least one thickening agent;

(4) water;

(5) optionally, at least one polyalcohol having an interface tension less than or equal to 15 dynes/cm with the perfluoropolyether;

(6) optionally, at least one foam booster; and

(7) optionally, at least one softener, dye, preservative, opacifier, or metal sequestering agent.

5,354,553

ANTIPERSPIRANT-DEODORANT COSMETIC STICK PRODUCTS

Wendy R. Greczyn, Randolph; M. Stephen Lajoie, Basking Ridge; John R. Berschied, Lawrenceville, and Lawrence Kirschner, Flanders, all of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed Dec. 8, 1992, Ser. No. 986,916

Int. Cl.[5] A61K *7/32, 7/34, 7/38, 9/14*

U.S. Cl. 424—65 **30 Claims**

1. A process for preparing an antiperspirant-deodorant cosmetic stick product which comprises (1) heating between about 10–50 parts by weight of a volatile silicone oil ingredient to a temperature of about 120°–220° F.; (2) adding to the heated silicone oil ingredient between about 1–30 parts by weight of a liquid emollient ingredient, between about 12–24 parts by weight of a low melting point wax ingredient, and between about 0.5–5 parts by weight of a surfactant ingredient to form a homogeneous fluid medium; (3) adding between about 18–30 parts by weight of an antiperspirant ingredient to the heated fluid medium; (4) adding between about 0.05–30 parts by weight of a particulate alkali metal bicarbonate deodorant ingredient to form a homogeneous fluid suspension medium, wherein the surfaces of the added alkali metal bicarbonate particles are pre-coated with a hydrophilic organic polymer; and (5) dispensing the heated fluid suspension medium into cosmetic stick containers, and cooling the container contents to form solid sticks at room temperature.

5,354,554

CROSSLINKED ANTIBODIES AND PROCESSES FOR THEIR PREPARATION

Stephen K. Rhind, Wooburn, United Kingdom, assignor to Celltech Limited, Slough, United Kingdom

Continuation of Ser. No. 603,698, Nov. 16, 1990, abandoned. This application Jan. 22, 1992, Ser. No. 824,867

Claims priority, application United Kingdom, Feb. 10, 1989, 8903021.7

Int. Cl.[5] A61K *39/44, 49/02;* **C07K** *17/02*

U.S. Cl. 424—1.49 **19 Claims**

1. A labelled antibody fragment conjugate comprising

(a) an antibody fragment specific for one antigenic determinant,

(b) at least one non-disulphide interchain bridge cross-linking said antibody fragment, said bridge being attached to each chain at one or more bridging sites located outside of the antigen binding domains of the antibody fragment, the bridging site comprising an amino, sulphydryl, carboxyl or phenolic group present in the side-chain of an amino acid residue or an oxidized carbohydrate residue attached to the antibody chain, and

(c) a reporter or effector group covalently bound to said antibody fragment independently of said non-disulphide interchain.

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5,354,555

VACCINE TO CONTROL THE VIRAL INFECTION OF FISH

Jo-Ann C. Leong, Albany, Oreg., assignor to State of Oregon Acting By and Through The State Board of Higher Education on Behalf of Oregon State University, Eugene, Oreg.

Continuation of Ser. No. 239,775, Sep. 2, 1988, abandoned, which is a continuation-in-part of Ser. No. 722,130, Apr. 10, 1985, abandoned. This application Mar. 8, 1993, Ser. No. 27,742

Int. Cl.[5] A61K *39/12*; C12P *21/06*

U.S. Cl. 424—186.1 6 Claims

1. A process for immunizing fish against infection by the Infectious Hematopoietic Necrosis (IHN) virus, the method comprising vaccinating fish with a vaccine which induces an immune response in fish, wherein the vaccine includes an antigen from a portion of the G protein encoded by a 329 base-pair fragment produced by digesting a glycoprotein gene of IHNV with Sau3AI, the antigen having been expressed by a replicon with joined DNA which encodes the antigen.

5,354,556

CONTROLLED RELEASE POWDER AND PROCESS FOR ITS PREPARATION

Randall T. Sparks, Gainesville, Ga., and Edward J. Geoghegan, Westmeath, Ireland, assignors to Elan Corporation, plc, Athlone, Ireland

Continuation of Ser. No. 169,447, Mar. 17, 1988, Pat. No. 4,952,402, which is a continuation of Ser. No. 792,801, Oct. 30, 1985, Pat. No. 4,940,588. This application Jul. 9, 1990, Ser. No. 537,065

Claims priority, application Ireland, Oct. 30, 1984, 2788/84

The portion of the term of this patent subsequent to Aug. 28, 2007, has been disclaimed.

Int. Cl.[5] A61K *9/58*, *9/60*

U.S. Cl. 424—419 12 Claims



1. A pharmaceutical suspension of controlled release microparticles for oral administration, comprising: discrete microparticles containing active ingredient in intimate admixture with at least one non-toxic polymer, each of said microparticles being in the form of a micromatrix with the active ingredient uniformly distributed therethrough but not entirely coated by polymer, said particles having an average size of from 0.1 to 125 μm, and an aqueous vehicle for suspending said microparticles comprising a substance for inhibiting the release of active ingredient from the microparticles when said microparticles are stored in said vehicle.

5,354,557

OSTEOGENIC DEVICES

Hermann Oppermann, Medway; Engin Ozkaynak, Milford; Thangavel Kuberasampath, Medway; David C. Rueger, Hopkinton, and Roy H. L. Pang, Medway, all of Mass., assignors to Stryker Corporation, Kalamazoo, Mich.

Division of Ser. No. 841,646, Feb. 21, 1992, Pat. No. 5,266,683, which is a continuation-in-part of Ser. No. 827,052, Jan. 28, 1992, Pat. No. 5,250,302, which is a division of Ser. No. 179,406, Apr. 8, 1988, Pat. No. 4,968,590, and a continuation-in-part of Ser. No. 579,865, Sep. 7, 1990, Pat. No. 5,108,753, which is a division of Ser. No. 179,406, Apr. 8, 1988, Pat. No. 4,968,590, and a continuation-in-part of Ser. No. 621,849, Dec. 4, 1990, abandoned, which is a division of Ser. No. 232,630, Aug. 15, 1988, which is a continuation-in-part of Ser. No. 179,406, Apr. 8, 1988, Pat. No. 4,968,590, and a continuation-in-part of Ser. No. 621,988, Dec. 4, 1990, which is a division of Ser. No. 315,342, Feb. 23, 1989, Pat. No. 5,011,691, which is a continuation-in-part of Ser. No. 232,630, Aug. 15, 1988, and a continuation-in-part of Ser. No. 810,560, Dec. 20, 1991, abandoned, which is a continuation of Ser. No. 660,162, Feb. 22, 1991, which is a continuation of Ser. No. 422,699, Oct. 17, 1989, which is a continuation-in-part of Ser. No. 315,342, Feb. 23, 1989, Pat. No. 5,011,691, and a continuation-in-part of Ser. No. 569,920, Aug. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 422,699, Oct. 17, 1989, which is a continuation-in-part of Ser. No. 483,913, Feb. 22, 1990, Pat. No. 5,171,574, which is a continuation-in-part of Ser. No. 422,613, Oct. 17, 1989, Pat. No. 4,975,526, which is a continuation-in-part of Ser. No. 315,342, Feb. 23, 1989, Pat. No. 5,011,691, and a continuation-in-part of Ser. No. 569,920, Aug. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 422,699, Oct. 17, 1989, which is a continuation-in-part of Ser. No. 483,913, Feb. 22, 1990, Pat. No. 5,171,574, which is a continuation-in-part of Ser. No. 422,613, Oct. 17, 1989, Pat. No. 4,975,526, which is a continuation-in-part of Ser. No. 315,342, Feb. 23, 1989, Pat. No. 5,011,691, and a continuation-in-part of Ser. No. 600,024, Oct. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 569,920, Aug. 20, 1990, abandoned, and a continuation-in-part of Ser. No. 599,543, Oct. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 569,920, Aug. 20, 1990, abandoned, and a continuation-in-part of Ser. No. 616,374, Nov. 21, 1990, Pat. No. 5,162,114, which is a division of Ser. No. 422,613, Oct. 17, 1989, Pat. No. 4,975,526, and a continuation-in-part of Ser. No. 483,913, Feb. 22, 1990, Pat. No. 5,171,574. This application Dec. 18, 1992, Ser. No. 993,387

The portion of the term of this patent subsequent to Apr. 30, 2008, has been disclaimed.

Int. Cl.[5] C07K *13/00*, *15/00*; A61K *37/00*; C12P *21/00*

U.S. Cl. 424—423 58 Claims

1. In an osteogenic device for implantation in a mammal, the device comprising:

osteogenic protein dispersed within a biocompatible, in vivo biodegradeable matrix defining pores of a dimension sufficient to permit influx, differentiation, and proliferation of migratory progenitor cells from the body of said mammal,

the improvement wherein said osteogenic protein comprises a pair of unglycosylated protein chains disulfide bonded to produce a dimeric species having a conformation such that said pair of unglycosylated polypeptide chains is capable of inducing endochondral bone formation in said mammal when disposed in said matrix and accessible to said cells, said osteogenic protein being substantially pure, and comprising at least one of the following amino acid sequences:

a) Ala-Cys-Cys-Val-Pro-Thr-Glu-Leu-Ser-Ala-Ile Ser-Met-Leu-Tyr-Leu-Asp-Glu-Asn-Glu-Lys,

b) Val-Pro-Lys-Pro, and

c) Ala-Pro-Thr.

5,354,558

BIOERODIBLE CONTRACEPTIVE SUPPOSITORY

Peter Britton, Scotch Plains, N.J.; Patricia Flanagan, Naperville, Ill.; William P. Hart, Freehold, N.J., and Deborah Linkin, Madeira Beach, Fla., assignors to McNeil-PCC, Inc., Milltown, N.J.

Filed Sep. 10, 1992, Ser. No. 943,258

Int. Cl.[5] A61K *9/02*

U.S. Cl. 424—433 7 Claims

1. An improved method for manufacturing a birth control device comprised of water-soluble, lyophilized foam and a contraceptive, said method comprising the steps of:

(a) forming an aqueous dispersion comprising from about 1% to about 25% by weight of said contraceptive and from about 1% to about 20% by weight of at least one water-soluble polymer;

(b) providing a continuous, enclosed mixer capable of operating under pressure to foam the dispersion, said continuous mixer comprising a pump; a mixing chamber; a head assembly having a rotor; a gas inlet; an outlet for the foamed dispersion; means to measure pump speed, rotor speed, and flow rate and pressure of an incoming gas; and means to measure the back pressure of the foamed dispersion;

(c) selecting a target density for the foamed liquid dispersion and a target dosage of contraceptive for said device, said target density ranging from about 0.1 gm/cc to about 1.0 gm/cc;

(d) setting a pump speed;

(e) setting a rotor speed;

(f) setting a pressure and flow rate for an incoming gas;

(g) transferring said dispersion, at a viscosity sufficient for the dispersion to be foamed, to said mixer, and then foaming said dispersion until the density of the dispersion is substantially equal to the target density, and the back pressure ranges from about 10 to about 40 psig;

(h) placing said foamed dispersion into a receptacle of known volume; and

(i) lyophilizing said dispersion to produce a lyophilized foam;

whereby the dosage of contraceptive in the lyophilized foam is substantially equal to the target dosage.

5,354,559

ENCAPSULATION WITH STARCH HYDROLYZATE ACID ESTERS

Alpha L. Morehouse, Muscatine, Iowa, assignor to Grain Processing Corporation, Muscatine, Iowa

Continuation of Ser. No. 809,215, Dec. 16, 1991, abandoned, which is a continuation of Ser. No. 529,340, May 29, 1990, abandoned. This application Apr. 6, 1993, Ser. No. 42,757

Int. Cl.[5] A61K *9/14*, *9/26*

U.S. Cl. 424—488 5 Claims

1. A composition comprising a particulate matrix of a starch hydrolyzate acid ester having encapsulated therein a water insoluble material selected from the group consisting of food flavors, perfumes, pharmaceuticals and insecticides, said hydrolyzate acid ester being the reaction product of a substituted succinic or glutaric acid or the anhydrides thereof with a starch hydrolyzate which is refined by carbon treatment and having a dextrose equivalent of about 10 to 30 which is substantially free of granular starch, the substituted succinic or glutaric acid having the formula:

wherein R is a radical selected from the group consisting of dimethylene and trimethylene and R_1 is a hydrocarbon substituent selected from alkyl, alkenyl, aralkyl and aralkenyl.

5,354,560

SUPPORTED DRUGS WITH INCREASED DISSOLUTION RATE, AND A PROCESS FOR THEIR PREPARATION

Mara L. Lovrecich, Trieste, Italy, assignor to Vectorpharma International, S.p.A., Trieste, Italy

Continuation of Ser. No. 441,969, Nov. 28, 1989, abandoned. This application Jan. 30, 1992, Ser. No. 827,496

Claims priority, application Italy, Nov. 28, 1989, 22770 A/88

Int. Cl.[5] A61K *9/14*

U.S. Cl. 424—489 14 Claims

1. A process for the preparation of a drug on a support material wherein which comprises the steps of

(a) mixing a drug and a support material in the form of powders to form a mixture;

(b) grinding said mixture in a grinding chamber which is saturated with the vapor of a solvent which is adsorbed on the surface of said support material to form a ground mixture;

(c) drying said ground mixture under vacuum; and

(d) sieving said ground mixture to eliminate any aggregates formed.

5,354,561

PROCESS FOR PRODUCING SOLID ACTIVE SUBSTANCE FORMS AND PRODUCTS THEREOF

Joerg Rosenberg, Ludwigshafen, Fed. Rep. of Germany, and Juergen Heberger, Schifferstadt, Fed. Rep. of Germany, assignors to Knoll AG, Ludwigshafen, Fed. Rep. of Germany

PCT No. PCT/EP91/00538, § 371 Date Aug. 19, 1992, § 102(e) Date Aug. 19, 1992, PCT Pub. No. WO91/14425, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 20, 1991, Ser. No. 920,555

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1990, 4009984

Int. Cl.[5] A61K *9/14*

U.S. Cl. 424—489 3 Claims

1. A process for the production of solid forms of water-soluble active substances of drugs, which forms have good redispersibility in aqueous systems, which comprises mixing PEG and dextran with water, removing the upper phase from the resulting two-phase mixture, dissolving the water-soluble active substance in the water-clear lower phase which was formed, adding a physiologically tolerated amphiphile and subsequently removing the water.

5,354,562

PROCESS FOR PREPARING MICRONIZED POLYPEPTIDE DRUGS

Robert M. Platz, Half Moon Bay; Anna Ip, Moorpark, and Clyde L. Whitham, Montara, all of Calif., assignors to SRI International, Menlo Park, Calif.

Continuation-in-part of Ser. No. 823,218, Jan. 21, 1992, abandoned. This application Feb. 16, 1993, Ser. No. 17,540

Int. Cl.[5] A61K *9/14*

U.S. Cl. 424—489 16 Claims

1. In a process for preparing a micronized polypeptide drug comprising lyophilizing a solution of the drug in a solvent and milling the lyophilized drug in a fluid energy mill using a pressurized gas to form a powder, the improvement comprising using a pure inert gas filtered to remove particles greater than about 0.1 μm and the improvement wherein the parts of the mill that are contacted by the pressurized gas in which the polypeptide drug is being carried are not substantially abraded by said drug-carrying gas whereby the insoluble contaminants in the micronized polypeptide drug comprise less than 2% by weight of the polypeptide drug.

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5,354,563

WATER DISPERSION CONTAINING ULTRAFINE PARTICLES OF ORGANIC COMPOUNDS

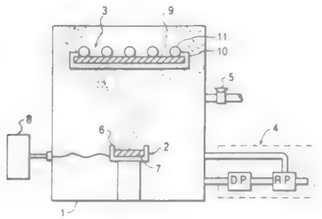
Hideki Toyotama, Saitama, Japan, assignor to Research Development Corp. of Japan and Stanley Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 853,258, Mar. 18, 1992, abandoned, which is a continuation of Ser. No. 659,452, Feb. 21, 1991, abandoned, which is a continuation of Ser. No. 307,994, Feb. 9, 1989, abandoned, which is a division of Ser. No. 865,801, May 22, 1986, Pat. No. 4,913,865. This application Jan. 16, 1993, Ser. No. 77,713

Claims priority, application Japan, Jul. 15, 1985, 60-155375

Int. Cl.[5] A61K *9/10*

U.S. Cl. 424—489 **1 Claim**



1. A water dispersion consisting of water and water-insoluble ultrafine particles consisting of a medicine dispersed in the water and having a particle size of at largest 4 μm, wherein said ultrafine particles are prepared by the steps of:

(a) heating said medicine in a vacuum vessel at a temperature of 30° C. higher than the boiling point thereof while controlling a pressure of inert gas in the vessel between 0.01 Torr and 10 Torr to evaporate said medicine; and

(b) condensing the resulting vapor of said medicine on a recovery plate in the vessel to obtain a condensate consisting of said water-insoluble ultrafine particles of medicine to be dispersed in water;

wherein said medicine is selected from the group consisting of α-bromoisovaleroylurea, barbital, phenobarbital, phenobarbital sodium, phenytoin, carbamazephine, haloperidol, diazepam, chlormezanone, phenacetin, acetaminophene, aspirin, ethenzamide, phenylbutazone, indomethacin, mepirizole, probenecide, digitoxin, sulfamonomethoxine, tolubatamide, chloramphenicol, ethyl hydroxybenzoate, vitamin B_{13}, cortisone acetate, predonisone, anthracene, pyrene, metal phthalocyanine, merocyanine, ferrocene and carbazole.

5,354,564

PERSONAL CARE COMPOSITIONS

Edward T. Borish, and Anne Tashjian, both of Mahwah, N.J., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 18, 1992, Ser. No. 993,132

Int. Cl.[5] A61K *9/16*

U.S. Cl. 424—490 **1 Claim**

1. A personal care composition comprising an aqueous dispersion of particles of dimethicone wherein said particles have a surface modifier adsorbed on the surface thereof in an amount sufficient to achieve a particle size of less than about 400 nanometers (nm), said composition comprising from about 0.1–20 percent by weight dimethicone and the surface modifier is present in an amount of from 1.0–10 mg per square meter surface area of the dimethicone.

5,354,565

BIOCIDE ACTIVATOR

Tetsuji Iwasaki; Tadashi Moriyama, and Yuichi Hioki, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Apr. 15, 1992, Ser. No. 868,349

Claims priority, application Japan, Apr. 17, 1991, 3-085281

Int. Cl.[5] A01N *55/04, 33/12, 59/00, 59/26*

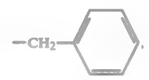
U.S. Cl. 424—605 **7 Claims**

1. A biocide composition which comprises a biocidally effective amount of a biocide which is hexakis (2-methyl-2-phenylpropyl) distannoxane, and an effective amount of a biocide activator having the formula (I):



(I)

wherein R_1 represents linear alkyl having 20 to 40 carbon atoms; R_2 and R_3 are independently selected from the group consisting of



alkyl having 1 to 4 carbon atoms and hydroxyalkyl having 2 to 4 carbon atoms; R_4 is alkyl having 12 to 30 carbon atoms, and wherein R_1 contains greater than two carbon atoms more than R_4; and counter-ion $X^{\ominus}$ is an anion of a halogen acid a polyoxyethylene alkylphenylether sulfate, a polyoxyethylene tribenzylphenylether sulfate or a sulfuric acid ester having an alkyl group of 10 or fewer carbon atoms.

5,354,566

PREPARATION OF YEAST-LEAVENED DOUGH CRUSTS

Anne M. Addesso, Ringwood, N.J.; Robert J. Martin, Warwick, N.Y.; Lysandros S. Mitsotakis, Rock Tavern, N.Y., and Robert W. Wood, Brewster, N.Y., assignors to Kraft General Foods, Inc., Northfield, Ill.

Filed Jun. 2, 1993, Ser. No. 71,155

Int. Cl.[5] A21D *13/00*

U.S. Cl. 426—9 **14 Claims**

1. A process for preparing a flat, yeast-leavened dough crust, comprising:

preparing a dough by combining dough forming ingredients comprising water, flour, and yeast in proportions sufficient to fully hydrate the flour, and mixing to partially develop the dough;

holding the dough at a temperature and for a time effective to develop the dough while maintaining good forming characteristics;

dividing the dough into weighed pieces;

finally proofing the weighed dough pieces;

pressing the weighed dough pieces between upper and lower heated platens to form and condition a flat dough preform, the upper platen being maintained at a temperature sufficient to partially gelatinize the surface of the dough in contact therewith, and the lower platen being heated to a temperature higher than that of the upper platen to sufficiently gelatinize the starch, set the gluten and reduce the moisture of the surface in contact therewith to increase the strength of the dough preform during conveying and subsequent processing and wherein the temperature of the upper platen is maintained within the range of about 70° to about 110° C., the temperature of the lower platen is maintained at a temperature of from about 150° to about 250° C., and the weighed dough piece is pressed for a time period of from about 2 to about ten seconds.

5,354,567

SEALANT FOR BAKED PRODUCTS

Victor T. Huang, Moundsview; Barbara J. Timm-Brock, Shoreview; Rhonda S. Sward, St. Paul; Laura M. Hansen, Vadnais Heights; Sylvia Abrams, Brooklyn Center, and Karin C. Gaertner, Andover, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Division of Ser. No. 890,062, May 28, 1992, Pat. No. 5,254,353. This application Aug. 10, 1993, Ser. No. 105,076

The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.

Int. Cl.[5] A23P *1/08*

U.S. Cl. 426—94 **2 Claims**

1. A baked product comprising a coating of a sealant composition, said sealant composition consisting essentially of about 40–72% sugar by weight, about 8–30% starch hydrolysate by weight having a DE of less than about 38, and about 20–30% water by weight wherein about 70–80% of the sealant composition is comprised of solids, said sealant composition being effective as a moisture barrier on the baked product.

5,354,568

PROCESS FOR TREATING RED MEAT TO CONTROL BACTERIAL CONTAMINATION AND/OR GROWTH

Fredric G. Bender, McMurray, and James L. Wild, Washington, both of Pa., assignors to Rhone-Poulenc Specialty Chemicals Co., Cranbury, N.J.

Continuation-in-part of Ser. No. 931,138, Aug. 17, 1992, Pat. No. 5,268,185, which is a continuation of Ser. No. 712,245, Jun. 7, 1991, Pat. No. 5,192,570. This application Sep. 27, 1993, Ser. No. 127,401

The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.

Int. Cl.[5] A23L *3/34*

U.S. Cl. 426—332 **17 Claims**

1. A process for treating red meat comprising treating the surface or internal organs of eviscerated red meat, with a treatment solution comprising trialkali metal orthophosphate at a pH exceeding 11.5 and at a temperature of up to about 60° C. in an amount and for a period of time effective to retard, reduce or remove bacterial contamination and/or growth without substantial color change caused by the treatment solution pH and with the proviso that the solution does not contain alcohol, nitrate or nitrite, or ascorbic acid.

5,354,569

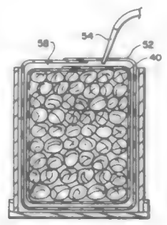
METHOD OF PACKAGING LETTUCE FOR STORING AND SHIPPING

Richard S. Brown, 34325 Chualar Canyon Rd., and Bennett W. Brown, 34021 Chualar Canyon Rd., both of Chualar, Calif. 93925

Filed Jul. 16, 1992, Ser. No. 915,093

Int. Cl.[5] B65B *31/00*

U.S. Cl. 426—411 **8 Claims**



1. A method of packaging lettuce for storing and shipping ing fresh lettuce in bulk quantities of at least several hundred lettuce in bulk quantities of at least several hundred pounds for long distance transport and reducing the deterioration and discoloration which usually arises during storage and shipping of the lettuce in bulk quantities, said method comprising:

a) fitting an upwardly struck flange of a polygonal shaped paperboard bottom closure on a lower end of a rigid polygonal paperboard construction side wall of a shipping and storage tubular container with a friction fit therebetween and without securement with mechanical fasteners so that the bottom end of the container is closed by said closure, said side wall having at least six sides connected to one another to form a continuous side wall, said bottom closure having substantially the same size and shape as the transverse cross section of the container, said container thereby forming an inner compartment;

b) inserting an inner flexible and foldable liner bag into outer flexible and foldable liner bag and where each have substantially the same size and shape thereby forming a pocket between inner and outer liners;

c) inserting the pair of flexible and foldable liner bags into the rigid container compartment of said container which is sized to snugly receive the bags when filled with lettuce in bulk quantities and opening the upper end of said inner bag to provide access to an interior chamber in said inner bag;

d) introducing fresh lettuce into said interior chamber of said inner bag to substantially fill said chamber of said inner bag with at least several hundred pounds of the fresh lettuce to a desired height therein;

e) closing the opening in said inner bag and sealing same to form a relatively air-tight interior chamber in said inner bag;

f) evacuating said chamber of said inner bag to substantially remove the oxygen therein;

g) recharging the chamber of said inner bag with a gas which is relatively inert to the lettuce to provide an oxygen reduced atmosphere in said chamber;

h) closing the opening in the outer bag and sealing same to form a relatively air-tight pocket between the inner bag and the outer bag;

i) said steps of closing the open upper end of the inner bag and sealing same (step e) and closing the upper end of the outer bag and sealing same (step h) further comprising for each of the inner and outer bags, respectively:

i) rolling excess material at the upper end of the bag into a roll and down onto the contents of the bag to form a top of the bag,

ii) folding back outwardly extending transverse end sections of the roll of the bag onto the roll forming a top of the bag so that the transverse end sections are opposed to one another, and

iii) securing the traverse end sections to the roll or the top of the bag so that there is an air tight seal to the interior of the bag;

j) evacuating the pocket between the inner and outer bags to substantially remove all oxygen therein;

k) recharging the pocket between the inner and outer bags with a gas which is relatively inert to the lettuce to provide an oxygen reduced atmosphere between the inner and outer bags;

l) maintaining the chamber of the inner bag sealed and the pocket between the inner bag and the outer bag sealed with the oxygen reduced atmosphere until need for access thereto; and

m) fitting a downwardly struck flange of a polygonal shaped paperboard lid on the upper end of the side wall with a frictional fit therebetween to close the top end of the container containing the lettuce filled bags containing the oxygen reduced atmosphere without securing the lid to the side wall with mechanical fasteners, said paperboard lid having substantially the same size and shape as the transverse cross section of the container.

4. A method of packaging lettuce for storing and transport-

VOL 1167 ISS 2 OC 11 1994 UMI

pounds and in a manner which simultaneously reduces deterioration or discoloration while permitting reusability of container portions used for the storing and transporting, said method comprising:

a) fitting an upwardly struck flange of a polygonal shaped paperboard bottom closure on a lower end of a rigid polygonal paperboard construction side wall of a shipping and storage tubular container with a friction fit therebetween and without securement with mechanical fasteners so that the bottom end of the container is closed by said closure, said side wall having at least six sides connected to one another to form a continuous side wall, said container having an inner compartment and said bottom closure being substantially of the same size and shape as the transverse cross section of the container;

b) inserting a foldable flexible plastic liner bag in a compartment formed in the container and opening the upper end of the bag to expose an interior chamber;

c) introducing the fresh lettuce in the interior chamber of the opened bag until the liner is substantially filled with at least several hundred pounds of the fresh lettuce;

d) closing the open upper end of the bag and sealing same to render the interior chamber sealed;

e) said step of closing the open upper end of the bag and sealing same (step d) further comprising:

i) rolling excess material at the upper end of the bag into a roll and down onto the contents of the bag to form a top of the bag;

ii) folding back outwardly extending transverse end sections of the roll of the bag onto the roll forming a top of the bag so that the transverse end sections are opposed to one another,

iii) securing the transverse end sections to the roll or the top of the bag so that there is an air tight seal to the interior of the bag;

f) evacuating the interior chamber of the bag and recharging the chamber with a gas which is relatively inert to the lettuce to provide an inert atmosphere containing a substantially reduced oxygen content; and

g) fitting a downwardly struck flange of a polygonal shaped paperboard lid on the upper end of the side wall with a frictional fit therebetween to close the top end of the container containing the lettuce filled bags containing the oxygen reduce atmosphere without securing the lid to the said wall with mechanical fasteners, said paperboard lid having substantially the same size and shape as the transverse cross section of the container.

5,354,570

EXTENDED USE OF FILTER AID IN OIL

Bernard Friedman, Allentown, Pa., assignor to Oil Process Systems, Inc., Allentown, Pa.

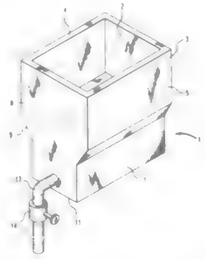
Continuation of Ser. No. 794,794, Nov. 19, 1991, Pat. No. 5,200,224, which is a continuation of Ser. No. 518,312, May 7, 1990, abandoned, which is a continuation of Ser. No. 99,134, Sep. 21, 1987, abandoned. This application Dec. 21, 1992, Ser. No. 995,670

The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.

Int. Cl.[5] A23L *1/01;* **C11B** *3/04*

U.S. Cl. 426—417 **9 Claims**

1. A method of frying food comprising providing a supply of cooking oil for use in a food frying process in a fryer apparatus, frying said food in said supply of cooking oil whereby said cooking oil including degradation products comprising surfactants are produced therein and food residue accumulates in said fryer apparatus, adding a treatment compound, directly in said cooking oil, said treatment compound reducing the amount of said surfactants to said used cooking oil, permitting said treatment compound to remain within said fryer apparatus and settle upon said food residue while continuing said food frying process, intermittently adding additional amounts of said treatment compound to said used cooking oil while further continuing said food frying process, and carrying out said method without filtering said cooking oil.



5,354,571

METHOD FOR ALIGNING AND BENDING INDIVIDUAL ROUND ELONGATED DOUGH PIECES

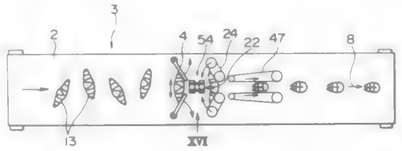
Michio Morikawa; Torahiko Hayashi, and Nobuyuki Saito, all of Utsunomiya, Japan, assignors to Rheon Automatic Machinery Co., Ltd., Japan

Filed Apr. 20, 1993, Ser. No. 49,528

Claims priority, application Japan, Apr. 27, 1992, 4-134138; Apr. 28, 1992, 4-135887

Int. Cl.[5] A21D *6/00*

U.S. Cl. 426—496 **7 Claims**



1. A method for aligning a round elongated dough piece with a feeding line of a transfer conveyor, comprising the steps of:

moving the transfer conveyor so as to transfer the round elongated dough piece placed randomly thereon;

arranging a pair of stoppers above the transfer conveyor such that the stoppers are symmetrically inclined with respect to the feeding line so as to block the round elongated dough piece, thereby causing the round elongated dough piece to roll on the moving transfer conveyor and move transversely onto the feeding line; and

moving the stoppers to their releasing position so that the dough piece is not blocked by the stoppers on the transfer conveyor.

5,354,572

DRY BUTTER-BASED FLAKE PRODUCT HAVING HIGH MILK SOLID CONTENT

Van Miller, R.R. 2, Brisbane, Ontario, Canada N0B 1T0 , and Rene Miller, 9 Carey Crescent, Guelph, Ontario, Canada N1H 7J9

Filed May 4, 1993, Ser. No. 56,747

Int. Cl.[5] A23C *15/04, 15/12*

U.S. Cl. 426—580 **10 Claims**

1. A dry butter-based flake product for incorporation into baked goods and flour confections, wherein said dry butter-based flake product comprises from substantially 0% to 2% moisture, from about 20% to about 60% dry dairy solids, with the balance being butterfat having less than 1% moisture content;

wherein said dry dairy solids are naturally occurring milk solids from which substantially all water has been removed;

wherein said butterfat is derived from whole milk; and

wherein said butterfat exhibits standard butterfat solid fat index and melting points.

5,354,573

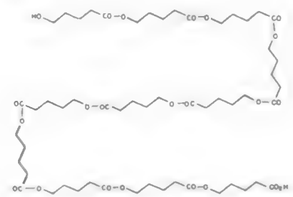
FAT SOLUBLE POLYMERS AND THEIR USE IN FOODS

Akiva T. Gross, Newton; Radha Iyengar, Belmont, and Mark L. Shulman, Waltham, all of Mass., assignors to Opta Food Ingredients, Inc., Bedford, Mass.

Continuation-in-part of Ser. No. 923,258, Jul. 31, 1992, abandoned, which is a continuation of Ser. No. 579,482, Sep. 7, 1990, Pat. No. 5,137,743. This application Apr. 2, 1993, Ser. No. 41,931

Int. Cl.[5] A23D *7/00, 9/00*

U.S. Cl. 426—603 **18 Claims**



1. An edible food product containing an oil phase thickened with a texturizing agent present in an amount sufficient to significantly increase the viscosity of the oil phase of said edible food product, said texturizing agent comprising an alkyl-substituted, non-nitrogen containing oil-soluble polymer having a molecular weight of at least about 2000 daltons, wherein said oil phase is a synthetic fat, a fat mimetic or combinations thereof.

5,354,574

METHOD FOR PRODUCING OPTICAL FIBER HAVING FORMYL GROUPS ON CORE SURFACE THEREOF

Takeshi Kobayashi; Shinji Iijima, both of Nagoya; Ken-ichi Shimada, Gifu; Kazue Obe, Gifu, and Yasunori Sakai, Gifu, all of Japan, assignors to Ibiden Co., Ltd., Gifu, Japan

Filed Jun. 22, 1993, Ser. No. 80,615

Claims priority, application Japan, Jun. 23, 1992, 4-189983; Aug. 28, 1992, 4-254171; Jan. 19, 1993, 5-024853; Jan. 19, 1993, 5-024854

Int. Cl.[5] B05D *5/06*

U.S. Cl. 427—21.3 **16 Claims**

1. A method for producing a plastic optical fiber having formyl groups on a core surface thereof, comprising the step of immersing the core surface of a plastic optical fiber, selected from the group consisting of polystyrene, polyacrylic ester, polyester, polyacrylamide, polyvinyl alcohol, polyethylene terephthalate, polycarbonate and copolymers thereof, in a treating solution containing from 0.5 to 40 mM alkali metal hydroxide and a compound having formyl groups, in water or lower alcohol solvent to introduce formyl groups on the core surface.

5,354,575

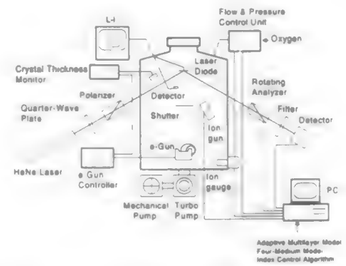
ELLIPSOMETRIC APPROACH TO ANTI-REFLECTION COATINGS OF SEMICONDUCTOR LASER AMPLIFIERS

Mario Dagenais, Chevy-Chase, and I-Fan Wu, Hyattsville, both of Md., assignors to University of Maryland, College Park, Md.

Filed Apr. 16, 1993, Ser. No. 47,840

Int. Cl.[5] B05D *3/06, 5/06;* **C23C** *16/00, 14/00*

U.S. Cl. 427—10 **19 Claims**



1. In a method of depositing at least one low reflectivity anti-reflection (AR) coating with reflectivity of less than 10^{-3} on at least one facet of a laser device using a deposition apparatus that includes a real-time in-situ ellipsometric monitoring means for feedback deposition control of the at least one AR coating, a chamber means for depositing the at least one AR coating, the chamber means includes a pressure leak valve means for controlling an index of refraction of a layer being deposited wherein the at least one AR coating is at least one layer;

the improvement comprising the steps of:

(a) preparing the laser device for depositing the at least one layer on at least one facet of the laser device;

(b) preparing a reference means for feedback control of the at least one layer to be deposited by using the ellipsometric monitoring means which monitors an index of refraction and thickness of the at least one layer being deposited;

(c) positioning the reference means and the laser device on a sample holder in the chamber means, the reference means is next to the laser device;

(d) preparing the deposition apparatus for the at least one layer and attaching electrical connections to the laser device whereby the laser device can be electrically excited by an electrical source with an electrical current;

(e) physically aligning the sample holder with respect to the ellipsometric monitoring means such that calibration measurements of an incident angle between the sample holder and the ellipsometric monitoring means can be achieved;

(f) applying the electrical current to the laser device before depositing of the at least one layer begins such that the electrical current is higher than a threshold current of the laser device wherein the threshold current is a minimum current required for the laser device to laser prior to deposition of the at least one AR coating, the electrical current is maintained during the deposition of the at least one layer;

(g) depositing the at least one layer on the at least one facet of the laser device;

(h) using the real-time in-situ ellipsometric monitoring means for measuring ellipsometric angles of Δ and ψ on the reference means whereby the thickness and index of refraction of the at least one layer being deposited can be determined by a computing means;

(i) using the computing means for evaluating both a calculated i) average and ii) instantaneous indices of refraction of the at least one layer being deposited by inputting to the computing means the monitored ellipsometric angles of Δ and ψ on the reference means and using derived data from

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the monitored angles of Δ and ψ with a non-absorptive deposition model of the at least one layer being deposited whereby the computing means in real-time iteratively solves the calculated i) average and ii) instantaneous indices of refraction of the at least one layer being deposited;

(j) controlling pressure of the chamber means by leaking a gas into the chamber means to change the index of refraction of the at least one layer being deposited to minimize a deposition error signal wherein the error signal is a difference between the calculated i) average and ii) instantaneous indices of refraction of the at least one layer being deposited and a required index of refraction of the at least one layer being deposited; and

(k) detecting an operational characteristic of the laser device to determine a deposition end-point of the at least one AR coating on at least one facet of the laser device and stopping the deposition of the at least one layer when the operational characteristic of the laser device is achieved.

5,354,576

HYDROGEN STORAGE ALLOY ELECTRODE

Yunshi Zhang; Deying Song; Youxiao Chen; Jun Chen; Genshi Wang; Huatang Yuan; Zaoxiang Zhou; Xeujun Cao; Taoshi Zang, and Daxin Zhang, all of P.R. China, China, assignors to Nan Kai University, Tainjin, China

Filed Dec. 23, 1992, Ser. No. 995,844

Claims priority, application China, Dec. 28, 1991, 91111747.4

Int. Cl.[5] H01M *4/24*

U.S. Cl. 429—59 **12 Claims**

1. A hydrogen storage alloy electrode having an active material which comprises:

a first hydrogen storage alloy M_1 with a composition of

$$MmNi_{5-x-y-z}A_xB_yC_z$$

wherein Mm is a mischmetal, A=Co, Cr, V; B=Mn, Sn, Be; C=Al, Ca, Mg, Zr, Nb; $0 \leqq x \leqq 0.5$, $0 \leqq y \leqq 1.5$, $0 \leqq z \leqq 0.5$ and a second hydrogen storage alloy M_2 with a composition of

$$D_{2-u}E_{1-v}F_uG_v$$

wherein D=Mg, Al; E=Cu, Zn; F=Ca, Be; G=Sn, Bi; $0 \leqq u \leqq 1$, $0 \leqq v \leqq 0.5$; and both the alloy M_1 and the alloy M_2 being coated with a Ni, P based metallic compound before the two alloys are mixed.

5,354,577

PROCESS FOR APPLYING A PROTECTIVE PLASTIC FILM, AND A DEVICE FOR CARRYING OUT THE PROCESS

Wolfgang Klingel, Leonberger Strasse 86, W-7259 Friolzheim, Fed. Rep. of Germany

PCT No. PCT/EP91/00280, § 371 Date Oct. 23, 1992, § 102(e) Date Oct. 23, 1992, PCT Pub. No. WO91/16806, PCT Pub. Date Oct. 31, 1991

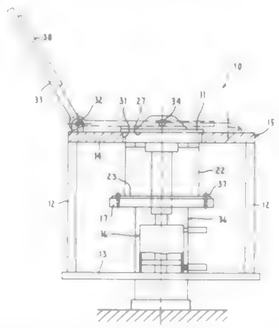
PCT Filed Feb. 13, 1991, Ser. No. 941,439

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1990, 4012903

Int. Cl.[5] B05D *1/00*

U.S. Cl. 427—96 **16 Claims**

1. In a process for applying a protective plastic film to a printed circuit board fitted with electronic components on at least one side, on which printed circuit board there are also areas which are fitted with such components and are to be kept free of film, including a vat into which a coating material in a liquid state is introduced, with the coating material and the surface(s) of the printed circuit board to be coated are brought into a wetting contact, after which the wetted and surface coated printed circuit board is subjected to a drying operation during which the coating is hardened, the improvement comprising the steps of: providing a vat wall which has exposed rims of its walls or wall sections shaped to correspond with the contour of the surface(s) to be coated and extending in a plane or surface which corresponds in shape with the plane or surface containing the contours of the surface(s) to be coated, moving the side of the printed circuit board which is to be partially coated into abutment with the coplanar exposed rims and pressing the circuit board on these rims corresponding with the shape of the coating surface(s), and moving the vat wall and the printed circuit board engaging it into a position in



which the printed circuit board forms the lower base of the vat and the coating material in the vat can spread over the surfaces to be coated to wet same, thereafter moving the vat with the printed circuit board into a position in which the excess coating material drains off from the printed circuit board, and thereafter removing the circuit board and subjecting the circuit board to a drying or hardening operation.

5,354,578

PROCESS FOR THE PREPARATION OF WEAR-RESISTANT HARD MATERIAL LAYERS ON METALLIC SUPPORTS

Hans-Hermann Beyer, Kahl; Roland Gerner, Rodenbach; Wolfgang Weber, Karlstein, and Klaus Zimmermann, Alzenau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 897,662, Jun. 12, 1992, abandoned. This application Jul. 19, 1993, Ser. No. 92,947

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1991, 4119462; Sep. 25, 1991, 4131871

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—190 **19 Claims**

1. A process for the preparation of a wear-resistant material layer on a metallic support comprising:

(a) grinding hard material particles and soldering particles to a homogeneous mixture having an average particle size from 1 to 20 μm, wherein said soldering particles are selected from the group consisting of Ni_3P and copper based particles;

(b) transforming said homogenous mixture into a suspension by admixture with 0.1 to 20% by weight of an organic binding agent and from 1 to 50% by weight of an organic solvent and the balance of the mixture being said hard material/soldering particles;

(c) applying said suspension onto said support in the form of a layer which has a thickness between 10 and 500 μm, wherein said organic binding agent is thermally decomposable without leaving a residue;

(d) burning out said binding agent at a temperature between 300° C. and 500° C.;

(e) and soldering said hard material particles on said support by heating at a temperature between 800° C. to 1100° C.

5,354,579

MECHANICAL PLATING METHOD FOR FORMING A ZINC ALLOY FILM BY EJECTING HEAT TREATED POWDER

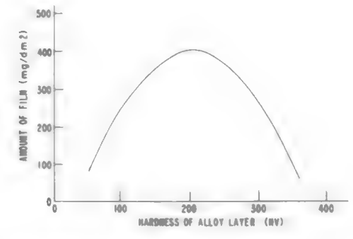
Masatsugu Watanabe; Yasuhisa Nagano; Hajime Shimoyama, and Tomohiro Osaka, all of Okayama, Japan, assignors to Dowa Iron Powder Co., Ltd., Okayama, Japan

Division of Ser. No. 17,626, Feb. 12, 1993. This application Sep. 23, 1993, Ser. No. 126,047

Claims priority, application Japan, Feb. 14, 1992, 4-061427

Int. Cl.[5] B05D *1//12*

U.S. Cl. 427—192 **2 Claims**



1. A mechanical plating method for forming a zinc alloy film on a surface of a substrate to be processed, comprising:

thermally treating an ejection powder comprising iron or iron alloy nuclei coated with zinc alloy so that the hardness of the zinc alloy is adjusted to be 60 to 370 n Vicker's hardness; and

ejecting said ejection powder onto said surface.

5,354,580

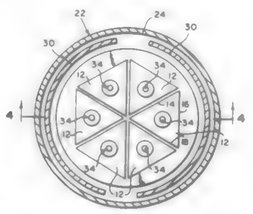
TRIANGULAR DEPOSITION CHAMBER FOR A VAPOR DEPOSITION SYSTEM

Jitendra S. Goela, Andover; Lee E. Burns, Woburn; ALexander Teverovsky, Concord, and James C. MacDonald, Stoneham, all of Mass., assignors to CVD Incorporated, Woburn, Mass.

Filed Jun. 8, 1993, Ser. No. 73,862

Int. Cl.[5] C23C *16/00*

U.S. Cl. 427—248.1 **20 Claims**



1. An apparatus for the manufacture of materials by vapor deposition comprising:

a means for supplying a gas at a controlled rate;

a vapor deposition furnace, having a plurality of side walls, a top cover and a bottom cover;

a plurality of first mandrel plates within said vapor deposition furnace, said first mandrel plates made from a material suitable for use in a vapor deposition furnace, wherein said first mandrel plates are arranged to form a vapor deposition cell having an outside, an inside, a first end, and a second end, said inside of said vapor deposition cell defining a vapor deposition chamber having a triangular cross section;

a means to heat said vapor deposition chamber; and

a means to conduct said gas to said first end of said vapor deposition chamber such that said reaction gas will flow through said vapor deposition chamber from said first end to said second end where said gas exits the vapor deposition chamber;

wherein said gas flows parallel to the surface of the heated mandrel plates and said gas is deposited onto said heated mandrel plates to form a vapor deposited structure.

12. A process for the manufacture of materials by vapor deposition having a high gas utilization efficiency comprising:

supplying a gas at a controlled rate to a vapor deposition furnace, having a plurality of side walls, a top cover and a bottom cover, a plurality of first mandrel plates within said vapor deposition furnace, said first mandrel plates made from a material suitable for use in a vapor deposition furnace, wherein said first mandrel plates are arranged to form a vapor deposition cell having an outside, an inside, a first end, and a second end, said inside of said vapor deposition cell defining a vapor deposition chamber having a triangular cross section;

heating said vapor deposition chamber; and

conducting said gas to said first end of said vapor deposition chamber such that said reaction gas will flow through said vapor deposition chamber from said first end to said second end where said gas exits the vapor deposition chamber;

wherein said gas flows parallel to the surface of the heated mandrel plates and said gas is deposited onto said heated mandrel plates to form a vapor deposited structure.

5,354,581

SURFACE TREATMENT OF SHEET- OR PLATE-LIKE BLANKS

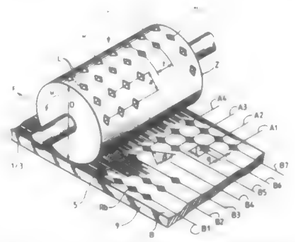
Hans-Jürgen Laube, Siegershausen, Switzerland, assignor to HJL Projects & Developments Ltd., Dudingen, Switzerland

Filed Jan. 7, 1991, Ser. No. 638,094

Claims priority, application Switzerland, Jan. 17, 1990, 00148/90-6; Nov. 28, 1990, 03768/90-7

Int. Cl.[5] B05D *3/00, 3/12*

U.S. Cl. 427—299 **21 Claims**



1. A method of mechanically surface-roughening one surface of a panel-, sheet- or plate-like blank, comprising a first step of mechanically forming the one surface with a plurality of grooves; and a second step of thereupon debossing the one surface, including mechanically forming said surface with a plurality of depressions.

5,354,582

METHOD FOR UTILIZING TONER FINES AS AN ELECTROSTATIC SPRAY COATING MATERIAL

Meftah U. Mahmud, Nashua, N.H., assignor to Nashua Corporation, Nashua, N.H.

Filed Nov. 20, 1992, Ser. No. 979,197

Int. Cl.[5] B05D *1/06*

U.S. Cl. 427—485 **4 Claims**

1. A method of utilizing a residue portion of manufactured toner particles which are generally of a size unacceptable for

VOL 1167 ISS 2 OC 11 1994 UMI

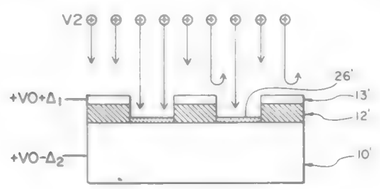
photocopying, said method comprising the charge-responsive formation of a coating by:
- manufacturing toner particles;
- segregating said manufactured toner particles into
  - toner particles generally of a size acceptable for photocopying purposes, and
  - residue toner particles generally of a smaller size not acceptable for photocopying purposes;
- diverting said toner particles which are generally of a size acceptable for photocopying purposes to toner packaging means for the packaging thereof;
- diverting said residue toner particles to coating material preparation means comprising
  - means for packaging said residue toner particles for use in charge-responsive spray coating;
- supplying said residue toner particles to charge-responsive spray coating means; and
- electrostatically spraying said residue toner particles from said charge-responsive spray coating means to form a continuous coating on a substrate with,
  - an air gap separating said charge-responsive spray coating means and said substrate and providing an air path through which said residue toner particles are electrostatically projected from said spray coating means to said substrate.

5,354,583

APPARATUS AND METHOD FOR SELECTIVE AREA DEPOSITION OF THIN FILMS ON ELECTRICALLY BIASED SUBSTRATES

Raymond A. Zuhr, Oak Ridge; Tony E. Haynes, Knoxville, both of Tenn., and Andrzej Golanski, Cheylas, France, assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Nov. 9, 1992, Ser. No. 972,778
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—526 **4 Claims**



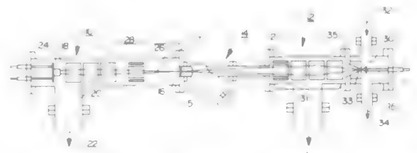
1. A method of selective area deposition of a thin film of an ionized material from an ion source having an original electrical potential on an electrically biased substrate having an insulating pattern formed thereon and a conducting layer formed on the insulating pattern, a portion of the substrate being exposed between adjacent portions of the insulating pattern, the method including the steps of:
- applying a first electrical potential to the substrate, said first electrical potential being sufficiently distinct from the original electrical potential of the ionized material to attract ionized material onto the exposed portion of the substrate;
- applying a second electrical potential to the conducting layer, the second electrical potential being similar to the original electrical potential to cause repulsion of the ionized material from the conducting layer and distinct from the first electrical potential to permit attraction of the ionized material to the exposed substrate; and
- irradiating the patterned substrate with the ionized material from the ion source having the original electrical potential which avoids implantation of the ionized material into the exposed portion of the substrate.

5,354,584

IN SITU LOW ENERGY ION DOPING OF MATERIALS GROWN BY CVD

Howard K. Schmidt, Houston, Tex., assignor to Schmidt Instruments, Inc., Houston, Tex.

Continuation of Ser. No. 742,001, Aug. 8, 1991, Pat. No. 5,234,724. This application May 7, 1993, Ser. No. 59,245
Int. Cl.[5] B05D *3/06;* **C23C** *16/00*
U.S. Cl. 427—530 **10 Claims**



1. A method of doping a material as it is grown in a chamber at a pressure of at least 0.01 torr by chemical vapor deposition on a substrate comprising:
- ionizing a dopant;
- forming an ion beam from the ionized dopant, the energy of the beam being selected to be high enough to implant the dopant in the material and low enough to avoid damaging the lattice, the geometry of the beam being formed to impact an area of the material; and
- impacting the ion beam onto the area of the surface of the material while the material is growing by chemical vapor deposition.

5,354,585

MOLDING MATERIALS AND MOLDED PRODUCTS THEREFORM

Takashi Shibata, Kamakura; Koichi Akiyama, Osaka, and Shinichiro Asao, Nishinomiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Feb. 13, 1992, Ser. No. 834,822
Claims priority, application Japan, Feb. 14, 1991, 3-021180
Int. Cl.[5] B32B *5/18, 5/16*
U.S. Cl. 428—35.9 **9 Claims**

1. A molding material which is prepared by
(1) coating one surface of a film (A) with a thermosetting resin composition containing a hollow filler having a number average particle diameter of 20 to 65μ, a vinyl monomer and a polymerization initiator, the amount of the hollow filler ranging from 10 to 200 parts by weight relative to 100 parts by weight of the mixture of resin component and vinyl monomer in the resin composition,
(2) placing a reinforcing fiber on the coated film obtained in step (1), the amount of the reinforcing fiber being 10 to 80 weight % of the said molding material,
(3) covering the reinforcing fiber with a film (B), and
(4) compressing the resulting structure to impregnate the resulting fiber with the liquid components of the resin composition.

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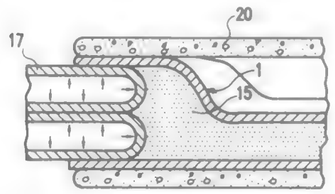
TUBULAR LINING MATERIAL AND A METHOD FOR IMPREGNATING THE SAME WITH A HARDENABLE RESIN

Yasuhiro Yokoshima, Ibaraki, and Hiroyuki Aoki, Tokorozawa, both of Japan, assignors to Shonan Gosei-Jushi Seisakusho K.K., Kanagawa; Yokoshima & Company, Ibaraki and OAR Inc., Saitama, all of Japan

Filed Dec. 7, 1992, Ser. No. 987,488
Claims priority, application Japan, Dec. 6, 1991, 3-348523
Int. Cl.[5] B29D *22/00, 23/00;* **B32B** *1/08*
U.S. Cl. 428—36.1 **9 Claims**

1. A tubular liner for lining the inner wall of a pipe, which liner comprises:

a flexible tubular resin-absorbent fabric and a tubular plastic film welded on the external surface of said tubular resin-absorbent fabric, wherein at least one portion of the tubular resin-absorbent fabric is formed of a material having a higher air permeability than the remainder of said resin-absorbent fabric.



5,354,587

HYDROPHILIC COMPOSITIONS WITH INCREASED THERMAL AND SOLVENT RESISTANCE

Dilip R. Abayasekara, Newark, Del., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Filed Nov. 15, 1993, Ser. No. 153,115
Int. Cl.[5] B29D *22/00*
U.S. Cl. 428—36.6 **8 Claims**

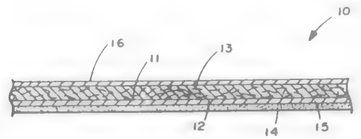
1. A hydrophilic, fluid permeable material comprising a substrate having continuous pores through it in which at least a portion of the interior of the substrate is coated with a copolymer of a fluorinated ethylenically unsaturated monomer and vinyl alcohol, wherein the vinyl alcohol units are cross-linked with a multifunctional epoxide, containing at least two functional groups.

5,354,588

LINERLESS LABELS WITH TIE COAT

Nancy G. Mitchell, Grand Island; Joseph W. Langan, Cheektowaga; Adele C. Shipston, Williamsville; Timothy J. Russ, Niagara Falls, and Douglas M. Smith, Buffalo, all of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jul. 13, 1992, Ser. No. 912,851
Int. Cl.[5] A61F *13/02;* **B32B** *7/12*
U.S. Cl. 428—40 **3 Claims**



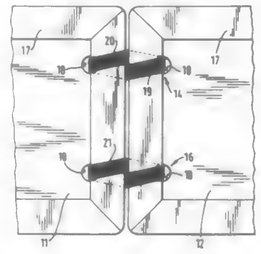
1. Linerless label stock, comprising:
a substrate having first and second faces;
a pressure sensitive adhesive;
a tie coat facilitating adherence of said pressure sensitive adhesive to said first face of said substrate, said tie coat adhering to both said substrate first face and said pressure sensitive adhesive; and
a release coat, of material that has a low adherence to said pressure sensitive adhesive, on said second face of said substrate, wherein said tie coating consists essentially of about 30–40 parts silica dispersion, about 20–35 parts polyvinyl alcohol, and about 30–40 parts water.

5,354,589

HINGED STRUCTURES

Geoffrey L. Wass, London, United Kingdom, assignor to Kidabra Limited, London, United Kingdom

Filed Sep. 17, 1992, Ser. No. 946,767
Int. Cl.[5] E04B *1/38;* **A63H** *33/10;* **F16B** *1/00*
U.S. Cl. 428—61 **3 Claims**



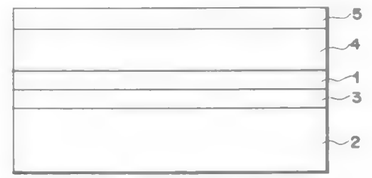
1. A playhouse comprising a wall structure having a top edge and a roof structure, said roof structure being supported by at least part of said top edge, both said roof structure and said wall structure comprising a plurality of panel members, each panel member being connected to an adjacent plate member by hinge means, and each of said panel members having a plurality of edge portions; wherein each panel has one or more apertures through an edge portion thereof, said edge portion being adjacent an edge portion of said adjacent panel member, said edge portion of said adjacent panel having a further aperture therethrough, and said hinge means comprises a length of webbing material configured in a figure-of-eight, said length of material comprising first and second loops, said first loop passing around said edge portion and through said aperture of said panel member, and said second loop passing around said edge portion and through said aperture of said adjacent panel member.

5,354,590

OPTICAL RECORDING MEDIUM

Miki Tamura, and Tsuyoshi Santoh, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1992, Ser. No. 835,343
Claims priority, application Japan, Feb. 16, 1991, 3-042447; Mar. 28, 1991, 3-087392
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—64 **17 Claims**



1. An optical recording medium having
a) a substrate,
b) a recording layer containing an organic coloring matter, and
c) a sensitivity-improvement layer on the recording layer, wherein:
the sensitivity-improvement layer is formed out of an elastic polymer,
the recording layer contains a radical scavenging compound, and

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the concentration of the radical scavenging compound in the recording layer is higher at the side of the sensitivity-improvement layer than at the side of the substrate.

5,354,591

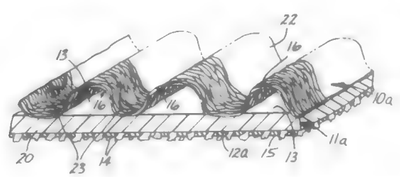
COATED ABRASIVE SHEET MATERIAL WITH LOOP MATERIAL FOR ATTACHMENT INCORPORATED THEREIN

Ronald L. Ott, Lake Elmo; Michael R. Gorman, White Bear Lake; Dennis L. Becker, Vadnais Heights; Donald W. Folske, Oakdale; William L. Melbye, Minneapolis; Susan K. Nestegard, Woodbury; David F. Slama, Vadnais Heights; John L. Barry, North St. Paul, and Jeffrey R. McMahon, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 748,038, Aug. 21, 1991, Pat. No. 5,254,194, which is a continuation-in-part of Ser. No. 555,049, Jul. 18, 1990, Pat. No. 5,256,231, which is a continuation-in-part of Ser. No. 517,409, Apr. 27, 1990, abandoned, which is a continuation of Ser. No. 193,832, May 13, 1988, abandoned. This application Aug. 2, 1993, Ser. No. 100,770

Int. Cl.[5] **B32B** *3/06*

U.S. Cl. 428—99 **15 Claims**



1. A sheet of coated abrasive material comprising a backing having front and rear surfaces, a layer of abrasive grains adhered to said front surface by a layer of bonding resin and a multiplicity of loops that project from said rear surface, which sheet of coated abrasive material is adapted to be held on the support surface of a pad from which project a multiplicity of hooks by releasable engagement between the loops and the hooks while the sheet is driven by the pad to abrade a workpiece, wherein said backing comprises a non-fibrous polymeric bonding layer defining said rear surface, and said sheet of coated abrasive material comprises a sheet of longitudinally oriented fibers having anchor portions at spaced bonding locations, said anchor portions of said sheet of longitudinally oriented fibers being embedded and bonded in the polymeric bonding layer while not extending entirely through the polymeric bonding layer, and said sheet of longitudinally oriented fibers having arcuate portions that project from the rear surface of the backing between the bonding locations to provide said loops.

5,354,592

SOLID SURFACING EDGE TREATMENT METHOD AND ARTICLE

Thomas Miskell, 130 Bloom Dr., Dixon, Calif. 95620

Filed Jan. 14, 1993, Ser. No. 4,504

Int. Cl.[5] **B32B** *3/02;* **B27F** *1/00;* **B27M** *1/08;* **B29C** *65/00*

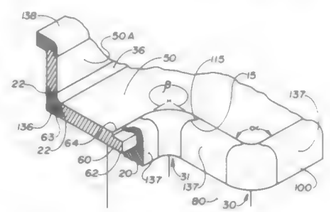
U.S. Cl. 428—115 **22 Claims**

1. A method for forming edge treatments from unfinished stock for solid surfacing, the edge treatments connectable to cantilevered margins of the solid surfacing at corners; including the steps of:

boring a cylindrical center hole through the stock to create an inner cylindrical surface;

cutting an outer periphery of the stock to form an outer cylindrical surface substantially concentric with the inner cylindrical surface but having a greater diameter, such that the stock is formed into a torus; and

dividing the torus into separate arcuate segments, each segment forming an edge treatment having a surface conforming to the corner of the cantilevered margin,



whereby the edge treatments can be attached to the cantilevered margin of the solid surfacing.

5,354,593

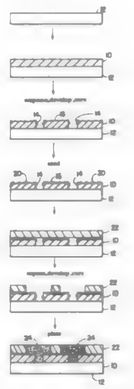
MULTILAYER CIRCUIT BOARD HAVING MICROPOROUS LAYERS AND METHOD FOR MAKING SAME

Paul E. Grandmont, Cumberland, R.I.; Harold Lake, Sharon, and Richard A. Anderson, North Attleboro, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 429,139, Oct. 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 742,747, Jun. 10, 1985, Pat. No. 4,915,983. This application Nov. 10, 1992, Ser. No. 973,939

Int. Cl.[5] **B32B** *9/00*

U.S. Cl. 428—137 **16 Claims**



1. A printed wiring board comprising a patternable circuit layer made of a first material and a via layer made of a cured microporous photopolymer whose chemical composition is different from the chemical composition of said first material.

5,354,594

WEATHER STRIP

Takeshi Naito, and Masanori Aritake, both of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Oct. 31, 1991, Ser. No. 784,504

Claims priority, application Japan, Oct. 31, 1990, 2-296685

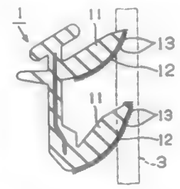
Int. Cl.[5] **E06B** *7/16*

U.S. Cl. 428—122 **10 Claims**

1. A weather strip comprising:

a weather strip body having a sealing portion surface;

a flock portion comprised of a plurality of individual piles adhered to said sealing portion surface; and



a hardened reactive silicone coating covering substantially all of the individual piles forming said flock portion, said hardened reactive silicone layer including dispersed pockets of fine powder.

5,354,595

SURFACE-ROUGHENED POLYESTER FILM

Eiji Yamamoto; Tsuneo Tamura; Katsuyuki Touma; Minoru Kishida; Yoshiaki Kozuka; Hiroyuki Matsuda; Hayami Ohnishi; Akira Menjyu, and Shouji Nishimoto, all of Kyoto, Japan, assignors to Unitika, Ltd., Japan

Filed Jun. 25, 1992, Ser. No. 903,584

Claims priority, application Japan, Jul. 2, 1991, 3-186950; Sep. 24, 1991, 3-272000; Apr. 18, 1992, 4-125614

Int. Cl.[5] **B32B** *27/36, 7/10*

U.S. Cl. 428—147 **16 Claims**

1. A surface-roughened film comprising at least one layer containing 97 to 99.99 wt. % of a thermoplastic polyester resin (a) and 0.01 to 3 wt. % of a particulate maleimide copolymeric resin (b) having a glass transition temperature higher than that of said thermoplastic polyester resin (a), a critical surface tension more than 0.1 dyne/cm different from that of said thermoplastic polyester resin (a), and a melt viscosity in the range of 500 to 50,000 poise at a temperature of 280° C. and shear rate of 10^2 sec^{-1}, wherein said particulate maleimide copolymeric resin (b) is dispersed as a discontinuous phase in resin (a), said film having at least one surface with microprotuberances with cores of said thermoplastic resin (b).

5,354,596

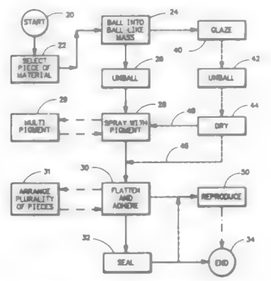
DECORATIVE COVERINGS AND PRODUCTION METHODS THEREFORE

Nancy Chew, 3781 S. Unita St., Denver, Colo. 80237, and Kevin C. Watts, 2068 S. Milwaukee, Denver, Colo. 80210

Filed Dec. 10, 1990, Ser. No. 625,549

Int. Cl.[5] **D06N** *7/04*

U.S. Cl. 428—152 **29 Claims**



1. A method of producing a decorative panel adapted to be supported on a surface, comprising:

(a) providing a flat piece of creaseable material which has a memory for creases placed therein;

(b) creasing said flat piece along a multitude of crease lines to form a relatively flat production blank that has a front surface and a back surface and that is configured with a topography having peak portions and valley portions formed by regions of said production blank between various ones of said crease lines; and

(c) spraying a sprayable pigment onto at least one of said front and back surfaces of said production blank in an oblique direction so that said sprayable pigment impinges and is retained on windward sides of said peak portions with said valley portions and leeward sides of said peak portions being shielded from said sprayable pigment.

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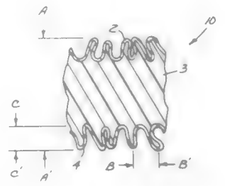
ELASTOMERIC TAPES WITH MICROTEXTURED SKIN LAYERS

Karen M. Capik, Woodbury, Minn.; Dennis L. Krueger, Hudson, Wis., and Joaquin Delgado, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 744,675, Aug. 9, 1991, abandoned, which is a continuation of Ser. No. 502,329, Mar. 30, 1990, abandoned. This application Dec. 4, 1992, Ser. No. 985,740

Int. Cl.[5] **C09J** *7/02*

U.S. Cl. 428—152 **20 Claims**



1. An elastomeric laminate tape consisting essentially of an elastomeric laminate comprised of at least one elastomeric layer and at least one outer skin layer wherein the at least one skin layer has a microtextured skin layer surface formed by inelastic deformation of the at least one skin layer in more than one direction and at least one substantially continuous pressure-sensitive adhesive layer in continuous contact with said at least one skin layer of said laminate.

5,354,598

ARTICLE CAPABLE OF DISPLAYING DEFINED IMAGES

Robert P. Arens, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 10, 1992, Ser. No. 867,139

Int. Cl.[5] **B32B** *9/00*

U.S. Cl. 428—195 **19 Claims**

1. An article capable of being marked with a fluid so as to provide an area of a localized image comprising

(a) a substrate, and

(b) a patterned treatment of a barrier material on or in said substrate;

wherein said treatment of barrier material confines said fluid to said area by preventing the migration of said fluid from said area, and wherein said barrier is selected from the group consisting of an oleophobic material, a hydrophobic material, an oleophobic-hydrophobic material and a jellifying material.

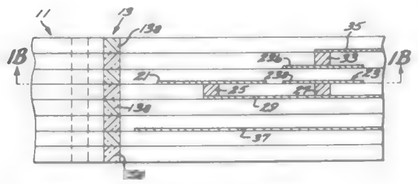
VOL 1167 ISS 2 OC 11 1994 UMI

5,354,599

DIELECTRIC VIAS WITHIN MULTI-LAYER 3-DIMENSIONAL STRUCTURES/SUBSTRATES

Robert F. McClanahan, Valencia, and Robert D. Washburn, Malibu, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 951,473, Sep. 24, 1992, abandoned. This application Sep. 27, 1993, Ser. No. 127,460
Int. Cl.[5] B32B *09/00*
U.S. Cl. 428—209 14 Claims



1. A multilayer circuit structure comprising:
a plurality of planar dielectric insulating layers having a first dielectric constant, said dielectric insulating layers being integrally fused into a unitized substrate; and
an array of dielectric vias formed in said insulating layers for controlling the locations and intensities of electric fields within said unitized substrate, said dielectric vias having a dielectric constant different from said first dielectric constant, said vias comprised completely of a dielectric material.

5,354,600

FORTIFIED PRESSURE SENSITIVE ADHESIVE

Dennis K. Fisher; Brian J. Briddell, and Stephen J. Eder, all of Jackson, Mich., assignors to Adco Products, Inc., Michigan Center, Mich.

Filed May 17, 1993, Ser. No. 61,809
Int. Cl.[5] B32B *7/02*
U.S. Cl. 428—215 14 Claims

1. A multi-layer pressure sensitive adhesive system comprised of:
a support layer having on at least one side a facing layer of a pressure sensitive adhesive, said pressure sensitive adhesive being comprised of a polymerization product of a formulation comprising:
at least one non-tertiary acrylic acid alkyl ester formed from a primary or secondary alcohol;
optionally an organofunctional silane in an amount sufficient to increase the adhesive characteristics of said pressure sensitive adhesive,
an ethylenically-unsaturated dimer in an amount sufficient to increase the adhesive characteristics of said pressure sensitive adhesive; and
optionally a non-dimer ethylenically unsaturated monomer having a polar group;
wherein said ethylenically-unsaturated dimer has the structure of Formula II:



Formula II

wherein R_1 is hydrogen and m is an integer of about 2.

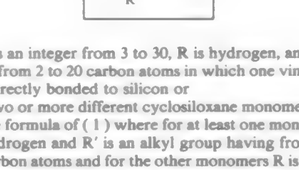
wherein said support layer is from about 20 to about 60 mils thick; and
wherein said facing layer is from about 1 to about 5 mils thick.

5,354,601

RECORDING SHEET

Hideo Kamijo, Okegawa; Kazuo Sato, and Tsutomu Komine, both of Tokyo, all of Japan, assignors to Kokusai Chart Corporation and Nisshinbo Industries, Inc.

Filed Nov. 23, 1992, Ser. No. 980,220
Claims priority, application Japan, Dec. 3, 1991, 3-107256[U]; Jan. 13, 1992, 4-004351[U]
Int. Cl.[5] B32B *27/06, 3/26*
U.S. Cl. 428—216 11 Claims



1. A recording sheet having an ink absorbing layer provided on at least one side of a substrate formed of a void-containing polyester film that has a specific gravity greater than 0.7 and less than about 1.2,
the ink absorbing layer containing a pigment having an oil absorbency of between about 50 ml/100 g and 230 ml/100 g and a binder consisting essentially of a hydrophobic resin.

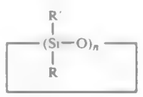
5,354,602

REINFORCED SILICON CARBOXIDE COMPOSITE WITH BORON NITRIDE COATED CERAMIC FIBERS

Gerald T. Stranford, Palatine; Roger Y. Leung, Schaumburg, and Stephen T. Gonczy, Prospect, all of Ill., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation of Ser. No. 654,168, Feb. 12, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 7,037
The portion of the term of this patent subsequent to Jan. 21, 2010, has been disclaimed.
Int. Cl.[5] D03D *3/00;* D04H *3/00;* C04B *35/02;* C03C *3/00*
U.S. Cl. 428—220 13 Claims

1. A fiber reinforced glass composite consisting essentially of
(a) refractory fibers having a boron nitride coating about 10 to 5000 nm thick;
(b) a carbon-containing black glass ceramic composition having the empirical formula SiCxOy wherein x ranges from about 0.9 to about 1.6 and y ranges from about 0.7 to about 1.8 and wherein said black glass ceramic composition is the pyrolyzed reaction product of
(1) a cyclosiloxane monomer having the formula



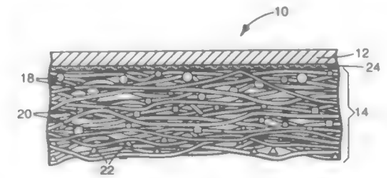
where n is an integer from 3 to 30, R is hydrogen, and R′ is an alkene of from 2 to 20 carbon atoms in which one vinyl carbon atom is directly bonded to silicon or
(2) two or more different cyclosiloxane monomers having the formula of (1) where for at least one monomer R is hydrogen and R′ is an alkyl group having from 1 to 20 carbon atoms and for the other monomers R is an alkene from 2 to about 20 carbon atoms in which one vinyl carbon is directly bonded to silicon and R′ is an alkyl group of from 1 to about 20 carbon atoms or
(3) cyclosiloxane monomers having the formula of (1) where R and R′ are moieties indepen.dently selected from hydrogen, an alkene of from 2 to about 20 carbon atoms in which one vinyl carbon atom is directly bonded to silicon, or an alkyl group of from 1 to about 20 carbon atoms and at least some of said monomers contain each of said hydrogen, alkene, and alkyl moieties, said reaction taking place in the presence of an effective amount of hydrosilylation catalyst.

5,354,603

ANTIFOULING/ANTICORROSIVE COMPOSITE MARINE STRUCTURE

Louis A. Errede, North Oaks, Minn.; Carol E. Hendrickson, Houlton, Wis., and Dale R. Anderson, Mahtomedi, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 15, 1993, Ser. No. 4,967
Int. Cl.[5] B32B *5/00*
U.S. Cl. 428—240 24 Claims



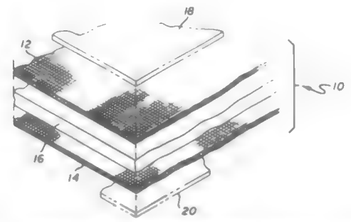
1. A composite marine structure comprising a marine substrate having adhered to at least a portion of its surface a layer of a water-permeable composite article comprising a nonwoven fibrous web having entrapped therein particulate which is active toward at least one of marine fouling and corrosion, said article providing said marine structure with protection against at least one of fouling and corrosion.

5,354,604

THERMOPLASTIC THERMOFORMABLE COMPOSITE MATERIAL AND METHOD OF FORMING SUCH MATERIAL

David M. Blakeman, Westlake Village; Douglas R. Fitchmun, Woodland Hills, and Niran Perera, Simi Valley, all of Calif., assignors to Medical Materials Corporation, Camarillo, Calif.

Filed Jul. 17, 1991, Ser. No. 731,640
The portion of the term of this patent subsequent to Oct. 18, 2005, has been disclaimed.
Int. Cl.[5] B32B *5/18, 5/28*
U.S. Cl. 428—246 19 Claims



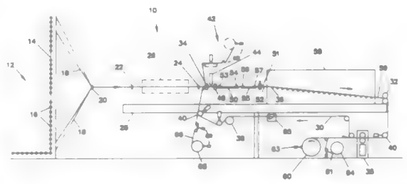
1. A thermoplastic thermoformable composite material shaped into a complex nonplanar form without rippling or buckling, including,
a core of a thermoplastic material formed as a sheet with a thickness in a range of approximately 0.008″ to approximately 0.020″,
layers of a fabric material respectively positioned at opposite sides of the core of the thermoplastic material with a thickness in a range of approximately 0.008″ to 0.009″, and
additional layers of a thermoplastic material bonding the layers of the fabric material to the core and enveloping and impregnating the layers of the fabric material with a thickness in a range of approximately 0.007″ to approximately 0.009″ without any wrinkles in the thermoplastic thermoformable composite material after shaping of the thermoplastic thermoformable composite material into the complex non-planar form and maximizing the flexural load of the thermoplastic thermoformable composite material after such shaping,
the thermoplastic material in the additional layers being the same as or compatible with the thermoplastic material in the core,
the layers of the fabric material producing a stiffness and rigidity of the thermoplastic thermoformable composite material after such shaping,
the core of the thermoplastic thermoformable composite material providing for a shaping of the composite material into the complex form.

5,354,605

SOFT ARMOR COMPOSITE

Leroy C.-T. Lin; Laura G. Wilson, and David V. Cunningham, all of Chesterfield, Va., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Apr. 2, 1993, Ser. No. 42,175
Int. Cl.[5] B32B *7/00*
U.S. Cl. 428—263 20 Claims



1. An article comprising at least one network of high strength fibers having a tenacity of at least about 7 g/d, a tensile modulus of at least about 150 g/d and an energy-to-break of at least about 8 J/g, and an acrylic ester copolymer matrix material which coats the fibers and has a tensile modulus of less than 100 psi, a tenacity of less than 450 psi, a glass transition temperature of about −10° to about −20° C., and an elongation-to-break of at least about 2000%.

5,354,606

PLATE OF FLAX FIBER FELT

Benny Kjelby; Erik Jepsen, both of Klarup, and Kai Bastiansen, Copenhagen, all of Denmark, assignors to Dansk Horindustri A/S, Klarup, Denmark

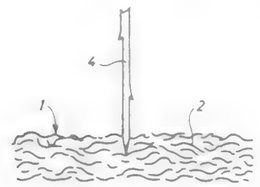
PCT No. PCT/DK90/00310, § 371 Date May 22, 1992, § 102(e) Date May 22, 1992, PCT Pub. No. WO91/08332, PCT Pub. Date Jun. 13, 1991
Continuation of Ser. No. 859,360, May 22, 1992, abandoned. This PCT application Nov. 29, 1990, Ser. No. 182,678
Claims priority, application Denmark, Nov. 30, 1989, 6060/89
Int. Cl.[5] D04H *1/08;* B32B *5/22*
U.S. Cl. 428—280 9 Claims

1. A plate of felt comprising:
a carded mat having flax fibres of substantially 5 to 15 cm long;
torn and frayed ends on the fibres caused by overstretched

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and breaking of the fibres to produce the torn and frayed ends;

the flax fibres being raw fibres that are partially retted; and



needle fibres extracted from the top side of the mat and extended through the mat to needle bond the fibres into the plate of felt.

5,354,607

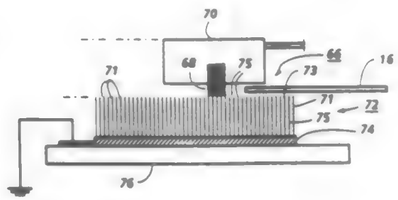
FIBRILLATED PULTRUDED ELECTRONIC COMPONENTS AND STATIC ELIMINATOR DEVICES

Joseph A. Swift, Union Hill; Thomas E. Orlowski, Fairport; Stanley J. Wallace, Victor; Wilbur M. Peck, Rochester; John E. Courtney, Macedon, and David E. Rollins, Lyons, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 806,062, Dec. 11, 1991, Pat. No. 5,270,106, which is a continuation-in-part of Ser. No. 516,000, Apr. 16, 1990, abandoned. This application Feb. 24, 1993, Ser. No. 21,445

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—294 **19 Claims**



1. A device for eliminating an electrical charge from a surface, the device comprising:

a nonmetallic pultruded composite member including a plurality of conductive fibers provided within a polymer matrix, the plurality of conductive fibers being oriented within the polymer matrix in a longitudinal direction of the pultruded composite member and extending continuously therethrough, the pultruded composite member having at least one fibrillated end including a brush structure of filament contacts formed from an exposed length of the plurality of conductive fibers for contact with the surface, the exposed length of each of the plurality of conductive fibers which form the brush structure being between about 0.1 mm and about 15 mm; and

a base member for holding the pultruded composite member, the base member including means electrically communicating with the plurality of conductive fibers for permitting the electrical charge to pass therefrom.

5,354,608

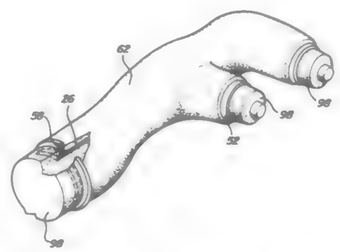
INTERNAL COMBUSTION ENGINE CYLINDER HEADS AND SIMILAR ARTICLES OF MANUFACTURE AND METHODS OF MANUFACTURING SAME

Thomas M. Keelan, Howell, and Stanley J. Hinkle, Milford, both of Mich., assignors to Detroit Diesel Corporation, Detroit, Mich.

Division of Ser. No. 711,917, Jun. 7, 1991, Pat. No. 5,239,956. This application Feb. 2, 1993, Ser. No. 13,817

Int. Cl.[5] B32B *3/26, 9/00*

U.S. Cl. 428—312.3 **12 Claims**



1. A cast metal article of manufacture comprising a first portion of low carbon cast iron, a second portion of high carbon stainless steel, and a layer of ceramic material separating the first portion from the second portion;

said layer of ceramic material comprising hollow ceramic particles uniformly distributed throughout a resin binder material;

said hollow ceramic particles individually being in intimate surface contact with adjacent individual hollow ceramic particles throughout said layer;

whereby the heat of the casting will be conducted efficiently through said layer and the amount of resin binder may be maintained at a minimum to reduce the amount of gas generated by the resin binder as it is exposed to the heat of the metal being cast;

said hollow ceramic particles being generally spherical and ranging in diameter from about 10 microns to about 2.5 millimeters; and

said hollow ceramic particles comprising about 99.0 to about 96.5% by weight of said layer and the resin binder being organic and comprising about 1.0 to 3.5% by weight, respectively, of said layer prior to said layer being cured.

5,354,609

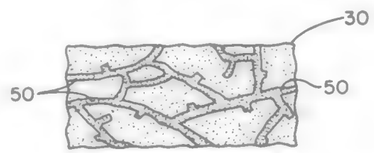
TWO-COMPONENT PRIMERLESS MODIFIED URETHANE ADHESIVE FOR POWDER COATINGS

Chia L. Wang, Hudson, Ohio, assignor to GenCorp Inc., Fairlawn, Ohio

Continuation-in-part of Ser. No. 805,255, Dec. 9, 1991, Pat. No. 5,175,228. This application May 4, 1992, Ser. No. 877,940

Int. Cl.[5] B32B *7/12*

U.S. Cl. 428—317.5 **17 Claims**



1. A bonded fused powder-coated laminate, comprising;

a substrate bonded to at least one other substrate with a primerless two part polyurethane adhesive, at least one of said substrates having an adhesive-free surface, said at least one adhesive-free surface having a powder coating thereon, said adhesive having a plurality of open network channels in the adhesive surface in contact with said substrate having said powder coated surface, said polyurethane adhesive being the reaction product of a two-component system of a urethane propolymer component and a urethane curative component, said urethane prepolymer component made from a hydroxyl terminated intermediate and a polyisocyanate, the equivalent ratio of said polyisocyanane to said hydroxyl terminated intermediate being from 2.0 to 75 so that said propolymer component contains free NCO groups, said urethane curative component comprising a nitrogen free polyol curative having OH groups therein, a polyamine containing NH_2 groups therein, and one or more trimerization catalysts, the equivalent ratio of said free NCO groups to said OH groups of said polyol curative and said NH_2 groups of said primary polyamine being at least 1.2, the amount of said one or more trimerization catalysts being from 0.01 percent to 1.0 percent by weight baded upon the total weight of said urethane curative component, and up to 0.049 percent by weight of a urethane catalyst based upon the total weight of said urethane prepolymer, said nitrogen-free polyol, said polyamine, and said trimerization catalyst, said urethane catalyst when utilized being other than said one or more trimerization catalysts.

5,354,610

MAGNETIC RECORDING MEDIUM COMPRISING A CONDUCTIVE UNDERLAYER CONTAINING CARBON BLACK AND A MAGNETIC LAYER CONTAINING TABULAR BARIUM FERRITE MAGNETIC PARTICLES, α ALUMINA, AND BINDER RESIN

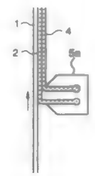
Kimio Ozawa; Hisato Kato; Hiromichi Enomoto, and Akihiro Maezawa, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Apr. 14, 1992, Ser. No. 868,719

Claims priority, application Japan, Apr. 18, 1991, 3-86894

Int. Cl.[5] G11B *5/00*

U.S. Cl. 428—323 **5 Claims**



1. A magnetic recording medium comprising a non-magnetic support having provided thereon, in sequence, a conductive layer containing carbon black, and a magnetic layer,

said magnetic layer containing tabular barium ferrite magnetic particles, each of which has an axis of easy magnetization that is substantially perpendicular to its plane surface and, 7 to 30 parts by weight, per 100 parts of said magnetic particles, of α-alumina,

there being in said magnetic particles, Fe elements, each of said magnetic particles having an average particle size of 400 to 900 **521** , an aspect ration of 2.0 to 10.0, a coercive force of 450 to 1500 Oe, and at least some of said Fe elements are replaced by Co and/or Zn,

said magnetic layer being formed on said conductive layer by a wet-on-wet process.

5,354,611

DIELECTRIC COMPOSITE

David J. Arthur, Norwood; Gwo S. Swei, Northboro, both of Mass., and Phong X. Nguyen, New Britain, Conn., assignors to Rogers Corporation, Rogers, Conn.

Continuation of Ser. No. 808,206, Dec. 13, 1991, abandoned, which is a continuation of Ser. No. 483,502, Feb. 21, 1990, abandoned. This application May 28, 1993, Ser. No. 71,345

The portion of the term of this patent subsequent to Apr. 9, 2093, has been disclaimed.

Int. Cl.[5] B32B *18/00;* **C08K** *9/04*

U.S. Cl. 428—325 **34 Claims**

1. A composite material, comprising:

a polytetrafluoroethylene fluoropolymer matrix;

from about 20 volume percent to about 70 volume percent first coated inorganic particles distributed throughout the matrix in a paste extrusion or calendering process, said first coated inorganic particles comprising hollow inorganic microspheres; and

a hydrophobic coating on the microspheres;

wherein the composite material exhibits a dielectric constant of less than about 2.5 and a thermal coefficient of expansion of less than about 70 ppm/°C.

5,354,612

REVOLUTION BODY HAVING AN ELASTIC LAYER OF DIMETHYLSILICONE RUBBER FORMED FROM POLYSILOXANE AND SILICIC ACID FINE POWDER

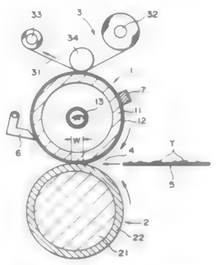
Toshiyuki Miyabayashi, Ohmachi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1989, Ser. No. 380,639

Claims priority, application Japan, Jul. 19, 1988, 63-181158; Jul. 19, 1988, 63-181160

Int. Cl.[5] B32B *25/20;* **C08G** *77/00*

U.S. Cl. 428—331 **34 Claims**



1. An elastic revolution body comprising an elastic layer formed from a dimethylsilicone rubber composition; said dimethylsilicone rubber composition being obtained by heating a platinum based catalyst and an addition reaction dimethylsilicone composition comprising a dimethylpolysiloxane containing a reactive vinyl group; a dimethylpolysiloxane containing an active hydrogen atom; and silicic acid fine powder having a BET specific surface area of 40–500 m^2/g and surface treated with both 1 to 30 wt. parts of compound (i) and 1 to 30 wt. parts of compound (ii) per 100 wt. parts of said silicic acid fine powder, said compound (i) being selected from the group consisting of a fluoroalkylsilane, an alkylsilane compound, a fluorosilicone oil, a dimethylsilicone oil, hexamethyldisilazane, and a mixture thereof, and said compound (ii) being a silane compound containing an unsaturated group having a reactivity to said dimethylpolysiloxane containing an active hydrogen atom.

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5,354,613

ANTISTACTIC COATING ON HYDROPHOBIC RESIN OR PAPER SUPPORT

Dirk Quintens, Lier; Bavo Muys, Mortsel; Etienne Van Thillo, Essen, and Rafaël Samijn, Wilrijk, all of Belgium, assignors to AGFA-GEVAERT, N.V., Mortsel, Belgium

Filed Oct. 1, 1993, Ser. No. 130,466

Claims priority, application European Pat. Off., Oct. 14, 1992, 92203149.7

Int. Cl.[5] B32B *5/16;* G03C *1/76*

U.S. Cl. 428—341 11 Claims

1. A sheet or web material comprising a hydrophobic resin support or paper support coated with at least one hydrophobic resin layer wherein said resin support or resin layer is coated with an outermost antistatic layer containing as an essential component a polythiophene with conjugated polymer backbone in the presence of a polymeric polyanion compound, wherein said antistatic layer contains also a hydrophobic organic polymer having a glass transition value (Tg) of at least 40° C., said polythiophene being present at a coverage of at least 0.001 g/m^2 and the weight ratio of said polythiophene to said hydrophobic organic polymer being in the range of 1/10 to 1/1000.

5,354,614

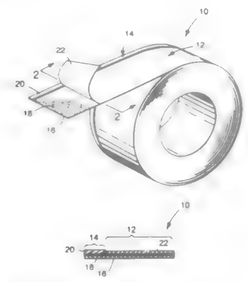
MASKING TAPE WITH STIFFENED EDGE AND METHOD OF GASKET MASKING

Sheila F. Cox, St. Paul, Minn.; Kent W. Gable, Hudson; George A. Kurhajec, Haines, both of Fla.; Peter K. Pederson, Star Prairie, Wis., and Steven J. Perron, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Mar. 1, 1993, Ser. No. 24,607

Int. Cl.[5] C09J *7/02;* B05D *1/32;* B32B *3/04*

U.S. Cl. 428—343 21 Claims



1. An elongate masking tape structure for use in masking flexible gaskets while mounted in place relative to a panel to be refinished, the gasket being of the type including a free leg portion that overlaps the panel, said masking tape structure being divided along a major surface thereof into first and second longitudinal zones and comprising:

a backing layer;

an adhesive layer covering at least a portion of said backing layer within said first longitudinal zone; and

stiffening means for making said second longitudinal zone stiffer in a transverse direction thereof than said first longitudinal zone in the transverse direction thereof, said stiffening means comprising a strip connected with said backing layer, said strip comprising a layer of material that is stiffer than said backing layer and has a Tabor stiffness value of at least 20 g-cm in the transverse direction of said masking tape, wherein said first zone is flexible for wrapping about a gasket to which said masking tape is to be applied and said second zone is sufficiently stiff in the transverse direction thereof so that said strip remains generally linear in cross-section in its transverse direction so as to create a lever action against a free leg gasket portion when the second zone is inserted under the free leg gasket portion and when a force is applied in the transverse direction of the masking tape from the first zone.

11. A roll of masking tape for use in masking objects while mounted in place relative to a panel to be refinished, said masking tape having a structure that is divided along a major surface thereof into first and second longitudinal zones and comprising:

a backing layer;

an adhesive layer covering at least a portion of said backing layer within said first longitudinal zone;

stiffening means for making said second longitudinal zone stiffer in a transverse direction thereof than said first longitudinal zone in the transverse direction thereof, said stiffening means comprising a strip connected with said backing layer, said strip comprising a layer of material that is stiffer than said backing layer and has a Tabor stiffness value of at least 20 g-cm in the transverse direction of said masking tape.

5,354,615

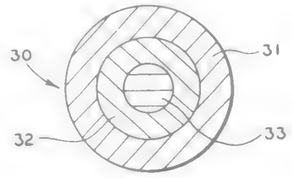
COATED SIC REINFORCEMENTS AND COMPOSITES CONTAINING SAME

Michael A. Tenhover, Solon, and Dorothy B. Lukco, Sagamore Hills, both of Ohio, assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Jun. 27, 1990, Ser. No. 545,328

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—366 39 Claims



1. A coated reinforcement comprising a SiC-based reinforcement having a rare earth boride coating.

5,354,616

FISHING LINES AND RELATED PRODUCTS

Robert B. Fish, Jr., Parkersburg, W. Va.; Francis G. Gallagher, Wilmington, Del.; James M. McKenna, Hockessin, Del., and Raymond F. Tietz, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 834,796, Feb. 13, 1992, which is a continuation-in-part of Ser. No. 645,849, Jan. 25, 1991, Pat. No. 5,097,004, which is a continuation-in-part of Ser. No. 522,134, May 11, 1990, Pat. No. 5,053,482. This application Nov. 16, 1992, Ser. No. 977,650

The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.

Int. Cl.[5] D02G *3/00;* A01K *91/00*

U.S. Cl. 428—373 5 Claims

1. A degradable fishing line that consists essentially of a monofilament having a tensile strength of at least 50,000 psi, said monofilament consisting essentially of a linear polyester consisting essentially of recurring structural units of the formula:

—C(O)—R—C(O)—OGO—

wherein R consists essentially of divalent hydrocarbylene radicals and at least 75 mole % of R is p-phenylene,

wherein G consists essentially of the following radicals:

a radical of a polyalkylene ether glycol of molecular weight at least 250, in amount at least 5 % by weight of the polyester,

a polyethylene ether radical selected from the group consisting of —$(CH_2)_2$—O—$(CH_2)_2$—and —$(CH_2)_2$—O—$(CH_2)_2$—O—$(CH_2)_2$—, in amount up to about mole % of G, .

and the remainder of G is a hydrocarbylene radical selected from the group consisting of

—$(CH_2)_2$—,—$(CH_2)_3$—, and —$(CH_2)_4$—radicals,

and wherein up to 3 mole % of the polyester may contain alkali metal or alkaline earth metal sulfo groups;

and wherein the polyester is stabilized by a stabilizer, in amount up to 5 percent by weight said stabilizer and said amount being, selected such that the tensile strength of the fishing line is not reduced more than 5 % over a 2 month storage period in ambient air, when protected from light, but is reduced by at least 15 % over a 2 month period of exposure to aerated water at 30 degrees C.

5,354,617

NON-WOVEN FABRIC SHEET SEPARATOR MATERIAL FOR STORAGE BATTERIES AND METHOD FOR MAKING THE SAME

Isao Ikkanzaka, Takarazuka; Kazuhiro Ikeda, Suita, and Yousuke Takai, Hyogo, all of Japan, assignors to Kanai Juyo Kogyo Co. Ltd., Hyogo and Daiwabo Create Co., Osaka, both of Japan

Filed Sep. 1, 1992, Ser. No. 937,950

Claims priority, application Japan, Oct. 23, 1991, 3-275154

Int. Cl.[5] C08F *228/06;* H01M *2/16;* B32B *15/00;* B22B *3/00*

U.S. Cl. 428—397 11 Claims



1. A non-woven fabric sheet separator for an alkaline storage battery separator comprising fibers of a first component of an ethylene based random copolymer having a unit represented by the formula —CH_2—$C(SO_3H)$ (COOH)—and a second component of a polyolefin having a melting point no higher than 250 ° C., wherein at least one of said first and second components has a sectional form divided into more than two parts, with each component having at least one exposed surface.

5,354,618

THERMOPLASTIC RESIN COMPOSITION AND PAINT-COATED MOLDED PRODUCT THEREOF

Satoru Ishigaki; Yutaka Yokoyama; Yukihiro Hisanaga; Zenichiro Izumi; Nobuyuki Mitarai, and Kouichi Yamamoto, all of Oita, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Mar. 25, 1993, Ser. No. 36,864

Claims priority, application Japan, Mar. 25, 1992, 4-098811; Apr. 9, 1992, 4-117023; Aug. 7, 1992, 4-211750; Sep. 17, 1992, 4-247993

Int. Cl.[5] C08L *51/06, 33/00;* C08F *8/00*

U.S. Cl. 428—424.8 19 Claims

1. A thermoplastic resin composition which comprises:

(a) from 20 to 80 parts by weight of a resin component containing a modified polyolefin resin which has been graft-modified with an unsaturated hydroxy group-containing compound or an unsaturated carboxylic acid, wherein said unsaturated hydroxy group-containing compound or said unsaturated carboxylic acid is present in an amount of at least 0.1% by weight of the unmodified polyolefin resin,

(b) from 80 to 20 parts by weight of a rubber component containing a copolymer rubber, and

(c) a functional group-terminated oligomer in an amount of from 0.1 to 20 parts by weight per 100 parts by weight of the sum of components (a) and (b), wherein said functional group-terminated oligomer has a number average molecular weight of from 300 to 10,000.

5,354,619

LAMINATES AND ADHESIVE TAPE WITH A POLYOLEFIN PRESSURE-SENSITIVE ADHESIVE COMPOSITION CONTAINING MACROMERS

Gaddam N. Babu, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 614,251, Nov. 15, 1990, Pat. No. 5,294,668. This application Dec. 21, 1993, Ser. No. 171,002

Int. Cl.[5] B32B *15/08*

U.S. Cl. 428—462 20 Claims

1. An article comprising a substrate coated with a pressure-sensitive adhesive composition comprising a mixture of:

a) 40–99% by weight of a Ziegler-Natta graft copolymer comprising

1) 0.1 to 25% by weight of a macromonomer comprising the polymerized product of at least one of an ethenylarene and a conjugated diene monomer, said product having a terminal ω-alkenyl group of at least 4 carbon atoms; and

2) 99.9 to 75% by weight of an alpha-olefin having 2 to 18 carbon atoms of which 60 to 100% of the total α-olefins are α-olefins having 6 to 14 carbon atoms; and

b) 60–1% by weight of one or more tackifying resins.

5,354,620

POLYMER MIXTURE BASED ON A POLYALKYLENEPHTHALATE ESTER

Wilhelmus J. L. A. Hamersma, HE Bergen op Zoom, Netherlands, and Roger W. Avakian, Brasschaat, Belgium, assignors to General Electric Co., Waterford, N.Y.

Continuation of Ser. No. 873,533, Apr. 22, 1992, abandoned, which is a continuation of Ser. No. 590,454, Sep. 26, 1990, abandoned, which is a continuation of Ser. No. 192,286, Jun. 14, 1988, abandoned. This application Jul. 9, 1993, Ser. No. 89,386

Claims priority, application Netherlands, Aug. 26, 1986, 8602160

The portion of the term of this patent subsequent to Jun. 19, 2007, has been disclaimed.

Int. Cl.[5] B32B *27/08*

U.S. Cl. 428—483 5 Claims

1. A laminate comprising: a layer of polystyrene; and a layer of polyalkylenephthalate ester and polystyrene functionalized by a pendent cyclic imino ether group.

5,354,621

BIODEGRADABLE CONSTRUCTION MATERIAL AND MANUFACTURING METHOD

Benno E. Liebermann, Louisville, Ky., assignor to Beltec International, Aurora, Ill.

Filed Jul. 2, 1992, Ser. No. 907,913

Int. Cl.[5] B32B *23/04*

U.S. Cl. 428—532 12 Claims

1. A method of manufacture of a rigid biodegradable food receptacle comprising the steps of:

a. grinding to a powder a normally human non-eaten by-product from an agricultural milling process, a major portion of which is one of th groups consisting of rice, oat, corn, soy and wheat hulls and mixtures thereof;

b. coating said powder with a binder which is non-toxic to human beings and a major portion of which is a natural

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binder of one of the groups consisting of corn starch, dextrin, glutens, gelatin, animal glue, gums, sugar, chitosan and beeswax; and

c. forming said coated powder which is in a dry state at room temperature into the shape of said receptacle under selected temperature and pressure conditions which cause the binder to hold said particles together to maintain the structural integrity of the receptacle and forms a food leak-proof receptacle.

5,354,622

MULTILAYERED SLIDING MEMBER

Takashi Nakamaru, Kanagawa; Tadashi Watai, Ayase; Akihiko Okimura, Yokohama, and Sumihide Yanase, Ebina, all of Japan, assignors to Oiles Corporation, Tokyo, Japan

Filed Jul. 28, 1993, Ser. No. 99,482
Claims priority, application Japan, Jul. 30, 1992, 4-245436
Int. Cl.[5] B22F *7/04*
U.S. Cl. 428—551 10 Claims

1. A multilayered sliding member comprising a lubricating composition comprising polytetrafluoroethylene and, as filler, 1–25 wt % of fibrous magnesium oxysulfate, fan-shaped magnesium oxysulfate or a mixture thereof, and a porous sintered metal layer formed on a steel backing,

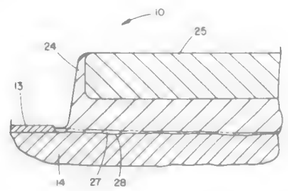
the lubrication composition being impregnated in and coated on a porous sintered metal layer formed.

5,354,623

JOINT, A LAMINATE, AND A METHOD OF PREPARING A NICKEL-TITANIUM ALLOY MEMBER SURFACE FOR BONDING TO ANOTHER LAYER OF METAL

Todd A. Hall, Bloomington, Ind., assignor to Cook Incorporated, Bloomington, Ind.

Continuation-in-part of Ser. No. 703,493, May 21, 1991, Pat. No. 5,242,759. This application Sep. 3, 1993, Ser. No. 116,443
The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.
Int. Cl.[5] B32B *5/14, 15/00;* B23K *35/363*
U.S. Cl. 428—610 31 Claims



1. A laminate comprising:

a base substrate of a metal alloy having by weight a first percentage of nickel and a second percentage of titanium, superelastic and shape memory properties, and an annealing temperature above which said superelastic and shape memory properties are impaired, said base substrate having a surface substantially free of a contaminant including titanium dioxide;

a metal from a metallic halide containing flux deposited on said base substrate, said metallic halide containing flux having an activation temperature below said annealing temperature of said base substrate and being capable of removing said contaminant from said surface of said base substrate; and

a solder material having a melting temperature less than said annealing temperature of said metal alloy and adhering to said metal deposited on said base substrate.

5,354,624

COATED COPPER ROOFING MATERIAL

Jay F. Carey, II, Follansbee, W. Va., assignor to The Louis Berkman Company, Steubenville, Ohio

Continuation of Ser. No. 967,407, Oct. 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 913,209, Jul. 15, 1992, abandoned. This application Nov. 17, 1993, Ser. No. 154,375
The portion of the term of this patent subsequent to Nov. 17, 2010, has been disclaimed.
Int. Cl.[5] B32B *15/20;* C22C *13/02*
U.S. Cl. 428—647 14 Claims

1. A highly corrosive resistant roof system which can be easily formed into complex shapes used for the collection of potable water, comprising a copper roofing material coated with a highly corrosive resistant metal alloy material, said metal alloy material having a low lead formulation and includes at least 0.05 weight percent metallic stabilizing agent, said metal alloy material consisting of:

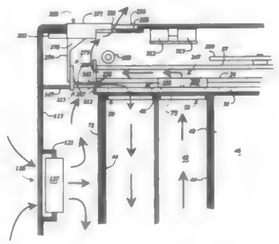
Tin	90.0 – 99.95
Lead	0.001 – 0.1
Bismuth	0.0 – 1.7
Antimony	0.0 – 7.2
Zinc	0.0 – 0.5
Iron	0.0 – 0.1
Copper	0.0 – 2.7

5,354,625

METAL-AIR POWER SUPPLY AND AIR-MANAGER SYSTEM, AND METAL-AIR CELL FOR USE THEREIN

R. Dennis Bentz; Christopher S. Pedicini, and William J. Scott, Jr., all of Marietta, Ga., assignors to AER Energy Resources, Inc., Atlanta, Ga.

Filed Mar. 16, 1992, Ser. No. 852,001
Int. Cl.[5] H01M *8/04*
U.S. Cl. 429—17 33 Claims



16. A metal-air power supply comprising:

a metal-air cell having an air cathode, electrolyte, and an anode disposed in a cell case:

a compartment for receiving the cell; and

means for registering the cell within the compartment so that when the cell is received within the compartment, the cell case and the compartment form a cathode plenum in the compartment adjacent the air cathode and a cooling air plenum in the compartment isolated from the air cathode,

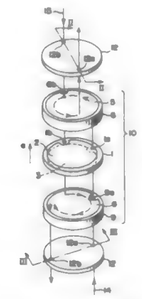
whereby reactant air may be directed adjacent the air cathode and cooling air may be directed against a portion of the cell case isolated from the air cathode.

5,354,626

DISTRIBUTOR FOR A SOLID OXIDE FUEL CELL AND MANUFACTURING PROCESS THEREOF

Shozo Kobayashi; Akira Shiratori; Hiroshi Takagi, and Yukio Sakabe, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Continuation of Ser. No. 837,916, Feb. 20, 1992, abandoned. This application Dec. 22, 1993, Ser. No. 173,134
Claims priority, application Japan, Feb. 22, 1991, 3-028134
Int. Cl.[5] H01M *8/10*
U.S. Cl. 429—30 10 Claims



1. A distributor for a solid oxide fuel cell, the solid oxide fuel cell having an electrolyte sandwiched between a fuel side electrode and an air side electrode the distributor being in contact with the fuel side electrode and the air side electrode for receiving both fuel and air, respectively said distributor comprising:

a porous base;

a reinforcing agent layer on the porous base; and

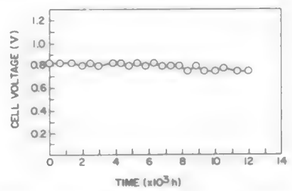
a conductive agent layer on the reinforcing agent layer.

5,354,627

MOLTEN CARBONATE FUEL CELL

Kazuhito Hatoh, Daitou; Junji Niikura, Hirakata; Eiichi Yasumoto, Kadoma, and Takaharu Gamo, Fujiidera, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 19, 1993, Ser. No. 64,712
Claims priority, application Japan, Aug. 13, 1992, 4-215986
Int. Cl.[5] H01M *8/14*
U.S. Cl. 429—40 5 Claims



1. A molten carbonate fuel cell including a plurality of unit cells and separator plates stacked alternately, each of said plurality of unit cells comprising:

(a) an anode of porous nickel-base alloy, containing 1 to 10 weight % of tungsten,

(b) a cathode of porous nickel-oxide doped with lithium, and

(c) an electrolyte plate including a eutectic mixture of carbonates of alkaline metals held between said anode and said cathode, and

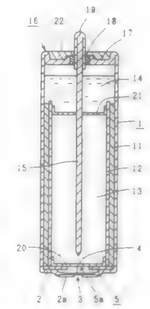
wherein each said separator plate is a heat-resistant metal plate.

5,354,628

HERMETICALLY SEALED CELL COMPRISING LIQUID ACTIVE MATERIAL

Osamu Watanabe; Kaoru Hisatomi; Kazuo Ishida; Akira Kishida, all of Osaka, and Yasunori Okuzono, Yokohama, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Aug. 18, 1993, Ser. No. 107,974
Claims priority, application Japan, Aug. 19, 1992, 4-244279
Int. Cl.[5] H01M *10/40, 2/12*
U.S. Cl. 429—56 6 Claims



1. A hermetically sealed liquid active material cell cell comprising a cell container which has a thin-wall part at the bottom thereof for explosion-proofing, an electrolyte liquid comprising an oxyhalide compound which is in an liquid state at room temperature as a positive active material, a negative electrode which comprises at least one alkali metal, a positive electrode, a separator for separating the negative electrode and positive electrode, a positive current collector, and a hermetic seal which closes an opening of the cell container, wherein said cell further includes a resinous ring on an inner surface of the bottom of said cell container.

5,354,629

MONAQUEOUS ELECTROLYTE BATTERY

Akira Kuroda; Atsushi Yamano; Satoshi Narukawa, and Yuichi Yokoyama, all of Sumoto, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Oct. 9, 1992, Ser. No. 959,128
Claims priority, application Japan, Oct. 9, 1991, 3-262219; Jul. 31, 1992, 4-205212
Int. Cl.[5] H01M *2/22, 4/64*
U.S. Cl. 429—94 6 Claims

1. A nonaqueous electrolyte battery comprising

a spiral shaped electrode unit including:

a belt shaped cathode;

a belt shaped anode laminated on said cathode and adapted to be reduced in volume during a discharge reaction;

a separator laminated between said cathode and said anode;

wherein said cathode, said anode and said separator are rolled into a spiral shape, such that an outermost turn of said anode is located outwardly of an outermost turn of said cathode;

wherein an outermost end of said cathode protrudes circumferentially beyond an outermost end of said anode in an outwardly spiralling direction; and

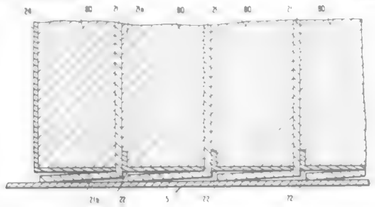
wherein an anode terminal tab is connected to said anode at a position located at least one full turn of said anode from said outermost end of said anode in an inwardly spiralling direction.

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5,354,630
NI-H_2 BATTERY HAVING IMPROVED THERMAL PROPERTIES

Martin W. Earl, Silver Spring; William H. Kelly, Gaithersburg; Wein-Shen Jiang, Germantown; Ronald R. Kessler, Mt. Airy, and Fred W. Brantner, Frederick, all of Md., assignors to Comsat, Clarksburg, Md.

Filed Dec. 10, 1992, Ser. No. 988,670
Int. Cl.[5] H01M *12/08*
U.S. Cl. 429—101 **6 Claims**



1. A battery comprising:
a pressure vessel; and
a plurality of compartments disposed in side-by-side relation, each of said compartments comprising:
a heat transfer member having a fin portion and a flange portion extending longitudinally from said fin portion, said flange being in thermal contact with an inner wall of said pressure vessel;
a plurality of battery cells, at least one battery cell being disposed in each of said compartments and in thermal contact with adjacent fin portions of said heat transfer members; and
a cell spacer for maintaining adjacent heat transfer members of adjacent compartments a predetermined distance from one another.

5,354,631
ENHANCED LITHIUM SURFACE

Benjamin Chaloner-Gill, Santa Clara; On K. Chang, San Jose; Neal Golovin, San Jose, and Eileen Saidi, San Jose, all of Calif., assignors to Valence Technology, Inc., San Jose, Calif.

Filed Jun. 8, 1993, Ser. No. 73,409
Int. Cl.[5] H01M *10/40*
U.S. Cl. 429—137 **27 Claims**

17. A solid electrochemical cell which comprises:
an anode containing lithium;
a cathode containing a compatible cathodic material;
interposed between said anode and said cathode, a solid electrolyte; and
interposed between said anode and said electrolyte, a polymeric layer comprising as prepolymer, the silane represented by Formula I

$$[CH_2{=}CR^1C(O)O(CH_2)O]_pSi(R^2)_qX_m$$

5,354,632
LITHOGRAPHY USING A PHASE-SHIFTING RETICLE WITH REDUCED TRANSMITTANCE

Giang T. Dao, Fremont; Kenny K. H. Toh, Sunnyvale; Eng T. Gaw, San Jose, and Rajeev R. Singh, Santa Clara, all of, assignors to Intel Corporation, Santa Clara, Calif.

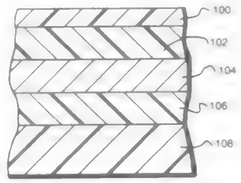
Filed Apr. 15, 1992, Ser. No. 869,026
Int. Cl.[5] G03F *9/00, 9/02*
U.S. Cl. 430—5 **30 Claims**

1. A method of forming a patterned resist layer on a semiconductor substrate comprising the steps of:
coating the substrate with a resist layer,
selectively exposing the resist layer to a radiation wave having a wavelength that is transmitted through a reticle, the reticle including:
at least one fast area having a first transmittance;
at least one second area adjacent to the fast area, the second area having a second transmittance that is less than the fast transmittance, the second area shifting radiation transmitted through the second area approximately 180° out of phase relative to radiation transmitted through the first area;
at least one third area adjacent to the second area, the third area being substantially opaque to prevent virtually all transmission of radiation; and
developing the resist layer to form the patterned resist layer including at least one resist layer opening and at least one resist element.

5,354,633
LASER IMAGEABLE PHOTOMASK CONSTRUCTIONS

Thomas E. Lewis, E. Hampstead, and Michael T. Nowak, Leominster, both of Mass., assignors to Presstek, Inc., Hudson, N.H.

Filed Sep. 22, 1993, Ser. No. 125,321
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 **12 Claims**



1. A photomask construction for use in conjunction with a source of actinic radiation, the construction comprising:
a. an ignition layer at least partially opaque to actinic radiation and ignitable by exposure to laser radiation;
b. an ignitable metal layer at least partially opaque to actinic radiation and which combines with the first layer to block at least 99% of incident actinic radiation, the metal layer ablating in response to combustion of the ignition layer;
c. a mechanically strong, durable and flexible third layer that is substantially transparent to actinic radiation.

5,354,634
ELECTROSTATIC IMAGE TRANSFER RECORDING SHEET

Katsutoshi Misuda, and Nobuyuki Yokota, both of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Apr. 3, 1992, Ser. No. 863,585
Claims priority, application Japan, Apr. 5, 1991, 3-100347; Aug. 21, 1991, 3-233857
The portion of the term of this patent subsequent to Apr. 3, 2009, has been disclaimed.
Int. Cl.[5] G03C *3/00*
U.S. Cl. 430—18 **12 Claims**

1. An electrostatic image transfer recording sheet which comprises a substrate having, on one side thereof, an image forming layer constituted of a porous alumina hydrate in a binder and on the other side, a layer of porous alumina hydrate in a binder, wherein in each of said layers, the amount of binder ranges from 5 to 50% by wt of the alumina hydrate.

5,354,635
ELECTROPHOTOGRAPHIC PHOTORECEPTOR COMPRISING MIXED CRYSTALS OF TITANYLPHTHALOCYANINE AND VANADYLPHTHALOCYANINE

Akihiko Itami, Hachioji, and Kazumasa Watanabe, Fuchu, both of Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 831,568, Feb. 5, 1992, abandoned. This application Jul. 16, 1993, Ser. No. 92,581
Claims priority, application Japan, Feb. 7, 1991, 3-016581
Int. Cl.[5] G03G *5/06*
U.S. Cl. 430—58 **10 Claims**

1. An electrophotographic photoreceptor having a conductive support and a photoreceptive layer comprising a charge generation material and a charge transfer material, wherein the charge generation material is comprised of a mixed crystal containing a titanylphthalocyanine and a vanadylphthalocyanine, said mixed crystal having characteristic peaks at a Bragg angle (2θ) of 27.2±0.2° and 9.5±0.2°, and in an X-ray diffraction spectrum with a Cu-Kα ray (wave length: 1.541 Å) and showing an exothermic peak between 150 and 400° C. in a differential thermal analysis.

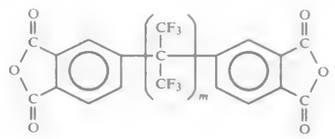
8. An electrophotographic photoreceptor having a conductive support and a photoreceptive layer comprising a charge generation material and a charge transfer material, wherein the charge generation material is comprised of a mixed crystal containing a titanylphthalocyanine and a vanadylphthalocyanine, said mixed crystal having characteristic peaks at a Bragg angle (2θ) of 27.2±0.2° and 9.1±0.2°, and in an X-ray diffraction spectrum with a Cu-Kα ray (wavelength: 1.541 Å) and showing an exothermic peak between 150 and 400° C. in a differential thermal analysis.

5,354,636
ELECTROPHOTOGRAPHIC PHOTORECEPTOR COMPRISING POLYIMIDE RESIN

Yoshiyuki Ono; Masaki Yokoi; Kazuo Yamasaki; Hiroyuki Hotta, all of Minami-ashigara; Kenichi Kobayashi, Ebina; Takayuki Yamada, Ebina, and Hitoshi Kojima, Ebina, all of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 18, 1992, Ser. No. 836,424
Claims priority, application Japan, Feb. 19, 1991, 3-045446; Feb. 21, 1991, 3-047359
Int. Cl.[5] G03G *5/07*
U.S. Cl. 430—78 **1 Claim**

1. An electrophotographic photoreceptor comprising a conductive substrate having provided thereon a photoconductive layer, wherein said photoconductive layer comprises a charge generating material, said charge generating material comprising a high polymeric compound wherein said high polymeric compound is a copolymer formed by vacuum deposition polymerizing a bisphthalic anhydride compound represented by formula (IV):



(IV)

wherein m represents an integer of from 1 to 3, and an aromatic diamine compound in the same reaction vessel.

5,354,637
MAGNETIC TONER

Masayoshi Shimamura, Kawasaki; Toshiaki Nakahara, Tokyo; Kuniko Kobayashi, Koganei; Kazuyoshi Hagiwara, Tokyo; Yushi Mikuriya, Kawasaki, and Masami Fujimoto, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

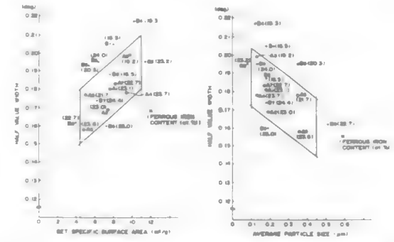
Filed Jun. 12, 1992, Ser. No. 897,849
Claims priority, application Japan, Jun. 19, 1991, 3-147403
Int. Cl.[5] G03G *9/083*
U.S. Cl. 430—106.6 **20 Claims**

1. A magnetic toner, comprising: at least a binder resin and a magnetic iron oxide; wherein said magnetic iron oxide has an Fe(II) content of 18.5–24.1 wt. %, and shows a BET specific surface area of S (m^2/g) and an X-ray diffraction pattern giving a half-value width W (deg.) of a diffraction peak corresponding to 311 plane of the magnetic iron oxide in spinel structure, the values S and W satisfying:

$4.5\times10^{-3}S+0.130\leqq W\leqq 4.5\times10^{-3}S+0.160$, and $4.5\leqq S\leqq 11.0$.

11. A magnetic toner, comprising: at least a binder resin and a magnetic iron oxide; wherein said magnetic iron oxide has been obtained through a heating treatment at a temperature of 130°–360° C. within a gaseous mixture of hydrogen and nitrogen containing 50 vol. % or less of hydrogen or at a temperature of 150°–450° C. in an inert gas, and said magnetic iron oxide has an Fe(II) content of 18.5–24.1 wt. %, and shows a number-average particle size of D (μm) and an X-ray diffraction pattern giving a half-value width W (deg.) of a diffraction peak corresponding to 311 plane of the magnetic iron oxide in spinel structure, the values D and W satisfying:

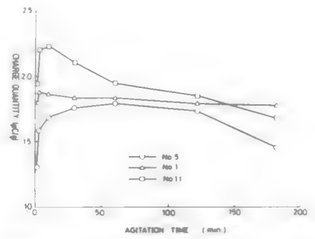
$-0.08D+0.180\leqq W\leqq -0.08D+0.212$, and $0.10\leqq D\leqq 0.45$.



5,354,638
MAGNETIC CARRIER FOR USE IN ELECTROPHOTOGRAPHIC DEVELOPMENT

Hiroshi Harada, Nikaho, Japan, assignor to TDK Corporation, Tokyo, Japan

Continuation of Ser. No. 625,425, Dec. 11, 1990, abandoned. This application Jun. 30, 1992, Ser. No. 908,543
Claims priority, application Japan, Dec. 11, 1989, 1-321027; Jan. 18, 1990, 2-9187; Oct. 31, 1990, 2-294338
Int. Cl.[5] G03G *9/113*
U.S. Cl. 430—106.6 **6 Claims**



1. In magnetic carrier particles for use in electrophotographic development, each in the form of a magnetic particle having a resinous coating on the surface thereof, the improvement wherein
said resinous coating comprises predominantly a copolymer of an alkyl methacrylate and/or acrylate and styrene in which the alkyl group has 1 to 5 carbon atoms and the content of styrene ranges from 5 to 45% by weight of the copolymer,
said copolymer being prepared by emulsion polymerization in the presence of a polymerizable emulsifier,
said magnetic particles having an average diameter of 10 to 200 μm, and
said resinous coating having a thickness from 0.6 to 1.2 μm.

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5,354,639

COLOR TONER FOR DEVELOPING ELECTROSTATIC IMAGE COMPRISING A POLYALKYLENE HAVING A CRYSTALLINITY OF 10-50%

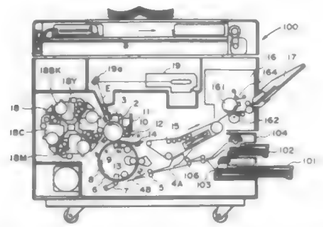
Takashige Kasuya, Soka; Takayuki Nagatsuka, Yokohama; Tatsuya Nakamura, Tokyo; Makoto Kanbayashi, Kawasaki, and Tatsuhiko Chiba, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1992, Ser. No. 936,503

Claims priority, application Japan, Aug. 29, 1991, 3-242398; Aug. 21, 1992, 4-222867

Int. Cl.[5] G03G *9/00*

U.S. Cl. 430—109 **14 Claims**



1. A color toner for developing electrostatic images, comprising:

color toner particles each comprising a binder resin, a polyalkylene, and a colorant;

wherein the color toner particles have been obtained by suspension polymerization of a polymerizable monomer composition including an α,β- ethylenically unsaturated monomer, a polar polymer or copolymer, the polyalkylene and the colorant by dispersion within an aqueous medium and polymerized in the presence of a polymerization initiator;

wherein each color toner particle has a capsule-like structure comprising a core substance comprising the polyalkylene and an outer shell covering the core substance as confirmed by observation of a section thereof by stained microtomy through a transmission electron microscope; and

wherein the polyalkylene has a crystallinity of 10–50% and a melting enthalpy (as measured by a differential scanning calorimeter) of at most 35 cal/g.

5,354,640

TONER FOR DEVELOPING ELECTROSTATIC IMAGE

Makoto Kanbayashi, Kawasaki; Takayuki Nagatsuka, Yokohama; Takashige Kasuya, Soka; Tatsuya Nakamura, and Tatsuhiko Chiba, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 948,251

Claims priority, application Japan, Sep. 25, 1991, 3-271863

Int. Cl.[5] G03G *9/00*

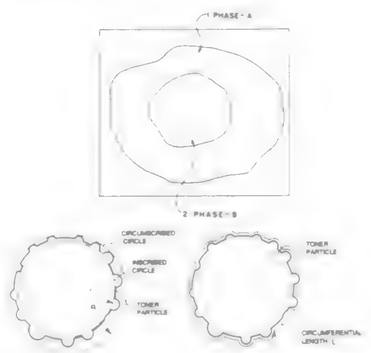
U.S. Cl. 430—110 **32 Claims**

1. A toner for developing an electrostatic image comprising toner particles:

said toner particles being prepared by suspension polymerization of a monomer component containing at least a polymerizable monomer in an aqueous medium;

containing at least two components comprised of a high softening point resin-A and a low softening point material-B;

each having a structure separated into a phase-A mainly composed of said resin-A and a phase-B mainly composed of said material-B, said phase-B being absent from the vicinity of the toner particle surface, said vicinity ranging from the toner particle surface to a depth 0.15 time a toner particle diameter; and



wherein an organic solvent, said polymerizable monomer or a mixture thereof is present in a quantity of not more than 1,000 ppm.

5,354,641

METHOD AND APPARATUS FOR TRANSFER OF TONER DEPOSITED ON IMAGE AREAS OF A RECORD CARRIER

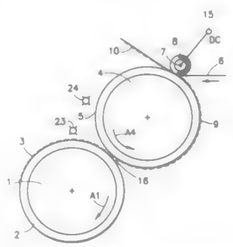
Luis Lima-Marques, Darlington, Australia, assignor to MAN Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Filed Apr. 2, 1992, Ser. No. 861,932

Claims priority, application Australia, Apr. 10, 1991, PK5560

Int. Cl.[5] G03G *13/14*

U.S. Cl. 430—126 **15 Claims**



1. A method for the transfer of toner deposited on the image area of a ferroelectric recoding surface (2) supported on a recording support member (1), to transfer said toner to a printing substrate (6),

said method comprising the steps of

positioning an offset member (4, 11) in spaced-apart relationship with respect to the ferroelectric recording surface (2) to define a gap (16) therewith, said ferroelectric recording surface having toned image area deposits (3) thereon;

contacting said offset member (4, 11) with the printing substrate (6) at a position remote from said gap (16),

said contacting step including engaging said printing substrate (6) with a charge transfer and impression member (7) at the reverse side of said substrate, with respect to said offset member, and positioned to press said substrate against said offset member (4, 11); and

applying a direct current voltage to said transfer and impression member (7) for transfer of said toner deposits (3) from the ferroelectric recording surface (2) of the recording support member (1) to the surface of the offset member (4, 11) for subsequent transfer of said toner deposits to said printing substrate (6).

5,354,642

POLYMERIC COUPLERS FOR HEAT IMAGE SEPARATION SYSTEMS

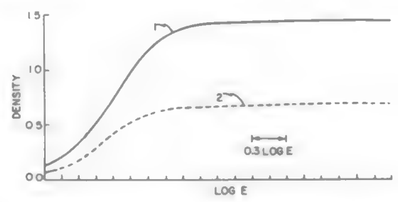
John Texter, Rochester; Tienteh Chen, Penfield, and Ronald H. White, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 10, 1992, Ser. No. 927,691

The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.

Int. Cl.[5] G03C *5/54, 7/32*

U.S. Cl. 430—203 **53 Claims**



1. A process for forming a dye image comprising the steps of:

exposing a photographic element comprising one and only one support bearing a light sensitive silver halide emulsion layer containing a polymeric color coupler compound capable of forming a heat transferable dye upon development, wherein the polymeric color coupler compound is of the formula:

COUP-L-B

wherein COUP represents a coupler moiety capable of forming a heat transferable dye upon reaction of the moiety with an oxidation product of a color developer; L is a divalent linking group which is separated from COUP upon reaction of the coupler moiety with said oxidation product of a color developer; and B represents the polymeric backbone;

developing said exposed element in an external color developer solution to form a heat transferable dye image;

stopping said development with an acid stop bath;

heating said exposed, developed element to thereby transfer the dye image from the emulsion layer to a dye receiving layer, wherein said receiving layer is part of the photographic element or part of a separate dye receiving element brought into contact with the photographic element; and

separating the emulsion layer from the dye receiving layer containing the transferred dye image.

5,354,643

OLIGOMERIC COMPOUNDS WITH ACID-LABILE PROTECTIVE GROUPS USEFUL IN POSITIVE-WORKING RADIATION-SENSITIVE MIXTURE

Ivan Cabrera, Gross-Gerau, and Georg Pawlowski, Weisbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 28, 1992, Ser. No. 920,633

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1991, 4125260

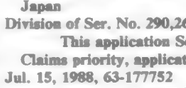
Int. Cl.[5] G03C *1/492*

U.S. Cl. 430—270 **17 Claims**

1. A positive-working radiation-sensitive mixture, comprising:

(a) a compound that generates a strong acid under the action of actinic radiation,

(b) a compound having at least one C—O—C bond that can be cleaved by the acid generated by the compound (a), said compound represented by the formula I



in which

X is a phenyl, (1)paphthyl or (2)naphthyl radical that is substituted by at least one tert.-butoxycarbonyloxy group and optionally by further substituents,

R^1 is a hydrogen atom, a (C_1-C_6)-alkyl radical, a (C_6-C_{10})-aryl radical or one of the radicals X,

R^2 is a (C_4-C_{12})-alkylene, (C_4-C_{12})-alkenylene or (C_4-C_{12})-alkynylene group in which up to three methylene groups are optionally replaced by bridge members having at least one hetero atom, said bridge members being selected from the group consisting of —O—, —S—, —NR^3—, —CO—, —CO—O—, —CO—NH—, —O—CO—NH—, —NH—CO—NH—, —CO—NH—CO—, —SO_2—, —SO-2—O—, —SO_2—NH—, a (C_4-C_{12})-cycloalkylene radical, a (C_4-C_{12})-cycloalkenylene radical, and a (C_8-C_{16})-arylenebisalkyl radical, up to three methylene groups of the aliphatic moiety of the (C_8-C_{16})-arylenebisalkyl radical being optionally replaced by bridge members of the above-mentioned type and the aromatic moiety of the (C_8-C_{16})-arylenebisalkyl radical being optionally substituted by fluorine, chlorine or bromine atoms or by (C_1-C_4)-alkyl, (C_1-C_4)-alkoxy, nitro, cyano or tert.-butoxycarbonyloxy groups,

R^3 being an acyl radical, and

n being an integer from 2 to 50, and

(c) a binder that is insoluble in water but soluble or at least swellable in aqueous-alkaline solution.

5,354,644

PHOTORESIST COMPOSITIONS COMPRISING STYRYL COMPOUND

Takanori Yamamoto, Minoo; Shinji Konishi, Takatsuki; Ryotaro Hanawa, Ibaraki; Akihiro Furuta, Takatsuki; Takeshi Hioki, Osaka, and Jun Tomioka, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 290,264, Dec. 27, 1988, Pat. No. 5,218,136. This application Sep. 1, 1992, Ser. No. 937,684

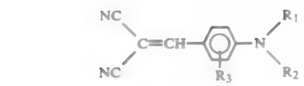
Claims priority, application Japan, Dec. 28, 1987, 62-332110; Jul. 15, 1988, 63-177752

Int. Cl.[5] G03C *1/72, 1/52*

U.S. Cl. 430—270 **5 Claims**

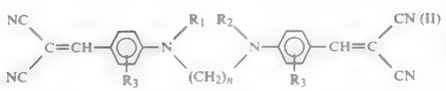
1. A photoresist composition which comprises a sensitizing compound, a resin and, as a light absorber, styryl compound of the general formula (I) or (II):

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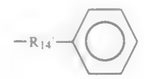
(I)

or



(II)

wherein R_1 and R_2 are the same or different and are a hydrogen atom; a C_1–C_{10} alkyl group; a C_1–C_{10} alkyl group substituted with —OH, —CN, —COOH, —SO_3H, —$NHSO_3H$, —Cl, —Br, —F, —I or —$COOR_{14}$ in which R_{14} is a lower alkyl group; a C_2–C_{10} alkenyl group; a C_2–C_{10} alkenyl group substituted with —OH, —CN, —COOH, —SO_3H, —$NHSO_3H$, —Cl, —Br, —F, —I or —$COOR_{14}$ in which R_{14} is a lower alkyl group; or



in which R_{14}' is a lower alkylene group;

R_3 is —$OCOR_5$ or —$OSi(R_5)_3$ in which R_5 is a lower alkyl group; and n is a number of 2 to 15.

5,354,645

PROCESS FOR THE PRODUCTION OF FLEXOGRAPHIC PRINTING RELIEFS

Manfred Schober, Offenbach, Fed. Rep. of Germany; Bernard Feinberg, Englishtown, and James A. Klein, Blackwood, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 604,986, Oct. 29, 1990, abandoned, which is a continuation of Ser. No. 392,536, Aug. 15, 1989, abandoned. This application Apr. 29, 1992, Ser. No. 876,812

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1988, 3828551

Int. Cl.[5] G03F *7/32*

U.S. Cl. 430—306 **9 Claims**

1. In a process for producing flexographic printing reliefs by:

(a) forming at least one photopolymerizable layer on a support, said layer containing a binder, selected from the group consisting of thermoplastic elastomeric block copolymers, A-B-C block copolymers having two different elastomeric blocks, radial block copolymers and homopolymers of butadiene, and said layer being crosslinkable by photopolymerization;

(b) imagewise exposing the layers to actinic radiation; and

(c) removing the noncrosslinked portions of the layers with at least one developer solvent;

wherein the improvement comprises using at least one developer solvent which has at least one component selected from the group consisting of: (a) diethylene glycol dialkyl ethers wherein the alkyl group has 1–5 carbon atoms; (b) acetic acid esters of alcohols selected from the group consisting of saturated alcohols having 6–10 atoms and alkoxy substituted saturated alcohols having 6–10 carbon atoms (c) carboxylic acid esters of acids having 6–10 carbon atoms and alcohols having 1–6 carbons; and (d) esters of alkoxy substituted carboxylic acids wherein the acid has from 2–4 carbon atoms, the alkoxy substituent has from 1–4 carbon atoms, and an alcohol has from 1–4 carbon atoms.

5,354,646

METHOD CAPABLE OF RAPIDLY PROCESSING A SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Kazuhiro Kobayashi, Inagi; Shigeharu Koboshi, Sagamihara; Masao Ishikawa, Tama; Masayuki Kurematsu, Hino, and Yoko Matsushima, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 974,489, Nov. 12, 1992, abandoned, which is a continuation of Ser. No. 384,051, Jul. 24, 1989, abandoned, which is a continuation of Ser. No. 149,224, Jan. 25, 1988, abandoned. This application Mar. 7, 1994, Ser. No. 206,283

Claims priority, application Japan, Mar. 26, 1986, 61-67949

Int. Cl.[5] G03C *7/30*

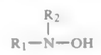
U.S. Cl. 430—372 **3 Claims**

1. A method of processing a silver halide color photographic light sensitive material having a color coupler and having a plurality of silver halide emulsion layers, comprising the steps of exposing said material imagewise to light and then processing the material in at least one color developing step, wherein:

(1) the silver halide contained in said plurality of silver halide emulsion layers is substantially silver chlorobromide;

(2) at least one of said plurality of silver halide emulsion layers contains silver chlorobromide having a silver chloride content of not less than 60 mol %; and

(3) a color developer used in said color developing step contains a paraphenylenediamine type color developing agent having at least one hydrophilic group on the amino group or the benzene nucleus thereof, and at least one compound represented by the formula I:



(I)

wherein R_1 and R_2 each represents an alkyl group having 1 to 3 carbon atoms and at least one of R_1 and R_2 is substituted with a sulfonic acid group or a carboxylic acid group and R_1 and R_2 are capable of together forming a ring.

5,354,647

BLEACH-FIXERS WITH EXCESS SULPHITE

John R. Fyson, Hackney, Great Britain, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 22, 1992, Ser. No. 910,361

Claims priority, application United Kingdom, Jan. 23, 1990, 9001503.3

Int. Cl.[5] G03C *7/00, 5/44, 5/18, 5/38*

U.S. Cl. 430—393 **7 Claims**

1. A bleach-fix agent adapted for use in the bleach-fixing of an exposed photographic color material with a total silver coating weight of 2.1 mg/dm^2 or less, comprising:

an alkali metal or ammonium thiosulphate or a mixture thereof at a total thiosulphate concentration of 0.16 molar or less;

a photographically effective salt of iron (III) EDTA at a concentration of 0.06 molar or less; and

a soluble sulphite in an amount in excess of the amount required for stabilization of said bleach-fix agent, whereby the sulphite reacts with oxidizing components of the developer in use thereby to neutralize said developer's effects upon the thiosulphate.

4. A method of bleach-fixing an exposed photographic color material comprising the steps of:

developing an exposed photographic color material having a total silver coating weight of 2.1 mg/dm^2 or less using a developer which includes an oxidizing component;

applying to said photographic color material a bleach-fix agent comprising

an alkali metal or ammonium sulphate or a mixture thereof at a total thiosulphate concentration of 0.16 molar or less:

a photographically effective salt of iron (III) EDTA at a concentration of 0.06 molar or less; and

a soluble sulphite for stabilization of the thiosulphate against decomposition, wherein said soluble sulphite is present in a concentration in excess of that amount required for stabilization of said bleach-fix agent thereby to protect the thiosulphate by sacrificial oxidation of said excess of said sulphite by carried over oxidizing components from said developer.

5,354,648

RADIOGRAPHIC ASSEMBLY HAVING REDUCED IMAGE-WISE CROSS-OVER AND SUPER RAPID PROCESSABILITY

Marco Bucci, Genoa; Renzo Torterolo, Bragno/Cairo Montenotte; Pierfiore Malfatto, Montenotte/Ferrania, and Marco Beruto, Savona, all of Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 7, 1993, Ser. No. 73,184

Claims priority, application Italy, Jul. 2, 1992, MI92A001620

Int. Cl.[5] G03C *1/46*

U.S. Cl. 430—502 **19 Claims**

1. A radiographic assembly comprising:

a radiographic element which comprises a support and a front and back pair of silver halide emulsion layers coated on the opposite sides of the support, and

a front and back pair of intensifying screens adjacent said front and back emulsion layers, respectively,

wherein at least one of said silver halide emulsion layers shows a swelling index lower than 140% and a melting time of from 45 to 120 minutes, and the contrast difference between said pair of silver halide emulsion layers is at least 0.5,

wherein the X-ray stimulated light emission difference between said pair of intensifying screens is at least 0.6 logE, and

wherein the average imagewise cross-over of said radiographic element is lower than 5% at optical density of from 0.5 to 1.75 and in the range of from 5 to 15% at optical density of from 1.75 to 3.25, said imagewise cross-over being measured according to the following formula:

$$A = \left(\left(\left(\frac{XF}{B+XF}\right)\left(\frac{B}{S}\right)\right)+\left(\left(\frac{XB}{F+XB}\right)\left(\frac{F}{S}\right)\right)\right)\cdot 100$$

wherein A is the imagewise cross-over percentage, B is the optical density of the back silver halide emulsion layer, F is the optical density of the front silver halide emulsion layer, XB is the optical density due to cross-over from the back side on the front side, XF is the optical density due to cross-over from the front side on the back side, and S is the sum of B+F+XB+XF.

5,354,649

COLOR PHOTOGRAPHIC SILVER HALIDE MATERIAL

Peter Bell, Cologne; Jürgen Haekel, Leverkusen; Cuong Ly, Cologne; Reinhart Matejec, Leverkusen, and Ralf Wichmann, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 4, 1993, Ser. No. 101,833

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1992, 42207075

Int. Cl.[5] G03C *7/26*

U.S. Cl. 430—543 **2 Claims**

1. A color photographic silver halide material comprising on a support the following photosensitive silver halide emulsion layers:

at least one red-sensitive, cyan-coupling silver halide emulsion layer,

at least one green-sensitive, magenta-coupling silver halide emulsion layer and

at least one blue-sensitive, yellow-coupling silver halide emulsion layer,

the silver halide emulsion of at least one of said photosensitive silver halide emulsion layers comprising 85 to 99 mol-% AgCl, 1 to 10 mol-T AgI and 0 to 5 mol-% AgBr, wherein the photographic silver halide material contains a layer which is arranged further from the support than each photosensitive layer and said layer contains a silver halide with at least 98 mol-% AgCl which is non-sensitive in the visible spectral region.

5,354,650

PHOTOGRAPHIC ELEMENTS CONTAINING RELEASE COMPOUNDS

David T. Southby; Daniel L. Kapp; Wojciech Slusarek; Louis E. Friedrich, all of Rochester; Zbyslaw R. Owczarczyk, and Xiqiang Yang, both of Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 890,905, May 29, 1992, abandoned. This application Nov. 5, 1993, Ser. No. 148,805

Int. Cl.[5] G03C *5/54, 7/32*

U.S. Cl. 430—544 **13 Claims**

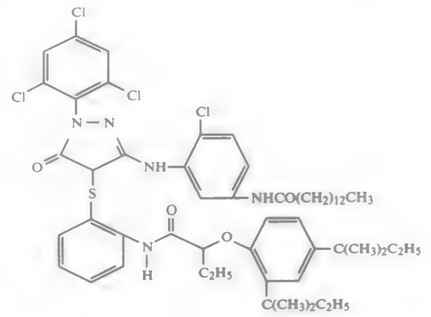
1. A photographic element comprising a support bearing at least one silver halide emulsion layer, the element containing:

a) a release compound that provides, as a function of development, an imagewise distribution of a compound A that is photographically inert in the form in which it is released, compound A being a mobile nucleophile that is released from a carrier group as a function of silver halide development; and

b) a uniform distribution in at least one of the layers of the element of a compound B, or a precursor of compound B that under photographic processing conditions provides a uniform distribution of compound B, both compound B and its precursor being photographically inert in the form in which it is contained in the layer, both compound B and its precursor further being a photographically active group that has its active site blocked by a group which is displaceable by compound A;

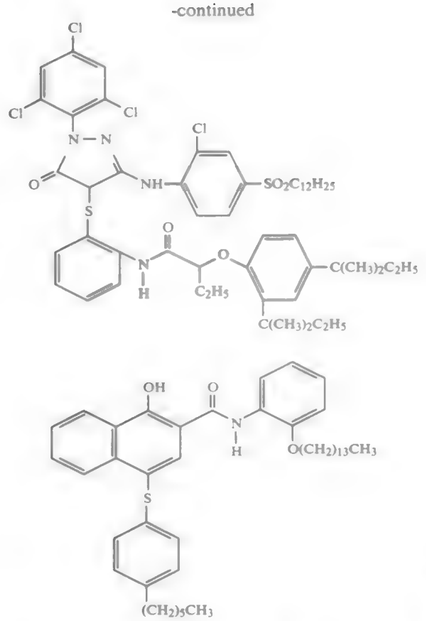
compounds A and B being such that, under photographic processing conditions, they interact to provide a photographically active group.

6. A photographic element of claim 1, wherein the compound which provides compound A is selected from:

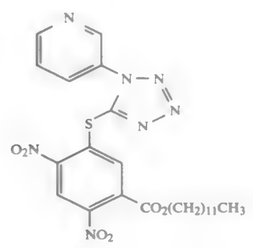


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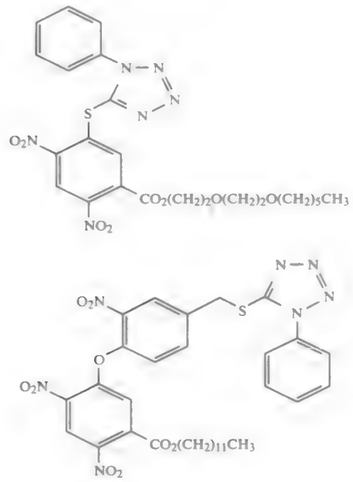
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and the compound B is selected from



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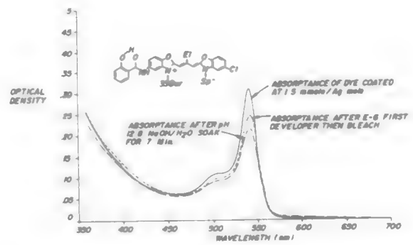


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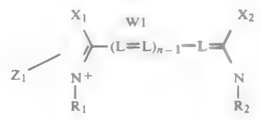
HYDROXYARYLACYL DYE COMPOUNDS AND SILVER HALIDE PHOTOGRAPHIC ELEMENTS CONTAINING SUCH DYES

Richard L. Parton, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 19, 1992, Ser. No. 978,569
Int. Cl.[5] G03C *1/14, 1/16, 1/18, 1/20*
U.S. Cl. 430—583 **26 Claims**



1. A silver halide photographic element comprising a silver halide emulsion sensitized with a sensitizing dye of the formula:



wherein:

X_1 and X_2 independently represent the atoms necessary to complete a benzothiazole nucleus, benzoxazole nucleus, benzoselenazole nucleus, benzotellurazole nucleus, quinoline nucleus, or benzimidazole nucleus in which X_1 may be further substituted and X_2 may be substituted or unsubstituted;

n is a positive integer from 1 to 4,

each L independently represents a substituted or unsubstituted methine group,

R_1 and R_2 each independently represents substituted or unsubstituted aryl or substituted or unsubstituted aliphatic group;

Z_1 represents a substituent which contains an α-hydroxyarylacyl group of formula HO—Ar—CO— in which Ar is an aromatic ring, where Ar may optionally be appended or fused to X_1; and

W1 is a counterion as needed to balance the charge of the molecule.

5,354,652

LEAD ASSAY

Ellen K. Silbergeld, Baltimore, Md., assignor to The University of Maryland at Baltimore, Baltimore, Md.

Continuation of Ser. No. 728,484, Jul. 11, 1991, abandoned. This application May 3, 1993, Ser. No. 55,761
Int. Cl.[5] C12Q *1/00, 1/32;* **C12N** *11/00;* **G01N** *33/20*
U.S. Cl. 435—4 **7 Claims**

1. A quantitative method for determining the amount of lead in a sample comprising the steps of:

(a) obtaining a lead containing sample, solubilizing the lead in said sample and inactivating any endogenous δ aminolevulinic acid dehydratase which may be present in said sample;

(b) adding the resulting solubilized lead sample, or an aliquot thereof, to a buffered solution comprising:

(i) substantially pure exogenous δ aminolevulinic acid dehydratase, or

(ii) a substrate for said dehydratase, so as to form an admixture;

(c) adding the other of said substantially pure exogenous δ aminolevulinic acid dehydratase or said substrate to said admixture of step (b); and

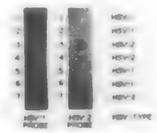
(d) measuring the amount of product resulting from reaction of said dehydratase and said substrate, wherein the amount of lead in said sample, or an aliquot thereof, is inversely and stoichiometrically related to the amount of product formed.

5,354,653

METHOD OF TYPE-SPECIFIC DETECTION OF HERPES SIMPLEX VIRUS

Toshiya Matsumoto, Tokyo; Takashi Kurimura, Hyogo, and Hiroshi Kita, Tokyo, all of Japan, assignors to Iatron Laboratories, Inc., Tokyo, Japan

PCT No. PCT/JP92/00196, § 371 Date Oct. 22, 1992, § 102(e) Date Oct. 22, 1992, PCT Pub. No. WO92/14846, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 24, 1992, Ser. No. 949,488
Claims priority, application Japan, Feb. 25, 1991, 3-53336
Int. Cl.[5] C12Q *1/70;* **C12P** *19/34;* **C07H** *21/04*
U.S. Cl. 435—5 **17 Claims**



1. In a method of detecting herpes simplex virus a aqueous liquid sample, including the sequential steps of:

(I) amplifying DNA in a mixture containing said aqueous liquid sample, a DNA polymerase and a combination of primers, and

(II) detecting and analyzing amplified DNA from step (I), the improvement which comprises using as said combination of primers:

(a) a first combination of a first BamHIB oligonucleotide primer containing at least 15 consecutive bases of the nucleotide sequence

CACGGGTATA AGGACATCCA (SEQ ID NO: 1)

with a second BamHIB oligonucleotide primer containing at least 15 consecutive bases of the nucleotide sequence

GGGTCCTCGT CCAGATCGCT (SEQ ID NO: 2)

to amplify a 243 base pair fragment of the BamHIB DNA fragment of herpes simplex virus type I,

(b) a second combination of a first a' oligonucleotide primer containing at least 15 consecutive bases of the nucleotide sequence

GCCTCTTTTC CCCCGGGGAG (SEQ ID NO: 3)

with a second a' oligonucleotide primer containing at least 15 consecutive bases of the nucleotide sequence

GGGAAAAAAG CCGCGCCGGGG (SEQ ID NO: 4)

to amplify a 212 base pair fragment of the a' DNA sequence of herpes simplex virus type II, or,

(c) both said first combination (a) and said second combination (b).

5,354,654

LYOPHILIZED LIGAND-RECEPTOR COMPLEXES FOR ASSAYS AND SENSORS

Frances S. Ligler, and James P. Whelan, both of Potomac, Md., assignors to The United States of America as Represented by the Secretary of the Navy, Washington, D.C. and U.S. Drug Testing, Inc., Rancho Cucamonga, Calif.

Filed Jul. 16, 1993, Ser. No. 92,518
Int. Cl.[5] G01N *33/543, 33/566, 33/569*
U.S. Cl. 435—5 **22 Claims**

1. A lyophilized ligand-receptor complex, prepared by a process comprising:

(i) binding a labelled ligand or a labelled receptor to an immobilized receptor or an immobilized ligand, to obtain an immobilized ligand-receptor complex;

(ii) washing said immobilized ligand-receptor complex to remove any excess labelled ligand or any excess labelled receptor, to obtain a washed immobilized ligand-receptor complex; and

(iii) lyophilizing said washed immobilized ligand-receptor complex, to obtain a lyophilized immobilized ligand-receptor complex,

wherein said lyophilizing is carried out .in the presence of a cryoprotectant.

5,354,655

METHOD FOR DETERMINING THE PRESENCE OR CONCENTRATION OF A BOUND ENZYME

N. Robert Ward, Jr., and Philip J. Lozier, both of Seattle, Wash., assignors to BioControl Systems, Inc., Bothell, Wash.

Filed Mar. 29, 1988, Ser. No. 174,848
Int. Cl.[5] C12Q *1/68;* **G01N** *33/53, 33/538*
U.S. Cl. 435—6 **4 Claims**

1. A method for determining the presence or concentration of an enzyme marker bound to an antibody, antigen or strand

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of nucleic acid generated in a hybridization assay or immunoassay, comprising the steps of:

adding a substrate in a selected solution to a first column containing the enzyme marker further bound to a solid phase as a result of the hybridization assay and immunoassay, said substrate being reactive with said bound enzyme marker;

incubating the first column to enzymatically convert said substrate to a product in an amount proportional to the amount of bound enzyme marker present;

transferring the product and unreacted substrate onto a second column of no more than 500 theoretical plates, said second column containing sorbent selectively binding said product in the presence of said selected solution;

eluting the product from the sorbent; and

detecting the presence or concentration of the product.

5,354,656

METHOD OF DNA SEQUENCING

Joseph A. Sorge, Rancho Santa Fe, and William D. Huse, Del Mar, both of Calif., assignors to Stratagene, La Jolla, Calif.

Filed Oct. 2, 1989, Ser. No. 416,021

Int. Cl.[5] C12Q *1/68*; C07H *21/04*; C12N *15/00*

U.S. Cl. 435—6 **36 Claims**

1. An improved method of determining the nucleotide base sequence of DNA comprising the steps of:

(a) preparing a DNA substrate comprising a set of molecules, each molecule having a template strand and a primer strand, wherein the 3' ends of said primer strands terminate at about the same nucleotide position on said template strands of said molecules within said set;

(b) inducing DNA synthesis to obtain labeled reaction products comprising newly synthesized DNA complementary to said template strands using the 3' ends of said primer strands to prime DNA synthesis, labeled nucleoside triphosphates, and at least one modified nucleoside triphosphate, wherein said modified nucleoside triphosphate is selected to substantially protect newly synthesized DNA from cleavage;

(c) cleaving said labeled reaction products at a selected site or sites to obtain labeled DNA fragments wherein said newly synthesized DNA is substantially protected from cleavage at said site or sites; and

(d) separating said labeled DNA fragments obtained in step (c) and thereafter identifying their nucleotide base sequence by suitable means.

5,354,657

PROCESS FOR THE HIGHLY SPECIFIC DETECTION OF NUCLEIC ACIDS IN SOLID

Hans J. Höltke, Kirchenstrasse 1, D-8132 Tutzing; Rudolf Seibl, Saalangerstrasse 46, D-8122 Penzberg; Christoph Kessler, Fraunhofer Strasse 12, D-8000 München 5; Ralf Mattes, Friedrich-Zundel-Strasse 14, D-7000 Stuttgart 75, and Hermann Graf, Johannes-Tanner-Strasse 2a, D-8000 München 60, all of Fed. Rep. of Germany

Continuation of Ser. No. 919,506, Jul. 24, 1992, abandoned, which is a continuation of Ser. No. 709,071, May 30, 1991, abandoned, which is a continuation of Ser. No. 296,444, Jan. 12, 1989, abandoned. This application Dec. 18, 1992, Ser. No. 993,820

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1988, 3800644

Int. Cl.[5] C12Q *1/68*; C07H *21/04*; C12N *15/00*

U.S. Cl. 435—6 **22 Claims**

1. A process for the detection of a target nucleic acid in a solution by hybridization with a labelled, single stranded nucleic acid probe present in the same solution, comprising:

(a) incubating the solution with a labelled single stranded nucleic acid probe, wherein said probe has at least one digoxigenin or digoxin steroid hapten molecule covalently bound thereto, via a bridge of at least four atoms in length, wherein said bridge is bound to a site on said probe which does not participate in hydrogen bridge formation with any target nucleic acid in said solution, wherein said site is selected from the group consisting of: position C5 of uracil, position C8 of adenine, position C8 of guanine, and position 2' of ribose;

incubating said solution with a nucleic acid capturing probe, wherein said capturing probe is bound to a solid matrix before, during, or after incubation with said solution, said nucleic acid capturing probe being complementary to said target nucleic acid at a region different from the region of said target nucleic acid to which said probe is complementary, wherein said capturing probe is bound to said solid matrix (1) adsorptively, (2) coordinately, (3) covalently, (4) via a binding system which comprises biotin and avidin or (5) via a binding system which comprises biotin and streptavidin so as to form a solid phase bound complex of (i) matrix bound capture probe, (ii) target nucleic acid present in said solution, and (iii) said labelled nucleic acid probe;

(b) separating solid phase bound complex from said solution,

(c) contacting solid phase bound complex with a labelled antibody which specifically binds to said digoxigenin or digoxin steroid hapten molecule, and

(d) determining target nucleic acid by determining any binding of said labelled antibody to said solid phase bound complex.

5,354,658

NON-RADIOACTIVE METHOD FOR DETECTING A LABELLED SEGMENT AND A SOLUTION OR COMPOSITION THEREFOR

Dennis Wright, 2925 E. Wisconsin Apt. D., Great Lakes, Ill. 60088

Filed Jan. 28, 1993, Ser. No. 10,344

Int. Cl.[5] C12Q *1/68*; G01N *33/53*

U.S. Cl. 435—6 **38 Claims**

1. A non-radioactive method of detecting a ligand and antiligand complex labelled with alkaline phosphatase or a tracer having alkaline phosphatase conjugated thereto comprising reacting said complex with bromo-chloro-indolyl phosphate, phenazine methosulfate and dimethylthiazol diphenyl tetrazolium and allowing the reaction to proceed to produce a colored formazan or a color change indicative of the presence of said labelled complex.

5,354,659

METHOD FOR DETECTING PATHOLOGICAL PREGNANCY

Robert Rothlein, and Steven D. Marlin, both of Danbury, Conn., assignors to Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Conn.

Division of Ser. No. 695,173, May 3, 1991, Pat. No. 5,223,396. This application Oct. 21, 1992, Ser. No. 964,586

Int. Cl.[5] C12Q *1/00*; G01N *33/53*

U.S. Cl. 435—7.1 **6 Claims**

1. A method for the detection of a pathological pregnancy in a pregnant female which comprises the steps of:

a) contacting a sample of the amniotic fluid or the serum, from the pregnant female with an immobilized first antibody capable of binding to ICAM-1, the first immobilized antibody being insoluble in the sample, to form a first insoluble complex of cICAM-1 and the immobilized first antibody;

b) contacting the first insoluble complex with a soluble labelled second antibody capable of binding to ICAM-1, to form a final insoluble complex of the labelled second antibody, cICAM-1 and the immobilized first antibody;

c) separating the final insoluble complex from the sample and any unreacted soluble labelled second antibody;

d) determining either the amount of label associated with the final insoluble complex or the amount of unreacted label, as a measure of the amount of cICAM-1 in the sample; and

e) comparing the amount of cICAM-1 in the sample with standards of cICAM-1 normal for amniotic fluid or serum for the stage of pregnancy of the pregnant female and with higher than normal levels of cICAM-1 indicating a risk of an abnormal delivery.

2. A method for the detection of a pathological pregnancy in a pregnant female which comprises measuring the amount of cICAM-1 is a sample of the amniotic fluid or the serum from the pregnant female, and then comparing the amount of cICAM-1 in the sample to standards of cICAM-1 normal for amniotic fluid or serum for the stage of pregnancy of the pregnant female and with higher than normal levels of cICAM-1 indicating a risk of an abnormal delivery.

5,354,660

ISOLATION OF DIAGNOSTIC GLYCOPROTEINS TO TAENIA SOLIUM, IMMUNOBLOT-ASSAY AND METHOD FOR THE DETECTION OF HUMAN CYSTICERCOSIS

Victor C. W. Tsang, Decatur; Joy A. Brand, Atlanta; Anne E. Boyer; Marianna Wilson, both of Decatur; Peter M. Schantz, Atlanta, and Shirley E. Maddison, Decatur, all of Ga., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 292,393, Dec. 30, 1988, abandoned. This application Apr. 2, 1992, Ser. No. 863,486

Int. Cl.[5] G01N *33/569, 33/53*

U.S. Cl. 435—7.22 **10 Claims**

1. A method for diagnosing human neurocysticercosis utilizing an immunoblot assay which comprises:

contacting serum or cerebrospinal fluid of a human to be diagnosed with *Taenia solium* larval glycoprotein antigens, said glycoprotein antigens being identified as GP50, GP42, GP24, GP21, GP18, GP14, and GP13, wherein GP indicates that said antigen is a glycoprotein and the number indicates the molecular weight in kilodaltons as determined by SDS-PAGE under non-reducing conditions after isolation by lentil lectin affinity; and

detecting the binding of antibody present in said serum or cerebrospinal fluid to at least one of said *Taenia solium* glycoprotein antigens, the presence of binding indicating human neurocysticercosis.

5,354,661

MONOCLONAL ANTIBODY TO ENTEROHEMORRHAGIC *ESCHERICHIA COLI* 0157:H7 AND 026:H11 AND METHOD FOR DETECTION

Michael P. Doyle, Peachtree City, and Nisha Padhye, Atlanta, both of Ga., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

PCT No. PCT/US91/05310, § 371 Date May 26, 1992, § 102(e) Date May 26, 1992

Continuation-in-part of Ser. No. 559,867, Jul. 19, 1990, Pat. No. 5,168,063. This PCT application Jul. 26, 1991, Ser. No. 842,384

Int. Cl.[5] G01N *33/569, 33/535*

U.S. Cl. 435—7.37 **20 Claims**

7. An immunoassay method for the detection of *E. coli* 0157:H7 or *E. coli* 026:H11, which comprises

(a) contacting a sample suspected of containing *E. coli* 0157:H7 or *E. coli* 026:H11 with a monoclonal antibody which specifically binds to the same epitope bound by monoclonal antibody 4E8C12 in order to form an immune complex, and

(b) determining the presence of the complex in order to detect *E. coli* 0157:H7 or *E. coli* 026:H11 in the sample.

5,354,662

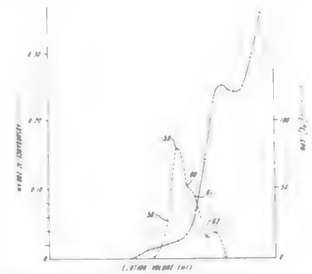
MEASURING TISSUE BREAKDOWN PRODUCTS IN BODY FLUIDS

Phillip J. Stone, Chestnut Hill, and Carl Franzblau, Newton, both of Mass., assignors to Trustees of Boston University, Boston, Mass.

Continuation-in-part of Ser. No. 523,587, May 15, 1990, Pat. No. 5,217,903. This application Mar. 11, 1993, Ser. No. 30,680 The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.

Int. Cl.[5] C12Q *1/00*; G01N *33/53*

U.S. Cl. 435—7.92 **43 Claims**



1. A method for quantitatively determining the amount of a tissue breakdown product from at least one of a connective tissue or a muscle tissue, in a body fluid from an animal, comprising

providing a standard comprising a breakdown product having an isotopic label, said label being radioactive or non-radioactive,

combining a known quantity of said standard, containing a known quantity of said label, with a sample of the body fluid,

substantially purifying from said combined standard and sample a breakdown product fraction containing labelled breakdown product from said standard together with breakdown product from the sample, and

measuring the quantity of breakdown product and the quantity of label in the substantially purified breakdown product fraction, whereby the measured recovery of the label in the substantially purified breakdown product fraction and the quantity of label in the original standard which was combined with the sample provides a measure of the proportionate loss of breakdown product during the purifying step.

5,354,663

MICROBIAL INHIBITION TEST KIT AND METHOD

Stanley E. Charm, Boston; Eliezer Zomer, Quincy; Thomas Lieu, Malden; Max Gandman, Malden, and Lea Gandman, Malden, all of Mass., assignors to Charm Sciences, Inc., Malden, Mass.

Continuation-in-part of Ser. No. 614,729, Nov. 16, 1990, abandoned, which is a continuation of Ser. No. 190,041, May 4, 1988, abandoned. This application Nov. 12, 1991, Ser. No. 791,785

Int. Cl.[5] C12Q *1/00, 1/02, 1/04*; C12M *1/00*

U.S. Cl. 435—32 **37 Claims**

1. A sensitive antimicrobial test method to test a sample for an antimicrobial drug, which method comprises:

a) placing a liquid sample to be tested into a test container and heating the sample to a temperature sufficient to destroy inhibitors in the sample;

b) cooling the sample to a lower temperature;

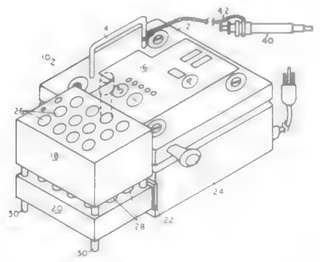
c) adding a BST tablet to the cooled liquid sample, the tablet comprising a compressed BST tablet containing Bacillus

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stearothermophilus (BST) spores which are inhibited in growth by the presence of the antimicrobial drug, a BST spore stabilizer and inert filler material;

d) rapidly heating the BST spores and the sample in the container to a temperature to heat shock the BST spores so as to effect general synchronization of germination of the BST spores;

e) adding a medium tablet to the heat-shocked BST spores and liquid sample, the medium tablet comprising amino acid and carbohydrate nutrients for the BST in a concentration sufficient to permit the growth of the BST spores, but sufficiently low to provide a low resistivity to the antimicrobial drugs to be tested;



g) incubating the sample, BST spores and the medium in the test container at an incubation temperature for an incubation time period;

h) terminating incubation at the end of the incubation time; and

j) detecting the presence or absence of the antimicrobial drug in the sample by a change of color of the pH indicator.

5,354,664

DNA ENCODING A HUMAN THROMBOMODULIN HAVING A MODIFIED GLYCOSAMINOGLYCAN (GAG) BINDING SITE

Takeshi Doi, Tsukuba; Akio Iwasaki, Matsudo; Yushi Saino, Tokyo; Shigeru Kimura, Higashiyama, and Masao Ohkuchi, Tokorozawa, all of Japan, assignors to Kowa Co., Ltd., Nagoya, Japan

Division of Ser. No. 14,723, Feb. 8, 1993, Pat. No. 5,273,962, which is a continuation-in-part of Ser. No. 796,336, Nov. 22, 1991, abandoned. This application Aug. 23, 1993, Ser. No. 110,011

Claims priority, application Japan, Nov. 30, 1990, 2-335720; Feb. 25, 1991, 3-30271

Int. Cl.[5] C12N *15/15, 5/10*

U.S. Cl. 435—69.1 9 Claims

1. A DNA molecule, the sequence of which encodes the amino acid sequence of SEQ ID NO: 18, wherein Xaa^{469} and Xaa^{470} are acidic amino acids and Xaa^{471} and Xaa^{472} are arbitrary amino acids.

5,354,665

RECOMBINANT DNA PROCESSES FOR PRODUCING PI-LINKED LYMPHOCYTE FUNCTION ASSOCIATED ANTIGEN-3

Barbara P. Wallner, Cambridge, and Catherine Hession, South Weymouth, both of Mass., assignors to Biogen, Inc., Cambridge, Mass.

Division of Ser. No. 237,309, Aug. 26, 1988, Pat. No. 5,185,441. This application Oct. 13, 1992, Ser. No. 959,550

Int. Cl.[5] C07K *13/00;* A61K *37/02;* C12N *15/10*

U.S. Cl. 435—69.3 10 Claims

1. A method of producing a polypeptide comprising the steps of culturing a unicellular host transformed with a recombinant DNA molecule comprising a DNA sequence selected from the group consisting of:

(a) the DNA sequence of the DNA insert carried in phage λP24 (ATCC 68788); and

(b) a DNA sequence which is degenerate to the foregoing DNA sequence, said DNA sequence being operatively linked to an expression control sequence in said recombinant DNA molecule.

5,354,666

MAMMALIAN CELL LINE EXPRESSING BASEMENT MEMBRANE PROTEINS

Keith G. Danielson, Rosemont, and Renato V. Iozzo, Villanova, both of Pa., assignors to Thomas Jefferson University, Philadelphia, Pa.

Continuation of Ser. No. 738,895, Aug. 1, 1991, abandoned. This application Dec. 29, 1992, Ser. No. 999,462

Int. Cl.[5] C12P *21/00;* C12N *5/06*

U.S. Cl. 435—70.3 5 Claims

1. A process for producing basement membrane proteins in vitro comprising growing immortalized EHS murine tumor cells in nutrient culture medium wherein said culture medium is Dulbecco's modification of Eagle's minimum essential medium supplemented with 1% to 5% mammalian serum, 3 to 7 μg/ml insulin, 3 to 7 μg/ml transferrin, 3 to 7 ng/ml sodium selenite, 300 to 400 ng/ml phosphoethanolamine, 100 to 200 ng/ml ethanolamine, 5 to 15 ng/ml epidermal growth factor, and 5 to 15 μg/ml gentamicin sulfate for a sufficient time to allow for deposit of basement membrane proteins in extracellular matrices; and isolating the resulting basement membrane proteins from the cells or cell product.

5,354,667

PROCESS FOR THE ENZYMATIC PREPARATION OF 7-AMINOCEPHALOSPORANIC ACID

Christian Croux, Madrid; Javier C. Perez, Leon; Jose L. B. Fuentes, Leon, and Francisco S. Maldonado, Leon, all of Spain, assignors to Antibioticos, S.p.A., Milan, Italy

Filed Aug. 5, 1991, Ser. No. 740,381

Claims priority, application Spain, Aug. 3, 1990, 9002109

Int. Cl.[5] C12P *35/02, 1/19;* C12N *1/21, 15/63, 9/80*

U.S. Cl. 435—51 6 Claims

1. A process for the production of high yields of 7-aminocephalosporanic acid comprising:

a) digesting the total DNA of a strain of *Acinetobacter* which is deposited under ATCC 53891 whose DNA includes the sequence encoding 7-beta-(4-carboxybutanamido) cephalosporin acylase and placing the resultant DNA fragments in DNA vectors so as to form a plasmidic library,

b) transforming, with each of the resultant DNA sequences contained in the plasmidic library, a *E. coli* host cells that are auxotrophic to leucine,

c) selecting for a transformed *E. coli* cell containing the sequence encoding 7-beta-(4-carborybutanamido) cephalosporin acylase by growth on a medium containing the glutaric acid amide of leucine,

d) isolating the vector containing the sequence encoding 7-beta-(4-carboxybutanamido) cephalosporin acylase from the resultant selected cell, digesting the vector DNA, and figuring each of the DNA sequences so obtained into an *E. coli* vector such that each of said DNA sequence is under the transcriptional control of *E. coli tac* promoter sequence,

e) transforming an *E. coli* host auxotrophic to leucine with each of the vectors formed in step (d), and then selecting for transformed hosts containing the sequence encoding 7; -beta-(4-carboxybutanamido) cephalosporin acylase under the transcriptional control of the *E. coil tac* promoter by growth on a medium as in step (c) above,

f) isolating the vectors from the resultant selected *E. coli* cells and using said vectors to transform an *E. coli* host deposited under NCIMB 40432 which is selected to lack substantial beta-lactamase activity,

g) culturing the resultant transformed *E. coli* under conditions which enable expression of 7-beta-(4-carboxybutanamido) cephalosporin acylase, recovering the resultant expressed 7-beta-(4-carboxybutanamido) cephalosporin acylase from whole broth, and

h) reacting in an aqueous medium of 7-beta-(4-carboxybutanamido) cephalosporanic acid or a salt thereof with said 7-beta-(4-carboxybutanamido) cephalosporin acylase recovered from said whole broth to produce said 7-aminocephalosporanic acid.

5,354,668

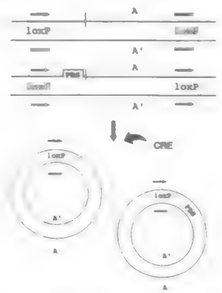
METHODS FOR THE ISOTHERMAL AMPLIFICATION OF NUCLEIC ACID MOLECULES

Jeffrey I. Auerbach, 13109 Jasmine Hill Terr., Rockville, Md. 20850

Continuation of Ser. No. 933,945, Aug. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 924,643, Aug. 4, 1992, abandoned. This application Oct. 15, 1993, Ser. No. 136,405

Int. Cl.[5] C12Q *1/68;* C12P *19/34*

U.S. Cl. 435—91.1 22 Claims



20. A method for amplifying a desired polynucleotide of a target nucleic acid molecule, said polynucleotide having a 3' region, said method comprising the steps:

A) incubating said target molecule in the presence of a primer nucleic acid molecule and a polymerase; wherein the 5' terminus of said primer contains an oligonucleotide, which, in double-stranded form comprises a LoxP recombinational site; hybridizing said primer molecule to said 3' region of said desired polynucleotide and subsequently forming primer extension products that each have a 3' terminus;

B) hybridizing the 3' terminus of a primer extension products of step A to a 3' terminus of single-stranded nucleic acid molecules having an oligonucleotide, which, in double-stranded form comprises a LoxP recombinational site; said oligonucleotide being located at a position 5' to said molecule's 3' terminus;

C) permitting template dependent extension of said hybridized 3' terminus of said primer extension products and of said hybridized 3' terminus of said single-stranded molecules of step B to thereby form linear double-stranded nucleic acid molecules having LoxP recombinational sites at both termini, said sites having a directly repeated orientation with respect to one another;

D) incubating said molecules from step C in the presence of a Cre recombinase under conditions sufficient to form a double-stranded amplifiable circular molecule containing said desired polynucleotide due to LoxP site-specific recombination between the LoxP recombinational sites of the two termini of said molecules;

E) incubating said double-stranded amplifiable circular molecules in the presence of an amplification primer under conditions sufficient to permit the template dependent extension of said primer, said extension thereby amplifying said desired polynucleotide.

5,354,669

TYPE II RESTRICTION ENDONUCLEASE SEXAI

Klaus Kaluza, Bad Heilbrunn; Johannes Auer, and Bruno Frey, both of Penzberg, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Jul. 19, 1993, Ser. No. 94,374

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1992, 4226657

Int. Cl.[5] C12P *19/34;* C12N *9/22*

U.S. Cl. 435—91.53 10 Claims

1. Type II restriction endonuclease having recognition sequence



and a cleavage site indicated by the arrows.

5,354,670

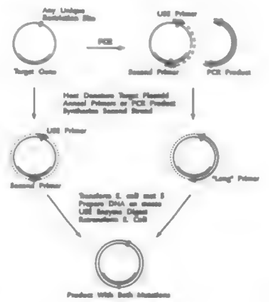
SITE-DIRECTED MUTAGENESIS OF DNA

Jac A. Nickoloff, Boston; Frank A. Ray, Brookline, and Win P. Deng, Boston, all of Mass., assignors to The President and Fellows of Harvard College, Cambridge, Mass.

Continuation of Ser. No. 813,581, Dec. 24, 1991, abandoned. This application Aug. 11, 1993, Ser. No. 105,761

Int. Cl.[5] C12P *19/34*

U.S. Cl. 435—91.53 31 Claims



1. A method of producing mutant DNA, comprising the steps of:

(a) generating from a circular parental DNA containing a nonessential, unique restriction site, circular mutant progeny DNA containing a desired mutation but lacking the restriction site, the progeny DNA being produced by a primer extension reaction wherein a primer carries the desired mutation;

(b) treating the non-mutant parental DNA and the mutant progeny DNA with an enzyme that cleaves at the restriction site to cleave parental DNA such that enzyme cleavage at the restriction site linearizes parental DNA, while mutant progeny DNA remains circular; and

(c) selecting for mutant progeny DNA by transforming mismatch repair-defective cells with the enzyme-treated DNA under conditions such that uncleaved DNA is trans-

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formed at a higher efficiency than cleaved DNA such that a majority of transformants carry mutant DNA.

5,354,671

ENZYMATIC CLARIFICATION OF POLYSACCHARIDES

Thomas J. Pollock, San Diego, Calif., assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan and Shin-Etsu Bio, Inc., San Diego, Calif.

Filed Jun. 26, 1992, Ser. No. 906,262

Int. Cl.[5] C12P *19/04, 19/06;* C12N *9/00*

U.S. Cl. 435—101 **12 Claims**

1. An extracellular enzyme containing composition obtained by subjecting a strain of bacteria selected from the group consisting of *Aeromonas media*-like DNA group 5A and Lysobacter species to culturing in a nutrient medium and separating the nutrient broth containing the composition from the bacterial cellular debris, the composition being capable of lysing cells and enzymatically digesting cellular debris in a polysaccharide-producing bacteria in the presence of polysaccharides produced by the polysaccharide-producing bacteria without degrading the polysaccharides.

5,354,672

MATERIALS AND METHODS FOR HYPERSECRETION OF AMINO ACIDS

Ian Fotheringham, 10 Southfield Dr., Vernon Hills, Ill. 60061; Jennifer Ton, 950 Countryside Dr. #219, Palatine, Ill. 60067, and Chris Higgins, Pipal Cottage, Water Eaton, OX28HE, Oxford, England

Filed Nov. 24, 1992, Ser. No. 985,694

Int. Cl.[5] C12P *13/04;* C12N *1/21, 15/09*

U.S. Cl. 435—106 **12 Claims**

1. A biologically pure culture of Escherichia coli cells comprising a DNA inversion gene, wherein said *Escherichia coli* cells exhibit stable hypersecretion of an amino acid.

5,354,673

Patent Not Issued For This Number

5,354,674

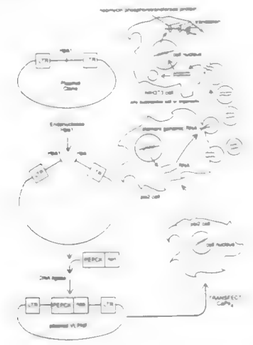
METHOD OF GENE TRANSFER USING RETROTRANSPOSONS

Clague P. Hodgson, Wooster, Ohio, assignor to Creighton University, Omaha, Nebr.

Continuation of Ser. No. 603,635, Oct. 25, 1990, abandoned. This application Oct. 29, 1992, Ser. No. 968,259

Int. Cl.[5] C12N *15/00, 5/00, 7/00*

U.S. Cl. 435—172.3 **13 Claims**



1. A process for the transfer and expression of at least one gene into a cell in vitro comprising the steps of:

(a) isolating the gene;

(b) introducing the gene into a retrotransposon, other than vectors derived from replication competent retroviruses, and other than vectors from retroviruses of a replication competent class from which at least one viral gene has been disrupted, wherein said retrotransposon is both noncogenic and nonpathogenic and comprises at least one cellular mobile genetic element with long terminal repeats by using a recombinant DNA (gene splicing) or recombination process, which results in at least one hybrid retrotransposon;

(c) introducing said hybrid retrotransposon into a donor cell and allowing the donor cell to package and transmit said hybrid retrotransposon into a virion;

(d) transferring said virion to a recipient cell wherein said hybrid retrotransposon replicates by reverse transcription and may also be integrated into the recipient cell's genome;

(e) expressing said hybrid retrotransposon as RNA and/or protein from either at least one internal promoter and/or from said retrotransposon long terminal repeat promoter or both; and

(f) screening or selecting for the phenotype of said hybrid retrotransposon.

5,354,675

C-TERMINAL AMIDATING ENZYME COMPOSITION, PROCESS FOR PREPARING, AND USE OF THE SAME

Toshii Iida; Yuka Fuse; Masahiro Tajima; Mitsuo Yanagi, all of Yokohama, and Hiroshi Okamoto, Sendai, all of Japan, assignors to Shiseido Company Ltd., Japan

PCT No. PCT/JP89/00521, § 371 Date Jan. 29, 1990, § 102(e) Date Jan. 29, 1990, PCT Pub. No. WO89/12096, PCT Pub. Date Dec. 14, 1989

PCT Filed May 25, 1989, Ser. No. 459,829

Claims priority, application Japan, May 30, 1988, 63-130187; Apr. 21, 1989, 1-99960

Int. Cl.[5] C12P *21/00;* C12N *9/00, 9/02*

U.S. Cl. 435—189 **6 Claims**

1. A C-terminal amidating enzyme composition derived from porcine or equine serum or plasma which comprises a C-terminal amidating enzyme capable of amidating a C-terminal glycine adduct, wherein said amidating enzyme

(i) amidates the carboxy terminus of the C-terminal glycine of a peptide selected from the group consisting of D-Tyr-Val-Gly, D-Tyr-Trp-Gly, Gly-Phe-Gly, Phe-Gly-Phe-Gly, D-Tyr-Leu-Asn-Gly, Arg-Phe-Gly, Arg-Ala-Arg-Leu-Gly, Leu-Met-Gly, Gly-Leu-Met-Gly, Phe-Gly-Leu-Met-Gly, Asp-Arg-Phe-Gly, Trp-Asp-Arg-Phe-Gly, Ala-Phe-Gly, Lys-Ala-Phe-Gly, Ser-Lys-Ala-Phe-Gly, Arg-Tyr-Gly, Gly-Met-Gly, Gly-Tyr-Gly, Gly-His-Gly, His-Gly-Gly, and Trp-Gly-Gly;

(ii) is stable in the pH range of 5 to 9;

(iii) has as cofactors metal ions and L-ascorbic acid;

(iv) has two active fractions at molecular weights of about 50,000 and about 100,000 as determined from gel filtration;

(v) has isoelectric points of about 4.5 pH for the active fraction having a molecular weight of about 50,000 and about 6.7 pH for the active fraction having a molecular weight of about 100,000 according to isoelectric point chromatography; and

(vi) is activated by addition of catalase.

5,354,676

RECOMBINANT MODIFIED THERMOSTABLE NAD-DEPENDENT DEHYDROGENASES AND PROCESS FOR THEIR PRODUCTION

William N. Chia, Singapore, Singapore; Anthony R. Clarke, Bristol, England; Joseph J. Holbrook, Bath, England; Helen M. Wilks, Bristol, England, and Anthony Atkinson, Wiltshire, England, assignors to The University of Bristol and Public Health Laboratory Service Board, both of England

PCT No. PCT/GB90/00345, § 371 Date Oct. 24, 1991, § 102(e) Date Oct. 24, 1991, PCT Pub. No. WO90/10702, PCT Pub. Date Sep. 20, 1990

PCT Filed Mar. 7, 1990, Ser. No. 768,881

Claims priority, application United Kingdom, Mar. 8, 1989, 8905269.0

Int. Cl.[5] C12N *9/04*

U.S. Cl. 435—190 **2 Claims**

1. A recombinant thermophilic NAD-dependant dehydrogenase consisting essentially of the amino acid sequence depicted in FIG. 1, and having the mutation 102-5 GlnLysPro→MetValSer.

5,354,677

INTRACELLULAR PHOSPHOLIPASE A_2 ENZYME

John L. Knopf, and James Clark, both of Acton, Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Division of Ser. No. 486,628, Feb. 28, 1990. This application Jan. 13, 1993, Ser. No. 2,447

Int. Cl.[5] C12N *9/20, 5/00, 9/00;* C07H *17/00*

U.S. Cl. 435—198 **4 Claims**

1. A purified homogeneous human phospholipase A_2 enzyme characterized by an apparent molecular weight of approximately 110 kD under reducing conditions as determined by SDS-PAGE.

5,354,678

PRODUCTION OF RECOMBINANT ADENO-ASSOCIATED VIRUS VECTORS

Jane S. Lebkowski, Portola Valley; Maureen A. McNally, and Thomas B. Okarma, both of Palo Alto, all of Calif., assignors to Applied Immune Sciences, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 605,775, Oct. 30, 1990, Pat. No. 5,173,414. This application Dec. 21, 1992, Ser. No. 993,776

The portion of the term of this patent subsequent to Dec. 22, 2009, has been disclaimed.

Int. Cl.[5] C12N *15/09, 5/10, 7/01, 15/86*

U.S. Cl. 435—172.3 **8 Claims**

1. A method for producing a recombinant adeno-associated virus comprising the steps of:

(a) introducing one or more DNA sequences into the genome of a cell, said DNA sequences comprising an adeno-associated virus rep gene and an adeno-associated virus cap gene, thereby producing a permanent packaging cell;

(b) introducing into said permanent packaging cell an adeno-associated virus transducing vector, wherein said adeno-associated virus transducing vector comprises an Epstein-Barr virus nuclear antigen gene, an Epstein Barr virus latent origin of replication, and exogenous genetic material, and wherein said adeno-associated virus transducing vector lacks functional rep and cap genes, thereby producing a permanent producer cell;

(c) growing said permanent producer cell in a cell growth medium;

(d) introducing adenovirus or herpesvirus to the permanent producer cell, thereby producing recombinant adeno-associated virus; and,

(e) isolating said recombinant adeno-associated virus.

5,354,679

MICROORGANISM IMMOBILIZATION IN A β-CHITIN CARRIER

Eiji Ohashi, Tokyo, Japan, assignor to Nippon Suisan Kaisha, Ltd., Tokyo, Japan

Filed Jun. 25, 1992, Ser. No. 904,258

Claims priority, application Japan, Jun. 25, 1991, 3-153268

Int. Cl.[5] C12N *11/10, 11/04;* C12M *1/40;* G01N *27/26*

U.S. Cl. 435—178 **9 Claims**

1. A microorganism immobilized in a β-chitin containing carrier which is obtained by a process comprising the steps of:

isolating β-chitin;

grinding the isolated β-chitin;

dispersing the ground β-chitin in water to form a β-chitin gel dispersion;

adding a microorganism suspension to the β-chitin gel dispersion; and

molding and drying the β-chitin gel and microorganism dispersion.

5,354,680

METHOD FOR PRODUCING THE DDEI RESTRICTION ENDONUCLEASE AND METHYLASE

Joan E. Brooks, Beverly, and Kimberly H. O'Donnell, Belmont, both of Mass., assignors to New England Biolabs, Inc., Beverly, Mass.

Continuation of Ser. No. 453,235, Dec. 14, 1989, Pat. No. 5,137,823, which is a continuation of Ser. No. 872,046, Jun. 6, 1986, abandoned. This application Nov. 26, 1991, Ser. No. 797,996

The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.

Int. Cl.[5] C12N *9/22, 15/55*

U.S. Cl. 435—199 **7 Claims**

1. Isolated DNA coding for the DdeI restriction endonuclease, wherein the isolated DNA is obtainable from ATCC Accession No. 69140.

5,354,681

ENZYME COMPLEX HYDROLYZING BACTERIAL CELL WALLS DERIVED FROM NOCARDIOPSIS DASSONVILLEI

Chi-Li Liu, and Janet M. Overholt, both of Danbury, Conn., assignors to 501 Novo Industri A/S, Bagsvaerd, Denmark

Filed May 17, 1988, Ser. No. 196,619

Int. Cl.[5] C12N *9/24, 9/26, 1/06*

U.S. Cl. 435—200 **11 Claims**

1. A purified bacteriolytic enzyme preparation derived from a strain of *Nocardiopsis dassonvillei* which

a) has the ability to hydrolyze bacterial cell walls of *Micrococcus sedentarius, Pseudomonas aeruginosa* and *Staphylococcus aureus*; and

b) retains at least 70% of its maximum lytic activity in the pH range of 8–10, as measured towards the substrate organisms *Pseudomonas aeruginosa* and *Staphylococcus aureus.*

5,354,682

VIRAL-SAFE PURIFIED HUMAN THROMBIN

Henry S. Kingdon, Pasadena; Michael J. Griffith, Walnut; Joyce Lawrence, Claremont, all of Calif., and Roger L. Lundblad, Chapel Hill, N.C., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 481,528, Feb. 20, 1990, abandoned. This application Feb. 24, 1993, Ser. No. 23,143

Int. Cl.[5] C12N *9/74;* A61K *35/14, 37/475*

U.S. Cl. 435—214 **1 Claim**

1. A therapeutic grade thrombin, said thrombin,

a) being essentially homogeneous when analyzed by SDS polyacrylamide gel electrophoreses, C_3-HPLC chromatography, and immunodiffusion;

b) having a total nucleic acid content of less than 10 pg per therapeutic dose;

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c) being contaminated by blood coagulation Factors VII, IX and X of less than 1 percent by weight in the aggregate;
d) having a level of inactivated prothrombin of less than 0.1 percent;
e) having a level of inactive prothrombin fragments of less than 5.0 percent;
f) having a specific activity ranging minimally from about 2200 NIH units per mg protein to about 3200 NIH units per mg protein; and,
g) being essentially free of lipid envelope viruses.

5,354,683

HUMAN IMMUNODEFICIENCY VIRUS SPECIFIC PROTEOLYTIC ENZYME AND A METHOD FOR ITS SYNTHESIS AND RENATURATION

Stephen Oroszlan, Potomac, and Terry D. Copeland, Frederick, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 201,654, Jun. 1, 1988, abandoned, which is a continuation-in-part of Ser. No. 174,473, Mar. 28, 1988, abandoned, which is a continuation of Ser. No. 107,880, Oct. 9, 1987, abandoned, which is a continuation of Ser. No. 57,183, Jun. 1, 1987, Pat. No. 5,252,477. This application Jul. 30, 1993, Ser. No. 100,703

Int. Cl.[5] C12N *9/50, 7/04*

U.S. Cl. 435—219 **3 Claims**

1. Essentially pure HIV-2 protease, a proteolytic enzyme necessary for cleaving precursor polyproteins of HIV-2.

5,354,684

AGROBACTERIUM RADIOBACTER K84 CARRYING TRANSFER-DEFICIENT PAGK84 PLASMIDS

Allen Kerr, Adelaide; David A. Jones, Surrey Downs; Bruce G. Clare, Glenunga; Maarten H. Ryder, Brompton, all of Australia, and Stephen K. Farrand, Seymour, Ill., assignors to Luminis Pty. Ltd., Adelaide, Australia

Continuation of Ser. No. 260,451, Oct. 20, 1988, abandoned. This application May 26, 1992, Ser. No. 890,393

Claims priority, application Australia, Oct. 20, 1987, PI4977

Int. Cl.[5] C12N *1/21, 15/74*

U.S. Cl. 435—252.3 **4 Claims**

1. A non-pathogenic strain of *Agrobacterium radiobacter* K84 comprising a stable modified plasmid pAgK84 including genes encoding the synthesis of the antibiotic agrocin 84 and also modified by a deletion of the EcoRI D1 fragment to inhibit transfer of the plasmid.

5,354,685

SUIDATRESTIN AND PRODUCTION THEREOF

Sawao Murao, Sakai; Takashi Shin, Sanda; Kyoichi Sugawa, Hirakata, and Amachi Teruo, Takarazuka, all of Japan, assignors to S. Murao, Sakai, Japan

Filed Mar. 29, 1993, Ser. No. 40,184

Claims priority, application Japan, Mar. 31, 1992, 4-077627

Int. Cl.[5] C12N *1/20, 9/98;* **C12P** *1/06*

U.S. Cl. 435—253.5 **2 Claims**

1. Isolated Streptomyces sp. SAM 1953, having the identifying characteristics of FERM BP-3805.

5,354,686

EXTRACELLULAR MATRIX PROTEIN ADHERENT T CELLS

Allan B. Haberman, Somerville, Mass., assignor to Trustees of Tufts College, Medford, Mass.

Division of Ser. No. 525,512, May 18, 1990, Pat. No. 5,188,959, which is a continuation-in-part of Ser. No. 414,131, Sep. 28, 1989, abandoned. This application Feb. 23, 1993, Ser. No. 21,220

The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.

Int. Cl.[5] C12N *5/00, 5/06, 5/08*

U.S. Cl. 435—240.2 **7 Claims**

1. Substantially purified, normal, mature peripheral blood T lymphocytes capable of binding in the absence of serum to a collagen, said lymphocytes binding to collagen to an extent greater than to fibronectin, said lymphocytes not capable of binding to laminin or fibrinogen, wherein said peripheral blood T lymphocytes are attached to a basement membrane protein.

5,354,687

LACTOBACILLUS CASEI (BP-4442)

Hideo Hashimoto, Yokohama, and Hayami Ito, Himeji, both of Japan, assignors to Japanese Research & Development Association For New Food Materials, Japan

Filed Mar. 1, 1993, Ser. No. 24,087

Claims priority, application Japan, Feb. 27, 1992, 4-075622

Int. Cl.[5] C12N *1/20, 1/00*

U.S. Cl. 435—252.9 **1 Claim**

1. A biologically pure culture of *Lactobacillus casei* (BP4442).

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ANAEROBIC MICROBIAL REMOBILIZATION OF COPRECIPITATED METALS

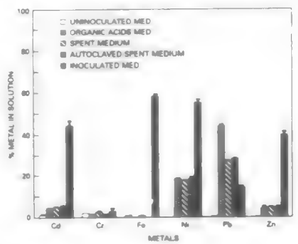
Arokiasamy J. Francis, Middle Island, and Cleveland J. Dodge, Wading River, both of N.Y., assignors to Associated Universities, Inc., Washington, D.C.

Continuation-in-part of Ser. No. 522,036, May 11, 1990, abandoned. This application Apr. 16, 1992, Ser. No. 869,397

The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.

Int. Cl.[5] C12P *3/00;* **C12N** *1/20;* **A61L** *9/01;* **B09B** *3/00*

U.S. Cl. 435—262 **17 Claims**



1. A method for remobilizing a coprecipitated metal from an iron oxide/metal coprecipitate comprising contacting the coprecipitate with a biologically pure bacterial culture of Clostridium sp. ATCC 53464 under conditions sufficient to sustain the viability of the bacteria and in a medium which satisfies the nutritional requirements of the bacteria so that the coprecipitated metal is solubilized or incorporated into biomass by said bacterial culture.

5,354,689

METHOD OF DETECTING ISOCYANATES

Robert P. Streicher, Cincinnati, Ohio, assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed May 10, 1993, Ser. No. 59,810

Int. Cl.[5] G01N *21/64, 31/22*

U.S. Cl. 436—109 **18 Claims**

1. A method for detecting the presence of isocyanate in a sample, which method comprises:
(a) contacting an isocyanate derivatizing reagent having the formula I

R—R' (I),

wherein R is 9-anthracenylmethyl or a derivative thereof and R' is a radical having a single isocyanate-derivatizing functionality comprising a cyclic secondary amine with a sample under conditions suitable for the formation of a reaction product capable of detection, and
(b) detecting the presence or absence of said reaction product as an indication of the presence or absence of isocyanate in said sample.

5,354,690

IMMUNOLOGICAL METHODS FOR THE DETECTION OF THE HUMAN TYPE IV COLLAGEN α5 CHAIN

Karl Tryggvason, Fyysinkontie 8, SF-90570 Oulu; Sirkka L. Hostikka, Tapiontie 9 A 21, SF-90750 Oulu, and Matti Höyhtyä, Valtatie, SF-90500 Oulu, all of Finland

Continuation-in-part of Ser. No. 377,238, Jul. 7, 1989, Pat. No. 5,114,840. This application Dec. 20, 1990, Ser. No. 630,563

Int. Cl.[5] G01N *33/53, 33/569;* **C12Q** *1/00;* **C07K** *15/00*

U.S. Cl. 436—501 **4 Claims**

1. Antibodies which react specifically with basement membrane human type IV collagen α5 chain and not with basement membrane type IV collagen α1 and α2 chains, said antibodies being obtained by immunizing a host with a synthetic peptide consisting of the residues Ser-Asp-Met-Phe-Ser-Lys-Pro-Gln-Ser-Glu.

5,354,691

POLYPEPTIDES AND DERIVATIVES THEREOF AS WELL AS THEIR USE IN PHARMACEUTICAL AND DIAGNOSTIC COMPOSITIONS

Willem Van Eden, Bilthoven; Johannes D. A. Van Embden; Ruurd Van Der Zee, both of Utrecht, all of Netherlands, and Irun R. Cohen, Rehovot, Israel, assignors to De Staat der Nederlanden Vertegenwoordigd Door de Minister Van Welzijn, Volksgezondheid en Cultuur; Rijksuniversiteit Te Utrecht, both of Netherlands and Yeda Research and Development Co., Ltd., Israel

Division of Ser. No. 288,080, Dec. 21, 1988, Pat. No. 5,154,923. This application Jun. 5, 1992, Ser. No. 893,783

Claims priority, application Netherlands, Dec. 22, 1987, 8703107

Int. Cl.[5] G01N *33/564, 33/53;* **C07K** *7/08, 7/10*

U.S. Cl. 436—506 **6 Claims**

1. A method for diagnosing an autoimmune arthritic disease in a patient suspected of having such a condition comprising the steps of
(a) contacting a peptide selected from the group consisting of TFGLQLELT, TAVVALELQ, TFGLQPQDT, RHNYQLELR and RARLQLELS with a serum sample obtained from the patient and with a control serum sample from an individual known not to have an autoimmune arthritic disease in separate reaction mixtures;
(b) incubating the reaction mixture of the peptide and patient serum sample and the reaction mixture of the peptide and control serum sample for a period of time sufficient to allow an immunological reaction to occur, and
(c) determining whether an immunological reaction has occurred between the peptide and patient serum and between the peptide and control serum, wherein the occurrence of an immunologic reaction between the peptide and patient serum, but not between the peptide and control serum, is indicative of an autoimmune arthritic disease in the patient.

5,354,692

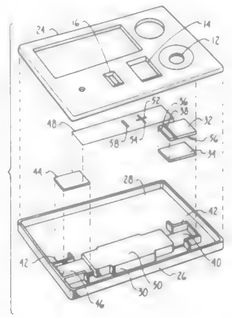
ANALYTE DETECTION DEVICE INCLUDING A HYDROPHOBIC BARRIER FOR IMPROVED FLUID FLOW

Hsin M. Yang; Michael Newton, both of San Diego, and Ping Liu, La Jolla, all of Calif., assignors to Pacific Biotech, Inc., San Diego, Calif.

Filed Sep. 8, 1992, Ser. No. 941,667

Int. Cl.[5] G01N *33/543, 33/558*

U.S. Cl. 436—514 **25 Claims**



1. An immunochromatographic assay device for detection of an analyte comprising:
a housing having an opening for introduction of a liquid sample;
first liquid permeable material in said housing under said opening to receive a liquid sample introduced through said opening and defining a sample receiving zone;
second liquid permeable material in said housing under said first liquid permeable material in fluid contact with said first liquid permeable material to receive sample from said first liquid permeable material, said second liquid permeable material being absorbent and defining a sample transport zone;
third liquid permeable material in said housing adjacent said first liquid permeable material and in fluid contact with said second permeable material to receive sample from said second liquid permeable material, said third liquid permeable located on top of said second liquid permeable material;
a barrier comprising a hydrophobic material interposed between said first and third liquid permeable materials to prevent direct transfer of sample from said first liquid permeable material to said third liquid permeable material;
an elongated sheet of wicking material in fluid contact with said third liquid permeable material in fluid contact with said third liquid permeable material to receive sample therefrom, wherein said elongated sheet of wicking material supports an immobilized capture molecule for said analyte; and
a detecting reagent located in one of said liquid permeable materials to detect the presence of bound analyte in said elongated sheet of wicking material.

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5,354,693

REAGENTS, METHODS AND KITS FOR AN AMPHETAMINE-CLASS FLUORESCENCE POLARIZATION IMMUNOASSY

Paul J. Brynes, Libertyville; Donald D. Johnson, Lindenhurst; Cynthia M. Molina, Deerfield; Charles A. Flentge, Lake Villa, and Patrick F. Jonas, Waukegan, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

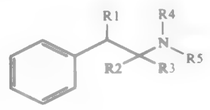
Division of Ser. No. 820,729, Jan. 14, 1992, Pat. No. 5,248,791, which is a division of Ser. No. 335,627, Apr. 10, 1989, Pat. No. 5,101,015. This application Jun. 29, 1993, Ser. No. 83,928

Int. Cl.[5] G01N *33/542*

U.S. Cl. 436—537 5 Claims

1. A method for determining the presence or amount of one or more amphetamine-class analytes in a test sample, comprising the steps of:

a) contacting the sample with a tracer and an antibody capable of recognizing and binding the analyte and said tracer, whereby binding of (i) said analyte or (ii) said tracer to said antibody blocks binding of (i) said tracer of (ii) said analyte, respectively, to said antibody; wherein said tracer comprises a compound of the formula:

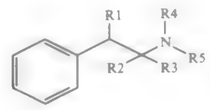


wherein

R_1, R_2 and R_4 are H, R_3 is CH_3 is CH_3 and R_5 is MFI;

FI is fluorescein or a fluorescein-derivative; and

M is a linking group consisting of from 0 to 15 carbon atoms and heteroatoms, including not more than six heteroatoms, arranged in a straight or branched chain, saturated or unsaturated, with the proviso that not more than two heteroatoms are linked in sequence and that branchings occur only on carbon atoms, wherein said heteroatoms are selected from the group consisting of nitrogen and oxygen; and wherein said antibody is elicited in response to an immunogen comprising a compound of the formula:



wherein

at least one of R1, R2, R3, R4, and R5 is X, and when other than X are independently selected from the group consisting of H, OH and CH_3

X is $(M)_zWO$;

Q is a carrier material;

W is a coupling group selected from the group consisting of NH, CO, COOH, CHO, and OH, present on said carrier material;

z is 0 or 1; and

M is a linking group consisting of from 0 to 15 carbon atoms and heteroatoms, including not more than six heteroatoms, arranged in a straight or branched chain, saturated or unsaturated, with the proviso that not more than two heteroatoms are linked in sequence and that branchings occur only on carbon atoms, wherein said heteroatoms are selected from the group consisting of nitrogen, oxygen, sulfur, silicon and phosphorous;

b) passing plane polarized light through said test solution to obtain a fluorescence polarization response; and

c) detecting the fluorescence polarization response as a measure of the presence or amount of amphetamine-class analyte in the test sample.

5,354,694

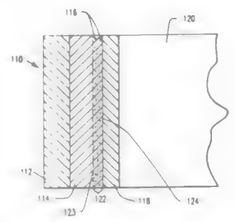
METHOD OF MAKING HIGHLY DOPED SURFACE LAYER FOR NEGATIVE ELECTRON AFFINITY DEVICES

Robert J. Field, Fincastle; Michael E. Givens, Roanoke, and Mary A. Whisenant, Eagle Rock, all of Va., assignors to ITT Corporation, New York, N.Y.

Division of Ser. No. 959,679, Oct. 13, 1992, Pat. No. 5,315,126. This application Jun. 18, 1993, Ser. No. 79,647

Int. Cl.[5] H01L *31/18*

U.S. Cl. 437—3 11 Claims



1. A method for increasing the photoresponse of a negative electron affinity device having a semiconductor layer doped with an electron acceptor dopant, said semiconductor layer having an emitter face having a negative electron affinity coating thereover, said coating setting up a depletion band in said semiconductor layer, comprising the steps of:

doping said semiconductor layer in a manner such that said diopant has an increased concentration with respect to said electron acceptor dopant concentration proximate said emitter face within said depletion band.

5,354,695

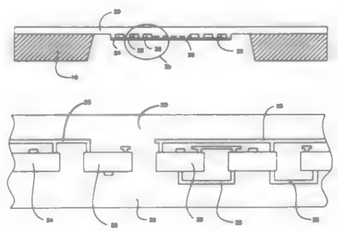
MEMBRANE DIELECTRIC ISOLATION IC FABRICATION

Glenn J. Leedy, 1061 E. Mountain Dr., Montecito, Calif. 93108

Filed Apr. 8, 1992, Ser. No. 865,412

Int. Cl.[5] H01L *21/00*

U.S. Cl. 437—7 16 Claims



1. A method of making an integrated circuit comprising the steps of:

forming a substrate having a thickness of less than about 50 μm;

forming semiconductor devices on a principal surface of the substrate;

depositing a low stress insulating membrane over the semiconductor devices wherein said insulating membrane has a net surface tensile stress level 2–100 times less than a fracture strength of the insulating membrane material; and

forming electrical interconnections in the membrane extending between the semiconductor devices.

5,354,696

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE WITH A HETEROJUNCTION BY IMPLANTATION WITH CARBON-HALOGEN COMPOUND

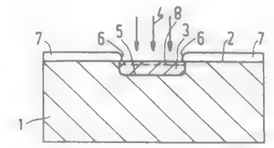
Doeke Oostra, Eindhoven; Jozef J. M. Ottenheim, Roosendaal, and Jarig Politiek, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 22, 1993, Ser. No. 95,978

Claims priority, application European Pat. Off., Jul. 24, 1992, 92202275.1

Int. Cl.[5] H01L *21/268*

U.S. Cl. 437—18 8 Claims



1. A method of manufacturing a semiconductor device wherein a surface zone is formed adjoining a surface of a silicon semiconductor body by locally providing carbon and dopant atoms, the carbon atoms being provided through implantation, characterized in that halogen atoms are provided simultaneously with the carbon atoms by means of an implantation with ions of a carbon-halogen compound, after which a heat treatment is carried out to remove non-bonded halogen atoms from the surface zone.

5,354,697

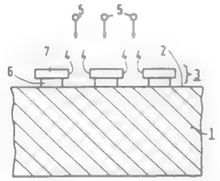
IMPLANTATION METHOD HAVING IMPROVED MATERIAL PURITY

Doeke J. Oostra, Eindhoven; Gerardus J. L. Ouwerling, Rijswijk; Jozef J. M. Ottenheim, Roosendaal, and Johanna M. L. Van Rooij-Mulder, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 22, 1992, Ser. No. 949,277

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—20 7 Claims



1. A method of manufacturing a device, in which a mask having an opening extending down to a bare body is provided on a surface of the body, after which a substance is implanted into the body through said opening, after which the mask is removed, characterized in that the mask is provided through consecutive deposition on the surface of a first and a second layer and by providing these layers with the opening, the first layer being selectively removable relative to the material of the body and the second layer comprising the same material as the body.

5,354,698

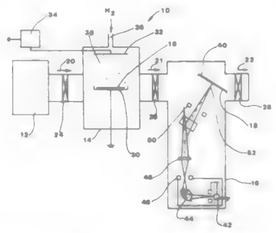
HYDROGEN REDUCTION METHOD FOR REMOVING CONTAMINANTS IN A SEMICONDUCTOR ION IMPLANTATION PROCESS

David A. Cathey, Jr., Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jul. 19, 1993, Ser. No. 93,424

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—20 19 Claims



1. In semiconductor manufacture, an improved method of ion implantation, comprising:

performing a hydrogen reduction in a process chamber maintained at a vacuum pressure by directing hydrogen gas at the substrate to a remove contaminants and oxide layers present on the substrate in order to prepare the substrate for ion implantation; maintaining the substrate under an inert vacuum environment to prevent additional contamination of the substrate; and

ion implanting the substrate after the contaminants have been removed by the hydrogen reduction so that the formation of "knocks ons" is reduced.

5,354,699

METHOD OF MANUFACTURING SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

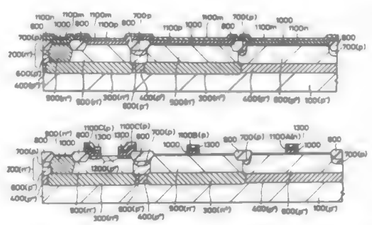
Takahide Ikeda, Tokorozawa; Kouichirou Yamada, Mitaka; Osamu Saito, Tokyo; Masanori Odaka, Kodaira; Nobuo Tamba, Ohme; Katsumi Ogiue, Hinode; Atsushi Hiraishi, Hitachi; Atsuo Watanabe, Hitachiohta; Mitsuru Hirao, Tohkai; Akira Fukami, Hitashi; Masayuki Ohayashi, Hitachi, and Tadashi Kuramoto, Ohme, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 755,340, Sep. 5, 1991, abandoned, which is a division of Ser. No. 526,696, May 23, 1990, Pat. No. 5,057,894, which is a continuation of Ser. No. 192,696, May 10, 1988, abandoned. This application Oct. 22, 1992, Ser. No. 964,824

Claims priority, application Japan, May 13, 1987, 62-116089; Aug. 13, 1987, 62-217095

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—34 12 Claims

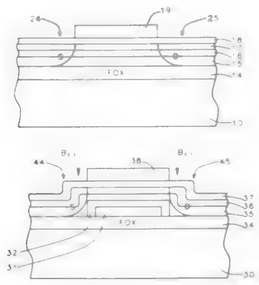


1. A method of manufacturing a semiconductor integrated circuit device having at least one bipolar transistor and at least one MISFET, comprising the steps of:

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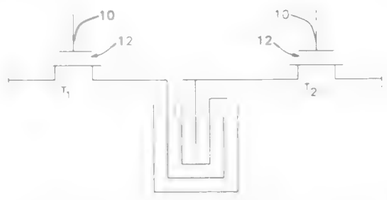
a) forming a silicon film, by deposition, overlying first and second portions of a main surface of a semiconductor body, said first and second portions being portions in which said bipolar transistor and MISFET are to be formed, respectively;
b) introducing first impurities of a first conductivity type into said silicon film overlying said first portion, and introducing second impurities of a second conductivity type, which is opposite to said first conductivity type, into said silicon film overlying said second portion, thereby to form a first silicon film part of said first conductivity type and a second silicon film part of said second conductivity type in said silicon film;
c) forming a metal silicide layer on said silicon film, the metal silicide layer being formed by deposition of metal silicide, so as to cover said silicon film;
d) after the steps a), b) and c), removing parts of said metal silicide layer so as to form a first metal silicide layer on said first silicon film part and a second metal silicide layer on said second silicon film part in such a manner that said first metal silicide layer on said first silicon film part and second metal silicide layer on said second silicon film part are spaced from each other;
e) after the step d), forming a silicon oxide film over said main surface of said semiconductor body by chemical vapor deposition so as to cover said first metal silicide layer and said second metal silicide layer; and
f) patterning said silicon oxide film, said first metal silicide layer, said second metal silicide layer, and said silicon film, by etching, so as to form a base lead-out electrode of said bipolar transistor comprised of said first silicon film part and said first metal silicide layer, and to form a gate electrode of said MISFET comprised of said second silicon film part and said second metal silicide layer, simultaneously.

5,354,700
METHOD OF MANUFACTURING SUPER CHANNEL TFT STRUCTURE
Heng-Sheng Huang, Taipei, and Chun Y. Chang, Hsin Chu, both of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan
Filed Jul. 26, 1993, Ser. No. 96,904
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—40 **18 Claims**



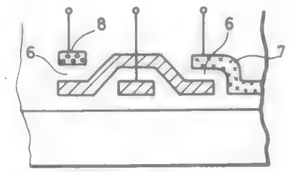
1. A method of forming an FET semiconductor device on a substrate comprising doped silicon including forming a dielectric film on the surface of said substrate,
forming a channel structure on said dielectric film by depositing a sandwich of three successive film layers of a first silicon containing layer, a silicon-germanium layer with less germanium than silicon in said silicon-germanium layer and a second silicon containing layer, and
forming a gate oxide and a gate electrode juxtaposed with said sandwich of three successive film layers.

5,354,701
DOUBLED STACKED TRENCH CAPACITOR DRAM AND METHOD OF FABRICATING
Fung-Ching Chao, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan
Filed Apr. 18, 1991, Ser. No. 687,055
Int. Cl.[5] H01L *27/00*
U.S. Cl. 437—52 **17 Claims**



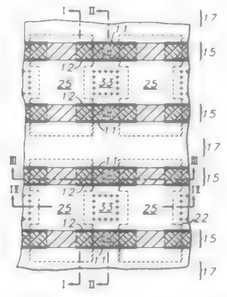
1. A method of producing a pair of DRAM cells each having a capacitor located in a common shared trench comprising,
forming a trench in a monocrystalline semiconductor substrate,
forming a first insulating layer on the top surface of said semiconductor substrate and on the sidewalls and bottom surfaces of said trench,
forming a first contact opening in said first insulating layer on the top surface of said semiconductor substrate that is adjacent said trench,
forming a first polysilicon layer on the surface of said semiconductor substrate over said first insulating layer,
patterning said first polysilicon layer to leave a polysilicon layer on at least the sidewalls and bottom or said trench, and a contact portion to said first contact opening,
form an insulating layer over said first polysilicon layer,
forming and patterning a second polysilicon layer over said first polysilicon layer,
forming an insulating layer over the surface of said second polysilicon layer,
forming a second contact opening in said first insulating layer space from said trench and opposite said first contact opening,
forming and patterning a third polysilicon layer over said second polysilicon layer and a portion extending into said second contact opening,
forming a gate electrode adjacent said first polysilicon contact portion in said first contact opening, and a second gate electrode adjacent said third polysilicon contact portion in said second contact opening,
introducing dopants into said semiconductor substrate on opposite sides of said gate electrodes to form source and drain regions, each of said first and said second gate electrode, and the associated source and drain regions, constituting a FET device of a cell,
forming an interconnecting metallurgy system that joins said gate electrodes to word lines and said source regions to bit lines of a DRAM device,
said first polysilicon layer forming the electrode of a capacitor for the associated FET and said third polysilicon layer forming the electrode of a capacitor for the associated FET.

5,354,702
ELECTRICAL ERASABLE AND PROGRAMMABLE READ-ONLY MEMORY AND MANUFACTURING METHOD THEREFOR
Eiichi Arima; Akira Nishimoto; Shinichi Jintate; Kazuo Sudo, and Kazutoshi Oku, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 241,887, Sep. 8, 1988, Pat. No. 5,252,847.
This application Jul. 1, 1993, Ser. No. 84,092
Claims priority, application Japan, Sep. 9, 1987, 62-225910
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **17 Claims**



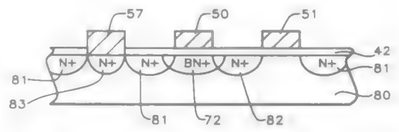
1. A method for manufacturing a semiconductor memory device comprising the steps of:
preparing a semiconductor substrate having a major surface and a conductive impurity concentration,
forming an insulating layer on the major surface of said semiconductor substrate,
forming on said insulating layer a first polysilicon gate electrode containing an organic compound selected from the group consisting of ethyl acetate and tetrahydrofuran, and
forming a second polysilicon gate electrode containing an organic compound selected from the group consisting of ethyl acetate and tetrahydrofuran and covering at least a part of said first polysilicon gate electrode while being insulated from said first polysilicon gate electrode.

5,354,703
EEPROM CELL ARRAY WITH TIGHT ERASE DISTRIBUTION
Manzur Gill, Arcola, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 925,282, Aug. 6, 1992, Pat. No. 5,264,718, which is a continuation of Ser. No. 723,010, Jun. 28, 1991, abandoned. This application Jun. 29, 1993, Ser. No. 85,430
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **6 Claims**



1. A method of fabricating a a first memory cell and a second memory cell at the face of a semiconductor substrate of a first conductivity-type, said method comprising:
creating at least a pair of cell-isolation thick-field insulator strips in said substrate;
forming a first conductive layer strip with underlying gate insulator between, parallel to and partially over said insulator strips;
forming an inter-level insulator layer over at least said first conductive layer strip;
forming a second conductive layer over at least said inter-level insulator layer;
stack etching said second conductive layer, said inter-level insulator layer and said first conductive layer strip to define a control gate and a floating gate for each said first and second memory cell, said control gate and floating gate of said first memory cell separated from said control gate and floating gate of said second memory cell by a distance;
at a point subsequent to forming said insulator strips, etching said insulator strips to define a source line between said first and second cells, said source line having a width less than said distance;
selectively implanting a dopant of a second conductivity-type opposite said first conductivity-type in said substrate to form said source line.

5,354,704
SYMMETRIC SRAM CELL WITH BURIED N+ LOCAL INTERCONNECTION LINE
Ming-Tzong Yang, and Chen-Chin Hsue, both of Hsin-Chu, Taiwan, assignors to United Microelectronics Corporation, Hsin Chu, Taiwan
Filed Jul. 28, 1993, Ser. No. 102,978
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **20 Claims**



1. A method of fabrication of a static random access memory device comprising
a) forming a field oxide structure and a gate oxide layer on the surface of a silicon semiconductor substrate,
b) forming a mask with openings therethrough and ion implanting a first dopant to form a pair of buried local interconnection lines through said gate oxide layer into said substrate buried below the surface of said semiconductor substrate through said openings in said mask,
c) forming a blanket polysilicon structure on said substrate,
d) forming a mask and etching said polysilicon to form at least one word line and gate electrodes of a first and second pull down transistors, and
e) forming a source region and a drain region in said substrate juxtaposed with a said buried local interconnection line by ion implanting a second dopant into said source region and into said drain region using said word line and said gate electrodes as a mask.

5,354,705
TECHNIQUE TO FABRICATE A CONTAINER STRUCTURE WITH ROUGH INNER AND OUTER SURFACES
Viju Mathews, and Pierre Fazan, both of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.
Filed Sep. 15, 1993, Ser. No. 122,639
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—52 **38 Claims**

1. A method for forming conductive container structures on

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a supporting substrate of a semiconductor device, said method comprising the steps of:

a) forming an insulating layer over parallel conductive lines and existing material on the surface of said supporting substrate;

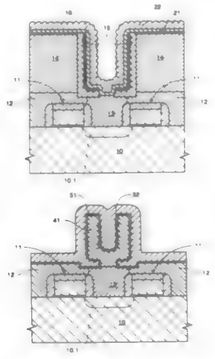
b) providing openings into said insulating layer, said openings forming vertical sidewalls in said insulating layer that resides between two neighboring conductive lines and thereby exposing an underlying conductive material;

c) forming a sacrificial layer that makes contact with said underlying conductive material;

d) forming a barrier layer overlying and conforming to said sacrificial layer;

e) forming insulating spacers on the vertical sidewalls of the barrier layer;

f) removing portions of said barrier layer and said sacrificial layer that span between said insulating spacers to thereby expose a portion of said underlying conductive material;



g) removing said insulating spacers and thereby exposing said barrier layer;

h) forming a conductive layer that conforms to said exposed barrier layer, makes contact to said underlying conductive material and forms multiple containers;

i) forming a filler material in said container;

j) removing portions of said conductive layer, said barrier layer and said sacrificial layer down to an upper portion of said insulating layer, thereby forming individual said container structures;

k) removing said insulating layer, thereby exposing the sacrificial layer surrounding the outer surfaces of said container structures; and

l) removing said sacrificial layer, the remaining barrier layer and said filler layer, thereby exposing the outer and inner surfaces of said container structures.

5,354,706

FORMATION OF UNIFORM DIMENSION CONDUCTIVE LINES ON A SEMICONDUCTOR WAFER

Roger Patrick, Santa Clara, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Mar. 2, 1993, Ser. No. 25,201

Int. Cl.[5] H01L *21/76*

U.S. Cl. 437—67 **20 Claims**

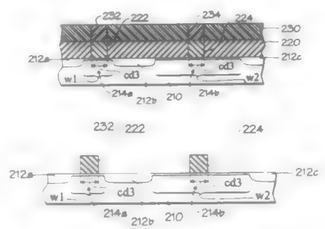
14. Method of forming conductive features having a uniform dimension in a layer of a semiconductor wafer, comprising:

forming trenches in a semiconductor wafer and filling the trenches with an insulating material having a substantially planar top surface;

disposing a layer of conductive material over the insulating material;

disposing a substantially-uniform thickness layer of photoresist over the layer of conductive material;

removing all but selected areas of the photoresist to expose all but corresponding selected areas of the layer of conductive material; and



etching the conductive layer so that the corresponding selected areas of the conductive layer have a substantially uniform dimension.

5,354,707

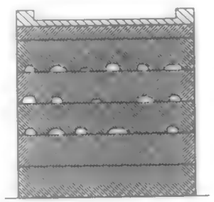
METHOD OF MAKING SEMICONDUCTOR QUANTUM DOT LIGHT EMITTING/DETECTING DEVICES

Jonathan D. Chapple-Sokol, Poughkeepsie; Seshadri Subbanna, Hopewell Junction, and Manu J. Tejwani, Yorktown Heighs, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 37,154, Mar. 25, 1993, Pat. No. 5,293,050. This application Nov. 9, 1993, Ser. No. 149,394

Int. Cl.[5] H01L *21/203, 31/18*

U.S. Cl. 437—106 **12 Claims**



1. A method of fabricating a semiconductor light emitting-/detecting device, comprising the steps of:

a) providing a first doped silicon layer of a first conductivity type;

b) forming a first intrinsic silicon epitaxial layer on said first doped silicon layer;

c) forming at least one quantum dot on said intrinsic silicon epitaxial layer;

d) forming a second intrinsic silicon epitaxial layer on said first intrinsic silicon epitaxial layer and over said at least one quantum dot so as to embed said at least one quantum dot therein;

e) forming a second doped silicon layer of a second conductivity type on said second intrinsic silicon epitaxial layer; and

f) defining a light emitting/detecting device with said layers and said at least one quantum dot.

5,354,708

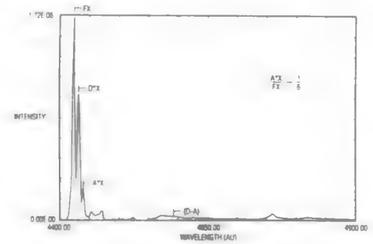
METHOD OF NITROGEN DOPING OF II-VI SEMICONDUCTOR COMPOUNDS DURING EPITAXIAL GROWTH USING AN AMINE

Nikhil R. Taskar, 38 ½ Walden Rd.; Babar A. Khan, 15 Bracken Rd., both of Ossining, N.Y. 10562, and Donald R. Dorman, Kentview Dr., Carmel, N.Y. 10512

Continuation-in-part of Ser. No. 894,308, Jun. 4, 1992, Pat. No. 5,273,931. This application Jul. 14, 1993, Ser. No. 91,634

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—108 **12 Claims**



1. A method of incorporating N acceptors into an epitaxial layer of a II-VI semiconductor compound, the method comprising introducing an amine in an undissociated state into the growth chamber during growth of the epitaxial layer.

5,354,709

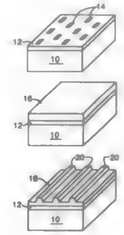
METHOD OF MAKING A LATTICE MISMATCHED HETEROSTRUCTURE OPTICAL WAVEGUIDE

Joseph P. Lorenzo, Stow, and Richard A. Soref, Newton, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 237,244, Aug. 26, 1988, Pat. No. 5,163,118, which is a continuation-in-part of Ser. No. 928,349, Nov. 10, 1986, abandoned. This application Apr. 11, 1991, Ser. No. 683,924

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—129 **21 Claims**



1. A method of producing a heterostructure optical waveguide comprising the steps of:

(a) providing a first crystalline layer of a first semiconductor material;

(b) depositing a dielectric film over said first crystalline layer and having a plurality of seeding windows formed completely therethrough;

(c) producing a second crystalline layer of a second semiconductor material upon said dielectric film, said second layer crystallized by seeding from said first crystalline layer, said second semiconductor material being lattice mismatched with respect to the material of said first crystalline layer, and said second crystalline layer having a major surface covering said dielectric film;

(d) during the performance of step (c), maintaining said second layer in contact with said first layer via said seeding windows;

(e) during the performance of step (c), producing lattice mismatch defects propogating toward said second layer and orthogonally with respect to the major surface of said second crystalline layer, which defects terminate in regions over said seeding windows while seeding lateral crystallization of said second layer parallel to the major surface thereof.

5,354,710

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES USING AN ADSORPTION ENHANCEMENT LAYER

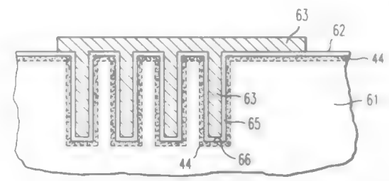
Hideichi Kawaguchi; Yoshitaka Tsunashima; Kikuo Yamabe, and Katsuya Okumura, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 664,437, Mar. 4, 1991, abandoned, which is a continuation of Ser. No. 428,446, Oct. 30, 1989, abandoned, which is a continuation of Ser. No. 296,697, Jan. 13, 1989, abandoned. This application Feb. 12, 1993, Ser. No. 17,449

Claims priority, application Japan, Jan. 14, 1988, 63-4883

Int. Cl.[5] H01L *21/00, 21/02, 21/225, 21/385*

U.S. Cl. 430—161 **9 Claims**



1. A method of manufacturing semiconductor devices comprising the steps of:

preparing a substrate having a semiconductor surface portion including a plurality of trenches, the substrate having a spontaneous natural oxide film formed on the trenches of the semiconductor surface portion;

forming an adsorption enhancement layer consisting essentially of a semiconductor material and having a thickness of one atom layer to less than 50 Å on the natural oxide film formed on the surface of said semiconductor substrate;

adsorbing impurities on the surface of adsorption enhancement layer; and

thermally diffusing said impurities into the surface portion of the semiconductor substrate through said adsorption enhancement layer and the natural oxide film.

5,354,711

PROCESS FOR ETCHING AND DEPOSITING INTEGRATED CIRCUIT INTERCONNECTIONS AND CONTACTS

Michel Heitzmann, Crolles; Jean Lajzerowicz, Meylan, and Philippe LaPorte, Sassenage, all of France, assignors to Commissariat A l'Energie Atomique, Paris, France

Continuation of Ser. No. 717,033, Jun. 18, 1991, abandoned. This application Jul. 8, 1993, Ser. No. 89,408

Claims priority, application France, Jun. 26, 1990, 90 08011

Int. Cl.[5] H01L *21/283, 21/90*

U.S. Cl. 437—182 **2 Claims**

1. A process for producing an integrated circuit stage having a dielectric layer covering interconnection lines and connection points linking the interconnection lines to conductive portions of the integrated circuit positioned below the dielectric layer, the latter having a lower sublayer covering the connection points and an upper sublayer covering the inter-

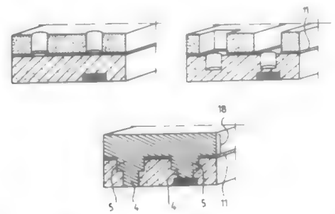
VOL 1167 ISS 2 OC 11 1994 UMI

connection lines, said process comprising the following steps in sequence of:

depositing the dielectric layer;

at least partially etching the dielectric layer at the locations of the connection points after producing a first mask on the dielectric layer;

final etching of the dielectric layer at the locations of the connection points and the upper sublayer at the locations of the interconnection lines after producing a second mask on the dielectric layer;



once depositing a conductive material on the dielectric layer, so as to: (i) fill the etched portions to contemporaneously form the connection points and interconnection lines, and (ii) produce an upper conductive layer above the dielectric layer, said upper conductive layer forming a planar upper surface, said conductive material being suitable for formation of said planar surface; and,

eliminating the conductive material above the dielectric layer to form a final planar layer comprising the interconnection lines and the dielectric.

5,354,712

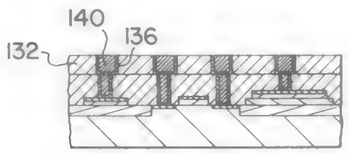
METHOD FOR FORMING INTERCONNECT STRUCTURES FOR INTEGRATED CIRCUITS

Yu Q. Ho, Kanata; Gurvinder Jolly, Orleans, and Ismail T. Emesh, Cumberland, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Nov. 12, 1992, Ser. No. 974,760

Int. Cl.[5] H01L *21/283, 21/304*

U.S. Cl. 437—195 **21 Claims**



1. A method of forming interconnect structures for devices of an integrated circuit, the devices being formed in a substrate and having an overlying substantially planar first dielectric layer, the dielectric layer having contact holes extending therethrough over contact regions of the devices, the contact holes being filled with conductive material to provide contacts, the method comprising:

providing a second dielectric layer having a substantially planar surface and defining therein interconnect trenches having steep sidewalls, each interconnect trench extending through the second dielectric and exposing selected contacts within a bottom of the trench;

providing a conformal layer of a conductive barrier material selectively over sidewalls and the bottom of each interconnect trench, by depositing a conformal layer of the barrier material overall and then selectively removing barrier material from the surface of the second dielectric layer by chemical mechanical polishing thereby leaving a layer of the barrier material lining the sidewalls and bottom of each interconnect trench;

and then filling the interconnect trenches with a conductive material by selectively depositing a conformal layer of a conductive material on the barrier layer to a thickness sufficient to fill each interconnect trenches.

5,354,713

CONTACT MANUFACTURING METHOD OF A MULTI-LAYERED METAL LINE STRUCTURE

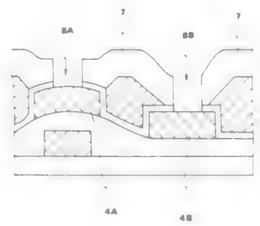
Jae Kap Kim, and Gon Soo, both of Kyoungki-do, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Dec. 1, 1992, Ser. No. 983,875

Claims priority, application Rep. of Korea, Dec. 2, 1991, 91-21955

Int. Cl.[5] H01L *21/44*

U.S. Cl. 437—195 **5 Claims**



1. A method for manufacturing a contact of a multi-layered metal line of a semiconductor device comprising the steps of:

forming a first conductive layer pattern on a silicon substrate;

forming an insulating layer on top of said first conductive layer pattern;

forming a second conductive layer pattern on top of said insulating layer;

forming a first interlayer insulation over the top of said second conductive layer pattern and then coating a layer smoothly over that part, said coating layer selected from an SOG layer and a polyimide layer;

forming a photoresist pattern over the top of said SOG or polyimide layer and then isotropically etching the SOG or polyimide layer to expose the first interlayer insulation located on top of said second conductive layer pattern;

removing said photoresist pattern;

forming a second interlayer insulation uniformly over the top of the entire structure; and

dry etching said second interlayer insulation and first interlayer insulation located on the contact area to expose the second conductive layer pattern so as to form a first contact hole and a second contact hole which do not have topology difference and then to form a third conductive layer over its top.

5,354,714

METHOD OF FORMING A VACUUM MICRO-CHAMBER FOR ENCAPSULATING A MICROELECTRONICS DEVICE

R. Mark Boysel, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 994,441, Dec. 21, 1992, Pat. No. 5,270,574, which is a continuation of Ser. No. 739,267, Aug. 1, 1991, abandoned. This application Aug. 26, 1993, Ser. No. 112,828

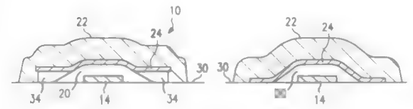
Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—209 **20 Claims**

1. A method of forming a vacuum micro-chamber for encap-

sulating a microelectronic device on a substrate, said method comprising the steps of:

a) forming a spacer material overlying said microelectronic device and a portion of said substrate adjacent to said microelectronic device;



b) forming a covering layer overlying and encompassing said spacer material except for at least one access aperture;

c) removing said spacer material through said at least one access aperture to form a chamber defined between said substrate and said covering layer; and

d) sealing said chamber by closing off said access aperture.

5,354,715

THERMAL CHEMICAL VAPOR DEPOSITION OF SILICON DIOXIDE AND IN-SITU MULTI-STEP PLANARIZED PROCESS

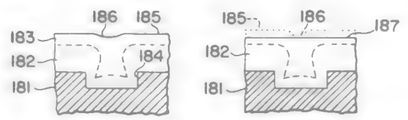
David N-K. Wang, Cupertino; John M. White, Hayward; Kam S. Law; Cissy Leung, both of Union City; Salvador P. Umotoy, Pittsburg; Kenneth S. Collins, San Jose; John A. Adamik, San Ramon; Ilya Perlov, Mountain View, and Dan Maydan, Los Altos Hills, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Division of Ser. No. 645,999, Jan. 23, 1991, which is a division of Ser. No. 944,492, Dec. 19, 1986, Pat. No. 5,000,113. This application Apr. 1, 1992, Ser. No. 861,719

The portion of the term of this patent subsequent to Oct. 10, 2008, has been disclaimed.

Int. Cl.[5] H01L *21/00, 21/02*

U.S. Cl. 437—238 **16 Claims**



1. A process for depositing a conformal layer of silicon oxide onto a substrate, comprising exposing the substrate surface heated to a temperature of from about 200°–500° C. to a plasma of reactive species formed from ozone, oxygen and tetraethylorthosilicate within a chamber having a pressure of at least about 10 torr.

5,354,716

METHOD FOR FORMING A DRAM MEMORY CELL WITH TAPERED CAPACITOR ELECTRODES

Gary A. Pors, Sacramento, and Gernia Tang, Folsom, both of Calif., assignors to NEC Electronics, Inc., Mountain View, Calif.

Division of Ser. No. 518,607, May 2, 1990, Pat. No. 5,068,707. This application Jul. 10, 1991, Ser. No. 727,678

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **3 Claims**

1. A method for forming a structure in a semiconductor device comprising the steps of:

(i) forming a conductive layer over but insulated from a semiconductor substrate;

(ii) forming an insulating layer disposed on said conductive layer;

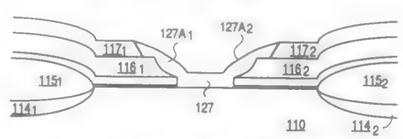
(iii) placing a mask layer on said insulating layer;

(iv) forming an opening in said mask layer;

(v) etching said insulating layer so as to expose a surface of the underlying conductive layer;

(vi) anisotropically etching said conductive layer so that a selected portion of said conductive layer is removed;

(vii) isotropically etching said conductive layer thereby shaping said conductive layer into a structure in said semiconductor device;



(viii) etching said insulating layer so that another portion of said surface of said conductive layer is exposed, said another exposed portion of said conductive layer being adjacent to said first mentioned portion of said conductive layer; and

(ix) forming a second insulating layer over said exposed portion of said conductive layer so that said second insulating layer abuts said first mentioned insulating layer.

5,354,717

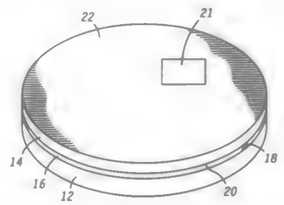
METHOD FOR MAKING A SUBSTRATE STRUCTURE WITH IMPROVED HEAT DISSIPATION

Randy L. Pollock, Austin, Tex., and George F. Anderson, Jr., Cave Creek, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 29, 1993, Ser. No. 99,682

Int. Cl.[5] H01L *21/302*

U.S. Cl. 437—225 **6 Claims**



1. A method for making a substrate structure with improved heat dissipation, comprising the steps of:

providing a diamond substrate comprising a top surface;

providing a semiconductor device substrate, separate from the diamond substrate, the semiconductor substrate comprising first and second surfaces;

thinning the semiconductor device substrate;

planarizing the top surface of the diamond substrate and the first surface of the semiconductor device substrate;

contacting the top surface of the diamond substrate with the first surface of the semiconductor device substrate;

bonding the diamond substrate to the semiconductor device substrate, thereby providing structural support and heat dissipation to the semiconductor device substrate; and

forming an electronic device on the second surface of the semiconductor device substrate, opposite the diamond substrate.

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5,354,718

CATALYST AND PROCESS FOR ISOPARAFFIN-OLEFIN ALKYLATION

Cynthia T-W. Chu, Moorestown; Altaf Husain, Marlton, both of N.J.; Kathleen M. Keville, Beaumont, Tex., and Daria N. Lissy, Glen Mills, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Apr. 5, 1993, Ser. No. 42,907
Int. Cl.[5] B01J *29/04, 29/28*
U.S. Cl. 502—60 **21 Claims**

1. A method for preparing a catalyst, said method comprising the steps of:

(a) preparing a reaction mixture comprising a source of at least one oxide, water and an organic directing agent, wherein said reaction mixture is capable of forming a crystalline oxide material upon being subjected to sufficient crystallization conditions, said crystalline oxide material, in as-synthesized form, having an X-ray diffraction pattern comprising the following lines:

d(A)	I/I_o
12.18–12.73	m-vs
10.93–11.41	w-s
6.74–7.04	w-m
4.37–4.60	w-m
3.84–4.03	w-vs
3.50–3.62	m-m
3.37–3.51	m-vs
3.27–3.41	w-s;

(b) maintaining said reaction mixture of step (a) under conditions sufficient to form said as-synthesized crystalline oxide material;

(c) recovering said as-synthesized crystalline oxide material comprising residual organic directing agent;

(d) mulling and extruding the uncalcined, as-synthesized crystalline material recovered in step (c) with a binder material under conditions sufficient to form an extrudate having a green strength sufficient to withstand processing as described in subsequent steps of this method, the crush strength of the green strength extrudate being capable of being improved by calcination thereof;

(e) exchanging ions in the crystalline material in the green strength extrudate of step (d) with ammonium ions, said extrudate in this step not having been subjected to calcination conditions sufficient decompose and/or oxidize the residue of the organic directing agent in the crystalline oxide material; and

(f) calcining the exchanged extrudate of step (e) for the first time under conditions sufficient to (1) decompose ammonium ions, (2) decompose and/or oxidize residual organic directing agent, and (3) convert the green strength extrudate into a calcined extrudate having improved crush strength.

17. A catalyst prepared according to the method of claim 1.

5,354,719

METHOD OF MANUFACTURING METALLOSILICATES

Zelimir Gabelica, Waremme-Oleve, Belgium; Reinaldo Monque, Chuao, and Giuseppe Giannetto, Colinas de Bello Monte, both of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed May 3, 1993, Ser. No. 55,089
Int. Cl.[5] B01J *29/06, 37/00;* **C01B** *33/34*
U.S. Cl. 502—62 **30 Claims**

1. A process for preparing an acidic metallosilicate catalyst, comprising the steps of:

forming a mixture of at least one non-alkali metal, a templating agent, and an organic base;

adding a silicon additive to said mixture so as to form a metallosilicate hydrogel;

aging said hydrogel to obtain a crystalline metallosilicate composition;

washing and drying said crystalline metallosilicate composition; and

heating said crystalline metallosilicate composition to a temperature of at least about 500° C. at a rate of less than or equal to about 20° C. per minute so as to provide said acidic metallosilicate catalyst.

5,354,720

REDUCTION IN THE QUANTITY OF NO_x IN LEAN EXHAUST GAS OF MOTOR VEHICLE ENGINES

Jürgen Leyrer, Alzenau; Egbert Lox, and Bernd Engler, both of Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 4, 1993, Ser. No. 26,127
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1992, 4206699
Int. Cl.[5] B01J *29/22, 35/04*
U.S. Cl. 502—64 **18 Claims**

1. A catalyst for reducing a quantity of nitrogen oxides in lean exhaust gas of motor vehicle engines, comprising:

an inert, structure reinforcing body;

a first catalytic coating on said body, the coating including aluminum oxide and/or cerium oxide of large surface area, optionally stabilized with rare earth metals and/or silicon dioxide, as a carrier for catalytically active noble metal components and noble metals including at least platinum and iridium; and

a second catalytic coating of zeolite on the first catalytic coating;

wherein the noble metal components of the first catalytic layer include iridium and platinum in a ratio by weight of from 1:10 to 10:1, and wherein the zeolite is a temperature stable zeolite of mordenite containing copper and/or iron, wherein the zeolite has an SiO_2: Al_2O_3 molar ratio in the range of 10–50.

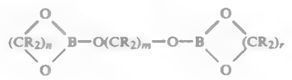
5,354,721

ORGANO-ALUMINOXY PRODUCT AND USE

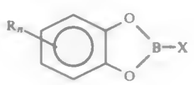
Rolf L. Geerts, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 22, 1993, Ser. No. 80,899
Int. Cl.[5] C08F *4/42*
U.S. Cl. 502—117 **21 Claims**

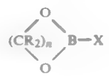
1. A process for producing a solid organo-aluminoxy product suitable for use as a cocatalyst for a metallocene for the polymerization of ethylene, said process comprising contacting a solution of an organoaluminoxane with a suitable amount of an acidic hydrogen free organic borane compound selected from those having the formulas



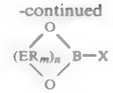
and



and



-continued



and R_2BOBR_2 wherein each R is individually selected from hydrogen and hydrocarbyl radicals, preferably aryl or alkyl radicals having 1 to 20 carbon atoms; n, m, and r are integers preferably in the range of 1 to 10; each E is individually selected from C, Si, Ge, Sn, B, Ga, In, P, As, and Sb, with the proviso that at least one E is not C; and X is selected from hydrogen, hydrocarbyl radicals having 1 to 20 carbon atoms, halides, hydrocarbyloxy radicals having 1 to 20 carbon atoms, and $—NR_2$ radicals.

5,354,722

VANADIUM (IV)-CONTAINING NASICON MATERIALS

Pradyot A. Agaskar, Lawrenceville, N.J., and Robert K. Grasselli, Chadds Ford, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Apr. 22, 1993, Ser. No. 50,794
Int. Cl.[5] B01J *27/198;* **C01B** *25/37, 25/45*
U.S. Cl. 502—209 **15 Claims**

1. A composition of matter having a NASICON structure and the formula

$$A_xB_{1-x}V_yC_{1-y}P_3O_z$$

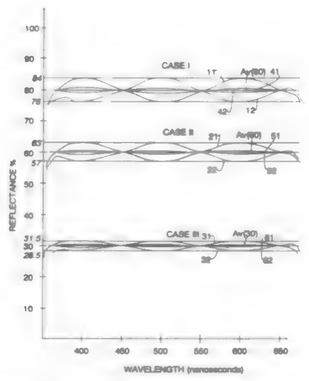
wherein A is Nb or Ta, B is Sb or As, C is Ti, Zr, Sn, or Ge, and $0 \leqq x \leqq 1$, $0 < y \leqq 1$, $10 \leqq z \leqq 15$, which composition has been calcined at a temperature of at least about 700° C.

5,354,723

METHOD FOR PROTECTING AGAINST DUPLICATION WITH A COLOR COPIER

Arshavir Gundjian, Montreal, Canada, assignor to Nocopi Technologies, Inc., Wayne, Pa.

Continuation-in-part of Ser. No. 861,712, Apr. 1, 1992. This application Apr. 19, 1993, Ser. No. 49,748
Int. Cl.[5] B41M *5/20;* **B42D** *15/00*
U.S. Cl. 503—201 **21 Claims**



1. A method for protecting against duplication with a color copier, comprising the steps of:

providing a background color on a substrate having an average reflectance value; and

printing on the background color with a contrast color having a spectral characteristic which modulates the average reflectance value by no more than 5% and has an average value equal to the average reflectance value by applying a printing medium consisting of a mixture of micronized color former leuco dye and micronized activator material and wherein at least one of the micronized color former leuco dye and activator is non-soluble in the printing medium.

5,354,724

HEAT SENSITIVE RECORDING MATERIALS WITH POLYMER ENROBED SENSITIZER

Dietrich Hoffmann, Roedersheim-Gronau, and Bernhard Schuler, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 29, 1993, Ser. No. 99,008
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1992, 4225863
Int. Cl.[5] B41M *5/26*
U.S. Cl. 503—209 **6 Claims**

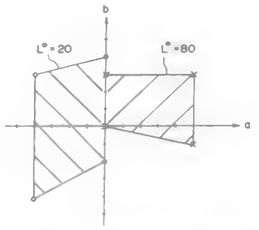
1. Heat-sensitive recording materials comprising one or more optionally polymer encapsulated dye precursors, one or more optionally polymer encapsulated developers and one or more polymer encapsulated sensitizers, wherein said one or more sensitizers are encapsulated separately from said one or more dye precursors and said one or more developers and wherein said sensitizers are monohydric or polyhydric aliphatic C_6–C_{34}-alcohols or mixtures thereof.

5,354,725

MEDICAL IMAGE FORMING METHOD, FORMING APPARATUS OF THE SAME, AND THERMAL TRANSFER SHEET OF THE SAME

Hiroshi Eguchi; Minoru Furuse, and Satoru Kawai, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Filed Nov. 30, 1992, Ser. No. 983,167
Claims priority, application Japan, Nov. 29, 1991, 3-339442; Feb. 14, 1992, 4-059272
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 **8 Claims**



1. A medical image forming method comprising the steps of:

superposing a three-primary-color thermal transfer sheet and an image receiving sheet, said thermal transfer sheet having a base film and one of three color dye layers of yellow, magenta, and cyan, each of said dye layers being composed of a dye and a binder, said image receiving sheet having a dye accepting layer; and

repeating heat printing for the three color dye layers by driving and controlling a heating device with a control unit in accordance with image information so as to form a full color image on said image receiving sheet;

wherein said control unit is adapted to compensate tones of said image so that the chromaticity values a^*, b^* of the image formed on said image receiving sheet are in a region defined by four points ($a^*=0$, $b^*=0$), ($a^*=20$, $b^*=-5$), ($a^*=18$, $b^*=15$), and ($a^*=0$, $b^*=15$), and a chromaticity value L^* of the image is about 80 when an achromatic color signal is inputted into the control unit.

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5,354,726

DELIVERY SYSTEM FOR AGRICULTURAL CHEMICALS

Kolazi S. Narayanan, Palisades Park, and Ratan K. Chaudhuri, Butler, both of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Division of Ser. No. 726,101, Jul. 5, 1991, Pat. No. 5,283,229, which is a continuation-in-part of Ser. No. 654,250, Feb. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 546,014, Jun. 28, 1990, Pat. No. 5,156,666, which is a continuation-in-part of Ser. No. 505,030, Apr. 5, 1990, Pat. No. 5,160,528, which is a continuation-in-part of Ser. No. 448,707, Dec. 11, 1989, Pat. No. 5,071,463. This application Dec. 22, 1993, Ser. No. 173,656

Int. Cl.[5] **A01N** *25/22, 25/30*

U.S. Cl. 504—116 **59 Claims**



1. A stable emulsifiable concentrate comprising an agriculturally active chemical which is substantially insoluble in water and is an insecticide selected from the group consisting of cyclo compounds, carbamates, animal and plant derivatives, synthetic pyrethoids, diphenyl compounds, nonphosphates, organic phosphates, thiophosphates, and dithiophosphates, a surfactant and a solvent selected from the group consisting of a first component of a solvent having a sufficiently high hydrophillic property and being present in an amount effective to solubilize the agriculturally active chemical, a second component having an HLB value of from about 2 to 8, and being present in an amount, in conjunction with a surfactant, effective to disperse the agriculturally active chemical, and mixtures thereof, wherein said second component comprise from about 5 to 90 percent by weight based on the total weight of the concentrate of an amide having the formula:



wherein R^1 is an alkyl having from 5 to 18 carbon atoms.

5,354,727

2-(1-SUBSTITUTED-2-IMIDAZOLIN-2-YL)BENZOIC AND NICOTINIC ACIDS AND A METHOD FOR THEIR PREPARATION

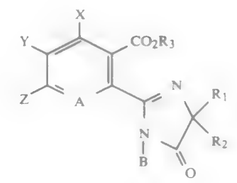
Michael A. Guaciaro, Hightstown, N.J., assignor to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 762,836, Sep. 19, 1991, Pat. No. 5,213,607, which is a division of Ser. No. 453,659, Dec. 20, 1989, Pat. No. 5,062,881. This application Jan. 26, 1993, Ser. No. 9,160

Int. Cl.[5] **A01N** *43/50, 57/16;* **C07D** *233/20, 233/32*

U.S. Cl. 504—193 **5 Claims**

1. A compound having the formula I structure:



(I)

wherein

X is hydrogen, halogen or methyl;

Y and Z are each hydrogen, halogen,

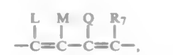
C_1–C_6 alkyl optionally substituted with C_1–C_3 alkoxy;

C_1–C_3 alkoxy, phenoxy, C_1–C_3 haloalkyl, trifluoromethoxy, C_1–C_4 hydroxyalkyl, C_1–C_4 alkylthio, formyl, difluoromethoxy, 1,1,2,2-tetrafluoroethoxy, nitro, cyano, C_1–C_4 alkylsulfonyl, C_2–C_6 alkenyl optionally substituted with halogen;

C_2–C_6 alkynyl optionally substituted with halogen;

or phenyl optionally substituted with C_1–C_3 alkyl, C_1–C_3 alkoxy, or halogen;

and, when taken together, Y and Z may form a ring in which YZ are represented by the structure: —$(CH_2)_n$—, where n is an integer of 3 or 4; or

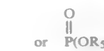


where L, M, Q and R_7 are each hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylsulfonyl, C_1–C_4 haloalkyl, difluoromethoxy, trifluoromethoxy, 1,1,2,2-tetrafluoroethoxy, nitro, cyano, phenyl optionally substituted with halogen or C_1–C_3 alkyl;

phenoxy optionally substituted with halogen, trifluoromethyl, nitro or C_1–C_3 alkyl; C_3–C_6 alkenyl optionally substituted with halogen; or C_3–C_6 alkynyl optionally substituted with halogen;

A is CR_6;

B is hydroxyl, cyano, halogen, SR_4,



R_1 is C_1–C_4 alkyl;

R_2 is C_1–C_4 alkyl or C_3–C_6 cycloalkyl;

and when R_1 and R_2 are taken together with the carbon to which they are attached they may represent C_3–C_6 cycloalkyl optionally substituted with methyl;

R_3 is hydrogen,

C_1–C_6 alkyl optionally substituted with C_1–C_3 alkoxy, halogen, C_3–C_6 cycloalkyl, benzyl, furyl, trimethylsilyl, phenyl, halophenyl, C_1–C_4 alkylphenyl, C_1–C_4 alkoxyphenyl, or nitrophenyl;

C_3–C_6 alkenyl optionally substituted with C_1–C_3 alkoxy, phenyl, halogen or C_1–C_4 alkoxycarbonyl;

C_3–C_6 cycloalkyl optionally substituted with C_1–C_3 alkyl;

C_3–C_6 alkynyl optionally substituted with C_1–C_3 alkyl; or a cation of alkali metals, ammonium or organic ammonium;

R_4 is C_1–C_4 alkyl, or phenyl optionally substituted with nitro, CO_2R_8, cyano, trifluoromethyl, difluoromethyl, C_1–C_4 alkyl, C_1–C_4 alkoxy, or halogen;

R_5 is C_1–C_4 alkyl;

R_6 is hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, trifluoromethyl, trifluoromethoxy, difluoromethoxy or 1,1,2-2-tetrafluoroethoxy;

R_8 is hydrogen or C_1–C_4 alkyl;

the N-oxides thereof, when R_3 is not unsaturated alkyl and Y and Z cannot be unsaturated alkyl or alkylthio;

the optical isomers thereof, when R_1 and R_2 represent different substituents; and

the acid addition salts thereof, when R_3 is other than a cation.

5,354,728

HERBICIDAL N-AZINYL-N'-(2-ETHYLSULPHINYL-PHENYLSULPHONYL)-UREAS

Hans-Jochem Riebel, Wuppertal; Hans-Joachim Santel, Leverkusen; Klaus Lürssen, and Robert R. Schmidt, both of Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

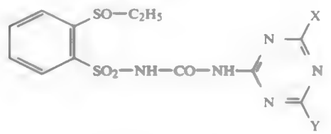
Division of Ser. No. 919,651, Jul. 24, 1992, Pat. No. 5,270,288. This application Aug. 13, 1993, Ser. No. 107,190

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1991, 4126423; Feb. 11, 1992, 4203875

Int. Cl.[5] **C07D** *251/44, 251/46, 251/42;* **A01N** *43/66*

U.S. Cl. 504—212 **8 Claims**

1. An N-azinyl-N'-(2-ethylsulphinyl-phenylsulphonyl)-urea of the formula



(I)

in which

X represents hydrogen, halogen or alkyl, alkoxy or alkylthio, each of which has 1 to 3 carbon atoms and each of which is optionally substituted by halogen and

Y represents alkyl or alkoxy, each of which has 1 to 3 carbon atoms and each of which is optionally substituted by halogen,

or a salt thereof.

5,354,729

N-ACYLDIHYDROQUINOLINE DERIVATIVES, A METHOD FOR PRODUCING THE SAME AND THEIR USE AS HERBICIDES

Toru Uekawa, Takarazuka; Mitsunori Hiratsuka, Toyonaka; Naonori Hirata, Sanda; Kazuo Saito, Toyonaka, and Hiroyuki Yogai, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

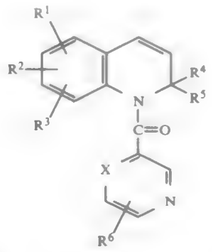
Filed Jul. 12, 1993, Ser. No. 89,576

Claims priority, application Japan, Jul. 15, 1992, 4-188043

Int. Cl.[5] **A01N** *43/48;* **C07D** *401/02, 215/12*

U.S. Cl. 504—235 **12 Claims**

1. A compound represented by the formula (I),



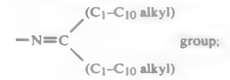
(I)

wherein each of R^1, R^2 and R^3, which may be the same or different, represents a hydrogen atom; a halogen atom; a C_1–C_6 alkyl group; a C_1–C_6 alkoxy group; a halo-C_1–C_6 alkyl group; a halo-C_1–C_6 alkoxy group; a (C_1–C_6 alkoxy)carbonyl group; a C_1–C_6 alkylthio group; a C_1–C_6 alkylamino group; a di(C_1–C_6 alkyl)amino group; a phenyl group; or a phenoxy group,

each of R^4 and R^5, which may be the same or different, represents a hydrogen atom or a C_1–C_6 alkyl group, or R^4 and R^5 are bonded together at their ends to form a C_2–C_5 alkylene group,

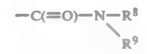
R^6 represents a hydrogen atom; a halogen atom; an amino group; a C_1–C_6 alkylamino group; a di(C_1–C_6 alkyl)amino group; a (C_1–C_6 alkoxy)carbonylamino group; a cyano group; or a group represented by the formula, —C(=O)—Y—R^7 (wherein Y represents oxygen atom or an a sulfur atom and R^7 represents a hydrogen atom; a C_1–C_{10} alkyl group; a C_2–C_{10} alkenyl group; a C_2–C_{10} alkynyl group; a halo-C_1–C_{10} alkyl group; a halo-C_2–C_{10} alkenyl group; a halo-C_2–C_{10} alkynyl group; a C_3–C_{10} cycloalkyl group; a C_3–C_{10} cycloalkenyl group; a C_1–C_{10} alkoxy-C_1–C_{10} alkyl group; a C_1–C_{10} alkylamino-C_1–C_{10} alkyl group; a di(C_1–C_{10} alkyl)amino-C_1–C_{10} alkyl group; a furyl-C_1–C_{10} alkyl group; a thienyl-C_1–C_{10} alkyl group; a C_1–C_{10} alkylamino group; a di(C_1–C_{10} alkyl)amino group;

—N=CH(C_1–C_{10} alkyl) group;



group;

or a phenyl group optionally substituted with at least one member selected from the group consisting of (C_1–C_6 alkoxy)carbonyl groups, halogen atoms and C_1–C_6 alkyl groups; or a phenyl-C_1–C_6 alkyl group optionally substituted with at least one member selected from the group consisting of (C_1–C_6 alkoxy)carbonyl groups, halogen atoms and C_1–C_6 alkyl groups); or a group represented by the formula,



(wherein each of R^8 and R^9, which may be the same or different, represents a hydrogen atom; a C_1–C_6 alkyl group; a C_2–C_6 alkenyl group; a C_2–C_6 alkynyl group; a halo-C_1–C_6 alkyl group; a halo-C_2–C_6 alkenyl group; a halo-C_2–C_6 alkynyl group; a C_3–C_6 cycloalkyl group; a C_3–C_6 cycloalkenyl group; an amino group; a C_1–C_6 alkylamino group; a di(C_1–C_6 alkyl)amino group; or a phenyl group optionally substituted with at least one member selected from the group consisting of halogen atoms and C_1–C_6 alkyl groups; or a phenyl-C_1–C_6 alkyl group optionally substituted with at least one member selected from the group consisting of halogen atoms and C_1–C_6 alkyl groups),

X represents CH or a nitrogen atom.

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5,354,730

URACIL DERIVATIVES AND THEIR HERBICIDAL USE

Masayuki Enomoto; Eiki Nagano, both of Hyogo; Ryo Sato, and Masaharu Sakai, both of Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

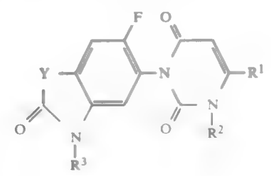
Division of Ser. No. 585,917, Sep. 21, 1990, abandoned. This application May 25, 1993, Ser. No. 66,377

Claims priority, application Japan, Oct. 2, 1989, 1-258261; Jul. 6, 1990, 2-180091

Int. Cl.[5] C07D *413/02, 417/02;* A01N *43/76, 43/78*

U.S. Cl. 504—243 11 Claims

1. (Amended) A compound of the formula:



wherein R^1 is a trifluoromethyl group or a pentafluoroethyl group, R^2 is an amino group, R^3 is a C_1–C_7 alkyl group, a C_3–C_7 alkenyl group, a C_3–C_7 alkynyl group, a halo (C_1–C_6) alkyl group, a halo(C_3–C_6) alkenyl group or a C_1–C_4 alkoxy(C_1–C_3) alkyl group and Y is an oxygen atom or a sulfur atom.

4. A herbicidal composition which comprises as an active ingredient a herbicidally effective amount of the compound according to claim 1, and an inert carrier or diluent.

5,354,731

PYRIDINESULFONAMIDE DERIVATIVES AS HERBICIDES

Kenzi Makino; Katsushi Morimoto; Shigeaki Akiyama; Hideaki Suzuki; Takeshi Nagaoka, all of Funabashi; Koichi Suzuki, Shiraoka; Tsutomu Nawamaki, Shiraoka, and Shigeomi Watanabe, Shiraoka, all of Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

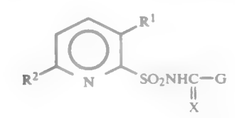
Division of Ser. No. 606,311, Oct. 31, 1990, Pat. No. 5,116,405. This application Feb. 11, 1992, Ser. No. 833,700

Claims priority, application Japan, Nov. 6, 1989, 1-288313; Jun. 11, 1990, 2-152325; Sep. 11, 1990, 2-240264

Int. Cl.[5] C07D *401/12, 405/14, 409/14;* A01N *43/40*

U.S. Cl. 504—253 13 Claims

1. A pyridinesulfonamide derivative of the formula (I) or a salt thereof:



(I)

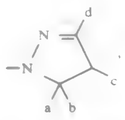
wherein

R^1 is a halogen atom, a trifluoromethyl group, a C_1–C_6 alkoxycarbonyl group, a C_1–C_6 mono- or di-alkylaminocarbonyl group, a C_1–C_6 alkoxy group, a C_1–C_6 alkylsulfonyl group, a C_1–C_6 alkylthio group, a C_1–C_6 alkyl group substituted by a C_1–C_6 alkoxy group, a C_1–C_6 alkyl group substituted by a C_1–C_6 mono- or poly-halogenoalkoxy group, a C_1–C_6 mono- or poly-halogenoalkoxy group, a C_1–C_6 mono- or di-alkylaminosulfonyl group, a C_1–C_6 alkoxyaminosulfonyl group substituted by a C_1–C_6 alkyl group, a nitro group, a C_1–C_6 alkyl group substituted by a C_1–C_6 alkylthio group, a C_1–C_6 alkyl group substituted by a C_1–C_6 alkylsulfonyl group, or a C_1–C_6 alkyl group substituted by a C_1–C_6 alkoxycarbonyl group;

R^2 is a hydrogen atom or a halogen atom;

X is an oxygen atom or a sulfur atom; and

G is



wherein one of a, b, c and d represents a furan, thiophene or naphthyl group and the other remaining a, b, c or d each represent a hydrogen atom, a C_1–C_6 alkyl group, a C_2–C_6 alkenyl group, a C_2–C_6 alkynyl group, a C_1–C_6 alkyl group mono- or poly-substituted by a halogen atom, a C_1–C_6 alkoxy group, a C_1–C_6 alkyl group substituted by a C_1–C_6 alkoxy group, a C_1–C_6 alkoxycarbonyl group, a C_1–C_6 alkyl group substituted by a C_1–C_6 alkylthio group, a C_1–C_6 alkyl group substituted by a C_1–C_6 alkylsulfonyl group, a C_1–C_6 alkylthio group, a C_1–C_6 alkylcarbonyl group, a C_3–C_7 cycloalkyl group, a C_3–C_7 cycloalkenyl group or a cyano group, and which furan or thiophene may be mono- or poly-substituted by a C_1–C_6 alkyl group, a C_1–C_6 alkoxy group, a halogen atom, a trifluoromethyl group, a nitro group or a C_1–C_6 alkoxycarbonyl group.

5,354,732

PYROELECTRIC IR SENSOR USING AN OXIDE SUPERCONDUCTOR UPPER ELECTRODE

Hitoshi Tabata, Akashi; Osamu Murata, Kobe; Junzo Fujioka; Shunichi Minakata, both of Akashi; Tomoji Kawai, Minoo, and Shichio Kawai, Suita, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Dec. 28, 1992, Ser. No. 997,187

Claims priority, application Japan, Dec. 27, 1991, 3-361439

Int. Cl.[5] G01J *5/00;* H01L *39/00*

U.S. Cl. 505—160 1 Claim

1. A pyroelectric IR sensor, comprising:

an upper electrode and a lower electrode formed to come into contact with the opposite surfaces of a functional thin film, the functional thin film being formed from an oxide ferroelectric material and the upper electrode acting also as an infrared absorption layer wherein the upper electrode is formed from an oxide superconductor selected from the group consisting of composite oxides containing lanthanides, composite oxides containing bismuth, composite oxides containing thallium and composite oxides containing strontium.

5,354,733

COPPER OXIDE SUPERCONDUCTOR CONTAINING CARBONATE RADICALS

Kyoichi Kinoshita, Hoya, and Tomoaki Yamada, Higashimurayama, both of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Mar. 22, 1993, Ser. No. 35,158

Claims priority, application Japan, Mar. 23, 1992, 4-064759; Mar. 24, 1992, 4-065766

Int. Cl.[5] H01B *1/06*

U.S. Cl. 505—125 7 Claims

1. A copper oxide superconductor containing carbonate radicals, comprising:

a compound having a composition represented by a general formula

$$(Ba_{1-x}Sr_x)_2Cu_{1+y}C_wO_{3+z}$$

wherein said x, y, w and z satisfy the following relations:

$0.25 \leqq x \leqq 0.64$,

$-0.11 \leqq y \leqq 0.77$,

$0.89 \leqq w \leqq 1.77$, and

$1.67 \leqq z \leqq 4.33$.

5,354,734

METHOD FOR MANUFACTURING AN ARTIFICIAL GRAIN BOUNDARY TYPE JOSEPHSON JUNCTION DEVICE

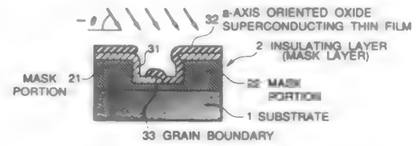
So Tanaka, and Michitomo Iiyama, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 7, 1992, Ser. No. 986,493

Claims priority, application Japan, Dec. 6, 1991, 3-348968; Nov. 27, 1992, 4-341196

Int. Cl.[5] H01B *12/00;* H01L *39/12*

U.S. Cl. 505—329 7 Claims



1. A method for manufacturing an artificial grain boundary type Josephson junction device, said device comprising a substrate, a first superconducting region comprising a c-axis oriented superconducting thin film deposited on the substrate and having its c-axis perpendicular to the substrate, and a second superconducting region comprising a c-axis superconducting thin film formed on the substrate having its c-axis parallel to the substrate, said second superconducting region being in contact with the first superconducting region, forming a weak link at an interface between said first and second superconducting regions, the method comprising the steps of:

forming an insulating layer on a principal surface of a substrate;

removing a portion of said insulating layer to form a recessed device region surrounded by first and second wall portions, said first and second wall portions forming a three dimensional mask on the substrate, wherein said first wall portion masks a first end of said device region and said second wall portion masks a second end of said device region;

obliquely depositing a first oxide superconducting thin film on said insulating layer at a first upper oblique angle to the principal surface of said substrate, wherein the first end of said device region is masked by the first wall portion and no thin film grows in said masked first end of said device region, said first oxide thin film being a c-axis oriented thin film having its c-axis perpendicular to the principal surface of said substrate; and

obliquely depositing a second oxide superconducting thin film on said insulating layer at a second upper oblique angle to the principal surface of said substrate, wherein the second end of said device region is masked by the second wall portion and no thin film grows in said masked second end of said device region, said second oxide superconducting thin film partially overlapping said first oxide superconducting thin film and forming a grain boundary at an interface between said first oxide superconducting thin film and said second oxide superconducting thin film, said second oxide thin film being a c-axis oriented thin film having its c-axis parallel to the principal surface of said substrate.

5,354,735

USE OF A CYCLOPENTADECENONE AS PERFUMING INGREDIENT

Edouard Demole, Coppet; Cyril Mahaim, Echichens, and Pierre-Alain Blanc, Crassier, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Filed Jun. 24, 1993, Ser. No. 82,214

Claims priority, application Switzerland, Jul. 30, 1992, 2395/92

Int. Cl.[5] A61K *7/46*

U.S. Cl. 512—8 14 Claims

1. A method to confer, improve, enhance or modify the odor properties of a perfuming composition or a perfumed article, which method comprises adding to said composition or article a fragrance effective amount of essentially pure 3-methyl-cyclopentadec-5-en-1-one to impart said composition or article a nitromusk-type odor character.

5,354,736

SYNTHETIC COMPOUNDS AND COMPOSITIONS WITH ENHANCED CELL BINDING

Rajendra S. Bhatnagar, Burlingame, Calif., assignor to Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 393,621, Aug. 14, 1989, abandoned. This application Dec. 9, 1991, Ser. No. 804,782

Int. Cl.[5] A61K *37/00, 37/02;* C07K *5/00, 7/00*

U.S. Cl. 514—14 3 Claims

1. A periodontal repair composition comprising:

hydroxylapatite particles admixed with a quantity of synthetic peptide, the peptide having a domain that mimics collagen binding to cells and has enhanced cell binding with respect to collagen, the peptide in an amount effective to promote cell attachment.

5,354,737

FRAGRANCE COMPOSITION CONTAINING SUBSTANTIAL AMOUNTS OF ACETYL HEXAMETHYL TETRALIN, AND DEODORANT COMPOSITION CONTAINING THE FRAGRANCE COMPOSITION

Morton L. Barr, East Brunswick; Paul J. Vincenti, Jefferson, and Robert V. Burke, Ridgewood, all of N.J., assignors to The Mennen Company, Morristown, N.J.

Filed Aug. 13, 1993, Ser. No. 105,806

Int. Cl.[5] A61K *7/46*

U.S. Cl. 512—17 38 Claims

1. A fragrance composition for masking malodor, adapted to be applied to a human, the malodor being human malodor, comprising fragrance materials providing at least one of top note and middle note and bottom note, in an olfactory effective quantity of said fragrance materials providing said at least one of top note and middle note and bottom note, wherein more than an amount of 28% by weight, and up to 95% by weight, of the total weight of the fragrance composition, is 6-acetyl-1,1,2,4,4,7-hexamethyl-1,2,3,4-tetrahydronaphthalene, so as to enhance efficacy for extended periods of time.

5,354,738

PLATELET AGGREGATION INHIBITORS

Foe S. Tjoeng, Manchester, Mo., and Jeffery A. Zablocki, Skokie, Ill., assignors to G. D. Searle & Co., Chicago, Ill. and The Monsanto Company, St. Louis, Mo.

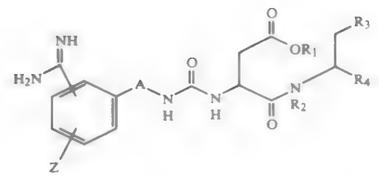
Filed Sep. 4, 1992, Ser. No. 940,569

Int. Cl.[5] C07D *209/18;* A61K *37/02, 31/405;* C07C *273/18*

U.S. Cl. 514—19 18 Claims

13. A method of treating a mammal to inhibit platelet aggregation comprising administering a therapeutically effective amount of a compound of the formula

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or a pharmaceutically acceptable salt thereof wherein Z is selected from the group consisting of H, halogen, hydroxy, alkoxy of from one to six carbon atoms and alkyl of from one to six carbon atoms;

wherein A is selected from the group consisting of alkyl of one to six carbon atoms, alkenyl of two to six carbon atoms and alkynyl of two to six carbon atoms;

wherein R_1 is selected from the group consisting of H, alkyl of from one to six carbon atoms, aralkyl wherein the alkyl is of one to six carbon atoms and alkanoyloxyalkyl wherein the alkyl is of one to six carbon atoms; and

wherein R_2 is selected from the group consisting of H, alkyl of from one to six carbon atoms and aralkyl wherein the alkyl is of one to six carbon atoms optionally substituted by hydroxy or methoxy;

wherein R^3 is selected from the group consisting of alkyl wherein the alkyl is of one to six carbon atoms, indolyl, pyridyl, benzothiophenyl, benzofuranyl and furanyl optionally substituted by a radical selected from the group consisting of halogen, alkyl of one to six carbon atoms, alkoxy of one to six carbon atoms, —COOR wherein R is hydrogen or alkyl of one to six carbon atoms, nitro, cyano, azido, ureido, —NH—CO—NHR_6 wherein R_6 is alkyl of one to six carbon atoms, alkoxycarbonyloxy wherein the alkoxy is of one to six carbon atoms, hydroxyl, alkylamino wherein the alkyl is of one to six carbon atoms, alkoxycarbonyl wherein the alkoxy is of one to six carbon atoms, trialkylsilyl wherein the alkyl is of one to six carbon atoms, alkoxyimino wherein the alkoxy is of one to six carbon atoms, alkylsulfonyl wherein the alkyl is of one to six carbon atoms, phenylsulfonyl and amino;

wherein R^4 is selected from the consisting of H,—$COOR_5$ and —$(CH_2)_mCOOR_5$;

wherein m is an integer from 1 to 6; and

wherein R_5 is selected from the group consisting of H, alkyl of one to six carbon atoms and aralkyl wherein the alkyl is of one to six carbon atoms.

5,354,739

HIGHLY CONCENTRATED EMULSIFIABLE CONCENTRATES OF NEOPHANES AND AZANEOPHANES FOR USE IN PLANT PROTECTION

Hans Röchling, Bad Soden im Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

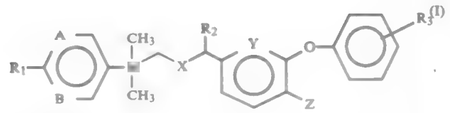
Continuation of Ser. No. 656,290, Feb. 15, 1991, abandoned. This application Oct. 5, 1992, Ser. No. 956,800

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1990, 4005153

Int. Cl.[5] **A01N** *55/02*

U.S. Cl. 514—63 **28 Claims**

1. A highly concentrated emulsifiable concentrate of a compound of the formula I



in which

A, B=independently of one another CH, CR_4 or N,

X=CH_2, O or S,

Y=CH or N,

Z=H or F,

R_1 and R_4=independently of one another H, halogen, (C_1–C_3)-alkyl, (C_1–C_3)-halogenoalkyl, (C_1–C_3)-alkoxy, (C_1–C_3)-halogenoalkoxy, (C_1–C_4)-alkylthio or (C_1–C_4)-halogenoalkylthio, or R_1 and R_4 together=—CH-2—O—CH_2—;

R_2=H, (C_1–C_3)-alkyl, ethynyl, vinyl, halogen or cyano,

R_3=H, halogen, (C_1–C_4)-alkyl or (C_1–C_3)-alkoxy and

M=C or Si, which contains a combination of an anionic and a nonionic emulsifier with a (C_6–C_8)-alkanol; wherein said concentrate contains 60 to 90% by weight of the compound of formula I and, wherein there is up to about 3% by weight of the anionic emulsifier, and there is up to about 7% by weight of the anionic emulsifier.

5,354,740

DIARYL(PYRIDINIO AND ISOQUINOLINIO) BORON FUNGICIDAL AGENTS

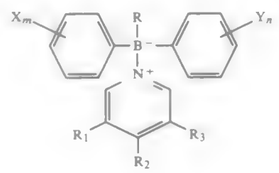
Bomi P. Patel, Philadelphia, Pa., assignor to American Cyanamid Company, Wayne, N.J.

Filed May 7, 1993, Ser. No. 59,048

Int. Cl.[5] **A01N** *55/08*

U.S. Cl. 514—64 **12 Claims**

1. A method for the control or amelioration of a disease caused by a phytopathogenic fungus which comprises contacting said fungus with a fungicidally effective amount of a compound having the structural formula

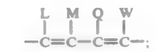


wherein

X and Y are each independently hydrogen, halogen, C_1–C_8 alkyl, C_1–C_8 haloalkyl, C_1–C_8 alkoxy or C_1–C_8 haloalkoxy;

m and n are each independently an integer of 0, 1, 2 or 3;

R is C_1–C_8 alkyl, C_1–C_8 alkoxy, halogen or hydroxy; R_1, R_2 and R_3 are each independently hydrogen, C_1–C_8 alkyl, C_1–C_8 haloalkyl, C_1–C_8 alkoxy, $C_1$14 C_8 haloalkoxy, halogen, cyano, nitro, C(O)R_4, NR_5R_6 or phenyl optionally substituted with one to three halogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, $C_1$14 C_4 alkoxy, C_1–C_4 haloalkoxy or NR_5R_6 groups, and when taken together, R_2 and R_3 may form a ring in which R_2R_3 is represented by the structure: —$(CH_2)_p$— or



R_4, R_5 and R_6 are each independently hydrogen or C_1–C_4 alkyl;

p is an integer of 3 or 4; and

L, M, Q and W are each independently hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy or nitro.

5,354,741

DIARYL (PYRIDINIO AND ISOQUINOLINIO) BORON INSECTICIDAL AND ACARICIDAL AGENTS

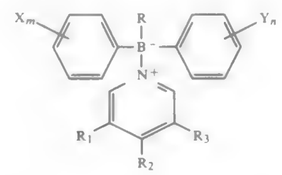
Bomi P. Patel, Philadelphia, Pa., assignor to American Cyanamid Company, Wayne, N.J.

Filed May 7, 1993, Ser. No. 59,143

Int. Cl.[5] **A01N** *55/08*

U.S. Cl. 514—64 **4 Claims**

1. A method for controlling insects and acarina which comprises contacting said insects and acarina, their breeding ground, food supply or habitat with an insecticidally or acaricidally effective amount of a compound having the structural formula



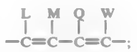
wherein

X and Y are each independently hydrogen, halogen, C_1–C_8 alkyl, C_1–C_8 haloalkyl, C_1–C_8 alkoxy or C_1–C_8 haloalkoxy;

m and n are each independently an integer of 0, 1, 2 or 3;

R is C_1–C_8 alkyl, C_1–C_8 alkoxy, halogen or hydroxy;

R_1, R_2 and R_3 are each independently hydrogen, C_1–C_8 alkyl, C_1–C_8 haloalkyl, C_1–C_8 alkoxy, C_1–C_8 haloalkoxy, halogen, cyano, nitro, C(O)R_4, NR_5R_6 or phenyl optionally substituted with one to three halogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy or NR_5R_6 groups, and when taken together, R_2 and R_3 may form a ring in which R_2R_3 is represented by the structure: —$(CH_2)_p$— or



R_4, R_5 and R_6 are each independently hydrogen or C_1–C_4 alkyl; p is an integer of 3 or 4; and

L, M, Q and W are each independently hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy or nitro.

5,354,742

WATER-DISPERSIBLE GRANULES AND PROCESS FOR THE PREPARATION THEREOF

John M. Deming, Hazelwood, and John M. Surgant, Sr., Ladue, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 883,684, Jul. 9, 1986, abandoned. This application Oct. 14, 1988, Ser. No. 257,561

The portion of the term of this patent subsequent to Jun. 26, 2007, has been disclaimed.

Int. Cl.[5] **A01N** *57/00, 37/18;* **C07C** *223/00*

U.S. Cl. 514—117 **34 Claims**

1. Water-dispersible granules comprising:

(a) an aggregation of essentially spherical microcapsules comprising at least one water-insoluble pesticide encapsulated within a polymeric shell wall,

(b) formulation adjuvants, and

(c) up to about 8% by weight moisture, said granules being essentially spherical and having diameters within the range of about 150 to 850 microns.

5,354,743

METHOD FOR THE TREATMENT OF PREMENSTRUAL SYNDROME WITH VITAMIN D

Susan Thys-Jacobs, 135 Hickory Grove Dr., New York, N.Y. 10538

Filed Sep. 15, 1992, Ser. No. 945,319

Int. Cl.[5] **A61K** *31/59, 31/595*

U.S. Cl. 514—167 **7 Claims**

1. A method for treating premenstrual syndrome comprising administering to an individual in need of said treatment an effective dose of vitamin D so that the symptoms of premenstrual syndrome are significantly reduced.

5,354,744

SIDE CHAIN UNSATURATED 1 ALPHA-HYDROXYVITAMIN D ANALOGS

Hector F. DeLuca, Deerfield; Heinrich K. Schnoes, and Kato L. Perlman, botho of Madison, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

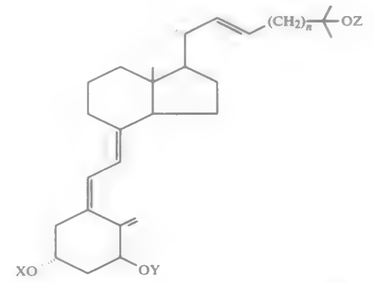
Continuation of Ser. No. 488,465, Feb. 26, 1990, abandoned, which is a continuation of Ser. No. 187,675, Apr. 29, 1988, abandoned. This application Dec. 31, 1992, Ser. No. 999,537

The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.

Int. Cl.[5] **H61K** *31/59;* **C07J** *9/00*

U.S. Cl. 514—167 **16 Claims**

1. Compounds having the structure



wherein X, Y and Z, which may be the same or different, are selected from the group consisting of hydrogen and a hydroxy-protecting group, and n is 3 or 4.

5,354,745

ESTRADIOL DERIVATIVE-CHLORAMBUCIL CONJUGATE PROCESS FOR PREPARING THE SAME, AND PHARMACEUTICAL COMPOSITION

Fumio Tamura; Tsuyoshi Saito, both of Ibaraki; Satoshi Mitsuhashi; Tadahiro Matsudaira, both of Saitama, and Kiro Asano, Ibaraki, all of Japan, assignors to Kureha Chemical Industry Co., Ltd., Tokyo, Japan

Filed Jun. 3, 1993, Ser. No. 70,797

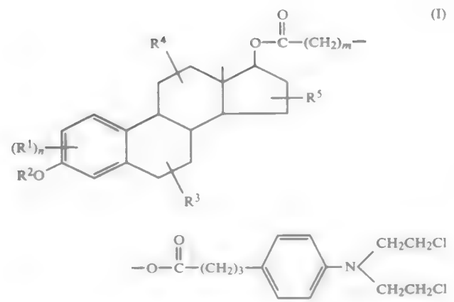
Claims priority, application Japan, Jun. 11, 1992, 4-177363

Int. Cl.[5] **C07J** *1/00*

U.S. Cl. 514—178 **12 Claims**

1. An estradiol derivative-chlorambucil conjugate of the formula (I):

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(I)

wherein R^1 is alkyl or alkoxyl of 1 to 4 carbon atoms; R^2 is acyl, dansyl, or alkyl; R^3, R^4, and R^5 independently are H, oxo, OH, or acyloxy; m is an integer of 1 to 3; and n is an integer of 0 to 3; provided that when n is 0, all of R^3, R^4, and R^5 are not H at the same time, and at least one of R^3, R^4, and R^5 is a group other than H and OH; and further, that when n is 2 or 3, the groups R^1 are the same or different.

5,354,746

SQUARIC ACID DERIVATIVES OF SUBSTITUTED DIBENZOXAZEPINE COMPOUNDS, PHARMACEUTICAL COMPOSITIONS AND METHODS OF USE

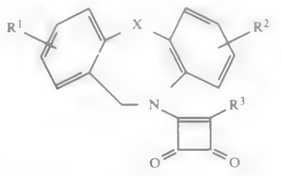
Nizal S. Chandrakumar, Vernon Hills, and Barnett S. Pitzele, Skokie, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Jun. 1, 1993, Ser. No. 69,503

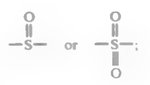
Int. Cl.[5] **C07D** *267/20, 281/16, 413/08;* **A61K** *31/55*

U.S. Cl. 514—211 **17 Claims**

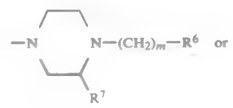
1. A compound having a structure:



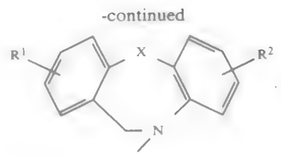
or a pharmaceutically-acceptable salt thereof, wherein:
X is oxygen, sulfur,



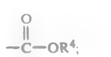
R^1 is hydrogen or halogen;
R^2 is hydrogen or halogen;
R^3 is $—NR^4R^5$, alkoxy,



-continued

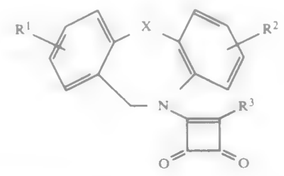


R^4 is hydrogen or alkyl;
R^5 is alkyl, alkylene-NR^4R^4 or alkylaryl;
R^6 is $—CH_3$ or aryl;
R^7 is hydrogen or

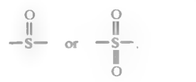


and
m is an integer of from 0 to 5.

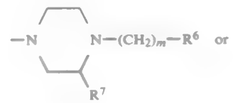
16. A method for treating diseases responsive to prostaglandin-E_2 antagonists in an animal comprising administering to said animal a therapeutically-effective amount of a compound having a structure:

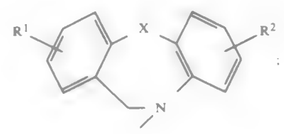


or a pharmaceutically-acceptable salt thereof, wherein:
X is oxygen, sulfur,



R^1 is hydrogen or halogen;
R^2 is hydrogen or halogen;
R^3 is $—NR^4R^5$, alkoxy,





R^4 is hydrogen or alkyl;
R^5 is alkyl, alkylene-NR^4R^4 or alkylaryl;
R^6 is $—CH_3$ or aryl;
R^7 is hydrogen or



and
m is an integer of from 0 to 5.

5,354,747

2-, 3-, 4-, 5-, 6-, 7-, 8-, 9- AND/OR 10-SUBSTITUTED DIBENZOXAZEPINE AND DIBENZTHIAZEPINE COMPOUNDS, PHARMACEUTICAL COMPOSITIONS AND METHODS OF USE

Donald W. Hansen, Jr., Skokie, and Karen B. Peterson, Vernon Hills, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Jun. 16, 1993, Ser. No. 79,021

Int. Cl.[5] **C07D** *413/06;* **A61K** *31/55*

U.S. Cl. 514—211 **17 Claims**

14. A compound having pharmacological activity, wherein the compound is:
8-chloro-10,11-dihydro-10-[[4-phenylmethyl)-1-piperazinyl]-carbonyl]dibenz[b,f][1,4]oxazepine, monohydrochloride;
10-[(4-butyl-1-piperazinyl)carbonyl]-8-chloro-10,11-dihydrodibenz[b,f][1,4]oxazepine, monohydrochloride;
10-([1,4'-bipiperidin]-1'-ylcarbonyl)-8-chloro-10,11-dihydrodibenz[b,f][1,4]oxazepine, hydrochloride;
8-chloro-10-[(4-decyl-1-piperazinyl)carbonyl]-10,11-dihydrodibenz[b,f][1,4]oxazepine, monohydrochloride;
8-chloro-10,11-dihydro-10-[(4-propyl-1-piperazinyl)carbonyl]-dibenz[b,f][1,4]oxazepine, hydrochloride;
8-chloro-10,11-dihydro-10-[(hexahydro-4-methyl-1H-1,4-diazepin-1-yl)carbonyl]dibenz[b,f][1,4]oxazepine, monohydrochloride;
1-[(8-chlorodibenz[b,f][1,4]oxazepin-10(11H)-yl)carbonyl]-4-[1-oxo-3-(3-pyridinyl)propyl]piperazine, monohydrochloride;
8-chloro-10,11-dihydro-10-[[4-(1-pyrrolidinyl)-1-piperidinyl]-carbonyl]dibenz[b,f][1,4]oxazepine;
10,11-dihydro-10-[[4-(2-phenylethyl)-1-piperazinyl]carbonyl]-dibenz[b,f][1,4]oxazepine, monohydrochloride;
8-chloro-10,11-dihydro-10-[[4-(3-thienylmethyl)-1-piperazinyl]carbonyl]dibenz[b,f][1,4]oxazepine, monohydrochloride;
8-chloro-10,11-dihydro-10-[[4-(2-thienylmethyl)-1-piperazinyl]carbonyl]dibenz[b,f][1,4]oxazepine, monohydrochloride;
8-chloro-10,11-dihydro-10-[[4-(2-thienylmethyl)-1-piperazinyl]carbonyl]dibenz[b,f][1,4]oxazepine, monohydrochloride;
1-[(8-chlorodibenz[b,f][1,4]oxazepin-10(11H)-yl)carbonyl]-4-(3-pyridinylcarbonyl)piperazine, hydrochloride; or
8-chloro-10-[[4-[2-(diethylamino)ethyl]-3,6-dihydro-1(2H)-pyridinyl]carbonyl]-10,11-dihydrodibenz[b,f][1,4]oxazepine, hydrochloride.

17. A method for treating diseases responsive to prostaglandin-E_2 antagonists in an animal comprising administering to said animal a therapeutically-effective amount of:
8-chloro-10,11-dihydro-10-[[4-(phenylmethyl)-1-piperazinyl]-carbonyl]dibenz[b,f][1,4]oxazepine, monohydrochloride;
10[(4-butyl-1-piperazinyl)carbonyl]-8-chloro-10,11-dihydrodibenz[b,f][1,4]oxazepine, monohydrochloride;
10-([1,4'-bipiperidin]-1'-ylcarbonyl)-8-chloro-10,11-dihydrodibenz[b,f][1,4]oxazepine, hydrochloride;
8-chloro-10-[(4-decyl-1-piperazinyl)carbonyl]-10,11-dihydrodibenz[b,f][1,4]oxazepine, monohydrochloride;
8-chloro-10,11-dihydro-10,-[(4-propyl-1-piperazinyl)carbonyl]dibenz[b,f][1,4]oxazepine, hydrochloride;
8-chloro-10,11-dihydro-10-[(hexahydro-4-methyl-1H-1,4-diazepin-1-yl)carbonyl]dibenz[b,f][1,4]oxazepine, monohydrochloride;
1-[(8-chlorodibenz[b,f][1,4]oxazepin-10(11H)-yl)carbonyl]-4-[1-oxo-3-(3-pyridinyl)propyl]piperazine, monohydrochloride;
8-chloro-10,11-dihydro-10-[[4-(1-pyrrolidinyl)-1-piperidinyl]-carbonyl]dibenz[b,f][1,4]oxazepine;
10,11-dihydro-10-[[4-(2-phenylethyl)-1-piperazinyl]carbonyl]-dibenz[b,f][1,4]oxazepine, monohydrochloride;
8-chloro-10,11-dihydro-10-[[4-(3-thienylmethyl)-1-piperazinyl]carbonyl]dibenz[b,f][1,4]oxazepine, monohydrochloride;
8-chloro-10,11-dihydro-10-[[4-(2-thienylmethyl)-1-piperazinyl]carbonyl]dibenz[b,f][1,4]oxazepine, monohydrochloride;
1-[(8-chlorodibenz[b,f][1,4]oxazepin-10(11H)-yl)carbonyl]-4-(3-pyridinylcarbonyl)piperazine, hydrochloride; or
8-chloro-10-[[4-[2-(diethylamino)ethyl]-3,6-dihydro-1(2H)-pyridinyl]carbonyl]-10,11-dihydrodibenz[b,f][1,4]oxazepine, hydrochloride.

5,354,748

ORAL ANTIBACTERIAL COMPOSITIONS AND METHOD FOR THE IMPROVEMENT OF GASTROINTESTINAL ABSORPTION OF PENEM OR CARBAPENEM ANTIBIOTICS

Osamu Sugita, Tatebayashi; Yasushi Kanai, and Takumi Kojima, both of Ashikaga, all of Japan, assignors to Suntory Limited, Osaka, Japan

Filed Jan. 31, 1992, Ser. No. 828,571

Claims priority, application Japan, Feb. 1, 1991, 3-031475; Feb. 1, 1991, 3-031476; Feb. 1, 1991, 3-031477; Feb. 1, 1991, 3-031478

Int. Cl.[5] **A61K** *37/64, 37/02, 31/43, 31/40*

U.S. Cl. 514—220 **9 Claims**

1. An oral antibacterial composition, comprising:
cilastatin as an absorption improver in combination with a penem or carbapenem antibiotic, the molar ratio of said penem or carbapenem compound to cilastatin ranging from about 10:1 to about 300:1.

5,354,749

SULFONYLBENZYL-SUBSTITUTED BENZO- AND PYRIDOPYRIDONES

Jürgen Dressel; Peter Fey, both of Wuppertal; Rudolf H. Hanko, Düsseldorf; Walter Hübsch, Wuppertal; Thomas Krämer, Wuppertal; Ulrich E. Müller, Wuppertal; Matthias Müller-Gliemann, Solingen-Ohligs; Martin Beuck, Erkrath; Stanislav Kazda, Wuppertal; Stefan Wohlfeil, Hilden; Andreas Knorr, Erkrath, and Johannes-Peter Stasch, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

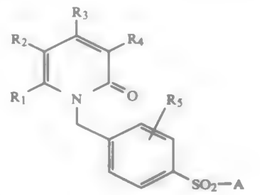
Filed May 5, 1993, Ser. No. 58,548

Claims priority, application Fed. Rep. of Germany, May 12, 1992, 4215587

Int. Cl.[5] **A61K** *31/47, 31/435;* **C07D** *217/24, 471/04*

U.S. Cl. 514—234.5 **7 Claims**

1. Sulphonylbenzyl-substituted benzo- or pyridopyridone of the formula

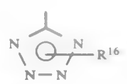


(I)

in which
R^1 and R^2 are identical or different and represent hydrogen or cyano, or
represent straight-chain or branched alkyl, alkenyl or alkynyl having in each case up to 8 carbon atoms, which are optionally substituted by cycloalkyl having 3 to 6

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carbon atoms, hydroxyl or by straight-chain or branched alkoxy having up to 6 carbon atoms or phenyl, or
represent cycloalkyl having 3 to 6 carbon atoms, or
represent straight-chain or branched acyl or alkoxycarbonyl having in each case up to 8 carbon atoms, benzyloxycarbonyl or carboxyl, or
represent phenyl, which is optionally substituted up to 3 times in an identical or different manner by halogen, nitro, cyano, hydroxyl, hydroxymethyl, trifluoromethyl or trifluoromethoxy or by straight-chain or branched alkyl or alkoxy having in each case up to 6 carbon atoms, or
represent the group of the formula —CO—NR^6R^7, B—R^8 or —NR^9R^{10}, wherein
R^6 and R^7 are identical or different and denote hydrogen, phenyl, straight-chain or branched alkyl having up to 6 carbon atoms or benzyl,
B denotes an oxygen or sulphur atom,
R^8 denotes straight-chain or branched alkyl having up to 8 carbon atoms,
R^9 and R^{10} are identical or different and have the abovementioned meaning of R^6 and R^7 or
R^9 or R^{10} denotes the —SO_2R^{11} group, wherein
R^{11} denotes straight-chain or branched alkyl having up to 6 carbon atoms, benzyl or phenyl, which are optionally substituted by methyl,
R^3 and R^4, including the double bond, form a phenyl or pyridyl ring which is optionally substituted up to 3 times in an identical or different manner by hydroxyl, formyl, carboxyl, halogen, straight-chain or branched acyl or alkoxycarbonyl having in each case up to 8 carbon atoms or straight-chain or branched perfluoroalkyl having up to 6 carbon atoms or by straight-chain or branched alkyl having up to 8 carbon atoms, which in its turn can be substituted by hydroxyl or straight-chain or branched alkoxy having up to 6 carbon atoms, or are substituted by the group of the formula —$CONR^6R^7$, wherein
R^6 and R^7 have the abovementioned meaning,
R^5 represents hydrogen, nitro, halogen or straight-chain or branched alkyl having up to 8 carbon atoms, or
represents straight-chain or branched perfluoroalkyl having up to 6 carbon atoms, or
represents a group of the formula —OR^{12}, —$NR^{13}R^{14}$ or —NR^{13}—CO—R^{15}, wherein
R^{12} denotes hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms or phenyl,
R^{13} and R^{14} are identical or different and have the abovementioned meaning of R^6 and R^7 and
R^{15} denotes straight-chain or branched alkyl having up to 6 carbon atoms or phenyl,
A represents a 3- to 8-membered saturated heterocyclic ring which is bonded via the nitrogen atom and has up to 2 further hetero atoms from the series comprising S, N and O, and is optionally substituted up to twice in an identical or different manner by a radical of the formula —$NR^{9'}R^{10'}$, —SO_3H,



or —CO—R^{17}, wherein
$R^{9'}$ and $R^{10'}$ have the abovementioned meaning of R^9 and R^{10} and are identical to or different from these,
R^{16} denotes hydrogen, straight-chain or branched alkyl having up to 6 carbon atoms or triphenylmethyl and
R^{17} denotes hydroxyl, straight-chain or branched alkoxy having up to 8 carbon atoms, phenoxy or a group of the formula —$NR^{18}R^{19}$, wherein
R^{18} and R^{19} are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 6 carbon atoms or phenyl,
or a salt thereof.

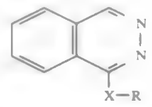
5,354,750

PHTHALAZINES CONTAINING AN AROMATIC ETHER OR THIOETHER GROUP IN THE 1-POSITION

Gerhard Scheffler, Bruchköbel; Ilona Fleischhauer, Offenbach; Bernhard Kutscher, Maintal; Jürgen Engel, Alzenau; Stefan Szelenyi, Schwaig, and Ulrich Werner, Miehlen, all of Fed. Rep. of Germany, assignors to Asta Medica Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 20, 1992, Ser. No. 963,631
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1991, 4135910
Int. Cl.[5] C07D *237/32*; A61K *31/50*
U.S. Cl. 514—248 **3 Claims**

1. Compounds of the Formula I



I

where X is oxygen and the radical R represents a quinuclidyl radical, a phenyl radical, a pyridyl radical, a phenyl or pyridyl radical substituted by the radicals R_1, R_2 and/or R_3, a C_1-C_6-alkyl radical substituted by pyridyl or alkylpyridyl or a C_1-C_6-alkyl radical substituted by phenyl, where each phenyl radical may also be substituted by the radicals R_1, R_2 and/or R_3 and the radials R_1, R_2 and R_3 are the same or different and represent hydrogen, halogen, trihalogenmethyl, C_1-C_6-alkyl, C_1-C_6-alkoxy, carboxy, Carb-C_1-C_6-alkoxy, amino, C_1-C_6-alkylamino, C_1-C_6-dialkylamino, C_2-C_6-alkanoylamino or C_2-C_6-alkanoylamino which contains one or more amino groups in the alkyl portion, and their physiologically acceptable acid addition salts with the exception of 1-methoxy-phthalazine, 1-ethoxy-phthalazine and 1-phenoxy-phthalazine.

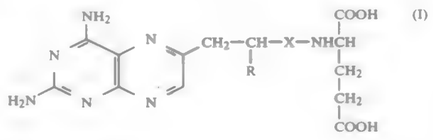
5,354,751

HETEROAROYL 10-DEAZAAMINO-PTERINE COMPOUNDS AND USE FOR RHEUMATOID ARTHRITIS

Joseph I. DeGraw, Sunnyvale; William T. Colwell, Menlo Park, both of Calif.; Francis M. Sirotnak, New York, N.Y.; R. Lane Smith, Palo Alto, Calif., and James R. Piper, Birmingham, Ala., assignors to SRI International, Menlo Park, Calif.

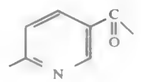
Continuation-in-part of Ser. No. 28,431, Mar. 9, 1993, and a continuation-in-part of Ser. No. 8,919, Jan. 26, 1993, and a continuation-in-part of Ser. No. 938,105, Aug. 31, 1992, abandoned, and a continuation-in-part of Ser. No. 845,407, Mar. 3, 1992, abandoned, and a continuation-in-part of Ser. No. 875,779, Apr. 29, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 90,750
Int. Cl.[5] A61K *31/505*
U.S. Cl. 514—249 **13 Claims**

1. Heteroaroyl-10-deazaaminopterin compounds having the formula (I):

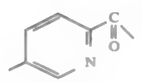


(I)

wherein X is [one of



or



and R is hydrogen or alkyl, alkenyl, or alkynyl having from one to eight carbon atoms.

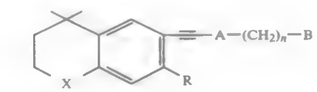
5,354,752

DISUBSTITUTED ACETYLENES BEARING A DIAZINYL GROUP HAVING RETINOID LIKE ACTIVITY

Roshantha A. S. Chandraratna, El Toro, Calif., assignor to Allergan, Inc., Irvine, Calif.

Continuation of Ser. No. 27,625, Mar. 8, 1993, abandoned, which is a division of Ser. No. 792,832, Nov. 15, 1991, Pat. No. 5,234,926, which is a division of Ser. No. 326,191, Mar. 20, 1989, Pat. No. 5,089,509, which is a continuation-in-part of Ser. No. 246,037, Sep. 15, 1988, abandoned, which is a continuation of Ser. No. 28,279, Mar. 20, 1987, abandoned. This application Oct. 28, 1993, Ser. No. 145,438
Int. Cl.[5] A61K *31/495, 31/50, 31/505*; C07D *405/06*
U.S. Cl. 514—252 **22 Claims**

1. A compound of the formula



where X is S or O; R is hydrogen or lower alkyl; A is pyridazinyl, pyrimidinyl or pyrazinyl; n is 0–4; and B is H, —COOH or a pharmaceutically acceptable salt thereof, or an ester thereof with a saturated aliphatic alcohol of ten or fewer carbon atoms, or with a cyclic or saturated aliphatic cyclic alcohol of 5 to 10 carbon atoms, or with phenol or with a lower alkylphenol, or an amide or a mono or di-substituted amide thereof, the subtituents on the amide being selected from a group consisting of saturated aliphatic radicals of ten or fewer carbon atoms, cyclic or saturated aliphatic cyclic radicals of 5 to 10 carbon atoms, and phenyl or lower alkylphenyl radicals, or B is CH_2OH or an ester derivative thereof derived from a saturated aliphatic acid of ten or fewer carbon atoms, or from a cyclic or saturated aliphatic cyclic acid of 5 to 10 carbon atoms, or from benzoic acid, or an ether derivative thereof derived from a saturated aliphatic radical of ten or fewer carbon atoms, or from a cyclic or saturated aliphatic cyclic radical of 5 to 10 carbon atoms, or from phenyl or lower alkylphenyl radical, or B is —CHO or a lower alkyl acetal derivative thereof, or an acetal derivative thereof formed with a lower alkyl diol, or B is —COR_1 or a lower alkyl ketal derivative thereof, or a ketal derivative thereof formed with a lower alkyl diol, where R_1 is —$(CH_2)_mCH_3$ where m is 0–4, or a pharmaceutically acceptable salt of the compound defined in said formula.

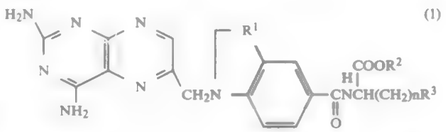
5,354,753

METHOTREXATE DERIVATIVE

Nobuhiro Ohi; Hiroharu Matsuoka; Katushito Miyamoto; Hiroshi Suzuki; Nobuaki Kato; Keiichiro Tsuji, all of Shizuoka; Yasuhisa Takeda, Kanagawa; Masahiko Mihara, Shizuoka; Hiromichi Nishina, Shizuoka; Shin Shimaoka, Shizuoka, and Kenichi Akamatsu, Shizuoka, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP91/01078, § 371 Date Feb. 12, 1993, § 102(e) Date Feb. 12, 1993, PCT Pub. No. WO92/03436, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 14, 1991, Ser. No. 971,773
Claims priority, application Japan, Aug. 14, 1990, 2-214691; Aug. 15, 1990, 2-215639; Sep. 21, 1990, 2-253466; Oct. 30, 1990, 2-293107; Nov. 29, 1990, 2-331845; Apr. 19, 1991, 3-180626; Apr. 23, 1991, 3-185943; May 30, 1991, 3-228158; Jun. 12, 1991, 3-247141; Jul. 3, 1991, 3-258301; Jul. 30, 1991, 3-279047
Int. Cl.[5] A61K *31/505*; C07D *475/08*
U.S. Cl. 514—258 **7 Claims**

1. A compound represented by the formula:



(1)

wherein R^1 represents one selected from the group consisting of CH_2, CH_2CH_2, CH_2O, CH_2S and CH_2SO; R^2 represents hydrogen atom, a lower alkyl group having 1 to 4 carbon atoms or a benzyl group; n represents an integer of 1 to 4; R^3 represents a group represented by the formula: $COOR^4$ (where R^4 represents hydrogen atom or a lower alkyl group having 1 to 4 carbon atoms), $NHCOR^5$ (where R^5 represents a phenyl group which may be substituted), $CONR^6R^7$ (where R^6 represents hydrogen atom or a lower alkyl group having 1 to 4 carbon atoms; R^7 represents a lower alkyl group having 1 to 4 carbon atoms, a phenyl group or a carboxylalkyl group each of which may be substituted or a lower alkylsulfonyl group), PO_3H_2 or SO_3H.

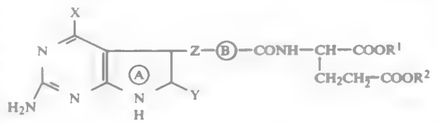
5,354,754

PYRROLOPYRIMIDINES, THEIR PRODUCTION AND USE

Hiroshi Akimoto, Kobe, and Takenori Hitaka, Takarazuka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 585,950, Sep. 21, 1990, abandoned. This application Apr. 14, 1993, Ser. No. 46,917
Claims priority, application Japan, Sep. 21, 1989, 1-245998
Int. Cl.[5] A61K *31/505*; C07D *487/04*
U.S. Cl. 514—258 **5 Claims**

1. A compound of the formula (1):



wherein the ring (A) is a pyrrole ring which may be hydrogenated, X is an amino group, a hydroxyl group or a mercapto group, Y is a hydroxyl group, —$COOR^1$ and —$COOR^2$ may be the same or different and are a carboxyl group which may be esterified by a C_{1-5} lower alkyl group, benzyl, nitrobenzyl, methoxybenzyl, phenyl, nitrophenyl, phenyl, nitrophenyl or methoxyphenyl, —(B)— is a thiophen-(2,4-, 2,5- or 3,4-)ylene which may have 1 or 2 substituents selected from the group

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consisting of a halogen, methoxy, dimethylamino, methyl and trifluoromethyl and Z is a straight C_{2-4} divalent group which may be substituted with 1 or 2 groups selected from the group consisting of a C_{1-3} alkyl, C_{2-3} alkenyl, C_{2-3} alkynyl, cyclopropyl, fluoro, hydroxy, oxo, methoxy, dimethylamino, diethylamino, trifluoromethyl, formyl, hydroxymethyl, 2-hydroxyethyl, methoxymethyl and 2-methoxyethyl, or its pharmaceutically acceptable salt.

5,354,755

1-ARYL-3-(3,4-DIHYDRO-4-OXO-3-QUINAZOLINYL-)UREA FUNGICIDAL AGENTS

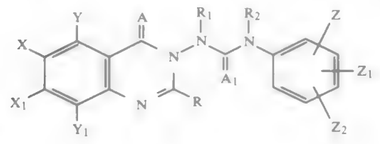
James J. Takasugi, Horsham, Pa.; Millord V. T. Neypes, Los Banos, Philippines; Lynn S. Evans, Langhorne, Pa.; Clint L. Kohls, Philadelphia, Pa., and Laurie A. Witucki, Stockton, N.J., assignors to American Cyanamid Company, Wayne, N.J.

Continuation-in-part of Ser. No. 891,528, Jun. 1, 1992, Pat. No. 5,276,038. This application Apr. 2, 1993, Ser. No. 35,871

Int. Cl.[5] A01N *47/36;* **C07D** *239/92*

U.S. Cl. 514—259 **16 Claims**

1. A compound having the structure



wherein

X and X_1 are each independently hydrogen or fluorine;

Y and Y_1 are each independently hydrogen, halogen,

C_1–C_4 alkyl optionally substituted with one or more halogen atoms,

C_1–C_4 alkoxy optionally substituted with one or more halogen atoms or phenyl,

nitro,

cyano,

hydroxy,

C_1–C_4 alkoxycarbonyl,

C_1–C_4 alkylcarbonyloxy, or phenylcarbonyloxy;

R is A_2R_3;

R_3 is hydrogen, C_1–C_4 alkyl or phenyl optionally substituted with one or more halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy groups;

R_1 and R_2 are each independently hydrogen or C_1–C_4 alkyl optionally substituted with one or more halogen atoms;

A, A_1 and A_2 are each independently O or S;

Z, Z_1 and Z_2 are each independently hydrogen, halogen,

C_1–C_4 alkyl optionally substituted with one or more halogen atoms,

C_1–C_4 alkoxy optionally substituted with one or more halogen atoms,

nitro,

cyano,

hydroxy,

$R_4S(O)_n$,

phenyl,

phenoxy, or

C_1–C_4 alkylcarbonyl; provided that only hydrogen or fluorine can be on positions 2 and 6 of the phenyl ring;

R_4 is C_1–C_4 alkyl optionally substituted with one or more halogen atoms; and

n is an integer of 0, 1 or 2.

5,354,756

OLEFIN-SUBSTITUTED LONG CHAIN XANTHINE COMPOUNDS

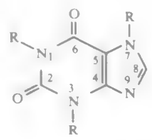
Gail Underiner, Brier; David Porubek, Edmonds, and J. Peter Klein, Vashon Island, all of Wash., assignors to Cell Therapeutics, Inc., Seattle, Wash.

Filed Jan. 12, 1993, Ser. No. 3,372

Int. Cl.[5] A61K *31/52;* **C07D** *473/02*

U.S. Cl. 514—263 **12 Claims**

1. A compound for inhibiting a second messenger pathway, comprising an olefin substituted xanthine core of the formula:



wherein each of one or two R is independently a straight chain hydrocarbon having at least one double bond in a carbon chain length of from about 4 to about 18 carbon atoms in length, wherein multiple double bonds are separated from each other by at least three carbon atoms, wherein the hydrocarbon chain may be substituted by a hydroxyl, halo or dimethylamino group and/or interrupted by an oxygen atom, and wherein the other one or two R is independently H or CH_3.

5,354,757

AZANORADAMANTANES

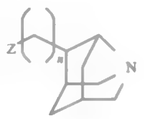
Daniel L. Flynn, Mundelein, and Alan E. Moormann, Skokie, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Dec. 15, 1992, Ser. No. 991,028

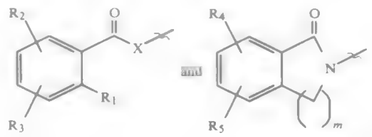
Int. Cl.[5] A61K *31/445;* **C07D** *221/22*

U.S. Cl. 514—290 **9 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable salt thereof wherein Z is selected from the group consisting of



R_1 is alkoxy of one to six carbon atoms;

R_2, R_3, R_4 and R_5 are the same or different and are selected from the group consisting of hydrogen, halogen, CF_3, hydroxy, alkoxy of one to six carbon atoms, acyl of two to seven carbon atoms, amino, amino substituted by one or two alkyl groups of one to six carbon atoms, C_2–C_7 acylamino, aminocarbonyl, aminosulfone optionally substituted by one or two alkyl groups of one to six carbon atoms, C_1–C_6 alkylsulfone and nitro;

n is 0, 1 or 2;

m is 1 or 2

X is O or NR_7; and

R_7 is hydrogen or alkyl of 1 to 6 carbon atoms.

5,354,758

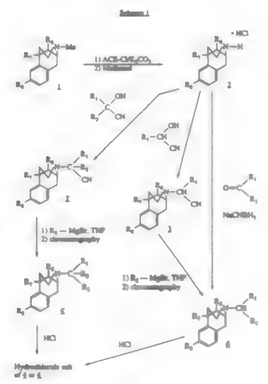
BENZOMORPHANS USEFUL AS NMDA RECEPTOR ANTAGONISTS

John A. Lawson, Fremont, Calif., and Itsuo Uchida, Kanagawa, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

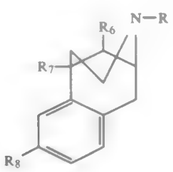
Filed Dec. 16, 1992, Ser. No. 991,365

Int. Cl.[5] C07D *221/26;* **A61K** *31/445*

U.S. Cl. 514—295 **15 Claims**



1. A compound of the formula



or a pharmaceutically acceptable salt thereof, wherein

R is $—CR_1R_2R_3$, in which

R_1 is hydrogen,

R_2 is an alkyl group having 1 to 4 carbon atoms, and

R_3 is a cycloalkyl group having 3 to 7 carbon atoms;

R_6 and R_7 are each independently hydrogen or an alkyl group having 1 to 4 carbon atoms; and

R_8 is hydrogen.

5,354,759

ANGIOTENIN II ANTAGONIZING HETEROCYCLIC COMPOUNDS

Teruo Oku; Hiroyuki Setoi; Hiroshi Kayakiri; Shigeki Satoh; Takayuki Inoue; Yuki Sawada, all of Tsukuba; Akio Kuroda, Uji, and Hirokazu Tanaka, Tsuchiura, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

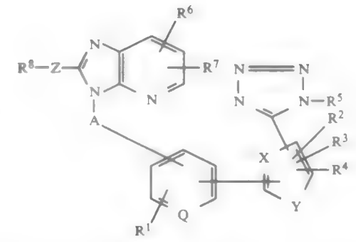
Continuation-in-part of Ser. No. 758,688, Sep. 12, 1991, Pat. No. 5,215,994. This application Jan. 25, 1993, Ser. No. 8,646

Claims priority, application United Kingdom, Jan. 28, 1992, 9201789.6

Int. Cl.[5] C07D *471/04;* **A61K** *31/435*

U.S. Cl. 514—303 **14 Claims**

1. A compound of the formula:



wherein R^1 is hydrogen, halogen, nitro, lower alkyl, lower alkoxy, amino or acylamino,

R^2, R^3 and R^4 are each hydrogen, halogen, nitro, cyano, lower alkyl, lower alkenyl, lower alkylthio, mono or di or trihalo(lower)alkyl, oxo(lower)alkyl, hydroxy(lower)alkyl or lower alkoxycarbonyl; or

R^2 and R^3 are linked together to form 1,3-butadienylene,

R^5 is hydrogen mono-, di- or tri-ar(lower)alkyl, lower alkoxy carbonyl, lower alkane-sulfonyl, or arenesulfonyl,

R^6 and R^7 are each hydrogen or lower alkyl,

R^8 is hydrogen or lower alkyl which may have a substituent selected from the group consisting of halogen and lower alkoxy,

A is lower alkylene,

Q is CH or N,

X is N or CH,

Y is NH, O or S, and

Z is NH, S, SO_2 or O

or a pharmaceutically acceptable salt thereof.

5,354,760

CRYSTALLINE TIAGABINE MONOHYDRATE, ITS PREPARATION AND USE

Henning Petersen, Lyngby; Peter Nielsen, Herlev, both of Denmark; Michael Cain, Grayslake, and Subhash Patel, Chicago, both of Ill., assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Filed Mar. 24, 1992, Ser. No. 857,038

Claims priority, application Denmark, Apr. 2, 1991, 0582/91

Int. Cl.[5] C07D *409/14;* **A61K** *31/445*

U.S. Cl. 514—326 **11 Claims**

1. Crystalline R(−)-N-(4,4-di(3-methylthien-2-yl)-but-3-enyl)nipecotic acid hydrochloride monohydrate having a differential scanning calorimetry profile with an onset from about 80.8° C. to about 83.0° C.

5,354,761

BIPYRIDYLS

Jaroslav Stanek, Arlesheim; Giorgio Caravatti, Allschwil; Hans-Georg Capraro, Rheinfelden, and Jörg Frei, Hölstein, all of Switzerland, assignors to Ciba-Geigy Corp., Ardsley, N.Y.

Continuation of Ser. No. 819,299, Jan. 9, 1992, abandoned. This application Jun. 1, 1993, Ser. No. 69,660

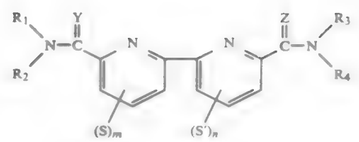
Claims priority, application Switzerland, Jan. 14, 1991, 85/91-4

Int. Cl.[5] C07D *401/04;* **A61K** *31/44*

U.S. Cl. 514—334 **13 Claims**

1. A compound of formula I

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(I)

wherein Y is NR_5, O or S, Z is NR_6, O or S, each of the radicals R_2, R_4, R_5 and R_6independently of the others is hydrogen or lower alkyl, and each of the radicals R_1 and R_3independently of the other is hydrogen, lower alkyl, C_3–C_8cycloalkyl, aryl-lower alkyl wherein aryl is unsubstituted naphthyl or is phenyl that is unsubstituted or substituted by one or more substituents selected form the group comprising lower alkyl, hydroxy, lower alkoxy, halogen and trifluoromethyl, aryl as defined above, cyano, carboxy, lower alkoxycarbonyl, carbamoyl, N-lower alkylcarbamoyl, N,N-di-lower alkylcarbamoyl, hydroxy, C_1–C_{20}alkoxy, lower alkanoyloxy, amino, lower alkylamino, di-lower alkylamino, C_4–C_6alkyleneamino, oxa-C_3–C_5alkyleneamino, thia-C_3–C_5alkyleneamino or aza-C_3–C_5alkyleneamino that is unsubstituted or lower alkyl-substituted at the aza-nitrogen and wherein each of S and S′ independently of the other is an unsubstituted hydrocarbon radical selected from C_1–C_{20}alkyl, lower alkenyl, lower alkynyl, C_3–C_8cycloalkyl, phenyl-lower alkyl, C_3–C_8cycloalkyl and phenyl or one of these hydrocarbon radicals that is substituted by hydroxy, lower alkoxy, halo-lower alkoxy, lower alkenyloxy, lower alkynyloxy, lower alkylenedioxy, lower alkanoyloxy, halogen, lower alkyl, trifluoromethyl, carboxy, lower alkoxycarbonyl, carbamoyl, lower alkylcarbamoyl, di-lower alkylcarbamoyl or cyano; trifluorormethyl; hydroxy; lower alkoxy; halo-lower alkoxy; lower alkenyloxy; halo-lower alkenyloxy; lower alkynyloxy; phenyloxy or phenyl-lower alkoxy wherein phenyl is unsubstituted or substituted by one or more substitutents selected from the group comprising lower alkyl, hydroxy, lower alkoxy, halogen and trifluorormethyl; lower alkanoyloxy; halogen; nitro; amino; lower alkylamino; di-lower alkylamino; N-lower alkyl-N-phenyl-lower alkylamino, lower alkyleneamino, oxa-, thia- or aza-lower alkyleneamino or (N-lower alkyl-aza)-, (N-phenyl-aza)-, (N-phenyl-lower alkyl-aza)-, (N-lower alkanoyl-aza)- or (N-benzoyl-aza)-lower alkyleneamino; lower alkanoyl; carboxy; lower alkoxycarbonyl; carbamoyl; lower alkylcarbamoyl; di-lower alkylcarbamoyl; cyano; sulfo; sulfamoyl; lower alkylsulfamoyl; di-lower alkylsulfamoyl; phenylsulfamoyl; lower alkythio; lower alkylsulfinyl; and lower alkylsulfonyl; m is 0, 1, 2 or 3; and n is 0, 1, 2 or 3, with the proviso that the sum of m and n is at least 1; tautomers thereof, or a pharmaceutically acceptable salt thereof.

5,354,762

SIX-MEMBERED HETEROCYCLIC DERIVATIVES OF N′-SUBSTITUTED-N,N′-DIACYLHYDRAZINES

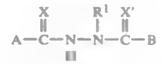
Adam C. Hsu, Lansdale, and Dat P. Le, North Wales, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 885,508, Jul. 14, 1986, abandoned. This application Feb. 19, 1987, Ser. No. 12,380

Int. Cl.[5] **A61K** *31/16, 31/17;* **C07D** *211/72, 211/84*

U.S. Cl. 514—338 **78 Claims**

1. A compound having the formula



wherein

X and X′ are the same or different O, S or NR;

R^1 is unsubstituted (C_3–C_{10}) branched alkyl or a (C_1–C_4) straight chain alkyl substituted with one or two of the same or different (C_3–C_6)cycloalkyl; and

A and B are unsubstituted phenyl or substituted phenyl where the substituents are from one to five of the same or different halo; nitro; cyano; hydroxy; (C_1–C_6)alkyl; (C_1–C_6)haloalkyl; (C_1–C_6)cyanoalkyl; (C_1–C_6)alkoxy; (C_1–C_6)haloalkoxy; (C_1–C_6)alkoxyalkyl having independently the stated number of carbon atoms in each alkyl group; (C_1–C_6)alkoxyalkoxy having independently the stated number of carbon atoms in each alkyl group; carboxyoxy; (C_1–C_6)alkoxycarbonyloxy; (C_2–C_6)alkenyl optionally substituted with halo, cyano, (C_1–C_4)alkyl, (C_1–C_4)alkoxy, (C_1–C_4)haloalkoxy or (C_1–C_4)alkylthio; (C_2–C_6)alkenylcarbonyl; (C_2–C_6)alkadienyl; (C_2–C_6)alkynyl optionally substituted with halo, cyano, nitro, hydroxy, (C_1–C_4)alkyl, (C_1–C_4)alkoxy, (C_1–C_4)haloalkoxy or (C_1–C_4)alkylthio; carboxy; (C_1–C_6)carboxyalkyl; (C_1–C_6)alkoxycarboxyalkyl having independently the stated number of carbon atoms in each alkyl group; —COR; (C_1–C_6)haloalkylcarbonyl; (C_1–C_6)cyanoalkylcarbonyl; (C_1–C_6)nitroalkylcarbonyl; (C_1–C_6)alkoxycarbonyl; (C_1–C_6)haloalkoxycarbonyl; (C_1–C_6)alkanoyloxy; amino, (C_1–C_6)alkylamino or (C_1–C_6)dialkylamino having independently the stated number of carbon atoms in each alkyl group; amino or (C_1–C_6)alkylamino where the N of the amino or (C_1–C_6)alkylamino is substituted with hydroxy, (C_1–C_4)alkoxy or (C_1–C_4)alkylthio groups; —CONRR′; —OCONRR′; —NRCOR′; —$NRCO_2R'$; —OCONRCOR′; sulfhydryl; (C_1–C_6)alkylthio; (C_1–C_6)haloalkylthio; —NRCSR′; (C_1–C_6)alkylcarbonylthio; unsubstituted phenyl; substituted phenyl having one to three of the same or different halo, cyano, nitro, hydroxy, (C_1–C_4)alkyl, (C_1–C_4)alkoxy, carboxy, (C_1–C_4)alkoxycarbonyl, (C_1–C_4)alkanoyloxy, amino, (C_1–C_4)alkylamino or (C_1–C_4)dialkylamino having independently the stated number of carbon atoms in each alkyl group; phenoxy where the phenyl ring is unsubstituted or substituted with one to three of the same or different halo, cyano, nitro, hydroxy, (C_1–C_4)alkyl, (C_1–C_4)alkoxy, carboxy, (C_1–C_4)alkoxycarbonyl, (C_1–C_4)alkanoyloxy, amino, (C_1–C_4)alkylamino or (C_1–C_4)dialkylamino having independently the stated number of carbon atoms in each alkyl group; benzoyl where the phenyl ring is unsubstituted or substituted with one to three of the same or different halo, cyano, nitro, hydroxy, (C_1–C_4)alkyl, (C_1–C_4)alkoxy, carboxy, (C_1–C_4)alkoxycarbonyl, (C_1–C_4)alkanoyloxy, amino, (C_1–C_4)alkylamino or (C_1–C_4)dialkylamino having independently the stated number of carbon atoms in each alkyl group; phenoxycarbonyl where the phenyl ring is unsubstituted or substituted with one to three of the same or different halo, cyano, nitro, hydroxy, (C_1–C_4)alkyl, (C_1–C_4)alkoxy, carboxy, (C_1–C_4)alkoxycarbonyl, (C_1–C_4)alkanoyloxy, amino, (C_1–C_4)alkylamino or (C_1–C_4)dialkylamino having independently the stated number of carbon atoms in each alkyl group; phenylthio where the phenyl ring is unsubstituted or substituted with one to three of the same or different halo, cyano, nitro, hydroxy, (C_1–C_4)alkyl, (C_1–C_4)alkoxy, carboxy, (C_1–C_4)alkoxycarbonyl, (C_1–C_4)alkanoyloxy, amino, (C_1–C_4)alkylamino or (C_1–C_4)dialkylamino having independently the stated number of carbon atoms in each alkyl group; or when two adjacent position on the phenyl ring are substituted with alkoxy groups, these groups may be joined to form a 5- or 6-membered dioxolano or dioxano heterocyclic ring; or

unsubstituted six-membered heterocycle or substituted six-membered heterocycle consisting of carbon and nitrogen atoms in the heterocycle ring and having one, two, three or four nitrogen atoms and two to five nuclear carbon atoms where the substituents are from one to three of the same or different halo; nitro; hydroxy; (C_1–C_6)alkyl; (C_1–C_6)alkoxy; (C_1–C_6)thioalkoxy; carboxy; (C_1–C_6)alkoxycarbonyl; (C_1–C_6)carboxyalkyl; (C_1–C_6)alkoxycarbonyl having independently the stated number of carbon atoms in each alkyl group; —CONRR′; amino, (C_1–C_6)alkylamino or (C_1–C_6)dialkylamino having independently the stated number of carbon atoms in each alkyl group; —NRCOR′; (C_1–C_6)alkylthio; unsubstituted phenyl; or substituted phenyl having one to three of the same or different halo, nitro, (C_1–C_6)alkyl, (C_1–C_6)haloalkyl, (C_1–C_6)alkoxy, (C_1–C_6)haloalkoxy, carboxy, (C_1–C_4)alkoxycarbonyl, amino, (C_1–C_4)alkylamino or (C_1–C_4)dialkylamino having independently the stated number of carbon atoms in each alkyl group;

where R and R′ are hydrogen or (C_1–C_6)alkyl; and

agronomically acceptable salts thereof; where one of A or B is an unsubstituted or substituted six-membered heterocycle as defined above provided that B is not 4-alkyl substituted phenyl or 3-alkoxy substituted when A is 2-pyridyl.

5,354,763

SUBSTITUTED N-HETEROARYL AND N-ARYL-1,2-DIAMINOCYCLOBUTENE-3,4-DIONES

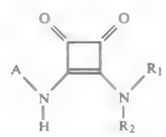
John A. Butera, Clarksburg, and Schuyler A. Antane, Plainsboro, both of N.J., assignors to American Home Products Corporation, Madison, N.J.

Filed Nov. 17, 1993, Ser. No. 153,706

Int. Cl.[5] **C07D** *213/02;* **A61K** *31/44*

U.S. Cl. 514—352 **12 Claims**

1. A compound of the formula:

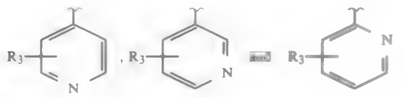


(I)

wherein:

R_1 and R_2 are, independent from each other, hydrogen, $C_{1\text{-}10}$ straight chain alkyl, $C_{1\text{-}10}$ branched chain alkyl or $C_{1\text{-}10}$ cyclic or bicyclic alkyl;

A is selected from the group consisting of:



wherein:

R_3 is hydrogen, $C_{1\text{-}6}$ alkyl, $C_{1\text{-}6}$ perfluoroalkyl, $C_{1\text{-}6}$ alkoxy, $C_{1\text{-}6}$ perfluoroalkoxy, amino, $C_{1\text{-}6}$ alkylamino, $C_{2\text{-}12}$ dialkylamino, $C_{1\text{-}6}$ alkylsulfonamido, alkylcarboxamido containing 2 to 7 carbon atoms, nitro, cyano or carboxyl;

or a pharmaceutically acceptable salt thereof.

5,354,764

METHOD FOR INHIBITING MYOCARDIAL CELL NECROSIS AND PRESERVING HEART FUNCTION DURING MYOCARDIAL ISCHEMIA AND/OR REPERFUSION

Gary J. Grover, Stockton, N.J., and Karnail Atwal, Newtown, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 784,482, Oct. 29, 1991, Pat. No. 5,256,688, which is a continuation-in-part of Ser. No. 411,137, Sep. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 220,886, Jul. 18, 1988, abandoned. This application Nov. 2, 1992, Ser. No. 970,753

Int. Cl.[5] **A61K** *31/44*

U.S. Cl. 514—353 **7 Claims**

1. A method of inhibiting myocardial cell necrosis and improving myocardial function during myocardial ischemia and/or reperfusion in a mammalian species, which comprises locally administering to the heart of a mammalian species in need of such treatment an effective amount of a potent potassium channel activator which is pinacidil in the range of from about 0.001 to about 30 mg/kg per treatment, to reduce or eliminate myocardial cell necrosis, ischemia injury and/or reperfusion injury, wherein the potent potassium channel activator exhibits potent inhibition of spontaneous mechanical activity in rat portal vein and has an IC_{50} of less than about 2 μM.

5,354,765

METHOD OF TREATMENT FOR HYPERTENSION USING COMBINATION THERAPY INVOLVING EXOGENOUS CALCIUM AND DIHYDROPYRIDINE CALCIUM CHANNEL BLOCKERS

Peter K. T. Pang, 52225 Range Road 232, 205 Carriage Lane, Sherwood Park, Alberta, Canada T8A 2A6 ; Richard Z. Lewanczuk, Edmonton, and Christine G. Benishin, Ardrossan, both of Canada, assignors to Peter K. T. Pang

Continuation of Ser. No. 460,482, Jan. 3, 1990, abandoned, which is a continuation-in-part of Ser. No. 327,450, Mar. 22, 1989, abandoned. This application Jul. 27, 1992, Ser. No. 918,775

Int. Cl.[5] **A61K** *31/44, 31/59, 33/14, 33/00*

U.S. Cl. 514—356 **11 Claims**

1. A pharmaceutical composition comprising:

a) a blood pressure lowering effective amount of a dihydropyridine calcium channel blocker which blocks calcium channels;

b) a calcium compound in a form capable of being absorbed in mammalian intestines, said calcium compound being present in an amount whereby the ratio by weight of elemental calcium to dihydropyridine is at least 40.

5,354,766

COMPOUND AND SALTS THEREOF WHICH ANTAGONIZE ANGIOTENSIN II

Takehiko Naka, Kobe, and Yoshiyuki Inada, Kawanishi, both of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Division of Ser. No. 904,452, Jun. 25, 1992, Pat. No. 5,243,054. This application Jun. 23, 1993, Ser. No. 80,259

Claims priority, application Japan, Jun. 27, 1991, 3-157194; Jul. 29, 1991, 3-188882; Jul. 31, 1991, 3-192054; Aug. 12, 1991, 3-288217; Sep. 19, 1991, 3-239764; Dec. 24, 1991, 3-341107

Int. Cl.[5] **A61K** *31/415;* **C07P** *271/07*

U.S. Cl. 514—364 **3 Claims**

1. 2-Ethoxy-1-[[2′-(2,5-dihydro-5-oxo-1,2,4-oxadiazol-3-yl)biphenyl-4-yl]methyl]benzimidazole-7-carboxylic acid or a physiologically acceptable salt thereof.

5,354,767

RENIN INHIBITING POLYHYDROXY-MONOAMIDES

Paul C. Anderson, Pierrefonds; Gary W. Bantle, St. Laurent; Grace L. Jung, Montreal; Pierre Lavallée, Rosemère, and Bruno Simoneau, Laval, all of Canada, assignors to Bio-Mega, Inc., Laval, Canada

Filed Dec. 10, 1992, Ser. No. 990,779

Claims priority, application Canada, Dec. 30, 1991, 2058603

Int. Cl.[5] **C07C** *235/34;* **A61K** *31/16*

U.S. Cl. 514—365 **7 Claims**

1. A compound of formula 1

$$R^1CH_2CH(X)CH(Y)CH(Z)CHR^2C(O)NHCHR^3C\text{-}H(OH)CH(OH)R^4 \quad \text{I}$$

wherein

R^1 is phenyl, 4-hydroxyphenyl, 4-methoxyphenyl, 2-fluorophenyl or 1-naphthyl;

R^2 is cyclopropylmethyl, cyclopentylmethyl, cyclohexylmethyl, benzyl, 4-imidazolylmethyl, 2-thienylmethyl, 4-thiazolymethyl, 2-methyl-4-thiazolylmethyl or 2-amino-4thiazolylmethyl;

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R^3 is 2-methylpropyl, cyclopropylmethyl, cyclohexylmethyl or benzyl;

R^4 is lower alkyl or lower cycloalkyl; and

X and Y each is hydroxy and Z is hydrogen or X and Z each is hydroxy and Y is hydrogen,

with the provisos that (a) the carbon atom bearing R^2 has the (R) configuration except when R^2 is 2-thienylmethyl, X and Y each is hydroxy and Z is hydrogen, then the carbon atom bearing the R^2 has the (S) configuration; (b) the carbon atoms bearing R^3 and R^4 each has the (S) configuration; and (c) the carbon atom located between the latter two carbon atoms has the (R) configuration.

5,354,768

USE OF IMIDAZOPYRAZOLE DERIVATIVES AS ANALGESICS AND ANTI-INFLAMMATORY AGENTS

Atsusuke Terada; Kazuyuki Wachi; Hachio Miyazwa; Yoshio Iizuka; Kazuo Hasegawa, and Keiichi Tabata, all of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

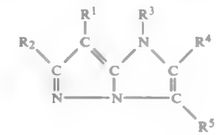
Continuation of Ser. No. 831,004, Feb. 6, 1992, abandoned, which is a continuation of Ser. No. 620,839, Nov. 29, 1990, abandoned, which is a division of Ser. No. 596,578, Oct. 10, 1990, abandoned, which is a continuation of Ser. No. 384,725, Jul. 25, 1989, abandoned. This application Nov. 13, 1992, Ser. No. 975,987

Claims priority, application Japan, Jul. 26, 1988, 63-186132

Int. Cl.[5] A61K *31/415*

U.S. Cl. 514—393 **11 Claims**

1. A method for the treatment or prophylaxis of a disease or disorder selected from the group consisting of pain, inflammation and ulcers, by the administration to a mammal suffering from said disease or disorder of an effective amount of an active compound, wherein said active compound is selected from the group consisting of compounds of formula (I);



(I)

in which:

R^1 and R^2 are independently selected from the group consisting of: hydrogen atoms; C_1–C_{25} alkyl groups; substituted C_1–C_6 alkyl groups having at least one substituent selected from the group consisting of substituents (a), defined below; C_3–C_8 cycloalkyl groups; C_2–C_6 alkenyl groups; aralkyl groups in which the alkyl part is C_1–C_4 and the aryl part is C_6–C_{10} and is unsubstituted or has at least one substituent selected from the group consisting of substituents (b), defined below; arylalkenyl groups in which the aryl part is a C_6–C_{10} aryl group which is unsubstituted or has at least one substituent selected from the group consisting of substituents (b), defined below, and the alkenyl part is C_2–C_3 alkenyl; C_6–C_{10} aryl groups; C_6–C_{10} aryl groups having at least one substituent selected from the group consisting of substituents (b), defined below; thienyl groups, said group being unsubstituted or having at least one substituent selected from the group consisting of substituents (b), defined below; cyano groups; and halogen atoms;

R^3 represents: a hydrogen atom; a C_1–C_{25} alkyl group; a substituted C_1–C_6 alkyl group having at least one substituent selected from the group consisting of substituents (a), defined below; an aralkyl group in which the alkyl part is C_1–C_4 and the aryl part is C_6–C_{10} and is unsubstituted or has at least one substituent selected from the group consisting of substituents (b) , defined below; a C_1–C_6 aliphatic carboxylic acyl group; or an aromatic carboxylic acyl group in which the aryl part is a C_6–C_{10} carbocyclic aryl group which is unsubstituted or has at least one substituent selected from the group consisting of substituents (b), defined below;

R^4 and R^5 are independently selected from the group consisting of: hydrogen atoms; C_1–C_{25} alkyl groups; substituted C_1–C_6 alkyl groups having at least one substituent selected from the group consisting of substituents (a), defined below; C_3–C_8 cycloalkyl groups; C_2–C_6 alkenyl groups; aralkyl groups in which the alkyl part is C_1–C_4 and the aryl part is C_6–C_{10} and is unsubstituted or has at least one substituent selected from the group consisting of substituents (b), defined below; arylalkenyl groups in which the aryl part is a C_6–C_{10} aryl group which is unsubstituted or has at least one substituent selected from the group consisting of substituents (b), defined below, and the alkenyl part is C_2–C_3 alkenyl; C_6–C_{10} aryl groups; C_6–C_{10} aryl groups having at least one substituent selected from the group consisting of substituents (b), defined below; and thienyl groups, said group being unsubstituted or having at least one substituent selected from the group consisting of substituents (b) defined below;

substituents (a):

hydroxy groups, halogen atoms, carboxy groups, cyano groups, C_2–C_7 alkoxycarbonyl groups and thienyl groups, said group being unsubstituted or having at least one substituent selected from the group consisting of substituents (b), defined below;

substituents (b):

C_1–C_6 alkyl groups; halogen atoms; C_1–C_6 alkoxy groups; aryloxy groups in which the aryl part is an unsubstituted C_6–C_{10} carbocyclic aryl group; aralkyloxy groups in which the alkyl part is C_1–C_4 and the aryl part is C_6–C_{10} and is unsubstituted; C_1–C_6 aliphatic carboxylic acyl groups; aromatic carboxylic acyl groups in which the aryl part is a C_6–C_{10} carbocyclic aryl group which is unsubstituted or has at least one substituent selected from the group consisting of C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups and halogen atoms; C_1–C_6 aliphatic carboxylic acyloxy groups; aromatic carboxylic acyloxy groups in which the aryl part is a C_6–C_{10} carbocyclic aryl group which is unsubstituted or has at least one substituent selected from the group consisting of C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups and halogen atoms; amino groups; C_1–C_4 alkylamino groups; dialkylamino groups in which each alkyl part is C_1–C_4; C_1–C_6 aliphatic carboxylic acylamino groups; aromatic carboxylic acylamino groups in which the aryl part is a C_6–C_{10} carbocyclic aryl group which is unsubstituted or has at least one substituent selected from the group consisting of C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups and halogen atoms; C_1–C_4 haloalkyl groups; carbamoyl groups; alkylcarbamoyl and dialkylcarbamoyl groups in which the or each alkyl group is C_1–C_4; carboxy groups; hydroxy groups; cyano groups; and C_2–C_7 alkoxycarbonyl groups;

with the proviso that at least one of R^1 and R^2 represents thienyl group;

or a pharmaceutically acceptable salt thereof.

5,354,769

BENZOFURANYLIMIDAZOLE DERIVATIVES AND THERAPEUTICAL COMPOSITIONS CONTAINING THE SAME

Jesus A. Garcia Sevilla, Valldemossa/Mallorca; JoséJ. Meana Martinez, Victoria-Gasteiz; Fernando Barturen Fernandez, Bizkara; Fernando A. Geijo Caballero, Vallirana Barcelona; Angel Menargues Banos, Barcelona; Rosendo Obach Vidal, Barcelona, and Francesc Pla Rodas, Barcelona, all of Spain, assignors to Societe de Conseils de Recherches et d'Applications Scientifiques (S.C.R.A.S.), France

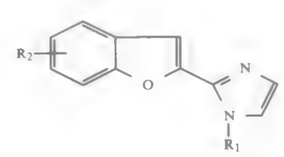
Division of Ser. No. 995,790, Dec. 23, 1992, Pat. No. 5,310,930. This application Dec. 2, 1993, Ser. No. 161,226

Claims priority, application United Kingdom, Dec. 27, 1991, 9127430.8

Int. Cl.[5] A61K *31/415*; **C07D** *405/04*

U.S. Cl. 514—397 **2 Claims**

1. Benzofuranylimidazole derivative of the general formula (1)



(1)

wherein

R_1 represents a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms, and

R_2 represents a hydroxy group or R'_2 wherein R'_2 represents a hydrogen atom, a halogen atom, an alkyl group having from 1 to 6 carbon atoms or an alkoxy group having from 1 to 5 carbon atoms;

or therapeutically acceptable salt of such a derivative.

5,354,770

USING IMIDAZOLYL TETRAHYDRONAPHTHALENE CARBOXYLIC ACIDS TO INHIBIT RESTENOSIS

Yoshimasa Yabe, Tokyo; Tomoyoshi Suzuki, Osaka, and Tomoo Shiozawa, Tokyo, all of Japan, assignors to Daiichi Pharmaceutical Co., Ltd., Tokyo, Japan

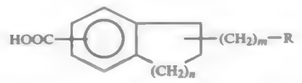
Continuation of Ser. No. 703,714, May 21, 1991, abandoned, which is a continuation of Ser. No. 485,716, Feb. 27, 1990, abandoned. This application Feb. 9, 1993, Ser. No. 15,674

Claims priority, application Japan, Feb. 27, 1989, 1-46093

Int. Cl.[5] A61K *31/415*

U.S. Cl. 514—399 **4 Claims**

1. A method for the treatment or prevention of restenosis after percutaneous transluminal coronary angioplasty which comprises administering to a host about to undergo and/or having just undergone percutaneous transluminal coronary angioplasty a compound of formula (I) or a pharmaceutically acceptable salt thereof as an active ingredient:



(I)

wherein R is an imidazolyl group, n is an integer of 1 or 2, and m is an integer of 1 to 4, in an amount effective to treat or prevent restenosis after percutaneous transluminal coronary angioplasty.

5,354,771

METHODS FOR TREATMENT OF SEPSIS USING BRANCH CHAIN AMINO ACIDS

MacKenzie Walser, Ruxton, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Continuation of Ser. No. 769,994, Sep. 30, 1991, abandoned. This application Jun. 24, 1993, Ser. No. 82,144

Int. Cl.[5] A61K *31/415, 31/19, 31/195, 31/04*

U.S. Cl. 514—400 **7 Claims**

1. A method for treatment of sepsis in a patient in need thereof which comprises orally or parenterally administering to said patient a composition comprising at least one keto analog of a branched-chain essential amino acid selected from the group consisting of valine, leucine, and isoleucine in an amount effective to treat sepsis.

5,354,772

INDOLE ANALOGS OF MEVALONOLACTONE AND DERIVATIVES THEREOF

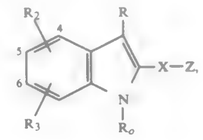
Faizulla G. Kathawala, Mountain Lakes, N.J., assignor to Sandoz Pharm. Corp., E. Hanover, N.J.

Continuation of Ser. No. 722,288, Apr. 11, 1985, abandoned, which is a continuation-in-part of Ser. No. 707,854, Mar. 4, 1985, Pat. No. 4,739,073, which is a division of Ser. No. 548,850, Nov. 4, 1983, abandoned, which is a continuation-in-part of Ser. No. 443,668, Nov. 22, 1982, abandoned. This application Nov. 24, 1993, Ser. No. 157,595

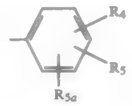
Int. Cl.[5] A61K *31/405*

U.S. Cl. 514—414 **30 Claims**

1. A compound of the formula



wherein one of R and R_o is and the other is



and the other is primary or secondary C_{1-6}alkyl not containing an asymmetric carbon atom, C_{1-3}cycloalkyl or phenyl-$(CH_2)_m$—,

wherein R_4 is hydrogen, C_{1-3}alkyl, n-butyl, i-butyl, t-butyl, C_{1-3}alkoxy, n-butoxy, i-butoxy, trifluoromethyl, fluoro, chloro, phenoxy or benzyloxy,

R_5 is hydrogen, C_{1-3}alkyl, C_{1-3}alkoxy, trifluoromethyl, fluoro, chloro, phenoxy or benzyloxy,

R_{5a} is hydrogen, C_{1-2}alkyl, C_{1-2}alkoxy, fluoro, or chloro, and

m is 1, 2 or 3, with the provisos that both R_5 and R_{5a} must be hydrogen when R_4 is hydrogen, R_{5a} must be hydrogen when R_5 is hydrogen, not more than one of R_4 and R_5 is trifluoromethyl, not more than one of R_4 and R_5 is phenoxy, and not more than one of R_4 and R_5 is benzyloxy,

$R_2$is hydrogen, C_{1-3}alkyl, n-butyl, i-butyl, t-butyl, C_{3-6}cycloalkyl, C_{1-3}alkoxy, n-butoxy, i-butoxy, trifluoromethyl, fluoro, chloro, phenoxy or benzyloxy,

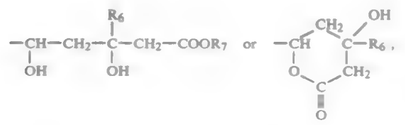
$R_3$is hydrogen, C_{1-3}alkyl, C_{1-3}alkoxy, trifluoromethyl, fluoro, chloro, phenoxy or benzyloxy, with the provisos that R_3 must be hydrogen when R_2 is hydrogen, not more than one of R_2 and R_3 is trifluoromethyl, not more than

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one of R_2 and R_3 is phenoxy, and not more than one of R_2 and R_3 is benzyloxy,

X is $-(CH_2)_n-$ or $-CH=CH-$, wherein n is 0, 1, 2 or 3, and

Z is



wherein

R_6 is hydrogen or C_{1-3}alkyl, and $R_7$is hydrogen, C_{1-3}alkyl, n-butyl, i-butyl, t-butyl, benzyl, or M, wherein M is a cation.

5,354,773

USE OF BAFILOMYCINE AND DERIVATIVES TO TREAT BONE DISEASES

Margareta Herslöf, Mölndal; Björn Wallmark, Mölnlycke, both of Sweden, and Kalervo Väänänen, Oulu, Finland, assignors to Aktiebolaget Astra, Sodertalje, Sweden

PCT No. PCT/SE90/00684, § 371 Date Jun. 1, 1992, § 102(e) Date Jun. 1, 1992, PCT Pub. No. WO91/06296, PCT Pub. Date May 16, 1991

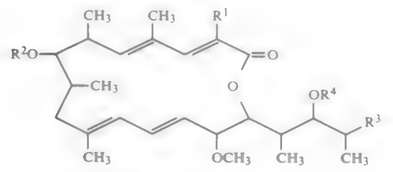
PCT Filed Oct. 22, 1990, Ser. No. 849,020

Claims priority, application Sweden, Oct. 24, 1989, 8903529-9

Int. Cl.[5] A61K *31/70*

U.S. Cl. 514—450 **11 Claims**

6. A method for the treatment of diseases which exhibit increased bone resorption comprising administering to a host in need of such treatment, an effective amount of a compound of the formula I



I

in a pharmaceutically acceptable carrier.

5,354,774

INHIBITION OF SMOOTH MUSCLE CELL PROLIFERATION BY 8-METHOXYPSORALEN PHOTOACTIVATED BY VISIBLE LIGHT

Lawrence I. Deckelbaum, Woodbridge; Francis P. Gasparro, Hamden, and Bauer K. Sumpio, New Haven, all of Conn., assignors to Yale University, New Haven, Conn.

Filed Dec. 24, 1992, Ser. No. 996,721

Int. Cl.[5] A61K *31/35*

U.S. Cl. 514—455 **8 Claims**

1. A method for preventing restenosis in a blood vessel following transluminal angioplasty by inhibiting smooth muscle cell growth, comprising the steps of:

administering a photoactivatable psoralen to a patient in need thereof, said psoralen being administered in an amount to achieve local arterial tissue levels of psoralen sufficient for inhibition of smooth muscle cell growth when the psoralen is photoactivated; and

delivering radiation in the visible wavelength range equal to or greater than about 420 nanometers to the stenosed region of the blood vessel at a level sufficient for photoactivation of the psoralen.

5,354,775

Patent Not Issued For This Number

5,354,776

ACETYLENES DISUBSTITUTED WITH A HETEROAROMATIC GROUP AND A TETRALIN GROUP AND HAVING RETINOID-LIKE ACTIVITY

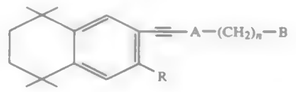
Roshantha A. S. Chandraratna, El Toro, Calif., assignor to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 947,681, Sep. 21, 1992, Pat. No. 5,246,962, which is a division of Ser. No. 25,434, Mar. 13, 1987, Pat. No. 5,149,705. This application Jun. 29, 1993, Ser. No. 84,843

Int. Cl.[5] A61K *31/34;* **C07D** *307/42, 307/46*

U.S. Cl. 514—461 **6 Claims**

1. A compound of the formula



where R is hydrogen or lower alkyl; A is pyridyl, thienyl, furyl, pyridazinyl, pyrimidinyl or pyrazinyl; n is 0–5; and B is H, —COOH or a pharmaceutically acceptable salt, ester or amide thereof, $—CH_2OH$ or an ether or ester derivative thereof, or —CHO or an acetal derivative thereof, or $—COR_1$ or a ketal derivative thereof where R_1 is $-(CH_2)_mCH_3$ where m is 0–4; or a pharmaceutically acceptable salt thereof.

5,354,777

CYANOALKENE DERIVATIVES, PROCESS FOR THEIR PREPARATION, AND THEIR USE AS MICROBICIDE FOR THE PROTECTION OF MATERIALS

Peter Wachtler, Köln; Wilfried Paulus, and Georg-Wilhelm Ludwig, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

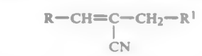
Filed Feb. 23, 1993, Ser. No. 21,407

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1992, 4206528

Int. Cl.[5] A01N *47/48;* **C07C** *331/12*

U.S. Cl. 514—514 **7 Claims**

1. A cyanoalkene derivative of the formula



in which

R is an optionally substituted member selected from the group consisting of C_1–C_{12}-alkyl, alkoxyalkyl, alkylmercaptoalkyl, cycloalkyl, C_2–C_8-alkenyl, cycloalkenyl, aryl, aralkyl and arylalkenyl, and R^1 is SCN.

5,354,778

ANTITUMOR COMPOSITIONS AND METHODS OF TREATMENT

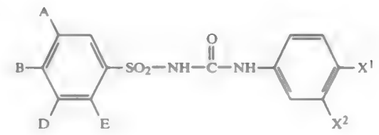
James E. Ray; John E. Toth, and J. Jeffry Howbert, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 811,483, Dec. 20, 1991, Pat. No. 5,234,955. This application Mar. 26, 1993, Ser. No. 37,954

Int. Cl.[5] A61K *31/18;* **C07C** *311/16*

U.S. Cl. 514—592 **8 Claims**

1. A compound useful in the treatment of susceptible neoplasms in mammals having the formula



wherein

X^1 is halo, CH_3 or CF_3;

X^2 is hydrogen, halo, or CF_3 with the proviso that at least one of X^1 and X^2 is halo;

A, B, D and E are

(a) independently selected from the group consisting of hydrogen, methoxyl, methyl, ethyl, chlorine, bromine and iodine with the proviso that no more than one of A, B, D or E is hydrogen

and pharmaceutically acceptable salts thereof.

5,354,779

SUBSTITUTED OXIME ETHER AMIDES

Wolfgang Krämer, Burscheid; Dieter Berg, Wuppertal; Heinz-Wilhelm Dehne, Monheim; Stefan Dutzmann, Hilden, and Christoph Erdelen, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

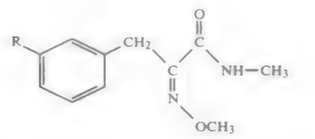
Filed Nov. 30, 1992, Ser. No. 983,984

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1991, 4140558

Int. Cl.[5] A01N *37/20*

U.S. Cl. 514—619 **4 Claims**

1. An oxide either amide of the formula (I):



(I)

wherein

R represents phenyl, naphthyl, or phenyl or naphthyl monosubstituted to polysubstituted by identical or different substitutents selected from the group consisting of halogen, cyano, nitro, in each case straight-chain or branched alkyl, alkoxy, alkylthio, alkylsulphinyl or alkylsulphonyl, each of which has 1 to 6 carbon atoms, in each case straight-chain or branched alkenyl, alkynyl, alkenyloxy, alkynyloxy, alkenylthio or alkynylthio, each of which has 2 to 6 carbon atoms, in each case straight-chain or branched halogenoalkyl, halogenoalkoxy or halogenoalkylthio, halogenoalkylsulphinyl or halogenoalkylsulphonyl, each of which has 1 to 6 carbon atoms and 1 to 13 identical or different halogen atoms, in each case straight-chain or branched halogenoalkenyl, halogenoalkynyl, halogenoalkenyloxy, halogenoalkynyloxy, halogenoalkenylthio or halogenoalkynylthio, each of which has 2 to 6 carbon atoms and 1 to 11 identical or different halogen atoms, in each case straight-chain or branched alkylcarbonyl, alkoxycarbonyl, alkylcarbonyl-(N-alkyl)-amino, aminocarbonyl, N-alkylaminocarbonyl, N,N-dialkylaminocarbonyl or alkoximinoalkyl, each of which has 1 to 6 carbon atoms in the individual alkyl moieties, and phenyl, phenoxy, phenylthio, phenylcarbonyl, phenylcarbonyloxy, phenylcarbonylamino, phenyl carbonyl-(N-alkyl)-amino, phenylaminocarbonyl, N-phenyl-(N-alkyl-)aminocarbonyl, phenylalkyl or phenylalkenyl, each of which has, where appropriate, up to 6 carbon atoms in the individual alkyl or alkenyl moieties and each of which is unsubstituted or monosubstituted to polysubstituted by identical or different substituents selected from the group consisting of halogen, straight-chain or branched alkyl or alkoxy, each of which has 1 to 4 carbon atoms.

5,354,780

INTRAORAL DOSING METHOD OF ADMINISTERING (+)-α-4-(DIMETHYLAMINO)-3-METHYL-1,2-DIPHENYL-2-BUTANOLPROPIONATE

Everett H. Ellinwood, 3519 Tonbridge Way, Durham, N.C. 27707, and Samir K. Gupta, 5011 S. Alston Ave., Apt. D-201, Durham, N.C. 27713

Continuation-in-part of Ser. No. 703,049, May 17, 1991, Pat. No. 5,198,436, which is a continuation of Ser. No. 422,992, Oct. 17, 1989, abandoned. This application Mar. 29, 1993, Ser. No. 38,911

Int. Cl.[5] A61K *31/135*

U.S. Cl. 514—649 **1 Claim**

1. A method for administering propoxyphene compound to the human central nervous system wherein a therapeutically effective amount of said compound is sublingually or buccally administered to a human, the improvement comprising the steps of:

a. selecting a lipid soluble compound comprising (+)-α-4-(dimethylamino)-3-methyl-1,2-diphenyl-2-butanol propionate hydrochloride that (1) has one or more unwanted or adversive metabolites comprising norpropoxyphene that are increased by portal vein entry to the liver;

b. placing said compound in a suitable intraoral formulation; and

c. intraorally administering a therapeutically effective amount of said intraoral formulation so as to bypass the portal vein entry to the liver and to thereby decrease the formation of the unwanted metabolites; wherein

the ratio of propoxyphene to the unwanted metabolite norpropoxyphene made available to the central nervous system is increased; and

this intraoral method over a period of one or more doses is utilized to achieve sustained high levels of the propoxyphene relative to the unwanted metabolite norpropoxyphene.

5,354,781

BENZENE DERIVATIVES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS IN WHICH THEY ARE PRESENT

Jean-Claude Breliere; Pierre Casellas; Serge Lavastre, all of Montpellier, and Raymond Paul, St Gely du Fesc, all of France, assignors to Sanofi, Paris, France

Continuation of Ser. No. 459,344, Dec. 29, 1989, abandoned. This application May 24, 1991, Ser. No. 707,229

Claims priority, application France, Dec. 30, 1988, 88 17538

Int. Cl.[5] C07C *211/40;* **A61K** *31/44*

U.S. Cl. 514—650 **6 Claims**

1. Cis-N-cyclohexyl-N-ethyl-3-(3-chloro-4-cyclohexylphenyl)prop-2-enylamine or one of its pharmaceutically acceptable addition salts.

5,354,782

POLYAMINE PHENOLS AS RADIOPROTECTIVE AGENTS

Michael L. Edwards, Cincinnati, and Ronald D. Snyder, Loveland, both of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

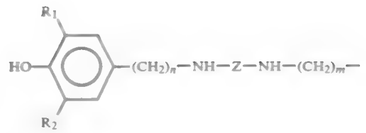
Continuation of Ser. No. 20,899, Feb. 22, 1993, abandoned, which is a continuation of Ser. No. 908,497, Jun. 30, 1992, abandoned, which is a continuation of Ser. No. 807,350, Dec. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 642,599, Jan. 17, 1991, abandoned. This application Aug. 30, 1993, Ser. No. 114,113

Int. Cl.[5] C07C *211/14, 211/54;* **A61K** *31/135*

U.S. Cl. 514—655 **14 Claims**

1. A compound of the formula

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wherein

R_1 and R_2 are each independently a C_1–C_6 alkyl group,

n is an integer from 0 to 3,

Z is a C_2–C_6 alkylene group, and

m is an integer from 4 to 9.

5,354,783

METHOD FOR REPELLING *AEDES AEGYPTAE* USING CARBOCYCLIC KETONES, AND ALDEHYDE IN ADMIXTURE

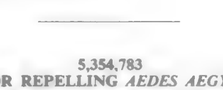
Anna B. Marin, Leonardo; Craig B. Warren, Rumson, both of N.J., and Jerry F. Butler, Gainesville, Fla., assignors to International Flavors & Fragrances Inc., New York, N.Y. and The University of Florida, Gainesville, Fla.

Filed Nov. 26, 1993, Ser. No. 157,420

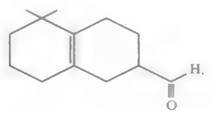
Int. Cl.[5] A01N *35/02, 35/06, 25/08;* C11D *9/50*

U.S. Cl. 514—691 4 Claims

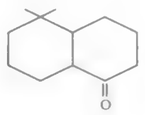
1. A method of repelling *Aedes aegyptae* comprising exposing a three dimensional space inhabitable by said *Aedes aegyptae* in an *Aedes aegyptae* repelling effective concentration and quantity of a mixture of ketone and aldehyde-containing compounds containing 45–60 mole percent of the compound having the structure:



from 15–20 mole percent of the compound having the structure:



and from 25–35 mole percent of the compound having the structure:



5,354,784

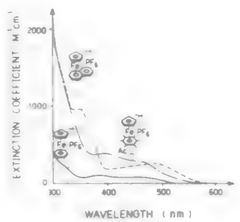
CYCLOPENTADIENYLIRON COMPLEX SALT, PROCESS FOR PREPARING THE SAME AND PHOTOPOLYMERIZABLE COMPOSITION CONTAINING THE SAME

Scott F. Timmons, San Antonio, Tex.; Hiroshi Sawada, Osaka, Japan; Stephen T. Willinghoff, San Antonio, Tex.; Robert E. Lyle, Jr., San Antonio, Tex., and Belinda K. Taylor, San Antonio, Tex., assignors to Arakawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 10, 1992, Ser. No. 926,286

Int. Cl.[5] C08F *2/50, 4/42;* C07F *17/02*

U.S. Cl. 522—33 6 Claims



1. A cyclopentadienyliron complex salt represented by the formula (1):

$$[(R^2CO)(R^1)_mC_6H_{5-m}Fe^{II}Cp]^{+1}A^{-1} \quad (1)$$

wherein R^1 is a methyl group, m is an integer of 5, R^2 is a methyl group or phenyl group, Cp is an η^5-cyclopentadienyl group and A^{-1} is a non-nucleophilic anion selected from the group consisting of BF_4^-, PF_6^-, AsF_6^-, SbF_6^- $FeCl_4^-$, $SnCl_5^-$, $SbCl_6^-$ and $BiCl_5^-$.

5,354,785

POLYMERIZABLE DENTAL MATERIALS

Volker Rheinberger, Vaduz, Liechtenstein; Ulrich Salz, Weissenberg, Fed. Rep. of Germany, and Kurt Grabber, Feldkirch, Austria, assignors to Ivoclar A.G., Schaan, Liechtenstein

Continuation of Ser. No. 674,133, Mar. 25, 1991, abandoned. This application Nov. 2, 1992, Ser. No. 970,236

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1990, 4009602

Int. Cl.[5] A61K *6/083;* C08K *3/22*

U.S. Cl. 523—116 10 Claims

1. A method for treating tooth cavities comprising applying underfilling material, wherein the underfilling material comprises:

(a) a polymerizable dental material comprising a monofunctional (meth)acrylate, or a polyfunctional (meth)acrylate, or mixtures thereof;

(b) a curing catalyst; and

(c) an inorganic filler material comprising a glass powder comprising:

40–75 wt-% CaO,

5–30 wt-% B_2O_3,

5–35 wt-% SiO_2,

whereby the underfilling material provides a controlled release of calcium oxide or hydroxide for an alkalizing effect on the pulpa protecting the pulpa against acids and bacterial attacks.

5,354,786

FLUID LOSS CONTROL COMPOSITION

Hon Chung Lau, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 892,877, Jun. 3, 1992, abandoned, Division of Ser. No. 718,036, Jun. 20, 1991, Pat. No. 5,158,139. This application May 3, 1993, Ser. No. 57,078

Int. Cl.[5] C09K *7/00;* C08K *5/02, 3/00*

U.S. Cl. 523—130 10 Claims

1. An aqueous wellbore fluid loss control composition for controlling fluid loss from a wellbore into the surrounding formation comprising:

a) an amount of polymer effective to control fluid loss from a wellbore the amount of polymer being between about 10 and about 200 pounds per 1000 gallons of fluid loss control composition; and

b) an amount of halogen-substituted organic acid or halogen-substituted organic acid salt sufficient to result in a concentration between about 0.02 and about 2.0 molar in the composition, this amount effective to decrease the molecular weight of the polymer under formation conditions after a predetermined time period to an extent where the polymer is not an effective fluid loss control agent, the predetermined time period being in the range of about 7 to about 200 hours.

5,354,787

SOIL-STABILIZING AGENT AND A METHOD FOR SOIL-STABILIZING TREATMENT

Tetsuya Shimoda, Hachioji; Katsuki Ishikawa, Yokohama; Teruo Urano, Sano; Hiroshi Miyaji, Utsunomiya, and Masatsune Ogura, Ichikawa, all of Japan, assignors to Nippon Hodo Co., Ltd., Tokyo; Murakashi Lime Industry Co., Ltd., Tochigi and Du Pont-Mitsui Fuluorochemicals Co., Ltd., Tokyo, all of Japan

Division of Ser. No. 728,030, Jul. 8, 1991, Pat. No. 5,210,122, which is a continuation of Ser. No. 530,435, Jun. 1, 1990, abandoned, which is a continuation of Ser. No. 259,374, Oct. 18, 1988, abandoned. This application Feb. 4, 1993, Ser. No. 13,050

Claims priority, application Japan, Oct. 19, 1987, 62-261838

Int. Cl.[5] C09K *17/00*

U.S. Cl. 523—132 3 Claims

1. A method of stabilizing soil and controlling associated dust by applying to soil in need of soil stabilization a soil stabilizing effective amount of an agent comprising:

a) not less than 90 wt % of quick lime and/or calcined dolomite;

b) 0–10 wt % of slaked lime and/or hydrated calcined dolomite; and

c) partially fibrillated polytetrafluoroethylene resin in an amount of 0.01–1.0 wt % of the material mainly composed of quick lime and/or calcined dolomite which has been added for dust control.

5,354,788

DIALDEHYDE MODIFIED PHENOLIC FOUNDRY SAND CORE BINDER RESINS, PROCESSES FOR MAKING SAME, AND PROCESS FOR PREPARING FOUNDRY CORES AND MOLDS EMPLOYING SAME

Calvin K. Johnson, Lockport; David R. Armbruster, Forest Park, and Sudhir K. Trikha, Streamwood, all of Ill., assignors to Borden, Inc., Columbus, Ohio

Continuation of Ser. No. 858,576, Mar. 27, 1992, abandoned. This application Sep. 10, 1993, Ser. No. 118,698

Int. Cl.[5] B22C *1/22*

U.S. Cl. 523—145 33 Claims

1. A phenolic resole resin that is the reaction product of a phenolic compound, formaldehyde and an aliphatic dialdehyde, said resin comprising;

(a) a phenolic compound;

(b) from about 0.4 moles to about 2.8 moles of formaldehyde per mole of phenolic compound; and

(c) from about 0.05 moles to about 0.3 moles of an aliphatic dialdehyde compound per mole of phenolic compound.

5,354,789

AQUEOUS RESIN DISPERSIONS

Koji Kamikado, Yokohama, Japan, assignor to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Dec. 3, 1992, Ser. No. 985,217

Claims priority, application Japan, Dec. 5, 1991, 3-348431

Int. Cl.[5] C08K *3/20;* C08L *63/02*

U.S. Cl. 523—420 27 Claims

1. An aqueous resin dispersion containing as an aqueous resin component a polyamide-modified epoxy-polyamine resin comprising a reaction product of (A) a phenolic hydroxyl group-terminated polyamide compound obtained by the reaction of, based on the total weight of (a), (b) and (c),

(a) 5 to 90% by weight of a polyamine compound containing at least two primary and/or secondary amino groups in a molecule and having a number average molecular weight of 40 to 8,000,

(b) 20 to 80% by weight of a polycarboxylic acid having a number average molecular weight of 100 to 8,000, and

(c) 10 to 90% by weight of a compound containing at least one phenolic hydroxyl group and one carboxyl group in a molecule,

(B) a bisphenol compound,

(C) a bisphenol diglycidyl ether compound, and

(D) an active hydrogen-containing amine compound.

5,354,790

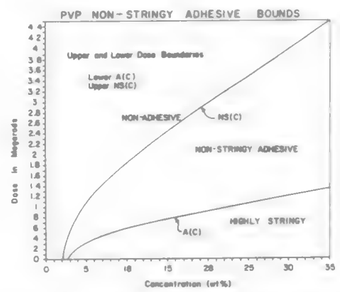
METHODS FOR THE PREPARATION OF NON-STRINGY ADHESIVE HYDROPHILIC GELS

Preston Keusch, New York; Keith A. Murdock, Suffern; Christine A. Czap, Montgomery, and Linda Lennon, Campbell Hall, all of N.Y., assignors to Nepera, Inc., Harriman, N.Y.

Division of Ser. No. 499,855, Mar. 26, 1990, Pat. No. 5,143,071, which is a continuation-in-part of Ser. No. 330,669, Mar. 30, 1989, Pat. No. 4,989,607. This application Aug. 31, 1992, Ser. No. 938,909

Int. Cl.[5] C08J *3/28;* C08K *5/06*

U.S. Cl. 523—300 34 Claims



1. A method for the preparation of a non-stringy adhesive hydrophilic gel comprising:

(a) forming a liquid film comprising a homogeneous mixture of water and at least one water-soluble polymer present at a concentration of at least about 7 percent by weight of said mixture, said water-soluble polymer having a weight average molecular weight of at least about 200 kD;

(b) exposing said film to a dose of radiant energy within an area of a plot of radiation dose versus polymer concentration whose upper and lower boundaries are defined by the equations NS(C) and A(C), respectively:

Lower Dose, A(C), $>1.245+0.0373C-3.908/C$

Upper Dose, NS(C), $\leq 2{,}039+0.1598C-8.183/C$

in which C is the concentration of the polymer expressed as a

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weight fraction of the total mixture, which dose is effective to provide a non-stringy hydrophilic gel which exhibits a sharp, substantially featureless force-displacement profile, has an Adhesion Energy Density (AED) of at least about 5 to less than about 50 g/cm and has a peak-force value of at least about 180 grams.

5,354,791

EPOXY-FUNCTIONAL POLYESTER, POLYCARBONATE WITH METAL PHOSPHATE

Robert R. Gallucci, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Oct. 19, 1993, Ser. No. 139,390
Int. Cl.[5] C08K 7/14; C08L 67/02, 69/00
U.S. Cl. 523—466 30 Claims

1. A polyester-polycarbonate composition comprising
(a) polyester having epoxy functionality,
(b) polycarbonate, and
(c) a catalyst quencher selected from the group consisting of Group IB metal phosphate salts, Group IIB metal phosphate salts, and salts of the formula

$$M^z_xH_yP_nO_{3n+1}$$

wherein M is a metal, x is a number ranging from 1 to 12, and y is a number ranging from 1 to 12, n is a number in the range of 1 to 10, z is a number in the range of 1 to 5, and the sum of $xz+y$ is equal to $n+2$.

5,354,792

FLOWABILITY IMPROVING AGENT, A PROCESS FOR THE PRODUCTION THEREOF AND A USE THEREOF

Lars-Inge Olsson, Helsingborg, and Kent Hamacek, Perstorp, both of Sweden, assignors to Perstorp AB, Perstorp, Sweden

PCT No. PCT/SE91/00096, § 371 Date Aug. 6, 1992, § 102(e) Date Aug. 6, 1992, PCT Pub. No. WO91/12214, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 12, 1991, Ser. No. 917,092
Claims priority, application Sweden, Feb. 19, 1990, 9000585-1
Int. Cl.[5] C08K 3/00, 5/55, 5/05
U.S. Cl. 524—6 10 Claims

1. Flowability improving agent which also gives a prolonged workability time of an aqueous composition containing cement, comprising a combination, calculated on a dry product of
A) 60–99% by weight of a resin selected from the group consisting of a sulphonated melamine-formaldehyde resin, a sulphonated melamine-urea-formaldehyde resin and a sulphonated naphthalene-formaldehyde resin;
C) 0.5–40% by weight of a boron containing polyhydroxycarboxylic acid or a water-soluble alkali salt or alkaline earth metal salt of said acid of the formula



and n is 3–8, and optionally
(D) 0.5–30% by weight of a compound with the formula

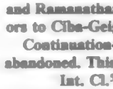


where Ar is unsubstituted or substituted benzene moiety or naphthalene moiety, R_1 is an oxyethylene group; $—CH_2CH_2O—$ or an oxypropylene group;



an oxyethylene chain or an oxypropylene chain with up to fifteen oxyethylene groups or oxypropylene groups or a combination of oxyethylene groups and oxypropylene groups to a chain length where the sum of these groups is at most fifteen; the mean value n for $\bar{n}$ is 1–15 and R_2 is hydrogen or a phosphonate group with the formula

where M_1 and M_2 are hydrogen ion or alkali metal ion or where R_2 is a group with the formula



where M_2 has the above meaning and M_3 is $—(R_1)_n—O$ Ar where R_1, n and Ar have the above meaning.

5,354,793

ACCELERATOR COMPOSITIONS AND RUBBER COMPOUNDING COMPOSITION EMBODYING THE SAME

John C. Hudson, Baton Rouge, La., assignor to DSM Copolymer, Inc., Baton Rouge, La.

Division of Ser. No. 435,770, Nov. 13, 1989, Pat. No. 5,075,028.
This application Dec. 20, 1991, Ser. No. 811,246
Int. Cl.[5] C08K 5/35
U.S. Cl. 524—96 9 Claims

1. A rubber composition for use in molding and extrusion to yield articles substantially free of iridescent sheen comprising (a) a rubber component, (b) an accelerator component comprising dithiodimorpholine, a dithiocarbamate salt of bismuth and a benzothiazyldisulfide and (c) elemental sulfur.

5,354,794

ELECTRO COAT/BASE COAT/CLEAR COAT FINISHES STABILIZED WITH S-TRIAZINE UV ABSORBERS

Tyler A. Stevenson, Teaneck, N.J.; Mark S. Holt, West Nyack, and Ramanathan Ravichandran, Nanuet, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 12,699, Feb. 3, 1993, abandoned. This application Feb. 1, 1994, Ser. No. 189,627
Int. Cl.[5] C08K 5/3492; B32B 15/04, 15/08
U.S. Cl. 524—100 8 Claims

1. A polymer film composition which comprises
(a) an electro coat primer in adhesion to a metal substrate;
(b) a base or color coat that is in adhesion to the electro coat and which comprises a film-forming binder and an organic pigment or an inorganic pigment or mixture thereof;
(c) a clear coat that is in adhesion to the base coat and which comprises a film-forming binder; and
(d) an effective stabilizing amount, of at least one tris-aryl-s-triazine UV absorber contained in either the base coat or the clear coat or in both base coat and clear coat.

5,354,795

POLYPROPYLENE RESIN COMPOSITION HAVING IMPROVED COATING PROPERTY

Kohhei Ueno, Sakai; Yoshifumi Nakano, Kishiwada; Kazuyoshi Tanaka, Izumi, and Yasuo Kita, Sakai, all of Japan, assignors to UBE Industries, Ltd., Ube, Japan

Continuation of Ser. No. 933,898, Aug. 24, 1992, abandoned, which is a continuation of Ser. No. 633,792, Dec. 26, 1990, abandoned. This application May 17, 1993, Ser. No. 62,251
Claims priority, application Japan, Dec. 27, 1989, 1-336289; Mar. 2, 1990, 2-49344
Int. Cl.[5] C08K 5/34, 3/26, 3/18, 3/22
U.S. Cl. 524—102 5 Claims

1. A polypropylene resin composition having an improved coating property after plasma treatment and suitable for use for the production of a molded article coated after a plasma treatment comprising:
(i) 100 parts by weight of a composition comprising:
(a) 45 to 88% by weight of a crystalline ethylenepropylene block copolymer,
(b) 10 to 35% by weight of a thermoplastic elastomer having a substantially saturated main chain, and
(c) 2 to 25% by weight of an inorganic filler;
(ii) 0.03 to 0.6 parts by weight of a hindered nitrogen-free phenolic antioxidant;
(iii) 0.03 to 0.6 parts by weight of a nitrogen-containing hindered phenolic antioxidant;
(iv) 0.03 to 0.5 parts by weight of a benzotriazole ultraviolet absorber; and
(v) 0.05 to 1.0 parts by weight of a hindered amine light stabilizer having a molecular weight of at least 500 and no N-H bond.

5,354,796

LOW GLOSS THERMOPLASTIC MOLDING COMPOSITIONS

Oliver P. Creecy, Elizabeth, W. Va.; Richard P. Eckberg, Saratoga Springs, N.Y.; Edward J. Fewkes, Jr., Belpre, Ohio, and Vicki H. Watkins, Alplaus, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Oct. 1, 1992, Ser. No. 955,078
Int. Cl.[5] C08K 5/15
U.S. Cl. 524—114 20 Claims

1. A low-gloss thermoplastic composition having enhanced low temperature Izod impact strength, said composition comprising
a) an aromatic carbonate polymer;
b) a graft copolymer comprising a rigid phase grafted to a rubbery phase, said rubbery phase being selected from the group consisting of conjugated diene rubbers and alkyl acrylate rubbers, said rubbery phase having a glass transition temperature below 0° C., said rigid phase being selected from the group consisting of vinyl aromatic monomers, vinyl cyanide monomers, allyl acrylate monomers, and mixtures thereof; and
c) an effective gloss-reducing amount of an epoxy functional silicone.

5,354,797

COATING COMPOSITION OF HYDROXY FUNCTIONAL ACRYLIC POLYMER, POLYOL AND POLYISOCYANATE CROSSLINKING AGENT

Richard D. Anderson, Brookhaven, and Douglas M. Lamb, Lansdale, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 31, 1992, Ser. No. 937,815
Int. Cl.[5] C08K 5/09
U.S. Cl. 524—285 15 Claims

1. A clear coating composition having a film forming binder solids content of about 30–70% by weight and organic solvent, wherein the binder contains
(A) 50–80% by weight, based on the weight of the binder, of a hydroxy functional acrylic polymer consisting essentially of polymerized monomers of styrene, an alkyl methacrylate having 1–4 carbon atoms in the alkyl group, a hydroxy alkyl methacrylate or hydroxy alkyl acrylate each having 1–4 carbon atoms in the alkyl group, an ethylenically unsaturated carboxylic acid reacted with a glycidyl ester of carboxylic acid; wherein the acrylic polymer has a number average molecular weight of about 1,000–12,000 determined by gel permeation chromatography;
(B) 1–20% by weight, based on the weight of the binder, of a polyol component having the formula of



wherein:
R^1 is a covalent bond or alkylene group containing 1, 2, 3 or 4 carbon atoms;
n is 1to 4;
m is 2, 3 or 4; and
Q is a saturated carbocyclic ring containing 5 or 6 carbon atoms, or $S—R^2—T$ wherein S and T are each independently saturated carbocyclic rings containing 5 or 6 carbon atoms, and R^2 is a covalent bond or an alkylene group containing 1, 2 or 3 carbon atoms;
provided that no more than one R^1 is bound to any carbocyclic carbon atom, and further provided that when Q is $S—R^2—T$, each R^1 is bound to a carbon atom of the carbocyclic rings of S and T and
(C) 10–49% by weight, based on the weight of the binder, of an organic polyisocyanate.

5,354,798

POLYACETAL RESIN COMPOSITION HAVING HIGH-TEMPERATURE STIFFNESS

Hiroshi Tsukahara, and Masahiko Niino, both of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 16, 1991, Ser. No. 746,341
Claims priority, application Japan, Aug. 20, 1990, 2-217149
Int. Cl.[5] C08L 67/00
U.S. Cl. 524—413 12 Claims

1. A polyacetal resin composition comprising 0.05–20 parts by weight of a dispersant (B) which is at least one member selected from the group consisting of a melamine derivative, a urea derivative, an aminoformic acid derivative and a guanidine derivative and 5–40 parts by weight of a filler (C), and 100 parts by weight of a resin ingredient (A) which comprises 90–50% by weight polyacetal resin (a) and 10–50% by weight of a polyamide resin (b) having a melting point of up to 230° C., a maximum particle diameter in the range of 0.03–10 μm and a maximum aspect ratio of up to 2, and is dispersed in a matrix of said polyacetal resin (a).

5,354,799

LIMITED COALESCENCE PROCESS

James R. Bennett, and Dennis E. Smith, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 16, 1992, Ser. No. 977,224
Int. Cl.[5] C08F 2/16
U.S. Cl. 524—458 16 Claims

1. In a limited coalescence method of making polymer particles of controlled size, which method comprises forming an aqueous suspension of polymer droplets, such droplets being immiscible with the aqueous suspension medium and having a layer of particulate suspension stabilizer on their surfaces which limits coalescence between droplets, forming solid particles from the droplets and separating the polymer particles having a layer of particulate suspension stabilizer on their surfaces from the aqueous suspension medium, the improvement comprising (a) controlling the coalescence between the

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droplets to provide polymer particles having an average particle size of not more than 3 μm, (b) reslurry washing the separated polymer particles by dispersing them in an organic liquid diluent that is miscible with the aqueous suspension medium and is a nonsolvent for the polymer particles, and (c) separating the polymer particles from the diluent to thereby substantially avoid agglomeration between the polymer particles upon drying.

5,354,800

PRODUCTION OF COPOLYMER LATICES

Shigeo Suzuki, Suita; Susumu Abe, Takatsuki; Fuyuo Maeda, and Tomotaka Seo, both of Toyonaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 28, 1992, Ser. No. 967,741

Claims priority, application Japan, Oct. 31, 1991, 3-286818; Oct. 31, 1991, 3-286819; Mar. 5, 1992, 4-048762; Mar. 11, 1992, 4-052853; Mar. 11, 1992, 4-052854; Mar. 11, 1992, 4-052855

Int. Cl.[5] **C08F** *2/38, 2/22*

U.S. Cl. 524—460 **21 Claims**

1. A method of producing a copolymer latex which comprises subjecting a monomer mixture comprising

(1) at least one conjugated diene monomer,

(2) at least one (C_4–C_{14})-ethylenically unsaturated monomer, said monomer being different from the monomer (1) above and different from the monomer (3) below, and

(3) at least one member selected from the group consisting of (a) an ethylenically unsaturated monocarboxylic acid monomer, (b) an ethylenically unsaturated dicarboxylic acid monomer or an anhydride or half ester thereof, and (c) a mixture of (a) and (b), to emulsion polymerization by a process which comprises

(a') subjecting a part of said monomer mixture to emulsion polymerization in the presence of a hydrophilic chain transfer agent to yield a copolymer latex, and subsequently

(b') subjecting the remainder of the monomer mixture to emulsion polymerization in the presence of (1) the copolymer latex of (a') above and (2) a hydrophobic chain transfer agent.

5,354,801

PROCESS FOR PRODUCING SMALL POLYMER PHASE DROPLET MICROEMULSIONS BY MULTISTEP AQUEOUS PHASE ADDITION

Michael P. O'Toole, Norwalk, Conn., assignor to Cytec Technology Corp., Wilmington, Del.

Filed Aug. 12, 1993, Ser. No. 105,266

Int. Cl.[5] **C08F** *2/32*

U.S. Cl. 524—461 **9 Claims**

1. A method of preparing water-in-oil polymer microemulsions having small aqueous phase droplet sizes comprising:

(a) preparing an oil phase comprising:

(i) at least one hydrocarbon; and

(ii) an effective amount of a surfactant or mixture of surfactants to form a microemulsion upon the addition of an aqueous phase;

(b) preparing an aqueous phase comprising:

(i) at least one ethylenically unsaturated monomer;

(c) adding a portion of said aqueous phase (b) to said oil phase (a) to form a microemulsion and polymerizing; and

(d) adding another portion of said aqueous phase (b) to the product of step (c) to form a microemulsion and polymerizing so as to form a polymer microemulsion having a polymer solids content of less than about 25% and an emulsifier to monomer ratio of less than about 0.4,

wherein the aqueous polymer phase droplets produced by said method are smaller than those obtained by a method comprising a single addition of the same total amount of aqueous phase.

5,354,802

RESIN COMPOSITION FOR BLOW MOLDING AND BLOW MOLDED ITEM MADE THEREFROM

Toshio Shiwaku; Kenji Hijikata; Kenji Furui, and Masato Suzuki, all of Shizuoka, Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed Feb. 11, 1993, Ser. No. 15,174

Int. Cl.[5] **C08J** *5/08;* **C08K** *3/40;* **C08L** *31/08*

U.S. Cl. 524—494 **5 Claims**

1. A blow-moldable resin composition which includes 100 parts by weight of a melt-blended resin component consisting essentially of:

(A) 1 to 99 parts by weight of a thermoplastic polyester resin mainly comprising terephthalic acid or the ester forming derivative thereof, and an aliphatic dihydroxy compound having 2 to 4 carbon atoms;

(B) 99 to 1 parts by weight of a thermoplastic polyamide resin;

(C) 0.2 to 10 parts by weight of a styrenic copolymer consisting essentially of 40 to 97% by weight of styrene, 60 to 3% by weight of a glycidyl ester of an α,β-unsaturated acid and 0 to 50% by weight of a vinylic monomer other than an olefinic monomer; and optionally

(D) 0 to 100 parts by weight of at least one member filler material selected from the group consisting of fibrous, granular and plate-like fillers.

5,354,803

POLYVINYL ALCOHOL GRAFT COPOLYMER NONWOVEN BINDER EMULSION

Louis R. Dragner, Rock Hill, and William C. Floyd, Chester, both of S.C., assignors to Sequa Chemicals, Inc., Chester, S.C.

Filed Mar. 29, 1993, Ser. No. 38,021

Int. Cl.[5] **C08L** *29/04*

U.S. Cl. 524—503 **17 Claims**

1. A surfactantless formaldehyde-free aqueous polyvinyl alcohol graft copolymer binder emulsion for nonwoven products comprising:

about 12% to 35% of a polyvinyl alcohol based on the weight of solids, wherein the polyvinyl alcohol has a low molecular weight defined as a viscosity up to 10 centipoise when in a 4% aqueous solution at 20° C. and wherein at least 75% of the polyvinyl alcohol is at least 98 mole % hydrolyzed; and

about 65% to 88% by weight of a monomer selected from the group consisting of vinyl monomer, acrylic monomer and mixtures thereof based on the weight of solids, which is graft copolymerized with the polyvinyl alcohol through emulsion polymerization.

5,354,804

METHOD OF EMULSIFYING THERMOPLASTIC RESIN COMPOSITION

Jun Inada, Yokkaichi; Fumio Koshiro, Yamaguchi; Ryoichi Shimizu, and Shinichi Sato, both of Yokkaichi, all of Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Continuation of Ser. No. 936,058, Aug. 28, 1992, abandoned, which is a continuation of Ser. No. 697,367, May 9, 1991, abandoned. This application Sep. 7, 1993, Ser. No. 117,348

Claims priority, application Japan, Jul. 23, 1991, 2-124175

Int. Cl.[5] **C08L** *29/04*

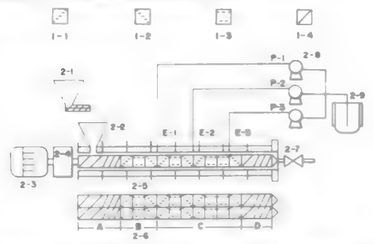
U.S. Cl. 524—503 **9 Claims**

1. A method of emulsifying a thermoplastic resin composition which consists of:

feeding a thermoplastic resin composition consisting of a mixture of 80 to 98 wt % of a thermoplastic resin and 20 to 2 wt % of polyvinyl alcohol into a biaxial extruder through a hopper thereof,

melting the thermoplastic resin composition in the biaxial extruder to give a molten thermoplastic resin composition in the biaxial extruder,

adding water only to the molten thermoplastic resin composition in the biaxial extruder, and



kneading the water with the molten thermoplastic resin composition in the biaxial extruder.

5,354,805

ADHESIVE COMPOSITION FOR BONDING NITRILE RUBBER TO METAL

Carol J. Treat, Erie, and Douglas H. Mowrey, Pleasantville, both of Pa., assignors to Lord Corporation, Erie, Pa.

Continuation of Ser. No. 877,555, May 1, 1992, abandoned. This application May 25, 1993, Ser. No. 67,266

The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.

Int. Cl.[5] **C08L** *61/10*

U.S. Cl. 524—510 **17 Claims**

1. A single-coat adhesive composition for bonding nitrile rubber to a metal surface comprising a chlorosulfonated polyethylene latex, a polyhydroxy phenolic resin copolymer, and a high molecular weight aldehyde polymer wherein the phenolic resin copolymer is prepared by combining a monohydroxy and/or a dihydroxy aromatic compound, as a first phenolic component, with a trihydroxy aromatic compound, as a second phenolic component, and a formaldehyde source under reaction conditions sufficient to create the phenolic resin copolymer and wherein the high molecular weight aldehyde polymer is selected from the group consisting of acetal homopolymers, acetal copolymers, gamma-polyoxymethylene ethers having the characteristic structure:

$$R_{10}O—(CH_2O)_n—R_{11}; \text{ and}$$

polyoxymethylene glycols having the characteristic structure:

$$HO—(R_{12}P)_x—(CH_2O_n—(R_{13}O)_x—H:$$

wherein R_{10} and R_{11} can be the same or different and each is an alkyl group having from 1 to 8 carbon atoms; R_{12} and R_{13} can be the same or different and each is an alkylene group having from 2 to 12 carbon atoms; n is greater than 100; and x is in the range of 0 to 8 with at least one x being equal to at least 1.

5,354,806

SUPERABSORBENT CROSSLINKED AMPHOLYTIC ION PAIR COPOLYMERS

Henry L. Hsieh, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 591,301, Oct. 1, 1990, Pat. No. 5,106,929. This application Sep. 18, 1991, Ser. No. 761,569

The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.

Int. Cl.[5] **A61L** *15/24*

U.S. Cl. 524—547 **88 Claims**

43. A method of absorbing an aqueous electrolyte solution comprising the step of contacting a polymer with an aqueous electrolyte solution wherein the polymer is formed by the copolyermization of an effective amount of each of the following components to produce a highly absorbent polymer:

(a) an ampholytic ion pair monomer comprising

(i) the ammonium cation 2-methacryloyloxyethyldiethylammonium and

(ii) a sulfonate anion selected from the group consisting of 2-acrylamido-2-methylpropane sulfonate, 2-methacryloyloxyethane sulfonate, vinyl sulfonate, styrene sulfonate and combinations of two or more thereof;

(b) at least one comonomer selected from the group consisting of acrylamide, methacrylamide, acrylonitrile, acrylic acid, methacrylic acid, alkali salts of acrylic acid, alkali salts of methacrylic acid, N-vinyl-2-pyrrolidone and combinations of two or more thereof; and

(c) at least one crosslinking agent which has at least two polymerizable solefinic functionalities wherein each of the olefinic functionalities is suitable for crosslinking.

5,354,807

ANIONIC WATER DISPERSED POLYURETHANE POLYMER FOR IMPROVED COATINGS AND ADHESIVES

Michael J. Dochniak, Ramsey, Minn., assignor to H. B. Fuller Licensing & Financing, Inc., Arden Hills, Minn.

Continuation-in-part of Ser. No. 825,025, Jan. 24, 1992, abandoned. This application Aug. 3, 1993, Ser. No. 101,430

Int. Cl.[5] **C08L** *75/04*

U.S. Cl. 524—591 **27 Claims**

1. As an improved composition, particularly for use as a coating or an adhesive, an anionic water dispersable polyurethane of the type which is the reaction product of an active hydrogen-containing material and a polyisocyanate to form a pre-polymer which is then reacted with a quantity of a diamine monomer containing a pendant aliphatic chain to form an anionic prepolymer having a pendant functionality, the prepolymer being readily dispersible in water.

5,354,808

POLYURETHANES INCLUDING PENDANT HINDERED AMINES AND COMPOSITIONS INCORPORATING SAME

Fidelis C. Onwumere, Woodbury, and Kurt C. Frisch, Jr., Fridley, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 8, 1992, Ser. No. 986,801

Int. Cl.[5] **C08G** *18/12*

U.S. Cl. 524—837 **14 Claims**

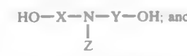
1. Aqueous dispersible silane-terminated polyurethane polymer which is the reaction product of:

(A) an isocyanate-terminated polyurethane prepolymer which is the reaction product of:

(i) a molar excess of organic polyisocyanate sufficient to promote substantially equal access of reactants (ii)–(iv) to isocyanate groups;

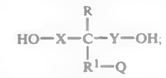
(ii) active hydrogen-containing material;

(iii) difunctional sterically hindered amine having the general formula



$$HO—X—\underset{\displaystyle Z}{\underset{|}{N}}—Y—OH; \text{ and}$$

(iv) internal emulsifier having the general formula



$$HO—X—\underset{\displaystyle R^1—Q}{\overset{\displaystyle R}{\overset{|}{\underset{|}{C}}}}—Y—OH;$$

(B) chain-extending monomer;

(C) organic compounds having a pKb of at most about 7; and

(D) silane coupling agent represented by the general formula $ASi(OR^2)_3$ and combinations thereof, the coupling agent present in an amount sufficient to partially crosslink the polyurethanes but insufficient to gel an aqueous dispersion of the reaction product of A, B, C, and D,

wherein:

Q is a negatively charged moiety selected from COO^- and SO_4^{2-};

X, Y, Z, R, and R^1, are independently selected from the group consisting of cyclic and aliphatic organic radicals

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free of reactive functional groups, and with the provisos that

i. at least 75% of the Z groups have from about 4 to about 20 carbon atoms;

ii. R can be hydrogen;

iii. R^1 is not required if Q is COO^-; and

iv. X, Y, Z, R, and R^1 are independently selected from the group consisting of cyclic and aliphatic hydrocarbon moieties having from about 1 to about 20 carbon atoms;

A is an organic radical having a functional group reactive with isocyanate groups; and

R^2 is independently selected from C_1–C_4 alkyl radicals.

5,354,809

PREPARATION OF A CURABLE MOLDING MATERIAL

Anton Hesse, Weinheim; Juergen Hofmann, Ludwigshafen; Walter Heckmann, Weinheim, and Volker Warzelhan, Weisenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 30, 1993, Ser. No. 54,090

Claims priority, application Fed. Rep. of Germany, May 30, 1992, 4217914

Int. Cl.[5] C08L *63/10, 67/06, 75/16*

U.S. Cl. 525—64 **8 Claims**

1. A process for the preparation of a curable molding material, comprising:

(a) uniformly distributing, in the absence of a free radical initiator, a melt of an ethylene polymer in a melt of an unsaturated polyester, to form a mixture; and

(b) mixing said mixture with a vinyl monomer to dissolve said unsaturated polyester and form a dispersion,

wherein said mixture comprises, based on the sum of the weights of said ethylene polymer and said unsaturated polyester,

i) from 10% to 50% by weight of said ethylene polymer, and

ii) from 90% to 50% by weight of said unsaturated polyester, and

wherein said dispersion comprises, based on 100 parts by weight of said ethylene polymer and said unsaturated polyester,

iii) from 10 to 100 parts by weight of said vinyl monomer, and

iv) from 0 to 15 parts by weight of a dispersant.

5,354,810

ACETAL RESIN COMPOSITION

Kosuke Nagasaki, Kurashiki, and Ryoichi Nakai, Yokohama, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 23, 1993, Ser. No. 21,361

Claims priority, application Japan, Feb. 26, 1992, 4-039650

Int. Cl.[5] C08L *59/02, 59/04, 33/08, 33/10*

U.S. Cl. 525—64 **11 Claims**

1. An acetal resin composition comprising:

(1) 100 parts by weight of an acetal resin; and

(2) from 1 to 100 parts by weight of a multiphase interpolymer particle comprising at least an elastomeric phase and a rigid phase, the elastomeric phase obtained by copolymerizing:

(A) from 10 to [54% by weight, based on the total weight of monomers for the elastomeric phase, of at least one compound selected from the group consisting of C_1 to C_6-alkyl monoacrylate, C_1 to C_6-alkyl monomethacrylate, C_1 to C_6-hydroxyalkyl monoacrylate and C_1 to C_6-hydroxyalkyl monomethacrylate;

(B) from 42 to 86% by weight, based on the total weight of monomers for the elastomeric phase, of at least one compound selected from the group

consisting of C_7 to C_{12}-alkyl monoacrylate and C_7 to C_{12}-alkyl monomethacrylate; and

(C) from 2 to 14% by weight, based on the total weight of monomers for the elastomeric phase, of at least one compound selected from the group consisting of an aromatic vinyl monomero a vinyl halide monomer, a nitrile monomer, a vinyl ester, an unsaturated amide, a vinyl alkyl ether, and a monomer having two or more of double bonds in one molecule.

5,354,811

FLUORINE-CONTAINING THERMOPLASTIC ELASTOMER COMPOSITION AND PROCESS FOR ITS PRODUCTION

Hiroki Kamiya, and Masayuki Saito, both of Kawasaki, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Nov. 18, 1992, Ser. No. 978,501

Claims priority, application Japan, Nov. 20, 1991, 3-331366

Int. Cl.[5] C08L *27/12*

U.S. Cl. 525—200 **8 Claims**

1. A fluorine-containing thermoplastic elastomer composition comprising a continuous phase of at least one melt-formable thermoplastic fluorocarbon resin (A) and a disperse phase of vulcanizate of a fluorine-containing elastomer (B) having vulcanizable sites selected from the group consisting of epoxy groups, carboxylic acid groups, carboxylic acid halide groups, carboxylic acid alkyl ester groups, carboxylic acid ammonium salt groups, sulfonic acid groups, sulfonic acid halide groups, sulfonic acid alkyl ester groups and sulfonic acid ammonium salt groups, wherein the disperse phase is from 50 to 90% by weight based on the total amount of the continuous phase and the disperse phase.

5,354,812

TERNARY ALLOYS OF POLY(VINYL CHLORIDE) WITH HIGH HEAT DISTORTION TEMPERATURES

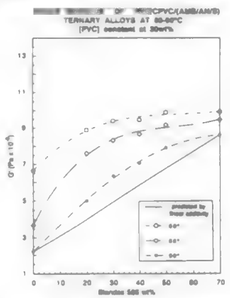
Lynn M. Soby, Brecksville; Marvin H. Lehr, Akron; Elmer D. Dickens, Jr., Richfield; Murali Rajagopalan, and William S. Greenlee, both of Avon Lake, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 697,817, May 9, 1991. This application Nov. 6, 1992, Ser. No. 973,011

The portion of the term of this patent subsequent to Dec. 28, 2010, has been disclaimed.

Int. Cl.[5] C08L *27/06*

U.S. Cl. 525—239 **20 Claims**



1. An alloy of PVC, CPVC, and an alloying polymer , said alloy comprising:

a) from about 5 to about 50 parts by weight of one or more poly(vinyl chloride) homopolymers or copolymers,

b) from about 10 to about 85 parts by weight of a chlorinated poly(vinyl chloride) polymer, and

c) from about 10 to about 85 parts of one or more alloying polymers to yield 100 parts by weight of an alloy,

wherein said one or more alloying polymers are each capable of producing an enhanced heat distortion temperature or a decrease in melt viscosity or both in binary alloys of said alloying polymer with either said CPVC or said PVC,

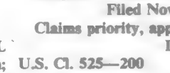
wherein said one or more alloying polymers each have a heat distortion temperature of at least 85° C. in ASTM

D648-88 and wherein said one or more alloying polymers are homopolymers or copolymers of one or more of the following monomers:

a) mono or disubstituted vinyl benzene wherein each substituent independently is a hydrogen or an alkyl group of 1 to 3 carbon atoms;

b) mono or disubstituted alpha-alkylstyrene monomers wherein each substituent is independently a hydrogen or an alkyl radical of 1 to 3 carbon atoms and wherein the alkyl group in said alpha-alkylstyrene has 1 to 3 carbon atoms;

c) acrylate monomers of the formula



where R′ is selected from hydrogen and alkyl radicals containing from 1 to 4 carbon atoms, R″ is selected from hydrogen and alkyl radicals of from 1 to 4 carbon atoms;

d) substituted nitrile monomers wherein the substituent is selected from hydrogen and alkyl radicals having from 1 to 4 carbon atoms;

e) acrylamides or monoalkyl or dialkyl substituted acrylamides having 5 to 11 carbon atoms; and

f) free radically polymerizable dicarboxylic anhydrides having from 4 to 8 carbon atoms, and

wherein said alloy has a Tg above 85° C.,

wherein the amount of alkyl acrylates wherein R′ is hydrogen in any alloying polymer is limited to from 0 to 10 mole percent,

and with the proviso that if one of said one or more alloying polymers are copolymers essentially of alpha-methylstyrene and acrylonitrile then the amount of PVC in said alloy is 30 parts by weight or less based upon 100 parts by weight of the alloy composition.

5,354,813

POLYMERIC MORDANTS FOR DYES AND THE LIKE

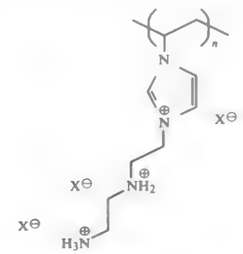
Omar Farooq, Woodbury, and Mahfuza B. Ali, Mendota Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 30,630, Mar. 12, 1993, abandoned. This application Jan. 10, 1994, Ser. No. 179,377

Int. Cl.[5] C08F *126/06*

U.S. Cl. 525—326.7 **1 Claim**

1. A mordant comprising units of the following formula:



wherein: X represents an anion and n represents an integer of 2 or greater.

5,354,814

POLYMETHACRYLIMIDES HAVING A HIGH HEAT RESISTANCE

Siegmund Besecke, Hameln; Andreas Deckers, Ludwigshafen, and Harald Lauke, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 28, 1993, Ser. No. 82,580

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1992, 4221712

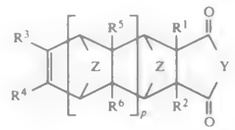
Int. Cl.[5] C08F *222/10, 222/04*

U.S. Cl. 525—326.8 **3 Claims**

1. A copolymer obtained by

(I) copolymerizing a monomer mixture comprising

(A) 1 to 98% by weight of a monomer of the formula I



I

where:

R^1 to R^6 are hydrogen, C_1–C_{10}-alkyl, C_1–C_{10}-alkoxy, the alkyl or alkoxy radicals having more than one carbon atom optionally have an oxygen atom inserted in either case between two carbon atoms, C_5–C_8-cycloalkyl, C_6–C_{10}-aryl, C_6–C_{10}-aryl-C_1–C_{10}-alkyl, C_6–C_{10}-aryloxy, the aryl groups optionally substituted by one to three members selected from the group consisting of C_1–C_{10}-alkyl, cyano, halogen, —CO—O—R^7, —O—CO—R^7 or —CO—NR^7R^8, where

R^7 and R^8 are hydrogen, C_1–C_{10}-alkyl, C_5–C_8-cycloalkyl, C_6–C_{10}-aryl or C_6–C_{10}-aryl-C_1–C_{10}-alkyl, the aryl groups optionally substituted by one up to three C_1–C_{10}-alkyl groups

p is 0, 1 or 2;

Z is —CH_2—, oxygen or sulfur, the radicals Z being identical or different in the case p>0;

Y is oxygen or —N—R^9, where R^9 is hydrogen, C_1–C_{22}-alkyl, C_5–C_{12}-cycloalkyl, C_6–C_{10}-aryl or C_6–C_{10}-aryl-C_1–C_{10}-alkyl, these radicals, with the exception of hydrogen and C_1–C_{22}-alkyl, being optionally substituted by one to three radicals selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy and halogen;

(B) 1 to 98% by weight of at least one compound selected from the group consisting of acrylic and methacrylic acid and esters of the acrylic and methacrylic acid of the formula II



II

where R^{10} is hydrogen or methyl, and

(C) 0 to 98% by weight of at least one further copolymerizable monomer,

and

(II) reacting the thus obtained copolymer with a compound of the formula II



III

where R^{11} is hydrogen, C_1–C_{22}-alkyl, C_5–C_8-cycloalkyl, C_6–C_{10}-aryl or C_6–C_{10}-aryl-C_1–C_4-alkyl, these radicals, with the exception of hydrogen and the C_1–C_{22}-alkyl radicals, being optionally mono to trisubstituted by radicals selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy and halogen, or a mixture thereof.

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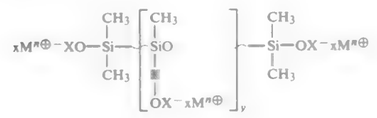
5,354,815

POLYMERS HAVING ENHANCED HYDROPHILICITY AND THERMAL REGULATED PROPERTIES AND PROCESS OF PRODUCING THE SAME

Lloyd F. Barringer, Jr., Rock Hill, S.C., and William T. Ledford, Gastonia, N.C., assignors to Comfort Technologies, Gastonia, N.C.

Filed Jun. 5, 1992, Ser. No. 894,530
Int. Cl.[5] C08L 67/00, 77/04
U.S. Cl. 525—431 12 Claims

1. An aliphatic polyamide or polyester polymer having enhanced hydrophilicity and thermal regularitive properties, said polymer having bonded thereto a hydrophilic anionic polysiloxane polymer having a molecular weight greater than about 1000 g/mol and having an affinity for said polymer, said polymer having substantially no polymerization with the hydrophilic anionic polysiloxane polymer, said hydrophilic polysiloxane anionic polymer having the formula



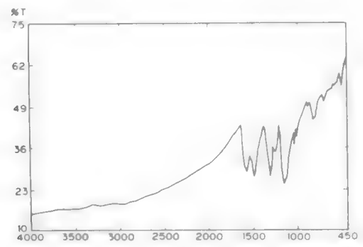
wherein X is selected from the group consisting of phosphate, phosphonate, phosphorylate, sulfonate, sulfate, sulfone and carboxylate groups; R is a sp^3 hybridized alkylene group with or without functional groups; M represents any metal, hydrogen ion, ammonium derivatives or any combination of Lewis acids that balances the overall charge of the molecule; n represents the number of metal or Lewis acid ions required to achieve a net ionic charge of zero; x is an integer from 1 to 6; and v represents the number of a monomeric alkyl groups pendant to the polysiloxane backbone.

5,354,816

SULFONATED ANILINE-TYPE COPOLYMER AND PROCESS FOR PRODUCTION THEREOF

Shigeru Shimizu; Takashi Saitoh, and Tomio Nakamura, all of Yokohama, Japan, assignors to Nitto Chemical Industry Co., Ltd., Japan

Filed Dec. 24, 1992, Ser. No. 996,786
Claims priority, application Japan, Dec. 27, 1991, 3-360226
Int. Cl.[5] C08L 81/00
U.S. Cl. 525—535 13 Claims



1. A process for preparing a sulfonated copolymer which comprises copolymerizing (A) a compound selected from the group consisting of an aniline compound, an N-alkyl aniline compound a phenylenediamine compound and mixtures thereof with (B) an aminobenzenesulfonic acid compound to obtain a first sulfonated copolymer; and further sulfonating the thus obtained first sulfonated copolymer with a sulfonating agent.

5,354,817

POLYMER SCALE PREVENTIVE AGENT, POLYMERIZATION VESSEL EFFECTIVE IN PREVENTING POLYMER SCALE DEPOSITION AND PROCESS FOR PREPARATION OF POLYMER

Masahiro Usuki, Ibaraki; Hajime Kitamura, Chiba; Susumu Ueno; Mikio Watanabe, both of Ibaraki, all of Japan; Richard W. Armentrout, La Jolla, and Thomas J. Pollock, San Diego, both of Calif., assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1992, Ser. No. 870,953
Claims priority, application Japan, Apr. 19, 1991, 3-115275
Int. Cl.[5] C08F 2/00
U.S. Cl. 526—62 3 Claims

1. In a process for preparing a polymer wherein a monomer having an ethylenic double bond comprising a haloethylene, as an essential component, represented by the general formula (I):

$$(X)(R)C=CH_2 \quad \text{(I)},$$

wherein X is a halogen atom and R is a hydrogen atom or halogen atom, is subjected to polymerization conditions in a polymerization vessel having a coating on its inner surfaces, the improvement wherein said coating comprises:

(A) an aromatic compound or a dye, both having at least one group selected from the class consisting of primary, secondary and tertiary amino groups, a quaternary ammonium group and the azo group or a dye having at least one group selected from said class;

(B) an alkali metal salt of a polyvinylsulfonic acid;

(C) a naphthoquinone natural dye comprising at least one compound selected from the group consisting of lawsone, naphthopurpurin, alkannan, alkannin, shikonins and the derivatives of shikonins;

(D) a water-soluble polymeric compounds; and

(E) a pH adjuster in an amount such that the pH of said coating is 6 or lower;

whereby polymer scale is prevented from depositing in the polymerization vessel.

5,354,818

LIVESTOCK FEED FROM POTATO WASTE

Albin L. Vazza, Boardman, Oreg., assignor to Vazza Farms, Boardman, Oreg.

Continuation-in-part of Ser. No. 973,845, Nov. 9, 1992, abandoned. This application Jun. 7, 1993, Ser. No. 72,814
Int. Cl.[5] A23B 7/10
U.S. Cl. 426—53 23 Claims

1. A method of making a livestock feed from potato waste, comprising the steps of:

(a) comminuting potato waste to form particles;

(b) heating said particles;

(c) cooling said particles to a cooling temperature lower than that temperature at which a starch-hydrolyzing enzyme is inactivated and adding to said particles in a starch-hydrolyzing enzyme;

(d) cooing said particles to a cooling temperature lower than that temperature at which a fermenting yeast is inactivated and adding to said particles a first yeast;

(e) dividing said particles containing said starch-hydrolyzing enzyme and said first yeast into first and second portions and adding a second yeast to said first portion, and adding a third yeast to said second portion;

(f) permitting said first and second yeasts to grow in said first portion and permitting said first and third yeasts to grow in said second portion;

(g) combining said first portion and said second portion to form a recombined batch and permitting said first, second, and third yeasts to grow in said recombined batch; and

(h) drying said recombined batch to form livestock feed

wherein two of said first, second and third yeasts are fermenting yeasts, and one of said first, second and third yeasts is the yeast *Saccharomycopsis fibuliger*.

5,354,819

LIGHTLY DONOR DOPED ELECTRODES FOR HIGH-DIELECTRIC-CONSTANT MATERIALS

Scott R. Summerfelt, Dallas; Howard R. Beratan, Richardson, and Bruce Gnade, Rowlett, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 31, 1993, Ser. No. 40,946
Int. Cl.[5] B05D 5/12
U.S. Cl. 427—79 16 Claims



1. A method of forming a microelectronic structure, said method comprising:

(a) forming an electrically conductive buffer layer;

(b) forming a conductive donor doped perovskite layer having between about 0.01 and about 0.3 mole percent doping on said buffer layer; and

(c) forming a high-dielectric-constant material layer on said perovskite layer, whereby said donor doped perovskite layer provides a chemically and structurally stable electrical connection to said high-dielectric-constant material layer.

5,354,820

PROCESS FOR THE PREPARATION OF OLEFIN POLYMER

Hideo Funabashi, Ichihara, Japan, assignor to Idemitsu Petrochemical Company Limited, Tokyo, Japan

Continuation of Ser. No. 759,974, Sep. 17, 1991, abandoned, which is a continuation of Ser. No. 279,174, Dec. 2, 1988, abandoned. This application Dec. 29, 1992, Ser. No. 999,654
Claims priority, application Japan, Dec. 7, 1987, 62-309208; Dec. 7, 1987, 62-309209
Int. Cl.[5] C08F 4/649, 10/06
U.S. Cl. 526—124 8 Claims

1. A process of producing an olefin polymer having stereoregularity by polymerizing olefin monomers in the presence of a catalyst, said catalyst comprising:

(A) a solid catalyst component,

(B) a tri-C_1–C_5-alkylaluminum, and

(C) an electron donative compound;

wherein said solid catalyst component (A) is obtained by reacting, in a first step, (i) a dialkoxymagnesium compound of the formula $Mg(OR^1)_2$ wherein R^1 is an alkyl group having 1 to 4 carbon atoms with (ii) a phthalate diester in an amount of from 0.01 to 1 moles of said diester per mole of said dialkoxymagnesium compound and (iii) tetrachlorosilane in an amount of 0.01 to 5 moles per mole of a said dialkoxymagnesium compound, to form a solid reaction product; and then reacting, in a second step, the solid reaction product with titanium tetrachloride.

5,354,821

NEW RADICALLY POLYMERIZABLE MULTICOMPONENT MIXTURES AND THEIR USE (III)

Thomas Huver; Herbert Fischer, both of Duesseldorf, and Winfried Emmerling, Erkrath,all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Fed. Rep. of Germany

Continuation of Ser. No. 655,457, Feb. 28, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 90,990
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1988, 3829461
The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.
Int. Cl.[5] C08F 4/26; C09J 5/04
U.S. Cl. 526—147 18 Claims

1. The process of initiating the radical polymerization of olefinically unsaturated polymerizable components comprising mixing said components with an activator system consisting essentially of

(a) from 30 to 60% by weight of a N-alkyl-substituted tertiary arylamine corresponding to formula I



(I)

in which R_1 is an unsubstituted or substituted aryl radical, R_2 is an unsubstituted or substituted aryl radical or an unsubstituted or substituted, linear, or branched alkyl radical, and R_3 is a substituted or unsubstituted linear or branched alkyl radical which has at least one H atom in the α-position to the N;

(b) from 5 to 20% by weight of a metal compound which is soluble in said polymerizable components; and

(c) from 30 to 60% by weight of a weakly acidic compound having a pK_a value of at least about 0.9, all weights being based on the weight of said activator system, wherein the resultant mixture has an initial viscosity of at least between about 30 and about 100 mPa.s as measured at about 20° C. with a Brookfield viscosimeter, and exposing the resulting mixture to ambient air at room temperature or elevated temperature.

5,354,822

METHODS FOR PREPARING FUNCTIONALIZED POLYMER AND ELASTOMERIC COMPOUNDS HAVING REDUCED HYSTERESIS

Thomas A. Antkowiak, Wadsworth; David F. Lawson, Uniontown; Russell W. Koch, Hartville, and Mark L. Stayer, Jr., Suffield, all of Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Division of Ser. No. 506,305, Apr. 9, 1990, Pat. No. 5,153,159. This application Sep. 8, 1992, Ser. No. 941,558
Int. Cl.[5] C08F 4/48, 8/30; C08K 3/04
U.S. Cl. 526—180 14 Claims

1. A method of preparing a functionalized polymer comprising the steps of:

forming a solution of one or more anionically polymerizable monomers in a solvent; and

polymerizing said monomers in the presence of an initiator comprising the reaction product of

a functionalizing agent selected from the group consisting of substituted aldimines, ketimines and secondary amines; wherein said substituted aldimines have the general formula

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where R_1 is selected from the group consisting of alkyls and aralkyls having from 1 to about 20 carbon atoms, with the proviso that the carbon atom adjacent the nitrogen atom contains at least one hydrogen; R_2 is selected from the group consisting of dialkyl and dicycloalky aminos having the formula



and cyclic amines having the formula



where R_4 is selected from the group consisting of alkyls, cycloalkyls or aralkyls having from 1 to about 12 carbon atoms, where both R_4's may be the same or different groups; R_5 contains from 3 to about 6 methylene groups; R_3 can be an alkyl group having from 1 to about 12 carbon atoms and n is an integer from 0 to 4;

said substituted ketimines have the formula

where R_1, R_2, R_3 and n are as described hereinabove and R_6 is selected from the group consisting of alkyls, cycloalkyls, alkenyls and aralkyls having from 1 to about 20 carbon atoms and short chain length low molecular weight polymers from diolefin and vinyl aryl monomers having up to about 25 units; and

said substituted secondary amines have the general formula



where R_1, R_2, R_3 and n are as described hereinabove and R_7 is H or R; and

an organolithium compound, wherein said organolithium compound has the general formula RLi where R is selected from the group consisting of alkyls, cycloalkyls, alkenyls, alkynyls, aryls and aralkyls having from 1 to about 20 carbon atoms and shore chain length low molecular weight polymers from diolefin and vinyl aryl monomers having up to about 25 units; wherein a functional group derived from said reaction product is incorporated onto said polymer at the initiator end and the lithium atom from said organolithium compound is carried at the other end of said polymer chain prior to quenching.

5,354,823

FILMS AND EXTRUSIONS OF CURED CROSSLINKED VINYL LACTAM POLYMER AND METHOD OF PREPARATION

Susan Y. Tseng, Staten Island, N.Y.; Philip F. Wolf, Bridgewater, and William J. Burlant, Wayne, both of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Aug. 9, 1993, Ser. No. 103,944

Int. Cl.[5] **C08F** *26/10, 26/06*

U.S. Cl. 526—264 **8 Claims**

1. A cured, 0.01–10 wt. % crosslinked N-vinyl lactam polymer consisting of 70–100 wt. % N-vinyl lactam monomer and 0–30 wt. % acrylic acid monomer units in the form of a continuous membrane or filament having a high glass transition temperature (Tg) above 150° C.

5,354,824

FLUOROELASTOMERIC AND FLUOROPLASTOMERIC COPOLYMERS HAVING A HIGH RESISTANCE TO BASES

Vincenzo Arcella, Novara; Giulio Brinati, Milan; Margherita Albano, Milan; Anna Minutillo, Milan, and Graziella Chiodini, Saronno, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed May 20, 1993, Ser. No. 64,276

Claims priority, application Italy, May 22, 1992, MI92 A 001244

Int. Cl.[5] **C08F** *16/24*

U.S. Cl. 526—247 **5 Claims**

1. Fluoroelastomeric copolymers, having resistance to bases, comprising the following monomers:

(a) 47–80 mole % vinylidene fluoride;

(b) 16–30 mole % hexafluoropropene and/or perfluoroalkylvinylether; and

(c) 2–25 mole % of a compound said compound having the formula

$$CH_2{=}CR'R''$$

wherein R′ =H or CH_3, with the proviso that when R′ is H, R″ is selected from the group consisting of H, an alkyl containing 1 to 5 carbon atoms, a perfluoroalkyl containing 1 to 5 carbon atoms, —CN, —COOH, phenyl, and an ethereal radical, optionally perfluorinated, while when R′ is

CH_3, R″ is $-COCH_3$,

the fluoroelastomeric copolymer being free from monomeric units derived from tetrafluoroethylene.

5,354,825

SURFACE-BOUND FLUORESCENT POLYMERS AND RELATED METHODS OF SYNTHESIS AND USE

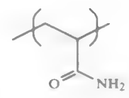
Stanley M. Klainer, 20 Belinda Ct., San Ramon, Calif. 94583; David R. Walt, 12 Milk St., Lexington, Mass. 02173, and Amos J. Gottlieb, 1650 Haight St., San Francisco, Calif. 94117

Continuation of Ser. No. 848,569, Mar. 9, 1992, abandoned, which is a division of Ser. No. 506,430, Apr. 9, 1990, abandoned, which is a continuation of Ser. No. 4,339, Jan. 16, 1987, abandoned, which is a continuation-in-part of Ser. No. 720,749, Apr. 8, 1985, abandoned. This application Sep. 7, 1993, Ser. No. 116,878

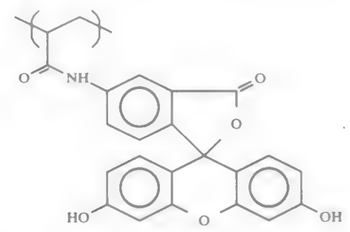
Int. Cl.[5] **C08F** *224/00*

U.S. Cl. 526—268 **11 Claims**

1. A fluorescent polymer containing x nonfluorescent monomer units having the structural formula



and y fluorescent monomer units having the structure



wherein

x and y are integers in the range of approximately 1 to 200, and further wherein the polymer is bound to the surface of a substrate.

5,354,826

POLYMERIC MAGENTA COUPLER AND COLOR PHOTOGRAPHIC RECORDING MATERIAL THAT CONTAINS THIS POLYMERIC MAGENTA COUPLER

Günter Helling, Odenthal-Globusch; Rainer Bialek, and Ralf Weimann, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

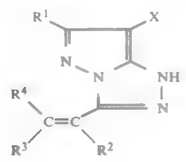
Filed Apr. 28, 1993, Ser. No. 53,370

Claims priority, application Fed. Rep. of Germany, May 8, 1992, 4215206

Int. Cl.[5] **C08F** *26/06, 126/06, 226/06*

U.S. Cl. 526—259 **19 Claims**

1. A polymeric color coupler comprising repeating units of a monomer K of formula I



I

wherein

R^1 represents H, an unsubstituted alkyl group or a substituted alkyl group;

R^2, R^3, R^4 are identical or different and represent H, Cl —COOH, unsubstituted alkyl groups or substituted alkyl groups; and

X represents H or a group releaseable by coupling.

5,354,827

DENTAL ADHESIVES

Michael Müller, Bergisch-Gladbach; Werner Finger, Dormagen; Wolfgang Podszun, and Jens Winkel, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 834,428, Feb. 12, 1992, abandoned. This application Mar. 23, 1993, Ser. No. 35,550

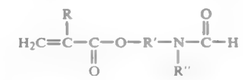
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1991, 4105550

Int. Cl.[5] **C08F** *20/58, 20/70*

U.S. Cl. 526—304 **7 Claims**

1. Formulations containing by weight

a) 2–80 parts of (meth)acrylic acid esters containing formamide groups, of the formula



(1)

in which

R denotes hydrogen or methyl,

R′ denotes a divalent aliphatic (C_2 to C_5) radical and

R″ denotes hydrogen or a monovalent alkyl radical (C_1 to C_3),

b) 0.3–80 parts of (meth)acrylic acid esters which can form crosslinkings,

c) 10–1000 parts of solvents, and

d) 0 to 2 parts of initiators, 0 to 4% of coactivators and 0–80% of fillers wherein

e) 0.3–20 parts of acids and

f) 0–10 parts of dispersing agents are added.

5,354,828

HIGHER α-OLEFIN COPOLYMER, PROCESS FOR PREPARING SAME, AND VULCANIZABLE RUBBER COMPOSITION

Masaaki Kawasaki; Syuji Minami, both of Kuga; Tetsuo Tojo, and Keiji Okada, both of Ichihara, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP90/00527, § 371 Date Dec. 13, 1990, § 102(e) Date Dec. 13, 1990, PCT Pub. No. WO90/12818, PCT Pub. Date Jan. 11, 1990

Continuation of Ser. No. 613,747, Dec. 13, 1990, abandoned. This PCT application Apr. 24, 1990, Ser. No. 79,845

Claims priority, application Japan, Apr. 24, 1989, 1-103679; Apr. 24, 1989, 1-103680; Apr. 24, 1989, 1-103681

Int. Cl.[5] **C08F** *236/20;* **C08L** *19/00*

U.S. Cl. 526—336 **21 Claims**

1. A vulcanizable rubber composition comprising a copolymer consisting essentially of 70 to 99.99 mol % of an α-olefin having 8–12 carbon atoms and 0.01 to 30 mol % of 7-methyl-1,6-octadiene non-conjugated diene,

wherein the intrinsic viscosity (η) of said copolymer, as measured in decahydronaphthalene at 135° C. is from 1.0 to 10.0 dl/g and the iodine value of the α-olefin copolymer is from 1 to 50.

5,354,829

SILYLATED POLYAMINE POLYMERS AND A METHOD OF TREATING FIBERS

Robert G. Swisher, Pittsburgh; Richard P. Beaver, Library; Robert G. Briody, and Louis J. Nehmsmann, both of Apollo, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 30, 1992, Ser. No. 906,960

Int. Cl.[5] **C08G** *77/00*

U.S. Cl. 528—10 **40 Claims**

1. Silylated polyamine polymer prepared by reacting:

I) one or more polyamine-containing polymers having one or more free amine groups and one or more moieties selected from the group consisting of difunctional organo

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compound, fatty acid moieties, and combinations of these; and

II) amine reactable organoalkoxy silane selected from the group consisting of the silane and hydrolysis products thereof to yield silylated polyamine polymer with organosilane moieties selected from those that are partially and fully hydrolyzed or hydrolyzable at suitable temperatures and times to form the silylated polyamine polymer.

5,354,830

VULCANIZABLE ONE-COMPONENT POLYSILOXANES

Thomas C. Williams, Ridgefield, Conn., assignor to OSi Specialties, Inc., Danbury, Conn.

Continuation-in-part of Ser. No. 923,457, Aug. 3, 1992, Pat. No. 5,275,980, which is a division of Ser. No. 627,578, Dec. 14, 1990, Pat. No. 5,162,480. This application Jun. 23, 1993, Ser. No. 81,614

The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.

Int. Cl.[5] **C08C** *77/08*

U.S. Cl. 528—15 **10 Claims**

1. A polysiloxane having the formula:

$$R''_3SiO[R'_xH_ySiO_{\frac{4-(x+y)}{2}}]_a[R'_x(CH_2{=}CH)_zSiO_{\frac{4-(x+z)}{2}}]_bSiR''_3$$

wherein:

R' is an alkyl group having 1 to 4 carbon atoms;

R'' is hydrogen, a vinyl group or an alkyl group having 1 to 4 atoms;

x has a value of from 1 to 2;

y has a value of from 0 to 1;

z has a value of from 0 or 1;

with the proviso that x+y is 2, x+z is 2, y and z each has an average value of 0.005 to 0.74; and a and b each has an average value from 2 to 500.

5,354,831

SHAPED ORGANOPOLYSILOXANES CONTAINING SULFONATE GROUPS, A PROCESS FOR THEIR PRODUCTION AND THEIR USE

Peter Panster, Rodenbach, and Peter Kleinschmit, Hanau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jul. 6, 1993, Ser. No. 85,960

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1992, 4223539

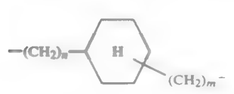
Int. Cl.[5] **C07F** *7/08, 5/06, 7/28;* **C08G** *77/22*

U.S. Cl. 528—9 **31 Claims**

1. A shaped organopolysiloxane comprising sulfonate groups and units corresponding to the following formula (I):

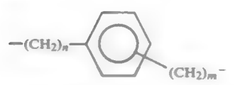
$$(O_{3/2}Si{-}R^1{-}SO_3^-)_xM^{x+} \quad (I)$$

in which R^1 is a linear or branched $C_{1\text{-}12}$ alkylene group, a $C_{5\text{-}8}$ cycloalkylene group or a unit corresponding to the formula (II) or (III):



(II)

or



(III)

where n and m are numbers from 0 to 6, x is a number from 1 to 4 depending on M, and M is hydrogen or a monovalent to tetravalent optionally complex metal ion, and the valencies of the silicon linked oxygen atoms are saturated by silicon atoms of other groups (I) and/or by one or more metal atom oxygen groups of the crosslinking bridge members (IV):

$$SiO_{4/2} \text{ or } R'SiO_{3/2} \text{ or } R_2'SiO_{2/2} \text{ or } AlO_{3/2} \text{ or } R'AlO_{2/2} \quad (IV)$$

where R' is a linear or branched $C_{1\text{-}5}$ alkyl group or a phenyl group,

the ratio of the silicon atoms in (I) to the sum of the silicon and aluminum atoms of said crosslinking agent (IV) being from 1:4 to 1:20,

wherein said shaped organopolysiloxane is a macroscopically spherical particle having a diameter of 0.01 to 3 mm, a specific surface of 0.01 to 1200 m^2/g, a specific pore volume of 0.01 to 6 ml/g, and an apparent density of 50 to 1000 g/l.

5,354,832

STABLE AQUEOUS DISPERSIONS CONTAINING SILOXANES FOR TREATING CELLULOSIC MATERIAL

Wen-Hsuan Chang, Gibsonia, Pa.; John F. Grunewalder, Mequon, Wis.; Mark A. Harley, Oakmont, and Edward E. McEntire, Allison Park, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 775,890, Oct. 15, 1991, abandoned. This application Apr. 16, 1993, Ser. No. 48,707

Int. Cl.[5] **C08G** *77/06*

U.S. Cl. 528—10 **5 Claims**

1. Stable aqueous dispersions having a particle size in the range of about 10 to 200 nanometers of silanes selected from the group of silanes having the following structural formulas:

$$R^1SiY_3 \quad (I)$$

and

$$R^1R^2SiY_2$$

wherein

R^1 represents a hydrocarbon group having from about 7 to about 30 carbon atoms containing at least one hydrophobic moiety and at least one neutralized anionic water-solubilizing moiety;

R^2 represents R^1, H, an alkyl radical having from 1 to 20 carbon atoms, an aryl radical having 6 to 18 carbon atoms, an aralkyl radical or an alkaryl radical having from 7 to 20 carbon atoms;

Y represents OR^3, with R^3 representing H, a lower alkyl having from 1 to 3 carbon atoms, aryl radicals or alkaryl radicals having from 6 to 10 carbon atoms or



wherein R^4 represents H or a lower alkyl having from 1 to 2 carbon atoms, said dispersions being stable for at least 20 days without externally added surfactant.

5,354,833

SHELF-STABLE ONE-PART ROOM TEMPERATURE VULCANIZING FLUOROSILICONE COMPOSITIONS

John J. Dziark, 26 Wood Mint Pl., Ballston Spa, N.Y. 12020

Filed Dec. 14, 1992, Ser. No. 990,214

Int. Cl.[5] **C08G** *77/24, 77/06;* **C08K** *3/22, 3/34*

U.S. Cl. 528—36 **4 Claims**

1. A shelf stable room temperature vulcanizable composition having been continuously produced in an extruder having an exit port, a first supply port upstream of said exit port, and a second supply port at a location along said extruder between said first supply port and said exit port, said composition comprising:

a fluorosilicone polymer, a silica filler and a ferrous oxide which are supplied to said extruder at said first supply port and which are processed at a temperature ranging from about 100 to about 200° C. to form a base composition; and

a catalyst solution including a tin based catalyst and an acetoxy silane cross linking agent added to the base composition in the extruder at said second supply port between the first supply port and the exit port.

5,354,834

POLYISOCYANATE CURING AGENT, AND COATING COMPOSITION AND ADHESIVE COMPOSITION EMPLOYING THE SAME

Mitsuhiro Yoshida, Hiratsuka; Susumu Sato; Yukio Obuchi, both of Yokohama; Shin Konishi, and Masanori Shindo, both of Fujisawa, all of Japan, assignors to Nippon Polyurethane Industry Co., Ltd., Tokyo, Japan

Filed Jan. 10, 1992, Ser. No. 819,259

Claims priority, application Japan, Jan. 14, 1991, 3-69553

Int. Cl.[5] **C08G** *18/00, 18/10, 18/32, 18/38*

U.S. Cl. 528—59 **21 Claims**

1. A method for making a curing agent for a two-component polyurethane comprising the steps of:

(i) partially urethanizing hexamethylene diisocyanate;

(ii) Polymerizing said partially urethanized hexamethylene diisocyanate by exposing it to a sufficient amount of catalyst under conditions suitable to produce polyisocyanate having a viscosity lower than 1400 millipascal.second-/measured at 25° C. in the state substantially free from monomeric hexamethylene diisocyanate and solvent, and having a uretidine dione dimer content of more than 10 percent by weight and an isocyanurate cyclic trimer content of less than 60 percent by weight of the polyisocyanate.

5,354,835

DESALINATION PROCESS

E. Allan Blair, Pennington, N.J., assignor to Saudi Basic Industries Corporation, Riyadh, Saudi Arabia

Filed Jul. 23, 1993, Ser. No. 96,766

Int. Cl.[5] **C08G** *18/48*

U.S. Cl. 528—59 **12 Claims**

1. A polyurethane hydrogel for recovering less saline water from a saline water, wherein said polyurethane hydrogel is comprised of a polyol precursor and a polyisocyanate precursor, said polyol precursor is comprised of a block copolymer of A and B, wherein in said block copolymer A is from 15 to 25% by weight and B is from 75% to 65% by weight, balance in said hydrogel is said polyisocyanate precursor, and wherein said polyol precursor of A and B and said polyisocyanate has an equivalent weight from 1000 to 2000, the polyol precursor is polyfunctional and the hydrogel in a cured condition has a tensile strength of at least 3500 psi and wherein A in said block copolymer is of ethylene oxide and B is of a propylene oxide., butylene oxide, or poly tetra methylene ether.

5,354,836

THIOPHENE-BASED POLYMERS

Edward T. Samulski, and Joseph M. DeSimone, both of Chapel Hill, N.C., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Division of Ser. No. 888,921, May 27, 1992, Pat. No. 5,266,677. This application Sep. 2, 1993, Ser. No. 116,000

Int. Cl.[5] **C08G** *8/02, 75/00*

U.S. Cl. 528—125 **18 Claims**

1. A poly(arylene ether ketone) comprising repeating units of the formula:

$$-[AB]- \quad (I)$$

wherein A comprises an aromatic diphenol having at least one aromatic ring;

wherein B comprises an aromatic ketone unit containing at least two aromatic rings joined by a ketone linkage, one of said at least two aromatic rings comprising a thiophene ring;

and wherein each of said aromatic ketone units is linked at each end thereof to a phenolic oxygen of one of said aromatic diphenols to form an ether linkage.

5,354,837

LOW-TEMPERATURE LIQUID URETHANE PREPOLYMER

Haruo Watanabe, Tokyo, Japan, assignor to Hodogaya Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1993, Ser. No. 164,544

Claims priority, application Japan, Dec. 22, 1992, 4-356456

Int. Cl.[5] **C08G** *18/10*

U.S. Cl. 528—76 **5 Claims**

1. An isocyanate-terminated urethane perpolymer prepared by a urethane reaction between (A) a dihydroxypolyol and (B) an isocyanate compound, wherein said dihydroxypolyol is a mixture of (a) a polyether glycol containing an oxytetramethylene group and having a molecular weight of from 600 to 5,000 or a polyether ester glycol containing an oxytetramethylene group and having a molecular weight of from 600 to 5,000 and (b) poly(tetramethylene ether/3-methyltetramethylene ether) glycol having a molecular weight of from 500 to 5,000, comprising a structural unit represented by formula (I):

$$-CH_2CH_2CH_2CH_2O- \quad (I)$$

and from 5 to 40% by weight based on the weight of (b) of a structural unit represented by the formula II

$$-CH_2-\underset{R_1}{CH}-\underset{R_2}{CH}-CH_2-O- \quad (II)$$

wherein R_1 and R_2 each represent a hydrogen atom or a methyl group, at least one of them being a methyl group, where the proportion of (b) based on the total dihydroxypolyol (A) is from 1 to 50% by weight, at a B/A molor ratio of from 1.2 to 2.2.

5,354,838

BLOOD SEPARATION COMPOSITION

Kazunori Murakami, Kusatsu, and Tetsuo Taguchi, Yao, both of Japan, assignors to Nisshо Corporation, Osaka and Hokoku Oil Mill Co., Ltd., Yao, both of Japan

Continuation of Ser. No. 904,279, Jun. 25, 1992, abandoned. This application Jul. 21, 1993, Ser. No. 93,994

Claims priority, application Japan, Jun. 25, 1991, 3-153237

Int. Cl.[5] **C08G** *63/16*

U.S. Cl. 528—272 **9 Claims**

1. A blood separation composition consisting essentially of, as a main ingredient thereof, a gel material which is a copolymer consisting of sebacic acid with 2,2-dimethyl-1,3-propanediol and 1,2-propanediol; and a thixotropic agent.

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5,354,839

POLYIMIDE AND PREPARATION PROCESS OF SAME

Wataru Yamashita; Yoshihiro Sakata; Toshiyuki Katsoka; Yuichi Okawa; Hideaki Oikawa; Tadashi Asanuma; Mitsunori Matsuo; Tsutomu Ishida, all of Kanagawa; Keizaburo Yamaguchi, Chiba, and Akihiro Yamaguchi, Kanagawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Mar. 31, 1993, Ser. No. 40,608

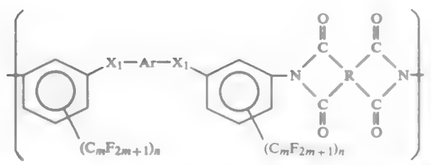
Claims priority, application Japan, Apr. 7, 1992, 4-085466; Apr. 22, 1992, 4-102815; Sep. 17, 1992, 4-247872; Sep. 18, 1992, 4-249631; Nov. 12, 1992, 4-302271; Nov. 20, 1992, 4-312039; Nov. 27, 1992, 4-318818

Int. Cl.[5] C08G *73/10, 69/26*

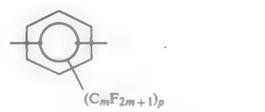
U.S. Cl. 528—188 28 Claims

1. A polyimide comprising a requisite structural unit having one or more recurring structural units of the formula (1):

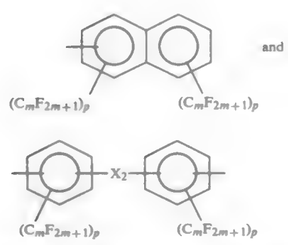
(1)



wherein X_1 is a direct bond or a divalent radical selected from the group consisting of —O—, —CO— and —C(CH$_3$)— and two X_1 are the same or different from each other, m is an integer of 1～6, n is individually 0 or an integer of 1～4, R is a tetravalent radical having 2～27 carbon atoms and being selected from the group consisting of aliphatic radical, alicyclic radical, monoaromatic radical, condensed polyaromatic radical and noncondensed aromatic radical connected to each other with a di ect bond or a bridge member, and Ar is a divalent radical selected from the group consisting of



and



wherein X_2 is a direct bond or a divalent radical selected from the group consisting of —O—, —S—, —CO— and —C(CH$_3$)$_2$—, m is an integer of 1～6, and p is individually 0 or an integer of 1～4, or an integer of 1～4 when n is 0 in the formula (1).

5,354,840

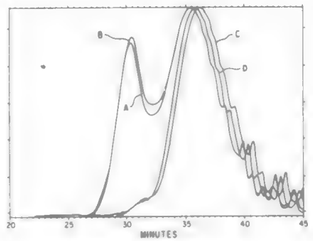
FUNCTIONAL-AMINE POLYESTERS

Peter G. Odell, Mississauga, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 10, 1993, Ser. No. 118,845

Int. Cl.[5] C08G *69/44*

U.S. Cl. 528—288 12 Claims



1. A linear, cross-linkable functional-amine polyester polymer, comprising:

at least a first residue of a diacid or anhydride monomer;

a second residue of a aromatic diol monomer; and

from about 0.1 to about 10.0 mole percent of a functional-amine residue of a functional-amine selected from tertiary aromatic amines consisting of N-phenyldiethanolamine, N,N-di(2-hydroxyethyl)-p-toluidine, N,N-di(2-hydroxypropyl)-p-toluidne, 2,6-dimethanol pyridine, 2,4,-dihydroxy-5,6-dimethyl-pyrimidine, 2,4-dihydroxy-5-methylpyrimidine, 2,4-dihydroxy-6methylpyrimidine, 4,6-dihydroxypyrimidine and phenylethylethanolamine;

said polyester polymer being prepared by reacting the first and second monomers and the functional-amine in an inert atmosphere.

5,354,841

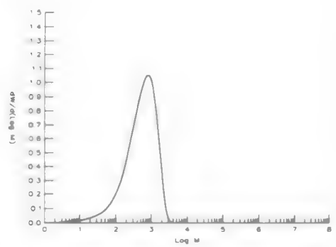
PROCESS FOR PREPARING POLY(ARYLENE SULFIDE) POLYMERS USING CYCLIC ARYLENE SULFIDE OLIGOMERS

Jon F. Geibel, Bartlesville, Okla., and Carlton E. Ash, Sugarland, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 719,852, Jun. 24, 1991, abandoned. This application Aug. 9, 1993, Ser. No. 103,847

Int. Cl.[5] C08G *75/02*

U.S. Cl. 528—388 11 Claims



1. A process for preparing a poly(arylene sulfide) polymer which comprises:

contacting reactants consisting essentially of at least one dihaloaromatic compound, a sulfur source, a polar organic compound, water and cyclic oligomers of the formula



wherein 4≦n≦15, under polymerization conditions sufficient to form said poly(arylene sulfide) polymer.

5,354,842

METHOD FOR DETERMINING BRANCH DISTRIBUTION OF POLYMER

Tatsuyuki Kamiya, Kawasaki; Narumi Ishikawa, Nagareyama, and Shigemitsu Kambe, Kawasaki, all of Japan, assignors to Nippon Petrochemicals Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 601,667, Oct. 23, 1990, abandoned. This application Jul. 13, 1993, Ser. No. 90,998

Claims priority, application Japan, Oct. 31, 1989, 1-281852

Int. Cl.[5] C08F *6/26, 210/16*

U.S. Cl. 528—503 12 Claims

1. A method for determining a branch distribution of a crystalline polymer, which method comprises,

melting the polymer using a differential scanning calorimeter or differential thermal analyzer,

then cooling the melted polymer to room temperature in such a manner that isothermal crystallization of the polymer is allowed to take place stepwise at intervals of from 3° to 10° C. at least from about the highest melting point of the polymer, then melting the crystals;

providing a correlation chart of crystallization temperatures for polymer samples having known branch densities; and

comparing the melt behavior of the crystalline polymer with the crystallization temperatures contained in the correlation chart to determine a branch distribution from the melt behavior.

5,354,843

FLANKING PEPTIDES OF CALCITONIN AND PROCESSES FOR THEIR MANUFACTURE

Hans Rink, Riehen, and Klaus Müller, Ettingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 23, 1989, Ser. No. 398,120

Claims priority, application Switzerland, Aug. 26, 1988, 3174/88.0

Int. Cl.[5] C07K *7/00, 1/06;* A61K *37/30*

U.S. Cl. 530—307 6 Claims

1. A peptide of the formula

(I)

R—Ala—Pro—Phe—Arg—Ser—Ala—Leu—Glu—Ser—Ser—

Pro—Ala—Asp—Pro—Ala—Thr—Leu—Ser—Glu—Asp—

Glu—Ala—Arg—Leu—Leu—Leu—Ala—Ala—Leu—Val—

Gln—Asp—Tyr—Val—Gln—Met—Lys—Ala—Ser—Glu—

Leu—Glu—Gln—Glu—Gln—Glu—Arg—Glu—Gly—

—Ser—X—OH

in which R is hydrogen or acetyl and X is an amino acid sequence of formula -Ser-Leu-Asp-Ser-Pro-Arg-Ser- (Ia) or of the formula -Arg-Ile-Ile-Ala-Gln- (Ib), in isolated, pure, or substantially pure form, or a salt of such a compound.

5,354,844

PROTEIN-POLYCATION CONJUGATES

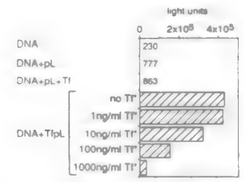
Hartmut Beug; Max L. Birnstiel; Matthew Cotten, all of Vienna, and Ernst Wagner, Langenzersdorf, all of Austria, assignors to Boehringer Ingelheim International GmbH, Fed. Rep. of Germany

Filed Mar. 9, 1990, Ser. No. 492,460

Claims priority, application Austria, Mar. 16, 1989, 610/89

Int. Cl.[5] C07K *3/08, 15/06;* C12N *15/90*

U.S. Cl. 530—345 4 Claims



1. A transferrin-polycation conjugate which is capable of forming a complex with a nucleic acid coding for a protein, wherein said conjugate when complexed with said nucleic acid, is capable of being internalized into erythroblasts by endocytosis mediated by the transferrin receptor, wherein said protein is capable of being expressed after said complex is internalized into erythroblasts, wherein the molar ratio of transferrin to polycation is 10:1 to 1:4, and wherein said polycation is a protamine or a homologous polypeptide comprising positively charged amino acids.

5,354,845

FK-506 AND RAPAMYCIN SPECIFIC BINDING IMMUNOPHILIN

Steven J. Soldin, Washington, D.C., assignor to Children's Research Institute, Washington, D.C.

Filed Apr. 21, 1993, Ser. No. 50,576

Int. Cl.[5] C07K *15/00, 17/02, 15/06*

U.S. Cl. 530—350 7 Claims

1. An isolated and purified, essentially homogeneous cytosolic immunophilin protein having specific binding affinity for FK-506 and rapamycin and chemically related compounds but not for cyclosporine, and having a molecular mass in the range of about 14–15 kDa by SDS-PAGE, and having a partial N-terminal amino acid sequence NH_2-Lys-Leu-Pro-Tyr-Glu-Leu-Lys-Xaa-Asn-Val-Lys-Ala-Phe-Xaa-Xaa-Lys-Val- (Seq. ID. No: 1), wherein Xaa has not been determined, and having an isolectric pH of about 6.5–7.5.

5,354,846

STREPTOLYSIN O ANTIGEN DERIVATIVES, ITS PRODUCTION AND USES

Michael Kehoe, 14 Springhouse La., Ebchester, County Durham, England

Continuation of Ser. No. 812,887, Dec. 26, 1991, abandoned, which is a continuation of Ser. No. 438,721, Nov. 17, 1989, abandoned. This application Jun. 8, 1993, Ser. No. 74,287

Claims priority, application United Kingdom, Nov. 18, 1988, 8827038

Int. Cl.[5] C07K *15/04, 3/18;* C12Q *1/04*

U.S. Cl. 530—350 4 Claims

1. A non-toxic and non-cytolytic antigen derived from wild-type streptolysin O by deletion of amino acids and which includes the sequence of amino acids from 383 to 571 of the complete streptolysin O sequence and comprises at least one epitope reactive with anti-streptolysin O antibodies in human patient's sera and characteristic of wild-type streptolysin O and wherein the antigen is more resistant to proteolytic degradation than a fragment containing amino acids 234 to 571 of the complete streptolysin O sequence.

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5,354,847

CHIMERIC ANTIBODY WITH SPECIFICITY TO HUMAN TUMOR ANTIGEN

Alvin Y. Liu, Santa Monica; Randy R. Robinson, Los Angeles, both of Calif.; Karl E. Hellstrom, and Ingegred Hellstrom, both of Seattle, Wash., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Continuation of Ser. No. 614,954, Nov. 15, 1990, abandoned, which is a continuation of Ser. No. 923,244, Oct. 27, 1986, abandoned. This application Sep. 12, 1991, Ser. No. 759,707

Int. Cl.[5] **C07K** *15/28;* **C12N** *5/20, 15/13*

U.S. Cl. 530—387.3 **4 Claims**

1. A chimeric antibody specific for the L6 human tumor antigen, comprising a human constant region and a variable region which are produced by transfected eukaryotic cells, in which:

(a) the antigen combining site of the chimeric antibody competitively inhibits the immunospecific binding of monoclonal antibody L6 produced by hybridoma HB8677 as deposited with the ATCC, and

(b) the chimeric antibody mediates a more potent antibody-dependent cellular cytotoxicity than that mediated by monoclonal antibody L6 produced by hybrodoma HB8677 as deposited with the ATCC.

5,354,848

CHEMICALLY MODIFIED ALLERGENS AND PROCESS FOR THE PREPARATION THEREOF

Paolo Falagiani, Milan; Oreste Brenna, Cologno Monzese, and Giovanni Mistrello, Milan, all of Italy, assignors to Laboratorio Farmaceutico Lofarma S.r.l., Milan, Italy

Filed Sep. 26, 1990, Ser. No. 588,344

Claims priority, application Italy, Oct. 6, 1989, 48431 A/89

Int. Cl.[5] **A61K** *39/35, 39/36;* **C07K** *3/08*

U.S. Cl. 530—395 **5 Claims**

1. A chemically modified protein allergen or glycoprotein allergen whose allergenic activity is reduced with respect to that of the corresponding native allergenic material and capable of inducing specific antibodies having an affinity for the corresponding native allergenic material, said allergen is derived from the corresponding native allergenic material by treating the native allergenic material with an organic isocyanate or an organic isothiocyanate is an alkaline medium such that said allergen is unpolymerized, is soluble in a water medium and resists tryptic attack.

5,354,849

SULFO GROUP-CONTAINING DISAZO COMPOUNDS CONTAINING SUBSTITUTED AMINO-1,3,5-TRIAZINIL OR- CHLOROPYRIMIDYL

Georg Schoefberger, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

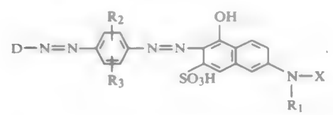
Continuation of Ser. No. 858,921, Mar. 27, 1992, abandoned. This application Jun. 4, 1993, Ser. No. 73,228

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1991, 4110461

Int. Cl.[5] **C09B** *62/03, 62/09;* **D06P** *1/382*

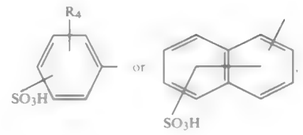
U.S. Cl. 534—637 **22 Claims**

1. A compound of the formula



or a salt thereof each cation of which is independently a non-chromophoric cation, or a mixture of such compounds or salts; wherein

D is



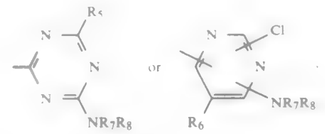
wherein R_4 is hydrogen, C_{1-4}alkyl, C_{1-4}alkoxy or halo,

R_1 is hydrogen, C_{1-4}alkyl or C_{2-4}hydroxyalkyl,

R_2 is hydrogen, C_{1-4}alkyl, C_{1-4}alkoxy, (C_{1-4}alkyl)carbonylamino, (C_{1-4}alkoxy)carbonylamino or —NH-$CONH_2$,

R_3 is hydrogen, halo, C_{1-4}alkyl or C_{1-4}alkoxy, and

X is



wherein

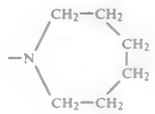
R_5 is chloro, hydroxy or —NHCN,

R_6 is hydrogen, chloro or cyano,

R_7 is hydrogen; C_{1-12}alkyl; C_{2-8}alkyl monosubstituted or disubstituted by hydroxy; phenyl; phenyl(C_{1-4}alkyl) or cyclohexyl, and

R_8 is C_{4-20}alkyl; C_{4-20}alkyl monosubstituted or disubstituted by hydroxy; C_{4-20}alkyl monosubstituted by halo, phenyl, carboxy or C_{1-12}alkoxy; —A—O—C_{1-12}alkyl; phenyl; phenyl substituted by one to three substituents selected from halo, C_{1-16}alkyl, C_{2-6}hydroxyalkyl, C_{1-6}alkoxy, phenoxy and acetamido; phenyl(C_{1-3}alkyl); phenyl(C_{1-3}alkyl) the phenyl ring of which is substituted by one to three substituents selected from halo, C_{1-16}alkyl, C_{2-6}hydroxyalkyl, C_{1-6}alkoxy, phenoxy and acetamido; cyclohexyl or cyclohexyl substituted by one to three C_{1-4}alkyl groups, wherein A is linear or branched C_{2-3}alkylene, with the proviso that R_7 and R_8 together contain at least 8 carbon atoms, or

—NR_7R_8 is



5,354,850

WATER-SOLUBLE PHENYLAZO NAPHTHYLAZONAPHTHYL COMPOUNDS CONTAINING A DICHLORO-S-TRIAZINYL AMINO GROUP, SUITABLE AS DYES

Andreas von der Eltz, Frankfurt am Main, and Werner H. Russ, Flörsheim, both of Fed. Rep. of Germany, assignors to Hoechst AG, Frankfurt, Fed. Rep. of Germany

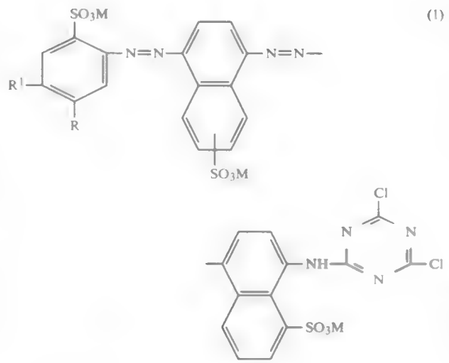
Filed Jun. 24, 1993, Ser. No. 82,607

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1992, 4220834

Int. Cl.[5] **C09B** *62/09;* **D06P** *1/382*

U.S. Cl. 534—637 **4 Claims**

1. A disazo compound of the formula (1)



(1)

in which

R is hydrogen or sulfo;

R^1 is hydroxy, methoxy or ethoxy;

M is hydrogen or an alkali metal; the non-fixed sulfo group in the naphthylene radical is in the 6 or 7 position.

5,354,851

PROCESS FOR PRODUCING CRUDE PECTIN THROUGH ION EXCHANGE

Frederic A. Graves, Ham Lake, Minn., assignor to Humanetics Corporation, Chaska, Minn.

Filed Mar. 31, 1993, Ser. No. 40,891

Int. Cl.[5] **C08B** *37/06;* **C07H** *1/00*

U.S. Cl. 536—2 **15 Claims**

1. A process for manufacturing a crude pectic material containing product, comprising the steps of:

(a) treating edible pectin-containing fiber with a source of alkaline earth metal ions under conditions effective for increasing the concentration of alkaline earth metal ions chemically coupled to the pectin component of the fiber;

(b) separating the treated fiber into a pectin-rich solid fraction and a pectin-poor liquid fraction;

(c) exchanging the alkaline earth metal ions chemically coupled to the pectin component of the fiber in the solid fraction with hydrogen ions;

(d) removing water from the ion exchanged solids fraction to form a dry, storage stable crude-pectic material containing product.

5,354,852

POLYSACCHARIDE DERIVATIVE, PROCESS FOR PRODUCING THE SAME, AND SEPARATING AGENT

Hirokazu Ikeda, Hyogo, Japan, assignor to Daicel Chemical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP92/00234, § 371 Date Oct. 27, 1992, § 102(e) Date Oct. 27, 1992, PCT Pub. No. WO92/15635, PCT Pub. Date Sep. 17, 1992

PCT Filed Feb. 28, 1992, Ser. No. 940,951

Claims priority, application Japan, Mar. 4, 1991, 3-062653

Int. Cl.[5] **C08B** *37/00;* **C07H** *1/00*

U.S. Cl. 536—17.9 **5 Claims**

5. In a process of separating racemic compounds or structural isomer mixtures, the improvement comprising contacting said racemic compounds or structural isomer mixtures with a separating agent comprising spherical particles of an aromatic or araliphatic carbamate of a polysaccharide having a mean particle diameter of 1 to 200 μm and a specific surface area of 0.5 to 300 m^2/g.

5,354,853

PHOSPHOLIPID-SACCHARIDE CONJUGATES

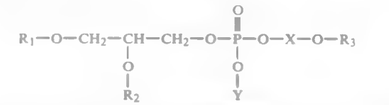
Mark M. Staveski, Sharon; Barbara Y. F. Wan, Tewksbury, and Alan E. Walts, Topsfield, all of Mass., assignors to Genzyme Corporation, Cambridge, Mass.

Filed Mar. 12, 1993, Ser. No. 30,793

Int. Cl.[5] **C12P** *19/44;* **C07H** *15/00;* **C07G** *3/00*

U.S. Cl. 536—17.1 **18 Claims**

1. A phospholipid-saccharide conjugate comprising the formula:



wherein R_1 and R_2 each independently comprise C(O)R wherein R comprises an alkyl, a substituted alkyl, an alkenyl, a substituted alkenyl, an alkynyl, a substituted alkynyl, an aryl, a substituted aryl, an aralykyl or a substituted aralkyl;

Y comprises a cation

X comprises an alkyl linker moiety of structure $(CH_2)_n$ wherein n is an integer in the range of 1 to about 16; and

R_3 comprises a saccharide.

5,354,854

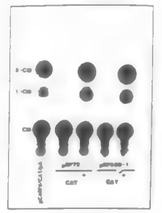
EXPRESSION SYSTEM FOR USE IN PLANTS TO SUPPRESS FOREIGN EXPRESSION AND METHOD

June E. Bourque, and William R. Folk, both of Columbia, Mo., assignors to The Curators of the University of Missouri, Columbia, Mo.

Filed Nov. 7, 1991, Ser. No. 790,199

Int. Cl.[5] **C07H** *21/02, 21/04*

U.S. Cl. 536—23.1 **2 Claims**



1. An expression system for use in plants to suppress foreign gene expression, said system consisting essentially of: a constitutive promoter element from a plant tRNA methionine initiator ($tRNA^{met}$) gene, said promoter element lacking a terminator, and a DNA sequence in reverse orientation fused to said promoter element for being co-transcribed with said promoter element by an RNA polymerase III to inhibit expression of the foreign gene.

5,354,855

RNA RIBOZYME WHICH CLEAVES SUBSTRATE RNA WITHOUT FORMATION OF A CONVALENT BOND

Thomas R. Cech, 573 Aztec Dr., Boulder, Colo. 80303; Arthur J. Zaug, 623 W. Lilac Ct., Louisville, Colo. 80027, and Michael D. Been, 705 Aurora Ave., Apt. 4, Boulder, Colo. 80303

Continuation of Ser. No. 562,672, Aug. 3, 1990, Pat. No. 5,093,246, which is a division of Ser. No. 937,327, Dec. 3, 1986, Pat. No. 4,987,071. This application Feb. 28, 1992, Ser. No. 843,737

The portion of the term of this patent subsequent to Jan. 22, 2008, has been disclaimed.

Int. Cl.[5] **C12N** *15/11*

U.S. Cl. 536—24.1 **1 Claim**

1. A purified enzymatic ribonucleic acid molecule having an endoribonuclease activity independent of any protein, said

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endoribonuclease activity acting on a nucleotide sequence defining a cleavage site in a separate RNA molecule and causing cleavage at said cleavage site by a transesterification reaction; wherein said enzymatic ribonucleic acid molecule does not form a covalent bond with said separate RNA molecule during said cleavage.

5,354,856

CRYSTALLINE MIXTURE SOLID CONTAINING MALTITOL AND A PROCESS FOR PREPARING IT

Shigeru Kawashima; Mitsuo Magara; Yoshibumi Ishii, all of Shizuoka, and Kazuaki Kato, Saitama, all of Japan, assignors to Towa Chemical Industry Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/00690, § 371 Date Feb. 24, 1992, § 102(e) Date Feb. 24, 1992, PCT Pub. No. WO92/00309, PCT Pub. Date Jan. 9, 1992

PCT Filed May 23, 1991, Ser. No. 836,017

Claims priority, application Japan, Jun. 25, 1990, 2-164148; Feb. 26, 1991, 3-053211

Int. Cl.[5] **C07H** *15/04, 3/04*

U.S. Cl. 536—127 **4 Claims**

1. A process for preparing a crystalline mixture solid containing maltitol, comprising supplying continuously an aqueous solution of maltitol to an extruder provided with elongated cooling and kneading zones, growing a maltitol magma by cooling and kneading said aqueous solution of maltitol in the presence of seed crystals and continuously extruding said maltitol magma from a nozzle.

5,354,857

METAL PHTHALOCYANINE CATALYSTS

Paul E. Ellis, Jr., Downingtown, and James E. Lyons, Wallingford, both of Pa., assignors to Sun Company, Inc. (R&M), Philadelphia, Pa.

Division of Ser. No. 862,038, Apr. 2, 1992, Pat. No. 5,254,740. This application Jul. 29, 1993, Ser. No. 99,281

Int. Cl.[5] **C07D** *487/22*

U.S. Cl. 540—135 **9 Claims**

1. A composition of matter having the following formula M′ wherein M is Fe, Co, Mn or Cr; N_3 is azide; is phthalocyanine; X is halogen substituted for hydrogen atoms in the phthalocyanine molecule; and M′ is alkali metal or ammonium or tetraalkylammonium.

5,354,858

PRODUCTION AND USE OF DIELS ALDER ADDUCTS OF VINYL PORPHYRINS AND OF COMPOSITIONS CONTAINING SUCH ADDUCTS

Alan R. Morgan, Swanton, and Steven H. Selman, Toledo, both of Ohio, assignors to The University of Toledo and Medical College of Ohio, both of Toledo, Ohio

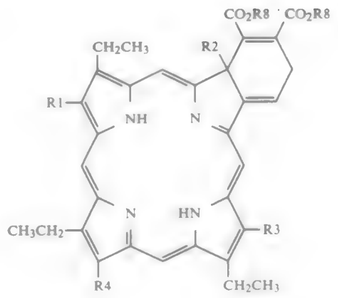
Continuation of Ser. No. 677,408, Mar. 28, 1991, abandoned. This application Jul. 8, 1992, Ser. No. 912,079

Int. Cl.[5] **C07D** *487/22*

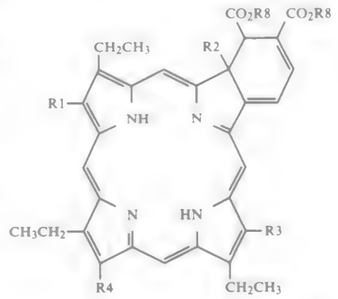
U.S. Cl. 540—145 **3 Claims**

1. A Diels Alder adduct having the structure of Formula 1 or of Formula 2, or a metal complex of a Diels Alder adduct having the structure of Formula 3 or of Formula 4, below:

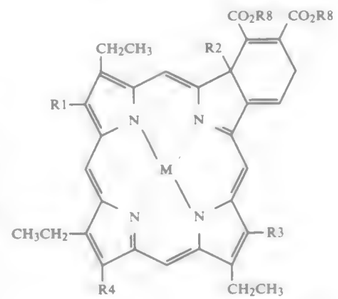
Formula 1



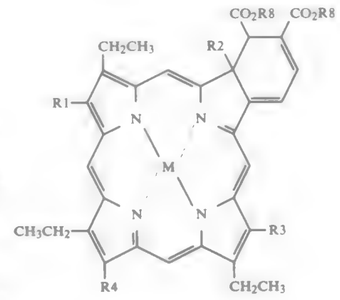
Formula 2



Formula 3



Formula 4



where R1, R2, R3 and R4 can be the same or different, and each is methyl or ethyl, R8 is an alkyl group other than t-butyl

having from one to four carbon atoms and M is Ag, Al, Ce, Co, Cr, Dy, Er, Eu, Ga, Gd, Hf, Ho, In, La, Lu, Mn, Mo, Nd, Pb, Pd, Pr, Pt, Rh, Sb, Sc, Sm, Sn, Tb, ^{99m}Tc, Th, Ti, Tl, Tm, U, V, Y, Yb, Zn or Zr.

5,354,859

ϵ-CAPROLACTAM

Hiroshi Ichihashi, Shiga; Masaru Kitamura, Osaka; Hiroshi Kajikuri, Osaka, and Eiji Tasaka, Osaka, all of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Filed Nov. 25, 1992, Ser. No. 981,476

Claims priority, application Japan, Nov. 27, 1991, 3-312492; Nov. 27, 1991, 3-312493

The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.

Int. Cl.[5] **C07D** *201/04*

U.S. Cl. 540—536 **18 Claims**

1. A process for producing ϵ-caprolactam, which process comprises:

bringing cyclohexanone oxime, in a gas phase, into contact with a solid catalyst in the presence of at least one nitrogen-containing compound selected from the group consisting of ammonia, methylamines and ϵ-caprolactam.

5,354,860

PROCESS FOR MAKING PURE S-TIMOLOL HEMIHYDRATE

Markku Periläampi, Katajatie 30 B 3, SF-36200 Kangasala, Finland

Division of Ser. No. 663,853, Apr. 19, 1991, Pat. No. 5,231,095. This application Jul. 8, 1992, Ser. No. 910,789

Claims priority, application Finland, Oct. 20, 1988, 884838

Int. Cl.[5] **C07D** *417/04*

U.S. Cl. 544—134 **10 Claims**

1. A process comprising the step of preparing the compound S-(−)-3-morpholino-4-(3-tert-butylamino-2-hydroxypropoxy)-1,2,5-thiadiazole hemihydrate which is commonly named S-timolol hemihysdrate, wherein the compound is crystallized in optically pure form as the hemihydrate from a mixture containing at least one organic solvent and water and s-timolol base wherein the organic solvent mixture is one in which S-timolol base is soluble but in which, in the presence of water, S-timolol hemihydrate is sparingly soluble.

10. A process for the purification of S-(−)-3-morpholino-4-(3-tert-butylamino-2-hydroxypropoxy)-1,2,5-thiadiazole commonly known as S-timolol, or its salt, especially for the removal of the corresponding R-enantiomer, comprising the steps of (a) crystallizing in optically pure form a compound selected from the group consisting of S-(−)-3-morpholino-4-(3-tert-butylamino-2-hydroxypropoxy)-1,2,5-thiadiazole and its salt as S-timolol hemihysdrate from a mixture containing at least one organic solvent and water and S-timolol base wherein the organic solvent mixture is one in which S-timolol base is soluble but in which, in the presence of water, S-timolol hemihydrate is sparingly soluble, and (b) converting the crystallized hemihydrate back to S-timolol base or its salt.

5,354,861

2-(BENZYL)-3-ARYLBENZOFURANS AS ANTITUMOUR AND HYPOCHOLESTEROLEMIC AGENTS

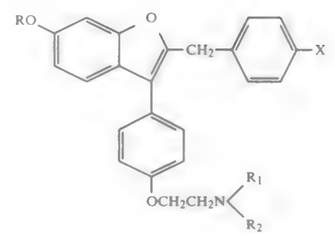
Keng-Yeow Sim; Oi-Lian Kon; Chin-Chin Teo; Siu-Choon Ng, and Srikanth Natarajan, all of Singapore, Singapore, assignors to National University of Singapore, Singapore, Singapore

Filed Nov. 4, 1992, Ser. No. 971,507

Int. Cl.[5] **C07D** *413/10, 405/10, 307.80*

U.S. Cl. 544—153 **10 Claims**

1. 2-(Benzyl)-3-arylbenzo[b]furan in free base form and pharmaceutically acceptable acid-addition salts thereof, of formula (1



(1)

where

R represents H, or methyl group,

R_1, R_2 are identical or different and represent C_{1-2} alkyl or R_1 and R_2 together with the nitrogen atom to which they are attached represent a saturated heterocyclic group, and their pharmaceutically acceptable acid addition salts and X represents bromo, chloro, fluoro or hydrogen.

5,354,862

PREPARATION AND THE USE OF HALOPROPARGYLATED CYCLIC QUATERNARY AMMONIUM COMPOUNDS AS ANTIMICROBIAL AGENTS

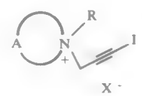
Adam C. Hsu, Lansdale, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 948,367, Sep. 21, 1992, Pat. No. 5,266,567, which is a continuation-in-part of Ser. No. 782,358, Oct. 24, 1991, abandoned. This application Aug. 31, 1993, Ser. No. 114,721

Int. Cl.[5] **C07D** *295/067, 211/20*

U.S. Cl. 544—171 **2 Claims**

1. Compounds having antimicrobial activity having the formula:



(I)

wherein

R is $C_1$to C_5) alkyl substituted with —C(=O)R′ wherein R′ is (C_6–C_{12}) alkoxy;

X=chlorine bromine, iodine, phosphate, acetate, benzoate, citrate, tartrate, alkyl- or aryl-sulfonate, or alkylsulfate; and



represents a 5- to 7-membered ring selected from the group consisting of pyrrolidinium, piperidinium, morpholinium, hexamethyleneiminium, tetrahydropyridinium, immidazolinium, thiormorpholinium, and thiazonlidinium, optionally substituted with one or more (C_1–C_3)alkyl groups.

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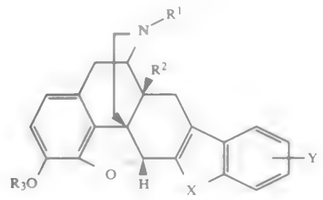
5,354,863

OPIOID AGONIST COMPOUNDS

Michael S. Dappen, Daly City, Calif.; Barnett S. Pitzele, Skokie, and Michael F. Rafferty, Buffalo Grove, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 823,221, Jan. 21, 1992, Pat. No. 5,225,417. This application Feb. 24, 1993, Ser. No. 21,694
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.
Int. Cl.[5] C07D *491/12;* A61K *31/44*
U.S. Cl. 546—35 **13 Claims**

1. A compound of the formula:



or a pharmaceutically-acceptable salt thereof, wherein:
R^1 is —CN;
R^2 is [—OR^4 wherein R^4 is



alkyl;
R^3 is



alkyl or alkoxy;
X is O; and
Y is hydrogen.

5,354,864

3-(9-ACRIDINYLAMINO)-5-HYDROXYMETHYLANILINE DERIVATIVES AS ANTICANCER AGENTS

Kyoichi A. Watanabe, Rye Brook; Grazyna Ciszewska, Jamaica; Tsann-Long Su, Baldwin Place, and Ting-Chao Chou, New York, all of N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Filed May 21, 1992, Ser. No. 886,980
Int. Cl.[5] A61K *31/47*
U.S. Cl. 546—106 **3 Claims**

1. A compound selected from the group consisting of:
3-(9-acridinylamino)-5-hydroxymethylaniline,
3-(9-acridinylamino)-5-hydroxymethyl-N-acetylaniline,
3-(9-acridinylamino)-N,O-bis(acetyl)-5-hydroxymethylaniline,
3-(9-acridinylamino)-5-acetoacetoxymethyl-N-acetylaniline,
3-(9-acridinylamino)-5-hydroxymethyl-N-acetoacetylaniline,
3-(9-acridinylamino)-N,O-bis(acetoacetyl)-5-hydroxymethylaniline,
3-(9-acridinylamino)-5-acetonylacetyloxymethylaniline,
3-(9-acridinylamino)-5-hydroxymethyl-N-acetonylacetylaniline
3-(9-acridinylamino)-N,O-bis(acetonylacetyl)-5-hydroxymethylaniline,
3-(9-acridinylamino)-5-acetonylpropionyloxymethylaniline,
3-(9-acridinylamino)-5-hydroxymethyl-N-acetonylpropionylaniline,
3-(9-acridinylamino)-N,O-bis(acetonylpropionyl)-5-hydroxymethylaniline,
3-(9-acridinylamino)-5-acetonylbutanoyloxymethylaniline,
3-(9-acridinylamino)-5-hydroxymethyl-N-acetonylbutanoylaniline,
3-(9-acridinylamino)-5-acetonylbutanoyloxymethyl-N-acetonylbutanoylaniline,
3-(9-acridinylamino)-5-malonyloxymethylaniline,
3-(9-acridinylamino)-5-hydroxymethyl-N-malonylaniline,
3-(9-acridinylamino)-5-malonyloxymethyl-N-malonylaniline,
3-(9-acridinylamino)-5-succinyloxymethylaniline,
3-(9-acridinylamino)-5-hydroxymethyl-N-succinylaniline,
3-(9-acridinylamino)-5-succinyloxymethyl-N-succinylaniline,
3-(9-acridinylamino)-5-glutaryloxymethylaniline,
3-(9-acridinylamino)-5-hydroxymethyl-N-glutarylaniline,
3-(9-acridinylamino)-5-glutaryloxymethyl-N-glutarylaniline,
3-(9-acridinylamino)-5-aminobenzyloxyacetic acid,
3-(9-acridinylamino)-5-hydroxymethylanilinoacetic acid,
sodium 3-(9-acridinylamino)-5-hydroxymethylanilinoacetate,
3-(9-acridinylamino)-N,O-bis(hydroxycarbonylmethyl)-5-hydroxymethylaniline,
3-[3-(9-acridinylamino)-5-aminobenzyloxy]propionic acid,
sodium 2-[3-(9-acridinylamino)-5-acetamidobenzyloxy]propionate,
3-[3-(9-acridinylamino)-5-hydroxymethylanilino]propionic acid,
sodium 2-[3-(9-acridinylamino)-5-hydroxymethylanilino]-propionate
3-[3-(9-acridinylamino)-5-hydroxycarbonylethoxymethylanilino]propionic acid,
sodium 2-[3-(9-acridinylamino)-5-hydroxycarbonylethoxymethylanilino]propionate
4-[3-(9-acridinylamino)-5-acetamidobenzyloxy]butanoic acid,
sodium 3-(9-acridinylamino)-5-aminobenzyloxybutyrate,
4-[3-(9-acridinylamino)-5-hydroxymethylanilino]butanoic acid,
sodium 4-[3-(9-acridinylamino)-5-hydroxymethylanilino]butyrate,
4-[3-(9-acridinylamino)-5-hydroxycarbonylpropyloxymethylanilino]butanoic acid,
sodium 4-[3-(9-acridinylamino)-5-hydroxycarbonylpropyloxymethylanilino]butyrate,
4-[3-(9-acridinylamino)-5-hydroxycarbonylpropylmethylánilino]butanoic acid
sodium 4-[3-(9-acridinylamino)-5-hydroxycarbonylpropyloxymethylanilino]butyrate
N-[3-(9-acridinylamino)-5-hydroxymethylphenyl]methanesulfonamide,
methyl 2-[3-(9-acridinylamino)-5-acetamidobenzyloxy]ethyl sulfone,
methyl 2-[3-(9-acridinylamino)-5-aminobenzyloxy]ethyl sulfone,
methyl 2-[3-(9-acridinylamino)-5-hydroxymethylanilino]ethyl sulfone,
3-(9-acridinylamino)-N,O-bis(methylsulfonylethyl)-5-hydroxymethylaniline,
methyl 3-[3-(9-acridinylamino)-5-aminobenzyloxy]propyl sulfone,
methyl 3-[3-(9-acridinylamino)-5-hydroxymethylanilino]-propyl sulfone,
methyl 3-(9-acridinylamino)-N,O-bis(methylsulfonyl-propyl)-5-hydroxymethylanaline,
3-[3-(9-acridinylamino)-5-aminobenzyloxy]propyl sulfonic acid,
3-[3-(9-acridinylamino)-5-hydroxymethylanilino]propyl sulfonic acid,
3-(9-acridinylamino)-N,O-bis(sulfonylpropyl)-5-hydroxymethylanaline,

sodium 3-[3-(9-acridinylamino)-5-aminobenzyloxy]propyl sulfinate,
sodium 3-[3-(9-acridinylamino)-5 -hydroxymethylanilino]-propyl sulfinate,
3-(9-acridinylamino)-5-hydroxymethylaniline-N,O-bis(sodiumpropyl sulfinate),
methyl 2-[3-(9-acridinylamino)-5-aminobenzyloxy]ethyl sulfonate,
methyl 2-[3-(9-acridinylamino)-5-acetamidobenzyloxy]ethyl sulfonate,
methyl 2-[3-(9-acridinylamino)-5-hydroxymethylanilino]ethyl sulfonate,
methyl 3-(9-acridinylamino)-5-hydroxymethylaniline-N,O-bis-(ethyl sulfonate),
methyl 3-[3-(9-acridinylamino)-5-aminobenzyloxy]propyl sulfonate,
methyl 3-(9-acridinylamino)-5-acetamidobenzyloxy]propyl sulfonate,
methyl 3-[3-(9-acridinylamino)-5-hydroxymethylanilino]-propyl sulfonate,
methyl 3-(9-acridinylamino)-5-hydroxymethylaniline-N,O-bis-(propyl sulfonate),
sodium 2-[3-(9-acridinylamino)-5-aminobenzyloxy]ethyl sulfonate,
sodium 2-[3-(9-acridinylamino)-5-acetamidobenzyloxy]ethyl sulfonate,
sodium 2-[3-(9-acridinylamino)-5-hydroxymethylaniline]ethyl sulfonate,
sodium 3-(9-acridinylamino)-5-hydroxymethylaniline-N,O-bis-(ethyl sulfonate),
sodium 3-[3-(9-acridinylamino)-5-aminobenzyloxy]propyl sulfonate,
sodium 3-[3-(9-acridinylamino)-5-acetamidobenzyloxy]propyl sulfonate,
sodium 3-[3-(9-acridinylamino)-5-hydroxymethylanilino]-propyl sulfonate,
sodium 3-(9-acridinylamino)-5-hydroxymethylaniline-N,O-bis-(propyl sulfonate), or
3-(9-acridinylamino)-5-(*β*-alanyloxyethoxymethyl)aniline.

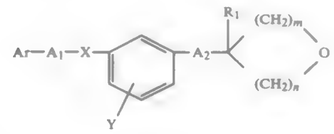
5,354,865

PHENYLMETHYL DERIVATIVES HAVING LIPOXYGENASE INHIBITORY ACTIVITY

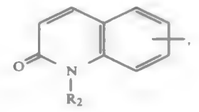
Joseph F. Dellaria, Lindenhurst; Linda J. Dorn, Wheeling, and Dee W. Brooks, Libertyville, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Sep. 10, 1992, Ser. No. 942,870
Int. Cl.[5] C07D *235/26, 215/227, 265/36*
U.S. Cl. 546—158 **7 Claims**

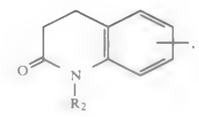
1. A compound having the structure



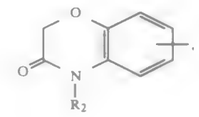
or a pharmaceutically acceptable salt thereof wherein
Ar is selected from the group consisting of
(a)



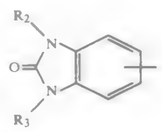
(b)



(c)



and
(d)



wherein R_2 and R_3 are independently hydrogen or alkyl of from one to four carbon atoms;
A_1 is a valence bond or is propynylene or methylene;
X is selected from the group consisting of O, S, SO_2, or NR_2, where R_2 is as defined above;
Y is selected from the group consisting of
hydrogen,
alkyl of from one to six carbon atoms,
haloalkyl of from one to six carbon atoms,
alkoxy of from one to six carbon atoms, and
halogen;
A_2 is selected from the group consisting of
(a)



wherein R_4 is selected from the group consisting of
hydrogen,
alkyl of from one to four carbon atoms,
alkenyl of from three to six carbon atoms,
alkynyl of from three to six carbon atoms, and
alkoxyalkyl in which the alkoxy and alkyl groups can independently contain from one to four carbon atoms;
(b)



wherein Z is selected from the group consisting of OR_5 and
NR_5, where R_5 is selected from the group consisting of hydrogen and alkyl of from one to four carbon atoms; and
(c) methylene;
R_1 is selected from the group consisting of hydrogen, alkyl of from one to four carbon atoms, and OR_5 where R_5 is as defined above;
m is 1 or 2; and

VOL 1167 ISS 2 OC 11 1994 UMI

n is 1 or 2.

5,354,866

RETROVIRAL PROTEASE INHIBITING COMPOUNDS

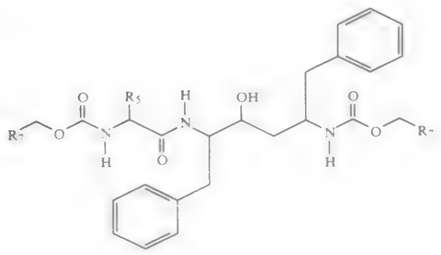
Dale J. Kempf, Libertyville; Daniel W. Norbeck, Lindenhurst; Lynn M. Codacovi, Antioch; Jacob J. Plattner, Libertyville; Hing L. Sham, and Chen Zhao, both of Gurnee, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 777,626, Oct. 23, 1991, which is a continuation-in-part of Ser. No. 746,020, Aug. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 616,170, Nov. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 518,730, May 9, 1990, Pat. No. 5,142,056, which is a continuation-in-part of Ser. No. 456,124, Dec. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 405,604, Sep. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 355,945, May 23, 1989, abandoned. This application Sep. 14, 1993, Ser. No. 121,673

Int. Cl.[5] C07D *401/10*

U.S. Cl. 546—265 7 Claims

1. A compound of the formula:



wherein R_5 is C_1–C_6-loweralkyl and R_7 is independently selected at each occurrence from unsubstituted pyridyl and pyridyl which is substituted with C_1–C_6-loweralkyl, C_3–C_7-cycloalkyl, C_1–C_6-alkoxy, hydroxy, amino, N-protected amino, C_1–C_6-alkylamino, (N-protected)-C_1–C_6-alkylamino, di-C_1–C_6-alkylamino or halo; or a pharmaceutically acceptable salt, ester or prodrug thereof, wherein the acyl residue of the ester is (i) $R^*C(O)$— or $R^*C(S)$— wherein R^* is hydrogen, C_1–C_6-loweralkyl, C_1–C_6-haloalkyl, C_1–C_6-alkoxy, C_1–C_6-thioalkoxy, C_1–C_6-alkoxy-C_1–C_6-alkyl, C_1–C_6-thioalkoxy-C_1–C_6-alkyl or C_1–C_6-haloalkoxy, (ii) R_a—$C(R_b)(R_d)$—C(O)— or R_a—$C(R_b)(R_d)$—C(S)— wherein R_b and R_d are independently selected from hydrogen and C_1–C_6-loweralkyl and R_a is —$N(R_e)(R_f)$, —OR_e or —SR_e wherein R_e and R_f are independently selected from hydrogen, C_1–C_6-loweralkyl and C_1–C_6-haloalkyl, (iii) $R_{180}NH(CH_2)_2NHCH_2C(O)$— or $R_{180}NH(CH_2)_2OCH_2C(O)$— wherein R_{180} is hydrogen, C_1–C_6-loweralkyl, aryl-C_1–C_6alkyl wherein the aryl group is phenyl, naphthyl, tetrahydronaphtyl, indanyl or indenyl, C_3–C_7-cycloalkyl-C_1–C_6-alkyl, C_1–C_6-alkanoyl or benzoyl, (iv) H_2O_3P— or (v) —$C(O)CH_2CH_2COOH$ and wherein the prodrug is a compound wherein the hydroxy group is functionalized with a substituent of the formula —$CH(R_g)OC(O)R_{181}$ or —$CH(R_g)OC(S)R_{181}$ wherein R_{181} is C_1–C_6-loweralkyl, C_1–C_6-haloalkyl, C_1–C_6-alkoxy, C_1–C_6-thioalkoxy or C_1–C_6-haloalkoxy and R_g is hydrogen, C_1–C_6-loweralkyl, C_1–C_6-haloalkyl, C_1–C_6-alkoxycarbonyl, aminocarbonyl, C_1–C_6-alkylaminocarbonyl or di-(C_1–C_6-alkyl)aminocarbonyl.

5,354,867

ANGIOTENSIN II RECEPTOR BLOCKING IMIDAZOLES

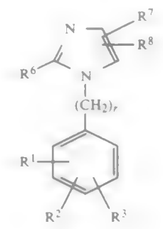
David J. Carini, Wilmington; John Jonas V. Duncia, Newark, and Pancras C. Wong, Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 545,240, Jun. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 373,755, Jun. 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 279,194, Dec. 6, 1988, Pat. No. 5,138,069. This application Apr. 15, 1993, Ser. No. 47,883

Int. Cl.[5] C07D *233/90, 401/12, 403/06*; A61K *31/415, 31/495*

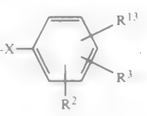
U.S. Cl. 548—252 5 Claims

1. An antihypertensive compound of the formula

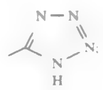


(I)

wherein
R^1 is

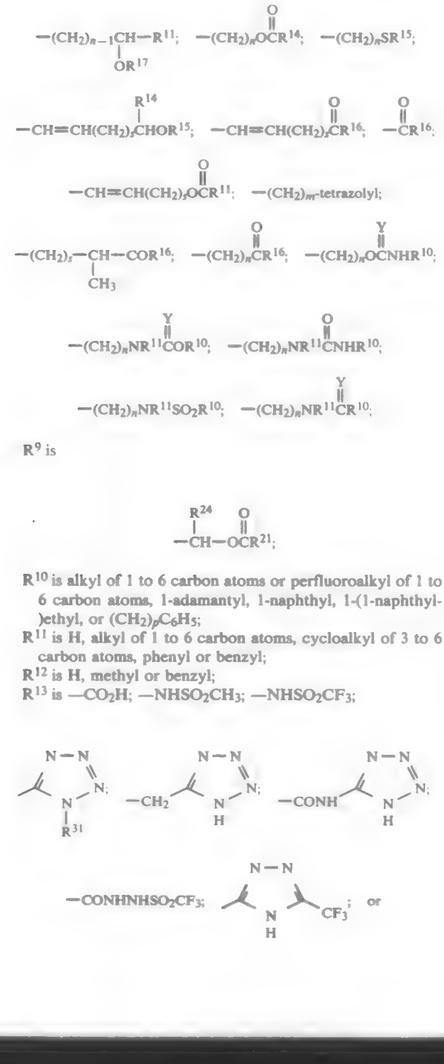


R^2 is H; Cl; Br; I; F; NO_2; CN; alkyl of 1 to 4 carbon atoms; acyloxy of 1 to 4 carbon atoms; alkoxy of 1 to 4 carbon atoms; CO_2H; CO_2R^9; $NHSO_2CH_3$; $NHSO_2CF_3$; CONHOR[12]; SO_2NH_2;



aryl; or furyl;
R^3 is H; Cl, Br; I; or F; alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms;
R^6 is alkyl of 2 to 10 carbon atoms, alkenyl or alkynyl of 3 to 10 carbon atoms
R^7 is vinyl; cycloalkylidenyl; alkynyl of 2–10 carbon atoms; phenylalkynyl where the alkynyl portion is 2–6 carbon atoms; heteroaryl selected from 2- and 3-thienyl, 2- and 3-furyl, 2-, 3-, and 4-pyridyl, 2-, 4- or 5-imidazolyl; o-, m- or p-biphenylyl; o-, m- or p-phenoxyphenyl; substituted phenylalkynyl where the alkynyl portion is 2–6 carbon atoms, heteroaryl selected from 2- and 3-thienyl, 2- and 3-furyl, 2-, 3- and 4-pyridyl, 2-, 4- or 5-imidazolyl, o-, m- or p-biphenylyl or o-, m- or p-phenoxyphenyl substituted with 1or 2 substituents selected from halogen, hydroxy, mercapto, alkoxy of 1–5 carbon atoms, alkyl of 1–5 carbon atoms, —NO_2—, —CN, —CF_3, —COR^{16}, —CH_2OR^{17}, —$NHCOR^{17}$, —$CONR^{18}R^{19}$, $S(O)_rR^{17}$, and $SO_2NR^{18}R^{19}$; 2-, 4- or 5-imidazolyl substituted on ring nitrogen with alkyl of 1–5 carbon atoms, phenyl or benzyl; or substituted alkyl, alkenyl, or alkynyl of 1 to 10 carbon atoms substituted with an unsubstituted heteroaryl selected from 2- and 3-thienyl, 2- and 3-furyl, 2-, 3- and 4-pyridyl, 2-, 4- or 5-imidazolyl, o-, m- or p-biphenylyl or

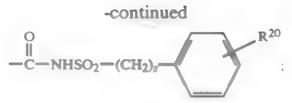
o-, m- or p-phenoxyphenyl or a heteroaryl selected from 2- and 3-thienyl, 2- and 3-furyl, 2-, 3- and 4-pyridyl, 2-, 4- or 5-imidazolyl, o-, m- or p-biphenylyl or o-, m- or p-phenoxylphenyl substituted with 1 or 2substituents selected from halogen, hydroxy, mercapto, alkoxy of 1–5 carbon atoms, alkyl of 1–5 carbon atoms, —NO_2, —CN, —CF_3, —COR^{16}, —CH_2OR^{17}, —$NHCOR^{17}$, —$CONR^{18}R^{19}$, $S(O)_rR^{17}$, and $SO_2NR^{18}R^{19}$; —S—$(O)_r$-heteroaryl, —S—$(O)_r$-biphenylyl, —$S(O)_r$-phenoxyphenyl, —$S(O)_rR^{17}$, —$NR^{18}R^{19}$, N-imidazolyl, where heteroaryl is a heterocycle defined in the scope of R^7 and where the phenyl group in R^{17} of —S—$(O)_rR^{17}$, the N-imidazolyl, is unsubstituted or substituted with one or two substituents selected from halogen, hydroxy, mercapto, alkoxy of 1–5 carbon atoms, —NO_2, —CN, —CF_3, —COR^{16}, —CH_2OR^{17}, —NHCOR[17], —$CONR^{18}R^{19}$, $S(O)_rR^{17}$, and $SO_2NR^{18}R^{19}$;
R^8 is



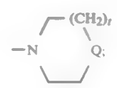
R^9 is

R^{10} is alkyl of 1 to 6 carbon atoms or perfluoroalkyl of 1 to 6 carbon atoms, 1-adamantyl, 1-naphthyl, 1-(1-naphthyl-)ethyl, or $(CH_2)_pC_6H_5$;
R^{11} is H, alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl or benzyl;
R^{12} is H, methyl or benzyl;
R^{13} is —CO_2H; —$NHSO_2CH_3$; —$NHSO_2CF_3$;

-continued



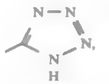
R^{14} is H, alkyl or perfluoroalkyl of 1 to 8 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl or benzyl;
R^{15} is H, alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl, benzyl, acyl of 1 to 4 carbon atoms, phenacyl;
R^{16} is H, alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, $(CH_2)_pC_6H_5$, OR^{17}, or $NR^{18}R^{19}$;
R^{17} is H, alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl or benzyl;
R^{18} and R^{19} independently are H, alkyl of 1 to 4 carbon atoms, phenyl, benzyl, a-methylbenzyl, or taken together with the nitrogen form a ring of the formula



Q is NR^{20}, 0 or CH_2;
R^{20} is H, alkyl of 1–4 carbon atoms, or phenyl;
R^{21} is alkyl of 1 to 6 carbon atoms, —$NR^{22}R^{23}$, or



R^{22} and R^{23} independently are H, alkyl of 1 to 6 carbon atoms, benzyl, or are taken together as $(CH_2)_u$ where u is 3–6;
R^{24} is H, CH_3 or —C_6H_5;
R^{31} is H, alkyl of 1 to 4 carbon atoms, —$CH_2CH{=}CH_2$ or —$CH_2C_6H_4R^{32}$;
R^{32} is H, NO_2, NH_2, OH or OCH_3;
X is a carbon-carbon single bond;
Y is 0 or S;
m is 1 to 5;
n is 1 to 10;
p is 0 to 3;
r is 0 to 2;
s is 0 to 5;
t is 0 or 1;
or a pharmaceutically acceptable salt thereof; provided that:
(1) the R^1 group is not in the ortho position;
(2) when R^{13} is CO_2H, or



then R^{13} must be in the ortho or meta position; or when R^{13} is $NHSO_2CF_3$ or $NHSO_2CH_3$, R^{13} must be ortho.

VOL 1167 ISS 2 OCT 11 1994 UMI

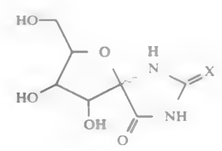
5,354,868

PROCESS FOR THE PREPARATION OF (+)-HYDANTOCIDIN AND ANALOGS THEREOF

Philip M. Harrington, Cranbury, N.J., and Michael E. Jung, Los Angeles, Calif., assignors to American Cyanamid Company, Wayne, N.J.

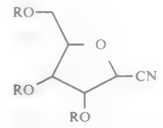
Filed Oct. 21, 1993, Ser. No. 140,580
Int. Cl.[5] C07D *491/107*
U.S. Cl. 548—301.4 5 Claims

1. A process for the preparation of a compound of formula I



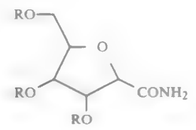
I

wherein X is O or S which comprises hydrating a compound of formula II



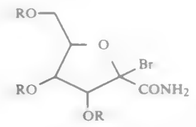
II

wherein R is a protecting group in the presence of manganese dioxide and a solvent to form an intermediate compound of formula III



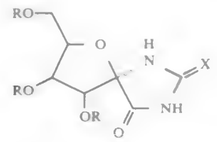
III

brominating the formula III compound to form a second intermediate of formula IV



IV

reacting the second intermediate with silver cyanate or silver thiocyanate in the presence of an anhydrous nonprotic solvent at a temperature of about 75°–150° C. to form a third intermediate of formula V



V

wherein X is O or S and deprotecting the formula V intermediate in the presence of a base to obtain the desired formula I product.

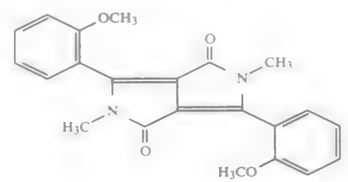
5,354,869

3,6-BIS-(2'-METHOXYPHENYL)-2,5-DIHYDRO-2,5-DIMETHYL-PYRROLO-(3,4-C)-PYRROLE-1,4-DIONE COMPOUND

Heinz Langhals, Ottobrunn, and Thomas Potrawa, Seelze, both of Fed. Rep. of Germany, assignors to Riedel-De Haen Aktiengesellschaft, Seelze, Fed. Rep. of Germany

Filed Jan. 29, 1991, Ser. No. 640,367
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1988, 3825943; Jan. 24, 1989, 3901988; Mar. 14, 1989, 3908312
Int. Cl.[5] C07D *487/02*
U.S. Cl. 548—453 1 Claim

1. 3,6-Bis-(2'-methoxyphenyl)-2,5-dihydro-2,5-dimethyl-pyrrole-(3,4-c)pyrrole-1,4-dione of the formula III



(III)

5,354,870

INDOLE DERIVATIVES FOR DYEING KERATIN MATERIALS

Gerard Lang, Saint-Gratien; Serge Forestier, Claye-Souilly; Alex Junino, Livry-Gargan; Herve Richard, Paris, and Jean J. Vandenbossche, Aulnay-sous-Bois, all of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 769,811, Oct. 2, 1991, Pat. No. 5,131,911, which is a continuation of Ser. No. 406,289, Sep. 12, 1989, abandoned. This application Apr. 6, 1992, Ser. No. 864,410
Claims priority, application Luxembourg, Sep. 12, 1988, 87338
Int. Cl.[5] C07D *209/08*
U.S. Cl. 548—469 2 Claims

1. 4-hydroxy-5-methoxyindole.

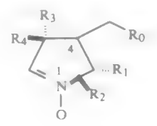
5,354,871

PYRROLINE N-OXIDE DERIVATIVES

Prabhat Arya, Gatineau, and David Griller, Ottawa, both of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Apr. 16, 1993, Ser. No. 46,727
Claims priority, application Canada, Nov. 27, 1992, 2083977
Int. Cl.[5] C07D *207/46, 403/12, 495/02*
U.S. Cl. 548—542 10 Claims

1. Substituted pyrroline N-oxides having the formula



where R_0 is selected from the group consisting of

(1) ester —R_5—CO—O—R_6 where R_5 is an alkylene group of 1–6 C atoms and R_6 is an alkyl group of 1–4 C atoms;

(2) polyether —O—[R_7—O]$_x$—R_8 where R_7 is an alkylene group of 1–3 C atoms, R_8 is an alkyl group of 1–2 C atoms, and X is 1–4;

(3) substituted alkanoyl —O—CO—R_9—Y where R_9 is an alkylene group of 1–6 C atoms, and Y is a group selected from malimido or biotin;

and where R_1, R_2, R_3, and R_4 are alkyl, deuterated alkyl or cyclic alkyl groups of up to 8 C atoms, or phenyl groups; with the proviso that only up to one of the R_1–R_4 groups may be phenyl.

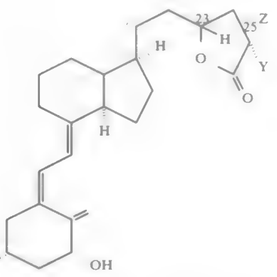
5,354,872

PROCESS FOR PREPARATION OF CALCITRIOL LACTONE AND RELATED INTERMEDIATES

Raymond E. Conrow, Fort Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed May 28, 1993, Ser. No. 69,271
Int. Cl.[5] C07D *307/33*
U.S. Cl. 549—313 6 Claims

1. A process for synthesizing diastereoisomers a, b, c or d of a compound of the formula.



wherein in diastereoisomer a, H on carbon 23 is in the α position; Y=H, C_1–C_6 alkyl, branched alkyl or cycloalkyl, saturated or unsaturated; and Z=OH; in diastereoisomer b, H on carbon 23 is in the β position; Y=H, C_1–C_6 alkyl, branched alkyl or cycloalkyl, saturated or unsaturated; and Z=OH; in diastereoisomer c, H on carbon 23 is in the β position; Y=OH; and Z=H, C_1–C_6 alkyl, branched alkyl or cycloalkyl, saturated or unsaturated; in diastereoisomer d, H on carbon 23 is in the α position; Y=OH; and Z=H, C_1–C_6 alkyl, branched alkyl or cycloalkyl, saturated or unsaturated; which comprises the steps of:

(a) protecting the hydroxyl group of enantiomerically pure glycidol or 2-alkylglycidol with a suitable first protective group;

(b) reductively cleaving the protected product of step (a) with an aromatic radical anion;

(c) reacting the cleaved product of step (b) with De-A,B-8β-hydroxy-24-norcholan-23-al which has had its hydroxyl group protected with a suitable second protective group to form epimeric hydrindane diols;

(d) removing the first protective group from the hydrindane diol product of step (c) to yield an epimeric mixture of hydrindane triols;

(e) separating the epimeric hydrindane triol isomers of step (d);

(f) removing the second protective group from the separated epimeric hydrindane triol isomers of step (e) to yield hydrindane tetrols;

(g) oxidizing the hydrindane tetrol product of step (f) to form the corresponding diastereoisomer of De-A,B-25-hydroxy-8-oxocholestan-26,23-lactone;

(h) protecting the hydroxyl group of the product of step (g) with a third protective group;

(i) reacting the product of step (h)with the lithium salt of (3S)-(3α,5β,Z)-2-(2-methylene-3,5-bis-((1,1-dimethylethyl)dimethylsilyloxy) cyclohexylidene)ethyl diphenyl phosphine oxide; and

(j) removing the hydroxyl protective groups from the product of step (i).

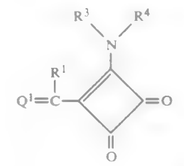
5,354,873

SQUARYLIUM DYES, AND PROCESSES AND INTERMEDIATES FOR THE PREPARATION THEREOF

Richard M. Allen, Norton; Peter K. Chu, Acton; John W. Lee, Still River; Donald A. McGowan, Bedford; Mark R. Mischke, Arlington; Socorro M. Ramos, Belmont, and Stephen J. Telfer, Arlington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 795,034, Nov. 20, 1991, Pat. No. 5,227,498. This application Nov. 20, 1992, Ser. No. 979,250
Int. Cl.[5] C07D *311/58, 309/34, 335/06, 345/00*
U.S. Cl. 549—404 12 Claims

1. A squaric acid derivative of the formula:



in which Q^1 is a pyrylium, thiopyrylium, selenopyrylium, benzpyrylium, benzthiopyrylium or benzselenopyrylium nucleus, R^1 is a hydrogen atom or an alkyl group containing not more than about 6 carbon atoms, and R^3 and R^4 are each independently a hydrogen atom or an alkyl or acyl group containing not more than about 6 carbon atoms, subject to the proviso that one of R^3 and R^4 may be an amino group or a mono- or dialkylamino group in which each alkyl substituent contains not more than about 6 carbon atoms, or R^3 and R^4 together form a hydrocarbon group such that R^3 and R^4 together with the intervening carbon atom form a nitrogenous heterocyclic ring containing no hetero atoms other than said intervening nitrogen atom.

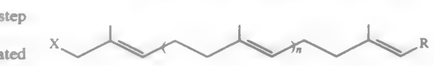
5,354,874

SUBSTITUTED-ACYCLIC TERPENE COMPOUND

Hisao Takayanagi; Yasunori Kitano, both of Yokohama, and Yasuhiro Morinaka, Tsuchiura, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Division of Ser. No. 44,602, Apr. 9, 1993, Pat. No. 5,304,661, which is a division of Ser. No. 962,016, Oct. 15, 1992, Pat. No. 5,245,085, which is a continuation of Ser. No. 786,071, Oct. 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 730,811, Jul. 25, 1991, abandoned. This application Nov. 30, 1993, Ser. No. 159,145
Claims priority, application Japan, Nov. 29, 1989, 1-309797; Jun. 20, 1990, 2-162439
Int. Cl.[5] C07C *69/734;* C07D *315/00*
U.S. Cl. 549—427 1 Claim

1. An acyclic terpene compound of the formula (I):



(I)

wherein R is a group of the formula:



wherein R^2 is a hydrogen atom or —CO_2R^3; R^3 is a C_1–C_4 alkyl group; X is a group of the formula: —OR^5 wherein R^5 is a hydrogen atom, 1-alkoxyalkyl group, tetrahydrofuryl group or tetrahydropyranyl group, a silyl group substituted with a C_1–C_5 alkyl group or a phenyl group; and n is 0, with the proviso that when R^5 is a hydrogen atom, R^2 is not a hydrogen

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atom; and when R^5 is a 1-ethoxyethyl group, R^3 is not a methyl group.

5,354,875

EPOXIDATION OF OLEFINS USING A TITANIA-SUPPORTED TITANOSILICATE

Laszlo T. Nemeth, Palatine; Thomas P. Malloy, Lake Zurich, and Richard R. Jones, Bensenville, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed Dec. 23, 1993, Ser. No. 172,314
Int. Cl.[5] C07D *301/12, 301/14, 301/19, 303/04*
U.S. Cl. 549—531 15 Claims

1. A process for the epoxidation of a carbon-carbon double bond in an olefinic compound comprising reacting under epoxide-forming conditions the olefinic compound with a hydroperoxide in the presence of a catalyst which is the product of hydrothermal crystallization of a titanosilicate in the presence of titania particles, and recovering the epoxide formed.

5,354,876

PREPARATION AND PURIFICATION OF 1-AMINO-2-PHENOXY-4-HYDROXYANTHRAQUINONE

Reinhold Kohlhaupt, Frankenthal, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 859,899, Mar. 30, 1992, abandoned. This application Jul. 22, 1993, Ser. No. 94,988
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1991, 4111827
Int. Cl.[5] C07C *225/34*
U.S. Cl. 552—242 3 Claims

1. A process for purifying 1-amino-2-phenoxy-4-hydroxyanthraquinone obtained by the reaction of a 1-amino-2-halo-4-hydroxyanthraquinone with phenol, which consists essentially of washing the crude product with an alkaline hypochlorite solution which has an active chlorine content of from 1 to 6% by weight.

5,354,877

CATALYTIC HYDROGENATION OF POLYUNSATURATED FATTY ACIDS OR DERIVATIVES USING A PALLADIUM/CARBONIC ACID CATALYTIC COMPLEX

Arno Behr, Duesseldorf; Christoph Lohr, Dortmund, and Bernd Ellenberg, Neuss, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP92/00542, § 371 Date Nov. 19, 1993, § 102(e) Date Nov. 19, 1993, PCT Pub. No. WO92/16605, PCT Pub. Date Oct. 1, 1992
PCT Filed Mar. 12, 1992, Ser. No. 119,078
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1991, 4109246
Int. Cl.[5] C07C *51/36*
U.S. Cl. 554—115 7 Claims

1. A process for the production of a monounsaturated fatty acid or a derivative thereof comprising reacting a polyunsaturated fatty acid or derivative thereof with hydrogen at a temperature of from about 0° C. to about 150° C. and under a pressure of from about 800 hPa to about 1500 hPa in the presence of a catalyst comprised of a palladium salt and a carbonic acid ester.

5,354,878

PROCESS FOR THE CONTINUOUS PRODUCTION OF LOWER ALKYL ESTERS OF HIGHER FATTY ACIDS

Joosten Connemann, Sagemuhlenstrabe 45, 2950 Leer; Anton Krallmann, Zeisigstrabe 6, 2953 Rhauderfehn, and Erich Fischer, Gerhard-Hauptmann-Strabe 82, 2956 Moormerland-Warsingsfehn, all of Fed. Rep. of Germany

Filed Mar. 26, 1993, Ser. No. 37,224
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1992, 4209779
Int. Cl.[5] C07C *51/00*
U.S. Cl. 554—167 16 Claims

1. In a process for the continuous production of lower alkyl esters of higher fatty acids wherein lower alcohol and an oil phase of fatty triglycerides or natural oils or fats containing free fatty acids is subjected to catalytic transesterification at reaction temperatures of up to 100° C. in the presence of an alkaline catalyst, and glycerine, catalyst residue alcohol reactant are removed, the improvement which comprises, in sequence,

a) introducing a reaction mixture which is pre-mixed combination of oil phase, alcohol and catalyst at reaction temperature into the top of a reactor column such that the rate of flow is less than the sinking rate of the glycerine which separates from the reaction mixture and separating free glycerine from the column transesterification product,

b) transferring the column transesterification product which contains dissolved and dispersed glycerine, lower alkyl esters, alcohol, catalyst, oil and partially transformed oil, to a second reactor which is at reaction temperatures and conducting a further transesterification,

c) washing the thus obtained reaction mixture with an aqueous extractant in a first separator,

d) introducing the thus washed reaction mixture, additional alcohol and catalyst into a third reactor at reaction temperature and at a flow speed conforming to the stage a) of the process,

e) introducing the resulting mixture into a fourth reactor and maintaining the mixture under stirring for a further transesterification, forming a reaction product have a degree of transesterification of at least 99.2%,

f) introducing the resulting transesterification product and hot, aqueous extractant solution into a second separator and separating alcohol, glycerine, soaps formed and catalyst from the transesterification product, and

g) drying the transesterification product.

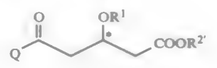
5,354,879

OPTICALLY ACTIVE INTERMEDIATE AND METHOD FOR PRODUCTION THEREOF

Toshiro Konoike, Suita, and Yoshitaka Araki, Amagasaki, both of Japan, assignors to Shionogi Seiyaku Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP92/00611, § 371 Date Feb. 19, 1993, § 102(e) Date Feb. 19, 1993, PCT Pub. No. WO92/22560, PCT Pub. Date Dec. 23, 1992
PCT Filed May 14, 1992, Ser. No. 969,249
Claims priority, application Japan, Jun. 19, 1991, 3-176209
Int. Cl.[5] C07F *7/08, 7/18*
U.S. Cl. 556—405 6 Claims

1. A method for synthesizing a compound (I):



(I)

wherein

R^1 is hydrogen or a hydroxy protecting group;

R^2 is hydrogen, a lower alkyl or a substituted lower alkyl;

Q is —CH═P(R^3)$_3$ or —CHX'X

wherein

R^3 is a lower alkyl, a substituted lower alkyl, an aryl or a substituted aryl;

X is —P(O)R^4R^5 or —S(O)R^4

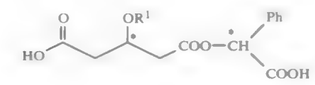
wherein

R^4 and R^5, each is hydrogen, a lower alkyl, a substituted lower alkyl, a lower alkoxy, a substituted lower alkoxy, an aryl, a substituted aryl, or halogen;

X' is hydrogen or lower alkyl;

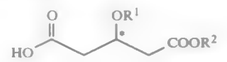
* is an asymmetric carbon, which comprises

(a) subjecting glutarate (II):



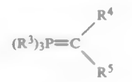
(II)

wherein R^1 and * are respectively the same as defined above, to a transesterification to produce a half-ester (III):



(III)

wherein R^1 is the same as defined above; R^2 is a lower alkyl or a substituted lower alkyl, then converting the free carboxylic acid to a reactive derivative, and reacting the derivative with a compound (IV a):



(IVa)

wherein R^3, R^4, and R^5 are respectively the same as defined above, or

(b) reacting the compound (II) with CH2X'X (IV b) wherein X and X' are respectively the same as defined above.

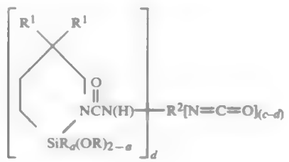
5,354,880

CYCLIC SILYLUREAS AND PROCESS OF PREPARATION

Enrico J. Pepe, Amawalk, N.Y.; Curtis L. Schilling, Jr., Marietta, Ohio, and Everett W. Bennett, Easthampton, Mass., assignors to OSi Specialties, Inc., Danbury, Conn.

Filed Dec. 18, 1992, Ser. No. 993,304
Int. Cl.[5] C07F *7/10*
U.S. Cl. 556—407 19 Claims

1. A cyclic silylurea having the formula:



wherein

R is an alkyl group having 1 to 3 carbon atoms;

R^1 is selected from the group consisting of

(i) hydrogen,

(ii) a linear or branched alkyl group having 1 to 6 carbon atoms, and

(iii) an aryl group having 6 to 8 carbon atoms;

R^2 is a mono, di, or polyvalent organic or organosilicone monomer or polymer;

a is 0, 1, or 2;

c is a number ranging from 1 to 5 inclusive; and

d is a number less than or equal to c.

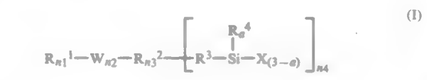
5,354,881

SILANES CARRYING WATER-SOLUBILIZING AND HYDROPHOBIC MOIETIES

Wen-Hsuan Chang, Gibsonia, Pa.; John F. Grunewalder, Nequon, Wis.; Mark A. Harley, Oakmont, and Edward E. McEntire, Allison Park, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 15, 1991, Ser. No. 776,040
Int. Cl.[5] C07F *7/08, 7/10*
U.S. Cl. 556—419 18 Claims

1. Aqueous dispersions of novel silanes containing in excess of about 5 weight percent of the silanes, said novel silanes carrying at least one anionic or nonionic water-solubilizing moiety and at least one hydrophobic moiety having the following structural formula:



(I)

where

R^1 represents a monovalent organic moiety selected from the group consisting of aryl, alkaryl and aralkyl radicals having from 6 to 30 carbon atoms and which may contain one or more heteratoms selected from the group consisting of O, N and S and functional groups selected from the group consisting of OH, CO_2, ethers, amines, amides and carbon-to-carbon double bonds;

R^2 represents a divalent



containing organic moiety selected from the group consisting of alkylidene, cycloalkylidene, arylidene, alkarylidene, and aralkylidene, with the total number of carbon atoms in R^1+R^2 being at least 5 and which may contain one or more heteratoms selected from the group consisting of O, N and S and functional groups selected from the group consisting of OH, CO_2, ethers, amines, amides and carbon-to-carbon double bonds;

R^3 represents a divalent organic radical having a carbon directly attached to silicon and which may contain one or more heteratoms selected from the group consisting of O, N and S and functional groups selected from the group consisting of OH, CO_2, ethers, amines, amides and carbon-to-carbon double bonds;

R^4 represents radicals selected from the group consisting of H and a lower alkyl;

W represents a moiety selected from the group consisting of AZ and O(CH_2CHR^5O)$_m$, wherein R^5 represents H or a lower alkyl; with the proviso that when W is AZ, n_1 is 0; and when W is O(CH_2CHR^5O)$_m$, n_1 is 1;

A represents a radical selected from the group consisting of CO_2 and SO_3;

Z represents a radical selected from the group consisting of $NR^6R^7R^8R^9$ and an alkali metal, wherein R^6 represents H or a lower alkyl and R^7, R^8 and R^9 independently represent radicals selected from the group consisting of H and a lower alkyl, with the formula weight of $R^7+R^8+R^9$ being less than about 300;

X represents a halide, or the radical OR^{10}, wherein R^{10} represents H, a lower alkyl, aryl or alkaryl organic radicals or

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wherein
R^{11} represents a lower alkyl;
n_1 is the integer 0 when W is AZ; n_1 is the integer 1 when W is $O(CH_2CHR^5O)_m$;
n_2 is the integer 1 or 3;
n_3 is the integer 1;
n_4 is the integer 1;
n_5 is the integer 0 or 1;
a is the integer 0 or 1; and
m is the integer ranging from 5 to 70.

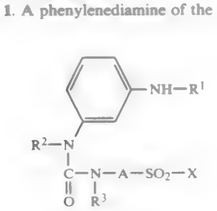
5,354,882

DOUBLED PHENYL- OR NAPHTHYL-AZOBENZENES HAVING A PLURALITY OF REACTIVE GROUPS AND INTERMEDIATES THEREFOR

Bernd Siegel, Ludwigshafen, and Manfred Patsch, Wachenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 835,484, Feb. 14, 1992, Pat. No. 5,182,371. This application Jun. 30, 1992, Ser. No. 906,656
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1991, 4107692
The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.
Int. Cl.[5] C07C *323/25*
U.S. Cl. 558—30 **14 Claims**

1. A phenylenediamine of the formula II



(II)

where
R^1, R^2 and R^3 are identical or different and each is independently of the others hydrogen, C_1–C_4-alkyl or phenyl,
A is C_2–C_8-alkylene which may be interrupted by from 1 to 3 oxygen atoms in ether function, imino groups or C_1–C_4-alkylimino groups, and
X is vinyl, 2-acetoxyethyl or 2-sulfatoethyl.

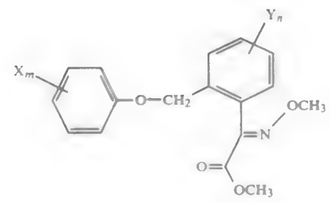
5,354,883

PREPARATION OF E-OXIME ETHERS OF PHENYLGLYOXYLIC ESTERS

Heinz Isak, Mutterstadt; Michael Keil, Freinsheim; Bernd Wolf, Fussgoenheim, and Horst Wingert, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

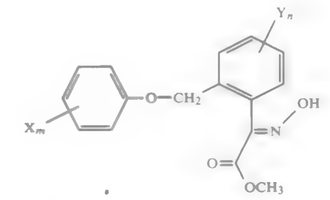
Filed Feb. 5, 1993, Ser. No. 14,149
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1992, 4203170
Int. Cl.[5] C07C *229/00*
U.S. Cl. 560—35 **4 Claims**

1. A process for preparing E-oxime ethers of the formula I



I

where
X and Y are identical or different and each is halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, trifluoromethyl, or 1-C_1–C_5-alkyl (C_2–C_5-alkenyl) hydroxyimino-C_1–C_5-alkyl (C_2–C_5-alkenyl) and 1-C_1–C_5-alkyl(C_2–C_5-alkenyl)hydroxyimino,
m is an integer from 0 to 4,
n is an integer from 0 to 3, **which comprises**
(1) preparing an E-oxime of the formula IIa

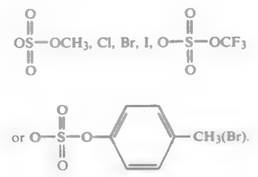


IIa

where the substituents have the meanings specified above, which comprises treating a mixture of an E-oxime of the formula IIa and the corresponding Z-oxime in a one-phase system with an acidic catalyst in an organic diluent to prepare said E-oxime,
(2) converting said E-oxime of the formula IIa with a base in the presence of an organic diluent into the corresponding salt and
(3) reacting said corresponding salt with a methylating agent of the formula

CH_3X III

where



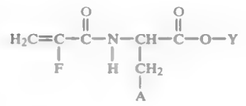
5,354,884

OPTICALLY ACTIVE N-α-FLUOROACRYLOYLAMINO ACID DERIVATIVES FOR THE RESOLUTION OF RACEMATES

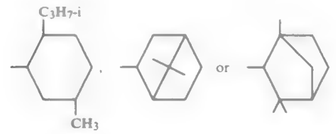
Rolf Grosser, Leverkusen; Walter Lange, Cologne; Bruno Bömer, Bergisch Gladbach; Dieter Arlt, Cologne, and Dietmar Bielefeldt, Ratingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 721,065, Jun. 26, 1991, abandoned. This application Oct. 1, 1992, Ser. No. 955,225
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1990, 4021108
Int. Cl.[5] C07C *229/30*
U.S. Cl. 560—41 **5 Claims**

1. An N-α-fluoroacryloylamino acid derivative of the formula



wherein
A is hydrogen or phenyl, and
Y is lower alkyl of 2 to 4 carbon atoms,



provided that when A is hydrogen Y is not lower alkyl of 2 to 4 carbon atoms.

5,354,885

PROCESS FOR PREPARING ETHYL ESTER OF L-DOPA

Isaac Milman, Maale Adumin; Alexander Veinberg, Rehovot; Daphne Atlas, Neve Granot, and Eldad Melamed, Mevasseret Zion, all of Israel, assignors to Yissum Research Development Company of the Hebrew University of Jerusalem and Teva Pharmaceutical Industries Ltd., both of Jerusalem, Israel

Filed Dec. 24, 1992, Ser. No. 995,847
Int. Cl.[5] C07C *229/00*; A61K *31/195, 31/135*
U.S. Cl. 560—43 **4 Claims**

1. A process for preparing a composition comprising pharmaceutically acceptable, crystalline, non-hygroscopic L-DOPA ethyl ester as free base in an amount which is at least 97% by weight of the composition and L-DOPA in an amount which is less than 1% by weight of the composition which comprises:
(a) reacting L-DOPA with ethanol in the presence of thionyl chloride or an acid catalyst selected from the group consisting of hydrochloric acid and toluene sulfonic acid to yield crude L-DOPA ethyl ester;
(b) removing any volatiles from the crude L-DOPA ethyl ester;
(c) diluting the solution with water containing a suitable antioxidant selected from the group consisting of ascorbic acid, BHT, BHA, sodium sulfite, sodium metabisulfite, propyl gallate, and vitamin E, and adjusting the pH with a suitable base to a pH between pH 6.0 and pH 7.0 to yield a solution containing L-DOPA ethyl ester free base;
(d) extracting the solution with a suitable solvent selected from the group consisting of ethyl acetate, methylene chloride or toluene in the presence of a suitable antioxidant selected from the group listed in step (c) to obtain the free base in the solvent phase;
(e) concentrating the solvent phase at a temperature lower than 40° C. to form a precipitate; and
(f) recrystallizing the precipitate in the presence of a second suitable solvent selected from the group listed in step (d) containing a second suitable antioxidant selected from the group listed in step (c) to yield the composition of pharmaceutically acceptable, crystalline, non-hygroscopic L-DOPA ethyl ester free base.

5,354,886

CATALYSTS ON INORGANIC CARRIERS FOR PRODUCING ETHYLIDENE DIACETATE

Dae C. Park, and Sung Y. Cho, both of Daejonjikhal, Rep. of Korea, assignors to Korea Research Institute of Chemical Technology, Daejonjikhal, Rep. of Korea

Division of Ser. No. 772,257, Oct. 7, 1991, abandoned. This application Jul. 26, 1993, Ser. No. 97,647
Claims priority, application Rep. of Korea, Oct. 5, 1990, 15017
Int. Cl.[5] B01J *31/20, 31/24, 31/18*
U.S. Cl. 560—232 **7 Claims**

1. A process for preparing ethylidene diacetate comprising reacting at a temperature between about 90–250° C. and at a pressure between about 20–70 atmospheres, methyl acetate, iodomethane, carbon monoxide and hydrogen in the presence of an accelerator and a supported catalyst represented by the formula M_aX wherein,
M is a compound of a group VIII transition metal which catalyzes the production of ethylidene diacetate;
X is an inorganic carrier; and
a represents the weight percent of said metal in said catalyst.

5,354,887

PREPARATION OF HEXENE-1,6-DIOIC ACIDS

Philippe Denis, Decines, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

Filed Dec. 13, 1990, Ser. No. 626,833
Claims priority, application France, Dec. 13, 1989, 89 16754
Int. Cl.[5] C07C *57/00, 51/00*
U.S. Cl. 562—517 **15 Claims**

1. A process for the preparation of a hexene-1,6-dioic acid, comprising reacting carbon monoxide and water with at least one diacyloxylated butene in a polar, aprotic and basic solvent, in the presence of a catalytically effective amount of palladium values, and at least one inorganic halide, the cation of which halide comprises an alkali or alkaline earth metal and the anion of which comprises a chloride or bromide.

5,354,888

PROCESS FOR THE PRODUCTION OF ORGANIC CARBODIIMIDES AND THEIR USE AS STABILIZERS FOR PLASTICS

Hans-Joachim Scholl, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 24, 1994, Ser. No. 186,188
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1993, 4302697
Int. Cl.[5] C07C *267/00*
U.S. Cl. 564—252 **1 Claim**

1. A process for the production of organic carbodiimides comprising
a) carbodiimidizing an isocyanate with a phospholine oxide catalyst and
b) upon completion of a), removing the catalyst system by introducing carbon dioxide in vacuo at a temperature of from about 100° to about 250° C.

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5,354,889

CRYSTALLIZATION PROCESS

Peter Chalmers, Sunbury; Andrew F. Kirby, Footscray, and Roger Heath, Eltham, all of Australia, assignors to ICI Australia Operations Proprietary Limited, Melbourne, Australia

Division of Ser. No. 798,247, Nov. 26, 1991, Pat. No. 5,276,188.
This application Sep. 23, 1993, Ser. No. 125,244
Claims priority, application Australia, Nov. 27, 1990, PK3569
Int. Cl.[5] C07C *251/42, 249/12, 249/04*
U.S. Cl. 564—256 5 Claims

1. A process for the preparation of anhydrous crystalline form of the compound 2-[1-(ethoxyimino)propyl]-3-hydroxy-5-(3-butyryl-2,4,6-trimethylphenyl)cyclohex-2-en-1-one comprising the steps of:

preparing a solution of said compound in a low-boiling hydrocarbon solvent; cooling the solution to at least 0° C., and collecting the crystals thus formed.

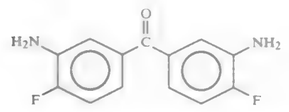
5,354,890

AROMATIC DIAMINE INTERMEDIATES USEFUL IN THE PREPARATION OF POLYIMIDES

Shoji Tamai; Wataru Yamashita; Yuichi Okawa; Yuko Ishihara; Keizaburo Yamaguchi, and Akihiro Yamaguchi, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

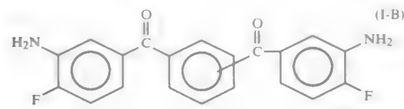
Division of Ser. No. 894,940, Jun. 8, 1992, Pat. No. 5,260,388.
This application Jun. 24, 1993, Ser. No. 80,772
Claims priority, application Japan, Jun. 10, 1991, 3-137688; Jul. 1, 1991, 3-160199; Jul. 4, 1991, 3-164241
Int. Cl.[5] C07C *225/22*
U.S. Cl. 564—328 3 Claims

1. 3,3'-Diamino-4,4'-difluorobenzophenone having the formula (I-A):



(I-A)

2. 1,3- or -1,4-bis(3-amino-4-fluorobenzoyl)benzene having the formula (I-B):



(I-B)

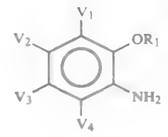
5,354,891

METHOD OF PRODUCING AROMATIC AMINE DERIVATIVES

Tatsuhiko Obayashi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

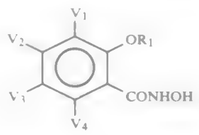
Filed Mar. 4, 1993, Ser. No. 26,007
Claims priority, application Japan, Mar. 5, 1992, 4-083152
Int. Cl.[5] C07C *209/40*
U.S. Cl. 564—394 17 Claims

1. A method of producing aromatic amine derivatives represented by the following formula (I), which comprises: reacting an aromatic hydroxamic acid derivative represented by the following formula (II) in the presence of a base with a nitrile represented by the following formula (III) or a nitrile equivalent represented by the following formula (IV);



(I)

wherein in formula (I) R_1 represents an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group or an optionally substituted aryl group; and V_1, V_2, V_3 and V_4 each represent a hydrogen atom or a group which can be substituted for a hydrogen on an aromatic ring, or V_1 and V_2, V_2 and V_3, or V_3 and V_4 combine with each other to complete a condensed ring;



(II)

wherein in formula (II) R_1, V_1, V_2, V_3 and V_4 have the same meanings as defined in general formula (I), respectively;



(III)



(IV)

wherein in formula (III) R_2 represents an optionally substituted alkyl group or an optionally substituted aryl group; and wherein in formula (IV) R_3 represents an optionally substituted alkyl group or an optionally substituted aryl group, and X represents an alkoxy group, an aryloxy group or a halogen atom.

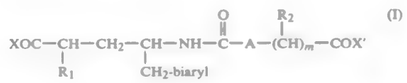
5,354,892

BIARYL SUBSTITUTED 4-AMINO-BUTYRIC ACID AMIDES

Gary Ksander, Milford, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 824,132, Jan. 22, 1992, Pat. No. 5,217,996. This application Jan. 25, 1993, Ser. No. 8,031
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[5] C07C *229/28, 229/34*; A61K *31/195*
U.S. Cl. 562—444 10 Claims

1. A compound of formula I



(I)

wherein COX and COX' independently represent carboxyl or carboxyl derivatized in form of a pharmaceutically acceptable ester or amide; R_1 represents hydrogen, lower alkyl, C_3–C_7-cycloalkyl-lower alkyl, aryl-lower alkyl, biaryl-lower alkyl, lower alkoxy, aryl-lower alkoxy, aryloxy, N-lower alkylamino, N,N-di-lower alkylamino, N-aryl-lower alkylamino, N,N-di-aryl-lower alkylamino, N-arylamino, N-N-diarylamino, lower alkanoylamino, aryl-lower alkanoylamino or aroylamino; R_2 represents hydrogen, hydroxy, lower alkoxy, lower alkyl, aryl-lower alkyl, C_3–C_7-cycloalkyl-lower alkyl, amino-lower alkyl, hydroxy-lower alkyl, lower alkylthio-lower alkyl, lower alkoxy-lower alkyl, aryl-lower alkylthio-lower alkyl or aryl-lower alkoxy-lower alkyl; biaryl represents phenyl substituted by carbocyclic or heterocyclic aryl; A represents a direct bond, lower alkylene, phenylene or cyclohexylene; m represents 1 or zero, provided that m represents 1 when A is a direct bond; carbocyclic aryl within the above definitions represents phenyl optionally substituted by lower alkyl, lower alkoxy, halogen, hydroxy, cyano, lower alkanoyloxy or trifluoromethyl; heterocyclic aryl represents thienyl or furanyl optionally substituted by lower alkyl; or a pharmaceutically acceptable salt thereof.

5,354,893

CMS/SiO_2/AL_2O_3 CATALYSTS FOR IMPROVED SELECTIVITY IN THE SYNTHESIS OF AMINES FROM METHANOL AND/OR DIMETHYL ETHER AND AMMONIA

Henry C. Foley, Newark; George C. Sonnichsen; Loren D. Brake, both of Wilmington; Ravindra K. Mariwala, Newark, all of Del., and David S. Lafyatis, Gent, Belgium, assignors to The University of Delaware, Newark and E. I. Du Pont de Nemours Company, Inc., Wilmington, both of Del.

Filed Jul. 30, 1993, Ser. No. 100,463
Int. Cl.[5] C07C *209/16*
U.S. Cl. 564—479 12 Claims

1. A method of producing monomethylamine, dimethylamine and trimethylamine which comprises contacting methanol and/or dimethyl ether and ammonia with a catalyst comprising CMS material, silica and alumina.

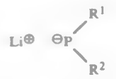
5,354,894

PROCESS FOR THE PREPARATION OF LITHIUM DIARYLPHOSPHIDES AND ALKYLATED DERIVATIVES THEREOF

Thomas J. Devon, Longview, Tex., assignor to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 17,662, Feb. 12, 1993, Pat. No. 5,288,912.
This application Oct. 14, 1993, Ser. No. 136,051
Int. Cl.[5] C07F *9/50*
U.S. Cl. 568—17 5 Claims

1. Process for the preparation of lithium diarylphosphide compounds having the structure



(I)

which comprises contacting a triarylphosphine having the formula



(II)

with lithium and a primary or secondary amine in the presence of an inert, organic solvent, wherein R^1 is alkyl-substituted aryl and R^2 and R^3 independently are selected from phenyl and alkyl-substituted aryl.

5,354,895

OXADIMETHACRYLICS AND PREPARATION THEREOF

Siegmund Besecke, Hamelen; Andreas Deckers, Ludwigshafen, and Harald Lauke, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 23, 1992, Ser. No. 996,394
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1991, 4142909
Int. Cl.[5] C07C *229/00*
U.S. Cl. 560—155 4 Claims

1. A process for preparing oxadimethacrylics of the formula

I

where A and B are selected from the group consisting of —$COOR^1$, —COR^1, —$CONR^2R^3$ and —CN with the proviso that A≠B and is not —COOH, and R^1, R^2 and R^3 are each defined as follows:

R^1 is hydrogen, C_1–C_8-alkyl, C_3–C_8-cycloalkyl, C_3–C_8-cycloalkyl-C_1–C_5-alkyl, wherein the cycloalkyl rings may be C_1–C_4-alkyl- or C_1–C_4-alkoxy-monosubstituted, -disubstituted or -trisubstituted, hydroxy-C_1–C_5-alkyl, amino-C_1–C_5-alkyl, N-C_1–C_4-alkylamino-C_1–C_5-alkyl, N,N-di-(C_1–C_4-alkyl)amino-C_1–C_5-alkyl, C_6–C_{18}-aryl, C_6–C_{18}-aryl-C_1–C_4-alkyl, wherein the aryl groups may carry up to three of the following groups: halogen, C_1–C_{22}-alkyl, C_1–C_4-alkoxy, carboxyl, C_1–C_4-alkoxycarbonyl, aminocarbonyl, C_1–C_4-alkylaminocarbonyl, di(C_1–C_4-alkyl)aminocarbonyl, nitrilo, nitro, amino, C_1–C_4-alkylamino, di(C_1–C_4-alkyl)amino;

R^2 and R^3 are each hydrogen, C_1–C_{18}-alkyl, C_3–C_8-cycloalkyl, C_3–C_8-cycloalkyl-C_1–C_5-alkyl, wherein the cycloalkyl rings may be C_1–C_4-alkyl- or C_1–C_4-alkoxy-monosubstituted, -disubstituted or -trisubstituted, C_6–C_{18}-aryl, C_6–C_{18}-aryl-C_1–C_4-alkyl, wherein the aryl groups may carry up to three of the following groups: halogen, C_1–C_{22}-alkyl, C_1–C_4-alkoxy, carboxyl, C_1–C_4-alkoxycarbonyl, aminocarbonyl, C_1–C_4-alkylaminocarbonyl, di(C_1–C_4-alkyl)aminocarbonyl, nitrilo, nitro, amino, C_1–C_4-alkylamino, di(C_3–C_4-alkyl)amino;

which process comprises:

reacting a mixture of two different acrylics of the formula IIa and IIb



IIa



IIb

with formaldehyde or a formaldehyde donor compound in the presence of oxygen and at least one tertiary amine to form an alcohol of the formulae



IIIa



IIIb

and then converting either the reaction mixture containing these alcohols, or the isolated alcohols IIIa and IIIb, into the corresponding oxadimethacrylic I by heating in the presence of oxygen and at least one tertiary amine.

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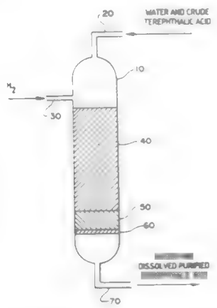
5,354,896
CATALYSTS FOR REACTION OF EPOXIDES AND ACIDS
William C. Pike, Midland, Mich.; Clinton J. Boriack, Freeport, and James A. Rabon, Jr., West Columbia, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.
Filed Feb. 1, 1993, Ser. No. 12,104
Int. Cl.[5] C07C *67/26*
U.S. Cl. 560—209 **16 Claims**

1. A process for making an ester compound, comprising the step of contacting:
(a) an epoxide compound that contains at least one oxirane ring with
(b) an acid compound that contains a carboxylic acid moiety or a phenolic hydroxyl moiety,
(c) in the presence of an anion exchange resin that contains quaternary ammonium moieties
under conditions such that an ester is formed, wherein the quaternary ammonium moieties in the anionic exchange resin comprise a nitrogen atom linked to a polymer backbone and to 3 pendant alkyl groups that each contain 2 to 6 carbon atoms.

5,354,897
PROCESS FOR OBTAINING ORTHOHYDROXYMANDELIC ACID AND ITS SALTS
Alain Schouteeten, Ezanville, and Yani Christidis, Paris, both of France, assignors to Societe Francaise Hoechst, Puteaux, France
Filed Feb. 12, 1993, Ser. No. 15,429
Claims priority, application France, Feb. 12, 1992, 92 01565
Int. Cl.[5] C07C *59/48*
U.S. Cl. 562—470 **20 Claims**

1. Preparation process for orthohydroxymandelic acid, as well as its salts, comprising
reacting glyoxylic acid with phenol in a concentrated aqueous medium in the presence of tertiary amine and catalytic quantities of trivalent metal cations and wherein said concentrated aqueous medium consists essentially of said glyoxylic acid in aqueous solution at a concentration by weight greater than 50%, said phenol, said tertiary amine and said trivalent metal cations.
isolating the resultant product and, optionally salifying said product.

5,354,898
METHOD FOR PURIFYING CRUDE AROMATIC CARBOXYLIC ACIDS
Hobe Schroeder, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.
Filed Jun. 17, 1993, Ser. No. 78,623
Int. Cl.[5] C07C *51/42*
U.S. Cl. 562—485 **11 Claims**



1. A method for purifying an aromatic carboxylic acid comprising passing a mixture of purification solvent and aromatic carboxylic acid, at a temperature of about 100° C. to about 350° C. and at a pressure sufficient to maintain the purification solvent substantially in the liquid phase through a first zone in a reactor vessel in the presence of hydrogen gas, the first zone having a catalyst comprising a carbon carrier material and at least one hydrogenation catalyst component, and subsequently passing the mixture through a second zone comprising abrasion-resistant material, the second zone being positioned within the reactor vessel so that it is directly adjacent to a means for retaining catalyst within the reactor vessel.

5,354,899
PRODUCTION PROCESS OF 1,4,5,8-NAPHTHALENE TETRACARBOXYLIC ACID
Toshio Sato; Ikuo Ito, and Kyoichi Takeda, all of Kashima, Japan, assignors to Sumikin Chemical Co., Tokyo, Japan
Filed Jun. 4, 1993, Ser. No. 72,242
Claims priority, application Japan, Jun. 5, 1992, 4-171771
Int. Cl.[5] C07C *63/48*
U.S. Cl. 562—488 **12 Claims**

1. A production process of 1,4,5,8-naphthalene tetracarboxylic acid comprising the steps of:
adding 1,3-butadiene to ethyl-p-xylene in the presence of an alkaline metallic catalyst;
subjecting 5-(p-xylyl)-hexene to a cyclization to form 1,4,5,8-tetramethyl-1,2,3,4-tetrahydronaphthalene;
dehydrogenating the 1,4,5,8-tetramethyl-1,2,3,4-tetrahydronaphthalene at a temperature in the range of from 200° to 350° C.; and
oxidizing a resultant product produced from the dehydrogenation.

5,354,900
AN H-ANP PEPTIDE, PHARMACEUTICAL COMPOSITION AND METHOD OF USE
Hisayuki Matsuo, 6653, Ooaza-kihara, Kiyotake-cho, Miyazaki-gun, Miyazaki-ken, and Kenji Kangawa, Miyazaki, both of Japan, assignors to Suntory Limited, Osaka and Hisayuki Matsuo, Miyazaki, both of Japan
Filed Dec. 21, 1984, Ser. No. 685,151
Claims priority, application Japan, Dec. 26, 1983, 58-243675
Int. Cl.[5] **A61K** *37/02;* **C07K** *7/10*
U.S. Cl. 514—12 **12 Claims**

1. A peptide α-hANP having the following formula:



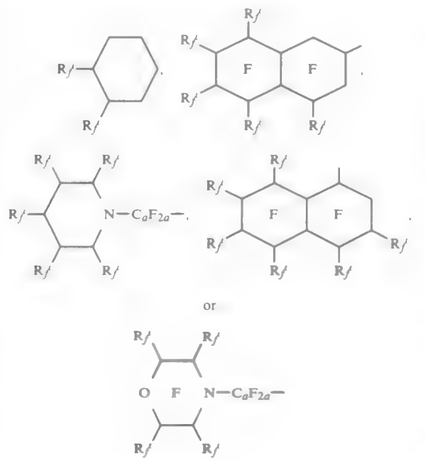
wherein ① and ② are directly bonded, Asp represents L-aspartic acid, Asn represents L-asparagine, Ala represents L-alanine, Arg represents L-arginine, Ile represents L-isoleucine, Gly represents glycine, Glu represents L-glutamic acid, Gln represents L-glutamine, Cys represents together with —S— ½ L-cysteine, Ser represents L-serine, Tyr represents L-Tyrosine, Phe represents L-phenylalanine, Met represents L-methionine, and Leu represents L-leucine, and the amino acid chain has an amino-termical at the left end, and carboxy-terminal at the right end, and acid addition salts thereof.

5,354,901
PERFLUORO(CYCLOALIPHATIC METHYLENEOXYALKYLENE) CARBONYL FLUORIDES AND DERIVATIVES THEREOF
Richard M. Flynn, White Bear Lake, and Patricia M. Savu, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 906,504, Jun. 30, 1992, Pat. No. 5,210,282, which is a division of Ser. No. 419,609, Oct. 10, 1989, Pat. No. 5,153,322, which is a division of Ser. No. 116,259, Oct. 30, 1987, Pat. No. 4,889,656. This application Feb. 1, 1993, Ser. No. 12,249
Int. Cl.[5] C07C *61/08*
U.S. Cl. 562—507 **10 Claims**

1. Fluorochemical compositions comprising compounds represented by the formula



wherein R_f is perfluorocycloaliphatic radical



Wherein R_f is independently fluorine or a C_1 to C_4 straight or branched chain perfluoroalkyl radical with the proviso that no more than two R_f radicals in an R_f radical are said perfluoroalkyl radicals and
a is an integer of from 1 to 6,
n is 0 to about 10,
Z is —H, —X', —CF_2H, —CF_2X'', —COX'', —COR, —COOH, —COOR, —CF_3, —CONR'R', —CH_2NH_2, —CH_2NCO, —CN, —CH_2OCOR_f, —$CH_2OSO_2R_f$, —$C_3N_3(R_f')_2$, —CH_2OCOR, or —$(CH_2)_mSi(R''')_3$,
wherein —X' is —F, —Cl, —Br, or —I
X'' is —Cl, —Br or I
R and R' are each independently H or lower alkyl, aryl, or a combination thereof, or the two R' groups in —CONR'R' can together form an alkylene moiety, which together with the amido nitrogen atom form a heterocyclic nitrogen atom form a heterocyclic ring,
R'' is H or CH_3
R''' is a hydrolyzable group,
R_f' is a fluoroaliphatic group, which can contain one or a plurality of hetero atoms, and
m is an integer of 2 to 11.

5,354,902
STABILIZED SORBIC ACID OR SALT THEREOF
Mel Merciadez, Avenel; Kas Mohammed, Somerville, and Francois Y. Maniere, Princeton Junction, all of N.J., assignors to McNeil-PPC, Inc., Milltown, N.J.
Continuation of Ser. No. 966,246, Oct. 26, 1992, abandoned. This application Apr. 28, 1993, Ser. No. 54,355
Int. Cl.[5] C07C *51/377*
U.S. Cl. 562—601 **21 Claims**

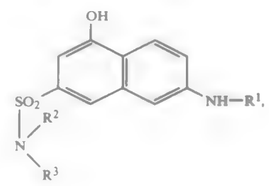
1. A stabilized aqueous solution containing sorbic acid or salt thereof in an antimicrobial proportion, and further containing from 0.1 to about 5 parts, by weight, per million parts of solution of manganous ion, said manganous ion being in an amount sufficient to inhibit oxidation of said sorbic acid or salt thereof to acetaldehyde.

5,354,903
POLYMERS PREPARED FROM CONCENTRATED SOLUTIONS OF N',N'METHYLENEBISACRYLAMIDE
Russell J. MacDonald, Wilmington, Mass., assignor to Ionics, Incorporated, Watertown, Mass.
Continuation-in-part of Ser. No. 705,872, May 28, 1991, abandoned, which is a division of Ser. No. 541,854, Jun. 21, 1990, Pat. No. 5,037,858. This application Dec. 24, 1992, Ser. No. 996,742
Int. Cl.[5] C07C *233/38*
U.S. Cl. 564—4 **8 Claims**

1. A process for solubilizing a slurry of one or more bisamide compounds selected from the group consisting of alkylenebisacrylamides and alkylenebismethacrylamides suspended in a liquid which liquid comprises at least one water miscible organic compound and a minor amount of water by weight, said process comprising adding at least one caustic in an amount greater than 0.01 gram-equivalents per liter of said slurry and effective to cause the substantial solubilization of said slurry, said slurry characterized by having a concentration of at least one of said bisamide compounds in dissolved and suspended state which concentration is greater than the equilibrium solubility of said one bisamide compound in said liquid at the temperature of said slurry, said water present in said slurry in an amount of at least one mole for each three moles of said at least one bisamide compound.

5,354,904
SULFONAMIDES DERIVED FROM 1-HYDROXY-6-AMINONAPHTHALENE-3-SULFONIC ACID (J ACID)
Udo Mayer, Frankenthal, and Ulrike Schloesser, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Oct. 8, 1992, Ser. No. 957,781
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1991, 4133514
Int. Cl.[5] C07D *211/06;* C07C *311/39*
U.S. Cl. 564—86 **3 Claims**

1. A sulfonamide of the formula I



(I)

where
R^1 is C_1–C_{13}-alkyl, substituted or unsubstituted phenyl, C_1–C_8-alkanoyl or substituted or unsubstituted benzoyl, and

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R^2 and R^3 are identical or different and each is independently of the other C_1–C_{13}-alkyl, optionally interrupted by from 1 to 4 imino or C_1–C_4-alkylimino groups and which may optionally be substituted by amino, by a 5- or 6-numbered heterocyclic radical with a nitrogen atom and optionally a further hereto atom selected from the group consisting of nitrogen, oxygen and sulfur, or by substituted or unsubstituted C_5–C_7-cycloalkyl or unsubstituted or methyl-substituted piperidinyl, or R^2 may also be hydrogen.

5,354,905

N-ALKOXYMETHYL BENZAMIDE DERIVATIVE AND MANUFACTURING METHOD THEREFOR, AND MANUFACTURING METHOD FOR BENZAMIDE DERIVATIVE USING THIS N-ALKOXYMETHYL BENZAMIDE DERIVATIVE

Yoshihiro Sato; Akihiro Koiso, both of Sakura; Tohru Asada, Shisui; Yasuhisa Miura, Sakura; Yasuo Kikuchi, and Yasuaki Hariya, both of Nagano, all of Japan, assignors to Yashima Chemical Industry Co., Ltd., Tokyo, Japan

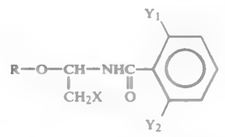
Filed Oct. 20, 1993, Ser. No. 138,423

Claims priority, application Japan, Oct. 23, 1992, 4-286394; Oct. 23, 1992, 4-286395

Int. Cl.[5] C09C *233/05, 233/65*

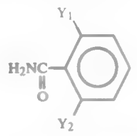
U.S. Cl. 564—186 **7 Claims**

1. A manufacturing method for N-alkoxymethyl benzamide derivatives depicted in Formula (I), wherein a substituted benzamide represented by Formula (II) below and an α-haloacetal represented by Formula (III) below are reacted;



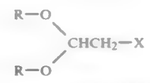
(I)

wherein, X indicates a halogen atom, Y_1 and Y_2 indicate hydrogen atoms or halogen atoms that are identical or different, and R indicates a lower alkyl group;



(II)

wherein, Y_1 and Y_2 represent hydrogen atoms or halogen atoms that are identical or different;



(III)

wherein, reference X indicates a halogen atom, and reference R indicates a lower alkyl group.

5,354,906

AQUEOUS LIQUID SOLUTION OF A BETAINE WITH A SOLIDS CONTENT OF AT LEAST 40% BY WEIGHT

Christian Weitemeyer, Essen; Willi Foitzik, Bottrop; Hans-Dieter Käseborn; Burghard Grüning, both of Essen, and Uwe Begoihn, Bochum, all of Netherlands, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

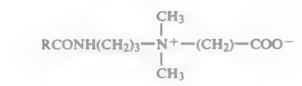
Filed Feb. 12, 1993, Ser. No. 16,917

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1992, 4207386

Int. Cl.[5] C07C *233/00*

U.S. Cl. 554—52 **10 Claims**

1. An aqueous liquid solution of a betaine of the formula



(I)

in which R is an alkyl group of coconut fatty acids, hydrogenated coconut fatty acids or a fatty acid mixture which on the average corresponds to coconut fatty acids, wherein the solution has a solids content of at least 40% by weight, a pH of 5 to 8 and an aminoamide content of not more than 1% by weight and comprises 1 to 3% by weight, based on the solution, of one or more saturated fatty acids with an average of 8 to 18 carbon atoms or one or more unsaturated fatty acids with an average of 8 to 24 carbon atoms and 0 to 4% by weight of glycerin, based on the solution, provided said saturated or unsaturated fatty acid is a compound selected from a member of the group consisting of lauric acid, oleic acid, ricinoleic acid, coconut fatty and hydrogenated coconut fatty acid.

5,354,907

AMINES DERIVED FROM THPE AND PROCESSES FOR PREPARING THE SAME

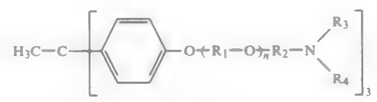
Michael T. Sheehan; James R. Sounik, both of Corpus Christi, and William W. Wilkison, III, Richardson, all of Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 69,964, May 28, 1993, Pat. No. 5,312,988. This application Jan. 11, 1994, Ser. No. 179,789

Int. Cl.[5] C07C *217/44;* **C08G** *18/10, 18/30*

U.S. Cl. 564—325 **11 Claims**

1. A process for preparing amino compounds having the structural formula:



wherein n is 0–1000; R_1 equals R_2, and R_1 and R_2 are from the group $—CH_2—CH_2—$; $—CH_2—C(CH_3)H—$; and $—C(CH_3)H—CH_2—$; and R_3 and R_4 are each independently selected from the group consisting of H, $—CH_3$, $—CH_2CH_3$, $—CH_2OH$, and $—CH_2—CH_2—OH$, which comprises the steps of (a) reacting an alkali metal hydroxide with tris(p-hydroxyphenyl)ethane to form the alkali metal salt of said tris-(p-hydroxyphenyl)ethane, (b) reacting the alkali metal salt of tris(phydroxyphenyl)ethane with an oxide material selected from the group consisting of ethylene oxide and propylene oxide to form an oxylated material, and then, (c) subjecting the oxylated material to reductive amination, under suitable conditions of temperature and pressure in order to form the amino compounds covered by the structural formula (I) set forth above.

5,354,908

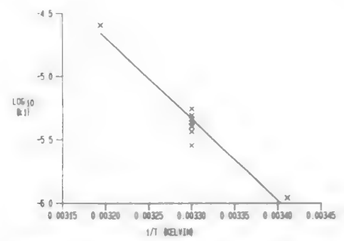
METHOD AND SYSTEM FOR COBALT ABSORPTION IN A HYDROFORMYLATION PROCESS

Kirk C. Nadler, Somerville, N.J., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Jul. 16, 1993, Ser. No. 93,421

Int. Cl.[5] C07C *45/50*

U.S. Cl. 568—451 **15 Claims**



1. A method for absorbing cobalt within an olefinic feedstock which comprises:

introducing a volatile cobalt compound into an absorber, said volatile cobalt compound comprising $HCo(CO)_4$;

introducing said olefinic feedstock into said absorber together with said volatile cobalt compound to form a cobalt-containing olefin mixture, said cobalt-containing olefin mixture having both volatile and non-volatile cobalt compound species entrained therein, said non-volatile cobalt compound species are selected from the group consisting of: $Co_2(CO)_8$, $Co_4(CO)_{12}$ and mixtures thereof;

withdrawing said cobalt-containing olefin mixture from said absorber;

introducing at least a portion of cobalt-containing olefin mixture into a reactor having a temperature within the range between about 20 to about 100° C. and a carbon monoxide partial pressure in the range between about 0 to about 3 atm, wherein a substantial portion of said volatile cobalt compound entrained within said cobalt-containing olefin mixture decomposes to its non-volatile cobalt compound species such that a cobalt-containing olefin solution is formed; and

withdrawing said cobalt-containing olefin solution from said reactor; whereby said cobalt-containing olefin solution has a cobalt concentration of up to about 3.5 weight %.

5,354,909

PROCESSES FOR ISOLATING HYDROXYALDEHYDE ISOMERS

Jeffrey A. Klang, Exton, Pa., and Ann P. Lawson, Lancashire, Del., assignors to ARCO Chemical Technology, L.P., Wilmington, Del.

Filed Aug. 17, 1993, Ser. No. 108,090

Int. Cl.[5] C07C *45/78*

U.S. Cl. 568—492 **20 Claims**

1. A process for isolating 3-hydroxy-2-methylpropanal from a mixture of 3-hydroxy-2-methylpropanal and 4-hydroxybutanal, said process comprising:

(a) reacting a two-phase mixture of:

(i) an aqueous solution containing 3-hydroxy-2-methylpropanal and 4-hydroxybutanal; and

(ii) a hydroxy compound; in the presence of an acid catalyst selected from the group consisting of soluble inorganic acids, organic acids, and insoluble acids, and a nonpolar organic solvent to produce a product aqueous solution that contains 3-hydroxy-2-methylpropanal and a product organic solution that contains a 2-oxytetrahydrofuran derived from 4-hydroxybutanal and the hydroxy compound;

(b) separating the product aqueous solution from the product organic solution; and

(c) isolating 3-hydroxy-2-methylpropanal from the product aqueous solution.

5,354,910

FUNCTIONAL FLUOROPOLYMERS

Ming-Hong Hung, and Paul R. Resnick, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 115,060, Sep. 7, 1993, Pat. No. 5,310,838. This application Feb. 1, 1994, Ser. No. 189,470

Int. Cl.[5] C07C *33/42, 43/12, 43/11*

U.S. Cl. 568—615 **3 Claims**

1. A monomer composition having the formula

$$CF_2=CF—[OCF_2CF(CF_3)]_m—O—(CF_2)_n—(CH_2)_p—O—COR$$

wherein m=0–20, n=1–10, p=1–4, and R is alkyl having 1–6 carbon atoms or phenyl.

5,354,911

PROCESS FOR THE PREPARATION OF UNSATURATED ETHERS

Jürgen Weber, Oberhausen; Peter Lappe, Dinslaken, and Helmut Springer, Oberhausen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 23,489, Feb. 25, 1993, abandoned, which is a continuation of Ser. No. 804,843, Dec. 6, 1991, abandoned. This application Jan. 7, 1994, Ser. No. 178,634

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1990, 4039950

Int. Cl.[5] C07C *41/28*

U.S. Cl. 568—691 **17 Claims**

1. A process for the preparation of ethers of the formula $R^1—CR^2=CH—O—R^3$, wherein R^1 is an alkyl radical having 1 to 6 carbon atoms, R^2 is hydrogen or an alkyl radical having 1 or 2 carbon atoms, and R^3 is an alkyl radical having 1 to 6 carbon atoms, said process comprising reacting a diacetal of the formula $R^1—CHR^2—CH(—O—R^3)_2$, at an elevated temperature, in the presence of a catalyst composed of an acid having a pK value not exceeding 2.5, and a cycloaliphatic or aliphatic amine having 8 to 30 carbon atoms, said acid and said amine being present in a molar ratio of 1:0.7 to 1:3.5.

5,354,912

METHOD FOR THE REMOVAL OF DIMETHYL ETHER FROM METHYL TERTIARY BUTYL ETHER

Rei-Yu J. Hwan, Houston, and Charles J. Kruse, Cypress, both of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Jun. 1, 1993, Ser. No. 69,482

Int. Cl.[5] C07C *41/06, 41/09, 41/34*

U.S. Cl. 568—697 **10 Claims**

1. A method for the continuous preparation and purification of methyl tertiary butyl ether which comprises the steps of:

(a) continuously passing an isobutylene feed mixture comprising methyl tertiary butyl ether, isobutylene and methanol through an isobutylene conversion zone containing a bed of an etherification catalyst under etherification reaction conditions to form an isobutylene conversion reaction product comprising unreacted methanol, unreacted isobutylene, dimethyl ether, methyl tertiary butyl ether, carbon monoxide and water,

(b) continuously charging said etherification conversion product to a methanol extraction zone and counter-currently contacting it therein with water to provide an overhead raffinate comprising isobutylene, methyl tertiary butyl ether and water, and an extract comprising

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methanol, water, methyl tertiary butyl ether, isobutylene and dimethyl ether,

(c) continuously charging the raffinate to a raffinate distillation column and separating it therein into a lighter distillation fraction comprising isobutylene and water and a heavier distillation fraction consisting essentially of methyl tertiary butyl ether,

(d) continuously charging said extract to an extract distillation column and separating it therein into a vaporized overhead fraction comprising methyl tertiary butyl ether, isobutylene, methanol and dimethyl ether; and a heavier distillation fraction comprising water and methanol,

(e) continuously partially condensing said vaporized overhead fraction and then venting uncondensed vapors, constituting from about 5 to 10 wt. % of the resultant condensate to thereby provide a liquid overhead distillation fraction comprising methyl tertiary butyl ether, methanol and isobutylene that is substantially free from dissolved dimethyl ether and carbon monoxide, and

(f) recycling said liquid overhead distillation fraction to said methanol extraction zone.

5,354,913

OPTICALLY ACTIVE PHENOL DERIVATIVES AND PREPARATION THEREOF

Mitsuru Shiraishi, Amagasaki, and Shoji Fukumoto, Kobe, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

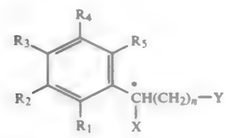
Filed Jul. 2, 1993, Ser. No. 85,166

Claims priority, application Japan, Jul. 3, 1992, 4-177043; Jun. 1, 1993, 5-130296

Int. Cl.[5] *C07C 39/10, 39/08*

U.S. Cl. 568—766 **15 Claims**

1. An optically active phenol derivative represented by the formula



wherein

R_1 is hydroxyl, alkoxy having 1 to 4 carbon atoms, methoxymethyloxy, benzyloxy, acyloxy having 1 to 4 carbon atoms, or tetrahydropyranyloxy;

R_2 is hydrogen, hydroxy, alkyl having 1 to 4 carbon atoms, or alkoxy having 1 to 4 carbon atoms;

R_3 is hydrogen, hydroxy, alkyl having 1 to 8 carbon atoms unsubstituted or substituted with hydroxy, alkoxy having 1 to 4 carbon atoms, fluorine, chlorine, bromine, or carboxyl, aralkyl having 7 to 13 carbon atoms unsubstituted or substituted with 1 to 5 halogen atoms selected from the group consisting of fluorine, chlorine and bromine, fluorine, chlorine, bromine, formyl, 1,3-dioxolan, propylene acetal, 1,3-oxathiolan, di(C_{1-4})alkyl acetal, acyl having 2 to 7 carbon atoms, carboxyl, alkoxycarbonyl having 2 to 5 carbon atoms, aralkyloxycarbonyl having 8 to 10 carbon atoms, aryloxycarbonyl having 7 to 10 carbon atoms, aminocarbonyl, (C_{1-4})alkylaminocarbonyl, morpholinocarbonyl unsubstituted or substituted with (C_{1-2}) alkyl or (C_{1-2}) alkoxy, piperidinocarbonyl unsubstituted or substituted with (C_{1-2})alkyl or (C_{1-2}) alkoxyl pyrolidinocarbonyl unsubstituted or substituted with (C_{1-2})alkyl or (C_{1-2})alkoxy, piperazinocarbonyl unsubstituted or substituted with (C_{1-2}) alkyl or (C_{1-2}) alkoxyl —CH═R_6 wherein R_6 is (C_{1-4})alkyl or (C_{2-6}) acyl or —CH═N_7 wherein R_7 is hydroxyl, (C_{1-8})alkoxy, (C_{2-6})alkenyloxy, or benzhydryloxy;

R_4 is alkyl having 1 to 8 carbon atoms unsubstituted or substituted with hydroxy, alkoxy having 1 to 4 carbon atoms, fluorine, chlorine, bromine, or carboxyl, aralkyl having 7 to 13 carbon atoms unsubstituted or substituted with 1 to 5 halogen atoms selected from the group consisting of fluorine, chlorine and bromine, fluorine, chlorine, bromine, formyl, 1,3-dioxolan, propylene acetal, 1,3-oxathiolan, di(C_{1-4})alkyl acetal, acyl having 2 to 7 carbon atoms, carboxyl, alkoxycarbonyl having 2 to 5 carbon atoms, aralkyloxycarbonyl having 8 to 10 carbon atoms, aryloxycarbonyl having 7 to 10 carbon atoms, aminocarbonyl, (C_{1-4})alkylaminocarbonyl, morpholinocarbonyl unsubstituted or substituted with (C_{1-2}) alkyl or (C_{1-2}) alkoxy, piperidinocarbonyl unsubstituted or substituted with (C_{1-2})alkyl or (C_{1-2}) alkoxy, pyrolidinocarbonyl unsubstituted or substituted with (C_{1-2})alkyl or (C_{1-2}) alkoxy, piperazinocarbonyl unsubstituted or substituted with (C_{1-2})alkyl or (C_{1-2}) alkoxyl —CH═R_6 wherein R_6 is (C_{1-4})alkyl or (C_{2-6}) acyl or —CH═NR_7 wherein R_7 is hydroxyl, (C_{1-8})alkoxy, (C_{1-2})alkenyloxy, or benzhydryloxy;

R_5 is hydrogen or alkyl having 1 to 4 carbon atoms; or an adjacent two of R_2, R_3, R_4 and R_5 may bond to each other to form —$(CH_2)_a$— wherein a is 3 or 4, —CH═CH—CH═CH—, —$(CH_2)_b$—CO— wherein b is 2 or 3, or —$(CH_2)_l$—CO—O— wherein l is 1 or 2;

X is phenyl unsubstituted or substituted with fluorine chlorine bromine, alkyl having 12 to 4 carbon atoms or alkoxy having 1 to 4 carbon atoms at the para-position thereof, or thienyl,

Y is methyl, hydroxymethyl, methoxymethyl, acetoxymethyl, 2-tetrahydropyranyloxymethyl, benzyloxymethyl, nitroxymethyl, aminocarbonyloxymethyl unsubstituted or N-substituted with methyl, ethyl, dimethyl, or phenyl, morpholinocarbonyloxymethyl, piperidinocarbonyloxymethyl, pyrolidinocarbonyloxymethyl, piperazinocarbonyloxymethyl, thiomorpholinocarbonyloxymethyl, t-butyldimethylsilyloxymethyl, carboxyl, alkoxycarbonyl having 2 to 4 carbon atoms, aminocarbonyl, mono- or di-(C_{1-4})alkylaminocarbonyl, benzylaminocarbonyl, α- or β-phenylethylaminocarbonyl, 1-(α-naphthyl)ethylaminocarbonyl, phenylaminocarbonyl whose benzene ring is unsubstituted or substituted with hydroxyl, amino, nitro, halogen, methyl, or methoxy, diphenylaminocarbonyl, hydroxyaminocarbonyl, N-hydroxy-N-methylaminocarbonyl, N-hydroxy-N-phenylaminocarbonyl, glycine residue-carbonyl, arginine residue-carbonyl, histidine residue-carbonyl, asparagin residue-carbonyl, proline residue-carbonyl, phenylalanine residue-carbonyl, alanine residue-carbonyl, methionine residue-carbonyl, leucine residue-carbonyl, morpholinocarbonyl, piperidinocarbonyl, pyrolidinocarbonyl, thiomorpholinocarbonyl, piperazinocarbonyl, cyano, or tetrazolyl;

n is an integer of 3 to 15, and

C means an asymmetric carbon atom.

5,354,914

METHOD FOR PRODUCING LOWER POLYHYDRIC ALCOHOLS BY HYDROGENOLYSIS OF HIGHER POLYHYDRIC ALCOHOLS

Guiseppe Gubitosa, Novara, and Bruno Casale, Cameri, both of Italy, assignors to Montecatini Tecnologie S.r.l. and Novamont S.p.A., Milan, Italy

Filed Jan. 26, 1993, Ser. No. 9,127

Claims priority, application Italy, Jan. 31, 1992, TO92A000081

Int. Cl.[5] **B01J** *23/46, 21/18;* **C07C** *29/00*

U.S. Cl. 568—861 **9 Claims**

1. A method for producing lower polyhydric alcohols, said method comprising subjecting a higher polyhydric alcohol or a mixture of higher polyhydric alcohols to a hydrogenolysis under pressure in the presence of a supported metal catalyst, said supported metal catalyst comprising an inert support, and comprising the following relative to the dry weight of the supported metal catalyst:

(a) 0.5 to 5 weight % ruthenium; and

(b) 0.1 to 10 weight % tin.

5,354,915

CATALYSTS FOR THE REDUCTION OF CARBONYLIC COMPOUNDS TO ALCOHOLS

Walter T. Reichle, Warren, N.J., assignor to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Dec. 21, 1992, Ser. No. 994,630

Int. Cl.[5] **C07C** *27/00, 29/14, 29/143, 33/03*

U.S. Cl. 568—881 **5 Claims**

1. In a process for converting an α,β-olefinically unsaturated aldehydic or ketonic compound into the corresponding allylic alcohol derivative which comprises reacting the α,β-olefinically unsaturated aldehydic or ketonic compound with an alcohol in the presence of a metal oxide catalyst supported on a support;

the improvement wherein;

(a) the catalyst is ZrO_2

(b) the support is silica; and

(c) the reaction is conducted in a liquid phase.

5,354,916

LOW TEMPERATURE CONVERSION OF ALKANES

Istvan T. Horvath, New Hope, Pa.; John M. Millar, Summit, and Raymond A. Cook, Hampton, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 10,039, Jan. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 848,814, Mar. 10, 1992, abandoned. This application Jan. 24, 1994, Ser. No. 187,351

Int. Cl.[5] **C07C** *29/58, 17/10*

U.S. Cl. 568—893 **7 Claims**

1. A process for selectively making alkyl monochlorides and hydrolysis products which comprises: forming a homogeneous liquid phase containing water, an alkane, a soluble transition metal halide complex which is $(PtCl_4^{-2})/(PtCl_6)^{-2}$ and an added halogen source selected from the group consisting of chlorine, a chloride and a hypochloride in addition to that contained in the transition metal; reacting the alkane, the added halogen source and the transition metal halide complex at a temperature and for a time and in amounts that are effective to produce the corresponding alkyl monochloride and hydrolysis products without the formation of metallic platinum wherein the added halogen source is not completely depleted.

5,354,917

USE OF SUPPORTED RHODIUM CATALYSTS IN THE PREPARATION OF TERTIARY BUTYL ALCOHOL FROM TERTIARY BUTYL HYDROPEROXIDE

John R. Sanderson, Leander; Roger G. Duranleau, Georgetown, and John F. Knifton, Austin, all of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Nov. 12, 1993, Ser. No. 150,914

Int. Cl.[5] **C07C** *29/132, 31/12*

U.S. Cl. 568—909.8 **13 Claims**

1. In a method wherein a solvent solution of a tertiary butyl hydroperoxide charge stock is brought into contact with a catalytically effective amount of a hydroperoxide decomposition catalyst in a hydroperoxide decomposition reaction zone in liquid phase with agitation to convert said tertiary butyl hydroperoxide to decomposition products, principally tertiary butyl alcohol, the improvement which comprises:

a) using, as said hydroperoxide decomposition catalyst, a carbon or alumina supported hydroperoxide decomposition catalyst consisting essentially of rhodium, and

b) recovering tertiary butyl alcohol from the products of said hydroperoxide decomposition reaction.

5,354,918

HIGHLY PURE MONOALKYLPHOSPHINE

Hiromi Ohsaki; Kazuyuki Asakura, both of Joetsu; Masashi Sugiya, Tokyo; Yutaka Demura, and Tomio Yanai, both of Kohriyama, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd. and Nippon Chemical Industrial Co., Ltd., both of Japan

Filed Jul. 15, 1993, Ser. No. 91,363

Claims priority, application Japan, Jul. 17, 1992, 4-190487; Nov. 9, 1992, 4-298629; Mar. 12, 1993, 5-51806; Mar. 22, 1993, 5-61775

Int. Cl.[5] **C07F** *9/50*

U.S. Cl. 568—8 **9 Claims**

1. A method for preparing a monoalkcylphosphine of high purity comprising the steps of

(a) reacting, in a non-aqueous system, phosphine and an alkene in the presence of a catalyst containing at least one anhydrous alkanesulfonic acid of the formula R—SO_3H where R is an alkyl group of 1 to 4 carbon atoms, in an organic solvent having a boiling point higher than the boiling point of the monoalkylphosphine prepared,

(b) contacting the system of step (a) with an alkali solution to remove catalyst remaining in the system, and

(c) recovering the monoalkylphosphine.

5,354,919

OXIDATION OF AROMATIC COMPOUNDS SUBSTITUTED BY OXIDIZABLE ALKYL MOIETIES

Michel Costantini; Dominique Laucher, both of Lyons, and Eric Fache, Villeurbanne, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Filed Jun. 29, 1993, Ser. No. 84,028

Claims priority, application France, Jun. 29, 1992, 92 07950; Mar. 26, 1993, 93 03488

Int. Cl.[5] **C07C** *45/32*

U.S. Cl. 568—432 **32 Claims**

1. A process for the oxidation of an aromatic compound substituted by an oxidizable alkyl substituent, comprising reacting said aromatic compound substituted by an oxidizable alkyl substituent with an oxidizing agent, in an aqueous reaction medium, in the presence of a catalytically effective amount of a solid, palladium-containing oxidation catalyst so as to produce an oxidized aromatic product, wherein the oxidizable alkyl substituent is bonded to the aromatic compound by way of a carbon atom which has at least two free hydrogen atoms.

5,354,920

CHEMICAL PROCESS FOR THE PREPARATION OF A 2-HYDROXYARYLALDEHYDE

Brian G. Cox, Poynton, and Daniel Levin, Manchester, both of United Kingdom, assignors to Zeneca Limited, London, England

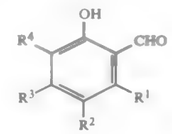
Filed Aug. 10, 1993, Ser. No. 103,697

Claims priority, application United Kingdom, Aug. 20, 1992, 9217723

Int. Cl.[5] **C07C** *45/00*

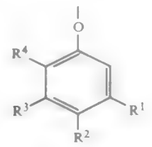
U.S. Cl. 568—437 **14 Claims**

1. A method for the preparation of a 2-hydroxyarylaldehyde of the formula:



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wherein each of R^1, R^2, R^3 and R^4, independently, represents hydrogen, halogen, hydroxy or an alkyl, cycloalkyl, aralkyl, aryl, alkaryl, alkoxy or acyl group containing up to 36 carbon atoms which comprises reacting an aryloxymagnesium halide wherein the aryloxy group has the formula:



with formaldehyde or a formaldehyde-liberating compound under substantially anhydrous conditions in the presence of a polar organic solvent other than hexamethylphosphoramide or 1,3-dimethyl-3,4,5,6-2(1H)-pyrimidone.

5,354,921

SINGLE CRYSTALLINE FIBROUS SUPERCONDUCTIVE COMPOSITION AND PROCESS FOR PREPARING THE SAME

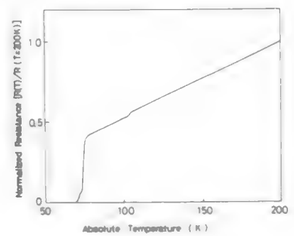
Ichiro Matsubara, Ikeda; Hideo Tanigawa, Kawanishi; Toru Ogura, Toyonaka; Hiroshi Yamashita, Kawanishi, and Makoto Kinoshita, Ikeda, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Continuation of Ser. No. 797,156, Nov. 26, 1991, abandoned, which is a continuation of Ser. No. 470,467, Jan. 26, 1990, abandoned. This application Aug. 26, 1993, Ser. No. 112,054

Claims priority, application Japan, Mar. 23, 1989, 1-73641

Int. Cl.[5] H01L *39/12*; H01B *12/00, 12/02*

U.S. Cl. 505—121 1 Claim



1. A superconductive composition of the formula $Bi_2Sr_2CaCu_2M_xO_y$, wherein $0.15<x<0.5$; $7.8<y<8.5$; and M is at least one member selected from the group consisting of Pb, Sn, Sb, In, Cd, Ga, Ge, K, Li and Na; said superconductive composition comprising a bendable fibrous single crystal rectangular in cross-section having a thickness of 1 to 10 μm, and a width of 10 to 500 μm and a length of 15 to 20 mm, and capable of being fabricated into a wire.

5,354,922

PERFLUOROPOLYOXYALKYLENE ENDOWED WITH A HIGH VISCOSITY AND A LOW PEROXIDE OXYGEN CONTENT, AND PROCESS FOR PREPARING THEM

Giuseppe Marchionni; Anna M. Staccione, both of Milan, and Pier A. Guarda, Turin, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Apr. 22, 1992, Ser. No. 871,991

Claims priority, application Italy, Apr. 26, 1991, MI 91 A001152

Int. Cl.[5] C07C *409/00*

U.S. Cl. 568—560 7 Claims

1. Peroxy perfluoropolyoxyalkylenes consisting of $—CF_2O—$ and $—CF_2CF_2O—$units, peroxidic oxygen atoms, and two end groups, wherein the end groups, like or different from each other, are selected from the group consisting of $—CF_3$, $—C_2F_5$, $—CF_2Cl$, $—CF_2CF_2Cl$, —COF, and CF_2 COF, and wherein said peroxy perfluoropolyoxyalkyles having a ratio of $—CF_2CF_2O—$units to $—CF_2O—$units of from 0.4 to 5, a peroxidic oxygen content not exceeding 4% by weight and a viscosity of from 300,000 to 8,000,000 cSt at 20° C.

5,354,923

PROCESS FOR THE PREPARATION OF AROMATIC CARBONIC DIESTERS

Norbert Schön; Hans-Josef Buysch, both of Krefeld; Eberhard Ziragiebl, Cologne, and Jürgen Kischkewitz, Ratingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 7, 1991, Ser. No. 788,959

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1990, 4036594

Int. Cl.[5] C07C *68/06, 69/96*

U.S. Cl. 558—270 10 Claims

1. Process for the preparation of carbonic diesters containing at least one aromatic ester group from carbonic diesters containing at least one aliphatic ester group by catalysed transesterification with a phenol, characterised in that the catalyst used is a titanium dioxide having a surface area of at least 90 m^2/g as determined by the BET method in an amount of 0.1 to 200% by weight, relative to the carbonic diester used, which contains at least one aliphatic ester group.

5,354,924

PROCESS FOR THE PRODUCTION OF DINITROTOLUENE

Robert W. Mason, Lake Charles, La., assignor to Olin Corporation, Cheshire, Conn.

Continuation of Ser. No. 900,213, Jun. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 210,549, Jun. 22, 1988, abandoned. This application Aug. 17, 1993, Ser. No. 108,035

Int. Cl.[5] C07C *205/11*

U.S. Cl. 568—934 14 Claims

1. A process for nitrating toluene to produce dinitrotoluene by a liquid phase nitration reaction of nitric acid with toluene in a reactor at a reaction temperature of between 0° C. and 60° C. for a reaction time of less than one-half hour and at reaction pressure not exceeding atmospheric pressure, said reaction employing a molar ratio of nitric acid plus any water to toluene of between 10:1, and 15:1, said reacion being conducted in the absence of sulfuric acid, and in the absence of any aprotic dipolar solvent during the reaction and in the absence of any aprotic dipolar solvent to halt the reaction, to produce said dinitrotoluene in a product mixture that is free of mononitro- and dinitro- cresol species, followed by vacuum distillation of the product mixture, in the absence of any aprotic dipolar solvent, to remove unreacted nitric acid from said product mixture thereby providing said dinitrotoluene.

14. A process for nitrating toluene to produce dinitrotoluene in a product mixture that is free of mononitro- and dinitrocresol by a liquid phase nitration reaction effected in less than 15 minutes by reacting nitric acid with toluene in the absence of sulfuric acid, and in the absence of any aprotic dipolar solvent during the reaction and in the absence of any aprotic dipolar solvent to halt the reaction, in a reactor at a reaction temperature of between 0° C. and 60° C. and a reaction pressure not exceeding atmospheric pressure, said nitric acid having an acid content of between 95 and 100 percent by weight based upon the weight of acid plus water therein, the molare ratio of nitric acid plus water to toluene being between 10:1 and 15:1.

5,354,925

USE OF SUPPORTED LEAD OXIDE CATALYST IN THE PREPARATION OF TERTIARY BUTYL ALCOHOL FROM TERTIARY BUTYL HYDROPEROXIDE

John R. Sanderson, Leander, and Roger G. Duranleau, Georgetown, both of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Nov. 12, 1993, Ser. No. 150,920

Int. Cl.[5] C07C *29/132, 31/12*

U.S. Cl. 568—909.8 7 Claims

1. In a method wherein a solvent solution of a tertiary butyl hydroperoxide charge stock is brought into contact with a catalytically effective amount of a hydroperoxide decomposition catalyst in a hydroperoxide decomposition reaction zone in liquid phase with agitation to convert said tertiary butyl hydroperoxide to decomposition products, principally tertiary butyl alcohol, the improvement which comprises:

a) using, as said hydroperoxide decomposition catalyst, a supported hydroperoxide decomposition catalyst consisting essentially of lead oxide supported on alumina, and

b) recovering tertiary butyl alcohol from the products of said hydroperoxide decomposition reaction.

5,354,926

FLUOROALKYLATED FULLERENE COMPOUNDS

Paul J. Fagan; Paul J. Krusic, and Edel Wasserman, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 23, 1993, Ser. No. 21,395

Int. Cl.[5] C07C *22/08, 17/24, 17/26, 17/28*

U.S. Cl. 570—129 4 Claims

1. A mixture of fluoroalkylated fullerene compounds comprising $C_{60}[(CF_2)_5CF_3]_bH_yCl_w$ wherein b is an average of 9, y is an average of 2, and w is an average of 0.5.

5,354,927

PROCESS FOR PREPARING 1,1,1-TRIFLUORO-2,2-DICHLOROETHANE BY HYDROFLUORINATION IN THE PRESENCE OF CATALYSTS

Diego Carmello, Mestre, and Giorgio Guglielmo, Mirano, both of Italy, assignors to Ausimont S.p.A., Milan, Italy

Division of Ser. No. 981,651, Nov. 25, 1992, Pat. No. 5,276,224, which is a division of Ser. No. 793,879, Nov. 18, 1991, Pat. No. 5,262,574, which is a continuation of Ser. No. 584,960, Sep. 19, 1990, Pat. No. 5,091,601, which is a continuation of Ser. No. 403,070, Sep. 5, 1989, Pat. No. 4,967,023, which is a continuation of Ser. No. 163,659, Mar. 3, 1988, abandoned. This application Jun. 7, 1993, Ser. No. 72,387

Claims priority, application Italy, Mar. 9, 1987, 19622 A/87

The portion of the term of this patent subsequent to Oct. 30, 2007, has been disclaimed.

Int. Cl.[5] C07C *17/20, 19/02*

U.S. Cl. 570—166 11 Claims

1. A continuous process for preparing 1,1,1-trifluoro-2,2-dichloroethane and 1,1,1,2-tetrfluoro-2-chloroethane, which comprises reacting perchloroethylene with HF in the gas phase in the presence of a catalyst comprising Cr_2O_3 carried on AlF_3, without Al_2O_3, in the gamma and/or beta form.

5,354,928

PROCESS FOR THE MANUFACTURE OF 1,1,1,2-TETRAFLUOROCHLOROETHANE AND OF PENTAFLUOROETHANE

Bernard Cheminal, Brignais; Eric Lacroix, Lyon, and Andre Lantz, Vernaison, all of France, assignors to Societe Atochem, Puteaux, France

Continuation of Ser. No. 696,791, May 7, 1991, abandoned. This application May 24, 1993, Ser. No. 65,422

Claims priority, application France, May 11, 1990, 90 05908

Int. Cl.[5] C07C *17/08*

U.S. Cl. 570—169 16 Claims

1. Process for the selective preparation of 1,1,1,2-tetrafluorochloroethane or 1,1,1,2-tetrafluorobromoethane, and of pentafluoroethane, comprising fluorinating under catalytic gas phase conditions at least one pentahaloethane of formula $C_2HX_{2-n}F_{3+n}$ in which X denotes a chlorine or bromine atom and n the number 0 or 1, by means of hydrofluoric acid, wherein the catalyst employed consists of a catalytic quantity of chromium in an oxidation state equal to or greater than 3 and an activated charcoal as support whereby formation of tetrahaloethanes and perhaloethanes is minimized.

5,354,929

BISBENZOCYCLOBUTENE COMPOUNDS WITH HYDROPHOBIC SUBSTITUENTS, A METHOD FOR MAKING SAME

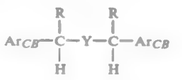
Robert A. Kirchhoff; P.J. Thomas, and R. Garth Pews, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 28, 1993, Ser. No. 128,611

Int. Cl.[5] C07C *13/00*

U.S. Cl. 585—26 12 Claims

1. A compound represented by:



wherein:

Y is a divalent alkyl, cycloaliphatic, aromatic, heteroaromatic, or heterocyclic moiety;

each Ar_{CB} is an arylcyclobutene moiety attached to the adjacent —CHRY group through an atom on the aromatic ring;

each R is independently selected from the group consisting of inertly substituted alkyl, cycloalkyl, and aryl.

5,354,930

PROCESS FOR CONVERTING POLYMERS BY CONTACTING SAME WITH PARTICULATE MATERIAL SUSPENDED IN A TOROIDAL SHAPE

Martin P. Atkins, Ashford, and David A. Kidd, Fleet, both of England, assignors to BP Chemicals Limited, London, England

Filed Jun. 11, 1993, Ser. No. 76,233

Claims priority, application United Kingdom, Jun. 29, 1992, 9213772; Jul. 21, 1992, 9215494

Int. Cl.[5] C07C *1/00, 4/00*

U.S. Cl. 585—241 11 Claims

1. A process for the conversion of a polymer, especially hydrocarbon polymers, into products of lower molecular weight than the starting polymer, said process comprising:

a. generating in a processing chamber of circular cross-section in its vertical orientation a stream of hot gas which flows in an angular and upward direction causing

(i) a bed or particulate material to be entrained in the flow of the gas and held in suspension in a toroidal shape and

(ii) the polymer introduced into said chamber in turn to intermingle with the particulate material and assume said toroidal shape thereby cracking said polymer at a temperature in the range from 300–600° C. into products of lower molecular weight and

(iii) recovering said products of lower molecular weight from said chamber.

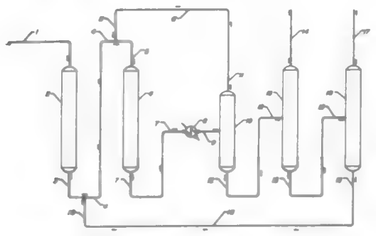
VOL 1167 ISS 2 OC 11 1994 UMI

5,354,931

PROCESS FOR HYDROTREATING AN ORGANIC FEEDSTOCK CONTAINING OXYGEN COMPOUNDS AND A HALOGEN COMPONENT

Chwu-Ching Jan; Mark D. Moser, both of Elk Grove Village; Tom N. Kalnes, La Grange, and George R. Hibel, Schaumburg, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed Mar. 10, 1993, Ser. No. 28,862
Int. Cl.[5] C07C *5/00*; C01B *7/01, 7/07*; C10G *25/00*
U.S. Cl. 585—264 14 Claims



1. A process for treating a halogenated organic stream containing oxygen compounds to produce an anhydrous liquid stream comprising hydrogenated hydrocarbonaceous compounds and a hydrogen halide compound which process comprises the steps of:

(a) contacting said halogenated organic stream containing oxygen compounds with a selective adsorbent at adsorption-promoting conditions in an adsorption zone to selectively remove at least a portion of said oxygen compounds;

(b) contacting a resulting halogenated organic stream having a reduced concentration of oxygen compounds produced in step (a) and a hydrogen-rich, gaseous recycle stream with a hydrogenation catalyst in a hydrogenation reaction zone at hydrogenation reaction conditions to increase the hydrogen content of said halogenated organic stream and to thereby produce a hydrogen halide compound; and

(c) condensing at least a portion of the resulting effluent from said hydrogenation reaction zone to produce said hydrogen-rich, gaseous recycle stream and an anhydrous liquid stream comprising hydrogenated hydrocarbonaceous compounds and a hydrogen halide compound.

5,354,932

CATALYTIC HYDROCARBON CONVERSION USING THERMALLY ACTIVATED HYDROTALCITE-TYPE CLAYS

Alakananda Bhattacharyya, Wheaton, and Mark P. Kaminsky, Winfield, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 881,752, May 8, 1992, abandoned, which is a division of Ser. No. 745,902, Aug. 16, 1991, Pat. No. 5,246,899. This application Jul. 19, 1993, Ser. No. 93,768
Int. Cl.[5] C07C *2/00*
U.S. Cl. 585—400 6 Claims

1. A process for the conversion of a hydrocarbon comprising contacting said hydrocarbon under hydrocarbon conversion conditions with a catalyst made by thermally activating a hydrotalcite clay of formula:

$$M^{2+}_{2x}M^{3+}_{2}(OH)_{4x+4}A^{n-}_{2/n}\cdot ZH_2O$$

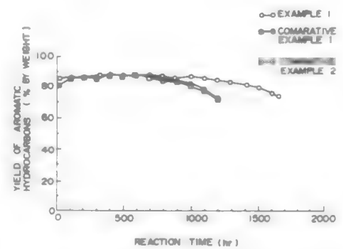
where M^{2+} is one or more metal ion selected from the group consisting of Mg^{2+}, $Zn^{2+}Cu^{2+}$, Ni^{2+}, Co^{2+}, Mn^{2+} and Fe^{2+} and M^{3+} is one or more metal ion selected from the group consisting of Al^{3+}, Fe^{3+}, Co^{3+}, Mn^{3+} and Cr^{3+}, x runs between 1.5 and 5, A is one or more anions selected from the group consisting of $B(OH)_4^-$, $[B_3O_3(OH)_4]^-$, $V_2O_7^{4-}$, $V_4O_{12}^{4-}$, and $V_3O_9^{3-}$, n is 1, 3 or 4, and Z runs between 0 and about 4, said hydrotalcite clay having an X-ray diffraction d(001) value greater than about 7.7 Angstroms.

5,354,933

PROCESS FOR PRODUCING AROMATIC HYDROCARBONS

Hiroshi Ohashi; Hisashi Katsuno, and Michio Sugimoto, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Division of Ser. No. 966,262, Oct. 26, 1992, Pat. No. 5,294,579, which is a continuation-in-part of Ser. No. 810,698, Dec. 19, 1991, abandoned. This application Jan. 18, 1994, Ser. No. 183,124
Claims priority, application Japan, Feb. 5, 1991, 3-035254; Nov. 12, 1991, 3-295922; Jul. 24, 1992, 4-198194
Int. Cl.[5] C07C *2/00*
U.S. Cl. 585—419 16 Claims



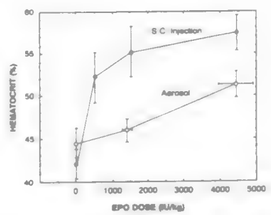
1. A process for producing aromatic hydrocarbons which comprises contacting at least one starting hydrocarbon selected from the group consisting of acyclic paraffins, acyclic olefins, acetylenic hydrocarbons, cyclic paraffins and cyclic olefins, with a catalyst, under aromatization conditions, said catalyst comprising zeolite comprising both a platinum-containing compound and a halogen-containing compound each supported on said zeolite, said zeolite simultaneously satisfies the conditions that (i) said platinum-containing compound supported on said zeolite has a peak intensity of 0.4 or less as determined by X-ray absorption near edge structure (XANES) analysis and (ii) the amount of dealuminization in said zeolite is 3% by weight or less, based on the total amount of aluminum therein.

5,354,934

PULMONARY ADMINISTRATION OF ERYTHROPOIETIN

Colin G. Pitt, Thousand Oaks, and Robert M. Platz, Half Moon Bay, both of Calif., assignors to Amgen Inc., Thousand Oaks, Calif.

Filed Feb. 4, 1993, Ser. No. 13,514
Int. Cl.[5] A61K *37/24, 9/12*
U.S. Cl. 514—8 21 Claims



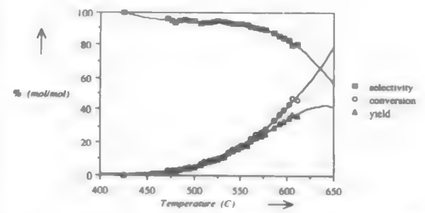
1. A method comprising pulmonary administration to a mammal of a therapeutically effective amount of erythropoietin in the absence of an absoftion enhancing agent.

5,354,935

CATALYSTIC METHOD FOR THE DEHYDROGENATION OF HYDROCARBONS

Frederik R. Van Buren; Dick E. Stobbe, both of Terneuzen; John W. Geus, Bilthoven, and Adrianus J. Van Dillen, Culemborg, all of Netherlands, assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 849,037, Apr. 21, 1992, Pat. No. 5,238,348. This application Aug. 12, 1993, Ser. No. 105,554
Int. Cl.[5] C07C *5/02*
U.S. Cl. 585—444 20 Claims



1. A process for the dehydrogenation of hydrocarbons, under dehydrogenation conditions, in the presence of steam at a temperature in the range of 400°–800° C. which process comprises using a catalyst comprising a preshaped porous support material, said preshaped porous support material being obtained by subjecting a corresponding powderous support material to a shaping operation and/or thermal treatment causing sintering of powder particles, and having a specific surface area of from 0.1 to 50 m^2/g, at least a catalytically active component chosen from the group consisting of compounds of the transition metals vanadium chromium manganese, iron, cobalt nickel, copper and zinc in an amount of from 0.1 to 20 wt.%, the amount being calculated as metal based on the total catalyst weight, said compounds being applied to the support in a finely divided form by impregnation.

5,354,936

METHOD FOR PREPARING ETHANE AND ETHYLENE FROM METHANE

Masami Yamamura, Kasukabe; Hideo Okado, Ushiku; Naohide Tsuzuki, Noda; Kazutoshi Chaki, Ichihara, and Toshiya Wakatsuki, Chiba, all of Japan, assignors to Sekiyushigen Kaihatsu Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1993, Ser. No. 37,763
Claims priority, application Japan, Apr. 9, 1992, 4-115166
Int. Cl.[5] C07C *2/00*
U.S. Cl. 585—500 5 Claims

1. Method for the partial oxidation of methane which comprises contacting methane with oxygen under effective reaction conditions and in the presence of a solid catalyst comprising a product formed by subjecting shellfish or its shell to a temperature from 500° C. to 1300° C. whereby an oxidation product containing two or more carbon atoms is obtained.

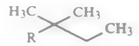
5,354,937

2-TERT-AMYL COMPOUNDS

Klaus Ebel, Ludwigshafen, and Juergen Schroeder, Viernheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

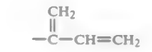
Filed Sep. 30, 1993, Ser. No. 129,333
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1992, 4233387
Int. Cl.[5] C07C *2/76, 2/78, 5/08*
U.S. Cl. 585—601 1 Claim

1. A tert-amyl compound of formula I



(I)

where R is



5,354,938

MODIFICATION OF SURFACE PROPERTIES OF HYDROGEN FLUORIDE

Costandi A. Audeh, Princeton, and Saverio G. Greco, Princeton Junction, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jun. 21, 1991, Ser. No. 719,275
Int. Cl.[5] C07C *2/60*
U.S. Cl. 585—724 8 Claims

1. A method for modifying the properties of an acid catalyst comprising liquid hydrofluoric acid to mitigate the effects of an aerosol formation upon release of the acid from a process unit containing the acid, which comprises adding to the hydrofluoric acid a perfluoro compound selected from the group consisting of pefluorosulfonic acid fluorides and perfluorocarboxylic acid fluorides.

5,354,939

STABILIZED EPOXY RESIN COMPOSITIONS

Werner Hollstein, Freiburg, Fed. Rep. of Germany; Peter Rüger, Oberwil, Switzerland, and Claus W. Rabener, Oetlingen, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 966,767, Oct. 26, 1992, abandoned. This application Dec. 20, 1993, Ser. No. 169,954
Claims priority, application Switzerland, Oct. 29, 1991, 03158/91-9
Int. Cl.[5] C08K *9/04*; C08L *63/00, 63/02*
U.S. Cl. 523—206 9 Claims

1. A composition comprising

(a) a liquid epoxy resin,

(b) a filler containing at least 50% by weight of quartz flour,

(c) a polyether polyol, and

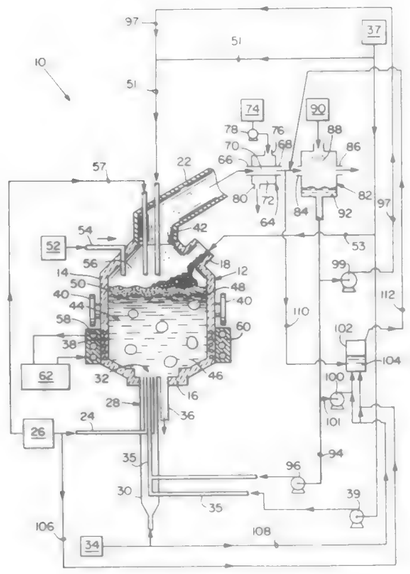
(d) 0.05–2% by weight, based on the entire composition, of an organically modified sheet silicate prepared by reacting bentonite with an organic quaternary ammonium salt.

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5,354,940
METHOD FOR CONTROLLING CHEMICAL REACTION IN A MOLTEN METAL BATH

Christopher J. Nagel, Wayland, Mass., assignor to Molten Metal Technology, Inc., Waltham, Mass.

Continuation-in-part of Ser. No. 23,696, Feb. 26, 1993, which is a division of Ser. No. 737,048, Jul. 29, 1991, Pat. No. 5,191,154. This application Mar. 31, 1993, Ser. No. 40,471
The portion of the term of this patent subsequent to Mar. 2, 2010, has been disclaimed.
Int. Cl.[5] C02F *1/72*; A62D *3/00*
U.S. Cl. 588—201 **14 Claims**



1. A method for controlling chemical reaction of a waste, comprising the steps of:

a) directing the waste into a reactor within which a molten metal bath is disposed, the molten metal bath causing chemical reaction of at least a portion of the waste, whereby an intermediate component and atomic constituents are formed, a portion of the intermediate component combining with an off-gas formed in the reactor and being emitted from the reactor;

b) separating at least a portion of the intermediate component from the off-gas to form an intermediate stream;

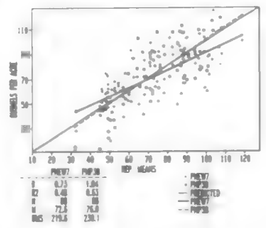
c) directing said intermediate stream into the reactor for chemical reaction of the intermediate component which is returned to the reactor to form atomic constituents and subsequent exothermic reaction of at least a portion of the atomic constituents with an oxidant in the molten metal bath; and

d) directing an oxidant into the molten metal bath which exothermally reacts with said atomic constituents, whereby heat generated by the exothermic reaction initiates additional chemical reaction of the waste and of the intermediate component, thereby controlling chemical reaction of the waste.

5,354,941
INBRED CORN LINE PHEW7

Robert L. Segebart, Shelbyville, Ill., assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Feb. 3, 1993, Ser. No. 12,661
Int. Cl.[5] A01H *5/00, 4/00*; C12N *5/04*
U.S. Cl. 800—200 **6 Claims**

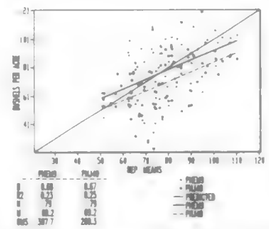


1. Inbred corn seed designated PHEW7 and having ATCC Accession No. 75641.

5,354,942
INBRED CORN LINE PHEM9

James M. Livesey, Woodstock, Canada, assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Feb. 3, 1993, Ser. No. 12,665
Int. Cl.[5] A01H *5/00, 4/00*; C12N *5/04*
U.S. Cl. 800—200 **6 Claims**



1. Inbred corn seed designated PHEM9 and having ATCC Accession No. 75642.

5,354,943
METHODS OF HIGH FREQUENCY TISSUE REGENERATION, REGENERATION OF HERBICIDE-TOLERANT POPULUS PLANTS THEREWITH, AND THE HERBICIDE-TOLERANT PLANTS MADE THEREBY

Charles H. Michler, and Bruce E. Haissig, both of Rhinelander, Wis., assignors to The United States of America as represented by the Secretary of the Agriculture, Washington, D.C.

Continuation of Ser. No. 447,458, Dec. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 192,408, May 4, 1988, abandoned. This application Jun. 7, 1991, Ser. No. 711,610
Int. Cl.[5] A01H *5/00, 4/00, 1/00*
U.S. Cl. 800—230 **23 Claims**



1. A Populus hybrid plant capable of surviving an application of a toxic chemical selected from the group consisting of sulfometuron methyl and glyphosate at a concentration equal to or greater than the concentration that is 100% lethal to the plant's parent hybrid genotype;

the plant being a hybrid Populus clone selected from the group consisting of: *P. alba*×*P. grandidentata* capable of surviving glyphosate applied at at least 10.50 mmole/l up to and including 13.12 mmole/l; *P. nigra*×*P. laurifolia* capable of surviving glyphosate applied at about 15.75 mmole/l; *P. maximowiczii*×*P. trichocarpa* capable of surviving glyphosate applied at about 15.75 mmole/l; *P. nigra betulifolia*×*P. trichocarpa* capable of surviving glyphosate applied at about 15.75 mmole/l; *P. nigra*×*P. laurifolia* capable of surviving sulfometuron methyl applied at at least 0.882 mmole/l up to and including 1.37 mmole/l; and, *P. maximowiczii*×*P. trichocarpa* capable of surviving sulfometuron methyl applied at at least 0.685 mmole/l up to and including 1.37 mmole/l; and,

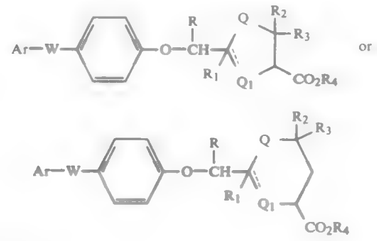
the plant having a genome derived only from the genome of the Populus parent hybrid, the plant being a somaclonal variant of the parent hybrid genotype with its survival capability arising from the somaclonal variation.

5,354,944
4-CARBOXY-2-ARYLOXYPHENOXYALKYL SUBSTITUTED HETEROCYCLES USEFUL AS HERBICIDAL AGENTS

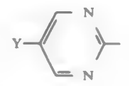
Robert L. Arotin, Yardley, Pa., and Michael A. Guaciaro, Hightstown, N.J., assignors to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 800,794, Nov. 27, 1991, Pat. No. 5,213,606. This application Jan. 25, 1993, Ser. No. 7,940
Int. Cl.[5] A01N *43/54*; C07D *239/24*
U.S. Cl. 504—136 **8 Claims**

4. A method for controlling undesirable grass weed species which comprises applying to the foliage or stems of the desirable vegetation or to the soil or water containing seeds or other propagating organs of the undesirable vegetation a herbicidally effective amount of a compound having the structure



wherein Ar is



Y is hydrogen, halogen, nitro, cyano or C_1–C_4 haloalkyl;
W is O or S;
R is C_1–C_4 alkyl;
-- indicates a single or double bond;
R_1 and R_2 are each independently hydrogen or C_1–C_4 alkyl, with the proviso that when --indicates a double bond, then R_1 is not present;
R_3 is hydrogen, C_1–C_4 alkyl or CO_2R_5;
Q is $S(O)_m$ and Q_1 is NR_6, with the proviso that when -- indicates a double bond then R_6 is not present;
m is an integer of 0, 1 or 2;
R_6 is hydrogen or C_1–C_4 alkyl;
R_4 and R_5 are each independently hydrogen,
C_1–C_4 alkyl optionally substituted with halogen, C_1–C_4 alkoxy, furyl, phenyl, halophenyl, C_1–C_4 alkylphenyl or C_1–C_4 alkoxyphenyl,
C_3–C_6 alkenyl optionally substituted with C_1–C_4 alkoxy, halogen or phenyl,
C_3–C_6 alkynyl optionally substituted with halogen, or
an alkali metal, alkaline earth metal, manganese, copper, zinc, cobalt, silver, nickel, ammonium or organic ammonium cation;
the acid addition salts thereof when R_6 is hydrogen; or optical isomers or diastereomers thereof.

5,354,945
PREPARATION OF ULTRAPURE N-VINYLPYRROLIDONE POLYMERS

Juergen Detering, Limburgerhof, and Hartwig Voss, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

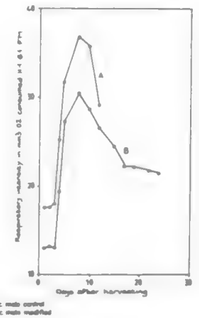
Filed Nov. 30, 1992, Ser. No. 982,885
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1991, 4140086
Int. Cl.[5] C08J *3/07*; B01D *61/14*
U.S. Cl. 523—310 **6 Claims**

1. A process for preparing ultrapure polymers, or solutions thereof, which contain at least 20% by weight of N-vinylpyrrolidone as polymerized units and have a Fikentscher K value of from 10 to 45 by free-radical polymerization in solution and subsequent purification of the solution with or without drying, which comprises purifying a polymer solution containing said polymer by separating off the low molecular weight impurities by means of ultrafiltration at from 20° to 100° C. and from 1 to 80 bar, wherein the initial concentration of said polymer in said polymer solution is within the range of about 20 to about 60% by weight based on the total weight of the solution.

5,354,946
GENE COMPLEX PARTICULARLY USEFUL FOR MODIFYING PLANTS SUCH AS *CUCUMIS MELO* AND *CUCUMIS MELO* INCORPORATING SAID GENE COMPLEX

Alain Dreyer, Chateauneuf de Gadagne, and Jean-Paul Ginoux, Eyragues, both of France, assignors to Bio-Obtention SC, Montferrier, France

Continuation of Ser. No. 842,375, Mar. 27, 1992, abandoned. This application Aug. 6, 1993, Ser. No. 103,305
Claims priority, application France, Jul. 27, 1990, 90 09622
Int. Cl.[5] A01H *5/00, 1/04*
U.S. Cl. 800—230 **3 Claims**



1. *Cucumis melo* line 95LS444.

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5,354,947

MUSICAL TONE FORMING APPARATUS EMPLOYING SEPARABLE NONLINER CONVERSION APPARATUS

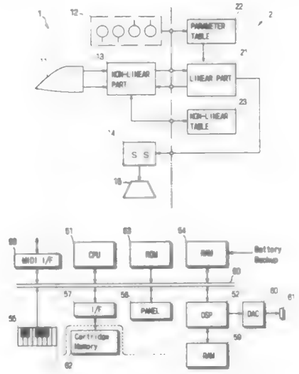
Toshifumi Kunimoto, and Yoichiro Ogai, Hamamatsu, both of Japan, assignors to Yamaha Corporation, Japan

Filed May 5, 1992, Ser. No. 878,563

Claims priority, application Japan, May 8, 1991, 3-102566; May 17, 1991, 3-034871

Int. Cl.[5] G10H *7/00, 1/06*

U.S. Cl. 84—622 **10 Claims**



1. A musical tone forming apparatus for forming musical tone signals employing a tone synthesizer of the type including a closed loop path including a non-linear processing portion and a delay portion receiving an input from the non-linear processing portion and providing an output back to the non-linear processing portion, the non-linear processing portion receiving an excitation signal and converting a signal based upon the excitation signal and the output of the delay portion in accordance with a non-linear conversion characteristic and providing the converted signal to the delay portion, the apparatus comprising:

a playing operator to be played by a player;

a first tone signal synthesizing section forming a portion of the tone synthesizer physically and fixedly provided to the apparatus, for synthesizing a musical tone signal according to a playing signal inputted from the playing operator, the first tone signal synthesizing section serving as a common part of tone synthesization with respect to a plurality of tone colors, wherein said first tone signal synthesizing section includes arithmetic means for receiving a playing signal constituting said excitation signal, which is inputted from said playing operator, and a signal corresponding to the output of the delay portion and derived from said second tone signal, synthesizing section and performing an arithmetic operation with respect to the received signals, and non-linear conversion means for generating a vibration signal by converting the output of the arithmetic means in accordance with said non-linear conversation characteristic;

a second tone signal synthesizing section separably provided from said first tone signal synthesizing section for synthesizing the musical tone signal in cooperation with the first tone signal synthesizing section, the second tone signal synthesizing section including means defining at least said non-linear conversion characteristic and being selectable for tone synthesizing with respect to a plurality of tones and connection means for connecting the second tone signal synthesizing section to the first tone signal synthesizing section to thereby form a unitary musical tone forming apparatus, wherein said means defining said non-linear conversion characteristic includes a non-linear table, and said connection means connects the table to the non-linear conversion means.

5,354,948

TONE SIGNAL GENERATION DEVICE FOR GENERATING COMPLEX TONES BY COMBINING DIFFERENT TONE SOURCES

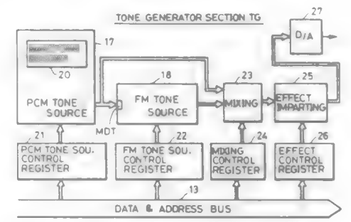
Hiroyuki Toda, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Oct. 2, 1990, Ser. No. 591,840

Claims priority, application Japan, Oct. 4, 1989, 1-259414; Oct. 4, 1989, 1-259415; Oct. 4, 1989, 1-259416

Int. Cl.[5] G10H *7/00, 1/04*

U.S. Cl. 84—624 **16 Claims**



1. A tone signal generation device comprising:

first tone source means for generating a first tone signal in response to tone generation designation information;

second tone source means, including a modulating signal input, for generating a second tone signal by executing a predetermined modulation operation in response to tone generation designation information, wherein said first and second tone source means employ different tone forming systems;

tone color parameter generating means for generating, separately for said first and second tone source means, respectively, tone color parameters adapted for the specific tone forming system employed in said respective tone source means;

modulating signal introduction control means for receiving said first tone signal and controlling introduction of said first tone signal to the modulating signal input of said second tone source means; and

tone generation control means for controlling the simultaneous generation of said first and second tone signals.

5,354,949

PICK-UP ELEMENT IN A STRINGED INSTRUMENT

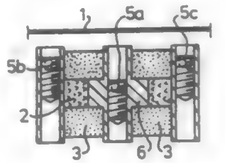
Erno Zwaan, Henrick de Keijsersplein 6 III, 1073 SX Amsterdam, Netherlands

Filed Nov. 18, 1992, Ser. No. 978,354

Claims priority, application Netherlands, Nov. 18, 1991, 9101916

Int. Cl.[5] G10H *3/18*

U.S. Cl. 84—727 **11 Claims**



1. A pick-up element in a stringed instrument for converting a vibration generated in at least one string into an electrical

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signal, comprising a pick-up section underneath each string, which pick-up section comprises at least three magnetic poles, each magnetic pole exerting a magnetic force on the respective string, the magnetic poles being placed in a row underneath the string, which row extends substantially parallel to the respective string, at least one of the poles comprising a first bolt which can be moved in a direction substantially perpendicular to the string and the magnetic poles deriving their magnetic action from permanent magnets positioned between the poles, wherein the permanent magnets are separated from the pole not situated at the outside of the pick-up section by nonmagnetic means.

5,354,950

ELECTROSTATIC SHIELDING SHEET FOR MAKING A BOX USED FOR SHIPPING AND STORING ELECTRONIC COMPONENTS AND A SHIPPING BOX MADE THEREOF

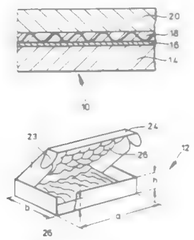
Meir Golane, Engen, Fed. Rep. of Germany, assignor to Firma Wolfgang Warmbier Systeme gegen Elektrostatik, Singen, Fed. Rep. of Germany

Filed May 18, 1992, Ser. No. 885,267

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1992, P4206727.8

Int. Cl.[5] H05K *9/00*

U.S. Cl. 174—35 MS **14 Claims**



1. An electrostatic shielding sheet material formed of a plurality of layers comprises a first layer of conductive material having a surface resistivity of less than 1×10^4 ohm/sq sandwiched between a second layer material and a third layer material, said second and third layer materials having a surface resistivity of between 1×10^5 to 1×10^{12} ohm/sq and said layer of conductive material being made of paper and loaded with 2% to 65% highly conductive fibers.

5,354,951

CIRCUIT BOARD COMPONENT SHIELDING ENCLOSURE AND ASSEMBLY

William A. Lange, Sr., Palm Harbor; Lester R. Fisher, Jr., New Port Richey, and William A. Lange, II, Palm Harbor, all of Fla., assignors to Leader Tech, Inc., Tampa, Fla.

Filed Mar. 15, 1993, Ser. No. 31,659

Int. Cl.[5] H05K *9/00*

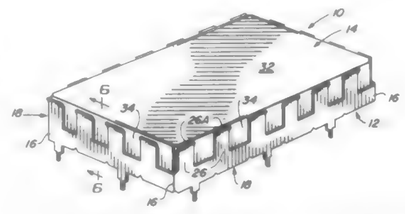
U.S. Cl. 174—35 R **22 Claims**

1. An electromagnetic interference shielding enclosure, comprising:

(a) a plurality of interconnected walls made of electically conductive material being arranged in a polygonal configuration to surround an electronic component on a circuit board, each of said walls having a lower portion and an upper portion extending upwardly from said lower portion;

(b) a plurality of mounting pins made of an electrically conductive material and being attached to said lower portions of said respective walls and extending downwardly from lower edges thereon for attachment to the circuit board; and

(c) a plurality of inner and outer tabs formed in said upper portions of said respective walls, said inner and outer tabs being disposed in spaced, alternating and offset relationship with respect to one another along said upper portions of said walls so as to create an annular channel between said inner and outer tabs extending along said upper portions of said respective interconnected walls, said annular channel being open from above so as to adapt said annular channel to receive a downward extending edge of a cover in said annular channel in engagement between said inner and outer tabs.



5,354,952

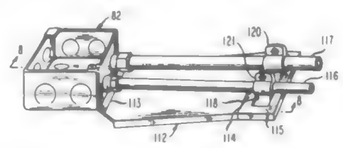
CONDUIT SUPPORT BRACKET

Gary S. Hickey, 391 Butter St., Germantown, Ohio 45327

Continuation-in-part of Ser. No. 807,447, Dec. 13, 1991, abandoned. This application Dec. 24, 1992, Ser. No. 996,443

Int. Cl.[5] H02G *3/04*

U.S. Cl. 174—48 **26 Claims**



1. In an electric wiring system comprising a plurality of electrical members including at least one wire, at least one enclosure within which to make an electrical connection between the wire and a second one of the members, the enclosure having first and second walls substantially perpendicular to each other and at least one entrance on the second wall for the wire, at least one conduit surrounding the wire externally of the enclosure and extending away from the enclosure in a predetermined direction, one end of the conduit being mechanically attached to the enclosure adjacent the entrance, a conduit support bracket comprising:

(a) a plate-like member having first and second ends longitudinally spaced apart in a first direction and aperture means spaced a predetermined distance from the first end;

(b) means extending through the aperture means to attach the plate-like member to the first wall of the enclosure with the longitudinal direction between the ends of the member generally parallel to the predetermined direction in which the conduit extends away from the enclosure and the second end of the plate-like member extending beyond the second wall of the enclosure and generally parallel to the conduit; and

(c) conduit-holding means attached to the plate-like member adjacent the second end thereof at any of a plurality of selected positions spaced transversely apart and substantially in alignment with the conduit to hold the conduit.

5,354,953

CABLE HOLDING DEVICE

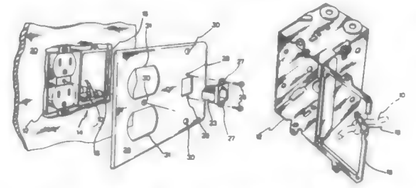
William Nattel, Montreal, and Mark Fabian, St-Luc, both of Canada, assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 27, 1992, Ser. No. 858,460

Claims priority, application Canada, Aug. 7, 1991, 2,048,524

Int. Cl.[5] H01H *9/02;* **H02B** *1/46;* **H02G** *3/16*

U.S. Cl. 174—54 **24 Claims**



1. A cable holding device for holding a communication cable beside an electrical power outlet box having a rectangular front opening, said device comprising a frame having a main generally rectangular frame portion forming a rectangular frame opening, said rectangular frame being attached directly beside said electrical power outlet box and substantially equal to said rectangular front opening of said electrical power outlet box, and a base portion, said base portion extending at substantially a right angle to said main generally rectangular frame portion for mounting said device to a side of said outlet box, said frame having at least one tab to which said communication cable is secured for access through said rectangular frame opening.

5,354,954

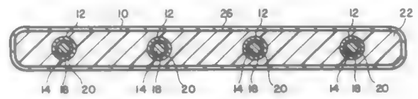
DIELECTRIC MINIATURE ELECTRIC CABLE

Edwin R. Peterson, 4420 Hillcrest, Boise, Id. 83705

Filed Jul. 29, 1993, Ser. No. 105,372

Int. Cl.[5] H01B *7/08, 13/00*

U.S. Cl. 174—113 C **23 Claims**



1. A multiple conductor electric cable characterized by:

a plurality of conductors each comprising a central core of least one tensile load bearing filament surrounded by a plurality of overlaid, spirally wrapped, strips of conductive material with each of the strips of conductive material for each conductor spirally wrapped about the strand of filaments in the same direction, and with each of said conductors arranged in a parallel array in spaced apart relationship wherein the direction of the spiral wrappings of conductive material of each of the conductors of the array are arranged in an orientation of alternating directions from one conductor to the next;

said parallel array of conductors being held within a thermoplastic insulating jacket, and

said thermoplastic insulating jacket being held in a polyester jacket of cured insulating varnish.

23. A method of manufacturing a multiple conductor electric cable comprising the steps of:

wrapping a first bundle of unbonded multi-filament fibers in a first direction with a first pair of overlaying continuous strips of conductive material to form a first conductor;

wrapping a second bundle of unbonded multi-filament fibers in a second direction, opposite to the first, with a second pair of overlaying continuous strips of conductive material to form a second conductor;

encasing the first and second conductors in a thermoplastic insulating jacket by passing the conductors and thermoplastic material through an extrusion die;

coating the thermoplastic insulating jacket in an insulating polyester varnish; and

curing the polyester varnish coating.

5,354,955

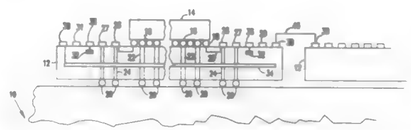
DIRECT JUMP ENGINEERING CHANGE SYSTEM

Lawrence V. Gregor, Hopewell Junction, and Michael F. McAllister, Clintondale, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 2, 1992, Ser. No. 984,608

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—250 **11 Claims**



1. A system to facilitate establishing an engineering change wiring path between one I/O pad of an integrated circuit chip mounted on a module and another I/O pad of an integrated circuit chip mounted on said module, comprising in combination:

a peripheral pattern of pads accessible from a top surface of said module, said peripheral pattern of pads including, engineering change pads, X jumper wire pads, Y jumper wire pads, and X-Y change pads;

an X wiring layer interconnecting X jumper wire pads located at opposite sides of said module and also connecting X-Y change pads in a line with said X jumper wire pads located at opposite sides of said module;

a Y wiring layer interconnecting Y jumper wire pads located at opposite sides of said module and interconnecting X-Y change pads in a line with said Y jumper wire pads at located opposite sides of said module; and

wires connecting said I/O pads of an integrated circuit chip to said engineering change pads.

5,354,956

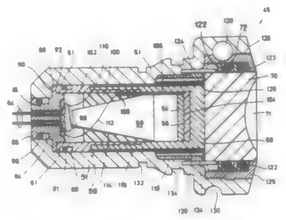
ULTRASONIC MEASUREMENT APPARATUS

Jacques Orban, and James C. Maves, both of Sugar Land, Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Division of Ser. No. 788,431, Nov. 6, 1991, Pat. No. 5,214,251, which is a division of Ser. No. 525,268, May 16, 1990, Pat. No. 5,130,950. This application Jan. 27, 1993, Ser. No. 9,651

Int. Cl.[5] G01V *1/40*

U.S. Cl. 181—105 **18 Claims**



1. An ultra-sonic sensor assembly for a downhole tool comprising

a sensor stack having

an inner sound absorbing backing element

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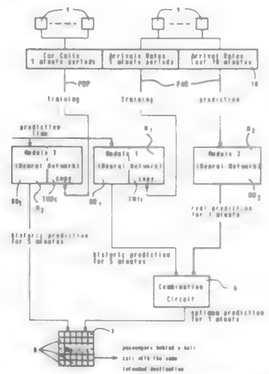
a piezo-electric ceramic disk stacked outwardly adjacent said backing element,
an impedance matching layer disposed outwardly adjacent said ceramic disk,
a rubber jacket having sides which are disposed outwardly around said backing element, said ceramic disk and said matching layer, and an end disposed adjacent said impedance matching layer,
a delay-line of rigid material disposed outwardly of said ceramic disk,
said delay-line having inner and outer ends, said inner end facing said end of said rubber jacket, and
first and second electrical connectors, and inner and outer electrode means for connecting inner and outer sides of said disk to said first and second electrical connectors.

5,354,957

ARTIFICIALLY INTELLIGENT TRAFFIC MODELING AND PREDICTION SYSTEM

Euan Robertson, Polmont, Scotland, assignor to Inventio AG, Hergiswil, Switzerland

Filed Apr. 16, 1993, Ser. No. 49,091
Claims priority, application United Kingdom, Apr. 16, 1992, 9208466
Int. Cl.[5] B66B *1/18*
U.S. Cl. 187—247 **9 Claims**



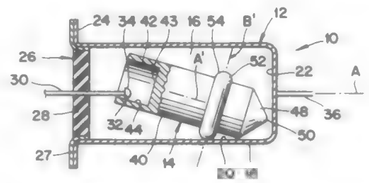
1. An artificially intelligent traffic modeling and prediction system for an elevator group control for optimizing the operation of elevator cars connected to the control by allocation of hall calls to the cars, the elevator group control calculating operating costs which correspond to waiting times and other lost times of passengers and are calculated on the basis of the passenger traffic prevailing at the time of computation and the passenger traffic probability predicted for the time of service of a hall call, comparing the operating costs of all cars and allocating the hall call to the car having the lowest operating costs, the system comprising:
a traffic data storage means for long-term and short-term storage of traffic data, said traffic data storage means having an input for receiving current traffic data from an elevator group control and having outputs;
a plurality of neural network modules for modeling, learning and predicting traffic by neural network techniques, said modules each having an input connected to one of said traffic data storage means outputs and having an output, said modules modeling and predicting traffic by representing at least one characteristic of predicted traffic for a predetermined longer time period and for a predetermined shorter time period and generating historic traffic predictions of said predicted traffic on the basis of historic data and generating real-time traffic predictions of said predicted traffic on the basis of recent data;
a combination circuit having a pair of inputs connected to said outputs of two of said modules for receiving and combining said historic traffic predictions and said real-time traffic predictions into an optimum traffic prediction generated at an output; and
a memory matrix having an input connected to said combination circuit output and another input connected to said output of another one of said modules, said memory matrix having a plurality of data storage locations for storing data entries representing predictions for another characteristic of said predicted traffic.

5,354,958

JITTER SWITCH

Sheldon S. Bitko, East Brunswick, N.J., assignor to Fifth Dimension Inc., Trenton, N.J.

Filed Mar. 3, 1993, Ser. No. 25,745
Int. Cl.[5] H01M *35/14*
U.S. Cl. 200—61.45 R **15 Claims**



1. A jitter switch, comprising:
a casing including a cylindrical wall defining a first longitudinal axis and forming a cylindrical chamber, said cylindrical wall formed of an electrically conductive material;
first and second electrodes mounted at opposite longitudinal ends of said chamber in fixed longitudinally spaced relationship to one another, said first and second electrodes being of opposite polarity, and one of said first and second electrodes being electrically connected to said cylindrical wall; and
an electrically conductive armature disposed within said chamber and comprising a body, said body defining a second longitudinal axis and first and second longitudinally spaced ends, said body being symmetrical about said second longitudinal axis, said armature having an outer periphery and a protuberance extending circumferentially around said outer periphery at a location between said first and second armature ends for engaging said cylindrical wall and defining a fulcrum about which said armature pivots, said armature being movable parallel to said first axis to bring said first and second armature ends into engagement with said first and second electrodes, respectively, and being movable laterally of said first axis to enable said protuberance to contact different portions of said cylindrical wall.

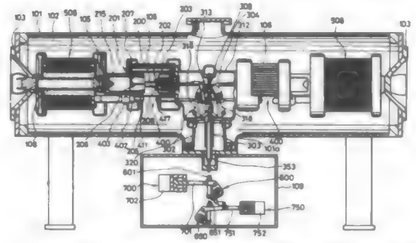
5,354,959

CIRCUIT BREAKER

Toshiaki Yoshizumi; Mikio Hidaka, and Yoshiki Hirano, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1993, Ser. No. 34,866
Claims priority, application Japan, Apr. 14, 1992, 4-094165
Int. Cl.[5] H01H *33/42, 33/50*
U.S. Cl. 200—148 F **8 Claims**

1. A circuit breaker comprising: a tank filled with an insulation gas:
two main contacts which are electrically connected in series and provided in said tank in a manner such that main moving contacts of said main contacts are driven in an axial direction of said tank for contacting and departing from stationary main contacts of said main contacts;
series connections of resistors and a resistor contact are respectively provided in said tank in a manner so as to be electrically connected in parallel with said main contacts;
a first insulation operation rod and a second insulation operation rod which are driven in a direction perpendicular to the axis of said tank and provided between said main contacts;
a first link mechanism for coupling between one end of said first insulation operation rod and said main contact;
a second link mechanism for coupling between one end of said second insulation operation rod and said resistor contact;
a first hydraulic operation apparatus and a second hydraulic apparatus which are provided below said tank;
a third link mechanism for coupling between the other end of said first insulation operation rod and said first hydraulic operation apparatus;



a fourth link mechanism for coupling between the other end of said second insulation operation rod and said second hydraulic operation apparatus; and
an engagement mechanism for restricting operations of said first link mechanism and second link mechanism in such a manner that said main contacts and said resistor contacts are moved so as to close at substantially the same speed, and said main contacts are closed after said resistor contacts are closed wherein, said engagement mechanism comprises a lever and a third link of which an end thereof is rotatably supported by a fixed base and the other end thereof is coupled to an end of said lever and wherein said main contacts and said resistor contacts are moved so as to close at substantially the same speed and said main contacts are closed after said resistor contacts are in a closed state in such a manner that the other end of said lever is kept in contact with a coupling point between said second link mechanism and said second lever in the closing operations of said main contacts and said resistor contacts.

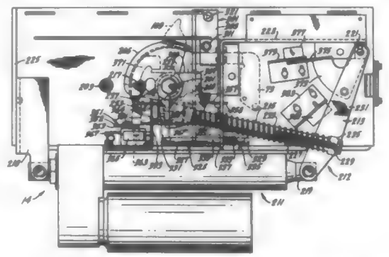
5,354,960

LINEAR MOTOR POWERED SHUNT TRIP OPERATOR

William C. Erickson, Cary, Ill., assignor to Boltswitch, Inc., Crystal lake, Ill.

Filed Jan. 4, 1993, Ser. No. 72,339
Int. Cl.[5] H01H *5/00*
U.S. Cl. 200—400 **6 Claims**

1. A linear motor powered closing assembly for an operating mechanism of a high-current, low voltage load break switch having an operating shaft, a follower affixed to said operating shaft for rotation therewith, an operating lever mounted on said shaft for rotation relative thereto, and spring means connecting said follower and said operating lever to bias them toward each other when said spring means is charged,
said closing assembly including:
a linear actuator having an extendible and retractable tube,
a drive rod connected to said operating shaft to rotate said shaft in a spring means charging direction upon longitudinal movement of said drive rod in one direction,



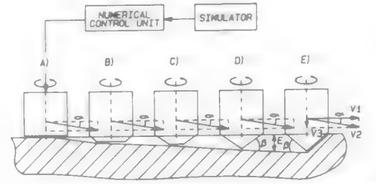
means connecting said actuator tube and said drive rod so that movement of said actuator tube in one direction will move said drive rod in its spring means charging direction while movement of said actuator tube in the opposite direction will not cause opposite movement of said drive rod.

5,354,961

DEVICE AND PROCESS FOR ELECTRICAL-DISCHARGE MACHINING OF A THREE-DIMENSIONAL CAVITY WITH A THIN ROTATING TOOL ELECTRODE

Jean-Claude Diot, Douvaine, and Willi Zaugg, Echenevex, both of France, assignors to Charmilles TGechnologies S.A., Switzerland

Filed Feb. 12, 1993, Ser. No. 17,486
Claims priority, application Switzerland, Feb. 12, 1992, 00416/92
Int. Cl.[5] B23H *7/20*
U.S. Cl. 219—69.13 **8 Claims**



1. An EDM device for machining by electro-erosion a three-dimensional cavity of a workpiece by compensating for tool-electrode wear, said device comprises:
a mechanism rotating a tool electrode whose diameter is small in comparison to dimensions of a cavity of a workpiece being eroded,
a numerical control unit which controls relative three-dimensional movement between the tool electrode and the workpiece,
means for controlling volumetric wear rate of the electrode, and
computational means for storing the volumetric shape of the cavity to be eroded as virtual fine parallel layers superimposed on one another, for simulating a tool path so that a tip of the tool sweeps groove by groove across said superimposed layers, and for transmitting a signal representative of the tool path to the control unit,
said device further comprising a simulator that calculates, prior to machining, longitudinal wear of the rotating tool or a value intended for additional axial feed of the tool

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electrode and continuously compensates for said longitudinal wear, said calculation being made from data stored in said simulator and parameters characterizing the geometry of the electrode, said simulator transmits to the control unit a corresponding signal continuously compensating for said longitudinal wear.

5,354,962

APPRATUS FOR DECOMPOSING HALOGENATED ORGANIC COMPOUND

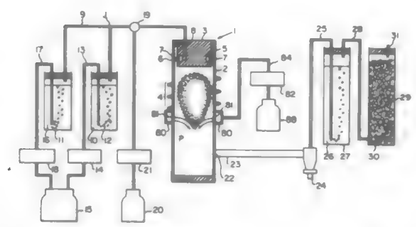
Koichi Mizuno, Ibaraki; Takeshige Wakabayashi; Yutaka Koinuma, both of Chiba; Reiji Aizawa, Ibaraki; Satoshi Kushiyama, Ibaraki; Satoru Kobayashi, Ibaraki; Hideo Ohuchi, Ibaraki; Toyonobu Yoshida, Tokyo; Yoshiro Kubota, Tokyo; Takanobu Amano, Tokyo; Hisashi Komaki, Tokyo, and Shoji Hirakawa, Tokyo, all of Japan, assignors to Agency of Industrial Science and Technology, Toyonobu Yoshida and JEOL Ltd., Tokyo, Japan

Continuation of Ser. No. 964,512, Oct. 21, 1992, abandoned, which is a continuation of Ser. No. 684,006, Apr. 11, 1991, Pat. No. 5,187,344, which is a division of Ser. No. 433,361, Nov. 7, 1989, Pat. No. 5,026,464. This application Jan. 14, 1994, Ser. No. 182,539

Claims priority, application Japan, Nov. 10, 1988, 63-284098; Aug. 31, 1989, 1-225211; Sep. 1, 1989, 1-227083; Sep. 1, 1989, 1-227084

Int. Cl.[5] B23K *9/00;* **A62D** *3/00*

U.S. Cl. 219—121.52 **3 Claims**



3. An apparatus for decomposing a halogenated organic compound into a harmless decomposed product comprising:

a cylindrical tube having an inlet end near which a compound to be decomposed is introduced and an exhaust end at which decomposed product is removed;

a gas supply nozzle positioned near the inlet of said cylindrical tube;

an induction plasma torch consisting of an RF coil wound around the tube between the inlet and exhaust ends;

a first container for holding a halogenated organic compound coupled to said gas nozzle;

a second container for holding water coupled to said gas nozzle;

a gas source coupled to said gas nozzle;

wherein liquid from said first and second containers is atomized by gas from said gas source and sprayed into the plasma; and

a second nozzle means for injecting gas or liquid into a portion of the plasma nearest the exhaust end to extinguish the plasma before it reaches the exhaust end of the tube to reduce the time the decomposed compounds remain in the plasma state.

5,354,963

PROCESS AND A DEVICE FOR CONTINUOUS SURFACE TREATMENT OF ROD-SHAPED, LONGITUDINALLY EXTENDED MATERIALS WITH METAL SURFACES USING A MAGNETICALLY DISPLACED PLASMA ARC

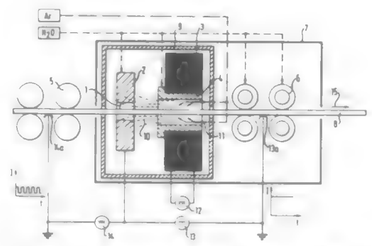
Volker Müller, and Manfred Fehn, both of Saalfeld, Fed. Rep. of Germany, assignors to SKET Schwermaschinenbau Magdeburg, Magdeburg, Fed. Rep. of Germany

Filed Mar. 30, 1993, Ser. No. 39,986

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1992, 4211167

Int. Cl.[5] B23K *9/00, 9/013, 9/06*

U.S. Cl. 219—121.54 **14 Claims**



1. A process for continuous treatment of billet-shaped materials having metal surfaces by means of an arc produced between an annular electrode (2) and a billet (8), said annular electrode defining a billet-treatment orifice and having a billet-entry side and a billet-egress side, comprising the steps of:

producing a magnetic field (10) proximate said billet-egress side of said annular electrode (2), said magnetic field setting said arc (1) in rotation around said billet (8) and counteracting a pulling of the arc by movement of the billet through said billet-treatment orifice of said annular electrode;

forming an arc current comprised of first and second unequal currents that can be controlled separately;

combining said first and second unequal currents at said annular electrode (2) together;

applying said first unequal current to said billet (8) on said billet-entry side of said annular electrode; and

applying said second unequal current to said billet on said billet-egress side of said annular electrode (2).

5,354,964

LASER TORCH

Yasuo Kyoren, Hiroshima; Hiroshi Fukuoka, Higashihiroshima, and Takafumi Fukai, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 31, 1993, Ser. No. 114,048

Claims priority, application Japan, Aug. 31, 1992, 4-232097

Int. Cl.[5] B23K *26/14*

U.S. Cl. 219—121.84 **6 Claims**

1. A laser working device for working a workpiece moving below and relative thereto comprising:

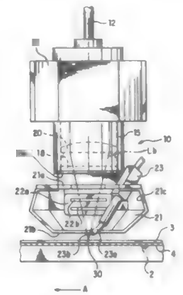
a housing defining an opening in the bottom thereof;

laser beam means located in said housing for directing laser radiation out of the opening in said housing;

a converging lens mounted in said housing for directing said laser beam approximately vertically through said opening with respect to and focusing same onto an area in the plane of a workpiece moving below and relative to said housing;

gas injection means mounted for directing inert gas forwardly in the direction of relative movement of the workpiece and covering said area onto where said laser beam is focused; and

air injection means mounted for forming and directing a laminar of air to cross said vertical laser beam at an acute angle and to intersect the plane of the workpiece forwardly of the said area onto where the laser beam is focused, thereby forming a downwardly directed air curtain between said converging lens and the workpiece.



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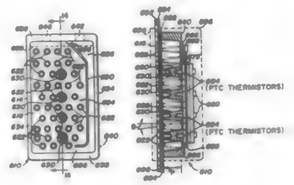
WINDOW CLEANING FLUID HEATING SYSTEM HAVING TIMER-CONTROLLED HEATER AND DIFFERENTIAL INPUT CIRCUIT

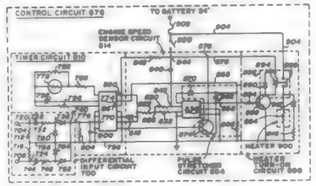
Sheng-Hann Lee, Cupertino, Calif., assignor to Gensonic, Inc., Los Gatos, Calif.

Continuation-in-part of Ser. No. 570,867, Aug. 21, 1990, abandoned. This application Mar. 16, 1992, Ser. No. 852,734

Int. Cl.[5] H05B *1/02;* **F24H** *1/10;* **B60S** *1/46;* **B67D** *5/62*

U.S. Cl. 219—202 **10 Claims**





1. A windshield cleaning fluid heating system comprising:

a metal vessel having an internal chamber for holding a volume of windshield cleaning fluid, the metal vessel being connected between a windshield cleaning fluid reservoir and at least one nozzle means for spraying a stream of windshield cleaning fluid on a windshield, whereby windshield cleaning fluid can be pumped from said reservoir, through said internal chamber and to said nozzle means;

a plurality of metal pins extending into said internal chamber and in thermal contact with a heater wall of said metal vessel, each of said plurality of metal pins having a tapered cylindrical shape;

at least one thermistor positioned on said heater wall outside of said internal chamber, for providing heat to said heater wall and to the plurality of metal pins; and

a control means electrically connected to the thermistor for controlling the heat provided by the thermistor, the control means comprising a timing means for setting a period of time during which the thermistor will heat said volume of cleaning fluid, an engine sensor means for sensing whether an internal combustion engine is running and for preventing the thermistor from being activated if said internal combustion engine is not running and a differential input circuit means for ensuring that a usable signal is delivered to said timing means independent of the manner in which said control means is connected to a pair of electrical terminals of a pump for pumping windshield cleaning fluid from said reservoir to said nozzle means.

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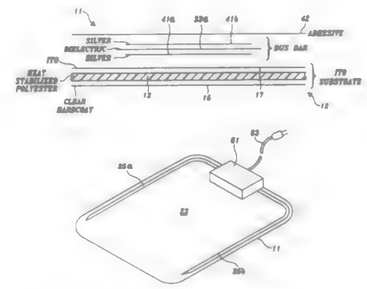
WINDOW DEFOGGING SYSTEM WITH OPTICALLY CLEAR OVERLAY HAVING MULTI-LAYER SILVER BUS BARS AND ELECTRICALLY ISOLATING PERIPHERAL GROOVES

Scott W. Sperbeck, 20007 - 45th Drive S.E., Bothell, Wash. 98011

Continuation-in-part of Ser. No. 801,278, Dec. 2, 1991, abandoned. This application Jan. 31, 1994, Ser. No. 189,958

Int. Cl.[5] H05B *3/00*

U.S. Cl. 219—203 **23 Claims**



1. A window defogger system comprising:

(a) a power supply mounted in a housing; and

(b) an optically clear overlay suitable for positioning on one surface of a window to be defogged, said optically clear overlay comprising:

(i) an indium tin oxide (ITO) substrate including a sheet of heat stabilized polyester, a hard coat layer on one surface of said sheet of heat stabilized polyester and an ITO layer located on the other surface of said sheet of heat stabilized polyester, said ITO layer including means for electrically isolating the edge of said ITO layer from an interior heating zone;

(ii) a pair of bus bars located along opposing edges of said interior heating zone, said bus bars being formed of multiple layers of silver deposited atop said ITO layer; and

(iii) attachment means for mounting said power supply housing on said optically clear overlay and connecting said bus bars to said power supply.

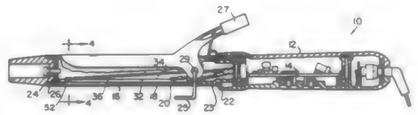
VOL 1167 ISS 2 OC 11 1994 UMI

5,354,967

HAIR STYLING APPLIANCE HEATER AND CONTROL

Yinon Barzilai; William Levy, and Robert Sherwood, all of El Paso, Tex., assignors to Helen of Troy Corporation, El Paso, Tex.

Filed Nov. 13, 1992, Ser. No. 976,022
Int. Cl.[5] H05B *1/02*; A45D *1/04*
U.S. Cl. 219—225 21 Claims



1. A heater element for a hair curling iron having a tubular heater barrel comprising:

a multilayer cylindrical sleeve sized to closely conform circumferentially to the interior of the tubular heater barrel and including first and second sheets of flat, flexible nonconductive substrate materials formed as an inner support and an outer cover and an electrically conductive resistive wire, heater element located between the first and second sheets and being wound circumferentially on the inner support;

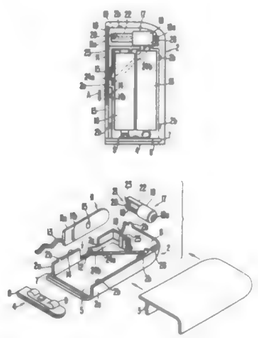
a diode supported on an exterior surface of the outer cover member, said sleeve and diode carried thereby adapted to be located within the tubular barrel with the diode located between the sleeve and the barrel in intimate thermal contact therewith, said heater being electrically energizable for transferring heat to the barrel through the outer cover member and said diode being sensitive to the barrel temperature for providing a signal indicative of the temperature of the barrel as it is heated.

5,354,968

BATTERY POWERED ELECTRIC CIGARETTE LIGHTER HAVING SNAP TOGETHER CONSTRUCTION AND SHUTTER-ACTUATED HEATER

Tetsuo Yamamura, Yokohama, Japan, assignor to Yamedia Co., Ltd., Japan

Continuation of Ser. No. 538,653, Jun. 15, 1990, abandoned. This application May 27, 1993, Ser. No. 68,616
Claims priority, application Japan, Jun. 17, 1989, 1-70927[U]
Int. Cl.[5] F23Q *7/16*; H05B *1/02*
U.S. Cl. 219—268 12 Claims



1. A lighter comprising:

half-case body;

projection means formed integrally with said half-case body;

means defining first and second grooves in said half-case body;

a half-case lid;

projection receiving means formed in said half-case lid for receiving said projection means in a manner which allows the half-case body and said half-case lid to be pressed together in a manner wherein they interlock with one another and form a casing without the need of screws or welding, said casing including a heater element compartment having an access opening and a battery compartment accessible through a bottom opening;

means defining third and fourth grooves in said half-case lid, said third and fourth grooves being arranged to define an essentially mirror image relationship with said first and second grooves at said bottom opening and said access opening respectively, when said half-case body and said half-case lid are assembled together to form said casing;

a bottom lid which is slidably received in said first and third grooves which are located opposite one another at said bottom opening when said half-case body and said half-case lid are assembled together to form said casing, said bottom lid closing said bottom opening and retaining first and second batteries within said battery compartment of said casing;

a shutter which is slidably received in said second and fourth grooves which are located opposite one another at said access opening when said half-case body and said half-case lid are assembled together to form said casing;

serpentine biasing means connected with said shutter and engaging said casing for biasing said shutter to slide in a first direction along said second and fourth grooves to close said access opening; and

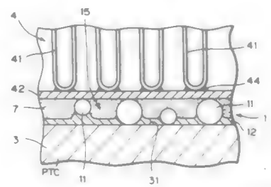
a heater element energizable by said batteries and disposed in said heater element compartment of said casing in a location wherein, when said shutter is slid along said second and fourth grooves against the bias of said serpentine biasing means in a second direction which is opposite the first direction, said shutter assumes a position wherein the access opening of said casing is opened and said heater element is exposed through said access opening and wherein a cigarette can be brought into contact with said heater element.

5,354,969

POSITIVE-TEMPERATURE-COEFFICIENT THERMISTOR HEATING DEVICE AND PROCESS FOR PRODUCTION OF THE SAME

Yosinori Akiyama; Akio Nara, both of Okazaki; Hidetaka Hayashi; Yasuhiro Oya, both of Nagoya; Keiichi Yamada, Toyoake, and Yasuaki Tsujimura, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 13, 1993, Ser. No. 60,939
Claims priority, application Japan, May 15, 1992, 4-148512; Apr. 2, 1993, 5-076758
Int. Cl.[5] H05B *3/08*
U.S. Cl. 219—541 7 Claims



1. A positive-temperature-coefficient thermistor heating device comprising:

a PTC element,

a first single layered electrode formed on the surface of the PTC element,

a heat radiating means having heat radiating fins and a second electrode, and

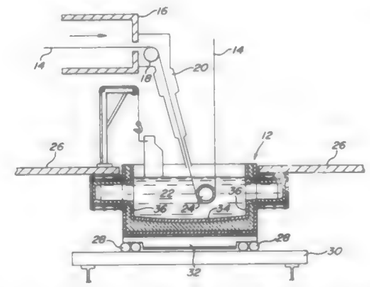
conductive particles contained in the first electrode and providing a rough surface on the first electrode and electrically conducted to the second electrode, said first electrode and said second electrode being bonded by an electrically insulative adhesive.

5,354,970

POT FOR BATCH COATING OF CONTINUOUS METALLIC STRIP

Peter Knupfer, Aachen, Fed. Rep. of Germany, assignor to Inductotherm Corp, Rancocas, N.J.

Filed Jun. 30, 1992, Ser. No. 906,961
Int. Cl.[5] B23K *13/01*
U.S. Cl. 219—609 13 Claims



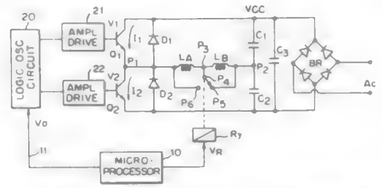
1. A hot dip batch coating pot comprising container means for containing a coating material in a liquid state, said container means having a vertical axis, an opening formed by a horizontal bottom and vertical side walls, said bottom and said side walls defining an interior volume for containing said coating material, said container means having an interior lining of refractory material, and at least one coreless induction furnace means mounted on a side wall of said container means, said coreless induction furnace means defining an interior volume therein, said interior volume of said coreless induction furnace means being in communication with said interior volume of said container means for inductively heating said coating material, said coreless induction furnace means including an induction coil having a central axis, said central axis being disposed at a right angle to the vertical axis.

5,354,971

DUAL PUSH-PULL HEATING DEVICE OF INDUCTION COOKER HAVING MULTIPLE BURNERS

Su-Min Chen, No. 9, Yung Kuang Lane, Herming Village, Show Shui Hsiang, Chang Hwa Hsien, Taiwan

Filed Jul. 15, 1992, Ser. No. 913,320
Int. Cl.[5] H05B *6/04*
U.S. Cl. 219—661 5 Claims



1. A dual push-pull heating device of an induction cooker having multiple burners comprising

logic amplifying drive circuitry;

a power element connected to receive high frequency signals from said logic amplifying drive circuitry;

at least two induction coils connected in parallel;

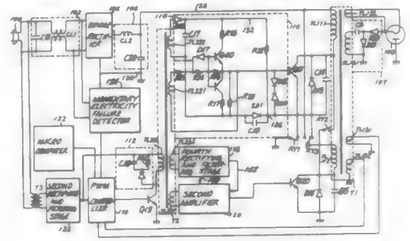
a relay connected to said induction coils, and having a common connection point connected to commonly connected ends of said induction coils, and a normally closed position of said relay with said common connection point connected to a non-common end of one of said induction coils, and a normally open position of said relay with said common connection point connected to a non-common end of another of said induction coils.

5,354,972

POWER SUPPLY FOR A MICROWAVE RANGE

Gyung H. Han, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Sep. 21, 1992, Ser. No. 948,385
Claims priority, application Rep. of Korea, Sep. 19, 1991, 91-15448
Int. Cl.[5] H05B *6/68*
U.S. Cl. 219—715 20 Claims



1. A power supply for a microwave range comprising:

a first transformer for transforming a direct current voltage from a direct current voltage source;

a voltage driving type switching means coupled to said first transformer for driving said first transformer in response to a switching signal;

a control means for generating the switching signal and coupled to said switching means for applying the switching signal to said switching means, said switching signal being pulse-width-modulated to a predetermined frequency;

a second transformer operatively connected to said control means, for electrically isolating said control means from said switching means and for transmitting to switching means said switching signal from said control means; and

a buffering means for driving said switching means, said buffering means being coupled between said second transformer and said switching means for buffering and amplifying the switching signal from said second transformer to generate an amplified buffered switching signal having a constant direct current voltage level and a constant swing width and supply said amplified switching signal to said switching means.

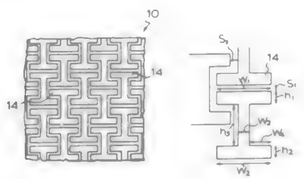
VOL 1167 ISS 2 OC 11 1994 UMI

5,354,973

MICROWAVE HEATING STRUCTURE COMPRISING AN ARRAY OF SHAPED ELEMENTS

D. Gregory Beckett, Oakville, Canada, assignor to Beckett Industries Inc., Oakville, Canada

Filed Jan. 29, 1993, Ser. No. 10,803
Claims priority, application United Kingdom, Jan. 29, 1992, 9201932
Int. Cl.[5] H05B 6/80
U.S. Cl. 219—730 20 Claims



1. A multiple layer article of manufacture, adapted to be formed into a packaging structure in which a foodstuff may be heated by microwave energy to a edible condition, comprising:

a plurality of individual discrete shapes of flexible electroconductive material supported in an array on a substrate layer,

each said individual discrete shapes of flexible electroconductive material having a thickness which is normally opaque to microwave radiation and being formed in an H- or I- outline or elongate-strip shape,

said individual discrete shapes being arranged on said substrate to define a space surrounding the periphery of each individual shape with the spaces surrounding the plurality of shapes defining a continuous aperture extending throughout the array of discrete shape and effective to generate thermal energy in said continuous aperture when said article is exposed to microwave energy and the foodstuff is in contact with or proximate to the aperture,

said substrate layer being formed of microwave energy transparent material and being in adhered structural relationship with said plurality of individual discrete shapes of flexible electroconductive material so that a packaging structure may be formed from said article in which said foodstuff may be positioned.

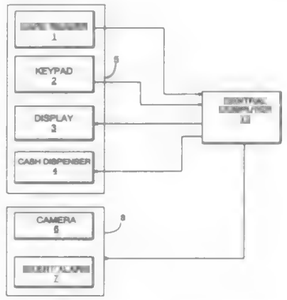
5,354,974

AUTOMATIC TELLER SYSTEM AND METHOD OF OPERATING SAME

Alan J. Eisenberg, Monmouth Junction, N.J., assignor to Base 10 Systems, Inc., Trenton, N.J.

Filed Nov. 24, 1992, Ser. No. 981,038
Int. Cl.[5] G06K 5/00
U.S. Cl. 235—379 5 Claims

1. In a method of operating an automatic teller system wherein a card is input by a user, the card is read, a personalized normal first PIN number selected by the user is entered by the user and is checked to determine whether the use of the card is authorized, if authorized a credit limit is determined and a desired amount of cash not exceeding the credit limit is dispensed to the user, the improvement comprising the steps of: providing a personalized emergency second PIN number to each user selected by the user in addition to the personalized normal first PIN number; checking the entered PIN number of each user to determine whether it is the normal first or emergency second PIN number of that user; and actuating an alarm in response to the determination of an entered emergency



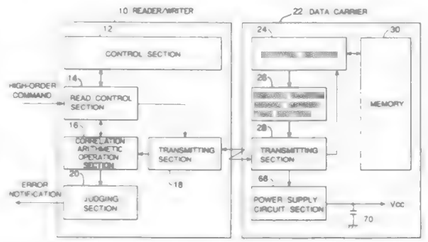
second PIN number for that user, while dispensing a limited amount of cash to that user.

5,354,975

CONTACTLESS DATA PROCESSING APPARATUS

Yoshihito Ishibashi; Masakatsu Matsumoto, and Shin-ichi Hayakawa, all of Tokyo, Japan, assignors to Tokimec Inc., Tokyo, Japan

Filed Jun. 3, 1993, Ser. No. 70,789
Claims priority, application Japan, Jul. 1, 1992, 4-173594; Jul. 2, 1992, 4-175099; Jul. 14, 1992, 4-186385
Int. Cl.[5] G06K 5/00; H04K 1/00; G06F 11/00
U.S. Cl. 235—380 13 Claims



1. A contactless data processing apparatus comprising:

a portable data carrier means for receiving a contactless coupling from an outside source and for executing at least a reading operation of data from said outside source to a built-in memory means; and

a data processing means for executing at least the reading operation of data from said outside source to said data carrier means by the contactless coupling;

wherein said data carrier means has a response means for returning one of two kinds of pseudo random signals which have been predetermined in correspondence to a bit 0 or 1 of response data when a predetermined command is received from said data processing means; and

said data processing means has:

a correlation operating means for holding the same signals as said two kinds of pseudo random signals of said data carrier means and for obtaining autocorrelations with a received signal; and

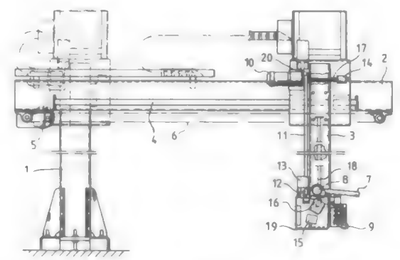
a judging means for determining that two or more data carrier means have been simultaneously accessed by an outside source when the autocorrelation values of said two kinds of pseudo random signals which have been obtained by said correlation operating means are simultaneously equal to or greater than a predetermined threshold value.

5,354,976

METHOD FOR IDENTIFICATION OF ROLLS AND A DEVICE FOR ITS ACCOMPLISHMENT

Jukka Mäkinen, Hollola; Jorma Hännikäinen, Lahti, and Mika Uusitalo, Torpinkylä, all of Finland, assignors to Valmet Paper Machinery Inc.

Filed Apr. 5, 1993, Ser. No. 42,886
Claims priority, application Finland, Apr. 10, 1992, 921587
Int. Cl.[5] G06K 7/10
U.S. Cl. 235—462 13 Claims



1. A method for identification of a roll and for determining its diameter by an identification device that comprises at least mechanisms for detecting the diameter of the roll and for reading the code marking on the roll, comprising the steps of:

driving the identification device towards the end of the roll to be identified;

detecting the arrival of the identification device to the vicinity of the end and interrupting the approaching movement;

moving the identification device towards the center of the end of the roll;

measuring the position of the identification device continuously during the movement towards the center;

detecting passing of the outer edge of the roll of the identification device with a mechanical sensor arm that contacts the surface of the roll and that by rising up enables the identification device to move further towards the center of the roll;

determining the diameter of the roll by the position of the sensor arm of the identification device at the moment of contact; and

dividing the obtained diameter by two and on the basis of the information steering the code reader of the identification device to read the identification code on the center of the end of the roll.

5,354,977

OPTICAL SCANNING HEAD

Alex Roustaei, 1696 Via Inspirar, San Marcos, Calif. 92069

Continuation-in-part of Ser. No. 956,646, Oct. 2, 1992, which is a continuation-in-part of Ser. No. 843,266, Feb. 27, 1992, Pat. No. 5,291,009. This application Oct. 23, 1992, Ser. No. 965,991
Int. Cl.[5] G06K 7/10
U.S. Cl. 235—472 97 Claims

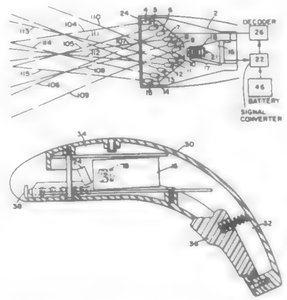
1. An optical scanning device for scanning one- and two-dimensional bar codes comprising:

a printed circuit board having a front and a rear;

an LED array having a plurality of LEDs disposed near said front of said printed circuit board wherein each LED of said plurality is oriented to emit light at an angle different than other LEDs of said plurality, said angle of each LED being a non-zero angle with respect to a reference line perpendicular to said front of said circuit board, said LED array projecting a fan of light forward in a direction along said reference line;

a cylindrical lens forward of said LED array having and input edge and an output edge for focussing said fan of light into a line of light at its focal distance for illuminating a bar code within a field of view within a range of said focal distance so that reflected light is reflected therefrom;

a detector comprising at least one linear CCD array disposed near rearward of said LED array on said printed circuit board for detecting a portion of reflected light from said



bar code and generating an electrical signal in response thereto wherein said electrical signal is an analog representation of said bar code;

an optical assembly for receiving said reflected light and directing said reflecting light onto said detector;

a conversion assembly for converting said electrical signal into a signal corresponding to said bar code; and

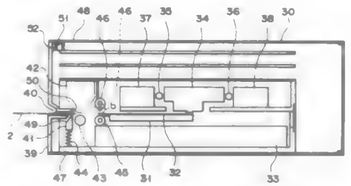
a voltage source for providing a driving voltage to said LED array, said CCD detector and said conversion assembly.

5,354,978

INFORMATION RECORDING/REPRODUCING APPARATUS

Hiroshi Hashi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 17, 1991, Ser. No. 778,252
Claims priority, application Japan, Oct. 26, 1990, 2-290231; Oct. 26, 1990, 2-290232
Int. Cl.[5] G06K 13/00, 13/08
U.S. Cl. 235—475 13 Claims



1. An information recording/reproducing apparatus comprising:

a housing including a card inserting slot for loading an optical card, and an optical card conveying passage having a first end and a second end, a space being provided between said card inserting slot and said first end of said conveying passage;

open/close means movable between a closed position in which a part of said space is closed, and an open position in which said space is open;

a shuttle means for holding the optical card, said shuttle

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means being reciprocally mounted in said conveying passage in said housing and being reciprocally movable along said conveying passage between said first and second ends thereof when holding the optical card;

an optical head, disposed facing the optical card held by said shuttle means, for recording information on and reproducing information from said optical card;

lock means for locking said shuttle means in said conveying passage at said first end thereof; and

control means including:

means responsive to said open/close means being moved to said open position for moving said shuttle means to said first end of said conveying passage after said open/close means is opened and when said shuttle means is not at said first end of said conveying passage, and for controlling said lock means to lock said shuttle means at said first end of said conveying passage, such that said shuttle means is locked at said first end of said conveying passage and closes said conveying passage at said first end thereof to prevent a foreign article from being inserted into said conveying passage of said housing, and

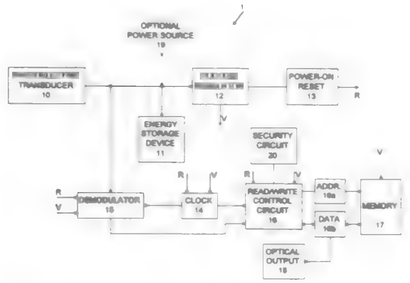
means for controlling said lock means to unlock said shuttle means when said movable open/close means is moved from said opened position to said closed position.

5,354,979

METHOD AND DEVICE FOR STORING DATA

Alexander Adelson, Mountainside Trail, Cortlandt Manor, N.Y. 10566, and Ira J. Schaefer, 107 Ridge Rd., Ardsley, N.Y. 10502

Filed Mar. 24, 1992, Ser. No. 856,779
Int. Cl.[5] G06K *19/06, 7/10*
U.S. Cl. 235—491 **11 Claims**



1. A data storage system comprising:

(a) a housing containing:

a memory for storing digital data words;

photoelectric means receptive of light energy for producing an electric signal;

memory control means responsive to the electric signal for sequentially reading data words out of the memory; and

display means receptive of the data words sequentially read out of the memory for displaying each data word as a bar code; and

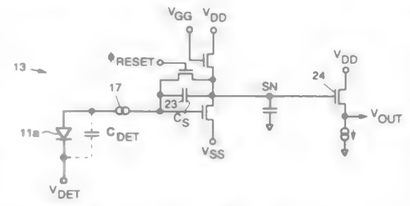
(b) means for applying light energy to the photoelectric means for effecting the sequential reading of stored data words and including means for reading the bar codes displayed by the display means.

5,354,980

SEGMENTED MULTIPLEXER FOR SPECTROSCOPY FOCAL PLANE ARRAYS HAVING A PLURALITY OF GROUPS OF MULTIPLEXER CELLS

William Rappoport, Weston; Edward Zalewski, Sandy Hook, and Peter Silverglate, Monroe, all of Conn., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 17, 1993, Ser. No. 77,973
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **3 Claims**



1. A focal plane array comprising:

an array of detectors comprising a plurality of groups of detector elements that each detect energy in a predetermined spectral region; and

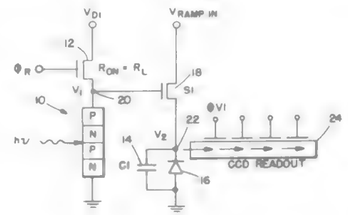
an array of multiplexer cells comprising a plurality of groups of multiplexer cells respectively coupled to the plurality of groups of detector elements of the array of detectors, wherein each multiplexer cell is comprised of an integrating capacitor, and wherein the integrating capacitor of each cell in a particular group has a predetermined capacitance whose charge integration capability corresponds to an expected maximum intensity level of radiation in a particular spectral region that is detected by the corresponding detector element in the detector array.

5,354,981

SWITCHING PHOTOSENSITIVE MATRIX DEVICE

Rudolph H. Dyck, Palo Alto, Calif., assignor to Loral Fairchild Corporation, Syosset, N.Y.

Filed Jul. 14, 1993, Ser. No. 91,348
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 R **15 Claims**



1. A photosensitive switch circuit for providing an output signal in response to a pulse of radiation directed thereon comprising:

a pnpn photoswitch means,

load means connected to said pnpn photoswitch means at a first node, said load means further connected to a potential source to provide a first voltage level value at said first node,

a switch means being connected to a voltage ramp signal source and connected to and controlled by said voltage level at said first node,

a capacitor storage means connected to said switch means, said switch means connecting said voltage ramp signal source to said capacitor storage means to charge said capacitor means as said voltage ramp signal increases, and

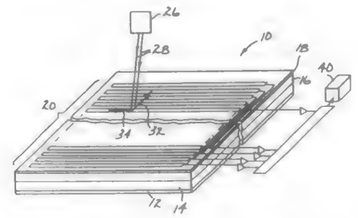
said pnpn photoswitch being activated during the said charging of said capacitor storage means in response to a pulse of radiation directed thereon to produce a change of said voltage level at said first node from said first voltage level to a second voltage level, said level change of voltage at said first node operating said switch device to disconnect said voltage ramp signal from said capacitor storage means wherein said capacitor storage means contains a particular amount of charge representative of the elapsed time between the start of the voltage ramp signal and the activation of the pnpn photoswitch by said pulse of radiation.

5,354,982

IMAGING SYSTEM HAVING OPTIMIZED ELECTRODE GEOMETRY AND PROCESSING

Owen L. Nelson, St. Paul, and John E. Potts, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 998,260, Dec. 31, 1992, Pat. No. 5,268,569, which is a continuation of Ser. No. 918,433, Jul. 22, 1992. This application Dec. 6, 1993, Ser. No. 163,266
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 LA **20 Claims**



1. A system for producing an image created by radiation incident upon an imaging device, comprising:

(a) an imaging device comprising a first conductive layer, an insulative material, a photoconductive insulative layer, an electrically blocking layer, and a second conductive layer which consists essentially of a segmented array of at least one group of elongated, striped, conductive electrodes lying in a first direction;

(b) means for creating an electric field between the first and second conductive layers such that first charge carriers are created in the imaging device by first incident radiation, and subsequently separated to create a first current, resulting in the formation of a latent electrostatic image near the interface between the insulative material and the photoconductive insulative layers;

(c) means for reducing the electric field after formation of the latent image to a strength suitable for maintaining the latent image in the photoconductive insulative layer;

(d) a scanner which, in a first time-ordered pattern, utilizes a second incident radiation to initiate a second current, comprising second charge carriers, within the imaging device; and

(e) detection electronics connected to, and sensitive to motion of the second charge carriers in, each electrode;

in which:

(f) the scanner scans the array in a second direction substantially different from the first direction;

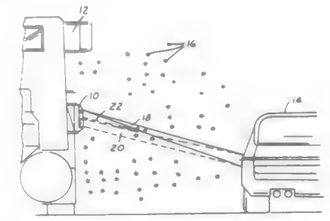
(g) each conductive electrode is addressed in a second, time-ordered pattern such that only one electrode in a group is monitored for motion of the charge carriers at one time, while adjacent electrodes in that group are held at a voltage level representing a virtual ground as measured relative to the monitored electrode, and the detection electronics interprets a coincidence of the first and second patterns as a pixel of the image created by the radiation, which pixel represents a corresponding portion of the latent image.

5,354,983

OBJECT DETECTOR UTILIZING A THRESHOLD DETECTION DISTANCE AND SUPPRESSION MEANS FOR DETECTING THE PRESENCE OF A MOTOR VEHICLE

Scott Juds, Everett, and Paul Mathews, Langley, both of Wash., assignors to Auto-Sense, Limited, Aurora, Colo.

Filed Apr. 10, 1990, Ser. No. 508,132
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—222.1 **17 Claims**



1. An object detector having a defined threshold detection distance associated therewith for detecting the presence of a motor vehicle, said motor vehicle reflecting a beam of radiation therefrom and being remotely located a distance from said object detector, said object detector comprising:

(a) detecting means for receiving said beam of radiation from said motor vehicle and for generating a detecting signal in response thereto; and

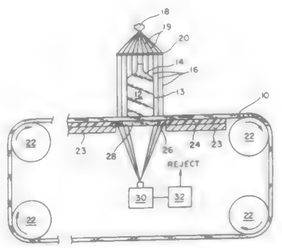
(b) suppressing means coupled to said detecting means for suppressing said detecting signal if an object is located within a predetermined distance being less than said defined threshold detection distance from said object detector.

5,354,984

GLASS CONTAINER INSPECTION MACHINE HAVING MEANS FOR DEFINING THE CENTER AND REMAPPING THE ACQUIRED IMAGE

Leo B. Baldwin, Horseheads, N.Y., assignor to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Filed Sep. 3, 1993, Ser. No. 116,664
Int. Cl.[5] G01N *9/04*
U.S. Cl. 250—223 B **5 Claims**



1. An inspection machine for inspecting the circumference of a vertically standing container comprising

means for conveying a vertically standing container through an inspection location including

means for directing a beam of collimated light vertically

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downwardly towards the container, said beam having a configuration selected so that when the container is located at the inspection location the periphery of said beam will be spaced from the circumference of the container,

two dimensional camera means for axially viewing the profile of the vertical projection of a container at the inspection location, and

image processing means for evaluating the circumference of the profile viewed by said two dimensional camera including

means for defining the center of the acquired image, and

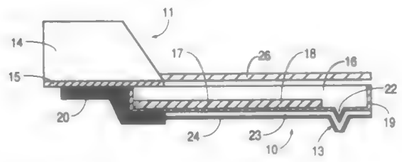
means for remapping the perimeter of the acquired image into at least one two-dimensional rectangular area bisected by an imaginary line representing the perimeter of an ideal container in vertical projection.

5,354,985

NEAR FIELD SCANNING OPTICAL AND FORCE MICROSCOPE INCLUDING CANTILEVER AND OPTICAL WAVEGUIDE

Calvin F. Quate, Stanford, Calif., assignor to Stanford University, Palo Alto, Calif.

Filed Jun. 3, 1993, Ser. No. 72,286
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—234 **34 Claims**



1. A cantilever for use in a near field optical scanning microscope, the cantilever comprising:

a flexible cantilever member having a free end and a fixed end,

a tip formed near the free end of the cantilever member, the tip extending from the cantilever member in a direction substantially perpendicular to a longitudinal axis of the cantilever member;

an optical waveguide positioned along the cantilever member and extending to an apex of the tip, an aperture for allowing light to escape from the waveguide being formed near the apex of the tip.

5,354,986

ION IMPLANTATION APPARATUS

Satoshi Yamada; Hirohisa Yamamoto, and Shigeru Shiratake, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 974,873
Claims priority, application Japan, Nov. 12, 1991, 3-295899
Int. Cl.[5] H01J *37/30*; H05H *3/00*
U.S. Cl. 250—251 **1 Claim**

1. An ion implantation apparatus comprising:

an ion source for generating cations for implantation in a semiconductor wafer;

an ion drawing electrode for extracting ions generated by the ion source;

a mass spectrometer for selecting ions having a predetermined mass from the ions extracted by the ion drawing electrode;

a movable disc having a front side on which a semiconductor wafer may be disposed for ion implantation and a back side; and

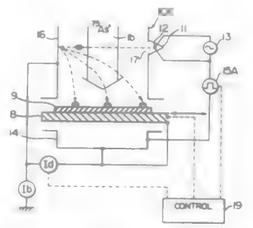
means for neutralizing positive charge accumulated on a semiconductor wafer on the movable disc during ion implantation including:

a filament for generating thermal electrons;

a filament current source for supplying an electric current to the filament to generate thermal electrons;

a Faraday cup containing the filament for producing secondary electrons in response to irradiation by the thermal electrons, the secondary electrons reaching the semiconductor wafer on the movable disc and neutralizing positive charge accumulated on the semiconductor wafer;

a catch plate at the back side of the disc;



a pulsed bias source connected to the catch plate and the filament for applying a pulsed bias voltage to the Faraday cup; and

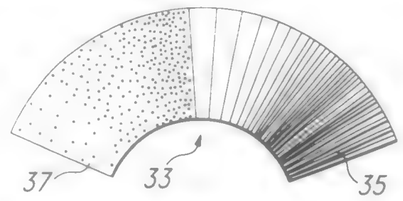
a control circuit connected to the pulsed bias source and the movable disc for locally changing the quantity of electrons irradiating the semiconductor wafer mounted on the disc along a direction of movement of the semiconductor wafer mounted on the disc by controlling the pulsed bias voltage generated by the pulsed bias source in response to movement of the disc.

5,354,987

CALIBRATING FOCAL PLANE ARRAYS USING MULTIPLE VARIABLE RADIOMETRIC SOURCES

Craig A. MacPherson, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 7, 1992, Ser. No. 987,039
Int. Cl.[5] G01D *18/00*
U.S. Cl. 250—252.1 **4 Claims**



1. A system for calibrating the detector elements of a focal plane array comprising:

(a) at least one detector element for observing a scene emitting indicia of temperatures in a known temperature range; and

(b) a reference source having a pair of end portions and a continuous portion with different magnitudes of infrared emission at different locations thereof and continuously less infrared emissive from one of said end portions to the other of said end portions, said reference source successively providing plural magnitudes of reference energy, said magnitudes of reference energy including a magnitude of energy at substantially each of the upper and lower boundaries of said known range and at least one magnitude intermediate said upper and lower boundaries of said known range; and

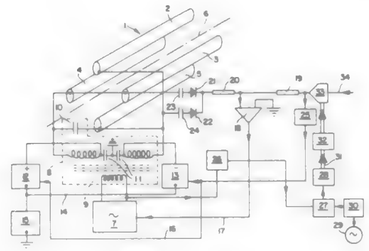
(c) means to periodically cause said magnitudes of energy from said reference source to impinge upon said at least one detector element in place of said scene.

5,354,988

POWER SUPPLY FOR MULTIPOLAR MASS FILTER

Paul Jullien, Bowdon, England, assignor to Fisons plc, Ipswich, England

PCT No. PCT/GB92/01961, § 371 Date Jun. 2, 1993, § 102(e) Date Jun. 2, 1993, PCT Pub. No. WO93/08590, PCT Pub. Date Apr. 29, 1993
PCT Filed Oct. 26, 1992, Ser. No. 70,372
Claims priority, application United Kingdom, Oct. 24, 1991, 9122598.7
Int. Cl.[5] B01D *59/44*; H01J *49/00*
U.S. Cl. 250—292 **20 Claims**



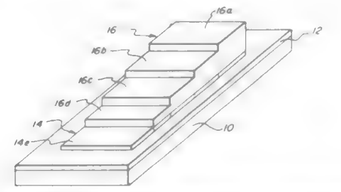
1. A multipolar mass filter (**1**) through which charged particles of a selected mass-to-charge ratio may be transmitted in response to the application to its electrodes of an alternating potential of selected amplitude and frequency, said filter comprising resonant circuit means (**8**) connected to the electrodes (**2–5**) of said filter, controllable radio-frequency oscillator means (**7**) for generating said alternating potential at a frequency determined by said resonant circuit means (**8**) and at an amplitude determined by an amplitude control signal, said mass filter being characterized by means (**26–33, 18, 19**) for adjusting the amplitude of said alternating potential in response to changes in the actual frequency of oscillation of said oscillator means (**7**) in order to maintain the transmission through said filter of charged particles of said selected mass-to-charge ratio.

5,354,989

SUPERCONDUCTING DETECTOR ASSEMBLY AND APPARATUS UTILIZING SAME

David B. Fenner, Simsbury, and Robert M. Carangelo, Glastonbury, both of Conn., assignors to Advanced Fuel Research Inc., East Hartford, Conn.

Filed Dec. 28, 1992, Ser. No. 997,457
Int. Cl.[5] G01J *3/51*; H01L *27/146, 39/00*
U.S. Cl. 250—336.2 **17 Claims**



1. A transform spectrometer comprising, in combination:

(1) a detector assembly for discriminating as a function of wavelength, radiation impinging thereon, said detector assembly comprising:

a plurality of superconductor bolometers arranged as an array and having substantially contiguous operative surfaces providing at least one planar irradiation face, all of said bolometers being responsive to radiation throughout a given range of wavelengths; and an interference layer superposed upon said irradiation face of said array with an associated region of said layer in registry with each of said bolometers, said layer being composed of a material that produces constructive and destructive optical interference conditions to periodically modulate, and thereby transmit selectively as a function of layer thickness, multiple bands of wavelengths of radiation in said range, said regions differing from one another in thickness so as to constitute said layer a graded interference filter, and to thereby provide a plurality of detectors that differ from one another in their response to radiation within said given range, each of said detectors registering a spectral irradiance periodically modulated, thereby being capable of discriminating a plurality of wavelength bands;

(2) means for maintaining said detector assembly at cryogenic temperatures in a range for varying the conductance of said bolometers;

(3) means for generating electrical currents, said means for generating being operatively connected to said array; and

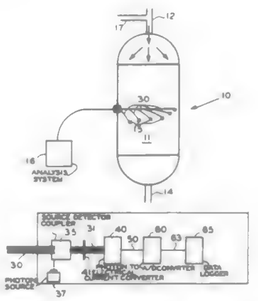
(4) electronic data processing means for transforming said currents, after passage through said bolometers of said array, so as to produce signals representative of the energy of radiation caused to impinge upon said irradiation face, discriminated as a function of wavelength said data processing means functioning to apply matrix-inversion transform algorithms to said electrical current, for producing such signals.

5,354,990

IN-SITU LOCALIZED TRACER INJECTION/FIBER OPTIC DETECTION FOR MEASUREMENT OF FLOW DISTRIBUTIONS IN FIXED BED REACTORS

David C. Dankworth, Whitehouse Station, and Robert M. Koros, Westfield, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 18, 1993, Ser. No. 63,393
Int. Cl.[5] G01F *1/00, 1/66*
U.S. Cl. 250—356.1 **11 Claims**



1. A method for determining the distribution of a main flow of fluid introduced into a reactor containing a bed of particulate solids for flow therethrough, the method comprising:

placing a plurality of fiber optic sensors at desired locations within the bed of particulate solids;

feeding a main flow of fluid into the reactor for flow through the reactor;

injecting a light analyzable tracer component into the main

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flow of fluid whereby the tracer component is distributed with the main flow of fluid;

stimulating the tracer component in the vicinity of a fiber optic sensor to emit electromagnetic radiation;

transmitting the emitted electromagnetic radiation to a detector;

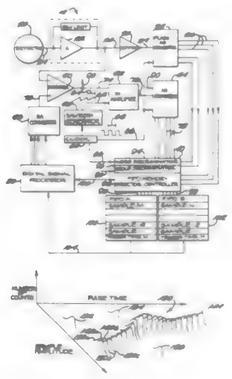
detecting the transmitted electromagnetic radiation to determine that the light analyzable tracer material is in the vicinity of each sensor and thereby providing a measure of the distribution of fluid flowing through the reactor.

5,354,991

APPARATUS AND METHOD FOR DETECTING FULL-CAPTURE RADIATION EVENTS

Daniel M. C. Odell, Aiken, S.C., assignor to The United States of America as represented by the Unites States Department of Energy, Washington, D.C.

Filed Mar. 1, 1993, Ser. No. 24,553
Int. Cl.[5] G01T *1/161, 1/20*
U.S. Cl. 250—369 **20 Claims**



1. An apparatus for distinguishing full-capture events from Compton scattering events, said apparatus for use with a radiation detector producing a time-varying output signal representing events and non-events, said events being the interactions of radiation with atoms in the detector, said apparatus comprising:

means in operative connection with said detector for sampling said output signal at a preselected rate, said sampling means producing a sequential stream of samples including event samples and non-event samples, said event samples including Compton event samples and full-capture event samples, said non-event samples not including Compton event samples or full-capture event samples;

means for converting each sample of said sequential stream of samples to a digital value to produce a sequential stream of digital values from said sequential stream of samples, each of said digital values having an amplitude;

means for identifying said event samples from said sequential stream of digital values, said identifying means in operative connection with said converting means for comparing said amplitudes of said digital values to a preselected threshold value, said event samples having an amplitude at least equal to said preselected threshold value and said non-event samples having an amplitude less than said threshold value; and

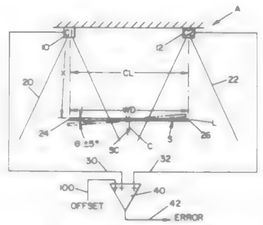
means for analyzing said event samples to distinguish said full-capture event samples from said Compton event samples.

5,354,992

TILT COMPENSATED ERROR CORRECTING SYSTEM

Gary J. Thompson, Akron; Thomas Tillander, Bay Village, and David E. Harris, Powell, all of Ohio, assignors to The North American Manufacturing Company, Cleveland, Ohio

Filed Feb. 16, 1993, Ser. No. 18,280
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—548 **31 Claims**



1. A system for creating a position correcting error signal indicative of the lateral displacement from a control position of a nearly flat web having a width and first and second generally parallel edges, as said generally flat web moves along a given feed line past a given location, said error signal creating device including first detector means for detecting the orthogonally projectable, one dimensional lateral position of said first edge of said moving web at said given location, second detector means for detecting the orthogonally projectable, one dimensional lateral position of said second edge of said moving web at said given location, said first and second detector means being spaced from each other a given distance, said first and second detector means being spaced from said web at said location a known spacing amount in a direction perpendicular to said web, and means for comparing said lateral positions of said first and second edges to generate said error signal, said system further comprising: transducer means for detecting the lateral tilt angle of said web at said given location, means for creating an electrical value based upon said detected tilt angle, means for creating a signal indicative of the difference between said given distance between said first and second detector means and said width of said web, means for multiplying said difference signal and said electrical value to produce an offset signal and means responsive to said offset signal for providing a tilt compensated error signal for reducing said lateral displacement of said web from said control position.

5,354,993

OPTICAL COMMUNICATION LINK FOR MEDICAL IMAGING GANTRY HAVING CONTINUOUS LINE OF SIGHT COMMUNICATIONS BETWEEN TRANSMITTERS AND RECEIVERS

Shmuel Kedmi; Joseph Bodenheimer, both of Jerusalem, and Yoav Kanfi, Herzelia, all of Israel, assignors to Elscint Ltd., Haifa, Ireland

Filed Jun. 5, 1992, Ser. No. 894,574
Claims priority, application Israel, Jun. 9, 1991, 098 421
Int. Cl.[5] G02B *27/00*
U.S. Cl. 250—551 **19 Claims**

1. A system for transferring data between a rotating part and a stationary part, comprising:

a rotor,

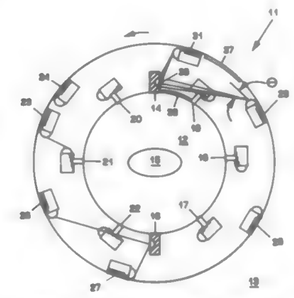
a stator spaced apart from said rotor,

at least one light transmitter mounted on said rotor for transmitting a light beam that is intensity modulated responsive to said data to be transferred between said rotor and said stator,

at least one light receiver mounted on said stator for receiving and demodulating said intensity modulated light beam transmitted by said at least one light transmitter mounted on said rotor and positioned to enable said transmitted light beam to impinge directly upon said light receiver on

a "line of sight" basis for transferring said data from said rotor to said stator,

a computer processor to process said data to provide image data, and



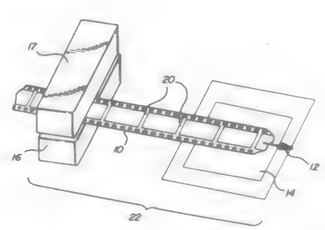
an image monitor to provide images based on said image data.

5,354,994

METHOD AND APPARATUS FOR DETECTING FILM EDGES AND FILM OPTICAL CENTERS

Ray Hicks, 4444 W. Bristol Rd., Flint, Mich. 48507

Continuation-in-part of Ser. No. 816,135, Dec. 31, 1991, abandoned. This application Feb. 1, 1993, Ser. No. 11,961
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—561 **9 Claims**



1. A method of determining the optical center of an individual frame of photographic film on a strip of photographic film being moved along a photographic film transport path, comprising the steps of;

positioning a plurality of light sensors in a substantially linear array substantially perpendicular to and on one side of said path at a sensor location along said path;

passing the strip of film along said path;

shining light through said film toward said array of light sensors as said strip is moved along said path;

sensing the level of illumination incident upon each of said sensors;

comparing the level of illumination incident upon said sensors with a predetermined level corresponding to a known degree of opacity associated with the interframe border between individual frames on the film;

as the leading edge of an individual frame of the film reaches the sensing location, determining the arrival of the leading edge of the individual frame at the sensor location by determining when the level of illumination associated with a predetermined number of said plurality of sensors corresponds to a degree of opacity at least as great as said predetermined level;

as the trailing edge of the individual frame reaches the sensor location, determining the arrival of the trailing edge of the individual frame at the sensor location by determining when the level of illumination associated with the predetermined number of said plurality of sensors corresponds to a degree of opacity at least as great as said predetermined level; and

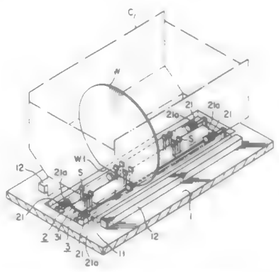
determining the center of said individual frame of film from the position of said leading end trailing edges.

5,354,995

SUBSTRATE DETECTING DEVICE FOR DETECTING THE PRESENCE OF A TRANSPARENT AND/OR AN OPAQUE SUBSTRATE BY OUTPUT OF JUDGEMENT MEANS

Shunetsu Endo; Mitsuo Kato, both of Sagamihara, and Masato Asakawa, Machida, all of Japan, assignors to Tokyo Electron Kabushiki Kaisha, Tokyo and Tokyo Electron Tohoku Kabushiki Kaisha, Esashi, both of Japan

Filed Aug. 20, 1993, Ser. No. 109,430
Claims priority, application Japan, Aug. 24, 1992, 4-247304
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—561 **10 Claims**



1. A substrate detecting device comprising:

light emitting means provided on the side of one surface of a substrate to be disposed in a region where said substrate is arranged, said emitting means being provided to emit a light toward said one surface;

first light receiving means positioned on a path of a light emitted from said light emitting means and, if a transparent substrate is disposed in said region, reflected by said one surface of the transparent substrate;

first judgment means for judging the presence or absence of said transparent substrate based on a reception signal transmitted from said first light receiving means;

second light receiving means provided on the side of the other surface of said substrate to be disposed in said region; said second light receiving means being provided to receive a light from said light emitting means which has advanced through said region; and

second judgment means for judging the presence or absence of an opaque substrate based on a light reception signal transmitted from said second light receiving means.

5,354,996

METAL ION MONITORING SYSTEM

Jeffrey K. Griffith, Cedar Crest; Teresa A. Coons, and Jack E. Floegel, both of Albuquerque, all of N. Mex., assignors to Permacharge Corporation, Albuquerque, N. Mex.

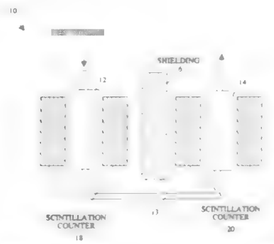
Filed Jun. 21, 1993, Ser. No. 80,293
Int. Cl.[5] C02F *1/42*
U.S. Cl. 250—364 **16 Claims**

1. An apparatus for detecting the presence of a first type of metal ion in a liquid, said apparatus comprising:

a first compartment having bound therein a first material that binds said first type of metal ion and a second type of metal ion, said second type of metal ion being bound with less force than said first type of metal ion, said first mate-

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rial having a radioactive isotope of said second type of metal ion initially bound thereto;



contact means for bringing a known volume of said liquid in contact with said material in said first compartment and then isolating said first material from said liquid.

5,354,997

METHOD FOR INCREASED SENSITIVITY OF RADIATION DETECTION AND MEASUREMENT

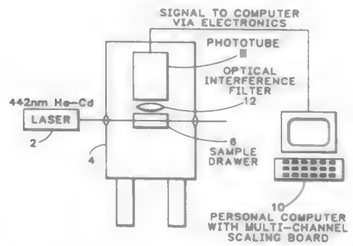
Steven D. Miller, Richland, Wash., assignor to Battelle Memorial Institute, Richland, Wash.

Continuation-in-part of Ser. No. 723,063, Jun. 28, 1991, Pat. No. 5,272,348, which is a continuation-in-part of Ser. No. 431,307, Nov. 13, 1989, abandoned. This application Mar. 18, 1993, Ser. No. 32,876

The portion of the term of this patent subsequent to Dec. 21, 2010, has been disclaimed.

Int. Cl.[5] G01T *1/105*

U.S. Cl. 250—484.5 20 Claims



15. A method of measuring radiation dose with a crystalline material exhibiting damage center absorption, comprising the steps of:

exposing said body to ionizing radiation,

coalescing primary radiation damage centers into secondary radiation centers;

exciting the material with optical radiation at a first wavelength that is near a peak damage center absorption center of said material; and

measuring optical energy emitted from the material by luminescence at a second wavelength that is longer than the first wavelength.

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Patent Not Issued For This Number

5,354,999

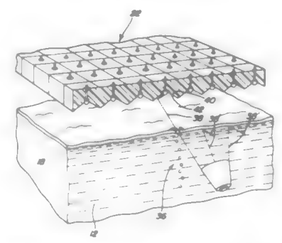
LEAK DETECTION ACHIEVED BY DETECTION OF LIGHT TRANSMITTED THROUGH AN OPAQUE LAYER INTERRUPTED BY A PASSING BUBBLE

Charles E. Neff, 406 Ripple Creek, Houston, Tex. 77024

Filed Apr. 2, 1993, Ser. No. 57,958

Int. Cl.[5] G01N *15/06*

U.S. Cl. 250—573 16 Claims



1. An apparatus for detecting bubbles in a first liquid comprising:

a second liquid having a lower specific gravity than said first liquid and forming a continuous layer on the surface of said first liquid;

a radiation source disposed on a first side of said second liquid;

a radiation detecting means located on a second side of said second liquid;

said second liquid initially offering an opaque barrier between said radiation emitting source and said radiation detecting means; and

means providing indicia of a discontinuity in said second liquid layer caused by a bubble which interrupts the continuity of said second layer thereby permitting radiation to pass therethrough to said radiation detecting means.

5,355,000

ASSYMETRIC QUANTUM WELL INFRARED DETECTOR

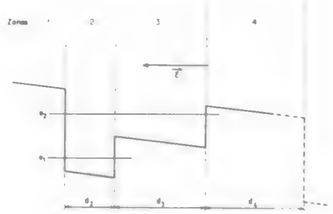
Dominique Delacourt, Paris; Michel Papuchon, Villebon, and Francois Chevoir, Vincennes, all of France, assignors to Thomson-CSF, Puteaux, France

Continuation of Ser. No. 714,610, Jun. 13, 1991, abandoned. This application Jul. 22, 1993, Ser. No. 95,044

Claims priority, application France, Jun. 26, 1990, 90 08004

Int. Cl.[5] H01L *31/0352*

U.S. Cl. 257—14 6 Claims



1. An electromagnetic photo-current detector, comprising:

an asymmetric quantum well having a first layer with a conduction band edge at a first energy, a second layer adjacent to the first layer so that inner surfaces of the first and second layers contact one another, said second layer having a conduction band edge at a second energy which is greater than said first energy, and third and fourth layers opposing one another and having a conduction band edges at energies which are greater than the second energy, the third and fourth layers contacting outer surfaces of the first and second layers, respectively;

a constant voltage source;

means for applying a constant voltage from said constant voltage source to the third and fourth layers; and

means for detecting an electric current flowing across the asymmetric quantum well, wherein:

thicknesses and conduction band energies of the first, second, third and fourth layers are such that fourth and fifth energies are allowed electron energies for electrons confined to the asymmetric quantum well, the fourth energy is less than the second energy and the fifth energy is greater than the second energy and less than conduction band edge energies of the third and fourth layers.

5,355,001

METHOD FOR RECORDING DATA, AND PRINTED BODY PRINTED BY THE METHOD, AND DATA RECORDING MEDIUM, AND METHOD FOR READING DATA FROM DATA RECORDING THE MEDIUM

Takeo Fujimoto; Yoshiyuki Itoh, both of Tokyo, and Makoto Tomioka, Chiba, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

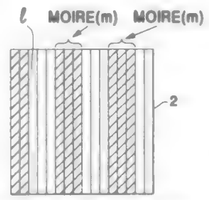
PCT No. PCT/JP91/01632, § 371 Date Jul. 28, 1992, § 102(e) Date Jul. 28, 1992, PCT Pub. No. WO92/09972, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 27, 1991, Ser. No. 915,830

Claims priority, application Japan, Nov. 28, 1990, 2-331372; Aug. 22, 1991, 3-210578

Int. Cl.[5] G06K *19/06*

U.S. Cl. 235—494 9 Claims



1. A data recording medium comprising:

at least four square bit-indicating fields which form a square or rectangular unit that designates a binary number with N bits on the surface of a piece of material, M kinds of colors being superimposed upon the fields such that fields printed with dots of a first color designate one numeric value and fields printed with dots of a second color designate another numeric value, said at least four square bit-indicating fields producing moire fringes used to distinguish said binary number.

5,355,002

STRUCTURE OF HIGH YIELD THIN FILM TRANSISTORS

Biing-Seng Wu, Hsin-Chu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jan. 19, 1993, Ser. No. 5,794

Int. Cl.[5] H01L *29/04, 31/036, 29/36, 27/01*

U.S. Cl. 257—57 9 Claims

1. A thin film field effect transistor (TFT) structure having a gate electrode and an active region with a source, a drain and a channel, and a field region outside said active region, comprising:

an insulating substrate,

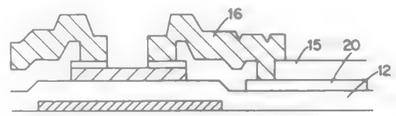
a gate electrode on said substrate and longer than said active region,

a first insulating layer covering said gate electrode,

said active region comprises a first semiconductor layer on said first insulating layer, shorter than said gate electrode and serving as said source, said drain and said channel for said TFT,

a second semiconductor layer and a third semiconductor layer, which are heavily doped and form contacts for said source and said drain, respectively,

a second insulating layer over the first insulating layer covering a portion of top surface of said contacts for said source and said drain,



a source metal interconnection to said source and a drain metal interconnection to said drain through the top surface of said of said contacts for the source and the drain,

said source metal interconnection and said drain metal interconnection having edges aligned with the edges of said second semiconductor layer and said third semiconductor layer on top of said channel and separated from said gate through said first insulating layer and said second insulating layer, and overlaying said second insulating layer by non-electrical contact areas of said source metal interconnection and said drain metal interconnection.

5,355,003

SEMICONDUCTOR DEVICE HAVING STABLE BREAKDOWN VOLTAGE IN WIRING AREA

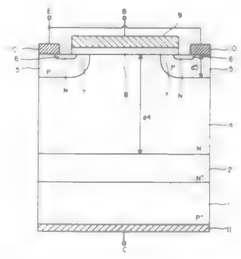
Yoshifumi Tomomatsu, Fukuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1993, Ser. No. 85,058

Claims priority, application Japan, Aug. 5, 1992, 4-208890

Int. Cl.[5] H01L *29/70, 29/72*

U.S. Cl. 257—139 7 Claims



1. A semiconductor device comprising:

a first conductivity type first semiconductor layer having one major surface and another major surface;

a first conductivity type second semiconductor layer being formed on said one major surface of said first semiconductor layer and having lower impurity concentration than said first semiconductor layer;

a second conductivity type third semiconductor layer being implanted in a surface of said second semiconductor layer;

a first main electrode being formed on said third semiconductor layer; and

a second main electrode being formed on said another major surface of said first semiconductor layer,

the thickness of said third semiconductor layer, and the

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thickness and impurity concentration of said second semiconductor layer being so set as to satisfy the following conditional expression:

$$D > W$$

assuming that D represents the thickness of said second semiconductor layer being located under said third semiconductor layer, BV represents a reverse bias voltage being applied across said first and second main electrodes in an actual operation, KS represents the relative dielectric constant of a semiconductor material in said second semiconductor layer, $\epsilon 0$ represents the dielectric constant of a vacuum, q represents the amount of charges of electrons, N represents impurity concentration of said second semiconductor layer, and W represents extension of a depletion layer in reverse bias setting of a P-N junction formed in the interface between said second and third semiconductor layers, being determined by the following equation (1):

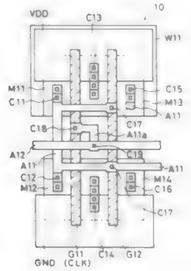
$$W = \sqrt{\frac{2 \cdot KS \cdot \epsilon 0}{q \cdot N} BV} \quad (1)$$

5,355,004

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING WIRING FOR CLOCK SIGNAL SUPPLY

Mutsuo Saitoh, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Nov. 12, 1992, Ser. No. 975,275
Claims priority, application Japan, Nov. 14, 1991, 3-297557
Int. Cl.[5] H01L 49/00, 23/48, 29/44, 29/52
U.S. Cl. 257—211 4 Claims



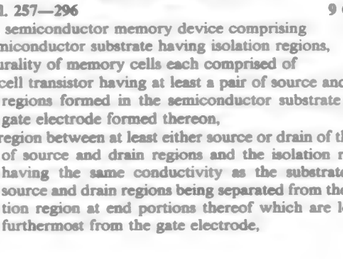
1. A semiconductor integrated circuit device comprising:
a plurality of circuit blocks each having a first terminal to which a clock signal is supplied and a second terminal through which a signal other than said clock signal is sent;
a first wiring pattern electrically connected to said second terminals in said plurality of circuit blocks, said first wiring pattern being disposed in a first plane of said device; and
a second wiring pattern electrically connected to said first terminals in said plurality of circuit blocks, said second wiring pattern being electrically insulated from said first wiring pattern and disposed in a second plane of said device, said second plane being above said first plane in said device;
said clock signal being supplied through said second wiring pattern and said first terminals to said plurality of said circuit blocks; each of said circuit blocks having a third wiring pattern connected to said first terminals and disposed in a third plane of said device which is below said first plane; and
said third wiring pattern does not extend outside of an individually associated one of said circuit blocks.

5,355,005

SELF-DOPED COMPLEMENTARY FIELD EFFECT TRANSISTOR

Saied Tehrani, Scottsdale; Jun Shen, Phoenix; Herbert Goronkin, Tempe, and Robert Smith, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 4, 1992, Ser. No. 971,118
Int. Cl.[5] H01L 31/072, 29/06, 31/109, 29/80
U.S. Cl. 257—192 12 Claims



1. A self-doping complementary field effect transistor comprising:
a first field effect transistor including a first channel of a first conductivity type sandwiched between two wide bandgap regions; a first doping region positioned adjacent to the first channel; a first gate electrode positioned over a portion of the first channel for controlling charge transfer between the first doping region and the first channel, wherein the first doping region is between the first gate electrode and the first channel;
a second field effect transistor including a second channel of the first conductivity type sandwiched between two wide bandgap regions; a second doping region positioned adjacent to the second channel; a second gate electrode positioned over a portion of the second channel for controlling charge transfer between the second doping region and the second channel, wherein the second channel is between the second gate electrode and the second doping region; and
an interconnect electrically coupling the first gate electrode to the second gate electrode.

5,355,006

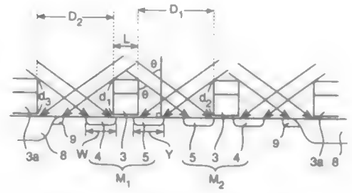
SEMICONDUCTOR MEMORY DEVICE WITH SOURCE AND DRAIN LIMITED TO AREAS NEAR THE GATE ELECTRODES

Katsuji Iguchi, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 928,406, Aug. 12, 1992, abandoned.
This application Feb. 25, 1994, Ser. No. 201,706
Claims priority, application Japan, Sep. 9, 1991, 3-229223
Int. Cl.[5] H01L 29/78
U.S. Cl. 257—296 9 Claims

1. A semiconductor memory device comprising
a semiconductor substrate having isolation regions,
a plurality of memory cells each comprised of
a cell transistor having at least a pair of source and drain regions formed in the semiconductor substrate and a gate electrode formed thereon,
a region between at least either source or drain of the pair of source and drain regions and the isolation regions having the same conductivity as the substrate, said source and drain regions being separated from the isolation region at end portions thereof which are located furthermost from the gate electrode,

a bit line,
a bit contact for providing contact between the drain region and the bit line,
a capacitor and



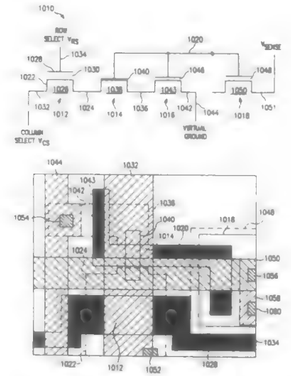
a storage contact for providing contact between the source region and the capacitor, in which the pair of source and drain regions are disposed in limited areas near the gate electrode so as to be spaced from said isolation regions and in an independent form not sharing the source or drain regions in other memory cells.

5,355,007

DEVICES FOR NON-VOLATILE MEMORY, SYSTEMS AND METHODS

Michael C. Smayling, Missouri City, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 864,369, Apr. 6, 1992, abandoned, which is a continuation of Ser. No. 618,279, Nov. 23, 1990, abandoned. This application Oct. 13, 1992, Ser. No. 960,570
Int. Cl.[5] H01L 29/78, 29/44; G11C 11/34
U.S. Cl. 257—321 15 Claims



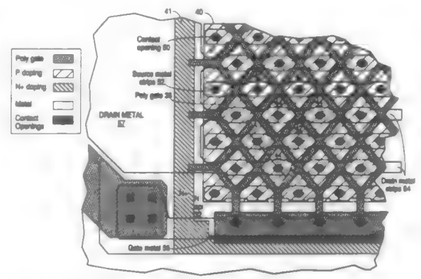
1. An electrically-erasable, electrically- programmable, read-only memory cell formed at a face of a layer of semiconductor of a first conductivity type comprising:
first and second heavily doped regions formed in said face to be of a second conductivity type opposite said first conductivity type, said first and second heavily doped regions spaced by a first channel to form a select transistor;
a gate conductor formed insulatively overlying said first channel for selectively controlling the conductance of said first channel;
a third heavily doped region formed in said face to be of said second conductivity type, said third heavily doped region spaced from said second heavily doped region by a second channel to form a programming transistor;
a thin oxide tunneling window formed overlying said second channel;
a fourth heavily doped region formed in said face to be of said second conductivity type, said fourth heavily doped region spaced from said third heavily doped region by a third channel to form a sense transistor;
a control capacitor lightly doped diffused region formed in said face to be of said second conductivity type, said control capacitor lightly doped diffused region spaced on said face from said programming, sense and select transistors;
a floating gate conductor formed adjacent said thin oxide tunneling window and insulatively adjacent said third channel and said control capacitor lightly doped diffused region; and
a fifth heavily doped region for connecting said control capacitor lightly doped diffused region with a control capacitor lightly doped diffused region of another memory cell.

5,355,008

DIAMOND SHAPED GATE MESH FOR CELLULAR MOS TRANSISTOR ARRAY

James C. Moyer, San Jose; Martin J. Alter, Los Altos, and Helmuth R. Litfin, Cupertino, all of Calif., assignors to Micrel, Inc., San Jose, Calif.

Filed Nov. 19, 1993, Ser. No. 155,029
Int. Cl.[5] H01L 29/10, 29/78, 23/48
U.S. Cl. 257—341 19 Claims



1. An MOS transistor comprising:
a semiconductor material having a top surface;
a conductive gate overlying and insulated from said top surface of said semiconductor material, said conductive gate forming a mesh having a plurality of substantially identical openings, each of said openings approximating an elongated diamond shape having a long diagonal and a short diagonal,
first regions of said semiconductor material underlying said gate being of a first conductivity type to form channel regions of said MOS transistor,
second regions of said semiconductor material exposed by said openings in said mesh being of a second conductivity type to form source regions and drain regions of said MOS transistor, said source regions and drain regions being located in alternate rows of said openings, where each row is along the direction of said short diagonal of said openings;
a first conductive strip of material overlying and electrically contacting central portions of a first row of said source regions, said first conductive strip for being connected to a source voltage; and
a second conductive strip of material overlying and electrically contacting central portions of a second row of drain regions adjacent to said first row of said source regions.

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5,355,009

SEMICONDUCTOR DEVICE AND METHOD OF FABRICATING SAME

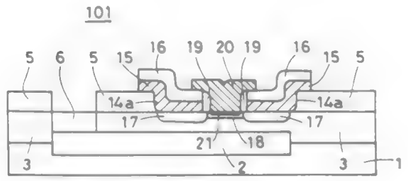
Hiroki Honda; Kimihara Uga; Masahiro Ishida, and Yoshiyuki Ishigaki, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 28, 1992, Ser. No. 875,019

Claims priority, application Japan, Jul. 19, 1991, 3-204880; Dec. 19, 1991, 3-336479

Int. Cl.[5] H01L *27/02*

U.S. Cl. 257—370 **6 Claims**



1. A semiconductor device comprising:

a semiconductor substrate having a major surface;

a bipolar transistor including a base region formed in said major surface;

a first insulator film formed on said base region,

said first insulator film being opened in a predetermined portion on said base region to present a cross section,

said cross section of said first insulator film being concavely sloped downward toward a center of said base region around a boundary between said first insulator film and said base region; and

an MOS transistor formed on part of said major surface outside of said first insulator film,

said MOS transistor including source and drain regions and a gate insulator film formed on said major surface, a gate electrode formed above said major surface through said gate insulator film and a second insulator film for covering at least said source region, drain region and gate electrode,

said bipolar transistor further including a base electrode formed on said base region and said second insulator film, a third insulator film for covering said base electrode and an emitter region formed in an upper portion of said base region outside of said third insulator film.

5,355,010

SEMICONDUCTOR DEVICE WITH A DUAL TYPE POLYCIDE LAYER COMPRISING A UNIFORMLY P-TYPE DOPED SILICIDE

Toyokazu Fujii, Moriguchi, and Yasushi Naito, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 18, 1992, Ser. No. 900,993

Claims priority, application Japan, Jun. 21, 1991, 3-150003

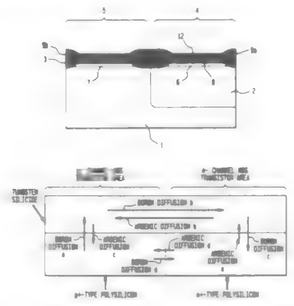
Int. Cl.[5] H01L *23/48, 29/46, 29/54*

U.S. Cl. 257—377 **11 Claims**

1. A semiconductor device comprising a semiconductor substrate, an insulating film formed on said semiconductor substrate, and a polycide film formed on said insulating film;

wherein said polycide film comprises:

a polysilicon layer formed on the insulating film and a silicide layer formed on said polysilicon layer, the polysilicon aver including a p-type region having p-type impurities diffused therein and an n-type region having n-type impurities diffused therein; and



wherein p-type impurities of a higher concentration than said p-type region in said polysilicon layer are substantially uniformly diffused in the entire silicide layer.

5,355,011

INSULATED GATE FIELD EFFECT TRANSISTOR HAVING LDD STRUCTURE AND METHOD OF MAKING THE SAME INCLUDING A CHANNEL STOP HAVING A PEAK IMPURITY CONCENTRATION, THE CHANNEL STOP PROVIDED BELOW A CHANNEL REGION

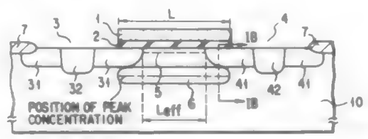
Osamu Takata, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 14, 1993, Ser. No. 90,934

Claims priority, application Japan, Jul. 15, 1992, 4-210927

Int. Cl.[5] H01L *29/76, 29/94, 31/062, 31/113*

U.S. Cl. 257—408 **3 Claims**



1. A semiconductor device having an Lightly Doped Drain structure comprising:

a semiconductor substrate of a first conductivity type having a surface;

source and drain regions of a second conductivity type provided in said semiconductor substrate to define a channel region therebetween, one of said source and drain regions having a lightly doped region;

a gate insulating film provided over said channel region;

a gate electrode provided over said gate insulating film; and

a channel stop of said first conductivity, formed below said channel region, having a peak impurity concentration,

a depth of said peak impurity concentration from said surface of said semiconductor substrate being deeper than a bottom surface of one of said source and drain regions, and

said peak impurity concentration being increased as an effective channel length of said channel region is reduced.

5,355,012

SEMICONDUCTOR DEVICE

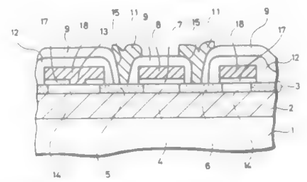
Yasuo Yamaguchi; Natsuo Ajika, and Tsuyoshi Yamano, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 767,333, Sep. 30, 1991. This application Apr. 28, 1993, Ser. No. 52,858

Claims priority, application Japan, Oct. 3, 1990, 2-267497

Int. Cl.[5] H01L *29/78, 33/00*

U.S. Cl. 257—409 **21 Claims**



1. A semiconductor device, comprising:

a semiconductor layer formed on an insulator layer;

an isolation gate electrode formed in an isolation region surrounding an active region on said semiconductor layer with an insulating first gate dielectric thin film interposed therebetween;

a transfer gate electrode formed in said active region on said semiconductor layer with a second gate dielectric thin film interposed therebetween and extending to cross over said isolation gate electrode;

a first channel region of a first conductivity type formed in said semiconductor layer throughout the region under said transfer gate electrode;

a second channel region of the first conductivity type formed in said semiconductor layer through the region under said isolation gate electrode;

second conductivity type source/drain regions formed in said semiconductor layer at opposite portions thereof interposing said first channel region therebetween, wherein

said first and second channel regions contact each other only at regions where said transfer gate electrode intersects said isolation gate electrode,

a prescribed electric potential is applied to said isolation gate electrode so as to prevent the surface of said second channel region from being inverted to be of the second conductivity type, and

said first gate dielectric thin film has a contact hole formed therein for electrically connecting said isolation gate electrode and said second channel region.

5,355,013

INTEGRATED RADIATION PIXEL DETECTOR WITH PIN DIODE ARRAY

Sherwood I. Parker, Alameda County, Calif., assignor to University of Hawaii, Honolulu, Hi.

Continuation-in-part of Ser. No. 522,482, May 11, 1990, abandoned, which is a continuation of Ser. No. 198,357, May 25, 1988, abandoned. This application Feb. 4, 1992, Ser. No. 831,131

Int. Cl.[5] H01L *29/78, 31/06*

U.S. Cl. 257—458 **12 Claims**

1. A monolithic device for detecting radiation in at least two dimensions, comprising:

a charge depletable substrate of high purity first conductivity type silicon having first and second surfaces, and a substrate thickness of at least 100 μm therebetween;

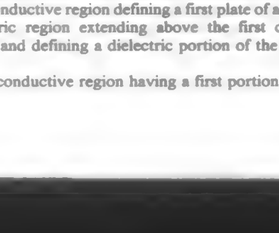
a region of highly doped first conductivity type silicon adjacent said second surface of said substrate;

a first plurality of spaced-apart collection electrodes of highly doped second conductivity type material disposed adjacent said first surface, said electrodes disposed in an array defining at least first and second non-parallel axes;

wherein each said collection electrode defines an electrode of an underlying diode that comprises said second conductivity type collection electrode, an underlying region of said substrate, and an underlying region of said high doped first conductivity type silicon adjacent said second surface of said substrate;

a voltage-biasable doped well region of first conductivity type material disposed on said first surface; wherein at least one of said collection electrodes is disposed adjacent said well region;

wherein voltage differentials coupled between said collection electrodes and said well region, and coupled between said collection electrodes and said region of highly doped first conductivity type material substantially deplete adjacent regions of said substrate and produce an electric field extending from said collection electrodes toward said well region and extending toward said region of highly doped



first conductivity type material adjacent said second surface;

wherein in the presence of radiation, said substrate releases charges, charge of a first polarity being caused by said electric field to move to an overlying one of said plurality of collection electrodes for collection, charge of a second polarity type being caused by said electric field to move to said well region or to said highly doped first conductivity type material adjacent said second surface; and

readout means including a second plurality of metal-on-semiconductor signal transistors, each having a gate node coupleable to one of said collection electrodes, fabricated in said well region, for selectively collecting charge present at said one collection electrode and providing an electrical signal in response thereto to a peripheral region of said device;

wherein a first-axis and second-axis co-ordinate corresponding to said one collection electrode collecting charge is determined.

5,355,014

SEMICONDUCTOR DEVICE WITH INTEGRATED RC NETWORK AND SCHOTTKY DIODE

Bhasker Rao, 5881 W. Orchid La., Chandler, Ariz. 85226; Horst Leuschner, 8701 Camino Vivaz, Scottsdale, Ariz. 85255, and Ashok Chalaka, 462 Tigerwood Way, San Jose, Calif. 95111

Filed Mar. 3, 1993, Ser. No. 25,600

Int. Cl.[5] H01L *27/06, 29/08, 29/48*

U.S. Cl. 257—533 **29 Claims**

1. An integrated semiconductor device comprising:

a resistive region defining a resistor;

a first conductive region in contact with the resistive region so as to define a first terminal of the resistor;

a second conductive region in contact with the resistive region so as to define a second terminal of the resistor;

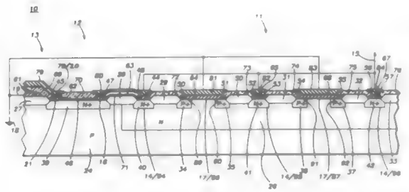
a third conductive region defining a first plate of a capacitor;

a dielectric region extending above the first conductive region and defining a dielectric portion of the capacitor; and

a fourth conductive region having a first portion extending

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above the dielectric region and a second portion extending above part of the resistive region and in contact with the first conductive region, the first portion defining a



second plate of the capacitor and the second portion coupling the second plate of the capacitor to the first terminal of the resistor.

5,355,015

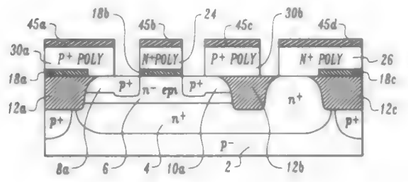
HIGH BREAKDOWN LATERAL PNP TRANSISTOR

Brian McFarlane, Campbell; Frank Marazita, and John E. Readdie, both of San Jose, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 627,127, Dec. 13, 1990, abandoned. This application Nov. 27, 1991, Ser. No. 799,847

Int. Cl.[5] **H01L** *29/72, 27/02, 27/04*

U.S. Cl. 257—554 **7 Claims**



3. A semiconductor device on an integrated circuit substrate comprising:

a collector of a first conductivity type;

an emitter of said first conductivity type;

a base of a second conductivity type disposed between said collector and said emitter and having an exposed base area along a surface of said substrate;

a buried layer, of a second conductivity type wherein selected portions of said buried layer contact said base and wherein a portion of said buried layer contacts the surface of said substrate;

an isolation region wherein said base, said buried layer, said emitter and said collector are isolated at least from other regions of said substrate;

a first polysilicon region in contact with said buried layer where said buried layer contacts the surface of said substrate and wherein a base contact is formed;

a second polysilicon region on the surface of said substrate which contacts said emitter and wherein an emitter contact is formed;

a third polysilicon region on the surface of said substrate which contacts said collector and wherein a collector contact is formed;

a fourth doped polysilicon region opposite the portion of said base which contacts the exposed base area and wherein an interconnect is formed; and

a first oxide layer disposed between said fourth polysilicon layer and said surface of said substrate along the exposed base area whereby impurities contained in said fourth polysilicon layer are prevented from diffusing into the base across the exposed base area.

5,355,016

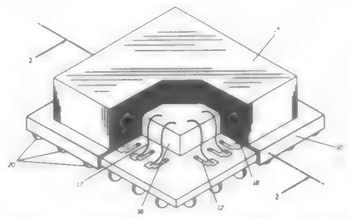
SHIELDED EPROM PACKAGE

Thomas J. Swirbel, Davie; Lonnie L. Barnardoni, Boca Raton; Melanie Williams, Deerfield Beach, and James L. Davis, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 3, 1993, Ser. No. 56,278

Int. Cl.[5] **H01L** *25/04, 23/28*

U.S. Cl. 257—659 **13 Claims**



1. A shielded monolithic EPROM package, comprising:

a circuit carrying substrate having conductive interconnecting patterns on a first surface;

an EPROM chip having an optically erasable surface, electrically and mechanically attached to the circuit carrying substrate;

an encapsulant material, at least partially transparent to UV light, molded on the circuit carrying substrate and covering the EPROM chip and associated chip interconnections so as to provide an optical path through the encapsulant material to the EPROM erasable surface;

an adherent metal coating, at least partially transparent to UV light, applied over the encapsulant material for shielding the semiconductor device from radio frequency energy; and

an adherent organic coating, at least partially transparent to UV light, applied over the metal coating.

5,355,017

LEAD FRAME HAVING A DIE PAD WITH METAL FOIL LAYERS ATTACHED TO THE SURFACES

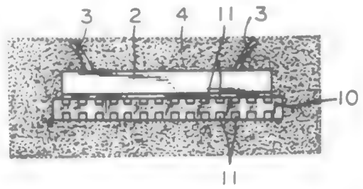
Yasuyuki Nakamura, and Shin Nemoto, both of Saita, Japan, assignors to Sumitomo Special Metal Co. Ltd., Osaka, Japan

Continuation of Ser. No. 776,694, Oct. 16, 1991, abandoned, which is a continuation of Ser. No. 563,709, Aug. 1, 1990, abandoned. This application Nov. 20, 1992, Ser. No. 979,489

Claims priority, application Japan, Apr. 6, 1990, 2-29554; Apr. 6, 1990, 2-92553

Int. Cl.[5] **H01L** *23/48, 29/44, 29/52;* **H02B** *1/00*

U.S. Cl. 257—666 **12 Claims**



1. In a semiconductor package which includes a Cu-Series metal lead frame that provides an island portion having opposite first and second sides and leads having inner ends and outer ends, a semiconductor chip attached to said first side of said island portion, and a block of resin enclosing and sealing said island portion, said semiconductor chip and said inner ends of said leads, such that heat generated by said semiconductor chip during use is dissipated through said island portion, said resin and said leads, said semiconductor chip and said island portion having differing coefficients of thermal expansion, the improvement wherein at least one metal foil having a low thermal expansion is attached to only said second side of said island portion so as to prevent warping of said island portion when said semiconductor chip becomes heated by substantially offsetting bending of said island portion caused by said heated semiconductor chip, thus improving the reliability of said semiconductor package.

5,355,018

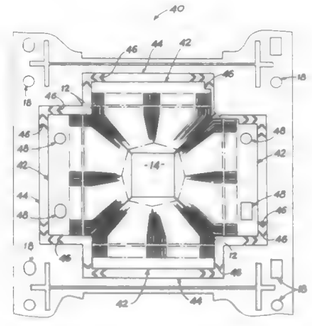
STRESS-FREE SEMICONDUCTOR LEADFRAME

Richard H. J. Fierkens, Keurbeek 15, 6914 AE Herwen, Netherlands

Continuation of Ser. No. 904,684, Jun. 26, 1992, abandoned. This application Dec. 28, 1993, Ser. No. 174,604

Int. Cl.[5] **H01L** *23/48, 29/44, 29/52, 29/60*

U.S. Cl. 257—669 **6 Claims**



1. A stress-free semiconductor lead frame formed in a conventional metallic substrate for use in conventional packaging equipment, comprising:

(a) an outer frame comprising a plurality of alignment holes for cooperative engagement with corresponding outer receiving pins in the packaging equipment;

(b) an inner island contained within said outer frame and comprising a die pad and a plurality of metallic leads extending therefrom;

(c) a plurality of alignment apertures comprised within said inner island for cooperative engagement with a corresponding plurality of inner receiving pins in the packaging equipment, said alignment apertures being disposed outside said die pad in the inner island; and

(d) flexible connection means for attaching said inner island to said outer frame, said flexible connection means being the only connection between the inner island and the outer frame;

wherein said connection means is capable of compression and expansion, thereby absorbing mechanical stresses resulting from structural deformations of said inner island without transmitting them to said outer frame.

5,355,019

DEVICES WITH TAPE AUTOMATED BONDING

Harold E. Fuchs, Kansas City, Mo., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 4, 1992, Ser. No. 845,898

Int. Cl.[5] **H01L** *23/48, 29/44, 29/52, 29/60*

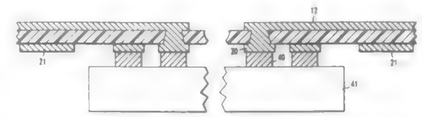
U.S. Cl. 257—698 **9 Claims**

1. A device comprising:

a flexible insulating material having first and second major surfaces;

a plurality of conductive fingers formed on the first major surface;

an array of via holes formed through the insulating material extending from the first major surface to the second major surface;



conductive material formed by a single electroplating step so that the material extends continuously from the conductive fingers, through the via holes, and terminates in a first array of bonding pads at the second major surface; and

a semiconductor chip having a second array of bonding pads electrically and mechanically bonded to the first array of bonding pads.

5,355,020

SEMICONDUCTOR DEVICE HAVING A MULTI-LAYER METAL CONTACT

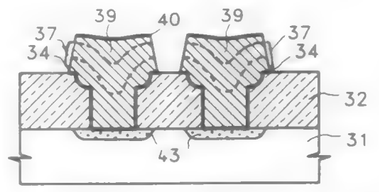
Sang-in Lee; Jeong-in Hong, both of Suwon, and Jong-ho Park, Koyang, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jul. 8, 1992, Ser. No. 910,894

Claims priority, application Rep. of Korea, Jul. 8, 1991, 91-11543

Int. Cl.[5] **H01L** *23/48*

U.S. Cl. 257—741 **32 Claims**



1. A semiconductor device including a wiring layer, comprising:

a semiconductor substrate;

an insulating layer formed on said semiconductor substrate, said insulating layer having an opening exposing a portion of a surface underlying said insulating layer;

a first conductive layer formed on said insulating layer and completely filling said opening, said first conductive layer being comprised of a first metal layer formed on an inner surface of said opening, on said insulating layer, and on said exposed portion of said underlying surface and a second metal layer formed on said first metal layer, said first metal layer being comprised of a material having a Si component and selected from a group consisting of an Al—Si alloy and an Al—Cu—Si alloy and said second metal layer being comprised of a material having no Si component and selected from a group consisting of pure aluminum, an Al—Cu alloy and an Al—Ti alloy, wherein said first conductive layer does not produce Si precipitates when subjected to cooling following heat treatment for completely filling said opening with said first conductive layer;

a second conductive layer having a planarized surface; and,

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wherein said first conductive layer and said second conductive layer together comprise said wiring layer.

5,355,021

OHMIC CONTACT FOR P-TYPE GAAS

Mark A. Crouch, Worcester; Suhkdev S. Gill, Midlands; William H. Gilbey, and Graham J. Pryce, both of Worcester, all of United Kingdom, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Hants, England

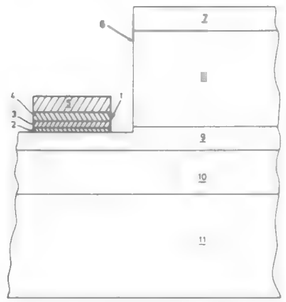
PCT No. PCT/GB91/01198, § 371 Date Jun. 11, 1993, § 102(e) Date Jun. 11, 1993, PCT Pub. No. WO92/02037, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 18, 1991, Ser. No. 75,460

Claims priority, application United Kingdom, Jul. 19, 1990, 9015871

Int. Cl.[5] **H01L** *29/46, 21/285, 23/485*

U.S. Cl. 257—745 **11 Claims**



1. An ohmic contact for p-type GaAs comprising:

a Pd/Zn/Pd/Au ohmic contact

characterised in that

the ohmic contact has a construction of a first layer of Pd with a depth of between 3 nm and 15 nm, a Zn layer with a depth of between 5 nm and 40 nm, a second Pd layer with a depth of greater than about 50 nm and a Au layer with a depth of greater than about 300 nm.

5,355,022

STACKED-TYPE SEMICONDUCTOR DEVICE

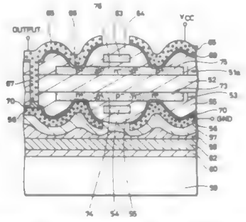
Kazuyuki Sugahara; Natsuo Ajika; Toshiaki Ogawa; Toshiaki Iwamatsu, and Takashi Ipposhi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1992, Ser. No. 936,390

Claims priority, application Japan, Sep. 10, 1991, 3-230246; Jun. 23, 1992, 4-164593

Int. Cl.[5] **H01L** *27/02, 23/48*

U.S. Cl. 257—768 **10 Claims**



1. A stacked-type semiconductor device comprising:

a supporting substrate having a main surface;

a refractory metal silicide layer on said main surface of said supporting substrate, said refractory metal silicide layer having an upper surface and a lower surface facing said main surface;

a silicon layer on said upper surface of said refractory metal silicide layer, said silicon layer having an upper surface and a lower surface facing said upper surface of said refractory metal silicide layer;

a first semiconductor layer on said upper surface of said silicon layer, said first semiconductor layer having an upper surface and a lower surface facing said upper surface of said silicon layer; and

a second semiconductor layer on said upper surface of asid first semiconductor layer with an insulating layer interposed therebetween,

wherein said second semiconductor layer has an upper surface and a lower surface, and said lower surface of said first semiconductor layer and said upper surface of said second semiconductor layer each has at least one electronic device formed thereon.

5,355,023

SEMICONDUCTOR DEVICE HAVING CONDUCTING LAYERS CONNECTED THROUGH CONTACT HOLES

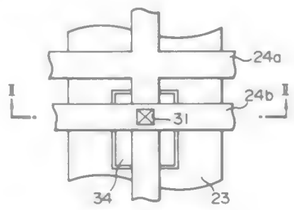
Yugo Tomioka; Yukihiro Okeda, and Yasuo Sato, all of Sagamihara, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed May 28, 1993, Ser. No. 68,185

Claims priority, application Japan, Jun. 5, 1992, 4-171911

Int. Cl.[5] **H01L** *23/48, 29/40*

U.S. Cl. 257—774 **10 Claims**



1. A semiconductor device comprising:

a first conducting layer;

a first insulating layer covering said first conducting layer;

a second conducting layer positioned on said first insulating layer and having a first overlap part which is overlapped with said first conducting layer as viewed from the top;

a second insulating layer covering said second conducting layer;

a third conducting layer positioned on said second insulating layer and having a second overlap part which is overlapped with said first overlap part as viewed from the top;

a contact hole made in said second insulating layer at a position corresponding to said second overlap part; and

an isolated conductive island formed in said first conducting layer, so that an area of said isolated conductive island covers a sectional area of said contact hole and said isolated conductive island is electrically insulated from other parts with the exception of said contact hole, and

wherein said second conducting layer is electrically connected to said third conducting layer through said contact hole.

5,355,024

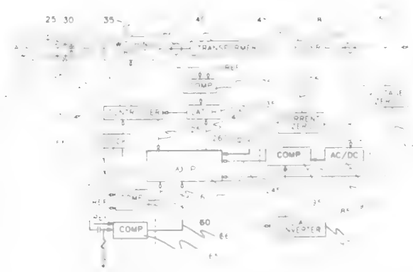
SOLID STATE FREQUENCY CONVERTER CAPABLE OF MISALIGNED PARALLEL OPERATION

Stephen H. Elliott, Troy; Theodore J. Fahrer, Dayton; Allen D. Kelly, and Larry E. Heisey, both of Troy, all of Ohio, assignors to Hobart Brothers Company, Troy, Ohio

Filed Mar. 11, 1993, Ser. No. 29,727

Int. Cl.[5] **H02J** *3/06*

U.S. Cl. 307—73 **10 Claims**



3. An external power supply for use in a no-break power transfer connection to an active aircraft power bus provided with power from an internal aircraft power source, and a power transfer switch for switching between the aircraft power source and the external power supply, comprising

a direct current source of power,

a transformer having at least one primary winding and at least one secondary winding,

a switching circuit connected between the primary winding of said transformer and said direct current source for providing pulses of direct current to said transformer, which provides an alternating current output from its secondary winding,

a frequency determining circuit having a predetermined nominal frequency output connected to control the operation of said switching circuit,

means for sensing whether the output of said secondary winding of said transformer has a leading or lagging phase angle relative to the current on said aircraft power bus from the internal aircraft power source while both the output of said transformer and the aircraft power source are connected to the aircraft power bus, and

control circuit means responsive to said sensing means detecting a lagging phase angle for increasing the nominal frequency of said frequency determining circuit until the output frequency of said transformer is in phase with the aircraft power bus, said control circuit means being responsive to said sensing means detecting a leading phase angle for decreasing the nominal frequency output of said frequency determining circuit until the output frequency of said transformer is in phase with the aircraft power bus during such time that both the external power supply and the aircraft power source are connected to the aircraft power bus.

5,355,025

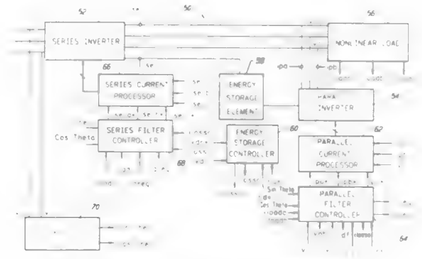
ACTIVE POWER LINE CONDITIONER WITH SYNCHRONOUS TRANSFORMATION CONTROL

Steven A. Moran, and Michael B. Brennen, both of Pittsburgh, Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation of Ser. No. 968,850, Oct. 30, 1992, abandoned. This application Dec. 14, 1993, Ser. No. 167,324

Int. Cl.[5] **H02M** *1/12*

U.S. Cl. 307—105 **40 Claims**



1. An active power line conditioner comprising:

a series inverter coupled to an energy input source;

a parallel inverter coupled to a load, said load being powered by a three phase load current which includes fundamental components and harmonic components;

an energy storage element 'electrically connected between said series inverter and said parallel inverter;

series filter controller means, coupled to said series inverter, for generating a series filter feedforward signal corresponding to said fundamental component of said load current, said series filter controller means utilizing a synchronous transformation mechanism for processing said load current to generate said series filter feedforward signal; and

parallel filter controller means, coupled to said parallel inverter, for producing a parallel filter signal corresponding to said harmonic ripple components of said load current, said parallel filter controller means utilizing a synchronous transformation mechanism for processing output voltages from said load to generate said parallel filter signal;

wherein said series filter feedforward signal is applied to said series inverter to generate sinusoidal input currents for said load, and said parallel filter signal is applied to said parallel inverter to generate sinusoidal voltages for said load.

5,355,026

WIRE-SENSORED RESIDENTIAL RANGE HOOD FIRE EXTINGUISHER SYSTEM

William A. Scofield, Clifton, N.J., assignor to Pem All Fire Extinguisher Corporation, Cranford, N.J.

Division of Ser. No. 691,316, Apr. 25, 1991, Pat. No. 5,186,260. This application Feb. 12, 1993, Ser. No. 17,659

Int. Cl.[5] **A62C** *35/00*

U.S. Cl. 307—117 **8 Claims**

1. A system for producing an activation signal responsive to the presence of a fire which may occur within a protected region, the system comprising:

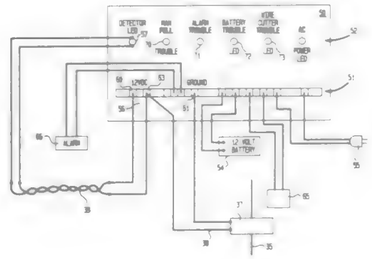
hood means arranged to overlie the protected region, said hood means having a top wall, first and second side walls, and a front wall;

first and second conductors for carrying a supervisory electrical current, said first and second conductors being arranged and supported beneath said hood means so as to be intermediate of said hood means and the protected region;

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conductor separation means having a predetermined heat response characteristic whereby said first and second conductors are maintained electrically insulated from one another below a predetermined temperature, and are brought into electrical communication with one another when said predetermined temperature is exceeded to produce a substantially short-circuit impedance across said first and second conductors and a corresponding increase in the magnitude of said supervisory electrical current;

an electrical device through which said supervisory electrical current is propagated, said electrical device having an



electrical impedance characteristic which is substantially greater than said substantially short-circuit impedance; [illegible]

current sensor means having an electrical input for receiving the supervisory electrical current, said sensor means having inactivated and activated states responsive to an activation current threshold characteristic which is intermediate of a low supervisory electrical current magnitude which flows through said electrical device, and a high supervisory electrical current magnitude which flows through a low impedance condition produced when said first and second conductors are brought into electrical communication with one another.

5,355,027

SHIFT REGISTER CIRCUIT WITH THREE-INPUT NOR GATES IN SELECTOR CIRCUIT

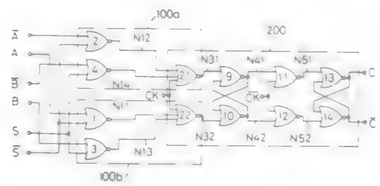
Masaaki Shimada; Norio Higashisaka, and Akira Ohta, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 11,236, Jan. 29, 1993, abandoned. This application Apr. 5, 1993, Ser. No. 42,506

Claims priority, application Japan, Feb. 4, 1992, 4-019118; Dec. 25, 1992, 4-359688

Int. Cl.[5] H03K *3/286, 19/20*

U.S. Cl. 307—247.1 **5 Claims**



1. A shift register circuit comprising a selector circuit for selecting one of two input signals and a flip-flop circuit connected to said selector circuit and synchronized with a clock signal having a prescribed period, said flip-flop circuit for latching the selected signal, said selector circuit comprising:

a first two-input NOR circuit to which a first data signal and a selection signal are input;

a second two-input NOR circuit to which a first reverse data signal having an opposite phase from the first data signal and the selection signal are input;

a third two-input NOR circuit to which a second data signal and a reverse selection signal having an opposite phase from the selection signal are input;

a fourth two-input NOR circuit to which a second reverse data signal having an opposite phase from the second data signal and the reverse selection signal are input;

a first three-input NOR circuit to which output signals from said first and third two-input NOR circuits and the clock signal are input; and

a second three-input NOR circuit to which output signals from said second and fourth two-input NOR circuits and the clock signal are input.

5,355,028

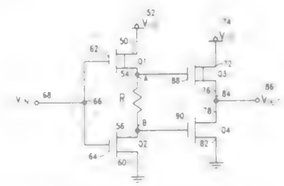
LOWER POWER CMOS BUFFER AMPLIFIER FOR USE IN INTEGRATED CIRCUIT SUBSTRATE BIAS GENERATORS

James E. O'Toole, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Oct. 23, 1992, Ser. No. 965,801

Int. Cl.[5] H03K *17/16*

U.S. Cl. 307—443 **24 Claims**



1. A complementary transistor buffer stage for use in a variety of integrated circuits comprising:

(a) first and second complementary input field-effect transistors cascaded to drive, respectively, first and second complementary output field-effect transistors; and

(b) at least two complementary long-channel field-effect transistors which are coupled in series between said first and second complementary input transistors and between the gate electrodes of said first and second complementary output transistors, said long-channel transistors being operative in combination with the capacitance generated at said gate electrodes to, in turn, produce a circuit time constant sufficient in magnitude to turn one of said first and second complementary output transistors substantially off before the other complementary output transistor turns on, thereby eliminating crossover currents in said first and second output transistors; and

(c) an N-channel diode, which couples the gate of the long-N-channel field-effect transistor to a power supply bus, and a P-channel diode, which couples the gate of the long-P-channel field-effect transistor to a ground bus, thereby producing a bootstrapping effect on the gates of said long-channel so that fluctuations in conductance through said long-channel transistors is minimized as voltage across said long-channel transistors varies, and thereby minimizing the driven capacitance of the gates of said long-channel transistors.

5,355,029

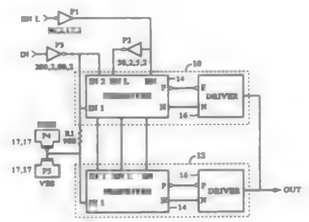
STAGED CMOS OUTPUT BUFFER

Chris L. Houghton, Westborough, and Carl F. Windnagle, Hudson, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 12, 1993, Ser. No. 90,359

Int. Cl.[5] H03K *17/16*

U.S. Cl. 307—443 **12 Claims**



1. An output buffer, comprising:

a resistor-capacitor (RC) delay circuit having an output and having an input coupled to an input node of said output buffer;

a first driver stage having (i) first and second inputs coupled to said input node, (ii) an output coupled to an output node of said output buffer, (iii) a driver having a pull-up transistor and a pull-down transistor coupled to said output, and (iv) a predriver coupled to said driver having means for turning on an inactive one of said driver transistors from said first input and means for turning off the other one of said driver transistors from said second input; and

a second driver stage having (i) first and second inputs, said first input coupled to said output of said RC delay circuit, and said second input coupled to said input node, (ii) an output coupled to said output node of said output buffer, (iii) a driver having a pull-up transistor and a pull-down transistor coupled to said output, and (iv) a predriver coupled to said driver having means for turning on an inactive one of said driver transistors from said first input and means for turning off the other one of said driver transistors from said second input.

5,355,030

LOW VOLTAGE BICMOS LOGIC SWITCHING CIRCUIT

Timothy C. Buchholtz; Nghia Van Phan, and Michael J. Rohn, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 4, 1992, Ser. No. 985,990

Int. Cl.[5] H03K *19/082, 19/0948*

U.S. Cl. 307—446 **15 Claims**

1. A logic switching circuit biased between upper and lower supply voltages, comprising:

a CMOS logic circuit driven by a plurality of logic input signals, wherein said CMOS logic circuit includes a plurality of controllable field effect transistor switches; a driving circuit coupled to said CMOS logic circuit, said driving circuit including:

a first bipolar transistor;

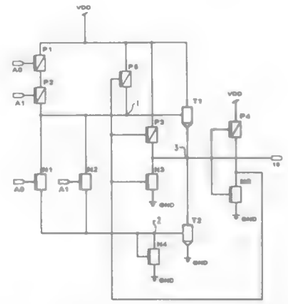
a second bipolar transistor coupled in series with said first bipolar transistor, said second bipolar transistor having a base;

an output node disposed between said first bipolar transistor and said second bipolar transistor for providing an output signal; and

at least one of said plurality of controllable field effect transistor switches coupling said base of said first bipolar transistor to said upper supply voltage, said at least one of said plurality of controllable field effect transistor switches switching in response to said plurality of logic input signals; and

a switching circuit coupled to said upper supply voltage, to said lower supply voltage, and to said output node for causing said output signal on said output node to swing fully between said upper and said lower supply voltages in response to changes in said logic input signals, wherein said plurality of field effect transistor switches is absent from said switching circuit, wherein said switching circuit comprises:

a second driving circuit coupled to said output node and to a base of said first bipolar transistor, wherein said second driving circuit causes said output signal on said output node to swing fully between said upper and said lower supply voltages, wherein said second driving circuit includes a first field effect transistor and a second field effect transistor, each field effect transistor having a drain, a gate, and a source, wherein said gate of said first field effect transistor and said gate of said second field effect transistor are coupled to a control node and said drain of said first field effect transistor and said drain of said second field effect transistor are connected to said output node; and



a sensing circuit coupled to said output node, to said upper supply voltage, and to said lower supply voltage, wherein said sensing circuit turns said second driving circuit on and off in response to said output signal on said output node, wherein said sensing circuit comprises third and fourth field effect transistors, said third and fourth field effect transistors each including a drain, a gate, and a source, wherein said drain of said third field effect transistor and said drain of said fourth field effect transistor are coupled to said control node, said gates of said third and fourth field effect transistors are coupled to said output node, and said source of said third field effect transistor is coupled to said upper supply voltage and said source of said fourth field effect transistor is coupled to said lower supply voltage; and

a fifth [illegible] effect transistor having a drain, a gate, and a source, wherein said source of said fifth field effect transistor is c[illegible]l to said upper supply voltage, said gate of said fift[illegible] effect transistor is coupled to said control node, a[illegible]d drain of said fifth field effect transistor is coupled t[illegible] base of said first bipolar transistor.

5,355,031

COMPLEMENTARY LOGIC WITH N-CHANNEL OUTPUT TRANSISTORS

David E. Fulkerson, [illegible]innetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 816,439, Dec. 31, 1991, abandoned. This application Dec. 31, 1992, Ser. No. 999,540

Int. Cl.[5] H03K *19/094*

U.S. Cl. 307—451 **5 Claims**

1. A buffered complementary logic gate comprising:

a first input terminal;

a second input terminal;

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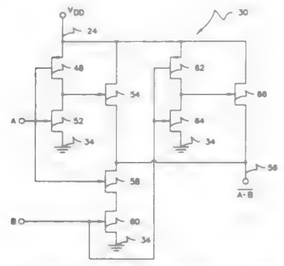
a first output terminal;

a first N-channel field effect transistor having a gate connected to the first input terminal, having a source connected to a reference terminal, and having a drain;

a first P-channel field effect transistor having a gate connected to the first input terminal, a source connected to a voltage terminal, and a drain connected to the drain of said first N-channel field effect transistor;

a second N-channel field effect transistor having a gate connected to the drain of said first N-channel field effect transistor, having a drain connected to the voltage terminal, and having a source connected to the first output terminal;

a third N-channel field effect transistor having a gate connected to the gate of said first N-channel field effect transistor, having a drain connected to the source of said second N-channel field effect transistor, and having a source;



a fourth N-channel field effect transistor having a gate connected to the second input terminal, having drain connected to the source of said third N-channel field effect transistor, and having a source connected to the reference terminal;

a second P-channel field effect transistor having a gate connected to the second input, having a source connected to the voltage terminal, and having a drain;

a fifth N-channel field effect transistor having a gate connected to the second input terminal, having a drain connected to the drain of said second P-channel field effect transistor, and having a source connected to the reference terminal; and

a sixth N-channel field effect transistor having a gate connected to the drain of said fifth N-channel transistor, having a drain connected to the voltage terminal, and having a source connected to the first output terminal.

5,355,032

TTL TO CMOS TRANSLATOR CIRCUIT AND METHOD

Alan C. Rogers, Palo Alto, and Bal S. Sandhu, Fremont, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Mar. 24, 1993, Ser. No. 36,613

Int. Cl.[5] H03K *19/01*

U.S. Cl. 307—475 **30 Claims**

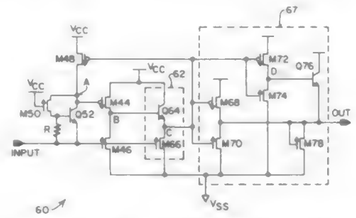
1. A translator circuit, comprising:

an input node for receiving a signal operating within a first operating range and at a first logic state;

a translating inverter stage for converting the signal to a second logic state within a second operating range and providing the signal to an output node;

a switched voltage generator internal to the translating inverter stage for supplying a switched voltage to the translating inverter stage;

a gain stage, coupled to the output node of the translating inverter stage, for increasing the gain of the signal; and



a second inverter stage, coupled to the gain stage, for inverting the inverted signal to the first logic state.

5,355,033

DATA INPUT BUFFER CIRCUIT FOR USE IN A SEMICONDUCTOR MEMORY DEVICE

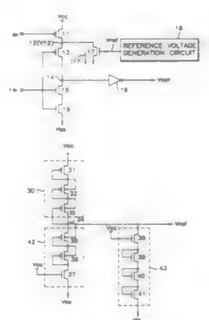
Hyun-Soon Jang, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 5, 1991, Ser. No. 726,188

Claims priority, application Rep. of Korea, May 24, 1991, 1991-8453

Int. Cl.[5] H03K *19/0175, 19/0948*

U.S. Cl. 307—475 **29 Claims**



1. A data input buffer circuit in a semiconductor memory device, said data input buffer circuit comprising:

a first transistor having a first gate electrode;

an insulation gate field effect transistor having a channel connected between a channel of said first transistor and a reference voltage terminal for providing a reference voltage, and a conductivity of said insulation gate field effect transistor being controlled in response to a voltage level of a supply voltage terminal for providing a supply voltage; and

a reference voltage generation circuit comprising a plurality of clamping circuits each generating different clamping voltages, and generating a reference voltage generation circuit signal being received by a gate of said insulation gate field effect transistor.

5,355,034

DRIFT SUPPRESSING CIRCUIT OF GYROSCOPE

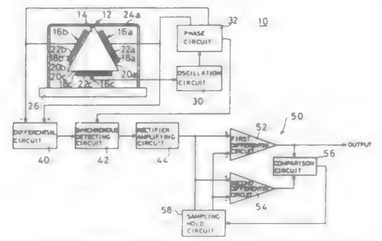
Takeshi Nakamura, and Akira Mori, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Jun. 28, 1993, Ser. No. 83,888

Claims priority, application Japan, Jun. 29, 1992, 4-196580; Aug. 24, 1992, 4-248534

Int. Cl.[5] H03K *5/24*

U.S. Cl. 307—491 **11 Claims**



1. A drift suppressing circuit of a gyroscope for suppressing drift components included in an output of the gyroscope, said drift suppressing circuit comprising:

a first differential circuit having a same frequency characteristic for all frequencies, the output of said gyroscope is input to a first input terminal of said first differential circuit and said first differential circuit having an output;

a second differential circuit having a frequency characteristic, on a higher frequency side above a specific frequency, which is different from the frequency characteristic of said first differential circuit, the output of said gyroscope is input to a first input terminal of said second differential circuit and said second differential circuit having an output;

a comparison circuit for comparing the output of said first differential circuit and the output of said second differential circuit; and

a sampling hold circuit for outputting a correction signal for suppressing said drift components included in the output of said gyroscope, said sampling hold circuit for holding and for outputting the output of said gyroscope as the correction signal when the output of said first differential circuit and the output of said second differential circuit compared by said comparison circuit are substantially equal, and said sampling hold circuit for outputting the held output of the gyroscope as the correction signal when the outputs of first and second differential circuits are not substantiality equal, said correction signal input to a second input terminal of said first differential circuit and to a second input terminal of said second differential circuit.

5,355,035

HIGH SPEED BICMOS SWITCHES AND MULTIPLEXERS

Madhukar B. Vora, 110 Lansberry Ct., Los Gatos, Calif. 95032, and Burnell G. West, 46750 Sentinel Dr., Freemont, Calif. 94539

Filed Jan. 8, 1993, Ser. No. 2,172

Int. Cl.[5] G06G *7/12;* **H03K** *17/56*

U.S. Cl. 307—494 **6 Claims**

1. A high speed switch, comprising:

a pair of data inputs for receiving high speed, complementary input signals; one or more pairs of high speed complementary data outputs;

a high voltage supply;

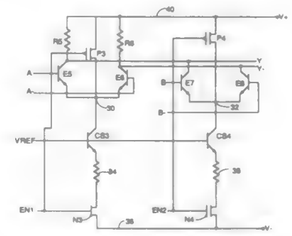
a low voltage supply;

one or more differential pairs of current mode logic transistors having base terminals coupled to said data inputs, each pair having a pair of collectors coupled to said high voltage supply and to one of said pairs of high speed complementary data outputs, and each pair having emitters coupled to a common node;

an essentially constant current source corresponding to each said differential pair of current mode logic transistors selectively coupling said common node to said low voltage supply;

one or more steering signal inputs, each steering signal input corresponding to one of said differential pairs of current mode logic transistors, each steering signal input for receiving a steering signal; and

enabling means for selectively coupling said constant current source for each said differential coupled pair of current mode transistors to said low voltage supply and for decoupling the common node of each said differential pair to said high voltage supply when the corresponding steering signal is in a first state, and for decoupling said constant current source for each said differential coupled pair of current mode logic transistors from said low voltage supply and coupling the common node of each said differential coupled pair of current mode logic transistors from said high voltage supply when the corresponding steering signal is in a second state, thereby allowing any of said differential coupled pairs of current mode logic transistors to drive the corresponding pair of high speed data outputs under the influence of the high speed data input signals received at said data inputs by control of the states of said steering signals.



5,355,036

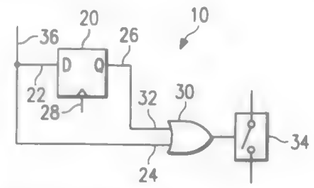
TIMED MAKE-BEFORE-BREAK CIRCUIT FOR ANALOG SWITCH CONTROL

Daramana Gata, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 12, 1992, Ser. No. 975,025

Int. Cl.[5] H03K *17/16*

U.S. Cl. 307—542.1 **19 Claims**



1. A circuit comprising:

at least one delay circuit;

more than one logic gate, each logic gate having one logic gate input line connected to a delay circuit input line and another logic gate input line connected to a delay circuit

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output line, wherein the delay circuit input line and the delay circuit output line are from the same delay circuit; and

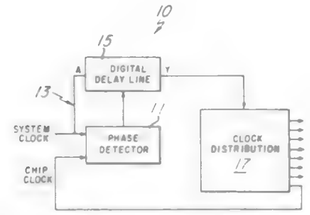
more than one switch, each switch having an input control line connected to an output line of one of the logic gates.

5,355,037

HIGH PERFORMANCE DIGITAL PHASE LOCKED LOOP

Bernhard H. Andresen, Dallas; Joseph A. Casasanta, Allen; Stanley C. Keeney; Robert C. Martin, both of Dallas, and Yoshinori Satoh, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 15, 1992, Ser. No. 898,981
Int. Cl.[5] H03K 17/28
U.S. Cl. 307—602 11 Claims



1. A phase locked loop circuit comprising:

a phase detector for detecting a phase relationship between first and second clock signals which each have a series of alternately rising and falling pulse edges, said phase detector having inputs from said first and second clock signals to be applied thereto;

means defining a delay path having an input for said first clock signal and having an output, said delay path providing an adjustable amount of propagation delay between said input and said output, said second clock signal being generated at said delay path output, said second clock signal being time-shifted relative to said first clock signal due to the delay provided by said delay path, said delay path being connected to said phase detector to receive therefrom control signals based on said detected phase relationship, and said delay path being responsive to said control signals to adjust said delay amount;

said phase detector including a control circuit which, at a point in time when an edge of said second clock signal trails a corresponding edge of said first clock signal by less than one-half cycle, outputs a first said control signal which causes said delay path to increase said delay amount until said edge of said second clock signal is eventually time-shifted past the next successive corresponding edge of said first clock signal;

said control circuit operative, whenever an edge of said second clock signal trails a corresponding edge of said first clock signal by less than a predetermined amount of time, to output a second said control signal which causes said delay path to decrease said delay amount;

said control circuit including a pair of cross-coupled NAND gates, one of said cross-coupled NAND gates having an input for said first clock signal, the other of said cross-coupled NAND gates having an input for said second clock signal, and a D flip-flop which is coupled to both of said NAND gate inputs;

said control circuit further including an AND gate having one input connected to an output of said other cross-coupled NAND gate and having another input connected to said input of said other NAND gate, said AND gate having an output which is connected to a data input of said D flip-flop, a fixed delay element which has an input and an output and which provides a fixed amount of propagation delay between said input and said output, said input of said fixed delay element being connected to said input of said on NAND gate, said output of said fixed delay element being connected to a clock input of said D flip-flop, said AND gate having a propagation delay associated therewith, said data input of said D flip-flop having a set up time associated therewith, and said predetermined amount of time being defined by substracting both said AND gate propagation delay and said flip-flop set up time from said fixed delay amount; and

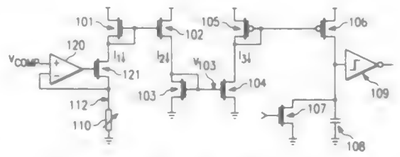
wherein said delay path includes a digital delay line arranged therein for permitting selective adjustment of said adjustable delay amount, said digital delay line having a plurality of individual delay units, said delay units being cooperable to define a plurality of delay path sections which are selectively insertable into said delay path to adjust said delay amount of said delay path, each said delay unit including first and second delay elements, each said delay element having an input and an output, each said delay element providing a propagation delay between said input and said output thereof, a pair of first and second switching elements which are switchable into open and closed positions, said first switching element being arranged between said delay elements for permitting selective connection of said output of said first delay element to said input of said second delay element, and said second switching element being connected to said input of said second delay element for permitting selective connection of said second delay element input to another said delay unit.

5,355,038

ARCHITECTURE FOR PROGRAMMABLE DELAY LINE INTEGRATED CIRCUIT

Titkwan Hui, Richardson, Tex., assignor to Dallas Semiconductor Corporation, Dallas, Tex.

Continuation of Ser. No. 742,571, Aug. 7, 1991, Pat. No. 5,144,123, which is a continuation of Ser. No. 374,102, Jun. 30, 1989, abandoned. This application May 28, 1992, Ser. No. 889,730
The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.
Int. Cl.[5] H03K 5/159, 3/01
U.S. Cl. 307—603 15 Claims



1. A delay line system, comprising:

(a) a first node having a capacitance to ground, said first node having a first voltage;

(b) a programmable resistor circuit having a resistance;

(c) a current source connected to charge said first node, said current source supplying a current with a magnitude dependent upon said resistance of said programmable resistor circuit connected to a second node which receives a controlled voltage;

(d) a reset circuit connected to discharge said first node to ground;

(e) a thresholding circuit with an input and an output, said input connected to said first node and said output in a first state when said first voltage on said first node is less than a second voltage, said output in a second state when said first voltage on said first node is greater than said second voltage;

(f) an input node connected to said reset circuit;

(g) an output node connected to said output of said thresholding circuit;

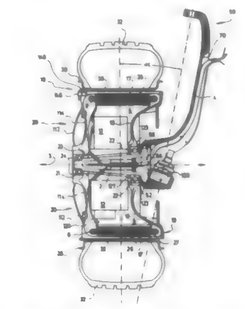
(h) wherein said programmable resistor circuit comprises a programmable resistor string controlled by a first set of control bits to directly switch said resistance of said programmable resistor circuit connected to said second node.

5,355,039

ELECTRICALLY MOTORIZED WHEEL ASSEMBLY

Pierre Couture, Boucherville, Canada, assignor to Hydro-Quebec, Montreal, Canada

Continuation of Ser. No. 913,021, Jul. 14, 1992, Pat. No. 5,327,034. This application Jul. 23, 1993, Ser. No. 77,646
Int. Cl.[5] H02K 11/00, 7/14, 7/10
U.S. Cl. 310—67 R 17 Claims



1. An electrically motorized wheel assembly comprising:

a hollow shaft having a first opening at one end thereof and a second opening, said first opening receiving conductors from outside of said assembly;

a stator coaxial with and fixedly attached to said shaft, said stator comprising a central portion attached to said shaft, a support extending radially from said central portion, and a peripheral circular pole piece, said pole piece being fixed onto peripheral ends of said support;

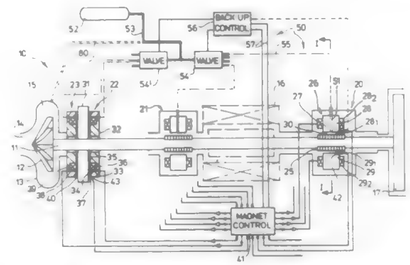
a rotor coaxial with said stator and mounted for rotation about said stator, said rotor comprising a housing having a cylindrical wall having an inner surface provided with a magnetic means surrounding said stator and separated therefrom by an air-gap, said housing comprised an inner wall, on a side of said cylindrical wall, and an outer wall, on the other side of said cylindrical wall, said shaft extending through said inner wall and centrally thereof, said inner wall of said housing extending inside the width of said cylindrical wall so that said inner wall defined a circular space concentric with said first end of said shaft, said space having predetermined dimensions whereby at least part of said brake means can be mounted therein, said inner wall of said housing having an inward annular bulge and said hollow shaft having a length smaller than the width of said cylindrical wall of said housing so that a ball-joint of a connecting rod connectable to said shaft is positioned in a close relationship to a symmetrical radial plane of said assembly when said connecting rod is connected to said shaft.

5,355,040

MAGNETIC BEARING BACK-UP

Nigel H. New, Harrow, United Kingdom, assignor to The Glacier Metal Company Limited, Middlesex, England

Filed Jul. 14, 1993, Ser. No. 91,189
Claims priority, application United Kingdom, Jul. 23, 1992, 9215691.8
Int. Cl.[5] H02K 7/09, 7/08
U.S. Cl. 310—90.5 18 Claims



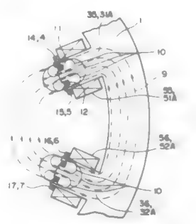
1. A magnetic bearing arrangement for a rotatable shaft, including movable armature means movable with the shaft, stationary armature means forming with the movable armature means a magnetic circuit including a suspension gap between them, and back-up bearing means, the back-up bearing means including fluid channels communicating with the suspension gap, a source of pressurised fluid and back-up control means responsive to a detected inability of the magnetic bearing arrangement to suspend the shaft within a predetermined range of operational shaft positions to cause supply of said fluid to the suspension gap to form therein a film at such hydrostatic pressure as to support the shaft within said predetermined range of operational shaft positions.

5,355,041

MAGNETIC BEARING APPARATUS

Yuji Shirao; Eishi Marui, and Mamoru Suzuki, all of Kanagawa, Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,979
Claims priority, application Japan, Apr. 1, 1992, 4-108590
Int. Cl.[5] H02K 7/09
U.S. Cl. 310—90.5 7 Claims



1. A radial magnetic bearing apparatus for rotatably suspending an object made of a magnetic material by means of a magnetic attracting force, comprising:

at least one control magnetic pole means disposed around the object for suspending the object and controlling a radial position thereof, each said control magnetic pole means having an end surface opposing to the object; and

at least one displacement sensor means for detecting a radial position of the object, each said displacement sensor means comprising at least two sensor magnetic poles formed on said end surface of each said control magnetic

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pole means and sensor coils wound around the sensor magnetic poles;

wherein said sensor coils provided at each said control magnetic pole means are connected in series to generate magnetic fields in opposite directions to each other.

5,355,042

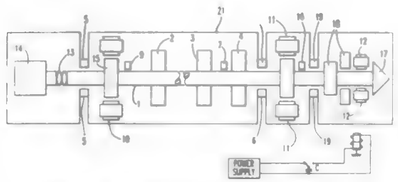
MAGNETIC BEARINGS FOR PUMPS, COMPRESSORS AND OTHER ROTATING MACHINERY

David W. Lewis; Robert R. Humphris; Eric H. Maslen; Paul E. Allaire, and Ronald D. Williams, all of Charlottesville, Va., assignors to University of Virginia Patent Foundation, Charlottesville, Va.

Continuation of Ser. No. 242,264, Sep. 9, 1988, abandoned. This application Nov. 13, 1990, Ser. No. 612,194

Int. Cl.[5] H02K *5/16*

U.S. Cl. 310—90.5 18 Claims



1. A rotatable machine comprising:

a housing;

a rotor disposed within the housing having a plurality of masses and a shaft means including a flexible shaft with an axis, wherein the plurality of masses are distributed axially along the shaft means and included within the masses are magnetizable disks;

a prime mover connected to the shaft means of the rotor;

at least one magnetic bearing mounted to the housing including a plurality of electromagnets and permanent magnets coacting to support the rotor in a radial direction; each electromagnet having a face and generating a flux field having a path extending normal to the axis of the shaft means, each permanent magnet being disposed between predetermined ones of the electromagnets such that each of the flux paths do not pass through the permanent magnets;

sensing means for measuring a position of the shaft means local to said at least one magnetic bearing and relative to the face of each of the plurality of electromagnets; and

control means including direct analog circuitry for controlling variable magnetic bearing parameters which can change values of stiffness and damping of the at least one magnetic bearing in response to measurements from the sensing means.

5,355,043

BRUSHLESS POLYPHASE DC MOTOR

Isao Kaneda, Moriyama, Japan, assignor to Nippon Densan Corporation, Kyoto, Japan

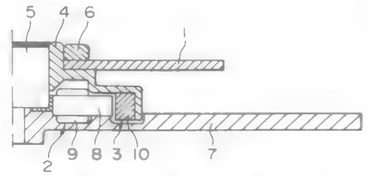
Filed Sep. 2, 1992, Ser. No. 939,168

Claims priority, application Japan, Sep. 10, 1991, 3-230108

Int. Cl.[5] H02K *11/00, 21/12*

U.S. Cl. 310—156 8 Claims

1. A brushless polyphase DC motor comprising a stator having a stator core and a plurality of phases of coils wound on the stator core, a rotor having a magnet disposed in opposition to the stator, an electric current in the positive direction and an electric current in the negative direction being alternately supplied to each of the coils of the plurality of phases with a stopping period therebetween, the stator and the rotor being rotated relative to each other by an electromagnetic interaction generated with the supply of these electric currents, and means for maintaining a substantial residual magnetization in the stator core upon termination of each stopping period so that when an electric current in the positive direction or negative direction is supplied to each coil after the stopping period, the magnetic flux density of the stator core changes from



negative or positive to positive or negative, and there is a substantial change in the magnetic flux density at the time of supplying an electric current in the positive direction or the negative direction.

5,355,044

ROTOR STRUCTURE OF AN ELECTRIC SYNCHRONOUS MOTOR TECHNICAL FIELD

Hiroyuki Uchida; Tomonaga Yamamoto, and Takashi Okamoto, all of Yamanashi, Japan, assignors to Fanuc Limited, Yamanashi, Japan

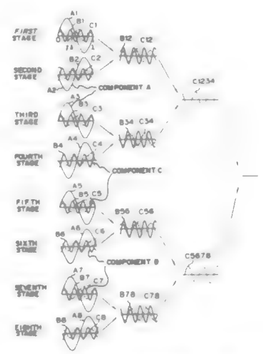
PCT No. PCT/JP91/00640, § 371 Date Jan. 14, 1992, § 102(e) Date Jan. 14, 1992, PCT Pub. No. WO91/18439, PCT Pub. Date Nov. 28, 1991

PCT Filed May 15, 1991, Ser. No. 793,345

Claims priority, application Japan, May 15, 1990, 2-122893

Int. Cl.[5] H02K *21/00*

U.S. Cl. 310—162 3 Claims



1. A rotor for an electric synchronous motor comprising a rotor shaft, a rotor core fixed to the rotor shaft and a plurality of circumferentially arranged magnets accommodated in the rotor core, said rotor being capable of eliminating three different cyclic torque ripple components, wherein said rotor core comprises eight separate equal rotor elements arranged axially on said rotor shaft and independently positionable circumferentially with respect to each other, said eight separate equal rotor elements being positioned in an arrangement which comprises:

a first sub-arrangement of said eight separate equal rotor elements into four pairs of elements wherein one element of each pair is circumferentially shifted with respect to the other element of the pair by an angle corresponding to a half-wavelength of a first cyclic torque ripple component to cancel said first cyclic torque ripple component;

a second sub-arrangement of said eight separate equal rotor elements into four groups of two elements each, wherein two elements of each group are shifted with respect to the other two elements of the group by an angle corresponding to a half-wavelength of a second cyclic torque ripple component of smaller wavelength than said first cyclic torque ripple component to cancel said second cyclic torque ripple component; and

a third sub-arrangement of said eight separate equal rotor elements into two groups of four elements each wherein the elements of one group are circumferentially shifted with respect to the elements of the other group by an angle corresponding to a half-wavelength of a third cyclic torque ripple component of smaller wavelength than said second cyclic torque ripple component to cancel said third cyclic torque ripple component.

5,355,045

TORQUE REACTION TRANSFER IN DYNAMOELECTRIC MACHINES HAVING ENERGY-EFFICIENT STATOR CONSTRUCTIONS

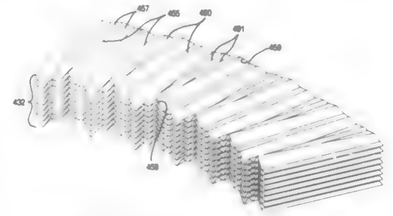
Bradner L. Hisey, 19325 Athos Pl., Saratoga, Calif. 95070

Continuation-in-part of Ser. No. 867,270, Apr. 10, 1992, Pat. No. 5,235,231, which is a continuation-in-part of Ser. No. 684,569, Apr. 12, 1991, Pat. No. 5,208,503. This application Mar. 10, 1993, Ser. No. 29,757

The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.

Int. Cl.[5] H02K *1/12*

U.S. Cl. 310—259 25 Claims



1. A radial-gap dynamoelectric machine having a longitudinal axis and a stator structure, said stator structure comprising:

an elongate ferromagnetic strip having a first inner edge and a second outer edge,

said elongate ferromagnetic strip having folds therein extending entirely across said elongate ferromagnetic strip from first inner edge to the second outer edge,

said folded elongate ferromagnetic strip being deflected about the longitudinal axis of the dynamoelectric machine to form a closed geometric figure, said elongate ferromagnetic strip having in general greater fold angles at the inner edge of the geometric figure than at the outer edge such that the projection of the elongate ferromagnetic strip edge at the inner edge of the geometric figure on a plane perpendicular to the longitudinal axis is shorter than the projection of said elongate ferromagnetic strip edge at the outer edge of the geometric figure onto the same plane,

said elongate ferromagnetic strip having superposed portions placed closely adjacent to each other along the longitudinal axis in two or more turns, such that immediately adjacent folds in each turn are in registration with corresponding adjacent folds of at least one adjacent layer of said strip to form a substantially solid laminated magnetic flux path in the stator.

5,355,046

STATOR END-WINDING SYSTEM AND A RETROFITTING SET FOR SAME

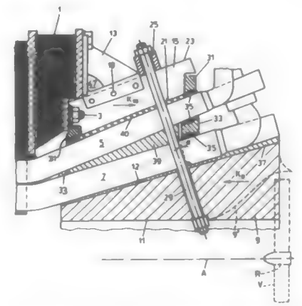
Klaus Weigelt, Postfach 1132, 7897 Kadelburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 627,001, Dec. 13, 1990, Pat. No. 5,140,740. This application Apr. 27, 1992, Ser. No. 874,601

Claims priority, application Switzerland, Dec. 15, 1989, 4515/89-0

Int. Cl.[5] H02K *3/46*

U.S. Cl. 310—260 21 Claims



1. An end-winding system of a stator of an electric machine having a hollow conical-shaped array of bars arranged coaxially about an axis of the machine and expanding outwardly at its end areas to define said hollow conical shape and having a support means including an inside ring having a conical-shaped outer surface extending along a predominant axial portion of an inner surface of said conical-shaped array of bars to provide an inner supporting surface area for said bars of a length at least equal to a length of said predominant axial portion, said support means including means urging said inside ring in an axial direction to urge said conical-shaped outer surface firmly against said array of bars which expands in a manner to define said hollow conical-shape; and an outer support system engaging an outer surface of said array of bars and being removable and replaceable without the need to disassemble said array of bars, coupling means for urging said outer support system towards the conical surface of said inside ring for clamping said array of bars between said outer support system and said inside ring, and resilient means arranged between said outer support system and said stator to enable a common axial displacement of said array of bars, said outside support system and said inside ring against a retaining force of said resilient means, said inside ring urging said outside support system against said resilient means through means coupling said outside ring to said inside ring.

5,355,047

CIRCUIT FOR DRIVING AN OSCILLATORY-WAVE MOTOR

Junji Okada, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 5, 1993, Ser. No. 645

Claims priority, application Japan, Jan. 16, 1992, 4-005921

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—316 19 Claims

1. A circuit for driving an oscillatory-wave motor, which has a voltage control oscillator for outputting frequency signals corresponding to an input voltage and which generates driving signals for driving the oscillatory-wave motor on the basis of the frequency signals, said circuit, designed to automatically track variations of the resonance frequency of the oscillatory-wave motor, comprising:

an electro-mechanical energy conversion element associated

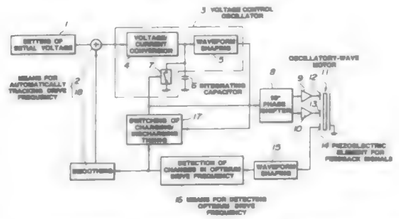
VOL 1167 ISS 2 OC 11 1994 UMI

with said motor for detecting an oscillation frequency during the driving of the oscillatory-wave motor;

a feedback pulse signal output circuit for outputting feedback pulse signals on the basis of an output from the electro-mechanical energy conversion element for a detection purpose; and

a voltage adjustment circuit for generating an adjustment voltage corresponding to the frequency of the feedback pulse signal and resetting an input voltage of the voltage control oscillator responsive to said adjustment voltage so that the frequency of the driving signal becomes optimum,

wherein said voltage control oscillator comprises:



a voltage-current conversion circuit for outputting electric current corresponding to an input voltage;

an integration capacitor being selectively charged/discharged by the converted current;

a digital comparison circuit which is inverted according to the integration voltage of the integration capacitor; and

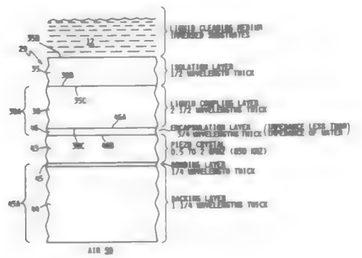
a charging/discharging switching circuit for switching the charging/discharging timing of the integration capacitor in response to one of the output of the digital comparison circuit and the feedback pulse signal, which charging/discharging timing switching circuit outputs the driving signal in synchronization with the switching timing.

5,355,048

MEGASONIC TRANSDUCER FOR CLEANING SUBSTRATE SURFACES

Bruce M. Estes, Apple Valley, Minn., assignor to FSI International, Inc., Chaska, Minn.

Filed Jul. 21, 1993, Ser. No. 94,780
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—334 **18 Claims**



1. A megasonic acoustic transducer to generate and direct megasonic acoustic energy into and through a water based liquid solution for cleaning substrates immersed therein, comprising

a source of high frequency electrical energy in the range of 0.5 to 2.0 Megahertz,

acoustic energy generating means connected to said source of high frequency electrical energy and comprising a piezo crystal having a front face and a back face and propagating megasonic frequency acoustic energy from both the front face and the back face,

a backing means adjacent the back side of said piezo crystal and supporting and conducting heat away from said megasonic acoustic energy generating means and propagating high frequency acoustic energy from the piezo crystal, said backing means comprising a rigid backing layer, and said backing means also comprising a bonding layer between and adhering to the rigid backing layer and to the piezo crystal, the bonding layer and the rigid backing layer having thicknesses to influence each other in the propagation of megasonic acoustic energy and contribute to optimizing the effect of the backing means on the electrical characteristics of the piezo crystal,

an acoustically transparent isolation means resistant to the deteriorating effects of corrosive chemicals, said isolation means engaging the water based liquid solution and propagating the megasonic frequency acoustic energy from the acoustic energy generating means and into the liquid solution, and said isolation means isolating the acoustic energy generating means from the liquid solution, the isolation means comprising an isolation layer having a load side and a supply side opposite each other, the supply side facing the acoustic energy generating means and the load side facing the water based liquid solution and comprising an acoustic impedance characteristic, the isolation layer having a uniform thickness between the load side and the supply side and substantially equaling an even number of one-quarter wavelengths of the megasonic acoustic energy propagated through the isolation layer to transfer the acoustic impedance characteristic existing at the load side and replicate said acoustic impedance characteristic at the supply side of the isolation layer,

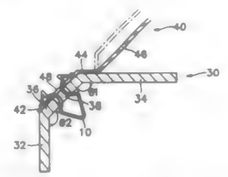
an acoustic energy transmitting means encapsulating the front face of the piezo crystal and acoustically coupling the piezo crystal to the isolation layer and also eliminating air between the piezo crystal and the isolation layer, said acoustic energy transmitting means comprising an encapsulation layer adjoining the front face of the piezo crystal and formed of an electrically insulating material and said acoustic energy transmitting means minimizing any change in acoustic impedance between the encapsulation layer and the isolation layer.

5,355,049

ASSEMBLY OF SHADOW MASK FRAME WITH INNER SHIELD FOR COLOR CATHODE RAY TUBE

Sitaek Sung, Kyunggi, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyunggi, Rep. of Korea

Filed Jan. 22, 1993, Ser. No. 7,548
Claims priority, application Rep. of Korea, Mar. 3, 1992, 92-3496
Int. Cl.[5] H01J *29/06*
U.S. Cl. 313—402 **4 Claims**



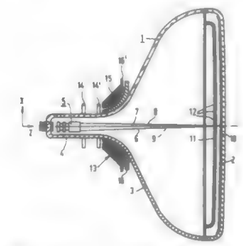
1. An assembly of a shadow mask frame with an inner shield for a color cathode ray tube having a shadow mask frame, an inner shield and a clip for coupling said shadow mask frame with said inner shield, said frame having a rim part and flange part bent at a nearly right angle to the rim part and extending inwardly, wherein: a sloping face is formed to a predetermined width between the rim part and the flange part of the frame with a predetermined obtuse angle therebetween, and said inner shield includes a fixing part aligned with said sloping face and having the same width as that of said sloping face, a flat part bent at the same angle as the angle between said sloping face and said flange part, and a shield part extending to a predetermined length from the inside edge of said flat part and bent at a predetermined angle with respect to the flange part of said frame, and each slot is formed on the positions of the sloping face of the frame and the fixing part of the inner shield corresponding to each other when said sloping face is aligned with said fixing part, and said clip is inserted into said slots to couple said frame with said inner shield.

5,355,050

COLOR DISPLAY TUBE WITH COMA CORRECTION

Albertus A. S. Sluyterman, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 29, 1992, Ser. No. 891,368
Claims priority, application European Pat. Off., Jun. 5, 1991, 91201350.3
Int. Cl.[5] H01J *29/54, 29/58*
U.S. Cl. 313—440 **6 Claims**



1. A color display tube comprising:

(a) a display screen having a short display screen axis and a long display screen axis,

(b) an electron gun for generating three electron beams whose axes are coplanar,

(c) a deflection unit comprising a first and a second deflection coil for generating a first and a second deflection field for deflecting the electron beams across said display screen in two mutually perpendicular directions, the direction of the first deflection field being parallel to said beam axes plane,

(d) convergence correction means for, during deflection of the beams, keeping the electron beams converged on the display screen, said convergence correction means providing a field deflection field positioned with respect to the beams such that the electron beams entering the field deflection field first pass an area with a barrel-shaped deflection field component and next pass an area with a pincushion-shaped deflection field component.

5,355,051

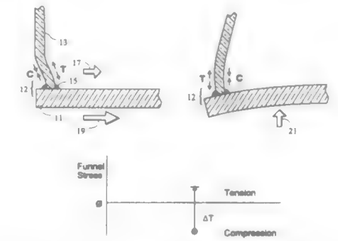
CRT BULB HAVING A FRONT PANEL WITH A HIGHER CTE THAN ITS FUNNEL

Mark T. Fondrk, Villa Park, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 21, 1992, Ser. No. 994,007
Int. Cl.[5] H01J *31/00*
U.S. Cl. 313—477 R **14 Claims**

1. In a cathode ray tube bulb made by sealing a glass front panel to a funnel by cementing said panel and said funnel together with solder glass at predetermined elevated temperatures over a predetermined time and temperature sealing cycle, whereby a substantially rigid hermetic panel-to-funnel seal is formed and thereafter lowering the sealed bulb to room temperature; the improvement comprising:

the front panel having an effective co-efficient of thermal expansion (CTE), over a temperature range from room temperature to the setting temperature of the sealant, which is greater than the effective CTE of the funnel over



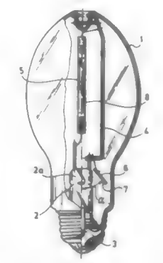
that temperature range, whereby residual stresses in the sealed bulb are distributed so as to produce a bulb with good evacuated pressure strength.

5,355,052

HIGH PRESSURE DISCHARGE LAMP WITH GETTER

László Ugrósdy, and György Horváth, both of Budapest, Hungary, assignors to Tungsram Részvénytársaság, Budapest, Hungary

Continuation of Ser. No. 826,078, Jan. 27, 1992, abandoned. This application Jun. 16, 1993, Ser. No. 78,481
Claims priority, application Hungary, Jan. 31, 1991, 330/91
Int. Cl.[5] H01J *61/24*
U.S. Cl. 313—558 **4 Claims**



1. A high pressure discharge lamp, comprising an inner discharge tube, an outer envelope, current leads, a pinched lamp stem in the outer envelope for containing the current leads, said pinched lamp stem having a narrower part and a wider part, a longitudinal axis disposed perpendicularly to said pinched lamp stem, a getter holder having a surface with getter thereon for increasing the service life of the lamp, said surface of the getter holder being located adjacent to and facing said narrower part of said pinched lamp stem at less than 90° with said longitudinal axis.

5,355,053

HIGH PRESSURE SODIUM LAMP STARTING AID

Huiling Zhu, Manchester, N.H., assignor to OSRAM Sylvania Inc., Danvers, Mass.

Filed Nov. 24, 1992, Ser. No. 980,897
Int. Cl.[5] H01J *7/44, 13/46*
U.S. Cl. 315—73 **1 Claim**

1. A starting aid for a high pressure arc discharge lamp having an arc tube with a power lead in each end of the arc tube, comprising:

a U-shaped wire connected to one of the power leads, said wire having upper and lower arms, said U-shaped wire

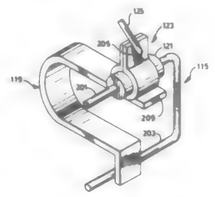
VOL 1167 ISS 2 OC 11 1994 UMI

including a section for mechanically connecting said one of the power leads to a support rod in the lamp, said section being a U-shaped extension of one arm of said U-shaped wire;

an insulating tube disposed about one arm of the U-shaped wire;

a conductive strap disposed about the insulating tube;

a U-shaped bimetallic strip, having one arm connected to the



U-shaped wire and having the other arm in contact with the conductive strap when the bimetallic strip is below a predetermined temperature and having the other arm not in contact with the conductive strap when the bimetallic strip is at or above the predetermined temperature; and

an ignition wire having two ends, one end connected to the conductive strap and the other end formed into a clip for holding the ignition wire in contact with an outer surface of the arc tube.

5,355,054

ELECTRODELESS LOW-PRESSURE DISCHARGE LAMP HAVING A COOLING BODY WITH A PARTITIONED VAPOR CHANNEL

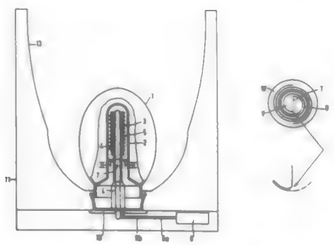
Dirk F.W. Van Lierop; Herman H.M. Van der Aa, and Nico H.J. Van de Peppel, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 23, 1992, Ser. No. 996,239

Claims priority, application Hague, Jan. 7, 1992, 92200027.8

Int. Cl.[5] H05B *41/24;* **H01J** *61/52, 1/50*

U.S. Cl. 315—112 **16 Claims**



1. An electrodeless low-pressure discharge lamp comprising

- a radiation-transmitting discharge vessel which is sealed in a gastight manner and is filled with a metal and a rare gas, the discharge vessel including a cavity,
- inductive means disposed in the cavity of the discharge vessel for generating a high-frequency electric field inside the discharge vessel during lamp operation, said inductive means comprising a core of magnetizable material and a winding of metal wire surrounding the core of magnetizable material, and
- a cooling body in contact with the core for removal of heat generated in the core during lamp operation, the cooling body comprising a vessel which is closed in a gastight manner and including a condenser, an evaporator, a liquid, and a capillary structure which comprises a winding of gauze defining a vapor channel for transporting the liquid from the condenser to the evaporator, characterized in that:

the capillary structure also comprises a central partition wall which divides the vapor channel in two and includes two opposing longitudinally extending sides connected to the gauze winding.

5,355,055

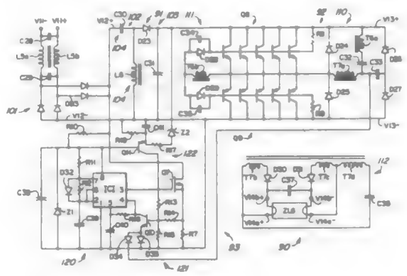
LIGHTING ASSEMBLY AND AN ELECTRONIC BALLAST THEREFOR

Tamas Tary, Mission, Canada, assignor to Ganasi Technical Developments Ltd., Port Moody, Canada

Filed Aug. 21, 1992, Ser. No. 933,201

Int. Cl.[5] H05B *37/00*

U.S. Cl. 315—209 R **16 Claims**



1. An electronic ballast comprising:

a) means for converting a general impedance load into a resistance, said converting means comprising:

i) means for receiving electrical energy and maintaining a continuous direct current,

ii) means for storing electrical energy connected serially to said receiving and maintaining means, and

iii) means for periodically discharging said energy storing means as a discontinuous direct current supplied to the load; and

b) means for inverting said discontinuous direct current into an alternating current connected serially as a load to said converting means for receiving said discontinuous direct current, said inverting means comprising:

i) means for receiving said discontinuous direct current to be inverted,

ii) means for receiving the inverted alternating current,

iii) means for connecting said direct current receiving means to the alternating current receiving means for the purpose of supplying the discontinuous direct current to the alternating current receiving means and for periodically reversing the polarity of the connection so as to supply the negative discontinuous direct current to the alternating current receiving means whereby an alternating current with a frequency equal to the polarity reversal frequency is supplied to the alternating current receiving means,

iv) means for supplying the alternating current and for applying an alternating potential difference connected to the alternating current receiving means, and

v) means responsive to the magnitude of the alternating potential difference operable to change the polarity reversal frequency; and

wherein said means for storing electrical energy comprises:

a) a first capacitor having a first terminal and a second terminal,

b) a first inductor having a first terminal and a second terminal wherein said first terminal of said first inductor is connected to said first terminal of said first capacitor,

c) a second capacitor including a first terminal and a second terminal wherein said first terminal of said second capacitor is connected to said second terminal of said first inductor,

d) a second inductor including a first terminal and a second terminal wherein

i) said first terminal of said second inductor is connected to said second terminal of said second capacitor,

ii) said second terminal of said second inductor is connected to said second terminal of said first inductor, and

iii) said second inductor is magnetically connected to said first inductor differentially, and

e) switch means being operable to connect a first terminal to a second terminal wherein

i) said first terminal of said switch means is connected to said second terminal of said first inductor, and

ii) said second terminal of said switch means is connected to said second terminal of said first capacitor.

5,355,056

SPARKPLUG VOLTAGE DETECTING PROBE DEVICE FOR USE IN INTERNAL COMBUSTION ENGINE

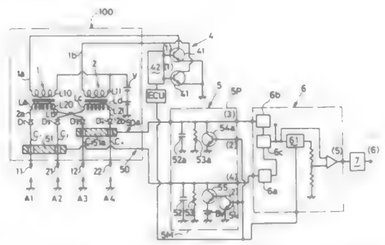
Shigeru Miyata; Yasuo Ito, and Hideji Yoshida, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed May 12, 1993, Ser. No. 59,370

Claims priority, application Japan, May 12, 1992, 4-118620; Sep. 30, 1992, 4-261246

Int. Cl.[5] H05B *37/02*

U.S. Cl. 315—209 CD **4 Claims**



1. A sparkplug voltage detecting probe device for use in internal combustion engine comprising:

a sensor provided to form a static capacity between the sensor and a secondary circuit of an ignition coil which is connected a spark plug;

a sparkplug voltage divider circuit having a capacitor connected between the sensor and the ground;

a release circuit having a resistor connected in parallel with the capacitor so as to provide a time constant of a RC path;

a short circuit provided to instantaneously release an electrical charge from the capacitor either immediately before establishing a spark voltage for the spark plug or immediately after initiating the spark action of the spark plug; and

a sparkplug voltage waveform detecting circuit which detects a sparkplug voltage waveform divided by the sparkplug voltage divider circuit.

5,355,057

TELECINE CHAINS

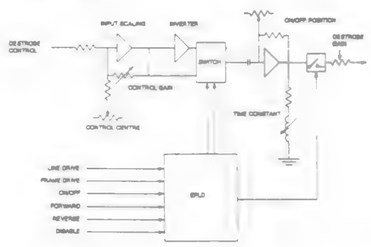
David R. Edgar; Tony Corcoran, and Ian G. Small, all of South Melbourne, Australia, assignors to Syme Electronic Communications Pty. Limited, South Melbourne, Australia

Division of Ser. No. 58,488, May 5, 1993, which is a continuation of Ser. No. 743,116, Aug. 9, 1991, abandoned. This application Jun. 30, 1993, Ser. No. 85,548

Claims priority, application Australia, Aug. 9, 1990, PK1630/90

Int. Cl.[5] G09G *1/04;* **H04N** *3/36*

U.S. Cl. 315—370 **5 Claims**



1. A telecine chain in which optical film is continuously scanned, said telecine chain comprising:

de-strobe compensation being effected by a displacement of scan lines of alternate fields developed from a single frame of optical film before the frame is recorded onto videotape, wherein said displacement decreases an image interlace error between adjacent images formed from groups of fields from different frames of a film image by introducing a scanning interlace error between fields in the groups from one frame.

5,355,058

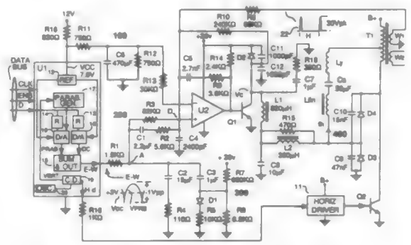
HORIZONTAL DEFLECTION WAVEFORM CORRECTION CIRCUIT

David R. Jackson, Indianapolis, and Joseph C. Stephens, Fishers, both of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jul. 29, 1993, Ser. No. 99,376

Int. Cl.[5] G09G *1/04;* **H01J** *29/70*

U.S. Cl. 315—371 **20 Claims**



1. A deflection apparatus comprising:

a deflection amplifier;

a deflection waveform modulation circuit coupled to said deflection amplifier;

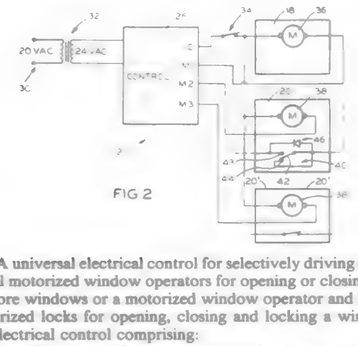
a digital to analog converter for generating a modulation signal;

means for generating a reference signal that is coupled to said digital to analog converter thereby subjecting said modulation signal to signal variations in accordance with variations of said reference signal; and,

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a comparator having two inputs, said digital to analog converter being coupled to one of the inputs, and said reference signal being coupled to one of the inputs, such that signals developed at said comparator inputs track one another in accordance with said variation of said reference signal, said comparator having an output coupled to said deflection waveform modulation circuit for waveform modulation.

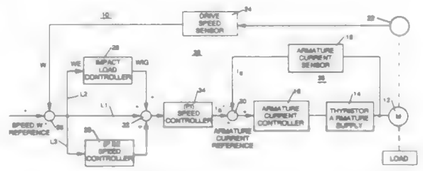
5,355,059
ELECTRONIC SWITCH ASSEMBLY FOR MOTORIZED WINDOW SYSTEM
Scott D. McMillan, Owatonna, Minn., assignor to Truth Hardware Corporation, Owatonna, Minn.
Filed Feb. 18, 1993, Ser. No. 18,818
Int. Cl.[5] H02P *1/58*
U.S. Cl. 318—103 **19 Claims**



1. A universal electrical control for selectively driving either plural motorized window operators for opening or closing one or more windows or a motorized window operator and plural motorized locks for opening, closing and locking a window, the electrical control comprising:
an interface circuit for connection to plural output devices comprising either motorized window operators or motorized window locks;
input means for commanding window movement to an open or close position;
a control circuit connected to said interface circuit and said input means and including initialization means for determining if each said output device is a motorized window operator or a motorized lock, and output drive means operable in response to a command from said input means for driving said output devices through said interface circuits in a lock sequence or a window sequence dependent on said initialization means respectively determining if a motorized window lock is connected or is not connected to said interface circuit, said lock sequence comprising opening any lock prior to opening the window and closing the window prior to closing the lock, the window sequence comprising driving the plural motorized window operators in a select desired sequence.

8. An electrical window operator control for driving plural motorized window operators for opening or closing one or more windows or motorized locks for locking a window, the electrical control comprising:
an interface circuit for connection to plural output devices comprising either motorized window operators or motorized window locks;
input means for commanding window movement to an open or close position;
a control circuit connected to said interface circuit and said input means and including initialization means for driving each said output device to cycle said output device to determine time to open or close the window or open or close the lock, said time being used to determine actual position according to subsequent length of time any such output device is driven, and output drive means operable in response to a command from said input means for driving said output devices through said interface circuits until actual position reaches a position commanded by said input means.

5,355,060
LOAD IMPACT CONTROLLER FOR A SPEED REGULATOR SYSTEM
Robert S. Peterson, Pittsburgh, Pa., assignor to AEG Automation Systems Corporation, Pittsburgh, Pa.
PCT No. PCT/US90/06112, § 371 Date Aug. 14, 1992, § 102(e) Date Aug. 14, 1992, PCT Pub. No. WO92/08275, PCT Pub. Date May 14, 1992
PCT Filed Oct. 24, 1990, Ser. No. 867,098
Int. Cl.[5] H02P *5/00*
U.S. Cl. 318—432 **41 Claims**



1. A speed regulator drive system for regulating the speed of a drive motor, comprising:
means for determining a speed error based on an actual speed value and a desired speed value and for using said speed error during the normal operation of said drive motor, and
impact load controller means for producing a first output, said first output used to compensate for a reduction in said speed from a steady state speed in said normal operation of said drive motor and for supplementing at least said speed error for said regulating of said drive motor when a load disturbance is applied to said drive motor,
said impact load controller means comprising:
rate controller means for receiving said speed error, for determining rates of change in said speed error, and for producing a gain value product including said rates of change in said speed error,
means for initially increasing said gain value product to a first value by a desired amount to proportionately increase said speed of said drive motor to a value above said steady state speed, and
filter means for receiving said first gain value product for precharging said filter means and for subsequently receiving second gain value products for exponentially decreasing said speed of said drive motor until said speed reaches said steady state speed.

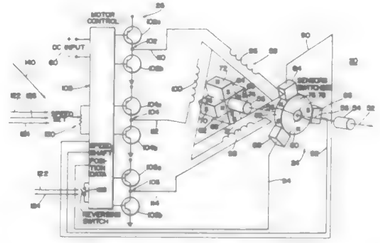
25. An impact load controller for controlling the dynamics of a drive motor whose speed is reduced from a steady state condition due to a load disturbance applied to said motor, said impact load controller comprising:
means for producing a signal which is a function in a rate of change in a speed error, which speed error is the difference between a desired speed value and an actual speed value, and including means for producing a gain value product for said signal, and
means for applying said signal to said drive motor to first increase said speed of said drive motor above said steady state condition and to sequentially decrease said speed of said drive motor until it reaches said steady state condition.

26. A method for controlling the dynamics of a drive motor whose speed is reduced from a steady state speed due to a load disturbance applied to said motor, the steps comprising:
using a rate of change in speed error, which speed error is based on the difference between a desired speed value and an actual speed value,

producing a gain value product for said rate of change in said speed error,
combining said gain value product with at least said speed error to initially increase said speed of said drive motor above said steady state speed, and thereafter to decrease said speed of said drive motor until it reaches said steady state speed.

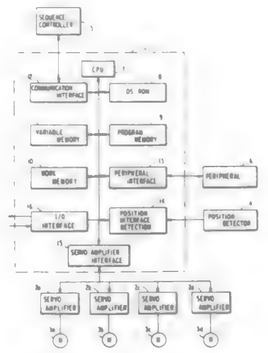
36. In a speed regulator drive system in which the speed of a drive motor is controlled by a speed error signal, a load impact controller for compensating for reduction in speed of said drive motor from a steady state speed due to impact loads, said load impact controller comprising:
means for generating a load impact correction signal which is a step function of the rate of change of the speed error and modified to decay with time, and including means for generating a rate signal proportional to said rate of change of said speed error, and
summer means for adding said load impact correction signal to said speed error signal to control the speed of said drive motor for returning said drive motor to its said steady state speed.

5,355,061
WINDSHIELD WIPER SYSTEM
Michael Forhan, Urbana, Ohio, assignor to Grimes Aerospace Company, Columbus, Ohio
Filed Jan. 24, 1992, Ser. No. 825,628
Int. Cl.[5] B60S *1/08*
U.S. Cl. 318—443 **20 Claims**



1. An improved windshield wiper assembly of the type in which a wiper blade undergoes oscillatory rotary motion and is swept back and forth between two extreme locations across a windshield to remove rain and water therefrom, wherein the improvement comprises:
a brushless DC motor, an output shaft of which is coupled to the wiper assembly so that rotation of the output shaft in a first or a second direction rotates the blade in corresponding first and second directions between the extreme locations;
means for periodically changing the direction of rotation of the motor and of the output shaft when the blade reaches an extreme location;
means responsive to the blade reaching each of the extreme locations and an intermediate location between the extreme locations for:
(i) accelerating the rotary motion of the blade in the first direction immediately after such motion changes from the second to the first direction;
(iii) accelerating the rotary motion of the blade in the second direction immediately after such motion changes from the first to the second direction; and
(iii) decelerating the rotary motion of the blade in the first or the second direction as and after it reaches a preselected intermediate location between the extreme locations; and
the accelerating and decelerating means including:
first sensor means for detecting the rotary position of the blade and for producing first signals indicating that the blade is in one of its extreme locations,
second sensor means for detecting the rotary position of the blade and for producing a second signal indicating that the blade has reached the intermediate location between the extreme locations; and
means responsive to the first and second signals for altering the commutation of the brushless DC motor to accelerate the blade after it reaches said one of the extreme locations and to decelerate the blade as and after it reaches the intermediate location.

5,355,062
POSITIONING AND CONTROL APPARATUS THAT IS INTERACTIVELY PROGRAMMABLE USING A DISPLAY
Yoshichika Takizawa; Yasuyuki Suzuki; Misako Okada; Makoto Nishimura; Hidehiko Matsumoto; Yasuharu Kudo, and Tohru Tsujimoto, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 27, 1992, Ser. No. 936,841
Claims priority, application Japan, Sep. 13, 1991, 3-234635
Int. Cl.[5] G05B *19/04*
U.S. Cl. 318—568.1 **61 Claims**



1. A positioning apparatus comprising a first plurality of motors for driving objects to be controlled on a machine and a controller for drive-controlling said motors for synchronously positioning said objects to be controlled, said controller comprising at least one drive simulation means for generating and outputting position information for synchronously drive-controlling said motors, a plurality of transmission simulation means for operating on at least one of input information and said position information and outputting the results as transmission information, and a plurality of output simulation means for operating on at least one of input information and transmission information and outputting the results as drive control commands for said motors, said controller being operative to selectively combine said drive simulation means, transmission simulation means and output simulation means to drive-control said motors.

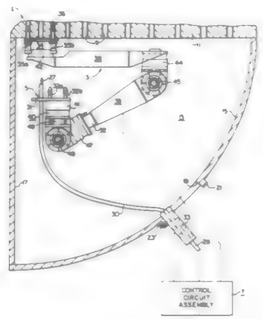
VOL 1167 ISS 2 OC 11 1994 UMI

5,355,063

ROBOTIC SYSTEM FOR SERVICING THE HEAT EXCHANGER TUBES OF A NUCLEAR STEAM GENERATOR

Paul J. Boone, Bethel Park; Michael H. Canton, Wilkinsburg; Stanley F. Niziol, Whitehall; Tara D. Mapson, Pittsburgh; Bruce R. L. Cox, Springdale Twp., Allegheny Co.; Raymond G. Kelly, Jr., Pittsburgh; Robert P. Vestovich, Monroeville; George A. Savage, Rostraver Twp., Westmoreland County; Robert D. Senger, Greensburg; Michael D. Hecht, Hempfield Twp., Westmoreland County; Kurt K. Lichtenfiels, Murrysville; Anthony Grieco, Penn Hills, all of Pa., and Wenche W. Cheng, Orlando, Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 1, 1990, Ser. No. 607,705
Int. Cl.[5] G05B *19/19*
U.S. Cl. 318—568.11 42 Claims



1. A robotic arm system for maintaining a tool in a desired orientation while moving it along a trajectory having components in all three dimensions, comprising:

a base assembly for cantileverly supporting a robotic arm;

at least first, second and third arm segments for forming an articulated robotic arm, and

at least first and second motorized joint assemblies rotatably connecting said base assembly to said first arm segment, and said first and second arm segments, respectively, and including motor mechanisms for driving said assemblies,

wherein said first and second joint assemblies are rotatable only around substantially vertical axes to prevent the application of cantileverly-induced torque on the motor mechanisms driving said assemblies, and wherein the motor mechanisms of each of said joint assemblies includes a drive train for rotating the joint assembly, a motor means for driving the drive train, and a pair of resolvers for simultaneously and independently generating signals indicative of the output of said motor means and the output of said drive train.

5,355,064

CONTROL SYSTEM FOR LEGGED MOBILE ROBOT

Ryutaro Yoshino; Hideo Takahashi; Minoru Kobayashi, and Nobuaki Ozawa, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 25,528
Claims priority, application Japan, Mar. 4, 1992, 4-081381; Mar. 31, 1992, 4-105316; Apr. 28, 1992, 4-136257; Apr. 28, 1992, 4-136258
Int. Cl.[5] B25J *11/00, 9/00*
U.S. Cl. 318—568.12 35 Claims

1. A system for controlling locomotion of a biped walking robot having a body and two articulated legs each connected to the body through a hip joint and each having at least an ankle joint, comprising:

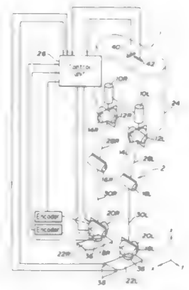
servo motor means provided at individual joints

first means for establishing a target attitude of the robot in terms of angles with respect to the direction of gravity assuming that the robot walks on a flat terrain;

second means for determining at least a target angle of each joint from the established attitude;

third means for detecting at least an actual angle of each joint;

fourth means for determining a basic control amount for each joint in response to a deviation at least between the target angle and the detected actual angle of each joint;



fifth means for estimating an attitude shift from the established attitude as angles with respect to the direction of gravity;

sixth means for determining a control correction amount indicative of a manipulated variable such that the attitude shift decreases; and

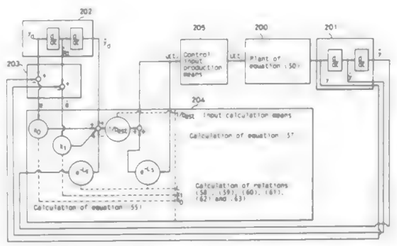
control means for summing the basic control amount and the control correction amount to provide the sum to the servo motor means.

5,355,065

ADAPTIVE CONTROL SYSTEM

Kazushige Narazaki, Neyagawa, and Osamu Ito, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 673,977, Mar. 25, 1991, abandoned. This application May 11, 1993, Ser. No. 60,039
Claims priority, application Japan, Mar. 26, 1990, 2-76058; Oct. 31, 1990, 2-295731
Int. Cl.[5] G05B *13/00*
U.S. Cl. 318—632 12 Claims



1. A control system for a physical plant wherein the physical plant has a number of inputs, q, equal to a number of outputs, modeled by the relationship

$$y(s)=(s^n I-A_{w,n-1}s^{n-1}-\ldots-A_{w,0})^{-1}B_w u(s),$$

wherein s is a Laplace variable, y(s) is a q-dimensional output vector, u(s) is a q-dimensional input vector, $A_{w,i}$(w=1—p, i=n−1—0) is an unknown plant matrix having dimensions q×q, B_w is an unknown input distribution matrix having dimensions q×q, "I" is a q×q-dimensional unit matrix, and "w" represents a number of operational points where (w=1, 2—p,p being a predetermined number) and "n" is an integer;

the control system comprising:

state output detecting means, including means for detecting a state output vector y(t) and differentials dy(t)/dt—d^ny(t)/dt^n of said state output vector which represent said operating conditions of said physical plant,

trajectory production means, including means for producing a desired trajectory vector y_d(t) and differentials dy_d(t)/dt—$d^n y_d$(t)/dt^n of said desired trajectory vector which represent said desired operating conditions,

error value production means, including means for producing error signals e(t)=y_d(t)−y(t) and differentials de(t)/dt—d^{n-1}e(t)/dt^{n-1} of said error signals e(t) using said state output vector y(t), said differentials dy(t)/dt—d^ny(t)/dt^n of said state output vector, said desired trajectory vector y_d(t) and the differentials dy_d(t)/dt—$d^n y_d$(t)/dt^n of said desired trajectory vector,

control signal generating means for generating a control signal, u(t), from a relationship

$$u(t)=u(t-L)+B_{est}^{-1}\cdot\{-d^n y(t-L)/dt^n+d^n y_d(t)/dt^n+K_{n-1}\cdot d^{n-1}e(t)/dt^{n-1}+\ldots+K_0\cdot e(t)\}$$

where L represents the predetermined time period, B_{est} represents the control input signal, and K_{n-1}—K_0 represent error dynamics adjustment signals,

said control signal generating means including:

control input signal generating means for generating said control input signal based on a predetermined relationship generating said control input signal, B_{est}, such that entire coefficients with respect to "s" are positive in a characteristic relationship determined from a relationship

$$\det\{(2B_{est}B_w^{-1}-I)Ls+2I\},$$

predetermined time period generating means for generating said error dynamics adjustment signals K_{n-1}—K_0 and said predetermined time period L so that the predetermined relationships

$$L<<2/|2B_{est}B_w^{-1}\cdot A_{w,n-1}+K_{n-1}|_{max},$$

$$L<<2/|(2B_{est}B_w^{-1}-I)K_{n-1}|_{max},$$

$$L<<|2K_i|_{min}/|2B_{est}B_w^{-1}\cdot A_{w,i-1}+K_{i-1}|_{max},$$

$$L<<|2K_i|_{min}/|(2B_{est}B_w^{-1}-I)K_{i-1}|_{max},$$

$$L<<2/\omega_0,$$

$$L<<2/\{|(B_{est}B_w^{-1}-I)|_{max}\cdot\omega_0\}$$

are satisfied for i=(n−1) to 1

where $|2K_i|_{min}$ is a minimum absolute value of a component of an error dynamics signal "k_i" with the exception of a zero component of said error dynamics signal $2K_i$, and ω_0 is a frequency range which is required for tracking of said desired trajectory, and

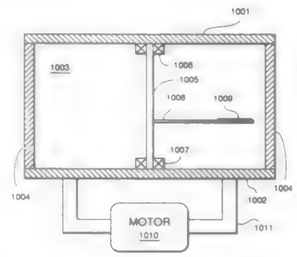
control signal application means for controlling said physical plant in accordance with said generated control signal.

5,355,066

TWO-AXIS MAGNETICALLY COUPLED ROBOT

Robert B. Lowrance, Los Gatos, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Division of Ser. No. 644,852, Jan. 22, 1991, Pat. No. 5,227,708, which is a continuation of Ser. No. 424,771, Oct. 20, 1989, abandoned. This application Mar. 2, 1993, Ser. No. 25,204
Int. Cl.[5] G21K *5/10*
U.S. Cl. 318—640 6 Claims



1. A robot apparatus, comprising:

a robot vacuum chamber having an outer wall, a top wall and a bottom wall;

a rotatable robot arm for positioning a workpiece at a desired angular location in said vacuum chamber;

a motor mounted outside the vacuum chamber;

a motor shaft extending into the chamber and coupled to the rotatable robot arm; and

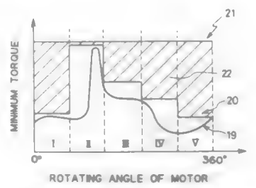
a load bearing support for the vacuum chamber, spaced inward from the outer wall, extending from the top wall to the bottom wall and having sufficient strength to withstand a compressive stress in said support when a vacuum is produced in said vacuum chamber, whereby when a vacuum is produced within the chamber, said support significantly reduces vertical displacement of the robot arm by ambient pressure.

5,355,067

APPARATUS FOR CONTROLLING A STEPPING MOTOR USED FOR DRIVING A CHEMICAL PUMP AND METHOD OF CONTROLLING A STEPPING MOTOR USED FOR DRIVING A CHEMICAL PUMP

Masazumi Tabuchi, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 8, 1991, Ser. No. 771,980
Claims priority, application Japan, Oct. 19, 1990, 2-282565
Int. Cl.[5] H02P *7/06*
U.S. Cl. 318—696 7 Claims



1. A method of controlling a stepping motor used for driving a chemical pump, said method comprising the steps of:

setting a plurality of initial values of a driving current to obtain a plurality of torque values in each of a respective plurality of divisional intervals of one cycle of said chemical pump;

initializing a count variable n(r) to 0 for each of said divi-

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sional intervals, said number of said count n(r) indicating how often said driving current has been reduced for an interval r, and wherein r is an integer from 1 to 5;

reading a current angular location of said stepping motor using a photo interrupter so as to set said number r;

setting an initial value I(r) for a driving current corresponding to said set number r so as to set an actual current I;

detecting a rotation of said stepping motor by said photo interrupter so as to determine whether said stepping motor loses synchronism;

incrementing said driving current I(r) when it is determined that the stepping motor loses synchronism so as to set an increased driving current,

incrementing said number of said count n(r) by one so that n(r)=n(r)+1 when said stepping motor does not lose synchronism;

determining whether said value of said count n(r) is equal to a predetermined value N; and

reducing said driving current I(r) of said stepping motor when said value of said count n(r) is less than said predetermined value N so as to set a reduced driving current.

5,355,068

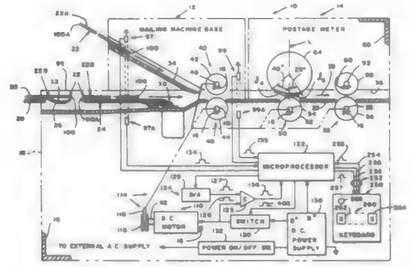
MAILING MACHINE INCLUDING SHUTTER BAR CONTROL SYSTEM

Alton B. Eckert, Jr., New Fairfield; Dennis M. Gallagher, Danbury; Thomas M. Pfeifer, Bridgeport, and Richard P. Schoonmaker, Wilton, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 19, 1991, Ser. No. 810,256

Int. Cl.[5] H02P *1/00*

U.S. Cl. 318—282 **26 Claims**



1. A mailing machine base adapted to have a postage meter mounted thereon, wherein the meter has a postage printing drum and a drive gear therefor, and wherein the meter has a shutter bar movable in opposite directions through a predetermined distance for movement thereof out of and into locking engagement with the drive gear, the base comprising:

a) means for moving the shutter bar;

b) a d.c. motor for driving the shutter bar moving means;

c) a microprocessor including a program:

d) power switching means connected between the microprocessor and d.c. motor, the switching means including four power switches arranged in an H-bridge circuit configuration for driving the motor in opposite directions respectively corresponding to the opposite directions of movement of the shutter bar; and

e) the microprocessor program including means for:

i) energizing the switching means with a first signal for driving the d.c. motor in a given direction for a first time interval predetermined to cause the d.c. motor to move the shutter partially through the predetermined distance,

ii) energizing the switching means with a second signal for driving the d.c. motor in the given direction for a second time interval predetermined to cause the d.c. motor to move the shutter bar substantially through the remainder of the predetermined distance,

iii) energizing the switching means with a third signal for driving the d.c. motor in the direction opposite to the given direction for a time interval predetermined to cause the d.c. motor to decelerate movement of the shutter bar, and

iv) energizing the switching means with a fourth signal for driving the d.c. motor in the given direction for a fourth time interval predetermined to move the shutter entirely through the remainder of the distance.

5,355,069

RELUCTANCE TYPE MOTOR

Itsuki Bahn, Tokyo, Japan, assignor to Kabushikigaisha Sekogiken, Tokyo, Japan

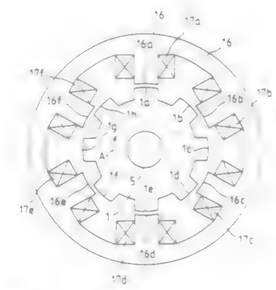
PCT No. PCT/JP91/01565, § 371 Date Jul. 14, 1992, § 102(e) Date Jul. 14, 1992, PCT Pub. No. WO92/09139, PCT Pub. Date May 29, 1992

PCT Filed Nov. 15, 1991, Ser. No. 910,021

Claims priority, application Japan, Nov. 15, 1990, 2-307150

Int. Cl.[5] H02P *8/00*

U.S. Cl. 318—701 **16 Claims**



1. A reluctance type motor driven by a DC electric power source and having a motor main body including a rotor equipped with a plurality of salient-poles and an armature equipped with a plurality of magnetic poles respectively associated with a plurality of exciting coils, said reluctance type motor comprising:

a position detecting device having a number of position detecting elements spaced apart from each other so as to correspond to said plurality of exciting coils, and successively outputting position detecting signals in accordance with a rotational position of the rotor;

a current supply control circuit connected to the DC electric power source for successively activating said exciting coils by supplying respective exciting currents to said exciting coils in response to said position detecting signals;

circuit means having a plurality of capacitors, for promptly discharging a magnetic energy stored in one of said exciting coils into a corresponding one of said plurality of capacitors, as a charged voltage, to charge said one capacitor and rapidly extinguish the magnetic energy stored in said one exciting coil at the moment when the respective exciting current supplied to said one exciting coil is stopped, said circuit means also steeply building up an exciting current supplied to a subsequently activated exciting coil by use of the charged voltage in said one capacitor; and

said number of position detecting elements being disposed such that, an interval before any one of said salient-poles begins to enter any one of said magnetic poles, said current supply control circuit is initiated to supply the respective exciting current to the one of said exciting coils associated with said any one of said magnetic poles, and said position detecting device outputs one of said position detecting signals sufficient for continuing the current supply of the respective exciting current to the one exciting coil during a predetermined large electric angle.

5,355,070

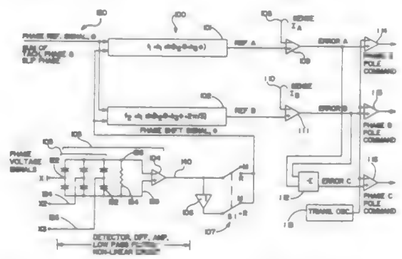
INDUCTION MOTOR DRIVE STABILITY CONTROL CIRCUIT

Alan G. Cocconi, Glendora, Calif., assignor to A. C. Propulsion, Inc., San Dimas, Calif.

Filed Mar. 10, 1993, Ser. No. 29,026

Int. Cl.[5] H02P *5/40*

U.S. Cl. 318—798 **1 Claim**



1. A stability controller for a polyphase electric motor comprising:

means for receiving a phase reference signal;

means for generating a phase shift signal that increases monotonically with motor e.m.f.; and

means for generating phase pole command signals from said phase reference and phase shift signals, wherein said means for generating phase pole command signals from a comparison of said phase reference and said phase shift signals comprises:

a first differential amplifier receiving said phase reference signal and a first current input signal and outputting a first error signal;

a second differential amplifier receiving said phase reference signal and a second current input signal and outputting a second error signal;

a summer receiving said first and second error signal and outputting a negative sum of said first and second error signals;

a triangular wave oscillator; and

fourth, fifth and sixth differential amplifiers, each receiving a signal from said triangular wave oscillator and respectively receiving said first, second and negative sum signals, said fourth, fifth and sixth differential amplifier outputting said phase pole command signals.

5,355,071

POWER SOURCE APPARATUS FOR VEHICLES

Hideo Ishida, Nagoya; Toshitaka Tanahashi, Okazaki, and Keiichiro Banzai, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 20, 1992, Ser. No. 871,230

Claims priority, application Japan, Apr. 24, 1991, 3-094102

Int. Cl.[5] H02J *7/14*

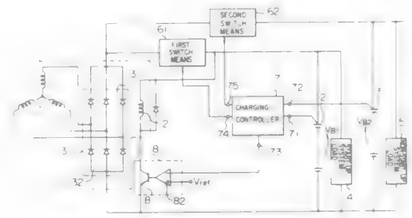
U.S. Cl. 320—6 **4 Claims**

1. A power source apparatus for vehicles comprising:

a first battery in a circuit for a start-up system used for driving a starter motor, and a second battery;

an alternating current generator for vehicles, for charging said first and second batteries; and

charging control means for detecting voltages of said first and second batteries, and comparing a drop of a voltage of said first battery with a drop of a voltage of said second battery, and controlling a duty factor of a charging current flowing from said generator to one of said batteries having a voltage drop larger than that of the other battery so as to equally charge said first and second batteries, said charging control means including means for charging said first battery with priority when the voltage of said first battery is lower than a lower limit voltage set beforehand,



wherein said first and second batteries have equal open terminal voltages, and said charging control means compares voltages of said first and second batteries with each other and exercises control so that the battery having a lower voltage may be charged with priority except when the voltage of said first battery is lower than a lower limit voltage set beforehand.

5,355,072

BATTERY DISCHARGING APPARATUS

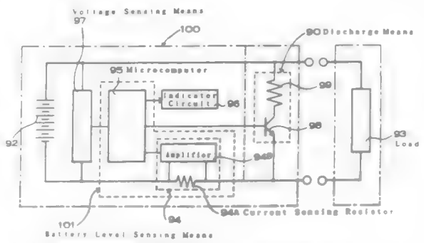
Eiji Satsuma; Tetsuya Okada, and Takahiro Yamashita, all of Sumoto, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jul. 22, 1992, Ser. No. 916,746

Claims priority, application Japan, Jul. 31, 1991, 3-060416[U]; Nov. 15, 1991, 3-300530; Jan. 23, 1992, 4-010146; May 27, 1992, 4-134951

Int. Cl.[5] H02J *7/10*

U.S. Cl. 320—13 **3 Claims**



1. A battery discharging apparatus comprising:

(a) a discharge means for discharging tile battery,

(b) a control means for controlling tile discharge means, and said control means provided with

(1) a current sensing means to determine whether or not power is flowing to or from tile battery, and

(2) a battery power capacity sensing means to determine battery capacity,

wherein tile control means controls the discharge means to begin battery discharge when said current sensing means determines that power is not flowing to or from the battery, and further, said battery power capacity sensing means determines that battery capacity is below a prescribed value.

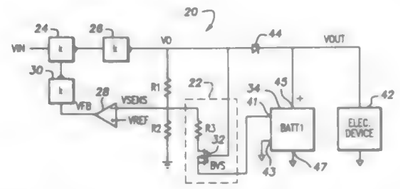
VOL 1167 ISS 2 OCT 11 1994 UMI

5,355,073

BATTERY PACK SENSOR FOR AN AC ADAPTER

Hai N. Nguyen, Spring, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Sep. 30, 1992, Ser. No. 954,008
Int. Cl.[5] H01M *10/44*; H02J *7/00*
U.S. Cl. 320—15 39 Claims



1. An AC adapter for charging a first battery pack if the first battery pack is present, and for charging a second battery pack if the second battery pack is present, the first and second battery packs having different voltages, said AC adapter comprising:

means having a sense input and an output for supplying power at said output, wherein the voltage level of said output is regulated by a sense signal provided at said sense input;

means coupled to said power supplying means for sensing the voltage level of said output and for providing said sense signal at a level so that said power supplying means regulates said output to a first voltage level appropriate for charging the first battery pack;

switching means coupled to said sense input and having a battery selection signal input for receiving a battery selection signal, wherein if said battery selection signal indicates that the second battery pack is present, said switching means modifies the level of said sense signal so that said power supplying means regulates said output to a second voltage level appropriate for charging the second battery pack; and

means coupled to said switching means and having a battery indicating input, said means for providing said battery selection signal, wherein said battery selection signal is set to a predetermined voltage level indicative of the second battery pack being present if said battery indicating input is connected to a predetermined voltage level and wherein said battery selection signal is not provided if said battery indicating input is unconnected.

5,355,074

GAS TURBINE GENERATOR UNIT

Norio Nakano, Tokyo, Japan, assignor to Nissan Motor Company, Ltd., Yokohoma, Japan

Filed Jan. 13, 1993, Ser. No. 3,912
Claims priority, application Japan, Jan. 14, 1992, 4-004541
Int. Cl.[5] H02K *5/00*
U.S. Cl. 322—1 18 Claims

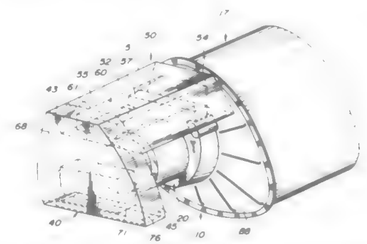
1. A gas turbine generator unit, comprising:

a gas turbine including a compressor and a rotor shaft;

a generator having a rotatable shaft which is coaxially connected with said gas turbine rotor shaft;

an air filter box having an air filter element and being arranged such that an extension of an axis of said generator rotatable shaft passes through said air filter box, said air filter box being located on an opposite side of said generator with respect to said compressor; and

an intake silencer for attenuating intake air noise, and being disposed to fluidly connect said air filter box with an air intake port of said compressor, said intake air silencer



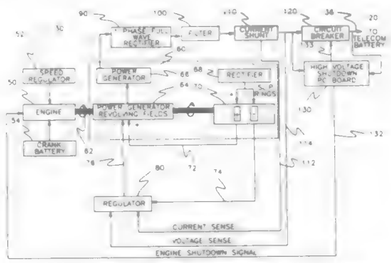
extending generally parallel with the axis of said generator rotatable shaft.

5,355,075

ROTATING TELECOMMUNICATIONS POWER SUPPLY

Grover C. Wilson, III, Eaton, Ohio, assignor to Hobart Brothers Company, Troy, Ohio

Filed Jan. 27, 1993, Ser. No. 9,768
Int. Cl.[5] H02J *7/14*
U.S. Cl. 322—25 9 Claims



1. In a telecommunications system including a battery connected to the telecommunications system, a connection to a source of normally available alternating current, a rectifier circuit and filter circuit for converting said alternating current source to direct current which is applied directly to said battery and to said telecommunications system, the improvement comprising

a low noise, essentially ripple free voltage and current regulated secondary source of direct current connected directly to said battery and telecommunications system, said secondary source including

an engine driven alternating current generator for providing a controllable output voltage and current to the battery and telecommunications system,

a regulator circuit for controlling the output voltage and current of said generator,

a second rectifier circuit for converting the generator output to a direct current output current and voltage,

a second filter circuit connected to the output current and voltage of said second rectifier circuit for providing an output voltage having a ripple component that does not exceed 100 mVolts and a noise value that does not exceed 32 dBrnc, and

a current sensor for monitoring the output current of said second rectifier circuit to the telecommunications system,

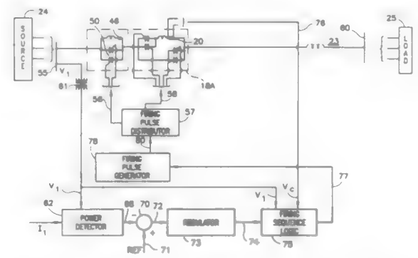
wherein said regulator circuit is responsive to said current sensor and said output current and voltage of said second rectifier circuit for providing a regulated output voltage level up to a predetermined maximum current output.

5,355,076

PHASE CONTROLLED CAPACITOR FOR SERIES COMPENSATION OF A HIGH VOLTAGE TRANSMISSION LINE

Philip Chadwick, Peterborough, Canada, assignor to General Electric Company, Hudson Falls, N.Y.

Continuation of Ser. No. 814,707, Dec. 30, 1991, abandoned.
This application Jun. 1, 1993, Ser. No. 70,018
Claims priority, application Canada, Apr. 25, 1991, 2041272
Int. Cl.[5] G05F *1/70*
U.S. Cl. 323—208 6 Claims



1. A power transmission system having a source of AC power at a predetermined supply frequency and a load for receiving AC power, said source and said load being connected by a transmission line, said transmission line having inductance and a series capacitor connected therein, and a compensating circuit arrangement for varying the effective reactance of the series capacitor in a smooth manner, said compensating circuit arrangement comprising:

first anti-parallel connected thyristors in series with said capacitor,

second anti-parallel connected thyristors and a bypass circuit connecting said second thyristors in parallel with said first thyristors and said capacitor, said bypass circuit having an impedance that is so low that said capacitor is effectively out of said power transmission line when one of said second thyristors is conducting current through said bypass circuit, and

control means for controlling the conductance of said first and second thyristors at desired times during each cycle of said supply frequency for varying the effective reactance of the capacitor.

5,355,077

HIGH EFFICIENCY REGULATOR WITH SHOOT-THROUGH CURRENT LIMITING

Barry K. Kates, Austin, Tex., assignor to Dell U.S.A., L.P., Austin, Tex.

Filed Apr. 27, 1992, Ser. No. 874,143
Int. Cl.[5] G05F *1/613*
U.S. Cl. 323—224 22 Claims

1. A regulator, comprising:

(a) a power input terminal;

(b) a regulated power output terminal;

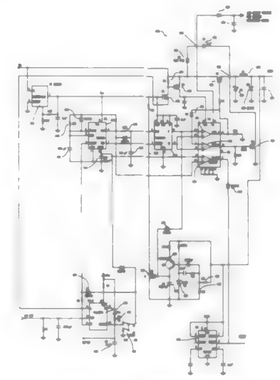
(c) an inductor and a pass switch in series between said input terminal and said output terminal, said inductor directly connected to said output terminal and said pass switch connected to said input terminal;

(d) a free-wheeling switch connecting said inductor and pass switch to ground;

(e) switch control circuitry with outputs connected to control inputs of said pass switch and said free-wheeling switch, said control circuitry including a feedback from said control input of said pass switch to delay turn-on said free-wheeling switch until said pass-switch has been turned off;

(f) said pass switch includes a first field effect transistor;

(g) said free-wheeling switch includes a second field effect transistor; and



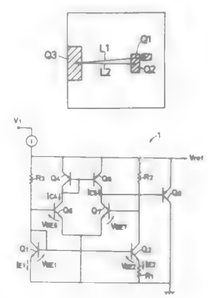
(h) said feedback includes a diode coupled from a driver for the gate of said second transistor to the gate of said first transistor.

5,355,078

SEMICONDUCTOR INTEGRATED CIRCUIT FOR A STABILIZED POWER SUPPLY CIRCUIT

Hironobu Demizu, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 2, 1993, Ser. No. 84,955
Claims priority, application Japan, Jul. 31, 1992, 4-205174
Int. Cl.[5] G05F *1/46*
U.S. Cl. 323—281 11 Claims



1. A semiconductor integrated power supply circuit, comprising:

an output transistor for receiving an input voltage and generating an output voltage;

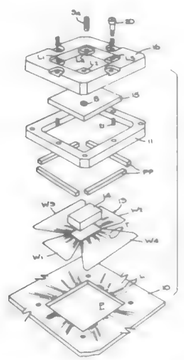
a reference voltage circuit also receiving the input voltage for supplying a reference voltage including a current mirror with a first transistor and a second transistor, the second transistor having an emitter area larger than that of the first transistor, wherein a first distance between the first transistor and the output transistor across the surface of the integrated circuit is greater than a second distance between the second transistor and the output transistor; and

a controller for determining a difference between the reference voltage and a feed back signal proportional to the output voltage for controlling the output transistor based

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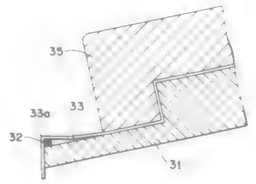
on the difference such that the output transistor generates a substantially constant output voltage independent of load changes.

5,355,079
PROBE ASSEMBLY FOR TESTING INTEGRATED CIRCUIT DEVICES
Arthur Evans, Brookfield Center; Joseph R. Baker, New Milford, and Jack Lander, Danbury, all of Conn., assignors to Wentworth Laboratories, Inc., Brookfield, Conn.
Filed Jan. 7, 1993, Ser. No. 1,759
Int. Cl.[5] G01R *1/06*
U.S. Cl. 324—754 **17 Claims**



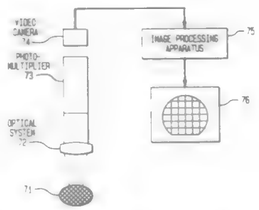
1. A probe assembly adapted to test an integrated circuit device having contact pads thereon deployed in a predetermined pattern in a common plane, said assembly comprising:
(a) a printed circuit board having a central port therein, said board being provided with leads which run from the port to terminals connectable to electronic instrumentation for testing said device;
(b) a film membrane having a planar dielectric contactor zone provided with an upper face and an under face and an array of suspension wings radiating therefrom, the under face of said zone having spring contact fingers anchored thereon which cantilever at a predetermined angle with respect to the plane of the zone whereby each finger is free to flex inwardly toward said zone, said fingers being deployed in a pattern matching that of the contact pads, said fingers being extensions of conductive traces running along the wings to the ends thereof; and
(c) means including a mounting ring surrounding said port and secured to said board to clamp the ends of the wings thereto and thereby to connect said traces to said leads, and to suspend said contactor zone so that it is disposed below the port in parallel relationship to said board, whereby when the device to be tested is raised, its contact pads are then engaged by the spring contact fingers which are caused to flex inwardly, and in doing so to scrub said contact pads to ensure an effective electrical contact with the fingers.

5,355,080
MULTI-POINT PROBE ASSEMBLY FOR TESTING ELECTRONIC DEVICE
Kaoru Sato, Tokyo, and Yutaka Okumura, Kanagawa, both of Japan, assignors to Giga Probe, Inc., Kanagawa, Japan
Continuation of Ser. No. 563,306, Aug. 6, 1990, abandoned. This application Nov. 17, 1993, Ser. No. 153,499
Claims priority, application Japan, Aug. 7, 1989, 1-204122
Int. Cl.[5] G01R *1/06, 31/02*
U.S. Cl. 324—761 **2 Claims**



1. A multi-point test probe assembly comprising a pin support;
a pin having first and second end portions with said first end portion of said pin being fixedly secured to said pin support and said second end portion of said pin including a contact portion for use in contacting a test surface, said pin support engaging said second end portion of said pin so as to deflect said second portion of the pin and induce a preload to the pin which biases said contact portion in a direction which is opposite to a direction along which said pin is to be brought into contact with the test surface and;
a rod which is disposed along a leading edge of said pin support, said second end portion having an angled end portion which extends downwardly at the leading edge of said pin support.

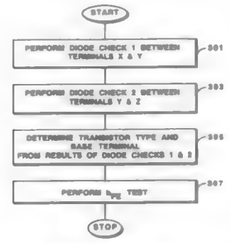
5,355,081
METHOD FOR TESTING A SEMICONDUCTOR INTEGRATED CIRCUIT HAVING SELF TESTING CIRCUIT
Yoshiro Nakata, Ikoma; Atsushi Fujiwara, Kadoma, and Akinori Shibayama, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Division of Ser. No. 767,998, Sep. 30, 1991, Pat. No. 5,248,936. This application May 20, 1993, Ser. No. 65,123
Claims priority, application Japan, Oct. 1, 1990, 2-264003
Int. Cl.[5] G01R *15/12*
U.S. Cl. 324—765 **4 Claims**



2. A method of testing a plurality of semiconductor integrated circuits formed on a substrate, each of said plurality of semiconductor integrated circuits comprising a main circuit, a self testing circuit for testing at least one part of functions of said main circuit, and a test result output circuit having at least one light emitting device for outputting test results from said self testing circuit in the form of light in a two-dimensional distribution, said method comprising the steps of:

inputting a test start signal to said self testing circuit so as to initiate operation of said self testing circuit;
detecting a two-dimensional distribution of light emitted from a plurality of said light emitting devices with an optical system, said light being emitted based on said test results from said self testing circuit; and
obtaining a two-dimensional map of said test results by an image processing technique, based on said two-dimensional distribution of said light.

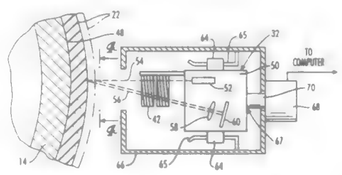
5,355,082
AUTOMATIC TRANSISTOR CHECKER
Paul T. Schreiber, Fort Worth, Tex., and Douglas R. Curtis, Los Gatos, Calif., assignors to Tandy Corporation, Ft. Worth, Tex.
Filed Mar. 27, 1992, Ser. No. 858,860
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—768 **8 Claims**



8. A method of determining a value for H_{fe} of a transistor under test having a base terminal, a second terminal and a third terminal the method comprising the steps of:
a. injecting a current into the second terminal of the transistor; and
b. measuring a current flowing in the base terminal of the transistor;
c. determining a first ratio of the current injected into the second terminal and the current measured in the base terminal;
d. injecting a current into the third terminal of the transistor;
e. measuring a current flowing in the base terminal of the transistor;
f. determining a second ratio of the current injected into the third terminal and the current measured in the base terminal; and
g. comparing the first ratio and the second ratio and identifying as the collector terminal the terminal into which current is injected to produce a larger ratio; and
h. determining a value for H_{fe} based on the result of step g.

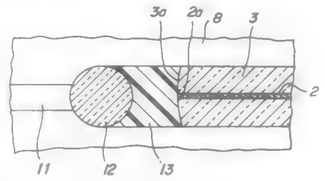
5,355,083
NON-CONTACT SENSOR AND METHOD USING INDUCTANCE AND LASER DISTANCE MEASUREMENTS FOR MEASURING THE THICKNESS OF A LAYER OF MATERIAL OVERLAYING A SUBSTRATE
Alan R. George, San Jose, and John A. Dahlquist, Palo Alto, both of Calif., assignors to Measurex Corporation, Cupertino, Calif.
Continuation-in-part of Ser. No. 272,104, Nov. 16, 1988, abandoned. This application Aug. 29, 1989, Ser. No. 399,845
Int. Cl.[5] G01B *7/10, 11/06, 11/14*
U.S. Cl. 324—229 **8 Claims**

1. A thickness measuring sensor for measuring the thickness of a solid material overlying an electrically conductive material without contacting the solid material, comprising:
an inductive separation distance measuring device, including a coil, for measuring a first distance between a portion of the conductive material/overlying material interface and a first reference location spaced from the overlying material; and
a laser separation distance measuring device, including a



laser disposed to direct a laser beam through the coil, for measuring a second distance between a portion of the exposed surface of the overlying material and a second reference location spaced from the overlying material.

5,355,084
OPTICAL MAGNETIC-FIELD SENSOR HAVING SPHERICAL LENSES FOR LIGHT COLLIMATION
Hisakazu Okajima, Nishikasugai, and Yuji Asai, Chita, both of Japan, assignors to NGK Insulators, Ltd., Japan
Filed Aug. 15, 1991, Ser. No. 745,191
Claims priority, application Japan, Aug. 30, 1990, 2-226551
Int. Cl.[5] G01R *33/032, 33/022, 3/00;* **G02F** *1/09*
U.S. Cl. 324—244.1 **3 Claims**



1. An optical magnetic field sensor, comprising:
a base;
optical parts and an optical element fixed relative to said base;
optical fibers for transmitting an optical signal to and from said optical parts and said optical element, said optical fibers having distal end portions fixed relative to said base;
a ferrule for receiving each optical fiber which is movable therein, said ferrule having a notch at one axial end thereof, said notch extending axially into the ferrule toward said distal end portion of its respective optical fiber;
spherical lenses for collimating said optical signals transmitted to and from said optical parts and said optical element, said spherical lenses being positioned within respective notches of said ferrules such that said spherical lenses are optically aligned with said distal end portions of said optical fibers; and
a synthetic resin member filled in each notch between said distal ends of the optical fibers and said spherical lenses.

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5,355,085

MULTICHANNEL SQUID FLUX METER HAVING MULTIPLEXED SQUID FLUX SENSORS

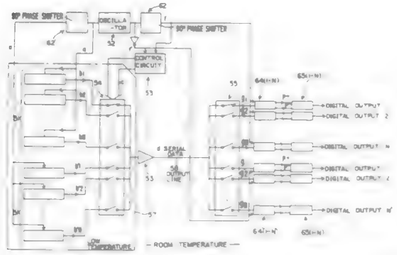
Yutaka Igarashi, Gotenba; Takao Goto, Kawasaki; Takehiko Hayashi, Kawasaki; Yoshiyasu Nakashima, Kawasaki; Norio Fujimaki, Atsugi; Hajime Hayashi, Yamato, and Kohtaro Gotoh, Tokyo, all of Japan, assignors to Fujitsu, Ltd., Kanagawa, Japan

Filed Mar. 20, 1991, Ser. No. 672,866

Claims priority, application Japan, Mar. 20, 1990, 2-70380; Nov. 30, 1990, 2-336401

Int. Cl.[5] G01R *33/035*

U.S. Cl. 324—248 15 Claims



1. A multichannel SQUID magnetometer for measuring external magnetic fields using a plurality of SQUID flux sensors, each of said SQUID flux sensors providing SQUID flux sensor output pulses and each of said SQUID flux sensors having an independently and simultaneously operated feedback circuit, comprising:

oscillator means for simultaneously supplying periodically-variable bias currents for each of said SQUID flux sensors;

first conversion means, formed of a superconducting circuit, for time division multiplexing after a predetermined time period has passed from a start of each cycle of the bias currents output pulses output from each SQUID sensor in a feedback state; and

second conversion means for demultiplexing multiplexed signals output from said first conversion means and distributing demultiplexed signals to a plurality of output terminals.

5,355,086

METHOD FOR THE GENERATION OF AN NMR SPECTRUM WITHOUT SIDE-BANDS

Dieter Ratzel, Rheinstetten, Fed. Rep. of Germany, assignor to Bruker Medizintechnik GmbH, Rheinstetten, Fed. Rep. of Germany

Filed Feb. 3, 1993, Ser. No. 12,578

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1992, 4203036

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—309 13 Claims

1. A method for the generation of a nuclear magnetic resonance (NMR) spectrum from a measuring volume comprising the steps of:

exposing the measuring volume to a highly homogeneous stationary magnetic field B_0;

irradiating, in a first run, a first radio frequency (RF)-pulse into the measuring volume to excite nuclear spins;

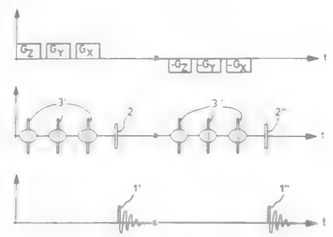
switching on and off a first magnetic gradient field G;

recording, in the absence of any magnetic gradient field, a first data set containing first observable measuring signals from the measuring volume;

irradiating, in a second run, a second radio frequency (RF)-pulse, which is essentially the same as the first (RF)-pulse, into the measuring volume to excite nuclear spins;

switching on and off a second magnetic gradient field −G having a polarity opposite to that of the first magnetic gradient field;

recording, in the absence of any magnetic gradient field, a second data set containing second observable measuring signals from the measuring volume; and



adding the first data set to the second data set to generate a corrected data set, whereby the corrected data set is subsequently analyzed to produce a spectrum with suppressed eddy current side-bands.

5,355,087

INTRACAVITY PROBE AND INTERFACE DEVICE FOR MRI IMAGING AND SPECTROSCOPY

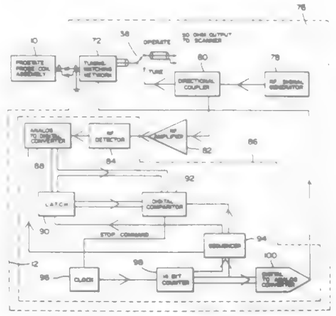
Theodore C. Claiborne, Gibsonia, Pa.; George J. Misic, Novelty, Ohio; Thomas R. Welch, Gibsonia, and Edward J. Rhinehart, Monroeville, both of Pa., assignors to Medrad, Inc., Pittsburgh, Pa.

Division of Ser. No. 315,875, Feb. 27, 1989. This application Feb. 11, 1991, Ser. No. 637,658

The portion of the term of this patent subsequent to Dec. 11, 2009, has been disclaimed.

Int. Cl.[5] G01R *33/20;* A61B *5/055*

U.S. Cl. 324—322 5 Claims



1. An interface network for interfacing a magnetic resonance imaging pickup probe with a magnetic resonance imaging scanner, said pickup probe having a receiving coil for electrical connection to said interface network by an interconnecting cable, said interface network comprising:

an input terminal for receiving as input said interconnecting cable of said pickup probe;

an output terminal for connection to said magnetic resonance imaging scanner; and

tuning means for tuning said pickup probe to a predetermined scanning frequency of said magnetic resonance imaging scanner, said tuning means comprising a series inductor, an input shunting varactor diode adjustable by a control voltage, and an output shunting capacitor, and wherein said interface network further comprises a circuit

for automatically adjusting the control voltage of said varactor diode for tuning the resonant frequency of said pickup probe to said predetermined scanning frequency of said magnetic resonance imaging scanner, and wherein said circuit for automatically tuning said pickup probe comprises:

a local RF signal generating means selectably coupled to said pickup probe for delivering an electrical signal thereto;

sampling means for sampling the power reflected from the pickup probe;

converting means for converting the sample of the reflected power to a DC signal level; and

slope detector means for detecting when said DC signal level reaches a zero slope as it drops from an initial value and adjusting the control voltage of said varactor diode according to the slope of said DC level signal.

5,355,088

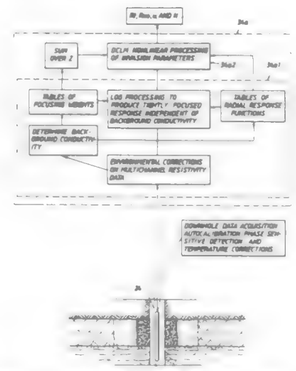
METHOD AND APPARATUS FOR DETERMINING PARAMETERS OF A TRANSITION ZONE OF A FORMATION TRAVERSED BY A WELLBORE AND GENERATING A MORE ACCURATE OUTPUT RECORD MEDIUM

Allen Q. Howard, Jr., Kingwood, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Apr. 16, 1991, Ser. No. 686,099

Int. Cl.[5] G01V *3/18*

U.S. Cl. 324—339 24 Claims



1. A system responsive to output signals from a wellbore tool adapted to be disposed in a wellbore for plotting a log on an output record medium, comprising

first means responsive to said output signals from said wellbore tool for generating a plurality of sets of invasion parameters corresponding, respectively, to a plurality of different depths in said wellbore, each of said sets of invasion parameters including a first parameter associated with a flushed zone in a formation traversed by said wellbore, second parameters associated with a transition zone in said formation, and a third parameter associated with an uninvaded zone in said formation,

said second parameters including a first value indicative of a midpoint of said transition zone between said flushed zone and said uninvaded zone and a second value related to a slope of a radial profile in said transition zone between said flushed zone and said uninvaded zone;

second means responsive to said plurality of sets of invasion parameters generated by said first means for determining a plurality of radial profiles in said formation traversed by said wellbore associated, respectively, with said plurality of different depths in said wellbore; and

third means for plotting said plurality of radial profiles representing said log on said output record medium, each of the radial profiles including said flushed zone determined by said first parameter, said transition zone determined by said second parameters, and said uninvaded zone determined by said third parameter.

5,355,089

MOISTURE BARRIER FOR BATTERY WITH ELECTROCHEMICAL TESTER

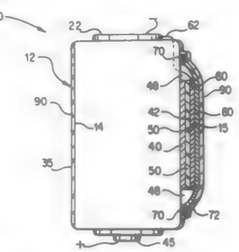
Jack Treger, Milton, Mass., assignor to Duracell Inc., Bethel, Conn.

Filed Jul. 22, 1992, Ser. No. 914,943

The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.

Int. Cl.[5] G01N *27/416*

U.S. Cl. 324—435 25 Claims



1. The combination of an electrochemical cell and a cell condition indicator, said indicator having at least one moisture sensitive component; wherein said electrochemical cell comprises a casing, a negative terminal, and a positive terminal; wherein said condition indicator comprises an indicator cell comprises an anode layer, a cathode layer, and an electrolyte in operative association with each other; and wherein said condition indicator is located proximally adjacent the outside surface of said casing; the combination further comprising a moisture barrier covering said indicator cell; and wherein at least one of the anode and cathode of said indicator cell provides a visually discernible indication of the condition of said electrochemical cell.

5,355,090

PHASE CORRECTOR FOR REDUNDANT CLOCK SYSTEMS AND METHOD

Raymond W. Pajowski, Oak Forest, and Bruce M. Bina, Naperville, both of Ill., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 730,033, Jul. 12, 1991, abandoned, which is a continuation of Ser. No. 418,301, Oct. 6, 1989, abandoned. This application Oct. 14, 1992, Ser. No. 124,318

Int. Cl.[5] H03K *7/00, 5/159*

U.S. Cl. 328—63 13 Claims

1. A redundant clock system for producing a pair of phase synchronized, master, clock output signals in response to a pair of asynchronous master clocks comprising:

a pair of substantially identical phase corrector circuits for respectively producing on clock outputs thereof the pair of delay compensated, phase synchronized, master, clock output signals, each of said phase corrector circuits having

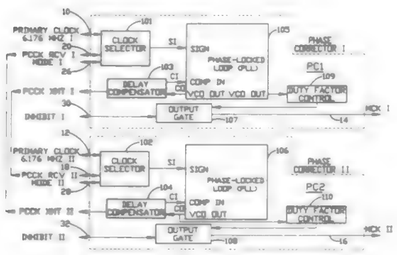
a pair of inputs, one of said pair of inputs connected to a respective one of the pair of master clocks to receive an asynchronous master clock signal therefrom and another one of said pair of inputs connected to receive the delay compensated, phase synchronized, clock output signal from the other phase corrector,

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means for producing on the clock output a phase synchronized, master, clock output signal based on a selected one of said asynchronous master clock signal and said delay compensated output signal at said pair of inputs,

means for selecting one of said master clock signal and said delay compensated output signal producing means, said selecting means introducing a propagation delay between the pair of inputs and the master clock output signal producing means, and

means connected between the producing means and the output of the phase corrector circuit, for causing the



delay compensated, phase synchronized, clock output signal to be provided with an amount of propagation delay to compensate for the propagation delay introduced by the selecting means for producing a phase synchronized, master clock output signal in phase with the selected one of said master clock signal and said delay compensated, phase synchronized, clock output signal; and

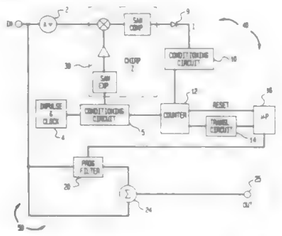
means for controlling both of the phase corrector circuits to selectively produce synchronous master clock output signals in response to different ones of the pair of inputs at each of the phase correctors.

5,355,091

APPARATUS FOR REAL TIME INTERFERENCE SIGNAL REJECTION

Stuart D. Albert, Bricktown, and William J. Skudera, Jr., Oceanport, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 21, 1992, Ser. No. 886,203
Int. Cl.[5] H04B *1/10*; G01S *7/36*
U.S. Cl. 328—167 **1 Claim**



1. An apparatus for real-time interference signal rejection, comprising:

an input terminal;

a chirp-z signal analyzer for deriving segregated time domain outputs of interference frequency components, said chirp-z signal analyzer electrically coupled to said input terminal;

a programmable filter means for interference frequency rejection electrically coupled to said input terminal, said programmable filter means programmed to reject said interference frequencies according to a set of filter tap values;

a digital counter electrically connected to said chirp-z signal analyzer through a first conditioning circuit;

a clock electrically connected to said digital counter and said chirp-z signal analyzer through a second conditioning circuit, wherein said clock provides an impulse to start said digital counter and wherein said chirp-z analyzer stops said counter at a critical number which represents a detected interference frequency;

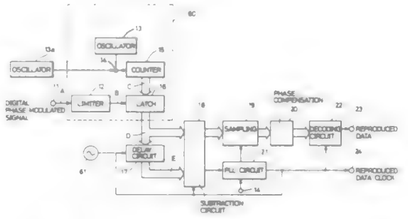
processing means electrically connected to said digital counter for said programmable filter means, said processing means reading said critical number from said digital counter and retrieving a set of tap values that correspond to said critical number from a set of predetermined tap values, and said processing means outputing said predetermined tap values to reprogram said programmable filter means, and a power combining means combining the said programmable filter output and an input signal from said input terminal, whereby the real-time interference signals are rejected.

5,355,092

RELATIVELY SIMPLE QPSK DEMODULATOR, THAT USES SUBSTANTIALLY ALL DIGITAL CIRCUITRY AND AN INTERNALLY GENERATED SYMBOL CLOCK, AND CIRCUITRY FOR USE THEREIN

Akio Kosaka; Toshinori Iinuma, and Masahiro Narita, all of Gifu, Japan, assignors to Sanyo Electric Co., Ltd., Osaka and Tottori Sanyo Electric Co., Ltd., Tottori, both of Japan

Filed Jun. 24, 1993, Ser. No. 83,546
Claims priority, application Japan, Jun. 26, 1992, 4-169200; Jul. 8, 1992, 4-181055; Jul. 23, 1992, 4-197133; Feb. 3, 1993, 5-016391
Int. Cl.[5] H03D *3/00, 3/18*
U.S. Cl. 329—304 **27 Claims**



1. A digital demodulator comprising:

an input terminal to which a digital phase modulated analog signal is applied, said digital phase modulated analog signal containing symbol data that occurs at a given symbol period;

means for converting said digital phase modulated analog signal into a phase modulated digital signal, said phase modulated digital signal possessing a digitized amplitude wherein said digitized amplitude is a logic level that corresponds to an amplitude value of said digital phase modulated analog signal;

a first clock signal source for supplying a reference clock signal having a constant reference frequency;

means for counting said reference clock signal in order to generate a counted value;

means, responsive to said phase modulated digital signal, for storing the counted value, at the occurrence of one of a plurality of pre-defined periodically occurring points in said phase modulated digital signal, so as to form a stored value;

means for delaying the stored value for the given symbol period so as to form a delayed value;

means for subtracting the delayed value from the stored value in order to provide phase change data;

a second clock signal source, responsive to said phase change data, for generating a symbol clock signal, wherein said symbol clock signal has a symbol period defined by said phase change data;

means for sampling the phase change data in response to the symbol clock signal in order to generate sampled phase change data; and

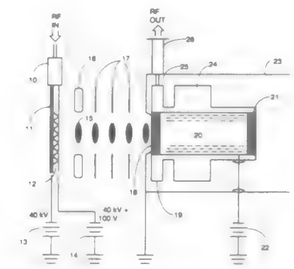
means for decoding the sampled phase change data in order to reproduce the symbol data.

5,355,093

COMPACT MICROWAVE AND MILLIMETER WAVE AMPLIFIER

Todd A. Treado, 5 Winter St., Merrimac, Mass. 01860, and Shiow-Hwa Lin, 5436 Dalen Ave., San Diego, Calif. 92122

Filed Dec. 23, 1992, Ser. No. 996,963
Int. Cl.[5] H03F *3/56*
U.S. Cl. 330—45 **1 Claim**



1. An amplifier device for amplifying microwaves or millimeter wave input signals comprising:

a) an output circuit resonant at microwave frequencies;

b) a diamond switch means connecting said output circuit to a high voltage source so as to provide a high voltage to said output circuit wherein said diamond switch is effectively closed by illuminating with a pulse of electrons;

c) a gated field emission array means for providing pulses of electrons at microwave or millimeter wave frequencies upon stimulation with a varying electric field provided by the input signal; and;

d) a beam control means for accelerating and directing said pulses to produce an electron beam pulsing at the frequency of the input signal for illuminating said diamond switch.

5,355,094

FEEDBACK DIFFERENTIAL AMPLIFIER CIRCUIT

Masaaki Soda, Tokyo, Japan, assignor to NEC Corporation, Japan

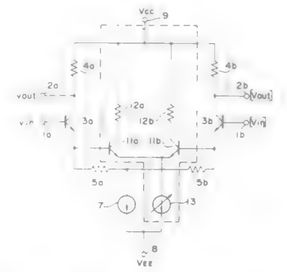
Filed Apr. 21, 1993, Ser. No. 51,072
Claims priority, application Japan, Apr. 22, 1992, 4-129665
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—260 **9 Claims**

1. A feedback differential amplifier circuit having a differential amplifier and a peaking circuit, wherein:

said peaking circuit comprises a capacitance circuit having a variable capacitance and a feedback circuit;

said differential amplifier comprises first and second three-terminal type amplifying elements and first and second resistive elements, each of the first and second amplifying elements having two output terminals and an input terminal;

one of the output terminals of said first amplifying element being adapted to be coupled to a first electric potential through said first resistive element, and one of the output terminals of said second amplifying element being adapted to be coupled to said first electric potential through said second resistive element;



the other output terminal of said first amplifying element being adapted to be coupled to an input of said variable capacitance circuit and an input of said feedback circuit; and

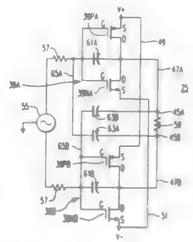
the other output terminal of said second amplifying element being adapted to be coupled to an input of said variable capacitance circuit and an input of said feedback circuit.

5,355,095

BROADBAND MICROWAVE INTEGRATED CIRCUIT AMPLIFIER WITH CAPACITIVE NEUTRALIZATION

Harvey C. Nathanson, Pittsburgh, and Richard J. Ravas, Penn Twp., Westmoreland County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 21, 1992, Ser. No. 838,971
Int. Cl.[5] H03F *3/18*
U.S. Cl. 330—264 **6 Claims**



1. A broadband power amplifier for signals having a frequency up to and into the gigahertz range and higher, comprising:

a wafer of semiconductor material having an insulating layer spaced from a top surface with an active layer of semiconductor material between said insulating layer and said top surface;

first and second amplifier devices formed in said active silicon layer, each of said amplifier devices having parasitic capacitance;

first and second inputs;

first and second outputs;

means connecting said first and second amplifier devices in push-pull circuit configuration between said first and second inputs and said first and second outputs; and

a first neutralization capacitor connected between said first

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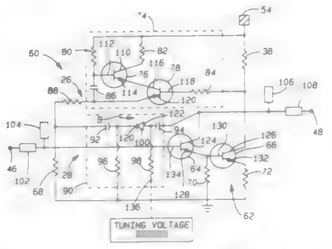
input and said second output, and a second neutralization capacitor connected between said second input and said first output, with each of said first and second neutralizing capacitors having a capacitance approximating the parasitic capacitance of one of said amplifier devices.

5,355,096

COMPACE HBT WIDE BAND MICROWAVE VARIABLE GAIN ACTIVE FEEDBACK AMPLIFIER

Kevin W. Kobayashi, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jul. 6, 1993, Ser. No. 87,949
Int. Cl.[5] H03G *3/12*
U.S. Cl. 330—278 12 Claims



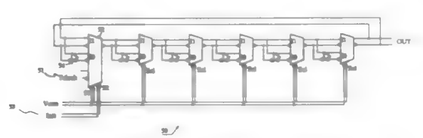
1. A variable gain amplifier comprising:
first transistor including a base, an emitter, and a collector;
first parallel feedback means connected to the collector and the base of the first transistor for providing an active feedback impedance; and
second parallel feedback means-connected to the collector and the base of the first transistor for providing a variable resistive impedance and including a monolithically integrated p-i-n diode having a quiescent bias current flowing therethrough,
wherein a gain response of said first transistor is related to the variable resistive impedance of said second parallel feedback means.

5,355,097

POTENTIOMETRIC OSCILLATOR WITH RESET AND TEST INPUT

Paul H. Scott, San Jose, and Bertrand J. Williams, Campbell, both of Calif., assignors to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Sep. 11, 1992, Ser. No. 943,708
Int. Cl.[5] H03B *1/04*; H03L *3/00, 7/099*
U.S. Cl. 331—1 A 14 Claims



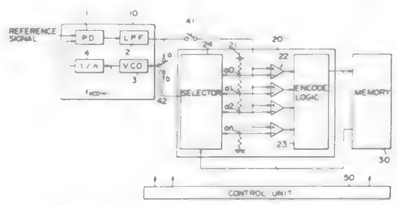
1. A voltage-controlled oscillator for generating a clock signal, said voltage-controlled oscillator comprising:
a plurality of multiplexers coupled in series, said plurality of multiplexers including a first multiplexer and a last multiplexer, each of said plurality of multiplexers having a signal input, a select input, and a signal output, said signal input of each of said plurality of multiplexers except said first multiplexer being electrically coupled with said signal output of a previous multiplexer of said plurality of multiplexers for receiving one of a first and second input signal from said previous multiplexer, said second input signal being said first input signal with a predetermined delay, said signal output of each of said plurality of multiplexers except said last multiplexer being electrically coupled with said signal input of a next multiplexer of said plurality of multiplexers for propagating one of said first and second input signals to said next multiplexer in response to a select signal applied at said select input, said last multiplexer generating said one of said first and second input signals as an output signal in response to said select signal applied at its select input:
a test circuit for generating a test signal of predetermined logic level;
a 3-input multiplexer having first, second and third signal inputs, a select input, and a signal output, said first and second signal input of said 3-input multiplexer being electrically coupled with said signal output of said last multiplexer for receiving said output signal, said signal output of said 3-input multiplexer being electrically coupled with said signal input of said first multiplexer, wherein said plurality of multiplexers and said 3-input multiplexer form a ring oscillator, said 3-input multiplexer receiving said first and second input signals at said first and second signal inputs of said 3-input multiplexer from said last multiplexer of said plurality of multiplexers and receiving said test signal as a third input signal at said third signal input, said 3-input multiplexer propagating one of said first, second and third input signals to said first multiplexer of said plurality of multiplexers;
a selecting circuit electrically coupled with said select input of each of said plurality of multiplexers and said select input of said 3-input multiplexer for generating said select signal to select one of said first and second input signals, said selected input signal being propagated through said ring oscillator; and
a initiator electrically coupled with said 3-input multiplexer for generating an initiate signal to select said test signal to be generated at said signal output of said 3-input multiplexer, said initiate signal overriding said select signal such that said test signal propagates through said ring oscillator with said predetermined logic level.

5,355,098

PHASE-LOCKED LOOP WITH MEMORY STORING CONTROL DATA CONTROLLING THE OSCILLATION FREQUENCY

Keiichi Iwasaki, Suita, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 22, 1993, Ser. No. 50,608
Claims priority, application Japan, Apr. 24, 1992, 4-132036
Int. Cl.[5] H03L *1/02, 7/10, 7/18*
U.S. Cl. 331—14 22 Claims



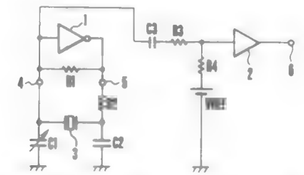
1. A phase-locked loop, comprising:
a voltage-controlled oscillator;
a phase detector having inputs connected to an output of the voltage-controlled oscillator and an external reference signal source, respectively;
a low-pass filter having an input connected to an output of the phase detector;
an electronic switch connecting an output of the low-pass filter to the oscillator input when the switch is in a first position;
the voltage-controlled oscillator, the phase detector and the low-pass filter thereby forming said loop when the switch is in said first position;
an analog-to-digital converter having an input connected to an output of the low-pass filter for receiving analog signals output by said low-pass filter and for outputting digital signals corresponding to said received analog signals;
a memory connected to an output of the analog-to-digital converter for storing digital data corresponding to said digital signals output by said analog-to-digital converter;
a digital-to-analog converter, connected to the memory through which control data corresponding to said stored digital data is read out from said memory;
the electronic switch connecting an output of the digital-to-analog converter to the input of the voltage-controlled oscillator when the switch is in a second position;
a control unit controlling an operation of said loop; and
the analog-to-digital converter comprising a reference voltage source, a comparator for comparing a plurality of individual reference voltages with the input of the voltage-controlled oscillator, an encode logic providing an appropriate digital output in accordance with an output of the comparator, and the digital-to-analog converter comprising a reference voltage source and a selector to output an individual reference voltage as analog equivalents of the control data, and the reference voltage source in the analog-to-digital converter being also used for the reference voltage source in the digital-to-analog converter.

5,355,099

SIGNAL GENERATING DEVICE

Fumio Murooka, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 25, 1992, Ser. No. 904,206
Claims priority, application Japan, Jul. 2, 1991, 3-161519
Int. Cl.[5] H03B *5/32*
U.S. Cl. 331—158 5 Claims



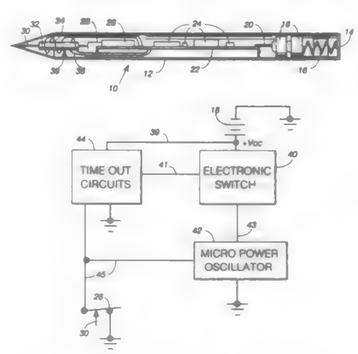
1. A signal generating device for generating a signal, comprising:
(A) a crystal oscillating element;
(B) an inverter connected in parallel with said crystal oscillating element;
(C) amplitude adjusting means for adjusting an amplitude of a signal produced at an input side of said inverter;
(D) capacity-coupling means for providing capacity-coupling of the signal produced at the input side of said inverter;
(E) a level adjusting circuit for adjusting a level of the signal fed through said capacity coupling means; and
(F) an amplifier circuit for amplifying the signal having its level adjusted by said level adjusting circuit and for outputting the amplified signal.

5,355,100

BATTERY POWERED MAGNETIC PEN WITH TIME OUT TO PREVENT ACCIDENTAL BATTERY DISCHARGE

Salvatore R. Riggio, Jr., Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 11, 1993, Ser. No. 3,084
Int. Cl.[5] H03B *1/00*
U.S. Cl. 331—173 7 Claims



1. A battery-powered magnetic pen comprising:
an elongated casing of a size adapted to be handheld and manipulated by a user;
a battery enclosed in said casing for supplying power to operate said pen;
an actuating rod mounted at one end of said casing for movement between first and second positions; and
electrical circuit means enclosed in said casing, said circuit means comprising
means including a power line and a ground for distributing power from said battery,
a tip switch actuated in response to movement of said actuating rod between said first position and said second position,
a pulse generator for generating a pulse in response to actuation of said tip switch each time said rod is moved between said first position and said second position,
a selectively operated oscillator for generating and emitting a magnetic field having a frequency equal to the frequency of oscillation of said oscillator,
a normally-open selectively-actuated second switch connected between said power line and said oscillator for connecting said oscillator to said power line and disconnecting said oscillator from said power line to respectively turn said oscillator on and off in response to closing and opening of said second switch,
actuating means for closing said second switch and turning on said oscillator in response to a first pulse generated when said rod is moved from said first position to said second position,
a resettable timing means for timing a time-out period of predetermined duration, said timing means being reset in response to each pulse generated while said oscillator is turned on, and
time-out actuating means operative, in response to said timing means completing timing of a time-out period, for opening said second switch and turning said oscillator off when said actuating rod has been in said first position for a period of time equal to said time-out period and when said actuating rod has been in said second position for a period of time equal to said time-out period.

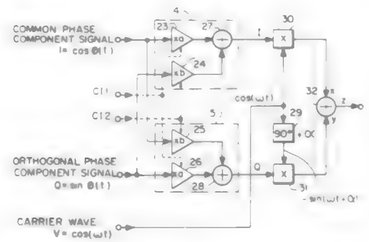
VOL 1167 ISS 2 OCT 11 1994 UMI

5,355,101

QUADRATURE MODULATOR HAVING CIRCIUT FOR CORRECTING PHASE ERROR

Masaki Ichihara, and Tsuguo Maru, both of Tokyo, Japan, assignors to Nec Corporation, Tokyo, Japan

Filed Nov. 9, 1992, Ser. No. 973,762
Claims priority, application Japan, Nov. 8, 1991, 3-321219
Int. Cl.[5] H03C *3/40;* **H04L** *27/20*
U.S. Cl. 332—103 **4 Claims**



1. A quadrature modulator for generating a modulated output signal in response to a first signal and a second signal which has a quadrature phase relationship with said first signal, said modulator comprising a first multiplier receiving said first signal and generating a third signal by multiplying said first signal by a first factor, a second multiplier receiving said second signal and generating a fourth signal by multiplying said second signal by a second factor, a third multiplier receiving said first signal and generating a fifth signal by multiplying said first signal by said second factor, a fourth multiplier receiving said second signal and generating a sixth signal by multiplying said second signal by said first factor, a first adder receiving said third and fourth signals and generating a seventh signal by adding said fourth signal to said third signal in a first polarity, a second adder receiving said fifth and sixth signals and generating an eighth signal by adding said fifth signal to said sixth signal in said first polarity, a fifth multiplier receiving said seventh signal and a carrier wave signal and generating a ninth signal by multiplying said seventh signal and said carrier wave signal, a phase shifter receiving said carrier wave signal and generating a phase-shifted carrier wave signal by shifting a phase of said carrier wave signal by a predetermined value with a phase error, a sixth multiplier receiving said eighth signal and said phase-shifted carrier wave signal and generating a tenth signal by multiplying said eighth signal and said phase-shifted carrier wave signal, and a third adder receiving said ninth and tenth signals and generating said modulated output signal by adding said ninth and said tenth signals, each of said first and second factors having such a value that is relative to said phase error of said phase shifter to thereby keep said modulated output signal free from a spurious component with respect to an angular frequency of said carrier wave signal.

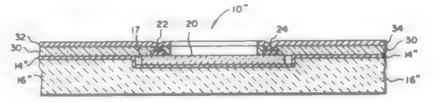
5,355,102

HDI IMPEDANCE MATCHED MICROWAVE CIRCUIT ASSEMBLY

William P. Korarumpf, Albany; Robert J. Wojnarowski, Ballston Lake, and Charles W. Eichelberger, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 504,821, Apr. 5, 1990, abandoned. This application Apr. 14, 1992, Ser. No. 869,090
Int. Cl.[5] H03H *7/38;* **H05K** *3/10, 3/30*
U.S. Cl. 333—33 **22 Claims**

1. A electronic system comprising:
a substrate having a first surface;
a ground plane conductor disposed on said first surface;
an electronic component disposed on a surface of said ground plane conductor, said component having a first surface facing away from said ground plane conductor and a terminal disposed on said first surface of said electronic component, said electronic component having an impedance as seen at said terminal;
a dielectric layer overlying and bonded to at least portions of said ground plane conductor and said first surface of said electronic component; and
at least one signal conductor disposed in ohmic electrical contact with said terminal of said electronic component



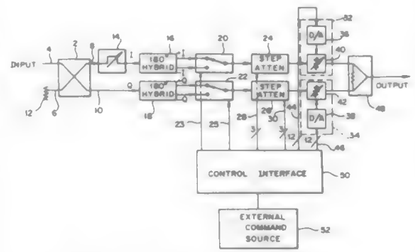
and spaced from at least some portions of said electronic component by said dielectric layer, and extending from over said component to over said first surface of said substrate; and
said ground plane conductor being spaced from said signal conductor by said dielectric layer to form with said signal conductor a transmission line having an impedance which matches the impedance of said electronic component as seen at said terminal.

5,355,103

FAST SETTLING, WIDE DYNAMIC RANGE VECTOR MODULATOR

John P. Kozak, Simi Valley, Calif., assignor to American Nucleonics Corporation, Westlake, Calif.

Filed Jun. 29, 1990, Ser. No. 546,581
Int. Cl.[5] H01P *1/22;* **H03H** *5/00;* **H04B** *1/10, 1/18*
U.S. Cl. 333—81 R **8 Claims**



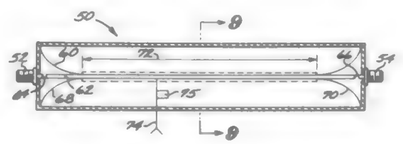
1. A vector modulator, which comprises:
means responsive to an RF signal for providing a primary in-phase component signal and a primary quadrature phase component signal corresponding to the RF signal;
means responsive to the primary in-phase component signal for providing first and second secondary in-phase component signals, each corresponding to the primary in-phase component signal, the first secondary in-phase component signal being 180° out of phase with the second secondary in-phase component signal;
means responsive to the primary quadrature phase component signal for providing first and second secondary quadrature phase component signals, each corresponding to the primary quadrature phase component signal, the first secondary quadrature phase component signal being 180° out of phase with the second secondary quadrature phase component signal;
first switching means for selecting one of the first and second secondary in-phase component signals in response to a first control signal, and providing a selected in-phase component signal corresponding thereto;
second switching means for selecting one of the first and second secondary quadrature phase component signals in response to a second control signal, and providing a selected quadrature phase component signal corresponding thereto;
first coarse attenuation means for providing coarse attenuation to the selected in-phase component signal, the first coarse attenuation means being responsive to the selected in-phase component signal and attenuating the selected in-phase component signal by a predetermined amount in accordance with a third control signal provided to the first coarse attenuation means, and providing a coarse attenuated in-phase component signal;
second coarse attenuation means for providing coarse attenuation to the selected quadrature phase component signal, the second coarse attenuation means being responsive to the selected quadrature phase component signal and attenuating the selected quadrature phase component signal by a predetermined amount in accordance with a fourth control signal provided to the second coarse attenuation means, and providing a coarse attenuated quadrature phase component signal;
first fine attenuation means for providing fine attenuation to the selected in-phase component signal, the first fine attenuation means being responsive to the coarse attenuated in-phase componeat signal and attenuating the coarse attenuated in-phase component signal by a predetermined amount in accordance with a fifth control signal provided to the first fine attenuation means, and providing a fine attenuated in-phase component signal;
second fine attenuation means for providing fine attenuation to the selected quadrature phase component signal, the second fine attenuation means being responsive to the coarse attenuated quadrature phase component signal and attenuating the coarse attenuated quadrature phase component signal by a predetermined amount in accordance with a sixth control signal provided to the second fine attenuation means, and providing a fine attenuated quadrature phase component signal; and
signal combining means for combining the fine attenuated in-phase and quadrature phase component signals, the signal combining means being responsive to and summing the fine attenuated in-phase component signal and the fine attenuated quadrature phase component signal, and providing an output signal corresponding thereto.

5,355,104

PHASE SHIFT DEVICE USING VOLTAGE-CONTROLLABLE DIELECTRICS

Ronald I. Wolfson, Los Angeles; Clifton Quan, Arcadia, and Donald R. Rohweller, Torrance, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 29, 1993, Ser. No. 10,943
Int. Cl.[5] H01P *1/18, 3/08*
U.S. Cl. 333—161 **14 Claims**



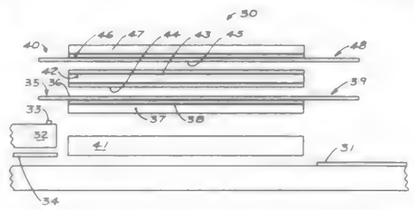
1. An RF phase shift device, comprising:
first and second spaced groundplanes;
a conductive housing, said housing comprising said first and second groundplanes and first and second sidewalls extending generally perpendicularly to said groundplanes;
first and second spaced conductors disposed between said groundplanes, said conductors being separated by a gap;
a dielectric material disposed in said gap, said material characterized by a dielectric constant which varies in value when a voltage is applied to said dielectric material;
means for applying a control signal to said dielectric material to set the value of the dielectric constant at a predetermined value in order to provide a desired phase delay region through said device;
means for exciting said first and second conductors by an RF signal to provide an anti-phase signal in said phase delay region; and
wherein said groundplanes, said conductors and said dielectric material comprise a suspended stripline transmission line in said region, and wherein said second conductor tapers to a greater width on each side of said region to form a microstrip groundplane of a microstrip-to-balanced stripline transition.

5,355,105

MULTI-LAYER FLEXIBLE PRINTED CIRCUIT AND METHOD OF MAKING SAME

Thomas L. Angelucci, Sr., 89 Charlan Cir., Cherry Hill, N.J. 08003

Filed Apr. 12, 1993, Ser. No. 46,407
Int. Cl.[5] H01P *3/08*
U.S. Cl. 333—238 **15 Claims**



7. A multi-layer flexible printed circuit comprising:
a conductive signal plane layer defining strip line leads attached to the top of and supported by an apertured first lead carrier dielectric flexible film
a conductive ground plane layer attached to the bottom of and supported by a second apertured lead carrier dielectric flexible film,
a dielectric spacer layer having a predetermined controlled thickness determined by calculating a desired characteristic impedance for a strip line, and
a pair of adhesive layers one on each side of said dielectric spacer layer for attaching said dielectric layer to said conductive signal plane layer and said conductive ground plane layer forming a plurality of strip lines open TAB leads extending outward on said signal layer having a characteristic impedance Z_0 which is proportional to the thickness of said dielectric spacer.

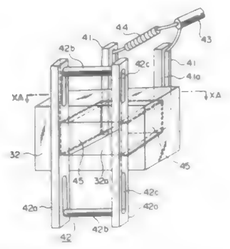
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5,355,106

PULSE ELECTROMAGNET FOR APPARATUS FOR ACCUMULATING CHARGED PARTICLES

Shuhei Nakata, and Chihiro Tsukishima, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 861,437, Apr. 1, 1992, Pat. No. 5,216,377, which is a division of Ser. No. 440,250, Nov. 22, 1989, Pat. No. 5,138,270. This application Mar. 22, 1993, Ser. No. 35,259
Claims priority, application Japan, Nov. 24, 1988, 63-294663; Dec. 22, 1988, 63-322125; Feb. 13, 1989, 1-31151; Mar. 17, 1989, 1-65668
Int. Cl.[5] H01F 7/06
U.S. Cl. 335—212 5 Claims



1. A pulse electromagnet unit for supplying a pulsed magnetic field to a charged particle beam in a charged particle accumulator to change the orbital path of the charged particles, said electromagnet unit comprising:

a transmission line for supplying an exciting current;

a core having a cavity extending along a center axis and having an opening at each of two faces;

a pair of elongated current introducing terminals disposed on opposite sides of the opening of the cavity, said current introducing terminals having elongated grooves for selectively attaching said transmission line at positions along the grooves in said current introducing terminals;

a return yoke assembly having a pair of elongated return yoke members disposed on opposite sides of the opening of the cavity, two conductor rods for electrically connecting opposite end portions of said pair of return yoke members, and elongated grooves in opposite end portions of said return yoke members for selectively attaching said conductor rods along the grooves in said return yoke members; and

a pair of plate coils extending through the cavity of said core along a pair of opposite inner surfaces of said core, each of said plate coils being connected at one end to one of said pair of current introducing terminals and at another end to one of said pair of return yoke members whereby the rise time of the pulsed magnetic field produced can be changed by selecting the attachment positions of said transmission line and said conductor rods, thereby selecting the coil inductance.

5,355,107

DEFLECTION YOKE WITH LEAKING MAGNETIC FIELD PREVENTION COILS

Sungku Hwang, Seoul; Changsik Kang, Kyunggi-do; Samkyeong Lee, Kyunggi-do, and Sanghyuk Yeun, Kyunggi-do, all of Rep. of Korea, assignors to Samsung Electron Devices Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Nov. 25, 1992, Ser. No. 981,871
Claims priority, application Rep. of Korea, Dec. 6, 1991, 91-22324; Jun. 15, 1992, 92-10659[U]
Int. Cl.[5] H01H 5/00; H01J 29/06
U.S. Cl. 335—214 1 Claim

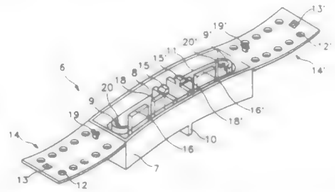
1. A deflection yoke comprising:

a leaking magnetic field preventing member for creating a magnetic field in a direction contrary to that of a leaking magnetic field from a horizontal deflecting coil,

the leaking magnetic field preventing member comprising a pair of coils disposed on opposite sides of and facing a flange part of the deflection yoke centering around the center axis of the deflection yoke;

a pair of cases, each case for receiving one of the coils, each case comprising coil winding parts disposed on side ends of a space formed in the case, each of the coil winding parts being formed in a semicircular shape;

coil drawing holes formed by penetrating the bottom of the coil winding parts for drawing out the coil in the case when the coil is wound on the coil winding parts and thus both side ends of the coil are electrically connected;



attaching parts formed on the case for fixing the case on a corresponding part formed on the flange part;

cover means for covering the open part of the case connected to the case so as to be rotatable outwardly;

cover supporting means formed in the space in the case for supporting the cover means;

engaging means formed in the cover means and corresponding to the cover supporting means for fixing the cover means on the cover supporting means; and

a plurality of heat emitting holes formed in the cover means to emit the heat generated from the coil,

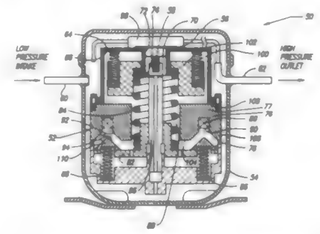
wherein a combining part is formed on each of the coil winding parts, and wedges for attaching each said combining part, respectively are formed on the cover means at a position corresponding to each said combining part.

5,355,108

ELECTROMAGNETICALLY ACTUATED COMPRESSOR VALVE

Fernando B. Morinigo, Los Angeles, and Keith O. Stuart, Cypress, both of Calif., assignors to Aura Systems, Inc., El Segundo, Calif.

Continuation-in-part of Ser. No. 957,194, Oct. 5, 1992. This application Dec. 9, 1992, Ser. No. 988,280
Int. Cl.[5] H01F 3/00, 7/08, 7/12; F16K 31/02
U.S. Cl. 335—262 13 Claims



1. An electromagnetic actuator for actuating an external load comprising:

an electromagnetic element, said electromagnetic element including a core and a coil, said core having a first surface and an opening at said first surface extending through said core, said first surface further having a continuous channel extending around said opening, said channel having a top portion of frustoconical cross-section and a bottom portion, said coil being disposed in said bottom portion; and

an armature element, said armature element having a raised portion of frustoconical cross-section dimensioned to be received within said top portion of said channel, said armature further being in a normally biased initial spaced apart position from said electromagnetic element, said armature being connected to the external load;

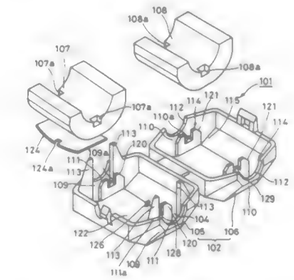
wherein applying current to the coil in the electromagnetic element causes the armature to move toward the electromagnetic element, and interrupting the current to the coil causes the armature to move away from the electromagnetic element.

5,355,109

ELECTRIC NOISE ABSORBER

Yasuo Yamazaki, Tougane, Japan, assignor to Kitagawa Industries Co., Ltd., Japan

Filed Feb. 2, 1993, Ser. No. 12,540
Claims priority, application Japan, Feb. 3, 1992, 4-003501[U]
Int. Cl.[5] H01F 17/06, 27/02, 27/26
U.S. Cl. 336—92 13 Claims



1. An electric noise absorber comprising:

a pair of magnetic bodies for surrounding an outer periphery of at least one electric wire to absorb noise current flowing through the electric wire;

a hollow openable and closable holding case formed by a first and a second hollow case member, both said first and second hollow case members being open on one side for holding one of said pair of magnetic bodies therein, the open sides of said case members being joinable together to form a closed holding case with said pair of magnetic bodies being accommodated therein, and half through holes being formed in opposite ends of said case members, adjacent the open side, such that the half through holes form a through hole extending through the holding case, when the case members are joined together, for holding the electric wire therein;

at least one wire support member extending from an end portion of said first case member, said support member directly abutting and being resiliently deformed by an opposed surface of said second case member when the case members are joined together; and

an indentation being formed in said second case member for receiving said wire support member when the holding case is closed by joining said two case members;

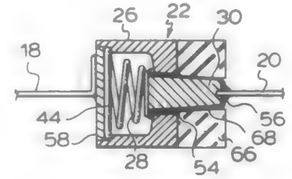
wherein, upon joining said case members together, said wire support member is biased by said indentation against a said wire accommodated within the through hole and secures said noise absorber in place at a desired location along that said wire.

5,355,110

DUAL ELEMENT FUSE

Mary A. Ruggiero, Toronto; Tony Biasutti, Mississauga; Peter Morgan, and Brian A. Young, both of Toronto, all of Canada, assignors to Nor-Am Electrical Limited, Toronto, Canada

Continuation-in-part of Ser. No. 994,951, Dec. 22, 1992, Pat. No. 5,254,967. This application Sep. 15, 1993, Ser. No. 120,752
Claims priority, application Canada, Oct. 2, 1992, 2079772
The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.
Int. Cl.[5] H01H 71/20
U.S. Cl. 337—165 33 Claims



1. An electrical interruption device to interrupt current flow therethrough on a predetermined condition occurring, the device comprising,

a plunger,

said plunger including lubrication means,

spring means having an inherent tendency to assume an unbiased first position, and being deformable from the unbiased first position to a second loaded position,

said spring means engaging said plunger,

holding means for releasably securing the spring means in the second loaded position,

a sleeve of insulating material disposed about and in contact with a portion of said plunger,

said lubrication means adjacent said sleeve,

when said spring means is in said second loaded position said plunger permitting current flow, wherein on said predetermined condition occurring said holding means releasing said spring means to permit said spring means to move towards the unbiased position, said spring means in moving towards said unbiased first position moving the plunger relative to said sleeve to a position to actuate interruption of current flow.

5,355,111

NESTED CONTACT AND CAP ASSEMBLY FOR FUSEHOLDER

Stephen P. Haasler, Muskego, Wis.; Stephen P. Johnson, Olean, N.Y., and John Lapp, Franklin, Wis., assignors to Cooper Power Systems, Inc., Coraopolis, Pa.

Division of Ser. No. 946,961, Sep. 17, 1992, Pat. No. 5,274,349. This application May 24, 1993, Ser. No. 65,439
Int. Cl.[5] H01H 85/14
U.S. Cl. 337—248 22 Claims

1. A cap assembly for the fuse tube of a fuseholder, said assembly comprising:

a conductive end cap having an embossed raised portion extending beyond the terminus of the fuse tube and a hole through said raised portion;

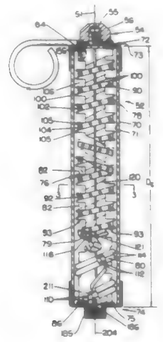
a fastener having a threaded shank portion and a head portion;

said head portion being retained in the fuse tube and said threaded shank portion being disposed through said hole;

a conductive contact outside the fuse tube having a threaded

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bore for receiving said threaded shank of said fastener; and

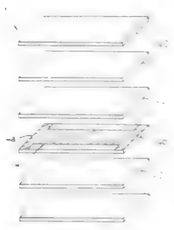


seal means disposed about said threaded shank and sealingly engaging said contact and said embossed raised portion.

5,355,112
FIXED RESISTOR

Kazutaka Nakamura; Keisuke Nagata; Yasunobu Yoneda, and Hiroji Tani, all of Nagaokakyo, Japan, assignors to Murata Mfg., Co., Ltd., Japan

Filed Feb. 5, 1993, Ser. No. 14,362
Claims priority, application Japan, Feb. 7, 1992, 4-56645; Mar. 25, 1992, 4-100430
Int. Cl.[5] H01C *1/02, 1/012*
U.S. Cl. 338—254 **10 Claims**



1. A resistor comprising a ceramic sintered body, said ceramic sintered body comprising ZnO as a main component and at least one element selected from the group consisting of Bi, Pb, B and Si as a subcomponent; and

at least one resistor film, said resistor film being embedded in said ceramic sintered body so as to be covered by said ceramic sintered body in all portions except for portions of said resistor film that are exposed for electrical connection.

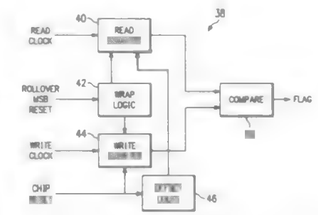
5,355,113
SERIALIZED DIFFERENCE FLAG CIRCUIT

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jun. 22, 1992, Ser. No. 901,667
Int. Cl.[5] G06F *7/02*
U.S. Cl. 340—146.2 **25 Claims**

1. Difference flag circuitry, comprising:

a comparator which compares the magnitude between multiple digital bits of a first binary value and corresponding multiple digital bits of a second binary value, and then generates an output signal indicative of whether the first binary value is larger than the second binary value; and

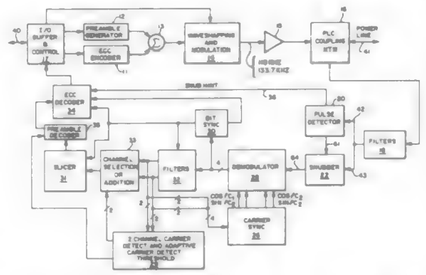


means, connected to the comparator, for generating an output flag, wherein said first binary value is initially set to a value which is offset from said second binary value by a value selected to generate said flag.

5,355,114
RECONSTRUCTION OF SIGNALS USING REDUNDANT CHANNELS

Philip H. Sutterlin, San Jose; Howard W. Johnson, Sunnyvale; Chin-Chen Lee, San Jose, and Amy O. Hurlbut, San Francisco, all of Calif., assignors to Echelon Corporation, Palo Alto, Calif.

Continuation of Ser. No. 698,292, May 10, 1991, abandoned. This application Mar. 16, 1994, Ser. No. 210,065
Int. Cl.[5] H04M *11/04*
U.S. Cl. 340—310 A **7 Claims**



1. In a power line communications system where binary signals are transmitted over power lines by modulation of a carrier signal, where the carrier signal frequency is substantially higher than the frequency of the power, an improved method comprising the steps of:

transmitting said binary signals erdundantly entirely on both first and second carrier signals, said first and second carrier signals being separated in frequency by a predetermined number of Hz;

receiving both said first and second carrier signals on first and second channels, respectively;

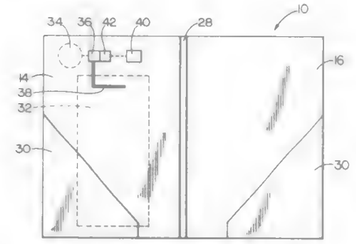
independently determining noise levels in said first and said second channels;

selecting the binary signals from one of said first and second channels with lower of said noise levels; and, summing the binary signals from said first and second channels when the noise levels in said first and second channels are approximately equal, so as to reconstruct the transmitted binary signals in its entirety.

5,355,115
WAITSTAFF SIGNALING DEVICE FOR USE IN A SERVICE ESTABLISHMENT

Dan Goor; E. Patricia Goor, and Robert P. Harnisch, all of Colorado Springs, Colo., assignors to Goor Associates, Inc., Colorado Springs, Colo.

Filed Dec. 14, 1992, Ser. No. 989,831
Int. Cl.[5] G08B *5/00*
U.S. Cl. 340—321 **7 Claims**



1. A waitstaff signaling device comprising:

a bill payment folder including,

a first cover having a first side and a second side, and

a second cover having a first side and a second side, said second cover movably secured to said first cover;

a signal device cooperative with one of said covers, said signal device having a first state and a second state;

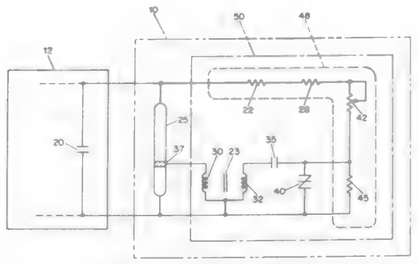
a switch in communication with said signal device for switching said signal device from said first state to said second state; and

a clip connected to said switch so that opening or closing said clip actuates said switch and thereby activates said signal device.

5,355,116
ADJUSTABLE STROBE WITH TEMPERATURE STABILIZATION

Ed Applegate, Toms River; Joseph Kosich, South Toms River, and John W. Curran, Lebanon, all of N.J., assignors to Wheelock, Long Branch, N.J.

Filed Mar. 16, 1993, Ser. No. 31,947
Int. Cl.[5] G08B *5/00*
U.S. Cl. 340—331 **3 Claims**



1. A strobe light circuit for flashing a flashtube at a desired rate and intensity comprising:

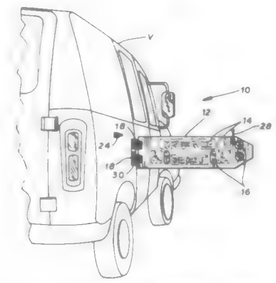
a voltage source circuit including a first capacitor which is connected in parallel with the flashtube, the first capacitor providing the energy to fire the flashtube upon attainment across the first capacitor of a voltage corresponding to a predetermined threshold firing voltage; and

a flash circuit connected across the voltage source circuit which includes a flashtube and a trigger circuit, the trigger circuit being operable to fire the flashtube to generate a light output upon the first capacitor charging to a voltage corresponding to the threshold firing voltage of the flashtube, the trigger circuit including a circuit means for ensuring that the flashtube is fired at virtually the same instant the voltage across the first capacitor exceeds the threshold firing voltage, the circuit means comprising a series resistor divider network which includes a thermistor for compensating for changes in the values of electrical elements in the strobe light circuit which may occur due to temperature changes, a potentiometer to allow for adjustments in the resistance of the series resistor divider network and a resistor.

5,355,117
VEHICLE WARNING SIGN

Len B. Jefferson, 1160 JoAnne St., Apt. No. 109, Jackson, Miss. 39204

Filed Nov. 18, 1992, Ser. No. 978,357
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 340—425.5 **2 Claims**



1. A vehicle warning sign for swingable mounting on a side of a vehicle, said warning sign comprising:

a sign panel having a latch projection, said sign panel including warning indicia and reflectors disposed upon both sides thereof, said sign panel having a rectangular front and rear shape including a tapered portion extending away from the vehicle when said warning sign is in a deployed position,

mounting means anchored to the side of the vehicle, said mounting means including hinge means attached to said sign panel, thus defining a vertical pivot axis, whereby said sign panel is attached to the vehicle so as to pivot to said deployed position substantially perpendicular to the side of the vehicle, and is also pivotable to a stowed position substantially parallel to and adjacent the side of the vehicle,

sign positioning means urging said sign panel to pivot to said deployed position, said sign positioning means yielding to a force acting to pivot said sign panel forwardly or backwardly about said pivot axis, said sign positioning means urging said sign panel into said deployed position upon absence of the force, and

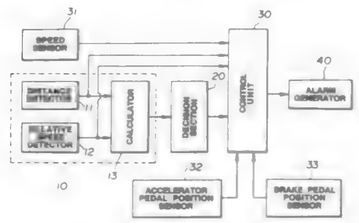
manual latch means engaging said latch projection when said sign panel is moved into said stowed position, said manual latch means having release pivot arm means requiring a first motion and a counter motion to disengage from said latch projection, said manual latch means also including a removable member immobilizing said release pivot arm means, whereby said release pivot arm means is secured against disengagement upon random motions of the vehicle while the vehicle is moving, said latch removable member further having manually removable resilient retention means, whereby said immobilizing member is secured when operably placed in said latch means.

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5,355,118
VEHICLE COLLISION ALERT SYSTEM

Hiroshige Fukuhara, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 10, 1992, Ser. No. 911,624
Claims priority, application Japan, Jul. 11, 1991, 3-171380
Int. Cl.[5] B60Q *1/26*
U.S. Cl. 340—435 **5 Claims**



1. An apparatus for determining an excessive speed approach of a vehicle to an object in front of said vehicle, comprising:

a normalized time rate of change detector for determining a normalized time rate of change of a visual angle, $(1/\theta)\cdot(d\theta/dt)$, for said object as viewed from said vehicle, the normalized time rate of change detector including means for measuring a distance D of said vehicle with respect to said object, means for measuring a relative speed Vr of said vehicle with respect to said object, and means for dividing the measured relative speed Vr by the measured distance D to calculate the normalized time rate; and

an indicator for producing an indication of the excessive speed approach based upon the normalized time rate, said indicator including means for producing a first alarm to indicate a recognition of an excessive approach of said vehicle to said object when the normalized time rate exceeds a first range of $6\%\pm1.1\%$, said first range corresponding to a driver's recognition of an excessive approach of said vehicle, and for producing a second alarm indicating danger of a rear-end collision when the normalized time rate exceeds a second range of $12\%\pm2.2\%$, said second range corresponding to a driver's recognition of danger of a rear-end collision.

5,355,119
APPARATUS AND METHODS FOR CONTROLLING A SIGNAL DEVICE

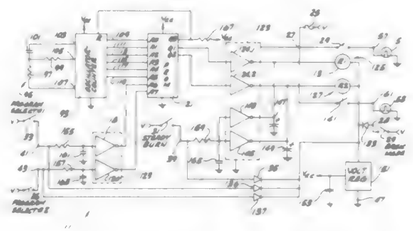
Barry S. Pearlman, Chesterfield, Mo., assignor to Public Safety Equipment, Inc., St. Louis, Mo.

Continuation of Ser. No. 246,976, Sep. 20, 1988, abandoned. This application Dec. 14, 1990, Ser. No. 629,070
Int. Cl.[5] G08B *5/00*
U.S. Cl. 340—468 **15 Claims**

1. Apparatus for controlling at least two signal devices for energization by an electrical source comprising:

means for repeatedly producing different first and second concurrent digital cycles each on an output line wherein each digital cycle includes a sequence of alternating pulses and spaces, each cycle having at least two pulses that differ in duration with respect to each other and having at least two spaces that differ in duration with respect to each other wherein said means for producing digital cycles includes memory means for storing the digital cycles with each of the digital cycles including a plurality of digital values representative of the duration of the pulses and spaces, means for producing the digital cycles in different modes in response to a mode input, and counter means for addressing said memory means in a predetermined sequence, said memory means successively supplying the digital values in sequence to said output line;

means connected to the output line and responsive to said means for producing the digital cycles for applying electrical energization from the electrical source to each one of the signal devices concurrently in accordance with the pulses in the digital cycles and for not applying electrical



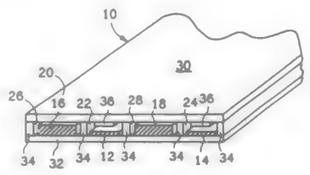
energization from the electrical source to the signal devices in accordance with the spaces in the digital cycles; and

wherein said means for producing the digital cycles includes an oscillator having an alterable repetition rate, and means responsive to the oscillator for concurrently generating a control signal for selectively altering the repetition rate of the oscillator at least once during each digital cycle.

5,355,120
FREQUENCY-DIVIDING-TRANSPONDER TAG

Lucian G. Ferguson, Seattle, Wash., and William D. Thomas, St. Petersburg, Fla., assignors to Security Tag Systems, Inc., Deerfield Beach, Fla.

Filed Oct. 9, 1992, Ser. No. 958,876
Int. Cl.[5] G08B *13/14*
U.S. Cl. 340—572 **9 Claims**



1. A transponder tag, comprising

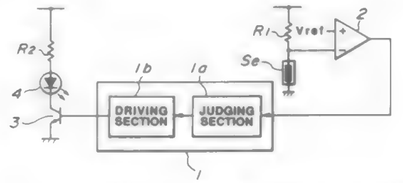
an active strip of magnetic material and having a given length that, when in the presence of a magnetic bias field within a predetermined magnetic field intensity range, responds to excitation by electromagnetic radiation of a first predetermined frequency by radiating electromagnetic radiation of a second predetermined frequency that is a frequency-divided quotient of the first predetermined frequency; and

a pair of bias strips of magnetic material disposed on opposite sides of the active strip in a common housing with the active strip for magnetically biasing the active strip with a magnetic bias field within the predetermined magnetic field intensity range, wherein the bias strips are cut from an extruded magnetic material ribbon having a width less than the given length of the active strip and a magnetic moment parallel to the lateral dimension of the ribbon, with the bias strips being cut at an oblique angle to the lateral dimension of the ribbon so that each bias strip has an oblique magnetic moment having longitudinal and lateral components; wherein the bias strips are disposed in the housing such that their respective longitudinal components have the same orientation and their respective lateral components oppose each other.

5,355,121
ALARM DEVICE FOR MAGNETO-OPTICAL DISC DRIVE UNIT

Takashi Naito, and Susumu Tosaka, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Nov. 6, 1992, Ser. No. 972,915
Claims priority, application Japan, Nov. 19, 1991, 3-302226
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—584 **9 Claims**



1. An alarm device for an optical disc drive unit, the optical disc drive unit having a cooling fan and a replaceable dust filter, said alarm device comprising:

means for indicating an operating condition of the optical disc drive unit;

a temperature sensor detecting a temperature within the unit;

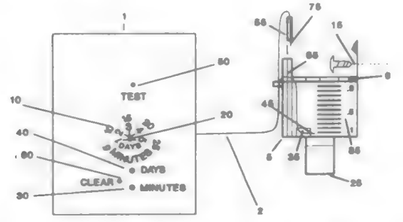
means for comparing the temperature detected by said temperature sensor with a predetermined temperature, said comparing means outputting a command signal when the detected temperature is higher than a predetermined temperature; and

means for flashingly illuminating said indicating means in response to the signal from said comparing and outputting means.

5,355,122
RAINFALL DETECTION AND DISABLE CONTROL SYSTEM

Gary A. Erickson, 221 Lois Dr., Louisville, Colo. 80027

Filed Jul. 24, 1992, Ser. No. 918,845
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—602 **1 Claim**



1. A dual function Rainfall Detection and Disable Control System for interfacing to an existing lawn sprinkler clock controller providing to the user water conservation that prevent watering both during and after a rain shower, said system comprising:

means for collecting natural rainfall with dual internal detection means mounted therein;

said dual internal detection means comprising trace rainfall detection means and variable level accumulation rainfall detection means;

said trace rainfall detection means includes a probe mounted near the bottom of said rainfall collecting means;

said trace rainfall detection means having a short selectable sprinkler system disable time;

said means for variable level accumulation rainfall detection includes a probe adjustably mounted in said rainfall collecting means;

said means for variable level accumulation rainfall detection having a long selectable sprinkler system disable time;

control means for the interaction of disable times of said trace rainfall detection and accumulation rainfall detection means; control means for tandem control of the time intervals for both said short selectable sprinkler system disable time and said long selectable sprinkler system disable time;

means visually displaying the detection of rainfall collected in said collecting means by both the trace rainfall detection means and the accumulation rainfall detection means with separate light emitting diodes, respectively;

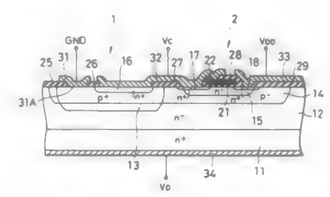
control means for remotely testing both the trace and accumulation rainfall detection means and the visual display means;

control means for remotely clearing said remote control testing means of the dual internal detection means.

5,355,123
OVERHEATING DETECTION CIRCUIT FOR DETECTING OVERHEATING OF A POWER DEVICE

Masaharu Nishiura, and Tatsuhiko Fujihira, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Continuation-in-part of Ser. No. 553,340, Jul. 17, 1990, Pat. No. 5,070,322. This application Nov. 21, 1991, Ser. No. 796,266
Claims priority, application Japan, Nov. 26, 1990, 2-322143; Sep. 10, 1991, 3-229238; Nov. 8, 1991, 3-292581
The portion of the term of this patent subsequent to Dec. 3, 2008, has been disclaimed.
Int. Cl.[5] G08B *17/06*
U.S. Cl. 340—653 **6 Claims**



1. An overheating detect ion arrangement for detecting overheating of a power integrated circuit, including:

a power device integrated in a semiconductor substrate; and

an overheating detection circuit, including:

a reverse biased pn junction formed in the same semiconductor substrate as said power device and having a reverse leakage current flow which is temperature dependent;

voltage means formed in said semiconductor substrate as said power device and coupled to said pn junction for producing a voltage depending on the reverse leakage current flow; and

threshold means connected for receiving the voltage and producing a signal when the voltage exceeds a threshold voltage to indicate that said power device is overheated.

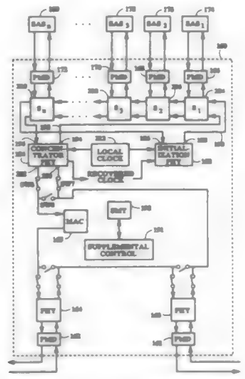
VOL 1167 ISS 2 OC 11 1994 UMI

5,355,124

WIRING CONCENTRATOR FOR DATA NETWORKS

Robert C. Kochem, Belmont, Mass., and Peter Hayden, Mont Vernon, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 9, 1992, Ser. No. 896,127
Int. Cl.[5] H04J *14/00, 3/02*
U.S. Cl. 340—825.05 5 Claims



1. A wiring concentrator comprising:

A) a plurality of PMD modules, each PMD module including PMD PHY-level input and output ports and including PMD input and output ports adapted for coupling to a network station, for converting PMD signals present at their PMD input ports into equivalent PHY signals at their PMD PHY-level output ports and for converting PHY signals at their PMD PHY-level input ports into equivalent PMD signals at their PMD output ports;

B) a concentrator clock for generating concentrator clock signals;

C) a common concentrator PHY module, including concentrator-PHY PHY-level input and output ports interposed in the concentrator loop, for transmission of PHY-level signals from the concentrator-PHY PHY-level output port and reception of PHY-level signals at the concentrator-PHY PHY-level input port;

D) a common initialization PHY module including initialization-PHY PHY-level input and output ports for reception and transmission, respectively, of PHY signals and being operable by application of initialization-control signals thereto, when it is connected in duplex to a PMD module to which a network station is coupled, to perform FDDI initialization with the thus-coupled network station by means of PHY signals that the initialization PHY transmits from the initialization-PHY PHY-level output port in accordance with a selected one of the concentrator clock signal and a recovered clock signal;

E) a switch matrix operable by application of switch-control signals thereto selectively to interconnect the PHY-level ports of the PMD modules and the concentrator and initialization PHY modules; and

F) a control circuit for application of initialization-control signals to the initialization PHY module and switch-control signals to the switch matrix that:

i) place a first one of the PMD modules in full-duplex communication with the initialization PHY and cause the initialization PHY to perform, if a network station is coupled to the first PMD module's PMD ports, FDDI initialization with that network station by means of PHY signals transmitted from the initialization-PHY PHY output port in accordance with the concentrator clock signals;

ii) after the initialization PHY module has achieved initialization with the network station coupled to the first PMD module, form a completed concentrator loop between the first PMD module alone and the concentrator PHY;

iii) thereafter place a second one of the PMD modules in duplex communication with the initialization PHY and cause the initialization PHY module to perform, if a network station is coupled to the second PMD module's PMD ports, FDDI initialization with that network station by means of PHY signals transmitted from the initialization-PHY PHY output port in accordance with clock signals recovered from the PHY signal at the first PMD module's PHY-level output port; and

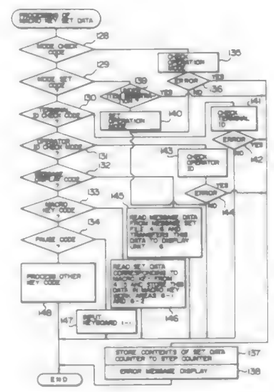
iv) after the initialization PHY module has achieved initialization with the network station coupled to the second PMD module, interpose the second PMD module in the concentrator loop immediately downstream of the first PMD module.

5,355,125

ELECTRONIC REGISTER WITH MACRO KEY AND SECURITY

Seiji Fuyama, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 26, 1992, Ser. No. 857,667
Claims priority, application Japan, Apr. 5, 1991, 3-072903
Int. Cl.[5] G07G *1/12*
U.S. Cl. 340—825.31 8 Claims



1. An electronic register comprising:

a memory for storing a key code for said register and seven kinds of codes including a mode check code for checking an operation mode of said register, a mode set code for altering said operation mode, a terminal ID check code for checking a terminal ID of said register, an operator ID check code for checking an ID of an operator who operates said register, a message display code for displaying a specific message, a macro key code and a pause code for waiting for a key input from a keyboard, which have been set as macro key set data corresponding to a macro key on a keyboard of said register; and

an arithmetic operation control unit for, during read processing from the keyboard, sequentially transferring macro key set data which have been set subsequently to a key code decoder, said key code decoder processing the data respectively for said mode check code, said mode set code, said terminal ID check code, said operator ID check code, said macro key code and said pause code when said mode check code, said mode set code, said terminal ID

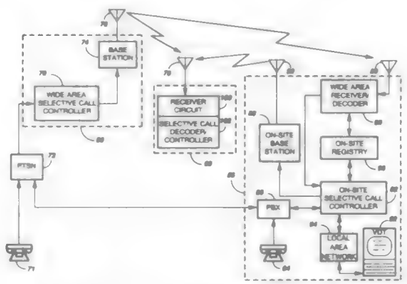
check code, said operator ID check code, said macro key code respectively exist in the macro key set data corresponding to said macro key in the read processing from the keyboard, and for reading message data corresponding to said message display code from a message set file stored in said memory for said message display code and transferring said message data to a display unit.

5,355,126

SELECTIVE CALL SYSTEM INTERACTIVE WITH A WIDE AREA SELECTIVE CALL SYSTEM

Leonard E. Nelson, Boynton Beach; Darrell A. Pfeffer, Delray Beach, and James A. Wright, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 563,156, Aug. 6, 1990, abandoned. This application Jul. 27, 1992, Ser. No. 918,773
Int. Cl.[5] H04B *7/00*
U.S. Cl. 340—825.440 17 Claims



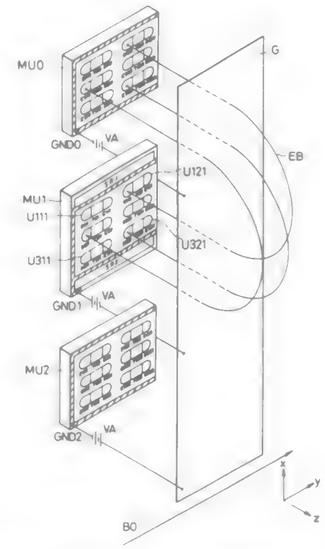
1. In a selective call system having a first selective call network system for transmitting selective call messages on a first channel to a selective call receiver having a predetermined selective call address assigned thereto and capable of operating in a first operating mode and a second operating mode wherein said selective call receiver operating in said first operating mode receives the selective call messages transmitted on said first channel and wherein said selective call receiver operating in said second operating mode receives selective call messages transmitted on a second channel by a second selective call network, the first selective call network system being coupled to the second selective call network via radio frequency link, a method comprising the step of the first selective call network system signaling the second selective call network system to transmit a selective call message to said selective call receiver for switching said selective call receiver from said second operating mode to said first operating mode the selective call message comprising the predetermined selective call address assigned to said selective call receiver and a first predetermined control message, said selective call receiver switching from said second operating mode to said first operating mode in response to receiving said first predetermined control message from the second selective call network system.

5,355,127

METHOD AND APPARATUS FOR TRANSFERRING INFORMATION BY UTILIZING ELECTRON BEAM

Fumitaka Kan, Tokyo; Kenji Nakamura, Hadano; Masanori Takenouchi, Atsugi; Naoji Hayakawa, Yokohama; Isamu Shimoda, Zama, and Masahiko Okunuki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 64,299, Jun. 19, 1987, abandoned. This application Jun. 24, 1992, Ser. No. 902,783
Claims priority, application Japan, Jun. 23, 1986, 61-144735; Aug. 15, 1986, 61-191851; Aug. 15, 1986, 61-191852; Aug. 15, 1986, 61-191853; Aug. 15, 1986, 61-191855; Aug. 15, 1986, 61-191856; Aug. 15, 1986, 61-191862; Aug. 15, 1986, 61-191863; Aug. 15, 1986, 61-191864
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.97 29 Claims



1. An apparatus for transferring information in a form of electron beams, including:

a first unit comprising a first substrate, a first electron beam detector and a first electron beam generator formed at different positions from each other on a surface of said first substrate, and a first controller for driving said first electron beam generator in response to a signal from said first electron beam detector, said first controller connected to said first electron beam detector and said first electron beam generator; and

a second unit comprising a second substrate, a second electron beam detector and a second electron beam generator formed at different positions from each other on a surface of said second substrate, and a second controller for driving said second electron beam generator in response to a signal from said second detector, said second controller connected to said second electron beam detector and said second electron beam generator, said second electron beam detector of said second unit receiving a first electron beam from said first electron beam generator of said first unit, and said first electron beam detector of said first unit receiving a second electron beam from said second electron beam generator of said second unit.

VOL 1167 ISS 2 OCT 11 1994 UMI

5,355,128
VIDEO LOGGING SYSTEM HAVING AN OPTICAL COMMUNICATIONS LINK

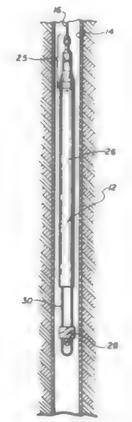
Mathew B. Riordan, Garden Grove, Calif., assignor to Westech Geophysical, Inc., Ventura, Calif.

Division of Ser. No. 708,977, May 31, 1991, Pat. No. 5,202,944, which is a division of Ser. No. 540,573, Jun. 15, 1990, Pat. No. 5,140,319. This application Feb. 11, 1993, Ser. No. 16,769

The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.

Int. Cl.[5] G01V *1/00*

U.S. Cl. 340—854.7 **21 Claims**



1. A down-hole inspection system for the remote visual inspection of the condition of an elongated passage, comprising:

a down-hole instrument for placement in the elongated passage for performing the visual inspection of said passage, said instrument comprising a non-articulated body being sealed against the entry of pressurized external fluid into the instrument and configured so that gravitational forces are required to move the instrument downwardly through the elongated passage, the non-articulated body having a first end, the body comprising:

a television camera for rendering the visual imagery of the passage into corresponding electrical image signals representative of that visual imagery; and

an electrical-to-light transducer for converting the electrical image signals into optical image signals;

a support cable having a first end and a second end, the first end connected to the first end of the down-hole instrument so as to support the entire weight of the instrument, the support cable having at least one optical fiber, the optical fiber operative to receive the optical image signals from the electrical-to-optical transducer and conduct said optical image signals to the second end of the cable; and

surface equipment located outside the passage, the surface equipment comprising:

a controllable actuator coupled to the support cable to control the position of the support cable and oppose the gravitational forces acting on the instrument thereby controlling the position of the instrument in the passage; and

a processor coupled to the optical fiber at the second end of the support cable to receive the optical image signals, the processor having an optical-to-electrical transducer for converting the optical image signals from the optical fiber into corresponding electrical image signals.

5,355,129
MEASURING SENSOR DEVICE

Bernd Baumann, Weissach, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

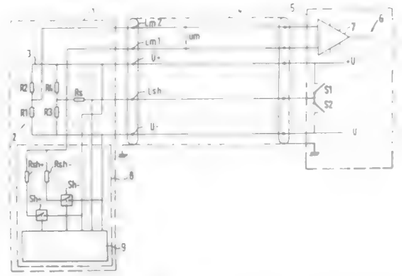
PCT No. PCT/EP91/01288, § 371 Date Mar. 24, 1993, § 102(e) Date Mar. 24, 1993, PCT Pub. No. WO92/02783, PCT Pub. Date Feb. 20, 1992

PCT Filed Jul. 10, 1991, Ser. No. 966,185

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1990, 4024402

Int. Cl.[5] G01D *18/00*

U.S. Cl. 340—870.04 **24 Claims**



1. An arrangement comprising:

a measuring sensor device for detecting a physical quantity with a physical electrical transducer that converts the physical quantity into an equivalent analog electrical quantity, the physical-electrical transducer being connected in a bridge circuit with branches;

an analysis circuit connected to the measuring sensor device, the analysis circuit being constructionally separate from the measuring sensor device and converting the analog electrical quantity into digital data;

electrical lines capable of transmitting measured values and supplying energy to the measuring sensor device;

a shunt resistor on the measuring sensor device, shunt switches connected to the analysis circuit, and a shunt line connecting the shunt switches with the shunt resistor (shunt calibration, calibrating operation), the individual branches of the measuring bridge, for calibration purposes, being capable of being detuned in a defined manner by the shunt resistor, the shunt switches and the shunt line;

an identification generator integrated in the measuring sensor device and having a nonvolatile memory module with correction data (sensor identification data) of the measuring sensor device, a controllable switching element situated in parallel to one of the branches of the measuring bridge, for the defined detuning of the measuring bridge in the controlled condition;

the identification generator including at least one auxiliary shunt resistor and at least one electrically controllable auxiliary shunt switch the auxiliary shunt resistor being connectable in parallel by the auxiliary shunt switch to the shunt switches and the shunt resistor;

the identification generator further including a controlling circuit which responds to defined pulses on the shunt line and controls the identification generator, such that the identification generator has operating modes (measuring operation, calibrating operation) that are switchable in response to superimposition of said pulses on the shunt line by means of the shunt switches, the operating modes including:

measuring operation and calibrating operation, the identification generator being switched such that measuring sensing is substantially unaffected by the identification generator,

calibrating operation, the physical-electrical transducer being detuned in a defined manner by the shunt switches and the shunt resistor,

identifying operation, by controlling the auxiliary shunt switches via the controlling circuit, with correction data being transmitted via the measuring lines from the identification generator to the analysis circuit.

5,355,130
ULTRASONIC PROXIMITY SWITCH WITH A SYNCHRONIZING DEVICE

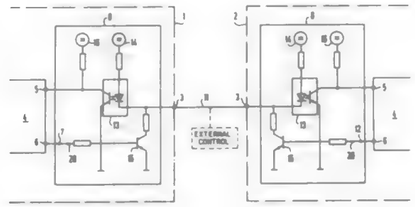
Ernst Luber, Holnstein, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 4, 1992, Ser. No. 893,438

Claims priority, application European Pat. Off., Jun. 13, 1991, 91109711.0

Int. Cl.[5] G01S *15/00*; G08C *15/08*; H03L *7/00*

U.S. Cl. 340—870.14 **6 Claims**



1. A proximity switch network having a plurality of synchronizing pulses comprising:

a) a shared line, said shared line

i) having a first potential state and a second potential state;

b) a first ultrasonic proximity switch, said first ultrasonic proximity switch including

i) a first enabling output, said first enabling output being connected to said shared line,

ii) a first open-loop control block, said first open-loop control block including

A) a first output providing a synchronizing pulse which indicates that said first ultrasonic proximity switch is ready to transmit, and

B) a first input; and

iii) a first circuit arrangement, said first circuit arrangement

A) being electrically connected to said first enabling output, said first output, and said first input,

B) providing a signal at said first input based on a potential state of said first enabling output, and

C) bringing said enabling output to said first potential state while said synchronizing pulse of said first proximity switch is applied and to said second potential state after the termination of all of said plurality of synchronizing pulses; and

c) a second ultrasonic proximity switch; said second ultrasonic proximity switch including

i) a second enabling output, said second enabling output, being connected to said shared line,

ii) a second open-loop control block, said second open-loop control block including

A) a second output providing a synchronizing pulse which indicates that said second proximity switch is ready to transmit, which overlaps said synchronizing pulse of said first proximity switch, and which continues after said synchronizing pulse of said first proximity switch has terminated, and

B) a second input, and

iii) a second circuit arrangement, said second circuit arrangement

A) being electrically connected to said second enabling output, said second output, and said second input,

B) providing a signal at said second input based on a potential state of said second enabling output, and

C) bringing said second enabling output to said first potential state while said synchronizing pulse of said second proximity switch is applied and to said second potential state after the termination of all of said plurality of synchronizing pulses,

wherein when all synchronizing pulses have terminated, thereby changing the potential of said shared line to said second potential state, the required state change is produced at said first and second inputs to release synchronized initial pulses.

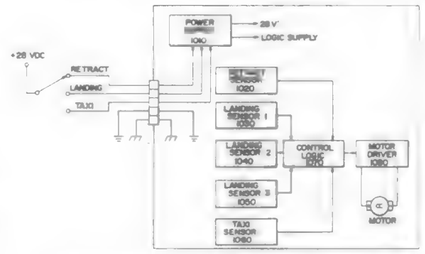
5,355,131
AIRCRAFT LANDING LIGHT

Donald J. Metz, N. Hampton, and Michael A. Forhan, Urbana, both of Ohio, assignors to Grimes Aerospace Company, Urbana, Ohio

Filed Oct. 7, 1992, Ser. No. 958,023

Int. Cl.[5] B64D *47/06*

U.S. Cl. 340—981 **13 Claims**



1. An aircraft landing light, comprising:

a base;

a lamphead pivotally mounted to said base;

lamp means affixed within said lamphead;

drive means associated with said lamphead;

a select switch, said switch selecting a mode corresponding to a desired operational position of said lamphead; and

control means in communication with said select switch, said control means comprising a magnetic switch array and a control circuit, a plurality of magnets, the position of each of said magnets corresponding to an operational position of said lamphead, said magnets actuating said magnetic switch array, said control circuit actuating said drive means to pivot said lamphead toward said desired position when said switch array detects the position of each of said magnets indicating that said lamphead is not in said desired position.

5,355,132
METHOD FOR TRANSMITTING DIGITAL DATA

Tetsuo Kani, and Yasuo Seki, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 288,430, Dec. 22, 1988, abandoned. This application Oct. 13, 1992, Ser. No. 960,260

Claims priority, application Japan, Dec. 29, 1987, 62-335304; Jan. 22, 1988, 63-12252

Int. Cl.[5] H03M *7/00*

U.S. Cl. 341—55 **5 Claims**

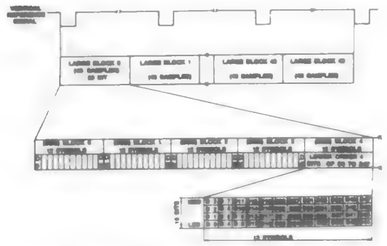
1. A method of processing digital data into a form of data which has plural blocks each having fewer bits than original source digital data comprising the steps of:

dividing said original source digital data each composed of a plurality of bits into respective higher order bits and respective lower order bit(s);

constituting first blocks each including a first predetermined

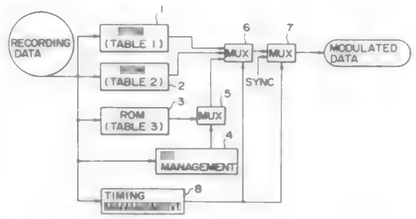
VOL 1167 ISS 2 OC 11 1994 UMI

number of words each comprised of a second predetermined number of said higher order bits of said respective digital data;
constituting second blocks each including said first predetermined number of words each comprised of a third predetermined number of said lower order bits of said respective digital data;
encoding error detection or correction code with respect to said words of said first and second blocks so as to generate redundant data;
producing said digital data and said redundant data for said error correction or correction code in a sequence com-



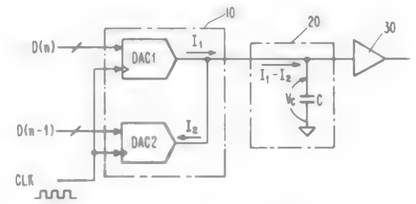
prising a plurality of consecutive ones of said first blocks followed consecutively by at least one of said second blocks;
providing, for each of said blocks, sequentially numbered address identifying data;
dividing said respective address data to two or more sequences of address data units, one of which has duplicate identifying data;
providing each of said respective address data units to said respective blocks each at a predetermined positions; and
producing said sequence of said blocks with said blocks incorporating said respective address data units.

5,355,133
DATA MODULATING METHOD AND APPARATUS AND DATA DEMODULATING METHOD AND APPARATUS
Yoshihide Shimpuku, Kanagawa; Hiroyuki Ino, Tokyo; Yasuyuki Chaki, Chiba, and Toshiyuki Nakagawa, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Feb. 9, 1993, Ser. No. 15,477
Claims priority, application Japan, Feb. 14, 1992, 4-059707
Int. Cl.[5] H03M *5/18*
U.S. Cl. 341—58 **20 Claims**



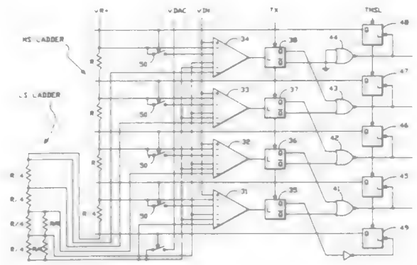
1. A data modulating method for modulating recording data into a variable length channel code, comprising the steps of:
dividing the recording data into a predetermined plurality of blocks;
modulating data which is not at a boundary portion of each of the blocks into a channel code according to a first set of rules;
modulating data which is at a boundary portion of each of the blocks into a channel code according to a second set of rules; and
wherein the first set of rules will produce a different channel code than the second set of rules for some sequences of recording data.

5,355,134
DIGITAL TO ANALOG CONVERTER CIRCUIT
Nobuyuki Kasuga, and Akinori Maeda, both of Hachioji, Japan, assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Dec. 2, 1991, Ser. No. 801,545
Claims priority, application Japan, Nov. 30, 1990, 2-340810
Int. Cl.[5] H03M *1/66*
U.S. Cl. 341—144 **9 Claims**



1. A digital to analog circuit comprising:
a digital to analog converter portion for accepting digital inputs indicative of a signal level and for producing successive analog outputs, each analog output being indicative of a difference in signal level between at least one digital input and at least one previous digital input; and
an integrator coupled to the digital to analog converter portion for cumulatively integrating the successive analog outputs thereby producing a substantially smooth waveform.

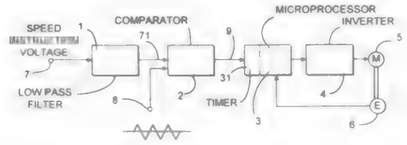
5,355,135
SEMI-FLASH A/D CONVERTER USING SWITCHED CAPACITOR COMPARATORS
Thomas P. Redfern, San Jose, Calif., assignor to Linear Technology Corporation, Milpitas, Calif.
Filed Jan. 30, 1989, Ser. No. 304,963
Int. Cl.[5] H03M *1/36, 1/44, 1/50*
U.S. Cl. 341—156 **5 Claims**



1. An analog-to-digital comparator comprising:
an inverting amplifier having an input, output, and a feedback loop between said output and said input, said feedback loop including a first switch;
first and second capacitive means each connected to said input;
a first plurality of input terminals each serially connected through second switches to said first capacitive means;

a second plurality of input terminals each serially connected through third switches to said second capacitive means;
said first plurality of said input terminals being connectable to an analog input signal, a most significant (M/S) reference voltage TAP, and a digital-to-analog converter (DAC) output;
said second plurality of input terminals being connectable to a 0 voltage potential and a least significant (L/S) reference voltage TAP;
whereby said capacitors convert input voltages to electrical charge, and said inverting amplifier responds to subtraction of charge in sequential closures of said second and third switches thereby providing sequential comparisons for a semi-flash A/D converter.

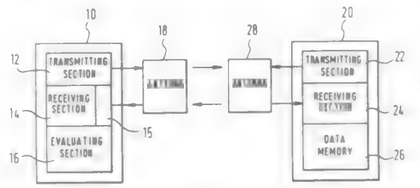
5,355,136
ANALOG-TO-DIGITAL CONVERTER CIRCUIT
Takashi Katagiri, Komagane, Japan, assignor to Sankyo Seiki Mfg. Co., Ltd., Nagano, Japan
Filed Oct. 23, 1992, Ser. No. 965,187
Claims priority, application Japan, Oct. 24, 1991, 3-095312[U]; Oct. 29, 1991, 3-309912; Dec. 10, 1991, 3-350169
Int. Cl.[5] H03M *1/12*
U.S. Cl. 341—157 **15 Claims**



1. An analog-to-digital converter circuit comprising:
a comparator for comparing an analog input signal with a triangular wave signal having a given frequency and a given amplitude to convert the analog signal into a pulse width-modulated output signal; and
a counter responsive to said pulse width-modulated output signal for counting clock pulses appearing during the period of the high or low level of the pulse width-modulated output signal to convert it into a digital output signal representative of said analog input signal;
wherein the analog signal is converted into digital data by subtracting data containing information related to the duty cycle of a rectangular wave from data containing information related to the duty cycle of the pulse width-modulated signal, the rectangular wave being obtained from a comparator by comparing the triangular wave with a given voltage and wherein digital data obtained when the analog input is zero is used as an offset correction value.

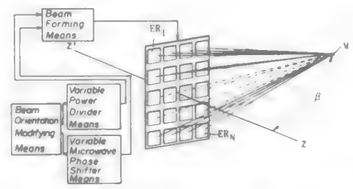
5,355,137
METHOD OF READING THE DATA STORED IN A PASSIVE RESPONDER BY MEANS OF AN INTERROGATION DEVICE COMPRISING A RECEIVING SECTION
Josef H. Schurmann, Oberhummel, Fed. Rep. of Germany, assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Oct. 9, 1992, Ser. No. 958,618
Claims priority, application European Pat. Off., Oct. 17, 1991, 91117724.4
Int. Cl.[5] G01S *13/80*
U.S. Cl. 342—42 **3 Claims**

1. A method of reading data stored in a passive responder, having a nominal operating frequency within a selected frequency range, by an interrogation device having a receiving section for receiving signals having a frequency within said selected frequency range, comprising the steps of:
transmitting an interrogation pulse from said interrogation device, the frequency of said interrogation pulse varying over said selected frequency range;
receiving said interrogation pulse transmitted from said interrogation device by said passive responder, said pas-



sive responder generating a supply voltage from said interrogation pulse and initiating a response signal at said nominal frequency and coded with said stored data; and
receiving said response signal transmitted from said passive responder by said interrogation device and tuning the receiving section of said interrogation device to said nominal frequency transmitted by said passive responder.

5,355,138
ANTENNA BEAM COVERAGE RECONFIGURATION
Jean-Pierre Cances, Toulouse; Gérard Maral, Goyrans; Bernard Coulomb, Toulouse, and Régis Lenormand, Blagnac, all of France, assignors to France Telecom, Paris, France
Filed Sep. 10, 1993, Ser. No. 118,664
Claims priority, application France, Sep. 11, 1992, 92 10871
Int. Cl.[5] H04B *7/185*
U.S. Cl. 342—354 **9 Claims**



1. In a satellite retransmitting telecommunications system including a satellite (1), a plurality of earth stations (S1–S8) having earth station beam-forming means for transmitting beams, respectively, and a control station (SC), said satellite comprising an antenna including a plurality of radiating elements (ER_1–ER_N), and satellite beam-forming means for producing from said antenna a selected one of a plurality of satellite beam coverages, said satellite beam-forming means including variable power divider means, and variable microwave phase shifter means;
the method for reconfiguring the satellite beam coverages retransmitted by the satellite to the earth stations by modifying said phase shifting means and said variable power divider means, thereby to establish a telecommunication link between a given calling station and a given called station via said satellite subsequent to a request from said calling station to a control station via a signalling channel of said satellite, which comprises the steps of:
(a) determining whether the calling and called stations are contained within the existing satellite beam coverages; and
(b) in the first event that said calling and called stations are not contained within existing coverages:
(1) determining amongst all said satellite beam cover-

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ages, a coverage nearest to said each of the calling and called stations;

(2) iteratively, reducing in size each of the satellite beam coverages other than said nearest coverage, until said nearest coverage is modified to include in said nearest coverage said each of the called and calling stations with a first antenna gain; and

(3) deriving a simulated link setting-up authorization for said each of the calling and called stations when one of said channels associated to said nearest coverage is free;

(c) said satellite beam forming means being alternatively operable in the second event that each of said calling and called stations are located within one of said satellite beam coverages, and when at least one of said channels associated with at said one coverage is free, for:

(1) deriving a simulated link initiation authorization for each of the calling and called stations, and

(2) when all said channels associated to said one of the coverages are busy, searching a coverage adjacent to said each of the calling and called stations and having an associated free channel, and in response to a searching having a positive result, exchanging of station load between said one of the coverages and said adjacent coverage by reducing said one of the coverages and increasing said adjacent coverage to that said each of the calling and called stations is located in said adjacent coverage, and deriving a simulated link setting-up authorization for said each of the calling and called stations; and

(d) when simulated link setting-up authorizations are derived both for said calling and called stations, emitting an emission authorization for said calling station and phase shift and power control values from said control station to said satellite to reconfigure said satellite beam coverages.

5,355,139

MICROSTRIP ANTENNA SYSTEM

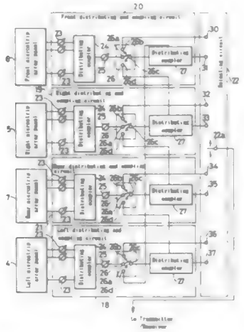
Toshikiyo Hirata, and Yujiro Taguchi, both of Samukawa, Japan, assignors to Toyo Communication Equipment Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 667,406, Apr. 4, 1991, abandoned. This application Mar. 17, 1993, Ser. No. 32,753

Claims priority, application Japan, Sep. 8, 1989, 1-233856

Int. Cl.[5] H01Q *3/22, 3/02*

U.S. Cl. 342—371 **4 Claims**



1. A microstrip antenna system used for mobile communications comprising:

four microstrip array panels provided on a body of a mobile and directed ninety degrees from each other in the azimuthal direction, said four microstrip array panels being inclined so that each of said four microstrip array panels faces upward;

four distributing and coupling circuits connected to said microstrip array panels, respectively, said distributing and coupling circuits comprising a switching means, a plurality of phase shifters and distributing couplers;

a plurality of driver elements provided on each of said microstrip array panels; each of said driver elements being connected to each one of said phase shifters; and

a selecting circuit having a plurality of terminals which are connected to said distributing and coupling circuits, said selecting circuit selecting any one of said terminals wherein said selecting circuit selecting a terminal so that two microstrip array panels, which are adjacent to each other, are associated and cooperated in order to increase a gain when a signal is transmitted to or received from a boundary direction of the selected two microstrip array panels.

5,355,140

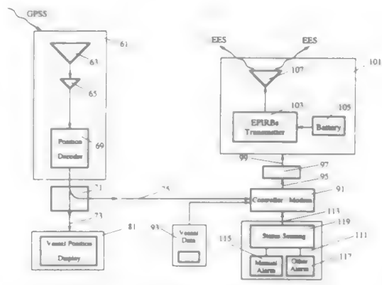
EMERGENCY REPORTING FOR MARINE AND AIRBORNE VESSELS

Michael W. Slavin, Palo Alto; James M. Janky, Los Altos, both of Calif., and Jeffrey S. Rubin, Fairfield, Conn., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Sep. 15, 1992, Ser. No. 945,265

Int. Cl.[5] G01S *1/08, 5/02*

U.S. Cl. 342—386 **35 Claims**



1. A method for reporting of an emergency event experienced by a marine or airborne vessel, or one of the occupants of the vessel, the method comprising the steps of:

receiving signals transmitted by three or more satellites in a Global Positioning System by a position-determining module located on the vessel;

determining, from these received signals, the present position of the vessel and the quality of the present position fix that estimates the inaccuracy of the vessel present position fix at each of an ordered sequence of times;

when an emergency event occurs, determining the approximate time of occurrence of such event, the position of the vessel and the quality of the position fix at approximately the time such event occurred; and

broadcasting the approximate time and position and present position fix quality of the vessel when the emergency event occurs on a selected frequency in at least one of the Emergency Radiowave Bands.

5,355,141

CHANNELIZED BEARING PROCESSOR

Stephen P. Graham, Hove, and Michael W. Keeping, Crawley, both of England, assignors to Thorn EMI Electronics Limited, Hayes, England

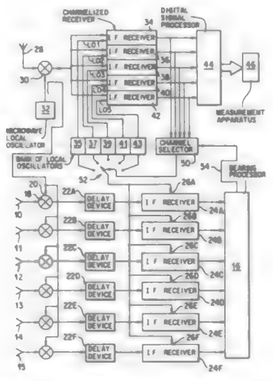
PCT No. PCT/GB91/00985, § 371 Date Dec. 18, 1992, § 102(e) Date Dec. 18, 1992, PCT Pub. No. WO91/19995, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 19, 1991, Ser. No. 965,377

Claims priority, application United Kingdom, Jun. 20, 1990, 9013765

Int. Cl.[5] G01S *5/04, 13/00;* **H04B** *17/02, 1/06*

U.S. Cl. 342—444 **10 Claims**



1. A channelised bearing processor comprising (a) a channelised receiver formed by a plurality of channel receivers covering respective predetermined frequency ranges, (b) a plurality of receiving channels for producing an amplitude signal, each said receiving channel having an input for receiving an input signal and a tunable receiver having an input for a local oscillator signal, and (c) tuning control means responsive to an output from one of the plurality of channel receivers to control the tuning of the tunable receivers to correspond to the tuning of that one of the plurality of channel receivers, characterised in that the channelised receiver includes a respective local oscillator coupled to each of the channel receivers and in that the tuning control means comprises local oscillator selecting means for connecting the local oscillator which is connected to that one of the plurality of channel receivers to the local oscillator signal inputs of the tunable receivers.

5,355,142

MICROSTRIP ANTENNA STRUCTURE SUITABLE FOR USE IN MOBILE RADIO COMMUNICATIONS AND METHOD FOR MAKING SAME

Robert Marshall, Littleton; Mark Rogers; Theresa C. Boone, both of Boulder, and Farzin Lalezari, Louisville, all of Colo., assignors to Ball Corporation, Muncie, Ind.

Filed Oct. 15, 1991, Ser. No. 776,160

Int. Cl.[5] H01Q *1/38*

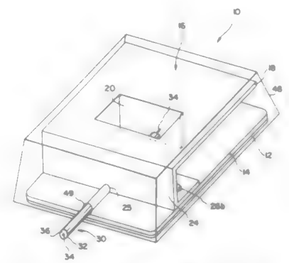
U.S. Cl. 343—700 MS **22 Claims**

1. A microstrip antenna suitable for use in mobile radio communication applications, comprising:

a first element that has a first substantially planar surface that is electrically conductive and extends from a first right terminal end to a first left terminal end;

a second element that includes a second substantially planar surface that extends from a second right terminal end to a second left terminal end and is electrically conductive and further includes a member that is made from the same piece of material as said second substantially planar surface, is located between said second right terminal end and said second left terminal end, has a free end, and is also electrically conductive, said second substantially planar surface being located substantially parallel to said first substantially planar surface wherein a space is defined intermediate to said first substantially planar surface and said second substantially planar surface, said free end of said member being located within said space and at an angle that is other than parallel to said second substantially planar surface;

a third element that is electrically conductive and extends between said second left terminal end of said second substantially planar surface and said first substantially planar surface;



wherein one of said first substantially planar surface and said second substantially planar surface has a length that is substantially equal to one-quarter of the wavelength (λ) of the center frequency to which the microstrip antenna is tuned; and

transmission line means for coupling radio frequency signals to said first substantially planar surface and said member, said transmission line means includes a first conductor that is electrically connected to said first substantially planar surface and a second conductor that is electrically connected to said free end of said member at a point within said space.

5,355,143

ENHANCED PERFORMANCE APERTURE-COUPLED PLANAR ANTENNA ARRAY

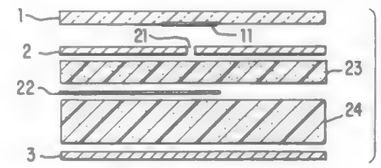
Jean F. Zürcher, Tavel sur Clarens; John R. Sanford, Oberutzwil; Kuno Wettstein, Schwellbrunn, and Richard C. Hall, Herisau, all of Switzerland, assignors to Huber & Suhner AG, Kabel-, Kautschuk-, Kunststoffwerke, Herisau, Switzerland

Continuation of Ser. No. 847,301, Mar. 6, 1992, abandoned. This application Jun. 28, 1993, Ser. No. 82,905

Claims priority, application Switzerland, Mar. 6, 1991, 680/91; Dec. 4, 1991, 3584/91

Int. Cl.[5] H01Q *1/38, 13/10*

U.S. Cl. 343—700 MS **14 Claims**



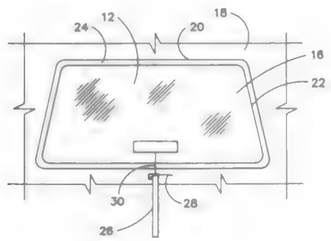
1. An aperture-coupled planar antenna having an adjustable directional radiating pattern created by at least one antenna element, comprising:

a ground plane;

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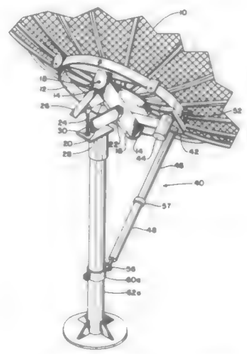
a first dielectric layer formed over said ground plane;
a second dielectric layer formed over said first dielectric layer;
a feeding network having at least one feed line formed between said first and second dielectric layers;
a coupling network formed over said second dielectric layer and having at least one coupling slot respectively aligned with said at least one feed line; and
a carrier plate formed over said coupling network and having formed thereon at least one radiating patch constituting said at least one antenna element, respectively aligned with said at least one coupling slot;
wherein said at least one radiating patch is formed by at least two patch segments for each antenna element, wherein the length of each of said patch segments is preadjusted such that the frequency band thereof overlaps a part of the overall desired frequency spectrum of said antenna, and wherein said at least one coupling slot is butterfly shaped.

5,355,144
TRANSPARENT WINDOW ANTENNA
Eric K. Walton, Columbus, Ohio; Harry S. Koontz, Pittsburgh, and Raymond D. Moran, Springdale, both of Pa., assignors to The Ohio State University, Columbus, Ohio
Filed Mar. 16, 1992, Ser. No. 852,400
Int. Cl.[5] H01Q *1/32*
U.S. Cl. 343—713 **12 Claims**



1. A slot antenna formed in association with a metal sheet having an inner metal edge defining an aperture which is closed by a non-conductive, optically transparent window extending across the aperture, the antenna including:
(a) an electrically conducting, optically transparent panel bonded to the window and having an outer peripheral edge spaced from said inner metal edge to define a polygonal antenna slot between the edges;
(b) an unbalanced transmission line having a grounded conductor and an ungrounded conductor coupled respectively to interfacing sides of the slot, the grounded conductor being coupled to the metal sheet near said inner metal edge; and
(c) a coupling metallic layer, generally parallel to and spaced from the electrically conducting, transparent panel by an interposed dielectric layer and positioned near the oppositely facing peripheral edge of the conducting, transparent panel across the slot from the grounded conductor, the coupling metallic layer having an area interfacing the transparent conducting layer selected to provide a capacitance between the coupling metallic layer and the transparent conducting layer which impedance matches the slot antenna to the transmission line by minimizing net reactance, the ungrounded transmission line conductor being connected to the coupling metallic layer to capacitively couple the ungrounded conductor to the transparent conducting panel.

5,355,145
SATELLITE DISH ACTUATOR MOUNTING CONSTRUCTION
Donald E. Lucas, 2115 Kenyon, NW., Massillon, Ohio 44646
Filed Jul. 30, 1992, Ser. No. 922,630
Int. Cl.[5] H01Q *3/04*
U.S. Cl. 343—882 **4 Claims**

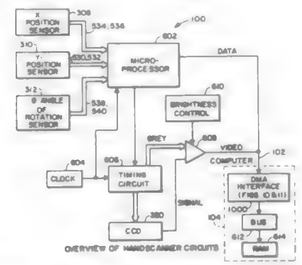


1. Satellite dish antenna mounting construction including a vertical support post having upper and lower ends, said lower end being mounted on a supporting surface, a pivotal polar mount member mounted on the upper end of the vertical support post, a satellite antenna dish frame pivotally mounted on the polar mount, a satellite antenna dish mounted on the dish frame, a power operated dish actuator having a motor and gear box housing with a motor and gear train mounted therein, an outer telescoping member extending downwardly from the gear box housing and having an open outer end, an inner telescoping member having an outer end movable within and extending downwardly from the outer telescoping member in response to operation of the motor and gear train, clamping means positioned on the vertical post at a position intermediate the upper and lower ends of the support post, a first universal pivot mount extending from the outer end of the inner telescoping member, a second universal pivot mount attached adjacent to the gear box housing, said first universal pivot mount pivotally mounted to the clamping means, and the second universal pivot mount pivotally mounted to the satellite dish frame at a position above the level of the location of the clamping means.

5,355,146
MULTI-DIRECTIONAL HAND SCANNER AND MOUSE
Wing-Lim Chiu, Quarry Bay, and Wai-Kwok Chew, Tai Po, both of Hong Kong, assignors to BMC Micro-Industries Ltd., Singapore, Singapore
Continuation-in-part of Ser. No. 489,183, Mar. 5, 1990, abandoned. This application Jan. 30, 1991, Ser. No. 647,832
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—156 **20 Claims**

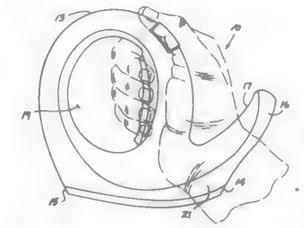
1. In a system for optically scanning the surface of an object and comprising an optical scanning device for repetitively generating representations of visually perceptible information of a portion of the object, each representation of visually perceptible information comprising a single row of pixel digits, and for each such representation of visually perceptible information for generating representations of movement of said scanning device over the object, said movement representations comprising a first X-direction movement representation, a first Y-direction movement representation, said Y-direction being normal to said X-direction and a representation of second Y-direction movement of a point on said scanning device

separate from the point of said first Y-direction movement representation, a method comprising:
determining from said representation of first X-direction movement and said representation of first Y-direction movement a position value;
determining from said representation a first Y-direction movement and said representation of second Y-direction movement a rotation value indicative of scanning device rotation;



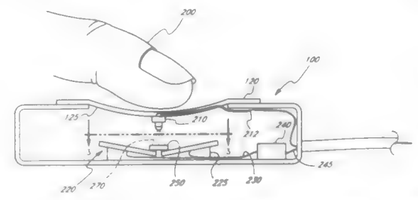
determining, from said position value and said rotation value, a storage location in a two-dimensional pixel array for a first of said pixel digits and a last of said pixel digits of the representation of visually perceptible information; and
writing into said two-dimensional pixel array said plurality of pixel digits in an approximation of a straight line between the storage location of the first pixel digit and the storage location of the last pixel digit.

5,355,147
ERGONOMIC COMPUTER MOUSE
Donald Lear, 11 Pine Side Dr., Perkasie, Pa. 18944
Filed Oct. 4, 1993, Ser. No. 130,692
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—156 **5 Claims**



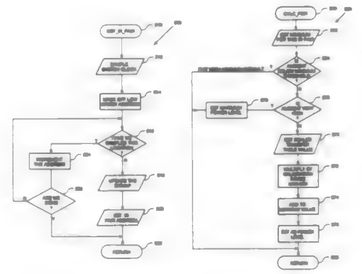
1. An ergonomic computer mouse, comprising,
a bottom wall having a planar bottom wall surface, with a housing extending from said bottom wall orthogonally oriented relative to said bottom wall surface, with said housing having a truncated elliptical configuration symmetrically oriented about a peripheral plane, with the peripheral plane orthogonally oriented relative to said bottom wall surface, and
a wrist support leg extending from said bottom wall and intersecting the housing at an intersection, with the wrist support leg including a concave wrist support surface, and the housing having a convex outer surface, with a first activator switch directed into the housing in a spaced relationship relative to the intersection and medially bisected by said peripheral plane, and a second activator switch mounted within said housing.

5,355,148
FINGERPOINT MOUSE
William J. Anderson, Anaheim, Calif., assignor to AST Research, Inc., Irvine, Calif.
Filed Jan. 14, 1993, Ser. No. 4,459
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—166 **16 Claims**



1. A fingerpoint mouse for use with a computer system having a graphical visual display with a graphics cursor, said mouse comprising:
a housing;
an elastic membrane supported by said housing and having a movable recess constructed to receive a finger of a user, said recess having a surface which tilts in response to pressure applied by the finger;
sensing circuitry which senses the motion of said recess caused by movement of the finger and generates a signal indicative of said motion, said sensing circuitry comprising a source of light connected to said surface of said recess such that said source of light tilts with said surface in response to pressure applied by the finger, and a plurality of photosensitive cells positioned within said housing with said source of light suspended above said photosensitive cells, said photosensitive cells arranged so as to detect movement of said source of light; and
conversion circuitry which converts said signals indicative of the motion of said recess into signals suitable to effect motion of a graphics cursor on said visual display.

5,355,149
SCANNING SYSTEM FOR TOUCH SCREEN KEYBOARDS
Mark W. Casebolt, Seattle, Wash., assignor to SpaceLabs Medical, Inc., Redmond, Wash.
Filed May 27, 1992, Ser. No. 889,780
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—175 **19 Claims**



1. A touch screen keyboard system for a display panel, comprising:
a plurality of spaced-apart light emitters positioned along at least one edge of said display panel;

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a plurality of spaced-apart light detectors positioned along an edge of said display panel opposite said light emitters;

power means for selectively energizing each of said light emitters in response to an activation signal applied to each of said light emitters;

detector means for enabling an output form at least one predetermined light detector while a respective light emitter is being energized, and for determining whether light from the energized light emitter is being received by said enabled light detector; and

control means for generating a pseudo random activation signal for each of said light emitters thereby energizing said light emitters in the pseudo random manner to reduce the probability that an external light source operating in close proximity will operate in synchronism and thus interfere with said touch screen.

5. A touch screen keyboard system for a display panel, comprising:

a plurality of spaced-apart light emitters positioned along at least one edge of said display panel to form part of said touch screen keyboard system;

a plurality of spaced-apart light detectors positioned along an edge of said display panel opposite said light emitters to form part of said touch screen keyboard system;

power control means for selectively energizing each of said light emitters in response to an activation signal applied to each of said light emitters, said power control means energizing each of said light emitters at an intensity corresponding to a respective intensity control signal;

detector means for enabling an output from at least one predetermined light detector while a respective light emitter is being energized, and for determining whether light from the energized light emitter is being received by said light detector; and

compensation means for generating each of said intensity control signals as a function of the intensity of ambient light so that the intensity of light emitted by said light emitters is a function of the intensity of ambient light.

14. A touch screen keyboard system for a display panel, comprising:

a plurality of spaced-apart light emitters positioned along at least one edge of said display panel;

a plurality of spaced-apart light detectors positioned along an edge of said display panel opposite said light emitters;

power means for selectively energizing each of said light emitters in response to an activation signal applied to each of said light emitters;

detector means for enabling at least one predetermined light detector while a respective light emitter is being energized, and for determining whether light from the energized light emitter is being received by said enabled light detector;

control means for straining said light emitter/light detector pairs by generating an activation signal for each of said light emitters;

memory means connected to said detector means to record whether light from each of said light emitters is being received by a respective light detector during a predetermined number of scans of said light emitter/light detector pairs; and

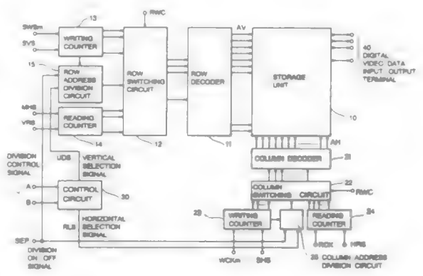
processing means operatively connected to said memory means for providing an indication that an area of said display panel corresponding to a predetermined light emitter/light detector pair has been activated only if light from the light emitter in said pair has not been received by the respective light detector in said pair during a plurality of successive scans of said light emitter/light detector pairs.

5,355,150

SUB-SCREEN DATA STORAGE CONTROL UNIT

Tatsuo Murakami, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 19,119
Claims priority, application Japan, Feb. 18, 1992, 4-029827
Int. Cl.[5] G09G *1/02*
U.S. Cl. 345—201 **8 Claims**



1. A sub-screen data storage control unit for digital video data to be selectively displayed on a sub-screen in a main screen of a display unit comprising:

a storage means **10** for storing digital video data for said sub-screen, said storage means including a plurality of divided sections for said sub-screen;

a writing address generation means for counting the horizontal synchronizing signal for said sub-screen divided corresponding to the vertical reduction ratio of said sub-screen and generating writing addresses for the row direction of said storage means by decoding the counted values;

another writing address generation means for counting the clock obtained by dividing the reading clock corresponding to the horizontal reduction ratio of said sub-screen and generating writing addresses for the column direction of said storage means by decoding the counted values;

a reading address generation means for counting the horizontal synchronizing signal for said main screen and generating reading addresses for the row direction of said storage means by decoding the counted values, another reading address generation means for counting said reading clock and generating reading address for the column direction of said storage means by decoding the counted values;

a selection signal generation means for generating selection signals to specify one of the divided sections in the storage area of said storage means divided corresponding to the division of said sub-screen; and

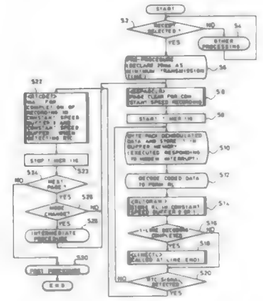
an address division means for providing at least one of the row direction writing address and the column direction writing address sent respectively from said row direction writing address generation means and said column direction writing address generation means to each of said divided sections in said storage area according to the section selection signal from said selection signal generation means.

5,355,151

IMAGE RECORDING APPARATUS AND METHOD IN WHICH RECORDING DATA INTERRUPTIONS ARE REDUCED

Takehiro Yoshida, Tokyo, and Yukio Nohata, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1992, Ser. No. 862,417
Claims priority, application Japan, Apr. 19, 1991, 3-088784
Int. Cl.[5] B41J *2/325*
U.S. Cl. 347—61 **14 Claims**



8. An image forming method for forming an image on a recording medium, comprising the steps of:

providing thermal printing means for printing said image;

storing printing information containing print data representative of a predetermined number of lines to be printed, said printing information being stored on a basis of a first speed at which said print data is input and a second speed at which said print data for one line is printed;

feeding at least said recording medium; and

outputting said print data on a line basis at a predetermined time interval between successive lines and delivering said print data which has been output to said thermal printing means.

5,355,152

THERMAL RIBBON ENCODER ASSEMBLY FOR A THERMAL PRINTING POSTAGE METER

Lorraine T. Porter, Dayton; Robert B. Schulte, Springboro, and Bruce E. Taylor, Tipp City, all of Ohio, assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 24, 1992, Ser. No. 949,913
Int. Cl.[5] B41J *2/32*
U.S. Cl. 346—76 PH **1 Claim**

1. An improved thermal printing apparatus, said printing apparatus having a base supporting a registration wall, said registration wall having means for supporting a thermal ribbon cassette, a print deck, a thermal print head mounted to the registration wall and extending over the deck to define a print station, a platen roller support assembly for supporting a platen roller parallel to the thermal print head and causing the platen roller to bias an envelope against the thermal print head and causing the envelope to traverse the thermal print head during a print cycle of the thermal printing apparatus under the influence of a drive motor, the improvement comprising:

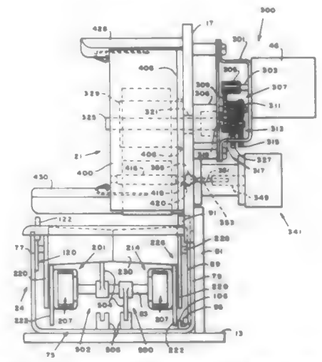
a thermal ribbon housed in said thermal ribbon cassette;

encoder means for producing an output signal representative of rate change of displacement of said thermal ribbon of said thermal ribbon cassette relative to said thermal print head;

a programmable microcontroller having means for receiving said output signal;

driver means responsive to instruction from said programmable microcontroller for causing said drive motor to drive said platen roller at one of a plurality of select speed which select speed corresponds to a desired print speed;

said programmable microcontroller having program means for comparing said output signal of said encoder means to said desired print speed and if a difference is detected greater than a predetermined amount to instruct said drive



means to incrementally decrease said drive motor speed until said difference is within a desired minimum range;

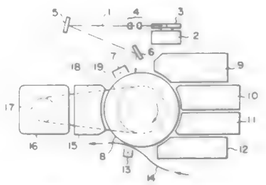
said programmable microcontroller to be further programmed such that if said difference is greater than said predetermined amount to interpreted said difference as a system error condition.

5,355,153

OPTICAL IMAGE WRITING UNIT HAVING IMPROVED DRIVING MECHANISM

Yuji Yasuda, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 23, 1992, Ser. No. 903,094
Claims priority, application Japan, Jun. 25, 1991, 3-153521
Int. Cl.[5] B41J *2/435*
U.S. Cl. 346—108 **11 Claims**



1. An optical image writing unit comprising:

a photoconductive image carrier medium;

writing means for optically writing images periodically on said photoconductive image carrier medium at a writing interval t_0; and

a driving mechanism, operatively coupled to said writing means, for moving said photoconductive image carrier medium so that the images are periodically written by said writing means at a predetermined area on said photoconductive image carrier medium, said driving mechanism comprising:

a drive source; and

drive coupling means for rotating said photoconductive image carrier by said drive source such that a driving element of said drive coupling means makes one revolution in a time which is one n-th of the writing interval, n being an integer.

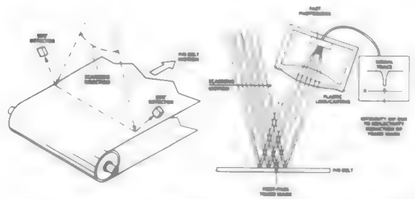
VOL 1167 ISS 2 OC 11 1994 UMI

5,355,154

ELECTRONIC COLOR PRINTERS MULTIPLE-PASS IMAGE SELF-REGISTRATION

Jean-Michel Guerin, Glendale, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1992, Ser. No. 996,388
Int. Cl.[5] B41J *2/435*
U.S. Cl. 346—108 8 Claims



1. In a xerographic color printer comprising a scanning laser beam which produces an output printed image and a border area from a first toner and subsequent toners which are laid down on a photoreceptor during first and subsequent passes, each pass comprising a plurality of scans, the method of registering said first and subsequent toners comprising the steps of:

A. on said first pass,

charging said photoreceptor to a first voltage,

charging said first toner to a second voltage which will enable said first toner to adhere to a charged portion of said photoreceptor, but not to a discharged portion,

using said laser beam to discharge an area around two points in said border, but not discharge said two points themselves, the first point before the beginning of said image area, the second point after the end of said image area, and

allowing toner to adhere to said two points to produce two toner marks,

B. on each scan of said subsequent passes,

using said laser beam to illuminate said marks,

measuring said laser beam reflected from said photoreceptor to determine the locations of said marks, and

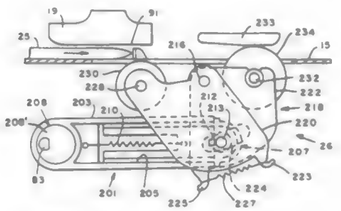
computing from said locations of said marks the start and end points of said image area.

5,355,155

ENVELOPE STOP POSITION FINGER AND RETRACTION APPARATUS FOR A THERMAL POSTAGE METER

John D. Mistyurik, Troy, Ohio, assignor to Pitney Bowes, Inc., Stamford, Conn.

Filed Sep. 24, 1992, Ser. No. 950,336
The portion of the term of this patent subsequent to Aug. 16, 2011, has been disclaimed.
Int. Cl.[5] B61J *13/00*
U.S. Cl. 346—134 3 Claims



1. A positioning assembly for a thermal printing postage meter having a base supporting a registration wall and a deck, and a thermal print head fixably mounted to said registration wall above a portion of said deck to define a print station for printing a postage indicia on an envelope having a leading edge positioned on said deck in said print station, comprising:

a stop lever having an envelope facing surface;

positioning means for supporting said stop lever in a first position such that said envelope facing surface extends generally perpendicular to said deck and provides an obstruction to said deck downstream of said print station in the direction of feeding said envelope to encounter said leading edge of said envelope and for repositioning said stop lever in a second position removing said envelope facing surface from obstructing said leading edge of said envelope; and

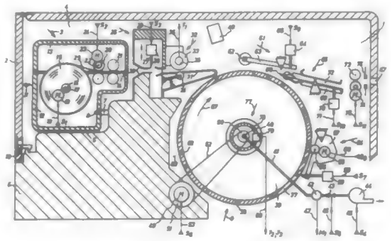
microcontroller means in communication with said positioning means for causing said positioning means to position said stop lever in said second position upon initiation of a meter print cycle and for causing said positioning means to position said stop lever in said first position when said print cycle is completed.

5,355,156

DEVICE FOR AUTOMATICALLY CLAMPING AND RELEASING RECORDING MATERIAL AND OPERATION OF SAID DEVICE

Ralf Balzeit, Preetz; Gunnar Behrens, Kiel Russee; Gerhard Bloehdorn, Schoenkirchen; Bernd Lassen, Moenkeberg; Hans Penza, Preetz, and Norbert Roth, Kiel, all of Fed. Rep. of Germany, assignors to Linotype-Hell AG, Kiel, Fed. Rep. of Germany

PCT No. PCT/DE90/00613, § 371 Date Feb. 18, 1992, § 102(e) Date Feb. 18, 1992, PCT Pub. No. WO91/03120, PCT Pub. Date Mar. 7, 1991
PCT Filed Aug. 9, 1990, Ser. No. 834,577
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1989, 3927162; Nov. 20, 1989, 3938480
Int. Cl.[5] H04N *1/08*
U.S. Cl. 346—138 27 Claims



1. An apparatus for automatically clamping film onto a recording drum of a reproduction device and for removing the film exposed by a recording element from the recording drum, comprising:

the recording drum being arranged in a light-tight space of the reproduction device;

a peripheral surface of the recording drum having means for vacuum-fixing of the film material comprising suction holes, said suction holes being arranged in suction hole rows proceeding substantially parallel relative to an axis of the drum, and the suction hole rows being connected to a stationary vacuum pump;

a roll film cassette that contains a web of the film as a rotatable film roll and is provided with a slot-shaped film passage opening which closes light-tight, said roll film cassette being receivable into the light-tight space of the reproduction device and means being provided for locking the cassette in said light-tight space, and the film passage opening being aligned toward the recording drum and having a longitudinal extent proceeding substantially parallel to the drum axis;

a conveying and guide surface means arranged between the film passage opening of the roll film cassette and the recording drum for receiving the film web unwound from the film roll and for guiding the web substantially tangentially relative to the recording drum in a region of the recording drum;

film conveying means for conveying the film web out of the roll film cassette and to the recording drum;

film cutting means arranged between the roll film cassette and the recording drum for cutting the film web a film sheet of a prescribed length to be respectively exposed;

a film length measuring means arranged between the roll film cassette and the recording drum for identifying a length of the film web that has respectively passed therethrough;

pressure means comprising a pressure roller that is pivotable against the recording drum in a region where a start of the film web conveyed via the conveying and guide surface means to the recording drum comes into contact with the drum surface;

a positioning drive means for turning the recording drum to start of clamping, start of exposure and start of release positions;

a lift-off means comprising a lift-off finger pivotable against the recording drum for peeling a respectively exposed sheet of film from the recording drum;

suction channels proceeding substantially parallel relative to the drum axis in the recording drum, each of said suction channels connecting the suction holes of a suction hole row to one another;

a vacuum distributor means controllable by rotational motion of the recording drum for connecting each of said suction channels to the stationary vacuum pump via a suction line that during clamping, a suction hole row on which a starting region of the film sheet lies is first charged with vacuum, further suction hole rows are then successively added and charged with vacuum in accordance with increasing wrap of the turning recording drum by the film sheet, and said addition of further suction hole rows occurring in accordance with a respective circumferential length of the film sheet to be clamped on;

the light-tight space of the reproduction device comprising a loading flap means for introduction of the roll film cassette and for closing in light-tight locking fashion;

a device carrier comprising an elevating platform means for depositing the roll film cassette inside the light-tight space; and

means for aligning the roll film cassette relative to the recording drum.

5,355,157

PLOTTER WITH PENCIL-LEAD DETECTING SYSTEM

Hiroshi Yoshino, Tokyo, Japan, assignor to Mutoh Industries, Ltd., Tokyo, Japan

Filed Dec. 14, 1992, Ser. No. 988,270
Claims priority, application Japan, Dec. 25, 1991, 3-356941; Apr. 7, 1992, 4-113930
Int. Cl.[5] G01D *15/16*; B43L *13/00*
U.S. Cl. 346—139 R 12 Claims

1. A plotter with a pencil-lead detecting system, comprising:

a knock-type pencil including a pencil case, a knock mechanism situated at an upper end portion of the pencil case and containing a plurality of pencil-leads, a chuck mechanism controlled by the knock mechanism to hold and release one of the pencil-leads fed from the knock mechanism, a movable ring situated at a lower end portion of the pencil case such that a part of the movable ring projects from the pencil case, and holding the pencil-lead fed from the chuck mechanism, and a spring for urging the movable ring downward;

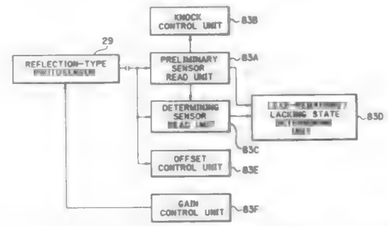
a pen holder means for holding and vertically moving the knock-type pencil;

reflection-type photosensing means for detecting an amount of projection of the movable ring from the pencil case;

preliminary sensor read means for performing a first read operation of the movable ring by reading an output from the photosensing means, with the pencil set in an elevated position relative to the photosensing means;

knock means for effecting a single lead-knocking operation for the pencil after the first read operation;

determining sensor read means for performing a second read operation of the movable ring by reading the output from the photosensing means after the lead-knocking operation, with the pencil set in the elevated position;



threshold level preparing means for preparing a determining threshold level based on a first sensor value obtained by the first read operation; and

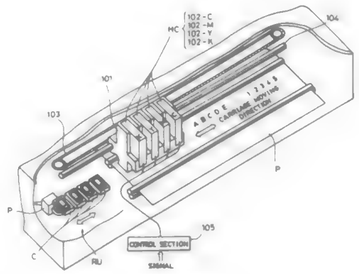
lead-remaining/lacking state determining means for determining a lead-remaining state or a lead-lacking state of the pencil by discriminating a difference between a second sensor value obtained by the second read operation and the first sensor value obtained by the first read operation, thereby determining the lead-remaining or lead-lacking state of the pencil.

5,355,158

INK JET APPARATUS AND METHOD OF RECOVERING INK JET HEAD

Genji Inada, Kawasaki; Hiroshi Tajika, Yokohama; Noribumi Koitabashi, Yokohama; Hitoshi Sugimoto, Yokohama; Atsushi Arai, Kawasaki, and Miyuki Matsubara, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 4, 1991, Ser. No. 637,633
Claims priority, application Japan, Jan. 11, 1990, 2-4366; Jan. 25, 1990, 2-15705; Apr. 11, 1990, 2-95484
Int. Cl.[5] G01D *15/18*
U.S. Cl. 347—4 28 Claims



1. An ink jet apparatus comprising:

an ink jet head including a discharge port surface having a port having walls forming an angle α at which ink forms a meniscus and an energy generator for generating energy to discharge ink from a discharge port for recording, wherein some of the ink discharged from said discharge

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port for recording may adhere to said discharge port surface as unwanted ink droplets, each droplet having an edge forming an angle Θ with said discharge port surface, wherein $\alpha > \pi - 2\Theta$; and

control means for controlling said energy generator to project the meniscus from said port and spread ink onto said discharge port surface to envelope unwanted ink droplets which adhere to said discharge port surface in the vicinity of said discharge port, wherein the ink spread onto said discharge port surface is sucked into said port to remove any unwanted ink droplets adhered to said discharge port surface.

5,355,159

COLOR FACSIMILE APPARATUS WHICH WARNS OF COLORANT AROMALIES

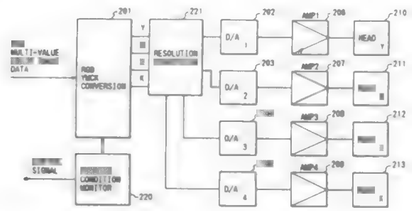
Yoji Kaneko, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 7, 1991, Ser. No. 772,688

Claims priority, application Japan, Oct. 8, 1990, 2-270302; Oct. 8, 1990, 2-270303; Oct. 8, 1990, 2-270304

Int. Cl.[5] B41J *2/01*

U.S. Cl. 349—19 **10 Claims**



1. An apparatus comprising:

image forming means for forming an image corresponding to received color image information, utilizing plural colorants;

detection means for detecting an abnormality in one of said plural colorants; and

control means for causing said image forming means to form the image in a reduced size without using said one of said plural colorants.

5,355,160

RECORDER HAVING SEPARATE RECORDING MEANS AND FEEDING MEANS HOUSINGS

Mass K. Ozawa, Ebina; Kunitaka Ozawa, Isehara; Katsunori Hatanaka, Yokohama; Tetsuo Suzuki, Hiratsuka; Tetsuzo Mori, Hirtsuka; Tadashi Shiina, Hiratsuka, and Ryuichi Ebinuma, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 681,640, Apr. 4, 1991, abandoned, which is a continuation of Ser. No. 368,139, Jun. 16, 1989, abandoned, which is a continuation of Ser. No. 281,970, Nov. 30, 1988, abandoned, which is a continuation of Ser. No. 3,051, Jan. 13, 1987, abandoned, which is a division of Ser. No. 733,389, May 13, 1985, Pat. No. 4,651,173. This application Apr. 2, 1992, Ser. No. 863,475

Claims priority, application Japan, May 19, 1984, 59-101508; May 19, 1984, 59-101509; May 19, 1984, 59-101510; May 19, 1984, 59-101511; May 19, 1984, 59-101512

Int. Cl.[5] B41J *2/01, 29/13*

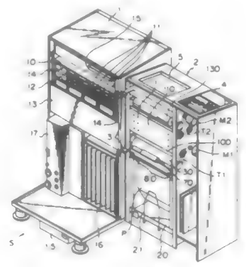
U.S. Cl. 349—108 **7 Claims**

1. A recorder comprising:

a fixed recording means housing holding ink jet recording means for recording on a record medium at a record position, said fixed recording means housing further holding an electrical power supply for supplying power to said apparatus and a control circuit unit for controlling an ink jet recording head of said recording means; and

a feed means housing holding feed means for feeding the record medium past the record position;

wherein said feed means housing holds all driving mechanisms of the feed means including a feed means driving



motor and is rotatably connected to said fixed recording means housing to move between open and closed positions with respect to said fixed recording means housing, said feed means housing can assume the closed position in which the recording means can record on the record medium and assume the open position in which the recording means and the feed means are exposed.

5,355,161

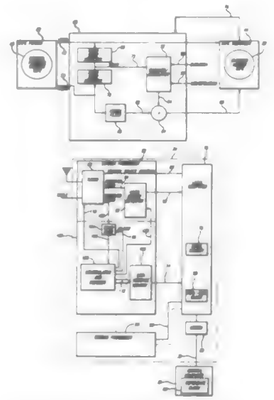
IDENTIFICATION SYSTEM FOR BROADCAST PROGRAM SEGMENTS

Richard M. Bird, Woodland Hills, Calif., and Houston F. Byrd, Lewisville, Tex., assignors to Concord Media Systems, Beverly Hills, Calif.

Filed Jul. 28, 1993, Ser. No. 98,598

Int. Cl.[5] H04N *7/01*

U.S. Cl. 348—2 **30 Claims**



1. An identification system for broadcast program segments, comprising:

means for supplying an original program segment having an audio channel;

means for supplying an encoded data frame of binary digits that includes a synchronization pattern identifying the start of the encoded data frame, a duration field identifying a prescribed program segment duration, and a program segment identification field identifying an original program segment;

means for adding the encoded data frame to the audio channel of the original program segment to form an encoded program segment having an encoded audio channel, wherein the adding means comprises:

audio detection means sensing the start of the original program segment,

start detection means using the audio detection means to initiate encoding of at least one encoded data frame and adding of each encoded data frame to the audio channel of the original program segment,

time duration input means signifying one of a plurality of prescribed program segment durations,

program segment identification input means identifying the original program segment with a plurality of alphanumeric characters, and

encoding means generating at least one encoded data frame between the times designated by the start detection means and the time duration input means;

means for receiving and decoding the encoded data frame from within the encoded program segment for identifying the encoded program segment;

means for verifying the integrity of the encoded audio channel of the encoded program segment; and

means for storing received data from the encoded data frame.

5,355,162

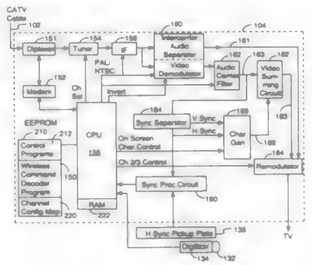
MULTI-STANDARD CABLE TELEVISION SYSTEM

Lauren F. Yazolino, Orinda, and Mircho A. Davidov, Alamo, both of Calif., assignors to Pacific Ray Video Limited, Mountain View, Calif.

Filed Jul. 13, 1993, Ser. No. 90,502

Int. Cl.[5] H04N *5/46, 7/173*

U.S. Cl. 348—11 **7 Claims**



1. A system for transmitting selected television signals to a number of independently controlled television sets, comprising:

a multiplicity of sources of television signals, said sources providing television signals in different ones of a plurality of predefined television signal formats;

a multiplicity of television sets, each television set having a multi-standard receiver that selectively receives ones of said television signals in said plurality of predefined television signal formats;

transmission media;

television signal generators for transmitting respective television signals from specified ones of said sources onto said transmission media in assigned respective frequency channels, each frequency channel having a bandwidth sufficient to transmit a respective television signal in a respective one of said plurality of predefined television signal formats;

a multiplicity of converters, each converter respectively coupling said transmission media to a respective one of said multiplicity of television sets, each said converter including

a controller for variable selecting a given one of the frequency channels in accordance with user commands;

a channel map memory for storing channel map data that identifies, for each frequency channel that is to be accessible by the television set coupled to said converter, a frequency band and one of said predefined television signal formats; and

a frequency convertor, coupled to said channel map memory, for shifting the television signal of the variably selected frequency channel to a predefined output channel in accordance with said channel map data in said channel map memory; and

a channel map transmitter that transmits a channel map via said transmission media and for downloading into the channel map memories of said multiplicity of converters.

5,355,163

VIDEO CAMERA THAT AUTOMATICALLY MAINTAINS SIZE AND LOCATION OF AN IMAGE WITHIN A FRAME

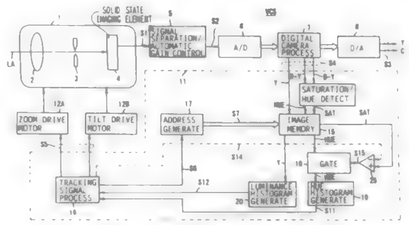
Tadafusa Tomitaka, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 15, 1993, Ser. No. 120,927

Claims priority, application Japan, Sep. 28, 1992, 4-282505; Nov. 7, 1992, 4-322652

Int. Cl.[5] H04N *9/64*

U.S. Cl. 348—234 **21 Claims**



1. A video camera system comprising:

picture element information forming means for forming picture element information constructing a display plane on the basis of an imaging output signal of an object whose image is to be taken;

standard measurement frame setting means connected to said forming means for setting a standard measurement frame of a predetermined size at a predetermined position on said display plane;

detection measurement frame setting means connected to said forming means for setting a detection measurement frame of the predetermined size on said display plane;

standard frequency characteristic data forming means receiving said standard measurement frame and said picture element information for forming standard frequency characteristic data of brightness levels and hue angles on the basis of brightness information and hue information of the image within said standard measurement frame;

detection frequency characteristic data forming means receiving said detection measurement frame and said picture element information for forming detection frequency characteristic data of said brightness levels and said hue angles on the basis of said brightness information and said hue information of the image within said detection measurement frame;

detection measurement frame determining means receiving said standard frequency characteristic data and said detection frequency characteristic data for determining a similarity of said standard frequency characteristic data and said detection frequency characteristic data in order to

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determine said detection measurement frame having said detection frequency characteristic data of a large similarity; and

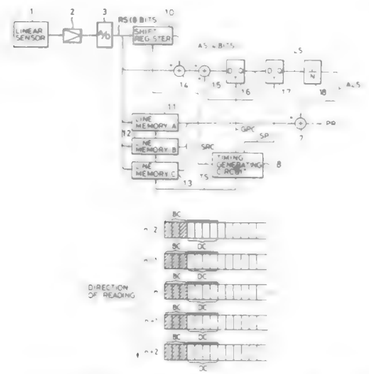
picture element information change control means connected to said determining means for driving and controlling said picture element information forming means so as to enter image information of said determined detection measurement frame into said standard measurement frame.

5,355,164

METHOD AND APPARATUS OF CORRECTION IMAGE READ SIGNALS BY REMOVING THE INFLUENCE OF DARK CURRENT THEREFROM

Yuji Shimoyama, and Yoko Takada, both of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 718,468, Jun. 20, 1991, abandoned. This application Jun. 23, 1992, Ser. No. 902,740
Claims priority, application Japan, Jun. 25, 1990, 2-166098
Int. Cl.[5] H04N *5/335*
U.S. Cl. 348—243 **4 Claims**



1. An apparatus for correcting image read signals comprising:

a linear sensor for reading an image line by line and outputting read pixel signals of said image and blind pixel signals;

an A/D converter for converting an output signal of said linear sensor into a digital signal;

a shift register, coupled to an output of said A/D converter for receiving said digital signal, for storing and outputting a plurality of blind pixel signals of a plurality of lines;

line memories, coupled to said output of said A/D converter for storing said digital signal;

a first subtracter for subtracting blind pixel signals from a plurality of preceding lines from blind pixel signals of a current line;

an adder, having a first input coupled to an output of said first subtracter and a second input for outputting addition data;

a first latch circuit for latching the addition data from the adder, and having an output coupled to said second input of the adder;

a second latch circuit for storing the addition data;

a divider for dividing an output of said second latch circuit so as to obtain an average value;

a second subtracter for subtracting the average value from an output of at least one of said line memories, and for outputting a corrected signal; and

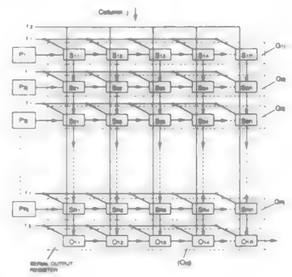
a timing generating circuit for controlling said line memories, said shift register and said first and second latch circuits by timing signals.

5,355,165

VERY HIGH FRAME RATE CCD IMAGER

Walter F. Kosonocky, Skillman, and John L. Lowrance, Princeton, both of N.J., assignors to Princeton Scientific Instruments, Inc., Monmouth Junction and New Jersey Institute of Technology, Newark, both of N.J.

Filed Aug. 6, 1992, Ser. No. 925,219
Int. Cl.[5] H04N *3/14*
U.S. Cl. 348—311 **32 Claims**



1. An image sensor comprising:

an array of M photo sensitive elements arranged in "R" rows and "C" columns; where R and C are integers greater than one; and R times C is equal to M;

M storage registers, one register per photo sensitive element; each one of said M storage registers being coupled to a respective one of said M photo sensitive elements; each one of said M storage registers including N storage elements; where N is an integer greater than two;

means coupled to each one of said M storage registers for selectively sampling photo signals generated by its associated photo sensitive element and transferring the sampled photo signals to, and propagating them along, the N storage elements of its associated storage register, at a first rate, for storing sampled photo signals in the storage elements of its associated M storage register; and

means coupled to the M storage registers for selectively reading-out the photo signals stored in the storage elements of each storage register, at a second rate.

5,355,166

IMAGE SENSING APPARATUS

Nobuaki Date, and Syuichiro Saito, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 947,941, Sep. 21, 1992, abandoned, which is a continuation of Ser. No. 658,091, Feb. 20, 1991, abandoned, which is a continuation of Ser. No. 336,707, Apr. 12, 1989, Pat. No. 5,023,723. This application Feb. 9, 1994, Ser. No. 194,129
Claims priority, application Japan, Apr. 18, 1988, 63-93580; Apr. 18, 1988, 63-93581; Apr. 18, 1988, 63-93582
Int. Cl.[5] H04N *9/00*
U.S. Cl. 358—336 **18 Claims**

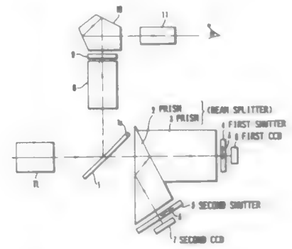
1. An image sensing apparatus, comprising:

(a) a plurality of image sensing devices;

(b) a beam splitter for supplying an image of an object to said plurality of image sensing devices;

(c) a plurality of shutter means, each of which is disposed between said beam splitter and a respective one of said plurality of image sensing devices, said shutter means being arranged to travel in the same direction relative to the image of an object formed on each of said plurality of the image sensing devices;

(d) detection means for detecting that all of said plurality of shutter means are in a full open state; and



(e) at least one filter means for passing a predetermined color of said image to a corresponding one of said plurality of image sensing devices.

5,355,167

ORTHOGONAL TRANSFORM CODING APPARATUS

Tatsuro Juri, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 6, 1991, Ser. No. 741,047
Claims priority, application Japan, Aug. 6, 1990, 2-208605
Int. Cl.[5] H04N *7/133*
U.S. Cl. 348—405 **21 Claims**

1. An orthogonal transform coding apparatus comprising:

a large blocking means for assembling sample values of an input sample to form a large block of sampled values;

a small blocking means for dividing said large block of sampled values into a plurality of small blocks;

an orthogonal transform means for orthogonally transforming the sample values in each of the small blocks to obtain orthogonally transformed components;

a plurality of kinds of quantizers each for quantizing the orthogonally transformed components to obtain quantized data;

an amount of data estimating means for estimating an amount of coded data which would be obtained by variable length encoding the quantized data quantized by each of the plurality of kinds of quantizers in each of the plurality of small blocks to obtain a plurality of amount of data values corresponding to the plurality of quantizers with respect to the plurality of small blocks, said amount of data estimating means including an amount of data storing means for storing the plurality of amount of data values

a quantizer selecting means for selecting, among the plurality of kinds of quantizers, a quantizer which gives an optimum amount of coded data with respect to each of the plurality of small blocks according to the amount of data values stored in the amount of data storing means such that a total amount of coded data in the large block becomes either a maximum amount of data within a range not larger than an actually transmittable amount of data or a minimum amount of data within a range not smaller than the actually transmittable amount of data, and for outputting a selection signal indicative of the selected quantizer;

a variable length encoding means for encoding a quantized data quantized by the quantizer selected by said quantizer selecting means to obtain actual coded data; and

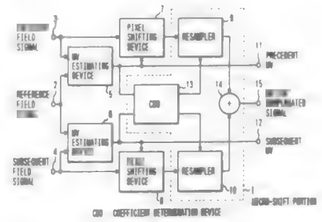
a transmission means for transmitting the actual coded data and the selection signal.

5,355,168

HIGH PRECISION MOTION COMPENSATION APPARATUS

Kenji Sugiyama, Yokosuka, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Oct. 29, 1992, Ser. No. 968,124
Claims priority, application Japan, Oct. 30, 1991, 3-313607
Int. Cl.[5] H04N *7/137*
U.S. Cl. 348—416 **13 Claims**



9. In a motion compensation apparatus for receiving a first imaging signal, a second imaging signal, and a reference imaging signal for outputting a motion compensated signal, including first and second motion vector estimating devices for respectively outputting first and second motion vector signals representing functions of motion estimates based on the reference imaging signal and on a respective one of said first and second imaging signals, and first and second pixel shifting means, said first pixel shifting means connected for receiving said first motion vector signal and processing the first imaging signal, and said second pixel shifting means connected for receiving said second motion vector signal and processing the second imaging signal, the improvement comprising:

coefficient determining means for determining resampling coefficients for resampling output signals of said first and second pixel shifting means,

said coefficient determining means comprising coefficient lookup table means for obtaining said resampling coefficients as a function of both said first motion vector signal and said second motion vector signal,

first and second resampler means for performing motion compensation on said first and second imaging signals, respectively,

said first and second resampler means connected for receiving said output signals of said first and second pixel shifting means, respectively, and for receiving respective resampling coefficients from said coefficient determining means as functions of both said first and second motion vector signals, and

combining means for combining outputs of said first and second resampler means to obtain said motion compensated signal.

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5,355,169

METHOD FOR PROCESSING A DIGITAL VIDEO SIGNAL HAVING PORTIONS ACQUIRED WITH DIFFERENT ACQUISITION CHARACTERISTICS

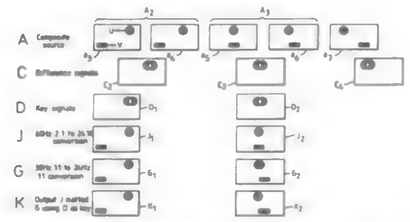
John W. Richards; Martin R. Dorricott, both of Hampshire; Morgan W. A. David, Surrey, and Stephen M. Keating, Berkshire, all of Great Britain, assignors to Sony United Kingdom Limited, Middlesex, United Kingdom

Filed Mar. 12, 1993, Ser. No. 31,109

Claims priority, application United Kingdom, Mar. 18, 1992, 9205921

Int. Cl.[5] H04N 7/01

U.S. Cl. 348—459 10 Claims



1. A method of processing an input digital video signal representing a series of input frames each formed of an array of pixels each having a respective pixel value to produce an output video signal representing a series of output frames each formed of an array of pixels each having a respective pixel value, at least some of the input frames each having a first picture portion having a first acquisition characteristic and a second picture portion having a second acquisition characteristic, the method comprising the steps of:

distinguishing between said first and second picture portions in said input frames; and

processing said first and second picture portions differently to produce said output frames so that said output frames simulate acquisition of said first and said second picture portions with generally a third acquisition characteristic.

5,355,170

METHOD FOR TRANSMITTING PERIODICALLY REPEATED TELETEXT DATA IN A TELEVISION RECEIVER

Gerhard Eitz, Poing, and Gerhard Möll, Gräfelfing, both of Fed. Rep. of Germany, assignors to Telefunken Fernseh und. Rundfunk GmbH, Hanover, Fed. Rep. of Germany

PCT No. PCT/EP90/00712, § 371 Date Dec. 12, 1991, § 102(e) Date Dec. 12, 1991, PCT Pub. No. WO90/13970, PCT Pub. Date Nov. 15, 1990

PCT Filed May 3, 1990, Ser. No. 773,553

Claims priority, application Fed. Rep. of Germany, May 3, 1989, 3914697; Nov. 11, 1989, 3937653

Int. Cl.[5] H04N 7/087, 7/08

U.S. Cl. 348—467 9 Claims

1. A method for the transmission of periodically repeated teletext data in a television receiver comprising:

providing teletext data including basic data of conventionally constructed teletext pages, complementary data for teletext pages, with the complementary data for a respective teletext page being in the form of at least one associated complementary page structured in a format of a conventionally constructed teletext page and having page numbers coded in the hexadecimal system which are allocated to page numbers of the associated conventional teletext pages and which are ordered in accordance with a fixed scheme in the decimal system selectable using a ten-key keypad, and separate information about the number of complimentary pages for each associated, conventional teletext page in the format of a separate complimentary page;

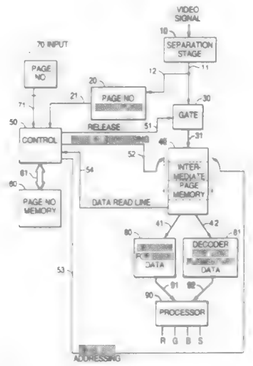
transmitting the provided teletext data in a television signal;

receiving the television signal and separating the teletext data from the received signal;

assembling the teletext data belonging to a particular teletext page;

intermediately storing the assembled teletext data, with the teletext basic data of a respective teletext page being separately stored from the associated complementary data pages; and

processing the stored teletext data such that the characters allocated to the basic data are made to appear at those character positions where no complementary data is present, and that the characters allocated to the basic data working in conjunction with the complementary data are made to appear at those character positions where complementary data is present.



5,355,171

DIGITAL OSCILLATOR AND COLOR SUBCARRIER DEMODULATION CIRCUIT HAVING THE DIGITAL OSCILLATOR

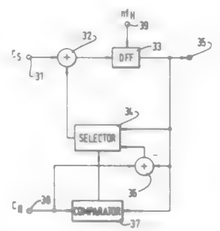
Toru Miyazaki, Yokohama, and Kiyoyuki Kawai, Yokosuka, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawaski, Japan

Filed Sep. 29, 1992, Ser. No. 954,503

Claims priority, application Japan, Sep. 30, 1991, 3-252250

Int. Cl.[5] H04N 9/45

U.S. Cl. 348—505 10 Claims



1. A digital oscillator for producing an output signal comprising:

integration means for cumulatively adding a specified signal and a control means output and for outputting said output signal; and

control means for comparing said output signal and a control signal, said control means adapted to produce said control means output, said control means output being said output signal when said control signal is greater than said output signal, said control means output being a difference between said output signal and said control signal when said control signal is less than said output signal, said control means output being sent to said integration means so that an output frequency of said integration mean is maintained.

5,355,172

METHOD AND APPARATUS OF SAMPLING A REFERENCE SIGNAL

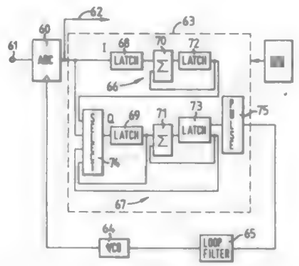
Phillip Adams, and Barry D. R. Miles, both of Newbury, United Kingdom, assignors to Alpha Image Limited, England

Filed Oct. 21, 1992, Ser. No. 964,419

Claims priority, application United Kingdom, Oct. 25, 1991, 9122711

Int. Cl.[5] H04N 9/44

U.S. Cl. 348—505 17 Claims



1. A method of sampling a reference signal so as to generate an error signal indicative of a phase error between an actual sampling phase and a desired sampling phase, wherein said desired sampling phase is displaceable from an optimum sampling phase, comprising the steps of:

sampling the reference signal at the frequency of said reference signal;

accumulating a plurality of said samples; and

periodically multiplying said accumulation of samples by a coefficient derived as a function of the phase displacement between the optimum sampling phase and the derived sampling phase.

5,355,173

IMAGE PROCESSING SYSTEM WITH EXTERNAL STORAGE OF SPECIAL EFFECT DATA

Shinichi Fujita, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 24, 1992, Ser. No. 933,808

Claims priority, application Japan, Aug. 27, 1991, 3-215130

Int. Cl.[5] H04N 9/74

U.S. Cl. 348—590 5 Claims

1. An image processing system for applying a video special effect to input image data, comprising:

a memory for storing image processing data;

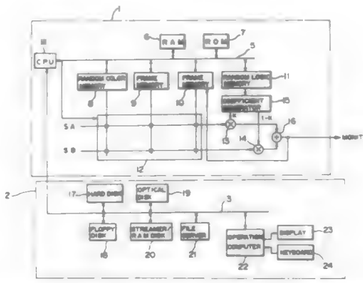
coefficient generator means for generating coefficients on the basis of the image processing data stored in said memory;

signal processor means for processing the input image data on the basis of the coefficients generated by said coefficient generator means;

switch means for selectively supplying the input image data to the signal processor means from at least one of a plurality of sources of image data;

control means for controlling operation of said switch means; said control means also being connected for data communication with said memory; and

external storage means for storing plural kinds of image processing data;



said control means being connected for data communication with said external storage means and controlling said external storage means and said memory so as to transfer at least a desired one of said plural kinds of image processing data to said memory from said external storage means.

5,355,174

SOFT EDGE CHROMA-KEY GENERATION BASED UPON HEXOCTAHEDRAL COLOR SPACE

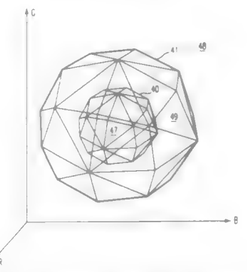
Yasushi Mishima, Tokyo, Japan, assignor to Imagica Corp., Kyoto, Japan

Filed Mar. 16, 1993, Ser. No. 31,884

Claims priority, application Japan, Jan. 22, 1993, 5-027442

Int. Cl.[5] H04N 9/75

U.S. Cl. 348—592 3 Claims



1. A chroma-key processing method for extracting an object to be foreground from a material image in the form of data of three primary colors RGB, using difference of color, and for obtaining a key value for a composite with a background image, which comprises dividing a three-dimensional space having three primary colors RGB as 3 orthogonal axes into 48 triangular pyramids having common representative background color as apices, setting an inner plane as a border between a background region and a soft key region with respect to each of the triangular pyramids to provide an inner hexoctahedron which defines a discriminative border of the background region in the RGB three-dimensional space, setting an outer plane as a border between a foreground region and the soft key region with respect to each of the triangular pyramids to provide an outer hexoctahedron which defines a discriminative border of the foreground region in the RGB three-dimensional space, making an interior division of the two hexoctahedrons to obtain a hexoctahedron as equipotential surfaces of key value of the soft key region, checking as to which of said 48 triangular pyramids each pixel of a material

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image belongs, and using parameters from an identification function determined by said inner and outer planes for each of the belonging triangular pyramids to calculate said key value for the composite with the background image.

5,355,175

VIDEO MIXING APPARATUS CAPABLE OF COMBINING TWO INPUT SIGNALS AND VARYING THE MIXING RATIO LINE BY LINE

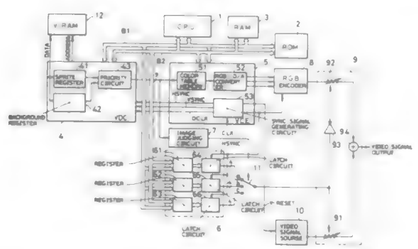
Setsuo Okada, Sapporo; Noriyoshi Takeya, Tokorozawa; Manabu Okamoto, Tokorozawa; Yoshinobu Nagase, Tokorozawa; Takashi Yoshimi, Tokorozawa; Hitoshi Yamazaki, Tokorozawa; Hiroyasu Matsuura, Tokorozawa; Masakazu Miyazaki, Tokorozawa; Yoshiki Furuta, Tokorozawa; Masahiro Sui, Tokorozawa, and Hirofumi Matoba, Tokorozawa, all of Japan, assignors to Hudson Soft Co., Ltd, Sapporo and Pioneer Electronic Corp., Tokyo, Japan

Filed Jun. 2, 1993, Ser. No. 71,014

Claims priority, application Japan, Jun. 3, 1992, 4-143039

Int. Cl.[5] H04N *5/265*

U.S. Cl. 348—595 **3 Claims**



1. A video mixing apparatus for mixing an analog video signal obtained from a recording medium and a graphics video signal having a plurality of screens, said apparatus comprising:

fade data generating means for generating fade data indicative of a mixing ratio between said analog video signal and each of said screens of said graphics video signal;

holding means for holding a plurality of fade data generated from said fade data generating means and for outputting the fade data synchronously with a horizontal sync signal,

mixing means for individually adjusting levels of the playback video signal and the graphics video signal in accordance with the fade data outputted from said holding means and for additively mixing the adjusted signals,

data generating means for generating one of a plurality of image data corresponding to said plurality of screens of said graphics video signal in accordance with a priority signal representing a priority order in reproduction of said screens;

means for converting said image data outputted from the data generating means into said graphics video signal; and

discrimination means for judging to which one of said screens said image data outputed from said data generating means belongs,

wherein said fade data generating means generates the fade data for each of said screens of said graphics video signal, and said holding means holds the fade data for each of said screens of said graphics video signal and supplies, to said mixing means, one of the plurality of fade data held according to the result of the discrimination by said discrimination means.

5,355,176

LUMINANCE/CHROMINANCE SIGNAL SEPARATING APPARATUS WHICH ATTENUATES CHROMINANCE SIGNAL BASED ON PHASE CHANGE OF CHROMINANCE SIGNAL

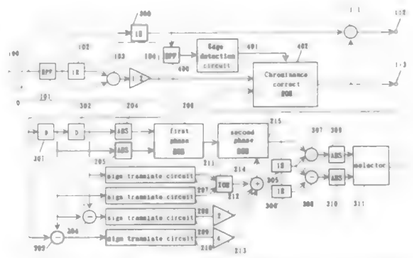
Satoru Inagaki, Suita, and Yoshihisa Nishigori, Itami, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 23, 1993, Ser. No. 109,997

Claims priority, application Japan, Oct. 13, 1992, 4-274635

Int. Cl.[5] H04N *9/78*

U.S. Cl. 348—609 **6 Claims**



1. A luminance signal and chrominance signal separating apparatus comprising:

separating means for separating a luminance signal and a chrominance signal from an input composite video signal;

phase calculation means for calculating a phase of the chrominance signal from the separating means;

delay means for delaying an output signal of the phase calculation means by a predetermined period of time;

phase difference calculation means receiving an output signal of the delay means and the output signal of said phase calculation means for calculating a phase difference therebetween;

chrominance signal correction means for attenuating the chrominance signal from said separating means in response to an output signal of the phase difference calculation means;

subtractor means for subtracting an output signal of said chrominance signal correction means from the input composite video signal;

luminance signal output means for outputting an output signal of the subtractor means as an output luminance signal; and

chrominance signal output means for outputting the output signal of said chrominance signal correction means as an output chrominance signal.

5,355,177

LUMINANCE/COLOR SIGNAL SEPARATION APPARATUS

Sung H. Hong, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 15, 1993, Ser. No. 137,498

Claims priority, application Rep. of Korea, Feb. 1, 1993, 1322/1993

Int. Cl.[5] H04N *5/21*

U.S. Cl. 348—609 **6 Claims**

1. A luminance/color signal separation apparatus comprising:

analog/digital conversion means for sampling a composite video signal inputted therein at a desired rate and converting the sampled composite video signal into a digital composite video signal;

adjacent signal detection means for detecting from the composite video signal from said analog/digital conversion means a target composite video signal from which luminance and color signals are to be separated and composite video signals vertically and horizontally adjacent to the target composite video signal; said adjacent signal detection means including,

a first sample memory for delaying the composite video signal from said analog/digital conversion means by two samples;

a second sample memory for delaying the resultant composite video signal from said first sample memory by two samples;

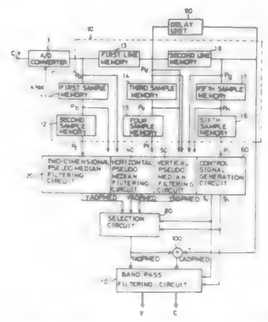
a first line memory for delaying the composite video signal from said analog/digital conversion means by one line;

a third sample memory for delaying the resultant composite video signal from said first line memory by two samples and outputting the resultant composite video signal as the target composite video signal;

a fourth sample memory for delaying the target composite video signal from said third sample memory by two samples;

a second line memory for delaying the resultant composite video signal from said first line memory by one line;

a fifth sample memory for delaying the resultant composite video signal from said second line memory by two samples; and



a sixth sample memory for delaying the resultant composite video signal from said fifth sample memory by two samples;

two-dimensional pseudo median filtering means for obtaining a correlation of the composite video signal from said analog/digital conversion means and the target composite video signal and the vertically and horizontally adjacent composite video signals from said adjacent signal detection means and filtering those composite video signals to extract a first luminance signal therefrom when the target composite video signal has vertical, horizontal and diagonal variations; wherein said two-dimensional pseudo median filtering means is constructed to output the first luminance signal by performing an arithmetic operation for the composite video signal from said analog/digital conversion means and the target composite video signal and the vertically and horizontally adjacent composite video signals from said adjacent signal detection means; and wherein said two-dimensional pseudo median filtering means including,

a first MIN filter for selecting the minimum value among the composite video signal from said analog/digital conversion means and the composite video signal from said first sample memory, the composite video signal from said first line memory and the target composite video signal from said third sample memory in said adjacent signal detection means and filtering the selected composite video signal to extract a fourth luminance signal therefrom;

a second MIN filter for selecting the minimum value among the composite video signals from said first to fourth sample memories in said adjacent signal detection means and filtering the selected composite video signal to extract a fifth luminance signal therefrom;

a third MIN filter for selecting the minimum value among the composite video signals from said first and second line memories and the composite video signals from said third and fifth sample memories in said adjacent signal detection means and filtering the selected composite video signal to extract a sixth luminance signal therefrom;

a fourth MIN filter for selecting the minimum value among the composite video signals from said third to sixth sample memories in said adjacent signal detection means and filtering the selected composite video signal to extract a seventh luminance signal therefrom;

a first MAX filter for selecting the maximum value among the composite video signal from said analog/digital conversion means and the composite video signal from said first sample memory, the composite video signal from said first line memory and the target composite video signal from said third sample memory in said adjacent signal detection means and filtering the selected composite video signal to extract an eighth luminance signal therefrom;

a second MAX filter for selecting the maximum value among the composite video signals from said first to fourth sample memories in said adjacent signal detection means and filtering the selected composite video signal to extract a ninth luminance signal therefrom;

a third MAX filter for selecting the maximum value among the composite video signals from said first and second line memories and the composite video signals from said third and fifth sample memories is said adjacent signal detection means and filtering the selected composite video signal to extract a tenth luminance signal therefrom;

a fourth MAX filter for selecting the maximum value among the composite video signals from said third to sixth sample memories in said adjacent signal detection means and filtering the selected composite video signal to extract an eleventh luminance signal therefrom;

a fifth MAX filter for selecting the maximum value among the fourth to seventh luminance signals from said first to fourth MIN filters;

a fifth MIN filter for selecting the minimum value among the eighth to eleventh luminance signals from said first to fourth MAX filters;

a first adder for adding output signals from said fifth MAX and MIN filters; and

a first amplifier for amplifying an output signal from said first adder and outputting the amplified signal as the first luminance signal;

horizontal pseudo median filtering means for obtaining a correlation of the target composite video signal and the horizontally adjacent composite video signals from said adjacent signal detection means and filtering those composite video signals to extract a second luminance signal therefrom;

vertical pseudo median filtering means for obtaining a correlation of the target composite video signal and the vertically adjacent composite video signals from said adjacent signal detection means and filtering those composite video signals to extract a third luminance signal therefrom;

control signal generation means for generating horizontal and vertical control signals to select one of the first to third luminance signals from said two-dimensional, horizontal and vertical pseudo median filtering means;

luminance signal selection means for selecting one of the first to third luminance signals from said two-dimensional, horizontal and vertical pseudo median filtering means in

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response to the horizontal and vertical control signals from said control signal generation means and outputting the selected luminance signal as the final luminance signal;

delay means for delaying the target composite video signal from said adjacent signal detection means by a predetermined time period for a timing matching with the final luminance signal from said luminance signal selection means;

color signal extraction means for removing the final luminance signal from said luminance signal selection means from the target composite video signal delayed by said delay means to extract a color signal therefrom; and

band pass filtering means for filtering the color signal from said color signal extraction means at a narrow band to remove a color spread phenomenon thereof.

5,355,178

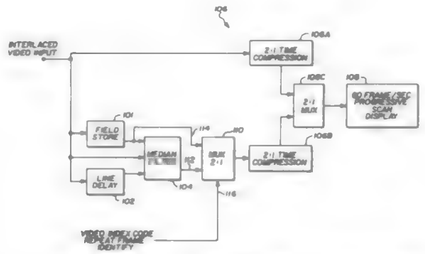
MECHANISM FOR IMPROVING TELEVISION DISPLAY OF STILL IMAGES USING IMAGE MOTION-DEPENDENT FILTER

Kenneth A. Parulski, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 24, 1991, Ser. No. 782,040

Int. Cl.[5] H04N *5/262*

U.S. Cl. 348—620 **9 Claims**



1. A system for use with a digitized image processing system in which images that have been captured on an image recording medium are digitized into image data and stored as image data files on a digital data base, said system controlling the manner in which the digitized images are accessed from the data base for retrieval and display, comprising a data base reader for reading from the digital data base the digitized image data of a respective data file in response to a first user command, means for manipulating the image in response to a second user command, a code generator for generating a video index code having a first value in response to manipulation of the image in accordance with the second user command, and a second value in the absence of such manipulation of the image.

8. A system for providing television signals comprising:

means for generating an image-containing television signal comprised of a sequence of television frames;

means for generating a single video index code in association with each television frame, said video index code being incorporated into said image-containing television signal and having a first value in response to a respective television frame image being different from the previous television frame image, and a second value in response to said respective television frame image being the same as the previous television frame image; and

means including an interpolation filter producing interpolated data for selectively modifying said image-containing television signal in dependence upon the value of said video index code.

9. A system for providing television signals comprising:

means for generating an image-containing television signal comprised of a sequence of television frames;

means for generating a single video index code in association with each television frame, said video index code being incorporated into said image-containing television signal and having a first value in response to a respective television frame image being different from the previous television frame image, and a second value in response to said respective television frame image being the same as the previous television frame image; and

means including a median filter for selectively modifying said image-containing television signal in dependence upon the value of said video index code.

5,355,179

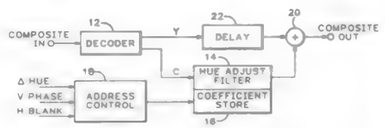
HUE CONTROL WITHOUT CHROMINANCE DEMODULATION FOR PAL

John J. Ciardi, Beaverton, and Terrence J. Trausch, Portland, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 20,937, Feb. 22, 1993, abandoned. This application Jan. 14, 1994, Ser. No. 181,484

Int. Cl.[5] H04N *9/64*

U.S. Cl. 348—654 **3 Claims**



1. A hue control circuit comprising:

means for separating a modulated chrominance component from a luminance component in a composite television signal;

means for filtering the modulated chrominance component using a set of coefficients corresponding to a desired hue adjustment, the set of coefficients being selected from a plurality of sets of coefficients with each set of coefficients representing a different phase offset, to produce an adjusted modulated chrominance component; and

means for combining the adjusted modulated chrominance component with the luminance component to produce an output composite television signal incorporating the desired hue adjustment.

5,355,180

APPARATUS FOR AND METHOD OF A TELEVISION RECEIVER INCORPORATING AUDIO/VISUAL WARNING OF VIEWING DISTANCE AND AUDIO MESSAGE RECORD/PLAYBACK FEATURES

Woon G. Back, Kumi, Rep. of Korea, assignor to Goldstar Co., Ltd.

Filed Dec. 17, 1992, Ser. No. 992,121

Claims priority, application Rep. of Korea, Dec. 19, 1991, 91-23517

Int. Cl.[5] H04N *5/44*

U.S. Cl. 348—734 **6 Claims**

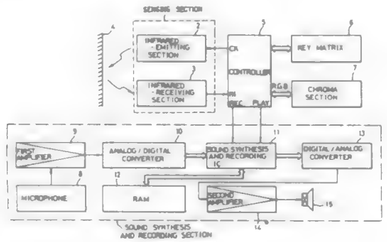
1. A viewing distance warning and sound recording method for a television receiver, comprising the steps of:

a) detecting the entry of a sound recording key and if the sound recording key is entered, performing on-screen display notifying that the present mode is a sound recording mode, to effect the sound recording for a predetermined time;

b) detecting the entry of a sound control key and if the sound control key is entered, setting either a message output mode or a viewing distance warning mode;

c) detecting if an object exists within a predetermined distance from a television screen when the viewing distance warning mode is set at the step b) and if the object is detected, outputting a viewing distance warning message recorded at the step a); and

d) detecting the entry of a message identification key when the message output mode is set at the step b) and if the



message identification key is entered, outputting a specific message recorded at the step a).

5,355,181

APPARATUS FOR DIRECT DISPLAY OF AN IMAGE ON THE RETINA OF THE EYE USING A SCANNING LASER

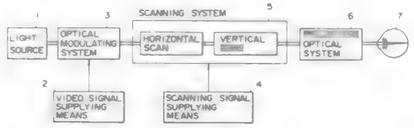
Koji Ashizaki, Tokyo; Masanobu Yamamoto; Senri Miyaoka, both of Kanagawa, and Sakuya Tamada, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 16, 1991, Ser. No. 745,704

Claims priority, application Japan, Aug. 20, 1990, 2-216978; Mar. 14, 1991, 3-074736

Int. Cl.[5] H04N *9/31*

U.S. Cl. 348—744 **20 Claims**



1. A direct viewing picture image display apparatus comprising:

a light source for emitting a laser beam;

video signal supplying means for supplying a video signal;

modulating means for optically modulating the laser beam emitted from said light source in response to the video signal supplied from said video signal supplying means;

a variable focus optical means for providing depth information to the modulated laser beam received from said modulating means;

scanning signal supplying means for supplying a scanning signal;

scanning means responsive to said scanning signal for causing said modulated laser beam received from said variable focus optical means to effect a horizontal and vertical scan; and

a projecting optical system for projecting and focusing the scanning laser beam received from said scanning means to form an image of the scanned, modulated laser beam directly on the retina of an eye of a user of the picture image display apparatus.

5,355,182

GOLFING SPECTACLES

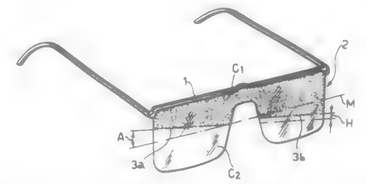
Umberto Barbera, Turin, Italy, assignor to Newtel S.r.l., Turin, Italy

Filed Apr. 15, 1992, Ser. No. 868,660

Claims priority, application Italy, Apr. 15, 1991, T091U000085

Int. Cl.[5] G02C *7/16*

U.S. Cl. 351—45 **2 Claims**



1. A pair of spectacles to be worn by a golfer to facilitate the alignment of a golf ball with a target, including:

a spectacle frame, and

two lens elements supported by the frame, each of said two lens elements each having a dark, tinted upper region and a clear lower region, the tinted upper region of one lens being greater in area than the tinted upper region of the other lens with the regions being separated by two parallel but non-aligned lines, each inclined to the horizontal by between 5° and 15°,

each line being oriented downwardly from left to right, as seen from outside the spectacles, in a pair of spectacles for a right-handed person and from right to left in a pair of spectacles for a left-handed person,

one of the two lines being situated in front of the right eye and the other of the two lines being situated in front of the left eye when the spectacles are in use with one of the lines being offset upward of the other line by a distance of the order of 2 mm.

5,355,183

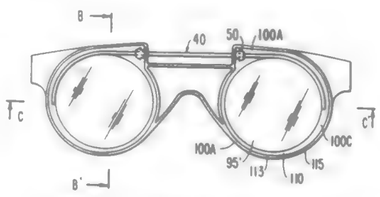
SEALED ADJUSTABLE POLARIZED SUNGLASSES

Douglas Andrea, Old Brookville, N.Y., assignor to Andrea Eyewear, Inc., Long Island City, N.Y.

Filed Sep. 30, 1992, Ser. No. 953,890

Int. Cl.[5] G02C *7/12*

U.S. Cl. 351—49 **19 Claims**



1. A variable density ophthalmic device comprising:

a frame provided with a bridge portion connecting right and left frame sections each supporting at least one rotatable polarizing lense, said frame further comprising:

a rear frame component having a bridge portion connecting right and left sections each supporting the rotatable polarizing lense;

means defining at least one opening in the rear frame component;

means for moving the rotatable lenses, including operating means and sealing means at the opening; and

a front frame component having a bridge portion connecting

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right and left sections, wherein the improvement comprises said front frame component matingly fitting and substantially hermetically sealed to said rear frame component;

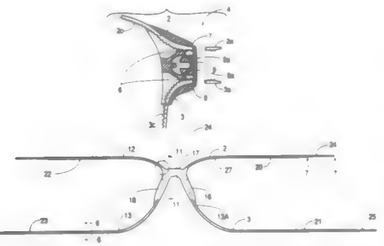
so that by said sealing means and said front frame component being substantially hermetically sealed to said rear frame component, said variable density ophthalmic device is substantially sealed, substantially liquid-proof and has a substantially moisture-free atmosphere between the front and rear frame components.

5,355,184

FRAME FOR EYEGLASSES HAVING FLEXIBLE STRAPS LENS RETAINERS

Nicholas G. Varveris, 538 Churchill Ave., Palo Alto, Calif. 94301, and John P. Valenti, San Martin, Calif., assignors to Nicholas G. Varveris, Palo Alto, Calif.

Filed Apr. 9, 1993, Ser. No. 45,999
Int. Cl.[5] G02C *1/04*
U.S. Cl. 351—106 **25 Claims**



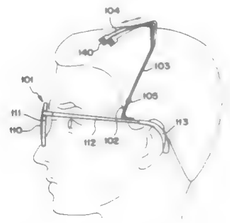
1. An eyeglass frame for a pair of glass lenses comprising a nose-piece, a pair of ratcheting clasps and a pair of flexible straps extending from said nose-piece, said straps having ratchet means on a surface thereof, such that said straps are wrappingly placeable around a periphery of a respective one of said lenses and an end of said straps containing said ratchet means cinched in a respective one of said ratcheting clasps to firmly hold said lenses in said frame.

5,355,185

NOSE PAD-FREE EYE GLASS FRAME

Min S. Lee, 69-23, Kwangchun-Dong, Seo-Gu, Kwangju, Rep. of Korea

Filed May 24, 1993, Ser. No. 65,230
Claims priority, application Rep. of Korea, Jun. 12, 1992, 92-10428[U]; Jun. 12, 1992, 92-10429[U]; Feb. 19, 1993, 93-2354
Int. Cl.[5] G02C *3/00, 9/00*
U.S. Cl. 351—63 **8 Claims**



1. A nose pad-free eye glass frame comprising:

a pair of rims for receiving lenses;

a pair of side temples, each having a front end hingedly connected to a respective rim, and a rear end configured for placement over a wearer's ear; and

a supporting means attached to each of said side temples for holding said rims at a selected distance from the wearer's eyes, each supporting means comprising:

first and second joint members each having a first end portion connected to a respective side temple adjacent a rear end thereof, and a second end portion extending upwardly from said first end portion, said second end portions disposed generally parallel to one another,

first and second substantially parallel connecting members connected to respective second end portions and extending upwardly toward a top portion of the wearer's head, and

head seating means connected to free ends of said connecting members and configured for engagement with the wearer's hair to firmly hold the eye glass frame thereto, and

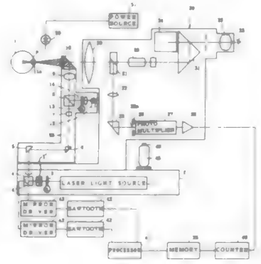
first and second hinges pivotably connecting respective connecting members to their associated joint members to enable said connecting members to be pivoted down toward the side temple when not in use.

5,355,186

OPHTHALMIC MEASUREMENT APPARATUS

Koichi Akiyama, Sagamihara, Japan, assignor to Kowa Company Ltd., Japan

Filed Mar. 5, 1992, Ser. No. 846,568
Claims priority, application Japan, May 14, 1991, 3-107710
Int. Cl.[5] A61B *3/10*
U.S. Cl. 351—215 **10 Claims**



1. An ophthalmic measurement apparatus having an optical system for irradiating the interior of an eye with a beam of substantially visible-region laser light and using the light scattered from the interior of the eye to perform specific measurements, the apparatus comprising:

a laser beam projection section for projecting into an eye a linearly polarized laser light beam emitted by a laser source;

a light receiving section provided with a photosensor for detecting laser light scattering from within the eye, an angle of the optical axes formed by the laser beam projection section and light receiving section with respect to the eye to be examined being set to be substantially ninety degrees; and

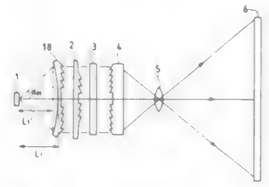
polarization varying means for varying a polarization direction of the laser beam from the laser beam projection section so that during alignment of the eye with the optical system of the apparatus the polarization direction is set substantially perpendicular to a plane that includes the eye, the optical axis of the laser beam projection section and the optical axis of light receiving section, and during measurement operations the polarization direction is set in a direction that is substantially in the plane.

5,355,187

LIQUID CRYSTAL PROJECTION DISPLAY

Masanori Ogino, Yokohama; Yoshiaki Iwahara, Yokosuka; Takeo Yamada, Yokohama; Shigeru Mori, Chigasaki; Fumio Inoue, and Akio Yamamoto, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 11, 1993, Ser. No. 29,640
Claims priority, application Japan, Mar. 13, 1992, 4-054749
Int. Cl.[5] G03B *21/00*
U.S. Cl. 353—38 **8 Claims**



2. A liquid crystal projection display comprising:

a light source means;

a liquid crystal panel means including a liquid crystal panel;

a projection lens means;

a screen means;

a first optical system disposed on an entrance side of said liquid crystal panel and having a peripheral illuminance enhancing means comprising a first light converging means disposed relatively remote from said light source means, and a second light converging means disposed relatively near to said light source means to enhance a ratio of illuminance of a peripheral region of an entrance surface of said first light converging means to that of a central region of the same;

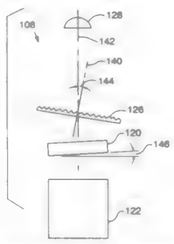
wherein said first light converging means comprises a first Fresnel lens means, said second light converging means comprises a second Fresnel lens means, and a light converging power of said central region of said first Fresnel lens means is higher than that of said peripheral region of the same, wherein said peripheral region of said first Fresnel lens means is bent toward said light source means so that said first Fresnel lens means is concave toward said light source means.

5,355,188

METHOD AND APPARATUS FOR DISTORTION CORRECTION IN OPTICAL PROJECTORS

Jonathan R. Biles, Portland; Gary B. Kingsley, and Arlie R. Conner, both of Tualatin, all of Oreg., assignors to In Focus Systems, Inc., Tualatin, Oreg.

Filed Sep. 9, 1993, Ser. No. 119,437
Int. Cl.[5] G03B *21/14*
U.S. Cl. 353—69 **14 Claims**



1. A method of projecting onto a screen an image having reduced distortion using a projector having an optical train that includes an image source, a field lens, and a projection lens, the image source and field lens having optical centers and the projection and field lenses having optical axes, the method comprising:

offsetting the optical center of the image source from the optical axis of the projection lens to position the image;

orienting the field lens so that its optical axis is not parallel to that of the projection lens to reduce keystone distortion; and

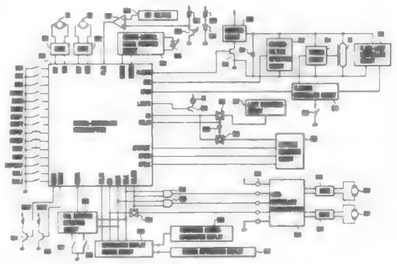
positioning the optical center of the field lens on the optical axis of projection lens to reduce distortion, whereby the image is projected without keystoning or trapezoidal distortion.

5,355,189

CAMERA HAVING A ZOOM FLASH UNIT

Ryuichi Kobayashi; Hidehiko Fukahori; Kenji Yokoyama, and Tsuyoshi Fukuda, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 10, 1992, Ser. No. 911,700
Claims priority, application Japan, Jul. 19, 1991, 3-179715
Int. Cl.[5] G03B *15/03, 5/00, 17/38*
U.S. Cl. 354—149.1 **10 Claims**



1. A photographic system comprising:

a camera body including a shutter;

a zoom lens having a variable focal length and mounted upon said camera body;

a shutter release operation member for operating a shutter;

a zoom flash unit comprising an illumination angle varying means for varying an illumination angle in correspondence with a focal length that is selected for the zoom lens,

wherein said illumination angle varying means varies the illumination angle within an illumination angle range that extends from a first illumination angle corresponding to a first focal length value to a second illumination angle corresponding to a second focal length value, as the focal length of said zoom lens is selected within a first range that extends from the first focal length value to the second focal length value; and

control means for controlling said camera body by (i) prohibiting the operation of the shutter in response to the shutter release operation member until the illumination angle is varied by said illumination angle varying means to correspond to the focal length when the selected focal length is within the first range, (ii) prohibiting the operation of the shutter in response to the shutter release operation member until the illumination angle corresponds to the first illumination angle or the second illumination angle when the selected focal length is outside the first range, whereby the shutter will respond to the shutter release operation member after the illumination angle corresponds to a selected focal length.

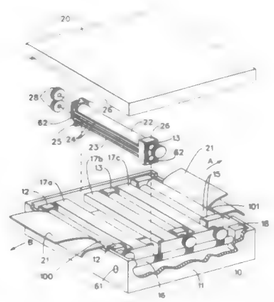
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5,355,190

SLOT IMPINGEMENT FOR AN AUTOMATIC TRAY PROCESSOR

John H. Rosenburgh, Hilton; David L. Patton, Webster; Joseph A. Manico, Rochester, and Ralph L. Piccinino, Jr., Rush, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1993, Ser. No. 56,649
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—324 18 Claims



1. An apparatus for processing photosensitive materials, said apparatus comprising:

a processing module comprising a container, at least one processing assembly placed in said container and at least one transport assembly disposed adjacent said at least one processing assembly, said at least one processing assembly and said at least one transport assembly forming a substantially continuous channel through which a processing solution flows, said at least one processing assembly and said at least one transport assembly substantially filling said container and being relatively dimensioned so that a small volume is provided for holding and moving processing solution and photosensitive material through said processing module, at least one discharge opening is provided in said at least one transport assembly or said at least one processing assembly for introducing processing solution to said channel; and

means for circulating the processing solution from said small volume provided in said module directly to said at least one slot nozzle.

5,355,191

PHOTOGRAPHIC PROCESSING APPARATUS AND METHOD

Takashi Nakamura; Yasuhisa Ogawa; Osami Tsuzi, and Takeshi Nakamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

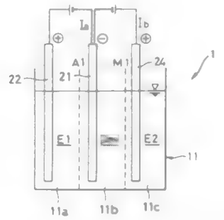
Filed Sep. 28, 1993, Ser. No. 127,996
Claims priority, application Japan, Sep. 30, 1992, 4-285437
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—324 11 Claims

1. An apparatus for processing a photographic silver halide photosensitive material after exposure, comprising

a tank having disposed therein an anion exchange membrane and a diaphragm impermeable to anions excluding at least OH^-,

said tank being charged with a processing solution in contact with a first electrolyte solution through said anion exchange membrane and in contact with a second electrolyte solution through said diaphragm,

a first anode immersed in said first electrolyte solution, a second anode immersed in said second electrolyte solution, and a cathode immersed in said processing solution, and



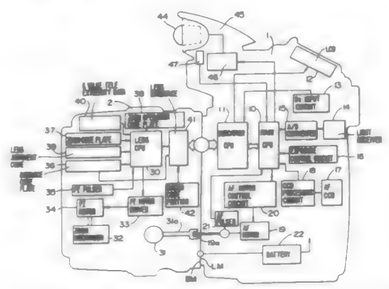
means for conducting electricity between said anodes and said cathode.

5,355,192

AUTOMATIC FOCUSING APPARATUS

Masahiro Kawasaki; Hiroyuki Takahashi, and Shigeru Iwamoto, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 748,786, Aug. 22, 1991, abandoned.
This application Aug. 24, 1993, Ser. No. 110,834
Claims priority, application Japan, Sep. 14, 1990, 2-244485
Int. Cl.[5] G03B *3/00, 17/00*
U.S. Cl. 354—403 25 Claims



1. An automatic focusing camera comprising a camera body and a photographing lens detachably mounted to the camera body, wherein:

said camera body comprises a focus detecting means which outputs a focus signal in accordance with an image formed by a photographing lens, an auxiliary light emitting means for emitting auxiliary light for detecting a focus, and an arithmetic operating means for calculating focusing data in accordance with the focus signal output from said focus detecting means;

said photographing lens comprises memory means for storing predetermined lens data, means for outputting the predetermined lens data to said camera body, and control means for calculating focus correction data for correcting the predetermined lens data, in accordance with the auxiliary light when said auxiliary light emitting means emits auxiliary light;

wherein said memory means stores said focus correction data when auxiliary light is emitted from said auxiliary light emitting means; and,

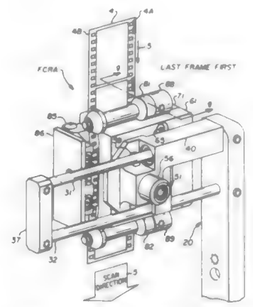
said arithmetic operating means of said camera body calculates focusing condition data in accordance with the focus signal outputted by said focus detecting means and the focus correction data input from said photographing lens.

5,355,193

FILM CODE READER ASSEMBLY FOR A FILM SCANNER

William I. Morris, Oakfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 20, 1993, Ser. No. 139,369
Int. Cl.[5] G03B *27/52*
U.S. Cl. 355—41 12 Claims



1. In a film scanner having a housing with internal mounting surfaces for mounting a film supply reel supplying developed and spliced film of pre-determined nominal width with optically readable film codes along either one of two edges of each frame of each film along a film path parallel with the film scanning direction past a film scanning unit to a film take-up reel, a film code reader assembly comprising:

mounting memos for mounting the film code reader assembly to a mounting surface in said housing along said film path at a position between said supply reel and said scanning unit;

film code reading means defining a code reading location;

film path defining means for defining the path of the scanning film at said code reading location;

self-alignment means for maintaining alignment of said film code reading means in response to positional variation of said scanning film in a direction perpendicular to said scanning direction; and

pivotably rotatable orienting means for orienting said film code reading means with respect to said one film edge having said film code.

5,355,194

OPTICAL PROCESSING APPARATUS

Nobuyuki Zumoto; Toshinori Yagi; Yasuhito Myoi; Teruo Miyamoto; Masaaki Tanaka, and Masao Izumo, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 27, 1992, Ser. No. 888,782
Claims priority, application Japan, May 30, 1991, 3-127433; Nov. 18, 1991, 3-301752; Mar. 24, 1992, 4-065886
Int. Cl.[5] G02B *17/00*
U.S. Cl. 355—53 12 Claims

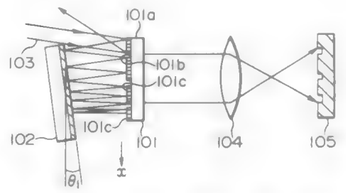
1. An optical processing apparatus comprising:

a light source for generating a beam of light (**103**);

optical focusing means (**104**) for focusing the light beam from said light source on an object (**105**) for optically processing it;

a mask (**101**) disposed at a location between said light source and said optical focusing means and having a reflecting portion (**101***c*) on one surface thereof for reflecting a portion of the light beam incident from said light source and a light transmitting portion (**101***b*) for allowing the passage therethrough of the remaining portion of the incident light beam toward said optical focusing means; and

a reflector (**102**) disposed in a spaced face-to-face relation with respect to said mask at said one surface thereof near said light source and having a fully reflecting surface for maximally reflecting the portion of the light beam, which is reflected from the reflecting portion of said mask, back



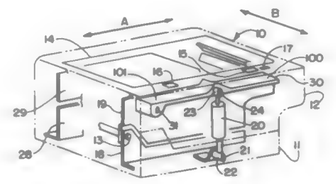
to said mask, said reflecting surface of said reflector being disposed at a predetermined angle of inclination (θ_1) relative to a plane parallel to the reflecting portion of said mask, to thereby enhance the uniformity of the light beam intensity over said one surface of the mask.

5,355,195

COPYING MACHINE

Mitsugu Miyamoto; Koji Ujino, and Hiroyuki Sakamoto, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Apr. 5, 1993, Ser. No. 42,530
Claims priority, application Japan, Apr. 7, 1992, 4-085773
Int. Cl.[5] G03B *27/62*
U.S. Cl. 355—75 13 Claims



1. A copying machine, comprising:

a lower body;

an upper body;

a damper contractively arranged between the upper body and the lower body; and

an adjusting member provided in the upper body;

wherein the lower body and the upper body are rotatably connected with each other at ends thereof and can be opened at the other ends thereof;

an original cover end an ADF are selectably mounted on the upper body so as to be replaced with each other; and

the adjusting member contracts the damper when the ADF is mounted on the upper body.

5,355,196

MICRO COMPUTER CONTROLLED IMAGE FORMING APPARATUS

Shigeo Kurando; Hiromi Sakata; Yukio Hashimoto, all of Osaka; Hidekazu Sakagami, Hyogo, and Kenzo Ono, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

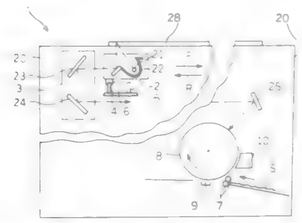
Continuation of Ser. No. 795,429, Nov. 20, 1991, abandoned.
This application Aug. 12, 1993, Ser. No. 105,779
Claims priority, application Japan, Nov. 27, 1990, 2-327857
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—206 6 Claims

1. An image forming apparatus including an optical system

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for exposing a document image to a light and scanning the document image, two motors, one of said two motors for driving said optical system and another one of said two motors for driving a photosensitive drum of said image forming apparatus, a home position switch for detecting the optical system when it comes to a vicinity of a starting position, and a resist roller for setting a feeding start timing of a transfer sheet to a transfer section, and reproducing the document image onto a transfer sheet, said image forming apparatus further comprising:

an encoder which generates pulse signals from a time when the optical system passes through the home position



switch, said encoder being connected to the drive motor of the optical system so as to count an amount of movement of the optical system from the home position,

a timing counting means for counting pulses from the encoder from a time when the optical system passes through the home position switch to a time when the resist rollers starts to feed a transfer sheet, and

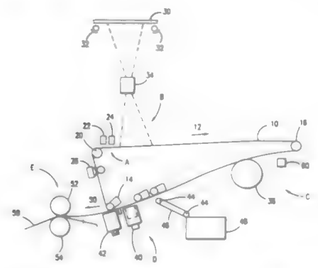
a timing setting means for setting the actual timing counted by the timing counting means on each actual machine from a time when the optical system passes through the home position switch to a time when the resist rollers starts to feed a transfer sheet.

5,355,197

METHOD AND APPARATUS FOR PREDICTING THE CYCLE-DOWN BEHAVIOR OF A PHOTORECEPTOR

Mark A. Hopkins, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Jun. 11, 1993, Ser. No. 75,361
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—208 **14 Claims**



1. A method for determining a dark development potential of a photoreceptor in a subsequent cycle during a cycle-down procedure, an initial charge potential in a present cycle being applied to the photoreceptor which loses some charge potential between a point of charging the photoreceptor and a point of using the charge potential remaining on the photoreceptor, comprising the steps of:

measuring the dark development potential on the photoreceptor in the present cycle;

determining a deviation ratio for the subsequent cycle based on a moving average constant and the measured dark development potential in the present cycle; and

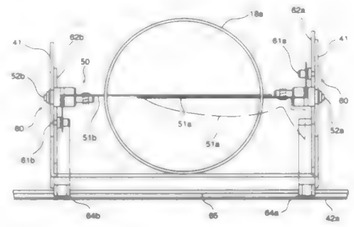
predicting the dark development potential on the photoreceptor for the subsequent cycle based on the deviation ratio and the initial charge potential to be applied in the subsequent cycle.

5,355,198

EXPOSURE DEVICE HAVING LIGHT SHADING MEMBERS FOR CORRECTING LIGHT DISTRIBUTION OF A PROJECTION MECHANISM IN A COPIER

Taku Saito, Hachioji, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Aug. 16, 1993, Ser. No. 106,818
Claims priority, application Japan, Aug. 31, 1992, 4-255533
Int. Cl.[5] G03G *15/04;* **F21V** *17/02*
U.S. Cl. 355—243 **4 Claims**



1. An exposure device comprising:

(a) a light source for imagewise exposing an original document;

(b) an optical path regulating member for regulating a cross section of an optical path from the light source, said optical path regulating member comprising a slit through which an imagewise light is passed to form an image on a photoreceptor;

(c) a lens provided on the optical path between the original document and said photoreceptor, the optical path having an optical axis;

(d) a lens moving mechanism, for moving said lens both in a direction of the optical axis of the optical path and in a direction perpendicular to the optical axis direction, to vary a magnification of the lens;

(e) a light shading member rotatable around a shaft, said light shading member being provided in a direction perpendicular to the optical axis direction and in a direction of the cross-section of the optical path, a center of said shaft being perpendicular to the optical axis of said optical path and being in parallel with a longitudinal direction of said slit;

said light shading member comprising two thin light shading plates, each thin light shading plate being thinner than said light shading member and being integrally provided in said light shading member, a length at adjacent portions of each of said two light shading plates in a width direction of the cross section of the optical path being unevenly changed; and

(f) a light shading member rotating mechanism for rotating said light shading member in accordance with a magnification ratio provided by said lens moving mechanism;

wherein when shading is absent, said light source has an even light distribution property at a predetermined magnification ratio for a position on a surface of said photoreceptor; and wherein:

when a surface of one of said two light shading plates is protected on the optical path at an angle crossing the optical axis and a magnification ratio larger than said predetermined magnification ratio is selected, a shape projected by said one of said light shading plates on a surface perpendicular to the optical axis is formed so that the light amount distribution on the photoreceptor is made uniform by means of said light shading member rotating mechanism; and

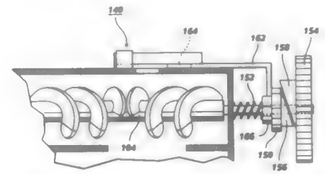
when a surface of the other one of said two light shading plates is projected on the optical path at another angle crossing the optical axis and another magnification ratio smaller than said predetermined magnification ratio is selected, a shape projected by said other one of said two light shading plates on the surface perpendicular to the optical axis is formed so that the light amount distribution on the photoreceptor is made uniform by means of said light shading member rotating mechanism.

5,355,199

DEVELOPMENT UNIT FOR AN ELECTROPHOTOGRAPHIC PRINTER HAVING A TORQUE-TRIGGERED OUTLET PORT

Daniel M. Bray, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 24, 1993, Ser. No. 125,889
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—245 **14 Claims**



1. A developer unit for an electrophotographic printer having a source of rotational motion therein, comprising:

a housing, defining a chamber for retaining developer material therein;

an auger, rotatable within the chamber for the conveying of developer material within the chamber;

a second member, rotatable within the chamber, the auger and the second member being adapted to receive rotational drive from the source of rotational motion;

a clutch responsive to a torque outside a predetermined range associated with the auger;

a selectably openable port defined in the housing, adapted to permit passage of developer material therethrough; and

a linkage operatively disposed between the clutch and the openable outlet port, whereby a torque outside a predetermined range associated with the auger actuates the clutch to move the linkage to open the outlet port.

5,355,200

PRINTER WITH PRINT DENSITY SWITCHING MEANS

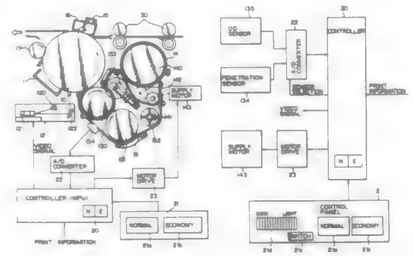
Hiroki Ohba, Fuchu; Yoshihiro Tonomoto, Kawasaki; Kiyohisa Yanagita; Yoji Houki; Tomokazu Akuta, Kawasaki, and Akihiro Komuro, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 2, 1992, Ser. No. 956,868
Claims priority, application Japan, Oct. 3, 1991, 3-256291
Int. Cl.[5] G03G *15/06, 21/00*
U.S. Cl. 355—246 **17 Claims**

1. An image forming apparatus, comprising:

an image forming mechanism for forming an image by applying toner particles onto a medium;

a mode selection switch for selecting a normal mode in which the toner volume applied on the medium is a first value, or an economy mode in which the toner volume applied on the medium is a second value which is lower than the first value, said mode selection switch outputting an output signal in accordance with the selected mode; and



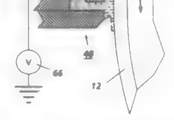
a controller for controlling the toner volume applied onto the medium based upon the output signal.

5,355,201

LIQUID DEVELOPMENT SYSTEM

Shyshung S. Hwang, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 21, 1993, Ser. No. 93,941
Int. Cl.[5] G03G *15/10*
U.S. Cl. 355—256 **27 Claims**



1. An apparatus for developing an electrostatic latent image with liquid toner, including;

a member comprising a lip adapted to supply liquid toner to the latent image to develop the latent image with a layer of liquid toner with the space between said lip and the latent image being greater than the thickness of the layer of liquid toner on the latent image;

means for reducing the pressure on the liquid toner as said member applies the liquid toner to the latent image to reduce the thickness of liquid toner on the latent image; and

means for electrically biasing said lip to attract the liquid toner from said lip to the latent image.

5,355,202

METHOD USING MAGNETIC MEMBER TO RETAIN MAGNETIC CARRIER OF DEVELOPER ON A DRUM IN ELECTROPHOTOGRAPHY

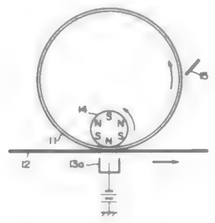
Yuichi Moriya, Shizuoka, Japan, assignor to Tomoegawa Paper Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1993, Ser. No. 21,046
Claims priority, application Japan, Feb. 24, 1992, 4-072160
Int. Cl.[5] G03G *9/08, 15/16*
U.S. Cl. 355—271 **3 Claims**

1. A transfer method for electrophotography comprising: providing a two-component developer comprising a magnetic carrier and a magnetic toner having a lower magnetic saturation than the magnetic carrier; transferring the magnetic toner to a recording sheet while holding the magnetic carrier on a

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surface of a developer-holding body with a magnetic member which is capable of magnetic adsorption and is disposed in an interior of, or on an inner surface of, the developer-holding



body at a location corresponding to a location at an outer surface of the developer-holding body past which the recording sheet is fed.

5,355,203

HEAT ROLL FIXING UNIT WITH UNIFORM HEAT DISTRIBUTION

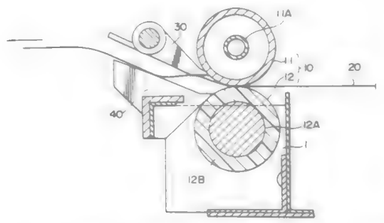
Tomoyuki Nishikawa, Matsudo, and Masahiro Kita, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyokabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 775,545, Oct. 15, 1991, abandoned. This application Aug. 6, 1993, Ser. No. 103,164

Claims priority, application Japan, Oct. 15, 1990, 2-107804[U]; Oct. 15, 1990, 2-107805[U]

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—285 **15 Claims**



1. A fixing device comprising a heat roller and a back-up roller, having a predetermined axial length and defining a central portion and side portions each extending from said central portion along the axial length, said fixing device fusing an unfixed toner image carried on a recording sheet during a fixing operation, said sheet having a width less than the predetermined axial length of said back-up roller and contacting said central portion of said back-up roller, wherein said heat roller comprises heater means having an output at axial end portions of said heater means higher than at a central portion of said heater means, for heating a portion of said heat roller corresponding to a passing area of said recording sheet to a higher temperature than of the remaining portions of said heat roller when said rollers are separated, said remaining portions correspond to said side portions of said back-up roller, said heater means of said heat roller comprising means for ensuring that a temperature distribution of said back-up roller becomes substantially uniform along the axial length of said back-up roller while said recording sheet is passing between said heat roller and said back-up roller, and means for moving one of said heat roller and said back-up roller between positions contacting each other and spaced from each other, said heat roller and said back-up roller being in said contacting position during said fixing operation.

5. The fixing device according to claim **1**, wherein said heating means comprises at least a pair of heating elements arranged in parallel along the axial direction of said heat roller, one of said heating elements being arranged to heat the axial center portion of said heat roller and the other of said heating elements being arranged to heat the axial end portions of said heat roller.

5,355,204

IMAGE FIXING APPARATUS WITHOUT CREASE OF FIXING FILM

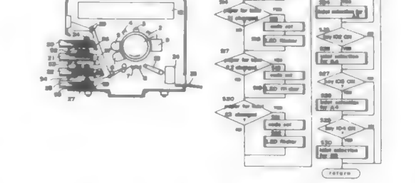
Kazuaki Aoki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 651,015, Feb. 4, 1991, abandoned. This application May 11, 1993, Ser. No. 59,728

Claims priority, application Japan, Feb. 9, 1990, 2-30650

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—285 **24 Claims**



1. An image fixing apparatus, comprising:

a stationary heater;

an endless film extending around said heater; and

a backup rotatable member for forming a nip with said heater with said film therebetween, wherein a recording material carrying an image is passed through a nip between said film and said backup rotatable member by which the image is fixed; and

wherein said heater is substantially crowned in a direction perpendicular to a movement direction of said film, and said backup rotatable member is substantially reversely crowned in a direction perpendicular to a movement direction of said film.

5,355,205

IMAGE FORMING METHOD AND APPARATUS HAVING IMPROVED COPY SHEET SUPPLY INLET SELECTABILITY

Osamu Toyama, Kobe, and Kadotaro Nishimori, Himeji, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 12, 1993, Ser. No. 17,136

Claims priority, application Japan, Feb. 17, 1992, 4-029514

Int. Cl.[5] G03G *15/00, 21/00;* **B65H** *3/44, 5/26*

U.S. Cl. 355—311 **8 Claims**

7. An image forming apparatus which is operated in one of a plurality of category for image forming and one of a plurality

of sub-categories each of which further classifies each the categories, said image forming apparatus comprising:

selecting means for selecting one desired category; and

control means for controlling said selecting means so as to select one desired sub-category following the selection of the desired category.

5,355,206

COPYING MACHINE WITH REGISTRATION ADJUSTING DEVICE

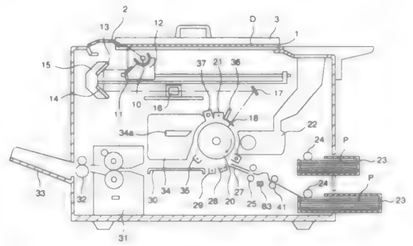
Kazuhisa Maruyama; Masaru Ushio, and Junji Sato, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Aug. 24, 1993, Ser. No. 111,213

Claims priority, application Japan, Sep. 21, 1992, 4-251118

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—317 **2 Claims**



1. A copying apparatus comprising:

(a) a platen on which an original document is placed, an image of which is optically read and then processed being formed on an image carrier;

(b) at least one sheet feeding cassette for storing recording sheets thereon;

(c) a sheet feeder provided on said cassette for feeding recording sheets one by one toward said image carrier to transfer the processed image which has been formed on said image carrier on recording sheet; and

(d) registering means for conveying the recording sheet fed by said feeder, for temporarily stopping the fed recording sheet in timed relation with the processed image on said image carrier, and for registering the processed image and the fed recording sheet; wherein each value of a period of time corresponding to a temporary stop of the recording sheets at said registering means fed by each cassette is used to calculate a mean value; and, upon comparing the calculated mean value with a predetermined reference value, a sheet feeding timing by said sheet feeder being advanced according to the comparison.

5,355,207

IMAGE FORMING APPARATUS EQUIPPED WITH A BINDING FUNCTION

Satoshi Yano, Imabari; Mitsuo Nomura, Kanazawa; Hiroyuki Arai, Osaka; Yoshifumi Ishii, Osaka, and Ichiro Takahashi, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 790,765, Nov. 12, 1991, Pat. No. 5,275,520. This application Oct. 4, 1993, Ser. No. 131,496

Claims priority, application Japan, Nov. 14, 1990, 2-310078; Nov. 14, 1990, 2-310079; Nov. 16, 1990, 2-312101

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—324 **15 Claims**

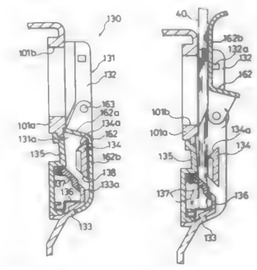
1. An image forming apparatus equipped with a binding function, said apparatus comprising:

means for forming an image onto a sheet;

an image forming apparatus body housing said image forming means;

a container attached to said body, said container having an insertion opening at its upper end, through which a binder is inserted, and a binding means at its bottom end; and

guide means movable between a first position in which said



guide means is adjacent to the bottom end of said container, and a second position in which said guide means projects beyond said insertion opening so as to laterally support a binder loaded in said container.

5,355,208

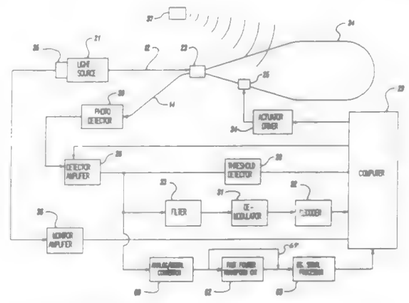
DISTRIBUTED FIBER OPTIC SENSOR FOR LOCATING AND IDENTIFYING REMOTE DISTURBANCES

Brian B. Crawford; Robert J. Prenovost, both of Huntsville; Jimmy L. Reil, Hazelgreen, and Jeff C. Robinson, Faulkville, all of Ala., assignors to Mason & Hanger National, Inc., Huntsville, Ala.

Filed Jun. 24, 1992, Ser. No. 903,358

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—35.5 **10 Claims**



1. A distributed fiber optic sensor comprising:

a) a first light source for injecting a first beam of light into a fiber;

b) a first optical splitter whose first port is connected to said first light source by an optical fiber, the splitter being effective to divide the first beam into a second and third beam, which second and third beams exit from the second and third ports of said splitter;

c) a first loop of optical fiber having its opposite ends connected to said second and third ports of said first optical splitter, thereby receiving said second and third beams which propagate through said first loop of optical fiber in opposite directions, and which returns said beams to the splitter to be recombined, a portion of the recombined beam exiting from the fourth port of the splitter;

d) a first photoelectric detector connected by a fiber to the fourth port of said first optical splitter, thereby receiving said portion of said recombined beam;

e) a first electronic circuit connected to said first photoelec-

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tric detector for amplifying, analyzing, and decoding the electrical output of said first photoelectric detector resulting from changes in the interference intensity of said recombined beam caused by disturbances to said first loop of optical fiber; and

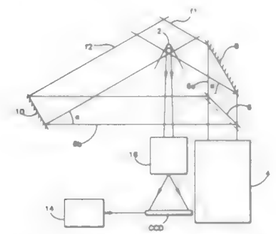
f) mechanical disturbing means, affixed to the fiber of said first loop of optical fiber, for indicating system operability by deliberately agitating said first loop of optical fiber under control from a central system control station, which agitation causes a positive system output if said first optical fiber is unbroken, and causes no response if said first loop of optical fiber is broken.

5,355,209

DEVICE FOR MEASURING THE DIAMETER OF AN OBJECT THAT IS LARGELY CYLINDRICAL, FOR EXAMPLE AN OPTICAL FIBER, WITHOUT CONTACT

Philippe Grosso, Lannion, France, assignor to France Telecom, Establissement Autonome, France

Filed Jun. 25, 1992, Ser. No. 903,888
Claims priority, application France, Jul. 8, 1991, 91 08545
Int. Cl.[5] G01N *21/00*; G01B *11/10*
U.S. Cl. 356—73.1 **9 Claims**



1. A device for measuring, without contact, a diameter of a generally cylindrical object, said device comprising:

a laser which emits a luminous beam,

optical means for forming separate first and second luminous beams from the luminous beam emitted by the laser, and for illuminating the object with the first and second luminous beams, and obtaining two luminous beams reflected by the object which interfere with one another, and

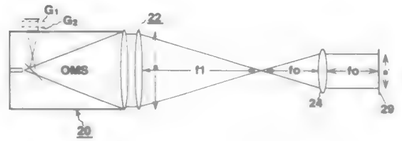
means for photo-detection and analysis of the interferences of the two reflected beams, capable of determining the diameter of the object from the interference fringes.

5,355,210

METHOD AND APPARATUS FOR MEASURING OPTICAL PROPERTIES OF OPTICAL DEVICES

Eliezer Keren, Arad; Kathi Kreske, Midreabet Ben Gurion, and Ami Livnat, Arad, all of Israel, assignors to Rotlex Optics Ltd., Doar Na Arava, Israel

Filed Nov. 23, 1992, Ser. No. 980,072
Int. Cl.[5] G01B *9/00*
U.S. Cl. 356—124 **18 Claims**



1. A method of measuring an optical property of an optical device, comprising:

locating a main converging lens having a focal length f_1 in front of an optical measuring system having means for measuring collimation of a beam;

providing a carrier having an auxiliary converging lens for receiving a beam from the optical measuring system, and means, including the optical device to be tested, for reflecting back, via the auxiliary converging lens to the optical measuring system, the beam passed through the auxiliary converging lens from the optical measuring system;

locating said carrier at a first position wherein the back focal plane of the auxiliary converging lens coincides with the front focal plane of the main converging lens;

locating said optical device to be tested on said carrier in the front focal plane of the auxiliary converging lens;

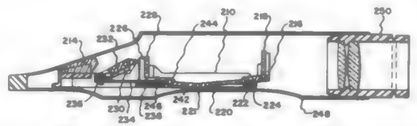
and moving the carrier to a second position wherein the beam reflected back to the optical measuring system via the auxiliary converging lens and main converging lens is found by said optical measuring system to be collimated.

5,355,211

REFRACTOMETER SUBASSEMBLY METHOD AND APPARATUS

Shawn E. Thompson, Grand Island, and Lawrence R. Pastwik, Lancaster, both of N.Y., assignors to Leica Inc., Buffalo, N.Y.

Filed Apr. 2, 1993, Ser. No. 41,869
Int. Cl.[5] G01N *21/41*
U.S. Cl. 356—135 **11 Claims**



1. A temperature compensated, hand-held refractometer comprising:

a hollow housing;

an elongated, one-piece subassembly frame insertable within said housing, said frame including a reference surface at a first end thereof for locating and supporting a critical angle prism, reticle mounting means at an opposite end thereof for slidably supporting a reticle, and lens mounting means between said ends for slidably supporting an objective lens;

an elongated temperature responsive member engaging said frame and wedge mounting means connected to said member for slidably supporting a compensating wedge for movement with said member;

a critical angle prism fixed to said reference surface, a reticle fixed to said reticle mounting means, an objective lens fixed to said lens mounting means, and a compensating wedge fixed to said wedge mounting means;

reticle adjustment means for selectively moving said reticle to an aligned position while said frame is outside of said housing and wedge adjustment means for selectively moving said compensating wedge to an aligned position while said frame is outside of said housing; and

an eyepiece attachable to said housing;

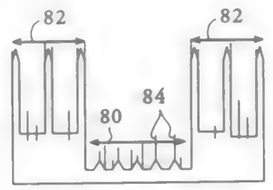
whereby said reticle and compensating wedge may be aligned with said objective lens and said critical angle prism prior to installation of said frame within said housing.

5,355,212

PROCESS FOR INSPECTING PATTERNED WAFERS

Keith B. Wells, Santa Cruz; Hung Nguyen, Santa Clara; Ralph T. Johnson, Los Gatos, and Brian C. Leslie, Cupertino, all of Calif., assignors to Tencor Instruments, Mountain View, Calif.

Filed Jul. 19, 1993, Ser. No. 93,999
Int. Cl.[5] G01N *21/88*
U.S. Cl. 356—237 **29 Claims**



1. A method of detecting particles and defects on a periodically patterned surface, comprising

scanning a periodically patterned surface with a light beam and detecting light scattered from said surface to produce an electrical signal that is a measure of the detected intensity of light scattered from each position on said surface that is scanned by said light beam, said surface having both periodically recurring pattern features and randomly occurring particle and defect features thereon, said surface having a plurality of regions characterized by different background scattering intensities,

assigning a threshold intensity level to each of said plurality of regions, regions with higher background scattering intensities being assigned higher threshold intensity levels than regions with lower background scattering intensities,

identifying from said electrical signal those features that have a detected scattering intensity which is greater than the threshold intensity levels assigned to the specific regions of said surface containing the respective features, and storing at least the locations of said identified features, and

comparing said locations of said identified features to remove those features that periodically recur, features remaining after said comparison and removal of said periodic features being identified as said randomly occurring particle and defect features on said surface.

5,355,213

INSPECTION SYSTEM FOR DETECTING SURFACE FLAWS

Gideon Dotan, 33 Havradim Street, Givat Avia 56 275 Yahud, Israel

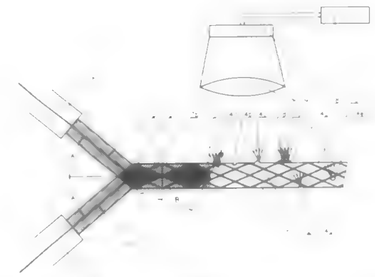
Filed Nov. 16, 1992, Ser. No. 976,862
Claims priority, application Israel, Dec. 20, 1991, 100443
Int. Cl.[5] G01N *21/17*
U.S. Cl. 356—239 **20 Claims**

1. An inspection system for detecting surface features, such as flaws, contaminants, and surface marks, in a transparent element, comprising:

(a) a collimated beam of electromagnetic radiation;

(b) directing means for directing said collimated beam edgewise into the transparent element at such an angle that the angle between said collimated beam penetrating the element and the surface of the element is larger than the critical angle so that substantially all of said radiation will stay within said transparent element and exit through an opposing edge of the transparent element unless a surface flaw is encountered, in which case a portion of said radiation will exit the transparent element through the surface of the transparent element;

(c) a multi-element line detector capable of detecting said portion of sad radiation which exits the transparent element through the surface of the transparent element and of producing signals corresponding to said exiting radiation;



(d) a signal processor capable of processing said signals corresponding to said exiting radiation; and

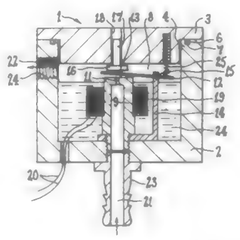
(e) means for creating relative motion between the transparent element and said beam.

5,355,214

FLOW CONTROL DEVICE

Michael R. Hammer, Melbourne, Australia, assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Aug. 29, 1991, Ser. No. 751,279
Claims priority, application Australia, Aug. 31, 1990, PK2064
Int. Cl.[5] G01J *3/30*; G01N *21/72*
U.S. Cl. 356—315 **8 Claims**



1. In an optical spectrometer gas supply flow control system, the method of controlling flow of said supply gas to an atomizer of said spectrometer comprising, using an open loop flow control technique employing the steps of:

(a) providing a fixed pressure head to an electric valve for forcing said supply gas through said electric valve;

(b) switching said valve between a maximum open position and a minimum open position in response to a pulsed electrical signal provided to said valve, said pulsed electrical signal having a space time and a mark time wherein said space time corresponds to the time in which said valve is in said maximum open position and said mark time corresponds to the time in which said valve is in said minimum open position;

(c) controlling the ratio of mark to space time to control the average flow rate through said valve wherein said average flow rate equals Fmin (B/A)+Fmax ((A-B)/A) where Fmax is maximum flow and Fmin is minimum flow, and where B is mark time and A-B is space time and A equals the total of mark time plus space time.

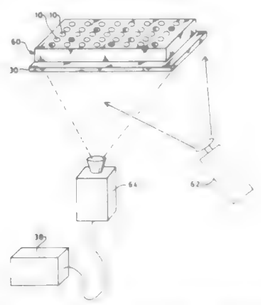
VOL 1167 ISS 2 OCT 11 1994 UMI

5,355,215

METHOD AND APPARATUS FOR QUANTITATIVE FLUORESCENCE MEASUREMENTS

Kirk Schroeder, and Brad Neagle, both of Ann Arbor, Mich., assignors to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Sep. 30, 1992, Ser. No. 953,898
Int. Cl.[5] G01J *3/30*; G01N *21/64*
U.S. Cl. 356—317 **21 Claims**



1. A method for reducing background fluorescence during the simultaneous measurement of a fluorescent emission from each of a plurality of samples contained in a multiple well plate, each sample being disposed adjacent a background fluorescence producing medium, said method including the steps of:

providing a light source which emits illumination a first wavelength selected to excite the fluorescent emission of light of a second wavelength by said samples;

disposing said light source so as to project illumination of said first wavelength onto and through a portion of a bottom surface of each of said wells at a first angle of incidence, so as to penetrate said samples and excite the fluorescent emission of light of said second wavelength therefrom through the bottom surfaces of said wells;

disposing an optical sensor, responsive to illumination of said second wavelength, so as to receive light emitted from the bottom surface of each of said wells at a second angle wherein at least one of said first or second angles is oblique to said bottom surface so as to increase the extent to which the paths associated with said illumination and said sensing intersect within said sample as compared to said background fluorescence producing medium; and

sensing the light emitted from the bottom surface of each of said wells with said optical sensor.

5,355,216

OPTICAL FIBER SENSOR HAVING DIGITAL INTEGRATING DETECTION SYSTEM UTILIZING ELECTRONIC PHASE LOCK LOOP

Byoung Y. Kim, Menlo Park; Kenneth A. Fesler, Sunnyvale, and James S. Bunn, Malibu, all of Calif., assignors to The Board of Trustees of the Leland Stanford University, Stanford, Calif.

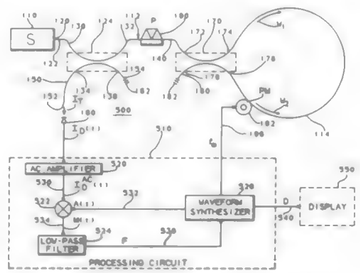
Continuation of Ser. No. 603,801, Oct. 25, 1990, abandoned. This application Aug. 17, 1992, Ser. No. 931,111
Int. Cl.[5] G01C *19/64*
U.S. Cl. 356—350 **20 Claims**

1. A sensing apparatus for producing a sensor output signal, said apparatus comprising:

an interferometer which produces an interferometer output signal responsive to a phase difference between first and second optical signals propagating in said interferometer;

a generator that generates a reference signal; and

a circuit which is connected to receive said reference signal and said output signal, said generator being connected to receive said feedback signal and to vary said reference signal in response to said feedback signal to drive said feedback signal toward a predetermined level.

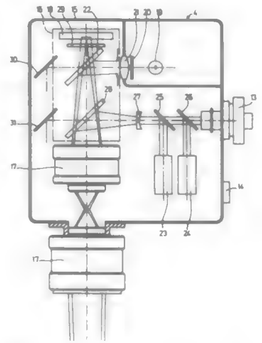


5,355,217

ASSEMBLY FOR SIMULTANEOUS OBSERVATION AND LASER INTERFEROMETRIC MEASUREMENTS, IN PARTICULAR ON THIN-FILM STRUCTURES

Jean Canteloup, Monthlery, and Jacky Mathias, Jargeau, both of France, assignors to Sofie, Arpajon, France

Filed Aug. 14, 1992, Ser. No. 930,243
Claims priority, application France, Aug. 14, 1991, 91 10355
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—357 **9 Claims**



1. An assembly for observation and laser interferometric measurements of articles, such as thin film structures, contained in a closed treatment chamber through a window in said treatment chamber, the assembly comprising:

an observation and measurement unit including a box-shaped housing located outside said treatment chamber at said window thereof, a video camera provided with an objective, means for illuminating a zone on the articles being treated so as to be observed by the video camera, and at least one laser emitter providing a laser beam on said zone to be observed; said video camera, said means for illuminating and said at least one laser emitter being enclosed within said housing and being arranged so as to provide a common optical path including a path of a return beam of said at least one laser emitter, said common path having an optical axis which passes through said objective of the video camera and through said window of the treatment chamber so that the articles in the treatment chamber can be simultaneously observed and subjected to measurements;

sensor means for measuring light intensity of the return beam of said at least one laser emitter; and

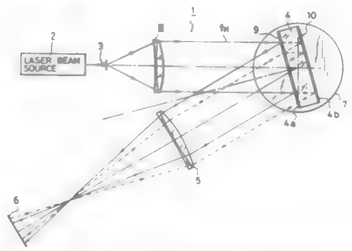
an interferometric measurement control and display system optically connected to said observation and measurement unit by optical fiber means, said sensor means including one of a sensor provided inside said video camera and a photosensitive sensor provided such that said return beam is transported thereto from said unit via said optical fiber means.

5,355,218

SHEARING INTERFEROMETER FOR MEASURING LENS LATERAL ABERRATION

Kiyofumi Matsuda, Tomoaki Eiji, Thomas H. Barnes, Shigeru Kokaji; all of Tsukuba, Japan, assignors to Agency of Industrial Science and Technology Ministry of International Trade and Industry, Toko, Japan

Filed Dec. 10, 1992, Ser. No. 988,480
Claims priority, application Japan, Dec. 11, 1991, 3-350893
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—353 **2 Claims**



1. A shearing interferometer for measuring lateral aberration of a lens, comprising:

a laser beam source;

an objective for spreading a laser beam from said laser beam source;

a slightly wedged plate having a front optical surface and a rear optical surface for receiving the spread beam from said objective; said lens being disposed in an optical path between said objective and said wedged plate for collimating the spread beam;

a first reflective thin film formed on said front optical surface of said wedged plate;

a second reflective thin film formed on said rear optical of said wedged plate;

a focusing lens for causing interference between wavefronts split by said wedged plate; and

a screen for displaying interference fringes formed.

5,355,219

GAP CONTROL APPARATUS AND METHOD UTILIZING HETERODYNE SIGNAL PHASE DIFFERENCE DETECTION

Kiyoshi Araki, Ibaraki, and Juro Yasui, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 17, 1993, Ser. No. 168,140
Claims priority, application Japan, Dec. 18, 1992, 4-338850
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—355 **4 Claims**

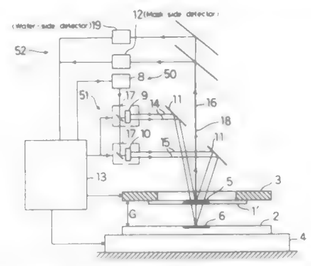
1. A gap control method of detecting the gap between a first object and a second object and setting the gap thus detected to a predetermined value, comprising the steps of:

attaching a first diffraction grating to a first object and a second diffraction grating to a second object, the grate pitches in said diffraction gratings being equal to each other, said first and second diffraction gratings being parallel to each other;

causing two coherent lights respectively having slightly different frequencies to be incident upon said diffraction gratings in the directions of the first order diffraction angles (initial incident directions) symmetric with respect to predetermined common directions (initial diffraction directions) of said diffraction gratings, so that said coherent lights are first orderly diffracted in said initial diffraction directions;

detecting, as an initial phase difference, a phase difference between first interference light formed by the interference of said coherent lights first orderly diffracted by said first diffraction grating, and second interference light formed by the interference of said coherent lights first orderl diffracted by said second diffraction grating;

causing said coherent lights to be incident upon said diffraction gratings in later incident directions slightly inclined at the same predetermined angle in the same direction with respect to said initial incident directions, so that said coherent lights are first orderly diffracted in later diffraction directions inclined at a predetermined angle with respect to said initial diffraction directions;



detecting, as a later phase difference, a phase difference between first interference light formed by the interference of said coherent lights first orderly diffracted by said first diffraction grating, and second interference light formed by the interference of said coherent lights first orderly diffracted by said second diffraction grating; and

operating, according to a change in phase difference between said detected initial and later phase differences, the gap between said first and second objects, based on the relation between change in phase difference and gap value, said relation being determined by said grate pitch of said diffraction gratings.

5,355,220

OPTICAL MOVEMENT MEASURING METHOD AND APPARATUS USING INTERFERENCE FRINGES GENERATED BY OVERLAPPING SPOTS OF DIFFRACTED LIGHTS OF DIFFERENT ORDERS OF DIFFRACTION FROM A LINE SOURCE

Hiroshi Kobayashi, No.3-15, Hanakoganei, Kodaira-Shi; Haruhiko Machida, No.4-10-7, Naksochisi, Shinjuku-Ku, Tokyo; Jun Akedo, Tokyo; Tomoyuki Yamaguchi, Chiba, and Hiroyoshi Funato, Chigasaki, all of Japan, assignors to Ricoh Company, Ltd.; Hiroshi Kobayashi and Haruhiko Machida, all of Tokyo, Japan

Continuation of Ser. No. 724,483, Jun. 28, 1991, abandoned, which is a continuation of Ser. No. 435,977, Nov. 13, 1989, abandoned. This application Aug. 21, 1992, Ser. No. 931,511
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—356 **64 Claims**

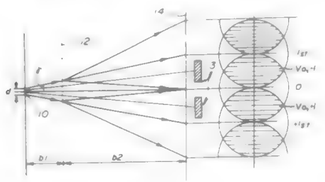
1. An optical movement measuring method for measuring a movement of an object, said optical movement measuring method comprising the steps of:

irradiating a light from a light source on a diffraction grating

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which is provided on the object so as to generate diffracted lights of different orders of diffraction, said diffraction grating having light transmitting portions and light blocking portions which are alternately and periodically arranged;

detecting interference fringes which are generated by overlapping spots of diffracted lights of two mutually different orders of diffraction, said interference fringes comprising bright and dark stripes which occur alternately; and



measuring a movement of the object based on a counted number of stripes of the detected interference fringes,

said step of irradiating the light using a light which is emitted from a finite line source which has a length d,

said diffraction grating having the light transmitting portions arranged with a pitch ξ,

said pitch ξ and said width d being set to satisfy a relation $1/10 \leqq (d/\xi) \leqq 2$.

5,355,221

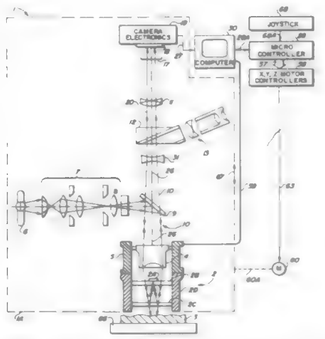
ROUGH SURFACE PROFILER AND METHOD

Donald K. Cohen; Paul J. Caber, both of Tucson, Ariz., and Chris P. Brophy, White Bear Township, Ramsey County, Minn., assignors to Wyko Corporation, Tucson, Ariz.

Continuation of Ser. No. 48,747, Apr. 16, 1993, abandoned, which is a continuation of Ser. No. 880,083, May 6, 1992, Pat. No. 5,204,734, which is a continuation of Ser. No. 714,215, Jun. 12, 1991, Pat. No. 5,133,601. This application Oct. 25, 1993, Ser. No. 143,372

Int. Cl.[5] G01B *11/00*

U.S. Cl. 356—359 **10 Claims**



1. A method of profiling a surface of an object, comprising the steps of:

(a) positioning the object along an optical axis so that the object surface is optically aligned with an imaging device;

(b) producing an interference pattern of the object surface by means of an interferometer;

(c) varying an optical path difference between the object and a reference surface of the interferometer;

(d) operating the imaging device to scan the object surface to produce intensity data for each pixel of an image of the object surface;

(e) removing a constant or slow-changing component from the intensity data, as the optical path difference is varied, to produce a first digital signal;

(f) rectifying the first digital signal to produce a second digital signal including a high frequency component and a low frequency component;

(g) digitally filtering the second digital signal to eliminate the high frequency component from the second digital signal to thereby produce a third digital signal;

(h) locating a preselected characteristic of the third digital signal for each pixel; and

(i) correlating the preselected characteristic of the third digital signal to a relative height of the object surface for each pixel.

5,355,222

OPTICAL RECEIVER FOR AREA LOCATION SYSTEM

Alan C. Heller; Christopher W. Fox, and Philip D. Olivier, all of San Antonio, Tex., assignors to Precision Tracking FM, Inc., San Antonio, Tex.

Filed May 15, 1992, Ser. No. 884,076

Int. Cl.[5] G01B *11/00, 9/00;* **G01C** *3/32*

U.S. Cl. 356—375 **19 Claims**

1. An optical location system for locating the position of a moving object in a defined area, comprising:

an optical transmitter for attachment to the moving object;

a number of optical sensors for receiving a signal from said transmitter,

wherein one of said sensors is a full-view sensor having a field of view of all of said defined area; and

an opaque template for each of said sensors other than said full view sensor,

wherein each of said templates has at least one horizontal or vertical blocking strip for partially blocking the field of view of said sensors other than said full-view sensor, such that each of said sensors other than said full-view sensor is a horizontal or vertical partial view sensor having a field of view of approximately one-half of said defined area, as determined by at least one horizontal or vertical window where said at least one blocking strip does not cover the field of view,

and wherein said blocking strips or said windows vary in size and number with respect to each of said horizontal or vertical partial view sensors, such that the detection or non detection of a signal from said transmitter can be used to form a digital code that represents a resolution of said defined area of 2^n where n is the number of said partial view sensors and having not more than n+1 sensors.

5,355,223

APPARATUS FOR DETECTING A SURFACE POSITION

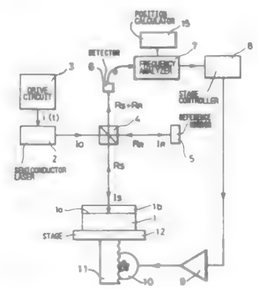
Nobutaka Magome, Kanagawa, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Nov. 10, 1992, Ser. No. 974,236

Claims priority, application Japan, Nov. 12, 1991, 3-322298

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—375 **3 Claims**



1. An apparatus for detecting a surface position of an object to be detected irrespective of the presence or absence of a transparent film on said object comprising:

a light source adapted to emit a light beam whose frequency varies continuously and steadily with time;

optical dividing means for dividing the light beam from said light source into parts whereby one of said divided light beams is directed to a surface of said object and the other of said divided light beams is directed to a reflecting surface of a reference mirror;

optical combining means for directing a reflected beam from said object and a reflected beam from said reference mirror onto the same optical path thereby forming a combined beam;

measuring means for measuring beat frequencies of said combined beam and the frequency difference between said beat frequencies in accordance with the variation with time of the intensity of said combined beam obtained by said optical combining means; and

calculating means for calculating a position of said object and/or the thickness of said film in accordance with a result of said measurement.

5,355,224

APPARATUS INCLUDING A MANGIN MIRROR FOR SUPERIMPOSING VARIABLE GRAPHICAL AND ALPHANUMERIC INFORMATION ONTO THE IMAGE PLANE OF AN OPTICAL VIEWING DEVICE

Robert E. Wallace, Garland, Tex., assignor to Varo Inc., Garland, Tex.

Filed Sep. 16, 1992, Ser. No. 945,680

Int. Cl.[5] G02B *27/10, 7/18, 23/12, 27/32*

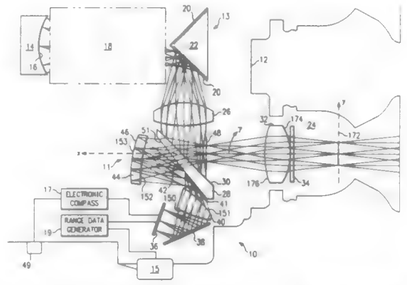
U.S. Cl. 359—631 **2 Claims**

1. An improved optical viewing device of the type having a housing and a viewing optical system supported within the housing for permitting a user to view an image of a scene, wherein the improvement comprises;

a display panel supported within the housing for displaying visual data when illuminated;

a mangin mirror supported within the housing;

a dichroic combiner supported within the housing and disposed in optical proximity to the mangin mirror, the dichroic combiner having a surface which reflects light of wavelengths associated with the viewing optical system and which transmits light of wavelengths associated with the illuminated display panel, whereby the mangin mirror reflects light from the display panel to the dichroic combiner and the dichroic combiner transmits the light into the path of the viewing optical system such that the data display on the display panel is effectively superimposed upon the image of the scene viewed by the user and



wherein the viewing optical system includes an image intensifying device for producing an intensified image of the scene for permitting night vision, and wherein the data displayed on the display panel is superimposed upon the intensified image of the scene.

5,355,225

VIDEO SIGNAL COLOR CORRECTION WITH DUAL FUNCTION MEMORIES AND COLOR WINDOW

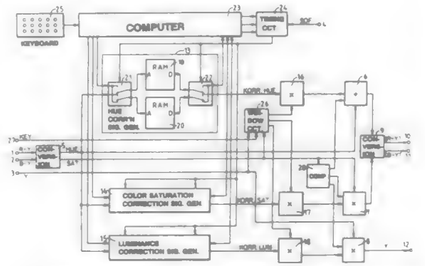
Peter Bachmann, Aschaffenburg, and Dieter Poetsch, Ober-Ramstadt, both of Fed. Rep. of Germany, assignors to BTS Broadcast Television Systems GmbH, Darmstadt, Fed. Rep. of Germany

Filed Feb. 28, 1992, Ser. No. 843,552

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1991, 4106306

Int. Cl.[5] H04N *9/64*

U.S. Cl. 348—645 **16 Claims**



1. A method of color correction of a color television signal by reference to the color hue represented in the color television signal and reference to control magnitudes previously set into a color correction system, comprising the steps of;

storing, in at least one memory, correction signal values in a manner dependent on both said previously set control magnitudes and digital values of said color hue represented in said color television signal, said at least one memory including first and second memories;

reading out from storage in said at least one memory said correction signal values addressed by digital color hue values successively derived from said color television signal and said control magnitudes;

arithmetically combining said correction signal values with other signals derived from said color television signal in at lest one calculation circuit and thereby producing refined signal values;

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after a first change of at least one of said control magnitudes has been selected by a person implementing the method, new correction signal values, provided in accordance with a new set of control magnitudes, are entered into said first memory while said second memory is being addressed by said digital color hue values and thereby provides previously stored correction signal values to said at least one calculating circuit, and

after a second change of at least one of said control magnitudes following next after said first change, new correction signal values, provided in accordance with a new set of control magnitudes, are entered into said second memory while said first memory is addressed by said digital color hue values and thereby provides previously stored correction signal values to said at least one calculating circuit.

5,355,226

RECORDING-REPRODUCTION APPARATUS APPLYING DOUBLE RESET TO THE PHASE OF AN FM CARRIER

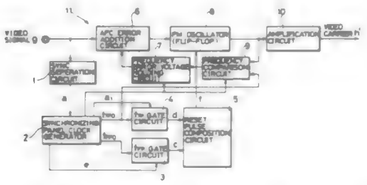
Hiroaki Nogami, Matsudo, and Soichi Iwamura, Fuchu, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 7, 1992, Ser. No. 831,214

Claims priority, application Japan, Feb. 8, 1991, 3-017980; Mar. 13, 1991, 3-048391

Int. Cl.[5] H04N *9/80*

U.S. Cl. 358—326 **6 Claims**



1. A magnetic recording-reproduction apparatus comprising:

frequency modulating means including a carrier oscillator for generating a carrier, for modulating a frequency for the carrier according to the amplitude of a video signal including a front porch and a horizontal sync pulse so as to generate an FM carrier;

pulse signal generating means for generating a master clock signal, a first reference pulse signal and a second reference pulse signal, the first reference pulse signal having a first reference frequency corresponding to a peak level of the horizontal sync pulse, the second reference pulse signal having a second reference frequency corresponding to a level of the front porch, the first reference frequency and the second reference frequency being phase-synchronous with each other at a leading edge of the horizontal sync pulse, and each of the first and second reference frequencies being set to an integer multiple of the horizontal scanning frequency; and

carrier resetting means for conducting a two-step carrier resetting operation on the FM carrier for each horizontal scanning cycle in such a manner that the phase of the FM carrier is permitted to coincide with the phase of the second reference pulse signal at the front porch and is also permitted to coincide with the phase of the first reference pulse signal at the leading edge of the horizontal sync pulse,

whereby recording of the video signal is conducted according to a reset FM carrier that has undergone the two-step carrier resetting operation, and a portion of the reset FM carrier having the first reference frequency is extracted as a reference burst signal that is used for correcting jitter during reproduction of the video signal.

5,355,227

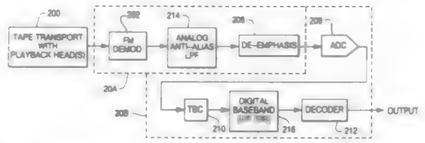
LINEAR-PHASE FILTERING FOR PLAYBACK OF RECORDED FOLDED-SPECTRUM VIDEO

Jung W. Ko, Lawrenceville, N.J., and Christopher H. Strolle, Glenside, Pa., assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Feb. 7, 1992, Ser. No. 832,911

Int. Cl.[5] H04N *5/76*

U.S. Cl. 358—335 **18 Claims**



1. A method for reproducing a full-bandwidth video signal from a frequency-modulation signal, said frequency-modulation signal being such as results from a folded-spectrum video signal of reduced-bandwidth being used to modulate the frequency of a frequency-modulation carrier wave, said folded-spectrum video signal being such as results from a bandwidth compression technique of frequency folding said full-bandwidth video signal, said method comprising the steps of:

converting said frequency modulation signal in analog form to a pulse-position-modulation signal in analog form, said pulse position signal comprising a baseband component corresponding to said folded-spectrum video signal of reduced-bandwidth, harmonics of said frequency-modulation carrier wave and frequency-modulation sidebands of said harmonics of said frequency-modulation carrier wave;

digitizing at a prescribed sampling rate the analog signal that is the response of a preliminary step of

filtering said pulse-position-modulation signal in analog form, to suppress components thereof of frequencies higher than half said prescribed sampling rate, and to maintain a constant group delay characteristic throughout a frequency band in which said folded-spectrum video signal is included; and

digitally filtering the response of said step of digitizing, to suppress the harmonics of said frequency-modulation carrier wave and said frequency-modulation sidebands of said harmonics of said frequency-modulation carrier wave, and to maintain a constant group delay characteristic throughout the band in which said folded-spectrum video signal is included.

5,355,228

CAMCORDER INCORPORATING A CAVITY FOR STORING A REMOTE CONTROLLER THEREIN

Masami Mizuno; Masayuki Kimura, both of Katsuta; Takayuki Nakajima, Hitachi; Takeshi Kawarai; Masanori Numa, both of Ibaraki; Takahiro Nakata, and Kazuo Tsukiyama, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo; Hitachi Tokai Engineering Co., Ltd., Ibaraki and Hitachi Video & Information System, Inc., Kanagawa, all of Japan

Filed Jun. 11, 1992, Ser. No. 897,008

Claims priority, application Japan, Jun. 24, 1991, 3-151451

Int. Cl.[5] H04N *5/76*

U.S. Cl. 358—335 **14 Claims**

1. A camcorder comprising:

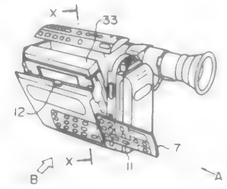
a camera portion;

a video cassette recorder portion adjacent to the camera portion;

a cassette compartment in the video cassette recorder portion;

a cassette compartment outer wall provided to the cassette compartment on said video cassette recorder portion which is selectively opened and closed when a cassette is inserted into or removed from the cassette compartment;

a remote controller operable with the camera portion and the video cassette recorder portion; and,



a cavity for storing said remote controller, said cavity being formed in the cassette compartment outer wall and adjacent to the cassette compartment and having a size larger than said remote controller.

5,355,229

DIGITAL SIGNAL RECORDING METHOD AND DIGITAL VIDEO TAPE RECORDER

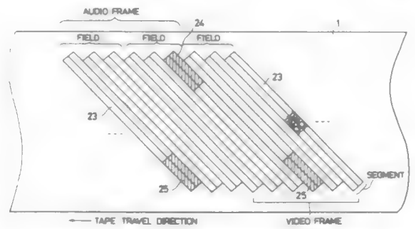
Yukari Arano, and Ken Onishi, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 362,243, Jun. 6, 1989, abandoned. This application Nov. 6, 1992, Ser. No. 972,730

Claims priority, application Japan, Jun. 7, 1988, 63-139811; Jun. 10, 1988, 63-144464; Jul. 19, 1988, 63-179889

Int. Cl.[5] H04N *5/782*

U.S. Cl. 358—343 **57 Claims**



57. A digital signal recording apparatus for recording digital multi-channel audio and video signals in helical tracks on a tape comprising:

video recording means for recording the video signal in video sectors in the helical tracks;

separating means, for each of the audio channels, for separating even samples from odd samples of the audio signal associated with each channel;

audio recording means for recording even samples of the audio signal in audio sectors of first tracks disposed near one edge of the tape and for recording said odd samples of the audio signal in audio sectors of second tracks disposed near the other edge of said tape, said second tracks on which said odd samples are recorded being different from said first tracks on which said even samples are recorded.

5,355,230

FACSIMILE APPARATUS AND FACSIMILE SYSTEM

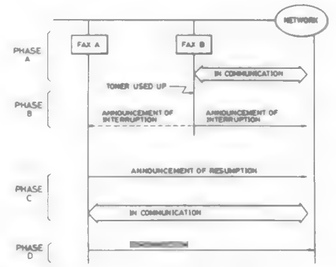
Yoji Kaneko, Yamato, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 524,493, May 17, 1990, abandoned. This application May 10, 1993, Ser. No. 58,789

Claims priority, application Japan, May 19, 1989, 1-125878

Int. Cl.[5] H04N *1/32*

U.S. Cl. 358—437 **14 Claims**



1. A first facsimile apparatus in a communication system on a data reception side thereof, the system comprising the first facsimile apparatus and a second facsimile apparatus each connected to an inside bus of an integrated services digital network, ISDN, said first facsimile apparatus comprising:

means for monitoring a signal on the inside bus of the ISDN;

means for determining whether or not the monitored signal is an announcement of interruption from the second facsimile apparatus on the bus; and

means for performing substituting reception in place of the second facsimile apparatus when said determination means has determined that the signal is an announcement of interruption;

wherein said announcement of interruption is a signal indicative of interruption of reception of data from the ISDN by the second facsimile apparatus output during the reception of the data from the ISDN, and

wherein said performing means performs, in place of the second facsimile apparatus, the reception of the data, thus enabling reception of the data from the ISDN which was interrupted by the second facsimile apparatus,

said first facsimile apparatus further comprising means for determining whether or not an abnormality has occurred in said first facsimile apparatus during the substituting reception, and means for issuing an announcement of interruption onto the bus when an abnormality has occurred.

5,355,231

OUTPUT APPARATUS WITH DOT DENSITY ADJUSTMENTS

Masahiko Murata, Tama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 493,324, Mar. 14, 1990, abandoned. This application Nov. 10, 1992, Ser. No. 974,347

Claims priority, application Japan, Mar. 15, 1989, 1-61023; Mar. 15, 1989, 1-61024

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—443 **85 Claims**

1. An output apparatus for receiving code information, converting the code information into a bit map and recording, said apparatus comprising:

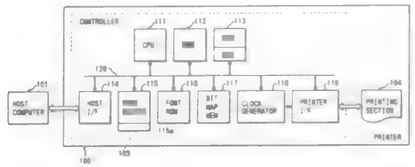
converting means for converting the code information into image information of a bit pattern form;

recording means which can record the image information on a recording medium with a change in output resolution of such image;

changing means for changing dot density with which said

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recording means records, in correspondence to a code system designated by the code information; and



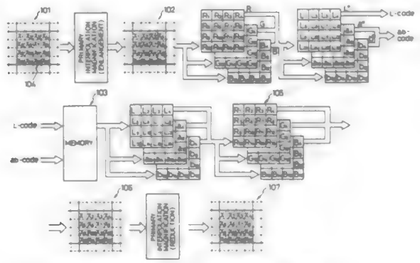
memory means for storing information indicating a current output resolution.

5,355,232

IMAGE SIZE CHANGE IN CONJUNCTION WITH CODING AND DECODING

Tatsuhito Katsoka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 9, 1991, Ser. No. 743,019
Claims priority, application Japan, Aug. 13, 1990, 2-211573
Int. Cl.[5] H04N *1/04*
U.S. Cl. 358—451 15 Claims



1. An image processing apparatus comprising:
input means for inputting image data;
image enlarging means for enlarging an image represented by the image data input by said input means; and
coding means for coding the image data output from said image enlarging means,
wherein said coding means performs information non-preserving type coding and said image enlarging means enlarges the image before coding by said coding means in order to prevent an image represented by the coded image data from deterioration which is caused by the information non-preserving type coding.

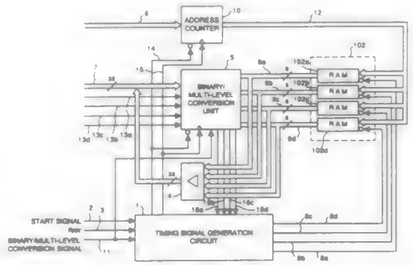
5,355,233

CONVERSION OF BINARY TO MULTI-LEVEL IMAGE DATA

Yoshifumi Okamoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 974,691
Claims priority, application Japan, Nov. 14, 1991, 3-299265
Int. Cl.[5] H04M *1/22*
U.S. Cl. 358—455 38 Claims

7. An image processing apparatus for converting binary pixel data into multi-level pixel data, comprising:
N N≧2) memory units having the same address space for storing multi-level pixel data;
setting means for setting multi-level data about each color component for reproducing a desired color;
N binary/multi-level conversion means successively outputting the multi-level data about each color component set by said setting means on the basis of the state of binary pixel data;
supply means for supplying N items of binary pixel data to the corresponding binary/multi-level conversion means;



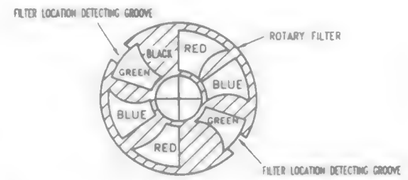
write means for writing the multi-level data of each color component output from the i-th (1≦i≦N) binary/multi-level conversion means in the i-th memory unit of said N memory units; and
control means for deciding whether or not said write means is energized.

5,355,234

IMAGE SCANNING APPARATUS

Eun-jin Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 17, 1993, Ser. No. 168,322
Claims priority, application Rep. of Korea, Jul. 31, 1993, 93-15008
Int. Cl.[5] H04N *1/04, 1/46, 9/07, 9/73;* G02B *5/23, 3/08*
U.S. Cl. 358—512 13 Claims



1. An image scanning apparatus for receiving a color image, comprising:
a light source having a rod-like shape for generating a light signal having plural color components and irradiating said light signal onto the surface of an object;
a transfer apparatus for controlling the relative motion of said light source with respect to said object;
a color separating filter for separating the light signal reflected and transmitted from said object surface into plural color signals, by arranging a set of color filters corresponding to the respective color components in a predetermined pattern;
a line sensor for receiving said separated light signal through one of said color filters and outputting an electrical signal corresponding to the intensity of said received light signal; and
driving means for adjusting a relative location between said color separating filter and said line sensor and combining the color separating filter and the line sensor in a predetermined order,
wherein the width of a light receiving surface of each said color filter gradually increases from the central area thereof to the periphery and the longitudinal axis of said line sensor is disposed in parallel with that of said light receiving surface.

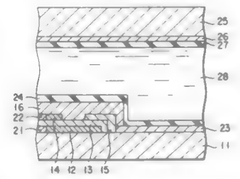
11. An image scanning apparatus comprising:
a color separating filter in which at least one set of color filters are arranged;
a line sensor for photoelectrically converting a light signal transmitted through one of said color filters, and sequentially outputting the photoelectrically converted light signal;
a filter driving unit for driving said color separating filter so that said color filters transversely cut the optical path of said light signal sequentially;
an analog processor for calibrating color unbalance between color signals by amplifying the color signals generated in said line sensor sequentially by respective predetermined amplifying factors;
a pre-processor connected to said analog processor for shading calibrating the color signals the color unbalance of which is calibrated; and
a tone calibrating unit connected to said pre-processor for generating a tone calibrated color signal by receiving the shade-calibrated color signal.

5,355,235

ORGANIC FIELD EFFECT ELEMENT HAVING ORGANIC LAYERS WITH DIFFERENT CARRIER CONCENTRATIONS

Hideyuki Nishizawa; Shuichi Uchikoga; Yoshihiko Nakano, all of Tokyo, and Shuzi Hayase, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 13, 1992, Ser. No. 928,704
Claims priority, application Japan, Aug. 15, 1991, 3-205286
Int. Cl.[5] G02F *1/133;* H01L *29/784*
U.S. Cl. 359—59 16 Claims



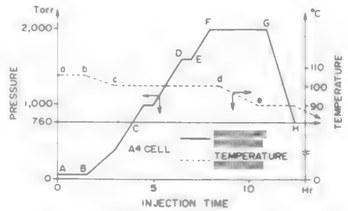
16. A liquid crystal display comprising two substrates arranged to be opposite to each other, a pixel electrode and a drive element formed on an inner surface of one substrate, a counter electrode formed on an inner surface of the other substrate, and a liquid crystal sealed between said substrates,
wherein said drive element includes
a source electrode and a drain electrode formed separately to each other;
a first organic layer constituting a channel between said source and drain electrodes;
a second organic layer formed to be adjacent to said channel and having a carrier concentration higher than that of said first organic layer; and
a gate electrode formed to be adjacent to said second organic layer and to be opposite to said channel,
wherein carriers are transferred between said second and first organic layers in response to a voltage applied to said gate electrode to change an electrical conductivity of said channel.

5,355,236

METHOD OF INJECTING FERROELECTRIC LIQUID CRYSTAL INCLUDING MULTIPLE PRESSURE CHANGES

Mutsuo Mitsui, Hachiohji, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1993, Ser. No. 56,896
Claims priority, application Japan, May 11, 1992, 4-143715
Int. Cl.[5] G02F *1/1339*
U.S. Cl. 359—62 5 Claims



1. A method of injecting a ferroelectric liquid crystal into a liquid crystal cell comprising a pair of substrates each having at least an electrode thereon and disposed with a sealing agent therebetween so as to provide a prescribed gap therebetween, the method comprising:
(a) changing a pressure or a pressure and a temperature of an environment of the liquid crystal cell with time so that,
in an initial stage of injection, the liquid crystal is injected at a suppressed speed, and
in an intermediate stage of injection, the liquid crystal is injected at a controlled speed so that a front end of the liquid crystal injected within the cell progresses at a substantially constant speed,
(b) in a final stage of injection, cooling the liquid crystal under a pressure so as to avoid occurrence of a local liquid crystal injection failure due to a difference in thermal expansion coefficient between the liquid crystal and the substrates, and
(c) during the pressure-changing step with time, introducing an inert gas into the environment so as to increase the environmental pressure to a pressure exceeding 760 Torr.

5,355,237

WAVELENGTH-DIVISION MULTIPLEXED OPTICAL INTEGRATED CIRCUIT WITH VERTICAL DIFFRACTION GRATING

Robert J. Lang, Pleasanton, and Siamak Forouhar, Pasadena, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 17, 1993, Ser. No. 33,512
Int. Cl.[5] H04J *14/02;* G02B *6/12*
U.S. Cl. 359—130 28 Claims

17. A wave division multiplexed optical communication system comprising:
(A) a transmitter multiplexer integrated circuit having a first semiconductor waveguide layer, comprising:
(1) a succession of first diffraction grating points in said first waveguide layer along a first diffraction grating contour,
(2) a diode laser array in said first waveguide layer near plural laser optical ports facing said succession of first diffraction grating points along a first direction, respective diode lasers in said array corresponding to respective ones of a predetermined succession of wavelengths,
(3) an optical fiber having one end thereof terminated at said first waveguide layer, said one end of said optical fiber facing said succession of first diffraction grating points along a second direction,

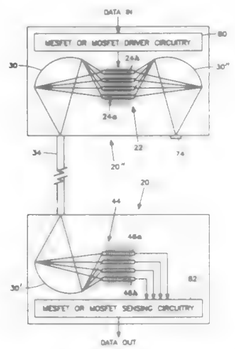
VOL 1167 ISS 2 OCT 11 1994 UMI

(4) wherein said diffraction grating points are spatially distributed along said first contour in such a manner as to diffract light of respective ones of said succession of wavelengths between said one end of said optical fiber and corresponding ones of said laser optical ports;

(B) a receiver demultiplexer integrated circuit having a second semiconductor waveguide layer, comprising:

(1) a succession of second diffraction grating points in said second waveguide layer along a second diffraction grating contour,

(2) a photodetector diode array in said second waveguide layer having plural detector optical ports facing said succession of diffraction grating points along a third



direction, respective photodetector diodes in said array corresponding to respective ones of said predetermined succession of wavelengths,

(3) another end of said optical fiber being terminated at said second waveguide layer, said other end of said optical fiber facing said second succession of diffraction grating points along a fourth direction,

(4) wherein said second diffraction grating points are spatially distributed along said second contour in such a manner as to diffract light of respective ones of said succession of wavelengths between said other end of said optical fiber and corresponding ones of said detector optical ports.

5,355,238

METHOD AND APPARATUS FOR THE MONITORING AND DEMARCATION OF SYNCHRONOUS OPTICAL NETWORKS

William D. Kight, Ellicott City, and Robert E. Pfister, Mount Airy, both of Md., assignors to SWL Inc., Vienna, Va.

Filed Aug. 18, 1993, Ser. No. 108,338
Int. Cl.[5] H04J *14/08*
U.S. Cl. 359—135 **18 Claims**

1. An optical communications network interface device comprising:

(a) a terminal optical interface for transmitting and receiving a terminal synchronous optical network communications signal,

(b) a facility optical interface for transmitting and receiving a facility synchronous optical network communications signal,

(c) a terminal processor operatively connected to said terminal optical interface comprising;

(d) a terminal frame synchronizer;

(e) a terminal overhead terminator operatively connected to the terminal frame synchronizer,

(f) a terminal overhead central processing unit operatively connected to the terminal overhead terminator,

(g) means within the terminal overhead terminator for demultiplexing said terminal synchronous optical network communications signal into a received terminal payload component and a received terminal overhead component,

(h) means within the terminal central processing unit for monitoring and manipulating said received terminal overhead component whereby the content of the overhead component may be restricted to a user defined subset of allowable values,

(i) means within the terminal overhead terminator for multiplexing a transmitted terminal payload component and a transmitted terminal overhead component into said terminal synchronous optical network communications signal,

(j) a facility processor, operatively connected to said facility optical interface comprising;

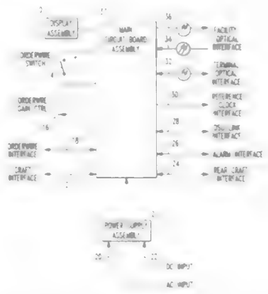
(k) a facility frame synchronizer,

(l) a facility overhead terminator operatively connected to the facility frame synchronizer,

(m) a facility overhead central processing unit operatively connected to the facility overhead terminator,

(n) means within the facility overhead terminator for demultiplexing said facility synchronous optical network communications signal into a received facility payload component and a received facility overhead component,

(o) means within the facility central processing unit for monitoring and manipulating said received facility



overhead component whereby the content of the overhead component may be restricted to a user defined subset of allowable values,

(p) means within the facility overhead terminator for multiplexing a transmitted facility payload component and a transmitted facility overhead component into said facility synchronous optical network communications signal,

(q) a process and interconnection means between said facility processor and said terminal processor for;

(r) changing said received terminal overhead component to said transmitted facility overhead component,

(s) changing said received terminal payload component to said transmitted facility payload component,

(t) changing said received facility overhead component to said transmitted terminal overhead component, and

(u) changing said received facility payload component to said transmitted terminal payload component,

(v) a unit controller operatively connected to the terminal processor and the facility processor comprising;

(w) a unit control central processing unit,

(x) a means, operatively connected to the unit control central processing unit, for providing local command and control access, status displays, alarm indication, and configuration control,

(y) a means, operatively connected to the unit control central processing unit, for providing remote command and control access, status reports, alarm indication, and configuration control,

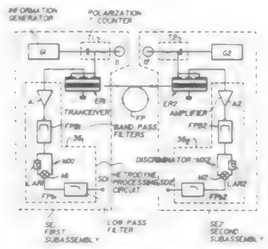
(z) a means, operatively connected to the unit control central processing unit, for monitoring the internal functionality of said optical communications interface device and reporting any malfunction.

5,355,239

COHERENT DETECTION TRANSCEIVER

Hisao Nakajima, Bagneux, France, assignor to France Telecom Etablissement Autonome De Droit Public, Paris, France

Filed Mar. 17, 1993, Ser. No. 32,662
Claims priority, application France, Mar. 20, 1992, 92 03382
Int. Cl.[5] H04B *10/00, 10/24*
U.S. Cl. 359—152 **10 Claims**



1. A coherent optical signal transceiver, comprising;

a distributed feedback semiconductor structure, comprising an active layer extending along a propagation direction between first and second active layer ends,

a diffraction grating disposed above the active layer, the diffraction grating extending in the propagation direction between first and second diffraction grating ends, the diffraction grating having a first region adjacent its first end and a second region adjacent its second end, the first and second regions having a first periodicity, the diffraction grating having a central region that is between the first and second regions having a second periodicity, the periodicities in the first, second, and central regions of the diffraction grating are selected such that the first and second regions are out of phase by a selected phase shift, the diffraction grating opposing at least a portion of the active layer;

a first electrode that is above the first region of the diffraction grating;

a second electrode that is above the second region of the diffraction grating;

a central electrode that is above the central region of the diffraction grating:

current supply means connected to the first and second electrodes for supplying current to the first and second electrodes;

a processing circuit connected to the central electrode comprising means for detecting a signal upon the central electrode.

5,355,240

OPTICAL COMMUNICATION LINK WITH CORRECTION OF NON-LINEAR EFFECTS AND OPTICAL SIGNAL PROCESSING METHOD

Laurence Prigent, Marcoussis; Olivier Audouin, Savigny sur Orge; Jean-Pierre Hamaide, ST Germain les Arpajon, and José Chesnoy, Paris, all of France, assignors to Alcatel Clt, Paris, France

Filed Sep. 1, 1992, Ser. No. 937,698
Claims priority, application France, Sep. 6, 1991, 91 11077
Int. Cl.[5] H04B *10/18*
U.S. Cl. 359—161 **9 Claims**



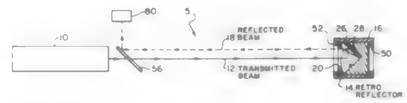
1. Optical communication link with correction of non-linear effects comprising an optical fiber transmission line subject to chromatic dispersion and non-linear effects and correction means for limiting the disadvantageous consequences of said dispersion and/or said non-linear effects comprising at the output of said transmission line a dispersion compensator adapted to apply dispersion in the opposite direction to and of lower absolute value than said line dispersion.

5,355,241

IDENTIFICATION FRIEND OR FOE DISCRIMINATOR

Clifford W. Kelley, 29414 Whitney Collins, Rancho Pales Verdes, Calif. 90274

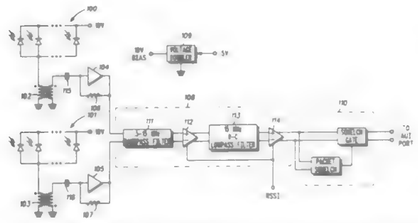
Continuation-in-part of Ser. No. 804,011, Dec. 9, 1991, abandoned. This application Aug. 2, 1993, Ser. No. 100,299
Int. Cl.[5] H04B *10/00*
U.S. Cl. 359—170 **6 Claims**



1. An IFF device comprising a beam generating means for directing a beam at a target, at least one retro-reflecting device adapted to be mounted on a target, each retro-reflecting device having internal reflecting surfaces shaped so an unmodulated beam striking the reflecting device penetrates said retro-reflecting device and strikes the internal reflecting surfaces, means associated with said internal reflecting surfaces for modulating said beam inside said retroreflector by changing its intensity at the internal surfaces of the retroreflector at a predetermined frequency whereby the modulated beam is reflected back out of the retro-reflecting device in a direction parallel to and back toward the beam generating means, a tuner, said tuner positioned in the path of the modulated reflected beam and having means for adjusting the tuner to the predetermined frequency of the reflected beam whereby if the tuner receives the modulated signal from the reflected beam it indicates the target is friendly.

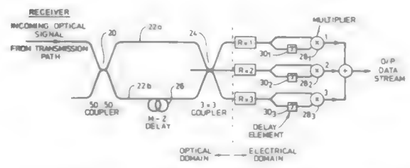
VOL 1167 ISS 2 OC 11 1994 UMI

5,355,242
RECEIVER FOR BINARY CODED WIRELESS OPTICAL DATA
Bruce C. Eastmond, Downers Grove; Rachid M. Alameh, Schaumburg, and Kevin W. Jelley, LaGrange Park, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 5, 1993, Ser. No. 42,909
Int. Cl.[5] H04B 10/06
U.S. Cl. 359—189 15 Claims



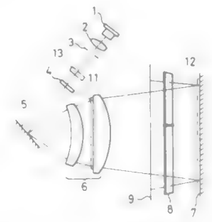
1. A receiver that receives binary coded optical data packets comprises:
at least one photodiode that receives the binary coded optical data packets from a transmitting light source to produce received binary encoded data;
at least one untuned transformer having at least a primary winding and a secondary winding, wherein the primary winding is operably coupled to the at least one photodiode such that the received binary encoded data is operably coupled from the primary winding to the secondary winding;
at least one transimpedance amplifier operably coupled to the secondary winding, wherein the transimpedance amplifier buffers the received binary encoded data to produce buffered binary encoded data; and
limiting means, operably coupled to the at least one transimpedance amplifier, for limiting amplitude of the buffered binary encoded data.

5,355,243
DIRECT DETECTING OF OPTICAL PSK SIGNALS
Jonathan P. King, Epping, United Kingdom, assignor to Northern Telecon Limited, United Kingdom
Filed Aug. 11, 1992, Ser. No. 928,868
Claims priority, application United Kingdom, Sep. 6, 1991, 9119073
Int. Cl.[5] H04B 10/06
U.S. Cl. 359—190 1 Claim



1. A self homodyne direct detection optical transmission system including at a transmitter means for converting binary data signals into double differentiated phase shift keyed optical signals, and at a receiver
a 2×2 optical coupler to one input of which are applied the received double differentiated phase shift keyed optical signals,
a 3×3 optical coupler two inputs of which are coupled to respective outputs of the 2×2 coupler to form a two-path optical interferometer, one of the paths including an optical delay substantially equal to 1 bit period, whereby the output of the 3×3 coupler forms 3 balanced phase diversity signals,
separate means for recovering from each of the phase diversity signals a replica of the binary data signals, and
means for combining the replica signals to form an output binary data signal.

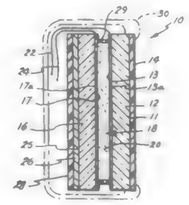
5,355,244
OPTICAL SCANNER FOR REDUCING SHADING
Seizoh Suzuki, Tokyo; Kenichi Takanashi, Chiba, and Hiromichi Atsuumi, Yokohama, all of Japan, assignors to Ricoh Company Ltd., Tokyo, Japan
Filed Sep. 15, 1992, Ser. No. 945,269
Claims priority, application Japan, Sep. 18, 1991, 3-238341; Nov. 6, 1991, 3-290096; Nov. 19, 1991, 3-303352; Feb. 24, 1992, 4-36500; Jun. 17, 1992, 4-158249
Int. Cl.[5] G02B 26/08
U.S. Cl. 359—212 3 Claims



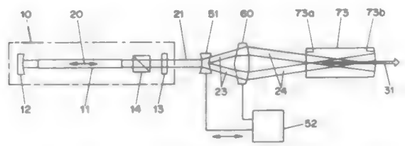
1. An optical scanner for reducing shading in which a semiconductor laser or a semiconductor laser array is set to a light source and a laser beam from the light source is deflected by light deflecting means having a deflecting reflecting face and is converged by a lens for scanning as a light spot on a scanned face to perform an optical scanning operation,
said optical scanner comprising:
one or more mirrors for bending an optical path of the laser beam and arranged between the light deflecting means and the scanned face; and
an increased reflecting coating film disposed on a mirror face of the one or more mirrors such that reflectivity is gradually increased from a central portion of the increased reflecting coating film in a main scan-corresponding direction toward both end portions of this film.

5,355,245
ULTRAVIOLET PROTECTED ELECTROCHEMICROMIC REARVIEW MIRROR
Niall R. Lynam, Holland, Mich., assignor to Donnelly Corporation, Holland, Mich.
Continuation of Ser. No. 732,572, Jul. 18, 1991, Pat. No. 5,239,406, which is a continuation-in-part of Ser. No. 464,888, Jan. 16, 1990, Pat. No. 5,115,346, which is a continuation-in-part of Ser. No. 155,256, Feb. 12, 1988, abandoned. This application Jun. 25, 1993, Ser. No. 82,882
The portion of the term of this patent subsequent to Dec. 17, 2008, has been disclaimed.
Int. Cl.[5] G02F 1/15; G02B 27/00; B60J 3/04
U.S. Cl. 359—267 62 Claims

1. An ultraviolet radiation protected electrochemichromic rearview mirror assembly comprising:
first and second spaced, optically transparent elements, said elements each having front and rear surfaces and defining a space between the rear surface of said first element and the front surface of said second element;
an electrochemichromic medium confined in said space whose light transmittance is variable upon the application of an electric field thereto; and
means for applying an electric field to said electrochemichromic medium to cause variation in the light transmittance of said medium;
said electrochemichromic medium comprising at least 1.2% by weight to volume of one of a) an ultraviolet radiation reducing additive in solution in said electrochemichromic medium and b) a mixture of at least two ultraviolet radiation reducing additives in solution in said electrochemichromic medium, said additive and additives comprising said mixture being selected from the group consisting of benzophenones, cinnamic acid derivatives, esters of benzoin acids, salicylic acid, terephthalic and isophthalic acids with resorcinol and phenols, pentamethyl piperidine derivatives, salicylates, benzotriazoles, cyanoacrylates, benzilidenes, malonates, oxalanilides, nickel chelates and hindered amines, wherein said additive and said mixture of at least two additives does not affect the function of said electrochemichromic medium and does not oxidize or reduce in said electrochemichromic rearview mirror assembly during operation thereof.

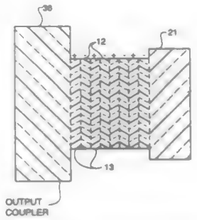


5,355,246
WAVELENGTH CONVERSION DEVICE
Ryohei Tanuma, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan
Continuation-in-part of Ser. No. 420,534, Oct. 12, 1989, Pat. No. 5,173,799. This application Oct. 5, 1990, Ser. No. 593,667
Claims priority, application Japan, Oct. 5, 1989, 1-260568
Int. Cl.[5] H03F 7/00; G02F 1/35
U.S. Cl. 359—326 21 Claims



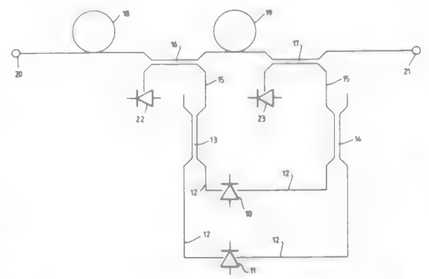
1. A laser beam wavelength conversion device comprising:
divergence means for converting a laser light beam projected from a laser beam generator into a divergent laser light beam having an annular wave front;
convergence means, spaced from said divergence means, for converging said divergent laser light beam;
adjustment means for adjusting the spacing between said divergence and convergence means; and
a nonlinear optical medium for receiving said converging laser light beam so that said beam is converged therewithin;
wherein said laser beam is received by said nonlinear optical medium, undergoes wavelength conversion under nonlinear matching conditions, and is emitted from said nonlinear optical medium.

5,355,247
METHOD USING A MONOLITHIC CRYSTALLINE MATERIAL FOR PRODUCING RADIATION BY QUASI-PHASE-MATCHING, DIFFUSION BONDED MONOLITHIC CRYSTALLINE MATERIAL FOR QUASI-PHASE-MATCHING, AND METHOD FOR FABRICATING SAME
Robert L. Byer, Stanford; Martin M. Fejer, and Leslie A. Gordon, both of Palo Alto, all of Calif., assignors to The Board of Trustees of the Leland Stanford, Jr. University, Stanford, Calif.
Filed Mar. 30, 1993, Ser. No. 40,018
Int. Cl.[5] G02F 1/39
U.S. Cl. 359—330 30 Claims



5. A monolithic nonlinear crystalline material for the transfer of energy from input radiation to a selected converted frequency of output radiation, comprising a plurality of adjacent wafers of a nonlinear monocrystalline material that are diffusion bonded together, which wafers individually have a dimension along an expected optical path through said wafer selected to optimize the conversion of energy from said input radiation to said converted frequency of output radiation, adjacent wafers being oriented relative to one another to optimize said conversion also in adjacent wafers, the material of each of said wafers being cubic and selected from the group consisting of GaAs, GaP, InP, ZnSe, ZnS, CdTe, ZnTe, CuCl, and CuBr.

5,355,248
OPTICAL AMPLIFIER
Anagnostis Hadjifotiou, Harlow, United Kingdom, assignor to Northern Telecom Limited, Montreal, Canada
Filed Oct. 29, 1993, Ser. No. 145,780
Claims priority, application United Kingdom, Oct. 30, 1992, 9222834.5
Int. Cl.[5] G02B 6/26
U.S. Cl. 359—341 4 Claims



1. A diode-pumped optical amplifier, which amplifier includes an optical pump source in the form of an injection laser diode having first and second end facets from which optical pump power is emitted, and including an optically amplifying

VOL 1167 ISS 2 OC 11 1994 UMI

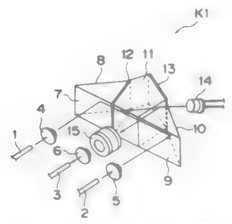
waveguided transmission medium formed in two parts optically in series with each other, wherein the optical output from the first end facet of the laser diode is optically coupled with the first part of the waveguided transmission medium while the optical output from the second end facet is optically coupled with the second part.

5,355,249

OPTICAL PASSIVE COMPONENTS

Hironori Souda, Hirakata; Masaaki Tojo, Nara, and Noboru Kurata, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 20, 1993, Ser. No. 49,459
Claims priority, application Japan, Apr. 21, 1992, 4-100834; Jul. 8, 1992, 4-180841; Nov. 10, 1992, 4-299027
Int. Cl.[5] G02B *6/34, 6/32*
U.S. Cl. 359—341 **8 Claims**



1. Optical passive components comprising:
a first optical fiber for outputting pumping light;
a second optical fiber for receiving the pumping light and either outputting or receiving signal light;
a third optical fiber for either receiving or outputting the signal light;
a wavelength selecting filter which transmits therethrough the pumping light and reflects the signal light;
a mirror which reflects most of the signal light reflected by the wavelength selecting filter and transmits therethrough a portion of the signal light reflected by the wavelength selecting filter such that the wavelength selecting filter and the mirror form an optical assembly;
an optical isolator which passes therethrough the signal light reflected by the mirror so as to output the signal light; and
a semiconductor optical detecting device for detecting the signal light transmitted through the mirror;
wherein the first, second and third optical fibers are disposed at one side of the optical assembly.

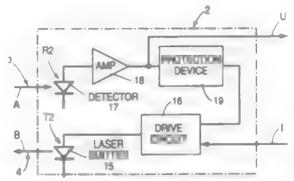
5,355,250

FIBER OPTICAL COMMUNICATION LINE WITH SHUT OFF CONTROL

Giorgio Grasso, Monza; Aldo Righetti, Milan, and Mario Tamburello, Vimercate, all of Italy, assignors to Pirelli Cavi S.p.A., Milan, Italy

Continuation of Ser. No. 844,115, Mar. 2, 1992, abandoned. This application Jun. 29, 1993, Ser. No. 84,770
Claims priority, application Italy, Mar. 29, 1991, MI91 A 000863
Int. Cl.[5] H01S *3/10*; H04B *9/00*; H01J *5/16*
U.S. Cl. 359—341 **11 Claims**

1. In an optical fiber transmission system for transmitting optical signals from an optical signal transmitter to an optical signal receiver, said system comprising an optical fiber amplifier having an input and an output, a first optical fiber line for interconnecting said transmitter and said input and a second optical fiber line for interconnecting said output and said receiver, said optical fiber amplifier comprising an active optical fiber for amplifying optical signals received at said input without conversion of the optical signals to electrical signals and for normally supplying said optical signals in amplified form to said output and hence, to said second optical fiber line connected thereto, when the magnitude of the optical signals at said input of said amplifier exceeds a predetermined magnitude, said optical fiber amplifier further comprising a source of pumping light energy coupled to said active fiber for normally supplying pumping light energy to said active fiber and said optical fiber amplifier also normally supplying optical signals to said second optical fiber line when the optical signals received at said input are below said predetermined magnitude, the improvement comprising protection means for substantially interrupting the supply of optical signals to said second optical fiber line by said amplifier when the optical signals received at said input are below said predetermined magnitude



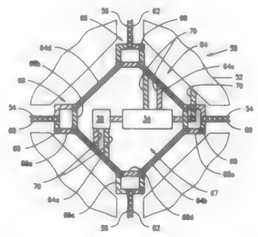
and thereby preventing the presence of harmful optical radiation at said output and in said second optical fiber line, said protection means comprising:
detecting means for detecting optical signals transmitted by said transmitter coupled to one of said input and said first optical fiber line and responsive to optical signals supplied to said input; and
control means connected to said amplifier and said detecting means and responsive to the magnitude of detected optical signals, said control means preventing the supply of optical signals to said second optical fiber line by said optical fiber amplifier as long as said detected optical signals have a magnitude less than said predetermined magnitude.

5,355,251

LIQUID CRYSTAL DISPLAY DEVICE WITH OCTAGONAL CELL PROVIDING INCREASED WIRING DENSITY

Terry J. Parks, Round Rock, Tex., assignor to Dell U.S.A. L.P., Austin, Tex.

Filed Apr. 28, 1993, Ser. No. 54,371
Int. Cl.[5] G02F *1/1343*
U.S. Cl. 359—354 **22 Claims**



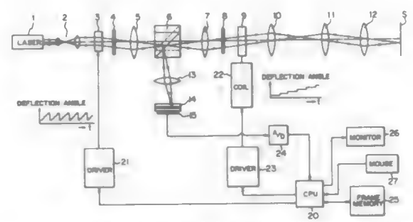
1. A liquid crystal display comprising:
at least four liquid crystal display electrodes spaced apart and arranged coplanar with each other upon a substrate having a substantially planar surface;
a first elongated conductor extending along said planar surface and between two pairs of said four liquid crystal display electrodes, and a second elongated conductor extending along said planar surface substantially perpendicular to said first conductor and between another two pairs of said four liquid crystal display electrodes; and
a cross-over region between both pairs of said four liquid crystal display electrodes, said cross-over region is sized to accommodate a control circuit capable of addressing one of said liquid crystal display electrodes, and said cross-over region further comprising a pair of elongated vias extending along said planar surface and dielectrically spaced substantially parallel to each other a spacing distance perpendicular to said planar surface, said vias are configured for connecting said first and second conductors to said control circuit and for routing said first and second conductors through said cross-over region.

5,355,252

SCANNING LASER MICROSCOPE

Koshi Haraguchi, Tokyo, Japan, assignor to Jeol Ltd., Tokyo, Japan

Filed Jan. 26, 1993, Ser. No. 9,286
Claims priority, application Japan, Jan. 27, 1992, 4-011933
Int. Cl.[5] G02B *21/36*
U.S. Cl. 359—369 **1 Claim**



1. A scanning laser microscope for focusing a laser beam onto an object while scanning the beam in two dimensions and for detecting light scattered from the object to observe an image of the object, said microscope comprising:
a laser emitting a laser beam;
means for focusing the laser beam;
scanning means for deflecting the laser beam to scan the object at regular intervals in two dimensions with the focused laser beam, said scanning means comprising at least one anisotropic Bragg diffraction acoustooptic deflector;
a detector producing an image signal in response to the light scattered from the object;
a digitizing means which digitizes the image signal from the detector in synchronism with the digital scan in such a way that the image signal is represented in terms of a given number of gray levels;
means for manipulating the image signal to extract information about a fine structure by performing a gradation conversion distributing gray levels from black to white; and
means for displaying the manipulated image signal.

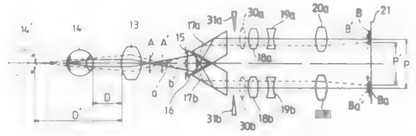
5,355,253

STEREOSCOPIC RETINAL CAMERA

Tsuguo Nanjo, Toyohashi, and Tokio Ueno, Chiryu, both of Japan, assignors to Nidek Co., Ltd., Japan

Filed Nov. 10, 1992, Ser. No. 974,108
Claims priority, application Japan, Nov. 30, 1991, 3-342184
Int. Cl.[5] G02R *27/22*
U.S. Cl. 359—473 **18 Claims**

1. A stereoscopic retinal camera which enables at least one of the stereoscopic observation of the fundus of the eye and the production of a stereoscopic picture of the fundus and a front portion of the eye by dividing a light beam reflected by the fundus into two light beams and transmitting the two light beams respectively along the light paths of separate image forming optical systems, said stereoscopic retinal camera comprising:
a focus adjustment means for photographing the fundus and the front portion of the eye; and
an optical correction means for correcting an inter-image pitch between a right image and a left image so as to be correspondent when at least one of the fundus and the front portion of the eye is photographed by operating said focus adjustment means;



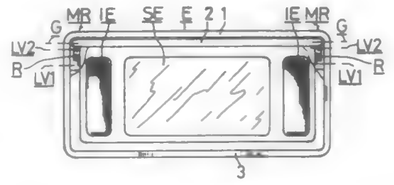
wherein said focus adjustment means comprises an auxiliary optical system for changing a focus area from the front portion of the eye to the fundus or from the fundus to the front portion of the eye; and
wherein said auxiliary optical system has a refracting power corresponding to a difference between the refracting power of an average eye and the refracting power of the front portion of the average eye.

5,355,254

SEMIAUTOMATIC OPENING AND CLOSING DEVICE FOR SUNVISOR MIRRORS HAVING A FOLD-DOWN COVER

José Aymerich, and Jesús Prat, both of Rubi, Spain, assignors to Industrias Techno-Matic S.A., Barcelona, Spain

Filed Jul. 22, 1992, Ser. No. 915,703
Claims priority, application Spain, Dec. 21, 1990, P9003267
Int. Cl.[5] G02B *7/18*; B60J *3/02*; E05D *11/10*; E05F *1/14*
U.S. Cl. 359—844 **2 Claims**



1. A sunvisor mirror, comprising:
a casing having opposite sides and a mirror disposed therein;
a cover rotatable about an axis of rotation relative to said casing;
an opening and closing device including two identical holding springs arranged in the interior of said casing, one on each of said sides and close to said axis of rotation of said cover, each of said holding springs being attached to said casing and said cover;
retaining means attaching said holding springs to said casing and said cover so that one end of said holding springs is hooked in said casing and the other of said holding springs acts on said cover so that said cover can be rotated from an intermediate position of a rotary path in two opposite automatic directions including an opening direction and a closing direction, said retaining means including two mutually opposite hooking orifices provided in said sides of said casing which are transverse to said axis of rotation of said cover at a distance from said axis of rotation, so that one end of said holding springs is hooked in each of

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said orifices and can rotate freely about said hooking orifices, two mutually opposite thrust orifices provided in the sides of said cover which are transverse to said axis of rotation so that the other end of each of said holding springs is housed in a respective one of said thrust orifices and can rotate freely in said cover such that a virtual longitudinal axis defined by said thrust orifices is at a greater distance from an outer surface of said cover than said longitudinal axis of rotation of said cover, and such that said virtual longitudinal axis is at a smaller distance from a front edge of said cover than said longitudinal axis of rotation of said cover.

5,355,255

EXTERIOR REAR VIEW MIRROR FOR A MOTOR VEHICLE

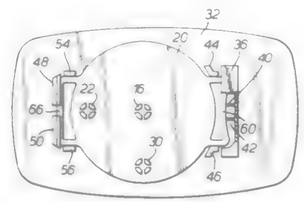
Andrew J. Assinder, Bognor Regis, England, assignor to Britax Wingard Limited, Hampshire, England

Filed Apr. 7, 1993, Ser. No. 44,269

Claims priority, application United Kingdom, Apr. 23, 1992, [redacted]

Int. Cl.[5] G02B *7/182;* **B60R** *1/02*

U.S. Cl. 359—871 **8 Claims**



1. An exterior rear view mirror assembly for a motor vehicle, comprising a housing adapted to be secured to the exterior of a motor vehicle body, a first mounting plate pivotally mounted within the housing, a mirror glass secured to a second mounting plate and a detachable catch assembly, releasable from outside the housing, for securing the second mounting plate to the first mounting plate, wherein the catch assembly comprises a pair of spaced parallel projections on one of said mounting plates, each projection containing a groove confronting the groove in the other projection, and a pair of outwardly directed abutment formations on the other of said mounting plates resiliently biassed apart from each other and spaced apart so that each abutment formation is engageable in a respective one of said grooves.

5,355,256

VIDEO SIGNAL REPRODUCING APPARATUS HAVING DIVERSE STILL PICTURE REPRODUCTION MODES

Tsutomu Fukatsu, and Yoshihiro Nakatani, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 586,223, Sep. 21, 1990, abandoned, which is a division of Ser. No. 209,491, Jun. 20, 1988, abandoned. This application Nov. 25, 1992, Ser. No. 982,225

Int. Cl.[5] H04N *5/78*

U.S. Cl. 360—10.3 **19 Claims**

1. A video signal reproducing apparatus for reproducing a video signal from a recording medium having the video signal recorded in many helical tracks, each of which has one field portion of the video signal recorded therein, comprising:

a) a rotary head arranged to periodically trace the recording medium and reproduce the recorded video signal;

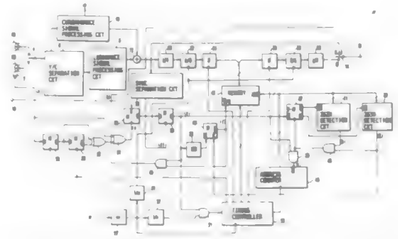
b) a memory arranged to receive the video signal reproduced by said rotary head and capable of storing at least one field portion of the video signal;

c) memory control means for controlling writing signals into said memory and for reading signals stored in said memory therefrom;

d) rotation control means for controlling rotation of said rotary head and outputting a rotation signal related to rotation of said rotary head; and

e) mode setting means for setting said apparatus into one of a plurality of modes according to still picture reproduction time, said plurality of modes including

a first still picture reproduction mode, in which said rotation control means operates to rotate said rotary head at a



predetermined rotation speed and said memory control means operates to cause repetitive reading from said memory of stored signals corresponding to one field portion of said video signal, and

a second still picture reproduction mode in which said rotation control means operates to cause rotation of said rotary head and said memory control means operates, to cause repetitive reading from said memory of stored signals corresponding to one field portion of said signal without using the rotation signal output from said rotation control means.

5,355,257

OVERLOAD DETECTION IN AN ARRANGEMENT FOR RECORDING AN ANALOG SIGNAL ON A RECORD CARRIER

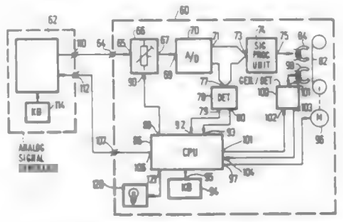
Gerardus C. P. Lokhoff, and Gijsbrecht C. Wirtz, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 19, 1992, Ser. No. 978,101

Claims priority, application European Pat. Off., Nov. 19, 1991, 91203003.8

Int. Cl.[5] G11B *5/09, 15/18*

U.S. Cl. 360—32 **16 Claims**



1. An arrangement for storing an analog signal in storage means in a storing mode, comprising:

an input terminal for receiving the analog signal;

variable attenuator means having an input coupled to the input terminal and an output;

conversion means, having an input coupled to the output of the variable attenuator means, and an output, the conversion means being adapted for converting the signal applied to its input into a second signal and for supplying the second signal to the output;

storing means, having an input coupled to the output of said conversion means, for storing said second signal in said storage means,

characterized in that said arrangement further comprises:

overload detection means having an input also coupled to the output of said conversion means, said overload detection means detecting an overload situation for the analog signal applied to the arrangement; and

attenuator control signal generator means having an input coupled to an output of said overload detection means for generating at an output an attenuator control signal upon said overload detection means detecting an overload situation, the output of said attenuator control signal generating means being coupled to a control signal input of the variable attenuator means, the arrangement being adapted to terminate the storing mode upon said overload detection means detecting the overload situation, and the variable attenuator means being adapted to increase the attenuation upon receipt of the attenuator control signal.

5,355,258

CIRCUIT FOR READING OUT MAGNETIC RECORD CAPABLE OF LOWERING SLICE LEVEL AND MAGNETIC RECORDER THEREWITH

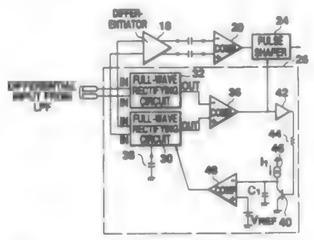
Akira Nakamura, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Mar. 10, 1993, Ser. No. 29,400

Claims priority, application Japan, Mar. 11, 1992, 4-52612

Int. Cl.[5] G11B *5/09*

U.S. Cl. 360—46 **14 Claims**



1. A magnetic record readout circuit comprising:

a) differentiation means for differentiating a signal output from a magnetic head;

b) means for comparing the differentiated signal with a value to detect a zero cross of the differentiated signal, an output signal of said means for comparing being a square wave signal whose value is inverted in response to detection of a zero cross;

c) means for detecting an edge of said square wave signal and for outputting a pulse signal upon detection of the edge; and

d) level slice means comprising:

e) full-wave rectification means for full-wave-rectifying the signal output from said magnetic head;

f) slice level determination means responsive to the full-wave-rectified waveform for determining a slice level;

g) comparison means for comparing said full-wave-rectified waveform with said slice level and for outputting a result of said comparing as a pulse signal; and

h) slice level lowering means for lowering said slice level based on said pulse signal,

wherein said slice level is lowered when said pulse signal indicates that said full-wave-rectified waveform is below said slice level for at least a predetermined time.

5,355,259

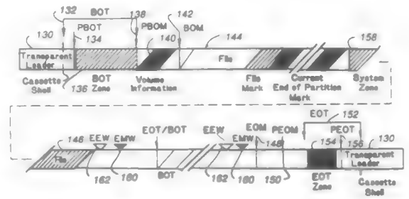
VOLUME FORMAT TABLE FOR DATA RECORDING SYSTEM

Lionel C. Shih, San Jose, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Feb. 28, 1992, Ser. No. 843,532

Int. Cl.[5] G11B *5/09, 20/10*

U.S. Cl. 360—48 **7 Claims**



1. A system adapted to selectively record and reproduce digital data on a magnetic tape, which has a plurality of boundaries defined along its length, the boundaries dividing said tape into a plurality of recording partitions, said system comprising:

recording means adapted to selectively record and reproduce user data on a recording area of said tape;

servo means for controlling the movement of said tape;

processing means for providing said user data to said recording means for recording thereby on said tape, said processing means generating a table of data for recording by said recording means on said tape at least at one predetermined location, said table including data identifying the locations of said boundaries along said tape,

wherein said tape has at least one system zone located along the length thereof, said system prohibiting the recording of user data within said zone, said table including data identifying the location of the beginning of each said system zone.

5,355,260

SERVO SYSTEM FOR POSITIONING A READ/WRITE HEAD WITHIN A STORAGE DEVICE WITH MEANS FOR DETECTING MALFUNCTIONS IN THE SERVO DATA

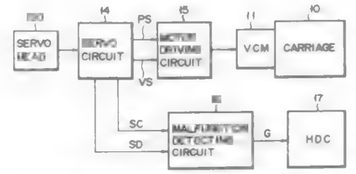
Masako Mikada, Higashimurayama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 557,805, Jul. 26, 1990, abandoned. This application Dec. 14, 1992, Ser. No. 993,807

Claims priority, application Japan, Jul. 28, 1989, 1-194068

Int. Cl.[5] G11B *5/09, 15/18*

U.S. Cl. 360—51 **1 Claim**



1. A servo system for positioning a head within a data storage apparatus, comprising:

a magnetic storage medium having prerecorded servo data, the servo data being used to position the head within the data storage apparatus and having units each of which comprises a sync signal and position data;

means for reproducing the prerecorded servo data and for separating the sync signal from the servo data;

means for generating a count period;

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means, responsive to the sync signal, for generating a pulse signal;

malfunction detecting means for detecting the pulse signal and for detecting a malfunction in the servo data when the pulse signal is not detected during the count period, including output means for generating a malfunction detection signal upon detection of a malfunction in the servo data; and

further comprising control means for stopping operation of said data storage apparatus in response to said malfunction detection signal.

5,355,261

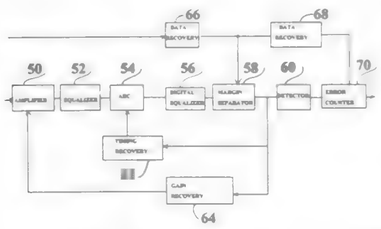
METHOD AND APPARATUS FOR MEASURING ERROR RATE OF MAGNETIC RECORDING DEVICES HAVING A PARTIAL RESPONSE MAXIMUM LIKELIHOOD DATA DETECTION CHANNEL

Alex Taratorin, Palo Alto, Calif., assignor to Guzik Technical Enterprises, Inc., San Jose, Calif.

Filed Dec. 20, 1993, Ser. No. 169,004

Int. Cl.[5] G11B *5/09*

U.S. Cl. 360—53 **15 Claims**



1. A method for measuring the error rate of a magnetic recording device storing a set of data and having a partial response maximum likelihood data detecting channel, said channel having a predetermined set of values at which samples are taken and is set in accordance with a predetermined criterion, said method comprising the steps of:

changing said predetermined criterion in a noise increase direction to a value different from said predetermined criterion, thus producing a signal with increased noise;

reading at least a part of said set of data by means of said partial response maximum likelihood data detecting channel and obtaining a plurality of sampled signals;

counting a number of errors introduced into said sampled signals as a result of said steps of changing and reading; and

determining a dependence of a number of errors on said value different from said predetermined criterion by repeating said steps of changing, reading, and counting;

extrapolating said dependence to said predetermined criterion and obtaining a number of errors corresponding to said predetermined criterion; and

using said dependence and said number of error corresponding to said predetermined criterion as a measure for evaluation of the performance of said partial response maximum likelihood data detecting channel.

5,355,262

MAGNETIC RECORDING APPARATUS HAVING AN ADJUSTABLE ROTARY HEAD

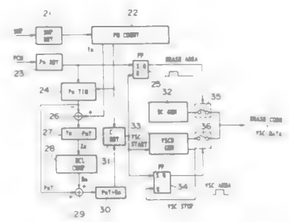
Teruhiko Kori; Hiroshi Yamazaki, both of Kanagawa; Sakae Okazaki; Hajime Watanabe, both of Tokyo; Satoshi Tsuchiya, Kanagawa, and Miki Furuya, Saitama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 19, 1993, Ser. No. 19,879

Claims priority, application Japan, Feb. 28, 1992, 4-078531

Int. Cl.[5] G11B *5/08, 15/14*

U.S. Cl. 360—64 **10 Claims**



2. A recording apparatus for recording a first information signal by a rotary head in a helical track on a recording medium which has said first information signal recorded in a first recording area, and a second recording area preceding said first recording area has a second information signal optionally recorded therein, comprising:

(a) third information signal recording means for recording a third information signal between said first and second recording areas of said helical track; and

(b) recording term adjusting means for adjusting a recording term of said third information signal based on a switch timing of said rotary head and on a recording area end point of time of said second recording area.

5,355,263

ROTARY HEAD TYPE MAGNETIC TAPE APPARATUS

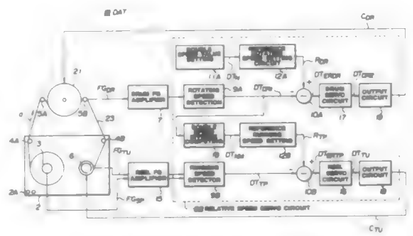
Masayoshi Noguchi, Chiba, and Makoto Yamada, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 20, 1990, Ser. No. 585,485

Claims priority, application Japan, Dec. 30, 1989, 1-340273; Dec. 30, 1989, 1-340275; Dec. 30, 1989, 1-340276

Int. Cl.[5] G11B *21/04, 15/46*

U.S. Cl. 360—70 **2 Claims**



1. A rotary head type magnetic tape apparatus in which a magnetic tape is wrapped around a rotary drum fitted with a rotary head or heads and desired information signals may be recorded on or reproduced from said magnetic tape by the rotary head or heads, comprising:

first reference value setting means for setting first reference head rotating speed data based upon preset tape speed data;

rotating speed detecting means for detecting the rotational speed of the rotary drum and generating head rotating speed data;

second reference value setting means for setting first reference tape running speed data based upon the inverse of the head rotating speed data;

tape running speed detecting means for generating tape running speed data;

rotational driving means for driving the rotary head or heads;

tape driving means for driving the magnetic tape;

first rotary head controlling means for controlling the rotational driving means so that the head rotating speed data and the first reference head rotating speed data are equal to each other, and

first magnetic tape running control means for controlling the tape driving means so that the tape running speed data and the first reference tape running speed data are equal to each other,

such that the relative speed along a track direction between the magnetic tape and the rotary head or heads mounted on the rotary drum is controlled to be constant.

5,355,264

RECORDING OR REPRODUCING APPARATUS

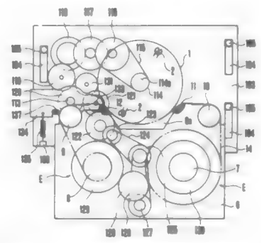
Osamu Nagatsuka, Kanagawa; Tatsuzo Ushiro, Saitama, and Hiroo Edakubo, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 791,991, Nov. 14, 1991, abandoned. This application Nov. 17, 1993, Ser. No. 154,153

Claims priority, application Japan, Nov. 20, 1990, 2-312743; Nov. 30, 1990, 2-329861; Nov. 30, 1990, 2-329865; Nov. 30, 1990, 2-329864

Int. Cl.[5] G11B *15/66*

U.S. Cl. 360—85 **21 Claims**



1. A recording or reproducing apparatus for recording or reproducing signals on or from a tape-shaped recording medium by using a cassette which has a pinch roller and a pair of tape reels around which the tape-shaped recording medium is wound, by guiding and causing the tape-shaped recording medium to travel in an oblique posture relative to a rotary drum which has heads, comprising:

a) a first chassis arranged to hold the cassette;

b) a second chassis arranged to hold the rotary drum;

c) a capstan disposed on said second chassis and arranged to control the travel of the tape-shaped recording medium;

d) a moving mechanism arranged to relatively move said first chassis and said second chassis so that the rotary drum is positioned close to and apart from the cassette, and said moving mechanism being arranged to control said first chassis and said second chassis to be set in a first relative position in which signals can be recorded or reproduced with the tape-shaped recording medium sandwiched between said capstan and the pinch roller in a state of being wrapped around the rotary drum and in a second relative position in which the recording medium is situated apart from the rotary drum and said capstan is situated apart from the pinch roller; and

e) urging means for pressing said capstan against the pinch roller by an urging force thereof.

5,355,265

CASSETTE LOADING DEVICE FOR A CASSETTE TAPE RECORDER

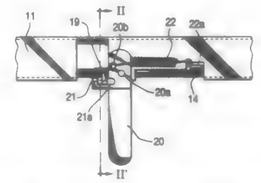
Joo D. Kim, Seongnam, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 19, 1992, Ser. No. 901,152

Claims priority, application Rep. of Korea, Jun. 24, 1991, 91-9429[U]

Int. Cl.[5] G11B *17/04*

U.S. Cl. 360—96.6 **16 Claims**



1. A tape cassette loading device for a cassette tape recorder for minimizing damage of a drum and a cassette tape by guiding said cassette tape during the loading of said tape cassette, said device comprising:

a housing;

a housing shaft mounted on a front wall of said housing and connected with a plurality of links mounted on first and second sides of said housing, said housing shaft revolving in a first rotational direction during loading and in a second rotational direction during unloading of said tape cassette;

pivoting means having a first end pivotally connected to said housing by a pivoting pin, said pivoting means rotating around said pivoting pin in response to the revolution of said housing shaft;

a lock piece having a slot, said lock piece connected to said first end of said pivoting means;

an engaging pin projecting from said housing shaft, engaging said lock piece, and thereby causing the rotation of said pivoting means as said housing shaft revolves; and

elastic means mounted on the front wall of said housing for supplying elastic force to said pivoting means.

5,355,266

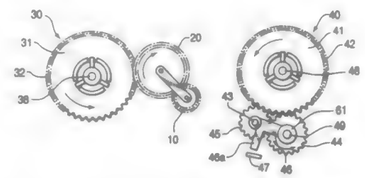
TAPE BACK-TENSION MECHANISM FOR A MAGNETIC REPRODUCING APPARATUS

Un-bae Kim, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 24, 1993, Ser. No. 64,863

Int. Cl.[5] G11B *15/24;* **B65H** *16/10*

U.S. Cl. 360—96.3 **27 Claims**



1. A tape back-tension mechanism for a tape handling apparatus, for applying a predetermined force to one of two reels of a tape cassette to prevent a tape from becoming loose due to

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inertia occurring during shifting between operational modes of the apparatus, said tape back-tension mechanism comprising:

a supply reel gear and a take-up reel gear fixed to a deck of the apparatus;

a supply reel disk and a take-up reel disk, said supply reel disk and said take-up reel disk frictionally coupled to and rotatable with said supply reel gear and said take-up of reel gear, respectively, each one of said reel disks accommodating a corresponding one of the reels of the tape cassette;

a fixed gear rotationally engaged with said take-up reel gear;

a floating gear rotationally engaged with said fixed gear, and engaging said take-up reel gear when said take-up reel gear rotates in a first direction and disengaging said take-up reel gear when said take-up reel gear rotates in a second direction; and

a connection lever, said connection lever connecting said fixed gear with said floating gear, and pivotally supporting said floating gear about an axis of rotation of said fixed gear;

wherein said take-up reel gear stops when engaged with said floating gear.

5,355,267

SUSPENSION ATTACHMENT APPARATUS FOR A DISK DRIVE

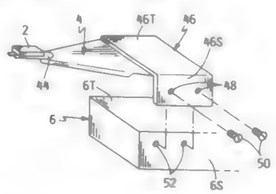
Akihiko Aoyagi, Yamato, Japan; Jerry T. Coffey, Oronoco, Minn., and Kiyoshi Satoh, Fujisawa, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 846,846, Mar. 6, 1992, abandoned. This application Oct. 14, 1993, Ser. No. 137,395

Claims priority, application Japan, Jul. 3, 1991, 3-065360

Int. Cl.[5] G11B *5/49, 21/20*

U.S. Cl. 360—104 **9 Claims**



1. A head carriage assembly which carries at least one head, and which is driven by a head positioning means so that said head is positioned at a target position on a disk rotating about an axis and lying in a plane perpendicular to said axis, said head carriage assembly comprising:

a rigid arm having rectangular cross section, said rigid arm including a first side surface substantially perpendicular to said plane of said disk, a top surface substantially parallel to said plane of said disk, and a bottom surface substantially parallel to said plane of said disk;

a suspension for suspending said head; and

a generally L-shaped mounting plate for attaching the suspension to the rigid arm, said mounting plate having a first portion which is attached to said first surface of said rigid arm and a second portion which engages one of said top surface and said bottom surface of said rigid arm.

5,355,268

DISK DRIVE KNIFE EDGE PIVOT

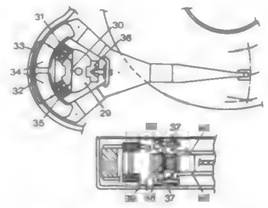
Dieter M. Schulze, 18956 Sara Park Clr., Saratoga, Calif. 95070

Continuation-in-part of Ser. No. 612,204, Nov. 13, 1990. This application Oct. 26, 1992, Ser. No. 966,273

The portion of the term of this patent subsequent to Feb. 19, 2008, has been disclaimed.

Int. Cl.[5] G11B *5/55, 21/08*

U.S. Cl. 360—106 **73 Claims**



1. A disk drive for retrieval of data from or storage of data to media means rotated by a full turn mover, said disk drive comprising:

arm structure means for supporting a head means, said head means movable about an axis of rotation relative to said media means, said arm structure means including:

partial turn mover means for moving said head means;

a member adjacent said partial turn mover means;

wherein one of said partial turn mover means and said adjacent member has one or more projecting members, and the other of said partial turn mover means and said adjacent member has one or more recessed portions, said one or more projecting members and said one or more recessed portions interacting to form pivot means which defines said axis of rotation and which has an inherently limited range of rotation; and

deck structure means for supporting said full turn mover, said partial turn mover means, and said adjacent member.

5,355,269

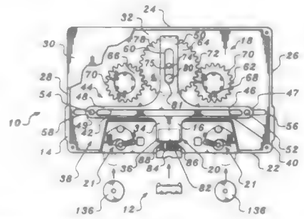
CLEANING APPARATUS FOR A CASSETTE PLAYER

Eivind Clausen, Bellingham, Wash., assignor to Allsop, Inc., Bellingham, Wash.

Filed Nov. 16, 1992, Ser. No. 977,126

Int. Cl.[5] G11B *5/41*

U.S. Cl. 360—128 **24 Claims**



1. Cleaning apparatus for cleaning a head assembly of a magnetic tape player and/or recorder unit with a cleaning solution, the unit including at least one drive spindle, said apparatus comprising:

(a) a housing adapted to be inserted in a tape player and/or recorder unit in a cleaning position, said housing having a forward end and a rearward end;

(b) a wiper arm, which is slidably mounted within said housing, comprising:

(i) a forward end portion, said wiper arm having a longitudinal axis extending rearwardly from said forward end portion; and

(ii) a spring portion connected to said forward end portion, said spring portion comprising right and left flexible members extending from said forward end portion in a direction generally perpendicular to said longitudinal axis, said flexible members being connected to said forward end portion to permit said forward end portion to be deflected in a direction parallel to said longitudinal axis, and

(iii) a mounting portion connected to said spring portion and slidably connected to said housing to allow motion of said forward end portion back and forth on a path generally transverse to said longitudinal axis;

(c) drive means, rotatably connected within said housing and slidably connected to said wiper arm, for causing oscillatory movement of said wiper arm relative to said housing in a direction generally perpendicular to said longitudinal axis; and

(d) a cleaning head, mounted to said forward end portion of said wiper arm, said cleaning head comprising a rigid body and a plurality of cleaning materials extending forwardly of said rigid body, in a direction generally parallel to said longitudinal axis, at least one of said cleaning materials including a solution-holding material characterized by its ability to absorb a cleaning solution, for spreading the cleaning solution on the head assembly, at least one other of said cleaning materials comprising a material relatively stiffer than said solution-holding material, for scrubbing the head assembly.

5,355,270

MAGNETIC RECORDING MEDIUM HAVING A REFERENCE TRACK STRUCTURE FOR IMPROVED OPTICAL TRACKING

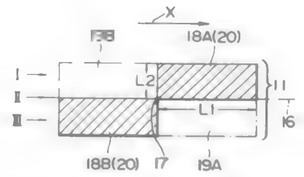
Nobuhiro Umebayashi, Tsukuba, and Kazuya Fukunaga, Ibaraki, both of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Jul. 8, 1992, Ser. No. 910,563

Claims priority, application Japan, Jul. 10, 1991, 3-195109; Jul. 26, 1991, 3-208821

Int. Cl.[5] G11B *5/82*

U.S. Cl. 360—135 **14 Claims**



1. A magnetic recording medium comprising a substrate made of a non-magnetic material, and a magnetic layer comprising magnetic powder in a binder on said substrate,

wherein said magnetic layer comprises

a reference portion at a predetermined position thereof;

a first magnetic head-tracking optical recess at a position spaced a predetermined distance from said reference portion in a direction perpendicular to a direction of travel of a magnetic head relative thereto;

a second magnetic head-tracking optical recess at a position spaced a predetermined distance from said first magnetic head-tracking optical recess in a direction perpendicular to the direction of travel of the magnetic head; and

a first data track for recording therein desired information between said first and second magnetic head-tracking optical recesses,

wherein said reference portion has (1) a pair of reference recess regions arranged symmetrically with respect to an arbitrary point on a centerline of said reference portion, each of said reference recess regions comprising a recess with an underlying portion of said magnetic layer having the same magnetic powder density as the remaining portion of the said magnetic layer formed by cutting by a laser, and (2) a constant depth flat portion with no recess which flat portion is disposed adjacent to each of said reference recess regions so that undesirable signals are not recorded in the reference recess regions.

5,355,271

TAPE CASSETTE WITH RESILIENTLY MOUNTED TAPE CLEANER

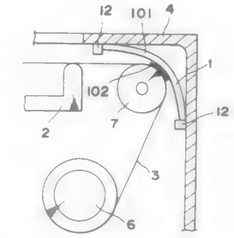
Masaru Watanabe, Nishinomiya; Tousaku Nishiyama, Katano; Tsumoru Ohata, Kyoto, and Kiyoshi Kobata, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 4, 1993, Ser. No. 13,378

Claims priority, application Japan, Feb. 7, 1992, 4-022392

Int. Cl.[5] G11B *5/41*

U.S. Cl. 360—137 **5 Claims**



1. A tape cassette comprising: a casing including two locking portions, a magnetic tape having a magnetic surface and wound within said casing, a guide roller disposed within said casing and over which said tape extends so as to be guided by the guide roller, the magnetic surface of said tape facing away from said guide roller, and a cleaner disposed in said casing opposite said guide roller, said cleaner including a piece of resilient film having opposite ends and a central portion located between said opposite ends, and nonwoven cloth disposed on the central portion of said film, the film of said cleaner being wedged between the locking portions of said casing with said opposite ends thereof engaged by the locking portions such that said resilient film is bowed away from said guide roller, and the nonwoven cloth of said cleaner being biased against the magnetic surface of said tape opposite said guide roller due to the resiliency of the film of the cleaner.

5,355,272

DISK DRIVE LOCK HAVING A HOOK MECHANISM TO ENGAGE A DISKETTE PROTECTIVE COVER PUSH ROD

Ching-hu Kung, 4th Fl, No. 9, Jen-ai Street, Yung-he City, Taipei Shien, Taiwan

Filed Mar. 16, 1993, Ser. No. 31,888

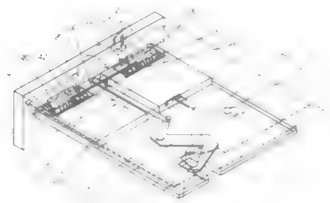
Int. Cl.[5] G11B *23/28;* **E05B** *73/00*

U.S. Cl. 360—137 **3 Claims**

1. A lock mechanism for disk drives having a diskette protective cover push rod and comprising: a case; a lock slantly disposed at a front side of said case and having a shaft which is turnable by means of a key; an eccentric member connected to said shaft; a transmission shaft having a first end connected to said eccentric member and a second end extending into said case; a hook member pivotally attached to said case and connected to said second end of said transmission shaft, the hook member having a hook formed thereon; said case defining two separate recesses formed near a front side thereof; two spring clips separately disposed in said recesses and being clamped by

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a linkage having an upper link and a lower link which respectively transversely pass across a top and a bottom of said recesses; said linkage having a central supporting rod which vertically passes through said transmission shaft such that movement of said transmission shaft drives said linkage to move forward or backward; said transmission shaft being moved forward or backward by turning said shaft and said eccentric



member when said key is turned to lock or unlock said lock whereby, when said key is turned to lock said lock, said transmission shaft is moved forward thereby causing said linkage to move forward allowing said spring clips to spring open, and moving said hook member to bias, allowing said hook of said hook member to engage the diskette protective cover push rod in said disk drive.

5,355,273

AUXILIARY POWER UNIT FOR USE WITH A MOTOR VEHICLE

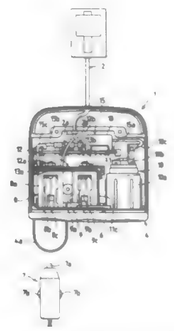
Nobuyuki Yoshizawa; Noriyuki Suzuki, and Kunio Kato, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Nov. 25, 1992, Ser. No. 981,299

Claims priority, application Japan, Nov. 26, 1991, 3-104711[U]

Int. Cl.[5] H02H *3/00*

U.S. Cl. 361—93 **5 Claims**



1. An auxiliary power unit for use with a motor vehicle having a cigarette lighter socket, said auxiliary power unit comprising:

a plug adapted for electrical connection to said cigarette lighter socket;

at least one socket adapted for electrical connection to at least one electrical device; and

electrical path forming means for forming an electrical path between said plug and said at least one socket, said electrical path enabling a flow of current from said plug to said at least one socket, said electrical path forming means including

first means for detecting said flow of current to said at least one socket and for opening said electrical path when said detected flow of current exceeds a predetermined current value, thereby stopping said flow of current to said at least one socket, and

second means for detecting a temperature of said at least one socket, and for short circuiting said electrical path when said detected temperature exceeds a predetermined temperature value, thereby causing said flow of current to said at least one socket to exceed said predetermined current value and causing said first means to open said electrical path to stop said flow of current to said at least one socket.

5,355,274

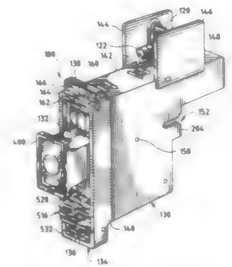
FUSED DISCONNECT

David R. Marach, Marengo; Conrad Alfaro, Chicago, and Lawrence Happ, Mundelein, all of Ill., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Nov. 5, 1991, Ser. No. 788,199

Int. Cl.[5] H01R *7/02*

U.S. Cl. 361—104 **24 Claims**



1. A power supply disconnect device for installation in a power supply distribution panel having at least one power supply bus means, said disconnect device comprising:

a housing;

load side terminal means extending from said housing;

line side terminal means extending from said housing for electrical connection to said power supply bus means;

alarm terminal means extending from said housing;

a protection fuse holder assembly removably installed in said housing;

an alarm fuse means independently removably installed in said housing, whereby said protection fuse holder assembly is removable without removing said alarm fuse means;

said alarm fuse means connected in parallel with said protection fuse assembly.

5,355,275

CURRENT LIMITING DEVICE FOR ELECTROMAGNETIC COIL EMPLOYING GAP CONTAINING SUPERCONDUCTIVE SHIELD

Philip J. Goodier, Manchester, and Peter J. Davidson, Chester, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Dec. 20, 1991, Ser. No. 809,908

Claims priority, application United Kingdom, Dec. 21, 1990, 9027803

Int. Cl.[5] H03K *17/92*

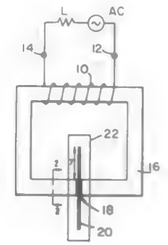
U.S. Cl. 361—141 **13 Claims**

1. An AC electrical power supply having a power supply line interconnecting an AC electrical power source and a load, and a current limiting device interposed in the power supply line for limiting the magnitude of current that can be supplied to the load, said device comprising:

a magnetic circuit interrupted by a gap;

a coil which is wound around part of the magnetic circuit and is coupled to said power supply line so that current supplied from the AC electrical power source to the load passes through the coil and induces magnetic flux within the magnetic circuit; and

superconducting means, inserted into the gap, for causing magnetic flux to traverse the gap via pathways greater



than the width of the gap when current passing through the coil is within a predetermined range, said superconducting means including a body of superconductive material inserted into the gap so as to extend laterally beyond the magnetic circuit in the vicinity of the gap, and said superconducting means being rendered non-superconducting when the current through the coil exceeds said predetermined range so that flux induced in said magnetic circuit can traverse the gap by penetration through said body with consequent increase in impedance of the device.

5,355,276

NETWORK CONNECTOR FOR COMPUTER

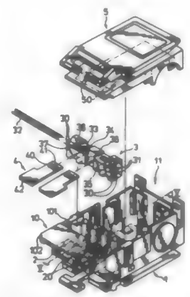
Ming-Kuang Chai, 3F-8, No.255, Sec.2, Chung-Shan Rd., Chung-Ho, Taiwan

Filed May 26, 1993, Ser. No. 68,726

Claims priority, application Taiwan, Jul. 16, 1992, 81209443

Int. Cl.[5] H01R *13/648;* **H05K** *5/03*

U.S. Cl. 361—679 **1 Claim**



1. A network connector for connecting a computer to a network, said connector comprising:

an elongated insulated casing including a front contact end, a rear contact end opposite to said front contact end, a bottom, an open top opposite to said bottom and a pair of opposed walls which interconnect said front and rear contact ends to define said elongated casing, said front contact end having a top portion which is provided with a stopping plate that extends frontwardly therefrom;

each of said opposed walls having an elongated groove which is formed adjacent to said front contact end and which extends from said bottom of said elongated casing to said open top of said elongated casing;

two pairs of first and second conducting pins which are disposed lengthwise on said bottom and which extend rearwardly from said front contact end, said first conducting pins being shorter than said second conducting pins, said first and second conducting pins of said two pairs being alternatingly arranged and each of which having a first end flushed with one another and a second end, said second ends of said first and second conducting pins being provided with an insert portion that extends upward, said insert portions of said second ends of said first conducting pins being staggered relative to said insert portions of said second ends of said second conducting pins in a direction transverse to a longitudinal axis of said elongated casing;

an elongated insulated seat provided in said elongated casing transverse to said longitudinal axis of said elongated casing, said insulated seat having two opposed ends, each of which is provided with a projection, said projections being inserted into said elongated grooves of said elongated casing respectively, said insulated seat further having a flat top surface provided with a T-shaped member and two inverted L-shaped members, each of which is disposed on both sides of said T-shaped member so as to define two hooking units, two spaced through bores that extend along a full length of said insulated seat so as to pass through said opposed ends, four inlet holes which extend from a bottom of said insulated seat to communicate said through bores, each of said four inlet holes being staggered relative to one another along the length of said elongated insulated seat so as to permit said insert portions of said second ends of said first and second conducting pins to extend therein, said flat top surface of said insulated seat being located lower than said stopping plate and having two recesses respectively formed adjacent to said hooking units;

two conducting rods inserted in said through bores in said insulated seat and respectively connecting said insert portions of said first conducting pins of said first and second pairs and said second conducting pins of said first and second pairs;

two ground conducting plates, each of which having a first end clamped by a respective one of said hooking units and a second end, a downward projection which is formed adjacent to said first end and which engages a respective one of said recesses of elongated insulated seat so that said ground conducting plate is fixed lengthwise of said elongated casing, said second end of said ground conducting plate passing through said front contact end so as to be disposed under said stopping plate such that said insulated seat is prevented from disengaging said elongated casing when said insulated seat is lifted from said elongated casing; and

a cover member provided on said elongated casing so as to close said open top.

5,355,277

THIN FILM CAPACITOR

Kazuhiro Hoshiba, Kyoto, Japan, assignor to Rohm Co. Ltd., Kyoto, Japan

Filed Dec. 17, 1992, Ser. No. 992,197

Claims priority, application Japan, Dec. 27, 1991, 3-346683

Int. Cl.[5] H01G *4/10*

U.S. Cl. 361—313 **5 Claims**

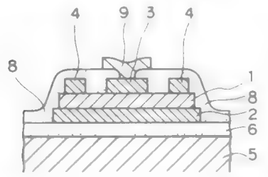
1. A thin film capacitor comprising:

a first capacitor including a ferroelectric film, and a first electrode arranged at one surface of said ferroelectric film and said first electrode arranged at the other surface of said ferroelectric film; and

A supplementary second capacitor including said ferroelectric film, and a second electrode arranged at said one

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surface of said ferroelectric film and said second electrode arranged at said other surface of said ferroelectric film,



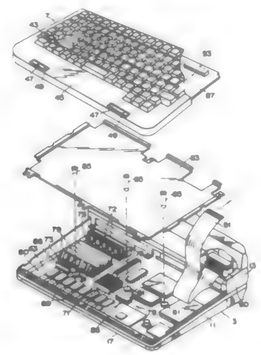
said supplementary second capacitor surrounding said first capacitor.

5,355,278

PORTABLE ELECTRONIC APPARATUS HAVING AN ELECTRO-MAGNETIC SHIELD SUPPORTING A KEYBOARD

Takashi Hosoi; Keizo Ohgami, and Fumiaki Takeda, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Continuation of Ser. No. 935,252, Aug. 27, 1992, abandoned, which is a division of Ser. No. 695,501, May 6, 1991, Pat. No. 5,255,154. This application Mar. 15, 1993, Ser. No. 32,189
Claims priority, application Japan, May 7, 1990, 2-115810
Int. Cl.[5] H05K *7/02, 9/00*
U.S. Cl. 361—680 **20 Claims**



1. A portable electronic apparatus comprising:
a housing having a bottom wall carrying a circuit board thereon;
a substantially rectangular keyboard unit mounted on the housing and facing the circuit board, a peripheral edge portion of the keyboard unit being supported on the housing;
a shielding plate arranged adjacent to the keyboard unit between the circuit board and the keyboard unit, for magnetically shielding the circuit board; and
means for preventing the keyboard unit from bending toward the circuit board, the preventing means including a supporting member extending from the shielding plate and having an extended end abutting against the circuit board.

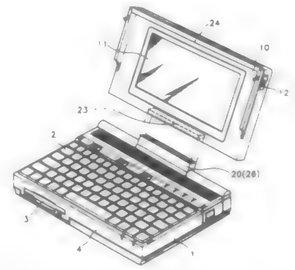
13. A portable electronic apparatus comprising:
a housing having a bottom wall;
a circuit board proximate to the bottom wall;
a shielding plate disposed proximate to the circuit board, the shielding plate having an edge portion supported on the housing for magnetically shielding the circuit board;
at least one spacing means, disposed between the circuit board and the shielding plate, for maintaining spacing between the circuit board and the shielding plate; and
at least one boss disposed between the bottom wall and the circuit board.

5,355,279

NOTEBOOK COMPUTER WITH DISPLAY ASSEMBLY SELECTIVELY CONNECTABLE FOR PEN OR KEYBOARD INPUTTING OF DATA

Sanglae Lee, Kyungki; Keesoon Park, Seoul, and Tafbaeg Kim, Kyungki, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 15, 1992, Ser. No. 992,816
Claims priority, application Rep. of Korea, Aug. 25, 1992, 92-15299
Int. Cl.[5] H05K *7/10;* **G06F** *1/16*
U.S. Cl. 361—681 **8 Claims**



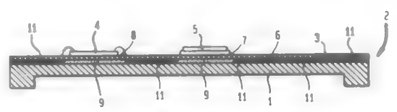
4. A notebook computer comprising:
a keyboard for inputting data and located in a main body section of the computer;
a display panel and a central processing unit located in a display body section; and
a pen for inputting data,
wherein the display body section comprises first and second contact pluralities and the main body section comprises a third contact plurality, said first and second contact pluralities selectively engageable with said third contact plurality to selectively operate the computer by means of said keyboard and pen, respectively.

5,355,280

CONNECTION ARRANGEMENT WITH PC BOARD

Walter Röthlingshöfer; Ulrich Goebel, and Roland Gerstner, all of Reutlingen, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 776,269, Nov. 27, 1991, abandoned. This application Oct. 7, 1993, Ser. No. 133,529
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1989, 3932213
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—705 **6 Claims**



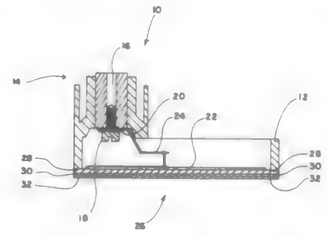
1. Connection arrangement, comprising
a PC board (3) and, mounted thereon, at least one energy-dissipating electrical component (4, 5);
a base plate (1) adhered to one major surface of said PC board and serving as a cooling body, said base plate (1) having a thermal expansion coefficient different from that of the PC board (3), and
a layer (6) of adhesive located between the PC board (3) and the base plate (1), said layer having sufficient resiliency to maintain adhesion to both said PC board and said base plate despite different thermal expansions of said base plate (1) and of said PC board (3), and including a plurality of islands (7, 8) of thermally conducting paste, having thermal dissipation capacity greater than that of other portions of said layer (6), each island being arranged between said cooling body and said at least one energy-dissipating electrical component (4, 5).

5,355,281

ELECTRICAL DEVICE HAVING A BONDED CERAMIC-COPPER HEAT TRANSFER MEDIUM

Harald E. Adelmann, Kirchberg, and Hans P. Peschl, Pachernweg, both of Austria, assignors to E.B.G. Elektronische Bauelemente Gesellschaft m.b.H., Austria

Filed Jun. 29, 1993, Ser. No. 82,961
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—707 **4 Claims**



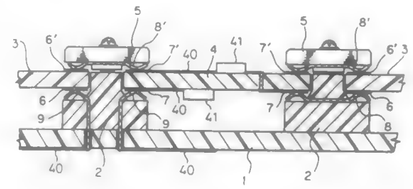
1. An electrical device having an improved heat transfer medium comprising:
a) a housing structure;
b) at least one heat generating element disposed within the housing;
c) a heat transfer medium disposed in contact with the heat generating element for transferring heat from the heat generating element;
d) said heat transfer medium including:
1) a first aluminum oxide ceramic layer having an outer surface engaged with the heat generating element and having an inner surface;
2) a second aluminum oxide ceramic layer having an outer surface and an inner surface and wherein at least one of the said ceramic layers is nickel-plated on one of said surfaces;
3) a copper layer disposed between the first and second ceramic layers and having nickel-plated opposing surfaces bonded to the inner surfaces of the first and second ceramic layers such that the copper layer is sandwiched between said first and second ceramic layers; and
4) wherein heat generated by the heat generating element is generally uniformly dissipated through the layers of the transfer medium.

5,355,282

CONNECTOR STRUCTURE FOR MODULES IN ELECTRONIC APPARATUS

Hitoshi Yokemura; Masao Hosogai, both of Kawasaki, and Yuko Tsujimura, Tokyo, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Apr. 26, 1993, Ser. No. 39,242
Claims priority, application Japan, Aug. 30, 1991, 3-219095
Int. Cl.[5] H05K *7/02*
U.S. Cl. 361—760 **5 Claims**



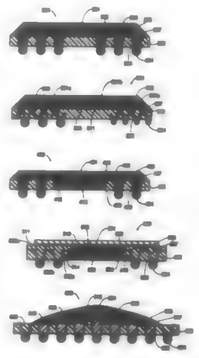
1. An electronic apparatus, comprising a plurality of modules that (3, 4) are orderly mounted on a motherboard (1) while flatly positioned parallel to the latter and a plurality of pairs of contacts (6, 7) provided along the edge portions of the respective modules (3, 4), a connector structure including a connector body (2) which extends along a boundary between the adjacent modules, and a plurality of connector springs (8, 8') integral with the connector body which are pressed onto and in contact with the respective pair of said contacts (6, 7) confronting each other and provided on the adjacent modules (3, 4) so that the electrical connection is achieved between the respective pair of said contacts (6, 7), and further including at least one other connector spring which is integral with the connector body and which is electrically connected between at least one of said modules and a wiring pattern of said motherboard.

5,355,283

BALL GRID ARRAY WITH VIA INTERCONNECTION

Robert C. Marrs, Scottsdale, Ariz., and Tadashi Hirakawa, Osaka, Japan, assignors to Amkor Electronics, Inc., Paoli, Pa. and Teijin Limited, Osaka, Japan

Filed Apr. 14, 1993, Ser. No. 47,721
Int. Cl.[5] H05K *7/02;* **H01L** *23/28*
U.S. Cl. 361—760 **17 Claims**



1. A packaged integrated circuit, comprising:
a substrate having first and second opposed surfaces, electri-

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cally conductive first traces being formed on the first surface of the substrate;
a series of electrically conductive pads extending across a portion of the substrate opposite the first surface of the substrate;
a series of vias formed in the substrate, each via extending to one of said pads;
electrically conductive plating material on sidewalls of said vias in electrical contact with selected ones of said first traces and with selected ones of said pads;
an electronic device attached to the first surface of the substrate;
means for making electrical connection between the electronic device and at least one of the first traces on the substrate; and
encapsulant formed around the electronic device so as to protect the electronic device, the encapsulant covering at least a portion of the first surface of the substrate, filling said vias and extending against a via-facing surface of said pads.

5,355,284

MIRROR ASSEMBLY

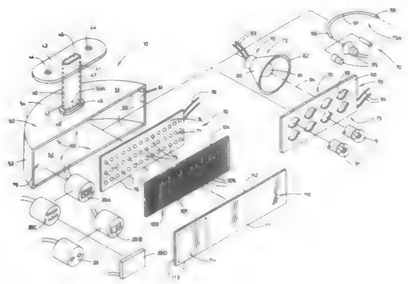
John K. Roberts, Sheboygan, Wis., assignor to K. W. Muth Company, Inc., Sheboygan, Wis.

Continuation-in-part of Ser. No. 694,884, May 2, 1991, Pat. No. 5,207,492, which is a continuation-in-part of Ser. No. 482,254, Feb. 20, 1990, Pat. No. 5,014,167. This application Oct. 19, 1992, Ser. No. 963,067

The portion of the term of this patent subsequent to May 7, 2008, has been disclaimed.

Int. Cl.[5] B60Q *1/00;* **F21V** *9/00;* **G02B** *5/08*

U.S. Cl. 362—30 **1 Claim**



1. A mirror assembly comprising:
an enclosure having an aperture;
a mirror borne by the enclosure and substantially occluding the aperture, the mirror reflecting a broad spectral band of light, and having formed therein a discrete window which permits light to pass therethrough;
a dichroic mirror positioned in covering relation relative to the window and operable to pass a predetermined narrow spectral band of light, and reflect a broad spectral band of light; and
means borne by the enclosure for emitting light in the predetermined narrow spectral band of light passed by the dichroic mirror, and wherein the dichroic mirror reflects visible light and transmits the predetermined narrow band of light.

5,355,285

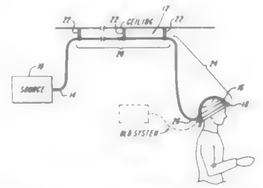
SURGEON'S HEADLIGHT SYSTEM

John W. Hicks, 312 Howard St., Northboro, Mass. 01532

Filed Jan. 12, 1993, Ser. No. 3,500

Int. Cl.[5] F21V *8/00*

U.S. Cl. 362—32 **9 Claims**



1. A surgeon's disposable headlight system which comprises:
a surgeon's cap;
a disposable light pipe having a proximal end and a distal end, the proximal end adapted to be placed in optical communication with a short arc xexon lamp light source, the distal end secured to the surgeon's cap;
beam-forming optics secured solely to the surgeon's cap and in optical communication with the distal end of the light pipe, the light pipe being less than about 2 millimeters in diameter.

5,355,286

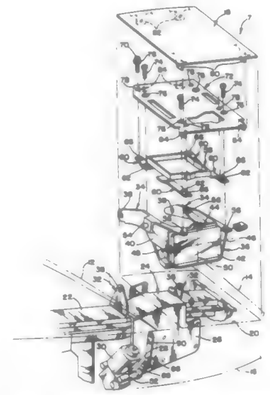
RETRACTABLE HEADLAMP ASSEMBLY

Gerald A. Flint, Rochester Hills; Edward Zentner, Clarkston, both of Mich., and Bryan T. Welch, Noblesville, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 9, 1993, Ser. No. 149,406

Int. Cl.[5] B60Q *1/05*

U.S. Cl. 362—65 **6 Claims**



1. A concealed headlamp assembly for a vehicle having a vehicle body with a front panel having a headlamp opening, the headlamp assembly comprising:
a headlamp housing pivotally mounted with respect to the vehicle for movement between a closed position and an open position;
a headlamp mounted to the headlight housing for movement with the headlamp housing between the closed and open positions, and the headlamp being adjustable relative to the headlamp housing for positioning the headlamp in an aim position when the headlamp housing is in the open position;

motor means for moving the headlamp housing between the open and closed positions;
a cover panel for covering the headlamp opening flush with the vehicle body opening when the headlight housing is in a closed position, the cover panel having fore and aft ends;
means to adjust the cover panel fore and aft with respect to the headlamp housing;
means to adjust the cover panel cross car with respect to the headlamp housing; and
means to adjust at least one of the fore and aft ends of the cover panel vertically with respect to the headlamp housing.

5,355,287

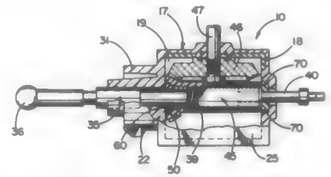
HEADLAMP ADJUSTER WITH SEALED ADJUSTING LINK

Ronald S. Denley, Woodstock, Ill., assignor to Elco Industries, Inc., Rockford, Ill.

Filed Mar. 10, 1994, Ser. No. 209,416

Int. Cl.[5] B60Q *1/06*

U.S. Cl. 362—66 **10 Claims**



1. A device for adjusting a headlamp component, said device comprising a housing defining a chamber having an end wall, an opening in said end wall, an elongated link having a first end portion extending into said chamber through said opening and having a second end portion adapted for connection to said headlamp component, means for moving said link back and forth within said opening to effect adjustment of said headlamp component, said means comprising a tubular member disposed within said chamber and receiving said first end portion of said link, a resiliently yieldable sealing ring encircling said link and located in said chamber between said tubular member and said end wall, and means pressing said tubular member toward said end wall thereby to cause said sealing ring to become compressed between said tubular member, said end wall and said link to seal off said opening.

5,355,288

LAMPHOLDER AND MOUNTING MEANS THEREFOR

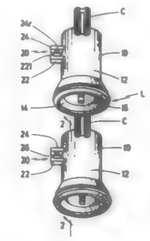
William H. Maddock, Toronto, Canada, assignor to Noma, Inc., Scarborough, Canada

Filed Apr. 21, 1993, Ser. No. 49,335

Int. Cl.[5] F21V *1/00*

U.S. Cl. 362—238 **13 Claims**

1. A lampholder for a festive string of lights, said lampholder comprising:
an insulated body portion into which a lamp forming a part of said festive string of lights may be inserted, and clip means comprising a pair of stiffly resilient jaws rooted to said insulated body portion to extend outwardly therefrom along an axis;
said jaws having major surface portions in spaced apart, mutually confronting relationship to form a passageway therebetween;
at least one of said jaws having a small recess disposed in medial portions of said major surface portion thereof; said major surface portion in which said recess is disposed being devoid of any spur-like projection into said passageway associated with said recess;



said clip means thereby being adapted to grip either of a rod-like support element of indefinite length or the head of a screw support element received between said jaws.

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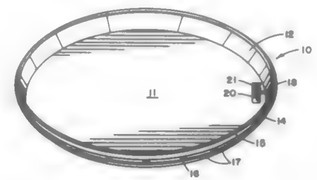
LIGHTED SERVING TRAY

Ronald J. Krenn, 142 Reef Rd., South Daytona, Fla. 32119

Filed Aug. 2, 1993, Ser. No. 100,285

Int. Cl.[5] F21V *33/00*

U.S. Cl. 362—253 **5 Claims**



1. A serving tray easily spotted by a patrol in low light comprising:
a tray having a flat bottom surface and a perimeter flange;
a flexible hollow transparent round polymer tube attached to said perimeter flange;
a plurality of lights attached in said transparent tube in a spaced relationship to each other;
an electric battery housing attached to said tray bottom and having a battery therein;
an electric conductor connecting each of said plurality of lights to said electric battery, whereby a lighted tray is visible within an area of low light without distracting the person holding the tray; and
said tray perimeter flange being angled outward from said tray flat bottom and said hollow transparent tube being mounted to said perimeter flange around the exterior thereof and below the edge of the perimeter flange whereby said perimeter flange shields the transparent tube and the lights mounted therein from a person holding the tray.

5,355,290

LIGHTING APPARATUS

Jerold A. Tickner, Phoenix, Ariz., assignor to Sportlite, Inc., Phoenix, Ariz.

Division of Ser. No. 36,822, Mar. 25, 1993, which is a continuation-in-part of Ser. No. 863,094, Apr. 3, 1992, Pat. No. 5,197,798. This application Jun. 25, 1993, Ser. No. 81,225

Int. Cl.[5] F21V *29/00;* **F21S** *1/02*

U.S. Cl. 362—294 **17 Claims**

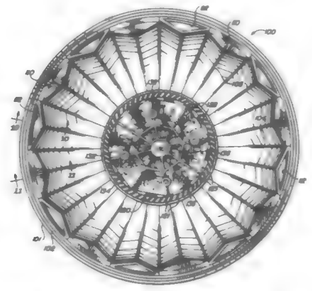
1. A reflector for a lighting fixture including in combination:
a substantially bell-shaped reflector body having a base end

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and a light-emitting end and adapted to be mounted with said light-emitting end facing downwardly;

said light-emitting end being adapted to permit the mounting of a light transmitting lens thereto;

apertures formed through said reflector body at said base end thereof and near said light-emitting end thereof for



permitting air from outside said reflector body to flow from said light emitting end thereof through the interior thereof and back to the outside at said base end thereof; and

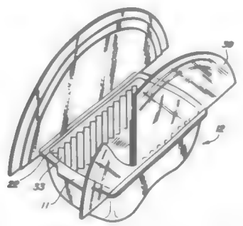
structural reinforcement members for spacing said apertures through said base end of said reflector body from a mounting surface to facilitate the passage of air therethrough.

5,355,291

INTERNALLY ILLUMINATED SIGN

Gregory J. Subisak, Gahanna, Ohio, and Douglas S. Hammond, Vicksburg, Miss., assignors to Holophane Lighting, Inc., Newark, Ohio

Continuation-in-part of Ser. No. 646,917, Jan. 28, 1991, Pat. No. 5,188,453. This application Oct. 15, 1992, Ser. No. 961,262
Int. Cl.[5] F21V 7/00
U.S. Cl. 362—300 8 Claims



1. For use in a sign having at least two spatially separated faces adapted to be illuminated from light radiated into the interior of said sign between said spatially separated faces, said at least two spatially separated faces including at least one translucent face, a luminaire, comprising:

a housing mountable on the periphery of said sign;

illumination means disposed in said housing for providing light directly into the region between said spatially separated faces;

a pair of spatially separated fluted reflector panels disposed in said housing for dispersing said light in a fan shaped pattern in a direction away from said interior into the region between said spatially separated faces; and

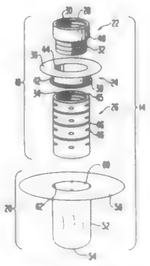
a refractor attached to said housing for directing light from said reflector panels into a uniform pattern of light to uniformly illuminate said spatially separated faces and for eliminating bright spots on said at least one translucent face.

5,355,292

SURGICAL LIGHT COVER AND LIGHT HANDLE ADAPTER

Mike M. Hoftman, Calabasas, and Eli Marmur, Los Angeles, both of Calif., assignors to American Medical Manufacturing Inc., Canoga Park, Calif.

Continuation-in-part of Ser. No. 843,144, Feb. 23, 1992, Pat. No. 5,156,456. This application Oct. 19, 1992, Ser. No. 963,200
Int. Cl.[5] F21L 15/12
U.S. Cl. 362—400 14 Claims



1. A light handle adapter for attachment to a conventional operating room light fixture having a light handle, the light handle adapter comprising:

a cylindrical body portion having first and second ends, and an inner diameter and an outer diameter, the inner diameter being larger than the widest diameter of the light handle to provide for slidable movement of the cylindrical body portion along the length of the light handle;

an annular ring coupled to the first end of the cylindrical body portion, the annular ring having an outer diameter larger than the outer diameter of the cylindrical body portion;

a flange portion extending from the second end of the cylindrical body portion; and

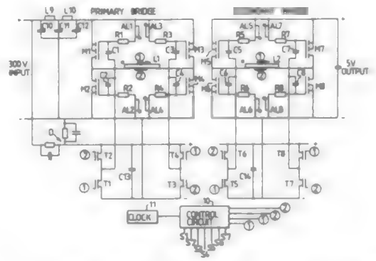
a securing means coupled to the light handle adapter for securing the light handle adapter to the light handle.

5,355,293

LOW-VOLTAGE DC POWER SUPPLY

L. Gunnar Carlstedt, Partille, Sweden, assignor to Carlstedt Elektronik AB, Gothenburg, Sweden

Filed Feb. 28, 1992, Ser. No. 844,988
Claims priority, application Sweden, Mar. 1, 1991, 9100595-9
Int. Cl.[5] H02M 3/335
U.S. Cl. 363—17 27 Claims



1.A low-voltage DC power supply having a DC voltage input and a DC low voltage output, each of said input and output having a positive and a negative terminal, said power supply comprising a plurality of transforming units, and a clock means for generating a clock pulse sequence, said clock means being connected to a control means common to each of said transforming units;

each of said plurality of transforming units comprising a transformer core provided with a primary winding, a secondary winding and a plurality of controllable switch means controlled by said common control means for performing switching operations connecting said positive and negative terminals of the DC voltage input with alternating polarity to said primary winding, and for connecting said positive and negative terminals of the DC low voltage output to said secondary winding alternatingly such that for each of two polarities of voltage fed to said primary winding, the voltage thereby induced in the secondary winding is switched for connecting always with equal polarity to said positive and negative terminals of said DC low voltage output;

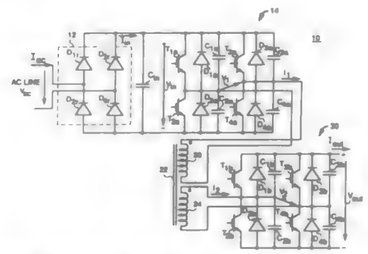
said plurality of transforming units being controlled by said common control means to perform switch operations on individual ones of said plurality of transforming units non-simultaneously to selectively connect and disconnect each of said transforming units to said DC voltage input and to said DC low voltage output, such that during each switch operation performed on any one of said transforming units, at least one other of said plurality of transforming units is connected to said DC low voltage output and non-switching, and delivers a low voltage potential across said positive and negative terminals of said DC low voltage output.

5,355,294

UNITY POWER FACTOR CONTROL FOR DUAL ACTIVE BRIDGE CONVERTER

Rik W. A. A. De Doncker, and Mustansir H. Kheraluwala, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 25, 1992, Ser. No. 981,670
Int. Cl.[5] H02M 3/335
U.S. Cl. 363—17 4 Claims



1. A method for controlling a dual active bridge converter with an input ac line rectifier to operate at unity power factor, said dual active bridge converter comprising an input converter transformer-coupled to an output converter, said input and output converters each comprising a plurality of switching devices arranged in a bridge configuration, said method comprising the steps of:

said input ac line rectifier rectifying an ac line voltage;

filtering said rectified ac line voltage to provide a high-frequency filtered input dc voltage pulsating at twice the ac line frequency;

said input converter converting said high-frequency filtered input dc voltage to a high-frequency ac voltage;

transforming said high-frequency ac voltage via the transformer coupling between said input and output converters to provide a transformed high-frequency ac voltage to said output converter, said output converter converting said high-frequency ac voltage to a dc output voltage; and

controlling the switching devices of said input and output converters so as to control a phase difference between said high-frequency ac voltage and said transformed high-frequency ac voltage in order to regulate said dc output voltage while providing unity power factor, said dual active bridge converter being controlled according to the expression:

$$\phi\left[1-\frac{\phi}{\pi}\right]=\frac{I_p X_L}{V_{OUT}}\sin\omega t,$$

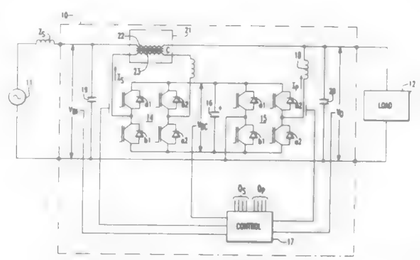
where f represents said phase difference, I_p represents peak ac output current from said input converter, X_L represents a leakage reactance of said transformer coupling, V_{out} represents said dc output voltage, ω represents ac line frequency in radians per second, and t represents time.

5,355,295

SERIES-PARALLEL ACTIVE POWER LINE CONDITIONER UTILIZING TEMPORARY LINK ENERGY BOOSTING FOR ENHANCED PEAK VOLTAGE REGULATION CAPABILITY

Michael B. Brennen, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 19, 1993, Ser. No. 108,262
Int. Cl.[5] H02M 1/12, 1/14
U.S. Cl. 363—40 9 Claims



1. An active power line conditioner for electrical connection interposing an electrical energy source and an electrical load, said active power line conditioner comprising:

series inverter means for electrical coupling to said electrical energy source to selectively provide an AC regulation voltage in series with an AC input voltage supplied by said electrical energy source;

parallel inverter means for electrical coupling across said electrical load to selectively source and sink electrical current;

a DC energy storage element electrically connected between said series inverter means and said parallel inverter means;

control means for controlling said series inverter means and said parallel inverter means to regulate an AC output voltage across said electrical load during variations of said AC input voltage;

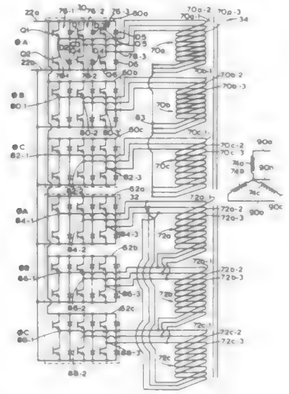
said control means operative to maintain DC energy in said electrical energy storage element at a nominal DC energy level when said variations of said AC input voltage are within a sinusoidal regulation range of said active power line conditioner; and

said control means further having link energy boosting means for increasing DC energy in said electrical energy

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storage element above said nominal DC energy level when variations of said AC input voltage are not within said sinusoidal regulation range of said active power line conditioner.

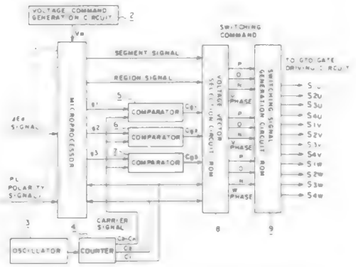
5,355,296
SWITCHING CONVERTER AND SUMMING TRANSFORMER FOR USE THEREIN
Ming Kuo, Caldeonia, and P. John Dhyanchand, Rockford, both of Ill., assignors to Sandstrand Corporation, Rockford, Ill.
Filed Dec. 10, 1992, Ser. No. 988,625
Int. Cl.[5] H02M *7/5387, 1/12*
U.S. Cl. 363—43 **15 Claims**



1. A switching converter, comprising:
first and second controllable switches;
a power source coupled to the switches;
a closed flux path;
first and second primary windings mutually inductively coupled through the closed flux path wherein the first and second primary windings have first ends coupled to the first and second switches, respectively, and second ends that are coupled together at a junction;
means coupled to the switches for operating the switches together in synchronism wherein each switch conducts a switch current between the power source and the junction and wherein the switch currents are summed at the junction; and
a secondary winding inductively coupled with but electrically isolated from the first and second primary windings through the closed flux path.

5,355,297
THREE-LEVEL THREE-PHASE INVERTER APPARATUS
Takao Kawabata, and Masato Koyama, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 13, 1993, Ser. No. 47,043
Claims priority, application Japan, Apr. 13, 1992, 4-092636
Int. Cl.[5] H02M *7/515*
U.S. Cl. 363—43 **52 Claims**

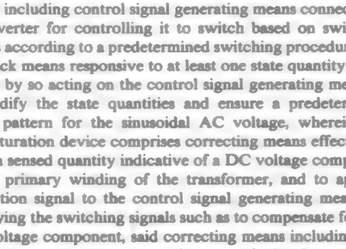
1. A three-level three-phase inverter apparatus comprising a three-level inverter for each of U, V and W phases, each three-level inverter comprising:
a direct current power supply having a neutral point output terminal and including a first, a second, a third and a fourth switching device connected in series between the positive and negative electrodes of said direct power supply, the junction between said first and said second switching devices and the junction between said third and said fourth switching devices being each connected to said neutral point output terminal via a clamp device, the junction between said second and said third switching devices constituting an inverter output terminal, wherein P represents the state in which said first and said second switching devices are turned on, 0 stands for the state in which said second and said third switching devices are turned on, and N denotes the state in which said third and said fourth switching devices are turned on; the switching states of each phase determining voltage vectors of which three contiguous vertexes constitute a region;
voltage vector selecting means for preselecting at least three voltage vectors constituting each vertex of the region, for determining beforehand the order in which to output the



voltage vectors within a carrier period, and for storing the voltage vectors and the voltage vector output order;
voltage command generating means for outputting a voltage command in vector format;
region determining means for receiving the voltage command in order to determine the region to which the voltage command is positioned per carrier period;
operation time determining means for determining the allocation of operation times within the carrier period of each voltage vector selected for the region determined by said region determining means so that an inverter output voltage will coincide with the voltage command; and
switching signal generating means for outputting a signal for driving the switching devices of each phase based on the operation time for each voltage vector.

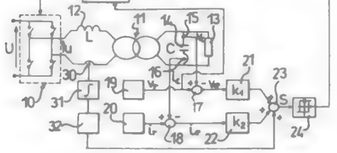
5,355,298
CONVERSION APPARATUS INCLUDING LATCH AND NON-LATCH TYPE FUNCTIONS
Nagataka Seki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jul. 30, 1993, Ser. No. 99,326
Claims priority, application Japan, Mar. 16, 1993, 5-056180
Int. Cl.[5] H02H *7/122*
U.S. Cl. 363—58 **17 Claims**

1. A conversion apparatus, comprising:
a plurality of high-speed switching devices, each being selectively operable by controlling a gate thereof in latch type operation and non-latch type operation;
power source means for supplying a first current to said high-speed switching devices, thereby forming a current path through said high-speed switching devices;
said high-speed switching device being turned off after changeover from said latch type operation to said non-latch type operation;
current regulation means provided in said current path for regulating a second current flowing through said current regulation means after said second current has reached a prescribed value; and
said high-speed switching device being changed from said latch type operation to said non-latch type operation, and then being caused to be turned off while said current



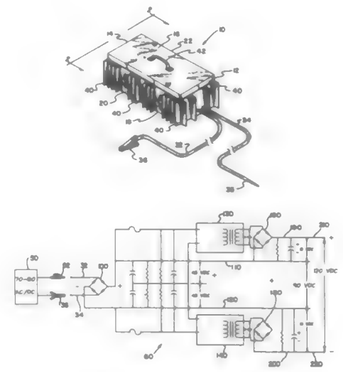
regulation means regulates said second current in case of overcurrent malfunction.

5,355,299
CIRCUIT DEVICE FOR PREVENTING SATURATION OF THE TRANSFORMER IN A DC/AC CONVERTER HAVING A FEEDBACK-REGULATED INVERTER
Mauro Carpita, Genova, Italy, assignor to Ansaldo-Un'Azienda Finmeccanica S.P.A., Rome, Italy
Filed Jun. 23, 1993, Ser. No. 81,620
Claims priority, application Italy, Jul. 22, 1992, MI 92A001776
Int. Cl.[5] H02M *3/24*
U.S. Cl. 363—95 **1 Claim**



1. An anti-saturation device for a transformer connected with its primary winding to an output of an inverter of a circuit for converting a DC voltage to a sinusoidal AC voltage, said circuit including control signal generating means connected to the inverter for controlling it to switch based on switching signals according to a predetermined switching procedure, and feedback means responsive to at least one state quantity of the circuit by so acting on the control signal generating means as to modify the state quantities and ensure a predetermined stable pattern for the sinusoidal AC voltage, wherein said anti-saturation device comprises correcting means effective to sense a sensed quantity indicative of a DC voltage component at the primary winding of the transformer, and to apply a correction signal to the control signal generating means for modifying the switching signals such as to compensate for said DC voltage component, said correcting means including processing means connected to the control signal generating means, operative to simulate the inverter operation in order to compute a computed quantity corresponding to an output voltage of the inverter, an integrator for generating an output quantity correlated to a DC component of said computed quantity, and means for obtaining said correction signal from said integrator output quantity.

5,355,300
VOLTAGE CONVERTER
James K. Zinn, Rte. 2, Box 1548, Amarillo, Tex. 79101
Filed Jul. 6, 1993, Ser. No. 85,840
Int. Cl.[5] H02M *1/00;* **B23K** *13/08*
U.S. Cl. 363—146 **4 Claims**



1. A new and improved voltage converter adapted for converting the voltage output of a welding machine to a level useful for operating standard ancillary electrical devices comprising:
a housing, said housing having an electrical receptacle contact assembly extending from a first side of the housing;
a stinger handle extending from a second side of the housing;
a ground clip extending from the second side of the housing; and
voltage converter circuit means enclosed in said housing for converting a first voltage obtained from a welding machine and connected across said stinger handle and said ground clip to a second voltage made available at said electrical receptacle contact assembly,
wherein said voltage converter circuit means comprises an input rectifier having an RC filter network connected across the output thereof, said filter network serving as a voltage dividing network being connected in series with first and second transistorized power inverters so that the output of said inverters are equal DC voltages of opposite polarity, said first and second power inverters being connected respectively to first and second output rectifiers, said first and second output rectifiers being connected in series with said RC filter network wherein said receptacle is connected across said first and second output rectifiers and said voltage dividing network to produce a DC output having a magnitude equal to the sum of the voltage output of said dividing network and said first and second output rectifiers.

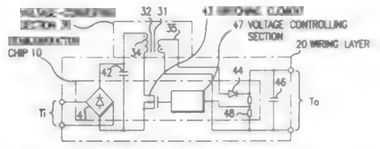
5,355,301
ONE-CHIP TYPE SWITCHING POWER SUPPLY DEVICE
Akira Saito; Yasuroo Motoi, and Tsuneo Watanabe, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan
Filed Mar. 1, 1993, Ser. No. 25,422
Claims priority, application Japan, Feb. 28, 1992, 4-043607; Mar. 13, 1992, 4-053961; Jul. 9, 1992, 4-181391
Int. Cl.[5] H02M *1/08*
U.S. Cl. 363—147 **6 Claims**

1. A one-chip switching power supply device comprising:
a voltage converting section in a form of a thin-film structure, said voltage converting section being formed of a

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magnetic inductive element and having an input current and an output side voltage,

a single semiconductor chip laminated with the voltage converting section, said single semiconductor chip including a switching element for turning the input current of the voltage converting section on and off; and a voltage controlling section for controlling the switching element so that the output side voltage in the voltage converting section is kept constant at a desired value, said voltage



controlling section having circuit elements therein; active elements containing the switching element and the circuit elements in the voltage controlling section being incorporated into the single semiconductor chip, and

a wiring layer situated between the voltage converting section and the single semiconductor chip for interconnecting the active elements on the semiconductor chip and the voltage converting section so that the voltage converting section and the semiconductor chip are integrally connected together.

5,355,302

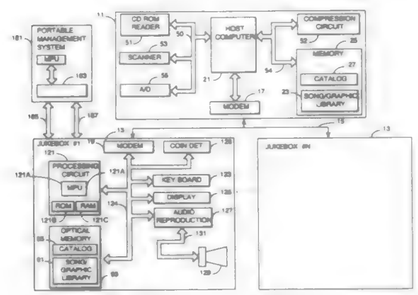
SYSTEM FOR MANAGING A PLURALITY OF COMPUTER JUKEBOXES

John R. Martin; Michael L. Tillery, and Samuel N. Zammuto, all of Rockford, Ill., assignors to Arachnid, Inc., Rockford, Ill.

Continuation-in-part of Ser. No. 538,981, Jun. 15, 1990, abandoned. This application Mar. 6, 1992, Ser. No. 846,707

Int. Cl.[5] G06F *15/44*

U.S. Cl. 364—410 **12 Claims**



1. A computer jukebox capable of being updated upon the receipt of digital data representing a plurality of songs, data representing the identity of each of said songs and data representing the amount of storage space necessary to store said digital song data in said jukebox, comprising:

song selection means actuable by a user for generating a signal representing a song selected from a plurality of songs stored in said jukebox;

a programmable computer memory storing digital data representing each selectable song stored in said jukebox and a catalog file including data for each stored song representing the identity of said song and the location in said computer memory of the digital data representing said song;

a communication interface for receiving said digital song data, said song identity data and said storage space data;

audio speakers;

a digital to analog converter coupled between said song storing computer memory and said audio speakers to convert digital song data to an analog signal coupled to said speakers; and

processing means responsive to a song selection signal for accessing said digital data representing a selected song from said computer memory to apply said song data to said digital to analog converter and said processing means being responsive to digital song data, song identity data and storage space data received by said communication interface to control the storage of said digital song data to update said jukebox.

5,355,303

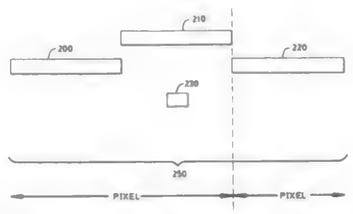
PRINTING APPARATUS

Guillermo S. Ferla, Reading, and Fawwaz N. Habbal, Cambridge, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 616,880, Nov. 21, 1990, abandoned. This application Nov. 17, 1992, Ser. No. 977,794

Int. Cl.[5] B41J *2/455, 2/435*

U.S. Cl. 346—107 R **6 Claims**



5. Scanning print head apparatus for forming an image in hardcopy form as a plurality of pixels on or over a medium by scanning the medium in a scan direction at a predetermined speed relative to the medium to form the pixels as adjacent columns of subpixels called pels, said print head comprising:

a first radiation source of given size having a predetermined fixed width as measured transverse to the scan direction and a predetermined length as measured in the scan direction;

two second radiation sources arranged along a line transverse to the scan direction and offset with respect to said first radiation source in the scan direction by a first predetermined distance, said two second radiation sources each also partially overlapping said first radiation source by a predetermined amount as measured transverse to the scan direction;

at least one third radiation source having a smaller size than said given size of said first radiation source and a smaller width than said predetermined fixed width of said first radiation source, said third radiation source being aligned with said first radiation source in the direction transverse to the scan direction, so that said third radiation source is overlapped by said first radiation source and said first radiation source and said second radiation sources are offset from one another in the scan direction by a predetermined second offset distance greater than said first predetermined offset distance by which said first and said second radiation sources are separated in the scan direction; and

means for selectively activating said first, second and third radiation sources with respect to one another at different times, determined by dividing said first and second predetermined offset distances by the predetermined speed of said print head over the medium in the direction of scan,

whereby all of said radiation sources may be activated in synchronization with one another and said first and said third radiation sources may be alternately turned on and off in synchronization with said second radiation sources to selectively form subpixels of different width in at least one column of subpixels.

5,355,304

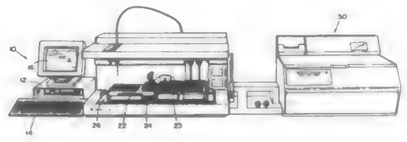
CLINICAL LABORATORY WORK-FLOW SYSTEM WHICH SEMI-AUTOMATES VALIDATED WHICH SEMI-AUTOMATES VALIDATED IMMUNOASSAY AND ELECTROPHORESIS PROTOCOLS

Victoria E. DeMoranville, 22 Forge Rd., Assonet, Mass. 02702, and James E. Ellis, 23 Ephriam Dr., Mansfield, both of Mass. 02048

Filed Jan. 30, 1990, Ser. No. 477,265

Int. Cl.[5] G06F *15/00*

U.S. Cl. 364—413.02 **34 Claims**



1. A clinical laboratory work-flow system which semi-automates validated immunoassay and electrophoresis protocols, said system having components including:

a. a controller for directing the operation of said system, said controller comprising:

1. a memory unit having a plurality of computer programs stored therein, each of said programs providing format instructions for performance of a specific immunoassay or electrophoresis protocol;

2. means for selecting a protocol;

3. means for entering the number of test samples to be analyzed by said protocol;

4. means for displaying the format instructions for said protocol, and;

b. a robotic test sample transfer device comprising:

1. a planar work-flow surface having a defined coordinate area for receiving and aligning test rack(s) and reaction medium(s); and

2. means for transferring a volume of test sample for each test sample to be analyzed, and a volume of one or more reagent(s) from a reagent source(s) for immunoassay protocols, to a reaction medium for initiating a test reaction, the transfer(s) being in response to format instructions from said controller, and wherein said transfer(s) are free of sample carryover and free of end run effect.

5,355,305

PATTERN RECOGNITION ADAPTIVE CONTROLLER

John E. Seem, Menomonee Falls, and Howard J. Haugstad, Milwaukee, both of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Oct. 29, 1992, Ser. No. 968,583

Int. Cl.[5] G05B *13/02*

U.S. Cl. 364—161 **22 Claims**

5. An apparatus for dynamically adjusting the control parameters of a proportional gain and integral time controller disposed to control an actuator affecting a process, comprising:

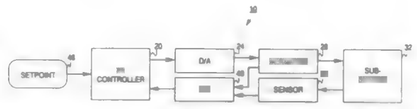
means for sampling a feedback signal representative of a controlled variable of the process to generate a sampled signal;

means for generating a smoothed signal based on the sampled signal;

means for determining an estimated noise level of the sampled signal;

means for determining a tune noise band based on the estimated noise level and the smoothed signal;

means for adjusting the gain and integral time values used by the controller if either the difference between a previous



setpoint value and a current setpoint value, or the difference between the current setpoint value and the smoothed signal, falls outside the tune noise band; and

means for utilizing the adjusted control parameters to control the actuator, thereby causing the controller to affect the process.

5,355,306

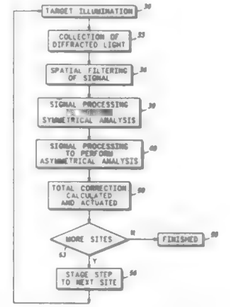
ALIGNMENT SYSTEM AND METHOD OF ALIGNMENT BY SYMMETRICAL AND ASYMMETRICAL ANALYSIS

Whitson G. Waldo, III, Madison, Wis., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 30, 1993, Ser. No. 128,427

Int. Cl.[5] G05B *19/18;* **G01J** *1/00;* **G06F** *15/46*

U.S. Cl. 364—167.01 **11 Claims**



1. A method of alignment, comprising the steps of:

providing a lithographic tool;

illuminating a target with a light generated from the lithographic tool;

collecting an amount of light diffracted off the target to obtain a signal having positional information about the target;

processing the signal to obtain a symmetrical analysis of the signal;

processing the signal to obtain an asymmetrical analysis of the signal;

calculating a correction based on a combination of the symmetrical analysis and the asymmetrical analysis; and

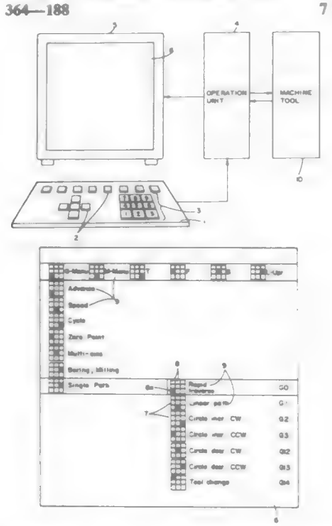
actuating the lithographic tool according to the correction.

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5,355,307
APPARATUS FOR ENTERING AND DISPLAYING CONTROL COMMANDS FOR CONTROLLING A MACHINE LOOP

Joachim Scharnhorst, Garbsen, Fed. Rep. of Germany, assignor to Grundig AG, Furth, Fed. Rep. of Germany

Filed Mar. 1, 1993, Ser. No. 24,486
Claims priority, application European Pat. Off., Mar. 2, 1992, 92103580.4
Int. Cl.[5] G05B *19/04*; G06F *15/46*
U.S. Cl. 364—188 **7 Claims**



1. An apparatus for entering and displaying control commands for controlling a machine tool, said apparatus comprising:

(a) an input keyboard having keys for entering information in the form of data and control commands;

(b) a visual display means having a display screen for displaying one or more key images, each said displayed key image comprising a plurality of fields which are arranged in a one-to-one correspondence with a corresponding number of selected keys of said input keyboard; and,

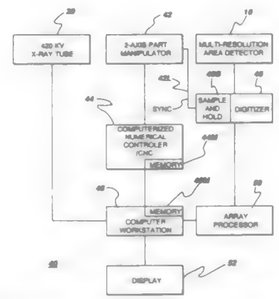
(c) an operation unit for controlling said machine tool and connected with said input keyboard for entering said data and control commands therein and further connected with said visual display means, said operation unit including means for simultaneously displaying on said display screen items of control information in the form of a main menu having one or more main commands and a sub-menu having one or more sub-commands, said sub-menu being displayed upon operator selection of a main command, each said main command and sub-command having a separately assigned key image displayed therewith and further associated with a field of its respective assigned key image, said operation unit including means for causing said field of the respective assigned key image to be optically distinguishable from the other fields of said assigned key image, said operation unit further including means for activating a control command for said machine tool when a key of the input keyboard corresponding to a field of a key image corresponding to a main command or sub-command is selected by said operator.

5,355,308
Patent Not Issued For This Number

5,355,309
CONE BEAM SPOTLIGHT IMAGING USING MULTI-RESOLUTION AREA DETECTOR

Jeffrey W. Eberhard, and Kwok C. Tam, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 30, 1992, Ser. No. 998,720
Int. Cl.[5] G06F *15/00*; A61B *6/00*; G01N *23/00*; G21K *1/12*
U.S. Cl. 364—413.15 **7 Claims**



1. A computerized tomography system comprising:

a multi-resolution array detector having a fine resolution zone with a density df of first detector elements and a coarse resolution zone with a density dc of second detector elements, and said density dc being less than said density df;

a source of imaging energy for applying imaging energy to at least a region of interest including a spotlight region of an object such that imaging energy passes to said array detector;

scanning means to move said source relative to the object about a rotation axis substantially centered with respect to said spotlight region;

data acquisition means connected to said array detector for acquiring multi-resolution sensed data from said array detector;

a data processor connected to said data acquisition means for providing multi-resolution image data from said multi-resolution sensed data, said data processor including means for calculating Radon derivative data at a plurality of fine resolution points in Radon space and at a plurality of coarse resolution points in Radon space, said data processor further including means for obtaining Radon data for the fine and coarse resolution points and means for inverting the Radon data to provide the multi-resolution image data;

said means for calculating and said means for obtaining each using weighted integration; and

a display connected to said data processor for displaying multi-resolution CT images based on said multi-resolution image data.

5,355,310
METHOD FOR OPERATING A MEDICAL IMAGING APPARATUS USING AN IMPROVED FILTERED BACK-PROJECTION TECHNIQUE

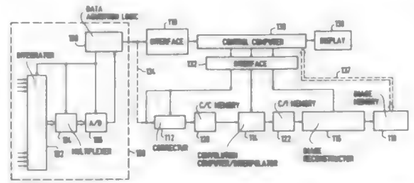
Julius Brunner, Rueckersdorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 29, 1992, Ser. No. 953,007
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1991, 4134127
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—413.21 **1 Claim**

1. In a method for operating a medical imaging apparatus wherein an original image of an examination subject in a subject region is produced by back-projection, with projection values for the back-projection being obtained along a plurality of defined straight lines, the improvement comprising:

identifying back-projection contributions in regions outside said subject region;

producing correction projections from said contributions



which respectively include integration along said straight lines used to obtain the projection values for said original image;

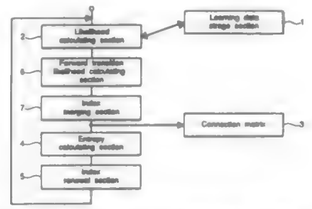
producing a further back-projection in said subject region which includes said correction projections; and

subtracting the image generated by said further back-projection from the original image to obtain a corrected image.

5,355,311
METHOD AND APPARATUS FOR CREATING A CONNECTION MATRIX

Atsushi Horioka, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 15, 1992, Ser. No. 961,507
Claims priority, application Japan, Oct. 18, 1991, 3-270814
Int. Cl.[5] G06F *15/18*
U.S. Cl. 364—419.01 **4 Claims**



1. An apparatus for creating a connection matrix, each element of which is a transition likelihood from a leading sequence of symbols to a subsequent symbol, comprising

a learning data storage section for storing various sequences of symbols,

a likelihood calculating section for calculating the transition likelihood from a leading sequence of symbols to a subsequent symbol for all indexes and subsequent symbols picked up from said various sequences of symbols stored in said learning data storage section,

a forward transition likelihood calculation section for calculating forward transition likelihood from all leading sequences of symbols to a subsequent symbol for all subsequent symbols,

an index merging section for merging indexes having forward transition likelihood similar to each other into one index,

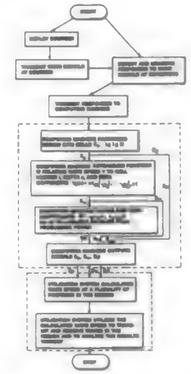
an entropy calculating section for calculating entropies for every index using transition likelihoods calculated by said likelihood calculating section and finding entropies larger than a predetermined threshold value, and

an index renewal section for renewing indexes having entropies found in the foregoing step by adding corresponding subsequent symbol to the end of each of said indexes.

5,355,312
INVERSE TOMOGRAPHY BY MATCHED FIELD PROCESSING

Alexandra I. Tolstoy, Annandale, Va.; Orest I. Diachok, Silver Spring, Md., and L. Neil Frazer, Kailua, Hi., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 24, 1991, Ser. No. 764,747
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—420 **21 Claims**



1. A computer implemented method for determining the wave speed within a region of a medium comprising the steps of:

(a) transmitting one or more signals from one or more sources disposed at discrete locations within the region, wherein each signal has a known harmonic component;

(b) detecting the one or more signals by use of one or more detectors disposed at discrete locations within the region so as to measure the detected signals and to identify the source from which each detected signal was transmitted;

(c) transmitting the measured signals to a computing machine; and

(d) said computing machine responsive to the measured signals determining the wave speed components by performing the steps of:

(i) partitioning the region into a plurality of cells so that each cell is indexed with a cell number so that each position in the region is represented by a cell number and a depth variable and so that each cell has at least one associated beta coefficient, said partitioning step comprising generating a partitioning signal indicative of the partitioning;

(ii) determining a wave speed function responsive to the partitioning signal, the wave speed function being for specifying the wave speed as a function of the at least one beta coefficient and the depth variable, the wave speed function determining step comprising generating a wave speed function signal indicative of the wave speed function;

(iii) calculating matched field processing power responsive to the partitioning signal and to the wave speed function signal, the matched field processing power being a correlation in the frequency domain of the signals measured by detecting step (b) with values predicted using the wave speed function of step (d)(ii);

(iv) calculating the at least one beta coefficient for all cells in the region so as to simultaneously maximize the matched field processing power calculated in step (d)(iii) for all source—detector combinations, said beta coefficients calculating step comprising generating a

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beta coefficient signal indicative of the at least one beta coefficient; and

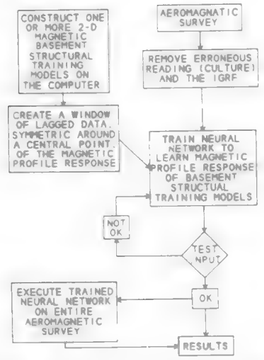
(v) outputting the partitioning signal, the wave speed function signal and the beta coefficient signal.

5,355,313

NEURAL NETWORK INTERPRETATION OF AEROMAGNETIC DATA

Robert F. Moll, Englewood; William C. Pearson, Lakewood; John R. Rogers, Castle Rock, and Jacky M. Wiener, Englewood, all of Colo., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 25, 1991, Ser. No. 783,016
Int. Cl.[5] G01V 1/00
U.S. Cl. 364—420 21 Claims



1. A computer implemented method for studying structural anomalies along aeromagnetic traces comprising the steps of:

providing a neural network having at least input, intermediate and output layers;

forming at least one two-dimensional profile magnetic basement structural model, each said at least one model having a range of geometric dimension approximating an area to be studied;

reprocessing aeromagnetic survey profiles to remove erroneous readings and the International Geomagnetic Reference Field;

windowing said profiles for input into the network;

training the neural network through weight adjustment using computer generated magnetic profiles from basement structures representative of those anticipated to be found in the basin of interest;

testing the trained network on aeromagnetic profiles where basement structures are already known from other means to validate the network; and

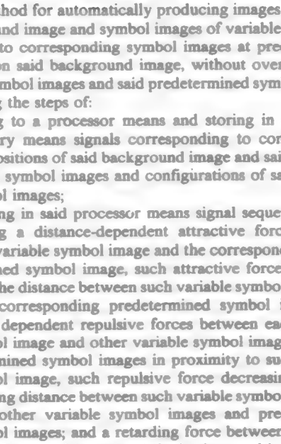
applying the network to recorded aeromagnetic profiles over an unknown portion of the basin.

5,355,314

METHOD AND APPARATUS FOR AUTOMATICALLY GENERATING SYMBOL IMAGES AGAINST A BACKGROUND IMAGE WITHOUT COLLISION UTILIZING DISTANCE-DEPENDENT ATTRACTIVE AND REPULSIVE FORCES IN A COMPUTER SIMULATION

Mitchell Feigenbaum, New York, N.Y., assignor to Hammond Incorporated, Maplewood, N.J.

Continuation of Ser. No. 671,246, Mar. 21, 1991, which is a continuation-in-part of Ser. No. 499,143, Mar. 26, 1990, abandoned. This application Nov. 5, 1993, Ser. No. 149,650
Int. Cl.[5] G06F 15/62
U.S. Cl. 364—420 30 Claims



1. A method for automatically producing images containing a background image and symbol images of variable position in proximity to corresponding symbol images at predetermined locations on said background image, without overlap of said variable symbol images and said predetermined symbol images, comprising the steps of:

inputting to a processor means and storing in a said first memory means signals corresponding to configurations and positions of said background image and said predetermined symbol images and configurations of said variable symbol images;

generating in said processor means signal sequences representing a distance-dependent attractive force between each variable symbol image and the corresponding predetermined symbol image, such attractive force increasing with the distance between such variable symbol image and such corresponding predetermined symbol image; distance dependent repulsive forces between each variable symbol image and other variable symbol images and predetermined symbol images in proximity to such variable symbol image, such repulsive force decreasing with increasing distance between such variable symbol image and such other variable symbol images and predetermined symbol images; and a retarding force between each such variable symbol image and the background image;

fixing and storing in a second memory means signals corresponding to an initial position of each such variable symbol image in proximity with the corresponding predetermined symbol image;

generating in said processor means signals corresponding to a non-overlapping position for each of such variable symbol images in proximity to such corresponding predetermined symbol images by simultaneously incrementally integrating the motion of such variable symbol images on such background image under the influence of said forces over an integration period made up of a plurality of such increments, and to update said initial position of such variable symbol images stored in said second memory means with the results of said such incremental integration;

outputting to an image generation means image generation signals corresponding to the configuration and position of said background image and said predetermined symbol images and the configuration and updated position of said variable symbol images; and

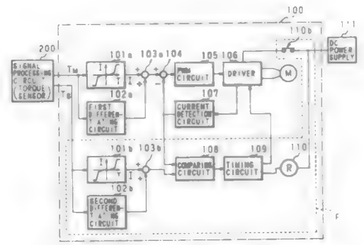
generating an output image including said background image, said variable symbol images and said predetermined symbol images in accordance with said image generation signals.

5,355,315

ELECTRIC POWER STEERING APPARATUS

Toshihiko Daido, Uda; Hirofumi Matsuoka, Souraku; Mitsuhiko Nishimoto, Yoshino, and Osamu Sano, Kashihara, all of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Sep. 9, 1992, Ser. No. 942,739
Claims priority, application Japan, Jun. 29, 1991, 4-196407; Sep. 30, 1991, 3-280802
Int. Cl.[5] B62D 5/04
U.S. Cl. 364—424.05 9 Claims



1. An electric power steering apparatus, comprising:

a signal processing circuit for a non-contact torque sensor for detecting a steering torque;

a control circuit for controlling the driving of a steering assisting motor in response so the signal processing result from said signal processing circuit, said control circuit including

first current output means for receiving a detected steering torque at its input and for outputting a target current value for said motor in accordance with a predetermined function;

first differentiating means for differentiating the detected steering torque;

first adding means for adding the outputs from said first current output means and said first differentiating means;

driving means for driving said motor;

current detecting means for detecting current for said motor;

subtracting means for subtracting the detection result obtained by said current detecting means from the addition result obtained by said first adding means;

first control means for outputting a driving signal to said driving means on the basis of the subtraction result obtained by said subtracting means;

second current output means for receiving a detected steering torque at its input and for outputting a target current value for said motor in accordance with a predetermined function;

second differentiating means for differentiating the detected steering torque;

second adding means for adding the outputs from said second current output means and said second differentiating means;

comparing means for comparing the addition result obtained by said second adding means with the detection result obtained by said current detecting means; and

second control means for measuring the time during which the difference between the two results compared by said comparing means exceed a predetermined value and for outputting a drive disabling signal to said driving means to as to disable the driving of said motor when the measured time exceeds a predetermined time; and

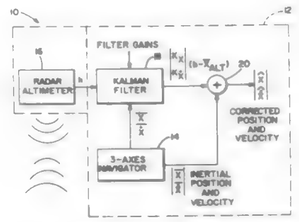
a circuit board for accommodating said signal processing circuit and said control circuit.

5,355,316

POSITION AIDED EVADER MANEUVERING RE-ENTRY VEHICLE NAVIGATOR

Edward J. Knobbe, Huntington Beach, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Mar. 24, 1989, Ser. No. 328,208
Int. Cl.[5] H04B 7/185
U.S. Cl. 364—453 6 Claims



1. In an evasive maneuvering atmospheric reentry vehicle, navigation apparatus comprising:

three-axis strap-down inertial navigation means having an output expressive of a position and a velocity of the vehicle;

radar altimeter means having an output expressive of an altitude of the vehicle above the surface of the earth;

Kalman filter means, having a first input coupled to the output of the inertial navigation means and a second input coupled to the output of the altimeter means, for generating an output expressive of an estimated correction to the vehicle position and to the vehicle velocity in accordance with the expression;

$$\begin{vmatrix} X \\ \dot{X} \end{vmatrix} = \begin{vmatrix} \bar{X} \\ \bar{\dot{X}} \end{vmatrix} + \begin{vmatrix} K_X \\ K_{\dot{X}} \end{vmatrix} (h - \bar{X}_{ALT});$$

where $[K_X K_{\dot{X}}]^T$ are six scalars related to gains of the Kalman filter,

(h) is the altimeter means output,

$\bar{X}$ is the position output of the inertial navigation means,

$\dot{X}$ is the velocity output of the inertial navigation means,

$\bar{X}_{ALT}$ is the inertial navigation means altitude solution,

$(h-\bar{X}_{ALT})$ is a scalar difference between the altimeter means output (h) and the inertial navigation means altitude solution,

X is the corrected vehicle position, and

$\dot{X}$ is the corrected vehicle velocity; the navigation apparatus further comprising summation means, having a first input coupled to the output of the navigation means and a second input coupled to the output of the Kalman filter means, for summing the output of the navigation means and the output of the generating means to produce a corrected vehicle position X, a corrected vehicle velocity $\dot{X}$ and a guidance position error ΔX, in accordance with

$$\Delta X = (X - \bar{X}).$$

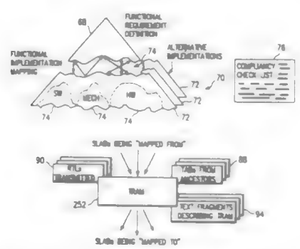
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5,355,317

METHOD AND APPARATUS FOR SYSTEM DESIGN

Marvin T. Talbott, Plano; Henry L. Burka, Dallas; Richard W. Shaw; Donald D. Strasburg, both of Plano, and Katherine K. Hutchison, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 26, 1991, Ser. No. 661,042
Int. Cl.[5] G06F *15/60, 15/21*
U.S. Cl. 384—468 **8 Claims**



1. A method of system design for a system, using a computer, comprising the steps of:

generating a first set of objects each defining a portion of the system, a parent object of the objects having a parent-child relationship wherein one or more child objects each define a portion of the parent object;

generating a second set of implementable objects associated with said first set of objects;

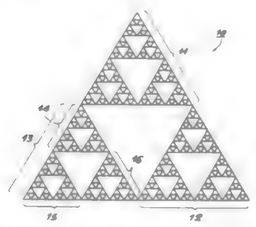
generating active links between said first set of objects and said second set of implementable objects, said active links describing the relationship between said first set and said second set and mapping requirements of said relationship between said first set and said second set to determine improper implementable objects, and wherein said active link generating step includes the step of providing text files associated with said active links.

5,355,318

METHOD OF MANUFACTURING A FRECTAL OBJECT BY USING STERIOLITHOGRAPHY AND A FRACTAL OBJECT OBTAINED BY PERFORMING SUCH A METHOD

Vincent Dionnet, Montrouge; Frederic Heliodore, Paris; Alain R. P. Le Mehaute, Gif Sur Yvette, and Jean Claude Andre, Nancy, all of France, assignors to Alcatel Alsthom Compagnie Generale D'Electricite, Paris Cedex, France

Filed Jun. 2, 1993, Ser. No. 70,172
Claims priority, application France, Jun. 2, 1992, 92 06652
Int. Cl.[5] G06F *15/46;* **B29C** *41/22*
U.S. Cl. 364—468 **7 Claims**



1. A method of manufacturing three-dimensional fractal objects, said method being characterized in that it consists in:

defining a parent generator object (**40, 46, 90**) by means of three-dimensional data defining its outside shape;

performing three-dimensional scaling reduction on the parent generator object (**40, 46, 90**) so as to reduce it by N, where N is an integer, said reduction supplying daughter objects (**41, 42, 43, 44, 45, 46**) whose positions are defined relative to said parent generator object (**40, 46, 90**), each of said daughter objects (**41, 42, 43, 44, 45, 46**) being defined by data enabling it to be situated three-dimensionally relative to said parent generator object (**40, 46, 90**);

repeating said scaling reduction for each of said daughter objects (**41, 42, 43, 44, 45, 46**) obtained by each scaling reduction until the dimensions of said daughter objects obtained by reduction become less than a given threshold value (epsilon); and

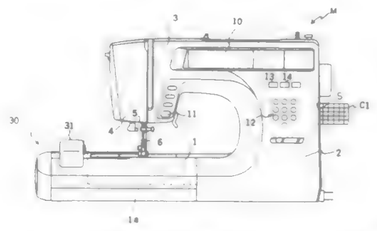
supplying at least part of said data enabling said daughter objects (**41, 42, 43, 44, 45, 46**) to be situated relative to said parent generator object (**40, 46, 90**) to a control device (**23**) for controlling stereolithographic apparatus which manufactures said fractal object.

5,355,319

PATTERN DATA PROCESSING APPARATUS FOR SEWING MACHINE

Kenji Matsubara, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 26, 1992, Ser. No. 888,533
Claims priority, application Japan, Aug. 22, 1991, 3-237089
Int. Cl.[5] G06F *15/46;* **D05B** *21/00*
U.S. Cl. 364—470 **19 Claims**



1. A pattern data processing apparatus for a sewing machine for producing composite pattern data for sewing a composite pattern including a reference pattern and at least one unit pattern, comprising:

unit pattern data storage means for storing pattern data of a plurality of unit patterns;

reference data storage means for storing pattern data of a plurality of reference patterns and arrangement position data for a plurality of unit patterns;

pattern selecting means for selectively setting one of the reference patterns and at least one of the unit patterns to be combined with the one reference pattern to form the composite pattern;

data composing means for composing composite pattern data of a composite pattern in accordance with data from said reference data storage means regarding the reference pattern selected by said pattern selecting means and data from said unit pattern data storage means regarding the at least one of the unit patterns selected by said pattern selecting means, said data composing means setting an arrangement position of the at least one selected unit pattern with respect to the reference pattern based on the arrangement position data; and

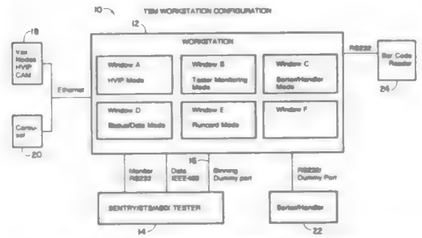
composite pattern data storage means for storing data composed by said data composing means.

5,355,320

SYSTEM FOR CONTROLLING AN INTEGRATED PRODUCT PROCESS FOR SEMICONDUCTOR WAFERS AND PACKAGES

Scott A. Erjavic, Danville, and Ronald E. Frye, Jr., Newnan, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Mar. 6, 1992, Ser. No. 847,517
Int. Cl.[5] G01R *31/28;* **G06F** *11/00*
U.S. Cl. 364—488 **20 Claims**



1. A system for controlling an integrated production process for the processing of semiconductor chips and packages, said process employing wafer sorters, package handlers, testers and a computer aided manufacturing node for providing and storing set up and wafer and package processing control information, said system comprising:

a semiconductor chip, wafer, or a package; and

a tester, sorter or a handler; and

a control device dedicated to and connected to said tester, sorter or handler, for configuring and controlling the tester, sorter or handler; and wherein said device collects and analyzes data from the tester, sorter or handler; and

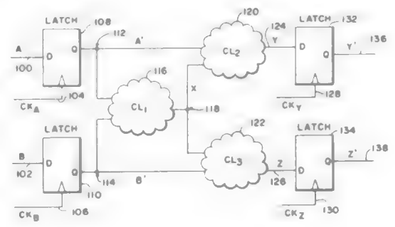
a network connecting the device to the node, so that said device enables an operator to test, sort or handle said chip, wafer or package according to a predetermined routine, to obtain updated data concerning the chip, wafer or package from the tester, sorter or handler, and to update and send updated processing control information to the node.

5,355,321

STATIC TIMING VERIFICATION

Joel J. Grodstein, Arlington; Anil K. Jain, Stow, and William Grundmann, Westboro, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 12, 1992, Ser. No. 898,920
Int. Cl.[5] G06F *15/20, 15/60*
U.S. Cl. 364—489 **9 Claims**



1. A method for improving a circuit design through static analysis of a software model of said circuit, said circuit designed to be clocked by two clocks, each of said clocks being characterized by a period, each of said clocks' periods being a multiple of a greatest common divisor period, the method comprising the steps of

determining a least common multiple period of said clocks, defining a composite clock, said composite clock having a period equal to said least common multiple period, and

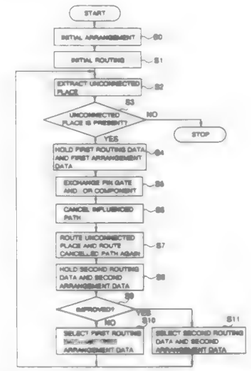
statically analyzing in a computer said model relative to said composite clock.

5,355,322

AUTOMATIC ROUTING METHOD AND DEVICE

Noboru Yamashita, and Toshiyuki Katada, both of Owariasahi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 5, 1991, Ser. No. 755,436
Claims priority, application Japan, Sep. 12, 1990, 2-240015
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—490 **9 Claims**



1. An automatic routing method for automatically routing circuit components, comprising the steps of:

a first step of automatically routing, in accordance with a prescribed logic, an arrangement of circuit components located at predetermined positions to form a first pattern;

a second step of deciding whether the first pattern includes an unconnected place;

a third step of modifying the arrangement of circuit components related to said unconnected place when it is decided that the first pattern includes an unconnected place; and

a fourth step of automatically routing the modified arrangement of circuit components to form a second pattern which does not include the unconnected place.

5,355,323

HUMIDITY CONTROL METHOD FOR AN AIR CONDITIONER WHICH DEPENDS UPON WEATHER DETERMINATIONS

Young-Don Bae, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Feb. 18, 1992, Ser. No. 837,203
Claims priority, application Rep. of Korea, Feb. 25, 1991, 91-3020
Int. Cl.[5] G06F *15/20;* **F24F** *3/14;* **G05B** *13/02*
U.S. Cl. 364—505 **13 Claims**

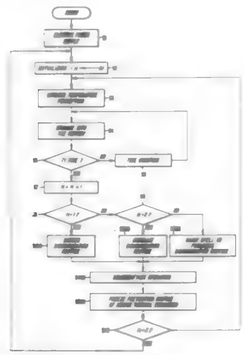
1. An automatic humidity control method for an air conditioner depending upon a weather determination, comprising the steps of:

storing reference data according to weather characteristics for the weather determination in memory;

detecting an outdoor temperature over a certain first time period and storing it in memory for comparing with said reference data;

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determining an outdoor temperature variation, an outdoor temperature range, and a temperature preservation time based upon the outdoor temperature detected over a certain first time period for comparing with said reference data for the weather determination and performing the weather determination which determines a plurality of recognizable weather conditions including showery conditions, overcast conditions, and rainy spell or foggy conditions based on a comparison with the reference data according to weather characteristics in response to the step of detecting;



recognizing an indoor humidity setting in accordance with using a shower discrimination routine for discriminating showery conditions, an overcast discrimination routine for discriminating overcast conditions, and a rainy spell or foggy conditions discrimination routine for discriminating a rainy spell or foggy conditions;

performing a dehumidifying operation responsive to the recognized indoor humidity; and

subsequently performing a freeze prevention routine of an indoor thermal exchanger responsive to the indoor humidity setting to prevent freezing of the indoor thermal exchanger during the dehumidifying operation.

5,355,324

DETECTING LEAKAGE OF FLUID FROM A CONDUIT

Xue Jun Zhang, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 10, 1992, Ser. No. 926,428

Claims priority, application European Pat. Off., Nov. 6, 1991, 91310267.9

Int. Cl.[5] G01M *3/28*

U.S. Cl. 364—510 **17 Claims**

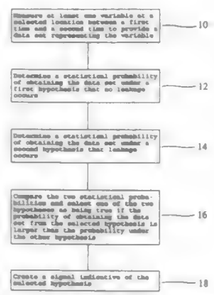
1. A method to detect leakage from a conduit through which a stream of fluid flows and to indicate when there is a leakage condition or a no leakage condition on the conduit, comprising:

measuring at least one variable of a group consisting of fluid pressure and fluid flow rate between a first and a second time and at a location of the stream flowing through the conduit to provide a data set representing the variable at said location and between said first and second times;

determining a statistical probability of obtaining said data set from the measurement under a first hypothesis that no leakage occurs from the conduit and a statistical probability of obtaining said data set from the measurement under a second hypothesis that leakage occurs from the conduit;

selecting one of said hypotheses as being true if the probability of obtaining said data set from the measurement under said selected hypothesis is larger than the probability of obtaining said data set from the measurement under the other hypothesis; and

creating a signal indicative of said selected hypothesis, wherein the signal initiates an alarm when the second



hypothesis is selected to indicate the leakage condition on the conduit or said signal initiates a notice of normal operation for the conduit when the first hypothesis is selected to indicate the no leakage condition.

5,355,325

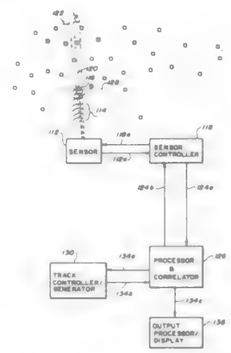
METHOD AND APPARATUS FOR CORRELATING OBJECT MEASUREMENTS WITH OBJECT MEASUREMENT ESTIMATES

Jeffrey K. Uhlmann, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 24, 1992, Ser. No. 903,390

Int. Cl.[5] G01S *17/42*

U.S. Cl. 364—516 **28 Claims**



1. A method for correlating measurements to at least one of a plurality of tracks, wherein each of the plurality of tracks is generated from previous, corresponding measurements and corresponds to the relative movement between an object and an origin of the measurement, comprising the steps of:

determining a measurement estimate for each of the plurality of tracks for a current sighting period, each said measurement estimate defining a volume measurement estimate;

iteratively building a volume measurement tree from the plurality of track volume measurement estimates;

generating at least one current measurement, each at least one measurement defining a volume measurement;

iteratively searching the volume measurement tree for one

of at least one measurement, wherein for each track volume measurement estimate intersected by the measurement volume of said one of the at least one measurement, the corresponding track is correlated to said one of the at least one measurement;

wherein the step of iteratively building the volume measurement tree comprises the steps of:

defining a base set comprising all of the track volume measurement estimates;

defining a base node associated with the base set;

beginning a first iteration with the base node as a current node; and

ending the first iteration, wherein each iteration comprises the steps of:

selecting the set associated with the current node as the current set;

determining a number of track volume measurement estimates in the current set;

ending the current iteration and returning to the previous iteration if the current set is empty;

otherwise, ending the current iteration and returning to the previous iteration if the current set has one track volume measurement estimate, after defining a current minimal enclosing volume as the one track volume measurement estimate;

otherwise, determining the current minimal enclosing volume which enclose all the track volume measurement estimates of the current set;

selecting and removing an arbitrary track volume measurement estimate from the current set and associating it with the current node;

selecting an arbitrary partitioning plane which partitions the current minimal enclosing volume;

determining a current left subset of the current set as all track volume measurement estimates entirely left of the partitioning plane;

determining a current middle subset of the current set as all track volume measurement estimates intersecting the partitioning plane;

determining a current right subset of the current set as all track volume measurement estimates entirely right wards of the partitions plane;

associating the left subset with a left daughter node;

beginning a first new iteration with the left daughter node as the current node;

returning from the first new iteration;

associating the middle subset with a middle daughter node;

beginning a second new iteration with the middle daughter node as the current node;

returning from the second new iteration;

associating the right subset with a right daughter node;

beginning a third new iteration with the right daughter node as the current node; and

returning from the third new iteration;

returning from the current iteration to a previous iteration; and

wherein the step of iteratively searching the volume measurement tree comprises the steps of:

selecting a current measurement having a volume measurement;

selecting the base node;

beginning a first search iteration with the base node as the current node;

ending the first iteration; and

outputting a correlation set comprising the track volume measurement estimates intersected by the measurement volume, wherein each search iteration comprises the steps of:

determining if the set associated with the current node has at least one track volume measurement estimate;

ending the current search iteration and returning to the previous search iteration if the current set does not have at least one track volume measurement estimate;

determining if the volume of the current measurement intersects the track volume measurement estimates associated with the current node;

adding the associated track volume measurement estimates to the correlation set if it does intersect the measurement volume;

determining if the measurement volume intersects the minimal enclosing volume associated with the current node;

ending the current iteration and returning to the previous iteration if the minimal enclosing volume does not intersect the measurement volume;

beginning a first new search iteration with the left daughter node as the current node;

returning from the first new iteration;

beginning a second new search iteration with the middle daughter node as the current node;

returning from the second new iteration;

beginning a third new search iteration with the right daughter node as the current node;

returning from the third new iteration;

returning from the current search iteration.

5,355,326

METHOD OF EFFECTING A MOTION FILTERING FOR SLOW TARGETS, AND AN APPARATUS FOR EXECUTING THE METHOD

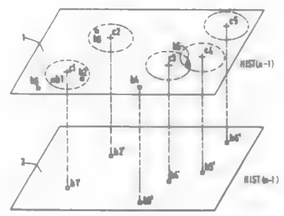
Raoul Florent, Liller, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 803,301, Dec. 2, 1991, abandoned. This application Dec. 29, 1993, Ser. No. 174,738

Claims priority, application France, Nov. 30, 1990, 90 15026

Int. Cl.[5] G01S *5/06*

U.S. Cl. 364—516 **14 Claims**



1. A method of effecting a motion filtering for detecting point targets moving slowly within a time sequence of readjusted binary images, these images corresponding to a history at an instant n—1, denoted Hist n—1, including target trajectories and alarms, the method comprising:

A/ an initializing step having

A1/ a sub-step of accumulating results arising from an extractor which include coordinates hj of start-points of the trajectories at the instant n—1 and coordinates Ci of the alarms at the instant n—1;

B/ a step for constructing a history at the next-following instant n, denoted Hist n, having two loops

B1/ a first loop for producing either lengthening or initializing of the trajectories depending on the alarms received; and

B2/ a second loop for producing either lengthening or destruction of the trajectories independent of the alarms received; and

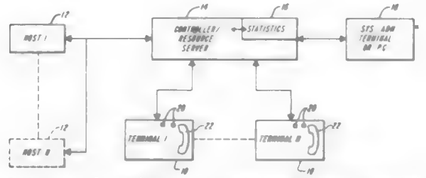
C/ a step for detecting the targets from observation of the history at the instant n, Hist n.

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5,355,327
AUTOMATED STATISTICAL DATA COLLECTION SYSTEM

Robert J. Stent, Westford, and Michael McGreevey, Billerica, both of Mass., assignors to Davox Corporation, Westford, Mass.

Filed Nov. 26, 1991, Ser. No. 798,241
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—551.01 **15 Claims**



1. A system for gathering, processing and displaying statistical data concerning the operation of at least one data terminal coupled to at least one host system by means of a data terminal controller, comprising:

a data terminal controller, coupled to one port of said at least one host system and to said at least one data terminal, and responsive to said at least one data terminal, for controlling access to said at least one host system by said at least one data terminal;

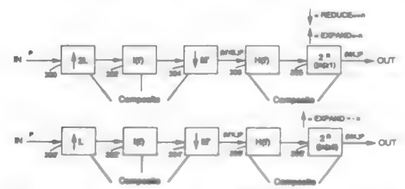
said at least one data terminal including at least one user definable function selector, said at least one user definable function selector operative for selecting and initiating the execution of at least one previously defined data processing function; and

said data terminal controller including a statistical data collector, responsive to said at least one data terminal and to at least one selected data terminal user definable function selector which has initiated the execution of at least one previously defined data processing function, for gathering statistical data concerning said data processing function selected and initiated by said user definable function selector and operation of said data terminal as said statistical data is generated and as operation of said data terminal is taking place, for processing at least said gathered statistical data as said statistical data is generated, and for displaying said processed statistical data as said statistical data is processed.

5,355,328
RESAMPLING APPARATUS SUITABLE FOR RESIZING A VIDEO IMAGE

James H. Arbeiter, Hopewell, and Roger F. Bessler, Lawrenceville, both of N.J., assignors to NorthShore Laboratories, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 766,128, Sep. 27, 1991, abandoned. This application Mar. 18, 1993, Ser. No. 33,503
Int. Cl.[5] G06F *15/31;* **H04N** *5/14*
U.S. Cl. 364—724.1 **22 Claims**



1. In apparatus for altering the sampling period of an input stream of digital-signal sample values that define D dimensional information, where D is at least one; wherein those digital-signal sample values of said input stream that define a given dimension of said information occur at a given sampling period P; and wherein said apparatus alters said given sampling period P by a factor equal to M/L, where L is a first positive integer greater in value than one and M is a second positive integer; the improvement wherein said apparatus comprises:

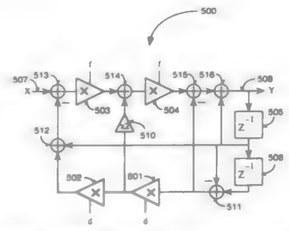
first means, including interpolation filter means, responsive to said digital-signal sample values of said input sample stream for producing a first derived sample stream of digital-signal sample values in which said given sampling period P of said input stream is multiplied directly by a factor equal to M'/CL, where C is a given positive integer and M' is smaller than CL, either $2^n(M'/CL)$ or $2^{-n}(M'/CL)$ is equal to M/L and the absolute value of n is at least equal to zero, so that the sampling period of said first derived sample stream is (M'/CL)P; and

second means, including octave prefiltering and sample means, responsive to said first derived sample stream of digital-signal sample values for producing as an output a second derived sample stream of digital-signal sample values in which said first derived sample sampling period (M'/CL)P of said first derived sample stream is multiplied by a factor equal to either 2^n or 2^{-n} so that the sampling period of said second derived sample stream is (M/L)P.

5,355,329
DIGITAL FILTER HAVING INDEPENDENT DAMPING AND FREQUENCY PARAMETERS

Richard F. Lyon, Los Altos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Dec. 14, 1992, Ser. No. 990,666
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.17 **11 Claims**



1. A recursive filter having independent damping and frequency parameters for generating a sequence of output values in discrete time from a sequence of input values, comprising:

a first state storage means and a second state storage means for storing said sequence of output values, wherein two previous values of said sequence of output values are stored and used in calculating a subsequent value of said sequence of output values;

a subtractor means coupled to said first state storage means and said second state storage means for generating a difference between said two previous values of said sequence of output values;

a first multiplier means coupled to said subtractor means for multiplying said difference by a damping parameter;

a second multiplier means coupled to an output of said first multiplier means for multiplying a signal obtained from the output of said first multiplier means by said damping parameter;

a third multiplier means coupled to an output of said second multiplier means for multiplying a signal obtained from the output of said second multiplier means by a frequency parameter;

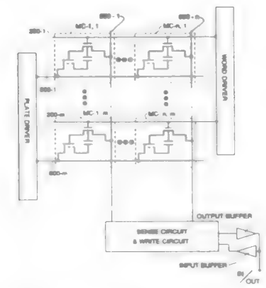
a fourth multiplier means coupled to an output of said first multiplier means and to an output of said third multiplier means for multiplying a combination of signals obtained from outputs of said first and said third multipliers by said frequency parameter;

a summing means coupled to an output of said fourth multiplier means, said first state storage means, and said second state storage means for generating said subsequent value of said sequence of output values of said recursive filter.

5,355,330
CAPACITIVE MEMORY HAVING A PN JUNCTION WRITING AND TUNNELING THROUGH AN INSULATOR OF A CHARGE HOLDING ELECTRODE

Dai Hisamoto, Kokubunji; Shoji Shukuri, Koganei; Kazuhiko Sagara, Hachiouji; Shinichiro Kimura, Kunitachi; Shinichi Minami, Kodaira, and Eiji Takeda, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 19, 1992, Ser. No. 932,242
Claims priority, application Japan, Aug. 29, 1991, 3-218497
Int. Cl.[5] G11C *11/24*
U.S. Cl. 365—149 **14 Claims**



1. A memory, comprising:

a plurality of word lines, a plurality of bit lines, a plurality of plate lines, and a plurality of memory cells, all arranged in a matrix;

a word line driver for establishing a voltage on one or more word lines;

a plate line driver for establishing a voltage of one or more plate lines;

a sense circuit connected to said bit lines;

a write circuit connected to said bit lines;

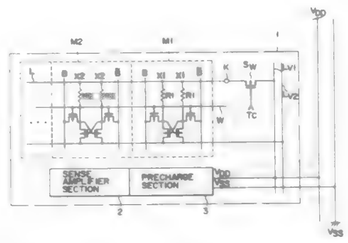
each of said memory cells being substantially identical and having a switching FET with a gate connected to a word line and one of a source and drain connected to a bit line, a memory charge storage electrode, insulation completely surrounding the memory charge storage electrode to envelop it, and the memory charge storage portion being sufficiently adjacent a channel of the switching FET so that a charge held by the memory charge storage portion will change the characteristics and particularly the threshold voltage of the switching FET; and

said write circuit including a write element connected between a plate line and a word line for each of the memory cells for tunneling charges through the insulation into the memory charge storage portion during a write cycle.

5,355,331
SEMICONDUCTOR MEMORY DEVICE HAVING ELECTRICALLY ISOLATED MEMORY AND LOGIC SECTIONS

Shinsuke Takase, Yokohama, and Toshiya Kato, Zama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 687,733, Apr. 19, 1991, abandoned. This application Jan. 24, 1994, Ser. No. 185,169
Claims priority, application Japan, Apr. 21, 1990, 2-105988
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—154 **9 Claims**



1. A semiconductor device in which a memory section and a logic section are formed on the same semiconductor chip, comprising:

a high-resistance element constituting a memory cell;

a low-resistance line connected to said high-resistance element;

a power source line serving as a power source path from a power source pad;

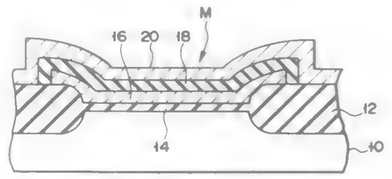
a control circuit for outputting a control signal; and

a switching element arranged between said low-resistance line and said power source line, and which is controlled by said control signal from said control circuit, thereby electrically separating said memory section and said logic section from each other.

5,355,332
ELECTRICALLY ERASABLE PROGRAMMABLE READ-ONLY MEMORY WITH AN ARRAY OF ONE-TRANSISTOR MEMORY CELLS

Tetsuo Endoh, Yokohama, and Riichiro Shirota, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 23, 1991, Ser. No. 780,933
Claims priority, application Japan, Oct. 23, 1990, 2-283296; Mar. 28, 1991, 3-64136
Int. Cl.[5] G11C *7/00, 11/40;* **H01L** *27/10*
U.S. Cl. 365—182 **19 Claims**



1. An electrically erasable and programmable transistor comprising:

a semiconductive substrate;

a source and a drain spaced apart to define a channel region therebetween in said substrate;

an insulated conductive layer at least partially overlying the

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channel region and being capacitively coupled with said substrate;

a control gate insulatively disposed above the conductive layer and spanning the channel region; and

said drain being doped with an impurity at a specifically selected density which causes the withstanding voltage of said drain to be potentially greater than a first voltage applied to said drain during a read operation and to be less than a second voltage applied thereto for forcing said conductive layer to discharge.

5,355,333

DYNAMIC REFERENCE SYSTEM FOR SENSE AMPLIFIER

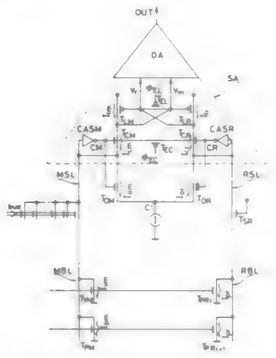
Luigi Pascucci, Sesto S. Giovanni, Italy, assignor to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Continuation of Ser. No. 949,678, Sep. 22, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 135,842

Claims priority, application Italy, Sep. 26, 1991, VA91 A 0034; Nov. 29, 1991, VA91 A 0042

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—189.01 **40 Claims**



1. A reference circuit for reading memory cells through a current unbalance between a first current forced through a first sensing line, containing a reference cell, and a second current forced through a second sensing line, containing a memory cell selected for a reading, of an input network of a differential amplifier, wherein each of said two lines is connected to an essentially identical load and wherein a first high impedance amplifying stage circuit has an input connected to said first line and a second high impedance amplifying stage circuit has an input connected to said second line, each of said amplifying circuits generating on a respective output node a signal which is utilized for driving at least a switch connected between a respective load and a source of a bias current forced through said sensing lines, comprising

a first transistor functionally connected between said switch driven by the first high impedance amplifying circuit and said source of a bias current and having a control terminal which is connected to said output node of said first high impedance amplifying circuit;

a second transistor functionally connected between said switch driven by said second high impedance amplifying circuit and said source of bias current and having a control terminal which is connected to said output node of said second high impedance amplifying circuit;

said first and second transistors having different sizes from each other and driven by said signals generated on the respective output nodes of said high impedance amplifying circuits superimposing an offset current on said currents which are forced through said identical loads of said two sensing lines of the input network of said differential amplifier.

5,355,334

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE HAVING PARALLEL WRITE AND READ FUNCTION

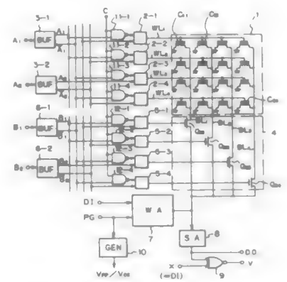
Hiroki Koga, and Keisuke Fuchigami, both of Kanagawa, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jan. 13, 1994, Ser. No. 180,713

Claims priority, application Japan, Jan. 13, 1993, 5-003714

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—189.01 **15 Claims**



1. A nonvolatile semiconductor memory device comprising:

M(=2^m, m=1, 2,. . .) word lines;

N(=2^n, n=1, 2,. . .) bit lines;

M×N nonvolatile memory cells, each connected to one of said word lines and one of said bit lines;

m row address buffers each for generating a row address signal and its inverted signal;

M row address decoders, each connected to said row address buffers and to one of said word lines, for receiving one of the row address and the inverted signal of each of said row address buffers to select one of said word lines and drive it;

n column address buffers each for generating a column address signal and its inverted signal;

N column address decoders, each connected to said column address buffers and to one of said bit lines, for receiving one of the column address and its inverted signal of each of said column address buffers to select one of said bit lines and drive it; and

degenerating means, interposed between at least one of said row address buffers and said row decoders, for bringing outputs of said at least one of said row address buffers to a selected level when receiving a parallel write and read signal.

5,355,335

SEMICONDUCTOR MEMORY DEVICE HAVING A PLURALITY OF WRITING AND READING PORTS FOR DECREASING HARDWARE AMOUNT

Akira Katsuno, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 24, 1992, Ser. No. 903,518

Claims priority, application Japan, Jun. 25, 1991, 3-153491

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—189.04 **23 Claims**

1. A semiconductor memory device comprising:

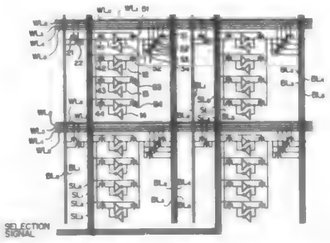
a plurality of writing ports add a plurality of reading ports for respectively carrying out parallel writing and parallel reading operations therethrough;

a first data latch portion directly accessible by externally entering an address signal;

at least one second data latch portion connected in parallel with said first data latch portion;

communication means for selectively accessing one of said first and second data latch portions;

writing control transfer gates operatively connecting said



writing ports to said first and second data latch portions; and

reading control transfer gates operatively connecting said reading ports to said first and second data latch portions.

5,355,336

MEMORY DEVICE AND A METHOD FOR PROHIBITING WRITING TO THE MEMORY DEVICE

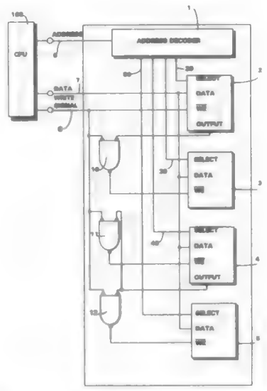
Katsuyuki Yoshioka, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 16, 1993, Ser. No. 32,054

Claims priority, application Japan, Mar. 18, 1992, 4-62434

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—195 **16 Claims**



5. A memory device, comprising:

a memory array for storing data;

a writing restriction register for prohibiting writing to the memory array as a function of data written to said writing restriction register and outputting a signal having a specified level as a result of said data being written to said writing restriction register; and

logic operation means for receiving said signal output from said writing restriction register, for putting the writing restriction register into an unwritable state in response to said signal having said specified level outputted from the writing restriction register and for putting the memory array into the unrewritable state.

5,355,337

ARRANGEMENT OF REDUNDANT CELL ARRAY FOR SEMICONDUCTOR MEMORY DEVICE

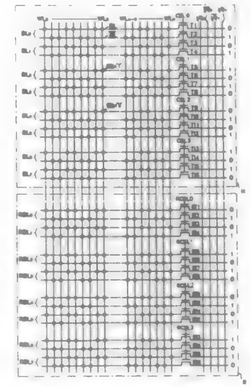
Tae-jin Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi-do

Filed Apr. 13, 1992, Ser. No. 867,461

Claims priority, application Rep. of Korea, Aug. 21, 1991, 91-14407

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—200 **3 Claims**



1. A semiconductor device comprising:

a first number of redundant memory cell arrays and a second number of normal memory cell arrays, said first number being less than said second number, each of said redundant and normal memory cell arrays comprising:

a plurality of repeat arrangements of a predetermined unit, said predetermined unit comprising a first and second bit line group, each bit line group being controllable for inputting and outputting data by a first and a second column select signal;

said first bit line group having bit lines arranged in a first logic arrangement defined as (0101) and said second bit line group having bit lines arranged in a second successive logic arrangement defined as (1010);

wherein each redundant memory cell array is built up by repeating an arrangement of a smallest length unit of a corresponding normal cell array, said smallest length unit comprising a first and second redundant bit line group for inputting and outputting data by one of a corresponding first and second redundant column select line signals.

5,355,338

REDUNDANCY CIRCUIT FOR SEMICONDUCTOR MEMORY DEVICE

Seok W. Han, Kyungki, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Filed Jul. 10, 1992, Ser. No. 911,611

Claims priority, application Rep. of Korea, Jul. 11, 1991, 91-12072

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—200 **6 Claims**

1. In a memory device having memory cells, some of which may be defective, two or more spare memory cells, address lines for receiving addresses of the memory cells and the two or more spare memory cells, and programmable and erasable transistors coupled to the address lines and the two or more spare memory cells, a method of selecting first and second spare memory cells, comprising the steps of:

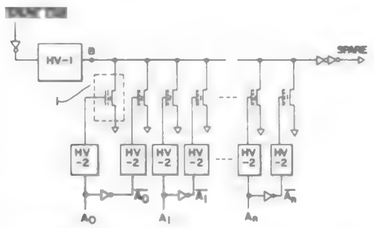
determining the address of a first defective memory cell;

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programming the programmable and erasable transistors with the address of the first defective memory cell, wherein the first spare memory cell is selected in response to the address of the first defective memory cell;

determining the address of a second defective memory cell;

erasing the programmable and erasable transistors;



programming the programmable and erasable transistors with the addresses of the first and second defective memory cells, wherein the first spare memory cell is selected in response to the address of the first defective memory cell and the second spare memory cell is selected in response to the address of the second defective memory cell.

5,355,339

ROW REDUNDANCY CIRCUIT OF A SEMICONDUCTOR MEMORY DEVICE

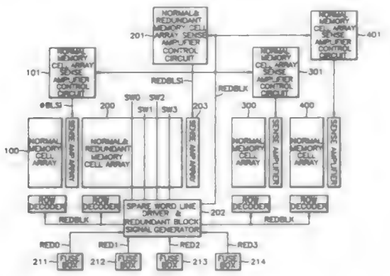
Seung-Cheol Oh, and Moon-Gone Kim, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Suwon, Rep. of Korea

Filed Jul. 13, 1993, Ser. No. 91,839

Claims priority, application Rep. of Korea, Jul. 13, 1992, 12437

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—200 **11 Claims**



1. A semiconductor memory device disposed on a semiconductor chip comprising:

a plurality of memory cell arrays arranged in rows and columns, each memory cell array containing a plurality of memory cells for storing data and normally addressable using a normal row address and a normal column address;

a normal row decoder associated with each of said plurality of memory cell arrays for decoding said normal row address to obtain a decoded normal row address signal corresponding to one of said rows;

means for selecting one of said rows in said memory array using said decoded normal row address signal, said means for selecting including a plurality of word lines;

a plurality of sense amplifier arrays, each sense amplifier array connected to one of said plurality of memory cell arrays, for sensing said data stored in said memory cells;

a redundant memory cell array disposed within one of said plurality of memory cell arrays for storing data in a plurality of redundant memory cells, said redundant memory array connected to one of said sense amplifier arrays;

a plurality of redundant row address decoders, each redundant row address decoder programmed to decode a redundant row address corresponding to a defective normal memory cell address and which outputs a redundant decoded row address signal when said redundant row address is decoded;

redundant means for selecting at least one of said rows in said redundant memory array using at least one of said decoded redundant row address signals, said redundant means for selecting including a plurality of redundant word lines; and

a control circuit for inputting each of said redundant decoded row address signals and outputting a redundancy control signal to each of said normal row decoders and each of said sense amplifier arrays.

5,355,340

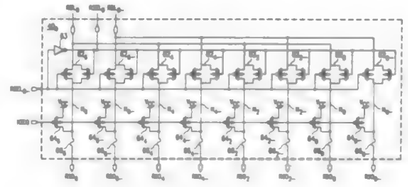
SEMICONDUCTOR MEMORY WITH MULTIPLEXED REDUNDANCY

Thomas A. Coker, Irving, and David C. McClure, Carrollton, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 627,823, Dec. 14, 1990, abandoned. This application Aug. 2, 1993, Ser. No. 101,347

Int. Cl.[5] G11C *29/00*

U.S. Cl. 365—200 **9 Claims**



1. An integrated circuit with a memory, comprising:

an array of storage cells arranged in rows and columns;

a plurality of output terminals;

means for accessing a plurality of storage cells in said array, selected according to an address signal, for communication with said plurality of output terminals;

a plurality of redundant storage cells arranged in first and second redundant columns and associated with said array;

a first and second redundant bit lines, for communicating the data state of one of said plurality of redundant storage cells in said first and second redundant columns, respectively, when selected;

a first redundant output select circuit, coupled between the first redundant column and a first group of said plurality of output terminals, for coupling the selected redundant memory cell in the first redundant column to a selected one of the first group of output terminals so that, responsive to said address signal indicating that one of said plurality of redundant storage cells in the first redundant column are to be selected, said one of said plurality of redundant storage cells is in communication with the selected one of the first group of output terminals comprising:

a first plurality of pass gates, each having a conduction path connected on a first side to said first redundant bit line and having a control terminal controlled according to said address signal; and

a first plurality of fuses, each associated with one of the first group of output terminals, and connected in series between its associated output terminal and a second side of the conduction path of one of the first plurality of pass gates; and

a second redundant output select circuit, coupled between the second redundant column and a second group of said plurality of output terminals, for coupling the selected redundant memory cell in the second redundant column to a selected one of the second group of output terminals so that, responsive to said address signal indicating that one of said plurality of redundant storage cells in the second redundant column are to be selected, said one of said plurality of redundant storage cells is in communication with the selected output terminal comprising:

a second plurality of pass gates, each having a conduction path connected on a first side to said second redundant bit line and having a control terminal controlled according to said address signal; and

a second plurality of fuses, each associated with one of the second group of output terminals, and connected in series between its associated output terminal and a second side of the conduction path of one of the second plurality of pass gates;

wherein those of the first and second plurality of fuses not associated with a selected output terminal are opened, and the ones of the first and second plurality of fuses associated with selected ones of the first and second groups of output terminals, respectively, are maintained closed.

5,355,341

INTEGRATED MEMORY HAVING IMPROVED TESTING MEANS

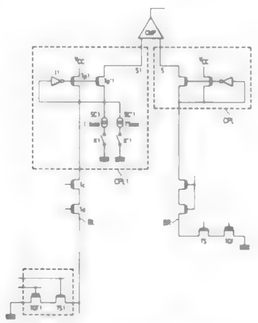
Jean-Marie Gaultier, Rousset; Gérard S. de Ferron, Fuveau, both of France, and Roberto Gastaldi, Milan, Italy, assignors to SGS-Thomson Microelectronics, S.A., Gentilly Cedex, France

Filed Feb. 5, 1993, Ser. No. 14,214

Claims priority, application France, Aug. 8, 1990, 90-10114

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—201 **20 Claims**



15. An electrically programmable memory in integrated circuit form in which the state of a cell is read by comparison between a current absorbed by a reference cell and the sum of the current absorbed by the cell to be read and a bias current produced inside the integrated circuit, characterized in that it comprises means for the reduction, in test mode, of the value of the bias current, and for the reading of the state of the cells with this reduced valued of the bias current.

5,355,342

SEMICONDUCTOR MEMORY DEVICE HAVING MULTIPLE SELECTOR UNIT SIMULTANEOUSLY SELECTING MEMORY CELLS FROM MEMORY CELL BLOCKS IN DIAGNOSTIC MODE OF OPERATION

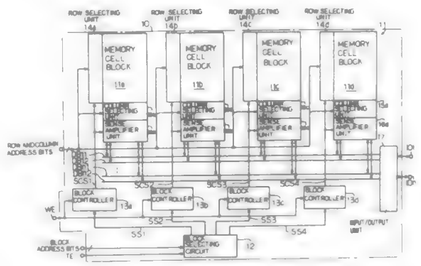
Junji Ueoka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 27, 1993, Ser. No. 52,665

Claims priority, application Japan, Apr. 27, 1992, 4-107169

Int. Cl.[5] G11C *7/00, 29/00*

U.S. Cl. 365—201 **3 Claims**



1. A semiconductor memory device selectively entering standard modes and a diagnostic mode of operation, comprising:

a) a plurality of memory cell blocks each having a plurality of memory locations arranged in rows and columns, block addresses being assigned to said plurality of memory cell blocks, row addresses being respectively assigned to the rows of memory locations, column addresses being respectively assigned to the columns of memory locations;

b) a block selecting unit responsive to block address bits indicative of a block address assigned to one of said plurality of memory cell blocks for producing a block selecting signal indicative of said one of said plurality of memory cell blocks in said standard modes of operation, said block selecting unit further responsive to a test signal indicative of said diagnostic mode for producing a block selecting signal indicative of said plurality of memory cell blocks regardless of said block address bits in said diagnostic mode, said block selecting unit comprising

b-1) a block selecting circuit supplied with said block address bits and said test signal for producing decoded signals, and comprising a predecoder for producing complementary block address bits from said block address bits, a decoder responsive to said block address bits and said complementary block address bits for producing output signals, and a multiple selector operative to transfer said output signals as said decoded signals in the absence of said test signal and to shift all of said decoded signals to said active level in the presence of said test signal; and

b-2) a plurality of block controllers respectively associated with said plurality of memory cell blocks, and responsive to said decoded signals for producing said block selecting signal;

c) a plurality of row selecting units respectively associated with said plurality of memory cell blocks, and enabled with said block selecting signal, one of said plurality of row selecting units enabled with said block selecting signal being responsive to row address bits indicative of a row address assigned to one of said rows of memory locations in the associated memory cell block in said standard modes, all of said plurality of row selecting units being responsive to said row address bits for selecting the rows of memory locations from said associated memory cell blocks, respectively;

d) a plurality of column selecting units respectively associ-

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ated with said plurality of memory cell blocks, and each responsive to column address bits indicative of a column address assigned to one of said columns of memory locations in the associated memory cell block; and

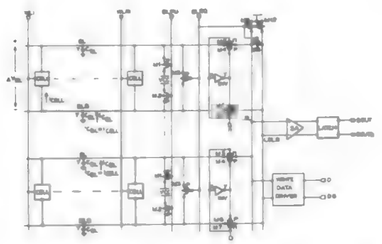
e) a data distributing means coupled between a data port and said plurality of column selecting means, and operative to provide a data propagation path between said data port and one of said plurality of column selecting units associated with the memory cell block indicated by said block selecting signal in said standard modes, said data distributing means being further operative to provide data propagation paths between said data port and said plurality of memory cell blocks in said diagnostic mode.

5,355,343

STATIC RANDOM ACCESS MEMORY WITH SELF TIMED BIT LINE EQUALIZATION

Lee-Lean Shu, 1096 November Dr., Cupertino, Calif. 95014, and Chenming W. Tung, 2998 Ridgegate Dr., San Jose, Calif. 95133

Filed Sep. 23, 1992, Ser. No. 949,217
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—203 **8 Claims**



5. In a static memory having a plurality of memory cells defined by word lines and bit lines, and a pair of local data lines for manifesting data which is written to or read from said memory cells, an equalization circuit for said data lines comprising an equalization transistor connected between said two local data lines, means for causing said equalization transistor to conduct, and means operative in response to detection of an address transition for cutting off said transistor for a predetermined period of time.

5,355,344

STRUCTURE FOR USING A PORTION OF AN INTEGRATED CIRCUIT DIE

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Nov. 13, 1992, Ser. No. 975,628
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—225.7 **27 Claims**

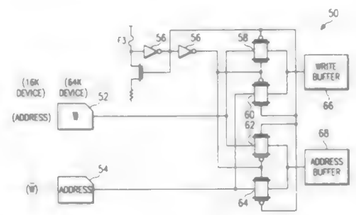
1. A method for utilizing a desired portion of a memory integrated circuit die, comprising the steps of:

determining which address signal pads correspond to the desired portion of the memory integrated circuit die;

identifying the address signal pads which will not be used so as to render a smaller addressable memory device;

setting each identified address signal pad to a logic level so as to avoid a floating condition and to identify the desired portion of the die;

bonding the pads of all address signal pads to the package of the integrated circuit with the exception of the identified address signal pads which will not be bonded to the package of the integrated circuit; and



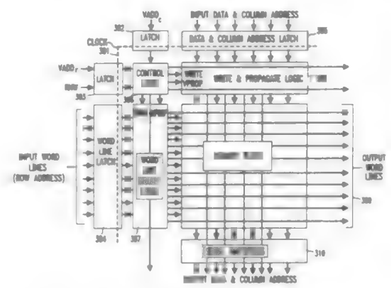
reversing the mapping between a first signal pad and a second signal pad in order to change the function of the first signal pad and the function of the second signal pad.

5,355,345

FULLY SCALABLE MEMORY APPARATUS

Alexander G. Dickinson, Neptune, N.J., and Christopher J. Nicol, Springwood, Australia, assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 4, 1993, Ser. No. 132,068
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—230.01 **10 Claims**



1. A memory, comprising:

an array partitioned into rows and columns of memory blocks, each one of the memory blocks being partitioned into a plurality of rows and columns of memory cells;

means for decoding addresses of the memory blocks and the memory cells into separate block column, block row, cell column, and cell row address signals;

means for addressing memory cells within the array using the block and cell address signals; and

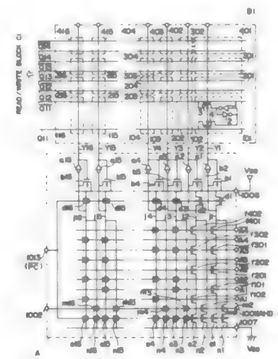
means for pipelining into the blocks of the array a plurality of memory access requests in consecutive clock cycles using the decoding and addressing means to provide memory cell access such that the memory operates at a clock speed equal to a single memory block clock speed.

5,355,346

WORD LINE SELECTION CIRCUIT FOR SIMULTANEOUSLY SELECTING A PLURALITY OF MEMORY CELLS

Yasuhiro Shin; Hidetaka Kodama, and Tatsuya Kimura, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jul. 1, 1993, Ser. No. 86,008
Claims priority, application Japan, Jul. 7, 1992, 4-179879
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.06 **9 Claims**



1. A word line selecting circuit comprising:

a plurality of word lines each of which is coupled to a plurality of memory cells, said word lines including first and second groups of word lines;

a first decode line group having a plurality of first decode lines each of which is coupled to the first group of word lines;

a second decode line group having a plurality of second decode lines each of which is coupled to the second group of the word lines;

a plurality of address input terminals applied to an address signal;

a first input terminal applied to a first signal;

a second input terminal applied to a second signal;

a first selecting switch coupled to said first and second decode line groups and said address input terminals for selecting one of the decode lines in response to the address signal;

a second selecting switch coupled to said first decode line group and said first input terminal for selecting the first decode lines in response to the first signal; and

a third selecting switch coupled to said second decode line group and said second input terminal for selecting the second decode lines in response to the second signal.

5,355,347

SINGLE TRANSISTOR PER CELL EEPROM MEMORY DEVICE WITH BIT LINE SECTOR PAGE PROGRAMMING

Dumitru Cioaca, Cupertino, Calif., assignor to Turbo IC, Inc., San Jose, Calif.

Filed Nov. 8, 1993, Ser. No. 148,926
Int. Cl.[5] G11C *8/00, 7/00*
U.S. Cl. 365—230.08 **26 Claims**

1. An EEPROM memory device comprising:

a plurality R of word lines;

a word line select bus for facilitating the selection of one of said word lines;

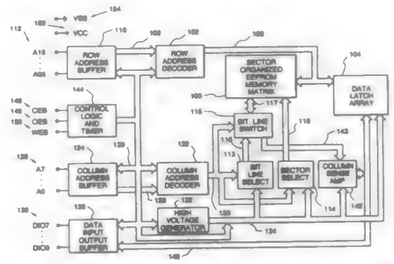
an input-output bus including S lines for facilitating the simultaneous input or output of S data bits;

a data latch array means including R rows and S columns of data latches, each latch having a latch input and a latch output, with each row of data latches being associated with a particular one of said R word lines and each column of said S columns of data latches being associated with one of said S lines of said input-output bus;

a plurality of bit lines;

a plurality of sector select lines; and

a memory array including a plurality of EEPROM memory cells organized in N sectors of R rows of S columns of memory cells with corresponding rows of memory cells in each said sector being connected to a particular row of said data latches by a particular one of said R word lines, and the memory cells in each said column being connected to one of said bit lines, and each memory cell in a particular sector being connected to one of said sector select lines;



coupling means for coupling said bit lines to said input/output bus;

whereby data to be loaded into said memory array is first loaded, S bits at a time, to the latches of each said row of latches;

whereby data contained in each said column of said data latch array is thereafter transferred a column at a time in parallel over said R word lines to said memory cells and stored in a particular column thereof selected by an input to a particular one of said bit lines in a sector of said memory array selected by an input on a particular one of said sector select lines; and

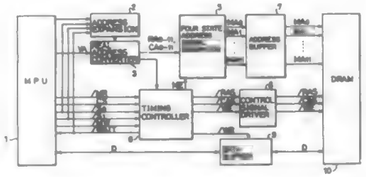
whereby upon demand data stored in said memory array may output S bits at a time in parallel via said bit lines and said coupling means to said input-output bus.

5,355,348

SEMICONDUCTOR MEMORY DEVICE AND MEMORY ACCESS SYSTEM USING A FOUR-STATE ADDRESS SIGNAL

Tsukasa Ooishi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 11, 1992, Ser. No. 834,041
Claims priority, application Japan, Feb. 12, 1991, 3-018961
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—230.06 **21 Claims**

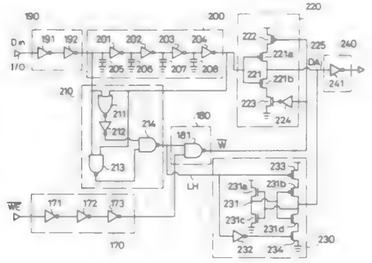


12. A semiconductor memory device, comprising:

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a memory cell array including a plurality of memory cells arranged in rows and columns;
means for receiving a four-state address signal having four states to designate a row or a column of said memory cell array;
two-state address generating means responsive to the four-state address signal for generating a two-state address signal having two states; and
selecting means responsive to the two-states address signal for selecting the row or the column of said memory cell array.

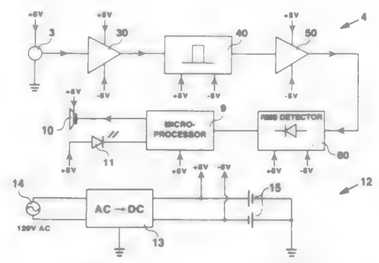
5,355,349
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE
Toshikazu Sakata, Miyazaki, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Dec. 17, 1992, Ser. No. 992,120
Claims priority, application Japan, Dec. 19, 1991, 3-336439; Dec. 19, 1991, 3-336442
Int. Cl.[5] G11C *11/34*
U.S. Cl. 365—233.5 5 Claims



1. A semiconductor integrated circuit device comprising:
a plurality of memory cells connected to a plurality of word lines (WL) and a plurality of pairs of bit lines which are selected in accordance with an address;
a data input delay circuit for delaying write data to a selected memory cell, for a predetermined time, so that the write data are outputted simultaneously with activation of the word line;
a transfer gate turned ON and OFF in accordance with a write enable signal or an inverted write enable signal and transferring the write data output from the data input delay circuit to the bit lines;
a match detecting circuit responsive to the input and output of the data input delay circuit and generating a match signal or a mismatch signal depending on whether or not the input and output of the data input delay circuit match each other;
a transfer gate control circuit for controlling the ON condition and OFF of the transfer gate in accordance with the output of the match detecting circuit; and
a latch circuit for latching, for a predetermined time, the write data outputted from the transfer gate, when the output of the match detecting circuit indicates a mismatch.

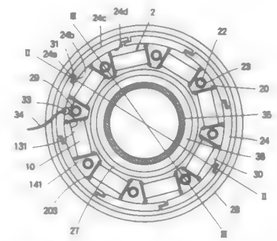
5,355,350
PASSIVE ACOUSTIC TORNADO DETECTOR AND DETECTION METHOD
Henry E. Bass, 2906 Old Taylor Rd., Oxford, Miss. 38655, and Haiping Yan, 67-102 Burns St., Forest Hill, N.Y. 11375
Filed May 24, 1993, Ser. No. 64,919
Int. Cl.[5] H04B *17/00*; G08B *21/00*
U.S. Cl. 367—13 15 Claims

9. A method of detecting tornadoes, comprising the steps of:
(a) sensing sound having frequencies emitted by a tornado;
(b) converting the sensed sound to electrical signals;
(c) processing the electrical signals to convert them to a varying DC level which constitutes an electrical signal representative of a sound level of the sensed sound;
(d) sampling the DC level and determining whether it is greater than a predetermined magnitude;



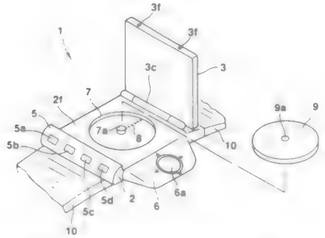
(e) eliminating signals similar to said electrical signal which do not have an amplitude and rate of change corresponding to that of a tornado;
(f) determining whether the level is increasing; and
(g) sounding an alarm.

5,355,351
UNDERWATER LOW-FREQUENCY SOUND PRODUCER USING A RARE EARTH ALLOY
Takashi Yoshikawa; Akiyoshi Kawamori; Hiroshi Kamata, all of Tokyo; Iwao Nakano, Yokosuka; Toshio Tsuchiya, Yokosuka, and Yasutaka Amitani, Yokosuka, all of Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo and Japan Marine Science and Technology Center, Yokosuka, both of Japan
Filed Jul. 16, 1993, Ser. No. 92,608
Claims priority, application Japan, Jul. 22, 1992, 4-195271
Int. Cl.[5] H04R *15/00*
U.S. Cl. 367—156 27 Claims



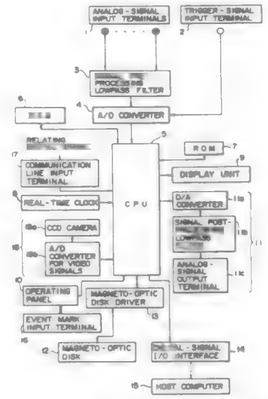
1. An underwater low-frequency sound producer using a rare earth alloy comprising:
(a) at least three vibrator units, each including a magneto-strictive rod formed of a rare-earth alloy, means for providing a magnetic bias to said rod, means for prestressing said rod, a coil magnetically coupled to said rod for causing magnetostriction of said rod corresponding to an input AC signal applied to said coil, and first and second masses on opposite ends of said rod;
(b) said vibrator units being arranged in such a manner that the first mass of each of said vibrator units is adjacent to the second mass of another of said vibrator units, each vibrator unit being so arranged that its rod extends substantially in the direction tangential to a circle centered on said axis;
(c) vibration plates, each provided for the first mass of each of said vibrator units and the second mass of another of said vibrator units;
(d) connection members, each connected to the first mass of each of the vibrator units and the second mass of another of said vibrator units;
(e) upper and lower plates and outer and inner boots defining a space which is centered on said axis and in which said vibrator units, said vibration plates and said connecting members are disposed; and
(f) a liquid filling said space, said liquid having an acoustic impedance similar to that of the water in which the sound producer is placed for use.

5,355,352
ELECTRONIC DEVICE DESIGNED TO PERMIT DETACHABLE ATTACHMENT OF AN EXTERNAL MEMORY DEVICE THERETO
Tunco Kobayashi, Tokyo; Kazunori Kita, Mizuhomachi, and Satomi Suzuki, Tachikawa, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
PCT No. PCT/JP92/00474, § 371 Date Dec. 17, 1992, § 102(e) Date Dec. 17, 1992, PCT Pub. No. WO92/20017, PCT Pub. Date Nov. 12, 1992
PCT Filed Apr. 15, 1992, Ser. No. 955,751
Claims priority, application Japan, Apr. 24, 1991, 3-122101; Jun. 24, 1991, 3-178848; Jun. 24, 1991, 3-178849
Int. Cl.[5] G04B *37/00*
U.S. Cl. 368—281 14 Claims



1. An electronic wrist watch device having means for permitting detachable installation of an external data storage medium, said electronic wrist watch having electronic circuitry means including a time-measuring section for measuring time and a display section for displaying the measured time, the electronic wrist watch further comprising:
a substantially disk-shaped external data storage medium for storing data, said external data storage medium having output terminals for outputting said stored data;
a wrist watch case having a substantially columnar retaining section formed at an upper portion of said wrist watch case for accommodating said external data storage medium therein;
a cover member attached to said wrist watch case for opening and closing said retaining section, and for holding said external data storage medium retained in said retaining section when said cover member is in a closed position to close said retaining section, said cover member comprising an optical display device at an upper surface of said cover member such that said optical display device is viewable by a user when said cover member is in said closed position;
said electronic circuitry means further including means, for measuring a current time and for outputting a first display signal for displaying the current time, and means for receiving data stored in said external data storage medium and for supplying a second display signal based on the received data; and
signal transfer means for supplying said first and second display signals output from said electronic circuitry means to said optical display device.

5,355,353
DATA RECORDING SYSTEM OF MAGNETO-OPTIC TYPE
Yu Kaiho, Tachikawa, Japan, assignor to Binet Co., Ltd., Japan
Filed May 20, 1992, Ser. No. 885,779
Claims priority, application Japan, Jun. 27, 1991, 3-183160
Int. Cl.[5] G11B *11/10*
U.S. Cl. 369—13 6 Claims



1. A data recording apparatus of a magneto-optic type, comprising:
control means for performing control of operation of each section for recording, reproducing and searching for data;
a program memory for storing a program for operating the control means;
an operating panel connected to the control means and provided with keys and buttons for entering data, designation and instructions;
a display unit connected to the control means and arranged to display an operation instruction, an operation status of the apparatus, an input monitor, a reproduction monitor and a search information monitor;
input terminals for entering analog signals of multiple channels;
A/D conversion means for converting the analog signals of multiple channels entered from the input terminal into digital signals in time series;
storage means playing a role as a first temporary storage buffer of analog-to-digital data during recording, as a second temporary storage buffer of digital-to-analog data during reproduction, and as an operation buffer for processing search conditions during a search;
a magneto-optic disk having a recording data section for storing analog signals digitized by the A/D conversion means and a condition data section as an index for the search in a particular sector;
a magneto-optic disk driver for writing and reading signals in and from the magneto-optic disk; and
D/A conversion means for converting signals read from the magneto-optic disk into analog signals.

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5,355,354

NON-OVERWRITABLE MAGNETOOPTICAL RECORDING APPARATUS USING EXCHANGE-COUPLED TWO-LAYERED MEDIUM WITH INTERFACE MAGNETIC WALL

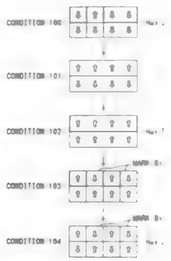
Hiroyuki Matsumoto, and Jun Saito, both of Tokyo, Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 712,743, Jun. 10, 1991, Pat. No. 5,235,569. This application Apr. 20, 1993, Ser. No. 48,178

Claims priority, application Japan, Jun. 13, 1990, 2-154288; Jun. 29, 1990, 2-172237

Int. Cl.[5] G11B *13/04*

U.S. Cl. 369—13 **12 Claims**



1. A non-overwritable magnetooptical recording apparatus comprising:

(a) a magnetooptical recording medium including at least first and second exchange-coupled layers having perpendicular magnetic anisotrophy, the second layer having a Curie temperature higher than a Curie temperature of the first layer, a direction of magnetization of the second layer being capable of being aligned in a predetermined direction by an external magnetic field at a room temperature without changing a direction of magnetization of the first layer, the magnetization of the second layer being aligned in said predetermined direction and the magnetization of the first layer being aligned in a direction such that an interface magnetic wall is present between the first and second layers in at least each recording portion of the medium;

(b) means for rotating said medium;

(c) an optical head which radiates a light beam to said medium; and

(d) modulation means which pulse-modulates intensity of the light beam from said optical head, in accordance with binary information to be recorded, between a first intensity level which imparts to a recording portion a temperature at least as high as the Curie temperature of said first layer and lower than the Curie temperature of said second layer and which thereby forms a mark having no interface magnetic wall between said first and second layers, and a second intensity level, including zero-level, which imparts to a recording portion a temperature lower than a lowest temperature at which said interface magnetic wall disappears, whereby said mark is not formed.

9. A non-overwritable magnetooptical recording apparatus comprising:

(a) a magnetooptical recording medium including at least first and second exchange-coupled layers having perpendicular magnetic anisotrophy, the second layer having a Curie temperature higher than a Curie temperature of the first layer, a direction of magnetization of said second layer being capable of being aligned in a predetermined direction by an external magnetic field at a room temperature without changing a direction of magnetization of said first layer;

(b) means for rotating said medium;

(c) external magnetic field applying means which, in at least each recording portion of said medium, aligns the direction of magnetization of said second layer in a direction opposite to the predetermined direction at the room temperature without changing the direction of magnetization of said first layer;

(d) means which radiates to said medium a non-modulated laser beam at a predetermined intensity level that imparts to each recording portion a temperature at least as high as the Curie temperature of said first layer and lower than the Curie temperature of said second layer and which causes disappearance of an interface magnetic wall which may be present between said first and second layers;

(e) external magnetic field applying means which, in at least each recording portion of said medium, aligns the direction of magnetization of said second layer in the predetermined direction at the room temperature without changing the direction of magnetization of said first layer and which forms an interface magnetic wall between said first and second layers in at least each recording portion;

(f) means which radiates a further light beam to said medium; and

(g) modulation means which pulse-modulates intensity of the further light beam, in accordance with binary information to be recorded, between a first intensity level which imparts to a recording portion a temperature at least as high as the Curie temperature of said first layer and lower than the Curie temperature of said second layer and which thereby forms a mark having no interface magnetic wall between said first and second layers, and a second intensity level, including zero-level, which imparts to a recording portion a temperature lower than a lowest temperature at which said interface magnetic wall between said first and second layers disappears, whereby said mark is not formed.

5,355,355

ELECTRONIC FILE APPARATUS CAPABLE OF STORING CODE DATA AND IMAGE DATA INTO OPTICAL MEMORY

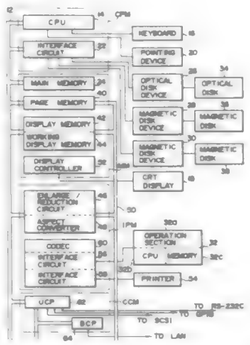
Ken Ohshima, Kawasaki, and Takenori Osanai, Ebina, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 607,625, Oct. 31, 1990, which is a continuation of Ser. No. 168,485, Mar. 15, 1988, abandoned. This application Dec. 23, 1991, Ser. No. 812,860

Claims priority, application Japan, Mar. 18, 1987, 62-63272; Mar. 18, 1987, 62-63273; Mar. 18, 1987, 62-63274

Int. Cl.[5] G11B *13/04*

U.S. Cl. 369—14 **18 Claims**



1. An apparatus for recording and reproducing data on and from an optical memory having regions for recording data by light only, comprising:

memory means for storing code data received from a magnetic recording medium and image data read from an optical device;

first processing means for outputting the code data and the image data from the memory means;

means for adding a first retrieval data to the code data output from the first processing means and for adding a second retrieval data to the image data output from the first processing means, said first retrieval data having a first identification data representing the code data and said second retrieval data having a second identification data representing the image data;

means for recording the first retrieval data added to the code data from the adding means on the optical memory and for recording the second retrieval data added to the image data from the adding means on the optical memory;

means for designating the first and second retrieval data; and

second processing means for retrieving the code data added to the first retrieval data and retrieving the image data added to the second retrieval data from the optical memory recorded by said recording means.

5,355,356

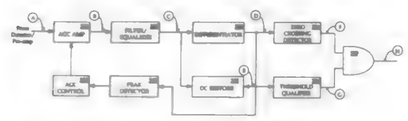
CHARGE PUMP FOR RESTORING DC IN AN OPTICAL RECORDING READ CHANNEL

Donald F. Johann, Palo Alto, and John E. DeFiore, Sunnyvale, both of Calif., assignors to Maxoptix Corporation, San Jose, Calif.

Filed May 19, 1993, Ser. No. 63,907

Int. Cl.[5] G11B *5/76, 5/09*; H04N *5/76*

U.S. Cl. 369—59 **17 Claims**



1. An optical recording system comprising:

a laser for emitting a beam used to write data onto an optical medium and to read data stored on said optical medium;

a lens for focusing said beam onto said optical medium;

a servo mechanism for controlling an actuator which positions said beam and said lens in order to perform a seek;

a detector for generating an electrical signal based on said data read from said optical medium;

a restoration circuit coupled to said detector for restoring said electrical signal to a pre-determined voltage level;

a qualifier for qualifying said signal according to a threshold voltage level, after said signal has been restored to said pre-determined voltage, wherein qualified pulses of said signal are considered to be valid;

a filter and an equalizer for filtering and equalizing said signal prior to said signal being restored;

a differentiator for generating a differential signal from said electrical signal;

a zero crossing detector for detecting zero crossings of said differential signal, said zero crossings representing peaks of said pulse;

an AND gate for generating a digital signal based on an AND operation performed on an output of said zero crossing detector and said qualifier;

a peak detector for detecting said peak voltage levels of said pulses;

a means for setting a reference voltage at said pre-determined voltage level;

an adjustment means for adjusting a charge on a capacitor in order to maintain the peaks of the pulse at said pre-determined voltage level, wherein said charge is decreased if said peak voltage levels are greater than said reference voltage level and said charge is increased if said peak voltage levels are less than said reference voltage level.

5,355,357

DISC PLAYER AND DISC LOADING DEVICE

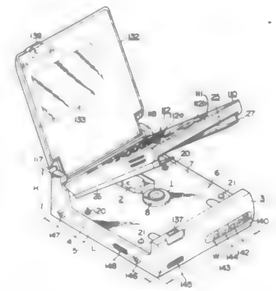
Eiji Yamamori, Tokyo, and Koji Takagi, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 639,247, Jan. 8, 1991. This application Mar. 27, 1992, Ser. No. 861,177

Claims priority, application Japan, Jan. 20, 1990, 2-11619

Int. Cl.[5] G11B *17/035*

U.S. Cl. 369—75.2 **57 Claims**



1. A disc player comprising:

a main body including disc rotating driving means for rotationally driving a disc and readout means for reading out information signals recorded on the disc rotationally driven by said disc rotating driving means;

a first cover having a disc clamping member mounted on one surface thereof;

a second cover including a display means on at least one surface thereof for displaying the read out information; and

mounting means for rotatably mounting said first and second covers on the main body so that said first and second covers are each movable between opened and closed positions, with the disc to be played being secured on the disc rotating driving means by the disc clamping member when the first cover is in the closed position and with the display means being exposed for viewing by a user when the second cover is in the opened position while the first cover is in the closed position.

5,355,358

DISC PLAYER WITH PUSH-AWAY DOOR FLAPS THAT CONTACT ONLY THE DISC EDGE

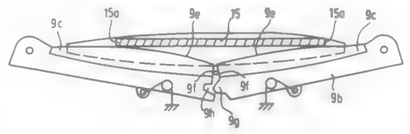
Maarten Van Alfen, Wetzlar, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 21, 1993, Ser. No. 65,714

Claims priority, application Fed. Rep. of Germany, May 26, 1992, 4217397

Int. Cl.[5] G11B *17/04*

U.S. Cl. 369—77.1 **18 Claims**



1. An electrical information apparatus for scanning a rotat-

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able information disc, having a disc surface and an information plane parallel to said surface,

said apparatus having an operating space into and out of which the disc is movable, parallel to said information plane, through a slot bounding the operating space towards the exterior and having a longitudinal direction and a slot edge; and movable shutter means for closing said slot,

characterized in that said shutter means are constructed as push-away segments which are movable perpendicularly to the plane of the disc and to the longitudinal direction of the slot, and have respective actuating edges, the slot edge and at least one of said actuating edges of the push-away segments being arranged and shaped in such a manner that, when the disc passes the push-away segments, only the area of the disc surface adjacent said disc edge comes into contact with the slot edge and the actuating edge of the push-away segments, during passage of the disc through said slot said push-away segments receding from other areas of said surface without contact with said other

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5,355,359

CARTRIDGE EJECTOR OF AN OPTICAL DISC PLAYER

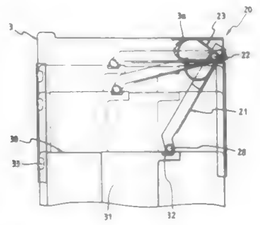
Jong-wan Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 20, 1993, Ser. No. 63,690

Claims priority, application Rep. of Korea, May 26, 1992, 92-9150

Int. Cl.[5] G11B *33/02*; E05F *1/08*

U.S. Cl. 369—77.2 **5 Claims**



1. A cartridge ejector of an optical disc player comprising a holder which receives and transports the cartridge, a lever which is rotatable about a hinge shaft disposed in the holder and of which has a free end which contacts with a shutter of the cartridge when the cartridge is received in the holder, elastic means for biasing the lever, said elastic means being a torsion spring comprising:

a coil portion having a predetermined number of coils;

first support portion extending from one end of said coil portion so as to come into contact with said cartridge holder:

second support portion extending from the other end of said coil portion so as to come into contact with said lever; and

third support portion extending form one of said second support portion wherein said third support portion comes into contact with said cartridge holder when said cartridge holder is in an inserted position and said third support portion is not in contact with said cartridge holder when said cartridge is in an ejected position.

5,355,360

SEMICONDUCTOR LASER CONTROLLING APPARATUS

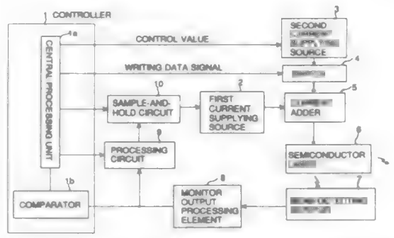
Hisanori Kawashima, Hachioji, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Mar. 17, 1993, Ser. No. 32,649

Claims priority, application Japan, Apr. 10, 1992, 4-090681

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—116 **3 Claims**



1. An apparatus for controlling a semiconductor laser generator to read, write, or erase an information signal on a recording medium, comprising:

means for generating a variable-strength laser beam to read, write, or erase the information signal on the recording medium;

a first means for supplying a first current to said generating means to read said information signal;

a second means for supplying a second current to said generating means to write or erase said information signal, and means for controlling said first and second supplying means, said controlling means including;

a) means for sampling a first value of said first current;

b) means for comparing said first value with a predetermined first reference value;

c) means for adjusting said first current according to a result of the comparison of said first value with said predetermined first reference value;

d) means for sampling a second value of said first current after said first current is adjusted by said adjusting means; and

e) means for holding said second value of said first current so that said controlling means controls said first supplying means to supply said first current at said second value to said generating means;

wherein said controlling means controls said second supplying means according to said second value of said first current so that said second supplying means supplies said second current to said generating means.

5,355,361

OPTICAL PICKUP APPARATUS FOR REPRODUCING SIGNALS RECORDED ON AN OPTICAL DISK

Takanori Maeda, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 1, 1992, Ser. No. 955,037

Claims priority, application Japan, Dec. 3, 1991, 3-319012

Int. Cl.[5] G11B *7/00*

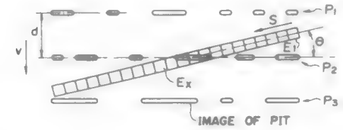
U.S. Cl. 369—120 **10 Claims**

1. An optical pickup apparatus for reproducing signals recorded on an optical disk having a signal track in which a plurality of signal pit strings are arranged in a circumferential direction of said optical disk, each of said signal pit strings including a plurality of signal pits arranged in a line in a radial direction of said optical disk, said optical disk being rotated at a speed v relative to said optical pickup apparatus, said optical pickup apparatus comprising:

means for projecting a light spot onto at least one signal pit string of said optical disk;

a lens for converging a reflected light from the signal pit string and for forming a linear image of the signal pit string at a magnification m; and

photodetector means having a plurality of photoelectric elements arranged in a line and located in an image forming position of said lens, for sequentially scanning, at a scanning speed s, the linear image by said photoelectric elements and for sequentially generating signals of the



photoelectric elements, said photoelectric elements being arranged at an angle θ with respect to the direction of said linear image, said angle θ being prescribed as follows:

$$\theta = \sin^{-1}(mv/s),$$

said photodetector means comprising a control means for starting to scan the linear image by said photoelectric elements when one end of the linear image crosses over one end of said photoelectric elements.

5,355,362

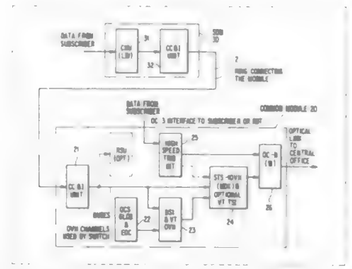
DIGITAL LOOP CARRIER SYSTEM

Steven S. Gorshe, Beaverton, Oreg., and Hitoshi Sato, Tokyo, Japan, assignors to NEC America, Inc., Melville, N.Y.

Filed Oct. 26, 1992, Ser. No. 966,335

Int. Cl.[5] H04J *3/12*; H04Q *11/04*

U.S. Cl. 370—16.1 **28 Claims**



1. A digital subscriber loop carrier system of a telecommunication network having a plurality of subscriber units comprising:

at least one service definition module, coupled to the subscriber units for interfacing said subscriber units to the system;

a common module, said common module comprising means for performing common functions of the system and means for transferring subscriber data between the system and a central location; and

interface means, including pulse coded modulation buses, for interconnecting said common module to said at least one service definition module and for transferring said subscriber data and common control data between said common module and said at least one service definition module via said pulse coded modulation buses based on a common pulse coded modulation frame format wherein said at least one service definition module comprises channel units for interfacing to the subscriber units, said channel units being operative to receive and transmit said subscriber data having data rate between DS0 and at least OC-1 rates; and a common control and interface unit coupled to said channel units and said interface means for transferring data to and from said common module.

5,355,363

VOICE TRANSMISSION METHOD AND APPARATUS IN DUPLEX RADIO SYSTEM

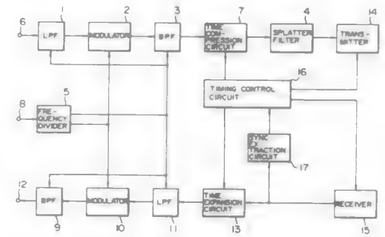
Katsumi Takahashi, Kodaira; Takashi Kurokawa, Hachioji; Nobuo Sekiguchi, Kodaira; Kazuo Suzuka, Sayama; Sakari Ohira, Sendai; Kiyoyuki Isawa, Kawasaki; Fujio Sumi, Tokyo, and Kenichi Suzuki, Yokohama, all of Japan, assignors to Hitachi Denshi Kabushiki Kaisha, Tokyo; Tohoki Electric Power Co., Inc., Sendai and Fuji-Tekku Kabushiki Kaisha, Tokyo, all of Japan

Filed Mar. 8, 1993, Ser. No. 27,479

Claims priority, application Japan, Mar. 9, 1992, 4-085020; Sep. 14, 1992, 4-269133

Int. Cl.[5] H04B *1/56*

U.S. Cl. 370—29 **10 Claims**



10. A voice transmission method in a duplex radio system having a transmitter and a receiver and using one carrier frequency in which a voice signal to be transmitted in a constant period of time is subjected to 1/N time compression, N being a numeral equal to or greater than 2.0, the time-compressed voice signal is supplied to said transmitter as a modulating signal, a transmitting operation is performed by said transmitter in synchronism with a period of time when said signal is inputted to said transmitter, a receiving operation of receiving a time-compressed and modulated signal transmitted from an external transmitter to demodulate it is performed by said receiver in a period of time other than said period of time when said transmitting operation is performed, a demodulated signal is subjected to N-ple time expansion to obtain a reproduced receive voice signal, and both said transmitting operation and said receiving operation are repeated at said constant period of time, the method comprising the steps of:

extracting with a predetermined bandwidth a predetermined band of a signal corresponding to said signal to be transmitted which is in a voice band; and

shifting the extracted signal to the predetermined band which is in said voice band and supplying a signal corresponding to the shifted signal to said transmitter as said signal to be modulated.

5,355,364

METHOD OF ROUTING ELECTRONIC MESSAGES

Bulent Abali, Danbury, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1992, Ser. No. 969,690

Int. Cl.[5] H04J *3/24*

U.S. Cl. 370—54 **28 Claims**

1. A method of sending an electronic message from a source station through a network of a plurality of switches and links to a destination station, said method comprising:

generating a series of one or more route signals, each route signal identifying an output port of a switch in the network of switches;

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compiling the series of route signals into an electronic message; and

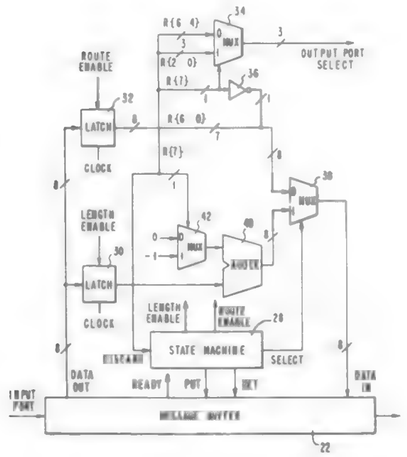
sequentially sending the message to each of a series of one or more switches, each switch reading a route signal in the message and sending the message to a component having an input port connected to an output port identified by the route signal;

characterized in that the step of generating the series of route signals comprises the steps of:

(a) storing in a location accessible to each said source station a weight w_o^m for each switch link connecting an output port of each of said switches to an input port of another of said switches, where m identifies the switch having an output port and o identifies the output port of that switch;

(b) identifying one or more candidate paths through the switch network starting at the source station and ending at initial candidate destinations, each initial candidate destination comprising a component having an input port directly connected to an output port of a switch having an input port directly connected to the source station;

(c) if one or more initial candidate destinations are the destination station, selecting a candidate path ending at the destination station, and generating in the source station a series of route signals corresponding to the selected candidate path, and changing the weight w_o^m of each switch link forming the candidate path; otherwise



(d) identifying one or more extended candidate paths through the switch network starting at the source station and ending at next candidate destinations, each next candidate destination comprising a component having an input port directly connected to an output port of an immediately preceding candidate destination, each extended candidate path having a path weight comprising the weights of switch links along the candidate path; and then

(e) if one or more candidate destinations are the destination station, selecting a candidate path ending at the destination station and having a path weight which is less than or equal to the path weight of each other candidate path ending at the destination station, and generating in the source station a series of route signals corresponding to the selected candidate path and changing the weight w_o^m of each switch link forming the candidate path; otherwise

(f) return to step (d).

5,355,365

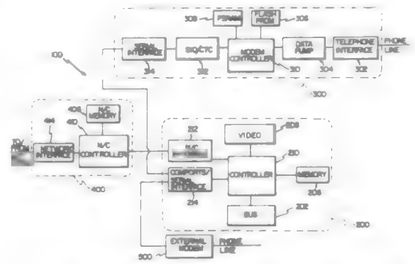
INTELLIGENT LOCAL AREA NETWORK MODEM NODE

Damodar Bhat, Bangalore, India; Hung S. Ngo, Spring Lake Park, Minn., and Narasimhan Sundarrajan, Bangalore, India, assignors to Multi-Tech Systems, Inc., Mounds View, Minn.

Filed Mar. 31, 1993, Ser. No. 40,931

Int. Cl.[5] H04L *12/28;* **H04J** *3/02*

U.S. Cl. 370—85.13 **3 Claims**



3. A method for sharing a modem resource between a plurality of nodes on a network and a plurality of remote computers, comprising the steps of:

(a) attaching a local area network server to an intelligent network modem node including a plurality of modems;

(b) communicating between the local area network server and the intelligent network modem node using a first level communications protocol;

(c) attaching the local area network server to a local computer using the first level communications protocol;

(d) communicating between the local computer and the intelligent network modem node using a second level communications protocol imbedded within the first level communications protocol;

(e) providing at least one modem flag, each corresponding to a different one of the plurality of modems;

(f) polling one of said modem flags to determine whether the corresponding modem is available;

(g) setting one of said modem flags when a connection between the corresponding modem and a remote computer or a network node is established;

(h) clearing one of said modem flags when a connection between the corresponding modem and a remote computer or a network node is terminated;

(i) engaging in a first communication protocol between the intelligent network modem node and at least one node on the network to establish, maintain and terminate a connection therebetween; and

(j) engaging in a second communication protocol between the intelligent network modem node and at least one remote computer to establish, maintain and terminate a connection therebetween.

5,355,366

TRAFFIC INTERMIXING MECHANISM FOR FAST CIRCUIT SWITCHING

Chung-Sheng Li, Ossining, and Christos J. Georgiou, White Plains, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 23, 1993, Ser. No. 51,968

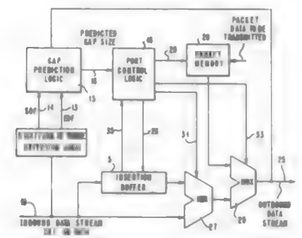
Int. Cl.[5] H04J *3/16*

U.S. Cl. 370—94.2 **8 Claims**

1. In a shared transmission medium, a method of transmitting packet data in gaps between the transmissions of circuit data comprising the following steps:

a. monitoring of each occurrence of said gaps appearing in between the circuit data transmitted on said shared transmission medium, and measuring the length of said gaps;

b. predicting a length of a next gap following said measured gaps in said circuit data, said predicted gap length of said next gap being a function of lengths of said measured gaps; and



c. transmitting a next frame of packet data when said predicted length of said next gap is larger than a length of said frame of packet data.

5,355,367

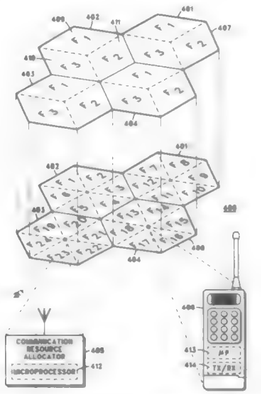
ONE CELL RE-USE PATTERN FOR COMMUNICATION SYSTEM SITES

Richard A. Comroe, Dundee; Aran Sobti, Wheaton, and John E. Major, Barrington, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 2, 1990, Ser. No. 459,624

Int. Cl.[5] H04B *7/00;* **H04Q** *7/00*

U.S. Cl. 370—95.1 **34 Claims**



34. A communication unit of a plurality of communication units that communicates within a communication system having a plurality of communication system sites and a communication resource allocator for allocating a first limited number of communication resources and at least some of a second limited number of communication resources among the plurality of communication units and wherein the first limited number of communication resources and the second limited number of communication resources are available for the plurality of communication system sites, and wherein each of at least some of the plurality of communication system sites consists of first communication region having a one cell re-use pattern of the first limited number of communication resources and a second communication region having a multi-cell re-use pattern of at least some of the second limited number of communication resources, the communication unit comprises:

processing means for processing redundant information when accessing a communication resource of the first limited number of communication resources, and for processing information when accessing a communication resource of the at least some of the second limited number of communication resources;

interference ratio means for determining an interference ratio; and

transceiving means, operably associated with the processing means and the interference ratio means, for transceiving the redundant information and the information, and for transmitting the interference ratio.

5,355,368

METHOD FOR ALLOCATING TIME SLOTS FOR TRANSMISSION IN A HALF-DUPLEX TIME DIVISION MULTIPLE ACCESS POINT-TO-MULTIPOINT BIDIRECTIONAL TRANSMISSION NETWORK

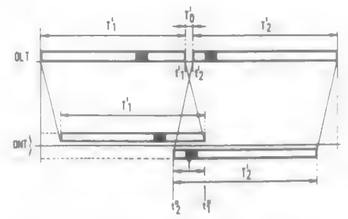
Pierre Dore, Levallois-Perret; Dany Sallaerts, Anvers; François Marcel, Orsay, and Serge Allaire, Beaumont le Roger, all of France, assignors to Alcatel CIT, Paris, France

Filed Jan. 29, 1993, Ser. No. 11,148

Claims priority, application European Pat. Off., Jan. 31, 1992, 92400264.5

Int. Cl.[5] H04B *7/212, 7/24*

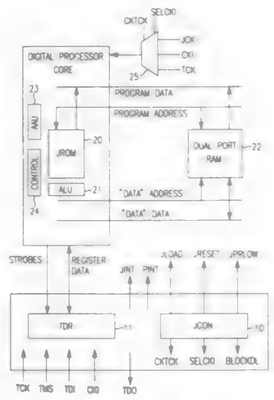
U.S. Cl. 370—95.3 **13 Claims**



1. Method of allocating time slots for transmission in a half-duplex time division multiple access point-to-multipoint bidirectional transmission system enabling transmission between a central station and a plurality of remote stations, at least one time slot being allocated to each remote station and to each transmission direction, the set of all time slots used for transmission from said central station to said remote stations being grouped into downward frames and the set of all time slots used for transmission from said remote stations to said central station being grouped together in upward frames, in which method the origin time of said upward frames is chosen in each remote station so that in said central station the origin time of said frames is separated from the end time of downward frames by a period less than twice the transmission time between said remote station and said central station, whereby there is defined in said remote station an overlap area between upward and downward frames, said time slots being allocated in such a way as to avoid any coincidence between time slots allocated to the same remote station in the upward and downward frames, respectively, in said overlap area.

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5,355,369
HIGH-SPEED INTEGRATED CIRCUIT TESTING WITH JTAG
Alan J. Greenberger, South Whitehall Township, Lehigh County, and Homayoon Sam, Wescosville, both of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Apr. 26, 1991, Ser. No. 692,337
Int. Cl.[5] H04B *17/00*
U.S. Cl. 371—22.3 **23 Claims**



1. An integrated circuit having input/output ports and comprising a programmable digital processor connected to a program memory having an address space;

and further comprising means for performing boundary-scan testing on the input/output ports of said integrated circuit, wherein said means comprises a finite state machine controller connected to an instruction register that is connected to an instruction decoder, a serial test input port, and a serial test output port coupled to said instruction register;

wherein said integrated circuit further comprises:

a test data register (TDR) connected to said finite state machine controller and said instruction decoder, and having n-bit locations for serially receiving a test program through said serial test input port, and for transferring said test program in parallel n-bit words into said program memory via said digital processor;

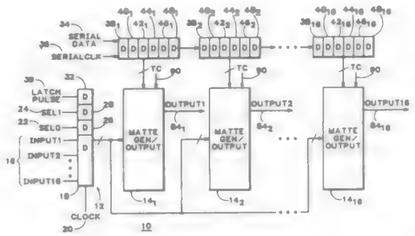
and a test control register (JCON) connected to said finite state machine and said instruction decoder for initiating downloading and execution of said test program in order to produce test results;

and wherein the test results of said test program are transferred via said programmable digital processor into said test data register for serial transfer through said serial test output port.

5,355,370
CROSSPOINT MATRIX
Jon A. Fairhurst, and Jay S. Baker, both of Grass Valley, Calif., assignors to The Grass Valley Group, Inc., Nevada City, Calif.
Filed Jul. 2, 1992, Ser. No. 909,108
Int. Cl.[5] H04Q *11/04*
U.S. Cl. 370—58.1 **10 Claims**

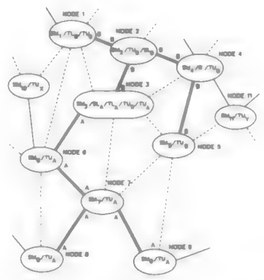
6. A method of operating a crosspoint matrix having a plurality of input lines and a plurality of output lines comprising the steps of:

providing a first mode wherein stored values are employed as selection data to transfer input data from one of the input lines to one of the output lines as output data; and



providing a second mode wherein one of said stored values is transferred as the input data to the one output line as the output data.

5,355,371
MULTICAST COMMUNICATION TREE CREATION AND CONTROL METHOD AND APPARATUS
Joshua S. Auerbach, Ridgefield, Conn.; Chee-Seng Chow, Ossining, N.Y.; John E. Drake, Jr., Pittsboro, N.C.; Prabandham M. Gopal, Wayne, N.J.; Elizabeth A. Hervatic, Apex, N.C.; Marc A. Kaplan, Katonah, N.Y.; Marcia L. Peters, Pittsboro, N.C., and Michael J. Ward, New Haven, Conn., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Jun. 18, 1982, Ser. No. 900,628
Int. Cl.[5] H04L *12/46, 12/44, 12/56*
U.S. Cl. 370—60 **19 Claims**



1. A communications network having a plurality of nodes interconnected to one another by communications links, via which links messages are sent and delivered to communications network users located at said nodes, said network being organized for communications among members of defined subsets of said network users included in at least one Distribution tree, wherein each of said nodes comprises

means for operating as a Distribution Tree Leader for each subset, said Distribution Tree Leader means including first means for generating a Distribution tree address; and

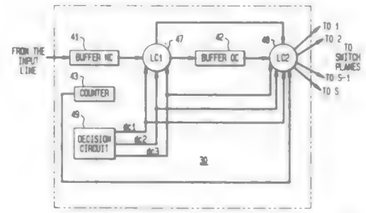
second means receiving said Distribution tree address for generating a Distribution tree address correlation index and means for combining said index with said Distribution tree address to, uniquely identify said Distribution tree at all other said nodes having members of said subset included by said Distribution Tree Leader in said Distribution tree; and

third means for generating and sending via said communications links, to all other said nodes having members served by said Distribution tree, a Distribution tree creation request message; and

fourth means at all others of said nodes for receiving Distribution tree creation request messages and, responsive thereto, for generating and sending over said communications links a reply message indicating to said node sending said Distribution tree creation request message whether said Distribution tree address is currently in use at each said other node and said reply message also containing an indication of what Distribution tree, addresses are currently available for use at said node; and

fifth means responsive to received replies from all other said nodes for enabling the distribution of messages to all other said nodes included in said Distribution tree using an address not in conflict with any of said received replies.

5,355,372
THRESHOLD-BASED LOAD BALANCING IN ATM SWITCHES WITH PARALLEL SWITCH PLANES RELATED APPLICATIONS
Bhaskar Sengupta, Princeton Junction, N.J., and Shyamal Chowdhury, Durham, N.C., assignors to NEC USA, Inc., Princeton, N.J.
Continuation-in-part of Ser. No. 931,847, Aug. 19, 1992, abandoned. This application Aug. 17, 1993, Ser. No. 107,542
Int. Cl.[5] H04L *12/50, 12/54*
U.S. Cl. 370—60.1 **8 Claims**



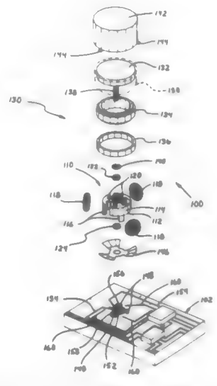
7. In an asynchronous transfer mode switching system that has an output buffer architecture and that has a plurality of incoming lines and a plurality of outgoing lines, each for a different destination, between which are included a plurally of switching elements each of which includes a separate output buffer supplying an outgoing line associated with a particular destination,

a plurality of distributor means, a separate one being associated with each separate incoming line and comprising a first and a second storage means, each of at least one cell size, the first storage means being connected to an incoming line for receiving and storing temporarily signal cells supplied by said line, and being adapted for transferring said received signal cells selectively either to the second storage means or to a switching element,

load matrix means for storing the load status of each load buffer in the switching elements, and

decision making means supplied with the load status of the load buffers for selecting whether cells in the first storage means are transferred to a switching element or to the second storage means and for determining when cells in the second storage means are transferred to switching elements.

5,355,373
ELECTRIC MOTOR, CONTROLLER THEREFOR AND METHODS FOR CONTROLLING AND ASSEMBLING SAME
Michael E. Salmon, Spartanburg, S.C.; David L. Ehle, Attica, and Jeffrey G. Hovis, Lapeer, Mich., assignors to Nu-Tech and Engineering, Inc., Lapeer, Mich.
PCT No. PCT/US92/03907, § 371 Date Jul. 6, 1992, § 102(e) Date Jul. 6, 1992
Continuation-in-part of Ser. No. 696,014, May 9, 1991. This PCT application May 11, 1992, Ser. No. 910,107
Int. Cl.[5] H01F *7/08;* **H02K** *21/12*
U.S. Cl. 310—71 **21 Claims**



1. An electric motor for rotating a load to a desired angular position in response to a sensor signal comprising:

a stator assembly including a stator having a plurality of lobes, the stator including at least one coil wound about at least one of the plurality of lobes, each coil having a pair of input leads;

a rotor assembly including a magnet having a plurality of poles, the magnet being magnetized according to a magnet flux profile having an amplitude which varies substantially sinusoidally with angular position, the magnet adapted to be coupled to the load and rotatably positioned relative to the stator assembly; and

means for electrically connecting the leads of the at least one coil to form an input terminal, the rotor assembly rotating relative to the stator assembly in response to a substantially continuously variable electrical signal applied to the input terminal to angularly position the rotor assembly to any one of a plurality of positions independent of stator geometry, the angular position of the load varying generally linearly with the sensor signal.

5,355,374
COMMUNICATION NETWORK WITH DIVISIBLE AUXILIARY CHANNEL ALLOCATION
Phillip Hester, Indian Harbour Beach; William Highsmith; Don McDaniel, both of Indialantic, all of Fla., and Alan Lusk, Dallas, Tex., assignors to Scientific-Atlanta, Inc., Atlanta, Ga.
Division of Ser. No. 880,209, May 8, 1992, abandoned. This application Dec. 14, 1993, Ser. No. 165,830
Int. Cl.[5] H04J *3/22*
U.S. Cl. 370—84 **9 Claims**

1. A communication network having a master and a plurality of remotes, said remotes supporting a plurality of co-services, the network comprising:

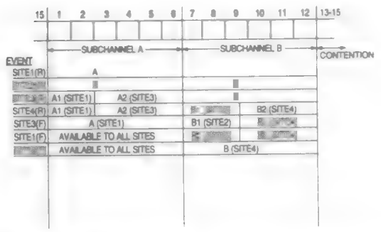
means for sharing access to a slotted frequency among the remotes;

means for detecting a need by a remote for an extraordinary

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amount of bandwidth, said remote being a demanding remote;

means for allocating, to a demanding remote, at least one reserved set of slots corresponding to at least one initial subchannel of said slotted frequency in response to the detection of a need for extraordinary bandwidth for that remote;



means for dividing the initial subchannel into separate secondary subchannels and assigning different secondary subchannels to a plurality of different demanding remotes;

means for recombining the secondary subchannels which have been divided when the need for extraordinary bandwidth for one of the demanding remotes using one of the divided secondary subchannels has ended.

5,355,375

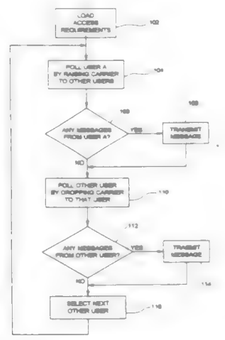
HUB CONTROLLER FOR PROVIDING DETERMINISTIC ACCESS TO CSMA LOCAL AREA NETWORK

Gary S. Christensen, North Oaks, Minn., assignor to Network Systems Corporation, Minneapolis, Minn.

Filed Mar. 18, 1993, Ser. No. 33,125

Int. Cl.[5] H04J *3/16*; H04Q *9/00*

U.S. Cl. 370—85.2 **17 Claims**



11. A method for selectively controlling access to a hub controller that interconnects a plurality of user nodes operating on a carrier-sense-multiple-access (CSMA) protocol local area network (LAN) having a plurality of user nodes each of which inhibit transmission of messages from the user node when the user node senses a carrier signal in accordance with the CSMA protocol to a common internal bus within the hub controller, the hub controller including a computer processor, the method comprising the computer-implemented steps of:

selectively inhibiting transmission of any messages in accordance with the CSMA protocol from selected user nodes according to a preselected deterministic contention algorithm by selectively generating a pseudo carrier control signal that simulates the carrier signal to each of the selected user nodes to prevent those user nodes from initiating transmission of any messages in accordance with the CSMA protocol; and

selectively allowing transmission of messages in accordance with the CSMA protocol from selected user nodes according to the preselected deterministic contention algorithm by selectively not generating the pseudo carrier control signal to each of the selected user nodes,

such that the computer processor implements the deterministic contention algorithm without any modifications to the CSMA protocol as implemented within the user nodes.

5,355,376

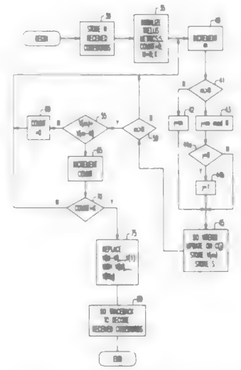
CIRCULAR VITERBI DECODER

Richard V. Cox, New Providence, and Carl-Erik W. Sundberg, Chatham, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 11, 1993, Ser. No. 16,362

Int. Cl.[5] G06F *11/10*

U.S. Cl. 371—43 **9 Claims**



1. A method of operating a receiver to decode N received branchword signals, c(j), $1 \leqq j \leqq N$, the method comprising the steps of:

a. storing the received branchword signals in memory such that said signals are accessible in a logically circular sequence;

b. performing Viterbi updates on a logically circular sequence of branchwords, the sequence comprising more than N branchwords, the Viterbi updates generating a set of decision vectors;

c. stopping the performance of said Viterbi updates responsive to an indication that Viterbi update decisions have become repetitive;

d. modifying the set of generated decision vectors responsive to said indication; and

e. generating a decoded signal by performing a Viterbi traceback procedure using the modified set of decision vectors.

5,355,377

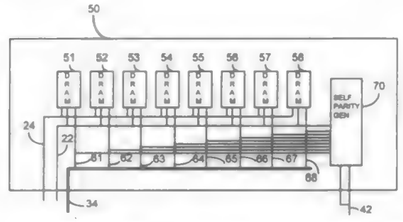
AUTO-SELECTABLE SELF-PARITY GENERATOR

Arockiyaswamy Venkidu, Milpitas; Larry Jones, Palo Alto, and Nick Antonopoulos, San Jose, all of Calif., assignors to Tetra Assoc. Inc., San Jose and OnSpec Electronic Inc., Santa Clara, both of Calif.

Filed Nov. 23, 1993, Ser. No. 156,075

Int. Cl.[5] G06F *11/10*; H03M *13/00*

U.S. Cl. 371—51.1 **17 Claims**



1. A memory module for installation on a printed circuit mother board, the printed circuit mother board providing an external parity checker, the memory module comprising:

data memory chips for storing digital data in a plurality of locations within the data memory chips, having data inputs and outputs, control inputs and address inputs;

a parity generator, responsive to the data outputs, for calculating parity of the digital data;

a substrate, the substrate being an epoxy-glass printed circuit board substrate, having a length and width adequate for mounting thereon the data memory chips and the parity generator, and for interconnecting the control inputs and address inputs, and for interconnecting the data outputs from the data memory chips to the parity generator;

terminals on the substrate for providing access to the data inputs and outputs, control inputs and address inputs to enable reading and writing of digital data into and out of the data memory chips;

a parity output terminal on the substrate for outputting the parity calculated by the parity generator, for transmission to the external parity checker;

a parity input terminal on the substrate, interconnected to the parity generator, for inputting externally generated parity during writing to locations in the data memory chips;

parity type determining means, coupled to the parity input terminal and the parity generator, for determining a type of parity required by the external parity checker;

storage means, coupled to parity determining means, to store the type of parity required by the external parity checker; and

inverting means, responsive to the storage means, for inverting the parity calculated by the parity generator;

whereby even or odd parity information will be outputted by the memory module depending upon the type of parity required by the external parity checker.

5,355,378

PREDICTIVE CODING DEVICE CAPABLE OF CODING IMAGE DATA SIGNALS WITHOUT A DISCONTINUITY AMONG BLOCKS

Mutsumi Ohta, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jan. 31, 1992, Ser. No. 829,770

Claims priority, application Japan, Jan. 31, 1991, 3-031504

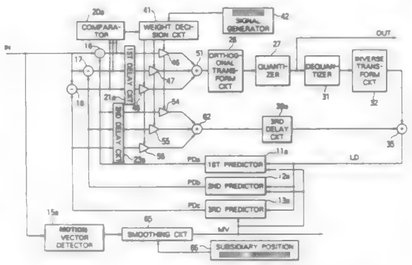
Int. Cl.[5] G06F *11/10*

U.S. Cl. 371—53 **6 Claims**

4. A predictive coding device for predictively coding, by motion-compensated prediction, a sequence of image data signals to produce a sequence of coded output signals representative of results of the predictive coding together with an output motion vector signal, said image data signal sequence being representative of picture elements divided into a plurality of blocks each of which includes a plurality of the picture elements and which is partitioned by boundaries between each of the blocks and an adjacent one of said blocks, said predictive coding device comprising:

detecting means supplied with said image data signal sequence for successively detecting a motion vector information signal representative of a motion vector of each of said blocks;

generating means for successively generating location signals representative of locations of the picture elements in each of said blocks and said adjacent one of the blocks;



smoothing means supplied with said motion vector information signal and said location signals for smoothing said motion vector information signal along said boundaries on the basis of said location signals to produce a smoothed motion vector signal at every one of said picture elements;

prediction signal generating means responsive to said smoothed motion vector signal and each of said image data signals for generating each of said coded output signals;

means for producing said smoothed motion vector signal as said output motion vector signal.

5,355,379

ERROR PROTECTION FOR VLC CODED DATA

Warren J. Hobson, Winchester, and Martin P. Gold, Eastleigh, both of England, assignors to National Transcommunications Limited, Winchester, England

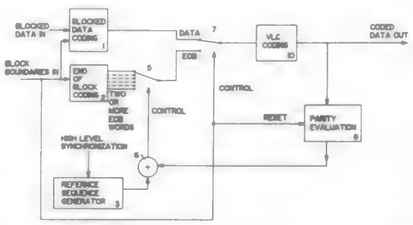
PCT No. PCT/GB91/01164, § 371 Date Jan. 7, 1993, § 102(e) Date Jan. 7, 1993, PCT Pub. No. WO92/01252, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 12, 1991, Ser. No. 961,910

Claims priority, application United Kingdom, Jul. 13, 1990, 9015426

Int. Cl.[5] G06F *11/00*; H04L *1/00*

U.S. Cl. 371—54 **39 Claims**



1. Method for error protecting a digital bitstream, the digital

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bitstream comprising a plurality of variable length codewords (VLC), coding blocks of digital data, said blocks of data being delimited by end-of-block words (EOB), the method comprising:

generating bits of a reference pattern;

modulating respective (EOB) by single, or small groups of, bits of the reference pattern, said single, or small groups of, reference pattern bits comprising only a portion of the reference pattern;

the step of conditioning the single, or small group of, reference pattern bits modulating an (EOB) such that the conditioned bit, or bits, carry information relating to the VLC code words coding a corresponding data block; and

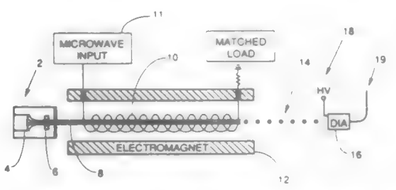
wherein there are a plurality of available (EOB) and said step of modulating selects one of the available EOB words for use based on the value of the respective conditioned reference pattern bit, or bits.

5,355,380

COMPACT MILLIMETER WAVE SOURCE

Shiow-Hwa Lin, 5436 Dalen Ave., San Diego, Calif. 92122, and Lawrence H. Sverorup, Jr., 12617 Mustange Dr., Poway, Calif. 92604

Filed Dec. 23, 1992, Ser. No. 995,718
Int. Cl.[5] H01S *3/30*
U.S. Cl. 372—5 **3 Claims**



1. A millimeter wave device for producing a high power millimeter waves comprising:

(a) a high voltage source,

(b) a millimeter wave output means for transmitting the high power millimeter waves,

(c) a diamond switch electrically connecting said high voltage source to said millimeter output means, and

(d) a pulsed electron beam means for illuminating said diamond switch with a pulsed electron beam of more than 1 billion electron pulses per second, the frequency of said pulsed electron beam defining a pulsed beam frequency, said pulsed electron beam means comprising:

(i) an electron beam means for producing an electron beam and

(ii) a bunching means for bunching said electron beam to create said pulsed electron beam:

said millimeter waves being generated by the opening and closing of said diamond switch by said pulsed electron beam at a frequency equal to said pulsed beam frequency.

5,355,381

SELF-HETERODYNE OPTICAL FIBER COMMUNICATIONS SYSTEM

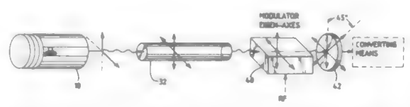
Pedram Leilabady, Lisle, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Dec. 3, 1992, Ser. No. 985,821
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—28 **30 Claims**

17. A fiber optic communications link, comprising:

a) a diode pumped solid state laser having a laser light output characterized by two spatially superimposed and orthogonal linearly polarized modes at two closely separated frequencies;

b) a modulator that receives said laser light and that is driven by a radio frequency information signal such that said modulator produces a beat frequency output that is a function of the sum of said two closely separated frequencies;



c) convening means, receiving said output of said modulator, for converting said beat frequency output to a signal that is representative of said radio frequency information signal by mixing said beat frequency output with another frequency; and

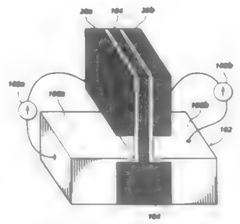
d) an optical fiber for connecting said modulator to said laser and to said convening means.

5,355,382

COMPOSITE LASER ARRAY SUPPORT

Gregory J. Kovacs, Sunnyvale; Harlan F. Chung, Castro Valley; G. A. Neville Connell, Cupertino; R. Donald Yingling, Jr., late of San Francisco by David Williamson, executor ; Rose M. Donaldson, Santa Clara, and Thomas L. Paoli, Los Altos, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 22, 1993, Ser. No. 156,229
Int. Cl.[5] H01S *3/04, 3/19*
U.S. Cl. 372—36 **20 Claims**



1. A laser array comprising:

a composite support comprised of an electrically conductive high thermal diffusivity region that includes at least two mounting surfaces, and of a low thermal diffusivity region that is at least partially disposed between said mounting surfaces; and

at least two lasing elements, each mounted on an associated one of said mounting surfaces such that the separation between said lasing elements is controlled by the thicknesses of said high thermal diffusivity region and by the thickness of the portion of said low thermal diffusivity region that is disposed between said mounting surfaces, said lasing elements being in electrical and thermal contact with their associated mounting surfaces;

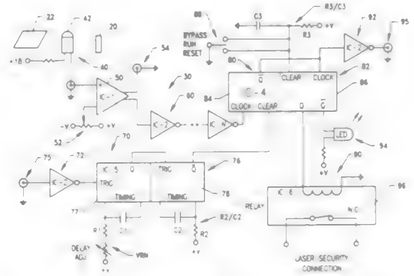
wherein said low thermal diffusivity region impedes heat flow between said lasing elements when at least one of said lasing elements emits light, and wherein said high thermal diffusivity region conducts heat generated in said light emitting lasing element away from said light emitting lasing element.

5,355,383

METHOD AND APPARATUS FOR DETECTION AND CONTROL OF PRELASING IN A Q-SWITCHED LASER

George E. Lockard, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 3, 1992, Ser. No. 988,082
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—38 **9 Claims**



1. An apparatus for controlling prelasing in a resonating cavity of a laser comprising a lasing medium located between a reflecting endplate and a partially transparent-partially reflective endplate and a Q-switch located between the lasing medium and the partially transparent-partially reflective endplate, the Q-switch blocking an optical path from the lasing medium to the partially transparent-partially reflective endplate until the lasing medium is excited to a predetermined level and the Q-switch opens in response to a predetermined Q-switch trigger signal, the prelasing control apparatus comprising:

a detector for detecting the presence of light beyond the Q-switch, said detector converting an optical signal of any light present to an electrical signal;

a comparison stage circuit for comparing this detected electrical signal to an established threshold signal value indicative of prelasing, wherein said comparison stage circuit generates a trigger signal if the detected signal exceeds the established threshold signal value; and

a control stage circuit which receives the trigger signal from said comparison stage and the Q-switch signal, said control stage terminating operation of the laser when the trigger signal from said comparison stage is received before the Q-switch signal is being received.

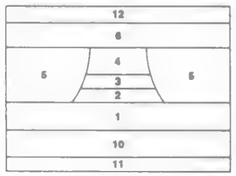
5,355,384

SEMICONDUCTOR LASER ELEMENT

Yuichi Inoue, Tsukuba; Kenji Shimoyama, Tsuchiura; Itaru Sakamoto, Tsuchiura, and Hideki Goto, Tsuchiura, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Sep. 29, 1993, Ser. No. 128,579
Claims priority, application Japan, Sep. 29, 1992, 4-260321
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—46 **12 Claims**

1. A semiconductor laser element comprising a first cladding layer, an optical guiding layer, an active layer and a second cladding layer disposed in this order or in reverse order on a semiconductor substrate, a refractive index of the optical guiding layer being larger than both refractive indexes of the first and second cladding layers, and a refractive index of the optical guiding layer is smaller than that of the active layer but larger than that of the first cladding layer, and a burying layer having a refractive index smaller than that of at least one of the first and second cladding layers being disposed on side faces



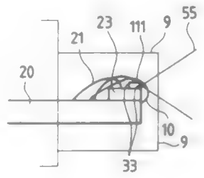
other than laser-emitting faces of the optical guiding layer and the active layer.

5,355,385

LASER DIODE DEVICE HAVING A PROTECTIVE LAYER ON ITS LIGHT-EMITTING END FACE

Akira Amano; Yoichi Shindo; Nobutaka Suganuma, and Katsue Nakata, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Nov. 6, 1991, Ser. No. 788,601
Claims priority, application Japan, Nov. 7, 1990, 2-302258
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—49 **15 Claims**



1. A laser diode device comprising:

a laser diode chip encapsulated with a resin, the laser diode chip having at least one light-emitting end face; and

an end-face-breakage preventing layer made of an organic resin and disposed on the light-emitting end face, the end-face-breakage preventing layer having a thickness of at least 5 μm, and the organic resin having a low coefficient of light absorption in a wavelength operation region of the laser diode and a dissociation energy of at least 90 kcal/mol, the dissociation energy of the organic resin being greater than a dissociation energy of the encapsulating resin.

5,355,386

MONOLITHICALLY INTEGRATED SEMICONDUCTOR STRUCTURE AND METHOD OF FABRICATING SUCH STRUCTURE

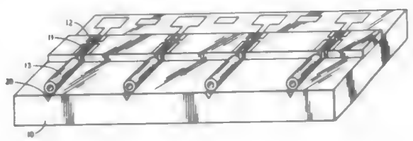
Mark A. Rothman, Acton, Mass.; Chan-Long Shieh, Paradise Valley, Ariz.; Craig A. Armiento, Acton, Mass.; John A. Thompson, Bedford, Mass., and Alfred J. Negri, Waltham, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 17, 1992, Ser. No. 977,596
Int. Cl.[5] G02B *6/30*; H01S *3/25*
U.S. Cl. 372—50 **9 Claims**

1. A monolithically integrated semiconductor structure, comprising:

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a fiber-receiving channel;
an optical detection region; and



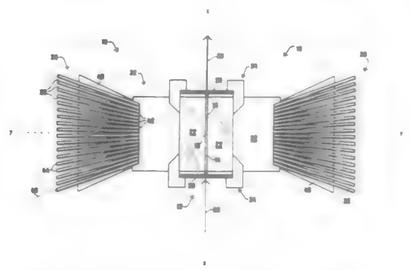
a lasing region interposed between and in optical communication with said fiber-receiving channel and said optical detection region.

5,355,387

INTERFACE MODULE FOR TRANSVERSE ENERGY INPUT TO DYE LASER MODULES

Ronald E. English, Jr., and Steve A. Johnson, both of Tracy, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 915,796, Jul. 14, 1992, abandoned. This application Feb. 10, 1994, Ser. No. 194,786
Int. Cl.[5] H01S *3/20*
U.S. Cl. 372—54 **20 Claims**



1. An interface module for use in inputting transverse electromagnetic beam energy to a dye laser component having excitable dye molecules situated within a lasing zone therein, comprising:

a plurality of optical fibers, each of said fibers having a proximal and a distal end, said proximal end of each of said fibers disposed proximate to a lasing zone of a dye laser component each of said fibers having an associated energy beam source for generating energy suitable for pumping dye molecules of said dye laser component situated proximate to said distal end such that said energy generated by said energy beam source is delivered by each of said fibers in substantially the form of a coherent beam from said proximal end of each said fibers in a direction substantially transverse to said lasing zone; and

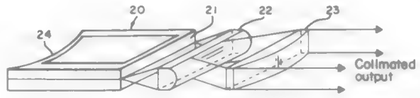
a plurality of optical shaping elements, said optical shaping elements formed into an optical element array, said optical shaping elements working in conjunction with each other to direct said energy delivered by each of said optical fibers into an elongated broad beam, a portion of said broad beam forming an illumination bar, said illumination bar having a substantially uniform intensity over a zone in the shape of a rectangular solid, said optical element array being positioned and configured such that said illumination bar coincides with said lasing zone of said dye laser component.

5,355,388

ABERRATION CORRECTION OF UNSTABLE RESONATORS

Robert J. Lang, Pleasanton, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 22, 1993, Ser. No. 20,813
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—99 **4 Claims**



1. An aberration-corrected unstable resonator comprising a resonant cavity between two reflectors in which aberrations of an output beam are corrected by the construction of a predefined end reflector opposite an output reflector of said resonator cavity with a shape that will yield such an arbitrary mode pattern outside said resonator cavity, or equivalently an arbitrary mode pattern inside said cavity, in which aberration in said output beam is eliminated, or in the alternative is purposely introduced and tailored to correct for known aberrations introduced by refraction of rays exiting said output reflector or by subsequent optics outside said unstable resonator cavity, thereby providing said output beam with tailored aberration correction by constructing said end reflector with said shape whereby aberration which would otherwise have been introduced by said output reflector is eliminated or aberration otherwise introduced outside said resonator cavity is corrected,

wherein said shape of said output reflector is specified parametrically for a desired mode to be the locus of positions defined in a two-dimensional coordinate system of perpendicular axes x and y by ordered pairs of coordinates $x_l(z)$, $y_l(z)$, where x_l and y_l are known functions of a parameter z, and the mode pattern of said output reflector in said resonator cavity is specified by an angle $\phi_l(z)$ of its rays with respect to said x axis, and

the shape of said end reflector opposite said output reflector is chosen to have the following parametric representation

$$\theta_r(z_0,z_1)=\theta_l(z_1)+\tfrac{1}{2}[\phi_r(z_1)-\phi_r(z_0)]$$

so that a ray outside of said resonator cavity exiting said output reflector is reflected by said opposite end reflector at a position $x_r(z),y_r(z)$ for some different parameter z_1 which position of said output reflector is a fixed function of both z_0 and said coordinates $x_r(z_0),y_r(z_0)$, where the subscripts l and r for said coordinates x and y, and said angle ϕ designate parameters of said output reflector and said opposite end reflector, respectively, whereby, upon treating the coordinates x_r and y_r as functions of both z_0 and z_1, where the subscripts 0 and 1 for the parameter z designate parameters for a reflected ray leaving said output reflector and an exiting ray respectively, and deriving a condition that gives the aberration correction functional form $z(z_0)$, the coordinates x_r and y_r are determined from said known coordinates $x_l(z),y_l(z)$ of the output reflector and the known angle $\phi_l(z)$ of its rays that define the resonator mode by the following equations

$$\tan\theta_l(z_0) = \frac{\frac{dx_l(z_0)}{dz_0}}{\frac{dy_l(z_0)}{dz_0}},$$

-continued

$$\tan\theta_r(z_0, z_1) = \frac{\frac{dx_r(z_0, z_1)}{dz_0}}{\frac{dy_r(z_0, z_1)}{dz_0}},$$

$$\tan\theta_r(z_0, z_1) = \frac{\frac{dx_r(z_0, z_1)}{dz_0}}{\frac{dy_r(z_0, z_1)}{dz_0}},$$

for said output reflector and said opposite end reflector, respectively, where θ and θ_r are angles of inclination with respect to said y axis, $x_1(z_0)$ and $y_1(z_0)$ are known, and x_r and y_r depend upon z_0 and z_1, whereby total derivatives in terms of partial derivatives are given by

$$\tan\theta_r(z_0, z_1) = \frac{\frac{\partial x_r(z_0, z_1)}{\partial z_0} + \frac{\partial x_r(z_0, z_1)}{\partial z_1}\frac{dz_1(z_0)}{dz_0}}{\frac{\partial y_r(z_0, z_1)}{\partial z_0} + \frac{\partial y_r(z_0, z_1)}{\partial z_1}\frac{\partial z_1(z_0)}{dz_0}}$$

and the angles θ of inclination of said output reflector and said opposite end reflector and angles ϕ of the rays reflected by said output reflector and said opposite end reflector are related by the following equations:

$$\phi_r(z_0, z_1) = 2\theta_1(z_1) + \phi_1(z_1),$$

$$\phi_r(z_0, z_1) = 2\theta_r(z_0, z_1) + \phi_1(z_0),$$

$$\tan\theta_1(z_0) = \frac{y_r(z_0, z_1) - y_1(z_0)}{x_r(z_0, z_1) - x_1(z_0)},$$

$$\tan\theta_r(z_0, z_1) = \frac{y_1(z_1) - y_r(z_0, z_1)}{x_r(z_0, z_1) - x_1(z_1)}$$

for rays leaving said output reflector (ϕ_1, θ_1) and rays leaving said opposite end reflector (ϕ_r, θ_r), and upon solving the derivative of variable z_1 in the fourth equation set forth above to construct a differential equation for said variable z_1, thus

$$\frac{dz_1(z_0)}{dz_0} = \frac{\frac{\partial x_r(z_0, z_1)}{\partial z_0} - \frac{\partial y_r(z_0, z_1)}{\partial z_0}\tan\theta_r(z_0, z_1)}{\frac{\partial x_r(z_0, z_1)}{\partial z_1} - \frac{\partial y_r(z_0, z_1)}{\partial z_1}\tan\theta_r(z_0, z_1)}$$

to specify a function $z_1(z_0)$ to solve for $\theta_r(z_0,z_1)$ simultaneous equations for reflection at the left mirror

$$\phi_r(z_0,z_1)=2\theta_r(z_1)+\phi_r(z_1)$$

and for reflection at the right mirror,

$$\phi_r(z_0,z_1)=2\theta_r(z_0,z_1)+\phi_r(z_0)$$

to yield

$$\theta_r(z_0,z_1)=\theta_1(z_1)+\tfrac{1}{2}[\phi_r(z_1)-\phi_r(z_0)]$$

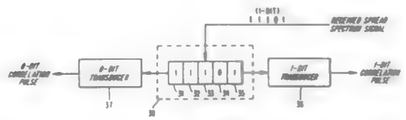
which defines the shape of said opposite end reflector required to correct for aberration of said unstable resonator.

5,355,389

RECIPROCAL MODE SAW CORRELATOR METHOD AND APPARATUS

George D. O'Clock, Mankato, Minn., and Jeffrey S. Vanderpool, Colorado Springs, Colo., assignors to Omnipoint Corporation, Colarado Springs, Colo.

Filed Jan. 13, 1993, Ser. No. 4,071
The portion of the term of this patent subsequent to Jan. 14, 2009, has been disclaimed.
Int. Cl.[5] H04L *27/06*; **G06F** *15/336*
U.S. Cl. 375—1 **1 Claim**



1. A correlator for decoding a spread-spectrum signal having a data signal modulated with a plurality of chip sequences and reciprocal-chip sequences, comprising

a tapped-delay-line having a plurality of taps defining a tapped-delay-line structure matched to the chip sequence, responsive to a plurality of first chips and second chips embedded in the spread-spectrum signal, and capable of generating a plurality of first chip sequences and a plurality of second chip sequences, said second chip sequences being reciprocal forms of said first chip sequences, respectively;

a first transducer, responsive to the spread-spectrum signal modulated by the chip sequence, capable of correlating a first group of the plurality of first chip sequences and second chip sequences generated by said tapped-delay-line and capable of outputting a first correlation pulse;

a second transducer, responsive to the spread-spectrum signal modulated by the reciprocal-chip sequence, capable of correlating a second group of the plurality of first chip sequences and second chip sequences generated by said tapped-delay-line and capable of outputting a second correlation pulse; and

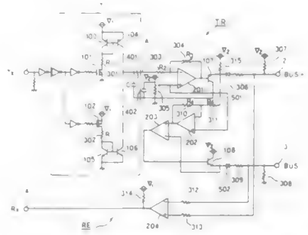
a decision circuit responsive to the first correlation pulse and the second correlation pulse.

5,355,390

COMMUNICATION APPARATUS FOR TRANSMITTING AND RECEIVING COMMUNICATION SIGNALS THROUGH COMMON TRANSMISSION LINE

Kiyoshi Yamamoto, Toyohashi; Yoshihisa Sato, Kota; Satoshi Suzuki, Nagoya, and Masayuki Kobayashi, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 16, 1991, Ser. No. 700,698
Claims priority, application Japan, May 17, 1990, 2-127870; Aug. 8, 1990, 2-211040; Apr. 22, 1991, 3-090643
Int. Cl.[5] H04B *3/00*
U.S. Cl. 375—36 **14 Claims**



1. A communication apparatus for transmitting and receiv-

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ing a communication signal by connecting a first control circuit comprising at least a transmitting circuit and a second control circuit comprising at least a receiving circuit with common transmission line means, wherein:

said common transmission line means comprises a first transmission line and a second transmission line;

said transmitting circuit comprises:

first transmitting means for inputting a square wave data signal;

means for converting the square wave data signal at the rising and falling edges thereof into the signal wave of predetermined non-infinite slope gradient;

means for transmitting the signal wave, corresponding to a communication signal, to said first transmission line;

voltage driving means for driving and controlling a first voltage on said first transmission line which transmits said communication signal;

second transmitting means for inputting said communication signal and generating a polarity inverted signal of said communication signal transmitted from said first transmission line; and

means for transmitting said polarity inverted signal to said second transmission line as a second voltage;

a feedback circuit, receiving said first voltage, for controlling a voltage level of said second voltage based on said first voltage and,

wherein said receiving circuit comprises means for comparing amplitudes of each said communication signal and said polarity inverted signal transmitted from said transmitting circuit via said first and second transmission lines to demodulate the compared signals into the square wave data signal.

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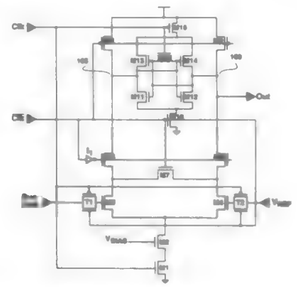
HIGH SPEED BUS SYSTEM

Mark A. Horowitz, Palo Alto, and Winston K. M. Lee, South San Francisco, both of Calif., assignors to Rambus, Inc., Mountain View, Calif.

Filed Mar. 6, 1992, Ser. No. 847,635

Int. Cl.[5] H04B *3/00*; **H04L** *25/00*

U.S. Cl. 375—36 **23 Claims**



1. A high speed bus system for coupling at least one master device to at least one slave device, said bus comprising at least one transmission line for transmission of signals, said master device and said slave device coupled to the transmission line;

each master device and slave device comprising a bus driver and bus receiver;

said bus driver comprising a current mode source to drive current along the transmission line,

said bus receiver comprising at least one sampler/amplifier circuits which sample the received signal and amplify the signal from a small swing voltage level to a large swing voltage level compatible with the device coupled to the receiver, each of said sampler-/amplifier circuits comprising,

a first stage sampler circuit for sampling the received signal,

a second stage amplifier circuit for amplifying the received signal to a voltage level compatible with the device coupled to the receiver, said second stage electrically isolated from the first stage, and

means for transferring the sampled received signal from the first stage to the second stage;

whereby the parasitic capacitive charge that is back injected onto the transmission line by the first stage sampler circuit is minimized by maintaining a small swing signal at the first stage and transferring the sampled small swing signal to the isolated second stage prior to amplifying the small swing signal to a large swing signal and the signal received by the bus receiver is output rapidly in a form compatible with the device coupled to the bus receiver.

5,355,392

DIGITAL DATA DETECTOR FOR REDUCING ERRORS DUE TO FREQUENCY VARIATIONS

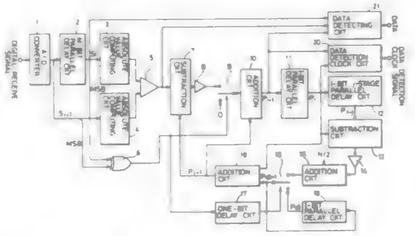
Hitoshi Takeuchi, Kitakatsuragi, and Chiaki Yamawaki, Habikino, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 7, 1992, Ser. No. 986,490

Claims priority, application Japan, Dec. 13, 1991, 3-330427

Int. Cl.[5] H03M *3/00*

U.S. Cl. 375—94 **7 Claims**



1. A digital data detector, comprising:

sampling data detecting means for sampling an input digital received signal at a frequency m times a channel bit rate (m>1);

phase interval computing means connected to receive the sampling data detected by said sampling data detecting means for computing a phase interval P between a point, at which said digital received signal crosses a reference level, and a present sampling point R_{i+1};

reference level crossing detecting means for detecting a position of the point at which said digital receive signal crosses the reference level;

phase interval predicted value computing means connected to receive a phase P_i of a sampling point R_i preceding said present sampling point R_{i+1}, a phase P_{i-j} (j is a natural number) of a sampling point R_{i-j} which is at least two points preceding said present sampling point R_{i+1}, and the position of the point at which said digital received signal crosses said reference level, detected by said reference level crossing detecting means, for computing a predicted value Pd_{i+1} of a phase interval between said present sampling point R_{i+1}, and said preceding sampling point R_i;

phase computing means for computing a present phase P_{i+1} based on said preceding phase P_i, said phase interval P between the point at which said digital receive signal crosses said reference level and said present sampling point R_{i+1}, computed by said phase interval computing means, said predicted value Pd_{i+1} of the phase interval between said present sampling point R_{i+1} and said preceding sampling point, computed by said phase interval predicted value computing means, and the position of the point at which said digital receive signal crosses said reference level, detected by said reference level crossing detecting means;

data detection clock signal detecting means connected to receive the phase of each sampling point computed by said phase computing means for detecting a data detection clock signal, which is synchronized with said digital received signal; and

data detecting means for detecting digital data from said digital received signal in response to said phase interval P between the point at which said digital receive signal crosses said reference level and said present sampling point R_{i+1}, which is computed by said phase interval computing means, said present phase P_{i+1}, which is computed by said phase computing means, and sampling data detected by said sampling data detecting means.

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DIGITAL OSCILLATOR FOR CARRIER FREQUENCY SYNCHRONIZATION

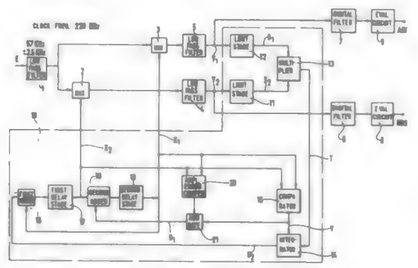
Detlev Nyenhuis, Sibbesse, and Lothar Vogt, Hohenhameln, both of Fed. Rep. of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Dec. 1, 1992, Ser. No. 983,680

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1991, 4140132

Int. Cl.[5] H04L *27/06*

U.S. Cl. 375—97 **2 Claims**



1. A circuit for synchronizing signal phases of

a radio receiver digital local oscillator output signal and a received digital input signal (E), comprising

a digital local oscillator (**16, 17, 18, 19**);

first mixing means (**3**) for mixing said received signal (E) with a second output signal (X_2) of said local oscillator;

means (**11-13**), connected to outputs of said first and second mixing means (**2,3**), for measuring any phase difference between said received signal and said local oscillator output signals; wherein said digital local oscillator includes:

a first adder stage (**16**) for generating an oscillator output amplitude adjustment signal;

a first delay stage (**17**), connected to an output of said first adder stage (**16**), for partial-cycle delay or retardation of said adjustment signal to generate said second local oscillator output signal (X_2);

a second adder stage (**18**) having a first input connected to an output of said first delay stage (**17**) and an output;

a second delay stage (**19**) having an input connected to the output of said second adder stage (**18**) and an output whose signal is said first local oscillator output signal (X_1), said first output signal (X_1) passing along a feedback line to an input of said first adder stage (**16**); and said circuit further comprises

a control circuit (**14, 15, 20, 21**) receiving, as input signals, said first and second local oscillator output signals (X1, X2) and a third signal (T) from an output of said phase difference measuring means (**11-13**), and generating first (**U1**) and second (**U2**) output signals, said first output signal (**U1**) feeding a further input of said second adder stage (**18**) and said second output signal (**U2**) feeding a further input of said first adder stage (**16**), whereby

said control circuit iteratively increases or decreases said second output signal (**U2**), serving as a phase increment signal, fed to said first adder stage (**16**), depending on the sign (plus or minus) of said third signal (T) representing said phase difference and, depending on a time-integrated value of said phase difference signal (T), iteratively increases or decreases said first output signal (**U1**) fed to said second adder stage (**18**) in such a way that the result of a vectorial addition of said first and second local oscillator output signals (**X1, X2**) will not go above a predetermined first reference value (1a), were a is a selectable amount between 0 and 1 representing a maximum permissible phase difference, and will not go below a predetermined second reference value (1−a).

5,355,394

METHOD FOR PRODUCING ACTINIUM-225 AND BISMUTH-213

Jacobus N. C. van Geel, Oberweier, Netherlands; Jean J. Fuger, Wöesingen, Belgium, and Lothar Koch, Weingarten, Fed. Rep. of Germany, assignors to European Atomic Energy Community (EURATOM), Plateau Du Kirchberg, Luxembourg

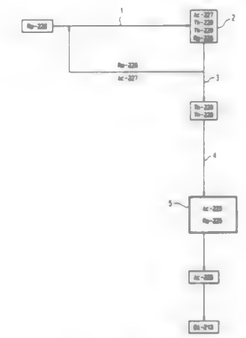
PCT No. PCT/EP91/00306, § 371 Date Aug. 10, 1992, § 102(e) Date Aug. 10, 1992, PCT Pub. No. WO91/13443, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 18, 1991, Ser. No. 916,835

Claims priority, application Luxembourg, Feb. 23, 1990, [illegible]

Int. Cl.[5] G21G *1/02*

U.S. Cl. 376—189 **2 Claims**



1. A method for producing a mixture of actinium-225 and radium-225, which mixture is a basic product for obtaining bismuth-213, comprising the steps of irradiating radium-226 in a thermal neutron flux of a nuclear reactor to obtain an irradiation product comprising thorium-229, chemically isolating a thorium fraction from the irradiation product, and chemically separating from the thorium fraction radionuclides actinium-225 and radium-225 obtained by decay of thorium-229 to thereby recover a mixture of actinium-225 and radium-225.

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5,355,395

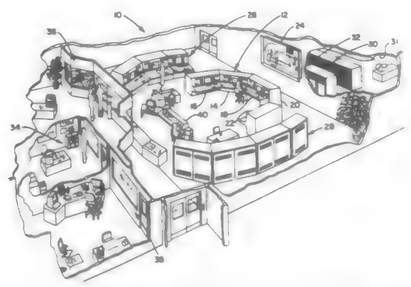
DYNAMIC ALARM PRESENTATION IN A NUCLEAR PLANT CONTROL ROOM

Scarola Kenneth; David S. Jamison, both of Windsor; Richard M. Manazir, North Canton; Robert L. Rescorl, Vernon, and Daryl L. Harmon, Enfield, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Continuation of Ser. No. 927,057, Aug. 6, 1992, Pat. No. 5,287,390, which is a division of Ser. No. 430,792, Nov. 2, 1989, Pat. No. 5,267,277. This application Dec. 29, 1993, Ser. No. 174,720

Int. Cl.[5] G21C *17/00*

U.S. Cl. 376—216 **5 Claims**



1. In a nuclear power plant having a nuclear steam supply system constituted by a multiplicity of components which can be operated in a coordinated manner to control plant operating variables for each of a plurality of preestablished plant operating modes; means for measuring a preestablished plurality of said operating variables and generating a first plurality of parameter signals commensurate with at least some of said variables; means for storing a set point value for each of said parameter signals; an alarm display containing a plurality of alarm tiles associated with said plurality of parameter signals; alarm logic means for generating an alarm signal when a particular parameter signal exceeds a particular set point; and means for activating a particular tile in response to said alarm signal; wherein the improvement comprises:

means for generating a variable of set points for each parameter, each value of such variable set point corresponding to one of said plant operating modes;

the alarm logic means compares said particular parameter signal with the particular value of said variable of set point corresponding to the particular mode in which the plant is operating;

whereby the activation of an alarm tile is dependant on the value of its corresponding parameter signal and a variable set point value dependant on the mode of plant operation.

5,355,396

CIRCUITRY AND METHOD FOR MODULARIZED SINGLE TRANSITION COUNTING

Jy-Der Tai, Phoenix, Ariz., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1991, Ser. No. 814,881

Int. Cl.[5] H03K *21/00*

U.S. Cl. 377—26 **4 Claims**

1. A first-in-first-out memory system, comprising:

a plurality of memory locations each for storing data;

a first count line for outputting a first count signal in response to data being written to one of said memory locations;

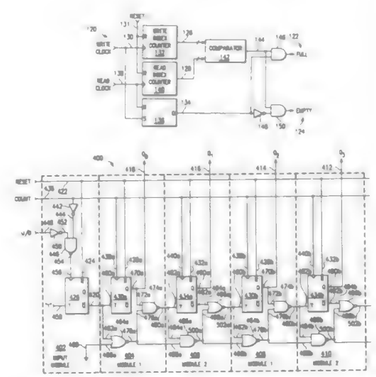
a write index counter coupled to said first count line for incrementing a write index in response to each said first count signal;

a second count line for outputting a second count signal in response to data being read from one of said memory locations; and

a read index counter coupled to said second count line for incrementing a read index in response to each said second count signal, wherein said write index counter and said read index counter each comprise an associated modularized single transition counter comprising:

an input module coupled to an associated one of said first and second count lines and having an output;

at least one first module coupled to said associated count line and having an input and an output; and



at least one second module coupled to said associated count line and having an input and an output, wherein said first and second modules are operable to be alternately coupled in series to said input module so that one of said first and second modules has its input coupled to said output of said input module and so that each additional one of said first and second modules has its input coupled to said output of an associated one of said second and first modules, respectively, wherein each said first and second module provides at least one bit of a single transition count such that said single transition count is modified in response to said count signal of said associated count line.

5,355,397

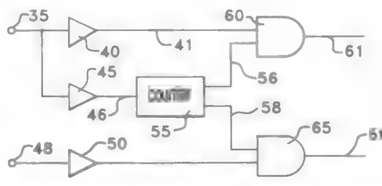
CLOCK START UP STABILIZATION FOR COMPUTER SYSTEMS

David A. Hanson, Altoona, and Edward C. Priest, Eau Claire, both of Wis., assignors to Cray Research, Inc., Chippewa Falls, Wis.

Filed Sep. 24, 1992, Ser. No. 950,628

Int. Cl.[5] H03K *17/296, 17/28, 17/22*

U.S. Cl. 377—56 **4 Claims**



2. Apparatus for preventing skew of at least an initial clock pulse of a train of clock pulses from a clock source from effecting functional operation of a utilization circuit comprising:

means enabling said clock source to begin producing a train of clock pulses at a first terminal and a train of delayed clock pulses at a second terminal,

counter memos coupled to said first terminal for receiving the pulses of said train of pulses for producing a first output signal in response to reception of a predetermined number of clock pulses from said clock source and a second output signal at a predetermined time subsequent to said first output signal,

first means enabled by said counter means first output signal for coupling said first terminal clock pulses to the utilization circuit thereafter, and

second means enabled by said second output signal for coupling said second terminal delayed clock pulses to the utilization circuit.

5,355,398

ROTATIONAL TOMOGRAPHIC X-RAY APPARATUS WITH PLANIGRAPH FUNCTION

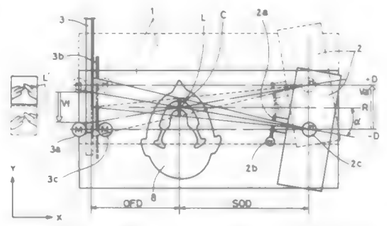
Kohzo Nakano; Keisuke Mori; Eiichi Arai; Takeshi Kusunoki; Takahiro Yoshimura, and Masanori Otsuka, all of Kyoto, Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Apr. 27, 1993, Ser. No. 54,399

Claims priority, application Japan, Apr. 30, 1992, 4-139888

Int. Cl.[5] A61B *6/14*

U.S. Cl. 378—39 **18 Claims**



1. In a rotational tomographic X-ray apparatus structured to obtain rotational tomographic images of maxillofacial regions by rotating an X-ray generator and an X-ray detection surface disposed opposite to each other with the head of a patient positioned therebetween while maintaining a constant relationship therebetween and by moving said X-ray detection surface substantially perpendicular to the direction of the X-rays irradiated from said X-ray generator in synchronization with the rotation,

a rotational tomographic X-ray apparatus with planigraph function having said X-ray detection surface disposed parallel to a planigraphic plane selected as a subject to be photographed, and comprising a linear movement means for moving said X-ray generator and said X-ray detection surface synchronously in relatively opposite directions parallel to said planigraphic plane and an X-ray irradiation direction control means for controlling the X-ray irradiation direction so that the irradiated X-rays always pass the same specific region in said planigraphic plane and are incident on said X-ray detection surface in synchronization with the linear movement.

5,355,399

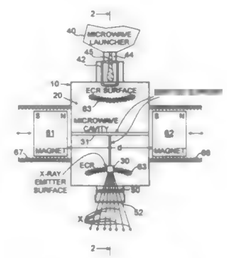
PORTABLE X-RAY SOURCE AND METHOD FOR RADIOGRAPHY

Konstantin S. Golovanivsky, Antony, France, and Valeri D. Dugar-Zhabon, Moscow, Russian Federation, assignors to Ruxam, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 843,569, Feb. 28, 1992. This application Aug. 25, 1992, Ser. No. 935,528

Int. Cl.[5] H01J *35/00*

U.S. Cl. 378—119 **82 Claims**



30. A method for use in x-ray imaging comprising:

providing a sealed plasma discharge chamber with a plasma support gas at a selected low pressure;

placing an x-ray emitter structure inside the plasma discharge chamber;

applying a magnetic field to the discharge chamber;

supplying microwaves to the discharge chamber, said microwaves producing an oscillating electric field perpendicular to the magnetic field;

exposing the chamber to the magnetic field and the oscillating electric field;

forming a plasma in the form of a hyperboloid of one sheet from the support gas, including hot electrons, under ECR conditions; and

bombarding the x-ray emitter continuously with hot electrons to produce x-ray radiation in response to the plasma being formed.

5,355,400

COMPENSATING FILTER FOR THORAX X-RAY PHOTOGRAPH

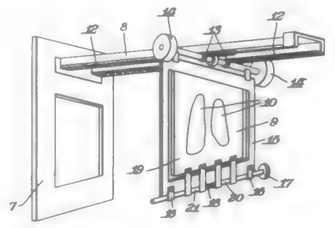
Christian Blendl, Bergheim, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengeseilschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 26, 1993, Ser. No. 51,889

Claims priority, application Fed. Rep. of Germany, May 4, 1992, 4214742

Int. Cl.[5] G21K *3/00*

U.S. Cl. 378—156 **10 Claims**



1. A compensating filter device for use in an X-ray photographic apparatus having an X-ray tube in a housing, said compensating filter device comprising:

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a filter comprising a plate formed at least in part from a material which attenuates an X-ray beam;

a filter holder which retains the filter in fixed position within said X-ray beam, and

a support secured to said X-ray photographic apparatus and supportingly connected to said filter holder, said support comprising a horizontal member mounted to the X-ray tube housing and positioned in the direction of the optical axis of the X-ray beam, said support further characterized by being above the optical axis, and at an angle of 93° to 105° to the vertical, whereby the filter is precisely positioned within the X-ray beam to provide compensating X-ray beam attenuation.

5,355,401

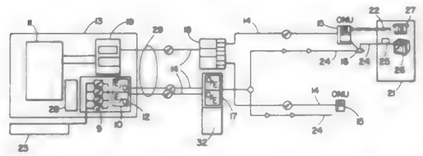
METHOD AND APPARATUS FOR PROVIDING TELEPHONY POWER THROUGH A COAXIAL CABLE NETWORK

Russell A. Skinner, Sr., Longmont, Colo., assignor to U S West Advanced Technologies, Inc., Boulder, Colo.

Filed May 28, 1993, Ser. No. 68,827

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—56 **2 Claims**



1. A video and telephony network including a plurality of telephones operatively connected thereto comprising:

a fiber optic transmission system;

a coaxial cable transmission system electromagnetically connected to said fiber optic transmission system;

a telephone switching system electromagnetically connected to said fiber optic transmission system;

a video provisioning system electromagnetically connected to said fiber optic transmission system;

a video receiver electromagnetically connected to said coaxial cable transmission system;

an optical network unit electromagnetically connected to said coaxial cable transmission system; and

a power supply electromagnetically connected to said coaxial cable transmission system;

whereby power from said power supply is transmitted through said coaxial cable transmission system to said optical network unit to power said telephones.

5,355,402

SYSTEM FOR ESTABLISHING A CONNECTION BETWEEN PRIVATE BRANCH EXCHANGES

Bernd Weis, Korntal; Karl-Albert Turban, Leonberg; Monika Bezler, Stuttgart; Manfred Schulz, Hammingen, and Gerd Siegmund, Stuttgart, all of Fed. Rep. of Germany, assignors to Alcatel N.V., Netherlands

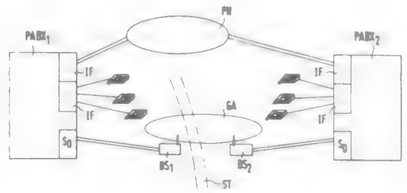
Filed Jan. 21, 1993, Ser. No. 6,808

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1992, 4201561

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—61 **1 Claim**

1. A system for establishing a connection between private branch exchanges each having an associated base station connected thereto by a transmission link in a specific geographic area, said base station making available a given number of information-carrying radio channels via which mobile cordless terminals in said geographic area can enter into communication with said base station and with the associated connected exchange, wherein within the geographic area of a base station of a first private branch exchange, a base station of a second private branch exchange is located, and that a radio link is provided between said two base stations over a selected number of said given number of radio channels whereby said private branch exchanges are connected to each other through said transmission links, through said associated base stations and over said radio link.



5,355,403

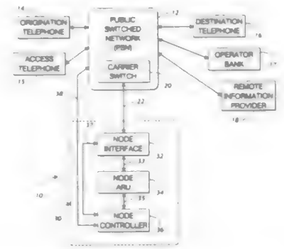
CUSTOMIZED, BILLING-CONTROLLED CALL BRIDGING SYSTEM

Charles T. Richardson, Jr., Norcross; Kevin L. Austin, Roswell, and Samuel F. Billingsley, III, Atlanta, all of Ga., assignors to United States Advance Network, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 852,491, Mar. 16, 1992, Pat. No. 5,317,627, which is a continuation of Ser. No. 591,047, Oct. 1, 1990, Pat. No. 5,113,430. This application Apr. 1, 1992, Ser. No. 861,630

Int. Cl.[5] H04M *1/64, 3/42*

U.S. Cl. 379—88 **6 Claims**



1. A method of providing an automated operator service to bridge a call, said method comprising the steps of:

providing a billing-controlled bridging node located outside of a public switched network and connected to a carrier switch within the public switched network, wherein the billing-controlled bridging node includes a storage device with a plurality of stored voice prompts;

receiving on a first communication path at the billing-controlled bridging node from the carrier switch a call bridging request, including, at least an origination number and a destination number assigned to a destination telephone located remotely from the billing-controlled bridging node, as a result of a caller dialing the destination number to initiate a first telephone call from an origination telephone located remotely from the billing-controlled bridging node to which is assigned an origination number;

comparing the origination number to a predefined origination number table to control access to the billing-controlled bridging node;

answering the first telephone call on the first communication path at the billing-controlled bridging node;

initiating a second telephone call from the billing-controlled bridging node through a second communication path to the destination telephone, including transmitting the destination number from the billing-controlled bridging node through the second communication path to the carrier switch;

automatically transmitting a voice prompt of the plurality of stored voice prompts from the billing-controlled bridging node to the destination telephone requesting an indication of an acceptance of billing charges in response to the billing-controlled bridging node detecting the second telephone call being answered; and

connecting the first communication path to the second communication path at the billing-controlled bridging node to bridge the origination telephone to the destination telephone in response to the billing-controlled bridging node detecting the second telephone call being answered and in response to the billing-controlled bridging node receiving an indication of acceptance of billing charges from the destination telephone.

5,355,404

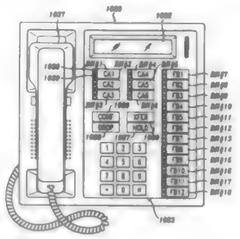
METHOD OF CONTROLLING PARAMETER DOWNLOADING FROM A COMMUNICATION SWITCHING SYSTEM TO CUSTOMER STATIONS

Douglas E. LeDuc, Bolingbrook, and Ravindranath Madhavan, Naperville, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 29, 1993, Ser. No. 84,679

Int. Cl.[5] H04M *3/42*

U.S. Cl. 379—201 **13 Claims**



1. A method for use by a switching system in controlling the downloading of parameters to customer stations, said method comprising

maintaining a first list of customer stations to which parameters are to be downloaded from said switching system,

maintaining a second list of customer stations to which parameters are to be downloaded from said switching system,

A) determining whether a given customer station on said first list is in an active status,

B) upon determining that said given customer station is in an active status, downloading parameters to said given customer station,

C) upon determining that said given customer station is in an inactive status, moving said given customer station to said second list and

D) repeating, for successive customer stations on said first list, step A) and, dependent on the status of each successive one of said customer stations, either step B) or step C) at a rate that is established such that any reduction of call load capacity of said switching system due to parameter downloading is within a predefined limit.

5,355,405

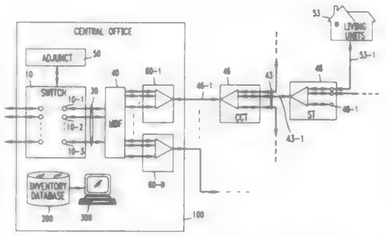
ARRANGEMENT FOR DYNAMICALLY IDENTIFYING THE ASSIGNMENT OF A SUBSCRIBER TELEPHONE LOOP CONNECTION AT A SERVING TERMINAL

Lawrence Bernstein, Short Hills, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 26, 1992, Ser. No. 904,788

Int. Cl.[5] H04M *3/30*

U.S. Cl. 379—246 **2 Claims**



2. A method of processing a request for telephone service, said processing involving assigning an idle telephone loop to provide said telephone service, said method comprising the steps of

terminating said idle telephone loop at a predetermined serving terminal, said idle telephone loop being one of a plurality of telephone line loops originating at said serving terminal and extending to a telephone central office, individual ones of said loops then extending from said serving terminal to telephone facilities associated with respective telephone subscribers,

storing in memory data identifying said serving terminal as being the originating point of said idle telephone loop,

responsive to a request for telephone service from a person having telephone facilities that may be served by said serving terminal, determining from said data that said idle telephone loop is available for connection to those telephone facilities, and associating, in said memory, said idle telephone loop with a telephone number assigned to said person as a result of said request, and

transmitting signals over said idle telephone loop so that a craftsman positioned at said serving terminal may identify the originating point of that loop and connect it to a telephone line extending from said serving terminal to said person's telephone facilities, whereby as a result of associating said originating point of said idle telephone loop with said serving terminal, then the identity of intermediate connections forming said idle telephone loop between said serving terminal and said central office may be excluded from said stored data.

5,355,406

INTEGRATED APPLICATION CONTROLLED CALL PROCESSING AND MESSAGING SYSTEM

Arnold Chencinski, Mountain View; David J. Ladd, Saratoga; Michael A. Liberty, Fremont, and Robert H. Sinn, Sunnyvale, all of Calif., assignors to VMX, Incorporated, San Jose, Calif.

Continuation of Ser. No. 660,279, Feb. 21, 1991, abandoned. This application Mar. 1, 1993, Ser. No. 24,796

Int. Cl.[5] H04M *1/64, 3/42*

U.S. Cl. 379—88 **20 Claims**

1. A call processing and messaging system, comprising:

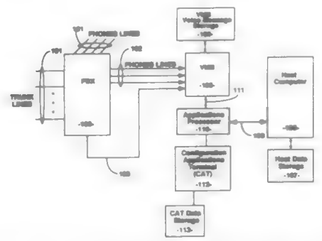
call receiving means having a plurality of lines for receiving a first incoming call from one of said lines;

means for storing a message from said first incoming call;

means for assigning a message identifier to said message, said message identifier being assigned without caller intervention;

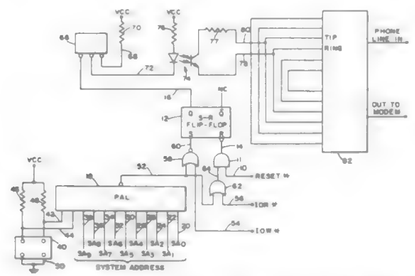
VOL 1167 ISS 2 OCT 11 1994 UMI

means for dynamically generating an inquiry reference number;
means for storing said message identifier and said inquiry reference number;
means for speaking said inquiry reference number to a caller;
said call receiving means having means for receiving a second incoming call from one of said lines;



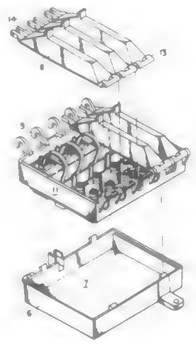
means for receiving said inquiry reference number from said second incoming call;
means for retrieving said message identifier using said inquiry reference number; and
means for playing said message to which said message identifier is assigned.

5,355,407
PHONE BUSY CIRCUIT
George L. Lazik, Woodland Hills, Calif., assignor to Astro Science Corporation, Chatsworth, Calif.
Filed Oct. 13, 1992, Ser. No. 959,338
Int. Cl.[5] H04M *1/65*
U.S. Cl. 379—381 **14 Claims**



1. A circuit for placing a busy signal on a telephone line while a computer is resetting, said telephone line having a TIP signal and a RING signal, said circuit comprising:
decoder means for receiving a system address from said computer and for providing a decoder output signal in response to access of a predetermined system address by said computer;
memory means for entering a first state in response to a system reset signal received from said computer and for entering a second state in response to said decoder output signal;
a resistor; and
switching means for connecting said resistor between said TIP signal and said RING signal only when said memory means is in said first state.

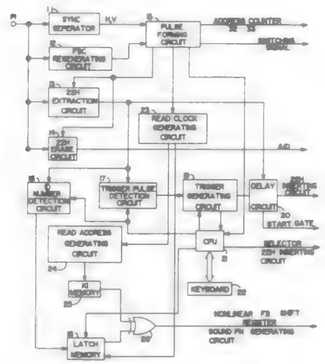
5,355,408
NETWORK INTERFACE DEVICE WITH ENVIRONMENTALLY PROTECTED COMPARTMENT
Todd C. Lanquist, Watauga; Kevin L. Strause, Keller; Thomas A. Dellinger, North Richland Hills, and John A. Keenum, Keller, all of Tex., assignors to Siecor Corporation, Hickory, N.C.
Filed Oct. 26, 1992, Ser. No. 966,477
Int. Cl.[5] H04M *9/00*
U.S. Cl. 379—397 **1 Claim**



1. A telephone network interface device for connection between telephone company owned subscriber loop wiring and telephone subscriber owned premise wiring, comprising:
(a) a rack having a first side and a second side, said rack perforated by at least one jack opening and a set of terminal openings, each such opening in communication with the first and second rack sides;
(b) a set of premise wiring terminals each inserted into a terminal opening from the first rack side, and a set of line cord terminals each inserted into a terminal opening from the second rack side to be in electrical communication with a premise wiring terminal;
(c) at least one electrical jack inserted into a jack opening, each jack having a plug receptacle facing the first rack side and a set of wire receptacles facing the second rack side;
(d) a set of telephone company subscriber loop wiring inserted into a set of wire receptacle; and at least one jack plug, each jack plug inserted into a plug receptacle;
(e) at least one line cord, each line cord in electrical communication between a jack plug and a pair of line cord terminals; and,
(f) a receptacle base attached to the second side of the rack, said base holding a potting compound covering the set of line cord terminals and the set of wire receptacles, but not covering the set of premise wiring terminals.

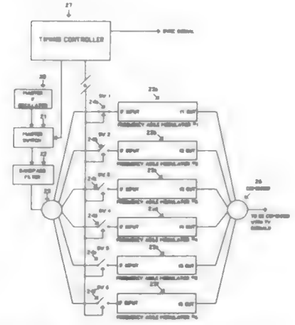
5,355,409
SCRAMBLE CODEC AND A TELEVISION RECEIVER INCORPORATING THE SAME
Masayoshi Hirashima, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 15, 1993, Ser. No. 31,539
Claims priority, application Japan, Mar. 13, 1992, 4-089664; Mar. 13, 1992, 4-089665
Int. Cl.[5] H04N *7/167;* **H04L** *9/02*
U.S. Cl. 380—14 **21 Claims**

1. A scramble codec comprising:
means for storing an identification number to secure communication data,
data storage means for receiving input communication data written in a first predetermined cycle, said data storage means having a maximum address value,
shift register means, being initialized as a function of the identification number, for outputting dissimilar pseudo-random pulse signals in a second predetermined cycle,
address setting means for generating and outputting a first value corresponding to the output of said shift register



means during scrambling of communication data and a second value determined by subtracting the output of said shift register means from the maximum address value of the data storage means during descrambling, and
address counter means for providing addresses to said data storage means starting from one of the first and second values generated by said address setting means in said second predetermined cycle.

5,355,410
METHOD AND APPARATUS FOR MULTI-TIRE TIME SHARED CATV JAMMING
Pierre Blais, Montreal, and Michael Rychel, Anjou, both of Canada, assignors to Electroline Equipment Inc., Montreal, Canada
Filed Aug. 18, 1993, Ser. No. 107,572
Int. Cl.[5] H04N *7/167*
U.S. Cl. 380—20 **20 Claims**



1. A method for selectively controlling subscriber access to the television channels in a CATV system, that transmits, from its head end, multiple channels' TV signals that every subscriber has access to (the "BTV channels") and multiple channels' TV signals that every subscriber may not have access to (the "EBTV channels"), wherein the BTV channels and the EBTV channels are together referred to as the "TOTAL CHANNELS", wherein the TOTAL CHANNELS' TV signals are transmitted from the head end on a system carrier wave, and wherein each subscriber receives access to some or all of the TOTAL CHANNELS through a receiver end, and wherein the CATV system, from its head end, is also transmitting subscriber status signals ("SSS"s), each of which identifies which subscriber's receiver end it is intended for, and which of the TOTAL CHANNELS' TV signals that subscriber's receiver end should jam the output of, which method is characterized in that it is comprised of the steps of:
(i) generating, from a head end, one at a time, six different predetermined frequencies (each of which are hereinafter referred to in general as "fx"), wherein each fx is stable in both amplitude and frequency;
(ii) generating, from the head end, a synchronization signal ("sync. sig.") that identifies which fx is being generated;
(iii) setting up a multiple of receiver ends, each of which:
(a) receives at one input, the TOTAL CHANNELS' TV signals, the SSS, the fx, and the sync. sig.;
(b) divides the received signals, into: (1) TOTAL CHANNELS' TV signals, SSS, and sync. sig., and (2) the fx;
(c) generates a local fixed frequency, which, each time it is combined with a different one of the six different fxs will result in a new frequency that is suitable for jamming a different one of the television signals of the EBTV channels, and therefore is a jamming signal;
(d) mixes the local fixed frequency with the fx, thereby creating a jamming signal;
(e) decoding the sync. sig.;
(f) decoding the SSS to obtain the subscriber status information that indicates whether that subscriber is entitled to receive any of the TOTAL CHANNELS, and which, if any, of the EBTV channels that subscriber is not entitled to receive;
(g) transmitting the TOTAL CHANNELS to the subscriber, if the subscriber status information indicates that subscriber is entitled to receive some or all of the TOTAL CHANNELS; and
(h) combining the jamming signal with the TOTAL CHANNELS' TV signals that are going to the subscriber, when the created jamming signal is for one of the channels that the subscriber status information indicates that subscriber is not entitled to receive.

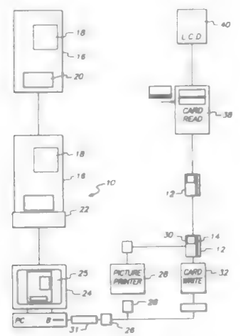
5,355,411
DOCUMENT SECURITY SYSTEM
John L. MacDonald, 44 Swanston Avenue, Inverness IV3 6QW, Scotland
PCT No. PCT/GB91/01385, § 371 Date Feb. 11, 1993, § 102(e) Date Feb. 11, 1993, PCT Pub. No. WO92/03804, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 14, 1991, Ser. No. 969,162
Claims priority, application United Kingdom, Aug. 14, 1990, 9017774.2; Sep. 7, 1990, 9019554.7
Int. Cl.[5] H04L *7/32;* **G06K** *9/00*
U.S. Cl. 380—23 **12 Claims**

1. A security system for encoding documents with a signature representative of a user, said security system comprising:
signal recording means for reading a sample signature and for digitally encoding said sample signature to produce a digitally encoded signature that cannot be read directly by the unaided eye;
digital data compression means coupled to said signal recording means for compressing the digitally encoded signature into a compressed signature with a reduced amount of data of 160 bytes or less, said digital data compression means including means for setting a usage size of the signature and means for setting a level of digital data to fit into said usage size, scanning means for scanning said signature on a line by line basis to produce a scanned image, means for determining and removing multiple dots from said scanned image and storage means for storing a

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number of dots and a number of dot displacements, counting and storage means for counting and storing increment values and a number and position of stray dots, comparison means for comparing a total dot count in said compressed digitised signature with said digital level, and scaling means for scaling the image size of the signature by a target or dot count in vertical and horizontal directions;

recording means for magnetically recording the compressed signature on a magnetic stripe of a document;



signal reading means including magnetic stripe reading means for reading a compressed signature so stored on a magnetic stripe; and

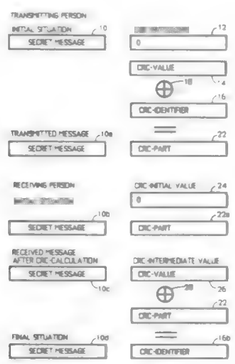
display means coupled to the signal reading means for visually displaying the compressed signature so that a visual compression between the compressed signature and a further sample signature provided by a user may be made to verify the identity of the user.

5,355,412

IDENTIFYING SECRET DATA MESSAGES IN A ONE-DIRECTION MULTIPOINT NETWORK

Mauri Kangas, Paimio, Finland, assignor to Nokia Technology GmbH, Pforzheim, Fed. Rep. of Germany

Filed Mar. 10, 1993, Ser. No. 29,110
Claims priority, application Finland, Mar. 11, 1992, 921055
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—23 **6 Claims**



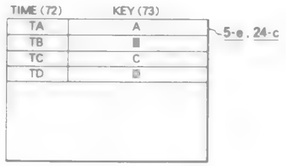
1. A method for identifying confidential data messages in a transmitting system where a cyclic redundancy code (CRC) is used for error check and for identifying confidential data messages only, wherein the identifying of the confidential data messages is carried out prior to decryption of the confidential data messages with the help of identification used for the error check.

5,355,413

AUTHENTICATION METHOD PERFORMED BETWEEN IC CARD AND TERMINAL UNIT AND SYSTEM THEREFOR

Hisashi Ohno, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1993, Ser. No. 24,319
Claims priority, application Japan, Mar. 6, 1992, 4-049830
Int. Cl.[5] H04L *9/32*
U.S. Cl. 380—24 **13 Claims**



1. An authentication method for authentication between an IC card and a terminal unit in which both said IC card and said terminal unit include a plurality of authentication codes, each code having a corresponding time data item, encryption means for encrypting data according to a predetermined algorithm, and timer means, one of said IC card and said terminal unit, including means for generating random numbers and comparison means, said authentication method comprising:

generating a random number in a first device selected from an IC card and a terminal unit and transmitting the generated random number to a second device that is the other of said IC card and said terminal unit;

a first encryption step of encrypting the received random number in the second device according to an algorithm using one of a plurality of authentication codes as a key to generate authentication data;

transmitting the encrypted authentication data to the first device from the second device when a time represented by time data corresponding to the authentication code used has elapsed after transmission of a predetermined signal;

a second encryption step of counting, in the first device, a time interval from transmission of a predetermined signal to reception of the authentication data from the second device and of encrypting the random number according to the algorithm using, as a key, the authentication code corresponding to the time data which coincides with the time interval counted in the second device to generate authentication data; and

comparing in the first device the authentication data generated in said second encryption step with the authentication data transmitted from the second device and transmitting a result signal indicating coincidence or non-coincidence of the two authentication data to the second device.

5,355,414

COMPUTER SECURITY SYSTEM

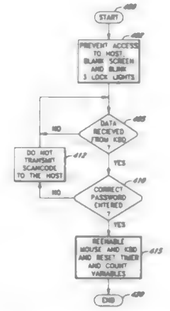
Robert P. Hale, and Jason T. Kurashige, both of Irvine, Calif., assignors to AST Research, Inc., Irvine, Calif.

Filed Jan. 21, 1993, Ser. No. 7,170
Int. Cl.[5] H04L *9/32*; **G06F** *13/12*
U.S. Cl. 380—25 **18 Claims**

1. A security system for a computer, said security system operating independently of a host computer to disable access to an operating system of the host computer when security measures are activated, said security system comprising:

at least one peripheral input device; and

a microprocessor based peripheral device controller in communication with said host computer and said at least one peripheral input device, said peripheral device controller providing an interface between said at least one peripheral input device and said host computer, said peripheral device controller, independent of said host computer, responsive to the elapsing of a predetermined period during which said at least one peripheral input device remains inactive to automatically inhibit access to said host computer after said predetermined period has elapsed, said peripheral device controller further responsive to entry of predesignated signals from said at least one peripheral input device to permit access to said host computer.

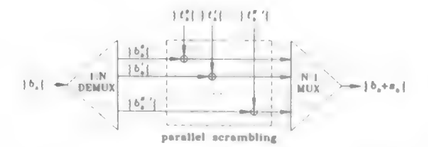


5,355,415

PARALLEL DISTRIBUTED SAMPLE SCRAMBLING SYSTEM

Byeong G. Lee, Hanshin Green Apt. A-703, 65-8 Jamwondong, Seochoku, Seoul, and Seok C. Kim, 302 382-32 Habjeongdong, Mapoku, Seoul, both of Rep. of Korea, assignors to Byeong Gi Lee; Seok Chang Kim and Goldstar Information & Communications, Ltd., all of Seoul, Rep. of Korea

Filed Mar. 15, 1993, Ser. No. 31,670
Int. Cl.[5] H04L *9/24*
U.S. Cl. 380—47 **8 Claims**



1. A parallel distributed sample scrambling system for fixed-sized packet transmission comprising;

a parallel shift register generator for generating parallel sequences for parallel scrambling, said generator including a plurality of shift registers and a plurality of modulo-2 adders,

a sampling means for generating samples of said parallel sequences from said parallel shift register generator depending on transmission channel slots available for sample conveyance,

a parallel scrambling means for performing parallel scrambling function by modulo-2 adding the parallel sequences from said parallel shift register generator to parallel input data sequences, and

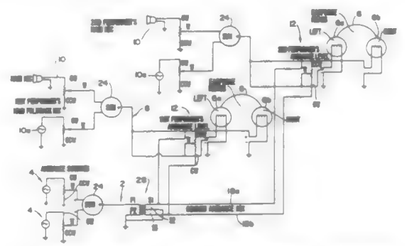
a multiplexing means for multiplexing the scrambled data sequences from said parallel scrambling means.

5,355,416

PSYCHO ACOUSTIC PSEUDO-STEREO FOLD BACK SYSTEM

Bill Sacks, Arlington, Va., assignor to Circuits Maximus Company, Inc., Columbia, Md.

Continuation of Ser. No. 695,453, May 3, 1991, abandoned. This application May 13, 1993, Ser. No. 60,697
Int. Cl.[5] H04S *5/00*
U.S. Cl. 381—17 **23 Claims**



1. A Psycho-Acoustic Pseudo Stereo System comprising:

(a) at least one main channel of mono acoustic information;

(b) at least one ambiance channel of mono acoustic information, wherein said ambiance channel of mono acoustic information primarily contains mono acoustic information different from the mono acoustic information contained on said main channel of acoustic information;

(c) earphone means having at least two transducers;

(d) means for feeding said main channel with the same polarity and no delay to each said earphone transducer;

(e) means for feeding, simultaneously with said main channel, said ambience channel in respective opposite polarities and no delay to respective transducers; and,

(f) means for adjusting the relative amplitude levels between said main channel of mono acoustic information and said ambiance channel of mono acoustic information;

(g) wherein, said main channel of mono acoustic information is perceived through said earphone means to be front and center with respect to said ambiance channel of mono acoustic information which is perceived to be a wide spacious field surrounding said main channel of mono acoustic information.

5,355,417

ACTIVE CONTROL OF AIRCRAFT ENGINE INLET NOISE USING COMPACT SOUND SOURCES AND DISTRIBUTED ERROR SENSORS

Ricardo Burdisso; Chris R. Fuller; Walter F. O'Brien; Russell H. Thomas, all of Blacksburg, Va., and Mary E. Dungan, Malden, S.C., assignors to The Center for Innovative Technology, Herndon; Virginia Polytechnic Institute & State University and Virginia Tech Intellectual Properties, Inc., both of Blacksburg, all of Va.

Filed Oct. 21, 1992, Ser. No. 964,604
Int. Cl.[5] G10K *11/16*
U.S. Cl. 351—71 **14 Claims**

1. An active noise control system for reducing aircraft engine noise which means emanates from an aircraft engine inlet of a gas turbine engine, said gas turbine engine having a fan and compressor the revolution of which generates a primary sound field, said active noise control system comprising:

blade passage sensor means mounted within said turbine engine adjacent to said fan for generating a reference acoustic signal, said blade passage sensor means comprises an eddy current sensor to sense a fan blade passage frequency which is correlated with radiated sound;

distributed error sensor means positioned to be responsive to said primary sound field for generating an error acoustic signal;

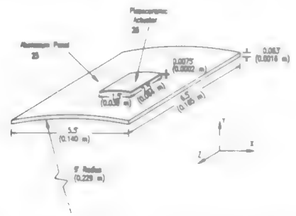
VOL 1167 ISS 2 OC 11 1994 UMI

acoustic driver means comprised of piezoelectric driven panels mounted circumferentially flush about an interior surface of said inlet preceding said fan; and

controller means responsive to said reference acoustic signal and said error acoustic signal for driving said acoustic driver means to generate a secondary sound field having an approximately equal amplitude but opposite phase as said primary sound field to thereby effectively reduce said engine noise.

9. A compact acoustic driver for generating a controlled sound field for canceling noise comprising:

a curved panel tuned to have a fundamental frequency near



a tone in said noise to be canceled, and having an interior radius of curvature and an exterior radius of curvature, said curved panel having an exterior surface defined by said exterior radius of curvature;

surface strain actuator means mounted only on said exterior surface of said curved panel, said surface strain actuator means being mechanically coupled to said curved panel to impart mechanical motion thereto; and

electrical generator means connected to said surface strain actuator means for driving said actuator means and imparting mechanical motion to said curved panel at said fundamental frequency to generate said controlled sound field for canceling said tone in said noise.

5,355,418

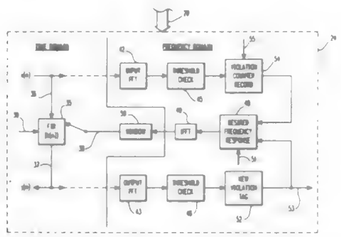
FREQUENCY SELECTIVE SOUND BLOCKING SYSTEM FOR HEARING PROTECTION

Randy J. Kelsey, Hampstead, Md., and Larry D. Aschliman, Jacobus, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 957,125, Oct. 7, 1992. This application Feb. 22, 1994, Ser. No. 198,689

Int. Cl.[5] A61F *11/06*

U.S. Cl. 381—72 **18 Claims**



1. A hearing protection device usable in environments of high amplitude sound to adaptively hinder transmission of frequencies above a threshold amplitude level while allowing transmission of frequencies below said threshold amplitude level, said device comprising:

a transducer for receiving a sound input and producing an electrical analog input signal;

sampler means operable to sample said electrical analog input signal at a periodic sampling rate and produce a stream of sampled input signals;

an analog-to-digital converter receiving said sampled amplitude input signals and producing respective corresponding digital input signals;

digital filter means implementing a time domain difference equation having a plurality of alterable filter coefficients for receiving said digital input signals and producing respective corresponding filtered digital output signals;

memory means having respective input data memory locations and output data memory locations for receiving and sequentially storing respective windows of said digital input signal and said digital output signals;

first transform means for receiving said window of said digital input signals and producing therefrom a first spectrum representative of input signal frequency component amplitudes;

means for comparing frequency components of said first frequency spectrum with said amplitude threshold level and distinguishing first violator frequency components which exceed said amplitude threshold level;

second transform means for receiving said window of said digital output signals and producing therefrom a second frequency spectrum representative of output signal frequency component amplitudes;

means for comparing frequency components of said second frequency spectrum with said amplitude threshold level and distinguishing second violator frequency components which exceed said amplitude threshold level;

adaptive means for adjusting said plurality of alterable filter coefficients to suppress output gain at first and second violator frequency components;

digital-to-analog conversion means for receiving said digital output signals and producing an analog output signal; and

an actuator for receiving said analog output signal and producing a sound output.

5,355,419

ON-VEHICLE AUDIO SYSTEM REPRODUCING BODILY-SENSIBLE SOUNDS

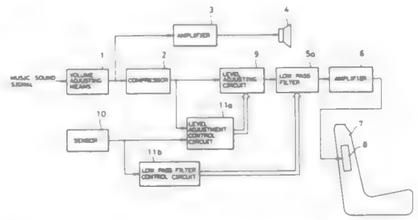
Hideo Yamamoto; Shiro Kato; Yuji Fukata; Yoichi Satoh; Akihiro Suzuki, all of Kawagoe; Kenji Suehiro, and Shigeru Takenaka, both of Hiroshima, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 23, 1993, Ser. No. 52,480

Claims priority, application Japan, Apr. 28, 1992, 4-110142

Int. Cl.[5] H04B *1/00*

U.S. Cl. 381—86 **6 Claims**



1. An on-vehicle audio system reproducing bodily-sensible sounds, comprising:

audio means, including at least one speaker for reproducing signals from said audio means;

a compressor operatively connected to said audio means to receive an inputted signal from said audio means, for compressing an amplitude of said inputted signal and producing a compressed output signal;

a low pass filter for extracting only low frequency band components of said compressed output signal;

an amplifying means for amplifying the output of said low pass filter and delivering the amplified signal;

a vibration unit disposed in a seat of a vehicle for converting said amplified signal to mechanical vibrations;

a vibration sensor for generating a vibration signal of a magnitude in accordance with vibrations of a vehicle body; and

level adjusting means for adjusting the level of said compressed output signal in accordance with an average level of said vibration signal.

5,355,420

METHOD AND APPARATUS FOR IDENTIFICATION OF DOCUMENT SKEW

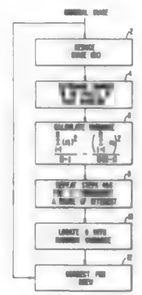
Dan S. Bloomberg, Palo Alto, and Gary E. Kopec, Belmont, both of Calif., assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 448,774, Dec. 8, 1989, Pat. No. 5,187,753. This application Oct. 19, 1992, Ser. No. 963,159

The portion of the term of this patent subsequent to Feb. 16, 2000, has been disclaimed.

Int. Cl.[5] G06K *9/32*

U.S. Cl. 382—46 **26 Claims**



12. An optical character recognition device (OCR) programmed to determine skew of an image of a document, said OCR comprising:

an optical scanner producing an image of said document in the form of a digital data structure, said image including plurality of scanlines comprising ON and OFF pixels;

a digital processor programmed to input said image of said document and determine a variance in a number of OFF pixels in at least one scanline of said image as a function of document rotation angle, said processor programmed to calculate said variance by an equation of the form:

$$\sum_{i=1}^{N} (n_i)^p$$

where:

N is a number of scan lines;

p is a real number greater than 1;

n is the number of all OFF pixels in a scan line; and

i is a counter for the scan lines,

said skew located at a document rotation angle at which said variance is substantially a maximum;

means for rotating said image about an angle of about said skew to produce a deskewed image of said document; and

means for identifying characters in a deskewed image of said document.

5,355,421

METHOD OF NOISE DETECTION AND NOISE APPARATUS

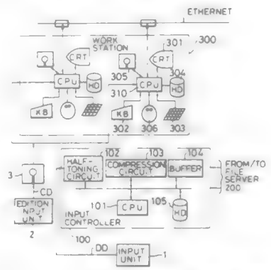
Hiroo Koyama, Miyanodai, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 15, 1992, Ser. No. 944,940

Claims priority, application Japan, Sep. 19, 1991, 3-268341

Int. Cl.[5] G06K *9/40, 9/48*

U.S. Cl. 382—54 **7 Claims**



1. A method of noise detection and noise erasing for image data which have been read by an input means and digitized, said method comprising the steps of:

forming a contour image of the same size as an original image,

scanning said contour image in a predetermined sequence to identify a black pixel,

tracing the contour of said original image having the same coordinates as said black pixel,

storing the pixels of said contour image in a memory as contour pixels if the length of the contour is shorter than a predetermined length, wherein the predetermined length can be freely selected, and at the same time erasing said contour pixels from said contour image,

listing the contour pixels stored in said memory as noise candidates,

screening from said original image said noise candidates by identifying all noise candidates having a predetermined noise level within a corresponding portion of said original image, wherein said predetermined noise level is freely selectable from a plurality of noise levels, and

erasing pixels corresponding to each said noise candidate determined to be noise based on said noise levels.

5,355,422

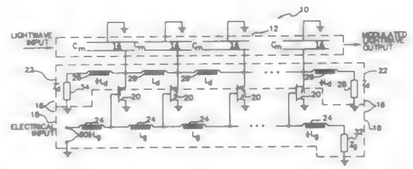
BROADBAND OPTICAL MODULATOR

Charles T. Sullivan, Burnsville, and Vladimir Solokov, Shakopee, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 9, 1992, Ser. No. 973,349

Int. Cl.[5] G02B *6/10;* **G02F** *2/00*

U.S. Cl. 385—1 **14 Claims**



3. A broadband optical modulator comprising:

N−1 pairs of modulator electrodes along a light waveguide such that light propagating through said waveguide prop-

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agates between and through each pair of electrodes, wherein each pair of electrodes comprises first and second modulator electrodes, respectively, wherein N is an integer which is at least three, each first electrode is connected to a reference terminal, and an effect of each pair of electrodes on light going through the light waveguide is an electro-optic effect;

a first termination impedance having a first terminal connected to the reference terminal, and having a second terminal;

a second termination impedance having a first terminal connected to the reference terminal and having a second terminal;

a first plurality of N inductors wherein each inductor has first and second terminals, wherein the first terminal of the first inductor is connected to the second terminal of the first termination impedance, the second terminal of the first inductor is connected to the first terminal of the second inductor and to the second electrode of the first pair of modulator electrodes, the second terminal of the second inductor is connected to the first terminal of the third inductor and to the second electrode of the second pair of modulator electrodes, and so on such that the first terminal of an nth inductor is connected to the second terminal of an (n−1)th inductor, the second terminal of the nth inductor is connected to the second electrode of the nth pair of modulator electrodes and to the first terminal of the (n+1)th inductor wherein n is an integer from two to (N−1), and the Nth inductor has the first terminal connected to the second terminal of the (N−1)th inductor and has the second terminal connected to the second terminal of said second termination impedance;

a third termination impedance having a first terminal connected to the reference terminal and having second terminal;

a second plurality of N inductors wherein each inductor has first and second terminals, the first terminal of the first inductor is an electrical signal input terminal, the second terminal of the first inductor is connected to the first terminal of the second inductor, the second terminal of the second inductor is connected to the first terminal of the third inductor, and so on such that the first terminal of an nth inductor is connected to the second terminal of an (n−1)th inductor and the second terminal of the nth inductor is connected to the first terminal of the (n+1)th inductor, wherein n is an integer from two to (N−1), and the Nth inductor has the first terminal connected to the second terminal of the (N−1)th inductor and has the second terminal connected to the second terminal of said third termination impedance; and

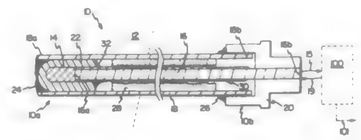
a plurality of N−1 transistors wherein each transistor has first, second and third terminals, wherein the second terminals of said plurality of transistors are connected to the reference terminal, the first terminal of the first transistor is connected to the second electrode of the first pair of modulator electrodes, the third terminal of the first transistor is connected to the second terminal of the first inductor of said second plurality of inductors, the first terminal of the second transistor is connected to the second electrode of the second pair of modulator electrodes, the third terminal of the second transistor is connected to the second terminal of the second inductor of said second plurality of inductors, and so on such that the first terminal of the nth transistor is connected to the second electrode of the nth pair of modulator electrodes, and the third terminal of the nth transistor is connected to the second terminal of the nth inductor of said second plurality of inductors, wherein n is an integer between one and (N−1).

5,355,423

OPTICAL TEMPERATURE PROBE ASSEMBLY

Richard W. Phillips, Eagan, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Jul. 16, 1992, Ser. No. 914,796
Int. Cl.[5] G01D *5/26*
U.S. Cl. 385—12 **32 Claims**



1. A temperature probe, comprising:

a sheath having a first and second sheath end, and further having a sheath coefficient of thermal expansion;

a waveguide having a first waveguide end secured proximate the first sheath end and a second waveguide end secured proximate the second sheath end, the waveguide having a waveguide coefficient of thermal expansion; and

a sensor material having a thermally responsive characteristic, and in optical communication with the second waveguide end;

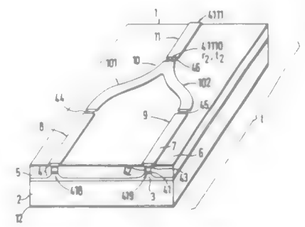
wherein the sheath coefficient is substantially matched to the waveguide coefficient.

5,355,424

METHOD OF OPERATING A SEMICONDUCTOR DEVICE AS AN OPTICAL FILTER AND SEMICONDUCTOR DEVICE FOR IMPLEMENTING THE METHOD

Wilfried Idler, Asperg; Gert Laube; Michael Schilling, both of Stuttgart; Klaus Wünstel, Schwieberdingen; Dieter Baums, Ludwigsburg; Olaf Hildebrand, and Kaspar Dütting, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Alcatel, N.V., Amsterdam, Netherlands

Filed Aug. 27, 1992, Ser. No. 935,885
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1991, 4130047.5
Int. Cl.[5] G02B *6/12*
U.S. Cl. 385—14 **10 Claims**



4. A semiconductor device comprising:

a substrate; and

a monolithically integrated branched waveguide structure disposed above the substrate, portions of the waveguide structure being divided into a plurality of regions by troughs, one of the regions being a branching region;

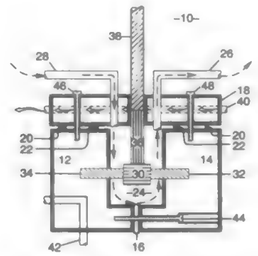
wherein free end faces of the regions are coated with a dielectric layer.

5,355,425

LIGHT COUPLING DEVICE FOR OPTICAL FIBERS

Mark S. Braiman, 1618 Shady Grove Ct., Charlottesville, Va. 22902-7218, and Roy E. Jonas, 417 Brandon Ave., Apartment 1, Charlottesville, Va. 22903

Filed Sep. 4, 1992, Ser. No. 940,647
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—31 **35 Claims**



1. A light source to optical fiber coupling device comprising, in combination:

light source means,

a diamond coupler, said diamond coupler having a first end and a second end, said diamond coupler having its first end proximate to at least a portion of said light source and optically coupled to said light source,

at least one optical fiber, said at least one optical fiber having a first end proximate said second end of said diamond coupler and being in optical coupling relation with said diamond coupler,

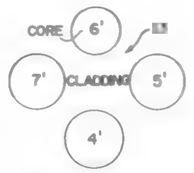
said first end of said diamond coupler extending into a chamber and being proximate said light source and said second end extending into a passage way.

5,355,426

BROADBAND MXN OPTICAL FIBER COUPLERS AND METHOD OF MAKING

Hani S. Daniel, Rockville; Douglas R. Moore, Severna Park, and Vincent J. Tekippe, Millersville, all of Md., assignors to Gould Electronics Inc., Eastlake, Ohio

Filed Sep. 2, 1992, Ser. No. 939,011
Int. Cl.[5] G02B *6/26;* **C03B** *23/20*
U.S. Cl. 385—39 **9 Claims**



1. A process for fabricating a 2×4 broadband fiber optic coupler, comprising the steps of:

a) arranging four optical fibers relatively axially in intimate contact, with two of the four fibers being both launch fibers and output fibers, at least two of the four optical fibers having unequal core diameters in the area of coupling and the four optical fibers having core diameters in the area of coupling satisfying the relationship:

$$\frac{\rho_2}{\rho_1} = \frac{\rho_4}{\rho_1} = \frac{\rho_3}{\rho_2} = \frac{\rho_3}{\rho_4}$$

where ρ_n, with n being an integer between 1 and 4, represents the diameter of the core of a particular optical fiber; and

b) heating, elongating and fusing said four optical fibers together to achieve broadband coupling.

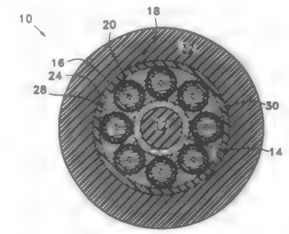
2. A 1×3 broadband optical fiber coupler comprising three optical fibers fused at a region of coupling, with one of the three fibers being a launch optical fiber which is continuous through the region of coupling to provide an output fiber, the launch optical fiber being dissimilar to the other two optical fibers in the region of coupling, said region of coupling being of a length and said dissimilarity of said launch optical fiber being of a degree to provide broadband response over a predetermined range of wavelengths.

5,355,427

GAS BLOCKED FIBER OPTIC TRANSMISSION

Galen M. Gareis, Richmond, and Richard C. Allen, Liberty, both of Ind., assignors to Belden Wire & Cable Company, Richmond, Ind.

Filed Jan. 21, 1993, Ser. No. 6,574
Int. Cl.[5] G02B *6/44*
U.S. Cl. 385—103 **16 Claims**



14. A fiber optic cable comprising

a fiberglass rod,

a plurality of optical fibers arranged around said rod,

each of said fibers being enclosed by a buffer tube,

said buffer tubes and said rod having an interstitial space between them, and

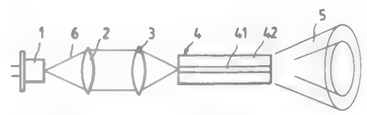
a filler that fills the interstitial space to prevent the flow of gas along the length of the cable and said filler contains ethylene vinyl acetate and ethylene acrylic acid.

5,355,428

OPTICAL WAVELENGTH CONVERSION MODULE

Takafumi Uemiya, and Naoto Uenishi, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 17, 1993, Ser. No. 19,187
Claims priority, application Japan, Feb. 17, 1992, 4-029783
Int. Cl.[5] G02B *6/00*
U.S. Cl. 385—122 **4 Claims**



1. An optical wavelength conversion module comprising:

a laser light source for emitting laser light having a substantially circular cross-section with an aspect ratio of at most about 1.3;

a fiber-type optical wavelength conversion element having a core and a clad, wherein a refractive index of the clad is smaller than a refractive index of the core, and wherein at

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least one of the clad and the core is made of a nonlinear optical material;

a condenser lens, having a numerical aperture of about 0.5, for converging the laser light emitted by the laser light source onto the core, such that the conversion element generates optically wavelength-converted light; and

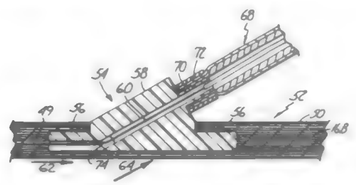
a collimating lens, having a numerical aperture of about 0.4, for collimating the laser light emitted by the laser light source and directing the laser light to the condenser lens.

5,355,429

OPTICAL FIBER STRAIN RELIEF APPARATUS

Nicholas A. Lee, Woodbury, and Gordon D. Henson, Lake Elmo, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 30, 1992, Ser. No. 998,446
Int. Cl.[5] G02B 6/44
U.S. Cl. 385—136 **21 Claims**



21. A strain relief apparatus for use with at least one optical fiber mounted between plies within a matrix of a generally planar, laminated composite structure wherein the fiber extends from a surface of the composite structure, the apparatus comprising:

an anchor having a proximal portion, a distal portion and an orifice extending therethrough, wherein the proximal portion is configured to be embedded within the composite structure, with the distal portion extending outwardly from the composite structure and the optical fiber extending through the orifice;

protective cabling, the protective cabling having a buffer, a threaded sleeve encompassing a portion of the buffer and a jacket encompassing the sleeve, such that the buffer is adapted to extend over the fiber and into the distal portion of the anchor with the threaded sleeve and the jacket extending over the distal portion of the anchor; and

a sleeve element extends about the protective cabling and is crimped to thereby secure the protective cabling to the distal anchor portion to provide strain relief to the optical fiber, thereby reducing the likelihood of fiber damage when forces are applied to the apparatus.

5,355,430

METHOD FOR ENCODING AND DECODING A HUMAN SPEECH SIGNAL BY USING A SET OF PARAMETERS

Russel D. Huff, Grand Junction, Colo., assignor to Mechatronics Holding AG, Vaduz, Liechtenstein

Filed Aug. 12, 1991, Ser. No. 743,843
Int. Cl.[5] G10L 9/00
U.S. Cl. 395—2.32 **18 Claims**

1. A method for encoding and decoding a human speech signal, comprising the following steps:

(a) generating a curvelet data base storing data related to a finite number of curvelet types of first human speech signals sufficient to cover a plurality of observable human speech signal curvelets;

(a1) a curvelet representing a piece of said first human speech signals on an interval between two subsequent spikes of a spike train corresponding to said speech signals,

(a2) said curvelet being described by discrete parameter values for each parameter variable of a predetermined set of one or more parameter variables,

(a3) a curvelet type being a class of curvelets described by identical parameter values,

(a4) a unique symbol being assigned to each of said curvelet types of said curvelet data base;

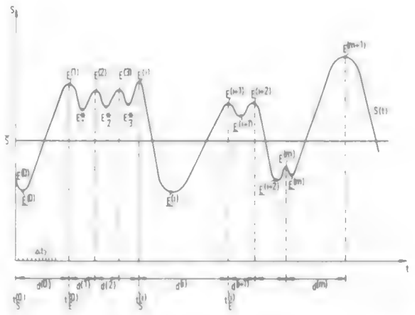
(b) encoding a second human speech signal actually to be encoded into a sequence of said symbols;

(b1) said second speech signal being sub-divided into a sequence of curvelets according to the spike train corresponding thereto,

(b2) each curvelet of said second speech signal being assigned to said symbol which symbol is assigned to said curvelet type within said curvelet data base to which said curvelet of said second speech signal belongs,

(b3) said assigned symbols forming the encoded human speech signal in the order of the curvelets within said second speech signal;

(c) composing a decoded speech signal corresponding to said second human speech signal as a series of chained representative signal curves taken from a set of representative signal curves in the order of the symbols of the encoded second human speech signal, each representative signal curve which is representative for said symbol exhibits a single curvelet being assigned to said symbol; wherein



said predetermined set of parameter variables, describing a curvelet between a first local extreme value and a second extreme value of an identical category being adjacent to each other and defining the location of two adjacent spikes of said spike train, comprises the following parameter variables:

a first parameter variable (d) having a value that for each curvelet equals a quantized value indicative of of said curvelet;

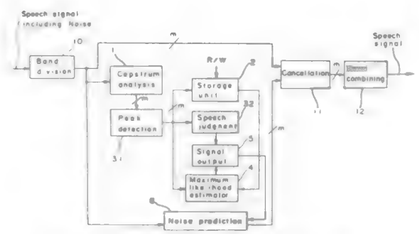
a second parameter variable (A_1) having a value that for each curvelet equals a quantized value of said first extreme value of said curvelet; a third parameter variable (A_2) having a value that for each curvelet equals a quantized value of said second extreme value of the curvelet; a fourth parameter variable (A_3) having a value that for each curvelet equals a quantized value of a third local extreme value of said curvelet located between said first local extreme value and said second extreme value and which is of discrete category with regard to said first and second extreme values; a fifth parameter variable (A_4) having a value that for each curvelet equals a quantized value of a duration between the occurrence of said first local extreme value and the occurrence of said third local extreme value, expressed as a percent value relative to a duration of said curvelet.

5,355,431

SIGNAL DETECTION APPARATUS INCLUDING MAXIMUM LIKELIHOOD ESTIMATION AND NOISE SUPPRESSION

Joji Kane, Nara, and Akira Nohara, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 706,576, May 28, 1991, abandoned. This application Nov. 27, 1992, Ser. No. 982,771
Claims priority, application Japan, May 28, 1990, 2-138053; May 28, 1990, 2-138061; May 28, 1990, 2-138062; May 28, 1990, 2-138063; May 28, 1990, 2-138067
Int. Cl.[5] G10L 3/02
U.S. Cl. 395—2.35 **1 Claim**



1. A signal detection and noise suppression apparatus comprising:

storage means for storing information of predetermined features of a plurality of kinds of predetermined signals:

band division means for performing a band division process including a Fourier transformation for an inputted noisy speech signal and outputting spectrum signals of a plurality of channels;

cepstrum analysis means for performing a cepstrum analysis process for the spectrum signals of a plurality of channels outputted from said band division means and outputting a cepstrum analysis result;

peak detection means for detecting a peak of a cepstrum in response to the cepstrum analysis result outputted from said cepstrum analysis means;

speech judgment means for detecting a speech signal interval of the inputted noisy speech signal in response to the peak detected by said peak detection means and outputting the detected speech signal interval;

maximum likelihood estimation means for detecting a kind of the signal of the inputted noisy speech signal by comparing a feature of the inputted noisy speech signal with the features stored in said storage means;

noise prediction means for predicting a noise in the speech of the inputted noisy speech signal in response to both of the detected speech signal interval outputted from said speech judgment means and the kind of the signal of the inputted noisy speech signal detected by said maximum likelihood estimation means;

cancellation means for cancelling the noise predicted by said noise prediction means in response to the spectrum signals of a plurality of channels outputted from said band division means and outputting noise-suppressed spectrum signals of a plurality of channels; and

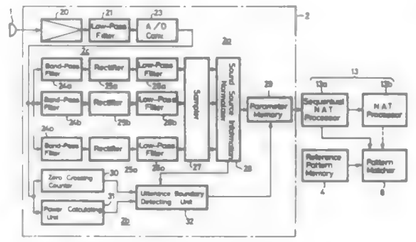
band combining means for combining the noise-suppressed spectrum signals of a plurality of channels, inverse Fourier-transforming the combined spectrum signal, and outputting a transformed speech signal.

5,355,432

SPEECH RECOGNITION SYSTEM

Miyuki Tanaka; Masao Watari, and Yasuhiko Kato, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 12, 1992, Ser. No. 928,448
Claims priority, application Japan, Aug. 30, 1991, 3-220732
The portion of the term of this patent subsequent to Mar. 26, 2008, has been disclaimed.
Int. Cl.[5] G10L 5/06
U.S. Cl. 395—2.43 **2 Claims**



1. A speech recognition system comprising:

acoustic analyzing means for producing a time sequence of acoustic parameters from an input speech signal in an utterance boundary thereof, and estimating a trajectory in a parameter space from said time sequence of acoustic parameters;

processing means for re-sampling said trajectory in said parameter space at predetermined constant intervals sequentially each time said acoustic parameters are produced by said acoustic analyzing means, thereby producing an input utterance pattern; and

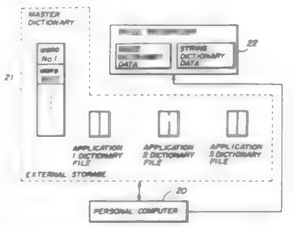
matching means for matching said input utterance pattern with reference speech patterns to recognize the input speech signal.

5,355,433

STANDARD PATTERN COMPARING SYSTEM FOR ELIMINATING DUPLICATIVE DATA ENTRIES FOR DIFFERENT APPLICATIONS PROGRAM DICTIONARIES, ESPECIALLY SUITABLE FOR USE IN VOICE RECOGNITION SYSTEMS

Seigou Yasuda, Yokosuka, Japan, and Peter Grennan, Eastbourne, England, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 18, 1991, Ser. No. 670,789
Claims priority, application Japan, Mar. 26, 1990, 2-76463
Int. Cl.[5] G10L 9/00
U.S. Cl. 395—2.52 **10 Claims**



1. A standard pattern comparing system to which a plurality of kinds of data are supplied and which recognizes data by

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comparing the data with standard patterns registered in a dictionary, the system comprising:

a) a memory which stores a plurality of dictionaries, the dictionaries including:
   1) a plurality of normal dictionaries, and
   2) one master dictionary; wherein:
   1) all standard patterns stored in each normal dictionary correspond to one kind of data;
   2) there are no duplicate standard-patterns included in at least two normal dictionaries, and
   3) each standard pattern included in the master dictionary is commonly used for at least two normal dictionaries to correspond to an arbitrary kind of data;
b) selection means, coupled to the memory, for selecting a corresponding one of the normal dictionaries and the master dictionary from the memory, based on the data;
c) comparing means, responsive to the selection means, for comparing the data with one of the standard patterns stored in the corresponding one of the normal dictionaries and the master dictionary;
d) output means, responsive to the comparing means, for outputting a comparison result for recognizing the data; and
e) analyzing means for analyzing the feature of the data so as to generate a feature pattern corresponding to the feature.

5,355,434

METHOD AND APPARATUS FOR PERFORMING LEARNING IN A NEURAL NETWORK

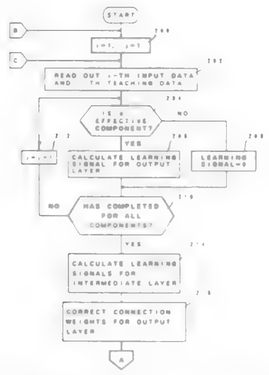
Takao Yoneda, Nagoya; Tomonari Kato, Kariya; Kazuya Hattori, Nagoya; Masashi Yamanaka, Obu, and Shiho Hattori, Nagoya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 18, 1992, Ser. No. 931,324

Claims priority, application Japan, Aug. 19, 1991, 3-232401; Aug. 29, 1991, 3-244774

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—23 **10 Claims**



1. A method of carrying out learning operation of a neural network having at least an input layer composed of plural input nodes and an output layer composed of plural output nodes, said input nodes and said output nodes being operatively coupled with each other with plural connection weights, said method comprising the steps of:

reading out from a data base a pair of input data and teaching data, said input data being composed of plural components respectively corresponding to said input nodes, and said teaching data being composed of plural components respectively corresponding to said output nodes;

judging whether or not each of the components of said teaching data is ineffective data for the purpose of learning operation;

applying said input data to said neural network so that said neural network outputs output data which is composed of plural components corresponding to the components of said teaching data;

calculating differences between the components of said output data and the components of said teaching data;

regarding some differences between s6me components of said output data and ineffective components of said teaching data as zero; and

correcting said connection weights based upon the differences.

5,355,435

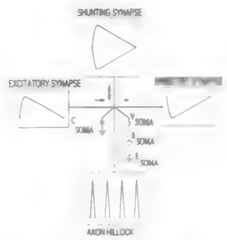
ASYNCHRONOUS TEMPORAL NEURAL PROCESSING ELEMENT

Mark R. DeYong, Las Cruces, N. Mex.; Randall L. Findley, Austin, Tex.; Thomas C. Eskridge, Las Cruces, N. Mex., and Christopher A. Fields, Rockville, Md., assignors to New Mexico State University Technology Transfer Corp., Las Cruces, N. Mex.

Filed May 18, 1992, Ser. No. 885,423

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—24 **19 Claims**



1. A neural network processing element, a plurality of which comprise a neural network, said processing element comprising:

means for simulating one or more chemical synapses;

means for simulating a neuron soma;

means for simulating one or more dendrites operably connecting said means for simulating one or more chemical synapses to said means for simulating a neuron soma;

means for simulating an axon;

means for simulating an axon hillock operably connecting said means for simulating a neuron soma to said means for simulating an axon:

means for receiving asynchronous signals and providing said signals to said means for simulating one or more chemical synapses; and

means for sending asynchronous signals from said means for simulating an axon.

5,355,436

SINGLE LAYER NEURAL NETWORK CIRCUIT FOR PERFORMING LINEARLY SEPARABLE AND NON-LINEARLY SEPARABLE LOGICAL OPERATIONS

Yong-Chul Shin, Amherst, and Ramalingam Sridhar, East Amherst, both of N.Y., assignors to The Research Foundation, State University of New York at Buffalo, Buffalo, N.Y.

Filed Oct. 5, 1992, Ser. No. 957,099

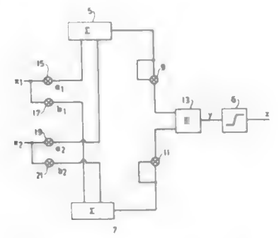
Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—24 **14 Claims**

1. A single artificial neuron circuit for performing a linearly separable or non-linearly separable predetermined logical operation on one or more input signals, comprising:

synapse means for receiving said one or more input signals and weighting said input signals with one or more complex weights to form one or more weighted input signals, said complex weights each having a real component and an imaginary component, the magnitude of said real and imaginary components determining the logical operation to be performed on said one or more input signals; and

neuron means for receiving said weighted input signals and for producing a resultant signal corresponding to said logical operation on said one or more input signals.



5,355,437

NEURAL NETWORK ARCHITECTURE FOR PATTERN RECOGNITION

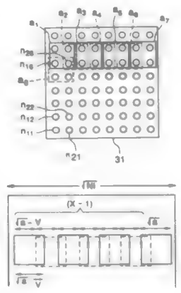
Sunao Takatori, and Makoto Yamamoto, both of Tokyo, Japan, assignors to Yozan Inc., Tokyo, Japan

Continuation of Ser. No. 703,746, May 21, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 22,438

Claims priority, application Japan, May 21, 1990, 2-129155; Jun. 4, 1990, 2-145986

Int. Cl.[5] G06K *9/66*

U.S. Cl. 395—24 **2 Claims**



1. A data processing system for recognizing an input image in response to an input characteristics data signal and outputting a recognition result signal, the data processing system comprising:

at least first, second and third adjacent square neural layers, each of said neural layers comprising a plurality of neurons arranged in neuron groups, each neuron group of said each neural layer having a predetermined number "a" of neurons, said predetermined number of neurons being coupled to a neuron in an adjacent neural layer, said neuron of said adjacent neural layer being responsive to said neurons of said neuron group;

wherein each neuron group of said each neural layer has at least one neuron which also belongs to an adjacent neuron group of said each neural layer so that said neuron group and said adjacent neuron group overlap by a width "v" of neurons, said overlap width "v" having a value of at least one and being less than a width of said neuron groups, said value "a" being equal for each of said first, second and third neural layers; and

wherein one of said at least first, second and third neural layers outputs said recognition result signal, each of said neural layers having an arrangement such that an nth neural layer has N_n number of neurons such that:

$$N_n = [(\sqrt{N_{n-1}} - v)/(\sqrt{a} - v)]^2,$$

the term "N_{n-1}" being a number of neurons in an adjacent (n−1)th layer, said arrangement causing said data processing system to have a minimum number of neurons.

5,355,438

WEIGHTING AND THRESHOLDING CIRCUIT FOR A NEURAL NETWORK

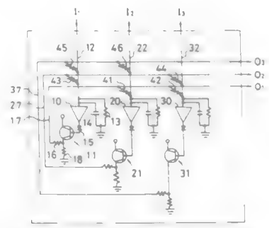
Sunao Takatori; Ryohei Kumagai; Koji Matsumoto, and Makoto Yamamoto, all of Tokyo, Japan, assignors to Ezel, Inc., Tokyo, Japan

Filed Apr. 26, 1993, Ser. No. 51,818

Claims priority, application Japan, Oct. 11, 1989, 1-264707

Int. Cl.[5] G06F *15/46, 11/00*

U.S. Cl. 395—24 **16 Claims**



1. A neural network system receiving a plurality of inputs and producing a plurality of outputs, said system comprising:

a plurality of interconnected neuron elements, each element comprising an operational amplifier, for amplifying an input signal to produce an output signal;

a threshold switching element, receiving said output signal, said threshold switching element assuming a first predetermined conducting state only when said output signal connected thereto exceeds a threshold, which is greater than zero, of said threshold switching element; and

signal summing means, comprising a variable resistor, for summing said output of said threshold switching element with inputs of others of said neuron elements,

said input signal of said operational amplifier including a combination of one said input signal and at least two signals from others of said neuron elements, summed together.

5,355,439

METHOD AND APPARATUS FOR AUTOMATED TISSUE ASSAY

Steven A. Bernstein, Los Olivos, and Page A. Erickson, Santa Barbara, both of Calif., assignors to Bio Tek Instruments, Santa Barbara, Calif.

Filed Aug. 5, 1991, Ser. No. 740,285

Int. Cl.[5] G06F *9/00, 15/46*

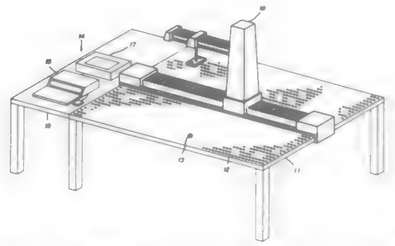
U.S. Cl. 395—82 **53 Claims**

1. A robotic system to transport a plurality of samples, each sample undergoing a test procedure having a plurality of steps, to a plurality of work stations each associated with one of said steps wherein said samples are undergoing said test procedures substantially simultaneously, said system comprising

a multi axis robotic device means having a predetermined working range area;

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a work table coextensive with said working range area;
a plurality of work modules each associated with one of said steps disposed at identifiable locations on said work table;
a computer capable of controlling said robotic device;
means for inputting to said computer a set of physical dimensions and a location on said work table of said work modules;
means for inputting to said computer a sequence of steps associated with each of said tests, each of said steps having a time of performance during which said sample must be located at the step's associated work station, said performance being completed at a step end time;
means associated with said robotic means for coupling to a sample and capable of holding said sample during transportation between steps;



means for scheduling said robotic device to move a sample sequentially to the work stations associated with the test said sample is undergoing and deposit said sample at said work station until said step end time is reached;
means for scheduling the movement of each sample after the first step in the test so that it occurs while the other samples are disposed in their work stations;
means for causing said robotic device to transport said samples responsive to said end times;
means for comparing the scheduled time of movement of each of said samples to determine if conflicts exist,
means for determining if multiple samples are scheduled to be disposed at the same work station during the same time, and
means for adjusting the time schedule of any sample within a predetermined time duration to resolve any conflicts determined by said means for comparing.

5,355,440

COLOR IMAGE PROCESSING METHOD AND APPARATUS THEREFOR

Kazuo Sayanagi, and Chiho Nakamura, both of Tokyo, Japan, assignors to Shaken Co., Ltd., Tokyo, Japan

PCT No. PCT/JP90/01568, § 371 Date Jul. 12, 1991, § 102(e) Date Jul. 12, 1991, PCT Pub. No. WO91/08520, PCT Pub. Date Jun. 13, 1991
PCT Filed Dec. 4, 1990, Ser. No. 730,833
Claims priority, application Japan, Dec. 5, 1989, 1-316293
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—109 **5 Claims**

1. A color image reproduction method which decides dot area ratios for reproducing a target color by means of the following steps using inks of the four colors Y, M, C, K:

(1) a step of obtaining dot area ratios A_{Y3}, A_{M3}, A_{C3} from biquadratic Neugebauer equations with four unknowns, in which an initial dot area ratio A_{K0} of K is taken as being a constant

$$A_{K0}=\mathrm{Min}(1-X,\ 1-Y,\ 1-Z)$$

and initial dot area ratios A_{Y0}, A_{M0}, A_{C0} of the three colors Y, M, C are taken respectively as being

$$A_{Y0}=\{(1-Z)-PA_{K0}\}/(1-pA_{K0})$$

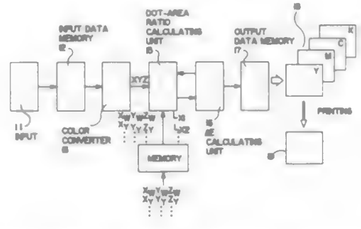
$$A_{M0}=\{(1-Y)-PA_{K0}\}/(1-pA_{K0})$$

$$A_{C0}=\{(1-X)-PA_{K0}\}/(1-pA_{K0})$$

where P is a constant ranging from 0.9 to 1.0;

(2) a step of obtaining a dot area ratio from biquadratic Neugebauer equations with four unknowns in which, when any one of A_{Y3}, A_{M3}, A_{C3} among dot area ratios A_{Y3}, A_{M3}, A_{C3}, $A_{K3}(=A_{K0})$ is minimum, the minimum dot area ratio is taken as being zero and the dot area ratios of the other two colors and of K are taken as being variables, and when A_{K3} is minimum,

$$A_{K3}=1.0$$



is taken as holding and the dot area ratios of the three colors Y, M, C are taken as being variables;

(3) when a dot area ratio of K exceeds 1.0, a step of obtaining a dot area ratio from biquadratic Neugebauer equations with four unknowns, in which

$$A_K=1.0$$

is taken as holding;

(4) when any of the dot area ratios of the three colors Y, M, C becomes negative, a step of obtaining a dot area ratio from biquadratic Neugebauer equations with four unknowns, in which this negative dot area ratio is taken as being zero and the area dot ratios of the other two colors and of K are taken as being variables; and

(5) reproducing the target color from said dot area ratios of the four colors Y, M, C, K.

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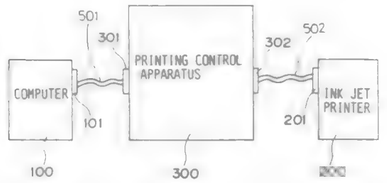
PRINTING CONTROL APPARATUS

Sunao Kawai, Nagoya; Hiroyuki Sasaki, Gamagori; Hiroshi Sumiya, Nagoya; Kousuke Fukaya, Kariya; Yoshiyuki Ban, Chita, and Ryohei Komiya, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 997,091, Dec. 29, 1992, abandoned. This application Jan. 24, 1994, Ser. No. 185,219
Claims priority, application Japan, Feb. 18, 1992, 4-30866
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—115 **19 Claims**

1. A printing control apparatus for use with a computer, a printer and an external storage device having a page buffer, comprising:

memory means for holding a current band of print bit image data for the page buffer, a page to be printed comprising a plurality of bands, wherein each band contains a plurality of adjacent and complete rows of print bit image data;
first interface means for receiving print command data from the computer;
second interface means for sending print bit image data to the printer;
third interface means for sending and receiving print command data and print bit image data to and from the external storage device; and
converting means coupled between said memory means and said first, second and third interface means, said converting means comprising:
developing means for developing in said memory means the print command data received from the computer into print bit image data;
determining means for determining whether a current print bit image data developed by said developing means belongs in the current band;



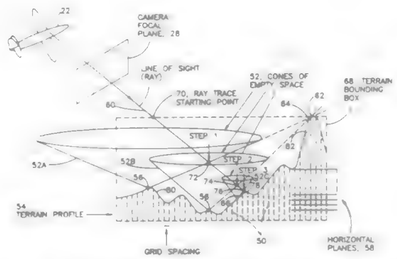
switching means for storing the current band into the page buffer and for retrieving into said memory means a new band as the current band when said determining means determines that the current print bit image data belongs in the new band;
combining means for combining the current print bit image data and the bit image data in the current band; and
sending means for sending the print bit image data from the page buffer to said second interface means after developing all of the print command data.

5,355,442

TERRAIN VISUALIZATION BY RAY TRACING A CONICAL HEIGHT FIELD TRANSFORMATION

David W. Paglieroni, Redwood City, and Sidney M. Petersen, Fremont, both of Calif., assignors to Loral Aerospace Corp., New York, N.Y.

Filed Dec. 16, 1992, Ser. No. 991,136
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—127 **5 Claims**



1. A process of generating a perspective view of a subject from a three-dimensional height field representation of a surface of the subject, the height field representation being composed of a set of columnar cells extending from a horizontal base plane upward to the subject surface, the process comprising the steps of:

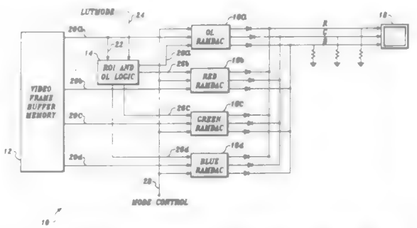
selecting a viewing location above the subject;
transforming said height field by placing upon respective ones of said columnar cells vertices of respective ones of a plurality of cones wherein, for each of said columnar cells, the horizontal and the vertical coordinates of the corresponding cone vertex are near the horizontal and vertical coordinates of an intersection of the columnar cell with the subject surface, said transforming step further comprising a step of opening each cone of said plurality of cones in an upward direction to a maximum cone angle which avoids intersection of the surface of the cone with the surface of the subject;
performing a ray tracing procedure with each of numerous rays from said viewing location to said subject wherein each of said rays corresponds to one pixel of the perspective view, said ray tracing procedure comprising, for each of said rays, steps of:
selecting on the ray a ray-trace start point;
initially tracing the ray from said start point to a first intercept with the conical surface of a first cone of said plurality of cones, said first cone extending from a vertex located on the subject surface beneath said start point;
further tracing the ray from the first intercept to a second intercept with the conical surface of a second cone of said plurality of cones, said second cone extending from a vertex located on the subject surface beneath said first intercept; and
continuing with the tracing of the ray through further intercepts with conical surfaces of successive cones of said plurality of cones wherein the Nth intercept occurs with the conical surface of the Nth cone, and the vertex of the Nth cone is located on the subject surface beneath the (N−1)th intercept, the tracing of the ray continuing until the ray
intercepts with a columnar cell of said set of columnar cells of said height field representation of the subject surface.

5,355,443

IMAGE COMPUTING SYSTEM

Yongmin Kim; Karl S. Mills, and Gillman K. Wong, all of Seattle, Wash., assignors to University of Washington, Seattle, Wash.

Continuation of Ser. No. 533,122, Jun. 4, 1990, abandoned. This application Nov. 12, 1992, Ser. No. 974,681
Int. Cl.[5] G06F *3/14*
U.S. Cl. 395—131 **27 Claims**



1. A computing system for generating image signals for driving a color video display device, each image comprising pixels, wherein the pixels are generated from a set of a plurality of separate signals representing different pixel color characteristics, the system comprising:

(a) a video buffer for storing image data representing one or more images in a plurality of image planes;
(b) mode selection means for selecting a display mode from a first display mode and a second display mode; and
(c) image conversion means for producing pixel color characteristic signals from said image data, said image conversion means including:
(i) a plurality of display generating means, each operable in a plurality of operating modes, for converting image data into signals representing the different pixel color characteristics, such that each of said display generating means converts image data from one of said image planes and is capable of generating pixel color characteristic signals; and

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(ii) display logic means for selecting, for a pixel, a set of a plurality of separate pixel color characteristic signals from said display generating means in accordance with said display mode selection, such that:

in said first mode, said set of a plurality of separate pixel color characteristic signals is comprised of a combination of signals representing the different pixel color characteristics which signals are selected from at least two of said display generating means, and

in said second mode, said set of a plurality of separate pixel color characteristic signals is selected from a single display generating means,

whereby said set of a plurality separate pixel color characteristic signals is output to a video display device which displays said pixel.

5,355,444

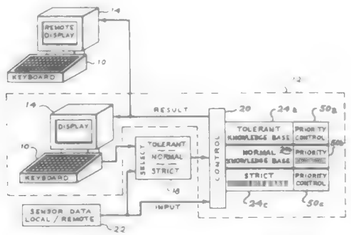
EXPERT SYSTEM WTIH A PLURALITY OF INDEPENDENT KNOWLEDGE BASES

Neil F. Chirico, Charlotte, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 826,200, Jan. 24, 1992, abandoned, which is a continuation of Ser. No. 468,538, Jan. 23, 1990, abandoned. This application Oct. 25, 1993, Ser. No. 142,888

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—51 **1 Claim**



1. An expert system for controlling maintenance on a machine requiring periodic maintenance;

an inference engine for processing an input and generating an output including a prioritized list of maintenance activities based on a set of rules related to the maintenance activities on the machine;

a plurality of stored sets of rules relating to maintenance of the machine and prioritization of such maintenance;

an input including a key factor relating to the maintenance of the sorting machine, each value of the key factor having associated with it one set of stored rules, said key factor chosen from tolerant, normal and strict and the set of stored rules includes a tolerant set of maintenance rules, a normal set of maintenance rules and a strict set of rules; and

means responsive to said key factor for selecting the associated set of stored rules for processing by the inference engine and for generating a prioritized list of maintenance activities based on the key factor, whereby the inference engine uses the selected set of rules to process the input and generate an output indicative of maintenance to be performed on the machine.

5,355,445

KNOWLEDGE BASE MANAGEMENT SYSTEM FOR AN INFORMATION REASONING APPARATUS

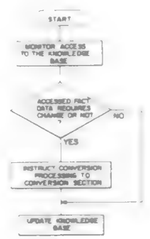
Kouichi Shibao; Yukinori Osada; Makoto Shimizu, and Tadashi Nishimura, all of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Apr. 8, 1992, Ser. No. 865,186

Claims priority, application Japan, Apr. 25, 1991, 3-95858; Apr. 26, 1991, 3-97750

Int. Cl.[5] G06F *15/18, 15/40*

U.S. Cl. 395—54 **14 Claims**



1. A method of managing a knowledge base system, comprising the steps of:

(a) storing primary data received from one of an input means and an external data base;

(b) converting said primary data into secondary data using a data conversion section, said secondary data having a data format compatible with said knowledge base system;

(c) storing said secondary data;

(d) storing added or updated primary date received from one of an input means and an external data base;

(e) recording change data indicating which of said primary data has been added or updated;

(f) accessing said secondary data based on a received retrieval inquiry;

(g) collating said accessing of said secondary data with said recorded change data; and

(h) controlling said data conversion section to convert said primary data corresponding to said secondary data to be accessed in said step (f) when said recorded change data indicates that said primary data corresponding to said secondary data to be accessed in said step (f) has been added or updated.

5,355,446

METHOD AND APPARATUS FOR PREPARING PICTURE MASKS

Lior Maayan, Tel Aviv, Israel, assignor to Scitex Corporation Ltd., Herzua Bet, Israel

Filed Aug. 26, 1992, Ser. No. 935,305

Claims priority, application Israel, Dec. 6, 1991, 100256

Int. Cl.[5] G06F *15/68*

U.S. Cl. 395—134 **28 Claims**

1. A method of preparing a fine mask of a boundary on a picture of an area of interest to be separated from the remainder of the picture, comprising the operations:

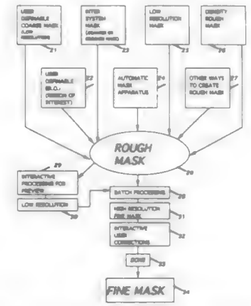
(a) storing in storage means a digitized representation of the picture, and of a rough mask defining the approximate boundary of the area of interest;

(b) selecting a first region of search of predetermined configuration starting with one point on the rough mask;

(c) retrieving picture data within the selected region of search from the storage means and processing said retrieved picture data to identify a boundary segment representing the portion of the boundary within the region of search;

(d) selecting the position of the next region of search by extrapolation from the preceding region of search in the direction of the boundary segment identified in the preceding region of search;

(e) retrieving picture data within said next region of search from the storage means and processing said retrieved picture data to identify the next boundary segment representing the position of the boundary within said next region of search; and



(f) repeating operations (d) and (e), to successively select the next regions of search by extrapolation and to find the boundary segments therein, until the next region of search meets the first region of search, or until encountering the condition that a boundary segment is not found in the region of search, whereupon the next region of search is selected by interpolation between the preceding region of search and the closest point on the approximate boundary defined by the rough mask.

5,355,447

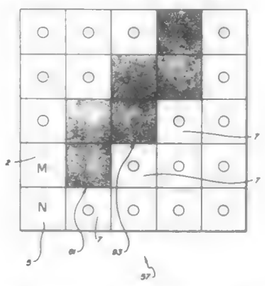
METHOD FOR COLOR IMAGE REDUCTION BASED UPON DETERMINATION OF COLOR COMPONENTS OF PIXELS IN NEIGHBORING BLOCKS

Kenneth C. Knowlton, Merrimack, N.H., assignor to Wang Laboratories, Inc., Lowell, Mass.

Division of Ser. No. 671,639, Mar. 20, 1991, Pat. No. 5,161,213, which is a continuation-in-part of Ser. No. 200,091, May 27, 1988, abandoned. This application Jul. 31, 1992, Ser. No. 922,403

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—139 **16 Claims**



1. A method of making a reduced image of an original two-dimensional pixel image, each pixel being defined by three components each having a value which together define a corresponding point at a position in a 3-D color space, said 3-D color space comprising a plurality of said points each of which defines a unique color, the method comprising:

dividing the original image into blocks, each block of the original image having a plurality of pixels, each block corresponding to a pixel in the reduced image; for each block,

determining if all pixels are equal to a first color in a block and, if so, making the corresponding pixel in the reduced image equal to the first color in said block;

if all pixels are not equal to the first color in said block,

determining if a unique identifiable background color is present in a plurality of blocks adjacent to said block;

if a unique identifiable background color is present,

identifying a first point in said color space related to an average value of the components of said pixels comprising said block;

identifying a second point in said color space related to said background color, said second point differing from said first point by a first distance; and

selecting as the color of the corresponding pixel in the reduced image, a color having a position in said 3-D color space which differs from said second point by an amount greater than said first distance.

5,355,448

METHOD OF GENERATING DOT SIGNALS CORRESPONDING TO CHARACTER PATTERN AND THE SYSTEM THEREFOR

Atsushi Uchino, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

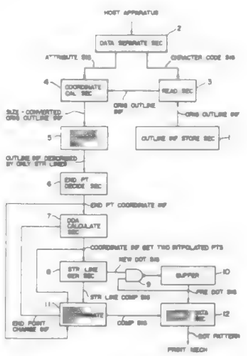
PCT No. PCT/JP91/00261, § 371 Date Dec. 27, 1991, § 102(e) Date Dec. 27, 1991, PCT Pub. No. WO91/13427, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 27, 1991, Ser. No. 768,878

Claims priority, application Japan, Feb. 27, 1990, 2-46362

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—150 **3 Claims**



1. A method of generating dot signals for character patterns having smooth outlines, comprising the steps of:

determining a plurality of end points from original outline data;

selecting one end point from said plurality of end points;

successively generating dot signals progressing from said end point outline pattern one dot at a time towards each of two adjacent end points to generate two intersecting lines having space therebetween;

generating pattern fill dot signals to fill the space between said outline pattern dot signals;

generating outline pattern dot signal progressing towards a closest adjacent end point when either of said outline pattern dot signals, which said outline pattern dot signals are generated simultaneously, reaches a target end point;

generating pattern fill dot signals in the space between the outline pattern dot signal generated progressing towards a

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closest adjacent end point and another outline pattern dot signal; and

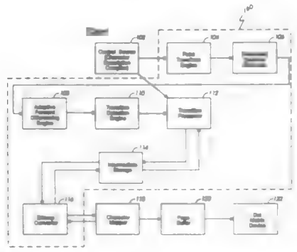
generating a sequence of outline pattern dot signals in the space between said outline dot signals until either both of the outline pattern dot signals meet at a final end point or both of the outline pattern dot signals arrive at their respective target end points simultaneously, followed by continued pattern fill dot signal generation until the character pattern is complete.

5,355,449

METHOD AND APPARATUS FOR OUTLINE FONT CHARACTER GENERATION IN DOT MATRIX DEVICES

James C. Y. Lang; Gary Ruby, and Jim C. K. Lo, all of San Jose, Calif., assignors to Destiny Technology Corporation, Santa Clara, Calif.

Filed Sep. 30, 1991, Ser. No. 771,382
Int. Cl.[5] G06F *3/14*
U.S. Cl. 395—150 **17 Claims**



1. Apparatus for converting an outline font represented by a control point stream into bit mapped data suitable for driving dot matrix display devices, comprising:

point transform means responsive to said control point stream and operative to generate a transformed point stream;

flattening means responsive to said transformed point stream and operative to generate a set of normalized polysegments defined by end point data wherein the length of each polysegment has a predetermined relationship to the dimensions of a pixel to be printed or displayed;

transition detection means responsive to said normalized polysegments and operative to develop a set of flag signals and initial transition pixel data locating a transition pixel relative to each polysegment intersected by a reference line passing through a particular point of each pixel in a row of pixels, a transition pixel being defined as a pixel at which a data state transition occurs;

intermediate storage means for storing transition pixel data;

transition processing means responsive to the transition pixel data developed by said transition detection means, a plurality of process parameters, and said set of flag signals, and operative to compare said initial transition pixel data to transition pixel data previously stored in said intermediate storage means and to generate intermediate transition pixel data for return to said intermediate storage means;

bitmap converter means responsive to said stored intermediate transition pixel data, and operative to generate bitmap data; and

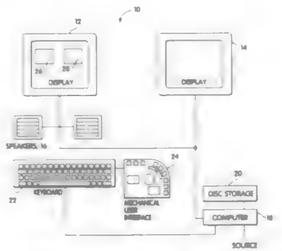
output means responsive to said bitmap data and operative to generate output character data corresponding thereto.

5,355,450

MEDIA COMPOSER WITH ADJUSTABLE SOURCE MATERIAL COMPRESSION

Paul D. Garmon, Winchester; Robert A. Gonsalves, Brighton; Patrick D. O'Connor, Framingham, all of Mass.; Stephen J. Reber, Nashua, N.H.; Eric C. Peters, Carlisle; Joseph H. Rice, Arlington, both of Mass., and Curt A. Rawley, Windham, N.H., assignors to Avid Technology, Inc., Tewskbury, Mass.

Filed Apr. 10, 1992, Ser. No. 866,829
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—162 **20 Claims**



1. Media composer for editing source material comprising:

digitizing apparatus for receiving, and digitizing video and audio source material;

storage to receive the video and audio source material;

computing apparatus including compression apparatus responsive to the digitizing apparatus, said compression apparatus being for compressing and storing the source material in the storage, wherein the computing apparatus is responsive to the storage to determine if the source material occupies more than a target amount of the storage and provide an indication if the source material does occupy more than the target amount of the storage, wherein the compression apparatus is responsive to the indication to adjust its compression if the source material does occupy more than the target amount of the storage, the computing apparatus further being for manipulating the stored source material;

output apparatus communicating with the computing apparatus for displaying the manipulated source material and control information;

wherein the computing apparatus is programmed so that multiple resolutions can be displayed, recorded and played back.

5,355,451

GRAPHIC PROCESSING UNIT

Katsumi Nonaka, Atsugi, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1992, Ser. No. 849,580
Claims priority, application Japan, Mar. 12, 1991, 3-046813
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—166 **3 Claims**

3. A graphic painting apparatus, comprising:

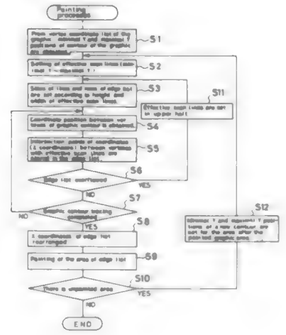
edge list memory means for storing coordinate data of contour points of a graphic;

judging means for judging whether storage of the coordinate data causes said memory means to overflow;

division processing means for dividing the coordinate data into data portions successively stored in said memory means and painting the graphic by painting the successively stored data portions in case it is judged by said judging means that said memory means has overflowed;

said memory means comprising a 2-dimensional memory, which can change the numbers of lines and rows, the number of lines being determined at first according to maximal Y coordinates and minimal Y coordinates of said graphic and, in case the memory means has overflowed, being determined according to maximal Y coordinates and minimal Y coordinates of a divided graphic; and

wherein the first row of each line of said edge list memory means is assigned to an index area, and the other rows are assigned to coordinate storage areas respectively, X coordinates matching with Y coordinates corresponding to each line are stored in a coordinate storage area of each line, and the number of X coordinates written the coordinate storage area following said index area is written in said index area.



5,355,452

DUAL BUS LOCAL AREA NETWORK INTERFACING SYSTEM

Roger T. Lam, Sacramento; Brandon H. Mathew, and Matthew P. Wakeley, both of Roseville, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 2, 1992, Ser. No. 907,955
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—200 **10 Claims**

1. An interface system for providing an interface between a local area network and a host, said system comprising:

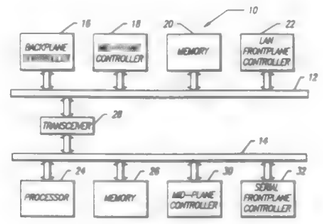
a first bus;

backplane controller means, connected to said first bus, for interfacing said first bus to said host;

a second bus;

frontplane controller means, connected to said first and second bus, for interfacing said local area network to said first bus and said second bus, respectfully;

processing means for controlling communication between said first bus and said second bus;



transceiver means, connecting said first bus to said second bus for allowing communication between said first bus and said second bus; and

midplane controller means connected to said second bus for allowing said processing means to determine the status of activity on said first bus by communicating directly with said midplane controller means.

5,355,453

PARALLEL I/O NETWORK FILE SERVER ARCHITECTURE

Edward J. Row, Mountain View; Laurence B. Boucher, Saratoga; William M. Pitts, Los Altos, and Stephen E. Blightman, San Jose, all of Calif., assignors to Auspex Systems, Inc., Santa Clara, Calif.

Continuation of Ser. No. 404,959, Sep. 8, 1989, Pat. No. 5,163,131. This application Oct. 13, 1992, Ser. No. 959,746
The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.
Int. Cl.[5] G06F *15/16, 13/00*
U.S. Cl. 395—200 **38 Claims**

1. Network server apparatus for use with a data network and a mass storage device, comprising:

an interface processor unit coupleable to said network and to said mass storage device;

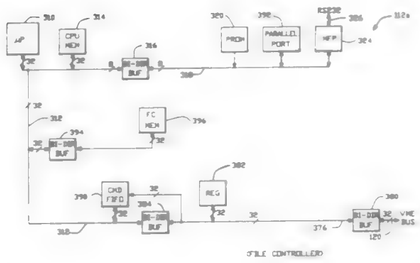
a host processor unit coupleable to said interface processor unit by a second path different from said network;

means in said interface processor unit for satisfying requests from said network to store data from said network on said mass storage device;

means in said interface processor unit for satisfying requests from said network to retrieve data from said mass storage device to said network;

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means in said interface processor unit for satisfying requests received from said host processor unit over said second path to store data from said host processor unit on said mass storage device; and



means in said interface processor unit for satisfying requests received from said host processor unit over said second path to retrieve data from said mass storage device to said host processor unit.

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Patent Not Issued For This Number

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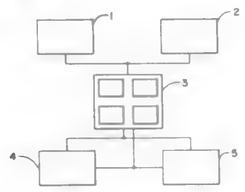
METHOD AND APPARATUS FOR AVOIDING DEADLOCK IN A COMPUTER SYSTEM WITH TWO OR MORE PROTOCOL-CONTROLLED BUSES INTERCONNECTED BY A BUS ADAPTOR

Rolf B. Hilgendorf, Boeblingen, and Thomas Schlipf, Holzgerlingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 794,748, Nov. 19, 1991, abandoned. This application Dec. 21, 1993, Ser. No. 171,268

Int. Cl.[5] G06F *13/14*

U.S. Cl. 395—325 **8 Claims**



1. A method for avoiding deadlocks in a computer system comprising a first bus, a first bus unit connected to said first bus, a second bus, a second bus unit connected to said second bus, and a bus adapter connected between said first and second busses, said method comprising the steps of:

requesting by said first bus unit a first operation that requires use of both busses to complete;

granting and acknowledging by said bus adapter to said first bus unit use of said first bus;

after said granting and acknowledging steps but before completion of said first operation, requesting by said second bus unit a second operation that requires use of both busses to complete, and in response and said first bus unit's use of said first bus, granting said second bus unit use of both busses and completing said second operation; and

after completing said second operation, said bus adapter resuming said first bus unit's use of said first bus, grating said first bus unit use of said second bus and resuming said first operation from its point of suspension until completion.

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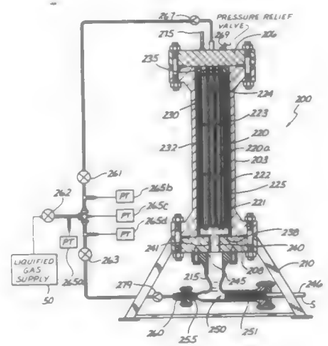
PEBBLE-BED EVAPORATION AND SUPERHEATER ASSEMBLY FOR VAPORIZING AND HEATING A LIQUIFIED CRYOGENIC GAS

Irving B. Osofsky, Rancho Palos Verdes, Calif., assignor to Sparta, Inc., Laguna Hills, Calif., a part interest

Division of Ser. No. 552,862, Jul. 13, 1990, Pat. No. 5,197,323. This application Jul. 22, 1992, Ser. No. 918,416

Int. Cl.[5] F24H *7/02, 1/10;* **F22B** *1/28*

U.S. Cl. 392—342 **11 Claims**



1. A pebble-bed evaporator and superheater assembly for vaporizing a liquidfied gas and for increasing the temperature of a vaporized gaseous material above an initial value, comprising:

a source of liquidfied gas at an initial temperature,

an elongated tubular pressure shell having an input connected to said source of liquidfied gas and an output for a heated vaporized gaseous material,

means forming spaced baffles arranged along the length of said tubular pressure shell between the input and output thereof,

said baffles including a plurality of apertures therein for passage of gaseous material through said tubular pressure shell,

pebble elements contained within said tubular pressure shell for storing heat and for transferring heat to the liquified gas entering said tubular shell to vaporize the same and to the gaseous material flowing through said shell,

means to heat said pebble elements to a predetermined temperature above said initial temperature,

mixer means having inlet means connected to receive the heated gaseous material heated to a first temperature by

said pebble elements during passage through said tubular pressure shell,

said mixer means including outlet means for the gaseous material flowing through said mixer means, and

liquified gas supplying means connected to said mixer means for introducing into said mixer means a liquified gas at said initial temperature to cool the heated gaseous material entering said mixer means from said tubular pressure shell whereby the temperature of the gaseous material flowing out of said outlet means is cooled to a temperature below said first temperature.

5,355,457

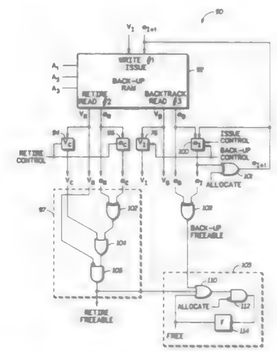
DATA PROCESSOR FOR PERFORMING SIMULTANEOUS INSTRUCTION RETIREMENT AND BACKTRACKING

Michael C. Shebanow, Austin, and Mitchell Alsup, Dripping Springs, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 21, 1991, Ser. No. 703,531

Int. Cl.[5] G06F *9/30, 9/38*

U.S. Cl. 395—375 **9 Claims**



5. In a data processing system having a predetermined number of execution units for simultaneously executing a plurality of instructions issued by a sequencer, and a plurality of numbered physical registers in a register file for selectively storing information resulting from execution by said execution units of each of said predetermined number of instructions, means for performing simultaneous instruction retirement and backtracking comprising:

first means for monitoring and storing an allocation state change of each of said physical registers, in response to said sequencer advancing from a first consistent checkpoint to a subsequent retirement checkpoint, said first means storing, at each of a plurality of checkpoints in between said first consistent checkpoint and said subsequent retirement checkpoint, an allocation state bit and a visible state bit for each of said physical registers; and

second means, coupled to said first means, for simultaneously evaluating a retirement deallocation equation and a backtracking deallocation equation using NRZ encoding, in response to said sequencer discarding a stream of instructions issued between a first back-up checkpoint and a subsequent issue checkpoint, said second means evaluating said retirement deallocation equation and said backtracking deallocation equation to determine which physical registers to deallocate and return to a free pool of registers; said second means comprising;

a first logic portion for reading from said first means, for each of said plurality of numbered physical registers, at least said allocation state bit and said visible state bit at said first back-up checkpoint and said subsequent issue checkpoint, said first means being capable of being indexed by said sequencer using checkpoint numbers; and

a second logic portion coupled to said first logic portion for retrieving, for each of said numbered physical registers, said allocation state bit and said visible state bit at said first back-up checkpoint and said subsequent issue checkpoint and for evaluating a first set of physical register allocation changes using NRZ encoding, said second logic portion providing for each numbered physical register, a first output signal in response to performing such evaluation, said first output signal deallocating each of said numbered physical registers which has become free as a result of said sequencer backtracking to said first back-up checkpoint and

a third logic portion coupled to said first logic portion for simultaneously retrieving, for each of said numbered physical registers, said allocation state bit and said visible state bit at said consistent checkpoint and a subsequent retirement checkpoint, and for evaluating a second set Of physical register allocation changes using NRZ encoding, said third logic portion providing, for each numbered physical register, a second output signal in response to performing such evaluation, said second output signal deallocating each of said numbered physical registers which has become free as a result of said sequencer retiring said completed instruction.

5,355,458

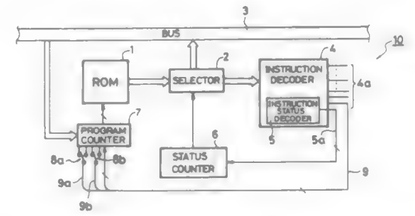
MICROCOMPUTER WITH TABLE ADDRESS FORCING FOR DIFFERENT SIZE MEMORIES

Hideo Ohmae, Kobe, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Oct. 10, 1991, Ser. No. 774,312

Int. Cl.[5] G06F *12/02, 13/00*

U.S. Cl. 395—375 **24 Claims**



1. A process of producing a microcomputer wherein a memory is accessed according to an address value designated by a program counter, to have data read therefrom, wherein the data thus read is decoded by a decoder when it is an instruction and wherein an ensuing value of the program counter is determined by a decoded instruction, said process comprising the steps of:

forming the program counter having a number of digits with which a maximum storage capacity that can be packaged as said memory is accessed;

setting the data in an area covering a predetermined storage capacity in a rearmost part of an address space in said memory;

storing a program having the instruction for gaining access to the data in the area; and

providing wiring for setting a specific digit out of the digits having a logical value "1" set at a plurality of high order digits of said program counter to "0", to gain access to said area of said memory when the instruction is executed.

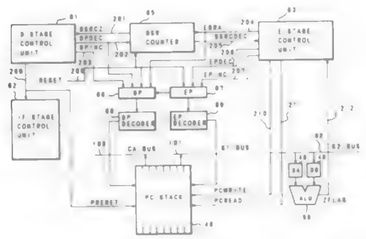
VOL 1167 ISS 2 OCT 11 1994 UMI

5,355,459

PIPELINE PROCESSOR, WITH RETURN ADDRESS STACK STORING ONLY PRE-RETURN PROCESSED ADDRESSES FOR JUDGING VALIDITY AND CORRECTION OF UNPROCESSED ADDRESS

Masahito Matsuo, and Toyohiko Yoshida, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 317,253, Feb. 28, 1989, Pat. No. 5,193,205.
This application Sep. 29, 1992, Ser. No. 953,414
Claims priority, application Japan, Mar. 1, 1988, 63-49093; Apr. 7, 1988, 63-86704
Int. Cl.[5] G06F 9/38, 9/40, 9/42
U.S. Cl. 395—375 6 Claims



1. A data processor, wherein instructions are processed in a multi-stage pipeline of at least an instruction fetch stage followed by an instruction execution stage, the instructions including a subroutine call instruction and a subroutine return instruction, comprising:

a first stack memory for storing data comprising stack variables and return addresses, wherein said data are stored in said first stack memory by pushing said data onto to a top of said first stack memory and said data are retrieved from said first stack memory by popping said data from said top of said first stack memory, wherein said stack variables pushed onto said first stack memory during execution of a subroutine are popped from said first stack memory before a return address for said subroutine is popped from said first stack memory;

a second stack memory for storing said return address and a validity bit for said return address, where said return address is associated with said subroutine and is stored during execution of the subroutine call instruction, and where said validity bit indicates whether said return address stored in said second stack memory is valid or invalid;

a first writing means, coupled to said first stack memory and to a return address input, for pushing said return address onto said first stack memory when the subroutine call instruction is executed;

a second writing means, coupled to said second stack memory and to said return address input, for pushing said return address onto said second stack memory when the subroutine call instruction is executed;

an operand writing means, coupled to said first stack memory, for pushing said stack variables onto said first stack memory;

a first reading means, coupled to said second stack memory and operable in a stage preceding the instruction execution stage, for popping a predicted subroutine return address from said second stack memory;

a second reading means, coupled to said first stack memory, for popping a data element from said first stack memory, where said data element is said return address of said subroutine when said stack variables pushed onto said first stack memory during execution of said subroutine are popped before said data element is read;

a validity bit setting means, coupled to said second stack memory, for setting said validity bit of said return address stored in said second stack memory to indicate validity of said return address;

a validity bit clearing means, coupled to said second stack memory, for clearing said validity bit of said return address stored in said second stack memory to indicate the invalidity of said return address;

a validity bit reading means, coupled to said second stack memory, for reading said validity bit of said predicted subroutine return address from said second stack memory;

instruction fetching means, coupled to said first stack memory, to said second stack memory, and to an instruction memory and operable in the instruction fetch stage, for fetching a first instruction from said instruction memory at an address indicated by said predicted subroutine return address popped from said second stack memory and outputting said first instruction, in response to the subroutine return instruction being fetched in the instruction fetch stage, whether execution of the subroutine return instruction in the execution stage is started or not, and for fetching a second instruction from said instruction memory at an address indicated by said top of said first stack memory and outputting said second instruction, in response to said validity bit of said predicted subroutine return address being invalid; and

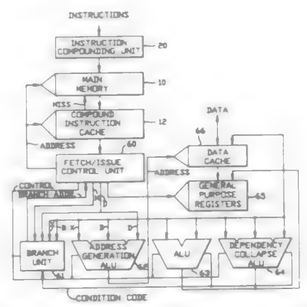
instruction execution means, coupled to said validity bit reading means, and to said instruction fetching means and operable in the instruction execution stage, for executing said first instruction when said validity bit of said predicted subroutine return address is valid and for executing said second instruction when said validity bit of said predicted subroutine return address is invalid.

5,355,460

IN-MEMORY PREPROCESSOR FOR COMPOUNDING A SEQUENCE OF INSTRUCTIONS FOR PARALLEL COMPUTER SYSTEM EXECUTION

Richard J. Eickemeyer, Endicott; Stamatis Vassiliadis, Vestal, and Bartholomew Blaner, Newark Valley, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 543,464, Jun. 26, 1990, abandoned.
This application Jul. 29, 1993, Ser. No. 98,240
Int. Cl.[5] G06F 9/40
U.S. Cl. 395—375 26 Claims



1. In a digital computer system including a means for executing a plurality of instructions having a form said instructions have when presented for scalar execution in parallel, a combination, comprising:

an in-memory preprocessor for a sequence of instructions which may be executed by a plurality of functional units of the digital computer system, each functional unit being capable of processing one or more types of machine-level instructions, said in-memory preprocessor providing for compounding of instructions for execution in parallel by one or more functional units of the digital computer system in parallel prior to issue and execution of a sequence of instructions to be executed by the functional units, including in combination,

(a) an input/output interface for providing a group of instructions to be processed,

(b) an instruction compounding mechanism for receiving the group of instructions to be processed from said input/output interface and for producing compounding tag information for an instruction which denotes a grouping of instructions for parallel execution for each one instruction of the group of instructions, the compounding tag information indicating whether an instruction associated with a produced compounding tag information may be compounded and executed in parallel in said digital computer system by a value of said compounding tag information for each one instruction of the group of instructions; and

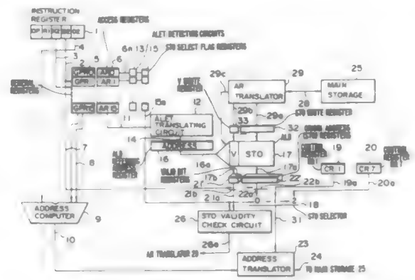
(c) a main storage connected to the input/output interface and to the instruction compounding mechanism for storing the group of instructions with the compounding tag information.

5,355,461

METHOD OF AND APPARATUS FOR SELECTING AN ORIGIN ADDRESS FOR USE IN TRANSLATING A LOGICAL ADDRESS IN ONE OF A PLURALITY OF VIRTUAL ADDRESS SPACES TO A REAL ADDRESS IN A REAL ADDRESS SPACE

Fujio Wakui, and Masahiko Tagami, both of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Computer Eng. Co., Ltd., Hadano, both of Japan

Filed Sep. 24, 1990, Ser. No. 587,031
Claims priority, application Japan, Sep. 22, 1989, 1-247324
Int. Cl.[5] G06F 12/10
U.S. Cl. 395—400 8 Claims



1. An apparatus for selecting an origin address for use in translating a logical address for an operand of an instruction in one of a plurality of virtual address spaces to a real address in a real address space, the apparatus comprising:

at least one control register for storing a predetermined origin address;

general registers, each of which is capable of being designated as a base register by an instruction;

access registers for storing respective space identifiers designating respective virtual address spaces, the access registers respectively corresponding to the general registers, wherein the space identifiers stored in the access registers are capable of being changed from time to time;

means for detecting if the space identifiers stored in the access registers are equal to a predetermined space identifier and outputting respective results of the detecting, the detecting and outputting being repeated for one of the access registers if the space identifier stored in the one access register is changed;

flag registers for storing the respective results from the detecting means, the flag registers respectively corresponding to the access registers and the general registers;

means for obtaining an instruction designating one of the general registers as a base register;

means for performing an access register translation based on a space identifier stored in one of the access registers corresponding to the general register designated as a base register to obtain an origin address; and

means for selecting one of (1) the predetermined origin address stored in the at least one control register and (2) the origin address obtained by performing the access register translation;

wherein the selecting means selects the predetermined origin address stored in the at least one control register if a result stored in one of the flag registers corresponding to the general register designated as a base register indicates that the space identifier stored in the access register corresponding to the general register designated as a base register is equal to the predetermined space identifier; and

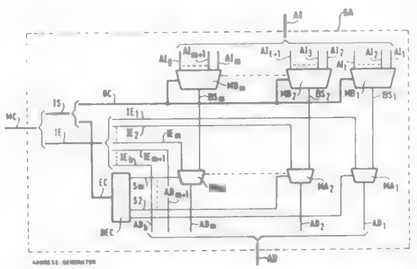
wherein the selecting means selects the origin address obtained by performing the access register translation if the result stored in the flag register corresponding to the general register designated as a base register indicates that the space identifier stored in the access register corresponding to the general register designated as a base register is not equal to the predetermined space identifier.

5,355,462

PROCESSOR DATA MEMORY ADDRESS GENERATOR

Emmanuel Rousseau, Paris, and Alain Chateau, Herblay, both of France, assignors to Alcatel Radiotelephone, Paris, France

Filed Sep. 19, 1991, Ser. No. 762,821
Claims priority, application France, Sep. 19, 1990, 9011560
Int. Cl.[5] G06F 12/00, 9/26, 9/34, 15/76
U.S. Cl. 395—400 12 Claims



1. A processor data memory address generator receiving an instruction address from an instruction counter and a control word from a program controller which receives instructions from a program memory addressed by said instruction counter, said program controller producing a program signal addressed to an arithmetic and logic unit, said instruction counter being incremented by a clock signal and reset by said program controller, wherein said control word comprises location information and selection information and said address generator comprises means for producing a data address b bits in length having a first part comprising bits of said location information and a second part formed by a selected set of bits of the instruction address, said selected set of bits being identified by said selection information.

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5,355,463

CIRCUIT CONFIGURATION FOR TRANSFORMING THE LOGICAL ADDRESS SPACE OF A PROCESSOR UNIT TO THE PHYSICAL ADDRESS SPACE OF A MEMORT

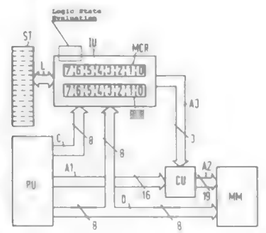
Udo Moeller, Duisburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 9, 1992, Ser. No. 818,539

Claims priority, application European Pat. Off., Jan. 10, 1991, 91100274.5

Int. Cl.[5] G06F *12/10, 9/32*

U.S. Cl. 395—400 **7 Claims**



1. A circuit configuration for transforming a logical address space of a processor unit to a physical address space of a memory, said circuit configuration comprising an interpretation unit; data and control lines for connecting said interpretation unit to said processor unit, said interpretation unit including a register, said register having a first register region and a second register region, said second register region to be written into by said processor unit, said interpretation unit having means for continuously evaluating logic states of said processor unit, for writing contents of said second register region into said first register region at a first one of the logic states and for outputting contents of said first register region as a first address portion; a linking unit, and address lines for connecting said linking unit to said processor unit, to said interpretation unit and to said memory, said linking unit forming a physical address for said memory from the first address portion transferred by said interpretation unit and a second address portion transferred by said processor unit.

5,355,464

CIRCUITRY AND METHOD FOR SUSPENDING THE AUTOMATED ERASURE OF A NON-VOLATILE SEMICONDUCTOR MEMORY

Mickey L. Fandrich, Placerville, and Virgil N. Kynett, El Dorado Hills, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 11, 1991, Ser. No. 655,650

Int. Cl.[5] G06F *13/00, 9/312;* **G11C** *16/06*

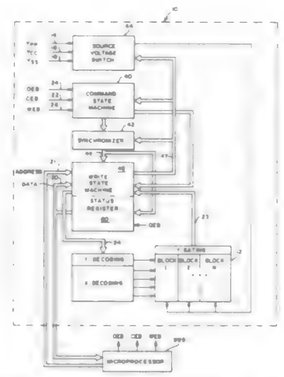
U.S. Cl. 395—425 **18 Claims**

1. A method of suspending execution of an automated erasure sequence of a nonvolatile electrically erasable semiconductor memory, the automated erasure sequence including a multiplicity of erasure steps, the erasure steps including a preconditioning step, a delay step, an erase pulse apply step, and an erase verification step, the method comprising the steps of:

(a) receiving an erase suspend command and bringing a suspend signal active;

(b) suspending the automated erasure sequence after a first erasure step in response to the active suspend signal;

(c) receiving an erase resume command and bringing the suspend signal inactive; and



(d) resuming execution of the automated erasure sequence with a second erasure step in response to the inactive suspend signal.

5,355,465

DATA STORING DEVICE HAVING A PLURALITY OF REGISTERS ALLOTTED FOR ONE ADDRESS

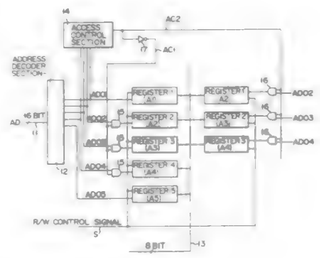
Kazuyoshi Yoshida, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 11, 1991, Ser. No. 712,440

Claims priority, application Japan, Jun. 12, 1990, 2-153595

Int. Cl.[5] G06F *12/00, 12/04, 13/00*

U.S. Cl. 395—425 **6 Claims**



1. A data storing device comprising:

first data holding means for holding data;

second data holding means set into an accessible state in a preset cycle succeeding to a cycle in which said first data holding means is accessed and set into an access inhibition state in the preset cycle succeeding to said accessible state;

third data holding means having the same address as that of said second data holding means allotted thereto and set into an access inhibition state in the preset cycle in which said second data holding means is accessed, and set into an accessible state in the preset cycle succeeding to said access inhibition state of third data holding means; and

access control means for controlling permission/inhibition of access to said second and third data holding means.

5,355,466

SINGLE CHIP MICROCOMPUTER HAVING AN ADDRESS DISCRIMINATION CIRCUIT AND AN OPERATION MODE TERMINAL FOR PROTECTING THE CONTENT OF INTERNAL ROM

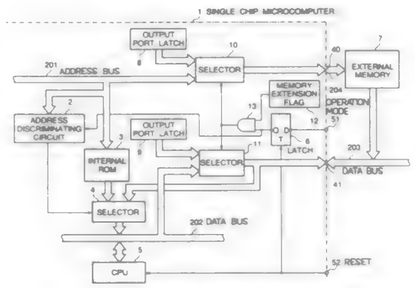
Shinichi Iwamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 6, 1992, Ser. No. 847,332

Claims priority, application Japan, Mar. 6, 1991, 3-039641

Int. Cl.[5] G06F *12/14, 13/00*

U.S. Cl. 395—425 **2 Claims**



1. A single chip microcomputer for coupling to an external memory through at least an external address bus and an external data bus, the single chip microcomputer comprising:

an internal address bus connected to an address bus interface terminal for coupling to said external address bus;

an internal data bus connected to a data bus interface terminal for coupling to said external data bus;

an internal memory coupled to said internal address bus;

a selector having a first input connected to an output of said internal memory and a second input connected to said internal data bus, an output of said selector being connected to said internal data bus;

an address discriminating circuit coupled to said internal address bus for discriminating whether an address on said internal address bus is directed to said internal memory or said external memory and for generating a selection signal to said selector, so that when the address on said internal address bus is directed to said internal memory, said address discriminating circuit causes said selector to select and output said output of said internal memory, and when the address on said internal address bus is directed to said external memory, said address discriminating circuit causes said selector to select and output data supplied to said internal data bus from said external memory;

a central processing unit coupled to said internal data bus and connected to a reset terminal;

a latch circuit having a data input connected to an operation mode designation terminal and a latch timing control input connected to said rest terminal sot hat said latch circuit latches a logical level on said operation mode designation terminal when said rest terminal is brought from a resetting level to a non-resetting level,

an output of said latch circuit connected to said address discriminating circuit and indicating a selected one of said internal memory and said external memory so that when said output of said latch circuit indicates said external memory, said address discriminating circuit causes said selector to select and output the data supplied to said internal data bus from said external memory, regardless of the address on said internal address bus;

whereby, when an operation is started during an external memory operation mode, even if the logical value of said operation mode designation terminal is changed after the resetting is released, the output of said latch circuit does not change, and therefore, the operation mode is in no way changed to an internal read-only (ROM) operation mode in the course of execution of a program,

said single chip microcomputer further comprising a second selector having a first input connected to said internal address bus and a second input connected to a first output port latch, an output of said second selector being connected to said address bus interface terminal,

a third selector having a first input connected to said internal data bus and a second input connected to a second output port latch, an output of said third selector being connected to said data bus interface terminal, and

a logic gate having a first input coupled to a memory extension flag an a second input connected to said output of said latch circuit,

an output of said logic gate being connected to a control input of each of said second and third selectors, so that when said output of said latch circuit indicates said internal memory and said memory extension flag does not indicate a memory extension, said first and second output port latches are coupled to said address bus interface terminal and said data bus interface terminal through said second and third selectors, respectively.

5,355,467

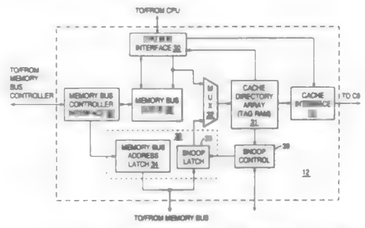
SECOND LEVEL CACHE CONTROLLER UNIT AND SYSTEM

Peter D. MacWilliams, Aloha; Robert L. Farrell, Portland, both of Oreg.; Adalberto Golbert, and Itzik Silas, both of Haifa, Israel, assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 710,507, Jun. 4, 1991, abandoned. This application Mar. 8, 1994, Ser. No. 208,090

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—425 **9 Claims**



1. A second level cache controller integrated circuit for use in a microprocessor system second level cache memory subsystem, the second level cache memory subsystem connected to a control processor unit (CPU) by means of a CPU bus and to a main memory bus for independently accessing a cache memory from the CPU bus and the main memory bus and for transferring data between the CPU bus and the main memory bus, the second level cache memory subsystem includes a memory bus controller for controlling access to and from the main memory bus, a cache memory coupled to the CPU bus and the main memory bus for data storage and retrieval, and a second level cache controller integrated circuit for control of the cache memory and independent data paths to and from the CPU bus and the main memory bus, the second level cache controller integrated circuit comprising:

a) a memory bus controller interface for coupling to the main memory bus controller and for adapting the second level cache controller to a specific main memory bus protocol;

b) a memory bus address queue coupled to the memory bus controller interface for scheduling main memory bus accesses by providing line and subline address data;

c) a CPU bus interface for coupling to the CPU bus and connected to the memory bus address queue for transmis-

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sion of memory bus address data from the CPU bus to the memory bus address queue;

d) a cache memory interface for coupling to the secondary cache memory for control of the cache memory input and output cycles;

e) a memory bus interface for coupling to the main memory bus, for accepting and sending main memory bus addresses, and for performing snoop operations, connected to memory bus queue for acceptance of memory bus addresses originating from the CPU bus;

f) a cache directory array coupled to the memory bus interface for snoop addresses, coupled to the CPU bus interface for cache access addresses and having an output for coupling address information to the cache memory interface; and

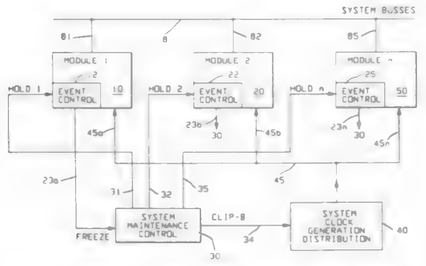
g) a snoop controller, selectably configurable for operation in a synchronous, an asynchronous, a strobed, and a clocked snoop mode, coupled to a second level cache controller clock, coupled to the main memory bus for receipt of snoop requests including snoop strobe and snoop clock signals, coupled to the memory bus interface for control of snoop address delivery to the cache directory array, coupled to the cache directory. array for delivering a snoop request and for receiving back a snoop request status signal, and coupled to the memory bus controller for communicating the snoop request status signal.

5,355,468

SYSTEM FOR HALTING SYNCHRONOUS DIGITAL MODULES

James H. Jeppesen, III, Lake Forest, and Bruce E. Whittaker, Mission Viejo, both of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Apr. 6, 1992, Ser. No. 864,111
Int. Cl.[5] G06F *11/22*; H03K *17/26*
U.S. Cl. 395—550 **7 Claims**



2. In a system of intercommunicating digital modules, a system for halting each module simultaneously comprising:

(a) a plurality of digital modules operating synchronously from a common clock means, each said module including:

(a1) event control logic means for sensing any error condition or shutdown condition required in the module and including;

(a2) means to generate a freeze signal to a system maintenance control means when an error or shutdown condition is detected;

(b) said maintenance control means for receiving said freeze signal from any one of said event control logic means and including:

(b2) means to transmit a hold signal to each of said digital modules;

(b2) means to activate a delay circuit which will transmit a disable signal, for one clock period, to a flip-flop means;

(b3) means to simultaneously suspend operation of the circuitry in each said digital module on the rise of the next clock following said deleted clock, said suspended operation thus maintaining all logic conditions at the moment of suspension;

(c) said flip-flop means for receiving said one-clock disable signal and deleting the transmission of one clock signal after occurrence of said freeze and hold signals;

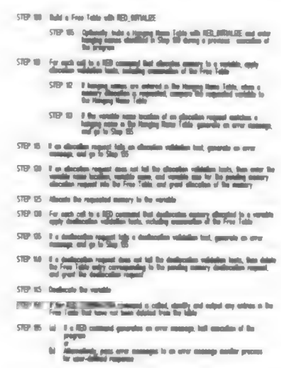
(d) said common clock means for generating normal clock pulses for synchronous operation of each digital module.

5,355,469

METHOD FOR DETECTING PROGRAM ERRORS

Clyde R. Sparks, Riverside, and Romuald I. Scibor-Marchocki, Baldwin Park, both of Calif., assignors to Delphi Data, a division of Sparks Industries, Inc., Corona, Calif.

Filed Jul. 30, 1990, Ser. No. 561,014
Int. Cl.[5] G06F *11/34*
U.S. Cl. 395—575 **9 Claims**



4. A programmed digital computer for automatically detecting operational errors in execution of commands of a computer program in the computer by monitoring memory allocations, such commands being of the type that allocate memory for a variable, each variable having a name location, a name, and a size, comprising:

a. means for generating a logical table in the computer structured to store at least one entry comprising values for a variable name location, variable name, and variable size;

b. means for comparing in the computer, during execution of a command allocating a variable, the variable name location, variable name, and variable size of the variable to a set of allocation test conditions, including comparison of the variable name location of the variable to the variable name location value of the at least one entry of the logical table;

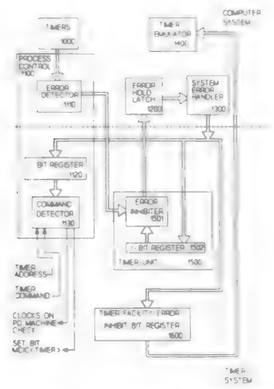
c. means for generating an error indication to the computer if the variable fails any one of the set of allocation test conditions, and for otherwise storing the variable name location, variable name, and variable size of the variable as an entry in the logical table, and allocating the variable in the computer.

5,355,470

METHOD FOR RECONFIGURING INDIVIDUAL TIMER REGISTERS OFFLINE

Jon K. Lexau; Allan J. Zmyslowski, both of Sunnyvale; Quang H. Nguyen; Robert A. Shaw, both of San Jose, and Carolee V. Newcomb, Los Altos, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Jan. 3, 1992, Ser. No. 816,219
Int. Cl.[5] G06F *11/34, 11/00*
U.S. Cl. 395—575 **2 Claims**



1. A timer system, in a computer system having x addressable timers where x ≧ 1, for taking a damaged said timer off line without check stopping the entire computer system, each said timer providing a timer output representing a time value of said timer, said computer system further comprising, command means for issuing timer read and write commands, error detection means for detecting errors in said timers and upon detecting an error in said timer generating an error signal identifying said timer as an error timer, process control means for processing said timer read and write commands to said timers, a system error handler for carrying out error correction procedures upon receipt of said error signal for said error timer, said timer system comprising:

a timer facility error inhibit bit register having x, stages, where each said stage is associated with a designated one of said timers and is set to a first state when said associated timer is on line and available to said computer system and set to a second state when said associated timer is off line and not available to said system, for indicating to said computer system which said timers are off line;

a timer unit including:

an inhibit bit register having x stages where each said stage is associated with a designated one of said timers and is set to a first state when said associated timer is on line and available to said computer system and set to a second state when said associated timer is off line and not available to said computer system, and

an error inhibiter means for inhibiting said error signal for said error timer if said stage associated with said error timer in said inhibit bit register in said timer unit is set to said second state;

said process control means further including:

an inhibit bit register having x stages where each said stage is associated with a designated one of said timers and is set to a first state when said associated timer is on line and available to said computer system and set to a second state when said associated timer is off line and not available to said computer system, and

a detection means for detecting when said command means issues said timer read or write command for said timer whose associated stage in said inhibit bit register in said process control means is set to said second state and for thereupon issuing signals to said computer system indicating that said timer command cannot be completed due to said addressed timer being off line and not available to said computer system; and

said system error handler further including:

detection means for detecting said error timer as a damaged timer when said system error handler cannot correct said error for said error timer; and

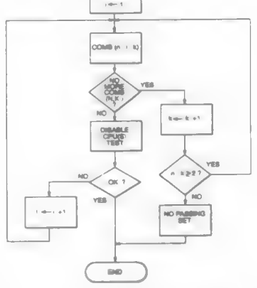
means for marking said damaged timer as a damaged timer by setting said stage associated with said damaged timer in said timer facility error inhibition register, said inhibit bit register in said timer unit and said inhibit bit register in said process control means.

5,355,471

MULTIPROCESSOR CACHE COHERENCY TESTER THAT EXERCISES THE COHERENCY LOGIC EXHAUSTIVELY AND ALSO DETECTS ERRORS IN A PROCESSOR USING AN AUTOMATIC CPU SORT

Russell H. Weight, Hillsboro, Oreg., assignor to Pyramid Technology Corporation, San Jose, Calif.

Filed Aug. 14, 1992, Ser. No. 929,370
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 **5 Claims**



1. In a computer system having multiple processors sharing a common main memory accessed through a common bus, each processor having its own cache memory, a method of testing cache coherency, comprising the steps of:

(a) causing each processor to perform a sequence of read and write accesses to main memory and to its own cache memory so as to cause substantially every possible sequence of cache coherency bus operations, each processor testing consistency of data read by it with data written by it;

(b) as long as no processor detects an error, continuing said read and write accesses for a predetermined period of time;

(c) when any processor detects an error, signalling said error on said bus and thereafter disabling at least one processor; and

(d) repeating steps (a), (b) and (c) until either a passing group of processors remains and no processor has detected an error for a predetermined period of time or no passing group of processors remains.

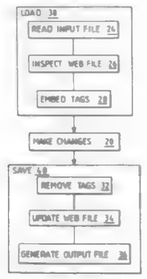
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5,355,472

SYSTEM FOR SUBSTITUTING TAGS FOR NON-EDITABLE DATA SETS IN HYPERTEXT DOCUMENTS AND UPDATING WEB FILES CONTAINING LINKS BETWEEN DATA SETS CORRESPONDING TO CHANGES MADE TO THE TAGS

Jonathon R. T. Lewis, Winchester, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 19, 1990, Ser. No. 615,769
Claims priority, application United Kingdom, Apr. 19, 1990, 9008870.1
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 14 Claims



1. A method for editing one of a plurality of data sets interconnected by at least one web file containing link information for linking elements of the data sets, comprising:

storing, by a data processing system, a data set selected from the plurality of data sets of at least two different editable formats, and a web file;

extracting, by said data processing system, information identifying location in the selected data set, corresponding to locations identified by the link information, from the stored web file;

generating, by said data processing system, an editable file in an editable format incorporating contents of the selected data set and tags corresponding to the link information the tags being located at the extracted information identifying locations;

editing, by said data processing system, the editable file;

removing, by said data processing system, the tags from the editable file and generating an output data set in accordance with changes made to the contents of the editable file;

and updating, by said data processing system, the web file in accordance with changes made to the editable file tabs.

5,355,473

INDEXED RECORD LOCATING AND COUNTING MECHANISM

Lawrence Au, 1931 17th St. N.W. #401, Washington, D.C. 20009

Filed Jun. 20, 1991, Ser. No. 718,286
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 1 Claim

1. A computer implemented method for searching an information tree of record keys with a search key to locate and retrieve a plurality of data records of a database held in the memory of a data processing system, wherein:

each of said record keys represents one of said data records and comprises a string of a plurality ("s") of characters, the number s of said characters differing for different ones of said record keys;

said search key comprises a string of a plurality ("k") of characters; said tree comprises a plurality of linked information nodes held in said memory, wherein each of at least some of said nodes comprises:

(i) a field holding a string of the i-the through p-the successive characters common to all of the record keys represented by all of at least one subtree of said each of at least some of said nodes;

(ii) a second field holding either a null pointer or containing a pointer to another of said nodes for which said i-the through p-the successive characters represent an initial portion of the respective key;

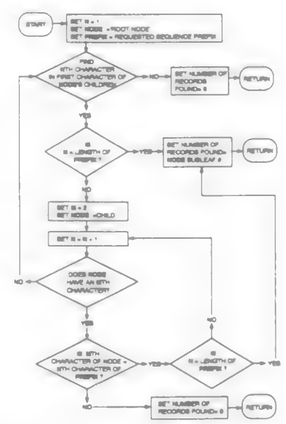
(iii) a third field containing the total number of record keys represented by said field (i); and

(iv) a fourth field containing either a null pointer or containing a pointer to another of said nodes which contains filed (i) similarly having j-the through n-the successive characters common to all of the record keys represented by all of at least one subtree of said each of at least some of said nodes, said j-the character greater than said i-the character in some alphabetical ordering;

said method characterized by:

(step zero)

for each one of said nodes, comparing the string of the i-the through p-the successive characters of said search key



with the record key character string held in the first field of said node, and

(1) if said search key string does not match said record key string, then

(a) if the fourth field of said node does not contain said null pointer then jumping to (step zero) using said node pointed to by said fourth field, but

(b) if the fourth field of said node contains a null then immediately terminating search and returning a message signifying NOT FOUND from the search, but

(2) if said search key string matches said record key string, then

(a) if k=p, then immediately terminating search and returning the number stored in the third field of said node with a message signifying FOUND from the search, but

(b) if k>p, then

(i) if said second field contains a pointer to another of said nodes, then removing the first k successive characters from said search key and jumping to (step zero) using the node pointed to by said second field, but

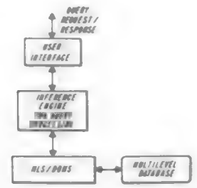
(ii) if said second field contains a null pointer then immediately terminating search and returning a message signifying NOT FOUND from the search.

5,355,474

SYSTEM FOR MULTILEVEL SECURE DATABASE MANAGEMENT USING A KNOWLEDGE BASE WITH RELEASE-BASED AND OTHER SECURITY CONSTRAINTS FOR QUERY, RESPONSE AND UPDATE MODIFICATION

Bhavani M. Thuraisingham, 209 Katardin Rd., Lexington, Mass. 02173; William R. B. Ford, 13 Coach Rd., Billerica, Mass. 01862; Marie S. Collins, 4452 Wordsworth Rd., Plano, Tex. 75093, and Jonathan P. O'Keeffe, 70 JFK Blvd., Somerset, N.J. 08873

Filed Sep. 27, 1991, Ser. No. 767,258
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 4 Claims



1. Apparatus for an integrated architecture for an extended multilevel secure database management system which processes security constraints to control unauthorized inference through logical deduction upon queries by users and implemented when the database is queried through the database management system, when the database is updated through the database management system, and when the database is designed, the integrated architecture comprising:

a knowledge base for storing the security constraints, application data and information on responses released from the multilevel secure database management system;

a multilevel database which contains data classified at different security levels;

a multilevel metadatabase to store schemes describing data in the multilevel database, the schemas classified at said different security levels;

the multilevel secure database management system utilized to access the multilevel database for queries and updates and to access the multilevel metadatabase for querying and updating the schemas by users cleared to said different security levels;

a query processor augmenting the multilevel secure database management system and accessing the knowledge base to examine the security constraints, application data and responses already released and to modify queries to prevent unauthorized inferences and to output a modified query for evaluation by the multilevel secure database management system, the multilevel secure database management system providing an output to the query processor which examines the security constraints, the application data, and responses already released, and modifies the responses to prevent unauthorized inferences,

an update processor augmenting the multilevel secure database management system for examining some of said security constraints and to assign security levels to the data;

the update processor complementing functions of the query processor such that if some of the constraints are processed during updates and the data is assigned appropriate security levels, said constraints need not be processed by the query processor, for performance enhancement the said update processor also being used as an off-line tool to determine the security levels of the data;

a multilevel database design tool which examines some of the security constraints and assigns security levels to the schemas, the schemas then being input to the multilevel secure database management system for storage in the multilevel metadatabase at the appropriate security levels, the design tool thereby complementing the functions of the query processor so that said some of the constraints need not be processed by the query processor for performance enhancement; and

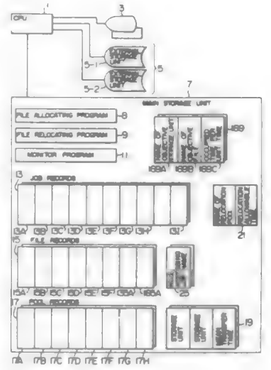
a user interface which accepts query requests from the user and passes the query to the query processor and accepts update requests from the user and passes it to the update processor if operating on-line or the user interface accepts the request from the user and passes it to the multilevel database management system if it is off-line, the user interface accepting the schema query request from the user and passes the query request to the multilevel secure database management system, the user interface further accepting the schema update requests from the user and passes it to the multilevel secure database management system.

5,355,475

METHOD OF RELOCATING FILE AND SYSTEM THEREFOR

Kazuaki Tanaka; Akihiko Togawa, both of Yokohama, and Taro Inoue, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 24, 1991, Ser. No. 782,076
Claims priority, application Japan, Oct. 30, 1990, 2-292656
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 18 Claims



1. In a computer system including storage units arranged in a storage hierarchy structure, a method of relocating a file stored in a source storage unit, said method being executed by a computer, comprising the steps of:

generating a relocate instruction, upon executing at least a job, in accordance with a difference between an expected execution time preset for the job and an actual execution time of the job in response to a user's relocate request;

determining an access indicator indicative of efficiency of access to the file in accordance with said relocate instruction;

determining a destination storage unit in the storage hierarchy structure to which the file is to be relocated in accordance with the determined access indicator; and

relocating the file to the determined destination storage unit.

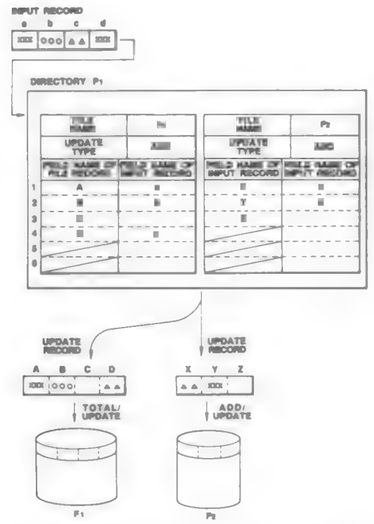
VOL 1167 ISS 2 OC 11 1994 UMI

5,355,476

FILE UPDATE APPARATUS FOR GENERATING A MATRIX REPRESENTING A SUBSET OF FILES AND THE UPDATE CORRESPONDENCE BETWEEN DIRECTORIES AND FILES

Masaaki Fukumura, Iruma, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1991, Ser. No. 801,005
Claims priority, application Japan, Dec. 29, 1990, 2-415947
Int. Cl.[5] G06F *7/00*
U.S. Cl. 395—600 **2 Claims**



1. A file update processing apparatus for generating a list representing a file update designation state, the apparatus having file update definitions each defining a file name, an update type, and a correspondence between fields in an input record and fields in a file record, for converting the input record into the file record in accordance with the correspondence, and for performing an update of the type designated by the update type on the file record with respect to a file designated by the file name, the apparatus comprising:

directories storage means for storing a directory together with directory names, each directory including a plurality of file names and a combination of a plurality of the file update definitions representing some of said plurality of file names;

retrieval means connected to the directory storage means, for retrieving, in response to a list forming designation, directory names from each directory in the directory storage means and only file names from the file update definitions in each directory;

list forming means connected to the retrieval means for forming a list having a matrix arrangement, the retrieved file names being listed in one column of the list, the retrieved directory names being listed in another column of the list, and identification data indicating a correspondence between the retrieved directory names and the retrieved file names being included in the list wherein said identification data reflects the update type; and

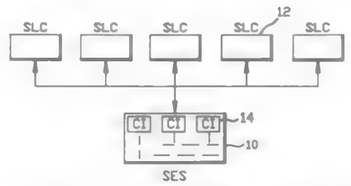
output means connected to the list forming means for outputting the list formed by said list forming means.

5,355,477

METHOD FOR UPDATING A BLOCK USING RECORD-LEVEL LOCKS BY COMMITTING THE UPDATE IF THE BLOCK HAS NOT BEEN UPDATED BY ANOTHER PROCESS OTHERWISE SPINNING

Jimmy P. Strickland, Saratoga, and Kenneth M. Kapulka, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1991, Ser. No. 812,677
Int. Cl.[5] G06F *12/08*
U.S. Cl. 395—600 **9 Claims**



1. In a concurrent transaction processing system where a plurality of asynchronous processes access records in a data set stored in a shared Structured External Storage (SES) means and organized as a plurality of SES data Control Intervals (CIs), said access being through said shared SES means, a method for updating a first record comprising the steps of:

(1) identifying the SES data CI containing said first record in response to an update access by a requesting process;

(2) creating a Private Buffer (PB) CI copy of the latest version of said SES data CI that is accessible only by said requesting process;

(3) updating said first record in said PB CI copy according to said requesting process to form an updated PB CI copy;

(4) conditionally writing said updated PB CI copy to said SES data CI if said latest version of said SES data CI has not yet been updated by another process, otherwise repeating steps (2)–(4); and

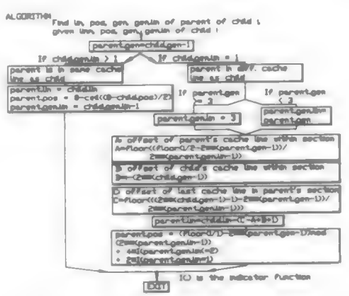
(5) terminating access by said requesting process to said PB CI copy.

5,355,478

METHOD FOR AVOIDING CACHE MISSES DURING EXTERNAL TOURNAMENT TREE REPLACEMENT SORTING PROCEDURES

James T. Brady, San Jose, and Balakrishna R. Iyer, Mountain View, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1991, Ser. No. 813,237
Int. Cl.[5] G06F *7/24*
U.S. Cl. 395—600 **6 Claims**



1. In a CPU having a main memory and a line-oriented cache coupled to said main memory, a method for generating sort strings of records while minimizing the number of cache reference misses per record, each said sort string being an ordering of keys of said records, said method including a selection tree having one or more sets of sub-tree nodes, said method comprising the steps of:

(1) sizing and writing into counterpart cache lines one or more said keys corresponding to said sets of sub-tree nodes such that no more than one node in each said cache line has a parent node in another said cache line; and

(2) until exhaustion of said records, performing the recursive steps of:

(a) copying at least one said key from said main memory to said cache,

(b) comparing keys within said cache to identify the replacement node, which contains the smallest said key,

(c) prefetching from said main memory to said cache the cache lines containing ancestor nodes of said replacement node, and

(d) writing the key from said replacement node to said main memory,

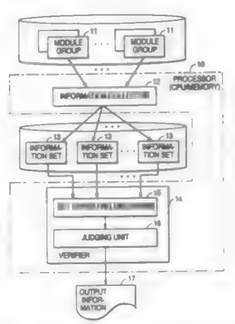
whereby said keys are written as one or more orderings into said main memory.

5,355,479

INTERFACE CONFORMANCE VERIFICATION SYSTEM

Satoru Torii, and Etsuo Ono, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 21, 1992, Ser. No. 823,115
Claims priority, application Japan, Jan. 21, 1991, 3-020575
Int. Cl.[5] G06F *7/02*
U.S. Cl. 395—600 **10 Claims**



1. An interface conformance verification system for verifying by a computer inter-module interface conformance of a verification target, for a plurality of modules readable by the computer, said interface conformance verification system comprising:

information collecting means for receiving at least one module group made up of at least one module, for collecting, as identification data, pieces of target information on at least one predetermined module operation, and for creating at least two sets, each having elements formed by the identification data; and

verifying means for verifying inter-module interface conformance, said verifying means including

set operating means for receiving the at least two sets created by said information collecting means and for performing at least one predetermined set operation on the at least two sets to produce a result, and

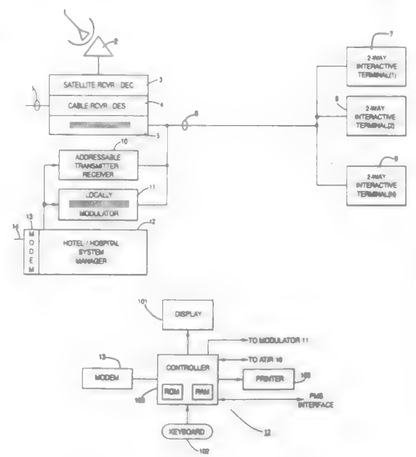
judging means for outputting the result of the at least one predetermined set operation to indicate a relation between corresponding set operations of at least two of the modules.

5,355,480

STORAGE CONTROL METHOD AND APPARATUS FOR AN INTERACTIVE TELEVISION TERMINAL

Elizabeth A. Smith, Cumming, and Lee R. Johnson, Lawrenceville, both of Ga., assignors to Scientific-Atlanta, Inc., Norcross, Ga.

Continuation of Ser. No. 342,987, Apr. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 289,218, Dec. 23, 1988, Pat. No. 4,987,486. This application Oct. 13, 1992, Ser. No. 960,261
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 **42 Claims**



1. A two-way interactive system comprising:

a host data processor;

a central data store controlled by the host data processor for storing a central data base, said central data base comprising a plurality of data items, each of said data items having a relative priority preassigned within said central data base; and

at least one local terminal subsystem connectable to the host data processor for accessing data items stored in the central data base, each of said at least one local terminal subsystem comprising:

a local processor for controlling access to the host data processor;

memory means controlled by the local processor and comprising a first memory area for storing data items accessed from the central data base;

locating means, operable when the first memory area has no vacant space for storing a newly accessed data item, for locating a data item in said first memory area for deletion according to criteria relating to the data items which includes locating one data item wherein the preassigned relative priority of the located data item is lower than the preassigned relative priority of at least one of the other data items stored in the first memory area, the criteria further including tie-breaking criteria to select one data item when more than one data item is located having preassigned relative priorities lower than the preassigned relative priority of the at least one of the other data items;

deleting means responsive to said locating means for deleting the data item located by the locating means to create space in the first memory area for the newly accessed data item.

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5,355,481

DATA BASE ACCESS SYSTEM

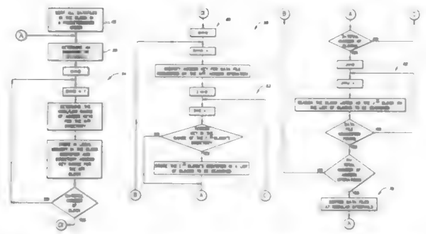
Aloysius W. M. Sluijter, KH Alphen aan den Rijn, Netherlands, assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 434,153, Nov. 13, 1989, abandoned. This application Dec. 8, 1992, Ser. No. 988,384

Claims priority, application European Pat. Off., Nov. 17, 1988, 88119083.9

Int. Cl.[5] **G06F** *15/40*

U.S. Cl. 395—600 **10 Claims**



1. In a computerized method for accessing data files of a data base stored in a computer system having a processor, memory, and a storage device, the data base comprising a number of blocks that are stored in the computer storage device, each of said blocks containing a plurality of data files and a directory of all access keys of the files stored in each of the respective blocks, and comprising means for effecting a sorted ordering of the data files such that the access keys in each block have a predetermined relation, the improvement comprising the steps of:

before the data base is accessed to search for at least one data file stored in the storage device,

accessing and reading all of the access keys in the directories of all data base blocks once in a predetermined order;

using the computer processor to determine the range of the access keys in each directory by identifying the highest and lowest values of the access keys in each directory; and

storing in a range table the determined ranges of access keys for each block directory;

during each access operation to search for a requested data file stored in the storage device by means of an access key for the data file,

using said computer processor to sort out those directories in which, the access key of the requested data file falls within the determined ranges of access keys stored in the range table; and

using said computer processor to search only the blocks corresponding to the sorted out directories for the requested data file; and

after new data files are added to the data base each of said new data files having a new data file access key, and at least one of said block directories being updated to include new data file access keys for said new data files,

reading said directories once in said predetermined order;

determining updated ranges of access keys by identifying the highest and lowest values of the access keys in each updated directory; and

storing said updated ranges in said range table.

5,355,482

APPARATUS AND METHOD FOR CONTROLLING A SYSTEM PROCESS

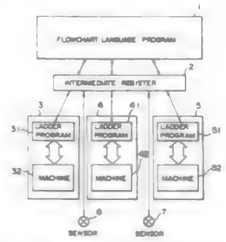
Akihiro Ohhashi; Tadashi Okamoto; Makoto Tachikawa; Takeshi Katoh, all of Hitachi; Noboru Aznsawa, Katsuta; Junichi Hamano, Yokohama, and Hitoshi Saitoh, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Information & Control Systems, Inc., Hitachi, both of Japan

Filed Apr. 2, 1991, Ser. No. 679,315

Claims priority, application Japan, Apr. 2, 1990, 2-87733

Int. Cl.[5] **G06F** *9/00*

U.S. Cl. 395—650 **8 Claims**



1. A method of combining a flowchart language program with a plurality of ladder programs for controlling objects in a process, said method comprising the steps of:

creating a plurality of ladder programs for controlling respective ones of said objects, each ladder program including an automatic contact, an automatic enabling contact, a manual contact and a manual enabling contact;

creating a flowchart language program including commands such that said commands sequentially activate said automatic contacts for automatic operation of said process; and

combining said ladder programs and said flowchart language program;

said automatic enabling contact being defined in each ladder program such that said automatic enabling contact is activated to enable the activation of said automatic contact during said automatic operation which is selected by an automatic/manual selection switch;

said manual contact being defined in each ladder program such that said manual contact is activated by a manual switch in a manual operation which is selected by said automatic/manual selection switch;

said manual enabling contact being defined in each ladder program such that said manual enabling contact is activated to enable the activation of said manual contact during said manual operation which is selected by said automatic/manual selection switch;

said combining step includes the steps of:

permitting execution of said flow chart language program, and

permitting execution of said ladder programs in response to execution of said flowchart language program when said automatic operation is selected and independent execution of said ladder programs when manual operation is selected.

5,355,483

ASYNCHRONOUS GARBAGE COLLECTION

Bertrand Serlet, Paris, France, assignor to NeXT Computers, Redwood City, Calif.

Filed Jul. 18, 1991, Ser. No. 732,453

Int. Cl.[5] **G06F** *12/00*

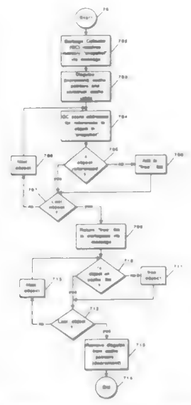
U.S. Cl. 395—650 **16 Claims**

1. A method for identifying free memory address locations in a computer system comprising the steps of:

executing a first process in said computer system that references a first collectible memory area in said computer system, said first collectible memory area having allocated and unallocated memory address locations;

executing a second process in said computer that identifies free memory address locations;

transferring a first image of a memory state of said first collectible memory area of said first process to said second process;



scanning each address in said first image by said second process to determine if said address is referenced;

adding by said second process each address of said first image that is not referenced to a list of unallocated memory addresses;

transferring by said second process said list of unallocated addresses from said second process to said first process.

unlisted event type and storing an indication of the event type;

means for subsequently receiving by the computer a signal of an occurrence of said event type; and

means, responsive to the stored event type indication and event signal, for storing the event signal.

5,355,485

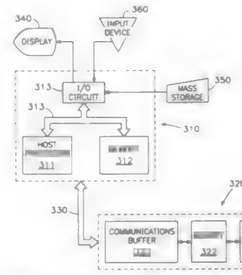
FIRST PROCESSOR FOR DIVIDING LONG ARGUMENT DATA INTO PACKETS AND STORING TOTAL PACKET COUNT AND PACKETS IN SHARED BUFFER FOR SUBSEQUENT EXECUTION BY SECOND PROCESSOR

Michael A. Denio, Sugar Land, and James G. Littleton, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 420,440, Oct. 12, 1989, abandoned. This application Mar. 3, 1993, Ser. No. 25,901

Int. Cl.[5] **G06F** *13/00*

U.S. Cl. 395—650 **13 Claims**



1. A method of using a multiprocessor computer system having a first processor for calling extended functions, a second processor for executing extended functions and a communications buffer of a predetermined data size for communications between the first and second processors, said communications buffer implemented as a shared address space accessible by both the first and second processor, each said extended function having at least one argument specifying data that is greater in size than the predetermined data size of the communications buffer, said method comprising the steps of:

calling one of said extended functions from a main program running on the first processor;

dividing the argument data corresponding to said called extended function into a plurality of data packets of predetermined packet size corresponding to said called extended function, said predetermined packet size permitting a plurality of said data packets to be simultaneously stored within the communications buffer;

executing a first communications routine running on the first processor via a first entry point command corresponding to said called extended function, the step of executing said first communications routine including

writing an extended function and a data packet count corresponding to said called extended function into the communications buffer, said data packet count indicating a total number of data packets of argument data to be sent to the second processor for said called extended function,

sequentially (a) writing one of said data packets into the communications buffer, (b) determining if one of said data packets has been read from the communications buffer by the second processor, (c) writing another one of said data packets into the communications buffer if a number of said data packets written into the communications buffer minus a number of said data packets read from the communications buffer indicates free data

5,355,484

DYNAMICALLY ESTABLISHED EVENT MONITORS IN EVENT MANAGEMENT SERVICES OF A COMPUTER SYSTEM

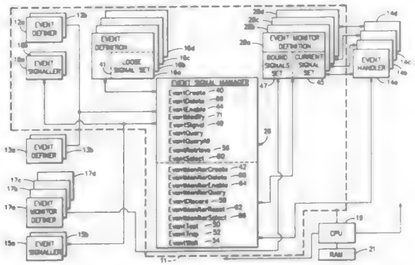
Stephen E. Record, Ridgefield, Conn.; Ann M. Shepherd, Endwell, and Steven S. Shultz, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 12, 1991, Ser. No. 744,627

The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.

Int. Cl.[5] **G06F** *11/30*

U.S. Cl. 395—650 **20 Claims**



6. A computer for managing events, comprising:

means for dynamically introducing to the computer by a program during normal operation of the computer an

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space within the communications buffer greater than said predetermined packet size, until said plurality of data packets have been written into the communications buffer;

reading said extended function identifier and said data packet count from the communications buffer by the second processor;

executing a second communications routine running on the second processor, the step of executing said second communications routine including

sequentially (a) reading one of said data packets from the communications buffer, (b) indicating one of said data packets has been read from the communications buffer, and (c) determining whether said one of said data packets read from said communications buffer is a last one of said data packets for said called extended function by comparing a number of data packets read from said communications buffer with said data packet count;

if it is determined in said determining step that said one of said data packets is not said last one of said data packets, repeating said reading, indicating, and determining steps for another one of said data packets, and

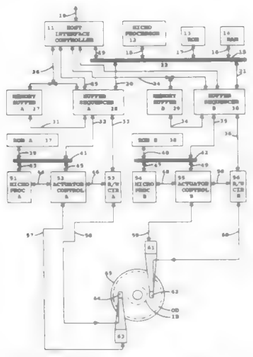
if it is determined in said determining step that said one of said data packets is said last one of said data packets, performing said called extended function corresponding to said extended function identifier on the second processor.

5,355,486

SYSTEM FOR ALLOCATING TASKS BETWEEN TWO ACTUATORS SERVICING THE SAME MAGNETIC DISK MEDIA IN A SINGLE DISK DRIVE

Stephen R. Cornaby, Niwot, Colo., assignor to Conner Peripherals, Inc., San Jose, Calif.

Filed Jan. 21, 1993, Ser. No. 6,457
Int. Cl.[5] G11B *5/54, 5/596*
U.S. Cl. 395—650 **24 Claims**



1. A task assigning system within a dual actuator disk drive system wherein each task has a cylinder address comprising:

storage means for storing a plurality of tasks;

a first means for assigning tasks stored in said storage means to a first actuator of said dual actuators in the sequence of increasing value of said cylinder addresses of said stored tasks; and

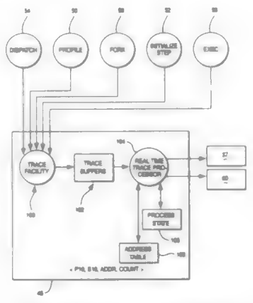
a second means for assigning tasks stored in said storage means to a second actuator of said dual actuators in the sequence of decreasing value of said cylinder addresses of said stored tasks.

5,355,487

NON-INVASIVE TRACE-DRIVEN SYSTEM AND METHOD FOR COMPUTER SYSTEM PROFILING

Thomas W. Keller, and Robert J. Urquhart, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 662,521, Feb. 28, 1991, abandoned.
This application Jul. 23, 1993, Ser. No. 96,751
Int. Cl.[5] G06F *11/34*
U.S. Cl. 395—650 **3 Claims**



1. In a computer system having an operating system kernel in a program executing multiple processes, a method for use during execution of said multiple processes in profiling said multiple processes, comprising:

inserting with said system a trace hook mechanism in a periodic clock routine of said operating system kernel;

inserting with said system additional trace hook mechanisms in said operating system kernel sufficient to initialize and maintain process identity, name, and current running process correspondences;

generating with said system trace events in response to said trace hook and additional trace hook mechanisms at predetermined time intervals;

generating with said system trace events in response to changes in process state at times of occurrence of said changes in process state;

creating and maintaining with said system during said profiling a trace buffer as a function of said trace events comprised of:

a plurality of fields of program counter hook data, each corresponding to a different <current executing process identity, program counter value> tuple and a count of the number of repetitions of each said instance; and

a plurality of fields maintaining correspondences between process names,

identities, and said fields of program counter hook data.

5,355,488

METHOD FOR ADAPTIVELY BUILDING A LIBRARY OF PROGRAM THREADS

Daryl R. Cox, Bedford; John T. Gabbard, Keller, and Sally A. Zuponcic, Hurst, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 809,981, Dec. 18, 1991, abandoned.
This application Dec. 21, 1993, Ser. No. 180,751
Int. Cl.[5] G06F *9/30, 9/38, 9/46*
U.S. Cl. 595—650 **1 Claim**

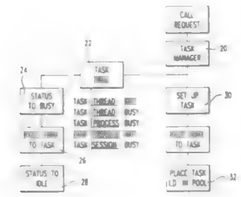
1. A computer implemented method for building in a memory a library of program threads that specify an execution environment for an application program in response to a thread-type application program work request in a multi-tasking computer operating system in which the operating system establishes said program threads in response to said application

program work request wherein each of said program threads has a respective identifier that identifies each program thread maintained in said memory and identifies a state of each program thread maintained in said memory as idle or busy; the method comprising the steps of:

searching said memory for an identifier of a corresponding idle program thread in response to said thread-type application program request;

constructing by means of an application program interface routine within the operating system, a corresponding program thread in response to said corresponding program thread not residing in said memory in an idle state;

storing said corresponding program thread, constructed in



said previous constructing step in said memory, in an idle state with a respective identifier, after said application program work request has been executed by said computer;

executing said application program work request with said corresponding idle thread, stored in said memory when said searching step locates the corresponding idles thread; and

repeating the steps of constructing and storing said thread and respective identifier, when said searching step fails to locate an idle program thread whereby said memory stores multiple copies of said corresponding program thread, depending upon the frequency with which said thread-type application work request is requested.

5,355,489

BIOS LOAD FOR A PERSONAL COMPUTER SYSTEM HAVING A REMOVABLE PROCESSOR CARD

Richard Bealkowski, Delray Beach; John W. Blackledge, Jr., Boca Raton; Doyle S. Cronk, Boca Raton; Richard A. Dayan, Boca Raton; Scott G. Kinnear, Boca Raton; George D. Kovach, Boca Raton; Jay H. Neer, Boca Raton, all of Fla.; Matthew S. Palka, Jr., Raleigh, N.C.; Robert Sachsenmaier, Boca Raton, Fla., and Kevin M. Zyvoloski, Raleigh, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation-in-part of Ser. No. 398,865, Aug. 25, 1989, Pat. No. 5,210,875, which is a continuation-in-part of Ser. No. 425,669, Oct. 23, 1989, Pat. No. 5,162,979. This application Mar. 26, 1991, Ser. No. 675,587
Int. Cl.[5] G06F *9/06*
U.S. Cl. 395—700 **20 Claims**

1. A personal computer system, comprising:

a planar board including a main memory;

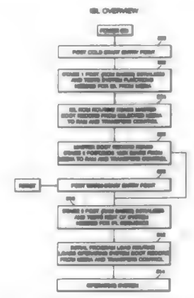
a processor card removably mounted on said planar board, said processor card including a system processor electrically coupled to a read only memory, said read only memory having data representing a hardware configuration of the personal computer system, said system processor of said processor card being electrically coupled to said main memory of said planar board;

a direct access storage device electrically coupled to said system processor;

a master boot record included in said direct access storage device, said master boot record having a data segment and an executable code segment, said data segment representing a hardware configuration of the personal computer system which is compatible with said master boot record;

a first portion of BIOS being included in the read only memory, said processing executing said first portion of BIOS to initialize the system and the direct access storage device to load in said master boot record, said first portion of BIOS further comparing the hardware configuration data from the master boot record to the hardware configuration data of the read only memory to verify the compatibility of the master boot record with the system processor;

a remaining portion of BIOS being included in the direct access storage device, wherein, after verifying the com-



patibility of the master boot record with the system processor, said processor transferring control from the first portion of BIOS to the executable code segment of the master boot records in order to effect the loading of the remaining portion of BIOS into the main memory, said first portion of BIOS being discarded after transferring control to the executable code segment; and,

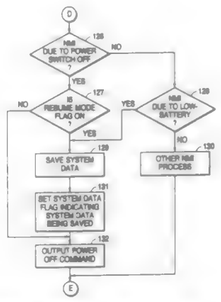
if said master boot record is incompatible with said system processor, said processor executing said first portion of BIOS to load in a second master boot record to replace said master boot record and verifying compatibility of said second master boot record with said system processor.

5,355,490

SYSTEM AND METHOD FOR SAVING THE STATE FOR ADVANCED MICROPROCESSOR OPERATING MODES

James T. L. Kou, Corona, Calif., assignor to Toshiba America Information Systems, Inc., Irvine, Calif.

Filed Jun. 14, 1991, Ser. No. 712,972
Int. Cl.[5] G06F *1/28, 1/30*
U.S. Cl. 395—700 **31 Claims**



1. In a computer system having a system memory and a central processing unit (CPU) operable in an enhanced mode

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and in a real mode, a method of saving an operational state of the CPU corresponding to the enhanced mode prior to a power-down of the computer system, comprising the steps of:

(a) receiving, while in the enhanced mode, a power-down request to power down the computer system;

(b) actuating, in response to said step (a), a resume processing module residing in the system memory for saving operational states and switching modes, accessible to the CPU during operation in the real mode;

(c) saving the operational state of the enhanced mode using said resume processing module;

(d) switching from the enhanced mode to the real mode using said resume processing module;

(e) performing a controlled power-off sequence.

5,355,491

COMPILER INCLUDING RETARGETABLE DATA GENERATION

Francis D. Lawlor, Saugerties, and Thomas M. Spence, Hyde Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 193,155, May 5, 1988, abandoned, which is a continuation of Ser. No. 788,318, Oct. 17, 1985, abandoned. This application Jun. 13, 1991, Ser. No. 714,466

Int. Cl.[5] G06F *9/45*

U.S. Cl. 395—700 8 Claims



6. A computer implemented method for compiling a program expressed as a plurality of source statements to generate target specific data definition code for use with a selected one of a plurality of target data processing systems, said source statements including data objects having attributes, said method comprising the steps of:

(a) in advance of compilation, in response to user input:

(1) storing operator supplied data classification criteria associated with said target data processing systems, said data classification criteria defining a plurality of data object groups based on said attributes wherein each of said data object groups is assigned a group data classification; and

(2) storing an operator supplied target specific data definition output format for each of the plurality of group classifications; and

(b) at compilation time, automatically:

(1) assigning a group data classification to each of said data objects by:

(A) determining the data object group defined for the attributes of the data object by said data classification criteria; and

(B) assigning to said data object the group data classification assigned to that data object group in accordance with said classification criteria;

(2) ordering said data objects by the assigned group data classification; and

(3) generating said target specific data definition code for each of the ordered data objects using the target specific data output format stored for the group data classification of the ordered data object.

5,355,492

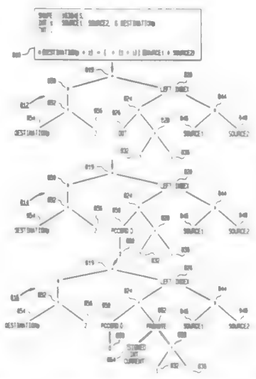
SYSTEM FOR COMPILING PARALLEL COMMUNICATIONS INSTRUCTIONS INCLUDING THEIR EMBEDDED DATA TRANSFER INFORMATION

James L. Frankel, Lexington, Mass.; Michael L. Best, Frederiksberg, Denmark; Karen C. Jourdenais, Concord, Mass.; Joshua E. Simons, Cambridge, Mass., and Steven J. Sistare, Somerville, Mass., assignors to Thinking Machines Corporation, Cambridge, Mass.

Filed Nov. 5, 1991, Ser. No. 788,052

Int. Cl.[5] G06F *15/16, 9/44, 15/20*

U.S. Cl. 395—700 16 Claims



1. A system for generating a target program from a source program, the target program being adapted for execution in a processor array having a plurality of processors interconnected by a communications network for transferring data thereamong, the source program declaring a plurality of parallel variables each defining a multi-dimensional array having a plurality of positions assigned to the processors, each of the positions representing a storage location to contain data to be processed in accordance with the target program, the source program also including a parallel communication instruction having a data identifier portion and a data transfer information portion, the data identifier portion identifying a source parallel variable and a destination parallel variable, the data transfer information portion indicating a relationship between positions of the source and destination parallel variables to facilitate the transfer of data among the processors from the positions of the source parallel variable to the positions of the destination parallel variable in accordance with the data transfer information portion, the system comprising:

A. a computer;

B. control means for controlling the computer, comprising:

(i) destination identifier generation enabling means for enabling the computer to generate a destination location identifier target program portion which, when executed in the processor array, enables the processor array to generate, in response to the data transfer information portion, destination storage location identifiers for the positions of the destination parallel variable; and

(ii) communication enabling means for enabling the computer to generate a communication target program portion which, when executed in the processor array, enables the processors of the processor array to transfer over the communications network data from the positions of the source parallel variable to the positions of

the destination parallel variable in accordance with said destination storage location identifiers.

5,355,493

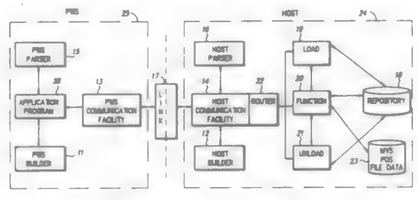
SYSTEM FOR ENCODING UNITS OF ENTITY/RELATIONSHIP DATA TO INCLUDE PREFIXES WITH CODES FOR LENGTH, ACTION, AND UNIT IDENTIFIER

Amy M. Silberbauer, Modesto, and Susanne J. Tabari, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 20, 1991, Ser. No. 796,117

Int. Cl.[5] G06F *15/40, 15/38*

U.S. Cl. 395—700 9 Claims



1. In a data processing system having stored units of entity/-relationship data, a computer-implemented method comprising the steps of:

reading said units of entity/relationship data;

encoding the units of entity/relationship data into an er_data element according to a set of grammatical rules wherein length represents a number of bytes or words and other terminal elements are arbitrary unique values; and

storing the er_data element;

wherein the set of grammatical rules include:

<er_data>	=	<template> | <rel>
<template>	=	length <crud_action> tmpl_id template_name <tmpl_key_list> <field_list>
<tmpl_key_list>	=	<tmpl_key> <tmpl_key_list> | <tmpl_key>
<tmpl_key>	=	length <no_action> temp_tmpl_key_id <temp_key> | length <no_action> tmpl_key_id key_value
<field_list>	=	<field> <field_list> | <NULL>
<field>	:=	length <crud_action> field_id field_name field_value
<rel>	:=	length <crd_action> rel_id <rel_key> <source_key> <target_key> | length <cu_action> orel_id <rel_key> <rel_posn> <source_key> <target_key>
<source_key>	:=	<relent_key> | <relrel_key>
<target_key>	:=	<relent_key> | <relrel_key>
<relent_key>	:=	length <no_action> relent_key_id template_name <tmpl_key_list>
<relrel_key>	:=	length <no_action> relrel_key_id rel_key
<crud_action>	:=	create | read | update | delete
<cu_action>	:=	create | update
<crd_action>	:=	create | read | delete
<c_action>	:=	create
<no_action>	:=	none
<temp_key>	:=	unique_key
<rel_key>	:=	unique_key
<rel_posn>	:=	unique_key | 0.

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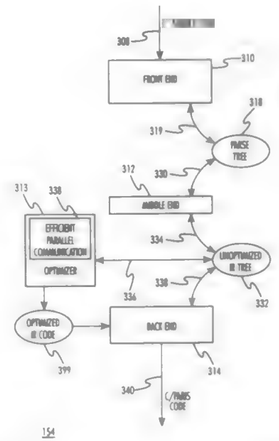
COMPILER FOR PERFORMING INCREMENTAL LIVE VARIABLE ANALYSIS FOR DATA-PARALLEL PROGRAMS

Steven J. Sistare, Somerville, and James L. Frankel, Lexington, both of Mass., assignors to Thinking Machines Corporation, Cambridge, Mass.

Filed Dec. 12, 1991, Ser. No. 806,026

Int. Cl.[5] G06F *9/44*

U.S. Cl. 395—700 28 Claims



1. A system for generating an object code program to be executed by a target computer comprising a processor array comprising a plurality of processing nodes for processing data in parallel, in response to a source code program written in a high-level language, the high-level language including a plurality of instructions, at least some of the instructions including an always variant to be executed by all of the processing nodes regardless of a context condition and a non-always variant to be executed on ones of the processing nodes having a selected context condition, said system including:

(a) intermediate representation generating means for generating an intermediate representation in response to the source code program, the intermediate representation having a series of intermediate representation nodes representative of source code instructions, at least some intermediate representation nodes each including at least one variable used as a referenced variable and at least some intermediate representation nodes each including at least one variable used as a destination variable;

(b) a definition/use set generating means for generating, in response to the intermediate representation, a definition set and a use set, the use set identifying those variables which are first used in the intermediate representation node series as (i) referenced variables in any intermediate representation nodes or (ii) first destination variables in intermediate representation nodes representing non-always instruction variants, and the definition set identifying those variables which are otherwise first used in the intermediate representation node series as destination variables;

(c) optimization means for generating an optimized intermediate representation in response to the intermediate representation generated by the intermediate representation generating means and the definition set and the use set generated by the definition/use set generating means.

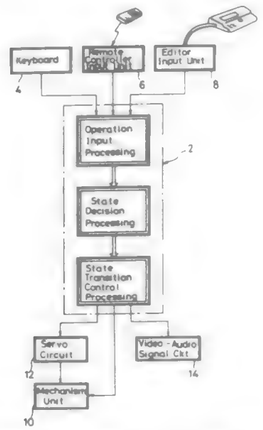
VOL 1167 ISS 2 OC 11 1994 UMI

5,355,495

CONTROL SYSTEM FOR A RECORDING AND/OR REPRODUCING APPARATUS

Yuriko Kishitaka, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 29, 1992, Ser. No. 827,350
Claims priority, application Japan, Jan. 31, 1991, 3-011329
Int. Cl.[5] G05D *13/00*
U.S. Cl. 395—700 **1 Claim**



1. A method of performing state transition control of a plurality of state transitions forming in a specific order a functional transition of an electronic apparatus having a central processing unit, a keyboard, and a plurality of operating parameters describing the state of the apparatus, comprising the steps of:

executing control processing including input/output functions with a central processing unit of the apparatus;

detecting whether a function transition request has occurred;

performing a main routine if the transition request has not occurred, in which the main routine includes the steps of

a) communicating with the central processing unit of the apparatus;

b) processing data input from the keyboard of the apparatus;

c) determining whether an operating parameter of the apparatus is in a standby mode;

d) returning to the step of communicating with the central processing unit if no operating parameter is in standby mode;

e) checking an actuation state of operating mechanism of the apparatus if an operating parameter is in the standby mode;

f) returning to the step of communicating with the central processing unit if the actuation state is not present;

g) returning to the step of executing control processing if the actuation state is p. esent; and

performing state transition processing if a transition request has occurred, in which the state transition processing includes the steps of:

h) activating a mechanism of the apparatus;

i) recognizing a parameter of the state transition request and call the main routine corresponding thereto;

j) starting switching operation of the state of the activated mechanism; and

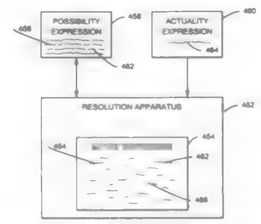
k) returning to the step of executing control processing upon completion of the switching operation.

5,355,496

METHOD AND SYSTEM FOR PROCESS EXPRESSION AND RESOLUTION INCLUDING A GENERALLY AND INHERENTLY CONCURRENT COMPUTER LANGUAGE

Karl M. Fant, and Scott A. Brandt, both of Minneapolis, Minn., assignors to Theseus Research, Inc., Minneapolis, Minn.

Filed Feb. 14, 1992, Ser. No. 837,641
Int. Cl.[5] G06F *9/00*
U.S. Cl. 395—700 **20 Claims**



1. A method of process expression and resolution, comprising the steps of:

(a) providing a first language structure comprising a possibility expression having at least one definition which is inherently and generally concurrent;

(b) providing a second language structure comprising an actuality expression including a fully formed input data name to be resolved;

(c) providing a third language structure comprising an active expression initially having at least one invocation, the invocation comprising an association with a particular definition and the fully formed input data name of the actuality expression; and

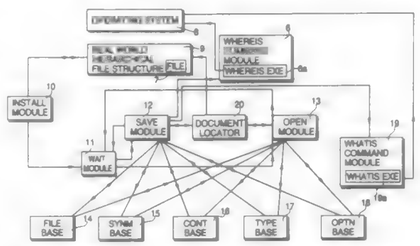
(d) resolving invocations in the active expression with fully formed input data names in relation to their associated definition to produce at least one or both of the following: (1) an invocation with a fully formed input data name and (2) a result data name.

5,355,497

FILE DIRECTORY STRUCTURE GENERATOR AND RETREVIAL TOOL WITH DOCUMENT LOCATOR MODULE MAPPING THE DIRECTORY STRUCTURE OF FILES TO A REAL WORLD HIERARCHICAL FILE STRUCTURE

Leon Cohen-Levy, New York, N.Y., assignor to Physiotronics Corporation, New York, N.Y.

Filed Jun. 10, 1992, Ser. No. 896,514
Int. Cl.[5] G06F *15/40, 9/44*
U.S. Cl. 395—700 **28 Claims**



1. A file directory and retrieval system for use in a computer, the computer comprising an output device, a memory and a processor operating according to an operating system program and an application program, the memory of the computer

storing files in a directory structure, the directory structure organized according to conventions of the operating system, the file directory and retrieval system comprising:

a map mapping the directory structure of the files stored in the memory to a real world hierarchical file structure of files and directories independent of conventions of the operating system;

means for creating, moving and deleting directories without exiting the application program;

means, operating in the background of the application program and intercepting control of the processor when a command is executed to cause a file to be opened, for displaying on the output device an open card to allow entry of information relating to the contents of the file and location of the file in the real world hierarchical file structure, utilizing the map for mapping the location of the file in the real world hierarchical file structure to the directory structure, and for causing the operating system to open the file; and

means, operating in the background of the application program and intercepting control of the processor when a command is executed to cause the application program to request information about a file to be saved, for displaying on the output device a save card to allow entry of information relating to the contents of the file to be saved and a location for the file in the real world hierarchical file structure, utilizing the map for mapping the location for the file in the real world hierarchical file structure to the directory structure, and causing the operating system to save the file in the directory structure.

5,355,498

METHOD AND APPARATUS FOR BOOTING A COMPUTER SYSTEM WITHOUT LOADING A DEVICE DRIVER INTO MEMORY

Joseph E. Provino, Cambridge, and William F. Pittore, Lexington, both of Mass., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 842,007, Feb. 25, 1992, abandoned.
This application Aug. 30, 1993, Ser. No. 113,959
Int. Cl.[5] G06F *9/445*
U.S. Cl. 395—700 **24 Claims**



1. In a computer system comprising a central processing unit (CPU), a boot device, a boot prom and a main memory, the CPU being coupled to the boot device, the boot prom and the memory, a method for booting said computer system to a root executable segment of an operating system without requiring loading of a device driver for the boot device into the main memory, said method comprising the steps of:

during system start up, giving to the CPU a start address of a bootstrap program residing in the boot prom;

the CPU fetching an initial instruction of the bootstrap program from the start address and thereby beginning execution of the bootstrap program;

the bootstrap program initializing a boot prom interface in said memory by setting a pointer in said boot prom interface to point to a device driver residing in said boot prom;

the bootstrap program loading a boot program from said boot device into said memory using said device driver; the bootstrap program transferring control to said loaded boot program;

said loaded boot program using said device driver pointed to by said pointer in said boot prom interface to load the root executable segment from said boot device into said memory, said boot program having a file subsystem reader interface for said root executable segment of said operating system to load other relocatable segments of said operating system; and

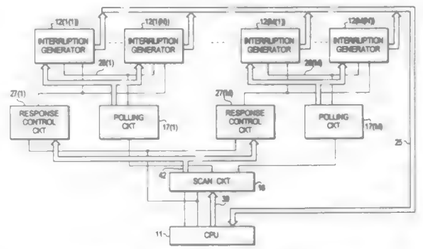
said loaded boot program transferring control to said loaded root executable segment of said operating system, said root executable segment using said boot program to load said other relocatable segments until a root file subsystem and a root device driver is loaded.

5,355,499

INTERRUPTION CIRCUIT OPERABLE AT A HIGH SPEED

Masao Murai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 15, 1992, Ser. No. 868,519
Claims priority, application Japan, Apr. 15, 1991, 3-109892
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—725 **9 Claims**



1. An interruption circuit for use in combination with a central processing unit and a multiplicity of interruption generating units, each of said interruption generating units being for generating an interruption signal upon occurrence of an interruption request, said interruption circuit comprising:

a scanning means between said central processing unit and said interruption generating units for scanning said interruption generating units, said scanning means operative to generating units as a particular unit generating said interruption signal and for supplying said central processing unit with the interruption signal generated by said particular unit, said central processing unit responsive to said interruption signal to produce a response signal;

a response supply means between said central processing unit and said interruption generating units for supplying said response signal to said particular unit; and

a vector supply means for supplying from said particular unit, upon reception of said response signal and according to said count value, said central processing unit with an interruption vector which is unique to each of said interruption generating units, said central processing unit responsive to said interruption vector to perform interrupt operations related to said particular unit;

said interruption generating units being grouped into first through M-th groups including an m-th group, where M represents a first plurality, m representing a first selected

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number selected between 1 and M, both inclusive, said m-th group comprising m(1)-th through m(N)-th interruption generating units, where N represents a second plurality, and wherein said scanning means comprises,

first through M-th polling circuits including an m-th polling circuit:

a connection arrangement between said first through said M-th polling circuits and said first through said M-th groups, respectively; and

a scanning circuit between said central processing unit and said first through said M-th polling circuits for cyclically scanning said first through said M-th polling circuits, said scanning circuit operative to specify one of said first through said M-th polling circuits as a particular circuit during each cycle;

said m-th polling circuit being for cyclically scanning said m(1)-th through said m(N)-th interruption generating units to specify an m(n)-th interruption generating unit as an identified unit, where n represents a second selected number selected between 1 and N, both inclusive, said identified unit being said particular unit when said m-th polling unit said particular circuit,

each of said multiplicity of interruption generating units producing the interruption signal when specified as said particular unit during presence of the interruption request therein;

said particular circuit and said scanning circuit supplying said central processing unit with the interruption signal generated by said particular unit and supplied to said particular circuit through said connection arrangement, and wherein said scanning circuit comprises,

a scan counter for counting up a scan count repeatedly from 1 up to M to produce a scan count signal representative of said scan count; and

a scan controlling arrangement connected to said first through M-th polling circuits and said scan counter for suspending count up of said scan count at m' when supplied with an m'-th interruption signal from an m'-th polling circuit, where m' represents selected count selected between 1 and M, both inclusive:

said scan controlling arrangement supplying said central processing unit with the interruption signal received from said m'-th polling circuit while said scan count signal represents said selected count;

said scan controlling arrangement supplying the scan count signal representative of said selected count to said first through said M-th polling circuits as an address for specifying said m'-th polling circuit as said particular circuit.

5,355,500

MULTIPROCESSOR SYSTEM FOR CONDUCTING INITIAL PROCESSING FOR SHARED CIRCUIT

Seiji Kondou, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jul. 23, 1992, Ser. No. 919,089
Claims priority, application Japan, Jul. 26, 1991, 3-187915
Int. Cl.[5] G06F *13/376*
U.S. Cl. 395—725 **3 Claims**

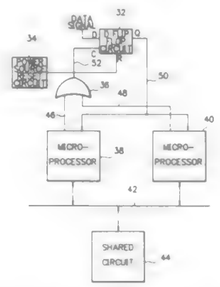
1. A multiprocessor system including a plurality of microprocessors and a shared circuit connected via a shared control line to the plurality of microprocessors, the system comprising:

resetting means activated when the multiprocessor system is powered, for producing a reset signal;

OR gate means for generating a logical sum of read signals sent from the microprocessors; and

D flip-flop circuit means for receiving said reset signal from said resetting means at a first terminal, and for receiving an output signal produced by said OR gate means at a second terminal, then receiving a data signal fed from a device external to the multiprocessor system at a third terminal, said D flip-flop circuit means being effective for enabling a given one of said plurality of microprocessors to conduct an initial processing for the shared circuit, and for producing an initial processing permission signal to inhibit other ones of said microprocessors from carrying out the initial processing;

said D flip-flop circuit means producing, after being reset by said resetting means, an initial processing signal denoting an inhibit state on receiving the output signal from said OR gate means, and the data signal, and



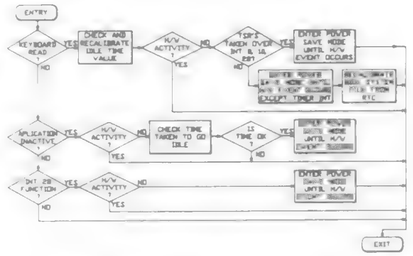
each of said microprocessors being effective for outputting, on receiving the initial processing permission signal, a read signal to said OR gate means so as to carry out the initial processing for the shared circuit when the signal is in a permission state and for refraining from conducting the initial processing for the shared circuit when the signal is in an inhibit state.

5,355,501

IDLE DETECTION SYSTEM

Roger A. Gross, Andover, and John P. Constant, Harwell, both of United Kingdom, assignors to Novell, Inc., Provo, Utah

Filed Mar. 9, 1990, Ser. No. 491,211
Int. Cl.[5] G06F *15/00, 11/30*
U.S. Cl. 395—750 **65 Claims**



1. An activity system in a computer where the computer executes programs involving multiple events with times between events and where the computer operates with multiple performance states comprising,

monitoring means for monitoring a plurality of said multiple events to determine event frequency represented by an event frequency value proportional to the frequency of said plurality of said multiple events during the execution of the programs by the computer system,

parameter means for establishing an event parameter,

comparing means for comparing the event frequency with the event parameter to determine when the event frequency differs from the event parameter,

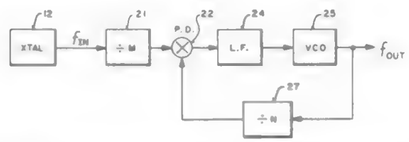
switching means for switching the performance state of the computer when the event frequency differs from the event parameter.

5,355,502

LOW POWER DISK DRIVE CLOCK GENERATOR CIRCUIT

Lester Schowe, and Roger Bailey, both of Longmont, Colo., assignors to Maxtor Corporation, San Jose, Calif.

Filed Sep. 2, 1992, Ser. No. 939,051
Int. Cl.[5] G06F *1/04*
U.S. Cl. 395—750 **6 Claims**



1. A clock generating circuit for use with a data storage unit, said clock generating circuit comprising:

a resonator circuit providing a first output signal having a first frequency;

a frequency multiplication circuit multiplying said first output signal by a predetermined factor to produce a second output signal having a second frequency, said second output signal being coupled to said data storage unit, said second frequency being greater than said first frequency, said frequency multiplication circuit comprising a phase-locked loop circuit including a first frequency divider means for dividing said first output signal by M, where M is an integer; an oscillator circuit providing said second output signal adjusted by a controlled voltage; a second frequency divider means for dividing said second output signal by N, where N is an integer greater than M, said predetermined factor being determined by the ratio N:M; a phase detector means for comparing the output of said first frequency divider with the output of second frequency divider, said phase detector means generating said control voltage therefrom: and

a switching circuit coupling said first output signal to said frequency multiplication circuit to generate said second output signal coupled to said data storage unit when said clock generating circuit operates in a normal mode, said switching circuit coupling said first output signal directly to said data storage unit when said clock generating circuit operates in a reduced power mode.

5,355,503

EVENT DRIVEN SCANNING OF DATA INPUT EQUIPMENT USING MULTI-INPUT WAKE-UP TECHNIQUES

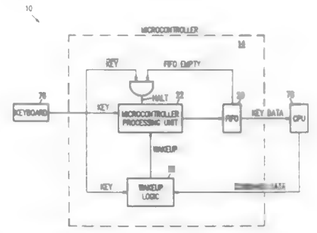
Volker Soffel, Maiching, and Thomas Rothhaupt, Emmering, both of Fed. Rep. of Germany, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 905,495, Jun. 25, 1992, abandoned, which is a continuation of Ser. No. 531,318, May 31, 1990, abandoned. This application Oct. 13, 1993, Ser. No. 136,475
Int. Cl.[5] G06F *1/32*
U.S. Cl. 395—750 **9 Claims**

1. A microcontroller that executes a sequence of instructions in response to clock signals provided by a clock generator and that controls a data input device used to enter data into a data processing system, an address of a currently executing instruction in the sequence of instructions being stored in a program counter, the program counter being incremented during the execution of the currently executing instruction to indicate an address of the next instruction in the sequence of instructions, the microcontroller being operable in a plurality of current consumption modes which it cycles among in response to external events indicative of activity or indicative of an absence of activity of data entry to or data processing by the data processing system, the microcontroller operating in a normal current consumption mode during data entry to the data processing system, and the microcontroller being responsive to an external event by generating an active signal indicative of an occurrence of the external event, the microcontroller comprising:

(a) halt means for initiating a reduced current consumption mode, wherein said halt means responds to an event indicative of inactivity at the data input device by generating a halt signal, the microcontroller being responsive to the halt signal by deactivating the clock means and thereby suspending execution of the sequence of instructions and by entering a reduced current consumption mode; and

(b) wake-up means for returning the microcontroller to the normal current consumption mode, wherein said wake-up



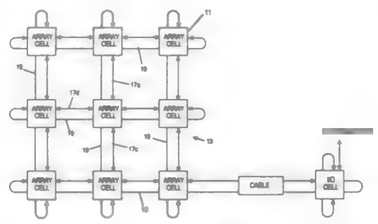
means responds to an active signal generated by the data input device when the microcontroller has entered the reduced current consumption mode by generating a wake-up signal, the microcontroller being responsive to the wake-up signal by activating the clock generator and thereby resuming execution of the sequence of instructions, where the first instruction executed upon wake-up is an instruction the address of which is stored in the program counter as a result of the microcontroller executing the instruction which was last executed prior to entering the reduced current consumption mode, and by returning from the reduced current consumption mode to the normal current consumption mode.

5,355,504

SELF-SYNCHRONIZING DATA QUEUES

David J. Nedwek, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 19, 1991, Ser. No. 794,467
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—775 **14 Claims**



1. A multiprocessor system comprising:

a plurality of processing cells, each of said cells coupled to a plurality of data pathways for communicating with adjacent cells, wherein a first predetermined number of said adjacent cells are disposed on a single printed circuit board and a second predetermined number of said adjacent cells are disposed on a printed circuit board coupled to a remote backplane, wherein each of said cells is adapted to exchange data on said data pathways with said first predetermined number of said adjacent cells in a

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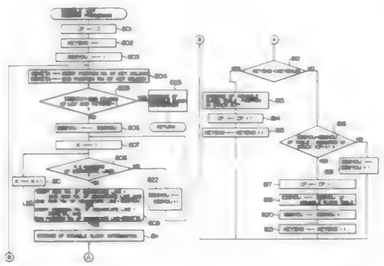
near-neighbor mode and with said second predetermined number of said adjacent cells in a far-neighbor mode.

5,355,505

METHOD FOR SIMULTANEOUSLY SORTING DATA ARRANGEMENT WITHIN MOVABLE DEMARCATED BLOCKS

Toyokazu Suzuki, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 4, 1989, Ser. No. 444,860
Claims priority, application Japan, Dec. 7, 1988, 63-309146
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—800 **2 Claims**



2. A method of controlling sorting of list data in a data processing apparatus which includes input means for inputting characters and commands, display means for displaying list data, control means for controlling said input means and said display means, said method comprising the steps of:

defining a plurality of blocks for demarcating said list data displayed on said display means;

identifying discriminatively blocks for rearranging said list data;

rearranging the list data located within said identified blocks, in the form of a movable block having a plurality of lines; and

displaying the rearranged list data on said display means;

wherein said defining step includes a step of generating blocks for demarcating said list data which are displayed on said display means and arrayed in the form of rows and columns;

wherein said rearranging step includes the steps of:

defining all the rows of the list data located within said blocks as row blocks for rearrangement, respectively,

making a decision for each of the row blocks whether each of the row blocks is constituted by a string of literal characters or by a string of numeric characters contained in each of the rows,

identifying each row block constituted by the string of literal characters having a number of characters greater than a predetermined value, the string forming a sentence together with a succeeding row block to thereby form a connected block for rearrangement, and

rearranging the list data for each of the row blocks and the connected blocks.

5,355,506

COMMUNICATION METHOD FOR CONTROLLING AND MONITORING ROBOTIC ENTITIES

Daniele Mariani, Sterling Heights, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 29, 1991, Ser. No. 695,147
Int. Cl.[5] G06F *13/362, 13/42, 15/18, 15/50*
U.S. Cl. 395—800 **1 Claim**

1. A protocol for direct, non-network communication between a robotic vehicle having a plurality of controllable devices and a control center controlling the devices, comprising the steps of:

a. establishing a database common to the center and the vehicle and representative of controllable devices of the vehicle, the establishing comprising the substeps of:

(1) assigning a first point-to-point address code to the center and assigning a second point-to-point address code to the vehicle;

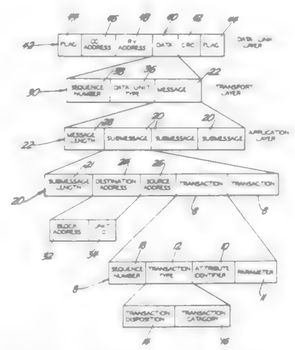
(2) choosing the devices on the vehicle to be controlled by the center; grouping the devices into logical blocks, assigning block address codes to each block; and assigning identification codes to the devices in the blocks;

(3) choosing attributes of the devices to be controlled; assigning attribute codes to the attributes; digitally representing value ranges for the attributes;

(4) develop a set of transaction types, each transaction type including a transaction disposition portion and a transaction category portion; assigning disposition codes to the transaction disposition portions; and assigning category codes to the transaction category portions;

(5) develop transport data unit types and assign data unit type codes to the transport data unit types;

(6) placing various codes in memories at the center and the vehicle; wherein the various codes include the transaction disposition codes, the transaction category codes, the block address codes, the identification codes, the



attribute codes and representations of value ranges associated with each attribute code;

b. constructing a transmission comprised of the various codes by;

(1) choosing one of the devices and one of the attributes;

(2) determining a value of the one attribute to be transmitted along with the one attribute;

(3) determining the transaction type for the one attribute;

(4) from one of the memories, obtaining appropriate codes, including an appropriate transaction disposition code, an appropriate transaction category code, an appropriate block address code, an appropriate one of the identification codes, an appropriate attribute code and a representation of the value;

(5) place the appropriate codes in a transaction block; add a sequence number code to the transaction block; arrange the appropriate codes and the sequence number code in a predetermined order in the transaction block;

(6) add a source address to the transmission identifying a sender of the transmission;

(7) add a destination address to the transmission;

(8) add a message length code to the transmission; and keep the transmission as thus far constructed at a constant length;

(9) add an appropriate data unit type code to the transmission;

(10) add a sequence number code to the transmission;

(11) after steps 8, 9 and 10, add the point-to-point address codes to the transmission;

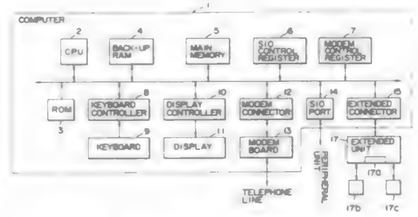
(12) add flags to a front and back of the transmission.

5,355,507

COMPUTER SYSTEM FOR ARBITRATING THE OPERATION OF A BUILT-IN MODEM AND EXTERNAL SIO CIRCUIT

Hirofumi Nishikawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 30, 1991, Ser. No. 784,713
Claims priority, application Japan, Nov. 7, 1990, 2-301693
Int. Cl.[5] G06F *1/00*
U.S. Cl. 395—800 **10 Claims**



1. A computer system having modem-controlling function, said computer system comprising:

a modem board disposed in a system body of said computer system and having a serial input-output port which is to be accessed in accordance with a preset first base address;

modem control register means for storing modem control data for controlling said modem board;

detachable extended unit means having serial input-output ports which are to be accessed in accordance with a preset second base address and which are designed to externally connect various extended units to the system body of the computer system;

first control means for determining whether or not the first base address of said modem board is the same as the second based address of said extended unit means, and for setting modem control data in said modem control register means, which disables said modem board, when the first base address of said modem board is the same as the second base address of said extended unit means; and

second control means for controlling said modem board in accordance with the modem control data set in said modem control register means.

5,355,508

PARALLEL DATA PROCESSING SYSTEM COMBINING A SIMD UNIT WITH A MIMD UNIT AND SHARING A COMMON BUS, MEMORY, AND SYSTEM CONTROLLER

Takashi Kan, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP91/00604, § 371 Date Jan. 6, 1992, § 102(e) Date Jan. 6, 1992, PCT Pub. No. WO91/17507, PCT Pub. Date Nov. 14, 1991
PCT Filed May 7, 1991, Ser. No. 793,353
Claims priority, application Japan, May 7, 1990, 2-117262
Int. Cl.[5] G06F *13/36, 15/80*
U.S. Cl. 395—800 **25 Claims**

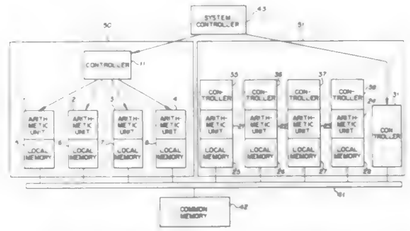
1. A parallel data processing system comprising:

a first parallel data processing unit, including a number of interconnected processing elements of a first type and that is directable to execute a single stream of instructions on multiple streams of data, wherein each processing element is capable of storing a quantity of data and of processing an amount of data per unit time;

a second parallel data processing unit, including a number of interconnected processing elements of a second type and that is directable to execute multiple streams of instructions on multiple streams of data, wherein each processing element is capable of storing a quantity of data and of processing an amount of data per unit time;

a common bus and a common memory connecting said first and second processing units;

a system controller having means for directing the first unit to execute the single stream of instructions on multiple streams of data and for directing the second unit to execute the multiple streams of instructions on multiple streams of data;



wherein the quantity of data storable in the first type of processing element is less than the quantity of data storable in the second type of processing element;

wherein the amount of data processable per unit time by the first type of processing element is less than the amount of data processable per unit time in the second type of processing element; and

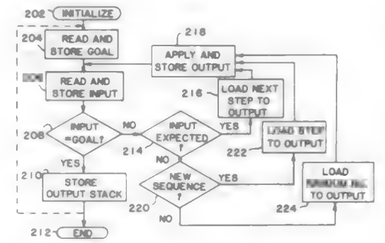
wherein the number of processing elements of the first type exceeds the number of processing elements of the second type.

5,355,509

MODULAR SELF-PROGRAMMER

James T. Beran, 2101 California St., Apt. 104, Mountain View, Calif. 94040

Continuation of Ser. No. 850,214, Mar. 12, 1992, Pat. No. 5,161,232, which is a continuation of Ser. No. 776,819, Sep. 17, 1985, abandoned. This application Oct. 29, 1992, Ser. No. 968,338
The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—800 **20 Claims**



3. A machine comprising:

memory;

a processor connected for accessing the memory;

a program stored in the memory; the program being executable by the processor; the processor, in executing the program;

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receiving input signals, each input signal having a value that is one of a set of possible values input signals can have;

providing a signal indicating at least one of said possible values input signals can have;

comparing said input signals with said signal indicating at least one of the possible values input signals can have and providing a comparison signal when one of the compared input signals has one of the values that is indicated by the indicating signal;

providing a sequence of output signals in response to said input signals, the sequence including two or more steps; and

storing data indicating at least two of said steps of the sequence of output signals in response to the comparison signal.

5,355,510

INFORMATION PROCESS SYSTEM

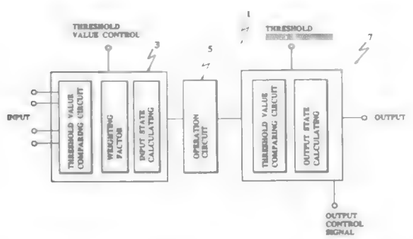
Masatoshi Sekine, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 589,505, Sep. 28, 1990, abandoned. This application Jan. 24, 1994, Ser. No. 185,154

Claims priority, application Japan, Sep. 30, 1989, 1-255472; Apr. 19, 1990, 2-103701

Int. Cl.[5] G06F *5/00*

U.S. Cl. 395—800 **9 Claims**



1. A process circuit for processing information composed of significant information and insignificant information, comprising:

(a) an input portion for selecting significant information from information inputted through a plurality input terminals and for recognizing each significance degree of said significant information as a value showing an input state, said significance degree being defined and determined by a duration time of the input state of said significant information;

(b) an operation circuit for carrying out a predetermined logic operation with said significant information propagated from said input portion; and

(c) an output portion for comparing said each significance degree of said significant information obtained from logic operation results from said operation circuit with a predetermined threshold value, and for recognizing each significance degree obtained from said logic operation results as a value showing an output state when said significance degree is over said threshold value so that significant information having said significance degree is output, and when said significance degree is below said threshold value insignificant information is output.

5,355,511

POSITION MONITORING FOR COMMUNICABLE AND UNCOMMUNICABLE MOBILE STATIONS

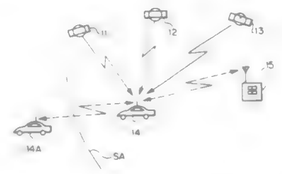
Rikuo Hatano, Toyota, and Toshimitsu Oka, Okazaki, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 7, 1991, Ser. No. 741,376

Claims priority, application Japan, Aug. 8, 1990, 2-210762

Int. Cl.[5] H04B *7/14, 17/02;* **G08G** *1/123*

U.S. Cl. 455—11.1 **5 Claims**



1. An information communicating method for an information communicating system including an order station and a plurality of mobile stations each of which has its own position detector, comprising the steps of:

attempting to communicate with each mobile station to identify each communicable mobile station and each uncommunicable mobile station;

receiving position information from each communicable mobile station;

requesting one of said communicable mobile stations on communicate with an uncommunicable mobile station; and

receiving position information from said uncommunicable mobile station through said one of said communicable mobile stations.

5,355,512

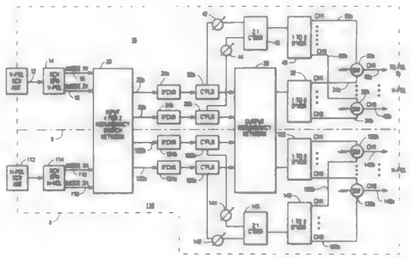
UPLINK NULL INTRUSION REJECTION FOR SATELLITE COMMUNICATIONS SYSTEMS

Charles E. Profera, Jr., Cherry Hill, N.J., assignor to General Electric Co., East Windsor, N.J.

Filed Mar. 12, 1992, Ser. No. 850,422

Int. Cl.[5] H04B *7/185, 1/10*

U.S. Cl. 455—13.3 **5 Claims**



1. A spacecraft communications system which can reduce intrusion originating from a particular location on the globe, comprising:

first array antenna means for receiving signals arriving at the spacecraft to generate received signals;

a first dual-mode network coupled to said first array antenna means for separating said received signals into at least first and second mutually independent channels;

first and second receiving means for at least amplifying signals applied thereto;

first receiver coupling means coupled to said first and second receiving means and to said first dual-mode network, for coupling said received signals in said first and second channels to said first and second receiving means, respectively, whereby said first and second receiving means at least amplify said received signals to form first and second processed signals, respectively;

first and second power dividing means coupled to said first and second receiving means, respectively, for dividing each of said first and second processed signals into first and second main processed signals and first and second ancillary processed signals;

transmitting antenna means adapted for radiating signals to a distant location;

single-pole, double throw switch means including a common port, and first and second ports which may be alternately coupled to said common port in first and second states of said switch means to form switched signals at said common port;

main signal coupling means coupled to said first and second power dividing means and to said first port of said switch means for coupling said main processed signals to said switch means for being selectively coupled to said common port of said switch means in said first state of said switch means, whereby said switched signals comprise at least a portion of said first and second main processed signals in said first state of said switch means;

switched signal coupling means coupled to said common port of said switch means and to said transmitting antenna means for coupling said switched signal to said transmitting antenna means, whereby in said first state of said switch means, at least said portion of said first and second main processed signal is coupled to said transmitting antenna means and radiated to said distant location;

power combining means including first and second input ports and a combined output port, for vectorially combining signals applied to said first and second input ports of said power combining means for generating vectorially combined signals at said combined output port;

combined signal coupling means coupled to said combined output port of said power combining means and to said second port of said switch means for applying said vectorially combined signals to said second port of said switch means; and

phase shifting and coupling means coupled to said first and second ports of said power combining means and to said first and second power dividing means, for applying said first and second ancillary processed signals to said power combining means, and for adjusting the relative phase of said first and second ancillary processed signals applied to said power combining means, whereby said vectorially combined signals represent signals received by a beam of said first array antenna means, which beam includes a null adjustable in position in dependence upon said relative phase, and whereby said switch means may be set to said second state during an intrusion, and said phase shifting means may be set to said particular location to reduce the severity of said intrusion.

5,355,513

TRANSPONDER WITH REPLY FREQUENCY DERIVED FROM FREQUENCY OF RECEIVED INTERROGATION SIGNAL

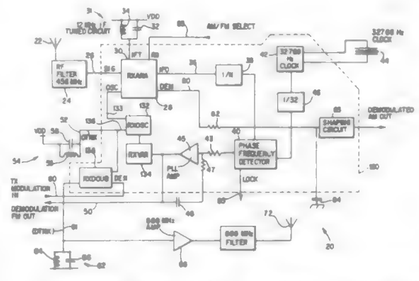
David J. Clarke, Bramford, England, and Edward A. Martin, Sunnyvale, Calif., assignors to Schlumberger Industries Limited, Farnborough, England

Filed Dec. 28, 1990, Ser. No. 635,066

Claims priority, application United Kingdom, Dec. 29, 1989, [illegible]

Int. Cl.[5] H04B *7/15*

U.S. Cl. 455—20 **9 Claims**



1. Transponder apparatus for transmitting a radio reply signal in response to a radio interrogation signal, comprising:

(a) radio receiver means for receiving said radio interrogation signal, said radio receiver means including:

(i) an antenna for receiving said radio interrogation signal;

(ii) a mixer; and

(iii) an intermediate frequency amplifier coupled to the output of the mixer; and

(b) decoder means for deriving a reference signal from said radio interrogation signal, said decoder means being coupled to the output of the intermediate frequency amplifier and including:

(i) an oscillator;

(ii) phase locked loop means for controlling said oscillator to generate the reference signal at a frequency dependent on the frequency of received radio interrogation signal and offset therefrom by a predetermined offset value; and

(c) radio transmitter means for transmitting a reply signal at a radio frequency derived from said reference signal but different from said radio interrogation frequency, said predetermined offset value being very much smaller than the radio interrogation frequency and the radio reply frequency,

said mixer having inputs comprising said radio interrogation signal from said antenna and the output from said oscillator, whereby said mixer generates an intermediate frequency for application to said intermediate frequency amplifier, said phase locked loop further including a divide-by-N counter coupled to the output of the intermediate frequency amplifier and a phase/frequency detector, said phase/frequency detector having one input connected to the output from said divide-by-N counter and a second input connected to a clock circuit, the parameter N determining said predetermined offset value.

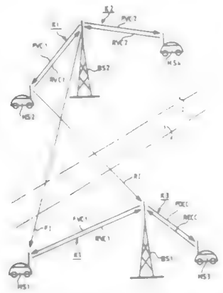
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5,355,514

METHOD FOR DETERMINING THE TRANSMISSION QUALITY OF A HOME TRAFFIC CONNECTION IN A MOBILE RADIO SYSTEM

Lars U. Borg, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Apr. 25, 1991, Ser. No. 691,221
Claims priority, application Sweden, May 23, 1990, 9001869-8
Int. Cl.[5] H04B *1/10*
U.S. Cl. 455—33.1 **9 Claims**



1. A method for determining a transmission quality of a home traffic connection in a mobile radio system, where the mobile radio system includes two-way radio channels, each channel having two carrier frequencies at a desired frequency distance from one another: the home traffic connection, which is established between a first base station and a first subscriber mobile station, utilizes a first radio channel; and wherein the first radio channel can be reused within the mobile radio system by a second base station and another subscriber mobile station as a traffic connection whose radio signals are liable to interfere with the radio signals of the home traffic connection at the first base station, comprising the following method steps:

measuring, at a first location, the combined received signal strength (C+I) of the carrier frequencies on the first radio channel during the transmission of speech or data;

measuring, at the first location, the signal strength of an interfering carrier frequency (I) on the first radio channel in a time interval during which the carrier frequency of the home traffic connection is closed down; and

calculating the transmission quality as the quotient (C/I), where (C) is the signal strength of the carrier frequency of the home traffic connection and (I) is the signal strength of the interfering carrier frequency.

5,355,515

METHOD AND APPARATUS FOR ESTIMATING INITIAL TIME ALIGNMENT IN A CELLULAR COMMUNICATIONS NETWORK

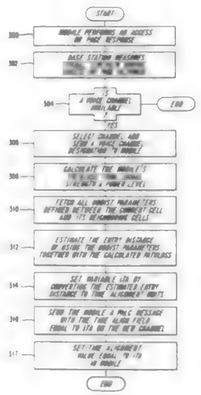
Alan Sicher, Garland, Tex., assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jun. 12, 1991, Ser. No. 713,853
Int. Cl.[5] H04B *7/26*
U.S. Cl. 455—33.2 **16 Claims**

1. A method in a cellular mobile radio system for initially setting a time alignment parameter in a mobile station comprising the steps of:

estimating an optimal time alignment parameter before communication on a new traffic channel of a desired base station is established, for use during communication on the new traffic channel based on information relating to the position of the mobile station available before the communication on the new traffic channel is established;

sending the estimated time alignment parameter to the mobile station; and



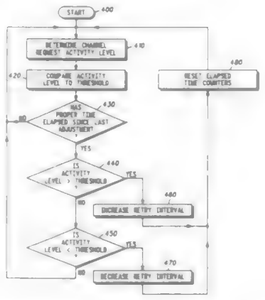
setting the time alignment parameter in the mobile station in accordance with the estimated time alignment parameter.

5,355,516

METHOD FOR REDUCING SUPERFLUOUS CHANNEL ALLOCATION IN A CELLULAR RADIOTELEPHONE COMMUNICATION SYSTEM

Brenda K. Herold, Carol Stream, and Christine K. Ioriatti, Union, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 28, 1990, Ser. No. 589,953
Int. Cl.[5] H04Q *7/00*
U.S. Cl. 455—34.1 **18 Claims**



1. In a communication system performing radio channel management, a method for reducing superfluous channel allocations among a plurality of mobile units, making multiple service requests to communication system base site equipment; said method comprising the steps of:

receiving, at a base site, a channel request from at least one of the plurality of mobile units;

determining, at the base site, a communication system processing delay associated with the received request; and

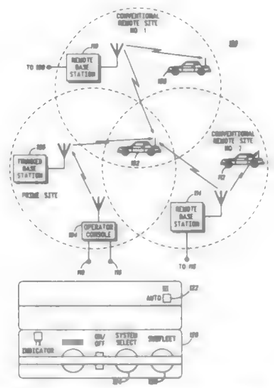
adjusting system parameters that control a range of mobile unit channel request retry intervals as a function of the processing delay, to reduce the likelihood of more than one channel being assigned to the requesting mobile unit.

5,355,517

METHOD AND APPARATUS FOR AUTOMATIC ALTERNATE COMMUNICATIONS SYSTEM ACCESS

Carl B. Olson, San Carlos, Calif., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 845,161, Mar. 27, 1986, Pat. No. 5,261,117, which is a continuation-in-part of Ser. No. 687,104, Dec. 28, 1984, abandoned. This application Oct. 4, 1993, Ser. No. 131,349
The portion of the term of this patent subsequent to Nov. 9, 2010, has been disclaimed.
Int. Cl.[5] H04Q *7/00*
U.S. Cl. 455—34.1 **5 Claims**



1. A method of controlling a portable or mobile transceiver for automatically seeking an available alternate communication system when a first communication system is not available in an area having at least one trunked communication system and at least one non-trunked communication system, said method comprising the steps of:

(a) searching for a channel on a first non-trunked communication system, and locking to said channel of said first non-trunked communication system when said first non-trunked communication system is available;

(b) searching for a channel of an alternate communication system according to a prearranged priority scan list when said first non-trunked communication system is not available;

(c) locking to said channel of said alternate communication system when said alternate communication system is available;

(d) periodically searching for a channel of said first non-trunked communication system; and

(e) locking to a channel of said first non-trunked communication system when said first non-trunked communication system is determined to be available during said periodic search.

5,355,518

RECEIVER WITH CONSTANT BATTERY SAVING DUTY CYCLE

Peter A. Kindinger, 75 Briargate Rd., Cary, Ill. 60013; James C. Knutsen, 227 Golfview Ter., Palatine, Ill. 60067; Kevin J. Kuehr, 716 Cimarron Dr., Cary, Ill. 60013, and James E. Eppley, 1282 William Dr., Lake Zurich, Ill. 60047

Filed May 26, 1992, Ser. No. 888,932
Int. Cl.[5] H04B *1/16*
U.S. Cl. 455—38.3 **7 Claims**

3. A method for saving battery energy in a radio, having a receiver for receiving a carrier signal to produce a recovered signal, the method comprising the steps of;

determining a duty cycle selected for said radio, wherein said duty cycle is determined by a first ON time period and a first OFF time period;

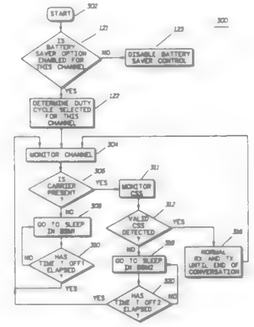
placing said radio in a first battery saver mode having said duty cycle;

detecting the absence of the carrier signal during the first ON time period;

maintaining said radio in said first battery saver mode in response to the detecting of the absence of the carrier signal;

detecting the presence of the carrier signal during said first ON time period;

placing said radio, in a second battery saver mode, in response to the detected presence of the carrier signal, the second battery saver mode having the same duty cycle as the first battery saver mode, but the second battery saver mode having a second ON time period and a second OFF time period, both second periods being longer than said first time periods;



detecting the presence of a non-valid coded squelch signal in said recovered signal during said second ON time period; and

maintaining said radio, in said second battery saver mode, in response to the detected presence of the carrier signal and the detected presence of the non-valid coded squelch signal.

5,355,519

FADING SIMULATION METHOD AND FADING SIMULATOR

Junichi Hasegawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 31, 1993, Ser. No. 114,686
Claims priority, application Japan, Mar. 4, 1993, 5-043760
Int. Cl.[5] H04B *17/00*
U.S. Cl. 455—52.3 **14 Claims**

1. A fading simulation method which uses a fading simulator interposed between a transmitter and a receiver of a radio system and including a distributor for distributing an input signal, a first path artificial circuit including a first variable attenuator and a first delay circuit for receiving the input signal distributed by said distributor, a second path artificial circuit including a variable phase shifter, a second variable attenuator and a second delay circuit for receiving the input signal distributed by said distributor, and a composer for composing signals from said first path artificial circuit and said second path artificial circuit, to conduct a performance test of said radio system for fading by inputting a signal from said transmitter to said fading simulator so as to artificially produce fading by said fading simulator and receiving the output of said fading simulator by said receiver, the method comprising the steps of:

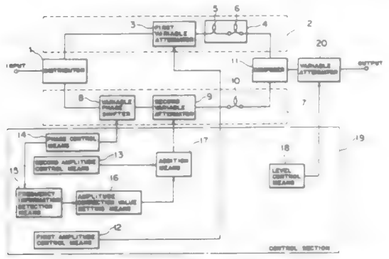
inputting an input signal from said transmitter to said fading

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simulator, the input signal being distributed by said distributor so that it is inputted to said first path artificial circuit and said second path artificial circuit;

controlling, in said first path artificial circuit, the amount of attenuation of said first variable attenuator to control the amplitude of a signal passing said first path artificial circuit and delaying the passing signal by said first delay circuit;

controlling, in said second path artificial circuit, said variable phase shifter to control the phase of a signal passing said second path artificial circuit, controlling the amount



of attenuation at said second variable attenuator in accordance with a signal obtained by addition to an amplitude control signal of an amplitude correction value set for leveling the amplitude characteristic of said second path artificial circuit in accordance with notch frequency information to control the amplitude of a signal passing said second path artificial circuit, and delaying the passing signal by said second delay circuit;

composing signals from said first path artificial circuit and said second path artificial circuit by said composer; and

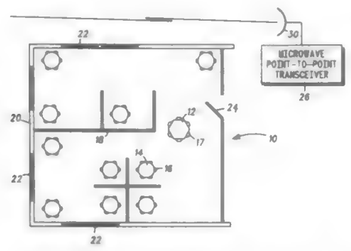
outputting a signal by the composer to said receiver.

5,355,520

IN-BUILDING MICROWAVE COMMUNICATION SYSTEM PERMITS FREQUENCY REFUSE WITH EXTERNAL POINT-TO-POINT MICROWAVE SYSTEMS

Thomas A. Freeburg, Arlington Heights, and Charles L. Warren, West Chicago, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 30, 1990, Ser. No. 621,673
Int. Cl.[5] H04B *7/00*
U.S. Cl. 455—53.1 15 Claims



1. A wireless radio frequency (RF) communication system disposed in a building having windows, operating on a first frequency which is also available for use by a different communications system located outside of the building, the in-building communications system comprising:

a central module (CM) that includes an RF transmitter, RF receiver and antenna system;

a plurality of user modules (UM) each including an RF transmitter for transmitting signals to said CM receiver, an RF receiver for receiving signals from said CM transmitter, and an antenna system consisting of unidirectional antennas each having a predetermined horizontal pattern beamwidth and being oriented to provide substantially 360° of total horizontal pattern coverage for each UM; and

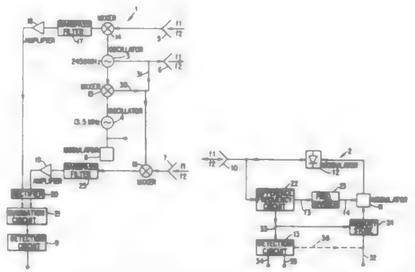
switching means, coupled to the UM antenna system, for limiting the magnitude of RF signals exiting said building to a predetermined level, said predetermined level being below a transmit signal level for the different communication system by at least the capture ratio of the different communication system, to prevent interference to the different communications system located outside of the building.

5,355,521

METHOD FOR CONTACTLESS TRANSMISSION OF INFORMATION USING TWO CARRIER WAVES AND AN INTERMEDIATE SIDE BAND ON THE CARRIER WAVES

Bengt Henoch, Backvindeln 90, S-126 57 Hägersten, and Eilert Berglind, Täby, both of Sweden, assignors to Bengt Henoch, Hägersten, Sweden

Filed Feb. 18, 1992, Ser. No. 834,272
Claims priority, application Sweden, Aug. 23, 1989, 8902808
Int. Cl.[5] H04B *1/59*
U.S. Cl. 455—59 7 Claims



1. A method for the contactless transmission of information between a transmitter/receiver unit and a transponder, wherein the transmitter/receiver unit includes oscillators, transmitter and receiver antennas and a modulator and detection circuit, and wherein the transponder includes a transmitter/receiver antenna, a modulator and a detection circuit, the method comprising the steps of: generating and transmitting from the transmitter/receiver unit first and second carrier wave signals, which have mutually different frequencies (f1, f2), to the transponder; receiving said first and second carrier wave signals by the transponder; creating a third signal, which is the difference frequency of said first and second carrier waves, in the transponder; dividing the third signal (f3) and thereby creating a fourth signal having half the said difference frequency (f4); modulating the fourth signal with the information received by the transponder; modulating the two carrier waves received in the transponder with the modulated fourth signal by applying the modulated fourth signal and said received first and second carrier wave signals to a diode device, wherein the received carrier waves are reflected back to the transmitter/receiver unit; mixing down the carrier wave signals received back in the transmitter/receiver unit from the transponder, with one of the first and the second original carrier wave frequencies to thereby create a signal comprising one sideband on each of the respective sides of the carrier wave frequency with which said mixing is effected; said sidebands differing from said one of the first and the second original Carrier wave frequencies by a frequency which is equal to half the difference frequency (f4) wherein one sideband, of said two sidebands, has a frequency that lies between the said two

carrier wave frequencies and is a combined sideband having an amplitude which differs from the amplitude of the other of said two sidebands; filtering both sidebands and detecting the information carried by the sidebands in the detecting circuit of the transmitter/receiver unit.

5,355,522

FREQUENCY SELECTION METHOD AND APPARATUS

Mark G. Demange, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 26, 1992, Ser. No. 904,621
Int. Cl.[5] H04B *17/00*
U.S. Cl. 455—62 23 Claims



1. In a radio frequency (RF) communications system having a plurality of control modules having transceivers operating at various frequencies within a predetermined range, a method for selecting an operating frequency from within said range for use by a new control module seeking to commence operation within said system, said method comprising the steps of:

scanning, by the new control module, at its intended location of operation, a set of frequencies within said range;

storing a table of information corresponding to signals sensed during said scanning;

evaluating the stored information to determine a number of interference sources associated with each scanned frequency; and

selecting that frequency from within the set having the least number of associated interference sources for use by the new control module.

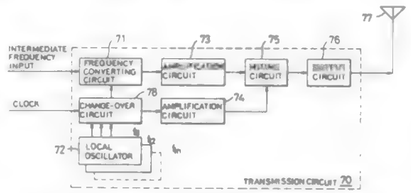
5,355,523

WIRELESS TRANSMISSION/RECEPTION SYSTEM INCLUDING TRANSMITTING TERMINAL PRODUCING MULTIPLE FREQUENCY LOCAL OSCILLATION SIGNALS AND RECEIVING TERMINAL STORING A LOCAL OSCILLATION SIGNAL

Haruo Ogawa; Haruhiro Kuboyama; Hirofumi Konishi; Toshiaki Inage; Shinji Morino; Yoshiaki Ueno; Haruhiko Hyosu, and Yoshihiro Shogaki, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jul. 28, 1992, Ser. No. 920,874
Claims priority, application Japan, Aug. 9, 1991, 3-200361; Sep. 2, 1991, 3-221879; Sep. 2, 1991, 3-221880; Jan. 27, 1992, 4-012060
Int. Cl.[5] H04B *1/40*
U.S. Cl. 455—71 2 Claims

1. A wireless transmission/reception system including a plurality of terminal units, a first of said terminal units including a transmitting/receiving circuit for transmitting a transmitted frequency signal resulting from mixing of an intermediate frequency signal with a local oscillation signal having a local oscillation frequency and for transmitting a reference signal at the local oscillation frequency, the other terminal units each including a transmitting/receiving circuit for receiving the transmitted frequency signal and the reference signal, for detecting the reference signal, and for generating from the detected reference signal the local oscillation frequency signal for frequency conversion of the transmitted frequency signal into the intermediate frequency signal, wherein a plurality of different local oscillation frequencies are generated in said first terminal unit, and one of the local oscillation frequencies is selected as the reference signal and for mixing with the inter-



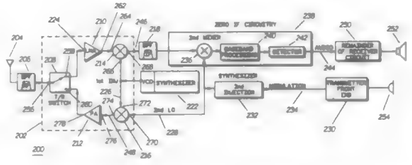
mediate frequency signal to produce the transmitted frequency signal in synchronism with a clock signal input to said first terminal unit for transmission of the transmitted frequency signal.

5,355,524

INTEGRATED RADIO RECEIVER/TRANSMITTER STRUCTURE

Robert J. Higgins, Jr., Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 21, 1992, Ser. No. 822,809
Int. Cl.[5] H04B *1/44*
U.S. Cl. 455—82 2 Claims



1. An integrated radio receiver/transmitter structure, comprising:

a first dielectric substrate having first and second opposed surfaces, the first dielectric substrate having a ground plane on the first surface and a conductive resonator on the second surface, the conductive resonator having first and second terminals;

a second dielectric substrate having first and second opposed surfaces, the second dielectric substrate having a ground plane on the first surface, the second surfaces of both dielectric substrates being attached to each other, the first and second dielectric substrates forming a bandpass filter; and

a single integrated circuit chip transmitter/receiver section attached to the second surface of the first dielectric substrate, the single chip transmitter/receiver section comprising:

an antenna switch having an antenna port, a receive signal output port and a transmit signal input port, the antenna port is coupled to the second terminal of the conductive resonator;

an amplifier having an input and output terminal, the amplifier input terminal being coupled to the antenna switch receive signal output port;

a first mixer means having first and second input terminals and an output terminal, the amplifier output terminal being coupled to the first input terminal of the first mixer means;

a second mixer means having first and second input terminals and an output terminal, the second input terminals of the first and second mixer means being coupled together for receiving a first reference signal; and

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a power amplifier having an input and output port the input port of the power amplifier is coupled to the output terminal of the second mixer means and the output port of the power amplifier being coupled to the transmit signal input port of the antenna switch.

5,355,525

METHOD FOR OPERATING A HAND-HELD TRANSMITTER FOR CONTROLLING VEHICLE FUNCTIONS

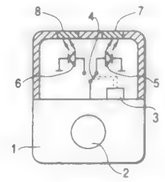
Martin Lindmayer, Leonberg, and Jürgen Moczygemba, Lichtenstein, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Jul. 14, 1992, Ser. No. 913,064

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1991, 4124181

Int. Cl.[5] H04B *1/04*

U.S. Cl. 455—99 **9 Claims**



8. An arrangement for remotely controlling locking devices and drives for closing vehicle openings of a vehicle, comprising:

a control unit on said vehicle responsive to received commands to operate the locking devices and the drives; and

a hand-held transmitter unit which emits output signals for controlling the locking devices at a first output power and range, and output signals for controlling the drives at a second output power and range that is lower than the first output power and range.

5,355,526

METHOD FOR THE FIELD STRENGTH DEPENDENT ANALYSIS OF RADIO INFORMATION FOR VEHICLES

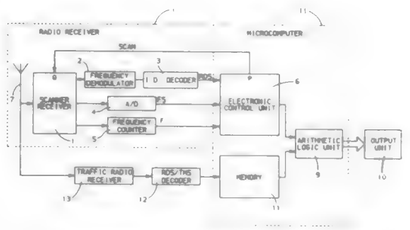
Harald Berninger, Ruesselsheim, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 10, 1992, Ser. No. 973,998

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1991, 4137000

Int. Cl.[5] H04B *17/02*

U.S. Cl. 455—161.2 **11 Claims**



11. In a vehicle with a radio receiver unit comprising (i) a scanner-receiver for supplying an intermediate frequency signal comprising a data signal, (ii) a frequency demodulator coupled to the scanner-receiver and receiving the intermediate frequency signal, (iii) a radio data signal program identification coder coupled to an output of the frequency demodulator, wherein responsive to the frequency demodulator output, the radio data signal program identification coder outputs a radio data signal comprising an identification sign for a specific transmission program, (iv) an analog-to-digital converter coupled to the scanner-receiver and, responsive thereto, outputting a currently received field-strength signal, and (v) a frequency counter, coupled to the scanner receiver and outputting a currently received frequency signal responsive to the scanner-receiver, a method for field-strength-dependent analysis of radio information comprising the steps of:

storing a plurality of reference field-strength profiles, each reference profile having a corresponding information data;

periodically scanning the scanner-receiver to obtain (i) a radio data signal, (ii) a field-strength signal, and (iii) a frequency signal for a plurality of received radio signals, each received radio signal transmitted from a different radio transmitter;

forming a current field-strength profile for the identified radio transmitters dependent on a receiving location;

comparing the current field-strength profile to each of the reference field-strength profiles; and

responsive to the comparison, outputting the data information corresponding to the reference field-strength profile that is equal to the current field-strength profile, wherein the output data information is received by a vehicle operator and comprises traffic information relevant only to the region in which the vehicle is presently located.

5,355,527

RADIO RECEIVER WITH DISPLAY MEMORY AND KEYS FOR DISPLAYING SELECTING, AND STORING STATION FREQUENCIES

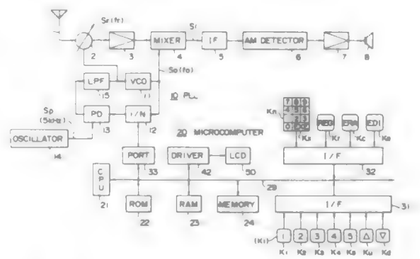
Masano Owaki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 904,583

Claims priority, application Japan, Jul. 1, 1991, 3-186868; Jul. 4, 1991, 1-190604

Int. Cl.[5] H04B *1/16*

U.S. Cl. 455—186.2 **4 Claims**



1. A radio receiver of a synthesizer type having a PLL adapted to perform frequency conversion of a received signal using an oscillated signal from said PLL to thereby achieve channel selection comprising:

a microcomputer with a central processing unit, a plurality of memories and a display driver means;

a data table divided into a plurality of pages and stored in one of said plurality of memories having frequency data for making a channel selection registered therein;

each of said plurality of pages being assigned with a page number;

display means connected to said display driver means of said microcomputer;

a page key for sequentially selecting a page from said plurality of pages;

a plurality of select keys for selecting the frequency data from a page; and

a register key for writing the frequency data into addresses of said data table;

said page key, said plurality of select keys, and said register key adapted to provide input to said microcomputer;

wherein every time said page key is operated in a first mode, each of the plurality of pages of said data table is sequentially selected by said central processing unit of said microcomputer and when said data table includes among said plurality of pages a plurality of blank pages having no data registered therein, all but one of said plurality of blank pages having no data are skipped over by said central processing unit of said microcomputer.

every time said page key is operated in a second mode, all pages of the plurality of pages of said data table including said plurality of blank pages are sequentially selected by said central processing unit of said microcomputer and

contents of each of the selected pages in the first and second mode are converted to a frequency format by said display driver means of said microcomputer and supplied to said display means to that the contents of said each of the selected pages are displayed on said display means in said frequency format, and wherein

in both said first and second modes when one select key of said plurality of select keys is operated, the frequency data registered at an address corresponding to said operated select key in the page selected by said page key is read from the address by said central processing unit of said microcomputer,

a received frequency is set up by said central processing unit of said microcomputer according to the read frequency data, and

when said register key and said one select key of said plurality of select keys are operated, the frequency data of the frequency which is currently received is written at the address corresponding to said operated select key in the page selected by said page key by said central processing unit of said microcomputer.

5,355,528

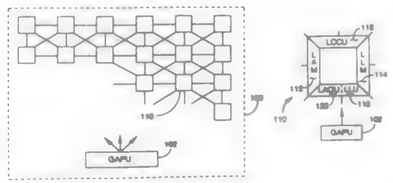
REPROGRAMMABLE CNN AND SUPERCOMPUTER

Tamas Roska, Budapest, Hungary, and Leon O. Chua, Berkeley, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Oct. 13, 1992, Ser. No. 959,562

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—24 **9 Claims**



1. A cellular neural network comprising:

a plurality of identical analog cells arranged in a multi-dimensional lattice array having multiple dimensions of said plurality of identical analog cells organized in n layers of cells wherein n is a positive integer and each cell has controllable operational signal values, the cells closest to any single cell in each of the multiple dimensions being neighbor cells that form a first layer of neighbor cells with each of said neighbor cells being identically interconnected with said any single cell depending on their relative position as a neighbor cell to said any single cell, all of the cells separated from any single cell by one other cell in any of the multiple dimensions form a second layer of neighbor cells that are identically interconnected with said any single cell depending on their relative position as a neighbor cell to said any single cell, and the remainder of the n layers of neighbor cells expanding concentrically from said second layer of neighbor cells in the multiple dimensions around said any single cell forming additional layers of neighbor cells to the most distant of said identical analog cells of said multi-dimensional lattice array from said any single cell with said layers of neighbor cells identically interconnected with said any single cell depending on their relative position as a neighbor cell to said any single cell;

a global analogic programming unit interfaced with each of said plurality of identical analog cells within said cellular neural network conveying identical analog and logic values to each said cell;

each of said identical analog cells programmably interacting non-linearly and continuously in time with selected layers of said n layers of neighbor cells and at least the cells of said first layer of neighbor cells with independently selected programmable parameters for each cell of said n layers depending on the relative position of each cell in any of said n layers to said any single cell;

wherein each of said identical analog cells comprises:

a non-linear operationally reprogrammable feed-forward section coupled to each cell in each of the selected layers of said n layers of neighbor cells to influence the operational signal values of each cell in said selected layers of neighbor cells;

a non-linear operationally reprogrammable feedback section coupled to each cell in each of the selected layers of said n layers of neighbor cells to influence the operational signal values of each cell in said selected layers of said neighbor cells;

a non-linear operationally reprogrammable self feedback section coupled to the cell being defined here to influence the operational signal values of said cell being defined here;

a local analog memory unit coupled to said global analogic programming unit and said feed-forward, feedback and self feedback sections of said cell being defined here, to store analog values for use by said cell being defined here;

an operationally reprogrammable local analog output unit coupled to said local analog memory unit to operate with said stored values that are indicative of the analog operation of said cell being defined here;

a local logical memory resister coupled to said local analog output unit to store logical values for internal use by said cell being defined here;

an operationally reprogrammable local logic unit coupled to said local logic memory register to process the operational logical values of said cell being defined here; and

a local communications and control unit coupled to each of said feed-forward, feedback and self feedback sections, said local analog memory unit, said local analog output unit, said local logical memory register and said local logic unit each of said cell being defined here, and said global analogic programming unit to control internal and external functions and configurations of said cell being defined here in cooperation with said global analogic programming unit;

each of said feed-forward section, feedback section, self feedback section, local analog output unit and local logic unit are programmable by said global analogic programming unit.

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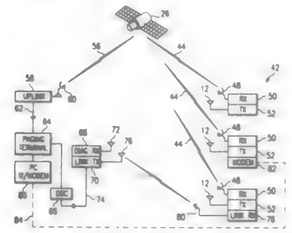
PAGING SYSTEM WITH SATELLITE TIME BASE

Roger D. Linquist, and Malcolm M. Lorang, both of Dallas, Tex., assignors to Pagemart, Inc., Dallas, Tex.

Continuation of Ser. No. 612,064, Nov. 13, 1990, Pat. No. 5,239,671. This application Aug. 24, 1993, Ser. No. 111,723

Int. Cl.[5] H04B *7/19, 7/24*

U.S. Cl. 455—13.1 6 Claims



1. A data transmission system, comprising:

a satellite having a predetermined footprint for transmitting timing information on a downlink channel;

a plurality of transmission sites disposed in the footprint of said satellite;

a satellite receiver disposed at each of said transmission sites for receiving the timing information from said satellite, said timing information received at the one of said satellite receivers associated with each of said transmission sites at substantially the same time;

a data communication channel connected from a data source to each of said transmission sites;

a data receiver disposed at each of said transmission sites for receiving from said communication link data transmitted thereby from said data source and providing received data from an associated output;

a data transmitter disposed at each of said transmission sites for receiving the data on the output of said data receiver and transmitting said received data on a data frequency within a predetermined transmission locale proximate to each of said transmission sites for reception by a mobile data receiver within said transmission locale; and

a synchronization system disposed at each of said transmission sites for synchronizing said received data received by said data receiver with the timing information received from said satellite receiver, said synchronization system operable to determine the amount of delay necessary to introduce into said received data received by the data receiver prior to transmission of said received data by said data transmitter that is necessary for the data to be transmitted by each of said data transmitters from each of said sites at substantially the same time, said synchronization system operable to introduce said determined amount of delay into said received data prior to transmission by said data transmitter.

5,355,530

RECEIVER USING RECEIVING CONDITION SIGNAL FOR CORRECTING INFLUENCE OF THE RECEPTION BAND WIDTH

Masaharu Ikeda, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 9, 1992, Ser. No. 848,718

Claims priority, application Japan, Mar. 20, 1991, 3-056592

Int. Cl.[5] H04B *1/06, 1/10*

U.S. Cl. 455—212 10 Claims

1. A receiver comprising:

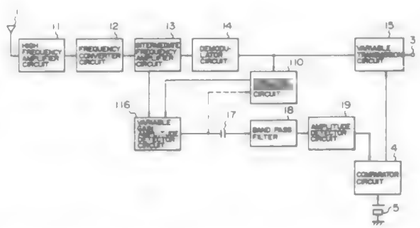
a frequency converter circuit for converting a received signal, received by said receiver, to an intermediate frequency signal;

an intermediate frequency amplifier circuit, having a bandwidth characteristic, for receiving and amplifying the intermediate frequency signal;

a demodulator circuit for receiving the amplified intermediate frequency signal and for generating a demodulated signal therefrom;

function generator means, coupled to said demodulator circuit, for receiving the demodulated signal and for generating in response thereto a gain control signal indicative of a reverse characteristic of the bandwidth characteristic of said intermediate frequency amplifier circuit;

first detector means, receiving the amplified intermediate frequency signal from said intermediate frequency amplifier circuit and the gain control signal from said function generator means, for detecting an amplitude value of the received signal of said receiver and providing an output signal having an amplitude determined by the gain control signal;



second detector means for detecting a change ;amount of an amplitude value of the received signal of said receiver based on said output signal of said first detector means for providing an output signal indicating said change amount;

comparator means, coupled to receive said output signal of said second detector means, for comparing the output signal of said second detector means with a set value and providing an output signal indicating a comparison result; and

variable transmission means connected with said demodulator circuit to receive the demodulated signal therefrom and also connected with said comparator means to receive said output signal thereof, for modifying the received demodulated signal in accordance with said output signal of said comparator means.

5,355,531

SQUELCH CIRCUIT FOR VOLUME CONTROL OF A RADIO TRANSMITTER AND RECEIVER

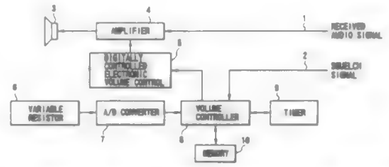
Yoshihiro Iwata, Saitama, and Mitsuo Shiraishi, Tokyo, both of Japan, assignors to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1992, Ser. No. 928,939

Claims priority, application Japan, Aug. 12, 1991, 3-225327

Int. Cl.[5] H04B *1/10*

U.S. Cl. 455—219 12 Claims



1. A squelch circuit for volume control of a radio transmitter/receiver, comprising:

amplifying means coupled to a loudspeaker for amplifying a received audio signal input, said amplifying means providing an amplified audio signal to said loudspeaker;

a digitally-controlled electronic volume control coupled to said amplifying means for changing an output level of said amplified audio signal;

variable resistor means coupled to a volume control means for providing a volume value to said volume control means for controlling said digitally-controlled electronic volume control and for controlling said output level of said amplified audio signal;

means for providing a squelch signal to said volume control means; and

said volume control means, coupled to said digitally-controlled electronic volume control, comprises means for detecting a change in said volume value provided by said variable resistor means and means for changing said output level of said amplified audio signal via said digitally controlled electronic volume control in response to said squelch signal and said change in said volume value, said squelch signal being selectively set to a mute state or a non-mute state to disable or enable said amplifying means, respectively,

wherein said digitally-controlled electronic volume control changes said output level of said amplified audio signal in response to said volume value from said variable resistor means when said squelch signal is in said non-mute state, and changes said output level of said amplified audio signal in response to said volume value from said variable resistor means during a predetermined time interval when said squelch signal is in said mute state and said change in said volume value from said variable resistor means is detected and, said digitally-controlled electronic volume control disables said amplifying means when said predetermined time interval has expired.

5,355,532

TELEVISION TUNER UNIT HAVING SHIELD HOUSING

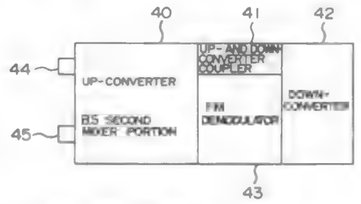
Kazuhiko Kubo, Osaka; Akira Usui, Takatsuki, and Akira Mishima, Gifu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 550,495, Jul. 10, 1990, abandoned. This application Mar. 29, 1993, Ser. No. 31,056

Claims priority, application Japan, Jul. 14, 1989, 1-182907

Int. Cl.[5] H04B *1/10*

U.S. Cl. 455—301 9 Claims



1. A television tuner, comprising:

a housing having a plurality of blocks each of which is surrounded by shielding partitions;

a first tuner unit disposed in a first one of said blocks, for selectively and alternately receiving (a) television signals of UHF/VHF band or a CATV signal as a first input signal or (b) a satellite broadcast television IF signal as a second input signal, said first tuner unit converting the first input signal into a first intermediate frequency signal having a frequency higher than a frequency of the first input signal and converting the second input signal into a second intermediate frequency signal having a frequency lower than a frequency of the second input signal;

a second tuner unit disposed in a second one of said blocks which is not adjacent to said first one of said blocks in which said first tuner unit is disposed, for converting the first intermediate frequency signal into a third intermediate frequency signal having a frequency lower than a frequency of the first intermediate frequency signal;

an FM demodulator unit disposed in a third one of said blocks which is located between said first one and said second one of said blocks in which said first and second tuner units are disposed, for demodulating the second intermediate frequency signal; and

a coupling means for coupling said first and second tuner units together, said coupling means including a patterned foil of an electrically conductive material adhered on a circuit board which extends through ones of said shielding partitions disposed between said first and second tuner units.

5,355,533

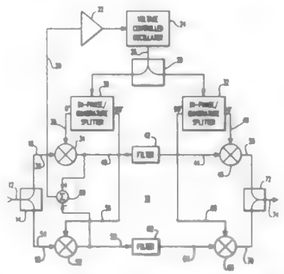
METHOD AND CIRCUIT FOR RADIO FREQUENCY SIGNAL DETECTION AND INTERFERENCE SUPPRESSION

Roger W. Dickerson, Montgomery, Ohio, assignor to Xetron Corporation, Cincinnati, Ohio

Filed Dec. 11, 1991, Ser. No. 806,060

Int. Cl.[5] H04B *1/12, 1/26;* H03B *19/10*

U.S. Cl. 455—306 32 Claims



1. A circuit for separating a signal of interest from a composite signal including the signal of interest and an interfering signal, said circuit comprising:

means for generating a reference signal representative of said composite signal, said composite signal including said signal of interest and said interfering signal;

means for producing in-phase and quadrature components of said reference signal;

a first mixer for mixing said in-phase component of said reference signal with said composite signal to produce a first compound signal;

means for removing selected components from said first compound signal to produce a first filtered signal;

a second mixer for mixing said in-phase component of said reference signal with said first filtered signal to produce a second compound signal;

a third mixer for mixing said quadrature component of said reference signal with said composite signal to produce a third compound signal;

means for removing selected components from said third compound signal to produce a second filtered signal;

a fourth mixer for mixing said quadrature component of said reference signal with said second filtered signal to produce a fourth compound signal; and

means for combining said second and fourth compound signals to produce an output signal, wherein the spectral power density of said signal of interest in said output signal is greater than the spectral power density of said interfering signal in said output signal.

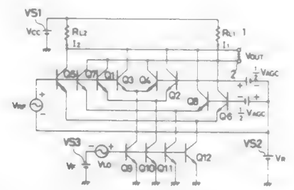
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5,355,534

FREQUENCY MIXING CIRCUIT HAVING AUTOMATIC GAIN CONTROL FUNCTION

Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 11, 1992, Ser. No. 989,548
Claims priority, application Japan, Dec. 12, 1991, 3-351434
Int. Cl.[5] H04B *1/28*; H03B *19/06*
U.S. Cl. 455—323 **14 Claims**



1. A frequency mixing circuit comprising:

first, second, third and fourth unbalanced differential pairs each composed of two transistors different in emitter area from each other;

first, second, third and fourth transistors each for driving a corresponding one of said four unbalanced differential pairs in accordance with a common direct current voltage source, each of said first, second, third and fourth transistors being operatively connected to said corresponding one of said first, second, third and fourth differential pairs;

in said four unbalanced differential pairs, collectors of said transistors smaller in emitter area being connected in common, and collectors of said transistors larger in emitter area being connected in common thereby to collectively form a pair of output terminals;

in said first and second differential pairs, a base of a transistor smaller in emitter area of one of said first and second differential pairs and a base of a transistor larger in emitter area of a different one of said first and second differential pairs being connected in common to form one terminal of a first pair of input terminals and a base of a transistor larger in emitter area of one of said first and second differential pairs and a base of a transistor smaller in emitter area of a different one of said first and second differential pairs being connected in common to form another terminal of a first pair of input terminals, and in said third and fourth unbalanced differential pairs, a base of a transistor smaller in emitter area of one of said first and second differential pairs and a base of a transistor larger in emitter area of a different one of said first and second differential pairs being connected in common to form one terminal of a second pair of input terminals and a base of a transistor larger in emitter area of one of said first and second differential pairs and a base of a transistor smaller in emitter area of a different one of said first and second differential pairs being connected in common to form another terminal of a first pair of input terminals, and one terminal of said first pair of input terminals and one terminal of said second pair of input terminals being connected in common thereby to be provided a first input signal voltage;

the other terminal of said first pair of input terminals being provided a first voltage obtained by halving an AGC voltage and the other terminal of said second pair of input terminals being provided a second voltage obtained by reversing in polarity said first voltage; and

bases of said first, second, third and fourth transistors being provided a second input signal voltage.

DESIGN PATENTS

GRANTED OCT. 11, 1994

ERRATA

For CLASS	See PATENT NO.
D12-180	D 351,365

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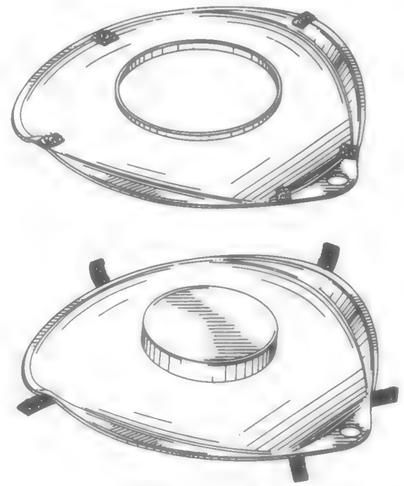
DESIGNS

OCTOBER 11, 1994

351,271
CAMOUFLAGE COVERALL
David R. Fields, Rte. 2 Box 247, Delbarton, W. Va. 25670
Filed Feb. 11, 1993, Ser. No. 4,695
Term of patent 14 years
U.S. Cl. D2—746



351,273
TWO PART HAT SHAPER I
Don McKinley, P.O. Box 754, Tucumcari, N. Mex. 88401
Filed Mar. 3, 1993, Ser. No. 5,389
Term of patent 14 years
U.S. Cl. D2—892



351,272
NOVELTY HAT
Susan L. Hyer, 26 Cool Spring Dr., Evergreen, Colo. 80439
Filed Apr. 8, 1993, Ser. No. 6,821
Term of patent 14 years
U.S. Cl. D2—869

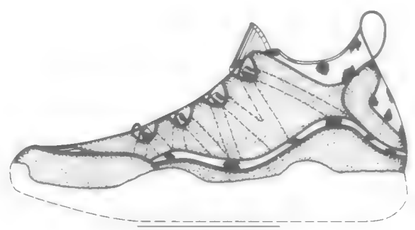


351,274
CROSS-COUNTRY BOOT
Catherine Felloube, Annecy Le Vieux, France, assignor to Salomon S.A., Annecy Cedex, France
Filed Mar. 25, 1993, Ser. No. 6,289
Claims priority, application World Int. Prop. O., Sep. 25, 1992, DM/023 977
Term of patent 14 years
U.S. Cl. D2—904



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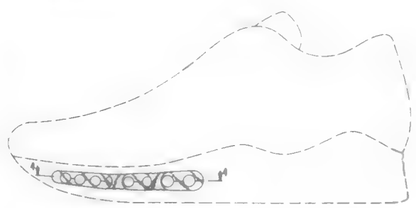
351,275
SHOE UPPER
Tinker L. Hatfield; Kanae H. Koh; Bradford A. Johnson, all of Portland, and Michael A. Aveni, Lake Oswego, all of Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Filed Nov. 1, 1993, Ser. No. 14,521
Term of patent 14 years
U.S. Cl. D2—970



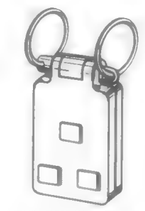
351,276
STRAP MEMBER FOR SHOE UPPER
Lyuba Gitelman, Hamden, Conn., assignor to Fila U.S.A. Inc., Hunter Valley, Md.
Filed May 10, 1993, Ser. No. 8,079
Term of patent 14 years
U.S. Cl. D2—973



351,277
ELEMENT OF A SHOE SOLE
Michael A. Aveni, Lake Oswego; Perry W. Auger, Tigard, both of Oreg., and David M. Forland, Battle Ground, Wash., assignors to Nike, Inc., Beaverton, Oreg.
Filed Sep. 17, 1993, Ser. No. 13,626
Term of patent 14 years
U.S. Cl. D2—977



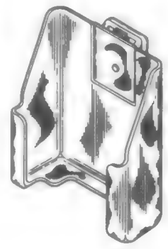
351,278
COMBINATION KEY RING AND REMOTE CONTROL SWITCH
Woodrow C. Stillwagon, Atlanta, Ga., assignor to Stillwagon Applied Technology, Inc., Columbus, Ohio
Filed Jul. 9, 1991, Ser. No. 727,136
Term of patent 14 years
U.S. Cl. D3—208



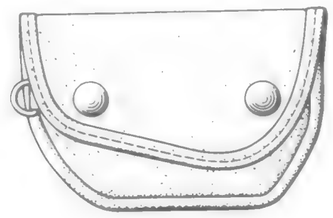
351,279
MULTIPLE POCKET BELT ACCESSORY
Larry Montgomery, 25 Clemente Pl., Hempstead, N.Y. 11550
Filed Mar. 15, 1993, Ser. No. 5,897
Term of patent 14 years
U.S. Cl. D3—215



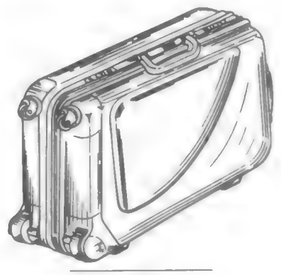
351,280
HOLSTER FOR A PORTABLE COMMUNICATION RECEIVER
Randall S. Pennington, Palm City; Jeffery S. King, Boynton Beach, both of Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 16, 1993, Ser. No. 5,984
Term of patent 14 years
U.S. Cl. D3—218



351,281
BELT POUCH
Michael C. Petryk, 406 Brudell Road, Saskatoon, Saskatchewan, Canada S7J 5G4
Filed Feb. 8, 1993, Ser. No. 4,585
Term of patent 14 years
U.S. Cl. D3—230



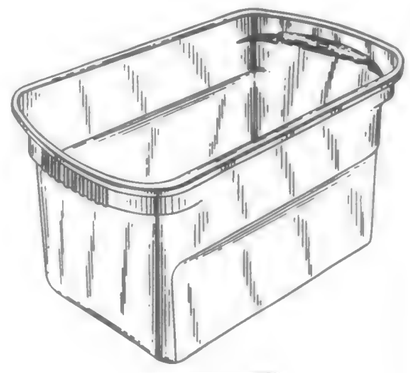
351,282
SUIT CASE
Aoi Masaru, Taipei, Taiwan, assignor to Echolac Company, Ltd., Taipei, China
Filed Dec. 21, 1992, Ser. No. 2,769
Term of patent 14 years
U.S. Cl. D3—279



351,283
COSMETIC ORGANIZER
Stacy L. Wolff, Akron, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 8, 1993, Ser. No. 3,477
Term of patent 14 years
U.S. Cl. D3—281



351,284
TOTE BIN
Cory J. Kruger, Gardner, Mass., assignor to Sterilite Corporation, Townsend, Mass.
Filed Aug. 6, 1993, Ser. No. 11,555
Term of patent 14 years
U.S. Cl. D3—314



351,285
SPONGE BRUSH
David B. Joyner, Winterville, and Paul A. Ricciarelli, Ayden, both of N.C., assignors to Empire Brushes, Inc., Greenville, N.C.
Filed Sep. 7, 1993, Ser. No. 12,625
Term of patent 14 years
U.S. Cl. D4—120

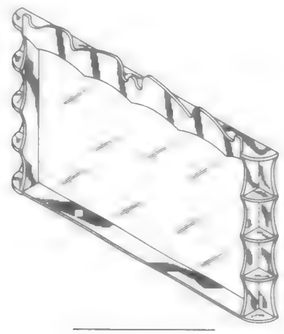


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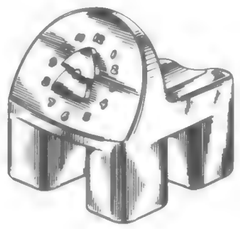
351,286
TOOTHBRUSH COVER
Claudette M. Tapocik, 1931 Sampson Ave., Corona, Calif. 91719
Filed Nov. 2, 1992, Ser. No. 1,013
Term of patent 14 years
U.S. Cl. D4—199



351,287
BOX PICTURE FRAME
Tony D. Castro, 6550 Greenhill Ave., Ventura, Calif. 93003-6713
Filed Sep. 21, 1992, Ser. No. 949,001
Term of patent 14 years
U.S. Cl. D6—300



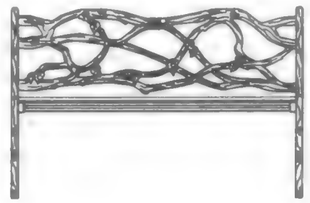
351,288
CHILDREN'S CHAIR
Daniel E. Hammond, 18000 Cottontail Pl., and John D. Hammond, 2436 Coraview La., both of Rowland Heights, Calif. 91748
Filed Jun. 1, 1992, Ser. No. 889,766
Term of patent 14 years
U.S. Cl. D6—335



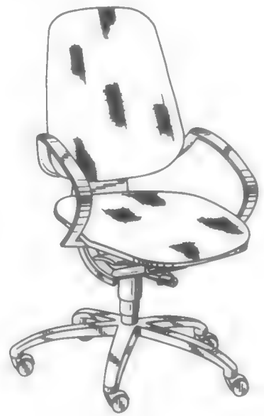
351,289
INFANT SWING
William B. Stephens, Boulder, and Marjorie G. Harper, Littleton, both of Colo., assignors to Gerry Baby Products Company, Denver, Colo.
Filed Sep. 8, 1992, Ser. No. 940,794
Term of patent 14 years
U.S. Cl. D6—344



351,290
BENCH
Chin H. Chen, Taipei, Taiwan, assignor to Berkeley Products, Inc., Paramount, Calif.
Filed Aug. 17, 1992, Ser. No. 930,301
Term of patent 14 years
U.S. Cl. D6—358



351,291
CHAIR
Rolf Völkle, Hohenholz 1, W-7298 Loosburg, Fed. Rep. of Germany
Filed Apr. 5, 1993, Ser. No. 6,741
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1992, 9207373
Term of patent 14 years
U.S. Cl. D6—366



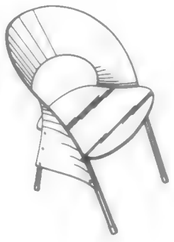
351,292
CHAIR
Virgil Miller, Archbold, Ohio, assignor to Sauder Manufacturing Co., Archbold, Ohio
Filed Jan. 15, 1993, Ser. No. 3,789
Term of patent 14 years
U.S. Cl. D6—379



351,293
CHAIR FRAME
Richard Frinier, Long Beach, Calif., assignor to Brown Jordan Company, El Monte, Calif.
Filed Jul. 9, 1993, Ser. No. 10,540
Term of patent 14 years
U.S. Cl. D6—379



351,294
CHAIR
Gregg R. Fleishman, 3850 Main St., Culver City, Calif. 90232
Filed Aug. 19, 1992, Ser. No. 933,048
Term of patent 14 years
U.S. Cl. D6—380

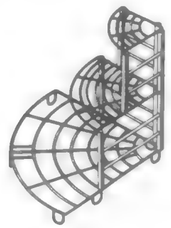


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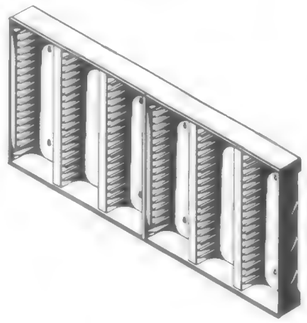
351,295
WORK TABLE
Zbigniew Noniewicz, Kempenich, Fed. Rep. of Germany, assignor to Werkzeug-Gesellschaft mit beschrankter Haftung, Weibern, Fed. Rep. of Germany
Filed Feb. 11, 1992, Ser. No. 833,904
Term of patent 14 years
U.S. Cl. D6—400



351,296
PLANT TERRACE CORNER SECTION
Seymour Emalfarb, 1585 Saunders Rd., River Woods, Ill. 60015, and Bradley S. Emalfarb, 26529 N. Highway 83, Mundelein, Ill. 60060
Filed Aug. 17, 1992, Ser. No. 930,302
Term of patent 14 years
U.S. Cl. D6—405

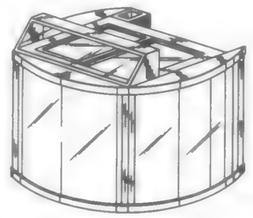


351,297
AUDIOCASSETTE STORAGE UNIT
Nicholas M. Sedon, Canton, and James T. Wesiburn, Massillon, both of Ohio, assignors to Alpha Enterprises, Inc., North Canton, Ohio
Filed Nov. 18, 1992, Ser. No. 1,547
Term of patent 14 years
U.S. Cl. D6—468

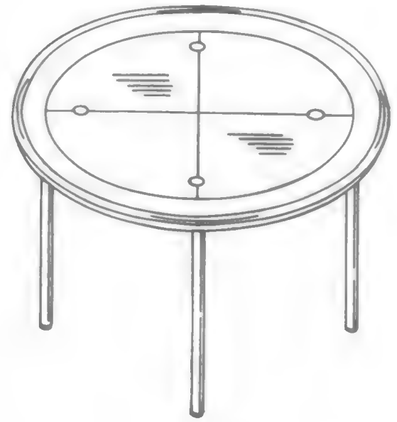


351,298
SINGLE LEVEL REFRIGERATED FOOD DISPLAY COUNTER
Maurice Gelinas, 370, Avenue des Bouleaux, St. Jean de Matha, Province of Quebec, Canada J0K 2S0
Filed Nov. 16, 1992, Ser. No. 1,518
Term of patent 14 years
U.S. Cl. D6—472

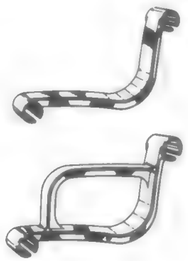
351,299
FOOD KIOSK
Sidney Barrish, 55 Newkirk Rd. North, Richmond Hill, Ontario, Canada L4C 3G4
Division of Ser. No. 892,000, Jun. 2, 1992. This application Sep. 21, 1993, Ser. No. 13,221
Term of patent 14 years
U.S. Cl. D6—481



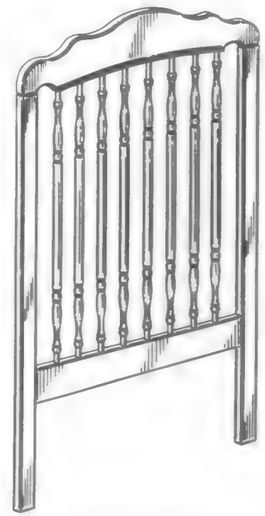
351,300
TABLE
Brian D. Cox, Tempe, Ariz., assignor to Bernhardt Furniture Company, Lenoir, N.C.
Filed Jan. 1, 1993, Ser. No. 8,923
Term of patent 14 years
U.S. Cl. D6—487



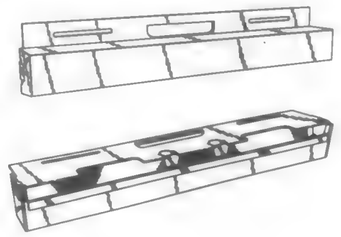
351,301
RIB FOR A SEATING UNIT
Gerald J. Adamson, 267 Glen Manor Drive, East, Toronto, Canada M4E 2Y3
Filed Oct. 8, 1992, Ser. No. 212
Term of patent 14 years
U.S. Cl. D6—501



351,302
CRIB ENDBOARD
Merlin A. Brunner, Appleton, and Harvey J. Draheim, Weyauwega, both of Wis., assignors to Simmons Juvenile Products Company, Inc., New London, Wis.
Filed Jan. 15, 1993, Ser. No. 3,791
Term of patent 14 years
U.S. Cl. D6—508

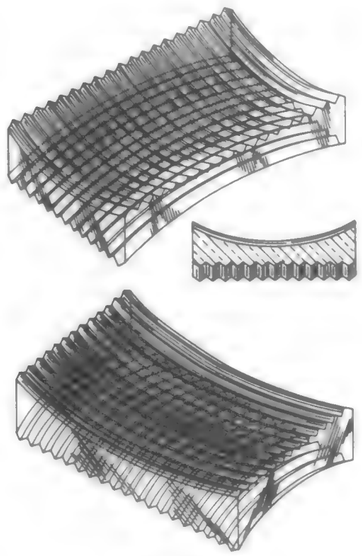


351,303
DISPENSING ASSEMBLY
Dennis L. Crawford, Roberts, Wis., and Mark D. Rivas, Norwalk, Iowa, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 16, 1993, Ser. No. 4,921
Term of patent 14 years
U.S. Cl. D6—518

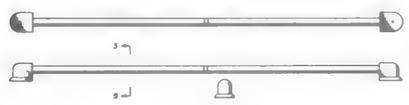


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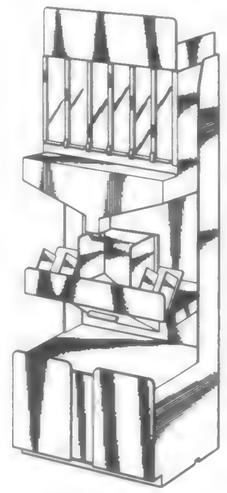
351,304
SOAP DISH
Henry P. Glass, Northfield, Ill., assignor to Sally Designs, Ltd., Niles, Ill.
Filed Jan. 21, 1993, Ser. No. 3,883
Term of patent 14 years
U.S. Cl. D6—536



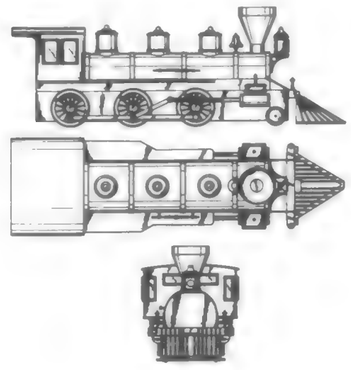
351,305
HANGER FOR KITCHEN TOOLS
Yung K. Law, Block C & D, 14th Floor, Yick Shin Industrial Building, 1 San on Street, Tuen Min, N.T., Hong Hong, Hong Kong
Filed Feb. 18, 1993, Ser. No. 5,008
Claims priority, application United Kingdom, Aug. 22, 1992, 2025206
Term of patent 14 years
U.S. Cl. D6—567



351,306
COFFEE DISPENSING MACHINE
Alex Horvath, 32 River St., Sutton, Ontario, Canada L0E 1R0
Filed Nov. 6, 1992, Ser. No. 1,214
Claims priority, application Canada, May 7, 1992, 07-05-92-6
Term of patent 14 years
U.S. Cl. D7—306



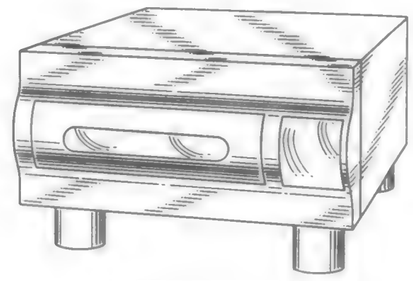
351,307
COMBINED BARBEQUE SMOKER AND COOKER
Thomas A. Birmingham, Rt. 3, Box 101, Buna, Tex. 77612
Filed Oct. 9, 1992, Ser. No. 345
Term of patent 14 years
U.S. Cl. D7—334



351,308
COMBINED BARBECUE GRILL AND STAND
Lucas Pai, No. 617, Sec. 4, Chung Hwa Rd., Hsingchu, Taiwan
Filed Dec. 8, 1992, Ser. No. 2,339
Term of patent 14 years
U.S. Cl. D7—334



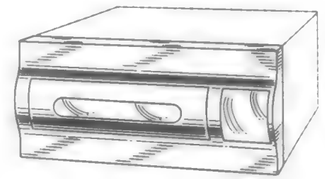
351,309
OVEN
Robert I. Beaver, II, Atherton; Michael H. Kellicutt, Half Moon Bay; William H. Sebestedt, Santa Clara; Joe R. Suarez, Clements; Eugene R. Westerberg, Palo Alto; Gerard A. Furbershaw, Menlo Park; David W. Laituri, Palo Alto; Gilbert Y. Wong, San Francisco, and Max K. Yoshimoto, San Mateo, all of, assignors to Quadlux, Inc., Fremont, Calif.
Filed May 21, 1993, Ser. No. 8,647
Term of patent 14 years
U.S. Cl. D7—350



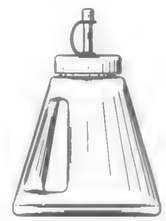
351,310
FLATWARE SUPPORT KNOB
Bruce Burdick, and Susan K. Burdick, both of San Francisco, Calif., assignors to The Burdick Group, San Francisco, Calif.
Filed Dec. 24, 1992, Ser. No. 3,011
Term of patent 14 years
U.S. Cl. D7—401.2



351,311
OVEN FRONT PANEL
Robert I. Beaver, III, Atherton; Michael H. Kellicutt, Half Moon Bay; William H. Sebestedt, Santa Clara; Joe R. Suarez, Clements; Eugene R. Westerberg, Palo Alto; Gerard A. Furbershaw, Menlo Park; David W. Laituri, Palo Alto; Gilbert Y. Wong, San Francisco, and Max K. Yoshimoto, San Mateo, all of Calif., assignors to Quadlux, Inc., Fremont, Calif.
Filed May 21, 1993, Ser. No. 8,649
Term of patent 14 years
U.S. Cl. D7—405



351,312
DRINK CONTAINER
Arie N. Sharon, 1322 N. Park Dr., Richardson, Tex. 75081, and Glenn M. Clegg, 302 Jessica Dr., Garland, Tex. 75040
Filed Nov. 13, 1992, Ser. No. 1,435
Term of patent 14 years
U.S. Cl. D7—510



351,313
WATER BOTTLE
Edward H. Giard, Jr., Naperville, Ill., assignor to Icon, Inc., Naperville, Ill.
Filed Apr. 15, 1993, Ser. No. 7,134
Term of patent 14 years
U.S. Cl. D7—510

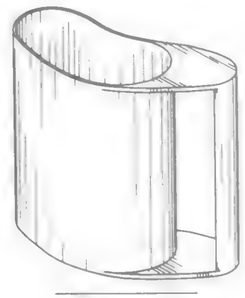


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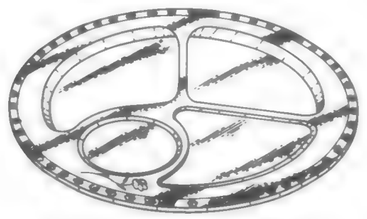
351,314
THERMO MUG WITH REMOVABLE BOTTOM
Robert Sokolski, and John Downey, both of Warren, Pa., assignors to Whirley Industries, Inc., Warren, Pa.
Filed Jun. 22, 1992, Ser. No. 902,052
Term of patent 14 years
U.S. Cl. D7—536



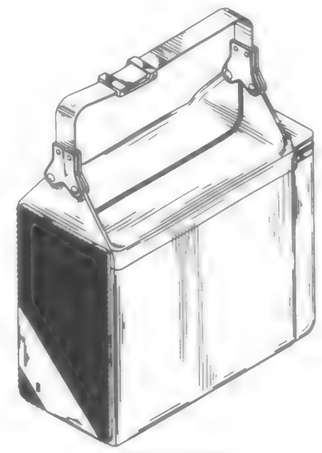
351,315
MUG
David van Stolk, North Vancouver, Canada, assignor to Albert G. van Stolk, Cleveland, Ohio
Filed Oct. 13, 1992, Ser. No. 318
Term of patent 14 years
U.S. Cl. D7—536



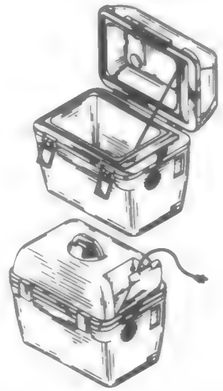
351,316
NESTABLE COCKTAIL PLATE
John C. Mann, 3111 Pualei Cir. #305, Honolulu, Hi. 96815
Filed Oct. 19, 1992, Ser. No. 546
Term of patent 14 years
U.S. Cl. D7—556



351,317
COMBINED COOLER AND WARMER BAG
Heiner Wedi, Rheiner Strasse 45, 4407 Emsdetten, Fed. Rep. of Germany
Filed Mar. 5, 1993, Ser. No. 5,445
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1993, 9300414
Term of patent 14 years
U.S. Cl. D7—605



351,318
COMBINED PORTABLE HEAT INSULATED COOLER AND WARMER
Heiner Wedi, Rheiner Strasse 45, 4407 Emsdetten, Fed. Rep. of Germany
Filed Mar. 5, 1993, Ser. No. 5,446
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1993, 9300414
Term of patent 14 years
U.S. Cl. D7—605



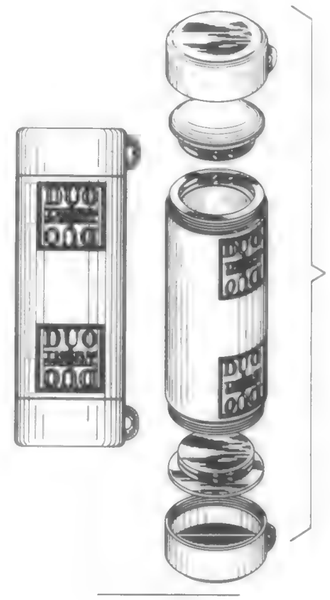
351,319
RECREATIONAL STEREO COOLER
Billy B. Long, Hayward, and Robert Aquilina, San Jose, both of Calif., assignors to Coolers Plus, Inc., San Jose, Calif.
Filed Apr. 30, 1993, Ser. No. 7,849
Term of patent 14 years
U.S. Cl. D7—605



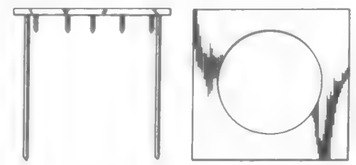
351,320
SPORTS COOLER
Craig S. Minor, 60 Homewood Avenue, Ste. 404, Toronto, Ontario, Canada M4Y 2X3
Filed Jun. 7, 1993, Ser. No. 9,179
Term of patent 14 years
U.S. Cl. D7—606



351,321
DUAL VACUUM BOTTLE
Leroy G. Steppe, Sr., 2972 Moon Rd. R.D. #2, Jamestown, N.Y. 14701
Filed Mar. 8, 1993, Ser. No. 5,640
Term of patent 14 years
U.S. Cl. D7—608

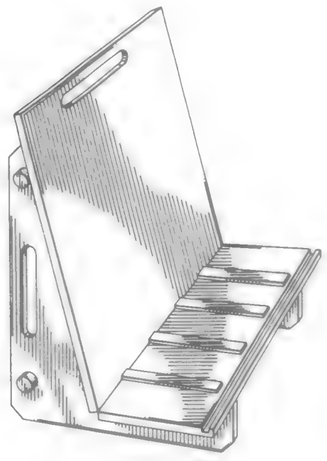


351,322
LANDSCAPING HOLD-DOWN STAKE
Joseph P. Terreta, 105 Telegraph Rd., Brownsville, Pa. 15417
Filed Sep. 3, 1992, Ser. No. 938,360
Term of patent 14 years
U.S. Cl. D8—1



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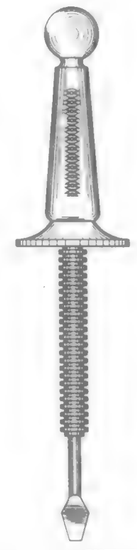
351,323
INCLINED TOTE FOR PRINTED CIRCUIT PANELS
Dennis E. Rich, 8060 South 1300 W., West Jordan, Utah 84088
Filed Jan. 15, 1993, Ser. No. 3,797
Term of patent 14 years
U.S. Cl. D8—14



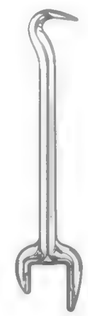
351,324
LIGHT SWITCH EXTENSION
Anthony J. Neppl, 213 Warren, Jacksonville, Ark. 72076
Filed Feb. 17, 1993, Ser. No. 4,976
Term of patent 14 years
U.S. Cl. D8—14



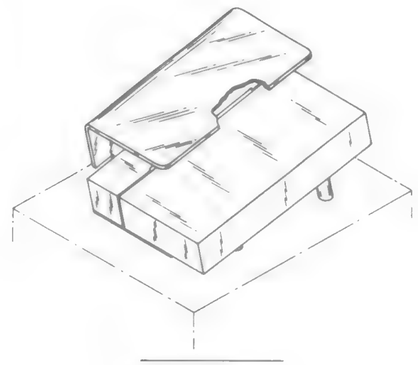
351,325
SCREWDRIVER
William D. Jones, 231 Summerwood La., Stockbridge, Ga. 30281
Filed Jul. 12, 1993, Ser. No. 10,563
Term of patent 14 years
U.S. Cl. D8—82



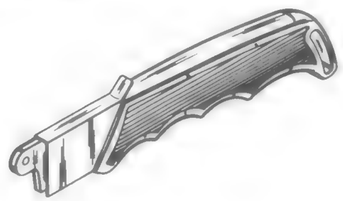
351,326
LUMBER LEVERING TOOL
John G. Schwengel, Dekalb, Ill., assignor to Hart Tool Company, Inc., Santa Fe Springs, Calif.
Filed Apr. 30, 1993, Ser. No. 7,836
Term of patent 14 years
U.S. Cl. D8—88



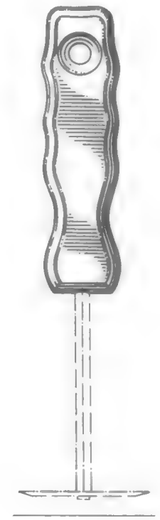
351,327
COIN ROLL OPENER
Joseph A. Trudeau, P.O. Box 2146, Jamaica Plain, Mass. 02130
Filed Apr. 23, 1993, Ser. No. 7,456
Term of patent 14 years
U.S. Cl. D8—98



351,328
HANDGRIP FOR A KNIFE
Katsumi Hasegawa, Sagamihara, Japan, assignor to Kai R. & D Center, Co., Ltd., Seki, Japan
Filed Oct. 30, 1992, Ser. No. 1,008
Claims priority, application Japan, May 7, 1992, 4-13535
Term of patent 14 years
U.S. Cl. D8—107



351,329
TOOL HANDLE
Andrew D. Harris, Droitwich Spa, England, assignor to L. G. Harris & Co. Limited, Bromsgrove, England
Filed Feb. 25, 1993, Ser. No. 5,479
Claims priority, application United Kingdom, Dec. 8, 1992, 2 027 601
Term of patent 14 years
U.S. Cl. D8—107

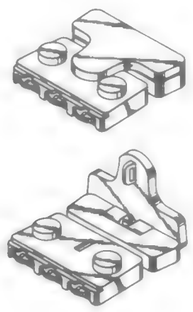


351,330
BICYCLE HANDLEBAR GRIP
Chen Ming-Chang, No. 48, Huan Kung Road, Yung Kang Hsiang, Tainan Hsien, Taiwan
Filed Jul. 28, 1992, Ser. No. 920,628
Term of patent 14 years
U.S. Cl. D8—303

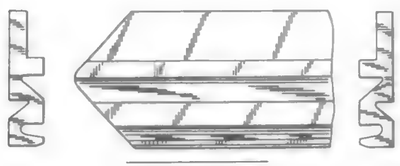


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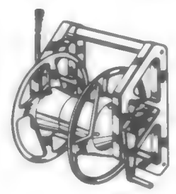
351,331
COMBINATION LOCK
Yung-Chang Kuo, Changua Hsien, Taiwan, assignor to CEDPO Metal Corporation, Changhua Hsien, Taiwan
Filed Apr. 9, 1993, Ser. No. 6,876
Term of patent 14 years
U.S. Cl. D8—331



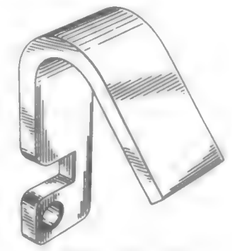
351,332
PORTION OF A KEY BLADE BLANK
Anthony J. Hoffman, Plantsville, Conn., and Robert E. Kearns, San Francisco, Calif., assignors to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,293
Term of patent 14 years
U.S. Cl. D8—347



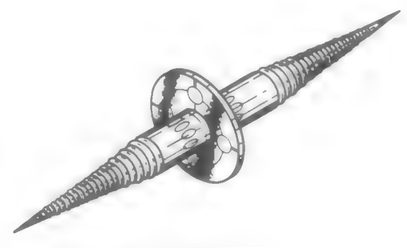
351,333
WALL MOUNT HOSE REEL
Terry N. Nelson, Shoreview, and Will Stageberg, Minneapolis, both of Minn., assignors to The Specialty Mfg. Co., St. Paul, Minn.
Filed May 20, 1993, Ser. No. 8,618
Term of patent 14 years
U.S. Cl. D8—359



351,334
LADDER HOOK ADAPTER
Isaac Sachs, 283 Newton, Dollard-des-Ormeaux, Quebec, Canada H9A 3G1
Filed Nov. 30, 1992, Ser. No. 2,005
Term of patent 14 years
U.S. Cl. D8—367



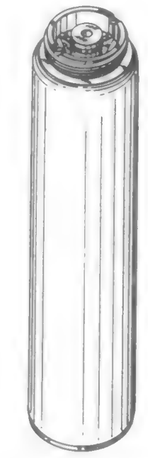
351,335
DOUBLE-ENDED NAIL
Frederick A. Yazich, 2325 Corby Blvd., South Bend, Ind. 46615
Filed Feb. 4, 1991, Ser. No. 650,008
Term of patent 14 years
U.S. Cl. D8—389



351,336
STRAP-TYPE SECURING DEVICE
James L. Dean, Spring, and Keith R. Hazelrigg, Houston, both of Tex., assignors to FSSL, Inc., Sugar Land, Tex.
Filed Oct. 14, 1991, Ser. No. 777,092
Term of patent 14 years
U.S. Cl. D8—394



351,337
PORTABLE FUEL CARTRIDGE
James V. Bonnema, Middleton, and Stephen J. Shapiro, Scituate, both of Mass., assignors to The Schawbel Corporation, Boston, Mass.
Filed Feb. 9, 1993, Ser. No. 4,611
Term of patent 14 years
U.S. Cl. D9—300



351,338
TUBE DISPENSER
Kurt Koptis, Yucca Valley, Calif., assignor to Painter's Products Inc., Palm Desert, Calif.
Filed Dec. 28, 1992, Ser. No. 2,993
Term of patent 14 years
U.S. Cl. D9—302



351,339
COMBINED BOTTLE AND CAP
Bernard Koytuk, New York, N.Y., assignor to Ralph Lauren Trust, NY, Ricky Lauren & Mark N. Kaplan, co-trustees
Filed Sep. 3, 1992, Ser. No. 939,638
The portion of the term of this patent subsequent to Mar. 22, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—310

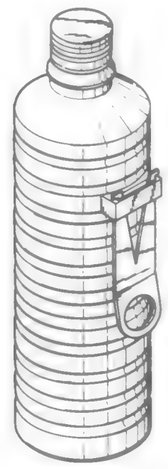


351,340
JAR
W. Richard Drummond, Vernon Hills, and Ronald J. Moore, Chicago, both of Ill., assignors to Kraft General Foods, Inc., Northfield, Ill.
Filed Aug. 28, 1992, Ser. No. 937,660
Term of patent 14 years
U.S. Cl. D9—316

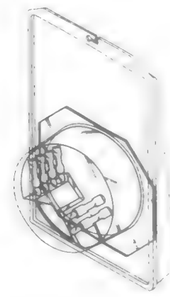


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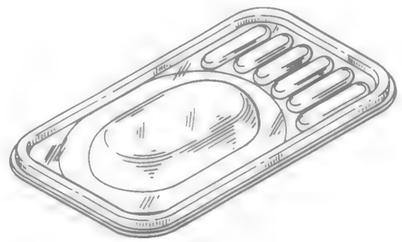
351,341
COMBINED BOTTLE AND SUPPORT ELEMENT
Ching-Lung Hung, 7F1-2, No. 1, Lane 24, Mou-Fan Street, Taichung, Taiwan
Filed Aug. 10, 1992, Ser. No. 927,373
Term of patent 14 years
U.S. Cl. D9—337



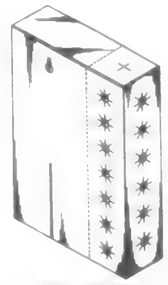
351,342
PACKAGE FOR CABLES
Noel Lee; Don Angel, and David Pitcher, all of South San Francisco, Calif., assignors to Monster Cable Products, Inc., South San Francisco, Calif.
Filed Mar. 4, 1993, Ser. No. 5,433
Term of patent 14 years
U.S. Cl. D9—415



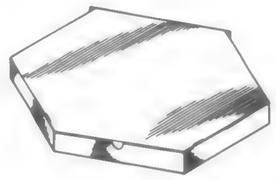
351,343
BLISTER PACKAGE
Robert J. Kellar, Mount Prospect; Michael F. Reardon, Chicago, and Martin J. Drazba, Arlington Heights, all of Ill., assignors to Wesley-Jessen Corporation, Chicago, Ill.
Filed Jun. 8, 1993, Ser. No. 9,339
Term of patent 14 years
U.S. Cl. D9—415



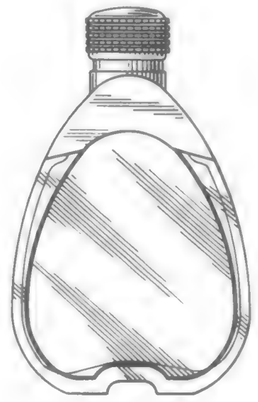
351,344
BOX
Tim A. Blott, 2816 - 49 Street S.W., Calgary, Alberta, Canada T3E 3Y2
Filed Jun. 1, 1993, Ser. No. 8,982
Term of patent 14 years
U.S. Cl. D9—418



351,345
FOOD CONTAINER
Kevin L. Gebo, Louisville, Ky., assignor to Chesapeake Packaging Company, Richmond, Va.
Filed Oct. 30, 1990, Ser. No. 606,781
Term of patent 14 years
U.S. Cl. D9—430



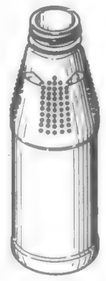
351,346
TOILETRY BOTTLE
Renata Kettmeir, Bolzano, Italy, assignor to Ettore Bugatti S.r.L., Ora, Italy
Filed Oct. 1, 1992, Ser. No. 47
Claims priority, application Italy, May 4, 1992, M092 0 000008
Term of patent 14 years
U.S. Cl. D9—520



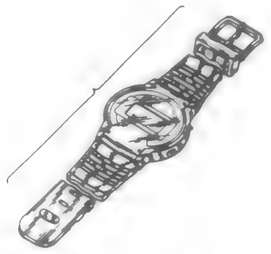
351,347
PLASTIC BOTTLE
Carl D. Ring, Oakland, Tenn., assignor to Ring Can Corporation, Oakland, Tenn.
Filed Apr. 21, 1993, Ser. No. 7,258
Term of patent 14 years
U.S. Cl. D9—528



351,348
BOTTLE
Keith Marriage, Brentford, England, assignor to SmithKline Beecham p.l.c., Brentford
Filed Mar. 26, 1992, Ser. No. 857,819
Claims priority, application United Kingdom, Sep. 30, 1991, 2017819
Term of patent 14 years
U.S. Cl. D9—551



351,349
SPORTS WATCH
Marc N. Schechter, Birmingham, Mich., assignor to Advance Watch Co., Inc., Southfield, Mich.
Filed Jan. 15, 1992, Ser. No. 822,556
Term of patent 14 years
U.S. Cl. D10—32

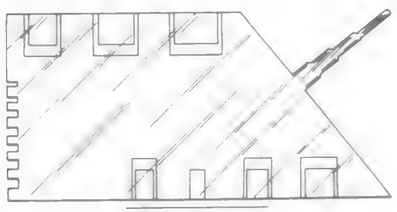


351,350
WRIST WATCH
Takashi Morishima, Akishima, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 920,839
Claims priority, application Japan, Mar. 31, 1992, 4-9078
Term of patent 14 years
U.S. Cl. D10—38

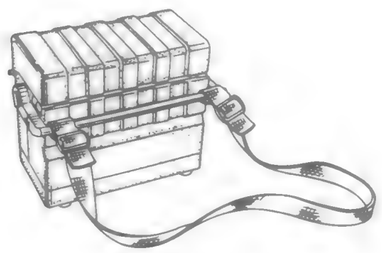


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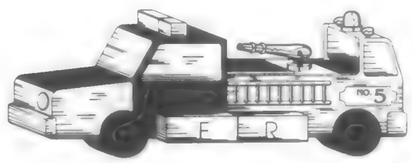
351,351
CANING GAUGE
Elizabeth L. Bartlett, 64 Melrose Pl., Montclair, N.J. 07042
Filed Mar. 9, 1992, Ser. No. 847,248
Term of patent 14 years
U.S. Cl. D10—64



351,352
REPAIRED ELECTRICAL APPLIANCE TESTER
Karl Hochreuther, Nürnberg, Fed. Rep. of Germany, assignor to Metrawatt GmbH, Nuremberg, Fed. Rep. of Germany
Filed May 12, 1993, Ser. No. 8,256
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1992, M9208451.6
Term of patent 14 years
U.S. Cl. D10—75



351,353
EMERGENCY VEHICLE WARNING SIGNAL FOR AUTOMOBILES
Robert Bruder, Jr., 1454 51st Street Gulf, Marathon, Fla. 33050
Filed Sep. 7, 1993, Ser. No. 12,568
Term of patent 14 years
U.S. Cl. D10—104



351,354
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jul. 1, 1992, Ser. No. 907,432
Term of patent 14 years
U.S. Cl. D10—126



351,355
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jul. 1, 1992, Ser. No. 907,433
Term of patent 14 years
U.S. Cl. D10—126



351,356
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jul. 1, 1992, Ser. No. 907,434
Term of patent 14 years
U.S. Cl. D10—126



351,357
WATCH DIAL
Akie Itoh, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jul. 1, 1992, Ser. No. 907,435
Term of patent 14 years
U.S. Cl. D10—126



351,358
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jul. 1, 1992, Ser. No. 907,442
Term of patent 14 years
U.S. Cl. D10—126



351,359
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jul. 1, 1992, Ser. No. 907,444
Term of patent 14 years
U.S. Cl. D10—126



351,360
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jul. 1, 1992, Ser. No. 907,445
Term of patent 14 years
U.S. Cl. D10—126



351,361
WATCH DIAL
Akie Itoh, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jul. 1, 1992, Ser. No. 907,448
Term of patent 14 years
U.S. Cl. D10—126



351,362
DOUBLE CHAIN COLLAR KEEPER
Richard H. Sprick, R. R. 3, Box 105, Lake City, Minn. 55041
Filed Feb. 23, 1993, Ser. No. 5,089
Term of patent 14 years
U.S. Cl. D11—213

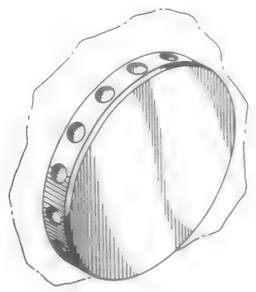


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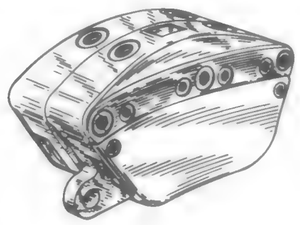
351,363
CHARM
Joseph E. Foreman, 121 College St., Wadsworth, Ohio 44281
Filed Jun. 30, 1992, Ser. No. 907,191
Term of patent 14 years
U.S. Cl. D11—81



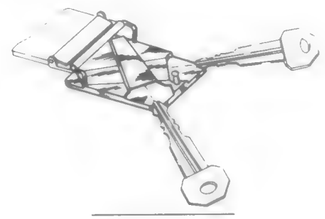
351,364
CIRCULAR FLORAL STAND
Kevin X. Domurat, 4135 Dixie Canyon Ave., Sherman Oaks, Calif. 91423
Continuation-in-part of Ser. No. 743,218, Aug. 9, 1991, Pat. No. 5,195,270. This application Nov. 12, 1992, Ser. No. 1,444
Term of patent 14 years
U.S. Cl. D11—164



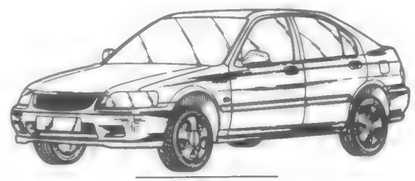
351,365
DISK BRAKE CALIPER HOUSING
Ronald H. Powers, Costa Mesa, Calif., assignor to Powers Design International, Newport Beach, Calif.
Filed Aug. 9, 1993, Ser. No. 11,641
Term of patent 14 years
U.S. Cl. D12—180



351,366
BUCKLE
Bae W. Park, 33-15, Samcheon-dong, Seo-ku, Taejeon-shi, Rep. of Korea
Filed Oct. 22, 1993, Ser. No. 14,555
Term of patent 14 years
U.S. Cl. D11—231



351,367
AUTOMOBILE
Shuji Koman, Higashikurume, and Hideyuki Ikeda, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 18, 1993, Ser. No. 5,958
Claims priority, application Japan, Sep. 22, 1992, 4-27777
Term of patent 14 years
U.S. Cl. D12—91



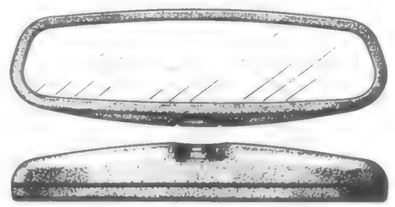
351,368
TIRE TREAD
Maurice Graas, Reichlange, and Jan H. van Tuyl, Ettelbruck, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 10, 1992, Ser. No. 926,810
Claims priority, application Benelux, Feb. 14, 1992, 67357-00
The portion of the term of this patent subsequent to Aug. 11, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—147



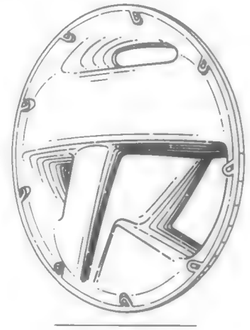
351,369
TREAD FOR A TIRE
Leo J. Hitzky, Walferdange, Luxembourg, and Claude Lardo, Walzing, Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 21, 1993, Ser. No. 3,868
Term of patent 14 years
U.S. Cl. D12—147



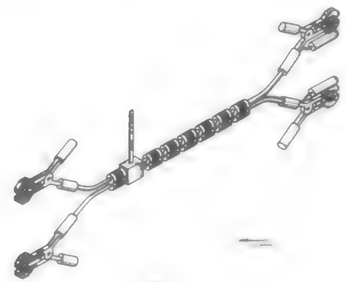
351,370
REARVIEW MIRROR
Patrick J. Lawlor, Dublin, and John P. Desmond, Newbridge, both of Ireland, assignors to Donnelly Mirrors Limited, Naas, Ireland
Filed Sep. 10, 1993, Ser. No. 12,806
Claims priority, application Ireland, Mar. 18, 1993, 104/93
Term of patent 14 years
U.S. Cl. D12—187



351,371
AUTOMOTIVE WHEEL COVER FRONT FACE
Lawrence E. Abele, Long Beach, Calif., assignor to Isuzu Motors Limited, Tokyo, Japan
Filed Oct. 21, 1991, Ser. No. 780,747
Term of patent 14 years
U.S. Cl. D12—209



351,372
SET OF BATTERY JUMPER CABLES
Vincent F. Donovan, Jr., 11-A-Cedar Dr., Baltimore, Md. 21220
Filed Jan. 21, 1993, Ser. No. 3,913
Term of patent 14 years
U.S. Cl. D13—120

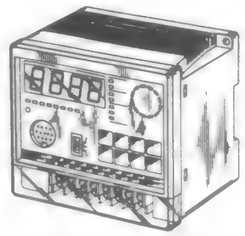


351,373
PLUG PROTECTOR
Craig S. Barton, 3302 E. Topeka Dr., Phoenix, Ariz. 85024
Filed Feb. 4, 1993, Ser. No. 4,424
Term of patent 14 years
U.S. Cl. D13—156



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351,374
PROGRAMMABLE ELECTRONIC CAM-OPERATED SWITCH
Norio Shimizu, and Teruo Matsuno, both of Tokyo, Japan, assignors to Koyo Electronics Industries Co., Ltd., Tokyo, Japan
Filed May 25, 1993, Ser. No. 8,697
Claims priority, application Japan, Dec. 10, 1992, 4-36527
Term of patent 14 years
U.S. Cl. D13—162



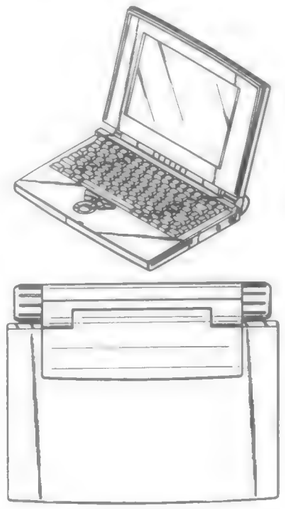
351,375
BUTTON SWITCH
Albert L. Nagele, Wilmette, Ill., assignor to Motorola Inc., Schaumburg, Ill.
Filed Mar. 12, 1993, Ser. No. 5,931
Term of patent 14 years
U.S. Cl. D13—171



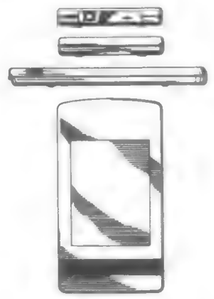
351,376
SWITCH ACTUATOR COVER
Richard R. Hughes, 1601 Kingsbridge, Garland, Tex. 75044
Filed Jun. 11, 1993, Ser. No. 8,770
Term of patent 14 years
U.S. Cl. D13—177



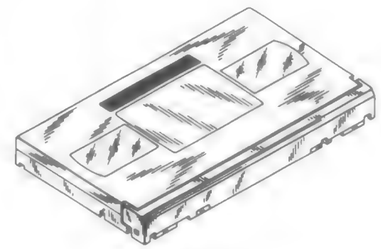
351,377
NOTEBOOK COMPUTER
Scott S. Yu, San Francisco, Calif., assignor to Century Products Company, Macedonia, Ohio
Filed Sep. 8, 1992, Ser. No. 941,633
Term of patent 14 years
U.S. Cl. D14—106



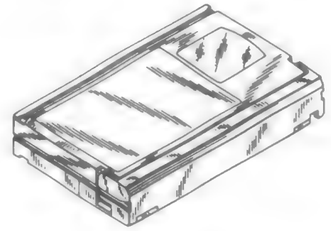
351,378
LIGHT RADIATION READER FOR A LIGHT PERMEABLE DOCUMENT
Eiji Nakazawa, Nirasaki; Mineo Kubota, Kofu, and Satoshi Neza, Yamanashi, all of Japan, assignors to NISCA Corporation, Yamanashi, Japan
Filed Jan. 28, 1993, Ser. No. 4,168
Claims priority, application Japan, Nov. 4, 1992, 4-32260
Term of patent 14 years
U.S. Cl. D14—107



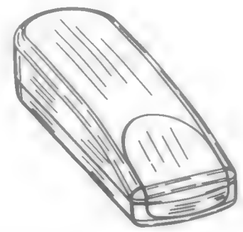
351,379
MAGNETIC TAPE CASSETTE
Masaki Suzuki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 21, 1993, Ser. No. 14,435
Claims priority, application Japan, Apr. 22, 1993, 5-11926
Term of patent 14 years
U.S. Cl. D14—121



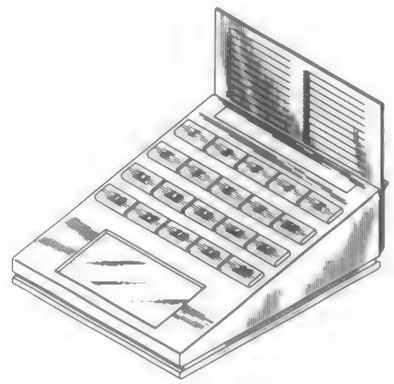
351,380
MAGNETIC TAPE CASSETTE
Masaki Suzuki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 21, 1993, Ser. No. 14,438
Claims priority, application Japan, Apr. 22, 1993, 5-11927
Term of patent 14 years
U.S. Cl. D14—121



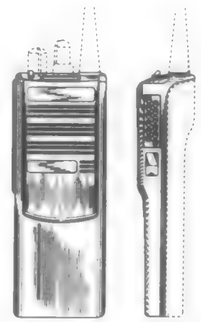
351,381
INTERACTIVE RECEIVER FOR A TELEVISION SET
John D. Reardon, Fairfield, Conn.; Susan K. Marshall, Greenwood Village, Colo.; Maureen E. Carroll, Atlanta, and Devin Moore, Decatur, both of Ga., assignors to Zing Systems, L.P., Englewood, Colo.
Filed Dec. 4, 1992, Ser. No. 2,187
Term of patent 14 years
U.S. Cl. D14—125



351,382
DATA TERMINAL FOR STORING AND READING INFORMATION ON A SELECTED BEVERAGE
Richard C. Kipfer, and Simon A. Trudgeon, both of 29 Palmer Sqr., Stratford, Ontario, Canada N5A 6E2
Filed Mar. 5, 1993, Ser. No. 5,549
Term of patent 14 years
U.S. Cl. D14—100

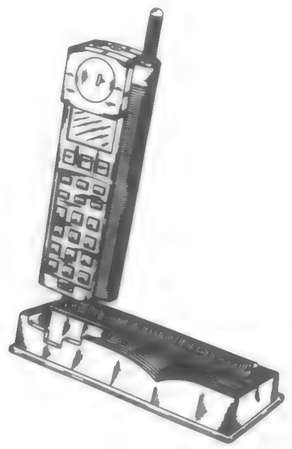


351,383
TWO-WAY RADIO
Scott H. Richards, Sunrise; Bruce A. Claxton, Coral Springs; Vito Dionisio, Jr., Sunrise; David H. Kari, Tamarac, and Randall P. Chambers, Davie, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 29, 1991, Ser. No. 706,725
Term of patent 14 years
U.S. Cl. D14—137

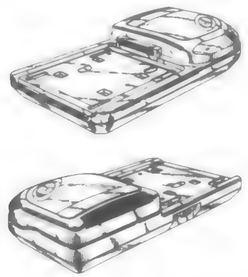


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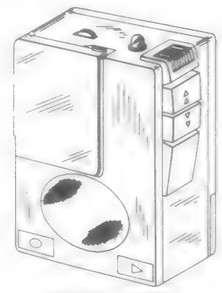
351,384
COMBINED PORTABLE TELEPHONE WITH CHARGING UNIT
Oscar E. Pena Angarita, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 27, 1993, Ser. No. 11,111
Claims priority, application World Int. Prop. O., Feb. 11, 1993, DM/025.199
Term of patent 14 years
U.S. Cl. D14—149



351,385
COMPACT DISC PLAYER
Shinobu Hamada, Yokohama, Japan, assignor to Sega Enterprises, Ltd., Tokyo, Japan
Filed Apr. 19, 1993, Ser. No. 7,305
Term of patent 14 years
U.S. Cl. D14—156



351,386
MICRO-CASSETTE TAPE RECORDER
Ric Lewis, P.O. Box 95247, Atlanta, Ga. 30347-0247
Filed Sep. 20, 1993, Ser. No. 13,106
Term of patent 14 years
U.S. Cl. D14—165



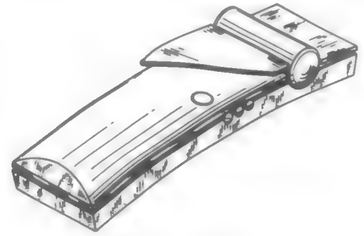
351,387
ACOUSTIC REFLECTOR
Philip O. Roberts, 425 Main St. 15-C, Hudson, Mass. 01074
Filed Feb. 1, 1993, Ser. No. 4,267
Term of patent 14 years
U.S. Cl. D14—205



351,388
COMBINED SPEAKER AND INTEGRAL STAND
Keith A. Ballard; Allen S. Baron, both of Baltimore; Gary B. Davis, Lutherville; Christian H. Fink; Stuart W. Lumsden, both of Towson; Dale B. Rose, Baltimore, all of Md., and Peter W. Bressler, Philadelphia, Pa., assignors to Polk Investment Corporation, Wilmington, Del.
Filed Mar. 23, 1992, Ser. No. 855,348
Term of patent 14 years
U.S. Cl. D14—214



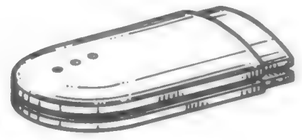
351,389
INFRA-RED LANGUAGE DISTRIBUTION RECEIVER
Dirk J. N. Vananderoye, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 6, 1992, Ser. No. 868,379
Claims priority, application PCT Int'l Appl., Nov. 21, 1991, DM/021.191
Term of patent 14 years
U.S. Cl. D14—217



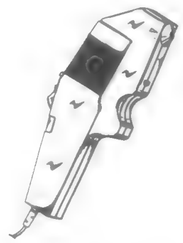
351,390
CUSHIONED HEADBAND
Richard M. Urella, Charlton, and Glen A. Davis, Leominster, both of Mass., assignors to David Clark Company, Inc., Worcester, Mass.
Filed Mar. 23, 1993, Ser. No. 6,071
Term of patent 14 years
U.S. Cl. D14—223



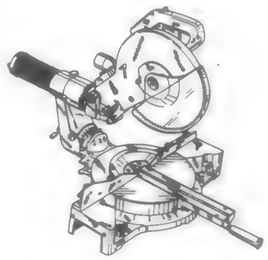
351,391
MICROPHONE FOR AUDIO RECORDING WITH MULTIMEDIA PERSONAL COMPUTER
Randall Martin, The Woodlands, Tex., assignor to Compaq Computer Corporation, Houston, Tex.
Filed May 1, 1992, Ser. No. 877,605
Term of patent 14 years
U.S. Cl. D14—225



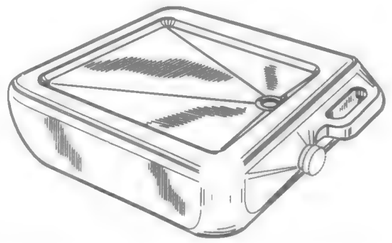
351,392
DICTATION MICROPHONE WITH BAR CODE READER
Rodney L. Bridges, Norcross, Ga., assignor to Lanier Worldwide, Inc., Atlanta, Ga.
Filed Jul. 30, 1992, Ser. No. 922,956
Term of patent 14 years
U.S. Cl. D14—226



351,393
MITER SAW
Katsuhiko Sasaki; Mitsuyoshi Niisomi; Yoshinori Shibata, and Hisashi Higuchi, all of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Jun. 25, 1993, Ser. No. 9,886
Claims priority, application Japan, Dec. 28, 1992, 4-39016
Term of patent 14 years
U.S. Cl. D15—133

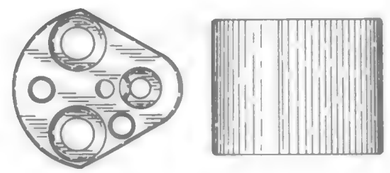


351,394
OIL RECYCLING CONTAINER
Michael A. Morris, Menlo Park, Calif., assignor to Geo Plastics, Redwood City, Calif.
Filed May 17, 1993, Ser. No. 8,373
Term of patent 14 years
U.S. Cl. D15—152

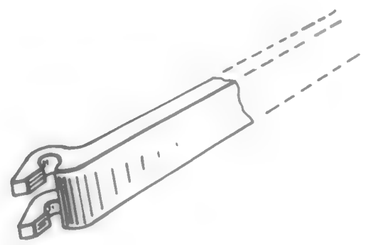


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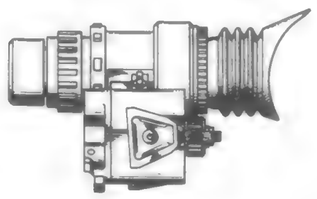
351,395
ONE PIECE BALL LOCK PUNCH RETAINER
David J. Moellering, 22644 Shadowglen, Farmington Hills, Mich. 48335
Filed Jul. 29, 1992, Ser. No. 923,152
Term of patent 14 years
U.S. Cl. D15—140



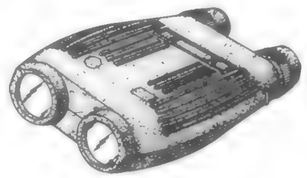
351,396
INTERCHANGEABLE TEMPLE
Simon M. Conway, Lima, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Jun. 7, 1993, Ser. No. 9,337
Term of patent 14 years
U.S. Cl. D16—335



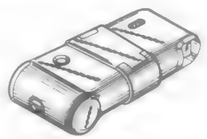
351,397
NIGHT VISION MONOCULAR
Amotz Dor, Scottsdale, Ariz., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed Dec. 10, 1991, Ser. No. 805,807
Term of patent 14 years
U.S. Cl. D16—130



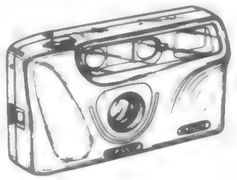
351,398
PAIR OF BINOCULARS
Manfred Meinzer, Hemer, Fed. Rep. of Germany, assignor to Leica Camera GmbH, Solms, Fed. Rep. of Germany
Filed Oct. 8, 1992, Ser. No. 601
Claims priority, application Fed. Rep. of Germany, May 9, 1992, M 9203735
Term of patent 14 years
U.S. Cl. D16—133



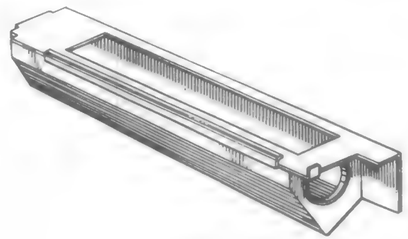
351,399
CAMERA WITH FOLDING FLASH
Samuel F. Swayze, Fairport, and Gary K. Smithborne, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 14, 1993, Ser. No. 3,779
Term of patent 14 years
U.S. Cl. D16—209



351,400
CAMERA
Hitoshi Suyama, Yokosuka, and Hideki Ito, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Feb. 9, 1993, Ser. No. 4,607
Claims priority, application Japan, Sep. 17, 1992, 4-27385
Term of patent 14 years
U.S. Cl. D16—209



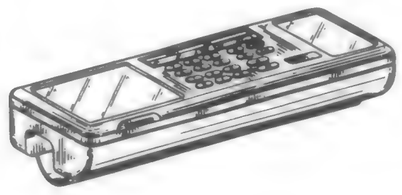
351,401
TONER HOPPER FOR LASER PRINTERS
Eric F. Intemann, 700 Lake Dr., #140, Orange, Calif. 92666
Filed Oct. 26, 1992, Ser. No. 776
Term of patent 14 years
U.S. Cl. D18—43



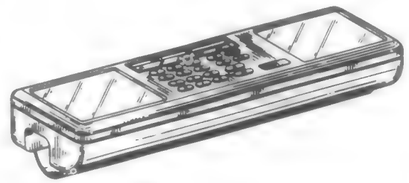
351,402
CASH REGISTER
Kenji Tamura, Fussa; Isamu Yoshitake, Musashino, and Kouichi Sato, Hachioji, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Nov. 24, 1992, Ser. No. 1,862
Term of patent 14 years
U.S. Cl. D18—4



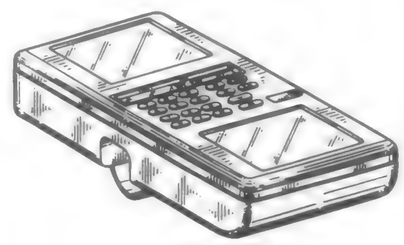
351,403
CALCULATOR WITH ADVERTISING SPACE AND LOCKING DEVICE FOR SHOPPING CART HANDLE
Charles H. Hood, and John P. Ewert, both of Tulsa, Okla., assignors to ADDvantage Media Group, Inc., Tulsa, Okla.
Filed Mar. 2, 1992, Ser. No. 841,084
Term of patent 14 years
U.S. Cl. D18—7



351,404
CALCULATOR WITH DUAL ADVERTISING SPACES FOR SHOPPING CART HANDLE
Charles H. Hood, and John P. Ewert, both of Tulsa, Okla., assignors to ADDvantage Media Group, Inc., Tulsa, Okla.
Filed Mar. 2, 1992, Ser. No. 841,085
Term of patent 14 years
U.S. Cl. D18—7



351,405
CALCULATOR WITH DUAL ADVERTISING SPACES FOR SHOPPING CART HANDLE
Charles H. Hood, and John P. Ewert, both of Tulsa, Okla., assignors to ADDvantage Media Group, Inc., Tulsa, Okla.
Filed Mar. 2, 1992, Ser. No. 841,086
Term of patent 14 years
U.S. Cl. D18—7

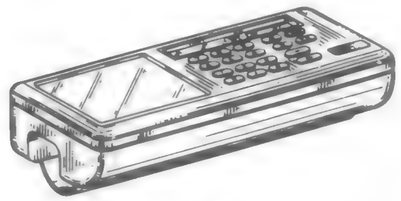


351,406
CALCULATOR WITH ADVERTISING SPACES FOR SHOPPING CART HANDLE
Charles H. Hood, and John P. Ewert, both of Tulsa, Okla., assignors to ADDvantage Media Group, Inc., Tulsa, Okla.
Filed Mar. 2, 1992, Ser. No. 841,087
Term of patent 14 years
U.S. Cl. D18—7

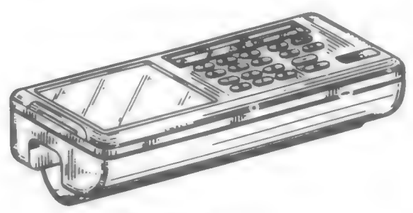


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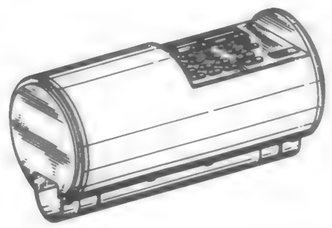
351,407
CALCULATOR WITH ADVERTISING SPACES FOR SHOPPING CART HANDLE
John P. Ewert, Tulsa, Okla., assignor to ADDvantage Media Group, Inc., Tulsa, Okla.
Filed Mar. 2, 1992, Ser. No. 841,088
Term of patent 14 years
U.S. Cl. D18—7



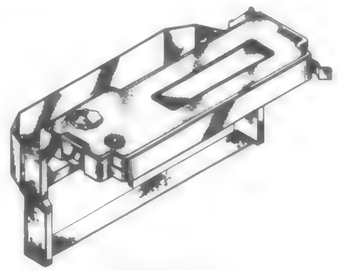
351,408
CALCULATOR WITH ADVERTISING SPACE AND COUPON DISPENSING APPARATUS FOR SHOPPING CART HANDLE
Charles H. Hood, and John P. Ewert, both of Tulsa, Okla., assignors to ADDvantage Media Group, Inc., Tulsa, Okla.
Filed Mar. 2, 1992, Ser. No. 841,089
Term of patent 14 years
U.S. Cl. D18—7



351,409
CALCULATOR WITH ADVERTISING SPACE FOR SHOPPING CART HANDLE
Charles H. Hood, Tulsa, Okla., assignor to ADDvantage Media Group, Inc., Tulsa, Okla.
Filed Mar. 25, 1992, Ser. No. 854,437
Term of patent 14 years
U.S. Cl. D18—7

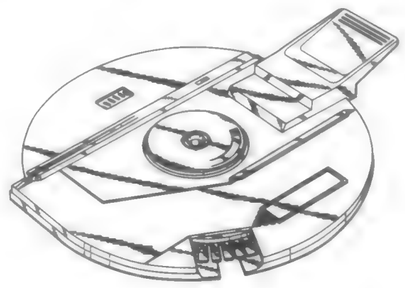


351,410
RIBBON CARTRIDGE
James T. Raleigh, Sylmar, Calif., assignor to Dataproducts Corporation, Woodland Hills, Calif.
Filed Jun. 25, 1992, Ser. No. 903,882
Term of patent 14 years
U.S. Cl. D18—12



351,411
ERASER FOR DRUM OF PHOTOCOPIER
Kyouichi Inoue, Akishima, and Yukitaka Kumagai, Hachiouji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed May 26, 1992, Ser. No. 889,090
Term of patent 14 years
U.S. Cl. D18—40

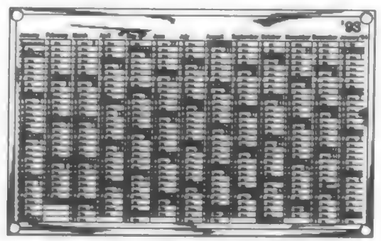
351,412
COMBINED DAISY-WHEEL AND HOUSING FOR A DEBOSSING STAMPER
Daniel T. Noonan, Greene, N.Y.; William A. Banks, Carrollton, Tex.; Roger M. Gray, Lewisville, Tex., and Barry C. Kockler, Lewisville, Tex., assignors to Taurus Impressions, Inc., Mountain View, Calif.
Filed Jan. 17, 1993, Ser. No. 10,715
Term of patent 14 years
U.S. Cl. D18—56



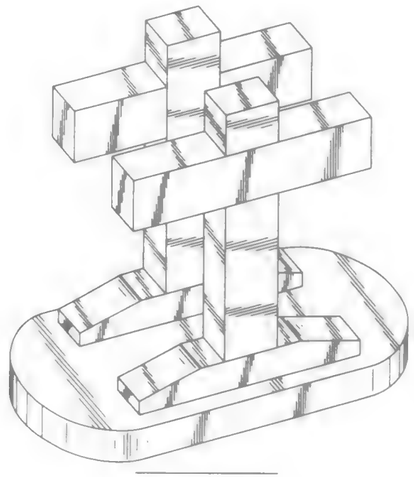
351,413
COMBINED CALENDAR AND CALENDAR FRAME THEREFOR
Duk K. Kim, 63-20 Samchung-Dong, Chongro-Ku, Seoul, Rep. of Korea
Filed May 13, 1991, Ser. No. 699,247
Term of patent 14 years
U.S. Cl. D19—20



351,414
THIRTEEN-MONTH CALENDAR
Manfred Bühner, Hochholzweg 26, D-7000 Stuttgart 75, Fed. Rep. of Germany
Filed Nov. 30, 1992, Ser. No. 2,047
Claims priority, application Fed. Rep. of Germany, May 30, 1992, 9204070
Term of patent 14 years
U.S. Cl. D19—20



351,415
BIBLE HOLDER
William E. Pope, Panama City, Fla., assignor to Jesse Joseph Large, Jr., Panama City, Fla.
Filed May 10, 1993, Ser. No. 8,036
Term of patent 14 years
U.S. Cl. D19—34.3



351,416
BALL POINT PEN
Shigeo Oka, Tokyo, and Shinkichi Katayama, Ibaraki, both of Japan, assignors to Pentel Kabushiki Kaisha, Japan
Filed Feb. 1, 1993, Ser. No. 4,312
Claims priority, application Japan, Aug. 7, 1992, 4-23770
Term of patent 14 years
U.S. Cl. D19—48

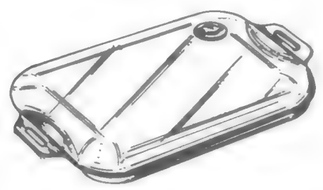


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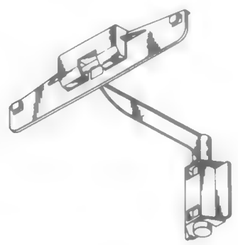
351,417
CAP FOR A WRITING INSTRUMENT
Shigeo Oka, Tokyo, Japan, assignor to Pentel Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 13, 1992, Ser. No. 912,177
Claims priority, application Japan, Apr. 16, 1992, 4-11395
Term of patent 14 years
U.S. Cl. D19—57



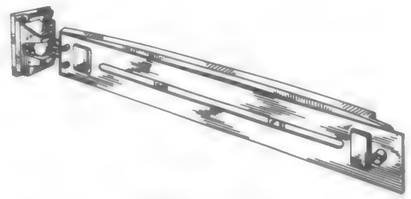
351,418
MAT FOR DEVELOPING HAND-TO-EYE COORDINATION IN INFANTS
Linda F. Dial, Atlanta, Ga., assignor to W. B. Nod & Company, Atlanta, Ga.
Filed Sep. 6, 1990, Ser. No. 578,859
The portion of the term of this patent subsequent to Jun. 22, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—64



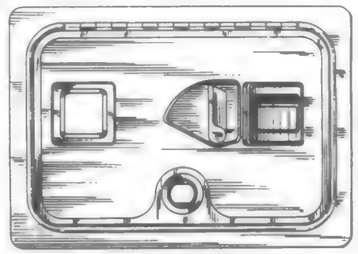
351,419
COPYHOLDER
Malcolm L. Goekler, Laredo, Tex., assignor to Hunt Holdings, Inc., Wilmington, Del.
Filed Jul. 2, 1993, Ser. No. 10,336
Term of patent 14 years
U.S. Cl. D19—88



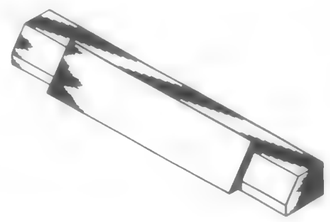
351,420
COPY CLIP
Richard C. Koch, Trabuco Cyn, Calif., assignor to Computer Coverup, Inc., Chicago, Ill.
Filed Mar. 25, 1993, Ser. No. 6,304
Term of patent 14 years
U.S. Cl. D19—88



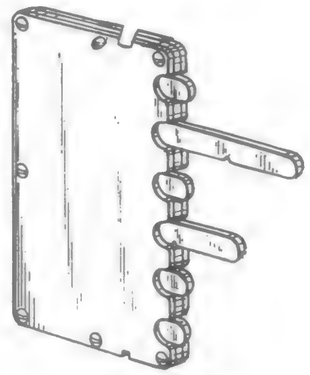
351,421
COIN DOOR BRACKET FOR A VENDING MACHINE
Hiroshi Abe, Tokyo, Japan, assignor to Asahi Seiko Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 29, 1992, Ser. No. 953,576
Claims priority, application Japan, Apr. 1, 1992, 4-9647
The portion of the term of this patent subsequent to Oct. 4, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D20—9



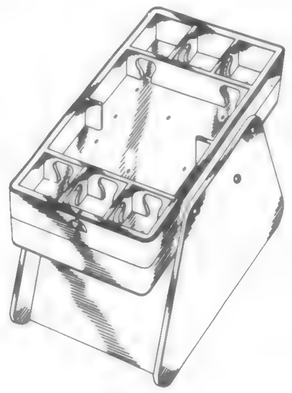
351,422
COMBINED PARKING LOT BARRIER AND COVER FOR ADVERTISING DISPLAYS
Jerry Morris, 2454 Okeechobee La., Fort Lauderdale, Fla. 33312
Filed Feb. 9, 1993, Ser. No. 4,609
Term of patent 14 years
U.S. Cl. D20—10



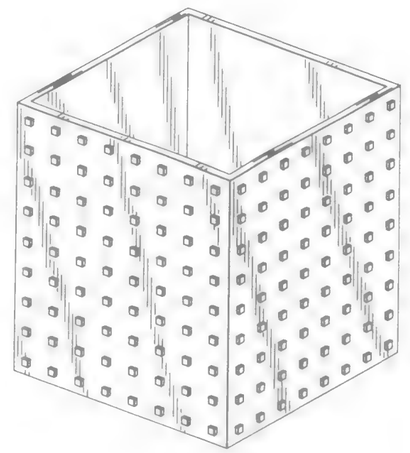
351,423
MEMORANDUM INDICATOR FOR HOSPITALS
John F. Cassidy, Jr., Golden Valley, Minn., assignor to Fern Island, Incorporated, Golden Valley, Minn.
Continuation of Ser. No. 967,106, Oct. 27, 1992, Pat. No. 5,257,595. This application Aug. 19, 1993, Ser. No. 11,991
Term of patent 14 years
U.S. Cl. D20—18



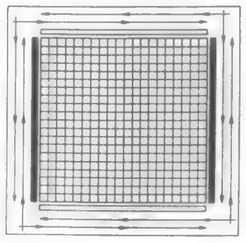
351,424
BOWLING GAME
Jonathan W. Hall, 7476 Daetwyler Rd., Orlando, Fla. 32812
Filed Jul. 29, 1991, Ser. No. 737,501
Term of patent 14 years
U.S. Cl. D21—7



351,425
GAME BOARD
Michael Seiler, 10 Elmwood Ct., Plainview, N.Y. 11803
Filed Nov. 30, 1992, Ser. No. 2,007
Term of patent 14 years
U.S. Cl. D21—23

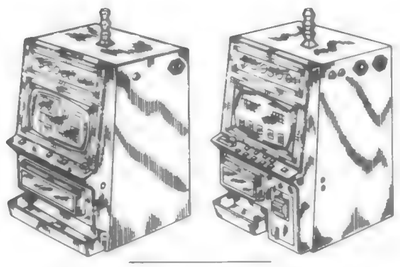


351,426
GAME BOARD
Paul H. Bryson, 41 Stalybridge Road, Mottram, Hyde, Cheshire SK14 6NF, United Kingdom
Filed Mar. 8, 1993, Ser. No. 5,612
Claims priority, application United Kingdom, Sep. 10, 1992, 2025809
Term of patent 14 years
U.S. Cl. D21—24

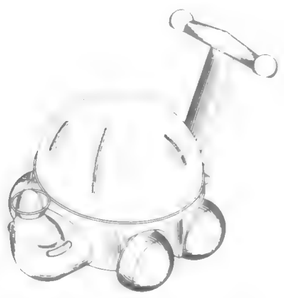


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351,427
VIDEO LOTTERY-GAME CABINET
Scott M. Waite, 3085 N. Sparkman, Tucson, Ariz. 85716
Filed Jun. 23, 1993, Ser. No. 9,750
Term of patent 14 years
U.S. Cl. D21—38



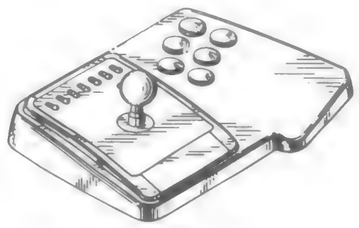
351,428
TOY
Chuan T. Chiang, Hong Kong, Hong Kong, assignor to Zei Hong Manufacturing Co., Kowloon, Hong Kong
Filed Jun. 7, 1993, Ser. No. 9,154
Term of patent 14 years
U.S. Cl. D21—59



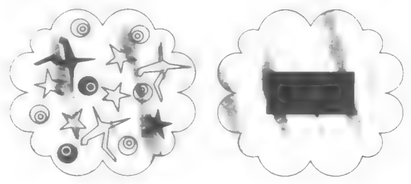
351,429
TOY
Chuan T. Chiang, Hong Kong, Hong Kong, assignor to Zei Hong Manufacturing Co., Kowloon, Hong Kong
Filed Jun. 7, 1993, Ser. No. 9,155
Term of patent 14 years
U.S. Cl. D21—59



351,430
CONTROLLER FOR VIDEO GAME MACHINE
Lance Barr, Redmond, Wash., assignor to Nintendo Co., Ltd., Japan
Filed Jun. 21, 1993, Ser. No. 9,671
Claims priority, application Japan, Mar. 8, 1993, 6613
Term of patent 14 years
U.S. Cl. D21—48



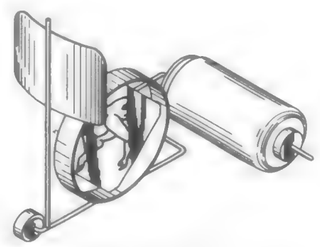
351,431
BACKSIDE
Allison D. Niehaus, 88 Village La., Windsor, Conn. 06095
Filed Feb. 16, 1993, Ser. No. 4,796
Term of patent 14 years
U.S. Cl. D21—59



351,432
COMBINED TOY ROCKET AND LAUNCHER
Karen E. Dudeck, Rte. 1, Box 22, Oregon, Mo. 64473, and Y. E. Bunny Tyson, 511 N. 36th St., Lot #1, St. Joseph, Mo. 64506
Filed Oct. 13, 1992, Ser. No. 381
Term of patent 14 years
U.S. Cl. D21—82



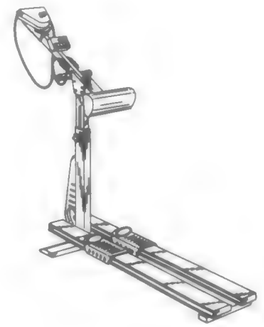
351,433
TOY VEHICLE
Harold C. Flood, and Eleanor R. Flood, both of Star Rte. 1 - Box 103, Crescent City, Fla. 32112
Filed Feb. 11, 1993, Ser. No. 4,680
Term of patent 14 years
U.S. Cl. D21—124



351,434
MASK
Philip B. Carroll, 225 Bear River Dr., Evanston, Wyo. 82930
Filed Dec. 2, 1992, Ser. No. 2,086
Term of patent 14 years
U.S. Cl. D21—190



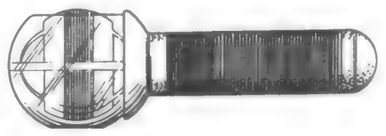
351,435
CROSS-COUNTRY SKI SIMULAOR EXERCISER
Stephen S. Peterson, Maple Grove, and Timothy S. Engel, Mound, both of Minn., assignors to NordicTrack, Inc., Chaska, Minn.
Filed May 6, 1991, Ser. No. 695,754
Term of patent 14 years
U.S. Cl. D21—191



351,436
GYROSCOPIC EXCERCISER
Kenneth L. Pravitz, 51 E. Grand Blvd., Corona, Calif. 91719
Filed Mar. 11, 1993, Ser. No. 5,819
Term of patent 14 years
U.S. Cl. D21—198

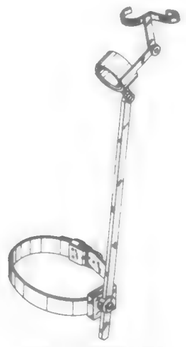


351,437
GYROSCOPIC EXERCISER
Kenneth L. Pravitz, 51 E. Grand Blvd., Corona, Calif. 91719
Filed Mar. 11, 1993, Ser. No. 5,818
Term of patent 14 years
U.S. Cl. D21—198

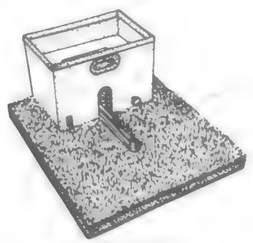


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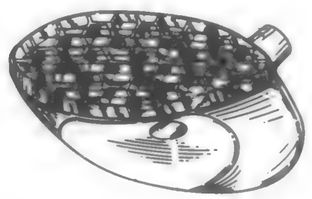
351,438
BASKETBALL TRAINING AID
Richard B. Weaver, 7788 Westminster St., S.W., Byron Center, Mich. 49315
Filed Oct. 14, 1993, Ser. No. 14,152
Term of patent 14 years
U.S. Cl. D21—201



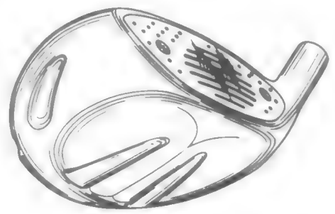
351,439
GOLF BALL DISPENSER AND TEEING MACHINE
David S. Halpern, 3106 Tree Corners Pkwy., Norcross, Ga. 30092
Filed May 27, 1993, Ser. No. 8,869
Term of patent 14 years
U.S. Cl. D21—208



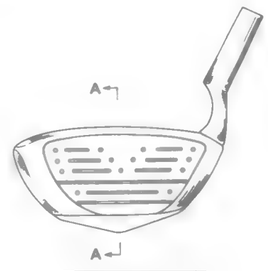
351,440
GOLF CLUB HEAD
Dillis V. Allen, Elk Grove Village, Ill., assignor to Vardon Golf Company, Inc., Elk Grove Village, Ill.
Filed May 13, 1992, Ser. No. 882,626
Term of patent 14 years
U.S. Cl. D21—214



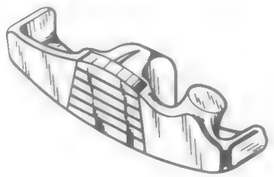
351,441
GOLF CLUB HEAD
Kanji Iinuma, Musashino, and Shigeki Take, Higashikurume, both of Japan, assignors to Daiwa Golf Co., Ltd., Tokyo, Japan
Filed Jul. 29, 1992, Ser. No. 920,930
Claims priority, application Japan, Feb. 6, 1992, 4-3218
Term of patent 14 years
U.S. Cl. D21—214



351,442
GOLF CLUB HEAD
Hideyo Asabuki, Tokyo, and Masahiko Nagahama, Kamakura, both of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Nov. 25, 1992, Ser. No. 1,828
Claims priority, application Japan, Jun. 25, 1992, 4-18623
Term of patent 14 years
U.S. Cl. D21—214



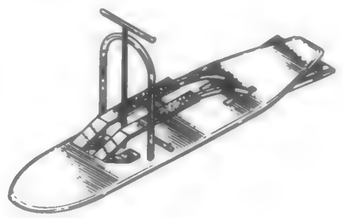
351,443
GOLF PUTTER HEAD
Gerald C. Caugh, and Manoug Broukiam, both of Kent, Mich., assignors to Keeler Brass Company, Grand Rapids, Mich.
Filed Dec. 22, 1992, Ser. No. 2,910
Term of patent 14 years
U.S. Cl. D21—219



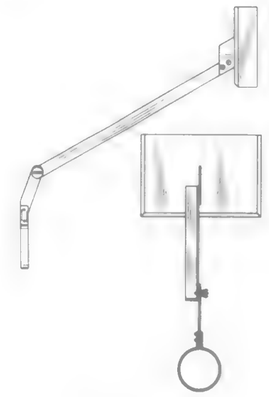
351,444
GOLF CLUB SUPPORT
Richard Hunter, 540 Wekiva Landing Dr., Apoka, Fla. 32712
Filed Oct. 29, 1992, Ser. No. 921
Term of patent 14 years
U.S. Cl. D21—223



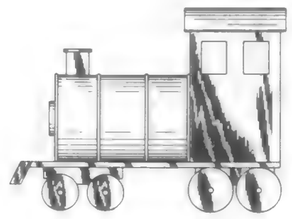
351,445
SELF-PROPELLED WATER BOARD
Carmelo Trapani, 40 Bay 17th St., Brooklyn, N.Y. 11214
Filed Aug. 30, 1993, Ser. No. 12,319
Term of patent 14 years
U.S. Cl. D21—228



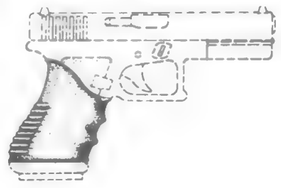
351,446
GOLF STANCE ALIGNMENT AID
Hans J. F. Niedworok, 801 Kirk Maiden Ave., Sanford, N.C. 27330
Filed Sep. 13, 1993, Ser. No. 12,858
Term of patent 14 years
U.S. Cl. D21—234



351,447
PLAYGROUND TOY TRAIN
Terry W. Barnes, 108 Winnicut Rd., Stratham, N.H. 03885
Filed Feb. 16, 1993, Ser. No. 4,887
Term of patent 14 years
U.S. Cl. D21—250

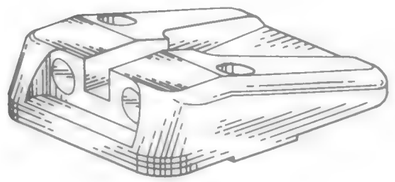


351,448
ELASTIC PISTOL GRIP COVER
Robert L. Fisher, 5227 Monterey Rd., Riverside, Calif. 92506
Filed Dec. 17, 1992, Ser. No. 2,711
Term of patent 14 years
U.S. Cl. D22—108

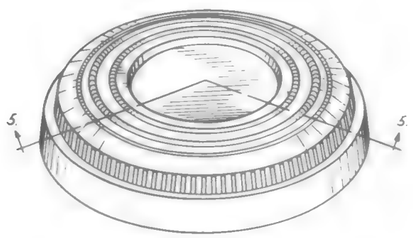


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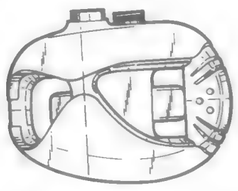
351,449
REAR SIGHT FOR PISTOL
Morris K. Dagley, 206 Frontage Rd., Ste. C, Pacific, Wash. 98047
Filed Dec. 6, 1993, Ser. No. 16,067
Term of patent 14 years
U.S. Cl. D22—109



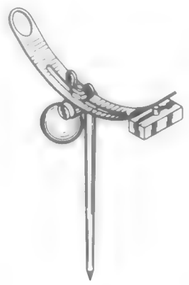
351,450
TARGET FOR SHOOTING
Walter L. Maryska, New South Wales, Australia, assignor to Riteflite Pty. Limited, New South Wales, Australia
Filed May 19, 1993, Ser. No. 8,560
Term of patent 14 years
U.S. Cl. D22—113



351,451
FISHING REEL FRAME
Achim Storz, Zell Am See, Austria, assignor to ABU Garcia Produktion AB, Svangsta, Sweden
Filed Jan. 21, 1993, Ser. No. 3,924
Term of patent 14 years
U.S. Cl. D22—140



351,452
SONIC STRIKE ROD HOLDER
Lyle W. Nielsen, 1227 E. Graham, Cottonwood, Ariz. 86326
Filed Mar. 25, 1993, Ser. No. 5,524
Term of patent 14 years
U.S. Cl. D22—148



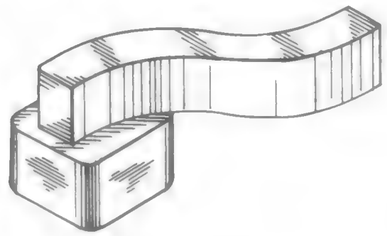
351,453
SHOWER HEAD
Hing W. Huen, Kowloon, Hong Kong, assignor to Fairform Mfg. Co., Ltd., Kowloon, Hong Kong
Filed Dec. 16, 1992, Ser. No. 2,693
Term of patent 14 years
U.S. Cl. D23—223



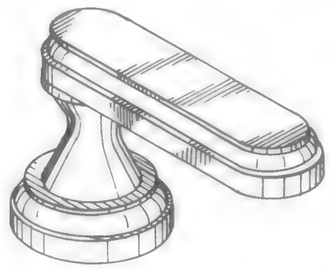
351,454
FAUCET HANDLE
Stanley M. Paul, 214 Bedford Rd., Greenwich, Conn. 06831
Filed Feb. 17, 1993, Ser. No. 4,967
Term of patent 14 years
U.S. Cl. D23—250



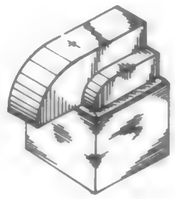
351,455
FAUCET HANDLE
Stanley M. Paul, 214 Bedford Rd., Greenwich, Conn. 06831
Filed Feb. 17, 1993, Ser. No. 4,945
Term of patent 14 years
U.S. Cl. D23—252



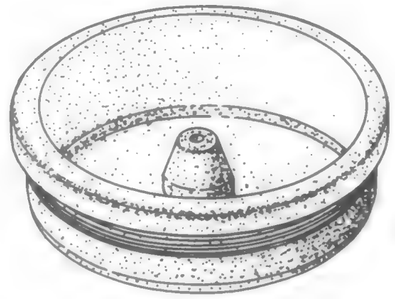
351,456
FAUCET HANDLE
Stanley M. Paul, 214 Bedford Rd., Greenwich, Conn. 06831
Filed Feb. 17, 1993, Ser. No. 4,947
Term of patent 14 years
U.S. Cl. D23—252



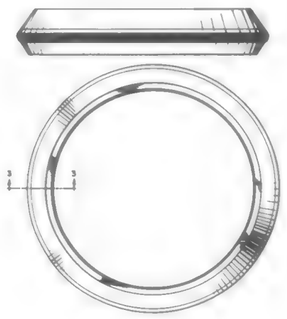
351,457
FAUCET HANDLE
Stanley M. Paul, 214 Bedford Rd., Greenwich, Conn. 06831
Filed Feb. 17, 1993, Ser. No. 4,950
Term of patent 14 years
U.S. Cl. D23—252



351,458
END MEMBER FOR A TUBE
Hans Linnér, Kalmar, Sweden, assignor to Nordea Pac Development AB, Sweden
Filed Oct. 2, 1992, Ser. No. 10
Claims priority, application Sweden, Apr. 24, 1992, 92-0922
Term of patent 14 years
U.S. Cl. D23—260

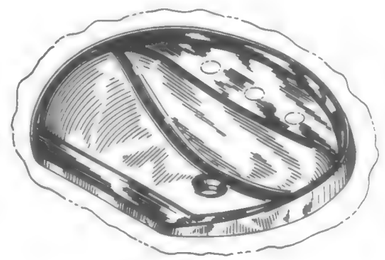


351,459
SEALING RING
Joakim Andersson, Lyckasvagen, Sweden, assignor to Forsheda AB, Forsheda, Sweden
Filed Sep. 10, 1992, Ser. No. 943,455
Term of patent 14 years
U.S. Cl. D23—269

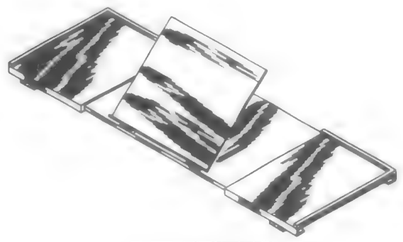


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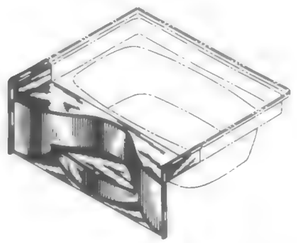
351,460
LAVATORY
Herbert V. Kohler, Jr., Kohler, Wis., and Kevin G. Short, Midlothian, Ill., assignors to Sterling Plumbing Group, Inc., Rolling Meadows, Ill.
Filed Feb. 12, 1993, Ser. No. 4,776
Term of patent 14 years
U.S. Cl. D23—284



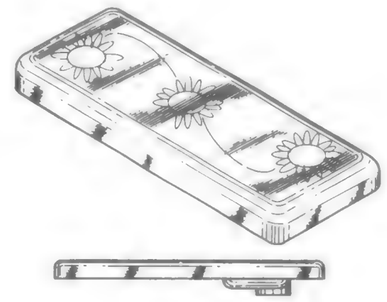
351,461
TUB TRAY
Barry M. Wannamaker, #231-1340 University Dr. N.W., Calgary, Alberta, Canada T2N 3A8
Filed May 26, 1993, Ser. No. 8,772
Term of patent 14 years
U.S. Cl. D23—304



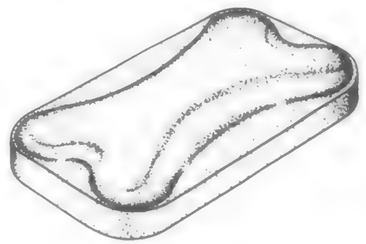
351,462
ENTRY FOR A BATHING TUB
Alan D. Bengtson, Shorewood, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jul. 29, 1993, Ser. No. 11,200
Term of patent 14 years
U.S. Cl. D23—306



351,463
TOILET TANK VENTILATING COVER
David W. McCormick, 1228 SW. 22nd St., Chehalis, Wash. 98532
Filed Jan. 31, 1992, Ser. No. 828,652
Term of patent 14 years
U.S. Cl. D23—313



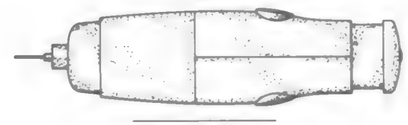
351,464
PHARMACEUTICAL PRODUCT
Kenneth A. Kramer, Green Lane, and Ashok V. Katadare, Norristown, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Sep. 29, 1992, Ser. No. 2,317
Term of patent 14 years
U.S. Cl. D24—100



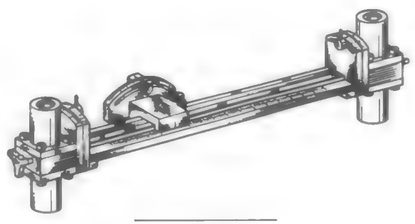
351,465
MEDICATION INJECTOR
Christopher J. Stringer, San Francisco, Calif.; Gerhard E. F. Pawelka, Lexington, Mass., and Matthew Marsh, San Francisco, Calif., assignors to Eli Lilly and Company, Indianapolis, Ind.
Filed Apr. 2, 1993, Ser. No. 6,635
Term of patent 14 years
U.S. Cl. D24—113



351,466
MEDICATION INJECTOR
Christopher J. Stringer, San Francisco, Calif.; Gerhard E. F. Pawelka, Lexington, Mass., and Matthew Marsh, San Francisco, Calif., assignors to Eli Lilly and Company, Indianapolis, Ind.
Filed Apr. 2, 1993, Ser. No. 6,651
Term of patent 14 years
U.S. Cl. D24—113



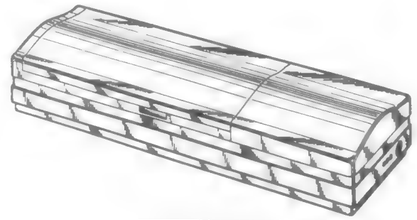
351,467
STEREOTACTIC BRIDGE
Panos G. Koutrouvelis, and Aristides P. Koutrouvelis, both of 1201 Ballantrae La., McLean, Va. 22101
Filed Feb. 5, 1993, Ser. No. 4,480
Term of patent 14 years
U.S. Cl. D24—140



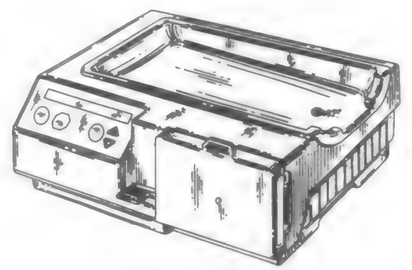
351,468
TUBE FOR TESTING FOR ALCOHOL IN THE BREATH
Jacques Ponsy, 34150, Arboras, France
Filed Sep. 14, 1990, Ser. No. 585,013
Term of patent 14 years
U.S. Cl. D24—169



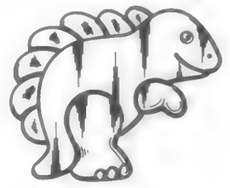
351,469
PORTABLE AUTOMATIC BLOOD GLUCOSE ANALYZER
Mitsunari Okamoto, Kawachinagano, and Shunji Maeda, Hashimoto, both of Japan, assignors to Daikin Industries, Ltd., Osaka, Japan
Filed Jun. 1, 1992, Ser. No. 891,472
Term of patent 14 years
U.S. Cl. D24—169



351,470
PERITONEAL DIALYSIS CYCLER
Craig S. Scherer, Wilmette; James D. Brewer, Chicago; David C. Brown, Chicago; Christopher S. LaBak, Chicago, and Russell L. Robertson, Chicago, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.
Filed Mar. 3, 1993, Ser. No. 6,426
Term of patent 14 years
U.S. Cl. D24—169

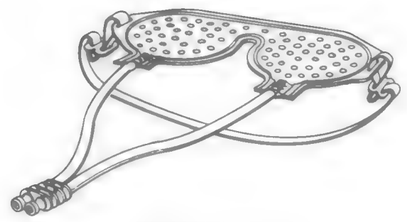


351,471
BABY TEETHER TOY
Randy L. Abrams, Leominster, Mass., assignor to Safety 1st, Inc., Chestnut Hill, Mass.
Filed Mar. 8, 1993, Ser. No. 5,613
Term of patent 14 years
U.S. Cl. D24—195



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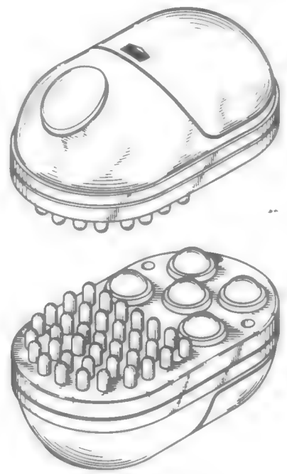
351,472
THERAPEUTIC FLUID CIRCULATION PAD FOR THE EYES
Bradley R. Mason, Olivenhain, and Jeffrey T. Mason, Escondido, both of Calif., assignors to Breg, Inc., Vista, Calif.
Continuation-in-part of Ser. No. 851,345, Mar. 12, 1992, Pat. No. Des. 345,609, which is a continuation-in-part of Ser. No. 767,494, Sep. 30, 1991, Pat. No. 5,241,951, which is a continuation-in-part of Ser. No. 578,508, Sep. 5, 1990, Pat. No. 5,080,089, and a continuation-in-part of Ser. No. 906,407, Jul. 1, 1992, which is a continuation-in-part of Ser. No. 767,494, Sep. 30, 1991, Pat. No. 5,241,951, which is a continuation-in-part of Ser. No. 578,508, Sep. 5, 1990, Pat. No. 5,080,089. This application Dec. 7, 1992, Ser. No. 2,338
Term of patent 14 years
U.S. Cl. D24—206



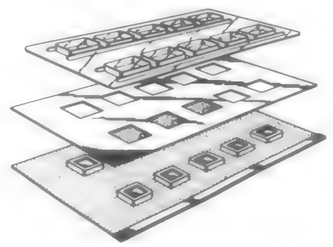
351,473
COMBINED SPRAYER AND MASSAGER
Pen Yu-Hsiang, 4 Fl., 5-1, Sublane 10, Lane 256, Hsin I Road, Sec. 4, Taipei, Taiwan
Filed Oct. 30, 1992, Ser. No. 952
Term of patent 14 years
U.S. Cl. D24—211



351,474
MASSAGER
Chien-Ming Huang, 11-1 Fl., No. 23, Sec. 2, Keelung Rd., Taipei, Taiwan
Filed Jun. 15, 1993, Ser. No. 9,519
Term of patent 14 years
U.S. Cl. D24—211



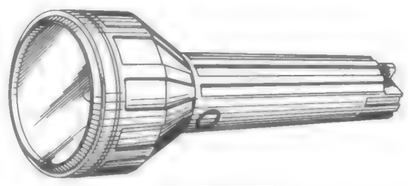
351,475
SKIN PATCH FOR TESTING ALLERGIC REACTIONS
Jan Gerber, 23, Bartokhof, NL-2402 GC Alphen a/d Rijn, Netherlands
Filed Jul. 7, 1992, Ser. No. 909,799
Claims priority, application World Int. Prop. O., Jan. 30, 1992, DM/021839
The portion of the term of this patent subsequent to Oct. 12, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—223



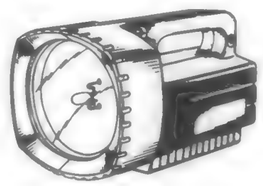
351,476
STEP LADDER
Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex Sarl, Oyonnax, France
Filed Nov. 17, 1992, Ser. No. 1,607
Claims priority, application Hague, May 22, 1992, DMA/001797
Term of patent 14 years
U.S. Cl. D25—63



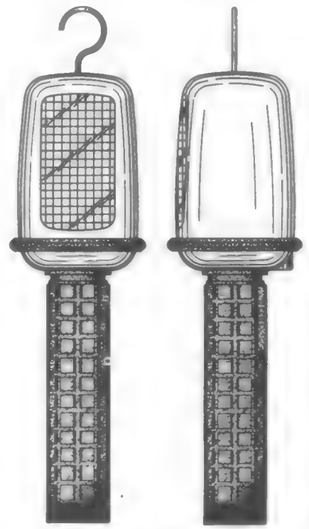
351,477
FLASHLIGHT
David Bamber, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.
Filed Dec. 21, 1992, Ser. No. 2,492
Term of patent 14 years
U.S. Cl. D26—37



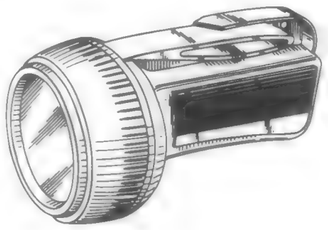
351,478
HALOGEN LANTERN
Gerry D. Welton, Morton, Ill., assignor to Lamplighter Manufacturing, Inc., East Peoria, Ill.
Filed Feb. 16, 1993, Ser. No. 4,914
Term of patent 14 years
U.S. Cl. D26—37



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PORTABLE WORKLIGHT
William J. Meyer, c/o Invention Plus, P.O. Box 1067, Mount Vernon, Ohio 43050
Filed Feb. 17, 1993, Ser. No. 4,968
Term of patent 14 years
U.S. Cl. D26—37

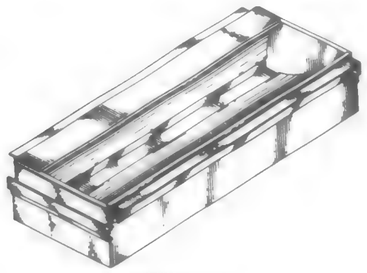


351,480
BELT FLASHLIGHT
David Bamber, and Robert Deines, both of Wichita, Kans., assignors to The Coleman Company, Inc., Wichita, Kans.
Filed Dec. 21, 1992, Ser. No. 2,493
Term of patent 14 years
U.S. Cl. D26—39



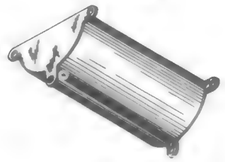
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RECESSED FLUORESCENT LIGHTING FIXTURE
John M. Cole, Jr., Hingham, Mass., assignor to Litecontrol Corporation, Hanson, Mass.
Filed Jan. 22, 1993, Ser. No. 3,943
Term of patent 14 years
U.S. Cl. D26—76



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LIGHT MODULE FOR SUSPENDED LIGHTING FIXTURE UNIT
Dennis E. Johnson, Grafton, and Scott P. Malmsten, West Bend, both of Wis., assignors to SPI Lighting, Inc., Mequon, Wis.
Filed May 7, 1993, Ser. No. 8,165
Term of patent 14 years
U.S. Cl. D26—113





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LIQUID AND LOTION APPLICATOR
Joseph G. Angeletta, 418 Fifth St., Mamaroneck, N.Y. 10543
Continuation-in-part of Ser. No. 607,483, Nov. 1, 1990, abandoned, which is a continuation of Ser. No. 223,801, Jul. 25, 1988, abandoned. This application Nov. 15, 1991, Ser. No. 792,733
Term of patent 14 years
U.S. Cl. D28—7



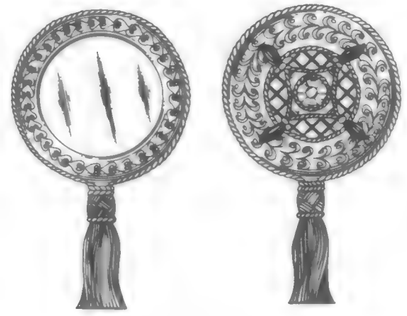
351,484
HAIR FROSTING CAP
David J. Mica, 315 South Rd., Bedford, Mass. 01730
Filed Oct. 16, 1992, Ser. No. 506
Term of patent 14 years
U.S. Cl. D28—20



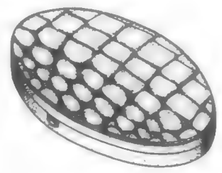
351,485
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Michael Miskin, 4927 N. Lester, Chicago, Ill. 60630
Filed Jul. 20, 1992, Ser. No. 916,404
Term of patent 14 years
U.S. Cl. D28—46



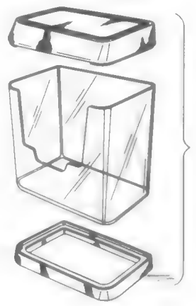
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Victor Carranza, Colonia Independencia, Mexico, assignor to Godinger Silver Art Co., Ltd., Brooklyn, N.Y.
Division of Ser. No. 724,955, Jul. 2, 1991, Pat. No. 8,341,722.
This application Aug. 31, 1993, Ser. No. 12,452
Term of patent 14 years
U.S. Cl. D28—64.6



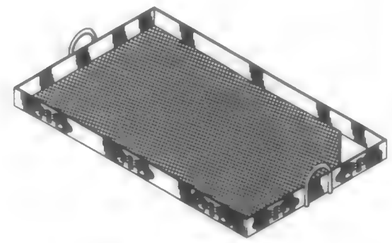
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Shih-Ko Chen, 20F, No. 65, Tun Hwa South Rd., Sec. 2, Taipei, Taiwan
Filed Nov. 21, 1991, Ser. No. 795,622
Term of patent 14 years
U.S. Cl. D28—79



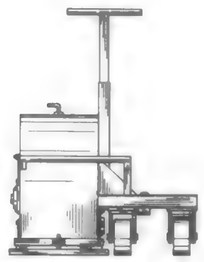
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Kazutoshi Tominaga, Higashiosakashi, Japan, assignor to Kabushiki Kaisha Tominaga Jyushi Kogyosho, Osaka, Japan
Filed Feb. 14, 1992, Ser. No. 836,112
The portion of the term of this patent subsequent to Jun. 14, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D30—101



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SIFTING TRAY FOR USE WITH A LITTER PAN
John K. Helfrick, 309 Hunter Run Rd., Winchester, Va. 22601
Filed Dec. 24, 1992, Ser. No. 2,982
Term of patent 14 years
U.S. Cl. D30—161



351,490
SURFACE CLEANING APPARATUS
Robert E. Hoover, 2837 Elsie Ave., Toledo, Ohio 43613
Filed Oct. 16, 1992, Ser. No. 517
Term of patent 14 years
U.S. Cl. D32—15



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF OCTOBER, 1994

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Wang, David N-K.; White, John M.; Law, Kam S.; Leung, Cissy; Umotoy, Salvador P.; Collins, Kenneth S.; Adamik, John A.; Perlov, Ilya; and Maydan, Dan, 5,354,715, Cl. 437-238.000.

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Coe, Charles G.; MacDougall, James E.; and Weigel, Scott J., 5,354,360, Cl. 95-101.000.
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Ott, Ronald L.; Gorman, Michael R.; Becker, Dennis L.; Folske, Donald W.; Melbye, William L.; Nestegard, Susan K.; Slama, David F.; Barry, John L.; and McMahon, Jeffrey R., to Minnesota Mining and Manufacturing Company. Coated abrasive sheet material with loop material for attachment incorporated therein. 5,354,591, Cl. 428-99.000

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Ottone, Renato; Piovano, Luigi; and Gaida, Guido, to Pluritec Italia S.p.A. Machine tool part loading and unloading method and device particularly for machining printed circuit boards. 5,354,153, Cl. 408-1.00R.

Ouellette, Thomas C. Tape cassette fast forward clutch. 5,354,013, Cl. 242-342.000

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Oven Systems, Inc.: *See*—
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Overholt, Janet M.: *See*—
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Owaki, Masano, to Sony Corporation. Radio receiver with display memory and keys for displaying selecting, and storing station frequencies. 5,355,527, Cl. 455-186.200.

Owczarczyk, Zbyslaw R.: *See*—
Southby, David T.; Kapp, Daniel L.; Slusarek, Wojciech; Friedrich, Louis E.; Owczarczyk, Zbyslaw R.; and Yang, Xiqiang, 5,354,650, Cl. 430-544.000.

Oya, Yasuhiro: *See*—
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Ozawa, Kimio; Kato, Hisato; Enomoto, Hiromichi; and Maezawa, Akihiro, to Konica Corporation. Magnetic recording medium comprising a conductive underlayer containing carbon black and a magnetic layer containing tabular barium ferrite magnetic particles, α alumina, and binder resin. 5,354,610, Cl. 428-323.000.

Ozawa, Kunitaka: *See*—
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Ozawa, Nobuaki: *See*—
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Pai, Chung-Jen. Motorized scissors. 5,353,504, Cl. 30-228.000.

Pajowski, Raymond W.; and Bina, Bruce M., to Rockwell International Corporation. Phase corrector for redundant clock systems and method. 5,355,090, Cl. 328-63.000

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Palamides, Sesto; Palamides, Aldo; and Palamides, Stefano, 5,353,576, Cl. 53-540.000.

Palamides, Sesto; Palamides, Aldo; and Palamides, Stefano. Device for packaging printed matter. 5,353,576, Cl. 53-540.000.

Palamides, Stefano: *See*—
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Paley, Edward D.; Leemhuis, Gregory E.; and Machesney, Kerry A., to Hydraulic Power Systems, Inc. Pressure response type pulsation damper noise attenuator and accumulator. 5,353,840, Cl. 138-31.000.

Palka, Matthew S., Jr.: *See*—
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Panster, Peter; and Kleinschmit, Peter, to Degussa Aktiengesellschaft. Shaped organopolysiloxanes containing sulfonate groups, a process for their production and their use. 5,354,831, Cl. 528-9.000.

Pantini, Giovanni; and Visca, Mario, to Ausimont S.r.L. Process for preparing cleansing emulsions for beauty treatment and cosmetic products thereof. 5,354,552, Cl. 424-401.000.

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Park, Dae C.; and Cho, Sung Y., to Korea Research Institute of Chemical Technology. Catalysts on inorganic carriers for producing ethylidene diacetate. 5,354,886, Cl. 560-232.000.

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Park, Keesoon: *See*—
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Parton, Richard L., to Eastman Kodak Company. Hydroxyarylacyl dye compounds and silver halide photographic elements containing such dyes. 5,354,651, Cl. 430-583.000.

Parulski, Kenneth A., to Eastman Kodak Company. Mechanism for improving television display of still images using image motion-dependent filter. 5,355,178, Cl. 348-620.000.

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Patel, Bomi P., to American Cyanamid Company. Diaryl (pyridinio and isoquinolinio) boron insecticidal and acaricidal agents. 5,354,741, Cl 514-64 000.

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Bradford, Lowell G.; and Bradford, Norman G. Apricot tree (Goldensweet). 8,932, 10-11-94, Cl. 39.000.

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Saville, F. Harmon, to Nor'East Miniature Roses, Inc. Miniature rose plant named Savaschool. 8,930, 10-11-94, Cl. 8.200.

Trees, Scott C., to George J. Ball, Inc. New Guinea Impatiens named BSR-266 Apple Star. 8,937, 10-11-94, Cl. 87.600.

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VandenBerg, Cornelius P., to Yoder Brothers, Inc. Chrysanthemum plant named Effect. 8,935, 10-11-94, Cl. 74.100.

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CLASSIFICATION OF PATENTS

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129.1 5,354,437
140 5,354,438
157.6 5,354,439
180.1 5,354,440
181.1 5,354,441
182.8 5,354,442
192.12 5,354,443
290 R 5,354,444
298.05 5,354,445
298.22 5,354,446
403 5,354,447
415 5,354,448
433 5,354,449

CLASS 206

0.83 5,353,924
6.! 5,353,921
63.3 5,353,922
77.1 5,353,923
204 5,353,925
217 5,353,926
219 5,353,927
222 5,353,928
364 5,353,929
370 5,353,930
387 5,353,931
5,353,932
398 5,353,933
454 5,353,934
470 5,353,935
597 5,353,936

CLASS 208

48 AA 5,354,450
65 5,354,451
111 5,354,452
236 5,354,453
309 5,354,454

CLASS 209

563 5,353,937
584 5,353,938

CLASS 210

104 5,354,455
170 5,354,456
5,354,457
180 5,354,458
188 5,354,459
198.2 5,354,460
5,354,461
223 5,354,462
232 5,354,463
240 5,354,464
305 5,354,465
321 69 5,354,466
420 5,354,467
448 5,354,468
490 5,354,469
500.23 5,354,470
607 5,354,471
635 5,354,472
5,354,473
637 5,354,474
656 5,354,475
679 5,354,476
708 5,354,477
716 5,354,478
728 5,354,479
734 5,354,480
5,354,481
742 5,354,482
789 5,354,483

CLASS 211

59.3 5,353,939

CLASS 212

180 5,353,940

CLASS 219

69.13 5,354,961
121.52 5,354,962
121.54 5,354,963
121.84 5,354,964
202 5,354,965
203 5,354,966
225 5,354,967
268 5,354,968
541 5,354,969
609 5,354,970
661 5,354,971
715 5,354,972
730 5,354,973

CLASS 220

220 5,353,941
254 5,353,942
276 5,353,943
303 5,353,944
314 5,353,945
326 5,353,946
331 5,353,947
343 5,353,948
371 5,353,949
407 5,353,950
571 5,353,951
575 5,353,952
602 5,353,953
608 5,353,954
710 5,353,955

CLASS 221

198 5,353,956

CLASS 222

1 5,353,957
54 5,353,958
66 5,353,959
77 5,353,960
94 5,353,961
95 5,353,962
129.1 5,353,963
134 5,353,964
143 5,353,965
145 5,353,966
181 5,353,967
212 5,353,968
321 5,353,969
5,353,970
5,353,971

CLASS 223

50 5,353,972

CLASS 224

36 5,353,973
219 5,353,974
224 5,353,975
251 5,353,977

CLASS 225

97 5,353,978

CLASS 226

196 5,353,979

CLASS 228

124.1 5,353,980
190 5,353,981

CLASS 229

23 R 5,353,982
103.1 5,353,983
104 5,353,984
123.1 5,353,985

CLASS 235

379 5,354,974
380 5,354,975
462 5,354,976
472 5,354,977
475 5,354,978
491 5,354,979
494 5,355,001

CLASS 237

2 R 5,353,986

CLASS 238

25 5,353,987

CLASS 239

164 5,353,988
230 5,353,989
313 5,353,990
409 5,353,991
533.12 5,353,992
542 5,353,993
700 5,353,994
701 5,353,995
752 5,353,996

CLASS 241

17 5,353,997
21 5,353,998
30 5,353,999
33 5,354,000
34 5,354,001
79.1 5,354,002
101.7 5,354,003
236 5,354,004
261.1 5,354,005

CLASS 242

118.41 5,354,012
342 5,354,013
348.4 5,354,009
402 5,354,011
532.7 5,354,007
555.3 5,354,006
571.8 5,354,010
580 5,354,008

CLASS 244

134 C 5,354,014
134 F 5,354,015
165 5,354,016
204 5,354,017

CLASS 246

383 5,354,018

CLASS 248

27.1 5,354,019
68.1 5,354,020
74.3 5,354,021
127 5,354,022
129 5,354,023
168 5,354,024
188 5,354,025
229 5,354,026
291 5,354,027
292.1 5,354,028
313 5,354,029
316.1 5,354,030
519 5,354,031

CLASS 250

208.1 5,354,980
214 LA 5,354,982
214 R 5,354,981
222.1 5,354,983
223 B 5,354,984
234 5,354,985
251 5,354,986
252.1 5,354,987
292 5,354,988
336.2 5,354,989
356.1 5,354,990
364 5,354,996
369 5,354,991
484.5 5,354,997
548 5,354,992
551 5,354,993
561 5,354,994
5,354,995
573 5,354,999

CLASS 251

129 06 5,354,032

CLASS 252

32.5 5,354,484
34 5,354,485
57 5,354,486
58 5,354,487
62 56 5,354,488
73 5,354,489
79.1 5,354,490
135 5,354,491
162 5,354,492
174.15 5,354,494
174.21 5,354,493
182.18 5,354,495
299.01 5,354,496
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5,354,498
299.5 5,354,499
299.61 5,354,500
5,354,502
299.62 5,354,501
299.63 5,354,503
314 5,354,504
358 5,354,505
387.31 5,354,506
390 5,354,507
400.1 5,354,508
512 5,354,509
548 5,354,510
582 5,354,511
585 5,354,512
5,354,513
587 5,354,514

CLASS 254

28 5,354,033
89 R 5,354,034
399 5,354,035

CLASS 256

25 5,354,036
59 5,354,037

CLASS 257

14 5,355,000
57 5,355,002
139 5,355,003
192 5,355,005
211 5,355,004
296 5,355,006
321 5,355,007
341 5,355,008
370 5,355,009
377 5,355,010
408 5,355,011
409 5,355,012
458 5,355,013
533 5,355,014
554 5,355,015
659 5,355,016
666 5,355,017
669 5,355,018
698 5,355,019
741 5,355,020
745 5,355,021
768 5,355,022
774 5,355,023

CLASS 261

72.1 5,354,515
121.1 5,354,516

CLASS 264

1.1 5,354,517
1.25 5,354,518
3.1 5,354,519
3.4 5,354,520
24 5,354,521
25 5,354,522
28 5,354,523
38 5,354,524
40.4 5,354,526
40.5 5,354,525
63 5,354,527
87 5,354,528
176.1 5,354,529
219 5,354,530
242 5,354,531
259 5,354,532
296 5,354,533

CLASS 266

44 5,354,038
251 5,354,039
252 5,354,040

CLASS 267

277 5,354,041

CLASS 270

53 5,354,042
54 5,354,043

CLASS 271

4 5,354,044
11 5,354,045
147 5,354,046
195 5,354,047

CLASS 273

1.5 A 5,354,048
1.5 R 5,354,049
26 C 5,354,050
29 A 5,354,051
34 R 5,354,052
65 EG 5,354,053
77 A 5,354,054
80 C 5,354,055
81.6 5,354,056
85 G 5,354,057
120 R 5,354,058
167 J 5,354,059
169 5,354,060
178 R 5,354,061
179 A 5,354,062
185 B 5,354,063
195 A 5,354,064
400 5,354,067
408 5,354,066
422 5,354,068
439 5,354,069

CLASS 277

9 5,354,070
35 5,354,071
206 R 5,354,072
235 A 5,354,074
235 R 5,354,073

CLASS 279

72 5,354,075
110 5,354,076

CLASS 280

11.12 5,354,077
11.18 5,354,078
33.991 5,354,079
43.12 5,354,080
87.01 5,354,081
152.1 5,354,082
233 5,354,083

250 5,354,084
285 5,354,085
291 5,354,086
490.1 5,354,087
618 5,354,088
645 5,354,089
656 5,354,090
683 5,354,091
718 5,354,092
728 A 5,354,093
728 B 5,354,094
5,354,095
733 5,354,096

CLASS 283

67 5,354,098
72 5,354,097
85 5,354,099

CLASS 285

21 5,354,100
25 5,354,101
81 5,354,102
137.1 5,354,103
235 5,354,104
319 5,354,106
334.5 5,354,107
414 5,354,108

CLASS 292

1.5 5,354,109

CLASS 294

11 5,354,110
27.1 5,354,111
81.41 5,354,112

CLASS 296

98 5,354,113
192 5,354,114
203 5,354,115

CLASS 297

85 5,354,116
180.15 5,354,117
181 5,354,118
191 5,354,119
301 5,354,120
485 5,354,121

CLASS 303

9.68 5,354,122
119.2 5,354,123

CLASS 305

35 EB 5,354,124

CLASS 307

73 5,355,024
105 5,355,025
117 5,355,026
247.1 5,355,027
443 5,355,028
5,355,029
446 5,355,030
451 5,355,031
475 5,355,032
5,355,033
491 5,355,034
494 5,355,035
542.1 5,355,036
602 5,355,037
603 5,355,038

CLASS 310

67 R 5,355,039
71 5,355,373
90.5 5,355,040
5,355,041
5,355,042
156 5,355,043
162 5,355,044
259 5,355,045
260 5,355,046
316 5,355,047
334 5,355,048

CLASS 312

109 5,354,125
237 5,354,126

CLASS 313

402 5,355,049
440 5,355,050
477 R 5,355,051
558 5,355,052

CLASS 315

73 5,355,053
112 5,355,054
209 CD 5,355,056
209 R 5,355,055
370 5,355,057
371 5,355,058

CLASS 318

103 5,355,059
282 5,355,068
432 5,355,060
443 5,355,061
568 1 5,355,062
568 11 5,355,063
568 12 5,355,064
632 5,355,065
640 5,355,066
696 5,355,067
701 5,355,069
798 5,355,070

CLASS 320

6 5,355,071
13 5,355,072
15 5,355,073

CLASS 322

1 5,355,074
25 5,355,075

CLASS 323

208 5,355,076
224 5,355,077
281 5,355,078

CLASS 324

229 5,355,083
244.1 5,355,084
248 5,355,085
309 5,355,086
322 5,355,087
339 5,355,088
435 5,355,089
754 5,355,079
761 5,355,080
765 5,355,081
768 5,355,082

CLASS 328

63 5,355,090
167 5,355,091

CLASS 329

304 5,355,092

CLASS 330

45 5,355,093
260 5,355,094
264 5,355,095
278 5,355,096

CLASS 331

1 A 5,355,097
14 5,355,098
158 5,355,099
173 5,355,100

CLASS 332

103 5,355,101

CLASS 333

33 5,355,102
81 R 5,355,103
161 5,355,104
238 5,355,105

CLASS 335

212 5,355,106
214 5,355,107
262 5,355,108

CLASS 336

92 5,355,109

CLASS 337

165 5,355,110
248 5,355,111

CLASS 338

254 5,355,112

CLASS 340

146.2 5,355,113
310 A 5,355,114
321 5,355,115
331 5,355,116
425.5 5,355,117
435 5,355,118
468 5,355,119
572 5,355,120
584 5,355,121
602 5,355,122
653 5,355,123
825.05 5,355,124
825.31 5,355,125
825.440 5,355,126
825.97 5,355,127
854.7 5,355,128
870.04 5,355,129
870.14 5,355,130
981 5,355,131

CLASS 341

55 5,355,132
58 5,355,133
144 5,355,134
156 5,355,135
157 5,355,136

CLASS 342

42 5,355,137
354 5,355,138
371 5,355,139
386 5,355,140
444 5,355,141

CLASS 343

700 MS 5,355,142
5,355,143
713 5,355,144
882 5,355,145

CLASS 345

156 5,355,146
5,355,147
166 5,355,148
175 5,355,149
201 5,355,150

CLASS 346

76 PH 5,355,152
107 R 5,355,303
108 5,355,153
5,355,154
134 5,355,155
138 5,355,156
139 R 5,355,157

CLASS 347

4 5,355,158
61 5,355,151

CLASS 348

2 5,355,161
11 5,355,162
234 5,355,163
243 5,355,164
311 5,355,165
405 5,355,167
416 5,355,168
459 5,355,169
467 5,355,170
505 5,355,171
5,355,172
590 5,355,173
592 5,355,174
595 5,355,175
609 5,355,176
5,355,177
620 5,355,178
645 5,355,225
654 5,355,179
734 5,355,180
744 5,355,181

CLASS 349

19 5,355,159
108 5,355,160

CLASS 351

45 5,355,182
49 5,355,183
63 5,355,185
71 5,355,417
106 5,355,184
215 5,355,186

CLASS 353

38 5,355,187
69 5,355,188

CLASS 354

149.1 5,355,189
324 5,355,190
5,355,191
403 5,355,192

CLASS 355

41 5,355,193
53 5,355,194
75 5,355,195
206 5,355,196
208 5,355,197
243 5,355,198
245 5,355,199
246 5,355,200
256 5,355,201
271 5,355,202
285 5,355,203
5,355,204
311 5,355,205
317 5,355,206
324 5,355,207

CLASS 356

35 5 5,355,208
73.1 5,355,209
124 5,355,210
135 5,355,211
237 5,355,212
239 5,355,213
315 5,355,214
317 5,355,215
350 5,355,216
353 5,355,218
355 5,355,219
356 5,355,220
357 5,355,217
359 5,355,221
375 5,355,222
5,355,223

CLASS 358

326 5,355,226
335 5,355,227
5,355,228
336 5,355,166
343 5,355,229
407 B1 4,922,348
437 5,355,230
443 5,355,231
451 5,355,232
455 5,355,233
512 5,355,234

CLASS 359

59 5,355,235
62 5,355,236
130 5,355,237
135 5,355,238
152 5,355,239
161 5,355,240
170 5,355,241
189 5,355,242
190 5,355,243
212 5,355,244
267 5,355,245
326 5,355,246
330 5,355,247
341 5,355,248
5,355,249
5,355,250
354 5,355,251
369 5,355,252
473 5,355,253
631 5,355,224
844 5,355,254
871 5,355,255

CLASS 360

10.3 5,355,256
32 5,355,257
46 5,355,258
48 5,355,259
51 5,355,260
53 5,355,261
64 5,355,262
70 5,355,263
85 5,355,264
96.3 5,355,266
96 6 5,355,265
104 5,355,267
106 5,355,268
128 5,355,269
135 5,355,270
137 5,355,271
5,355,272

CLASS 361

93 5,355,273
104 5,355,274
141 5,355,275
313 5,355,277
679 5,355,276
680 5,355,278
681 5,355,279
705 5,355,280
707 5,355,281
760 5,355,282
5,355,283

CLASS 362

30 5,355,284
32 5,355,285
65 5,355,286
66 5,355,287
238 5,355,288
253 5,355,289
294 5,355,290
300 5,355,291
400 5,355,292

CLASS 363

17 5,355,293
5,355,294
40 5,355,295
43 5,355,296
5,355,297
58 5,355,298
95 5,355,299
146 5,355,300
147 5,355,301

CLASS 364

161 5,355,305
167.01 5,355,306
188 5,355,307
410 5,355,302
413.02 5,355,304
413.15 5,355,309
413.21 5,355,310
419.01 5,355,311
420 5,355,312
5,355,313
424.05 5,355,314
5,355,315
453 5,355,316
468 5,355,318
470 5,355,319
488 5,355,320
489 5,355,321
490 5,355,322
505 5,355,323
510 5,355,324
516 5,355,325
5,355,326
551.01 5,355,327
724.1 5,355,328
724.17 5,355,329

CLASS 365

149 5,355,330
154 5,355,331
182 5,355,332
189.01 5,355,333
5,355,334
189.04 5,355,335
195 5,355,336
200 5,355,337
5,355,338
5,355,339
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201 5,355,341
5,355,342
203 5,355,343
225.7 5,355,344
230.01 5,355,345
230.06 5,355,346
5,355,348
230.08 5,355,347
233.5 5,355,349

CLASS 366

27 5,354,127
68 5,354,128
343 5,354,129

CLASS 367

13 5,355,350
156 5,355,351

CLASS 368

281 5,355,352

CLASS 369

13 5,355,353
5,355,354
14 5,355,355
59 5,355,356
75.2 5,355,357
77.1 5,355,358
77.2 5,355,359
116 5,355,360
120 5,355,361

CLASS 370

16.1 5,355,362
29 5,355,363
54 5,355,364
58.1 5,355,370
60 Re 34,755
5,355,371
60.1 5,355,372
84 5,355,374
85.13 5,355,365
85.2 5,355,375
94.2 5,355,366
95.1 5,355,367
95.3 5,355,368

CLASS 371

22.3 5,355,369
43 5,355,376
51.1 5,355,377
53 5,355,378
54 5,355,379

CLASS 372

5 5,355,380
28 5,355,381
36 5,355,382
38 5,355,383
46 5,355,384
49 5,355,385
50 5,355,386
54 5,355,387
99 5,355,388

CLASS 374

175 5,354,130

CLASS 375

1 5,355,389
36 5,355,390
5,355,391
94 5,355,392
97 5,355,393

CLASS 376

189 5,355,394
216 5,355,395

CLASS 377

39 5,355,398
119 5,355,399
156 5,355,400

CLASS 379

56 5,355,401
61 5,355,402
88 5,355,403
5,355,406
201 5,355,404
246 5,355,405
381 5,355,407
397 5,355,408

CLASS 380

14 5,355,409
20 5,355,410
23 5,355,411
5,355,412
24 5,355,413
25 5,355,414
47 5,355,415

CLASS 381

17 5,355,416
72 5,355,418
86 5,355,419

CLASS 382

46 5,355,420
54 5,355,421

CLASS 383

24 5,354,131
49 5,354,132
103 5,354,133

CLASS 384

468 5,355,317

CLASS 385

1 5,355,422
12 5,355,423
14 5,355,424
31 5,355,425
39 5,355,426
103 5,355,427
122 5,355,428
136 5,355,429

CLASS 392

342 5,355,456

CLASS 395

2.32 5,355,430
2.35 5,355,431
2.43 5,355,432
2.52 5,355,433
23 5,355,434
24 5,355,435
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5,355,528
51 5,355,444
54 5,355,445
82 5,355,439
109 5,355,440
115 5,355,441
127 5,355,442
131 5,355,443
134 5,355,446
139 5,355,447
150 5,355,448
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162 5,355,450
166 5,355,451
200 5,355,452
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325 5,355,454
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375 5,355,457
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400 5,355,461
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425 5,355,464
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550 5,355,468
575 5,355,469
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600 5,355,472
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725 5,355,499
5,355,500
750 5,355,501
5,355,502
5,355,503
775 5,355,504
800 5,355,505
5,355,506
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CLASS 400

73 5,354,134
124 5,354,135
185 5,354,136
197 5,354,137
223 5,354,138
616.1 5,354,139

CLASS 401

6 5,354,140
65 5,354,141

CLASS 402

41 5,354,142

CLASS 404

9 5,354,143
10 5,354,144
75 5,354,145
90 5,354,146
5,354,147
102 5,354,148

CLASS 405

128 5,354,149
154 5,354,150
205 5,354,151

CLASS 406

3 5,354,152

CLASS 408

1 R 5,354,153
139 5,354,154
145 5,354,155
223 5,354,156

CLASS 409

133 5,354,157
201 5,354,158
235 5,354,159

CLASS 411

501 5,354,160

CLASS 412

9 5,354,161

CLASS 414

5 5,354,162
229 5,354,163
462 5,354,164
498 5,354,165
561 5,354,166
563 5,354,167
676 5,354,168
745.7 5,354,169
790 5,354,170
790.2 5,354,171

CLASS 415

90 5,354,172
205 5,354,173
209.2 5,354,174

CLASS 416

9 5,354,175
204 R 5,354,176
219 A 5,354,177
223 A 5,354,178

CLASS 417

42 5,354,179
199.1 5,354,180
269 5,354,181
363 5,354,182
366 5,354,183
410 1 5,354,185
410 5 5,354,184
474 5,354,186
540 5,354,187

CLASS 418

132 5,354,188

CLASS 419

10 5,354,534
48 5,354,536

CLASS 422

100 5,354,537
5,354,538
102 5,354,539
174 5,354,540
186.07 5,354,541
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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1166 O.G. 94, on Sept. 27, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1994, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1165 O.G. 81, on Aug. 23, 1994.

International fees were changed, effective on May 1, 1993, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1994, and were announced in the *Official Gazette* at 1165 O.G. 132, on Aug. 30, 1994.

The schedule of PCT fees (in U.S. dollars), effective Oct. 1, 1994, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	210.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	640.00
—Corresponding prior U.S. national application filed	420.00
—Supplemental search fee, per additional invention (payable only upon invitation	180.00
European Patent Office as ISA	1537.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
—For the first 10 national or regional offices designated	128.00
—For each designation in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee	128.00
—Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	460.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	690.00
—Additional examination fee, per additional invention (payable only upon invitation)	240.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4)	46.00	92.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	330.00	660.00
USPTO was ISA but not IPEA	365.00	730.00
USPTO was neither ISA nor IPEA		
—Filed without a search report from the European Patent Office or the Japanese Patent Office	490.00	980.00
—Filed with a search report from the European Patent Office or the Japanese Patent Office	425.00	850.00
Other National fees		
—For each independent claim in excess of 3	38.00	76.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	120.00	240.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Sept. 9, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on October 15, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

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Utility Patents 5,056,155 through 5,058,206
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 13, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,698,844 through 4,700,402
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 11, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,408,355 through 4,409,688
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

*

By a small entity (§ 1.9(f)) $480.00
By other than a small entity $960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $965.00
By other than a small entity $1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,450.00
By other than a small entity $2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $640.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED August 10, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 34,560	07/927,064	03/08/94
(4,946,291)	(07/251,020)	(08/07/90)
4,343,122	06/227,596	08/10/82
4,343,140	06/226,153	08/10/82
4,343,158	06/246,240	08/10/82
4,343,167	06/253,533	08/10/82
4,343,170	06/227,361	08/10/82
4,343,217	06/242,881	08/10/82
4,343,231	06/227,555	08/10/82
4,343,236	06/239,024	08/10/82
4,343,295	06/240,627	08/10/82
4,343,299	06/249,148	08/10/82
4,343,363	06/221,966	08/10/82
4,343,373	06/247,219	08/10/82
4,343,376	06/241,554	08/10/82
4,343,409	06/253,478	08/10/82
4,343,607	06/233,112	08/10/82
4,343,616	06/219,217	08/10/82
4,343,619	06/247,146	08/10/82
4,343,623	06/219,121	08/10/82
4,343,634	06/246,916	08/10/82
4,343,635	06/221,113	08/10/82
4,343,636	06/255,987	08/10/82
4,343,641	06/239,241	08/10/82
4,343,648	06/251,921	08/10/82
4,343,653	06/255,075	08/10/82
4,343,655	06/265,609	08/10/82
4,343,666	06/217,261	08/10/82
4,343,668	06/269,380	08/10/82
4,343,684	06/218,275	08/10/82
4,343,700	06/237,286	08/10/82
4,343,723	06/267,238	08/10/82
4,343,736	06/280,687	08/10/82
4,343,738	06/216,903	08/10/82
4,343,739	06/267,553	08/10/82
4,343,744	06/221,742	08/10/82
4,343,766	06/239,175	08/10/82
4,343,767	06/252,665	08/10/82
4,343,780	06/228,895	08/10/82
4,343,781	06/272,025	08/10/82
4,343,784	06/241,550	08/10/82
4,343,799	06/245,575	08/10/82
4,343,803	06/259,792	08/10/82
4,343,805	06/217,925	08/10/82
4,343,828	06/273,888	08/10/82
4,343,835	06/217,437	08/10/82
4,343,839	06/216,323	08/10/82
4,343,856	06/241,869	08/10/82
4,343,868	06/221932	08/10/82
4,343,881	06/281,223	08/10/82
4,343,883	06/221,445	08/10/82
4,343,887	06/263,684	08/10/82
4,343,902	06/217,976	08/10/82
4,343,908	06/221,110	08/10/82
4,343,909	06/259,581	08/10/82
4,343,924	06/302,184	08/10/82
4,343,928	06/232,054	08/10/82
4,343,945	06/292,451	08/10/82
4,343,950	06/225,527	08/10/82

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4,343,951	06/220,671	08/10/82
4,343,954	06/258,382	08/10/82
4,343,956	06/274,829	08/10/82
4,343,957	06/218,333	08/10/82
4,343,958	06/258,334	08/10/82
4,343,971	06/234,711	08/10/82
4,344,006	06/278,523	08/10/82
4,344,026	06/240,558	08/10/82
4,344,041	06/239,084	08/10/82
4,344,083	06/219,104	08/10/82
4,344,084	06/231,635	08/10/82
4,344,105	06/216,215	08/10/82
4,344,125	06/263,553	08/10/82
4,603,439	06/679,620	08/05/86
4,603,440	06/652,748	08/05/86
4,603,454	06/607,597	08/05/86
4,603,457	06/407,595	08/05/86
4,603,459	06/797,260	08/05/86
4,603,462	06/578,263	08/05/86
4,603,465	06/648,313	08/05/86
4,603,474	06/611,514	08/05/86
4,603,481	06/652,315	08/05/86
4,603,486	06/788,371	08/05/86
4,603,487	06/801,050	08/05/86
4,603,498	06/784,526	08/05/86
4,603,502	06/798,045	08/05/86
4,603,503	06/775,813	08/05/86
4,603,504	06/715,915	08/05/86
4,603,509	06/579,877	08/05/86
4,603,510	06/644,392	08/05/86
4,603,511	06/663,700	08/05/86
4,603,512	06/685,723	08/05/86
4,603,519	06/682,675	08/05/86
4,603,522	06/522,574	08/05/86
4,603,524	06/634,416	08/05/86
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4,603,526	06/793,072	08/05/86
4,603,530	06/364,252	08/05/86
4,603,535	06/738,478	08/05/86
4,603,544	06/695,799	08/05/86
4,603,553	06/680,352	08/05/86
4,603,555	06/607,630	08/05/86
4,603,557	06/686,235	08/05/86
4,603,558	06/594,360	08/05/86
4,603,559	06/752,634	08/05/86
4,603,560	06/606,521	08/05/86
4,603,564	06/464,504	08/05/86
4,603,565	06/552,505	08/05/86
4,603,566	06/735,793	08/05/86
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4,603,583	06/718,062	08/05/86
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4,603,630	06/620,731	08/05/86
4,603,632	06/650,609	08/05/86
4,603,636	06/632,434	08/05/86
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4,603,654	06/703,476	08/05/86
4,603,655	06/733,386	08/05/86
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4,603,679	06/758,705	08/05/86
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4,603,692	06/612,576	08/05/86
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4,603,703	06/599,889	08/05/86
4,603,707	06/519,639	08/05/86
4,603,711	06/661,663	08/05/86
4,603,713	06/583,128	08/05/86
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4,603,718	06/792,243	08/05/86
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4,603,728	06/718,178	08/05/86
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4,603,736	06/611,002	08/05/86
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4,603,765	06/627,074	08/05/86
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4,603,783	06/800,895	08/05/86
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4,603,796	06/732,426	08/05/86
4,603,798	06/529,047	08/05/86
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4,603,815	06/585,297	08/05/86
4,603,819	06/788,090	08/05/86
4,603,820	06/708,468	08/05/86
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4,603,823	06/627,307	08/05/86
4,603,825	06/620,487	08/05/86
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4,603,828	06/715,840	08/05/86
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4,603,839	06/499,143	08/05/86
4,603,843	06/603,157	08/05/86
4,603,844	06/666,545	08/05/86
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4,603,854	06/618,187	08/05/86
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4,603,904	06/764,557	08/05/86
4,603,905	06/653,924	08/05/86
4,603,912	06/744,301	08/05/86
4,603,914	06/708,006	08/05/86
4,603,915	06/586,974	08/05/86
4,603,916	06/667,572	08/05/86
4,603,923	06/682,603	08/05/86
4,603,925	06/758,943	08/05/86
4,603,926	06/566,905	08/05/86
4,603,942	06/540,479	08/05/86
4,603,947	06/581,770	08/05/86
4,603,951	06/736,515	08/05/86
4,603,956	06/671,954	08/05/86
4,603,960	06/666,398	08/05/86
4,603,963	06/660,766	08/05/86
4,603,965	06/750,379	08/05/86
4,603,967	06/474,276	08/05/86
4,603,975	06/373,075	08/05/86
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4,603,978	06/624,171	08/05/86
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4,603,985	06/622,827	08/05/86
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4,604,002	06/550,498	08/05/86
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4,604,017	06/745,073	08/05/86
4,604,019	06/633,806	08/05/86
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4,604,052	06/728,358	08/05/86
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4,604,056	06/707,217	08/05/86
4,604,060	06/733,958	08/05/86
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4,604,073	06/683,736	08/05/86
4,604,074	06/771,544	08/05/86
4,604,076	06/736,998	08/05/86
4,604,077	06/710,525	08/05/86
4,604,078	06/714,914	08/05/86
4,604,082	06/536,252	08/05/86
4,604,090	06/554,197	08/05/86
4,604,092	06/823,828	08/05/86
4,604,096	06/770,226	08/05/86
4,604,104	06/548,836	08/05/86
4,604,105	06/628,079	08/05/86
4,604,114	06/765,443	08/05/86
4,604,116	06/583,817	08/05/86
4,604,117	06/671,940	08/05/86
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4,946,566	07/402,463	08/07/90
4,946,578	07/361,709	08/07/90
4,946,580	07/348,285	08/07/90
4,946,583	06/744,554	08/07/90
4,946,584	07/266,322	08/07/90
4,946,587	07/279,008	08/07/90
4,946,588	07/242,621	08/07/90
4,946,590	07/336,735	08/07/90
4,946,598	07/321,042	08/07/90
4,946,603	07/272,457	08/07/90
4,946,607	07/419,218	08/07/90
4,946,608	07/425,236	08/07/90
4,946,610	07/389,329	08/07/90
4,946,617	07/271,320	08/07/90
4,946,621	07/146,812	08/07/90
4,946,622	07/307,231	08/07/90
4,946,626	07/206,451	08/07/90
4,946,629	07/274,926	08/07/90
4,946,630	06/448,889	08/07/90
4,946,637	07/297,149	08/07/90
4,946,641	07/282,233	08/07/90
4,946,656	07/137,116	08/07/90
4,946,660	07/317,569	08/07/90
4,946,662	07/374,407	08/07/90
4,946,663	07/258,296	08/07/90
4,946,666	07/233,885	08/07/90
4,946,675	07/055,266	08/07/90
4,946,678	07/346,885	08/07/90
4,946,689	07/275,489	08/07/90
4,946,709	07/395,213	08/07/90
4,946,725	07/228,622	08/07/90
4,946,734	07/122,268	08/07/90
4,946,738	07/455,606	08/07/90
4,946,745	07/347,206	08/07/90
4,946,760	07/265,838	08/07/90
4,946,774	07/118,719	08/07/90
4,946,791	06/915,279	08/07/90
4,946,793	07/283,215	08/07/90
4,946,797	07/301,805	08/07/90
4,946,803	07/282,232	08/07/90
4,946,804	07/175,215	08/07/90
4,946,808	07/269,671	08/07/90
4,946,809	07/358,063	08/07/90
4,946,810	07/405,335	08/07/90
4,946,824	07/356,359	08/07/90
4,946,836	07/399,439	08/07/90
4,946,841	07/294,096	08/07/90
4,946,842	06/880,372	08/07/90
4,946,845	07/248,525	08/07/90
4,946,847	07/274,162	08/07/90
4,946,852	07/330,979	08/07/90
4,946,861	07/271,125	08/07/90
4,946,862	07/215,775	08/07/90
4,946,864	07/150,586	08/07/90
4,946,865	06/945,959	08/07/90
4,946,868	06/640,107	08/07/90
4,946,869	06/820,440	08/07/90
4,946,871	07/456,196	08/07/90
4,946,873	07/304,487	08/07/90
4,946,890	07/231,026	08/07/90
4,946,894	07/232,268	08/07/90
4,946,907	07/106,998	08/07/90
4,946,909	07/266,539	08/07/90
4,946,911	07/354,948	08/07/90
4,946,916	07/288,888	08/07/90
4,946,917	07/459,346	08/07/90
4,946,919	07/273,089	08/07/90
4,946,924	07/264,643	08/07/90
4,946,937	07/339,076	08/07/90
4,946,940	07/232,713	08/07/90
4,946,946	07/260,995	08/07/90
4,946,947	07/361,225	08/07/90
4,946,957	07/400,883	08/07/90
4,946,959	07/379,401	08/07/90
4,946,962	07/356,000	08/07/90
4,946,963	07/264,695	08/07/90
4,946,973	07/247,057	08/07/90
4,946,983	07/288,873	08/07/90
4,946,990	07/368,752	08/07/90
4,947,007	07/268,598	08/07/90
4,947,008	07/170,920	08/07/90
4,947,015	07/236,065	08/07/90
4,947,018	07/410,642	08/07/90
4,947,019	07/289,915	08/07/90
4,947,025	07/210,316	08/07/90
4,947,026	07/339,212	08/07/90
4,947,032	07/334,962	08/07/90
4,947,033	07/286,574	08/07/90
4,947,037	07/337,088	08/07/90
4,947,039	07/258,649	08/07/90
4,947,041	07/195,809	08/07/90
4,947,050	07/379,241	08/07/90
4,947,055	07/296,676	08/07/90
4,947,066	07/265,728	08/07/90
4,947,070	07/212,082	08/07/90
4,947,075	07/327,768	08/07/90
4,947,087	07/182,866	08/07/90
4,947,090	07/370,198	08/07/90
4,947,096	07/240,020	08/07/90
4,947,100	07/421,830	08/07/90
4,947,101	07/244,186	08/07/90
4,947,107	07/212,579	08/07/90
4,947,108	07/258,001	08/07/90
4,947,110	07/305,300	08/07/90
4,947,111	07/334,147	08/07/90
4,947,114	06/381,052	08/07/90
4,947,117	07/293,120	08/07/90
4,947,122	07/326,913	08/07/90
4,947,124	07/333,605	08/07/90
4,947,136	07/408,678	08/07/90
4,947,137	07/316,835	08/07/90
4,947,142	07/137,242	08/07/90
4,947,144	07/347,449	08/07/90
4,947,148	07/350,561	08/07/90
4,947,150	07/311,651	08/07/90
4,947,151	07/328,304	08/07/90
4,947,152	06/827,894	08/07/90
4,947,154	07/393,728	08/07/90
4,947,168	07/197,733	08/07/90
4,947,172	07/373,659	08/07/90
4,947,180	07/365,805	08/07/90
4,947,183	07/270,784	08/07/90
4,947,206	07/288,134	08/07/90
4,947,210	07/212,247	08/07/90
4,947,220	07/089,892	08/07/90
4,947,235	07/312,800	08/07/90
4,947,241	07/346,323	08/07/90
4,947,243	07/319,009	08/07/90
4,947,250	07/404,024	08/07/90
4,947,251	07/277,227	08/07/90
4,947,270	07/166,399	08/07/90
4,947,273	07/274,385	08/07/90
4,947,278	07/370,761	08/07/90
4,947,279	07/204,212	08/07/90
4,947,284	07/320,022	08/07/90
4,947,285	07/332,451	08/07/90
4,947,291	07/208,218	08/07/90
4,947,295	07/461,851	08/07/90
4,947,298	07/396,317	08/07/90
4,947,300	07/444,933	08/07/90
4,947,308	07/338,327	08/07/90
4,947,311	07/437,242	08/07/90
4,947,313	07/453,161	08/07/90
4,947,323	07/270,490	08/07/90
4,947,340	07/238,661	08/07/90
4,947,341	07/168,502	08/07/90
4,947,350	07/443,861	08/07/90
4,947,357	07/159,898	08/07/90
4,947,383	06/763,150	08/07/90
4,947,392	07/247,544	08/07/90
4,947,399	06/647,001	08/07/90
4,947,410	07/314,024	08/07/90
4,947,417	07/285,485	08/07/90
4,947,422	07/427,972	08/07/90
4,947,431	07/406,900	08/07/90
4,947,437	07/400,783	08/07/90

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Patent Number	Serial Number	Issue Date	4,947,472	07/238,820	08/07/90
			4,947,475	07/314,843	08/07/90
4,947,439	07/318,968	08/07/90	4,947,480	07/264,722	08/07/90
4,947,450	07/093,679	08/07/90	4,947,481	07/188,342	08/07/90
4,947,453	07/240,452	08/07/90	4,947,482	07/385,984	08/07/90
4,947,457	07/279,957	08/07/90	4,947,483	07/147,455	08/07/90
4,947,467	07/172,513	08/07/90	4,947,485	07/383,787	08/07/90

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(C); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
Re. 33,506	07/382,525	12/25/90	07/19/89	08/25/94
4,805,164	07/094,113	02/14/89	09/08/87	
Re. 33,930	07/628,717	05/19/92	12/10/90	07/28/94
(4,792,130)	(07/002,946)	(12/20/88)	(01/13/87)	
4,464,359	06/252,926	08/07/84	04/10/81	08/26/94
4,486,169	06/496,423	12/04/84	05/20/83	08/04/94
4,510,769	07/597,073	04/16/85	04/05/84	07/28/94
4,538,213	06/587,230	08/27/85	03/07/84	06/02/94
4,539,313	06/605,004	09/03/85	04/27/84	08/26/94
4,566,763	06/574,902	01/28/86	01/30/84	05/03/94
4,567,688	06/652,310	02/04/86	09/19/84	08/15/94
4,580,898	06/615,645	04/08/86	05/31/84	07/13/94
4,585,534	06/489,783	04/29/86	04/29/83	08/17/94
4,588,501	06/526,565	05/13/86	08/25/83	07/13/94
4,591,155	06/708,412	05/27/86	03/05/85	08/03/94
4,591,570	06/463,188	05/27/86	02/02/83	08/05/94
4,750,213	06/872,627	06/07/88	06/09/86	08/09/94
4,837,026	06/783,621	06/06/89	10/03/85	05/12/94
4,844,220	07/018,572	07/04/89	02/25/87	08/26/94
4,855,948	07/107,432	08/08/89	10/08/87	11/15/93
4,858,209	07/222,953	08/15/89	07/21/88	07/24/94
4,887,290	07/083,496	12/12/89	08/05/87	08/26/94
4,877,778	07/068,921	10/31/89	07/01/87	08/17/94
4,884,725	07/178,134	12/05/89	04/06/88	08/15/94
4,896,863	07/199,312	01/30/90	05/26/88	08/03/94
4,899,827	07/326,514	02/13/90	03/21/89	07/22/94
4,906,561	07/034,981	03/06/90	04/06/87	08/17/94
4,908,390	07/240,235	03/13/90	06/07/88	08/17/94
4,911,486	07/393,551	03/27/90	08/14/89	07/21/94
4,913,558	07/259,405	04/03/90	10/18/88	08/09/94
4,919,970	06/907,265	04/24/90	09/15/86	07/21/94
4,924,355	07/343,765	05/08/90	04/25/89	07/28/94
4,925,549	07/166,588	05/15/90	03/10/88	08/03/94
4,927,175	07/366,780	05/22/90	06/15/89	08/03/94
4,929,133	07/338,039	05/29/90	04/14/89	08/09/94
4,943,057	07/391,991	07/24/90	08/10/89	08/25/94

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,710,533, Re. S.N. 08/289,146, Aug. 9, 1994, Cl. 524/394, MELT PROCESSING CPVC BLENDS, Richard C. Neuman, Owner of Record: *B.F. Goodrich Co., Akron, Ohio,* Attorney or Agent: Daniel J. Hudak, Ex. Gp.: 1511

4,876,113, Re. S.N. 08/267,550, June 21, 1994, Cl. 428/64, OPTICAL DATA RECORDING SYSTEM AND METHOD OF PRODUCTION OF RECORDING MEDIUM, Toshinori Sugiyama, et. al., Owner of Record: *Hitachi Maxell, Ltd., Ibarki-shi, Japan,* Attorney or Agent: William I. Solomon, Ex. Gp.: 1513

5,117,951, Re. S.N. 08/252,807, June 2, 1994, Cl. 190/013.00C, GARMENT CONTAINER APPARATUS, Girard B. Sisson, Owner of Record: *Samsonite Corp., Denver, Colo.,* Attorney or Agent: Gregory W. O'Conner, Ex. Gp.: 2401

5,123,005, Re. S.N. 08/261,090, June 16, 1994, Cl. 369/77.1, DISC TRAY LOADING MECHANISM FOR REDUCING LOADING AND UNLOADING MECHANICAL SHOCKS, Tadao Kurosu, Owner of Record: *Sony Corp., Tokyo, Japan,* Attorney or Agent: Ronald P. Kananen, Ex. Gp.: 2512

5,126,882, Re. S.N. 08/267,380, June 29, 1994, Cl. 359/619, PLANE LIGHT SOURCE UNIT, Makoto Oe, et. al., Owner of Record: *Mitsubishi Rayon Co., Ltd., Tokyo, Japan,* Attorney or Agent: Norman F. Oblon, Ex. Gp.: 2507

5,130,500, Re. S.N. 08/255,873, Aug. 8, 1994, Cl. 178/019, DIGITIZER HAVING FLAT TABLET WITH MAGNETIC SHIELD PLATE, Azuma Murakami, et. al., Owner of Record: *Kabushikikaisha Wacom, Saitamaken, Japan,* Attorney or Agent: Allan M. Lowe, Ex. Gp.: 2601

5,131,968, Re. S.N. 08/276,189, July 15, 1994, Cl. 156/153, GRADIENT CHUCK METHOD FOR WAFER BONDING EMPLOYING A CONVEX PRESSURE, Raymond C. Wells, et. al., Owner of Record: *Motorola, Inc., Schaumburg, Ill.,* Attorney or Agent: Kent J. Cooper, Ex. Gp.: 1301

5,135,033, Re. S.N. 08/282,128, July 28, 1994, Cl. 139/449, RAPIER LOOM HAVING PICKING TAPES AND SPACERS, Angelo Stacher, et. al., Owner of Record: *Sulzer Brothers Limited, Winterthur, Switzerland,* Attorney or Agent: J. Geurg Seka, Ex. Gp.: 2407

5,137,727, Re. S.N. 08/289,473, Aug. 11, 1994, Cl. 424/422, DELIVERY DEVICE PROVIDING BENEFICIAL AGENT STABILITY, James B. Eckenhoff, Owner of Record: *Alza Corp., Palo Alto, Calif.,* Attorney or Agent: Richard T. Ito, Ex. Gp.: 1502

5,139,278, Re. S.N. 08/288,293, Aug. 10, 1994, Cl. 280/47.26, VERSATILE FUEL CONTAINER, Lewis J. Vlasicak, Owner of Record: *Inventor,* Attorney or Agent: Jerald E. Nagae, Ex. Gp.: 3106

5,142,492, Re. S.N. 08/293,319, Aug. 22, 1994, Cl. 365/51, SEMICONDUCTOR MEMORY DEVICE, Owner of Record: *Mitsuru Shimizu, et. al., Owner of Record: Kabushiki Kaisha Toshiba, Kawasaki-Shi, Japan,* Attorney or Agent: Joseph M. Potenza, Ex. Gp.: 2312

5,268,802, Re. S.N. 08/286,812, Aug. 5, 1994, Cl. 360/77.13, READING NON-STANDARD TAPES ON TAPE DRIVES, Rafael Bar, Owner of Record: *Iomega Corp., Roy, Utah,* Attorney or Agent: Richard E. Kurtz, Ex. Gp.: 2513

5,298,830, Re. S.N. 08/286,079, Aug. 4, 1994, Cl. 313/346R, METHOD OF PREPARING AN IMPREGNATED CATHODE WITH AN ENHANCED THERMIONIC EMISSION FROM A POROUS BILLET AND CATHODE SO PREPARED, Louis E. Branovich, et. al., Owner of Record: *The United States of America, Secretary of The Army, Washington, D.C.,* Attorney or Agent: James A. Digiorgio, Ex. Gp.: 2604

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,758,745, Reexam. No. 90/003,413, Apr. 19, 1994, Cl. 307/465, USER PROGRAMMABLE INTEGRATED CIRCUIT INTERCONNECT ARCHITECTURE AND TEST METHOD, Abbas El Gamal, et. al., Owner of Record: *Actel Corp., Sunnyvale, Calif.,* Attorney or Agent: Jeffrey A. Miller, Lyon & Lyon, San Jose, Calif., Ex. Gp.: 2509, Requester: Quick Logic Corp., Santa Clara, Calif.

4,873,459, Reexam. No. 90/003,414, Apr. 19, 1994, Cl. 307/465, PROGRAMMABLE INTERCONNECT ARCHITECTURE, Abbas A. El Gamal, Owner of Record: *Actel Corp., Sunnyvale, Calif.,* Attorney or Agent: Jeffrey A. Miller, Lyon & Lyon, San Jose, Calif., Ex. Gp.: 2509, Requester: Quick Logic Corp., Santa Clara, Calif.

4,925,457, Reexam. No. 90/003,404, Apr. 18, 1994, Cl. 51/293, ABRASIVE TOOL AND METHOD FOR MAKING, Peter T. DeKok, et. al., Owner of Record: *Ultimate Abrasive Systems, Inc., Atlanta, Ga.,* Attorney or Agent: Finnegan, Henderson, Farabow, Garrett & Dunner, Washington, D.C., Ex. Gp.: 1108, Requester: Owner

5,049,165, Reexam. No. 90/003,403, Apr. 18, 1994, Cl. 51/295, COMPOSITE MATERIAL, Naum N. Tselesin, Owner of Record: *Ultimate Abrasive Systems, Inc., Atlanta, Ga.,* Attorney or Agent: Finnegan, Henderson, Farabow, Garrett & Dunner, Washington, D.C., Ex. Gp.: 1108, Requester: Owner

5,092,910, Reexam. No. 90/003,405, Apr. 18, 1994, Cl. 51/295, ABRASIVE TOOL AND METHOD FOR MAKING, Peter T. DeKok, et. al., Owner of Record: *Ultimate Abrasive Systems, Inc., Atlanta, Ga.,* Attorney or Agent: Gerard P. Rooney, Finnegan, Henderson, Farabow, Garrett & Dunner, Washington, D.C., Ex. Gp.: 1108, Requester: Owner

5,190,568, Reexam. No. 90/003,407, Apr. 18, 1994, Cl. 51/293, ABRASIVE TOOL WITH CONTOURED SURFACE, Naum N. Tselesin, Owner of Record: *Ultimate Abrasive Systems, Inc., Atlanta, Ga.,* Attorney or Agent: Gerard P. Rooney, Finnegan, Henderson, Farabow, Garrett & Dunner, Washington, D.C., Ex. Gp.: 1108, Requester: Owner

5,203,880, Reexam. No. 90/003,406, Apr. 18, 1994, Cl. 51/293, METHOD AND APPARATUS FOR MAKING ABRASIVE TOOLS, Naum N. Tselesin, Owner of Record: *Ultimate Abrasive Systems, Inc., Atlanta, Ga.,* Attorney or Agent: Gerard P. Rooney, Finnegan, Henderson, Farabow, Garrett & Dunner, Washington, D.C., Ex. Gp.: 1108, Requester: Owner

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED AUGUST 29, 1994 DUE TO FAILURE TO RENEW

Reg. No	Serial Number	Reg. Date
41,511	70/041,511	11/24/1903
94,311	71/071,266	11/25/1913
94,313	71/071,268	11/25/1913
308,039	71/332,546	11/21/1933
308,051	71/338,267	11/21/1933
308,055	71/338,674	11/21/1933
308,181	71/340,400	11/21/1933
308,195	71/339,563	11/21/1933
582,596	71/546,227	11/24/1953
582,598	71/551,287	11/24/1953
582,602	71/569,751	11/24/1953
582,603	71/570,548	11/24/1953
582,609	71/577,954	11/24/1953
582,613	71/583,692	11/24/1953
582,614	71/584,061	11/24/1953
582,618	71/589,686	11/24/1953
582,623	71/598,771	11/24/1953
582,632	71/607,275	11/24/1953
582,640	71/609,774	11/24/1953
582,643	71/610,040	11/24/1953
582,651	71/613,239	11/24/1953
582,652	71/613,414	11/24/1953
582,653	71/613,860	11/24/1953
582,654	71/614,332	11/24/1953
582,665	71/617,336	11/24/1953
582,677	71/620,803	11/24/1953
582,679	71/621,266	11/24/1953
582,684	71/621,684	11/24/1953

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Reg. No	Serial Number	Reg. Date
582,693	71/624,576	11/24/1953
582,703	71/625,740	11/24/1953
582,706	71/625,883	11/24/1953
582,715	71/627,498	11/24/1953
582,719	71/627,951	11/24/1953
582,721	71/628,311	11/24/1953
582,727	71/629,827	11/24/1953
582,729	71/629,634	11/24/1953
582,730	71/629,633	11/24/1953
582,731	71/629,472	11/24/1953
582,734	71/629,345	11/24/1953
582,739	71/628,658	11/24/1953
582,747	71/630,797	11/24/1953
582,763	71/631,823	11/24/1953
582,768	71/632,451	11/24/1953
582,769	71/632,576	11/24/1953
582,771	71/632,707	11/24/1953
582,772	71/632,801	11/24/1953
582,778	71/633,880	11/24/1953
582,782	71/634,344	11/24/1953
582,784	71/634,430	11/24/1953
582,786	71/634,465	11/24/1953
582,801	71/635,228	11/24/1953
582,821	71/639,758	11/24/1953
582,822	71/639,789	11/24/1953
582,826	71/640,110	11/24/1953
582,832	71/640,398	11/24/1953
582,834	71/640,601	11/24/1953
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582,970	71/645,797	11/24/1953
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582,972	71/648,354	11/24/1953
582,973	71/648,510	11/24/1953
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973,138	72/422,506	11/20/1973
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973,158	72/453,371	11/20/1973
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Patent Terms Extended Under 35 USC § 156

Certificates extending the term of the following patents were issued on September 20, 1994.

U.S. Patent No. 4,052,991; Granted October 11, 1977, to Fred Zacouto; Owner of Record: Fred Zacouto; Title: METHOD OF STIMULATING THE HEART; Classification: 607/9; Product Trade Name: PCD Tachyarrhythmia Control Device Model 72171B; Term Extended: 808 days.

U.S. Patent No. 4,190,584; Granted February 26, 1980, to George O. Weston; Owner of Record: John Wyeth & Brother Limited; Title: PROCESS FOR PREPARING OXAZOLES; Classification: 548/236; Product Trade Name: DAYPRO; Term Extended: 2 years.

U.S. Patent No. 4,282,233; Granted August 4, 1981, to Frank J. Villani, et. al., Owner of Record: Schering Corporation; Title: ANTIHISTAMINIC 11-(4-PIPERIDYLIDENE)-5H-BENZO-[5,6]-CYCLOHEPTA-[1,2-B]-PYRIDINES; Classification: 514/290; Product Trade Name: Claritin; Term Extended: 2 years.

U.S. Patent No. 4,346,227; Granted August 24, 1982, to Akira Terahara, et. al.; Owner of Record: Sankyo Co., Ltd.; Title: ML-236B DERIVATIVES AND THEIR PREPARATION; Classification: 560/119; Product Trade Name: Pravachol; Term Extended: 1,598 days.

U.S. Patent No. 4,382,938; Granted May 10, 1983, to Jean-Pierre Kaplan, et. al.; Owner of Record: Synthelabo; Title: IMIDAZO [1,2-a] PYRIDINE DERIVATIVES AND THEIR APPLICATION AS PHARMACEUTICALS; Classification: 514/393; Product Trade Name: Ambien; Term Extended: 5 years.

U.S. Patent No. 4,474,787; Granted October 2, 1984, to Hugh Cairns, et. al.; Owner of Record: Fisons plc; Title: 7,6 DIOXO-4H, 6H-PYRANO [3,2-g] QUINOLINE DICARBOXYLIC ACIDS AND ANTI-ALLERGIC USE THEREOF; Classification: 514/291; Product Trade Name: Tilade; Term Extended: 5 years.

U.S. Patent No. 4,552,884; Granted November 12, 1985, to Malcolm F. Sim, et. al.; Owner of Record: The Boots Company PLC; Title: METHOD OF TREATING HEART DISEASE; Classification: 514/312; Product Trade Name: Manoplax; Term Extended: 1,509 days.

U.S. Patent No. 4,588,585; Granted May 13, 1986, to David F. Mark, et. al.; Owner of Record: Cetus Oncology Corporation; Title: HUMAN RECOMBINANT CYSTEINE DEPLETED INTERFERON-ß MUTEINS; Classification: 424/85.2; Product Trade Name: Betaseron; Term Extended: 1,516 days.

U.S. Patent No. 4,687,659; Granted August 18, 1987, to Steven C. Quay; Owner of Record: Nycomed Salutar, Inc.; Title: DIAMIDE-DTPA-PARAMAGNETIC CONTRAST AGENTS FOR MR IMAGING; Classification: 424/9; Product Trade Name: Omniscan Injection; Term Extended: 873 days.

U.S. Patent No. 4,692,435; Granted September 8, 1987, to Jean-Claude Lormeau, et. al.; Owner of Record: Choay, S.A.; Title: MUCOPOLYSACCHARIDE COMPOSITION HAVING A REGULATORY ACTION ON COAGULATION, MEDICAMENT CONTAINING SAME AND PROCESS OF

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PREPARATION; Classification: 514/56; Product Trade Name: Lovenox; Term Extended: 1,116 days.

U.S. Patent No. 4,721,723; Granted January 26, 1988, to Roger D. Barnes, et. al.; Owner of Record: Beecham Group p.l.c.; Title: ANTI-DEPRESSANT CRYSTALLINE PAROXETINE HYDROCHLORIDE HEMIHYDRATE; Classification: 514/321; Product Trade Name: Paxil; Term Extended: 702 days.

U.S. Patent No. 4,757,006; Granted July 12, 1988, to John J. Toole, Jr., et. al.; Owner of Record: Genetics Institute, Inc.; Title: HUMAN FACTOR VIII:C GENE AND RECOMBINANT METHODS FOR PRODUCTION; Classification: 435/69.6; Product Trade Name: Antihemophilic Factor Concentrate (Recombinant); Term Extended: 516 days.

U.S. Patent No. 4,816,470; Granted March 28, 1989, to Michael D. Dowle, et. al.; Owner of Record: Glaxo Group Limited; Title: HETEROCYCLIC COMPOUNDS; Classification: 514/415; Product Trade Name: Imitrex; Term Extended: 275 days.

U.S. Patent No. 4,868,908; Granted September 19, 1989, to Benjamin Pless, et. al.; Owner of Record: Ventritex, Inc.; Title: POWER SUPPLY DOWN-CONVERSION, REGULATION AND LOW BATTERY DETECTION SYSTEM; Classification: 323/267; Product Trade Name: Ventritex Cadence Model V-100 Tiered Therapy Defibrillator System; Term Extended: 223 days.

Notice For Registered Patent Attorneys and Agents

The United States Patent and Trademark Office (PTO) has been informed of a CONSENT DECREE entered in the District of Columbia Department of Consumer and Regulatory Affairs, Office of Compliance, in *Hampton Cross, Director, Department of Consumer and Regulatory Affairs, On Behalf of Natalie Lawson et. al., v. Innovation Center, Inc., International Product Design, Inc., National Idea Center, Inc., and American Group for Innovation & Technology, Inc.*

The Consent Decree settles charges, requires the companies to make certain payments, and prohibits the corporations, their employees, agents, independent contractors, servants, and all other persons in active concert or participation with them from making certain representations regarding invention promotion services or patents.

The Consent Decree does not constitute admission of a violation of law.

A copy of the Consent Decree is published below to facilitate compliance with 37 CFR 10.23(c)(17) by registered patent attorneys and agents representing before the PTO in a patent case either (1) an inventor referred to the registered patent attorney or agent by Innovation Center, Inc., International Product Design, Inc., National Idea Center, Inc., and/or American Group for Innovation & Technology, Inc. their employees, agents, independent contractors, servants, and any and all other persons in active concert or participation with them; or (2) a joint venture comprising an inventor and Innovation Center, Inc., International Product Design, Inc., National Idea Center, Inc., and/or American Group for Innovation & Technology, Inc. their employees, agents, or independent contractors, servants, and any and all other persons in active concert or participation with them. Failure by such registered patent attorneys and agents to comply with that regulation constitutes professional misconduct.

September 19, 1994 *Cameron Weiffenbach, Director*
Office of Enrollment and Discipline

District of Columbia
Department of Consumer and Regulatory Affairs
Office of Compliance
614 H Street, N.W.
Washington, D.C. 20001
(202) 727-7900

In the Matter of
Hampton Cross, Director,
Department of Consumer and
Regulatory Affairs

On Behalf of:

Consent Decree

Natalie Lawson et. al.

Complainants,
v.
Innovation Center, Inc.,
5130 MacArthur Blvd., N.W.
Washington, D.C. 20016,

International Product Design, Inc.
5130 MacArthur Blvd., N.W.
Washington, D.C. 20016,

National Idea Center, Inc.
5130 MacArthur Blvd., N.W.
Washington, D.C. 20016,

and

American Group for Innovation
& Technology, Inc.
5130 MacArthur Boulevard, N.W.
Washington, D.C. 20016,

Respondents.

CONSENT DECREE

I. Preliminary Understandings

1. A dispute exists between Petitioner and Respondents ("the parties") concerning alleged violations of the District of Columbia Consumer Protection Procedures Act ("the Act"), D.C. Code Ann. secs. 28-3901 through 3909 (1991), which dispute is the subject of cases currently pending in the Department of Consumer and Regulatory Affairs ("the Department").
2. This dispute is the subject of those cases, enumerated in Appendixes A and B, filed by Complainants against Respondents and received and investigated by the Department, D.C. Code Ann. sec. 28-3903 (1991).
3. Without establishing a formal class action, the Department has undertaken to resolve these complaints as a group in the interest of economy. 16 District of Columbia Municipal Regulations (DCMR) sec. 1504.1.
4. Under the Act, the parties and the Department may settle a case and enter into an agreement covering multiple complaints, D.C. Code Ann. secs. 28-3905 (e), (h) (1991).
5. The Department, on behalf of Petitioner or Complainant(s), may enforce this agreement under the Act by suit in the Superior Court of the District of Columbia; in the event of such suit, the Court, in addition to ordering enforcement of this agreement (including the terms set out below for payment in lieu of any fines, penalties, or costs), may assess civil penalties for each violation of the and may order temporary, preliminary, or permanent injunctions, damages, treble damages, reasonable attorney fees, consumer redress, or other remedy. D.C. Code Ann. sec. 28-3905 (i)(3) (B) (1991).
6. For purposes of this Agreement, the parties acknowledge the jurisdiction of the Department over their persons for this matter and over the subject matter of the complaints as captioned above. The parties consent to the jurisdiction over their persons of the Superior Court for any action arising out of this Agreement. Nothing contained in this settlement agreement is intended to modify, expand, or contract the jurisdiction of the Department under the Act.
7. In a suit to enforce this Agreement, the parties shall not be required to prove anything about the underlying disputes but need only prove a breach of this Agreement. In such event, the parties waive the right to plead any statute of limitations or other defense to the underlying disputes.
8. In entering into this Agreement, Respondents state that they do so voluntarily, and without admitting any allegations of the Department, or of any Complainant, or admitting any violations of law or admitting any liability of or to any person. Respondents are entering into this Agreement on the express grounds that neither this Agreement nor anything contained herein will be deemed as an admission in any proceeding involving Respondents, or be considered res judicata or collateral estoppel with respect to any matter or any issue, other than in a proceeding between the Department and Respondents. Nothing in this Agreement shall restrict the rights of Respondents, the Department, Corporation Counsel, or any complainant to bring suit or pursue any other available legal remedy for any failure of Respondents to resolve complaints as provided herein or of subsequent complaints, if any.

II. Definitions

For purposes of this Agreement, the following definitions shall apply:

1. "Idea" shall mean any idea, invention, or product;
2. "Consumer" shall mean any person that has entered into, or has been or is being solicited to enter into, an agreement with Respondents for the "promotion" of an "idea." Solely for purposes of this Agreement, the parties have agreed that complainants are consumers under the Act regardless of whether complainants expected to realize financial gain as a result of their transaction with Respondents. For purposes of item 32, the provision for subsequent complainants, Respondents agree not to challenge the Department's determination of whether subsequent complainants are consumers under the Act. The use of the term "consumer" herein shall not prevent Respondents from asserting in any other proceeding that any consumer as defined herein is not a consumer under the Act.
3. "Financial gain" shall mean an amount of money greater than the amount of money paid by a "consumer" to Respondents.
4. "Promotion" shall mean the review, development, manufacturing, marketing, or other contribution to the success or growth of an "idea."
5. "Respondents" shall mean Innovation Center, Inc., International Product Design, Inc., National Idea Center,Inc., and American Group for Innovation & Technology, Inc.
6. "Future services" shall include but shall not be limited too any arrangement meeting the definition of "promotion" above, whereby one party pays or contracts to pay a sum of money, other than a commission or other payment solely contingent on the receipt of revenue by the client, in the belief that he or she may receive, as a result of such arrangement, the delivery or performance, at least partly in the future, of any service, benefit, promotion, sum of money, or similar thing of value; the term shall include but shall not be limited to any arrangement whereby one person pays or contracts to pay a sum of money in the belief that he or she may receive a financial gain as a result of such arrangement.
7. "Initial contact" shall mean the first contact between Respondents and a prospective consumer, whether in person, by mail, by telephone, or by other means. Initial contact shall not include a telephone contact the purpose and content of which relates solely to scheduling an appointment.
8. "Contract for invention promotion services" means a contract by which an invention promotion company undertakes to provide invention promotion services to a consumer. This includes contracts for New Product Reports, Product Development Agreements, or any other contract for invention promotion services (regardless of what it is called).
9. "Company," for the purposes of the disclosures required in Appendix C of this Agreement, shall mean the company contracting with the consumer receiving the Affirmative Disclosure Statement.
10. "Submission Agreement" shall mean a contract by which an invention promotion company undertakes to represent a consumer and submit the consumer's ideas to companies, persons or other entities, and shall not include agreements for nonsubmission services.
11. "Total Number," for purposes of the disclosures required in Terms of Agreement, item 3, and Appendix C of this Agreement, includes all clients who contracted for Respondents' services during the three (3) calendar years preceding the calendar year in which the representation is made; provided, however, that the total number need not include those clients who signed such agreements within the last thirty (30) days; and provided further that clients who contracted only for product research reports, or who only entered into contracts other than submission agreements, and clients who defaulted on their contracts need not be included. All numbers shall be stated in Arabic numerals.
12. "Dates," for purposes of the disclosures required in Terms of Agreement, item 3, and in Appendix C, shall be the three (3) calendar years preceding the calendar year in which the representation is made.

III. Statement of Facts

The Innovation Center, Inc. (original name American Patent Research Corporation, changed to American Patent Research and Development Corporation in 1986 and to its present name in 1987) was incorporated for profit in the District of Columbia on June 7, 1983. Among its purposes was "To engage in the business of research, promotion, marketing and distribution of patent technolgy (sic) of any and all nature, including the operation of an information service establishment and all business connected with or incidental thereto . . . " Departmental records show its principal office as 2155 Queens Chapel Road, N.E. through 1989; the company's current address is 5130 MacArthur Blvd, N.W., Washington, D.C. 20016.

International Product Design, Inc. is a Nevada corporation authorized in 1989 to do business in the District as a for-profit foreign corporation. The company's address in the District of Columbia is 5130 MacArthur Boulevard, N.W., Washington, D.C. 20016.

National Idea Center, Inc. is a Delaware corporation authorized in 1987 to do business in the District as a for-profit foreign corporation. The company's address in the District of Columbia is 4545 Forty-Second St., N.W., Suite 102, Washington, D.C. 20016.

American Group for Innovation & Technology, Inc. is a Delaware corporation authorized in 1987 to do business in the District as a for-profit corporation. American Group for Innovation & Technology, Inc. is identified in National Idea Center, Inc. literature as "[f]ollowing up on all serious manufacturer inquiries, negotiation of royalties/signing of license agreements, and selling new products at trade shows worldwide." The company's principal address is 5130 MacArthur Boulevard, N.W., Washington, D.C. 20016.

Consumer complainants are individuals of all ages, socioeconomic backgrounds, and educational levels, from thirty-five states, with an idea or invention they hope to bring to the marketplace but without the knowledge or the technical expertise to do so. No consumer complainant is a resident of the District of Columbia.

Respondents advertise throughout the nation by television, radio, and print media, offering information through toll-free telephone numbers on the invention promotion process. Once a consumer responds to such an advertisement, he or she receives telephone sales calls from Respondents' representatives, who seek to have the consumer purchase Respondents' services.

At the time this Agreement is signed, services packages are similar for Innovation Center, Inc., International Product Design, Inc., and National Idea Center, Inc. In the first stage, consumers are encouraged to purchase a New Product Report at a cost of approximately $595.00 to $890.00. This report consists of a thirty-some page report containing a general description of the invention ("Background and Problem Addressed," "Invention Described," "Functional Overview") as well as a line drawing of the invention based on a drawing supplied by the consumer.

In the second stage, consumers who have purchased a New Product Report are encouraged to enter into a Product Development Agreement at a cost of $4,950.00 to $8,950.00 or more. A consumer chooses one of three contracts, each of which

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assigns a percentage of from 10% to 35% of any future licensing royalties to the company. A contract at a lower cost assigns a higher percentage of any future royalties to the company.

Services subsequent to payment in full by consumers consist mainly of providing materials for mass mailing to prospective manufacturers (form letters, envelopes, address labels); and enrollment in the U.S. Patent and Trademark Office's Disclosure Document Program, which, as stated in the USPTO's own literature,is not part of a patent application process.

In the third stage, American Group for Innovation & Technology, Inc. agrees to negotiate licensing agreements with manufacturers with a "serious interest" in the consumer's idea. To the Department's knowledge, no complainant's idea was successfully marketed through American Group for Innovation & Technology, Inc.

The Department has received complaints against Respondents from consumers around the country. Many complainants allege the same general misrepresentations by Respondents, including misrepresenting that an idea was patentable and would be patented through the company's services; misrepresenting that an idea would be financially successful; misrepresenting that the company would provide continuing services following payment and then failing to respond to repeated consumer inquiries by telephone and mail; and so on.

IV. Terms of Agreement

In settlement of their differences in the above-captioned matter, the parties hereby agree as follows:

All of the preceding is incorporated into this Agreement and made a part of the Agreement.

Respondents Innovation Center, Inc., International Product Design, Inc., National Idea Center, Inc., and American Group for Innovation & Technology, Inc., and their employees, agents, independent contractors, servants, those for whom they act as consultants, and all those persons in active concert or participation with them who receive actual notice of this Agreement by personal service or otherwise, whether directly or through any corporation, subsidiary, division, or other device, and their successors and assigns, hereby agree, in connection with the advertising, offering for sale, or sale of contracts for future services relating to the introduction, promotion, development, licensing, marketing, or sale of ideas, or any other future services subject to the jurisdiction of the Act, that they shall not

1. Represent, directly or by implication, verbally or in writing, that Respondents' promotional, marketing, or licensing services have resulted in financial gain for clients, unless such representation is made in conjunction with and adjacent to specific, verifiable information demonstrating such to be fact.
2. Make, directly or by implication, verbally or in writing, any claim of earnings or financial gain or success for any specific client(s), unless such representation is made in conjunction with and adjacent to specific, verifiable information demonstrating such to be fact.
3. Make, directly or by implication, verbally or in writing, any claim of earnings or financial gain or success for clients generally; or represent, directly or by implication, verbally or in writing, that any client purchasing future services may or will receive a financial gain from an idea or product, unless Respondents make, in conjunction with and adjacent to such representations, the disclosure set forth below. The disclosure required under this paragraph shall be set forth in the following manner:

> From [dates] we signed submission agreements with _____ [total number of clients as defined in section II, "Definitions," item 11; if zero it must be so stated] clients. The total number of consumers, who have received license agreements for their products as a result of our services is _____ [total number; if zero it must be so stated]. The total number of consumers known by this invention promotion company to have received, by virtue of this company's performance, an amount of money in excess of the amount paid to the invention promotion company is _____ [total number; if zero it must be so stated].

Such disclosure shall be made in a clear and conspicuous manner in print at least as large as the print containing the representation; or in broadcast media, such disclosure shall be read at a rate of speed at least as slow as the slowest part of the advertisement.

4. Represent, directly or by implication, verbally or in writing, that new product report services constitute evaluations or appraisals of the merit or marketability, patentability, or commercial or technical feasibility of clients' ideas or products, or that Respondents are qualified to make such an evaluation or appraisal, unless true by verifiable information.
5. Represent, directly or by implication, verbally or in writing, that Respondents in any way evaluate or make a judgment on the merit, marketability, patentability, commercial or technical feasibility, or potential for success of clients' ideas as part of their services, or that they are qualified to make such an evaluation or judgment, unless true by verifiable information.
6. Represent, directly or by implication, verbally or in writing, that Respondents in any way evaluate or make a judgment on the merit, marketability, patentability, commercial or technical feasibility, or potential for success of clients' ideas in determining whether to offer marketing and licensing services to clients, unless true by verifiable information.
7. Represent, directly or by implication, that Respondents have any specialized, valuable access to corporations or other business organizations, unless (i) they have, in fact, specialized, valuable access to such corporations or other business organizations, and make regular use of such access, and (ii) affirmatively disclose the nature of the specialized, valuable access they have to such corporationsor other business organizations.
8. Represent, directly or by implication, verbally or in writing, that Respondents have been, or are, requested by corporations or other business organizations to find new product ideas, unless (i) they have, in fact, been requested by such corporations or other business organizations, and (ii) they affirmatively disclose the nature of the requests.
9. Represent, directly or by implication, verbally or in writing, that Respondents develop or refine ideas submitted to them by clients, unless Respondents in fact provide such services, and unless the services generally provided to refine or develop ideas are: (i) regularly provided to clients, and (ii) described in a writing made available to clients before they enter into any contract for such services.
10. Represent, directly or by implication, verbally or in writing, that the processes used by Respondents to search for manufacturers or potential licensees will or are likely to identify those manufacturers or potential licensees who are reasonably likely to be interested in bringing to market or otherwise commercializing clients' ideas, unless true by verifiable information.
11. Represent, directly or by implication, verbally or in writing, that Respondents will promote clients' ideas to existing manufacturers or potential licensees who are likely to respond to their methods of promotion or are reasonably likely to be interested in bringing to market or otherwise commercializing clients' ideas, unless true by verifiable information.
12. Represent, directly or by implication, verbally or in writing, that many professionals are involved in the performance of Respondents' services, unless true by verifiable information.
13. Represent, directly or by implication, verbally or in writing, that the Product Research Report requires a substantial amount of research, evaluation, drafting, and/or other preparation, unless true by verifiable information.
14. Represent, directly or by implication, verbally or in writing, that the materials used to promote, market, or license clients' ideas contain information that manufacturers or potential licensees consider valuable and/or necessary to their determination whether to license, bring to market, or otherwise commercialize the idea, unless true by verifiable information.
15. Represent, directly or by implication, verbally or in writing, that seeking patent protection is an undesirable or unnecessary route for clients to pursue, unless such representation is based on the opinion of an independent patent attorney, with the further provision that such opinion shall be in writing and shall be addressed to the consumer by the patent attorney.
16. (a) Represent, directly or by implication, verbally or in writing, that ideas or inventions that are not or cannot be patented can still be successfully licensed for financial gain, and/or recommending that clients purchase Respondents' services to promote, market, or license their unpatented ideas or products, unless Respondents affirmatively disclose to clients that manufacturers or other business organizations may be unwilling to enter into licensing agreements for, or agree to pay for the right to commercialize, such unpatentable ideas or products.
    (b) Such disclosure shall be made in a clear and conspicuous manner in print at least as large as the print containing the representation; or in broadcast media, such disclosure shall be read at a rate of speed at least as slow as the slowest part of the advertisement.
17. (a) Represent, directly or by implication, verbally or in writing, that Respondents, or the methods employed by them, will assist clients in the process of obtaining a patent (other than referral to an independent patent attorney).
    (b) This statement shall be made in a clear and conspicuous manner in print at least as large as the print containing the representation; or in broadcast media, such statement shall be read at a rate of speed at least as slow as the slowest part of the advertisement.
18. (a) Represent, directly or by implication, verbally or in writing, that clients' ideas or products will be exhibited or promoted by Respondents at trade shows, unless Respondents disclose the nature of the method by which the client's idea will be exhibited or promoted in conjunction with and adjacent to the representation. Representations shall not include statements that the client's idea will be exhibited or promoted at the store in Crystal City, Virginia, "The Invention Store," or any other store owned by or affiliated with Respondents, unless such ownership and/or affiliation is disclosed.
    (b) Such disclosures shall be made in a clear and conspicuous manner in print at least as large as the print containing the representation; or in broadcast media, such disclosure shall be read at a rate of speed at least as slow as the slowest part of the advertisement.
19. Represent, directly or by implication, verbally or in writing, that clients are certain to or likely to receive value, wide exposure to potential manufacturers or licensees, or financial gain from the inclusion of their idea in Respondents' new product advertisements or catalogs.
20. Materially misrepresent, directly or by implication, verbally or in writing, the scope, nature, or quality of the services Respondents would or will perform to introduce or promote ideas or inventions to industry.
21. Materially misrepresent, directly or by implication, verbally or in writing, Respondents' background, qualifications, experience, or expertise as evaluators or developers of ideas, or as promoters or marketers of ideas or products to manufacturers or other business organizations.
22. Misrepresent any material aspect of Respondents' services or business practices.

Without admitting any allegation, Respondents further agree that they will not

23. Misrepresent the scope, meaning, or value of any patent search, including a preliminary patent search.
24. Enter into a submission agreement relating to the same idea or a substantially similar idea that Respondent is currently representing; enter into any agreement relating to the same idea or a substantially similar idea that Respondent has represented in the past pursuant to any agreement, unless such prior representation is disclosed to the consumer in writing prior to entering into any agreement, including an agreement for nonsubmission services.
25. Misrepresent or omit material information from the new product report relating to safety or other regulatory requirements or concerns, unless the new product report discloses that such information is not included in the new product report. Such disclosure shall be made in a clear and conspicuous manner in print as least as large as the largest print in the body of the new product report.

V. Consumer Redress

Furthermore, Respondents agree that they shall

26. (a) Refund in full all monies paid to Respondents by consumers listed in Appendix A in the amounts and in the manner specified; such refunds shall include fees for New Product Report, Product Development Agreement, or other contract (regardless of what it is called), and any and all other fees paid. Refund amounts shall be subject to good faith verification by the parties. This provision shall apply to any and all consumer complainants whose complaints are pending at the Department as of the date of this agreement and who have not entered into an independent settlement agreement with Respondents by the date this agreement is signed.
    (b) Payments to these consumer complainants shall be made by money order or by certified check or traveler's check made out to the consumer complainant. Respondents shall have all payment checks hand-delivered to the Department for verification, within sixty calendar days after this Agreement is signed, at the address and in the manner specified in item 27, with the exception of payments to consumers whose complaints were received by the Department on or after July 1, 1994 (indicated in Appendix A by complaint numbers with the prefix 9407). Payments to those consumers shall be made in the same manner but within ninety calendar days after the date this Agreement is signed.
    (c) Respondents further agree to relinquish any and all financial or other interest in consumer complainants' ideas or inventions.
27. (a) Respondents agree to make payment to the Government in the amount of fifty thousand dollars ($50,000.00), no later than ninety (90) calendar days after this Agreement is signed. Payment shall be made in two amounts, forty-seven thousand dollars ($47,000.00) and three thousand dollars ($3,000.00). The $47,000.00 payment shall be in lieu of all penalties, fines, or costs incurred by the Department in pursuit of this matter. The $3,000.00 payment shall be in compensation of the Government's costs to be incurred in producing a planned consumer education videotape in the area of telemarketing. Payments shall be made by money orders or by certified checks or traveler's checks to "D.C. Treasurer" and shall be hand-delivered to Department of Consumer and Regulatory Affairs, Office of Compliance, Enforcement Division, Attention: Margaret M. Leonard, Esq., 614 H Street, N.W., Room 531, Washington, D.C 20001, between the hours of 9:00 A.M. and 5:00 P.M.
    (b) Respondents agree to make payment into a Security Fund in the total amount of up to two hundred thousand dollars ($200,000.00). The first payment into the Security Fund shall be in the amount of twenty-five thousand dollars ($25,000.00) and shall be due no later than one hundred twenty (120) calendar days from the date this Agreement is signed. The second payment into the Security Fund shall be in the amount of twenty-five thousand dollars ($25,000.00) and shall be due no later than one hundred fifty (150) calendar days from the date this Agreement is signed. The Security Fund shall be maintained in the minimum amount of $50,000.00 at all times until payments from the fund total $200,000.00 or until the end of the two-year period, whichever occurs earlier. The Security Fund shall be used in accordance with item 32 below to provide payments to consumers who make claims covered by item 32 as a result of a settlement or any final adjudication. The Security Fund shall be administered by an independent accounting firm located in the District of Columbia and mutually selected by the parties hereto, but any expenses associated therewith shall be the sole responsibility of Respondents. Any funds remaining in the Security Fund after two years from the date of this Agreement shall be paid to the D.C. Treasurer. Respondents' obligations under this section shall be secured by a Promissory Note. Any violation of the terms of item 32 providing for subsequent complainants shall result in such Promissory Note becoming due and owing in full. A record of any and all disbursements by Respondents to subsequent consumer complainants under the terms of this Agreement shall be provided to the Department on a quarterly basis at the

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address and in the manner specified in item 27(a) above, until the total amount of such disbursements may reach $200,000.00, or in two (2) years, whichever is earlier. Payments from this fund shall be limited to reimbursement of complainants for payments made to Respondents. Nothing in this provision shall be construed to restrict any consumer's right of action under any law or in any forum, either before or after depletion of the fund. Any monies remaining in the fund after two years shall be paid to the D.C. Treasurer.

VI. Affirmative Disclosures

28. Respondents further agree that they shall provide a retainable copy of the Affirmative Disclosure Statement set forth in Appendix C during each initial contact with all prospective consumers, and with each research, development, marketing, service, or other contract for invention promotion services (regardless of what it is called). Respondents are required to give the Affirmative Disclosure Statement to all consumers who sign contracts for Respondents' services that relate to (i) "promotion" or (ii) "submission" of ideas, as defined above ("Definitions" section, items 4 and 10), including consumers being offered additional services by Respondents. Respondents shall effectuate compliance with the provisions of the "Affirmative Disclosure" portion of this Agreement starting 45 days from the date hereof, with all consumers who enter into contracts with Respondents.
29. To ensure that the disclosures contained in Appendix C to this Decree are made by Respondents in a clear and conspicuous manner, Respondents shall set forth such Affirmative Disclosure Statement:
    (a) in a separate document that contains no other information and, with respect to the disclosure statement provided with the initial letter or other written material first given to all prospective consumers, in duplicate with one part detachable;
    (b) on a background that contrasts with the text; and
    (c) printed in 10 point boldface type.
30. Respondents shall, in the initial contact with prospective consumers,
    (a) Request that the prospective consumer acknowledge in writing on the separate disclosure document receipt of the Affirmative Disclosure Statement contained in Appendix C, and return it to Respondents before contracting for any of Respondents' services; such signed receipt shall be a prerequisite to any valid contract between Respondents and consumers, and absent such signed receipt, any such contract shall be voidable at the consumer's option and a full refund made.
    (b) State that the prospective consumer's New Product Report contract, Product Development Agreement, or any other contract (regardless of what it is called) will not be processed by Respondents unless the consumer has returned a signed acknowledgment of the Affirmative Disclosure Statement contained in Appendix C.
31. Respondents further agree that they shall
    (a) Provide the Notice of Cancellation set forth in Appendix D to this Agreement to each consumer who purchases any of Respondents' services; and
    (b) Within ten (10) business days after receipt of a signed Notice of Cancellation pursuant to the terms of the cancellation provision provided in said Notice of Cancellation, refund all monies that have been paid to Respondents pursuant to the cancelled transaction.

VII. Subsequent Consumer Complaints

32. (a) Respondents further agree that, upon their receipt of a written complaint from a consumer who entered into a contract after the date of this Agreement, alleging facts that indicate that this Agreement may have been violated, the contract shall be rescinded in whole or in part and Respondents shall refund any and all monies, or a portion thereof, to the consumer where Respondents determine, after a good faith investigation by Respondents, that one or more of the terms of this Agreement may have been violated in connection with such consumer's transaction with Respondents. Any consumer complaint Respondent fails to resolve within sixty (60) days of the date Respondents received the complaint shall be referred by Respondents for review to the Department of Consumer and Regulatory Affairs, Office of Compliance, Enforcement Division, Attention: IP Group, 614 H Street, N.W., Room 531, Washington, D.C. 20001.
    (b) Upon Respondents' receipt of a written complaint from a consumer who entered into a contract before the date of this Agreement, alleging facts that indicate that one or more of the laws and regulations of the District of Columbia may have been violated in connection with such consumer's transaction with Respondents, Respondents shall refund, in whole or in part, monies to consumers where Respondents determine, after a good faith investigation by Respondents, that such law(s) and or regulation(s) may in fact have been violated and that the complainant has a reasonable basis for the claim. Any consumer complaint Respondent fails to resolve within sixty (60) days of the date Respondents received the complaint shall be referred by Respondents for review to the Department of Consumer and Regulatory Affairs, Office of Compliance, Enforcement Division, Attention: Margaret M. Leonard, 614 H Street, N.W., Room 531, Washington, D.C. 20001.
    (c) Initial notice to all such subsequent consumer complainants of the procedure for forwarding unresolved consumer complaints to the Department shall be in writing, in language and format approved by the Department, and shall be mailed to the consumer complainant within fifteen (15) business days of Respondents' receipt of the consumer's written complaint.
    (d) If it appears, on review of such complaints referred by Respondents to the Department, that such law(s) or regulations(s) may in fact have been violated despite Respondent's determination otherwise, the Department may pursue the complaint by filing a Petition with the Office of Adjudication. In such case, the Department may seek full redress for the consumer by rescission of the contract as well as civil penalties, attorney fees and other costs, and any other redress provided by law. The Department agrees to seek no additional civil penalties or other fees or costs against Respondents in subsequent complaints for which Respondents resolve the matter with the consumer.
    (e) Provisions in this Agreement for subsequent consumer complainants shall not be construed to limit any consumer's right to bring any action or claim against Respondents under the Act or under any other law. A consumer who declines to exercise his or her right of redress under this Agreement retains all rights under the CPPA and any other law.

VIII. Reporting Requirement

33. Respondents further agree that, for a period of two (2) years from the date of this Agreement, Respondents shall maintain, preserve, and make available for examination and copying by a duly authorized representative of the Department, upon reasonable notice, during normal business hours, all books, accounts, written materials or other records reasonably necessary to assess Respondents' compliance with this Agreement, including but not limited to the following records:
    (a) A copy of each advertisement, each radio script and each television script and film published or disseminated by Respondents.
    (b) Records disclosing the date or dates each advertisement, script, or film was published or disseminated.
    (c) The name and address of each publication or broadcast media disseminating each advertisement, script, or film.
    (d) A copy of each brochure, flyer, or other type of promotional literature published or disseminated by Respondents.
    (e) A copy of each telephone script used by Respondents.
    (f) Copies of signed Affirmative Disclosure Statements made pursuant to this Agreement.
    (g) Copies of signed Notices of Cancellation made pursuant to this Agreement.
    (h) Copies of all research, development, marketing, service, or other contracts for invention promotion services, with due regard for client confidentiality.
34. For a period of two (2) years from the date of this Agreement, Respondents shall deliver a copy of this Agreement to all present and future sales consultants, employees, agents, servants, independent contractors, those for whom Respondents act as consultants, and all persons in active concert or participation with Respondents in the sale of Respondents' promotion services, as defined above, and secure from each such person a signed statement acknowledging receipt of a copy of this Agreement and their written agreement to adhere to it.
35. For a period of two (2) years from the date of this Agreement, Respondents shall notify the Department at least thirty (30) days prior to any proposed change in Respondents' corporate status such as dissolution, assignment, or sale resulting in the emergence of a successor corporation, the creation or dissolution of subsidiaries, or any other change in Respondents that may affect the compliance obligations arising out of this Agreement. In the event that a successor corporation emerges, an assignment occurs, or a subsidiary is created during this two (2) year period, such notice shall state that Respondents have delivered a copy of this Agreement to such successor, assignee, or subsidiary and have informed them that this Agreement is binding upon them.
36. Within ninety (90) calendar days after the signing of this Agreement, Respondents shall file with the Department a report stating the fact and manner of their compliance with this Agreement, including but not limited to the names and positions of all persons provided a copy of this Agreement pursuant to item 34 above.
37. All written notices that Respondents are required to provide to the Department shall be mailed to:

    Department of Consumer and Regulatory Affairs
    Office of Compliance, Enforcement Division (IP Group)
    614 H Street, N.W., Room 531
    Washington, D.C. 20001

    or the current address of
    the Department's Office of Compliance,
    Enforcement Division.

IX. Compliance with Other State or Federal Law

38. Nothing in this Agreement shall relieve Respondents of any obligations respecting contracts required by District of Columbia law, federal law, or other applicable law.

X. Continuing Jurisdiction

39. The Department shall retain jurisdiction of this matter for purposes of enabling any of the parties to this Agreement to apply to the Court at any time for the enforcement of compliance with this Agreement, or for the imposition of punishment or other sanctions for violations of this Agreement.
40. In consideration of the above, the Department agrees to
    (a) settle its dispute with Respondents in lieu of proceeding to a hearing;
    (b) waive any admission of liability by Respondents;
    (c) accept payment to consumer complainants as enumerated above (refund amounts shall be subject to good faith verification by the parties);
    (d) accept payment to the Government in the amount of $50,000.00 in the manner provided in item 25(a) of this agreement, which payment shall be in lieu of all penalties, fines, or costs incurred by the Department in pursuit of this matter as of the date of signing of this agreement. This payment shall be made no later than ninety (90) calendar days after this Agreement is signed by the parties.
    (e) provide to Respondents, before each consumer shall receive a refund, a release of all claims against Respondents with respect to this action only, signed by the consumer; such release shall be drafted by the Department and approved by Respondents.
41. The parties shall provide a written receipt for each item tendered under the terms of this Agreement; such receipt shall serve as evidence that the term was fulfilled.
42. Each person signing this Agreement warrants and represents that he or she has full authority to enter into this agreement on behalf of the party on whose behalf he or she signs.
43. Should any provision or part of this Agreement be determined to be invalid or unenforceable, such determination shall not affect the validity or enforceability of any other provision of the Agreement.
44. Respondents shall be jointly and severally responsible for performing all financial obligations under the terms of this Agreement. Each Respondent shall have an affirmative obligation to report to the Department immediately any instance in which it has reason to believe that any signatory to this agreement has violated any obligation under this agreement.
45. This Agreement shall be binding upon and inure to the benefit of each of the parties and its respective assigns, successors in interest, or agents.
46. These twenty-nine (29) pages constitute the full understanding and agreement between all parties. Any amendment to this agreement must be in writing and must be assented to by the Respondent(s) to be charged with theamendment.
47. This Agreement may be executed in one or more counterparts, all of which together shall constitute the entire agreement.

Disclaimer

4,664,648—*Francois Dupuy*, Dignac, France. METHOD AND APPARATUS FOR MAKING DISPLAY BOXES. Patent dated May 12, 1987. Disclaimer filed August 2, 1994, by the assignee, Klearfold, Inc.

Hereby enters this disclaimer to claims 40-46 of said patent.

4,826,004—*Francois Dupuy*, Les Grands Moulins-Dignac, France. DISPLAY BOXES. Patent dated May 2, 1989. Disclaimer filed August 2, 1994, by the assignee, Klearfold, Inc.

Hereby enters this disclaimer to claims 1-4 of said patent.

4,845,079—*Jay R. Luly; Jacob J. Plattner*, both of Libertyville, Ill.; Dale J. Kempf, Gurnee, Ill. PEPTIDYLAMINODIOLS. Patent dated July 4, 1989. Disclaimer filed July 15, 1994, by the assignee, Abbott Laboratories.

Hereby enters this disclaimer to claims 1, 2, 3, 4, 26 and 27 of said patent.

4,878,512—*Fred L. Pirkel*, Phoenixville, Pa. VALVE MECHANISM. Patent dated November 7, 1989. Disclaimer filed January 5, 1994, by the inventor.

Hereby enters this disclaimer to all claims of said patent.

4,927,421—*E. Marlowe Goble; W. Karl Somers*, both of Logan, *David McGuire*, Anchorage, Ak. PROCESS OF ENDOSTEAL FIXATION OF A LIGAMENT. Patent dated May 22, 1990. Disclaimer filed March 29, 1993, by the inventors.

Hereby enters this disclaimer to claim 1 of said patent.

5,038,315—*Sailesh K. Rao*, Lakewood, N.J. MULTIPLIER CIRCUIT. Patent dated August 6, 1991. Disclaimer filed May 25, 1994, by the assignee, AT&T Bell Laboratories.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

5,077,192—*Tsanyang Liang*, Brookline; *Jack R. Wands*, Waban, both of Mass. METHOD OF DETECTING ANTIGENIC, NUCLEIC ACID-CONTAINING MACROMOLECULAR ENTITIES. Patent dated December 31, 1991. Disclaimer filed July 14, 1994, by the assignee, The General Hospital Corporation.

Hereby enters this disclaimer to claim 11 of said patent.

5,103,757—*Daniel P. Palazzolo*, Michigan City, Ind. SELF CLEANING DEVICE FOR SIGHT FLOW INDICATORS. Patent dated April 14, 1992. Disclaimer filed June 29, 1993, by the assignee, Dwyer Instruments, Inc.

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Hereby enters this disclaimer to the claims 1 and 2 of said patent.

5,210,664—*Mark W. Perona*, San Diego, Calif. LOW PROFILE TAPE DRIVE FOR DRIVING A MINI-DATA CARTRIDGE. Patent dated May 11, 1993. Disclaimer filed August 10, 1994, by the assignee, Iomega Corporation.

Hereby enters this disclaimer to claim 2 of said patent.

5,246,153—*Robert J. Beletsky*, Temecula, Calif. AMBIDEXTROUS SHOULDER HOLSTER. Patent dated September 21, 1993. Disclaimer filed September 2, 1994, by the assignee, Bianchi International.

Hereby enters this disclaimer to claim 6 of said patent.

5,269,300—*David W. Kelly*, Vadnais; *Carol G. Stadler*, Shoreview; *Robert Dreher*, Roseville, all of Minn. AUTOMATIC SENSITIVITY CONTROL IN AN IMPLANTABLE CARDIAC RHYTHM MANAGEMENT SYSTEM. Patent dated December 14, 1993. Disclaimer filed July 22, 1994, by the assignee, Cardiac Pacemakers, Inc.

Hereby enters this disclaimer to all claims of said patent.

Disclaimer and Dedication

4,305,464—*Denes G. Masszii*, Calgary, Canada. METHOD FOR RECOVERING METHANE FROM COAL SEAMS. Patent dated December 15, 1981. Disclaimer and Dedication filed August 18, 1994, by the inventor.

Hereby disclaims and dedicates to the Public the entire term of said patent.

4,857,668—*Samuel S. Buonanno*, Monroe, N.Y. MULTIFUNCTION GASKET. Patent dated August 15, 1989. Disclaimer and Dedication filed August 31, 1994, by the assignee, Schlegel Corporation.

Hereby disclaims and dedicates to the Public claims 1-15 of said patent.

4,918,086—*Laurenz Gsell*, Basel, Switzerland. 1-NITRO-2,2-DIAMINOETHYLENE DERIVATIVES. Patent dated April 17, 1990. Disclaimer and Dedication filed May 5, 1994, by the assignee, Ciba-Geigy Corporation.

Hereby disclaims and dedicates to the Public the entire term of said patent.

4,941,330—*William R. Williamson*, Pensacola, Fla. MULTISTAGE FLASH EVAPORATOR. Patent dated July 17, 1990. Disclaimer and Dedication filed April 15, 1994, by the inventor.

Hereby disclaims and dedicates to the Public the entire term of said patent.

5,075,370—*Werner Kubitza; Hermann Gruber; Joachim Probsts*, all of Leverkusen, Fed. Rep. of Germany. AQUEOUS COATING COMPOSITION BASED ON SPECIFIC TWO-COMPONENT POLYURETHANES AND TO A PROCESS FOR ITS PRODUCTION. Patent dated December 24, 1991. Disclaimer and Dedication filed July 11, 1994, by the assignee, Bayer Aktiengesellschaft.

Hereby disclaims and dedicates to the Public claims 1 and 5 of said patent.

Errata

The following registration numbers listed in the "Trademark Registrations Issued" section of the Trademark *Official Gazette* of July 5, 1994 were inadvertently issued:

TM 211 TMI 12	1,842,782
TM 215 TMI 29	1,842,952
TM 220, 222, 223 TMI 24	1,843,161
TM 221 TMI 32	1,843,219
TM 224 TMI 4	1,843,305

Consequently, the above-identified registration numbers have been vacated.

DAVE BUCHER
Director of Trademark
Examining Groups

Errata

The following registration numbers listed in the "Trademark Registrations Issued" section of the Trademark *Official Gazette* were inadvertently issued:

TM 263 TMI 28	1,782,332	07/20/93
TM 199 TMI 28	1,829,599	04/05/94
TM 257 TMI 19	1,832,891	04/26/94
TM 229, 230 TMI 6	1,833,863	05/03/94
TM 88 TMI 8	1,836,996	05/17/94
TM 88 TMI 2	1,837,001	05/17/94
TM 92 TMI 1	1,837,177	05/17/94
TM 174, 184	1,840,532	06/21/94
TM 245 TMI 13	1,847,842	08/02/94

Consequently, the above-identified registration numbers have been vacated.

DAVE BUCHER
Director of Trademark
Examining Group

Errata

The following registration numbers listed in the "Trademark Registrations Issued" section of the Trademark *Official Gazette* dated July 26, 1994 were inadvertently issued:

TM 223, 224 TMI 27	1,846,694
TM 224 TMI 24	1,846,733
TM 232 TMI 18	1,847,062
TM 232 TMI 16	1,847,073
TM 229 TMI 3	1,846,959

Consequently, the above-identified registration numbers have been vacated.

DAVE BUCHER
Director of Trademark
Examining Group

PCT Searches Conducted by the European Patent Office

In an experiment to permit the Patent and Trademark Office (PTO) to more effectively address the growing workload of international searches in international applications filed under the Patent Cooperation Treaty, and to take advantage of the current workload shortage at the European Patent Office (EPO), searches in selected international applications will be conducted by EPO examiners in the Hague. Applications will be selected from among those applications that do not claim priority of an earlier application, that do not select the EPO as the International Searching Authority, and contain a designation for a European Patent. The Search Report in these selected applications will be signed by the examiner in the PTO, and mailed from the PTO. Although the international search fee charged by the EPO is higher than that charged by the PTO, applicants will continue to pay the international search fee charged by the PTO in these selected applications. Accordingly, fees paid to the PTO will not be affected during this experiment.

September 16, 1994 LAWRENCE J. GOFFNEY, Jr.
Assistant Commissioner
for Patents

Erratum

In the list of patents which expired on August 27, 1992, due to failure to pay maintenance fees, in the O.G. of May 10, 1994, the following patent should have appeared:

Patent No.	Serial No.	Issue Date	Filing Date
4,537,032	06/486,898	08/27/85	04/19/83

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Promenaders, Inc., Winder, Ga., Reg. No. 1,087,782 for the mark "SCOOP BY PROMENADERS" and Design, Canc. No. 22,547.

Eternalite, Inc., New Orleans, La., Reg. No. 662,507, for the mark "ETERNALITE" and Design, Canc. No. 22,574.

National Critical Care Institute of Education, Orange, Calif., Reg. No. 1,074,325, for the mark "EMERGENCY CARE UPDATE!", Canc. No. 22,575.

Cretech Limited, Oak Harbor, Wash., Reg. No. 1,523,525, for the mark "VERT-I-GROW", Canc. No. 22,654.

Ernie Mavrides d.b.a. Metro Music, Wellesley, Mass., Reg. No. 1,555,561, for the mark "THE CLASSICAL CHILD", Canc. No. 21,670.

Personal Trainer, Inc., New York, N.Y., Reg. No. 1,606,188, for the mark "PERSONAL TRAINER" and Design, Canc. No. 21,700.

Newcomb Audio Products Co., Sylmar, Calif., Reg. No. 1,028,231, for the mark "RT", Canc. No. 22,707.

American Horizons, Inc., Jacksonville, Fla., Reg. No. 1,547,875, for the mark "AMERICAN HORIZONS" and Design, Canc. No. 22,750.

The Crystal Gourmet Corp., New York, N.Y., Reg. No. 1,493,737, for the mark "CRYSTAL GOURMET", Canc. No. 21,809.

JEAN BROWN
Administrator of the
Trademark Trial and
Appeal Board
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Certificate of Correction
For Week of October 18, 1994

P. 8,590	5,166,939	5,244,757	5,278,268
P. 8,593	5,174,585	5,245,441	5,278,541
P. 8,603	5,174,770	5,245,650	5,278,970
P. 8,637	5,175,311	5,246,087	5,279,666
P. 8,776	5,176,744	5,246,825	5,279,838
P. 8,791	5,178,919	5,246,936	5,280,048
P. 8,794	5,182,272	5,247,404	5,280,514
P. 8,802	5,186,311	5,248,129	5,280,792
P. 8,803	5,186,841	5,248,762	5,281,212
P. 8,812	5,189,703	5,250,228	5,281,522
P. 8,823	5,190,935	5,250,313	5,281,593
P. 8,824	5,192,561	5,250,548	5,281,631
Re. 34,541	5,192,606	5,250,664	5,282,743
D. 309,805	5,195,963	5,251,293	5,282,799
D. 347,769	5,196,372	5,252,363	5,282,842
D. 347,885	5,196,404	5,252,414	5,283,293
D. 348,548	5,196,460	5,252,700	5,283,501
D. 349,794	5,198,963	5,252,752	5,284,201
4,556,738	5,199,564	5,254,589	5,284,414
4,628,056	5,200,074	5,254,704	5,284,693
4,719,215	5,200,443	5,255,047	5,284,921
4,735,882	5,200,813	5,255,585	5,284,993
4,774,941	5,203,189	5,256,789	5,285,009
4,837,295	5,203,594	5,256,793	5,285,239
4,849,993	5,204,057	5,256,915	5,285,383
4,851,055	5,204,207	5,257,311	5,285,434
4,878,192	5,204,232	5,257,583	5,285,566
4,926,996	5,204,357	5,259,646	5,285,588
4,945,807	5,204,659	5,260,054	5,286,323
4,959,630	5,204,944	5,260,477	5,286,697
4,963,568	5,208,187	5,260,705	5,286,737
4,969,606	5,208,267	5,261,114	5,286,775
4,976,504	5,209,663	5,261,822	5,287,223
4,976,605	5,210,077	5,262,669	5,287,321
4,980,467	5,210,630	5,262,958	5,287,350
4,982,129	5,212,186	5,263,037	5,287,940
5,000,377	5,213,034	5,264,621	5,288,170
5,008,924	5,213,487	5,265,387	5,288,420
5,019,756	5,214,117	5,265,465	5,289,117
5,020,584	5,215,776	5,265,643	5,289,250
5,026,530	5,215,924	5,265,751	5,289,258
5,047,808	5,216,008	5,266,336	5,289,611
5,057,911	5,216,875	5,266,370	5,290,620
5,061,660	5,219,692	5,266,576	5,291,178
5,062,336	5,219,818	5,267,021	5,291,205
5,064,516	5,219,820	5,267,187	5,291,500
5,066,629	5,219,979	5,267,322	5,291,527
5,069,680	5,221,453	5,267,505	5,291,985
5,072,043	5,221,628	5,267,609	5,292,530
5,073,161	5,222,511	5,268,381	5,292,886
5,082,147	5,223,156	5,268,645	5,293,194
5,084,065	5,223,353	5,269,297	5,293,256
5,084,756	5,225,453	5,269,794	5,293,282
5,089,606	5,227,512	5,269,854	5,293,771
5,100,418	5,227,659	5,269,964	5,293,724
5,101,656	5,227,799	5,270,201	5,294,092
5,106,963	5,229,338	5,270,247	5,294,228
5,108,897	5,230,338	5,270,311	5,295,063
5,109,495	5,231,541	5,270,396	5,295,069
5,109,792	5,233,336	5,270,892	5,295,134
5,116,944	5,234,650	5,271,083	5,295,521
5,117,584	5,235,435	5,273,840	5,295,633
5,120,393	5,235,575	5,273,922	5,295,634
5,127,817	5,236,304	5,274,999	5,296,087
5,130,781	5,236,411	5,274,817	5,296,099
5,133,630	5,237,462	5,274,997	5,296,122
5,133,965	5,238,360	5,275,738	5,296,356
5,133,977	5,238,924	5,275,926	5,296,461
5,139,977	5,239,586	5,276,264	5,296,493
5,147,999	5,242,351	5,276,281	5,296,788
5,150,589	5,242,646	5,276,419	5,296,938
5,151,216	5,242,974	5,277,375	5,298,188
5,153,066	5,243,236	5,277,986	5,298,377
5,156,865	5,243,979	5,278,015	5,298,690
5,160,275	5,244,596	5,278,102	5,298,846
5,166,078	5,244,658	5,278,227	5,298,926

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5,299,042	5,304,616	5,309,720	5,315,775	5,321,123	5,327,199	5,330,685	5,336,104
5,299,428	5,305,096	5,309,962	5,315,906	5,322,225	5,327,242	5,330,779	5,336,117
5,299,972	5,305,131	5,310,299	5,316,035	5,322,389	5,327,258	5,331,208	5,336,283
5,300,350	5,305,151	5,310,533	5,316,183	5,322,869	5,327,518	5,331,466	5,336,351
5,300,382	5,305,347	5,310,793	5,316,349	5,323,058	5,327,689	5,331,505	5,337,355
5,300,564	5,305,415	5,311,049	5,316,451	5,323,140	5,327,735	5,331,657	5,337,446
5,300,622	5,305,995	5,311,125	5,316,453	5,323,220	5,327,812	5,332,035	5,337,508
5,300,817	5,306,058	5,311,384	5,316,610	5,323,305	5,327,907	5,332,394	5,337,620
5,300,998	5,306,502	5,311,475	5,316,621	5,323,324	5,328,235	5,332,580	5,337,714
5,301,040	5,307,102	5,311,498	5,317,254	5,323,509	5,328,336	5,332,589	5,338,149
5,301,072	5,307,160	5,312,361	5,317,448	5,324,247	5,328,451	5,333,112	5,338,161
5,301,101	5,307,273	5,312,418	5,317,916	5,324,356	5,328,771	5,333,480	5,338,391
5,301,331	5,307,410	5,312,441	5,317,940	5,324,599	5,328,986	5,333,575	5,338,492
5,301,563	5,307,448	5,312,525	5,317,988	5,325,034	5,329,010	5,333,975	5,338,708
5,301,683	5,307,608	5,312,683	5,318,005	5,325,105	5,329,052	5,334,098	5,338,738
5,302,018	5,307,610	5,313,332	5,318,030	5,325,145	5,329,130	5,334,296	5,338,754
5,302,304	5,308,126	5,313,434	5,319,686	5,325,278	5,329,383	5,334,595	5,338,881
5,302,609	5,308,235	5,313,442	5,319,769	5,325,484	5,329,577	5,334,746	5,338,890
5,302,635	5,308,495	5,313,860	5,319,903	5,325,879	5,329,808	5,334,795	5,339,249
5,302,705	5,308,516	5,314,178	5,320,047	5,325,885	5,330,044	5,335,078	5,339,767
5,303,057	5,308,578	5,314,179	5,320,195	5,326,393	5,330,163	5,335,221	5,340,000
5,303,059	5,308,866	5,314,307	5,320,455	5,326,580	5,330,226	5,335,724	5,340,333
5,303,105	5,309,184	5,314,769	5,320,801	5,326,870	5,330,332	5,335,945	5,340,634
5,303,717	5,309,524	5,315,317	5,320,805	5,326,912	5,330,482	5,335,957	
5,304,003	5,309,600	5,315,378	5,320,924	5,327,057	5,330,567	5,336,021	

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Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
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	Sacramento: California State Library	(916) 654-0069
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	San Francisco Public Library	Not Yet Operational
	Sunnyvale Patent Clearinghouse	(408) 730-7290
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	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
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	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
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PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	10/18/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	08/12/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	12/28/93
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	10/28/93
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/08/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—JOSEPH J. ROLLA, JR., Director	308-1782	10/09/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	03/08/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—GERALD GOLDBERG, Director	305-9600	09/14/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—CARLTON CROYLE, Director	308-0771	09/19/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/06/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—BOBBY R. GRAY, Director	305-4700	02/24/93
DESIGN, GROUP 2900—ROBERT E. GARRETT, Director	308-0511	12/22/92
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	09/27/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—N. GODICI, Director	308-1148	09/07/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	10/14/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	04/23/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	08/19/93

*A communication from the examiner should have been received in most applications filed prior to this date

Expiration of Patents: The patents within the range of numbers indicated below expire during September 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.
Patents.....Numbers 4,045,824 to 4,051,551 inclusive
Plant Patents.....4,097 to 4,116

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of Sept. 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/22/94	07/07/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/12/94	06/28/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/21/94	07/11/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/07/94	05/25/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/07/94	04/06/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/06/94	06/27/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/15/94	05/11/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/09/94	07/20/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/13/94	05/07/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/21/94	07/25/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/01/94	05/06/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/24/94	07/13/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/31/94	05/24/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	03/11/94	—0—
Renewals (All Classes)	06/03/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

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REEXAMINATIONS

OCTOBER 18, 1994

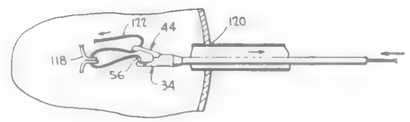
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,923,461 (2410th)

METHOD OF ARTHROSCOPIC SUTURING OF TISSUE

Richard B. Caspari, Maidens, Va.; Arthur F. Trott, Largo, and F. Barry Bays, Seminole, both of Fla., assignors to Linvatec Corp., Largo, Fla.

Reexamination Request No. 90/003,183, Aug. 27, 1993.
Reexamination Certificate for Patent No. 4,923,461, issued May 8, 1990, Ser. No. 326,991, Mar. 22, 1989.
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—146



AS A RESULT OF REEXAMINATION IT HAS BEEN DETERMINED THAT:

The patentability of claims **3–7** and **8** is confirmed.

Claims **1** and **2** are cancelled.

3. A method of arthroscoipic suturing of tissue within the body comprising the steps of

inserting a suturing instrument into the body having an elongate tube terminating at a distal end at a jaw tip formed of first and second relatively movable jaws with the first jaw carrying a hollow needle;

penetrating tissue to be sutured with the hollow needle;

feeding suture material through the hollow needle to define a free end segment of the suture material extending from the hollow needle;

withdrawing the hollow needle from the tissue and from the body;

pulling the free end segment of the suture material from the body;

tying a knot in the suture material externally of the body; and

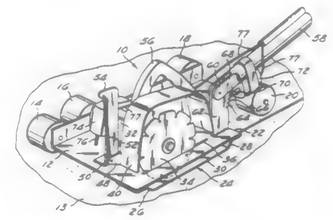
moving the knot into the body to a position adjacent the tissue.

B1 4,938,201 (2411th)

SAW FOR CUTTING UNCURED CONCRETE

Edward Chiuminatta, and Alan R. Chiuminatta, both of 6677 Columbus, Riverside, Calif. 92504

Reexamination Request No. 90/003,050, May 11, 1993.
Reexamination Certificate for Patent No. 4,938,201, issued Jul. 3, 1990, Ser. No. 386,814, Jul. 27, 1989.
Division of Ser. No. 185,055, Apr. 22, 1988, Pat. No. 4,889,675, which is a division of Ser. No. 843,799, Mar. 25, 1986, Pat. No. 4,769,201
Int. Cl.[5] B28D *1/04*
U.S. Cl. 125—13.01



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1, 11–36** is confirmed.

Claim **2** is cancelled.

Claims **3–6, 9** and **10** are determined to be patentable as amended.

Claims **7** and **8**, dependent on an amended claim, are determined to be patentable.

1. An apparatus for cutting grooves in the exterior surface of concrete, comprising:

rotating cutting means urged against said exterior concrete surface for cutting a groove in said exterior surface, said cutting means having a cutting edge, two sides, and a trailing edge, said cutting edge rotating out of the exterior surface of the concrete;

a motor driving said cutting means;

propelling means for moving the apparatus across the exterior surface of the concrete;

support means in contact with the exterior surface of said concrete for supporting the surface of said concrete within 0.125 inches of said sides immediately adjacent the cutting edge of said cutting means as said cutting means cuts said groove, said support means inhibiting cracking, chipping and damaging of the said concrete finish adjacent said groove;

movement means for allowing movement of said cutting means away from the exterior surface of said concrete in response to contact between said cutting means and an obstacle in the concrete, said movement means allowing said cutting means to at least partially circumvent said obstruction;

resilient means by which said cutting means is resiliently urged against said exterior surface of said concrete and for predetermining the force with which the cutting means is urged against the exterior surface of the concrete; and

wheel means for moving said apparatus across the exterior surface of said concrete.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,757

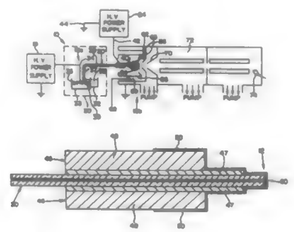
COMBINED ELECTROPHORESIS-ELECTROSPRAY INTERFACE AND METHOD

Richard D. Smith; Harold R. Udseth, both of Richland, Wash., and José A. Olivares, Los Alamos, N. Mex., assignors to Battelle Memorial Institute, Richland, Wash.

Original No. 4,885,076, dated Dec. 5, 1989, Ser. No. 178,046, Apr. 5, 1988. Application for reissue Dec. 4, 1991, Ser. No. 803,145

Int. Cl.[5] **G01N** *27/26, 27/447;* **H01J** *49/02, 27/02*

U.S. Cl. 204—299 R **54 Claims**



22. A method of producing high resolution analyte separations capable of being analyzed by numerous analytical detectors, which comprises:

providing a source of an analyte sample solution and a source of a sheath liquid;

separating a source of an analyte sample solution in a capillary to form a flow of analyte eluent;

discharging the separated analyte eluent from a central outlet opening in the capillary and separately discharging the sheath liquid in a annular sheath flow about the outlet of the capillary in coaxially adjoining flows;

electrospraying an electrically-charged spray containing the separated analyte eluent and the sheath liquid; the capillary outlet opening protruding from an outlet of a surrounding sheath flow tube.

Re. 34,758

TRAVELLING DISC VALVE APPARATUS

David L. Farley, Lafayette, La., and Kent T. Fink, Glen Ellyn, Ill., assignors to Osca, Lafayette, La.

Original No. 5,137,088, dated Aug. 11, 1992, Ser. No. 693,679, Apr. 30, 1991. Application for reissue Feb. 11, 1993, Ser. No. 16,433

Int. Cl.[5] **E21B** *34/00*

U.S. Cl. 166—319 **20 Claims**

16. A traveling valve assembly, comprising:

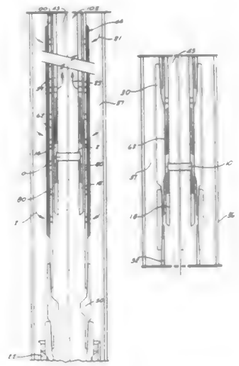
a) a length of tubing lowered down a cased wellbore;

b) a crossover tool secured to the lower end of the length of tubing;

c) valving means secured to the crossover tool and positioned to a lower circulation position in the well bore;

d) means interconnecting the crossover tool with the valving means; and

e) means in the upper portion of the valving means for disconnecting the valving means from the crossover tool when the valving means is an upper position, providing means to prevent fluid from flowing into the formation below the valving means and to prevent production flow to the surface.



Re. 34,759

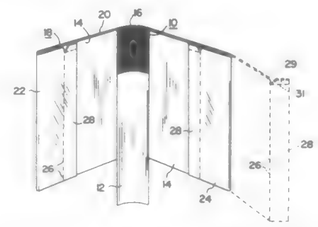
REMOVABLE BOOK MARKER STRIP

Gladys D. Boyette, 3300 N. Key Dr., Unit 8-W, North Fort Myers, Fla. 33903

Original No. 4,577,890, dated Mar. 25, 1986, Ser. No. 591,119, Mar. 19, 1984. Application for reissue Mar. 31, 1993, Ser. No. 40,973

Int. Cl.[5] **B42D** *3/00, 3/12, 3/04;* **B42L** *11/00*

U.S. Cl. 281—29 **6 Claims**



4. [In a book of the paper back type] *A soft-back book* having a plurality of pages, a binding securing [the] *spine* edges of the pages together[.] *with* a [paper back] *protective* cover of heavier material than the pages of the book [secured to the binding and], *said protective cover* overlying [both] *opposite* sides of the plurality of pages *and said spine edges*, the [outer edges of the paper back covers being turned inwardly, and] *protective cover having* perforations along [the inturned portions] *a fore edge* of the *protective* cover [whereby] *demarcating* a narrow strip *which* may be detached from [each side of the inturned portions] *the protective cover fore edge* and used as a book marker;

said protective cover is folded along said perforations with said narrow strip interposed between said plurality of pages and said protective cover; and

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said narrow strip has a width extending from the fore edge which is substantially less than a width, measured between the spine edge and the fore edge, of said soft-back book.

Re. 34,760
BLUE GLASS COMPOSITIONS

Edward N. Boulos, Troy; Mark F. Best, Taylor, and Roman Surowiec, Redford, all, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Original No. 5,070,048, dated Dec. 3, 1991, Ser. No. 626,497, Dec. 12, 1990. Application for reissue Dec. 27, 1993, Ser. No. 173,841

Int. Cl.[5] **C03C** *3/087*

U.S. Cl. 501—71 **2 Claims**

1. A blue-colored glass having an Illuminant C transmittance of 54%±3% at a glass thickness of one quarter inch, a dominant wavelength of 482 nm±1 nm, and a color purity of 13%±1%, consisting essentially of:

A. 68% to 75% by weight SiO_2;

B. up to 5% by weight Al_2O_3;

C. 5% to 15% by weight CaO;

D. up to 10% by weight MgO, wherein CaO+MgO is 6% to 15% by weight;

E. 10% to 18% by weight Na_2O;

F. up to 5% by weight K_2O, wherein Na_2O+K_2O is 10% to 20% by weight; and

G. colorant selected from the group consisting of:

i. 0.290% by weight Fe_2O_3, 0.0055% by weight [Co_3O_4] *Co*, and 0.0072% by weight [NiO] *Ni*; and

ii. 0.430% by weight Fe_2O_3, 0.0054% by weight [Co_3O_4] *Co*, 0.0035% by weight [NiO] *Ni*, and 0.00015% by weight senelium.

Re. 34,761
PROCESS FOR THE PREPARATION OF TRICHLOROETHYLENE

Willibald Dafinger, Emmerting; Wolfdietrich Gabler, Burghausen; Eduard Pichl, Burghausen, and Roman Hierzegger, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Original No. 5,091,603, dated Feb. 25, 1992, Ser. No. 602,417, Oct. 22, 1990. Application for reissue Oct. 15, 1993, Ser. No. 138,463

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1989, 3941037

Int. Cl.[5] **C07C** *17/34*

U.S. Cl. 570—230 **12 Claims**

1. A process for the preparation of trichloroethylene comprising reacting perchlorethylene and hydrogen in the presence of a supported catalyst at a temperature of [150°-200°] *150° to 250°* C. and a hydrogen pressure 1 to 10 bar absolute, said catalyst consisting of a support of active charcoal having a BET surface area of more than 500 m^2/g, impregnated with 0.5 to 20% by weight of copper in elemental or chemically bonded form, 0.01 to 1.0% by weight of rhodium or palladium in elemental or chemically bonded form and 0.1 to 10.0% by weight of a water-soluble phosphonium halide, said weight based on the total weight of catalyst support and active components.

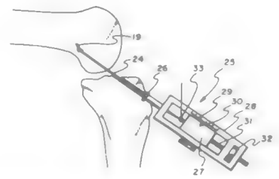
Re. 34,762
PROCEDURE FOR VERIFYING ISOMETRIC LIGAMENT POSITIONING

E. Marlowe Goble, 850 E. 1200 North, and W. Karl Somers, 651 N. 150 West, both of Logan, Utah 84321

Original No. 5,037,426, dated Aug. 6, 1991, Ser. No. 246,324, Sep. 19, 1988. Application for reissue Aug. 3, 1993, Ser. No. 101,040

Int. Cl.[5] **A61B** *17/56*

U.S. Cl. 606—96 **8 Claims**



3. A process to verify proper isometric ligament positioning in an arthroscopic surgical procedure on a human knee to replace the anterior cruciate ligament, comprising the steps of:

positioning the knee in a bent attitude;

forming a straight test passage from a point on the anterior medial portion of the tibia through the tibia to intersect and pass through a first proposed ligament point of origin on the tibia;

guiding an isometric testing stud mounted in the end of a driver through the test passage and turning said isometric testing stud into the femur at a second proposed ligament point of origin on the femur;

disengaging the driver from the isometric testing stud and withdrawing said driver out of said test passage exposing a suture connected to the exposed end of said isometric testing stud, said suture extending outwardly through said test passage;

connecting said suture to a tension isometer that reflects a change in tension of a change in length of said suture;

flexing the knee through its full range of motion; and observing the tension isometer during said knee flexure to confirm the correct isometric positioning of said suture based upon readings obtained from said tension isometer.

PLANT PATENTS

GRANTED OCTOBER 18, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,940
MINIATURE ROSE PLANT NAMED JACPLY

Keith W. Zary, Thousand Oaks, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Nov. 9, 1993, Ser. No. 150,390

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—7.1 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its attractive but changing orange, yellow and pink flower colors; its disease-resistant, dark green and glossy foliage; its vigorous, upright, well-branched growth; and its attractive, high-centered flowers.

8,941
MINIATURE ROSE PLANT NAMED POULTUR

Mogens N. Olesen, and Pernille Olesen, both of Fredensborg, Denmark, assignors to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Nov. 9, 1993, Ser. No. 150,430

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—8.1 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its uniform, compact growth habit; ease of propagation by softwood cuttings; long shelf life as a pot rose, and uniform white flower color.

8,942
MINIATURE ROSE PLANT NAMED 'POULNYE'

Mogens N. Olesen, and Pernille Olesen, both of Fredensborg, Denmark, assignors to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Jul. 23, 1993, Ser. No. 96,697

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, a sport of the variety POULvic, U.S. Plant Pat. No. 8,012, characterized particularly as to novelty by its difference in flower color from its parent.

8,943
MINIATURE ROSE PLANT NAMED 'POULANN'

Mogens N. Olesen, and Pernille Olesen, both of Fredensborg, Denmark, assignors to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Jul. 23, 1993, Ser. No. 96,927

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, a sport of the variety POULvic, characterized particularly as to novelty by its flower color difference from its parent.

8,944
MINIATURE ROSE PLANT NAMED 'POULCI'

Mogens N. Olesen, and Pernille Olesen, both of Fredensborg, Denmark, assignors to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Jul. 23, 1993, Ser. No. 97,165

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, a sport of the variety POULvic characterized particularly by its flower color difference from its parent.

8,945
MINIATURE ROSE PLANT NAMED POULTVER

Mogens N. Oelsen, and Pernille Olesen, both of Fredensborg, Denmark, assignors to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Nov. 9, 1993, Ser. No. 150,466

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a long shelf life, attractive and unique flower color, ease of propagation by softwood cuttings, and a vigorous and compact habit of growth.

8,946
FLORIBUNDA ROSE PLANT NAMED JACMOS

Keith W. Zary, Thousands Oaks, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Nov. 9, 1993, Ser. No. 150,455

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—24 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its profusion of glands and thorns on stipules and peduncles; its profusion of thorns on stems; its dark green, leathery foliage; and its free production of hips that turn brown and scaly at maturity and are covered with thorns.

8,947
NECTARINE TREE (AUGUST SNOW)

Lowell G. Bradford, 12439 E. Savana Rd., and Norman G. Bradford, 11875 E. Savana Rd., both of Le Grand, Calif. 95333

Filed Jan. 31, 1994, Ser. No. 188,914

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—40.1 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, that is most similar to its seed parent, the Bradcrim (U.S. Plant Pat. No. 8,461), by producing white flesh freestone nectarines that are nearly full red in skin color and non-acidic in flavor, but is distinguished therefrom and an improvement thereon by producing fruit that ripens thirty days later, that is larger in size, and that is much firmer in texture.

8,948
NECTARINE TREE (DIAMOND RAY)

Lowell G. Bradford, 12439 E. Savana Rd., and Norman G. Bradford, 11875 E. Savana Rd., both of Le Grand, Calif. 95333

Filed Jan. 19, 1994, Ser. No. 183,351

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—41.1 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, which is most similar to the Summer Bright nectarine (U.S. Plant Pat. No. 7,049), by producing clingstone fruit that is full red in skin color, sweet and flavorful in taste, and extremely firm in texture, but is distinguished therefrom and an improvement thereon by having a large blossom instead of small and by producing fruit that ripens approximately twelve days earlier and has substantially less red streaking in the flesh.

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NECTARINE TREE — ELLIOTT CULTIVAR

Bill K. Elliott, Silver City, N. Mex., assignor to Stark Brothers Nurseries and Orchards Company, Louisiana, Mo.

Filed Nov. 19, 1993, Ser. No. 154,460
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—41.3 1 Claim

1. A new and distinct late-season nectarine cultivar, having the following combination of characteristics:

(a) forms fruit of good flavor and texture that is substantially similar to that of the N.J. 260 cultivar with the exception that it is lacking in pubescence,

(b) forms fruit that commonly matures approximately 3 to 5 days earlier than that of the N.J. 260 cultivar,

(c) forms fruit that commonly is slightly smaller than that of the N.J. 260 cultivar, and

(d) exhibits an overall growth habit that is substantially similar to that of the N.J. 260 cultivar;

substantially as herein shown and described.

8,950

P.F. 12A PEACH TREE

Paul J. Friday, P.O. Box 850, Coloma, Mich. 49038

Filed Jul. 26, 1993, Ser. No. 96,267
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—43.2 1 Claim

1. A new and distinct variety of peach tree substantially as illustrated and described of large size, vigorous and upright in growth and a regular and productive bearer of large size, yellow flesh freestone fruit with good flavor and eating quality; and being further characterized by a partially showy blossom when in full bloom; and a fruit of substantially spheroidal shape having a firm flesh, and a red skin color cover over 80% of the fruit at maturity which occurs about 4 days after maturity of the Redhaven peach.

8,951

SYRINGA PEKINENSIS

Willet N. Wandell, R.R. 1, Box 286, Oquawka, Ill. 61469

Filed Aug. 26, 1993, Ser. No. 112,078
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—66 1 Claim

1. A new and distinctive variety of *Syringa pekinensis* named 'Summer Charm' as shown and described herein that differs from all other varieties by the unique combination of: (1) large panicles of creamy-white flowers produced annually and not intermittently; (2) narrow, upright tree habit; (3) outstandingly thick glossy, fine-textured foliage resulting from the production of an abundance of leaves borne; (4) attractive lustrous dark-brown bark with an abundance of light-colored and persistant lenticels.

PATENTS

GRANTED OCT. 18, 1994

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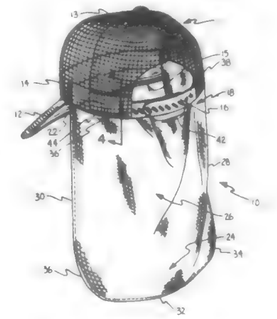
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GENERAL AND MECHANICAL

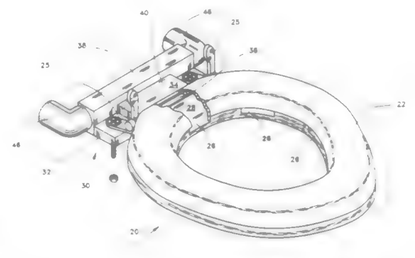
5,355,535
HAT SUNGUARD DEVICE
Thomas A. Bruder, 2500 W. 87th St., Bloomington, Minn. 55431
Filed Apr. 23, 1993, Ser. No. 52,633
Int. Cl.[5] A42B *1/06*
U.S. Cl. 2—172 **19 Claims**



1. A hat with a detachable hat sunguard device comprising:
(a) a baseball-style hat having a bill, and a dome having an interior, an upturned inner band, a back having coupling adjustable members, and interior opposite sides; and
(b) a hat sunguard having a substantially rectangular body formed of a fabric material, said body having an upper portion and a lower portion, said upper portion having a centrally positioned notch having a lower edge defining a pair of pockets having interior edges proximal to said notch, said body further having a first edge depending from one of said pockets opposite to said interior edge of said one pocket, and a second edge depending from said other pocket opposite to said interior edge of said one pocket, said body further having a third edge perpendicular to said first and second edges proximal to said lower portion, said body further having a pair of rounded corners where one of said rounded corners extends between said first edge and said third edge and said other rounded corner extends between said second edge and said third edge, said body further having a pair of resilient tab members where one of said tab members is positioned inside each of said pockets and each of said pockets is releasably and foldably engaged over said upturned inner band on opposite sides of said interior of said hat where said pockets are frictionally pinched between said interior opposite sides and said upturned inner band releasably and adjustably attaching said hat sunguard to said hat where said body depends from said back of said hat.

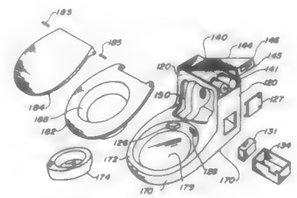
5,355,536
VENTILATED TOILET SEAT ASSEMBLY
Anthony Prisco, 3600 Redwood, Las Vegas, Nev. 89103
Continuation-in-part of Ser. No. 633,970, Dec. 26, 1990, Pat. No. 5,170,512, which is a continuation-in-part of Ser. No. 481,344, Feb. 16, 1990, Pat. No. 5,010,600. This application Jul. 16, 1992, Ser. No. 914,876
Int. Cl.[5] E03D *9/04*
U.S. Cl. 4—217 **6 Claims**

1. A ventilated toilet seat assembly comprising:
a) a hollow toilet seat including a hollow seat base attached thereto;
b) at least one vent aperture in the toilet seat opening into the hollow interior thereof;
c) a mounting block attached to the toilet seat;
d) the mounting block including a top vent plate having a passageway therethrough communicating with the hollow interior of the toilet seat when the toilet seat is in a lowered position;
e) the mounting block further including a rear top block with a passageway therethrough communicating with the passageway in the top vent plate;
f) a hollow tubular member attached to the rear top block and including an opening therein that communicates with the passageway in the rear top block;
g) at least one hollow coupling joined to the hollow tubular member; and



h) means for pivotally connecting the toilet seat to the mounting block so that the passageway in the top vent plate can be disconnected from the hollow interior of the toilet seat while at the same time the passageway in the top vent plate remains in communication with the passageway in the rear top block and the hollow tubular member when the toilet seat is in a raised position
whereby when the ventilated toilet seat assembly is connected to a source of suction, noxious odors from a toilet can be exhausted through the ventilated toilet seat assembly when the toilet seat is in the lowered position and noxious odors can be exhausted directly through the passageway in the top vent plate when the toilet seat is in the raised position and the communication between the toilet seat and the source of suction is disconnected.

5,355,537
ENVIRONMENTALLY CONTROLLED PORTABLE TOILET
Daniel S. Redford, 5270 Elvira Rd., Woodland Hills, Calif. 91364
Division of Ser. No. 746,934, Aug. 19, 1991, Pat. No. 5,210,884. This application May 10, 1993, Ser. No. 59,643
Int. Cl.[5] A47K *13/00*
U.S. Cl. 4—217 **7 Claims**



1. An environmentally controlled portable toilet comprising:

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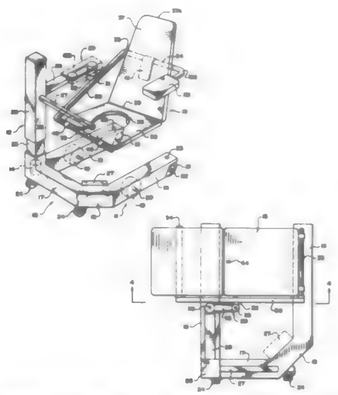
a) a bowl-structure having an opening with a rim, a bowl-structure top, a center section and an enclosed bottom,
b) a toilet seat, positioned on top of the said rim, said seat having an integrated seat-skirt extending downwardly into the said bowl-structure and forming within said bowl-structure, and air-trapping cavity between said seat-skirt and said bowl-structure,
c) an air cooling means for cooling the air circulating inside said bowl-structure,
d) an air circulation means for generating a flow of air into said bowl-structure through at least one exhaust opening positioned inside said air-trapping cavity, moving air inside said bowl-structure, and returning the air from said air-trapping cavity to said air circulation means through at least one inlet opening positioned inside said air trapping cavity, wherein the moving air inside said bowl-structure resembles a cyclone-type air circulation that generates secondary air currents that move radially from the center of said bowl-structure, carrying airborne contaminants from the bowl-structure center to said air-trapping cavity, and mixing them with the air sweeping tangentially inside said air-trapping cavity thus lowering the temperature of the air carrying the airborne contaminants to prevent their escape from the bowl-structure during the toilet use, and
e) a sanitizer/conditioning means for dispensing odor conditioning and sanitizing agents into recirculating air returning to said bowl-structure.

5,355,538

LIFTING AND TRANSPORTATION DEVICE FOR BED RIDDEN PATIENTS

Raymond Fulford, Winnipeg; Brian Prystupa, and Steve Mardero, both of Manitoba, all of Canada, assignors to Canadian Aging & Rehabilitation Product Development Corporation, Winnipeg, Canada

Filed Mar. 22, 1993, Ser. No. 35,184
Int. Cl.[5] A61G *7/14, 7/10*
U.S. Cl. 5—86.1 21 Claims



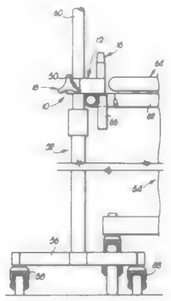
1. A lifting and transportation device for use by a bed ridden patient comprising
a base frame having a plurality of ground wheels on the base frame for rolling movement of the base frame across a floor;
an upstanding support structure extending upwardly from the base frame to be carried thereby and including a bottom portion mounted on the base frame and a top portion mounted on the bottom portion for movement upwardly and downwardly relative to the bottom portion for raising and lowering the patient;
a patient support assembly including a seat back portion for engaging the back of the patient and the seat bottom portion for engaging the buttocks and thighs of the patient, the seat back portion being pivotally connected to the seat bottom portion so as to be pivotal about a rear edge of the seat bottom portion from a first position, in which the seat back portion and the seat bottom portion lie in a common horizontal plane for supporting the patient in a lying position to a second position in which the seat back portion is inclined upwardly and rearwardly from the rear edge for supporting the patient in a sitting position; and,
mounting means mounting the patient support assembly on the support structure for vertical movement therewith;
said mounting means including a rigid arm means extending outwardly from the support structure so as to hold the patient support assembly at a stable position over the base frame, pivot means for rotating the patient support assembly about a vertical axis through 90° relative to the arm so as to rotate the patient support assembly relative to the base frame between the first position in which the patient lies transverse to the base frame and the second position in which the patient sits longitudinal of the base frame and translation means for horizontally translating the pivot means relative to the support structure so that, as the patient support assembly is rotated from the first position to the second position, the pivot means is also moved horizontally to move the center of gravity of the patient relative to the base frame.

5,355,539

CLAMP FOR INTERCONNECTING A FREE STANDING, WHEELED INTRAVENOUS POLE WITH A MOBILE GURNEY

Conrad H. Boettger, Hesston, Kans., assignor to St. Francis Research Institute, Wichita, Kans.

Filed Jan. 19, 1993, Ser. No. 5,825
Int. Cl.[5] A47C *21/00;* F17L *3/00*
U.S. Cl. 5—503.1 8 Claims



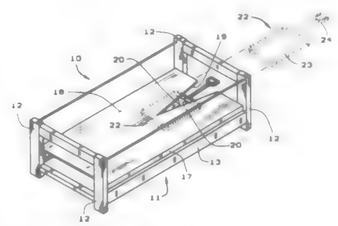
1. In combination:
a mobile patient transfer device presenting a frame and an upstanding, upwardly opening tubular section;
a support stand including a wheeled base and an upright standard secured to said base; and
means for releasably coupling said support stand to said transfer device in order to permit movement thereof together, including a clamp body presenting a pair of spaced apart jaws cooperatively defining a recessed area receiving said standard, an elongated connector element secured to said body and oriented transverse to said jaws and positioned within said tubular section, and means for releasably maintaining said standard within said recessed area,
said connector element and tubular section permitting relative pivoting movement between the transfer device and support stand.

5,355,540

INVALID BED

James O. Allen, 1600 Dr. Martin Luther King Dr., Peoria, Ill. 61605

Filed Oct. 12, 1993, Ser. No. 135,287
Int. Cl.[5] A61G *7/02*
U.S. Cl. 5—604 12 Claims



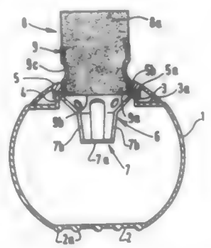
1. An invalid bed comprising
(a) a frame,
(b) a bottom support positioned on the frame having a top mattress supporting surface with a V-shaped opening beneath the buttocks of the patient,
(c) a waste receptacle pan beneath the opening,
(d) a mattress positioned on the supporting surface, said mattress having a cut out area beneath the buttocks of the user aligned with the top surface opening, and
(e) an auxiliary mattress segment movable into and away from the cut out area to expose the top surface opening for toilet use by the patient without moving the patient.

5,355,541

EQUIPMENT FOR THE MACHINE WASHING OF CLOTHES AND THE METHOD OF UTILIZING THE SAME

Philippa J. Rutter, Durhan, Great Britain; Henri Cornette, Pointoise, France; John Bailey, Newcastle Upon Tyne, Great Britain; Gerard Bocquet, Neuilly Sur Seine, France; Aude Bouraoui-Karoui, Strombeek-Bever, Belgium, and Gilbert Laurenty, Paris, France, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US91/08824, § 371 Date May 25, 1993, § 102(e) Date May 25, 1993, PCT Pub. No. WO92/09737, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 25, 1991, Ser. No. 64,109
Claims priority, application France, Nov. 30, 1990, 90 15064
Int. Cl.[5] D06F *39/02*
U.S. Cl. 8—158 18 Claims



1. Equipment comprising a reusable measuring and dispensing device for use in the machine washing of clothes, said device comprising a hollow body closed at one end by a base and adapted to receive a predetermined amount of a product, said hollow body being provided with at least one filling opening and with outlets for distribution of said product, said device being adapted to be placed, together with clothes to be washed, in a drum of a washing machine, wherein said device is progressively emptied of said product during the course of a washing cycle, said device being further provided with pretreatment means for enabling a user to effect, once said device has been filled, a controlled application of a pretreatment amount of said product to selected areas of said clothes to accomplish a pretreatment of said areas before said washing cycle, said device, containing a residual amount of product remaining after said pretreatment, being introduced into said machine together with said clothes, and in that said pretreatment means are removable from said body of said device.

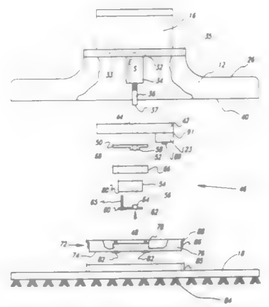
18. Process for pretreating and washing clothes in a washing machine, comprising the following steps:
(a) a dosage of the total quantity of liquid detergent to be utilized during a washing cycle is introduced into a measuring and dispensing device;
(b) said clothes are pretreated with a controlled pretreatment quantity of said total liquid detergent dosage contained in said device; and
(c) said clothes and said device containing the residual quantity of liquid detergent remaining after said pretreatment quantity is applied to said clothes are placed in a drum of said washing machine, such that the residual quantity of liquid detergent is used for said washing cycle.

5,355,542

ORBITER FLOOR MACHINE

Marshall B. Oreck, and David I. Oreck, both of New Orleans, La., assignors to Oreck Corporation, New Orleans, La.

Filed Nov. 12, 1992, Ser. No. 975,627
Int. Cl.[5] A47L *11/162*
U.S. Cl. 15—49.1 10 Claims



7. An orbiter floor machine for treating floors, comprising:
a motor having a rotatable drive shaft extending therefrom, the drive shaft having a shaft axis;
a flywheel having an axial opening for fixedly receiving the drive shaft so that rotation of the drive causes rotation of the flywheel;
a bearing assembly having an eccentric aperture through which the drive shaft extends such that the bearing assembly has an axis that is radially spaced from the shaft axis, the bearing assembly being secured to the flywheel, the rotation of the flywheel causing the bearing assembly to orbitally rotate such that the bearing axis orbits about the drive shaft axis; and
a counterbalance weight secured to the flywheel in a position opposite to the bearing assembly axis with respect to the shaft axis, the counterbalance weight being radially coplanar with the bearing assembly;

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a housing having a downwardly and outwardly extending flange terminating in a lower edge; and

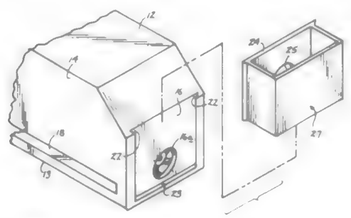
a motor mount to which the motor is affixed, the motor mount being affixed to the housing, the motor mount having a cylindrical member extending axially away from the motor, the drive shaft extending coaxially through the cylindrical member, the cylindrical member having a radius larger than a radius of the bearing assembly eccentric aperture, thereby preventing the bearing assembly from sliding onto the cylindrical member, the cylindrical member having a length that causes the bearing assembly to be positioned in the same radial plane as the housing lower edge.

5,355,543

LOTTERY CARD SCRAPER APPARATUS

Mark R. Cameron, and Kelly D. Cameron, both of 301 Bayou Dr., Bay City, Tex. 77414

Filed Oct. 20, 1993, Ser. No. 138,869
Int. Cl.[5] B08B *11/00*
U.S. Cl. 15—93.1 **6 Claims**



1. A lottery card scraper apparatus, comprising,

a housing, the housing including a top wall spaced from a bottom wall, a first side wall spaced from a second side wall, a first end wall spaced from a second end wall,

and

the housing including a housing cavity,

and

an entrance slot directed through the first side wall, the second side wall including an exit slot, with the entrance slot and the exit slot arranged in a coextensive parallel relationship relative to one another, the bottom wall includes a floor within the housing cavity, with the floor in contiguous communication with the entrance slot and the exit slot,

and

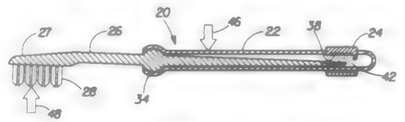
an axle rotatably mounted to the first end wall and the second end wall parallel to the floor, the axle including a resilient drive roller, a rigid helical blade member, with the drive roller and the blade member coaxially aligned in a spaced relationship relative to one another, with a central pulley mounted coaxially to the axle between the resilient cylinder and the helical blade, and drive means mounted within the cavity for effecting rotation of the axle, with the drive means including a drive means pulley, and the drive means pulley and the central pulley including a drive belt extending therebetween.

5,355,544

FORCE-INDICATING TOOTHBRUSH USING MAGNETIC LATCHING

Robert S. Dirksing, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 157,357, Nov. 22, 1993, abandoned. This application Mar. 22, 1994, Ser. No. 216,598
Int. Cl.[5] A46B *9/04*
U.S. Cl. 15—105 **18 Claims**



1. A force-indicating toothbrush comprising:

a) a hollow handle having a latching end and a connecting end;

b) a brush member having a brush head, a connecting point, and a magnetic surface, said connecting point and magnetic surface being disposed at spaced locations on said brush member said brush member arranged relative to said hollow handle such that said connecting end of said hollow handle is connected to said connecting point of said brush member to enable said brush member to move relative to said hollow handle about said connecting end, and said latching end of said hollow handle is positioned adjacent to said magnetic surface of said brush member; and

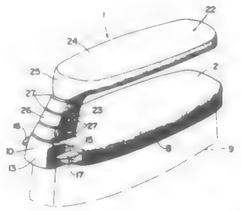
c) a magnet connected to said latching end of said hollow handle opposite said magnetic surface of said brush member such that when said magnet contacts said magnetic surface over a contact area, a magnetic force latches said brush member to said hollow handle until a predetermined force is applied to said brush head to cause said magnet to separate from said magnetic surface, thereby unlatching said brush member from said hollow handle to indicate that said predetermined force has been exceeded.

5,355,545

HAND AND FINGERNAIL CLEANING BRUSH

Mary M. Hoagland, Cincinnati, Ohio, assignor to Vining Industries, Inc., Springfield, Ohio

Filed Jan. 11, 1993, Ser. No. 2,151
Int. Cl.[5] A46B *9/00*
U.S. Cl. 15—111 **19 Claims**



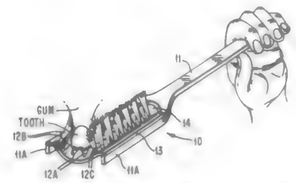
1. A hand and fingernail cleaning brush comprising an elongated bristle block body having a top surface, a bottom surface, body sides, forward and rearward ends, a plurality of bristles extending downwardly from said bottom surface, a recessed alcove formed in said body at the juncture of said forward end of said body and one of said body sides, a fixed fingernail cleaner extending forwardly in said alcove and terminating in a forward cleaning end located slightly rearwardly of said body forward end when in a fingernail cleaning position.

5,355,546

TOOTHBRUSH WITH RESILIENT FLEXIBLE BRISTLE SUPPORT

Paul A. Scheier, and Louise E. Scheier, both of 220 Central Park South, New York, N.Y. 10019

Filed Dec. 11, 1992, Ser. No. 989,163
Int. Cl.[5] A46B *9/04*
U.S. Cl. 15—167.2 **12 Claims**



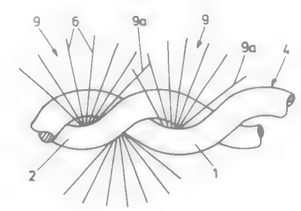
1. A toothbrush comprising a readily flexed resilient member having a longitudinally extending intermediate portion and peripheral portions, said peripheral portions extending along opposite sides of said intermediate portion, said intermediate portion when stressed being readily stretchable so as to change its shape and size, an elongated handle means for manipulating said resilient member, said handle means having spaced apart portions defining extension means which extend parallel to the longitudinal axis of the handle connected to said peripheral portions of said resilient member leaving the intermediate portion of said resilient member free to flex and change shape and size when stressed, a plurality of bristle tuft arrays fixed to said intermediate portion of said resilient member intermediate said handle portions, said arrays including a center array between outer arrays on opposite sides of said center array, said outer bristle tuft arrays being free to move and also incline relative to one another when said resilient member is stretched and flexed by said handle means while the center array engages the biting surface of at least one tooth, for simultaneously engaging the biting surface of said at least one tooth with said center array while at the same time the outer arrays engage respectively the inner and outer sides and the adjacent gums of said at least one tooth being cleaned.

5,355,547

DENTAL CLEANING BRUSH

Holger Fitjer, Ansbach, Fed. Rep. of Germany, assignor to Georg Karl Geka-Brush GmbH, Bechhofen-Walzendorf, Fed. Rep. of Germany

Filed Feb. 25, 1993, Ser. No. 22,126
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1992, 9202508
Int. Cl.[5] A46B *3/18*
U.S. Cl. 15—206 **2 Claims**



1. An interdental brush, comprising a plurality of fiber portions retained between two twisted wire sections and extending away from the latter,

wherein the diameter of the wire sections (1,2) is in the range of 0.1 to 0.25 mm,

wherein each individual fiber portion **96**) consists of a plurality of fiber-segment portions (9), the fiber-segment portions (9) extending away from where they are retained between the wire sections (1,2) while fanning out in tufts, and part of the fiber portions (9) also extending approximately in the longitudinal direction of the wire sections (1,2), and

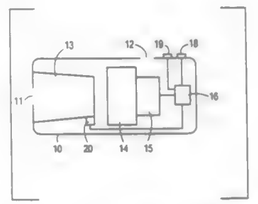
wherein only the fiber-segment portions (9) are glued together where they are retained between the wire sections (1,2) by means of a glue (10) soluble in a solvent that does not attack the fiber-segment portions (9).

5,355,548

APPARATUS COMPRISING AN ELECTRIC MOTOR WITH VARIABLE MOTOR POWER

Jan H. Dekker, Hoogeveen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 856,772, Mar. 24, 1992, abandoned. This application Oct. 6, 1993, Ser. No. 132,435
Claims priority, application European Pat. Off., Mar. 29, 1991, 91200754.9
Int. Cl.[5] A47L *9/28*
U.S. Cl. 15—319 **11 Claims**



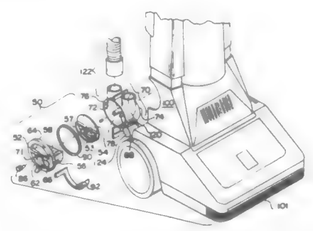
1. A vacuum cleaner comprising an electric motor with a variable motor power, a vacuum chamber for generating a partial vacuum by means of the electric motor, and a control circuit for controlling the variable motor power and comprising means for temporarily increasing the variable motor power to a power level above a nominal power level, said means being effective to temporarily increase the variable motor power in dependence upon the partial vacuum generated in the vacuum chamber, the temporary increase of the variable motor power being inhibited if the partial vacuum exceeds a reference partial vacuum related to a maximum speed value of the motor.

5,355,549

DIVERTER VALVE FOR VACUUM CLEANER APPARATUS

Gary Steinberg, Jenison, and Henry Rosendall, Grand Rapids, both of Mich., assignors to Amway Corporation, Ada and Bissell Inc., Grand Rapids, both of Mich.

Filed Mar. 13, 1992, Ser. No. 850,679
Int. Cl.[5] A47L *5/32*
U.S. Cl. 15—334 **4 Claims**



1. A diverter valve assembly for a vacuum cleaner with

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suction creating means, a floor cleaning member for carrying dirty air from a floor surface, and an accessory cleaning member for carrying dirty air from an off-floor surface, comprising:

a vacuum cleaner housing defining a cylindrical shaped cavity therein, a vacuum outlet orifice communicating with the suction creating means, located generally tangential to the cavity and in a first quadrant of said cavity,

a first orifice communicating with the floor cleaning member, located generally normal to the cavity and in a second quadrant of said cavity,

a second orifice communicating with the accessory cleaning member, located generally tangential to the cavity and in a third quadrant of said cavity, and

a post affixed to the housing, extending into the cylindrical shaped cavity and parallel to the axis of the cylindrical shaped cavity, said post located between said vacuum cleaner housing and said cavity axis, about 180 degrees from said vacuum outlet orifice;

a clear plastic substantially cylindrical valve member having a centered cylindrical hole extending axially through inboard and outboard axial end walls, and an arcuate slot in said inboard end wall of said valve member adapted to receive said post therein, said valve member being slidably received in said housing cavity with said post received in the arcuate slot to allow for limited rotation of said member with respect to said housing,

said valve member further defining an arcuate cavity open along the circumference of said member, with said axial end walls corresponding to the bases of said member, and an interior generally planar wall,

said member having a flange extending from one base thereof and defining an annular recess therein with said recess opening toward the other base of said valve member;

an annular gasket received in said flange annular recess; and

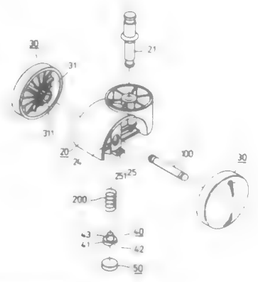
removable attachment means for rotatably retaining said cylindrical member within the housing cavity, whereby the member may be rotated with respect to the housing and allow the vacuum outlet orifice to effectively communicate with the first and second orifice.

5,355,550

PIVOTING CASTOR

Su-Hua Yang, 25, Lane 97, Hertzuoh St., Fong-Yuan, Taichung, Taiwan

Filed Oct. 19, 1993, Ser. No. 137,918
Int. Cl.[5] B60B *33/00*
U.S. Cl. 16—44 **10 Claims**



1. A pivoting castor comprising:

a main body provided on one side thereof with a shaft post pivoted thereto and intended to permit said main body to be mounted pivotally under an outer end of each branch of a claw-shaped bottom seat of a chair, said main body having a bottom provided centrally and upwardly with a receiving space of cylindrical construction and having an opening facing downwards, said bottom of said main body further provided in an upper portion of a center thereof with a pivoting hole having a cross section of an upright oblong shape, said pivoting hole provided respectively under both sides thereof with a recessed arcuate collar block provided in a circumferential surface of a top thereof with a first contact portion;

a cross shaft having a midsection pivoted in said pivoting hole of said main body;

two wheeled members pivoted respectively to both ends of said cross shaft and provided respectively in an inner side thereof with a shaft tube portion provided in a circumferential surface thereof with a second contact portion;

a braking member mounted over said midsection of said cross shaft and provided with a disk portion having a bottom provided with an arcuate slot and having a top provided with a post extending upwards therefrom, said arcuate slot being attached to a top surface of said midsection of said cross shaft; and

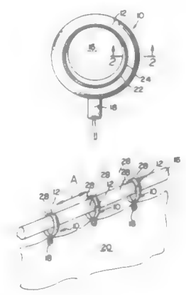
an elastic element disposed in said receiving space of said main body such that a top end of said elastic element urges a top wall of said receiving space, and that a bottom end of said elastic element urges said disk portion of said braking member, and further that said post is fitted into a lower segment of said elastic element, and still further that said elastic element presses downwards said cross shaft so as to cause said midsection of said cross shaft to move downwards to reach a lower segment of said pivoting hole, thereby causing said second contact portion of said two wheeled members to engage said first contact portion of said main body so as to incapacitate the mobility of said wheeled members.

5,355,551

SCENT-RELEASING CURTAIN RINGS

Daniel R. Schechter, and Susan Murphy, both of 105 Cooper Ct., Port Jefferson, N.Y. 11777

Filed Apr. 27, 1993, Ser. No. 53,916
Int. Cl.[5] A44B *13/00, 21/00;* **E05D** *15/00*
U.S. Cl. 16—87.2 **4 Claims**



1. A curtain ring for mounting a curtain rod and for suspending a curtain, comprising:

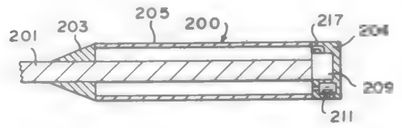
a ring member suspendable on said rod, said ring member having a means for releasing fragrance integral therewith, said means releasing a fragrance into the atmosphere in response to movement of said means along said rod.

5,355,552

AIR CUSHION GRIP WITH A CUBIC SUPPORTING STRUCTURE AND SHOCK-ABSORBING FUNCTION

Ing-Chung Huang, No. 15 Reh-Her 1st Street, Kaohsiung City, Taiwan

Continuation-in-part of Ser. No. 734,487, Jul. 23, 1991, Pat. No. 5,193,246. This application Mar. 4, 1993, Ser. No. 26,686
The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.
Int. Cl.[5] A47B *95/02;* **A47J** *45/10*
U.S. Cl. 16—111 R **14 Claims**



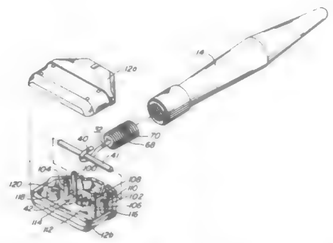
1. A handle cushion grip of the type wherein the handle includes a central core body surrounded at least in part by an inflatable air bladder enclosed within an outer layer of cushion material, the improvement comprising: an air pump substantially permanently secured to the air bladder for inflating same.

5,355,553

ADJUSTABLE HANDLE FOR A HAND IMPLEMENT

Frederick G. Mahoney, 102 W. Ninth St., Pittsburgh, Pa. 15215

Filed Oct. 21, 1992, Ser. No. 964,255
Int. Cl.[5] A47B *95/02;* **A47J** *45/10;* **E05B** *1/00*
U.S. Cl. 16—112 **8 Claims**



1. In a hand implement assembly, the combination comprising:

a base means having a plurality of surfaces, at least some of which are oriented in differing planes with respect to one another;

handle means having a butt end surface which is adapted to be fixed selectively in abutting engagement with ones of said surfaces, respectively;

selectively adjustable stem means cooperably retained with respect to said handle means and said base means to selectively retain said butt end surface of said handle means in firm abutting engagement with any of said surfaces to define a plurality of positions of said handle means with respect to said base means;

a retention means which is enclosed within said base means and is cooperable with said stem means for retaining said stem means with respect to said base means;

opening means communicating within said base means between said retention means and said plurality of surfaces, respectively, to accommodate movement of said handle means selectively to said plurality of positions, respectively, while said stem means is retained with respect to said base means;

said base means including a pair of mating portions which are mutually cooperable in assembly with each other to form at least a portion of said base means, said mating portions having recess means for receiving said retention means and said mating portions closing said recess means upon assembly with each other in mating relation to retain said retention means with respect to said base means; and

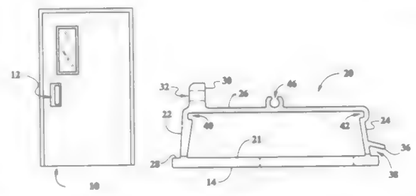
each said mating portion including a plurality of elongated pin means extending therefrom, said pin means of the respective said mating portions being mutually cooperable to form said recess means upon assembly of said mating portions.

5,355,554

FLUSH DOOR PULL HANDLE AND MEANS FOR MOUNTING

Robert D. Magoon, Duluth, Ga., assignor to Kawneer Company, Inc., Norcross, Ga.

Filed Nov. 10, 1992, Ser. No. 974,268
Int. Cl.[5] A47B *95/02*
U.S. Cl. 16—124 **8 Claims**



1. A door handle for flush mounting within the face of a door having walls defining a cutout therewithin, said door comprising a lock stile, and said cutout-defining walls including a first wall adjacent to said lock stile and an opposed second wall remote from said lock stile, said door handle comprising:

a front panel having opposing front and back surfaces and having an opening therethrough dimensioned to receive at least the fingers of a human hand, whereby a user can insert his fingers through said opening and grasp the back surface of said front panel to exert a pulling force thereagainst;

a housing attached to said back surface of said front panel and extending rearward therefrom, said housing having opposing first and second lateral edges;

means mounted to said housing for engaging said first lateral edge of said housing with said second wall remote from said lock stile when said housing is disposed within said cutout in said face of said door;

a threaded fastener; and

a threaded bore formed on said second lateral edge of said housing such that when said housing is disposed within said cutout in said face of said door, said threaded fastener is selectively insertable through said lock stile and threadable into said threaded bore of said housing:

whereby said door handle is mountable to said door without the need for exposed fasteners.

5,355,555

ELONGATED BENDABLE DEVICE

Christer Zarelius, Skeppargatan 29, 114 52 Stockholm, Sweden

PCT No. PCT/SE91/00618, § 371 Date Mar. 2, 1993, § 102(e) Date Mar. 2, 1993, PCT Pub. No. WO92/05331, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 16, 1991, Ser. No. 983,850
Claims priority, application Sweden, Sep. 18, 1990, 9002966-1
Int. Cl.[5] E05D *1/02*
U.S. Cl. 16—225 **15 Claims**

1. A hinge strip for forming a hinge arrangement having a plurality of edge related segments oriented between two mutually adjacent elements, normally in the form of two flat panels, the hinge strip comprising a single layer of flexible material

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having at least one surface coated with a respective adhesive layer for adhesion to at least one of an edge region and an edge surface of a respective element, the hinge strip being divided longitudinally into segments by a plurality of spaced apart segment-separating weakenings which extend transversely to a longitudinally extending hinge rotation line, each segment having a non-adhesive surface region positioned between two



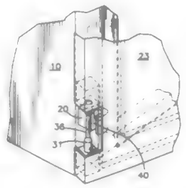
transversely adjacent adhesive surface regions adapted to be adhered to a respective side region of one element and an edge region of the other element, wherein a non-adhesive surface region of a first segment being located on one side of and adjacent to the hinge rotation line, and a first surface region of an adjacent segment is located on the other side of and adjacent to said hinge rotation line.

5,355,556

ENCLOSURE HAVING REVERSIBLE DOOR AND HINGE THEREFOR

Ronald W. Lyon, Carmel, Ind., assignor to Aircom Metal Products, Inc., Indianapolis, Ind.

Filed Jan. 26, 1993, Ser. No. 8,549
Int. Cl.[5] E05D *7/10*
U.S. Cl. 16—266 **20 Claims**



1. A hinge, comprising:
- a first leaf having two axially opposed, axially spaced pintles generally round in cross-section and each having an end surface;
- a second leaf having a knuckle with a socket generally round in cross-section for receiving one of the pintles, said socket having an internal surface upon which one of the pintle end surfaces bears;
- a post joining the pintle end surfaces, said post having a smaller cross-section than the pintles; and
- a slot in the knuckle for receiving the post.

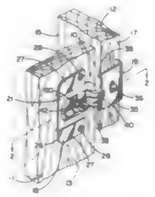
6. An enclosure with a reversible door, comprising:
- a frame having an opening and having left and right sides;
- a door to close said opening;
- two pairs of axially opposed, axially spaced pintles generally round in cross-section and each having an end surface, said pintles being attached near an edge of the door and being substantially axially aligned;
- a post joining the pintle end surfaces, said post having a smaller cross-section than the pintles;
- four knuckles each having a socket generally round in cross-section for receiving one of the pintles, each of said sockets having an internal surface upon which one of the pintle end surfaces can bear, two of the knuckles being axially aligned and mounted to the frame on the left side of the opening and two of the knuckles being axially aligned and mounted to the frame on the right side of the opening, so that two knuckles on the same side can each simultaneously receive one pintle of a corresponding pair; and
- a slot in the knuckle for receiving the post.

5,355,557

CONCEALED SELF-CLOSING HINGE WITH INTEGRAL HINGE PIN MEANS

David R. Cress, Janesville, Wis.; Michael J. Bowers, Rockford, and A. Raymond King, IV, Machesney Park, both of Ill., assignors to Amerock Corporation, Rockford, Ill.

Filed May 18, 1993, Ser. No. 63,032
Int. Cl.[5] E05F *1/08*
U.S. Cl. 16—286 **5 Claims**



1. A concealed self-closing hinge for mounting a door for swinging on a fixed frame, said hinge comprising a door member having a cup mountable in the door, the cup having a pair of opposing slots with an open space therebetween, said hinge further comprising a frame member having a wing for mounting the frame member on the frame, an arm joined to said wing and having a free end portion extending into said open space, pintles formed integrally with and projecting in opposite direction s from the free end portion of said arm and received pivotally in said slots, a plastic cam having a generally U-shaped slot therein tightly receiving the free end portion of said arm with said pintles projecting in opposite directions from said cam, said cam and the free end portion of said arm being formed with detents which coact to hold said cam releasably on the free end portion of said arm, said detents comprising an opening formed in the free end portion of said arm and further comprising a projection molded integrally with said cam within the U-shaped slot thereof and extending into said opening, and a leaf spring attached to said cup and bearing against said one to press said pintles into seating engagement with said slots, said spring coacting with said cam to bias said door member to a closed position with respect to said frame member after said door member has been swung a predetermined distance toward said closed position about the axes of said pintles.

5,355,558

HINGE ASSEMBLY

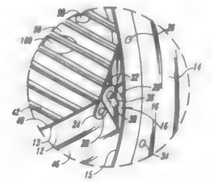
Mark W. Vertanen, Creston, Iowa, assignor to Gits Manufacturing Company, Creston, Iowa

Filed Aug. 9, 1993, Ser. No. 103,867
Int. Cl.[5] A47J *37/00;* **E05D** *11/08*
U.S. Cl. 16—360 **30 Claims**

20. A hinge assembly for pivotally securing a cover to a base, comprising:

a rigid first arm having a first end pivotally connected to the base and a second end pivotally connected to the cover;

a second arm adjacent the first arm and having a first end pivotally connected to the cover and a second end pivotally connected to the first arm; and



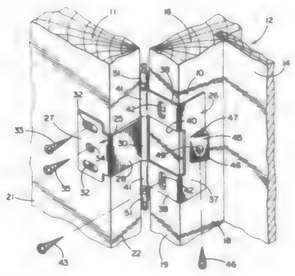
the first arm being connected to the exterior of the base and the interior of the cover, and the second arm being connected to the interior of the cover.

5,355,559

HINGE FOR INSET DOORS

Michael J. Bowers, Rockford, and Jeffrey L. Sullivan, Loves Park, both of Ill., assignors to Amerock Corporation, Rockford, Ill.

Filed Apr. 26, 1993, Ser. No. 52,455
Int. Cl.[5] E05D *5/06, 5/10, 5/00*
U.S. Cl. 16—389 **9 Claims**



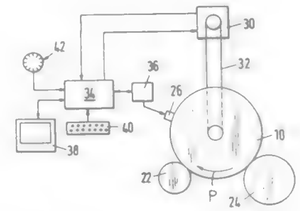
1. A hinge for mounting an upright door member for swinging between open and closed positions on an upright frame member, each of said members comprising a rear upright face surface and each further comprising an upright edge surface extending generally perpendicular to the rear face surface, the edge surfaces of said members being disposed in substantially parallel spaced relation when said door member is in said closed position, said hinge comprising a door wing adapted for attachment to said door member and having first and second flanges engageable with said rear face surface and said edge surface, respectively, of said door member, said hinge further comprising a frame wing adapted for attachment to said frame member and having first and second flanges engageable with said rear face surface and said edge surface, respectively, of said frame member, means pivotally interconnecting said second flanges of said door and frame wings at forward free edges of said second flanges and supporting said door member for swinging between said positions, an upright wall formed integrally with and projecting rearwardly from said first flange of said frame wing and angled in such a direction as to diverge away from the rear face surface of said frame member upon progressing away from the edge surface of said frame member, and a fastener-receiving hole formed through said wall and having an axis disposed at an acute angle relative to the rear face surface of said frame member.

5,355,560

CONTROLLED GRINDING OF CLOTHING

Peter Fritzsche, Winterthur, and Robert Demuth, Nurensdorf, both of Switzerland, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed Apr. 6, 1993, Ser. No. 43,305
Claims priority, application Switzerland, Apr. 7, 1992, 01136/92
Int. Cl.[5] B24B *19/18;* **D01G** *15/38*
U.S. Cl. 19—98 **23 Claims**



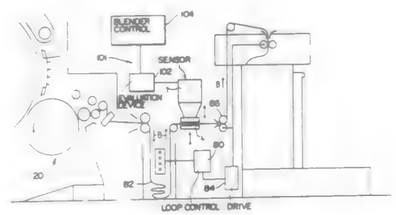
1. A textile machine comprising in combination:
- a processing element, said processing element having a working shape, said working shape having a predominant influence on at least one quality parameter of a product being produced on said machine;
- the working shape of said processing element deteriorating as an operating period of said machine increases, with product quality of said product being impaired accordingly;
- a built-in maintenance element, operatively associated with said processing element, said maintenance element improving the working shape of said processing element by treatment thereof in order to counteract the impairment of the quality of said product;
- said maintenance element being movable between a waiting position and an operating position; and
- a control unit, operatively interconnected with said maintenance element, said control unit controlling or initiating the movement of said maintenance element from said waiting position to said operating position and vice-versa.

5,355,561

METHOD AND APPARATUS FOR MEASURING A CHARACTERISTIC OF A FIBER STRUCTURE, SUCH AS A FIBER COMPOSITE OR A SLIVER

Jurg Faas, Dinhard, Switzerland, assignor to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed Oct. 30, 1991, Ser. No. 785,064
Claims priority, application Switzerland, Nov. 2, 1990, 3 496/90-0
Int. Cl.[5] D01G *21/00;* **G01N** *21/00, 21/86;* **G01J** *3/50*
U.S. Cl. 19—300 **25 Claims**



1. A method for determining, during continuous operation of a textile fiber processing apparatus, a characteristic in a fiber

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structure composed of different individual types of textile fibers, said method comprising the steps of:

selecting a pregiven blending proportion of said individual types of textile fibers in said fiber structure as a characteristic to be determined; and

measuring a concentration of at least one of said individual pregiven different types of textile fibers for determining said blending proportion.

5,355,562

BUCKLE

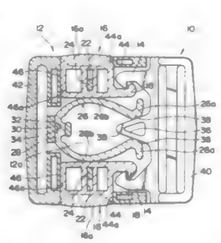
Hiroshi Matoba, and Ryukichi Murai, both of Toyama, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Sep. 14, 1993, Ser. No. 120,527

Claims priority, application Japan, Sep. 17, 1992, 4-071473[U]; Sep. 17, 1992, 4-071474[U]; Dec. 30, 1992, 4-093534[U]

Int. Cl.[5] A44B *11/00*

U.S. Cl. 24—625 **23 Claims**



1. A buckle for fastening two end portions of an article, comprising:

(a) a male member adapted to be connected to one of the end portions of the article and including a pair of locking elements;

(b) a female member adapted to be connected to the other end portion of the article and including a pair of actuating members movably mounted in said female member, a pair of retaining elements integral with said actuating members, respectively, and releasably engageable with said locking elements to couple said male and female members, and a resilient member disposed in said female member for urging each of said actuating members in one direction such that said locking elements and said retaining elements are firmly locked together, said actuating members being movable in the opposite direction against the resiliency of said resilient member to disengage said locking elements and said retaining elements; and

(c) a force deflecting member provided on one of said male and female members for deflecting a resilient force of said resilient member toward a direction of removal of said male member from said female member so that when said locking elements are disengaged from said retaining elements in response to the movement of said actuating members in said opposite direction, said force deflection member is operated to thrust out said male member from said female member.

5,355,563

FASTENER AND ORNAMENTAL DEVICE USING SAME

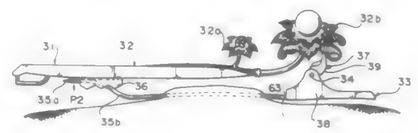
Kiyohiro Kanno, Tokyo, Japan, assignor to Jatecs Yugen Kaisha, Tokyo, Japan

PCT No. PCT/JP90/00272, § 371 Date Jul. 31, 1991, § 102(e) Date Jul. 31, 1991, PCT Pub. No. WO91/12742, PCT Pub. Date May 9, 1991

PCT Filed Mar. 1, 1991, Ser. No. 741,509

Int. Cl.[5] A44B *9/00*

U.S. Cl. 24—708.1 **5 Claims**



1. A fastener attached to a main body of an ornamental device, characterized by comprising:

connecting means for freely rotatably connecting the fastener to said main body;

a pin extending in one direction and a lever of said pin extending in another direction, from a portion connected at said connecting mean;

biasing means for biasing a distal end of said pin toward said main body about a rotary shaft constituted by said connecting means; and

accommodating means for accommodating said distal end of said pin at a portion where said biasing means causes said distal end to abut against an outer surface of said main body;

said pin having a plurality of juxtaposed pins in the longitudinal direction thereof, and said accommodating means has projections between the pins which limit accommodating positions when said plurality of pins are accommodated;

said pin including difference-in-level means for shifting the axial direction of the pin in the proximity of its distal end toward said main body.

5,355,564

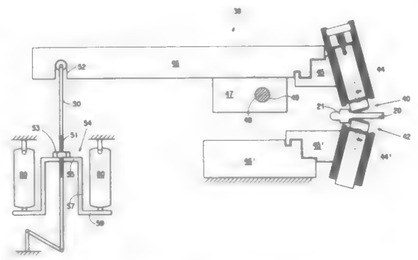
APPARATUS FOR STRETCHING A WEB OF MATERIAL

Jack E. Gunter, Jr., Pisgah Forest, N.C.; Neil I. Steinberg, Greer, S.C., and John A. Stewart, III, Pickerington, Ohio, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 933,943, Aug. 24, 1992, abandoned, which is a division of Ser. No. 751,850, Aug. 29, 1991, Pat. No. 5,173,239. This application Jul. 23, 1993, Ser. No. 96,208

Int. Cl.[5] D06C *3/04;* **B65H** *23/028*

U.S. Cl. 26—94 **4 Claims**



3. An apparatus for use in a longitudinal stretcher for longitudinally stretching a sheet of film having thickened longitudinal edges, the longitudinal stretcher being of the type having

means for engaging and stretching the film, means for heating and cooling the film above and below a glass transition temperature of the film, and a plurality of gripper pairs disposed longitudinally and above and below a plane of the film and inside and adjacent to each of the thickened longitudinal edges of the film, the apparatus comprising:

1 a first group of gripper pairs wherein each gripper pair comprises an upper gripper disposed above the plane of the film and a lower gripper disposed below the plane of the film;

2 means for adjustably moving said upper and lower grippers in said first group of gripper pairs relative to one another to provide a predetermined amount of clearance therebetween for the film;

3 a second group of gripper pairs positioned longitudinally adjacent to said first group of gripper pairs wherein each of said gripper pairs comprises an upper gripper disposed above the plane of the film and a lower gripper disposed below the plane of the film; and

4 means for adjustably moving said upper and lower grippers in said second group of gripper pairs relative to one another to grip the film with a predetermined, substantially constant amount of force in a direction substantially perpendicular to the plane of the film;

5 wherein said second group of gripper pairs comprises:

a) at least one beam disposed above the plane of the film and substantially parallel to the longitudinal dimension of the film;

b) a pivotally movable support affixed to each end of said at least one beam whereby upon pivoting said support, said at least one beam is moved toward or away from the plane of the film; and

c) pneumatic cylinder means operatively connected to said support at a location remote from said at least one beam for pivotally moving said support;

d) a plurality of grippers attached to and carried by said at least one beam, whereby said grippers comprise;

1) a substantially cylindrical barrel disposed within a bore in said at least one beam;

2) bearing means affixed to said barrel at one end thereof adjacent to the plane of the film; and

3) spring means for biasing said barrel and said bearing means toward the film;

e) wherein said pneumatic cylinder means and said spring means comprise said means for adjustably moving said grippers to exert said predetermined amount of force on the film.

5,355,565

PROCESS FOR THE PRODUCTION OF A NON-WOVEN CLOTH CONSTITUTED OF CONTINUOUS INTERCONNECTED FILAMENTS AND CLOTH THUS OBTAINED

Jean Baravian, Sundhoffen, France, assignor to Freudenberg Spunweb S.A., Colmar, France

Filed Apr. 28, 1993, Ser. No. 53,367

Claims priority, application France, Apr. 22, 1993, 93 04919

Int. Cl.[5] D04H *1/42, 1/46*

U.S. Cl. 28—104 **8 Claims**

1. A process for the production of a non-woven sheet of continuous interconnected filaments, comprising producing biconstituted filaments of a size less than 4 dtex said biconstituted filaments comprising two interconnected elemental filament components each of a different polymer, imparting to said biconstituted filaments a differential shrinkage resulting in a curling frequency of 3 to 30 curls per centimeter which in turn produces a bunching of the filaments of 50 to 400%, forming a non-woven sheet from said curled biconstituted filaments, the sheet having a weight of 10 to 400 g/m^2, and subjecting the non-woven sheet to water jets supplied under a pressure of 50 to 300×10^5 Pa to interlace and entangle the curled filaments constituting said sheet and to separate said interconnected filaments from each other.

5,355,566

MACHINE FOR THE AUTOMATIC DRAWING-IN OF WARP THREADS

Hermann Egiseer, Uster, and Hans Wilhelm, Chur, both of Switzerland, assignors to Zellweger Uster AG, Uster, Switzerland

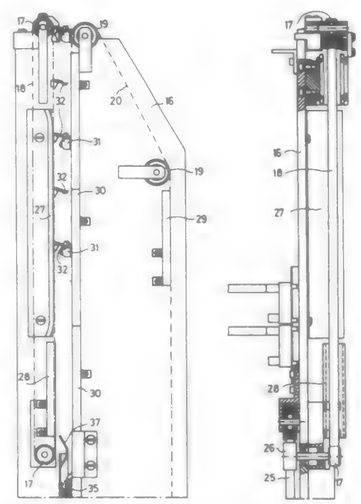
PCT No. PCT/CH91/00229, § 371 Date Jul. 1, 1992, § 102(e) Date Jul. 1, 1992, PCT Pub. No. WO92/08830, PCT Pub. Date May 29, 1992

PCT Filed Nov. 12, 1991, Ser. No. 867,189

Claims priority, application Switzerland, Nov. 14, 1990, 3619/90-1

Int. Cl.[5] B65H *67/00*

U.S. Cl. 28—202 **10 Claims**



1. Machine for drawing warp threads into a harness for a weaving machine from a warp-thread layer; said machine comprising a drawing-in member movable back and forth along a path; a frame having top and bottom clamping rails for holding said warp thread layer, means for selecting individual warp threads of the warp-thread layer, a separating member for separating warp thread ends, said top clamping rail being mounted at a position adjacent to said separating member and said bottom clamping rail being mounted at a position adjacent to said drawing-in member; means for presenting the selected warp threads to said drawing-in member, said means for presenting the warp threads including a drivable transport clamp for transporting each separated warp thread end to a position to be received by said drawing-in member, a moveable guide element for controlling the thread during the transport operation, and means for driving said guide element in timed relation to be movement of said transport clamp, means for holding the separated thread in a fixed position in the path of said drawing-in member, and means for controlling the thread during the drawing-in, said transport clamp being movable downwardly from the level of said separating member to the level of said drawing-in member, said guide element being movable downwardly from the level of said separating member to a level above said drawing member along a path such that when said transport clamp transports a separated thread end downwardly, said thread end runs from the bottom clamping rail to the guide element and from the guide rail to the transport clamp.

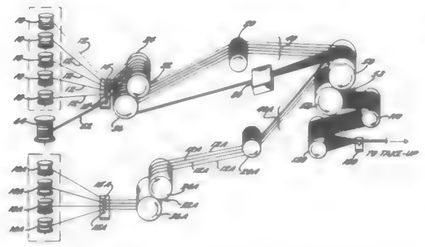
VOL 1167 ISS 3 OC 18 1994 UMI

5,355,567

PROCESS FOR PREPARING ENGINEERED FIBER BLENDS

Richard C. Holliday, Matthews, N.C., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Dec. 18, 1992, Ser. No. 993,189
Int. Cl.[5] D02G *3/04, 1/20;* B32B *17/04;* B65H *81/00*
U.S. Cl. 28—282 25 Claims



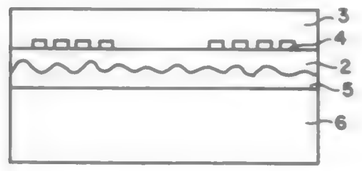
1. A process for preparing a non-uniformly blended tow of thermoplastic and reinforcing fibers comprising:
forming a substantially planar, spaced array of substantially parallel, continuous thermoplastic multifilament yarns wherein each of the multifilament yarns is substantially discrete and is spaced from adjacent yarns in the array by an amount substantially greater than the width of the individual, discrete multifilament yarns;
spreading a tow of reinforcing fibers to provide a substantially planar spread tow of said reinforcing fibers wherein said array of multifilament yarns has a width of at least about 50% of the width of said spread tow of reinforcing fibers;
continuously superimposing said substantially planar spaced array of thermoplastic fibers onto said substantially planar spread tow of reinforcing fibers to thereby continuously combine said superimposed array and said spread tow into a substantially planar non-uniformly mixed yarn; and
gathering said substantially planar non-uniformly mixed yarn into a tow of non-uniformly blended reinforcing fibers and thermoplastic yarns.

5,355,568

METHOD OF MAKING A SURFACE ACOUSTIC WAVE DEVICE

Takahiro Imai; Hideaki Nakahata; Akihiro Hachigo, and Naoji Fujimori, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaki, Japan

Division of Ser. No. 894,598, Jun. 5, 1992. This application Nov. 29, 1993, Ser. No. 158,415
Claims priority, application Japan, Jun. 5, 1991, 134239
Int. Cl.[5] H01L *41/22*
U.S. Cl. 29—25.35 2 Claims



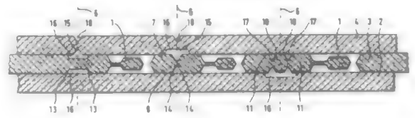
1. A method for producing a surface acoustic wave device comprising the steps of:
forming a diamond layer on a substrate by a vapor phase growth method,
removing said substrate, and
forming a piezoelectric layer and a comb-like electrode on a surface of said diamond layer that had been in contact with said substrate.

5,355,569

METHOD OF MAKING SENSOR

Jiri Marek, Reutlingen; Helmut Baumann, Gomaringen; Guenther Findler, Stuttgart; Michael Offenberg, Tuebingen, and Martin Willmann, Reutlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 25, 1992, Ser. No. 951,169
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1991, 4132232
Int. Cl.[5] H01G *5/16*
U.S. Cl. 29—25.41 10 Claims



1. A method for producing a capacitive sensor adapted for measurement of at least one of acceleration, inclination, and rate of rotation, where said sensor is made from
a monocrystalline wafer (3), which is conductive at least on its surface, and which is connected with
at least one plate (2,4) which is conductive at least on its surface, where the wafer (3) and the plate (2, 4) are insulated against each other and joined to form a composite;
comprising the steps of
forming a plurality of parallel troughs (15, 16, 17) on a plate-facing major surface of said wafer (3) and on a wafer-facing major surface of said each plate (2, 4); and
splitting said composite along splitting line (6) in selected ones of said parallel troughs, thereby precisely defining values of stray capacitance in said sensor.

5,355,570

METHOD FOR THE PRODUCTION OF BRIGHT ROUND STEEL

Bruno Böhmer, Erkrath, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 763,207, Sep. 20, 1991, abandoned. This application Apr. 12, 1993, Ser. No. 46,518
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1990, 4029786
Int. Cl.[5] B23D *79/02;* B21B *15/00;* B23P *25/00*
U.S. Cl. 29—81.09 6 Claims

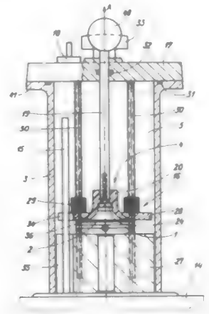
1. A method of producing a bright round steel produced from a hot-rolled steel, said method comprising the steps of:
round-rolling a bright round steel coming from rolling heat in a high-precision mill to a roundness of between 0.1% and 1%;
extensively removing oxide film from the round-rolled steel; and
thereafter, straightening and polishing a deoxidized steel;
wherein said oxide film removing step includes descaling a surface of the bright round steel until appearance of one of shadow and strip patterns.

5,355,571

METHOD FOR OPENING A WATCH CASE AND APPARATUS FOR PRACTICING SUCH METHOD

Marc-André Miche, Bienne, Switzerland, assignor to SMH Management Services AG, Biel, Switzerland

Filed Mar. 1, 1993, Ser. No. 24,455
Claims priority, application Switzerland, Mar. 9, 1992, 00739/92
Int. Cl.[5] G04D *3/00;* B23P *19/00*
U.S. Cl. 29—179 7 Claims



1. A method for opening a watch case by extraction of the crystal including the following steps:
the watch case is secured in an enclosure,
a suction cup is applied to the crystal,
the interior of the enclosure as well as the interior of the watch case are subjected to the same predetermined overpressure,
a pulling force is exerted on the suction cup until extraction of the crytsal,
normal pressure is reestablished within the enclosure in order to remove the watch case relieved of its crystal.

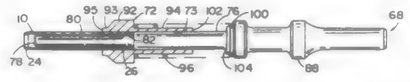
5. An apparatus for opening a watch case by extraction of a crystal, said apparatus including a stand in which a pump is housed, an enclosure surmounting the stand and into which a duct communicating with the pump opens out, the enclosure including a securing arrangement for the watch case, said enclosure being surmounted by a detachable cover blocking an upper portion of said enclosure, said cover being provided with a valve and a stem, said stem being slidingly mounted through the cover and, at a stem end within the enclosure, bearing a suction cup capable of being applied against the crystal to be extracted from the case.

5,355,572

VALVE GUIDE INSERT INSERTION TOOL

James A. Kammeraad, Holland; Dwain L. Kamphuis, West Olive, and Robert T. Ritt, Holland, all of Mich., assignors to K-Line Industries, Inc., Holland, Mich.

Division of Ser. No. 869,418, Apr. 14, 1992, Pat. No. 5,249,555. This application Jul. 27, 1993, Ser. No. 98,425
Int. Cl.[5] B23P *7/00*
U.S. Cl. 29—213.1 6 Claims



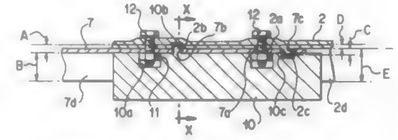
1. An insertion tool for inserting a thin-walled valve guide insert press-fittingly into a valve guide bore of an internal combustion engine, the valve guide insert having an intermediate section and ends, the ends each having a reduced inner diameter and a reduced outer diameter relative to the intermediate section providing a tapered insertion section adapted to lead said insert into the valve guide bore, comprising:
a tool including a mandrel section and a driver section interconnected by a frusto-conical junction, said frusto-conical junction including a base adjacent said driver section, said driver section including, adjacent said base of said frusto-conical junction, a circumferential, square driving shoulder adapted to engage and drive the bore-remote extremity of said insert; and
an installation sleeve for holding the insert on said tool, said installation sleeve having an inner diameter sufficiently large to accommodate said driving shoulder, but small enough to cooperate with said frusto-conical junction so that, when the insert is placed on said mandrel section with the bore-remote tapered insertion section located between said frusto-conical junction and said installation sleeve, the bore-remote tapered insertion section of the valve guide insert is supported to prevent the bore-remote tapered insertion section from collapsing when said valve guide insert is inserted into the valve guide bore.

5,355,573

POSITIONING STRUCTURE FOR FRAME AND BRACKETS IN MODULAR-TYPE WIPER DEVICE

Akira Hayashi, and Hirokazu Nakano, both of Kiryu, Japan, assignors to Mitsuba Electric Manufacturing Co., Ltd., Gunma, Japan

Filed Aug. 31, 1992, Ser. No. 937,418
Claims priority, application Japan, Sep. 6, 1991, 3-079867[U]
Int. Cl.[5] B25B *27/14*
U.S. Cl. 29—281.1 5 Claims

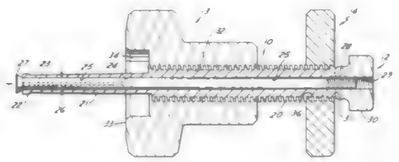


1. An assembly structure comprising:
a removable jig having at least two spaced holes in a jig surface thereof, each hole having a size corresponding to a size of a nut received within each hole, a first positioning protrusion extending from said jig surface between said at least two holes, said jig having two side surfaces transverse to the jig surface and defining a jig width;
a U-shaped frame member located on said jig surface of said removable jig and comprising a frame surface and two side frame surfaces, a width between said two side frame surfaces of said frame member being greater than said jig width, said frame surface of said frame member having at least two spaced holes corresponding in position to said at least two spaced holes in said removable jig, said frame surface of said frame member further including a first positioning hole corresponding in position and size to said first positioning protrusion on said jig for receiving said first positioning protrusion and a second positioning hole spaced from said first positioning hole;
a U-shaped bracket member located on said frame member with the frame member between the U-shaped bracket member and the removable jig, said bracket member having at least two spaced holes corresponding in size and position to said at least two spaced holes in said frame member, said U-shaped frame member including a recess corresponding in position and size to said first positioning hole for receiving said first positioning protrusion of said assembly jig and a second positioning protrusion provided on the bracket member and extending through said second positioning hole on said frame member, said second positioning protrusion being in a truncated cone-like configuration tapering toward said frame member; and

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at least two bolts, each inserted respectively through a corresponding one of said at least two spaced holes of said bracket member and said frame member and fixedly attached to the nut located within the corresponding one of said at least two spaced holes of said removable assembly jig.

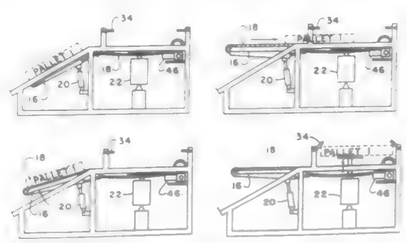
5,355,574
BEARING CHANGER
Raymond T. Zweekly, Royal Oak, and Jeffrey A. Zweekly, Troy, both of Mich., assignors to Inventive Fabrications, Inc., Royal Oak, Mich.
Continuation of Ser. No. 6,988, Jan. 21, 1993, abandoned. This application Aug. 18, 1993, Ser. No. 107,910
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—262 **10 Claims**



1. A tool for extracting a bearing press fit in a wheel comprising; a tube having a threaded body and a split end for extending through an inner bearing race with shoulder means extending beyond the axial extremity of said bearing race expandable for axial engagement with the axial extremity of said race, a rod extending through said tube with a threaded end and a tapered opposite end for expanding said split end, upon tensile retraction, threaded means engaging said threaded end and reacting against an end of said tube opposite said split end for retracting said rod to produce said expansion, and a collar, said collar having an axially extending, inwardly threaded bore therein, said threaded bore complementary with said threaded body of said tube such that rotation of said collar about said tube results in axial displacement of said collar, said collar further including a radially extending portion defining a face transverse said axially extending threaded bore, said collar further having a cylindrical cavity extending axially inward form said face, said cavity of a size sufficient to receive said bearing, wherein said face reacts directly against said wheel for retracting said tube with said split end shoulder means in axial retracting engagement with said race and bearing to effect extraction of said bearing from said wheel.

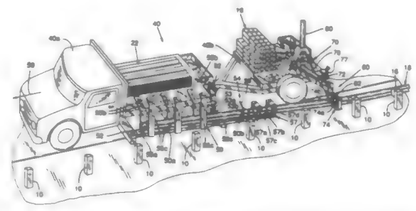
5,355,575
PALLET MOVING DEVICE
M. L. Self, 1712 Avenue F, Bay City, Tex. 77414
Filed Feb. 4, 1993, Ser. No. 13,751
Int. Cl.[5] B23P *11/00*
U.S. Cl. 29—430 **4 Claims**

1. In a process for building a pallet and moving it to another location, the improvement which comprises:
(a) providing a table having an angled upon which a pallet may be built;
(b) building a pallet on the angled surface of the table;
(c) mechanically raising the finished pallet off of the angled



surface of the table to a substantially horizontal position; and
(d) conveying the finished pallet away from the table.

5,355,576
GUARDRAIL ASSEMBLY METHOD AND DEVICE
Jack J. Miller, 17638 S. Redland Rd., Oregon City, Oreg. 97045
Filed Mar. 1, 1993, Ser. No. 24,520
Int. Cl.[5] B23P *11/00, 19/00*
U.S. Cl. 29—431 **14 Claims**

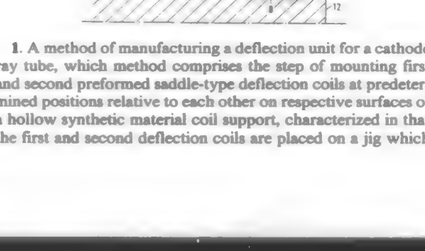


7. A method of guardrail assembly and mounting to prepositioned guardrail posts, the guardrail comprising guardrail sections joined together to form a continuous guardrail in a given orientation, the method comprising the steps of:
supporting by frame structure at least two guardrail sections in said given orientation laterally adjacent a site of attachment to said prepositioned guardrail posts;
joining together said at least two guardrail sections;
exposing to said site of attachment a portion of said at least two guardrail sections as joined in said joining step;
moving said portion of said at least two guardrail sections into an attachment position at said site of attachment; and
attaching said portion of said at least two guardrail sections to said attachment site.

5,355,577
METHOD AND APPARATUS FOR THE ASSEMBLY OF MICROFABRICATED DEVICES
Michael B. Cohn, 163 Highland Ave., Short Hills, N.J. 07078
Filed Jun. 23, 1992, Ser. No. 902,986
Int. Cl.[5] H01S *4/00;* **B23P** *19/00*
U.S. Cl. 29—592.1 **6 Claims**

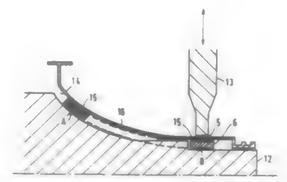
1. Apparatus for arranging microfabricated devices in a predetermined planar pattern, comprising:
(a) a cell or container for containing said microfabricated particles;
(b) vibration means for rapidly agitating the particles within the container;
(c) a template comprising
(1) a first planar electrode overlying an inner surface of said container;
(2) a second, parallel planar electrode substantially covering said first electrode, and having a plurality of apertures; and
(d) a voltage source applied between the electrodes,
whereby the voltage causes electric flux to emanate from each aperture, thus attracting and binding any particle which may randomly approach an aperture under influence of the vibration, allowing rapid assembly of the particles into substantially any desired pattern, as determined by the placement of the apertures.

4. A method of fabricating an array of spaced discrete particles, comprising the steps of:
(a) providing a cell or container;
(b) providing a template comprising:
(1) a first planar electrode overlying an inner surface of said container; and



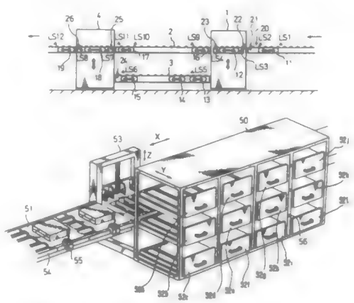
(2) a second, parallel planar electrode substantially covering said first electrode, and having a plurality of apertures;
(c) placing a plurality of the discrete particles in the container;
(d) applying a voltage source between the electrodes; and
(e) agitating the particles,
whereby the voltage causes electric flux to emanate from each aperture, thus attracting and binding any particle which may randomly approach an aperture under influence of the vibration, allowing rapid assembly of the particles into a desired planar pattern, as determined by the placement of the apertures.

5,355,578
METHOD OF MANUFACTURING A DEFLECTION UNIT
Hendrik Van Den Berg; Jacobus Jamar, and Bernardus Dekkers, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 16, 1992, Ser. No. 945,475
Claims priority, application European Pat. Off., Sep. 23, 1991, 91202456.9; May 18, 1992, 92201398.2
Int. Cl.[5] H01F *41/06*
U.S. Cl. 29—605 **5 Claims**



1. A method of manufacturing a deflection unit for a cathode ray tube, which method comprises the step of mounting first and second preformed saddle-type deflection coils at predetermined positions relative to each other on respective surfaces of a hollow synthetic material coil support, characterized in that the first and second deflection coils are placed on a jig which supports an inner surface of each coil at a plurality of predetermined locations and in that an inner surface of the coil support is urged against an outer surface of each supported coil, whereafter the material of the coil support is softened for a short period of time by applying thermal energy at locations situated opposite locations where the coils are supported and is urged towards the coils so that the support is pressed into the coils at said locations without substantially deforming the coils.

5,355,579
VERSATILE PRODUCTION SYSTEM WITH BYPASS STRUCTURE WHICH IS RESPONSIVE TO THE CONDITION OF A PRODUCT
Kazumi Miyasaka; Eiichi Terabayashi; Katsunao Sasaki, all of Kahoku, and Hiroyoshi Terashima, Kanazawa, all of Japan, assignors to PFU Limited, Ishikawa, Japan
Filed Mar. 4, 1993, Ser. No. 26,064
Claims priority, application Japan, Oct. 29, 1992, 4-291168; Oct. 29, 1992, 4-291213; Oct. 30, 1992, 4-292927; Nov. 6, 1992, 4-297375; Nov. 6, 1992, 4-297376
Int. Cl.[5] B23P *21/00;* **B65G** *43/08, 60/00*
U.S. Cl. 29—712 **21 Claims**



1. A versatile production system comprising:
an input conveying means for conveying a pallet with a product placed thereon;
an output conveying means for conveying a pallet with a product placed thereon;
a bypass structure, interposed between the input conveying means and the output conveying means, comprising:
main line conveying means for conveying a pallet with a product placed thereon,
bypass line conveying means for conveying a pallet with a product placed thereon, the bypass line conveying means conveying a pallet with a product placed thereon at a slower speed than the main line conveying means conveys a pallet with a product placed thereon, and for being selectively, temporarily stopped if products carried thereon are to be repaired or tested,
means for determining if a product on a pallet is defective or non-defective, including first switching means for switching the pallet from the input conveying means to the bypass line conveying means if the product is defective and switching the pallet from the input conveying means to the main line conveying means if the product is non-defective,
means, disposed selectively on at least one of the pallet and the product, for communicating a defective or non-defective state of a product placed on a pallet to the first switching means, and
second switching means for switching pallets from the main line conveying means and the bypass line conveying means to the output conveying means.

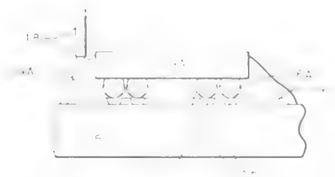
VOL 1167 ISS 3 OC 18 1994 UMI

5,355,580

METHOD FOR REPLACING SEMICONDUCTOR CHIPS

Yutaka Tsukada, Shiga, Japan, assignor to International Business Machines, Armonk, N.Y.

Filed Nov. 16, 1992, Ser. No. 976,619
Claims priority, application Japan, Dec. 26, 1991, 3-344822
Int. Cl.[5] H05K *3/39*
U.S. Cl. 29—840 7 Claims



1. A method for replacing a semiconductor chip bonded face down to a substrate by bump electrodes with the space between the bottom surface of said semiconductor chip and said substrate being filled with an encapsulation resin, comprising the steps of:

mechanically removing said chip from said substrate;

planarizing the surface of said resin and said bump electrodes remaining on said substrate;

bonding another chip to the bump electrodes on said substrate through the use of other bump electrodes; and

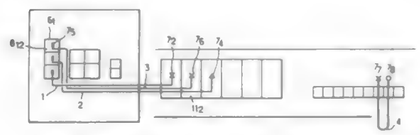
filling the space between the bottom surface of said another chip and said substrate with an encapsulation resin.

5,355,581

METHOD AND DEVICE FOR MANUFACTURING ELECTRICAL WIRING LOOMS

Louis Soriano, Aubagne, France, assignor to L'Entreprise Industrielle, Paris, France

PCT No. PCT/FR91/00896, § 371 Date Sep. 15, 1992, § 102(e) Date Sep. 15, 1992, PCT Pub. No. WO92/10013, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 14, 1991, Ser. No. 910,350
Claims priority, application France, Nov. 23, 1990, 90 14975
Int. Cl.[5] H01R *43/00;* B23P *23/00*
U.S. Cl. 29—857 7 Claims



1. A method for manufacturing looms of electric wires, said electric wires being cut at a desired length and stripped wherein ends of said electric wires are fitted with terminals, wherein said terminals are inserted by an insertion device in sockets of connectors according to an insertion order, said method comprising following steps:

gripping each end of said electric wires by a transfer clip, each electric wire being gripped by two adjacent transfer clips in a line of transfer clips placed on a linear conveyor, said transfer clips being movable by said conveyor,

placing said electric wires held by said transfer clips on said conveyor according to a wire sequence such that an end of first wire of said wire sequence is fitted with first terminal according to said insertion order, and such that an end of each following wire according to said wire sequence is fitted with following terminal according to said insertion order,

successively extracting said wires from said transfer grips according to said wire sequence,

inserting at least one end of each extracted wire into one of the sockets of the connectors according to said insertion order,

providing temporary holding clips for temporarily holding non-inserted ends of said extracted electric wires by respectively inserting the non-inserted ends in said temporary holding clips, said temporary holding clips being movable by said conveyor, and located on said conveyor between said line of transfer clips and an insertion station comprising said insertion device, and

successively extracting the non-inserted ends of said wires from the temporary holding clips and inserting them respectively into the sockets of the connectors according to said insertion order.

2. A loom manufacturing device for manufacturing looms of electric wires, said electric wires being cut at a desired length and stripped, wherein ends of said electric wires are fitted with terminals and to be inserted in sockets of connectors, said loom manufacturing device comprising:

an insertion station for supporting the connectors,

a linear conveyor for feeding the electric wires to the insertion station,

transfer clips being moved by said conveyor and lined up on the conveyor according to a wire sequence, each of said transfer clips gripping an end of said electric wire, each wire being gripped by two adjacent transfer clips,

an insertion device for successively extracting the wires from the transfer clips and inserting said terminals thereof into the sockets of the connectors according to an insertion order, said insertion device being located along said conveyor,

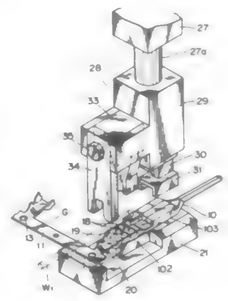
temporary holding clips for temporarily holding non-inserted ends of said extracted electric wires according to said insertion order, said temporary holding clips being moveable by said conveyor, each capable of holding more wire ends than that of the transfer clip, said temporary holding clips being located on said conveyor between the line of said transfer clips and said insertion station.

5,355,582

METHOD OF FABRICATING TERMINAL CONNECTED LEADS

Toshimasa Saito, and Yuji Hatagishi, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 886,589, May 21, 1992, abandoned.
This application Oct. 26, 1993, Ser. No. 141,686
Claims priority, application Japan, May 31, 1991, 3-129257
Int. Cl.[5] H01R *43/04*
U.S. Cl. 29—863 5 Claims



1. A method of fabricating terminal connected leads for connecting leads to force-fitting terminals comprising:

providing a plurality of leads each having a conductive portion surrounded by a nonconductive portion;

providing a plurality of force-fitting terminals connected at a respective connecting section thereof and at predetermined intervals to a carrier strip, each force-fitting terminal comprising at one end an electrically contacting portion having a contact element for contacting the conductive portion of a respective lead, and at another end a lead connecting portion for connecting to a respective lead, the lead connecting portion of each force-fitting terminal having a crimping portion for crimping the nonconductive portion of the respective lead;

intermittently feeding with an intermittent feeder said plurality of force-fitting terminals connected to said carrier strip to a terminal receiving base of a pressing machine;

placing an end portion of a lead of predetermined length, on the electrically contacting portion of each respective terminal fed to said terminal receiving base, said end portion placed on said electrically contacting portion having both said conductive and nonconductive portions;

pressing each lead to each respective terminal with a pressing machine, the pressing machine comprising a force-fitting punch section and a crimper section, wherein the force-fitting punch section acts such that the end portion of the lead is pressingly fitted to the electrically contacting portion of the respective terminal so that the contact element of the terminal penetrates the nonconductive portion of the respective lead and contacts the conductive portion of the lead, and wherein the crimper section acts to crimp the crimping portion of the lead connecting portion of the respective terminal so that the nonconductive portion of the lead is fixedly held by the crimping portion of the respective terminal;

separating each force-fitting terminal while attached to the respective lead from the carrier strip by cutting the respective connecting section of each terminal;

wherein said step of pressing each lead to each respective terminal comprises pressingly fitting each end portion of each lead into the terminal contact element which has at least one slit formed in at least one upright wall extending transversely therein, the force-fitting punch section acting such that the at least one slit cuts through the nonconductive portion of the end portion of the respective lead so that the at least one upright wall contacts the conductive portion of the lead; and

wherein said force-fitting punch of the pressing machine comprises at least one groove complementary to said at least one upright wall of the respective terminal, such that in the pressing step, the force-fitting punch is lowered so that the lead is and the at least one upright wall extends at least in part into the at least one complementary groove of the force-fitting punch.

5,355,583

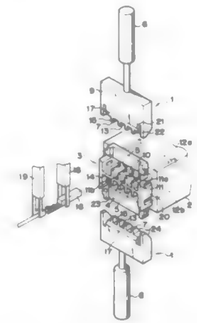
METHOD AND APPARATUS FOR INSERTING TERMINAL

Yoshihisa Osumi; Hiroo Suzaki, and Takao Nakagame, all of Gotenba, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jul. 27, 1993, Ser. No. 96,968
Claims priority, application Japan, Jul. 28, 1992, 4-201148
Int. Cl.[5] H01R *43/20;* B23P *19/00*
U.S. Cl. 29—876 11 Claims

1. A method for inserting a terminal into a connector housing having an interior divided by partition walls into a plurality of terminal accommodating chambers each having an outer end defining an opening capable of constituting an opening through which the terminal is inserted, a notched shoulder portion formed in each partition wall at at least one of joints between the partition wall and top and bottom walls of said connector housing, and a terminal retaining cover capable of opening away from and closing onto the notched shoulder portions, said method comprising the steps of: positioning a guide wall for engaging with said notched shoulder portions and for defining a flame-shaped terminal insertion opening when said terminal retaining cover is open; and inserting said terminal into said connector housing through said terminal insertion opening.

6. An apparatus for inserting a terminal connected to an electric wire into a connector housing, said connector housing having a top wall, a bottom wall, an opened rear end portion located rearward with regard to the direction of insertion, an interior divided into a plurality of terminal accommodating chambers by a plurality of vertical partition walls each extending vertically between said top wall and said bottom wall, a notched shoulder portion formed at said opened rear end portion in each partition wall at at least one of joints of the partition wall with said top and bottom walls of said connector



housing, and a terminal retaining cover capable of opening away from and closing onto said notched shoulder portions, said apparatus comprising:

at least one terminal insertion guide member for being disposed in opposition to said opened rear end portion, said terminal insertion guide member having a guide wall for engaging with said notched shoulder portions, said guide wall defining, when engaged with said notched shoulder portions, a frame-shaped terminal insertion opening; and

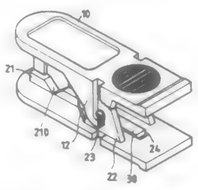
means for holding said terminal and causing said terminal to advance through from behind said frame-shaped terminal insertion opening said frame-shaped terminal insertion opening, said opening defined by the terminal insertion guide member and the connector housing.

5,355,584

HOSE CUTTING DEVICE

Chih-Chieh Huang, Taichung Hsien, Taiwan, assignor to Taiwan Shin-Lin Company Ltd., Taichung Hsien, Taiwan

Filed Oct. 21, 1993, Ser. No. 138,979
Int. Cl.[5] B23D *21/06*
U.S. Cl. 30—92 1 Claim



1. A hose cutting device comprising:

an upper seat provided with a cutting tool and two connection portions, each of which has a retaining slot;

a lower seat provided with a cutting tool receiver corre-

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sponding in location to said cutting tool of said upper seat, and with two connection portions, each of which has a projection dimensioned to be received and retained in said retaining slot of said upper seat; and

an elastic element mounted between said upper seat and said lower seat;

wherein said two connection portions of said upper seat are provided respectively on one side thereof with a retaining portion capable of retaining a top of each of said two connection portions of said lower seat; and

wherein said elastic element is of a U-shaped construction and has one end provided with a protruded portion capable of being located in a recess of said upper seat, said elastic element having another end that is located in a locating slot of said lower seat.

5,355,585

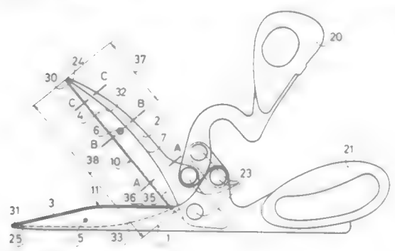
SCISSORS AND REPLACEABLE TORSION BLADE INSERTS FOR SCISSORS

Slobodan Tepic, Davos, Switzerland, assignor to AO-Forschungsinstitut Davos, Davos Platz, Switzerland

Continuation of Ser. No. 933,087, Aug. 21, 1992, abandoned. This application Jan. 12, 1994, Ser. No. 180,506

Int. Cl.[5] B26B *13/00*

U.S. Cl. 30—260 **10 Claims**



1. Scissors comprising

upper and lower handles connected to elongated upper and lower blade insert carriers each having inwardly and outwardly facing surfaces and a longitudinal axis, all substantially arranged in a plane;

pivot means interconnecting said handles and carriers so that when said handles are moved in one direction said carriers pivot to a position in which the inwardly facing surfaces face toward each other;

means in each of said upper and lower blade insert carriers defining an inwardly opening recess having a substantially planar inwardly facing surface;

first and second replaceable blade inserts respectively receivable in said recesses each of said blade inserts having an inner face;

attachment means for fixedly and releasably holding said blade inserts in said recesses, said attachment means being located a preselected distance from tip ends of said carriers, said preselected distance being less than a distance between said tip ends and said pivot means, said attachment means acting along a transverse axis substantially perpendicular to said plane; and

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5,355,586

WHEEL EXAMINING APPARATUS

Yutaka Fukuda, Tokorozawa; Yukio Higuchi, Fuji; Kiyoshi Masuda, and Toshihiko Chisaki, both of Numazu, all of Japan, assignors to Anzen Motor Car Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 725,152, Jul. 3, 1991, Pat. No. 5,297,344. This application Nov. 22, 1993, Ser. No. 156,209

Claims priority, application Japan, Jul. 5, 1990, 2-176190; Jul. 5, 1990, 2-176191; Jul. 5, 1990, 2-176192; Jul. 5, 1990, 2-176193

Int. Cl.[5] G01B *5/255*

U.S. Cl. 33—203.13 **7 Claims**

1. A wheel examining system for a three axle vehicle having a first axle for front wheels, a second axle for intermediate wheels and a third axle for rear wheels, each axle being on a common body frame, comprising:

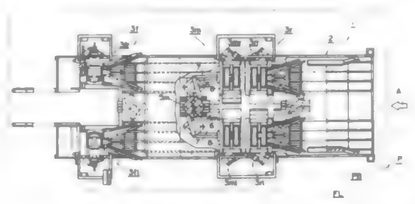
a front wheel examining section;

an intermediate wheel examining section located upstream of said front wheel examining section with respect to a direction of advancement of said vehicle;

a rear wheel examining section located upstream of said intermediate wheel examining section with respect to the direction of advancement of said vehicle; and each of said front, intermediate and rear wheel examining sections including:

left-hand clamp means for clamping a left-hand wheel from both sides;

right-hand clamp means clamping a right-hand wheel from both sides;



interconnecting means for interconnecting said left-hand and right-hand clamp means such that said left-hand and right-hand clamp means are always located symmetrically in position with respect to a predetermined center position of said interconnecting means; and

means for keeping the center position of said interconnecting means of one of said front, intermediate and rear wheel examining sections movable in a transverse direction to a predetermined longitudinal straight line established in said system while keeping the center position of said interconnecting means of each of the remaining wheel examining sections fixed in position in space at least during examining operation.

5,355,587

ULTRASONIC CUTTER

Naomitsu Takekawa, Tokyo; Yukihiro Katou, Chiba; Masahiko Yano, Shizuoka; Atsushi Horiuchi, Shizuoka, and Tomoyuki Fujisaki, Shizuoka, all of Japan, assignors to Suzuki Motor Corporation, Shizuoka and Alcare Co., Ltd., Tokyo, both of Japan

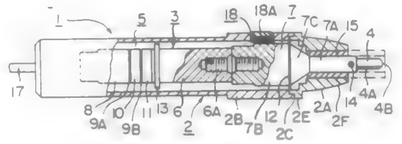
PCT No. PCT/JP92/00488, § 371 Date Dec. 16, 1992, § 102(e) Date Dec. 16, 1992

PCT Filed Apr. 17, 1992, Ser. No. 958,334

Claims priority, application Japan, Apr. 17, 1991, 3-114073

Int. Cl.[5] B26B *7/00;* **A61C** *1/07*

U.S. Cl. 30—277.4 **14 Claims**



2. An ultrasonic cutter comprising a housing assembly, an ultrasonic wave generator positioned and located within said housing assembly, a relatively thin elongated cutting blade detachably mounted to said ultrasonic wave generator so as to project exterior of said housing assembly, said cutting blade being substantially planar and straight along its entire length and extending exterior of said housing assembly in a direction either along or parallel to the longitudinal axis of said housing assembly, said cutting blade having a terminal end portion and at least one side face associated therewith, the side face only of said cutting blade having a cutting edge associated therewith, the terminal end portion of said cutting blade having a smoothly curved non-cutting surface associated therewith, and means enabling said ultrasonic wave generator to vibrate said cutting blade so as to effect a cutting action when the cutting edge of said blade is positioned against a surface to be cut.

5,355,588

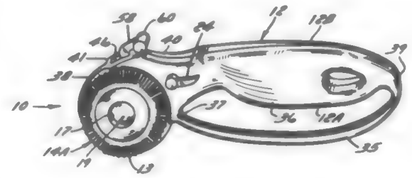
ROTARY CUTTING BLADE ASSEMBLY FOR A HAND-HELD CUTTER

Lloyd W. Brandenburg, Jr., and Charles S. Ramsey, both of Wausau, Wis., assignors to Fiskars Inc., Wausau, Wis.

Continuation-in-part of Ser. No. 821,593, Jan. 15, 1992, abandoned, and a continuation-in-part of Ser. No. 926,212, Aug. 5, 1992, Pat. No. Des. 342,883. This application Sep. 14, 1992, Ser. No. 944,870

Int. Cl.[5] B26B *3/08*

U.S. Cl. 30—319 **6 Claims**



1. A hand-held rotary cutter of the type including a handle, a cylindrical head formed on one end of the handle, said head having an internal cavity and a planar surface on each side, and an actuating member pivotally mounted in the cavity, the improvement comprising a circular blade having a hub and a circular cutting edge formed around the perimeter of the hub, said cutting edge being offset to one side of said hub wherein said blade is mounted on the actuating member with the hub in abutting relation to one of the planar surfaces and a guard extending from the head to the handle and formed as an integral part of the head and the handle to protect the fingers of the operator.

5,355,589

SENSING HEAD FOR THE THREE-DIMENSIONAL SENSING OF WORKPIECE

Wolfgang Madlener, Koenigberger Strasse 20, and Wilfried Veil, Ludwig-Uhland-Strasse 3, both of 7980 Ravensburg, Fed. Rep. of Germany

Filed May 28, 1993, Ser. No. 68,195

Claims priority, application Fed. Rep. of Germany, May 28, 1992, 4217641

Int. Cl.[5] G01B *5/03*

U.S. Cl. 33—561 **1 Claim**

1. A sensing head for a three-dimensional sensing of a workpiece, comprising

(a) a housing having an inner space, a longitudinal axis and opposite ends;

(b) a lid secured to the housing at one end thereof; the lid having an opening and an inner face oriented toward said inner space;

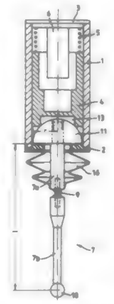
(c) a transmission member axially slidably received in said inner space for motion toward or away from the lid;

(d) a transducer mounted in the housing and cooperating with the transmission member for generating a signal representing axial displacements of the transmission member;

(e) a spring disposed in the housing and urging said transmission member toward said lid;

(f) a bearing body disposed in said inner space of said housing between said lid and said transmission member, said bearing body being a spherical segment having a base and a spherical surface; said base being in contact with said inner face of said lid;

(g) a sensing pin secured to said bearing body and extending away from said bearing body from said base; said sensing pin being perpendicular to said base and passing through said opening of said lid; and



(h) a seat defined in said transmission member; said seat including a circular edge being in a circular contact with said spherical surface; said seat centering said bearing body in said housing; said sensing pin and said bearing body being pivotally displaceable about a contact location between said inner face of said lid and a boundary edge between said base and said spherical segment; any pivotal motion of said bearing body relative to said inner face of said lid causes a sliding motion between said spherical surface and said circular edge and an axial motion of said transmission body relative to said lid.

5,355,590

PROCESS FOR THE DRYING AND GRANULATION OF ASPARTAME

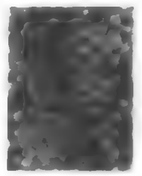
Hubertus J. M. Slangen, Stein, and Mathieu H. M. Mertens, Sittard, both of Netherlands, assignors to Holland Sweetener Company V.o.F., Maastricht, Netherlands

Filed Jul. 17, 1992, Ser. No. 914,239

Claims priority, application Netherlands, Sep. 2, 1991, 9101477

Int. Cl.[5] F26B *7/00*

U.S. Cl. 34—385 **18 Claims**



15. Method of using a high-speed paddle dryer fitted with a jacket heated to a temperature of 80°–190° C. and with paddles, mounted on a central shaft with a controllable speed of rotation, at an adjustment distance from and angle to the jacket, comprising the steps of:

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positioning the paddles so as to provide more or less spherical granules of a narrow, controllable particle size distribution;

choosing the speed of rotation so as to produce a Froude number higher than 1; and

passing aspartame with a moisture content of less than 35% with a carrier gas through the paddle dryer for decreasing the microbiological contamination of the aspartame.

5,355,591

STEAMER ATTACHMENT FOR A HAIR CURLER STEAMER

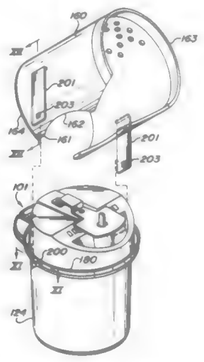
Richard Caruso, 619 Croyden Rd., Cheltenham, Pa. 19102

Continuation-in-part of Ser. No. 863,449, Apr. 3, 1992, Pat. No. 5,228,213. This application Jan. 29, 1993, Ser. No. 10,996

The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.

Int. Cl.[5] F26B *19/00*

U.S. Cl. 34—60 20 Claims



1. A steamer for steam treating a user's body, comprising:

a) a steam flow generating unit having (i) a vessel forming a cavity for containing water, and (ii) means for transforming at least a portion of said water contained in said cavity to a flow of steam; and

b) steam flow directing means having (i) steam flow discharging means for directing at least a first portion of said steam flow from said steam flow generating unit in a first substantially horizontal direction, and (ii) means for locking said steam flow directing means onto said steam flow generating unit.

5,355,592

PASTA MAKING ACCESSORY

Ronald J. Pardini, 3033 E. Thunderbird, #2081, Phoenix, Ariz. 85032

Filed Jul. 26, 1993, Ser. No. 97,152

Int. Cl.[5] F26B *25/00*

U.S. Cl. 34—104 19 Claims

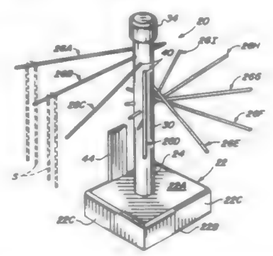
1. A pasta making accessory, comprising:

(a) a base for placement upon a support surface;

(b) an elongated hollow tubular post supported at a bottom end on said base and extending upright therefrom, said tubular post having an open top end and an interior storage cavity extending between said bottom and top ends; said

(c) a plurality of elongated sticks adapted to be removably placed and stored during non-use in a closely packed relationship with one another in said elongated interior cavity of said tubular post;

(d) said tubular post having means defined thereon for removably mounting said plurality of sticks in an outward radially extending relationship about said post so as to permit draping of pasta strips thereover for drying;



(e) said tubular post having an elongated continuous sidewall extending between said opposite top and bottom ends and defining said interior storage cavity with a diameter to store said elongated pasta drying sticks therein.

5,355,593

DEVICE FOR TRANSFERRING A FIBER WEB

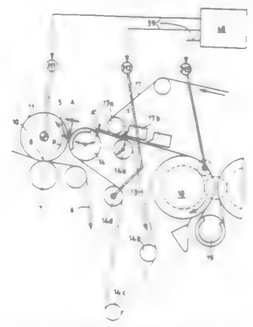
Gerhard Kotitschke, Steinheim, Fed. Rep. of Germany, assignor to J.M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 931,265, Aug. 17, 1992, abandoned. This application Jun. 17, 1993, Ser. No. 78,375

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1992, 4220682

Int. Cl.[5] D06F *58/00*

U.S. Cl. 34—117 38 Claims



1. A device for transferring a paper web from a press section into a dry end of a paper making machine, the device comprising:

the press section including a rotatable press surface and a cooperating backing roll which together define a press nip through which the web is directed, the press surface being a smooth rotatable press surface for carrying the web thereon through the press nip and then for continuing to carry the web thereon to a further location around the rotating press surface, beyond the press nip, which is at the region of web removal from the press surface;

a suction device located near the press surface and forming a slot with the press surface in the region of web removal;

a porous transport belt, first guide means for guiding the transport belt through the slot between the rotating smooth press surface and the suction device, the transport belt being adapted to receive the web from the smooth press surface and for transporting the web away from the region of web removal;

the dry end comprising a first dryer group comprised of a row of first drying cylinders, a support belt which has a first surface that faces toward the first drying cylinders and that supports a web for a first surface of the web to contact with the first drying cylinders and for then conducting the web from each first drying cylinder to the next first drying cylinder; second guide means for guiding the support belt toward the transport belt to enable the web to be transferred therebetween;

transfer means for transferring the web from the transport belt to the support belt, as the support belt is moving toward the first dryer group for bringing the web to the first drying cylinders;

a first drive for the rotating the smooth press surface which forms the press nip;

a second drive, independent of the first drive, for driving the transport belt to move;

a third drive, independent of the first and the second drives, and connected with the first dryer group for driving the first drying cylinders to rotate;

speed control means connected with the first, second and third drives for establishing the respective speeds of the drives to achieve selected speed differences, wherein the first and second drives are adjustable for establishing a positive difference in speed wherein the second drive moves the transport belt faster than the first drive rotates the press surface, and wherein the third drive is adjustable to establish a positive difference of speed with respect to the second drive, wherein the third drive moves the support belt for the web at a greater speed than the transport belt is driven by the second drive.

5,355,595

STEAM BOX

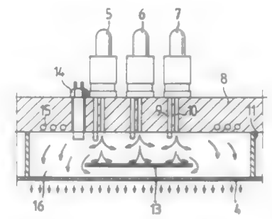
Pekka Koivukunnas, Järvenpää , and Teuvo Lappalainen, Kerava, both of Finland, assignors to Valmet Paper Machinery, Inc., Helsinki, Finland

Filed Sep. 14, 1992, Ser. No. 944,790

Claims priority, application Finland, Sep. 12, 1991, 914300

Int. Cl.[5] F26B *13/00*

U.S. Cl. 34—570 7 Claims



1. A steam box for moisturizing a web, comprising: steam distributing means for distributing a flow of steam onto a web being calendered; at least one valve being connected to the steam distributing means for controlling the flow of steam onto a web; and means for feeding hot steam to the valve, each valve having at least a first, a second and a third steam channel, the first steam channel being an inlet channel for feeding the steam to the valve, the second channel being an outlet channel for conducting the steam to the web, and the third channel being a recirculation channel for recirculating the steam, each valve further comprising a check element movably mounted in the valve for controlling and dividing the steam introduced into the valve through the inlet channel between the outlet channel and the recirculation channel, the steam box further comprising a return pipe connected to the recirculation channel of the at least one valve for conducting the steam introduced to the recirculation channel to a condensate return line of the steam distributing means.

5,355,594

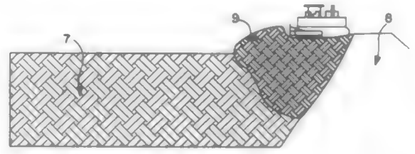
EVAPORATIVE SLUDGE STABILIZATION

Daekyoo Hwang, 1671 Bow Tree Dr., West Chester, Pa. 19380

Filed Dec. 21, 1992, Ser. No. 994,614

Int. Cl.[5] F26B *3/00*

U.S. Cl. 34—356 26 Claims



1. A method of stabilizing wet sludge comprising the steps of:

drying a layer of wet sludge by surface evaporation;

adding additional wet sludge to said previously-dried layer and mixing said additional wet sludge with said previously-dried layer to form a wet sludge mixture having a water content within an operable range which permits said wet sludge mixture to have a self-supporting consistency wherein the mixing process creates irregular surfaces and voids within said wet sludge mixture to significantly increase evaporation surface area while maintaining a sufficiently high surface water content, wherein the combined effect of the increased evaporation surface area and the sufficiently high surface water content is to maximize surface evaporation; and

drying said wet sludge mixture by surface evaporation to form a substantially dried sludge mixture.

5,355,596

SHOE WITH A CENTRAL CLOSURE

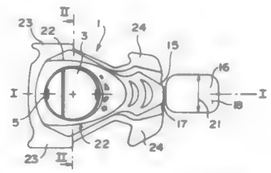
Reinhold Sussmann, Scheinfeld, Fed. Rep. of Germany, assignor to Tretorn AB, Helsingborg, Sweden

Filed Aug. 31, 1993, Ser. No. 113,659

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1992, 9211711[U]

Int. Cl.[5] A43B *11/00*

U.S. Cl. 36—50.1 27 Claims



1. Shoe with an upper that is at least partially formed of an elastically flexible material, an instep cover, a central closure attached on the instep cover in an area of the wearer's instep, and with a wire-like tightening element that is coupled with the central closure and runs from the central closure down toward a toe end of the upper, and then back up to the central closure, the tightening element passing back and forth between guide elements on the instep cover and on side parts of the upper at each of opposite sides of the throat area; wherein a projecting sheet-shaped fastening tab is molded on the instep cover, said

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tab being securely connected with the shoe in the instep area thereof; and wherein the instep cover is folded, around a hinge-like connection of the tab to the instep cover, onto the instep area into a position in which the tab extends under the instep cover as a result of said folding of the instep cover about said hinge-like connection.

5,355,597

DEVICE FOR DIGGING A TRENCH

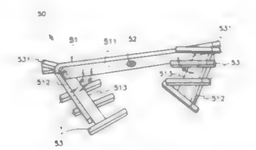
Charles H. Pollard, E. Tallassee, Ala., assignor to Brown Manufacturing Corporation, Ozark, Ala.

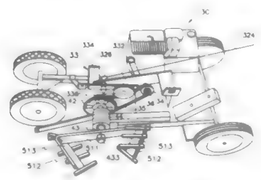
Continuation of Ser. No. 904,362, Jun. 26, 1992, Pat. No. 5,226,248. This application Apr. 16, 1993, Ser. No. 46,736

The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.

Int. Cl.[5] E02F *5/08*

U.S. Cl. 37—94 **7 Claims**





1. A device for digging a trench having a vertical face and a sloping face, comprising:

a rotor configured to rotate about an axis of rotation, said rotor comprising a longitudinal rotor member having an inner surface, an outer surface, and a central axis; a first angled end portion having a central axis; a second angled end portion having a central axis, said first and said second angled end portions coupled to said longitudinal rotor member so that said outer surface of said longitudinal rotor member faces toward said first and said second angled end portions; a plurality of teeth-like elements coupled to said first and said second angled end portions, wherein the central axes of each of said first and said second angled end portions intersect the central axis of said longitudinal rotor member to each define an acute angle between said outer surface and each said angled end portion; and

means for moving said device in a direction of travel substantially perpendicular to said axis of rotation.

5,355,598

DEVICE FOR AUTOMATICALLY MARKING, IRONING, HEMMING AND CUTTING FABRIC

Shin-Chau Yao, Taipei, Taiwan, assignor to China Textile T&R Institute, Taipei, Taiwan

Filed Aug. 3, 1993, Ser. No. 101,002

Int. Cl.[5] D06F *69/00*; D05B *21/00*; A41H *42/00*; B26D *5/12*

U.S. Cl. 38—2 **5 Claims**

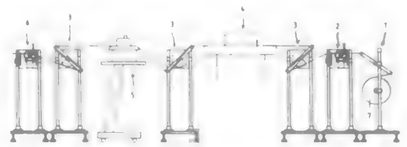
1. A continuous ironing and automatic cutting apparatus, comprising:

cloth roll stand means for rotatively supporting a roll of lining fabric;

marking means for displacing the lining fabric from the roll of lining fabric supported on said cloth roll stand means and continuously imprinting spaced marks thereon;

first buffering means for receiving the marked lining fabric from said marking means;

pressing means for sequentially ironing marked lining fabric portions of predetermined length supplied from said first buffering means and pieces of cloth disposed in alignment with said spaced marks on the lining fabric;



second buffering means for receiving the ironed lining fabric and pieces of cloth from said pressing means;

means for hemming the ironed lining fabric and pieces of cloth supplied from said second buffering means;

third buffering means for receiving the hemmed lining fabric and pieces of cloth from said hemming means; and,

cutting means for cutting said lining fabric in pieces responsive to detection of said imprinted marks on said lining fabric.

5,355,599

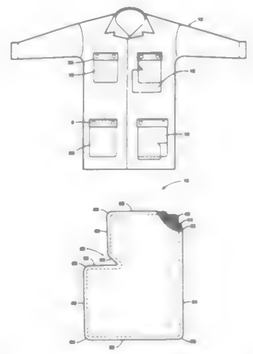
PRESSING PAD FOR PRESSING POCKET FLAPS

Evan W. Spenneberg, Jr., 400 Lewis St. #6, Greenville, N.C. 27858

Filed Feb. 24, 1993, Ser. No. 21,978

Int. Cl.[5] D06F *87/00*

U.S. Cl. 38—141 **19 Claims**



1. A pocket flap pressing device for a military uniform having at least four different-sized pockets with each pocket having an associated pocket flap that is pivotally connected to the uniform, each pocket flap including an outer layer and an inner layer that are connected together to form a pocket flap opening that extends lengthwise from a first side border to a second side border, the pocket flap pressing device comprising:

(a) a board-like member having a first edge, a second edge, a third edge, and a fourth edge of different lengths;

(b) the first edge having a first predetermined length corresponding to the length of a first pocket flap and a first pocket flap opening so as to enable the first edge to be inserted into the first pocket-flap opening and beneath the outer layer of the first pocket flap such that the board-like member underlies the outer layer and extends between the first side border and the second side border of the first pocket flap;

(c) the second edge having a second predetermined length corresponding to the length of a second pocket flap and second pocket flap opening so as to enable the second edge to be inserted into the second pocket flap opening and beneath the outer layer of the second pocket flap such that the board-like member underlies the outer layer and extends between the first side border and the second side border of the second pocket flap;

(d) the third edge having a third predetermined length corresponding to the length of the third pocket flap and third pocket flap opening so as to enable the third edge to be inserted into the third pocket flap opening and beneath the outer layer of the third pocket flap such that the board-like member underlies the outer layer and extends between the first side border and the second side border of the third pocket flap; and

(e) the fourth edge having a third predetermined length corresponding to the length of a fourth pocket flap and fourth pocket flap opening so as to enable the fourth edge to be inserted into the fourth pocket flap opening and beneath the outer layer of the fourth pocket flap such that the board-like member underlies the outer layer and extends between the first side border and the second side border of the fourth pocket flap.

5,355,600

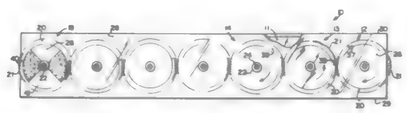
POINT-OF-PURCHASE DISPLAYS AND SIGNS WITH LIGHT TRANSMITTING VISUAL EFFECTS

Marion E. Thompson, 319 Mt. View La., Colorado Springs, Colo. 80907

Filed Jun. 6, 1991, Ser. No. 711,135

Int. Cl.[5] G09F *19/00*

U.S. Cl. 40—435 **26 Claims**



1. A sign or point of purchase display assembly, comprising:

at least one disc having an outer face, and rotatable about an axis of rotation generally concentric with said disc;

light transforming material, comprising holographic material, diffraction material, or patterned metallized foil, disposed on said disc outer face for receipt of light falling thereon and transforming the light to a distinctive visual display; and

means for rotating said disc to change the orientation of said light transforming material on said disc outer face, to thereby continuously change the visual perception by an observer of the light transforming material and the distinctive visual display provided thereby.

5,355,601

PORTABLE PUBLIC DISPLAY APPARATUS FOR ILLUMINATING A DRIVEN TRANSPARENT MATERIAL

Darryl L. Paulsen, 506 Follow Thru, Yakima, Wash. 98901

Filed Aug. 11, 1992, Ser. No. 929,882

Int. Cl.[5] G09F *11/18*

U.S. Cl. 40—471 **1 Claim**

1. A public display apparatus for displaying large, high quality images, said public display apparatus comprising:

a container body, said container body having a front, a back, a top, a bottom, and at least two sides, said container body further being substantially hollow and said front being substantially open;

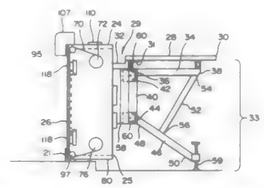
a driven roller, said driven roller being an elongated cylinder with two ends, said driven roller being substantially as long as said container body, and further said driven roller being rotatably attached to and inside of said container body proximate said container body back and top;

a tension roller, said tension roller being an elongated cylinder with two ends, said tension roller being substantially as long as said container body, and further said tension roller being rotatably attached to and inside of said container body proximate said container body back and bottom with said tension roller being substantially parallel to said driven roller;

a tension source, said tension source being connected to said tension roller, said tension source supplying a torsional force to said tension roller, said torsional force allowing said tension roller to rotate freely only in one direction without an external force acting on said tension roller;

an upper support roller, said upper support roller being an elongated cylinder with two ends, said upper support roller being substantially as long as said container body, and further said upper support roller being rotatably attached to and inside of said container body front and top with said upper support roller being substantially parallel to said driven and tension rollers;

a lower support roller, said lower support roller being an elongated cylinder with two ends, said lower support roller being substantially as long as said container body, and further said lower support roller being rotatably attached to and inside of said container body proximate said



container body front and bottom with said lower support roller being substantially parallel to said driven and tension rollers;

a driving source, said driving source being connected to said driven roller, said driven roller being rotated by said driving source when said driving source is energized;

at least two support arms, each said support arm having a fixed end and a roller end, each said roller end having at least two support wheels rotatably attached to it, each said support arm being inside said container body with each said fixed end being attached to said container body back, with one support arm extending toward one end of the upper support roller and in contact and supporting therewith, and with the other support arm extending toward one end of the lower support roller and in contact and supporting therewith;

said tension source further comprising a tension spring, said tension spring being attached to and inside of said tension roller to provide said torsional force;

said driving source comprising a motor connected to said driven roller;

a controller, said controller controlling said motor and rotation of said driven roller;

a sheet, said sheet being made of transparent flexible material and having a rectangular shape with visual images being transferred to said sheet;

said sheet being wrapped around said driven roller, passing around and over said upper support roller, passing around and over said lower support roller, and being wrapped around said tension roller;

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a light source, said light source being located within said container body and behind said sheet;

a crash shield, said crash shield being transparent and substantially covering said container body front;

a shelf, said shelf being substantially flat with a front edge and a back edge and a length substantially equal to said container body length, said shelf being attached to said container body back proximate said container body top with at least one hinge so that said shelf can swing down against said container body back; and

at least one shelf support assembly, each said shelf support assembly being attached to said container body back with said hinge being vertically oriented allowing said shelf support assembly to swing laterally relative to said container body, each shelf support assembly further having a shelf support rail which holds said shelf in a horizontal position, and having a lower member with an adjustable foot.

5,355,602

DISPLAY DEVICE

Wilhelm Menke, Ingelheim; Paul Himmelsbach, Bad Kreuznach, and Enrico Kämpfer, Bingen, all of Fed. Rep. of Germany, assignors to NSM Aktiengesellschaft, Bingen, Fed. Rep. of Germany

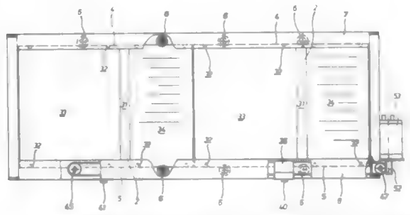
PCT No. PCT/DE91/00051, § 371 Date Jun. 24, 1992, § 102(e) Date Jun. 24, 1992, PCT Pub. No. WO91/11786, PCT Pub. Date Aug. 8, 1991

PCT Filed Jan. 19, 1991, Ser. No. 916,083

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1990, 4001785

Int. Cl.[5] G09F *11/00*

U.S. Cl. 40—476 **8 Claims**



1. A display device, particularly for the display of music titles in a jukebox including:

a frame housing,

two juxtaposed stacks of movable and displaceable information carriers arranged vertically one behind the other, each of the information carriers having a thickness,.

displacing means for simultaneously displacing a front information carrier of a first one of the stacks of information carriers and a rear information carrier of a second one of the stacks of information carriers relative to one another toward the respective other stack of information carriers,

wherein, in order to displace the respective front and rear information carriers, the two stacks of information carriers are movable by the displacing means relative to one another in synchronized steps and offset by the thickness of an information carrier,

reversing means for reversing a direction of movement of the movable and displaceable information carriers,

threaded spindles having threads for supporting the information carriers of each stack of information carriers at edges thereof, and

wherein threaded spindles of one stack of information carriers is driven in an opposite direction but in synchronism with threaded spindles of the other stack of information carriers.

5,355,603

FASTENING SYSTEM FOR FASTENING BOARDS, PARTICULARLY ILLUMINATED ADVERTISING SIGNS

Jukka Luikkonen, Lappeenranta, Finland, assignor to Vilsmainos KY, Lappeenranta, Finland

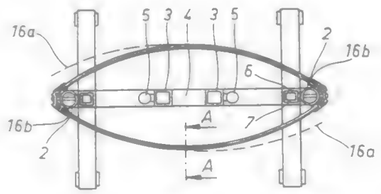
PCT No. PCT/FI90/00288, § 371 Date May 14, 1992, § 102(e) Date May 14, 1992, PCT Pub. No. WO91/08562, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 28, 1990, Ser. No. 856,893

Claims priority, application Finland, Nov. 28, 1989, 895678

Int. Cl.[5] G09F *13/00*

U.S. Cl. 40—541 **6 Claims**



1. A combination of an illuminated advertising sign, a frame structure thereof and an arrangement for fastening the illuminated advertising sign by two opposite edges thereof to said frame structure, wherein the frame structure comprises a plurality of spaced apart tubular members, and wherein the illuminated advertising sign comprises a base sheet having two opposite edges one disposed at either end thereof and a transparent plastic sheet laid thereupon also having two opposite edges one disposed at either end thereof, said two opposite edges of said base sheet being at any given time permanently fitted within a pair of H-shaped profiles each having spaced apart legs defining a groove therebetween, in a manner that each of said opposite edges of said base sheet settles at any given time in the groove between the legs of a respective said H-shaped profile one of said opposite edges of said transparent plastic sheet being permanently fixed to one of said H-shaped profiles, the other edge of said plastic sheet being openably fixable in said groove of the other H-shaped profile, wherein between the transparent plastic sheet and base sheet is provided a space for an advertising poster, and wherein said illuminated advertising sign fitted with the H-shaped profiles is fixed to the frame structure in a manner that a distance along a straight line connecting said tubular members for catching said H-shaped profiles of said sign is smaller than a distance along a straight line connecting said H-shaped profiles when the H-Shaped profiles are caught by less than two of said tubular members whereby, when said illuminated advertising sign is caught by at least two of said tubular members of said frame structure, said illuminated advertising sign produces an arched light-transmitting advertising surface, and wherein the arrangement for fastening comprises a locking profile having a substantially C-shaped cross-section, fastening means for fastening the C-shaped locking profile to one of said tubular members included in the frame structure and cooperating with the C-shaped locking profile whereby the fastening of said advertising sign to the frame structure can be affected by placing a leg of said C-shaped locking profile in a groove between the legs of said H-shaped profile extending away from said advertising sign in a manner that the H-shaped profile settles against said tubular member whereby, upon fixing said C-shaped locking profile to said tubular member with said fastening means, said H-shaped profile is locked through the action of friction between the C-shaped locking profile and said tubular member.

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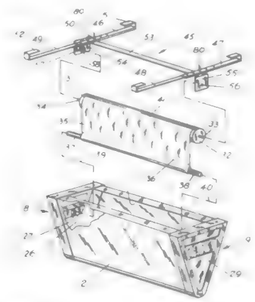
SIGN UTILIZING AMBIENT ILLUMINATION

Roy M. Rathke, New Berlin, Wis., assignor to Everbrite, Inc., Greenfield, Wis.

Filed Oct. 21, 1993, Ser. No. 140,773

Int. Cl.[5] G09F *7/20*

U.S. Cl. 40—601 **6 Claims**



6. The combination of a box-like sign body and support means for supporting the sign body for being moved between upper and lower positions,

the sign body comprising light transmissive side panels arranged adjacent each other to define a top opening for the body, the side panels having opposite ends,

laterally spaced apart end panels each spanning between corresponding ends of the side panels and means for fastening the end panels to the side panels to create said boxlike sign body with said open top,

the support means comprising a reel including a spindle and a web of predetermined width having one end fastened to the spindle and having an opposite free end, the web having sufficient length to wind around the spindle a plurality of times,

means for supporting the spindle for rotating immediately beneath a light source, and

rod means fastened to the free end of the web and having end portions extending laterally in opposite directions beyond said width of the web for said portions to connect respectively to said end panels to achieve supporting said sign body from the web,

urging said sign body upwardly to its upper position causing said web to wind onto said spindle for supporting said body with its said top opening presented to said light source and urging said body downwardly causing said web to unwind from the spindle to support said sign body in said lower position.

5,355,605

DISPLAY DEVICE WITH SHEET MATERIAL SURFACE AND STRESSED FRAME

Ki I. Kim, 826 S. Berendo St., Los Angeles, Calif. 90005

Filed Nov. 16, 1992, Ser. No. 976,475

Int. Cl.[5] G09F *17/00*

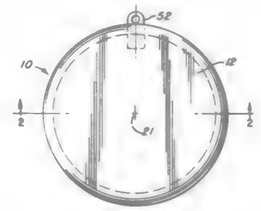
U.S. Cl. 40—603 **13 Claims**

1. A display device comprising:

a peripheral frame having a relatively stiff core element, and having first and second sides,

a resilient deformable sheath disposed completely about said core element and having an outer surface,

a plastic sheet stretched on the frame and having outer portions thereof extending about the outer surface of the sheath, whereby tension forces in the sheet deform said resilient sheath in the direction inwardly of the frame, and



thereby exert reaction forces to deform the sheath to prevent and eliminate wrinkling of the sheet.

5,355,606

APPARATUS FOR LOADING BULLETS INTO A CLIP

Roberto E. Origoni, 290 Larmier Ave., Oak View, Calif. 93022

Filed Feb. 16, 1993, Ser. No. 18,318

Int. Cl.[5] F41A *9/83*

U.S. Cl. 42—87 **5 Claims**

1. In the combination with a clip for containing a series of bullets in a stacked relationship, said clip having an exterior wall, said clip having a single access opening through which the bullets are to be loaded within said clip, said exterior wall around said access opening being inwardly flared forming a necked down area to hold in position the uppermost bullets of the stacked series of bullets, an apparatus for loading bullets into said clip comprising:

an elongated housing having a lower mount and an upper mount, said lower mount to connect with said exterior wall of said clip, said lower mount being spaced from said access opening, said upper mount to engage with said exterior wall of said clip at said necked down area, said lower mount being restrained laterally on said clip, said upper mount being restrained laterally and longitudinally on said clip;

a rod mounted on said elongated housing and parallel to said exterior wall, said rod being longitudinally movable relative to said elongated housing maintaining its parallel relationship to said elongated housing, said rod and said elongated housing being exteriorly mounted on and in juxtaposition to said clip; and

an actuator mounted on said rod directly adjacent said access opening, said actuator having a pressable section for being manually contacted by a human user to move said rod relative to said elongated housing, said actuator having an actuating end for contacting said uppermost bullet within said necked down area, sufficient pressing on said

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actuator causes said actuating end to press against said uppermost bullet and displace said stacked series of bullets a sufficient distance to permit entry of another bullet into said clip which will then become the uppermost bullet upon manual release of said actuator.

5,355,607

SUB-BASE FOR TOP-MOUNTED GUNSIGHT

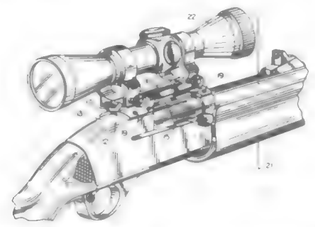
David A. Klotz, 364 Nichols Ave., Syracuse, N.Y. 13206

Continuation of Ser. No. 751,546, Aug. 29, 1991. This application May 25, 1993, Ser. No. 66,738

The portion of the term of this patent subsequent to Aug. 16, 2008, has been disclaimed.

Int. Cl.[5] **F41G** *1/387*

U.S. Cl. 42—101 **2 Claims**



1. A method for mounting a telescopic gunsight on a semi-automatic shotgun having a receiver, which comprises:

attaching said gunsight to a base/sub-base element by means of dual rings having clamping means with attached clamp actuating means;

said clamping means being clamped to said base/sub-base element;

forming said base/sub-base element as a single structure having a lower surface substantially conforming to said receiver;

attaching said clamping means to said base/sub-base element;

rigidly and permanently fastening said base/sub-base element to a first and a second side of said receiver;

said step of fastening including bringing said base/sub-base element substantially into contact with said receiver; and

said step of fastening further including affixing a plurality of fasteners at an angle to a vertical axis of said shotgun.

5,355,608

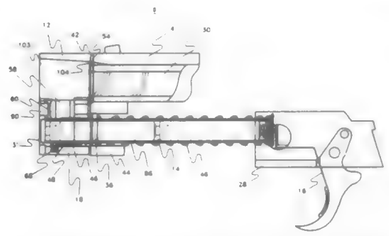
CONCEALED LASER MODULE SIGHT APPARATUS

James W. Teetzel, 14 Stratham Green, Stratham, N.H. 03885

Filed Jun. 8, 1993, Ser. No. 73,766

Int. Cl.[5] **F41G** *1/35, 1/36*

U.S. Cl. 42—103 **12 Claims**



1. A laser sight for an autoloading handgun, said handgun having a barrel and a spring recoil guide, a trigger, a frame, a slide having a cross-sectional profile with a front face having two holes therein, with one hole corresponding to the diameter of the barrel and the other hole corresponding to the diameter of the spring recoil guide, said laser sight comprising:

a chassis, having a cross-sectional profile corresponding to the cross-sectional profile of the slide of said handgun, said chassis having a front face, a back face, and having another two holes extending therethrough from the back face to the front face of said chassis, with said another two holes corresponding in positional alignment to the holes in the front face of the slide of said handgun, with said chassis having at least one light source;

a battery pack dimensioned to fit within the spring recoil guide of said handgun and to power said light source; wherein the light of said light source is emitted from the front face of said chassis, and with the back face of said chassis securely mounted on the front face of the slide of said handgun.

5,355,609

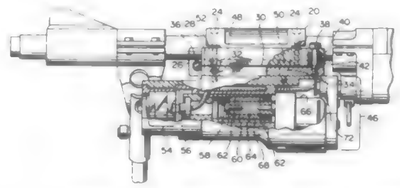
LASER BEAM SIGHTING APPARATUS WITH A SELECTIVELY ADJUSTABLE BEAM WIDTH

Reynold A. Schenke, 290 Old Leacock Rd., Paradise, Pa. 17562

Continuation of Ser. No. 985,939, Dec. 4, 1992, abandoned. This application Sep. 9, 1993, Ser. No. 118,288

Int. Cl.[5] **F41G** *1/35, 1/36*

U.S. Cl. 42—103 **24 Claims**



1. A bore sighted laser beam sighting apparatus for emitting a selectively adjustable laser beam for illuminating a target at various distances from the apparatus, said apparatus comprising:

a main housing having a proximal end and a distal end;

lens means at said distal end of said main housing for projecting a laser beam to a target;

a laser source slidably contained within said main housing, said laser source being slidable linearly through said main housing between said proximal and distal ends;

means for selectively sliding said laser source to substantially any position between said proximal and distal ends of said main body to thereby achieve a particular distance between the laser source and the lens means, said particular distance determining the width of the laser beam.

5,355,610

DEVICES FOR SUPPORTING A FISHING ROD ADAPTED TO SIGNAL THE USER WHEN A FISH BITES A HOOK

Earl E. Sizemore, and Eddie Sizemore, both of 981 Blue Ball Rd., Elkton, Md. 21921

Filed Nov. 1, 1993, Ser. No. 144,355

Int. Cl.[5] **A01K** *85/01*

U.S. Cl. 43—17 **5 Claims**

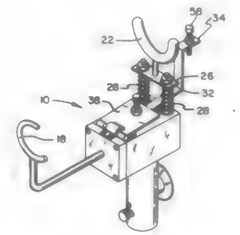
1. A new and improved device for supporting a fishing rod with a hook adapted to signal the user when a fish has bit the hook comprising, in combination:

a rectangular support box having an upper surface, a lower surface, an outboard surface, an inboard surface and vertical side surfaces coupled therebetween, the box having a battery positioned therein;

a support assembly comprising a generally C-shaped rearward support component positioned rearwardly of the inboard surface and adapted to receive the rear of a handle of a fishing rod and a U-shaped forward support component positioned rearwardly of the outboard surface, the U-shaped component being located above the C-shaped component whereby when a fishing rod is located in contact with the C-shaped component and U-shaped component, the rod will be maintained at a proper angular orientation for fishing;

a crossbar supporting the U-shaped component with a pair of springs having their lower ends attached to the box and their upper ends urging the crossbar and U-shaped component upwardly;

an adjustable trigger having its upper end located along the longitudinal axis of the box at a location above the lower



edge of the U-shaped component and forwardly thereof to be contacted and depressed by a fishing rod supported in the support assembly when a fish bites the hook of the fishing rod, the trigger having a lower end pivotally coupled to the upper surface of the box and with an upturned switch contact on the end of the trigger opposite from the upper end;

a horn mounted adjacent to the box and operatively coupled with the battery and trigger and adapted to be sounded upon the biting of the hook;

an on/off switch in the box adapted to inactivate the horn irrespective of the orientation of the fishing rod; and

a hollow tube extending downwardly from the box adapted to be received on a post.

5,355,611

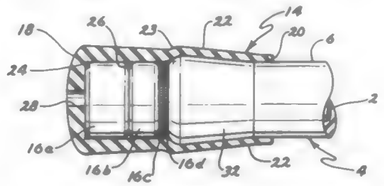
BALANCER FOR FISHING RODS

Larry J. Dahlberg, Brainerd, and John E. Brackett, Minneapolis, both of Minn., assignors to Fishing Designs, Inc., Minneapolis, Minn.

Filed Aug. 16, 1993, Ser. No. 106,522

Int. Cl.[5] **A01K** *87/00, 97/10*

U.S. Cl. 43—21.2 **16 Claims**



1. A removable, counterbalancing, butt cap assembly for fishing rods comprising:

an elongated butt cap adapted to be slidably mounted over the rear end portion of fishing rod handles, said butt cap being of a substantially cylindrical, hollow configuration with a closed rear end wall and an open front end spaced apart at opposite ends of generally cylindrical side walls a sufficient distance so as to define an interior, weight-containing compartment between said closed rear end wall and the external rear end extremity of a fishing rod handle, when the butt cap is partially, slidably positioned over the outside of the rear end portion of the rod handle, said butt cap side walls being flexible, thereby permitting the butt cap to be slidably mounted over fishing rod handles of varying diameter and shape; and

at least one counterweight contained within said weight-containing compartment for achieving a desired counterbalance against the weight of the rod forward length extending between the fulcrum created by the user's hand grip on the rod and the rod tip.

5,355,612

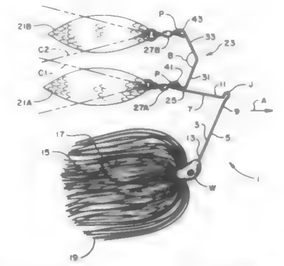
SPINNER FISHING LURE

Stanley Smith, P.O. Box 188, Birch Tree, Mo. 65438

Filed Nov. 2, 1992, Ser. No. 971,016

Int. Cl.[5] **A01K** *85/00*

U.S. Cl. 43—42.13 **13 Claims**



1. A spinner lure comprising a frame including first and second diverging arms lying generally in the same plane, a hook connected to the frame at the distal end of the first arm and lying generally in the plane of the first and second arms, at least two blades, means for connecting the blades to the frame generally at the distal end of the second arm, the blades being tethered to said connecting means at spaced apart connection points such that the blades may swivel relative to said connecting means generally sweeping out overlapping cones as the blades travel through water so that the blades periodically strike one another to produce a noise attractive to fish, said connecting means being configured so that the connection points of the blades and the blades are substantially vertically aligned as the lure is pulled through the water.

5,355,613

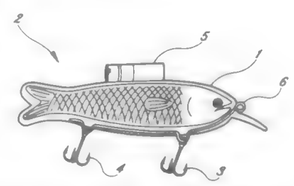
VARIABLE BUOYANCY NATURAL BAIT CAST FISHING LURE

George Kechriotis, 1557 SW. 7th Ct., Boca Raton, Fla. 33486

Filed Jan. 27, 1993, Ser. No. 9,817

Int. Cl.[5] **A01K** *85/00*

U.S. Cl. 43—42.22 **9 Claims**

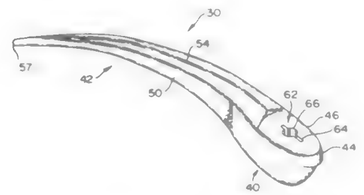


1. A fishing lure, comprising: a body member; and means for adjusting the buoyancy of the fishing lure to achieve various depth levels operatively associated with said body member,

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said means for adjusting including a first cylinder, the first cylinder having an inside surface, a portion of the inside surface of the first cylinder being threaded, the first cylinder having a closed first end and an open second end, said means for adjusting further including means for closing the second end of the first cylinder, said means for closing is a screw at least partially disposed within the first cylinder at the second end of the first cylinder, wherein the buoyancy of the lure is varied by varying the position of the screw within the first cylinder.

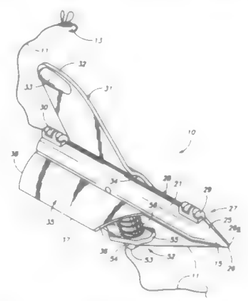
5,355,614
INTERNAL BAIT WEIGHT APPARATUS
Jeffrey L. Brickey, 2402 Killarney Way SE., Bellevue, Wash. 98004-7633
Filed Jun. 1, 1993, Ser. No. 70,607
Int. Cl.[5] A01K *91/00*
U.S. Cl. 43—43.1 **19 Claims**



1. A line fishing apparatus for insertion inside a fish used for bait in water, the bait fish having a mouth, digestive cavity, and tail, the apparatus generally shaped to the internal dimensions of the fish by comprising a bulbous head portion and a tapered barbless tail portion;
- the head portion fitting inside the fish mouth while the apparatus is inserted in the fish;
- the head portion defining a through channel having a first opening and a second opening, the channel for receiving a hook and a fishing line;
- the barbless tail portion tapered continuously from the bulbous head portion to a distal end enabling the apparatus to slide out of the fish once inserted.

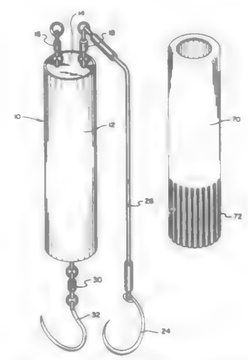
5,355,615
FISH LINE RUDDER DEVICE WITH STABILIZER
W. James Spickelmire, Grangeville, Id., assignor to Gem Tackle Company, Grangeville, Id.
Continuation-in-part of Ser. No. 747,525, Aug. 20, 1991, Pat. No. 5,165,196, which is a continuation-in-part of Ser. No. 530,067, May 29, 1990, Pat. No. Des. 330,752. This application Aug. 12, 1992, Ser. No. 928,788
Int. Cl.[5] A01K *95/00*
U.S. Cl. 43—43.13 **19 Claims**

1. A fish line rudder device, comprising:
- an elongated body formed on a central axis and having a top side surface and a bottom side surface leading axially from a rearward end to a forward tapered section and a reduced front end;
- a fish line receiver defining an open line receiving way extending along an axis along the body on one side thereof, for slidably receiving a fish line therethrough;
- a top rudder member extending radially from the body and centered along a central longitudinal reference plane;
- a pair of elongated wings extending in opposed directions outwardly from the body to side edges, said wings extending axially between the forward section and the rearward end;
- a bottom rudder plate member extending radially from the body and centered on the central longitudinal reference plane;
- wherein the top and bottom rudder plates extend axially along the body between the pair of elongated wings; and



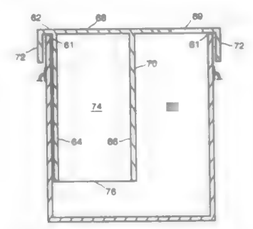
- line grip means adjacent the bottom side surface of the body for releasably receiving and securing a fish line therein.

5,355,616
FISHING LURE
Michael H. Parker, P.O. Box 201407, Anchorage, Ak. 99520
Filed Nov. 1, 1993, Ser. No. 143,648
Int. Cl.[5] A01K *85/00, 85/01*
U.S. Cl. 43—43.14 **7 Claims**



1. A new and improved fishing rig, comprising:
- a hollow cylinder having a top end and a bottom end; a top cap removably coupled to the top end; a bottom cap removably coupled to the bottom end;
- a first top swivel removably coupled to the top cap for receiving a fishing line;
- a second top swivel removably coupled to the top cap diametrically opposed to the first top swivel;
- a bottom swivel removably coupled to the bottom end cap;
- a first hook means for catching fish operatively coupled to the second top swivel; and
- a second hook means operatively coupled to the bottom swivel.

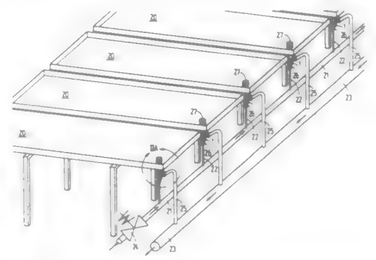
5,355,617
MINNOW CONTAINER
Robert A. Maynard, R.R. #1, Cavan, Ontario L0A 1C0 CA, Canada
Filed Mar. 31, 1993, Ser. No. 40,846
Int. Cl.[5] A01K *97/04*
U.S. Cl. 43—56 **8 Claims**



1. An improved minnow container that is adapted to carry water and oxygen therein when in an upright position, said container comprising:
- a water receiving and retaining chamber having a first opening in the top thereof;
- an oxygen receiving and retaining chamber that is substantially open at its bottom end and is sealed above said open bottom end so as to preclude the escape of oxygen therefrom when said container is in its upright position;
- wherein the volume of said water receiving and retaining chamber is greater than the volume of said oxygen receiving and retaining chamber;
- a barrier means physically separating said oxygen receiving and retaining chamber and said water receiving and retaining chamber, said barrier means terminating at a lower boundary in a passageway that connects said water receiving and retaining chamber in fluid communication with said oxygen receiving and retaining chamber, with said passageway being generally below said barrier means;
- wherein, when said container is rotated from its upright position to a fully rotated position, all of the air in said oxygen receiving and retaining chamber will pass through said passageway and into said water receiving and retaining chamber, and concurrently some water from said water receiving and retaining chamber will pass through said passageway and into said oxygen receiving and retaining chamber, whereby said oxygen receiving and retaining chamber is filled with water; and
- wherein, when said container is subsequently rotated form its fully rotated position to its upright position, said oxygen receiving and retaining chamber remains filled with water;
- so that said container is in use in its upright position, and when oxygen gas has been introduced into said oxygen receiving and retaining chamber after said container has been placed in its upright position, said oxygen receiving and retaining chamber contains oxygen gas, said passageway contains water, and said water receiving and retaining chamber contains water above the level of said passageway, and said oxygen gas is precluded from exiting said oxygen receiving and retaining chamber.

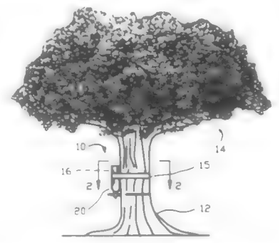
5,355,618
IRRIGATION VALVE FOR A CULTIVATION TABLE AND RELATED IRRIGATION SYSTEM
Leif L. Pedersen, Ågade 25, DK-5270 Odense N, Denmark
Filed Sep. 9, 1992, Ser. No. 942,381
Claims priority, application Denmark, Sep. 9, 1991, 1581/91
Int. Cl.[5] A01G *9/00*
U.S. Cl. 47—18 **8 Claims**

1. Irrigation plant for a plurality of cultivation tables, the irrigation plant comprising a pressure-water piping, an outlet pipe an inlet pipe extending from the pressure-water piping respectively leads to each cultivation table, an irrigation valve provided in each inlet pipe, said irrigation valve including means for draining liquid from the table, means for aerating the liquid, a valve housing including an inlet, an outlet, and a mixing chamber disposed between the inlet and the outlet, and



- one of a narrowing or a nozzle provided at the mixing chamber, with at least one of the mixing chamber and an area connected to the mixing chamber being in communication with a further opening, and wherein the further opening of the irrigation valve is connected to the outlet pipe, and wherein the pressure-water piping includes at least one valve.

5,355,619
TREE INJECTOR SYSTEM
Otho S. West, 4405 Old Government Rd., and Gary E. Hale, 4210 Lake Hancock Rd., both of, Lakeland, Fla. 33811
Continuation of Ser. No. 681,718, Apr. 8, 1991. This application Sep. 30, 1993, Ser. No. 129,492
Int. Cl.[5] A01G *29/00*
U.S. Cl. 47—57.5 **1 Claim**



1. An improved refillable tree injection system for injecting a treatment liquid into a plurality of holes drilled into a trunk of a tree, comprising:
- a container having a container opening including container threads for permitting the opening and closing of said container and for filling an interior of said container with the treatment liquid;
- a closure having closure threads for threadably engaging with said container threads for removably securing said closure to said container for closing said container opening in said container and for enabling said container to be refilled with the treatment liquid;
- a coupling secured to said closure for communicating with said interior of said container through a closure aperture;
- one-way valve means secured to said coupling for communicating with said interior of said container when said closure is secured to said container to enable the pressurized gas to be introduced into said interior of said container and

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for inhibiting the discharge of the pressurized gas therefrom;

said one-way valve means being adapted to receive the pressurized gas from a conventional tire filling adaptor to introduce the pressurized gas into said interior of said container;

control valve means secured to said coupling for communicating with said interior of said container when said closure is secured to said container to control the flow of liquid from said interior of said container;

a flexible tubing having a plurality of injector nozzles for insertion into the plurality of holes in the tree;

said plurality of injector nozzles being spaced along said flexible tubing with each of said injector nozzles having tapered serration means for facilitating the insertion of said injector nozzles into the plurality of holes in the tree and for inhibiting the removal of said plurality of injector nozzles from the plurality of holes in the tree;

means for securing the container to the trunk of a tree in an inverted position with said container opening being disposed in a downward position; and

means for connecting said flexible tubing to said control valve means for enabling the pressurized gas within said interior of said container to force the treatment liquid into the plurality of holes in the tree to administer the treatment liquid to the tree at a preselected flow rate;

a spray valve disposed in said closure for communicating with said interior of said container when said closure is secured to said container;

a spray actuator having a terminal orifice secured to said spray valve for enabling said pressurized gas within said interior of said container to spray the treatment liquid from said terminal orifice upon actuation of said spray actuator when said container is removed from the trunk of a tree and the container is disposed in an upright position with said container opening being disposed upwardly; wherein said one-way valve means defines a gas input for enabling the pressurized gas to be introduced into said interior of said container;

said control valve means defining a liquid output for directing the treatment liquid into said flexible tubing;

said gas input being disposed at a substantially perpendicular angle relative to said liquid output for enabling said liquid output to be disposed tangential to the trunk of the tree when said container is secured to the trunk of a tree in said inverted position;

said gas input being disposed substantially perpendicular to the trunk of a tree for facilitating the pressurized gas to be introduced into said interior of said container when said container is secured to the trunk of a tree; and

a gas pressure gauge secured to said coupling and communicating with said interior of said container for displaying the pressure of the pressurized gas within said interior of said container when said container is secured to the trunk of a tree in said inverted position.

5,355,620

VACUUM-INFUSION SYSTEM FOR TREE INJECTION

Dennis Newbanks, 161 Beech Ridge Rd., York, Me. 03909

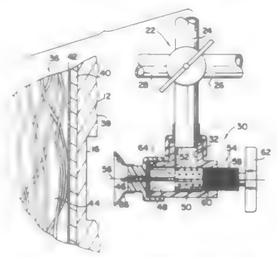
Filed Jul. 9, 1992, Ser. No. 911,011
Int. Cl.[5] A01G *29/00*
U.S. Cl. 47—58 **9 Claims**

1. A method of infusing liquid into a living plant having a layer of xylem through an exterior plant surface, said method comprising the steps of:

establishing a seal between an infusion housing and a portion of the exterior plant surface to prevent the passage of air between the infusion housing and the exterior plant surface;

supplying said liquid to a chamber coupled to said infusion housing, and degassing said liquid introduced into said chamber by evacuating said chamber to a negative pressure;

forming a liquid passageway in the plant extending between the xylem and the exterior plant surface and introducing



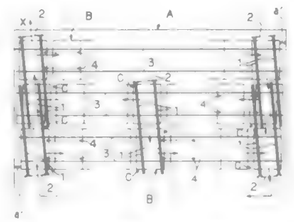
liquid from said chamber through said liquid passageway into said xylem.

5,355,621

HIGH-DENSITY TYPE CULTIVATION EQUIPMENT

Mamoru Yokota, Shizuoka, Japan, assignor to Yazaki Industrial Chemical Co., Ltd., Shizuoka, Japan

Filed Mar. 1, 1993, Ser. No. 24,485
Int. Cl.[5] A01G *31/02*
U.S. Cl. 47—65 **15 Claims**



1. A high-density type cultivation equipment comprising:

cultivation beds for cultivating plants therewithin and having forward and rear wheels;

plural main rail tracks laid on a site area parallel to each other, wherein said cultivation beds are movable via said wheels, said wheels traveling on said main rail tracks, said main rail tracks positioned to have a clearance therebetween wide enough to avoid interference between said cultivation beds on two adjacent said main rail tracks, said cultivation beds being provided on said main rail tracks in plurality in dense rows and being adapted to be moved in a cyclic path through transference from one main rail track to the adjacent main rail track at the ends thereof;

a transfer rail track which connects an end of one of said main rail tracks to an end of an adjacent main rail track, said transfer rail track comprising two pairs of parallel feed rollers that are adapted for rotation in a common direction at a substantially identical velocity, said transfer rail track being arranged to have a track gauge related to the distance between the forward and rear wheels of said cultivation beds and being positioned to cross said main rail tracks at an angle inclined from a right angle by a feed angle and being positioned at substantially the same height with said main rail tracks;

means to drive said feed rollers for rotation;

wherein the wheels of said cultivation beds are arranged such that axles thereof are fixed perpendicular to central axes of said main rail tracks when said wheels are positioned on corner points of a parallelogram formed by the

crossing of said main rail tracks and said transfer rail track; and

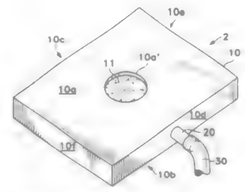
hook means adapted to detachably engage with structural members of said cultivation beds, said hook means being driven by a driving device in a predetermined stroke motion parallel to said main rail tracks for advancing in the direction of said cyclic path any of said cultivation beds that has moved on said transfer rail track from one of said main rail tracks to the adjacent main rail track thereof.

5,355,622

PLANT POUCH

Scott P. Isabelle, 416 Rte. 210, Stoney Point, N.Y. 10980, and John Lipscomb, Pearce, Ariz., assignors to Scott Paul Isabelle, Stoney Point, N.Y.

Filed Mar. 15, 1993, Ser. No. 30,917
Int. Cl.[5] A01G *9/02*
U.S. Cl. 47—66 **6 Claims**



1. A plant pouch comprising

an envelope having integrally-constructed opposing top and bottom walls, opposing side walls and opposing end walls, said top wall including a top wall opening formed therein, said side walls having a height not exceeding two inches, said envelope further including an envelope floor extending between the opposing side walls and the opposing end walls thereby dividing said envelope into an upper envelope chamber and a lower envelope chamber, and at least one side wall including perforations extending along its length below the envelope floor, a planting mixture being disposed within the upper envelope chamber and granular rock material being disposed within the lower envelope chamber, the perforations in at least one side wall thereby permitting said granular rock material to be selectively released from the lower envelope chamber to form a raised growth medium support.

5,355,623

PLANT POT PROTECTION APPARATUS

Darren K. Brown, 2055 Sierra Dr., Elko, Nev. 89801

Filed Sep. 20, 1993, Ser. No. 123,115
Int. Cl.[5] A01G *9/02*
U.S. Cl. 47—84 **3 Claims**

1. A new and improved protection apparatus for installation in a plant pot which contains a quantity of soil and a plant therein, said apparatus comprising:

a planar base member having a central axis,

an array of ridge portions that project upward from said planar base member, said ridge portions arrayed on said planar base member in an alternating arrangement of planar base member portions and ridge portions, said alternating arrangement extending radially with respect to said central axis,

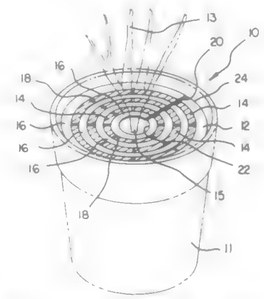
a radial slot that extends through a portion of said planar base member and through respective portions of said respective ridge portions, said radial slot permitting respective opposing portions of said planar base member and said ridge portions which are adjacent to said radial slot to be separated for allowing a stem of a plant to pass therebetween for installing the apparatus in the pot, and

a central aperture, centrally located in said planar base member, for permitting the stem of the plant to pass through said planar base member, said radial slot extending from said central aperture to an outer edge of said planar base member,

further including:

a plurality of spaced apertures located in said alternating planar base member portions for permitting water to pass from said planar base member portions to soil in the pot,

a separable trough assembly adapted to be superimposed



with respect to said planar base member, said trough assembly including an annular trough member and a plurality of hollow spike members protecting downward from said annular trough member,

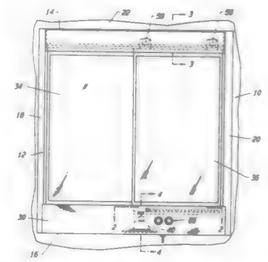
wherein said hollow spike members are arrayed on said annular trough member such that they are capable of being placed in registration with a corresponding plurality of apertures in said planar base member portions of said planar base member when said separable trough assembly is superimposed with respect to said planar base member.

5,355,624

MODULAR, POWERED CLOSURE APPARATUS

Russell E. Bacon, 5201 Summerhill Rd., Apt. 506, Texarkana, Tex. 75503

Filed Dec. 18, 1992, Ser. No. 992,796
Int. Cl.[5] E05F *15/00*
U.S. Cl. 49—280 **12 Claims**



1. Modular, powered closure apparatus for installation as a unit into an opening of a building, said apparatus comprising, in combination:

a rigid framework to be secured to the building in said opening and defining a framework interior, said framework including a top framework element for engagement with the building, a bottom framework element for engagement with the building, and side framework elements for engagement with the building interconnecting said top and bottom framework elements, at least one of said top and

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bottom framework elements including a housing extending between said side framework elements having a housing interior;

a first closure panel fixed in position on said framework between said top and bottom framework elements and extending into the framework interior from a side framework element;

a second closure panel positioned on said framework within said framework interior and movable relative thereto and relative to said first closure panel between an open position and a closed position;

an electric motor mounted in said housing interior;

a switch operatively associated with said electric motor for selectively energizing and de-energizing said electric motor;

support means for supporting said second closure panel during movement of said second closure panel between said open and closed positions;

transmission means operatively connecting said electric motor and said second closure panel to selectively move said second closure panel between said open and closed positions upon energization of said electric motor, said transmission means including an elongated rack affixed to said second closure panel movable relative to said housing and a pinion interconnected with said rack and rotatable by said electric motor to move said rack, said pinion and at least a portion of said rack being disposed in said housing interior;

lock means responsive to de-energization of said electric motor to lock said second closure panel against movement relative to said framework, Said lock means including an electrical solenoid having an armature movable between a lock position wherein said armature engages said rack to prevent movement of said rack and an unlock position wherein said armature is disengaged from said rack and allows movement of said rack, said solenoid being operatively associated with said electric motor and electrically energized upon energization of said electric motor to disengage said armature from said rack; and

biasing means continuously biasing said armature toward said rack, said rack defining a plurality of spaced holes along the length of said rack, said holes being brought into sequential registry with said armature during movement of said rack, and said armature entering the hole in registry therewith upon de-energization of said electric motor due to the bias of said biasing means.

5,355,625

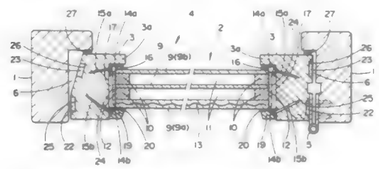
WOOD-CASED GLASS DOOR ASSEMBLY

Hisayuki Matsuoka, Tokyo, Japan, assignor to Kabushiki Kaisha Tomoku, Tokyo, Japan

Filed Dec. 31, 1992, Ser. No. 999,717

Int. Cl.[5] E05D *7/00*

U.S. Cl. 49—400 **10 Claims**



1. A wood-cased glass door assembly comprising:

an openable glass door composed of a glazing, and wooden stiles and rails, which are fitted on an outer peripheral edge of the glazing;

a wooden doorcase fixed in an opening in a wall, said door being mounted for opening and closing within said doorcase;

thermally expanding materials separately installed in spaces defined between an inner peripheral portion of the wooden doorcase and outer peripheral portions of the wooden stiles and rails and between inner peripheral portion of the wooden stiles and rails and the outer peripheral edge of the glazing over the entire length in the longitudinal directions of the spaces, said expanding materials foaming and expanding under heat to block the respective spaces; and

metal fittings for holding the glazing, said metal fittings being positioned on inner and outer surfaces of the outer peripheral edge of the glazing therebetween are fixed to the wooden stiles and rails,

wherein the thermally expanding material installed in the space between the inner peripheral portion of the wooden door case and the outer peripheral portions of the wooden stiles and rails is divided into two strips provided with an interval therebetween, one of said strips being disposed at a position near an inner surface of the openable glass door and another of said strips being disposed at a position near an outer surface of said openable glass door,

wherein the space defined between the inner peripheral portion of the wooden doorcase and the outer peripheral portions of the wooden stiles and rails includes a drain space defined between an inclined drain surface and a lower one of said wooden rails, said drain surface being inclined downwardly on an inner peripheral surface at a bottom of said wooden doorcase, a portion of said two strips of thermally expanding material being installed in the space between said lower wooden rail and said drain surface, and

wherein the strip of thermally expanding material disposed at the position near the outer surface of said operable glass door is thicker than the strip of thermally expanding material disposed at the position near the inner surface of said openable glass door.

5,355,626

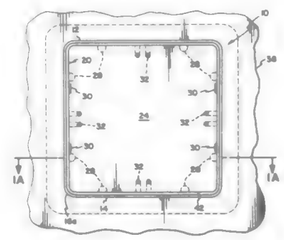
ACCESS PANEL ASSEMBLY

Steve H. Sachs, Torrance, Calif., assignor to Sachwin Products, Inc., Torrance, Calif.

Continuation of Ser. No. 31,807, Mar. 15, 1993, abandoned. This application Feb. 14, 1994, Ser. No. 197,561

Int. Cl.[5] E06B *3/32*

U.S. Cl. 49—436 **6 Claims**



1. An access panel assembly, comprising:

(a) a frame having two faces and a groove located equidistantly between the faces; and

(b) a door, press-fitted within the frame, wherein one or more resilient tabs are located adjacent to each edge of the door for engagement with the groove of the frame.

5,355,627

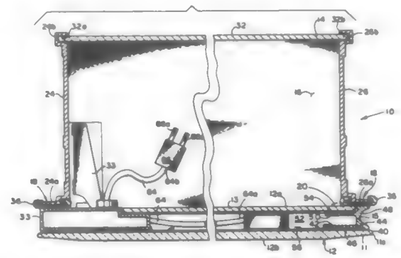
CABINET HAVING AN INTERNAL POWER SUPPLY AND A DOOR CASING GASKET

Howard S. Katz, Riegelsville, Pa., assignor to Robern, Inc., Bensalem, Pa.

Continuation of Ser. No. 889,658, May 27, 1992, abandoned, Division of Ser. No. 587,701, Sep. 25, 1990, abandoned. This application Oct. 28, 1993, Ser. No. 144,588

Int. Cl.[5] E06B *7/16*

U.S. Cl. 49—479.1 **3 Claims**



1. A wall mounted cabinet comprising:

a cabinet body mounted on a wall and having an internal storage area for receiving items to be stored and a door casing defining an opening for accessing said storage area;

a cabinet door pivotally mounted to said cabinet body, said cabinet door having an interior surface and an exterior surface;

hinge means interconnected between said cabinet door and said cabinet body for allowing said cabinet door to pivot with respect to said cabinet body between a first position wherein said cabinet door is positioned proximate said door casing and a second position wherein said cabinet door is positioned away from said door casing;

a gasket positioned on said door casing such that said gasket substantially covers said door casing whereby said interior surface of said cabinet door is positioned against said gasket when said cabinet door is in said first position; and

said door casing comprising a corner formed of generally planar flanges extending generally parallel to said interior surface of said cabinet door when said cabinet door is in said first position, said flanges each including a generally orthogonal end in elevational view, said ends of said flanges being in a non-mitered abutting relationship such that a line of separation is defined therebetween, said gasket being positioned on said flanges such that said gasket surrounds the flanges and said line of separation is substantially covered.

5,355,628

WEATHERSTRIP FOR A VEHICLE DOOR

Lawrence J. Dranchak, Taylor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 7, 1992, Ser. No. 909,835

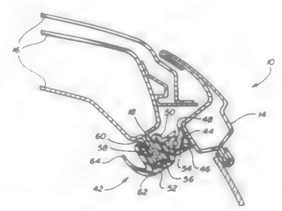
Int. Cl.[5] E06B *7/16*

U.S. Cl. 49—483.1 **7 Claims**

1. A weatherstrip for a vehicle having a seal gap define by a door and a door flange surrounding a door opening on said vehicle, said weatherstrip comprising:

a first member having a bulb portion which is curvilinear in shape and an integrally joined base which is adhesively secured to said door, said first member comprising a rigid elastomeric material; and

a second member having a gripping portion for affixing said second member to said door flange and an integrally joined securing channel correspondingly sized to receive said bulb portion of said first member when said door is in a closed position, said second member being mounted around said door opening such that said bulb portion is firmly secured in said securing channel when said door is



in said closed position so as to substantially seal said seal gap, said second member comprising a resilient elastomeric material.

5,355,629

DOOR STRUCTURE FOR VEHICLE

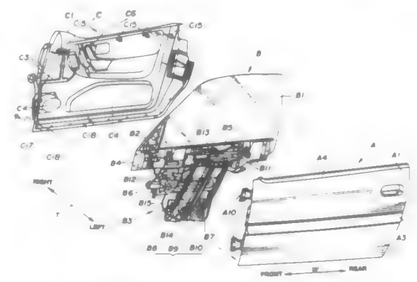
Koichi Kimura, Yokohama; Kenichi Hirooka, Ebina; Hiroshi Tsuchiya, Zama; Akito Tozuka, Fujisawa; Shuji Yamagata; Kiyoto Matsuzaki, both of Yokohama; Kensuke Uchida, Tokyo; Toshiaki Shiraiwa; Sumio Inami, both of Atsugi; Eiji Murakami, Sagamihara; Tetsuji Nasu, Yokohama, and Takayuki Sano, Zama, all of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Dec. 23, 1992, Ser. No. 996,971

Claims priority, application Japan, Dec. 28, 1991, 3-359743; Dec. 28, 1991, 3-359744; Dec. 28, 1991, 3-359745; Jan. 29, 1992, 4-013670

Int. Cl.[5] B60J *5/04*

U.S. Cl. 49—502 **35 Claims**



1. A door structure for a door of a vehicle comprising:

an outer module comprising a basic structural member;

a regulator module comprising a door window pane, and a regulator subassembly for moving said door window pane up and down;

an inner module comprising an interior member forming an inside surface of said door; and

a first joining means for joining said regulator module to said outer module, said joining means extending substantially in parallel to an imaginary plane which is parallel to a direction of a thickness of said door;

wherein said basic structural member of said outer module comprises an inner panel, said inner panel comprising first and second upright portions each extending from a lower end to an upper portion, and a lower portion connecting said lower ends of said first and second upright portions, and wherein said regulator module further comprises a door inner waist reinforcing member comprising a first end joined to said upper portion of said first upright portion of said inner panel and a second end joined to said

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upper portion of said second upright portion of said inner panel;

wherein said door inner waist reinforcing member is joined to said inner panel of said outer module by said first joining means at a plurality of joint points which are different in position along said direction of the thickness of said door.

5,355,630

PROCEDURE FOR CONTROLLING A TURNSTILE AND A TURNSTILE CONTROLLED BY SAID PROCEDURE

Wolfram Kocznar, Innsbruck, and Kurt Wallerstorfer, Irrsdorf, both of Austria, assignors to Skidata Computer Gesellschaft m.b.H., Gartenau

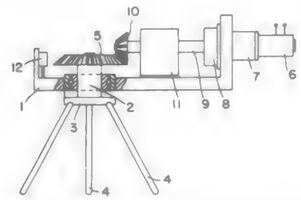
PCT No. PCT/AT92/00102, § 371 Date Mar. 24, 1993, § 102(e) Date Mar. 24, 1993, PCT Pub. No. WO93/03251, PCT Pub. Date Feb. 18, 1993

PCT Filed Jul. 23, 1992, Ser. No. 30,201

Claims priority, application Austria, Aug. 9, 1991, 1578/91

Int. Cl.[5] E06B *3/00*

U.S. Cl. 49—506 **5 Claims**



1. A procedure for controlling a turnstile for the cyclical release of a passageway having a control system, the turnstile comprising a plurality of blocking arms that are offset at an angle to each other, thereby defining a blocking position, said turnstile further comprising a drive motor, and an angle of rotation identification system whereby each of said plurality of said blocking arms is first moved by an externally applied force and then rotated by said drive motor, such that each blocking arm is moved from the blocking position into a subsequent stop position and then, after application of an external force, rotated from the stop position until a next blocking arm is in the blocking position.

5,355,631

REGULATED FORCE AND SPEED CONTROL OF A SURFACE TREATING WHEEL

Glenn A. Whittington, Lino Lakes, and Steven J. Austin, Minneapolis, both of Minn., assignors to Robotics and Automation Corporation, Minneapolis, Minn.

Filed Nov. 19, 1992, Ser. No. 978,727

Int. Cl.[5] B24B *49/00*

U.S. Cl. 451—237 **2 Claims**

1. A regulated force and speed control device for a surface treating wheel comprising,

a housing,

a tool mounting plate in connection with said housing,

a powered tool mounted onto said plate having a work wheel to engage a surface for treatment,

counterbalance means including weights in said housing in connection with counterbalancing said powered tool and said work wheel,

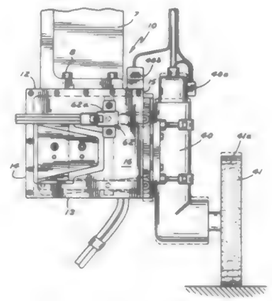
said counterbalance means suspending said mounting plate and said powered tool thereon,

means in connection with said counterbalance means pivotally supporting said mounting plate and powered tool for limited vertical movement thereof,

a pneumatic cylinder having a piston operated by a controlled source of pressurized air engaging said mounting plate to perfect a precise counterbalance of said powered tool and said work wheel to render said powered tool and said work wheel weightless, and

a second pneumatic cylinder having a piston operated by a controlled source of pressurized air to apply constantly the specific controlled pressurized air to said mounting plate and thence to said work wheel which is required for engagement of said work wheel with a specific workpiece,

a proximity sensor in connection with said second pneumatic cylinder, said sensor having an inductive sensing tube sensing the movement of said mounting plate which is



directly responsive to a reduction in the diameter of said work wheel due to the wear of its surface causing the pressure of said piston to increase in accordance with said wear of said work wheel to maintain a preset pressure against the workpiece,

a rotary potentiometer-like means in connection with the powered tool upon said mounting plate responding to a change in reference voltage to achieve the reference voltage required to maintain a constant speed of said work wheel.

5,355,632

APPARATUS FOR TEXTURE PROCESSING OF MAGNETIC DISK

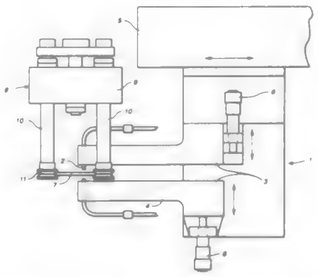
Yuji Horie, Tokyo, Japan, assignor to Nihon Micro Coating Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 974,807

Claims priority, application Japan, Nov. 13, 1991, 3-323965

Int. Cl.[5] B24B *49/00*

U.S. Cl. 451—165 R **2 Claims**



1. In a texture-producing apparatus for producing texture on a surface of a disk by means of an abrasive tape, a roughness-regulating apparatus for regulating the roughness of a processed surface by adjusting the feed speed of said tape, said texture-producing apparatus comprising a measuring device for measuring the roughness of said processed surface and a processing device for processing data obtained by said measuring device and automatically adjusting the feed speed of said abrasive tape according to said data;

said measuring device comprising a sensor unit having a pair of photosensors attached to a movable stand so as to be able to simultaneously measure both surfaces of the disk and a holding unit for holding and rotating the disk while said disk is being measured;

said processing device comprising:

converting means for converting a measured amount of reflected light received thereby into a voltage value;

storing means for storing converted from analog form, comprising said data with preliminarily inputted data, and generating signals for adjusting the feed speed of said tape according to said digital data with respect to said preliminarily inputted data;

adjusting means for adjusting the rotational speed of said disk; and

moving means for moving said photosensors;

said measuring device and said processing device being adapted to measure and process different disks sequentially.

5,355,633

METHOD OF GRINDING A WORKPIECE HAVING PLURAL CYLINDRICAL PORTIONS WITH PLURAL GRINDING WHEELS

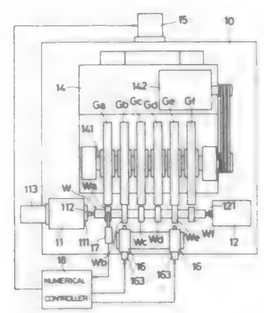
Toshio Ishikawa, Anjo; Masahiko Yokoi, Obu; Shozo Kobayashi, Toyota; Hisashi Kubota, Aichi, and Yoshiki Kawachi, Toyota, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 23, 1992, Ser. No. 996,041

Claims priority, application Japan, Dec. 26, 1991, 3-345429

Int. Cl.[5] B24B *49/00*

U.S. Cl. 451—5 **4 Claims**



1. A method of grinding plural cylindrical portions of a workpiece with plural grinding wheels, wherein said method comprises the steps of:

providing a workpiece having plural cylindrical portions to be ground, the diameter of at least one selected cylindrical portion being larger than those of the rest of the cylindrical portions, said at least one selected cylindrical portion being fewer in number than all of said plural cylindrical portions;

providing a work rest having a movable contact shoe which is engagable with an outer surface of said at least one selected cylindrical portion;

positioning said contact shoe at a position away from the outer surface of said at least one selected cylindrical portion;

advancing said grinding wheels in a first grinding step to partially grind said at least one selected cylindrical portion and fewer than all of said plural cylindrical portions;

advancing said contact shoe for supporting the outer surface of said at least one selected cylindrical portion which has been partially ground; and

advancing said grinding wheels to grind all of said cylindrical portions to a predetermined dimension.

5,355,634

TOOL HOLDER UNIT FOR A ROBOT

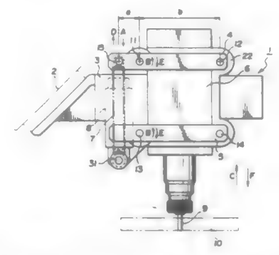
Hisashi Araki, and Shinobu Kawase, both of Shizuoka, Japan, assignors to Yamaha Corporation, Japan

Filed May 26, 1992, Ser. No. 888,181

Claims priority, application Japan, May 24, 1991, 3-149690; May 24, 1991, 3-149691

Int. Cl.[5] B25J *17/02*; B24B *41/00*

U.S. Cl. 451—490 **11 Claims**



1. A tool holder for holding a tool on a robot, the tool having first and second lateral extensions, the tool holder unit comprising:

a first upper frame;

a first lower frame;

a second upper frame;

a second lower frame;

the first lateral extension of the tool located between the first upper frame and the first lower frame;

the second lateral extension of the tool located between the second upper fame and the second lower frame;

a drive member for driving the tool to move the tool; and

an offsetting member located between the first lateral extension of the tool and one of the first upper frame and the first lower frame and between the second lateral extension of the tool and one of the second upper frame and the second lower frame for offsetting gravitational forces acting on the tool.

5,355,635

POWER-DRIVEN CUT-OFF MACHINE

Katsuhiko Sasaki, Chita, and Masaki Kondo, Haza, both of Japan, assignors to Makita Corporation, Anjo, Japan

Filed Nov. 4, 1992, Ser. No. 971,889

Claims priority, application Japan, Nov. 5, 1991, 3-318482

Int. Cl.[5] B24B *41/00*

U.S. Cl. 451—461 **5 Claims**

1. A cut-off machine comprising

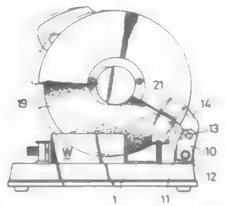
a base extending along a longitudinal axis and having an axial back end and having a vise arrangement for clamping a workpiece,

a pair of joint members having an upper portion and a lower portion and supported by a pair of brackets projecting from the back end of said base, said joint members being pivotably movable relative to said base within a predetermined angle, each of said joint members having two edges spaced apart along the longitudinal axis, the first edge being a front edge of the joint member and the second edge being a rear edge of the joint member, wherein said joint members are alternately movable between a first

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position at which the first edge is placed in contact with said base upper face and a second position at which the second edge is placed in contact with said base upper face,

an arm being pivotably attached at one end thereof to said upper portion of said joint members to form a pivotal center, said pivotal center being movable at least along a horizontal plane substantially parallel to said longitudinal axis,



an abrasive wheel mounted on the other end of said arm for cutting said workpiece,

a handle attached to said arm for operating said arm,

a motor attached to said arm for driving said abrasive wheel, and

a pressing member having an upper mounting end associated with said arm and having a lower mounting end associated with said base, for spanning between said base and said arm and for generally pressing said arm upward.

5,355,636

TEAR RESISTANT COATED ABRASIVE ARTICLE

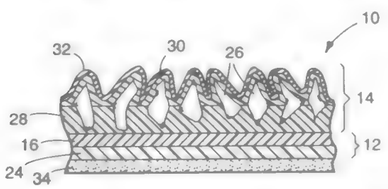
Kimberly K. Harmon, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 1, 1992, Ser. No. 955,046

The portion of the term of this patent subsequent to Oct. 1, 2009, has been disclaimed.

Int. Cl.[5] B24D *11/00*

U.S. Cl. 51—295 **39 Claims**



1. A tear resistant coated abrasive article comprising:

a backing which comprises a film having at least five layers situated one on the other in a parallel array, the layers occurring essentially randomly in the array and being individually selected from a stiff polyester or copolyester and a ductile polymeric material; and

an abrasive layer on a surface of the backing.

5,355,637

ABRASIVE MEDIUM

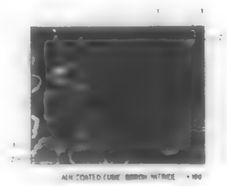
Alan D. Wiltshire, Bristol, and Terry E. Rowen, Derby, both of Great Britain, assignors to Rolls-Royce plc, London, United Kingdom

Continuation of Ser. No. 889,798, May 29, 1992, abandoned. This application Sep. 14, 1993, Ser. No. 120,238

Claims priority, application United Kingdom, Jun. 4, 1991, 9111999

Int. Cl.[5] B24D *11/00*

U.S. Cl. 51—295 **22 Claims**



1. An abrasive medium comprising a dispersion of a plurality of discrete cubic boron nitride particles, and a continuous coating of a material that resists oxidation of the cubic boron nitride surrounding said plurality of particles of said dispersion.

5,355,638

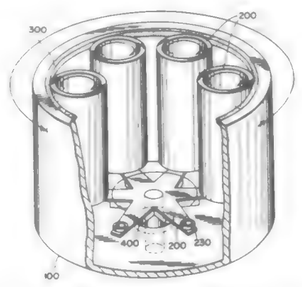
TRACTION DRIVE CENTRIFUGAL FINISHER

Steve E. Hoffman, 6 Maple St., Englewood Cliffs, N.J. 07632

Filed Sep. 8, 1992, Ser. No. 941,695

Int. Cl.[5] B24B *1/00*

U.S. Cl. 451—32 **36 Claims**



21. A method for finishing at least one object, comprising the steps of:

loading said at least one object into at least one inner vessel having an outer surface and containing abrasive media, said inner vessel being inside an outer vessel having an inner surface and an axis, and

revolving said at least one inner vessel around said axis of said outer vessel so as to engage said inner surface of said outer vessel with said outer surface of said at least one inner vessel at a traction surface of a resilient material, thereby causing said at least one inner vessel to rotate.

5,355,639

DEVICE FOR MACHINING OF CONTOURS MADE OF A SOFT MATERIAL AND AUTOMATIC MACHINING METHOD USING SUCH A DEVICE

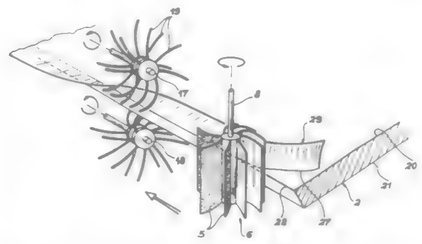
Michel Ferard, Argenteuil; Tanguy de Kervenoael, Neauphle le Chateau, and Frederic Sgarbi, Paris, all of France, assignors to Commissariat a L'Energie Atomique, France

Continuation-in-part of Ser. No. 717,041, Jun. 18, 1991, abandoned. This application Jan. 7, 1993, Ser. No. 1,163

Claims priority, application France, Jul. 4, 1990, 90 08472

Int. Cl.[5] B24B *45/00*

U.S. Cl. 451—496 **3 Claims**



1. A device for machining a flexible burr on a contour formed of a soft material, said contour having two faces separated by the burr, said device comprising a deburring tool comprised of plates made of an elastic cloth coated with abrasive and a rotary block driven by a motor and in which the plates are embedded at one end, said device further comprising an elastic system for flexing the burr onto one of the faces, the elastic system and the tool being secured to a same support and being moveable along the contour and the burr, the elastic system preceding the tool on the burr, the elastic system comprising at least one brush having elastic radial elements rotating around an axis roughly parallel to the faces of the contour and its attached burr.

5,355,640

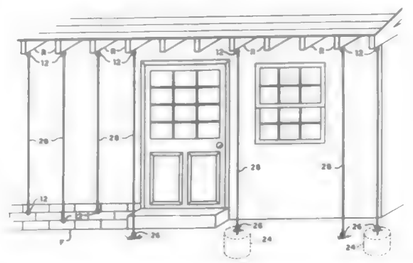
ANCHOR SYSTEM FOR COMPLETED STRUCTURES

Filmore O. Frye, 42 W. Blaine St., McAdoo, Pa. 18237

Division of Ser. No. 64,437, May 21, 1993, Pat. No. 5,311,708. This application Jan. 4, 1994, Ser. No. 177,128

Int. Cl.[5] E04B *7/00*

U.S. Cl. 52—23 **17 Claims**



1. In an existing completed permanent frame structure having a foundation, walls formed of a plurality of studs having a top plate thereacross and having door and window openings therein, and a sloped roof covered by a plurality of rows of shingles, with each of the shingles having an upper portion secured by an overlying shingle and a lower portion resting atop an underlying shingle, and with the roof supported by opposite end rafters and a plurality of intermediate rafters and joists, an external anchoring system comprising in combination:

externally installed shingle securing lines for precluding lifting of the shingles due to storms and high winds, said externally installed shingle securing lines comprising a plurality of transverse shingle securing lines with each of said shingle securing lines having two opposite ends and each of said shingle securing line opposite ends secured to one of said opposite end rafters, with each of the rows of shingles having one of said transverse shingle securing lines tautly extending thereacross;

externally installed roof securing straps for precluding displacement of the roof relative to the walls due to storms and high winds; and

externally installed structural anchoring means for precluding displacement of the roof and walls of the structure due to storms and high winds, whereby;

said shingle securing lines, roof securing straps, and structural anchoring means are installed externally to the structure to secure the structure against damage to the shingles, roof and walls due to storms and high winds.

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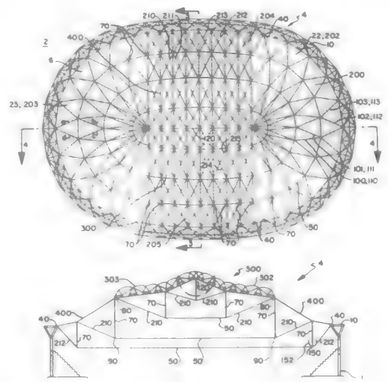
TRIANGULATED CABLE DOME WITH RETRACTABLE ROOF

Matthys P. Levy, New York, N.Y., assignor to Weidlinger Associates, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 608,497, Nov. 2, 1990, Pat. No. 5,259,158. This application Oct. 29, 1992, Ser. No. 968,090

Int. Cl.[5] E04B *7/16*

U.S. Cl. 52—66 **53 Claims**



1. A cable dome roof having a retractable roof portion, comprising;

a triangulated cable arrangement for supporting a roof membrane;

a roof membrane fixed to a portion of said triangulated cable arrangement leaving a portion of said triangulated cable arrangement uncovered; and

a pair of retractable roof sections movably secured to said triangulated cable arrangement, said retractable roof sections being movable between a closed position in which said sections overlay the uncovered portion of said triangulated cable arrangement and an opened position in which said sections nest above the covered portion of said triangulated cable arrangement.

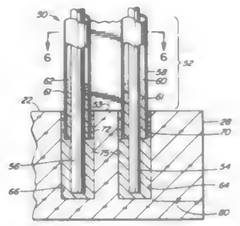
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5,355,642

PREFABRICATED POST WITH DUAL MOUNTING MEMBERS

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Filed Dec. 3, 1992, Ser. No. 984,703
Int. Cl.[5] E04B *1/34*; E04H *17/20*
U.S. Cl. 52—73 20 Claims



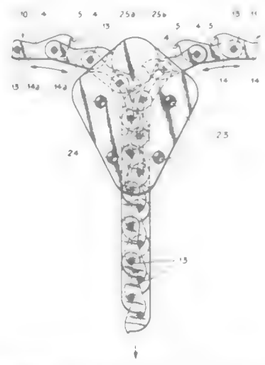
1. A post for mounting in a concrete slab, said post comprising:
(a) an elongated body member having a mounting end for mounting to a concrete slab, a free end, exterior surfaces and first and second sides;
(b) a first channel adjacent to said first side of said body member extending into said body member from said mounting end;
(c) a second channel adjacent to said second side of said body member parallel to said first channel extending into said body member from said mounting end;
(d) a first rod fixed in and extending from said first channel; and
(e) a second rod fixed in and extending from said second channel
wherein said first rod is smaller in diameter than said second rod.

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TRANSFORMABLE STRUCTURAL ELEMENT

Serge Bringolf, La Chaux-de-Fonds, Switzerland, assignor to Alain Burri SA, Conches/Geneve, Switzerland

Filed Jun. 8, 1992, Ser. No. 895,332
Claims priority, application Switzerland, Oct. 4, 1991, PCT/CH91/00208
Int. Cl.[5] E04H *12/18*
U.S. Cl. 52—108 14 Claims



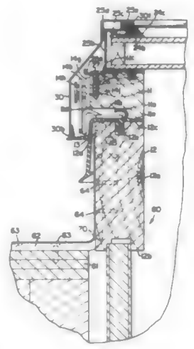
1. A transformable structural element capable of assuming the shape of a beam-like structure having first and second lateral sides and which comprises a first chain also having two lateral sides, a first one of which corresponds to the first one of said lateral sides of said structural element, said first chain comprising a series of articulated links, each of said links comprising at least one link plate and a hinge pin joining a link plate of an adjacent link and projecting from both sides of the joined link plates, said element further comprising means for selectively stiffening the articulations between said links to transform said element into a beam-like structure, said means for selectively stiffening said articulations comprising an elongated flexible connecting member having two lateral sides, a first one of the lateral sides corresponds to the second one of said lateral sides of said structural element, said flexible connection further comprising a series of locking elements equally spaced apart along said elongated flexible connection, the link plate of each of said links of said chain including a first support surface and second support surface opposing said first support surface, the first support surface of each of said links cooperating respectively with the second support surface of one of its adjacent links to contain a respective one of said locking elements therebetween when said structural element assumes its beam-like shape, and wherein the hinge pins of said links and said locking elements of said flexible connecting member are laterally accessible from said first sides of said chain and said flexible connection during the assembly of the chain and flexible connecting member into a beam-like structure, in a direction substantially perpendicular to the axes of said hinge pins and said locking elements.

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ROOF WINDOW-VENTING AND STATIONARY

James C. Guhl, Hudson, Wis., and Jürgens R. Martens, Leinfelden-Echterdingen, Fed. Rep. of Germany, assignors to Andersen Corporation, Bayport, Minn.

Continuation of Ser. No. 927,877, Aug. 10, 1992, abandoned, which is a continuation of Ser. No. 747,749, Aug. 20, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 49,619
Int. Cl.[5] E04B *7/18*
U.S. Cl. 52—200 6 Claims



1. A roof window having a top, bottom and two sides, said roof window configured to be mounted to cover an opening in a roof structure of a building, said roof window comprising:
(a) a glass unit;
(b) a sash member having an inner surface, said glass unit positioned in said sash member;
(c) a frame, having an inner surface having a top and bottom surface;
(d) first means for operatively connecting said frame to said sash said first means comprises:
(i) said sash having a non-inner surface;
(ii) said frame having a non-inner surface; and

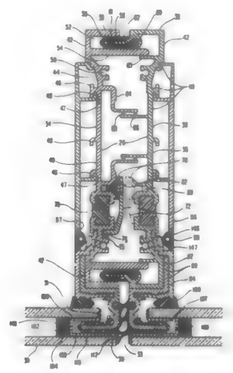
(iii) said first connecting means having a first end operatively connected to said sash's non-inner surface and a second end operatively connected to said frame's non-inner surface, wherein said first means is concealed from view from inside;
(e) second means for operatively connecting said frame to the roof structure;
(f) said sash member sized and positioned over said frame, wherein said inner surface of said sash is stacked over and is substantially in alignment with said inner surface of said frame;
(g) a glass retaining member having a first end operatively connected to said sash and a second end for engaging said top surface of said glass unit; and
(h) a shroud member having a first end operatively connected to said second end of said retaining member and a second end extending generally outward and downward thereby covering said means for operatively connecting said frame to said sash and said retaining member forming a primary watershed and also concealing said first means from view from outside, wherein said retaining member and shroud member are positioned on said window's top and two sides, further wherein said retaining member and shroud are formed from roll formed aluminum and lap joints are formed between said top and sides, still further wherein said retaining member has a C-shaped end section and said shroud has a C-shaped end section, whereby said C-shaped sections have a sliding fit, wherein additional outside hardware is minimized.

5,355,645

STOPLESS BUTT-JOINT MULTIPLE CURTAINWALL SYSTEM

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Filed Aug. 26, 1992, Ser. No. 936,048
Int. Cl.[5] E04C *2/46*
U.S. Cl. 52—235 24 Claims



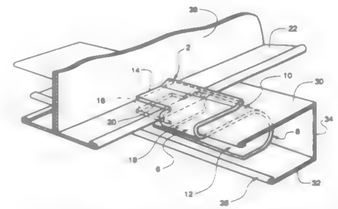
1. A system adapted to secure at least one panel to a mullion, the system comprising:
a clip secured to the at least one panel, the clip forming a channel and including a locking element; and
a retainer secured to the mullion, the retainer comprising 1) a flange inserted into the channel of the clip, and 2) a locking element disposed on the flange;
wherein the retainer flange is snap-locked within the channel to secure the at lest one panel to the mullion.

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CEILING CLIP

Wesley T. K. Bischel, Elizabethtown, and Brian E. Witmyer, Lititz, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Mar. 18, 1993, Ser. No. 33,372
Int. Cl.[5] E04B *9/00*
U.S. Cl. 52—489 2 Claims



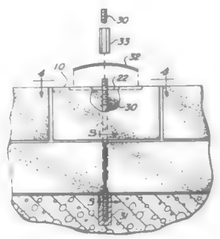
1. A clip in combination with an inverted T-shaped runner comprising:
(a) a clip with a reverse S-shaped cross-section with upper and lower loops, the open end of the upper loop of the S-shape faces to the left and the open end of the lower loop of the reverse S-shape faces to the right;
(b) the upper loop having an upper side and lower side, the distance between the upper and lower sides being about ¼", the upper loop having a transition section joining the upper and lower sides together, said transition section joining together only a portion of the upper and lower sides to define an open area between the upper and lower sides; and
(c) said runner having a horizontal flange, said flange adapted to receive the clip whereby the clip may be placed on the flange with the flange positioned in the upper loop of the clip and the lower loop of the clip positioned below the flange, or the clip may be placed on the flange with the flange positioned in the upper loop of the clip and the open area between the upper and lower sides of the upper loop to position the lower loop of the clip to the side of the flange.

5,355,647

INSTALLED STRESS MASONRY SYSTEM

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Filed Nov. 2, 1992, Ser. No. 969,958
Int. Cl.[5] E04B *5/48*
U.S. Cl. 52—503 13 Claims



1. A standing masonry wall system including in combination:
a plurality of masonry blocks arranged in courses to form said wall system, each of said blocks having an upper surface and a lower surface, with at least predetermined ones of said blocks having a recess of a predetermined

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shape in the upper surface thereof, and each of said blocks having a first void therethrough extending through the upper and lower surfaces;

structured reinforcement means including a plurality of elongated rods anchored to a foundation, each rod having a predetermined length sufficient to pass through a predetermined number of courses of said masonry blocks in said wall system to extend above the upper surface of said blocks in the upper one of said courses, with the blocks above the upper surface of which said rods extend being said predetermined ones of said blocks, said elongated rods being threaded at the upper end thereof, and said predetermined number of courses of masonry blocks being less than the total number of courses of said masonry blocks in said wall system;

clamping plate means having a bowed configuration fitting over said rods and having a shape corresponding to said predetermined shape of the recesses in the upper surfaces of said predetermined ones of said blocks, said clamping plate means overlying and fitting into the recesses in the upper surfaces of said predetermined ones of said blocks through which said elongated rods extend said clamping plate means providing an indication when a predetermined pressure is applied thereby to the upper surfaces of said predetermined ones of said blocks when said means for applying stress between said rod means and said clamping plate means flattens said clamping plate means into the corresponding recesses in the Upper surfaces of said predetermined ones of said blocks; and

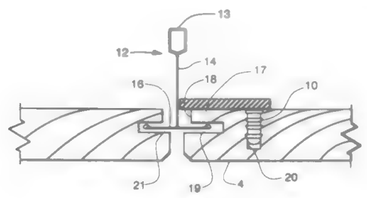
elongated threaded sleeves for engaging the threaded ends of each of said rods to apply stress between said rods and said clamping plate means to apply pressure to the upper surfaces of said predetermined ones of said blocks in said wall system, each of said threaded sleeves being adapted for receiving the lower end of another of said elongated rods for extending vertically upwardly through an additional predetermined number of courses of said masonry blocks in said wall system.

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LOCKING CLIP

Martin L. Graver, Lancaster, and James F. Mathis, Columbia, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Mar. 12, 1993, Ser. No. 31,217
Int. Cl.[5] E04B *9/24*
U.S. Cl. 52—506.08 **5 Claims**



1. A locking clip in combination with a ceiling panel for use with a suspended ceiling system comprising:

(a) said locking clip being a flat base formed with at least one edge and a ribbed post projecting from the base;

(b) at least one ceiling panel and a suspension system for the ceiling panel comprising four inverted T-shaped runners, each said runner having a vertical member and a horizontal member, said ceiling panel being supported on the horizontal members of at least two runners and the ceiling panel having four edges and four corners, said edges being spaced from the vertical members of the four runners, adjacent at least one edge of the ceiling panel a hole being partially bored in the ceiling panel; and

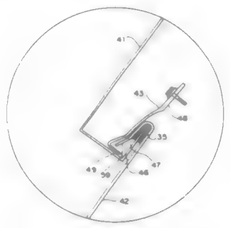
(c) at least one locking clip having its ribbed post inserted into the hole, said edge of the locking clip contacts the vertical member of an adjacent runner to maintain the spacing of the edge of the ceiling panel from the runner vertical member.

5,355,649

METHOD AND APPARATUS FOR IMPROVED MOISTURE RESISTANT SEAM ASSEMBLY

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Continuation-in-part of Ser. No. 668,729, Mar. 13, 1991, Pat. No. 5,134,825, which is a continuation of Ser. No. 431,467, Nov. 3, 1989, abandoned. This application Aug. 3, 1992, Ser. No. 924,184
The portion of the term of this patent subsequent to Aug. 4, 2009, has been disclaimed.
Int. Cl.[5] E04B *1/06*
U.S. Cl. 52—520 **13 Claims**



1. An improved structural building covering assembly comprising:

(a) a plurality of panels, each comprising a first and second edge and an interior pane, said panels positionable in side by side relationship wherein a first edge of any given panel will lie adjacent to a second edge of a panel installed adjacent to said given panel, wherein each said first edge comprises a lip directed relatively towards the interior pane of its respective panel; and wherein each said second edge comprises a receptacle pocket segment and a flared lip segment, said receptacle pocket segment oriented with a slot directed relatively toward the interior pane of its respective panel for receiving the lip at the first edge of an adjacent panel so that adjacent panels will be interlockingly interconnected;

(b) sealing means comprising a member which is "U" shaped in cross section and which is fitted over said lip at said first edge of said panels and extended continuously for the length of said panels so that said sealing means will isolated and be interposed between, said lip at the first edge of a given panel from said receptacle pocket of the second edge of an adjacent panel, and so that said sealing means is spaced apart from said flared lip segment at said second edges, when adjacent panels are assembled; and,

(c) clip means for securing said panels to a building without breaking said sealing means, comprising means for interconnection of said clip means with said flared lip segments at said second edges of said panels and means for attachment of said clip means to a building.

5,355,650

BATTEN MOUNTING SYSTEM

Robert S. Agar, 150-14 Ferrier Street, Markham, Ontario, Canada L3R 3K3

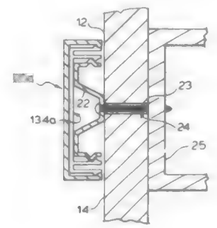
Filed Apr. 28, 1993, Ser. No. 54,709
Int. Cl.[5] E04F *19/02*
U.S. Cl. 52—716.1 **14 Claims**

1. A batten mount for releasably joining a batten to a supporting structure comprising the following:

a base;

first and second legs depending from said base;

means formed in each of said first and second legs and projecting inwardly therefrom for snap fitting of said base and said first and second legs to a supporting structure;



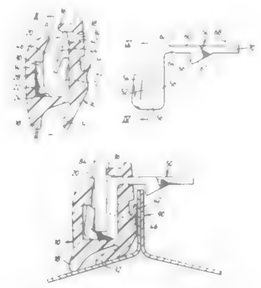
outwardly directed flanges formed on each of said first and second legs for releasably engaging a batten, said outwardly directed flanges being formed of a more compliant material than said base, said first and second legs, and said snap fitting means.

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MOUNTING ARRANGEMENT FOR SECURING A PANE OF WINDOW GLASS IN A FRAME

Jacques Correia, Barby, France, assignor to Draftex Industries Limited, Edinburgh, Scotland

Filed Feb. 11, 1993, Ser. No. 16,753
Claims priority, application United Kingdom, Feb. 15, 1992, 9203276
Int. Cl.[5] B60J *1/02*
U.S. Cl. 52—716.7 **18 Claims**



1. A glass mounting arrangement for securing a pane of window glass in a frame, comprising

a flexible strip for providing a seal between an edge of the window glass and the frame,

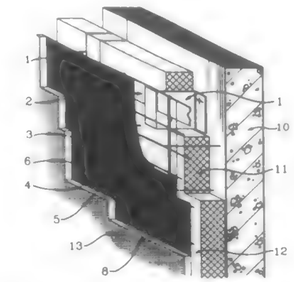
a least one clip for gripping the edge of the glass and for mechanically securing the glass relative to the frame, and means for locating and securing the clip relative to the strip, the clip including a U-shaped portion, said U-shaped portion embracing the said edge of the window glass, said clip further including securing means, operative when the strip with the clip secured thereon is fitted to the window glass, for lockingly engaging the frame, the securing means comprising a locking portion extending from the U-shaped portion for mechanically locking the clip relative to the frame after the clip has been secured to the strip.

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SUSPENDED SURFACES FOR THE APPLICATION OF PLASTERS

Iosifides Minas, 14 Panagi Benaki, 114 71 Athens, Greece

PCT No. PCT/GR90/00004, § 371 Date Apr. 18, 1991, § 102(e) Date Apr. 18, 1991, PCT Pub. No. WO91/05928, PCT Pub. Date May 2, 1991
PCT Filed Oct. 19, 1990, Ser. No. 656,155
Int. Cl.[5] E04G *21/00*
U.S. Cl. 52—741.1 **5 Claims**



1. A method for the suspension of panels from a building, to form a final surface, on which final surface plasters are to be applied, the building consisting of a load bearing structure and a curtain wall, whereby the building has an outer surface, which faces the panels, and which is covered with an insulating material, the method comprising the following steps:

(a) clamping supports made of non-rusting material on the load bearing structure, to form at least one horizontal array of supports, whereby the supports project from the outer surface of the building and from the insulating material,

(b) bridging the supports of each of the horizontal arrays by at least one beam-member made of non-rusting material, whereby the connection between the supports of each horizontal array and the beam-members bridging the supports allows the beam-members to slide on the supports, so that to avoid the development of stresses in the beam-members as a result of temperature variations,

(c) providing at least one comb element having teeth connected to stop means, and penetrating the insulating material with the teeth to locate the comb element, so that the stop means projects from the insulating material,

(d) hanging the panels on the beam-members, the panels being hung in such a way so that adjacent panels overlap, whereby the stop means form an abutment for the panels to maintain them at a distance from the outer surface, the distance exceeding the thickness of the insulating material so that an air gap is formed,

(e) fastening the overlapping areas of the adjacent panels to each other, to form the final surface, on which the plasters are to be applied.

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APPARATUS AND METHOD FOR INSTALLING LOOSE FILL OR PARTICULATE INSULATION

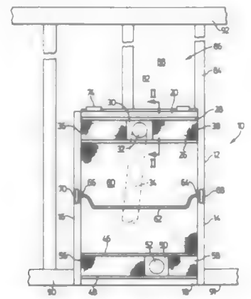
Clarence Henri, 90 Spruce St., Moncton, New Brunswick, Canada E1C 7K3

Filed Mar. 29, 1993, Ser. No. 38,785
Int. Cl.[5] E04F *21/06;* **E04B** *2/10*
U.S. Cl. 52—743 **11 Claims**

10. A method of installing a loose fill or particulate insulation in a building wall or ceiling under construction, said wall or ceiling having an open cavity bounded by a back surface, side supports and end supports, comprising the steps of:

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pressing a rigid rectangular frame against the side supports of said cavity, said frame having a pair of side members, a first end member, a second end member, at least one pair of transverse runners extending between said side members, said at least one pair of transverse runners defining a space therebetween, a panel slidably received by said at least one pair of runners, said panel having an insulation hose receiving aperture, screen means extending between said side members and of said first and second end mem-



bers exteriorly of the space between said at least one pair of transverse runners;

fitting an insulation hose to said aperture in said apertured panel;

sliding said apertured panel to a position whereat said hose is not impeded by any obstacles in said cavity;

blowing insulation through said hose so that said insulation fills said cavity; and

removing said frame.

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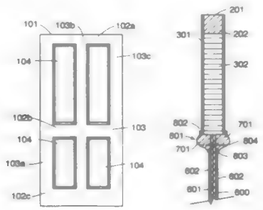
SIMULATED SOLID WOOD SLAB

Kenneth M. Stanley, 138 Monmouth Rd., Spotswood, N.J. 08884

Filed Apr. 23, 1993, Ser. No. 52,149

Int. Cl.[5] E06B *3/70*

U.S. Cl. 52—809 **14 Claims**



1. A hollow core slab door for simulating a solid wood slab door, said hollow core slab door comprising:

a frame having a front and a rear;

a first side, said first side including a first sheet of wood mounted to said front and defining a first plane;

a second side, said second side including a second sheet of wood mounted to said rear and defining a second plane;

each of said sides matching the shape and size of said frame and including an opening; and

at least one artifical panel mounted within the opening and outside of said first and second planes.

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SYSTEM WHICH INCLUDES APPARATUS FOR TRANSMITTING MESSAGES TO RECEIVING APPARATUS

Leif Lundblad, Djurgårdsslätten 100, S-115 21 Stockholm, Sweden

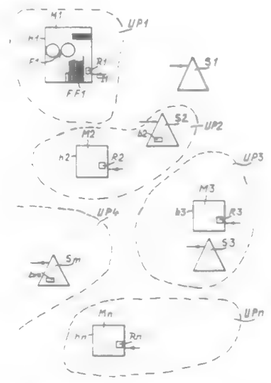
PCT No. PCT/SE91/00184, § 371 Date Oct. 29, 1992, § 102(e) Date Oct. 29, 1992, PCT Pub. No. WO91/14335, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 12, 1991, Ser. No. 927,503

Claims priority, application Sweden, Mar. 12, 1990, 9008681

Int. Cl.[5] B65B *11/50, 61/00*

U.S. Cl. 53—131.4 **6 Claims**



1. A system comprising:

a plurality of transmitting apparatuses having means for transmitting messages wherein one or more of said plurality of transmitting apparatuses include payment means for providing payment for use of said system and a remainder thereof do not include said payment means; and

a plurality of receiving apparatuses having means for receiving and printing said messages on sheets contained within each of said plurality of receiving apparatuses; each of said plurality of receiving apparatuses having a closed casing having means for collecting said sheets containing each said printed message into a bundle; each of said plurality of receiving apparatuses including means for automatically enveloping said bundle in enveloping material contained therein;

wherein each of said plurality of transmitting apparatuses includes means for transmitting said messages to a selected one of said plurality of receiving apparatuses.

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HEAT SEALING ELEMENT FOR PACKAGING MACHINES WHICH MAKE LAP-SEALED POUCHES

Arnold E. Perrett, Whitby, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

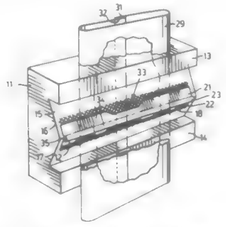
Filed Apr. 13, 1993, Ser. No. 45,294

Int. Cl.[5] B65B *51/00*

U.S. Cl. 53—373.7 **9 Claims**

1. A heat sealing element for sealing and simultaneously cutting through a tube of thermoplastic film defined by a plane having a longitudinal direction and a transverse direction perpendicular to the longitudinal direction, said tube having a lap seal formed by an overlap of edges of the film along the longitudinal direction, said element comprising a strip of metal having a width greater than its thickness and a length effective for simultaneously making a heat seal and cutting completely

across the tube in the transverse direction, said strip having a portion of the length which coincides with the lap seal having



a greater electrical resistance than all other portions of the element.

5,355,657

ARTICLE PACKAGING MACHINE

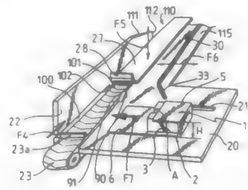
Pierre Chevalier, 31, Boulevard d'Auteuil, 92100, Hauts de Seine, Boulogne Sur Seine, and Gilbert E. Veniard, 2, rue Torricelli, 75017, Paris, both of France

Division of Ser. No. 688,703, Apr. 22, 1991, Pat. No. 5,197,260, which is a continuation of Ser. No. 429,459, Oct. 31, 1989, abandoned. This application Mar. 8, 1993, Ser. No. 27,845

Claims priority, application France, Oct. 31, 1988, 88/14214

Int. Cl.[5] B65B *11/06, 49/04*

U.S. Cl. 53—209 **54 Claims**



1. Apparatus for packaging an article in a container formed from a plate of pliable material having a flap portion, a base portion and a closure panel disposed in integral, coplanar relation, said apparatus comprising:

a generally horizontal working surface;

a conveyor having a surface movable in a direction alongside said working surface and disposed in substantial coplanar relation therewith, said conveyor comprising a side proximal to said working surface and a side opposite said working surface;

a guiding obstruction upstanding from the side of said conveyor opposite from said working surface and extending parallel to said conveyor, said guiding obstruction presenting a guide surface on its side proximal to said conveyor along which said conveyor moves in parallel relation thereto and having a first portion on said proximal side free for reception from said working surface of said plate carrying an article thereon retained between said base portion and said flap portion and moved against said first portion transversely with respect to the direction of movement of said conveyor;

means on said guiding obstruction to permit extension of said closure panel to the side of said guiding obstruction distal from said conveyor when an article disposed on said base portion is moved onto said conveyor into engagement with the proximal side of said guiding obstruction; and

forming means disposed on said distal side of said guiding obstruction for engaging said closure panel and displacing said closure panel from the plane of said base portion to a position substantially perpendicular thereto as said plate and article are moved along said guiding obstruction by said conveyor.

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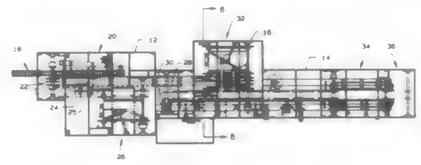
PACKAGING MACHINE WITH ADJUSTABLE SIDES FOR A BUCKET

Danny S. Thiede, Lakeville, Minn., assignor to Thiele Engineering Company, Minneapolis, Minn.

Filed Nov. 6, 1992, Ser. No. 972,926

Int. Cl.[5] B65B *39/14, 59/02, 65/02*

U.S. Cl. 53—566 **3 Claims**



2. A packaging machine comprising:

a. a frame;

b. a shaft rotatably mounted on the frame for driving components of the packaging machine;

c. a first sprocket mounted on the shaft;

d. a first chain mounted on the first sprocket for movement as the shaft rotates;

e. a bucket base mounted on the first chain;

f. a second sprocket mounted on the shaft and angularly adjustable on the shaft relative to the first sprocket;

g. a second chain mounted on the second sprocket for movement as the share rotates;

h. a bucket side mounted on the second chain; and,

i. a phase adjuster connected to the second sprocket, spaced apart from the second sprocket along the shaft, for altering angular position of the second sprocket relative to the first sprocket, and therefore position of the side relative to the base, without manual contact with either sprocket.

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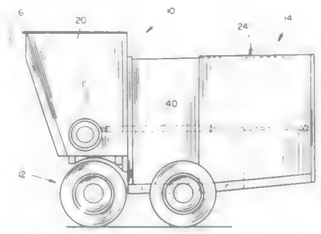
AGRICULTURAL FEED BAGGING MACHINE HAVING A LENGTH ADJUSTABLE TUNNEL

Steven R. Cullen, Box 642, Astoria, Oreg. 97103

Filed Feb. 23, 1994, Ser. No. 200,761

Int. Cl.[5] B65B *9/10, 9/15, 25/02*

U.S. Cl. 53—567 **4 Claims**



1. An agricultural feed bagging machine for bagging agricultural feed material into agricultural bags having a closed end and an open mouth comprising,

a frame having rearward and forward ends,

a hopper on said frame at the forward end thereof for receiving the material to be bagged,

means in communication with said hopper for forcing the material to be bagged rearwardly therefrom,

a tunnel means on said frame and having an intake end for receiving the material being forced rearwardly from said

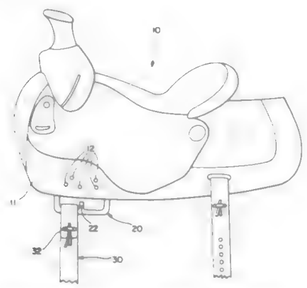
VOL 1167 ISS 3 OC 18 1994 UMI

hopper and an output end adapted to receive the open mouth of the agricultural bag, said tunnel means including a top wall and opposite side walls,

said tunnel means comprising a fixed inner tunnel shell having an outer tunnel shell selectively movably mounted thereon,

and moving means connected to said outer tunnel shell for selectively moving said outer tunnel shell rearwardly and forwardly with respect to said inner tunnel shell for increasing and decreasing the length of said tunnel means respectively.

5,355,660
SADDLE RIGGING
Ralph S. Shimon, Rte. 2, Box 181, Torrington, Wyo. 82240
Filed Oct. 29, 1993, Ser. No. 145,766
Int. Cl.[5] B68C *1/14*
U.S. Cl. 54—46.2 **6 Claims**



1. In a saddle intended to be secured to the back of an animal by means of a cinch extending around the girth of said animal, wherein the cinch is attached to said saddle by means of a latigo; wherein said saddle includes a skirt member having a forward portion; wherein the improvement comprises at least one attachment ring secured in said forward portion of said skirt member of said saddle such that said at least one ring does not move or freely swing relative to said skirt member, wherein said ring comprises forward and rearward attachment positions and an upwardly projecting post member separating said forward and rearward positions; and wherein said latigo is attached to said at least one ring and can be moved over said post member between said forward and rearward positions without detaching said latigo from said at least one ring.

5,355,661
LAWN MOWER HAVING A STEERING HANDLE SWITCHABLE BETWEEN A WALKING MODE AND A RIDING MODE
Yoshio Tomiyama, Sakai, Japan, assignor to Kubota Corporation, Osaka, Japan
Filed May 17, 1993, Ser. No. 62,016
Claims priority, application Japan, May 25, 1992, 4-34264[U]; Sep. 30, 1992, 4-260926
Int. Cl.[5] A01D *34/68*; B62D *11/04*
U.S. Cl. 56—10.8 **7 Claims**

1. A lawn mower for use in a walking mode and a riding mode, comprising:

a chassis frame;

an engine mounted on a rearward position of said chassis frame;

at least one front wheel;

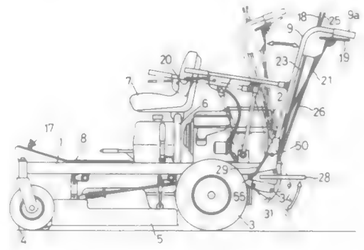
driven rear wheel means;

transmission means for transmitting drive from said engine to said rear wheel means, said transmission means including change speed means for changing speed of said rear wheel means;

a grass cutting unit suspended from said chassis frame;

a driver's seat mounted on said chassis frame; and

control means interlocked to said change speed means for controlling said change speed means, said control means including:

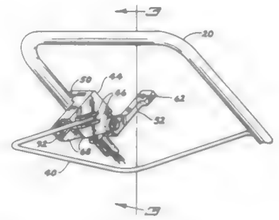


a first shift member accessible to a driver walking behind the lawn mower;

a second shift member accessible to the driver seated on said driver's seat; and

prohibit means for prohibiting operation of one of said shift members when the other shift member is operative.

5,355,662
SINGLE BAIL SELF-PROPEL AND ZONE BRAKE CONTROL
Larry W. Schmidt, Farmington, Minn., assignor to The Toro Company, Bloomington, Minn.
Filed Feb. 22, 1993, Ser. No. 21,273
Int. Cl.[5] A01D *69/00*
U.S. Cl. 56—11.3 **13 Claims**



1. In a walk behind power lawn mower, a lawn mower self-propel and zone brake control system comprising:

(a) a deck;

(b) a prime mover mounted on said deck;

(c) a cutting blade rotatably coupled to said prime mover;

(d) a ground engaging wheel rotatably coupled to and supporting said deck;

(e) a handlebar assembly operatively coupled to said deck;

(f) a transmission operatively coupled to said ground engaging wheel;

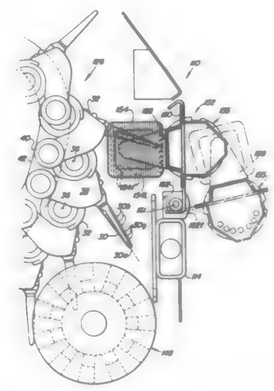
(g) a pivoting control bail pivotally mounted on said handlebar assembly, said control bail pivotable between first and second positions;

(h) a power transmitting device connecting said prime mover and said transmission;

(i) a zone brake operatively coupled to said prime mover and to said pivoting control bail wherein said zone brake operates in either a first or a second mode and wherein said zone brake inhibits rotational movement of and generation of power by said prime mover in said first mode and wherein said zone brake allows rotational movement of and power generation by said prime mover in said second mode, said zone brake operating in said first mode when said pivoting control bail is in said first position and said zone brake operating in said second mode when said pivoting control bail is in said second position; and

(j) a selector mechanism movably coupled to said pivoting control bail and coupled to said transmission by a first bowden cable wherein said selector mechanism is movable between a first and a second position and wherein movement of said selector mechanism to its said second position and movement of said pivoting control bail to its said second position causes said power transmitting device to transmit power from said prime mover to said transmission and said ground engaging wheel and wherein movement of either said selector mechanism or said pivoting control bail out of its respective second position stops the transmission of power through said power transmitting device from said prime mover to said transmission and said ground engaging wheel.

5,355,663
RELOCATED PIVOTING MOISTENER COLUMN FOR A COTTON PICKER
Timothy A. Deutsch, Newton, and Joel M. Schreiner, Ankeny, both of Iowa, assignors to Deere & Company, Moline, Ill.
Filed Mar. 31, 1993, Ser. No. 42,046
Int. Cl.[5] A01D *46/18*
U.S. Cl. 56—12.1 **19 Claims**



1. In a cotton harvester for harvesting cotton planted in rows, a row unit comprising:

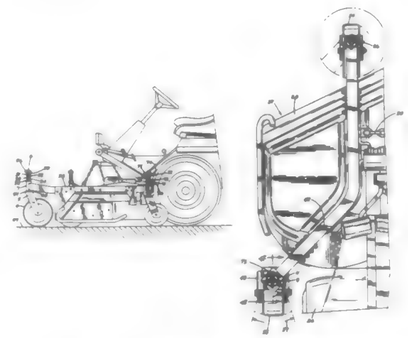
a row unit housing defining a fore-and-aft extending row receiving area;

a harvesting drum supported by the housing for rotation about an upright axis beside the row receiving area, the drum including a plurality of spindles for picking cotton from a row of cotton plants in the row receiving area, the spindles moveable with the drum generally along a circular path about the upright axis;

doffer structure located near the rear of the harvesting drum approximately one-quarter revolution of the drum from the location where the spindles leave the row receiving area for removing picked cotton from the spindles; and

an upright moistener column located on the side of the harvesting drum opposite the row receiving area and substantially behind the forwardmost extremity of the harvesting drum less than one-half of a revolution of the drum from the location where the spindles leave the row receiving area and greater than a quarter drum revolution from the location where the spindles reenter the row receiving area, the column having spindle cleaning structure for cleaning the spindles after the picked cotton is removed from the spindles.

5,355,664
CASTER WHEEL SUSPENSION AND SHAFT TENSIONING SYSTEM FOR TURF MAINTENANCE EQUIPMENT
Michael N. Zenner, Dakota County, Minn., assignor to The Toro Company, Bloomington, Minn.
Filed Dec. 21, 1992, Ser. No. 994,494
Int. Cl.[5] A01D *34/00, 67/00*
U.S. Cl. 56—15.8 **20 Claims**



1. For use with a mower having a traction vehicle and a cutting unit, a system for supporting and restraining torsional and lateral motion of a castering wheel associated with the cutting unit, comprising:

(a) a torsional motion resistance mechanism, the torsional resistance mechanism being deformable about a first longitudinal axis, the torsional motion resistance mechanism being mechanically coupled to the castering wheel;

(b) a housing, the housing connecting the torsional motion resistance mechanism to the cutting unit, the housing being rigidly affixed to the cutting unit so as to limit motion of the castering wheel relative to the housing; and

(c) a shaft, the shaft being coaxial with the first longitudinal axis, the castering wheel being affixed to the shaft and tending to rotate about the first longitudinal axis, such that torsional rotation of the castering wheel about the first longitudinal axis is elastically limited to less than ten degrees under normal loads, the shaft thereby being biased toward a given azimuthal orientation.

5,355,665
FULL FLOTATION MOWER DECK
Tim Peter, Medina, Ohio, assignor to MTD Products Inc.
Filed Apr. 13, 1993, Ser. No. 46,647
Int. Cl.[5] A01D *34/74*
U.S. Cl. 56—15.8 **10 Claims**

1. A free flotation mower deck for a walk behind mower, said walk behind mower including a frame having an aft section and a forward section fixedly interconnected by rails,

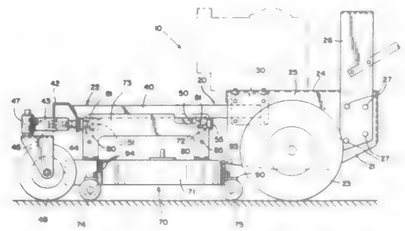
a front axle, said front axle being connected to said forward section of said frame, said front axle having wheels to the ground so as to support the forward section of the frame,

forward and aft "U" shaped brackets, said "U" shaped brackets attached to said rails so as to create areas of enclosure,

deck brackets, said deck brackets extending upwards off of the mower deck, said deck brackets having holes therein respectively, pins selectively insertable through said holes and into said areas of enclosures so as to interconnect said

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deck brackets to said frame in a lost motion type interconnection,



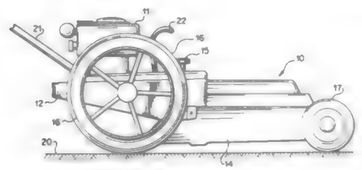
and means other than said pins to interconnect said deck brackets to said frame or said "U" shaped brackets extending therefrom so as to prevent the aft movement of said deck brackets in respect thereto.

5,355,666

HIGH WHEEL MULCHING MOWER WITH ADJUSTABLE COLLECTION CHAMBER

Orville R. McDonner, Brandon; James C. Welch, Clinton; Troy Berry, Crystal Springs; John C. Sharp, Clinton, and Ricky J. Wynn, Madison, all of Miss., assignors to Yazoo Manufacturing Company, Jackson, Mich.

Filed Aug. 25, 1993, Ser. No. 111,476
Int. Cl.[5] A01D *75/00*
U.S. Cl. 56—255 **15 Claims**



1. A mulching rotary lawn mower which cuts and returns cut grass clippings to a lawn, the mower comprising:

an engine;

a rotating blade driven by said engine, said blade adapted to cut grass and create a partial vacuum between said grass and said blade; and

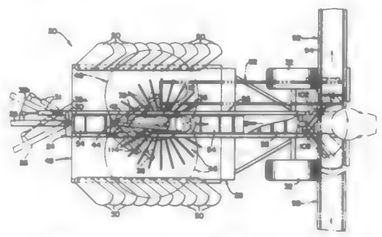
a cutter deck which rotatable mounts said blade in a substantially horizontal disposition, said cutter deck including a skirt which closely surrounds the circle circumscribed by said blade, except for a collection chamber included in said skirt which is disposed at the rear of said cutter deck, said cutter deck directing air flow caused by said rotating blade when driven by said motor so that grass in the underlying lawn is cut by said blade and the clippings therefrom are moved by said air flow within said deck to, at least in part, said collection chamber, and adjustment means for said collection chamber, wherein said adjustment means comprises a plate which is movable within said collection chamber for the selective enlargement or reduction in volume of said collection chamber, for adjusting the portion of said clippings received therein to avoid overloading said cutting deck by cut grass and clippings being moved therein by said air flow.

5,355,667

SINGLE ROW GRAPE AND RAISIN HARVESTER

Phillip R. Scott, Madera, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Sep. 21, 1992, Ser. No. 947,626
Int. Cl.[5] A01D *46/00*
U.S. Cl. 56—330 **15 Claims**



1. A mobile harvester for harvesting crops when trained over horizontal beams supported by trellis posts, comprising:

means defining a mobile power driven vehicle connected to said harvester for moving the harvester under a row of plants and for providing hydraulic and electrical power to said harvester;

means defining a trailer supporting said harvester and having two upstanding pairs of parallelogram linkages pivotally connected to said mobile power driven vehicle having a platform for supporting several boxes which receive crops shaken from overhead vines;

means defining a plurality of horizontal parallel beams pivotally connected to the upper ends of said parallelogram linkages; and

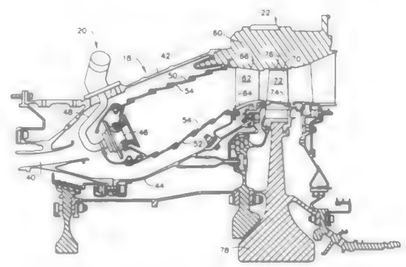
means defining a plurality of horizontally positioned power driven shaker heads pivotally connected to said horizontal parallel beams for shaking the overhead vines and for collecting the crops from the vines for collection in said boxes.

5,355,668

CATALYST-BEARING COMPONENT OF GAS TURBINE ENGINE

Antoinette E. Weil, Cincinnati; Jon C. Schaeffer, Milford, and Julia A. Fields, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jan. 29, 1993, Ser. No. 10,939
Int. Cl.[5] F02C *7/00*
U.S. Cl. 60—39.06 **14 Claims**



1. An axial flow gas turbine engine having a compressor portion, a combustor portion, a turbine portion and an exhaust portion, in which fuel is solely supplied to a combustor portion of the engine where it is ignited to form a hot gas, the ignited gas passing through at least one turbine stage intermediate between the combustor portion and the exhaust portion, the improvement comprising:

a component having a surface thereof that defines at least a portion of a gas flow path in the engine downstream from the combustor portion through the exhaust portion; and

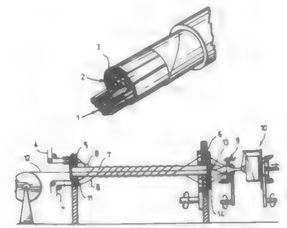
a catalytic coating, applied to at least a sufficient portion of the surface, that catalyzes the combustion of gas turbine engine fuels to reduce emission of unburned hydrocarbons and carbon monoxide by at least 15% at a fuel to air equivalence ratio of 0.8.

5,355,669

APPARATUS AND METHOD FOR SIMULTANEOUS REVERSE STRANDING AND LONGITUDINAL STRIP WINDING OF CABLES

Raimo Karhu, Helsinki, Finland, assignor to Nokia-Maillefer Holding S.A., Ecublens, Switzerland

Filed Aug. 17, 1992, Ser. No. 929,910
Claims priority, application Finland, Aug. 28, 1991, 914068
Int. Cl.[5] H01B *13/02*
U.S. Cl. 57—294 **6 Claims**



1. A method of forming a cable by reverse stranding and longitudinal strip winding comprising the steps of:

drawing conductors in a downstream direction through a stationary divider means, peripheral tubes surrounding a central tube and twistable around the central tube recurrently in opposite directions and a twisting device rotatable in opposite directions, into a stranding nozzle;

rotating the twisting device in opposite directions;

feeding a longitudinally extending strip into the central tube in a downstream direction;

guiding the strip through the rotatable twisting device and between the conductors upstream of the stranding nozzle to twist the strip in opposite directions upon rotation of the twisting device in opposite directions; and

subsequent to guiding and twisting the strip, bending the edges of the strip to serve as an intermediate shield among the conductors in the cable.

5,355,670

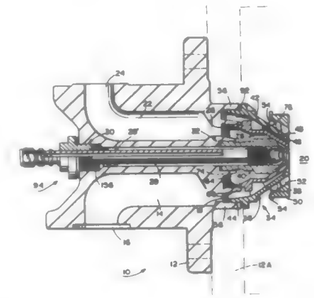
CARTRIDGE ASSEMBLY FOR SUPPLYING WATER TO A FUEL NOZZLE BODY

Michael B. Sciocchetti, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 517,349, May 1, 1990, Pat. No. 5,228,283.
This application Dec. 22, 1992, Ser. No. 994,962
Int. Cl.[5] F02C *3/30*
U.S. Cl. 60—39.55 **10 Claims**

1. A cartridge for supplying water under pressure to a fuel nozzle orifice comprising:

an elongated tubular member having a coupling at a rearward end thereof, and a mounting element adjacent the rearward end for securing the cartridge within a fuel nozzle body adjacent said rearward end, and wherein a tubular fuel swirler is secured at the forward end of said elongated tubular member, said tubular fuel swirler having a tapered forward end forming a discharge orifice for said elongated tubular member, and having external surface means for swirling fuel flowing within the fuel nozzle body and adapted to engage an interior surface of a fuel



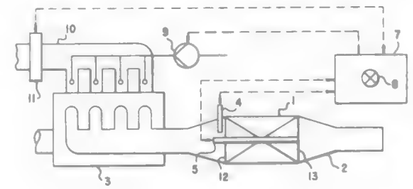
nozzle tip assembly when mounted in said fuel nozzle body.

5,355,671

METHOD AND APPARATUS FOR MONITORING THE FUNCTION OF A CATALYTIC CONVERTER

Wolfgang Maus; Helmut Swars, and Rolf Brück, all of Bergisch Gladbach, Fed. Rep. of Germany, assignors to Emitec Gesellschaft Für Emmissionstechnologie mbH, Lohmar, Fed. Rep. of Germany

Filed Mar. 1, 1993, Ser. No. 24,659
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1990, 4032721.3
Int. Cl.[5] F01N *3/00*
U.S. Cl. 60—274 **20 Claims**



1. A method for monitoring the status of a catalytic converter with a honeycomb body through which a catalyzable fluid flows along a flow direction from an inlet end to an outlet end, which comprises:

a) measuring the temperature of the catalytic converter honeycomb body at a plurality of measurement points along the flow direction and forming a means temperature value from the temperature measured at the plurality of measurement points;

b) measuring the temperature of the catalytic converter honeycomb body at least at one measurement point forming an associated local temperature value; and

c) comparing the mean temperature value with the local temperature value for deriving an indication as to the status of the catalytic converter.

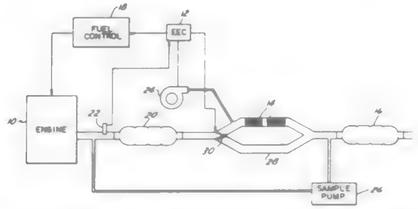
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5,355,672

AUTOMOTIVE ENGINE EXHAUST AFTERTREATMENT SYSTEM INCLUDING HYDROCARBON ADSORBER WITH SAMPLE PROCESSING OXYGEN SENSOR REGENERATION CONTROL

Andrew A. Adamczyk, Jr., Dearborn, Mich.; Ronald G. Hurley, Sheffield, United Kingdom, and James D. Pakko, Dearborn, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 4, 1993, Ser. No. 131,356
Int. Cl.[5] F02D *41/14*
U.S. Cl. 60—274 7 Claims



1. An automotive engine and exhaust emission control system, comprising:
an internal combustion engine;
an exhaust hydrocarbon adsorber for selectively receiving the exhaust from the engine;
a downstream catalytic exhaust gas treatment device mounted downstream of said hydrocarbon adsorber for treating effluent from the hydrocarbon adsorber;
an upstream catalytic exhaust gas treatment device mounted upstream of said hydrocarbon adsorber for receiving exhaust flowing from the engine;
an air pump for selectively supplying air to said hydrocarbon adsorber for the purpose of adjusting the stoichiometry of the exhaust flowing from the adsorber and for assisting in the desorption of hydrocarbon material from the adsorber, so as to regenerate said adsorber;
an exhaust gas oxygen sensor, located between the engine and said upstream catalytic device, for sensing the concentration of oxygen in the exhaust stream entering the upstream catalytic device;
a sample pump for drawing a small amount of exhaust gas downstream from said hydrocarbon adsorber, but upstream of said downstream catalyst, and for injecting the sampled gas upstream of said exhaust gas oxygen sensor;
an engine control computer connected with said oxygen sensor, with said air pump, and with said sample pump, with said computer operating said sample pump and said oxygen sensor so as to measure the oxygen content of the exhaust flowing past the oxygen sensor both when the sample is being injected and when the sample pump is stopped, with said computer controlling said air pump in response to the oxygen sensed when the sample is being injected such that the concentration of oxygen in the exhaust flowing into the downstream catalytic device will be suitable for oxidizing the hydrocarbon material contained in the exhaust.

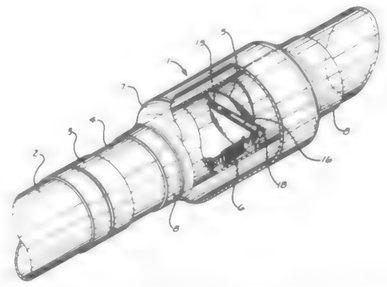
5,355,673

EXHAUST VALVE

Robert E. Sterling, N. 22711 N. Glen Dr., Colbert, Wash. 99005, and Mathew R. Sterling, W. 5727 Pacific Park, Spokane, Wash. 99208

Filed Nov. 18, 1992, Ser. No. 985,642
Int. Cl.[5] F01N *7/00*
U.S. Cl. 60—324 7 Claims

1. A valve for the exhaust system of an internal combustion engine comprising an elongated exhaust tube for conducting engine exhaust therethrough and having an inlet end and an outlet end, a valve plate, and mechanical means for movably mounting said valve plate in said tube and for normally positioning said valve plate in a central position substantially obstructing said tube, said mechanical mounting means including means for automatically adjusting the position of said valve plate in said tube in response to flow of exhaust through said tube from said inlet end to said outlet end for movement of said valve plate from said central position to an open position in which said tube is substantially unobstructed, said valve plate having a first portion and a second portion substantially smaller than and angled relative to said first portion, said mechanical mounting means including means for automatically swinging said valve plate in a first direction from the normal central position toward the open position in response to exhaust flow through said exhaust tube creating greater pressure at the inlet side of said valve plate than at the outlet side of said



valve plate and for automatically swinging said valve plate in the opposite direction from the normal central position, away from the open position, in response to exhaust flow through said tube creating greater pressure at the outlet end side of said valve plate than at the inlet end side of said valve plate, said mechanical mounting means including a shaft having a portion secured to said valve plate and means rotatably supporting said shaft at only one side of said exhaust tube for mounting said valve plate for swinging about an axis extending transversely of said exhaust tube, a crank connected to said shaft at the exterior of said exhaust tube and a mechanical linkage assembly limiting the maximum degree of travel of said valve plate in both directions from said central position, said mechanical linkage assembly including a pair of links including a first link pivotally connected to said crank and a second link pivotally connected to said exhaust tube, said two links having overlapping end portions.

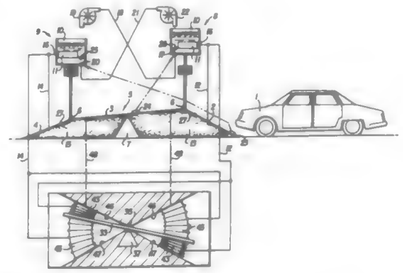
5,355,674

INSTALLATION FOR GENERATING UTILIZABLE ENERGY FROM POTENTIAL ENERGY

Baruch Rosenberg, 4 Hadekalim St., Ramat-Hadar Hod-Hasharon, Israel

PCT No. PCT/EP91/01802, § 371 Date Mar. 19, 1993, § 102(e) Date Mar. 19, 1993, PCT Pub. No. WO92/05366, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 20, 1991, Ser. No. 27,155
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1990, 9013326[U]
Int. Cl.[5] F16D *31/00;* H02P *9/04*
U.S. Cl. 60—325 12 Claims

1. An installation for generating utilizable energy from the potential energy of moving motor vehicles, on a road comprising a first, swivel plate pivotably mounted in said road, said first swivel plate being supported on flexible first air containers to be compressed by the swiveling of the first swivel plate and being coupled by means of a power transmission to a rigid second swivel plate being located laterally of the first swivel plate and being centrally supported, flexible second air containers supported at said second swivel plate to be compressed by the swiveling of said second swivel plate, said first and second air containers being connected through compressed-air lines to at lest one water-bearing pressure equalizing container connected through a water line with a hydraulic motor to press water through the hydraulic motor, said hydraulic motor being connected with its outlet to water storage containers adapted to being connected to the pressure equalizing container and



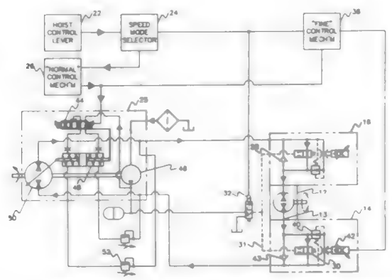
pivotally supported by at least one of the swivel plates whereby the storage container assists in lowering the swivel plate and hence assists in compressing the air containers, wherein filling the storage containers is controlled by motor vehicleactuated signal transmitters which open and close valves in such a way, that the suitable energy container is exactly filled at the right moment so that it assists in lowering the plate caused by the motor vehicle.

5,355,675

STABILIZED SPEED-CONTROL SYSTEM FOR A HYDROSTATIC TRANSMISSION

Joel M. Mayhugh, and Georgios L. Varsamis, both of Houston, Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Filed Aug. 31, 1993, Ser. No. 114,486
Int. Cl.[5] F16D *31/00, 31/02*
U.S. Cl. 60—327 11 Claims



1. A stable closed hydrostatic rotary power transmission system having a wide dynamic speed control range, comprising:
a hydrostatic motor;
a variable displacement hydrostatic pump;
a two-position control means for
(i) in a first position, interconnecting said pump with said motor through a first circuit configuration for controlling the operation of said motor as a function of the displacement of said variable displacement pump, and
(ii) in a second position, disabling said first circuit configuration and interconnecting said pump with said motor through a second circuit configuration for controlling the operation of said motor as a function of the fluid flow as metered through a proportional flow control valve.

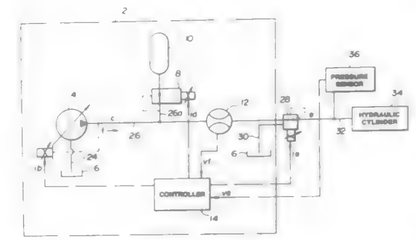
9. A method for controlling the operation of a dual mode hydrostatic power transmission system at slow rotation rates, the system including a hydrostatic variable displacement pump interconnected with a hydrostatic motor, comprising:
in a first mode, controlling the operation of said motor as a function of the hydraulic fluid flow as determined by the displacement of said variable displacement pump;
in a second mode, fixing the displacement of said variable displacement pump to a desired constant value and controlling the operation of said motor by metering the fluid flow from the outlet port of said motor.

5,355,676

HYDRAULIC PRESSURE SUPPLY APPARATUS

Iwane Inokuchi, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Oct. 11, 1991, Ser. No. 773,330
Claims priority, application Japan, Oct. 11, 1990, 2-273064
Int. Cl.[5] B60K *25/04;* F16D *31/02*
U.S. Cl. 60—413 4 Claims



1. A hydraulic pressure supply apparatus for supplying hydraulic fluid under pressure to a load side, said hydraulic pressure supply apparatus comprising:
a variable displacement pump which is smoothly changeable of discharge pressure to a target discharge pressure;
a conduit communicating said variable displacement pump and the load side;
a load pressure control valve disposed between the load side and said conduit, said load pressure control valve controlling a pressure of the hydraulic fluid from said conduit at a regulated pressure;
an accumulator communicated with said conduit;
a valve disposed between said accumulator and said conduit, said valve starting to reduce pressure of the fluid of said accumulator when the pressure in said conduit is lower than a target reduced pressure; and
means for setting the target reduced pressure and the target pump discharge pressure of said pump so that the target pump discharge pressure is greater than the target reduced pressure and the target reduced pressure is greater than a regulated pressure at the load side;
flow rate detecting means detecting a flow rate supplied to the load side and outputting a signal indicative of the flow rate supplied to the load side;
flow rate judging means outputting a signal when the flow rate according to the signal from said flow rate detecting means is lower than a set value; and
charge commanding means setting the target discharge pressure of said pump to be the same as the maximum discharge pressure of said pump and setting the target reduced pressure to be greater than the maximum discharge pressure of said pump, in response to the signal outputted from said flow rate judging means.

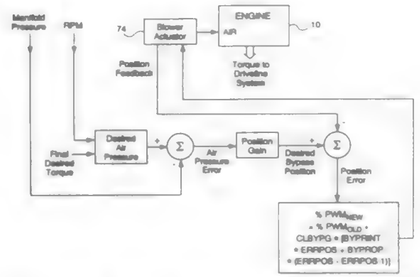
VOL 1167 ISS 3 OCT 18 1994 UMI

5,355,677

METHOD OF OPERATING A SUPERCHARGED METHANOL FUELED DIESEL CYCLE INTERNAL COMBUSTION ENGINE

Jeffery S. Hawkins, Burbank, Calif.; Stanley P. Miller, Northville, Mich.; Craig L. Savonen, Carlton, Mich.; Steven M. Weisman, Farmington Hills, Mich.; David P. Tasky, Auburn Hills, Mich., and Richard E. Winsor, Birmingham, Mich., assignors to Detroit Diesel Corporation, Detroit, Mich.

Division of Ser. No. 757,720, Sep. 10, 1991, Pat. No. 5,269,144.
This application Aug. 18, 1993, Ser. No. 108,313
Int. Cl.[5] F02B *37/04*
U.S. Cl. 60—609 **3 Claims**



1. In an intake air supply system for use with an internal combustion engine, the intake air supply system having a positive displacement blower and a turbo-compressor connected in series with the blower, the blower providing a bypass passage and a valve means supported in the passage, the valve means being operable by a solenoid-driven actuator to adjust the position of the valve means within the bypass passage to any one of a plurality of positions within a predetermined range, a method of adjusting the position of the valve means to any one of said positions so as to continuously modulate the flow area of said passage, the method comprising the steps of:

calculating the position of the valve means based on engine speed, air pressure downstream of the turbo-compressor at a particular point and operator demand;

the step of calculating the position of the valve means including the step of determining a desired air pressure based on engine speed and operator demand;

sensing an actual air pressure at the same particular point downstream of the turbo-compressor and comparing the actual air pressure to the desired air pressure to obtain a first error signal;

calculating a desired valve means position based on said first error signal and a multiplier associated with the desired air pressure;

generating a feedback signal representing the actual valve means position and a comparing the actual valve means position to the desired valve means position to obtain a second error signal;

calculating a duty cycle based on said second error signal; and

energizing the solenoid based on the duty cycle, thereby controlling the position of the valve means in the passage and infinitely varying the flow area of said passage.

5,355,678

THERMOELECTRIC ELEMENT MOUNTING APPARATUS

Shlomo Beitner, 3900 N. Lakeshore Dr., Chicago, Ill. 60613

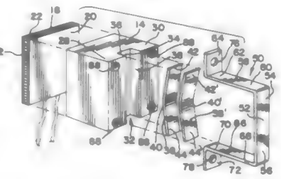
Filed May 19, 1993, Ser. No. 64,818
Int. Cl.[5] F25B *21/02;* **B25B** *5/14*
U.S. Cl. 62—3.2 **30 Claims**

1. An apparatus for accurately applying a predetermined compressive force to an element to be mounted between a first compressive member and a second compressive member forming a part of said apparatus, said element to include a generally planar first surface and an opposing generally planar second surface, said apparatus comprising:

said first compressive member having a first generally planar surface adapted to abut said first surface of said element and an opposing second surface;

said second compressive member having a first generally planar first surface and an opposing second surface; and

a clamping bracket having a force generating web for applying a centrally located compressive force to said second surface of said first compressive member, said web having a first end and an opposing second end, a first bracket leg



having a predetermined length and having a first end extending from said first end of said web and terminating at an opposing second end, a second bracket leg having a predetermined length and having a first end extending from said second end of said web in spaced confronting relation to said first bracket leg and a second opposing end, said second end of said first bracket leg including securing means for securing said first bracket leg to said second compressive member, and said second end of said second bracket leg including securing means for securing said second bracket leg to said second compressive member, wherein said bracket holds said first compressive member and said second compressive member in a clamping relationship about said element.

5,355,679

HIGH RELIABILITY GAS EXPANSION ENGINE

James G. Pierce, Columbus, Ohio, assignor to PHPK Technologies, Incorporated, Columbus, Ohio

Filed Jun. 25, 1993, Ser. No. 83,097
Int. Cl.[5] F25B *9/00*
U.S. Cl. 62—6 **20 Claims**

1. An expansion engine for cryogenic refrigerators and liquefiers, comprising:

A) an expansion cylinder having a first end adapted for exposure to ambient temperatures, and a second end adapted for exposure to cooler temperatures, said expansion cylinder including:

a cylinder assembly having a first end and a second end and extending generally from said first end to said second end of said expansion cylinder; and

a piston slidably disposed in the cylinder assembly for reciprocating motion to define at said second end a variable volume within said cylinder assembly for gas expansion;

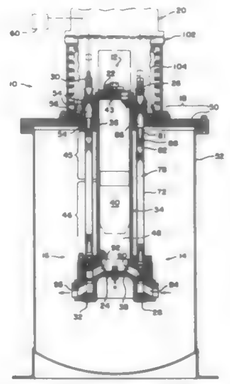
B) means for mounting the expansion engine, including a mounting flange rigidly connected to said first end of said cylinder assembly;

C) an inlet valve to control fluid flow into said variable volume, said inlet valve having a first end and a second end, the second end thereof rigidly connected to the second end of said cylinder assembly, and the first end thereof slidably disposed in said mounting flange;

D) an outlet valve to control fluid flow from the variable volume, said outlet valve having a first end and a second end, the second end thereof rigidly connected to the second end of said cylinder assembly, and said first end thereof slidably disposed in said mounting flange; and

E) means for operating said expansion cylinder, inlet valve and outlet valve in timed relationship;

whereby said inlet valve and said outlet valve are supported by respective connections to said cylinder assembly such



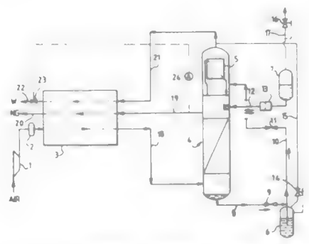
that upon cooldown, thermal contraction of said cylinder assembly is accompanied by sliding motion of said inlet valve and said outlet valve at their respective first ends through said flange at generally ambient temperatures.

5,355,680

PROCESS AND INSTALLATION FOR PRODUCING GASEOUS NITROGEN WITH VARIABLE FLOW RATE

Bernard Darredeau, Sartrouville; Maurice Grenier, Paris; Catherine Garnier, Paris, and François Venet, Paris, all of France, assignors to l'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Oct. 15, 1993, Ser. No. 136,276
Claims priority, application France, Oct. 30, 1992, 92 13026
Int. Cl.[5] F25J *3/00*
U.S. Cl. 62—21 **6 Claims**



1. Process for producing gaseous nitrogen with variable flow rate and a substantially constant composition, comprising:

cooling compressed air purified of water and CO_2 to near its dewpoint, and introducing said cooled compressed air into the sump of a rectification column (**4**) to produce gaseous nitrogen product in the head and a so-called rich liquid in the sump, comprising of air enriched in oxygen;

liquefying a portion of the nitrogen in the head of the column by vaporizing rich liquid expanded at low pressure in a head condenser (**5**) of the column;

when the gaseous nitrogen demand is greater than a nominal demand, sending liquid nitrogen to the head of the column from a liquid nitrogen holding tank (**7**), and storing rich liquid in a rich liquid holding tank (**6**) connected to the sump of the column as well as to the head condenser; and

when the gaseous nitrogen demand is less than the nominal demand, sending liquid nitrogen from the head of the column to the liquid nitrogen holding tank (**7**) and reducing the level of rich liquid in the rich liquid holding tank (**6**),

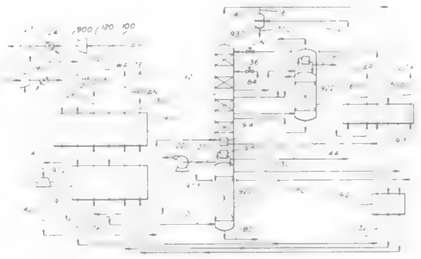
wherein the liquid nitrogen is caused to pass from the column (**4**) to the liquid nitrogen holding tank (**7**) and vice versa, via a single conduit (**12**) equipped with a pressure reducing device (**13**), and the pressures in the liquid nitrogen holding tank (**7**) and rich liquid holding tank (**6**) are maintained at constant values.

5,355,681

AIR SEPARATION SCHEMES FOR OXYGEN AND NITROGEN COPRODUCTION AS GAS AND/OR LIQUID PRODUCTS

Jianguo Xu, Fogelsville, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 23, 1993, Ser. No. 126,156
Int. Cl.[5] F25J *3/02*
U.S. Cl. 62—25 **7 Claims**



1. A cryogenic distillation process for the separation of compressed, dry and contaminant-free air into its constituent components utilizing a distillation column system having at least two distillation columns operating at different pressures, wherein the top of the higher pressure column is in thermal communication with the lower pressure column, wherein a nitrogen product is produced at the top of the higher pressure column and an oxygen product is produced at the bottom of the lower pressure column, characterized in that: (a) a portion of the compressed, dry and contaminant-free feed air is condensed thereby producing a liquid air stream; (b) feeding at least a portion of the liquid air stream as impure reflux to at least one distillation column of the distillation column system, and (c) removing a waste vapor stream having a nitrogen mole fraction of less than 0.95 from a location in the distillation column system situated not more than four theoretical stages above the location in the column where the liquid air stream of step (b) is fed to the distillation column system.

5,355,682

CRYOGENIC AIR SEPARATION PROCESS PRODUCING ELEVATED PRESSURE NITROGEN BY PUMPED LIQUID NITROGEN

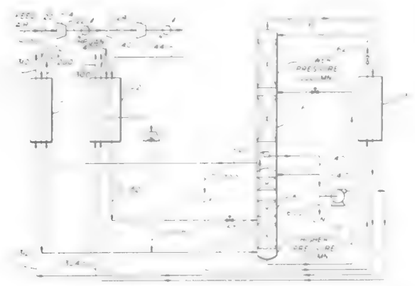
Rakesh Agrawal, Emmaus; Bruce K. Dawson, Bethlehem; Jeffrey A. Hopkins, Whitehall, and Jianguo Xu, Fogelsville, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 15, 1993, Ser. No. 123,026
Int. Cl.[5] F25J *3/00*
U.S. Cl. 62—41 **15 Claims**

1. A process for the separation of a compressed feed air stream to produce elevated pressure oxygen and nitrogen gases comprising:

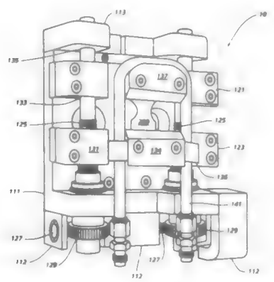
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(a) using a double column system with a lower pressure column and a higher pressure column;
(b) feeding at least a portion of the compressed and cooled feed air to the higher pressure column;
(c) separating the portion of the feed air from step (b) into a nitrogen vapor and an oxygen-enriched liquid in the higher pressure column;
(d) feeding the oxygen-enriched liquid from the bottom of the higher pressure column to an intermediate point in the lower pressure column;
(e) condensing at least a portion of a nitrogen-rich vapor



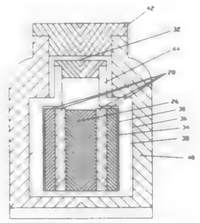
from the higher pressure column thereby producing a liquid nitrogen stream; returning a portion of the liquid nitrogen stream to the top of the higher pressure column; and removing the remaining portion of the liquid nitrogen from the double column system;
(f) increasing the pressure of a nitrogen-rich liquid which is removed from a location of the double column system;
(g) cooling and at least partially condensing a portion of the feed air by indirect heat exchange with the elevated pressure nitrogen-rich stream of step (f);
(h) removing an oxygen stream and a vapor stream containing at least 80% nitrogen from the lower pressure column.

5,355,683
CRYOGENIC TEMPERATURE CONTROL AND TENSION/COMPRESSION ATTACHMENT STAGE FOR AN ELECTRON MICROSCOPE
Dale E. Taylor, Spotsylvania, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 14, 1993, Ser. No. 169,922
Int. Cl.[5] G01N *3/02, 3/18*
U.S. Cl. 62—51.1 **11 Claims**



1. A tension-compression attachment stage for use with an electron microscope comprising:
a base fixture having an upper surface, a lower surface, and a front face;
a drive support bracket attached to the lower surface of said base fixture;
a load-screw support bracket attached to the upper surface of said base fixture;
a pair of load screws rotatably mounted in said base fixture and further secured by rotatable mounts in the load screw support bracket;
a fixed jaw assembly fixed to the front face of said base fixture;
a moveable jaw assembly mounted on said load screws;
a drive assembly mounted on said drive support bracket and engaging said load screws and rotatably driving said load screws; and
a cryogenic cooling loop fixedly mounted on said fixed jaw assembly and slideably mounted on said moving jaw assembly.

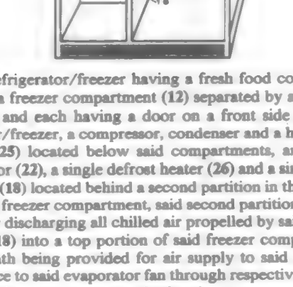
5,355,684
CRYOGENIC SHIPMENT OR STORAGE SYSTEM FOR BIOLOGICAL MATERIALS
Walter L. Guice, 19640 FM 1804, Lindale, Tex. 75771
Filed Apr. 30, 1992, Ser. No. 876,406
Int. Cl.[5] F17C *7/00*
U.S. Cl. 62—54.2 **17 Claims**



1. An shipping and storage apparatus consisting of (a) a vessel insulated with a material selected from the group consisting of superinsulation materials, evacuated thin film insulation materials, and evacuated powder insulation materials, and (b) a heat sink material which is initially in the solid phase and at a temperature at least 100° F. below the temperature at which it will melt, which heat sink material is selected so as to melt at a selected temperature at least 50° F. below the freezing temperature of water, and which said heat sink material remains in the liquid state up to at least 100° F.

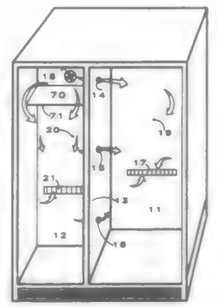
5,355,685
PURIFICATION OF REFRIGERANT
Kenneth E. Stie, and Carl Calame, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Mar. 15, 1993, Ser. No. 31,519
Int. Cl.[5] F25B *47/00*
U.S. Cl. 62—85 **16 Claims**

7. A method of operating a purge system for a closed loop refrigeration unit with the aid of a programmable controller wherein purging of said contaminated refrigerant is responsive to a control valve, and said programmable controller is provided with data representative of vapor pressure versus temperature of said refrigerant in an uncontaminated state, and a routine for manipulating said control valve, said routine comprising the following steps:
reading in a value for actual vapor pressure P_i and actual temperature in said accumulator;
defining a minimum acceptable deviation for the pressure P_i and a pressure P_s of uncontaminated refrigerant;
determining the pressure P_s of uncontaminated refrigerant corresponding to the temperature in said accumulator from the data provided to said programmable controller;
calculating an error P_i-P_s;
determining when said error is greater than said minimum acceptable deviation;



calculating a control output signal according to a proportional-interval-derivative (PID) control law for reducing said error; and
outputting said control signal so as to manipulate said control valve.

5,355,686
DUAL TEMPERATURE CONTROL OF REFRIGERATOR-FREEZER
John Weiss, Amityville, N.Y., assignor to Micro Weiss Electronics, Inc., West Babylon, N.Y.
Filed Aug. 11, 1993, Ser. No. 105,493
Int. Cl.[5] F25D *17/06*
U.S. Cl. 62—89 **26 Claims**



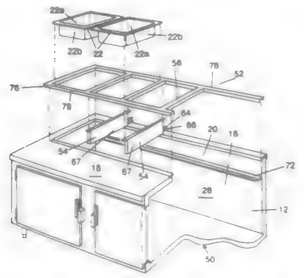
1. A refrigerator/freezer having a fresh food compartment (11) and a freezer compartment (12) separated by a first partition (13) and each having a door on a front side of said refrigerator/freezer, a compressor, condenser and a heat-removing fan (25) located below said compartments, and a single evaporator (22), a single defrost heater (26) and a single evaporator fan (18) located behind a second partition in the rear of at least said freezer compartment, said second partition having an outlet for discharging all chilled air propelled by said evaporator fan (18) into a top portion of said freezer compartment, a return path being provided for air supply to said evaporator and thence to said evaporator fan through respective vents (17, 21) of said compartments, and wherein:
a first port (14) in said first partition (13) and of constant aperture for passage of air from said freezer compartment to said fresh food compartment is located near said outlet of said evaporator fan, said top portion of said freezer compartment being empty and of a configuration for maintaining a steady proportion, of all air propelled by said evaporator fan through said outlet, which thereafter flows through said first port;
at least one other port (15, 16) is provided in said first partition (13), below said top empty portion of said freezer compartment, for passage of air from said freezer compartment to said fresh food compartment;
a first temperature sensor (19) is situated in an upper portion of said fresh food compartment below said first port for measuring the air temperature of said fresh food compartment;
a second temperature sensor (20) is situated in said freezer compartment to measure the air temperature of said freezer compartment;
control means, including manually operable means for establishing temperature settings respectively for air in said freezer and fresh food compartments, from which there are automatically calculated and stored by calculation means, a fresh food compartment temperature control value derived in a first predetermined manner from said respective fresh food compartment and freezer temperature settings and a freezer compartment temperature control value derived in a second predetermined way from said respective fresh food compartment and freezer compartment temperature settings, and means for starting said compressor and said evaporator fan when said fresh food compartment air temperature exceeds said fresh food compartment temperature control value, means for thereafter maintaining in operation both said compressor and said evaporator fan for a predetermined minimum time which is more than 20 minutes and less than 40 minutes and means for thereafter determining the respective stopping times of said compressor and of said evaporator fan in accordance with the following principles:
(A) if the freezer air temperature is less than said freezer compartment temperature control value, both the compressor and the evaporator fan operations are stopped;
(B) if the freezer air temperature is equal to or above said freezer compartment temperature control value, the compressor is kept operating if and until the freezer air temperature reaches said freezer compartment temperature control value and then stopping compressor operation, while said evaporator fan is kept operating if and until said fan has operated, since compressor stop, for more than a predetermined percentage of the duration of the last previous compressor operation, said predetermined percentage being greater than 8% and less than 12%.

5,355,687
PAN COOLER AND METHOD
Donald Carpenter, and Craig Kusben, both of Gardena, Calif., assignors to Kairak, Inc., Gardena, Calif.
Filed Apr. 15, 1993, Ser. No. 47,791
Int. Cl.[5] F25D *23/12*
U.S. Cl. 62—258 **18 Claims**

1. A refrigeration unit adapted to removably mount in the refrigeration unit a plurality of pans which hold food, including
a cabinet member having a top wall with an opening therein that enables the pans to be seated in the opening,
location means for seating an individual pan in one of a plurality of predetermined pan positions in the opening, the predetermined pan positions being in a row side by side, an individual pan when in a predetermined pan position being seated in the opening so that substantially the entire pan is positioned within the cabinet member, said location means allowing an individual pan to be removed from the opening and then reseated in the opening,
a plurality of cooling elements positioned at the opening, individual cooling elements being located between, and in

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close proximity to adjacent pan positions, and being mounted so that each cooling element is positioned sub-



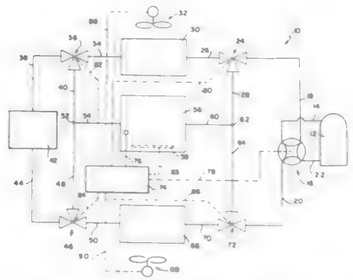
stantially within the cabinet member and lies across the row of pan positions.

5,355,688

HEAT PUMP AND AIR CONDITIONING SYSTEM INCORPORATING THERMAL STORAGE

Alexander P. Rafalovich; David B. Phillips, and Joseph A. Gustin, all of Indianapolis, Ind., assignors to Shape, Inc., Indianapolis, Ind.

Filed Mar. 23, 1993, Ser. No. 36,041
Int. Cl.[5] F25D *11/00*; F28D *15/00*
U.S. Cl. 62—117 **8 Claims**



1. A heat pump and air conditioning system operable in at least one of a heating and a cooling mode, both modes including thermal charging and discharging cycles, the system comprising

a refrigerant circuit including a compressor, a fourway reversing valve, and, in serial connection, a first heat exchanger, a first expansion device, a second expansion device, and a second heat exchanger,

a thermal storage device positioned in the refrigerant circuit between the first and second expansion devices,

a first bypass conduit for bypassing the first expansion device, the first bypass conduit including a first controlled valve,

a second bypass conduit for bypassing the second expansion device, the second bypass conduit including a second controlled valve, and

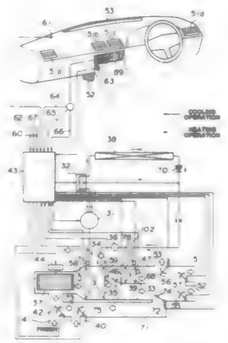
means for controlling operation of the first and second controlled valves so that during the thermal charging cycle in operation in either the heating or cooling mode, refrigerant flowing in the refrigerant circuit bypasses the first expansion device and during the thermal discharging cycle in either the heating or cooling mode, refrigerant bypasses the second expansion device.

5,355,689

HEAT PUMP TYPE AIR CONDITIONER FOR AUTOMOTIVE VEHICLE

Junichiro Hara, Yokohama, and Takayoshi Matsuoka, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 25, 1993, Ser. No. 66,265
Claims priority, application Japan, May 25, 1992, 4-132380; Mar. 3, 1993, 5-042468
Int. Cl.[5] F25B *29/00, 41/00*
U.S. Cl. 62—159 **17 Claims**



1. A heat pump type air conditioner for an automotive vehicle, comprising:

refrigerant;

a compressor applying a workload to said refrigerant;

a condenser connected to a refrigerant discharge side of said compressor and radiating heat of said refrigerant into ambient air;

a blower leading air for air-conditioning the passenger compartment of the automotive vehicle;

a heat-radiating inner heat exchanger connected to the refrigerant discharge side of said compressor and transmitting the heat of said refrigerant to the air led by said blower;

an expansion valve connected to a refrigerant outlet side of said heat-radiating inner heat exchanger;

an evaporator connected to a refrigerant outlet side of said expansion valve, said evaporator transmitting the heat of the air led by said blower to said refrigerant which is supplied through said expansion valve from at least one of said condenser and said heat-radiating inner heat exchanger;

a switching device disposed among the refrigerant discharge side of said compressor, said switching device being set at one of a first state in that said compressor is fluidly communicated with said condenser and a second state in that said compressor is fluidly communicated with said heat-radiating inner heat exchanger; and

means for lowering a cooling efficiency of said evaporator for a predetermined time when said compressor is started.

5,355,690

AIR CONDITIONING APPARATUS

Kunio Iritani, Anjo, and Akira Isaji, Nishio, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 24, 1992, Ser. No. 996,691
Claims priority, application Japan, Dec. 27, 1991, 3-346324
Int. Cl.[5] F25D *17/06*
U.S. Cl. 62—184 **9 Claims**

1. An air conditioning system for a cabin to be air conditioned, comprising:

a duct for introducing an air flow into the cabin;

a blower for generating air flow in the duct;

an upstream heat exchanger arranged in the duct for a heat exchange of a refrigerant with the air flow in the duct;

a downstream heat exchanger arranged in the duct downstream of said upstream heat exchanger for a heat exchange of the refrigerant with the air flow in the duct;

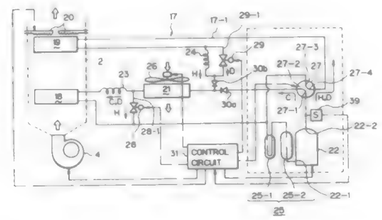
an outside heat exchanger located to an outside of the duct for a heat exchange of the refrigerant with air outside of the cabin;

a pressure reduction device for reducing a pressure of the refrigerant;

a compressor for compressing the refrigerant;

a refrigerant container for storing an excessive amount of said refrigerant and for supplying a proper amount of said refrigerant to said compressor;

a refrigerant circuit for connecting the upstream heat exchanger, downstream heat exchanger, the outside heat exchanger, the pressure reducing device, the refrigerant



container and the compressor, the refrigerant circuit having a dehumidifying mode wherein the compressed refrigerant from the compressor flows, in order, through the downstream heat exchanger, the outside heat exchanger, the pressure reduction device, the upstream heat exchanger, the refrigerant container, and the compressor;

means for varying the heat exchange between the refrigerant and the outside air at the outside heat exchanger;

means for detecting the temperature of the compressed refrigerant flowing from an outlet of the compressor before being heat exchanged; and

means for variably controlling the heat exchange varying means to increase the heat exchange at the outside heat exchanger when the temperature of the refrigerant flowing from the compressor detected by the detecting means exceeds a predetermined value;

wherein said refrigerant container retains an amount of said refrigerant.

5,355,691

CONTROL METHOD AND APPARATUS FOR A CENTRIFUGAL CHILLER USING A VARIABLE SPEED IMPELLER MOTOR DRIVE

Brian T. Sullivan; Craig M. Goshaw, and Paul C. Rentmeester, all of La Crosse, Wis., assignors to American Standard Inc., New York, N.Y.

Filed Aug. 16, 1993, Ser. No. 107,391
Int. Cl.[5] F25B *1/00*; F04B *49/00*
U.S. Cl. 62—201 **36 Claims**

1. A controller for adjusting the capacity of a variable capacity centrifugal compressor driven by a motor, the controller adapted for adjusting the capacity of the compressor in response to demand while minimizing electric power consumption and avoiding surge conditions, comprising:

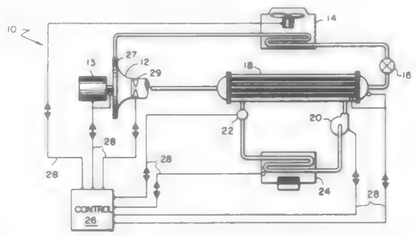
means for establishing a dimensionless plot of possible points of compressor operation relating the pressure coefficient and the capacity coefficient of the centrifugal compressor;

means for determining the current operating point of the centrifugal compressor on the plot;

means for determining a region of actual surge on the plot;

means for plotting a dynamic surge boundary control curve proximate the region of actual surge; and

means responsive to variations of the region of actual surge and the surge boundary control curve for controlling



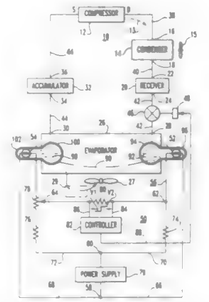
compressor capacity by varying the opening of the inlet guide vanes and varying the speed of the compressor to move the operating point of the compressor proximate the surge boundary control curve.

5,355,692

PHASE CHANGE LOCATION CONTROLLER FOR A HEAT EXCHANGER IN A REFRIGERATION SYSTEM

Jerry A. Brownfield, Minneapolis, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

Filed Sep. 1, 1993, Ser. No. 114,405
Int. Cl.[5] F25B *41/00*
U.S. Cl. 62—212 **11 Claims**



1. A refrigeration system having a refrigerant, a flow path for the refrigerant which includes a heat exchanger having an inlet, an outlet, and a refrigerant flow path between the inlet and outlet, with the refrigerant entering the inlet in a first predetermined phase and exiting the outlet in a second predetermined phase, comprising:

a bridge circuit having bridge arms connected between first and second input and first and second output terminals,

first and second resistance means connected in predetermined different bridge arms of said bridge circuit,

first and second means in the refrigerant flow path of the heat exchanger respectively defining first and second locations for mounting said first and second resistance means in the refrigerant flow path while assuring that heat transfer between the refrigerant and the first and second resistance means will be primarily due to the phase of the refrigerant and not the velocity of the refrigerant,

said first means being disposed adjacent to the inlet of the heat exchanger,

said second means being disposed where a change in phase

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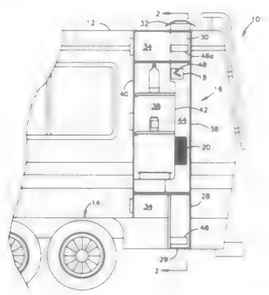
of the refrigerant from the first phase to the second phase is desired in the heat exchanger,
said first resistance means being immersed in the refrigerant at the predetermined location of the refrigerant flow path provided by the first means,
said second resistance means being immersed in the refrigerant at the predetermined location of the refrigerant flow path provided by the second means,
a source of potential connected to the input terminals of said bridge circuit,
the output terminals of said bridge circuit providing a first signal when said first and second resistor means detect the same refrigerant phase, and a second signal when said first and second resistance means detect different refrigerant phases,
and control means controlling a predetermined parameter of the refrigeration system in response to said first and second signals, such that the change from the first refrigerant phase to the second refrigerant phase occurs substantially at the location of the second resistance means.

5,355,693

POWER VENTILATOR FOR A REFRIGERATOR IN A VEHICLE

Patrick N. McConnell, Goshen, and Bruce L. Boxum, Angola, both of Ind., assignors to The Dometic Corporation, LaGrange, Ind.

Filed Apr. 12, 1993, Ser. No. 45,915
Int. Cl.[5] F24C *3/00;* **F25B** *15/00;* **B60H** *3/04*
U.S. Cl. 62—2.44 **14 Claims**



1. A ventilation system for a refrigerator having a condenser, comprising:
a recreational vehicle having exterior walls, a floor and a roof;
an air passage disposed inwardly from all exterior walls in which the condenser is located;
a lower air duct extending through the floor, communicating with the air passage, and disposed inwardly from all exterior walls; and
an upper air duct extending outside the vehicle, communicating with the air passage and disposed inwardly from all exterior walls.

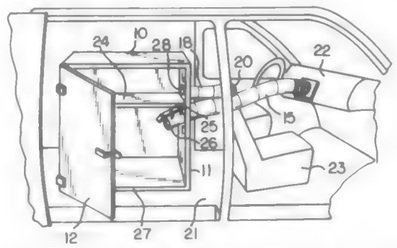
5,355,694

MOBILE COOLER

Thomas R. Morrow, and Carole G. Travers, both of Route 4, P.O. Box 632, Enfield, N.H. 03748

Filed Apr. 21, 1993, Ser. No. 49,367
Int. Cl.[5] B60H *1/32*
U.S. Cl. 62—244 **2 Claims**

1. A new and improved mobile cooler comprising:
an open-interior box insulated on all four sides thereof;
a flexible air intake duct extending from within said box to the air vent on an automotive air conditioning system;
means to affix the end of such intake duct to said air vent, said means comprising a plate coupled to said air intake duct and adapted to fit over and engage said air vent to permit fluid communication between said air vent and said air intake duct, and a plurality of flexible fingers extending from said plate, said fingers being operable to extend into spring engagement with vanes of said air vent to secure said plate thereto;
shelf means within said open-interior box to support perishable food stuffs thereon, said shelf means being positioned intermediate the bottom and top of said box and having an opening in one end thereof, said shelf means being operable to direct air completely across a lower half of said



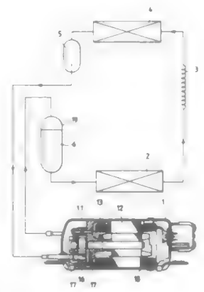
interior of said box, through said opening to an upper half of said interior, and across said upper half of said interior;
air-directing and accelerating means within said open-interior of said box adjacent the interior end of said air intake duct; and
a flexible air exhaust duct extending from within said open-interior of said box, said exhaust duct terminating in a perforated member,
wherein said air directing means comprises an adjustable angle baffle extending into the path of intake air coming through said intake duct, and wherein said air accelerating means comprises a ducted fan in engagement with the interior end of said air intake duct.

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REFRIGERATION DEVICE USING HYDROFLUOROCARBON REFRIGERANT

Susumu Kawaguchi; Tatsuaki Shimizu; Hiroshige Konishi; Hitoshi Maruyama; Noboru Masuda; Shinobu Ogasawara, all of Shizuoka; Yoshihiro Sumida, and Satoru Toyama, both of Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1992, Ser. No. 982,884
Int. Cl.[5] F25B *43/02*
U.S. Cl. 62—498 **31 Claims**



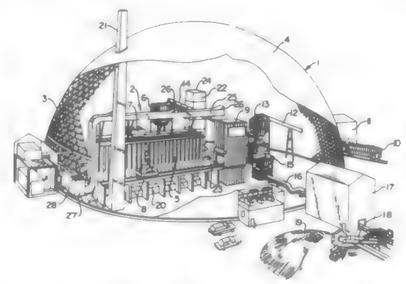
1. A closed-loop refrigeration device comprising a compressor, a condenser, an evaporator, a refrigerant, a lubricating oil, an accumulator and a suction pipe;
said refrigerant comprising a hydrofluorocarbon as a main ingredient;
said lubricating oil being stored in said compressor for lubricating movable members thereof and having a smaller specific gravity than the refrigerant and being insoluble with said refrigerant;
an upper end portion of said accumulator being connected to an outlet of said evaporator;
one end of said suction pipe being inserted into said accumulator upwardly from below, another end of said suction pipe being connected to an introduction port of said compressor;
said suction pipe and said accumulator forming a refrigerant pooling section between a bottom of said accumulator and an opening provided in a wall of that portion of said suction pipe inserted into said accumulator for storing said refrigerant and said insoluble lubricating oil in a phase separated state;
wherein said device is arranged such that said refrigerant and said lubricating oil flow downwardly through said suction pipe from an upper end of said accumulator during operation.

5,355,696

POLLUTION CONTROL APPARATUS FOR INDUSTRIAL PROCESSES AND THE LIKE

Aubrey C. Briggs, 305 Summer Dr., Coraopolis, Pa. 15108

Continuation of Ser. No. 910,937, Jul. 9, 1992. This application Feb. 22, 1993, Ser. No. 23,785
Int. Cl.[5] B01D *47/00*
U.S. Cl. 62—476 **15 Claims**



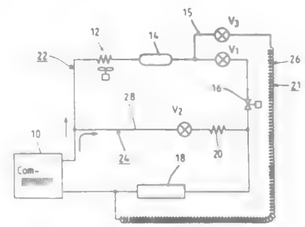
1. Pollution control apparatus for industrial processing equipment which generates large quantities of heated gases carrying pollutants which apparatus comprises:
(a) a containment structure which encloses the processing equipment and which includes a barrier interposed between the processing equipment and the atmosphere,
(b) gas cleaning apparatus having an intake and a discharge within the structure, and
(c) an absorption refrigeration system having
(i) a generator in heat exchange relationship with hot gasses within the structure and activated by heat generated by the processing equipment,
(ii) a condenser positioned in heat exchange relationship with a medium outside the structure
(iii) an evaporator positioned in heat exchange relationship with the atmosphere within the containment structure.

5,355,697

COOLING MEDIUM CIRCUIT FOR ICE MAKING MACHINE ETC.

Ryoji Morimoto, Handa, Japan, assignor to Hoshizaki Denki Kabushiki Kaisha, Aichi, Japan

Filed Aug. 12, 1993, Ser. No. 105,705
Claims priority, application Japan, Sep. 17, 1992, 4-071584[U]
Int. Cl.[5] F25B *47/02*
U.S. Cl. 62—278 **5 Claims**



1. A cooling medium circuit for ice making machines and the like, comprising:
a freezing circuit in which a high-pressure and high-temperature vaporized cooling medium compressed in a compressor is fed to a condenser; the cooling medium liquefied through condensation in said condenser is fed to an expansion means through a first solenoid valve; the cooling medium expanded and vaporized through said expansion means is fed to an evaporator to perform heat exchange; and the thus heated vaporized cooling medium is fed back to said compressor; and
a hot gas circuit in which the high-pressure and high-temperature vaporized cooling medium fed from said compressor is partly by-passed to the evaporator through second solenoid valve and a choking means to achieve ice releasing and the like in the evaporator; wherein the state of said first solenoid valve and that of said second solenoid valve can be changed over synchronously each time said ice making machine is switched to freezing operation or to ice releasing operation to assume states contrary to each other;
characterized in that a by-pass pipe for liquefied cooling medium is provided which branches out from an intermediate point between said condenser of said freezing circuit and said first solenoid valve, said by-pass pipe and said condenser are connected to each other via a third solenoid valve and a capillary tube which expands and vaporizes the liquefied cooling medium so that said liquefied cooling medium fed from said condenser is supplied to said compressor while being controlled in flow rate by said third solenoid valve.

5,355,698

INTERCHANGEABLE DECORATIVE ORNAMENT

Tomima L. Edmark, 5335 S. Dentwood Dr., Dallas, Dallas County, Tex. 75220

Filed Jun. 4, 1993, Ser. No. 71,479
Int. Cl.[5] A44C *17/02*
U.S. Cl. 63—29.1 **16 Claims**

1. An interchangeable decorative ornament, comprising:
a setting comprising a frame and a base;
at least one decorative piece;
means, coupled to said base and said decorative piece, for removably coupling said decorative piece to said setting;
said frame having an edge adjacent to and securing said decorative piece in place in said setting;
said base operable to receive said decorative piece and coupled to said frame such that at least one unobstructed opening is formed between said base and said frame to

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allow said decorative piece to be separated from said setting; and



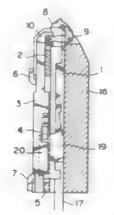
means, coupled to said setting, for displaying the interchangeable decorative ornament.

5,355,699

FLAT KNITTING MACHINE AND A METHOD OF OPERATING THE ROCKING SINKERS OF THE FLAT KNITTING MACHINE

Katsumi Inagaki; Atsuo Tsuboi, and Shoichi Komasaka, all Fuji, Japan, assignors to Tsudakoma Kogyo Kabushiki Kaisha, Ishikawa, Japan

Filed Apr. 14, 1993, Ser. No. 45,700
Claims priority, application Japan, Apr. 16, 1992, 4-096724
Int. Cl.[5] D04B *15/06*
U.S. Cl. 66—64 6 Claims



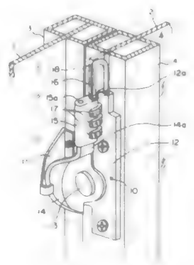
1. A flat knitting machine comprising:
two needle beds disposed opposite to each other along a stitching line;
a plurality of needles slidably supported on the two needle beds, respectively;
needle operating means for operating the needles for reciprocal sliding movement on the needle beds;
a plurality of rocking sinkers arranged on at least one of the needle beds in connection with the needles, respectively, so as to rock about an axis parallel to the stitching line;
sinker operating means for operating the sinkers for rocking motion; and
frictional engaging means for transmitting movement of the needle operating means to reciprocally move the sinker operating means, wherein the frictional engaging means allows the needle operating means to move free of the sinker operating means when a load on the sinkers exceeds a predetermined frictional engaging force.

5,355,700

WINDOW-LOCK AND LEVER-TYPE LOCK

Shoji Suzuki, Fuchu, Japan, assignor to Suzusho Trading Co., Tokyo, Japan

Continuation of Ser. No. 997,542, Dec. 28, 1992, abandoned.
This application Mar. 16, 1994, Ser. No. 214,029
Claims priority, application Japan, Dec. 31, 1991, 3-113575
Int. Cl.[5] E05B *65/08*
U.S. Cl. 70—89 12 Claims



1. A window-lock having a lock, comprising:
a catch provided on one of double sliding windows;
a latch provided rotatably on another of said double sliding windows and engageable with said catch and preventing movement of said double sliding windows when engaged with said catch;
a lock member being provided on said latch, said lock member having a plurality of movable portions, a shaft member and a lock member engaging portion, and said lock member being locked and unlocked by combinations of respective portions of said plurality of movable portions; and
a fixed member being provided on the sliding window on which said latch is provided and having an engaging portion which engages said shaft member, wherein one end portion of said shaft member is provided so as to be selectively engageable with one of said engaging portion and said lock member engaging portion, said shaft member locking said lock member and preventing rotation of said latch when said latch and said catch are engaged and when said one end portion of said shaft member and said engaging portion are engaged, and said shaft member locking said lock member and being immovable when said one end portion of said shaft member and said lock member engaging portion are engaged.

5,355,701

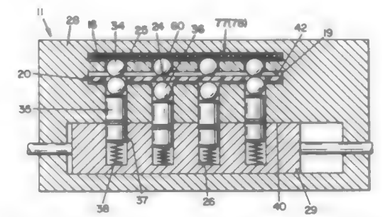
METHOD AND APPARATUS FOR DECODING A PIN TUMBLER LOCK

Marc W. Tobias, 4317 Town Park Pl., Sioux Falls, S. Dak. 57105

Filed Mar. 1, 1993, Ser. No. 24,288
Int. Cl.[5] E05B *19/20*
U.S. Cl. 70—394 17 Claims

1. A method for decoding a tumbler lock having a lock housing and a moveable locking member, said lock housing and said locking member, each, having a like plurality of aligned bores arranged in a matrix, each bore containing a ball, first and second tumblers, and a spring mechanism biasing said tumblers towards one end of said bore; said lock housing further having a program card slot and key card slot, and a permanent program card and a key card extending within said program card and key card slots; respectively, each slot passing through each bore and said program and key card co-operating with one another such that when said key card is mounted into its slot, an intersecting position of said first and second tumblers in each bore is coincident with a shear line of said lock to permit movement of said locking member; the method comprising the steps of:

a) inserting a tool in said key card slot;
b) measuring at each bore position by said tool the force exerted by said tumblers at said key card slot;
c) recording the measured force at each bore as falling within a first or second force level and



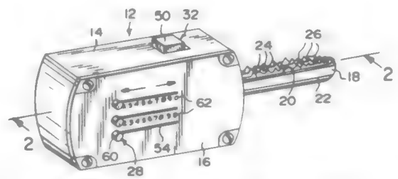
d) duplicating said key card by constructing a substitute key card having an opening at each bore position in which said first force level was recorded and a closed position whereat said second force level was recorded.

5,355,702

SECURITY COMBINATION KEY

Augusto Escribens, Dellepiani 779, San Isidro, Lima 27, Peru

Filed Oct. 4, 1993, Ser. No. 130,678
Int. Cl.[5] E05B *19/18*
U.S. Cl. 70—395 2 Claims



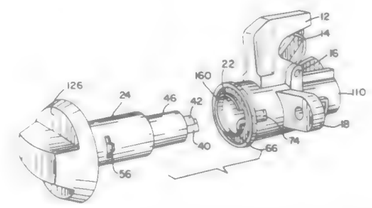
1. A security combination key which will operate at least two different locks which comprises:
a) a hollow housing having a removable cover plate;
b) an elongated guide member having an open track therein and a ward groove on a side thereof, said guide member extending from one side of said hollow housing;
c) a plurality of blades having serrations, said blades extending in parallel relationships from within said hollow housing into said track of said guide member with said serrations exposed in said track;
d) means for sliding said blades in said track of said guide member to form various combinations with said serrations to match up with pin tumblers in a lock, wherein said means for sliding said blades includes:
i) said cover plate having a plurality of parallel slots therethrough;
ii) each said blade having an L-shaped arm bent at a right angle with an elongated handle extending through one said slot in said cover plate;
iii) a plurality of knobs, each to fit upon a distal end of one said handle; and
iv) combination indicia printed on said cover plate adjacent said slots, so that each said knob can be moved along each said slot and set at one combination indicia; and
e) means for locking said blades in a stationary position in said track of said guide member, so that said guide member having said ward groove can be inserted into a keyway having a compatible set of ward ridges in a cylinder of the lock, allowing said serrations of said blades to properly position the pin tumblers to permit operation of the lock, wherein said means for locking said blades includes:
i) said blades having a set of teeth along one edge thereof;
ii) a lever pivotally mounted within said hollow housing;
iii) a pawl on a first end of said lever extending inwardly towards said teeth in said blades;
iv) a button on a second end of said lever extending outwardly through said hollow housing; and
v) a spring affixed between said lever and a portion of said hollow housing, so as to bias said pawl into said teeth of said blades, so that when said button is depressed said pawl will move away from said teeth of said blades to allow said blades to slide.

5,355,703

CYLINDRICAL LOCK WITH CAM DOWN RETAINING TUMBLER

Kevin J. Elinski, and William D. Boppre, both of Milwaukee, Wis., assignors to Briggs & Stratton Corporation, Milwaukee, Wis.

Continuation of Ser. No. 758,780, Sep. 12, 1991, abandoned. This application May 28, 1993, Ser. No. 71,344
Int. Cl.[5] E05B *63/00*
U.S. Cl. 70—421 16 Claims



1. In a cylinder lock having a sleeve including a longitudinal axis, an open outer end and an inner peripheral wall, a cylinder having an outer peripheral wall and adapted to be inserted in and rotatably carried by the sleeve, the cylinder rotatable between a home position and an advanced position, and means for retaining the cylinder in assembled relationship within the sleeve, an improvement comprising:
a. a retractable retaining tumbler carried in said cylinder, said retaining tumbler disposed in a plane perpendicular to said longitudinal axis and radially slidably movable in said plane between an extended position and a retracted position, and said retaining tumbler having a tip normally extending radially outward beyond the outer peripheral wall of the cylinder, the tumbler movable to a retracted position wherein the tip is moved inwardly toward the axis of the cylinder and the sleeve;
b. an axially extending retaining tumbler-receiving aperture formed in the sleeve for slidably receiving said retaining tumbler, said aperture in communication with the outer open end of the sleeve and having a top and at least one cam-engaging axially extending side edge, the top of said aperture being disposed in interfering relationship with the tip of said tumbler when the tumbler is in its extended position; and
c. a circumferentially extending inclined cam surface on the tip of the tumbler and disposed to engage the side edge of the aperture as the cylinder is axially inserted in the sleeve, whereby the cam surface engages said side edge and drives the tumbler into the cylinder as the cylinder is rotated relative to the sleeve.

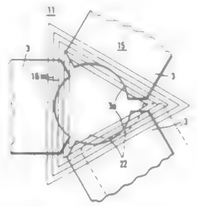
VOL 1167 ISS 3 OC 18 1994 UMI

5,355,704

METHOD AND ARRANGEMENT FOR ADJUSTING OF THREE ROLLERS OR GUIDING ROLLS WHICH TOGETHER FORM A CALIBER OPENING

Helmut Holthoff, Duesseldorf, Fed. Rep. of Germany, assignor to Kocks Technik GmbH & Co., Hilden, Fed. Rep. of Germany

Filed Nov. 3, 1992, Ser. No. 970,085
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1991, 4137451
Int. Cl.[5] B21B *31/16*; B23Q *17/22*; G01B *9/08*
U.S. Cl. 72—21 26 Claims



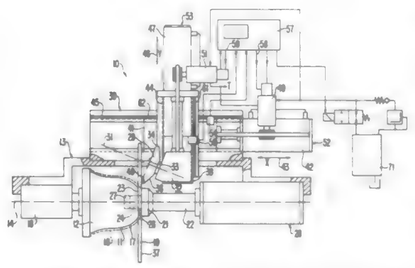
1. A method of adjusting of three caliber opening-forming rolling elements arranged around a throughgoing axis which forms a caliber opening center and having concave working surfaces, comprising the steps of determining a triangle which is formed by three parallels to rotary axes of three roller elements which parallels extend through a caliber bottom deepest point located in a joint rotary axis plane and also determining a center point of an inscribed circle of the triangle; axially displacing the rolling elements so that their section planes extending through the deepest point and perpendicularly to the rotary axes are adjusted so that the section planes extend through said center point of said inscribed circle.

5,355,705

PROCESS FOR CONTROLLING THE REVOLVING PATH MOTIONS OF THE SPINNING ROLLER OF A SPINNING LATHE, AND SPINNING LATHE FOR PERFORMING THE PROCESS

Eckehart Schulze, Stahlbühlstrasse 36, 7251 Weissach-Flacht, and Hans Hartmann, Emser Strasse 14, 7000 Stuttgart 50, both of Fed. Rep. of Germany

PCT No. PCT/EP91/00847, § 371 Date Jan. 4, 1993, § 102(e) Date Jan. 4, 1993, PCT Pub. No. WO91/17004, PCT Pub. Date Nov. 14, 1991
PCT Filed May 4, 1991, Ser. No. 945,980
Claims priority, application Fed. Rep. of Germany, May 4, 1990, 4014405
Int. Cl.[5] B21D *22/16*
U.S. Cl. 72—83 10 Claims



1. Process for controlling the revolving path motions of the spinning roller of a spinning lathe comprising forming a round-blank sheet-metal workpiece by pressing said workpiece against a rotationally drivable spinning chuck, into a spun part unilaterally hugging a shaping surface of the spinning chuck, wherein the spinning roller is supposed to be freely rotatable, on a bearing block shiftable by means of respectively one coordinate drive unit into two mutually orthogonal (X- and Y-) directions, about an axis fixed at the block, and wherein the activation of the coordinate drive units, fashioned as valve-controlled hydraulic cylinder, takes place according to a track repetition (playing-back) process, in accordance with which, in at least one master spinning process, coordinate data characteristic for the thus-traversed positions of the spinning roller and determined with the aid of position pickups are stored in an electronic NC or CNC control unit and are processed by the latter to output data, the X- and Y-coordinate drive units being actuatable by the serial call-up of these output data along the lines of tracking the course of travel of the spinning roller determined during the master spinning process, and wherein initially the contour of the spinning chuck is scanned, and a set of coordinate data characteristic for the configuration of such contour is introduced into the NC or CNC control unit, a safety curve being determined from these data which marks the limit of a closest possible approach of the spinning roller toward the spinning chuck, said process further including

(a) operating the coordinate drive units are according to a follow-up control process working with electrically controlled reference position value presetting and mechanical actual value acknowledgement,

(b) utilizing the spinning roller and the drive units provided for the motion control thereof for said scanning of the outer contour of the spinning chuck, wherein these drive units are operated only with less then the maximally usable control circuit amplification, and

(c) continuously measuring the follow-up path ΔS (lag error) corresponding to the difference between the set reference position value and the actual position value of the spinning roller at least during the last revolution of the spinning roller through which the spun part received its final shape, and wherein, when this measured follow-up path ΔS exceeds a threshold value ΔS_{max}, taking at least one of the following measures:

reducing the path tracking velocity V_B of the spinning roller by decreasing the control data output rate, and

transitioning to a path routing curve of the spinning roller and thus of its rolling-off point corresponding to an increase of the distance of the spinning roller rolling-off point, measured normally to the outer contour of the spinning chuck, with respect to its previously governing reference value curve, until the threshold value ΔS_{max} has been exceeded in the downward direction by a defined amount δS.

5,355,706

PROCESS FOR THE PRODUCTION OF A HOLLOW WORKPIECE BEING PROFILED AT LEAST INTERNALLY IN A STRAIGHT OR HELICAL MANNER RELATIVE TO THE WORKPIECE AXIS

Daniel Deriaz, Meilen, and Hans Krapfenbauer, Kuesnacht, both of Switzerland, assignors to Ernst Grob AG, Mannedorf, Switzerland

Filed Jul. 2, 1993, Ser. No. 85,155
Claims priority, application Switzerland, Jul. 16, 1992, 02 246/92-8
Int. Cl.[5] B21D *22/16*
U.S. Cl. 72—83 7 Claims

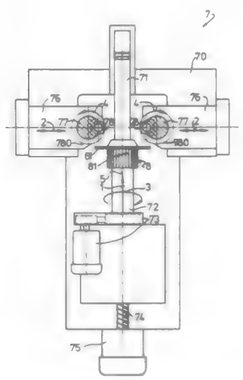
1. A method for the production of a hollow workpiece having an internal straight or helical internal profile, relative to the workpiece axis, said workpiece having at least a partial web portion and a substantially tubular rim portion connected to said web portion, with said workpiece having a predetermined length, said method comprising the steps of:

providing a workpiece blank or disk having a predetermined first radius;

providing a set-up including a workpiece retaining means and a mandrel which possesses an external profile corresponding to the internal profile which is to be fabricated on the tubular rim portion of the workpiece blank;

cold forming said workpiece blank on said mandrel into said hollow workpiece having said web portion and said substantially tubular rim portion, said mandrel having a predetermined second radius;

said forming step utilizing two opposed impact formers, drivingly journalled in a rotating rolling head, in conjunction with said workpiece retaining means and said mandrel;



cold working said rim portion of said hollow workpiece on said mandrel according to the known Grob method of impact roller forming to form the hollow workpiece with said an internal profile on the rim portion thereof; and

whereby said cold forming and said cold working are performed substantially simultaneously in one operation, with both axial and radial material movement occurring in said workpiece blank thereby directly cold forming and cold working said hollow workpiece.

5,355,707

ROLLING MILL AND METHOD FOR OPERATING ROLLING MILL

Tetsuo Inoue; Tohru Yoshioka; Hideaki Yoshimatsu, and Akira Nohara, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Aug. 14, 1992, Ser. No. 929,832
Claims priority, application Japan, Aug. 14, 1991, 3-204412; Dec. 26, 1991, 3-345595; Apr. 23, 1992, 4-104825
Int. Cl.[5] B21B *31/20*; F15B *15/22*
U.S. Cl. 72—245 11 Claims

1. A rolling mill, comprising:

lower rolls,

a lower housing for holding said lower rolls,

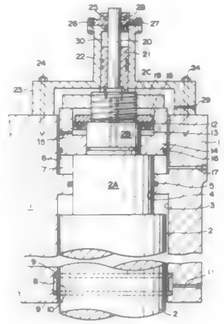
upper rolls,

an upper housing for holding said upper rolls,

four columns for connecting said upper housing to said lower housing,

frictional lock means fitted on an outside of each column and fixed in at least one of said upper and lower housings for locking one of said housings to said columns by clamping said columns, wherein said frictional lock means comprises a cylinder disposed within a cylinder chamber formed in said one of said housings and a clamping sleeve disposed within said cylinder, said clamping sleeve being elastically deformable to clamp and release a column, and said cylinder being vertically movable within said cylinder chamber, and

a plate thickness control means operated to control a thickness of materials to be rolled by hydraulically adjusting a reduction force of said rolls, wherein said plate thickness control means comprises a piston connected to an end of said cylinder and a fluid chamber formed at a surface of



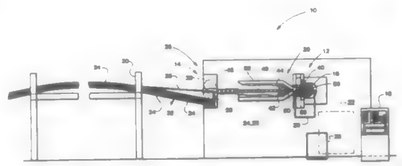
said piston, wherein a plate thickness of materials to be rolled is controlled by adjusting the reduction force of said rolls by filling a fluid in said fluid chamber.

5,355,708

STRAIGHT ROD STOCK PROCESSOR

Kenneth A. Kauffman, R.D. #12, Pisgah Rd., York, Pa. 17406

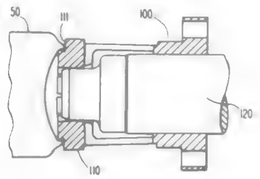
Filed Dec. 20, 1993, Ser. No. 170,611
Int. Cl.[5] B21D *7/022*
U.S. Cl. 72—294 7 Claims



1. A straight rod stock processor adapted to produce bent rod product pieces, said processor comprising in combination a stirrup bender head mechanically linked to a rod stock loader being electronically integrated one with the other by means of a processor control, said rod stock loader having means to support a bundle of individual straight rod stock, a set of loader compression drive wheels of said rod stock loader adapted to compressively engage and infeed rod stock from said loader into a channel means adapted to guide an individual infed rod stock piece from said rod stock loader to said bender head of said rod stock processor, a shear blade of said rod stock processor adjacent said bender head at the bender head terminal end of said channel means, and a set of secondary rod stock compression rollers comprised of a drive roller provided with a serrated circumferential groove and rotated by a direct drive motor electronically integrated with said processor control and an automatically adjustable spring biased variably set flat faced compression roller being an idler roller interposed within said channel means between said set of loader compression drive wheels of said rod stock loader and said shear blade of said rod stock processor, said set of secondary rod stock compression rollers cooperatively adapted to compressively engage and forward to said bender head a tail length of said individual infed rod stock piece for the processing thereof into a bent rod product piece.

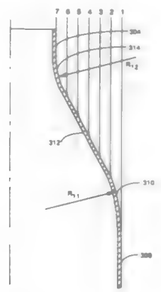
VOL 1167 ISS 3 OC 18 1994 UMI

5,355,709
METHODS AND APPARATUS FOR EXPANSION REFORMING THE BOTTOM PROFILE OF A DRAWN AND IRONED CONTAINER
Joseph Bauder, Huntingdon Valley, and George Ruff, Cornwells Heights, both of Pa., assignors to Crown Cork & Seal Company, Philadelphia, Pa.
Filed Nov. 10, 1992, Ser. No. 976,138
Int. Cl.[5] B21D *51/26*
U.S. Cl. 72—356 **11 Claims**



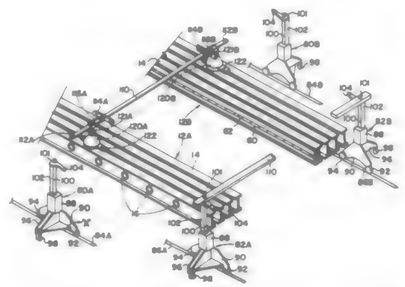
1. Apparatus for high speed reforming a container having a domed bottom defining a bottom opening comprising:
a tool holder having a substantially flat base portion for receiving a support surface of the container, said base portion comprising a location in contact with the domed bottom of the container and a section extending in a horizontal plane outwardly therefrom, whereby the container bottom opening encounters no obstruction upon insertion into and removal from the tool holder;
a forming tool mounted in the tool holder and comprising a plurality of integral, radially expandable elements arrayed about a central axis; and
a means inserted within the forming tool for displacing one or more of the elements outwardly and away from the central axis to deform a portion of the domed bottom of a container seated on the base portion.

5,355,710
METHOD AND APPARATUS FOR NECKING A METAL CONTAINER AND RESULTANT CONTAINER
Hans H. Diekhoff, Avoamore, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Jul. 31, 1992, Ser. No. 922,913
Int. Cl.[5] B21D *51/26*
U.S. Cl. 72—379.4 **6 Claims**



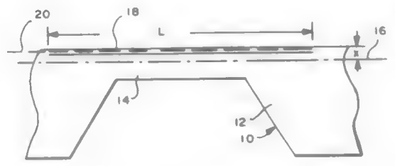
1. A method of necking an end portion of a metal beverage container comprising
effecting a generally radially inward deformation of an axial portion of said container adjacent to an open end of said container to establish a generally cylindrical reduced diameter portion adjacent to said open end of said container and a transition portion between said reduced diameter portion and the undeformed underlying body portion of said container,
progressively reforming said transition portion into a substantially straight angularly upwardly and inwardly extending section having a body radius portion connecting said straight section with said underlying body portion and a neck radius portion connecting said straight section portion with said reduced diameter portion,
establishing said neck radius at about 0.150 to 0.250 inch, and establishing said body radius portion with a radius greater than the radius of said neck radius portion.

5,355,711
VEHICLE LIFT AND SUPPORT HAVING CONNECTABLE BODY AND FRAME MEASURING AND STRAIGHTENING EQUIPMENT
Finis L. Chisum, Rte. 5, Box 267, Claremore, Okla. 74017
Filed Aug. 27, 1992, Ser. No. 936,137
Int. Cl.[5] B21D *1/12*
U.S. Cl. 72—457 **9 Claims**



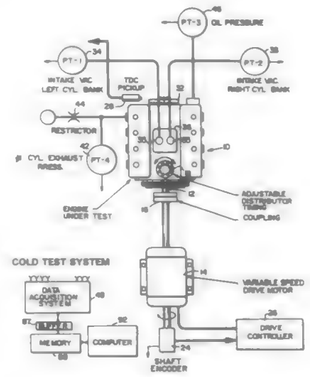
1. Apparatus for supporting, measuring and correcting a defective body and frame of a vehicle comprising:
a platform system assembly to receive said vehicle, said platform system assembly comprised of a pair of connected, spaced, and parallel longitudinal treadways, each said treadway comprised of spaced longitudinal and parallel I-beam members retained together by a plurality of transverse tubes, said tubes being open to outer perimeters of said treadways;
means for raising, lowering and releasably locking said platform system assembly at a desired height;
a measuring tape longitudinally movable along at least one of said treadways, means to move said measuring tape;
at least two centering assemblies, each centering assembly comprising a vehicular support bar transversely positionable to said platform system assembly, said vehicular support bar having means to connect with chassis members of said vehicle, outer ends of said support bar supported upon stands, each said stand having a track means to move said stand longitudinally with respect to said platform system assembly and to permit pivotal movement of said stand transverse to said platform, cam means operable against said outer perimeter of said treadways to position a longitudinal center axis of said vehicle within a vertical plane which also includes a longitudinal center axis of said platform system assembly;
a pulling tower having a vertical upright portion, said vertical upright portion being attached to a wheel supported lower base portion, a shaft means in said lower base portion receivable within one of said tubes of said platform system assembly, means to lock said shaft in said tube, means to rotate said pulling tower about said shaft to angularly position said pulling tower in a vertical plane relative to said platform system assembly, said pulling tower being provided with a front side and a back side, a plurality of vertical ratchet notches on the front and back sides of the pulling tower to lockably receive a collar, an idler pulley being attached to said collar so that it attaches on the front side of the pulling tower, an idler chain sheave being attached to a top of said pulling tower, a chain locking means vertically movable along said back side, a fluid powered cylinder/piston assembly powered by means in said tower, an immovable end of said cylinder/piston assembly connected to said pulling tower, a movable end of said cylinder/piston assembly connected to said chain locking means for vertical down/up movement, a pull chain connectable at one end to the vehicle positioned on said platform system assembly, thence around said idler pulley, thence around said idler sheave to said chain locking means at another end of said chain; and
means to support said vehicle upon said platform system assembly.

5,355,712
METHOD AND APPARATUS FOR THERMALLY ACTUATED SELF TESTING OF SILICON STRUCTURES
Kurt Petersen, San Jose; Farzad Pourahmadi, Fremont, both of Calif., and Russell Craddock, Birmingham, England, assignors to Lucas NovaSensor, Fremont, Calif.
Filed Sep. 13, 1991, Ser. No. 758,836
Int. Cl.[5] G01P *21/00*
U.S. Cl. 73—4 R **13 Claims**



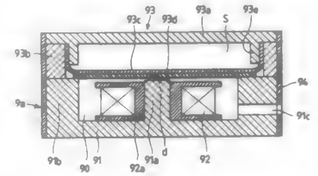
4. A thermally actuated self test mechanism for a micro machined silicon structure, said silicon structure including at least one flexure beam means for permitting one portion of said silicon structure to move relative to another portion of said silicon structure in a flexure direction, said flexure beam means having a neutral axis, said silicon structure having a means for providing an output when flexed, said self test mechanism comprising:
at least one thermal actuator beam having an axis of expansion and a length connecting said one portion of said silicon structure with said another portion of said silicon structure, said axis of expansion of said at least one thermal actuator beam displaced from said neutral axis of said flexure beam means in a direction parallel to said flexure direction;
means for thermally changing said length of said at least one thermal actuator beam thereby displacing said another portion with respect to said one portion and flexing said flexure beam means; and
means for comparing said output when said flexure beam means is flexed to a value and indicating the operability of said means for providing an output.

5,355,713
COLD ENGINE TESTING
George Scourtes, Clearwater, Fla.; John P. Gagneur, Westland, and Elliott Yush, Ann Arbor, both of Mich., assignors to Lucas Hartridge, Inc., Reston, Va.
Continuation of Ser. No. 650,918, Feb. 5, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 960,232
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—117.2 **47 Claims**



1. A method of testing an internal combustion engine having an exhaust manifold, a plurality of cylinders and an operating cycle, said method comprising the steps of:
rotating said engine, without internal combustion, through said operating cycle at a speed sufficient to cause pressure variations in the exhaust related to each cylinder:
recording the pressure waveform defined as the pressure variations in the exhaust with respect to said engine operating cycle; and
comparing the pressure waveform for each cylinder with a pressure waveform produced by a normal engine.

5,355,714
PRESSURE SENSOR USING A PRESSURE RESPONSIVE MAGNETIC FILM TO VARY INDUCTANCE OF A COIL
Masaru Suzuki, Kariya; Fumiaki Murakami, Okazaki; Yoshihisa Nakano, Nagoya, and Hideki Miyazawa, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Feb. 25, 1993, Ser. No. 22,633
Claims priority, application Japan, Feb. 26, 1992, 4-038996
Int. Cl.[5] B60C *23/02*
U.S. Cl. 73—146.5 **22 Claims**



1. A pressure sensor comprising:
a case;
a diaphragm supported by said case at its outer peripheral portion and arranged to displace depending on a pressure differential between two fluids acting on opposite sides thereof; and
conversion means for converting said displacement of said

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diaphragm into an electric signal, said conversion means comprising:

a magnetic film provided on said diaphragm,

a ferrite core having a center post and an outer peripheral annular section which cooperatively define therebetween an annular recess,

a communication passage formed through said outer peripheral annular section for introducing a monitored pressure into said annular recess therethrough,

a coil disposed in said annular recess of said ferrite core and close to said magnetic film with a predetermined gap therebetween, said coil changing into inductance depending on a variation in magnitude of said gap, said gap variation caused by said displacement of said diaphragm, and

circuit means for feeding a signal in a form of an alternating current to said coil to detect a signal component which has been modulated by said inductance,

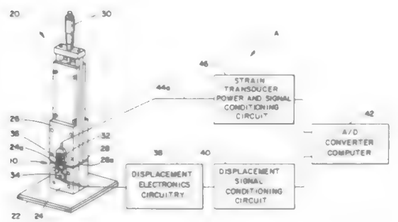
wherein one opposite side of said diaphragm is exposed to a hermetically sealed chamber and another opposite side of said diaphragm is exposed to said monitored pressure.

5,355,715

STRAIN TRANSDUCER CALIBRATION DEVICE

Frank Rausche, Chagrin Falls; Dean A. Cotton, Brunswick Hills Township, Medina County, and Paul T. Kicher, Euclid, all of Ohio, assignors to Pile Dynamics, Inc., Cleveland, Ohio

Filed Jun. 29, 1992, Ser. No. 905,727
Int. Cl.[5] G01L *1/22*
U.S. Cl. 73—1 B **26 Claims**



1. A device for calibrating a strain gage the device comprising:

an assembly having a first section and a second section, relative position of the sections defining a gap;

an attachment means for securing the strain gage to the assembly across the gap;

an adjustment means for altering the relative position, thereby redefining the gap;

a displacement means for detecting a displacement signal occurring due to the redefining of the gap;

a strain gage output detector means for detecting a strain output signal occurring due to the redefining of the gap; and

a calibrating means for calibrating the strain output signal in relation to the displacement signal.

5,355,716

GENERALIZED ROTARY SHOCK AND IMPACT TESTING MACHINE

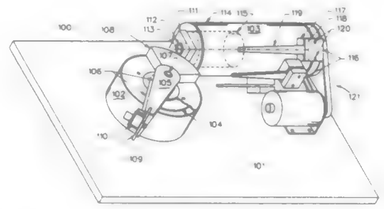
Vittorio Castelli, Yorktown Heights, N.Y., assignor to Automotive Technologies International, Inc., Boontown Township, N.J.

Filed Jun. 1, 1990, Ser. No. 531,906
Int. Cl.[5] G01L *25/00*
U.S. Cl. 73—1 D **36 Claims**

1. Apparatus for subjecting a test object to an acceleration pulse of prescribed shape and amplitude, said apparatus comprising:

(a) means for moving said test object at a prescribed speed along a prescribed path; and

(b) mechanical spring means, arranged in said path, for reversing the direction of motion of said test object, thereby imparting a new velocity to said test object nearly the same as said prescribed speed but in the opposite direction, thereby imparting an acceleration pulse to said test object, said spring means being in the form of a bar



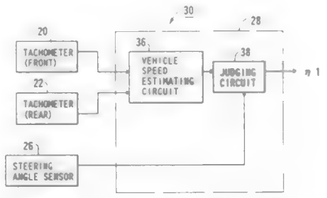
having a flat, rectangular cross-section and having two ends, said bar being tapered from one of said ends to the other end, said one end being wider than said other end and being rigidly mounted to a stationary support and the other end being arranged to intercept the movement of said test object along said prescribed path, said spring means having a plurality of characteristic modes of vibration which provide different frequencies of vibration, said spring means being constructed to reverse said direction of motion of said test object at substantially one frequency of vibration.

5,355,717

ROAD SURFACE CONDITION SENSOR FOR CONTROLLING BRAKES

Keishin Tanaka; Toichiro Hikichi, and Chiaki Kumagai, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1993, Ser. No. 80,117
Claims priority, application Japan, Jun. 25, 1992, 4-167508
Int. Cl.[5] G01B *5/28*
U.S. Cl. 73—105 **11 Claims**



1. A road surface condition sensor, which is incorporated into a vehicle comprising:

vehicle speed estimating means for estimating a running speed of the vehicle;

a steering angle sensor for detecting a steering angle of the vehicle; and

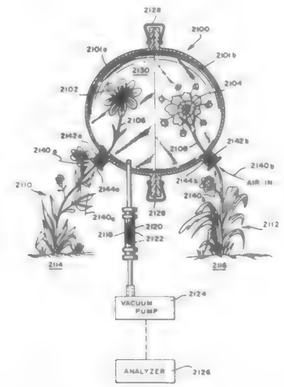
judging means for making a judgement as to whether the magnitude of a time-derivative of the steering angle is equal to or greater than a threshold value which is determined according to the estimated running speed of the vehicle, and for outputting a road surface condition signal indicative of results of the judgement.

5,355,718

AROMA EMISSION ANALYSIS SYSTEM

Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Brielle, and Subha M. Patel, Bridgewater, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 988,337, Dec. 9, 1992, Pat. No. 5,269,169. This application Jul. 16, 1993, Ser. No. 92,463
Int. Cl.[5] G01N *30/86, 33/48*
U.S. Cl. 73—23.34 **47 Claims**



1. A process for qualitatively and quantitatively substantially continuously analyzing the emitted aroma and rates of emission of the aroma components thereof from a plurality of n members of two or more different species and/or varieties of living flowers wherein n is an integer greater than or equal to 2, each of which living flower is attached through a stem to a living plant or a living tree, said plurality of n members being located within a single totally enclosed 3-space having an outer side and an inner side, said inner side entirely surrounding all of said n living flowers comprising the steps of:

(a) providing a hollow enclosure having

(i) an outer wall containing at least n + 1 outer wall orifices spaced at a distance of at least d_1 from one another in order to provide for the unobstructed individual maintenance of each of the living flowers, each orifice having an orifice wall surrounding said orifice;

(ii) having an inner void having a volume V_0 sufficient to provide for the separate individual unobstructed maintenance of each of the living flowers; and

(iii) having an inner volume V_0 such that the volume relationship between the volume of the inner void expressed as "V_0" and the volume of the 3-space surrounding each living flower, "V_f", the individual flower surrounding 3-space is:

$$V_0 > \sum_{i=2}^{n} V_i$$

wherein

$$V_i = \frac{4}{3}\pi R_i^3;$$

$$V_0 > \sum_{i=2}^{n} \frac{4}{3}\pi R_i^3;$$

and

-continued

$$V_0 = H + \sum_{i=2}^{n} \frac{4}{3}\pi R_i^3$$

the mathematically constructed sphere having a volume V_i having an individual mathematically constructed outer surface and

$$\sum_{i=2}^{n} V_i$$

having a mathematically constructed outer surface wherein R_i represents the length of the longest petal of the ith living flower and H is the headspace between the outer surface of

$$\sum_{i=2}^{n} V_i$$

and said inner wall of said single totally enclosed 3-space;

(b) causing the insertion of each of the n members of the plurality of living flowers through a separate outer wall orifice whereby the stem of each living flower is held in place by means of the gripping action of the orifice wall of each of said orifices and whereby each living flower is held in place within said hollow enclosure with the mathematically constructed surface S_i of each living flower being at a finite distance d_2 from its assigned orifice; in contact with at least one of its neighboring flowers and/or at a finite distance d_3 from each of the mathematically constructed surfaces S_i of each of its neighboring living flowers; and at a finite distance d_4 from any inner wall of said hollow enclosure,

(c) trapping the components of said emitted aroma, in trapping tube means containing a trapping material, said trapping tube means being engaged with a juxtaposed to at least one of said orifices at a location outside said hollow enclosure, said trapping tube means having two ends; (i) an orifice end sealably juxtaposed with and engaging said orifice wall and (ii) an outer end at a location outside said hollow enclosure;

(d) exerting a negative pressure on said single totally enclosed 3-space using a vacuum pumping means, said vacuum pumping means being juxtaposed with and engaging said outer end of said trapping tube means, whereby said aroma components are transmitted from said single totally enclosed 3-space into said trapping tube means and onto said trapping material thereby forming an aroma component-bearing trapping material;

(e) removing the aroma component-bearing trapping material from said trapping tube means;

(f) extracting the aroma components from the aroma component-bearing trapping material thereby forming an extracted aroma component composition; and

(g) carrying out qualitative and quantitative analysis on the extracted aroma component composition.

5,355,719

DRAIN SEPARATOR IN GAS ANALYZER

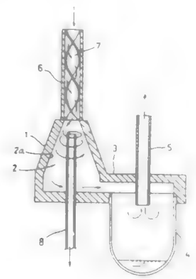
Hiroji Kohsaka, Kusatsu, and Tokihiro Tsukamoto, Kyoto, both of Japan, assignors to Horiba, Ltr., Kyoto, Japan

Filed Jul. 10, 1992, Ser. No. 911,325
Claims priority, application Japan, Aug. 17, 1991, 3-73030[U]
Int. Cl.[5] G01N *1/34;* **B01D** *5/00*
U.S. Cl. 73—31.07 **7 Claims**

1. A drain separator in a gas analyzer, characterized in that a sample gas-inlet passage revolving a sample gas to spout said sample gas into a separating chamber is connected with a side

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of a top portion of said separating chamber, formed of a divergent conical space, with which a drain and exhaust gas-outlet



passage is connected, and a gas-outlet of a sample gas-outlet passage is provided so as to face to a gas-inlet.

5,355,720

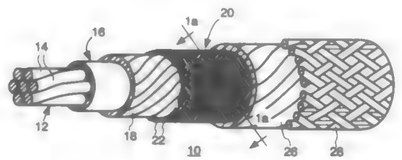
CORROSION RESISTANT CABLE

Douglas S. Bailey, Deerfield, Ill., assignor to Perma-Pipe, Inc., Niles, Ill.

Continuation-in-part of Ser. No. 893,499, Jan. 4, 1992, abandoned. This application May 7, 1993, Ser. No. 56,062

Int. Cl.[5] G01M *3/16;* **G01R** *31/11*

U.S. Cl. 73—40 **35 Claims**



1. An electrical fluid leak detection cable comprising:

a central electrical conductor;

annular spacer means of electrically insulating material disposed around said central conductor, said annular spacer means having a plurality of void spaces for receiving leakage fluid; and

an annular sheath disposed around said spacer means in concentric relationship with said central conductor;

said sheath being formed of a plurality of electrically conductive wires braided in a helical configuration to form a sheath around said central electrical conductor, said wires being coated with a corrosion resistant material before braiding.

5,355,721

METHOD AND APPARATUS FOR MEASURING DEPTH AND HARDNESS

Jose M. Las Navas Garcia, Parque Infantas 150, 28210 Valdemorillo, Madrid, Spain

Filed Sep. 30, 1993, Ser. No. 129,682

Claims priority, application European Pat. Off., Dec. 18, 1992, 92500167.9; Mar. 1, 1993, 93500025.7

Int. Cl.[5] G01N *3/48*

U.S. Cl. 73—82 **11 Claims**

1. A method of measuring a characteristic at the surface of a sample, comprising:

placing the sample onto a stage of a microscope which stage is movable in at least one horizontal direction;

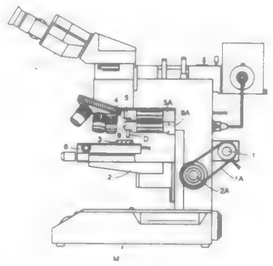
positioning the stage on a vertically movable table;

moving a sample surface into engagement with a sample surface penetrator by vertically moving the table;

moving the sample surface with respect to the penetrator by further vertically moving said table;

measuring the pressure on the penetrator by a load cell;

stopping vertical movement of the table when a preselected force is reached between the penetrator and the sample surface as measured by the load cell, the preselected force being sufficiently high so that the penetrator produces an indentation in the sample surface;



removing the sample surface from contact with the penetrator by vertically moving the table; and

measuring the indentation in the sample surface as a measurement of the characteristic by moving the stage of the microscope in a horizontal direction until the indentation in the sample surface is in alignment with the optical path of the microscope and using the microscope to measure the indentation.

5,355,722

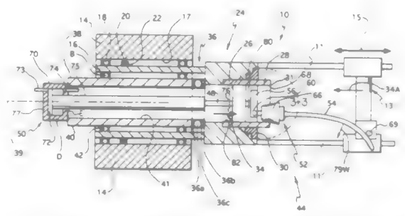
CONDUIT FLARING APPARATUS

Jerry C. Socier, 655 N. SE. Boutell, Bay City, Mich. 48708

Filed May 11, 1993, Ser. No. 59,107

Int. Cl.[5] B21D *19/04*

U.S. Cl. 72—82 **18 Claims**



1. Tube flaring apparatus for forming a radially outwardly extending, flange on an end of a hollow malleable cylindrical conduit comprising:

a stationary support member;

a hollow, rotary drive spindle journaled on said stationary support member for rotation about its axis;

workpiece holding means, coupled to one end of said drive spindle for rotation therewith, cantileverly mounting a hollow, malleable conduit workpiece for rotation about said axis;

axially and radially translatable flare forming means, adjacent said one end of said drive spindle moveable between an axially outer, radially inner position, removed from said conduit, and an axially inner, radially outer, conduit flaring position, bearing against a radially inner portion of one end of said malleable conduit to axially and radially displace said one end of said conduit to form said flange;

means mounting said flare forming means for radial movement between said radially inner and outer positions;

means for moving said flare forming means between said axially inner and outer positions including

a fluid pressure operated cylinder adjacent an axially opposite end of said hollow rotary drive spindle;

a cooperating fluid pressure operated piston disposed in said cylinder for axial movement therein;

piston rod means, received by said rotary drive spindle, coupling said piston, adjacent said axially opposite end of said spindle, to said flare forming means, adjacent said one end of said spindle, for axially moving said flare forming means from said axially outer position to said axially inner position as said flare forming means moves from said radially inner position to said radially outer position;

spacer means, disposed radially between said piston rod means and said spindle, axially extending between said workpiece holding means at said one end of said drive spindle and said cylinder at said opposite end of said drive spindle to preclude relative axial movement of said cylinder and said workpiece holding means when said flare forming means is moved from said axially outer, radially inner position to said axially inner, radially outer position to axially and radially displace said one end of said conduit to form said flange.

5,355,723

METHOD AND APPARATUS FOR CONTROLLING THE TEMPERATURE OF A HEATED MEASURING RESISTOR

Karl Gmelin, Flein; Hans-Peter Stiefel, Ditzingen, and Wolfgang Ketterer, Ludwigsburg-Neckarweihingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

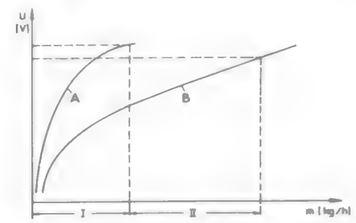
Continuation of Ser. No. 772,421, Oct. 7, 1991, Pat. No. 5,207,094, which is a continuation of Ser. No. 576,056, Aug. 31, 1990, abandoned. This application Dec. 31, 1992, Ser. No. [illegible]

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1989, 3931308

The portion of the term of this patent subsequent to Jun. 25, 2008, has been disclaimed.

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—118.2 **6 Claims**



1. A method of controlling the temperature of a measuring resistor for measuring the mass flow rate of air entering an internal combustion engine, comprising the following steps:

maintaining said measuring resistor at an operating temperature target value by controlling the level of electrical current flowing therethrough;

generating an output signal indicative of the mass flow rate of air entering the engine based on the level of electric current flowing through the measuring resistor;

measuring at least one engine reference variable, wherein changes in the value of the reference variable correspond to changes in the mass flow rate of air entering the engine; and

adjusting said operating temperature target value of the measuring resistor to one of a plurality of preselected values, each preselected value (A, B) corresponding to one of a plurality of ranges (I, II) of said air mass flow rate, to thereby provide a desired degree of measurement sensitivity in a range which includes the mass flow rate value indicated by said output signal.

5,355,724

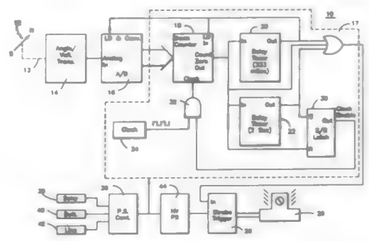
OPTICALLY BROADCASTING WIND DIRECTION INDICATOR

Jan A. Zysko, Merritt Island, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 23, 1993, Ser. No. 111,320

Int. Cl.[5] G01P *13/00*

U.S. Cl. 73—107.06 **14 Claims**



1. A method for optically indicating wind direction comprising the steps of:

a) determining wind direction relative to a fixed direction; and

b) actuating a light source to generate first and second flashes which are spaced in time in proportion to the angle of the determined wind direction relative to the fixed direction;

c) determining the angle of the wind direction relative to the fixed direction by visually observing the time interval between the first and second flashes of the light source.

5,355,725

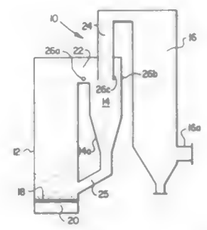
METHOD FOR DETERMINING THE MASS FLOW RATE OF SOLIDS IN A CYCLONE SEPARATOR FOR A FLUIDIZED BED REACTOR

David H. Dietz, Hampton, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Filed Jun. 25, 1993, Ser. No. 82,630

Int. Cl.[5] G01F *15/02;* **B09B** *3/00;* **F22B** *1/00*

U.S. Cl. 73—198 **2 Claims**



1. A method for determining the mass flow rate of solids in a cyclone separator having an inlet for receiving a mixture of solids and gases and an outlet for discharging the separated gases, said method comprising the steps of measuring the gas

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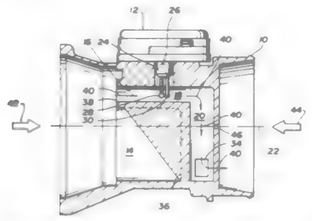
pressure at said inlet, measuring the gas pressure in said separator, measuring the gas pressure at said outlet, determining a first pressure drop across said outlet, determining a second pressure drop across said separator, determining the ratio of said first pressure drop to said second pressure drop, and establishing a curve of the relationship of said ratio to the ratio of the solids mass flow rate to the gas mass flow rate to enable the solids mass flow rate to be determined.

5,355,726

HOUSING FOR REDUCING BACK AIR FLOW TO MASS AIR FLOW SENSORS

Lawrence A. Zurek, Harrison Township, Macomb County, and Lorna J. Clowater, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 3, 1994, Ser. No. 176,987
Int. Cl.[5] G01F *1/68; G01M 15/00*
U.S. Cl. 73—202.5 17 Claims



1. A housing structure for reducing the sensitivity of a mass air flow sensor mounted thereon to back air flow, said housing structure comprising:

a housing having a main air flow passage passing therethrough, said housing having an input end, an output end and a longitudinal axis;

an auxiliary air passage disposed in said housing, said auxiliary air passage having a bypass passage substantially parallel to said longitudinal axis and a recovery chamber connected to said bypass passage, said bypass passage having an air inlet port and said recovery chamber having one end connected to said bypass passage and an opposite end, said opposite end having at least one outlet, said mass air flow sensor receivable in said bypass passage;

an internal structure enclosing said recovery chamber, said internal structure producing a low pressure region in the vicinity of said at least one outlet in response to an air flow through said main air flow passage, said low pressure region generating an air flow through said auxiliary air passage from said inlet port out through said at least one outlet; and

an aperture having a predetermined cross-sectional area provided through said internal structure on a side facing said output end of said housing intermediate said bypass passage and said at least one outlet, said aperture connecting said recovery chamber to said main air flow passage downstream of said internal structure.

5,355,727

METHOD OF MAKING AVERAGE MASS FLOW VELOCITY MEASUREMENTS

Malcolm M. McQueen, Fallbrook, Calif., assignor to Fluid Components, Inc., San Marcos, Calif.

Division of Ser. No. 543,337, Jun. 25, 1990, Pat. No. 5,167,153.
This application Aug. 19, 1992, Ser. No. 932,233
Int. Cl.[5] G01F *1/68*
U.S. Cl. 73—204.25 3 Claims

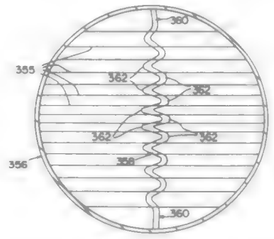
1. A method of measuring average mass flow velocity of gas in a duct where the gas has a nonuniform flow velocity distribution across the duct, the method comprising the steps of:

deploying at least one elongated, relatively stiff, wire-like distributed RTD sensing means across said duct from one side to the other, the RTD sensing means having heater means co-extensive in length with the RTD sensing means;

thermally sensing by the RTD sensing means physical information about the mass flow rate of the gas external to the RTD sensing means and developing signal outputs of the RTD sensing means representative of said information;

transmitting the signal outputs to a remote location; and

detecting and interpreting the signals at the remote location to obtain the desired information about the mass flow



velocity of fluid through said duct from the RTD signal outputs;

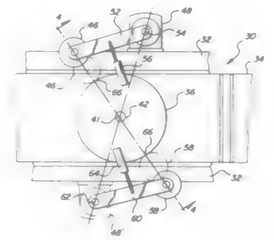
said distributed RTD means being deployed generally radially across said duct in a nonlinear configuration which places substantially equal lengths of said distributed RTD sensing means across substantially equal cross-sectional flow areas of said duct so that said signal output will substantially linearly represent average mass flow rate of fluid through said duct, said distributed RTD sensing means being arranged in a spiral configuration having a plurality of regularly angularly spaced spiral arms.

5,355,728

TIRE BALANCE MEASURING MACHINE FOR VARIOUS TIRE SIZES

Richard Hartmann, Jr., Brighton, Mich., assignor to Balance Technology, Inc., Ann Arbor, Mich.

Filed Jun. 22, 1992, Ser. No. 901,675
Int. Cl.[5] G01M *1/22*
U.S. Cl. 73—460 6 Claims



1. A wheel balancing machine for wheels of various diameters comprising:

a spindle having an axis for rotatably supporting a wheel on the axis including a collet for holding the wheel on the spindle;

wheel rotating means comprising a motor driven drum for frictionally engaging the outer perimeter of the wheel and means for moving the drum through a defined path between a driving and idle positions and for applying a first radial force to the wheel, so that the driving position of the drum on the wheel is established by and varies with the wheel diameter; and

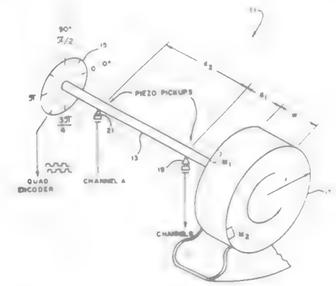
counterforce means operative irrespective of the wheel diameter for applying a second radial force to the wheel substantially equal to the first radial force and at a location on the wheel diametrically opposed to said driving position of the drum on the wheel.

5,355,729

SPLIT WEIGHT WHEEL BALANCING

Michael W. Douglas, St. Peters, Mo., assignor to Hunter Engineering Company, Bridgeton, Mo.

Filed Jan. 24, 1992, Ser. No. 824,999
Int. Cl.[5] G01M *1/08, 1/38*
U.S. Cl. 73—468 11 Claims



6. Apparatus for balancing a wheel and tire assembly comprising:

means for measuring imbalance of a wheel and tire assembly and for determining the magnitude and placement of a first single correction weight in an inner correction plane and the magnitude and placement of a second single correction weight in an outer correction plane to substantially correct the imbalance;

means responsive to the measuring and determining means for displaying the magnitude and placements of the first and second single correction weights to the user;

means for providing a split weight signal to the measuring and determining means, said measuring and determining means being responsive to the split weight signal to determine for at least one of the first or second single correction weights at least a pair of weight magnitudes and weight placements which are vectorially equivalent to the corresponding single correction weight in terms of correcting imbalance;

said display means being responsive to the determination of said at least a pair of weight magnitudes and weight placements to display said magnitude and weight placements to the user;

the measuring and determining means being responsive to the split weight signal to determine a first pair of weight magnitudes and placements equivalent to the corresponding single correction weight, said pair of weight magnitudes being smaller than said single correction weight; and

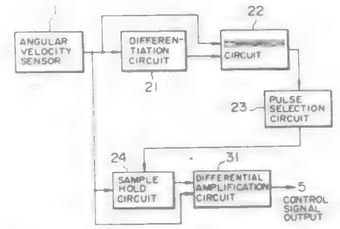
the measuring and determining means being responsive to an additional occurrence of the split weight signal to determine a second pair of weight magnitudes and weight placements equivalent to the corresponding single correction weight, the weight magnitudes of the second pair being greater than the weight magnitudes of the first pair and the placements of the second pair being farther apart than the placements of the first pair.

5,355,730

APPARATUS FOR DRIFT CANCELLATION IN ANGULAR VELOCITY DETECTING SENSOR

Yoshio Koizumi, Kawasaki, Japan, assignor to Taya Engineering Co., Ltd., Yokohama, Japan

Filed Mar. 10, 1993, Ser. No. 29,409
Claims priority, application Japan, Mar. 23, 1992, 4-064496
Int. Cl.[5] G01P *3/00*
U.S. Cl. 73—497 3 Claims



1. A drift canceling apparatus in which a detection output of an angular velocity detecting sensor having temperature/time drift is supplied to an object to be controlled to thereby control said object to be controlled, said apparatus comprising:

a reference signal extraction means for extracting a reference signal from the detection output of said angular velocity detecting sensor; said reference signal extraction means includes a differentiation circuit for differentiating the detection output of said angular velocity detecting sensor to generate an output signal , a comparison circuit for comparing the detection output of said angular velocity detecting sensor with said output signal of said differentiation circuit to produce a comparison circuit output signal, a selection circuit for selecting only an output in a required normal operation region from said comparison circuit output signal, and a sample hold circuit for sample-holding the detection output of said angular velocity detecting sensor in response to the output of said selection circuit to produce a sample hold signal to be used as said reference signal; and

a control signal generation means for generating a control signal from the output of said angular velocity detecting sensor on the basis of said reference signal so that said control signal is used to control said object to be controlled.

5,355,731

SPHERICITY DETERMINATION USING RESONANT ULTRASOUND SPECTROSCOPY

Raymond D. Dixon, Los Alamos; Albert Migliori, Santa Fe, and William M. Visscher, Los Alamos, all of N. Mex., assignors to The Regents of the University of California, Office of Technology Transfer, Alameda, Calif.

Filed May 8, 1992, Ser. No. 880,393
Int. Cl.[5] G01H *13/00*
U.S. Cl. 73—579 8 Claims

1. A method for grading spherical objects against predetermined values, comprising the steps of:

generating a resonant ultrasound spectrum from a spherical object, where said spectrum includes a plurality of fine-structure resonant frequency spectra;

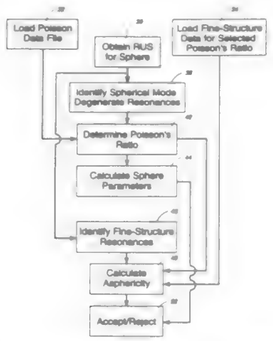
estimating from each one of said fine-structure resonant frequeny spectra a corresponding degenerate sphere-resonance frequency;

determining from said degenerate sphere-resonance frequencies of said spectrum sphere parameter values of said spherical object;

determining from said fine-structure resonant spectra of said

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spectrum and said sphere parameter values an asphericity value of said spherical object; and



comparing said asphericity value with said predetermined values to grade said spherical object.

5,355,732

VIBRATING TABLE WITH DRIVEN UNBALANCED SHAFTS

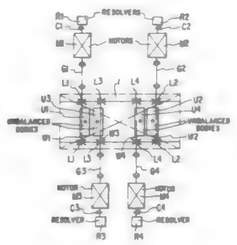
Manfred Anderl, Burbach; Gerhard Bogun, Herdorf, and Winfried Burkhard, Wenden-Hünsborn, all of Fed. Rep. of Germany, assignors to Hess Maschinenfabrik GmbH & Co. KG, Burbach-Wahlbach, Fed. Rep. of Germany

Filed Jan. 14, 1993, Ser. No. 960,392

Claims priority, application Fed. Rep. of Germany, May 22, 1991, 4116647

Int. Cl.[5] G01M *7/06*

U.S. Cl. 73—672 **7 Claims**



1. In a vibrator including:

(a) a vibrating table;

(b) a plurality of driven unbalanced shafts disposed within said vibrating table and arranged in pairs;

(c) a plurality of unbalanced bodies; a separate unbalanced body being connected to each unbalanced shaft; the unbalanced bodies being adapted to assume various vibrating frequencies and angular positions; and

(d) an adjustment means for varying the vibrating frequencies and angular positions of said unbalanced bodies relative to one another;

the improvement comprising

a plurality of motors; a separate motor being drivingly connected to each said driven unbalanced shaft; said motors being adapted to rotate in synchronism with one another at a predetermined rotational speed;

further wherein said adjustment means includes an electronic controller for regulating each of said motors, said electronic controller comprising:

means for changing the vibrating frequencies of said unbalanced bodies by briefly varying a rotational speed of said unbalanced shafts; and

means for changing the angular positions of said unbalanced bodies relative to one another by briefly varying a rotational speed of at least one driven unbalanced shaft of a pair of driven unbalanced shafts.

5,355,733

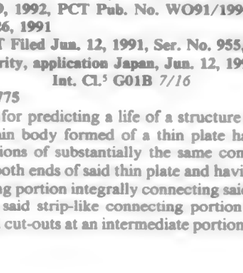
WIDE SCALE POINTER ARC, DIAPHRAGM GAUGE

Frank W. Murphy, Jr., Box 470248, Tulsa, Okla. 74147, and Lewis M. Carlton, Tulsa, Okla., assignors to Frank W. Murphy, Jr. and Murphy Management Inc., both of Tulsa, Okla.

Filed Jan. 14, 1992, Ser. No. 820,467

Int. Cl.[5] G01L *7/08*

U.S. Cl. 73—715 **26 Claims**



1. An indicator gauge comprising:

a gauge movement responsive to a sensed condition including at least:

a pivotal indicating pointer shaft,

a pinion gear fixedly mounted on said pointer shaft,

a pivotal gear segment engaging said pinion gear, and

a crankshaft configured to engage and move said pivotal gear segment in response to the sensed condition;

a condition sensing assembly abutting said gauge movement;

means for calibrating or adjusting the indicator gauge comprising at least:

a base plate having a first end and a second end, said first end being fixedly attached to said condition sensing assembly and said second end configured so as to be adjustable toward or away from said condition sensing assembly, a pivot plate pivotally mounted on said base plate, and an adjusting screw provided in said second end of said base plate for calibrating or adjusting said pivot plate; and

an indicating pointer connected to said pivotal indicating pointer shaft.

5,355,734

LIFE PREDICTING GAUGE FOR STRUCTURE AND LIFE PREDICTING METHOD EMPLOYING THE SAME

Katsuhiro Kajino, Kanagawa, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Japan

PCT No. PCT/JP91/00793, § 371 Date Dec. 9, 1992, § 102(e) Date Dec. 9, 1992, PCT Pub. No. WO91/19968, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 12, 1991, Ser. No. 955,862

Claims priority, application Japan, Jun. 12, 1990, 2-151667

Int. Cl.[5] G01B *7/16*

U.S. Cl. 73—775 **20 Claims**

1. A gauge for predicting a life of a structure comprising:

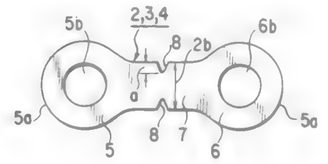
a gauge main body formed of a thin plate having annular ring portions of substantially the same configuration located at both ends of said thin plate and having a strip-like connecting portion integrally connecting said annular ring portions, said strip-like connecting portion formed with V-shaped cut-outs at an intermediate portion in opposition

to each other, said gauge main body having a fatigue characteristic related to a fatigue characteristic of said structure but having shorter life than a life of said structure; and

a crack gauge fitted between said V-shaped cut-outs.

3. A method for predicting a life of a structure comprising the steps of:

preparing a gauge having a fatigue characteristic related to a fatigue characteristic of said structure, said gauge breaking at a first time in response to a repeatedly applied stress load and said structure breaking at a second time in response to said repeatedly applied stress load, said first time earlier than said second time;



rigidly fixing said gauge to a predetermined portion on said structure;

determining said first time at which period said gauge breaks on the basis of a variation of a resistance in said gauge; and

predicting said second time at which point said structure will break on the basis of the first time thus determined.

5,355,735

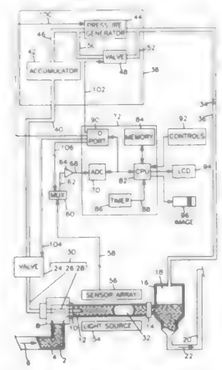
APPARATUS FOR METERING LIQUID FLOW

Mark E. Miller, Vancouver, and Ronald W. Evans, Delta, both of Canada, assignors to Datrend Systems Inc., British Columbia, Canada

Filed Feb. 23, 1993, Ser. No. 21,511

Int. Cl.[5] G01F *1/708*

U.S. Cl. 73—861.05 **10 Claims**



1. Apparatus for metering liquid flow, comprising:

(a) a conduit for conducting a liquid from an input port to an output port;

(b) gas injecting means for injecting a volume of gas into the liquid in the conduit;

(c) pressure sensing means for producing a fluid pressure signal representative of the pressure of the liquid within the conduit;

(d) gas supplying means responsive to the fluid pressure signal for supplying gas at a predetermined pressure to the gas injecting means; and

(e) indicating means responsive to the time required for the volume of gas to transit between at least one pair of positions located a predetermined distance apart along the conduit for indicating the flow of the liquid through the conduit.

5,355,736

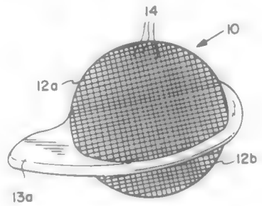
ABSORBER DEVICE AND PROCESS FOR USING SAME

Earl O. Skogley, 3535 Stucky Rd., Bozeman, Mont. 59715

Filed Jan. 14, 1992, Ser. No. 821,474

Int. Cl.[5] E21B *49/00;* **G01N** *1/10, 30/00*

U.S. Cl. 73—863.21 **9 Claims**



1. A free standing, self contained solute adsorber device comprising:

a pair of hollow, semi-spherical shells being joined together to form a hollow, spherical capsule;

the semi-spherical shells being formed of a porous, shape retaining material;

the adsorber device having an adsorber material held within the capsule.

5,355,737

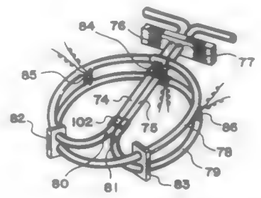
SINGLE VIBRATING CONDUIT MASS FLOWMETER

Hyok S. Lew, and Yon S. Lew, both of 7890 Oak St., Arvada, Colo. 80005

Filed May 3, 1993, Ser. No. 55,280

Int. Cl.[5] G01F *1/84*

U.S. Cl. 73—861.38 **20 Claims**



17. An apparatus for measuring mass flow rate of media comprising in combination:

a) a conduit with two extremities restrained from experiencing lateral movements including two end sections respectively extending from the two restrained extremities of the conduit in an over-hanging relationship and a looped midsection of a loop angle approximately equal to 720 degrees comprising two approximately 360 degree loops superimposed on one another with a space therebetween, wherein the looped midsection of the conduit connects the two end sections of the conduit to one another in a configuration substantially symmetric about a center plane perpendicularly intersecting with the two 360 degree loops and dividing the conduit into two substantially equal opposite halves, and a first half and a second half of each of the two 360 degree loops being respectively located on

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two opposite sides of the center plane; wherein conduit center lines of the two 360 degree loops are respectively disposed substantially on two approximately parallel planes respectively located on two opposite sides of the two end sections of the conduit, each of said conduit center lines being a line passing through the geometric center of every cross section of each of the two 360 degree loops;

b) means for exerting a vibratory force on the two 360 degree loops in an action-reaction relationship on a single line disposed on the center plane and perpendicular to the two approximately parallel planes, said vibratory force generating a relative flexural vibration between the two 360 degree loops in directions perpendicular to the two approximately parallel planes; and

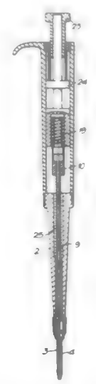
c) first means for measuring the relative flexural vibration between the first halves of the 360 degree loops located on one side of the enter plane, and second means for measuring the relative flexural vibration between the second halves of the two 360 degree loops located on the other side of the center plane opposite to said one side.

5,355,738

POSITIVE-DISPLACEMENT PIPETTE

Mauno Heinonen, Vantaa, Finland, assignor to Labsystems OY, Helsinki, Finland

Filed Jan. 9, 1992, Ser. No. 818,386
Claims priority, application Finland, Jan. 7, 1991, 910087
Int. Cl.[5] B01L *3/02;* **G01N** *1/14*
U.S. Cl. 73—864.13 **9 Claims**



1. A positive-displacement pipette comprising:

a longitudinally extending body portion having a bore passing therethrough,

a hand grip portion disposed at one end of said body,

a tip portion coupled to and coaxially extending from said hand grip portion,

a cylinder connected to and extending coaxially from said tip portion,

said cylinder having a jet at its bottom end,

a piston with a piston rod connected thereto disposed in the body of said pipette,

said piston rod extending through said cylinder to said jet,

a gripping arm in the form of a slidable sleeve movably supported within the bore of said body and adapted for gripping said piston rod by force applied to said slidable sleeve to cause said sleeve to attache itself to said piston rod by friction, a movable releasing rod provided inside of the slidable sleeve by means of which the piston rod can be separated from the slidable sleeve,

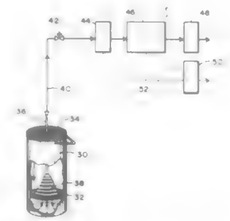
and means located on the hand grip portion of the body for applying force to said slidable sleeve and hence to said piston rod extending through said cylinder to said jet.

5,355,739

APPARATUS FOR MEASURING GAS EMISSION RATE FROM SOIL

Charles D. Cooper, Maitland; Debra R. Reinhart, Oviedo, and Debra R. H. Seligman, Altamonte Springs, all of Fla., assignors to University of Central Florida, Orlando, Fla.

Filed Mar. 26, 1993, Ser. No. 37,332
Int. Cl.[5] G01N *7/14, 1/22*
U.S. Cl. 73—864.73 **8 Claims**



1. Apparatus for measuring gas flux rate from a surface comprising:

an elongated tubular housing having a lower open end and an upper open end;

support means positioned within said housing a predetermined distance from said lower open end;

a gas sampling wand extending into said housing from said upper open end and supported on said support means, said wand having a lower open end at said support means generally co-planar with said lower open end of said housing;

air baffling means coupled to said upper open end of said housing for reducing velocity and pressure fluctuations of atmospheric air entering said housing from said upper end; and

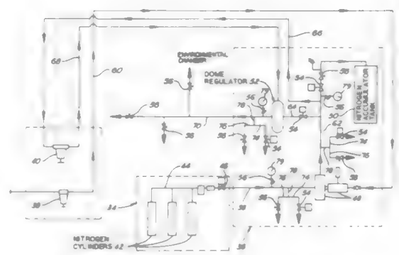
detector means coupled to said wand for measuring the concentration of selected gases within said housing.

5,355,740

VEHICLE AIR BAG TEST APPARATUS

Brian M. Beaudet, Lake Orion, and Frederick M. Peters, Northville, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Apr. 19, 1993, Ser. No. 47,932
Int. Cl.[5] B60R *21/16*
U.S. Cl. 73—865.6 **12 Claims**



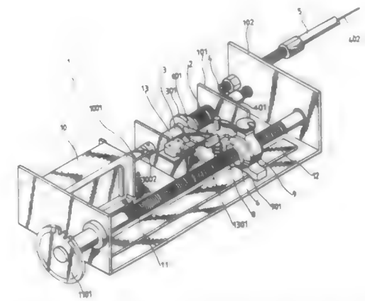
1. A test fixture for simulating the inflation profile of a vehicle air bag, the test fixture comprising cavity block containing a gas at a first predetermined pressure, an accumulator containing said gas at a second higher predetermined pressure, a diffuser containing an air bag at ambient pressure, first rupturable means intermediate said accumulator and said cavity block adapted to rupture at a third predetermined pressure intermediate said first and second predetermined pressures, second rupturable means intermediate said diffuser and said cavity block adapted to rupture at a fourth predetermined pressure intermediate said first and second predetermined pressures, and valve means operatively connected to said cavity block to selectively open to release said gas from said cavity block at said first predetermined pressure, to thereby increase the pressure differential across said first rupturable means to rupture same and then subject the second rupturable means to said released gas to rupture same and, thence, subject said diffuser to said released gas to inflate said air bag.

5,355,741

FAILSAFE LIMIT SWITCH WITH AUTOMATIC RESET FOR ROLLING FIRE DOOR

Tsung W. Hsieh, 25 Fen-Liao Road, Tung-Lin, Lin-Ko, Taipei County, Taiwan

Filed Oct. 23, 1992, Ser. No. 965,724
Int. Cl.[5] G01G *17/00;* **E06B** *9/56*
U.S. Cl. 74—2 **7 Claims**



1. A failsafe limit switch with automatic reset, comprising of:

(a) a plunger movable between a first secured position and a second triggered position, said plunger storing mechanical energy in an energy storage means as said plunger moves from said second triggered position to said first secured position; and

(b) a catch, said catch movable between a normally engaged position and a released position, said catch in said normally engaged position holding said plunger in said first secured position, said catch in said released position allowing said plunger to move into said triggered position under the impetus of said energy storage means ; and

(c) a solenoid with a movable arm attached to said plunger, said arm moving said plunger from said second triggered position to said first secured position when said solenoid is energized; and

(d) a reversibly rotatable input shaft; and

(e) a collar, said collar's position relative to said catch responsive to the angular displacement of said input shaft, said collar contacting and moving said catch from said normally engaged position to said released position beyond a particular angular displacement of said input shaft; and

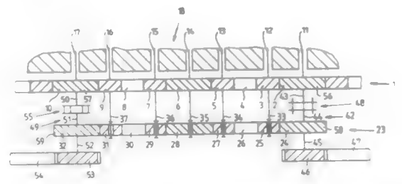
(f) a means for remotely communicating the movement of said plunger from said secured position to said triggered position.

5,355,742

DEVICE FOR AVOIDING FLANK BLACKLASH IN GEAR TRAINS

Joachim Herrmann, Mannheim, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Jul. 9, 1993, Ser. No. 89,676
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1992, 4222514
Int. Cl.[5] F16H *55/18;* **B41F** *5/16*
U.S. Cl. 74—409 **12 Claims**



1. Device for avoiding gear flank backlash, comprising

a first gear train including a plurality of mutually meshing gear wheels with a first initial wheel and a first end wheel, and means for driving said first initial wheel;

a second gear train including a plurality of mutually meshing gear wheels with a second initial wheel and a second end wheel, and means for driving said second end wheel;

means for selectively rotatably and non-rotatably connecting said first initial wheel of said first gear train with said second initial wheel of said second gear train; and

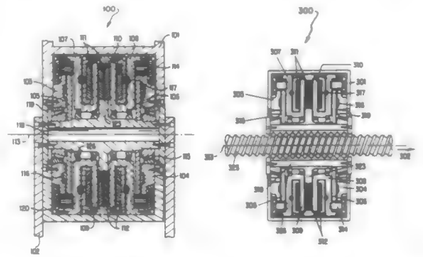
tensioning means connected between said first and second end wheels for producing a torque in a rotational direction of said gear wheels of said first gear train between said first initial wheel and said first end wheel for ensuring definite flank alignment of said gear wheels during operation of said first gear train.

5,355,743

ROBOT AND ROBOT ACTUATOR MODULE THEREFOR

Delbert Tesar, Austin, Tex., assignor to The University of Texas at Austin, Austin, Tex.

Filed Dec. 19, 1991, Ser. No. 810,429
Int. Cl.[5] B25J *17/00, 18/00;* **F16H** *1/32*
U.S. Cl. 74—479 BP **8 Claims**



1. An actuator module for inducing motion of a first robot member relative to a second robot member, the actuator module comprising a Ferguson epicyclic gear train, an integral motor and integrated control means, the gear train comprising:

a first sun gear connected to the first robot member and disposed substantially perpendicular to a central rotational axis;

a second sun gear connected to the second robot member

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and disposed substantially perpendicular to the central rotational axis;

a planet gear carrier disposed substantially perpendicular the central rotational axis;

a plurality of planet gears rotatably mounted in the planet gear carrier and adapted to rotate outside the sun gears and to mesh with the sun gears;

a central shaft about which the planet gear carrier rotates, the central shaft being substantially aligned with the central rotational axis.

5. An actuator module for inducing linear motion of a first robot member relative to a second robot member along a central rotational axis, the actuator module comprising a Ferguson epicyclic gear train, an integral motor and integrated control means, the gear train comprising:

a first base gear connected to the first robot member and disposed substantially perpendicular to the central rotational axis;

a second base gear disposed substantially perpendicular to the central rotational axis;

a planet gear carrier disposed substantially perpendicular the central rotational axis;

a plurality of planet gears rotatably mounted in the planet gear carrier and adapted to mesh with the first and second base gears;

a central shaft about which the planet gear carrier rotates, the central shaft being substantially aligned with the central rotational axis.

5,355,744

TWO DIMENSIONAL DRIVE SYSTEM

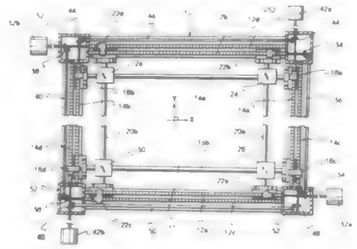
Ken Yanagisawa, c/o Kabushiki Kaisha Mechanic Sekkei Jimusho, 5175-1, Ooaza Toyoshina, Toyoshina-machi, Minamiazumi-gun, Nagano-ken, Japan

Filed May 11, 1993, Ser. No. 59,364

Claims priority, application Japan, May 12, 1992, 4-146654

Int. Cl.[5] G05G *11/00*

U.S. Cl. 74—479 PH **8 Claims**



1. A two dimensional drive system, comprising:

a pair of X-guides being arranged parallel to an X-direction;

a pair of first Y-guides being arranged parallel to a Y-direction perpendicular to the X-direction;

a pair of second Y-guides being arranged parallel to said first Y-guides;

a first X-shaft being arranged parallel to said X-guides, each end of said first X-shaft being connected to each of said first, Y-guides, said first X-shaft being capable of moving along said first Y-guides;

a second X-shaft being arranged parallel to said X-guides, each end of said second X-shaft being connected to each of said second Y-guides, said second X-shaft being capable of moving along said second Y-guides;

a Y-shaft being arranged parallel to said first Y-guides and said second Y-guides, each end of said Y-shaft being connected to each of said X-guides, said Y-shaft being capable of moving along said X-guides;

a first moving body always locating at a cross point of said first X-shaft and said Y-shaft, said first moving body being capable of moving on said first X-shaft and said Y-shaft;

a second moving body always locating at a cross point of said second X-shaft and said Y-shaft, said second moving body being capable of moving on said second X-shaft and said Y-shaft;

an X-drive mechanism for moving said Y-shaft along said X-guides;

a first Y-drive mechanism for moving said first X-shaft along said first Y-guides; and

a second Y-drive mechanism for moving said second X-shaft along said second Y-guides.

5,355,745

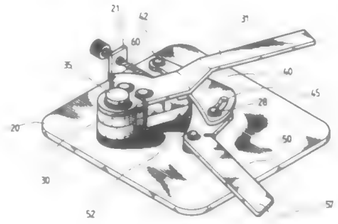
BICYCLE SPEED CONTROLLER

Huann-Wen Wu, Miao Li, and Tieh-Yung Hsuan, North Area Taichung, both of Taiwan, assignors to Chuan Fei Industrial Limited Company, Taichung Hsien, Taiwan

Filed Aug. 12, 1992, Ser. No. 928,367

Int. Cl.[5] B62M *25/04*

U.S. Cl. 74—502.2 **3 Claims**



1. A bicycle speed controller comprising a control mechanism comprising a casing to hold a control mechanism, an upper stop plate and a curved lower stop plate for controlling shifting of speeds of a bicycle controller, said control mechanism being comprised of a sector ratchet wheel, a cable winch and a lever connected together and pivotably fastened to said casing, and characterized in that said upper stop plate has a through hole on one end pivoted to said casing, a pawl on one side on the middle engaging said sector ratchet wheel, a sliding slot on an opposite end in longitudinal direction hung on a guide post on said casing, and a bottom rod projected from a bottom edge thereof; said curved lower stop plate has a through hole on the middle pivotably secured to said casing, a pressure bar on one end extended out of said casing in a direction deviated from said lever, a stop edge on an opposite end stopped against the bottom rod on said upper stop plate, a pawl adjacent to the stop edge spaced from said sector ratchet wheel, and a sliding slot in latitudinal direction hung on the guide post on said casing.

5,355,746

MOUNT FOR OPTIONAL EQUIPMENT FOR BICYCLES

Michael Lin, Taichung, Taiwan, assignor to Topeak Inc., Taichung, Taiwan

Filed Aug. 4, 1993, Ser. No. 102,070

Int. Cl.[5] B62K *21/12*

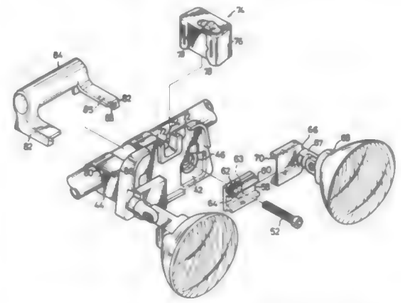
U.S. Cl. 74—551.8 **9 Claims**

1. A mount in combination with a handle bar for optional equipment for bicycles, comprising:

a plate comprising at least one hole formed therein, at least one pair of flanges formed on a first side thereof and at least one tubular portion formed on a second side thereof, the pair of flanges engaging with a pair of flanges formed on a slide attached to optional equipment;

at least one steel strip comprising a nut attached on a first tip thereof and a hole formed in a second tip thereof, the first and second tips of the steel strip disposed in the tubular portion; and

at least one bolt inserted through the hole formed in the mount and the hole formed in the second tip of the steel strip and further engaged in the nut so that the tubular portion is moved towards the handle bar and that the tubular portion abuts against the handle bar and that the mount is firmly mounted on the handle bar.



5,355,747

FLYWHEEL ASSEMBLY

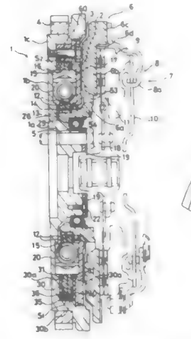
Koji Kajitani; Hirotaka Fukushima; Mamoru Okubo; Naoki Yanagida; Mitsuhiko Takenaka; Mitsuo Touji, and Kozo Yamamoto, all of Neyagawa, Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

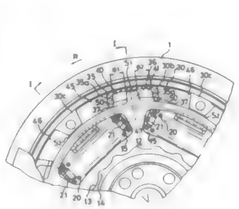
Filed Sep. 1, 1992, Ser. No. 938,863

Claims priority, application Japan, Sep. 4, 1991, 3-070801[U]; Sep. 4, 1991, 3-070802[U]; Sep. 4, 1991, 3-070803[U]; Sep. 4, 1991, 3-070804[U]; Sep. 4, 1991, 3-070805[U]; Sep. 18, 1991, 3-237926; Nov. 8, 1991, 3-292954

Int. Cl.[5] F16F *15/22;* **G05G** *1/00*

U.S. Cl. 74—573 F **14 Claims**





1. A flywheel assembly, comprising:

a first flywheel connectable to an engine;

a second flywheel supported rotatably on said first flywheel, and together with said first flywheel defining an interior cavity, wherein said second flywheel includes a friction facing, a capturing channel formed radially inwardly of said friction facing for capturing escaped lubricating fluid driven on said friction facing-side by centrifugal force, and a plurality of circumferentially elongate through holes extending from said capturing channel to said cavity for guiding fluid captured by said capturing channel to said cavity; and

a viscous damping mechanism disposed in said cavity for viscous damping of torsional vibrations between said flywheels through a fluid contained in said damping mechanism;

said first flywheel comprises a central first hub extending toward said second flywheel, and said second flywheel comprises a central second hub extending toward said first flywheel and enclosing said first hub;

said flywheel assembly including a bearing disposed between said first and second hubs, wherein a beveled portion is chamfered radially inward of a crown of said second hub, for redirecting stray fluid proximal to said bearing and from said viscous damping mechanism, and returning said fluid to said viscous damping mechanism under centrifugal force.

5,355,748

ROTATION TRANSMITTING DEVICE FOR AN INTERAXLE GEARLESS DIFFERENTIAL

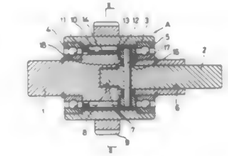
Kenichiro Ito, Shizuoka; Hiromi Nojiri, and Kenro Adachi, both of Iwata, all of Japan, assignors to NTN Corporation, Osaka, Japan

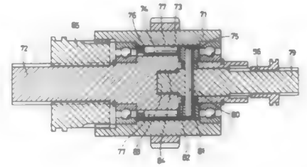
Filed May 27, 1992, Ser. No. 889,209

Claims priority, application Japan, May 31, 1991, 3-129157; Jun. 26, 1991, 3-154702

Int. Cl.[5] B60K *17/00;* **F16H** *35/04*

U.S. Cl. 74—650 **3 Claims**





1. A power transmission changeover device for distributing a driving force of an engine to front and rear wheels, said device comprising:

an input shaft coupled to a transmission of an engine;

a first output member rotatably mounted on said input shaft;

a second output member coupled to a differential of the rear wheels;

a cage rotatably mounted between opposed surfaces of said input shaft and said first output member and formed with a plurality of pockets;

engaging elements operatively mounted in said pockets so as to engage said opposed surfaces when said cage and said input shaft rotate relative to each other and to disengage said opposed surfaces when said first output member and said second output member rotate relative to each other;

resilient members mounted in said pockets for keeping said engaging elements out of engagement with said opposed surfaces, said cage and said second output member being coupled to said input shaft with a gap formed therebetween in the direction of rotation so as to be rotatable together, said cage being coupled to said second output member by means of a pin; and

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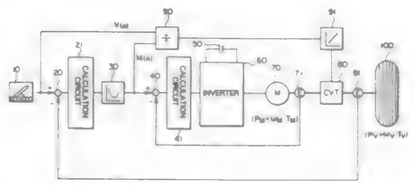
a retaining member for resiliently retaining said input shaft and said second output member in a neutral position with respect to said engaging elements, said first output member being provided with a connecting portion through which said first output member is connected with a drive shaft coupled to a front wheel differential, said drive shaft being provided in parallel to said first output member.

5,355,749

CONTROL APPARATUS AND CONTROL METHOD FOR MOTOR DRIVE VEHICLE

Sanshiro Obara, Ibaraki; Ryoso Masaki, Hitachi; Toshiaki Okuyama, Ibaraki; Tsutomu Ohmae, Hitachi; Keigo Naoi, Katsuta, and Makoto Shioya, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 17, 1992, Ser. No. 992,112
Claims priority, application Japan, Dec. 20, 1991, 3-338140
Int. Cl.[5] F16H *59/36*
U.S. Cl. 477—20 13 Claims



1. A control apparatus of a vehicle driven by an electric motor, comprising:

means for generating a target vehicle speed according to an operator input of an accelerator device;

vehicle speed control means, having means for detecting actual speed of said vehicle and means for calculating difference between said target vehicle speed and the actual vehicle speed, for controlling a vehicle speed so as to make the difference zero;

motor speed instruction means for receiving an instruction value corresponding to a value of said different and for generating a target motor speed according to a predetermined high efficiency pattern whereon maximum efficiency points are plotted in relation to the motor speed values and motor power values obtained from values of said difference;

motor control means for receiving said target motor speed from said motor speed instruction means and driving said electric motor in said target motor speed;

variable transmission means for receiving output of said electric motor and varying rotation speed of said output of the motor in a transmission ratio instructed so as to transfer the rotation to a drive shaft of said vehicle; and

transmission ratio calculating means for determining said transmission ratio on the basis of said target vehicle speed and said target motor speed and instructing said transmission ratio to said variable transmission means.

5,355,750

ROLLING CONE BIT WITH IMPROVED WEAR RESISTANT INSERTS

Danny E. Scott, Houston, Tex.; Redd H. Smith, and Gordon A. Tibbitts, both of Salt Lake City, Utah, assignors to Baker Hughes Incorporated, Houston, Tex.

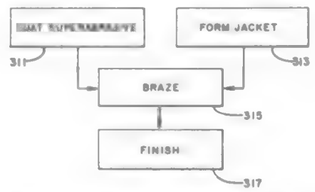
Division of Ser. No. 895,594, Jun. 8, 1992, which is a continuation-in-part of Ser. No. 662,935, Mar. 1, 1991, Pat. No. 5,119,714. This application Nov. 29, 1993, Ser. No. 159,009
Int. Cl.[5] B21K *5/02*
U.S. Cl. 76—108.2 16 Claims

1. A method of forming a insert for use in an earth-boring bit having a body and at least one bearing shaft depending therefrom, at least one cutter cone mounted for rotation on the bearing shaft, the cutter cone having a plurality of sockets formed therein to receive the insert by interference fit, the method comprising the steps of:

selecting at least one superabrasive element having desired wear-resistant properties and a maximum temperature of thermal stability;

coating at least a portion of the superabrasive element with at least one layer of metallic material;

forming a hard metal jacket of fracture-tough material;



providing the hard metal jacket with an opening at a selected end thereof to define a receptacle cavity therein; and

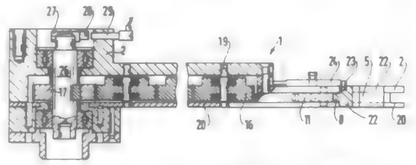
securing the superabrasive element in the receptacle cavity of the hard metal jacket by introducing a binder material therebetween, the step of securing serving to establish both mechanical and metallurgical bonds between the superabrasive element, the at least one layer of metallic material, the binder material, and the fracture-tough material of the hard metal jacket.

5,355,751

MOTOR-DRIVEN WRENCH

Wolfgang Specht, Gaildorf, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 851,648, Mar. 16, 1992, abandoned. This application Feb. 26, 1993, Ser. No. 23,567
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1991, 9103252[U]
Int. Cl.[5] B25B *21/00*
U.S. Cl. 81—57.14 17 Claims



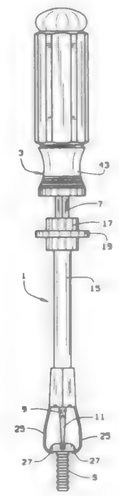
1. A motor-driven wrench, comprising a housing having a recess forming a wrench opening; a rotatable wrench wheel supported in said housing, said wrench wheel having a wrench wheel opening and an engaging formation, said wrench opening and said wrench wheel opening being is alignment; drive means for rotary driving said wrench wheel and having at least two engaging portions which engage said engaging formation of said wrench wheel and are spaced from one another by a distance which is greater than a width of said wrench opening; marking means identifying an open position of the wrench; and sensor means sensing a position of said marking means and thereby determining said open position of the wrench, said sensor means being formed to recognize said marking means in a contactless way and to produce an electrical signal for stopping a rotation of said wrench wheel in said open position of said wrench.

5,355,752

SCREWHOLDER FOR SCREWDRIVER

Christopher S. Keenan, Colorado Springs, and Joseph N. Varnell, III, Black Forest, both of Colo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 14, 1994, Ser. No. 194,911
Int. Cl.[5] B25B *23/10*
U.S. Cl. 81—453 10 Claims



1. A screwholder adapted to be mounted over a screwdriver shank that includes an outwardly flared blade section adjacent a screwdriver tip, the screwholder comprising:

a hollow extension tube for mounting over the screwdriver shank, said hollow extension tube having an enlarged section at one end for engagement and displacement along the screwdriver shank by the thumb of a user and screw gripping fingers attached to an opposite end for gripping a screw;

said screw gripping fingers extending upwardly from the hollow extension tube, an inner retaining plate that is secured to an outer housing at an upper end, thereof said outer housing being slidably mounted to said extension tube said screw gripping fingers being captured between said inner retaining plate and said outer housing and further having outer free ends for gripping opposite areas of a screw;

a compressible spring positioned within said outer housing and extending between the inner retaining plate at one end of the outer housing and the opposite end of the hollow extension tube which is positioned within a lower end of the outer housing; and

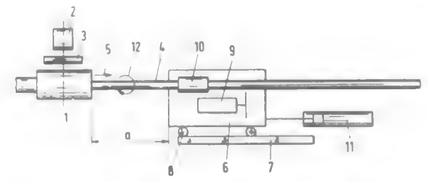
said inner retaining plate having a restricted opening for engaging the outwardly flared blade section of the screwdriver to restrict disassembly of the screwholder relative to the screwdriver, whereby engagement of the enlarged section and movement of the hollow extension tube toward the screwdriver tip causes binding engagement of the restricted opening of the inner retaining plate with the outwardly flared blade section for compression of the compressible spring to enable the outer free ends of the screw gripping fingers to be moved apart for release or gripping of opposite areas of a screw.

5,355,753

METHOD AND ARRANGEMENT FOR CUTTING COLD FILIERHEI TUBES

Karl-Heinz Häusler, Korschenbroich; Horst Stinertz, Willich, and Werner Henze, Langenfeld, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Apr. 27, 1993, Ser. No. 55,211
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1992, 4238961
Int. Cl.[5] B23D *45/20;* B26D *1/60*
U.S. Cl. 83—37 2 Claims



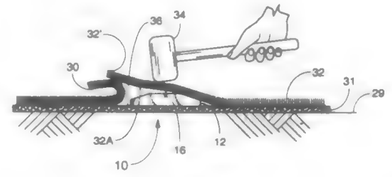
1. A method of cutting cold pilgered tubes capable of bearing an elastic torsional load during rolling in a rolling zone of a cold pilger rolling mill with reciprocating rolling stand and with intermittent advancing movement and intermittent rotation of the tube at one of both dead centers of the rolling stand, the method comprising: imparting on the tube along a distance range thereof behind the rolling zone a constant rotation corresponding to an average speed of rotation of the tube such that the tube is temporarily elastically twisted along a portion of the distance range near the rolling zone, wherein the distance range is selected in accordance with parameters determined by the material and dimensions of the tube so that the twisting does not exceed the yield point of the tube material; cutting the tube within the distance range outside the twisted portion during the constant rotation synchronously with the advancing movement of the tube in the direction of the longitudinal axis thereof.

5,355,754

CARPET SEAM CUTTER

Billy Baker, 5716 Tiger Trail, Fort Worth, Tex. 76126

Filed Oct. 8, 1992, Ser. No. 960,488
Int. Cl.[5] B26B *29/06*
U.S. Cl. 83—679 3 Claims



1. Apparatus for cutting the backing of a section of pile carpet laid on a supporting surface so as to make a hidden edge, said apparatus comprising;

hidden edge clamping means affixed to the supporting surface and having a closing means for clamping a folded predetermined width of carpet edge;

an elongate blade including a longitudinal cutting edge;

base means having a flattened shape with upper and lower surfaces for placement beneath a carpet section and having a straight reference edge for placement against said clamping means;

means for affixing said elongate blade at said upper surface so that said cutting edge protrudes thereabove by a dimen-

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sion at least equal to the thickness of the carpet backing to be cut with said blade edge being parallel to said reference edge at a dimension for cutting said predetermined width; and

means, opposed to said cutting edge to cooperate therewith, for urging the backing of said pile carpet section against said cutting edge to cut through said backing while said reference edge cooperates with said clamping means so as to provide said predetermined width of carpet for clamping by said closing means.

5,355,755

CIRCUIT BOARD TRIMMING APPARATUS AND METHOD

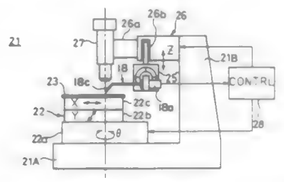
Yuji Sakata; Hidenori Sekiguchi, and Fumio Tabata, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 3, 1993, Ser. No. 70,853

Claims priority, application Japan, Jun. 4, 1992, 4-144525; Jul. 13, 1992, 4-184240; Oct. 1, 1992, 4-262613; Apr. 20, 1993, 5-093383

Int. Cl.[5] B24B *7/22;* **H05K** *3/22;* **H01P** *1/205*

U.S. Cl. 83—875 **33 Claims**



15. A circuit board trimming method comprising the steps of:

(a) pressing a cutter excited with an ultrasonic oscillation against a wiring pattern formed on the surface of a circuit board; and

(b) cutting a defect included in said wiring pattern by moving said cutter with respect to said circuit board in a direction parallel to a main surface of said circuit board, while said cutter is being pressed against said circuit board,

said pressing step including a step of measuring a force exerted by said cutter on the surface of said circuit board, and

said cutting step including a step of controlling said force to be at a specified level.

5,355,756

SOUND-ENHANCED STRINGED MUSICAL INSTRUMENTE

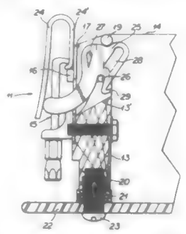
John F. Geiger, 190 Berwick Dr., Atlanta, Ga. 30328-1205

Filed Feb. 16, 1993, Ser. No. 17,596

Int. Cl.[5] G01D *1/10, 1/08, 3/02*

U.S. Cl. 84—270 **8 Claims**

1. A banjo comprising a pot having a generally cylindrical rim, a flexible head mounted tautly to one open end of said rim and a reflector mounted to the other open end of said rim, a resonator ring having a reentrant portion mounted rigidly to said rim and a vibratory portion spaced from said rim, a head ring mounted in contact with said head and a plurality of



acoustical links mounted in contact with said head ring and with said resonator ring vibratory portion.

5,355,757

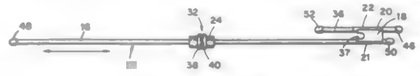
STRING INSTRUMENT BOWING PRACTICE DEVICE

Kathryn C. Plummer, 3416 Benham Ave., Nashville, Tenn. 37215

Filed Jan. 14, 1994, Ser. No. 180,981

Int. Cl.[5] G10D *1/02*

U.S. Cl. 84—283 **10 Claims**



1. A device for practicing bowing of a stringed musical instrument, comprising a first elongated shaft means of a substantially uniform cross-sectional dimension over essentially the full length thereof and having first and second end regions, rectangular block means having substantially parallel first and second longitudinally extending edge regions and attached at the first edge region thereof to the first shaft means at the first end region thereof, a second elongated shaft means of a length substantially less than that of said first shaft means attached to the rectangular block means at the second edge region thereof and disposed in a longitudinal plane substantially parallel to and spaced from said first shaft means, elongated sleeve means having a elongated passageway therethrough of a substantially uniform cross sectional dimension slightly larger than the cross sectional dimension of said first shaft means for receiving therein said first shaft means in a relatively movable manner with respect to said sleeve means over substantially the full length of said first shaft means, and engagable means supported by said sleeve means and adapted to be engaged for maintaining the sleeve means n a fixed position with respect to the relatively movable first shaft means.

5,355,758

Patent Not Issued For This Number

5,355,759

HOLDING STRUCTURE FOR GUITAR STRINGS

Yoshiki Hoshino, Aichi, Japan, assignor to Hoshino Gakki Co., Ltd., Japan

Filed Aug. 9, 1993, Ser. No. 104,367

Claims priority, application Japan, Nov. 11, 1992, 4-084308[U]

Int. Cl.[5] G10D *3/04*

U.S. Cl. 84—298 **10 Claims**

1. A structure for holding a guitar string in the region of a bridge of a guitar, comprising:

a base plate supported in the region of the bridge of the guitar;

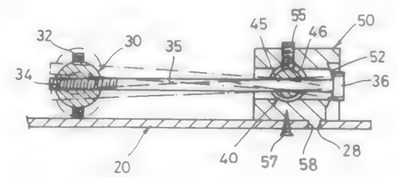
a saddle disposed above the base plate and positioned so that the guitar string is supported to pass over the saddle such that the saddle may adjust the height of the string at the saddle and/or may adjust the tension on the string;

saddle height adjusting means extending from the base plate to the saddle and operable for adjusting the height of the saddle above the base plate;

means for adjusting the front to back position of the saddle with respect to the base plate, comprising:

a first screw to be threaded into the saddle generally in the front-back direction, the first screw having a head that is behind and spaced away from the saddle;

a fixed member fixed on the base plate behind the saddle for supporting the first screw, the fixed member having a hole in it extending across the direction of extension of the string;



a holding member for holding the first screw, the holding member having a body that is supported in the hole of the fixed member and that is rotatable with respect to the fixed member in the hole; a groove in the body of the holding member, a holding part of the body being positioned at the groove to hold the first screw inserted into the groove;

an engaging part on the fixed member for engaging the head of the first screw which determines the forward position of the first screw and of the saddle on the first screw;

fixing means in the fixed member for holding the first screw in the tilted position with respect to the fixed member which tilted position is established by the saddle height position adjusting means.

5,355,760

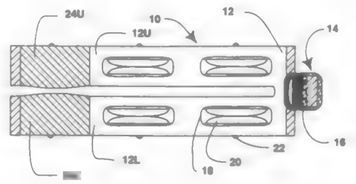
MULTI-SOUND TAMBOURINE

Thomas W. Bein, 1283 Swan Dr., Annapolis, Md. 21401, and Woodwerth C. Bein, III, 106 Philadelphia Ave., Lavallette, N.J. 08735

Filed Oct. 13, 1993, Ser. No. 135,437

Int. Cl.[5] G10D *13/02*

U.S. Cl. 84—418 **46 Claims**



1. An improved tambourine whereby in operation the player can generate a knock sound with the instrument in addition to the sound generated by the jingles, comprising:

(a) a rigid enclosed frame with open ends;

(b) a plurality of pairs of jingle sound generating elements connected to said frame in openings in the side of said frame at predetermined locations;

(c) a handle for manually grasping said frame;

(d) a slot formed perpendicular to the axis of said frame that extends around the perimeter of said frame a sufficient distance to permit the two sides formed above and below the slot to bend toward each other and touch when struck by the player, which creates a knocking sound when the two sides of the frame impact each other.

5,355,761

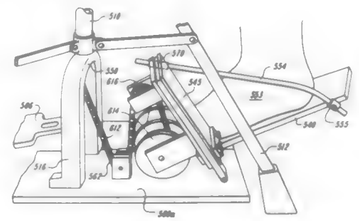
HEEL DRIVEN PEDAL ACTUATOR FOR PERCUSSION INSTRUMENTS SUCH AS HI-HAT CYMBALS AND THE LIKE

Susan D. Ward, Vancouver, Wash., and Keith M. Swartz, Scarsdale, N.Y., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 2, 1993, Ser. No. 12,203

Int. Cl.[5] G10D *13/02*

U.S. Cl. 84—422.2 **12 Claims**



1. An actuator for a percussion instrument having a movable sound initiation member, the actuator comprising:

a. base adapted to rest upon the ground;

b. a pedal having a heel pad free to be displaced vertically toward and away from the base in response to vertical displacement of a user's heel toward and away from the base;

c. connected between the pedal and the sound initiation member, a means for transducing a vertical displacement of the heel into a motion of the sound initiation member; and

d. means for adjusting the degree of motion of the sound initiation member that is transduced in response to a specified degree of vertical displacement of the heel pad.

10. An actuator for a hi-hat cymbal having a movable sound initiation member, the actuator comprising:

a. a base adapted to rest upon the ground;

b. a heel pad, having a toe facing edge and a heel facing edge;

c. connected between the heel pad and the sound initiation member, a means for transducing vertical motion of the heel facing edge into a motion of the sound initiation member

where the heel pad is arranged such that clearance is provided to free a user's leg and torso from interference with the cymbal and means for transducing heel pad motion when a user's heel is placed upon the heel pad adjacent the heel facing edge and with the users's toes pointing in the direction of the toe facing edge.

5,355,762

EXTEMPORANEOUS PLAYING SYSTEM BY POINTING DEVICE

Toshiyuki Tabata, Kanagawa, Japan, assignor to Kabushiki Kaisha Koei, Kanagawa, Japan

Continuation of Ser. No. 764,544, Sep. 24, 1991, abandoned. This application Feb. 11, 1993, Ser. No. 17,327

Claims priority, application Japan, Sep. 25, 1990, 2-252000

Int. Cl.[5] G10H *1/06, 1/26*

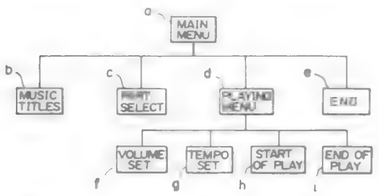
U.S. Cl. 84—609 **13 Claims**

1. In a music playing method including the steps of inserting software into a computer, and operating the computer to generate sound from a speaker through a sound source, the improvement comprising the steps of:

providing a hand held type position input device which is

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coupled to the computer, operating the hand held type position input device to select musicians for a band from a predetermined set of musicians, and to select music to be played, causing the computer to generate sound representative of the selected music as performed by the selected musicians of the band, and using the hand held position input device to execute sound generation control and



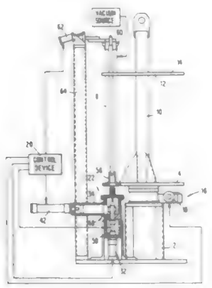
musical interval control causing the computer to selectively generate a further sound which varies in pitch substantially simultaneously in response to operation of the hand held position input device during said step of causing the computer to generate sound representative of the selected music, so that an operator of the hand held type position input device participates as a member of the band.

5,355,763

PROPELLANT CASTING APPARATUS

Richard N. Franklin, Madison, and Philip W. Schrack, Manassas, both of Va., assignors to Atlantic Research Corporation, Fairfax, Va.

Filed Sep. 14, 1989, Ser. No. 407,369
Int. Cl.[5] F42B *33/02*
U.S. Cl. 86—31 **13 Claims**



1. Apparatus for automatically filling rocket propulsion motors with semi-solid propellant, comprising

(a) a fixed frame;

(b) a rack rotatably connected with said frame for vertically supporting a plurality of motors, each of which has a bottom;

(c) indexing means connected between said rack and said frame for incrementally rotating said rack;

(d) propellant filling apparatus connected with said frame;

(e) means for connecting said propellant filling apparatus with the bottom of at least one of the motors; and

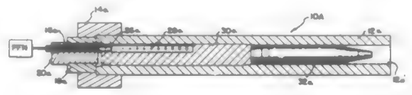
(f) means for injecting a given quantity of propellant from said propellant filling apparatus into the bottom of the motor, whereby the motors are accurately filled with the given quantity of propellant from the bottom thereof to prevent the formation of voids in the propellant.

5,355,764

PLASMA ACTUATED IGNITION AND DISTRIBUTION PUMP

Charalampos D. Marinos, Brooklyn Center; James P. Warren, Coon Rapids; Amir Chaboki, Minneapolis; Chris S. Sorensen, Edina, and Mark E. Schneider, Minneapolis, all of Minn., assignors to FMC Corporation, Chicago, Ill.

Filed May 4, 1992, Ser. No. 878,350
Int. Cl.[5] F41B *6/00*
U.S. Cl. 89—8 **25 Claims**



1. An improved electrothermal-chemical impulse propulsion system for accelerating a projectile in a bore of a barrel of the type comprising a capillary having a first and a second end:

an anode terminal disposed at said first end of said capillary;

a cathode terminal;

a fuse wire connected to and extending from said anode terminal and connected to said cathode terminal;

a pulse forming network (PFN) means for creating a plasma discharge across said fuse wire;

a fuel chamber; and

means forming an oxidizer chamber contiguous to said fuel chamber and said capillary wherein the improvement comprises:

means for developing controllable plasma pressure for distribution of said plasma discharge in a direction having radial and axial components relative to said bore;

said means for developing controllable plasma pressure further including variable size perforations spaced along a surface of the capillary: and

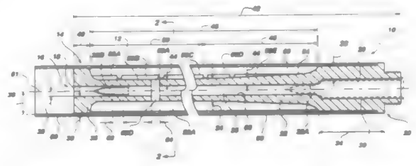
means for separating the capillary, said perforations in the capillary, the fuel chamber and the oxidizer chamber.

5,355,765

HIGH PERFORMANCE GUN BARREL

Ernest Rogers, 1735 E. Cherokee, Pleasant Grove, Utah 84062

Filed Dec. 2, 1992, Ser. No. 985,173
Int. Cl.[5] F41A *21/28*
U.S. Cl. 89—14.4 **26 Claims**



1. For accelerating a projectile advanced by a propellant to an exit velocity, a barrel comprising:

an inner tube with a longitudinal axis and a length and having a wall with an external surface and an internal surface to define a bore, said internal surface sized to make obturating contact with a projectile along said length, said inner tube having a muzzle and an aperture formed in said wall proximate to and spaced inwardly from said muzzle in fluid communication with said bore; and

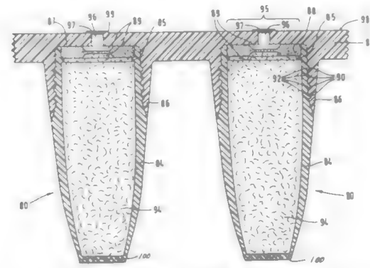
an outer tube sealing said inner tube therein to form a chamber in fluid communication with said aperture in said inner tube, said aperture being positioned to receive said propellant after said projectile achieves substantially the exit velocity.

5,355,766

DEVICE FOR IGNITING A PROPELLANT CHARGE, A CARTRIDGE FOR THE CHARGE AND A MAGAZINE FOR HOLDING CARTRIDGES, ESPECIALLY FOR STUD SETTING OR DRIVING TOOLS

Uwe Brede, Fürth; Alfred Hörr, Zirndorf; Hans Jena, Fürth; Bodo Preis, Nurnberg, and Wolfgang Spranger, Fürth, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Division of Ser. No. 803,990, Dec. 9, 1991, Pat. No. 5,216,200.
This application May 27, 1993, Ser. No. 67,985
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1990, 4039069
Int. Cl.[5] F42B *39/08*
U.S. Cl. 89—35.01 **16 Claims**



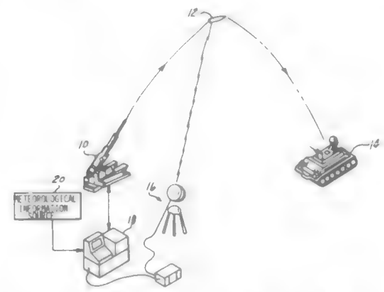
1. A magazine for cartridges ignitable by adiabatic compression, which comprises a magazine belt made of a synthetic resin for connecting a plurality of cartridges with one another and forming bottom walls of the cartridges; said magazine belt having, in the region of each of the bottom walls of the cartridges, an intentional separation zone; one primer wafer being provided per cartridge, each primer wafer being arranged on the magazine belt in the region of the bottom wall of the cartridge; and each primer wafer, in an area near the region of the intentional separation zone, being thinner than in a remaining zone surrounding said area.

5,355,767

RADIO EMISSION LOCATOR EMPLOYING CANNON LAUNCHED TRANSCEIVER

Yuji Morita, Ann Arbor, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Mar. 6, 1981, Ser. No. 241,156
Int. Cl.[5] F41G *3/14*
U.S. Cl. 89—41.07 **16 Claims**



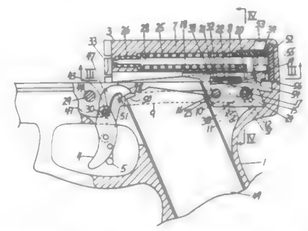
1. A system for detecting the location of a source of radio signal emission comprising an artillery shell containing a radio receiver for receiving radio signals from said source, means for processing the received signals and for producing position signals which are a function of the position of the source relative to the position of the shell, and a radio transmitter for transmitting radio signals containing data which includes the position of the source relative to the shell; a cannon for launching the artillery shell; a ground based receiver for receiving the artillery shell's radio signals; and a computer operative to receive said data from the ground based receiver and signals relating to the cannon operation, and operative to generate signals corresponding to the location of said emission source relative to said cannon.

5,355,768

AUTOMATIC PISTOL WITH SELECT FIRE MECHANISM

Edward K. Felk, 126 Skye Pt. Rd., Coal-Point NSW 2282, Australia

Filed May 19, 1993, Ser. No. 63,543
Claims priority, application Australia, Aug. 19, 1992, PL4253,35498/93
Int. Cl.[5] F41A *19/38*
U.S. Cl. 89—147 **10 Claims**



1. An automatic pistol comprising: a frame with a magazine receiving grip; a slide including a breech-block at the rear;

a floating barrel and the slide, movable on the frame with the breech-block engagable over the barrel to form a cartridge chamber;

a spring loaded firing pin, with a foot at the rear projecting down, movable in the breech-block, away from and towards the barrel, between its rearmost position when it is out of the cartridge chamber and at the maximum extent of its travel to the rear of the breech-block, and its foremost position when it projects into the cartridge chamber, and including a rest position when it is fully contained within the breech-block between its rearmost and foremost positions;

a trigger provided with a safety lever and with a trigger bar pivotally connected, said trigger bar embodying, at its rearmost end, a plate with a face on its rearmost top corner and a triangular hole with an inclined edge within, and a web extending sideways from the plate, said web embodying a wing extending further sideways from the web and with a ledge extending rearward from the web, the trigger and the trigger bar being moveable between their foremost and rearmost positions, in the same directions as the firing pin;

an activating rod, embodying a foot and a groove, is transversely mounted in the frame and passes through the triangular hole in the plate of the trigger bar to co-act with the inclined edge within said hole to disengage the ledge from the foot of the firing pin when the trigger is in its rearmost position, said activating rod being transversely movable within the frame, on the slide's rearward movement, positioning the groove over the inclined edge for said edge to enter the groove and position the ledge into the path of the foot of the firing pin, a triggering mechanism including the trigger and the trigger bar, said trigger bar and the ledge having abutment means, are guided along their path by the inclined edge and the activating rod, said path being a gradually downward one towards

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the rear of the pistol characterised by the firing pin starting in its rest position with the ledge being positioned in front of the firing pin foot prior to the actuation of the trigger and the ledge being arranged to engage said foot to carry the firing pin in a rearward direction during the movement of the ledge along its path during activation of the trigger and to disengage from the foot, to release the firing pin to fire a cartridge, at the end of its movement when the trigger is in its rearmost position.

a select fire switch with an inclined edge is positioned at the rear of the breech-block in line with the plate of the trigger bar and is switchable to position its inclined edge in the path of the face of the plate for said ledge to strike the face and force the ledge of the trigger bar down to disengage the ledge of the trigger bar from the foot of the firing pin when the breech-block reaches its foremost position;

an ejector plate, for ejecting a cartridge, embodying a rectangular hole in its top edge to stabilise the ledge of the trigger bar as it is moved between its foremost and rearmost position;

a magazine drop safety plate embodying a hook to stop the trigger's rearward movement by engaging over the trigger bar when a magazine is fully or partially out of the frame;

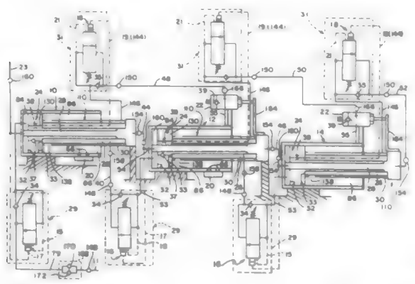
an extractor, for extracting a cartridge from the chamber, embodying a ledge, a follower and a spring, said extractor being automatically retained in the breech-block.

5,355,769

SEQUENTIALLY OPERATED CYLINDERS WITH LOAD HOLDING VALVE INTEGRATED SYSTEM

Kevin D. Kottke, Storm Lake, Iowa, assignor to Magna Pow'r, Inc., Franklin Park, Ill.

Filed Jul. 23, 1992, Ser. No. 919,182
Int. Cl.[5] F01L *21/02*
U.S. Cl. 91—184 28 Claims



1. A mechanism for extending and retracting a telescoping unit, the mechanism comprising:

a plurality of interconnected power cylinders, each movable between an extended position and a retracted position and having a flow-through passage in each cylinder interconnected to provide an unobstructed flow path for a retraction pressure signal from a first cylinder through to a last cylinder, and;

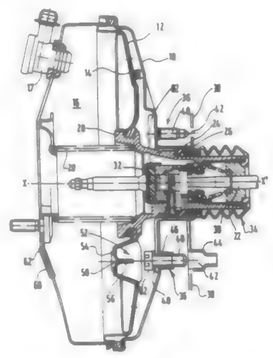
sequencing means for transmitting said retraction pressure signal sequentially from said last cylinder to said first cylinder to initiate retraction of the cylinders from an extended position in sequence beginning with said last cylinder.

5,355,770

BRAKE BOOSTER

Jean Pierre Gautier; Ulysse Verbo, both of Aulnay-sous-Bois; Miguel Perez Revilla, Argenteuil; Guy Meynier, Aulnay-sous-Bois, and Philippe Castel, Paris, all of France, assignors to AlliedSignal Europe Services Techniques, Drancy, France

PCT No. PCT/FR92/01100, § 371 Date May 4, 1993, § 102(e) Date May 4, 1993, PCT Pub. No. WO93/11011, PCT Pub. Date Jun. 10, 1993
PCT Filed Nov. 26, 1992, Ser. No. 50,203
Claims priority, application France, Dec. 6, 1991, 91 15130
Int. Cl.[5] F15B *9/10*; B60T *13/567*
U.S. Cl. 91—376 14 Claims



1. A brake booster comprising a casing (10) within which is at least one piston structure which, with the help of an unrolling membrane (12), defines at least one front chamber (16) connected permanently to a vacuum source via a valve (17) and at least one back chamber (18) connected selectively to the front chamber (16) or to atmosphere via valve means (34) when a control rod (30) is actuated, and a fastening device (36) for fastening the booster on a wall (38) adjacent to a first face of the casing (10), apertures (50, 60) located in a piston structure (14) and in a second face of the casing (10) and aligned in an axial direction of the booster so as to permit the actuation of the fastening device (36) through the aperture (60) in the second face of the casing (10), characterized in that the aperture (50) in the piston structure (14) receives a closing member (52, 64) integral with the piston structure and movable with the piston structure.

5,355,771

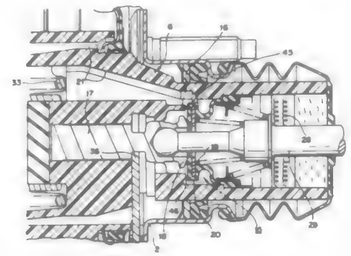
VALVE MECHANISM FOR BRAKE BOOSTER

Makoto Watanabe, Saitama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1993, Ser. No. 98,199
Claims priority, application Japan, Aug. 28, 1992, 4-066339[U]
Int. Cl.[5] F15B *9/10*
U.S. Cl. 91—376 R 4 Claims

1. A valve mechanism for brake booster including a first valve seat formed on a valve body which is slidably disposed within a shell, a valve plunger slidably fitted within the valve body, a second valve seat formed on the valve plunger, a valve element formed by a resilient member for movement toward and away from the first and the second valve seat for selectively switching a fluid circuit, and a key member mounted on the valve body and reciprocable in an axial direction thereof and abutting against an internal wall surface of the shell to maintain the valve plunger at an advanced position relative to the valve body when the brake booster is inoperative; the valve mechanism comprising an abutment formed on at least

one of engaging surfaces of the first valve seat of said valve body and the valve element where they are engaged when the valve element is seated upon the first valve seat so as to abut against part of the opposing engaging surface, and a communication area formed adjacent to the abutment, said communication area providing communication through the engaging surfaces of said valve body and said valve element when the



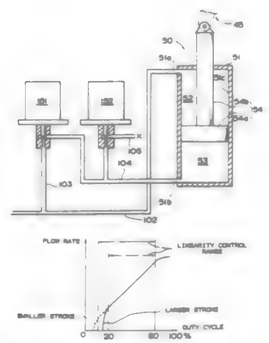
abutment abuts against the opposing engaging surface with a force less than a given value while when the abutment abuts against the opposing engaging surface with a force greater than the given value, an elastic deformation of the valve element causes the communication area to be closed to interrupt the communication through the engaging surfaces of said valve body and said valve element.

5,355,772

HYDRAULIC SERVO UNIT WITH SOLENOID OPERATED VALVES HAVING VARIABLE DUTY CYCLES

Takamichi Shimada, Nerima; Yoshikazu Ishikawa, Hiki, and Kouji Yamaguchi, Tokorozawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1992, Ser. No. 903,723
Claims priority, application Japan, Jun. 24, 1991, 3-178803
Int. Cl.[5] F15B *15/17, 13/044*
U.S. Cl. 91—417 R 11 Claims



1. An apparatus for controlling operation of a hydraulic servo unit, comprising:

a hydraulic servo unit comprising a cylinder having a cylinder chamber defined therein, a piston slidably fitted in said cylinder chamber, and a rod projecting axially from said piston, said piston dividing said cylinder chamber into a rod-side chamber on one side of said piston, said rod extending through said rod-side chamber, and a head-side chamber on an opposite side of said piston;

a first hydraulic pressure supply passage connected to said rod-side chamber for supplying working oil under predetermined hydraulic pressure;

a first solenoid-operated valve openable and closable according to a duty cycle of a pulse signal applied thereto;

a second hydraulic pressure supply, passage connected to said head-side chamber through said first solenoid-operated valve;

a second solenoid-operated valve openable and closable according to a duty cycle of a pulse signal applied thereto;

a drain hydraulic passage connected to said second hydraulic pressure supply passage through said second solenoid-operated valve; and

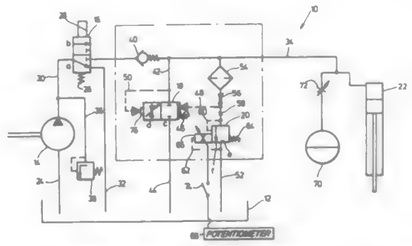
control means for simultaneously actuating said first solenoid-operated valve with a first duty cycle and said second solenoid-operated valve with a second duty cycle, said control means capable of varying said first and second duty cycles wherein each of said duty cycles has a non-correlated relationship to the other in order to vary a rate at which the working oil flows into or out of said head-side chamber through said second hydraulic pressure supply passage, wherein said control means comprises means for simultaneously actuating said first and second solenoid-operated valves with the respective first and second duty cycles each falling within a linearity control range in which the rate at which the working oil flows varies linearly in proportion to the duty cycles, said linearity control range excluding a range in the vicinity of 0% and a range in the vicinity of 100%.

5,355,773

HYDRAULIC SYSTEM FOR CONTROLLING CONTACT PRESSURE

Günter Winkels, Zweibrücken, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Feb. 28, 1992, Ser. No. 843,500
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1991, 4106845
Int. Cl.[5] F15B *13/043*
U.S. Cl. 91—452 4 Claims



1. A hydraulic system for the controlling of the contact force of a hydraulic device, the system comprising:

a source of fluid pressure;

a hydraulic device in fluid communication with the source of pressurized fluid, the hydraulic device can be extended and retracted;

a pilot-controlled main valve in fluid communication with the source of fluid pressure and the hydraulic device, the pilot controlled main valve has a first position which prevents the flow of fluid through the valve and a second position which permits the flow of fluid through the valve, the pilot controlled main valve controls how fast the hydraulic device is retracted;

a second pilot-controlled valve is in fluid communication with the source of fluid pressure, the hydraulic device and the pilotcontrolled valve, the second pilot-controlled valve is provided with a proportional solenoid for biassing

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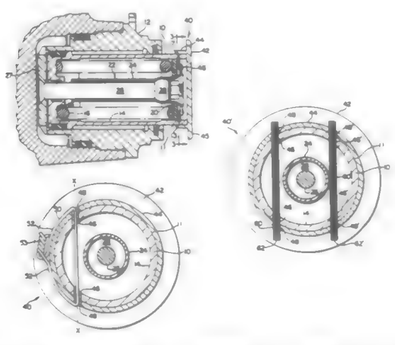
the valve, the second pilot-controlled valve controls the positioning of the pilot-controlled main valve, the position of the second pilot-controlled valve is biassed by the fluid pressure applied to the hydraulic device in the same direction as the force of the proportional solenoid, the means for controlling how the proportional solenoid is energized.

5,355,774

AIRCRAFT BRAKE PISTON CAP ASSEMBLY

Richard J. Ditlinger, South Bend, Ind., assignor to AlliedSignal Inc., Morristown, N.J.

Filed May 5, 1993, Ser. No. 58,078
Int. Cl.[5] F01B *29/00*
U.S. Cl. 92—128 **2 Claims**



1. An improved piston cap assembly for a brake, the brake including a bore slidably receiving a piston, the piston comprising a generally cylindrical tube having an interior opening and an exterior end which is enclosed by a piston cap, the exterior end having a first pair of openings extending through the piston and aligned with one another along a line truncating the exterior end of said piston, said piston cap having a second pair of openings extending through the piston cap and aligned with the openings of the piston, means for attaching said piston cap to said piston extending through the aligned pairs of openings so that said piston cap is attached to said piston, said attaching means comprising a wire having ends located exteriorly of said openings and extending to engagement with one another, and the piston cap including an axially extending flange which is located about the circumference of an outer axial surface of the piston, the aligned pairs of openings along said line truncating the exterior end of said piston and the axially extending flange about the outer axial surface of the piston providing increased space for components located within the interior opening of the piston.

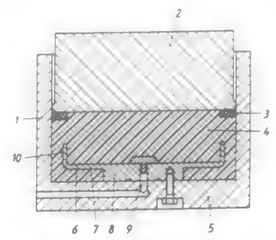
5,355,775

PRESSURE-TRANSMITTING HYDRAULIC CYLINDER

Georg Wolff, Linz, Austria, assignor to Reisner & Wolff Engineering Gesellschaft m.b.H & Co. KG, Wels, Austria

PCT No. PCT/AT91/00119, § 371 Date May 17, 1993, § 102(e) Date May 17, 1993, PCT Pub. No. WO92/09748, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 21, 1991, Ser. No. 64,113
Claims priority, application Austria, Nov. 21, 1990, A 2358/90
Int. Cl.[5] F16J *15/18, 9/00*
U.S. Cl. 92—168 **2 Claims**

1. Potlike hydraulic cylinder comprising a cylinder pot having a wall and a bottom, a piston constituting a cover for the pot, a rubber-elastic plastic body occupying a pressure chamber between the cylinder pot bottom and the piston, the body forming a closed pocket that is provided with a partition, the partition extending substantially parallel to the pot bottom and constituting a bottom of the pocket, and the partition being connected to at least one bottom extension of the cylinder pot, which extension protrudes axially into the plastic body, and at least one pressure line for a hydraulic fluid, which pressure line



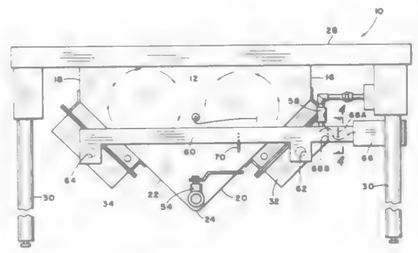
extends through the bottom extension and the partition and opens into the pocket to deform the plastic body under hydraulic fluid pressure, and wherein the partition is adjoined by a peripheral wall protruding toward the piston and defining with the pot wall a guiding gap for the deformation of the plastic body.

5,355,776

DEEP FAT FRYER

Galen R. Driskill, Skiatook, Okla., assignor to Daylight Corporation, Tulsa, Okla.

Filed Dec. 5, 1991, Ser. No. 802,610
Int. Cl.[5] A47J *27/00*
U.S. Cl. 99—330 **4 Claims**



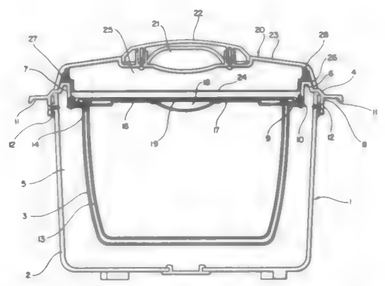
1. A deep fat fryer comprising:
an open top vessel having sidewalls and a bottom and having a quantity of liquid cooking oil therein, the vessel bottom being configured to provide, within the vessel, an upper cooking zone and a lower zone;
first and second spaced apart gas fired heater units supported to said vessel bottom, each heater having an fuel/air mixture inlet, said heater units being arranged to provide heat to said cooking oil in said upper cooking zone through said vessel bottom to raise the temperature of said cooking oil in said upper cooking zone to frying temperature but wherein significantly less heat is transferred to said cooking oil in said lower zone;
an air blower having an outlet;
a fuel/air distributor channel having a first end and second end, the first end being connected to said blower outlet, the distribution channel having a gas inlet adjacent said first end and having spaced apart first and second fuel/air outlets spaced from said first end and from said gas inlet in the direction towards said distributor channel second end, said first fuel/air outlet being connected to said first heater unit and said second fuel/air outlet being connected to said second heater unit; and
a single adjustable baffle within said fuel/air distributor channel between said first and second fuel/air outlets providing a single adjustable means to equalize the fuel-/air input to said first and second heater units.

5,355,777

HIGH TEMPERATURE ADIABATIC COOKING DEVICE

Tsang-Hue Chen; Chao J. Chen; Chao C. Chen, and Chao Y. Chen, all of 6Fl. No. 53, Alley 22, Lane 553, Chung Hsiao E. Road, Sec. 4, Taipei, Taiwan

Filed Sep. 21, 1993, Ser. No. 124,028
Int. Cl.[5] A47J *27/00, 36/00*; A45C *11/20*; B65D *8/06*
U.S. Cl. 99—340 **9 Claims**



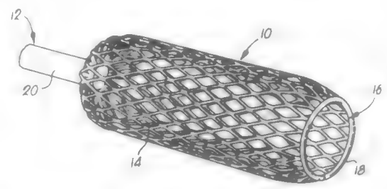
1. A high temperature unheated adiabatic cooking device comprising:
an inner pot made of a thermally conductive material and having an outer surface and an upper flange extending laterally outwardly from the outer surface;
an inner lid for covering said inner pot, said inner lid having an outer surface;
a thermally insulating ring interposed between the flange and the inner lid so as to minimize heat transfer between the inner pot and inner lid;
an outer pot having a thermally insulated construction, said outer pot having an inner surface and a shoulder provided at an inner upper part of said outer pot to receive said upper flange of said inner pot such that said inner pot is removably supported in said outer pot by the upper flange on the shoulder so as to maintain a space between the entire outer surface of said inner pot and the entire inner surface of said outer pot;
an outer lid having a thermally insulated construction for covering said outer pot, thereby completely enclosing said inner pot covered with said inner lid and said upper flange, in an air tight manner, said outer lid having an inner surface spaced from the entire outer surface of said inner lid; and,
a thermally insulating layer interposed between the outer lid and the outer pot;
wherein said outer pot is comprised of an inner shell made of a rigid material, an outer shell and a heat insulating material disposed between the inner and outer shells having a thickness of from 10 to 40 mm to achieve a heat preservation capability of maintaining the temperature of the material within the inner pot above 93° C. for one hour after said material in said inner pot is heated to 100° C. and placed in said outer pot.

5,355,778

HANDHELD, ROTATABLE FOOD ROASTING APPARATUS

Alfred B. Mayfield, RR 2, Box 93, Halstead, Kans. 67056, and Sanford Nikkel, Rte. 1, Box 117, Moundridge, Kans. 67107

Filed Oct. 9, 1992, Ser. No. 959,110
Int. Cl.[5] A47J *43/18*
U.S. Cl. 99—441 **4 Claims**



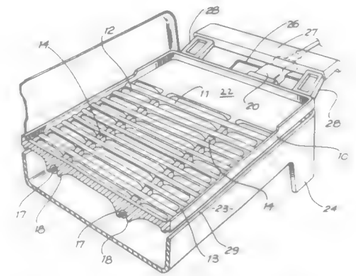
1. A handheld, rotatable food roasting apparatus for use in supporting food over a source of heat, the apparatus comprising:
a cylindrical receptacle formed of expanded metal and including opposed axial ends, an open interior space, and an opening formed in one of the axial ends through which food may be placed into and removed from the interior space, the cylindrical shape of the receptacle defining a diameter which is greater than the diameter defined by the opening so that the end of the receptacle in which the opening is formed is partially closed to inhibit food from falling out of the interior space through the opening; and
an elongated handle by which the apparatus may be rotatably supported over the source of heat, the handle being affixed to the end of the receptacle opposite the opening.

5,355,779

GRILLER

William J. O'Brien, Vaucluse, and Stephen J. McClean, Beverly Hills, both of Australia, assignors to Breville R & D Pty Limited, Australia

Filed Jun. 24, 1993, Ser. No. 82,042
Claims priority, application Australia, Jul. 10, 1992, PL3476; Mar. 9, 1993, 34093/93
Int. Cl.[5] A47J *37/06*
U.S. Cl. 99—446 **7 Claims**



1. A griller having a substantially horizontally extending grill member to support food while being grilled, the grill member consisting of alternating bars and slots the bars being made of material selected from the group consisting of aluminum, aluminum alloy and a material having similar heat transmitting properties to aluminum, the slots passing through the grill member, there being arranged under the grill member and spaced from the slots an elongated electric heating element

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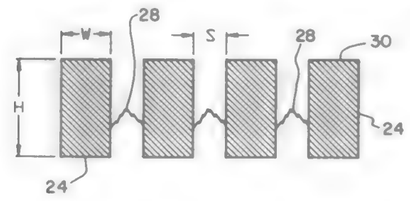
that is accommodated within a groove formed on an underside of the grill member, whereby fats and liquids emerging from food being cooked on the grill member are prevented from coming into contact with the electric heating element, electric plug receiving means connected to said electric heating element directly and without intervention of a thermostat, the heating element and the grill member being constructed and arranged so that heat from the heating element is distributed over a surface of the grill member, the grill member being removeably supported on a container that in use underlies the grill member and acts to catch fat and liquids from the food being grilled, the underside of said grill member being vertically spaced above an outer peripheral wall of said container to define a gap between the outer wall of said container and the underside of the grill member positioned so as to permit a flow of air transversely through the gap into the space beneath the grill member to control the temperature of the heating element and grill member and prevent abnormal heating.

5,355,780

FLAME INHIBITING GRATE FOR A COOKING GRILL

Michael F. Campbell, R.R. #1, Box 133, Shelburn, Ind. 47879

Filed Mar. 9, 1993, Ser. No. 28,298
Int. Cl.[5] A47J *37/00*
U.S. Cl. 99—450 **21 Claims**



21. A grate for a cooking grill, the grill including a heat source, said grate comprising:

a plurality of support members;

a plurality of elongated rails having a height of between about 3/16 and ¾ inch and disposed in spaced apart parallel relationship with each other, said rails extending transversely to said support members; and

means for preventing flames from passing through said grate, said preventing means comprising a plurality of spaces of between about 1/16 and ¼ inch, respectively defined by and disposed between adjacent said rails.

5,355,781

CONTROLLED ATMOSPHERE STORAGE SYSTEM

Max D. Liston, Irvine, Calif.; Sy J. Banaitis, Wilsonville, Oreg., and Robert J. Olson, Santa Rosa, Calif., assignors to Prolong Systems, Inc., Wilsonville, Oreg.

Filed Feb. 28, 1992, Ser. No. 843,545
Int. Cl.[5] B60H *1/32*
U.S. Cl. 99—476 **21 Claims**

1. A device for maintaining a controlled oxygen atmosphere within a transport container vessel comprising:

a first inlet adapted to receive ambient air from outside said container;

a compressor having a compressor intake port fluidly connected to said first inlet and a compressor exhaust port;

a gas-separation means having an entrance port fluidly connected to said compressor exhaust port and an exit port, said compressor and said gas-separation means being collectively operable to maintain an oxygen level within said container not exceeding 5%;

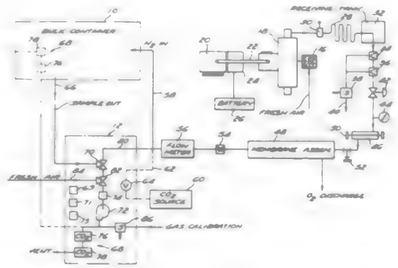
a first outlet fluidly connected to said exit port for placing said exit port in fluid communication with the interior of said container;

a second outlet fluidly connected to said container for receiving gas from therewithin;

a gas-analyzer means connected to said second outlet for monitoring and recording the oxygen levels of gas within the container;

a controller assembly connected between said second outlet and said gas-analyzer means, said controller assembly being adapted to selectively draw gas from within said container into said gas-analyzer means, and said controller assembly comprising a housing, a programmable microprocessor disposed within said housing and a data storage means disposed within said housing and electrically interfaced to said gas-analyzer means.

a control valve disposed within said housing, said control valve being electrically interfaced to said microprocessor and actuatable between first and second positions, said second outlet being fluidly connected to said control valve;



a pump electrically interfaced to said microprocessor and fluidly connected between said control valve and said gas-analyzer means wherein activation of said pump concurrently with the actuation of said control valve to the first position by said microprocessor draws gas from within the container into the gas-analyzer means, said gas-analyzer means being operable to transmit oxygen level measurements of the gas to the data-storage means;

a first passage fluidly connecting said first outlet to said control valve, said control valve being operable to place said first outlet in fluid communication with said gas-analyzer means via said first passage while simultaneously blocking the communication between said second outlet and said gas-analyzer means when actuated to the second position by said microprocessor, thereby allowing said gas-analyzer means to monitor the oxygen level of gas exiting said gas-separation means, said control valve being further operable to block the communication between said first passage and said gas-analyzer means when actuated to said first position.

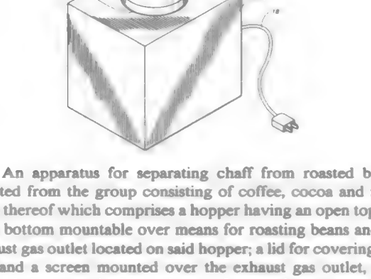
5,355,782

SMOKE GENERATOR FOR FOOD SMOKING KILNS

John P. Blanchard, 33 Second Court, R.R. 2, Truro, Canada, assignor to John P. Blanchard, Truro, Canada

PCT No. PCT/CA91/00287, § 371 Date Feb. 18, 1993, § 102(e) Date Feb. 18, 1993, PCT Pub. No. WO92/03057, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 19, 1991, Ser. No. 979,862
Claims priority, application United Kingdom, Aug. 22, 1990, [redacted]
Int. Cl.[5] F23B *1/32*; F23K *3/00*
U.S. Cl. 99—482 **10 Claims**

1. A smoke generator comprising an enclosed body having a pyrolysis chamber therein, a fuel supply communicating with said pyrolysis chamber for supplying combustible matter to said pyrolysis chamber, an air supply communicating with said body for supplying air for smoke generation, means for heating said combustible matter in said pyrolysis chamber to pyrolize said combustible matter, and a smoke outlet from said body, communicating with said pyrolysis chamber via a smoke channel, said smoke generated being characterized by:



said fuel supply including means for adjusting the supply of said combustible matter to said pyrolysis chamber to a desired rate;

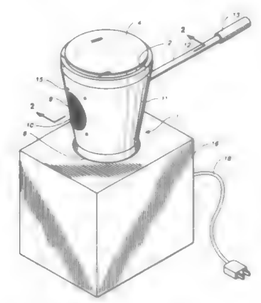
said air supply being adjustable for supplying said air for said smoke generation at a desired rate.

5,355,783

APPARATUS FOR SEPARATING CHAFF AND ROASTING COFFEE AND COCOA BEANS

David M. Cochran, 851 Tulare St., Pismo Beach, Calif. 93449

Filed Oct. 27, 1993, Ser. No. 144,716
Int. Cl.[5] A23N *12/12*
U.S. Cl. 99—483 **27 Claims**



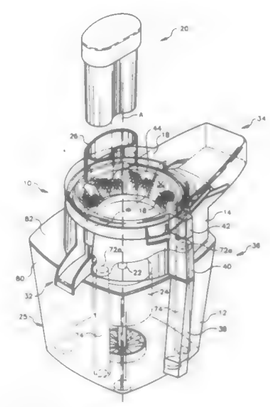
1. An apparatus for separating chaff from roasted beans selected from the group consisting of coffee, cocoa and mixtures thereof which comprises a hopper having an open top, an open bottom mountable over means for roasting beans and an exhaust gas outlet located on said hopper; a lid for covering the top; and a screen mounted over the exhaust gas outlet, said screen being coated with a mixture of materials that causes the surface of the screen to become electrostatically charged during the bean roasting process, whereby the chaff that becomes separated from the beans during the roasting process is entrained in the exhaust gases which pass upward from said means for roasting beans and through the open bottom and is collected on the electrostatically charged screen.

5,355,784

JUICE EXTRACTORS

Eric Franklin, Crawfordsville, Ind.; Brent Markee; Harold Kawaguchi, both of Seattle, Wash.; Bong-Sool Kim, Pusan, Rep. of Korea, and Robert G. Harrison, Poulsbo, Wash., assignors to Trillium Health Products, Inc., Seattle, Wash.

Filed Dec. 20, 1991, Ser. No. 811,572
Int. Cl.[5] A23N *1/02*
U.S. Cl. 99—492 **5 Claims**



1. A juice extractor comprising:

a base which includes a housing and a motor with a rotatable output shaft in said housing;

means attached to said output shaft for extracting juice from comestibles;

cooperating drive components on said juice extracting means and said output shaft for drive-connecting the juice extracting means to the output shaft;

a juice bowl for collecting extracted juice, said juice bowl being configured to receive the juice extracting means; and

means for locking said juice bowl to the housing of said base, said locking means having cooperating coupling elements incorporated in the housing and the juice bowl and being so constructed that: (a) when said juice bowl is rotated in one direction relative to said base, the cooperating coupling elements are engaged and lock the juice bowl to the base; and (b) when the juice bowl is rotated in the opposite direction relative to the base, the cooperating coupling elements are disengaged and the juice bowl and juice extracting means are cammed upwardly and lifted from the base to disengage said cooperating drive components and allow the juice bowl and juice extracting means by the relative rotational movement between the drive components on said juice extracting means and the drive components on the output shaft to be removed from the base.

5,355,785

DEJUICER FOR DEJUICING HARVESTED GRAPES

Didier Pera, Montblanc, and Jean Pera, Cap d'Agde, both of France, assignors to Somavi, Florensac, France

Continuation of Ser. No. 927,211, Aug. 6, 1992, abandoned. This application Dec. 9, 1993, Ser. No. 164,637
Claims priority, application France, Aug. 12, 1991, 91 10240
Int. Cl.[5] B30B *9/22*
U.S. Cl. 99—495 **19 Claims**

1. A device for dejuicing harvested grapes and collecting the juice therefrom, said device comprising:

an immobile closed tank having a first end and an opposite end, said immobile closed tank further having an inner

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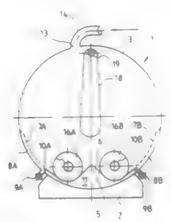
surface defining an internal chamber, said inner surface of said immobile closed tank having at least one food opening located therein, said immobile closed tank further having at least one discharge opening located in said first end of said immobile closed tank;

at least one dejuicing grid spaced a predetermined distance from said inner surface of said immobile closed tank;

a membrane located within said internal chamber;

means for mounting said membrane separate from said inner surface of said immobile closed tank, said membrane further being adapted to be pressurized;

means for collecting said juice of said dejuiced grapes, said collecting means being located adjacent said dejuicing



grid, said means for collecting receiving said juice from said harvested grapes; and

means for removing said dejuiced harvested grapes from said immobile closed tank, said removing means being located within said immobile closed tank;

whereby after said harvested grapes are loaded into said internal chamber of said immobile closed tank through said at least one feed opening, said membrane is pressurized to apply pressure to said harvested grapes to dejuice said harvested grapes such that said juice flows through said at least one dejuicing grid and into said collecting means and whereafter said membrane is depressurized and then said removing means is actuated to remove said dejuiced harvested grapes from said immobile closed tank.

5,355,786

STRAP GUIDE FOR GUIDING STRAP THROUGH ALIGNED OPENINGS IN PALLET STRINGERS

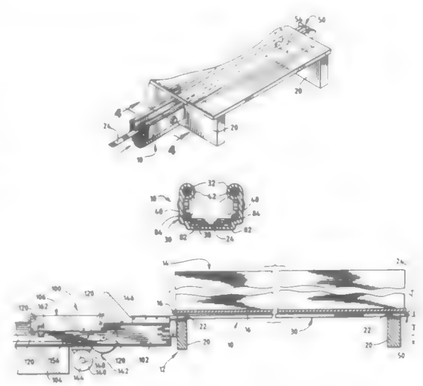
Allison D. Tipton, Bloomingdale, and Margaret Fialko, Glenview, both of Ill., assignors to Signode Corporation, Glenview, Ill.

Filed Sep. 21, 1993, Ser. No. 123,992
Int. Cl.[5] B65B *13/04*
U.S. Cl. 100—25 12 Claims

1. A strap guide for guiding a strap through aligned openings in spaced stringers of a shipping pallet, the strap guide comprising

(a) an elongate channel having a proximal end and a distal end and being supportable from the proximal end as a cantilever, the channel having a base and two sides upstanding from the base, at least one side having an upper, generally tubular portion defining an axis, and

(b) a tensioning member extending through the generally tubular portion and being tensioned so as to impart axial compression to the generally tubular portion, and so to counteract tendencies of the distal end of the channel to be



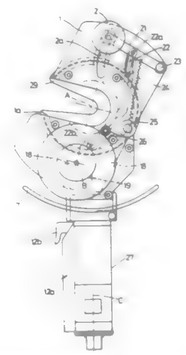
downwardly deflected by gravity when the channel is supported from the proximal end as a cantilever.

5,355,787

TAPING MACHINE FOR WIRE HARNESS

Arthur G. Burns, 49 Fallowfield, Orton Wistow, Peterborough PE2 OUR; Ken Aubrey, 34 Bradwell Road, Long-thorpe, Peterborough, Cambridgeshire; David Hyland, 37 Wainbody Avenue, Coventry, Warwickshire, all of United Kingdom; Andres Marin Correa, and Manuel Fernandez Martin, both of Passeig de l'estacio 14, Valls, Tarragona, Spain

PCT No. PCT/GB91/01299, § 371 Date Jan. 29, 1993, § 102(e) Date Jan. 29, 1993, PCT Pub. No. WO92/02417, PCT Pub. Date Feb. 20, 1992
PCT Filed Jul. 31, 1991, Ser. No. 972,443
Claims priority, application Spain, Jul. 31, 1990, P9002280
Int. Cl.[5] B65B *13/10*
U.S. Cl. 100—27 7 Claims



1. Apparatus for applying tape to wire harnesses comprising:

a body (3) defining a first mouth (3*a*) opening to one side of the body (3) and extending in an outward direction from a closed inner end, the body (3) having an axis (A) generally perpendicular to said outward direction of the mouth (3*a*) and intersecting an inner end portion of the mouth;

at least two toothed gears (17) mounted on the body (3) each for rotation about a respective axis (18);

a head (1, 5, 16) comprising a support (5) with a gear disposed around the support and in meshing engagement with said at least two gears (17), the head (1, 5, 16) being supported for rotation about said axis (A), the head (1, 5, 16) defining a second mouth (1*a*) opening to one side of the head (1, 15, 16) and extending in an outward direction from a closed inner end of the second mouth (1*a*), an inner end portion of said second mouth (1*a*) being intersected by said axis (A) whereby the inner end portions of said first and second mouths (1*a*, 3*a*) are in register one with the other;

mounting means (6, 8) on the head (1, 5, 16) for mounting a reel (28) of tape on the head for rotation about an axis (B) parallel with the axis (A), the axis (B) disposed radially outwardly of the axis (A);

drive means (9, 11, 12) adapted to rotate said at least two gears (17) in synchronism whereby to cause said gears (17) to rotate said head about said axis (A), and

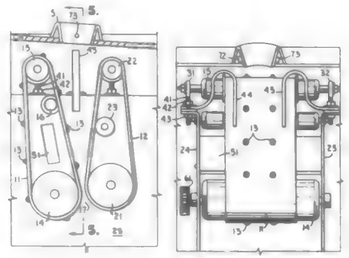
counterbalance means (4) mounted on the head (1, 5, 16) substantially diametrically opposite the mounting means (6, 8) for the reel (28) of tape, said counterbalance means (4) comprising counterbalance weight (2) mounted for movement in a direction generally towards and away from the axis (A) and control means (21, 22, 24, 26) for detecting the diameter of tape carried by a reel (28) mounted on said mounting means (6, 8) and for moving the counterbalance weight (2) to a position to substantially counterbalance said reel (28) of tape.

5,355,788

OPPOSED BELT CAN COMPACTOR APPARATUS

Randall B. Phinney, 715 Bishop, Salina, Kans. 67401

Filed May 20, 1993, Ser. No. 63,726
Int. Cl.[5] B30B *15/14, 5/06*
U.S. Cl. 100—49 9 Claims



1. A can compactor apparatus comprising:

(a) a compactor means comprising first and second crusher belt arranged in opposition to each other and at respective angles to form a V; each of said first and second crusher belts comprising an endless belt encircling a respective pair of rollers, with one of the rollers in each crusher belt being a drive roller;

(b) an electric motor driving a chain which, in turn, drives said drive rollers via connected sprockets to crush a can placed into the top portion of the V and to expel the crushed can out the bottom portion of the V, said chain means driving said drive rollers such that said first belt is driven in a first direction about said rollers while said second belt is driven in the opposite direction, and said chain driving said first and second belts at different speeds;

(c) a plurality of gripping lugs positioned on at least one of said first and second belts, said gripping lugs being adapted to grip said can and pull it between said belts;

(d) a normally closed limit switch positioned in close proximity to said chain, said limit switch being placed in series with said motor, said limit switch including a feeler;

(e) said chain including a special link adapted to engage said feeler on said limit switch during each cycle of said chain, said limit switch shutting off power to said motor when said feeler is so engaged;

(f) a housing surrounding said can compactor;

(g) an inlet through said housing sized and positioned to permit the introduction of cans to be compacted into said housing;

(h) a lamp and a photosensor positioned at opposite sides of said inlet, said introduced cans momentarily shielding said photosensor to block light from said lamp;

(i) a relay means with a normally open relay contact positioned in parallel with said limit switch; and

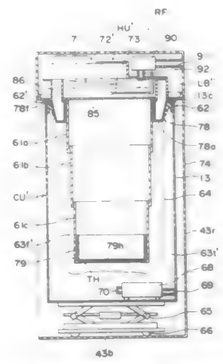
(j) switching means responsive to blockage of light from said photosensor to momentarily operate said relay to provide power to said motor when one of said cans is introduced into said inlet.

5,355,789

REFUSE COMPRESSION APPARATUS

Jiro Suzuki, Nara; Takeshi Tomizawa, Ikoma; Tatsuo Fujita, Osaka, and Kunihiro Ukai, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 21, 1992, Ser. No. 916,258
Claims priority, application Japan, Jul. 23, 1991, 3-182249; Sep. 30, 1991, 3-250952; Sep. 30, 1991, 3-250955; Oct. 15, 1991, 3-265928; Oct. 15, 1991, 3-265930
Int. Cl.[5] B30B *15/34, 5/02*
U.S. Cl. 100—92 21 Claims



1. A refuse compression apparatus comprising:

a housing having a first open end and a peripheral edge formed about said first open end;

a bag disposed in said housing so as to divide an interior of said housing into a first space defined inside said bag and a second space defined outside said bag;

a volume changeable container disposed in said first space and being adapted to receive refuse;

a cover device mounted over said first open end of said housing and including a cover surface covering said first open end, said cover surface having at least one air passage formed therethrough in communication with an interior of said volume changeable container,

pressurizing means for increasing ambient pressure in said second space relative to ambient pressure in said first space; and

hot air stream generation means for producing a heated air stream and causing the heated air stream to flow into said volume changeable container through said at least one air passage, said hot air stream generation means comprising a heater mounted to said cover device for producing heated air, and a fan operably communicated with said

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heater and said at least one air passage to blow the heated air through said at least one air passage and into said volume changeable container.

5,355,790

DIAPHRAGM OF A PRESS INTENDED FOR SEPARATING LIQUID AND SOLID MATERIALS

Eduard Hartmann, Schneisingen, Switzerland, assignor to Bucher-Guyer AG Maschinenfabrik, Niederweningen, Switzerland

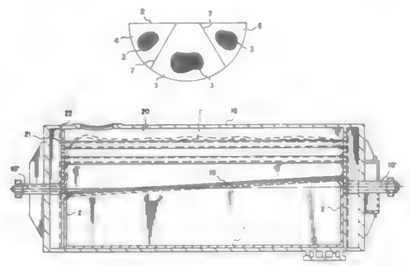
PCT No. PCT/CH91/00135, § 371 Date Mar. 3, 1992, § 102(e) Date Mar. 3, 1992, PCT Pub. No. WO92/00847, PCT Pub. Date Jan. 23, 1992

PCT Filed Jun. 21, 1991, Ser. No. 836,268

Claims priority, application Switzerland, Jul. 4, 1990, 2217/90

Int. Cl.[5] B30B *5/02, 9/22*

U.S. Cl. 100—211 **7 Claims**



1. A diaphragm for a press for separating liquid and solid materials wherein the press comprises a cylindrical press vessel disposed in a substantially horizontal position, the pressure vessel having a substantially cylindrical wall interconnecting a pair of substantially circular front walls, said diaphragm connected to said cylindrical wall in a longitudinal plane passing through the central longitudinal axis of the cylindrical wall of the cylindrical press vessel in the interior of said press vessel to divide the press vessel into a pressure space and a pressing space, said diaphragm comprising a fabric having two sides and at least one plastic-coated sheet on one of said sides of said fabric, said diaphragm further comprising a first portion having a shape substantially corresponding to the cylindrical wall of said cylindrical pressure vessel and a semi-circular portion directed toward one of said front walls, said diaphragm being subjected to main stresses in a direction when a pressure source is imposed on said diaphragm in said pressure space, said fabric having a plurality of thread systems and at least one of said thread systems disposed in said direction of imposed main stresses, said semi-circular diaphragm portions comprising a plurality of segment-like sectors, one of the thread systems in each of said sectors extending substantially parallel to a central radial bisector of each said sector.

5,355,791

ALL-IN-ONE SCREEN PRINTING MACHINE

John R. Benedetto, and William Gillespie, Jr., both of Everett, Wash., assignors to Universal Screen Printing, Inc., Everett, Wash.

Filed Aug. 20, 1993, Ser. No. 109,687

Int. Cl.[5] B41F *15/06*

U.S. Cl. 101—126 **18 Claims**

1. An all-in-one screen printing machine that can be easily reconfigured to (i) create an image-bearing screen; (ii) use the image-bearing screen to print designs on suitable substrates; and (iii) heat the designs to set the print ink, said all-in-one screen printing machine comprising:

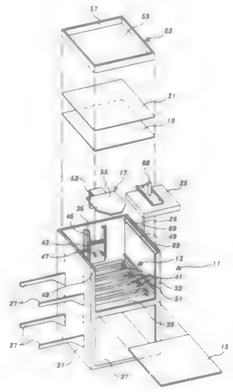
(a) a metal cabinet that includes a pair of side walls each having upper edges and a horizontal shelf located beneath the upper edges of the side walls;

(b) ultraviolet light means mounted on the shelf;

(c) support means located above the shelf for selectively supporting either an image support or a print screen;

(d) an image support sized to be supported by the support means and suitable for supporting an image;

(e) a print screen comprising a frame and a layer of mesh



affixed to the frame, the frame sized to be supported by the support means;

(f) a platen for supporting a substrate suitable for receiving a screen print;

(g) an adjustable platen support mounted in said cabinet for adjustably positioning the platen below the support means; and

(h) a heater mounted on the cabinet and positionable to heat a substrate supported by the platen.

5,355,792

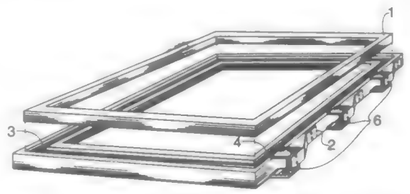
TWO-PART FRAME AND PRE-TENSIONING DEVICE THEREFOR

George MacNaughton, Andover; Steven Forti, Norwell, and Dietmar Stapelfeld, Marshfield, all of Mass., assignors to WearGuard Corporation, Norwell, Mass.

Filed May 21, 1992, Ser. No. 886,968

Int. Cl.[5] B05C *17/06*

U.S. Cl. 101—127.1 **5 Claims**



1. A system for holding sheet material, which comprises:

(a) a pre-tensioning device including a pair of opposed jaws for engaging the sheet material, means for drawing the material taut, and means for regulating the amount of tension in the material; and

(b) a two-part frame for receiving the sheet material from the pre-tensioning device, the two-part frame including an upper frame and a lower frame, the lower frame having a channel therein which is configured so that the upper frame can be inserted within the channel to hold the sheet material between the upper frame and lower frame.

5,355,793

METHOD AND APPARATUS FOR MAKING A MIMEOGRAPHIC PRINTING PLATE

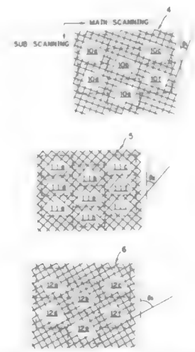
Masamichi Sato, and Kenji Yamakawa, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 21, 1992, Ser. No. 933,196

Claims priority, application Japan, Aug. 21, 1991, 3-233936

Int. Cl.[5] B41F *15/10;* **B41L** *13/00*

U.S. Cl. 101—128.21 **6 Claims**



1. A method of making a plurality of mimeographic printing plates from a heat sensitive plate material including a support through which printing ink is passable and a thermoplastic resinous membrane formed on a surface thereof, said thermoplastic resinous membrane being heated and melted so as to form holes therein for passing said printing ink therethrough, said method comprising the steps of:

(a) applying a thermal head to said plate material, said thermal head having a plurality of heating elements disposed in a main scan direction, each element of which is repeatedly energized and de-energized during the making of said mimeographic plate;

(b) providing relative movement between said thermal head and said plate material in a sub scan direction perpendicular to said main scan direction, the amount of relative movement during a time interval between the commencement of successive energizings of a given heating element, during the makeup of said mimeographic plate, defines pixel length and the width of each heating element defines pixel width, to thereby define pixels on said plate material, wherein said heating elements have a length relative to said sub scan direction which is much smaller than said length of said pixels relative to said sub scan direction; and

(c) controlling the time of driving each of said heating elements in order to form a hole in each pixel of said plate material during the relative movement between said thermal head and said plate material provided in step (b), the length of each hole within each pixel varying in accordance with an optical density to be reproduced by said pixel so that a mimeographic printing plate for printing a half tone image is obtained;

(d) repeating steps (a) to (c) so as to produce three mimeographic plates corresponding to the colors cyan, magenta, and yellow, said mimeographic plates being used to print a multicolor image, wherein repeating said steps (a) to (c) for the cyan and magenta mimeographic plates includes;

varying said length of said pixels relative to said sub scan direction for the cyan plate with respect to the magenta plate such that the length of said pixels in the cyan plate are different than the length of said pixels in the magenta plate.

5,355,794

PROCESS AND APPARATUS FOR DRY PRINTING

Herbert Freudenheim, 45 Brook Court, Watling Street, Radlett, Herts. WD7 7JA, Great Britain

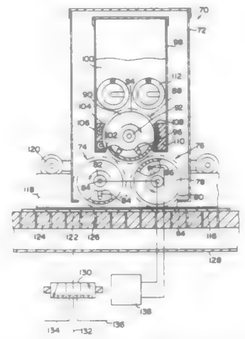
PCT No. PCT/EP91/01566, § 371 Date Feb. 12, 1993, § 102(e) Date Feb. 12, 1993, PCT Pub. No. WO92/03295, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 17, 1990, Ser. No. 971,769

Claims priority, application United Kingdom, Aug. 17, 1990, 9018107

Int. Cl.[5] B41M *1/12*

U.S. Cl. 101—129 **35 Claims**



1. A dry printing process comprising the steps of

(a) arranging a printing substrate to be printed on a bed and positioning a screen printing stencil over said printing substrate in direct contact therewith,

(b) dusting at least one brush having flexible fibres with a dielectric printing powder particles containing a dielectric plastics binder and pigments,

(c) moving said at least one brush over said stencil and said printing substrate under the simultaneous effect of an electric field, the field lines of which extend substantially perpendicular to the surface of said printing substrate;

(d) fixing said printing powder on said printing substrate,

(e) maintaining an electric field of at least 100 V/cm in the vicinity of the portion of said printing substrate that is positioned opposite said at least one brush;

(f) said moving of said at least one brush is done while maintaining a close working distance between the outer surface of said at least one brush and said printing substrate,

(g) the average diameter of said printing powder particles being greater than about 5 μm and not greater than 15 μm, the diameter of the printing powder particles being selected to be smaller than the mesh width of said screen printing stencil, and

(h) removing said screen printing stencil from said substrate.

5,355,795

AUTOMATIC PLATE-LOADING CYLINDER FOR USE WITH PLATE-IMAGING SYSTEMS

James R. Moss, Satellite Beach, Fla.; Frank G. Pensavecchia, Hudson, and John P. Gardiner, Londonderry, both of N.H., assignors to Presstek, Inc., Hudson, N.H.

Filed Aug. 26, 1993, Ser. No. 112,789

Int. Cl.[5] B41J *7/20*

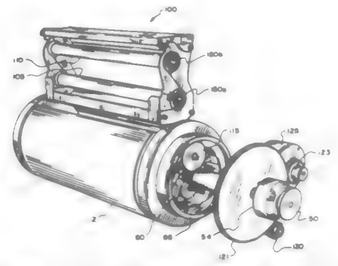
U.S. Cl. 101—141 **8 Claims**

1. Apparatus for winding lithographic plate material onto a

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plate cylinder adapted for rotation about a longitudinal axis, the apparatus comprising:

a. a plate cylinder;
b. supply means located within the cylinder for dispensing lithographic plate material in web form;
c. uptake means, located within the cylinder, for withdrawing material from the dispensing means, the path from the supply means to the uptake means extending around the cylinder;
d. means for restraining rotation of the uptake means;
e. mechanical locking means for restraining rotation of the supply means;



f. braking means for establishing a predetermined amount of tension along the material wrapped around the cylinder;
g. means for selectably disengaging the supply and uptake rotation-restraining means;
h. means for causing rotation of the cylinder to draw material round the cylinder from the supply means;
i. means for monitoring the amount of plate material dispensed; and
j. means for re-engaging the rotation-restraining means upon dispensation of a predetermined amount of material, thereby retaining the predetermined amount of tension along the material wrapped around the cylinder.

5,355,796

ANILOX OFFSET PRINTING UNIT WITH A SHORT INKING DEVICE

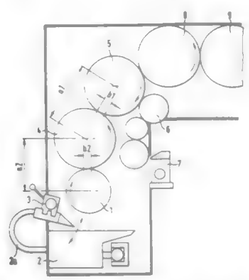
Ingo Köbler, Anhausen, and Hans Mamberer, Königsbrunn, both of Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach, Fed. Rep. of Germany

Filed Mar. 30, 1993, Ser. No. 40,126

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1992, 4211379.2

Int. Cl.[5] B41F *7/26, 31/06*

U.S. Cl. 101—148 **11 Claims**



1. An anilox offset printing unit with a short inking device mounted between side walls, the printing unit comprising a screen roller, means for doctoring the screen roller, and means for applying ink to the screen roller, an inking roller in contact with the screen roller over a first transfer width, and a plate cylinder for inking a rubber blanket cylinder, the inking roller being in contact with the plate cylinder over a second transfer width, a damping device for damping the plate cylinder, adjusting means with at least two degrees of freedom for adjusting at least one of the transfer widths between the inking roller and the screen roller and between the inking roller and the plate cylinder, and at least one measuring means for measuring selected parameters of the printing unit, and means connected to the measuring means for controlling the adjusting means.

5,355,797

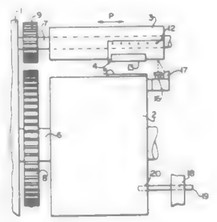
DEVICE FOR PRINTING OBJECTS COMPRISING MEANS FOR BRINGING THE IMAGES OF A NUMBER OF PRINTING PLATES IN REGISTER AND METHOD APPLIED WITH THE DEVICE

Robert W. Tielrooy, Amstelveen, Netherlands, assignor to Van Dam Machine, B.V., Amsterdam, Netherlands

Filed Dec. 28, 1992, Ser. No. 996,826

Int. Cl.[5] B41F *13/16, 5/22*

U.S. Cl. 101—177 **6 Claims**



1. A device for printing objects, comprising:

a framework, said framework having a first bore; an offset cylinder; a plurality of plate cylinders, said plate cylinders being arranged around said offset cylinder; each of said plate cylinders having a drive shaft; rubber cloth fitted on said offset cylinder; a printing plate being fixed to each of said plate cylinders; inking means for applying ink on said printing plates and transferring the ink onto said rubber cloth; each of said plate cylinders being adjustable in axial and radial directions relative to its respective drive shaft; means for securing said offset cylinder in a plurality of positions, each of said positions corresponding to a position of a plate cylinder; each of said printing plates having images thereon, each of said printing plates having a first marking located thereon in predetermined positional relationship with said images; detecting means for detecting a positional relationship of said first markings relative to said detecting means; and wherein said detecting means is mounted on said offset cylinder.

5,355,798

INTERMITTENT MOTION ROTARY PRINTING PRESS

Donald E. Yoder, Jr., 3610 Holly Rd., Dover, Pa. 17315

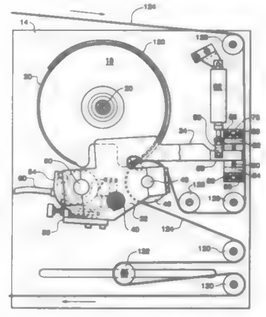
Filed Nov. 12, 1993, Ser. No. 150,847

Int. Cl.[5] B41F *13/24, 13/34*

U.S. Cl. 101—247 **4 Claims**

1. An intermittent motion rotary printing press for printing on one side successive definite lengths of a continuous flexible web advanced through the press from a source of supply upstream of the press, the web having a print-receiving side and a non-printed side, in a process wherein motion of the web is stopped after each of said successive lengths has been printed and is resumed when the following successive length is to be printed, said press being of the type comprising an inking cylinder, a print cylinder having a printing plate attached to and covering a portion of its surface, and a pressure cylinder, all of which cylinders are mounted for rotation with their axes substantially parallel and horizontally positioned, wherein the improvement comprises:

a. a bracket assembly on which both the pressure cylinder and inking cylinder are rotatably mounted in spaced apart relation, said bracket assembly being mounted for pivoting movement about a horizontal pivot axis between a first stop point at which the inking cylinder makes ink transferring contact with the printing plate and the pressure cylinder is spaced from the print cylinder, and a second stop point at which the inking cylinder is spaced from the print cylinder and the pressure cylinder confines the web in printing contact with the printing plate;



b. adjusting means for independently varying the location of the first and second stop points; and
c. means for moving the bracket assembly between the first and second stop points and for holding the assembly at the first stop point during an inking step in which the print cylinder and inking cylinder rotate at equal surface speeds in directions opposite one another and ink is applied to the printing plate from the inking cylinder, and at the second stop point during a printing step in which one of said successive definite lengths of the web is advanced at a predetermined speed and is printed by the inked printing plate as the print cylinder rotates at a surface speed equal to the predetermined web speed.

5,355,799

APPLICATOR DEVICE FOR VISCOUS MATERIALS

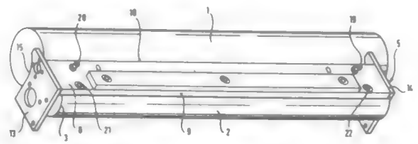
Nölle Lutz, Weissenhorn, Fed. Rep. of Germany, assignor to Nölle GmbH, Fed. Rep. of Germany

Filed Dec. 15, 1992, Ser. No. 991,623

Claims priority, application Fed. Rep. of Germany, Jan. 3, 1992, 4200071; Nov. 26, 1992, 4239793

Int. Cl.[5] B41F *31/06;* **B41L** *27/08*

U.S. Cl. 101—350 **16 Claims**



1. Applicator device for a viscous medium of a flexographic printing machine comprising a pattern roller with recesses which take up a viscous medium and transfer it to a high pressure roller, a dosing roller engaging said pattern roller along a contact line, and a housing having the same length as the pattern roller (1) and the dosing roller (2), said housing being provided above the contact line (4) which extends between the dosing roller(2) and the pattern roller (1), said housing, said pattern roller and said dosing roller creating and surrounding a chamber (6) located above the contact line (4) of said pattern roller and said dosing roller (1, 2) for receiving the viscous medium, said housing cooperating with said pattern roller and said dosing roller to seal the chamber on all sides in a gas-tight and an air-tight manner.

5,355,800

COMBINED EED IGNITER MEANS AND MEANS FOR PROTECTING THE EED FROM INADVERTENT EXTRANEOUS ELECTRICITY INDUCED FIRING

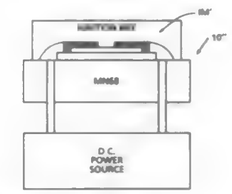
Robert L. Dow, Rte. 5, Box 415, LaPlata, Md. 20646, and Paul W. Proctor, Rte. 2, Kathy La., White Plains, Md. 20695

Continuation-in-part of Ser. No. 584,045, Sep. 18, 1990, Pat. No. 5,279,225, which is a continuation-in-part of Ser. No. 479,117, Dec. 13, 1990, Pat. No. 5,036,768. This application Apr. 14, 1992, Ser. No. 868,249

The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.

Int. Cl.[5] F42B *3/18*

U.S. Cl. 102—202.2 **24 Claims**



1. In combination:

A) an explosive device that includes
a non electrically conducting substrate,
an electrical material mounted on said substrate and having a negative temperature coefficient of electrical resistivity at an elevated temperature, said electrical material covering an area of said substrate and defining two spaced pads connected by a bridge, each of said pads having an area, said bridge having an area and forming a plasma when electrical current is passed therethrough, and the area of each of said pads being much larger than the area of said bridge, said bridge having an electrical resistance of less than about three ohms,
a metallized layer covering each of said spaced pads,
an electrical conductor connected to each of said metallized layers, with electrical resistance between said electrical conductors being substantially determined by the electrical resistance of said bridge, and
an explosive material covering said metallized layer, the area of said bridge in contact with said explosive material being sufficient to ignite said explosive material when said bridge forms said plasma due to said electrical current passing therethrough;

B) a dc power source connected to said electrical conductors; and

C) means for protecting said explosive device from inadvertent extraneous electricity induced firing, said means including
a ground element electrically separated from said electrical conductors by a first impedance,
an impedance in said electrical conductors between said dc power source and said explosive device which is greater than said first impedance when exposed to extraneous electricity.

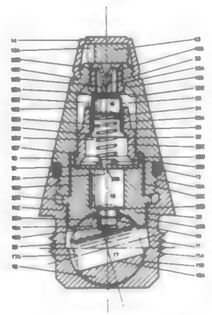
VOL 1167 ISS 3 OC 18 1994 UMI

5,355,801

SMALL CALIBER FUZE WITH ARMING DELAY, SECOND IMPACT AND GRAZE SENSITIVITY

William J. Donahue, 1000 Lossing Ave., Colonial Beach, Va. 22443; Thomas A. Cammack, 4306 Birmingham Pl., Beltsville, Md. 20705, and William C. Pickler, P.O. Box 0251, 12476 Lime Kiln Rd., Fulton, Md. 20759

Filed Jun. 21, 1993, Ser. No. 43,302
Int. Cl.[5] F42C *15/22, 15/26*
U.S. Cl. 102—233 11 Claims



1. A fuze for an explosive shell having diameter of 40 mm or less, which comprises:

a body that tapers from a large diameter rear end, with an external portion threaded to mate with said shell, to a small diameter at the front or nose end;

a conical firing pin mounted in said nose end pointing to the rear of the body;

a detonator housing mounted centrally in said body defining a tunnel from the front to the rear of said body with front, rear and center chambers, said center chamber being filled with detonator material to form a detonator;

a primer assembly mounted on the front end of said detonator housing, supporting a primer cup with a cylindrical sidewall and a circular endwall, the rear surface of said endwall being covered with a primer disk and the front surface thereof being adjacent to said pin;

an out-of-line spin actuated arming rotor loaded with booster material mounted on the rear end of said detonator housing;

said rotor including a mechanical means to allow said booster to come in line with the said primer disk and detonator only after setback, spin and a minimum safety delay of one tenth of a second has occurred in that order.

5,355,802

METHOD AND APPARATUS FOR PERFORATING AND FRACTURING IN A BOREHOLE

Luc Petitjean, Danbury, Conn., assignor to Schlumberger Technology Corporation, Ridgefield, Conn.

Filed Nov. 10, 1992, Ser. No. 975,497
Int. Cl.[5] F42B *3/00*
U.S. Cl. 102—313 16 Claims

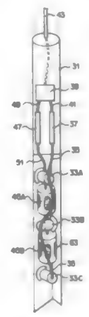
1. A method for fracturing a formation surrounding a borehole, the method being performed by a fracture initiation and propagation tool and comprising the steps of:

positioning the tool in a production zone of the borehole;

igniting a gas propellant in the tool which is released to pressurize a portion of the borehole surrounding the production zone;

waiting a predetermined time period until the production zone of the borehole reaches a maximum pressure level and decreases a preselected amount; and

firing at least one shaped charge through a gas zone created by the gas propellant to initiate a fracture at a particular location such that pressure built up by the gas propellant



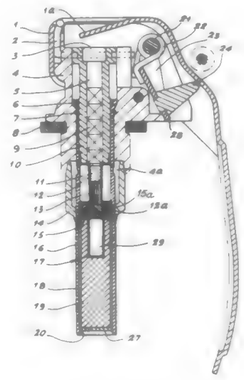
is released into the particular location propagating the fracture.

5,355,803

IGNITER PLUG

Jean Robinet, Balma, and Daniel Casenave, Castanet Tolosan, both of France, assignors to Ruggieri, Neuilly sur Seine, France

Filed Jan. 26, 1993, Ser. No. 8,987
Claims priority, application France, Jan. 29, 1992, 92 00931
Int. Cl.[5] F42B *27/00*
U.S. Cl. 102—487 10 Claims



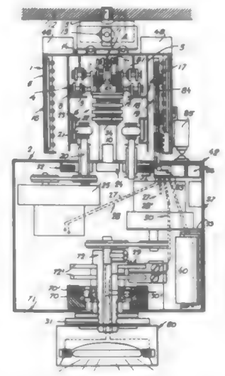
1. Delay igniter plug for a manual or mechanical launch pyrotechnic machine, comprising a body (4) fitted with a control mechanism comprising a trigger lever (1) and a percussion mechanism (28) interacting with a primary pyrotechnic module provided with a primer (3), a retardant composition (9), a primary explosive (13) for ensuring initiation of a charge of an associated machine, said primary pyrotechnic module being arranged so that the primary explosive (13) cannot be initiated without going via the retardant composition, the primary pyrotechnic module (5) being axially displaceable in said body toward a principal charge, means (2) for holding the primary pyrotechnic module (5) axially separated from the principal charge (19) and a screen (12*a*, 15; 12*c*, 15) interposed between the principal charge and a terminal part of the primary pyrotechnic module containing the primary explosive (13), characterized in that the means (2) for holding the primary pyrotechnic module (5) axially separated from the principal charge (19) are exclusively mechanical means, actuated by the trigger lever (1) and in that the screen interposed between the principal charge and the terminal part of the primary pyrotechnic module (5), comprises a closure cap (15) of a cup (18) containing the principal charge (19) and a pellet (12*a;* 12*c*) carried by an end of the primary pyrotechnic module (5) containing the primary explosive (13) and engaged in the cap (15), the pellet (12*a;* 12*c*) and the cap (15) being rendered integral with each other in the case of excitation of the primary explosive (13) in the storage position and creating a physical barrier to the shock wave or to the fragments.

5,355,804

RAIL-GUIDED APPARATUS-CARRYING SYSTEM

Eduardo R. Garcia, and Patricia Lazzeretti, both of 4100 Lugones St., 1430 Buenos Aires, Argentina

Continuation-in-part of Ser. No. 806,760, Dec. 13, 1991, abandoned. This application Nov. 3, 1993, Ser. No. 145,123
Int. Cl.[5] B61B *3/02*
U.S. Cl. 104—93 19 Claims



1. A rail-guided apparatus-carrying system for conveying and moving, with steady and smooth movements, at least one lighting apparatus along a predetermined conveying path defined in a support surface, the system comprising:

a rail-like holding assembly having a profile shape with a base to be connected to the support surface, the holding assembly having faces defining at least three guiding, supporting, stabilizing and driving tracks;

a movable carrier connected to a supporting-guiding-stabilizing mechanism capable of running along the holding assembly, the supporting-guiding-stabilizing mechanism having at least guiding, supporting and stabilizing wheels for running over at least the guiding, the supporting and the stabilizing tracks, the carrier including a driving motor unit for moving the carrier along the holding assembly;

first damping-resilient means connected at least to the supporting, guiding and stabilizing wheels for causing said wheels to be resiliently urged, with damping effect, at least against the supporting, guiding and stabilizing tracks, the damping-resilient means exerting opposite forces on the wheels for compensating for any alterations appearing on the conveying path during movement of the carried apparatus;

an electrical-feeding system to supply electrical power to at least the movable carrier and to the carrier apparatus, the electrical-feeding system including a plurality of electrical contacts provided in at least one face of the holding assembly, the electrical contacts being capable of being fed by a power line through electrical connectors;

driving means connected to the driving motor unit and to the driving track; the driving means comprising at least one shaft driven by the driving motor unit, the shaft having, at least one driving wheel for running over the driving track; and

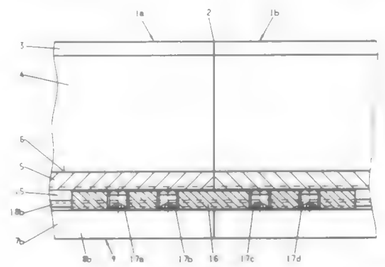
power collecting means provided in the movable carrier, electrically connected to at least the driving motor unit, capable of collecting power from the electrical contacts of the holding assembly by means of at least one electrical connecting finger in contact with the electrical contacts of the holding assembly.

5,355,805

RAIL FOR OVERHEAD TROLLEYS HAVING BAR IN GROOVE CONNECTION FOR CONNECTING ADJACENT RAIL ENDS

Karl Haab, Obere Weidstrasse 7, 6343 Rotkreuz, and Otto Haab, Zurichstrasse 25, 8932 Mettmenstetten, both of Switzerland

Filed Jun. 3, 1993, Ser. No. 71,722
Claims priority, application Switzerland, Jun. 4, 1992, 01796/92-5
Int. Cl.[5] E01B *25/24*
U.S. Cl. 104—106 13 Claims



1. A rail having at least one running surface for bearing rollers of running mechanisms, which rail is formed by at least two successive profile pieces of equal cross-section, which join together at a junction point, and comprises at least one coupling piece, which overlaps and is connected to said profile pieces, wherein each profile piece has, for the reception of a part of said at least one coupling piece which overlaps it, a coupling groove, having lateral holding strips, which overlap the coupling piece with holding surfaces, and in that the said part of the coupling piece is braced against the holding surfaces in each case by means of at least one threaded pin, which is screwed into a through bore of said coupling piece and presses against the floor of the coupling groove and, wherein the holding surfaces are plane and are counter-directionally inclined and interact with flat contact strips on the coupling piece, which contact strips respectively exhibit a corresponding inclination.

5,355,806

MONOCOQUE LOCOMOTIVE

Allen C. Bieber; John E. Kleiner, both of Erie; Thomas C. Sonney, Wattsburg; Frederick W. Schulze, Erie; Harold E. Rinn, Erie; Gail L. Detar, Erie; Douglas W. Miller, North East; Richard H. Holmes, Harborcreek, and Geoffrey Perkins, North East, all of Pa., assignors to General Electric Company, Erie, Pa.

Filed May 10, 1993, Ser. No. 59,788
Int. Cl.[5] B61C *17/00*
U.S. Cl. 105—26.05 1 Claim

1. A locomotive assembly comprising:

a generally flat longitudinally extending platform;

a plurality of generally vertical sidewalls extending upwards

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along at least a portion of the platform, each of the sidewalls having a longitudinally extending hollow support disposed at the top of the sidewall;

a nosepiece extending about the front of the platform from sidewall to sidewall;

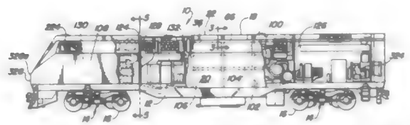
attachment means for removably attaching a component to the hollow support of the sidewall without inwardly deforming the support when forces are applied by the attachment means on the support;

a bulkhead including a generally vertical attached portion extending transversely across the platform and fixedly attached to the platform and the sidewall, the attached portion including a vertical plate forming at least a portion of an opening, and

an insert portion disposed within the opening, the insert portion including a planar substrate forming a single plane with the plate, the peripheral edge of the substrate being rigidly attached to the plate to form a unitary element, the insert portion also including at least one component attached to the substrate;

a window assembly including a peripheral frame disposed in an opening in the sidewall, the peripheral frame including a first flange extending horizontally inward through the sidewall and a peripheral skirt attached to the first flange and extending outward from the first flange and generally coplanar with the exterior of the sidewall to form an interface between the skirt and the sidewall,

a plurality of positioning means attached about a first portion of the periphery of the peripheral frame, each positioning means contacting the sidewall for positioning the peripheral skirt relative to the sidewall so that the interface is a



desired width, the positioning means including means for allowing limited relative coplanar movement between the peripheral skirt and the sidewall,

sealing means disposed within the interface for environmentally sealing the interface during the limited relative movement between the skirt and the sidewall, and

fastening means for rigidly attaching a second portion of the periphery of the peripheral flange to the sidewall;

a headlight assembly including a frontal transparent pane flush mounted with the nosepiece,

a rearward housing, the pane mounted to the front of the housing to form a generally sealed enclosure,

air supply means extending into the enclosure to supply a desired flow rate of pressurized air into the enclosure, and

air exit means extending through the enclosure for allowing air to flow out of the enclosure and

a collision post assembly including a vertical first plate rigidly attached to the upper surface of the platform,

an operator's cab plate rigidly attached to the top edge of the vertical plate and to the sidewalls,

a front section means rigidly attached to the platform and the first plate, for absorbing collision forces and transferring the forces to the first plate at first attachment points between the first plate and said front section means, and

a rear support means rigidly attached to the platform and the first plate, attachments between the first plate and the rear support means being at second attachment points, at least one of the second attachment points being opposite one of the first attachment points, for transferring the forces transferred to the vertical plate by the front section means, to the platform.

5,355,807

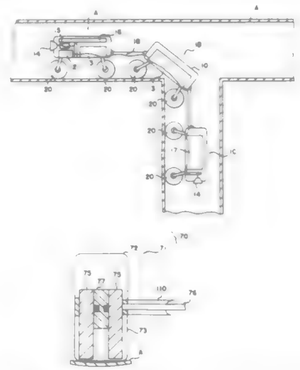
VEHICLE ADAPTED TO FREELY TRAVEL THREE-DIMENSIONALLY BY MAGNETIC FORCE AND WHEEL FOR THE VEHICLE

Ronald E. Pelrine; Eric A. Edwards, both of Menlo Park, and Lawrence S. Gullman, La Honda, all of Calif., assignors to Osaka Gas Co., Ltd., Japan

Division of Ser. No. 741,330, Aug. 7, 1991, Pat. No. 5,220,869. This application Jan. 28, 1993, Ser. No. 27,736

Int. Cl.[5] B61C *15/04*; B61B *13/10*

U.S. Cl. 105—78 **3 Claims**



1. A vehicle adapted to freely travel three-dimensionally and comprising a vehicle body, wheels provided on the vehicle body, and a drive assembly mounted on the vehicle body for driving at least one said wheel, the one wheel comprising an outer wheel member having an annular peripheral wall and having a rigidity capable of bearing the load of the vehicle and magnetic forces applied to the one wheel, an arm rotatably mounted on the central portion of the outer wheel member and having a portion of magnetically permeable material radially extending to a position close to the inner peripheral surface of the outer wheel member, a magnet mounted on the arm with its poles in contact therewith, and an arm rotating portion for rotating the arm through a desired angle independent of the outer wheel member's rotation so that when the vehicle travels from a first surface to a second surface having an inclination which allows the outer wheel member to come into contact with the first surface at a first point and with the second surface at a second point simultaneously and the outer wheel member is in a stationary state on contact with the first surface at the first point and the second surface at the second point, the rotating arm portion rotates the arm to transfer the attraction of the magnetic force from the first surface to the second surface, whereby the vehicle in the stationary state is moved to travel from said initial stationary position along the second surface.

5,355,808

BATTENLESS RAILCAR HATCH COVER ASSEMBLY

Stephen R. Early, Olathe, Kans., assignor to Aero Transportation Products, Independence, Mo.

Filed Sep. 21, 1992, Ser. No. 948,116

Int. Cl.[5] B61D *39/00*

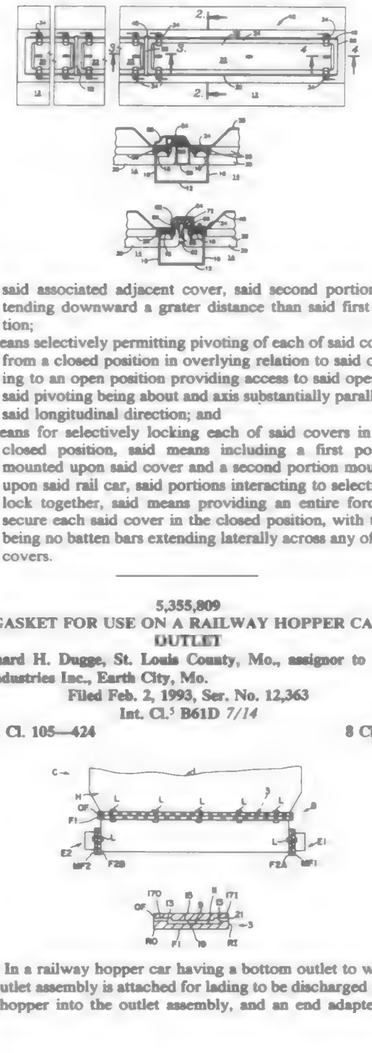
U.S. Cl. 105—377 R **15 Claims**

1. A hatch assembly for rail cars having at least one opening therein extending in a longitudinal direction, such opening having first and second ends, comprising:

a plurality of covers, each having lateral sides and longitudinal ends, said covers being arranged in a longitudinal series along the longitudinal direction with adjacent ones

of said covers each having an associated one of said longitudinal ends in proximity to each other in a closed position to therefore define at lest one set of adjacent longitudinal ends, a first of said longitudinal ends of each said set having a compression lip extending longitudinally outwardly therefrom, and thus extending longitudinally inward of, and spaced above, a second of said longitudinal ends of each said set, when in said closed position, a second of said longitudinal ends of each said set having a sealing lip extending upward therefrom;

a compression seal fixed to a bottom face of each of said compression lips and adapted to abut against said second of said longitudinal ends of said set when in said closed position, each said compression seal each including a first portion adapted to abut against said sealing lip and a second portion adapted to abut against an edge portion of



said associated adjacent cover, said second portion extending downward a grater distance than said first portion;

means selectively permitting pivoting of each of said covers from a closed position in overlying relation to said opening to an open position providing access to said opening, said pivoting being about and axis substantially parallel to said longitudinal direction; and

means for selectively locking each of said covers in said closed position, said means including a first portion mounted upon said cover and a second portion mounted upon said rail car, said portions interacting to selectively lock together, said means providing an entire force to secure each said cover in the closed position, with there being no batten bars extending laterally across any of said covers.

5,355,809

GASKET FOR USE ON A RAILWAY HOPPER CAR OUTLET

Richard H. Dugge, St. Louis County, Mo., assignor to ACF Industries Inc., Earth City, Mo.

Filed Feb. 2, 1993, Ser. No. 12,363

Int. Cl.[5] B61D *7/14*

U.S. Cl. 105—424 **8 Claims**

1. In a railway hopper car having a bottom outlet to which an outlet assembly is attached for lading to be discharged from the hopper into the outlet assembly, and an end adapter attached to at least one outer end of the outlet assembly for lading discharge equipment to be connected to the outlet assembly, the improvement comprising:

a flange formed at the end of the outlet assembly and defining an opening through which the lading is discharged from the outlet assembly;

a mating flange formed on the end adapter for attaching the end adapter to the outlet assembly;

fastening means for mounting the end adapter to the outlet assembly; and,

sealing means installed between the respective flanges to effect a seal between the end adapter and the outlet assembly, the sealing means including a gasket extending circumferentially about the opening, one of the respective flanges having a circumferential groove therein, and the gasket having a raised portion extending circumferentially of the gasket and sized to be received in the groove to align the gasket with respect to the flanges so when the end adapter is mounted to the outlet assembly, a seal is effected therebetween to prevent lading from being trapped and contaminating subsequent ladings, and said groove being formed on the outlet assembly flange wherein the outlet has an irregular shape and the gasket has a corresponding irregular shape, and the groove is formed at the outer edge of the outlet assembly flange and is of a uniform width around the perimeter of the flange.

5,355,810

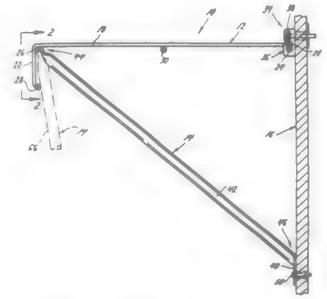
SHELF AND SUPPORT ARM ASSEMBLY

Charles Camilleri, St. Louis, Mo., assignor to Lee/Rowan Company, St. Louis, Mo.

Filed Nov. 22, 1991, Ser. No. 796,639

Int. Cl.[5] A47B *23/04*

U.S. Cl. 108—42 **12 Claims**



1. A shelf assembly comprising:

a shelf member formed of a plurality of crisscrossing wires, the plurality of wires including at least one back wire extending laterally across a back edge of the shelf member and at least one front wire extending laterally across a front edge of the shelf member, the front and back wires being longitudinally spaced from each other;

means for securing the back wire to a vertical wall surface;

at least one support arm, the support arm having opposite first and second ends, the first end of the support arm being provided with means for securing the first end to a vertical wall surface, and the second end of the support arm being provided with at least one hook thereon, the hook being releasably engagable over the front wire of the shelf member for releasably attaching the second end of the support arm to the front wire of the shelf member for pivoting movement relative thereto, the hook having a configuration for suspending the support arm from the front wire of the shelf member solely by the hook with the front wire and the back wire positioned in a horizontal

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plane and the support arm positioned generally perpendicular to the horizontal plane;

the plurality of crisscrossing wires of the shelf member form a substantially planar support surface of the shelf member, and the hook enables the support arm to be suspended beneath and pivoted relative to the support surface from a first position where the support arm is suspended by the front wire at a substantially perpendicular orientation relative to the support surface, to a second position where the support arm is suspended by the front wire at an acute angle orientation relative to the support surface; and,

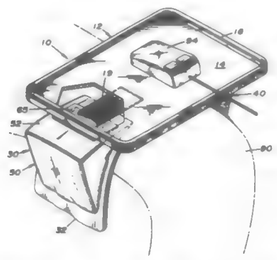
the plurality of crisscrossing wires of the shelf member include a plurality of parallel, spatially arranged longitudinal wires each having opposite front and back ends, with the back wire extending laterally across and being secured to the back ends of each of the longitudinal wires and the front wire extending laterally across and being secured to the front ends of each of the longitudinal wires, and the second end of the support arm is formed with at least a pair of shoulder surfaces thereon, the shoulder surfaces being provided on opposite sides of the hook and being configured to engage against and support a pair of longitudinal wires of the plurality of longitudinal wires with the hook projecting between the pair of longitudinal wires.

5,355,811

ADJUSTABLE LEG SUPPORTED MOUSE PAD

Brian H. Brewer, 2005-185th Place SE. #P-204, Bothell, Wash. [illegible]12

Filed Mar. 31, 1993, Ser. No. 40,918
Int. Cl.[5] A47B *23/00*
U.S. Cl. 108—43 5 Claims



1. An adjustable leg supported mouse pad, comprising:

a. a mouse pad, said mouse pad having a flat top surface and a bottom surface;

b. an adjustable saddle structure capable of engaging a user's thigh, said saddle structure including a flexible panel and a first support member and a second support member, said flexible panel having a top surface and a transverse axis, said first and second support members being spaced apart with said first support member being pivotally attached and said second support member being adjustably attached to said top surface of said flexible panel on opposite sides of said transverse axis, each said support member being a five-sided pillow shaped, triangular in cross-section, with a medial planar surface and a quadrilateral bottom surface;

c. a fastening means disposed between said medial planar surfaces on said first and second support members and said bottom surface of said mouse pad enabling said first and second support members to be selectively fastened to said bottom surface of mouse pad, and;

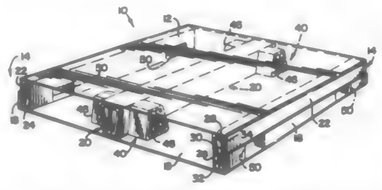
d. an adjustable attachment means disposed between said bottom surface of said second support member and said top surface of said flexible panel, said adjustable attachment means enabling said second support member to be adjustably attached to said flexible panel so that when said flexible panel is positioned transversely over said user's thigh, said second support member may be adjusted in position on said flexible panel so that when said mouse pad attached to said first and second support members, said mouse pad may be supported in a substantially horizontal position by said over said user's thigh.

5,355,812

PAPERBOARD PALLET WITH DECKING SHEET FOLDED TO FORM OUTER STRINGERS

Ted D. Kilpatrick, Ponte Vedra Beach, Fla., and Arthur M. Wagner, Geneva, Ill., assignors to Gate Pallet Systems, Inc., Crown Point, Ind.

Continuation-in-part of Ser. No. 74,942, Jun. 10, 1993. This application Sep. 10, 1993, Ser. No. 119,726
Int. Cl.[5] B65D *19/00*
U.S. Cl. 108—51.3 18 Claims



1. A pallet made predominantly of corrugated paperboard, the pallet comprising a first decking sheet defining a first deck and a second decking sheet defining a second deck spaced from and parallel to the first deck, the first and second decks being planar, the first decking sheet being folded to form two outer stringers extending longitudinally along opposite sides of the pallet, each outer stringer having panels that define a box-like profile with two upper corners and two lower corners and that include an outer panel extending vertically from the first deck, a panel extending inwardly from the outer panel and secured adhesively to the second deck, an inner panel extending vertically from the inwardly extending panel, a panel extending outwardly from the inner panel and secured adhesively to the first deck, and a diagonal panel extending from another of the panels of such outer stringer and extending diagonally from one of the upper corners of such outer stringer to one of the lower corners of such outer stringer, so as to brace the box-like profile of such outer stringer, wherein the outer stringers are spaced from each other and wherein spacing between the outer stringers is at least several times greater than spacing between the outer and inner panels of either of the outer stringers.

5,355,813

LOAD AND ROLL PALLET

James R. Darnell, Tinley Park, and Ralph DeFalco, Oak Lawn, both of Ill., assignors to C.M.I. Freight Trans Inc., Oak Park, Ill.

Filed Sep. 7, 1993, Ser. No. 116,588
Int. Cl.[5] B65D *19/44*
U.S. Cl. 108—55.3 7 Claims

1. An improved load-and-roll-style pallet which includes:

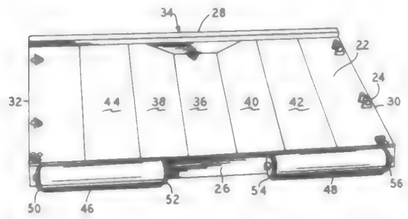
a generally rectangular body for carrying lading, for positioning on a floor of a lading carrier, and for movement with the carrier;

said body having top and bottom surfaces, a front end, a back end and a pair of sides;

said body defining an elongated central lading carrying depression which extends between the front end and the back end, is positioned between the sides and, has a pair of opposite ends;

a roller systems mounted to the body (a) at the front end, (b) extending forwardly thereof, (c) whose axis of rotation is generally transverse to the lading carrying depression and, (d) whose axis of rotation is forward of the front end;

said body defining a pair of lift pockets, one member of the pair between the depression and each side, wherein each pocket opens to the back so the pallet can be lifted, rolled in position on a lading carrier, and



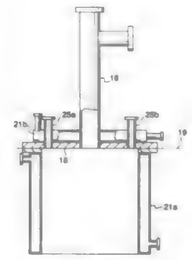
said front end and back end each including an end plate that extends across an end of the central depression and both plates closing the ends of the central depression so as to enhance the front-end to back-end restraint to the shifting of lading loaded in the central depression.

5,355,814

GASIFIER BURNER FOR POWDERED SOLID FUELS AND METHOD FOR USING THE SAME

Nobumasa Kemori; Kimiaki Utsunomiya; Hitoshi Takano, all of Niihama, and Keiji Fujita, Saijou, all of Japan, assignors to Sumitomo Metal Mining Company Limited, Tokyo, Japan

Filed Jan. 25, 1993, Ser. No. 8,818
Claims priority, application Japan, Jan. 24, 1992, 4-032804
Int. Cl.[5] F23D *1/06*
U.S. Cl. 110—265 8 Claims



1. A method for using a gasification burner for powdered solid fuel, in which the burner comprises:

a combustion chamber having a ceiling formed with an opening therethrough, said chamber having a vertical center axis and said ceiling having a lower surface defining the top of the combustion chamber;

a pre-mixing pipe for conveying under pressure to said combustion chamber a combustible mixture of powdered solid fuel and an oxygen-bearing gas, said pipe having a center axis and a lower end connected to said opening in said ceiling and defining with the lower surface of said ceiling a horizontal plane substantially at right angles to the center axis of said pre-mixing pipe, a nozzle connected to said pre-mixing pipe near the upper end thereof for supplying said oxygen-bearing gas to said pipe for mixing therein with said powdered solid fuel, said nozzle having a center axis, said pre-mixing pipe and said combustion chamber being concentric;

a plurality of sub-mixing pipes mounted in said ceiling and directed into said combustion chamber, said sub-mixing pipes being mounted between the pre-mixing pipe and the side wall of the combustion chamber and being spaced from each other to form a concentric circle with the pre-mixing pipe, powdered solid fuel and an oxygen-bearing gas being supplied under pressure to said sub-mixing pipes for delivery to said combustion chamber to enhance combustion;

wherein the powered solid fuel and oxygen-bearing gas mix in said pre-mixing pipe and emanate from the lower end of said pre-mixing pipe into said combustion chamber in the form of a cone-shaped gas flow increasing in diameter away from said lower end of said pre-mixing pipe, the total spread angle of the conical surface of the combustible gas flow forming an angle 2α, and wherein α is between 5° and 20°, and the variable values are determined by the following equation:

$$\tan\alpha = (D-d)/2/L,$$

wherein

D is the internal diameter in mm of the combustion chamber

d is the internal diameter in mm of the pre-mixing pipe

L is the length or height of the combustion chamber

l is the distance in mm from the center axis of the nozzle to the lower end of the pre-mixing pipe, and 5d is equal to or less than 1,

including the step of making the oxygen ratio m for the pre-mixing pipe greater than the oxygen ratio m for the sub-mixing pipe, wherein m is obtained from the equation

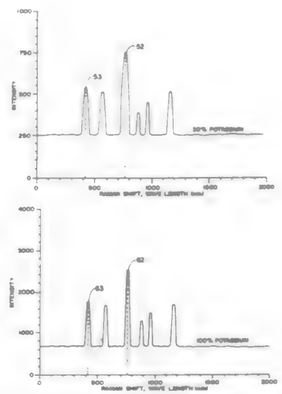
m = amount of oxygen actually supplied/amount of oxygen required to oxidize all of the C and H in the fuel to obtain Co_2 and H_2O.

5,355,815

CLOSED-LOOP VARIABLE RATE APPLICATOR

Robert J. Monson, St. Paul, Minn., assignor to Ag-Chem Equipment Co., Inc., Minnetonka, Minn.

Filed Mar. 19, 1993, Ser. No. 33,911
Int. Cl.[5] A01C *15/00*
U.S. Cl. 111—200 20 Claims



1. An apparatus for treating an area of soil, comprising:

(a) a vehicle capable of traversing a field;

(b) soil analysis means coupled to said vehicle for obtaining a soil signature indicative of a content of at least one element at a soil scene, comprising:

(i) means for generating a first signal at a predetermined fixed frequency and directing said first signal upon the soil scene; and

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(ii) means for detecting a returned second signal from the soil scene induced by the first signal, said second signal composed of a plurality of frequencies and defining the soil signature; and

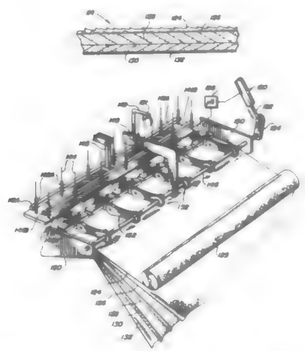
(c) means coupled to the vehicle for dispensing a quantity of the element as a function of the soil signature.

5,355,816

QUILTING AND MULTIPLE LAYER SHIRRING FOR BEDDING

Michael A. Echevarria, 200 E. Angelino #104, Burbank, Calif. 91502

Filed Apr. 28, 1992, Ser. No. 875,278
Int. Cl.[5] D05B *11/00*; A47G *9/00*
U.S. Cl. 112—2.1 13 Claims



1. Quilting apparatus for producing a sleeping surface having a shirred uppermost fabric layer comprising: p1 a frame for supporting a plurality of layers of material to be laminated to form said sleeping surface;

feed roll means for advancing said layers along said frame during the laminating thereof;

means including a plurality of needles for stitching said layers together along predetermined stitch lines as the layers are advanced along said frame;

a plurality of shirring blade assemblies mounted along said frame generally transversely of said stitch lines, each assembly being positioned between a corresponding pair of adjacent stitch lines, each assembly including a shirring blade which is movable between a first position in which the blade is retracted to frictionally engage a segment of said uppermost fabric layer and a second position in which the blade is extended to advance said segment of said uppermost fabric layer relative to the other layers of said plurality;

means for selectively moving the blades of said assemblies between said first and said second positions to establish the shirred configuration of said uppermost fabric layer; said selectively moving means including:

a pivotable shaft extending generally transversely of said frame with said shirring blade assemblies being attached to said shaft at transversely spaced positions for pivotable movement therewith, and

an adjustable member coupled to said shaft for determining the extent of the segment of the uppermost fabric layer which is frictionally engaged by the blades;

each blade assembly comprising a lever arm fixedly mounted to said shaft and a blade holder pivotably coupled to the lever arm at a point remote from the shaft, said blade holder having a shirring blade attached thereto; and

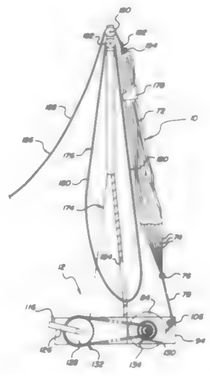
means for pivoting said shaft in order to rotate the lever arms of said blade assemblies in unison to move said blades between said first and second positions, wherein the advancement of said blades from said first position to said second position frictionally engages said uppermost fabric layer and the layer next adjacent thereto to develop different degrees of advancement of said layers relative to the remainder of the layers of said plurality.

5,355,817

SAIL BOAT

James M. Schrems, 8650 Ederer Rd., Saginaw, Mich. 48609

Filed Sep. 29, 1993, Ser. No. 128,551
Int. Cl.[5] B63H *9/08*
U.S. Cl. 114—39.1 26 Claims



1. A wind-powered sailing apparatus, comprising:

a hull;

an air-inflatable parafoil having load and control lines connected to said parafoil for extending, retrieving, and maneuvering said parafoil;

line length adjustment means carried by said hull and connected to said lines for adjusting the length of said lines between said hull and said parafoil;

parafoil maneuvering means engaging said control lines for enabling a user selectively to alter the effective length of said control lines independently of one another for steering said parafoil; and

parafoil collapsing means carried by said hull for collapsing and supporting said parafoil when retrieved.

5,355,818

PORTABLE INSPECTION EQUIPMENT FOR OCEAN GOING VESSELS

Gary Strait, and Paul Murphy, both of San Pedro, Calif., assignors to Strait Imaging Research, Newport Beach, Calif.

Filed Aug. 27, 1992, Ser. No. 936,208
Int. Cl.[5] B63G *8/00*
U.S. Cl. 114—73 27 Claims

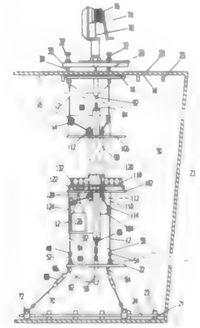
1. The combination of a ship having a cargo hold beneath the deck of said ship and accessible for cleaning and inspection through a cargo hatch of limited dimensions and an inspection device comprising:

a. carriage support means comprising a plurality of spaced-apart guy wires received within said cargo hold and including attachment means removeably securing said guy wires in a vertical position including first attachment means to secure the upper ends of said guy wires to said deck and second attachment means to secure the lower ends of said guy wires to the bottom wall of said cargo hold;

b. a carriage vertically moveably received on said guy wires;

b. a platform rotationally mounted on said carriage for rotational movement thereon and including a central column;

c. means to direct said guy wires into and through said central column;



d. carriage elevational drive means to raise and lower said carriage on said guy wires.

5,355,819

METHODS OF TRANSPORTING LOW DENSITY LIQUIDS ACROSS OCEANS

Chih-Hung Hsia, and Chih-Yu Hsia, both of 210 W. Las Tunas Dr., Arcadia, Calif. 91006

Filed Jan. 26, 1993, Ser. No. 9,222
Int. Cl.[5] B63B *25/12*
U.S. Cl. 114—74 R 4 Claims

2. A method of transporting low density liquids across oceans, the method comprising:

placing a Bag near a source of low density liquid; said low density liquid having density lower than that of sea water; said Bag being a bag with two sealable Side Openings; said Side Openings being on a side wall of said Bag; each said Side Opening being a membrane clamped by two rings onto said Bag; said Side Opening being surrounded by floats; said floats being made of material lighter than sea water and being mounted on the walls of said Bag;

un-sealing said Side Openings of said Bag;

filling up said Bag with low density liquid to be transported;

sealing up said Side Openings of said Bag;

putting a Towing Net around said Bag; said Towing Net being a net capable of strengthening said Bag;

towing said Bag to open sea to catch an ocean current;

releasing said Bag and allowing said Bag to drift;

repeating the last two steps until said Bag reaches its destination;

un-sealing at least one of said Side Openings;

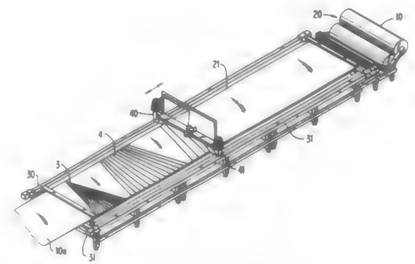
removing said low density liquid from said Bag.

5,355,820

MACHINES FOR MAKING LAMINATE SUITABLE FOR STRESS BEARING MATERIALS SUCH AS SAILS

Peter G. Conrad, Greensboro, and John D. Sullivant, Suwanee, both of Ga., assignors to Sobstad Corporation, Greensboro, Ga.

Filed Jul. 27, 1992, Ser. No. 920,613
Int. Cl.[5] B63H *9/06*
U.S. Cl. 114—103 30 Claims



1. A method for constructing a material with improved stress bearing characteristics including use of the material for distributing stress in a sail whereby said sail is capable of resisting aerodynamic and dynamic loading, said method comprising:

feeding a film from a film supply source onto a surface;

drawing a thread from a thread supply source;

applying an amount of an adhesive from an adhesive supply source to said thread upon a withdrawal of said thread from the thread supply source;

depositing said thread onto said film in a pre-determined thread layout pattern;

looping said thread around means for changing a direction for said threads and for providing tension in said thread, said means for changing direction for said thread being located on opposite sides of said film; and

driving reciprocally x direction means and y direction means interconnected with each other; and in

response to the depositing of said thread onto said film in a pre-determined thread layout pattern.

5,355,821

STEERING APPARATUS FOR AN OUTBOARD MOTOR

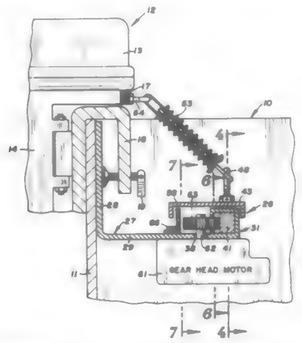
Bruce D. Johnson, Bloomington, Minn., assignor to Red Line Industries, Inc., Minneapolis, Minn.

Filed Mar. 31, 1994, Ser. No. 220,607
Int. Cl.[5] B63H *25/00*
U.S. Cl. 114—144 R 23 Claims

1. A steering apparatus for remote control of an outboard motor pivotally mounted on the stern of a boat With clamping means, comprising: bracket means having a first end and a second end, the first end mounted to the stem of the boat with the clamping means mounting the outboard motor to the boat, the second end including tubular means, rack means slidably accommodated by the tubular means, the tubular means including a top wall having a pair of transverse slots open to opposite ends thereof, connector means secured to the rack means and attachable to the outboard motor, the connector means being aligned with and movable into the slots and operable to pull the outboard motor from side to side when the rack means is linearly moved relative to the tubular means to control the direction of movement of the boat, motor means secured to the bracket means, the motor means operable to reversibly move the rack means in opposite lateral directions,

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and control means operably connected to a source of power and to the motor means to control the operation of the motor



means to linearly move the rack means thereby steering the boat from a location remote from a rear area of the boat.

5,355,822

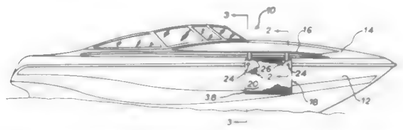
BUMPER FENDER

Stuart H. Lemke, 349 River Bluff Dr., Mosinee, Wis. 54455

Filed Aug. 25, 1993, Ser. No. 111,633

Int. Cl.[5] B63B *59/02*

U.S. Cl. 114—219 **8 Claims**



1. A bumper fender assembly to protect a boat hull when moored at a dock, said assembly comprising:

a slip sheet disposed to be in contact with the dock when the boat is moored, said slip sheet having an upper and lower horizontal edge,

a cushion sheet connected to said slip sheet adjacent said upper horizontal edge so that said cushion sheet hangs from said upper edge of said slip sheet and is disposed between said slip sheet and the boat hull,

fastening means disposed at the upper end of one of said slip or cushion sheets for suspending said assembly along a portion of the boat hull,

said cushion sheet being in contact with the boat hull and following the up and down movement of the hull while said slip sheet contacts the dock and slides along the surface of said cushion sheet as the boat hull moves up and down.

5,355,823

APPARATUS AND METHOD FOR PERFORMING EXTERNAL SURFACE WORK ON SHIPS' HULLS

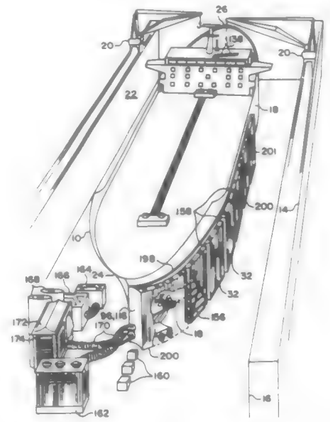
Richard A. Goldbach, and William A. Wagner, both of Norfolk, Va., assignors to MMC Compliance Engineering, Inc., Norfolk, Va.

Continuation-in-part of Ser. No. 782,315, Oct. 24, 1991, Pat. No. 5,211,125. This application Nov. 12, 1992, Ser. No. 975,520

The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.

Int. Cl.[5] B63B *59/00*

U.S. Cl. 114—222 **33 Claims**



1. A method for servicing a generally vertical surface of substantial horizontal extent, comprising:

(a) selecting a series of horizontally adjoining increments of the surface, each having a given horizontal extent which is less than said substantial extent, and a given vertical extent which ranges downwards to adjacency with a generally horizontal platform;

(b) arranging a respective generally vertical tower on the platform in confronting relationship to, but spaced from each said increment of the surface, at least two said towers each having supported thereon a respective trolley which can be raised and lowered on the respective tower so as to place the respective trolley selectively in confronting relation with any selected horizontal strip of the respective said increment, and each said trolley having provided thereon a work platform cantilevered from the respective trolley towards the surface, on an arm structure which permits the respective work platform to be extended towards and retracted away from the surface;

(c) forming a series of horizontally adjoining curtain-enclosed space increments each of which includes a respective said tower and a respective said increment of said surface, with each said work platform thereby being disposed within a respective said space increment and all of said work platforms thereby being enclosed in common within a space composed of said space increments;

(d) while supporting at least one work-performing operator on each said work platform, causing each said operator to successively apply work to a plurality of said bands of respective ones of said increments of said surface confronted by a respective said work platform, and, in conjunction therewith, adjusting each said arm structure for adjusting the proximity of the respective said operators to the respective said increments of said surface.

5,355,824

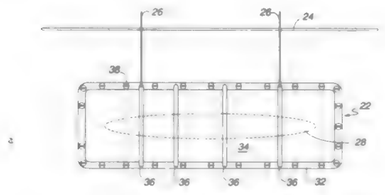
SEAL DEVICE FOR FERROMAGNETIC CONTAINERS

Ross E. Meyer, and Andrew J. Jason, both of Los Alamos, N. Mex., assignors to The Regents of the University of California, Office of Technology Transfer, Alameda, Calif.

Filed Dec. 7, 1993, Ser. No. 163,617

Int. Cl.[5] B63B *43/16*

U.S. Cl. 114—229 **12 Claims**



1. A seal device for sealing about an area of a leak in the surface of a ferromagnetic container, comprising:

frame means defining an internal area larger than said area of said leak;

a bladder covering said internal area and secured to said frame means;

a plurality of permanent magnets spaced about said frame means for magnetic attachment to said surface of said ferromagnetic container, each said permanent magnet having a first magnetic condition that is not attracted to said ferromagnetic container and a second magnetic condition that is attracted to said ferromagnetic container;

wherein each one of said permanent magnets includes two permanent magnets in parallel relationship that are relatively moveable to obtain a first relative magnetic alignment to obtain said first magnetic condition and a second relative magnetic alignment to obtain said second magnetic condition; and

seal means for sealing between said frame means and said ferromagnetic container.

5,355,825

MULTIPURPOSE FLOTATION DEVICE

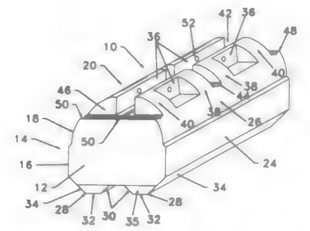
Ronald R. Lefebvre; Robert J. Cowan, both of Saskatoon; Warren D. Jeschke, Hepburn, and Allan R. McCubbing, Saskatoon, all of Canada, assignors to Free Form Plastic Products Inc., Saskatoon, Canada

Filed Jul. 15, 1993, Ser. No. 91,584

Claims priority, application Canada, Jul. 8, 1992, 2073425

Int. Cl.[5] B63B *35/44*

U.S. Cl. 114—267 **21 Claims**



1. An aquatic float comprising a molded shell of plastic resin having a base part with longitudinally spaced ends and transversely spaced sides, and a plurality of integral frame mounting elements on the top of the base part, the mounting elements including transversely spaced apart longitudinal flanges, spaced inwardly from the sides of the base part, the longitudinal flanges defining between them a centre channel for receiving a longitudinal framing member, and a plurality of longitudinally spaced apart transverse flanges extending outwardly from the longitudinal flanges towards the sides of the base part and supporting the longitudinal flanges on the base part, the transverse flanges defining therebetween transverse framing channels for receiving transverse framing members, and fastener receiver means molded integrally into the longitudinal flanges.

5,355,826

WATERCRAFT

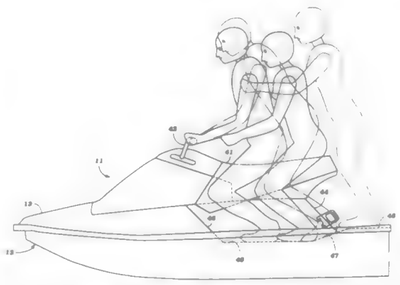
Toshiyuki Hattori, and Fumihiko Ebihara, both of Shingai-Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Division of Ser. No. 786,536, Nov. 1, 1991, Pat. No. 5,255,626. This application Jun. 21, 1993, Ser. No. 79,899

Claims priority, application Japan, Oct. 9, 1991, 3-262355

Int. Cl.[5] B63B *1/20*

U.S. Cl. 114—270 **13 Claims**



1. A watercraft having a unitary hull having a lower portion for submersion in a body of water and an integral upper portion defining a deck area disposed above the water line when floating in the water and extending transversely outwardly beyond the wetted area of the submersed part of said lower hull portion when upright, a seat supported in a fixed position upon a portion of said deck area that is raised a substantial distance above said deck area, a pair of foot areas on opposite sides of and below said seat defined by said deck, said foot areas being fixed to said hull and accommodating the feet of a rider seated on said seat in straddle fashion with the rider's knees being at least at a level below said seat and in a generally standing posture, and a control means for said watercraft forwardly of said seat and accessible by a rider seated on said seat, said hull lower portion being configured to facilitate leaning of the entire hull of said watercraft like a motorcycle when turning.

5,355,827

CATAMARAN

Vladimiz Barbazash; Albert D. Kruglov; Boris E. Rapoport, all of St. Petersburg, and Yury M. Ukrainskiy, Moscow, all of Russian Federation, assignors to DCD, Ltd., Moscow, Russian Federation

Filed May 28, 1993, Ser. No. 68,737

Int. Cl.[5] B63B *1/12*

U.S. Cl. 114—274 **6 Claims**

1. A catamaran comprising:

(a) two hulls connected to each other by a deck,

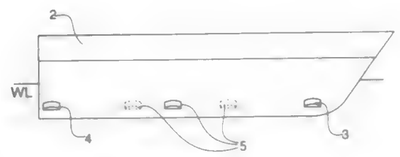
(b) three or more hydrofoils mounted transverse to said hulls below the water line of the catamaran, at least two of said hulls being trim hydrofoils, and the remaining hydrofoil(s) being relieving hydrofoils,

(c) one of said trim hydrofoils being mounted in the bow at a distance of not less than 30% of the hull length to the

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bow from the center of mass and accounting for from 0.15–0.15 per cent of the total weight of said catamaran,

(d) the remaining trim hydrofoil being mounted in the stern at a distance of not less than 20% of the hull length to the stern from the center of mass of the catamaran, and

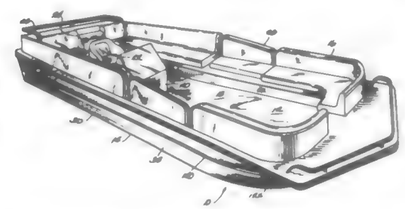


(e) the relieving hydrofoil(s) being positioned intermediate the bow trim hydrofoil and the stern trim hydrofoil and accounting for from 0.10–0.25 per cent of the total weight of the catamaran.

5,355,828
BOAT CONSTRUCTION

Geoffrey T. Pepper, Lebanon, Mo., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 975,101, Nov. 12, 1992, Pat. No. 5,279,249, which is a continuation-in-part of Ser. No. 814,348, Dec. 27, 1991, abandoned. This application Oct. 28, 1993, Ser. No. 144,715
The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.
Int. Cl.[5] B63B *3/00*
U.S. Cl. 114—355 **8 Claims**

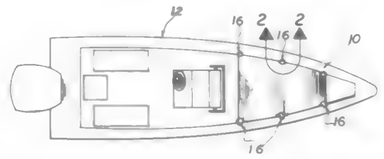


1. A boat having first and second sides and comprising a hull outer skin having a first longitudinal edge on one side of said boat and a second longitudinal edge on the other side of said boat; first and second inboard vertical walls each including an upper end and a lower end; first and second narrow side decks each having an outer edge portion and an inner edge portion, said first narrow deck outer edge portion being affixed to said first longitudinal edge of said outer skin and said first narrow deck inner edge portion being affixed to said upper end of said first vertical wall, said second narrow deck outer edge portion being affixed to said second longitudinal edge of said outer skin and said second narrow deck inner portion being affixed to said upper end of said second vertical wall; first and second gunwale extrusions which respectively capture and extend outward from said first and second longitudinal edges, said first and second narrow side deck outer edge portions being supported respectively by said first and second gunwale extrusions; first and second trim band extrusions which are attached respectively to said first and second gunwale extrusions and to said outer edge portion of said first and second narrow side decks in order to affix said first and second longitudinal edges to said first and second narrow deck outer edge portions respectively; and a cockpit floor which extends between said first and second vertical walls, below said narrow side decks, and above said lower ends of said vertical walls.

5,355,829
SUPPORT PLATFORM TO COVER AN OPEN COCKPIT PORTION OF A BOAT

Paul N. Waddell, 9790 SW. 157th Ter., Miami, Fla. 33173, and Mark Hoven, 4345 SW. 72 Ave. Ste. G, Miami, Fla. 33155

Filed Jun. 4, 1993, Ser. No. 70,961
Int. Cl.[5] B63B *17/00*
U.S. Cl. 114—361 **24 Claims**



1. A support assembly for supporting one or more people above an open cockpit or compartment area of a marine craft, said assembly comprising:

a) a support platform demensioned and configured to overlie at least a majority of the open cockpit in covering relation to an interior thereof,

b) anchor means for securing the support platform being attached to the marine craft in substantially surrounding relation to the open cockpit and adjacent a periphery thereof,

c) connection means for connecting said support platform to said anchor means and being mounted along a periphery of said support platform,

d) said connection means cooperatively disposed and structurally adapted relative to said anchor means to maintain tension on and orient said support platform in an operative position defined by a substantially flat, planar configuration thereof over the open cockpit,

e) said anchor means comprising a plurality of anchor members mounted on the marine craft in spaced relation to one another about a periphery of the open cockpit, said anchor members structured to have said connection means removably attached thereto,

f) said connection means comprising an elongated cord secured within and extending along a major length of a periphery of said support platform, said cord exposed through openings in said periphery of said support platform at spaced apart locations along the length of said cord corresponding to locations of said plurality of anchor members, said cord extending through each of said openings into removable, supported connection with corresponding ones of said anchor members, and

g) biasing means secured to said cord and mounted on said support platform for providing tension on said cord when disposed into removable engagement with said anchor members.

5,355,830
RECHARGEABLE AIR HORN AND METHOD OF USING THE SAME

Michael deJong, 719 Yonge St., Ste. 205, Toronto, Canada

Filed Sep. 29, 1992, Ser. No. 953,519
Int. Cl.[5] G10K *9/04*
U.S. Cl. 116—142 FP **18 Claims**

1. An apparatus for initiating flow of pressurized air to produce a sound, the apparatus comprising:

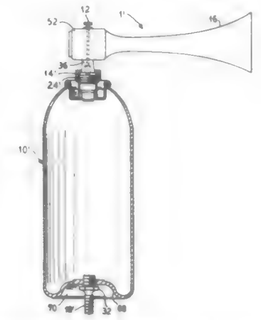
a refillable pressurized air chamber for filling with said pressurized air, the chamber having a base end and a top end;

an adapter having a first opening connected to said chamber and a second opening in communication with said first opening defining a first passageway therebetween;

an inlet valve connected to the base end of the chamber;

an outlet valve within the adapter and connected to said second opening of said adapter and having a second passageway extending between said second opening and an opposite open end of said adapter;

an activator for releasing said pressurized air from said chamber and through said outlet valve of said adapter; and



a horn intermediate said activator and said outlet valve of said adapter for receiving the pressurized air and producing the sound in response.

5,355,831
EPITAXIALLY COATED SEMICONDUCTOR WAFERS HAVING LOW-OXYGEN ZONE OF ADJUSTABLE EXTENT AND PROCESS FOR PRODUCING SAME

Reinhard Schauer, Laufen, Fed. Rep. of Germany, assignor to Wacker-Chemitronic Gesellschaft für Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed May 6, 1992, Ser. No. 879,780
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1991, 4119531
Int. Cl.[5] C30B *25/02*
U.S. Cl. 117—89 **7 Claims**

1. A process for producing epitaxially coated semiconductor wafers having a low-oxygen zone formed by epitaxy on a monocrystalline substrate wafer in a single-wafer reactor, comprising

depositing on said substrate wafer a first epitaxial layer having a layer thickness of 1 to 20 μm at a first temperature, wherein the doping of said first epitaxial layer is chosen in such a way that the resistivity of said first epitaxial layer is the same, or higher within narrow tolerances of 5 to 20% than the resistivity of said substrate wafer; and

depositing on said first epitaxial layer a second epitaxial layer having a layer thickness of 1 to 100 μm at a second temperature which is lower than the first temperature, with the wafer thickness thereby being increased.

5,355,832
POLYMERIZATION REACTOR

Ih-Houng Loh, Maynard, and David M. Hudson, Chelmsford, both of Mass., assignors to Advanced Surface Technology, Inc., Billerica, Mass.

Filed Dec. 15, 1992, Ser. No. 990,683
Int. Cl.[5] C23C *16/50*
U.S. Cl. 118—723 MW **31 Claims**

1. An apparatus for depositing one or more polymeric materials on the surface of a substrate, which apparatus comprises:

a polymerization chamber;

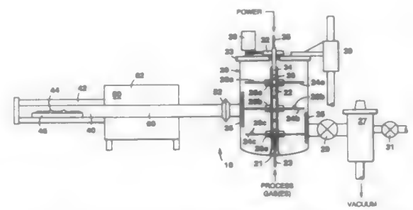
an inlet for admitting a glow discharge polymerization precursor into said polymerization chamber;

a first conductive member extending into said polymerization chamber, said first conductive member being defined by a tube in communication with both said inlet and said polymerization chamber;

a first conductive support attached to and sustained by said first conductive member for holding a substrate;

a power source arranged for providing electrical energy to said first conductive member;

a second conductive member on or within said polymerization chamber, said second conductive member being



spaced and insulated from said first conductive member; and

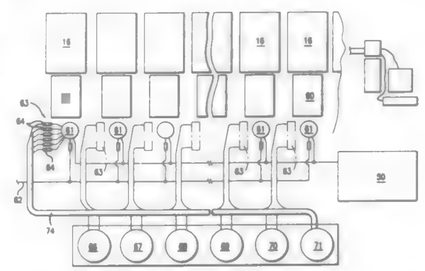
a pump arranged for applying a vacuum to said polymerization chamber;

whereby aglow discharge zone is established within said polymerization chamber when a vacuum is applied thereto and electrical energy from said first conductive member is received by said second conductive member.

5,355,833
COMPUTER AIDED FEED DISTRIBUTION EQUIPMENT FOR YOUNG ANIMALS

Michel Legrain, Foulbec, 27210 Beuzeville, France, assignor to Michel Legrain, France

Filed Apr. 13, 1993, Ser. No. 45,207
Claims priority, application France, Apr. 14, 1992, 92 04536
Int. Cl.[5] A01K *5/02*
U.S. Cl. 119—51.02 **42 Claims**



1. A feeding apparatus for feeding animals comprising:

at least one feeding station, each feeding station including means for mixing feed components into an individualized feed portion according to at least one feed distribution signal;

sensor set for generating a plurality of sensor signals, the plurality of sensor signals including an environmental temperature signal and at least one other sensor signal corresponding to an environment of the feeding apparatus;

at least one monitor, each monitor corresponding to a respective feeding station of the at least one feeding station, each monitor generating at least one monitor signal, the at least one monitor signal representing animal data corresponding to a particular animal present in the feeding

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station and corresponding to the monitor which is generating the at least one monitor signal; and

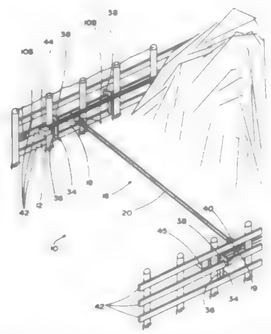
a processor generating the at least one feed distribution signal for each feeding station of the at least one feeding station, the at least one feed distribution signal corresponding to each feeding station being generated based on the plurality of sensor signals and the at least one monitor signal corresponding to the feeding station for which the at least one feed distribution signal is generated.

5,355,834

CATTLE BARRIER

James V. Blazek, Box 423, Rosetown, Saskatchewan, Canada S0L 2V0

Filed Jul. 6, 1993, Ser. No. 86,114
Claims priority, application Canada, Jul. 3, 1992, 2073091
Int. Cl.[5] A01K *5/00, 3/00*
U.S. Cl. 119—51.11 **27 Claims**



1. An apparatus for controlling the feeding of animals in a feed yard with a bulk supply of feed stored in the yard, the apparatus comprising:

barrier means extending across the yard between the animals and the bulk supply of feed;

barrier moving means for moving the barrier means between a feeding position adjacent supply of feed and a withdrawn position spaced therefrom;

control means for operating the barrier moving means at predetermined times;

limit means operatively associated with the barrier moving means for stopping the barrier moving means when the barrier reaches the feeding and withdrawn positions, the limit means being adjustable for advancing the feeding position towards the bulk supply as the feed is progressively eaten back into the bulk supply; and

timer means operable to cause the barrier moving means to move the barrier means to the feeding position at a predetermined time in each day.

5,355,835

MARAUDER-DETERRENT BIRD FEEDER POLE AND PLATFORM SLIDE ASSEMBLY

Alvin N. Freed, 319 Cedar Pl., E. Rochester, N.Y. 14445

Filed Dec. 9, 1993, Ser. No. 164,366
Int. Cl.[5] A01K *39/00, 29/00*
U.S. Cl. 119—57.9 **19 Claims**

1. A marauder-deterrent bird feeder pole and platform slide assembly, comprising:

(a) an elongated hollow pole having a pair of opposite bottom and top ends, said pole adapted at said bottom end to be mounted to and extend upright from the group and adapted at said top end to support a bird feeder;

(b) a platform subassembly having lower and upper ends and being mounted about said pole for undergoing reciprocal movement between said bottom and top ends of said pole;

(c) first and second pluralities of guide rollers respectively mounted to said lower and upper ends of said platform subassembly and rollably engaging said pole below and above said platform subassembly so as to movably support said platform subassembly on said pole;

(d) means mounted to said pole and connected to said platform subassembly for biasing said platform subassembly to move upward toward a raised home position adjacent to and spaced below said top end of said pole in absence of the weight of a marauding animal being imposed on said



platform subassembly, said biasing means being yieldable away from the raised home position to permit said platform subassembly to move downward toward a lowered displaced position remote from and spaced below said top end of said pole in response to the weight of the marauding animal being imposed on said platform subassembly; and

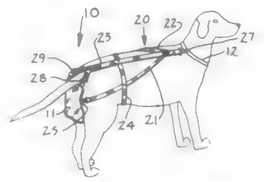
(e) means attached longitudinally along a side of said pole and extending between said top and bottom ends thereof for guiding said platform subassembly to undergo substantially linear movement along said pole so as to thereby prevent said platform subassembly from also undergoing rotational movement about said pole.

5,355,836

DOG-FECES COLLECTION SYSTEM

Julius C. Vallery, 26010 Calmhill Dr., Torrance, Calif. 90505

Filed Sep. 3, 1993, Ser. No. 116,289
Int. Cl.[5] A01K *23/00*
U.S. Cl. 119—95 **1 Claim**



1. A dog-feces collection system comprising:

a. a bag having an open end, a first side edge and a second side edge; and

b. a harness attached to a dog adjacent to his rear-end, said harness including:

i. a first strap having a first end and a second end;

ii. a first connector clip coupled to said first end of said first strap whereby said first connector clip connects said first end of said first strap to said first side edge of said bag;

iii. a second strap having a first end and a second end;

iv. a second connector clip coupled to said first end of said second strap whereby said second connector clip connects said first end of said second strap to said second side edge of said bag;

v. a third strap having a first end and a second end;

vi. a third connector clip coupled to said first end of said third strap whereby said third connector clip connects said first end of said third strap to the collar and whereby said second ends of said first and second straps are coupled to said third strap adjacent to said first end thereof;

vii. a fourth strap having a first end, a middle point and a second end, said fourth strap being coupled at said middle point thereof to said third strap adjacent to said second end thereof whereby said fourth strap is wrapped once around the dog's body adjacent to his hind legs, said first and second ends of said fourth strap are detachably coupled together and said first and second straps adjacent to said first ends thereof are coupled to said fourth strap; and

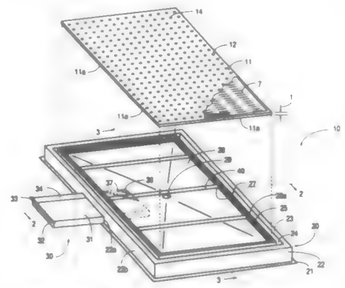
viii. a fourth connector clip and a fifth connector clip coupled to said second end of said third strap whereby said fourth and fifth connector clips connect said second end of said third strap to said open end of said bag whereby said bag is detachably coupled to said harness so that said harness holds open said bag in order to collect feces from the dog.

5,355,837

CANINE TRAINER AND TOILET STATION

Richard B. Reyes, 1842 W. Bayshore, Apt. 4, East Palo Alto, Calif. 94303

Filed Sep. 21, 1993, Ser. No. 125,047
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—161 **18 Claims**



1. A canine trainer and toilet station comprising:

an impervious generally flat one-piece housing bounded by an integral peripheral upstanding sidewall and having an integral generally horizontal ridge extending peripherally within the sidewall, an inclined bottom surface and a drain aperture in said bottom surface;

an integral depending U-bend extending between a top of the sidewall and the horizontal ridge, the bottom of the U-bend being spaced above a bottom of the sidewall;

at least one support rod extending transversely across opposite spaced portions of said ridge;

a canine-supporting perforated platform having peripheral edges seating on said horizontal ridge and overlying said at least one support rod;

said housing sidewall including a side opening extending laterally of the sidewall and having a height less than the height of the underside of the bottom of the U-bend adjacent to the side opening; and

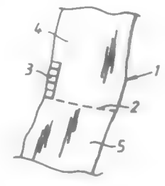
a removable drawer dimensioned to be inserted into said side opening and positionable under said drain aperture for receiving canine urine deposited on said perforated platform.

5,355,838

METHOD FOR REMOVING PARASITES

Jan M. Thomassen, Bådalen, and Odd-Ivar Lekang, Oslo, both of Norway, assignors to Eka Nobel AB, Bohus, Sweden

Filed Sep. 28, 1993, Ser. No. 127,530
Claims priority, application Sweden, Oct. 2, 1992, 9202881-0
Int. Cl.[5] A01K *1/00*
U.S. Cl. 119—219 **10 Claims**



1. A method for preventing fish-borne parasites from spreading to a watercourse or a limited area of a watercourse without such parasites comprising:

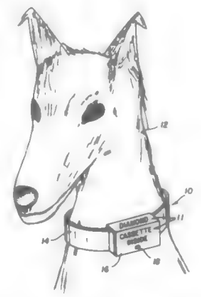
forcing all fish which are going to pass into the watercourses or limited area of a watercourse to pass first through a bath of water containing an active substance which kills or removes the fish-borne parasites without killing or seriously injuring the fish.

5,355,839

ANIMAL IDENTIFICATION DEVICE UTILIZING A MICROCASSETTE

Rupal T. Mistry, 9000 Cheltenham Dr., Brandywine, Md. 20613

Filed Sep. 21, 1993, Ser. No. 124,206
Int. Cl.[5] A01K *39/00*
U.S. Cl. 119—858 **19 Claims**



1. In an animal pet collar, an identification and information storage device comprising:

a flexible collar member including attachment means to secure the collar to the animal;

a microcassette;

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receiving means for said microcassette, said receiving means being integral with said collar member;

said receiving means further including securement means such that said microcassette is held firmly within said receiving means;

whereby said microcassette has recorded thereon information pertaining to the animal's owner and location of the animal's home.

5,355,840

STEAM GENERATOR CONTROLLED BY PRESSURE SWITCH

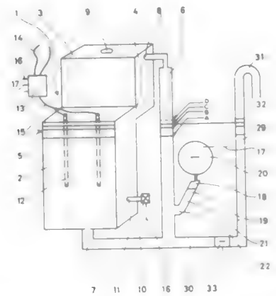
Raymond Violi, Marlens, France, assignor to Societe Cooperative DeProduction Bourgeois, Faverges, France

Filed Jun. 9, 1992, Ser. No. 895,913

Claims priority, application France, Jun. 10, 1991, 91 07265

Int. Cl.[5] F22B *35/00*

U.S. Cl. 122—13.2 7 Claims



1. Steam generator comprising:

a main vessel bounded by a watertight wall to contain water,

water inlet pipework including a water inlet control solenoid valve to inject water into the vessel via at least one water inlet opening,

steam outlet pipework that communicates with the upper part of the main vessel via at least one steam outlet opening,

heating devices connected to an external energy source and positioned to heat the water contained in the main vessel,

a measuring vessel comprising a lower communicating opening having a water level situated below the average water level in the main vessel and associated with a pressure switch exposed to the pressure inside the measuring vessel, wherein the pressure switch generates input signals, comprising at least four different signals on input conductors which signals correspond respectively to four different pressure levels in the measuring vessel, wherein the pressure inside the measuring vessel substantially equals the steam pressure in the main vessel plus a pressure head of water situated between the average water level in the main vessel and the water level in the lower communicating opening in the measuring vessel,

measuring pipework having a first end connected to a measuring opening located in the lower part of the main vessel below the average water level and a second end connected to said lower communicating opening in the measuring vessel,

a volume of air in the measuring vessel continuously trapped between the water and pressure switch,

control means, responsive to said input signals and connected to said input conductors, for controlling the heating devices and the solenoid valve to control water inlet as a function of said input signals, so that, during normal operation, the control means ensures that power is supplied to the heating devices and when the water level in the main vessel drops below a predetermined level, the control means opens said solenoid valve, causing water to be injected into the steam generator.

5,355,841

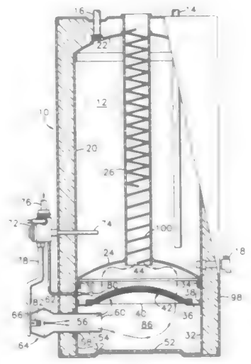
WATER HEATER WITH INTEGRAL BURNER

H. Jack Moore, Jr., Playa Del Rey, and Martin Abalos, Pomona, both of Calif., assignors to Sabh (U.S.) Water Heater Group, Inc., Bala-Cynwyd, Pa.

Filed Aug. 27, 1993, Ser. No. 113,619

Int. Cl.[5] F22B *5/00*

U.S. Cl. 122—17 22 Claims



1. A water heater comprising:

a tank adapted to contain a body of water, said tank having a water inlet, a water outlet and a bottom;

a combustion chamber defined by said tank bottom, a side wall substantially gas tightly sealed to said tank bottom and a bottom pan substantially gas tightly sealed to said side wall;

a flue passing through said tank having an inlet in said tank bottom:

a burner substantially gas tightly sealed along and to said side wall and adapted to contain combustion above said burner;

a fuel and air proportioner adapted to admit air and fuel to said combustion chamber;

said combustion chamber being substantially gas tight except for said proportioner and said flue.

5,355,842

GAS HOT WATER HEATER

Heribert Schmitz, Braunfels, and Dietmar Debus, Rauschenberg, both of Fed. Rep. of Germany, assignors to Viessmann Werke GmbH & Co., Allendorf, Fed. Rep. of Germany

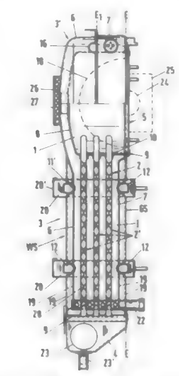
Filed Jan. 21, 1994, Ser. No. 184,466

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1993, 4301804

Int. Cl.[5] F22B *5/00*

U.S. Cl. 122—17 14 Claims

1. A gas hot water heater comprising a housing having walls, connections for forward and return flow of water, a cup-shaped combustion chamber located in an interior of the housing, and a heating gas tubing provided in the interior of the housing, which heating gas tubing connects the combustion chamber with an exhaust gas collecting chamber on which are provided an exhaust gas connection and a condensate discharge connection, with the housing formed as a flat-rectangular configuration, with the heating gas tubing formed as a pocket and arranged parallel to a rear wall of the housing and substantially corresponding to a width thereof, with the cup-shaped combustion chamber provided in an upper portion of the housing and substantially corresponding in width and depth to a flat-rectangular cross-section of the housing below the combustion chamber, and with a burner insert opening in



the combustion chamber for connection of a gas blower burner located on a plane extending through a front wall of the housing.

5,355,843

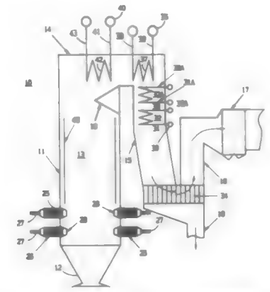
HEAT TRANSFER MECHANISM WITH THIN FILAMENTS INCLUDING CERAMIC HIGH TEMPERATURE HEAT EXCHANGER

Kwan H. Im, Naperville, and Rajesh K. Ahluwalia, Burr Ridge, both of Ill., assignors to University of Chicago, Chicago, Ill.

Filed Jul. 12, 1993, Ser. No. 90,766

Int. Cl.[5] F22B *23/06*

U.S. Cl. 122—367.2 22 Claims



1. Heat transfer mechanism for radiatively and convectively transferring heat between first and second gases, said heat transfer mechanism comprising an elongated hollow conduit having a first hotter gas on one side thereof and a second cooler gas on the other side thereof, and a plurality of elongated thin filaments inside said elongated hollow conduit, said filaments having diameters in the range of from about 1 micrometer to about 1,000 micrometers extending generally axially of said conduit and having an infrared radiation absorption cross-section sufficient to cause said filaments to heat upon exposure to infrared radiation, whereby heat energy from the first hotter gas is transferred to said conduit by radiation and convection and heat energy from said conduit is transmitted to said filaments by radiation and heat energy is transmitted from said filaments to the second gas by convection.

5,355,844

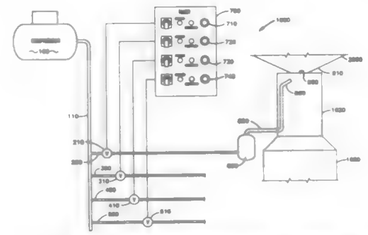
SYSTEM FOR SLAG REMOVAL AND THE LIKE

William E. Kendrick, 212 East 4th St., Archie, Mo. 64725

Filed May 26, 1993, Ser. No. 67,712

Int. Cl.[5] F22B *37/52*

U.S. Cl. 122—390 8 Claims



1. A system for precluding the formation of deposits about a floor drain of a furnace comprising:

a compressor;

an accumulator tank for storage of high pressurized air therein, said accumulator tank having means therein for quickly releasing the accumulated air from an outlet;

a first air line communicating said compressor to said accumulator;

valve means interposed in said air line for regulating the passage of compressed air from said compressor therethrough;

an outlet line extending from said accumulator and having a free end terminating adjacent the floor drain;

control means for positioning said valve means in a first mode to allow flow of said compressed air through said valve and into said accumulator and a second mode for ceasing the compressed air flow into the accumulator;

said accumulator instantly discharging the compressed air from said outlet upon movement of said valve means to said second mode, said discharged air directed out said free end of said outlet line and through the drain hole of the furnace, the discharged air vibrating and chilling any deposits around said floor drain.

5,355,845

TEMPERATURE MEASUREMENT IN POWER GENERATOR BOILERS

James J. Burgess, Morris Plains; Richard T. LaGrotta, West Orange; Frank A. Magnotti, Millburn, and Walter V. Werner, Sparta, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 4, 1993, Ser. No. 131,348

Int. Cl.[5] F22B *37/42*

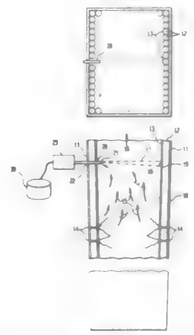
U.S. Cl. 122—504 7 Claims

1. For a steam-generating boiler comprising water tubes disposed along the internal wall of said boiler and a heat source creating high-temperature gaseous combustion products passing within said boiler and heating said tubes, apparatus for measuring the temperature at selected surface segments of said water tubes, comprising:

means for remotely sensing infrared radiation emitted from a said surface segment at one or more wavelengths corresponding to pass-bands in the infrared radiation/absorption spectra of said combustion products;

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means for measuring the intensity of said Sensed infrared radiation; and



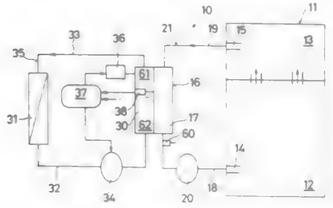
means for converting said measure radiation intensity to an indicia of the temperature of said surface segment.

5,355,846

COOLING DEVICE FOR USE IN ENGINE

Yasuo Ozawa, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Apr. 30, 1993, Ser. No. 55,018
Int. Cl.[5] F01P *9/02*
U.S. Cl. 123—41.21 **20 Claims**



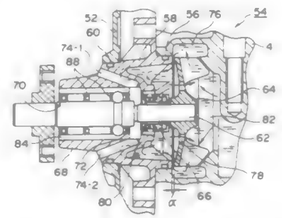
1. A cooling device for use in an engine comprising:
a first cooling circuit which contains a first cooling water;
a second cooling circuit for cooling said engine by an evaporative cooling method, said second cooling circuit containing a second cooling water and air in a closed system;
a water jacket of said engine disposed at one end of said first cooling circuit;
a heat exchanger including a radiating portion and a cooling portion, said radiating portion is disposed in said first cooling circuit and downstream of said water jacket while said cooling portion is disposed in said second cooling circuit;
a first pump which is disposed in said first cooling circuit between said water jacket and said heat exchanger;
a condenser which is disposed in said second cooling circuit and downstream from said cooling portion;
a second pump which is disposed in said second cooling circuit between said condenser and said cooling portion, said second pump for increasing or decreasing the volumetric flow rate of said second cooling water into said cooling portion and thereby controlling the level of said second cooling water in said cooling portion; and
control means for controlling the level of said second cooling water in said portion by adjusting the volumetric flow rate of said second pump.

5,355,847

WATER PUMP

Hisashi Ozeki, Shizuoka, Japan, assignor to Suzuki Motor Corporation, Shizuoka, Japan

Filed Dec. 13, 1993, Ser. No. 166,389
Claims priority, application Japan, Apr. 16, 1993, 5-113789
Int. Cl.[5] F01P *5/10*
U.S. Cl. 123—41.44 **5 Claims**



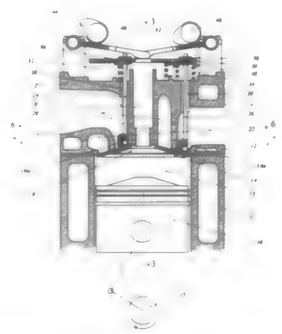
1. A water pump is arranged in a cylinder block of an engine and forms a passage for lubricating oil around a water pump casing which is covered, wherein a water drain hole portion is formed around the water pump casing, a water pump bearing is provided on the inside of the water pump casing, and an inner chamber of the water pump is extended to a position at which it radially surrounds at least parts of the water pump bearing and the water drain hole portion to reduce thermal influence of the lubricating oil on the water pump bearing or water drain hole portion.

5,355,848

INTERNAL-COMBUSTION ENGINE WITH CONCENTRIC, ANNULAR INTAKE AND EXHAUST VALVES

Richard J. Denton, 11701 Fernshire Rd., Gaithersburg, Md. 20878-1927

Filed Oct. 25, 1993, Ser. No. 140,639
Int. Cl.[5] F01L *1/28*
U.S. Cl. 123—79 C **14 Claims**



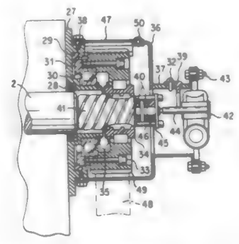
1. An internal combustion engine, comprising:
a cylinder block,
a rotating crankshaft,
at least one piston connected to said crankshaft to reciprocate within a cylinder bore in said block responsive to rotation of said crankshaft,
an improved cylinder head adapted to be affixed to said cylinder block and to define a combustion chamber in combination with said bore and said piston,
said cylinder head defining intake and exhaust passages extending from intake means and exhaust means affixed to said cylinder head to first and second concentric annular intake and exhaust ports in communication with said combustion chamber,
annular intake and exhaust valves, said valves being concentric with respect to one another and to said cylinder bore, and being mounted for reciprocation with respect to said cylinder head to open and close said intake and exhaust ports, and
means for reciprocating said intake and exhaust valves with respect to rotation of said crankshaft.

5,355,849

AUTOMATIC VARIATOR VALVE OVERLAP OR TIMING AND VALVE SECTION

Miljenko Schiattino, Rivadavia 986, Piso 9, of 33. (1002), Buenos Aires, Argentina

Continuation-in-part of Ser. No. 6,944, Jan. 21, 1993. This application Jul. 26, 1993, Ser. No. 95,549
Claims priority, application Argentina, Jul. 20, 1992, 322785; Jul. 31, 1992, 322862
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.17 **9 Claims**



1. An automatic variator assembly for varying the valve timing in a valvular distribution system in an internal combustion engine which includes an engine block, a cylinder formed in the engine block, the cylinder having a cylinder head, a piston slidable within the cylinder, and a combustion chamber bounded by the cylinder and the piston, and a distribution system consisting of two camshafts with valves located in the cylinder head, the variator assembly comprising:
an automatic mechanism controlled by a microprocessor;
a spindle for moving one of said camshafts;
a motor activated by said automatic mechanism which turns a number of predetermined turns or steps, causing an end of said spindle to advance and push the camshaft forward or pull it back;
an axle box; and
a multiple entrance grooved screw etched in at one end of said camshaft, turning inside said axle box, in such a way that a differential and controlled turn is produced in said camshaft when said spindle moves said camshaft, causing a rotation of said camshaft and longitudinal displacement of said camshaft, thereby varying the valve timing while the engine is turning.

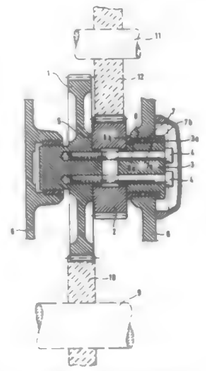
5,355,850

ADJUSTABLE FORCE TRANSMISSION ARRANGEMENT FOR A CAMSHAFT OF A BIG DIESEL ENGINE

Lars Gullberg, Vasa, Finland, assignor to Wartsila Diesel International Ltd. Oy, Helsinki, Finland

Filed Feb. 15, 1994, Ser. No. 197,288
Claims priority, application Finland, Feb. 16, 1993, 930669
Int. Cl.[5] F01L *1/02, 1/34*
U.S. Cl. 123—90.31 **4 Claims**

1. An adjustable force transmission arrangement in a big diesel engine for accomplishing force transmission from a crankshaft (9) of the engine by means of gear wheels to at least one camshaft (11), the arrangement including a first gear wheel (1), which is in force transmitting connection with the crankshaft (9), and a second gear wheel (2), which is in force transmitting connection with the camshaft (11), said gear wheels (1,2) being arranged adjacent to each other and arranged in force transmitting connection with each other through a friction surface (5), the arrangement comprising further a guiding



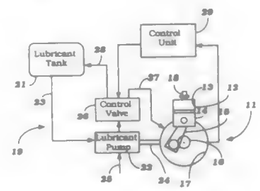
element (3), which is supported by means of a separate slide bearing element (7) to the engine block (6) so that the guiding element is guided both radially and axially with respect to said gear wheels, the guiding element (3) being arranged to be fixed by means of at least one fastening member (4) to said first gear wheel (1) so that said second gear wheel (2) is positioned between the first gear wheel (1) and the guiding element (3), and the second gear wheel receives radial guidance from the first gear wheel and the guiding element.

5,355,851

LUBRICATING OIL SUPPLYING SYSTEM FOR TWO CYCLE ENGINE

Tsuyoshi Kamiya, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Oct. 30, 1992, Ser. No. 969,391
Claims priority, application Japan, Feb. 10, 1992, 4-056620
Int. Cl.[5] F01M *1/16*
U.S. Cl. 123—196 R **39 Claims**



1. A lubricating system for supplying lubricant to an internal combustion engine comprising a lubricant pump for pumping lubricant, a control valve for receiving lubricant from said lubricant pump and operable cyclically between a delivery condition wherein lubricant is delivered to said engine for a delivery time and a condition wherein lubricant is not delivered to said engine for a non-delivery time, the sum of said delivery time and said non-delivery time for a cycle comprising the control time, the ratio of delivery time to control time for a given cycle comprising the duty ratio, means for sensing

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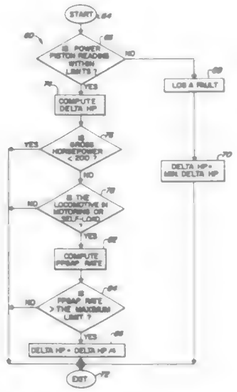
an engine running condition, and control means for controlling the amount of lubricant supplied to said engine during a given cycle by sensing the engine running condition at the beginning of a control time, holding one of the delivery and non-delivery times constant during that cycle in response to the sensed engine running condition at the beginning of that control time and varying the duty ratio by varying the other of said delivery and non-delivery time in the cycle in response to sensed engine running conditions after the initiation of the cycle.

5,355,852

METHOD TO LIMIT SMOKE AND FIRE WHEN LOADING A DIESEL ENGINE

Myron L. Smith, Fairview, Pa.; David J. Konko, Dunkirk, N.Y.; Richard L. Evans, Jr., North East, and Harold S. Hostettler, Jr., Edinboro, both of Pa., assignors to General Electric Company, Erie, Pa.

Filed Jul. 1, 1993, Ser. No. 85,655
Int. Cl.[5] F02D *1/00*
U.S. Cl. 123—350 **17 Claims**



1. A method for limiting smoke and fire upon loading a diesel engine having a power piston with a variable piston gap value for controlling fueling of the engine, the method comprising:

sensing the piston gap value on a cyclical basis;

computing the piston gap velocity;

comparing the computed piston gap velocity with a preset piston gap velocity range; and

adjusting engine horsepower output upon the computing of an abnormal piston gap velocity reading.

5,355,853

KNOCK CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Hirohiko Yamada, Anjo, and Koji Sakakibara, Hekinan, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 11, 1993, Ser. No. 31,245
Claims priority, application Japan, Mar. 12, 1992, 4-53744
Int. Cl.[5] F02P *5/14*
U.S. Cl. 123—425 **8 Claims**

1. A knock control system for an internal combustion engine comprising:

a knock sensor for detecting knock of the engine and for producing a signal representative of the knock;

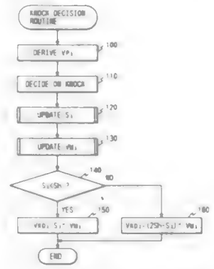
means for deriving a knock intensity value effective for knock detection from said signal produced by the knock sensor;

knock determining means for determining presence of the knock of the engine by comparing the knock intensity value with a knock threshold level;

means for controlling a knock control factor based on a result of said comparing by said knock determining means;

means for determining a first value corresponding to a standard deviation of a distribution of a substantially logarithmic conversion value of the knock intensity value;

means for determining a second value corresponding to a predetermined cumulative relative frequency of the distribution of the substantially logarithmic conversion value of the knock intensity value;



first knock level determining means for determining said knock threshold level based on said first and second values when said first value is within an allowable range having a size defined by a predetermined value; and

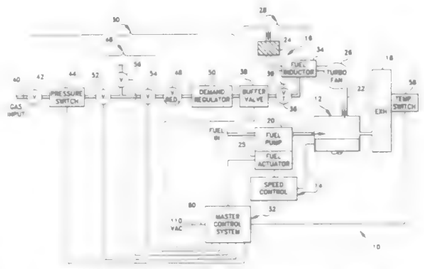
second knock level determining means for determining said knock threshold level based on said second value and a third value derived by subtracting a predetermined weighting of said first value and said predetermined value from the predetermined value when said first value deviates from said allowable range.

5,355,854

SUPPLEMENTAL GASEOUS FUEL SYSTEM FOR A DIESEL ENGINE

Thomas A. Aubee, 27 Beacon Dr., North Kingstown, R.I. 02852

Filed Mar. 12, 1993, Ser. No. 30,706
Int. Cl.[5] F02B *7/00*
U.S. Cl. 123—431 **10 Claims**



10. A supplemental gaseous fuel system for a diesel engine having an intake manifold, a fuel injector pump having an actuator for regulating a volume of diesel fuel supplied to said engine, and load sensitive speed control means for controlling movement of said actuator responsive to variations in engine speed, comprising:

a fuel inductor for introducing a flow of gaseous fuel to said intake manifold;

throttle valve means for determining a maximum flow of gaseous fuel to said fuel inductor;

a buffer valve for selectively controlling said flow to said throttle means, said buffer valve being actuable between a normally closed position and an open position;

a gaseous fuel supply manifold operative for providing said flow of gaseous fuel, said fuel supply manifold including a demand regulator which is connected to said buffer valve, said regulator sensing an airflow through said buffer valve and controlling said flow in response to said airflow;

means for sensing a physical position of said actuator; and

control means for opening and closing said buffer valve responsive to predetermined positions of said actuator, said buffer valve cycling open over a predetermined time to gradually allow said flow of gaseous fuel to be drawn into said intake manifold, said buffer valve cycling closed over a predetermined time to gradually reduce said flow of gaseous fuel,

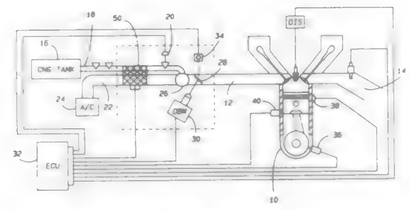
said load sensitive speed control means being operable for quickly responding to variations in engine speed with a volume of diesel fuel, said supplemental fuel system being operative for gradually replacing a given volume of diesel fuel during a steady state load.

5,355,855

INTEGRATED FEED FORWARD AIR/FUEL RATIO SENSOR FOR GASEOUS FUEL ENGINES

George Saikalis, West Bloomfield, Mich., assignor to Hitachi America, Ltd., Tarrytown, N.Y.

Filed Dec. 27, 1993, Ser. No. 172,748
Int. Cl.[5] F02M *7/00, 21/04*
U.S. Cl. 123—438 **12 Claims**



1. An integrated air/fuel sensor for a gaseous fuel internal combustion engine having a fuel supply system with an air intake passage means, said sensor comprising:

a housing,

a mass air flow sensor contained in said housing, said mass air flow sensor providing a first output signal representative of the mass of air flow through the mass air flow sensor,

a mass gas flow sensor contained in said housing, said mass gas flow sensor providing a second output signal representative of the mass of gas flow through the mass gas flow sensor,

means for mounting said housing in the fuel supply system so that said mass air flow sensor is fluidly connected in series with the air intake passage means and said mass gas flow sensor is fluidly connected in series with the fuel intake passage means,

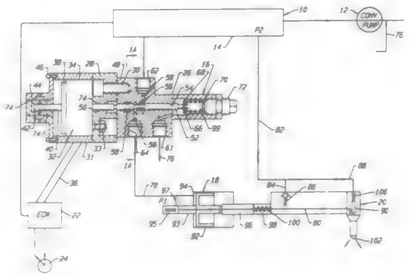
means responsive to said first and second outputs for computing and generating a third output signal representative of the air/fuel ratio for the fuel system.

5,355,856

HIGH PRESSURE DIFFERENTIAL FUEL INJECTOR

Marius A. Paul, and Ana Paul, both of 1120 E. Elm Ave., Fullerton, Calif. 92631

Continuation of Ser. No. 918,240, Jul. 23, 1992, abandoned. This application Feb. 2, 1994, Ser. No. 191,769
Int. Cl.[5] F02M *39/00*
U.S. Cl. 123—446 **12 Claims**



1. An ultra high pressure fuel injector for injecting fuel at injection pressures exceeding 16,000 p.s.i. comprising:

a fuel injector component having an injector body with a pressurized fuel admission passage with a check valve means for allowing admission of fuel and preventing expulsion of fuel through the pressurized fuel admission passage;

a discharge nozzle connected to the injector body having a plenum connected to the pressurized admission passage and a nozzle tip with at least one fuel discharge orifice in selective communication with the plenum;

a displaceable needle valve having a needle with a tip, a body segment and a blunt end, the injector body having a needle valve bore in which the needle body segment is slidable, a fluid chamber in communication with the blunt end of the needle, and a valve seat in the discharge nozzle contactable by the needle tip in a position blocking the discharge orifice from communication with the plenum;

a pressurized fluid supply, the injector body having a fluid admission passage communicating with the fluid chamber;

a pressurized fluid distributing means selectively interconnecting the pressurized fluid supply and the fluid admission passage for directing pressurized fluid to the fluid chamber, wherein the needle valve tip is urged against the nozzle seat blocking the orifice by action of the pressurized fluid on the blunt end of the needle valve during the period of closure;

a booster component connected to the fuel injector component, the booster component having a pressure multiplying piston mechanism with a large piston and a coupled small piston, the small piston being in communication with the plenum and the large piston being in communication with the pressurized fluid distributing means; and

actuation means for actuation of the fluid distributing means to hydraulically connect the piston mechanism with the pressurized fluid supply and displace the large and small pistons wherein fuel in the plenum is pressurized to ultra high pressure, hydraulically lifting the needle valve, and discharging a quantity of fuel through the orifice during the period of injection and hydraulically disconnecting the piston mechanism from the pressurized fluid supply during the period of closure.

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5,355,857

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

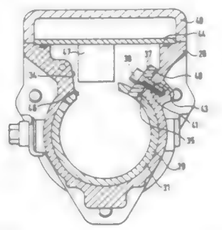
Werner Nanmann, Eppelborn; Hannes Pflug, Weilderstadt; Wolfgang Braun, Ditzingen; Wolfgang Fehlmann; Dieter Junger, both of Stuttgart, and Joachim Kurz, Muehlacker, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 12, 1993, Ser. No. 105,715

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1992, 4232741

Int. Cl.[5] F02M *41/00, 37/04*

U.S. Cl. 123—449 8 Claims



1. A fuel injection pump for internal combustion engines, comprising a pump housing which has an interior space; at least one pump piston which is rotatable and reciprocatingly movable in said interior space; a cam drive which rotates and reciprocatingly moves said pump piston, said cam drive having a stationary part and a rotatable part; a fixing element which determines a rotary position of said stationary part, said fixing element radially engaging said stationary part and being fixed circumferentially to said stationary part to prevent turning of said stationary part, said pump piston limiting a pump working chamber; a valve operative for loading said pump working chamber during a feed stroke of said pump piston for controlling an injection-active pump piston stroke, said valve having a controlled time point of its closing in order to control an injection start in dependence upon operational parameters of the internal combustion engine; and a mounting element which releasably mounts said fixing element in said interior space of said pump housing on an inner side of a part of said pump housing.

5,355,858

ASSIST-AIR TYPE FUEL INJECTION METHOD AND DEVICE FOR INTERNAL COMBUSTION ENGINE

Akira Kiyomura, and Kazumitsu Kobayashi, both of Isesaki, Japan, assignors to Japan Electronic Control Systems Co., Ltd., Isesaki, Japan

Filed Jan. 19, 1993, Ser. No. 5,737

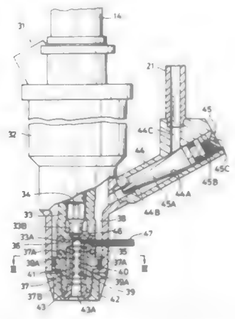
Claims priority, application Japan, Apr. 7, 1992, 4-114143

Int. Cl.[5] F02M *23/12, 51/02*

U.S. Cl. 123—457 9 Claims

1. An assist-air type fuel injection method for an internal combustion engine in which a fuel pressure supplied to a fuel injection valve is regulated by a pressure regulator having a function to regulate the pressure so that a differential pressure from a signal pressure put in from the outside is made constant and an assist-air for promoting atomization of the fuel is supplied toward the injected fuel of said fuel injection valve, the method comprising the steps of:

detecting a pressure of the assist-air in an air chamber positioned between a nozzle hole of said fuel injection valve and at least one air nozzle; and



supplying the detected pressure of the assist-air as the signal pressure for said pressure regulator.

5,355,859

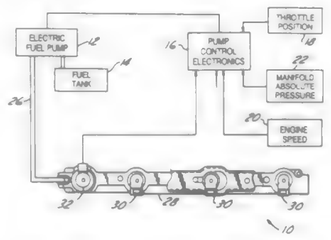
VARIABLE PRESSURE DEADHEADED FUEL RAIL FUEL PUMP CONTROL SYSTEM

Robert E. Weber, Newport News, Va., assignor to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Sep. 16, 1993, Ser. No. 122,117

Int. Cl.[5] F02M *37/04*

U.S. Cl. 123—497 2 Claims



1. In variable pressure deadheaded fuel rail fuel pump control system having the fuel rail mounted on an internal combustion engine, the fuel rail having one or more electrically operated fuel injectors mounted thereon and operable for discharging fuel from the fuel rail and into the engine, a plurality of engine operating sensors for measuring the operational load of the engine and calculating the open time of the injector, wherein the improvement comprises:

means for comparing the calculated open time of the injector with the linear operating time of the injector;

means responsive to said comparison and generate a first fuel pump control signal if said calculated open time is within the linear operating time of the injector and to modify the calculated open time if such time is not within the linear operating time of the injector to generate a second fuel pump control signal;

a fuel pump control system responding to said fuel pump control signals for controlling the output pressure of the fuel from the fuel pump to the fuel rail for operating the electrically operated fuel injectors in their linear operating range, the system further comprising;

a fuel pressure transducer mounted on the fuel rail and adjacent to the injectors for measuring the absolute pressure of the fuel in the fuel rail, and for generating an electrical signal indicating the pressure of the fuel;

means for comparing the calculated open time of the injector with the linear operating time of the injector;

means responsive to said comparison and generate a first signal if said calculated open time is within the linear operating time of the injector and to modify the calculated open time if such time is not within the linear operating time of the injector to generate a second signal;

means responsive to said electrical signal from said fuel pressure transducer and one of said first or second signals for generating a pump electrical signal;

an electrically operated variable pressure fuel pump operatively connected to the fuel tank and responsive to said pump electrical signal for pumping fuel under pressure to the fuel rail;

so that the electrically operated fuel injectors are supplied with fuel under sufficient pressure to be operated at all times in the fuel injector's linear operating range of electrical pulse width signals.

5,355,860

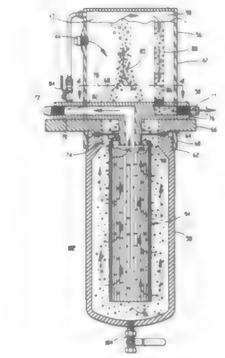
FUEL DELIVERY SYSTEM FOR DIESEL ENGINES

Charles L. Ekstam, 318 S. Oak St., California, Mo. 65018

Filed Jul. 9, 1992, Ser. No. 911,119

Int. Cl.[5] F02M *37/04*

U.S. Cl. 123—516 16 Claims



1. A fuel delivery system for removing undesired components from fuel delivered from a fuel tank to an engine comprising, in combination:

an engine;

initial fuel filter means for removing water from fuel received from the fuel tank; and

secondary fuel filter means including an outlet in fluidic communication with said engine and an inlet in fluidic communication with said initial fuel filter means and located downstream therefrom for receiving fuel containing an undesired gas from said initial fuel filter means and separating substantially all of said undesired gas from fuel received therein prior to passage of said fuel through the outlet,

said secondary fuel filter means including a vessel defining a hollow interior chamber in fluidic communication with a return line in fluidic communication with said fuel tank for returning fuel and undesired gas thereto, and a filter media positioned within said chamber for immersion in fuel received therein and a conduit located within said filter media for delivering fuel passing through said filter media to said outlet.

5,355,861

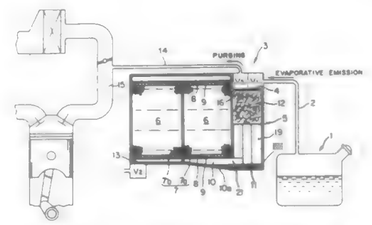
EVAPORATIVE EMISSION CONTROL SYSTEM

Katsumi Arai, Ibaraki, Japan, assignor to Kyosan Denki Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1993, Ser. No. 163,897

Int. Cl.[5] F02M *33/00, 25/08*

U.S. Cl. 123—519 7 Claims



7. In an evaporative emission control system including a canister having an adsorbent accommodating chamber for accommodating an adsorbent therein, said canister being disposed in an evaporation emission passage for connecting between a fuel tank side and an intake pipe side of an engine, wherein an evaporative emission is adsorbed by the adsorbent so as to prevent the evaporative emission from being emitted to the atmosphere during a stop of the engine while the evaporative emission is desorbed from the adsorbent by the introduction of the atmosphere into the canister due to negative pressure generated in the engine and the desorbed evaporated emission is supplied to the intake pipe side of the engine and combusted in the engine while the engine is running, comprising the improvement wherein said evaporative emission control system further includes:

a vapor-liquid separation chamber formed in said canister;

a liquefaction acceleration chamber disposed in an upper portion of said vapor-liquid separation chamber;

a fuel storage chamber disposed in a lower portion of said vapor-liquid separation chamber;

a tank inner pressure control valve having a discharge port, and a purge valve having an inflow port which are respectively disposed at the upper end portion of the vapor-liquid separation chamber wherein the discharge port and the inflow port are adjacent to each other and the adsorbent accommodating chamber communicates with the vapor-liquid separation chamber.

5,355,862

EVAPORATED FUEL CONTROL SYSTEM IN INTERNAL COMBUSTION ENGINE

Hiroaki Muramatsu; Shinichi Kitajima; Hiroshi Kitagawa; Teruo Wakashiro; Toshikatsu Takanohashi, all of Wako; Yoshihiko Kobayashi, Tochigi, and Hiroshi Maruyama, Wako, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1993, Ser. No. 38,093

Claims priority, application Japan, Mar. 31, 1992, 4-105535; Jan. 29, 1993, 5-013457

Int. Cl.[5] F02M *25/08*

U.S. Cl. 123—520 4 Claims

1. An evaporated fuel control system in an internal combustion engine, comprising:

a canister filled with an adsorbent for adsorbing evaporated fuel in a fuel tank;

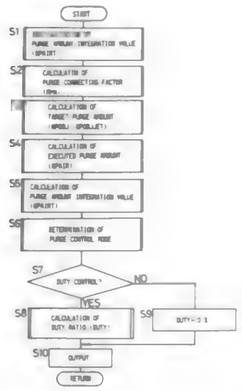
a purge amount control means provided in a middle of a purge passage connecting an intake passage and the canister;

a fuel supply means; and

an electronic control unit for integrating a purge flow rate

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from a start of purging and for controlling an operation of the purge amount control means so as to reduce the purge



amount to a larger extent in response to the integrated purge amount value becoming smaller.

5,355,863

EVAPORATIVE FUEL-PROCESSING SYSTEM FOR INTERNAL COMBUSTION ENGINES

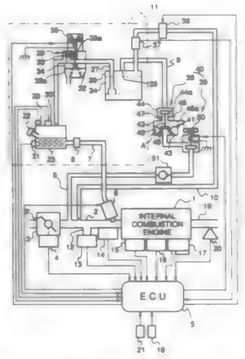
Masayoshi Yamanaka; Hiroshi Maruyama; Takeshi Suzuki; Kazutomo Sawamura, and Shigetaka Kuroda, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1993, Ser. No. 159,548

Claims priority, application Japan, Dec. 2, 1992, 4-349803

Int. Cl.[5] F02M *33/02;* **F02B** *77/00*

U.S. Cl. 123—520 **8 Claims**



1. In an evaporative fuel-processing system for an internal combustion engine having a fuel tank, and an intake system, including an evaporative emission control system formed by said fuel tank, a canister having an air inlet port formed therein and communicating with the atmosphere, said canister accommodating an adsorbent for adsorbing evaporative fuel generated within said fuel tank, a first passage connecting between said canister and said fuel tank, a second passage connecting between said canister and said intake system of said engine, and a purge control valve arranged across said second passage, a drain shut valve for opening and closing said inlet port of said canister, pressure-detecting means for detecting pressure within said evaporative emission control system, negatively pressurizing means for negatively pressurizing said evaporative emission control system by introducing negative pressure from said intake system of said engine into said evaporative emission control system by opening said purge control valve and closing said drain shut valve, to thereby bring said evaporative emission control system into a predetermined negatively pressurized state, and then closing said purge control valve to complete said negative pressurization, and leak-detecting means for detecting presence/absence of a leak from said evaporative emission control system, based on a rate of decrease in negative pressure within said evaporative emission control system after said closing of said purge control valve,

the improvement comprising delay means for causing said leak-detecting means to start operating when said pressure within said evaporative emission control system becomes substantially equal throughout said evaporative emission control system after the completion of said negative pressurization by said negatively pressurizing means.

5,355,864

EVAPORATIVE FUEL-PROCESSING SYSTEM FOR INTERNAL COMBUSTION ENGINES

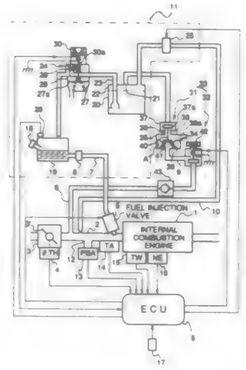
Shigetaka Kuroda; Kazutomo Sawamura; Hiroshi Maruyama; Masayoshi Yamanaka; Yoichi Iwata, and Tsuyoshi Takizawa, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 5,802, Jan. 19, 1993, abandoned. This application Dec. 27, 1993, Ser. No. 173,055

Claims priority, application Japan, Jan. 20, 1992, 4-028861; Jan. 20, 1992, 4-028862; Jan. 20, 1992, 4-028863

Int. Cl.[5] F02M *33/02*

U.S. Cl. 123—520 **12 Claims**



1. An evaporative fuel-processing system for an internal combustion engine having an intake system, and a fuel tank, comprising:

a canister having an air inlet port provided therein;

an evaporative fuel-guiding passage extending from said fuel tank to said canister;

a first control valve arranged across said evaporative fuel-guiding passage, said first control valve being controllable to be opened or closed for detection of an abnormality of said evaporative fuel-processing system;

a purging passage extending from said canister to said intake system of said engine;

a second control valve arranged across said purging passage;

a third control valve arranged at said air inlet port of said canister for establishing and interrupting communication between the interior of said canister and the atmosphere;

tank internal pressure detecting means for detecting pressure within said fuel tank;

control means for supplying operation command signals to said first to third control valves at the same time for closing or opening the same; and

abnormality detecting means responsive to an output from said tank internal pressure detecting means and said operation command signals, for detecting an abnormality in operation of a predetermined one of said first to third control valves.

5,355,865

CRANKSHAFT ANGLE SENSOR FOR AN INTERNAL COMBUSTION ENGINE

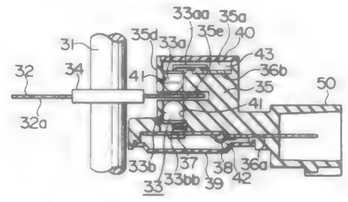
Kouichi Okamura, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1993, Ser. No. 87,877

Claims priority, application Japan, Jul. 10, 1992, 4-183899; Jul. 10, 1992, 4-183900

Int. Cl.[5] F02P *5/00*

U.S. Cl. 123—613 **7 Claims**



1. A crankshaft angle sensor for use in a distributor assembly and which operates in cooperation with a perforated signal disc plate mounted to a distributer rotary shaft comprising:

a housing;

a crankshaft angle sensing element mounted to said housing; and

a circuit board mounting to said housing and having an electronic circuit thereon, said electronic circuit electrically connected to said crankshaft angle sensing element for controlling an ignition timing of an internal combustion engine;

said crankshaft angle sensing element and said circuit board being disposed in a direction substantially parallel to the axis of the distributor rotary shaft and each being connected through a plurality of conductors having a connection portion extending in a direction substantially perpendicular to said rotary shaft.

5,355,866

POWER DART LAUNCHER

Gary R. Hunter, 2530 Oak Grove, Toledo, Ohio 43613

Filed Sep. 21, 1993, Ser. No. 124,335

Int. Cl.[5] F41B *7/00, 7/08*

U.S. Cl. 124—26 **2 Claims**

1. A launcher device for a projectile such as a dart, comprising:

a pistol-shaped frame comprising an upper horizontal stock member, and downwardly depending handle, intermediate the ends of the stock member;

a lengthwise channel in said stock member;

a launcher block slidably mounted in said channel, said launcher block having means to receive said projectile; a launcher spring to bias said launcher block toward the front of the stock to a discharge position;

stop means mounted within said channel to prevent movement of said launcher block forward of a predetermined position;

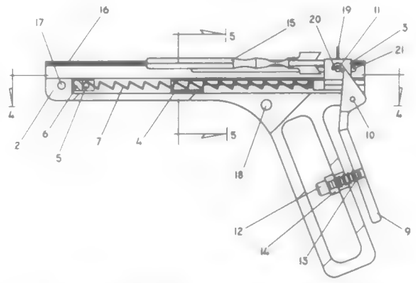
two lengthwise slots cut through the frame walls into the channel, one on each side of the channel;

a cross pin extending through the launcher block and through the slots, each end of the cross pin extending outside of the frame;

retaining and triggering means comprising:

a fork-shaped lever, pivoted with a pivot at the rear of the stock member and behind the handle and below the channel;

the end of said lever above said pivot being bifurcated and terminating in catch means adapted to receive said cross pin outside said frame;



lever spring means below said pivot to bias the lever rearward away from the handle;

whereby, the catch means is biased downwardly into engagement with said cross pin to retain said launcher block in a cocked position; as a user pushes said lever forward, said catch means is disengaged from said cross pin allowing said launcher spring to accelerate said launcher block and projectile forward; when said launcher block contacts said stop means, the launcher block is abruptly stopped and the projectile is propelled forward.

5,355,867

PORTABLE GRILL

Richard L. Hall, 8202 E. Sells, Scottsdale, Ariz. 85251, and Jeffrey D. Hebets, 4001 N. 45th Street, Phoenix, Ariz. 85018

Filed Mar. 26, 1993, Ser. No. 37,314

Int. Cl.[5] F24B *3/00*

U.S. Cl. 126—30 **23 Claims**



1. A portable grill assembly comprising:

a vertical grill base having an upper and lower end;

an inner sleeve rotatably and slidably received about the vertical grill base for movement along the vertical grill base between the upper and lower ends;

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an adjustment assembly affixed to the inner sleeve for limiting movement of the inner sleeve along the vertical grill base;

said adjustment assembly further including an anchor affixed adjacent to the upper end of the vertical grill base and a flexible member affixed to the inner sleeve for engagement of the anchor allowing the inner sleeve to be raised and lowered relative to the fire;

a plurality of grill portions rotatably mounted on the inner sleeve extending outwardly from the inner sleeve, each of the plurality of grill portions being constructed for support of gratings over a fire; and

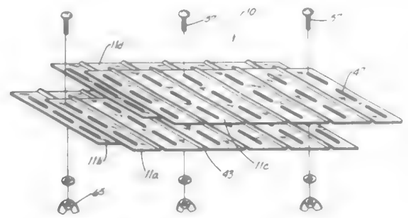
a stop affixed adjacent to the lower end of the inner sleeve for support of the plurality of grill portions.

5,355,868

HEAT DISTRIBUTION ARTICLE FOR COOKING GRILLS

William G. Haen, Racine, Wis., assignor to Greene Manufacturing Co., Racine, Wis.

Filed Jun. 4, 1993, Ser. No. 71,545
Int. Cl.[5] F24C *3/14, 3/00*
U.S. Cl. 126—41 R **18 Claims**



1. In the combination of (a) a generally rectangular cooking grill kettle containing a burner and a cooking grate and having a central region, side perimeter regions, kettle ends and kettle sides, and (b) a heat distribution article mounted in the kettle intermediate the burner and the cooking grate, the improvement wherein:

the article is between the burner and the grate and includes a pair of flat plates formed of sheet metal;

each plate has an upper surface vertically spaced from the upper surface of the other plate;

each plate has at least two rows of elongate apertures and the apertures of each row are disposed along a row axis;

the plates are in partial overlapping contact with one another; and,

for each plate, those apertures at the kettle central region are at least partially closed by portions of the other plate; and

those plate apertures at the side perimeter regions are fully open,

whereby upward air flow at the central region is restricted, heat is distributed toward the sides of the kettle and food drippings are substantially prevented from falling to the burner.

5,355,869

SELF-HEATING GROUP MEAL ASSEMBLY AND METHOD OF USING SAME

Donald W. Pickard, Sherborn; Robert L. Trottier, Franklin, both of Mass., and Peter G. Lavigne, Cumberland, Me., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

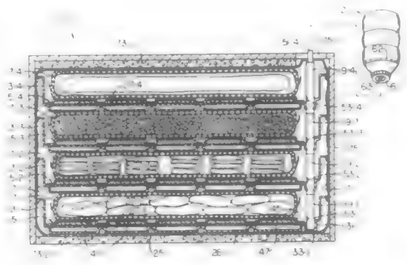
Filed Feb. 15, 1994, Ser. No. 196,537
Int. Cl.[5] F24J *1/00*
U.S. Cl. 126—263 R **18 Claims**

1. A self-heating group meal assembly comprising:

(a) a first tray, said first tray having a first plurality of standoffs extending upwardly from the bottom thereof;

(b) first and second heater assemblies, said first and second heater assemblies comprising (i) an exothermic chemical heater, said exothermic chemical heater comprising a Mg-Fe alloy heater from which all water soluble activating electrolytes have been omitted and (ii) packaging means for containing said exothermic chemical heater, said packaging means comprising a bottom portion made of a porous material through which an electrolyte-containing activator fluid may pass and a top portion made of a material through which heat may be conducted for heating a group-sized quantity of food positioned thereon, said first heater assembly being seated within said first tray with said bottom portion of porous material positioned on top of said first plurality of standoffs so as to define a first reservoir between said porous material and the bottom of said first tray;

(c) a first food container for holding a group-sized quantity of food, said first food container being made of a heat-conductive material and being positioned on top of said first heater assembly;



(d) a second tray positioned over said first food container, said second tray having a second plurality of standoffs extending upwardly from the bottom thereof;

(e) said second heater assembly being seated within said second tray with its bottom portion of porous material positioned on top of said second plurality of standoffs so as to define a second reservoir between said porous material and the bottom of said second tray;

(f) a second food container for holding a group-sized quantity of food, said second food container being made of a heat-conductive material and being positioned on top of said second heater assembly;

(g) a pair of separably interconnected tube sections, the first of said pair being mounted on said first tray and having an orifice alignable with said first reservoir, the second of said pair being mounted on said second tray and having an orifice alignable with said second reservoir; and

(h) a container connectable to said pair of separably interconnected tube sections, said container holding an appropriate quantity of dry activating electrolytes suitable for making an electrolyte-containing activator fluid upon the addition of water thereto.

5,355,870

LARYNGOSCOPE HAVING REMOVABLE BLADE ASSEMBLY CONTAINING LAMP AND LIGHT CONDUCTOR

William Lacy, 26 Steers Ave., Northport, N.Y. 11768

Filed Jul. 28, 1992, Ser. No. 920,677
Int. Cl.[5] A61B *1/06*
U.S. Cl. 128—11 **10 Claims**

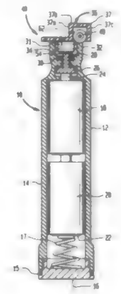
1. A laryngoscope, comprising:

an electrically conductive casing closed at one end and having an electrode at said other end of said casing;

battery means in said casing arranged to apply a positive electric polarity to said electrode and a negative electric polarity to said casing;

an elongated insulated blade assembly, removably mounted near one end thereof, on said other end of said casing and rotatable thereon, between operating and nonoperating positions spaced angularly apart;

a lensed end lamp enclosed in a housing integral with said blade assembly at said one end thereof, said lamp having a bulb, a base and an end terminal;



first circuit means carried by said blade assembly and arranged to contact said end terminal of said lamp to apply said positive electric polarity thereto from said electrode when said blade assembly is in said operating position; and

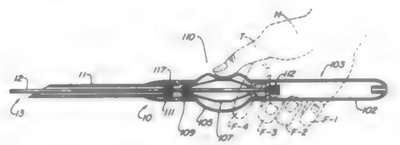
second circuit means carried by said casing and contacting said base of said lamp, for lighting said lamp only when said blade assembly is in said operating position, and for extinguishing said lamp when said blade assembly is rotated to said nonoperating position.

5,355,871

ELASTOMERIC CONTROLLER FOR ENDOSCOPIC SURGICAL INSTRUMENTS

Paul Hurley, and James F. Caruso, both of Chicago, Ill., assignors to Dexide, Inc., Fort Worth, Tex.

Filed Sep. 11, 1992, Ser. No. 943,514
Int. Cl.[5] A61B *17/00;* **A61M** *3/00*
U.S. Cl. 128—20 **8 Claims**



1. A hand-held surgical instrument comprising:

a housing having an open end and a longitudinal axis;

an instrument body disposed in the housing, the instrument body terminating in a working end, the instrument body and working end being movable relative to the housing between a first position and a second position;

a handle secured to the housing, the handle including a flexible portion located for engagement by an operator, said flexible portion overlying at least a portion of said instrument body; and

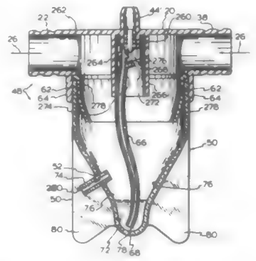
control means coupled between the handle and the instrument body and underlying the flexible portion for moving the instrument head between the first and second positions responsive to compression of the flexible portion by the operation in a direction substantially normal to the longitudinal axis of the housing.

5,355,872

LOW FLOW RATE NEBULIZER APPARATUS AND METHOD OF NEBULIZATION

John H. Riggs, 201-F Foliage Cir., Cary, N.C. 27511, and Barry O. Mangum, P.O. Box 20554, Raleigh, N.C. 27619

Continuation-in-part of Ser. No. 846,784, Mar. 4, 1992, Pat. No. 5,186,166. This application Aug. 10, 1992, Ser. No. 927,834
Int. Cl.[5] A61M *11/00, 16/10;* **B05B** *1/26;* **B05D** *7/14*
U.S. Cl. 128—200.21 **14 Claims**



1. A small volume nebulizer device, comprising:

(a) a housing defining a nebulizer receptacle having an interior volume therewithin, including a reservoir portion for holding medicament therein for entrainment into a carrier gas to form a delivery gas mixture comprising nebulized medicament and carrier gas, said nebulizer receptacle having a size defining said nebulizer device as a small volume nebulizer device;

(b) a discharge port connected to the housing in flow communication with the interior volume therein, for discharging the delivery gas mixture from the housing;

(c) means for increasing delivery of pulmonarily effective aerosol particles at low flow rates through said nebulizer receptacle, comprising:

a jet passage member having (i) an inlet means for introduction of carrier gas thereinto and (ii) a nozzle means positioned in the interior volume of the housing for discharging carrier gas in jet form into the interior volume of said nebulizer receptacle for entrainment of medicament from the reservoir portion of the housing in the carrier gas jet, said nozzle portion comprising a nozzle orifice accomodating carrier gas flow therethrough, wherein the nozzle orifice has an equivalent orifice diameter in the range of from about 0.005 inch to about 0.015 inch;

an impingement baffle presenting an impingement surface in alignment with the orifice of the jet passage member; and pressurized carrier gas supply means coupled in gas-supplying relationship with the inlet portion of the jet passage member, for supplying pressurized carrier gas at a flow rate of from about 0.5 to 2.8 liters per minute.

5,355,873

AN INHALATION DEVICE AND METHOD HAVING A VARIABLY RESTRICTABLE AIR INLET THAT ALLOWS THE INHALATION FORCE REQUIRED TO OVERCOME A LOCKING ELEMENT TO BE CHANGED

Franco Del Bon, Eggenscherstrasse 52, CH-4663 Aarburg, and Walter Treyer, Dorngasse 43, CH-8967 Widen, both of Switzerland

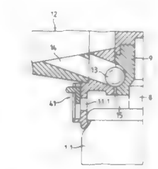
Filed Apr. 22, 1992, Ser. No. 871,979
Int. Cl.[5] A61M *11/00, 15/08;* **A63B** *23/00;* **A62B** *7/00*
U.S. Cl. 128—200.23 **16 Claims**

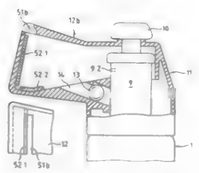
2. A method of dosing and nebulizing a liquid or powdered preparation for inhalation and for increasing the inhalation strength of a user, comprising the steps of:

providing a dose nebulizing device having:

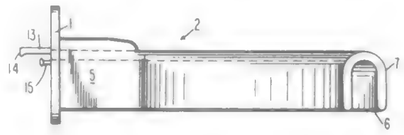
VOL 1167 ISS 3 OC 18 1994 UMI

a supply chamber containing a supply of a liquid or powdered preparation;
a reservoir means surrounding an outer surface of said supply chamber for supporting said supply chamber;
a housing rigidly connected to said reservoir means;
a mouthpiece provided on said housing;
a dispensing and nebulizing means for dispensing and nebulizing a dose of said preparation from said supply chamber into an inhalation airflow generated by a user, said dispensing and nebulizing means sliding relative to said housing along a common interface face from a locked position to a dispensing position;
a locking means for maintaining said dispensing and nebulizing means in said locked position, said locking means moving between a blocking position and a disengaged position, said locking means comprising a blocking chamber extending between said dispensing means and said housing, and a blocking means acted on by gravity to exhibit a locking force, said blocking means positioned in said blocking chamber for establishing said blocking position when said blocking means intersects said common interface to prevent relative movement of said dispensing means relative to said housing;
means for adjusting the inhalation force required to move said locking means to said disengaged position, and for increasing the inhalation strength of a user, said adjusting means comprising an air inlet orifice located on an exterior of said device, and a means for varying the size of the air inlet orifice, said locking means being moved from said blocking position to said disengaged position by an inhalation force generated by said inhalation airflow of the user drawing air through said air inlet orifice and overcoming the locking force of said locking means, thereby enabling said dispensing and nebulizing means to move relative to said housing;
inhaling air through said air inlet orifice and exerting an inhalation force on said blocking means of said locking means, said inhalation force being generated by an inhalation airflow of an inhaling user;
releasing said locking means when said inhalation force overcomes a locking force of said blocking means generated by gravity, and thereby moving said locking means between said blocked position and said disengaged position;
activating said dispensing and nebulizing means to discharge and nebulize a dose of said preparation from said supply chamber to said inhalation airflow, wherein said step of activating said dispensing and nebulizing means comprises sliding said dispensing and nebulizing means relative to said housing along said common interface from said locked position to a dispensing position; and
variably restricting said air inlet orifice to adjust the inhalation force necessary to disengage said blocking means, said step of variably restricting comprising adjusting the size of said air inlet orifice.





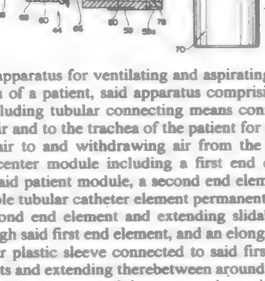
5,355,874
OROPHARYNGEAL DEVICE
Volker Bertram, Robert-Bosch-Str. 7, 7247 Sulz a.N., Fed. Rep. of Germany
PCT No. PCT/EP1/021970, § 371 Date Jul. 22, 1992, § 102(e) Date Jul. 22, 1992, PCT Pub. No. WO92/09325, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 21, 1991, Ser. No. 915,702
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1990, 4037084
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—200.26 **11 Claims**



1. Oropharyngeal device comprising
an extended body including a comparatively shorter approximately straight portion and a comparatively longer curved portion adjoining the straight portion, said extended body having a substantially constant U-shaped transverse cross-section along the entire length of the extended body to provide a U-shaped opening on one side thereof;
a transverse securing flange attached to an end of the straight portion remote from the curved portion, one side of the transverse securing flange being provided with a U-shaped first recess, said first recess conforming to the U-shaped transverse cross-section the extended body and positioned to provide a mouth for the U-shaped opening, and also with a C-shaped second recess in a side of the transverse securing flange remote from the side having the U-shaped first recess, said C-shaped second recess being dimensioned so that an endotracheal tube can be snapped in the second recess and held fixed therein; and
a hard bite block formed integrally with the extended body and located in the vicinity of the straight portion, said bite block being made of a material also used for making the extended body.

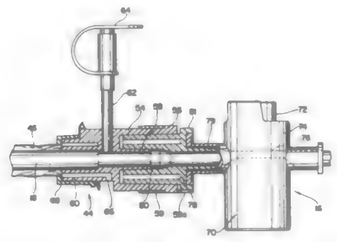
5,355,875
PROTECTIVE GARMENT USING ONE-WAY VALVES
John H. Siegel, Des Moines, Wash., assignor to Vinatronics Division, Seattle, Wash.
Continuation-in-part of Ser. No. 956,740, Oct. 6, 1992. This application Oct. 5, 1993, Ser. No. 131,583
Int. Cl.[5] A62B *17/00*
U.S. Cl. 128—201.29 **5 Claims**

1. An anti-contamination suit comprising:
a) a body garment for covering substantially all of a human body and a hood connected to said body garment in a substantially air tight manner, and allowing circulation of air from an air inlet throughout said body garment and said hood;
b) said body garment including a plurality of one-way air valves for permitting exhaust of air from the interior of said body garment;
c) each of said one-way air valves being formed of a substantially cylindrically walled base member having an outer end of an inner end and a outer flange member adapted for engaging a clothing surface;
d) said base member including a central perforated wall extending substantially perpendicularly to said cylindrical wall and forming an outer face of the air valve;
e) said inner end of said base member having a lower lip extending perpendicularly from said cylindrical wall toward the center of said base member;
f) a insertable membrane support member for connection to said base member;



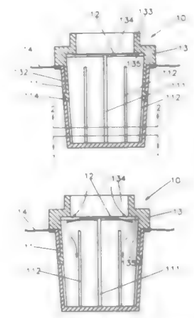
g) said support member being sized for engagement with said inner end of said base member between said perforated wall and said lower lip; and
h) whereby said membrane is flexible to allow air to exhaust through said perforated wall while preventing air from entering from said perforated wall by seating against said support member.

5,355,876
PATIENT VENTILATING APPARATUS WITH MODULAR COMPONENTS
David L. Brodsky, Providence, and Harry O. Olsen, Warwick, both of R.I., assignors to Superior Healthcare Group, Inc., Cumberland, R.I.
Filed May 6, 1992, Ser. No. 878,968
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—202.27 **3 Claims**



1. In an apparatus for ventilating and aspirating the respiratory system of a patient, said apparatus comprising: a patient module including tubular connecting means connectable to a supply of air and to the trachea of the patient for involuntarily supplying air to and withdrawing air from the lungs of the patient; a center module including a first end element connected to said patient module, a second end element, an elongated flexible tubular catheter element permanently connected to said second end element and extending slidably and sealingly through said first end element, and an elongated, collapsible, tubular plastic sleeve connected to said first and second end elements and extending therebetween around said catheter element; and a vacuum module connected to said second end element and adapted to be connected to a source of vacuum for applying vacuum to said catheter element, said vacuum module including means for controlling the application of vacuum to said catheter element, said first end element being releasably connected to said patient module and said second end element being releasably connected to said vacuum module and including first interconnecting means for releasably interconnecting said sleeve to said vacuum module and second interconnecting means for simultaneously, releasably, sealingly interconnecting said catheter element to said vacuum module to permit removal and replacement of said center module as a single unit without replacing said patient module or said vacuum module, said first and second interconnecting means comprising concentric tubular male and female extensions on said sleeve and on said vacuum module arranged to coact in a friction fit respectively with one another.

5,355,877
MOUTH-TO-MOUTH RESUSCITATION DEVICE HAVING A SEALED VALVE POSITION TO PROTECT A RESCUER
Yu W. Cheng, 3F, No. 2-3, 181 Lane, Chia-Hsing Street, Taipei, Taiwan
Filed May 3, 1993, Ser. No. 56,655
Int. Cl.[5] A61M *16/00;* **A62B** *9/06*
U.S. Cl. 128—203.11 **1 Claim**



1. A mouth-to-mouth resuscitation device comprising:
a lower casing resembling a hollow cylinder having an internal wall, a top and a bottom, the internal wall having a top and the bottom having a guard net;
an upper casing adapted to be fastened to the top of said lower casing, said upper casing having a blow-in portion, said blow-in portion having a top, a bottom and a chamber;
fastening means for fastening said lower casing with said upper casing and forming an air passage therebetween;
closing means for closing said passage between said upper casing and said lower casing, said closing means comprising a floating diaphragm disposed between said upper casing and said lower casing, said floating diaphragm being a pliable and elastic sheet slightly smaller than the sectional area of the top of said lower casing, said floating diaphragm further being unattached to either said upper casing or said lower casing and easily replaced;
a transparent stopper sheet fitted between said upper casing and said lower casing;
said closing means further comprising means to prevent leaking of patient fluids past said floating diaphragm, said leak preventing means including a holding means for positively holding said floating diaphragm between said upper casing and said lower casing and against the bottom of said blow-in portion, said holding means comprising two opposing struts affixed to the internal wall of said lower casing and extending beyond the top of the internal wall of said lower casing;
said floating diaphragm being upheld by said two struts of said lower casing and urged against the bottom of the

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blow-in portion of said upper casing when said upper casing and said lower casing are fastened together to thereby seal the chamber of the blow-in portion from communicating with said lower casing thus preventing air from leaking into said upper chamber from said lower casing under normal conditions;

portions of said floating diaphragm not being upheld by said struts bending and allowing air to flow into said lower casing responsive to air blowing through said blown-in portion said diaphragm returning to its normally closed and sealing position responsive to lack of air blowing through said blown-in portion, thus said floating diaphragm provides a function of a normally closed check valve prohibiting air from flowing back into said blow-in portion or any leaking between said lower chamber and said blow-in portion.

5,355,878

BREATHING EQUIPMENT FOR AIRCREW

Joseph A. Griffiths, Haslemere, and Donald M. Sweaton, Brighton, both of England, assignors to Cam Lock (UK) Ltd., Farnborough Hants., England

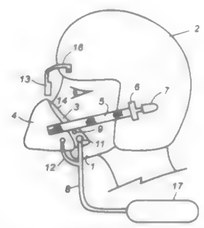
PCT No. PCT/GB91/01034, § 371 Date Feb. 22, 1993, § 102(e) Date Feb. 22, 1993, PCT Pub. No. WO92/00120, PCT Pub. Date Jan. 9, 1992

PCT Filed Jun. 26, 1991, Ser. No. 958,108

Claims priority, application United Kingdom, Jun. 26, 1990, 9014212; May 22, 1991, 9111070

Int. Cl.[5] A62B *18/02*

U.S. Cl. 128—206.24 **18 Claims**



1. A facemask incorporating breathing equipment for use with an aircrew flying helmet comprising a rigid outer shell and a flexible face-piece, said flexible face-piece having a periphery adapted to make a seal with a pilot's face, the face-piece incorporating an inspiratory and expiratory valve and the outer shell having means for attaching said outer shell at a fixed distance from the helmet, and extendable means located between the rigid shell and the face-piece, said extendable means to selectively press the periphery of the face-piece towards the pilot's face to improve the seal therewith and means automatically operable in response to gas at a pressure above that required for normal breathing to reconfigure the extendable means to press the periphery of the face-piece toward the pilot's face.

5,355,879

LARYNGEAL-MASK CONSTRUCTION

Archibald I. J. Brain, St. Andrews, Abney Court Drive, Bourne End, Bucks SL 8 5DL, United Kingdom

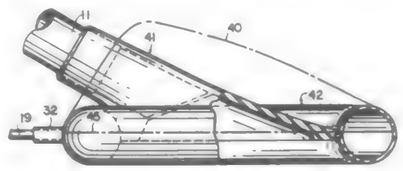
Continuation-in-part of Ser. No. 952,586, Sep. 28, 1992, Pat. No. 5,241,956, and a continuation-in-part of Ser. No. 3,900, Feb. 1, 1993. This application May 7, 1993, Ser. No. 60,167

The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—207.15 **15 Claims**

1. A laryngeal-mask construction, comprising a backplate member providing in essentially a single plane an apertured base-mounting rim of generally elliptical configuration, an inflatable toroidal ring of flexible material surrounding and continuously connected to said base-mounting rim, and an inflatable back cushion comprising a shell of flexible material



adhered generally to the perimeter of said inflatable ring to define said back cushion in conjunction with said mask construction.

5,355,880

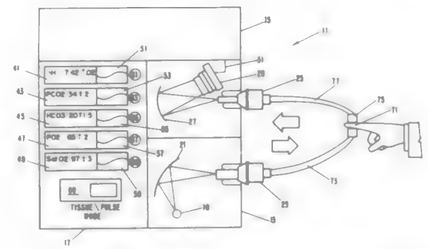
RELIABLE NONINVASIVE MEASUREMENT OF BLOOD GASES

Edward V. Thomas; Mark R. Robinson; David M. Haaland, and Mary K. Alam, all of Albuquerque, N. Mex., assignors to Sandia Corporation, Albuquerque, N. Mex.

Filed Jul. 6, 1992, Ser. No. 910,004

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—633 **62 Claims**



1. A method of determining non-invasively and in vivo at least two blood gas parameters in a human, said method comprising steps of:

a. generating light at three or more different wavelengths, said wavelengths being in the range of 500 nm to 2500 nm;

b. irradiating in vivo and non-invasively blood containing tissue with said wavelengths, so that there is differential attenuation of at least some intensities of said wavelengths, said wavelength dependent differential attenuation being a function of said blood containing tissue and the direct and indirect spectral influences resulting from the unknown values of pH, HCO_3^-, PCO_2, PO_2 and O_2 saturation in said blood containing tissue;

c. measuring said intensities of said wavelengths emerging from said blood containing tissue to obtain a set of at least three spectral intensities v. wavelengths; and

d. determining said unknown values of at least two of pH, HCO_3^-, PCO_2, and a measure of oxygen concentration in said blood containing tissue from said intensities emerging from said blood containing tissue, said values being within the physiological ranges observed in blood containing tissue.

5,355,881

Patent Not Issued For This Number

5,355,882

PULSE OXIMETER

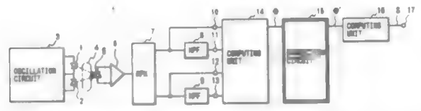
Teiji Ukawa; Kazumasa Ito, and Tadashi Nakayama, all of Tokyo, Japan, assignors to Nihon Kohden Corporation, Tokyo, Japan

Filed Jul. 8, 1993, Ser. No. 87,314

Claims priority, application Japan, Jul. 9, 1992, 4-181946

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—633 **2 Claims**



1. A pulse oximeter comprising:

a red light source and an infrared light source which apply red light and infrared light, respectively, having two different wavelengths to a living tissue including arterial blood;

a light-receiving element which detects optical reception outputs after the red light and the infrared light having the two different wavelengths and which are respectively emitted from said red light source and said infrared light source haven been absorbed by the living tissue;

first computing means for computing an absorbance ratio between pulsating components of light absorbance for the two different wavelengths due to the arterial blood, based on dc components and pulsating components of the respective two different wavelengths which are obtained from the reception outputs of said light-receiving element;

correction circuit means for detecting a degree of fluctuation in the absorbance ratio outputted from said first computing means, for holding the pulsating components of said respective two different wavelengths when the pulsating components of said respective two different wavelengths are stable, and for computing a corrected absorbance ratio using the stable pulsating components of the respective two different wavelengths which were held and the dc components of the respective two different wavelengths at a present time when a fluctuation in the absorbance ratio exceeds a predetermined value; and

a second computing means for computing an oxygen saturation of the arterial blood based on the absorbance ratio produced from said correction circuit means.

5,355,883

ELECTRODE CONNECTOR, IN PARTICULAR FOR ELECTROCARDIOGRAM ELECTRODES, AND ELECTRODE ASSEMBLY COMPRISING A CONNECTOR OF THIS KIND

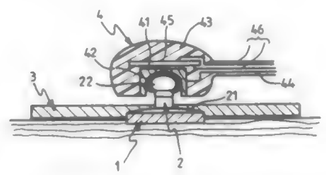
Gilles Ascher, 36, rue de la Ferme, 92200 Neuilly, France

Filed Dec. 23, 1992, Ser. No. 995,993

Claims priority, application European Pat. Off., Dec. 27, 1991, 91403552.2

Int. Cl.[5] A61B *5/0402*

U.S. Cl. 128—641 **9 Claims**



1. Electrode connector suitable for electrocardiogram electrodes having a connection head made from a material that is a good conductor of electricity, the connector comprising a contact member made from a material that is a good conductor of electricity and that is adapted to contact said connection head, means for snap-fastening said connector to said connection head, an electrically insulative material protective cap at least partially enclosing said contact member, an electric cable comprising at least one electric conductor connected to said contact member and a device for detecting strain generating artefacts and comprising a strain sensor accommodated in said cap between at least part of said contact member and at least one interior area of said cap and at least one other electric conductor connected to said strain sensor.

9. An electrode assembly comprising an electrode having a connection head; a pad impregnated with an electrically conductive gel connected to said electrode; and a connector comprising a contact member made from a material which is a good conductor of electricity and adapted to contact said connection head, means for snap fastening said connector to said connection head, an electrically insulative material protective cap at least partially enclosing said contact member and an electric cable comprising at least one electric conductor connected to said contact member, said connector further comprising a device for detecting strain generating artefacts and comprising a strain sensor accommodated in said cap between at least part of said contact member and at least one interior area of said cap and at least one other electric conductor connected to said strain sensor.

5,355,884

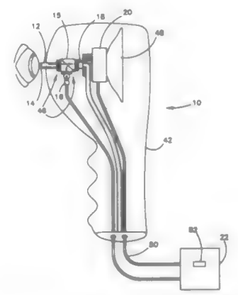
APPLANATION TONOMETER FOR MEASURING INTRAOCULAR PRESSURE

Emeric S. Bennett, 12149 Fowlers Mill Rd., Chardon, Ohio 44024

Filed Oct. 30, 1992, Ser. No. 969,068

Int. Cl.[5] A61B *3/16*

U.S. Cl. 128—645 **11 Claims**



1. A method of measuring intraocular pressure comprising the steps of:

providing an applanation tonometer having a body forming an integral handle portion and mounting case, a probe having an inner end mounted in said body and an outer end projecting therefrom and adapted to contact, and be pressed against a corneal surface of the eye; a sensorhead defining a predetermined maximum contact area at said outer end and a means for generating a first output signal proportional to the corneal contact area; said tonometer further having a force sensor associated with the sensorhead of the probe to monitor the intraocular pressure on the probe upon contact of said probe to the corneal surface of the eye and to provide a second output signal proportional to said pressure; and electronic processing circuitry having a means for determining when said predetermined maximum contact area has been reached and a

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calculating means to calculate intraocular pressure at that point;

pressing said sensorhead at the outer end of said probe against the corneal surface of an eye;

generating a first signal proportional to corneal surface area contacted by the probe to a sensor providing an output signal proportional to said corneal contact area;

monitoring intraocular pressure upon contact of the probe against the corneal surface of an eye and generating a second signal to a force sensor and providing a second output signal proportional to pressure;

generating an indication of when said maximum corneal contact area has been reached by said means for determining said predetermined maximum contact area; and,

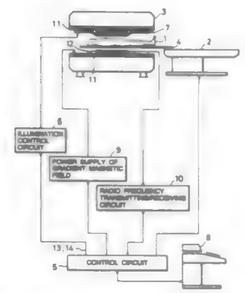
calculating the intraocular pressure per unit of contact area by the calculating means of said electronic processing circuitry when said maximum corneal contact area has been reached.

5,353,345

ILLUMINATING METHOD AND APPARATUS IN NUCLEAR MAGNETIC RESONANCE INSPECTION

Munetaka Tsuda, Mito; Atsushi Takane, and Masao Yabusaki, both of Katsuta, all of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Dec. 10, 1992, Ser. No. 988,889
Claims priority, application Japan, Dec. 12, 1991, 3-329165
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.2 **24 Claims**



1. An illuminating method in nuclear magnetic resonance inspection, the method comprising the steps of:

generating a static magnetic field, a gradient magnetic field, and a radio frequency magnetic field in a predetermined space in which an object of inspection is disposed;

detecting a nuclear magnetic resonance signal generated by the object of inspection in response to the static magnetic field, the gradient magnetic field, and the radio frequency magnetic field;

controlling generation of the static magnetic field, the gradient magnetic field, and the radio frequency magnetic field, and detection of the nuclear magnetic resonance signal to perform nuclear magnetic resonance inspection of the object of inspection;

illuminating with light the space in which the object of inspection is disposed;

changing an intensity of the light illuminating the space in which the object of inspection is disposed during performance of the nuclear magnetic resonance inspection so as to indicate progress of the nuclear magnetic resonance inspection to the object of inspection;

arithmetically processing the detected nuclear magnetic resonance signal to obtain a tomographic image of the object of inspection; and

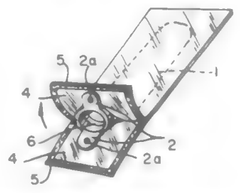
displaying the tomographic image.

5,353,806

PROPHYLACTIC PROTECTOR FOR ECHOGRAPHIC PROBES

José F. Losa Domingues; Jordi Briones Escubos; Xavier Juive Diaz, and Francesc Prats Llopis, all of Paseo Bonanova, 44 bajos, E-08017 Barcelona, Spain

PCT No. PCT/ES92/00080, § 371 Date Aug. 5, 1993, § 102(e) Date Aug. 5, 1993, PCT Pub. No. WO93/11697, PCT Pub. Date Jun. 24, 1993
PCT Filed Dec. 9, 1992, Ser. No. 98,326
Claims priority, application Spain, Dec. 10, 1991, 9102748
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—660.01 **2 Claims**



1. Prophylactic protector for echographic probes, comprising:

an inner, isolated resilient case, an outer isolated envelope for receiving said inner isolated resilient case, said outer envelope consisting of two superimposed resilient opaque sheets and a loading mouth, wherein a surface of each of said sheets having a thermofusible layer, and edges connected by thermal embossing, the loading mouth having a pair of lips connected only by cold embossing, wherein the assembled prophylactic protector includes the outer envelope and the inner case forming a single body, the inner case being extended inside the outer envelope and connected by means of two permanent connection points, until moment of use, to the inner surface of the lips of the loading mouth of the outer envelope, and

at least two wings, for providing the two permanent connection points, integral with two opposite points of the edge of the mouth of the inner case, and connected by these points to the inner surface of the lips of the mouth of the outer envelope, said at least two wings, being integral with the inner surface of the respective lips of the loading mouth of the envelope, following the movement of opening by separation of said lips, and for pulling at the two opposite points of the mouth of the case wherein the mouth opens automatically.

5,355,887

ULTRASONIC DIAGNOSTIC APPARATUS

Miyuki Iizuka; Akira Shibe; Isamu Yamada, and Takaki Shimura, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

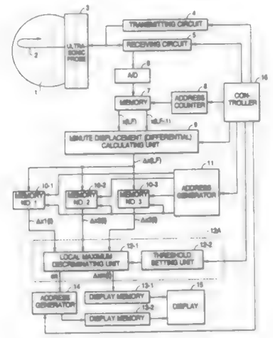
Filed Oct. 30, 1992, Ser. No. 968,688
Claims priority, application Japan, Oct. 31, 1991, 3-286207; Jul. 15, 1992, 4-187935
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—660.04 **22 Claims**

1. An ultrasonic diagnostic apparatus which receives ultrasonic waves, transmitted into a human body along a scanning line and reflected by internal organs of the human body, for producing data signals corresponding to the received, reflected ultrasonic waves, processing the data signals to generate display data, and displaying a tomogram of the human body represented by the display data, said ultrasonic diagnostic apparatus comprising:

calculating means for calculating one of a minute displacement of tissue within the human body on the basis of the data signals and a differential of the minute displacement

with respect to a direction parallel to the scanning line within the human body;

local maximum calculating means, coupled to said calculating means, for calculating a plurality of temporal local maximums of one of the minute displacement varying with time and the differential of the minute displacement



varying with time, and for assigning corresponding pixel data, representing levels of luminance, to each of the temporal local maximums; and

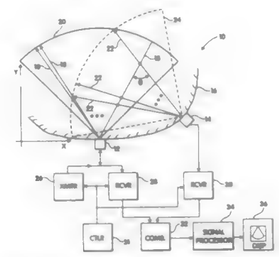
display means, coupled to said local maximum calculating means, for displaying the temporal local maximums by displaying the corresponding pixel data representing levels of luminances.

5,355,888

HIGH RESOLUTION PHASED ARRAY ECHO IMAGER

Henry W. Kendall, Sharon, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Nov. 12, 1992, Ser. No. 975,509
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—660.07 **27 Claims**



1. An ultrasound imaging system having improved spatial resolution, comprising:

an active transducer coupled to an ultrasonic transmitter for producing a pulse of ultrasonic energy in a first direction along which one or more targets are disposed, the active transducer also is coupled to a first ultrasonic receiver for receiving a plurality of echoes of the pulse, each of the echoes corresponding to a different one of the targets and returning to the active transducer along the first direction;

a first passive transducer coupled to a steerable second ultrasonic receiver for receiving the plurality of echoes along a plurality of second directions each intersecting the first direction at a different one of the targets;

a controller for controlling the steering of the second ultrasonic receiver to steer the first passive transducer in each of the second directions to receive each of the echoes at the passive transducer such that both the active and passive transducers each receive echoes resulting from the same pulse of ultrasonic energy transmitted in the first direction; and

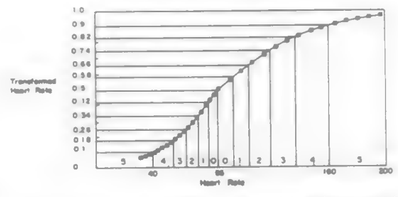
a signal processor for combining the echoes received by the first and second ultrasonic receivers to form a composite image for the one or more targets.

5,355,889

MONITORING SYSTEM FOR PRODUCING PATIENT STATUS INDICATOR

Igal Nevo, Bala Cynwyd, and Allon Guez, Penn-Valley, both of Pa., assignors to Albert Einsestein Health Care Foundation, Philadelphia, Pa.

Filed Jun. 9, 1992, Ser. No. 895,669
Int. Cl.[5] A61B *5/0205*
U.S. Cl. 128—671 **17 Claims**



1. A patient monitoring method, comprising the steps of:

(a) measuring a plurality of medical parameters;

(b) transforming each medical parameter to a sigmoid function indicative of at least normal and critical levels of the parameter;

(c) comparing each of said functions to a prescribed sequence of reference values and on the basis of the comparison generating for each parameter a corresponding danger level;

(d) selecting one of said danger levels as a vital function status (VFS) indicator; and

(e) displaying said VFS indicator.

5,355,890

PULSE SIGNAL EXTRACTION APPARATUS FOR AN AUTOMATIC BLOOD PRESSURE GAUGE

Andres Aguirre, Cambridge, Mass., and James M. Chickering, Newton, N.H., assignors to Siemens Medical Electronics, Inc., Danvers, Mass.

Continuation of Ser. No. 822,508, Jan. 17, 1992, abandoned. This application Mar. 18, 1994, Ser. No. 210,644
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—680 **19 Claims**

1. A signal processing system suitable for use in an automatic blood pressure gauge which generates at least one blood pressure measurement value and which includes a pressurized cuff and a pressure transducer that generates a cuff pressure signal representing pressure levels in the cuff including blood pressure pulse signal components, the signal processing system comprising:

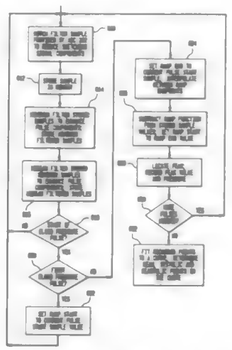
digitizing means adopted to be direct-current (DC) coupled to receive the cuff pressure signal for developing a sampled data digital cuff pressure signal;

means for filtering the sampled data digital cuff pressure signal to produce an auxiliary signal which identifies samples of the sampled data digital cuff pressure signal that correspond to a start of successive ones of the blood pressure pulse signal components;

pulse signal extraction means, including, a first means responsive to at least two samples of the sampled data digital cuff pressure signal which were identified by the auxiliary signal for generating a base pressure signal by interpolat-

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ing new pressure signal samples between said at least two samples, which base pressure signal approximates the cuff pressure signal without the blood pressure pulse signal components, and a second means for subtracting the base pressure signal from the sampled data digital cuff pressure



signal to produce a separated blood pressure pulse signal;

means for processing the separated blood pressure pulse signal to determine said at least one blood pressure measurement value.

5,355,891

ECG ANALYZER

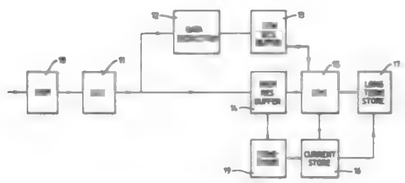
Steven J. Waterridge, and Shaun C. Byrne, both of Oxon, England, assignors to Oxford Medical Limited, Oxon, United Kingdom

Filed Jan. 12, 1993, Ser. No. 3,406

Claims priority, application United Kingdom, Jan. 13, 1992, 9200586

Int. Cl.[5] A61B *5/0452*

U.S. Cl. 128—702 17 Claims



1. Apparatus for analyzing ECG signals from a patient in the form of a data stream, the apparatus comprising means for monitoring the data stream to detect the occurrence of heart beats and generate a trigger point for each beat detected, the trigger point defining a region of data which is examined by the monitoring means to accurately determine a location of a portion of said ECG signal which may include micropotentials; processing means for determining which are acceptable heart beats and, where a heart beat is acceptable, for generating and storing an average from successive portions of said ECG signal at a resolution to detect micropotentials, wherein said processing means is adapted to store a set of averaged data generated during a corresponding number of time intervals.

5,355,892

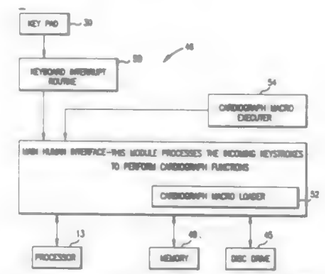
METHOD AND APPARATUS FOR CONTROLLING A MEDICAL DEVICE WITH A MACRO INSTRUCTION

William E. Saltzstein, Amity; Lawrence Hileman, and Peter M. Galen, both of McMinnville, all of Oreg., assignors to Hewlett-Packard Corporation, Palo Alto, Calif.

Filed Feb. 10, 1993, Ser. No. 15,749

Int. Cl.[5] A61B *5/0432*

U.S. Cl. 128—710 7 Claims



1. A method for enhanced efficiency in the utilization of a cardiograph which includes a digital processor, memory and a keypad which includes a plurality of keys for providing instructions and data to said cardiograph which relate to collection and display of cardiographic data, said method comprising the steps of:

providing a macro instruction for initiating a plurality of signals which simulate actuation of said plurality of keys in a predetermined order for providing instruction and data relating to collection and display of cardiographic data for a selected patient;

storing said macro instruction within portable storage media;

temporarily coupling said portable storage media to said digital processor;

connecting said cardiograph to said selected patient;

initiating execution of said macro instruction; and

collecting cardiographic data for said selected patient in response to execution of said macro instruction.

5,355,893

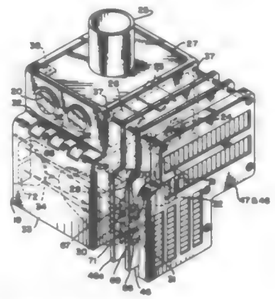
VITAL SIGNS MONITOR

Peter R. Mick, 4 Stonybrook Trail, Kinnelon, N.J. 07405, and Donald C. Beck, 18 Woodglen Way, Boonton, N.J. 07005

Continuation-in-part of Ser. No. 864,312, Apr. 6, 1992, abandoned. This application Sep. 13, 1993, Ser. No. 120,183

Int. Cl.[5] A61B *5/08, 5/097*

U.S. Cl. 128—719 23 Claims



1. A vital signs monitor comprising:

first means adopted to be disposed at a selected location on a patient to pass at least exhaled gases therethrough;

second means coupled to said first means to perform a plurality of resistive measurements of certain predetermined parameters of said exhaled gases and a plurality of optical absorption measurements of other predetermined parameters of said exhaled gases; and

third means coupled to said second means responsive to said plurality of resistive measurements and said plurality of optical absorption measurements to provide individual read outs of at least a value of carbon dioxide in said exhaled gases, a value of tidal volume of said exhaled gases and a value of a respiration rate of said patient.

5,355,894

METHOD FOR GENERATING A SIGNAL CORRESPONDING TO THE RESPIRATION VOLUME PER UNIT OF TIME OF A PATIENT

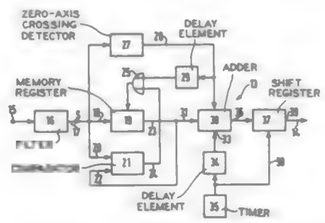
Ake Sivard, Solna, Sweden, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 23, 1993, Ser. No. 110,772

Claims priority, application European Pat. Off., Aug. 26, 1992, 92114546.2

Int. Cl.[5] A61B *5/0205*

U.S. Cl. 128—725 3 Claims



1. A method for generating a signal corresponding to the respiration volume per unit of time of a patient, comprising the steps of:

acquiring a measured impedance signal from an impedance measuring system including an electrode arrangement disposed in a region of the heart of said patient;

filtering a signal component out of said measured impedance signal correlated with the respiration of the patient, said signal component having a plurality of zero-axis crossings;

detecting said zero-axis crossings of said signal component;

identifying a maximum amplitude value of said signal component between each of two successive pairs of zero-axis crossings; and

forming a continuously updated average of said maximum amplitude value over a predetermined time interval, said average corresponding to the respiration volume per unit of time of said patient.

5,355,895

OCULAR DISEASE DETECTION APPARATUS

S. Hutson Hay, 310 Clinton Ave. West, Huntsville, Ala. 35801

Filed Jul. 20, 1993, Ser. No. 93,685

Int. Cl.[5] A61B *13/00*

U.S. Cl. 128—745 20 Claims

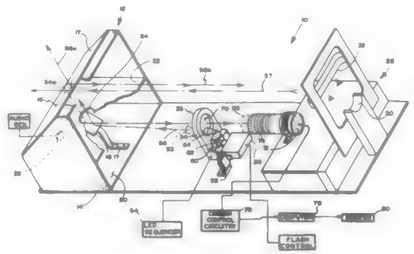
1. An ocular disease detection device comprising:

eye positioning apparatus for positioning eyes of a subject in a selected focal plane;

a first, relatively broad, visual stimulus having at least a partially reflective character and generally positioned in front of said eye positioning apparatus at a first focal distance therefrom;

a smaller, second, visual stimulus of varying character superimposed on said first visual stimulus and appearing at a second focal distance from said eye positioning apparatus, said first and second visual stimulus cooperating to defocus eyes of a subject;

light beam generation means for generating a beam of light and directing said beam of light to said selected focal



plane, illuminating eyes of a subject and producing eye reflections therefrom; and

visual recording and display means having a lens positioned to receive said eye reflections, for recording and displaying an image of said eye reflections.

5,355,896

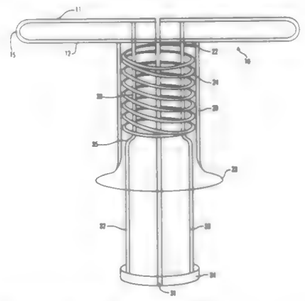
VAGINAL PESSARY

Norman Schulman, 250 N. Robertson Blvd., Beverly Hills, Calif. 90211

Filed Feb. 23, 1993, Ser. No. 21,193

Int. Cl.[5] A61F *6/06*

U.S. Cl. 128—834 10 Claims



1. A pessary comprising:

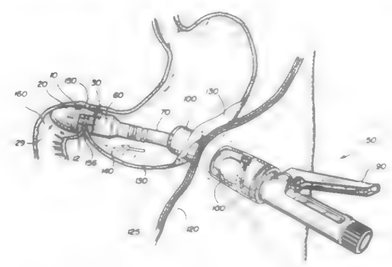
a substantially flat, circular, flexible head substantially rigid across its diameter, the head partially compressible from small compressive forces, highly compressible from large compressive forces, and having an extended shape absent compressive forces, the head comprising a rim disposed about its circumference and two flat disks joined at the rim; and

a manipulation apparatus operatively coupled to the head, the manipulation apparatus comprising a tube-like chamber and a plunger movably disposed inside the chamber, the plunger having a longitudinal dimension larger than that of the chamber;

wherein one disk extends between the rim and the plunger, and the other disk extends between the rim and the chamber, and operation of the manipulation apparatus provides large compressive forces on the head or release of previously set large compression forces.

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5,355,897
METHOD OF PERFORMING A PYLOROPLASTY/PYLORECTOMY USING A STAPLER HAVING A SHIELD
Joseph J. Pietrafitta, Minnetonka, Minn., and Ronald D. Adams, Cincinnati, Ohio, assignors to Ethicon, Inc., Somerville, N.J.
Filed Apr. 16, 1992, Ser. No. 869,981
Int. Cl.[5] A61B *17/00*
U.S. Cl. 128—898 **1 Claim**



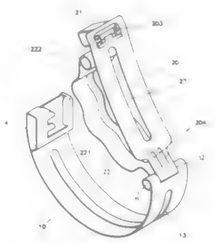
1. A method of performing a pyloroplasty/pylorectomy, comprising:
inserting a circular stapler having a pyloroplasty/pylorectomy shield into the pylorus of a mammal; and,
actuating the stapler so that a section of the pylorus is removed and adjoining tissue is stapled,
wherein the pyloroplasty/pylorectomy shield comprises:
a base member having a proximal end and a distal end;
anvil means mounted to the proximal end of said member;
attachment means mounted to said proximal end of said member for engagement with a circular stapler;
a pyloroplasty/pylorectomy shield member extending axially from the proximal end of said member; and,
dilation means extending from the distal end of said member.

5,355,898
METHOD FOR INDUCING EXTRASKELETAL BONE GROWTH IN PRIMATES AND FOR SCREENING IMPLANTS THEREFOR
Ugo Ripamonti, Johannesburg, South Africa, assignor to South African Medical Research Council, South Africa
Filed Jun. 2, 1992, Ser. No. 889,994
Int. Cl.[5] A61B *19/00*
U.S. Cl. 128—898 **12 Claims**

1. A method for evaluating the shape and configuration of a porous hydroxyapatite structure for its osteoconductive or osteoinductive potential, which method comprises:
implanting the structure extraskeletally into a non-human primate;
removing the structure from the primate after a predetermined period of time; and
examining the structure after removal to determine approximately the amount of bone which has formed on or within the structure.

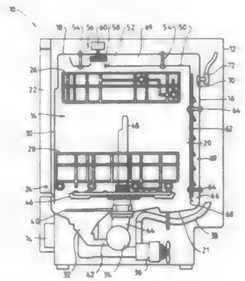
5,355,899
ARCHED HAIRCLIP
Chou Kuo-Hua, Suite 1, 11F, 95-8 Chang Ping Road, Sec. 1, Taichung, Taiwan
Filed Jul. 9, 1993, Ser. No. 89,168
Int. Cl.[5] A45D *8/22*
U.S. Cl. 132—279 **9 Claims**

1. An arched hairclip, comprising
an arched base piece, having a pair of hinge rings at one end, said hinge rings having a rectangular receiving space defined thereinbetween, and a retainer at the other end thereof; said retainer being an inwardly bent plate body with an entrance opening on its top; said retainer having a first and a second guiding members downwardly disposed on left and right sides of said entrance opening respectively, at least two gripping parts and spaces being provided on at least one of said right and left guiding members; and
a tongue piece having a thickness, said tongue piece comprising an upper portion in the shape of a elongate arch and a lower portion forming an undulated spring strip; a U-shaped buckle member being extended and connected to a first end of said upper portion of said tongue piece and having at least a tip at a free end of said buckle member; a press knurling being provided on said upper portion of



said tongue piece near said buckle member, said press knurling having at least one retaining recess that said tip can be inserted therethrough for fixing up; two protruding tabs laterally extending from two sides of said tongue piece between said upper portion and said spring strip, each of said protruding tabs abutting a pair of inwardly stepped spaces to form a turning point for said tongue piece; an spring plate connected to said tongue piece between said upper portion and said spring strip and pointing downward for stopping against said arched base piece, said two protruding tabs being inserted into said hinge rings through said rectangular opening respectively so as to pivotally connect said arched base piece and said tongue piece.

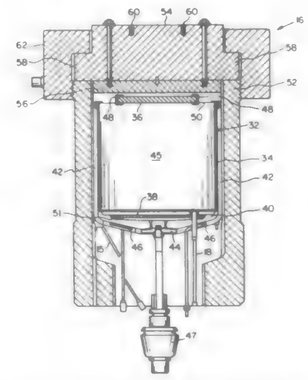
5,355,900
DISHWASHER WITH DRYING CYCLE
Hiroshi Sakata, Seto, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 1, 1992, Ser. No. 983,767
Claims priority, application Japan, Dec. 5, 1991, 3-321872
Int. Cl.[5] A47L *15/48*
U.S. Cl. 134—95.2 **11 Claims**



1. A dishwasher, comprising:

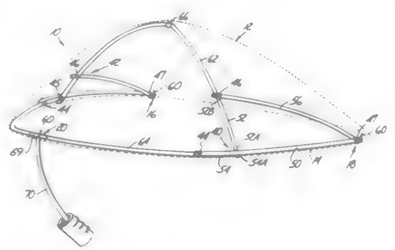
a) a chamber including a dish holding portion for holding dishes;
b) heating means, mounted in the chamber, for heating the air in the chamber to promote drying of dishes;
c) a drain pump for draining the water out of the chamber;
d) an air circulation passage, through which the air from the dish holding portion of the chamber is circulated;
e) dehumidifying surface means capable of holding water, provided in the air circulation passage, for dehumidifying the air circulated through the air circulation passage; and
f) fan means for circulating heated air from the dish holding portion over the dehumidifying surface means and for returning dehumidified air to the dish holding portion;
g) means, connectable to a water supply, for providing water onto the dehumidifying surface means;
h) control means for controlling the drain pump, the fan means and water providing means so that heated air from the dish holding portion is dehumidified and returned to the dish holding portion, and the drain pump drains water from the chamber after the water supply means have been activated at least once so that the water is not allowed to heat to evaporation before being drained, thereby drying the dishes located in the dish holding portion.

5,355,901
APPARATUS FOR SUPERCRITICAL CLEANING
Richard J. Mielnik; John A. Metalonis; Richard K. Reber; Larry R. Rosio; Stephen H. Shore, and Charles W. Smith, all of Erie, Pa., assignors to Autoclave Engineers, Ltd., Erie, Pa.
Filed Oct. 27, 1992, Ser. No. 967,219
Int. Cl.[5] B08B *3/10*
U.S. Cl. 134—105 **17 Claims**



13. A system for cleaning a workpiece with a supercritical cleaning fluid, comprising:
a pressure vessel, an open ended cleaning drum positioned in the vessel and defining a work zone for receiving the workpiece, said pressure vessel enclosing an annular space around said drum, said pressure vessel having an inlet in communication with said annular space and an outlet in communication with said work zone;
a let-down valve in communication with said outlet;
a heater for controlling the temperature of said cleaning fluid;
a separator in communication with said let-down valve, said separator having a body with an inlet and an outlet and a contaminant drain at a lower end of the separator;
a condenser in communication with said separator outlet for condensing gaseous cleaning fluid to a liquid state;
a storage vessel for maintaining the liquid cleaning fluid;
a pump for conveying cleaning fluid from the storage vessel to the cleaning vessel; and
control means for monitoring temperatures and pressures and operating said let-down valve, said heater and said pump to maintain predetermined pressures, temperatures and flow rates throughout said system;
such that liquid cleaning fluid may be pumped from the storage vessel to the pressure vessel and caused by temperature and pressure to achieve a supercritical state, with the cleaning fluid circulated through the annular space into said work zone during a cleaning cycle, said cleaning fluid removed from the work zone after said cleaning cycle when said let-down valve is opened, said removed portion passed to the separator where it is regenerated, with the cleaning fluid thereafter passing through the separator outlet to the condenser and from there back to the liquid storage vessel, with separated contaminants collecting in the lower end of the separator for removal through said drain.

5,355,902
UMBRELLA WITH SPHERICAL MECHANISMS
Karen S. Schlangen, LaCrescent, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.
Filed Jun. 16, 1993, Ser. No. 78,444
Int. Cl.[5] A45B *11/00*
U.S. Cl. 135—20.1 **17 Claims**



1. An umbrella comprising:
a collapsible cover portion;
a flexible loop member attached to the cover portion; and
linkage means attached to the flexible loop member at first, second, and third equidistantly spaced points for moving the first, second and third points together such that the flexible loop member folds onto itself to form a plurality of smaller overlapping loops when the umbrella is in a closed position and for moving the first, second, and third points away from each other such that the overlapping loops expand when the umbrella is in an open position.

5,355,903
UMBRELLA
Joseph F. Haddad, and Joseph R. Haddad, both of 18 Powder Horn Way, Berkeley Heights, N.J. 07922
Division of Ser. No. 734,223, Jul. 22, 1991, Pat. No. 5,307,827.
This application Mar. 4, 1994, Ser. No. 206,015
Int. Cl.[5] A45B *11/00*
U.S. Cl. 135—20.1 **10 Claims**

1. An apparatus comprising:
a shaft comprising a handle end and a canopy end;
a canopy comprising a plurality of extension ribs, the ribs having a shaft end pivotally connected to the canopy end of the shaft and extending from the shaft to outer rib ends, and a canopy cover supported on the extension ribs and extending radially from the shaft to the outer rib ends, a shaft section and an outer rib section, there being at least one multi-position canopy rib having at least one multi-

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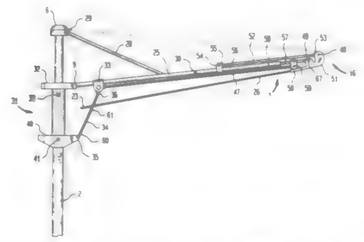
position rib hinge between the shaft section and the outer rib section, said canopy having a plurality of sections;

an actuating means for moving the canopy between:

a) an closed position where all of said ribs are closed and

b) middle position where said outer rib section is folded towards said shaft end and said canopy ribs are extended

c) an opened position where all of the ribs are fully opened;



means to latch the umbrella in said middle position;

means to latch the umbrella in the opened position wherein in said middle position, a section of said canopy is closed while other sections or said canopy are extended; and

means to fasten the canopy when opened in the middle position in the inside windshield of an automobile.

5,355,904

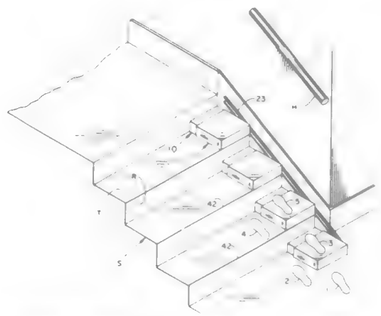
STAIR CLIMBING AID

Ronald I. Wallum, P.O. Box 5282, Fargo, N. Dak. 58205

Filed Oct. 4, 1993, Ser. No. 130,746

Int. Cl.[5] A45B *1/00*

U.S. Cl. 135—65 **20 Claims**



1. A stairway climbing aid comprising:

(a) a plurality of vertically spaced half-step members, each having vertical dimensions within a range approximately 3″ to 4¾″, and having upper and lower horizontal surfaces; and

(b) a rigid, elongated, substantially planar connector fixedly connected at locations along its length spaced uniformly approximately 11″ to 14″ apart, to each of said members at a point intermediate said surfaces and rearwardly relative to said surfaces at an angle approximately 27° to 44° relative thereto.

5,355,905

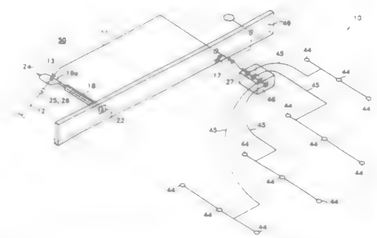
UNDERGROUND SPRINKLER SYSTEM AND METHODS FOR WINTERIZING AND INSTALLING THE SAME

Robert K. Burgess, 27 Taxi Dr., and Thomas A. Redle, 115 Red Fox Dr., both of Sheridan, Wyo. 82801

Filed May 4, 1993, Ser. No. 57,649

Int. Cl.[5] F16L *5/00;* **F16K** *31/46*

U.S. Cl. 137—1 **44 Claims**



1. An underground sprinkler system for connection to a water source line located within a building structure, said structure having an interior and exterior, said system comprising:

a. at least one underground sprinkler device positioned within an area on the exterior of said building structure to be watered;

b. a feedline connected at one end to said sprinkler device and leading back towards said building structure where it connects at another end to said water source line;

c. valve means connected within said feedline, wherein said valve means is positioned within said interior of said building structure;

d. drain means connected to said valve means; and

e. valve control means coupled to said valve means, wherein said valve control means comprises an access means which accesses said valve means from said exterior of said building structure.

5,355,906

PRESSURE BALANCED MIXING VALVE

Garry Marty, Fishers, and Diana Smolkin, Indianapolis, both of Ind., assignors to Masco Corporation of Indiana, Taylor, Mich.

Continuation of Ser. No. 921,191, Jul. 28, 1992, abandoned. This application May 27, 1993, Ser. No. 68,848

Int. Cl.[5] F16K *11/06;* **G05D** *11/02*

U.S. Cl. 137—98 **53 Claims**

1. A mixing valve comprising:

a housing having a side wall and a bottom wall defining a cavity which is open at the top, an outlet port in communication with said cavity, said bottom wall having first and second supply ports;

a housing cap engaged with said housing;

a valve plate having a first outlet aperture and a second outlet aperture rotatably disposed in said housing cap;

a cartridge non-rotatably disposed in said cavity intermediate said bottom wall and said valve plate;

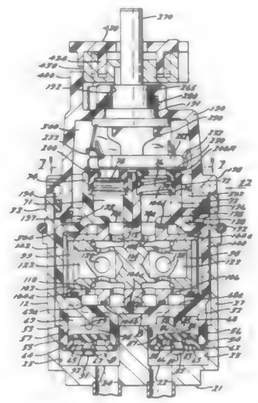
said cartridge having a chamber therein, first inlet passageway upstream of said chamber in communication at its downstream end with said chamber and at its upstream end with said first supply port, second inlet passageway upstream of said chamber in communication at its downstream end with said chamber and at its upstream end with said second supply port, first outlet passageway downstream of said chamber in communication at its upstream end with said chamber and at its downstream end with said valve plate, and second outlet passageway downstream of said chamber in communication at its upstream

end with said chamber and at its downstream end with said valve plate;

third outlet passageway intermediate said valve plate and said outlet port in communication at its upstream end with said valve plate and at its downstream end with said outlet port;

means to rotate said valve plate to align and misalign said first outlet aperture with said first outlet passageway and said second outlet aperture with said second outlet passageway to thereby open and close communication between said first and second outlet passageways and said third outlet passageway to vary at least the amount of fluid passing into said third outlet passageway;

spool valve within said chamber to even the pressures of the



fluids from said first and second supply ports that are delivered to said first and second outlet passageways;

check valve disposed in said first and second inlet passageways; and means for adjusting the maximum temperature of the fluid comprising

a stop flange on said housing cap,

a stem receiving member having an opening to receive a stem,

a stop member having an opening to receive said stem, and a stop shoulder adapted to engage said stop flange to limit rotational movement of said stop member, and

engagement means on said stem receiving member and said stop member cooperating to prevent independent rotational movement of said stem receiving member and said stop member.

5,355,907

AUTOMATIC DRAINING BACK FLOW PREVENTER FOR USE WITH HYDRANT

Herbert W. Hoeptner, III, 15085 Venetian Way, Morgan Hill, Calif. 95037

Continuation-in-part of Ser. No. 885,646, May 19, 1992, Pat. No. 5,217,039, and a continuation-in-part of Ser. No. 884,774, May 18, 1992, Pat. No. 5,228,471. This application Jun. 4, 1993, Ser. No. 71,108

Int. Cl.[5] E03R *1/10*

U.S. Cl. 137—218 **10 Claims**

1. In automatic draining back flow prevention apparatus, for use with hydrant structure, the combination comprising:

a) tubular body means having main passage structure between flow entrance and exit ports,

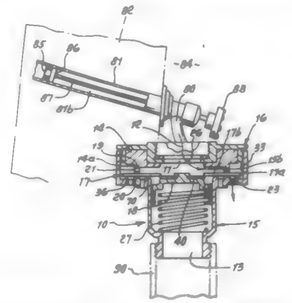
b) the body means having a first side port communicating with said passage structure,

c) a single diaphragm carried by the body means to be exposed to flow in said passage means,

d) a stopper in said passage means cooperating with said diaphragm to pass forward fluid flow from said hydrant structure, while the diaphragm is positioned to block exit flow of fluid through the first side port, and to block back flow of fluid through said main passage means when said diaphragm moves to unblock flow of fluid through said first side port, said diaphragm forming a central through opening,

e) a first seat in said body means exposed to said passage means, and seating said diaphragm as it moves to block flow of fluid through said first side port,

f) and spring means carried by said body means to urge the stopper bodily toward said diaphragm, said spring means



and diaphragm sized to allow said movement of the diaphragm to pass forward fluid flow when the pressure of said flow exceeds a predetermined level,

g) there being a second annular seat for said diaphragm, inwardly of said first seat, and allowing diaphragm flexing away from the second seat to allow fluid passage between the main passage and the exterior via a second port in said body,

h) said stopper located downstream of said diaphragm in said direction of forward fluid flow through said central opening,

i) the first port being at a greater radial distance from said central through opening than the second port.

5,355,908

REUSABLE PIPE UNION ASSEMBLY WITH AUTOMATIC FLUID FLOW CHECKING

Martin H. Berger, Edmonton; Leo L. Krywitsky, Toronto, and Lee A. Krywitsky, Calgary, all of Canada, assignors to Hiltap Fittings, Ltd., Calgary, Canada

Continuation-in-part of Ser. No. 335,149, Apr. 7, 1989, abandoned, which is a continuation of Ser. No. 1,331, Jan. 8, 1987, abandoned, which is a continuation-in-part of Ser. No. 839,332, Mar. 13, 1986, abandoned, which is a continuation-in-part of Ser. No. 819,948, Jan. 15, 1986, abandoned. This application Aug. 28, 1989, Ser. No. 399,786

The portion of the term of this patent subsequent to Oct. 18, 2008, has been disclaimed.

Int. Cl.[5] F16L *29/00*

U.S. Cl. 137—614.04 **44 Claims**

1. A pipe union assembly comprising:

a first hollow fitting member having means for attaching the first fitting member at a first end thereof to a first pipe member;

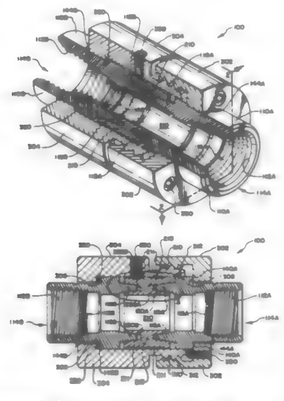
a truncated tapered ridge formed at the periphery of a second end of the first fitting member, the truncated tapered ridge having two opposing flat sides, each of said sides being oriented at an angle in the range from about 6° to about 8° with respect to a central axis of the first fitting member and wherein the tapered channel is defined by two flat tapered walls, said walls being oriented with respect to a central axis of the sealing means at an angle

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which is equal to the angle at which the tapered ridge sides are oriented with respect to the central axis of the fitting member;

first check means for automatically halting the flow of fluid from the first pipe member through the first fitting member when the pipe union is disassembled;

hollow rigid sealing means having a first tapered channel peripherally formed on a first end, the first tapered channel being configured to receive into sealing engagement the tapered ridge such that the truncated tapered ridge does not completely penetrate the first tapered channel, the hollow rigid sealing means allowing fluid flow therethrough;



securing means for selectively applying pressure to the first hollow fitting member to hold the truncated tapered ridge in sealed engagement with the first tapered channel such that the sealing engagement is maintained while the pipe union undergoes significant thermal cycling; and

disabling means for disabling the first check means when the pipe union is assembled and the truncated tapered ridge is in sealing engagement with the first tapered channel such that fluid is allowed to flow through the first fitting member when the pipe union is assembled but fluid flow through the first fitting member is automatically halted upon disassembly of the pipe union assembly.

5,355,909

UNDERSEA HYDRAULIC COUPLING WITH METAL SEALS

Robert E. Smith, III, Missouri City, Tex., assignor to National Coupling Company, Inc., Stafford, Tex.

Filed Feb. 7, 1994, Ser. No. 192,495

Int. Cl.[5] F16L *37/28*

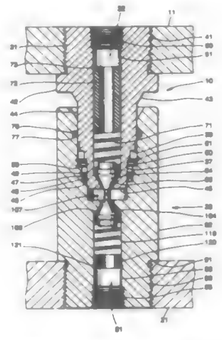
U.S. Cl. 137—614.04 **16 Claims**

1. An undersea hydraulic coupling comprising:

(a) a female member having an internal bore extending therethrough, a valve slidable in the female member bore for controlling fluid flow through the female member bore, the bore having first and second sections with at least one inner shoulder surface between the first and second sections of the female member bore, the second section having a greater diameter than the first section;

(b) a male member having an internal bore extending therethrough, a valve slidable in the male member bore for controlling fluid flow through the male member bore, an outer body having first and second sections, the first section of the outer body dimensioned to slide within the first section of the female member bore and the second section of the outer body dimensioned to slide within the second section of the female member bore, and at least one outer shoulder surface between the first and second sections of the male member outer body; and

(c) first and second hollow metal seals positionable between the first and second sections of the female member bore; the first seal being positionable on the inner shoulder surface of the female member bore and being axially compressible between the inner shoulder surface and the outer shoulder surface of the male member upon insertion of the male member into the female member bore, the hollow metal seals being pressure-energizable to seal between the male member outer body, and female member bore upon fluid pressurization of the coupling.



5,355,910

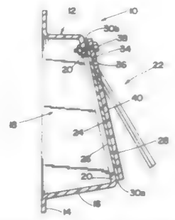
DUAL COMPONENT FLAP

Mark C. Gies, Leomister, and Keith J. Nardone, Northborough, both of Mass., assignors to TRW Inc., Cleveland, Ohio

Filed Oct. 13, 1993, Ser. No. 136,391

Int. Cl.[5] F16K *15/16*

U.S. Cl. 137—858 **15 Claims**



1. A valve element for use in a flap-type pressure relief valve comprising:

a first sheet of a relatively soft flexible elastomeric material having opposed first and second faces and a peripheral edge including spaced first and second lateral side edges, the first face being smooth and planar and adapted to function as a sealing face; and,

a first strip of relatively rigid plastics material bonded to the second face to extend continuously along and closely adjacent the first lateral side edge to provide a rigid mounting strip for joining the valve element to an associated valve body.

5,355,911

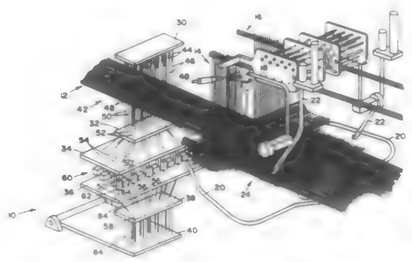
WEAVE SHED FORMATION APPARATUS WITH INDIVIDUAL HEDDLE SELECTOR CONTROL

Heinz Kuster, and Stephan Kuster, both of Sandpoint, Id., assignors to Asten Group, Inc., Charleston, S.C.

Continuation of Ser. No. 832,350, Feb. 7, 1992, Pat. No. 5,183,081. This application Oct. 13, 1992, Ser. No. 959,967

Int. Cl.[5] D03C *3/20, 13/00*

U.S. Cl. 139—55.1 **5 Claims**



1. A shed formation apparatus comprised of:

a plurality of movable heddles;

a plurality of heddle selectors connected to the moveable heddles by a first plurality of control leads;

a plurality of heddle selector controllers which include stopper means for retarding the movement of the heddle selectors;

a first harness means, including a plurality of passages through which the first plurality of control leads pass, to increase the spacing between the control leads;

a first plurality of control frames, to which the controllers are mounted, equal in number to the control leads, each frame including a through slot which is intersected by a passageway that extends through one wall of the frame;

each heddle selector being movable in the through slot in a respective controller and further including an aperture which is alignable with the respective passageway;

the stopper means each include an extendable-retractable piston affixed to the wall of the control frame and are positioned so that the extended piston can be passed through the passageway and then through the aperture;

a second plurality of control leads attached to the heddle selectors;

a second harness means, including a plurality of passages through which the second plurality of control leads pass; and

repeat pattern output means that determines the movement of the second plurality of control leads and, thereby, the movement of the heddle selectors, and selectively activates the stopper means.

5,355,912

ELASTIC DEFORMATION DEVICE FOR AUTOMATICALLY CONTROLLING THE WARP TENSION IN A LOOM

Luciano Corain, Vicenza; Roberto Spanevello, Schio, and Marco Novella, Valdagno, all of Italy, assignors to Nuovopignone-Industrie Meccaniche e Fonderia SpA, Florence, Italy

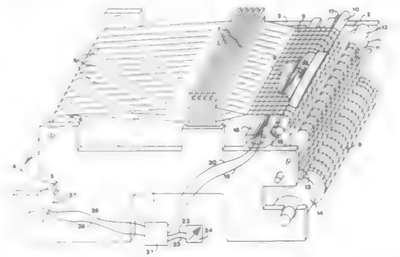
Filed Sep. 27, 1993, Ser. No. 127,678

Claims priority, application Italy, Oct. 1, 1992, MI 92/A/002279

Int. Cl.[5] D03D *49/10*

U.S. Cl. 139—110 **1 Claim**

1. A device for automatically controlling the warp yarn tension in a loom comprising a warp yarn feed beam, a geared electric motor for operating said beam and a fixed deviation bar for the fabric under formation, characterized in that said fixed deviation bar is supported only at the ends of said deviation bar to allow said bar to undergo flexure in response to the warp yarn tension, a deformation sensor directly fixed to said bar, said deformation sensor being electrically connected to one of two imputs of a comparator, the other input of said



comparator being connected to an adjustable set-value unit, and the output of said comparator being connected to said geared motor, whereby said comparator output drives the geared motor to operate said beam to control the warp yarn tension in response to said two comparator inputs.

5,355,913

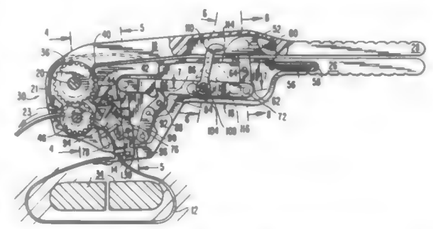
SURGICAL REPAIR DEVICE

David T. Green, Westport; Henry Bolanos, East Norwalk; Thomas W. Alesi, Jr., New Fairfield, all of Conn., and Kenneth E. Toso, Portchester, N.Y., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 9, 1992, Ser. No. 959,273

Int. Cl.[5] B21F *9/02*

U.S. Cl. 140—123.6 **33 Claims**



1. An apparatus for tightening a strap about split portions of tissue, which comprises:

frame member;

advancing means associated with said frame member for advancing a first end portion of the strap in a strap tensioning direction about split portions of tissue;

linkage means for severing an excess portion of the strap not used in securing the split tissue portions; and

manually operable control means for controlling operation of the apparatus said control means being operable by at least one control lever rotatably mounted to said frame member, said at least one control lever moveable between at least two positions, a first position of said at least one control lever corresponding to an actuating position to permit actuation of said advancing means a second position of said at least one control lever corresponding to a release position to permit actuation of said linkage means.

5,355,914

Patent Not Issued For This Number

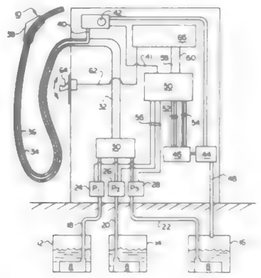
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5,355,915

VAPOR RECOVERY IMPROVEMENTS

Edward A. Payne, Greensboro, N.C., assignor to Gilbarco, Greensboro, N.C.

Continuation-in-part of Ser. No. 824,702, Jan. 21, 1992, Pat. No. 5,156,199, which is a continuation of Ser. No. 625,892, Dec. 11, 1990, abandoned. This application Sep. 16, 1992, Ser. No. 946,741
Int. Cl.[5] B65B *3/18*
U.S. Cl. 141—83 76 Claims



1. A vapor recovery fuel dispenser comprising

a. a plurality of liquid fuel pumps for pumping and blending liquid fuels from fuel reservoirs along a fuel delivery lines to an outlet, first sensors that generate pulse trains representative of the flow rates of said liquid fuel lines,

b. a vapor pump, an electric motor driving said vapor pump for returning fuel vapors from proximate said outlet a vapor return line, and a vapor repository, said vapor pump directing vapors from said outlet along said vapor return line to said vapor repository, a second sensor that generates a second pulse train representative of the speed of said electric motor,

c. said electric motor driving said vapor pump in response to a signal to operate said vapor pump,

d. an electrically-activatable valve in said vapor return line, and

e. a controller operably interposed between said liquid fuel delivery lines and said vapor pump, wherein said controller

1) monitors

a) whether said liquid pumps are operating,

b) whether said electric motor is operating, and

c) the electrical current to said electric motor,

2) outputs an electrical signal to open said valve when liquid fuel is being pumped through said liquid fuel delivery line and to close said valve when vapor pump motor operation or liquid pumping is not detected,

3) controls the speed of said vapor pump to return substantially all fuel vapors proximate said outlet with substantially no excess air in response to evaluations of said pulse trains, and

4) disables operation of said electric motor when

a) said liquid pumps are not operating,

b) electric motor operation is detected while not signaled to operate, or

c) the monitored current indicates a malfunction.

5,355,916

Patent Not Issued For This Number

5,355,917

PRE-CONDITIONED AIR ADAPTER CHUTE

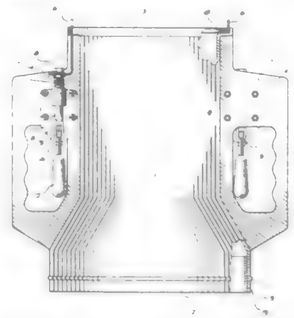
David F. Kofflin, 9801 Dupont Ave. S., Bloomington, Minn. 55431

Filed Jul. 19, 1993, Ser. No. 95,562
Int. Cl.[5] B65B *1/30*
U.S. Cl. 141—384 1 Claim

1. A pre-conditioned air adapter chute wherein said chute is adapted to connect an aircraft to a pre-conditioned air unit located on the ground, said adapter chute comprising:

an adapter body comprised of plastic material, said body being hollow and having a generally cylindrical top end and a flared, generally conical bottom end, said top end defining an inner rim which is provided with a gasket having openings defined therethrough, said top end being adapted for attachment to said aircraft and said bottom end being adapted for attachment to said pre-conditioned air unit;

a pair of handles disposed vertically along opposite sides of said adapter body;



clamp means mounted onto each of said handle, each of said clamp means including a vertical rod attached to a clamp handle so that moving said clamp handle up and down also moves said rod up and down;

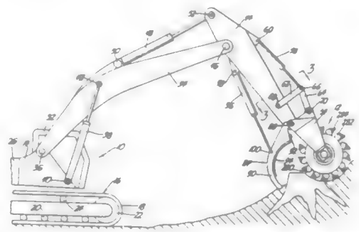
a hook attached to each of said clamp means, each of said hooks being right-angled in shaped, having a horizontal bottom piece which is attached to the top end of its respective clamp means and a vertical top piece which projects through one of said openings in said gasket, each of said hooks being adapted to move up and down with the up and down motion of its respective clamp means in order to adjust the position of said adapter chute in connection to said aircraft.

5,355,918

GRINDER BEAM DRIVE FOR A TREE STUMP GRINDER

William J. Lang, 2540 Glidden Rd., Beaverton, Mich. 48612

Filed Jul. 14, 1993, Ser. No. 91,557
Int. Cl.[5] B27C *9/00*
U.S. Cl. 144—2 N 13 Claims



1. A tree stump grinder assembly including a first yoke arm,

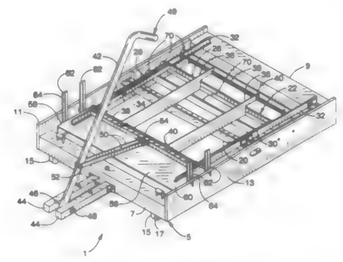
a second yoke arm, a first stub shaft non-rotatably attached to the first yoke arm, a drum with a central axis and two ends having one end journaled on the first stub shaft for rotation of the drum relative to the first stub shaft about the central axis of the drum, a second stub shaft operable to support the other end of the drum on the second yoke arm for rotation about the central axis of the drum, a hydraulic motor within said drum having a central spindle non-rotatably attached to the first stub shaft, said hydraulic motor further including a hydraulic motor housing rotatably mounted on said central spindle and secured to the drum to rotate the drum about said central axis, and a plurality of grinding tools secured to the drum.

5,355,919

WOOD SPLITTING DEVICE

Paul V. Knox, 15320 Fulton Ave., No. 144, Sacramento, Calif. 95825

Filed Nov. 18, 1993, Ser. No. 155,588
Int. Cl.[5] B27L *7/00*
U.S. Cl. 144—193 R 8 Claims



1. A wood splitting device comprising:

a) a body element, wherein said body element comprises a generally rectangular base frame having a front support member, a rear support member, a fist side, and a second side;

b) means for splitting the wood mounted in said body element, wherein said splitting means comprises a splitting blade horizontally mounted between said first side and said second side of said rectangular base frame;

c) means for guiding the wood into said splitting means associated with said body element, wherein said wood guiding means comprises a generally rectangular frame having a front member, a back member, and first and second sides, said first and second sides of said wood guiding frame slidably mounted into runners tracks, said runners mounted to said base frame parallel to said first and second sides of said base frame;

d) means for reciprocating said wood guiding means associated with said body element; and

e) means for adjusting incrementally a thickness of a split piece of the wood associated with said body element.

5,355,920

FELLING AND DELIMBING APPARATUS ALLOWING TO DELIMB TREES IN LENGTH AND ITS METHOD OF USE

Jacques Tanguay, 74, 6th Ave., St-Prime, Canada

Filed Dec. 16, 1992, Ser. No. 991,843
Claims priority, application Canada, Dec. 16, 1992, 2057680-4
Int. Cl.[5] A01G *23/08*
U.S. Cl. 144—338 14 Claims

14. A method for felling and delimbing a tree comprising the steps of:

providing an apparatus having a head for felling and delimbing trees and including:

a frame,

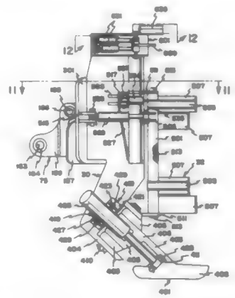
at least two grasping jaws pivotally mounted on said frame and movable toward or away from each other,

means for selectively moving and positioning said grasping jaws toward or away from each other, delimbing knives mounted on said frame and on said grasping jaws, and

first and second means for cutting the trunk of a tree, the first means being positioned above the grasping means while the second means is positioned under the grasping means;

a platform pivotally mounted on a frame of a vehicle and means for moving the platform around a substantially vertical pivoting axis;

first and second booms pivotally connected together by a first pivoting means defining a substantially horizontal pivoting axis, the first boom being also pivotally connected with the platform by a second pivoting means defining a substantially horizontal pivoting axis, the second boom being also pivotally connected with a first supporting member by a third pivoting means defining a substantially horizontal pivoting axis, the frame of the head and the first supporting member being connected together by a fourth pivoting means defining a pivoting axis that is substantially not parallel with aforesaid horizontal axis, and means adapted to selectively move and position the booms, the first supporting member and the head around their respective pivoting axis;



driving means for engaging the trunk of a tree having a longitudinal axis, said driving means having a substantially horizontal driving axis and being mounted on the platform;

positioning a tree between grasping jaws of the head, the longitudinal axis of the trunk of said tree is being allowed to be put in a substantially coaxial alignment with said driving axis by selective movements and positioning of booms, first supporting member and head around their corresponding pivoting axis;

positioning grasping jaws around and close the trunk of a tree, at the foot thereof, by selective movements and positioning of booms, of the first supporting member and of the head around their respective pivoting axis, and then sliding the head upwardly along a determined length of the trunk by selective movement and positioning of booms, of the first supporting member and of the head around their respective pivoting axis, to thus press branches of the tree against delimbing knives and delimbed a determined length of said tree,

sliding down the head at the foot of the tree by selective movements and positioning of booms, of the first supporting member and of the head around their respective pivoting axis, moving grasping means against the trunk and separating the trunk for the stub with second means for cutting said trunk,

moving grasping jaws slightly away from each other and by selective movements and positioning of booms, of the first

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supporting member and of the head around their respective pivoting axis, sliding the head upwardly along the trunk at a determined distance, and then moving grasping jaws again against the trunk, and by selective movements and positioning of booms, of the first supporting member and of the head around their respective pivoting axis, lifting the tree above the ground;

selectively moving and positioning the booms, the first supporting member and the head around their respective pivoting axis to bring the longitudinal axis of the trunk substantially coaxial with the driving axis, and to engage the foot of the trunk with by driving means;

moving grasping jaws slightly away from each other and starting driving means so as to pull the trunk between grasping jaws and press branches against delimbing knives to thus delimb another determined length of the tree, and then stopping driving means;

separating the trunk from the top of the tree with first means for cutting the trunk of the tree;

starting driving means in reverse direction to push the delimbed trunk between grasping jaws until the trunk is out of engagement by said driving means;

moving grasping means again against the trunk and by selective movement and positioning of the booms, the supporting member, the head and the platform around their respective pivoting axis, and positioning the trunk above a stack of trunks; and

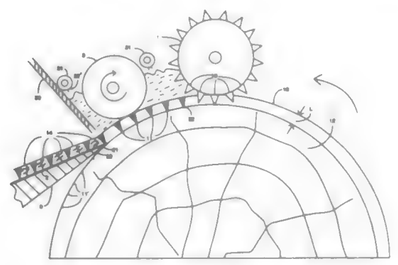
moving grasping means away from each other to release the trunk on the stack of trunks.

5,355,921

PROCESS AND APPARATUS FOR SELF SHARPENING A PELLET LATHE KNIFE

Gerald M. Fisher, 1491 Greenwood Ave., Palo Alto, Calif. 94301

Continuation-in-part of Ser. No. 895,605, Jun. 8, 1992, Pat. No. 5,215,135. This application May 21, 1993, Ser. No. 65,931
Int. Cl.[5] B27M *1/00*; B27C *1/00*
U.S. Cl. 144—364 **14 Claims**



1. A method for self sharpening a pellet lathe veneer knife having a first and second face comprising,

peeling a previously incised log with a veneer knife to create separated loose pellets and a peeled surface;

passing said separated pellets over and in contact with said first face of the said veneer knife;

passing said peeled surface of said log in contact with said second face of the said veneer knife; and

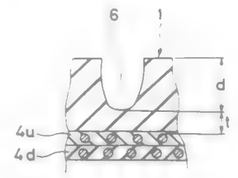
selectively abrading, during operating, said second face of said veneer knife more rapidly than said first face of said veneer knife.

5,355,922

PNEUMATIC RADIAL TIRE FOR PASSENGER CAPS

Tomohiko Kogure, Ashigara, and Yoshiaki Hashimura, Isehara, both of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Apr. 29, 1992, Ser. No. 875,768
Int. Cl.[5] B60C *9/26*, *11/04*
U.S. Cl. 152—209 R **12 Claims**



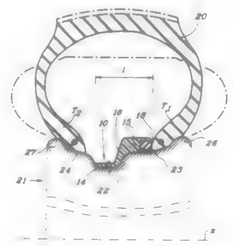
1. A pneumatic radial tire for passenger cars having a plurality of grooves formed in the tread and extending at least circumferentially of the tire, the tread being provided with two belt plies therein, said grooves having a depth in the range of 6.0 to 8.5 mm, with the thickness of the under-groove rubber layer from the bottom of the grooves to the cord surface of the outer belt ply being fixed within the range of 0.5 to 2.0 mm, said belt plies being both made from aramid fiber cords, with the both edge portions of at least one of said belt plies being folded back toward the center of the tread at a fold percentage of 8 to 100 percent, said belt plies forming cord angles of 5° to 40° to the circumferential direction of the tire.

5,355,923

LOCKING INSERT DEVICE FOR A TIRE CHAMBER

Bernard Boni, Champagne s/Oise, and Bruno Pelletier, Villiers s/St Leu, both of France, assignors to Hutchinson, Paris, France

Filed Feb. 4, 1993, Ser. No. 13,696
Claims priority, application France, Feb. 18, 1992, 92 01829
Int. Cl.[5] B60C *15/028*
U.S. Cl. 152—381.6 **11 Claims**



1. A locking insert device for a tire chamber adapted to be fitted to a vehicle wheel provided with a tubeless tire mounted on a well or drop center type rim, said device being designed to oppose the coming off of the beads of the tire from the rim in the event of a puncture of said tire, said device comprising a strip of rigid material shaped as a ring split parallel to the axis of said rim to form two free ends thereof, an abutment means on said strip in the vicinity of a first one of said beads for opposing movement thereof towards said drop center upon said tire being punctured or otherwise damaged, said ring having a cross-section that corresponds at least in part to the shape of the rim against which it is pressed, a spacer of elastomer type material shaped as a ring and selected within the family of flexible rubbers having good deformation characteristic of residual deformation under load and fixed on said abut-

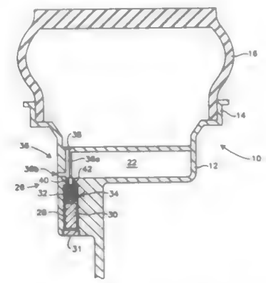
ment means and means for fastening together one said free end to the other said free end of said strip to hold said strip stationary on the rim when said fastening means are rendered operative after the ring has been placed on said rim.

5,355,924

VEHICLE WHEEL INCLUDING SELF-INFLATING MECHANISM

Ross D. Olney, West Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 6, 1992, Ser. No. 957,292
Int. Cl.[5] B60C *23/10*
U.S. Cl. 152—418 **12 Claims**



1. A pressurizing mechanism for a wheel, comprising:

a wheel having a substantially radially extending bore formed therein and a high pressure air reservoir for storing air for inflating a tire mounted on the wheel;

a piston which is movable in the bore in response to centrifugal force resulting from the rotation of the wheel acting thereon;

a variable volume compression chamber which is sealingly defined in the bore between radially outer ends of the bore and the piston;

biasing means for urging the piston radially inward;

outlet valve means for transmitting air from the compression chamber into the reservoir when the piston is moved radially outward against the biasing means by the centrifugal force resulting from the rotation of the wheel; and

inlet valve means for transmitting air from the atmosphere into the compression chamber to replenish the air in the chamber when the piston is moved radially inward by the biasing means, the inlet valve means having a passageway which communicates with the atmosphere and opens into the chamber radially outward of said outer end of the piston and a valve element which is capable of movement upwardly towards the passageway.

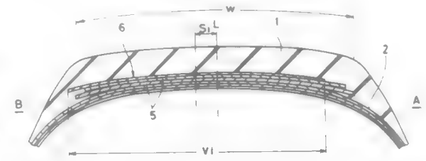
5,355,925

PNEUMATIC RADIAL TIRE HAVING ASYMMETRIC BELT COVERING LAYERS

Naoyuki Katsura; Tomohiko Kogure; Zenichiro Shida; Yoshiaki Hashimura, and Yusaku Miyazaki, all of Hiratsuka, Japan, assignors to The Yokohama Rubber Company, Ltd., Tokyo, Japan

Filed Apr. 7, 1993, Ser. No. 43,858
Claims priority, application Japan, Jun. 30, 1992, 4-173300
Int. Cl.[5] B60C *9/30*
U.S. Cl. 152—455 **4 Claims**

1. A pneumatic radial tire to be fitted on a wheel, the wheel having a rim, and a disc joined to the rim at a position offset from the center of the width of the rim toward the outer surface of said wheel, said tire comprising a belt layer provided between a tread and a carcass layer at a cord angle of 10°–30° to the tire circumferential direction, an outer circumferential portion of said belt layer being covered with at least two belt covering layers, said at least two belt covering layers being formed of materials having different rigidities from each other and having a cord angle of 0°–10° to the tire circumferential direction, said at least two belt covering layers being disposed asymmetrically with respect to the equator of said tire, such



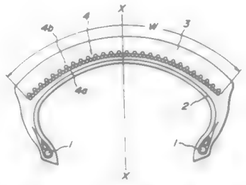
that the rigidity of the portion of said tire to one side of the equator of the tire to be mounted on the offset side of said disc of the wheel is lower than that of the portion of said tire which is on the opposite side of the equator.

5,355,926

PNEUMATIC RADIAL TIRES FOR TWO-WHEELED VEHICLES

Kiyoshi Takase, Kodaira, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Oct. 28, 1992, Ser. No. 967,397
Claims priority, application Japan, Nov. 6, 1991, 3-289966
Int. Cl.[5] B60C *9/18*, *9/20*, *9/22*
U.S. Cl. 152—527 **4 Claims**



1. A two-wheeled vehicle, pneumatic radial tire, comprising a carcass constituted by at least one carcass ply composed of cords extending at an angle of 75° to 90° with respect to an equatorial plane of the tire, and a belt constituted by at least two belt plies, each of said belt plies being arranged radially outwardly on and adjacent an outer peripheral side of a crown portion of said carcass and extending uniformly over the entire width of said belt, each of said belt plies composed of a single spirally wound cord extending substantially in a circumferential direction of the tire, wherein a number of the cords per unit width of a radially outermost belt ply is in a range of 30% to 80% of that of a compactly wound belt ply adjacent radially inwardly to said outermost belt ply as considered on the average over an entire width of the belt.

5,355,927

SELF-CLOSING FIRE DOOR

James McKeon, Brooklyn, N.Y., assignor to McKeon Rolling Steel Door Company, Inc., Brooklyn, N.Y.

Filed Dec. 17, 1992, Ser. No. 992,441
Int. Cl.[5] E05F *15/20*
U.S. Cl. 160—7 **57 Claims**

1. A door comprising:

a curtain including a plurality of interconnected relatively pivotal slats aligned in a single direction;

means for guiding movement of said curtain between an opened position and a closed position;

an outer tube operatively connected to a first end of said curtain for winding said curtain thereabout as said curtain

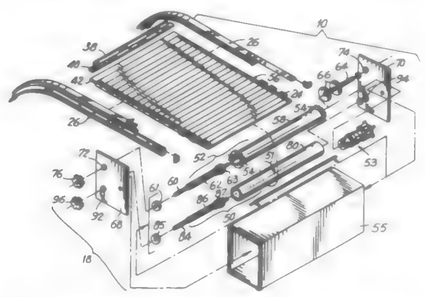
VOL 1167 ISS 3 OC 18 1994 UMI

is moved to its opened position and for unwinding said curtain as said curtain is moved to its closed position;

an inner shaft;

resilient tensioning means disposed between said outer tube and said first inner shaft, a first portion of said resilient tensioning means being operatively connected to said outer tube and a second portion of said resilient tensioning means being operatively connected to said inner shaft, wherein the tension of said resilient tensioning means is maintained substantially constant irrespective of the degree of opening or closing of said curtain to thereby tightly wind said curtain around said outer tube;

regulating means for regulating the speed of said curtain comprising a speed reduction means for reducing a rotational speed, an input shaft connected to said speed reduction means, an output shaft connected to said speed reduction means, said speed reduction means for reducing the rotational speed of said output shaft relative to said input shaft, a governor mounted on said input shaft for limiting the rotational speed thereof thereby limiting the rotational speed of the said output shaft;



a self-closing mechanism operatively connected to said curtain for moving said curtain to its closed position, said self-closing mechanism including a second inner shaft, a second outer tube and a second resilient tensioning means, wherein a first portion of said second resilient tensioning means is operatively connected to said second inner shaft and a second portion of said second resilient tensioning means is operatively connected to said second outer tube, wherein said second outer tube is operatively connected to said output shaft by said connecting means and is operatively connected to said curtain, wherein said second inner shaft is maintained in a fixed position, and wherein said second resilient tensioning means is adapted for storing energy when said curtain is moved to its open position;

connecting means for operatively connecting said output shaft to said self closing mechanism and said inner shaft;

a brake for preventing rotation of said output shaft thereby blocking movement of said self-closing mechanism; and

releasing means for releasing said brake to free said output shaft for rotation, thereby enabling said movable means to release energy stored thereby and urge said curtain to its closed position.

5,355,928

ROMAN SHADE AND METHOD OF CONSTRUCTION

Richard W. Robertson, Arvada, Colo., assignor to D.S.C. Fabrics, Inc., Arvada, Colo.

Filed Oct. 4, 1993, Ser. No. 131,371

Int. Cl.[5] E06B 9/06

U.S. Cl. 160—84.1 R **11 Claims**

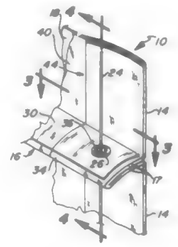
1. A pleated Roman shade for hanging from a shade header having an internal pulley system comprising:

a flexible facing body extending from said shade header comprising a plurality of fabric panels, each said fabric panel having a front facing side and a rear side, and in use, capable of extending into a generally vertically planar surface and folding into a flexible loop shape;

a plurality of horizontally extending vertically spaced pleats, each said pleat extending rearwardly from in between adjacent pairs of said fabric panels and including first and second pleat segments formed from said flexible facing body with each segment's facing side facing the inside of each said pleat and each segment's rear side facing the outside of each said pleat such as to form an outside surface of the pleat;

polymer based retaining means adhesively secured to said outside surfaces of each said pleat along the pleat's length for holding each pleat's two pleat segments together from the pleat's outside surfaces to rigidly maintain said pleat, said retaining means including

first and second strips having a plurality of vertically



aligned openings corresponding to one another, said first strip adhesively secured to said outside surface of said first pleat segment and said second strip adhesively secured to said outside surface of said second pleat segment, and

an eyelet extending through each of said aligned openings in said strips, said eyelets having first and second ends, said first end of each eyelet having a first engaging surface extending therefrom for engaging said first strip, said second end having a second engaging surface extending therefrom for engaging said second strip, said engaging surfaces further securing said strips to said pleat segments to rigidly maintain said pleat; and

at least one drawstring cooperating with the pulley system and extending through said eyelets in said rearwardly extending pleats for lowering and raising said shade by folding said fabric panels into flexible loop shapes.

5,355,929

METHOD OF AND APPARATUS FOR MAKING CASTING MOULDS

Erik N. Sorensen, Ballerup, Denmark, assignor to Dansk Industri Syndikat A/S, Herlev, Denmark

Filed May 26, 1993, Ser. No. 67,122

Claims priority, application Denmark, Jun. 10, 1992, 0764/92

Int. Cl.[5] B22C 15/24, 15/28

U.S. Cl. 164—20 **7 Claims**

1. A method for producing casting moulds or casting-mould parts in a mould chamber with a blowing-in duct member, the mould chamber including (a) an opening through which the blowing-in duct member is introduced, (b) at least one pressing plate which is movable such that the mould chamber forms a press chamber, and (c) a central space in the mould chamber, the method comprising the steps of:

introducing the blowing-in duct member through the opening and a substantial distance into the central space of the mould chamber in a direction which is transverse to a direction of movement of the pressing plate;

providing the blowing-in duct member with (a) two blowing-in apertures respectively located, relative to the direction of introduction, on a side facing the pressing plate and on a side opposite therefrom, and (b) a width, as measured

transversely to the direction of introduction and transversely to the direction of movement of the pressing plate, which substantially corresponds to an internal width of the central space;

blowing mould sand into the mould chamber through the apertures of the blowing-in duct member;

moving, as said blowing step is performed, the blowing-in duct member out of the central space and back through the opening along the direction of introduction, leaving an open cavity in the mould chamber devoid of moulding sand which corresponds to the width of the blowing-in duct member;

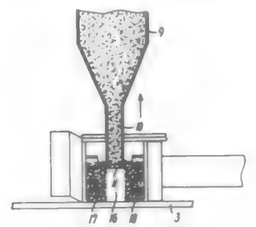
pressing the pressing plate inwardly along the direction of movement thereof to compress the mould sand in the mould chamber and eliminate the open cavity of the mould chamber such that respective mould elements formed by the mould sand blown in through the two blowing-in apertures are moved and pressed together so as to form a single casting mould or casting-mould part.

4. A mould-making machine for making casting moulds or casting-mould parts comprising:

a mould chamber including (a) a wall, (b) an opening in said wall, (c) at least one pressing plate which is movable such that said mould chamber forms a press chamber, and (d) a central space adjacent said opening;

a mould sand reservoir;

a blowing-in duct member which is introduced into said mould chamber through said opening so as to extend a substantial distance into said central space of said mould chamber in a direction which is transverse to a direction



of movement of said pressing plate and which is subsequently withdrawn from said central space through said opening so as to not interfere with the movement of said pressing plate, said blowing-in duct member including

(a) a first end fluidly connected to said mould sand reservoir,

(b) a second end including two blowing-in apertures fluidly connected to said first end and respectively located, relative to the direction of introduction and after the substantial introduction into the central space, on a side facing said pressing plate and on a side opposite therefrom, and

(c) a width, as measured transversely to the direction of introduction and transversely to the direction of movement of said pressing plate, which substantially corresponds to an internal width of said central space;

a first moving means for moving said blowing-in duct member the substantial distance into and then back out of said central space such that as mould sand is blown into said mould chamber from said mould sand reservoir through said apertures of said blowing-in duct member said blowing-in duct member is moved out of said central space and back through said opening along the direction of introduction leaving an open cavity in said mould chamber devoid of moulding sand which corresponds to said width of said blowing-in duct member; and

a second moving means for moving said pressing plate such that subsequent to the withdrawal of the blowing-in duct member from said central space said pressing plate is pressed inwardly along the direction of movement thereof to compress the mould sand in said mould chamber and eliminate the open cavity of said mould chamber whereby respective mould elements formed by the mould sand blown in through said two blowing-in apertures are moved and pressed together to form a single casting mould or casting-mould part.

5,355,930

METHOD OF EXPENDABLE PATTERN CASTING OF HYPEREUTECTIC ALUMINUM-SILICON ALLOYS USING SAND WITH SPECIFIC THERMAL PROPERTIES

Raymond J. Donahue, Fond du Lac; Terrance M. Cleary, Allenton; William G. Hesterberg, Rosendale, all of Wis., and Terry C. Holmgren, Ishpeming, Mich., assignors to Brunswick Corporation, Skokie, Ill.

Continuation-in-part of Ser. No. 940,485, Sep. 4, 1992, abandoned. This application Sep. 9, 1993, Ser. No. 119,027

Int. Cl.[5] B22C 7/02

U.S. Cl. 164—34 **7 Claims**

1. A method of casting a hypereutectic-aluminum silicon alloy, comprising the steps of forming a pattern from an expendable polymeric foam material having a configuration corresponding to the article to be cast, positioning the pattern in spaced relation to an outer flask, introducing an unbonded flowable sand into the flask and surrounding said pattern, said sand having a heat diffusivity greater than 1500J/m^2/°K./s$^{\frac{1}{2}}$, preparing a molten hypereutectic aluminum-silicon alloy comprising from 12% to 30% by weight of silicon, 0.4% to 5.0% by weight of magnesium, up to 0.3% by weight of manganese, up to 1.4% by weight of iron, up to 5.0% by weight of copper, and the balance aluminum, pouring said molten alloy by gravity into contact with the pattern to thereby decompose the pattern with the products of decomposition being entrapped within the interstices of the sand, solidifying the alloy to precipitate particles of primary silicon and produce a cast article, said precipitated particles of primary silicon having an average particle size less than 30 microns, and a coefficient of variation less than 50%, and removing the cast article from the flask.

5,355,931

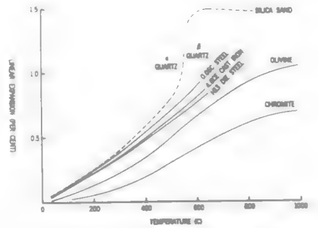
METHOD OF EXPENDABLE PATTERN CASTING USING SAND WITH SPECIFIC THERMAL PROPERTIES

Raymond J. Donahue, Fond du Lac; Terrance M. Cleary, Allenton; William G. Hesterberg, Rosendale, all of Wis., and Terry C. Holmgren, Ishpeming, Mich., assignors to Brunswick Corporation, Skokie, Ill.

Continuation-in-part of Ser. No. 940,485, Sep. 4, 1992, abandoned. This application Sep. 9, 1993, Ser. No. 119,035

Int. Cl.[5] B22C 7/02

U.S. Cl. 164—34 **10 Claims**



1. A method of producing dimensionally predictable metal castings, comprising the steps of forming a pattern of an expendable foam polymeric material having a configuration corresponding to an article to be cast, positioning the pattern in spaced relation to an outer flask, disposing a first quantity of an unbonded sand in the flask surrounding the pattern, said sand having a diffusivity greater than 1500 J/m^2/°K/s$^{\frac{1}{2}}$, a linear expansion from 0° C. to 1600° C. of less than 1%, an AFS grain

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fineness number of 25 to 33, and an AFS base permeability number of 450 to 500, contacting the pattern with a molten metal to decompose the polymeric material with the products of decomposition being entrapped within the interstices of the sand, solidifying the molten metal to produce a cast article, and removing the cast article from the flask.

5,355,932

METHOD OF PRODUCING A COMPOUND ROLL

Ryosaku Nawata; Kenji Date, and Toshiyuki Hattori, all of Kitakyusyu, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 25,669
Claims priority, application Japan, Mar. 6, 1992, 4-084707
Int. Cl.[5] B22D *13/02, 19/16*
U.S. Cl. 164—95 10 Claims

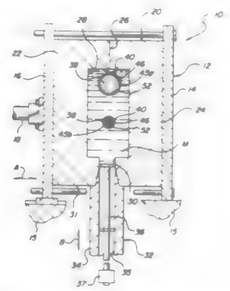
1. A method of producing a compound roll comprising a shell portion made of a hard, high-alloy cast steel or iron having excellent wear resistance and resistance to surface roughening and a core portion made of a tough cast iron or steel, said high-alloy cast steel or iron of said shell portion having a composition consisting essentially, by weight, of 1.0–3.0% of C, 2.0% or less of Si, 2.0% or less of Mn, 2.0–15.0% of Cr, 10.0% or less of Mo, 2.0–8.0% of V, the balance being substantially Fe and inevitable impurities, an average diameter of crystal grains constituting a matrix of the metal structure of said shell portion being 100 μm or less in a range from a surface to a depth of 50 mm when determined by an image analysis method on the crystal grains having diameters exceeding 30 μm, and said crystal grains satisfying the formula: $m_2 \leqq 1.2\ m_1$, wherein m_1 is an average diameter of said crystal grains at the surface of said shell portion, and m_2 is an average diameter of said crystal grains at the depth of 50 mm, said method comprising centrifugally casting said shell portion by supplying a melt for said shell portion at a temperature T satisfying the formula: $Tc \leqq T \leqq Tc + 90°$ C., wherein Tc is a primary crystal-forming temperature of the melt for said shell portion, to a hollow cylindrical mold rotatable around its longitudinal axis, at such a speed that an average shell portion-forming speed in said mold is 2–40 mm/min.

5,355,933

METHOD OF SQUEEZE CASTING METAL ARTICLES USING MELT-OUT METAL CORE

Karl D. Voss, West Bloomfield, Mich., assignor to CMI International Inc., Southfield, Mich.

Filed Nov. 12, 1993, Ser. No. 150,846
Int. Cl.[5] B22C *3/00, 9/10*; B22D *29/00, 18/02*
U.S. Cl. 164—120 13 Claims



1. A method of producing a metal article by high pressure casting, comprising the steps of:

producing a melt-out metal core (38) having an outer shape-imparting surface (40) and a predetermined melting temperature;

applying water-extractable insulating material (46) to the outer shape-imparting (40) surface of the core (38);

inserting the insulated metal core (38) into a die cavity (28) of a high pressure casting die (20) having the outer surface (40) of the insulated core (38) exposed for preserving a space within the cavity (28) corresponding to a cored space (39) to be formed within the cast article (29);

introducing molten casting metal (M) having a melting temperature relatively higher than the melting temperature of the core metal into the die cavity (28) and against the insulated metal core (38) and pressurizing the metal (M) with pressure sufficient to squeeze form the article (29) in the die (20) and around the insulated core (38), the insulating material (46) protecting the meal core (38) from the heat of the molten casting metal (M) sufficiently to prevent melting of the core (38) during the casting of the article (29);

allowing the molten casting metal (M) to solidify in the die cavity (28) and about the insulated core (38) forming the resultant cored space (39) in the article (29) and opening the die (20) and removing the cast article (29) and insulated core (38) from the die cavity (28); and

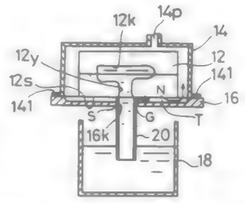
extracting the core (38) from the article (29) in a first step by heating the article (29) and core (38) in an oven to a temperature above the melting temperature of the core metal but below that of the casting metal (M) to liquify and extract the metal core (38) and thereafter introducing water into the cored space in a separate second step to dissolve and extract the insulating material (46) from the article (29).

5,355,934

LOW PRESSURE CASTING APPARATUS

Minoru Uozumi, Aichi; Mitsuyoshi Sato, Toyota; Kunio Shimizu, Toyota, and Masao Nakayama, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 19, 1993, Ser. No. 93,585
Claims priority, application Japan, Jul. 22, 1992, 4-216425; Oct. 20, 1992, 4-307671; Nov. 5, 1992, 4-322474
Int. Cl.[5] B22D *18/06*
U.S. Cl. 164—255 5 Claims



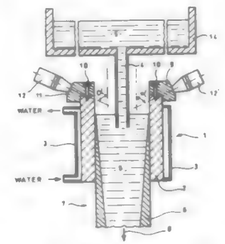
1. A low pressue casting apparatus comprising a gas permeable casting die, a vacuum chamber and a surface plate having a die mounting area and a vacuum chamber mounting area for supporting said casting die and said vacuum chamber, said surface plate being formed with a through hole for inserting a stalk therethrough, the top surface of said surface plate being formed with grooves extending from said through hole to an area between said die mounting area and said vacuum chamber mounting area.

5,355,935

METHOD AND DEVICE FOR VIBRATING AN INGOT MOULD FOR THE CONTINUOUS CASTING OF METALS

Michel Nogues, Lafitte, France, assignor to Institut de Recherches de La Siderurgie Francaise (IRSID), Puteaux, France

Continuation of Ser. No. 534,646, Jun. 7, 1990, abandoned. This application Feb. 22, 1993, Ser. No. 21,178
Claims priority, application France, Jun. 12, 1989, 89 07839
Int. Cl.[5] B22D *11/04*
U.S. Cl. 164—416 13 Claims



1. A device for vibrating a wall of an ingot mould for the continuous casting of metals, said device comprising:

at least one ultrasound emitter for emitting in a specific direction and placed at one end of the ingot mould; and

at least one surface integral with the ingot mould;

wherein said emitter is applied against the surface so that the ultrasound emission direction is perpendicular to said surface;

wherein said surface is oriented so that an axis of said emitter, which is perpendicular to said surface, is inclined by an angle α relative to an axis of the ingot mould, wherein α is substantially different than 0° and substantially different than 90°; and

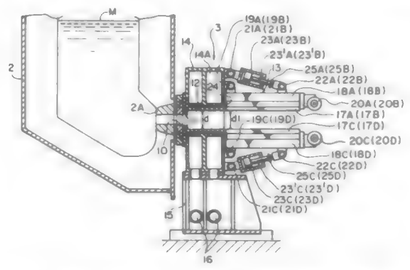
wherein said surface includes a bevelled edge of a ring surrounding the perimeter of one end of the ingot mould.

5,355,936

ADJUSTABLE MOLD FOR HORIZONTAL CONTINUOUS CASTING APPARATUS

Hastuyoshi Kumashiro; Taizou Kiyosuke, both of Kobe; Jiro Arashi, Kakogawa; Toshihiro Kosuge, and Kazuaki Sueoka, both of Hikari, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo and Nippon Steel Corporation, Tokyo, both of Japan

Continuation of Ser. No. 799,965, Nov. 26, 1991, abandoned. This application Jul. 1, 1993, Ser. No. 84,438
Claims priority, application Japan, Nov. 29, 1990, 2-338955; Oct. 11, 1991, 3-091453[U]
Int. Cl.[5] B22D *11/124*
U.S. Cl. 164—435 11 Claims



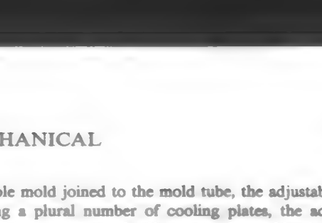
9. An adjustable mold assembly, comprising a tundish, an airtight cylindrical mold tube tightly joined to the tundish, an adjustable mold joined to the mold tube, the adjustable mold including a plural number of cooling plates, the adjustable mold having an inlet end adjacent to the mold tube and an outlet end, a position adjustment member located near the inlet end of the adjustable mold for supporting the inlet end of the adjustable mold in a substantially stationary position during casting, the position adjustment member including a pivot for pivotally attaching the inlet end cooling plates to the position adjustment member, and a hydraulic cylinder located near the outlet end of the adjustable mold, the hydraulic cylinder pivoting the cooling plates about the pivot for continuously adjusting the position of the outlet end of the adjustable mold during casting in an amount dependent on shrinkage of a billet formed in the adjustable mold during casting.

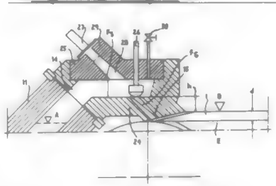
5,355,937

METHOD AND APPARATUS FOR THE MANUFACTURE OF A METAL STRIP WITH NEAR NET SHAPE

Hilmar R. Mueller, Bellenberg, and Georg Kehse, Laupheim, both of Fed. Rep. of Germany, assignors to Wieland-Werke AG, Ulm, Fed. Rep. of Germany

Filed Sep. 24, 1992, Ser. No. 950,902
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1991, 4132189; Jun. 5, 1992, 4218587
Int. Cl.[5] B22D *11/06, 37/00*
U.S. Cl. 164—479 19 Claims





1. In a method for continuous manufacture of a metal strip (1) with approximate final dimensions, in which in an operating condition, a metal melt (6) is fed from a melt distributor (5) through a casting nozzle (15) onto a rotating, cooled conveyor belt (2) and is solidified, and in which in the operating condition, a melt level is controlled in the melt distributor (5) as a function of a desired strip thickness d of the metal strip (1), an improvement comprising initially adjusting a fill level (A), in the melt distributor (5), which fill level corresponds at a maximum with a conveyor belt plane (E), then adjusting a fill level (B) such that the melt (6) completely displaces the air from a region (11, 14) in front of the casting nozzle (15) and from the casting nozzle (15), and in the operating condition, providing a fill level (C) above a level (D) of the liquid metal on the conveyor belt (E) so that the melt (6) flows out of the casting nozzle (15) according to a pipette principle.

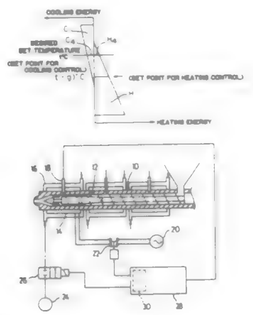
VOL 1167 ISS 3 OCT 18 1994 UMI

5,355,938

TEMPERATURE CONTROL DEVICE

Tsutomu Hosoya; Katsuhiro Inaba; Toru Akiyama, and Shigeru Fujita, all of Numazu, Japan, assignors to Toshiba Machine Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 747,482, Aug. 16, 1991, abandoned, which is a continuation of Ser. No. 494,321, Mar. 16, 1990, abandoned. This application Nov. 27, 1992, Ser. No. 982,425
Claims priority, application Japan, Mar. 20, 1989, 1-66385
Int. Cl.[5] F25B *29/00*
U.S. Cl. 165—12 1 Claim



1. A temperature control device comprising heating means and cooling means for separately heating and cooling a process chamber, first and second separate control circuits for performing proportional control, integral control and derivative control, said first and second control circuits independently controlling said heating means and said cooling means, respectively, to vary a ratio of energy supply periods to predetermined control periods on the basis of a controlled variable calculated from a detected deviation of actual temperature of a controlled medium from a desired reference temperature, thereby to control heating and cooling energy supplies for said heating and cooling means, said heating means and said cooling means being separately controlled by first and second proportional bands specific to said first and second control circuits, respectively, each of said proportional bands comprising a set point which is separately and independently set, said predetermined control periods for said heating energy supply and said cooling energy supply being also set separately and independently, said first and second control circuits operating both said heating means and said cooling means simultaneously when said actual temperature deviates from said desired temperature by less than a predetermined amount.

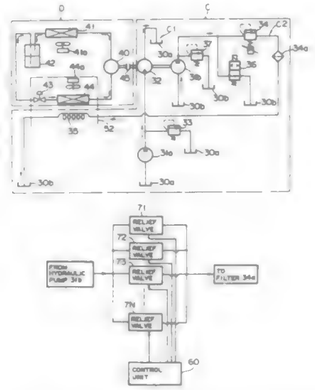
5,355,939

HYDRAULICALLY DRIVEN VEHICULAR AIR CONDITIONING SYSTEM WITH VALVE CLEANING FEATURE

Yorikazu Aoki, Maebashi, Japan, assignor to Sanden Corporation, Isesaki, Japan

Division of Ser. No. 977,793, Nov. 17, 1992. This application Nov. 24, 1993, Ser. No. 156,635
Claims priority, application Japan, Nov. 18, 1991, 3-94356; Nov. 18, 1991, 3-94394
Int. Cl.[5] F25B *29/00*
U.S. Cl. 165—12 6 Claims

1. An air conditioning system for vehicles comprising:
a heating circuit comprising a hydraulic pump, a hydraulic motor for driving said hydraulic pump, a radiator for radiating heat of hydraulic oil flowing in said heating circuit, a first fluid pathway in said hydraulic circuit defined between said radiator and said hydraulic pump, and a valve mechanism disposed in said first fluid pathway for generating a pressure difference in the hydraulic oil flowing therethrough;
a refrigerant circuit comprising a compressor driven by said hydraulic motor, a clutch mechanism provided between said hydraulic motor and said compressor for controlling the connection of said hydraulic motor and said compressor, a condenser, and an evaporator;



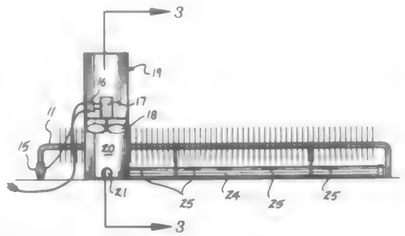
a filter provided downstream of said valve mechanism in said first fluid pathway; and
a control means for controlling the operation of said valve mechanism between a fully opened state and a fully closed state, said control means maintaining said valve mechanism in the fully opened state for a predetermined amount of time when said hydraulic pump first begins operating.

5,355,940

RADIANT HEAT APPARATUS

Gene P. Snider, P.O. Box 5093, Cheboygan, Mich. 49721

Filed Oct. 4, 1993, Ser. No. 130,708
Int. Cl.[5] F28D *9/02*
U.S. Cl. 165—55 2 Claims



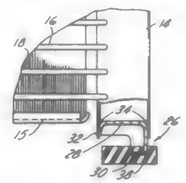
1. A radiant heat apparatus, comprising,
a fluid conduit, the fluid conduit arranged to receive a heated fluid therethrough, and the fluid conduit including a plurality of spaced heat radiating fins fixedly mounted to the fluid conduit extending beyond the fluid conduit, and
a fan housing positioned adjacent the fluid conduit, with the fan housing including an upper chamber and a lower chamber, and a blower motor oriented between the upper chamber and the lower chamber, with the blower motor having fan blades directed in facing relationship relative to the lower chamber effecting pneumatic pressurizing of the lower chamber, and
an air inlet opening directed into the upper chamber, with the upper chamber in pneumatic communication with the ,lower chamber, and
the lower chamber having a lower chamber outlet, with a pneumatic housing positioned in pneumatic communication with the chamber outlet, with the pneumatic housing directed coextensively with the heat radiating fins, and the pneumatic housing having at least one outlet port directing pressurized air from the lower chamber through the pneumatic housing, and
the pneumatic housing includes a first housing member and a second housing member, with the second housing member telescopingly received within the first housing member, with the first housing member having a first top wall, the second housing member having a second top wall, with the first top wall and the second top wall arranged in a sliding parallel relationship relative to one another coextensive with the heat radiating fins, and a first slot directed through the first top wall, and a second slot directed through the second top wall, wherein the first slot and the second slot are arranged in an overlapping relationship to define an exit slot in facing relationship relative to the heat radiating fins.

5,355,941

SEALING APPARATUS FOR A HEAT EXCHANGER MANIFOLD

Gary J. Blankenberger, Westland, and Richard G. Gibbons, Jr., Fraser, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 17, 1993, Ser. No. 123,127
Int. Cl.[5] F28F *9/02*
U.S. Cl. 165—67 12 Claims



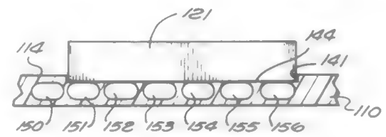
1. A heat exchanger for an automotive vehicle, comprising:
a generally elongate, tubular manifold assembly having a pair of terminating ends;
a plurality of tubular elements being fluidly connected to the manifold assembly and defining air paths between adjacent pairs of tubular elements;
a plurality of fin elements provided in said air paths;
a pair of support members disposed adjacent said manifold assembly on opposite sides of the plurality of tubular elements; and
one piece plug means for sealing at least one of said terminating ends of said manifold assembly and for providing a mounting attachment for securing said heat exchanger in said vehicle, said plug means comprising a plug portion configured to engage the inner diameter of said manifold assembly along the axis of elongation thereof and an attachment portion adapted to receive a mounting fastener therethrough for securing said heat exchanger to said vehicle.

5,355,942

COOLING MULTI-CHIP MODULES USING EMBEDDED HEAT PIPES

Alfred S. Conte, Hollister, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Division of Ser. No. 961,153, Oct. 15, 1992, Pat. No. 5,268,812, which is a continuation-in-part of Ser. No. 749,575, Aug. 26, 1991, abandoned. This application Apr. 5, 1993, Ser. No. 42,735
Int. Cl.[5] H01L *23/427*
U.S. Cl. 165—104.33 6 Claims



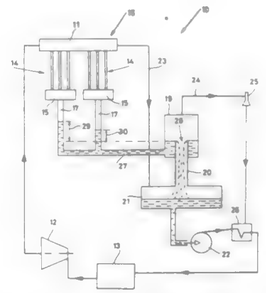
1. A method for cooling semiconductor chips, comprising the steps of:
encasing a plurality of heat pipes within a substrate for mounting the semiconductor chips, each heat pipe having a first end and a second end;
sealing the first and second ends of each heat pipe and enclosing the first and second ends within the substrate;
forming a cavity for each semiconductor chip through a top face of the substrate, the cavities exposing a top surface of the heat pipes;
coupling the semiconductor chips through the cavities in the substrate such that each semiconductor chip engages the top surface of the heat pipes.

5,355,943

VACUUM STEAM CONDENSING PLANTS USING AIR AS THE COOLING FLUID

Giuseppe Gonano, Monza; Giovanni Murgia, Milan, and Giovanni Ricci, Bergamo, all of Italy, assignors to FBM Hudson Italiana S.p.A., Milan, Italy

Filed Jan. 14, 1993, Ser. No. 4,419
Claims priority, application Italy, Jan. 17, 1992, MI 92 A 000086
Int. Cl.[5] F28B *1/06*
U.S. Cl. 165—112 9 Claims



1. A condensing plant comprising a steam receiving inlet manifold connected to one end of tube nests externally grazed by air for therein achieving the at least partial steam condensation, said tubes at the opposite ends thereof being gathered in at least one outlet manifold for the condensed liquid which is connected by a vertically-extending duct to a vertical rain-fall element opening at the lower part thereof into a collection tank supplied with steam from the inlet manifold, which steam moves up along said vertical element for heating of the falling

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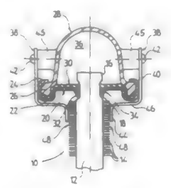
liquid, said vertical rain-fall element at the upper part thereof comprising a chamber or vessel inside of which a vertical rain-fall duct opening into the collection tank projects from the bottom, the upper end of said vertical duct being at a higher level than the level of the liquid entering the vessel from the outlet manifold so as to form a liquid storage on the vessel bottom of the surface of said liquid grazing said upper end of the vertical duct.

5,355,944

HEAT EXCHANGER COMPRISING A BUNDLE OF FINNED TUBES IMMOBILIZED WITH RESPECT TO A COLLECTOR HEADER ASSEMBLY

Michel Potier, Rambouillet, France, assignor to Valeo Thermique Moteur, Paris, France

Filed Apr. 21, 1993, Ser. No. 50,678
Claims priority, application France, Apr. 21, 1992, 92 04861
Int. Cl.[5] F28F *9/00*
U.S. Cl. 165—149 **9 Claims**



1. A heat exchanger comprising: a bundle of tubes, each having a terminal end portion; fins surrounding the tubes; a fluid header comprising a header casing having an open side and a header plate closing the open side, the header plate having defining holes formed through it, with the end portions of the tubes being sealingly fitted in the holes; said header plate extending outward beyond the width of the tube and surrounding fins so that the lower portion of the header plate and the fins form a recess, and locating means associated with the bundle of tubes and the header plate for resisting relative displacement between the bundle of tubes and the header plate, wherein the locating means comprises at least one applied element interposed between the tube bundle and the header, with said applied element comprising a substantially right angled support member having a first substantially horizontal portion for engaging on the lower portion of the header and a second substantially vertical portion extending parallel to the longitudinal direction of the tubes and engaging against opposed longitudinal edges of a group of several said fins adjacent to the header plate so as to immobilize the tube bundle and header plate as one unit.

5,355,945

HEAT EXCHANGER AND METHOD OF FABRICATION

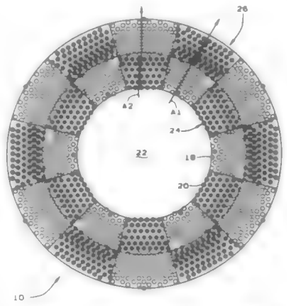
Delio Sanz, and Gary M. Sanz, both of Harding Postal Outlet P.O. Box 32155, Richmond Hill, Ontario, Canada L4C 9S3

Continuation-in-part of Ser. No. 981,757, Nov. 25, 1992, Pat. No. 5,291,944. This application Jan. 21, 1994, Ser. No. 185,118
Int. Cl.[5] F28D *7/16*
U.S. Cl. 165—159 **10 Claims**

1. A heat exchanger comprising:

a shell having a fluid inlet and outlet;

a plurality of heat exchanger tubes housed in the shell and extending substantially parallel to each other, the tubes being arranged in a predetermined tube pattern throughout the exchanger, the tubes being divided into an inner layer of tubes and an outer layer thereof, one layer of tubes being rotated with respect to the other layer thereof with the resultant arrangement of tubes creating alternating patterns of tubes both radially from a central core of the heat exchanger, and circumferentially about the core with the alternating patterns producing uniform resistance



to flow regardless of the flow path through the heat exchanger; and,

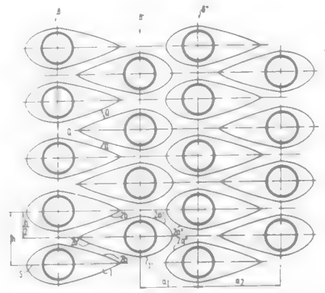
means for supporting the tubes.

5,355,946

TEARDROP-SHAPED HEAT EXCHANGE TUBE AND ITS PROCESS OF MANUFACTURE

William Wei, München, and Gerhard Pellischek, Wolfratshausen, both of Fed. Rep. of Germany, assignors to MTU Motoren-und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 4, 1993, Ser. No. 131,286
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1992, 4234006
Int. Cl.[5] F28F *1/02*
U.S. Cl. 165—172 **17 Claims**



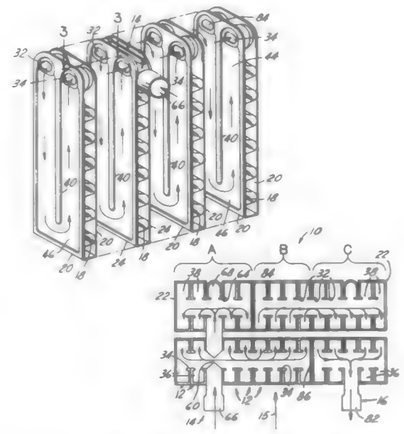
1. A matrix of heat exchange tubes in a heat exchanger in which a first fluid flowing in the heat exchange tubes undergoes heat exchange with a second fluid flowing externally on the heat exchange tubes, said tubes being of teardrop shape and arranged in said matrix in parallel relation in rows in which each tube has a rounded surface at one end and a tapered narrow surface at the other end, the tubes in each row all facing in the same direction, the tubes in alternate rows facing in opposite directions.

5,355,947

HEAT EXCHANGER HAVING FLOW CONTROL INSERT

Steven J. Rasso, Jr., Kettering, Ohio; Stephane Petit, LeMans, and Jean P. Herve, Mesnil Sauin Denis, both of France, assignors to Chrysler Corporation, Highland Park, Mich.

Filed Oct. 25, 1993, Ser. No. 140,835
Int. Cl.[5] F28D *1/03*
U.S. Cl. 165—176 **7 Claims**



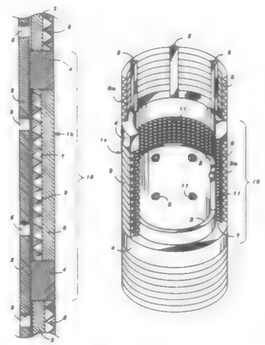
1. In a multi-pass evaporator comprising a plurality of tube units operatively interconnected with one another to transmit pressurized refrigerant therethrough, each of said tube units providing a U-type flow for said pressurized refrigerant, one end of each of said tube units being formed with a pair of spaced tanks between which the pressurized refrigerant flows as it passes through the separate tube units, said plurality of tubes being arranged in separate blocks so that the direction of flow of the pressurized refrigerant between said pair of tanks is reversed as said pressurized fluid passes from one of said blocks to the adjoining block, one of said blocks having an inlet port for receiving said refrigerant in a liquid state and another of said blocks having an outlet for having said refrigerant exit said evaporator in a vaporized state, the improvement wherein a flow control insert is located in one of said blocks and has a body portion engaging with one of said ports, wherein said body portion of said flow control insert is elongated and is adjacent to said tube unit and has said one of said ports located at one end thereof, the other end of said body portion of said flow control insert having a chamber which communicates with said one of said ports and allows said refrigerant to flow therebetween along the longitudinal axis of said flow control insert, and a third opening being located between said chamber and said one of said ports and allowing said refrigerant to flow in a direction crossing said longitudinal axis, said flow control insert being located between a pair of said tube units and having a first opening and a second opening communicating with said one of said ports and being connected to one of said tanks of each of said pair if tube units for allowing two separate streams of said refrigerant to flow through said body portion, and said body portion having a third opening formed therein that communicates with the other of said tank portions of said pair of tubes so that one of said two separate streams of refrigerant flows through said third opening and is combined with the other of said two separate streams so as to allow said outlet port and said inlet port to be located on the same face of said evaporator.

5,355,948

PERMEABLE ISOLATION SECTIONED SCREEN

Derry D. Sparlin, 9803 Oxted La., Spring, Tex. 77379, and Tadayoshi Nagaoka, No. 2-2-91, Mokuzaidouri Mihara-Cho, Minamikawachi-gun, Osaka, Japan 587

Filed Nov. 4, 1992, Ser. No. 971,273
Int. Cl.[5] E21B *43/08*
U.S. Cl. 166—228 **27 Claims**



1. A well liner having a selective isolation screen for placement within a well bore comprising:

a) a tubular member having a first and a second end; said tubular member having a plurality of spaced apertures therethrough;

b) a spacer means surrounding said tubular member for forming a fluid flow annulus circumferentially surrounding said tubular member and in fluid communication with said apertures on said tubular member;

c) a screen means surrounding and coupled to said spacer means to form the exterior of said annulus and having openings therethrough to be in fluid communication with said annulus and said apertures; said screen means further being coupled to each said first and second ends;

d) one or more permeable seal sections vertically spaced on said tubular member at selected vertical locations along the length of said well liner for isolating one or more sections of said annulus and preventing fluid flow between said sections of said annulus corresponding to specific well conditions such as the well length, the spacing of productive formations within said well and the permeability variations of said productive formations exposed to said well liner; said permeable seal sections having means for allowing fluids to flow radially through said permeable seal sections.

5,355,949

WELL LINER WITH DUAL CONCENTRIC HALF SCREENS

Derry D. Sparlin, 9803 Oxted La., Spring, Tex. 77379, and Tadayoshi Nagaoka, No. 2-2-91, Mokuzaidouri Mihara-Cho, Minamikawachi-gun, Osaka, Japan 587

Filed Apr. 22, 1993, Ser. No. 52,158
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—236 **40 Claims**

1. A well liner for preventing sand incursion into a wellbore comprising:

a) an elongate, tubular inner member and an elongate, tubular outer member, both of said members having a first and second end and wherein said inner member is inserted within said outer member and coupled at each of said first and second ends thereto to form an annulus therebetween;

b) said inner tubular member divided axially to form first and

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second arcuate portions, said first arcuate portion consisting of an arcuate solid pipe and said second annular portion consisting of a tubular filter means;

c) said outer member divided axially to form first and second arcuate portions also, said first arcuate portion consisting of an arcuate filter means and said second portion consisting of a arcuate solid pipe;



d) said arcuate solid pipe of said tubular inner member being disposed annularly adjacent to said arcuate filter means of said tubular outer member with said arcuate filter means of said tubular inner member being disposed annularly adjacent to said outer member so that each said solid pipe portions prevent fluid communication with the bore; and

e) a spacer means coupled to said filter means for providing support to said screen means.

5,355,950

CENTRALISER

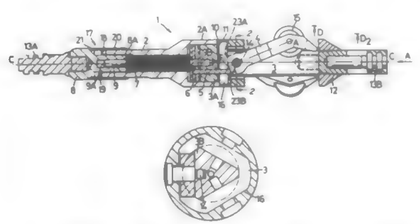
Klaas Zwart, Drumgarth Road, Cults Aberdeen AB1 9NX, United Kingdom

Filed Sep. 15, 1993, Ser. No. 117,202

Claims priority, application United Kingdom, May 25, 1991, [illegible]

Int. Cl.[5] **E21B** *17/10*

U.S. Cl. 166—241.6 **20 Claims**



1. A centralizer comprising a body including carrying means for a plurality of swinging arms, each swinging arm being pivotally attached to the carrying means at a pivot axis, each swinging arm having a free end and an outer portion adapted to support a roller or other implement; actuating means for swinging of the arms between retracted and extended positions, and including loading means providing a centralizer load countering swinging of the arms, the swinging arms swinging in generally tangential planes off-set from the center line of the carrying means, wherein the swinging arms lie on the outside of a central body portion of the carrying means and each pivot axis of the swinging arms extends substantially through the center line of the carrying means.

5,355,951

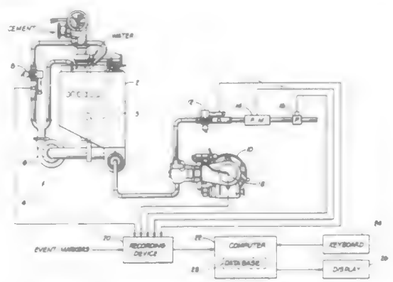
METHOD OF EVALUATING OIL OR GAS WELL FLUID PROCESS

Thomas E. Allen; Gary D. Arnold; Leonard R. Case; Mark A. Clark; Gary E. Folmsbee; Jerry L. Gammill; James M. Macadam; John M. Richardson; Freddie L. Sabins, and Larry T. Watters, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 15, 1993, Ser. No. 31,777

Int. Cl.[5] **E21B** *33/13, 44/00, 47/06*

U.S. Cl. 166—250 **9 Claims**



1. A method of evaluating a cementing process for an oil or gas well, comprising:

identifying subprocesses of a cementing process;

expressing the identified subprocesses in a visual medium, including visually linking each subprocess to at least one other subprocess;

performing identified subprocesses to implement an actual cementing process at an oil or gas well, including mixing a cement slurry, placing the cement slurry in the well and monitoring operating parameters of the performed subprocesses so that electrical signals representing the monitored parameters are generated;

creating in a computer a database in response to the generated electrical signals, wherein the database includes data from the actual cementing process related to the linked identified subprocesses; and

analyzing data from the database for determining whether any identified subprocess as actually performed is causative of a problem in the actual cementing process.

5,355,952

METHOD AND DEVICE FOR ESTABLISHING AN INTERMITTENT ELECTRIC CONNECTION WITH A STATIONARY TOOL IN A WELL

Patrick Meynier, Chaton, France, assignor to Institut Francais Du Petrole, Rueil-Malmaison, France

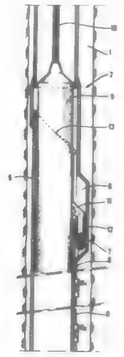
Filed Feb. 24, 1993, Ser. No. 21,665

Claims priority, application France, Feb. 24, 1992, 92 02201

Int. Cl.[5] **E21B** *47/00, 23/03*

U.S. Cl. 166—250 **12 Claims**

4. A device for intermittently connecting a stationary intervention means positioned outside a pipe in a well with a surface station, thereby allowing an electrical communication to be established between the stationary intervention means and the surface station, said device comprising a connecting means, a conductor cable for linking the connecting means to the surface station, at least one electric conductor crossing through a wall of the pipe and connected electrically to the intervention



means, and guiding means for bringing the connecting part in electrical contact with said at least one conductor.

5,355,953

ELECTROMECHANICAL SHIFTER APPARATUS FOR SUBSURFACE WELL FLOW CONTROL

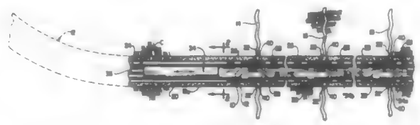
Perry C. Shy, Arlington, and William R. Welch, Carrollton, both of Tex., assignors to Halliburton Company, Houston, Tex.

Division of Ser. No. 984,179, Nov. 20, 1992, Pat. No. 5,309,988.

This application Feb. 9, 1994, Ser. No. 194,440

Int. Cl.[5] **E21B** *47/00, 34/14*

U.S. Cl. 166—250 **10 Claims**



9. A method of inspecting well fluid disposed in a subsurface fracture zone through which a well flow conductor extends, the well flow conductor having installed therein, at the fracture zone, a movable sleeve type fluid flow control device the axially movable sleeve portion of which being in a closed position thereof, said method comprising the steps of:

providing a shifter tool having:

a hollow, general tubular body slidably receivable within and longitudinally movable through the interior of the well flow conductor, said shifter tool body having opposite top and bottom ends, and

key means carried on said shifter tool body for driven opposite radial extension and retraction movements relative thereto;

mounting an inspection device, such as a logging tool or a video camera, on said bottom end of said shifter tool body for movement therewith through the well flow conductor;

inserting said shifter tool, bottom end first into the well flow conductor;

moving said shifter tool into the fluid flow control device;

drivingly extending said key means radially outwardly into locking engagement with the closed flow control device sleeve portion;

axially driving the lockingly engaged key means relative to a portion of said shifter tool body in a manner axially shifting the closed sleeve portion to an open position thereof;

drivingly retracting said key means radially inwardly from the shifted sleeve portion to disengage said shifter tool from the opened sleeve portion;

raising the disengaged shifter tool within the well flow conductor without removing said shifter tool therefrom;

using said inspection device to inspect fracture zone fluid entering the well flow conductor through the opened fluid flow control device;

lowering the disengaged shifter tool into the opened flow control device;

drivingly extending said key means radially outwardly into locking engagement with the opened sleeve portion;

axially driving the lockingly engaged key means relative to a portion of said shifter tool body in a manner axially returning the opened sleeve portion to its closed position; and

drivingly retracting said key means radially inwardly from the closed sleeve portion to disengage said shifter tool therefrom.

5,355,954

UTILIZING DRILLING FLUID IN WELL CEMENTING OPERATIONS

David D. Onan, Lawton; Bobby G. Brake, and Dralen T. Terry, both of Duncan, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Nov. 2, 1993, Ser. No. 146,767

Int. Cl.[5] **E21B** *33/14*

U.S. Cl. 166—292 **20 Claims**

1. A method of cementing a well utilizing a cementing composition which includes a portion of the drilling fluid used to drill the well as a component of the cementing composition, said method being comprised of the steps of:

forming a cementing precursor composition,

forming a non-activated cementing slurry by mixing said precursor composition with a portion of said drilling fluid,

forming said cementing composition by mixing said non-activated cementing slurry with a set activator,

placing said cementing composition in the zone of said well to be cemented and,

permitting said cementing composition to set into a hard mass in said zone;

wherein said precursor composition consists essentially of soluble silicates or stable water dispersions of a silica selected from the group consisting of colloidal silica, silica sols, silica gels and precipitated silicas,

said drilling fluid is present in said cementing composition in an amount in the range of from about 5 to about 50 percent by weight of said cementing composition,

said cementing precursor composition and said set activator are present in said cementing composition in an amount in the range of from about 50 to about 95 percent by weight of said cementing composition wherein said set activator is present in said cementing composition in an amount in the range of from about 5 percent to about 30 percent by weight of said precursor composition.

5,355,955

CEMENT SET RETARDING ADDITIVES, COMPOSITIONS AND METHODS

Klein A. Rodrigues, and Jiten Chatterji, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jul. 2, 1993, Ser. No. 85,362

Int. Cl.[5] **E21B** *33/138*

U.S. Cl. 166—293 **6 Claims**

1. A method of cementing a subterranean zone penetrated by a well bore comprising the steps of:

forming a pumpable cement composition comprised of hydraulic cement, sufficient water to form a slurry, and a water soluble additive consisting of a polymer having grafted thereto at least one acid monomer selected from the group consisting of a first acid monomer or said first acid monomer and a second acid monomer wherein:

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said polymer is the condensation polymer product of an aliphatic ketone, an aliphatic aldehyde and an acid contributing compound wherein the molar ratio of said ketone to said aldehyde to said acid contributing compound in said polymer is in the range of from about 1 mole of said ketone to about 1 to 18 moles of said aldehyde to about 0.25 to 3.0 moles of said acid contributing compound; said first acid monomer is selected from the group consisting of acrylic acid, vinyl phosphonic acid, methacrylic acid, maleic acid and itaconic acid and said second acid monomer is 2-acrylamido-2-methylpropane sulfonic acid; the weight ratio of said acid monomer to said polymer in said additive is in the range of from about 0.05 to 1 to about 5 to 1;

pumping said cement composition into said zone by way of said well bore; and

allowing said cement composition to set.

5,355,956

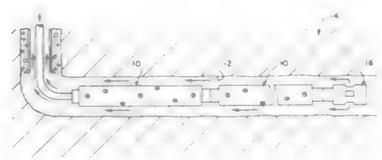
PLUGGED BASE PIPE FOR SAND CONTROL

Henry L. Restarick, Houston, Tex., assignor to Halliburton Company, Houston, Tex.

Filed Sep. 28, 1992, Ser. No. 952,561

Int. Cl.[5] E21B *43/10*

U.S. Cl. 166—296 **17 Claims**



15. In the completion of a well wherein a well screen having a perforated mandrel is run through a well bore, the improvement comprising the steps:

sealing each screen mandrel perforation with a sacrificial plug;

pumping cleaning fluid through the annulus between the screen and the well bore for removing debris from the annulus; and,

after the annulus has been cleaned, removing the plugs.

5,355,957

COMBINED PRESSURE TESTING AND SELECTIVE FIRED PERFORATING SYSTEMS

John D. Burleson; Justin L. Mason, both of Denton, and Flint R. George, Flower Mound, all of Tex., assignors to Halliburton Company, Houston, Tex.

Continuation-in-part of Ser. No. 937,601, Aug. 28, 1992, Pat. No. 5,287,924. This application Oct. 8, 1993, Ser. No. 134,125

Int. Cl.[5] E21B *29/02*

U.S. Cl. 166—297 **19 Claims**

14. A method of performing multiple operations on a well in response to multiple fluid pressure increases, comprising:

(a) applying a first fluid pressure increase to a source of fluid pressure;

(b) performing a first operation on said well in response to said first fluid pressure increase;

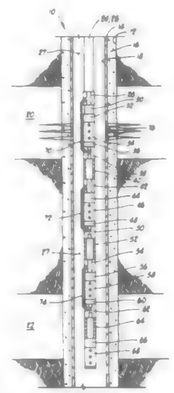
(c) applying said first fluid pressure increase to a first pressure actuated firing head and thereby actuating said first firing head;

(d) isolating a second pressure actuated firing head from said first fluid pressure increase during steps (b) and (c);

(e) in response to actuating said first firing head in step (c), communicating said second firing head with said source of fluid pressure;

(f) applying a second fluid pressure increase to said source of fluid pressure;

(g) applying said second fluid pressure increase to said second firing head and thereby actuating said second firing head; and



(h) performing a second operation on said well in response to said second fluid pressure increase.

5,355,958

LOW VISCOSITY ACID-IN-OIL EMULSIONS AND METHODS

Richard W. Pauls; William G. F. Ford, and Keith H. Hollenbeak, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Nov. 6, 1992, Ser. No. 973,302

Int. Cl.[5] E21B *43/27*

U.S. Cl. 166—307 **6 Claims**

1. A method of stimulating the production of hydrocarbons from a subterranean formation penetrated by a well bore comprising the steps of:

pumping a low viscosity acid-in-oil emulsion into said formation by way of said well bore whereby said acid in said emulsion reacts with materials in said formation to increase the permeability thereof; and

recovering the resulting spent acid from said formation;

said low viscosity acid-in-oil emulsion being comprised of a hydrocarbon oil forming the external phase of said emulsion present in said emulsion in an amount in the range of from about 5% to about 48% by volume thereof, an emulsifying agent of a type which forms and stabilizes an acid-in-oil emulsion present in said emulsion in an amount in the range of from about 0.01% to about 2.0% by volume thereof, an emulsion viscosity reducing agent comprising a fatty ammonium salt of a fatty acid present in said emulsion in an amount in the range of from about 0.01% to about 2.0% by volume thereof and an aqueous acid solution forming the internal phase of said emulsion present in said emulsion in an amount in the range of from about 5% to about 48% by volume thereof.

5,355,959

DIFFERENTIAL PRESSURE OPERATED CIRCULATING AND DEFLATION VALVE

Jeffrey S. Walter; James C. Tucker, and John C. Zimmerman, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Sep. 22, 1992, Ser. No. 949,303

Int. Cl.[5] E21B *34/08*

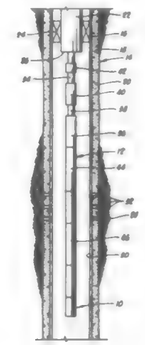
U.S. Cl. 166—321 **27 Claims**

1. A valve comprising:

a housing means for connecting to a downhole tool and defining a passage therethrough between an interior and an exterior of said housing means, said housing means defining a first bore and a second bore therein;

a valve sleeve slidably disposed in said housing means and defining a valve port therethrough in communication with said passage when in an open position and isolated from said passage when in a closed position, said valve sleeve having a differential area thereon defined between a first outer surface and a second outer surface of said valve sleeve, wherein:

said first outer surface of said valve sleeve is received in said first bore of said housing means;



said second outer surface of said valve sleeve is received in said second bore of said housing means; and

said valve sleeve is moveable from said open to said closed position in response to pressure acting across said area;

first sealing means for continuously sealing between said first outer surface and said first bore on a first side of a passage and said valve port; and

second sealing means for sealing between said second outer surface and said second bore on a second side of said passage from said first sealing means and said valve port.

5,355,960

PRESSURE CHANGE SIGNALS FOR REMOTE CONTROL OF DOWNHOLE TOOLS

Roger L. Schultz, Richardson; Donald G. Kyle, Plano, and Neal G. Skinner, Lewisville, all of Tex., assignors to Halliburton Company, Houston, Tex.

Filed Dec. 18, 1992, Ser. No. 993,260

Int. Cl.[5] E21B *34/10*

U.S. Cl. 166—374 **21 Claims**

1. A method of controlling a downhole valve in a well, said valve having open and closed positions, comprising:

(a) transmitting into said well a command signal including at least one high level pressure change applied to a column of fluid in said well;

(b) receiving said command signal and generating an electrical signal representative of said at least one high level pressure change;

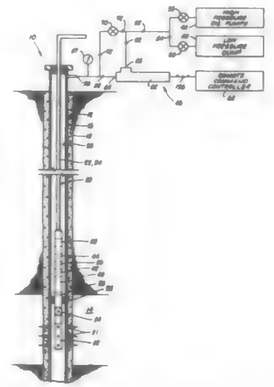
(c) comparing said electrical signal to information stored in a control system for said downhole tool, said information identifying said at least one high level pressure change;

(d) by said comparing of step (c), verifying that said command signal is directed to said downhole tool; and

(e) upon said verifying of step (d), moving said valve from one of its said open and closed positions to the other of its said open and closed positions; and

wherein in step (a), said at least one high level pressure change includes:

(1) changing a pressure applied to said column of fluid in said well from a first value to a lower second value, said second value being at least about 1000 psi above hydrostatic pressure of said column of fluid in said well; and



(2) maintaining said pressure substantially at said second value for an interval of time corresponding to said information stored in said control system.

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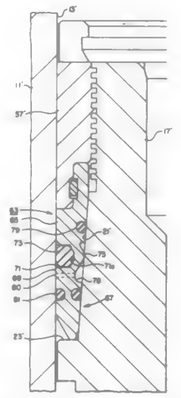
METAL AND ELASTOMER CASING HANGER SEAL

James A. Gariepy, and Lawrence A. Eckert, both of Houston, Tex., assignors to ABB Vetco Gray Inc., Houston, Tex.

Filed Apr. 2, 1993, Ser. No. 42,367

Int. Cl.[5] E21B *33/04*

U.S. Cl. 166—387 **19 Claims**



1. A seal assembly for sealing an annular space between an outer tubular member and an inner tubular member of a well, the inner tubular member having a tapered wall at a selected angle and the outer tubular member having a cylindrical wall, the seal assembly comprising in combination:

an annular metal body having an inner wall that is tapered to match the angle of the tapered wall of the inner tubular member and an outer wall that is cylindrical;

at least one inner groove on the inner wall of the body and at least one outer groove on the outer wall of the body;

at least one inner O-ring and at least one outer O-ring, each

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having a transverse circular cross-section and positioned in unbonded condition in each of the inner and outer grooves, respectively; and

the inner and outer walls of the body having dimensions selected such that when lowering the seal into the annular space, the inner wall will, initially engage the tapered wall prior to the outer O-ring sealingly engaging the cylindrical wall, then continued downward movement of the body on the tapered wall will permanently deform the body, causing the outer wall of the metal body to increase in diameter and pressing the outer O-ring into sealing engagement with the cylindrical wall.

18. A method for sealing an annular space between an outer tubular member and an inner tubular member of a well, the inner tubular member having a tapered wall with a selected angle of taper and the outer tubular member having a cylindrical wall, the method comprising:

providing an annular metal body having an inner wall that is tapered at the same angle as the angle of the tapered wall of the inner tubular member and an outer wall that is cylindrical;

forming at least one inner groove on the inner wall of the body and at least one outer groove on the outer wall of the body;

placing in unbonded condition an inner O-ring in the inner groove and an outer O-ring in the outer groove; and

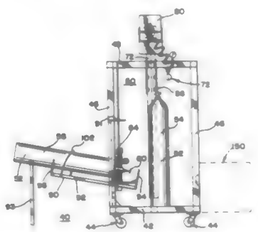
lowering the body into the annular space, causing the inner wall to initially engage the tapered wall, then continuing to lower move the body downward on the tapered wall, permanently expanding the inner and outer walls of the body, causing the outer wall of the body to increase in diameter and pressing the outer O-ring into sealing engagement with the cylindrical wall.

5,355,962

AMPLIFIED MIXER-BLOWER MECHANISM AND USES THEREOF

William E. Anderson, Jefferson; Jon L. Curzon, Atlanta, and Donald M. Davis, Gainsville, all of Ga., assignors to LaRoche Industries, Inc., Atlanta, Ga.

Filed Apr. 24, 1992, Ser. No. 874,587
Int. Cl.[5] A62C *31/02*
U.S. Cl. 169—70 12 Claims



1. A blower device for mixing and discharging an amplified discharge of liquid or solid material at high velocity and enhanced volume, comprising:

(a) a source of propulsive media other than air in the gaseous phase;

(b) a source of carbon dioxide in the liquid or solid phase;

(c) a discharge head having;

(i) an elongated housing having an hourglass-shaped passageway therethrough in the longitudinal direction, defining a flow path for the liquid or solid carbon dioxide;

(ii) a gas inlet in said housing perpendicular to the longitudinal direction thereof for introduction of the propulsive gas media to a collection chamber in said housing;

(iii) a tapered annular orifice between the collection chamber and the passageway for causing an increase in the velocity of the propulsive gas media passing therethrough to a central region in the passageway to cause a diminished pressure condition therein;

(iv) a feed chamber located in one end of the passageway for introduction of the carbon dioxide, the feed chamber communicating with the central region of the passageway; and

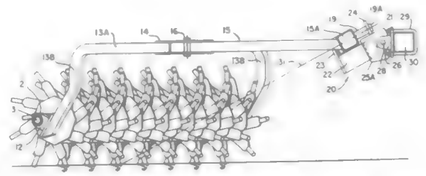
(v) a discharge outlet at the other end of said housing, an amplification chamber being defined between the discharge outlet and the central region of the passageway so that the carbon dioxide is drawn rapidly into the central region of the passageway and mixed with the propulsive gas media therein, the mixture increasing in volume in the amplification chamber of said housing, and being discharged therefrom to a work area at high velocity to further expand in volume.

5,355,963

ROTARY OR ACTIVE HARROW

Stanley Boyko, and Darryl Kerr, both of St. Brieux, Canada, assignors to F.P. Bourgault Industries Air Seeder Division, Saskatchewan, Canada

Filed Oct. 2, 1992, Ser. No. 955,974
Claims priority, application Canada, Sep. 21, 1992, 2078702
Int. Cl.[5] A01B *21/04, 23/00*
U.S. Cl. 172—383 6 Claims



3. A rotary harrow adapted to be pulled behind a power source, comprising:

a longitudinal horizontally disposed shaft mounted in a frame, for rotation therein, such that in operation when said harrow is pulled by said power source, said shaft rotates at an acute angle to a line perpendicular to the line of travel, thus comprising a forward end and a trailing end;

said frame including:

a yoke;

an angle means comprising:

a pair of spaced apart frame members fixedly mounted to a cross member at an acute angle;

one of said frame members being shorter than the other such that said shaft of said harrow has a leading end and a trailing end; and

said cross member being fixedly connected at its opposite side to a pair of pivot brackets adapted to hole a horizontal pivot pin;

a walking pivot hitch, said walking pivot hitch being pivotally mounted to a power source, such that in operation, said harrow, when encountering obstacles or uneven terrain, can move up or down about an axis or tilt side to side about a second axis, said second axis being located to prevent the creation of an undesirable moment caused by side loading on the tines;

a plurality of planar mounting plates fixedly mounted at predetermined distances along said shaft and perpendicular thereto;

a plurality of tines circumferentially mounted on each of said mounting plates;

each of said tines being of unitary construction having a flattened portion at the inner end for attachment to said mounting plates, and a rounded portion, at the outer end for engagement with the soil;

each of said tines being bent along its longitudinal axis such that the inner ends of said tines are closer than the outer ends of said tines to the forward end of said shaft;

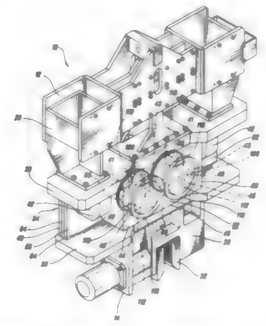
wherein when in operation said tines are adapted to deflect rearwardly in the direction of the trailing end of said shaft when encountering obstacles in or on the soil.

5,355,964

PILE DRIVING AND/OR PILE PULLING VIBRATORY ASSEMBLY WITH COUNTERWEIGHTS

John L. White, 7032 S. 196th, Kent, Wash. 98032

Filed Jul. 12, 1993, Ser. No. 90,891
Int. Cl.[5] E02D *7/18*; E21B *7/24*
U.S. Cl. 173—1 27 Claims



21. A method of making a counterweight assembly of a vibratory device for imparting a vibratory force to a pile, comprising the steps of:

forming with a first metal a counterweight having a cylindrical gear portion and an eccentric weight portion integral with the cylindrical gear portion, a coaxially aligned aperture through said cylindrical gear and eccentric weight portions and adapted to receive a shaft, and at least one insert-receiving area in said eccentric weight adapted to receive a solid insert member;

providing a solid insert member sized to fit within the at least one insert-receiving area from a second metal having a specific gravity greater than the specific gravity of the first metal and a melting point of 328° C. or greater;

inserting the solid insert member into the at least one insert-receiving area;

securing the solid insert member within said at least one insert-receiving area;

forming a plurality of gear teeth around the circumference of the cylindrical gear portion; and

balancing the counterweight assembly such that the center of gravity of the eccentric weight portion is aligned with the gear teeth.

5,355,965

MOUNTING APPARATUS FOR A ROTATIONAL DRIVE UNIT

Peter C. Rozendaal, Pella, Iowa, assignor to Vermeer Manufacturing Company, Pella, Iowa

Filed Mar. 19, 1993, Ser. No. 34,559
Int. Cl.[5] E21C *5/06*
U.S. Cl. 173—141 5 Claims

1. Apparatus for mounting a rotational drive unit comprising:

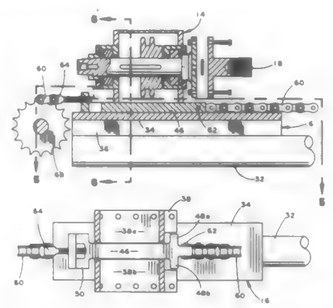
(a) guide rail means on a support rack having transversely spaced longitudinal guide surfaces;

(b) a slide platform supporting said rotational drive unit and having transversely spaced longitudinal slide surfaces which engage said guide surfaces to mount said slide platform on said support rack for relative longitudinal reciprocal movement thereon;

(c) a pair of longitudinally spaced, opposing engagement surfaces on said slide platform;

(d) a carrier positioned on said support rack, said carrier having a longitudinal central member and a pair of opposing cross members at opposite end portions of said central member;

(e) means for reciprocally moving said carrier longitudinally along said support rack; and



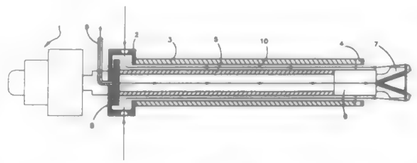
(f) wherein said carrier cross members are outside of said engagement surfaces of said slide platform whereby said slide platform has a range of independent longitudinal motion relative to said carrier defined at one limit by contact of a first of said pair of engagement surfaces of said slide platform with a corresponding one of said cross members of said carrier and at an opposite limit by contact of the second of said pair of engagement surfaces with the other of said cross members.

5,355,966

DRILLING METHOD AND AN ASSEMBLY FOR PERFORMING THE METHOD

Andrea L. Mathis, Haldenstrasse 14, 8703 Erlenbach, Switzerland

PCT No. PCT/CH92/00218, § 371 Date Jul. 7, 1993, § 102(e) Date Jul. 7, 1993, PCT Pub. No. WO93/09328, PCT Pub. Date May 13, 1993
PCT Filed Oct. 26, 1992, Ser. No. 84,253
Claims priority, application Switzerland, Nov. 8, 1991, 3267/91
Int. Cl.[5] E21B *6/00*
U.S. Cl. 175—57 5 Claims



1. A drilling method for drilling a bore-hole in ground or soil, with a percussion drilling device operated directly in the bore-hole and with a rotary percussion drilling device operated from the surface of the ground or soil, both devices being received in a common support member and adapted to be simultaneously operated, characterized in that drilling impact forces and vibrations directed to said rotary percussion drilling device from the surface are registered, elastically dampened and absorbed prior to having an effect on said percussion drilling device.

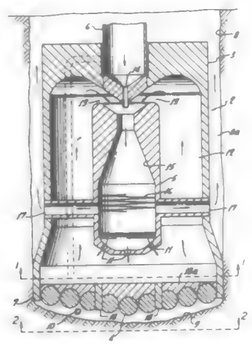
VOL 1167 ISS 3 OC 18 1994 UMI

5,355,967

UNDERBALANCE JET PUMP DRILLING METHOD

Mark D. Mueller, Bakersfield, and William O. Jacobson, San Diego, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Oct. 30, 1992, Ser. No. 969,018
Int. Cl.[5] E21B *10/60*
U.S. Cl. 175—65 22 Claims



1. A drilling apparatus for drilling an underground wellbore from a surface location which comprises:

a rotary drill capable of producing cuttings from an underground formation face;

a housing partially enclosing said rotary drill, said housing capable of restricting fluid flow between an upper portion and a lower portion when said rotary drill is drilling;

jet pump means located proximate to said housing and capable of inducing a mixture comprising a drilling fluid and said cuttings at a first pressure from said lower portion and discharging said mixture at a second pressure to said upper portion when said jet pump means is actuated by a power fluid and said rotary drill is rotated, wherein said jet pump directs said mixture in a direction not toward said underground formation face when said drill is producing said cuttings; and

a source of a power fluid stream attached to said jet pump means.

22. A process for drilling a wellbore which comprises:

producing cuttings from a solid material;

pumping said cuttings entrained in entraining fluid located proximate to said material, forming a pumped mixture, said pumping being motivated by a power fluid stream;

separating at least a portion of said entraining fluid from said cuttings within said wellbore; and

diverting a portion of said power fluid stream to a location proximate to said drill, forming at least part of said entraining fluid.

5,355,968

TOOL JOINT STRESS RELIEF GROOVE

Jackie E. Smith, Houston, Tex., assignor to Grant TFW, Inc., Houston, Tex.

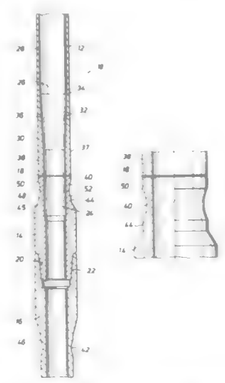
Filed May 20, 1993, Ser. No. 64,858
Int. Cl.[5] E21B *17/042, 17/20;* F16L *15/00*
U.S. Cl. 175—320 14 Claims

1. A tubular member, comprising:

a pipe body having an upset portion at the end of said pipe body, said upset portion including a first thick walled region having a wall thickness greater than the wall thickness of said pipe body adjacent said upset portion;

a tool joint having a threaded end and a second, thick walled region axially displaced from said threaded end, said second thick Walled region having a wall thickness greater than the wall thickness of said pipe body adjacent said upset portion;

a weld connection between said first and second thick walled regions forming a rigid section of said tubular member, said rigid section having an annular stress relief groove disposed therein axially displaced from said weld connection for increased flexibility of said rigid section,



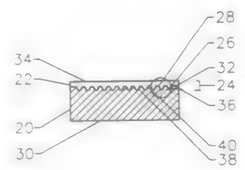
said annular stress relief groove being profiled so as to provide a reduction in wall thickness in the locus of said annular stress relief groove to allow said increased flexibility of said rigid section and sufficient wall thickness in the locus of said annular stress relief groove to provide that an anticipated stress to be applied to said rigid section is less than the endurance limit in the locus of said stress relief groove.

5,355,969

COMPOSITE POLYCRYSTALLINE CUTTING ELEMENT WITH IMPROVED FRACTURE AND DELAMINATION RESISTANCE

John W. Hardy; Bill J. Pope, both of Provo; Kevin G. Graham, Payson, and Robert J. Farr, Orem, all of Utah, assignors to U.S. Synthetic Corporation, Provo, Utah

Filed Mar. 22, 1993, Ser. No. 36,540
Int. Cl.[5] E21B *10/46*
U.S. Cl. 175—432 15 Claims



1. A cutting element comprising:

a substrate having a support surface formed with alternating protuberances and depressions spaced-apart in a radial direction from the center wherein the bottoms of the depressions are concave, and

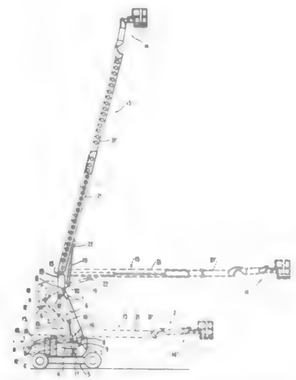
a polycrystalline material layer having a cutting surface and an opposed mounting surface, the mounting surface having depressions and protuberances complementary to and in contact with the protuberances and depressions of the support surface, said mounting surface being joined to the said support surface.

5,355,970

MUTLICELL ARTICULATED RISER SYSTEM FOR A SELF PROPELLED AERIAL WORK PLATFORM

Donald C. Hade, Jr., Waynesboro, and Robert D. Backer, Rouzerville, both of Pa., assignors to Kidde Industries, Inc., Iselin, N.J.

Filed Aug. 26, 1993, Ser. No. 111,933
Int. Cl.[5] B66F *11/04*
U.S. Cl. 182—2 13 Claims



1. An articulated riser system for aerial access equipment comprising, a support frame, a riser frame assembly, a pair of substantially parallel arms comprising an upper arm positioned above a lower arm, one end of each arm being pivotally connected to said support frame, the opposite end of each arm being pivotally connected to the riser frame assembly, a load supporting boom assembly pivotally connected to said riser frame assembly, a lift cylinder being operatively connected between the support frame and the lower arm, the riser frame assembly, support frame and parallel arms providing a parallelogram linkage for lifting the boom assembly from a stored position to an operating position, the cross-sectional configuration of said lower arm being larger than the cross-sectional configuration of said lower arm comprising a pair of spaced vertical side walls integral with a bottom wall, a pair of divergent walls positioned between and spaced from said side walls, said divergent walls being integrally connected to and extending upwardly from said bottom wall, the upper end portions of each of said divergent walls extending outwardly and integrally connected to a respective said side wall, a transverse plate positioned above said bottom wall and extending between and integrally connected to said pair of divergent walls, whereby said lower arm is provided with a plurality of cells defined by the interconnection of said bottom wall, side walls, divergent walls and transverse plate.

5,355,971

DRIVETRAIN AND LOAD BEARING SWIVEL HITCH ASSEMBLY AND COMBINE INCORPORATING SAME

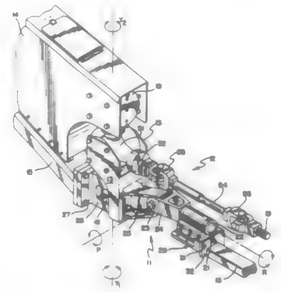
Gregg A. Austin, and Gary E. Coppock, both of Selma, Ala., assignors to Bush Hog Corporation, Selma, Ala.

Filed Jul. 28, 1993, Ser. No. 98,135
Int. Cl.[5] B60K *17/28*
U.S. Cl. 180—53.1 30 Claims

1. A swivel hitch and drivetrain apparatus for securement of an agricultural implement to a pulling vehicle having a drawbar and a power takeoff shaft extending in a generally rearward direction, the apparatus comprising:

a load bearing swivel hitch assembly operatively connecting a frame component of an implement to a drawbar of a pulling vehicle, the implement having a draft and tongue load which is transferred to the drawbar of the pulling vehicle through the load bearing swivel hitch assembly, the load bearing swivel hitch assembly having separate axes of rotation, one axis of said axes of rotation being generally coaxial with the drawbar of the pulling vehicle, another axis of said axes of rotation being generally horizontal and transverse to said one axis, the other axis of said axes of rotation being generally vertical and transverse to said one axis, and a tongue extension rotates with respect to a tongue clevis along said other axis;

said load bearing swivel hitch assembly includes a tongue extension pin which bears virtually all of the implement load, the tongue extension pin being along said another axis of rotation that is generally horizontal and transverse to said one axis, said tongue extension which is pivotable along said other axis is not pivotable along either said another axis or an axis parallel to said another axis, and said load bearing swivel hitch assembly further includes



an adaptor assembly secured to the drawbar of the vehicle, said adaptor assembly having an adaptor component being pivotable along said one axis and not pivotable about either said another axis or an axis parallel to said another axis;

a drivetrain assembly having a swivel gearbox with a generally vertical rotation and drive axis parallel to said generally vertical other axis of rotation of the load bearing swivel hitch assembly, said drivetrain assembly also having a generally horizontal drive shaft assembly that is in driven connection between a power takeoff shaft of the pulling vehicle and said swivel gearbox; and

a torque arm that is in operative engagement with both said tongue extension of the load bearing swivel hitch assembly and said swivel gearbox of the drivetrain assembly, whereby said tongue extension and swivel gearbox rotate substantially together with each other.

5,355,972

CONTROL DEVICE FOR A SUCKED AIR QUANTITY OF AN ENGINE

Seiji Wataya, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1993, Ser. No. 29,164
Claims priority, application Japan, Apr. 21, 1992, 4-100940
Int. Cl.[5] B60K *15/00*
U.S. Cl. 180—68.3 1 Claim

1. A control device for a sucked air quantity of an engine comprising:

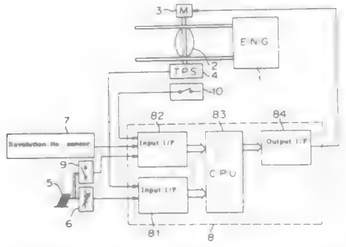
an accelerator pedal opening degree sensor for detecting an opening degree of an accelerator pedal;

a throttle valve opening degree sensor for detecting an opening degree of a throttle valve;

a throttle valve actuator for controlling the opening degree of the throttle valve in accordance with outputs of both the accelerator pedal opening degree sensor and the throttle valve opening degree sensor;

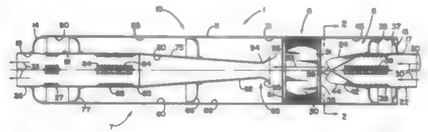
VOL 1167 ISS 3 OC 18 1994 UMI

a first fully-closed state detecting switch for detecting a fully-closed state of the accelerator pedal;
a second fully-closed state detecting switch for detecting a fully-closed state of the throttle valve; and



an abnormality determining means for determining that the control device for a sucked air quantity is abnormal when the throttle valve is not in the fully-closed state when the accelerator pedal is in the fully-closed state.

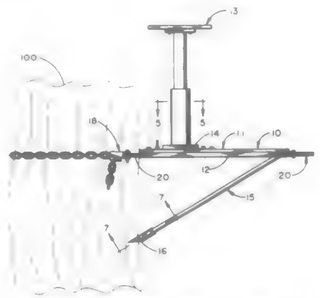
5,355,973
MUFFLER WITH CATALYTIC CONVERTER ARRANGEMENT; AND METHOD
Wayne M. Wagner, Apple Valley; Marty A. Barris, Lakeville; Douglas E. Flemming, Rosemount; James C. Rothman, Burnsville, and Peter A. Betts, Prior Lake, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.
Filed Jun. 2, 1992, Ser. No. 889,949
Int. Cl.[5] F01N *1/24*
U.S. Cl. 181—258 **22 Claims**



1. An apparatus for modifying an exhaust stream of a diesel engine, said apparatus comprising:
(a) a muffler arrangement having an exhaust inlet, an exhaust outlet and means for sound attenuation;
(b) a catalytic converter arrangement positioned within said muffler arrangement between said exhaust inlet and exhaust outlet;
(i) said catalytic converter arrangement including a porous core member having an upstream face;
(c) means for directing flow of exhaust gases through said catalytic converter arrangement whenever exhaust gases operably flow through said muffler arrangement from said exhaust inlet to said exhaust outlet;
(d) a flow distribution arrangement constructed and arranged to direct exhaust flow substantially evenly against said porous core member upstream face;
(i) said porous core member being positioned within a distance of about 2 to 4 inches from said flow distribution arrangement.

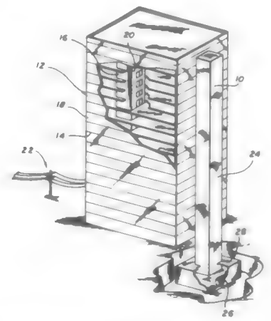
5,355,974
PORTABLE TREE STAND
Kenneth L. Miller, 4476 S. Licking Pike, Alexandria, Ky. 41001
Filed Apr. 12, 1993, Ser. No. 44,726
Int. Cl.[5] A01M *31/02*
U.S. Cl. 182—187 **9 Claims**

1. An apparatus for supporting a person at a preselected height on a stanchion comprising:
(a) a floor member having trapezoidal upper and lower surfaces, said surfaces being bounded by:
a first parallel edge to abut said stanchion;
a second parallel edge being substantially wider than said first parallel edge;
a first diagonal edge; and
a second diagonal edge;
(b) a frame member attached to the lower surface of said floor member, said frame member having a trapezoidal outline corresponding to the trapezoidal surfaces of said floor member, including:
a first parallel edge to abut said stanchion;
a second parallel edge being substantially wider than said first parallel edge;
a first diagonal edge; and
a second diagonal edge;
(c) a seat hingingly attached and selectively locked to the floor member, said seat having
a horizontal support for supporting the person;
a pedestal having a proximal end attached to a lower surface of said horizontal support;
a hinge and lock mechanism including:
a base member attached to a distal end of said pedestal;
a hinge attached to a first edge of said base member and attached to said floor member;
a lock pin;
a lock pin receiver having:



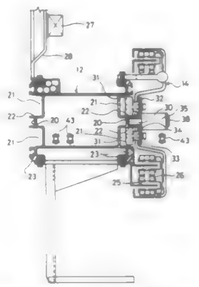
a first mating receiver fixedly attached to a second edge of said base member, said second edge being disposed opposite said first edge, and
a second mating receiver fixedly attached to said floor member, said first and second mating receivers being mounted to allow cooperative alignment of said receivers to accommodate the removable insertion of said lock pin;
(d) a support member, having a piercing member, attached to the frame member;
(e) an attachment device connected to the floor member, said attachment device including:
a mounting bracket threadingly attached to the first parallel edge of said frame member and adjacent the first diagonal edge of said frame member;
a hook pivotally and removably disposed on the first parallel edge of said frame member and adjacent the second diagonal edge of said frame member; and
a chain for wrapping around said stanchion, said chain being removably attachable to said hook and fixedly attached to said mounting bracket;
(f) an adjustable tightening means adjustably attached to the attachment device and removably attached to the frame member to adjustably tighten the attachment device, said adjustable tightening means including:
a first guide tube opening disposed in said first parallel edge of said frame member, said first guide tube opening being disposed substantially adjacent the second diagonal edge of said frame member;
a second guide tube opening disposed in said second parallel edge of said frame member, said second guide tube opening being disposed substantially adjacent the second diagonal edge of said frame member;
a hollow guide tube having:
a first end fixedly attached to the frame member surrounding said first guide tube opening; and,
a second end fixedly attached to the frame member surrounding said second guide tube opening;
a threaded rod for removable and slidable insertion into said hollow guide tube, said hook being pivotally and removably attached to a distal end of said threaded rod; and
a handle threadingly attached to a proximal end of said threaded rod; and,
(g) a gripping means attached to the frame member.

5,355,975
HIGH RISE EMERGENCY ELEVATOR
Charles J. Laurutis, 655 W. Baker, Apt. F 104, Costa Mesa, Calif. 92626
Continuation of Ser. No. 850,171, Mar. 11, 1992, Pat. No. 5,253,734. This application Jul. 8, 1993, Ser. No. 88,787
The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.
Int. Cl.[5] B66B *9/16*
U.S. Cl. 187—270 **11 Claims**



1. An elevator system for use in combination with a multistoried building for vertical transport between floors of said building during an emergency, said building having an exterior and an interior, said elevator system comprising:
an elevator shaft, said shaft permanently spaced apart from the exterior of said building a sufficient distance to thermally isolate such shaft from said building;
an elevator platform for transporting men and materials vertically along said elevator shaft;
drive means for moving said platform along said elevator shaft, said drive means engaging said elevator shaft with said elevator platform;
a motor engaged with said drive means; and
environmental enclosure means for protective receipt of said elevator platform for protecting said elevator platform from damage due to environmental effects prior to use of said elevator platform said elevator shaft extending from adjacent said environmental enclosure means.

5,355,976
HANDLING APPARATUS FOR AUTOMATIC WAREHOUSING ARRANGEMENT
Yukihiro Goto, and Yoshihiko Yamada, both of Komaki, Japan, assignors to Daifuku Co., Ltd., Osaka, Japan
Filed Jul. 21, 1993, Ser. No. 95,666
Claims priority, application Japan, Jul. 31, 1992, 4-204154; Jul. 31, 1992, 4-204156
Int. Cl.[5] B66B *7/02*
U.S. Cl. 187—406 **4 Claims**



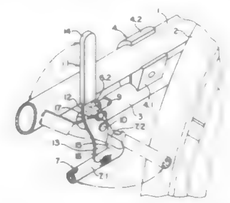
1. A handling apparatus for automatic warehousing arrangement comprising:
a travelling carriage body,
a pair of front and rear posts vertically extending from the travelling carriage body and spaced from each other in the direction of movement of the carriage body, said front and rear posts each having opposed surfaces,
front and rear guide faces formed on the opposed surfaces of the posts,
an elevator guided at one and the other ends thereof by the front and rear guide faces for upward and downward movement along the guide faces,
cord means for vertically driving the elevator arranged along at least one of the opposed surfaces of the pair of posts and connected to the elevator, and
relief spaces defined on the opposed surfaces of the posts at a position opposite to the cord means so as to provide a spacing between the cord means and the respective posts,
wherein recesses are formed integrally with each respective post, front side or rear side, in pair at both sides of the guide face of the post, and wherein each of the recesses has a pair of inner sides and one of the inner sides which is closer to the center of the post defines a side guide face for guiding the elevator, and wherein the relief spaces are each defined by one said recess which is formed open toward the cord means in each respective post.

5,355,977
PARKING BRAKE FOR A WHEELCHAIR
Rainer Küschall, Ringstrasse 15, CH 4123 Allschwil, Switzerland
Filed Sep. 15, 1993, Ser. No. 121,938
Claims priority, application Switzerland, Sep. 16, 1992, 921/92
Int. Cl.[5] B60T *1/04*; A61G *5/00*
U.S. Cl. 188—2 F **5 Claims**

1. Parking brake for a wheelchair defined by a frame having a rear wheel rotatable about a rotational axis at right angles to a section of the frame, said parking brake having a rod-shaped brake element which acts on the rear wheel and a locking lever each of which brake element and locking lever rotates and is fitted to a mount secured to the section of the wheelchair frame, the brake element and the locking lever acting together so that when the locking lever is actuated the brake element is moved from a braking position to a released position and from

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a released position to a braking position, and the brake element in the braking position being substantially parallel with the rotational axis of the rear wheel and approximately perpendicular thereto in the released position, wherein the improvement comprises a cylindrical bearer and a two-piece clamp forming the mount; the cylindrical bearer being parallel to the portion of the frame to which the bearer is attached, by means of the



two piece clamp to allow the bearer to slide lengthwise and to rotate relative to the portion of frame; and the brake element and locking lever being attached to one end of the bearer; and one arm of the locking lever which acts together with the brake element having two recesses, against which a spring presses the brake element; and the brake element in the braking position engaging one of the recesses and in the released position engaging the other of the recesses.

5,355,978

LIQUID-IMMERSED DISC BRAKE

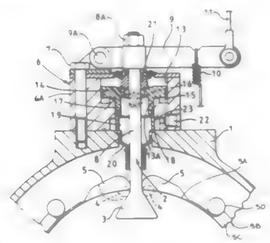
Anthony G. Price, Gwent; David Parry, Cwmbran; Michael A. Taylor, and Andrew R. Broadwell, both of Gwent, all of Wales, assignors to Lucas Industries, public limited company, Solihull, England

Filed Jul. 1, 1992, Ser. No. 907,327

Claims priority, application United Kingdom, Jul. 6, 1991, 9114649

Int. Cl.[5] F16D *65/853*

U.S. Cl. 188—264 D 11 Claims



1. A liquid-immersed disc brake comprising a housing for containing at least one friction element rotatable with a member to be braked and a torque resisting member, actuator means including a force-applying unit carried externally of the housing and operable via an actuator device to bring the friction element and torque resisting member into braking engagement, and a valve located radially outwardly of the friction elements for controlling a supply of cooling liquid to the housing, the valve being closed by action thereon of the force-applying unit in its non-operative position and opened to permit a flow of cooling liquid to the housing as a result of the force-applying unit performing an actuating movement via the actuating device, a piston associated with said force-applying unit and providing a first part of said valve, and said housing having a cooling oil inlet opening providing a second part of said valve, said first valve part cooperating with said second valve part for controlling flow of cooling fluid through the opening into the housing.

5,355,979

DAMPING ELEMENT FOR DAMPING TRANSLATORY MOTION

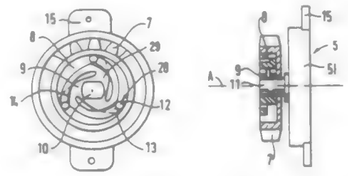
Christoph H. Stephan, deceased, late of Sindelfingen; by Dorothea Stephan, heir and legal representative, Vaihinger Strasse 25, 7032 Sindelfingen; by Otto Stephan, heir and legal representative; by Ilse Stephan, heir and legal representative, both of Jasminstrasse 8, 7030 Böblingen-Dagersheim, and Wilfried Weber, Am Stücklesberg 10, 7294 Schopfloch, all of Fed. Rep. of Germany

Filed Oct. 21, 1992, Ser. No. 964,495

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1991, 4135216

Int. Cl.[5] F16D *57/00*

U.S. Cl. 188—290 7 Claims



1. A damping element for damping translatory motion of a body over a relatively stationary base, comprising:

a housing holding a viscous fluid;

a friction disk in the viscous fluid in the housing coupled with a shaft extending from the housing;

a rotatable drive element having an axis of rotation and connected to the shaft outside the housing, said drive element being provided with a cavity coaxial to said axis of rotation and said drive element being formed so that said drive element can be driven rotatably due to a translatory motion of the body over the base; and

coupling means connecting the friction disk and the rotatable drive element,

wherein said coupling means includes a free-wheel device arranged in said cavity of said drive element and said coupling means is structured so that rotation of the drive element in one direction results in a torque transferring connection between the friction disk and the drive element so as to damp rotational motion of said rotatable drive element in said one direction, while rotation of the drive element in a direction opposite to said one direction results in an interruption of the torque transferring connection between the friction disk and the drive element so that said rotation of said drive element in said opposite direction is undamped.

5,355,980

SUITCASE WITH EXTENSIBLE HANDLE AND FOLDABLE PLATE FOR CARRYING ANOTHER SUITCASE THEREON

Dick M. Hsieh, No. 18, Lane 777, Chung-Shan Rd., Kuei-Jen Hsiang, Tainan Hsien, Taiwan

Filed Sep. 10, 1993, Ser. No. 119,760

Int. Cl.[5] A45C *5/14*

U.S. Cl. 190—115 2 Claims

1. A suitcase, comprising:

a hollow suitcase body having a front side wall, a rear side wall which has a lower portion and which is formed with a longitudinally extending recess, and a wheel unit mounted on said lower end portion of said rear side wall;

a foldable plate mounted pivotally on said front side wall of said suitcase body and turnable outward to a carrying position in which said foldable plate is generally perpendicular to said front side wall;

a cover plate mounted on said rear side wall of said suitcase body to cover said recess, said cover plate having an inner face formed with a spaced pair of upright tubular sleeves, each of said upright tubular sleeves having a top portion that is formed with a radial hole, said cover plate being formed with a pair of elongated slots and a bent top portion with an opening;

a strap mounting frame mounted on said inner face of said cover plate, said strap mounting frame having a top portion provided with a horizontally extending first hook support, a bottom portion provided with a spaced pair of pivot ears, a shaft extending between said pivot ears and being mounted rotatably thereto, a strap wound on said shaft and having one end fixed thereto, a toothed positioning wheel provided on one end of said shaft, a first spring means for biasing said shaft in a direction for winding said strap thereon, a pivot seat mounted pivotally on said strap mounting frame and having a bottom end formed with a stop projection that engages releasably said positioning wheel to arrest rotation of said shaft, and a second spring means for biasing said pivot seat toward said strap mounting frame, said pivot seat further having a top end which is formed with a lever portion that extends out of said opening in said bent top portion of said cover plate and

that is operated to cause said pivot seat to pivot against action of said second biasing means in order to disengage said stop projection from said positioning wheel; and

a handle member having two upright tubular portions, each of which being formed with a series of longitudinally aligned positioning holes and being inserted slidably into said upright tubular sleeves on said cover plate, said handle member further having a horizontal second hook support extending across distal top ends of said tubular portions;

said strap mounting frame further having a pair of slide plates mounted slidably thereon and extending through a respective one of said elongated slots of said cover plate, each of said slide plates having an outermost end formed with a locking pin, and a third spring means for biasing said slide plates away from each other, said locking pin of each of said slide plates extending releasably into said radial hole of a respective one of said upright tubular sleeves and into a selected one of said positioning holes in a respective one of said tubular portions to retain said handle member at a desired degree of extension relative to said suitcase body;

said strap having a distal end which is provided with a hook unit that engages removably said first hook support on said strap mounting frame when said strap is wound fully around said shaft on said strap mounting frame, said hook unit engaging removably said second hook support on said handle member after said strap is pulled to bind an object carried on said foldable plate.

5,355,981

TORQUE TRANSMISSION DEVICE

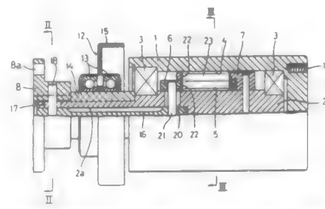
Kenichiro Itoh; Hiromi Nojiri, and Kenro Adachi, all of Iwata, Japan, assignors to NTN Corporation, Osaka, Japan

Continuation of Ser. No. 927,269, Sep. 17, 1992, abandoned. This application Jan. 3, 1994, Ser. No. 176,676

Claims priority, application Japan, Jan. 30, 1991, 3-009910; Feb. 22, 1991, 3-028281; Feb. 22, 1991, 3-028524; Feb. 22, 1991, 3-028655; Feb. 22, 1991, 3-028677

Int. Cl.[5] F16D *15/00, 43/20*

U.S. Cl. 192—35 7 Claims



1. A torque transmission device comprising an outer ring, an input shaft rotatably mounted in said outer ring, said outer ring and said input shaft being formed with engaging surfaces so as to be opposite to each other, a cage rotatably mounted between said outer ring and said input shaft and formed with pockets, engaging elements mounted in said pockets and adapted to engage said engaging surfaces when said input shaft and said cage rotate relative to each other, elastic members mounted in said pockets to urge said engaging elements toward a position where they do not engage, a control shaft mounted coaxially with respect to said input shaft, said control shaft being integrally coupled with said cage, and input member integral with said control shaft and coupled with said input shaft with a gap left therebetween in the direction of rotation, and a rotation delay means for causing a relative rotation between said control shaft and said input shaft.

5,355,982

STARTER DRIVE FOR INTERNAL COMBUSTION ENGINES

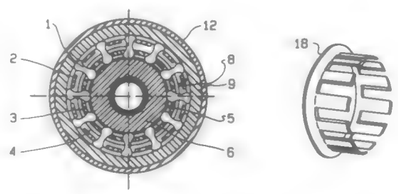
Dimitar B. Philipov, K.Drushba, Bl.42-A, Sofia, Bulgaria 1592; Valeri D. Baronov, K.Mladost 1-A,B1.514-4, Sofia, Bulgaria 1787; Gavril I. Ninov, Losenetz Street 16, Sofia, Bulgaria 1421; Ivan T. Penchev, K.Buckstone, M.Gortalov Street 12, Sofia, Bulgaria 1618, and Dimitar P. Vaikov, K.Drushba, B1.42-7, Sofia, Bulgaria 1592

Filed Apr. 27, 1993, Ser. No. 53,793

Claims priority, application Bulgaria, Apr. 28, 1992, 96 274

Int. Cl.[5] F16D *15/00*; F02N *15/00*

U.S. Cl. 192—45.1 11 Claims



1. A one-way clutch assembly comprising:

a plurality of hedging sprags having a predetermined shape

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and mounted circumferentially in an annular space between an inner ring and an outer ring, said rings having contact surfaces of circular cross-section;

an activating smooth band cage having a plurality of openings formed thereon, the sprags being inserted in said openings; and

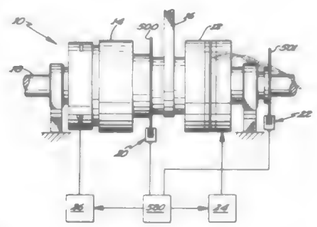
at least one outer cage and at least one inner cage, each cage having a rigid annular body, a strengthening rim disposed on one end of the body and a plurality of rectangular apertures opening toward the other end of the body; wherein the sprags are placed in the apertures for retaining said plurality of sprags in position.

5,355,983

ELECTRONICALLY CONTROLLED ROTATIONAL CONTROL APPARATUS

James V. Radomski, New Brighton, and Richard G. Christensen, Brooklyn Park, both of Minn., assignors to Horton Manufacturing Co., Inc., Minneapolis, Minn.

Filed Jul. 7, 1993, Ser. No. 88,240
Int. Cl.[5] F16D *23/04, 25/10, 43/286*
U.S. Cl. 192—56 F **16 Claims**



1. Apparatus for connecting and disconnecting a rotatable output to and from a rotatable input for transferring rotational motion between the input and the output, and while at least one of the input and output is continuously rotating, comprising, in combination: a first rotational control apparatus for selectively rotating the output independent of the relative rotational positions of the input and the output; a second rotational control apparatus for selectively rotatably relating the input and the output at select rotational positions of the input relative to the output; first means for detecting the rotational position of the input; second means for detecting the rotational position of the output; and means for controlling actuation of the first and second rotational control apparatus in response to the rotational positions of the input and the output as detected by the first and second detecting means allowing the first rotational control apparatus to rotate the output while the second rotational control apparatus is not actuated and to bring the output to general alignment with the input at the select rotational position of the second rotational control apparatus at which time the second rotational control apparatus is actuated to rotatably relate the input and the output at least at one select rotational position.

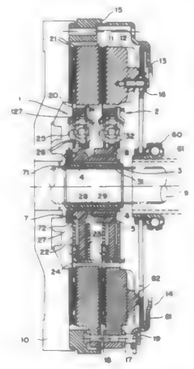
5,355,984

DAMPING DEVICE FOR A MULTIPLATE FRICTION CLUTCH

Thomas Grabis, Kirchardt, Fed. Rep. of Germany, assignor to Valeo, Paris, France

Filed May 13, 1993, Ser. No. 60,578
Claims priority, application France, May 14, 1992, 92 05870
Int. Cl.[5] F16D *13/68*
U.S. Cl. 192—70.17 **13 Claims**

1. A multi-plate friction clutch comprising: a first friction wheel having a first hub; a second friction wheel having a second hub, said friction wheels defining indexing means coupling them in rotation together; a common third hub having first teeth, with one of the friction wheels having second teeth cooperating with said first teeth and defining therewith a loose coupling means coupling the third hub to said one of the friction wheels; and a predamper operatively interposed between the third hub and the friction wheels, wherein one of said first and second hubs is elongated axially by an extension portion having third teeth formed externally thereon, the other one of said second and first hubs having internal fourth teeth meshing with the third teeth so as to define, with the third teeth, said indexing means, the elongated hub having said second teeth



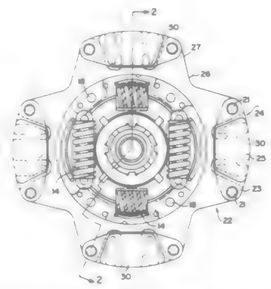
internally thereof whereby to be coupled directly to the third hub, the predamper and the third hub together constituting a sub-assembly with the predamper arranged on a side of the friction wheel having the elongated hub opposite the other friction wheel, at a first end of the third hub, the clutch further including a retaining ring located axially on the third hub proximate a second end of the elongated hub, and means on the elongated hub and predamper defining an axially releasable mating coupling between the predamper and the elongated hub.

5,355,985

CLUTCH FRICTION WHEEL, ESPECIALLY FOR A MOTOR VEHICLE CLUTCH

Jacques Thirion De Briel, Colombes, and André Dalbiez, Argenteuil, both of France, assignors to Valeo, Paris, France

Filed Jun. 16, 1993, Ser. No. 77,412
Claims priority, application France, Jun. 18, 1992, 92 07405
Int. Cl.[5] F16D *13/60*
U.S. Cl. 192—107 C **8 Claims**



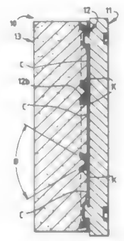
1. A clutch friction wheel comprising: a support having an inner portion and a plurality of lobes projecting radially from the inner portion and defining slots therein; a plurality of friction liners, each comprising a pair of friction pads, each lobe mounting a said pair of pads back-to-back on either side of the lobe; and a plurality of resilient means, each said resilient means being interposed between two associated said friction pads and disposed in the slots of the lobes; and a pair of shouldered pins associated with each said lobe and securing a first said friction pad of each pair to the associated lobe, said shouldered pins defining a clearance and mounting the other said pad of the same pair for movement within said clearance on the said pins, wherein said resilient means comprise a plurality of profiled fins projecting from said inner portion of the support so as to define a wavy support having a central zone with free circumferential end portions for contact with a first said friction pad of each pair, and marginal zones for contact with the other friction pad of the same pair, with one of said marginal zones projecting from, and being integral with, said inner portion of the support.

5,355,986

CLUTCH AND DISC BRAKE FRICTION ASSEMBLY

Chandi P. Biswas, Prattville, Ala., assignor to Prattville Manufacturing, Inc., Prattville, Ala.

Filed May 27, 1993, Ser. No. 68,437
Int. Cl.[5] F16D *69/04, 69/00*
U.S. Cl. 192—107 R **12 Claims**



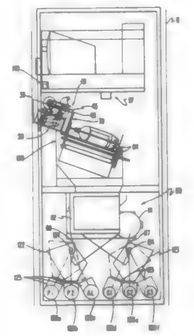
1. A clutch and disc brake friction assembly suitable for use on medium and heavy duty vehicles comprising a metallic shoe having an exposed backing surface with a plurality of relatively-spaced, integrally-formed protuberances projecting therefrom; an attachment lamina substantially overlying said backing surface and having a plurality of holes formed therein through which the distal ends of said protuberances extend, the distal end of each protuberance being enlarged whereby said attachment lamina is fixedly secured to said backing surface, said attachment lamina having a plurality of relatively-large openings relatively arranged so as to form a grid-like configuration, adjacent openings being separated from one another by relatively-narrow elongated segments each having sides which extend divergently away from the adjacent backing surface of said shoe; a high temperature adhesive lamina substantially overlying the shoe backing surface exposed between the elongated segments and the upper exposed surfaces of said attachment lamina, including the divergent sides of the elongated segments of said attachment lamina; and a friction lamina overlying said adhesive lamina and said attachment lamina whereby the divergent sides of said elongated segments and the adhesive lamina are embedded therein.

5,355,987

SINGLE STATION REVERSE VENDING MACHINE

Bruce H. DeWoolfson; Ken R. Powell, and David Alexander, all of Fairfax, Va., assignors to Environmental Products Corporation, Fairfax, Va.

Continuation of Ser. No. 851,494, Mar. 16, 1992, abandoned.
This application Oct. 6, 1993, Ser. No. 132,233
Int. Cl.[5] G07F *7/06*
U.S. Cl. 194—209 **40 Claims**



39. A method of collecting, densifying and storing recyclable commodities comprising:

inserting the commodities one at a time through insert means into a housing;

sensing at least one feature of each commodity adjacent the insert means;

separating the commodities according to the sensed feature after the sensing step;

densifying the commodities in a densification mechanism after the separating step;

sorting the commodities in a sorter mechanism after the densifying step according to the sensed feature;

removing the densified commodities for storage including receiving the densified commodities from the sorter mechanism and routing the densified commodities to a corresponding one of a plurality of storage compartments to maintain separation of the various densified commodities as sorted in the sorting step; and

coordinating the steps of sensing, separating, densifying, sorting, and removing so that a plurality of various commodities may be inserted while maintaining the separation of each type according to the sensed feature.

5,355,988

COIN SUPPLY DEVICE FOR COIN-OPERATED GAMING MACHINE

Masaharu Shirasawa, Tochigi, Japan, assignor to Kabushiki Kaisha Universal, Tochigi, Japan

Filed Oct. 15, 1991, Ser. No. 776,165
Claims priority, application Japan, Oct. 15, 1990, 2-277122
Int. Cl.[5] G07F *9/08*
U.S. Cl. 194—217 **10 Claims**

1. A coin supply device for automatically supplying a coin-operated machine with coins one by one, comprising:

a coin containing portion for receiving an overlapping plurality of manually-inserted coins;

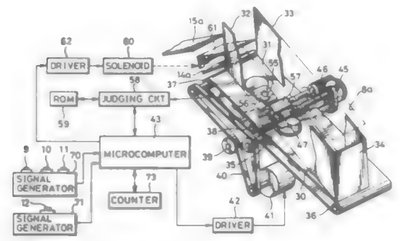
a first conveyor belt traveling about a first downstream roller and a second upstream roller, for conveying said coins supplied from said coin containing portion;

a first guide wall provided along a conveying direction of said first conveyor belt substantially perpendicular relative to said first conveyor belt for defining a direction of

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movement of said supplied coins from a lateral side thereof; and

a separating roller provided above and directly opposite said first downstream roller and defining with said first conveyor belt at a point where said first conveyor belt passes about said first downstream roller a spacing D satisfying



the relation $T<D<2T$ where T is the thickness of a predetermined coin or token, for rotation in the same direction as said first downstream roller thereby to convey a lowermost coin of said supplied overlapping coins on said first conveyor belt to said coin-operated machine and to push back coins overlying said lowermost coin.

5,355,989

METHOD AND SYSTEM FOR OPERATING ELECTRONIC COIN VALIDATORS

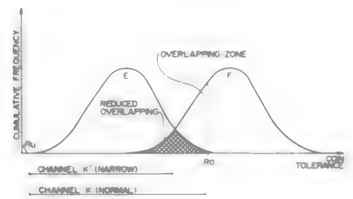
Jochen Best, Appen, Fed. Rep. of Germany, assignor to National Rejectors, Inc. GmbH, Fed. Rep. of Germany

Filed Jun. 25, 1992, Ser. No. 903,857

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1991, 4121034

Int. Cl.[5] G07D *5/08*

U.S. Cl. 194—317 **24 Claims**



1. A method for operating an electronic coin validator wherein at least one test probe generates a measuring signal if a coin passes said probe wherein further said measuring signal is digitized and compared with an upper and a lower reference value defining an acceptance band and wherein a validity signal is generated if said measuring signal lies within said acceptance band, said method being characterized in that at least a second acceptance band is also defined which falls within and is narrower than said first acceptance band, said measuring signal being compared with said second acceptance band, with said second acceptance band being selectively and alternatively used for the generation of said validity signal when said measuring signal of at least one previous coin is outside of said second acceptance band, whereas said first acceptance band is used if said measuring signal of at least one previous coin is within said second acceptance band.

5,355,990

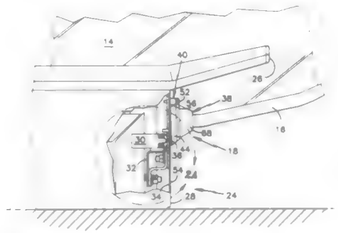
BALUSTRADE HANDRAIL ENTRY SAFETY DEVICE

John T. Pitts, West Hartford; Ary O. Mello, and Gerald E. Johnson, both of Farmington, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Nov. 29, 1993, Ser. No. 159,066

Int. Cl.[5] B66B *29/04*

U.S. Cl. 198—323 **12 Claims**



1. A handrail entry safety device for a balustrade having an enclosure and a handrail, comprising:

a collar; and

a base, having

an upper section with means for attaching said base to the enclosure of the balustrade, and

a lower section, having a seat for receiving said collar;

wherein said lower section and said collar receive and substantially surround the handrail; and

wherein said upper section is hingedly attached to said lower section above the handrail, thereby enabling said lower section and said collar to pivot together.

5,355,991

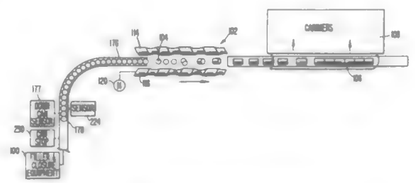
CONTAINER TOPPLING SYSTEM

John Baranowski, Bensalem, Pa., assignor to Campbell Soup Co., Camden, N.J.

Filed May 5, 1992, Ser. No. 878,693

Int. Cl.[5] B65G *47/24*

U.S. Cl. 198—412 **33 Claims**



1. A container toppling system, comprising:

feed means for feeding upright containers, each container having a straight cylindrical wall portion;

a pair of horizontally disposed screws, rotatable in opposite directions about respective axes, one said screw being disposed with its axis spaced a distance above the axis of the other, said rotating screws being laterally spaced and positioned such that, when the upright containers are fed into and between said screws by said feed means, said screws grasp the straight cylindrical wall portions, convey forward and topple the upright containers down and forward to form a line of spaced, laid down containers; and

conveying means for conveying the line of laid down containers generally longitudinally and away from said screws.

5,355,992

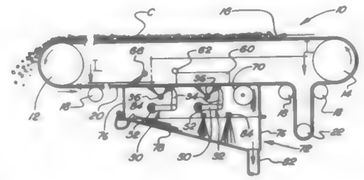
BELT CLEANING APPARATUS

Nazoor A. Baig, Grosse Ile; Allen T. Dean, Ida; Anthony E. Krolikowski, Royal Oak, and David W. Skiver, Petersburg, all of Mich., assignors to Utility Technical Services, Inc., Detroit, Mich.

Filed Oct. 15, 1993, Ser. No. 136,164

Int. Cl.[5] B65G *45/22*

U.S. Cl. 198—495 **20 Claims**



1. Apparatus for cleaning particulate material including dust from an elongated flexible belt of the type which is adapted to transport material such as coal on its material-supporting surface and which is of a composition which has surface cracks and collects such material in said cracks, comprising means for advancing said belt lengthwise along a predetermined path, a scraper blade having a scraping edge, means for supporting said scraper blade so that its scraping edge extends crosswise of the belt in scraping contact with the material-supporting surface of the belt as the belt is advanced, and means for directing liquid against the material-supporting surface of the belt and into the surface cracks adjacent to the point of contact of said scraping edge, said liquid-directing means comprising a liquid-deflecting surface of said scraper blade extending away from said scraping edge, and nozzle means for discharging said liquid against said liquid-deflecting surface to be deflected against the material-supporting surface of said belt as aforesaid.

5,355,993

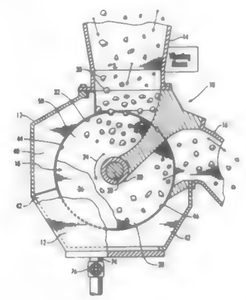
GROOVED DISK DRIVE APPARATUS AND METHOD FOR TRANSPORTING AND METERING PARTICULATE MATERIAL

Andrew G. Hay, 17244 S. Main St., Gardena, Calif. 90248-3130

Filed Jun. 11, 1993, Ser. No. 76,314

Int. Cl.[5] B65G *31/04*

U.S. Cl. 198—642 **25 Claims**



1. An apparatus for transporting particulate material comprising:

a transport duct having an inlet and an outlet downstream of said inlet, and a primary transport channel located between said inlet and said outlet, said primary transport channel being defined by a pair of opposed moving surfaces which move between said inlet and said outlet towards said outlet, at least one of said moving surfaces having a series of discontinuities, each of said discontinuities configured to define a transport facilitation zone contiguous with said primary transport channel such that particulate material within said transport facilitation zone is contiguous with particulate material within said primary transport channel, each of said discontinuities having a downstream facing drive surface;

motive means for moving said movable surfaces between said inlet and said outlet towards said outlet.

5,355,994

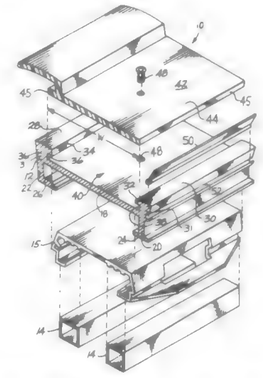
REPLACEABLE WEAR SURFACE FOR CONVEYOR SLATS

Raymond K. Foster, P.O. Box 1, Madras, Oreg. 97741

Filed Nov. 16, 1993, Ser. No. 153,366

Int. Cl.[5] B65G *25/00*

U.S. Cl. 198—750 **20 Claims**



1. A reciprocating slat conveyor, comprising:

a plurality of side-by-side, elongated, longitudinally movable conveyor slats;

each conveyor slat having opposite side portions, a top portion extending between the side portions, and a pair of laterally-spaced ridges, upstanding from the side portions;

each ridge including a base and a laterally, inwardly-directed slot in said base, adjacent the top portion, each slot extending the full length of the conveyor slat, and each slot opening towards and confronting the slot in the other ridge; and

an elongated wear plate for each conveyor slat adapted to rest on the top portion of the conveyor slat, between the ridges, each wear plate including opposite side edge portions which fit into the slots in the ridges, said engagement of the wear plates and the slots restraining the wear plates against sideways and vertical movement relative to the conveyor slats.

5,355,995

RECIPROCATING FLOOR CONVEYOR HAVING SEPARABLE FLOOR AND DRIVE PORTIONS

Raymond K. Foster, P.O. Box 1, Madras, Oreg. 97741

Filed Oct. 14, 1993, Ser. No. 136,295

Int. Cl.[5] B65G *25/00*

U.S. Cl. 198—750 **12 Claims**

1. A drive mechanism for a reciprocating floor conveyor, comprising:

a frame including a slat-supporting framework including a first end section, a second end section, a pair of laterally spaced-apart side frame members, and a drive beam win-

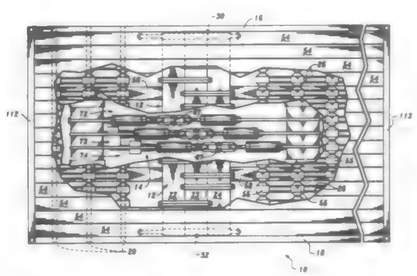
VOL 1167 ISS 3 OC 18 1994 UMI

dow located transversely between the side frame members and longitudinally between the two end sections;

support beams on the end sections of the framework, for supporting conveyor slats;

a plurality of elongated conveyor slats mounted adjacent each of the support beams, the conveyor slats being divided into at least two sets, and being movable along the support beams in a first direction for conveying a load and being retractable in an opposite direction;

a plurality of transverse drive beams within said drive beam window, one for each set of conveyor slats, each transverse drive beam being connected to its set of conveyor slats, each said transverse drive beam having opposite ends and a guide member for each end connected to the drive beam and. directed longitudinally of the conveyor;



a pair of longitudinal guide and support rails, one on each side of the conveyor, connected to the frame, the rails extending lengthwise of the conveyor and transversely of the drive beams;

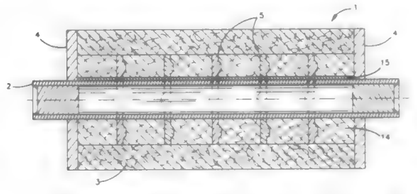
the guide members slidably and guidingly engaging said guide and support rails, whereby during use the transverse drive beams move back and forth longitudinally of the conveyor and the guide and support rails and, as they move, the guide members and the guide and support rails guide the transverse drive beams in their longitudinal travel, causing the two ends of each drive beam to move together, and the transverse drive beams, the guide members, and the guide and support rails transmit to the frame weight that is imposed on the conveyor slats in the region of the drive beam window.

5,355,996

WEAR RESISTANT CERAMIC FIBER CONVEYOR ROLLS

Charles M. Hart, Concord Township, Lake County, Ohio, assignor to Global Consulting, Inc., Painesville, Ohio

Filed Aug. 2, 1993, Ser. No. 100,785
Int. Cl.[5] B65G *13/02*
U.S. Cl. 198—780 **36 Claims**



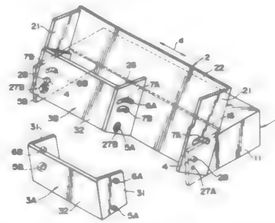
1. In a roller especially adapted for use in roller conveying articles, which articles are at substantially elevated temperature, or which articles are being conveyed through a zone of substantially elevated temperature, which roller comprises an inner shaft having around said shaft at least one dense and refractory, elevated temperature resistant annular cover member of highly axially compressed at least substantially ceramic fiber, the improvement in said roller comprising a cover member having on said shaft, a soft, ceramic fiber inner member and a hard, ceramic fiber outer member, with there being rigid, perforated disks spaced along said shaft and nestled within the soft ceramic fiber inner member, with said disks having outwardly projecting edges at perforations, which projecting edges are embedded in the soft ceramic fiber by axial compression of said cover member on said shaft between roller end plate means, said ceramic fiber outer member being hardened to provide an outer weight bearing roller surface for contact with roller conveyed articles.

5,355,997

STORAGE CASE FOR DISC-SHAPED RECORDING MEDIA

Shuichi Kikuchi, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 23, 1993, Ser. No. 157,368
Claims priority, application Japan, Nov. 25, 1992, 4-336747
Int. Cl.[5] B65D *79/00*
U.S. Cl. 206—45.13 **7 Claims**



1. A cassette case for containing a plurality of cassettes comprising:

a cover box having a front surface plate and right and left side plates each extending orthogonally from said front surface plate in a same direction;

an outer box having at least a back surface plate and a pair of side plates extending orthogonally from said back surface plate, and rotatably connected to said cover box between a first, closed position, in which a box type assembly is formed by said cover box and said outer box and a second, opened position, in which said back surface plate is abutted on the front surface plate of said cover box;

a plurality of inner boxes each rotatably mounted for forming rooms to accommodate the plurality of cassettes; and

means for providing independent rotational movement between said inner boxes relative to said outer box.

5,355,998

PACKAGING FOR A PLURALITY OF CYLINDRICAL CONTAINERS CONCEALING ONLY A BOTTOM PORTION OF THE CONTAINERS

Patrick Bienaime, Milly sur Therain, France, assignor to 4P Emballages France, Beauvais Cedex, France

Filed Jun. 16, 1993, Ser. No. 78,421
Claims priority, application France, Jun. 16, 1992, 92 07269
Int. Cl.[5] B65D *5/06*
U.S. Cl. 206—145 **17 Claims**

1. Packaging for a plurality of cylindrical containers, said packaging being made from a single blank of foldable material and comprising:

a bottom wall (**100**);

a top wall (**200**);

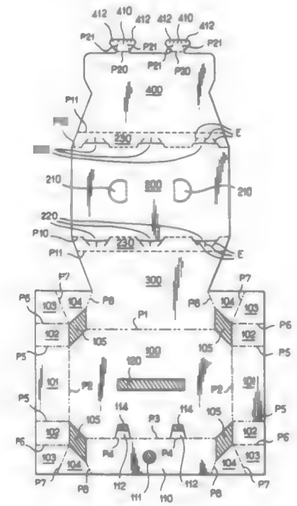
a side wall (**300**) hingedly connecting said top wall (**200**) to said bottom wall (**100**);

another side wall (**400**) hingedly connected to said top wall (**200**) on a longitudinal side of said top wall opposite to said side wall (**300**);

a continuous skirting (**101,102**) hingedly connected to said bottom wall (**100**) on opposite ends of said bottom wall (**100**);

a locking flap (**110**) hingedly connected to a fold line (P3) corresponding to a longitudinal side edge of said bottom wall (**100**) opposite from another longitudinal side edge of said bottom wall (**100**) connected to said side wall (**300**);

lateral support flaps (**103,104**) hingedly connecting said side wall (**300**) and said continuous skirting (**101,102**) at each of said opposite ends of said bottom wall (**100**) and other lateral support flaps (**103,104**) hingedly connecting said locking flap (**110**) to said continuous skirting (**101,102**) at each of said opposite ends of said bottom wall (**100**), said lateral support flaps being formed so as to be foldable to fix said continuous skirting (**101,102**) at each of said opposite ends of said bottom wall (**100**) in a position substantially transverse to a plane of said bottom wall so that said



packaging can enclose a group of containers with said continuous skirting covering bottom end portions of said containers; and

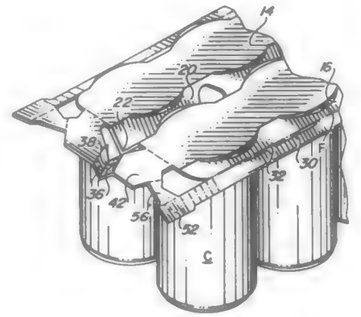
means for locking said other side wall (**400**) with a longitudinal side of said bottom wall (**100**) opposite to said side wall (**300**), said means for locking including at least one locking tab (**410,412**) projecting from the vicinity of a free longitudinal side edge of said other side wall (**400**) and at least one locking opening (**114**) associated with each of said at least one locking tab (**410,412**) and provided in said bottom wall (**100**) in the vicinity of said fold line (P3) corresponding to said side edge of said bottom wall (**100**) opposite from said other side edge of said bottom wall (**100**) and located between said bottom wall (**100**) and said locking flap (**110**), each of said at least one locking tabs including a central portion (**410**) and at least one wing (**412**) hingedly connected to said central portion so that each of said at least one locking tabs can be locked in a corresponding one of said at least one locking openings by temporary deformation of said at least one wing of said at least one locking tab.

5,355,999

CLIP-TYPE ARTICLE CARRIER

Robert L. Sutherland, Kennesaw, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Oct. 14, 1993, Ser. No. 136,523
Int. Cl.[5] B65D *71/12*
U.S. Cl. 206—153 **20 Claims**



1. A carrier containing adjacent rows of articles, each article having an upper portion which includes an outwardly projecting lip, comprising:

a top panel including two downwardly extending outer support sections and two converging downwardly extending inner support sections;

the inner and outer support sections containing slots through which at least portions of the projecting lips of the articles protrude;

the slots having lower surfaces engaging the underside of the protruding portions of the article lips to thereby support the articles;

side panels connected to the outer support sections; and

end panels connected to both the top panel and the side panels.

16. A blank for forming a clip-type carrier adapted to support adjacent rows of articles from outwardly projecting lips on the upper portions of the articles, comprising:

a sheet including two spaced parallel inner fold lines and two outer fold lines parallel to and outwardly spaced from the inner fold lines;

the sheet including outer support sections connected thereto along the outer fold lines and inner support sections connected thereto along the inner fold lines, the inner support sections connected to each other along a central fold line, thereby defining a top panel section;

each inner and outer fold line being interrupted by spaced slits forming slots in the support sections for receiving at least portions of the projecting lips of the articles to be carried;

end panel flaps connected to each end of the top panel section on opposite sides of the inner fold lines thereof by a fold line;

side panels connected to each of the outer support sections by a fold line;

glue flaps extending from each end of the side panels and being spaced from the end panel flaps; and

each end panel flap being connected to the adjacent glue flap by a web, the web being connected to the glue flap by a first web fold line and to the end panel flap by a second web fold line;

the end panel flaps being adapted to overlie the glue flaps of a carrier formed from the blank.

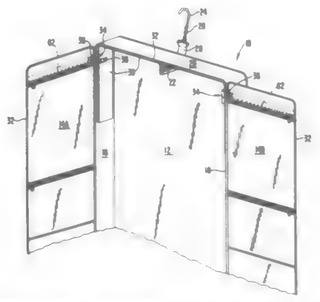
VOL 1167 ISS 3 OC 18 1994 UMI

5,356,000

GARMENT BAG WITH MULTI-POSITION FRONT FLAPS

Paul V. Sciciuna, Peandel, Pa., assignor to York Partners, L.P., Lambertville, N.J.

Filed Jul. 20, 1993, Ser. No. 93,726
Int. Cl.[5] B65D *85/18*
U.S. Cl. 206—282 8 Claims



1. A garment bag comprising major front and rear walls and minor side and to walls extending between the front and rear walls, the garment bag being formed principally of flexible material, having a hook adjacent to the top wall for suspending the bag therefrom and having a device mounted interiorly of the top wall for suspending bangers therefrom, the front, rear, and side walls extending longitudinally of the bag, the front wall being divided longitudinally to provide a pair of flaps extending longitudinally along corresponding side walls, the flaps being disposed adjacent to each other substantially in a common plane for closing the garment bag and being turnable away from each other, outwardly of the bag, to provide access to the interior of the bag, each of the flaps being provided with a hinge having a first arm attached to a corresponding flap and a second arm fixed relative to a corresponding side wall adjacent to the corresponding flap, each hinge having means interconnecting the arms thereof for turning movement of the first arm relative to the second arm about a hinge axis extending longitudinally of the corresponding side wall, and each hinge having a series of detents for releasably holding the first arm of the hinge at any one of a plurality of positions differently angulated relative to the second arm of the hinge, whereby the corresponding flap is releasably held in any one of a plurality of positions differently angulated relative to the remainder of the bag.

5,356,001

FOLDING SPORTS NET

Mary M. Luna, 703 W. Main St., Carson City, Mich. 48811

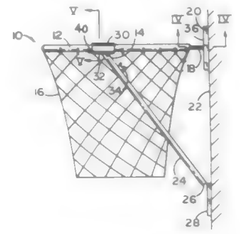
Filed Jan. 15, 1993, Ser. No. 5,025
Int. Cl.[5] B65D *85/20, 85/00*
U.S. Cl. 206—315.1 14 Claims

1. A collapsible storage container to be mounted to an upright support, comprising:

a ring tangentially interconnected through a living hinge to an integrally connected first mounting plate, said ring movable about said hinge between a first position generally parallel to the upright support and a second position at an angle with respect to the upright support;

at least one support arm having a first end interconnected through a living hinge to an integrally connected second mounting plate, and a second end interconnected through a living hinge to a C-shaped slip detachably receiving a portion of said ring, for supporting said ring at said second position, and said support arm to be stowed adjacent said first mounting plate by a latching structure with said ring in said first position;

said support arm, living hinge and second mounting plate are molded as an integral unit from a polymeric material; and



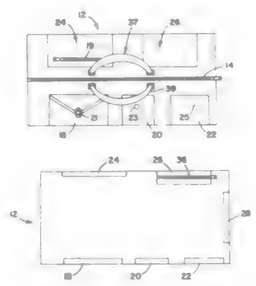
a soft container depending from said ring for receiving articles therein.

5,356,002

BASEBALL/SOFTBALL SPORT UTILITY BAG

Gregory C. Brown, Manchaug, Mass., assignor to Pamela Brown, Corona del Mar, Calif., a part interest

Filed Mar. 29, 1993, Ser. No. 38,916
Int. Cl.[5] A45C *3/00*
U.S. Cl. 206—315.1 9 Claims



1. A sport utility bag having a top panel, a bottom panel, first and second side panels, and first and second end panels thereby forming a primary storage area, said bag comprising:

handle means coupled to said bag for facilitating grasping and transporting said bag;

closure means for sealing said primary storage area;

a first elongate compartment extending substantially between said first and second end panels, said first elongate compartment having a shape to contain a first generally rod-shaped object; and

sealing means for securing said first generally rod-shaped object in said elongate compartment wherein said sealing means is supplied by the inherent elasticity of the material used to form said first elongate compartment so that said first rod-shaped object is securely held in position by said material.

8. A sport utility bag comprising:

a primary storage area formed from a plurality of interconnected panels of material;

closure means for sealing said primary storage area;

a plurality of individually accessible compartments on said utility bag with at least one compartment having access means on a bottom surface of said bag;

handle means coupled to said bag for facilitating grasping and transporting said bag; and

a first elongate section designed to securely carry a first generally rod-shaped object, said first elongate section having associated therewith at least two straps for securing said first rod-shaped object.

9. A sport utility bag comprising:

a primary storage area formed from a plurality of interconnected panels of material;

closure means for sealing said primary storage area;

a plurality of individually accessible compartments on said utility bag with at least one compartment having access means on a bottom surface of said bag;

handle means coupled to said bag for facilitating grasping and transporting said bag;

a first elongate section designed to securely carry a first generally rod-shaped object wherein said first elongate section comprises a separate elongate compartment to contain said first rod-shaped object; and

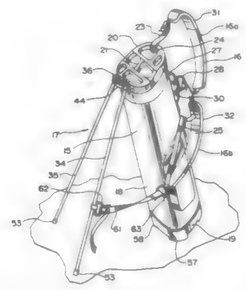
sealing means for securing said first rod-shaped object in said first elongate compartment wherein said sealing means is supplied by the inherent elasticity of the material used to form said first elongate compartment so that first said rod-shaped object is securely held in position by said material.

5,356,003

GOLF BAG WITH STAND

Jon J. Gretz, Springfield, Tenn., and James L. Shenoha, Lockport, Ill., assignors to Wilson Sporting Goods Co., Chicago, Ill.

Filed Jul. 23, 1992, Ser. No. 919,070
Int. Cl.[5] A63B *55/10*
U.S. Cl. 206—315.7 20 Claims



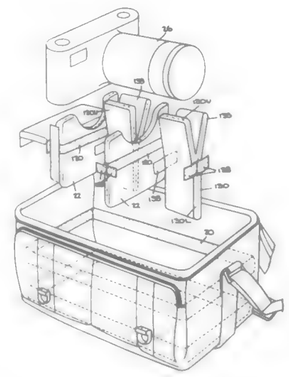
1. A golf bag having an elongated generally tubular body with a bottom and an open top, a bag strap attached to the golf bag for carrying the golf bag, the bag strap having a first end supported by the bag adjacent the top thereof and a second end attached to the bag intermediate the top and the bottom thereof, a pair of support legs, means for pivotally attaching each of the support legs to the bag for movement between a closed position in which the legs extend generally along side the bag and an open position in which the legs extend away from the bag, a leg strap attached to one of the legs, and a ring attached to the leg strap, the bag strap extending slidably through the ring for pulling the legs to the closed position when the bag strap is lifted, and a buckle attached to the bag intermediate the top and bottom thereof, the second end of the bag strap being attached to the buckle, said ring being releasably engageable with said buckle for holding the legs in the closed position when the bag strap is not lifted.

5,356,004

CAMERA BAG DIVIDER SYSTEM

Robert Weinreb, 510 Broadway, New York, N.Y. 10012

Continuation of Ser. No. 882,431, May 13, 1992, abandoned.
This application Sep. 10, 1993, Ser. No. 119,886
Int. Cl.[5] B65D *85/38*
U.S. Cl. 206—316.2 16 Claims



1. A case for photographic accessories, comprising:

(a) a base wall;

(b) a plurality of upstanding walls extending away from, and bounding an interior space with, the base wall;

(c) a lid wall mounted on the case for movement between open and closed positions; and

(d) divider means for compartmentalizing the interior space, including a flexible divider having

(i) a lower section mounted on, and bounding a lower compartment for receiving a first accessory with the base wall, and

(ii) an upper resilient section connected to, and movable relative to, the lower section between a covering position in which the upper section at least partially covers the lower compartment when a second accessory is positioned in the case on the upper section, and an access position in which the upper section at least partially uncovers the lower compartment when the second accessory is removed from the case, said upper section being at least partly constituted of a resilient material having an inherent resilience and constantly biasing itself due to said inherent resilience toward the access position, and wherein said upper resilient section, moves toward the access position, with removal of said second accessory, said upper resilient section being configured and positioned such that it does not interfere with the lid wall, in the closed position, whereby said case is closeably utilizable, with the upper resilient section remaining in said access position.

5,356,005

SINGLE USE DENTAL MAINTENANCE DEVICE

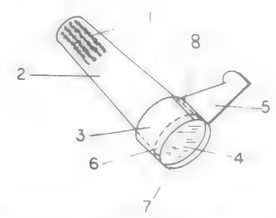
David T. Burrello, Box 186, Sea Cliff, N.Y. 11579

Filed Dec. 6, 1993, Ser. No. 161,583
Int. Cl.[5] A61H *7/00*; A46B *5/04*
U.S. Cl. 206—362.4 5 Claims

1. A single use dental maintenance device comprising a non-porous elastic tube of a size to fit over the index finger, said tube being closed at one end and open at the other end, rows of bristles attached to said tube proximate said closed end

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at the area where the ball of the finger is located, means adhering said open end of said tube to the inside surface of a paperboard cylinder, means for sealing the cylinder at each end for packaging the adhered tube therein.

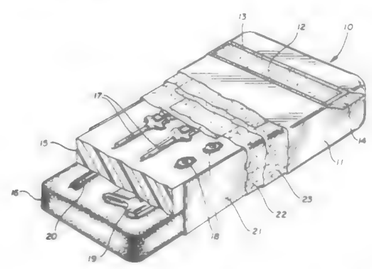


5,356,006

STERILE PACKAGE FOR SURGICAL DEVICES

Marvin Alpern, Glen Ridge, N.J.; Robert Cerwin, Pippersville, Pa.; Michael O'Toole, Suffern, N.Y.; Teresa M. Simons, Milltown, and Deborah M. Transue, Bridgewater, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Dec. 16, 1992, Ser. No. 991,602
Int. Cl.[5] B65D *83/10*
U.S. Cl. 206—363 **15 Claims**



1. A sterile package for a surgical instrument, said package comprising:

a closed cell foam member, said foam member having a density of from 2 pounds per cubic foot to 6 pounds per cubic foot

at least one surgical instrument disposed on and held in position by said foam member,

at least one sterile overwrap member enclosing said foam member and said instrument, and

a second non-sterile overwrap member enclosing said sterile overwrap member.

5,356,007

PACKAGE OF SHIRRED FOOD CASING AND METHOD

Raymond A. Feldt, Hickory Hills, Ill., assignor to Viskase Corporation, Chicago, Ill.

Filed Aug. 27, 1993, Ser. No. 112,527
Int. Cl.[5] B65D *71/06, 85/20*
U.S. Cl. 206—443 **22 Claims**

1. A package of tubular shirred sticks of food casing comprising:

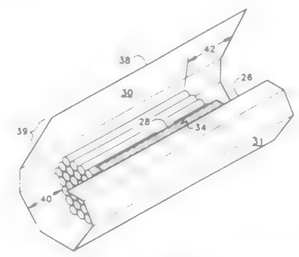
a) a plurality of tubular shirred sticks of food casing all of substantially equal diameter arranged in a stack with the longitudinal axes of the sticks parallel to form sides of said stack and the stick ends coplanar to form ends of said stack, said sticks being arranged in rows piled one on another with the number of rows and sticks in each row being arranged to provide said stack with a preselected shape in transverse cross section;

b) a retainer disposed in tension transversely around said stack and pressing radially inward against the periphery of said stack for bundling said sticks together and securing the shape of said stack, said retainer having an inner surface disposed against the stack periphery and an outer surface;

c) said retainer having a first end and an opposite second end which extend generally parallel to the longitudinal axes of said sticks and which overlap along one side of said stack, said first end defining an underlayer against said stack and said second end defining an overlayer superimposed on said underlayer;

d) connector means releasably uniting said underlayer to said overlayer, said connector means being in direct contact with the inner surface of said overlayer and with said underlayer for holding said retainer first and second ends together and maintaining said retainer in tension about said stack; and

e) said overlayer having an outer margin portion extending along said second end substantially parallel with said connector means which is free of said connector means and loose from said underlayer, and said outer margin portion comprising means for grasping and pulling said overlayer for separating said connector means to open said package.



16. A method of forming a package of containing a plurality of tubular shirred sticks of food casing comprising the steps of:

a) arranging a plurality of tubular shirred sticks of food casing, each substantially the same diameter, in a stack with the longitudinal axes of the sticks parallel to form sides of the stack and the stick ends coplanar to form ends of the stack, the sticks being in rows piled on one another with the number of rows and number of sticks in each row arranged to provide said stack with a preselected shape in transverse cross section;

b) disposing a retainer in tension transversely around the sides of the stack to exert a radial inward pressure on the stack for bundling the sticks together, the retainer having an inner surface disposed against the stack periphery and an outer surface;

c) overlapping opposite ends of the retainer, a first of the overlapped ends defining an underlayer against the stack and a second of the ends defining an overlayer superimposed on the underlayer;

d) releasably connecting the inner surface of said overlayer to said underlayer for holding the opposite ends of the retainer together and maintaining the retainer in tension about the stack; and

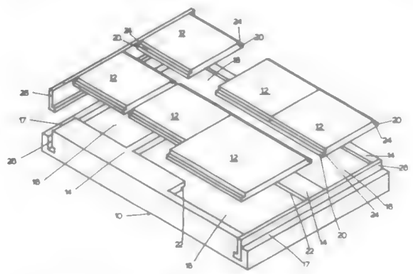
e) providing an outer margin portion of the overlayer extending along said second end which is free and loose from the underlayer, the outer margin portion comprising means for grasping and pulling the overlayer and separating it from the underlayer to open the package.

5,356,008

COMPOSITE COASTER TRAY

Yueh-Min Chung, 1500 Campus Dr., Berkeley, Calif. 94708

Filed Jul. 19, 1993, Ser. No. 93,015
Int. Cl.[5] B65D *85/62*
U.S. Cl. 206—449 **2 Claims**



1. A composite coaster tray comprising:

a base tray for supporting a plurality of coaster units, said base tray including a plurality of bracing bars being spaced to define channels there between, each channel comprising an upper supporting surface for supporting one or more coaster units, each said channel having an open end edge;

a plurality of said coaster units, said coaster units being sized for being received in said channels and for being supported by said supporting surface, each coaster unit having opposed edges;

engaging means for slidably engaging the coaster units to the bracing bars and for maintaining the coaster units supported on the respective supporting surfaces of the channels, said engaging means including facing, opposed sliding grooves defined by said bracing bars, and including projecting tongues defining an angled notch on each of said opposed edges, said tongues adapted to be received in said grooves for sliding movement in said channel;

locking means for selectively preventing said coaster units from being removed from said channels at respective end edges until the locking means is unlocked;

whereby when the coaster units are in the base tray, the composite tray may support together a complete arrangement of a serving set of pots and cups, and when the coasters are detached from said base tray, the coasters may be served individually with individual pots or cups.

5,356,009

CUSHIONED OVERPACK FOR CONTAINING HAZARDOUS SUBSTANCES

Hyman R. Lubowitz, Rolling Hills, Calif., assignor to Environmental Protection Polymers, Inc., Rolling Hills Estates, Calif.

Continuation-in-part of Ser. No. 58,402, Jun. 8, 1987, Pat. No. 5,137,166. This application Aug. 11, 1992, Ser. No. 929,890
Int. Cl.[5] B65D *90/04, 43/14, 81/00*
U.S. Cl. 206—524 **2 Claims**

1. A packaging assembly for containing a hazardous article, comprising:

an overpack defining a chamber for containing said article, said overpack having a rotationally molded wall with a composition of thermoplastic resin;

a filler carried by the inner surface of said wall, said filler including a chemically functional group selected from hydroxyl, amino and carboxyl;

a foam cushion positioned within said chamber, said cushion formed by a pour-in-place process which chemically bonds said cushion to said filler and said cushion having an outer shape conforming to the shape of said chamber; and



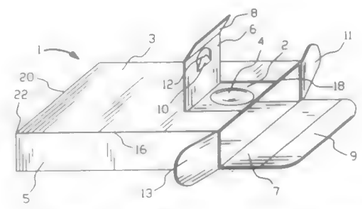
a closure formed of thermoplastic resin and spin welded to said wall of said overpack for hermetic sealing thereof.

5,356,010

CONTAINER WITH BLISTER PACK OPENER

Jack Weinstein, Manchester Township, Ocean County, N.J., assignor to Primary Delivery Systems, Inc., Easton, Pa.

Filed Jan. 21, 1993, Ser. No. 6,528
Int. Cl.[5] B65D *83/04*
U.S. Cl. 206—532 **16 Claims**



1. A medication container for a softpack of individually segregate dosage units of medication, which comprises:

(a) a package having a generally rectangular shape, having a flap type opening and having at least one flat surface, said opening being of predetermined size for the insertion and removal of a softpack of individually segregate dosage units of medication, the softpack having a softpack backing disposed adjacent to the individually segregated dosage units;

(b) a softpack puncturing mechanism having a base segment and a top segment, said top segment and said base segment being hingedly connected to one another, said base segment having an orifice located therein which is of a predetermined size to receive a dosage unit section of a softpack, and said top segment having a protrusion thereon protruding at approximately a right angle therewith, said protrusion being of predetermined size and shape to nest within said orifice of said bottom segment, and having a predetermined height and strength, the predetermined height relating to the dimensions of the softpack, the dosage unit, and the softpack backing so as to puncture the softpack backing of a dosage unit section of the softpack and so as to retain space between the protrusions and the dosage unit when said dosage unit section is placed within said orifice of said bottom segment while said top segment is hingedly pushed downwardly, the predetermined strength being greater than the strength of the softpack backing, said puncturing mechanism being attached to said flat surface of said package.

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5,356,011

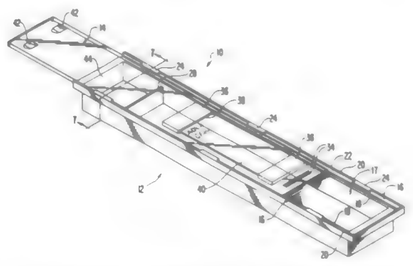
MEDICATION DISPENSING CONTAINER

Jerome M. Romick, Artromick International, Inc., 4800 Hilton Corp. Dr., Columbus, Ohio 43232

Continuation-in-part of Ser. No. 970,863, Nov. 3, 1992, Pat. No. 5,299,711. This application Mar. 22, 1993, Ser. No. 35,085

Int. Cl.[5] B65D *83/04*

U.S. Cl. 206—534 5 Claims



1. A dispenser for storing and dispensing medical preparations, comprising:

a container having a tray construction with an open top portion, said container being adapted to store and dispense medical preparations and including guide means formed at least along opposing marginal longitudinal sides thereof which are positioned adjacent said open top portion; and,

slidable covering means for covering and uncovering said container, said covering means having edge means for slidably cooperating with said guide means so as to enable said covering means to slidably move between covering and non-covering positions with respect to said container;

said covering means including a pair of generally longitudinally spaced apart and opposing recess means for defining recesses into which opposed cooperating end portions of a pliable indicia bearing member may be inserted, secured, and replaced with another of such indicia bearing members;

each of said recess means including entry preventing means for obstructing the entry of unit dosage forms or their containers into a bottom opening in said recess means.

5,356,012

CONTAINER WITH COUNTER

Yi Tang, and Hong Yang, both of 11140 Rose Ave. #414, Los Angeles, Calif. 90034

Filed May 6, 1993, Ser. No. 59,216

Int. Cl.[5] B65D *83/04*; G09F *9/40*

U.S. Cl. 206—534 3 Claims

1. A container apparatus constructed for recording the opening and closing thereof, comprising: an outer cylinder having a window therethrough, an axis, a closed bottom end, and an open top end,

a cap for fitting onto said open top end of said outer cylinder,

an inner cylinder coaxially and rotatably positioned within said outer cylinder,

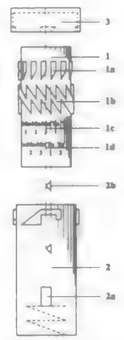
plural readings annularly disposed around an outer surface of said inner cylinder for sequential registration with said window,

an upper annular saw-tooth structure and a lower annular saw-tooth structure mounted around said outer surface of said inner cylinder, said saw-tooth structures spaced apart along said axis, said saw-tooth structures having opposite saw-tooth edges with an equal number of teeth, said saw-tooth edges being radially offset from each other,

a spring disposed within said outer cylinder for urging said inner cylinder outwardly therefrom, and

a tenon mounted on an inner surface of said outer cylinder for alternately engaging and partially rotating each of said saw-tooth structures when said inner cylinder is cycled inwardly and outwardly,

whereby when said cap is fitted onto said outer cylinder, said inner cylinder is pushed in by said cap and said upper annular saw-tooth structure is pushed into engagement with said tenon so that one of said readings is displayed through said window, and when said cap is removed, said spring will urge said inner cylinder outwardly until said lower annular saw-tooth structure comes into engagement with said tenon and is caused to rotate partially about said axis in a direction determined by said lower saw-tooth



structure, and when said cap is replaced onto said outer cylinder, said cap will push in said inner cylinder until said upper annular saw-tooth structure comes into engagement with said tenon and is caused to partially rotate in said direction further about said axis so that another one of said readings is displayed through said window, each consecutive opening and closing cycle of said cap will cause said inner cylinder to partially rotate in said direction and sequentially display said readings one at a time through said window, thereby the opening and closing of said container is recorded by the sequential displaying of said readings.

5,356,013

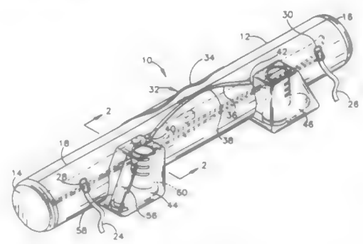
SKI AND BOOT BAG

David M. Deioma, and David B. Deioma, both of 35 Greentree Rd., Chagrin Falls, Ohio 44022

Filed Sep. 17, 1993, Ser. No. 123,450

Int. Cl.[5] A45C *3/00*; B65D *85/00*

U.S. Cl. 206—579 14 Claims



1. A luggage bag including a main general tubular portion and ends on the main portion, the main portion having a length greater than its circumference,

a carrying means fastened along the main portion of the bag; the carrying means having a support area so that the luggage bag when generally evenly loaded is adapted to be generally balanced when supported at the support area;

a closure means on the luggage bag for allowing opening and closing of the bag in order to load and unload it;

at least two satellite compartments attached to the main portion of the luggage bag, spaced from each other along the length of the bag, the spacing of satellite compartments being at least the width of one of its ends of the main portion so that a person carrying the bag at the support area will be generally longitudinally offset from the satellite compartments so that the person will not abut against any of the compartments.

13. A combination ski and boot bag comprising:

an elongated generally tubular shaped main portion for holding skis;

ends on the main portion;

a closure along at least part of the main portion;

a carrying means having a support area near an area at about one-half the length of the main portion;

at least two satellite boot compartments connected to the outside of the main portion, the satellite boot compartments being spaced from each other and generally spaced about equidistant from the support area along the length of the main portion;

the satellite boot compartments having a closure to allow boots to be placed therein;

the boot compartments further having a bottom portion located so that boots will stand up when in the boot compartment and set on a horizontal surface; and

the space between the satellite boot compartments being at least as wide as the bottom portion of the boot compartment on which the boot rests so that a person carrying the bag by the support area will have his body longitudinally offset from the compartments so that the person does not abut against any of the compartments.

5,356,014

CONTAINER FRAME FOR USE WITH A PALLET TO FORM A STORAGE AND TRANSPORT CONTAINER

Kurt Berner, Muhen, Switzerland, assignor to Ecoboard Limited, Jersey

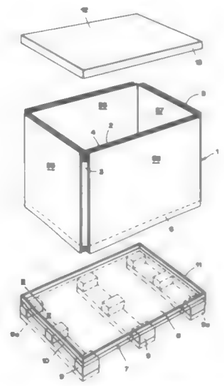
PCT No. PCT/CH91/00074, § 371 Date Nov. 12, 1991, § 102(e) Date Nov. 12, 1991, PCT Pub. No. WO91/14631, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 26, 1991, Ser. No. 776,228

Claims priority, application Switzerland, Mar. 26, 1990, [illegible]

Int. Cl.[5] B31B *1/62*; B65D *19/00*, *5/35*

U.S. Cl. 206—600 11 Claims



1. Container frame for use with a pallet to form a storage and transport container made from a collapsible blank of recyclable cardboard material, characterized in that it comprises wall elements (55, 56, 57, 58) constructed of at least three layers, a middle layer (3) joining the wall elements with each other and having a smaller width than the outer layers (2, 4) and thereby forms an insertion slot (6) at least on one side of the container wall.

5,356,015

MAGNETIC SEPARATION PROCESS

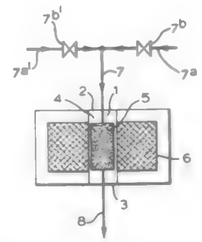
Cornelis W. Notebaart, and Frank P. Van Der Meer, both of Arnhem, Netherlands, assignors to Shell Research Limited, London, United Kingdom

Filed May 26, 1992, Ser. No. 887,499

Claims priority, application United Kingdom, May 24, 1991, 9111228

Int. Cl.[5] B03C *1/00*

U.S. Cl. 209—214 14 Claims



1. A process for separating relatively magnetic mineral particles P_m having magnetic susceptibilities χ_m, with $\chi_m > 0$, from relatively non-magnetic particles P_n, having magnetic susceptibilities χ_n, with $\chi_m > \chi_n$, all said particles being suspended in a liquid stream, the process comprising the steps of:

providing a separating container having an inlet and an outlet and a passageway formed therebetween;

providing an arrangement of magnetizable matrix elements in the passageway;

magnetizing the arrangement of magnetizable matrix elements to a predetermined degree by means of a magnet located adjacent to the passageway; and

supplying the liquid stream to the passageway at a predetermined velocity, wherein

the supplying velocity and magnetizing degree are such that vortex flow patterns are created in said stream at the downstream side of the matrix elements, and that depositions of particles are obtained predominantly upon the downstream side of the matrix elements, and

from all said particles magnetic particles P_m being captured to an effective amount upon the downstream side, thereby resulting in a high grade deposition.

5,356,016

BABY NURSING BOTTLE

Warren T. Wiedemann, 62 Spring Valley Rd., Paramus, N.J. 07657

Filed Nov. 20, 1991, Ser. No. 796,071

Int. Cl.[5] A61J *9/00*

U.S. Cl. 215—11.3 19 Claims

1. A baby nursing bottle for being used in conjunction with collapsible liquid containers such as small disposable plastic bags, said baby nursing bottle comprising:

a hollow cylindrical elongate main body portion that defines an inner surface and an outer surface and respective circular end portions;

a pair of longitudinal slots through said main body portion,

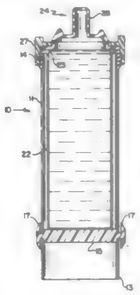
VOL 1167 ISS 3 OC 18 1994 UMI

said slots extending substantially along the length of said main body portion;

said inner surface between said slots being entirely smooth;

a longitudinally movable plunger member positioned within said main body portion; and

a pair of tab handles connected to said plunger and extending outwardly through said slots adjacent said outer surface of



said main body portion for moving said plunger longitudinally within said main body portion when said tab handles are engaged and moved along said outer surface of said main body portion;

said tab handles being connected to said plunger by connecting means extending radially outwardly from said plunger, said connecting means being free of contact with said inner surface at all times.

5,356,017

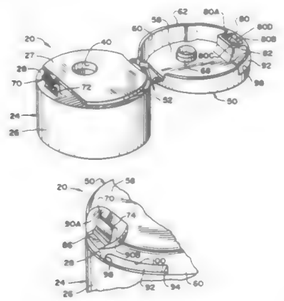
CHILD RESISTANT CLOSURE WITH RECESSED LATCH

Robert D. Rohr, Eagle; Leo R. Imbery, Jr., Mukwonago, and Richard J. Daniels, Caledonia, all of Wis., assignors to Aptar Group, Inc., Crystal Lake, Ill.

Filed Oct. 28, 1992, Ser. No. 967,759

Int. Cl.[5] B65D *55/02*

U.S. Cl. 215—216 **13 Claims**



1. A child resistant closure for an opening to a container interior, said closure comprising:

a base for attachment to said container and having a deck defining a discharge aperture;

a lid having a bottom surface for engaging said base;

a hinge connection for hingedly connecting said lid to said base for movement between open and closed positions;

said base having a periphery, said base having a portion extending from said hinge connection, said base having a resilient locking lever that projects from said base deck at a location inwardly of the periphery of said base and that defines a shoulder, said lever being deflectable in a rearward direction;

said lid having a periphery, said lid having a portion extending from said hinge connection, said lid defining an aperture inwardly of the periphery of said lid for receiving said lever when said lid is closed to reduce the exposure of the lever to engagement with a child's teeth, said lid defining a latch surface that is adjacent said aperture and that lies under said base lever shoulder when said lid is closed, said lid having an outwardly facing top surface, said lid defining a finger access recess around, and extending from, said aperture, said recess being adjacent said lid periphery to accommodate insertion of a finger from the side of said closure and against said locking lever, said recess increasing in lateral size with increasing distance away from said lid bottom surface, said finger access recess having smoothly curving lateral walls extending upwardly from said aperture to said top surface laterally of said aperture generally transversely of said rearward direction to (1) facilitate the slippage of a child's teeth on said closure and (2) limit the size of said recess thereby minimizing the engagement of a child's teeth with said lever, the periphery of said lid defining a finger-engaging surface laterally offset relative to said lid aperture and extending progressively outwardly with increasing distance from said lid bottom surface thereby to require the use of separate fingers to operate said lever and to lift said lid via said finger-engaging surface; and

said portion of said base that extends from said hinge connection being configured to project peripherally outwardly at least as far as said lid bottom surface when closed and said portion of said lid periphery that extends from said hinge connection being free of overhanging peripheral surfaces of sufficient depth to be liftingly engaged by a child's teeth.

5,356,018

PLASTICS CLOSURE WITH WARRANTY ELEMENT

Werner F. Dubach, Maur, Switzerland, assignor to Createchnic AG, Switzerland

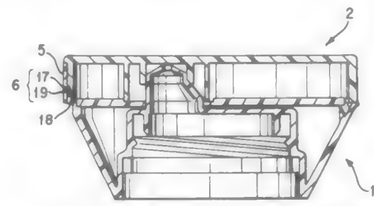
PCT No. PCT/CH92/00020, § 371 Date Oct. 13, 1992, § 102(e) Date Oct. 13, 1992, PCT Pub. No. WO92/13774, PCT Pub. Date Aug. 20, 1992

PCT Filed Jan. 30, 1992, Ser. No. 941,084

Claims priority, application Switzerland, Feb. 12, 1991, 422/91-7

Int. Cl.[5] B65D *47/08*

U.S. Cl. 215—237 **5 Claims**



1. In a plastic closure comprising a base part (1) fixed on a container (B) and a cap (2) connected to said base part (1) in one piece by a hinge (4), a gripping area (3) located diametrically opposite the hinge (4) at least partially covered by a security element (5) disposed on the base part (1), and securing means (6) on said cap (2) and on the security element (5), said securing means (6) in interlocking connection with each other prior to a first time the closure is opened, the improvement comprising: said securing means (6) comprising interlocking means (19, 27) disposed on the security element (5) and directed towards a casing wall of the cap (2) which fit interlockingly with at least one corresponding recess (17, 29) in the cap (2) aligned therewith, said gripping area (3) formed by a depression in said casing wall of the cap (2) wherein a top edge of said cap extends radially outwardly beyond at least a portion of said security element (5), and said at least one corresponding recess (17, 29) disposed within said gripping area (3) of the cap (2).

5,356,019

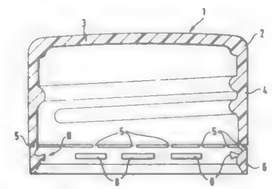
TAMPER INDICATING PLASTIC CLOSURE

Ronald L. Kelly, Chester, Va., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Filed Oct. 14, 1992, Ser. No. 961,134

Int. Cl.[5] B65D *41/34*

U.S. Cl. 215—252 **8 Claims**



1. A tamper-evident closure cap for a container of the type that has a neck portion (9) and a locking surface (13) protruding radially outwardly from the neck portion (9), comprising:

a plastic cap (2) having a base (3) and a cylindrical skirt portion (4) attached to said base (3);

a tamper-indicating band (6) at least partially detachably mounted to said skirt portion (4);

a plurality of blocking elements (8), each of said blocking elements (8) comprising a substantially nonflexible solid mass that defines an upper retaining surface (14) and a lower supporting surface (12);

a plurality of flexible hinges (7) extending radially inwardly from an inner surface of the tamper-indicating band, each of said hinges (7) being connected to said tamper-indicating band (6) at a first end and to one of said blocking elements (8) at a second end, said hinges (7) being substantially less thick than said blocking elements (8);

wherein said blocking elements (8) are constructed and arranged so that each (i) pivots upwardly on its respective hinge (7) into a recess in the tamper-indicating band by contact of said lower supporting surface (12) with said locking surface (13) during installation of said cap (2) on a neck portion (9) of a container; and (ii) pivots downwardly beneath said locking surface (13) once said cap (2) is sufficiently installed so that said locking surface (13) is positioned above the blocking element (8), and wherein said lower supporting surface (12) is positioned at an angle with respect to said upper retaining surface (14), said angle being substantially in the range of 60°–100°, and blocking elements (8) are sufficiently thick that, in the installed position, said upper retaining surface (14) and said lower retaining surface (12) are sufficiently close to said locking surface (13) and an inner surface of said tamper-indicating band (6), respectively, that said blocking element (8) cannot be bent to be pried back with a knife or other thin object to slip said tamper-evident band (6) back over said locking surface (13) by one who is attempting to overcome the tamper-evident protection of said closure cap.

5,356,020

CONTAINER CLOSURE WITH TAMPER EVIDENT BAND

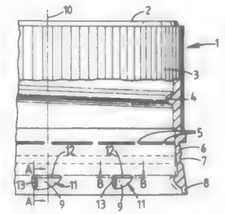
Nigel Thompson, Norton, United Kingdom, assignor to MCG Closures Limited, England

Continuation of Ser. No. 27,751, Mar. 8, 1993, abandoned. This application Feb. 25, 1994, Ser. No. 202,666

Claims priority, application United Kingdom, Mar. 12, 1992, 9202375.0

Int. Cl.[5] B65D *41/34*

U.S. Cl. 215—252 **4 Claims**



1. A container closure formed of plastics material, comprising:

(a) a crown;

(b) an annular skirt depending from said crown and having a screw thread on an inner surface thereof;

(c) said skirt containing a circumferential line of weakness defining a tamper-evident ring depending from said skirt, said line of weakness including a plurality of spaced frangible bridges adapted to transmit rotational forces arising between said ring and said skirt during an on-screwing process and for connecting said ring with said skirt; and

(d) a plurality of integral protrusions extending radially inwardly from an inner surface of said ring, said protrusions being annularly spaced by a distance greater than the length of each protrusion, each protrusion having

(1) an abutment surface facing said crown and inclined slightly away from the crown in a radially inward direction; and

(2) an inwardly facing cam surface inclined away from said crown, said cam surface having a compound curve including an inclined surface which tapers downwardly from the crown and toward a screw-on direction of the closure and a sharp re-entrant inclined surface which tapers toward a screw-off direction, whereby when the closure is rotated in a screw-off direction, said ring rotates with said skirt until said bridges are fractured owing to axial and rotational forces generated on said protrusions to separate said ring from said skirt.

5,356,021

CONTAINER CLOSURE WITH MULTIPLE LINER SEALS

Stephen W. McBride, Brownsburg, and Lawrence M. Smeyak, Lafayette, both of Ind., assignors to H-C Industries, Inc., Crawfordsville, Ind.

Filed Sep. 30, 1993, Ser. No. 129,262

Int. Cl.[5] B65D *53/00*

U.S. Cl. 215—349 **4 Claims**

1. A multiple seal closure for a container, comprising:

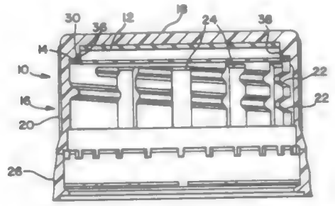
a plastic closure cap having an imperforate circular top wall portion, and a depending annular skirt portion depending from said top wall portion and having an internal thread formation thereon for engagement with a like thread formation on the container, said closure cap including a continuous annular abutment generally at the juncture of said top wall portion and said skirt portion;

a molded-in first circular, resilient seal element positioned

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within said plastic cap adjacent to said top wall portion; and

a second circular, resilient seal element positioned by insertion within said plastic cap adjacent to and separable from said first seal element, so that upon an initial application to the container, said second seal element effects sealing of said container, with said first sealing element being configured for effecting sealing of the container upon a subsequent application of said closure in the event said second seal element is removed from said plastic cap,



said second sealing element comprising a disk having an outside diameter greater than an inside diameter of said annular abutment so that when said closure is applied to the container, said second sealing element cooperatively engages said annular abutment to deform said second sealing element from an initially generally flat state and to conform said second sealing element about the container to form a top/side seal of the container.

5,356,022

CONTAINER FOR TOXIC WASTE

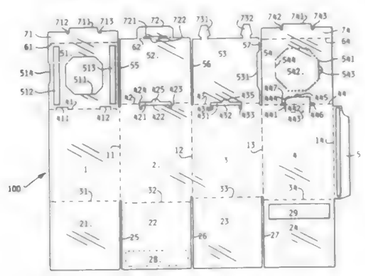
Steven V. Tipps, 9224 Highedge Cir., Dallas, Tex. 75238

Filed Apr. 22, 1993, Ser. No. 52,196

Claims priority, application Switzerland, Apr. 24, 1992, 01326/92-1

Int. Cl.[5] B65D *5/10, 5/60*

U.S. Cl. 220—404 9 Claims



1. A waste container comprising:

a. a carton shaped generally as a parallelepiped having opposing lateral sides and a top, each lateral side comprising a bottom part with a bottom folding line having a flap along the bottom folding line and an upper part with an upper folding line having a flap along the upper folding line; and

b. an internal wrapping within the carton, the wrapping having a top, wherein

at least one of the upper flaps includes an opening for insertion of waste into the internal wrapping,

at least one of the upper flaps includes adhesive strips around the opening for attaching the top of the wrapping inside the opening, and

at least one of the upper flaps includes an end with a closing and supporting tab that cooperates with the opposite side of the container.

5,356,023

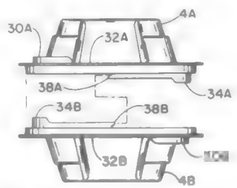
ROSE BOX WITH INTERCHANGEABLE LID AND BASE

Calvin S. Krupa, Medina, Minn., assignor to Ultra Pac, Inc., Rogers, Minn.

Filed Nov. 4, 1993, Ser. No. 147,031

Int. Cl.[5] B65D *1/00*

U.S. Cl. 220—4.24 11 Claims



1. A container, comprising:

(a) a pair of elongated components each having a surface member, a pair of sidewalls integrally formed with and sloping away from the surface member, and a pair of end walls integrally formed with the surface member and the sidewalls and sloping away from the surface member, each end wall terminating in an end portion;

(b) a protruding nub on each end portion and each end portion having a lower recessed area, said nubs and lower recessed areas for aligning the end portions of said pair of elongated components in face-to-face relation; and

(c) interlocking lips on the end portions, said interlocking lips on opposing components latching to hold the components together in face-to-face registration so the elongated components cooperate to define a chamber.

5,356,024

COLLAPSIBLE HAMPER FOR STORAGE OF LAUNDRY AND OTHER ITEMS

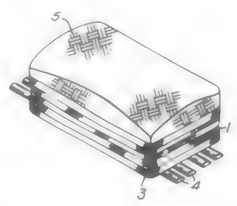
Stanley Ho, Warren, N.J., and Mark Ho, Taipei, Taiwan, assignors to Allure Home Creation Co., Inc., Boonton, N.J.

Filed Jul. 29, 1992, Ser. No. 921,236

Claims priority, application China, Mar. 26, 1992, 92205228

Int. Cl.[5] B65D *6/26*

U.S. Cl. 220—9.2 23 Claims



1. A collapsible hamper comprising:

a side wall substantially fabricated of a sheet of flexible material;

an upper rigid frame;

a lower rigid frame;

the top and bottom edges of said side wall being secured about the outside circumferential surface of said upper rigid frame and said lower rigid frame, respectively;

a plurality of supporting rods removably secured and extending between the downward surface of said upper rigid frame and the upward surface of said lower rigid frame to define a three-dimensional internal storage space;

a lid hingably fixed to the upward surface of said upper rigid frame, said lid covered with the same flexible material as that comprising said side wall;

said lower rigid frame being fabricated from a molded polymeric material and comprising,

a rectangular horizontal surface of uniform thickness having a plurality of perforations throughout said horizontal surface,

a plurality of upwardly extending flanges for removably securing said supporting rod therebetween and maintaining each said rod in a substantially vertical position when said hamper is assembled for use, and

downwardly extending legs of a length sufficient to provide space between said horizontal surface of said lower rigid frame of the floor to allow air to flow into air and out of said internal storage space of said hamper.

5,356,025

PACKAGING DEVICE FOR COSMETIC PRODUCTS

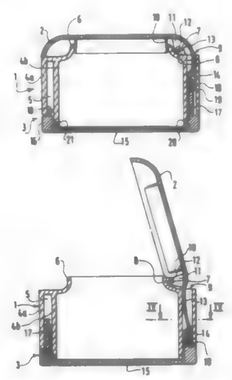
Philippe Renault, Paris, France, assignor to L'Oreal, Paris, France

Filed Apr. 5, 1993, Ser. No. 42,523

Claims priority, application France, Apr. 3, 1992, 92 04095

Int. Cl.[5] B65D *43/16*

U.S. Cl. 220—263 22 Claims



11. A packaging device for cosmetic products, comprising:

a body having a wall, first and second opposite ends, and defining a chamber;

a lid pivotally attached to said first end of said body;

an operating element rotatably mounted on said second end of said body and having an inclined ramp; and

a tongue attached between said lid and said ramp, said tongue being slidably attached to said ramp so that rotation of said operating element, relative to said body, causes said ramp to slide relative to said tongue, causing said tongue to move along a longitudinal axis of said tongue and said lid to pivot on said body.

5,356,026

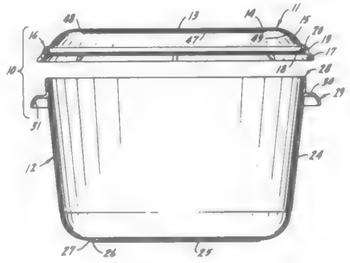
DOUBLE SEAL CONTAINER

Bradley W. Andress, Hudson, Wis.; Dale V. Rude, St. Paul, Minn., and Dick E. VanKeuren, River Falls, Wis., assignors to Plastics, Inc., St. Paul, Minn.

Filed Mar. 22, 1993, Ser. No. 34,902

Int. Cl.[5] B65D *43/04*

U.S. Cl. 220—306 17 Claims



1. A container assembly, said container assembly including a container,

a lid adapted to be assembled to and disassembled from the container.

said lid having downwardly depending inner flange means and outer flange means, said flange means defining a seat therebetween at the upper portion of a downwardly open space adapted to receive a container rim,

said lid further including resilient hinge means formed integrally with the lid and located between the flange means whereby said flange means may flex toward and away from one another,

first mechanical locking means carried by the lower end portion of the outer flange means and adapted to engage the container,

said container having second mechanical locking means carried by the upper portion of the container and adapted, when the lid is fully assembled to the container, to engage the first mechanical locking means,

said mechanical locking means, when engaged, forcing the upper edge of the container into seating engagement in the seat formed between the inner and outer lid flange means,

the force causing the mechanical locking means to urge the upper edge of the container into seating engagement in the seat formed between the inner and outer flange means is derived from the flexing of the material in the hinge means.

5,356,027

PIVOTING LID ATTACHMENT FOR REFUSE CONTAINER

Charles W. Craft, Apple Creek, and Mitchell L. Wilgus, Akron, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio

Filed Jul. 23, 1993, Ser. No. 95,405

Int. Cl.[5] B65D *51/04*

U.S. Cl. 220—338 18 Claims

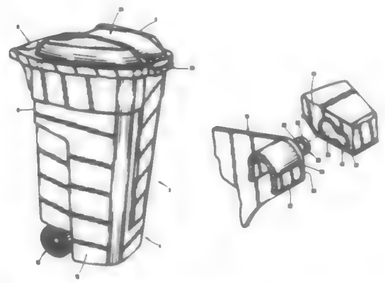
1. A refuse container comprising:

a container base comprising a bottom and sidewalls extending from the bottom to an upper rim and defining therebetween an internal chamber;

first and second support plates attached at one end to a rearward container base sidewall and having a second distal end extending outward therefrom, each support plate having an outward facing surface and a pivot post projecting outward therefrom and located proximate the distal plate end, each said pivot post having a shank portion attached at one end to the outward plate surface and an end cap attached to a distal end of the shank portion;

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a lid having a central cover portion for enclosing a top of the container base chamber and first and second spaced apart arms, each connected at a first end to a rearward end of the cover portion and having a second distal end extending outward therefrom, and each of the arms having an inward facing surface and an enclosed keyhole-shaped



aperture through the inward facing surface and located proximate the distal arm end, each said keyhole-aperture having a relatively large portion for receipt of one said pivot post end cap therethrough and a relatively small portion dimensioned to receive the one pivot post shank portion.

5,356,028

FOLDING BOX WITH INNER BAG AND PROCESS FOR MANUFACTURING SAME

Erich Heuberger, Trugenhofen, and Wolf-Dieter Knörrich, Heidenheim, both of Fed. Rep. of Germany, assignors to Carl Edelmann GmbH, Heidenheim, Fed. Rep. of Germany

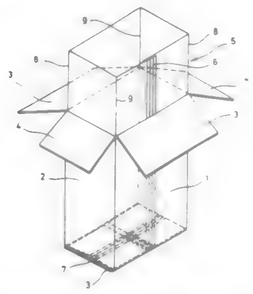
PCT No. PCT/DE92/00116, § 371 Date Feb. 9, 1993, § 102(e) Date Feb. 9, 1993, PCT Pub. No. WO92/14652, PCT Pub. Date Sep. 3, 1992

PCT Filed Feb. 14, 1992, Ser. No. 937,859

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1991, 4104559

Int. Cl.[5] B65D *5/56*

U.S. Cl. 220—462 8 Claims



1. Pre-glued, flat folding box, consisting of a body portion having a cross section when in flat condition which is defined by two acute-angular corners and two obtuse-angular corners and having a rectangular inner cross section when set up in an upright, open condition, said box in said upright, open condition having open sides and flaps connected to said open sides and a tubular foil section having open ends and being arranged in said body portion and having a cross section when in said upright, open condition which corresponds to the inner cross section of the body portion said tubular foil section being glued to the body portion and extending at said open ends at least between the flaps and comprising pre-formed first fold lines which extend in the two acute-angular corners of the inner cross section of the body portion, said fold lines extending continuously up to the open ends of the tubular foil section, said tubular foil section also comprising pre-formed second fold lines which extend in the two obtuse-angular corners of the inner cross section of the body portion, said second fold lines extending continuously up to the open ends of the tubular foil section.

5,356,029

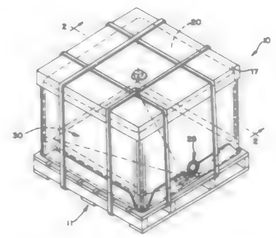
BIN-TYPE BULK FLUID CONTAINER

Christopher T. Hogan, Houston, Tex., assignor to Kaneka Texas Corporation, Houston, Tex.

Filed Aug. 25, 1993, Ser. No. 111,389

Int. Cl.[5] B65D *5/50, 5/56*

U.S. Cl. 220—465 12 Claims



1. A foam plastic insert for use in a bin-type, bulk fluid container including a carton having a bottom wall, sidewalls upstanding from the bottom wall, and an evacuation orifice on a sidewall, said insert comprising:

a) a molded plastic foam body adapted to fit inside said carton and on said bottom wall;

b) said body including a roof panel having a support surface on top of it;

c) said roof panel being supported by a plurality of wall panels.

5,356,030

CONTAINER HAVING AT LEAST ONE FILLING OPENING WITH A THREADED CLOSURE

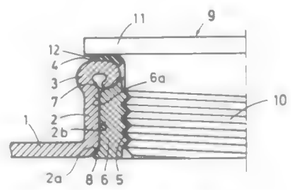
Bernd Büdenbender, Schubertweg 5, 2160 Stader, Fed. Rep. of Germany

Filed Mar. 20, 1991, Ser. No. 672,662

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1990, 4008964

Int. Cl.[5] B65D *6/40, 41/04*

U.S. Cl. 220—601 6 Claims



1. A sheet-metal container, comprising:

a container body composed of sheet metal and having top and bottom walls;

a tubular fitting projecting outwardly from said container body formed from the sheet metal of one of said walls and unitary therewith, said tubular fitting having a bend at its junction with said one of said walls;

a threaded bushing received in said tubular fitting and formfittingly engaged therein, said bushing being provided with an internal screwthread, an outwardly extending flange on one end formfittingly engageable with said bend, and another end opposite said one end;

means forming an annular enlargement on a free end of said tubular fitting, said enlargement being a bulge projecting inwardly to overhang said other end of said bushing; and

a closure stopper threadedly received in said tubular fitting and having an external screw thread threaded into said internal screwthread, an annular shoulder juxtaposed with said annular enlargement, and an annular seal clamped between said shoulder and said enlargement, said stopper drawing said flange against said bend and said other end against said enlargement, said other end having an outwardly concave shape complementarily engaging an inwardly convex portion of said bulge.

5,356,031

DEVICE FOR SUPPORTING PAPER FOR COMPUTER PRINTERS

Björn Jondelius, Riviere, Tewkesbury Road, Cheltenham, Gloucestershire GL51 9SG, England

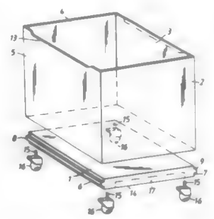
PCT No. PCT/SE91/00581, § 371 Date Mar. 3, 1993, § 102(e) Date Mar. 3, 1993, PCT Pub. No. WO92/04242, PCT Pub. Date Mar. 19, 1992

PCT Filed Sep. 4, 1991, Ser. No. 984,576

Claims priority, application Sweden, Sep. 5, 1990, 9002830-9

Int. Cl.[5] B65D *90/08*

U.S. Cl. 220—610 3 Claims



1. A device for supporting printing paper for the printers of computers and computer terminals, the paper being in the form of a stacked continuous paper web, said device comprising: an upwardly open box made from plastic material having a structurally integral, one piece, rectangular flat bottom part with upper and lower surfaces, the upper surface consisting of only a single rectangular plane and having no recesses, and two sets of opposed parallel side edges, one set of said two sets of opposed parallel side edges of the rectangular bottom part define two opposite side edges; said bottom part having longitudinally extending projections integral with and centrally projecting out only from each of the two opposite side edges of said one set and said projections being located on said edges centrally between said upper and lower surfaces and having a thickness, in the direction normal to the flat bottom part, which is less than the width of the bottom side edges; and a vertical box part with four substantially flat upstanding walls, each being of essentially rectangular shape with vertical edges attached to each other; said bottom part and said vertical box part being of independent construction and said box part being removably supported on the bottom part, only two opposite walls of said four walls being directly supported by their lower horizontal portions resting on said longitudinally extending projections which project out from said one set of two opposite side edges of the rectangular bottom part; and wherein at least one of the upstanding walls of the box part has provided, in its upper horizontal edge, a recess which extends along the major part of the length of said at least one upstanding wall and has a depth that is greater than half of the width dimension of the side edges of the bottom part minus half of the thickness dimension of said projections.

5,356,032

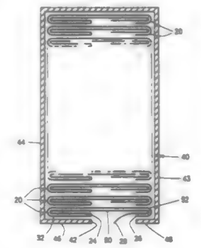
FOLDED SHEET PRODUCT AND DISPENSER THEREFOR

Randel L. Rhodes, Queensbury, N.Y., assignor to Encore Paper Company, South Glens Falls, N.Y.

Filed Feb. 1, 1994, Ser. No. 189,827

Int. Cl.[5] A47K *10/42*

U.S. Cl. 221—47 5 Claims



1. A folded product comprising a rectangular sheet of absorbent material of predefined thickness which is:

(a) folded upon itself along a first crease parallel with first and second edges of the sheet and removed from a center line between the first and second edges, thereby forming a structure having a region of double thickness which terminates at the first edge that is disposed inwardly of the second edge;

(b) said structure being folded upon itself along a second crease parallel with the first crease and within the region of double thickness to provide a first flap of double thickness lying upon one surface of said structure; and

(c) said structure being folded upon itself along a third crease parallel with the first and second edges and within the region of double thickness to provide a second flap of double thickness lying upon the one surface.

5,356,033

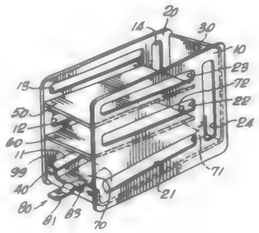
BEVERAGE DISPENSING METHOD AND APPARATUS

David Delaney, 1185 E. 2nd St., Winnemucca, Nev. 89445

Filed Dec. 1, 1992, Ser. No. 985,167

Int. Cl.[5] G07F *11/34*

U.S. Cl. 221—194 1 Claim



1. The beverage can dispenser for use in a refrigerator comprising in combination: a first side; a second side; an end connecting said first and second sides on the facing edges thereof; a first shelf means angularly disposed in a downward direction

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from the front to the rear of said sides and fastened to said sides in such manner as to provide sufficient open space to accommodate the diameter of a beverage can, a second shelf similar to said first shelf and angularly disposed beneath said first shelf and running downwardly from the front toward the rear parallel to said first shelf providing a similar opening through which a can may roll, a third shelf beneath said second shelf connected to the end of the dispenser and angularly disposed in a downward direction from the back to the front of the dispenser and connected between the first side and second side, a generally u-shaped front stop piece fixedly connected to said third shelf at its front end and to said sides at their front edges suitable to stop a can from rolling out and having sufficient space above it and beneath said second shelf to enable a can to pass between them; and means operable cooperatively with said stop piece for lifting one can at a time for ejecting it by means of the pressure on said can from other cans on said third shelf wherein the means operable cooperatively with said stop piece for lifting one can at a time is pivotally mounted on an upper surface of said stop piece and does not lift said can over a top of the stop piece.

5,356,034

APPARATUS FOR THE PROPORTIONED FEEDING OF AN ANALYSIS FLUID

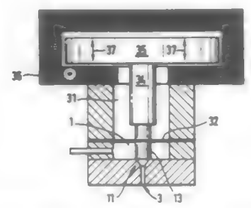
Helmut Schlumberger, Polling, Fed. Rep. of Germany, assignor to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Jan. 22, 1993, Ser. No. 8,552

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1992, 4202561

Int. Cl.[5] **B67D** *5/08*

U.S. Cl. 222—61 **24 Claims**



1. An analysis fluid microproportioning apparatus for microproportioned feeding of an analysis fluid onto a target, comprising:

a pressure chamber for holding the analysis fluid under a permanent pressure of at least 0.1 bar;

a valve unit having a valve opening disposed in a flow path of the fluid between the pressure chamber and a nozzle, said valve unit having a closing element which is moved by a positioning member for opening and closing the valve opening, said permanent pressure forcing fluid through said valve opening when said valve opening is open, wherein the valve unit controls ejection of the fluid onto a target in small quantities in a pulse-wise manner, and wherein the fluid ejection is supported by movement of the closing element when the closing element is moved toward a closing position of the valve unit,

wherein the closing element of the valve unit comprises a closing face facing an input side of the nozzle, said closing face being defined by a sealing rim, said sealing rim being disposed opposite an annular sealing seat disposed adjacent said input side of the nozzle, wherein the nozzle comprises a nozzle pre-chamber disposed toward said input side of the nozzle, said nozzle pre-chamber being closed on an input side thereof when said valve unit is in a closed position by said sealing rim tightly fitting against said annular sealing seat, and wherein a surface formed by said closing face and said sealing rim facing the nozzle does not substantially protrude into said nozzle pre-chamber.

5,356,035

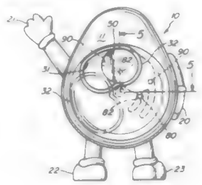
ORNAMENTED CANDY DISPENSER

Gregory P. Shlopak, Rockport, and Ronald Magers, Essex, both of Mass., assignors to Cyrk, Inc., Gloucester, Mass.

Filed Feb. 3, 1992, Ser. No. 829,928

Int. Cl.[5] **G07F** *11/00*

U.S. Cl. 222—78 **2 Claims**



1. A candy dispenser comprising:

a container having an interior chamber for holding candy pieces, the container having

a top portion having a curved surface,

a bottom portion having a curved surface, and

a side portion having a single opening;

a rotatable disk having an opening with the opening substantially the same size and shape as the single opening in the side of the container, a first centrally located pin extending from the disk into said side portion of the container adjacent the openings and supporting the disk for rotation;

a finger grip having a ridge extending around the opening in the disk and extending outwardly from the opening in the disk;

means for limiting rotational movement of the disk relative to said side portion to and from at least two positions including a first position in which the openings are not aligned and the container is closed, and a second position in which the openings are at least partially aligned for removal of pieces from the container;

said means for limiting rotational movement including stop means for limiting movement of the disk relative to said side portion, the stop means comprising a second pin extending from one of the side portion or disk and a groove in the other of the side portion or disk rotationally aligned with the second pin and having a length sufficient to permit and limit movement between the positions;

a detent intermediate the end of the groove which mates with the second pin to serve as a first stop for locking the disk in the second position; and

wherein the openings are partially aligned in the second position, the groove having a second stop for limiting movement at a third position in which the openings are completely aligned.

5,356,036

CHEMICAL SUPPLY DEVICE FOR CHEMICAL HANDLING SYSTEM, AND FITMENTS THEREFOR

Richard H. Garnett, Hereford, United Kingdom, assignor to Wisdom Agricultural Limited, Fownhope, England

PCT No. PCT/GB89/00500, § 371 Date Oct. 23, 1990, § 102(e) Date Oct. 23, 1990, PCT Pub. No. WO89/11219, PCT Pub. Date Nov. 30, 1989

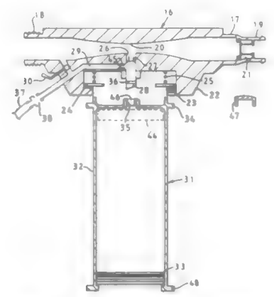
PCT Filed May 2, 1989, Ser. No. 598,736

Claims priority, application United Kingdom, May 21, 1988, [illegible]

Int. Cl.[5] **B67D** *5/00*

U.S. Cl. 222—83.5 **8 Claims**

1. A chemical container in combination with a chemical supply device for a chemical handling system, the supply device including a conduit for supplying a quantity of chemical to the system, a bayonet connector seating for the container and an injection orifice opening into the conduit, wherein the chemical container comprises a cylindrical casing for containing a quantity of chemical, the casing having at one end a bayonet connector adapted to be detachably received in the bayonet connector seating of the supply device and being closed at the other end, a neck at said one end of the casing defining an outlet, the supply device including a duct that communicates with the injection orifice and is adapted sealingly to enter the neck so that, when the casing is received in the seating, the neck surrounds the duct and the outlet is in sealed communication with the injection orifice opening into the conduit of the supply device, and an actuator which is a plunger slidable in the casing and which is actuable to force a quantity of the chemical from within the casing through the outlet into the conduit by way of the injection orifice.



5,356,037

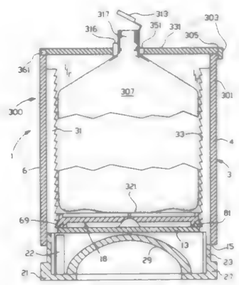
LIFT AND DROP RATCHET STICK DISPENSER

John E. Harrold, Bloomsbury, N.J., assignor to Pakmax, Inc., Bloomsbury, N.J.

Filed Jan. 21, 1993, Ser. No. 79,042

Int. Cl.[5] **B65D** *35/28*

U.S. Cl. 222—95 **9 Claims**



1. A dispenser, comprising:

(a) a main hollow housing having an inside and an outside and having sidewalls, a base and a top, said base being open to receive an activator component and said top being at least partially open for dispensing material therethrough;

(b) at least two sets of vertically aligned, horizontal housing ratchets located on the inside of said housing sidewalls, said ratchets being tapered downwardly so as to permit upward movement and restrict downward movement;

(c) a push plate located within said housing and adapted so as to only be movable upwardly past said housing ratchets;

(d) an activator component inserted into the bottom of said housing, said activator component being vertically and reciprocally movable within said housing, and having at least two sets of vertically aligned horizontal ratchets extending upwardly and aligned against the inside of said housing sidewalls, said ratchets being tapered downwardly so as to permit upward movement of said push plate, said activator component having a flexible spring portion biasing said activator component downwardly, whereby said activator component is reciprocally movable between a first, lower position and a second, higher position such that when said activator component is moved from a first, lower position to a second, higher position, its ratchets move said push plate upwardly at least one ratchet length, and when said activator component is moved from said second position back to said first position, it is reset to advance said push plate upwardly upon a next reciprocation.

5,356,038

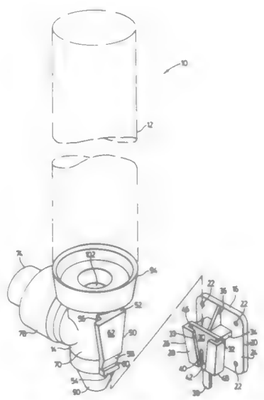
WALL MOUNTABLE CREAM TUBE DISPENSER

Stewart Banks, Brantford, Canada, assignor to Sprintvest Corporation N.V., Curacao, Netherlands Antilles

Filed Jan. 21, 1993, Ser. No. 2,348

Int. Cl.[5] **B65D** *35/54*

U.S. Cl. 222—96 **8 Claims**



1. In a tube dispenser of the type having a housing provided with a receiving means for receiving and holding a tube, the housing including a discharge outlet for discharging material from said tube dispenser, and pump means for pumping material from said tube through said outlet, the improvement in the dispenser, comprising;

a) a mounting bracket being mountable to a support surface; and

b) said housing including attachment means for releasably attaching said tube dispenser to said mounting bracket, said attachment means including a guide plate, said mounting bracket including a slot for receiving therein said guide plate, including an elongate lever having a proximal end and a distal end, said lever being attached to said mounting bracket at said proximal end, said elongate lever having a tongue member attached thereto between said distal end and said proximal end and extending into said slot, said guide plate provided with a groove for receiving therein said tongue member to form a tongue-in-groove connection, the elongate lever being resiliently movable with respect to said mounting bracket, wherein

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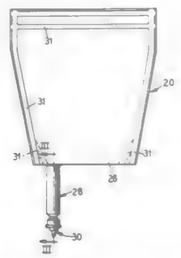
the tongue-in-groove connection is uncoupled by moving the distal end of elongate lever.

5,356,039

PUMP TUBE AND POUCH

William C. Christine, Nazareth, and Scott A. Roth, Danielsville, both of Pa., assignors to Inpaco Corporation, Worthington, Ohio.

Filed Dec. 15, 1992, Ser. No. 991,373
Int. Cl.[5] B65D *37/00*
U.S. Cl. 222—107 21 Claims



1. A pouch for holding and dispensing incremental amounts of liquid, comprising:

a body section for holding a supply of liquid;

a pump tube arranged to be squeezed by a dispensing device and having a nozzle at an end thereof for passing the incremental amounts of liquid therefrom, the pump tube having a tube section connected to the body section and in fluid communication with an interior of the body section, the tube section being constructed from a composition containing a butyl terpolymer rubber and polypropylene and the body section comprising a polyolefin material at a region connected to the tube section, said body section material at the region being compatible with the composition of the tube section for direct sealing thereto.

5,356,040

CONTAINER PARTICULARY FOR MULTICOMPONENT PRODUCTS

Fulvio Reggiani, Tradate, Italy, assignor to Mapiast S.r.l., Tradate, Italy

Filed Mar. 16, 1993, Ser. No. 32,034
Claims priority, application Italy, Mar. 31, 1992, 000309/92[U]
Int. Cl.[5] B65D *21/02*
U.S. Cl. 222—129 9 Claims

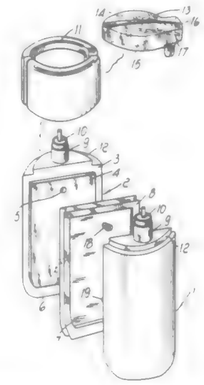
1. Container structure for dispensing multicomponent products comprising;

a first tank and a second tank each having a dispensing valve, a side wall, a median portion protruding from said side wall, and a shaped ridge located adjacent said median portion;

accommodation seats provided on said median portion of said first tank and on said median portion of said second tank;

a coupling partition having engagement pins and a frame, said frame accommodating said median portion of said first tank and said median portion of said second tank, said engagement pins protruding from opposite sides of said coupling partition and engaging said accommodation seats for interconnecting said first tank, said coupling partition and said second tank;

a dispenser closure having at least two actuation stoppers, said actuation stoppers engaging said dispensing valve on said first tank and said second tank and each having a dispensing duct, for simultaneously dispensing contents of said first tank and said second tank;



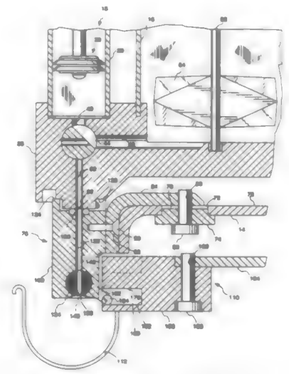
a collar engaging said shaped ridge formed on said first tank and said second tank and at least partially embracing said first tank, said coupling partition, said second tank, and said dispenser closure.

5,356,041

DISPENSING APPARATUS HAVING IMPROVED VALVING

Leendert Hellenberg, Warmond, and Mark Voskiul, Leiden, both of Netherlands, assignors to Fluid Management Limited Partnership, Wheeling, Ill.

Filed Mar. 23, 1993, Ser. No. 35,941
Int. Cl.[5] B67D *5/52*
U.S. Cl. 222—135 20 Claims



1. A sealing valve mechanism for mounting to an exit opening of a discharge valve carried on a turntable which is rotatably supported on a turntable support, comprising:

a valve assembly having a valve body, a valve member movably mounted within the valve body and an operator member coupled to the valve member, the operator member having a free end protruding outside the valve body and movable between first and second positions to operate the valve member between closed and open positions, respectively;

mounting means for sealingly mounting the valve assembly in sealing engagement with portions of the discharge valve adjacent its exit opening so as to be carried on the turntable for travel therewith so as to move the operator free end along a preselected path of travel;

a cam block mounted to the turntable support adjacent a point on the path of travel; and

said cam block defining a channel having a first channel portion extending generally along the path of travel and a second channel portion extending from the first channel portion, away from the path of travel so as to displace the operator free end as the turntable is rotated, to thereby move the valve member between said closed and said open positions and to open the valve member in preparation for dispensing a material from said discharge valve.

5,356,042

CONTAINER HAVING A VALVE CONTROLLED OUTLET

Terry Huffman, 947 S. Oak St., Grand Island, Nebr. 68801, and Aage Nost, 4428 Center St., Omaha, Nebr. 68105

Continuation of Ser. No. 783,385, Oct. 28, 1991, Pat. No. 5,193,719. This application Mar. 15, 1993, Ser. No. 31,725
The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.
Int. Cl.[5] B67D *3/00*
U.S. Cl. 222—153 7 Claims

1. A dispenser for dispensing liquids, comprising:

a) a container having an outlet opening;

b) a valve stem disposed in said container, said valve stem at a first end, having a valve which normally closes said outlet opening and at a second end, being connected to the container;

c) means for flexibly connecting said second end to the container at a location remote from said outlet opening and having interior portions thereof which hold said second end of said valve stem, said flexibly connecting means serving as an actuator, when moved, for moving said valve via said valve stem, to a position in which the outlet opening is unobstructed by said valve to permit dispensing from the container; and

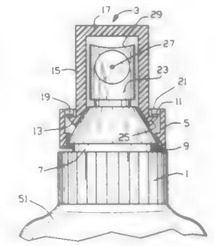
d) means for preventing said valve and valve stem from falling out of the container after the container has been opened and inverted, said means comprising a safety stem angularly disposed on said valve stem in a direction toward a wall adjacent said outlet opening, said stem being spaced from said wall when the valve is in a closed position, whereupon moving the valve toward an open position causes the safety stem to move toward and eventually engage said wall thereby preventing said valve and stem from falling out of the container when the container is inverted.

5,356,043

CHILD RESISTANT CAP WITH SAFETY COLLAR FOR SPRAYERS

Kenneth P. Glynn, Hunterdon County, Raritan Township, N.J., assignor to Ideal Ideas, Inc., Flemington, N.J.

Filed Aug. 30, 1993, Ser. No. 113,237
Int. Cl.[5] B67B *5/00*
U.S. Cl. 222—153 14 Claims



1. A spray dispenser device closure, which comprises:

(a) a main closure base for attachment to a container, said base having a top portion having a circular horizontal track thereon for attachment with an outer ring;

(b) an outer ring having a circular inside wall with a horizontal track thereon for attachment to the track of said base so as to connect said outer ring to said base so as to be horizontally and freely rotatable thereabout, said outer ring also having a top with an inwardly biased ledge for retaining an overcap, and having at least one cut out on said ledge to permit an overcap to be inserted and removed from said outer ring;

(c) a spray mechanism attached to the top of said base and extending therethrough for insertion into a container;

(d) an overcap having a circular bottom adapted to be inserted into said outer ring and over said spray mechanism, said bottom having at least one protrusion thereon which has a geometry of adequate size to freely move through said at least one cut out of said ledge of said outer ring and when said overcap is so inserted and rotated, of adequate size and geometry to prevent removal of said overcap from said outer ring, except when said at least one protrusion and said at least one cut out are in alignment; and,

further wherein said outer ring ledge has an underside and said at least one protrusion of said overcap has a top wherein the underside of said ledge and the top side of said at least one protrusion are in frictional contact with one another when said overcap is inserted into said outer ring such that when one of said outer ring and said overcap are rotated, the other of said outer ring and said overcap rotates therewith, and wherein said frictional contact may be overcome manually by holding one of said outer ring and said overcap and rotating the other of said outer ring and said overcap.

5,356,044

TAMPER EVIDENT SEAL FOR DISPENSING CLOSURE

Donald LaVange, Cumberland, R.I., assignor to Polytop Corporation, Slatersville, R.I.

Filed Sep. 10, 1993, Ser. No. 118,616
Int. Cl.[5] B67D *15/32*
U.S. Cl. 222—153 7 Claims

1. In combination, a dispensing closure and a tamper evident seal therefor,

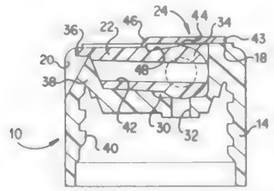
a) said dispensing closure including a body with a depending skirt with means adapted to secure same to a container,

b) said dispensing closure further including a planar top surface and a cavity defined in said body below said top surface,

c) a spout mounted in said cavity for pivotable movement from a horizontal orientation to a vertical orientation,

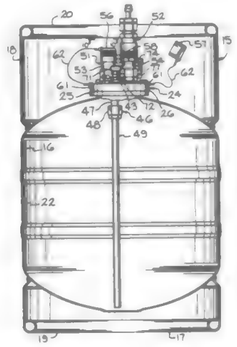
VOL 1167 ISS 3 OCT 18 1994 UMI

d) a central bore extending axially throughout said spout,
e) said spout terminating at one end in a cylindrical base,
f) an aperture defined through said body of said closure to establish communication between the interior of the container and said cavity,
g) said base of said spout closing said aperture when said spout is in its horizontal position,



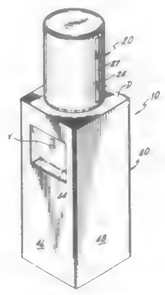
the invention being characterized in that a tamper indicating seal is secured to said spout and partially overlies same prior to opening said spout for the first time,
said seal assuming the form of a rigid plastic tab, and frangible means for attaching said tab to the upper surface of said spout, and parallel to the planar surface of said closure.

5,356,045
FLUID DISPENSING APPARATUS HAVING TAMPER EVIDENT ASSEMBLIES
Richard D. Parks, Horton; Ernest F. Kulikowski, Albion; Paul J. E. Fournier, Jackson; Douglas R. Fortman, Canton, and John D. Boland, Jackson, all of Mich., assignors to Aeroquip Corporation, Maumee, Ohio
Continuation of Ser. No. 840,507, Feb. 24, 1992, abandoned. This application Jan. 14, 1994, Ser. No. 181,658
Int. Cl.[5] B67D *5/33*
U.S. Cl. 222—153 **12 Claims**



1. Fluid dispensing apparatus comprising, in combination, a stainless steel fluid container defining a fluid cavity and having a bunghole at its upper end, a manifold assembly mounted at such upper end adjacent such bunghole, a fill tube assembly mounted by said manifold assembly, said fill tube assembly including a fill tube extending downwardly into such cavity of said fluid container, said manifold assembly including a bunghole flange surrounding such bunghole and attached to said fluid container and a manifold flange connected to said bunghole flange by a plurality of bolts, a pair of coupling parts mounted on said manifold flange, one of said coupling parts being in fluid communication with said fill tube and said other one of said coupling parts being in communication with such fluid cavity, caps removably positioned over said coupling parts, each of said coupling parts and each of said caps includes corresponding alignment means for receiving a lock member when said caps are positioned on said coupling parts, a pressure relief valve mounted on said manifold assembly and tamper evident means on said manifold assembly for determining if said fluid container has been opened, said tamper evident means including a first lock wire assembly connected to said lock member and a second lock wire assembly connected to said plurality of bolts.

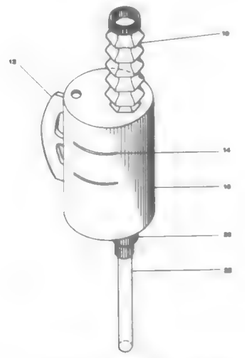
5,356,046
COVER FOR BOTTLED WATER DISPENSER
Melissa Burke, 27728 SW. 132 Ct., Miami, Fla. 33032
Filed Nov. 1, 1990, Ser. No. 608,060
Int. Cl.[5] B67D *5/38*
U.S. Cl. 222—156 **6 Claims**



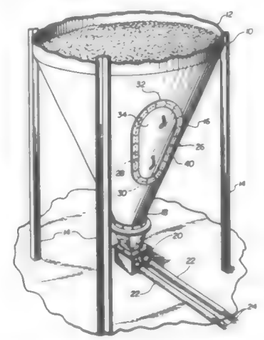
1. A cover for bottled water dispensers having a water bottle mounted thereon and at least one water outlet valve, comprising:
A. upper cover portion made out of a flexible and opaque material having substantially the shape of a sac with cooperative dimensions for receiving and covering said water bottle and said sac having an opening and further including means for closing the opening of said sac opening to fittingly come in contact with the neck of said bottle;
B. lower cover portion being made out of a flexible sheet having substantially a rectangular shape that cooperatively covers substantially said dispenser and means for keeping said lower cover portion mounted to said dispenser and said lower cover portion further including an opening exposing said water outlet valves.

5,356,047
CONSUMER GASOLINE TESTER
Ronald G. Rogers, 1226 Prestige La., St. Louis, Mo. 63137
Filed Aug. 13, 1993, Ser. No. 106,364
Int. Cl.[5] B67D *5/38*
U.S. Cl. 222—158 **1 Claim**

1. A portable consumer gasoline tester comprising:
a cylindrical clear hand held plastic container having upper and lower end walls and a connecting elongated side wall therebetween;
an integral handle on said side wall oriented along the longitudinal axis of the side wall for handling the container;
an upper elongated flexible receiving nozzle extending from the upper end wall and communicating with the interior of said container for receiving gasoline therethrough;
a manually actuated dispensing valve attached to the lower end wall with an inlet thereof communicating with the interior of said container, said valve including an outlet having attached thereto a flexible, bendable, elongated plastic outlet tube for directing the output of gasoline from the container when the valve is actuated to the open position;
said container including graduation marks defining at least two distinct volumetric amounts for verifying the accuracy of an associated gasoline metering pump used in conjunction with the apparatus; and;
said tester further comprising an associated storage container for suspect gasoline with an enlarged base for stability, and a closure for sealing the storage container.

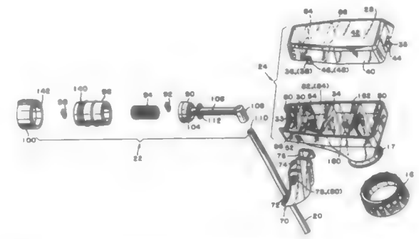


5,356,048
BULK STORAGE TANK WITH ACCESS PANEL
Richard L. Geiser, Goshen, Ind., assignor to CTB, Inc., Milford, Ind.
Filed Jul. 29, 1993, Ser. No. 99,227
Int. Cl.[5] B67D *5/06;* **E04H** *7/00*
U.S. Cl. 222—185 **8 Claims**



1. A combination, including a bulk storage tank for particulate bulk material comprising a lower end funnel portion having a side wall of decreasing circumference, means defining a vertically elongated access opening in said side wall through which a workman may bodily project into the interior of said funnel portion for maintenance purposes, a lip around and projecting inwardly of a margin of said opening, a cover disposed within said lip and covering said opening, fastening elements releasably securing said cover to said lip, said funnel portion including a lower discharge outlet, and discharge conveyor means connected to and communicating with said discharge outlet.

5,356,049
HAND PUMP ASSEMBLY WITH A PUMP MECHANISM WHICH IS INDEPENDENT OF THE PUMP HOUSING
Clark E. Harris, Fairport; Bradley S. Bush, Hilton; Michael W. Didas, Rochester, and Anthony J. Imperato, Purdys, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 29, 1993, Ser. No. 38,957
Int. Cl.[5] B67D *5/40*
U.S. Cl. 222—383 **5 Claims**



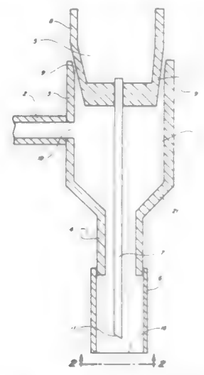
1. A pump assembly for pumping liquid from a container, the pump assembly comprising:
a housing, the housing having a body portion and a separate cover portion, the portions including means for attaching the cover portion on the body portion;
a pump mechanism initially separate from and independent of the housing, the pump mechanism comprising a suction tube for extending from the pump assembly into the liquid within the container when the pump mechanism is mounted in the housing, a chamber for storing and discharging a charge of liquid, a piston reciprocal in the chamber for charging and discharging the chamber upon reciprocation therein, and a nozzle for dispensing liquid discharged from the chamber;
a separate trigger for operating the pump mechanism;
means for slidably mounting the trigger within the body portion of the housing;
support means within the body portion of the housing for slidably receiving the pump mechanism as a unit and aligning the pump mechanism with the trigger, whereby since the pump mechanism is an assembly initially independent of the housing prior to mounting the pump mechanism within the housing, the body portion and cover portion of the housing may be modified without modifying the pump mechanism.

5,356,050
AIR PRESSURE GLUE APPLICATION HEAD
Daniel A. Hahn, and Donald H. Stover, both of 515 W. Main St., Greenville, Ill. 62246
Filed Aug. 30, 1993, Ser. No. 112,975
Int. Cl.[5] B65D *83/00*
U.S. Cl. 222—394 **12 Claims**

1. An air pressure glue application head, comprising:
(a) a main mixing chamber fluidly connected to a smaller, essentially cylindrical lower chamber;
(b) an air pressure inlet tube fluidly connecting a source of air pressure to said main chamber;
(c) an essentially cylindrical removable lower sleeve connected around and below said lower chamber; and
(d) a glue dispensing assembly sealably connected to the top of said main chamber, further comprising a thin glue dispensing needle, wherein the top of said needle is fluidly connected to a source of glue and wherein the lower portion of said needle is positioned in the center of said main chamber, lower chamber and sleeve;

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whereby, as a droplet of glue accumulates on the lower end of said needle, air pressure is supplied through said main



chamber, lower chamber and sleeve to blow said droplet out the lower end of said sleeve onto a target to be glued.

5,356,051

LIQUID SOAP SUPPLYING DEVICE

Tsutomu Azuma, and Yojiro Taketomi, both of Kitakyushu, Japan, assignors to Toto, Ltd., Fukuoka, Japan

Filed Sep. 23, 1991, Ser. No. 763,522
Int. Cl.[5] B65D *83/00*
U.S. Cl. 222—396 **2 Claims**

1. A liquid soap supplying device comprising:

a tank for storing liquid soap having an air accumulation part being located at an inner upper part of said tank;

a pressurizing device arranged to communicate with said air accumulation part;

a pressure sensor arranged at said air accumulation part;

a control part for controlling operation of said pressurizing device in response to a sensing signal from said pressure sensor and for controlling pressure of said tank to a predetermined pressure;

a liquid soap feeding pipe at a bottom part of said tank;

an air feeding pipe at said air accumulation part;

a discharging nozzle provided with a mixing chamber for liquid soap and air, and communicating with the liquid soap feeding pipe and the air feeding pipe;

an opening and closing valve for controlling discharge of combined air and liquid soap from said discharging nozzle; and

a liquid soap supplementing port arranged at the tank, said liquid soap supplementing port being provided with an opening and closing sensor for sensing an opening or closing said supplementing port, and the control part being provided with controlling means for stopping an operation of the pressurizing device when said opening and closing sensor detects an opened supplementing port.

5,356,052

BFS METERED DROP BOTTLE

Richard Q. Poynter, Palm Beach Gardens, Fla., assignor to HealthStar Inc., Quincy, Mass.

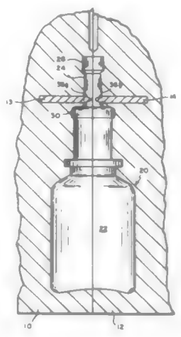
Filed Oct. 13, 1993, Ser. No. 135,798
Int. Cl.[5] B65D *47/18*
U.S. Cl. 222—420 **4 Claims**

1. A BFS metered drop bottle which comprises:

a container;

a dispensing tip characterized by a chamber which terminals is an aperture which aperture determines the size of a dispensed drop; and

a neck which joins the container to the tip to allow for the flow of a liquid from the container into the tip, the neck comprising two opposed flat abutting walls which define



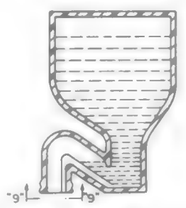
a substantially planar flow path between the container and the tip such that the liquid flows through the flow path in thin film form and coalesces in the tip chamber and is dispensed through the aperture as a drop of predetermined size.

5,356,053

FUNNEL-LESS SQUEEZE CAP

Joseph Di Fatta, 1230 Scarlet Dr., Addison, Ill. 60101

Filed Dec. 7, 1992, Ser. No. 985,643
Int. Cl.[5] G01F *11/26*
U.S. Cl. 222—456 **10 Claims**



1. An invertible cap for controlling the flow of a substance, comprising:

a housing having a horizontal flat base for allowing the cap to be able to rest on the horizontal flat base in an inverted position, the housing further having a hollow S-shaped chamber, the S-shaped chamber having a first end portion communicating with an inlet opening of the housing, and a second end portion of the S-shaped chamber communicating with an outlet opening of the housing, so that the substance is contained in the housing towards the first end portion of the S-shaped chamber when the cap is in the inverted position and is continuously dispensed through the second end portion of the S-shaped chamber when the cap is tilted about a 30° angle from the inverted position; and

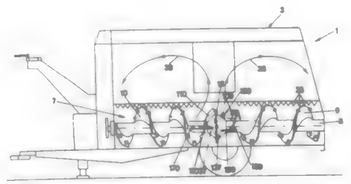
means for flowingly connecting the housing a horizontal flat bottomed container.

5,356,054

WAGON WITH CUTTING, MIXING AND DISPENSING FUNCTIONS FOR FODDER AND GRASS OR STRAW MATERIALS STORED IN SILOS

Giuseppe Loppoli, Grantorto, and Lino Zago, Campo San Martino, both of Italy, assignors to Seko Spa, Curtarolo (PD), Italy

PCT No. PCT/EP91/02510, § 371 Date Jul. 28, 1993, § 102(e) Date Jul. 28, 1993, PCT Pub. No. WO93/00799, PCT Pub. Date Jan. 21, 1993
PCT Filed Dec. 27, 1991, Ser. No. 94,074
Claims priority, application Italy, Jul. 2, 1991, VI91 A/000108
Int. Cl.[5] A01K *5/00*; A01C *3/06*
U.S. Cl. 222—610 **10 Claims**



1. A cutting, mixing and dispensing wagon, particularly suitable for the cutting and mixing of fodder, of straw or grass stored in silos, comprising:

a container supported by wheels, provided with a hitch for the coupling with a trailing vehicle, with at least one mouth for the introduction of the material to be treated and with at least one trapdoor for the discharge of the treated material;

at least two rotatable endless-screws housed each within a corresponding curved-profile compartment, formed at the bottom of said container, positioned parallel to one another and both provided with a pair of spirals, each spiral beginning at opposite ends of each screw, one wound in clockwise and the other in counter-clockwise direction starting from its extremity, in order to convey the treated material toward a convergence zone near the central part of each endless screw;

each of said screws presenting in addition a number of blades fixed so that they protrude from the external edge of the spirals forming it; each of said screws presents in the convergence zone of the spirals baffle means positioned orthogonal to the lengthwise axis of said screw.

5,356,055

METHOD OF PLEATING GARMENTS

Naoki Takizawa, Tokyo, Japan, assignor to Kabushiki Kaisha Miyake Design Jimusho d/b/a Miyake Design Studio, Tokyo, Japan

Continuation-in-part of Ser. No. 846,121, Mar. 4, 1992, abandoned. This application Mar. 22, 1993, Ser. No. 36,536
Claims priority, application Japan, Aug. 22, 1991, 3-233769
Int. Cl.[5] A41H *43/00, 33/00*; D06F *73/00*
U.S. Cl. 223—28 **12 Claims**

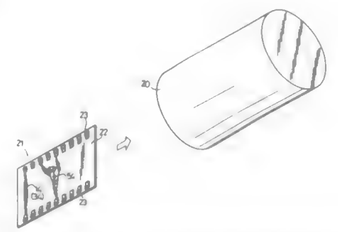
1. A method of pleating a garment, comprising the steps of:

rolling an unfinished garment prepared by sewing cloth parts together,

twisting the rolled garment,

folding the unfinished garment before the garment is twisted,

placing the twisted garment into a heat-treatment apparatus, and



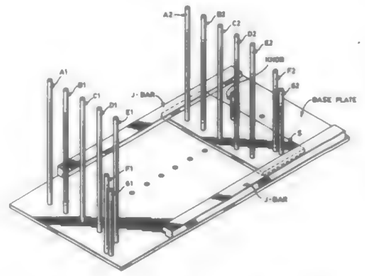
heat-treating the twisted garment in the heat-treatment apparatus with saturated steam, thereby pleating the garment.

5,356,056

ADJUSTABLE BOW MAKING DEVICE FORM

Craig Teuten, 17 Wapping Rd., Kingston, Mass. 02364

Filed Jul. 19, 1993, Ser. No. 93,402
Int. Cl.[5] A41H *43/00*
U.S. Cl. 223—46 **8 Claims**



1. A floral bow making apparatus comprising, a base plate having first and second oppositely positioned edges, a first array of upstanding rod elements fixed to said plate member near one edge thereof in spaced apart positions extending generally parallel to said first edge thereof, a slide plate positioned on said base plate near said second edge and arranged to slide back and forth along said base plate in a direction toward and away from said first array of upstanding rod elements,

a second array of upstanding rod elements fixed to said slide plate in a spaced positions generally parallel to said first array of upstanding rod elements, and

detent means in said base plate for providing a series of temporarily fixed discrete positions of said sliding plate along said base plate.

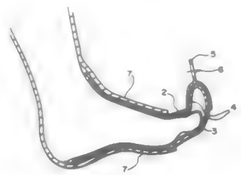
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5,356,057

MEANS FOR PUTTING ON THERAPEUTIC ELASTIC STOCKINGS

Johannes G. H. M. Vossen, Nieuwstadt, Netherlands, assignor to Stichting, Medische Technologie, Netherlands

PCT No. PCT/NL90/00148, § 371 Date Apr. 16, 1992, § 102(e) Date Apr. 16, 1992, PCT Pub. No. WO91/05498, PCT Pub. Date May 2, 1991
PCT Filed Oct. 10, 1990, Ser. No. 839,776
Claims priority, application Netherlands, Oct. 23, 1989, 8902619
Int. Cl.[5] A47G *25/90*
U.S. Cl. 223—112 1 Claim



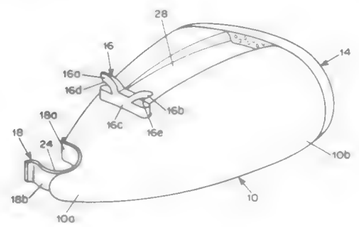
1. Means for putting on therapeutic elastic stockings comprising:
an outer slipper having a first end and a second end, a slipper mouth near said first end for introduction of the foot of the user, a foot stop at said second end and means at its second end for pulling said slipper away, wherein said means comprises a tab (5) provided with an eye (6);
an inner lining, separate from said slipper and having a first end defining a lining mouth for introduction of the foot of the user and a second end defining a free end, said lining mouth being connected with said slipper mouth, said lining being disposed within and adjacent to said slipper and said lining being free of connection to said slipper except at its mouth.

5,356,058

BICYCLE SEAT BAG

Timothy J. Fenton, New Canaan, Conn., assignor to Cannondale Corporation, Georgetown, Conn.

Filed Mar. 15, 1993, Ser. No. 31,525
Int. Cl.[5] B62J *9/00*
U.S. Cl. 224—32 R 17 Claims



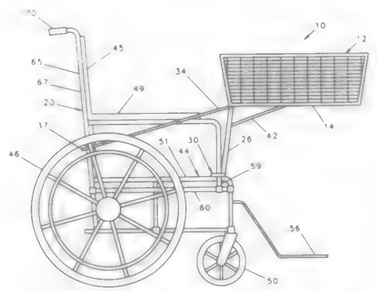
1. A bicycle seat bag comprising a tapered body having a top portion, a smaller forward end and a larger rearward end, an opening at the rearward end, a closure for the opening, a cleat member on the top portion of the body having a pair of slots opening outwardly in opposite directions and adapted to receive frame bars of a bicycle seat to removably attach the body to the seat, a generally C-shaped clip member attached to the forward end of the body and having a pair of resilient legs defining an opening that faces laterally relative to the ends of the body, the clip member being adapted to be received on and resiliently engaged with a bicycle seat post with one leg in front of and the other leg in back of the seat post so as to attach the body to the seat post against forward, backward and rotational movements, and a backing plate received within the body, the cleat member and the clip member being attached to the backing plate, the backing plate thus coupling the cleat member and the clip member to each other and to the body.

5,356,059

BASKET OR TRAY FOR ATTACHMENT TO A WHEELCHAIR

John E. Yanez, 5 S 275 Naperville-Wheaton Rd., Naperville, Ill. 60563, and John Sandford, 307 Elm St., Lodi, Ill. 60506

Filed Feb. 22, 1993, Ser. No. 20,705
Int. Cl.[5] B60R *9/00*
U.S. Cl. 224—42.43 10 Claims



1. A support structure for attachment to a wheelchair having a seat, a pair of side bars, one side bar extending substantially parallel to each side of said seat, and a back having substantially parallel upwardly extending outer edges, said support member comprising in combination:
a body having two sides,
a pair of legs, each of said legs having an upper and a lower end,
said lower ends of said legs being spring biased for movement toward and away from each other,
said upper end of each of said legs connected to one of said sides of said body,
each of said legs having a foot at said lower end thereof, and each said foot having a transverse portion for resting on a horizontal member, and a notch for receiving a vertical member of a wheelchair,
a pair of arms, each of said arms having a forward and a rearward end,
said forward end of each of said arms connected to one of said sides of said body,and
attachment means on said rearward ends of said arms for attaching said arms to a seat of a wheelchair.

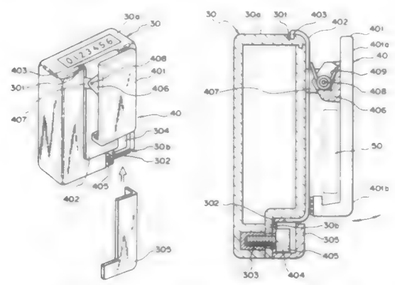
5,356,060

STRUCTURE OF CASING OF RADIO PAGER AND CLIP ATTACHABLE THERETO

Mituru Kuroda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 6, 1992, Ser. No. 831,959
Claims priority, application Japan, Feb. 6, 1991, 3-010344[U]
Int. Cl.[5] A45F *5/02*
U.S. Cl. 224—252 2 Claims

1. In a structure of a box-like casing of a portable apparatus and a clip attachable to said casing;
said casing comprising:
a top and a back;
an elongate groove formed on the top; and
a cavity formed in a lower end portion of the back;
said clip comprising:
a base plate complementary in configuration to the back of said casing and having an engaging portion engageable with said groove at a upper end, a bent portion at a lower end and which is received in said cavity of said casing, and a screw hole in said bent portion; and
a clip body supported by said base plate and rotatable to be attached and detached from one who carries said apparatus;
wherein said casing further comprises a threaded hole provided on a rear portion of said cavity in alignment with said screw hole, whereby a screw is driven into said threaded hole via said screw hole for fastening said clip to said casing.

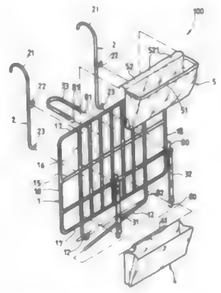


5,356,061

ARTICLE ARRANGING FRAME FOR MOUNTING ON VEHICLE SEAT BACK

Yung-Nan Yu, 8F, No. 86, Sec. 1, Hsinsheng N. Road, Taipei, Taiwan

Filed Oct. 15, 1993, Ser. No. 137,306
Int. Cl.[5] B60R *7/00*
U.S. Cl. 224—275 5 Claims



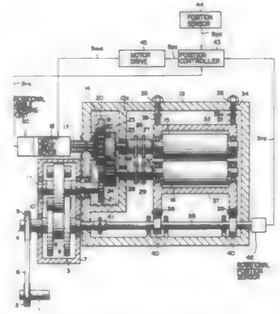
1. An article arranging frame for mounting on a vehicle seat back, said article arranging frame comprising:
a main frame having a first pair and a second pair of parallel edge bars, each pair extending in a horizontal direction and a vertical direction, respectively;
a plurality of first bars connected to and extending between the second edge bars, parallel with the horizontal direction;
a plurality of second bars connected to and extending between the first edge bars, parallel with the vertical direction, said second bars being interconnected with said first bars at intersecting points therebetween;
a pair of hook-like hangers attached to said frame for hanging said main frame on the vehicle seat back;
a plurality of elongated flexible strips, each having two hooks mounted to ends thereof for releasably attaching the flexible strips to said main frame, wherein at least two of said flexible strips being mounted in parallel with the vertical direction for cooperatively holding an article on said main frame and at least one of said flexible strips being mounted in parallel with the horizontal direction to hold at least an article on said main frame; and
at least one bag having an upper edge defining an opening for receiving therein at least an article, said bag being mounted to a support bar which is mounted to said main frame in parallel with the horizontal direction and having a leg extending from one end thereof rotatably mounted to said main frame and an opposite free end so as to allow said support bar and thus said bag to be rotatable relative to said main frame about the leg thereof, said bag having a tubular member mounted to the upper edge thereof to be extended over the support bar, an end holder being mounted to said main frame in such a way to releasably receive and hold said opposite end of said support bar therein for holding the support bar stationary relative to the main frame.

5,356,062

ROLL FEED APPARATUS FOR INTERMITTENTLY FEEDING A WORKPIECE

Heizaburo Kato, Shizuoka, Japan, assignor to Sankyo Manufacturing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 799,285, Nov. 27, 1991, abandoned.
This application Oct. 12, 1993, Ser. No. 134,861
Claims priority, application Japan, Nov. 30, 1990, 2-334497
Int. Cl.[5] B65H *20/00;* B41F *13/54*
U.S. Cl. 226—31 6 Claims

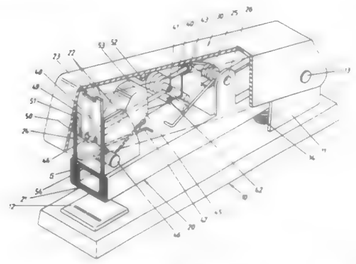


1. A roll feed apparatus of the type including a pair of rolls for clamping a workpiece therebetween and for intermittently feeding the workpiece, said apparatus comprising:
a differential gear, operatively connected to at least one of the rolls, for rotating the at least one roll;
mechanical feeding means, including a cam indexing unit connected to said differential gear, for outputting a rotational output to said differential gear and for effecting a primary intermittent feeding of said workpiece; and
means for controlling said intermittent feeding effected by said cam indexing unit and providing fine adjustment of rotation of the rolls, said controlling means including:
a) an electrical driving means, also connected to the differential gear, for outputting a rotational output to the differential gear;
b) rotational angle sensing means for sensing a rotational angle of the electrical driving means to output a rotational angle signal representing the rotational angle sensed;
c) reference position providing means for providing a reference position signal representing a reference position of the workpiece; and
d) a control means for comparing the rotational angle signal with the reference position signal to produce a signal

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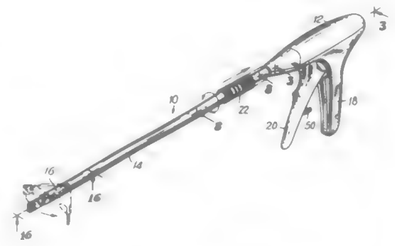
representing the difference therebetween and for controlling the electrical driving means to correct the difference; whereby said mechanical feeding means allows stable and reliable primary intermittent feeding of the workpiece whereas said electrical driving means ensures fine adjustment of rotation of the rolls and correction of errors in feeding.

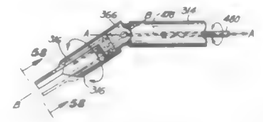
5,356,063
HAND-OPERATED STAPLER
Jorge G. Perez, Barcelona, Spain, assignor to Erwin Müller GmbH Co., Lingen, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 803,177, Dec. 5, 1991, abandoned. This application Mar. 26, 1993, Ser. No. 39,556
Claims priority, application Spain, Dec. 5, 1990, 9003139
Int. Cl.[5] B25C *5/10*
U.S. Cl. 227—132 **5 Claims**



5. A hand-operated stapler, comprising a base plate, a die plate disposed on said base plate, a body pivotably supported on said base plate, said body including a magazine having a center channel formed therein for receiving strips of staples and guide ribs extending from said magazine substantially perpendicularly relative to a longitudinal axis of said center channel of said magazine, a push blade being guided by said guide ribs for sliding up and down past said center channel from a neutral position to a released position, respectively, for releasing individual staples from the strip of staples and driving in the staples, a top part supported by and disposed above said body and acting as an operating arm, a locking and release device for said push blade, said locking and release device including a spring engaging in said push blade and means for arresting said push blade in said neutral position, said locking and release device being in a locked position while said top part is being depressed and said spring is tensed, said spring being means for suddenly moving said push blade to said released position and driving a staple from said strip of staples when said locking and release device has reached an unlocked position, said locking and release device including a pivotable latch for temporarily locking said push blade, said latch having a free end and said top part having a protrusion cooperating with said free end of said latch for gradually pivoting said latch into the unlocked position, and means including said top part and an elongated part of said push blade, said elongated part protruding past end surfaces of said guide ribs and extending toward said top part in said neutral and released positions, for applying additional force on said push blade by further depressing said top part after driving of the staple by a force applied by said spring on said push blade.

5,356,064
APPARATUS AND METHOD FOR APPLYING SURGICAL STAPLES TO ATTACH AN OBJECT TO BODY TISSUE
David T. Green, Westport, Conn.; Wayne Young, Brewster, N.Y.; Stephan A. DeFonzo, Bridgeport, and Samson Pennatto, Danbury, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Sep. 23, 1992, Ser. No. 950,425
Int. Cl.[5] A61B *17/00*
U.S. Cl. 227—177 **66 Claims**



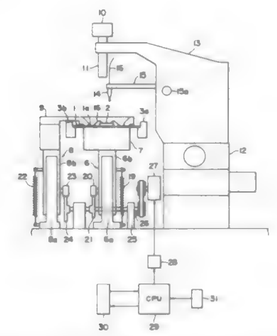


1. Apparatus for endoscopic application of a surgical fastener, which comprises:
a) a frame;
b) an elongated member connected to said frame and extending distally therefrom, said elongated member having a generally longitudinal axis and having a proximal end portion, an intermediate portion, and a distal end portion;
c) means cooperating with said elongated member for storing at least one surgical fastener;
d) pusher means for advancing said at least one surgical fastener distally for positioning adjacent the body tissue;
e) means for closing said fastener; and
f) means to rotate said storing means about said longitudinal axis at least independent of said intermediate portion.

5,356,065
WIRE BONDING APPARATUS
Hiroaki Kobayashi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 567,609, Aug. 15, 1990. This application Jun. 15, 1992, Ser. No. 899,138
Claims priority, application Japan, Aug. 18, 1989, 1-212178
Int. Cl.[5] B23K *37/00*
U.S. Cl. 228—4.5 **4 Claims**

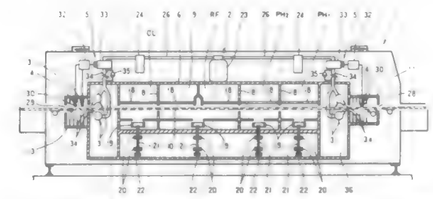
1. A wire bonding apparatus for semiconductor devices, said apparatus comprising:
(A) a supporting block for supporting a workpiece to which wires are to be bonded;
(B) first guide means for guiding and supporting said supporting block in a direction perpendicular to a base floor;
(C) a presser member, located above said supporting block, for holding down said workpiece on said supporting block;
(D) second guide means for guiding and supporting said presser member in a direction perpendicular to said base floor;
(E) first drive cam means for driving said supporting block;

(F) second drive cam means for driving said presser member; and



(G) a common driving cam shaft which is connected to each of said first and second drive cam means and which drives said first and second drive cam means.

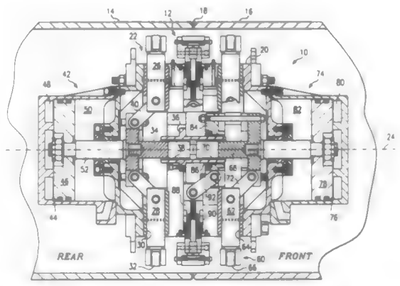
5,356,066
AUTOMATIC SOLDERING APPARATUS
Osamu Yamada, Tokyo, Japan JPX , assignor to Eightech Tectron Co., Ltd., Tokyo, Japan
Filed Jul. 20, 1993, Ser. No. 93,683
Claims priority, application Japan, Jul. 22, 1992, 4-217165
Int. Cl.[5] B23K *1/008, 37/00*
U.S. Cl. 228—8 **2 Claims**



1. An automatic soldering apparatus for soldering a printed circuit board having a plurality of electronic parts mounted thereon to be soldered while it is transported through a heating chamber having an inert gas filled therein, the apparatus having a first station for receiving the printed circuit board to be soldered and a second station for removing the soldered printed circuit board from the heating chamber, said apparatus comprising:
nozzle means provided in the first and second stations respectively;
means for supplying the inert gas to the nozzle means for jetting the inert gas in the first and second stations; and
sensor means provided in the first and second stations respectively to detect a condition of air flowing through the first and second stations and to produce detecting signals.

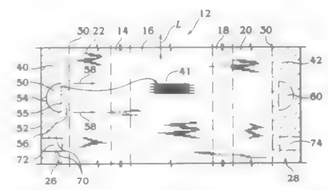
5,356,067
INTERNAL LINE UP CLAMP
Trung Leduc, Houston, Tex., assignor to CRC-Evans Pipeline International, Inc., Houston, Tex.
Filed Jun. 7, 1993, Ser. No. 72,928
Int. Cl.[5] B23K *37/053*
U.S. Cl. 228—44.5 **11 Claims**

1. An internal line up clamp and back up ring for clamping first and second pipes in proper orientation for welding and providing a back up ring at the weld comprising:
a frame
a first set of pipe clamps mounted on the frame for movement between a retracted position and a clamping position clamped against the interior surface of the first pipe;
first structure mounted on the frame for moving the first set of pipe clamps to the clamping position;
a second set of pipe clamps mounted on the frame for movement between a retracted position and a clamping position clamped against the interior surface of the second pipe;



a back up ring mounted on the frame comprising a plurality of back up ring segments spaced from the second set of pipe clamps, each back up ring segment for movement between a retracted position and a back up position urged against the interior surface of the first and second pipes;
second structure mounted on the frame for simultaneously moving the second set of pipe clamps and the back up ring into engagement with the pipes; and
a fill block pivotally attached to adjacent back up ring segments to fill the gap between the back up ring segments as the back up ring segments are engaged with the interior surface of the pipes.

5,356,068
FOIL-LIKE MATERIAL FOR A FOLDING PACK AND SUCH FOLDING PACK
Damaso Moreno, Huckelhoven, Fed. Rep. of Germany, assignor to Syspack, S.A., Frisbourg, Switzerland
PCT No. PCT/EP90/00812, § 371 Date Nov. 8, 1991, § 102(e) Date Nov. 8, 1991, PCT Pub. No. WO90/14291, PCT Pub. Date Nov. 29, 1990
PCT Filed May 19, 1990, Ser. No. 776,302
Claims priority, application Fed. Rep. of Germany, May 25, 1989, 3917048
Int. Cl.[5] B65D *65/32*
U.S. Cl. 229—87.05 **5 Claims**



1. A foil-like material for folding around an article to be packaged, producing a folding pack comprising:
a single foil sheet having two opposite longitudinal edges and corresponding regions adjacent said edges, said regions laterally framing an inner region of the foil sheet,

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said single foil sheet being adapted to surround the article on all sides;

one of said regions having a tab, and the corresponding region containing a portion which has the configuration of the tab, said tab and said portion being located one above the other when said foil sheet is folded together to form a folding pack, said tab and said portion being disposed completely within the corresponding edge region;

an adhesive layer disposed on said regions surrounding said tab and said portion;

an intermediate region between each of said corresponding regions and the inner region;

said tab being partially separated materially along a peripheral line from the corresponding region, said adhesive layers being present respectively in the intermediate region between respective ones of said tab and said portion and the inner region, so that the inner region is completely framed laterally by said adhesive layers; and

said partially separated tab being foldably connected to said intermediate region so that when said partially separated tab is pulled, the intermediate region is torn open.

5,356,069

STAND-UP TYPE SACHET INTENDED TO CONTAIN A LIQUID, PASTY OR PULVERULENT PRODUCT

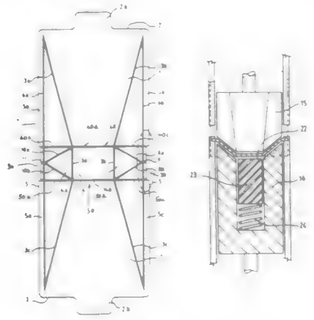
Thierry Bochet, Pontchateau, and Jean-Pierre Moriniere, Bouzielle, Lire, both of France, assignors to Packart Holding, Franc

PCT No. PCT/FR91/00433, § 371 Date Sep. 22, 1992, § 102(e) Date Sep. 22, 1992, PCT Pub. No. WO92/21580, PCT Pub. Date Dec. 10, 1992

PCT Filed May 30, 1991, Ser. No. 861,795

Int. Cl.[5] B65D *5/42*; B31B *3/26*

U.S. Cl. 229—104 **10 Claims**



1. A stand-up sachet comprising:

a pair of opposing face walls each comprising a top edge, a bottom edge having a pair of outer edge portions and a central edge portion therebetween, two parallel outer side edges, and primary marginal side regions formed along said outer side edges, said primary marginal side regions having a first width;

a bottom connecting said central edge portions of said bottom edges of said face walls and comprising a pair of parallel bottom support edges extending transverse to said central edge portions of said bottom edges, said bottom support edges and said central edge portions defining a central bottom wall therebetween, said bottom support edges being constructed and arranged to allow said sachet to balance thereon when said sachet is in its stand-up position, and said opposing face walls being sealed along said corresponding primary marginal side regions and said top edges such that said face walls and said bottom define an interior volume of said sachet,

said bottom further comprising a pair of triangular facets depending from each of said bottom support edges and having side edges tapering to an apex, said triangular facets being inclined upward toward said top edges and toward said interior volume of said sachet, a pair of secondary marginal side regions corresponding to said primary marginal side regions, said apexes of said pair of triangular facets being located at said secondary marginal side regions, and two paris of opposing intermediate facets, each said intermediate facet of said pair depending from one of said outer edge portions of said bottom edge of said face walls and one of said tapering side edges of one of said triangular facets, each said pair of intermediate facets tapering to one of said secondary marginal side regions, each of said secondary marginal side regions having an outer side edge coextensive with a respective one of said outer side edges of said opposing face wall and a second width less than said first width of said primary marginal side regions, such that said secondary marginal regions are captured within said primary marginal side regions when said sachet is sealed in its closed position and said outer side edges of each said pair of intermediate facets are recessed from said outside edges of said opposing face walls to insure tightness and homogeneity of said sachet.

5,356,070

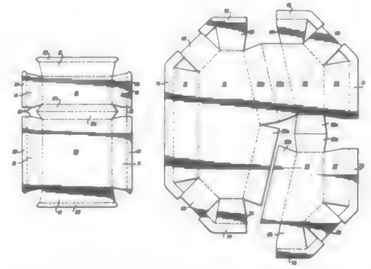
PARTITIONED PAPERBOARD FOOD TRAY

William R. Rigby, Newark, Del., assignor to Westvaco Corporation, New York, N.Y.

Filed Jan. 27, 1993, Ser. No. 9,775

Int. Cl.[5] B65D *5/48*

U.S. Cl. 229—120.17 **9 Claims**



1. A paperboard package blank for erecting a divided tray shaped vessel, said tray having at least two distinct vessel sections separated by internal wall panels, wherein said blank is comprised of:

a paperboard sheet material base having an interior surface lined with a continuous and unlapped layer of a blow molded polymer applied to said interior surface, wherein said base is formed into at least two bottom panel areas with each of said bottom panel areas being in the shape of a polygon having straight line perimeter segments delineated by first and second fold score lines such that said first and second fold score lines radiate in straight lines from a common point of termination;

at least two internal wall panels materially integral with each of said bottom panel areas such that said first fold score lines are located substantially between said internal wall panels and each of said bottom panel areas, wherein said internal wall panels are substantially aligned along an internal wall edge that is substantially parallel to said first fold score lines;

at least two external wall panels materially integral with each of said bottom panel areas such that said second fold score lines are located substantially between said external wall panels and each of said bottom panel areas;

a top flange located adjacent to at least one of said external wall panels such that an external wall edge is located substantially between said top flange and said external wall panels, wherein said external wall edge is substantially parallel to said second fold score lines;

a plurality of first side edges located substantially adjacent to said internal wall panels and radiating in substantially straight lines for a predetermined length from a terminus of said internal wall panels to said internal wall edge; and

a plurality of second side edges located substantially adjacent to said external wall panels and radiating in substantially straight lines for a first length substantially corresponding to said first side edge length and continuing, at an angle to said first length, along a straight line to said top flange.

5,356,071

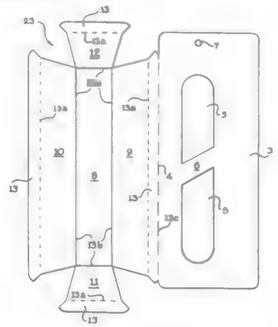
BIODEGRADABLE DISPLAY CARTON AND METHOD OF MAKING SAME

Mark M. Schmissrauter, Signal Mountain, Tenn., assignor to Textile Printing Company, Chattanooga, Tenn.

Filed Sep. 28, 1993, Ser. No. 127,878

Int. Cl.[5] B65D *5/20*

U.S. Cl. 229—160 **5 Claims**



1. A biodegradable display carton comprising, a one-piece paper blank, cut, scored and folded to form a container portion having a bottom wall, opposite end walls, and opposite side walls, an outwardly extending flange portion integral with the upper edge of said end walls and said side walls, a substantially planar cover hingedly connected to the outer edge of said flange portion along a selected one of said side and end walls of said container portion, said planar cover being folded over on the hinged connection upon said flange portion to which it is hingedly connected and adhesively secured in overlying relation thereto and to the other flange portions on the remaining side and end walls.

5,356,072

MAILBOX MOUNTING DEVICE TO ABSORB LATERAL IMPACT

Frank P. Thomas, 108 Snowden St., Sumter, S.C. 29150

Filed Dec. 2, 1992, Ser. No. 985,003

Int. Cl.[5] B65D *91/00*

U.S. Cl. 232—39 **8 Claims**

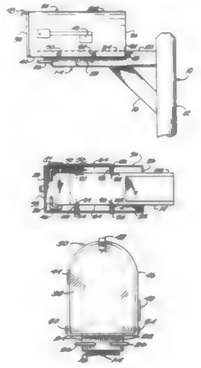
1. A mailbox assembly for attachment to a beam, said beam having a top and sides, said assembly comprising;

a mailbox having a flange, said mailbox positioned on said beam so that said flange depends along said sides of said beam; and

means for attaching said mailbox to said beam through said flange of said mailbox into said sides of said beam, said attaching means having

a first section attached to said beam,

a second section attached to said mailbox, said first section slidable with respect to said second section, and



spring means positioned between the flange and the sides of the beam for restoring said mailbox to said nominal position when compressed by lateral displacement of said mailbox with respect to said beam.

5,356,073

Patent Not Issued For This Number

5,356,074

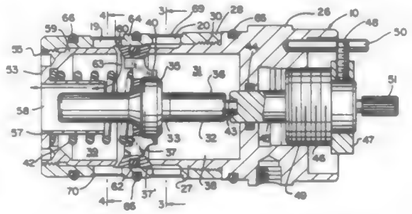
THERMOSTATIC MIXING DEVICE

Henri D. Limet, Reims; Francois P. Vogt, Jonchery Sur Vesle; Jacques R. Debaecker, Tinqueux, all of France, and Kathleen S. DeKeyser, Hingham, Wis., assignors to Jacob Delafon, Paris, France

Filed Nov. 5, 1993, Ser. No. 148,787

Int. Cl.[5] G05D *23/13*

U.S. Cl. 236—12.22 **10 Claims**



1. A fluid mixing device for controlling the temperature of hot and cold fluids, comprising:

a body member having an internal chamber;

at least one inlet to the chamber for bringing to the chamber a supply of hot fluid, one inlet to the chamber for bringing to the chamber a supply of cold fluid, and one outlet from the chamber for receiving from the chamber a mixture of the hot and cold fluids;

a reciprocating member operatively positioned in the chamber and having a portion extending radially therefrom into the hot and cold fluid inlets; and

a thermal expansion element connected to the reciprocating member, the thermal expansion element constructed and arranged to reciprocate the portion of the reciprocating member in the hot and cold fluid inlets in relation to the temperature of the hot and cold fluids.

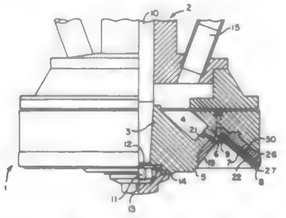
VOL 1167 ISS 3 OC 18 1994 UMI

5,356,075

ATOMIZER WHEEL WITH A DIVIDED WEAR RING

Morten Heide, Kolding, and Henrik Sonderby, Helsingor, both of Denmark, assignors to APV Pasilac Anhydro AS, Soborg, Denmark

Filed Mar. 19, 1993, Ser. No. 961,717
Claims priority, application Deamark, Jul. 10, 1990, 1658/90; Nov. 1, 1990, 2625/90
Int. Cl.[5] B01D *1/18;* B05B *3/10;* F26B *5/08*
U.S. Cl. 239—222.11 21 Claims



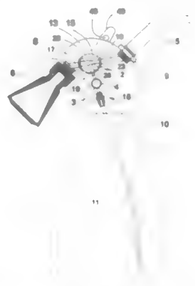
1. An atomizer wheel comprising a central hub for securing the wheel on a rotatable shaft in a centrifugal atomizer associated with an atomizer drying system, a ring-shaped acceleration chamber arranged around the hub and having an upper ring opening through which the liquid to be atomized may be added to the acceleration chamber, at least one throw-out face for passing the liquid outwardly in the atomizer wheel in a direction toward its periphery, and a plurality of throw-out channels which, distributed with a mutual angular distance along the periphery of the acceleration chamber, extend transversely out through the outer wall of the chamber and serve to throw the liquid out of the acceleration chamber during the rotation of the atomizer wheel, wherein at least one throw-out face is provided on a separate wear ring which is provided on the atomizer wheel and comprises a hard and wear resistant material, the wear ring being divided into a plurality of wear elements by cuts that extend from the periphery of the ring substantially in a direction directed to a substantially circular area around the axis of rotation, the cuts extending obliquely forwardly in the direction of rotation from at least one throw-out face of the ring.

5,356,076

SHOWER SOAP DISPENSER FOR LIQUID SOAPS

Robert A. Bishop, 110 Dry Creek Rd., Hollister, Calif. 95023

Filed Mar. 29, 1993, Ser. No. 38,216
Int. Cl.[5] B05B *7/30*
U.S. Cl. 239—311 1 Claim



1. A soap dispenser for mixing a liquid soap from a soap reservoir, and air, into a flowing water stream from a pressurized water source, and for delivering water having entrained soap and air to an outlet, for ultimate delivery to the user, comprising:

a body, having an inlet (7), an outlet (8), and a main valve cavity (14) having an essentially circular cross section, and having:

an inlet passage (16) communicating between the inlet (7) and the main valve cavity (14),

an outlet passage (17) communicating between the main valve cavity (14), and the outlet (8)

a soap supply valve cavity (20) having a soap supply valve seat (22),

an air supply valve cavity (28),

a soap supply passage (19) having a first section communicating between the main valve cavity (14) and the soap supply valve cavity (20) and having a second section communicating between the soap supply valve cavity (20) and the soap reservoir (10), and

an air supply passage (34) communicating between the air supply valve cavity (28) and the soap supply passage (19);

a main valve element (15) having an essentially cylindrical form, and rotatably mounted within the main valve cavity (14), said main valve element having:

a metering passage (23, 24, 25), having an inlet section (23) and an outlet section (25), wherein the metering passage inlet section (23) has a cross-sectional area smaller than the cross-sectional area of the inlet passage (16), and wherein the metering passage outlet section (25) has a cross-sectional area larger than the cross-sectional area of the metering passage inlet section (23), said metering passage inlet section (23) and metering passage outlet section (25) extending approximately diametrically through the valve element and being positioned so that when the valve element is rotated to a first position the metering passage inlet section (23) communicates with the body inlet passage (16) and the metering passage outlet section (25) communicates with the body outlet passage (17), and

a straight-through passage (26) having an inlet and an outlet, said straight-through passage (26) extending through the main valve element (15) at approximately its diameter, and communicating with the intersection (24) of the metering passage inlet section (23) and the metering passage outlet section (25), said soap supply passage (19) being positioned so that when the valve element is rotated to the first position the straight-through passage (26) communicates with the soap supply passage (19), and when the main valve element (15) is rotated to a second position the straight-through passage (26) communicates with the body inlet passage (16) and the body outlet passage (17);

a soap supply valve element (21) adapted to match to the soap supply valve cavity (20) and adjustably closeable with respect to the soap supply valve seat (22), whereby a restriction provided by the soap supply valve element (21) in conjunction with the soap supply valve seat (22) may be adjustably set;

an air supply valve element (29) adapted to match and adjustably closeable with respect to the air supply valve cavity (28), whereby a restriction provided by the air supply valve element (29) in conjunction with the air supply valve cavity (28) may be adjustably set.

5,356,077

PULSATING SHOWER HEAD

Sidney J. Shames, 57 Holly Pl., Briarcliff Manor, N.Y. 10510, and Harold Shames, 5 Agnes Cir., Ardsley, N.Y. 10502

Filed Jan. 10, 1994, Ser. No. 179,430
Int. Cl.[5] B05B *1/08, 1/16, 1/18*
U.S. Cl. 239—383 4 Claims

1. A pulsating shower head comprising:

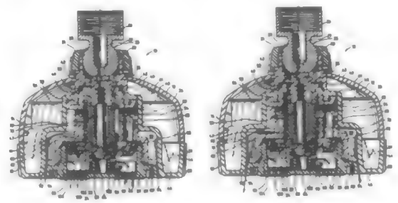
an upper body housing having a cup shaped outer wall, a downstream extending inner wall and a center stem;

a lower body housing having an upstream end abutting the upper body housing inner wall;

a stem housing configured to fit within the lower body housing and being affixed thereto, said stem housing having an upstream portion comprising a substantially cylindrical wall with at least two apertures disposed therein for directing water flow, and a downstream portion comprising a substantially cylindrical wall having internally facing threads;

a stem configured to be received by the upper body housing center stem and having a tangentially outwardly facing groove for holding a rubber gasket and a circumferential groove downstream of the tangentially outwardly facing groove for holding a second rubber gasket, said rubber gaskets providing a sliding watertight seal between the stem and the stem housing;

a spray plate having a transverse wall with a first set of jet-discharging apertures therethrough and inner and



outer substantially cylindrical walls extending upstream from the transverse wall, said outer wall threadedly affixed to the downstream portion of the stem housing, said transverse and cylindrical walls defining an annular rotor chamber, said transverse wall and said lower body housing defining a second set of jet-discharging apertures;

a nozzle plate interposed between the spray plate transverse wall and the downstream portion of the stem housing and held in fixed relation therewith, said nozzle plate having a plurality of tangentially directed flow channels which direct jets of water downstream thereof into the rotor chamber at a rotor driving velocity; and

a rotor rotatably mounted in said rotor chamber;

wherein rotation of the lower body housing and stem housing relative to the stem causes the selective discharge of either a pulsed spray through the first set of jet-discharge apertures or a continuous spray through the second set of jet-discharge apertures, or a combination of both pulse spray and jet spray.

5,356,078

ADJUSTABLE HAND-SHOWER ASSEMBLY

Bernd Bischoff, Iserlohn, Fed. Rep. of Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 881,687, May 12, 1992, abandoned. This application Sep. 22, 1993, Ser. No. 125,501
Int. Cl.[5] B05B *1/16*
U.S. Cl. 239—447 7 Claims

1. An adjustable shower assembly comprising:

a housing provided with a water-supply tube defining a seat;

a core element fixed in the seat and having a stem extending from the seat along an axis and having an outer end formed with a noncircular boss generally centered on the axis;

a diverter formed with a central bore fitted over and axially traversed by the stem and provided with at least two throughgoing passages, the diverter being at least limitedly rotatable on the stem;

an end plate fixed on the diverter and formed with

at least two sets of nozzles associated with the respective passages in respective angular positions of the diverter on the core element, and

a central axially throughgoing bore of a diameter larger than an outside diameter of the washer;

means including

a plurality of axially rearwardly projecting and radially deflectable snap tongues on the end plate and

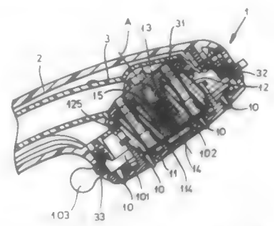
a radially outwardly projecting ridge on the diverter engaged under the tongues axially and formed with a radially outwardly projecting boss engaging between the tongues and rotationally fixing the end plate on the diverter;

a washer recessed in the bore of the end plate, having a central hole complementary to and interfitting with the boss of the stem, and bearing axially backward on the diverter, whereby the washer is nonrotatable on the housing and retains the diverter and end plate axially thereon; and

a screw threaded axially into the stem and bearing axially backward on the washer to retain the diverter and end plate axially on the core element.

6. An adjustable shower assembly comprising:

a housing provided with a water-supply tube defining a seat;



a core element fixed in the seat and having a stem extending from the seat along an axis and having an outer end formed with a noncircular boss generally centered on the axis;

a diverter formed with a central bore fitted over the stem and provided with at least two throughgoing passages, the diverter being at least limitedly rotatable on the stem;

an end plate formed with at least two sets of nozzles associated with the respective passages in respective angular positions of the diverter on the core element;

means including formations axially and rotationally fixing the end plate on the diverter;

a washer having a central hole complementary to and interfitting with the boss of the stem and bearing axially backward on the diverter, the end plate being formed at the axis with an axially throughgoing bore of a diameter larger than an outside diameter of the washer; and

a screw threaded axially into the stem and bearing axially backward on the washer to retain the diverter and end plate axially on the core element, the screw having a generally cylindrical head provided with an O-ring engaging an inner periphery of the end-plate bore.

5,356,079

FUEL INJECTOR SNAP-LOCK FILTER-RETAINER

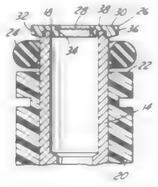
Mehran K. Rahbar, Chesapeake, Va., assignor to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Nov. 23, 1993, Ser. No. 156,556
Int. Cl.[5] B05B *17/00*
U.S. Cl. 239—585.1 4 Claims

1. A top feed electrically operated fuel injector comprising a body having an inlet connector tube at one axial end via which fuel is introduced into the fuel injector and a nozzle at an opposite axial end via which fuel is injected from the fuel injector, said inlet connector tube being metal and having an entrance through which fuel passes upon entering said inlet

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connector tube, said inlet connector tube comprising a tubular wall, said body comprising a non-metallic cover covering at least a portion of said body, including covering said inlet connector tube to a point short of said inlet connector tube's entrance so as to leave a shoulder that axially faces, but is spaced from, said entrance, an elastomeric O-ring seal disposed around the outside of said inlet connector tube between said entrance and said shoulder, and a filter-retainer assembly assembled onto said inlet connector tube at said entrance for filtering certain entrained matter from fuel entering said entrance, said filter-retainer assembly comprising filter media carried by a frame, said frame comprising a ring having a radially inwardly



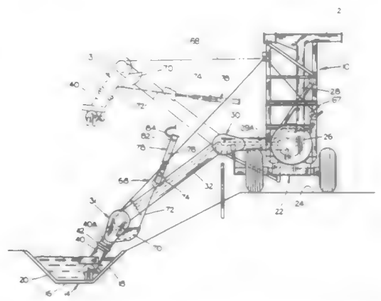
raping I.D. surface, a radially outwardly facing O.D. surface, and axially facing surfaces joining said I.D. and O.D. surfaces, one of said axially facing surfaces fitting over the wall of said inlet connector tube at said entrance thereof so that said I.D. surface is radially inwardly of said wall and said O.D. surface is radially outwardly of said wall, said one surface comprising an axially open circular annular groove within which said wall is received at said entrance, and said frame comprising means providing for a snap-on, snap-off attachment of said filter-retainer assembly to, said inlet connector tube, said ring having said O.D. surface disposed sufficiently radially outwardly to radially overlap said O-ring.

5,356,080

WATER INLET FOR A LINEAR MOVE IRRIGATION SYSTEM

John A. Chapman, Wahoo, Nebr., assignor to Valmont Industries, Inc., Omaha, Nebr.

Continuation of Ser. No. 765,180, Sep. 25, 1991, Pat. No. 5,265,810. This application Oct. 18, 1993, Ser. No. 142,702
The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.
Int. Cl.[5] A01G *25/09*
U.S. Cl. 239—724 **11 Claims**



1. A linear move irrigation system for irrigating a field comprising,

a conduit extending transversely from an elongated irrigation ditch extending lengthwise adjacent the field,

said ditch including a bottom and opposite sides,

said conduit supported above the ground by a series of support towers each having drive means associated therewith,

a series of water dispensers located along the length of the conduit for dispensing water fed through the conduit to the field,

the support tower nearest the irrigation ditch adapted to move along a road adjacent the irrigation ditch and having an inlet pipe means extending therefrom which is in fluid communication with the irrigation ditch,

said inlet pipe means also being in fluid communication with the conduit whereby water in the irrigation ditch may be fed to the conduit,

means supporting said inlet pipe means whereby said inlet pipe means may vertically move with respect to said nearest support tower to compensate for variations in the relative elevation between the road and the irrigation ditch,

a pump means mounted on said nearest support tower which has inlet and outlet ends, the outlet end of said pump means being in fluid communication with said conduit,

said inlet pipe means comprising a connecting pipe means extending transversely outwards from said nearest support tower and being connected to the inlet end of said pump means,

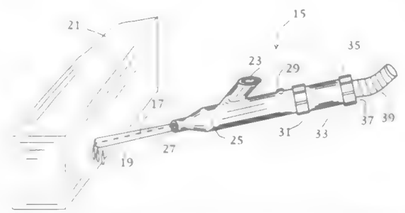
said connecting pipe means having a first pivotal pipe joint means provided therein which permits said inlet pipe means to move in a vertical plane with respect to the irrigation ditch, and a second pivotal pipe joint means provided therein outwardly of said first pivotal pipe joint means which also permits said inlet pipe means to move in a vertical plane with respect to said nearest support tower.

5,356,081

APPARATUS AND PROCESS FOR EMPLOYING SYNERGISTIC DESTRUCTIVE POWERS OF A WATER STREAM AND A LASER BEAM

John G. Sellar, Lakewood, Colo., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Feb. 24, 1993, Ser. No. 21,911
Int. Cl.[5] B02C *19/18*
U.S. Cl. 241—1 **20 Claims**



1. An apparatus for fracturing a mass of material, the apparatus comprising:

means for applying a fluid to said mass comprising a conduit having a fluid inlet, a fluid flow chamber, and a fluid outlet; said conduit for converting fluid from a pressurized fluid source into a fluid stream and for aiming said stream onto a particular location on said mass;

a fracturing laser beam for fracturing said mass; and

a laser beam aiming means for aiming said fracturing laser beam onto said particular location; wherein said means for applying said fluid and said laser beam aiming means are disposed such that said fracturing laser beam is surrounded by an envelope formed by said fluid stream;

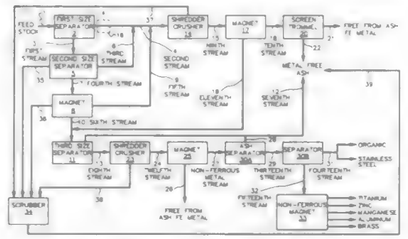
such that said fracturing laser beam and said fluid combine at said particular location to achieve a fracture rate for said mass substantially higher than a fracture rate of either said fracturing laser beam or said fluid acting on said mass alone.

5,356,082

INCINERATED WASTE MATERIAL TREATMENT

Peter F. Prinz, Slaughter; George O. Starke, and James R. Diefenthal, both of New Orleans, all of La., assignors to Resource Recycling, Inc., Pinellas Park, Fla.

Continuation-in-part of Ser. No. 718,787, Jun. 21, 1991, Pat. No. 5,174,509. This application Dec. 28, 1992, Ser. No. 997,517
The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.
Int. Cl.[5] B02C *23/00*
U.S. Cl. 241—24 **52 Claims**



1. A method for treating a feedstock of incinerated waste material containing ferrous metals, non-ferrous metals and ash to produce a metal-free ash product comprising the steps of:

(a) in a first means capable of separating the feedstock according to size, separating the feedstock to form:

(i) a first stream whose components each have dimensions which are less than a first pre-determined size, and

(ii) a second stream whose components each have dimensions which are greater than said first pre-determined size;

(b) transporting the first stream to a second means capable of separating the first stream according to size;

(c) separating in the second means the first stream to form:

(i) a third stream whose components each have dimensions which are greater than a second pre-determined size, and

(ii) a fourth stream whose components each have dimensions which are less than the second pre-determined size, and

wherein the second pre-determined size is less than the first pre-determined size;

(d) magnetically treating the fourth stream to remove ferrous metal to form:

(i) a fifth stream whose largest component by weight is the ferrous metal removed from the fourth stream, and

(ii) a sixth stream whose largest components by weight are ash and non-ferrous metal;

(e) transporting the sixth stream to a third means capable of separating the sixth stream according to size;

(f) separating in the third means the sixth stream to form:

(i) a seventh stream whose components each have dimensions which are less than a third pre-determined size and are comprised substantially of metal-free ash, and

(ii) an eighth stream whose components each have dimensions which are greater than the third pre-determined size, and

wherein the third pre-determined size is less than the second pre-determined size;

(g) recovering the seventh stream;

(h) transporting ash dust particles created in the second means during the step of separating the first stream to form the third stream and the fourth stream to a scrubber means capable of agglomeration of the ash dust particles;

(i) agglomerating the ash dust particles to form a stream of agglomerated ash dust particles; and

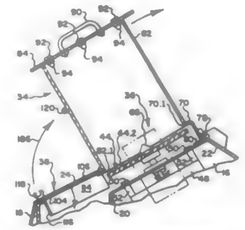
(j) recovering the agglomerated ash dust particles.

5,356,083

VEGETABLE OR FRUIT SHREDDER FOR JUICE MACHINE

Dale E. Wettlaufer, 7930 Clinton St., Elma, N.Y. 14059

Division of Ser. No. 783,762, Oct. 28, 1991, Pat. No. 5,207,152. This application Jan. 28, 1993, Ser. No. 10,608
Int. Cl.[5] B02C *18/00*
U.S. Cl. 241—92 **4 Claims**



1. A vegetable or fruit shredder assembly for use in a compact juice machine of the type set forth above; the shredder assembly comprising:

an open bottom hopper;

a shredder disk mounted for rotation a short distance below the bottom of the hopper, the disk having an upper surface onto which vegetables or fruit placed in the hopper may rest;

a shredder element mounted on the disk, the shredder element having a generally vertically extending leading edge surface extending upwardly from the upper surface of the shredder disk, the height of the surface being relatively uniform within the range of approximately 0.8–4 mm, there being a discharge opening between the bottom of the hopper and the top surface of the shredder disk, which opening is at least as great as the height of the vertically extending edge surface of the shredder element but not greater than the thickness of the smallest vegetables or fruit to be grated; and

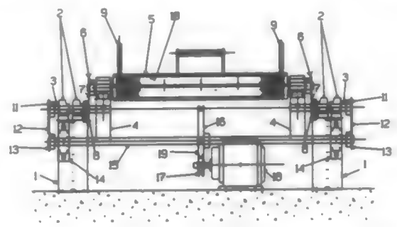
drive means for rotating the shredder disk at such a rotational speed as to impart a satisfactory product for pressing.

5,356,084

IMPROVED FEED FOR CENTRIFUGAL MILLS

Rodger L. Gamblin, 8 Springhouse Rd., Dayton, Ohio 45409

Filed May 3, 1993, Ser. No. 55,745
Int. Cl.[5] B02C *17/08*
U.S. Cl. 241—171 **8 Claims**



1. A planetary grinding mill comprising a base, a rotatable drum assembly supported on said base for rotation about a horizontal axis, said drum assembly including a cylindrical grinding tube having an axis parallel to and offset from said axis of said rotatable drum assembly, said cylindrical grinding tube rotatably mounted with respect to said rotatable drum assembly, means for preventing rotation of said cylindrical

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grinding tube with respect to said base, driving means supported by said base and drivingly interconnected with said rotatable drum assembly,

and two helical chambers of opposite screw sense connected at the ends and near the wall of said cylindrical grinding tube so as to form coaxial helical chambers as an exit and an entrance leading to external connections for entrance and for exit of material from said cylindrical tube.

5,356,085

METHOD AND APPARATUS FOR TREATING PACKAGE YARN END

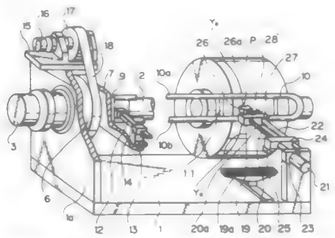
Noriyuki Kobayashi, and Masayuki Tamura, both of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 1, 1993, Ser. No. 22,686

Claims priority, application Japan, Mar. 3, 1992, 4-045539; Oct. 29, 1992, 4-291465

Int. Cl.[5] **B65H** *65/00*

U.S. Cl. 242—18 R **7 Claims**



1. A method for picking up a yarn end so as to fix the same on a yarn package, comprising the following steps:

picking up a yarn end from a yarn package by a suction means so as to hold said end yarn therein in a drawn state,

inserting a yarn end handling bar between the held yarn end and the package surface,

revolving the yarn end handling bar along the package surface while maintaining the bar beneath an outermost layer yarn connected to the yarn end, until a layered portion is formed, in which the yarn end held in a drawn state, which coincides with the outermost yarn layer, and

ejecting a jet of pressurized fluid onto or in the vicinity of the layered portion so as to entangle the yarn end with the outermost yarn layer so that the yarn end is fixed on the package.

5,356,086

FASCIMILE APPARATUS

Katsunori Takagi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

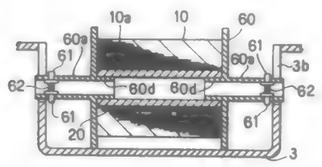
Continuation of Ser. No. 437,197, Nov. 16, 1989, abandoned.

This application Aug. 7, 1992, Ser. No. 925,895

Claims priority, application Japan, Dec. 14, 1988, 63-313726

Int. Cl.[5] **B65H** *75/02*

U.S. Cl. 242—596.7 **1 Claim**



1. A facsimile apparatus, comprising:

a recording paper roll holder box for holding a roll of recording paper of various widths on which images are recorded by a recording head;

first and second flange members each having a permanently fixed, unremovable axially extending short portion and a permanently fixed, unremovable axially extending long portion on opposing sides thereof, and axially extending long portions having radially retractable projections thereon, said short portions being detachably engageable in respective ends of a roll of relatively small width and said long portions being detachably engageable in respective ends of a roll of relatively large width, by reversing the orientation of said flange members with respect to said rolls;

said roll holder box including engaging means for engaging said axially extending short portions when a roll of relatively large width recording paper is used in said apparatus, and for engaging and rotatably supporting said axially extending long portions when a roll of relatively small width recording paper is used in said apparatus, wherein said radially retractable projections project from said axially extending long portions when said roll of relatively small width is used, to prevent said roll of relatively small width from moving on an axial direction within said roll holder box by contacting inner surfaces of said roll holder box adjacent said engaging means, and wherein said radially retractable projections are retracted into said axially extending long portions when said roll of relatively large width is used in said apparatus.

5,356,087

METHOD AND DEVICE FOR AUTOMATIC SLEEVE FEED TO ROLL-CUTTING MACHINES OF THE SUPPORT ROLLER TYPE

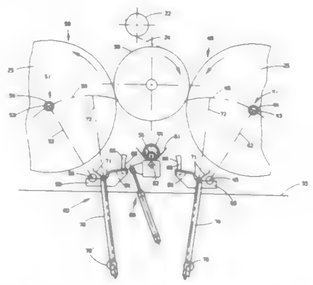
Philip W. Smith, Beloit, Wis.; Jürgen Treutner, Ostfildern, and Gerhard W. Dörfel, Boll, both of Fed. Rep. of Germany, assignors to Beloit Technologies, Inc., Wilmington, Del.

PCT No. PCT/EP90/00849, § 371 Date Nov. 25, 1992, § 102(e) Date Nov. 25, 1992, PCT Pub. No. WO91/18815, PCT Pub. Date Dec. 12, 1991

PCT Filed May 26, 1990, Ser. No. 952,622

Int. Cl.[5] **B65H** *19/30*

U.S. Cl. 242—525 **3 Claims**



1. A method for automatically feeding winding sleeves into a machine for receiving a traveling web, which has been slit longitudinally into a plurality of narrower, partial webs, and for winding each of the plurality of partial webs onto a sleeve and into a corresponding plurality of wound web rolls, the machine including a support roller, which is rotatable about a longitudinal axis, for supporting the web rolls as they are wound, a plurality of pairs of pivoted support arms, corresponding in number to the plurality of wound web rolls and having at least one pair of support arms disposed on either side of the support roller, comprising the steps:

1) feeding a plurality of longitudinally aligned sleeves, corresponding in number to the number of web rolls to be wound, into the machine along a loading path substantially parallel with, and substantially immediately beneath, the longitudinal axis of the support roller;

2) distributing the sleeves translationally to a holding station on either side of the loading path, in a predetermined array, to remove them from the loading path and substantially from beneath the support roller, such distributing comprising the sub-steps of:

a) restraining pre-selected sleeves from translational movement to a holding station on one side of the support roller;

b) distributing the remaining sleeves translationally to the said holding station on one side of the support roller;

c) releasing the restrained sleeves from restraint;

d) distributing the previously restrained sleeves translationally to the holding station on the other side of the support roller;

3) engaging each sleeve at either end thereof in its holding station and lifting it substantially along a straight line to region near the lateral periphery of the support roller on corresponding sides thereof;

4) releasing each sleeve to be rotatably mounted in a corresponding pair of support arms, one support arm disposed near either end of each sleeve;

5) winding each partial web onto a corresponding sleeve while the sleeve is held in its support arms in nipping engagement with the support roller;

6) rotating the pairs of support arms downwardly to bring the wound web rolls to a removal station laterally on either side of the support roller;

7) severing the webs being wound into the wound web rolls;

8) releasing the wound web rolls from the support arms.

5,356,088

TAPE SPEED CONTROL SERVO WITH AN OVERRIDING SLACK TAKEUP CAPABILITY FOR A STREAMING CASSETTE TAPE TRANSPORT

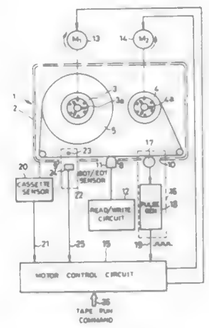
Shinobu Fujisawa, Akishima, and Kazuhiko Nakagawara, Mitaka, both of Japan, assignors to TEAC Corporation, Tokyo, Japan

Filed Nov. 20, 1992, Ser. No. 979,639

Claims priority, application Japan, Nov. 29, 1991, 3-340241; Nov. 29, 1991, 3-340242

Int. Cl.[5] **B65H** *23/192*

U.S. Cl. 242—334.4 **6 Claims**



4. In a tape transport for use with a tape cassette having a length of tape extending between a pair of reels within a housing, wherein the tape transport has a pair of motors for driving the respective reels in opposite directions and hence for causing the tape to travel bidirectionally therebetween, a method of taking up a slack that may develop in the tape, which method comprises:

(a) predefining a set of conditions in which the tape may have a slack;

(b) when any of the predefined conditions is met, simultaneously energizing the pair of motors with a first voltage for a first preassigned length of time for rotating the pair of reels in the opposite directions;

(c) simultaneously energizing the pair of motors with a second voltage, lower than the first voltage, for a second preassigned length of time for rotating the pair of reels in the opposite directions; and

(d) repeating the steps (b) and (c) a predetermined number of times.

5,356,089

REEL LOCK FOR VIDEO CASSETTE

Akira Abe, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

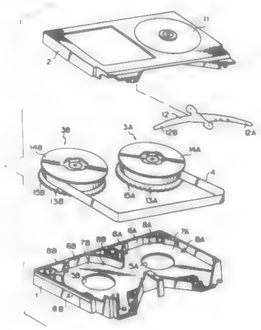
Continuation of Ser. No. 545,574, Jun. 29, 1990, abandoned.

This application Nov. 12, 1991, Ser. No. 794,328

Claims priority, application Japan, Jul. 4, 1989, 1-172487

Int. Cl.[5] **G11B** *23/087*

U.S. Cl. 242—343 **12 Claims**



1. A tape cassette comprising:

a supply reel and a takeup reel;

a lower housing having a bottom plate and peripheral walls joined thereto for surrounding annular portions in said bottom plate for respectively enclosing said supply reel and said takeup reel;

an upper housing;

said supply reel and takeup reel each being formed with a respective first plurality of notches uniformly arranged facing radially outwardly along the entire outer periphery of a flange forming said reel;

a second plurality of lower projections substantially less in number than said first plurality of notches and being formed on said annular portions at boundaries where said peripheral walls join said bottom plate of said lower housing of said tape cassette for engaging some of said first plurality of notches, wherein an upper surface of each of said lower projections includes two slanted surfaces to form a peak at its center and said two slanted surfaces are sloping downwardly from said peripheral walls toward said bottom plate; and

an elongated resilient member located in said upper housing of said tape cassette, one end of said resilient member disposed to contact said supply reel and another end of said resilient member disposed to contact said takeup reel, whereby said resilient member biases said supply reel and said takeup reel toward said lower housing of said tape cassette so that less than all of said first plurality of notches engage said peaks formed respectively on said second plurality of lower projections.

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5,356,090

BAITCASTING REEL HAVING CENTRIFUGAL BRAKE MECHANISM WITH IMPROVED ADJUSTING CONTROL

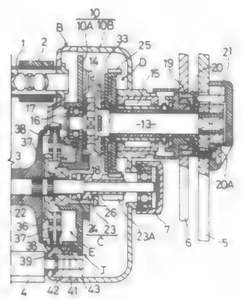
Jun Sato, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Dec. 18, 1992, Ser. No. 993,034

Claims priority, application Japan, Dec. 18, 1991, 3-104022[U]

Int. Cl.[5] A01K *89/0155*

U.S. Cl. 242—289 12 Claims



1. A baitcasting reel comprising:

a reel body including first and second side frames respectively disposed on axially opposite sides of a spool;

a side case for covering an opening defined in one side face of said first side frame;

an attachment/removal mechanism including an engaging means disposed along a periphery of a spool-receiving opening defined in said first side frame and a further engaging means provided to said side case, said mechanism being operable to attach and remove said side case to and from said first side frame by rotating said side case about an axis normal to said side case; and

a centrifugal brake mechanism including:

a brake shoe fixed to said first side frame;

a plurality of brake blocks mounted on a rotational drive line of said spool to act upon said brake shoe in response to rotation of said spool, said brake blocks being opposed to said brake shoe and movable between an operative position to contact said brake shoe and a rest position retracted from said brake shoe; and

retaining means for selectively retaining at least one of said brake blocks in said rest position;

wherein said attachment/removal mechanism allows said brake blocks to be accessible when said mechanism is operated to remove said side case from said first side frame.

5,356,091

SPINNING REEL

Kenichi Sugawara, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Apr. 16, 1991, Ser. No. 685,672

Claims priority, application Japan, May 9, 1990, 2-48428[U]; Jun. 6, 1990, 2-60399[U]

Int. Cl.[5] A01K *89/00*

U.S. Cl. 242—319 7 Claims

1. A spinning reel comprising:

a rotary frame rotatable about an axis, said rotary frame including a bail arm and a support arm for supporting said bail arm, said rotary frame having an engaging portion;

a support shaft reciprocating along said axis in accordance with rotation of said rotary frame, said support shaft having an end;

a spool fixed to said end of said support shaft, said spool reciprocating with said support shaft, said spool having an engaging portion;

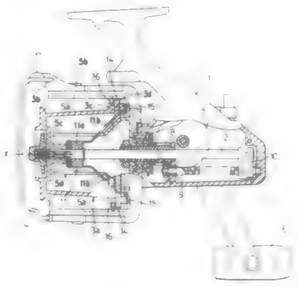
a line-retainer means for closing a gap between said rotary frame and said spool, said line-retainer means including:

a base-end boss portion fitted on said support shaft, said base-end boss portion being rotatable with respect to said support shaft, said base-end boss portion being axially movable with said support shaft;

an annular frame member;

a connecting frame member for integrally connecting said base-end boss portion to said annular frame member;

a support frame extending outwardly from said annular frame member;



first spool engaging means disposed at a side of an outer periphery of said spool, said first spool engaging means having an axis substantially parallel to said axis of said rotary frame and having a roller member rotatably mounted on said support frame and engageable with said engaging portion of said spool to reciprocate with said spool and also to rotate relative to said spool; and

a rotary frame engaging means extending from said support frame, said rotary frame engaging means being engageable with said engaging portion of said rotary frame at a position adjacent to said roller member so as to rotate with said rotary frame and also to reciprocate relative to said rotary frame.

5,356,092

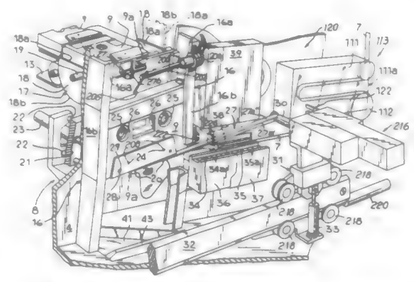
REDUCED SIZE TAPE LOADING MODULE

Luciano Perego, Milan, Italy, assignor to Tapematic U.S.A., Inc., Orlando, Fla.

Continuation-in-part of Ser. No. 905,740, Jun. 29, 1992. This application Oct. 2, 1992, Ser. No. 955,462

Int. Cl.[5] B65H *21/00*

U.S. Cl. 242—523 9 Claims



1. A tape loading module comprising:

an extraction member, wherein said extraction member engages a leader tape in a cassette, extracts a loop of leader tape from the cassette and disengages the loop of leader tape before said cassette reaches a separate loading position;

cassette support means for releasably supporting a cassette in said loading position, in which position said cassette is to be loaded with use tape;

positioning means for engaging said extracted leader tape when the cassette is in the loading position and, positioning said leader tape on a plurality of splicing blocks;

winding means for winding use tape into a cassette supported by said support means; and

splicing means for splicing an end of use tape to the leader tape extracted from each said cassette.

5,356,093

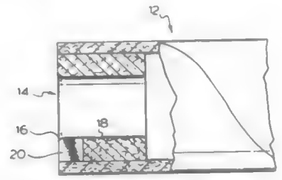
TUBULAR CORE ASSEMBLIES FOR ROLLS OF PAPER OR OTHER SHEET MATERIAL

Daniel D. Kewin, 16 Dogwood Drive, Brantford, Ontario, Canada N3R 1R3

Filed Jan. 27, 1992, Ser. No. 825,887

Int. Cl.[5] B65H *75/18*

U.S. Cl. 242—610.4 4 Claims



1. A tubular core assembly for a roll of paper or other sheet material comprising;

a hollow cylindrical core member formed by multiple wraps of paperboard material, and

an annular collar within each opposite end portion of the core member, each collar being a rigid body of non-isotropic material and having an outer annular surface glued to the inner annular surface of the core member so that torque is properly transmitted from the collar to the core member, each collar also having an inner annular surface shaped to receive a roll supporting chuck,

the ratio of collar wall thickness to core member wall thickness being in the range of from about 1.3:1 to about 2:1.

5,356,094

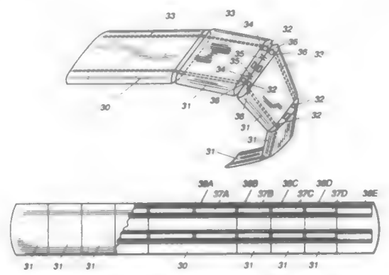
SCORPION WING

Rick Sylvain, 2443 Fillmore #235, San Francisco, Calif. 94115

Filed Mar. 4, 1987, Ser. No. 21,651

Int. Cl.[5] B64C *3/56*

U.S. Cl. 244—49 11 Claims



1. An airfoil comprising a plurality of airfoil sections adjoined in such a way as to form a complete but segmented airfoil; means enabling two or more of said sections to pivot at their adjoining ends while retaining their ordered placement; and means for maintaining airfoil rigidity that also permits two or more of said sections to pivot at their adjoining ends when said means for maintaining airfoil rigidity is released, said means for maintaining airfoil rigidity including a segmented spar system, comprising:

a) an outer spar segmented into sections and constructed in such a way as to permit a smaller spar to slide within it;

b) said outer spar segments built into said airfoil sections in such a way that, when said airfoil sections adjoin and form a complete but segmented airfoil, said outer spar segments align end to form a complete but segmented outer spar;

c) an inner spar sufficiently smaller than said outer spar to permit said inner spar to slide within said outer spar, said inner spar constructed in segments in such a way that, when said airfoil sections adjoin and form a complete but segmented airfoil, said inner spar segments align end to end to form a complete but segmented inner spar;

d) said spars constructed in such a way that when the end of said inner spar segments align with the ends of said outer spar segments, each of said inner spar segments contacts only one of said airfoil sections, but when said ends of said spar segments are not so aligned, each of said inner spar segments contacts two of said airfoil segments;

e) means to shift the inner spar segments from the position within said outer spar in which said ends of inner and outer spar segments are aligned, to a position of nonalignment, and to return said inner spar segments to said position of alignment.

5,356,095

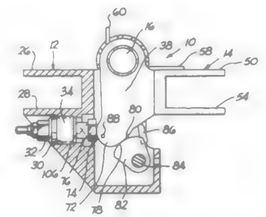
ATTENUATING LINGED DEPLOYMENT APPARATUS

Gary I. Aker, Silver Spring, Md., assignor to Fairchild Space and Defense Corporation, Germantown, Md.

Filed Aug. 4, 1992, Ser. No. 924,489

Int. Cl.[5] B64G *1/44*

U.S. Cl. 244—173 14 Claims



1. Deployment apparatus comprising a first hinge member, a second hinge member, means for pivotally connecting said first hinge member to said second hinge member, said first and said second hinge members having a deployed position with respect to each other, means for biasing said first hinge member and said second hinge member into the deployed position with respect to each other and a mechanical attenuator associated with one of said hinge members for dampening oscillatory movement of one of said hinge members with respect to the other of said hinge members, said mechanical attenuator comprising a plunger member and a spring member that biases said plunger member into contact with a portion of one of said hinge members.

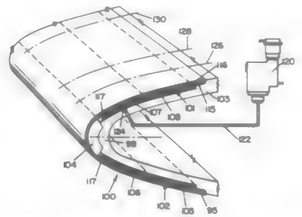
VOL 1167 ISS 3 OCT 18 1994 UMI

5,356,096

SKIN FOR A DEICER

Richard L. Rauckhorst, III, North Canton, and Kevin L. Leffel, Akron, both of Ohio, assignors to The BFGoodrich Company, Akron, Ohio

Filed Dec. 30, 1992, Ser. No. 998,360
Int. Cl.[5] B64D *15/00*
U.S. Cl. 244—134 A 16 Claims



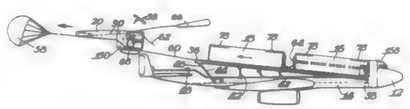
1. A deicer for attachment to an airfoil comprising:
a composite primary layer comprised of a fabric impregnated with a nitrile phenolic resin; and,
distortion means for providing distortion forces for distorting said primary layer in order to impose strain in ice accumulated thereabove.
wherein said primary layer interacts with said distortion means to transfer said distortion forces with increased resistance to fatigue.

5,356,097

SEGMENTED SAFETY AIRCRAFT

Stefan Chalupa, 11508 Ridgely Rd., Ridgely, Md. 21660

Filed May 10, 1993, Ser. No. 58,328
Int. Cl.[5] B64D *1/12, 25/18, 25/12*
U.S. Cl. 244—139 20 Claims



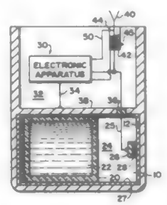
1. In an aircraft having a fuselage with a cockpit portion at one end and a tail section at the other end, the improvement being in that said fuselage includes a fuselage base support, said fuselage further including at least one segment detachably mounted to said base support, sealing means for selectively sealing said segment during emergency conditions to create a sealed compartment, means for moving said segment away from said base support during emergency conditions to cause said segment to separate from the remainder of said aircraft, at least one parachute mounted to said segment for opening during emergency conditions to float said segment in descent, a generally longitudinal guide fixedly mounted on said base support, and said segments riding on said guide to facilitate each segment being separated in a longitudinal direction away from said cockpit portion.

5,356,098

COMMUNICATION SYSTEM FOR TRANSMITTING RF SIGNALS REPRESENTATIVE OF DEFECTS OR HAZARDS IN A RAILWAY SYSTEM HAVING FRANGIBLE GLASS ACTIVATION

Kendall E. Post, Madison, Wis., assignor to General Railway Signal Corporation, Rochester, N.Y.

Filed Jul. 15, 1993, Ser. No. 93,191
Int. Cl.[5] B61L *3/00*
U.S. Cl. 246—169 A 5 Claims



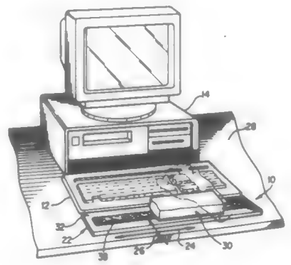
1. A communication system for transmitting RF signals representative of defects or hazards in a railway system comprising:
a reserve cell glass ampule containing an electrolyte, said ampule containing a sufficient quantity of inert gas such that a suitable elevated activation temperature for the reserve cell can be established; a housing for containing said glass ampule;
electronic apparatus, including an antenna, located within said housing; said reserve cell further including electrodes electrically connected to said electronic apparatus such that when said reserve cell is activated by reaching its activation temperature, said ampule becomes fractured and its contents dispersed, whereby said electronic apparatus and said antenna are energized;
further in which said antenna has a connection to said electronic apparatus for broadcasting RF signals to a locomotive or to a way station; and
means for deploying said antenna responsive to said reserve cell being activated.

5,356,099

WRIST SUPPORT SYSTEM

Joel L. Sereboff, 2215 Millridge Rd., Owings Mills, Md. 21117

Filed Jun. 28, 1993, Ser. No. 82,498
Int. Cl.[5] B43L *15/00*
U.S. Cl. 248—118.1 20 Claims



1. A wrist support system positionally located adjacent a keyboard for alleviating symptoms of carpal tunnel syndrome, comprising:
(a) a substantially planar and longitudinally extending support member mounted on a base surface adjacent said keyboard; and,

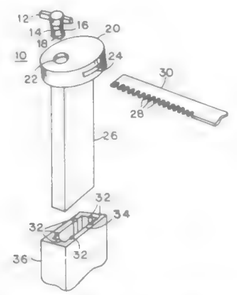
(b) a liquid containing pack positionally located contiguous an upper surface of said support member continuously and substantially conforming to at least a portion of a user's palm and wrist when said user is operating said keyboard for resiliently supporting said user's palm and wrist, said liquid substantially filling an interior volume of said liquid containing pack.

5,356,100

SLIDING-FIT OPERATING TABLE STABILIZING POST AND RACK

John R. Bookwalter, 9 Belmont Ave., Brattleboro, Vt. 05301, and William H. Bookwalter, 337 College St., Burlington, Vt. 05401

Filed Jan. 22, 1993, Ser. No. 7,913
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—122 3 Claims



2. A sliding-fit operating table stabilizing post comprising
a rectangular base post for securement to an operating table, which base post has a rectangular opening on a top surface;
six sterilizable lubricating rods positioned around the interior of the opening, which rods protrude evenly into the rectangular opening;
a top post having a long rectangular foot inserted with a sliding fit into the base post opening, wherein the top post when inserted in the opening comprises a rigid shaft movable only vertically, wherein the rods are the sole vertical support maintaining the top post stationary;
a circular casing on the top post above the rectangular foot, which top casing houses a rack arm and a pinion, whereby said rack arm may be moved perpendicularly to the post by turning said pinion, wherein the rack arm extend from the stabilizer post over a patient, and which rack arm is capable of supporting surgical apparatus.

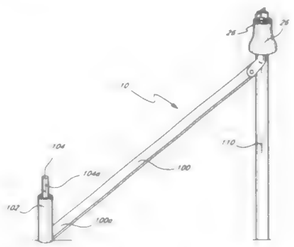
5,356,101

FENCE SUPPORT

James T. Malloy, 50 Swede Creek Rd., Oak Run, Calif. 96069

Continuation-in-part of Ser. No. 370,802, Jun. 23, 1989, Pat. No. 5,104,074. This application Apr. 1, 1992, Ser. No. 861,914
The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—156 5 Claims

1. A fence support comprising
a main support post having a top end and a bottom end adapted to be forced into the ground to orient the main support post generally vertically, said. main support post having a predetermined cross-sectional configuration to provide a corner,
a brace having a top end including an elongated bearing element and a bottom end including stake holder means, said elongated bearing element being mounted by hinge means to the top end of the brace,
said main support post and brace being adapted to be assembled into said fence support wherein the top end of the brace engages the top end of the main support post, with



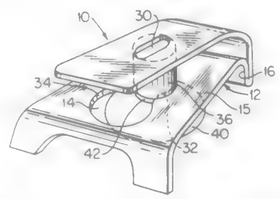
said elongated bearing element received in said corner, and
a collar member force fitted over the top of the main support post and the elongated bearing element, attaching said main support post and elongated bearing element rigidly and fixedly together.

5,356,102

PUSH RELEASE SPRING CLIP

Jon M. Blumenaus, 1904 Brookhaven Cir., Dalton, Ga. 30720

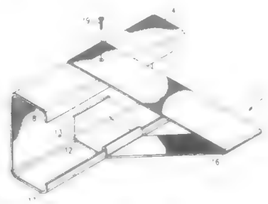
Filed Nov. 23, 1992, Ser. No. 980,211
Int. Cl.[5] F16B *47/00*
U.S. Cl. 248—205.5 21 Claims



1. A spring clip assembly for use in releasably attaching articles to a support surface, comprising
an elongated spring member having top and bottom surfaces, a central body and opposed end portions,
an elongated actuating lever having one end attached to one of said end portions and extending therefrom along said top surface in outwardly spaced relation thereto and terminating in a free end,
mounting means for releasably attaching said spring member to a support surface, and
spacer means providing a fulcrum extending between said spring member top surface and said actuating lever,
said lever being operable by a force applied thereto adjacent said free end in the direction of said spring member to engage said spacer means and cooperate with said mounting means to act as a fulcrum of a first class lever to deflect said one end of said spring means away from the support surface against the resilient spring force of the spring member.

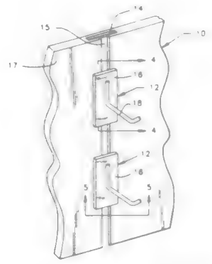
VOL 1167 ISS 3 OCT 18 1994 UMI

5,356,103
APPARATUS FOR PROVIDING SUPPORT ON A METAL PURLING
Donald L. McClurg, 6000 Oriole Dr., Midland, Tex. 79707
Filed Sep. 30, 1993, Ser. No. 129,768
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—220.2 17 Claims



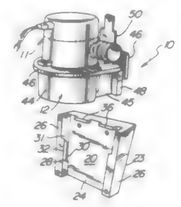
1. An apparatus for providing support on a metal purling, comprising:
a bracket member, said bracket member having a first section for contact with a first portion of the metal purling, said bracket member having a second section for contact with a second portion of the metal purling, said bracket member extending from said first and second sections and away from said first and second portions of the metal purling, said second portion being opposite said first portion.

5,356,104
MOUNTING BRACKET ASSEMBLY FOR USE IN A SLATWALL CONSTRUCTION
Leonard Rosenberg, Highland Park, and Frank Dimattia, Cedar Grove, both of N.J., assignors to Gould Metal Specialities, Inc., Union, N.J.
Filed Sep. 30, 1993, Ser. No. 129,999
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—220.2 17 Claims



1. A display mounting assembly for use on a slatwall construction that contains at least one generally vertical slot therein, said display mounting assembly comprising:
at least one bracket positionable between a first and second orientation, said bracket having at least one latching element extending therefrom, wherein said at least one latching element is free to pass into and out of said generally vertical slot only when said bracket is at said first orientation;
a locking projection extending from said at least one bracket, said locking projection passing into said generally vertical slot as said support member is turned from said first orientation to said second orientation, thereby retaining said support member in said second orientation; and
at least one insert plate member positionable within said generally vertical slot, said insert plate member having an engagement means thereon for engaging and retaining said at least one latching element in said generally vertical slot as said bracket is moved from said first orientation to said second orientation, thereby locking said bracket into a set position along said generally vertical slot.

5,356,105
RELEASABLE MOUNTING BRACKET FOR A PUMP
Del Andrews, 424 Calle De Los Molinos, San Clemente, Calif. 92672
Filed Nov. 29, 1993, Ser. No. 158,431
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—221.3 10 Claims

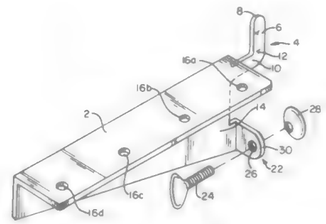


1. A mounting bracket assembly for pumps comprising:
a mounting bracket having a supporting wall and oppositely disposed side walls, wherein keeper means are formed therein;
a pump support carriage defining a support cup, whereby a pump is mountable in said support cup;
a passage means formed in said bottom of said support carriage to allow water to pass therethrough into said support cup and be directed into the pump supported therein;
a rear mounting wall integrally formed with said pump support carriage;
said rear mounting wall being formed with means for attaching said pump support carriage to said keeper means of said mounting bracket and means for releasably latching said support carriage to said mounting bracket as said attaching means is received in said keeper means of said mounting bracket;
said keeper means comprising a vertical slot formed within the inner surface of each of said side walls, wherein each of said slots is formed with an opening therein to receive said attaching means;
wherein said attaching means is defined by a pair of oppositely disposed key members formed along the vertical edges of said rear mounting wall and positioned to be received in said respective vertical slots formed in said side walls of said mounting bracket; and
wherein said releasable latching means comprises an upwardly extending latching member formed with a pair of oppositely disposed shoulder members and a latching tongue, said shoulder members being positioned to engage a pair of corresponding projecting members formed on said support wall of said mounting bracket, and wherein said projecting members are spaced apart so as to receive said latching tongue therebetween.

5,356,106
UNIVERSAL DISPLAY MOUNT
Frank A. Trotta, Maplewood, and Vincent J. Gamello, Hackensack, both of N.J., assignors to Intermark Corp., South Kearny, N.J.
Filed Jul. 6, 1993, Ser. No. 87,580
Int. Cl.[5] E04G *3/08*
U.S. Cl. 248—243 23 Claims

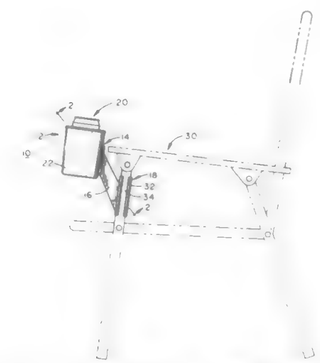
1. A universal mounting assembly for use with display fixtures having corresponding vertical posts with corresponding forward facing external surfaces having corresponding slots

therein, said mounting assembly comprising a display component and bracket means, wherein said bracket means comprises at least one bracket comprising a single hook for insertion into a single slot in the vertical post of the display fixture, adjustable



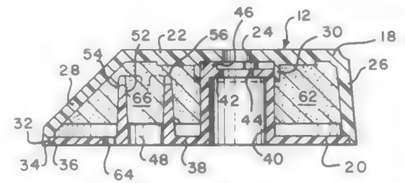
leveling means located below said single hook having contact means for contact with the forward facing external surface of the vertical post of the display fixture and engagement means for engagement of said display component.

5,356,107
BEVERAGE CONTAINER HOLDER
David M. Sinohuiz, 83 153 Circle Dr., Indio, Calif. 92201
Filed Jul. 19, 1993, Ser. No. 93,467
Int. Cl.[5] A47K *1/08*
U.S. Cl. 248—311.2 3 Claims



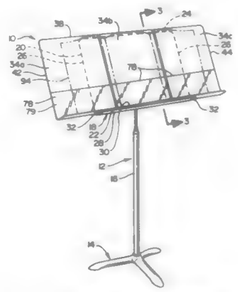
1. A beverage container holder for holding a beverage container, said beverage container holder being removably attachable to a substantially vertical chair member, said beverage container holder comprising:
a holder member;
said holder member having a substantially cylindrical exterior surface;
a substantially cylindrical and upwardly facing cavity provided in said holder member;
an annular rim extending radially outward from said substantially cylindrical exterior surface adjacent an upper edge of said holder member;
a semicylindrical clamping member dimensioned to partially encircle the chair member;
a strut member extending obliquely upward from said clamping member; and
an annular ring extending substantially horizontally outward from said strut member.

5,356,108
WEIGHTED TROPHY BASE
Peter M. Stagl, Morris Plains, and Robert Hedrick, Dix Hills, both of N.J., assignors to Avnet, Inc., Great Neck, N.Y.
Filed Jul. 2, 1993, Ser. No. 87,390
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—346 18 Claims



1. A weighted base for a trophy that may stand on a shelf, table and the like, comprising:
a shell having a platform for supporting portions of said trophy above said base;
a cover having a first surface for resting on a table, shelf and the like, said cover being connected to said shell to define a hollow interior cavity of said base;
a fill hole in said cover providing access to said cavity;
a funnel connected to said cover and communicating with said fill hole to provide a flow path from said fill hole to said cavity, said funnel having an inlet end adjacent said fill hole and an outlet end extending into said cavity;
hardened filler means in said base, which filler means was introduced to said cavity in fluid form via said fill hole and said funnel, for increasing the weight of said base;
connective means for connecting said shell to said cover; and
vent means for communicating said cavity with the external environment during filling of said base with said filler means.

5,356,109
MUSIC SUPPORT APPARATUS AND METHOD
Americole Biasini, 2101 Ontario, Bellingham, Wash. 98226
Filed Feb. 14, 1994, Ser. No. 195,878
Int. Cl.[5] A47B *97/04*
U.S. Cl. 248—448 22 Claims



1. A stand, such as a music stand, and stand extender combination, comprising:
a. a stand having a sheet material support section which has a forward side and a rear side and comprises:
i. a main back support providing a substantially planar forward support surface adapted to engage sheet material which can be positioned against the support surface, said back support having upper and lower edges and side edges;

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ii. a bottom ledge support means extending forwardly from a lower portion of said back support and positioned to engage and support a lower edge of said sheet material;

iii. said support section having a lateral dimension extending between side edges of said back support, and a vertical dimension extending from said ledge means to the upper edge of the back support;

b. a stand extender comprising:

i. a panel section portion comprising a plurality of panel sections, each having opposite side edges and upper and lower edges, said panel sections each having at least one panel hinge connection to an adjacent panel section along a related vertical panel hinge axis and along an adjacent side edge of said adjacent panel section, to restrain relative movement between said adjacent panel sections to articulating motion about said vertical panel hinge axis;

ii. a flange portion comprising a plurality of flange sections, each flange section having opposite side edges and rear and front edges;

iii. each flange section having a flange/panel hinge connection at the rear edge of the flange section to an adjacent lower edge of a related panel section along a related panel/flange hinge axis to restrain relative motion between each panel section and its related adjacent flange section to articulating motion about said panel/-flange hinge axis;

iv. each flange section having at least one flange hinge connection of one of its side edges to an adjacent side edge of an adjacent flange section about a related flange hinge axis to restrain relative motion between the adjacent flange section to articulating motion about the flange hinge axis;

c. said extender having a collapsed position where each panel section is folded over along its panel hinge connection so that the panel sections are stacked in overlying relationship with one another and said flange sections are also in stacked overlying relationship;

d. said extender having an extended position where:

i. said panel sections are in an unfolded configuration at laterally spaced positions in substantial co-planar relationship, where the panel sections collectively present an extended forwardly facing sheet support surface;

ii. said flange sections are at laterally spaced positions in substantially co-planar relationship to present an extended bottom support surface;

iii. said flange sections extending forwardly from said panel sections at an angle having a substantial right angle component, in a manner that said flange sections restrain relative angular movement of said panel sections to substantially maintain said panel sections in co-planar relationship, and said panel sections restrain relative angular movement of said flange sections to maintain said flange sections in substantial co-planar alignment;

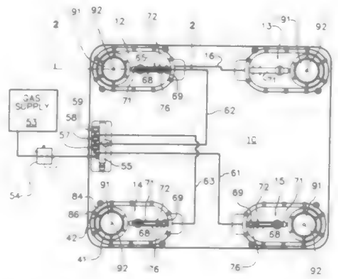
e. said extender being arranged to be positioned in its extended position on said support section of said stand with said panel section portion positioned adjacent, and substantially parallel to, said back support of the stand, and with said flange portion being positioned adjacent to, and generally parallel to, the bottom support means of the stand, said extender in its extended position having a lateral length dimension greater than the lateral dimension of the sheet support section of the stand, so that outer portions of the extender extend beyond the side edges of the sheet support section to present a laterally extended support for sheet material.

5,356,110

PNEUMATIC ISOLATION SYSTEMS FOR DAMPING VERTICAL, HORIZONTAL AND ROTATIONAL VIBRATIONS

Richard P. Eddy, Gardena, Calif., assignor to Newport Corporation, Irvine, Calif.

Filed Jun. 8, 1993, Ser. No. 73,933
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—550 **29 Claims**



1. In a method of isolating a load structure from vertical, horizontal and rotational vibrations of a supporting structure with the aid of displacement of a pneumatic fluid from and to a fluid chamber of a pneumatic vibration isolation system, the improvement comprising in combination:

providing a fluid-tight diaphragm extending from a circumferential edge of said fluid chamber into said fluid chamber;

providing said diaphragm with a circumferential compliance section inside said edge of the fluid chamber;

structuring said diaphragm inside of said compliance section with alternate stiffened and reinforced diaphragm portions in said fluid chamber;

coupling said diaphragm and said fluid chamber between said supporting structure and said load structure;

damping vertical vibrations by displacing pneumatic fluid from and to said fluid chamber with said fluid-tight diaphragm; and

damping horizontal and rotational vibrations with said reinforced diaphragm portion in said fluid chamber.

5,356,111

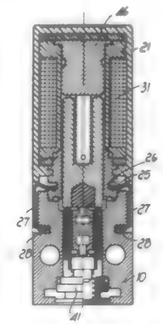
MINIATURIZED SOLENOID VALVE DEVICE AND METHOD FOR MANUFACTURING SAID DEVICE

Roberto Bottacini, Lurano, Italy, assignor to Pneumax S.r.l., Lurano, Italy

Filed May 24, 1993, Ser. No. 67,437
Claims priority, application Italy, Jun. 8, 1992, MI92A001414
Int. Cl.[5] F16K *31/02*; F15B *13/044*
U.S. Cl. 251—129.15 **3 Claims**

1. Miniaturized solenoid valve device comprising: a valve housing member containing a valve port and flow passages connected to said port; a valve body moving to engage or free said port in order to control the connection between said port and said passages; a solenoid arranged adjacent to said housing member in order to move said valve body; a removable pusher means to push said solenoid against said housing member; said solenoid comprising a polymeric covering which forms an abutment for connection to said housing member; said pusher means comprising:

a) an upper part provided with a central opening, at least a portion of the edge of said opening being provided with a recess for engaging said solenoid;



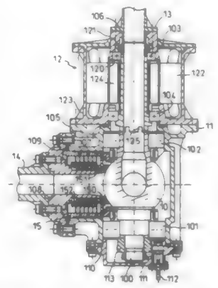
b) two opposite lateral parts each provided with an indent toward its lower end for engaging said housing member.

5,356,112

ELECTRICALLY CONTROLLED VALVE HAVING A TOTALLY LEAKPROOF VALVE PLUG

Patrick Simar, Pinterville; Francis Meyer, La Mare/S Venables, and Jean-Lac Pattyn, St Marcel, all of France, assignors to Societe Europeenne de Propulsion, Suresnes, France

Filed Jun. 29, 1993, Ser. No. 84,756
Claims priority, application France, Jul. 9, 1992, 92 08547
Int. Cl.[5] A16K *31/04, 5/00*
U.S. Cl. 251—129.11 **17 Claims**



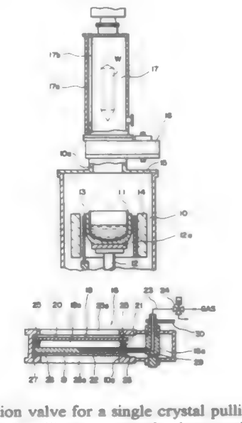
1. An electrically controlled leakproof valve comprising a fluid feed channel and at least one delivery channel for said fluid, rotary displacement of a distributor plug of said valve being controlled by an actuator, the actuator comprising a rotor that is axially pierced and through which the fluid from the feed channel flows without headloss, said actuator connected to a valve body, said connection being provided in sealed manner without using dynamic sealing devices.

5,356,113

ISOLATION VALVE FOR SINGLE CRYSTAL PULLING APPARATUS

Koji Mizuishi; Kouzou Yokota, and Katsuhiko Ogino, all of Annaka, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Sep. 23, 1993, Ser. No. 125,187
Claims priority, application Japan, Sep. 30, 1992, 4-285115
Int. Cl.[5] F16K *3/16*
U.S. Cl. 251—167 **11 Claims**



9. An isolation valve for a single crystal pulling apparatus, the single crystal pulling apparatus having a main chamber in which a crucible holds a melt of a raw material, the single crystal pulling apparatus having a pull chamber which receives a single crystal pulled from the melt, the isolation valve for the single crystal pulling apparatus comprising:

a valve casing having two opposing valve seats, a first valve seat having a first opening communicable with the main chamber and formed around the first opening, a second valve seat having a second opening communicable with the pull chamber and formed around the second opening, the first and second openings being circular and arranged coaxially with each other;

a valve rod having a longitudinal axis located within the valve casing, the valve rod being longitudinally movable along the axis and rotatable about the axis;

a shutter rotatably mounted within the casing about the longitudinal axis, the shutter including a first plate movable in and out of sealing contact with the first valve seat to open and shut the first opening, a second plate movable in and out of sealing contact with the second valve seat to open and shut the second opening, and a bellows connecting the first plate to the second plate, the first plate being fastened to the valve rod;

spring means holding the first plate out of sealing contact with the first valve seat when the first plate is opposite to the first valve seat and the second plate is out of contact with the second valve seat;

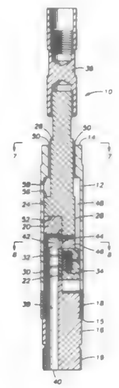
a gas passage communicable with a gas supply and with an interior of the shutter defined by the first plate, the second plate and the bellows, the gas passage enabling a working gas from the gas supply to pass to the interior of the shutter; and

means, provided intermediate the gas passage, for controlling the pressure of the interior of the shutter, the controlling means having a first set pressure of the gas at which the first plate is in sealing contact with the first valve seat and the second plate is in sealing contact with the second valve seat, the controlling means having a second set pressure of the gas at which the first plate is out of sealing

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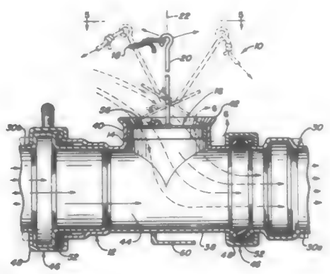
contact with the first valve seal and the second plate is out of contact with the second valve seat.

5,356,114
TRAVELING VALVE FOR SUCKER ROD PUMP
Kenneth R. Havard, Houston, Tex., assignor to Mash Oil Tools, Inc., Kingwood, Tex.
Filed Jan. 26, 1994, Ser. No. 187,302
Int. Cl.[5] F16K *3/00*
U.S. Cl. 251—176 20 Claims



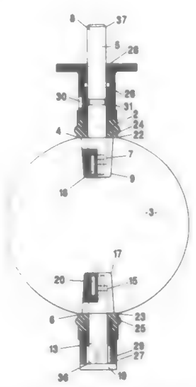
1. A mechanically operated traveling valve for use in a sucker rod pump comprising:
a cylindrical housing having a lower end containing an inlet and an upper end containing an outlet; and
a mechanically operated sliding shear seal positioned within said housing, said seal being operable between open and closed positions by reciprocal action of a sucker rod.

5,356,115
VACUUM RELIEF VALVE
B. J. Helmick, 303 Deborah Ct., Upland, Calif. 91786
Filed Jul. 22, 1993, Ser. No. 94,982
Int. Cl.[5] F16K *31/46*; A47L *9/00*
U.S. Cl. 251—294 26 Claims



1. A valve comprising:
a valve body having a passage,
a base on said valve body for supporting said body on a surface in a normal position in which a certain axis of said body extends outwardly from the surface.
a valve member in said passage movable between a closed valve position wherein the valve member blocks flow through the passage and an open valve position wherein said valve member permits flow through the passage, and
valve operating means including an elongate operating member movable about said certain axis of the valve body for moving said valve member from one of said valve positions to the other valve position in any position of said operating member about said axis.

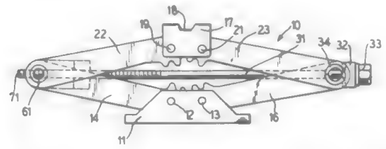
5,356,116
SHAFT AND VALVE DISC CONNECTION FOR BUTTERFLY VALVE
David R. Morgan, and Wayne C. McClelland, both of Madison, Kans., assignors to ABZ Manufacturing, Inc., Madison, Kans.
Filed Oct. 21, 1993, Ser. No. 139,003
Int. Cl.[5] F16K *1/22*
U.S. Cl. 251—308 15 Claims



1. An improved shaft and valve disc connection for butterfly valve comprising:
a valve disc having a hub and adapted to be rotated between an open and a closed position in a flow line;
a valve disc seat adapted to engage said valve disc in said closed position:
a shaft having one end inserted into a bore of said hub, said bore having a single larger aperture contiguous with a plurality of smaller apertures, said shaft having a diameter less than the diameter of said larger aperture and aligned along substantially the same axis as the axis of said larger aperture and extending outwardly therefrom to permit torque to be transmitted to said valve disc from a point external thereof, one end of said shaft including:
a plurality of dowels for engaging said shaft into said bore of said valve disc hub, each of said dowels having a diameter less than the diameter of said smaller apertures and having an axis aligned along substantially the same axis as the axis of said shaft and having a diameter less than one-half the diameter of said shaft and mounted in apertures located in the end of said shaft and protruding therefrom and positioned in such a manner so that said dowels have an axis that is aligned along substantially the same axis as the axis of said smaller apertures.

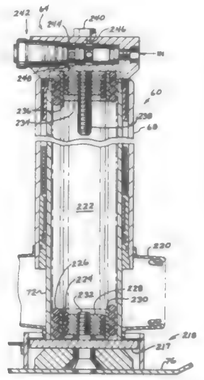
5,356,117
HOLLOW TRUNNIONS FOR SCISSOR JACKS
Darryl L. Engel, LaOtto, Ind., assignor to Universal Tool & Stamping Company, Inc., Butler, Ind.
Filed Jul. 1, 1993, Ser. No. 84,129
Int. Cl.[5] B66F *3/08*
U.S. Cl. 254—126 5 Claims

1. A scissors jack comprising, a base member, a pair of lower channel members pivotally connected to said base member, a support member, a pair of upper channel members pivotally attached to said support member, a first hollow cylindrically-shaped trunnion formed with transverse openings which pivotally connects the lower end of one of said pair of upper channel members to the upper end of one of said pair of lower channel members, a second trunnion formed with a threaded opening which pivotally connects the lower end of the other of said



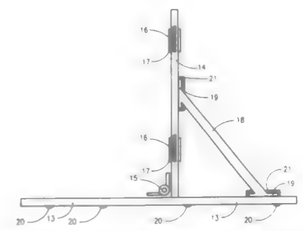
pair of upper channel members to the upper end of the other of said pair of lower channel members, a lead screw which extends through said transverse openings of said first hollow cylindrical trunnion and is threadedly received through said threaded openings of said second trunnion, and an enlarged portion on said lead screw which bears against said first hollow cylindrical-shaped trunnion, and wherein a flatted portion is formed on said first hollow cylindrically shaped trunnion into which said enlarged portion is received.

5,356,118
COMBINATION VALVE AND INTERNAL SPRING LEG ASSEMBLY
Robert H. Schneider, Beaver Dam, Wis., assignor to Versa Technologies, Inc., Racine, Wis.
Continuation of Ser. No. 703,488, May 21, 1991, Pat. No. 5,230,499, which is a division of Ser. No. 327,439, Mar. 23, 1989, abandoned. This application Nov. 30, 1992, Ser. No. 983,783
Int. Cl.[5] B60S *9/02*
U.S. Cl. 254—423 1 Claim



1. A telescoping assembly for use in combination with a pressurized fluid system including a reservoir, comprising:
an inner tubular member defining a first internal passage;
an outer tubular member defining a second internal passage;
wherein the inner tubular member is mounted for longitudinal telescoping movement within the second internal passage defined by the outer tubular member, between an extended position and a retracted position;
one or more springs located within the first internal passage and interconnecting the inner and outer tubular members, for biasing the inner tubular member toward its retracted position;
a housing mounted to an end of the outer tubular member, the housing including an internal cavity, a first passage establishing communication between the internal cavity and the first internal passage defined by the inner tubular member, and a second passage establishing communication between the internal cavity and the exterior of the housing, wherein the housing is interconnected in the pressurized fluid system for selectively providing fluid under pressure to the second passage and opening the second passage to a reservoir;
a movable valve member disposed within the internal cavity,, the valve member being movable between a first position establishing communication between the first and second passages and a second position cutting off communication between the first and second passages, wherein the valve member is movable to its first position in response to supply of pressurized fluid from the fluid system to the second passage to extend the inner tubular member; and
a retraction actuator arrangement mounted to the housing and interconnected with the valve member and with the pressurized fluid system for moving the valve member to its first position responsive to the pressurized fluid system to retract the inner tubular member by operation of the one or more springs when the second passage is opened to the reservoir.

5,356,119
VERSATILE BABY BARRIER SYSTEM
Joel F. Schock, 4008 Copperfield Ct., Fargo, N. Dak. 58104
Filed Dec. 21, 1992, Ser. No. 993,406
Int. Cl.[5] E04H *17/16*
U.S. Cl. 256—26 2 Claims



2. A means of bracing in a manually removable manner a vertical component of a portable barrier substantially perpendicular to a horizontal component to which one end of said vertical component is attached comprising:
a rigid, elongated substantially diagonal brace between said vertical and said horizontal components;
flanges fixedly attached to ends of said diagonal brace;
two mounds slotted for receiving said flanges, one mound being attached to a side of said vertical component, and the other mound being attached to a side of said horizontal component, said mounds being spaced from said attachment of said vertical component to said horizontal component, said flanges capable of being inserted horizontally into said slotted mounds for supporting said portable barrier.

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5,356,120

DEVICE FOR PRODUCING FINELY-DIVIDED METAL AND CERAMIC POWDER

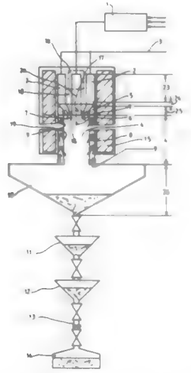
Theo König, Laufenburg-Rotzel; Kurt Bächle, Murg; Falk Stein, Murg-Oberhof; Horst Ewel, Murg; Volker Rose, Laufenburg; Gerd Zippenfenig, Murg, and Roland Klafki, Grafenhausen, all of Fed. Rep. of Germany, assignors to H. C. Starck, Gmbh and Co. KG., Goslar, Fed. Rep. of Germany

Filed Apr. 26, 1993, Ser. No. 51,836

Claims priority, application Fed. Rep. of Germany, May 4, 1992, 4214720

Int. Cl.[5] B22F 9/00

U.S. Cl. 266—175 6 Claims



1. A gas phase reactor for producing at least one of fine-divided metal and ceramic powder, comprising a gas pre-heater, a gas-introduction part, a flow-shaping part comprising at least two coaxially disposed reaction-gas nozzles and at least one inert gas nozzle disposed between the reaction-gas nozzles, a reaction tube and a product discharge device, wherein the gas preheater comprises at least two separate gas heaters.

5,356,121

FLUID-FILLED CYLINDRICAL ELASTIC MOUNT HAVING ANNULAR PARTITION MEMBER FIXEDLY SUPPORTED IN FLUID CHAMBER FOR PROVIDING RESTRICTED FLOW PASSAGE BETWEEN TWO SECTIONS OF FLUID CHAMBER

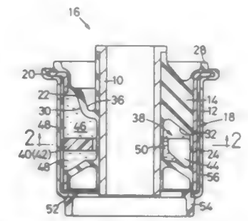
Katuhisa Ikeda, Kasugai, Japan, assignor to Tokai Rubber Industries, Ltd., Japan

Filed May 28, 1993, Ser. No. 68,107

Claims priority, application Japan, Jan. 1, 1992, 4-166991

Int. Cl.[5] F16M 5/00

U.S. Cl. 267—140.12 5 Claims



1. A fluid-filled cylindrical elastic mount, comprising:

an inner sleeve;

an outer sleeve disposed radially outwardly of said inner sleeve with a predetermined radial spacing therebetween;

an elastic body interposed between said inner and outer sleeves for elastic connection therebetween, said elastic body having a pocket formed over the entire circumference thereof, which provides an annular fluid chamber filled with a non-compressible fluid and extending between said inner and outer sleeves in a circumferential direction of the mount, said pocket being open on an outer circumferential surface of said elastic body;

an annular partition member supported by said outer sleeve and protruding radially inwards from the outer sleeve so as to divide said annular fluid chamber into two sections on axially opposite sides of said partition member, said partition member having an inner circumferential surface which cooperates with an inner wall surface of said fluid chamber to define therebetween an annular restricted flow passage that communicates with said two sections of said fluid chamber, said partition member consisting of a pair of semi-circular blocks; and

an intermediate sleeve fixedly fitted on said outer circumferential surface of said elastic body, said intermediate sleeve having a pair of windows which are opposed to each other in a first diametrical direction of the mount, each of said windows extending over less than half of the circumference of the intermediate sleeve, said pocket of said elastic body being open on an outer surface of said intermediate sleeve through said windows at first diametrically opposite portions thereof which are opposed to each other in said first diametrical direction, said pocket being closed by said intermediate sleeve at second diametrically opposite portions thereof which are opposed to each other in a second diametrical direction perpendicular to said first diametrical direction and which are located between corresponding circumferential ends of said windows, said pair of semi-circular blocks of said partition member being received in said pocket such that circumferentially opposite end faces of one of said pair of blocks abut on corresponding circumferential end faces the other block, and such that circumferentially end portions of said blocks are fixedly supported by said intermediate sleeve at said second diametrically opposite portions of said pocket, said outer sleeve being fitted on said intermediate sleeve so that said pocket is fluid-tightly closed by the outer sleeve, so as to form said annular fluid cheer, said pair of semi-circular blocks being supported at outer circumferential surfaces thereof by said outer sleeve to thus form said annular partition member.

5,356,122

HYDRAULICALLY DAMPED BEARING FOR A PISTON ENGINE HAVING A RELIEF VALVE FOR INSULATING ENGINE IDLING VIBRATIONS

Ulrich Freudenberg, Hirschberg, and Tillman Freudenberg, Weinheim, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Continuation of Ser. No. 561,705, Aug. 2, 1990, abandoned. This application Jan. 7, 1992, Ser. No. 818,735

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1989, 3925712

Int. Cl.[5] F16M 5/00

U.S. Cl. 267—140.13 16 Claims

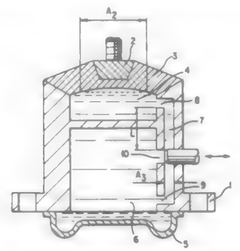
1. A hydraulically damped bearing having a longitudinal axis for supporting a piston engine comprising:

a liquid-filled working chamber defined by a journal bearing, a bearing member, and an elastic spring element, said elastic spring element being connected between said bearing member and said journal bearing such that a predetermined displacement cross-section of said spring element is movable relative to said journal bearing;

a compensating chamber bounded at one end by a flexible inner wall;

a conduit having a cross-sectional flow area and a flow length, the majority of which length of the conduit being generally aligned with the longitudinal axis of the hydraulically damped bearing, said conduit further having a first outlet communicating with said working chamber, and a second outlet axially spaced from said first outlet communicating with said compensating chamber, said conduit cooperating with the expanding elasticity of the spring element such that when vibrations of an arbitrarily specified frequency are introduced into the bearing member, the liquid volume in the conduit attains a resonant movement; and

a selectively operable relief valve mounted between said outlets in an inner side wall of said conduit, said relief valve communicating with said conduit and with one of said working and compensating chambers, and having an



open position defining an effective length of the conduit that is shorter than the effective conduit length when the relief valve is in its closed position, said relief valve being positioned between said outlets such that the liquid volume contained in a linear section of the conduit defining the effective conduit length when the relief valve is open is set into a relative movement that vibrates essentially in phase with the bearing member when vibrations of a frequency corresponding to an idling speed of the piston engine are introduced into the bearing member, and the relative movement of the liquid volume has an amplitude that is greater than the amplitude of the bearing member, multiplied by the ratio of the displacement cross-section of the spring element and the cross-sectional flow area of the conduit.

5,356,123

ELASTIC MOUNT HAVING FLUID CHAMBER PARTIALLY DEFINED BY OSCILLATING PLATE ACTUATED BY ELECTROSTRICTIVE/MAGNETOSTRICTIVE ELEMENT

Masaaki Hamada, and Yumi Sekiguchi, both of Komaki, Japan, assignors to Tokai Rubber Industries, Ltd., Japan

Filed Dec. 11, 1992, Ser. No. 989,516

Claims priority, application Japan, Dec. 24, 1991, 3-356936

Int. Cl.[5] F16M 1/00

U.S. Cl. 267—140.14 14 Claims

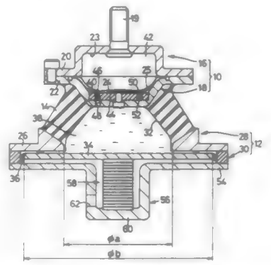
1. A fluid-filled elastic mount comprising:

a first support;

a generally annular second support which is spaced apart from said first support, said second support having a first portion and a second portion which are arranged in an axial direction of the mount and which define a first bore and a second bore, respectively, said first bore being smaller than said second bore, said first portion having an open axial end which is opposed to said first support in said axial direction;

an elastic body which is interposed between said first and second supports for elastically connecting the first and second supports and which partially defines a fluid chamber filled with a non-compressible fluid, said elastic body being secured at one end to said first support and at the other end to said open axial end of said first portion of said second support, said elastic body at least partially defining a recess which provides a part of said fluid chamber and which is open at said first bore of said first portion of said second support, the opening of said recess being substantially the same diameter as said first bore;

an oscillating plate which is supported by said second portion of said second support to close said second bore and partially define said fluid chamber, said oscillating plate being displaceable relative to said second support, said oscillating plate having a surface area which is larger than an area of said first bore of said first portion of said second support;



a support member fixed to said second support such that said support member is disposed on one of opposite sides of said oscillating plate remote from said fluid chamber; and

an electrostrictive or magnetostrictive element disposed between said oscillating plate and said support member, for oscillating said oscillating plate to thereby change a pressure of the fluid in said fluid chamber, said electrostrictive or magnetostrictive element expanding and contracting due to a strain produced therein when an electric or magnetic field, respectively, is applied to the element.

5,356,124

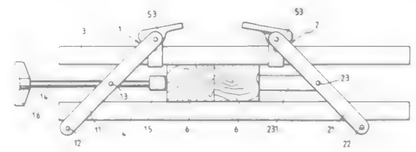
ADJUSTABLE CLAMP FIXTURE WITH MULTI-DIRECTIONAL OPENING

Yu-Fang Ai, 3F, No. 8, Lane 261, Fu Yuan St., Taipei, Taiwan

Filed Oct. 25, 1993, Ser. No. 140,531

Int. Cl.[5] B23Q 3/08

U.S. Cl. 269—134 1 Claim



1. A multi-directional clamp fixture mainly comprising:

a front clamping head;

a rear clamping base;

a top pressing plate;

a bottom pressing plate; and

pair of latching bases;

whereby said front clamping head has two side plates which are riveted together by a lower stud shaft and a central stud shaft, the central stud shaft is provided with a screw bolt, which has a pushing block at its forward end and a wing nut at its rearward end while the rear clamping base also has two side plates which cooperate with another lower stud shaft and another central stud shaft, an inverted U-shaped blocking base is inserted between the two side plates and is positioned by the central stud shaft,

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the blocking base is used to block and hold the working objects to be clamped in place, moreover, both the top pressing and the bottom pressing plates are designed to have appropriate thickness, the latching bases are installed on top of the front clamping head and the rear clamping base respectively, characterized in that each one of the latching bases further comprising:

bracket;

a pin shaft;

a thumb latch; and

a torsion spring;

wherein the bracket is formed into "U" shape with a pivotal connecting hole on each side of its two side walls, a pressing plate formed by punching is provided in one of the selected side walls, the pin shaft is used to feed through the pivotal connecting holes on each side of the bracket, the thumb latch is of "L" shape with appropriate bending at the end, the top surface of the bending area is a corrugated surface, the other end of the L-shaped thumb latch is also having a corrugated top surface, joining the L-shaped thumb latch is a pivotal portion, which has a pivotal hole provided thereof, the torsion spring is provided immediately inside the pivotal portion of the thumb latch, the pin shaft is now used to insert through the pivotal connecting holes of the bracket, the pivotal hole of the thumb latch and the torsion spring, one end of the torsion spring is pushing against the thumb latch and the other end of the torsion spring is pushing against the pressing plate of the bracket; and

by such configuration, the bracket is allowed to have the top pressing plate to feed through, the thumb latch is pressed down appropriately to let the top pressing plate to pass through and then released, then, the corrugated surface at the bending area of the L-shaped thumb latch securely clamps onto the top pressing plate due to the twisting force from the torsion spring, this setup can be used to cooperate with the bottom pressing plate to securely clamp the working objects together.

5,356,125

APPARATUS FOR STAPLING FOLDED PRINTED SHEETS

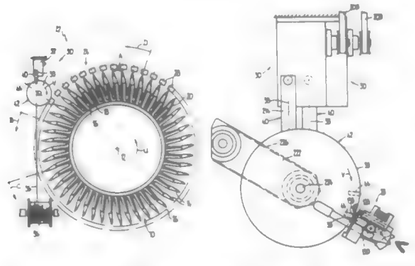
Egon Hansch, Wetzikon, and Willy Leu, Pfaffikon, both of Switzerland, assignors to Ferag AG, Hinwil, Switzerland

Continuation of Ser. No. 732,656, Jul. 19, 1991, abandoned, which is a continuation of Ser. No. 527,749, May 23, 1990, abandoned. This application Jun. 24, 1992, Ser. No. 905,169

Claims priority, application Switzerland, May 25, 1989, 01964/89-3

Int. Cl.[5] B42B *2/00;* **B27F** *7/17;* **B25C** *5/04*

U.S. Cl. 270—53 **12 Claims**



1. An apparatus for wire stapling multipart printed products along the line of a fold of the multipart printed products, comprising:

a conveyor arrangement for conveying the printed products to be stapled in a conveying direction along a track of travel through a stapling region , the line of the fold extending essentially perpendicular to the conveying direction;

at least one stapling head arrangement including a plurality of stapling heads for placing wire staples having lateral arms, the stapling heads rotating essentially at the rate of travel of the printed products along a closed track of travel and being arranged one behind another at spaced intervals in the direction of rotation, the rotation track extending in the stapling region along a section essentially parallel to the track of travel of the printed products;

at least one staple closing arrangement including a plurality of specific mating elements for closing the placed wire staples, the mating element cooperating in the stapling region with the stapling head and rotating synchronously with the stapling heads along a closed rotation track which extends essentially parallel to the track of travel of the products in the stapling region along a section which, with reference to the track of travel of the products, is disposed opposite the rotation track of the stapling heads; and

a wire section dispenser unit, the wire section dispenser unit being arranged in a stationary fashion on the rotation track of the stapling heads and dispensing, in each case to the passing stapling heads, a wire section extending essentially perpendicular to the direction of the rotation of the stapling heads.

5,356,126

METHOD AND APPARATUS FOR SEPARATING PILED TEXTILE CUTS

Fritz Bayer, Neckartalfingen, and Georg Schulz, Neu-Ulm, both of Fed. Rep. of Germany, assignors to Institu fur Textil - und Verfahrenstechnik der Deutschen Institut fur Textil - und Faserforschung Stuttgart, Kenkendorf, Fed. Rep. of Germany

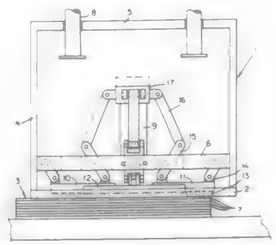
PCT No. PCT/EP91/00554, § 371 Date Sep. 17, 1992, § 102(e) Date Sep. 17, 1992, PCT Pub. No. WO91/14641, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 21, 1991, Ser. No. 934,635

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1990, 4009039

Int. Cl.[5] B65H *5/00, 3/22*

U.S. Cl. 271—10 **9 Claims**



1. A method for separating an uppermost textile cut from a pile of textile cuts comprising the steps of:

gripping said uppermost cut at a top surface thereof;

lifting said uppermost cut;

imparting a load to a restricted area close to an edge of said uppermost cut, whereby said uppermost cut is sagged downward below a level at which said uppermost cut is gripped in a region of said restricted area, said sag causing a relative lateral movement between a said uppermost cut and further cuts possible clinging thereto;

blowing air from said top surface through said uppermost cut onto said further cuts, thus forming a tunnel-type gap therebetween; and

moving a downholder laterally and translationally into said gap for completely separating said uppermost cut from said further cuts.

5,356,127

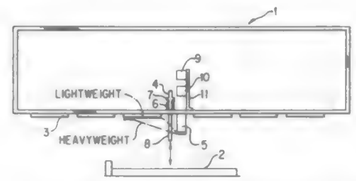
SELF ADJUSTING VACUUM CORRUGATED FEEDER AND METHOD OF FEEDING A SHEET

Steven R. Moore, Rochester; Michael J. Martin, Hamlin, and Russel J. Sokac, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 1, 1992, Ser. No. 983,924

Int. Cl.[5] B65H *5/08*

U.S. Cl. 271—11 **26 Claims**



1. In a device for feeding sheets from a stack of sheets held in a sheet tray including

an air knife positioned near a top of the stack of sheets and having a first adjustable air parameter, and

a vacuum feeder positioned above the stack of sheets and having a second adjustable air parameter,

a control device comprising:

a) means for detecting a first sheet property and a second, unrelated, sheet property;

b) means for selecting an appropriate air parameter for at least one of said first adjustable air parameter and said second adjustable air parameter based on the first and second sheet properties detected by said means for detecting; and

c) means for adjusting said at least one of said first adjustable air parameter and said second adjustable air parameter based on the appropriate air parameter selected by said means for selecting, whereby misfeeds and multifeeds are minimized.

5,356,128

GRIPPER FOR A CONVEYING DEVICE FOR CONVEYING SINGLE-SHEET OR MULTIPLE-SHEET PRINTED PRODUCTS

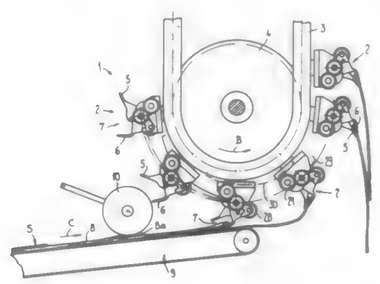
Jurg Eberle, Hinwil, and Bruno Weber, Berg, both of Switzerland, assignors to FERAG AG, Hinwil, Switzerland

Filed Feb. 17, 1993, Ser. No. 18,701

Claims priority, application Switzerland, Feb. 19, 1992, 00496/92-0

Int. Cl.[5] B65H *29/04*

U.S. Cl. 271—204 **14 Claims**



1. A gripper for a conveying device for conveying single-sheet or multiple-sheet printed products, such as newspapers, magazines and parts thereof, comprising:

a) a first gripper part and a second gripper part which can be moved relative to one another, the first gripper part being mounted to pivot about a pivot axis such that it can be pivoted from an open position to a clamping position in which it interacts with the second gripper part to clamp a printed product under a spring force;

b) a pivotably mounted closing lever which interacts with fixed closing cams arranged along the path of travel of the gripper to pivot the first gripper part into the clamping position;

c) a locking device for blocking the first gripper part in its clamping position, the locking device being releasable by a stationary opening arrangement along the path of travel of the gripper;

d) a further gripper part which is coupled to the closing lever for common pivotal movement with the closing lever; and

e) a spring element which is arranged between the first gripper part and the further gripper part which is coupled with the closing lever for common pivotal movement, the spring element being tensioned during the closing movement of the gripper, the spring element transmitting the pivot movement of the closing lever to the first gripper part, and the spring element generating the closing force when the first gripper part is blocked in its clamping positions.

5,356,129

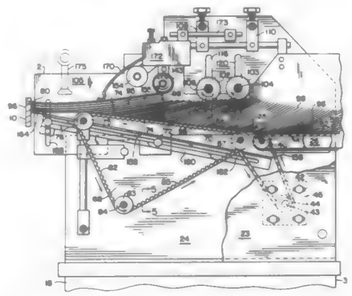
PRESS FEEDING APPARATUS

Edward S. Godlewski, 129 S. Spruce, Wooddale, Ill. 60191

Continuation of Ser. No. 695,565, May 3, 1991, abandoned. This application Mar. 29, 1993, Ser. No. 31,060

Int. Cl.[5] B65H *29/66*

U.S. Cl. 271—212 **9 Claims**



1. An apparatus for feeding stock items to a press having vacuum pick-up fingers comprising:

a stack holding area including a vertical guide surface, a conveyor means inclined with respect to a horizontal plane and guide means contiguous to the vertical guide surface;

a substantially horizontally disposed conveyor means;

lift means; and

stop means;

whereby stock items are transported in an imbricated fashion on the horizontal conveyor means, the horizontal conveyor means feeds the imbricated stock items onto the inclined conveyor means, the inclined conveyor means forces leading edges of the stock items onto the guide means, and against the vertical guide surface, the lift means engage the trailing edges of the stock items on the inclined conveyor means and the stop means engage the top surface of a topmost stock item conveyed on the inclined conveyor means, the coaction of the inclined conveyor means, the lift means and the stop means effecting the reorientation of the imbricated stock items into a

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vertical stack of stock items abutting the vertical guide surface.

5,356,130

METHOD AND APPARATUS FOR DETECTING FAULTS IN A STREAM OF OVERLAPPING PRODUCTS

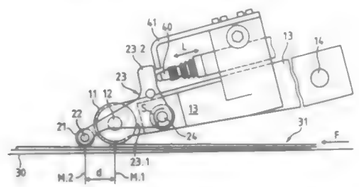
Rudolf Infanger, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Feb. 18, 1993, Ser. No. 18,826

Claims priority, application Switzerland, Feb. 19, 1992, 00510/92; Jul. 3, 1992, 02105/92

Int. Cl.[5] B65H *7/12*

U.S. Cl. 271—263 20 Claims



1. Method for detecting faults in a stream of mutually overlapping flat products, such as printed products, transported on the supporting surface of a conveyor system, in which either the leading or the trailing edges of the products may be exposed, comprising; detecting the level of the stream surface above the supporting surface at a first measuring point (M.1), measuring at a second measuring point (M.2) displaced a distance in the feed direction from the first measuring point (M.1) the relative level of the stream surface in relation to the level of the stream surface at the first measuring point (M.1), and generating a measuring signal in response to the measurement of the relative level to detect faults in the stream.

5,356,131

APPARATUS FOR TRANSFERRING PAPER NAPKINS OR SIMILAR PRODUCTS FROM THE PRODUCTION MACHINE TO STACKER MEANS

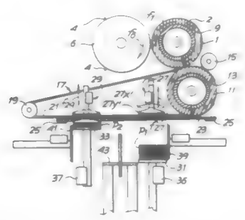
Ghilardi Mauro, Lucca, Italy, assignor to Fabio Perini S.p.A., Lucca, Italy

Filed Feb. 9, 1994, Ser. No. 193,955

Claims priority, application Italy, Feb. 15, 1993, FI93 A [illegible]025

Int. Cl.[5] B65H *39/10*

U.S. Cl. 271—288 5 Claims



1. An apparatus for transfer of single articles (M) in sheet form, such as paper napkins, and for stacking said articles in stacks (P1, P2) of a pre-determined number of articles, including:

a conveyor (17, 23) which picks up said articles from a delivery means (11);

at least two expellers (27, 29), disposed along said conveyor, and provided with reciprocating motion to remove said articles from the conveyor onto corresponding stacker means (31, 35; 33, 37);

the expellers (27, 29) being aligned in a direction of advancement of said conveyor and working alternately;

the articles which are fed to the expeller (29) which is further away from the delivery means (11) passing the expeller (27) which lies closer to the delivery means without being affected thereby;

characterized in that each expeller (27, 29) is provided with continuous, reciprocating motion even when it is not contacting any article, and further that the expeller (27) which is closest to the delivery means (11) may be moved in a direction of its reciprocating motion so as to alternately take up an operative position (27X, 27Y), in which it crosses a trajectory of advancement of the articles fed by said conveyor, and an inoperative position (27X',27Y') , in which it does not cross said trajectory of advancement of the articles.

5,356,132

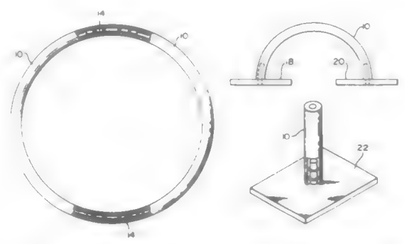
VERSATILE PLAYGROUND AND FLOTATION DEVICE

Charles McEwan, and Barbara J. McEwan, both of 11080 Arroyo Beach Pl., SW., Seattle, Wash. 98146

Continuation of Ser. No. 747,600, Aug. 21, 1991, abandoned. This application Jun. 17, 1993, Ser. No. 78,960

Int. Cl.[5] A63B *65/10, 67/06*

U.S. Cl. 273—26 R 7 Claims



1. An arch shaped play field and amusement device comprising support pads and a resilient elongated, semi-rigid foam cylinder formed into a U shape having a connector receiving, axially positioned recess therein to receive connectors for engagement with said support pads, said supports pads each having an aperture to receive connectors therein, whereby said foam cylinder extends upwardly from said support pads; and connectors adapted to be inserted within said axial recess for connection of said foam cylinder to said support pads.

5,356,133

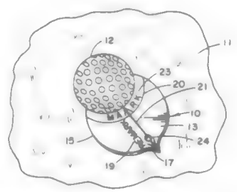
GOLF BALL POSITION MARKER

Miro D. Bellagamba, 5161 Vineland Rd., Orlando, Fla. 32811

Filed Jul. 19, 1993, Ser. No. 93,465

Int. Cl.[5] A63B *57/00*

U.S. Cl. 273—32 A 3 Claims



1. A golf ball marker comprising:

a flat piece of material having top and bottom sides and an edge therearound, said edge having a concave arcuate portion shaped to fit around a portion of a golf ball and said edge also forming a point generally centered on and opposite said concave arcuate edge portion, and said flat piece of material having surface markings formed on the top side thereof, said surface markings including indicia and an arrow between the center of said concave arcuate edge portion and the center of said pointer, whereby a golf ball marker can be used to mark a ball position and as a pointer.

5,356,134

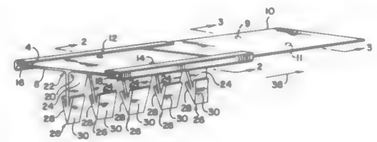
FAIRWAY DISTANCE MARKER

Dante E. DeMatteo, Port St. Lucie, Fla., assignor to Dande Plastics, Inc., Dunellen, N.J.

Filed Dec. 28, 1993, Ser. No. 174,131

Int. Cl.[5] A63B *57/00*

U.S. Cl. 273—32 R 19 Claims



1. A distance marker comprising:

a base plate having parallel sides, opposing ends, a top and a bottom;

means forming channels having open sides that face each other along the parallel sides of the top;

a web perpendicular to the bottom of said base plate extending in a direction parallel to said sides between said opposing ends;

teeth formed in the part of said web that is remote from the bottom of said base plate; and

barbs at ends of said teeth that are remote from said base plate.

5,356,135

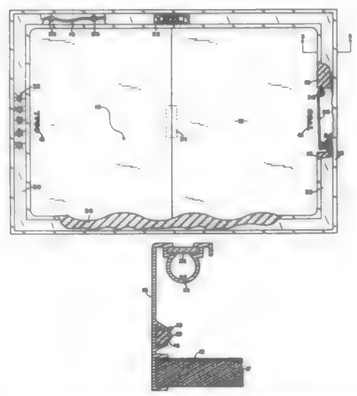
COMBINATION HOCKEY AND ROLLER BALL REFLEX PRACTISE BOARD

Robert D. Montgomery, 1685 W. 12th St., Reno, Nev. 89503

Filed Jul. 26, 1993, Ser. No. 96,438

Int. Cl.[5] A63B *69/00*

U.S. Cl. 273—57.2 16 Claims



1. A combination reflex practise board for use by hockey and roller ball players comprising; a playing surface, a wall structure having rebound means, said wall structure surrounding said playing surface, a hockey puck, a roller ball, said wall structure having a first and second substantially horizontal protrusion, said first protrusion being above a first plane passing thru the center of said puck, said first plane being parallel to said playing surface, said second protrusion being substantially above a second plane passing thru the center of said roller ball, said second plane being parallel to said playing surface,

whereby;

when said hockey puck or said roller ball is propelled in a first direction against said wall structure having rebound means at a first velocity, said rebound means propels said hockey puck or said roller ball in a second direction at a second velocity, said second velocity being substantially equal to said first velocity.

5,356,136

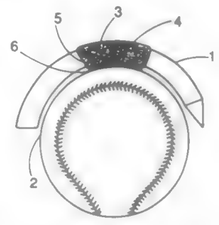
AUTOGRAPH COMBINATION, REMOVABLY-ATTACHED BALL AND PEN

Nicholas W. Ippolito, 930 Osceola Dr., Boca Raton, Fla. 33432, assignor to Nicholas W. Ippolito, Commack, N.Y.

Filed Apr. 23, 1993, Ser. No. 51,339

Int. Cl.[5] A63B *43/00*

U.S. Cl. 273—58 R 1 Claim



1. A combination removably-attached ball and pen assembly comprising a sport ball having a spherical contour, a flexible pen which is capable of following the contour of the sport ball when it is attached to the ball and is readily detachable from the sport ball to permit signing by a user of the sport ball and a means for removably attaching the ball and pen assembly comprised of two separate male and female strips, where one of the two separate strips is attached with cement glue to the ball and the other one of the two separate strips is wrapped around and permanently attached with cement glue to the pen.

5,356,137

SPORTS RACKET WITH INSTRUCTIONAL EXERCISE DEVICE

Alcides Carvalho, 928 Beverly Dr., Rock Hill, S.C. 29730

Filed Jan. 25, 1994, Ser. No. 186,437

Int. Cl.[5] A63B *49/00, 69/38*

U.S. Cl. 273—73 R 10 Claims

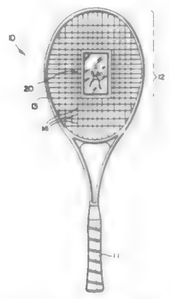
1. A sports racket having a handle, a head, and an open frame for supporting interwoven stringing, and including an instructional exercise device, said instructional exercise device comprising:

(a) a casing located within the head of the racket and removably attached to the stringing, said casing having a viewing surface spaced-apart from the stringing and a connecting surface positioned adjacent to the stringing;

(b) visual image means carried by said casing for being viewed by the user, said visual image means providing an

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instructional image for demonstrating to the user the proper form of a particular racket stroke; and



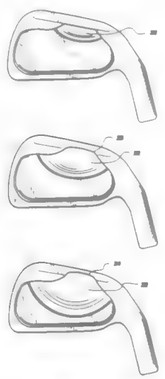
(c) attachment means for removably attaching said casing to the stringing of said sports racket.

5,356,138

DUAL WEIGHT GOLF CLUB SET

Ming T. Chen, Salt Lake City, and Jeffrey R. Thurman, West Valley City, both of Utah, assignors to Pro Sports, U.S.A., Salt Lake City, Utah

Filed Sep. 27, 1993, Ser. No. 126,607
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—77 A 5 Claims



1. An improved dual weight correlated set of iron-type golf clubs, each club having a neck to attach to a shaft, and a face for impacting a golf ball, a back surface, a heel portion, a toe portion, and a sole, wherein the improvement comprises:

a. reinforcement periphery balancing weight structure placed along the perimeter of the back of the club defining a cavitated back, said balancing weight structure having least weight and thickness starting at the top of the back of the club and gradually increasing in weight and thickness toward the sole of the club along the perimeter of the toe, sole, and heel to provide better balance and strength behind the periphery of the hitting surface of the face of the club, and including

b. a second mound weight reinforcing structure partially filling the cavitated back of the iron-type club behind the hitting surface of the club, with

i. a curvilinear base reinforcing the sole of the club with gradually increasing curvilinear thickness starting with least thickness along the back of the sole proximate the heel and gradually increasing to a maximum thickness proximate and behind center of the sole of the club face, and then gradually decreasing in thickness along the sole behind the center of the sole of the club face to the toe; and

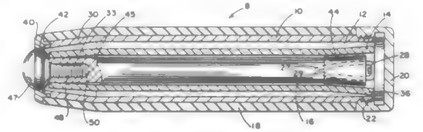
ii. a mound mass curvilinearly rising from a low point proximate the heel along the sole to a peak filling the middle of the back of the cavity of the club behind the lower segment of the hitting surface of the club face, and thereafter curvilinearly declining to a low point proximate the back of the toe along the sole to add center weight behind the segment of hitting surface of the club face wherein a ball leaves impact and leaves said hitting surface.

5,356,139

EXPANDABLE BATON WITH SECTIONS MADE OF DISSIMILAR MATERIALS

Kevin L. Parsons, Appleton, Wis., assignor to Armament Systems and Procedures, Inc., Appleton, Wis.

Filed Jan. 8, 1993, Ser. No. 2,282
Int. Cl.[5] F41B *15/02*
U.S. Cl. 273—84 R 14 Claims



1. A rigid expandable baton for use as an intermediate force weapon by law enforcement personnel, the baton of the type having a plurality of elongated, nesting, telescoping rigid baton sections, one of which is a handle adapted for receiving and housing any remaining sections when the baton is in a retracted, collapsed position, the remaining rigid sections being releasable outwardly from the handle and selectively self-locking in an extended position and slidably retractable into the collapsed position, the expandable baton further comprising:

a. the handle having a hollow interior and an open outer end through which any remaining rigid sections pass, said handle being constructed of a first material having a first specific weight and a first hardness;

b. one additional rigid baton section having an outer perimeter adapted for passing through the open outer end of the handle, said additional baton section having opposite ends, an outer and an inner end, the inner end always being contained in an adjacent receiving rigid baton section in both the expanded and nested positions, at least a portion of said additional rigid baton section being constructed of a second material having a second specific weight and a second hardness which is different from the first material;

c. an intermediate baton section constructed of the first material having a hollow interior and open inner and outer ends, and wherein said one additional baton section is of an outer perimeter adapted to pass through the open inner end of said intermediate baton section; and

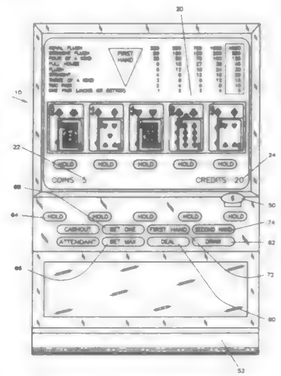
d. means for locking the baton in the extended position wherein the open outer end of said handle and said intermediate baton section each has a decreasing, tapered internal diameter and the inner end of the adjacent nesting baton section has an increasing, flared outer diameter such that the flared inner end of the nesting baton section engages the tapered outer end of the adjacent receiving baton section when the baton is in the expanded position.

5,356,140

DOUBLE POKER

Stanley P. Dabrowski, and Mark Sincox, both of 8068 W. Sahara, Ste. C, Las Vegas, Nev. 89117

Filed Apr. 14, 1993, Ser. No. 47,715
Int. Cl.[5] A63F *1/00*
U.S. Cl. 273—85 CP 51 Claims



1. A method of playing a draw poker game comprising:

a) dealing a player a first five card hand from a first deck of playing cards,

b) dealing the player a second five card hand from a second deck of playing cards,

c) the player selecting either the first hand or the second hand,

d) the player either standing on the hand selected or discarding one or more cards from the hand selected,

e) dealing the player replacement cards for the discarded cards, if any,

f) determining a value for the player's selected hand based on conventional poker hand ranking, and

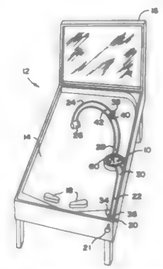
g) awarding the player a predetermined amount based on the value of the player's selected hand.

5,356,141

ROULETTE SCORING DEVICE

Barry Oursler, Barrington; Zofia Bil, and Python Anghelo, both of Chicago, all of Ill., assignors to Williams Electronics Games, Inc., Chicago, Ill.

Filed Nov. 12, 1993, Ser. No. 151,546
Int. Cl.[5] A63F *7/30*
U.S. Cl. 273—119 R 13 Claims



7. A pinball game comprising an inclined playfield for supporting a rolling ball and a plurality of play features thereon, one of said play features including:

(a) a horizontally rotating wheel having a plurality of receiving apertures disposed therethrough, each aperture having a point value associated therewith and a diameter larger than the diameter of a pinball;

(b) means for rotating said wheel;

(c) means for delivering a ball to said wheel to permit it to be received in one of said apertures in said wheel;

(d) a horizontally disposed plate positioned beneath said wheel for supporting a ball delivered to said wheel thereon as said ball moves in one of said apertures, said plate having an exit opening therethrough to permit said ball to escape from the scoring device; and

(e) means for determining which particular aperture has received the pinball,

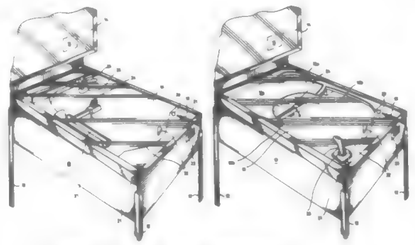
whereby the point value assigned to the particular aperture which received said ball can be added to the player's score.

5,356,142

PINBALL MACHINE WITH MOVEABLE BALL TRANSFER ASSEMBLY

John D. Borg, Lisle, and Joseph E. Kaminkow, Arlington Heights, both of Ill., assignors to Data East Pinball, Inc., Melrose Park, Ill.

Filed Aug. 9, 1993, Ser. No. 103,599
Int. Cl.[5] A63F *7/30*
U.S. Cl. 273—121 A 29 Claims



7. A pinball machine which comprises;

a housing which carries a playfield;

at least one ball retrieval location on said playfield;

at least one ball deposit location on said playfield;

a motor assembly within said housing;

a movable ball transfer assembly, adapted for retrieving and releasing balls on said playfield, said ball transfer assembly being movably connected to said motor assembly;

said motor assembly being actuatable to move said ball transfer assembly from said ball retrieval location on said playfield to retrieve a ball, and to move said ball transfer assembly to said ball deposit location on said playfield to release said ball, and

said ball retrieval location comprising a vertical-up-kick assembly and a wire tube member directing a ball retrieved by said vertical-up-kick assembly to said movable ball transfer assembly.

5,356,143

DEVICES FOR USE WITH AN AIR CUSHION GAME TABLE

Peter J. Hylak, Northbrook, Ill., assignor to E & H Plastics, Inc., Chicago, Ill.

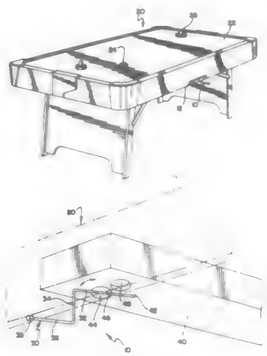
Filed Jul. 30, 1993, Ser. No. 100,045
Int. Cl.[5] A63F *7/00*
U.S. Cl. 273—126 A 19 Claims

1. A device for varying the flow of air onto a surface of an air cushion game table comprising:

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an air cushion game table having an underside, a topside, and first and second sides;

a pivotably mounted operating lever to be secured to said



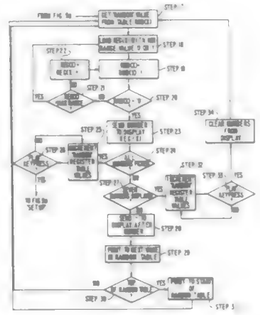
underside of said table and to extend from said first or second side of said table, said lever having an attached plate to cover an air flow opening formed on said underside of said table surface.

5,356,144

HAND-HELD LOTTERY NUMBER GENERATING DEVICE

James R. Fitzpatrick, 170 Morning Dew La., Stratford, Conn. 06497, and Kevin W. Coyle, 302 Piedmont St., Waterbury, Conn. 06706

Filed Jul. 21, 1992, Ser. No. 917,868
Int. Cl.[5] G06F *1/02*
U.S. Cl. 273—138 A **26 Claims**



13. A hand-held random number generating device for generating a plurality of random numbers having at least a first random number and a second random number, comprising:

a housing having a front lace portion with a display disposed thereon and connected thereto said housing being configured for placement within a hand of a user so that said display is visible by the user when placed in the user's hand:

a keyboard entry system connected to said housing and comprising a plurality of keys for entering at least one set of user defined parameters for said plurality of random numbers, said set of user defined parameters comprising,

(i) a first range having a first lower limit defining a minimum number value and a first upper limit defining a maximum number value;

(ii) an amount of random numbers in said plurality of random numbers; and

(iii) art instruction for optionally precluding duplication of numbers when said amount of random numbers exceeds 1;

a memory disposed in said housing for storing said at least one set of user defined parameters and

for storing a first and second set of predetermined parameters, said first set of predetermined parameters comprising;

(i) a second range having a second lower limit defining a minimum number value equal to 1 and a second upper limit defining a maximum number value equal to 6; and

(ii) an amount of random numbers equal to 2, and

said second set of predetermined parameters comprising;

(i) a third range from which said amount is generated having a third lower limit defining a minimum number value equal to 0 and a third upper limit defining a predetermined maximum number; and

(ii) an amount of random numbers equal to 1;

a table having a plurality of numbers stored in said memory;

selecting means connected to said memory for selecting one of the numbers in said table and one of said set of user defined parameters, first set of predetermined parameters and second set of predetermined parameters;

a microprocessor responsive to said selecting means, said microprocessor comprising a circuit for generating said first random number before said second random number is generated, so that the random numbers in said plurality of random numbers are generated serially;

a look-up table wherein when said selecting means selects said second set of predetermined parameters, each generated number is assigned one designation from a predetermined set of designations;

means for comparing said number generated, when said selecting means selects said second set of predetermined parameters to said numbers in said lookup table for determining the assigned designation; and

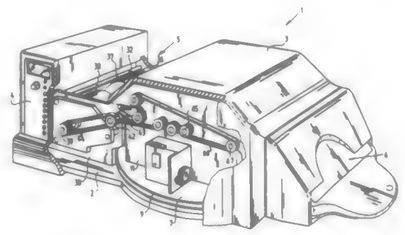
means for outputting to said display said generated random numbers and, when said selecting means selects said second set of predetermined parameters said assigned designation.

5,356,145

CARD SHUFFLER

Oetze A. Verschoor, Mierlo-Hout, Netherlands, assignor to Nationale Stichting tot Exploitatie van Casinospelen in Nederland, Hoofddorp, Netherlands

Filed Jan. 21, 1994, Ser. No. 184,441
Claims priority, application Netherlands, Oct. 13, 1993, 9301771
Int. Cl.[5] A63F *1/12*
U.S. Cl. 273—149 R **16 Claims**



1. Device for shuffling playing cards, comprising:

two shuffling card compartments which can each be placed in a first position and in a second position,

a delivery compartment,

transporting means for carrying the playing cards from the shuffling compartment located in the first position to the shuffling compartment located in the second position,

discharge means for carrying playing cards from the card compartment located in the first position to the delivery compartment,

control means for normally activating the transporting means and for otherwise activating the discharge means as determined by algorithm,

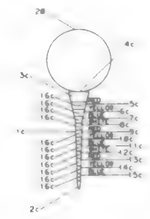
feed means for feeding the playing cards for shuffling to one of the shuffling compartments.

5,356,146

GAUGED GOLF TEE

Daniel W. Blosser, Bellevue Branch, Wilmer Ave., Richmond, Va. 23227

Filed Apr. 9, 1993, Ser. No. 45,809
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187.1 **1 Claim**



1. A golf tee comprising a unitary and substantially rigid body having a head at one end of the tee for supporting a golf ball and an elongated shaft extending from the head to the other end of the body, the shaft being capable of being embedded to different depths to support a golf ball on the tee, and means for gauging the above-ground height of a golf ball on the tee when part of the shaft is embedded, said means comprising colored stripes which are visible and extend in side-by-side relation around the shaft and along a large part of its length, said stripes being arranged in at least two side-by-side series of stripes, each of said series being the same and comprising at least two stripes, and each stripe of the same series having a color which is different from and contrasts with the color of each other stripe of the same series, whereby the contrasting appearance of exposed stripes of the same color helps to determine their number at a glance when the shaft is partly embedded to support a golf ball, and thereby helps to determine the above-ground height of the ball.

5,356,147

GOLF PRACTICE DEVICE

Donald K. MacDonald, 1180 Kilkere Rd., Sunol, Calif. 94586

Continuation-in-part of Ser. No. 931,598, Aug. 18, 1992, abandoned. This application Jan. 21, 1993, Ser. No. 6,826
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—195 A **18 Claims**

1. An apparatus for practicing a golf swing comprising:

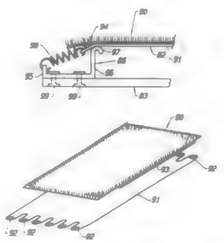
a rectangular frame assembly having a bottom surface;

a rectangular sheet of substantially inelastic supporting material;

a separate rectangular sheet of simulated grass having its own backing;

means for attaching the sheet of simulated grass with its own backing to the sheet of substantially inelastic supporting material;

means for attaching each end of the sheet of supporting material to the frame assembly so that the sheet of supporting material is suspended in position relative to the ends of the frame assembly with a predetermined amount of tension applied thereto a predetermined distance above said bottom surface of said frame assembly such that the sheet of supporting material with the sheet of simulated grass attached thereto is depressed when struck by the



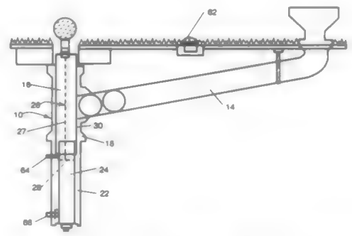
head of a golf club as the club head is swung "through" a golf ball placed on the sheet of simulated grass in a manner which normally would result in making a divot in the natural turf of a golf course.

5,356,148

SIMPLIFIED MECHANISM FOR AUTOMATICALLY TEEING PRACTICE GOLF BALLS

John F. Elder, Jr., 3301 Hunting Creek Ct., Bolling Green, Ky. 42104

Filed Aug. 3, 1993, Ser. No. 101,420
Int. Cl.[5] A63B *57/00*
U.S. Cl. 273—201 **6 Claims**



1. An automatic golf ball teeing device for automatically teeing golf balls above a practice surface, said device comprising:

a. a silo adapted to be mounted beneath the practice surface, said silo having a wall and a channel of a substantially constant cross section passing through the silo, said channel having an axis;

b. said axis being substantially vertically aligned;

c. a trough into which multiple golf balls can be fed, said trough having a cross section substantially complementary to the cross sectional shape of a golf ball so as to hold the golf balls in stacked alignment;

d. a hole in the wall of the silo;

e. said trough mating with said hole so that golf balls stacked within the trough may feed into the silo;

f. a pneumatic cylinder positioned within the silo below the hole;

g. a piston within the cylinder having a piston head adapted to move within the cylinder to a lower most ball loading position and an upward most teeing position;

h. said piston including a piston rod passing through the cylinder;

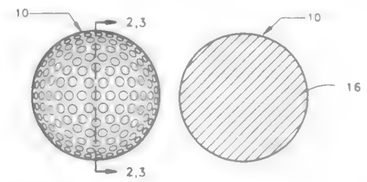
i. said piston rod attached at one end to said piston head;

j. a cylindrical sleeve telescoping inside the silo and telescoping over the cylinder;

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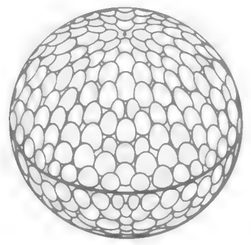
k. said sleeve attached near its uppermost end to the other end of said piston rod;
l. a tee attached to the uppermost end of the sleeve;
m. air pressure lines feeding into the cylinder on either side of the piston head; and
n. switching mechanism for controlling the flow of air pressure through the air pressure lines so that greater air pressure is exerted on the underside of the piston head when the device is at rest; and when the switching mechanism is activated, greater pressure is applied to the upper side of the piston head to lower the piston in the cylinder so that the device will retract to its loading position, said pressure being reversed when the switching, mechanism is released to return the device to its at rest position.

5,356,149
INJECTION MOLDED WATER-SOLUBLE GOLF BALL
Patrick E. Kane, 4059 Bonita View Dr., Bonita, Calif. 91902
Filed Dec. 23, 1992, Ser. No. 996,964
Int. Cl.[5] A63B *37/02, 37/12*
U.S. Cl. 273—218 **10 Claims**



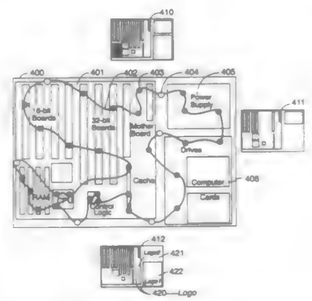
1. A water soluble golf ball comprising:
a solid unitary structure having a dimpled outer surface formed from a common liquid mixture cured into a solid solution, said common liquid mixture comprising a blend of a non-toxic water soluble filler material and a non-toxic thermo setting water soluble adhesive blended together to form a slurry, said water soluble golf ball performing substantially the same as a conventional non-water soluble golf ball, said water soluble golf ball being non-toxic and soluble in water over a finite period of time.

5,356,150
GOLF BALL
Gerald A. Lavallee, Belchertown, and Edward F. Mendrala, West Springfield, both of Mass., assignors to Lisco, Inc., Tampa, Fla.
Filed Jul. 14, 1993, Ser. No. 92,435
Int. Cl.[5] A63B *37/14*
U.S. Cl. 273—232 **4 Claims**



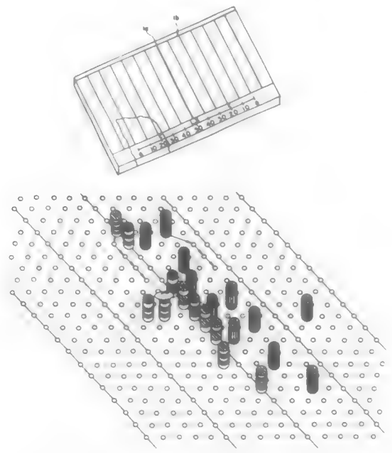
1. A spherical golf ball having a plurality of dimples formed on the spherical surface thereof, said surface defining a pole in each hemisphere thereof and an equator midway between said poles dividing the surface into two hemispheres, each of said hemispheres having substantially the same dimple pattern, said dimple pattern in each hemisphere comprising
a dimple-free area adjacent said equator;
a plurality of substantially identical sections extending between a pole and said equator, each of said sections having a dimple pattern comprising
a plurality of elongated dimples, each of said dimples having an elongated axis extending at any angle relative to said equator from 0° to 90° in either direction; and
the majority of said dimples overlapping at least one adjacent dimple.

5,356,151
GAMEBOARD AND SCALE MODEL GAME
Max Abecassis, 19020 NE. 20 Ave., Miami, Fla. 33179
Filed Apr. 20, 1993, Ser. No. 50,556
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—243 **7 Claims**



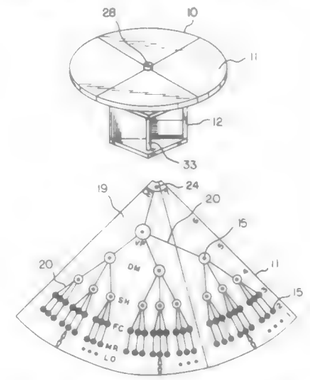
1. A board game apparatus comprising:
a plurality of model computer components representing a plurality of components of an actual computer;
assembly means for assembling said plurality of model computer components to produce an assembled model of said actual computer;
said plurality of model computer components including a model case for retaining and yielding at least some of said plurality of model computer components therein and therefrom;
said plurality of model computer components further including a model motherboard for retaining and yielding at least some of said plurality of model computer components therein and therefrom;
gameboard means for defining a playing area, said playing area including a plurality of identified player positions disposed in spaced relation to one another and defining a pathway, at least some of said player positions being located within one of a plurality of component areas within said playing area, each of said component areas including identification means for identifying one of said plurality of model computer components, said playing area further including direction means for assembling said plurality of model computer components;
marker means for identifying a position of a player on said gameboard;
marker movement generating means for determining an amount of movement of said markers along said pathway; and
instruction means for establishing the distribution of model computer components as a player's marker progresses about said pathway.

5,356,152
FOOTBALL BOARD GAME
Kevin P. Curry, R.R. #111, Claysville, Pa. 15323
Filed Jun. 2, 1993, Ser. No. 70,666
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—247 **2 Claims**



1. A football board game apparatus for simulating single football plays where said plays may be compiled to simulate a full football game or used in any other combination that would constitute a full game as determined by two opponents;
Said board apparatus comprising a football playing area including a first plurality of equidistant holes for marking locations on said playing area;
a second plurality of equidistant holes for marking individual movement and location of said pegs on said playing area;
a plurality of pegs divided by color code into a pair of matching sets, each said set of pegs representing an imaginary football team;
random selecting means for determining range of movement of said pegs through said plurality of locations;
wherein first said random selecting means includes a cubic die with an equal number of two different color markings, each color corresponding to the color of one set of pegs indicated thereon to determine which of the opposing sets of pegs moves first in the play of said game;
second said random selecting means including a cubic die having at least three distinct letters displayed thereon, a first letter being displayed singularly on three sides, a second said letter being displayed singularly on two sides, and a third said letter being displayed singularly on the remaining side;
third said random selecting means including a cubic die having four integers displayed thereon, wherein each of the two lowest integers being displayed singularly on two sides of said die and the remaining integers each being displayed singularly on a side of said die;
said letter displayed on the upward face of said second die corresponding to an integer value multiplied with the integer displayed on the upward facing side of said third die to form a product which determines the number of player moves allocated to the participants; and
a football piece including means for removably attaching said piece to a selected one of said pegs to indicate the peg having possession of the football.

5,356,153
BOARD GAME
Donald H. Morse, 18659 Palomar Dr., Sun City West, Ariz. 85375-4766
Filed Dec. 21, 1993, Ser. No. 170,822
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—248 **4 Claims**

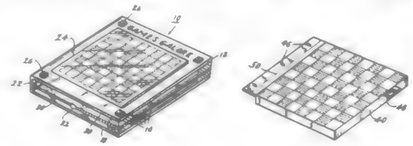


1. A new and improved corporate board game which comprises: a game board divided into four removable and reversible quadrants, one side of each of said quadrants being a playing surface carrying indicia and having perforated career paths for advancement thereon, the other side of said quadrants indicating a non-playing surface; a plurality of numbered game pieces each representing an employee said pieces being adapted to be engaged in perforations of said career paths; a base support member for said game board subdivided into internal compartments accessible from the exterior thereof to hold respectively said game pieces prior to selection by a player; a stack of marked cards for play; and a discard stack of cards played, rotatable means atop said base support member to rotatably mount said game board thereon; said marked cards consisting of a specific number of each of a set of seven different direction bearing cards per game piece, said sets for the total number of game pieces in use being shuffled together, assembled into a draw stack and inserted in a compartment of said base member; and a score card providing lines for recording 36 annual reviews of each employee, said reviews including salary points, specified on the game board, and pension points which are the accumulated total of said salary points, and a tabulation of company policy rules which cooperate with the direction on said cards to determine the employee's progress along said career path.

5,356,154

Patent Not Issued For This Number

5,356,155
LOOSE LEAF BOUND BOARD GAMES
David L. Gross, 141-39 71st Ave., Flushing, N.Y. 11367
Filed Dec. 29, 1993, Ser. No. 174,988
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—284 **13 Claims**



1. A board game kit, comprising:

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a loose leaf binder including a bottom panel, a front cover panel, a connecting rib and several binders; and

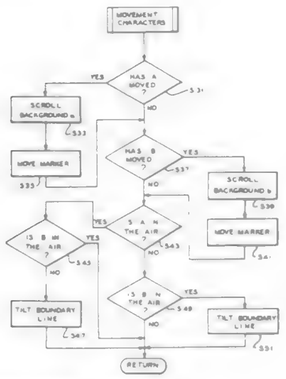
a plurality of board games, each of the game boards including an appendage with a series of binder holes, said game boards being pivotally installed in said loose leaf binder and being secured therein at said appendages.

5,356,156

GAME APPARATUS AND METHOD OF PLAYING A GAME

Toshihiro Suzuki, Tokyo; Kazuya Minamino, Kyoto, and Akifumi Kubota, Tokyo, all of Japan, assignors to Kabushiki Kaisha Bandai, Japan

Filed Apr. 12, 1993, Ser. No. 45,932
Claims priority, application Japan, Oct. 27, 1992, 4-311314
Int. Cl.[5] G06F *3/14*
U.S. Cl. 273—437 12 Claims



2. A game apparatus comprising:

a storage means storing characters and plural frames of background pictures across which characters move with the progress of a game, said frames of background pictures having a boundary line therebetween and said boundary line having a tilt;

an arithmetic unit including:

(a) a reading means which successively detects the background pictures containing the characters as these characters move and which reads the detected background pictures from the storage means;

(b) a display control means which displays the plural frames of background pictures containing the characters on a single screen;

(c) a position display means that displays the positional relation between the characters on the screen;

(d) a tilt change means which changes the tilt of the boundary line between the frames of background pictures for the characters according to the heights of the characters;

(e) a first enlargement display means which, when one character attacks, displays its background picture in enlarged size;

(f) a second enlargement display means which, when a flying object due to the attack by the attacking character reaches the background picture for the other character, displays this background picture in enlarged size; and

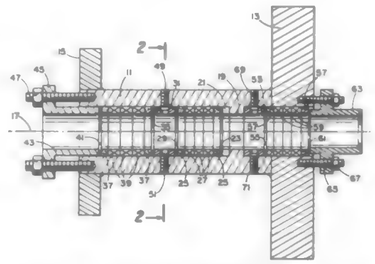
(g) a microcomputer and a random access memory for controlling the reading means, display control means, position display means and tilt change means according to the progress of the game.

5,356,157

INTERNAL LIVE LOADING PACKING GLAND

James L. Houston, 3534 E. 109th St., Tulsa, Okla. 74137

Continuation of Ser. No. 910,669, Jul. 8, 1992, Pat. No. 5,290,046. This application Jan. 13, 1994, Ser. No. 181,627
Int. Cl.[5] F16J *15/18*
U.S. Cl. 277—1 9 Claims



1. A method of packing a gland having a bore in a casing comprising the steps of:

inserting a first resiliently compressible member into the bore and against a stop in the packing gland;

inserting at least one primary packing ring into the bore and against said first member;

inserting a second resiliently compressible member into the bore and against said at least one primary packing ring;

inserting a locking ring into the bore and against said second member;

compressing said first and second compressible members and said primary packing ring between the stop and said locking ring to a predetermined first compressive load condition;

securing said locking ring to the casing to maintain said predetermined first compressive load condition;

inserting a third resiliently compressible member into the bore and against said secured locking ring;

inserting at least one secondary packing ring into the bore and against said third member;

inserting a fourth resiliently compressible member into the bore and against said at least one secondary packing ring;

inserting a follower into the bore and against said fourth member;

compressing said third and fourth compressible members and said at least one secondary packing ring between said secured locking ring and said follower to a predetermined second compressive load condition;

securing said follower to the casing in said predetermined second compressive load condition; and

releasing said locking ring from the casing to be slidable in the bore.

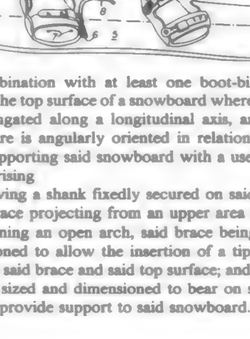
5,356,158

RESILIENT ROTARY SEAL WITH PROJECTING EDGE

Brian Simmons, San Ramon; Michael S. Rivkin, San Leandro, and Arnold Kholodenko, San Francisco, all of Calif., assignors to Rotoflex, Inc., Pleasanton, Calif.

Continuation-in-part of Ser. No. 973,108, Nov. 6, 1992, Ser. No. 875,889, Apr. 29, 1992, abandoned, Ser. No. 868,080, Apr. 13, 1992, abandoned, Ser. No. 735,920, Jul. 25, 1991, abandoned, and Ser. No. 738,007, Jul. 30, 1991, abandoned, said Ser. No. 735,920, and Ser. No. 738,007, each is a continuation-in-part of Ser. No. 595,420, Oct. 11, 1990, abandoned. This application Dec. 2, 1992, Ser. No. 985,082
Int. Cl.[5] F16J *15/34*
U.S. Cl. 277—95 10 Claims

1. A seal for preventing leakage around a rotary shaft extending through a structural casing comprising an annular stationary rigid seal secured to the structural casing for surrounding the rotary shaft, the stationary rigid seal having a smooth sealing surface for establishing a seal, and a resilient rotary seal adapted to be secured to the rotary shaft and having an annular projecting edge means for contacting the smooth sealing surface under a biased pressure to form a seal in conjunction therewith, the projecting edge means being formed by the convergence of inner and outer forward surfaces of said resilient rotary seal, a radial surface of said resilient rotary seal extending to the inner forward surface from a torque point at its forward cylindrical base, an outer rearward surface of said



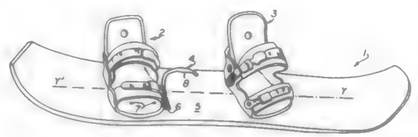
resilient rotary seal extending to the outer forward surface from a pivot point at its rearward cylindrical base, the outer forward surface forming an angle, E, with a central axis of the seal in a plane through the central axis of the seal of from 40° to 60° the inner forward surface and the outer rearward surface forming angles with the central axis of the seal in a plane through the central axis of the seal which are individually within the range of from 45° to 60° and a line extending in a plane through the central axis of the seal from the pivot point to the projecting edge means, G, being within the range of from 16° to 21°.

5,356,159

SNOWBOARD EQUALIZING HOOK

Kenneth J. Butterfield, 7465 Altiva Pl., La Costa, Calif. 92009

Filed Nov. 22, 1993, Ser. No. 156,681
Int. Cl.[5] A63C *5/06*
U.S. Cl. 280—14.2 6 Claims



1. In combination with at least one boot-binding fixture mounted on the top surface of a snowboard wherein said snowboard is elongated along a longitudinal axis, and said boot-binding fixture is angularly oriented in relation to said axis, means for supporting said snowboard with a user's boot, said means comprising

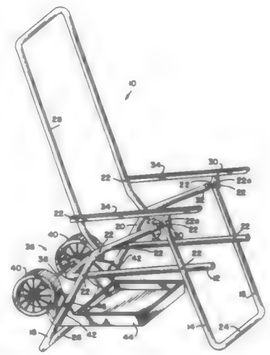
a lever having a shank fixedly secured on said snowboard, and a brace projecting from an upper area of said shank and defining an open arch, said brace being shaped and dimensioned to allow the insertion of a tip of said boot between said brace and said top surface; and wherein said brace is sized and dimensioned to bear on said boot and thereby provide support to said snowboard.

5,356,160

COLLAPSIBLE, WHEELED, CHAIR FRAME ASSEMBLY, AND A WHEEL AND TRAY ASSEMBLY THEREFOR

Robert Urlwin, 9 Woody La., Sparta, N.J. 07871

Filed Mar. 17, 1993, Ser. No. 32,288
Int. Cl.[5] B62B *1/12*
U.S. Cl. 280—30 9 Claims



1. A collapsible, wheeled, chair frame assembly, comprising:

a seat frame;

front and rear leg members pivotably coupled to said seat frame;

a back frame pivotably coupled to said rear leg members; and

an assembly, removably coupled to said rear leg members, having at least one wheel, support means for supporting said at least one wheel to said rear leg members for rotation about an axis rearwardly spaced from said rear leg members, and a utility tray secured to said support means for rotation about said axis; wherein

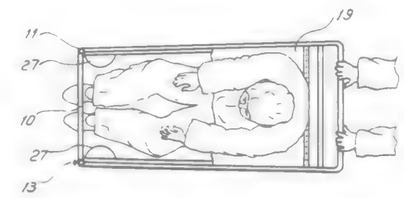
said chair frame assembly comprises means, responsive to manipulation, for disposing said frame assembly in (a) a first, expanded, attitude, in which said wheel is in non-load-bearing elevation, and said tray assumes an attitude substantially parallel with said seat frame, and (b) a second, collapsed attitude, in which said seat frame, leg members, and back frame are folded together, into substantial parallelism as a compact unit, and said tray projects outwardly from, and substantially perpendicular to, said unit.

5,356,161

CARRIAGE

Naum Pokhis, 1132 S. Doheny Dr., Apt. 303, Los Angeles, Calif. 90035

Filed Oct. 18, 1993, Ser. No. 136,824
Int. Cl.[5] B62B *3/02*
U.S. Cl. 280—33.991 7 Claims



1. A carriage, comprising a plurality of substantially upright walls; a bottom pivotally connected to at least one of said walls

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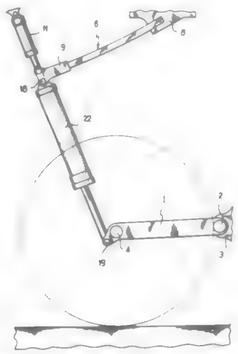
and having at least two bottom portions which are pivotally connected with one another, so that in one position said bottom extends as a whole substantially horizontally between said walls to form an uninterrupted supporting surface for supporting goods, etc, in another position said bottom as a whole is pivoted from a horizontal position to a substantially upright position and a whole space between the walls is released so that a user can stand inside the carriage between said walls, and a further position in which one of said bottom portions extends substantially horizontally while another of said bottom portions is pivoted and placed on top of said one bottom portion and therefore one part of the space between the walls is released for legs of the user while in another part of the space said bottom portions together form a seat for the user; and front and rear wheels for moving the carriage.

5,356,162

RETRACTABLE RUNNING GEAR FOR A VEHICLE THAT IS SUPPORTED WITHOUT CONTACT

Michel Derries, Versailles, France, assignor to Messier-Bugatti, Velizy-Villacoublay, France

Filed Sep. 16, 1992, Ser. No. 945,364
Claims priority, application France, Sep. 17, 1991, 91 11436
Int. Cl.[5] B60G *25/00*
U.S. Cl. 280—43.18 **6 Claims**



4. A retractable running gear for a vehicle, the running gear comprising a tilting beam having one end hingedly connected to the vehicle about a tilt pin and supporting a rotary axle for at least one wheel, a blade spring having a first end secured to the vehicle and a second end hingedly connected to a first end of a shock absorber, a second end of the shock absorber being hingedly connected to the vehicle, and a control actuator having a first end hingedly connected to the second end of the blade spring and a second end hingedly connected to a tilting control pin carried by the tilting beam at a point that is spaced apart from the tilt pin for controlling the tilt of the tilting beam, said control actuator and said shock absorber being in alignment with each other when the running gear is in a lowered position.

5,356,163

TIRE TRUCK

Donald R. Suggs, Sr., Boyd, Tex., assignor to Tire Shuttle, Inc., Elm Mott, Tex.

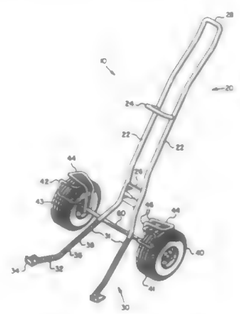
Filed Dec. 18, 1992, Ser. No. 992,576
Int. Cl.[5] B62B *1/10;* **B60B** *29/00*
U.S. Cl. 280—47.27 **14 Claims**

1. A tire truck for mounting, unmounting and transporting a tire, the tire truck comprising:

an elongated body having a longitudinal axis divided by a flat plate, the body further having

two bars coupled to opposite sides of the plate and extending parallel to the longitudinal axis to form a handle having a proximate end forming a plant adjacent the plate and a distal end having a transverse grip connecting the bars; and

a fork coupled to the handle adjacent the plate and extending opposite the handle, the fork further having two divergent, segmented tines terminating in feet bearing



pads, the segments of the tines being arranged at angles to each other to offset the feet from the plane;

axle means transverse the fork between the plate and the pads and having;

a single axle coupled to each tine;

a wheel on each end of the axle; and

a step coupled to the axle and covering a portion of a tread of each wheel, said step being accessible by a user from rearward the truck; and

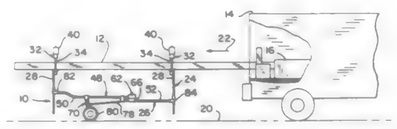
tire rest means for resting a tire supported by the feet against the body.

5,356,164

SEAMLESS GUTTER ROLLING SUPPORT

Chase E. Miller, 220 Avon St., La Crosse, Wis. 54603

Filed May 20, 1993, Ser. No. 65,128
Int. Cl.[5] B62B *1/26*
U.S. Cl. 280—79.6 **8 Claims**



1. An apparatus for supporting a seamless gutter as it is being formed, comprising:

a frame for supporting said gutter at a certain height above a ground surface;

a clamp secured to said frame for releasable attachment to said gutter at said certain height;

a rotatable wheel secured to said frame for rolling engagement with said ground surface as said gutter is being formed, said frame supporting said gutter at said certain height above said ground surface and said apparatus traveling with said gutter as said gutter is being formed; and

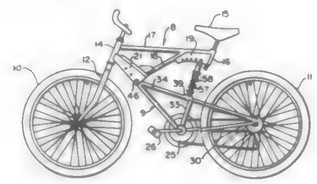
a clamp support for adjusting the height of said clamp above said wheel to support said gutter at said certain height.

5,356,165

BICYCLE INCORPORATING BIFURCATED FRAME

Joseph E. Kulhawik, 10636 Landale St., North Hollywood, Calif. 91602, and Thomas E. Lee, 11661 Pendelton St., Sun Valley, Calif. 91352

Filed Jun. 21, 1993, Ser. No. 78,351
Int. Cl.[5] B62K *3/02*
U.S. Cl. 280—275 **5 Claims**



1. A bicycle comprising:

(a) a front frame having a steering assembly coupled to a front wheel, a seat for holding a rider, a top tube secured intermediate the seat and steering assembly, a support tube secured to and extending forwardly and downwardly from said top tube, a pivot plate secured intermediate the support tube and steering assembly and having a plurality of apertures disposed therethrough forwardly from said support tube to said steering assembly and a gusset having a top and bottom edge, the top edge being secured to the top tube and support tube and including an aligned plurality of spaced apertures disposed therethrough adjacent the bottom edge thereof;

(b) a rear frame having a crank and pedal assembly including a crank housing, said crank and pedal assembly being rotatably coupled to a rear wheel, first and second rear arms extending rearwardly from the crank housing and being disposed on either side of the rear wheel, a front stay secured to and extending upwardly from the crank housing, a pair of rear stays secured to said front stay and extending rearwardly, each of said rear stays being coupled to a respective one of said rear arms at the rear wheel, a center stay secured to the front stay and rear stays and an extension member secured to and extending forwardly from said center stay;

(c) means for pivotally coupling the extension member of said rear frame to said pivot plate at the location of one of the apertures disposed through said pivot plate; and

(d) resilient means for damping the relative movement between the front frame and rear frame, said resilient means being coupled between the center stay of the rear frame and the gusset of said front frame.

5,356,166

ARRESTABLY LOCKABLE TELESCOPING TOW-BAR ASSEMBLY

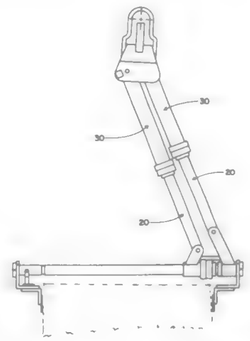
Merton K. Hahne, Coleridge, and William A. Bachman, Pender, both of Nebr., assignors to Automatic Equipment Mfg. Co., Pender, Nebr.

Filed Jul. 12, 1993, Ser. No. 89,445
Int. Cl.[5] B60D *1/167*
U.S. Cl. 280—491.4 **5 Claims**

1. Arrestably Lockable Telescoping Tow-Bar Assembly comprising:

(A) an inner-tube having an outer-surface concentrically surrounding a directionally longitudinally extending central-axis and having a trail-end directionally transversely intersecting said central-axis, said outer-surface being provided with at least one radially inwardly extending inward-groove circularly surrounding said central-axis and located in a plane perpendicular to said central-axis;

(B) an outer-tube having a leadward-end directionally transversely intersecting said central-axis and having an outward-surface surrounding said central-axis and an inward-surface slidably surrounding said inner-tube outward-surface, said outer-tube being provided with a finite-plurality of equiangularly-spaced sideward-openings therethrough that are radially and directionally transversely alignable with said inner-tube's outer-surface inward-groove, each said sideward-opening being provided with a spherical ball whose diameter slightly exceeds the radial dimension between the outer-tube outward-surface and inward-surface, and said outer-tube between a leadward-end thereof and said transversely aligned balls-provided sideward-openings being externally provided with a retainer ring that surrounds and extends directionally radially outwardly beyond said outer-tube outward-surface;



(C) a slidable latch member permanently surrounding said outer-tube balls-provided sideward-openings and including a leadward-part and a trailward-part radially outwardly spaced from the outer-tube outward-surface and further including a medially-located cam portion permanently located trailwardly of said retainer ring and slidably surrounding said outer-tube outward-surface;

(D) a cover having a leading-part slidably surrounding the slidable latch member trailward-part and being directionally trailwardly immovably restrained along the outer-tube; and

(E) helical spring means surrounding the outer-tube and actuatably extending directionally longitudinal between the cover member and the slidable latch member medially-located cam portion.

5,356,167

TRAILER HITCH WITH MULTI-DIRECTIONAL PIVOT

Arthur E. Hall, P.O. Box 452, Libby, Mont. 59923, and Arthur T. Hall, P.O. Box 494, Colstrip, Mont. 59323

Filed Jul. 20, 1993, Ser. No. 95,165
Int. Cl.[5] B60D *1/01, 1/48*
U.S. Cl. 280—492 **11 Claims**

1. A trailer hitch comprising:

a support structure having first and second end mounting brackets spaced apart from one another;

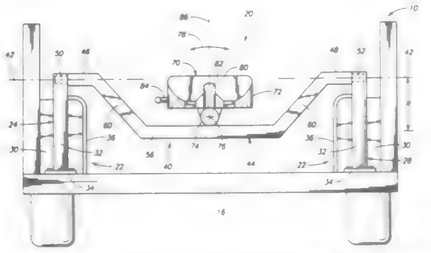
a U-shaped cross member pivotally mounted to the support structure to pivot about a first axis, the U-shaped cross member having (1) first and second ends aligned along the first axis and pivotally coupled to respective first and second mounting brackets and (2) a mid-section suspended between the first and second ends and radially spaced from, and rotatable about, the first axis;

a coupling subassembly for connecting with a towing member of a trailer, the coupling subassembly being pivotally mounted to the mid-section of the U-shaped cross member to pivot about a second axis, the coupling subassembly comprising a fifth-wheel trailer mount having a connecting plate with an upper surface for supporting a nose of a

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trailer and a clamping mechanism for releasibly retaining a towing pin of the trailer; and

the mid-section of the U-shaped cross member being radially



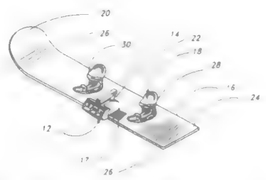
spaced from the first axis an effective distance that at least a portion of the upper surface of the connecting plate is substantially elevationally level with the first and second ends of the U-shaped cross member.

5,356,168

SNOW BOARD PARKING BRAKE APPARATUS

James C. Ozburn, 11150 Highway 24, Falcon, Colo. 80831

Filed Dec. 10, 1992, Ser. No. 988,469
Int. Cl.[5] A63C 7/10, 11/18
U.S. Cl. 280—605 19 Claims



1. A snow board parking brake apparatus adapted to be mounted on a snow board assembly, comprising:

a) a support base assembly connected to the snow board assembly; and

b) a main parking brake assembly including a brake anchor and support assembly connected to said support base assembly, a movable blade and actuator assembly connected to said brake actuator and support assembly, and an actuator brake handle assembly connected to said movable blade and brake actuator assembly for movement thereof from a non brake position to a snow board brake position;

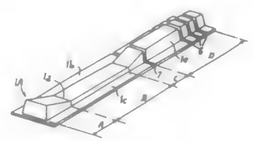
whereby said actuator brake handle assembly is selectively moved by an operator of the snow board assembly to move a portion of said movable blade and brake actuator assembly laterally of the snow board assembly to engage an adjacent support surface to achieve a braking function.

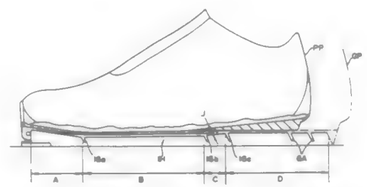
5,356,169

FLEXIBLE AND LENGTH ADJUSTABLE LATERAL GUIDE APPARATUS FOR A CROSS-COUNTRY SKI SHOE

Jean Hue, Saint Jorioz, and Gerard Graillat, Annecy, both of France, assignors to Salomon S.A., Annecy Cedex, France

Division of Ser. No. 581,198, Sep. 9, 1990, Pat. No. 5,088,756, which is a continuation of Ser. No. 271,515, Nov. 15, 1988, abandoned. This application Aug. 15, 1991, Ser. No. 745,406
Claims priority, application France, Nov. 18, 1987, 87 15950
The portion of the term of this patent subsequent to Feb. 19, 2008, has been disclaimed.
Int. Cl.[5] A63C 5/04, 5/06
U.S. Cl. 280—607 21 Claims





1. An apparatus for guiding a ski boot on a ski, said apparatus comprising:

a longitudinally extending guide rib adapted to cooperate with a complementary longitudinally extending groove in the sole of a boot, said guide rib having a predeterminate length and comprising means for facilitating changing of said predeterminate length of said guide rib to a different predeterminate length corresponding to a different complementary longitudinally extending groove in the sole of a different boot, said longitudinally extending guide rib having a predeterminate width defined by least one portion of said guide rib, said means for facilitating changing of said predetermined length of said guide rib comprising at least one score line extending substantially across said predeterminate width at said one portion, said apparatus further comprising a pair of opposite lateral wings extending from said guide rib, said at least one score line extending transversely across said lateral wings.

16. A method of changing the length of a longitudinally extending guide rib, said longitudinally extending guide rib adapted to cooperate with a complementary longitudinally extending groove in the sole of a boot, at least one score line extending transversely across said guide rib, said method comprising the step of:

breaking said guide rib at said one score line.

5,356,170

SNOWBOARD BOOT BINDING SYSTEM

Jake B. Carpenter, Manchester Center, and David Dodge, Shelburne, both of Vt., assignors to Burton Corporation USA, Burlington, Vt.

Division of Ser. No. 826,598, Jan. 28, 1992, Pat. No. 5,261,689.
This application May 28, 1993, Ser. No. 69,285
Int. Cl.[5] A63C 9/00
U.S. Cl. 280—618 7 Claims

1. A snowboard binding comprising:

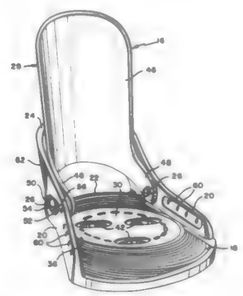
a base plate having a front and a rear;

a highback leg support, said leg support being positioned

near said rear and extending substantially perpendicular to said base plate and having a forwardly directed surface of substantial area;

said base plate having two sidewalls, said leg support being adjustably connected to each of said sidewalls; and

means for mounting said leg support to said sidewalls for rotational movement about an upright axis generally nor-



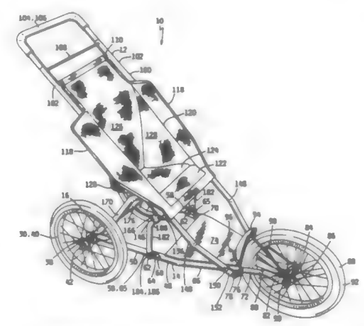
mal to said base plate while allowing said leg support substantially to retain its shape, said mounting means including means for fixing said highback leg support in its rotational orientation, whereby the rotational orientation of said leg support relative to said base plate may be adjusted and maintained, said surface providing an adjustable support surface at the rear of the user's boot.

5,356,171

COLLAPSIBLE JOGGING INFANT STROLLER

Thomas J. Schmidlin, and David Eyman, both of Cincinnati, Ohio, assignors to TRI Industries, Inc., Bloomington, Minn.

Filed Mar. 12, 1993, Ser. No. 30,703
Int. Cl.[5] B62B 7/00
U.S. Cl. 280—650 38 Claims



1. A conveniently transportable, collapsible jogging infant stroller for safely and smoothly carrying an infant at walking speed and at a relatively higher speed than the normal average walking speed of approximately 3–4 miles per hour, comprising:

(a) a contractible lower frame portion having a rear end supporting two rear wheels, an intermediate portion and a front fork end supporting a front wheel, wherein the lower frame portion comprises a pair of opposing rear links extending forwardly of the rear end and each rear link forming a pivotal connection to one of a pair of opposing forward links which form the front fork end;

(b) a contractible upper frame portion having an upper handle end, an intermediate seat portion supporting a flexible infant holder and a lower end pivotally attached to the lower frame portion;

(c) two stabilizer struts pivotally extend upwardly each from the pivotal connection of one pair of the forward and the rear links to a connection with the upper frame portion wherein the stabilizer struts hold the forward and the rear links substantially horizontal to the ground and alternatively will lift the forward and the rear links to fold upon each other to contract the lower frame portion; and

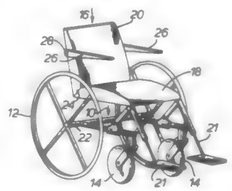
(d) a releasable locking means adapted to secure the stroller in an upright erect condition for use and when released to permit contraction of the upper and the lower frame portions inwardly upon themselves as to move the stroller to a collapsed and contracted condition for transportation and storage.

5,356,172

SLIDING SEAT ASSEMBLY FOR A PROPELLED WHEEL CHAIR

Moshe Levy, Kibbutz Tzora, and Zvi Gilad-Smolinsky, 19 Moshe Sne Street, Danya, Haifa, Israel, assignors to Zvi Gilad Smolinsky, Danya, Israel

Continuation-in-part of Ser. No. 918,305, Jul. 21, 1992, abandoned. This application Oct. 21, 1993, Ser. No. 141,908
Claims priority, application Israel, Jul. 23, 1991, 98931
Int. Cl.[5] B62B 7/10; A61G 5/00
U.S. Cl. 280—650 12 Claims



1. A hand-propelled wheelchair comprising:

a frame element;

a horizontal first tubular frame bar of the frame element defining a first axis

at least one horizontal tubular member of the frame element having a front portion and a rear portion, the rear portion being integral with and generally perpendicular to the first frame bar;

first and second large drive wheels being rotatably mounted to first and second ends of the first frame bar;

a seat unit;

a base of the seat unit having a front edge and a rear edge, the rear edge being hingedly attached to a back of the seat unit;

at least one linkage arm being hingedly attached to the front edge of the base at one end and slidably mounted to at least one horizontal member at the other end;

at least one front caster wheel being revolvably connected to a front portion of at least one horizontal member;

an engagement and release means connected to the at least one linkage arm for sliding the linkage arm along the at least one horizontal member while the base and back are generally perpendicular to each other; and

the engagement and release means varying the center of gravity of the wheelchair.

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5,356,173

STEERING WHEEL UNIT INCLUDING AIR BAG MODULE

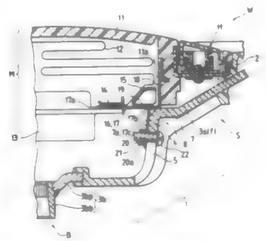
Suzuaki Hongou, and Shinichi Goto, both of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Oct. 28, 1992, Ser. No. 967,873

Claims priority, application Japan, Oct. 28, 1991, 3-088300[U]; Oct. 28, 1991, 3-281216

Int. Cl.[5] B60R *21/20*; B62D *1/04*

U.S. Cl. 280—728 A **2 Claims**



1. A steering wheel unit comprising:

a boss portion;

a ring portion surrounding said boss portion;

at least three spoke members for connecting said boss portion and said ring portion, said spoke members including right and left anterior spoke members which are disposed anteriorly with respect to the other spoke members, each of said spoke members having a metal core, the metal core of each of said right and left anterior spoke members including fastening parts, said fastening parts being provided solely on said metal cores of said right and left anterior spoke members;

an air bag module fastened solely to said fastening parts of said metal cores of said anterior spoke members, said air bag module being disposed over said boss portion, said air bag module including:

a bag holder made of a rigid material for holding an air bag, said bag holder having a bottom portion, and

right and left brackets secured to said bottom portion, each said bracket having a fastening portion which is coupled with a respective said fastening part;

said metal core of each of said anterior spoke members having a seat surface for contacting said bottom portion of said bag holder;

said seat surfaces of said anterior spoke members being disposed over said fastening parts; and each said fastening part of said anterior spoke members having an opening comprising an open ended slot.

5,356,174

VEHICLE AIRBAG ASSEMBLY

John F. Rhein, Hamburg, N.Y.; Theodore J. Bachelder, Romeo, and Russell E. Stein, Mt. Clemens, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed May 6, 1993, Ser. No. 59,225

Int. Cl.[5] B60R *21/16*

U.S. Cl. 280—728 A **30 Claims**

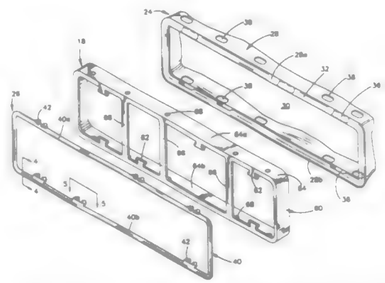
1. Apparatus comprising an airbag/retainer subassembly for use in forming an airbag assembly;

said airbag/retainer subassembly comprising an airbag and a retainer joined with said airbag;

said airbag including an inflatable bag which has a mouth defining a fluid inlet and a mating device incorporated into said mouth;

said mating device including airbag mating members which extend out of said mouth;

said retainer comprising a base member and retainer mating members which are attached to, and extend away from, said base member; and



said airbag mating members being mated with said retainer mating members and thereby joining said airbag with said retainer in a predetermined alignment and thereby forming said airbag/retainer subassembly.

5,356,175

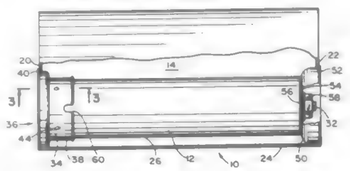
ANTI-RATTLE AND RETENTION STRUCTURE FOR A FLANGELESS INFLATOR OF AN AIRBAG RESTRAINT ASSEMBLY

Larry D. Rose, Layton, and Donald R. Lauritzen, Hyrum, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Jul. 2, 1993, Ser. No. 86,928

Int. Cl.[5] B60R *21/16*

U.S. Cl. 280—728 A **10 Claims**



1. An airbag restraint inflator assembly comprising:

a reaction can having a mounting means providing an opening in a first end wall thereof, said opening adapted to receive and position an inflator within a cavity of said reaction can;

an inflator, shorter in dimension than the reaction can, and having a generally cylindrical housing with a flangeless base on a first end thereof;

said reaction can mounting means being a generally open, right circular cylindrical shaped tube formed by a circular sidewall, said sidewall terminating at one end thereof with a radially extending mounting flange having an outer diameter greater than a diameter of said first end wall opening and terminating in a resilient arm on the other end of said sidewall;

said mounting means being located in said reaction can first end wall with said resilient arm engaging and holding the inflator housing by biased radial compression force.

5,356,176

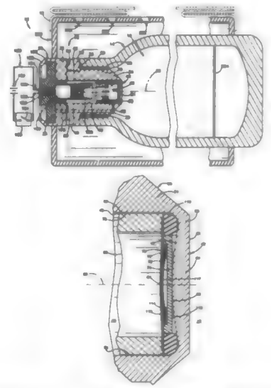
VEHICLE OCCUPANT RESTRAINT APPARATUS

Roger F. Wells, Yorbalinda, Calif., assignor to TRW Technar Inc., Irwindale, Calif.

Filed May 25, 1993, Ser. No. 67,472

Int. Cl.[5] B60R *21/26*

U.S. Cl. 280—737 **16 Claims**



9. Apparatus for use in inflating a vehicle occupant restraint, said apparatus comprising:

means for defining a pressure vessel for storing gas at a storage pressure, said pressure vessel having a rupturable closure wall which closes said pressure vessel to block said gas from exiting said pressure vessel, said rupturable closure wall being subjected to said storage pressure and being deflectable under the influence of a change in said storage pressure;

opening means for rupturing said rupturable closure wall to open said pressure vessel and thereby to release said gas to exit said pressure vessel to inflate the vehicle occupant restraint; and

pressure sensing means for sensing a change in said storage pressure, said pressure sensing means including means responsive to deflection of said rupturable closure wall under the influence of a change in said storage pressure.

5,356,177

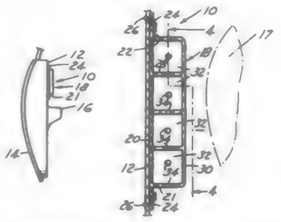
SIDE IMPACT PROTECTION APPARATUS

Peter A. Weller, Holland, Mich., assignor to Davidson Textron Inc., Dover, N.H.

Filed Jun. 25, 1993, Ser. No. 149,832

Int. Cl.[5] B60R *21/04*

U.S. Cl. 280—751 **4 Claims**



1. For use on the inner panel of a vehicle door, a side impact protection apparatus comprising a cushion including a flexible skin forming an outer wall, side walls, and an inner wall, said inner wall being secured to the inner panel of said door, flexible wall means formed between said inner wall and said outer wall to prevent said flexible skin from bulging and forming a plurality of cells while includes a plurality of peripheral cells, fully open outlet means formed in said flexible wall means and in said side walls, and air contained within said cells, wherein said air is adaptable to discharge through said outlet means from cell to cell and, thence, through said side walls upon being impacted by the vehicle occupant in the event of a severe side impact against the door.

5,356,178

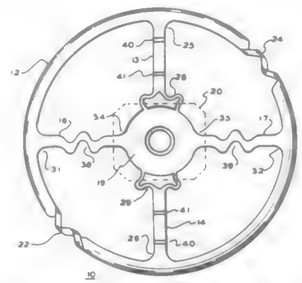
ENERGY ABSORBING STEERING WHEEL

Ryusaku Numata, P.O. Box 272, Patchoque, N.Y. 11712

Filed Apr. 20, 1992, Ser. No. 871,086

Int. Cl.[5] B62D *1/11*

U.S. Cl. 280—777 **12 Claims**



1. An energy absorbing steering wheel comprising:

(a) an armature means of substantially circular configuration defining a rim of a steering wheel;

(b) a hub means, positioned inside the circular configuration of said armature means;

(c) a plurality of radial spokes, each spoke of said plurality of spokes having a first end and a second end and a length between said first end and said second end, said first end connected to said armature means and said second end connected to said hub means;

(d) a first spoke of said plurality of radial spokes connected to said hub means at said second end by a flexible connection means, said length of said first spoke characterized by a rupture means integrated into said first spoke for breaking said first spoke in response to a second predetermined energy applied to said rim, and,

(e) a first spring means and a second spring means integrated into and forming a part of said rim and positioned substantially 180 degrees of arc from each other, each of said first and second spring means extending only between adjacent individual radial spokes of said plurality of radial spokes, said first spring means and said flexible connection means combining, in response to a first predetermined energy applied to said rim, for delaying breakage of said rupture means until application of said second predetermined energy applied to said rim.

5,356,179

ENERGY ABSORBING DEVICE FOR A STEERING COLUMN

Thomas J. Hildebrandt, Troy, and Tim J. Wehner, Auburn Hills, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 13, 1993, Ser. No. 119,632

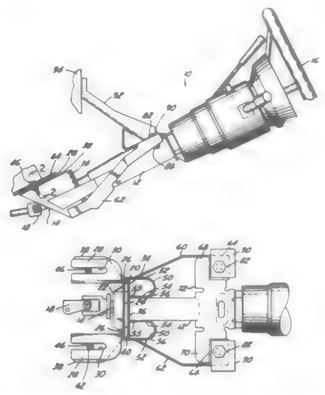
Int. Cl.[5] B62D *1/11*

U.S. Cl. 280—777 **2 Claims**

1. An energy absorbing device for the steering column of a

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vehicle having a steering wheel at one end thereof, comprising a bracket adapted to be secured to a vehicle support structure and disposed adjacent to the steering column, said bracket being generally channel-shaped having a base extending perpendicular to the steering column and laterally spaced first and second side walls, a hole in said base through which the steering column extends, said side walls being disposed on opposite sides of the steering column, first and second energy absorbing straps on opposite sides of the steering column, said straps being made of relatively stiff, bendable, flexible strip material, said straps being generally U-shaped having spaced legs connected by a curved byte portion and oriented with the byte portions thereof adjacent the steering wheel and said legs extending from said byte portions in a forward direction away



from the steering wheel lengthwise of the steering column, one leg of said first strap being rigidly connected to the first wall of said bracket at a point spaced from the byte portion thereof and otherwise free of connection thereto, one leg of said second strap being rigidly connected to the second side wall of said bracket at a point spaced from the byte portion thereof and otherwise free of connection thereto, the other legs of said straps extending alongside and being rigidly connected directly to the opposite sides, respectively, of the steering column and otherwise free of connection thereto, whereby upon collapse of the steering column as in a collision, said other leg of each strap will move with the steering column and said straps will move along the surface of the steering column with a rolling action to absorb energy gradually and prevent excessive reaction forces of the steering column against the driver.

5,356,180

ADJUSTABLE LENGTH SKI GUARD

Kenneth P. Adasek, 11367 Nancy Dr., Warren, Mich. 48093

Filed Feb. 11, 1993, Ser. No. 16,468

Int. Cl.[5] A63C *11/00*

U.S. Cl. 280—814 **19 Claims**

1. A ski guard assembly for use with skis of different lengths that have tip and tail end portions, comprising,

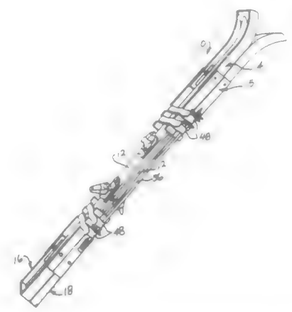
an outboard guard having a channel that is closed at one end and open at an opposite end for removably receiving an end portion of a ski,

an inboard guard having a complimentary channel that is open at each end for removably receiving a portion of the ski adjacent the end portion of the ski,

the outboard guard having a base wall with integrally formed spaced side walls that are integrally joined with a tip wall or a tail wall to form the closed end,

the inboard guard having a base wall with integrally formed spaced side walls that are juxtaposed the side walls of the outboard guard, and

means for slideably attaching the inboard guard to the outboard guard comprising one of the base walls having a longitudinal slot that receives a projection of the other base wall that moves in the longitudinal slot when the



inboard guard moves relative to the outboard guard in the longitudinal direction so that it slides longitudinally of the ski when the outboard guard member is installed on the end portion of the ski, and

the inboard guard having means for clamping the inboard guard onto the ski independently of the outboard guard.

5,356,181

JOINTING DEVICE FOR A CORRUGATED FLEXIBLE CONDUIT

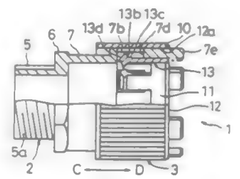
Katsuhiko Shirogane; Tsuneo Kubo, both of Ichihara; Nobuyuki Nagashima, and Kiyoshi Nakayama, both of Chiba, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1993, Ser. No. 135,292

Claims priority, application Japan, Oct. 15, 1992, 4-277004; Mar. 26, 1993, 5-067933

Int. Cl.[5] F16L *55/00*

U.S. Cl. 285—86 **11 Claims**



1. A jointing device for a corrugated flexible conduit, the corrugated flexible conduit having ridges and grooves, the joint device comprising:

a joint body having a cylindrical connector section for receiving the corrugated flexible conduit, said cylindrical connector section having a longitudinal axis and a plurality of circumferentially spaced apart receive holes arranged in a circumferential surface thereof, said receive holes each being defined by at least one receive-hole-defining face formed in said cylindrical connector section; and

a clasp member axially slidably mounted on said joint body; said clasp including:

an outer cylinder member axially slidably fitted over said cylindrical connector section and covering the plurality of receive holes of said cylindrical connector section;

an inner cylinder member slidably fitted into said cylindrical connector section for receiving the corrugated flexible conduit therein;

a plurality of locking members, said plurality of locking members having respective fixed ends which are connected with said inner cylinder member; and

means for connecting said outer cylinder member and said inner cylinder member with each other;

said locking members of said clasp each having a free end portion which comprises a claw portion which extends radially and which is engageable with the corrugated flexible conduit and which is disengageable from the corrugated flexible conduit;

said free end portion of each locking member being receivable in a corresponding one of the plurality of covered receive holes of said cylindrical connector section when said free end portions are pushed radially outward by engagement with the corrugated flexible conduit which is received in said inner cylinder member; and

said clasp being movable relative to said cylindrical connector section to cause each claw of each locking member to be engaged with a groove of the corrugated flexible conduit by moving each locking member relative to said receive-hole-defining face to cause the free end portion of each locking member to be pushed radially inwardly toward the corrugated flexible conduit and into a groove of the corrugated flexible conduit by engagement of the locking member with a corresponding one of receive-hole-defining faces of said cylindrical connector section.

5,356,182

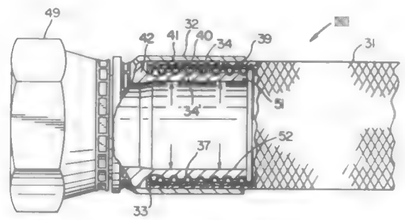
HOSE CONSTRUCTION, COUPLING THEREFOR AND METHODS OF MAKING THE SAME

John D. Sanders, Springfield, Mo., assignor to Dayco Products, Inc., Dayton, Ohio

Continuation of Ser. No. 993,196, Dec. 18, 1992, abandoned. This application Feb. 17, 1994, Ser. No. 197,891

Int. Cl.[5] F16L *33/213*

U.S. Cl. 285—258 **10 Claims**



1. In a hose construction comprising a tubular hose having an inner peripheral surface means and an outer peripheral surface means, and a coupling secured to one end of said tubular hose, said inner peripheral surface means of said tubular hose comprising an inner corrugated hose made of polymeric material and having inwardly convex projections with recesses therebetween and extending from said one end of said tubular hose to the other end thereof, said coupling having an insert means disposed in said one end of said tubular hose and being radially outwardly expanded into sealing relation with said inner corrugated hose, said insert means having an outer peripheral surface means defined by a plurality of outwardly directed projections with recess therebetween, said projections of said insert means being respectively received in said recesses of said inner hose and said projections of said inner hose being respectively received in said recesses of said insert means whereby the interior of said tubular hose is substantially sealed to the interior of said coupling, said convex projections of said hose respectively having apexes that defined an inside diameter of said hose of approximately 1.500 inches and a pitch of said convex projections of approximately 0.246 of an inch before said insert means was radially outwardly expanded, said insert means comprising a tubular metallic sleeve that is formed to define said outer peripheral surface means thereof, the improvement wherein said projections of said sleeve each has a substantially flat outer surface and defined an outside diameter of said sleeve of approximately 1.515 inches before said sleeve was radially outwardly expanded, said sleeve having defined an inside diameter thereof of approximately 1.331 of an inch before said sleeve was radially outwardly expanded, said recesses of said sleeve each having had a depth of approximately 0.041 of an inch before said sleeve was radially outwardly expanded.

5,356,183

COUPLING WITH ROTATING RETAINING RING HAVING CAM SURFACES

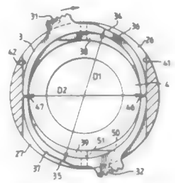
John Cole, Crawley, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Mar. 26, 1993, Ser. No. 37,165

Claims priority, application United Kingdom, Mar. 28, 1992, 9207008; Apr. 25, 1992, 9208994

Int. Cl.[5] F16L *35/00*

U.S. Cl. 285—305 **7 Claims**



1. A coupling for fitting to an externally corrugated elongate member, the coupling comprising: a body having one end adapted to receive the elongate member and an opposite end provided with coupling means by which the coupling can be connected with a cooperating coupling; and annular retaining means carried by the body, at least part of said annular retaining means being rotatable in a plane transverse to an axis of the elongate member and fixed relative to the body, the retaining means and the body having cooperating cam surfaces, the retaining means having at least one internally-projecting surface formation and at least one manually-engageable member that projects from the body such that by engaging the manually-engageable member and rotating it in said plane, the cam surfaces rotate relative to one another and thereby displace the surface formation between a first position in which the surface formation is located relatively outwardly to enable entry of the corrugated member into the body and within the retaining means, and a second position in which the surface formation is located relatively inwardly to lie between adjacent corrugations on the elongate member and lock it in the body, and wherein the retaining means cannot be removed from the body while the elongate member is inserted within the body.

5,356,184

CORNER PIECES FOR IMPROVED DUCT CONNECTOR

A. Reese Hunter, Greensboro, N.C., assignor to Industrial Air, Inc., Greensboro, N.C.

Filed Jan. 10, 1992, Ser. No. 818,848

Int. Cl.[5] F16L *23/00*

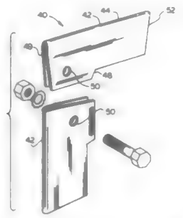
U.S. Cl. 285—405 **23 Claims**

1. A corner piece for a sheet metal connector system having coupling members which join sheet metal articles that have outwardly extending flanges and which have a portion with a V-shaped cross section and inwardly turned retaining edges spaced a given distance from the apex of the V comprising

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a first leg which has a width slightly less than the given distance and a length, and

a second leg which has a width slightly less than the given distance and a length which extends at an angle other than 180 degrees with respect to said first leg's length, said first and second legs being separate pieces formed of a sheet of material bent to form a V-shape having an apex similar to the V-shape of the coupling member and which can intersect and be joined by a connecting pin through holes in their intersected portions to form said angle, so that a



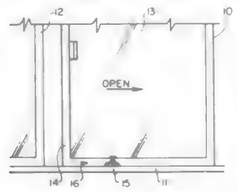
portion of the first leg may be snugly fitted between the apex of a first V-shaped coupling member and the inwardly turned edge of the first coupling member and a portion of the second leg may be snugly fitted between the apex of a second V-shaped coupling member and the inwardly turned edge of the second coupling member and another portion of the second leg may be joined to another portion of the first leg by a connecting pin through said holes to join the two coupling members together at said angle.

5,356,185

SLIDING PANEL LOCK

Russell S. Cameron, 18012 Manhattan Pl., Torrance, Calif. 90504

Filed Apr. 19, 1993, Ser. No. 47,992
Int. Cl.[5] E05C *1/04*
U.S. Cl. 292—149 **2 Claims**



1. A releasable locking means for a sliding panel comprising:

a stationary base;

a sliding panel having an aperture opening towards said stationary base;

a movable latch member slidably carried on aid stationary base and having an end adapted to register with said aperture for insertable reception therethrough;

retainer means threadably carried on said stationary base normal to said latch member for selectively engaging with said latch member to releasably retain said latch member in position within said sliding panel aperture;

said aperture is a slotted hole and said latch member includes an outwardly projecting key from said latch member end and being matable with said slotted hole to be inserted therethrough and rotated to engage said key with said panel; and

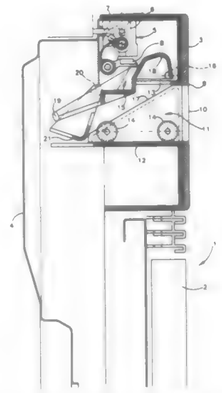
said latch member includes a groove parallel to the central longitudinal axis of said latch member for insertably receiving said retainer means.

5,356,186

LATCH MECHANISM FOR A HOME APPLIANCE

Daniele Favaro, Pramaggiore, Italy, assignor to Zanussi Elettrodomestici S.P.A., Italy

Filed Jul. 20, 1993, Ser. No. 94,558
Claims priority, application Italy, Jul. 23, 1992, PN921000078
Int. Cl.[5] E05C *3/06*
U.S. Cl. 292—216 **3 Claims**



1. An apparatus with a closing door which houses a locking mechanism, including a sprung hook which holds a pin affixed to a frame in order to lock the door in a closed position and a lever for unhooking the sprung hook; a front opening of the door normally closed by a small shutter (**10**) on a slider (**11**) having an incline (**17**) and which runs along runner guides (**12, 13**) towards the inside of the door (**1**); and an activating lever (**15**) balanced at a fulcrum (**16**) adjacent to a front surface of the door and extending to the inside of the door, and having a free end (**19**) operated by the incline (**17**) of the slider (**11**) so as to activate the locking mechanism (**5**) by tripping the lever (**8**) so as to unlatch the hook (**6**) from the pin (**7**).

5,356,187

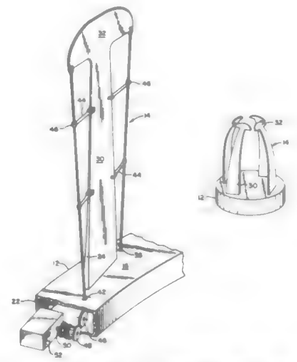
RECOVERY AND DEPLOYMENT DEVICE

James M. McCarthy, Mattapoisett, Mass., and Earl S. Nickerson, Jr., Little Compton, R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 21, 1993, Ser. No. 79,518
Int. Cl.[5] B66C *1/42*
U.S. Cl. 294—99.1 **11 Claims**

1. In a recovery and deployment device having a base, a plurality of armatures operatively secured to the base and extending therefrom in substantially the same direction toward cooperative terminating end portions, said armatures being spaced from an axial center line extending through said base in substantially said same direction, and drive means operative on said armatures for driving said end portions toward a closed position, the improvement wherein each of said armatures comprises an elongated tentacle having a first end fixed to the base in spaced relationship to said axial center line and a terminating end opposite said first end moveable into and out of a rest position, said tentacle including a resilient body portion bendable toward and away from said axial center line from said rest position and a bend-inducing portion associated with said

terminating end, said resilient body portion having a natural bias toward said rest position, said base having an inbound guide and an outbound guide for each armature, said drive means being operatively secured to said terminating end and including a closing drive member for each armature associated with said inbound guide for effecting closing movement of the terminating end out of said rest position and an opening drive



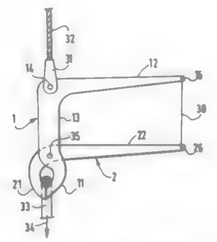
member for each armature associated with said outbound guide for effecting expanding movement of said terminating end out of said rest position, said drive means being operative to drive said bend-inducing portion and terminating end of said tentacle out of the rest position toward respective closed and expanded positions against the bias of said resilient body portion.

5,356,188

DEVICE FOR TEMPORARILY HOLDING A LOAD ON A HOLDING LINE

René Maloberti, Champigny, and Alain Coutarel, Paris, both of France, assignors to Coflexip, France

PCT No. PCT/FR91/00259, § 371 Date Nov. 20, 1992, § 102(e) Date Nov. 20, 1992, PCT Pub. No. WO91/15421, PCT Pub. Date Oct. 17, 1991
PCT Filed Apr. 2, 1991, Ser. No. 927,295
Claims priority, application France, Mar. 30, 1990, 90 04101
Int. Cl.[5] B66C *1/34*
U.S. Cl. 294—66.1 **4 Claims**



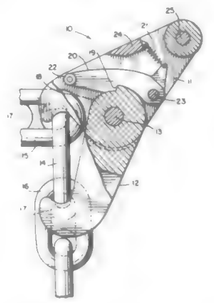
1. A device for temporarily holding a hanging load comprising: a vertical holding line; two articulated elements forming pincers, each element comprising a jaw and an arm having a free end; wherein said device is able to assume two positions, namely a first position in which said jaws are closed for gripping said hanging load and a second position in which said jaws are opened enabling said hanging load to be released, and wherein said device further comprises vertically extending connecting means releasably connecting said free ends of said arms, by exerting a tensile force necessary for maintaining said jaws in said first closed position, said connecting means being placed laterally at a distance greater than 0.3 meters relative to an axis of said vertical holding line.

5,356,189

METHOD OF LINE LAYING FOR MOORING A PLATFORM

Tokume Fujita, Rio de Janeiro, Brazil, assignor to Petroleo Brasileiro S.A., Rio de Janeiro, Brazil

Division of Ser. No. 666,952, Mar. 11, 1991, Pat. No. 5,193,872.
This application Feb. 2, 1993, Ser. No. 12,348
Claims priority, application Brazil, Apr. 18, 1990, PI9001801
Int. Cl.[5] B66C *1/36*
U.S. Cl. 294—82.11 **1 Claim**



1. A method of operating a line laying device used for a platform mooring system wherein the device is comprised of a pair of claws each having twin hooks and pivotally coupled to a first spindle for swiveling about said first spindle, said twin hooks of one of said claws being joined to define a solid part where said one of said claws swivels on said first spindle, a radial shoulder on said solid part, a lock pivoted on a second spindle on another of said claws, biasing means biasing said lock against said shoulder, said lock being provided with a small wheel at an end remote from said second spindle on said another of said claws by means of a third spindle and said another of said claws being fitted with a stop to limit travel of said pivoted lock away from said shoulder and a ring carried by said another of said claws to which a wire rope may be secured;

said method comprising the steps of:

engaging a link of a chain at opposite ends of the link by each of said claws of said device with each adjacent link of said chain being disposed between the twin hooks of each claw respectively, thereby allowing said biasing means to pivot said lock into engagement with said shoulder to prevent disengagement of said claws from said link;

securing a wire rope about said ring of said device;

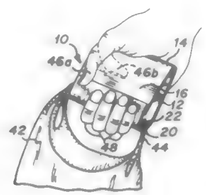
securing one end of said chain to a surface support; and

lowering said chain and device into a body of water by means of said wire rope secured to said device;

whereby when said device reaches a level where said chain is substantially vertically extended, the adjacent link between said hooks of said claw having said lock thereon will pivot about the link engaged by said claws to engage and pivot said lock out of engagement with said shoulder to permit disengagement of said claws from said link by manipulation of said wire rope.

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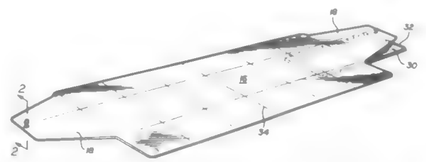
5,356,190
PLASTIC BAG HANDGUARD
Daniel S. Torres, 17270 Torrey Ct., Morgan Hill, Calif. 95037
Filed Aug. 10, 1993, Ser. No. 105,015
Int. Cl.[5] A45C *13/26*; B65D *33/06*
U.S. Cl. 294—171 20 Claims



1. A handguard for carrying plastic bags and like carrying articles having thin loop-type carrying handles comprising in operative combination:
a) a single elongated sheet of plastic material having a width dimension about as wide as an adult user's hand, said elongated sheet including:
i) a finger guard portion having a top edge portion and a bottom end portion;
ii) a palm guard portion having a top end portion and a bottom end portion, said top end portion spaced at a vertical distance roughly equal to the length of an adult user's palm;
iii) a U-shaped bridge member connecting the bottom end portions of said finger guard portion and said palm guard portion, said U-shaped bridge member having an outer gripping surface and an inner trough having a radius of curvature sized for receiving a plurality of thin loop-type bag handles;
iv) a keeper flap portion disposed extending between said finger guard portion and said palm guard portion and having a top end portion connected to said top end portion of said palm guard portion defining a rigid inverted substantially V-shaped connection and a bottom free end portion disposed extending downwardly a distance for abutment against an inner surface of said top edge portion of said finger guard portion, said keeper flap portion having a vertical length greater than half as long as a corresponding vertical length of said palm guard portion; and
b) whereby said V-shaped connection normally biases said keeper flap portion to a closed position such that said keeper flap bottom end portion is retainingly engaged by abutment against said finger guard top edge portion and is inwardly movable by thumb pressure in a direction toward said palm guard portion thereby permitting single-handed opening and closing operation of said handguard for receiving bag handles.

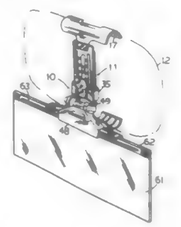
5,356,191
PROTECTIVE COVER FOR THE WINDSHIELD OF AN AUTOMOBILE
Dan Sheehan, Cambridge, Canada, assignor to Auto-Shade, Inc., Moorpark, Calif.
Filed Jul. 26, 1993, Ser. No. 98,477
Int. Cl.[5] B60J *3/00*
U.S. Cl. 296—95.1 4 Claims

1. A cover for a windshield of an automobile, comprising:
a flexible sheet that has a cover section, a pair of flaps that extend from said cover section and a pouch member that extends from said center section which has an outer cover section, said flaps and center section being capable of being folded into a folded sheet that can be placed in said outer cover section;
a zipper attached to said pouch member and said outer cover section, said zipper fastens together said pouch member to said outer cover section to enclose said folded sheet; and,



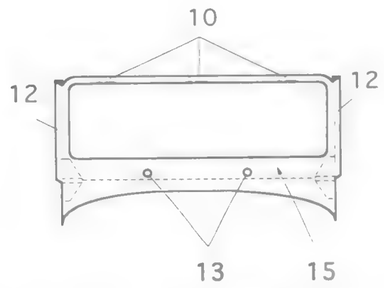
windshield coupling means for coupling said unfolded cover section to the windshield.

5,356,192
LIGHT SCREENING DEVICE
Peter Schierau, 42 Holm Crescent, Thornhill, Ontario, Canada L3T 5J3
Filed Jun. 21, 1993, Ser. No. 78,916
Int. Cl.[5] B60J *3/02*
U.S. Cl. 296—97.6 13 Claims



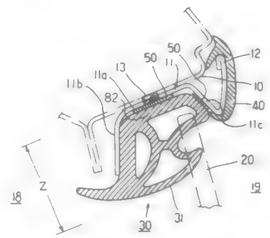
1. Alight screening device adaptable to a sun visor in an automotive vehicle comprising,
a mounting means operative for attaching said light screening device to said sun visor, said mounting means having an elongated body portion,
a slider means slidably coupled to said elongated body portion of said mounting means and being operative to locate at a selected position on said elongated body portion, said elongated body portion extending in a downward manner from said sun visor when said light screening device is attached to said sun visor,
a bracket means pivotally mounted to said slider means, said bracket means having an open bottom portion,
transparent sheet member having one lateral side therein slidably mounted to said open bottom of said bracket means,
a latching member formed on said slider means and a plurality of grooves formed on said elongated body portion, said latching member being cooperative with a selected one of said grooves to locate said slider means in a slidable snap-action at said selected position on said elongated body portion,
said mounting means including a clamping means comprising a substantially T-shaped upper member and a substantially T-shaped lower member, said upper member and lower member being slidably coupled to each other to clasp an upper side and lower side respectively of said sun visor for attaching said light screening device to said sun visor.

5,356,193
PROTECTIVE COVER FOR THE FRAME SURROUNDING THE FRONT WINDSHIELD OF A MOTOR VEHICLE
Britton W. Palmer, II, 2350 E. Vassar, Denver, Colo. 80210, and Robert C. Terkhorn, 4418 S. Atchison Cir., Aurora, Colo. 80015
Filed Aug. 12, 1993, Ser. No. 104,770
Int. Cl.[5] B62D *25/08*
U.S. Cl. 296—136 12 Claims



1. A protective cover for a vehicular windshield frame which surrounds a windshield and has a first upstanding frame post positioned at a first side portion of the windshield, a second upstanding frame post positioned at a second side portion of the windshield, a windshield-frame top portion extending between the first and second upstanding frame posts, and a windshield-frame bottom portion extending between the first and second upstanding frame posts, the vehicular windshield frame for supporting the windshield in an upstanding position, said protective cover comprising:
an upper, transversely-extending panel positioned to cover the windshield-frame top portion;
a lower, transversely-extending panel positioned to cover the windshield-frame bottom portion which extends between the upstanding frame posts of the windshield frame;
a first, longitudinally-extending panel positioned to cover the first upstanding frame post and connected to a first end portion of the upper, transversely-extending panel and to a first end portion of the lower, transversely-extending panel;
a second, longitudinally-extending panel positioned to cover the second upstanding frame post and connected to a second end portion of the upper, transversely-extending panel and to a second end portion of the lower, transversely-extending panel;
a first hooked extension formed to extend beyond the first, longitudinally-extending panel along substantially the length of said first longitudinally-extending panel, said first hooked extension positionable about a rear portion of the first upstanding frame post to generate a first attaching force, when positioned about the rear portion of the first upstanding frame post, to maintain the first, longitudinally-extending panel in position to cover the first, upstanding frame post; and
a second hooked extension formed to extend beyond the second, longitudinally-extending panel along substantially the length of said second longitudinally-extending panel, said second hooked extension positionable about a rear portion of the second upstanding frame post to generate a second attaching force, when positioned about the rear portion of the second upstanding frame post, to maintain the second, longitudinally-extending panel in position to cover the second upstanding frame post.

5,356,194
WEATHER STRIP
Norio Takeuchi, Hiroshima, Japan, assignor to Nishikawa Rubber Co., Ltd., Hiroshima, Japan
Filed Jan. 29, 1993, Ser. No. 11,662
Claims priority, application Japan, Jan. 31, 1992, 4-046313
Int. Cl.[5] B60J *10/02*
U.S. Cl. 296—146.9 3 Claims



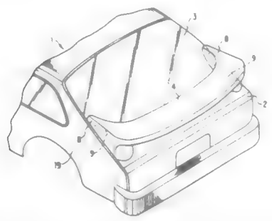
1. A weather strip for sealing a gap between an opening edge of a car body and a door glass of a car door, the weather-strip comprising:
an inverted substantially U-shaped retainer having a central portion, and first and second divergent leg portions each extending away from a respective end edge of said central portion so that no under-cut regions are formed in said retainer, said first leg portion extending in a first direction generally toward an interior of said car body and said second leg portion extending in a second direction generally toward an exterior of said car body;
a metal trim fitting extending transversely from a free end of said second leg portion, said metal trim fitting and said second leg portion cooperating to define a substantially V-shaped member;
means for securing said central portion to said opening edge of said car body;
a weather strip body having a base portion and a hollow seal portion which elastically contacts the door glass, said weather strip having a width profile reduced from a width value Y to a width value Z thus increasing an operator's field of vision through the door glass;
a pressure sensitive double sided adhesive tape disposed between said central portion of said retainer and said base portion of said weather strip, and between at least one of said first and second leg portions of said retainer and said weather strip to secure said weather strip to said retainer, said adhesive tape being the sole means for securing said weather strip to said retainer; and
an outer trim member secured to said substantially V-shaped member.

5,356,195
REAR SPOILER MOUNTING STRUCTURE FOR AN AUTOMATIC VEHICLE AND VEHICLE SO EQUIPPED
Kazunori Kanda, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan
Filed Mar. 18, 1993, Ser. No. 33,792
Claims priority, application Japan, Mar. 18, 1992, 4-023632
Int. Cl.[5] B62D *35/00*; B60J *5/10*
U.S. Cl. 296—180.1 10 Claims

1. A rear structure for an automotive vehicle comprising:
a back door including a lifting gate having an outer surface,
a rear window glass mounted and fixed on said outer surface,
said rear window glass in including an indentation defining on each of right and left peripheries of said rear window glass, and
a rear spoiler having a pair of mounting legs, connected with the lifting gate, and a cross bar extending between and interconnecting said mounting legs, each of said mounting

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legs having a mounting base formed thereon and attached directly to the lifting gate within one of said indentations,



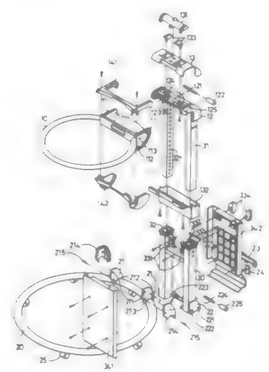
each said mounting base overlaying and covering an edge of one of said indentations.

5,356,196

HEIGHT-ADJUSTABLE FOLDING WALKING CHAIR

Ruey-Chang Chuang, No. 116 San Yuan Street, Ku Ting Dist., Taipei, Taiwan

Filed Jun. 8, 1993, Ser. No. 73,083
Int. Cl.[5] A47D *13/04*
U.S. Cl. 297—5 4 Claims



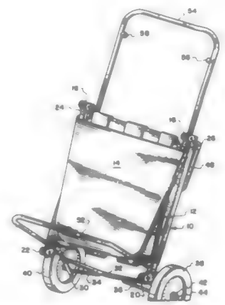
1. A height-adjustable folding walking chair comprising
a folding upper protective ring part;
a folding lower protective ring part, and an extensible H-shaped support having two parallel sliding columns movably disposed therein;
said folding lower protective ring part being connected to bottom ends of said H-shaped support and having been mounted with adequate numbers of universal caster;
said folding upper protective ring part being connected to top ends of said two sliding columns and including an upper protective ring;
a pair of segmental plates forming a rear portion of said upper protective ring and having an upper and a lower shaft holes and a fixed shaft hole formed on each of said segmental plates;
a pair of segmental side covers;
a fixed shaft supported on and between said segmental side covers and having its two ends projected out of said segmental side covers;
a pair of toothed steel plates separately disposed on said segmental side covers with their outer shaft-like ends separately projecting out of said segmental side covers;
a spring and a spring sleeve enclosing said spring, both being supported on and between said pair of toothed steel plates;
two top press tabs being separately screwed to said toothed steel plates;
whereby when said two top press tabs are pressed inward at the same time said two toothed steel plates and their projected shaft-like ends are driven to retract inward and therefore, allowing said upper protective ring to pivot about said fixed shaft **123**, and when said press tabs are released said toothed steel plates and their projected shaft-like ends can move outward.

5,356,197

COMBINATION CHAIR, DOLLY AND TABLE APPARATUS

Milorad Simic, 2912 Calle Estepa, Thousand Oaks, Calif. 91360

Filed Oct. 26, 1992, Ser. No. 966,527
Int. Cl.[5] A47C *13/00*
U.S. Cl. 297—129 4 Claims



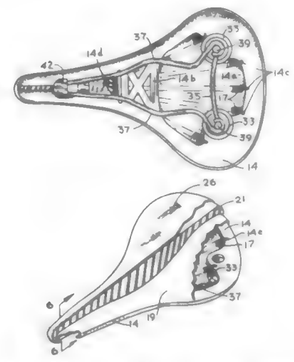
1. A combination chair, dolly and table apparatus comprising:
a seat section adapted to connect with the buttocks of a human when used as a chair;
a back rest section adapted to connect with the legs of a human when used as a chair;
a leg rest section adapted to connect with the legs of a human when used as a chair;
said back rest section being pivotally mounted by first pivot means to said seat section at a first pivot joint from a position located in juxtaposition with said seat section to an extended position which is defined as being any position from substantially perpendicular to said seat section to substantially in alignment with said seat section, said leg rest section being pivotally mounted by second pivot means to said seat section at a second pivot joint from a position located in juxtaposition with said seat section to an extended position which is in substantial alignment with said seat section;
a wheel assembly being mounted at said first pivot, joint, said wheel assembly being movable by pivotal connection means between an upper position and a lower position, said upper position being when said wheel assembly is located directly adjacent said seat section which is for storage, said lower position extends said wheel assembly permitting rolling of said wheel assembly on a supportive surface;
a handle assembly mounted on said seat section, said handle assembly being movable by movement means between a retracted position and a protracted position, with said handle assembly in said retracted position said handle assembly being in a stowage position not intended to be used and confined to said seat section, with said handle assembly in said protracted position said handle assembly facilitates manual grasping and movement of said apparatus on said wheel assembly permitting usage of said apparatus as a dolly; and
a bottom bar pivotally mounted on said leg rest section at said first pivot point, said bottom bar being movable to an outward position when said leg rest section is in juxtaposition with said seat section with said bottom bar functioning as a supporting base.

5,356,198

BICYCLE AND EXERCISER SEAT

Bradley E. Hughes, Agoura, Calif., assignor to Western States Import Company, Inc., Camarillo, Calif.

Filed Aug. 7, 1992, Ser. No. 927,459
Int. Cl.[5] B60J *1/02, 1/18*
U.S. Cl. 297—195.1 6 Claims



1. A seat for use in a bicycle or exerciser comprising:
a frame fabricated of a flexible plastic material contoured to form the basic shape of the seat, said frame having an opening in the central portion thereof, said opening having a rear edge and a forward edge which is substantially narrower thin said rear edge,
means for providing a resilient support strung between the rear and forward edges of said opening, said resilient support means evenly covering said opening and converging towards said forward edge, and
a seat pad of resilient material mounted over said resilient support means and attached to said frame said seat pad being contoured to form the shape of the top of the seat said seat further including a cover for the top of said seat, stretched over said seat pad, and attached to said frame and said seat pad.

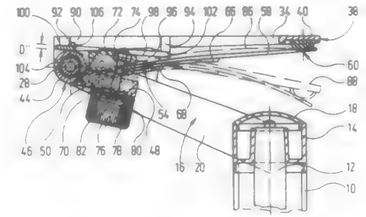
5,356,199

MECHANISM FOR MOUNTING THE SEAT OF A SWIVEL CHAIR ON A CHAIR FRAME

Manfred Elzenbeck, Steinheim, and Burkhard Vogtherr, Kandern, both of Fed. Rep. of Germany, assignors to Fritz Hansen A/S, Allerod, Denmark

Filed Sep. 28, 1992, Ser. No. 927,402
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1990, 9003589[U]
Int. Cl.[5] A47C *1/031*
U.S. Cl. 297—313 6 Claims

1. A mechanism for mounting the seat of a swivel chair on a chair frame (**10**) comprising
(a) a first mounting (**16**) which is adapted to be connected to a chair frame (**10**),
(b) a second mounting (**38**) that is connected to said first mounting (**16**) via a pivot joint (**24, 26, 28, 30**), said second mounting being adapted to be connected to a seat,
(c) a leaf spring arrangement (**54**) having two ends that pretension said second mounting (**38**) in an upper position, one end of which is supported by a mounting adjacent said pivot joint (**24, 26, 28, 30**) and the other end of which engages a portion of said second mounting (**38**) that is spaced away from said pivot joint (**24, 26, 28, 30**),
(d) first locking parts (**96**) on said first mounting (**16**),
(e) second locking parts (**94**) on said second mounting (**38**) that are located adjacent said first locking parts (**96**) and at



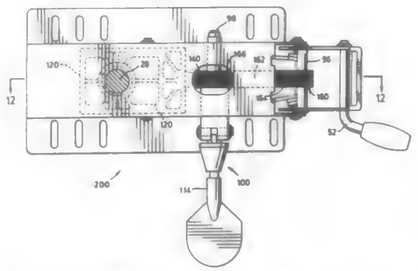
a spaced distance therefrom so as to form a gap therebetween, and
(f) a locking slide (**100**) movably supported on said first mounting (**16**), said locking slide (**100**) being movable into said gap so that said second mounting (**38**) cannot move downwardly with respect to said first mounting (**16**) and being movable out of said gap so that said second mounting (**38**) can move downwardly with respect to said first mounting (**16**).

5,356,200

UNITARY BRAKE FOR A CHAIR TILT MECHANISM

William S. Stumpf, Kitchener, and Art A. Patton, Waterloo, both of Canada, assignors to Doerner Products Ltd., Waterloo, Canada

Filed Oct. 23, 1992, Ser. No. 965,206
Int. Cl.[5] A47C *1/027*
U.S. Cl. 297—328 25 Claims



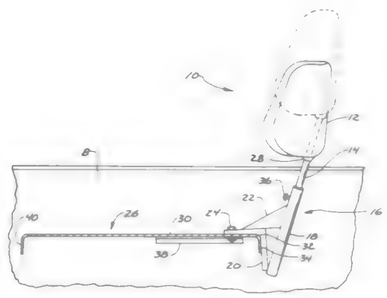
1. A chair having a seat with an underside and a seat tilt mechanism attached to the underside, the seat tilt mechanism provided with a housing, the chair having a seat back with a seat back support arm attached thereto and also having a seat back support mechanism comprising a mounting bracket pivotally attached to an end portion of said housing, said seat back support arm being attached to said mounting bracket, the chair including spring means for biasing said mounting bracket with respect to said housing, the chair including means defining a brake for locking said mounting bracket and said chair seat, said brake means including a spindle bracket pivotally mounted in said housing for receiving therein a chair support spindle, the spindle bracket being provided with at least three parallel arms extending therefrom, said arms each having slots extending therethrough, the brake means including means

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defining a rear lammal, said rear lammal means being pivotally mounted on said mounting bracket, said rear lammal means comprising arms interleaved with said spindle bracket arms, said rear lammal arms having slots extending therethrough and being in registration with said slots in the spindle bracket arms, said registered slots for receiving a locking bolt transversely through said arms, wherein said locking bolt is movable between a first position in which said interleaved arms are compressed together for locking the chair seat and the seat back in position and a second position in which the arms of the spindle bracket are free to move with respect to the arms of the rear lammal means,

said spindle bracket and said arms extending therefrom being of one piece unitary construction.

5,356,201
CANOE BACKREST
Jerome Olson, 8424 Westwood Ave., Brooklyn Park, Minn. 55444
Filed Jul. 27, 1992, Ser. No. 920,263
Int. Cl.[5] A47C *15/00*
U.S. Cl. 297—352 **4 Claims**



1. An adjustable boat seat backrest and frame comprising:

a back support member adapted for supporting a human back when a human is seated on a boat seat, the back support member being of padded construction and having a pair of elongated supports extending therefrom;

means for attaching the back support member to the boat seat and positioning the elongated supports in a generally upright position, comprising two support tubes, each having a receptacle for slidably receiving one elongated support of the back support member;

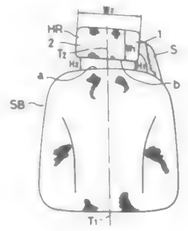
adjusting means for securing the elongated supports to the respective support tube at any selected adjusted position, such that the back support member can be adjusted with respect to the human back by sliding the elongated supports and securing the adjusting means at any selected position;

an L-shaped brace for supporting the back support member against a corresponding edge of the boat seat;

an arm attached to an outer surface of the tube and to a top face of the L-shaped brace; and

connecting means to attach the L-shaped brace to the boat seat.

5,356,202
ARRANGEMENT FOR MOUNTING A HEADREST IN SEAT
Yoshikazu Itoh, Akishima, Japan, assignor to Tachi-S Co. Ltd, Akishima, Japan
Filed Mar. 12, 1992, Ser. No. 849,952
Claims priority, application Japan, Mar. 1, 1991, 3-18351
Int. Cl.[5] A47C *1/10*
U.S. Cl. 297—391 **1 Claim**



1. An arrangement for mounting a headrest in a seat, in which said seat includes a seat back, and said headrest is of a cantilever-type having one single stay erected from an upper edge of said seat back, said headrest and seat back each having a uniformly expanded area such that its right-side and left-side half areas expand symmetrically relative to its central vertical line, with both central vertical lines of said headrest and seat back being aligned together, said stay being erected from said seat back adjacent a first side of said headrest such that the other side of said headrest is free, wherein said headrest is inclined upwardly relative to said stay at an angle so that the said free side of said headrest lies a greater distance from said upper edge of said seat back than said first side of said headrest, the inclination of said headrest offsetting an optical illusion that the headrest was inclined downwardly from said stay toward said upper edge of said seat back at a certain inclination angle if said headrest was positioned with its lower edge parallel with said upper edge of said seat back, making illusively smaller a first distance between said free side of said headrest and said upper edge of said seat back than a second distance between said first side of said headrest and said upper edge of said seat back, such that the headrest appears disposed horizontally in parallel with said upper edge of said seat back.

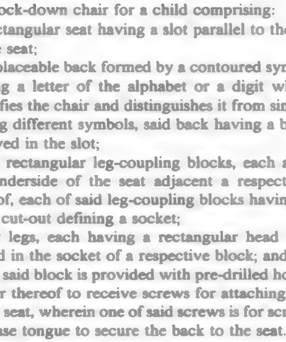
5,356,203
ADJUSTABLE FOOTREST
Leon E. Levasseur, and Leon J. Levasseur, both of 50 Whitney St., Holliston, Mass. 01746
Filed Jun. 17, 1993, Ser. No. 77,595
Int. Cl.[5] A47C *16/02*
U.S. Cl. 297—423.45 **9 Claims**

1. A footrest comprising:

frame means including a base portion for placement on a supporting surface, and a standard portion projecting upwardly from said base portion; said standard portion comprising a pair of substantially parallel horizontally spaced apart upright members, and a pair of substantially parallel horizontally spaced apart struts, each said strut having an upper end joined to an upper end of a different one of said upright members by a joining means, and said joined upright members and struts sloping upwardly toward each other;

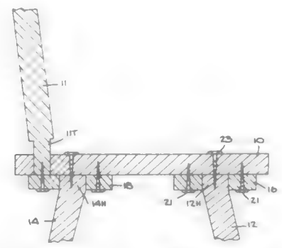
support means defining a substantially planar support surface straddled between said joining means and having opposite edges disposed adjacent to said joined upright members and said struts; and

attachment means projecting from said support means and attaching each of said opposite edges to said adjacent joined upright member and strut, each said attachment means including an upright attachment member slidably engaging said adjacent upright and a strut attachment member slidably engaging said adjacent strut and spaced from said upright attachment member, and including



adjustment means between said attachment means and said support means and for adjusting said spacing between each pair of said spaced apart upright and strut attachment members whereby the vertical position of said support means on said standard portion can be adjusted.

5,356,204
KNOCK-DOWN CHILD'S CHAIR
Michael McDonough, 131 Spring St., New York, N.Y. 10012
Filed May 17, 1993, Ser. No. 62,172
Int. Cl.[5] A47C *7/02*
U.S. Cl. 297—440.16 **3 Claims**



1. A knock-down chair for a child comprising:

(a) a rectangular seat having a slot parallel to the rear edge of the seat;

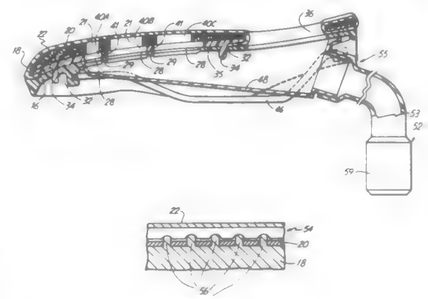
(b) a replaceable back formed by a contoured symbol representing a letter of the alphabet or a digit whose shape identifies the chair and distinguishes it from similar chairs having different symbols, said back having a base tongue received in the slot;

(c) four rectangular leg-coupling blocks, each attached to the underside of the seat adjacent a respective corner thereof, each of said leg-coupling blocks having a rectangular cut-out defining a socket;

(d) four legs, each having a rectangular head section received in the socket of a respective block; and

(e) each said block is provided with pre-drilled holes at each corner thereof to receive screws for attaching said block to the seat, wherein one of said screws is for screwing into the base tongue to secure the back to the seat.

5,356,205
SEAT ASSEMBLY WITH A DEFINED FLEXURE REGION, VENTING OR SUPPORT NODULES
Nathaniel Calvert, Rochester, and Michael J. Arbeiter, Minneapolis, both of Minn., assignors to InMotion, Inc., Minneapolis, Minn.
Filed Sep. 18, 1992, Ser. No. 947,332
Int. Cl.[5] A47C *7/02*
U.S. Cl. 297—452.41 **18 Claims**



1. A seat assembly comprising:

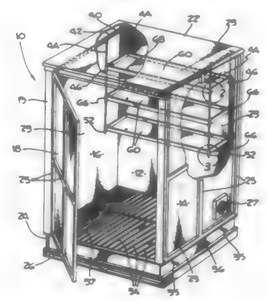
a support plate;

a liquid-filled bladder mounted to the support plate;

a plurality of nodules engaging the liquid-filled bladder, the nodules increasing pressure at localized pressure points upon a person when the person applies weight to the seat assembly, wherein the nodules are formed on the support plate; and

a foam padding having apertures substantially aligned with the nodules, the nodules passing through the apertures thereby aligning and retaining the padding in position.

5,356,206
HAZARDOUS MATERIAL STORAGE ENCLOSURE UNIT WITH SECONDARY CONTAINMENT SHELF
Gary L. Van Valkenburgh, 40 S. Linden Dr., Ventura, Calif. 93004
Filed Jul. 9, 1992, Ser. No. 911,201
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—317.1 **12 Claims**



1. A storage enclosure unit for storing containers of hazardous material providing for a primary containment of any spills or leakage of materials from said containers: said enclosure unit having a base a primary containment pan providing said primary containment, side and rear walls, a front wall having at least one door and a roof, the improvement comprising:

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a plurality of secondary containment shelves, said shelves having upstanding liquid tight marginal portions for providing a secondary containment of spills or leakage of material from containers stored on said shelves:

a sub-roof frame assembly fixedly attached to said storage enclosure unit above said primary containment pan;

a plurality of support rods suspended from said sub-roof frame assembly and depending therefrom below said roof within said storage enclosure and the above said primary containment pan;

support means, associated with each of said plurality of secondary containment shelves, for supporting said secondary containment shelves on said suspended support rods independent of said side, rear, and front walls above said primary containment pan whereby said plurality of secondary containment shelves are suspended within said enclosure unit from said sub-roof frame assembly free of support from and/or engagement with said side, rear, and front walls, so as to facilitate retention of said containers on said shelves in the event of movement of said unit walls in response to any disturbance of said unit, such as in an earthquake;

wherein said plurality of secondary containment shelves are provided in a vertical array above said primary containment pan.

5,356,207

BRAKING DEVICE FOR DRAWERS

Erich Röck, Höchst, Austria, and Fredi Dubach, Adetswil, Switzerland, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

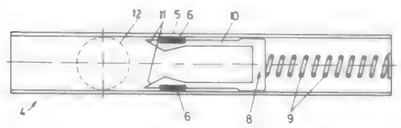
PCT No. PCT/AT92/00063, § 371 Date Dec. 21, 1992, § 102(e) Date Dec. 21, 1992, PCT Pub. No. WO92/19131, PCT Pub. Date Nov. 12, 1992

PCT Filed Apr. 29, 1992, Ser. No. 962,191

Claims priority, application Austria, May 2, 1991, A 913/91

Int. Cl.[5] A47B *88/00*

U.S. Cl. 312—334.46 **47 Claims**



1. A braking device for use in braking sliding movement of a drawer relative to a furniture body, said device comprising:

a brake rail to be fixed to one of the body or the drawer;

at least one brake shoe mounted on said brake rail to be movable relative thereto and to be brought into braking engagement therewith;

a spring connecting said brake shoe to said brake rail and urging said brake shoe relative to said brake rail in a first direction to be opposite to a direction of drawer movement to be braked; and

an element to be fixed to the other of the drawer and the body at a position such that, when the drawer is moved relative to the body in the direction of drawer movement to be braked, said element moves said brake shoe relative to said brake rail in a second direction opposite to said first direction and against the force of said spring and causes said brake shoe to brakingly engage said rail, thus braking the movement of the drawer.

5,356,208

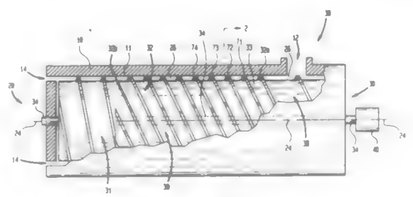
SCREW ELEMENT HAVING SHEARING AND SCRAPING FLIGHTS

Zehev Tadmor, 62 Tishbi Street, Haifa, Israel

Filed Apr. 7, 1993, Ser. No. 43,742

Int. Cl.[5] B29B *1/06*

U.S. Cl. 366—79 **41 Claims**



1. A machine for processing solid and viscous plastic and polymeric materials comprising

a hollow barrel defining a barrel chamber, said barrel having an inner surface and an outer surface, said barrel having first and second ends and a longitudinal axis extending between said ends, whereby said barrel defines axial directions along said axis, radial directions traverse to said axis and circumferential directions around said axis,

inlet means for introducing a material into said barrel chamber,

a screw extending along said longitudinal axis and rotatable about said longitudinal axis in a circumferential rotation direction, said screw having a first end adjacent said first end of said barrel and having a second end adjacent said second end of said barrel,

said screw including at least one shearing flight and at least one scraping flight,

said shearing flight extending to a spaced distance from said inner surface of said barrel for shearing material between said shearing flight and said inner surface of said barrel, said spaced distance associated with said shearing flight gradually decreasing in the direction opposite the rotation direction until said spaced distance reaches a minimum spaced distance,

said scraping flight radially extending to adjacent the inner surface of said barrel for removing material from said inner surface of said barrel, said shearing and scraping flights being constructed and arranged such that upon rotation of said screw in said rotation direction, said scraping flight collects and guides said material to said shearing flight.

5,356,209

TWO-PIECE AXLE BOLT FOR SKATE WHEEL MOUNTING

Martin H. Hill, Syracuse, N.Y., assignor to Built for Speed, Inc., Syracuse, N.Y.

Filed May 19, 1993, Ser. No. 63,303

Int. Cl.[5] B60B *37/10*

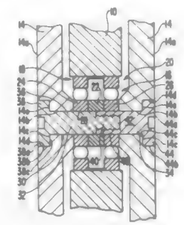
U.S. Cl. 301—5.7 **8 Claims**

1. A two-piece axle bolt for mounting an in-line skate wheel having a centrally disposed bearing assembly between the spaced side walls of an in-line U-shaped skate frame, said bearing assembly having a centrally disposed axle receiving bore therein, said side walls each having a respective outer face and a respective axle receiving and mounting hole extending therethrough, there being a respective bolt head receiving counter bore formed in the outer face of each side wall around the hole therein, said axle receiving and mounting holes and said counter bores being disposed in coaxial alignment, said counter bores each having a respective annular inner surface that is spaced radially from said axis, said axle bolt comprising:

a first shaft component having a first elongated central axle shaft portion having a first outer diameter, a first enlarged head disposed at one end of the first shaft portion and a male threaded segment of reduced diameter at the other end of the first shaft portion; and

a second shaft component having a second elongated central axle shaft portion having a second outer diameter which is the same as said first outer diameter, a second enlarged head at one end of the second shaft portion and a female threaded segment at the other end of the second shaft portion,

said threaded segments being complementarily configured and the male segment being threadably engaged within the female segment so that said central shaft portions are in axial alignment to thereby present said axle bolt,



said enlarged heads each having a respective outer end surface which faces axially away from the engaged threaded segments, said enlarged heads each also having a respective peripheral wall surface which extends around the outer end surface, said axle bolt being configured so that when the wheel and the frame and the axle bolt are assembled the shaft portions present a support for said bearing assembly and an axis of rotation for the wheel, said heads are received within the counter bores with said peripheral wall surfaces disposed in closely fitted load bearing relationship relative to an adjacent corresponding annular inner surface of a corresponding counter bore, and the outer end surfaces of the heads do not project outwardly substantially beyond the outer faces of the side walls.

5,356,210

ANTI-LOCK HYDRAULIC BRAKE SYSTEM

Joachim Maas, Bad Vilbel, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 946,462, Nov. 13, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 184,747

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1991, 4108640

Int. Cl.[5] B60T *8/42*

U.S. Cl. 303—116.1 **1 Claim**

1. An anti-lock hydraulic brake system with a master cylinder comprising:

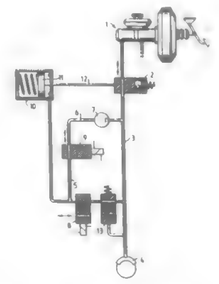
at least one wheel brake;

a brake line connecting said master cylinder to said wheel brake and a cut-off valve to close said master cylinder in relation to said brake system;

pressure-fluid collecting means, connected to said wheel brake by way of an outlet valve switchable between an open position and a closed position, for collecting pressure fluid from said wheel brake;

a pump, having a suction side and a pressure side, said pump communicating with its suction side to said pressure-fluid collecting means by way of a selector valve and with its pressure side directly to said wheel brake, wherein said pressure-fluid collecting means is a low-pressure accumulator, and wherein said cut-off valve is coupled mechanically to the piston of the low-pressure accumulator; and

throttle means located between the brake and the outlet valve in a line of the brake system separate from the brake line for providing an additional restriction in the connection between the wheel brake and the pressure-fluid collecting means upon the attainment of a defined pressure in the wheel brake, the throttle means operated between an



open position and a throttle position by the change in pressure in the wheel brake to ensure an even pressure reduction per unit of time independently of a given magnitude of wheel braking pressure.

5,356,211

MAGNET VALVE

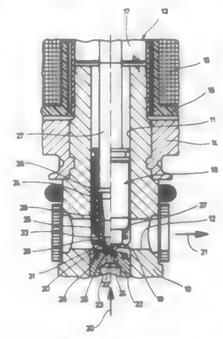
Siegfried Fritsch, Sonthofen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 24, 1993, Ser. No. 127,032

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1992, 4236482

Int. Cl.[5] B60T *8/36*; F15B *13/044, 9/12*; H01F *7/16*

U.S. Cl. 303—119.2 **17 Claims**



1. A magnet valve for anti-lock vehicle brake systems, having a housing (10) having a longitudinal bore (11) with a transverse bore (12), an electromagnet (13) related to said housing (10), a valve body (22) in said longitudinal bore, said valve body includes a first valve seat (25), a valve member (18) that cooperates with said first valve seat, a valve inlet (20) for connection of a pressure source in a master cylinder, and a valve outlet (21) for connection of a pressure receiver in a wheel brake cylinder; said valve member (18) cooperates with said first valve seat (25) to control a connection between the valve inlet (20) and the valve outlet (21); said valve members (18) is embodied in two parts and includes a tappet (27) coupled to an armature of the electromagnet, said electromagnet (13) is triggerable by minimum and maximum different exciter currents (I_1, I_2) for actuating the valve member (18); a restoring spring (19) for returning the valve member (18) when the

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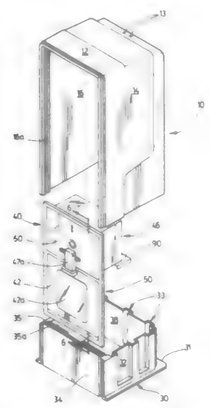
electromagnet (13) is without power; a first closing element (28) is formed on a face end of said valve tappet (27) remote from the armature (17), and a closing cap (29, 29') is slipped over the face end of the valve tappet (27) and is axially displaceable thereon, said closing cap includes a wall and is supported on the valve tappet (27) via a barrier spring (34) and having a cap bottom on an outside of which a second closing element (30) cooperates with said first valve seat (25) and on an inside of which a second valve seat (31) cooperates with the first closing element (28) embodied on the face end of the valve tappet; a central, axial throttle (32) is defined in the cap bottom and operative between the valve inlet (20) and the valve outlet (21) for delaying a pressure rise at the valve outlet (21), said throttle bore (32) being disposed in the valve member (18) and the valve member being embodied such that by triggering the electromagnet (13) with the minimum exciter current (I_1), the throttle bore (32) between the valve inlet (20) and the valve outlet (21) is switched on and the valve inlet (20) and the valve outlet (21) communicate with each other via the throttle bore (32), and upon a triggering of the electromagnet (13) by the maximum exciter current (I_2) the valve inlet (20) and the valve outlet (21) are each disconnected from one another, in an absence of electromagnet triggering, the valve inlet (20) and the valve outlet (32) are made to communicate with one another, said central, axial throttle bore (32) is defined in the cap bottom, and at lest one radial bore (33) is made in the cap wall, said central, axial throttle bore and said radial bore being interconnected, the embodiment of the valve member (18) is chosen such that in the absence of electromagnet triggering, the valve inlet and outlet (20, 21) communicate with one another; upon triggering of the electromagnet (13) by the maximum exciter current (I_2), the valve inlet and outlet (20, 21) are sealed off from one another; and upon triggering of the electromagnet (13) by the minimum exciter current (I_1) that is reduced compared with the maximum exciter current (I_2), the valve inlet and outlet (20, 21) communicate with one another via the throttle (32).

5,356,212

PLASTIC VENDOR WITH METAL INSERT

Morris Okopny, 6616 Snow Goose Lane, Mississauga, Ontario, Canada L5N 5H5

Filed Dec. 7, 1992, Ser. No. 988,408
Int. Cl.[5] A47B *47/00*
U.S. Cl. 312—263 14 Claims



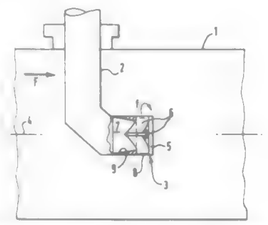
1. A vendor for newspapers or other articles, comprising
a plastic cabinet having a top panel and a rear panel extending between side panels, and an open front and bottom forming front and bottom opening,
an insert comprising a frame having a door adjacent to a secure compartment, the door being locked by a latch mechanism contained within the secure compartment, and
vertical channels being provided along interior faces of the side panels, the channels comprising opposed outer lips for retaining and insert within the cabinet, the channels each having an open bottom open in the direction of the bottom opening of the cabinet, to permit the frame of the insert to be inserted into the channels through the bottom of the cabinet,
whereby when the insert is inserted into the cabinet a storage compartment is formed within the cabinet for storing newspapers or other articles.

5,356,213

PROCESS AND APPARATUS FOR MIXING TWO GASES

Philippe Arpentinier, Paris, France, assignor to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude, Paris, France

Continuation of Ser. No. 731,013, Jul. 16, 1991, abandoned. This application Feb. 11, 1993, Ser. No. 39,685
Claims priority, application France, Jul. 27, 1990, 90 09617
Int. Cl.[5] B01F *15/02*
U.S. Cl. 366—178 14 Claims



6. A method for mixing a first gas stream flowing in a pipe section having an axis with a second gas comprising the steps of: injecting substantially radially outwardly from an injection zone within the pipe section at least two angularly spaced streams of the second gas within the first gas stream, and imparting to each stream of the second gas a rotating movement relative to the axis, said rotating movement being imparted by stationary swirled radially extending vanes.

5,356,214

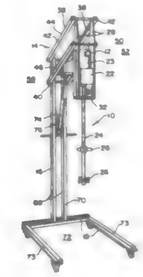
MIXER SUPPORT STRUCTURE WITH INTEGRAL HOIST

Richard Styles, Redmond, Wash., assignor to Richard Styles & Associates, Inc., Redmond, Wash.

Filed Apr. 23, 1993, Ser. No. 52,146
Int. Cl.[5] B01F *7/22*
U.S. Cl. 366—285 19 Claims

1. A hoist for a power driven rotary shaft having journal attachment means thereon comprising, in combination;
an independent support structure,
a boom comprising spaced apart sets of parallelogram linkages providing four point pivotal connections with said journal attachment means and said support structure, and
a telescopic means for swinging said linkages about their pivotal connections,

said telescopic means having one end supported by said independent support structure,



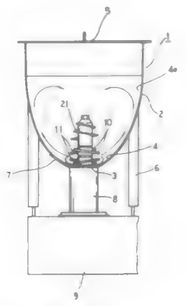
whereby said shaft may be linearly translated and said four point connections resist rotational moments transmitted by said rotary shaft.

5,356,215

MIXING DEVICE

Takao Inoue, and Yukihiro Omika, both of Tokyo, Japan, assignors to Kajima Corporation, Tokyo, Japan

Continuation of Ser. No. 794,055, Nov. 19, 1991, abandoned. This application Aug. 30, 1993, Ser. No. 113,513
Claims priority, application Japan, Nov. 21, 1990, 2-317005; Sep. 17, 1991, 3-236653
Int. Cl.[5] B01F *7/24*
U.S. Cl. 366—293 10 Claims



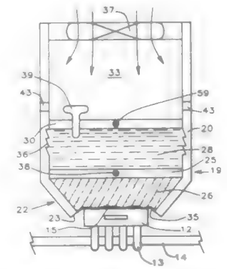
1. A mixing device comprising:
a mixing container for containing mixing materials including aggregate to be mixed, said mixing container including an interior bottom surface and an inner wall surface shaped as an arc or parabola in vertical section such that said inner wall surface has a diameter which decreases gradually toward said interior bottom surface;
a rotary shaft extending upwardly from said interior bottom surface and being adapted for high speed rotation in a rotational direction;
an upper blade unit mounted to said rotary shaft for rotation therewith, said upper blade unit including a pair of spiral-shaped upper screw blades, each of said upper screw blades being inclined downwardly from its leading edge to its trailing edge with respect to the rotational direction; and
a lower blade unit mounted to said rotary shaft for rotation therewith, said lower blade unit being disposed below said upper blade unit and including a pair of spiral-shaped lower screw blades aligned beneath said upper screw blades, respectively, each of said lower screw blades being inclined upwardly from its leading edge to its trailing edge with respect to the rotational direction, such that spaces are defined between said upper screw blades and said lower screw blades, respectively, which gradually decrease in vertical dimension from the leading edges to the trailing edges of said upper and lower screw blades, respectively;
wherein the materials contained in said mixing container are caused to be guided into said spaces between said upper and lower blades, respectively, to be collided with one another toward the trailing edges of said upper and lower screw blades, respectively.

5,356,216

APPARATUS FOR MEASURING HEAT OF CIRCUIT MODULE

Jian-Dih Jeng, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed May 3, 1993, Ser. No. 55,568
Int. Cl.[5] G01K *17/00*
U.S. Cl. 374—31 13 Claims



1. Testing apparatus for measuring the heat of a circuit module mounted on a circuit board, the board having a planar surface that defines a plane for the orientation of the circuit module, the circuit module having a major heat dissipating surface facing outward from the board the apparatus comprising,
a tubular housing having a central axis and having a shape to be positioned over the circuit module with the axis of the housing generally perpendicular to the plane of the board, whereby a thermal path is formed through the axis of the housing for substantially all of the heat from the module surface,
a first horizontal partition of high thermal conductivity located inside the housing at a position spaced from the heat dissipating surface to form a top of a first chamber that is open to receive the circuit module and forming a bottom of a second chamber,
a second horizontal partition of high thermal conductivity located inside the housing to form a top of the second chamber, and a bottom of a third chamber,
means in the first chamber for making a good thermal path between the circuit module and the first horizontal partition,
a second thermally conductive material having a predetermined thermal resistance filling the second chamber, whereby a temperature drop will be produced between the first and second partitions according to a heat flow through the housing,
an electric fan located above the second partition for blowing cooling air against the upper surface of the second partition
means for measuring the temperature drop through the thermal resistance of the second chamber, comprising
a first temperature sensing element located to measure the temperature of the first partition and a second tempera-

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ture sensing element located to measure the temperature of the second partition,

the walls of the housing being poor heat conductors to restrict the thermal path to substantially said axis of the housing

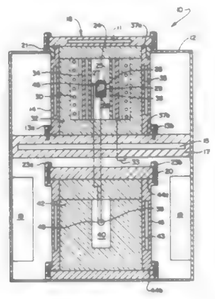
whereby the heat transferred from the circuit module can be calculated according to an equation relating the temperature drop across the thermally conductive material to the thermal resistance established by the material.

5,356,217

ENTHALPIMETRIC ANALYZER AND METHOD OF USE

Gary S. Sheffield, Westerville, Ohio, assignor to The Edward Orton, Jr. Ceramic Foundation, Westerville, Ohio

Filed Dec. 4, 1992, Ser. No. 986,099
Int. Cl.[5] G01N *25/00, 25/02*
U.S. Cl. 374—45 43 Claims



1. A system for determining the amount in at least one sample of at least one analyte having a thermally-induced, energy event and an associated enthalpy change, comprising:

sensor means for providing output signals of amplitude corresponding to the temperature of said sample;

data input means manually actuable for deriving select function signals and operational parameter inputs;

a first closable chamber for receiving the sample;

heating means disposed within said first chamber in heat transfer adjacency with said sample and responsive to control signals submitted thereto for heating or cooling said sample at a preselected rate;

an oscillator for deriving oscillator sampling signals at a predetermined frequency;

converter means responsive to said output signals from said sensor means for generating sample digital signals corresponding therewith, and to said oscillator sampling signals from said oscillator for generating oscillator sampling digital signals corresponding therewith;

first memory means for selectively storing with associated time signals said sample digital signals received from said converter means, said sample digital signals and associated time signals corresponding to the thermal response of said sample; and

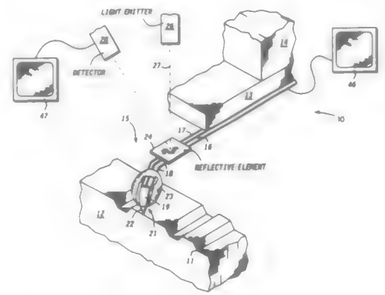
processing means responsive to a first select function signal and said operational parameter inputs from said data input means for deriving said control signals and effecting the submittal thereof to said heating means, for effecting responsive to said oscillator sampling digital signals the selective storage by said first memory means of said sample digital signals and said associated time signals over a predetermined temperature range which includes the temperature range of said energy event of said analyte, for retrieving the selectively stored sample digital signals and associated time signals from said first memory means, and for deriving process signals proportional to the amount of said analyte in said sample from the retrieved sample digital signals and time signals.

5,356,218

PROBE FOR PROVIDING SURFACE IMAGES

Theresa J. Hopson, Mesa; Ronald N. Legge, Scottsdale, and Juan P. Carrejo, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 4, 1993, Ser. No. 55,887
Int. Cl.[5] G01J *5/02, 5/12*
U.S. Cl. 374—124 7 Claims



1. A probe for providing surface images comprising:

a heat sensing assembly having a first end, a second end, and a heat sensing element;

an electrically insulating and thermally conducting tip projecting from the heat sensing assembly; and

a reflective element positioned between the first end of the heat sensing assembly and the electrically isolating and thermally conductive tip, wherein the reflective element cooperates with a light emitter and a detector to provide a first surface image, and wherein said heat sensing assembly and said electrically isolating and thermally conductive tip are used in providing a second surface image.

5,356,219

AERODYNAMIC INSTRUMENTATION PROBE

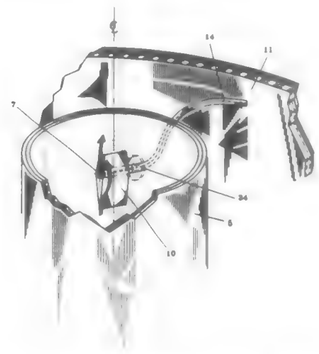
Robert F. Tammera, West Orange, and Donald F. Shaw, Denville, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 937,337, Aug. 31, 1992, abandoned. This application Sep. 30, 1993, Ser. No. 129,507
Int. Cl.[5] G01K *1/10, 1/14, 13/02*
U.S. Cl. 374—138 6 Claims

1. An improved instrument probe for use in erosive process streams comprising:

a tubular housing sized to enclose a sensing element;

an outer casing having a tubular opening therein surrounding the tubular housing, the outer casing being aerodynamically shaped to be substantially non-disruptive of the process stream and to direct the entire process stream around the casing, wherein the tubular housing is protected from erosion.

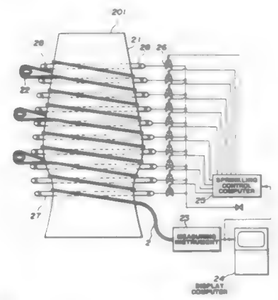


5,356,220

METHOD AND APPARATUS FOR MONITORING TEMPERATURE OF BLAST FURNACE AND TEMPERATURE CONTROL SYSTEM USING TEMPERATURE MONITORING APPARATUS

Osamu Iida; Toshihiko Hironaga, both of Kurashiki, and Katsuhiko Yanagisawa, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed May 18, 1993, Ser. No. 63,035
Claims priority, application Japan, May 29, 1992, 4-139061; Jun. 23, 1992, 4-164874
Int. Cl.[5] G01N *21/65;* G01J *5/10*
U.S. Cl. 374—161 11 Claims



1. An apparatus for monitoring a temperature of a blast furnace facility, the apparatus comprising:

an optical fiber wound around and contacting an outside surface of said blast furnace facility;

temperature measuring means connected to a transmission end of said optical fiber, for measuring a temperature distribution of a measuring area of the outside surface of the blast furnace facility, the measuring area comprising portions of the outside surface of the blast furnace facility contacting the optical fiber, the temperature measuring means measuring a temperature distribution based on an intensity of Raman back scattering light from a light pulse transmitted into the optical fiber and further based on a time interval from the transmission of the light pulse until the Raman back scattering light returns to the transmission end of the optical fiber; and

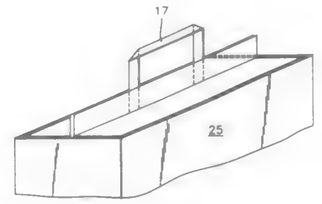
display means for displaying the temperature distribution.

5,356,221

CARRYING HANDLE ASSEMBLY FOR BAGS HAVING FLAT BOTTOMS AND A METHOD AND AN APPARATUS FOR PRODUCING THE SAME

Fritz Achelpohl, Lienen, and Hermann Sandmeier, Bielefeld, both of Fed. Rep. of Germany, assignors to Windmoeller & Hoelscher, Lengerich, Fed. Rep. of Germany

Filed Feb. 17, 1993, Ser. No. 18,519
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1992, 4205062
Int. Cl.[5] B65D *33/14*
U.S. Cl. 383—21 3 Claims



1. A carrying assembly comprising:

a bag having a flat bottom,

two strips of material bent into an L-shape cross section,

one portion of each of said two strips of material extending generally in a single plane and bonded to said flat bottom of said bag and confined within boundaries of said flat bottom of said bag,

the other portions of each of said two strips of material being arranged along side of each other and bonded together, and

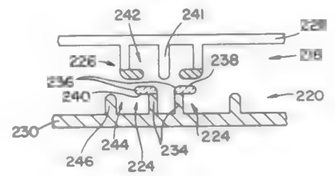
a carrying handle bent into a U-shape having two limbs interconnected by a crosspiece, said two limbs being bonded between said other portions of said two strips of material.

5,356,222

INTERLOCKING CLOSURE FOR PLASTIC STORAGE BAGS WITH CONFIRMING COLOR STRIPES

Catherine E. Kettner, Appleton, Wis.; Jack R. McLean, Richmond, Va.; Mladomir Tomic, and Wayne M. Wegner, both of Appleton, Wis., assignors to Reynolds Consumer Products Inc., Appleton, Wis.

Continuation-in-part of Ser. No. 840,250, Feb. 24, 1992, Pat. No. 5,248,201. This application May 12, 1993, Ser. No. 59,607
Int. Cl.[5] B65D *33/24*
U.S. Cl. 383—63 7 Claims



1. A container comprising a pair of transparent or translucent side walls for defining a container interior and at least one open end; and a closure device including a first closure element and a second closure element; said closure elements being formed with first and second webs respectively extending

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along said side walls adjacent said open end, said first and second closure elements being matable so that, upon mating engagement of said first and second closure elements along their substantially entire respective lengths, said open end is substantially entirely closed, and wherein tip portions of said first closure element are colored a first color, wherein the remaining portions of said first closure element and said first web are colored a second color, said second color being an opaque color, and wherein said second web is transparent or translucent so that upon substantially entirely complete mating of said first and second closure elements, said first color is visually observable through said second web as a continuous band of said first color, said first web providing contrast with said first color when the first and second closure elements are viewed through said second web.

5,356,223

LINEAR MOTION ROLLING GUIDE UNIT

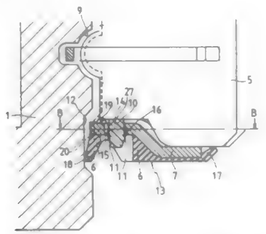
Norimasa Agari, Seki, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1993, Ser. No. 162,267

Claims priority, application Japan, Dec. 10, 1992, 4-090441[U]

Int. Cl.[5] F16C *29/06*

U.S. Cl. 384—15 **6 Claims**



1. A linear motion rolling guide unit comprising:

a track rail having first raceway grooves formed on longitudinally extending side wall surfaces thereof;

a casing slidable relative to the track rail and having second raceway grooves formed at positions facing the first raceway grooves;

end caps mounted to the longitudinal ends of the casing;

rolling elements rolling and circulating through raceways formed between the first raceway grooves and the second raceway grooves;

under seals made up of core members and elastic members secured to the core members, the elastic members having lip portions for sealing the track rail, the casing and the end caps; and

projections protruding from the undersides of the end caps, each of the projections having a projection body extending parallel to the track rail and locking portions protruding widthwise from and on both sides of the projection body;

wherein the projections each have their longitudinal length partly cut away to a certain depth to reduce the thickness in the lateral direction thereby forming a notch;

wherein the core member is formed with insertion holes elongate in the longitudinal direction of the core member to receive the projections; and

wherein opposing longitudinal edges of each of the insertion holes are formed with locking detents with which the locking portions of the projections are engageable, and the locking detents facing each other at both sides of each of the insertion holes are formed at positions offset or staggered longitudinally of the insertion holes.

5,356,224

DEVICE FOR FASTENING SLIDE INSERTS

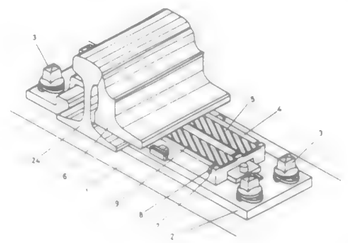
Gerald Durchschlag, Zeltweg, Austria, assignor to Voest-Alpine Eisenbahnsysteme Aktiesengesselschaft, Vienna, Austria

Filed May 12, 1993, Ser. No. 59,594

Claims priority, application Austria, May 18, 1992, 1019/92

Int. Cl.[5] E01B *7/26;* **F16C** *33/02*

U.S. Cl. 384—41 **6 Claims**



1. A device for fastening at least one exchangeable slide insert, formed of synthetic plastic material, in an elongated recess within a slide base, said slide insert having surfaces on opposite sides thereof which extend longitudinally of the slide insert and which are received within respective undercut walls on opposite sides of the recess; a first groove formed in an underside surface of said slide insert facing the slide base along a bottom surface of the recess, said groove extending transversely of the slide insert; a second groove formed in said bottom surface and extending transversely of the slide base; and a locking member located within said first and second grooves when the slide insert is positioned relative to the slide base such that the grooves are in alignment, said locking member having plastically deformable free ends which project beyond the slide base.

5,356,225

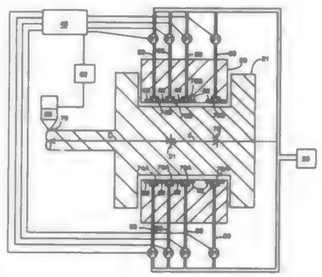
AIR BEARING SYSTEM WITH LARGE STIFFNESS AND MINIMAL VIBRATION CHARCTERISTICS

Charles E. Hanes, 15042 Lakeside Dr., Sonora, Calif. 95370, and Robert S. Smith, 1263 Emory St., San Jose, Calif. 95126

Continuation-in-part of Ser. No. 943,497, Sep. 11, 1992, abandoned. This application Dec. 20, 1993, Ser. No. 170,441

Int. Cl.[5] F16C *32/06*

U.S. Cl. 384—100 **26 Claims**



1. A fluid dynamic bearing system supplied with pressurized fluid through a conduit means from a supply for supporting a load applied asymmetrically at a location to the bearing system which comprises:

at least one moving bearing member, each bearing member having a plurality of moving surfaces;

at least one stationary bearing member, each one stationary bearing member paired with one of said moving bearing members and each stationary bearing member having a plurality of stationary surfaces;

each said stationary surface paired with one of said moving surfaces respectively to form a bearing interface having an area, an interface location, a fluid supply entrance and an exit;

fluid pressurized to flow through each said entrance across said respective interface and out of said respective exit thereby creating fluid dynamic pressure in each said interface;

means to control pressure of said pressurized fluid in each said interface to establish target values of pressure and flow rates independent of said target values of pressure and flow rates in other said interfaces such that a sum of the load and the forces on each said moving member exerted by said target pressure in each interface is substantially zero and the sum of the moments about any axis exerted by said load and the forces on said member exerted by said target pressure in each interface is substantially zero and such that said target values provide maximum stiffness of said interfaces without inducing resonance in said bearing interfaces.

5,356,226

BEARING DEVICE

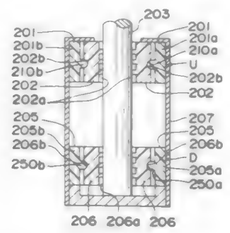
Masayoshi Onishi, Sakai, and Takeshi Takahashi, Yamatotakada, both of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Division of Ser. No. 873,000, Apr. 24, 1992, abandoned. This application Apr. 8, 1993, Ser. No. 44,008

Claims priority, application Japan, Apr. 26, 1991, 3-029584[U]; Apr. 26, 1991, 3-029585[U]

Int. Cl.[5] F16C *25/04*

U.S. Cl. 384—119 **4 Claims**



1. A bearing device, comprising:

a bearing sleeve for bearing a shaft;

a mounting sleeve disposed outside said bearing sleeve; and

a support member for adjustably supporting said bearing sleeve on said mounting sleeve, said bearing sleeve and said mounting sleeve being discrete from each other, and said support member being formed integrally with said mounting sleeve;

wherein said mounting sleeve comprises two semi-cylindrical components, said support member comprises an adjusting flange on the inner periphery of each said semi-cylindrical component thereof, and an annular groove is on the outer periphery of said bearing sleeve, said adjusting flanges being fitted into said annular groove.

5,356,227

SOLID-LUBRICATED BEARING ASSEMBLY

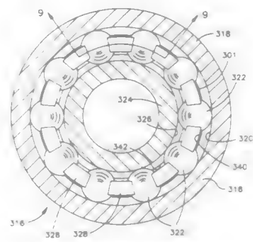
Lewis B. Sibley, Paoli, and C. Brian Kelly, Secane, both of Pa., assignors to Tribology Systems, Inc., Paoli, Pa.

Continuation-in-part of Ser. No. 374,167, Jun. 29, 1989, Pat. No. 5,066,145. This application Nov. 18, 1991, Ser. No. 794,152

The portion of the term of this patent subsequent to Nov. 19, 2008, has been disclaimed.

Int. Cl.[5] F16C *33/66, 33/44*

U.S. Cl. 384—463 **16 Claims**



1. A solid-lubricated bearing assembly comprising:

a. rotatable bearing elements having an arcuate outer surface of constant radius of curvature and constant diameter to facilitate rotation of said elements;

b. an outer member having a generally radially inwardly facing annular race adapted to receive said bearing elements for rotating motion thereof respecting said outer member;

c. an inner member having a generally radially outwardly facing annular race adapted to receive said bearing elements for rotating motion thereof respecting said inner member, said bearing elements being retained between said races of said inner and outer members; and

d. spacer means circumferentially positioned between said bearing elements for maintaining said bearing elements in spaced relation to one another while permitting rotation of said elements in said races, comprising

i. a concave surface formed therein facing each of said bearing elements, said concave surface having a radius of curvature larger than the radius of curvature of the portion of said bearing element which said concave surface faces;

ii. circumferential clearance between the concave surface of said spacer means and the arcuate surface of each of said bearing elements which said concave surface faces, the sum of each of said clearances being greater thn said diameter of said bearing elements; and

iii. solid lubricant material for depositing a solid lubricant film on at least one of said bearing elements as said element rotates respecting said races.

5,356,228

APPARATUS FOR DRIVING ADJACENT ELEMENTS IN A WIRE-DOT PRINT HEAD

Tatsuya Koyama; Hirokazu Andou, and Kiyoshi Ikeda, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 665,902, Mar. 7, 1991, abandoned. This application Dec. 17, 1992, Ser. No. 991,759

Claims priority, application Japan, Mar. 9, 1990, 2-56719

Int. Cl.[5] B41J *2/30*

U.S. Cl. 400—124.02 **12 Claims**

1. A device for driving a wire-dot printer including a wire-dot print head having wire drive elements disposed in sequence, said device comprising:

means coupled to control energization of the respective wire drive elements in accordance with print data supplied for

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respective drive elements and timing signals supplied to said drive elements;

said print data for each said wire drive element indicating whether each said wire drive element is to be driven in each print cycle;

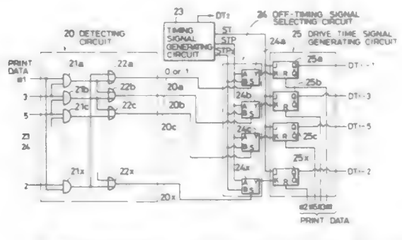
means coupled to said control means to detect, for each drive element, whether either adjacent drive element is energized, in accordance with the print data corresponding to said adjacent drive elements;

said means to detect whether either adjacent drive is energized consisting essentially of, for each print data element, an AND gate and an OR gate;

said control means being coupled to control the energization time for each said drive element in accordance with the result of the detection, said control means comprising:

a timing signal generating circuit to produce a first timing signal and a second timing signal;

a timing signal selecting circuit coupled to said timing



signal generating circuit to select, for each drive element, either the first or the second timing signal in accordance with the print data corresponding to said adjacent drive elements;

a drive time signal generating circuit coupled to said timing signal selecting circuit and responsive to the selected one of the first and second timing signals to produce, for each drive element, a drive time signal having an active period and an inactive period, wherein said selected one of said timing signals determines the beginning of said drive time signal and wherein the end of said drive time signal is the same whether the first timing signal or the second timing signal is selected; and

a drive circuit responsive to the drive time signal for causing, for each drive element, an electric current to flow through each of said wire drive elements, wherein the active period of said drive time signal has a shorter duration when said second timing signal is selected than when said first timing signal is selected.

5,356,229

PRINT MEDIUM HANDLING SYSTEM TO CONTROL PEN-TO-PRINT MEDIUM SPACING DURING PRINTING

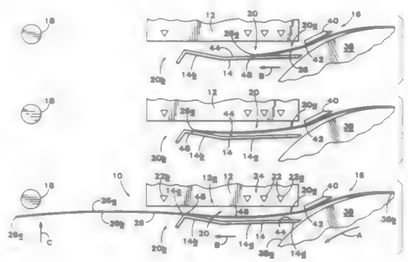
Mark S. Hickman, and Chris Lesniak, both of Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 3, 1993, Ser. No. 71,417
Int. Cl.[5] B41J *2/00*
U.S. Cl. 400—642 **14 Claims**

1. A printer mechanism to control pen-to-print medium spacing during printing, the mechanism comprising:

a printhead for printing on a print medium; and

means for effecting a concave flexure in the print medium relative to the printhead substantially throughout a print zone, said means including a platen positioned adjacent the printhead to define said print zone between the platen and the printhead, said platen being configured for contacting the print medium substantially along a line of contact in the print zone, said line of contact being transverse to a feed direction of the print medium, said platen being further configured so as to not contact said print medium other than along said line of contact, thereby



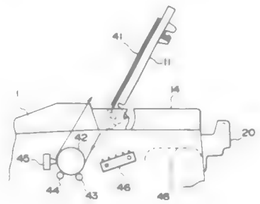
reducing uncontrolled bending of the print medium in the print zone.

5,356,230

SHEET GUIDE ATTACHING MECHANISM OF A PRINTER

Hidenori Ueda; Kenichi Egawa, and Yosimizu Yuasa, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 48,005, Apr. 19, 1993, abandoned. This application Nov. 8, 1993, Ser. No. 148,412
Claims priority, application Japan, May 7, 1992, 4-29695[U]
Int. Cl.[5] B41J *11/50*
U.S. Cl. 400—605 **17 Claims**



1. A sheet guide attaching mechanism of a printer comprising:

a first retaining portion formed on an upper portion of the printer;

a second retaining portion which is formed on the front end portion of a sheet guide and turnable and detachable relative to the first retaining portion;

a holding portion for holding the sheet guide while the latter remains standing;

a turnable supporting shaft which is formed on a rear end portion of the printer;

a third retaining portion which is formed on the rear end portion of the sheet guide turnable and detachable relative to the turnable supporting shaft; and

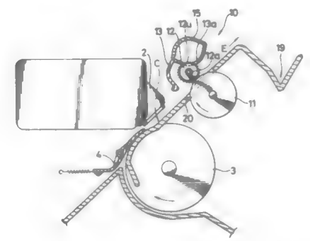
wherein printing is performed on a cut sheet in the steps of allowing the third retaining portion to come off from the turnable supporting shaft, holding the sheet guide by the holding portion while the sheet guide remains standing, setting the cut sheet on the sheet guide so as to convey the cut sheet to a printing position and actuating a print head of the printer so as to perform printing on the cut sheet, and wherein printing is performed on a continuous forms sheet in the steps of allowing the first retaining portion to come off from the second retaining portion, turning the sheet guide about the turnable supporting shaft so as to make the sheet guide stand, setting the continuous forms sheet on the printer so as to convey the continuous forms paper to a printing position and actuating the print head so as to perform printing on the continuous forms sheet.

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INK JET PRINTER

Shinya Nakamura, and Yoshiaki Tanaka, both of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1993, Ser. No. 93,853
Claims priority, application Japan, Jul. 20, 1992, 4-192066
Int. Cl.[5] B41J *13/00*
U.S. Cl. 400—636 **10 Claims**



1. An ink jet printer which applies drops of ink to paper to effect desired printing, comprising:

a mechanism for defining a paper path for guiding paper along a predetermined route from a paper supplying station to a paper discharging station;

an ink jet head for printing the paper guided along said paper path;

a paper discharging roller for contacting with a non-printed face of the paper after printing by said ink jet head to feed the paper to said paper discharging station;

a pinch roller having a serrated outer circumferential face for contacting with a printed face of the paper after printing by said ink jet head to press the paper against said paper discharging roller; and

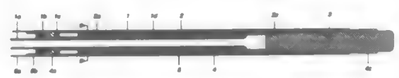
a pinch roller cover for covering over said pinch roller, part of the outer circumferential face of said pinch roller projecting from said cover to contact said paper, said cover having a cut portion formed therein for exposing another part of said outer circumferential face of said pinch roller at a location where said pinch roller does not contact said paper.

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UNIFIED WRITING INSTRUMENT AND ERASER DISPENSER

Andrew J. Skinner, 57 Woodlawn Dr., Williamstown, Mass. 01267

Continuation of Ser. No. 781,921, Oct. 24, 1991, abandoned. This application Aug. 4, 1993, Ser. No. 102,112
Int. Cl.[5] B43K *29/02*
U.S. Cl. 401—52 **6 Claims**



1. A writing instrument comprising:

a) an elongated hollow outercasing;

b) a hollow twist and click mechanism disposed within the outercasing;

c) a hollow eraser carriage disposed within the twist and click mechanism and axially slidable but rotatably fixed with respect to the twist and click mechanism; and

d) an elongated hollow lead pipe for storing lead, the lead pipe disposed within the outercasing and having a hollow rear end;

the lead pipe directly engaging the outercasing to prevent a relative rotation with the outercasing;

the lead pipe directly engaging the twist and click mechanism to prevent axial movement with respect to the twist and click mechanism so that axial movement of the lead pipe and the twist and click mechanism together operates to advance the lead; and

the rear end of the lead pipe directly engaging the eraser carriage to permit axial movement upon relative rotation between the lead pipe and the eraser carriage.

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MECHANICAL-ELECTRICAL SAFETY LOCKING SYSTEM

William M. Blenkush, Elk River; Harry R. Brown, Buffalo; Michael A. Knipfer, and Wade D. Palasbewski, both of Maple Grove, all of Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Dec. 18, 1992, Ser. No. 993,347
Int. Cl.[5] H01R *13/453*
U.S. Cl. 403—4 **7 Claims**

1. An apparatus for conditionally permitting or preventing the mating of a first connector with a mating chassis connector dependent upon the fastening of the chassis, having said mating chassis connector secured thereto, to support frame, the apparatus comprising:

a blocking member moveable between (i) a blocking position preventing said first connector from mating with said chassis connector, and (ii) a non-blocking position permitting said first connector to mate with said chassis connector;

a bolt having a head, apart from said first connector and said chassis connector, for securing said chassis to said support frame, said bolt being in operative relationship with said blocking member with said bolt being moveable between (i) an unfastened position where said chassis is not fastened to said support frame and said bolt prevents said blocking member from attaining said non-blocking position, and (ii) a fastened position where said chassis is fastened to said support frame and said blocking member is permitted to attain said non-blocking position;

a compression type spring for exerting a force on said bolt in a manner so as to urge said bolt toward said unfastened position; and

housing means for constraining said bolt and said compression spring and permits said bolt to translate, upon compression of said compression spring,

a channel means; and

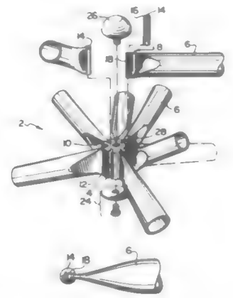
a slideable member coupled to said blocking member, and configured to slide along said channel means, at least in part, between first and second slide positions concurrently with said blocking position and said non-blocking position of said blocking member.

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SEPARABLE JOINT FOR ARM AND HUB CONSTRUCTIONS

William Vangool, Nepean, Canada, assignor to 506567 Ontario Limited, Ottawa, Canada

Filed Oct. 26, 1992, Ser. No. 966,423
Int. Cl.[5] E04B *1/19, 1/58*
U.S. Cl. 403—170 8 Claims



1. In a separable joint embodying a keyway-type connector with separable arms engaged therewith and secured against accidental displacement therefrom by securing means, the improvement characterized in that the connector comprises:

(a) a hub having sides and opposite ends, a plurality of spaced, longitudinal, parallel apertures extending end to end through the hub positioned towards the sides of the hub and parallel, longitudinally extending slots extending between the sides of the hub and central portions of the apertures;

(b) an elongated spline having ends and sides, a keyway slot extending from end to end through the spline and opening to one side, the sides of the spline contoured to conform to the sides of the corresponding apertures in the hub and to be releasable received therein with the keyway slot opening and the hub aperture slot aligned adjacent each other, the spline being spaced from the aperture to form a tolerance therebetween permitting a limited rang of rotation of the arm relative to the hub, said spline being means for providing a secure, but relatively loose fit and facilitating assemble and diassembly of the joint, and the spline having fixedly secured in its keyway slot a co-operative interlocking key formed in an end of a corresponding arm; and

(c) securing means at the ends of the hub to prevent accidental removal of the splines and associated arms when in position in the hub apertures.

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LOCKING MECHANISM

A. Gentry Brown, 3793 Rockwood Way, Apt. A, West Valley City, Utah 84120, and Ronald L. Wimmer, 3193 S. 9100 West, Magna, Utah 84044

Filed Oct. 2, 1992, Ser. No. 955,689
Int. Cl.[5] F16B *2/18*
U.S. Cl. 403—350 20 Claims

1. A locking mechanism for temporarily maintaining two telescoping hollow shaft members in a desired position relative to each other, consisting of:

a first piece having first and second ends and a central portion,

the first end including attachment means for securing the first piece to one end of the interior of one of said telescoping members,

the central portion having a generally cylindrical shape and including a first tab with first and second edges, and

the second end comprising a shaft which is eccentric to the central portion, and

a second piece having a generally cylindrical shape and including

a second tab in rotational communication with the first tab, the second tab including first and second edges, and

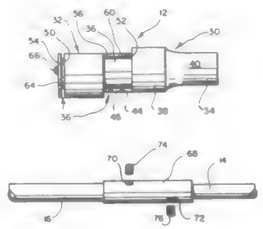
an eccentric bore through which the shaft of the second end of the first piece passes,

such that when the first edges of the first and second tabs are in contact with each other, the first and second pieces are in axial alignment, and when the second edges of the first and second tabs are in contact with each other, the first and second pieces are not in axial alignment.

20. A locking mechanism and cover for temporarily maintaining two telescoping hollow shaft members in a desired position relative to each other, comprising:

a first piece having first and second ends and a central portion,

the first end including attachment means for securing the first piece to one end of the interior of one of said telescoping members,



the central portion having a generally cylindrical shape and including a first tab with first and second edges, and

the second end comprising a shaft which is eccentric to the central portion, and

a second piece having a generally cylindrical shape and including

a second tab in rotational communication with the first tab, the second tab including first and second edges, and

an eccentric bore through which the shaft of the second end of the first piece passes,

such that when the first edges of the first and second tabs are in contact with each other, the first and second pieces are in axial alignment, and when the second edges of the first and second tabs are in contact with each other, the first and second pieces are not in axial alignment, and

a cover enveloping the locking mechanism and adjoining ends of the telescoping members which serves to maintain the telescoping members in a locked position wherein the cover includes apertures through which Allen screws pass to secure the cover in place.

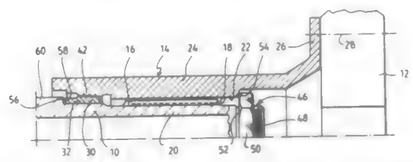
5,356,236
DEVICE FOR CONNECTING TWO ELEMENTS IN ROTATION

Jean Duboué, Assat, France, assignor to Turbomeca, Bordes, France

Continuation-in-part of Ser. No. 945,278, Sep. 15, 1992, abandoned. This application Dec. 21, 1993, Ser. No. 173,132
Claims priority, application France, Sep. 25, 1991, 91 11802
Int. Cl.[5] F16D *1/06*
U.S. Cl. 403—359 2 Claims

1. Device for connecting in rotation two substantially coaxial elements, said device comprising in combination: a splined shaft having a first end portion comprising male splines and cylindrical bearing surface, a splined hub having female spines, clamping means for achieving a relative axial immobilization

between said splined shaft and said splined hub, a centering ring having an inner bore which bears against said cylindrical bearing surface and an outer surface including an outer screw threading having unsymmetrical flanks, said splined hub having a tapping which has unsymmetrical flanks which are complementary to said centering ring outer screw threading which

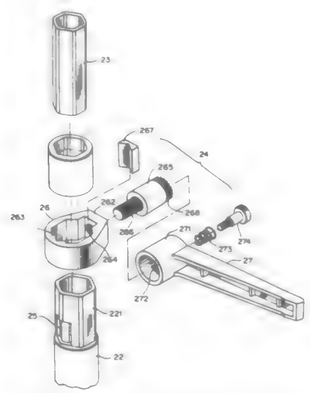


is screw-threadedly mounted in said tapping, said splined shaft having a second end portion comprising an outer screw threading, said clamping means being an axial clamping nut screw-threadedly mounted on said outer screw threading of the splined shaft, said axial clamping nut having a radial face and said splined hub having a radial face which confronts and is cooperative with said radial face on said axial clamping nut.

5,356,237
EXPANDABLE HANDLES OF WALK-AIDING WHEELED FRAME

Jung T. Sung, No. 30 Lane 154, Ta-Chain Str., Taichung, Taiwan

Filed Dec. 17, 1992, Ser. No. 992,020
Int. Cl.[5] B60D *3/00*
U.S. Cl. 403—374 3 Claims

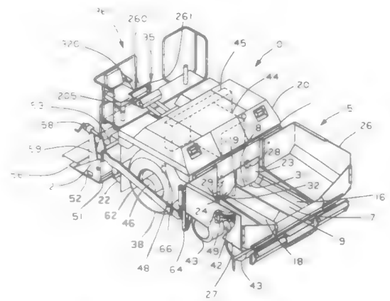


1. Expandable handles of walk-aiding wheeled frame comprising a handle tube united in an end-to-end manner with a base tube attached securely to a bottom frame of said walk-aiding wheeled frame, with said handle tube and said base tube held securely together interfittingly by means of a fastening device, with said base tube provided with a connecting portion having a polygonal cross section and a locking slot, with said handle tube having a polygonal cross section similar to said polygonal cross section of said base tube; wherein said fastening device is characterized in that said fastening device has a fastening tube having a polygonal cross section, a fastening slot, and a threaded base having a threaded hole, and that said fastening slot is provided with a pressing baffle which can be driven to move by a threaded tail of a rotor fastened to said threaded base of said fastening device, with said rotor provided at an end thereof opposite to said threaded tail with a splined head engageable with a socket of a wrench, and further that said fastening tube of said fastening device comprises a locking baffle opposite to said pressing baffle.

5,356,238
PAVER WITH MATERIAL SUPPLY AND MAT GRADE AND SLOPE QUALITY CONTROL APPARATUS AND METHOD

Joseph E. Musil, Ely, and Charles G. Mackn, Cedar Rapids, both of Iowa, assignors to Cedarapids, Inc., Cedar Rapids, Iowa

Filed Mar. 10, 1993, Ser. No. 28,995
Int. Cl.[5] E01C *19/00*
U.S. Cl. 404—84.1 20 Claims



1. Paving apparatus comprising:

a tractor unit;

a paving screed having a width extending transversely across a width of a path to be paved, the screed coupled by left and right pull arms to the tractor unit to be pulled by the tractor unit, left and right pull arm positioning actuator devices coupled to the tractor unit and to the pull arms, the actuator devices operable to orient the screed at an angle of attack with respect to the direction of travel of the tractor unit at respective left and right sides thereof;

material transfer conveyor means having at least one conveyor track extending from the front to the rear of the tractor unit and left and right transverse material distribution conveyors disposed transversely to a direction of travel of the paving apparatus and in front of the screed to distribute material across the width of the screed;

grade control sensing means including means for sensing the height of the screed with respect to a grade reference and means for measuring travel of the tractor unit; and

a control device including a screed position control means for controlling the angle of attack of the screed based on a magnitude of a height deviation of the screed with respect to the grade reference within a unit of measured travel of the tractor unit.

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UNIVERSAL MODULAR PLATFORM METHOD AND APPARATUS

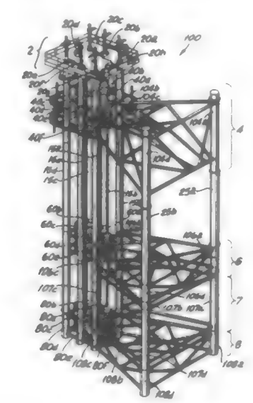
David W. Canton, Dhahran, Saudi Arabia, assignor to Saudi Arabian Oil Company, Dhahran

Continuation of Ser. No. 822,474, Jan. 17, 1992, abandoned. This application Sep. 7, 1993, Ser. No. 117,875
Int. Cl.[5] E02B *17/02*
U.S. Cl. 405—227 19 Claims

1. A plurality of stackable modules adapted to be stacked on one another, for forming at least a portion of a jacket assembly for an offshore platform, said assembly adapted to be placed at least partially underwater to support said platform, each of said stackable modules comprising a plurality of rigid members joined so as to form a substantially rigid structure, said stackable modules adapted to be substantially interchangeable with

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each other so that the same stackable modules can be stacked in different sequences wherein said rigid members are joined together to form top horizontal framing, bottom horizontal framing and vertical framing,



said vertical framing joining the top horizontal framing with the bottom horizontal framing,

and wherein the plan at the top and bottom horizontal framing has a truncated triangular shape, having a major side at its base and a minor side formed at the truncation.

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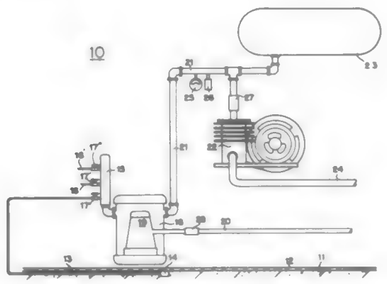
SOIL GAS AND MOISTURE REMOVAL

Joseph A. Schuler, 4500 Alma Lane, Nampa, Id. 83686

Filed Dec. 23, 1992, Ser. No. 995,781

Int. Cl.[5] E02D *27/00*; E04B *1/92*

U.S. Cl. 405—229 **12 Claims**



1. A soil gas and moisture removal apparatus comprising:

a vacuum-producing means;

an array of conduits connected to and in fluid communication with said vacuum-producing means, said conduits being a network of grooves in a cement slab foundation of a building; and

a plurality of fluid collectors, each collector being connected to and in fluid communication with at least one of said conduits, said collectors being located at discrete points in said conduits, said collectors being located below or flush with the top surface of said cement slab foundation and covered with a floor covering.

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FOUNDATION HAVING CYLINDRICAL SHELL AND CONSTRUCTION METHOD THEREFOR

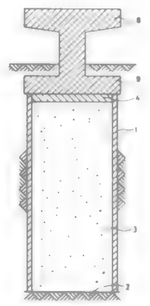
Mitsuhiro Kunito, Osaka, Japan, assignor to Seiko Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 8, 1992, Ser. No. 958,167

Claims priority, application Japan, Oct. 8, 1991, 3-287337

Int. Cl.[5] E02D *3/00*

U.S. Cl. 405—233 **15 Claims**



1. A foundation for supporting a superstructure thereon, comprising:

a cylindrical shell made of a cast-in-place concrete placed into a ring-like groove which is formed by excavation of the soil at a place of installation of the foundation, leaving a columnar soil radially inwardly of said ring-like groove without discharging the columnar soil;

an internal soiidified soil formed by solidifying said columnar soil surrounded by said cylindrical shell with a chemical hardener; and

a covering slab, made of a concrete placed in situ, disposed on an upper surface of said internal solidified soil, said covering slab being fixed to an upper part of said cylindrical shell such that said internal solidified soil is isolated from external soil, and invasion of flowing water into said internal solidified soil is thereby prevented.

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SYSTEM AND METHOD FOR ADJUSTABLY CONNECTING WALL FACING PANELS TO THE SOLDIER BEAMS OF A TIE-BACK OR ANCHORED WALL

J. Thomas Elmore; Alan Veatch, both of Washington, D.C.; William C. Clements, Reston, Va.; Victor Elias, Bethesda, and Longine J. Wojciechowski, Gaithersburg, both of Md., assignors to JTE, Inc., Lorton, Va.

Filed Oct. 9, 1992, Ser. No. 958,260

Int. Cl.[5] E02D *29/02*

U.S. Cl. 405—262 **17 Claims**



1. A system for adjustably connecting pre-cast wall panels having opposing side edge portions and a back side to spaced soldier beams of a tie-back wall that retains the cut face of an excavation, comprising:

at least two of said panels having mutually adjacent side edge portions spaced apart from a front face of one of said soldier beams;

a connecting column means integrally cast-in-place from cementitious material between the front face of said soldier beam and a back side of each of said panels in the area of the adjacent side edge portions of said panels for structurally interconnecting the panels to said soldier beam, said connecting column means being formed to accommodate misalignments between said soldier beams and said panels;

an array of reinforcing members for both structurally interlinking said panels and said soldier beam and reinforcing said column means, said array being adjustable prior to the casting of said column means to accommodate variations in the distances between said soldier beam and panel side edge portions and including first anchoring members mounted on said soldier beam and extending from the front face thereof and second anchoring members mounted on said panels and extending from the back faces thereof in the area of the panel side edge portions, a linking member for interconnecting said first and second anchor members and for adjusting said array prior to casting of said column means, said array also including at least one vertically oriented bar member, said linking member having a portion for receiving said vertically oriented bar member and a portion interlinkable with the anchor members of said panels; and a footing foundation for supporting an eccentric load applied by the column means, the panels and an appurtenant structure.

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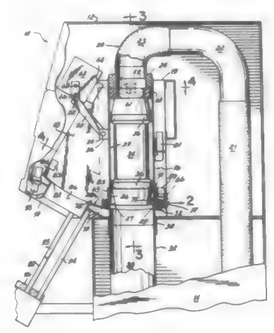
PIVOTING TUBE SECTION FOR PNEUMATIC TRANSPORT TUBE SYSTEM

Victor J. Vogel, Oak Ridge, N.J., assignor to Mosler, Inc., Wayne, N.J.

Filed Apr. 21, 1993, Ser. No. 51,077

Int. Cl.[5] B65G *51/32*

U.S. Cl. 406—74 **11 Claims**



1. A terminal connected to a transport tube, said transport tube transporting a carrier into and out of the terminal, the terminal comprising:

a tube section support having a lower surface,

a first opening located on said lower surface and adapted to be connected to the transport tube, and

a second opening on said lower surface adjacent said first opening;

a carrier support connected to said tube section support proximate said second opening and adapted to support the carrier in a position oblique to a vertical; and

a pivoting tube section located within said tube section support and adapted to receive the carrier, said pivoting tube section having

an upper end pivotally connected to an upper end of said tube section support,

an open lower end, said pivoting tube section pivoting with respect to a pivot axis between a first position aligning said open lower end with said first opening and the transport tube and a second position aligning said open lower end with said second opening and said carrier support, and

means connected to said pivoting tube section for sealing said lower end of said pivoting tube section against said lower surface of said tube section support.

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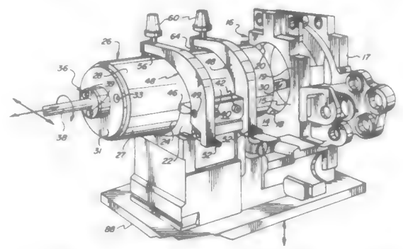
HEAD FRAME BORING METHOD AND APPARATUS

Florian I. Nowak, Newington, Conn., assignor to Nowak Products, Inc., Newington, Conn.

Filed Dec. 9, 1993, Ser. No. 163,517

Int. Cl.[5] B23B *1/00*

U.S. Cl. 408—1 R **9 Claims**



1. In a method of boring to produce a cylindrical opening on an axis through a revolving head-mounting frame portion of a machine, the machine also having, rearwardly adjacent the frame portion, a saddle with a semi-cylindrical bearing surface disposed on said axis for underlying support of a stationary head of the machine, the improvement comprising: providing a boring bar having a cylindrical body of equal diameter to said bearing surface, and having a boring tool on an end portion of said body; seating directly said boring bar on said bearing surface, with the stationary head removed and with said boring tool forwardly disposed; and effecting the linear advance and rotation of said boring bar, on said axis, to cause said tool to effect boring of said frame portion to produce said cylindrical opening therethrough.

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COOLING AND DUST COLLECTING APPARATUS FOR A MACHINE TOOL

Masanori Hosoi, Mibu, and Fumio Watanabe, Utsunomiya, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1993, Ser. No. 159,575

Claims priority, application Japan, Dec. 14, 1992, 4-332988

Int. Cl.[5] B23B *47/34*

U.S. Cl. 408—56 **4 Claims**

1. A cooling and dust collecting apparatus for a drilling machine tool having a spindle with a cutting tool, comprising:

a base cylinder connected to said spindle;

a movable cylinder inserted in said base cylinder for covering said tool and for moving telescopically in said base cylinder;

said base cylinder being disposed on said drilling machine tool in such a manner that said base cylinder surrounds said spindle;

said movable cylinder being slidably connected to said base

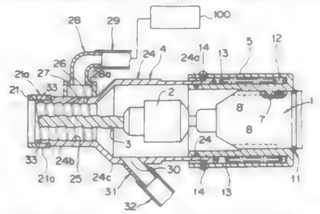
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cylinder and provided with an outlet opening portion and an inlet opening portion;

a blowing pipe connected to said outlet opening portion of said movable cylinder and adapted for blowing said tool with cold air;

a sucking pipe connected to said inlet opening portion and adapted for sucking cutting chips and poisonous gas;

wherein said movable cylinder has a joint portion, a forward end portion, and an intermediate portion, said joint portion being connected to said base cylinder, said forward



end portion surrounding said tool, said intermediate portion being disposed between said joint portion and said forward end portion; and

wherein said forward end portion of said movable cylinder surrounds said tool with a predetermined gap, spiral grooves being defined on an inner wall of said forward end portion, said outlet opening portion being defined at said forward end portion, said inlet opening portion being defined at said intermediate portion of said movable cylinder, said outlet pipe being adapted for supplying dehumidified, cold, compressed air.

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Patent Not Issued For This Number

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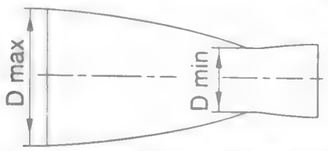
CURVILINEAR PROFILE PARTS MACHINING METHOD

Alexandr A. Barsov; Anatoly A. Vdovin; Sergei L. Gavrilov; Valery A. Gorelov, all of Moscow; Sergei N. Dolgih, Pezm; Azkady A. Merkushev, Pezm, and Eugene D. Mokzonosov, Pezm, all of Russian Federation, assignors to DCD, Ltd., Proezo, Russia

Filed Jul. 8, 1993, Ser. No. 88,743

Int. Cl.[5] **B23C** *3/00;* **B23B** *1/00*

U.S. Cl. 409—131 **4 Claims**



1. A curvilinear profile part machining method which comprises:

(a) conducting a plurality of rotations of a spindle during preliminary machining of a part at various preselected rotational frequencies;

(b) determining the integral value of wave process energies for the preselected frequencies;

(c) correlating the integral values of the wave process energies to the rotational frequencies;

(d) selecting the rotational frequency corresponding to the minimum ratio of wave process energy to rotational frequency;

(e) rotating the part at or about the selected rotational frequency.

5,356,248

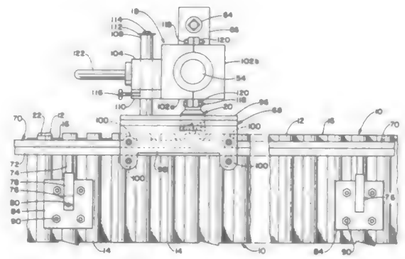
BOILER TUBE BANK REPAIR

Mark W. Hillestad, 220 Hatch Rd., Wadsworth, Ohio 44281

Filed Nov. 17, 1993, Ser. No. 154,751

Int. Cl.[5] **B23B** *35/00*

U.S. Cl. 409—132 **7 Claims**



1. A method for removing membrane material from the area between exposed tube ends of a boiler tube wall from which a section thereof has been cut out for replacement with a new section, to facilitate milling of a frusto-conical bevel on an exposed tube end of said boiler tube wall and subsequent welding of said new section thereto, said method comprising: simultaneously removing membrane material from the areas immediately adjacent opposite sides of an exposed tube end using a motor-driven tool having a rotary milling head.

5,356,249

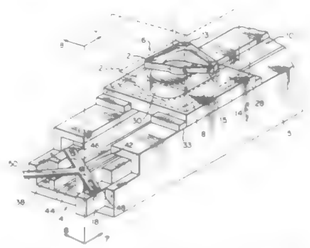
AUTOMATIC SECURING SYSTEM FOR LOCKING AND UNLOCKING A FREIGHT CONTAINER TO A LOAD CARRIER

Johan Hove, Jacksonville, Fla., assignor to Buffers AB, Taby, Sweden

Filed Mar. 30, 1993, Ser. No. 40,027

Int. Cl.[5] **B61D** *17/00, 45/00;* **B60P** *7/00, 3/00*

U.S. Cl. 410—83 **6 Claims**



1. An automatic securing system for locking and unlocking a container to a load carrier, said securing system comprising:

a plurality of rails fixed on said load carrier,

a plurality of twistlock means releaseably engaged to said rails for automatically engaging and locking said container down on said load carrier,

said plurality of twistlock means having spring means for actuating each said plurality of twistlock means to automatically engage and lock said container down on said load carrier,

each of said plurality of rails having a plurality of seating position means for respectively engaging said plurality of twistlock means to said plurality of rails,

release means on said rails for automatically and simultaneously unlocking and releasing said plurality of releaseably engaged twistlock means respectively from said container and said rails,

wherein, said release means allows said unlocked and released plurality of twistlock means to be individually moved into engagement with different said seating position means to permit automatic engaging and locking down of containers with different lengths on said load carrier.

5,356,250

LOCKING DEVICE FOR SECURING A PIECE OF FREIGHT ON A LOADING FLOOR IN AN AIRCRAFT

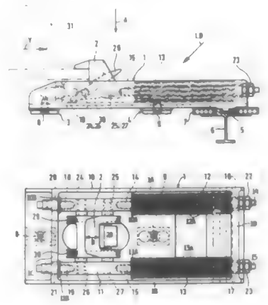
Guenter Vogg, and Juergen Wieck, both of Bremen, Fed. Rep. of Germany, assignors to Deutsche Aerospace Airbus GmbH, Hamburg, Fed. Rep. of Germany

Filed Mar. 29, 1993, Ser. No. 39,811

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1992, 4210703

Int. Cl.[5] **B64C** *1/20;* **B60P** *1/00;* **B61D** *45/00*

U.S. Cl. 410—86 **9 Claims**



1. A locking device for securing a piece of freight on a loading floor in an aircraft, comprising a frame including two long side walls and two short end walls forming a rectangular frame, securing means for releasably attaching said frame to support rails in said loading floor, a latching hook (2), two parallel mounting bars (10, 11) extending in parallel to said long frame side walls and mounting said latching hook in said rectangular frame, axial movement permitting mounts (16, 18; 17, 19) mounting each end of each parallel mounting bar in said short end walls for an axial movement in an axial direction parallel to said long side walls of said rectangular frame, two stops (10A, 10B; 11A, 11B) as part of each of said parallel mounting bars (10,11), each stop limiting axial movement of its mounting bar in one direction but not in the opposite direction and vice versa, and biasing springs (12, 13) mounted on said mounting bars for biasing said latching hook in said rectangular frame against said axial movement, whereby an impact of a load against said latching hook is damped in said axial direction.

5,356,251

COLLAPSIBLE VOID FILLING APPARATUS

Robert W. Sisco, Hammond, Ind., and Thomas J. Hamilton, Palos Heights, Ill., assignors to Corrugated Systems, Inc., Dolton, Ill.

Filed Nov. 18, 1992, Ser. No. 978,248

Int. Cl.[5] **B61D** *45/00;* **B63B** *25/24;* **B65D** *81/04;* **B60P** *7/16*

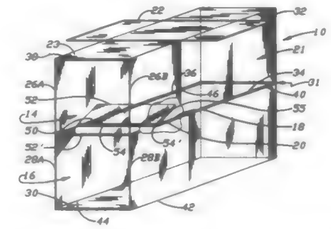
U.S. Cl. 410—154 **24 Claims**

1. A collapsible void filling apparatus, comprising:

a plurality of rectilinear, elongate, hollow members, each of the hollow members having four sides interconnected at adjacent edges, a pair of opposite ends and two pairs of opposite sides;

means for pivotally connecting the edges of adjacent sides together to facilitate collapse of the hollow members to a relatively flattened configuration;

means for connecting the plurality of hollow members together in side to side relationship to form a generally rectangular composite body; and



a locking member carried by at least two of the plurality of hollow members and movable from a position intermediate at least two of the plurality of hollow members to a locking position within at least one of said at least two of the plurality of hollow members to prevent collapse of the at least one hollow member, the locking member being elongate and extending between and engaging one pair of the opposite sides of the at least one of said at least two of the plurality of hollow members to hold the one pair of opposite sides spaced apart when in the locking position.

5,356,252

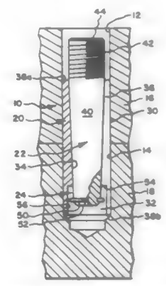
UNITIZED EXPANDING DOWEL

Lawrence V. Whistler, III, East Amherst, and Raymond J. Hutten, Tonawanda, both of N.Y., assignors to S.B. Whistler & Sons, Inc., Akron, N.Y.

Filed Aug. 6, 1993, Ser. No. 102,836

Int. Cl.[5] **F16B** *13/06*

U.S. Cl. 411—45 **9 Claims**



1. A unitized expanding dowel for locating and aligning a first part having a through-hole relative to a second part having a hole of the same inside diameter as said through-hole, said dowel comprising:

a resiliently deformable sleeve having a generally cylindrical outer surface and an axially extending passage, said passage having a frusto-conically shaped inner surface portion, said sleeve being uniformly radially expandable over its entire length and insertable in a first direction within said through hole and said hole;

an expansion pin slidably receivable within said passage and having a frusto-conically shaped outer surface portion at least as long as said inner surface portion and complemen-

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tary in taper to said inner surface portion, said pin being movable within said passage in said first direction to move said outer surface portion into surface-to-surface engagement with said inner surface portion for radially expanding said sleeve uniformly over its entire length and moving said outer surface into tight engagement with said holes and in an opposite direction to remove said outer surface portion from surface-to-surface engagement with said inner surface portion for permitting resilient contraction of said sleeve to remove said outer surface from tight engagement with said holes; and

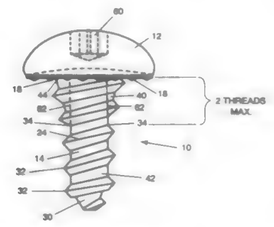
coupling means for connecting said sleeve to said pin to permit movement of said pin in said opposite direction while preventing withdrawal of said pin from within said passage.

5,356,253

SHEET METAL SCREW

Neil L. Whitesell, 2703 Avalon Ave., Muscle Shoals, Ala. 35662-2571

Filed Apr. 29, 1992, Ser. No. 875,732
Int. Cl.[5] F16B *39/282, 23/00*
U.S. Cl. 411—188 6 Claims



1. A screw for use with sheet metal, said screw having an axis and comprising:

a. a head having an upper side and underside, said underside having serrations;

b. a shank having threads throughout the entire length thereof, said shank attached to said underside of said head, said shank having a first tapered section and a second substantially cylindrical section, said first tapered section being conical in shape and narrowing along its length as it recedes from the head, the widest portion of said first tapered section being integral with the underside of the head, the narrowest portion of said first tapered section being the same diameter as and integral with one end of the said second substantially cylindrical section, said first section being of a length that carries between one and two turns of the said threads.

5,356,254

HIGH TEMPERATURE SELF-LOCKING THREADED FASTENER

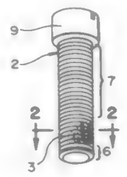
Anthony E. DiMaio, Barre, Vt.; Richard Duffy, Shelby Twp., Mich.; Mario Pollizzi, Rochester, Mich., and Eugene D. Sessa, Mt. Clemens, Mich., assignors to Nylok Fastener Corporation, MaComb, Mich.

Filed Jul. 24, 1992, Ser. No. 918,070
Int. Cl.[5] F16B *39/00, 39/34*
U.S. Cl. 411—302 34 Claims

1. A threaded fastener having a self-locking patch, comprising:

a threaded portion adapted for engagement with a mating fastener, and

a patch of fused high-temperature-resistant resin powder adhering to at least part of said threaded portion, said patch providing sufficient frictional engagement between said threaded fastener and said mating fastener to satisfy the minimum removal torque requirements set forth in MIL-F-18240E after exposure to a temperature in excess of 400° F. for a period of time in excess of three hours, wherein said high-temperature-resistant resin powder is



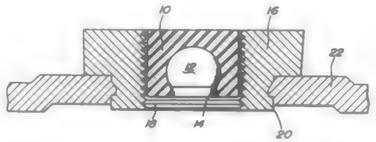
selected from the group consisting of poly (hexamethyl isophthalamide), poly (heptamethyl isophthalamide), and poly (octamethyl isophthalamide), and mixtures thereof.

5,356,255

NUT AND PANEL ASSEMBLY AND METHOD OF FORMING SAME

Takao Takahashi, Machida, and Hiroshi Takehara, Hachioji, both of Japan, assignors to Multifastener Corporation, Detroit, Mich.

Filed Mar. 10, 1993, Ser. No. 29,218
Claims priority, application Japan, Mar. 10, 1992, 4-86263
Int. Cl.[5] F16B *37/14;* B05D *3/00*
U.S. Cl. 411—431 25 Claims



1. A nut and metal panel assembly, said nut attached to said panel and having a threaded bore extending therethrough, a resilient non-metallic plug located in said bore having a normal outside diameter greater than a minor crest diameter of said threaded bore and retained in said threaded bore by said thread, said plug being slightly conical having a smaller diameter at one end which is first received in said nut bore and an axial length generally equal to an axial length of said threaded bore and masking said threaded bore during subsequent coating of said nut and panel assembly.

5,356,256

REFORMED CONTAINER END

Timothy L. Turner, 5704 Greenview Rd., Cary, Ill. 60013; Dennis Dettmer, 126 N. Columbia St., Naperville, Ill. 60540, and Randall G. Forrest, 1205 Monarch La., Hoffman Estates, Ill. 60195

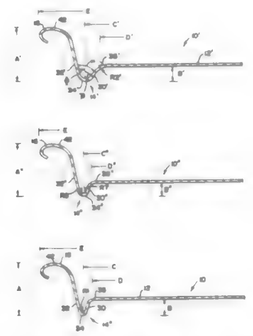
Filed Oct. 2, 1992, Ser. No. 955,921
Int. Cl.[5] B21D *51/44*
U.S. Cl. 413—8 4 Claims

1. A method of producing a container end comprising:

providing a shell having a center panel including an initial panel height and an initial panel diameter, an integral first countersink portion including an initial countersink depth, an inner wall and an outer wall being joined by a curved countersink bottom having a first bottom radius, said panel being joined to the inner wall of the countersink portion by a curved shoulder having an initial shoulder radius, said outer wall being joined to a peripheral curl having an initial curl diameter; and

restraining a portion of said outer wall and reforming said first countersink portion to a second countersink portion

in a first operation to decrease said first bottom radius to a second bottom radius while maintaining said initial curl diameter; and



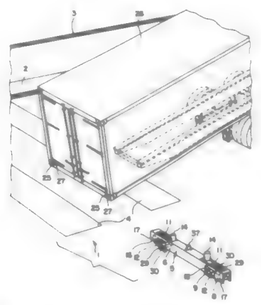
restraining said portion of said outer wall and reforming said second countersink portion to a third countersink portion in a second operation to decrease said second bottom radius to a third bottom radius while maintaining said initial curl diameter.

5,356,257

CARRIAGE FOR LIFTING AND MOVING A CONTAINER

Derk Nijenhuis, Hoogeveen, Netherlands, assignor to N.C.H. Hydraulische Systemen B.V., Al Hoogeveen, Netherlands

PCT No. PCT/NL91/00002, § 371 Date Aug. 3, 1992, § 102(e) Date Aug. 3, 1992, PCT Pub. No. WO91/09792, PCT Pub. Date Jul. 11, 1991
PCT Filed Jan. 4, 1991, Ser. No. 861,970
Claims priority, application Netherlands, Jan. 5, 1990, 9000030
Int. Cl.[5] B60P *1/02, 3/00;* B66F *7/00;* B62D *61/12*
U.S. Cl. 414—495 8 Claims



1. A carriage for lifting and moving a container comprising:

an elongated hollow frame extending along a longitudinal axis;

first and second gripping means mounted on said elongated hollow frame and spaced from each other along said longitudinal axis, each of said first and second gripping means having movable engagement means for selectively engaging a container;

first and second carrier means spaced from each other along said longitudinal axis each of said first and second carrier means being pivotably mounted on said elongated hollow frame about an axis transverse to said longitudinal axis;

at least one bearing means mounted on each of said first and second carrier means and pivotable therewith about said transverse axis; and

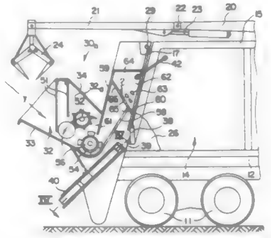
first and second motor means connected to said first and second carrier means respectively for pivoting said first and second carrier means on said bearing means for lifting said carriage.

5,356,258

REFUSE COMPOSTING METHOD AND APPARATUS

Werner Burklin, Sonnhaldenstr. 8, CH-8280 Kreuzlingen, Switzerland

Division of Ser. No. 259,175, Oct. 18, 1988, Pat. No. 5,104,805. This application Jan. 27, 1992, Ser. No. 826,021
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1987, 3735362
Int. Cl.[5] B60P *1/00*
U.S. Cl. 414—1501 12 Claims



1. A vehicle for transporting garbage or refuse, in particular coarse refuse such as shrubs or bushes or the like, comprising a container for accommodating the garbage, a tail structure for feeding the garbage into the container, said tail structure including an intake hopper mounted to an outside wall portion of the tail structure, a slow-speed cutting mill (36) disposed downstream of said intake hopper (32), said cutting mill arranged above a conveyor element (40) and below an impact space (60) defined in part by said outside wall portion, said impact space being located above the cutting mill for receiving hard items, said cutting mill cutting refuse inserted into said hopper and dropping said cut refuse onto said conveyor element, the conveyor element being arranged substantially parallel to said cutting mill and terminating at an opening (38) through a rear wall of the container and being used to convey cut material to said container.

5,356,259

APPARATUS FOR CONTROLLING HYDRAULIC CYLINDERS OF A POWER SHOVEL

Tadayuki Hanamoto, Hiratsuka, and Shinji Takasugi, Tokyo, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Hiratsuka, Japan

Division of Ser. No. 738,592, Jul. 31, 1992, Pat. No. 5,187,510, which is a division of Ser. No. 465,259, Mar. 30, 1990, Pat. No. 5,116,186. This application Oct. 2, 1992, Ser. No. 956,075
Claims priority, application PCT Int'l Appl., Aug. 2, 1988, PCT/JP88/00771
Int. Cl.[5] E02F *9/20*
U.S. Cl. 414—694 14 Claims

1. A controlling device for a power shovel which includes a vehicle body, a boom pivoted to the body, an arm pivoted to the boom, a bucket pivoted to the arm, a boom cylinder for pivoting the boom, an arm cylinder for pivoting the arm, a bucket cylinder for pivoting the bucket, and a hydraulic pump for supplying pressurized oil into said boom cylinder, arm

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cylinder, and bucket cylinder, said controlling device comprising:

automatic mode assigning means for assigning an automatic mode of excavation;

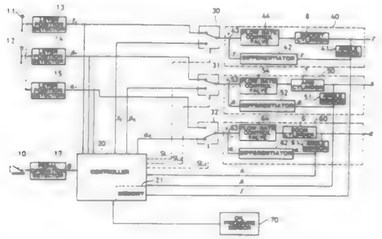
automatic mode start detection means for detecting a moment to start excavation according to the automatic mode;

angle detection means for detecting an angle of the bucket with respect to the arm, an angle of the arm with respect to the boom and an angle of the boom with respect to the body;

pump pressure detection means for detecting the pump pressure of oil supplied by the pump;

first arithmetic means comprising means for receiving values detected by said angle detection means at the moment to start excavation according to an output from said automatic mode start detection means, and means for obtaining the position of a front edge of the relative to the vehicle body at the moment to start excavation according to the detected angle values;

second arithmetic means comprising means for initially setting a reference locus of movement of a front edge of the bucket approximated by a plurality of points, means for initially setting respective postures of the bucket when the front edge of the bucket is situated at the plurality of points, means for calculating a position relative to the vehicle body for each of said plurality of points which have been set position-by-position for each of a plurality of excavation sections divided by said plurality of points according to the position to start excavation obtained by



said first arithmetic means, and means for calculating an angle of rotation of the bucket, an angle of rotation of the arm and an angle of rotation of the boom needed to move the front edge of the bucket to said calculated position and to set the bucket to the posture of the bucket which has been set for each respective point for each of the excavation sections;

third arithmetic means comprising means for obtaining a distribution ratio of flow rates of pressurized oil to be supplied to the respective hydraulic cylinders for each of the excavation sections according to the angle of rotation of the bucket, the angle of rotation of the arm and the angle of the boom calculated for each of the excavation sections, and means for calculating and outputting commands for flow rates for the respective hydraulic cylinders according to a flow rate of the pump obtained from the pump pressure and the distribution ratio obtained;

excavation section end detection means comprising means for detecting a moment when the angle of the arm reaches a target arm position for each of the excavation sections according to an output from the angle detection means, and means for incrementing the arithmetic control by the second and third arithmetic means to the arithmetic control for the next excavation section at the moment of the detection;

switching means for outputting respective commands for flow rates output from said third arithmetic means in place of manual commands giving priority to manual commands when the automatic mode has been assigned by the automatic mode assigning means; and

automatic excavation end detection means for detecting the end of automatic excavation by said automatic mode.

5,356,260

APPARATUS FOR MAINTAINING ATTITUDE OF BUCKET CARRIED BY LOADING/UNLOADING VEHICLE

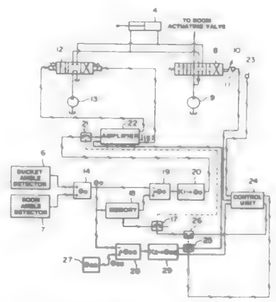
Masanori Ikari, Sayama, and Masao Fukuda, Kawagoe, both of Japan, assignors to Kabushiki Kaisha Komatsu, Seisakusho, Japan

Division of Ser. No. 415,260, Sep. 14, 1989, Pat. No. 5,083,894. This application Nov. 25, 1991, Ser. No. 786,078

Claims priority, application Japan, Jan. 18, 1988, 63-6837; PCT Int'l Appl., Jan. 18, 1989, PCT/JP89/00036

Int. Cl.[5] E02F *3/43*

U.S. Cl. 414—700 **7 Claims**



2. An apparatus for maintaining the attitude of a load carrier on a vehicle, comprising:

a) booms adapted to turn vertically about a fulcrum on a vehicle, said load carrier being turnable about fore ends of said booms;

b) boom angle detecting means for detecting an angle of said booms to the ground;

c) a load carrier actuating lever for generating a lever output to actuate turning of said load carrier;

d) load carrier angle detecting means for detecting an angle of said load carrier to said booms;

e) load-carrier-to-ground angle calculating means for determining a calculated angle of the load carrier relative to a horizontal plane from outputs of said boom angle detecting means and said load carrier angle detecting means;

f) drive means to turn said load carrier to change said load carrier-to-ground angle to a desired turned position;

g) presetting means for establishing a preset angle at which said load carrier is to be held immovable;

h) actuating means for generating an actuator command to instruct said drive means to turn said load carrier to said preset angle said actuator command being used to initiate calculation of said calculated angle;

i) first controlling means for determining a first differential value between said preset angle and said calculated angle, said first controlling means issuing a first correction command for moving said load carrier to reduce said first differential value, and second controlling means for determining a second differential value between said preset value and said calculated angle, said second controlling means issuing a second correction command for moving said load carrier to reduce said second differential value; and

j) switch means operating in coordination with said load carrier actuating lever to initiate operation of said actuating means;

whereby said load carrier is automatically moved to a corrected position closer to the intended preset position in response to operation of said switch means.

5,356,261

WAFER BOAT ROTATING APPARATUS

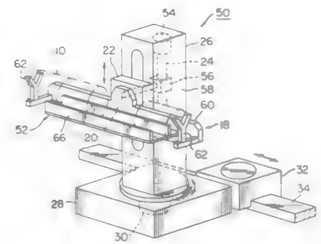
Hironobu Nishi, Sagamihara, Japan, assignor to Tokyo Electron Kabushiki Kaisha, Japan and Tokyo Electron Tohoku Kabushiki Kaisha, Japan

Filed Aug. 10, 1993, Ser. No. 103,666

Claims priority, application Japan, Aug. 17, 1992, 4-239995

Int. Cl.[5] B65G *69/00*

U.S. Cl. 414—744.7 **12 Claims**



1. A wafer boat rotating apparatus disposable between a wafer transfer unit adapted to transfer a plurality of wafers to a wafer boat having an opening at a bottom portion thereof, which boat is held in a horizontal direction, and a heat-treating unit adapted to heat-treat wafers held in the wafer boat in a vertical direction, said apparatus comprising:

a boat holding portion for holding both ends of a wafer boat;

a vertical rotation drive mechanism for rotating said boat holding portion on a vertical plane;

a horizontal rotation drive mechanism for rotating said boat holding portion on a horizontal plane; and

a wafer holding member disposed on said boat holding portion and being adapted to keep wafers held in the wafer boat apart from a bottom portion of the wafer boat by a small distance.

5,356,262

HIGH EFFICIENCY MATERIAL HANDLING AND TRANSPORTATION SYSTEM

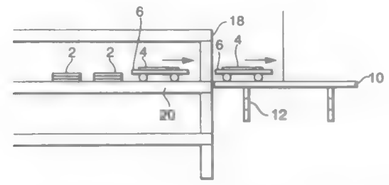
Franklin R. Babienko, Vancouver, and Donald C. Jones, Langley, both of Canada, assignors to Ferguson Glass B.C. Ltd., Richmond, Canada

Filed Jun. 25, 1993, Ser. No. 81,692

Claims priority, application Canada, Apr. 13, 1993, 2093892

Int. Cl.[5] B65G *63/00*

U.S. Cl. 414—786 **10 Claims**



1. A method of delivering a material from a material source to a construction site comprising:

(a) loading the material onto a mobile cart;

(b) loading the material and the mobile cart onto an adjustable height platform;

(c) positioning a flat-decked truck under the platform;

(d) positioning the platform on the truck so that it is free of the ground;

(e) securing the platform to the truck and driving the truck with platform, cart and material to the construction site;

(f) moving the platform until the platform, cart and materials are free of the truck and the platform is free standing;

(g) moving the truck from under the platform;

(h) lifting the platform with the cart and materials by a lifting means to a desired floor of a building;

(i) moving the materials and cart off the platform onto the desired floor;

(j) moving the empty cart back onto the platform;

(k) lowering the platform to the ground;

(l) positioning an empty truck under the platform;

(m) positioning the platform until the platform rests on the truck;

(n) securing the platform to the truck and driving the truck and platform to the materials site;

(o) moving the platform until the platform is free of the truck and is free standing;

(p) moving the truck from under the platform; and

(q) removing the empty mobile carts from the platform.

5,356,263

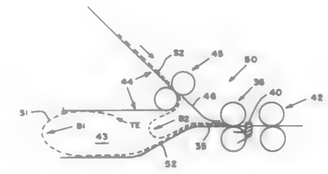
BUCKLE ACCUMULATOR AND METHOD FOR ACCUMULATING SHEETS

Carl A. Miller, Fairfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 16, 1992, Ser. No. 991,226

Int. Cl.[5] B65H *57/00*

U.S. Cl. 414—790.7 **20 Claims**



1. A sheet accumulator, comprising:

a) feed means for feeding a sheet along first path and second paths;

b) deflecting means for deflecting the leading edge of said sheet along said second path, said second path being at an angle to said first path;

c) selectively activatable accumulating stop means, in said second path, for, when activated, stopping said leading edge, whereby, as said feed means continues to drive said sheet against said stop means, said sheet buckles in a direction determined by said angle; and,

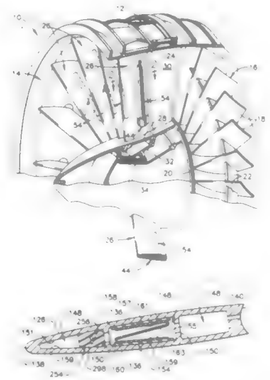
d) receiving means for receiving a loop formed as said sheet buckles; whereby,

e) the trailing edge of said sheet is displaced from said paths as said loop unrolls into said receiving means and the trailing edge of said sheet is released by said feed means; and whereby,

f) said paths are cleared to accumulate a next sheet against said stop means.

VOL 1167 ISS 3 OC 18 1994 UMI

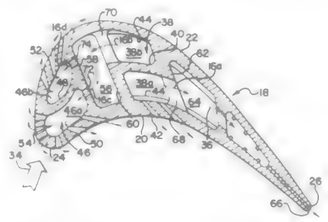
5,356,264
VISCOELASTIC VIBRATION DAMPER FOR ENGINE STRUTS
Dennis W. Watson, West Chester, and Michael T. Bonnoitt, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio
Continuation-in-part of Ser. No. 813,547, Dec. 26, 1991. This application Oct. 14, 1993, Ser. No. 136,508
Int. Cl.[5] F01D *5/10*
U.S. Cl. 415—119 20 Claims



1. A damper assembly for use on a strut in a gas turbine engine, said strut including a pair of spaced walls extending radially between an outer cylindrical case and an inner circumferential hub ring and axially between a leading edge and a trailing edge and a strut stiffener disposed inside said strut between said walls and forming a plurality of cells, said damper assembly comprising:
a) viscoelastic material disposed within at least one of said cells, such that said viscoelastic material is in contact with said pair of spaced walls; and
b) means for inserting said viscoelastic material into said strut cell and removing said viscoelastic material from said strut cell coupled to said viscoelastic material;
c) wherein said means for inserting and removing said viscoelastic material maintains a damping ability of said damper assembly during removal of said viscoelastic material from said strut cell.

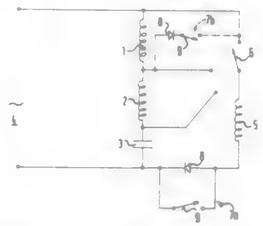
5,356,265
CHORDALLY BIFURCATED TURBINE BLADE
David M. Kercher, Ipswich, Mass., assignor to General Electric Company, Cincinnati, Ohio
Filed Aug. 25, 1992, Ser. No. 935,061
Int. Cl.[5] F01D *5/18*
U.S. Cl. 416—97 R 10 Claims

1. A gas turbine blade comprising:
a dovetail for joining said blade to a rotor disk;
an airfoil including:
a pressure side and a suction side joined together at a leading edge and a trailing edge, and extending longitudinally from a root to a tip, said root being integrally joined with said dovetail;
a chordal line extending between said pressure and suction sides from said leading edge to said trailing edge; and
a longitudinally extending flow channel including a chordally extending, imperforate septum diving said flow channel into a first chamber disposed adjacent to said pressure side and a second flow chamber spaced laterally from said first chamber and disposed adjacent to said suction said; and
a supply manifold for receiving compressed air at a single pressure, and disposed in flow communication with both



said first and second chambers for channeling thereto first and second portions of said compressed air, respectively.

5,356,266
CENTRIFUGAL PUMP UNIT
Niels D. Jensen, Bjerringbro, and Jørgen Daugbjerg, Ulstrup, both of Denmark, assignors to Grundfos a/s, Bjerringbro, Denmark
Filed Feb. 12, 1993, Ser. No. 17,089
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1992, 4204323; May 9, 1992, 4215266
Int. Cl.[5] F04B *49/06*
U.S. Cl. 417—45 14 Claims

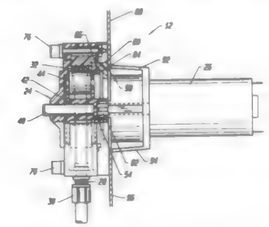


1. A centrifugal pump unit with a single phase induction motor constructed as a split tube motor, the motor having at least one start winding connected in parallel with a power supply, a condenser connection in series with said at least one start winding, and a power winding connected in parallel with said power supply and said start winding and said condenser comprising:
a means for altering over time a voltage applied to a winding of the motor wherein the mean value of the voltage during an oscillation of the voltage is not equal to zero; and
a switch for connecting said voltage altering means to a winding of the motor.

5,356,267
PERISTALTIC PUMP WITH REMOVABLE COLLAPSING MEANS AND METHOD OF ASSEMBLY
Frederick Fulmer, Santa Cruz, Calif., assignor to Beta Technology, Inc., Santa Cruz, Calif.
Continuation-in-part of Ser. No. 967,173, Oct. 27, 1992, abandoned. This application Jul. 15, 1993, Ser. No. 91,982
Int. Cl.[5] F04B *43/08*
U.S. Cl. 417—53 23 Claims

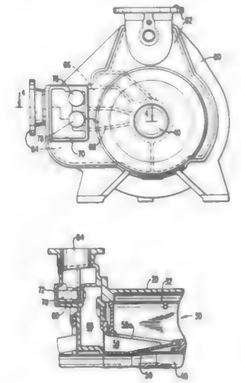
1. A removable cartridge assembly for a peristaltic pump, said pump having a motor providing power thereto, said cartridge assembly comprising:
(a) a length of flexible tubing having an inner wall defining a passageway for fluid within said tubing;
(b) collapsing means for successively collapsing said inner wall of consecutive portions of said tubing to thereby

propel fluid within said passageway through said tubing; and
(c) a cartridge housing at least partially enclosing said flexible tubing and said collapsing means, which housing is



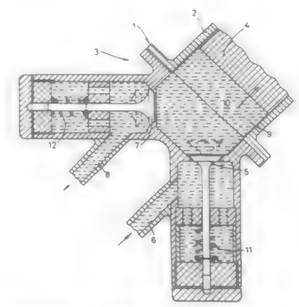
mountable to and removable from said motor with said tubing substantially contained within said housing, said housing having a stationary cylindrical pin integral with said housing, said pin supporting said collapsing means for successively collapsing said tubing.

5,356,268
CHECK VALVE STRUCTURES FOR LIQUID RING PUMPS
Louis J. Lengyel, Fairfield, Conn., and Ramesh B. Shenoi, Orangeburg, N.Y., assignors to The Nash Engineering Company, Trumbull, Conn.
Filed Sep. 29, 1993, Ser. No. 128,877
Int. Cl.[5] F04C *19/00*
U.S. Cl. 417—68 20 Claims



1. A liquid ring pump comprising:
an annular housing having a longitudinal axis and containing a quantity of pumping liquid;
a rotor mounted in said housing for rotation about a rotor axis which is substantially parallel to said longitudinal axis, said rotor having a plurality of radially and axially extending blades spaced circumferentially around the rotor for engaging the pumping liquid and forming it into a recirculating annular ring inside said housing when said rotor is rotated;
a port member adjacent an axial end of said rotor, said port member having a gas inlet port for admitting gas to be pumped to working spaces of the pump bounded partly by adjacent rotor blades and an interior surface of said annular ring of pumping liquid, said port member also having at least two separate gas outlet ports for conveying said gas, after compression by said pump, from said working spaces, said outlet ports being circumferentially spaced from one another and from said inlet port so that a first of said outlet ports precedes a second of said outlet ports in the direction of rotor rotation;
a first conduit communicating with said first outlet port on a side of said port member which is remote from said working spaces;
a second conduit communicating with said second outlet port on said side of said port member which is remote from said working spaces; and
mechanical check valve means disposed at a predetermined location in said first conduit for allowing said gas from said first outlet port to flow through said first conduit substantially only in a direction away from said first outlet port by opening said first conduit at said predetermined location to permit gas flow in said direction and by closing said first conduit at said predetermined location to prevent gas flow opposite to said direction, said first conduit communicating with said second conduit downstream from said check valve means, said first conduit having a cross sectional area at said predetermined location which is substantially greater than the cross sectional area of said first outlet port, and said first and second conduits being shaped to substantially prevent an accumulation in said conduits of pumping liquid through which said gas from said first outlet port would have to pass in flowing through said first conduit from said first outlet port into said second conduit.

5,356,269
VARIABLE DISPLACEMENT PUMP
James E. Stangroom, Sheffield, England, assignor to ER Fluid Developments Limited, Sheffield, England
Continuation of Ser. No. 807,841, Feb. 5, 1992, abandoned. This application Aug. 17, 1993, Ser. No. 108,182
Claims priority, application United Kingdom, Jun. 9, 1989, 8913343.3
Int. Cl.[5] F04B *39/08*
U.S. Cl. 417—297 4 Claims



1. A continuously variable displacement pump comprising a piston reciprocable within a cylinder, a displaceable inlet valve adapted to control admission of lower pressure hydraulic fluid to the swept volume area of the piston and cylinder, a displacement outlet valve adapted to control delivery of higher pressure fluid from the swept volume area, characterised in that an ER fluid device controls the position of the inlet valve so as to control the volume of fluid delivered by the pump in accordance with demand, the ER fluid device being usable in a passive mode as a brake, to restrain movement of the inlet valve, which movement results from forces generated by the normal working of the pump, whereby the output of said single cylinder may be varied from full swept volume to zero, wherein the ER device, in the passive use mode, comprises an

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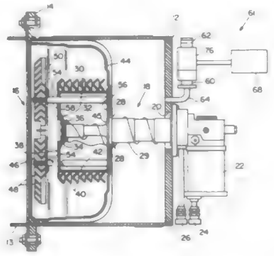
ER buffer consisting of two main parts, namely a piston attached to valve stem of the inlet valve, and a sleeve held concentric with a cylindrical housing of the inlet valve and the piston by insulating end-plates equipped with seals, with annular clearance between the piston and the sleeve and between the sleeve and the housing, the whole of the buffer being filled with ER fluid, an external relief tube, to equalise the pressures at each end of the valve stem, and means to apply a high voltage to the sleeve.

5,356,270

ULTRA HIGH VACUUM CRYOPUMP RELIEF VALVE ASSEMBLY

Allen J. Bartlett, Milford, Mass., assignor to Helix Technology Corporation, Mansfield, Mass.

Division of Ser. No. 795,783, Nov. 21, 1991, Pat. No. 5,242,277.
This application Jun. 23, 1993, Ser. No. 81,524
Int. Cl.[5] F04B *49/00*
U.S. Cl. 417—307 **15 Claims**



1. A cryopump pressure relief valve assembly comprising:
a main housing having an inlet at one end and an outlet at another end, the main housing inlet being in communication with a cryopump pressure relief valve which is attached to an exhaust conduit of a cryopump, the cryopump valve having an outlet adjacent to the main housing inlet such that the cryopump valve outlet and the main housing inlet form a fluid path into the main housing;
a second pressure relief valve in communication with the main housing and having an outlet adjacent to the main housing outlet such that the second valve outlet and the main housing outlet form a fluid path out of the main housing; and
a vacuum pump coupled to the main housing for maintaining a pressure within the main housing less than a pressure external to the main housing.

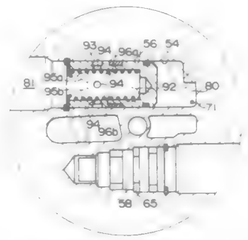
5,356,271

CAPACITY CONTROL MECHANISM FOR SCROLL-TYPE COMPRESSOR

Shigeki Miura; Ryuhei Tanigaki, and Takayuki Iio, all of Aichi, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 4, 1993, Ser. No. 13,422
Claims priority, application Japan, Feb. 6, 1992, 4-54162
Int. Cl.[5] F04B *49/00*
U.S. Cl. 417—310 **6 Claims**

1. A capacity control mechanism for a scroll-type compressor comprising:
a cylinder having a piston valve, the piston valve being sealingly and slidably fitted in the cylinder;
a control valve, control pressure developed by the control valve being introduced to one side of the piston valve;
a suction-side chamber communicating with suction on a side of said piston valve opposite to a side communicating with the control pressure;
a first through hole introducing gas being compressed in the cylinder to said suction-side chamber, the first through hole having a shape so that opening area thereof gradually increases during movement of the piston valve;
a second through hole introducing the compressed gas to said suction-side chamber, said first and second through holes being opened sequentially by movement of said piston valve in said cylinder along with a decrease in said control pressure, the first through hole being opened before the second through hole is opened;



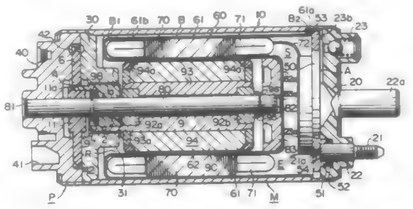
an auxiliary through hole being provided in said cylinder, said auxiliary through hole having a smaller opening area than said first through hole and being opened by said piston valve before said first through hole is opened to introduce the gas being compressed into said suction-side chamber.

5,356,272

FUEL SUPPLY DEVICE AND METHOD OF ASSEMBLING SAME

Kiyoshi Nagata, Anjo, and Takeshi Matsuda, Obu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 5, 1991, Ser. No. 755,006
Claims priority, application Japan, Sep. 5, 1990, 2-236094; Feb. 8, 1991, 3-017771
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—366 **24 Claims**



1. A fuel supply device for feeding fuel under pressure, comprising:
a cylindrical housing;
a preliminarily assembled cylindrical part having a closed bottom and fixed to said housing;
a rotor having a permanent magnet fixedly mounted thereon, said rotor being rotatably received in a columnar-shaped space enclosed by a cylindrical-shaped wall portion of said preliminarily assembled part;
a plurality of stator coils supported on said cylindrical-shaped wall portion of said preliminarily assembled part and mounted around said rotor;
a control circuit supported on a bottom wall portion of said preliminarily assembled part and having two input terminals for power supply and a plurality of output terminals provided in accordance with said plurality of stator coils whereby said control circuit controls a supply of electricity to said stator coils by successively supplying electrical

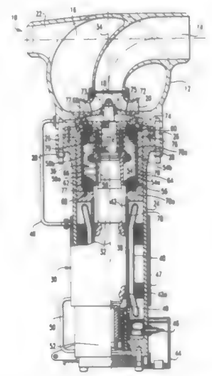
power from said input terminals to said plurality of output terminals;
a pump portion fixed to said housing and driven by said rotor to feed fuel under pressure, using an interior portion of said housing as a fuel passageway;
electrically-conductive members electrically connected between said output terminals of said control circuit and said stator coils; and
an enclosure member enclosing said control circuit, said stator coils, and said electrically-conductive members;
wherein said preliminarily assembled part has said output terminals extended outside said bottom wall portion; and
wherein said preliminarily assembled part being fixed to said housing after said enclosure member has integrally supported said control circuit, said stator coils and said electrically-conductive members.

5,356,273

RADIAL BEARING ASSEMBLY FOR A HIGH INERTIA FLYWHEEL OF A CANNED PUMP

Donald R. Nixon, Murraysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 30, 1993, Ser. No. 175,866
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—423.12 **9 Claims**



1. A pump comprising:
a shaft assembly having an outer circumferential surface means,
an impeller mounted on said shaft assembly for pumping a fluid;
drive means engaged with said shaft assembly for turning said impeller;
a flywheel assembly having inner circumferential surface means and mounted on said shaft with an annular recess between one end of said flywheel assembly and said shaft assembly, and
radial bearing means located in said annular recess and contacting one of said circumferential surface means of said flywheel assembly and said shaft assembly.

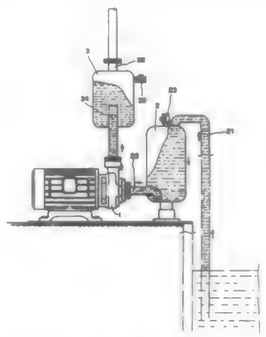
5,356,274

SUPPLYING SELF-SUCTION UNIT

Mu-Chun Lee, No. 41, Cherz Road, Hsin Tien, Taipei, Taiwan

Filed Jan. 24, 1993, Ser. No. 80,810
Claims priority, application China, Jun. 25, 1992, 92226018.4
Int. Cl.[5] F04B *21/00*
U.S. Cl. 417—435 **2 Claims**

1. A self-drawing pump apparatus comprising:
a pump having an intake and an outlet;
a self drawing tank having an upper portion and a lower portion, said tank lower portion being connected to the intake of said pump, said tank upper portion being connected to a pipe communicating with a liquid source, said tank further having an air outlet valve located at said tank upper portion; and
a supplying barrel connected to said pump, said barrel having an upper portion and a lower portion, said barrel lower portion being connected to the outlet of said pump via an inlet pipe, said inlet pipe having an open distal end located within said supplying barrel, said inlet pipe further having a hole formed therein toward said barrel lower portion, said barrel further having an air inlet valve located at said barrel upper portion.

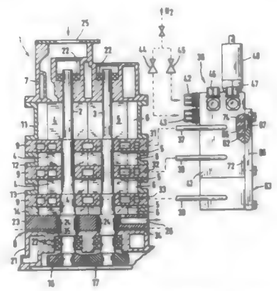


5,356,275

DEVICE FOR SUPPLYING A MULTI-STAGE DRY-RUNNING VACUUM PUMP WITH INERT GAS

Lothar Breuner, Bad Münstereifel Eichers cheid, and Rudolf Bahnen, Roetgen, both of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

PCT No. PCT/EP92/00367, § 371 Date Sep. 1, 1993, § 102(e) Date Sep. 1, 1993
PCT Filed Feb. 21, 1992, Ser. No. 108,675
Claims priority, application European Pat. Off., Mar. 4, 1991, 91103231
Int. Cl.[5] F01C *1/30*
U.S. Cl. 418—9 **12 Claims**



1. Apparatus for supplying inert gas to a dry running vacuum pump having an inlet, an outlet, a shaft, multiple stages, and shaft seals, said apparatus comprising
a block having inert gas inlet means, inert gas outlet means, internal inlet conduit means connecting said inlet means to a surface of said block, and internal outlet conduit means

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connecting said outlet means to said surface of said block, and

a removable component fixed to said surface of said block, said removable component connecting said internal inlet conduit means to said internal outlet conduit means.

5,356,276

SPIRAL DISPLACEMENT MACHINE MADE OF MAGNESIUM ALLOY

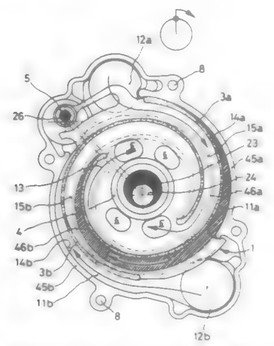
Fritz Spinnler, Mellingen, Switzerland, assignor to Aginfor AG fur Industrielle Forschung, Wettingen, Switzerland

Filed Dec. 7, 1992, Ser. No. 985,653

Claims priority, application Switzerland, Dec. 5, 1991, 3581/91

Int. Cl.[5] F01C *1/04*; F04C *18/04*

U.S. Cl. 418—55.2 **3 Claims**



1. A displacement machine for compressible media, comprising:

a stationary housing having circumferentially extending spiral walls, a radially outer inlet and a radially inner outlet;

a displacement body in said housing, said displacement body comprising a disk having spiral shaped strips extending perpendicularly from opposite sides of the disk, wherein said spiral strips have axial seals and cooperate with the walls of the housing to define spiral shaped conveying spaces in said housing; and

means for eccentrically driving said displacement body such that said displacement body effects a circular movement with said conveying spaces moving from the inlet to the outlet,

wherein said displacement body is made of magnesium alloy and at least the circumferentially extending housing walls are made of a magnesium alloy, so that circumferentially extending walls of said conveying spaces are formed of a magnesium alloy.

5,356,277

VANE TYPE GAS COMPRESSOR

Masaru Yamaguchi; Makoto Ijiri; Shuji Yamane, all of Narashino, and Yutaka Shimizu, Sano, all of Japan, assignors to Seiko Seiki Kabushiki Kaisha and Calsonic Corp., Japan

Filed Feb. 11, 1993, Ser. No. 17,324

Claims priority, application Japan, Feb. 12, 1992, 4-005246[U]

Int. Cl.[5] F01C *21/02*

U.S. Cl. 418—179 **12 Claims**

1. A vane type gas compressor comprising:

a cylinder having an inner circumference of a substantially oval shape;

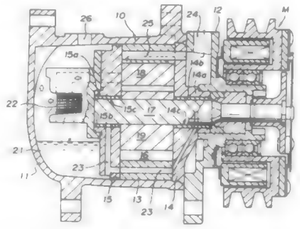
a front and a rear side blocks attached to both sides of the cylinder for forming a cylinder chamber;

a rotor rotatably provided in the cylinder chamber;

a rotor shaft for transmitting rotational force to the rotor;

a plurality of vanes inserted into a plurality of vane grooves provided in the radial direction of the rotor in a manner freely slidable in the grooves;

a plurality of plain bearings provided respectively in the front and the rear side blocks for rotatably supporting the rotor shaft; and



a refrigerant HFC-134*a* (1,1,1,2-tetrafluoroethane; CH_2FCF_3) comprising the compressible gas of the gas compressor;

wherein the cylinder, the front and the rear side blocks, the rotor and the vanes are made of aluminum alloys, and the rotor shaft is made of an iron series metal; and

wherein the plain bearings are made of cast iron and have bearing surfaces to which a manganese phosphate coating treatment is applied.

5,356,278

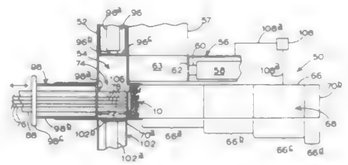
APPARATUS FOR MAKING A THERMOPLASTIC COMPOSITE

William R. Reetz, 1829 Roanoke Dr., Boise, Id. 83712

Continuation-in-part of Ser. No. 677,416, Mar. 29, 1991, Pat. No. 5,155,146. This application Oct. 9, 1992, Ser. No. 959,228

Int. Cl.[5] B29C *47/00*

U.S. Cl. 425—111 **6 Claims**



1. Apparatus for making a reinforced thermoplastic composite from a dry blend of expanded thermoplastic pieces and filler particles, comprising:

an elongate compartment defining a high-pressure compression chamber and including open ends, a feeder port and an access port, and an entry section;

a feeder for sequentially transferring preselected amounts of the blend to the compartment through the feeder port;

a plurality of reinforcing strands to be fed through the chamber, with each such strand having a front section which is positioned in the entry section;

a plurality of tensioning members being removably attachable to desired front sections of the strands after a first amount of the blend has been compressed in the chamber, the front sections being accessible for attaching the members via the access port, and the members being insertable into the first amount to maintain tension on the strands during subsequent compressing of additional amounts of the blend;

means for heating the chamber;

a high pressure compressor to compress the blend around the strands in the heated chamber to form a molten reinforced thermoplastic composite, and to transfer the molten composite out of the chamber where it can cool, thus to form a reinforced thermoplastic composite.

5,356,279

MACHINE FRAME WITH A MOVABLE SCAFFOLD FOR THE TOOL AREA OF AN INJECTION MOLDING MACHINE

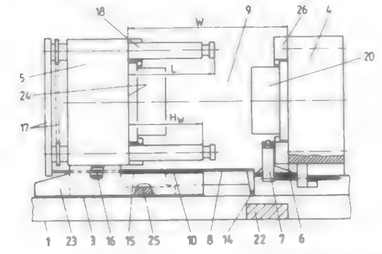
Klaus Füller, and Walter Stein, both of Schwerin, Fed. Rep. of Germany, assignors to Hemscheidt Maschinentechnik Schwerin GmbH & Co., D-Schwerin, Fed. Rep. of Germany

Filed Dec. 3, 1992, Ser. No. 984,790

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1991, 4139758

Int. Cl.[5] B29C *45/17*

U.S. Cl. 425—186 **4 Claims**



1. A machine frame for an injection molding machine, comprising:

a displaceable scaffold for a tool area of the injection molding machine;

a stationary tool clamping plate;

a tool clamping plate displaceable on a slide carriage and opposite said stationary clamping plate, the scaffold being arranged between said clamping plates, each of the clamping plates supporting half of a forming tool;

a plurality of columns provided so as to extend into said tool clamping plates when said plates are moved toward one another;

tool height adjusting means for adjusting the length said columns extend between said tool clamping plates to correspond to a tool height;

the machine frame having a stepped height;

two upper outer straps arranged on a top step of the stepped frame;

two inner straps arranged on an inner, lower step of the frame, said inner straps forming guideways on which the slide carriage of said displaceable tool clamping plate is displaceable; and

connecting rods provided so as to connect said displaceable scaffold with said tool height adjusting means, said scaffold being displaceable on the guideways formed by the inner straps and on the carriage so that upon closing of the forming tool said scaffold is shifted under said stationary tool clamping plate.

5,356,280

PUMP FOR PARTICULATE SOLIDS

Giuseppe Ponzielli, Solaro, Italy, assignor to GPW Machine S.a.S. di Giuseppe Ponzielli & C., Italy

Filed Nov. 24, 1992, Ser. No. 980,963

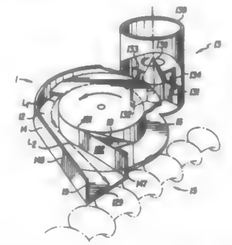
Claims priority, application Italy, Nov. 27, 1991, MI 91 A 003161

Int. Cl.[5] B29C *31/00*

U.S. Cl. 425—201 **10 Claims**

1. A rotary channel pump for processing a particulate solid material comprising a rotary flow channel having an inlet and an outlet and including:

(i) a substantially annular drag flow channel segment formed between a stationary outer wall member and a rotating circular inner wall member, said annular drag flow channel segment having an upstream end communicating with said inlet, and a downstream end; and (ii) a substantially straight channel segment formed between a first substantially planar stationary wall portion and a second substantially planar stationary wall portion to provide for smooth passage of said particulate solid material through said flow channel and to prevent melting and thermal degradation of said particulate solid material within said flow channel, said substantially straight channel segment having an



upstream end communicating with said downstream end of said annular drag flow channel segment, and a downstream end communicating with said outlet; said pump further including a rotary feeder connected with said inlet of said flow channel for precompacting said particulate solid material prior to passing it into said flow channel, wherein said rotating inner wall member is connected to a drive for rotating said inner wall member in a first direction of rotation and said rotary feeder comprising a housing having an upper and a lower end, and a rotor near said lower end of said housing and comprising at least one displacement element, said rotor being connected to a drive for rotating said rotor in a direction opposite said first direction of rotation of said inner wall member.

5,356,281

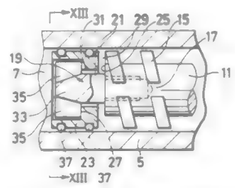
SCREW-TYPE RESIN INJECTION APPARATUS FOR INJECTION MOLDING

Nobuhiro Katsuno, and Toru Shimizu, both of Hachioji, Japan, assignors to Three Bond Co., Ltd., Japan

Filed Aug. 10, 1992, Ser. No. 927,813

Int. Cl.[5] B29C *45/48*, *45/50*, *45/60*

U.S. Cl. 425—208 **7 Claims**



1. An injection screw for an in-line screw-type injection molding system for mixing and kneading moldable materials, said injection screw having first and second threads extending in the same direction and arranged respectively along the screw axis adjacent to a rear material receiving portion and a front material discharge portion, the improvement comprising:

said first thread having lead surfaces substantially perpendicular to the screw axis;

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said second thread having a smaller pitch and lead angle as compared to said first thread and being interrupted by axial grooves extending parallel to the screw axis, said axial grooves being spaced circumferentially around the screw axis;

a screw head element adjacent to said front material discharge portion, said screw head element having a head portion and a shaft portion, said head portion having a plurality of kerfs extending in the direction of the screw axis, said kerfs being spaced circumferentially and arranged out of phase with respect to said axial grooves for accelerating kneading;

a seal element surrounding and movable axially with respect to said screw head element; and

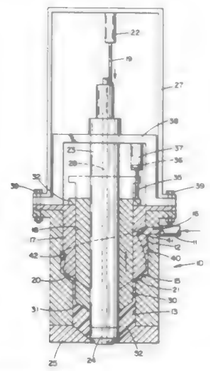
a plurality of O-rings disposed on an outer peripheral surface of said seal element.

5,356,282

BLOW MOLDING EXTRUSTION HEAD

James L. Throne, Hinckley; Christopher I. Beal, Avon Lake, and Michael M. Balasko, Parma, all of Ohio, assignors to The Geon Company, Independence, Ohio

Filed Jan. 21, 1992, Ser. No. 822,813
Int. Cl.[5] B29C *47/22, 49/04*
U.S. Cl. 425—381 9 Claims



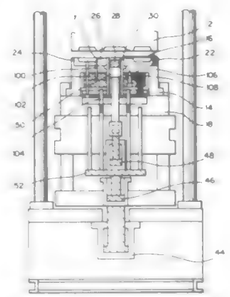
1. In an extrusion head for use in a blow molding machine having an extruder for uniformly delivering polymer melt to said extrusion head; said extrusion head having a cylindrical support with a longitudinally extending central bore; said central bore having an outlet bore portion; a die member mounted at said outlet bore portion; said cylindrical support having an inlet bore for receiving melt for processing; a distributor head located in the upper portion of said central bore and fixedly secured to said cylindrical support; said distributor head having a central opening coaxial with said central bore; a plunger journaled in said central opening; said distributor head having a lower peripheral bottom portion; power means connected to said plunger operable to reciprocate said plunger to and from said die member for expressing melt through said die member; said distributor head having a melt flow channel that extends circumferentially around thereof; said channel having an inlet portion that communicates with said inlet bore of said cylindrical support; said channel having a terminal end portion diametrically opposite said inlet bore; said channel has an upper curved portion in cross section; said channel having a lower linear portion; said channel having an intermediate linear portion linking said upper and lower portions to define a curvilinear channel in cross section; said lower linear portion of said channel terminates at said lower peripheral bottom portion of said distributor head; said channel is circumferentially extending and descending from said inlet portion to said terminal end portion to direct melt from said channel to that portion of said central bore at the bottom of said plunger to move said plunger away from said die member to accumulate melt therebetween.

5,356,283

METAL MOLD FOR SEALING SEMICONDUCTOR DEVICES WITH A RESIN

Makoto Hamada, and Hiroshi Ise, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 14, 1993, Ser. No. 136,081
Claims priority, application Japan, Oct. 14, 1992, 4-275761
Int. Cl.[5] B29C *45/02, 45/14, 45/38, 45/42*
U.S. Cl. 425—544 1 Claim



1. A metal mold for sealing with a resin a lead frame loaded with semiconductor devices and undergone wire bonding, comprising:

a shutter gate pin forming a part of a cavity for forming a package, and a part of a gate constituting a resin inlet port;

a shutter plate on which said shutter gate pin is studded;

a knock-out rod for selectively moving said shutter plate upward or downward and causing said shutter gate pin to selectively block or unblock said gate; and

a support bolt forming a part of said shutter plate and adjusting a depth of said gate which defines a size of said resin inlet port;

whereby an ejection stroke of a seal press is used to drive said shutter gate pin.

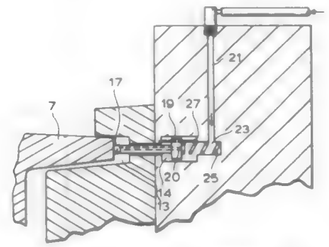
5,356,284

STACK MOLD WITH SPRING LOADED BLOW OFF PIN

James Sheffield, Alston, Canada, assignor to Izon Industries Inc., Brampton, Canada

Continuation-in-part of Ser. No. 463,542, Jan. 11, 1990, abandoned, which is a continuation of Ser. No. 193,605, May 13, 1988, abandoned. This application Jul. 1, 1991, Ser. No. 723,601
Int. Cl.[5] B29C *45/40, 45/43*
U.S. Cl. 425—556 1 Claim

1. A mold with gas ejection only of pieces formed in said mold, said mold comprising a female body part and a male body part, said male body part including a male molding surface with a surrounding plastic injection shut off face and a reciprocable gas controlling blow off pin slideably trapped within a pin receiving recess at said shut off face, said pin having an enlarged bottom portion and a narrow upper portion with a gas passage starting upwardly through said bottom portion into said upper portion and opening sideways thereof with said pin having a solid top surface, said pin receiving recess being defined by a recess wall outwardly around said pin and having an undercut configuration including a small diameter upper region and a larger diameter base region with a first clearance around said narrowed upper portion of said pin in said small diameter upper region of said pin receiving recess and an second clearance around said enlarged bottom portion of said pin in said larger diameter base region of said pin receiving recess, said first clearance being only sufficient to allow movement of said upper portion of said pin while at least substantially preventing flashing of mold material into said upper region of said pin receiving recess, said second clearance being greater than said first clearance, said first clearance around said narrowed upper portion of said pin being sufficiently tight to restrict sideways movement of said pin to the extent to avoid contact between said recess wall of said base region of said pin receiving recess and said enlarged bottom portion of said pin for sliding of said pin in said recess and a spring fittable chamber beneath and opening upwardly into said pin receiving recess, said spring fittable chamber having a diameter less than said bottom portion of said pin to prevent downward movement of said pin into said spring fittable chamber.

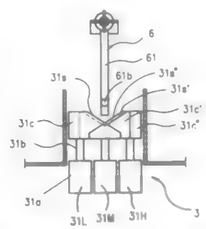


5,356,285

FLAME SIZE CONTROL APPARATUS FOR A GAS BURNER

Byung Youb Kim, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon City, Rep. of Korea

Filed Feb. 3, 1993, Ser. No. 12,409
Claims priority, application Rep. of Korea, Feb. 20, 1992, 92-2486[U]
Int. Cl.[5] F24C *3/12;* F16K *31/528;* G05G *11/00*
U.S. Cl. 431—18 10 Claims



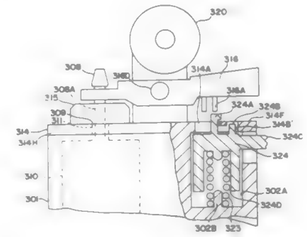
1. In a gas flame burner having a gas passage, a vertically movable valve member movable to different positions for varying the gas supply in order to adjust the flame size, and an actuating mechanism for moving said valve member, said actuating mechanism comprising a plurality of selectively actuable control elements arranged to move said valve member to different vertical positions, respectively, so that the gas supply can be varied in order to adjust flame size is dependent upon which control element is actuated, said control elements being movable relative to one another in horizontal directions for vertically moving said valve member to one of said vertical positions.

5,356,286

CHILD PROOF SAFETY LOCK LIGHTER

Tak C. Sher, North Point, Hong Kong, assignor to Polycity Industrial Ltd. and Tak Fi International (Holdings) Ltd., both of Quarry Bay, Hong Kong

Filed Dec. 22, 1993, Ser. No. 172,615
Int. Cl.[5] F23D *11/36*
U.S. Cl. 431—153 4 Claims



1. In a lighter having

(a) a lighter body, said lighter body having a top surface, a bottom surface and a side surface extending between said lighter body's top surface and bottom surface, said lighter body having an imaginary vertical axis running along said lighter body's center from the lighter body's bottom surface to said lighter body's top surface, and said lighter body having a reservoir for storing fuel, said reservoir having an outlet port connected to the top surface of said lighter body through which outlet port said fuel is ejected when said lighter is in use;

(b) a nozzle through which said fuel is ejected after said fuel leaves said outlet port when said lighter is in use, said nozzle having a head with a tube extending down therefrom,

(c) a mounting frame affixed atop said lighter body, said mounting frame having a platform disposed substantially in a plane perpendicular to said vertical axis, said platform having an opening disposed over the outlet port of said reservoir, wherein said nozzle tube is disposed through said opening and into said outlet port while said nozzle head remains disposed above said platform, and said mounting frame having a fulcrum bearing member disposed above a central portion of said platform,

(d) a lever having a front end and a rear end, said lever having a fulcrum disposed intermediate said front and rear ends of said lever and mounted upon said fulcrum bearing member, said front end of said lever having gripping means for gripping said nozzle and causing said nozzle head to be raised when said rear end of said lever is pressed down, said nozzle and said outlet port being configured so that said fuel is allowed to be ejected from said nozzle when said nozzle is in a raised position and, when said nozzle is not in said raised position, said fuel is prevented from being ejected from said nozzle, and

(e) an igniter mounted upon said mounting frame, said igniter being disposed such that a user may actuate said igniter substantially simultaneously with the user's pressing down upon the rear end of said lever, the improvement comprising the addition of lighter safety means, said lighter safety means comprising,

a drum having an upper drum surface and a lower drum surface, and a side drum surface extending from said upper drum surface to said lower drum surface, said drum having an imaginary drum axis extending in a direction which is substantially parallel to said vertical axis, said drum having first and second stud members upstanding from the upper drum surface in a direction substantially parallel to said drum axis, said first and second stud members being disposed along an arc about said drum axis, and said drum

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having an arm member extending out from said side surface in a direction substantially perpendicular to said drum axis, said first stud member being longer than said second stud member, said first stud member having a shoulder disposed at an end of the first stud member which is remote from said upper drum surface, which shoulder extends out in a direction substantially perpendicular to said drum axis;

portions of said lighter body forming a recess in said lighter body, said recess disposed at the junction of said top and side surfaces of said lighter body and approximately below the rear end of said lever, said recess configured to receive said drum so that said drum may move up and down in directions parallel to said vertical axis and rotate back and forth from a first position to a second position about said drum axis with said arm member being accessible to said user;

portions of said platform forming a first slot, through which said first stud member extends above said platform, and a second slot, said first slot substantially conforming to the path travelled by said first stud member as said drum rotates from said first position to said second position, said second slot disposed to receive said second stud member when said drum is in said first position, wherein when said drum is in said first position said shoulder of said first stud member extends vertically over a portion of said platform, and when said drum is in said second position said second stud member is received in said first slot and said shoulder of said first stud member extends vertically over said first slot;

a spring disposed in said recess and against said drum, said spring acting to urge said drum upward toward said platform;

a first leg member attached to and extending downward from the rear end of said lever, said first leg member positioned above said first stud member when said drum is in said first position and having a length such that when the rear end of the lever is pressed downward while the drum is in said first position, said lever cannot travel sufficiently far to cause said nozzle to be lifted to said raised position before said shoulder of said first stud member moves into vertical engagement with said platform, thereby preventing further downward movement of said rear end of said lever,

wherein said drum is rotated from said first position to said second position by the user pressing down on said arm member and urging the drum in a downward direction away from said platform until said second stud member is free from said second slot, turning said arm member until said second stud member is below a portion of the first slot, and then allowing the spring to push the drum upward toward the platform until the second stud member is received by said first slot.

5,356,287

SIMULATING PRESENCE

Kevin M. McIntyre, 160 Commonwealth Ave., Ste. 801, Boston, Mass. 02116

Continuation of Ser. No. 677,366, Mar. 26, 1991, abandoned, which is a continuation of Ser. No. 94,500, Sep. 9, 1987, abandoned, which is a continuation-in-part of Ser. No. 25,858, Mar. 16, 1987, abandoned. This application Mar. 3, 1992, Ser. No. 845,220

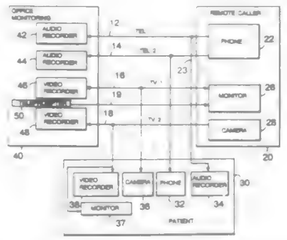
Int. Cl.[5] G09B *5/04, 19/00*

U.S. Cl. 434—320 **14 Claims**

1. A method of treating a patient with restricted short-term memory which method includes the steps of,

recording a sequence of comments voiced a voice familiar to said patient,

and playing back the recorded comments to said patient while leaving blank recorded intervals between said recorded comments for said patient to respond to said recorded comments,



wherein said voice is the voice of a parent, child or spouse of said patient.

5,356,288

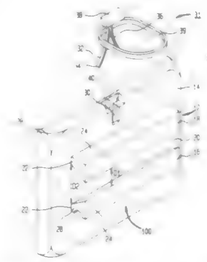
DUAL ORTHODONTIC BRACKET

Howard Cohen, 339 Forest Ave., Woodmere LI, N.Y. 11598

Filed Dec. 7, 1992, Ser. No. 987,458

Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—8 **10 Claims**



1. An orthodontic bracket system for retaining an archwire in desired position with respect to the tooth of a patient whose teeth orientation is being corrected, said bracket system comprising:

a primary bracket adapted to be fixed with respect to the surface of a tooth;

a pair of spaced mesio-distally extending holding members on said primary bracket spaced to permit engagement of an arch wire therebetween;

a slot extending into said primary bracket from an edge surface thereof;

a spring pin member dimensioned for positioning within and spring biased into engagement with the sidewalls of said slot; and

a cap member at the upper end of said spring pin.

5,356,289

ORTHODONTIC BRACKET

Kazuya Watanabe, Ushio Heights 205, 7-14, Shinden 2-chome, Ichikawa-shi, Chiba-ken, Japan

Filed Jun. 4, 1993, Ser. No. 71,486

Claims priority, application Japan, Sep. 1, 1992, 4-066700[U]

Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—8 **3 Claims**

1. In an orthodontic bracket which includes a main body made of a shape memory alloy; and a plurality of pairs of longitudinally elongated hold members formed on said main body so as to define a slot which extends between said hold members of each said pair; the improvement comprising

wherein each said hold member has at an outer end thereof a nail portion which projects only in a direction into said slot to hold an arch wire in said slot of the bracket so that an exit of



the arch wire from said slot is resisted by said nail portions, said bracket being free of tie wings projecting from said hold members in a direction away from said slot for ligating the arch wire.

5,356,290

MEDICAL TREATMENT DEVICE, IN PARTICULAR FOR SURGICAL PURPOSES

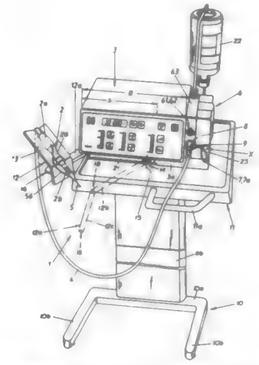
Ernst Strohmaier, Bad Schussenried, Fed. Rep. of Germany, assignor to Kaltenbach & Voigt GmbH & Co., Biberach/Riss, Fed. Rep. of Germany

Filed Nov. 25, 1992, Ser. No. 981,364

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1991, 4[illegible]

Int. Cl.[5] A61G *15/00*

U.S. Cl. 433—77 **13 Claims**



1. Medical treatment device for a surgical treatment station, comprising a motor-operated treatment instrument having a handpiece consisting of at least two portions, one handpiece portion being connectable to a control unit by a media supply line and the other handpiece portion for receiving a treatment tool, one of the two handpiece portions containing a separable motor cartridge; a receiving arrangement in the form of a plug-in device constituting a parking place for the motor cartridge being located at the treatment station; a first coupling with coupling means for the releasable coupling of the one handpiece portion and the motor cartridge; and a second coupling with coupling means for coupling the motor cartridge and the receiving arrangement in the position in which the cartridge has been transferred to the receiving arrangement, whereby said handpiece portion supporting the motor cartridge is transferable with said cartridge from said treatment station for positioning said cartridge at said parking place and is detachable from said cartridge, and said handpiece portion is reattachable to said cartridge and returnable in conjunction therewith to said treatment station for reconnection of said cartridge with said other handpiece portion.

5,356,291

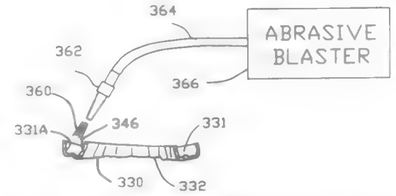
TREATMENT OF A TOOTH

Daniel H. Darnell, Hanceville, Ala., assignor to Dunhall Pharmaceuticals, Inc., Gravette, Ark.

Continuation of Ser. No. 793,244, Nov. 12, 1991, abandoned, which is a continuation of Ser. No. 612,599, Nov. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 374,985, Jul. 3, 1989, Pat. No. 4,968,251. This application Jan. 26, 1993, Ser. No. 9,355

Int. Cl.[5] A61C *15/00*

U.S. Cl. 433—216 **42 Claims**



1. An improved method of whitening a tooth with an active agent, comprising the steps of:

making a model of the tooth;

molding a stint to define an internal region and an external region with the internal region overlaying the tooth and the adjacent gingiva tissue;

trimming the stint to overlay only the tooth and to terminate at the juncture of the tooth and the gingiva tissue;

abrading the internal region of the stint to form indentations within the internal region of the stint;

introducing the active agent to brighten the tooth into the indentations; and

applying the stint containing the active agent upon the tooth.

5,356,292

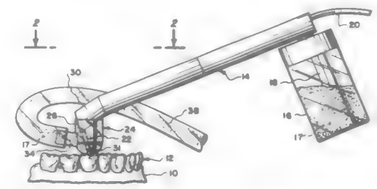
DENTAL SANDBLASTING CONFINER

Phillip P. Ho, 966 Embarcadero del Mar, Goleta, Calif. 93117

Filed Dec. 23, 1993, Ser. No. 173,158

Int. Cl.[5] A61C *3/02, 1/16*

U.S. Cl. 433—88 **6 Claims**



1. In combination with a dental sandblasting tool comprising a housing terminating in a forward end, a nozzle extending outward from said forward end, said nozzle having a free outer end defined as a tip, said nozzle being substantially smaller in cross-sectional area than said forward end, sand to be discharged from said tip of said nozzle, a sandblasting confiner to be used with said sandblasting tool as it is operated, said sandblasting confiner comprising:

a flexible walled cup having an internal chamber, said cup having an inlet opening and an outlet opening, said forward end of said sandblasting tool adapted to connect with said inlet opening causing said cup to slightly deform and form a reasonably snug fit when engaged and pressed

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by said forward end, said cup having an access opening spaced from both said inlet opening and said outlet opening, said tip of said nozzle adapted to be located directly adjacent said access opening when said nozzle with a portion of a tooth is inserted in said cup to be repaired being surrounded by said access opening, said nozzle adapted to be slightly movable relative to the tooth when said nozzles is within said internal chamber while said cup maintains said snug fit with said forward end, whereby as sand is discharged from said tip against the portion of the tooth the sand is confined within said internal chamber and then removed therefrom through said outlet opening.

5,356,293

SEXUALLY-TRANSMITTED DISEASE AWARENESS PROGRAM PACKAGE

Joseph Mizglewski, P.O. Box 85, Belford, N.J. 07718

Filed Jun. 14, 1993, Ser. No. 76,423
Int. Cl.[5] G09B *19/00*
U.S. Cl. 434—236 8 Claims

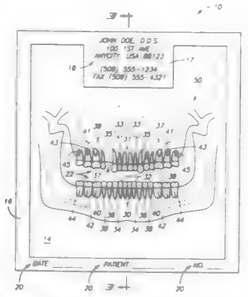
1. A sexually-transmitted disease awareness program package, said package comprising:
a series of collector trading cards, said series including a first plurality of cards, each of said first plurality of cards having a celebrity pictured on a first side, and said celebrity's own, personal views on "safe sex" expressed on an opposite, second side, and a second plurality of cards having educational facts about sex provided thereon; and
a sealed condom; wherein said first plurality of cards, said second plurality of cards, and said sealed condom are contained within a protective wrapping.

5,356,294

DENTAL DIAGNOSTIC AND INSTRUCTIONAL APPARATUS

Wataru Odomo, 18805 Cox Ave., #100, Saratoga, Calif. 95070-4182

Filed Jul. 30, 1993, Ser. No. 100,108
Int. Cl.[5] G09B *23/28*
U.S. Cl. 434—263 12 Claims



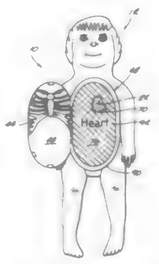
1. A dental diagnostic and instructional apparatus, comprising:
a base member;
a top sheet coupled to the base member, the top sheet including a dental diagram;
a plurality of magnetic devices removably disposed on the base member for slidable, translational movement relative to the base member to accurately position the magnetic devices about the dental diagram according to a patient's actual teeth configuration; the magnetic devices being securable to the base member through the top sheet, the magnetic devices each comprising:
a magnetic portion having a top surface and a bottom surface, the magnetic portion providing a magnetic force sufficient to support the weight of the respective magnetic device; and
a face sheet attached to the magnetic portion, the face sheet including a dental diagram.

5,356,295

ANATOMICAL TEACHING TOOL AND METHOD FOR TEACHING ANATOMY

Claudia M. Grosz, 553 Lakehurst Rd. Apt. 1-L, Waukegan, Ill. 60085

Filed Mar. 8, 1993, Ser. No. 28,697
Int. Cl.[5] G09B *23/28*
U.S. Cl. 434—267 12 Claims



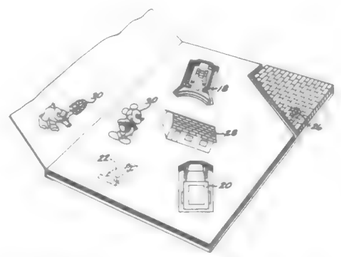
9. A method of teaching anatomy comprising the steps of:
(a) providing a doll representing the human body including at least one representation of an anatomical part;
(b) providing a template having therein an aperture approximately the shape of one of said at least one anatomical part; and
(c) superimposing said template on said doll such that one of said at least one anatomical part is visible through said aperture.

5,356,296

AUDIO STORYBOOK

Harold D. Pierce, 186 Falling Star Ave., Westlake Village; Basil J. Scafidi, Northridge, and Bennie L. Garcia, Sylmar, all of Calif., assignors to Harold D. Pierce, Westlake Village, Calif.

Filed Jul. 8, 1992, Ser. No. 911,155
Int. Cl.[5] G09B *5/00*
U.S. Cl. 434—317 1 Claim



1. A book including a plurality of pages hinged at one side and a last page;
at least one of said first pages having a void and corresponding text thereon;
at least one subsequent page having a character in registration with a previous page and corresponding text thereon;
said characters each having a switch incorporated therein;

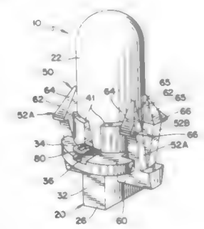
a sound synthesizer, an electronic amplifier and speaker incorporated with said last page;
said switches being connected to said sound synthesizer, amplifier and speaker, thereby causing a sound to be emitted representing said character upon the actuation of said switch in said character; and
each page having distinct characterization in position where they are progessively revealed by the story line as the book is read, said characters and text progessively revealing a story as said pages are turned.

5,356,297

LAMP SOCKET AND TERMINAL THEREFOR

Steven W. Haskins, Sparta, Tenn., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Mar. 12, 1993, Ser. No. 30,716
Int. Cl.[5] H01R *23/72*
U.S. Cl. 439—58 23 Claims



1. A socket for receiving a lamp to mount the lamp into a circuit plate which has an opening therethrough for receiving the socket, said socket comprising:
a body forming an aperture which is open at a forward axial end thereof for receiving the lamp,
locking means carried by said body for locking said socket to the circuit plate, and
electrical terminals disposed on the body for making electrical contact with a circuit carried by the circuit plate, each terminal comprising:
a rear shank portion mounted in said aperture, and
a contact portion projecting out of said forward axial end of said aperture and extending radially outwardly from said forward end such that a free end of said contact portion is disposed radially outwardly of said rear shank portion, said contact portion including a through-slot therein extending toward said free end of said contact portion so that said contact portion presents relatively movable contact surfaces on opposite sides of said slot, said contact surfaces facing axially forwardly and disposed radially inwardly of said free end.

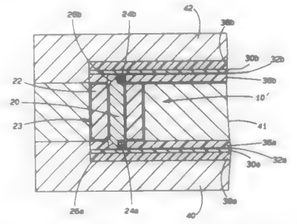
5,356,298

WIDEBAND SOLDERLESS RIGHT-ANGLE RF INTERCONNECT

John D. Voss, San Diego; Stephen C. Ellis, Murrieta; Robert G. Riddle, Escondido, and Jeffrey A. Douglass, Poway, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Apr. 1, 1993, Ser. No. 42,565
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—63 22 Claims

1. A right-angle electrical interconnect comprising:
a conductive pin having a first end electrically coupled to a first transmission path and a second end for electrically coupling to a circuit trace, said second end having an outermost end shaped with a first flat tapered edge formed on one side of said conductive pin for reducing impedance discontinuities;
a circuit trace having a contact surface located at a right-angle with said first end of said pin for providing a second transmission path; and



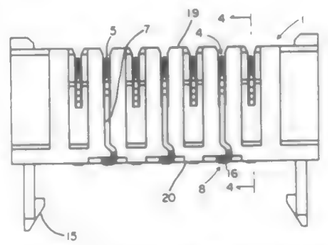
springy conductive means compressed between said second end of said conductive pin and the contact surface of said circuit trace for providing signal transitions therebetween.

5,356,299

TERMINAL ELEMENT OF A SURFACE-APPLIED TYPE ELECTRIC CONNECTOR

Shinsuke Kunishi, Obsaka, and Masaaki Ohya, Yokohama, both of Japan, assignors to Molex Incorporated, Lisle, Ill.

Filed May 6, 1993, Ser. No. 58,104
Claims priority, application Japan, Jun. 19, 1992, 4-049080[U]
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—83 7 Claims



1. A connector mounted to a surface of a printed circuit board including:
a housing having a board mounting face, a connector mating face, and a plurality of elongated terminal receiving recesses parallel to each other and extending within the housing each recess defining a plane,
a plurality of stamped terminals having two surfaces mounted in the recesses, each terminal having a base section, a generally elongated intermediate section extending from the base section with a vertical axis, a lower section extending from the intermediate section and a generally horizontal foot extending from the lower section with a solder region adapted to be secured to a conductor strip on the surface of the printed circuit board,
the improvement comprising:
the base and intermediate sections having a plane located in the same plane as each respective recess,
the lower section including a transition section located out of the vertical axis of the intermediate section and the generally horizontal foot aligned with and centered on said vertical axis and bent so that one of the surfaces of the terminal in the horizontal foot is parallel to and in contact with the conductor strip of the surface of the printed circuit board.

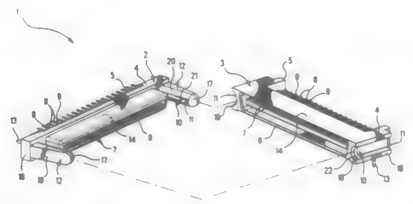
VOL 1167 ISS 3 OC 18 1994 UMI

5,356,300

BLIND MATING GUIDES WITH GROUND CONTACTS

Brian P. Costello, Cupertino, Calif.; Robert N. Whiteman, Middletown, Pa.; Earl C. Myers, Jr., Harrisburg, Pa.; Donald T. Biechler, Harrisburg, Pa., and Robert W. Walker, Harrisburg, Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Sep. 16, 1993, Ser. No. 122,741
Int. Cl.[5] H01R *13/652, 13/629*
U.S. Cl. 439—101 14 Claims



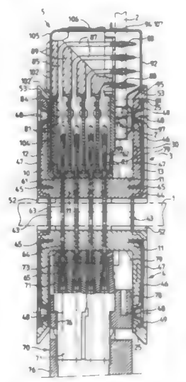
1. An electrical connector comprising: an insulating housing of the electrical connector having a mating face for connection with another, mating electrical connector; electrical contacts in the housing extending from the rear face toward the mating face; insulative posts; and conductive ground contacts extending along the posts; the posts and the ground contacts projecting outwardly beyond the mating face to establish a ground connection of the ground contacts with the mating electrical connector spaced apart from the mating face, and to align the mating connector with the posts while the mating face is spaced apart from the mating electrical connector.

5,356,301

MODULAR ELECTRICAL-CONNECTION ELEMENT

Patrick Champion, and Jacky Thenaisie, both of Le Mans, France, assignors to Framatome Connectors International, Versaille, France

Filed Dec. 18, 1992, Ser. No. 992,598
Claims priority, application France, Dec. 23, 1991, 91 16012
Int. Cl.[5] H01R *13/648*
U.S. Cl. 439—108 13 Claims



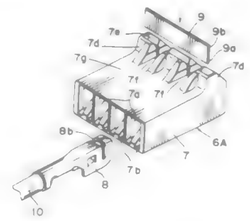
1. An electrical connection assembly which comprises a first modular connector element comprising a first insulating body including a central region (**11**) for receiving first electrical contact elements (**60**) and two lateral branches (**12, 13**) substantially perpendicular to an axis of the central region (**11**), each lateral branch including, on an outwardly facing surface (**32**), a screening plate (**40**) having an external contour, said screening plate (**40**) comprising at least one means (**45, 54**) for retaining in position in said insulating body, at least one electrical connection means (**43**) extending beyond said insulating body and at least one means (**46, 48**) for elastic electrical contact through at least one corresponding opening (**17**) of said lateral branch (**12, 13**) emerging on an inner face (**31**) of said lateral branch (**12, 13**) and a second connector element comprising a second insulating body having second electrical contact elements for mating engagement with said first electrical contact elements, and screening means having on each of two lateral sides of said second connector element a lateral screening portion to contact electrically said means for elastic electrical contact, each lateral screening portion at least partly overlapping a corresponding screening plate in an overlapping region to form substantially continuous lateral screens.

5,356,302

JOINT CONNECTOR

Nori Inoue, and Athushi Sakatani, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Jul. 29, 1993, Ser. No. 98,906
Claims priority, application Japan, Aug. 25, 1992, 4-225675
Int. Cl.[5] H01R *29/00*
U.S. Cl. 439—189 4 Claims



1. A joint connector comprising:
a housing having a plurality of chambers, each chamber accommodating one terminal and being provided with a lance for locking the terminal, and one slit opening communicating with the chambers at a right angle to an inserting direction of the terminal into the chamber,
the terminals each having a slit groove at a right angle with the inserting direction of the terminal into the chamber and a locking portion locked by the lance; and
a bus bar plate inserted into the slit opening of the housing and pressed against the slit groove of each terminal accommodated in the chamber so as to be locked in the housing, said bus bar plate thereby providing an electrical connection between the terminals.

5,356,303

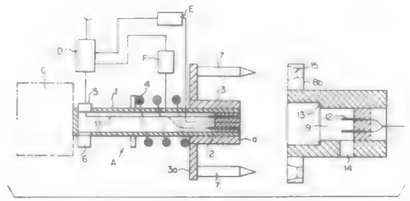
AUTOMATIC PLUG-IN CONNECTING APPARATUS

Susumu Shibata; Yuichi Fujita; Kazumi Shima, all of Chiba, and Makoto Wada, Tokyo, all of Japan, assignors to Toyo Engineering Corporation, Tokyo, Japan

Filed Aug. 24, 1993, Ser. No. 111,127
Claims priority, application Japan, Sep. 11, 1992, 4-243315; Dec. 22, 1992, 4-340821
Int. Cl.[5] H01R *13/52*
U.S. Cl. 439—198 6 Claims

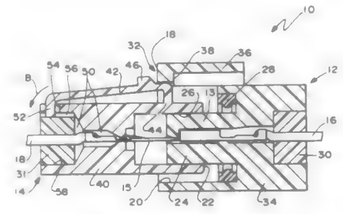
1. An automatic plug-in connecting apparatus comprising:
a supply side connecting unit provided with an electrical connecting socket contact buried at a distal end of said supply side connecting unit and said electrical connecting socket serving also as an air vent, and at a proximal end portion of said supply side connecting unit an outlet port is provided for taking out therefrom an electric wire

connected to said socket contact and an inlet port is provided in said supply side connecting unit for introducing a non-explosive inert gas thereinto;
a reception side connecting unit is provided with a hollow, disposed at a distal end of said reception side connecting unit, for receiving said supply side connecting unit, and at a distal end portion of said receiving hollow, a discharge port is provided for discharging therefrom a gas in said receiving hollow and a space communicating therewith and a pin contact is provided for forming a counterpart of said socket contact;
a supply side connecting unit driving means for fitting said supply side connecting unit into said receiving hollow of said reception side connecting unit so as to connect or disconnect said socket contact and said pin contact to or from each other,
an engagement guide which consists of guide pins provided on either one of said supply side connecting unit and said reception side connecting unit or pin receiving bores



provided in the other thereof, said engagement guide for facilitating an operation for fitting said supply side connecting unit into said receiving hollow of said reception side connecting unit,
an inert gas supply means for forming an inert gas atmosphere in a space in the vicinity of said socket contact and said pin contact when said contacts are connected and disconnected to and from each other by connecting said supply side connecting unit to said reception side connecting unit,
a connection detecting means for ascertaining the connection of said supply side connecting unit to said reception side connecting unit,
a supplied inert gas detecting means adapted to sense the presence or absence of said inert gas supplied to an interior of said supply side connecting unit, and
a current supply control means operatively connected to said connection detection means and said supplied inert gas detecting means and adapted to control a supply of electric current from a power source.

release means operatively associated between the latch means and the seal means for biasing the seal means and



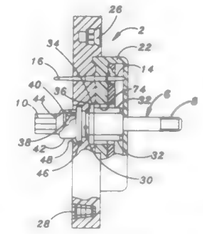
opening the passageway means to release air entrapped in the cavity during mating of the connectors.

5,356,305

ELECTRICAL CONNECTOR ASSEMBLY WITH JACKSCREW COUPLING

Douglas E. Riddle, Corona, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 9, 1993, Ser. No. 44,666
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—364 20 Claims



1. An electrical connector assembly, comprising:
first and second connector blocks having multiple mating electrical connectors that mutually connect when the connector blocks are assembled,
a metal jackscrew that is threaded at one end,
means for rotatably retaining said jackscrew in said first connector block with its threaded end protruding,
a threaded metal receiver in said second connector block to which the threaded end of the jackscrew is screwed to bring said connector blocks together in an assembly, said receiver having an outer polygon shape and lodged in an opening within a plastic portion of said second connector block that has a matching polygon shape, said opening providing a bearing surface to inhibit rotation of the receiver, said second connector block including a plastic securing member that is secured against rotation in said second connector block, with said polygon-shaped opening provided in said securing member, and
means for aligning said connector blocks so that their respective electrical connectors come into contact with each other when the jackscrew is screwed to the receiver.

5,356,304

SEALED CONNECTOR

Stephen A. Colleran, Lisle, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Sep. 27, 1993, Ser. No. 127,410
Int. Cl.[5] H01R *13/52*
U.S. Cl. 439—205 10 Claims

1. In a sealed electrical connector which includes a housing having an interior cavity for sealingly receiving a mating connector, latch means for holding the connectors in mated condition, passageway means communicating the interior cavity with the environment, and seal means for sealing and closing the passageway means,
wherein the improvement comprises:

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5,356,306

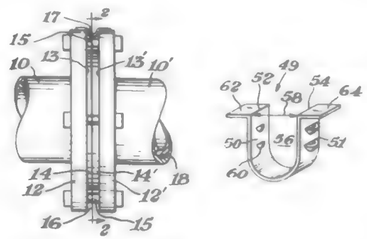
METAL CONDUCTOR ELEMENT

Bryan Ackerman, Freeland, Mich., and Brian Prokuda, Knoxville, Tenn., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 976,588, Nov. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 696,894, May 7, 1991, Pat. No. 5,166,475. This application Dec. 23, 1993, Ser. No. 173,857

Int. Cl.[5] H01R *40/26*

U.S. Cl. 439—387 5 Claims



1. A metal conductor element suitable for insertion between adjacent metal faces comprising a bent metal strip in part defined by first and second arm portions with corresponding first and second arm ends, the arms disposed such that the conductor is substantially U-shaped, V-shaped, or W-shaped, the arm portions defining a corresponding U-shaped, V-shaped, or W-shaped gap therebetween, the first and second arm portions bearing barbs.

5,356,307

INSULATION DISPLACEMENT ELECTRICAL CONNECTOR SYSTEM

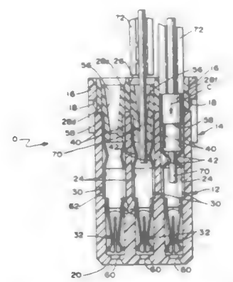
Helen Dechelette, Wissous, France, assignor to Molex Incorporated, Lisle, Ill.

Filed Sep. 1, 1993, Ser. No. 115,955

Claims priority, application European Pat. Off., Nov. 26, 1992, 92120140.6

Int. Cl.[5] H01R *4/24*

U.S. Cl. 439—421 8 Claims



1. In an electrical connector assembly for terminating a plurality of insulated electrical wires and which includes a dielectric housing having a mating end and wire-receiving end with a plurality of open-ended terminal-receiving cavities communicating therebetween, a plurality of terminals respectively disposed in the cavities, each terminal including a mating end nearer the mating end of the housing, a wire-receiving end nearer the wire-receiving end of the housing and an axially collapsible insulation-displacement section therebetween, and a dielectric cover positionable against the housing at the wire-receiving end thereof, the cover having a plurality of wire-receiving openings aligned with the wire-receiving cavities in the housing, characterized in that a plurality of pusher members movably mounted on the cover at the openings therein for movement between inoperative positions and operative positions for collapsing the insulation-displacement sections of the terminals to slice through the insulation of the electrical wires, whereby any one of the pusher members can be moved independent of the other pusher members for selectively terminating the individual insulated electrical wires.

5,356,308

CONNECTOR ASSEMBLY FOR A FLEXIBLE WIRING PLATE

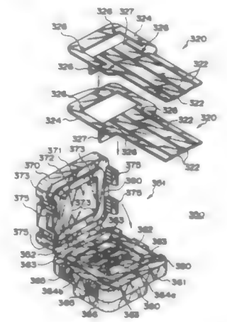
Katsuaki Tobe; Yutaka Noro, and Takuya Inoue, all of Mie, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Sep. 30, 1992, Ser. No. 953,801

Claims priority, application Japan, Oct. 31, 1991, 3-313263; Nov. 1, 1991, 3-098452[U]

Int. Cl.[5] H01R *9/07*

U.S. Cl. 439—495 2 Claims



1. In a connector assembly for connecting a flexible wiring plate, having circuit conductors coated with insulator films on the two sides thereof, to a box-like connector housing;

said connector assembly for the flexible wiring plate being characterized in that:

said connector housing includes a housing body, including top and bottom walls, and a lid body detachably secured to said housing body;

said housing body is provided with an opening in one of said top and bottom walls thereof;

an elastic seal member is mounted around said opening;

a part of said insulator film of said flexible wiring plate is removed in accordance with said opening so that end portions of said circuit conductors are exposed from said insulator film in opposition to said opening; and

electrical terminals having elastic contacts are disposed in said housing body so that said elastic contacts of said terminals engage with said exposed end portions of said circuit conductors;

wherein said opening in said housing body is provided with wiring plate through-holes for passing said flexible wiring plate therethrough, wherein said flexible wiring plate is provided with an attaching area which surrounds said end portions of said circuit conductors, said attaching area comprising a U-shaped shearing portion including side slits formed along opposite sides of said circuit conductors and an end slit formed along an end of said circuit conductors, said shearing portion forming a tongue area, which includes said end portions of said circuit conductors, and a non-wiring area spaced apart from said tongue area, wherein said end portions of said circuit conductors are inserted into said wiring plate through-holes and positioned within said seal member, and wherein said lid body is secured to said housing body so that said seal member is closely contacted with said attaching area.

5,356,309

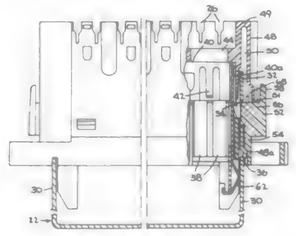
CONNECTOR BLOCK WITH RELEASABLE MOUNTING

William V. Carney, Oyster Bay, and Michael Fasano, Huntington, both of N.Y., assignors to Porta Systems Corp., Syosset, N.Y.

Filed Jan. 26, 1994, Ser. No. 186,597

Int. Cl.[5] H01R *9/26*

U.S. Cl. 439—532 22 Claims



1. An electrical connector block comprising:

an elongated block of electrically insulative material, said block being formed near an end thereof with a recess into which a mounting bracket tab may extend, and an end wall between the recess and said end of the block; and

a release tab mounted on said block to extend along the outer surface of said end wall and to be elastically bendable outwardly therefrom;

said release tab having thereon an interlocking formation which, when the release tab is in a non-bent out position, projects through an opening in the end wall and into the recess to engage a cooperative locking formation in a mounting tab which extends into the recess to lock the connector block to the mounting tab, and which, when the release tab is bent back from the end wall, becomes at least partially withdrawn from the recess to disengage from said cooperative locking formation and release the block.

5,356,310

FLUSH-MOUNTED TELEPHONE JACK

Jay Garthwaite, Fort Morgan; Kenneth Hotchkiss, Golden; Arthur B. Woodward, Lakewood; Brian Lee, Longmont, all of Colo.; Walter C. Lewis, East Northport, and Ferdinand E. Orbeta, Briarwood, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Continuation of Ser. No. 921,194, Jul. 28, 1992, Pat. No. 5,226,049. This application Nov. 22, 1993, Ser. No. 156,176

Int. Cl.[5] H01R *13/60*

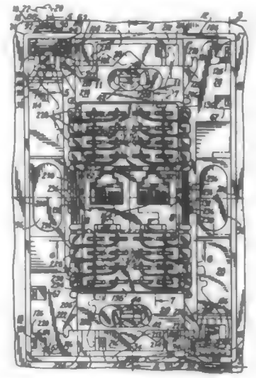
U.S. Cl. 439—535 14 Claims

1. A wiring device capable of installation within a standard size electrical outlet box for electrically connecting at least two insulated electrical conductors comprising:

at least one conductor terminal having a first end and a second end, a first insulation displacing slot extending from said first end towards said second end for receiving a first insulated conductor therein, said first slot severing and displacing the insulation of a first insulated conductor and making electrical contact with the metal conductor therein; said conductor terminal having a second insulation displacing slot extending from said first end towards said second end for receiving a second insulated conductor therein, said second slot severing and displacing the insulation of said second insulated conductor and making electrical contact with the metal conductor therein;

a housing member fabricated of insulating material having a top wall, a bottom wall and two side walls each joined along one marginal edge to a back wall to form a housing member enclosed on five sides and open on the front face;

A pair of ribs on the interior of said back wall to receive there between and support said second end of said conductor terminal; and;



support means fabricated of insulating material coupled to said top wall and said bottom wall of said housing member intermediate said back wall and said open front face; at least one aperture in said support means to permit said first end of said at least one conductor terminal to pass through said aperture to position said first and second slots adjacent said open face of said housing member.

5,356,311

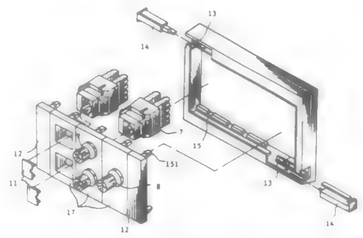
NETWORK WALL PLATE

Danny Liu, 3rd Fl., 7 Alley 6, Lane 235, Poa-Chau Road, Hsin-Tien City, Taiwan

Filed Mar. 25, 1993, Ser. No. 37,979

Int. Cl.[5] H01R *13/518*

U.S. Cl. 439—536 14 Claims



1. A network wall plate comprising:

a wall plate shell;

a plurality of transmission-line adapting sockets removably installed on said wall plate shell;

a plurality of transmission-line connectors which can be respectively plugged into said transmission-line adapting sockets; and

two fastener bases capable of passing therethrough fasteners to fix said wall plate onto a wall surface, characterized in that said two fastener bases can be removed to thus obtain an extra space capable of exactly fitting therein one or more of said transmission-like sockets.

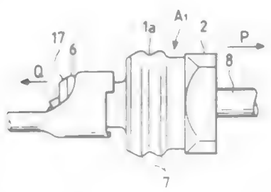
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5,356,312

CONNECTOR WATERPROOFING STOPPER

Kimihiro Abe, and Seiji Koumatsu, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 986,806, Dec. 8, 1992, abandoned. This application Jan. 3, 1994, Ser. No. 176,698
Claims priority, application Japan, Dec. 9, 1991, 3-101114[U]
Int. Cl.[5] H01R *13/52*
U.S. Cl. 439—587 7 Claims



1. A connector waterproofing stopper adapted to be clamped by electric wire staking portions of an electric wire connecting terminal together with a covered wire to seal between the covered wire and an inner wall surface of a connector housing accommodating the electric wire connecting terminal therein, said stopper comprising:

a tubular part formed of an elastic material with an electric wire insertion hole extending therethrough;

the tubular part including:

a seal portion with an outer surface adapted to be brought into tight contact with the inner wall surface of the connector housing;

a connecting portion adapted to be clamped by the electric wire staking portions; and

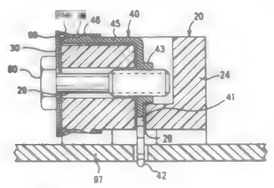
an annular engaging rib extending radially outward from an end of said connecting portion, the annular engaging rib having an engaging surface portion for engagement with the electric wire staking portions and means for reinforcing the engagement of the annular engaging surface portion with the electric wire staking portions, said reinforcing means including a tapered reinforcing portion extending from the engaging surface portion in an axial direction of the tubular part with its radial height gradually reduced.

5,356,313

SHIELDED ELECTRICAL CONNECTOR AND MOUNTING FIXTURE THEREFOR

Takeo Niwa; Yoshitsugu Fujiura, and Hiromitsu Kodama, all of Kawasaki, Japan, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 9, 1993, Ser. No. 28,498
Claims priority, application Japan, Mar. 26, 1992, 4-4024929
Int. Cl.[5] H01R *13/648*
U.S. Cl. 439—607 13 Claims



1. An electrical connector comprising:

an elongated dielectric housing with a plurality of electrical contacts;

said housing being enclosed in a metal shield, said shield having at least one fastener at each end;

wherein a tie-in plate is disposed on the soldering tie-in ends of the contacts, said tie in plate having tapered aperture surfaces for receiving said contacts;

said fastener has a generally planar main leg joined to an auxiliary leg by a deformable, narrowed neck portion and said main leg includes a hole in the plane of said main leg; and

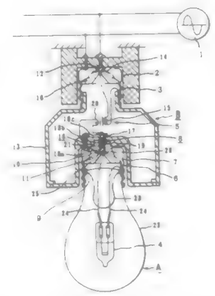
wherein said main leg has a pair of resilient arms disposed in said plane for engaging a printed circuit board.

5,356,314

DOUBLE-SOCKET ELECTRIC LAMP CONTAINING A LOW-VOLTAGE HALOGEN LIGHT SOURCE, TRANSFORMER FOR THE SAME, AND A FIXING ARRANGEMENT OF THEM

Jiro Aota, Himeji, Japan, assignor to Minoru Nishibori, Kasai, Japan

Filed May 10, 1993, Ser. No. 58,334
Claims priority, application Japan, Apr. 12, 1993, 5-110108
Int. Cl.[5] H01R *33/94*
U.S. Cl. 439—642 6 Claims



1. A transformer for connecting a commercial power source with a low-voltage halogen light bulb, comprising:

a housing having a primary base that fits into an existing primary socket connected to said commercial power source which completes an electrical circuit with said commercial power source;

a transformer within said housing connected electrically with said base for decreasing a commercial supply voltage of said commercial power source to a voltage suitable for use in supplying current to said low-voltage halogen light bulb;

said housing including a secondary socket opposite said primary base that receives a base of the low-voltage halogen light bulb, said second socket having a central projecting electrode therein;

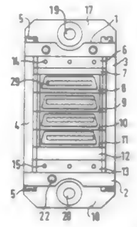
said base of said low-voltage halogen light bulb having a central indentation therein with a central contact for making an electrical contact with said central projecting electrode of said secondary socket.

5,356,315

MODULAR CONNECTOR SYSTEM

Meinrad Jankowski, Töping; Wolfgang Jacobi, and Paul-Rainer Molitor, both of Mühldorf, all of Fed. Rep. of Germany, assignors to Otto Dunkel GmbH Fabrik fur elektrotechnische Gerate

Filed Nov. 24, 1993, Ser. No. 157,708
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1992, 4239988
Int. Cl.[5] H01R *13/502*
U.S. Cl. 439—701 9 Claims



1. A modular connector system comprising at least one connector frame extending in a plane and composed of a plurality of frame members which can be connected to each other, a plurality of insulating members secured in the connector frame, each insulating member having two outer contact surfaces which extend approximately parallel to each other, the plurality of insulating members being arranged next to each other in a row with the outer contact surfaces resting against each other, each insulating member further having at least two outer holding surfaces which extend transversely of the contact surfaces, holding projections being arranged on the holding surfaces, wherein distances between the holding surfaces of all insulating members are equal, the outer holding surfaces being engaged by two of the frame members of the connector frame extending parallel to each other, such that a movement of the insulating members transversely of the plane of the connector frame is excluded, the connector system further comprising a plurality of contact elements for transmitting energy or signals, the contact elements being secured in receiving bores which extend through the insulating members, at least one of the insulating members in each connector frame comprising a first component and a second component pressed onto the first component, wherein the first component includes the contact elements connected to one of plug contacts and socket contacts arranged in a protected manner in the first component and to insulation displacement contacts which project beyond the first component for connection to a flat cable mounted between the first component and the second component, the second component having outer webs engaging over and securely grasping the first component, wherein the holding projections of the insulating member are provided on the outer surfaces of the webs.

5,356,316

COMBINED ELECTRICAL CONNECTOR MOUNTING TRACK AND GROUNDING CONNECTOR ASSEMBLY

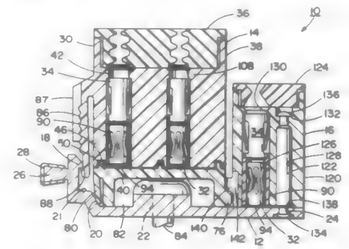
James D. Andersoa, Norwalk, Coan., assignor to Burndy Corporation, Norwalk, Conn.

Filed Nov. 10, 1992, Ser. No. 974,225
Int. Cl.[5] H01R *11/09*
U.S. Cl. 439—724 18 Claims

1. An electrical connector assembly comprising:

a grounding-mounting track adapted to have a plurality of signal modules removably snap-lock connected thereto; and

at least one ground module fixedly connected to the grounding-mounting track, the ground module having a housing with at least one electrical terminal therein, and a ledge integral with the housing for a portion of a signal module to be located against to support snap-lock connection of the signal module to the track, the electrical terminal



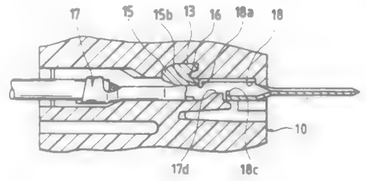
being fixedly electrically connected to the mounting track.

5,356,317

MULTI-TERMINAL CONNECTOR

Yasuhisa Shinji, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Jul. 28, 1993, Ser. No. 97,892
Claims priority, application Japan, Jul. 28, 1992, 4-052981[U]
Int. Cl.[5] H01R *13/436*
U.S. Cl. 439—752 1 Claim



1. A multi-terminal connector, comprising:

a connector housing having a plurality of terminal accommodating chambers disposed therein and a plurality of through holes which intersect said terminal accommodating chambers;

terminal holding pins which, when fitted into said through holes, respectively hold terminals in said terminal accommodating chambers; and

terminal guide means for smoothly inserting said terminal into said terminal accommodating chambers in a terminal advancing direction, said terminal guide means including a projection having an inclination surface descending in said terminal advancing direction, said terminal holding pins each having a groove receiving said terminal guide projection therein in the longitudinal direction so as to be slidable along said through hole.

5,356,318

CONDUCTOR CRIMPING ELECTRICAL TERMINAL

Rupert J. Fry, Des Plaines; Robert A. Klemmer, Wheaton; Gary E. Polgar, Bolingbrook, and Russell E. Wende, Oak Lawn, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Oct. 14, 1993, Ser. No. 136,633
Int. Cl.[5] H01R *4/18*
U.S. Cl. 439—877 4 Claims

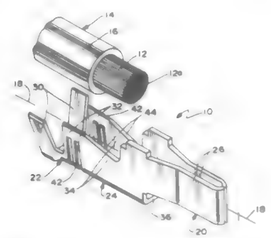
1. In an elongated sheet metal terminal adapted to be crimped onto an exposed conductor of an electrical wire, the conductor having a given cross-sectional area, the terminal defining a longitudinal axis and including a mating end, a terminating end and a transition section therebetween, the terminating end having a pair of spaced crimp walls, and the

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transition section having a pair of spaced transition walls joining the crimp walls to the mating end,

wherein the improvement comprises

said transition section having a cross-sectional area perpendicular to said longitudinal axis gradually diminishing from the terminating end to the mating end with a minimum cross-sectional area of the transition section at any given axial location thereof of at least sixty-five percent of said given cross-sectional area of the conductor;



wherein said terminating end and said transition section are generally U-shaped in cross section and include a common base wall, with said crimp walls and said transition walls projecting from the base wall; and

wherein said crimp walls have upper edges extending generally parallel to said base wall and are adapted to be curled into crimping engagement with the conductor, and said transition walls have edges extending from the edges of the crimp walls to said given axial location of the transition section at an acute angle to the base wall and adapted to be partially curled toward the conductor.

5,356,319

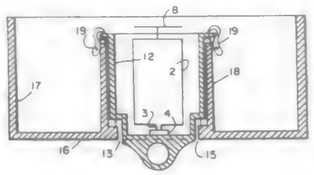
BOAT WITH REMOVABLE INBOARD JET PROPULSION UNIT

Corvin L. Parker, P.O. Box 2056, Jupiter, Fla. 33468

Filed Jan. 21, 1993, Ser. No. 6,977

Int. Cl.[5] B63H *11/00*

U.S. Cl. 440—38 **17 Claims**



1. A boat with a removable inboard jet propulsion unit, the boat comprising:

A) an integral jet propulsion unit including:

1) an engine;

2) a water impeller operatively connected to, and driven by, said engine;

3) a water intake to said impeller;

4) a water outlet from said impeller providing a jet of water to drive said boat;

5) a water-tight housing enclosing said engine on the sides thereof, said housing having a lower portion connected to said water intake and said water outlet;

B) a boat having a bottom portion;

C) an aperture in said bottom portion adapted for passage therethrough of said lower portion to position said intake and outlet below said aperture;

D) wall means sealingly connected to said bottom portion at said aperture in water-tight connection therewith, and extending upward therefrom, said wall means completely enclosing and defining a compartment open at top and bottom, said wall means being sufficiently high to prevent water from entering said boat when said jet propulsion unit is absent, said compartment adapted to removably receive therein said entire water-tight housing and said engine, said water-tight housing and compartment having a closed construction to prevent fore and aft movement of said housing relative to said compartment when said housing is retained in said compartment for transmission of thrust from said propulsion unit to said hull without damage; and

E) releasable retaining means holding said water-tight housing operative position in said compartment with said water intake and water outlet below said bottom portion.

5,356,320

SEAL ARRANGEMENT FOR PROPELLER SHAFTS OF SHIPS

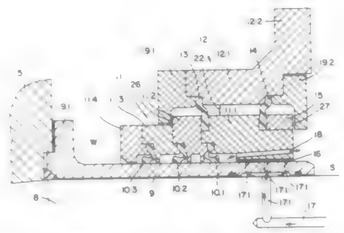
Ernst-Peter Von Bergen, Ahlefeld, and Günter Pietsch, Hamburg, both of Fed. Rep. of Germany, assignors to Blohm + Voss AG, Hamburg, Fed. Rep. of Germany

Filed Jul. 8, 1993, Ser. No. 88,872

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1992, 4222564

Int. Cl.[5] B63H *5/10*

U.S. Cl. 440—80 **7 Claims**



1. A seal arrangement for providing seals about a propeller shaft arrangement of a ship, the shaft arrangement including inner and outer propeller shafts disposed concentrically to one another and passing through the hull, said seal arrangement comprising:

first seal means for sealing between the outer propeller shaft and the hull to provide a fluid-tight seal between the outer propeller shaft and the hull; and

second seal means for being disposed between the inner and outer propeller shafts to provide a fluid tight seal between the inner and outer propeller shafts, said second seal means comprising:

a housing for being disposed about the inner shaft;

at least one sealing element for being disposed about the inner shaft and being supported on said housing, said at least one sealing element having a first edge for being disposed in sealing engagement with the inner propeller shaft and a second edge for being mounted on said housing;

support means for maintaining a position of said housing about the inner shaft, said support means for being mounted to the outer propeller shaft, said support means being disposed concentric to said housing and spaced radially therefrom to define a first clearance between said support means and said housing; and

at least one flexible member disposed between said housing and said support means to seal said first clearance between said housing and said support means, said at least one flexible member being configured for allowing radial movements between the inner shaft and the outer shaft, and said at least one flexible member having an inner edge disposed adjacent said housing, and an outer edge disposed adjacent said support means;

said housing comprises a tubular member for being disposed about the inner propeller shaft, said housing having an exterior surface disposed adjacent said support means and an interior surface for being disposed adjacent the inner propeller shaft;

said housing comprises at least one annular recess disposed about said exterior surface thereof for receiving said inner edge of said at least one flexible member therewithin;

said at least one flexible member comprises at least one flexible ring-shaped member;

said housing comprises ring means disposed about said housing adjacent said at least one annular recess to clamp said inner edge of said at least one flexible ring-shaped member to said housing;

said support means comprises a tubular member disposed concentrically about said housing, said support means having an interior surface disposed towards said housing;

said support means comprises at least one annular recess disposed about said interior surface thereof for receipt of said outer edge of said at least one flexible ring-shaped member thereinto;

said support means comprises ring means disposed about said support means adjacent said at least one annular recess to clamp said outer edge of said at least one flexible ring-shaped member to said support means;

said housing further comprises a friction bearing for being disposed in contact with the inner propeller shaft, said friction bearing being configured for eliminating radial play between said housing and the propeller shaft;

said arrangement further comprises a bearing bush for being disposed about the inner propeller shaft within said housing;

said housing has a first end for being disposed adjacent the hull of the ship, and a second end disposed opposite to said first end;

said housing comprises, adjacent said first end, a portion extending radially inwardly towards said bearing bush;

said extending portion of said housing comprising a first surface for being disposed adjacent said bearing bush;

said first surface of said extending portion comprising said friction bearing, said friction bearing being disposed in contact with said bearing bush;

said housing is for being disposed about the propeller shaft in a fixed position along an axial direction of the inner propeller shaft, and said arrangement further comprises means for retaining said housing in said fixed axial position along the inner propeller shaft, said means for retaining comprises guide means, and said guide means comprises: at least one of A, B and C:

A) at least one protrusion extending from said housing towards said support means, said at least one protrusion comprising an annular protrusion; and

at least one corresponding recess disposed in said support means for receiving said at least one protrusion therein, said at least one corresponding recess comprising channel means disposed circumferentially within said support means;

B) at least one protrusion extending from said housing towards said bearing bush, said at least one protrusion comprising an annular protrusion; and

at least one corresponding recess disposed in said bearing bush for receiving said at least one protrusion therein, said at least one corresponding recess comprising channel means disposed circumferentially about said bearing bush; and

C) at least one protrusion extending from said bearing bush towards said housing, said at least one protrusion comprising an annular protrusion; and

at least one corresponding recess disposed in said housing for receiving said at least one protrusion therein, said at least one corresponding recess comprising channel means disposed annularly within said housing;

the inner propeller shaft comprises a passage for providing lubricant to the vicinity of the second seal means, and the ship further comprises a lubricant supply source for supplying lubricant to the second seal means, and wherein:

said seal arrangement further comprises a plurality of passages for circulation of lubricating oil through said seal arrangement;

said bearing bush comprising at least one axial passage for being disposed in alignment with the at least one lubricant passage of the propeller shaft to provide lubricant from a lubricant supply source to lubricate the friction bearing, the lubricant for flowing axially along said bearing bush in both a forward direction of the inner shaft and a rearward direction of the inner shaft; and

said radially extending portion of said housing having at least one lubricant passage therethrough for returning the lubricant portion which flows in the rearward direction back in a forward direction to return the rearward flowing lubricant back to the lubricant supply source.

5,356,321

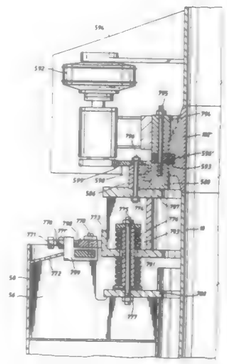
DISCONNECTABLE MOORING SYSTEM

L. Terry Boatman, Katy, and Charles O. Etheridge, Houston, both of Tex., assignors to Sofec, Inc., Houston, Tex.

Division of Ser. No. 985,129, Dec. 3, 1992, Pat. No. 5,240,446, which is a continuation-in-part of Ser. No. 767,026, Sep. 27, 1991, Pat. No. 5,316,509. This application May 13, 1993, Ser. No. 59,975

Int. Cl.[5] B63B *21/50*

U.S. Cl. 441—3 **12 Claims**



1. A detachable vessel mooring system comprising

a vessel having a vertical well which is open to the sea and in which sea water rises to a maximum height when said vessel is fully loaded,

an upper support structure mounted within said well above said maximum height,

a vertically aligned turret rotatably supported within said well by a bearing assembly placed between an upper part of said turret and said upper support structure,

spring means including metallic springs substantially vertically stationarily fixed between said bearing assembly and said upper support structure for providing resilient support to said bearing assembly substantially solely in a vertical direction,

a mooring element and a plurality of mooring lines extending between and connected to said mooring element and the sea floor, and

connection means by which said mooring element may be selectively connected to the bottom of said turret.

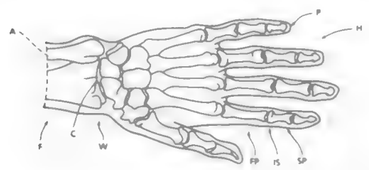
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5,356,322

WEBBED GLOVE FOR CONTROLLING MOVEMENT OF A WEARER'S HAND THROUGH A FLUID

Konstantine G. Bakalis, Brooklyn, N.Y.

Filed Oct. 13, 1993, Ser. No. 135,477
Int. Cl.[5] A63B *31/00*
U.S. Cl. 441—57 21 Claims



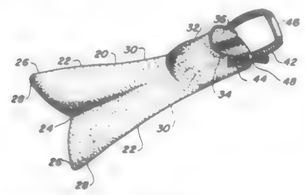
1. A webbed glove for use in controlling hand movement through a fluid comprising:
A) a main portion that includes
(1) a wrist-covering section,
(2) a body section, and
(3) a plurality of proximal phalange-covering sections;
B) webs connecting adjacent phalange-covering sections together;
C) a fluid flow hole defined through each web;
D) a plurality of fins extending on said body and on each of said phalange-covering sections, said fins being raised above the outer surface of said main portion;
E) a rib means on each web and extending adjacent to and past the flow hole in said each web for reinforcing said each web adjacent to the flow hole; and
F) closure means on said wrist-covering section for closing said wrist-covering section.

5,356,323

CLOSED SHOE SWIM FIN

Robert B. Evans, 28 Anacapa St., Santa Barbara, Calif. 93101

PCT No. PCT/US90/07539, § 371 Date May 21, 1993, § 102(e) Date May 21, 1993, PCT Pub. No. WO92/11906, PCT Pub. Date Jul. 23, 1992
PCT Filed Dec. 31, 1990, Ser. No. 64,139
Int. Cl.[5] A63B *31/08*
U.S. Cl. 441—64 8 Claims



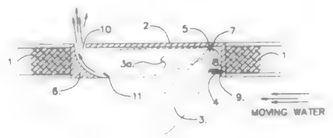
1. A closed shoe swim fin for assisting to propel a swimmer through the water comprising:
a planar trapezoid shaped flexible base having a forward portion, a rearward portion and a pair of converging sides, said forward portion further having a centrally located vee-shaped inwardly converging contour defining a pair of tips distal from the rearward portion in a symmetrical orientation with the forward portion wider than the rearward portion and the sides having an equal acute angular relationship and an inwardly merging radial contour,
an enlarged bulbous shoe like foot retainer integral with the rearward portion of said base, the retainer having a rearward opening adaptable to receive a swimmer's foot and said retainer having an inside cavity of a volumetric proportion allowing a swimmer's foot to flex therewithin, whereby muscles of said swimmer's foot inserted within said bulbous shoe like foot retainer are allowed to move said foot and to provide additional strength to assist the leg of said foot in kick and flip movements of the fin,
said tips of the base each having a movable end which are deflectable, further, said tips having a cross-sectional shape varying in thickness from the sides in a tapered manner to a parallel portion in between, and in like manner from the extreme forward portion allowing flexibility in a pre-determined manner with said rearward portion somewhat thicker than the parallel base between the sides providing sufficient structural integrity to maintain a grip in the wearers foot, and,
said tips of the base being responsive to a force urged against an upper surface thereof to flex the tips through an arcuate shaped path curling away from the forward opening of the foot retainer creating a build-up of water pressure within a flexed lower surface, also being responsive to a reaction force produced by the thicker cross-section of the rearward portion when the force being urged against is discontinued immediately deflecting the tips causing a snapping action wherein the tips abruptly reverse direction with the combination of flexing and snapping producing a propelling force, as water is channeled through the inwardly diverging contour over and under the tapered edges of the flexible base.

5,356,324

RETRACTABLE, AND ADJUSTABLE FIN BOX MECHANISM

Eugene F. Cunningham, 480 S. Joanne Ave., Ventura, Calif. 93003

Filed Sep. 13, 1993, Ser. No. 122,048
Int. Cl.[5] B63B *35/00*
U.S. Cl. 441—079 4 Claims



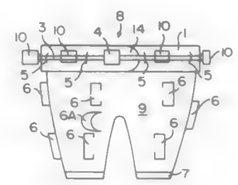
1. A fin assembly for use on a sail, surf, or knee board comprising:
a fin box member sized and shaped to fit completely within the board;
a fin member sized and shaped to fit either completely within the box member or partially within the fin box member as desired when in a retracted position, and to extend below the box when in an exposed position;
a fin support mechanism, mounted completely within the fin box member, including support means for supporting the fin member in the fin box member and retracting means for retracting the fin member from an exposed position to a retracted position;
a holding latch mechanism, mounted completely within the fin box member, including locking means for locking the fin member in a retracted position;
a faring shaped wedge member, housed completely within the fin box member and directly aft of the fin member when the fin member is in a retracted position, for collecting water from beneath the board while it is moving and discharging such water out the top rear of the board.

5,356,325

WATER FITNESS, THERAPY, SPORT, AND LIFE-PRESERVER FLOTATION SHORTPANT

Brian J. Awbrey, 151 Merrimac St. #202, and Kipp K. Dye, 151 Merrimac St. #203, both of Boston, Mass. 02114

Filed Nov. 17, 1993, Ser. No. 152,539
Int. Cl.[5] A63B *23/00*
U.S. Cl. 441—120 6 Claims



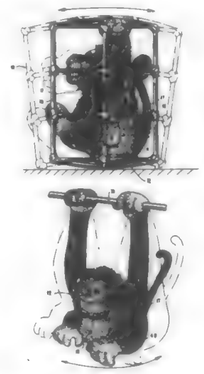
1. A water fitness flotation shortpant for use by a human comprising:
(a) a shortpant extending from and surrounding the waist to the midthigh of each leg of the user,
(b) means for attaching flotation material to the waist of the shortpant, said attachment arranged and constructed to provide buoyant force about at the human anatomical center of buoyancy, by placing said flotation material unequally from the anterior to the posterior of the shortpant, such that the anterior portion is about twice as large as the posterior portion forming a front to back ratio of flotation material of two to one.

5,356,326

SHAKING TOY

Charles Ting, Taipei, Taiwan, assignor to T. L. Products' Promoting Co., Ltd. A Corporation of Taiwan, Taipei, Taiwan

Filed May 28, 1992, Ser. No. 890,611
Int. Cl.[5] A63H *11/02, 3/28*
U.S. Cl. 446—175 12 Claims



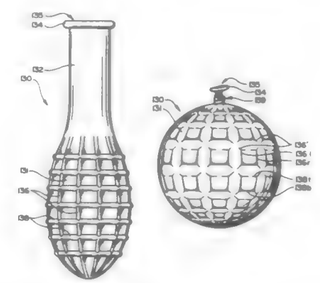
1. A toy comprising:
a support member comprising a cage-like structure having a non-planar bottom surface;
a figurine dispose within said cage-like structure, said figurine having at least one flexible extremity incorporating means for securing said flexible extremity to said structure;
a vibrating mechanism incorporated in said figurine for vibrating said figurine; and
means for activating and deactivating said vibrating mechanism, said figurine vibrating when said vibrating mechanism is activated and, via said at least one flexible extremity, rocking said cage on said non-planar bottom surface, said at least one flexible extremity further effecting relative movement between said figurine and said structure.

5,356,327

WATER GRENADE BALLOON

H. Ross Gill, III, 1074 Orange Township Rd. 713, Ashland, Ohio 44805

Filed May 21, 1993, Ser. No. 65,835
Int. Cl.[5] A63H *27/10*
U.S. Cl. 446—220 1 Claim



1. A balloon comprising:
a) an inflatable latex sidewall terminating at one end in an integral neck having an integral rolled latex ring at its distal end surrounding said neck and defining an inflation aperture;
b) said latex sidewall, when in the uninflated state, being characterized by:
(i) a plurality of thin, outwardly projecting, longitudinal ribs; and,
(ii) a plurality of thin, outwardly projecting, latitudinal ribs intersecting said longitudinal ribs; and,
c) said latex sidewall, when in the inflated state, being characterized by a smooth, uninterrupted, rounded surface devoid of outwardly projecting ribs and having a plurality of darkened lines formed thereon, said lines defining a plurality of discrete spaced boxes each having:
(i) relatively thick and prominent bottom edges;
(ii) left and right side edges which are relatively thick and prominent at their lower ends and which gradually decrease in prominence and thickness at their upper ends forming relatively fine lines;
(iii) a top edge comprising a relatively thin fine line; and,
(iv) a fine line extending diagonally from each corner of each box toward diagonally adjacent ones of said spaced discrete boxes.

5,356,328

MULTI-PURPOSE YO-YO STRUCTURE

Chen-Lung Ho, Suite 1, 11F, 95-8 Chung Ping Road, Sec. 1, Taichung, Taiwan

Filed Nov. 24, 1992, Ser. No. 981,130
Int. Cl.[5] A63H *1/24*
U.S. Cl. 446—242 1 Claim

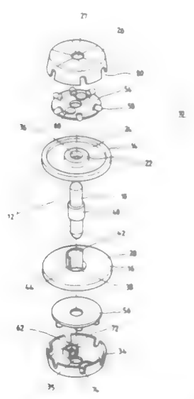
1. A multi-purpose yo-yo structure comprising:
a body having two identical disk members, each having an inner surface and an out surface with central hole running there through, said disk members being mounted on a mandrel in such a way to define a gap between the inner surfaces thereof which face each other;
a string which is windable around an axle defined within said gap between said disk members;

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two dome-like cover members respectively mounted on the outer surfaces of said disk members;

a lighting means which is disposed within spaces defined in said cover members, said lighting means comprising a plurality of light sources disposed within each said cover members and are controlled by a circuit formed within each cover members;

a switch means which is disposed within said spaces defined



by said cover members to actuate said lighting means with power supplied from power sources; said switch means being electrically connected to said circuit and said power sources to control the actuation of said light sources; and

each said circuit being formed on a circuit board disposed within the respective cover members and wherein said light sources are disposed along a periphery of said circuit board and are partially received within corresponding openings formed on the respective cover members.

5,356,329

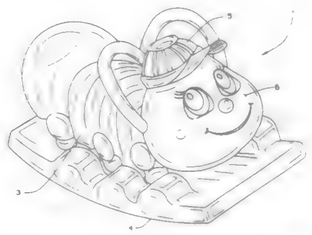
LIGHT DISPLAY DRIVE FOR A ROCKING TOY

Ernest L. Thornell, Gasconade County, Mo., assignor to Handi-Pac, Inc., Hermann, Mo.

Filed Apr. 15, 1993, Ser. No. 46,302

Int. Cl.[5] **A63H** *33/00, 13/18, 33/26*

U.S. Cl. 446—485 **18 Claims**



1. A ridable toy adapted to be rocked by a child, the toy having a body on which the child may sit to rock the toy, a translucent portion, a centrifugally operated light display visible through said translucent portion, and a drive for operating said light display in response to the rocking of said toy, said drive including free wheeling means for continuously rotating said light display in a single direction while said toy is rocked;

said drive including a drive gear and a fly wheel operatively connected to said drive gear to be rotated thereby, said light display being mounted on said fly wheel, said fly wheel and light display including intermeshing gears which cause said light display to rotate when said fly wheel is rotated; said free wheeling means including meshing means for engaging and disengaging said drive gear from said fly wheel in response to the rocking of said toy.

5,356,330

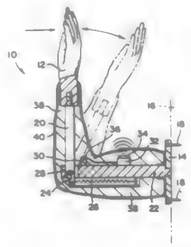
APPARATUS FOR SIMULATING A "HIGH FIVE"

Albert Cohen, 176 N. Lake Ave., Troy, N.Y. 12180

Filed Dec. 7, 1993, Ser. No. 163,856

Int. Cl.[5] **A63H** *33/00, 3/36*

U.S. Cl. 446—491 **12 Claims**



1. An apparatus for simulating a "high five" comprising:

a first, movable arm portion for simulating a forearm, said first arm portion having a simulated hand secured thereto;

a second, immovable arm portion for simulating an upper arm;

a mounting arrangement for mounting said second arm portion to a supporting surface;

a pivot member for pivotally securing said first arm portion to said second arm portion, wherein said first arm portion is adapted to be pivotally displaced about said pivot member along a single plane when struck by a user, with said second, immovable arm portion remaining stationary;

a stop arrangement for limiting the pivotable displacement of said first arm portion along said single plane; and

a biasing element, formed independently of said stop arrangement, for biasing said first arm portion towards and against said stop arrangement and for maintaining said first and second arm portions in a predetermined alignment;

wherein said first arm portion is adapted to be dislodged from against said stop arrangement, and pivotally displaced about said pivot member along said single plane, when said simulated hand is struck by a user, said biasing element subsequently biasing said first arm portion towards and against said stop arrangement, thereby reestablishing said predetermined alignment.

5,356,331

METHOD OF PREPARING AN END CLOSURE FOR SHIRRED CASING

Florentino Madrigal-Oceguera, Zacapu Michoacán, Mexico, assignor to Celanese Mexicana, Del A. Obregon, Mexico

Filed Sep. 22, 1993, Ser. No. 125,095

Int. Cl.[5] **A22C** *13/00*

U.S. Cl. 452—32 **21 Claims**

1. An end closure for a shirred tubular casing, prepared by a method comprising the steps of:

a. positioning a shirred, tubular casing having a hollow, axial interior, a shirred end and an unshirred end inside a casing guide for securing the shirred end against rotating or shifting about its longitudinal axis, wherein the unshirred end extends outside the casing guide at a shirred-unshirred interface;

b. axially sliding compacting means from the shirred end through the interior of the tubular casing proximal to the shirred-unshirred interface;

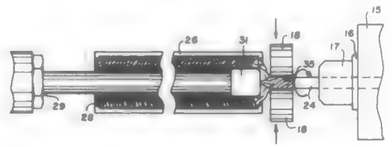
c. axially sliding guiding means having butting means attached thereto from the unshirred end through the interior of the tubular casing proximal to the shirred-unshirred interface, wherein the compacting means and guiding means axially contact proximal to the shirred-unshirred interface;

d. engaging a sealing means with the unshirred end, wherein the unshirred end intimately contacts the guiding means;

e. axially rotating the guiding means in contact with the unshirred end, wherein the unshirred end adheres to the guiding means and rotates therewith causing the unshirred end to wrap around the guiding means to produce a wrapped unshirred end, and wherein a portion of the shirred end may be unshirred and taken up in the wrapped unshirred end;

f. disengaging the sealing means from the wrapped unshirred end;

g. axially sliding the compacting means and guiding means



having the wrapped unshirred end attached therearound through the casing to the shirred end, wherein a portion of the shirred end at the shirred-unshirred interface is unshirred and drawn through the casing to the shirred end;

h. axially sliding the butting means into engaging contact with the shirred-unshirred interface to prevent axial shifting of the casing at the interface;

i. axially sliding the compacting means and guiding means through the casing to the butting means, wherein the guiding means are disengaged from the compacting means proximal to the shirred-unshirred interface and are withdrawn from the casing, and wherein the wrapped unshirred end is compacted by the compacting means against the butting means; and

j. axially withdrawing the compacting means from the casing, disengaging the butting means, and removing the securing means from the casing,

wherein the end closure exhibits a partially twisted, compacted, cylindrical element having an axial opening in the cross section for releasing gases which axial opening conforms to the shape of the cross section of the guiding means.

5,356,332

COIN MECHANISM

Trevor Thompson, and Bernard J. Campbell, both of Hampshire, United Kingdom, assignors to Mars Incorporated, McLean, Va.

PCT No. PCT/GB91/01206, § 371 Date Jan. 29, 1993, § 102(e) Date Jan. 29, 1993, PCT Pub. No. WO92/02906, PCT Pub. Date Feb. 20, 1992

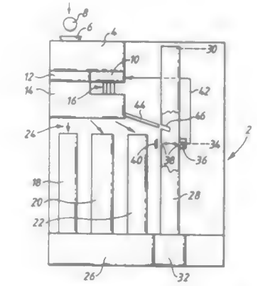
PCT Filed Jul. 18, 1991, Ser. No. 972,449

Claims priority, application United Kingdom, Aug. 1, 1990, 9016861.8

Int. Cl.[5] **G07D** *3/14, 9/06*

U.S. Cl. 453—3 **12 Claims**

11. A method of providing a coin mechanism, which includes coin testing means, with coins of a particular denomination for being dispensed from the mechanism, comprising adding to the mechanism a substantially upright coin store pre-loaded to a predetermined level with such coins, accepting further coins of said denomination into the mechanism through said coin testing means, dispensing coins from said coin store, and when its contents are below a lower level, directing into



the coin store at said lower level accepted coins of said denomination.

5,356,333

COIN STORAGE DEVICE

Richard G. Bointon, Caversham, and John J. Comfort, Basingstoke, both of United Kingdom, assignors to Mars, Inc., McLean, Va.

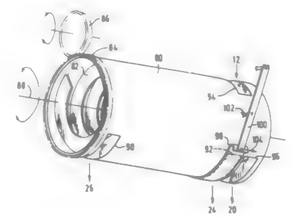
PCT No. PCT/GB90/01526, § 371 Date Jul. 15, 1992, § 102(e) Date Jul. 15, 1992, PCT Pub. No. WO91/06073, PCT Pub. Date May 2, 1991

PCT Filed Oct. 4, 1990, Ser. No. 847,015

Claims priority, application United Kingdom, Oct. 12, 1989, 8923006.4

Int. Cl.[5] **G07D** *1/00*

U.S. Cl. 453—40 **22 Claims**



1. A coin handling apparatus comprising a coin store having first and second exit points wherein a group of coins of different denominations can be reciprocated with respect to the first and second exit points, a cash retention means, means located in relation to

the first and second exit points for conveying coins exiting therefrom to the cash retention means, whereby at each exit point a coin of any of said denominations can be taken away from the group and delivered to the cash retention means, and control means controlling the sequence in which coins are delivered to the cash retention means by selectively moving the coin group in one direction to dispense a coin from the first exit point, and the opposite direction to dispense a coin from the second exit point.

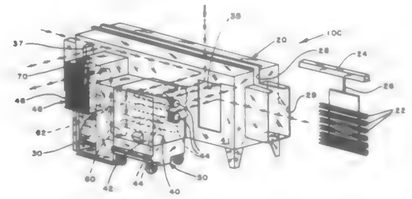
VOL 1167 ISS 3 OC 18 1994 UMI

5,356,334

APPARATUS AND METHOD FOR AIRBORNE PARTICULATE BOOTH

R. David Gray, Plano, Tex., assignor to Binks Manufacturing Company, Franklin Park, Ill.

Filed Oct. 1, 1992, Ser. No. 955,390
Int. Cl.[5] B05B *15/12*
U.S. Cl. 454—51 6 Claims



1. A particulate booth having generated airborne particulate matter therein, comprising a work chamber wherein the airborne particulate matter is generated, blower means for moving air through the work chamber, means for determining the velocity of the air moving through the work chamber, means for controlling the blower means for moving the air through the work chamber to provide a constant velocity of air in the work chamber, said means for determining the velocity of the air moving through the work chamber including sail means movable by the moving air and sensor means for detecting the movement of said sail means, at leat one particulate filter located downstream of said work chamber, said means for determining the velocity of air being located and measuring the velocity of the air after it is discharged from said at least one particulate filter, said sensor means generating a signal for regulating said blower means for moving the air, said sensor means including a linear proximity detector for detecting the motion of said sail means, said means for controlling the blower means for moving the air through the work chamber including standard means for comparing with said signal from said sensor means, and said means for controlling the blower means for moving air maintaining said blower means at the lowest rotating speed to maintain the desired constant air flow velocity in said work chamber to compensate for any diminishment of air to flow through said particulate filter due to clogging, and said means for determining the velocity of air being located at and detecting the velocity of the air discharged from said work chamber without being subject to contamination of particulate matter in the work chamber, whereby a constant velocity air flow can be provided in the work chamber.

5,356,335

PRESSURE GRADIENT CONTROL SYSTEM

Yoshiaki Matsui, Nara, and Mutsumi Moriwaki, Osaka, both of Japan, assignors to Taikisha, Ltd., Tokyo, Japan

Filed Jun. 29, 1992, Ser. No. 905,894
Claims priority, application Japan, Jul. 5, 1991, 3-164760
Int. Cl.[5] E05B *15/12*
U.S. Cl. 454—52 7 Claims

1. A pressure gradient control system comprising:

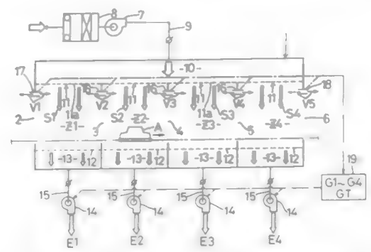
a ventilated area divided into a plurality of intercommunicating zones;

zone-to-zone pressure gradient detecting means for detecting pressure gradients between adjacent pairs of said zones;

control means for adjusting quantities of air supply or exhaust to/from said zones based on detection information received from said zone-to-zone pressure gradient detecting means to establish a predetermined pressure gradient between adjacent pairs of said zones; and

interior-ambient pressure gradient detecting means for detecting pressure gradients between an ambient area and those of said zones communicating with the ambient area;

wherein said control means is operable, in response to detection information received from said zone-to-zone pressure gradient detecting means and said interior-ambient pressure gradient detecting means, to adjust quantities of air supply or exhaust to/from said zones, thereby to establish the predetermined pressure gradient between adjacent pairs of said zones and between the ambient area and those of said zones communicating with the ambient area.

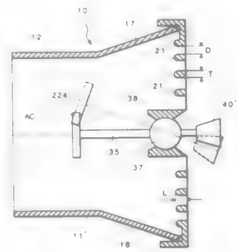


5,356,336

NOZZLE FOR DISCHARGING AIR AND METHOD

Ronald D. Stouffer, Silver Spring; Ernest W. Chesnutis, Jr., and Milan Kuklik, both of Columbia, all of Md., assignors to Bowles Fluidics Corporation, Columbia, Md.

Continuation-in-part of Ser. No. 853,236, Mar. 17, 1992, abandoned, and a continuation-in-part of Ser. No. 3,702, Jan. 13, 1993, Pat. No. 5,297,989. This application Jul. 8, 1993, Ser. No. [illegible]
Int. Cl.[5] B60H *1/34*
U.S. Cl. 454—155 21 Claims



1. In a nozzle for discharging air to ambient and having an axial center and upstream and downstream ends, upstream end means for directing air in different directions relative to said axial center and a grill at the downstream end of said nozzle, the improvements comprising, said upstream end means including an intruder disc member and a downstream extending control shaft for positioning said disc member and a ball joint in said grill mounting said proximate the center thereof, said grill being comprised of a monolayer of polygonal cells in an array of cells bounded by planar walls having a depth L, interstitial thickness T, and said cells having a major diameter D, and wherein:

L is short enough such that said planar walls do not significantly affect directionality of the air as imparted by said upstream means for directing, and

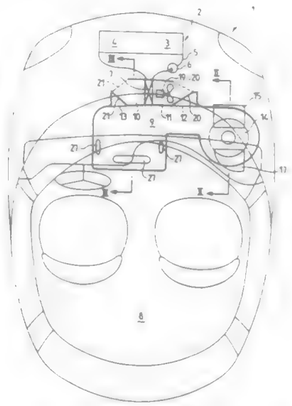
T has a value such that the impedance to air flow is very low, the length L to diameter D ratio (L/D) is no greater than about 0.7 and no less than about 0.3, such that the degree of opacity of said grill is relatively high.

5,356,337

VENTILATING AND TRACTION MOTOR COOLING APPARATUS FOR AN ELECTRIC VEHICLE

Jean Dauvergne, Fosses, France, assignor to Valeo Thermique Habitacle, Le Mesnil Saint-Denis, France

Filed Sep. 30, 1993, Ser. No. 130,103
Claims priority, application France, Oct. 2, 1992, 92 11681
Int. Cl.[5] B60H *1/24*
U.S. Cl. 454—156 5 Claims



1. An electrically propelled vehicle having a traction motor, a cabin, and apparatus associated with the traction motor and the cabin, for cooling the traction motor and for at least one function associated with the cabins elected from heating, ventilating and air conditioning, the apparatus comprising: a cooling radiator associated with the traction motor for cooling the traction motor and with the cabin for heating the cabin; duct means associated with the cooling radiator and cabin for flow of air through the duct means; a main blower in the duct means for drawing air selectively from the cabin and from outside the vehicle and for producing a flow of ventilating air; and air inlet regulating means for varying between 0 and 100% a first ratio between the flow of air drawn from outside the vehicle and the total air flow produced by the main blower, the apparatus further including a heat source and mixing means for varying from 0 to 100% a second ratio between the fraction of the air flow drawn from contact with the heat source and the air flow delivered into the cabin, wherein:

(a) the air inlet regulating means is arranged in the duct means upstream of the main blower,

(b) the heat source is the cooling radiator, and

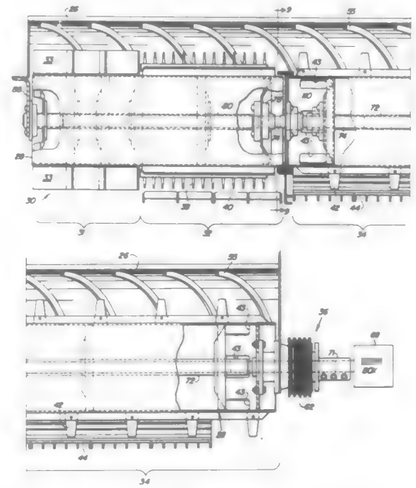
(c) the duct means comprise: a main branch; a secondary branch branched from the main branch and arranged in series with the main blower; a secondary blower arranged int he secondary branch; means defining an air inlet port upstream of the cooling radiator and the auxiliary blower; and means defining an air outlet port arranged downstream of the cooling radiator and the auxiliary blower, the secondary branch being connected through the air inlet and outlet ports with the environment outside the cabin, the mixing means comprising an upstream mixing member and a downstream mixing member, each mixing member being arranged to be displaced between a first position and a second position such that in the first position the corresponding junction between the branches is obturated thereby, and the second position being such that the mixing member concerned obturates a port of the secondary branch selected from its inlet and outlet ports.

5,356,338

AXIAL ROTOR HAVING AN INDEPENDENTLY DRIVEN THRESHING SECTION AND SEPARATING SECTION

Klaus A. Braunhardt, Bettendorf, Iowa; Mark F. Stickler, Silvis, Ill.; Raymond M. Andes, Jr., Bettendorf, Iowa, and Merle R. Gerber, Moline, Ill., assignors to Deere & Company, Moline, Ill.

Filed Apr. 26, 1993, Ser. No. 53,125
Int. Cl.[5] A01F *12/26*
U.S. Cl. 460—69 6 Claims



1. An axial flow combine for harvesting, threshing and separating crop material comprising:

a supporting structure;

ground engaging means extending from the supporting structure for transporting the supporting structure around a field;

a cylindrical rotor housing located inside the supporting structure, the rotor housing is provided with a forward portion having an inlet for receiving crop material, a rear portion having an outlet for unused crop material, a bottom portion having an open grate, and a top portion having inwardly projecting helical vanes for indexing crop material from the inlet of the forward portion to the outlet of the rear portion, the housing is also provided with a central housing longitudinal axis extending through the housing;

a rotor located in the rotor housing having a central rotor longitudinal axis located below the central housing longitudinal axis, the rotor is provided with crop engaging assemblies extending outward from the rotor for engaging crop material passing through the rotor, the rotor having a threshing section and a separating section;

means for driving the threshing and separating sections of the rotor independently of one another; and

a midpoint support bearing assembly located between the threshing and separating sections for supporting the rotor, the midpoint bearing assembly is mounted to the supporting structure of the combine.

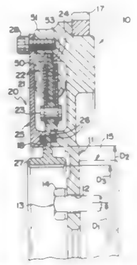
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5,356,339

TORSION DAMPING DEVICE WITH PERIPHERAL RESILIENT MEANS ARRANGED IN A SEALED HOUSING, PARTICULARLY FOR AUTOMOTIVE VEHICLES

Jean-Claude Bochot, Claye Souilly, and Pierre Casse, Ermont, both of France, assignors to Valeo, Paris, France

Continuation of Ser. No. 535,506, Jun. 11, 1990, abandoned. This application Sep. 28, 1992, Ser. No. 952,214
Claims priority, application France, Jun. 12, 1989, 89 07736
Int. Cl.[5] F16F *15/12*
U.S. Cl. 464—24 10 Claims



1. A torsion damping device comprising a support wheel defining a pitch circle and having first fastening means arranged around said pitch circle whereby the support wheel can be secured on a first shaft, a damper plate having means for securing the damper plate to a second shaft for rotation therewith, and peripheral resilient means operatively disposed between the support wheel and damper plate, wherein a plurality of components define a sealed annular housing for containing a lubricating fluid, the device further including second fastening means for securing together said components defining said housing, and a torsion damper which includes said peripheral resilient means and said damper plate and which is enclosed within said housing, the radially innermost periphery of said damper plate having a diameter greater than that of said pitch circle of the first fastening means, with the damper plate projecting radially and sealingly from said housing in which the damper plate is located axially and able to slide circumferentially, the second fastening means being separate from the first fastening means, and the device further comprising means for urging said torsion damper into rotation and carried by one of said components of the housing, the torsion damper including two guide rings and means securing said guide rings for rotation with the damper plate, the device further including a drive plate disposed between said guide rings, the peripheral resilient means being disposed operatively between said guide rings and the drive plate, with two of said components of said housing gripping said drive plate between them so as to couple the drive plate to the support wheel for rotation therewith, said second fastening means are located radially outside an outermost periphery of said drive plate.

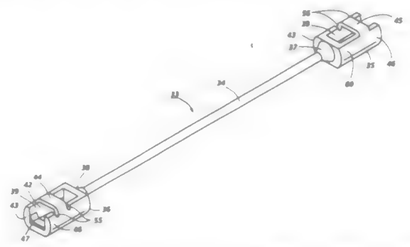
5,356,340

ONE PIECE INTEGRAL FLEXIBLE DRIVE SHAFT

Gregory P. Miller, Rochester; Mark S. Gibson, Sodus Center, and Gerald M. DeVito, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 753,243, Aug. 30, 1991, abandoned. This application Feb. 24, 1993, Ser. No. 21,934
Int. Cl.[5] F16D *3/52*
U.S. Cl. 464—87 12 Claims

1. A one piece molded flexible drive shaft assembly of a hardened moldable material comprising an elongated flexible drive shaft core having a shaft drive input end, a shaft drive output end and integrally molded therewith at each end a coupling member of a hardened moldable material to connect said input end and output end to a drive input and a drive output respectively, and wherein each of said coupling members includes means to rotatably securely connect it to one of said drive input and drive output comprising an integrally molded noncircular shaft connecting member having an axis parallel to said drive shaft core and having an elongated channel therein with an axis parallel to said drive shaft core and an



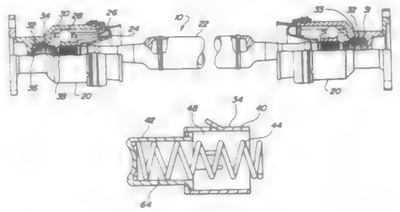
elongated opening in said connecting member oriented parallel to the axis of said connecting member and extending substantially along the length of said connecting member, said opening defining two opposed sides parallel to said axis and an integrally molded biasing member extending across said opening perpendicular to the axis of said connecting member connecting said two opposed sides of said connecting member.

5,356,341

ENCAPSULATED SPRING FOR A MECHANICAL JOINT

Frederick J. Uchman, Clarkston; Theodore H. Collins, Rochester Hills, and Mark Van Ophem, Romeo, all of Mich., assignors to GKN Automotive, Inc., Auburn Hills, Mich.

Continuation of Ser. No. 736,060, Jul. 25, 1991, abandoned. This application Jun. 22, 1993, Ser. No. 81,068
Int. Cl.[5] F16D *3/16*
U.S. Cl. 464—146 4 Claims



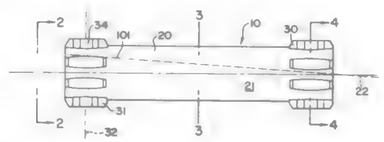
1. A universal joint member for use in a propeller shaft, said universal joint comprising:
- an outer race having an open end, a second end, and a first inner wall defining a cavity beginning at said open end and longitudinally extending towards said second end, said outer race further having a second inner wall defining a cylindrical pocket at said second end;
- a first cylindrical housing defining a first cylindrical cavity, said first housing having a first end, a second end and a first radially inwardly extending homogenous flange at said first end, said second end of said first housing defining a circular opening in communication with said first cavity;
- at least one retaining tab angularly extending from said first cylindrical housing, said retaining tab interacting with said second inner wall to retain said first housing within said cylindrical packet;
- a second cylindrical housing having an outside wall defining an outside diameter smaller than said circular opening in said first housing, said second housing insertable through said circular opening in said first housing and located in said first cavity of said first housing, said second housing defining a second cavity and having a first end, a second end, a second homogenous flange extending radially outward from said outside wall at said first end of said second housing, and a third homogenous flange extending radially inwardly from said outside wall at said second end of said second housing, said second homogenous flange having an outside diameter smaller than said circular opening in said first housing; and
- biasing means for biasing said first housing with respect to said second housing such that said radially inwardly extending first flange of said first housing mates with said radially outwardly extending second flange of said second housing, said biasing means located in said first and second cavities of said first and second cylindrical housings, said first and second cylindrical housings resisting radial movement of said biasing means due to the centrifugal force being exerted on said biasing means due to the high speed rotation of said outer race member.

5,356,342

TEETH FOR A WOBBLESTICK

Harvey C. White, Nashville, Tenn., assignor to White Hydraulics, Inc., Hopkinsville, Ky.

Continuation-in-part of Ser. No. 453,355, Dec. 18, 1989, abandoned, which is a continuation of Ser. No. 118,017, Nov. 6, 1987, abandoned. This application Aug. 13, 1990, Ser. No. 565,731
Int. Cl.[5] F16D *3/18*
U.S. Cl. 464—156 12 Claims



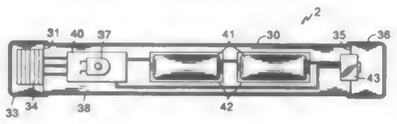
1. An improvement for a wobblestick having a body with a diameter and teeth with a minor diameter, the improvement of the minor diameter of the teeth being equal to the diameter of the body.

5,356,343

FLASH MAGIC WAND

Christopher J. Lovetere, 786 Summer St., Brockton, Mass. 02402

Filed Jul. 29, 1992, Ser. No. 922,070
Int. Cl.[5] A63H *33/26*
U.S. Cl. 472—57 10 Claims



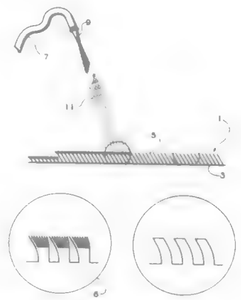
1. A flash magic wand, comprising:
- a generally elongated, hollow, cylindrical shaped body, having two ends, one of which is designated the light end and the other of which is designated the switch end, said light end terminating in an end cap, and said switch end terminating in an end cap;
- a strobe light positioned within said light end and concealed by said end cap;
- a power source contained within said wand body;
- a flash circuit electrically connected to said strobe light and positioned within the wand body near to the light end, said flash circuit being electrically connected to said power source;
- a power switch interconnecting said flash circuit with said power source; and
- a trigger switch electrically interconnecting said flash circuit and said strobe light for causing activation of said strobe light from said flash circuit.

5,356,344

SYNTHETIC TURF, METHOD OF MAKING THEREOF, BORDER STRIP FOR SMALL SIZE GOLF AND UNDERSTRUCTURE FOR ARTIFICIAL LARGE SIZE GOLF

Alain Lemieux, Longueuil, Canada, assignor to Top Golf, Inc., Boucherville, Canada

Filed May 24, 1991, Ser. No. 705,508
Int. Cl.[5] A63B *71/02*
U.S. Cl. 472—92 5 Claims



1. A synthetic turf comprising:
- a base made of fabric material;
- a plurality of grass-like blades made of a material selected from the group consisting of polypropylene, nylon and polyester projecting upwardly from said base, each of said blades having a lower portion, a middle portion, and a frayed upper portion;
- said frayed upper portion comprising a tuft of strand elements integral with the corresponding lower and middle portions;
- a layer of adhesive material for attaching said lower ends of said blades to said base, each of said blades having a length in the range of ⅜" to 2" and a weight in the range of 28 to 60 ounces per square foot;
- said frayed upper portions of said grass-like blades being entangled and crimped to completely hide said base and provide a dense and uniform playing surface.

5,356,345

CHALK HOLDING DEVICE FOR A POOL CUE

Robert E. Peuplie, and Robert E. Peuplie, II, both of 306 N. 4th St., Perkasie, Pa. 18944

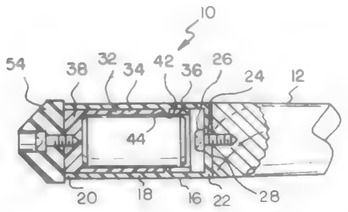
Filed Dec. 20, 1993, Ser. No. 169,405
Int. Cl.[5] A63D *15/16*
U.S. Cl. 473—36 6 Claims

1. A chalk holder for coupling to a pool cue comprising, in combination;
- a first holder component having cylindrical side walls, an open rearward end and a closed forward end, the forward end having a central hole with a screw for mounting to the rear end of a pool cue;
- a second holder component having cylindrical side walls, an open forward end and a closed rearward end, the diameter

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of the side walls of the second holder component being less than the diameter of the cylindrical side walls of the first holder component to allow its reciprocal movement therewithin for thereby defining a cylindrical volume between the cylindrical walls of the second holder component, the closed forward end of the first holder component and the closed rearward end of the second holder component;

coupling elements to releasable join the first holder component and second holder component, such elements including a pair diametrically opposed, interiorally directed,



radial pins secured to the cylindrical side walls of the first holder component and cooperable slots formed axially into the second holder component extending from the forward open end and terminating in circumferential slots whereby rotation and axle movement between the first and second holder components will couple and separate the first and second holder component;

a cylindrical piece of chalk located within the cylindrical volume for use by a player; and

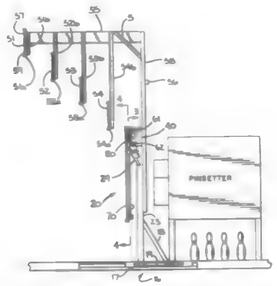
a bumper having a central aperture and a screw for coupling the bumper with the rearward end of the second holder component.

5,356,346

PINSETTER MASKING UNIT

Michael J. Katje, Spring Lake; William C. Murphy, Fremont, and Michael F. Stirling, Spring Lake, all of Mich., assignors to Brunswick Bowling & Billiards Corporation, Muskegon, Mich.

Filed Jan. 11, 1993, Ser. No. 2,913
Int. Cl.[5] A63D *5/04*
U.S. Cl. 473—54 **19 Claims**



1. A device for hiding bowling pinsetters on bowling lanes from the view of the bowlers, comprising:

an opaque masking panel,

means for supporting said panel above and across a plurality of bowling lanes in a plurality of vertical positions, comprising

two vertical stanchions positioned one adjacent each end of the masking panel,

a linear track member mounted on the back and adjacent to each end of the masking panel,

a plurality of wheeled carriage members positioned upon each vertical stanchion and engaged for linear motion upon one of said tracks and means for retaining said carriage members in engagement with said tracks,

means for attaching the plurality of carriage members to each of said vertical stanchions,

means apart from the track and carriage members for synchronizing the vertical movement of the opposite ends of the masking panel, comprising:

a plurality of sprocket wheels,

means for rotatingly attaching a sprocket wheel to each of said vertical stanchions,

chain means positioned adjacent to and parallel to each of said tracks for positively engaging the sprocket wheels, and

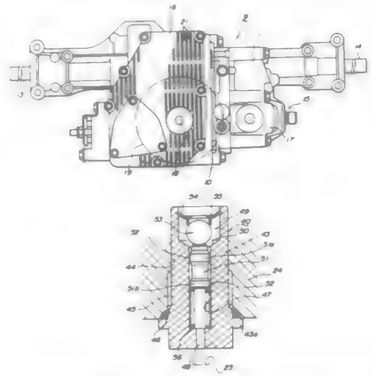
means for interconnecting said sprocket wheels so that they rotate in unison, so that the chain means and the ends of the masking panel more vertically in unison as the connected sprocket wheels rotate.

5,356,347

HYDROSTATIC CONTINUOUSLY VARIABLE TRANSMISSION

Norio Komura; Hiroshige Makita, both of Tokyo; Tomoaki Ishikawa, Saitama, and Taro Miyakawa, Tokyo, all of Japan, assignors to Honda Giken Kokyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1992, Ser. No. 987,752
Claims priority, application Japan, Oct. 23, 1992, 4-309680
Int. Cl.[5] F16H *59/00*
U.S. Cl. 474—28 **47 Claims**



1. A hydrostatic continuously variable transmission comprising:

a hydraulic pump actuatable by a power source for generating an oil pressure;

a hydraulic motor drivable by the oil pressure generated by said hydraulic pump;

oil passage means for supplying oil from said hydraulic pump to said hydraulic motor; and

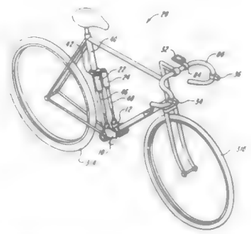
pressure-responsive valve means connected to said oil passage means for draining the oil from said oil passage means to an oil tank in response to a first oil pressure, lower than a predetermined pressure level, which is generated by said hydraulic pump and applied through said oil passage means, said pressure-responsive valve means being closable in response to a second oil pressure in said oil passage means, higher than said predetermined pressure level, which is generated by said hydraulic pump and applied through said oil passage means.

5,356,348

ELECTRONIC TRANSMISSION CONTROL SYSTEM FOR A BICYCLE OR THE LIKE

Stephen Bellio, West Roxbury, and Gerald P. Eidelman, Jamaica Plain, both of Mass., assignors to E.B.T., Inc., Brookline, Mass.

Continuation-in-part of Ser. No. 520,627, May 8, 1990, Pat. No. 5,059,158. This application Nov. 6, 1992, Ser. No. 946,379
Int. Cl.[5] F16H *61/00*
U.S. Cl. 474—70 **19 Claims**



1. A bicycle transmission control system, comprising:

generating means responsive to a rider for generating torque;

transmitting means for transmitting torque from the generating means to at least one wheel of the bicycle;

determining means including control means comprising digital data processing means for determining a cadence of the generating means in response to a calculated gear ratio and sensed bicycle speed;

means for indicating if the cadence determined by the determining means is outside a predetermined range for the calculated gear ratio and sensed bicycle speed;

means for adjusting the transmitting means if the cadence determined by the determining means is outside the predetermined range for the calculated gear ratio and sensed bicycle speed; and

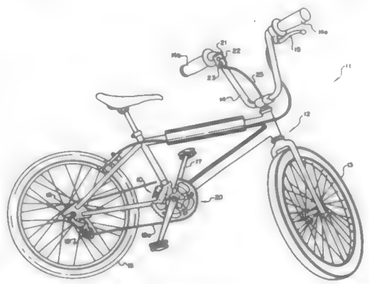
overtravel means responsive to the control means for controlling the adjusting means.

5,356,349

HIGH-EFFICIENCY, HIGH-SPEED CONTROL UNIT FOR CHAIN SHIFTER

David L. Browning, Bainbridge Island, Wash., assignor to Browning Automatic Transmissions, Bainbridge Island, Wash.

Filed Oct. 8, 1993, Ser. No. 134,077
Int. Cl.[5] F16H *59/00*
U.S. Cl. 474—78 **10 Claims**



1. In a control unit for a chain shifter of the type having a cam that is rotatable in opposite directions from a neutral position to respective up-shift and down-shift positions, means for resiliently biasing said cam toward said up-shift and down-shift positions, and a latch mechanism having first and second latch members for holding said cam in said neutral position but selectively releasing said cam to allow said cam to rotate to said up-shift position when said first latch member is actuated in one direction and to allow said cam to rotate to said down-shift position when said second latch member is actuated in a direction opposite the actuation of said first latch member, a system for selectively actuating said first and second latch members using relatively little power, comprising:

a shift selector generating an up-shift signal to shift said chain shifter up and a down-shift signal to shift said chain shifter down;

a rotary actuator coupled to said shift selector, said rotary actuator rotating in one direction responsive to receipt of said up-shift signal from said shift selector and in an opposite direction responsive to receipt of said down-shift signal from said shift selector; and

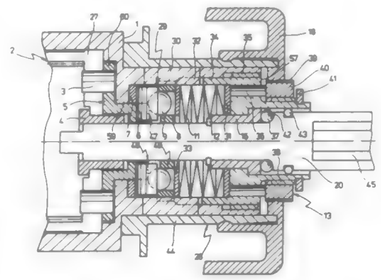
a hammer member coupled to said rotary actuator, said hammer member freely rotating with said rotary actuator before striking one of said latch members, said hammer member striking said first latch member to allow said cam to rotate to said up-shift position when said rotary actuator rotates in response to said up-shift signal, said hammer member striking said second latch member to allow said cam to rotate to said down-shift position when said rotary actuator rotates in response to said down-shift signal.

5,356,350

MOTOR-DRIVEN SCREWDRIVER WITH VARIABLE TORQUE SETTING FOR EQUAL TORQUES REGARDLESS OR COUNTERTORQUES BY FASTENERS

Wolfgang Schreiber, Stuttgart, Fed. Rep. of Germany, assignor to C. & E. Fein Gmbh & Co., Stuttgart, Fed. Rep. of Germany

Filed Jul. 14, 1992, Ser. No. 913,238
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1991, 4123349
Int. Cl.[5] F16H *35/10*; F16D *7/06*; B25B *23/14*
U.S. Cl. 475—153 **21 Claims**



1. A portable electric screwing machine with a variable torque setting, comprising:

a housing;

a motor within said housing;

a transmission coupled to said motor for driving a tool shaft;

de-energizer means operably connected with said transmission for de-energizing said motor at a preset torque;

first setting means operably connected with said de-energizer means for presetting said de-energizer means to a desired first torque, at which said de-energizer means is activated;

a clutch arranged between said transmission and said tool shaft, said clutch having a variable tripping torque for

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decoupling the driving of said tool shaft by said transmission at a preset second torque; and

second setting means operably connected with said clutch for presetting said second torque, and operably connected with said first setting means for a corresponding setting of said first torque preset by said first setting means and of said second torque preset by said second setting means for substantially equal tightening torque regardless of counter-torque due to fasteners.

5,356,351

SHUTTLECAR WHEEL END

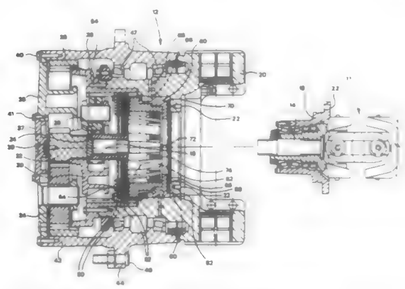
Dusan J. Hvolka, Salt Lake City, Utah, assignor to Eimco Mining Machinery (Proprietary) Limited, Transvall, South Africa

Filed Dec. 17, 1992, Ser. No. 992,453

Claims priority, application South Africa, Dec. 19, 1991, 91/9999

Int. Cl.[5] F16H *3/44*

U.S. Cl. 475—331 8 Claims



1. A shuttlecar wheel assembly comprising:

an output shaft operatively associated with drive means and being driven in rotational movement thereby;

a wheel end unit engaged with said output shaft;

steerable support means supporting the wheel end unit and enabling steering movement of the wheel end unit relative to the drive means;

said output shaft including steerable transmitting means for transmitting rotational movement to the wheel end unit while permitting steering movement of the wheel end unit relative to said output shaft;

said wheel end unit comprising

a first planetary gear reduction stage having a sun gear fixedly engaged with the output shaft and driven thereby;

a second planetary gear reduction stage operatively engaging said first planetary gear reduction stage;

a hub operatively engaging the second planetary gear reduction stage and having an outer wheel mounted thereon, said first and second planetary gear reduction stages providing sequential speed reductions between the output shaft and the hub.

5,356,352

BEARING ARRANGEMENT FOR A PLANET PINION

Kenichi Sakamoto; Muneo Mizuta, and Hiroshi Noguchi, all of Fuji, Japan, assignors to Jatco Corporation, Fuji, Japan

Filed Jul. 27, 1992, Ser. No. 919,489

Claims priority, application Japan, Jul. 26, 1991, 3-187871; Jul. 26, 1991, 3-187885

Int. Cl.[5] F16H *1/28*

U.S. Cl. 475—348 4 Claims

1. A bearing arrangement for a planet pinion, said arrangement comprising:

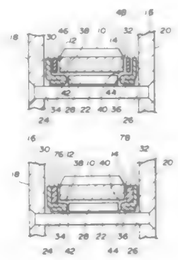
a pinion having first and second opposite axial ends;

a carrier;

a pinion shaft extending through said pinion and having first and second opposite end portions supported by said carrier;

a needle bearing disposed between said pinion and said pinion shaft and supporting said pinion for rotation about said pinion shaft; and

a first pair of pinion washers, a first one being disposed between said first axial end of said pinion and the adjacent portion of said carrier, and a second one being disposed between said second axial end of said pinion and the adjacent portion of said carrier,



each of said pair of pinion washers having an integral sleeve-like structure extending into a space defined between said pinion, said needle bearing and said pinion shaft, and having a thrust acting face arranged to slidably contact with an adjacent axial end of said needle bearing;

wherein said sleeve-like structure includes an inner peripheral portion of each of said pair of pinion washers, said inner peripheral portion being bent towards said needle bearing and being further bent back over itself.

5,356,353

EXERCISED DEVICE HAVING AN APPARATUS FOR MONITORING AND CONTROLLING THE RANGE OF MOTION OF THE EXERCISE DEVICE

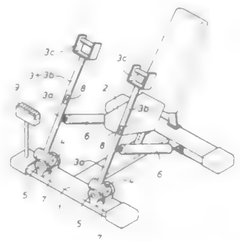
Hideo Takaoka, 20-12-108, Mama 5-chome, Ichikawa-shi, Chiba-ken, Japan

Continuation of Ser. No. 887,782, May 22, 1992, abandoned. This application Oct. 29, 1993, Ser. No. 146,461

Claims priority, application Japan, May 22, 1991, 3-146927

Int. Cl.[5] A63B *71/00*

U.S. Cl. 482—9 12 Claims



1. A structure of a training equipment for use during an exercise routine, said structure comprising:

a fixed part mounted on a base;

a movable part that is movable by a user relative to said fixed part and to the base in a plurality of trajectories during an exercise routine;

a plurality of sensors adjustably mounted on said fixed part and the base for defining two or more acceptable trajectories for said movable part, said sensors being mechanically actuatable and transmitting a signal upon actuation; and

actuator means integrally formed in said movable part for actuating one or more of said sensors, said actuator means mechanically engaging one or more of said sensors when a movement of said movable part during an exercise routine deviates from said acceptable trajectories.

5,356,354

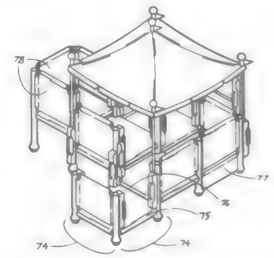
SOFT, MODULAR, PLAY EQUIPMENT SYSTEM FOR TODDLERS

Kevin W. Owens, P.O. Box 247, New Berlin, Pa. 17855

Filed Nov. 8, 1993, Ser. No. 148,892

Int. Cl.[5] A63B *9/00, 17/00*

U.S. Cl. 482—35 11 Claims



1. A system of various parts that can be assembled in a variety of configurations to produce modular play equipment units for infant and toddler age children (8–36 months), comprised of:

a number of vertical support posts, each comprised of:

a tubular steel structural core containing one or more columns of threaded steel inserts to serve as attachment points for assembly of said system,

a cylindrical, molded polyurethane foam cushioning body into which said structural core is embedded on all sides except the bottom, and

a molded plastic foot element with drain holes along its bottom surface permanently plugged by means of an interference fit into the cavity exposed in the structural core at the bottom of the molded polyurethane body for the purpose of lifting the vertical support post above ground level to allow for drainage and containing drain holes to allow for escape of condensation that may occur inside the structural steel core;

a number of threaded cam-operated fasteners, each comprised of:

a threaded steel cylinder intended for insertion into the threaded inserts of the vertical support posts, and

a molded plastic handle that contains

two fin-like elements to assist rotational adjustment of the threaded steel cylinder in the threaded insert of the post, and

a generally cylindrical hub with an offset connecting cavity for the attachment of the handle to the threaded steel cylinder by means of a steel spring pin, the location of which produces a cam or over-center mechanism which in combination with the threaded steel cylinder allows for both rotational adjustment of the fastener in or out and for a fold-over clamping action to securely draw together the framing members of the system to the vertical support posts during assembly without the need to use hand tools or power tools or other conventional construction means;

a number of wall frames, each comprised of a generally rectangular welded assembly of steel tubing, the bottom rung of which provides support to the horizontal deck, the portion above the bottom rung of which provides for the application of assemblies of fabric and foam play and learning activity walls and contains holes for the connection of the frame to a post using the cam-operated fasteners;

a number of 'U' frames, each comprised of

a 'U' shaped welded structural core assembly of steel tubing, the bottom rung or rungs of which provide support to the horizontal deck, the portion above the bottom rung or rungs of which consists of two vertical elements containing holes for the connection of the frame to a post with the cam-operated fasteners, to which are welded the structural core portion of handholds to assist children in entrance and passage between decks of the finished play structure,

a pair of molded polyurethane foam cushioning bodies into which said structural core assembly is embedded along the vertical portions of the core, completing two handholds with the proper diameter to allow for maximum grip strength of children in the intended age group and providing a pliable, easy to grip surface, and providing for four pockets that cover and protect the cam-operated fasteners that hold the frame to a post from tampering and cushion such hard elements against falls by users when plugged with

four molded polyurethane cushioning bodies that snap fit, in a manner childproof to the intended user age group, into said pockets;

a number of 'J' frames each comprised of:

a 'J' shaped welded structural core assembly of steel tubing, the bottom rung or rungs of which provide support to the horizontal deck, the portion above the bottom rung or rungs of which consists of two vertical elements, one of which is much taller than the other in order to partially support a shade canopy, both of which contain holes for the connection of the frame to a post with the cam-operated fasteners, to which are welded the structural core portion of handholds to assist children in entrance and passage between decks of the finished play structure,

a pair of molded polyurethane foam cushioning bodies into which said structural core assembly is embedded along the vertical portions of the core, completing two handholds with the proper diameter to allow for maximum grip strength of children in the intended age group and providing a pliable, easy to grip surface, and containing four pockets that cover and protect the cam operated fasteners that hold the frame to a post from tampering and cushion such hard elements against falls by users when plugged with

four molded polyurethane cushioning bodies that snap fit, in a manner childproof to the intended user age group, into said pockets;

a number of poles for the support of a portion of a shade canopy each comprised of:

a straight, vertical welded structural core assembly of steel tubing, which contains holes for the connection of the pole to a post with the cam-operated fasteners, to which is welded the structural core portion of a handhold to assist children in using activity walls,

a molded polyurethane foam cushioning body into which said structural core assembly is embedded, completing the handhold with the proper diameter to allow for maximum grip strength of children in the intended age group and providing a pliable, easy to grip surface, and containing two pockets that cover and protect the cam-operated fasteners from tampering and cushion such hard elements against falls by users when plugged with

two molded polyurethane foam cushioning bodies that snap fit, in a manner childproof to the intended user age group, into said pockets;

a shade canopy comprised of:

a four-sided, generally pyramidal canopy, sewn of fabric, attached to the upper portion of the taller of the two

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vertical members of the 'J' frames and to the upper portion of the poles by

several generally cylindrical molded polyurethane foam dips that press fit over the upper portion of the 'J' frames and poles and contain an indented ring feature that allows the fabric canopy to attach securely with snaps onto the cap,

several triangular fabric flags that each attach by means of hook and loop fastening material around one cap to add a visual stimulant to the appearance of the assembled play equipment unit, and

four lengths of fiberglass reinforced plastic rod that slide into pockets along the caves of the pyramidal canopy to provide strength and stiffness for wind resistance;

a number of horizontal deck pieces, each comprised of

a structural core of exterior structural grade plywood with a polyethylene face laminated on one side,

a generally square molded polyurethane foam cushioning, body sloped away from center for drainage of its top face, that forms, along all four sides, a snap fit to attach to the bottom rungs of frames, into which said structural core is embedded on all sides except the bottom, exposing the polyethylene face as a moisture barrier and guard against splinters to exploring children;

a number of fabric play and learning activity walls, each comprised of:

a sewn fabric panel containing various play and learning events,

three flaps along the top and sides of the panel containing grommets, through which pass cam-operated fasteners when attaching wall frames to posts as the first of three redundant cheeks to ensure the structural reliability of the fabric panel should the following snaps or zippers be tampered with by intended users,

zippers that secure the panel on the tubular portion of the wall frame as the second of three redundant checks to ensure the structural reliability of the fabric panel should the following snaps be tampered with by intended users, and

snaps that close the flaps by securing them to themselves to provide the third of three redundant checks to ensure the structural reliability of the fabric panel and that are childproof to the intended user age group,

a pocket along the bottom of the fabric panel to accept

a length of fiberglass reinforced plastic rod that flexes into holes in the vertical portions of the wall frame in order to secure the fabric panel along its bottom side, as the bottom rail of the wall frame will be occupied by the snap-on deck when the play unit is assembled, and

three lengths of extruded polyethylene foam tubing that wrap the steel tubing of the wall frame along its top side and wrap the steel tubing and cover the camlock handles along the two vertical sides of the wall frame in order to cushion such hard elements against falls by users;

a number of foam window or mirror activity walls, each comprised of:

two structural cores of exterior structural grade plywood with a polyethylene face laminated on one side, with circular holes to accept window or mirror elements,

two molded polyurethane foam cushioning bodies that contain snap fit features to attach the window or mirror activity walls to wall frames, into which said structural cores are embedded on all sides except the polyethylene faces, and

a circular polycarbonate window or mirror to infill the opening in the wall panel;

a pit for the containment of a pool of play balls or other toys comprised of:

a horizontal floor piece, comprised of

a structural core of exterior structural grade plywood with a polyethylene face laminated to one side,

a generally square molded polyurethane foam cushioning body with its upper surface sloped away from its center for drainage of its top face, into which said structural core is embedded on all sides except the bottom, exposing the polyethylene face as a moisture barrier,

a number of plastic foot elements to raise the deck piece above ground level to allow for drainage, and

four lengths of hook-and-loop type fastening material adhered to the polyethylene face for the attachment of

a skirt of fabric sewn into the form of a short and generally square tube containing,

four lengths of the mating portion of hook-and-loop type fastening material to connect the skin to the bottom of the horizontal floor piece,

four flaps along the top edges of the sides of the square tube each containing,

zippers that secure each of four flaps of the skin to the rungs of the various frames of the system when such system is configured into one structural bay as the first of two redundant checks to ensure the structural reliability of the sides of the pit should the following snaps be tampered with by intended users, and

snaps that close the flaps by securing them to themselves to provide a second of two redundant checks to ensure the structural reliability of the sides of the pit and that are childproof to the intended user age group, and

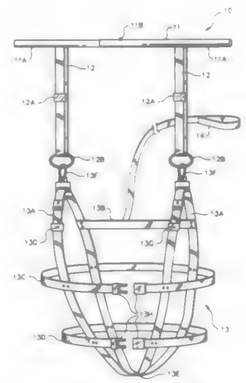
four lengths of extruded polyethylene foam tubing that wrap the rungs of the various frames of the system underneath the skin flaps to cushion such hard elements against falls by users.

5,356,355

FULLY ADJUSTABLE INFANT WALKING AIDE

Douglas Campbell, 8008 34th Ave. South, Space 54, Tacoma, Wash. 98407

Filed Nov. 12, 1993, Ser. No. 152,435
Int. Cl.[5] A63B *1/00, 22/00*
U.S. Cl. 482—43 **14 Claims**



1. An infant walking aide comprising:

a) a harness means for securely supporting a small child, said harness means having

1) at least one adjustable shoulder strap,

2) a lower adjustable body belt,

3) an upper adjustable body belt,

4) at least one crotch strap, and

5) a high back belt;

b) a crossbar having a first end, a second end, and two attachment points; and

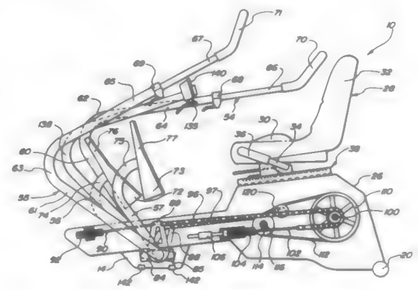
c) two adjustable suspending straps connected between said crossbar and said harness means.

5,356,356

RECUMBENT TOTAL BODY EXERCISER

Mark D. Hildebrandt; Steven W. Sarns, both of Ann Arbor, and Todd A. Sutton, Grand Rapids, all of Mich., assignors to Life Plus Incorporated, Ann Arbor, Mich.

Filed Jun. 2, 1993, Ser. No. 71,188
Int. Cl.[5] A63B *21/00*
U.S. Cl. 482—62 **19 Claims**



1. A recumbent apparatus for exercise and physical therapy providing a lower body workout, an upper body workout and cardiovascular conditioning, said apparatus comprising:

a frame having a forward end and a rearward end, said frame generally defining a longitudinal axis extending between said forward and rearward ends;

a seat supported by said frame and positioned generally toward said rearward end, said seat including a seat cushion and a seat back;

a left leg assembly and a right leg assembly, said leg assemblies supported by said frame for pivoting movement about a pivot axis transverse to said longitudinal axis, said leg assemblies positioned generally toward said forward end and each including an upwardly extending leg lever terminating in a pedal;

a left arm assembly and a right arm assembly, said arm assemblies supported by said frame for pivoting movement also about said pivot axis, said arm assemblies positioned generally toward said forward end and each including an upwardly extending arm lever terminating in a handle;

said left leg assembly being connected to said right arm assembly enabling movement therewith and defining a first connected assembly, said right leg assembly being connected to said left arm assembly enabling movement therewith and defining a second connected assembly, said first connected assembly coupled to said second connected assembly such that forward movement in one of said connected assemblies induces rearward movement in the other of said connected assemblies thereby enabling contralateral movement of said arm and leg assemblies;

resistance means coupled to said arm and leg assemblies for providing resistance to movement of said arm and leg assemblies about said pivoting axis; and

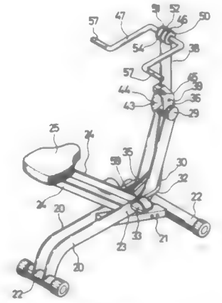
an open area being defined above said frame and between said seat and said arm and leg assemblies, said open area providing step-through access to said seat regardless of relative arm and leg assembly positions.

5,356,357

RIDING EXERCISER

Leao Wang, and Peter Wu, both of Taichung Hsien, Taiwan, assignors to Greenmaster Industrial Corp., Taiping Hsiang, Taiwan

Filed Feb. 24, 1994, Ser. No. 199,887
Int. Cl.[5] A63B *21/00, 69/06*
U.S. Cl. 482—96 **2 Claims**



1. A riding exerciser comprising:

two curved base frames connected in parallel and having a respective pivot hole at the top aligned with each other;

two parallel seat supports pivoted to said curved base frames in the middle to support a seat, each seat support having a bottom end pivoted to either base frame in the middle by a pivot and a top end obliquely extended backwards and pivoted to said seat at either side;

a lower actuating rod having a top end pivotally connected between the pivot holes on said curved base frames at the top by a pivot and a bottom end fixed with a U-tube to hold a pair of pedals, said lower actuating rod comprising a bridge plate at the top, said bridge plate comprising a spring-supported lock bolt at one side;

an upper actuating rod having a bottom end pivotally connected to said bridge plate by a pivot and fixed with a sector plate having a series of lock holes around the periphery for locking by said spring-supported lock bolt, and a top end fixed with a horizontal socket;

a curved handle inserted through said horizontal socket and retained in place by stop rings being fastened to said horizontal socket at two opposite ends; and

a link having one end pivotally connected to said lower actuating rod by a pivot at an elevation above said U-tube, and an opposite end pivotally connected to a slide being adjustably fixed to said seat supports.

5,356,358

HORSE-RIDING TYPE EXERCISER

Paul Chen, No. 3-6, Ching Yang Rd. Liu Pao Village, Ta Ya Hsiang, Taichung Hsien, Taiwan

Filed Mar. 8, 1994, Ser. No. 208,135
Int. Cl.[5] A63B *69/06, 21/068*
U.S. Cl. 482—96 **6 Claims**

1. A-horse-riding type exerciser comprising:

a base frame (**10**) having a first portion extending upwardly therefrom and a second portion;

a drive post means (**30**) having a mediate portion pivotally engaged with the first portion of said base frame (**10**) and having an upper portion (**36**) and a lower portion (**32**);

a handlebar (**362**) mounted to the upper portion (**36**) of said drive post means (**30**);

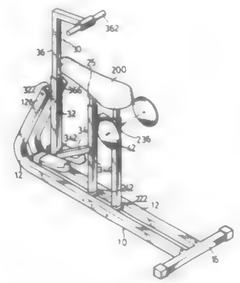
a pair of foot rests (**38**) pivotally mounted to the lower portion (**32**) of said drive post means (**30**);

a seat post means (**20**) having a lower portion pivotally engaged with said base frame (**10**) and an upper portion;

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a bracket means (26) pivotally engaged with the upper portion of said seat post means (20);

a seat element (200) securely mounted on said bracket means (26); and



a connecting means (34) having a first end (342) pivotally engaged with the lower portion (32) of said drive post means (30) and a second end (344) pivotally engaged with a mediate portion of said seat post means (20).

5,356,359

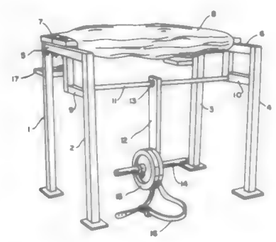
METHOD AND APPARATUS FOR IMPROVED LOWER BACK EXERCISE

Louis J. Simmons, 590 Larcomb Ave., Cols, Ohio 43223

Filed Jun. 9, 1993, Ser. No. 73,544

Int. Cl.[5] A63B *21/08*

U.S. Cl. 482—97 **7 Claims**



1. An apparatus for exercising the lower back and upper legs comprising:

a support structure;

a horizontally disposed body support platform maintained above the ground by said support structure and which is configured to allow the user's legs to hang freely and vertically down from a first edge of said platform;

a pivot bar horizontally disposed below said body support platform and maintained above the ground by said support structure wherein said pivot bar extends parallel to and below the first edge of said platform;

an adjustable strap which is retained on the opposite end of a pendulum and which retains the legs of the user to transmit the resistance of the pendulum to the user and;

said pendulum which is pivotally connected to said pivot bar with means at one end for engaging and pivoting about said pivot bar, and means at the opposite end of said pendulum for retaining said adjustable strap, wherein the user is able to lift the pendulum by moving the legs from a vertical rest position to a horizontal position and then back to a position beyond the vertical rest position in a total motion substantially greater than a 90 degree arc.

5,356,360

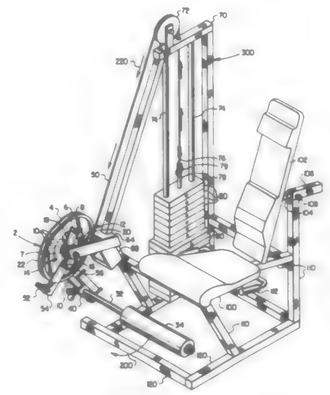
ADJUSTABLE LEVER ARM-VARIABLE RESISTANCE CAM ASSEMBLY

George Johns, Richardson, Tex., assignor to Titan Exercise Equipment, Inc., Carrollton, Tex.

Filed May 15, 1992, Ser. No. 883,569

Int. Cl.[5] A63B *21/062*

U.S. Cl. 482—99 **10 Claims**



1. In a variable resistance cam assembly formed of a cam, a cable connected at one end to a weight set, and a positioning arm for selective engagement with said cam for rotatable engagement therewith, the improvement comprising a cable tension arm pivotally mounted to the positioning arm for select angulation relative thereto and concomitant positioning of said cable's other end relative to said cam, and means for imparting angulation of said positioning arm in response to rotation of said cam relative to said positioning arm, wherein said means is a guide ridge of said cam against which said cable tension arm is rollingly engaged in a manner causing said cable tension arm to angularly move to position said cable's other end relative to said cam when said cam is rotated with respect to said positioning arm.

5,356,361

SELF-GENERATING OSCILLATING PRESSURE EXERCISE DEVICE

Donald E. Watenpaugh, Sunnyvale, Calif., assignor to The United States of America as represented by the Administrator of National Aeronautics and Space Administration, Washington, D.C.

Filed May 13, 1993, Ser. No. 61,401

Int. Cl.[5] A63B *21/008*

U.S. Cl. 482—111 **11 Claims**

1. An exercise device comprising:

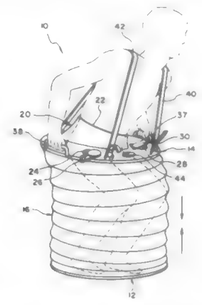
first and second substantially rigid end walls; and

a flexible, variable length sidewall extending between and hermetically connected to the first and second end walls to define an air chamber having a variable volume,

the air chamber being adapted to enclose at least a portion of a user's body and having an internal air pressure which varies in accordance to variations in volume,

the sidewall being expandable and contractible in length to thereby vary the internal pressure in response to a force applied to one of the first and second end walls by the user,

the applied force generating a reaction force delivered to the other of the first and second end walls, and the applied force being resisted by a pneumatic force generated by a



difference between the internal air pressure of the air chamber and ambient air pressure outside the air chamber.

5,356,362

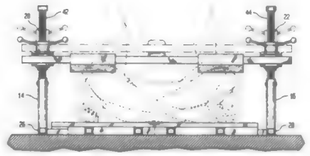
APPARATUS FOR BODY EXERCISE, BODY STRETCHING, NEUROMUSCULAR AND OTHER ORTHOPEDIC MOVEMENTS

Richard B. Becker, Short Hills, N.J., and David D. Gilbert, New York, N.Y., assignors to Yogi Pogi Inc., New York, N.Y.

Filed May 26, 1993, Ser. No. 67,679

Int. Cl.[5] A63B *21/00*

U.S. Cl. 482—142 **20 Claims**



1. An exercise and stretching apparatus, comprising:

a base having a pair of spaced vertical uprights;

a cross-bar extending between the uprights above the base; the cross-bar, having means for engaging legs of a user;

first and second retainers movably on the first and second uprights to engage one end of the cross-bar to an upright;

first and second releasable means associated with one of the first and second retainers to vertically displace the first and second retainers thereby vertically displacing the cross-bar such that when a user sits beneath the cross-bar, the first and second retainers can be adjusted downwardly along the pair of uprights to press firmly on a portion of the legs of the user.

5,356,363

APPARATUS FOR MAKING FLAT PACKAGING BAGS FROM A FLEXIBLE SHEET OF SYNTHETIC MATERIAL

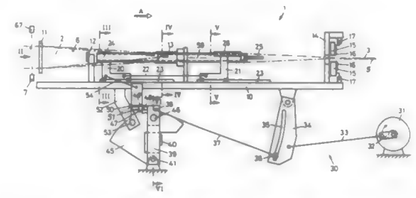
Georg Kopp, Uhwiesen, and Willy Altermatt, Neuhausen am Rheinfall, both of Switzerland, assignors to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed May 5, 1993, Ser. No. 56,548

Claims priority, application Switzerland, May 6, 1992, 1451/92-4

Int. Cl.[5] B31B *23/64*

U.S. Cl. 493—197 **9 Claims**



1. An apparatus for making flat packaging bags from a flexible web of indeterminate length passing through the apparatus in a direction of advance, comprising

(a) a machine frame;

(b) a sled mounted on said machine frame for travel parallel to said direction of advance;

(c) a first drive means for reciprocating said sled parallel to said direction of advance;

(d) a mandrel mounted on said sled; said mandrel having a longitudinal axis oriented parallel to said direction of advance;

(e) a tubular folding body fixedly mounted on said machine frame and coaxially surrounding said mandrel for bending the web about said mandrel to form a web hose;

(f) a first sealing shoe mounted on said sled;

(g) a second drive means for pressing said first sealing shoe against an outer face of said mandrel for providing a longitudinal sealing seam on the web hose situated between the mandrel and said first sealing shoe;

(h) a second sealing shoe mounted on said machine frame for displacements perpendicularly to said direction of advance;

(i) a third drive means for actuating said second sealing shoe for providing a transverse sealing seam on the web hose; and

(j) a cutting means for severing a length of web hose from the web.

5,356,364

METHOD FOR EMBOSSING WEBS

Jerome S. Veith, Menasha; Edward H. Grupe, and Joseph W. Brown, both of Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 660,317, Feb. 22, 1991, abandoned. This application Apr. 17, 1992, Ser. No. 870,528

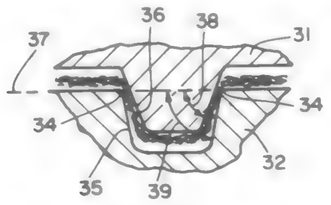
Int. Cl.[5] B65H *45/12;* **B31F** *1/07*

U.S. Cl. 493—395 **13 Claims**

1. A method for embossing a web comprising deflecting the web between a plurality of engaging unmatched male and female embossing elements having sidewalls sloped at an angle

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to the plane of the undeflected web during embossing, wherein the sidewall slope of the female embossing elements is different



than the sidewall slope of the male embossing elements with which the female embossing elements are engaged.

5,356,365

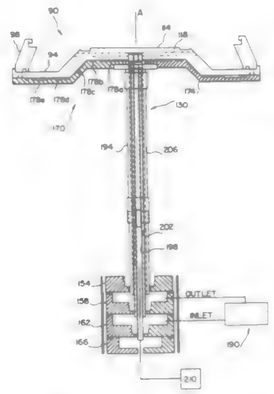
TEMPERATURE CONTROLLED CENTRIFUGE

Mark J. Brierton, Littleton, Colo., assignor to Cobe Laboratories, Inc., Lakewood, Colo.

Continuation of Ser. No. 868,989, Apr. 15, 1992. This application Feb. 25, 1994, Ser. No. 201,717

Int. Cl.[5] B04B *15/02, 11/04*

U.S. Cl. 494—14 **19 Claims**



15. A centrifuge, comprising:

containment means for receiving a material, said containment means comprising a centrifuge bowl including a base portion and a wall portion and having a rotational axis;

a substantially flexible membrane separating said containment means into upper and lower chambers, the material being positionable in said upper chamber;

at least one outlet conduit fluidly connectable with an interior portion of said upper chamber of said containment means and extending externally of said centrifuge;

a volume variation assembly interconnected with said lower chamber of said containment means, said volume variation assembly comprising a reservoir of a volume variation fluid, a fluid transfer device, and a volume variation fluid conduit having at least a portion which is substantially concentric with said rotational axis;

heat exchanger means connected to said base portion for maintaining a temperature of said base portion by circulating a heat transfer medium through said heat exchanger means, said heat exchanger means comprising first and second channel means, said first and second channel means being substantially annular and concentrically positioned about said rotational axis at different distances from said rotational axis;

a heat transfer medium supply assembly comprising a heat transfer medium temperature control device;

first conduit means for providing said heat transfer medium from said heat transfer medium supply assembly to said heat exchanger means, at least part of said first conduit means being substantially concentrically positioned about said rotational axis and said at least a portion of said volume variation fluid conduit;

second conduit means for receiving said heat transfer medium from said heat exchanger means and providing said heat transfer medium back to said heat transfer medium supply assembly, at least part of said second conduit means being substantially concentrically positioned about said rotational axis and said at least a portion of said volume variation fluid conduit, whereby said parts of each of said first and second conduit means and said portion of said volume variation fluid conduit are substantially coaxial; and

drive means for rotating said containment means substantially about said rotational axis of said containment means.

5,356,366

PROCESS FOR THE OPERATION OF A PUSHER CENTRIFUGE

Werner Stahl, Stalbühlweg 8, D-6740 Landau, Fed. Rep. of Germany

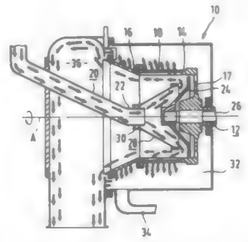
PCT No. PCT/EP90/00583, § 371 Date Oct. 11, 1991, § 102(e) Date Oct. 11, 1991, PCT Pub. No. WO90/11834, PCT Pub. Date Oct. 18, 1990

PCT Filed Oct. 18, 1990, Ser. No. 768,062

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1989, 3912207; Apr. 3, 1990, 4010748

Int. Cl.[5] B01D *21/26, 33/06, 43/00*

U.S. Cl. 494—37 **2 Claims**



1. A process for operating a pusher centrifuge to form a solid cake from a quantity of material mixture, the pusher centrifuge including a rotating pusher plate and a perforated drum axially aligned with the pusher plate, comprising the steps of:

(a) continuously moving the pusher plate relative to the perforated drum in an axial direction in a cycle between an advanced position and a retracted position in a forward movement or a reverse movement substantially without pause when the direction of movement is reversed, the reverse movement including a first portion, a second portion immediately following the first portion, and a third portion immediately following the second portion;

(b) supplying all of the material mixture during the second portion of the reverse movement;

(c) partially dehumidifying the material mixture in the perforated drum by centrifugal separation due to rotation of the perforated drum, during said step (b), to form a solid cake; and

(d) following said step (c), sliding the solid cake from the perforated drum using the pusher plate during the forward movement to the advanced position.

5,356,367

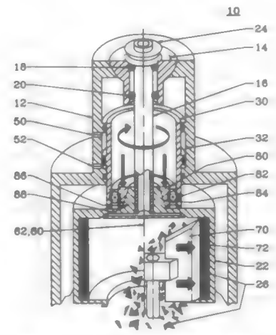
CENTRIFUGAL SEPARATOR WITH FLEXIBLY SUSPENDED RESTRAINABLE BOWL

Robert B. Carr, Dedham, Mass., assignor to Carr Engineering Associates, Inc., Easton, Mass.

Continuation of Ser. No. 88,605, Jul. 6, 1993, abandoned, which is a continuation of Ser. No. 803,477, Dec. 4, 1991, abandoned. This application Dec. 6, 1993, Ser. No. 162,781

Int. Cl.[5] B04B *11/08, 9/12*

U.S. Cl. 494—58 **9 Claims**



1. A centrifugal separator system for separating a feed material at a high speed, comprising:

a rotatable centrifuge bowl having an interior surface for receiving said feed material;

a flexible suspension means for rotatably, flexibly supporting said bowl;

a scraper blade to remove solids from said interior surface of said bowl during low speed revolutions; and

retractable substantially radially rigid restraining means for constraining said bowl during low speed revolutions such that the distance between said scraper blade and said interior surface remains substantially constant.

5,356,368

METHOD OF AND APPARATUS FOR INDUCING DESIRED STATES OF CONSCIOUSNESS

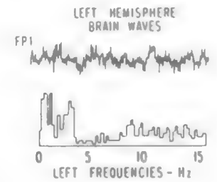
Robert A. Monroe, Nelson County, Va., assignor to Interstate Industries Inc., Faber, Va.

Filed Mar. 1, 1991, Ser. No. 664,176

The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.

Int. Cl.[5] A61M *21/00*

U.S. Cl. 600—28 **28 Claims**



1. A method of inducing desired states of consciousness in human beings, comprising the following steps:

combining a plurality of replicated electroencephalogram (EEG) waveforms, each indicative of a particular desired state of consciousness, to produce a combined EEG waveform;

superimposing said combined EEG waveform on two separate sets of carrier waves using stereo sound;

creating differential beat frequencies between said sets of carrier waves based on said superimposing step; and

providing the resulting signals in audio form to respective ears of a human being, to induce said state of consciousness.

5,356,369

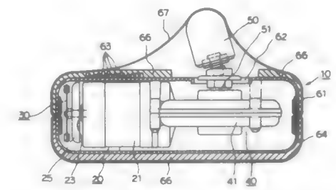
PORTABLE VIBRATION FINGER PRESSURE MASSAGER

Yoshikiyo Yamasaki, Sakai, and Shinichiro Fujimoto, Osaka, both of Japan, assignors to Kabushiki Kaisha Japan Health and Kabushiki Kaisha Fuji Iryoki, both of Osaka, Japan

Filed Jun. 11, 1992, Ser. No. 897,278

Int. Cl.[5] A61H *1/00, 7/00*

U.S. Cl. 601—70 **4 Claims**



1. A portable vibration finger pressure massager comprising a drive worm disposed in a center portion of a box and a pair of worm gears engaged on opposite sides of the worm and rotatably disposed within the box, frames located above the worm gears and rotating disks disposed above said frames, massaging balls connected with the rotating disks at inclined angles relative to the axes of rotation of the rotating disks, a motor provided outside the box, said motor having a front shaft and a rear shaft, said front shaft extending into said box and driving said worm, a vibration generation means provided at the rear of said motor, said vibration generation means comprising a weight change structure attached to the motor rear shaft, said weight change structure comprising means for balancing said weight change structure when the motor rear shaft is rotated in a first direction and means for unbalancing said weight change structure when the motor rear shaft is rotated in a second direction opposite to said first direction so that a vibration is imparted to said massager.

5,356,370

ANTIFRICTION MECHANICAL JOINT FOR AN ORTHOPEDIC KNEE BRACE

Bruce Fleming, Pitt Meadows, Canada, assignor to Generation II Orthotics Inc., Richmond, Canada

Filed Sep. 9, 1993, Ser. No. 120,261

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—16 **8 Claims**

1. In an orthopedic knee brace having an upper arm to be secured to a wearer's body above the knee, a lower arm to be secured to the wearer's body below the knee, and a mechanical joint between the upper arm and the lower arm to permit flexing of the knee, an improved antifriction mechanical joint comprising:

a first bearing plate on an end of the lower arm and a second bearing plate on an end of the upper arm;

a link having a first bearing surface to mate with the first bearing plate, and adjacent thereto a second bearing surface to mate with the second bearing plate, thus providing a first bearing at the first bearing plate and a second bearing at the second bearing plate;

a first cavity having curved internal surfaces in the first bearing plate and a second cavity having curved internal surfaces in the second bearing plate;

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a first cam having curved external peripheral surfaces within the first cavity and a second cam within the second cavity, the cams having curved external peripheral surfaces attached to the link;

at least two cylindrical rollers in the first cavity and in the second cavity, the rollers fitting between the internal surfaces of the cavities and the external peripheral surfaces of the cams, the shape of the cams and the shape of the cavities permitting multiple axis pivotal movement of the mechanical joint substantially corresponding to the knee movement of the wearer between a flexed position and an extended position of the knee, and

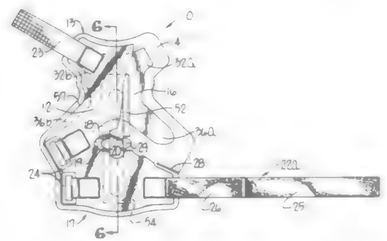
cover means over the first bearing plate and the second bearing plate attached to the link to retain the rollers within the cavities.

5,356,371

SHAPEABLE THUMB SUPPORT

Craig J. Hubbard, Port Macquarie, Australia, assignor to Wildtman Australia Pty. Limited, Port Macquarie, Australia

Filed Mar. 5, 1993, Ser. No. 27,196
Int. Cl.[5] A61F *5/04*
U.S. Cl. 602—22 **13 Claims**



1. An apparatus worn on a hand for supporting a digit thereof, said apparatus including a digit-supporting portion and a wrist segment and comprising:

a base cushion layer,

a outer flexible layer overlying said base layer,

a relatively thin, sheet-like support member retained between said layers and moldable to conform to the shape of said digit and guide movement thereof through a normal range of motion,

said member having a shape which , when the apparatus is in a functional position on a hand of a wearer, leaves the pal of the hand substantially unobstructed, and said member in said functional position extending inwardly within said digit-supporting portion toward and terminating in spaced relationship to a wrist segment of the apparatus so that the mobility of the wrist of a wearer is not impaired, and

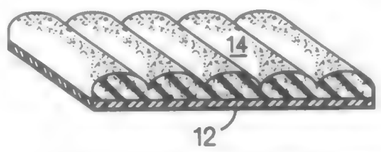
means for fastening the apparatus to the hand and the selected digit of a wearer to hold the apparatus in said functional position on the back of the hand and digit, whereby to provide support thereto without immobilizing the hand or digit.

5,356,372

OCCLUSIVE PRESSURE-REDUCING WOUND DRESSING

Maura G. Donovan, St. Paul, and Matthew A. Bergan, Brooklyn Park, both of Minn., assignors to Ludlow Corporation, Exeter, N.H.

Filed Dec. 1, 1993, Ser. No. 160,568
Int. Cl.[5] A61F *5/34*
U.S. Cl. 602—58 **20 Claims**



1. An occlusive pressure-reducing dressing comprising in combination:

(a) an occlusive, wound-contacting layer comprised of a biologically compatible polymer; and

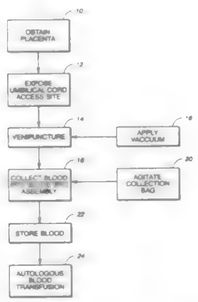
(b) a pressure-reducing layer that reduces the transmission of compressive forces with a progressive rate of resistance such that there is a low resistance to initial compression and provides increased resistance to greater compressive forces thereafter, having a bottom surface attached to the occlusive layer, the pressure-reducing layer comprised of air-containing material, the pressure-reducing layer having a top surface shaped in a contour that provides said progressive rate of resistance to said compressive forces applied to the pressure-reducing layer and which allows the pressure-reducing layer to conform to curved surfaces.

5,356,373

METHOD AND APPARATUS FOR AUTOLOGOUS TRANSFUSIONS IN PREMATURE INFANTS

Robert A. Dracker, North Syracuse, N.Y., assignor to Miles Inc., Berkeley, Calif.

Filed Nov. 15, 1991, Ser. No. 792,824
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—4 **7 Claims**



1. A method for autologous blood transfusion into a neonate, comprising the sequential steps of:

A. obtaining the placenta of said neonate;

B. exposing an umbilical cord venous access site on said placenta;

C. performing venipuncture at said venous access site using a cateter assembly, said assembly including a needle in communication with a blood collection bag having a predetermined amount of anticoagulant therein;

D. applying a vacuum suction to said catether assembly so as to draw blood from said umbilical cord through said venous access site directly into said blood collection bag;

E. intermittently agitating said collection bag while applying the vacuum suction during step (D);

F. storing said blood collection bag containing said blood of step (D) for a selected amount of time; and

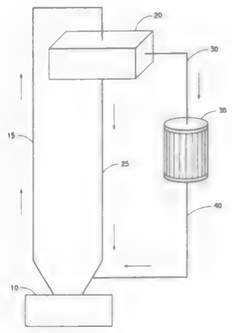
G. transfusing said stored blood into said neonate.

5,356,374

PROCESS FOR TREATING BLOOD WITH POLYIMIDE CARRIERS

John J. Hogan; Alexander Kopatsis; Lorenzo F. Pelosi, all of Wilmington, Del., and Patrick T. Shannon, Drexel Hill, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 491,585, Mar. 12, 1990, abandoned. This application Aug. 28, 1992, Ser. No. 935,349
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—4 **3 Claims**



1. A process for treating blood, comprising the following steps:

a) removing blood from a patient;

b) separating the removed blood into a plasma component and a cellular component;

c) passing the plasma component through a column containing polyimide particulate carriers having proteins bonded to their surfaces, wherein the polyimide carriers are soluble in aprotic solvents and have a surface area between about 5 and 600 m^2/gm with at least 50% by weight of the particles being between about 50 and 500 microns in their longest dimension; and

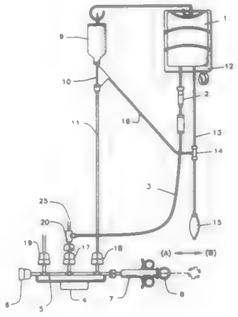
d) returning the treated plasma component and cellular component to the patient.

5,356,375

POSITIVE PRESSURE FLUID DELIVERY AND WASTE REMOVAL SYSTEM

Robert E. Higley, Queensbury, N.Y., assignor to Namic U.S.A. Corporation, Glens Falls, N.Y.

Filed Apr. 6, 1992, Ser. No. 863,999
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—30 **20 Claims**



1. An improved fluid delivery apparatus having a first fluid reservoir to contain fluid under pressure connected by a first tubing means to a manifold and syringe, wherein the improvement comprises,

a waste container in fluid connection with the manifold; and

a dual check valve making a three-way fluid connection between the first tubing means, the manifold and the waste container wherein the dual check valve comprises an intake check valve allowing one-directional fluid flow under positive pressure from the first fluid reservoir to the manifold, and an exhaust check valve allowing one-directional fluid flow under positive pressure from the manifold to the waste container.

5,356,376

FLOW CONTROLLERS FOR FLUID INFUSION SETS

Zoran Milijasevic, and Graham Bode, both of 47-49 Henderson Street, Turrella, NSW 2205, Australia

PCT No. PCT/AU91/00083, § 371 Date Oct. 21, 1992, § 102(e) Date Oct. 21, 1992, PCT Pub. No. WO91/13641, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 8, 1991, Ser. No. 923,927
Claims priority, application Australia, Mar. 8, 1990, PJ9008
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—30 **16 Claims**

1. An in line fluid flow controller for use with a fluid administration set for infusion of fluid into the body of a patient, the administration set including a means for connecting the admin-

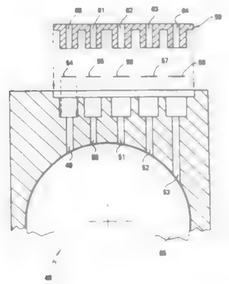
VOL 1167 ISS 3 OCT 18 1994 UMI

istration set to a reservoir of fluid, said connecting means being connected to a supply line having the flow controller therein, said fluid flow controller comprising:

a housing having a chamber therein,

an inlet to and an outlet from said chamber,

a plurality of feed passages within said housing, said passages being in fluid communication with said inlet, each feed passage having a flow restrictor therein which includes at least one orifice configured to control the rate of fluid therethrough so that the fluid flow is at a predetermined constant flow rate,



a flow rate selector disposed within the chamber and including a transfer passage, the selector being movable so that the transfer passage can be in communication with one or a selected number of said feed passages, said transfer passage being in communication with the outlet and the arrangement being such that a predetermined flow rate of fluid can be selected by the number of feed passages in communication with the transfer passage as a result of movement of said selector.

5,356,377

Patent Not Issued For This Number

5,356,378

FLUID LINE CONDITION DETECTION

David B. Doan, San Diego, Calif., assignor to IVAC Corporation, San Diego, Calif.

Continuation of Ser. No. 823,863, Jan. 22, 1992, abandoned. This application Jan. 24, 1994, Ser. No. 185,278

Int. Cl.[5] A61M *5/00*

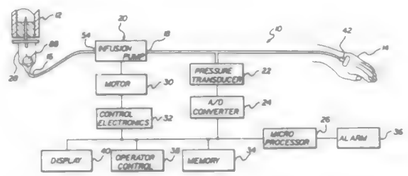
U.S. Cl. 604—65 35 Claims

1. A fluid line condition detection apparatus coupled between a fluid supply and a fluid receiver, the apparatus comprising:

a fluid line having an upstream segment coupled to the fluid supply for receiving fluid from the fluid supply at head pressure and a downstream segment coupled to the fluid receiver;

a fluid chamber disposed in fluid communication with the upstream segment and with the downstream segment of the fluid line;

control means for alternately opening the fluid chamber to fluid communication with the upstream segment of the fluid line and with the downstream segment of the fluid line, wherein when opened to the upstream segment, the chamber receives and stores fluid at head pressure and wherein when opened to the downstream segment, the chamber communicates the fluid stored at head pressure to fluid residing in the downstream segment thereby causing a pressure equalization pulse in the downstream segment;



pressure sensor means for sensing equilibrium pressure in the downstream segment and for providing an equilibrium signal representative thereof and for also sensing the pressure equalization pulse and for providing an equalization signal representative of the pressure equalization pulse; and

processor means responsive to said equilibrium signal and to said equalization signal for taking the difference between the equilibrium signal and the equalization signal and for integrating the difference in determining the head pressure.

5,356,379

DISPOSABLE AMBULATORY INFUSION PUMP ASSEMBLY

Vincent L. Vaillancourt, 14 Bunyan Dr., Livingston, N.J. 07039

Filed Aug. 3, 1993, Ser. No. 100,978

Int. Cl.[5] A61M *5/14*

U.S. Cl. 604—80 14 Claims

1. A disposable ambulatory infusion pump assembly for delivering fluid intravenously to a patient comprising

a pump means for supplying a continuous unrestricted pressurized flow of fluid;

a first line in direct communication with said pump means for conveying the pressurized flow of fluid therethrough;

a restrictor fixed within one portion of said line and within the flow of fluid for restricting the rate of the flow of fluid through said line;

a connector having a first inlet port in communication with said line to receive the flow of fluid therefrom and having an outlet port for connection to a catheter in a patient;

a second line connected in parallel with said portion of said first line to convey a flow of fluid from said pump means to said inlet port of said connector at an unrestricted rate of flow relative to said rate of flow in said first line; and



means in said second line for selectively opening and closing said second line to a flow of fluid therethrough.

5,356,380

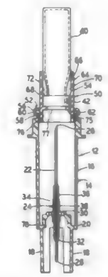
DRUG DELIVERY SYSTEM

Mark Hoekwater, Vernon Hills; Jeffrey S. Nordquist, Barrington; Thomas A. Fowles, McHenry, all of Ill.; James Sertic, Kalamazoo, Mich., and Brian J. Gorman, Lake Geneva, Wis., assignors to Baxter International Inc., Deerfield, Ill.

Filed Oct. 23, 1991, Ser. No. 780,604

Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—85 20 Claims



1. A cartridge for introducing a beneficial agent into a fluid conduit for delivery of the beneficial agent to a patient comprising:

a hollow tube having a cannula holder;

a chamber having a beneficial agent therein, the chamber being coupled by a frangible retaining member to a first end of the hollow tube, the chamber being slidably mounted at least partially within the hollow tube from a first position to a second position, such that in the first position, the chamber extends a greater distance from the hollow tube than in the second position;

a cannula mounted within the cannula holder at a second end substantially opposite the first end of the hollow tube; and

the frangible retaining member being coupled to the first end of the hollow tube and including a first part and a second part for securing the chamber in the first position, and including means for allowing the second part to separate from the first part allowing the chamber to move to the second position.

5,356,381

IMPLANTABLE ACCESS DEVICES

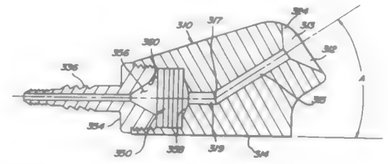
William D. Ensminger, 2770 Parkridge Dr.; James A. Knol, 1059 Hasper, and James C. Andrews, 3568 River Pines, all of Ann Arbor, Mich. 48103

Continuation of Ser. No. 940,444, Sep. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 818,626, Jan. 10, 1992, Pat. No. 5,226,879, which is a continuation-in-part of Ser. No. 654,661, Feb. 15, 1991, Pat. No. 5,180,365, which is a continuation-in-part of Ser. No. 539,793, Jun. 18, 1990, Pat. No. 5,053,013, which is a continuation-in-part of Ser. No. 487,541, Mar. 1, 1990, Pat. No. 5,057,084. This application Nov. 24, 1993, Ser. No. 158,042

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

Int. Cl.[5] A61M *11/00*

U.S. Cl. 604—93 50 Claims



1. An implantable access device for permitting the access to a predetermined location within the body of a patient through an implanted internal catheter by a percutaneously placed filament such as a needle, external catheter, wire or optical fiber, said device being implantable within the body of the patient comprising:

a housing having a funnel shaped entrance orifice, a passageway and an exit orifice adapted for communication with the internal catheter, said entrance orifice having a decreasing cross sectional area defining a target area for insertion of said filament and causing said filament introduced into said entrance orifice to be directed to and enter said passageway, said passageway connecting said entrance orifice with said exit orifice,

a valve means positioned within said housing and normally remaining closed for providing resistance to flow of fluids through said passageway, said valve means also permitting passage of said filament therethrough for enabling said filament to pass through said housing and communicate with said predetermined location, and

means for supporting said access device within the body of the patient.

5,356,382

PERCUTANEOUS TRACT MEASURING AND FORMING DEVICE

George J. Picha, Independence; Angela P. Nguyen, Sagamore Hills, and Jim Gelbke, Strongsville, all of Ohio, assignors to Applied Medical Research, Inc., Independence, Ohio

Filed Oct. 23, 1992, Ser. No. 965,219

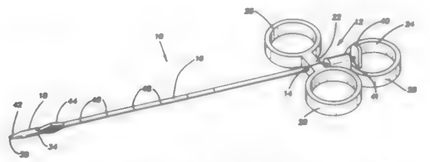
Int. Cl.[5] A61M *25/00*

U.S. Cl. 604—105 20 Claims

1. A surgical tool for forming an incised tract and for measuring the tract so formed, comprising a handle means having first and second relatively movable handle sections, at least one of said first and second handle sections having a ring-shaped finger receiving portion,.said finger receiving portion providing bearing surfaces to facilitate movement of said first and second handle sections toward and away from one another, a cannula slidably movable with respect to the first handle section, an obturator slidably received by the cannula, a dilator

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secured to one end of the cannula and the second handle section being secured to an opposite end of the cannula, said dilator having a sharpened distal end of the obturator projecting out of a distal end thereof, said sharpened end of the obturator and said dilator cooperating to form the incised tract when forced into and through a body being operated upon, and a flexible tubular member generally covering at least a portion of the cannula and including an outwardly deformable section, said tubular member having a proximal end secured to the first



handle section and a distal end secured to the dilator, wherein movement of the first handle section relative to the second handle section causes the deformable section of the tubular member to outwardly deform and thereby define a stop surface, said stop surface being adapted to engage a surface surrounding an inner terminal end of the tract being measured, wherein a portion of the tubular member projecting from an outer terminal end of the tract includes scale indicia which are used to determine the tract length.

5,356,383

HYPODERMIC NEEDLE/SYRINGE ASSEMBLIES AND DEVICE FOR REMOVING NEEDLES THEREFROM

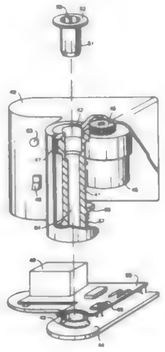
Eugene Daly, Cork, and Owen McAuliffe, County Cork, both of Ireland, assignors to Damal Limited, Cork, Ireland

Filed Feb. 11, 1991, Ser. No. 653,421

Claims priority, application Ireland, Feb. 9, 1990, 465/90; Apr. 27, 1990, 1512/90; Jun. 19, 1990, 2204/90

Int. Cl.[5] A61W *5/00*

U.S. Cl. 604—110 **4 Claims**



1. A removal device for use in combination with a hypodermic needle assembly having either (a) a needle hub on a needle attachable to a syringe, or (b) an attachment adaptor for attaching the needle assembly to a syringe, wherein the needle assembly or the attachment adaptor has an external engagement configuration thereon comprising a series of external ribs parallel to the axis of the needle assembly, said removal device for removing the needle assembly from a syringe comprising:

a hollow cylindrical sleeve having an internal surface defining a passage for permitting the needle assembly and any attachment adaptor thereon to pass freely in an axial direction through the sleeve the sleeve being disposed within a hollow shaft through which the needle assembly and adaptor can pass freely in an axial direction,

an internal engagement configuration on the sleeve for engaging against the external ribs of the needle assembly on the attachment adaptor when the sleeve is rotated relative to the syringe about the axis of the sleeve, said internal engagement configuration comprising a series of internal ribs on the internal surface of the sleeve, wherein the internal ribs are aligned parallel to the axis of the sleeve, and are spaced around the internal circumference of the sleeve, the internal ribs each having a radially-inward surface, and the internal diameter of the sleeve at the radially-inward surfaces of the internal ribs is greater than the diameter of any part of the needle assembly and any attachment adaptor thereon other than the said external ribs;

and wherein drive means are provided externally of the shaft for rotating it about its axis.

5,356,384

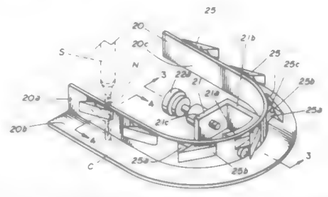
SYRINGE WITH NEEDLE RECAPPING SYSTEM

John P. Haber, 4229 Byron, Houston, Tex. 77005

Filed Feb. 2, 1993, Ser. No. 12,331

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—110 **8 Claims**



1. Apparatus providing for one-handed removal of a syringe with needle from a needle cap and subsequent replacement, comprising:

a frame having means for attachment to a stationary object;

a gripping mechanism attached to said frame, said gripping mechanism including resiliently urged, internal gripping surfaces to receive and hold a syringe with needle having a needle cap thereon, said syringe with needle being removable from said needle cap and replaceable into said needle cap which is held in a gripped position by said gripping mechanism; and

said frame includes first and second surfaces forming a generally L-shaped portion when viewed in cross-section wherein said friction-gripping mechanism is attached to said first surface a sufficient distance away from said second surface such that the closed end of a needle cap gripped in said gripping mechanism will be landed onto said second surface to cooperate with said gripping mechanism to hold said needle cap stationary during replacement of a syringe with needle into a needle cap.

5,356,385

HYPODERMIC NEEDLE SHEATH HOLDER

Claudio Latini, Rome, Italy, assignor to Kenneth T. O'Dell, Mt. Prospect, Ill.

Filed Dec. 27, 1993, Ser. No. 173,123

Claims priority, application Italy, Jan. 29, 1993, RM93A000050

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—110 **20 Claims**

1. A device for holding a hypodermic syringe needle sheath to prevent human contact with a needle during its insertion into and removal from the sheath, said device comprising:

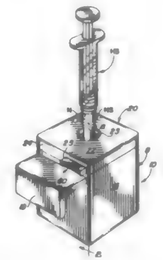
(a) a housing including a body and a cover;

(b) said cover having an upper wall with an opening extending therethrough;

(c) said body having an upper wall, with an opening extending therethrough, and having an integral tube extending vertically downward therefrom, in axial alignment with both of said openings and adapted to receive a portion of a hypodermic needle sheath that may be inserted through said openings;

(d) a sheath gripping mechanism located in said housing between said cover and body upper walls and including:

(i) a plurality of gripper blades, with serrated edges,



mounted for pivotal movement in a horizontal plane under said cover opening between a sheath gripping position, wherein said blades are close to each other, and a release position, wherein said blades are away from each other;

(ii) spring means normally biasing said gripper blades toward said gripping position;

(iii) release means for temporarily overcoming biasing action of said spring means to permit the insertion of a needle sheath into said housing and the withdrawal therefrom;

(d) handle means on said body for cooperation with said release means to allow use of said release means with one hand.

5,356,386

APPARATUS FOR LOCATING BODY CAVITIES

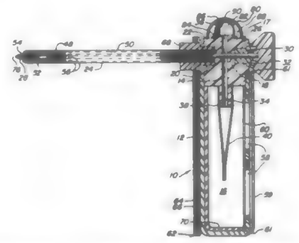
Edward M. Goldberg, Glencoe; Lev Melinyshyn, Mt. Prospect; Michael Jaron, Des Plaines, and Jeffrey M. Stupar, Chicago, all of Ill., assignors to Uresil Corporation, Skokie, Ill.

Continuation of Ser. No. 559,757, Jul. 30, 1990, abandoned, which is a division of Ser. No. 310,366, Feb. 13, 1989, Pat. No. 4,944,724, which is a continuation of Ser. No. 58,400, Jun. 5, 1987, abandoned. This application Aug. 3, 1992, Ser. No. 924,407

The portion of the term of this patent subsequent to May 31, 2005, has been disclaimed.

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—118 **15 Claims**



1. An apparatus for locating a body cavity having a fluctuating fluid pressure and transporting fluid either into or out of the cavity comprising:

a conduit comprising a flexible catheter having a spring covered by an elastomeric coating for entering the cavity;

means, in communication with said conduit, for producing a pulsating indication corresponding to the fluctuation of the fluid pressure in the cavity when said conduit enters the body cavity; and

means, in communication with said conduit, for transporting fluid either into or out of the cavity.

5,356,387

NEEDLE GUARD ASSEMBLY WITH DRAWSTRING FOR A SYRINGE

Michael Sirbola, 4468 W. Glen Pl., Rapid City, S. Dak. 57702

Filed Apr. 13, 1992, Ser. No. 867,419

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—198 **16 Claims**



1. A needle guard for a syringe comprising:

a forward annular member having an internal diameter sufficient to extend around a diameter of a syringe needle;

a cap flexibly fastened to said forward annular member;

a rearward annular member having a diameter suitable for attachment to the syringe;

a resilient member connected to said rearward annular member and connected to said forward annular member, said resilient member for urging said forward annular member away from said rearward annular member, said cap fastened to an end of said forward annular member opposite said rearward annular member; and

a drawstring means connected at one end to said forward annular member, said drawstring means extending toward said rearward annular member, said drawstring means for actuating a movement of said forward annular member toward said rearward annular member.

5,356,388

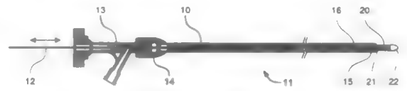
PERFUSION CATHETER SYSTEM

Ivan Sepetka, Redwood City, and Phong Pham, San Jose, both of Calif., assignors to Target Therapeutics, Inc., Fremont, Calif.

Filed Sep. 22, 1992, Ser. No. 948,720

Int. Cl.[5] A61M *5/178, 5/00*

U.S. Cl. 604—164 **10 Claims**



1. A catheter for placement within a tortuous, small vessel and for delivery of fluid at a target site, said catheter comprising an elongate tubular body having proximal and distal ends and a lumen extending between said ends, said catheter comprising:

(a) a polymeric tube extending continuously from said elongate tubular body proximal end to a perfusion tip attached distally of said polymeric tube, said tube being small enough and stiff enough to be guided through the tortuous small vessel; and

(b) a perfusion tip attached distally of the polymeric tube and having adjustable perfusion openings which are remotely adjustable so to allow a remotely controllable delivery rate of fluid at the target site.

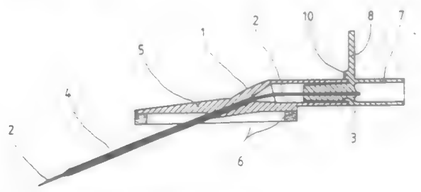
VOL 1167 ISS 3 OC 18 1994 UMI

5,356,389

INFUSION NEEDLE

Erika Willing, Emil-von-Behring Str. 17, 4290 Bocholt, Fed. Rep. of Germany

Filed Apr. 5, 1993, Ser. No. 42,807
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1992, 4211932
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—164 8 Claims



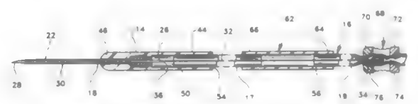
1. An infusion needle comprising
a needle receiving body comprising a first portion having a cylindrical receiving opening therein and a transition zone,
a plastic cannula which passes through said transition zone, said plastic cannula having a conically shaped first end which terminates at and is connected to said receiving opening and a second end extending away from the transition zone,
said first portion being constructed with a bend therein so that an angle is formed between said transition zone and said receiving opening of said body, and so that said plastic cannula emerges from said body at substantially said angle with respect to said first portion, and
a metal cannula which passes through and is removably received within said cylindrical receiving opening of said body and within said plastic cannula, said metal cannula being longer than said plastic cannula so that said metal cannula extends beyond said second end of said plastic cannula.

5,356,390

CATHETER INTRODUCER ASSEMBLY

Timothy J. Erskine, Way Sandy, Utah, assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 30, 1993, Ser. No. 130,067
Int. Cl.[5] A61M *25/01*
U.S. Cl. 604—164 15 Claims



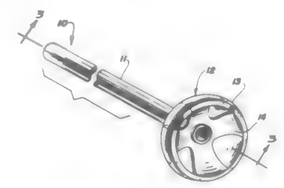
1. A catheter introducer assembly comprising:
a catheter having a proximal end, a distal end and a lumen extending there between;
a flexible tube having a proximal end, a distal end and a lumen extending there between, the lumen of the tube being in fluid communication with the lumen of the catheter;
an introducer needle having a proximal end and a distal end the needle being axially disposable in the catheter lumen;
an object connected to the proximal end of the needle, the object partially occluding the lumen of the tube and being slidable in the tube such that squeezing the tube adjacent the object causes the object to move axially in the lumen of the tube.

5,356,391

FLEXIBLE RETAINER FLANGE FOR GASTROSTOMY TUBE AND THE METHOD OF INSTALLING IT

Daren L. Stewart, Redwood City, Calif., assignor to Medical Innovations Corp., Milpitas, Calif.

Filed Jun. 22, 1992, Ser. No. 901,894
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—175 17 Claims



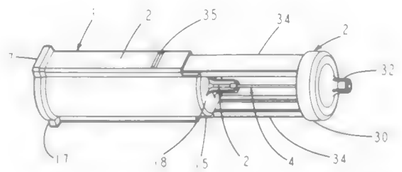
1. A gastrostomy tube comprising:
a catheter member comprising a distal end for placement within a patient's stomach, and a proximal end extending outside of the patient to provide access for feeding the patient through the catheter member; and
a dome-shaped flange means mounted to the distal end within the stomach and having a first diameter for retaining the gastrostomy tube in place within the stomach of the patient, the dome-shaped flange means comprising a sufficiently resilient and flexible reinforcing means for collapsing the dome-shaped flange means upon itself to form a second diameter smaller than the first diameter so as to become elongated in form to permit passage of the dome-shaped flange means through a body opening without the aid of an insertion and removal tool when the dome-shaped flange means is drawn through a body opening having a diameter less than the first diameter in response to a traction force applied to the catheter member.

5,356,392

SHIELDED BLOOD COLLECTION TUBE HOLDER

John R. Firth, Wilsonville, Oreg., and Anthony R. Perez, Alhambra, Calif., assignors to Safety Syringes, Inc., Arcadia, Calif.

Continuation-in-part of Ser. No. 783,825, Oct. 29, 1991, Pat. No. 5,279,581, which is a continuation-in-part of Ser. No. 581,734, Sep. 12, 1990, Pat. No. 5,108,378, which is a continuation-in-part of Ser. No. 521,243, May 9, 1990, abandoned. This application Jan. 18, 1994, Ser. No. 183,605
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—198 12 Claims



1. A disposable blood collection tube holder comprising a body having a first forward end with a needle for penetrating

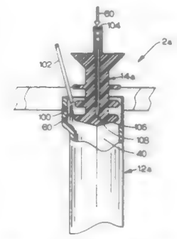
a blood vessel of a patient and a second rearward end having a cavity for receiving an evacuated blood collection tube,
a protector case adapted to slidably fit with respect to the body, and having a first open end through which the needle may extend and a second end wherein the second end of the of the case and the body have cooperating detent arms and channels with slots for facilitating placement of the case with respect to the body for uncovering and covering, respectively, an exposed end of the needle, and
a needle hub molded integrally to the first end of the body to which the needle is attached.

5,356,393

PLURAL DIAMETER SYRINGE

Terry M. Haber, Lake Forest; Clark B. Foster, Laguna Niguel, and William H. Smedley, Lake Elsinore, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Division of Ser. No. 521,704, May 10, 1990, Pat. No. 5,135,507.
This application Jul. 24, 1992, Ser. No. 918,968
Int. Cl.[5] A61M *5/315*
U.S. Cl. 604—222 4 Claims



1. A syringe structure or the like comprising:
a barrel having a distal end, a proximal end and a bore between the distal and proximal ends, the bore having an entrance bore and a main bore, the entrance bore being positioned nearer the proximal end than the main bore and having a larger diameter than the main bore;
a plunger including an outer end with entrance bore and main bore gaskets at the outer end, the entrance bore gasket being larger than the main bore gasket and sized to matingly engage the entrance bore, and the main bore gasket being sized to matingly engage the main bore but to be undersized with respect to the entrance bore; and
the entrance bore having an axial length sized so that both the entrance bore and main bore gaskets can be positioned within the entrance bore prior to use so that the compression set of the main bore basket prior to use is at least reduced.

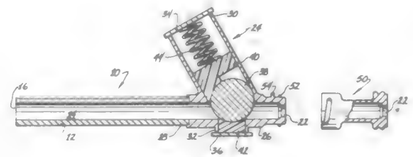
5,356,394

CANNULA WITH BALL VALVE

Kevin Farley, 4227 Susan Dr., Williamsville, N.Y. 14221, and Daniel M. Gudeman, 526 Chesterfield Ln., Barrington, Ill. 60010

Filed Oct. 9, 1992, Ser. No. 959,221
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—256 17 Claims

1. An improved cannula having a hollow body defining a cannula passage sized to receive instruments running therethrough, the cannula body having a distal end to be disposed in the human body and having a proximal end, wherein the improvement comprises a ball valve connected to the proximal end of said cannula body, the valve comprising:
(a) a hollow valve housing defining a cavity, the valve housing having an inlet and an outlet to said cavity sized to receive instruments, the inlet and outlet being located at opposite sides of the housing and being arranged along a first axis collinear with said cannula passage, the cavity further having a first end and a second end located opposite thereto, said ends being arranged along a second axis which intersects said first axis, the outlet being connected to the proximal end of the cannula body such that the cannula passage and a portion of the valve cavity between the inlet and the outlet are connected and collinear;



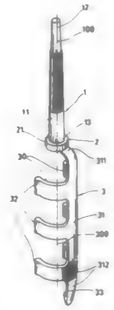
(b) a movable ball disposed within the valve cavity between the first end and the second end along said second axis which intersects; and
(c) first sealing means having upwardly curved face portion for engaging a portion of said ball and for pushing the ball along said second axis into an inlet sealing position, said seal means having associated therewith, biasing means for biasing the sealing means along said second axis.

5,356,395

SAFETY SYRINGE SHIELD

Shih-Shuan Chen, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (104), Taiwan

Filed Dec. 14, 1993, Ser. No. 165,837
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—263 3 Claims



1. A safety syringe shield comprising:
an alongated cap adapted for sealing a needle of a syringe therein and having a rim annularly formed on a rear end portion of said elongated cap; and
a holder means secured to said elongated cap, and slidably engageable with a syringe barrel and protruding rearwardly from said elongated cap adapted to be held by a user, whereby upon engagement of said syringe barrel in said holder means and upon forwardly pushing of the syringe to insert the needle into said cap, said needle of said syringe will be shielded in said cap for safety disposal;
said rim having plurality of teeth circumferentially formed on a periphery of the rim for temporarily engaging the needle and its tip on the teeth for preventing sidewardly slipping of the needle and needle tip from the rim when inserting the needle into an interior of the cap; and
said holder means attachable to a syringe barrel including a

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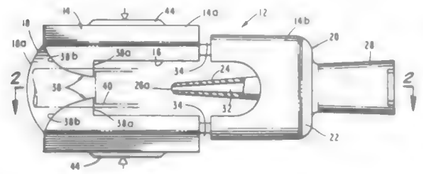
longitudinal stem having a front stem end arcuately bending inwardly and secured to the ring and a rear stem end protruding rearwardly from the stem to form a rear hook member adapted for lockably engaging the flange formed on a rear portion of a barrel of the syringe when inserting the needle into the cap, and at least a pair of holding guide members disposed on two opposite sides of the longitudinal stem for operatively holding and slidably guiding the barrel of the syringe for moving the syringe forwardly in order to insert the needle and a needle tip thereof into an interior of the cap for disposal of a used syringe without pricking a person.

5,356,396

INFUSION APPARATUS

Philip Wyatt, Glendale; Gary Schaeffer, Valencia, both of Calif., and Freddy Zinger, Raanana, Israel, assignors to Medical Associates Network Inc., Glendale, Calif.

Filed Sep. 29, 1992, Ser. No. 954,528
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—283 **18 Claims**



1. An apparatus for infusing liquids into a patient comprising:
(a) a Y site having a tubular body portion and an arm portion extending laterally therefrom, said tubular portion having a locking member and first and second ports, said first port being closed by a penetrable seal; and
(b) a connector for releasable interconnection with said Y site, said connector comprising:
(i) a cannula; and
(ii) a sheath assembly including a body having a longitudinally extending central axis and comprising a cylindrical wall surrounding said cannula over its length, said wall having a slot for receiving said arm portion of said Y site and including first locking means for locking engagement with said locking member of said Y site to lockably interconnect said connector with said Y site, said locking means being movable from a first locked position to a second unlocked position and comprising a pair of longitudinally extending locking members defined by spaced apart longitudinally extending slits provided in said cylindrical wall of said body, said locking members being yieldably deformable from a first position substantially parallel with said central axis to a second, non-parallel position.

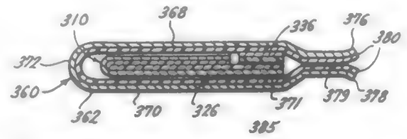
5,356,397

APPLICATOR MITT

Duane L. Storandt, 12 Hanley Downs, St. Louis, Mo. 63117

Continuation-in-part of Ser. No. 212,503, Jun. 28, 1988, Pat. No. 5,019,058, which is a continuation-in-part of Ser. No. 9,053, Jan. 27, 1987, abandoned, which is a continuation of Ser. No. 681,921, Dec. 14, 1984, abandoned, which is a continuation of Ser. No. 316,654, Oct. 30, 1981, abandoned. This application May 28, 1991, Ser. No. 705,918
Int. Cl.[5] A61M *35/00*
U.S. Cl. 604—292 **19 Claims**

1. An applicator mitt, formed from a single sheet of material having opposed side margins and end margins, the material being a laminate of a heat sealable substance and a substance suitable for use as an applicator portion, the sheet being folded in a direction transverse to the side margins such that the side margins of the sheet are folded onto each other substantially in register to provide overlying side panels and are heat sealed along at least part of a length in which they are in register, and the end margin of one panel being substantially free of attachment to the other panel to define an end opening at least a finger tip being insertable between the seals through the end opening, the applicator mitt having an external surface at least



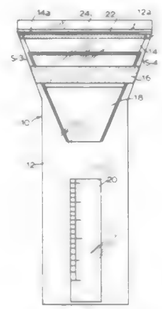
part of which is adapted as the applicator portion, and the mitt being packaged in a pouch comprising first and second panels secured together such as to enclose at least the applicator portion of the mitt, characterized in that the panels, in at least one section, are secured by peel-sealing, such that peeling of the section allows exposure for use of the mitt, one panel only of the mitt being operatively fixedly secured to its adjacent one panel of the pouch to connect the mitt to the pouch during use.

5,356,398

DISPOSABLE BAG FOR THE COLLECTION OF BODY FLUIDS

Michael W. Willis, Riverton, Utah, assignor to Laser Corporation, Salt Lake City, Utah

Filed Jul. 16, 1993, Ser. No. 92,716
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—321 **2 Claims**



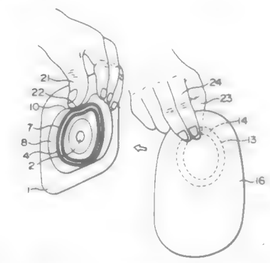
1. A disposable device for collection of body fluids, comprising:
(a) a body fluid collection bag formed of a flexible material, having an open topper upper portion in the shape when flat of a trapezoid having a top edge longer than a bottom edge, and having a closed bottom lower portion contiguous with said upper portion;
(b) first and second complementary seal strips integrally formed on and extending across respective opposed inner surfaces of said upper portion and being located parallel to and immediately below said top edge;
(c) a funnel formed of a resilient material, shaped to conform substantially to the shape of said upper portion of said bag, and having an outer surface of said funnel sealed to an inner surface of said upper portion of said bag in a location so that said funnel resides immediately beneath said complementary seal strips;
(d) a flexible non-return valve formed of a flexible material and having two opposed side walls connected at respective side edges thereof and having an upper edge and lower edge and with an inner surface of said upper edge sealed to an ,outer surface of said funnel and said lower edge residing below a bottom edge of said funnel;
(e) a scale formed on said lower portion of said bag and adapted to allow measurement of a quantity of body fluid collected in said bag; and
(f) a marking surface formed on said bag and adapted to received inscription of identification information relating to said collected body fluid.

5,356,399

OSTOMY APPLIANCE

Tetsuya Takahashi, Kawasaki, Japan, assignor to Alcare Col, Ltd., Tokyo, Japan

Filed Feb. 14, 1992, Ser. No. 837,354
Claims priority, application Japan, Feb. 15, 1991, 3-012846[U]
Int. Cl.[5] A61F *5/44*
U.S. Cl. 604—339 **12 Claims**



1. Ostomy appliance comprising an adhesive plate fixably positionable by adhesion around the aperture of a human body, a first flange attached to the non-adhesive side of said adhesive plate, and a second flange capable of fitting to said first flange,
said adhesive plate having an opening corresponding to the aperture of the human body,
said first flange being fixed to said adhesive plate and extending outwardly nearly along the surface of said adhesive plate, said first flange having a ring-form fitting portion on the side opposite to said adhesive plate and extending around the opening of said adhesive plate, said ring-form fitting portion having an outermost periphery extending therearound and around said opening, a collar portion extending around at least one portion of the ring-form fitting portion, said collar portion have a cut-away recess in at least a portion thereof, said cut-away recess reaching the outermost periphery of said fitting portion and being of sufficient size as to allow a finger to be inserted therein, and
said second flange having a ring-form fitting portion on one side thereof engageable with the fitting portion of said first flange, said cut-away recess being positioned so as to enable placement of a finger against the outermost periphery of the fitting portion of said first flange to enable aligning said fitting portions for engagement.

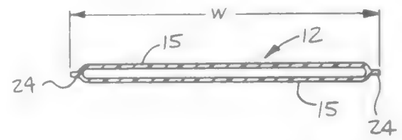
5,356,400

LARGE BORE DRAINAGE APPARATUS

John E. Temple, 2442 McKinley, Chelsea, Mich. 48118

Filed May 6, 1993, Ser. No. 58,487
Int. Cl.[5] A61B *19/00*
U.S. Cl. 604—356 **15 Claims**

1. An apparatus for draining a biological substance from a collection bag attached to a patient producing said substance, said apparatus comprising:
a large bore, thin walled drainage tube which expands to have a substantially circular cross-sectional configuration when a biological substance is passing therethrough and collapses into a substantially flat cross-sectional configuration when said tube is empty, said tube normally being in said collapsed configuration; and
a flat connector for attaching an end of said tube to an outlet of a collection bag containing said biological substance, said connector comprising two opposed, mating pieces formed of a resilient, fluid impervious material, each of



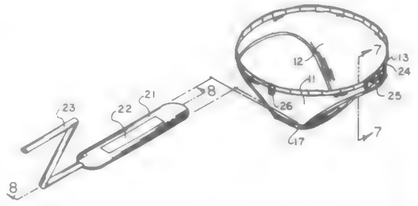
said mating pieces having a width greater than the outside diameter of said drainage tube when said drainage tube is in said collapsed condition such that edge portions of said connector members extend beyond said tube when said connector member is attached to said tube, said connector members further including an adhesive layer disposed thereon for adhesive attachment to said tube end and said drainage bag outlet.

5,356,401

FRAGRANCE INSERT PANTY UNDERGARMENT

Cathy E. Levari, 24972 Express Dr., Laguna Hills, Calif. 92653

Filed Oct. 19, 1992, Ser. No. 962,693
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—359 **1 Claim**



1. A fragrance insert panty undergarment, comprising,
a panty member having a continuous body panel formed with a front panel spaced from a rear panel, with the front panel and the rear panel interconnected by a porous fabric crotch web, and
the body panel including a continuous elastomeric band at an upper terminal end of the body panel, and
a right leg opening and a left leg opening directed through the body panel between the front panel and the rear panel on opposed sides of the crotch web, and
the crotch web including a pocket cavity, and
the pocket cavity having a pocket flap, and
the pocket flap includes a first hook or loop fastener patch and the front panel includes a second loop or hook fastener patch corresponding to said first patch, respectively, with the first fastener patch securable to the second fastener patch to permit enclosure of the pocket cavity, and an insert web received within the pocket cavity, and the insert web is formed of a flexible fibrous fluid saturated pad, and
the insert web having a contrasting coloration identification pad mounted to the insert web for identification of the insert web, and
the elastomeric band includes a fluid reservoir tube secured coextensively to the elastomeric band and the reservoir

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tube having a fill cap to permit directing of fluid within the reservoir tube, and the reservoir tube in fluid communication with a reservoir outlet tube, and a fluid conduit, the fluid conduit having a first end received within the reservoir outlet tube, and a second end directed into the insert web to direct fluid from the reservoir tube into the insert web.

5,356,402

REUSABLE DIAPER

Suzanne Gillies, and John Gillies, both of R.R. #3, King City, Ontario, Canada

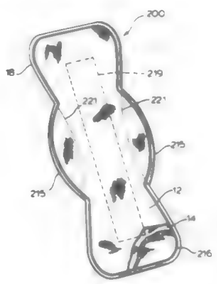
Continuation-in-part of Ser. No. 650,543, Feb. 5, 1991, Pat. No. 5,267,991. This application Apr. 30, 1993, Ser. No. 54,474

Claims priority, application United Kingdom, Sep. 7, 1990, 9019619.7

The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—375 **20 Claims**



1. A washable and reusable mat for the absorption, dispersion and retention of a liquid, said mat comprising a plurality of non-woven layers of carded and cross-laid viscose rayon fibres having a cross-section of substantially rigid multi-limbed configuration, said layers being stitchbonded together into a cohesive web, said layers stitchbonded with a thread under medium tension to stabilize and maintain the web whereby the fibres that are gripped by the thread are not bunched up and tightened in a manner that would interfere with uniform absorption and dispersion of the fluid throughout said web after repeated washings.

12. A washable and reusable feminine hygiene pad for the absorption, dispersion and retention of liquids, said pad comprising:

a) an interior layer of hydrophobic material presenting a receiving surface:

b) a median layer adjacent the interior layer opposite the receiving surface comprising carded and cross-laid layers of unbonded viscose rayon fibres, said fibres having a cross-section of substantially rigid multi-timbed configuration, the layers of rayon fibres stitchbonded with a thread under medium tension to stabilize and maintain the layers of rayon fibres in a cohesive web whereby the fibres that are gripped by the thread are not bunched up and tightened in a manner that would interfere with uniform absorption and dispersion of the fluid throughout the web;

c) an outer layer of substantially waterproof polyurethane film adjacent the median layer;

said interior layer, median layer and outer layer being joined only along the outer edges thereof to form a pad of unitary construction.

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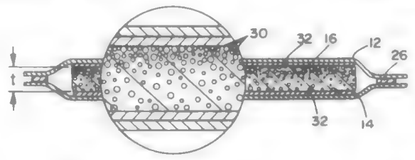
ABSORBENT STRUCTURE COMPRISING A FIBROUS MATRIX HAVING DUAL Z-DIRECTIONAL GRADIENT

Michael J. Faulks, Neenah, and Daniel R. Schlinz, Appleton, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 30, 1992, Ser. No. 982,806

Int. Cl.[5] A61F *13/15, 13/20*

U.S. Cl. 604—378 **53 Claims**



1. An absorbent structure, said absorbent structure comprising:

a fibrous matrix having a first one-half comprising a first major planar surface, and a second one-half comprising a second opposed major planar surface, said first one-half and said second one-half of said fibrous matrix containing a high-absorbency material, said fibrous matrix being characterized in that the first one-half of said fibrous matrix containing said first major planar surface comprises a greater concentration of high-absorbency material and has a lower average density than the second one-half of said fibrous matrix containing said second major planar surface and wherein said first one-half of said fibrous matrix comprises from about 20 to about 95 weight percent of said high-absorbency material based on a total weight of the fibrous matrix and high-absorbency material present in said first one-half of the fibrous matrix.

5,356,404

Patent Not Issued For This Number

5,356,405

ABSORBENT PARTICLES, ESPECIALLY CATAMENIALS, HAVING IMPROVED FLUID DIRECTIONALITY, COMFORT AND FIT

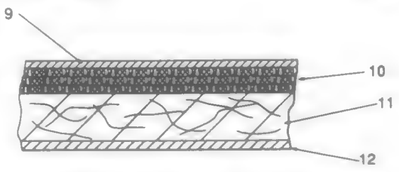
Hugh A. Thompson, Fairfield; Gerald A. Young; Thomas W. Osborn, III, both of Cincinnati; Charles W. Chappell, West Chester; John L. Hammons, Hamilton; James C. Horney, Cincinnati, and Lee M. Hines, Wyoming, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 734,404, Jul. 23, 1991, abandoned. This application Apr. 6, 1993, Ser. No. 43,645

The portion of the term of this patent subsequent to Jan. 25, 2011, has been disclaimed.

Int. Cl.[5] A61F *13/15, 13/20*

U.S. Cl. 604—384 **15 Claims**



1. An absorbent article having a long axis and a short axis, comprising:

(a) a fluid permeable formed-film topsheet having a back face and a fluid-receiving front face, said topsheet having multiple openings communicating between said front face and said back face for passage of fluid through said topsheet;

(b) an intermediate layer comprising substantially curled polymeric fibers having external intrafiber capillary channels sized to draw fluid away from the openings in said topsheet, said curled fibers being positioned such that the external intrafiber capillary channels lie substantially parallel to the long axis of said article, said intermediate layer underlying the back face of said topsheet and being in fluid-transporting contact therewith;

(c) a fibrous moisture-absorbing structure underlying said intermediate layer and in fluid-transporting contact therewith, said moisture-absorbing structure comprising multiple non-capillary channel fibers, said non-capillary channel fibers in said moisture-absorbing structure arranged such that spacings between said non-capillary channel fibers perform a relatively strong capillary function to draw fluid away from the external intrafiber capillary channels in the curled fibers of said intermediate layer; and

(d) a fluid impermeable backsheet underlying said moisture-absorbing structure.

5,356,406

ADAPTOR TO FACILITATE INTERCONNECTION OF MEDICINE BOTTLE AND SYRINGE

Steven Schraga, 1841 NE. 146 St., North Miami, Fla. 33181

Filed Jan. 8, 1993, Ser. No. 2,256

Int. Cl.[5] A61B *19/00*

U.S. Cl. 604—415 **6 Claims**



1. For use in charging a dose of medicine through the mouth of a medicine bottle into a syringe having an exterior surface and which syringe includes a barrel and needle extending from the barrel,

a medicine bottle cap and a mating tubular adaptor,

said cap being sized and configured to engage the medicine bottle and close the bottle mouth and said cap having a central target zone of relatively small diameter in covering relation of a portion of the bottle mouth,

said target zone comprising pierceable material to be pierced by the needle to withdraw medicine and charge the syringe barrel with a dose of said medicine,

said mating tubular adaptor having a through axial passageway, said adaptor including

a) a first end zone with an outer axially facing surface and defining a recessed skirt portion of said passageway extending axially from said outer axially facing surface and into said first zone, said skirt portion being sized and adapted to receive said bottle cap in said recessed skirt position and comprising means to removably fasten said cap to said adaptor and maintain said adaptor and bottle cap in co-axial alignment,

b) a second end zone with an outer axially facing surface, said second end zone having a single truncated, cone-shaped recessed portion co-axial with said skirt portion, said truncated, cone-shaped recessed portion converging at a substantially constant slope from an enlarged mouth at the outer axially facing surface of said second end zone with said mouth having a diameter greater than said target zone diameter,

c) an intermediate portion between the first and second end zones having a bore interconnecting said cone-shaped recess and said skirt said bore having a diameter substantially equal to said target zone diameter,

d) said cone-shaped surface of said recessed portion defining a needle guide means for the distal end of said needle to guide the distal end of the needle to and through said bore and target zone upon the application of a generally co-axially directed force toward the first end to pierce the central target zone of said cap.

5,356,407

OPHTHALMIC SURGERY PROBE ASSEMBLY

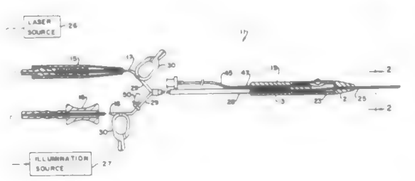
James C. Easley, St. Charles; Gregory A. Blount, St. Peters, and Gregg D. Scheller, Chesterfield, all of Mo., assignors to Infinitech, Inc., Chesterfield, Mo.

Continuation-in-part of Ser. No. 876,191, Apr. 30, 1992. This application Jul. 29, 1993, Ser. No. 99,056

The portion of the term of this patent subsequent to Jan. 4, 2011, has been disclaimed.

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—4 **14 Claims**



11. A probe assembly for ophthalmic surgery and the like comprising:

a handpiece having a handpiece body and a hollow tip of a size suitable for insertion into a human eye, said handpiece body having a proximal end and a distal end, said hollow tip having a proximal end and a distal end and extending distally from the handpiece body;

a laser connector for connection to a laser source;

an illumination connector for connection to an illumination source;

a fiber optic assembly, said fiber optic assembly consisting essentially of a first single optical fiber and a second single optical fiber, said first optical fiber having a proximal end and a distal end, said first optical fiber terminating at the proximal end in the laser connector and terminating at the distal end in the handpiece for transmitting laser light from the laser source to an eye to be treated;

said first optical fiber extending at least partially through the handpiece tip;

said second optical fiber having a proximal end and a distal end, said second optical fiber terminating at the proximal end in the illumination connector and terminating at the distal end in the handpiece for transmitting illumination from the illumination source to an eye to be treated;

said second optical fiber extending at least partially through the handpiece tip.

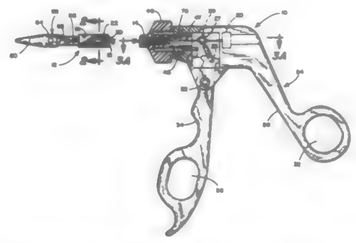
VOL 1167 ISS 3 OC 18 1994 UMI

5,356,408

BIPOLAR ELECTROSURGICAL SCISSORS HAVING NONLINEAR BLADES

Mark A. Rydell, Golden Valley, Minn., assignor to Everest Medical Corporation, Minneapolis, Minn.

Filed Jul. 16, 1993, Ser. No. 92,076
Int. Cl.[5] A61D *17/39*
U.S. Cl. 606—48 12 Claims



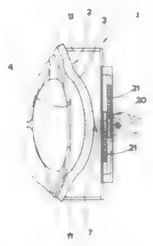
1. A bipolar electrosurgical scissors instrument comprising a proximal portion having a proximal linear axis and a distal blade portion affixed to said proximal portion and having cooperating first and second parallel cutting blade members wherein at least one cutting blade member is pivotable relative to said proximal portion and wherein the cutting blade members have a non-parallel axis in relation to the proximal linear axis, said cutting blade members each comprising an electrically conductive outer surface and an electrically non-conductive inner surface, said inner surface comprising a ceramic layer having a honed cutting edge whereby pivoting of the at least one cutting blade member causes the honed cutting edge of the first cutting blade member to wipe the honed cutting edge of the second cutting blade member and handle means affixed to said proximal portion and operatively coupled to said at least one cutting blade member for imparting pivoting motion to said at least one cutting blade member.

5,356,409

EQUIPMENT FOR THE CORRECTION OF ASTYGMATISM BY REMODELLING THE CORNEAL SURFACE BY MEANS OF PHOTO-ABLATION

Guido M. Nizzola, Modena, Italy, assignor to Nibatec S.A., Chiasso, Switzerland

Filed Nov. 17, 1992, Ser. No. 977,579
Claims priority, application Italy, Nov. 21, 1991, MO91A000167
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—5 12 Claims



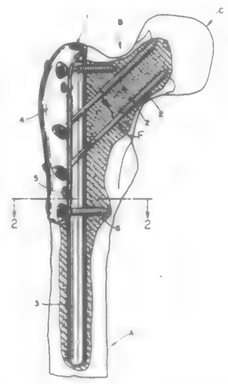
10. The assembly according to claim 9, wherein each of said straight sides is an opposite edge of a sheet which is pivotable about an axis that is parallel to the two middle sides; the length of said sheet being substantially equal to or greater than the length of said respective middle side.

5,356,410

ADJUVANT FOR OSTEOSYNTHESIS IN THE CASE OF PERTROCHANTERIC FRACTURE OF THE NECK OF THE FEMUR

Dietmar Pennig, Hans-Driesch-Strasse 12, 5000 Köln, Fed. Rep. of Germany

Filed Jun. 8, 1993, Ser. No. 75,495
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1991, 4141152; European Pat. Off., Dec. 4, 1992, 92120696.7
Int. Cl.[5] A61B *17/58*
U.S. Cl. 606—62 15 Claims



1. An osteosynthesis adjuvant for use in a case of bone fracture, comprising a medullary nail and an osteosynthesis plate, said medullary nail having at an end thereof means for rigid connection to said osteosynthesis plate, said osteosynthesis plate having plural spaced bores designed to accommodate bone screws, and said bores being arrayed as longitudinally spaced pairs of transversely spaced holes, wherein the transverse spacing of paired holes is greater than the diameter of the medullary nail.

5,356,411

BONE TRANSPORTER

Alan R. Spievack, 65 Lowell Ave., Watertown, Mass. 02172

Continuation-in-part of Ser. No. 18,820, Feb. 18, 1993. This application Feb. 9, 1994, Ser. No. 194,381
Int. Cl.[5] A61B *17/56*
U.S. Cl. 606—63 21 Claims

1. A device for transporting a segment of bone intentionally separated at an interim point from the proximal end of a bone toward a void in the bone in the direction of the distal end in a human or animal by incrementally extending the distance between the segment and the proximal end to permit continued growth between the intentionally separated portions comprising:

an intramedullary nail having a distal portion and a proximal portion;

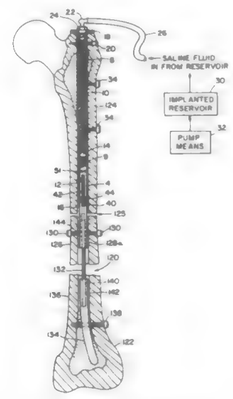
the proximal portion of the nail being securable within the medullar canal of the bone at the proximal end of the bone;

the distal portion of the nail comprising a discrete tip securable within the medullar canal of the bone at the distal end of the bone;

a hydraulic cylinder connected to the proximal portion of the nail;

a piston securable to the intentionally separated segment of the bone and movable in the cylinder;

a supply of operating fluid in communication with the cylinder; and



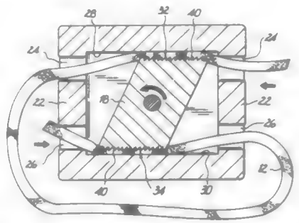
a rod between the piston and the discrete tip with means permitting relative movement between said piston and said discrete tip.

5,356,412

STERNUM BUCKLE WITH ROTATIONAL ENGAGEMENT AND METHOD OF CLOSURE

Ellen M. Golds, Hastings-on-Hudson, N.Y., and Ross R. Muth, Brookfield, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 9, 1992, Ser. No. 959,051
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—74 27 Claims



1. A strap assembly for surgical repair of split portions of a human sternum to retain the sternum portions in adjacent contacting relation during healing, which comprises:

a strap member dimensioned to be passed through intercostal tissue and about split portions of a sternum, said strap member having first and second end portions; and

a buckle member dimensioned to be positioned adjacent the sternum, said buckle member comprising:

means for receiving at least said first end portion of said strap member and for permitting passage of said first end portion through said buckle member; and

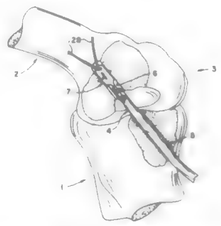
rotatable means within said buckle member for rotating to a strap securing position in response to tensional forces exerted on said strap member during tightening thereof about the sternum portions for securing said strap member in a looped tensioned condition about the split sternum portions, said rotatable means rotatably mounted about a pin disposed within said buckle member.

5,356,413

SURGICAL ANCHOR AND METHOD FOR DEPLOYING THE SAME

Harold M. Martins, Newton; John T. Rice, Lincoln, both of Mass., and Lonnie E. Paulos, Salt Lake City, Utah, assignors to Mitek Surgical Products, Inc., Norwood, Mass.

Filed Mar. 12, 1993, Ser. No. 30,657
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—75 24 Claims



1. A surgical anchor for attaching an object to a bone-like structure defining a tunnel therein, said anchor comprising:

a coupling member adapted for longitudinal insertion into said tunnel, and a plurality of barbs attached to said coupling member in axially aligned, circumferentially spaced relation to one another;

said coupling member comprising a body having a longitudinal axis, a maximum cross-section transverse to said longitudinal axis, an outer surface, a front end, a front portion adjacent said front end, a rear end, a rear portion adjacent said rear end defining an opening extending therethrough, a slot aligned with said longitudinal axis and extending from said opening to said front end, and connection means associated with said front portion, said front end and said front portion together defining a generally forwardly pointed configuration, and said connection means being adapted for releasable engagement by anchor pulling means; and

each said barb being elastically deformable, including an outer end, and being attached to said coupling member forwardly of said opening such that each said barb normally extends rearwardly and radially outwardly from said outer surface with said outer end of each said barb being normally located outwardly of an axial projection of said maximum transverse cross-section of said body, and such that each said barb is elastically deformable into a configuration located substantially within said axial projection.

5,356,414

PROSTHETIC KNEE TIBIAL COMPONENT WITH AXIALLY RIBBED KEEL AND APPARATUS FOR EFFECTING IMPLANT

Robert C. Cohen, Rockaway Township, Morris County; Robert G. Averill, Ringwood, and Scott V. Cron, Rahway, all of N.J., assignors to Osteonics Corp., Allendale, N.J.

Division of Ser. No. 834,675, Feb. 12, 1992, Pat. No. 5,282,866.
This application Nov. 15, 1993, Ser. No. 151,983
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—88 5 Claims

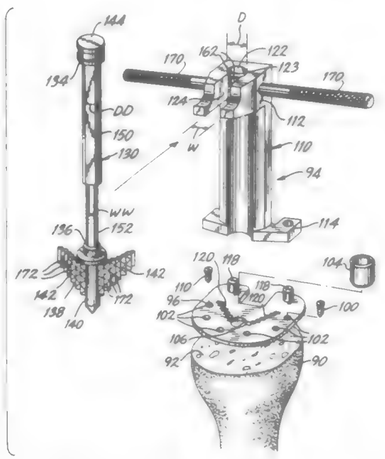
1. Apparatus for preparing the proximal tibia for the reception of a tibial component of a prosthetic knee implant, the tibial component including a tibial tray having an upper surface for confronting the femur, a lower surface for engaging the proximal tibia, and a keel projecting in an axial direction downwardly from a proximal end at the lower surface of the tibial tray to a distal end spaced away from the lower surface, the keel including a pair of flanges extending in the axial direction and establishing a generally V-shaped overall cross-sectional configuration in planes transverse to the axial direction,

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the V-shaped cross-sectional configuration having an apex located essentially centrally of the tibial tray along the medial-lateral direction, the flanges each having an inner edge located at the apex and an outer edge spaced away from the apex in a medial-lateral direction and extending in a posterior direction from the inner edge toward the outer edge such that the flanges make an angle with one another for being directed toward relatively denser portions of the bone of the proximal tibia, the apparatus comprising:

a tibial punch having an elongate shaft, cavity-forming means at one end of the shaft for entering the proximal tibia to establish a cavity in the proximal tibia for reception of the keel, and impact means at the other end of the shaft for receiving an impact for driving the cavity-forming means into the proximal tibia, the elongate shaft including a bearing portion adjacent the impact means and a neck portion between the bearing portion and the cavity-forming means, the bearing portion having a first diameter and the neck portion having a second diameter;

a tower having a guide bushing, adapted to slidably receive the tibial punch and a base for location at the proximal tibia such that the tower places the guide bushing at a



location spaced a predetermined axial distance away from the base and the proximal tibia;

an axially extending guideway in the guide bushing, the guideway having a diameter corresponding to the diameter of the bearing portion of the elongate shaft for guiding the bearing portion in axial directions toward and away from the proximal tibia;

a channel extending laterally through the guide bushing to the guideway, the channel having a width for accommodating the diameter of the neck portion of the elongate shaft such that upon registration of the neck portion with the channel, the punch may be moved laterally into the guideway to be placed at a first position wherein the cavity-forming means is located between the guide bushing and the base of the tower, and subsequently may be moved axially toward the proximal tibia to a second position wherein the bearing portion of the elongate shaft is engaged with the guideway and the cavity-forming means is in appropriate axial alignment with the proximal tibia, and then to a third position wherein the appropriately aligned cavity-forming means is driven into the proximal tibia.

5,356,415

DEPILATING DEVICE

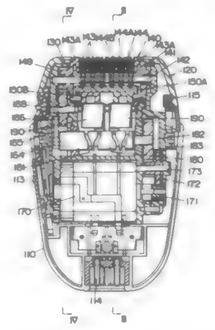
Juzaemon Iwasaki, Nagahama; Masao Tanahashi, and Hidekazu Sueyoshi, both of Hikone, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Feb. 19, 1992, Ser. No. 836,903

Claims priority, application Japan, Feb. 20, 1991, 3-026104; Jun. 25, 1991, 3-152786; Dec. 20, 1991, 3-338559

Int. Cl.[5] A45D *26/00*; A61B *17/00*

U.S. Cl. 606—133 **12 Claims**



1. A depilating device for removing hairs from the skin of a user, said device comprising:

a carrier having a longitudinal axis and mounting a series of fixed and movable pinching plates arranged along an axial direction of said carrier, said fixed pinching plates being fixed in said axial direction and said movable pinching plates being movable in said axial direction, said fixed and movable pinching plates being positioned in a closely adjacent relation to define small clearances between the fixed pinching plates and adjacent movable pinching plates for entrapping hairs therebetween;

shuttle means connected to said movable pinching plates to displace said movable pinching plates relative to the adjacent fixed pinching plates along said axial direction in order to repeatedly clamp the hairs between adjacent fixed and movable pinching plates and releasing the same, thereby plucking the hairs from the skin; and

wherein said fixed and movable pinching plates are arranged on said carrier and connected to said shuttle means such that the shuttle means displaces adjacent movable pinching plates in opposite directions along the longitudinal axis of said carrier, each of the adjacent movable pinching plates thereby being pivoted toward different adjacent fixed pinching plates in a clamping movement, providing a clamping force therebetween, and wherein said movable pinching plates on opposite sides of a common fixed pinching plate apply counterbalancing clamping forces thereto, resulting in a clamping and releasing movement of said movable pinching plates.

5,356,416

COMBINED MULTIPLE LIGATING BAND DISPENSER AND SCLEROTHERAPY NEEDLE INSTRUMENT

Michael S. H. Chu, Brookline, and Yem Chin, Burlington, both of Mass., assignors to Boston Scientific Corporation, Watertown, Mass.

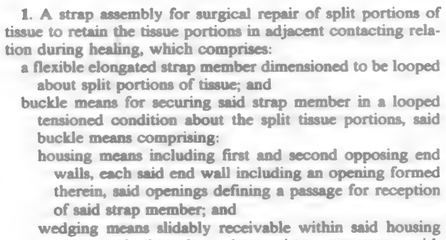
Continuation-in-part of Ser. No. 960,081, Oct. 9, 1992, Pat. No. 5,269,789. This application Oct. 19, 1993, Ser. No. 139,585

Int. Cl.[5] A61B *17/12*

U.S. Cl. 606—140 **20 Claims**

1. An instrument for selectively transferring a fluid, for dispensing ligature means for band ligation and for being introduced through an endoscope that extends between distal and proximal ends and has a working lumen, said instrument comprising:

A. a ligature means dispenser for being located at the distal end of the endoscope and including first and second coaxially located segment means for supporting a ligature means thereon and one of said segment means being moveable between first and second positions relative to the other of said segment means thereby to dispense the ligature means from the distal end of said instrument,



B. elongated sheath means for extending from the distal end of said instrument to a location exteriorly of said instrument at the proximal end thereof through the endoscope working lumen, said sheath means being adapted for attachment to said one segment means and being slidable in the working lumen to operate said ligature means dispenser, and

C. elongated catheter means extending through said elongated sheath means to beyond the proximal and distal ends thereof and being slidable in said elongated sheath means for defining a fluid transfer passage between the proximal and distal ends of said elongated catheter means.

5,356,417

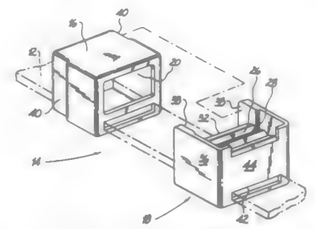
ABSORBABLE STERNUM CLOSURE BUCKLE

Ellen Golds, Hastings-on-Hudson, N.Y., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 9, 1992, Ser. No. 959,165

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—151 **29 Claims**



1. A strap assembly for surgical repair of split portions of tissue to retain the tissue portions in adjacent contacting relation during healing, which comprises:

a flexible elongated strap member dimensioned to be looped about split portions of tissue; and

buckle means for securing said strap member in a looped tensioned condition about the split tissue portions, said buckle means comprising:

housing means including first and second opposing end walls, each said end wall including an opening formed therein, said openings defining a passage for reception of said strap member; and

wedging means slidably receivable within said housing means and adapted to advance into engagement with said strap member to securely wedge said strap member against one of said first and second end walls of said housing means.

5,356,418

APPARATUS AND METHOD FOR ROTATIONAL ATHERECTOMY

Leonid Shturman, Minneapolis, Minn., assignor to Shturman Cardiology Systems, Inc., Minneapolis, Minn.

Filed Oct. 28, 1992, Ser. No. 967,765

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—159 **14 Claims**



1. Apparatus for performing an atherectomy, comprising:

a rotational atherectomy device having a flexible, elongated drive shaft and an abrasive burr carried on the drive shaft, the drive shaft and abrasive burr each including a central lumen therein for receipt of a guide wire; and

a guide wire having a flexible, generally straight proximal portion, a flexible distal end portion, each such portion having a longitudinal axis, the longitudinal axis of at least a portion of the flexible distal end portion being normally substantially parallel to the longitudinal axis of the proximal portion, and flexible intermediate burr-positioning segment means having a predetermined curved shape for laterally positioning the abrasive burr with respect to one or both of the proximal portion and the distal end portion of the guide wire so that when the abrasive burr is advanced over the guide wire to a position along the curved burr-positioning segment means, such curved burr-positioning segment means positions the burr laterally away from one or both of such longitudinal axes.

5,356,419

CUTTING INSTRUMENTS FOR ENDOSCOPIC SURGERY

James C. Chow, 3001 Caroline Dr., Mt. Vernon, Ill. 62864

Division of Ser. No. 622,451, Dec. 5, 1990, abandoned, which is a division of Ser. No. 502,217, Mar. 30, 1990, Pat. No. 5,029,573. This application Jan. 6, 1993, Ser. No. 1,387

Int. Cl.[5] A61B *1/00*; B26B *3/00*

U.S. Cl. 606—170 **1 Claim**



1. An endoscopic surgical cutting instrument for use on humans comprising an elongate handle and an operative portion extending outwardly from a distal end of said handle, said operative portion having a distal substantially triangular planar

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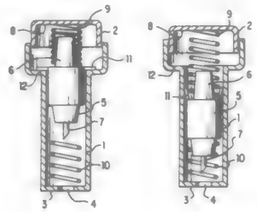
surface, said surface having two sides forming a pointed end and a base, the base of said surface together with the operative portion being triangular in configuration, the base of which extends laterally from said handle, said surface having a single blade section with opposing blade faces substantially the entire length from point to base, and wherein each of said blade faces extends obliquely from said handle.

5,356,420

DEVICE FOR PUNCTURING

Andrzej Czernecki; Dariusz Firchal, and Marek Królikowski, all of Warsaw, Poland, assignors to Przedsiebiorstwo Zagraniczne HTL, Warsaw, Poland

Filed Jul. 26, 1993, Ser. No. 96,417
Claims priority, application Poland, Aug. 3, 1992, 295552
Int. Cl.[5] A61B *17/34*
U.S. Cl. 606—182 13 Claims



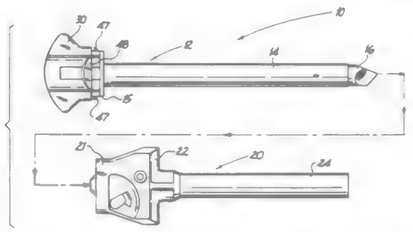
1. A puncturing device comprising: a sleeve having a top end and a bottom end, the bottom end having a hole formed therein; a push-button mounted at the top end of the sleeve and slidable with respect to the sleeve, the push button having an inner face; a piston which is slidably mounted in the sleeve; a power spring placed inside the sleeve between the inner face of the push-button and the piston; wherein the piston is provided with a puncturing tip at one end and at least one frangible wing projecting radially outward from the piston outer perimeter, the wing resting against an internal projection of the sleeve to restrict the range of sliding of the piston within the sleeve such that the puncturing tip is maintained within the sleeve; and a return spring placed inside the sleeve between the sleeve's bottom and the piston for biasing the puncturing tip back into the sleeve when the frangible wing is broken.

5,356,421

SAFETY TROCAR WITH LOCKING HANDLES

Salvatore Castro, Seymour, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 7, 1992, Ser. No. 957,673
Int. Cl.[5] A61M *5/18*
U.S. Cl. 606—185 15 Claims



1. Apparatus for locking an obturator housing to a cannula housing, said obturator housing having an obturator shaft extending distally therefrom, which comprises:

(a) pivoting means positioned at least partially within said obturator housing and having at least one latch associated therewith for securing said obturator housing to said cannula housing;

(b) latch receiving means positioned at a proximal end of said cannula housing for receiving said at least one latch;

(c) actuating means operatively connected to said obturator shaft for moving said pivoting means such that said at least one latch engages said latch receiving means when said obturator shaft is advanced distally relative to said cannula housing, said actuating means being movable with respect to said obturator housing, and being housed at least in part by and accessible through an outer surface of said obturator housing; and

wherein said at least one latch of said pivoting means automatically disengages from said latch receiving means when said obturator shaft moves proximally with respect to said cannula housing.

5,356,422

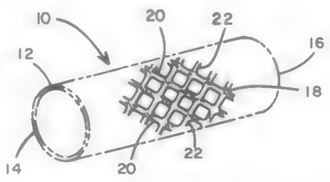
Patent Not Issued For This Number

5,356,423

RESECTABLE SELF-EXPANDING STENT

Claude Tihon, Eden Prairie; John H. Burton; Bradford G. Staehle, both of Minnetonka, all of Minn., and Michael A. Mikulich, La Conversion, Switzerland, assignors to American Medical Systems, Inc., Minnetonka, Minn.

Continuation of Ser. No. 875,675, Apr. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 637,356, Jan. 4, 1991, abandoned. This application Apr. 22, 1993, Ser. No. 53,846
Int. Cl.[5] A61M *29/00;* A61F *2/06*
U.S. Cl. 606—194 10 Claims



1. A stent for insertion into a tubular organ for maintaining the organ patent, comprising a single-piece, single-layer, non-braided tubular member having a single-plane fenestrated side wall exhibiting a pattern of regular cut-outs forming spaced openings, said tubular member radially compressible from a larger diameter to a smaller diameter and self-expandable when the radial compressive force is removed, the compression and later expansion producing a change in length of less than about 10%.

5,356,424

LAPAROSCOPIC SUTURING DEVICE

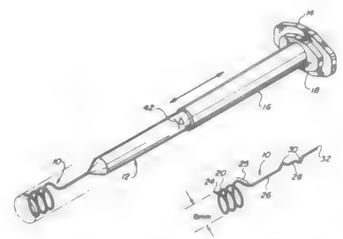
John E. Buzerak, Poughquag, N.Y.; Robert J. Bedard, Southbury, Conn.; Janniah S. Prasad, Norwalk, Conn.; Charles L. Putnam, Fairfield, Conn.; Lester Miller, Danbury, Conn.; Steven I. Becker, Bergen, N.J., and James Coleman, Richmond, England, assignors to American Cyanamid Co., Wayne, N.J.

Filed Feb. 5, 1993, Ser. No. 13,871
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—223 6 Claims

1. A laparoscopic suturing device, comprising:

a suturing needle formed with a helically-wound front-end portion having a sharp needle point at its distal end for penetrating tissue, a rear-end portion, a substantially straight middle portion connected to said rear-end portion, and a transitional portion connected between said middle portion and said helically-wound front-end portion, said middle portion extending along and aligned with a central axis of said helically-wound front-end portion; and

a driver detachably connected to said rear-end portion, wherein



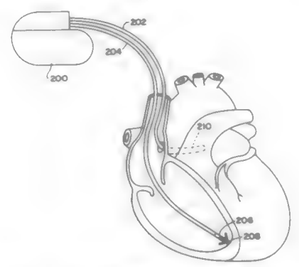
said rear-end portion includes an offset section offset from an axial center of said suturing needle, with said offset section secured within said driver and capable of transmitting torsional and longitudinal force from said handle to said suturing needle.

5,356,425

METHOD AND APPARATUS FOR TREATMENT OF ATRIAL FIBRILLATION AND FLUTTER

Gust H. Bardy, Seattle, Wash., and Rahul Mehra, Stillwater, Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 906,914, Jun. 30, 1992, abandoned. This application Jun. 24, 1993, Ser. No. 82,327
The portion of the term of this patent subsequent to Aug. 2, 2011, has been disclaimed.
Int. Cl.[5] A61N *1/372*
U.S. Cl. 607—14 21 Claims



1. A method of electrical stimulation, comprising:

placing an electrode in an appropriate location for stimulating the AV nodal fat pad of a human heart;

defining a first heart rate;

sensing the rate at which said human heart is beating; and

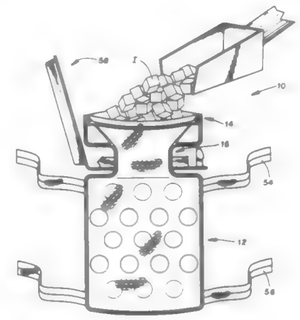
providing said stimulus pulses to said electrode, synchronized to depolarizations of a chamber of said human heart in response to the rate at which said heart is beating exceeding said first heart rate.

5,356,426

REFILLABLE ICE PACK

Robert E. Delk, Dallas, and Michael L. Bowen, Arlington, both of Tex., assignors to Strucksmeyer Corporation, Dallas, Tex.

Filed Apr. 13, 1993, Ser. No. 45,360
Int. Cl.[5] A61F *7/04*
U.S. Cl. 607—112 28 Claims



1. An ice pack, comprising:

a) a reservoir for receiving contents therein, said reservoir having:

1) a first side; and

2) a second side joined to said first side, said second side incorporating means for providing a greater heat exchange rate than said first side, whereby

a temperature differential is provided between said second side and said first side;

b) a mouth for receiving contents therethrough to fill said reservoir, said mouth being integral with said reservoir;

c) means for retaining contents in said reservoir, said retaining means being attachable at a juncture between said reservoir and said mouth; and

d) said first and second sides each including an inner layer, an outer layer, and an intermediate layer interposed between said inner and outer layers, said inner layers being of sheet material impervious to liquids and each said intermediate layer being of a non-absorbent material and including perforations formed therethrough, said perforations in said intermediate material of said first side being distinct from said perforations of said intermediate layer of said second side, whereby

a distinction in said perforations between said first and second sides forms the temperature differential between said first and second sides.

5,356,427

CATHETER FOR TEMPORARY PACING AND PACEMAKER

Shinichi Miyata, Yokohama; Takashi Kawabata, Hasuda; Kiyoshi Takagi, Yokohama; Masaru Miyahara, Tokyo; Takashi Tsuji, Fujisawa; Shigeto Yoshida; Masayuki Horikawa, both of Yokohama, and Fumiharu Iwai, Kodaira, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

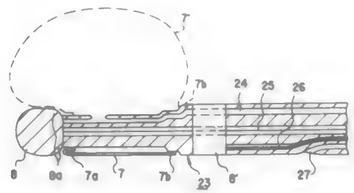
Continuation of Ser. No. 834,068, Feb. 11, 1992, abandoned, which is a division of Ser. No. 445,673, Nov. 27, 1989, Pat. No. 5,099,839. This application May 20, 1993, Ser. No. 63,068
Claims priority, application Japan, Mar. 29, 1988, 63-73219
Int. Cl.[5] A61N *1/04*
U.S. Cl. 607—122 5 Claims

1. A temporary pacing catheter combined with a pacemaker, said temporary pacing catheter having a branched portion where at least two linear portions having separate functions are combined into one linear portion having multiple functions, said temporary pacing catheter and pacemaker comprising:

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a temporary pacemaker integrally attached to one of the at least two linear portions, wherein said temporary pacemaker exhibits a stimulation frequency and a stimulation output, with at least one of said stimulation frequency and said stimulation output being a fixed value, and having an adjusting means for automatically adjusting an electrocardio-input sensitivity; said temporary pacing catheter further comprising an electrode attached to a distal end of the linear portion having multiple functions; and

a balloon attached to a vicinity of the distal end of the linear portion having multiple functions said balloon being arranged so that, when the balloon is inflated, the balloon envelopes the distal end electrode.

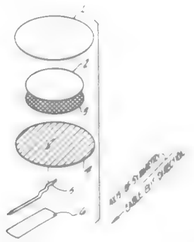


5,356,428

NON-INVASIVE, RADIOLUCENT ELECTRODE

Tim J. Way, Carlsbad, Calif., assignor to Cardiotronics, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 860,995, Mar. 31, 1992. This application Aug. 13, 1992, Ser. No. 930,003
Int. Cl.[5] A61B 5/04
U.S. Cl. 607—142 19 Claims



1. A non-invasive radiolucent electrode comprising:

an adhesive conductive polymer pad haying a first surface adapted for contacting a patient's skin, and having a second surface;

an expanded foil backing to said pad configured to be radiolucent, and having a front surface substantially covering the second surface of the pad, and having a back surface; and

an insulated wire having a first exposed end which is electrically coupled to the expanded foil backing.

5,356,429

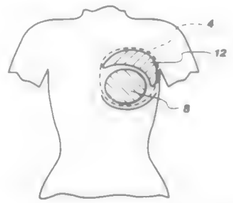
BODY POCKET MAINTENANCE PROSTHESIS

William J. Seare, 3396 Chula Vista Cir., Salt Lake City, Utah 84121

Continuation of Ser. No. 701,021, May 16, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 960,004
Int. Cl.[5] A61F 2/12, 2/02
U.S. Cl. 623—8 10 Claims

1. A body implant comprising a body pocket maintenance prosthesis for implantation into a body pocket a mammal, including,

a first sheet of elastomeric material having first and second sides for placement within the body pocket to prevent the body pocket walls from growing together, the first side of said sheet being smooth and non-textured to inhibit adhesion thereto of human tissue, and the second side of said sheet being textured to allow growth thereinto of human tissue so that the textured second side of the sheet adheres to a contiguous body pocket wall while the smooth first side of the sheet does not so adhere to a corresponding contiguous body pocket wall;



a primary prosthesis for implantation into the body pocket and adapted for movement therein between the body pocket walls and adjacent the smooth first side of the sheet, whereby movement of the primary prosthesis within the body pocket is uninhibited due to the prevention of the growing together of the body pocket walls; and

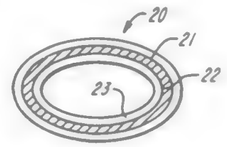
a second sheet of elastomeric material having first and second sides for placement inside the first sheet in the body pocket, the first side of said second sheet being smooth and non-porous and positioned contiguous to the smooth first side of said first sheet to freely slide relatively thereto, and the second side of said second sheet being porous to allow growth of human tissue.

5,356,430

HEARING PROSTHESIS

Joseph B. Nadol, Jr., 640 Charles River Rd., Needham, Mass. 02192

Continuation of Ser. No. 712,430, Jun. 10, 1991, abandoned. This application Oct. 20, 1993, Ser. No. 139,557
Int. Cl.[5] A61F 2/18, 2/04
U.S. Cl. 623—10 22 Claims



1. A middle ear prosthesis for treating hearing loss due to middle ear fluid conjestion, said prosthesis comprising a pliant membrane of biocompatible material formed into a closed synthetic bubble configured to fit in a patient's middle ear within a defined hypotympanic cavity between the eardrum and the round window,

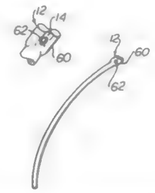
said membrane being thin and substantially impermeable to water and to dissolved gases during protracted contact with body fluids, said prosthesis further having a reservoir of at least one gas within said closed bubble and configured to be located, when implanted, proximate to the round window, said gas having a pressure within said closed bubble effective to transmit pressure changes and sound vibrations acoustically through said closed bubble.

5,356,431

CONNECTIVE TISSUE STABILIZER AND METHOD OF USE

Frank C. Pierce, 3998 Belair Rd., Augusta, Ga. 30909

Continuation-in-part of Ser. No. 614,727, Nov. 16, 1990, abandoned. This application May 15, 1992, Ser. No. 883,645
Int. Cl.[5] A61F 2/02, 2/18, 2/08; A01K 29/00
U.S. Cl. 623—11 10 Claims



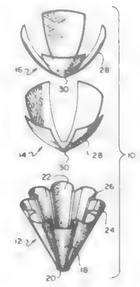
1. A soft tissue stabilizer for supporting cartilage in a surgical area comprising an elongated, substantially rigid rod means having first and second ends with a body portion therebetween said body portion having a generally rounded cross section with said first end having a flattened configuration, said stabilizer also being comprised of a biocompatible hypo-allergenic material having shape memory for maintaining the stability thereof when implanted in a body, said first end including suture receiving means for anchoring said rod means to the cartilage being supported and stabilized, wherein the cartilage has a discrete shape and flexibility, and said rod means being configured to generally conform to said shape and having the flexibility of the cartilage being supported and stabilized so as to support said cartilage in a selected position in axial alignment with said stabilizer and to resist forces tending to cause motion, whereby once the stabilizer is formed into a particular shape and implanted, the supported cartilage may be moved but will return to the selected position in generally axial alignment with the stabilizer.

5,356,432

IMPLANTABLE MESH PROSTHESIS AND METHOD FOR REPAIRING MUSCLE OR TISSUE WALL DEFECTS

Ira M. Rutkow, Marlboro, and Alan W. Robbins, Freehold, both of N.J., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed Feb. 5, 1993, Ser. No. 14,343
Int. Cl.[5] A61F 2/02, 2/00, 13/00
U.S. Cl. 623—11 26 Claims



1. An implantable prosthesis for repairing a tissue or muscle wall defect, comprising:

a flexible plug, formed of a surgical mesh fabric having openings therein for tissue ingrowth, and constructed and arranged to securely fit within and occlude the tissue or muscle wall defect wherein at least a portion of said flexible plug includes a pleated surface which allows radial into the defect without kinking or buckling so that said plug conforms to irregularities in the tissue or muscle wall defining the defect, said flexible plug being compressible radially upon insertion into the defect from a first configuration which is larger than the defect to a second configuration which closely approximates the shape of the defect.

5,356,433

BIOCOMPATIBLE METAL SURFACES

Stephen M. Rowland, Miami, and Kimberly D. Stanley, Florida City, both of Fla., assignors to Cordis Corporation, Miami Lakes, Fla.

Continuation of Ser. No. 744,537, Aug. 13, 1991, abandoned. This application Nov. 3, 1993, Ser. No. 147,017
Int. Cl.[5] A61F 2/02, 2/06, 2/24, 2/76
U.S. Cl. 623—11 10 Claims



1. A medical device having a biocompatible surface, the biocompatible surface having been made by a process comprising the steps of:

providing a metallic men ber having a tantalum oxide-containing surface thereof, said metallic member being flexible and being sized and shaped as a stent;

treating the tantalum oxide containing surface with an amino-terminated organosilane having amine reactive sites and covalently linking the organosilane with the flexible metallic member to effect a condensation reaction that covalently links the tantalum oxide and silicon moieties of the organosilane in order to form a flexible organosilane-coated tantalum stent;

applying a biologically active agent compostion to the organosilane-coated tantalum stent and forming a covalent linkage between the organosilane and the biologically active agent to provide a coated flexible tantalum stent; and

the coated flexible tantalum stent thus formed has a coating which withstands cracking upon flexure, and the tantalum stent thus formed is a biocompatible tantalum stent which, when implanted within a living body, prevents substantial thrombus from occurring on its surface while not significantly interfering with endothelialization of said surface.

5,356,434

ARTIFICIAL LIGAMENTS

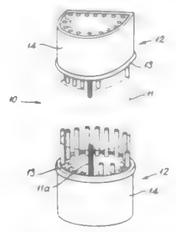
John W. Goodfellow, Woodeaton, and John J. O'Connor, Headington, both of England, assignors to British Technology Group Limited, London, England

PCT No. PCT/GB91/00804, § 371 Date Nov. 17, 1992, § 102(e) Date Nov. 17, 1992, PCT Pub. No. WO91/17719, PCT Pub. Date Nov. 28, 1991
PCT Filed May 22, 1991, Ser. No. 949,504
Claims priority, application United Kingdom, May 22, 1990, 9011435
Int. Cl.[5] A61F 2/08
U.S. Cl. 623—13 12 Claims

1. An implantable artificial ligament for attachment to a human joint that generally exhibits changes in shape and strain distribution in association with relative rotation and translation between bones of the joint during flexion-extension movement

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of the joint, said artificial ligament comprising a bundle of coextensive elongate elements, each of said elements having a first end and a second end, each first end being held in mutual one-to-one relationship with the second end of that element, each of said first and second ends of each of said elements being attached to respective attachment means adapted to be secured



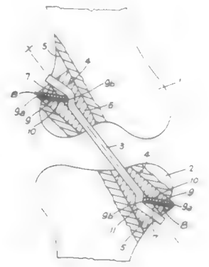
to respective bones of the joint, the relative disposition of the individual elements at their respective first ends corresponding generally with the relative disposition of the individual elements at their respective second ends, each element extending between the respective attachment means substantially independently of other elements of the bundle.

5,356,435

ELEMENT FOR FIXING LIGAMENTS

Rafael Thein, Rehovot, Israel, assignor to Cendis Medical, Paris, France

Filed Jan. 27, 1993, Ser. No. 9,932
Int. Cl.[5] A61F *2/08*
U.S. Cl. 623—15 **6 Claims**



1. An element for fixing a deformable ligament within an osseous canal comprising:

a truncated conical element including a first diametric end portion and a second, widened diametric end portion, said truncated conical element being adapted to be received within an osseous canal with at least part of said second, widened diametric portion projecting outside the osseous canal, said truncated conical element being formed with an internal conduit defining a longitudinal axis and which is adapted to receive a deformable end of a ligament, said internal conduit including a widened zone defined by a recessed segment, said truncated conical element also being formed with a threaded bore opening at the part of said second widened diametric end portion projecting outside the osseous canal and opening into said internal conduit, said bore being inclined with respect to said longitudinal axis and opening into sad internal conduit at a position opposite the recessed segment of said internal conduit; and

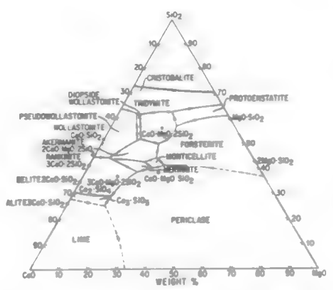
a threaded fastener positioned within said bore, said fastener having a first end that is accessible form outside said bore and a second end that is adapted to be shifted toward said recessed segment whereby, upon insertion of a deformable end of a ligament within said internal conduit, said fastener can be threaded within said bore such that the second end of said fastener engages the ligament to cause the ligament to deform so as to fill said recessed segment by taking a bend shape thereby retaining the ligament within said internal conduit.

5,356,436

MATERIALS FOR LIVING HARD TISSUE REPLACEMENTS

Tohru Nonami, Ichikawa; Hiroyasu Noma, and Shinya Nakajima, both of Narashino, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Division of Ser. No. 533,768, Jun. 6, 1990, abandoned. This application Apr. 21, 1992, Ser. No. 872,949
Claims priority, application Japan, Jun. 6, 1989, 1-142058; Mar. 8, 1990, 2-55126; May 23, 1990, 2-131191
The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.
Int. Cl.[5] A61F *2/28*
U.S. Cl. 623—16 **22 Claims**



1. A method for replacement of living hard tissue comprising:

providing an implant comprising a ceramic material which contains at least 40% by volume of a diopside composition, a wollastonite composition or a mixture of diopside and wollastonite compositions, and which (i) contains CaO and SiO_2 as essential components, (ii) is substantially free from calcium phosphate and (iii) is capable of forming a compound based in calcium phosphate by contact with an aqueous solution containing phosphorous, said CaO and SiO_2 being present in a weight ratio of CaO to SiO_2 of between 1:4 and 6:1; and

inserting said implant into a living body to replace living hard tissue.

5,356,437

REMOVAL OF EXCESS DYE FROM NEW TEXTILES

Gitte Pedersen, Frederiksberg C, Denmark, and Michael Schmidt, Gau-Köngernheim, Fed. Rep. of Germany, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK92/00118, § 371 Date Oct. 7, 1993, § 102(e) Date Nov. 9, 1993, PCT Pub. No. WO92/18687, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 10, 1992, Ser. No. 129,185
Claims priority, application European Pat. Off., Apr. 12, 1991, 91610032.4
Int. Cl.[5] C11D *3/395, 3/39*
U.S. Cl. 8—401 **15 Claims**

1. A process for removing excess dye from a newly manufactured printed or dyed fabric or yarn, comprising treating said fabric or yarn with a wash liquor containing (a) an enzyme exhibiting peroxidase activity and a suitable source of H_2O_2 or (b) an enzyme exhibiting a suitable oxidase activity and a source of O_2.

5,356,438

HAIR COLOR RINSE COMPOSITION CONTAINING HALOGINATED FLUORESCEIN DYES

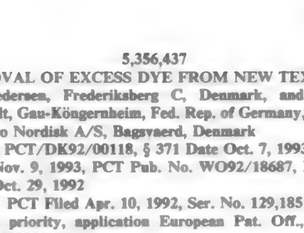
Chang K. Kim, Seoul; Jin K. Cha, Suwon, and Eung S. Kang, Seoul, all of Rep. of Korea, assignors to Pacific Corporation, Seoul, Rep. of Korea

Filed Jan. 7, 1993, Ser. No. 1,645
Claims priority, application Rep. of Korea, Oct. 16, 1992, 92-19056
Int. Cl.[5] A61K *7/13*
U.S. Cl. 8—405 **4 Claims**

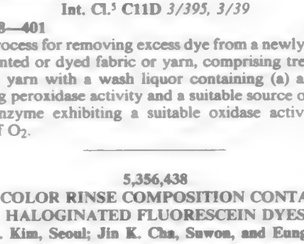
1. A hair color rinse composition consisting essentially of:

(a) from about 0.01 to 2.0 parts by weight, based on the total weight of the composition, of at least one acid dye selected from the group consisting of FD&C Red 2, FD&C Red 3, C.I. 16255 Acid Red 18, C.I. 45100 Acid Red 52, FD&C Yellow 5, FD&C Yellow 6, FD&C Green 3, FD&C Blue 1, FD&C Blue 2, D&C Red 33, D&C Green 5, D&C Green 4, D&C Blue 4, D&C Orange 4, FD&C Red 4, Ext. D&C Violet 2 and D&C Black 1;

(b) from about 0.01 to 0.5 parts by weight, based on the total weight of the composition, of at least one halogenated fluorescein dye of the formula:



or



wherein,

X, which may be the same or different, is a hydrogen atom or a halogen atom selected from the group consisting of chlorine, bromine and iodine, provided that at least two of the 4 X's are halogen atoms,

Y, all of which are the same, is a hydrogen atom or a halogen atom selected from the group consisting of chlorine and bromine,

M is a hydrogen atom or a metal selected from the group consisting of Na and K; and

(c) from about 1.0 to 20.0 parts by weight, based on the total weight of the composition, of disodium dimethicone copolyol sulfosucinate having molecular weight of from 10,000 to 30,000.

5,356,439

NON-OXIDATIVE PERMANENT DYE FORMULATION FOR HAIR AND SYNTHETIC FIBERS

Thomas M. Schultz, Ridgefield, and Stephanie Wong, Bridgeport, both of Conn., assignors to Shiseido Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1992, Ser. No. 944,407
Int. Cl.[5] A61K *7/13*
U.S. Cl. 8—432 **15 Claims**

1. A highly effective, easily employed permanent dye and gel composition for use on natural and synthetic fibers free from oxidants and activators for imparting a desired color into the fiber in a permanent and long-lasting manner employing a single, one-step application, said composition comprising

A. between about 0.001% and 5.0% by weight of at least one dyestuff selected from the group consisting of certified dyes designated as F,D&C dyes and D&C dyes;

B. viscosity controlling additives for maintaining the viscosity of said composition to between about 1,000 and 20,000 centipoise and comprising

a. between about 0.01% and 8.0% by weight of a gelling agent comprising one selected from the group consisting of guar and cellulosic based compositions; and

b. between about 0.01% and 4.0% by weight of ammonium chloride;

C. between about 0.01% and 25% by weight of a mercaptan-based reducing agent wherein said mercaptan-based reducing agent is further defined as comprising at least 0.5% by weight of the dyestuff; and

D. water forming the balance with the resulting pH of the composition ranging between about 3.0 and 7:0;

whereby a permanent dye and gel composition is attained which is easily applied to the desired fiber in a single, one-step application and imparts the precisely desired color into the fiber in a permanent long-lasting durable manner.

5,356,440

PROCESS FOR THE DYEING OF SYNTHETIC POLYAMIDE FIBRE MATERIALS

Pierre Galafassi, Hegenheim, and Jean-Marie Adam, Rosenau, both of France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 22, 1993, Ser. No. 96,143
Claims priority, application Switzerland, Jul. 31, 1992, 2414/92-3
Int. Cl.[5] D06P *1/384;* **C09B** *62/527, 62/53*
U.S. Cl. 8—543 **20 Claims**

1. A process for dyeing synthetic polyamide fibre materials, which comprises dyeing these fibre materials with a reactive dye of the formula

$$HO_3S—Fa-(-X—SO_2CH_2CH_2OSO_3H)_m \quad (1),$$

in which Fa is a dye radical, X is a direct bond or a radical of the formula —$CONHCH_2CH_2$— and m is the number 1 or 2, the dye of the formula (1) containing only one sulfo group, from an aqueous liquor at a pH of 5 to 9 and, to set the dyeing temperature, raising the temperature from 80° C. to at least 95° C. over a period of at least 20 minutes.

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5,356,441

REACTIVE DYE COMPOSITION AND METHOD FOR DYEING OR PRINTING FIBER MATERIALS USING THE SAME

Takemi Tokieda, Nara; Naoki Harada, Ibaraki; Shuhei Hashizume, Osaka; Koiti Ishii; Nobuaki Kawamura, both of Toyonaka; Tetsuya Miyamoto, Nara; Hiroyuki Suzuki, Habikino, and Shigeru Kawabata, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 9, 1993, Ser. No. 118,227

Claims priority, application Japan, Sep. 11, 1992, 4-243171; Sep. 29, 1992, 4-259932; Sep. 29, 1992, 4-259933; Oct. 1, 1992, 4-263578; Apr. 8, 1993, 5-081813; Apr. 8, 1993, 5-081814

Int. Cl.[5] C09B *62/016;* D06P *1/38*

U.S. Cl. 8—543 21 Claims

1. A reactive dye composition comprising a reactive dye and a salt of polyoxyethylene substituted-phenyl ether ester.

5,356,442

METHOD FOR DYEING FIBROUS MATERIALS MADE OF OR CONTAINING WOOL

Philippe Ouziel, Riedisheim, France, and Martin Kuhn, Dornach, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 30, 1993, Ser. No. 99,872

Claims priority, application Switzerland, Aug. 6, 1992, 2463/92

Int. Cl.[5] C09B *67/00;* D06P *1/52*

U.S. Cl. 8—552 18 Claims

1. A method for dyeing fibrous material made of or containing wool with an anionic dye, which comprises dyeing this material in the presence of a wool preservative comprising at least one compound of the formula

$$R—CH_2—CH(OH)—CH_2—Y \quad (I),$$

where

Y is halogen, R is hydroxy or a radical R*—C(O)—O—, and R* is

(Ia) the radical of an ethylenically unsaturated mono-, di- or tricarboxylic acid, in which in the case of a di- or tricarboxylic acid the remaining carboxyl group or groups are or are not partly or wholly esterified with a compound of the formula

$$HO—CH_2—CH(OH)—CH_2—Y \quad (II)$$

and Y is as defined above,

(Ib) the radical of a homo- or copolymer of ethylenically unsaturated mono-, di- or tricarboxylic acid derivatives with or without one or more comonomers, in which the carboxyl groups are wholly or partly esterified with a compound of the above-indicated formula (II),

(Ic) the radical of a carboxyl-containing modified sugar derivative, in which, if it has more than one carboxyl group, the remaining carboxyl group or groups are or are not esterified with a compound of the above-indicated formula (II), or

(Id) the radical of a saturated mono-, di-, tri-, tetra- or pentacarboxylic acid, in which in the case of a di-, tri-, tetra- or pentacarboxylic acid the remaining carboxyl group or groups are or are not wholly or partly esterified with a compound of the above-indicated formula (II).

5,356,443

STABILIZATION OF DYEINGS OF POLYAMIDE FIBRES

Gerhard Reinert, Allschwil; Thys Bouwknegt, Reinach, and Francesco Fuso, Therwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 7, 1993, Ser. No. 117,847

Claims priority, application Switzerland, Sep. 8, 1992, 2802/92-1

Int. Cl.[5] D06P *5/02;* D06M *13/438, 13/256*

U.S. Cl. 8—586 12 Claims

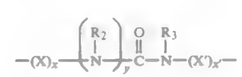
1. A process for enhancing the thermal and/or photochemical stability of dyeings on dimensionally stabilised polyamide fibres, which comprises treating the polyamide fibre material, before the fixation step for producing defined, resilient forms and dimensions, from aqueous medium with a compound of formula I

$$(A—Y—)_nZ(—W)_m \quad (1)$$

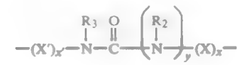
wherein

A is the radical of a sterically hindered phenol of the benzene series,

Y is a radical of formulae (2) or (3)



(2)



(3)

wherein

X and X' are each independently of the other alkylene, oxaalkylene or thiaalkylene,

R_2 and R_3 are each independently of the other hydrogen or an unsubstituted or substituted alkyl group, and

x, x' and y are each independently of one another 0 or 1,

Z is an aliphatic or a carbocyclic aromatic radical, which last mentioned radical contains not more than two mono- or bicyclic nuclei,

W is the sulfo group, and

m and n are each independently of the other 1 or 2, or a water-soluble salt thereof, from aqueous medium.

5,356,444

PHTHALOCYANINE REACTIVE DYESTUFF MIXTURE

Max Schwarz, Leverkusen; Joachim Wolff, Odenthal; Dietrich Hildebrand, Odenthal; Joachim Grütze, Odenthal; Manfred Hoppe, Kürten-Bechen; Josef-Walter Stawitz, Odenthal, and Rolf Schulz, Köln, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 26, 1993, Ser. No. 143,559

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1992, 4236937; Feb. 23, 1993, 4305454

Int. Cl.[5] C09B *67/22, 67/24, 62/26;* D06P *3/66*

U.S. Cl. 8—638 10 Claims

1. A dyestuff mixture comprising at least two phthalocyanine reactive dyestuffs which contain a different reactive group, characterized in that it comprises at least one phthalocyanine vinylsulphonyl reactive dyestuff 1) and at least one phthalocyanine fluorochloropyrimidinyl reactive dyestuff 2) and/or a phthalocyanine monochlorotriazinyl reactive dyestuff 3).

5,356,445

PROCESS FOR DYEING NATURAL OR SYNTHETIC POLYAMIDE FIBRE MATERIAL WITH DYE MIXTURES

Christian De Meulemeester, Allschwil, Switzerland, and Patrick Runser, Michelbach-le-Bas, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

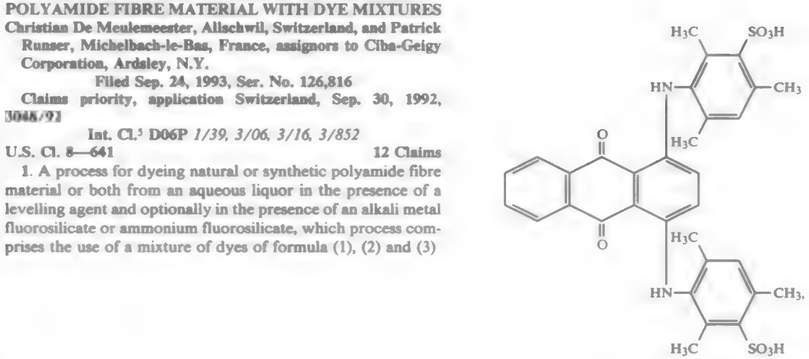
Filed Sep. 24, 1993, Ser. No. 126,816

Claims priority, application Switzerland, Sep. 30, 1992, 3048/92

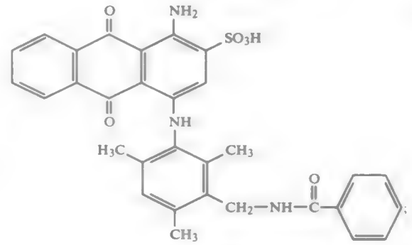
Int. Cl.[5] D06P *1/39, 3/06, 3/16, 3/852*

U.S. Cl. 8—641 12 Claims

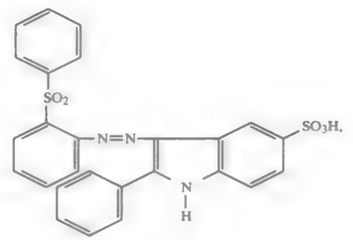
1. A process for dyeing natural or synthetic polyamide fibre material or both from an aqueous liquor in the presence of a levelling agent and optionally in the presence of an alkali metal fluorosilicate or ammonium fluorosilicate, which process comprises the use of a mixture of dyes of formula (1), (2) and (3)



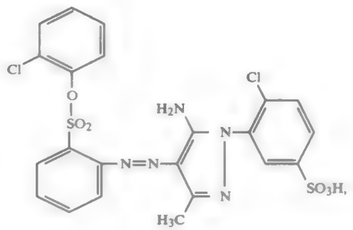
(4)



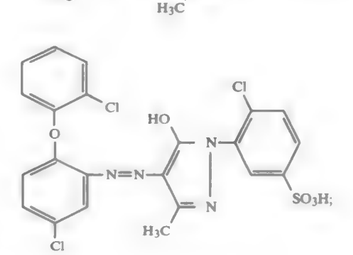
(5)



(1)



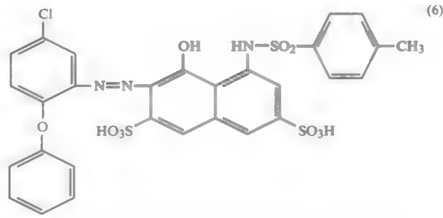
(2)



(3)

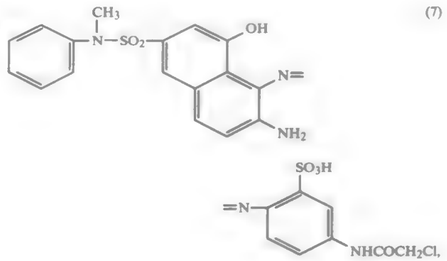
or a mixture of dyes of formulae (4) and (5)

or a mixture that comprises a dye of formula (6)



(6)

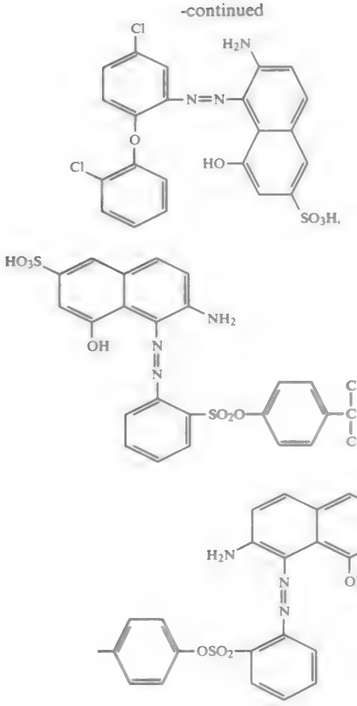
together with at least one dye of formula (7), (8) and (9).



(7)

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-continued



(8) cement and at least 10% by weight of a smooth-surfaced, vesicular, expanded perlite into said containment bag to substantially conform said containment bag to said structural member adjacent said void and to substantially fill said void with said cementitious composition, and

allowing said cementitious composition to cure to a substantially hardened state.

5,356,447

MANUFACTURE OF HIGH PROOF-TEST OPTICAL FIBER USING SOL-GEL

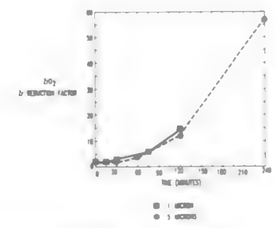
Suhas D. Bhandarkar, Murray Hill, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 11, 1993, Ser. No. 29,753

Int. Cl.[5] C03B *37/023*

U.S. Cl. 65—395 **16 Claims**

(9)



1. Process for fabrication of optical fiber in accordance with which fiber is drawn from a preform comprising a sol-gel derived glass body, in which the body is prepared by gelation of a sol followed by drying to a porous body and finally by sintering.

characterized in that the still-porous body is subjected to a particle-removal step in which the body is heated and maintained at elevated temperature below the sintering temperature, and is exposed to a flowing halogen-containing gas mixture which is substantially free of oxygen whereby refractory particles react with the gas mixture to yield gaseous reaction product and thereby to reduce particle size with consequent reduction in incidence of particle-nucleated fiber breaks, and in which the gas mixture as introduced contains $SOCl_2$.

5,356,446

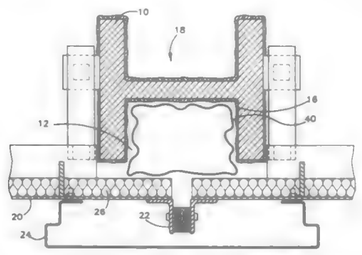
LOW DENSITY INSULATING AND FIRE-RESISTANT PERLITE CONCRETE

David A. Smetana, 2159 N. St. James Pkwy., Cleveland Heights, Ohio 44125; Alfonzo L. Wilson, 3661 Langton Rd., Cleveland Heights, Ohio 44121; Richard J. Lenczewski, 12509 Oakview Blvd., Garfield Heights, Ohio 44125, and Said Dimitry, 20650 Fairmount Blvd., Apt. 4D, Shaker Heights, Ohio 44118

Filed Jul. 7, 1993, Ser. No. 87,983

Int. Cl.[5] E04B *2/00*; **E04F** *15/22*

U.S. Cl. 52—743 **14 Claims**



1. A method of fire-proofing and thermally insulating a building by substantially filling structural member voids therein comprising the steps of

placing at least one conforming containment bag within the void to be filled,

pumping a cementitious composition containing portland

5,356,448

METHOD OF MAKING A PREFORM FOR AN OPTICAL FIBER

Jean-Pierre Dumas, Villemoisson sur Orge, and Christian Belouet, Sceaux, both of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed May 12, 1993, Ser. No. 59,657

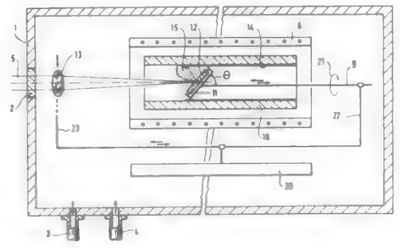
Claims priority, application France, May 13, 1992, 92 05811

Int. Cl.[5] C03C *25/02*; **C03B** *37/023*

U.S. Cl. 65—388 **7 Claims**

1. A method of making a preform for an optical fiber, in which method a plurality of layers of glass are deposited inside a support tube, said method being characterized by the fact that, with said layers being based on fluoride glass that is free of any metal oxide, said layers are deposited by laser ablation in a controlled atmosphere using a target having the composition of said glass, which target is moved back-and-forth paral-

lel to the axis of said tube, the temperature of the enclosure in which said ablation is performed being not greater than the



vitreous transition temperature Tg of said glass, and said laser emitting in the ultraviolet range of 200 to 300 nanometers.

5,356,449

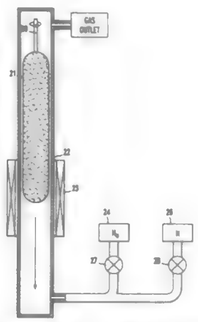
VAD PROCESS IMPROVEMENTS

Toru Kuwahara, Cary, and Bret M. Mohlenhoff, Durham, both of N.C., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 24, 1993, Ser. No. 65,384

Int. Cl.[5] C03B *37/023*

U.S. Cl. 65—421 **14 Claims**



1. A method for making glass bodies comprising the steps of:

depositing by flame hydrolysis glass soot on a substrate to form a glass soot boule;

locating the glass soot boule in a furnace;

introducing helium into the furnace;

partially sintering the soot boule comprising the step of heating the glass soot boule in the furnace in a substantially helium atmosphere;

before the soot boule is completely sintered, changing the atmosphere within the furnace to an atmosphere containing substantially no externally applied helium;

completing the sintering of the soot boule within said furnace to convert said boule entirely to a glass preform portion and annealing said glass preform portion;

the steps of completing the sintering and annealing the preform portion being performed in said furnace in an atmosphere substantially free of externally applied helium, said atmosphere comprising a substantially inert gas that is heavier than helium.

5,356,450

PROCESSS AND APPARATUS FOR MAKING MINERAL WOOL FIBRES

Leth Moller: Per; Svend Grove-Rasmussen, both of Roskilde, and Bruno Friis Rasmussen, Hedehusene, all of Denmark, assignors to Rockwool International A/S, Denmark

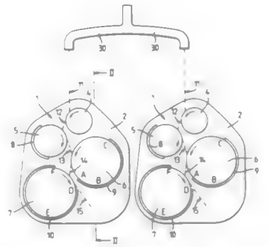
PCT No. PCT/EP91/01862, § 371 Date May 5, 1993, § 102(e) Date May 5, 1993, PCT Pub. No. WO92/06047, PCT Pub. Date Apr. 16, 1992

PCT Filed Sep. 30, 1991, Ser. No. 30,016

Claims priority, application United Kingdom, Sep. 28, 1990, 9021168; Sep. 28, 1990, 9021169; Jan. 16, 1991, 9100883

Int. Cl.[5] C03B *37/05*

U.S. Cl. 65—456 **14 Claims**



14. A method for preparing mineral wool fibres comprising the steps of:

(a) providing a housing having a front face;

(b) converting mineral melt into mineral wool fibres by means comprising a set of rotors each rotor mounted on the front face of the housing for rotation about a different substantially horizontal axis and arranged such that when the rotors are rotating, mineral melt poured on to the periphery of the top rotor in the set is thrown on to the periphery of the subsequent rotor, or each subsequent rotor in sequence, in the set and mineral wool fibres are thrown off the or each subsequent rotor;

(c) collecting the mineral wool fibres by means comprising, associated with the at least subsequent rotor, an air supply slot extending through the front face of the housing around and close to that rotor for discharging an air blast close to and substantially parallel to the periphery of the rotor with an axial component for carrying the mineral wool fibres axially off that periphery; and

(d) selecting the angle of the discharged air relative to the axial direction by direction means, wherein the direction means in at least the air supply slot associated with the final rotor in the set are arranged to direct the air at an angle to the axial direction that varies along the length of the air supply slot between a higher angle of up to 65° and a smaller angle that is at least 10° less than the bigger angle, and wherein the air has a tangential component that is corotational with the rotor.

5,356,451

METHOD AND APPARATUS FOR VAPORIZATION OF LIQUID REACTANTS

Michael B. Cain, and Michael S. Dobbins, both of Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Dec. 20, 1993, Ser. No. 169,037

Int. Cl.[5] C03B *37/023*

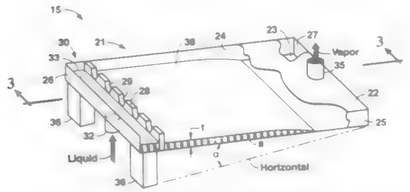
U.S. Cl. 65—414 **16 Claims**

1. A method of providing reactant vapors to make an optical fiber preform by decomposing said reactant vapors to form glass particles, comprising

flowing a liquid reactant onto an inclined surface having an upper portion elevated with respect to a lower portion, said liquid being flowed onto said surface such that it is

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distributed across said upper portion, said surface being inclined with respect to horizontal at an angle sufficient to cause said liquid to flow down said surface at a rate sufficient to form a film, the thickness of which is smaller than that thickness which would support a bubble during boiling of an amount of said liquid of sufficient thickness to support bubbles,



heating said surface to a temperature greater than the boiling point of said liquid, thereby converting said liquid reactant to a vapor, and

delivering the vaporized liquid to a vapor utilization site to form said optical fiber preform.

5,356,452

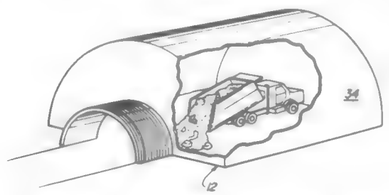
METHOD AND APPARATUS FOR RECLAIMING WASTE MATERIAL

Robert E. Fahey, 2200 Corporation Blvd., Naples, Fla. 33942

Continuation of Ser. No. 418,830, Oct. 5, 1989, abandoned, which is a continuation of Ser. No. 203,709, Jun. 7, 1988, abandoned. This application May 24, 1993, Ser. No. 65,026

Int. Cl.[5] C05F *9/00, 9/02;* B09B *3/00*

U.S. Cl. 71—10 22 Claims



1. A method for continuously processing and reclaiming processed garbage and waste materials and processed cover soil comprising

providing a plurality of adjacent cells designed to contain alternate layers of a mixture of garbage and waste materials and a layer of cover soil,

lining each of said cells with a bottom layer of impermeable plastic film and, while filling the cells with alternate layers of mixed garbage and waste material and cover soil, covering each cell with a removable plastic cover,

when each cell is filled with alternate layers of mixed garbage and waste material and cover soil, replacing said removable cover with a cover of impermeable plastic film sealed to the bottom layer of plastic film,

introducing controlled amounts of liquid into the sealed cells through conduit means connected thereto to percolate water and leachate through the contents of the sealed cell to control the decomposition of the garbage and waste materials and to enrich the cover soil,

monitoring the rate of decomposition of the garbage and waste materials within each sealed cell, and

opening each sealed cell after a period of time and then recovering and separating the usable contents of the open cell and reusing some of the recovered soil as cover soil in adjacent cells.

5,356,453

MIXED POWDER FOR POWDER METALLURGY AND SINTERED PRODUCT THEREOF

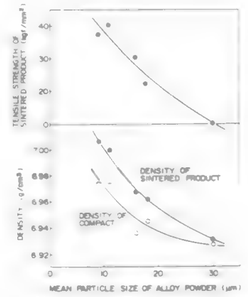
Jinsuke Takata, Kobe, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed May 28, 1992, Ser. No. 889,421

Claims priority, application Japan, May 28, 1991, 3-154123; May 28, 1991, 3-154124; May 28, 1991, 3-154125

Int. Cl.[5] C22C *29/14*

U.S. Cl. 75—244 9 Claims



1. A mixed powder for powder metallurgy comprising a Fe powder and an alloy powder mixed together, wherein the solidus line temperature of the alloy powder is higher than 950° C. and lower than 1300° C., the amount of liquid phase formed by the alloy powder during sintering is more than 20%, and the mean particle size of the alloy powder is smaller than 20 μm.

2. A sintered product prepared by sintered the mixed powder as defined in claim 1, in which the structure of the sintered product comprises a homogeneous martensite structure developed into a network configuration along the grain boundary of the Fe powder.

5,356,454

MOLD POWDER FOR CONTINUOUS CASTING

Seiji Itoyama, Chiba; Hidenari Kitaoka, Okayama; Toshikazu Sakuraya, Chiba; Kenichi Sorimachi, Chiba; Saburo Moriwaki, Chiba; Sumio Yamada, Chiba; Chikashi Tada, Chiba; Takahiro Mitumune; Shinichi Kaneko, both of Hyogo, and Masafumi Maeda, Saitama, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Jul. 28, 1993, Ser. No. 98,139

Int. Cl.[5] C21C *7/076;* B22C *1/00*

U.S. Cl. 75—305 2 Claims

2. A mold powder for continuous casting, having a composition which consists essentially of from 10 to 35 wt % of CaO, from 10 to 35 wt % of Al_2O_3, from 3 to 15 wt % of TiO_2, from 3 to 20 wt % of Li_2O, from 5 to 40 wt % of BaO, not more than 10 wt % of MgO, not more than 15 wt % of F, not more than 20 wt % of Na_2O at least one of from 0.5 to 4.0 wt % of BN and from 0.5 to 4.0 wt % of C, wherein the percentages are weight percentages and are selected to total 100%, and the balance inevitable impurities.

5,356,455

PROCESS FOR RECOVERING LEAD FROM LEAD-CONTAINING RAW MATERIALS

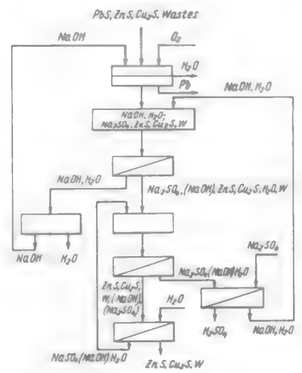
Nikolai V. Khodov, Vladikavkaz; Mikhail P. Smirnov, Moscow; Oleg K. Kuznetsov, Vladikavkaz, and Konstantin M. Smirnov, Moscow, all of Russian Federation, assignors to Nikolai Vladimirovich Khodov, Vladikavkaz,

Filed Sep. 3, 1993, Ser. No. 116,321

Claims priority, application Russian Federation, Sep. 14, 1992, 5056328

Int. Cl.[5] C22B *13/00*

U.S. Cl. 75—419 14 Claims



1. A process for recovering lead from a feed containing the lead, said feed also containing zinc and copper sulphides and gangue, said process comprising:

a) feeding molten caustic soda, the feed and an oxygen-containing gas into a reaction zone having a temperature of 600° to 700° C. to form lead metal and a melt containing a sodium sulphate, zinc sulphide, copper sulphide and gangue;

b) removing said melt from the reaction zone and leaching said melt in a first leaching step to form a slurry comprising a mixture of solid particles of sodium sulphate, zinc and copper sulphides, and gangue and a first aqueous solution consisting essentially of caustic soda;

c) filtering said slurry to separate said first aqueous solution from said mixture of said particles whereby to obtain a filtered aqueous strong solution consisting essentially of the caustic soda, and a solid residue consisting essentially of sodium sulphate, zinc and copper sulphides and gangue;

d) dewatering said filtered aqueous strong solution consisting essentially of caustic soda;

e) leaching said solid residue in a second leaching step to form a suspension comprising a second mixture of solid particles of zinc and copper sulphides, gangue and a second aqueous solution consisting essentially of sodium sulphide;

f) filtering said suspension to separate said second mixture of solid particles from said second aqueous solution to obtain a cake comprising said solid particles of zinc and copper sulphides and gangue with a sodium sulphate solution adsorbed on its surface, and a filtered second aqueous solution consisting essentially of sodium sulphate;

g) electrochemically treating said filtered second aqueous solution consisting essentially of sodium sulphate to obtain a sulfuric acid solution and a caustic soda solution;

h) washing said cake to obtain a washed cake consisting essentially of zinc and copper sulphides and gangue, and a second sodium sulphate solution.

5,356,456

METHOD OF DEGASSING AND DECARBURIZING STAINLESS MOLTEN STEEL

Hiroshi Nishikawa; Masanori Nishikohri, and Hitoshi Ohsugi, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Oct. 5, 1993, Ser. No. 131,894

Claims priority, application Japan, Oct. 7, 1992, 4-268653; Jun. 11, 1993, 5-140824

Int. Cl.[5] C21C *7/10*

U.S. Cl. 75—508 19 Claims

1. A method of vacuum degassing and decarburizing molten stainless steel, which molten steel is a product of a steelmaking furnace, comprising the steps of:

foaming said molten steel in a vacuum degassing tank by denitrifying said steel;

vacuum degassing said foaming steel;

blowing oxidizing gas onto the surface of said steel in said vacuum degassing tank, thereby conducting a decarburization reaction wherein carbon is reacted with oxygen to from carbon monoxide, and

causing combustion of said carbon monoxide to resist temperature decrease of the molten steel as said decarburization reaction proceeds.

5,356,457

HYDROMETALLURGICAL PROCESS FOR THE TREATMENT OF COPPER-BEARING ORE

Aliro Teodoro Nelson Pincheira Alvarez; Andres Antonio Reghezza Insunza, and Alberto Segundo Crus Rivera, all of Chuquicamata, Chile, assignors to Corporacion Nacional Del Cobre De Chile, Santiago, Chile

Filed Dec. 14, 1992, Ser. No. 990,163

Claims priority, application Chile, Dec. 18, 1991, 1268-91

Int. Cl.[5] C21B *9/00;* C22B *9/00*

U.S. Cl. 75—710 24 Claims

1. A process for extracting copper from copper bearing ore, comprising:

substantially uniformly wetting a copper bearing ore with a first solution which contains sulfuric acid and water in sufficient quantities and for a sufficient time to uniformly wet but not agglomerate the ore and alter the surface characteristics of the ore by increasing its thickening and filtration properties, and to sulfatize a significant portion of the copper therein;

allowing the wetted ore to age for a period of time sufficient to further sulfatize the copper therein and form a substantially sulfatized copper ore;

repulping the aged sulfatized copper ore with a second aqueous solution which contains water and optionally contains sulfuric acid for a sufficient time to extract a substantial portion of the sulfatized copper therefrom in a solution; and

recovering copper from the extracted sulfatized copper solution.

5,356,458

COMPUTERIZED CHEMICAL INJECTION SYSTEM FOR HYDROGEN SULFIDE CONTROL IN A WASTE WATER STREAM

Younes Javadi; Randy L. Jones, both of Sugerland, and Douglas F. Werner, Kingwood, all of Tex., assignors to Clearwater Industries Corporation, Metairie, La.

Continuation of Ser. No. 743,815, Aug. 12, 1991, abandoned. This application Jun. 8, 1993, Ser. No. 74,271

Int. Cl.[5] B01D *53/14*

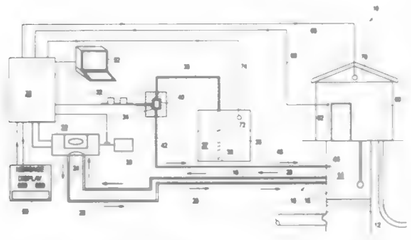
U.S. Cl. 95—13 4 Claims

1. A computerized chemical injection system for controlling hydrogen sulfide emissions from a waste water stream, comprising:

a) removing a quantity of atmosphere from above a portion of the waste water stream;

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b) sensing whether the quantity of atmosphere removed includes hydrogen sulfide gas therein;
c) analyzing the concentration of hydrogen sulfide gas within the removed air, through the use of an analyzer;
d) providing a specified quantity of dopant amine chemical compound into the waste water stream, the quantity depending on the level of hydrogen sulfide derived from the analyzer, to absorb the H_2S gas; and



e) continuously repeating steps a–d, to reduce concentrations of hydrogen sulfide sensed within the atmosphere above the stream,
wherein said quantity of atmosphere above the waste water stream is removed from above the stream through a pump device.

5,356,459

PRODUCTION AND USE OF IMPROVED COMPOSITE FLUID SEPARATION MEMBRANES

Benjamin Bikson, Brookline, and Joyce K. Nelson, Lexington, both of Mass., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Jun. 30, 1993, Ser. No. 83,604
Int. Cl.[5] B01D *53/22, 69/08, 71/70*
U.S. Cl. 95—54 **20 Claims**

1. A process for separating a gas or vapor mixture comprising:
(a) contacting a feed gas or vapor mixture with a multilayer composite membrane produced by the process comprising:
(1) applying a thin layer of a coating solution to a substrate, said coating solution comprising not more than about 5% weight by volume of a polymeric gas or vapor separation membrane forming material in a solvent system, and not more than about 20% by weight, based on the weight of the membrane forming material, of at least one additive comprising polysiloxane; and
(2) drying the thin coating layer on the substrate, thereby forming a multilayer composite membrane having at least one interior separation layer of the polymeric membrane forming material, that substantially determines the gas or vapor separation characteristics of the membrane, deposited on the substrate and an exterior protective layer of said at least one additive comprising polysiloxane over said at least one interior separation layer; and
(b) withdrawing the more permeable component of the feed mixture from the multilayer composite membrane as permeate gas; and
(c) separately recovering the less permeable component of the feed mixture from the multilayer composite membrane as non-permeate gas, whereby the exterior protective layer serves to protect said at least one interior separation layer from imperfections, thereby enhancing the selectivity permeability performance capabilities of the membrane.

5,356,460

REMOVAL OF METHACROLEIN FROM A GASEOUS MIXTURE

Herbert Vogel, Ludwigshafen; Herbert Exner, Waldsee, and Gerd Bohner, Bad Schoenborn, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 23, 1993, Ser. No. 95,986
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1992, 4225321
Int. Cl.[5] C07C *47/22;* **B01D** *53/14*
U.S. Cl. 95—237 **3 Claims**

1. A process for removing methacrolein from a gaseous mixture comprising contacting said mixture with an aqueous solution containing methacrylic acid, and absorbing methacrolein into said solution, the content of methacrylic acid in the aqueous solution being from 60 to 90% by weight.

5,356,461

GAS SEPARATION MEMBRANE

Heinz-Dieter Sluma, Grossostheim; Robert Weinzenhofer, Erlenbach; Alfons Leeb, Kleinwallstadt, and Karl Bauer, Dammbach, all of Fed. Rep. of Germany, assignors to Akzo N.V., Netherlands

Division of Ser. No. 798,814, Nov. 27, 1991, Pat. No. 5,242,636. This application Mar. 30, 1993, Ser. No. 40,357
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1990, 4037817
Int. Cl.[5] B01D *53/22, 69/12, 71/68*
U.S. Cl. 96—10 **5 Claims**

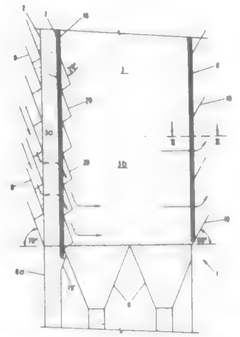
1. A membrane for gas separation, manufactured by
guiding a polymeric hollow capillary supporting membrane through a central bore of a spinneret;
sequentially applying at least two solutions, each comprised of a separating layer-forming polymer and at least one solvent, to an external surface of said supporting membrane through at least one concentric annular slit or groove in said spinneret to form a coated supporting membrane coated with a first coating layer, which in turn is coated with a second coating layer; and
removing said at least one solvent from said coated supporting membrane to form a gas separation membrane, said gas separation membrane comprising:
said coated supporting membrane;
said first coating layer on said supporting membrane, composed of an organic polymer with silane side groups, a thickness of said first coating layer being in the range from 0.1 to 10 microns and said first coating layer exhibiting a selectivity to O_2/N_2 of between 1.2 and 3 and an oxygen permeability of between 5 and $5000 \cdot 10^{-12}$m/Pa.s; and
said second coating layer over said first coating layer, composed of at least one member selected from the group consisting of an aromatic polyester, an aromatic polyimide, an aromatic polyamide, an aromatic polysulfone, and a polyphenylene oxide, a thickness of said second coating layer being in the range between 0.1 and 1 micron and said second coating layer having a selectivity to O_2/N_2 of between 1 and 10 and an oxygen permeability of between 0.1 and $10 \cdot 10^{-12}$m/Pa.s; and
a separation resistance of the coating layers to pressure being greater than 5 bars.

5,356,462

ADSORPTION MEDIUM REACTOR, ESPECTIALLY FLUIDIZED BED REACTOR

Hermann Brüggendick, Schermbeck, Fed. Rep. of Germany, assignor to STEAG Aktiengesellschaft, Essen, Fed. Rep. of Germany

PCT No. PCT/EP91/01938, § 371 Date Apr. 16, 1993, § 102(e) Date Apr. 16, 1993, PCT Pub. No. WO92/06770, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 11, 1991, Ser. No. 39,397
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1990, 4032738; Aug. 7, 1991, 4126146
Int. Cl.[5] B01D *53/08*
U.S. Cl. 96—150 **24 Claims**



1. An adsorption medium reactor with a fluidized bed for transverse flow of a fluid to be treated, said reactor comprising:
at least two substantially vertical fluid-permeable walls with an inflow and an outflow side, with at least one said walls comprised of a fluid-permeable wall component in a sandwich-type construction, comprised of:
a) a slotted hole screen with substantially parallel extending slot-limiting elements positioned substantially vertically and with slots between said slot-limiting elements; and
b) a stabilizing grate comprising:
b1) connecting rods extending transverse to said slot-limiting elements,
b2) a plurality of connecting stripe connected to said connecting rods in a crossed arrangement, and
b3) a louver-type construction with slats extending transverse to said slot-limiting elements, said slats located at said outflow side of said wall component; and
wherein said slotted hole screen is located at said inflow side and said slots have a width adapted to the size of particles of an adsorption medium such that the particles, with the exception of very fine particles, are retained by said slotted hole screen on said inflow side.

5,356,463

FACADE PAINTS AND PARGETS HAVING HIGH EARLY WATER RESISTANCE

Hermann Kober, Bergisch Gladbach; Armand de Montigny, Leverkusen, and Ottfried Schlak, Köln, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 1, 1992, Ser. No. 983,911
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1991, 4140733
Int. Cl.[5] C08G *77/04*
U.S. Cl. 106—2 **4 Claims**

1. A process for the production of paints and pargets which have high early water resistance and are free of emulsifiers and comprise:
a) 45 to 60% by weight of inorganic solids selected from inorganic fillers and pigments,
b) 5 to 50% by weight of a silicone resin,
c) an organic polymeric binder in an amount free from the silicone content, and
d) water
which comprises the steps of:
1) initially dispersing the organic fillers and pigments in at least 80% by weight of the total quantity of water required to disperse the inorganic fillers and pigments in the presence of pigment wetting aids;
2) subsequently dispersing the silicone resin in the absence of emulsifiers as found in step 1) and
3) then adding the polymeric binders in the form of an aqueous dispersion.

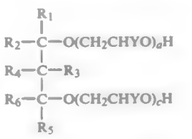
5,356,464

AQUEOUS INK COMPOSITIONS CONTAINING ANTI-CURL AGENTS

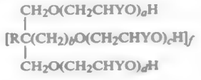
Mark S. Hickman, Vancouver, Wash.; Loren E. Johnson, Corvallis, Oreg.; John L. Stoffel, San Diego, Calif.; Ronald A. Askeland, San Diego, Calif.; Catherine B. Hunt, San Diego, Calif.; Howard Matrick, Hurleyville, N.Y.; Keshava A. Prasad, San Diego, Calif.; John T. Rich, San Diego, Calif.; Leonard Slevin, San Diego, Calif., and John R. Moffatt, Corvallis, Oreg., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 941,691, Sep. 8, 1992, abandoned. This application Dec. 1, 1993, Ser. No. 160,703
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—20 R **11 Claims**

1. A process for reducing paper curl in plain-paper printed elements consisting essentially of the step of applying an ink composition to a plain-paper substrate, said ink composition comprising an aqueous carrier medium, a colorant and at least one anti-curl agent in an amount sufficient to substantially eliminate curl in said plain-paper substrate, wherein the anti-curl agent has a solubility in water of at least 4.5% at 25° C. and is selected from the group consisting of:
(a) 1,3-diols, 1,3,5-triols, amino-1,3-diols and polyoxyalkylene derivatives thereof having the following structure:

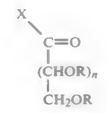


wherein R_1, R_2, R_4, R_5 and R_6 are independently H; C_nH_{2n+1}, where n=1–4; or $C_nH_{2n}O(CH_2CHYO)_bH$ where n=1–6 and b=0–25;
R_3=H; C_nH_{2n+1} where n=1–4; $C_nH_{2n}O(CH_2CHYO)_bH$ where n=1–6 and b=0–25; or $(CH_2)_eNXZ$, where X and Z are independently H, CH_3, C_2H_5 or $C_2H_4O(CH_2CHYO)_dH$, where d=0–25 and e=0–3;
Y=H or CH_3;
a and c are independently 0–25; and
wherein the total number of CH_2CHYO units is 0–100;
(b) polyols and oxyalkylene derivatives thereof having the following structure:

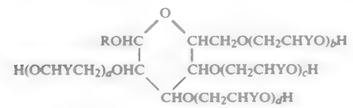


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wherein R is independently H, C_nH_{2n+1}, where n=1–4 or $CH_2O(CH_2CHYO)_eH$;
Y=H or CH_3,
b=0 or 1;
a, c, d and e are independently 0–40,
f=1–6; and
wherein the total number of CH_2CHYO units is 0–100;
with the proviso that when a, b, c and d=0, and f=1, R is not H and when a, c, and d=0 and b and f=1, then R is $CH_2O(CH_2CHYO)_eH$ and e is not 0;
(c) compounds having the following structure:



wherein X=H; OH; $CH_2O(CH_2CHYO)_eH$; $O(CH_2.CHYO)_bH$; or OM where M is a metal cation;
n=2–7;
R=$(CH_2CHYO)_eH$, where Y=H or CH_3;
a, b and c are independently 0–25; and
wherein the total number of CH_2CHYO units is 0–125;
(d) pyranosides and polyalkoxyalkylene derivatives thereof having the following structure:



wherein R=H or C_nH_{2n+1}, where n=1–4
a, b, c and d are independently 0–30;
Y=H or CH_3; and
wherein the total number of CH_2CHYO units is 0–120;
(e) poly (oxyalkylene) compounds having the following structure:

$$H—(OCH_2CHY)_xOH$$

wherein Y=H or CH_3, and
x=3–20; and
(f) polyoxyalkylene derivatives of aliphatic polyamines having the structure:

$$Z_1Z_2N(CH_2CH_2NZ_3)_nZ_4$$

wherein Z_1, Z_2, Z_3, or Z_4 are independently $(CH_2CHYO)_aH$ wherein Y=H or CH_3;
n=1–20;
a is independently 0–20; and
wherein the total number of CH_2CHYO units is 3–200.

5,356,465

OIL-SPILL MARKING METHOD AND COMPOSITION

Kevin T. Eldridge, Cheshire, Conn., assignor to Midsun Group, Inc., Southington, Conn.

Filed Jul. 23, 1993, Ser. No. 95,855
Int. Cl.[5] C09D *11/00*
U.S. Cl. 106—21 A **18 Claims**

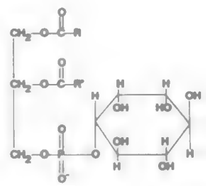
1. A method for visibly marking an area contaminated with an organic liquid, comprising:
providing a marking composition comprised of a colorant held within a solid carrier material, said carrier material being interactive with an organic liquid for effecting direct contact between said organic liquid and said colorant; and
distributing said marking composition over an area suspected of contamination by said organic liquid, said colorant effecting a visibly perceptible change upon contact with said organic liquid.

5,356,466

ANTI-SLIP AGENTS

Michael B. Lawson, 2618 N. Broadway, Shawnee, Okla. 74801

Filed Mar. 18, 1993, Ser. No. 36,516
Int. Cl.[5] C09K *3/14*
U.S. Cl. 106—36 **14 Claims**



1. A method for the prevention of slippage in systems comprising coating lecithin or compounds thereof on surfaces that are in intimate contact with each other.

5,356,467

CONTROLLED RELEASE COATINGS DERIVED FROM AQUEOUS DISPERSIONS OF ZEIN

Benjamin Oshlack, New York, N.Y.; James McGinity, Austin, Tex.; Mark Chasin, Manalapan, N.J., and Roland Bodmeier, Austin, Tex., assignors to Euroceltique S.A., Luxembourg, Luxembourg

Continuation-in-part of Ser. No. 930,107, Aug. 13, 1992. This application Aug. 6, 1993, Ser. No. 103,887
Int. Cl.[5] C08L *89/00*
U.S. Cl. 106—153 **34 Claims**

1. A stabilized aqueous dispersion of zein, comprising
an aqueous dispersion comprising from about 0.1 to about 10 percent zein w/v having a particle size from about 0.01 μm to about 10 μm, and
an amount effective to preserve said dispersion of a pharmaceutically acceptable preservative.

15. A method for preparing an aqueous dispersion of zein, comprising
adding zein to a solvent mixture comprising water and from about 60 to about 90 percent of an organic solvent selected from the group consisting of ethanol, acetone, and mixtures thereof, such that the zein dissolves in the solvent mixture,
precipitating the zein as fine particles by pouring said solution of zein as a thin stream into an aqueous phase under continuous stirring, to obtain an aqueous dispersion of zein comprising from about 0.1 to about 10 percent zein w/v,
evaporating said organic solvent from the mixture, concentrating the resulting aqueous phase to a zein concentration up to about 10% w/v, and
preserving the resulting aqueous dispersion of zein by adding an amount of effective to preserve said dispersion of a pharmaceutically acceptable preservative.

22. A solid controlled release formulation, comprising
a substrate comprising an active agent, said substrate coated with a controlled release coating to a weight gain from about 3 to about 15 percent, said controlled release coating comprising
(i) an aqueous dispersion of from about 0.1 to about 10 percent zein w/v having a particle size from about 0.01 μm to about 10 μm, said aqueous dispersion obtained by precipitating zein by pouring a solution of zein in a solvent comprising water and from about 60 to about 90 percent organic solvent as a thin stream into an aqueous phase under continuous stirring, the organic solvent thereafter being substantially removed and the resulting aqueous phase concentrated;
(ii) a pharmaceutically acceptable preservative;
(iii) a pharmaceutically acceptable plasticizer, the preservative and the plasticizer each being included in an amount necessary to provide a strong, continuous film capable of releasing the active agent at a desired rate when the formulation is exposed to an aqueous solution.

5,356,468

ANTISTAT COATING COMPOSITIONS AND ANTISTAT LAYERS FORMED THEREFROM

Charles T. Havens, Churchville; Raymond T. Jones, Webster; John M. Fukushima, and Jack J. Holt, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 27, 1993, Ser. No. 68,006
Int. Cl.[5] C09D *101/18*
U.S. Cl. 106—195 **13 Claims**

1. A coating composition for applying an antistat layer to a support which comprises vanadium pentoxide, at least 0.04 parts of cellulose nitrate per part of vanadium pentoxide, and the balance coating vehicle.

5,356,469

AQUEOUS RESISTANT METAL PIGMENT-CONTAINING PASTE AND METHOD FOR MAKING

William G. Jenkins, Plymouth; Craig Keemer; H. Taylor Lamborn, both of Reading, and Michael Curcio, Pen Argyl, all of Pa., assignors to Silberline Manufacturing Co., Inc., Tamaqua, Pa.

Filed Oct. 15, 1993, Ser. No. 136,286
Int. Cl.[5] C09C *1/62*
U.S. Cl. 106—404 **19 Claims**

1. A metal pigment composition suitable for formation of a coating composition, comprising:
metal pigment particles;
a solvent;
at least one phosphosilicate pigment;
and at least one heteropoly anion.

5,356,470

MEDIA MILLING PIGMENT SLURRIES TO ELIMINATE OR REDUCE OVERSIZE PARTICLES

Michael W. Ott, and Brian W. Sullivan, both of Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 995,511, Dec. 21, 1992, abandoned, which is a continuation of Ser. No. 811,894, Dec. 20, 1991, abandoned, which is a continuation of Ser. No. 550,103, Jun. 25, 1990, abandoned. This application Jul. 19, 1993, Ser. No. 93,638
Int. Cl.[5] C09C *1/36*
U.S. Cl. 106—437 **2 Claims**

1. A process for enhancing the coatability of TiO_2 slurries on paper and paperboards, said process consisting essentially of:
(a) slurrying base TiO_2 particles produced from the chloride process at a solids content of about 79–83 percent by weight, so as to achieve deagglomeration of the slurry, while still permitting sufficient fluidity to permit dispersion thereof,
(b) diluting the slurry to a point sufficient to permit slurry handling and transfer,
(c) optionally removing any scrub solids in the slurry arising from the TiO_2 process, and
(d) media milling the slurry until the TiO_2 particles having a size of about 10–44 microns are reduced to less than about 0.1 percent by weight, based on the total weight of the TiO_2.

5,356,471

PIGMENTS OF DARK SURFACE COLOR

Peter Reynders, Griesheim, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Aug. 17, 1993, Ser. No. 107,183
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1992, 4227082
Int. Cl.[5] C04B *14/04*
U.S. Cl. 106—489 **13 Claims**

1. A platelet-shaped pigment, comprising a platelet-shaped substrate having a coating layer comprising silicon oxycarbide glass.

5,356,472

PORTLAND CEMENT CLINKER AND PORTLAND CEMENT

Ivan Odler, Lärchenweg 23, D-3360 Goslar, Fed. Rep. of Ger-[illegible]

Filed Feb. 12, 1993, Ser. No. 16,966
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1992, 4204227
Int. Cl.[5] C04B *7/04*
U.S. Cl. 106—734 **14 Claims**

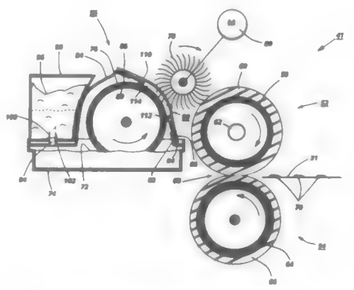
1. Portland cement clinker containing the following amounts of clinker phases in wt. %:
$3CaO.SiO_2$ (C_3S): 30 to 80,
$4CaO.3Al_2O_3.SO_3$ ($C_4A_3\bar{S}$): 5 to 30,
$4CaO.Al_2O_3.Fe_2O_3$ (C_4AF): <30,
$2CaO.SiO_2$ (C_2S): <40,
$3CaO.Al_2O_3$ (C_3A): <20,
and an SO_3 content between 2 and 8 wt. %, obtained by calcining a raw material mixture containing CaO, SiO_2, Al_2O_3, and Fe_2O_3, together with an additive containing SO_3 and an additive containing fluoride (F^-), at temperatures between 1,150° C. and 1,350°]C.

5,356,473

DIRT BLADE FOR RAM SYSTEMS

Paul M. Fromm, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 14, 1992, Ser. No. 990,567
Int. Cl.[5] B05C *11/00, 21/00;* **G03G** *21/00*
U.S. Cl. 118—60 **2 Claims**



1. Fuser apparatus, said apparatus comprising:
first and second fuser members supported for contact with each, other;
means for heating at least one of said fuser members;
a release agent cartridge for use with a release agent management system including:
a sump containing release agent material;
a release agent metering member supported in said sump;
a donor member contacting said metering roll;
a metering blade contacting the surface of said metering roll for metering a predetermined quantity of release

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agent material, said metering blade being disposed upstream of said donor member;

a blade member disposed downstream of said donor member for collecting contaminants and precluding them from entering said sump; and

a pair of end seal members cooperating with said blade members to provide a sealed cartridge having an opening, provided by said end seals, blade member and said metering blade, though which said donor member contacts said metering member.

5,356,474

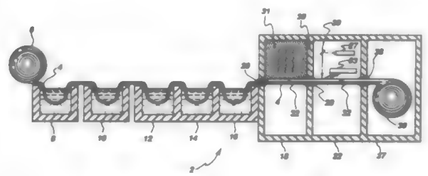
APPARATUS AND METHOD FOR MAKING ALIGNED HI-TC TAPE SUPERCONDUCTORS

Sudhir D. Savkar, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 27, 1992, Ser. No. 982,526

Int. Cl.[5] C23C *16/00*

U.S. Cl. 118—719 **14 Claims**



1. An apparatus for making an aligned Hi-Tc tape superconductor buffer layer wherein said apparatus is comprised of:

a cleaning and polishing means;

a chemical vapor deposition means operatively connected to said cleaning and polishing means for depositing a polycrystalline strontium titanate material;

a cooling means operatively connected to said deposition means; and

a laser treatment means operatively connected to said cooling means wherein a superconductor tape substrate contacts said cleaning and polishing means to clean and polish said substrate, said tape substrate then contacts said deposition means such that a strontium titanate layer is deposited on said substrate, said tape substrate then contacts said cooling means such that said substrate and said stronium titanate layer are substantially cooled in said cooling means, and said laser means impinges on said deposit layer to create an aligned Hi-Tc tape superconductor buffer layer.

5,356,475

CERAMIC SPACER ASSEMBLY FOR ASM PECVD BOAT

Salvatore Diiorio, Campbell, and Quentin Jackson, Hayward, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Feb. 22, 1993, Ser. No. 21,009

Int. Cl.[5] C23C *16/50*

U.S. Cl. 118—723 E **10 Claims**

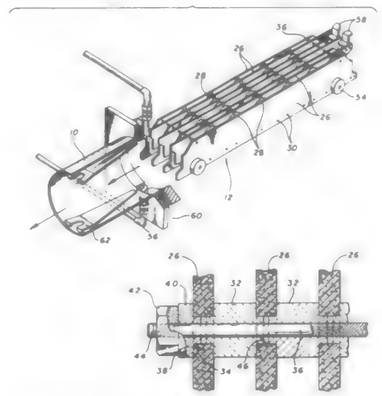
1. A boat assembly for supporting a wafer in a plasma enhanced chemical vapor deposition (PECVD) apparatus, comprising:

a support rod having a first diameter;

a planar electrode which has a hole of a second diameter that is larger than said first diameter formed therethrough and includes structure for supporting said wafer; and

an electrically insulative, tubular spacer including a bore of said first diameter, a first portion having said second diameter, and a second portion having a third diameter that is larger than said second diameter, in which:

the rod extends through said bore of said spacer, and said first portion of said spacer fits into said hole of said electrode with said second portion of said spacer abutting against said electrode.



5,356,476

SEMICONDUCTOR WAFER PROCESSING METHOD AND APPARATUS WITH HEAT AND GAS FLOW CONTROL

Robert F. Foster, Weston, Mass.; Helen E. Rebenne, Fair Lawn, N.J.; Rene E. LeBlanc, Branford, Conn.; Carl L. White, Gilbert, Ariz., and Rikhit Arora, Mesa, Ariz., assignors to Materials Research Corporation, Orangeburg, N.Y.

Filed Jun. 15, 1992, Ser. No. 898,800

The portion of the term of this patent subsequent to Dec. 28, 2010, has been disclaimed.

Int. Cl.[5] C23C *16/00*

U.S. Cl. 118—725 **38 Claims**

1. An apparatus for processing semiconductor wafers comprising:

a sealed vessel enclosing an interior volume, the vessel having exhaust means having an exhaust port connected to one end of the volume for maintaining the volume at a vacuum pressure level;

a susceptor supported on an axis in a processing space in the interior volume of the vessel, the susceptor having a wafer supporting surface thereon oriented perpendicular to the axis;

gas introduction means disposed at one end of the volume opposite the susceptor from the exhaust means for introducing gas supplied thereto into the interior volume of the vessel;

means for supplying at least one processing gas to the gas introduction means;

the introduction means being disposed parallel to the wafer supporting surface and generally centered on the axis and spaced from the wafer supporting surface for directing a flow of the processing gas from the introduction means into the processing space parallel to the axis, toward and perpendicular to the wafer supporting surface of the susceptor;

means carried by the susceptor for holding the wafer to the supporting surface for processing with a surface thereof centered thereon and facing the introduction means; and

stationary annular opposed gas directing surfaces distributed uniformly around the axis for directing the gas in a smooth non-turbulent flow from the gas introduction means, across the wafer and past the susceptor to the exhaust means, the gas directing surfaces forming baffle means,

surrounding the axis and axially positioned between the wafer supporting surface of the susceptor and the exhaust means, for facilitating the exhausting of gas through the exhaust port without creating turbulence inside the processing space.

5,356,477

DEVICE FOR PROVIDING A SUBSTRATE WITH A SURFACE LAYER FROM A VAPOR

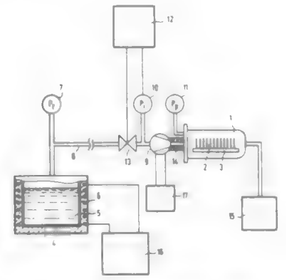
Jan Visser, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 771,375, Oct. 2, 1991. This application Nov. 8, 1993, Ser. No. 148,814

Claims priority, application Netherlands, Oct. 5, 1990, 9002164

Int. Cl.[5] C23C *16/00*

U.S. Cl. 118—726 **7 Claims**



1. A device for providing a substrate with a surface layer, comprising a reactor chamber for accommodating the substrate, a reservoir for accommodating a substance, means for generating vapour from the substance, and a gas line for conducting the vapour from the reservoir to the reactor chamber, characterized in that a pump is present in the gas line between the reservoir and the reactor chamber for pumping the vapour from the reservoir to the reactor chamber.

5,356,478

PLASMA CLEANING METHOD FOR REMOVING RESIDUES IN A PLASMA TREATMENT CHAMBER

Ching-Hwa Chen, Milpitas; David Arnett, Fremont, and David Liu, San Jose, all of Calif., assignors to LAM Research Corporation, Fremont, Calif.

Continuation of Ser. No. 902,663, Jun. 22, 1992, abandoned. This application Jan. 3, 1994, Ser. No. 176,935

Int. Cl.[5] B08B *7/00*

U.S. Cl. 134—1 **22 Claims**

21. A plasma cleaning method for removing metal-containing residues in a plasma treatment chamber, comprising:

introducing a cleaning gas mixture comprising oxygen gas and a chlorine containing gas into a plasma treatment chamber; and

performing a plasma cleaning step by activating the cleaning gas mixture and forming a plasma with the cleaning gas, contacting interior surfaces of the plasma treatment chamber with the plasma cleaning gas and removing metal-containing residues on the interior surfaces.

5,356,479

METHOD FOR CLEANING BATHROOM FITTINGS

Ronald Menke, Mettmann; Bernd-Dieter Holdt, Duesseldorf, and Petra Plantikow, Ratingen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Aug. 24, 1992, Ser. No. 934,381

Claims priority, application Fed. Rep. of Germany, May 18, 1992, 4216380

Int. Cl.[5] B08B *7/00*

U.S. Cl. 134—2 **19 Claims**

1. A method for cleaning hard surfaces in bathrooms with cleaning foam which comprises the steps of: (1) applying to a hard surface an effective amount of a foam to remove unwanted dirt and/or soil from said surface, said foam generated by a foam-generating spray unit wherein the foam is comprised of an aqueous-based liquid comprising a surfactant of the formula I

$$R\text{-}O(\text{-}G)_n \qquad \text{I}$$

wherein R is an alkyl radical having from about 8 to about 22 carbon atoms, G is a glycoside-bonded residue of a monosaccharide and n has a value of 1 to 10; and (2) removing at least a portion of said foam by wiping or by rinsing with water, wherein said foam when dry is transparent and virtually invisible on the hard surface.

5,356,480

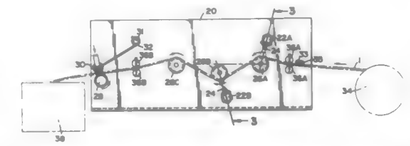
METHOD OF WASHING HOSE

Edward L. Melgeorge, R.R. 1, Box 2222H, Nashwauk, Minn. 55769

Continuation of Ser. No. 840,753, Feb. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 581,741, Sep. 13, 1990, Pat. No. 5,113,884. This application Oct. 29, 1993, Ser. No. 144,899

Int. Cl.[5] B08B *3/02*

U.S. Cl. 134—15 **22 Claims**



1. A method of washing hose using high pressure water, said hose comprising an outer cloth nap, said method comprising the steps of:

a) drawing said hose into the path of said high pressure water;

(b) manipulating said hose in a serpentine manner to expose the outer nap of said hose to said high pressure water; and

(c) applying a spray of water, at a high pressure ranging from about 200 psi to 1000 psi, into the outer nap of said hose.

5,356,481

METHOD OF DI CAN SURFACE TREATMENT

Takayuki Yoshimura, Omiya; Yoshiteru Kondō, Tokyo; Yoshimasa Matsumura, Sagamihara, and Kiyoaki Inoue, Hachioji, all of Japan, assignors to Daiwa Can Company, Tokyo, Japan

Filed Dec. 4, 1992, Ser. No. 986,038

Claims priority, application Japan, Dec. 6, 1991, 3-348592

Int. Cl.[5] B08B *3/02, 9/00, 9/093*

U.S. Cl. 134—22.1 **5 Claims**

1. A method of treating surfaces of drawn and ironed can bodies, said method comprising the steps of: right after the can

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bodies have been trimmed to a common height, placing the trimmed can bodies in an inverted state on an endless conveyor belt having rods in the form of an open framework which travels through a tunnel accommodating a series surface treatment zones with the can bodies being arranged on the upper flight of said conveyor belt in a plurality of rows and spaced from each other in each of said rows by a distance of at least 2 mm, and maintaining the rows of trimmed can bodies in a spaced relationship from one another with a plurality of partitions each of which extends in the direction of travel of the trimmed can bodies and projects outwardly from the outer periphery of the framework of the conveyor belt; while the trimmed can bodies travel in the inverted state on the upper flight of said conveyor, directing continuous sprays of treatment liquid simultaneously downwardly and upwardly from respective upper and lower nozzles, each of the upper nozzles being aligned with a respective one of the lower nozzles with the upper flight of said conveyor belt being interposed therebetween, such that each trimmed can body, as it travels in the inverted state, simultaneously receives, on the inner and outer surfaces of the can body, a downwardly directed spray having a fully conical or pyramidal spray pattern wherein the treatment liquid is uniformly dispersed over and bounds a first square or circular area on a plane containing an annular rim of the outer bottom surface of said trimmed can body and which first area is larger than a circular area defined by the annular

sidewall of said trimmed can body, and an upwardly directed spray having a fully conical, pyramidal or transversely disposed fan-shaped spray pattern wherein the treatment liquid is dispersed uniformly over and bounds a second square or circular area on a plane containing the annular edge of the open end of said trimmed can body, and which second area is larger than a circular area defined by the annular sidewall of said trimmed can body, or is dispersed transversely with respect to the direction of travel of said conveyor belt over a narrow elongate area on a plane containing said annular edge of the open end of said trimmed can body, the elongate area being longer than the diameter of said trimmed can body; regulating the pressure of the downwardly directed sprays to prevent the trimmed can bodies from being forced to float off of said conveyor belt by the upwardly directed sprays passing through the upper flight of said conveyor belt; and concurrently with the step of directing continuous sprays simultaneously downwardly and upwardly, directing lateral continuous sprays of the treatment liquid transversely of the conveyor belt towards a path along which the trimmed can bodies travel from locations at both sides of and transversely symmetrical with respect to said path, the transverse sprays being of equal pressure and each having a fan-shaped spray pattern wherein the treatment liquid is dispersed over and bounds a narrow and vertically elongate area extending a distance greater than the height of the trimmed can bodies.

5,356,482

PROCESS FOR VESSEL DECONTAMINATION

Nishaneth K. Mehta, and Richard W. Krajicek, both of Houston, Tex., assignors to SERV-Tech, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 805,367, Dec. 10, 1991, abandoned. This application Dec. 30, 1992, Ser. No. 998,556

Int. Cl.[5] B08B *3/00, 9/00*

U.S. Cl. 134—22.1 **22 Claims**

1. A process for decontaminating process vessels and auxiliary equipment in fluid communication therewith to remove benzene and hazardous solid, liquid and gaseous chemical contamination to permit entry by humans into the vessel to perform maintenance and repair comprising the steps of:

contacting solid and liquid contamination on vessel surfaces, at a temperature of from about 160° F. to about 230° F., with an aqueous solution containing a terpene extractant chemical and a surfactant having an HLB of from about 6 to about 18;

circulating the solution through the process vessels in contact with the surface to allow invasion of interstices of solid contaminants by the surfactant and extractant for a time sufficient to break down, separate and entrap such contaminants into the solution;

dispersing such extractant and surfactant as vapor through the process vessels to condense on surfaces of the vessels to break down scale and trap contaminants; and

separating the solution from the surface to remove the benzene and contaminants from the vessel with the fluid.

5,356,483

PROCESS FOR THE CONTINUOUS MACHINE-WASHING OF INSTITUTIONAL CROCKERY

Güenther Saalmann, Gevelsberg; Josef Selbertinger, Staudach; Thomas Schuster, Duesseldorf; Udo Schaab, Misselberg, and Friedel Rings, Monheim, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

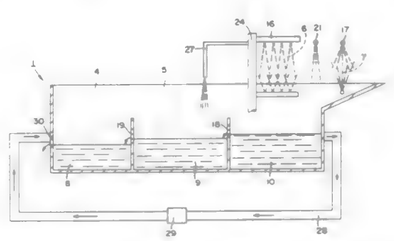
PCT No. PCT/EP90/01945, § 371 Date Jul. 23, 1992, § 102(e) Date Jul. 23, 1992, PCT Pub. No. WO91/07904, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 14, 1990, Ser. No. 859,419

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1989, 3938755

Int. Cl.[5] B08B *3/02*

U.S. Cl. 134—25.2 **16 Claims**



1. A process for the continuous washing of soiled crockery in a dishwashing machine comprising: passing the soiled crockery successively from a first wash zone to a last wash zone, each wash zone comprising a wash tank, wherein the crockery is sprayed with wash liquor in at least three wash zones fed from the wash tanks by means of circulating pumps and a system of spray nozzles, the wash liquor passing from the last wash tank to the first wash tank to provide washed crockery passing from the last wash zone; passing the washed crockery to a rinse zone to rinse the washed crockery; predosing a detergent to establish a detergent concentration in the wash liquor in the individual wash tanks; after-dosing detergent into penultimate wash tank to provide fresh detergent, after the start of the washing process; introducing fresh water into the last wash tank; passing a first wash liquor stream, comprising at least 50% of the quantity of the fresh water introduced into the last wash tank, directly from the last wash tank to a wash tank which is in front of a penultimate wash tank, in a direction of passage of crockery to the penultimate wash tank, and a remaining quantity of wash liquor passes through the wash tanks in succession as a second stream; and introducing the after-dosed detergent into the penultimate wash tank, to increase the detergent concentration in the penultimate wash tank by at most the factor of a division ratio of the amount of fresh water to the amount of the second stream whereby the crockery is contacted with a wash liquor having an increased detergent concentration.

5,356,484

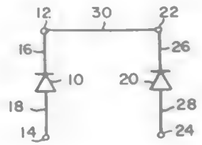
REVERSIBLE THERMOELECTRIC CONVERTER

Joseph C. Yater, 71 Autumn La., Lincoln, Mass. 01773; Jane A. Yater, 2H Sutton Dr., Matawan, N.J. 07747, and Joan E. Yater, 7205 Hart La. #3013514, Austin, Tex. 78731

Filed Mar. 30, 1992, Ser. No. 860,677

Int. Cl.[5] H01L *37/00*

U.S. Cl. 136—200 **48 Claims**



1. Apparatus for converting thermal energy into electric energy comprising:

a first device comprising first and second regions, each having a thickness selected to insure that electric carriers are quantized in discrete energy levels, and a third region providing a potential barrier between said first and second regions, said first device receiving thermal energy from a source and converting the thermal energy to electric voltage fluctuations, said first device having a first voltage between said first and second regions;

a second device comprising first and second regions, each having a thickness selected to insure that electric carriers are quantized in discrete energy levels, and a third region providing a potential barrier between said first and second regions, said second device converting electric voltage fluctuations to electric energy, said second device having a second voltage between said first and second regions; and

means for electrically connecting said first device to said second device without a thermal barrier between them such that said first voltage and said second voltage have opposite polarities and such that the electric voltage fluctuations generated by said first device in response to the thermal energy are coupled to said second device and are converted to electric energy by said second device, the electric carriers in said first device having a higher temperature than the electric carriers in said second device when said first device is receiving thermal energy, said second device having a lower temperature than the source of thermal energy.

5,356,485

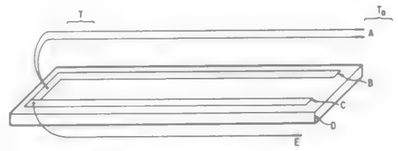
INTERMETALLIC THERMOCOUPLES

Kenneth G. Kreider, Potomac, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Apr. 29, 1992, Ser. No. 875,391

Int. Cl.[5] H01L *35/16*

U.S. Cl. 136—225 **29 Claims**



1. A thin film thermocouple comprising two legs at least one of said legs having a thin film of an intermetallic system, said film having a fixed amorphous phase and a Seebeck coefficient above 900 $\mu V/^{\circ}$ C.

5,356,486

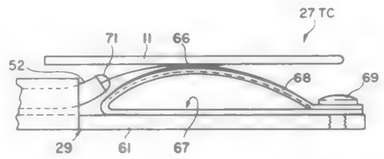
COMBINED WAFER SUPPORT AND TEMPERATURE MONITORING DEVICE

Michael N. Sugarman, San Francisco; Michael Beesely, Sunnyvale; Shannon J. Kelsey, Los Gatos, and Robert J. Steger, Cupertino, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Mar. 4, 1991, Ser. No. 664,578

Int. Cl.[5] H01L *35/02*

U.S. Cl. 136—230 **15 Claims**



1. A combined wafer support and thermocouple assembly, comprising:

a wafer support basket comprising a plurality of wafer support fingers for collectively supporting a wafer thereon;

one of the fingers comprising a base and a support member of low mass and low heat constant mounted on the base, the support member having an elevated section for supporting the wafer; and

a thermocouple, having a thermocouple junction, supported on the elevated section of the support member so that positioning a wafer on the wafer support basket presses the thermocouple junction against the support member, providing thermal connection between the thermocouple junction and the wafer, and wherein the support member shields the junction from any radiation emanating from beneath the wafer.

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5,356,487

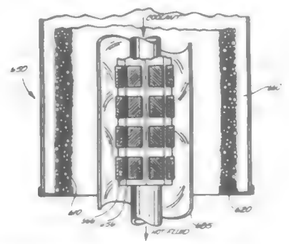
THERMALLY AMPLIFIED AND STIMULATED EMISSION RADIATOR FIBER MATRIX BURNER

Mark K. Goldstein, La Jolla; Jeffrey R. LaBar, Escondido; John C. Bass, La Jolla, and Boyd S. Conklin, Carlsbad, all of Calif., assignors to Quantum Group, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 636,132, Dec. 31, 1990, Pat. No. 5,281,131, which is a continuation-in-part of Ser. No. 864,088, May 16, 1986, abandoned, and a continuation-in-part of Ser. No. 48,961, May 11, 1987, Pat. No. 4,793,799, which is a continuation of Ser. No. 659,074, Oct. 5, 1984, abandoned, which is a continuation-in-part of Ser. No. 517,699, Jul. 25, 1983, abandoned. This application Mar. 27, 1992, Ser. No. 860,777

Int. Cl.[5] H01L *31/058;* F21H *1/00*

U.S. Cl. 136—253 27 Claims



1. A thermophotovoltaic device comprising:

a porous ceramic burner comprising:

a base fiber layer which is porous allowing combustion gas and air to pass through it, selected from the group consisting of silicon dioxide, aluminum oxide, gallium oxide, thorium oxide, yttrium oxide, erbium oxide, zirconium oxide, or other metal oxides or mixed metal oxides, borides, nitrides, carbides, and silicides;

an outer fiber layer which is thermally stimulated to emit radiation of specific wavelengths above a threshold temperature;

a photovoltaic collector matched to the emitter for selectively absorbing radiation in the same wavelength band as emitted by the emitter; and

a means to remove heat from the photovoltaic collector.

5,356,488

SOLAR CELL AND METHOD FOR ITS MANUFACTURE

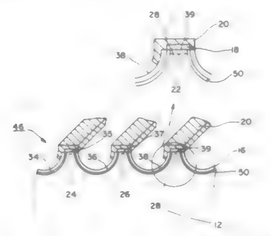
Rudolf Hezel, Hofheimer Strasse 12, D-8000 München 60, Fed. Rep. of Germany

Filed Dec. 15, 1992, Ser. No. 990,766

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1991, 4143083; Dec. 27, 1991, 4143084

Int. Cl.[5] H01L *31/06, 31/0224*

U.S. Cl. 136—256 14 Claims



1. A solar cell comprising a semiconductor substrate in which charge carriers can be generated by incident radiation energy, said charge carriers being separable by an electrical field and then conductible via electrically conducting contacts, said solar cell comprising:

a. at least one semiconductor substrate surface having elevated areas with flanks,

b. electrically conducting contacts for conducting charge carriers on said semiconductor substrate surface,

c. a passivation layer comprising passivation material covering said semiconductor substrate at least in the area between said contacts, and

d. said elevated areas having regions from which said passivation layer and, optionally semiconductor material, has been removed, said electrically conducting contacts being disposed on said regions and extending over said passivation layer along said flanks,

there being a plateau-like area in said elevated areas, said flanks extending from said plateau-like areas, said semiconductor substrate material or a layer disposed thereon being provided in said plateau-like areas, and wherein said electrically conducting contacts extend over said plateau-like areas and along at least one flank extending therefrom.

5,356,489

PROCESS FOR THE PREPARATION OF PERMANENT MAGNETS BASED ON NEODYMIUM-IRON-BORON

Jean P. Nozieres, Seyssins; Renë P. De La Bathie, Saint Pierre D'Albigny, and Marc Lelievre, Eybens, all of France, assignors to Centre National de la Recherche Scientifique and La Pierre Synthetique Balkiwski, France

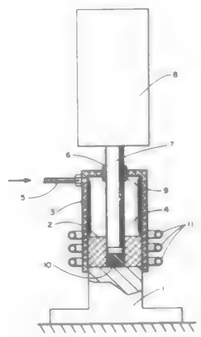
PCT No. PCT/FR90/00452, § 371 Date Dec. 12, 1991, § 102(e) Date Dec. 12, 1991, PCT Pub. No. WO91/00602, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 21, 1990, Ser. No. 777,547

Claims priority, application France, Jun. 23, 1989, 8908657

Int. Cl.[5] H01F *1/02*

U.S. Cl. 148—101 21 Claims



1. A process for the preparation of permanent magnets by the steps of:

in a bulk alloy comprising copper-neodymium-iron-boron that occurs in a first brittle solid phase and in a second liquid phase in a temperature range;

forging said alloy at a temperature in said temperature range at a deformation rate of at least ten until grains of said partially substituted alloy are refined into particles having a reduced size to produce a welded alloy; and thereafter annealing said welded alloy.

5,356,490

COMPOSITION AND PROCESS FOR TREATING METAL

Shawn E. Dolan, Sterling Heights, and Gary A. Reghi, Rochester Hills, both of Mich., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 862,012, Apr. 1, 1992, Pat. No. 5,281,282. This application Oct. 5, 1993, Ser. No. 131,645

Int. Cl.[5] C23C *22/48*

U.S. Cl. 148—247 20 Claims

1. A process comprising steps of:

(I) providing a precursor liquid mixture consisting essentially of water and:

(A) a dissolved component selected from the group consisting of H_2TiF_6, H_2ZrF_6, H_2HfF_6, H_2SiF_6, H_2GeF_6, H_2SnF_6, HBF_4, and mixtures thereof and

(B) a dissolved, dispersed, or both dissolved and dispersed component selected from the group consisting of Ti, Zr, Hf, Al, Si, Ge, Sn, and B, the oxides, hydroxides, and carbonates of Ti, Zr, Hf, Al, Si, Ge, Sn, and B, and mixtures of any two or more of these elements, oxides, hydroxides, and carbonates,

said precursor liquid mixture having at least one of the following characteristics: (i) it is not optically transparent in a thickness of 1 cm; (ii) it scatters visible light; or (iii) it undergoes visually detectable settling of a solid phase if maintained for at least 100 hours at a temperature between its freezing point and 20° C.;

(II) maintaining the precursor liquid mixture provided in step (I) for at least a sufficient time at a sufficient temperature to form a stabilized liquid mixture that is free from any visually observable evidence of phase separation, is transparent when viewed in a thickness of 1 cm, and is sufficiently stable that it would remain free from any visually observable evidence of phase separation during storage at temperature in the range from 20° to 25° C. for a period of at least 100 hours; and, optionally,

(III) mixing at least one of (i) a water soluble or dispersible polymer or copolymer component (C) and (ii) a water soluble oxide, carbonate, or hydroxide of Ti, Zr, Hf, B, Al, Si, Ge, or Sn with the stabilized liquid mixture from the end of step (II) to form a mixture that is sufficiently stable that it would remain free from any visually observable evidence of phase separation during storage at temperature in the range from 20° to 25° C. for a period of at least 100 hours.

5,356,491

COMPOSITION AND METHOD FOR TREATING TIN PLATED STEEL SURFACE

Tomoyuki Aoki, Chigasaki, and Masayuki Yoshida, Yokohama, both of Japan, assignors to Henkel Corporation, Plymouth Meeting, Pa.

PCT No. PCT/US91/08405, § 371 Date May 21, 1993, § 102(e) Date May 21, 1993

PCT Filed Nov. 14, 1991, Ser. No. 64,085

Claims priority, application Japan, Nov. 21, 1990, 2-317017

Int. Cl.[5] C23C *22/07*

U.S. Cl. 148—253 20 Claims

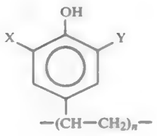
1. An aqueous liquid composition of matter having a pH in the range from 2.0 to 6.5 and comprising water and:

(A) from 1 to 30 g/L of phosphate ions,

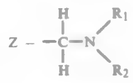
(B) from 0.1 to 5 g/L of condensed phosphate ions,

(C) from 0.5 to 5 g/L of reducing agent, and

(D) from 0.1 to 20 g/L of dissolved solids of a water soluble resin component selected from molecules conforming to the following general formula:



where, in the preceding formula, n is an integer with a value in the range from 2 to 80; each of X and Y independently of each other and independently for each of the n units in the molecule may represent hydrogen or a group "Z" with the following general formula:



in which each of R_1 and R_2 independently of each other and independently for each Z group in the component represents a C_1 to C_{10} alkyl or hydroxyalkyl moiety, except that the total number of Z groups present in the resin component is from 30 to 200% of the total number of aromatic rings in the resin component.

5,356,492

NON-TOXIC CORROSION RESISTANT CONVERSION PROCESS COATING FOR ALUMINUM AND ALUMINUM ALLOYS

Robert N. Miller, Acworth, Ga., assignor to Locheed Corporation, Calabasas, Calif.

Filed Apr. 30, 1993, Ser. No. 56,169

Int. Cl.[5] C23C *22/56*

U.S. Cl. 148—273 14 Claims

1. A process for producing a corrosion resistant chemical conversion coating on aluminum and aluminum alloys comprising subjecting a cleaned, degreased and deoxidized aluminum to an aqueous solution containing cerous chloride and hydrogen peroxide wherein an acidic condition is created by the hydrolysis of the cerous chloride.

5,356,493

BLISTER-RESISTANT STEEL SHEET AND METHOD FOR PRODUCING THEREOF

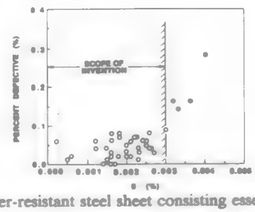
Seishi Tsuyama; Yoshihiro Hosoya; Shuji Kanetoh; Daijiro Koyanagi; Hiromi Nakamura, and Satoshi Kohira, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Jul. 1, 1993, Ser. No. 86,507

Claims priority, application Japan, Jul. 8, 1992, 4-203168

Int. Cl.[5] C21P *8/04;* C22C *38/06*

U.S. Cl. 148—320 20 Claims



1. A blister-resistant steel sheet consisting essentially of: 0.0005 to 0.003 wt. % C, 0.10 to 2.2 wt. % Mn, 0.6 wt. % or less Si, 0.07 wt. % or less P, 0.025 wt. % or less S, 0.02 to 0.06 wt. % sol. Al, 0.0035 wt. % or less N, 0.003 wt. % or

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less O, [(48/14)N+(48/32)S+4×(48/12)C] wt. % or less Ti, and the balance being Fe and inevitable impurities; and smaller one if either Ti (wt. %) or [(48/14)N+(48/32)S] (wt. %) being [0.002 t^2+0.003] or more, where t is a thickness (mm) of the steel sheet.

5,356,494

HIGH STRENGTH COLD ROLLED STEEL SHEET HAVING EXCELLENT NON-AGING PROPERTY AT ROOM TEMPERATURE AND SUITABLE FOR DRAWING AND METHOD OF PRODUCING THE SAME

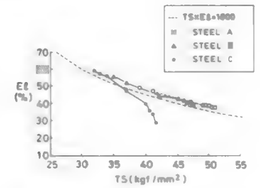
Susumu Okada; Kei Sakata; Susumu Satoh; Masahiko Morita, and Toshiyuki Kato, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Apr. 24, 1992, Ser. No. 874,306

Claims priority, application Japan, Apr. 26, 1991, 3-123134; Apr. 26, 1991, 3-123135

Int. Cl.[5] C22C *38/12;* **C21D** *8/04*

U.S. Cl. 148—330 **10 Claims**



1. A high strength cold rolled steel sheet having excellent non-aging property at room temperature and excellent drawability, said steel sheet having a dual-phase structure composed of a high-temperature transformed ferrite phase and a low-temperature transformed ferrite phase having high dislocation density, said steel sheet having a composition which essentially contains: not less than 0.001 wt % but not more than 0.025 wt % of C; not less than 0.05 wt % but not more than 1.0 wt % of Si; not less than 0.1 wt % but not more than 2.0 wt % of Mn; not less than 0.001 wt % but not more than 0.2 wt % of Nb; not less than 0.0003 wt % but not more than 0.01 wt % of B; not less than 0.005 wt % but not more than 0.10 wt % of Al; not more than 0.1 wt % of P; not more than 0.007 wt % of N; at least one selected from a group consisting of not less than 0.05 wt % but not more that 3.0 wt % of Ni; not less than 0.01 wt % but not more than 2.0 wt % of Mo; and not less than 0.05 wt % but not more than 5.0 wt % of Cu; and the balance being substantially Fe with inevitable impurities.

5,356,495

METHOD OF MANUFACTURING CAN BODY SHEET USING TWO SEQUENCES OF CONTINUOUS, IN-LINE OPERATIONS

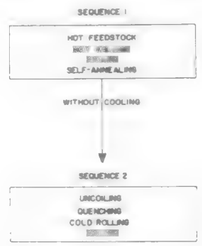
Gavin F. Wyatt-Mair, Lafayette, and Donald G. Harrington, Danville, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Pleasonton, Calif.

Continuation-in-part of Ser. No. 902,936, Jun. 23, 1992. This application Dec. 28, 1992, Ser. No. 997,503

Int. Cl.[5] C22F *1/04*

U.S. Cl. 148—551 **25 Claims**

1. A method for manufacturing can body sheet in which the process is carried out in two sequences of continuous, in-line operation comprising, in the first sequence, continuously hot rolling a hot aluminum feedstock to reduce its thickness, coiling the hot rolled feedstock while it is hot, holding the hot reduced feedstock at or near the hot rolling exit temperature for at least two minutes to effect recrystallization and solutionization without intermediate heating, and, in the second continuous in-line sequence, the steps of uncoiling the hot coiled



feedstock and quenching the annealed feedstock immediately and rapidly to a temperature sufficient for cold rolling.

5,356,496

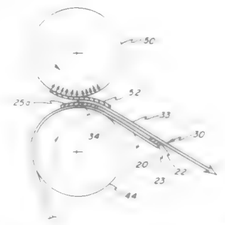
SPLICE TAIL TAPE-DOWN METHOD AND APPARATUS

Edward M. Lincoln, Liverpool, N.Y., and William J. Winch, III, E. Brunswick, N.J., assignors to The Black Clawson Company, Middletown, Ohio

Filed Jun. 15, 1992, Ser. No. 898,423

Int. Cl.[5] B65H *19/18, 19/20*

U.S. Cl. 156—64 **13 Claims**



7. Apparatus for taping down the tail of a splice on a progressing web in which a leading edge of the web from a fresh roll is spliced onto an expiring web thereby forming an overlapping splice, and in which a knife severs the expiring web following the splice and forms a trailing tail of the expiring web, which tail extends upstream from the splice in overlapping relation to the fresh web, comprising:

means on at least one of said webs indicating the position of the cut end of said tail along the progressing web,

means responsive to said indicating means for applying a piece of hold-down tape over said tail cut end and onto the adjacent portion of said fresh web without interrupting the progressing movement of said webs.

5,356,497

METHOD FOR FORMING A SHEET MATERIAL PERMEABLE TO GAS AND NOT PERMEABLE TO WATER

Chi S. Lee, No. 396, Chung Shan Rd., Ching Shui Chen, Taichung Hsien, Taiwan

Filed May 5, 1993, Ser. No. 57,154

Int. Cl.[5] B29C *59/10, 65/52*

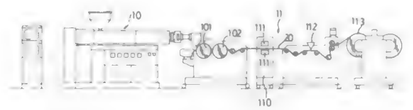
U.S. Cl. 156—87 **5 Claims**

1. A method for forming a sheet material which is made of 70% of polypropylene and 30% of nylon and is permeable to gas and not permeable to water, said sheet material having an upper surface and a lower surface, said method comprising:

applying a first static discharge mechanism having two electrodes respectively disposed at adjacent opposite sides

of said sheet material for discharging static electricity to said sheet material in order to form a plurality of apertures therein, each of said apertures having a size ranging from 0.2 μm to 10 μm and smaller than that of water particles and larger than that of gas particles such that said sheet material is permeable to gas and not permeable to water;

applying a water-resistant gelatinous substance onto the



upper surface of said sheet material so as to form a water-resistant covering layer on said sheet material; and

applying a second static discharge mechanism having two electrodes respectively disposed at adjacent opposite sides of said sheet material for discharging static electricity to said sheet material in order to form a plurality of orifices in said covering layer, each of said orifices having a size ranging from 0.2 μm to 10 μm.

5,356,498

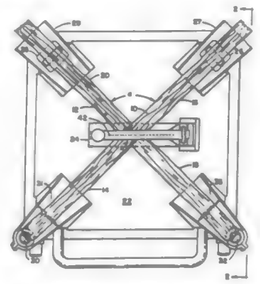
METHOD AND APPARATUS FOR FORMING SPLICES IN FLEXIBLE, FUSIBLE MATERIAL AND MATERIAL SPLICED ACCORDINGLY

Kyle E. Morrison; Kenneth R. Wilmoth; Richard D. Neal, all of Kingsport, and Jimmie L. Cox, Jonesborough, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 562,876, Aug. 6, 1990. This application Jun. 2, 1992, Ser. No. 892,443

Int. Cl.[5] B29C *65/22, 65/74*

U.S. Cl. 156—158 **11 Claims**



1. Apparatus for splicing crimped, generally flat tow comprising cellulose acetate, said apparatus comprising a first vacuum clamp for holding a main portion of a first tow, a first fluid jet means for tensioning the first tow, a second vacuum clamp for holding a main portion of a second tow and a second fluid jet means for tensioning the second tow, said clamps and said first and second fluid jet means being positioned relative to each other so that the first tow, which is held by the first vacuum clamp and tensioned by the first fluid jet means, and the second tow which is held by the second vacuum clamp and tensioned by the second fluid jet means cross at an angle of between about 40 and about 140 degrees, means for fusing the tows at their crossing along a line dividing the two end portions from the two main portions, whereby upon fusing the tows together, the main portions are fused together and the end portions are fused together and the end portions are drawn away from said main portions under tension to form two separate lengths of tow.

5,356,499

METHOD FOR INCREASING FIBER STRENGTH TRANSLATION IN COMPOSITE PRESSURE VESSELS USING MATRIX RESIN FORMULATIONS CONTAINING SURFACE ACTING AGENTS

Owen H. Decker, West Reading, Pa.; Ben A. Lloyd, and Neal A. Mumford, both of Brigham City, Utah, assignors to Thiokol Corporation, Ogden, Utah

Continuation of Ser. No. 426,890, Oct. 25, 1989, abandoned. This application Jun. 23, 1993, Ser. No. 81,839

Int. Cl.[5] B29C *71/00;* **B65H** *81/00*

U.S. Cl. 156—175 **16 Claims**

1. A method for improving composite pressure vessel strength comprising:

(a) providing a chemorheologically viscosity tailored resin formulation comprising a curable matrix resin and an effective amount of a reactive resin curing agent reactive at room temperature and a latent curing agent substantially non-reactive at room temperature but activated upon heating or radiation;

(b) adding to said resin formulation an amount of surface-active agent sufficient to permit interaction between the fiber or filament and the resin formulation such that tensile strength is enhanced and variation in performance is reduced;

(c) impregnating a fiber or filament strand or tow with the mixture of resin formulation and surface-active agent;

(d) allowing the reactive resin curing agent to partially cure the resin formulation and increase its viscosity, thereby forming a prepreg composition;

(e) winding a pressure vessel from said strand or tow prepreg composition; and

(f) activating the latent curing agent to further cure the resin formulation and form a composite pressure vessel.

5,356,500

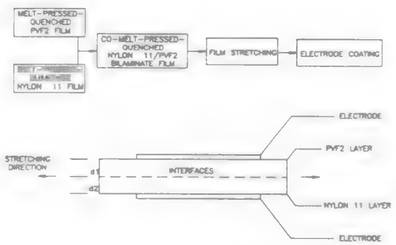
PIEZOELECTRIC LAMINATE FILMS AND PROCESSES FOR THEIR MANUFACTURE

Jerry I. Scheinbeim, Somerset; Brian A. Newman, Highland Park, and Ji Su, Piscataway, all of N.J., assignors to Rutgers, The State University of New Jersey, New Brunswick, N.J.

Filed Mar. 20, 1992, Ser. No. 854,110

Int. Cl.[5] B32B *31/00;* **H01L** *41/22*

U.S. Cl. 156—229 **5 Claims**



1. A method for providing a piezoelectric laminate film comprising the following steps:

a) melting at least two polymeric films formed of different polymers and quenching them;

b) place one surface of one quenched film upon one surface of another quenched film in intimate contact therewith;

c) laminate said quenched films whose surfaces are in intimate contact by co-melt pressing;

d) repeat steps b) and c) until all polymeric films are laminated;

e) quench said laminate;

f) cold draw said quenched laminate, and

g) pole said drawn laminate to form said piezoelectric lami-

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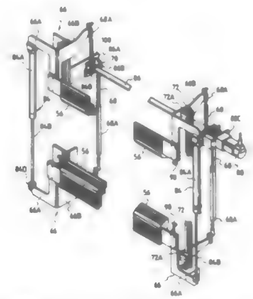
nate film having one or more properties superior to the corresponding property of the individual polymeric films used to make said piezoelectric laminate film.

5,356,501

FILM APPLYING METHOD AND FILM APPLYING APPARATUS

Yoji Washizaki, and Hiroyoshi Nakano, both of Saitama, Japan, assignors to Somar Corporation, Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,368
Claims priority, application Japan, Dec. 13, 1991, 3-352370
Int. Cl.[5] B32B *31/10*
U.S. Cl. 156—256 **4 Claims**



1. A film applying method comprising the steps of:

conveying a base plate having first and second sides to a film applying position;

attracting leading edges of films onto first and second film feed members opposed to said first and second sides of said base plate, said first and second film feed members being secured to first and second mounting members slidably supported by a body frame of a film applying apparatus;

moving said first and second film feed members toward leading edges of the first and second sides of said base plate, such that the leading edges of said films are tentatively applied to the leading edges of said first and second sides of said base plate, respectively, by

driving said first and second mounting members with only a motor through rack-and-pinion mechanisms from respective original positions toward said base plate such that said first and second feed members are positioned in predetermined positions at a prescribed distance from said base plate, said predetermined positions being close to said base plate as compared to the original positions, and then simultaneously driving said first and second mounting members via only drive cylinders from said predetermined positions toward said base plate such that said films are tentatively applied to said first and second sides of said base plate, respectively;

driving said first and second mounting members away from said base plate utilizing only said drive cylinders after said films are tentatively applied to said base plate; and

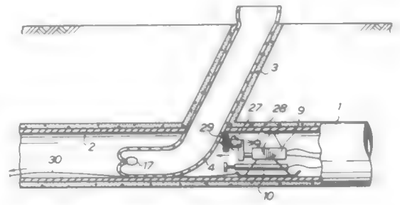
completely applying said films to said first and second sides of said base plate by pressure applying rollers such that each of said films completely applied to said first and second sides has a length corresponding to that of said base plate.

5,356,502

METHOD FOR LINING A BRANCH PIPE

Takao Kamiyama, Hiratsuka, and Yasuhiro Yokoshima, Ibaraki, both of Japan, assignors to Shonan Gosei-jushi Seisakusyo K.K., Kanagawa and Yokoshima & Company, Ibaraki, both of Japan

Filed Oct. 22, 1993, Ser. No. 139,671
Claims priority, application Japan, Feb. 9, 1993, 5-021431
Int. Cl.[5] B29C *63/36*
U.S. Cl. 156—267 **8 Claims**



1. A method for lining a branch pipe branching off a main pipe consisting of the steps of: (a) preparing a tubular liner bag by sewing a rectangular nonwoven resin-absorbent fabric into a tubular shape with one end closed and cutting it to a length substantially greater than the length of the branch pipe to be lined; (b) attaching an impermeable plastic film over the external surface of this tubular liner bag; (c) soaking said nonwoven resin-absorbent fabric with a hardenable fluid resin; (d) everting said liner bag into the branch pipe from the ground to the main pipe by means of a fluid pressure until the eversion head of the liner bag is stopped by the inner wall of the main pipe; (e) forcing said eversion head of the liner bag to turn downstream in the main pipe, thus allowing the the liner bag to evert entirely; (f) hardening said hardenable fluid resin while inflating said liner bag by means of the fluid pressure; and (g) removing that portion of said liner bag which protrudes into said main pipe.

5,356,503

MASKING ASSEMBLY AND MASKING METHOD FOR PROTECTING SURFACES FROM RADIANT HEAT

James D. Caryford, Afton Township, Washington County, Minn., and Robert J. Petrush, Sagamore Hills Township, Summit County, Ohio, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 816,323, Dec. 30, 1991, abandoned. This application May 12, 1993, Ser. No. 60,705
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—272.2 **6 Claims**



1. A method for protecting portions of an assembly from radiant heat during radiant heating to cure paint on another newly painted outer surface portion of the assembly, said method comprising the steps of:

providing a roll of masking material having an axis, the roll of masking material comprising a coiled elongate thin flexible sheet of masking material having opposite first and second untaped elongate edges, and the roll of masking material having first and second axially spaced ends with the first end of the roll being defined by the first elongate edge of the sheet, the sheet of masking material comprising a layer of flexible backing material having opposite major surfaces and a coating of metal on one of the surfaces of the backing material providing a reflectance of at least 50 percent of radiant heat for the sheet of masking material;

providing a tape roll comprising a coiled length of tape having first and second elongate edges and comprising a coating of pressure sensitive adhesive;

providing a portable dispensing device comprising a frame having a handle adapted for manual manipulation of the dispensing device and first and second spindles each having an axis, said spindles each being mounted on the frame for rotation about the axis of the Spindle with the axis of the first spindle being spaced from and generally parallel to the axis of the second spindle;

mounting the tape roll coaxially about the first spindle with the first edge of the length of tape at a first predetermined position axially with respect to the first and second spindles;

mounting the roll of masking material coaxially about the second spindle with the first edge of the sheet at a second predetermined position axially with respect to the first and second spindles, and with the width of the length of tape extending from the first position past the second position and the width of the sheet of masking material extending from the second position past the first position so that a portion of the length of tape along the first edge of the length of tape and a portion of the sheet of masking material along the first edge of the sheet of masking material are both positioned between the first and second positions;

pulling the tape and sheet of masking material from the dispensing device along paths relative to the frame including a path for the length of tape from the tape roll and a path for the sheet of masking material from the roll of masking material, the paths including a common path portion so that the pressure sensitive adhesive along the first edge of the length of tape adheres to the portion of the sheet of masking material along the first edge of the sheet of masking material to form a tape and masking material composite having opposite edges defined by the second edges of the length of tape and the sheet of masking material and an exposed portion of the coating of pressure sensitive adhesive along the second edge of the length of tape;

adhering the exposed portion of the coating of pressure sensitive adhesive on the tape and masking material composite to a surface with the sheet of masking material extending over the portion of the assembly to protect that portion of the assembly from radiant heat used to cure paint on another newly painted outer surface portion of the assembly, said pulling step being done closely adjacent or along the surface to which the exposed portion of the coating of pressure sensitive adhesive on the tape and masking material composite is adhered during said adhering step;

painting the outer surface portion of the assembly;

directing radiant heat toward the assembly to cure the paint on the outer surface portion; and

removing the tape and sheet of masking material.

5,356,504

METHOD OF SEALING CRACKS IN FOUNDATION WALLS BY APPLYING POLYVINYL ACETAL AS A PRIMER FOR SILICONE SEALANT

Aurele E. Maurice, 138 Holten St., Danvers, Mass. 01923

Continuation-in-part of Ser. No. 820,009, Jan. 13, 1992. This application Jul. 1, 1993, Ser. No. 84,483
Int. Cl.[5] B05D *5/10*
U.S. Cl. 156—281 **19 Claims**

1. A method of bonding a concrete joint having at least a first and second element comprising the steps of:

applying a polyvinyl acetal adhesive to said first and second elements;

waiting until said adhesive becomes tacky;

applying a silicone sealant over the adhesive; and

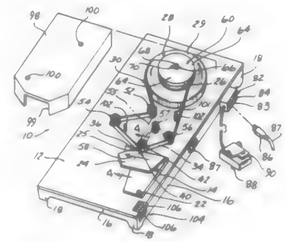
contacting the elements with each other.

5,356,505

STAINED GLASS FOIL APPLICATOR

John J. Salvatore, 30987 Boewe, Warren, Mich. 48092

Filed Feb. 15, 1991, Ser. No. 657,065
Int. Cl.[5] B65C *1/00*
U.S. Cl. 156—461 **13 Claims**



1. An apparatus for applying a foil strip from a foil reel containing a wound, continuous strip of foil having an adhesive on one side and a removable backing covering the adhesive to an edge of a piece of glass, the apparatus comprising:

a planar base;

means, co-planarly mounted on the base, for rotatably receiving the foil spool;

guide means, mounted on the base, for guiding the foil from the foil spool past an application point with the adhesive surface of foil facing outward;

take-up means, rotatably and co-axially mounted above the means for rotatably receiving the foil spool, for receiving one end of the backing after the backing has been separated from the foil and for winding up the backing;

drive means, mounted on the base and coupled to the take-up means, for rotatably driving the take-up means to pull the foil from the foil spool and to wind up the backing about the take-up means; and

glass guide support means, mounted on the base at the application point, for slidably supporting a piece of glass as the piece of glass is urged past the application point and the foil applied to an edge thereof.

5,356,506

MODULAR CONSTRUCTION PATTERN ROLLS FOR USE IN PAPER CONVERTING

Kevin B. McNeil, Maineville, Ohio; Donald D. Culver, Edgewood, Ky., and James R. Johnson, Lawrenceburg, Ind., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 898,048, Jun. 12, 1992, abandoned. This application Apr. 4, 1994, Ser. No. 222,349
Int. Cl.[5] B31B *1/62, 1/64*
U.S. Cl. 156—553 **8 Claims**

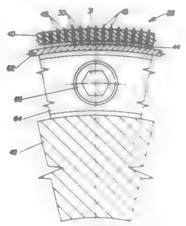
1. A paper laminate converting apparatus, said apparatus

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comprising two pattern rolls juxtaposed in axially parallel relationship to form a nip therebetween, each said pattern roll comprising:

a generally hollow integral cylindrically perforate shell having an inner circumference, an outer periphery, and a plurality of radially oriented holes therethrough;

a plurality of protuberances, each of said protuberances having a proximal end with a shoulder and having a distal end, said protuberances being disposed in said holes so that said shoulder is in engaged relation with the inner circumference of said shell and the distal ends of said protuberances protrude radially outwardly from the outer periphery of said shell; and



a means for maintaining said protuberances and said hollow cylindrically perforate shell in fixed relationship wherein said means for maintaining said protuberances and said cylindrically perforate shell in fixed relationship comprises a radial anvil internal to said perforate shell

wherein the protuberances of said pattern rolls are sized and spaced so that the distal end of each protuberance touches the periphery of the other said other pattern roll at a location between the protuberances of the other said pattern roll when said protuberances are in said nip, whereby a paper laminate in said nip is in contacting relationship with the distal ends of the protuberances of one said pattern roll and is also in contacting relationship with the other of said pattern rolls.

5,356,507

LAMINATOR

Ladislaus Wojtanowitsch, Aschaffenburg, Fed. Rep. of Germany; Gregor Gehrer, Hallein/Rehhof, Austria; Markus Köll, Matrei, Austria, and Alfred Nowak, Klagenfurt, Austria, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

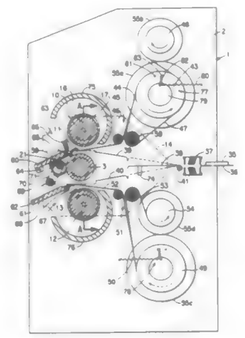
Filed Jan. 14, 1993, Ser. No. 4,350

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1992, 4202553

Int. Cl.[5] B32B *31/04*

U.S. Cl. 156—555 **23 Claims**

1. A laminator for laminating a film onto a support, with an upper pressure nip formed between a fixed roller and an upper pressure roller to which can be passed the support over a feed plate and a film from an upper supply roll after removal of a protective sheeting, whereby the upper pressure roller is adjustable back and forth by means of a shifting device from an idle position, in which the upper pressure nip is open into an operating position in which the upper pressure nip is closed and a roller drive is switched on, characterized in that the fixed roller forms with a lower pressure roller a lower pressure nip to which can be passed, alternatively to the upper pressure nip, the support over a feed plate and a second film from a lower supply roll after removal of a protective cover sheeting, and in that the lower pressure roller is adjustable back and forth by



means of the shifting device from an idle position in which the lower pressure nip is open into an operating position in which the lower pressure nip is closed and the roller drive is switched on in the opposite direction.

5,356,508

APPARATUS FOR CONTINUOUSLY APPLYING LABELS TO ARTICLES

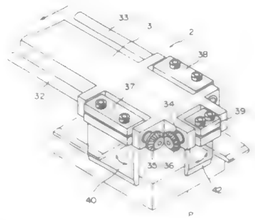
Tomoichi Watanabe, Tokyo, Japan, assignor to Japan Tobacco, Inc., Tokyo, Japan

Filed Mar. 31, 1993, Ser. No. 40,982

Claims priority, application Japan, Mar. 31, 1992, 4-105670

Int. Cl.[5] B65C *9/00*

U.S. Cl. 156—566 **17 Claims**



1. An apparatus for applying small labels to articles, comprising:

a rotary table continuously rotatable in a horizontal plane and having peripheral portions;

an arcuate article guide provided around said rotary table; and

heads provided on said peripheral portions of said rotary table, each of said heads having;

a holding-moving mechanism for holding an article loaded on said article guide and transferring said article on and along said article guide together with said each head in accordance with rotation of said rotary table, each holding-moving mechanism having three movable holding members for simultaneously holding three sides of the article, a fourth side of the article being exposed, the three holding members being pivotable to engage the three sides of the article, first, second and third holding members being pivotable about first, second and third rotary shafts, the first and second rotary shafts being generally parallel and the third rotary shaft being generally perpendicular to the first and second shafts, and

a labeling mechanism for applying a label to said article when said article is being transferred on and along said article guide together with said each head and when the three holding members are holding the article, the label being applied to the fourth exposed side of the article.

5,356,509

HETERO-EPITAXIAL GROWTH OF NON-LATTICE MATCHED SEMICONDUCTORS

Nancy Terranova, Wilmington, and Allen M. Barnett, Newark, both of Del., assignors to AstroPower, Inc., Newark, Del.

Filed Oct. 16, 1992, Ser. No. 962,475

Int. Cl.[5] H01L *21/20*

U.S. Cl. 117—58 **26 Claims**



1. A process for forming a layer of compound semiconductor material on a nonlattice matched substrate comprising the steps of forming a growth mask on a surface of the substrate, forming openings in the growth mask to expose areas of the substrate, forming an interlayer only on the exposed areas of the substrate by close-spaced-vapor-transport on the exposed areas in the openings of the growth mask, and forming the compound semiconductor layer over the interlayer by liquid phase epitaxy and using the interlayer in the exposed areas to seed the growth of the compound semiconductor layer.

5,356,510

METHOD FOR THE GROWING OF HETEROEPITAXIAL LAYERS

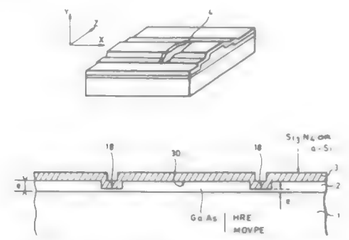
Daniel Pribat, Sevres; Bruno Gerard, Chelles, and Pierre Legagneux, Le Mesnil St Denis, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Oct. 6, 1992, Ser. No. 956,995

Claims priority, application France, Oct. 8, 1991, 91 12352

Int. Cl.[5] H01L *25/02*

U.S. Cl. 117—95 **10 Claims**



10. A method for growing heteroepitaxial semiconductor layers, comprising the steps of:

growing a first layer of a first semiconductor material on a surface of a substrate comprising a second semiconductor material;

etching bands that are thinner than thicker regions of the first layer in the first layer;

depositing a confinement layer onto the first layer, wherein the confinement layer comprises a material on which there can be neither nucleation or deposition by vapor phase growth under any of the conditions in which nucleation or deposition of the first semiconductor material onto a surface of the first semiconductor material does occur;

etching at least one aperture into the second layer which reaches through the second layer to a portion of the first layer;

chemically etching thinner and thicker regions of the first layer, from the portion of the first layer that is exposed through the aperture, thereby leaving a recessed seed crystal of the first semiconductor material in a confinement space that is between the surface of the substrate and the second layer;

growing monocrystal of the first semiconductor material in the confinement space by vapor phase epitaxy onto the recessed seed crystal.

5,356,511

PRODUCTION OF A POLYMER/METAL OR POLYMER/SEMICONDUCTOR COMPOSITE

Peter Hoessel, Schifferstadt; Klaus Harth, Altleiningen; Gerhard Hoffmann, Otterstadt, and Hartmut Hibst, Schriesheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 16, 1993, Ser. No. 92,494

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1992, 4223887

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—629 **8 Claims**

1. A process for producing a polymer/metal or polymer/-semiconductor composite having an adhesive layer between a polymer and a metal or between a polymer and a semiconductor, which comprises applying to the metal or semiconductor a layer of at least two different chemical elements by vapor-deposition or cathode sputtering, then selectively or partially removing at least one chemical element of this layer in an etching process to form an adhesion layer, and then applying the polymer.

5,356,512

METHOD OF STACKING CERAMIC GREEN SHEETS

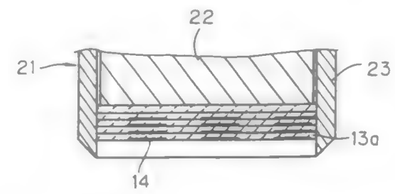
Takao Hosokawa, Kyoto, Japan, assignor to Murata Mfg. Co., Ltd., Japan

Filed Dec. 9, 1992, Ser. No. 988,222

Claims priority, application Japan, Dec. 9, 1991, 3-324500

Int. Cl.[5] B32B *31/04*

U.S. Cl. 156—634 **16 Claims**



1. A method of stacking ceramic green sheets, comprising the steps of:

(a) preparing first and second back films;

(b) forming a ceramic green sheet on said first back film;

(c) contacting an outwardly facing first surface of said ceramic green sheet with said second back film and retaining, at lest momentarily, said ceramic green sheet between said first and second back films such that both surfaces of said ceramic green sheet are in direct contact with said first and second back films, respectively;

(d) transferring said ceramic green sheet from said first back film to said second back film and simultaneously exposing an outwardly facing second surface of said ceramic green

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sheet by separation of said first back film from said ceramic green sheet; and then

(e) transferring said ceramic green sheet from said second back film to at least one other ceramic green sheet, which has been already stacked, by contacting with said already stacked ceramic green sheet.

5,356,513

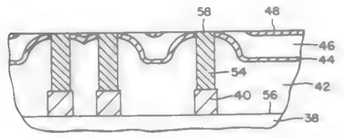
POLISHSTOP PLANARIZATION METHOD AND STRUCTURE

Peter A. Burke, Milton, Vt., and Michael A. Leach, Milpitas, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 22, 1993, Ser. No. 51,915

Int. Cl.[5] H01L *21/44, 21/465*

U.S. Cl. 156—636 **24 Claims**



11. A method for producing a substantially planar surface overlying features of a semiconductor structure, which method comprises:

forming alternating layers of a hard polishing material and a soft polishing material over features of a semiconductor structure, said features including radioed and recessed portions, wherein said alternating layers comprise:

a conformal first layer of a soft polishing material overlying said features of said semiconductor structure;

a conformal second layer of a hard polishing material overlying said first layer of a soft polishing material;

a conformal third layer of a soft polishing material overlying said second layer of a hard polishing material;

a conformal fourth layer of a hard polishing material overlying said third layer of a soft polishing material;

a conformal fifth layer of a soft polishing material overlying said fourth layer of a hard polishing material; and

a conformal sixth layer of a hard polishing material overlying said fifth layer of a soft polishing material; and

polishing said alternating layers so as to create a substantially planar surface over said features.

5,356,514

PROCESS AND APPARATUS FOR ETCHING IRON-CONTAINING MATERIALS

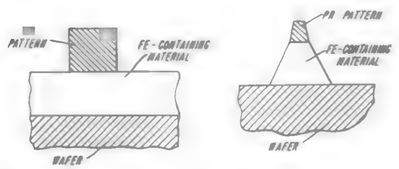
Keizo Kinoshita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 27, 1991, Ser. No. 750,274

Claims priority, application Japan, Aug. 27, 1990, 2-224596

Int. Cl.[5] B05D *5/00*

U.S. Cl. 156—643 **4 Claims**



1. A process for etching a film of Fe-containing material forming the surface of a sample, which comprises:

subjecting the sample to reactive etching in an atmosphere of chlorine-containing gas while the sample is heated to not lower than 250° C. in vacuo;

subjecting the sample to post-treatment so as to allow the etching residues left on the sample surface to react fully with the chlorine-containing gas; and then

subjecting the sample to a purified water treatment by immersing the sample in a purified water so as to dissolve and remove the etching products formed during said post-treatment step.

5,356,515

DRY ETCHING METHOD

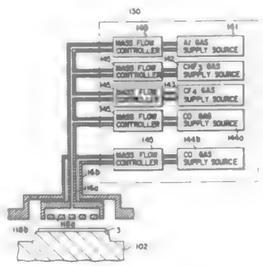
Yoshifumi Tahara, Machida; Yoshihisa Hirano, Kodaira; Masahiro Ogasawara, Hachioji; Isahiro Hasegawa, Zushi; Keiji Horioka, Kawasaki, and Takaya Matsushita, Yokohama, all of Japan, assignors to Tokyo Electron Limited, Tokyo and Kabushiki Kaisha Toshiba, Kawasaki, both of Japan

Continuation-in-part of Ser. No. 779,376, Oct. 18, 1991, Pat. No. 5,302,236. This application Dec. 10, 1992, Ser. No. 988,809

Claims priority, application Japan, Oct. 19, 1990, 2-283155; Nov. 5, 1990, 2-300361; Dec. 13, 1991, 3-352074; Dec. 16, 1991, 3-331077

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—643 **10 Claims**



1. A dry etching method, comprising the steps of:

placing a workpiece having an oxide portion or a nitride portion and structurally having a central portion and a peripheral portion about the central portion in a processing vessel;

keeping said workpiece at a temperature not higher than 0° C. within the processing vessel;

supplying an etching gas including a first gas containing a halogen element and a second gas containing carbon having an oxidation number of less than 4 and oxygen to a region in the vicinity of the workpiece while keeping the temperature of the workpiece at a level not higher than 0° C.; and

forming a plasma of said etching gas for etching the oxide portion or the nitride portion of the workpiece with the plasma, wherein the amount of the second gas supplied to the peripheral portion of the workpiece is larger than the amount supplied to the central portion.

5,356,516

PROCESS FOR ETCHING MIXED METAL OXIDES

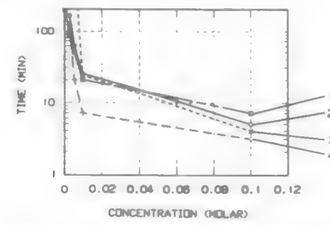
Carol I. H. Ashby, Edgewood, N. Mex., and David S. Ginley, Evergreen, Colo., assignors to Sandia Corporation, Albuquerque, N. Mex.

Filed Feb. 26, 1993, Ser. No. 23,286

Int. Cl.[5] C23F *1/00*

U.S. Cl. 156—667 **18 Claims**

1. A process for controllably etching at least one of the metal oxides from a mixed metal oxide surface comprising contacting the surface with an aqueous solution of at least one chelating poly-carboxylic acid selected from the group consisting of bicarboxylic acids and tricarboxylic acids.



5,356,517

HYDROLYSIS OF RESIN IN PULP WITH AN ENZYME AND A PEROXIDE

Lars S. Pedersen, Lyngby, and Steen Skjold-Jorgensen, Horsholm, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark and SCA Wifsta-Östrand AB, Timraa, Sweden

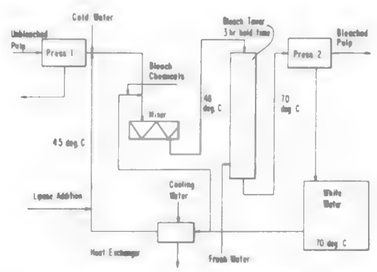
PCT No. PCT/DK90/00282, § 371 Date Apr. 16, 1992, § 102(e) Date Apr. 16, 1992, PCT Pub. No. WO91/07542, PCT Pub. Date May 30, 1991

PCT Filed Nov. 7, 1990, Ser. No. 848,973

Claims priority, application Denmark, Nov. 8, 1989, 5561/89; Sweden, Jan. 10, 1990, 9000077-9

Int. Cl.[5] D21C *9/16*

U.S. Cl. 162—72 **13 Claims**



1. A process for hydrolysis of resin in pulp during bleaching of the pulp, comprising enzymatically hydrolyzing the resin with an enzyme selected from the group consisting of lipase and esterase simultaneously with bleaching of the pulp with a peroxide, wherein the enzyme and the peroxide are present during the bleaching in amounts effective to hydrolyze resin in the pulp and bleach the pulp.

5,356,518

METHOD OF PRODUCING MOLDED PAPER PULP ARTICLES AND ARTICLES PRODUCED THEREBY

Joseph Kelley, Hamilton County; James Parks, Warren County, both of Ohio; Robert Frey, Kenton County, Ky.; Richard Reames, Allegan County, and William Forester, Kalamazoo County, both of Mich., assignors to The Cin-Made Corporation, Cincinnati, Ohio

Filed Sep. 21, 1992, Ser. No. 948,010

Int. Cl.[5] D21J *1/04*

U.S. Cl. 162—224 **11 Claims**

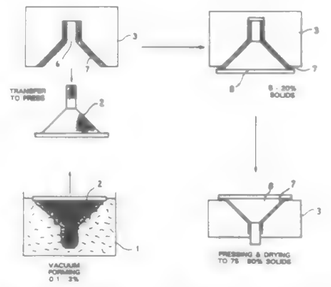
1. A method of preparing a molded paper article comprising the steps of:

preparing a slurry of paper pulp and water;

inserting a foraminous mold into the slurry;

pulling a vacuum on the foraminous mold so that a layer of wet paper pulp is deposited thereon;

removing the foraminous mold with the deposited layer of wet paper pulp from the slurry;



separating the deposited layer of wet paper pulp from the foraminous mold; and

compressing the separated layer of wet paper pulp having an initial solids content of 5 to 20 weight percent in such a manner that the wet paper pulp is shaped into the form of the molded paper article and e water content thereof is reduced.

5,356,519

SUPPORT BEAM MADE OF COMPOSITE FIBER MATERIAL

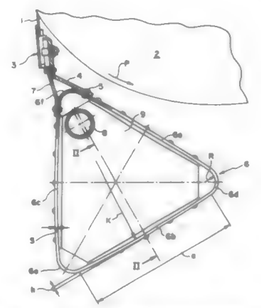
Joachim Grabscheid, Heuchlingen, and Thomas Appels, Kühlenthal, both of Fed. Rep. of Germany, assignors to J.M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Dec. 9, 1992, Ser. No. 988,232

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1991, 4141133

Int. Cl.[5] B31F *1/14*

U.S. Cl. 162—281 **16 Claims**



1. A support beam for at least one scraper blade adapted for interaction with the shell-surface of a roll or drying cylinder of a machine for the production or processing of fibrous webs, said support beam comprising:

an oblong hollow body having at least two longitudinal walls with a convex curvature, said convex curvature defining a radius of curvature greater than a width of each longitudinal wall, said hollow body comprising a composite fiber material having a major fiber orientation extending essentially in the longitudinal direction of said hollow body, said longitudinal walls of said hollow body joined exclusively by means of transition sections having a radius

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of curvature which is smaller than the width of an adjacent longitudinal wall.

5,356,520

SEPARATION OF HIGH BOILING POINT SOLVENTS FROM AMYL ACETATE

William Z. McCarthy, St. Louis, and Michael J. Gentilcore, Maryland Heights, both of Mo., assignors to Mallinckrodt Medical PMC, Las Vegas, Nev.

Filed Feb. 26, 1993, Ser. No. 23,283
Int. Cl.[5] B01D *3/14*
U.S. Cl. 203—81 4 Claims

1. A process for the purification of a crude amyl acetate solution comprising the steps of:

distilling said crude amyl acetate solution to remove tars and non-volatile components,

fractionating said crude amyl acetate solution, wherein said tars and non-volatile components have been removed, to remove lower boiling point impurities, and

redistilling said crude amyl acetate solution wherein said lower boiling point impurities have been removed whereby purified amyl acetate is separated from higher boiling point impurities including bromoethyl acetate or dimethylsulfoxide.

5,356,521

PROCESS FOR MONITORING BIOFILM ACTIVITY

George Nekokza, San Ramon, and George J. Licina, Campbell, both of Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Division of Ser. No. 771,701, Oct. 4, 1991, Pat. No. 5,246,560. This application Apr. 16, 1993, Ser. No. 48,603
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—153.12 8 Claims

1. A process for monitoring biofilm activity on a structure exposed to an aqueous solution comprising the steps of:

a. submerging two electrodes made from the same electrically conducting material, in said aqueous solution and electrically insulating said electrodes from one another and said structure;

b. measuring the electrical characteristics of said two electrodes;

c. measuring the current flow through said electrodes after connecting said electrodes to a power supply;

d. determining biofilm activity on said electrodes by analysis of said electrical current generated or said electrical current flow;

whereby changes in said electrical current generated or said electrical current flow indicate biofilm activity on said electrodes.

5,356,522

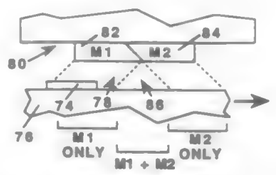
METHOD FOR MANUFACTURING THIN-FILM MEDIUM WITH CHROMIUM UNDERLAYER GRADIENT

Brij B. Lal, San Jose, and Tadashi Shinohara, Fremont, both of Calif., assignors to HMT Technology Corporation, Fremont, Calif.

Continuation-in-part of Ser. No. 837,855, Feb. 18, 1992, Pat. No. 5,324,593, and Ser. No. 964,745, Oct. 22, 1992. This application Dec. 23, 1992, Ser. No. 995,879
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.15 6 Claims

1. A method of forming a magnetic thin-film medium, comprising

moving a non-metallic substrate, in an upstream-to-downstream direction, through a first sputtering zone having a single segmented target composed of adjoining upstream and downstream target segments, said upstream target segment being composed of a metal selected from the group consisting of Ti, W, Si, Mo, V, Nb, Ag, B, Al, Gd, and Ni/P, and being positioned to deposit sputtered material onto the substrate, as the substrate moves into and through an upstream region of said sputter deposition zone, and said downstream target segment being composed of Cr add being positioned to deposit sputtered Cr onto the substrate, as the substrate moves through and out of a downstream region of said sputter deposition zone, thereby forming on the substrate, an axial composition gradient underlayer in which the percentage of the upstream-target-segment metal in the underlayer decreases on progressing axially away from the substrate in a manner dependent on the relative dimensions of the two target segments in the direction of substrate movement through the sputtering zone,



moving the substrate through a second sputtering zone having a Co-based magnetic alloy target, to deposit on the underlayer, a magnetic thin film having a thickness between about 150–1,000 Å, and

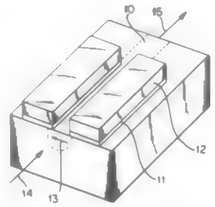
moving the substrate through a third sputtering zone having a carbon target, to deposit a carbon overlayer on the magnetic thin film.

5,356,523

METHOD OF MAKING $LINBO_3$ CHANNEL OPTICAL GUIDES

Antonello Vannucci, and Mauro Varasi, both of Rome, Italy, assignors to Alenia Aeritalia & Selenia S.p.A., Rome, Italy

Filed May 11, 1992, Ser. No. 882,146
Claims priority, application Italy, May 10, 1991, RM91 A 000316
Int. Cl.[5] C23C *14/34*; G03C *5/00*
U.S. Cl. 204—192.23 1 Claim



1. A method of making an electro-optical device having at least one single mode optical guide channel, comprising the steps of:

(a) applying a polymethylmethacrylate photopolymer to an "x"-cut $LiNbO_3$ crystal and photoetching th ephotopolymer with deep ultraviolet radiation to define a channel profile in said photopolymer, thereby forming an "x"-cut $LiNbO_3$ substrate with a photopolymer strip thereon extending along said channel profile;

(b) depositing an SiO_2 layer on said substrate covering said strip by magnetron sputtering in an oxidizing environment of argon and oxygen;

(c) removing said SiO_2 layer along said channel by lifting off said strip of said photopolymer by immersion in acetone;

(d) effecting a proton exchange with said substrate along said channel where said SiO_2 layer has been lifted off in step (c) in dilute benzoic acid with lithium benzoate to modify optical properties of said substrate along said channel;

(e) thermally treating said substrate in an oxygen atmosphere to effect interdiffusion of protons in an exchange layer along said channel with lithium atoms present in said substrate close to said layer, thereby forming in said substrate at least one single mode optical guide channel having a refractive index profile with a peak at a center line of said channel; and

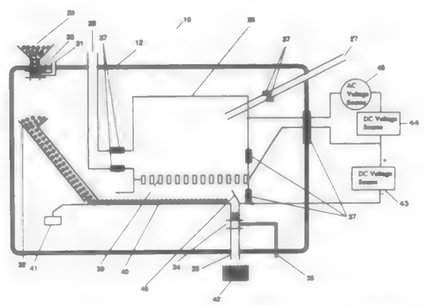
(f) applying metal electrodes to said SiO_2 layer along opposite longitudinal sides of said channel.

5,356,524

ELECTRICAL METHOD FOR CONVERSION OF MOLECULAR WEIGHTS OF PARTICULATES

William M. Sackinger, Fairbanks, Ak., assignor to University of Alaska, Fairbanks, Ak.

Filed Apr. 20, 1993, Ser. No. 49,867
Int. Cl.[5] C25B *9/00*; C25C *7/00*
U.S. Cl. 204—194 5 Claims



1. An apparatus for converting particulates composed of substances having one or more molecular weights, into molecules having one or more different molecular weights, comprising:

A reaction chamber means having chamber walls, inlet particulate means, inlet gas means, outlet gas means, and outlet particulate means;

particulate mechanical transport means, mounted in said reaction chamber, comprising a mechanically-moving surface, said surface also comprising a first electrode means;

second electrode means mounted in said reaction chamber located adjacent to said first electrode means; said second electrode means being porous to allow passage of a fraction of projected particulates, said first and second electrode means defining a first particle projection region between them;

third electrode means mounted in said reaction chamber located outside of said first particle projection region and adjacent to said second electrode means, said second and third electrode means defining a second particle projection region between them, said second particle projection region being located above said first projection region;

a first external potential source electrically connected to said first and second electrode means;

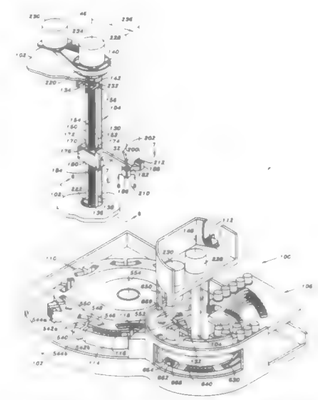
a second external potential source comprising both a time-varying component and a static component, said second external potential source being connected to said second and third electrode means.

5,356,525

SAMPLE HANDLING SYSTEM

David L. Goodale, Yorba Linda, and Steven D. Mack, Mira Loma, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 48,708, Apr. 16, 1993, abandoned. This application Jun. 3, 1993, Ser. No. 72,202
Int. Cl.[5] G01N *27/26, 27/447, 35/00*
U.S. Cl. 204—299 R 43 Claims



1. A capillary electrophoresis sample handling system suitable for use with a sample segment and a plurality of capillaries, comprising:

an arm including receiving means for receiving and removably retaining the sample segment;

rotational means for moving the arm about a central rotational axis and translational means for moving the arm along a translational axis, the translational axis passing through the rotational axis; and

manifold means for removably receiving the sample segment and the plurality of capillaries.

5,356,526

COPPER-BASED METALLIZATIONS FOR HYBRID INTEGRATED CIRCUITS

Robert P. Frankenthal, Summit, N.J.; Ajibola O. Ibidunni, Litchfield, and Dennis L. Krause, Atkinson, both of N.H., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 968,810, Oct. 30, 1992, Pat. No. 5,288,951. This application Oct. 20, 1993, Ser. No. 139,499
Int. Cl.[5] C25D *5/02*; H01L *21/288*
U.S. Cl. 205—122 11 Claims

5. A method of forming a circuit including thin film elements and electrical interconnections on the major surface of an insulating substrate comprising the steps of:

depositing onto substantially the entire major surface of said substrate a first metal layer consisting essentially of titanium in a thickness within the range 100–300 nm;

depositing onto substantially the entire surface of said first metal layer a second metal layer consisting essentially of an alloy of titanium and palladium in a thickness within the range 50–300 nm, said alloy comprising 0.3–14 weight percent palladium, remainder being essentially titanium;

depositing onto substantially the entire surface of said second metal layer a thin metal film consisting essentially of copper in a thickness within the range 300 to 700 nm;

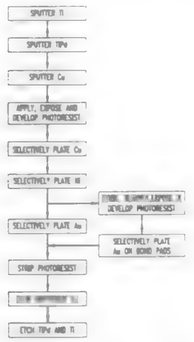
electroplating additional copper onto selected portions of said layer of copper in the desired interconnection pattern to produce a total Cu thickness within the range

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2500–4000 nm, said thin film and electroplated copper forming a third metal layer;

while said electroplated copper layer is still wet, electroplating a fourth metal layer consisting essentially of nickel on substantially the entire surface of said electroplated copper layer in a thickness within the range 800–2,000 nm utilizing a plating bath comprising nickel sulfamate;

electroplating onto at least portions of said fourth metal layer a fifth metal layer consisting essentially of gold in a



thickness within the range 700–2500 nm utilizing a plating bath comprising gold cyanide;

removing portions of the copper layer not covered by at least one of said electroplated layers by immersing in an aqueous etching solution comprising ammoniacal solution; and

removing portions of the titanium layer and titanium-palladium alloy layer not covered by at least one of said electroplated layers by immersing in an aqueous etching solution comprising hydrofluoric acid.

5,356,527

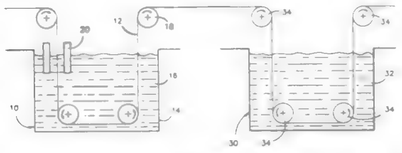
METHOD FOR RINSING COPPER OR COPPER BASE ALLOY FOIL AFTER AN ANTI-TARNISH TREATMENT

Chung-Yao Chao, and Lifun Lin, both of Waltham, Mass., assignors to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 548,314, Jul. 2, 1990, abandoned. This application Aug. 9, 1991, Ser. No. 746,006

Int. Cl.[5] **C25D** *5/48*

U.S. Cl. 205—155 **15 Claims**



1. A method for treating a copper or copper base alloy foil to impart tarnish resistance thereto, comprising the steps of:

electrolytically depositing chromium and zinc ions on said foil strip, thereafter

rinsing said foil in an aqueous buffer solution containing a material selected from the group consisting of the phosphate salts of an alkali metal or alkaline earth metal, the borate salts of an alkali metal or alkaline earth metal, or mixtures thereof, said solution having a pH from about 5 to about 12, and

maintaining the pH of said solution by adding an acid to said solution during processing.

5,356,528

COPPER FOIL FOR PRINTED CIRCUITS AND METHOD OF PRODUCING SAME

Katsuhito Fukuda, Kyoto; Masato Takami, Uji; Hirokazu Hasegawa, Kyoto; Chiaki Nakajima, Shiga, and Kenji Isihara, Kyoto, all of Japan, assignors to Fukuda Metal Foil & Powder Co., Ltd., Japan

Division of Ser. No. 924,527, Aug. 4, 1992. This application Apr. 1, 1993, Ser. No. 41,383

Int. Cl.[5] **C25D** *5/48*

U.S. Cl. 205—155 **8 Claims**

1. A method of producing a copper foil for printed circuits, comprising the steps of:

a) providing a copper foil having a shiny side surface;

b) treating said shiny side surface by cathode electrolysis in an alkaline solution comprising zinc and chrome ions to form a treated surface containing at least zinc or a zinc compound therein; and

c) applying a solution to said treated surface to form a rust-preventative and heat-discoloration resistant coat,

said solution combining effective amounts of a silane coupling agent and phosphorous or a phosphorous compound.

5,356,529

ELECTRODEPOSITABLE COMPOSITIONS CONTAINING TRIORGANOTIN CATALYSTS

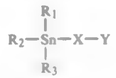
V. Eswarakrishnan; Robert R. Zwack, both of Allison Park, and Edward R. Coleridge, Lower Burrell, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 3, 1993, Ser. No. 57,368

Int. Cl.[5] **C25D** *13/06;* **C08G** *18/00*

U.S. Cl. 205—224 **7 Claims**

1. An electrodepositable composition comprising an active hydrogen-containing ionic resin, a capped polyisocyanate curing agent and which contains as an organotin catalyst from 0.025 to 0.25 percent by weight of tin based on weight of resin solids of a triorganotin compound of the structure:



where X is O and Y is H or



where R_1, R_2 and R_3 are alkyl.

5,356,530

METHOD FOR UPGRADING PETROLEUM RESIDUUM AND HEAVY CRUDE OIL

Albert Calderon, P.O. Box 126, Bowling Green, Ohio 43402

Filed Oct. 16, 1992, Ser. No. 961,670

Int. Cl.[5] **C10G** *47/02*

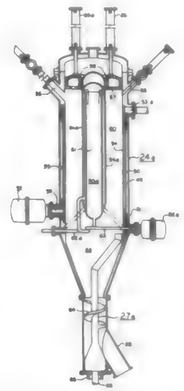
U.S. Cl. 208—108 **13 Claims**

1. A method for upgrading a petroleum material comprising resid and heavy crude oil, to produce lighter liquids comprising:

charging the petroleum material into a vessel having a cylindrical wall to cause said material to come into contact with said wall;

heating said wall to a temperature sufficient to cause said material which is adjacent said wall to form a layer of carbon against said wall and vaporize volatile matter which is emitted during the formation of carbon away from said heated wall; and

reacting said volatile matter with petroleum material which is not adjacent to said wall to thermally crack said petro-



leum material which is not adjacent to said wall to reduce the size of the molecular structure thereof and desulfurize that petroleum material which is not adjacent to said wall.

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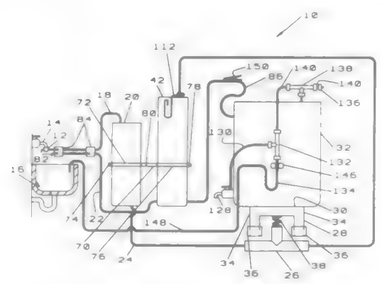
REVERSE OSMOSIS WATER SYSTEM HAVING PIVOTING CLAMP DEVICE

Tim Rantz, 8261-A Trenton Rd., Forestville, Calif. 95436-9641

Filed Aug. 16, 1993, Ser. No. 106,442

Int. Cl.[5] **B01D** *17/12, 35/30*

U.S. Cl. 210—86 **17 Claims**



1. A water purification system for attachment to a sink having a spigot, said system comprising:

a flow diverter releasably engageable with a spigot;

a filter chamber connected to receive water from said flow diverter;

a membrane housing containing a reverse osmosis membrane connected to receive water from said filter chamber;

a double clamp device having a first portion releasably secured to said filter chamber, a second portion releasably secured to said membrane housing, and pivot means connecting said first and second portions and selectably movable between a first position holding said membrane housing parallel with said filter chamber and a second position holding said membrane housing perpendicular to said filter chamber; and

a wastewater hose connected to discharge waste water from said membrane housing.

2. The water system of claim 1 further comprising:

a reservoir connected to receive and store pure water from said membrane housing.

11. The water system of claim 2 further comprising:

an air filter connected to pass air into and out of said reservoir in response to a changing level of pure water in said reservoir,

an air trap connected between said air filter and an overflow hose, and

a transparent reservoir level indicating hose connected between the output of said reservoir and a point located between said air filter and said air trap.

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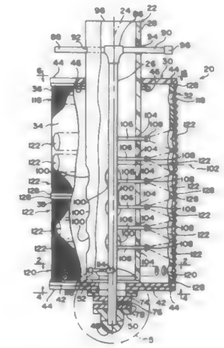
USE OF A MULTI-APERTURED PLASTIC PIPE IN THE DRIVE AND STRUCTURE OF A ROTARY SELF-CLEANING STRAINER

Thomas R. Wilkins; Charles A. Wilkins, and James O. Stoneburner, all of Ann Arbor, Mich., assignors to Perfection Sprinkler Co., Ann Arbor, Mich.

Filed Apr. 13, 1993, Ser. No. 46,761

Int. Cl.[5] **B01D** *33/073*

U.S. Cl. 210—107 **20 Claims**



1. A self-cleaning rotary strainer for connection to the suction side of a pump and insertion into a body of debris-containing liquid to prevent debris in the liquid from being sucked into the pump, said strainer comprising a central core having an axis, said central core comprising a suction pipe and a supply pipe, said suction pipe comprising an intake and a discharge at spaced locations along its length, said discharge serving to communicate said suction pipe to the pump and said intake serving to communicate said suction pipe to the body of liquid so that when the pump is operated, liquid is sucked into said suction pipe via said intake, conveyed through said suction pipe, and discharged from said suction pipe via said discharge, rotary strainer means for straining debris from liquid before the liquid is sucked into said intake, said rotary strainer means comprising a cylindrical main pipe coaxial with said axis radially outwardly of said suction pipe and having a sidewall that is open at opposite axial ends and that contains multiple apertures extending between radially inner and radially outer surfaces of said sidewall, means mounted on said main pipe, including journal means and strainer screen means, for journaling said rotary strainer means on said central core for rotation about said axis and for straining debris from liquid that passes through said apertures prior to entering said intake, said strainer screen means being disposed on said main pipe in covering relation to said apertures to allow liquid, but not debris, to pass through said apertures, said supply pipe supplying pressurized liquid to both clean and rotate said rotary strainer means, branch supply pipes extending from said supply pipe to convey pressurized liquid to first and second nozzle

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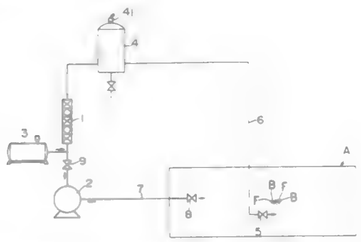
means that are aimed toward said cylindrical main pipe's sidewall, said first nozzle means being aimed substantially radially as viewed along said axis such that pressurized liquid emitted from said first nozzle means is incapable of rotating said rotary strainer means, said second nozzle means being aimed toward a circumferential succession of certain ones of said apertures such that pressurized liquid emitted from said second nozzle means is reacted against surface portions of said certain ones of said apertures with a component of force that is tangential to said axis and sufficiently large to rotate said rotary strainer means, said first nozzle means being aimed such that, as said rotary strainer means rotates, pressure liquid emitted from said first nozzle means passes through certain others of said apertures to dislodge debris from said strainer screen means where said strainer screen means is in covering relation to said certain others of said apertures.

5,356,533

BUBBLING SYSTEM

Tuzuo Nakagawa, Amagasaki, Japan, assignor to F. Tecs Co., Ltd., Osaka, Japan

Filed Apr. 23, 1993, Ser. No. 51,375
Claims priority, application Japan, May 14, 1992, 4-148600
Int. Cl.[5] B01D *17/035;* **C02F** *1/24*
U.S. Cl. 210—123 **11 Claims**



1. A bubbling system apparatus comprising: a sucking pipe; gas-liquid mixing means connecting to said sucking pipe; a pressure pump disposed midway of said sucking pipe; compressor means connected to the connection between said pressure pump and said gas-liquid mixing means for introducing a gas into said sucking pipe; a pressure tank connected to said gas-liquid mixing means; a feed pipe connected to said pressure tank; and a pressure valve, attached to the leading end of said feed pipe, said pressure valve including means for biasing said valve in a closed position until a predetermined pressure of about 7 kg/cm^2 is exceeded whereafter the pressure opens the valve.

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MAGNETIC-FIELD AMPLIFIER

George M. Zimmerman, deceased, late of 513 N. Dobbins Dr., San Gabriel, Calif. 91775, by Patricia W. Zimmerman, legal representative

PCT No. PCT/US89/00891, § 371 Date Jul. 24, 1992, § 102(e) Date Jul. 24, 1992, PCT Pub. No. WO90/10598, PCT Pub. Date Sep. 20, 1990
PCT Filed Mar. 7, 1989, Ser. No. 582,929
Int. Cl.[5] C02F *1/48*
U.S. Cl. 210—222 **5 Claims**

5. A magnetic-field amplifier comprising:

A. a magnetic-field receiving conduit for carrying a fluid, and

B. a magnetic amplifying assembly that generates a plurality of magnetic loops that are summed to produce a composite magnetic field, where said assembly is attached to said structure by an attachment means to allow said structure to receive the magnetic field, wherein said magnetic amplifying assembly comprises:

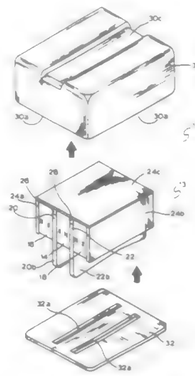
a) an inner magnetic structure further comprising:

(1) a first permanent magnet having a south pole, a north pole, an outward end, and an inward end,

(2) a second permanent magnet having a north pole, a south pole, an outward end, and an inward end, where the south pole of said second permanent magnet faces the south pole of said first permanent magnet,

(3) a third permanent magnet having a south pole, a north pole, an outward end, and an inward end, where the north pole of said third permanent magnet faces the north pole of said first permanent magnet,

(4) a first ferromagnetic pole member located between said first and second permanent magnets that includes an outward end and an inward end and forms a south pole summing point, where the outward end of said first ferromagnetic pole member is located inwardly relative to the outward ends of said first and second permanent magnets to create a space therebetween, and the inward end of said first ferromagnetic pole member projects radially inward beyond the inward ends of said first and second permanent magnets to interface with the magnetic-field receiving structure,



(5) a second ferromagnetic pole member located between said first and third permanent magnets that includes an outward and an inward end, and forms a north pole summing point, where the outward end of said second ferromagnetic pole member is located inwardly relative to the outward ends of said first and third permanent magnets to create a space therebetween, and the inward end of said second ferromagnetic pole member projects radially inward beyond the inward ends of said first and third permanent magnets to interface with the magnetic-field receiving structure,

(6) a ferromagnetic cover comprising:

(a) a first side that fits against and encloses the outward-north pole side of said second permanent magnet,

(b) a second side that fits against and encloses the outward-south pole side of said third permanent magnet,

(c) a third side having an inward surface and edges that are contiguous with the outward edges of said first and second sides and where the inward surface of said third side fits against and encloses the outward sides of said first, second and third permanent magnets, to enclose the space created between the outward end of said first ferromagnetic pole member and the outward ends of said first and second permanent magnets, and the space created between the outward end of said second ferromagnetic pole member and the outward ends of said first and third permanent magnets, where into each said space is longitudinally and respectively located a first non-magnetic insulating rod and a second non-magnetic insulating rod,

b) a non-magnetic housing having a strap channel on its outward side and an open-ended cavity sized to accept said inner magnetic structure with the inward ends of said first and second ferromagnetic pole members extending beyond the edges of the cavities open end,

c) a non-magnetic housing plate sized for attachment along the open-ended edges of said non-magnetic housing, with said plate having a set of slots that are located and sized to allow the inward ends of said first and second ferromagnetic pole members to protrude through the respective slots when said plate is attached, wherein said magnetic amplifying assembly produces a first magnetic loop that is summed with a second magnetic loop at said first and second ferromagnetic pole members from where the summed magnetic loops produce a composite magnetic field that is applied perpendicularly through a wall of the fluid conduit in a radial flux density pattern into the path of the fluid flow where:

(1) the first magnetic loop follows a closed path that commences at said first ferromagnetic pole member continues, in order, through the fluid conduit, said second ferromagnetic pole member, the north and south poles of said first permanent magnet and completes the closed loop by returning to said first ferromagnetic pole member, and

(2) the second magnetic loop follows a path that commences at said first ferromagnetic pole member, continues, in order, through the fluid conduit, said second ferromagnetic pole member, the north and south poles of said third permanent magnet, the second, third and first sides of said ferromagnetic cover, the north and south poles of said second permanent magnet and completes the closed loop by returning to said first ferromagnetic pole member wherein the summed magnetic loops generated by said magnetic amplifying assembly produce a concentrated flux density in excess of 14,000 gauss.

5,356,535

OIL TANK

Hiroshi Ueno, Osaka; Hirokazu Arai, Nara; Yoshiaki Hamasaki, Nara; Akihiko Shiina, Nara; Masuyoshi Uchida, Nara, and Seiji Fujioka, Osaka, all of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Aug. 31, 1992, Ser. No. 937,396
Claims priority, application Japan, Sep. 4, 1991, 3-254815; Sep. 12, 1991, 3-082300[U]; Nov. 27, 1991, 3-105849[U9
Int. Cl.[5] B01D *29/00*
U.S. Cl. 210—416.5 **9 Claims**

1. An oil tank comprising:

an oil tank body having a bottom wall, a top wall, a side wall integral with and extending upwardly from said bottom wall, and an inner wall integral with and extending upwardly from said bottom wall and spaced from said side wall;

said inner wall having an inner top wall spaced from said bottom wall, and an inner side wall spaced from said side wall with said inner side wall having an upwardly opening slot therein and a solid portion and said top wall having a filler opening therethrough;

an oil inlet chamber enclosed by said inner top wall, said inner side wall, a portion of said side wall and a portion of said bottom wall, and an oil storage chamber being formed outside of said oil inlet chamber and within said oil tank body;

a first oil filter having a substantially flat shape, forming a portion of said inner side wall, and extending downwardly into said slot;

an oil inlet passage having a central axis and passing into said oil inlet chamber, for allowing oil into said oil tank body;

an oil outlet passage having a central axis and passing into said oil storage chamber, for allowing oil to exit from said oil tank body; and

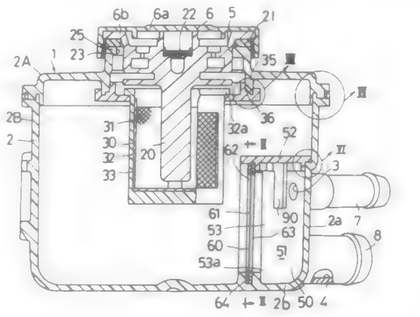
a second oil filter provided in said oil storage chamber and located between said filler opening and said oil outlet passage.

5. An oil tank comprising:

an oil tank body having a bottom wall, a top wall, a side wall and an inner wall, said top wall having a filler opening therethrough;

said oil tank body comprising a synthetic resin upper member having a first axially extending annular rim and a synthetic resin lower member having a second axially extending annular rim;

an oil inlet chamber enclosed by a portion of said bottom wall, a portion of said side wall, and said inner wall, and an



oil storage chamber being formed outside of said oil inlet chamber and within said oil tank body;

a first oil filter having a substantially flat shape, and forming a portion of said inner wall;

an oil inlet passage having a central axis and passing into said oil inlet chamber, for allowing oil into said oil tank body;

an oil outlet passage having a central axis and passing into said oil storage chamber, for allowing oil to exit from said oil tank body;

a circumferential surface of said first annular rim positioned adjacent and concentric to a circumferential surface of said second annular rim with a radial clearance between said circumferential surfaces;

said radial clearance being large enough to allow friction welding of said upper member to said lower member by relative vibration of said upper and lower members, but small enough to prevent substantial radial movement between said upper and lower members;

an annular contact area between said upper and lower members extending in a radial direction from said circumferential surfaces; and

a second oil filter provided in said oil storage chamber and located between said filler opening and said outlet passage.

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Patent Not Issued For This Number

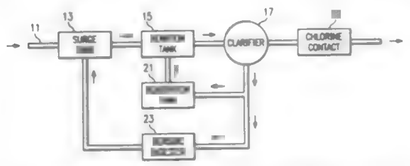
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5,356,537

METHOD AND APPARATUS FOR TREATING WASTE WATER

Jesse M. Thurmond, and Charles O. Peters, both of Little Elm, Tex., assignors to No Sludge, Inc., Little Elm, Tex.

Continuation-in-part of Ser. No. 889,853, May 28, 1992. This application Apr. 21, 1993, Ser. No. 50,809
Int. Cl.[5] C02F *3/12, 11/02*
U.S. Cl. 210—607 8 Claims



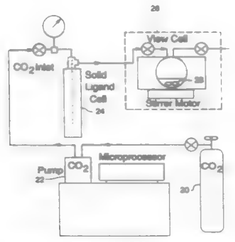
1. A process for treating waste water, including the steps of:
moving the waste water to an aeration tank and aerating the waste water therein in the presence of activated sludge to create a mixed liquor;
moving the mixed liquor to a clarifier settling tank;
drawing about 5–25% of the activated sludge solids off of the clarifier settling tank to an aerobic digester;
holding the activated sludge solids in the aerobic digester for about 16–24 hours;
digesting the activated sludge solids aerobically in the aerobic digester;
returning the activated sludge solids from the aerobic digester to the aeration tank.

5,356,538

SUPERCRITICAL FLUID EXTRACTION

Chien M. Wai, Moscow, Id., and Kenneth Laintz, Pullman, Wash., assignors to Idaho Research Foundation, Inc., Moscow, Id.

Continuation-in-part of Ser. No. 714,265, Jun. 12, 1991, Pat. No. 5,274,129. This application Oct. 21, 1991, Ser. No. 781,086
Int. Cl.[5] B01D *11/04*
U.S. Cl. 210—634 32 Claims



21. A method of extracting a metalloid or metal species from a solid or liquid, comprising the steps of:
exposing the solid or liquid to supercritical fluid carbon dioxide containing a fluorinated chelating agent for a sufficient period of time to form chelates between the agent and species that are solubilized in the supercritical carbon dioxide.

5,356,539

TANDEM WASTE STREAM TREATMENT FOR THE REMOVAL OF NITROAROMATICS AND NITROPHENOLICS

Steven B. Peter, Kutztown; Keith B. Adams, Coopersburg; Baldomero Casas, Emmaus, and John E. Sawicki, Breinigsville, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 19, 1993, Ser. No. 33,597
Int. Cl.[5] C02F *1/28, 1/72*
U.S. Cl. 210—668 20 Claims

18. In a process for removing nitrophenolic and other nitroaromatic compounds from an aqueous alkaline waste stream generated in a process for the nitration of benzene or toluene by the mixed acid technique, the improvement which comprises
(a) adjusting the pH of the aqueous alkaline waste stream containing nitroaromatic and nitrophenolic compounds to a range from about 2 to 4.5,
(b) contacting the acidic aqueous stream with 8 to 20 moles hydrogen peroxide and 0.15–1 moles ferrous ion catalyst per mole nitrophenolic compounds under conditions to effect oxidation of substantially all of the nitrophenolic compounds,
(c) adjusting the acidic, oxidized aqueous waste stream having a reduced nitrophenolic content to about pH ≧4, and
(d) thereafter contacting the aqueous waste stream with 1–4 kg activated carbon adsorbent/kg nitroaromatics, wherein essentially all of the remaining unoxidized nitrophenolics and all other nitroaromatics in the aqueous waste stream are removed in said contacting step.

5,356,540

PUMPABLE AQUEOUS SLURRIES OF SEWAGE SLUDGE

Motasimur R. Khan, Wappingers Falls, and Christine C. Albert, Peekskill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed May 20, 1991, Ser. No. 702,579
Int. Cl.[5] C02F *11/14;* C10J *3/46*
U.S. Cl. 210—758 31 Claims

1. A pumpable aqueous sewage sludge composition having a solids content of about 30–65 wt. %, comprising a sewage sludge containing material with about 0.05 to 2.0 wt. % of a nonionic water soluble alkoxylated alkylphenol additive.

12. An improved process for preparing an aqueous sewage sludge composition having a solids content of about 30 to 65 wt. %, comprising:
(a) dewatering a first sewage sludge material to produce an intermediate aqueous slurry of sewage sludge having a solids content of about 10 to 25 wt. %;
(b) pretreating the intermediate aqueous slurry of sewage sludge to improve its slurrying characteristics and increase its solids content;
(c) increasing the solids content of the pretreated aqueous slurry of sewage sludge by mixing it with:
(i) at least one material selected from the group consisting of a second sewage sludge containing material, and a solid carbonaceous fuel containing material; and
(ii) about 0.05 to 2 wt. % of a nonionic water soluble alkoxylated alkylphenol additive;
to thereby produce said aqueous sewage sludge composition having a solids content of about 30 to 65 wt. %.

21. A process for disposing sewage sludge and recovering valuable by-products, comprising:
(a) dewatering a first sewage sludge material to produce an intermediate aqueous slurry of sewage sludge having a solids content of about 10 to 25 wt. %;
(b) pretreating the intermediate aqueous slurry of sewage sludge to improve its slurrying characteristics and increase its solids content;
(c) increasing the solids content of the pretreated aqueous slurry of sewage sludge by mixing it with:

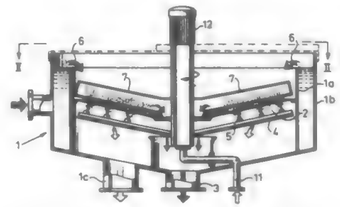
(i) at least one material selected from the group consisting of a second sewage sludge containing material, and a solid carbonaceous fuel containing material; and
(ii) about 0.05 to 2 wt. % of a nonionic water soluble alkoxylated alkylphenol additive;
to produce an aqueous sewage sludge composition having a solids content of about 30 to 65 wt. %; and
(d) disposing the sewage sludge by:
(i) partial oxidation to produce a gas selected from the group consisting of synthesis gas, reducing gas, fuel gas, and mixtures thereof; or
(ii) subjecting the sewage sludge to complete combustion.

5,356,541

METHOD AND APPARATUS FOR FILTERING A PARTICLE-LIQUID SUSPENSION

Bjorn Wickzell, Ekero, Sweden, assignor to Filterteknik b.w. AB, Bromma, Sweden

Filed Aug. 25, 1992, Ser. No. 920,438
Claims priority, application Sweden, Feb. 28, 1990, 9000722
Int. Cl.[5] B01D *29/68*
U.S. Cl. 210—791 12 Claims



1. A method of filtering particle-contaminated liquid comprising the steps of delivering jets of flushing liquid to an undersurface of a filter through nozzle-equipped spray pipes which are movable in relation to the filter, to flush the filter clean and facilitate transportation of the particles to an outlet, collecting at least some of said flushing liquid and at least some of said particles influenced by pressure of the flushing liquid, and delivering said particles and said flushing liquid to the outlet through a substantially enclosed drainage channel which slopes towards said outlet and which is located above the filter surface at a distance therefrom.

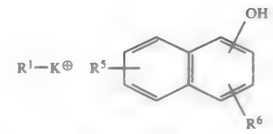
5,356,542

MIXTURES OF ORGANIC AMMONIUM SALTS AND THEIR USE AS FLOW ACCELERATORS

Dieter Ohlendorf, Liederbach; Manfred Hofinger, Burgkirchen, and Detlef Wehle, Kastl/Obb., all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

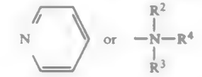
Division of Ser. No. 391,176, Aug. 9, 1989. This application Jan. 6, 1992, Ser. No. 818,478
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1988, 3827183
Int. Cl.[5] C09K *3/00*
U.S. Cl. 252—1 11 Claims

1. A method for accelerating the flow of a liquid comprising the step of adding a salt mixture comprising: a quaternary ammonium salt of the formula (1)

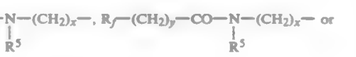


(1)

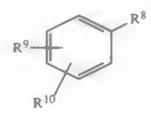
the above right-hand structure being the anion, wherein K denotes a group of the formula



R^1 denotes C_{12}–C_{26}-alkyl, C_{12}–C_{26}-alkenyl, C_{12}–C_{26}-fluoroalkyl, C_{12}–C_{26}-fluoroalkenyl or a group of the formula



R_f—$(CH_2)_y$B$(CH_2)_x$—,
R^2 and R^3 denote C_1–C_3-alkyl,
R^4 denotes C_1–C_3-alkyl and, for the case where R^1 = alkyl or alkenyl, also a group of the formula —$(C_2H_4O)_zH$,
R_f denotes C_8–C_{20}-fluoroalkyl or C_8–C_{20}-fluoroalkenyl,
R^5 denotes hydrogen, methyl or ethyl,
R^6 denotes —COO⊖ or —SO_3⊖,
R^7 denotes hydrogen or methyl,
B denotes oxygen or sulfur,
x denotes an integer from 2 to 6,
y denotes 0, 1 or 2,
and z denotes numbers from 1 to 4, and an alkali metal salt of an anion of the formula 2



(2)

wherein R^8 denotes —COO⊖ or —SO_3⊖, R^9 denotes hydrogen, hydroxyl, NO_2, fluorine, chlorine, bromine or iodine and R^{10} denotes C_1–C_5-alkyl, C_2–C_5-alkenyl or C_1–C_5-alkoxy, in a quantity of 30 to 70, mol %, based on the total amount of said anion, to said liquid.

5,356,543

ABRASIVE BELT LIFE BOOSTER

Jim Pugh, and Raymonde B. Pugh, both of P.O. Box 711, Azle, Tex. 76098

Filed Jan. 29, 1993, Ser. No. 11,198
Int. Cl.[5] C10M *105/32*
U.S. Cl. 252—11 10 Claims

1. A formulation for use for application to a grinding belt of the type having abrasive material secured to a flexible base for extending the useful life of the grinding belt comprising a solution of toluene, naphtha, shellac, wax, and ethyl alcohol, wherein:
toluene is present in a concentration in a range of about 25%–35% by volume of the solution;
naphtha is present in a concentration in a range of about 55%–65% by volume of the solution;
shellac is present in a concentration in a range of about 0.8%–2.5% by volume of the solution;

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wax is present in a concentration in a range of about 0.08%–0.14% by volume of the solution;

ethyl alcohol is present in a concentration in a range of about 2.4%–7.3% by volume of the solution.

5,356,544

METHOD FOR THE PREPARATION OF METAL SOAP AQUEOUS DISPERSIONS

Ekhiel Zilberman, Acre, and Felix Lerner, Karmiel, both of Israel, assignors to Electrochemical Industries (Frutarom) Ltd., Israel

Filed Jun. 3, 1993, Ser. No. 72,222

Claims priority, application Israel, Sep. 6, 1992, 103068

Int. Cl.[5] **C10M** *129/40*

U.S. Cl. 252—17 **15 Claims**

1. A method for preparing metal soap aqueous dispersions in the presence of an ionic surfactant formed in-situ which comprises the steps of:

(a) partially neutralizing up to 30% a fatty acid containing between 8 and 28 carbon atoms with an alkali metal oxide or hydroxide including ammonia, obtaining an aqueous dispersion of said fatty acid, and

(b) mixing said dispersion with an aqueous dispersion of a metal oxide, or hydroxide, the metal being selected from those of Group II.

5,356,545

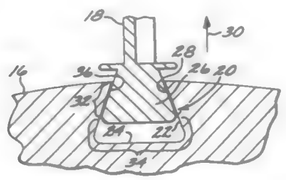
CURABLE DRY FILM LUBRICANT FOR TITANIUM ALLOYS

Peter Wayte, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jan. 15, 1991, Ser. No. 641,229

Int. Cl.[5] **C10M** *147/00*; **F03B** *3/12*

U.S. Cl. 252—28 **2 Claims**



1. A lubricated titanium rotor and blade assembly, comprising:

a titanium rotor having a dovetail slot in the circumference thereof;

a titanium blade having a dovetail sized to fit into the slot, there being mating faces on the dovetail and in the interior of the slot; and

a curable lubricant applied to the mating surface of at least one of the dovetail of the blade and the rotor slot, wherein the curable lubricant consists essentially of, on a non-carrier basis, a mixture of from 20 to 30 percent by weight poly(tetrafluoroethylene), from 35 to 45 percent by weight solid lubricant particles, from 1 to 3 percent by weight bentonite, from 30 to 40 percent by weight resin selected from the group consisting of epoxy resin, phenolic resin and acrylic resin, and an evaporable carrier, the evaporable carrier present in an amount sufficient to permit the application of the curable lubricant by spraying.

5,356,546

METAL SALTS USEFUL AS ADDITIVES FOR FUELS AND LUBRICANTS

Sheri L. Blystone, Concord Township, Lake County; William K. S. Cleveland, Mentor on the Lake, and Paul E. Adams, Willoughby Hills, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Apr. 16, 1992, Ser. No. 870,506

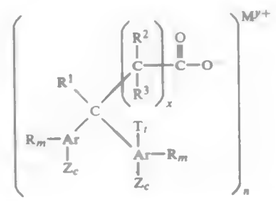
Int. Cl.[5] **C10M** *105/08*; **C09K** *3/00*, *15/32*

U.S. Cl. 252—35 **75 Claims**

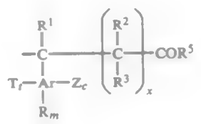
1. A metal salt of the general formula

$$A^{y-}M^{y+} \quad \text{(I)}$$

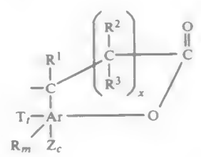
wherein M represents one or more metal ions, y is the total valence of all M and A represents one or more anion containing groups having a total of about y individual anionic moieties and each anion containing group is a group of the formula


(II)

wherein T is selected from the group consisting of

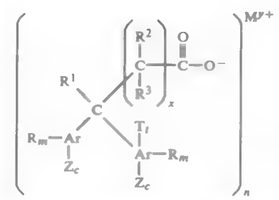

(V)

or

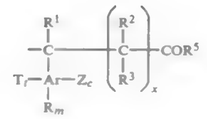

(VI)

wherein each R^5 is independently selected from O^- and OR^6 wherein R^6 is H or alkyl and t in Formula II is independently 0 or 1, when t in Formula II equals 1, from 1 up to about 3 additional groups T of formula V or VI are present, terminating when t in formula V or VI equals zero, wherein T is as hereinbefore defined and wherein each Ar is independently an aromatic group of from 4 to about 30 carbon atoms having from 0 to 3 optional substituents selected from the group consisting of polyalkoxyalkyl, lower alkoxy, nitro, halo or combinations of two or more of said optional substituents, each R is independently alkyl, alkenyl or aryl containing at least 8 carbon atoms, R^1 is H or a hydrocarbyl group, R^2 and R^3 are each independently H or a hydrocarbyl group, each m is independently an integer ranging from 1 to about 10, x ranges from 0 to about 8, and each Z is independently OH, $(OR^4)_bOH$ or O^- wherein each R^4 is independently a divalent hydrocarbyl group and b is a number ranging from 1 to about 30 and c ranges from 0 to about 3 with the proviso that when t in Formula (II)=0, or when T is Formula (V), then c is not 0, provided that the sum of m, c and t does not exceed the valences of the corresponding Ar.

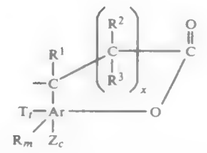
25. A metal salt of the formula


(II)

wherein M represents one or more metal ions, y is the total valence of all M, n is a number depending on the value of y, n times the number of anionic moieties in the corresponding parenthetical group is about equal to y, each Ar is independently a benzene nucleus, a lower alkylene bridged benzene nucleus or a naphthalene nucleus, wherein T is selected from the group consisting of

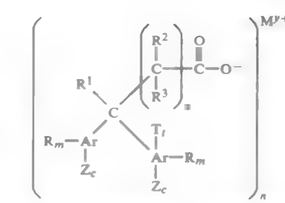

(V)

or

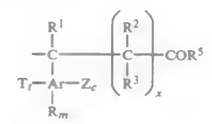

(VI)

wherein each R^5 is independently selected from O^- and OR^6 wherein R^6 is H or alkyl and t in Formula II is independently 0 or 1, when t in Formula II equals 1, from 1 up to about 3 additional groups T of Formula V or VI are present, terminating when t in Formula V or VI equals zero, each Ar has 0 or 1 optional substituents selected from the group consisting of lower alkyl, lower alkoxy, polyalkoxyalkyl, nitro or halo, T is as hereinbefore defined, each R is independently an aliphatic hydrocarbyl group wherein at least one R has at least 8 carbon atoms, R^1 is H or an aliphatic group, R^2 and R^3 are each independently H or an aliphatic group, each m is independently an integer ranging from 1 to about 3, x ranges from 0 to about 8, and each Z is independently OH, $(OR^4)_bOH$ or O^- wherein each R^4 is independently a divalent hydrocarbyl group and b is a number ranging from 1 to about 30 and c ranges from 0 to about 2 with the proviso that when t in Formula (II)=0, or when T is Formula (V), then c is not 0 provided that the sum of m, c and t does not exceed the unsatisfied valences of the corresponding Ar.

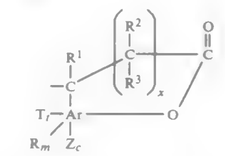
40. A metal salt of the formula


(II)

wherein M represents one or more metal ions, y is the valence of all M, and n is a number depending on the value of y, n times the number of anionic moieties in the corresponding parenthetical group is about equal to y, wherein T is selected from the group consisting of


(V)

or


(VI)

wherein each R^5 is independently selected from O^- and OR^6 wherein R^6 is H or alkyl and t is Formula II is independently 0 or 1, when t in Formula II equals 1, from 1 up to about 3 additional groups T of Formula V or VI are present, terminating when t in Formula V or VI equals zero, wherein each Ar is independently an aromatic group of from 4 to about 30 carbon atoms having from 0 to 3 optional substituents selected from the group consisting of polyalkoxyalkyl, lower alkoxy, nitro, halo or combinations of two or more of said optional substituents, wherein T is as hereinbefore defined, each R is independently alkyl or alkenyl containing at least about 8 carbon atoms, at least one Ar is an aromatic group of the formula

$$ar\text{—}(L\text{—}ar)_w$$

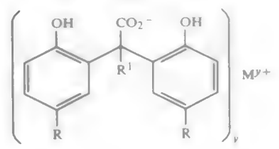
wherein each ar is a single ring or a fused ring aromatic nucleus of 4 to 12 carbons, w is an integer ranging from 1 to about 20 and each L is independently selected from the group consisting of carbon to carbon single bonds between ar nuclei, ether linkages, sulfide linkages, polysulfide linkages, sulfinyl linkages, sulfonyl linkages, lower alkylene linkages, lower alkylene ether linkages, lower alkylene sulfide and/or polysulfide linkages, amino linkages, linkages derived from oxo- or keto-carboxylic acids of the formula



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wherein each of R^1 R^2 and R^3 is independently lower alkyl or H, R^6 is H or an alkyl group and x is an integer ranging from 0 to about 8, and mixtures of such linkages, at least one ar has a substituent R wherein each R is independently alkyl or alkenyl containing at least 8 carbon atoms, each Z is OH, $(OR^4-)_bOH$ or O^-, R^4 is an alkylene group, and b ranges from 1 to about 10, each of R^1, R^2 and R^3 is independently H or lower alkyl, x ranges from 0 to 3, m ranges from 1 up to about 10 and c is a number ranging from 0 to about 3 provided that when t in Formula (II)=0, or when T is Formula (V), then c is not zero provided that the sum of m, c and t does not exceed the unsatisfied valences of the corresponding Ar.

51. A metal salt of the formula



wherein M represents one or more metal ions, y is the total valence of all M, R^1 is H or an alkyl or alkenyl group containing from 1 to about 20 carbon atoms and each R is independently a hydrocarbyl group containing from 12 to about 300 carbon atoms.

5,356,547

LUBRICATING OIL COMPOSITION CONTAINING FRICTION MODIFIER AND CORROSION INHIBITOR

Katsuya Arai; Toshikazu Tsukada, both of Ohi, and Hirotaka Tomizawa, Tokorozawa, all of Japan, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 9, 1993, Ser. No. 89,876
Claims priority, application Japan, Jan. 9, 1992, 4-20408
Int. Cl.[5] C10M *135/14*
U.S. Cl. 252—46.4 **5 Claims**

1. A lubricating oil composition which comprises:
a) a lubricating oil basestock;
b) from 0.01 to less than 0.2% by weight, based on the oil composition, of at least one organomolybdenum compound selected from the group consisting of sulfurized oxymolybdenum dithiocarbamate and sulfurized oxymolybdenum organophosphorodithioate;
c) from 0.5 to 7% by weight, based on the oil composition, of at least one organozinc compound selected from the group consisting of zinc dithiophosphate and zinc dithiocarbamate; and
d) from 0.01 to 5% by weight, based on the oil composition, of an organic acid amide.

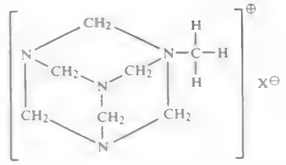
5,356,548

1-METHYL-3,5,7-TRIAZA-1-AZONIATRICYCLODECANE COMPOUNDS, A METHOD FOR PREPARING THESE COMPOUNDS, THEIR USE IN THE CONTROL OF MICROORGANISMS IN AQUEOUS SYSTEMS, AND THEIR USE IN THE INHIBITION OF CORROSION

John D. Pera, Cordova, and S. Rao Rayudu, Germantown, both of Tenn., assignors to Buckman Laboratories International, Inc., Memphis, Tenn.

Division of Ser. No. 732,759, Jul. 19, 1991, Pat. No. 5,245,031, which is a division of Ser. No. 174,819, Mar. 29, 1988, Pat. No. 5,061,797. This application Apr. 28, 1993, Ser. No. 53,407
Int. Cl.[5] C10M *137/00, 139/00;* **C09D** *5/14*
U.S. Cl. 252—49.3 **13 Claims**

1. A method of preserving an aqueous system which is susceptible to microbiological degradation, comprising the step of adding to said system a compound having the formula



wherein X is an anion selected from the group consisting of phosphate, borate and molybdate groups, and wherein said compound is added in an amount sufficient to inhibit the growth and proliferation of at least one microorganism in said aqueous system.

5,356,549

SILICONE GREASE

Takayuki Takahashi, Kanra, and Motohiko Hirai, Annaka, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 19, 1993, Ser. No. 6,286
Claims priority, application Japan, Jan. 21, 1992, 4-030106
Int. Cl.[5] C10M *105/76*
U.S. Cl. 252—49.6 **18 Claims**

1. A silicone grease comprising
(A) an amino-modified silicone fluid of the formula (1);

$$R_a^1R_b^2SiO_{(4-a-b)/2} \quad (1),$$

wherein R^1 is a group of the formula: $—R^3—NH_2$ or $—R^3—NHR^4—NH_2$ wherein R^3 and R^4 are independently alkylene groups having 1 to 8 carbon atoms,
R^2 is a halogen substituted or unsubstituted monovalent hydrocarbon group having 1 to 6 carbon atoms,
letters a and b are positive numbers in the range: $0.0001 \leqq a \leqq 0.01$ and $1.95 \leqq a+b \leqq 2.20$, said silicone fluid having an amine equivalent of 10,000 to 200,000 g/mol and a viscosity of 10 to 100,000 centistokes at 25° C., and
(B) a thickener in amounts sufficient to provide a silicone grease.

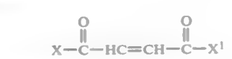
5,356,550

LUBRICATING OIL ADDITIVES

Stephen J. Cook, and Sean P. O'Connor, both of North Humberside, England, assignors to BP Chemicals (Additives) Limited, London, England

PCT No. PCT/GB89/01225, § 371 Date Jun. 8, 1990, § 102(e) Date Jun. 8, 1990, PCT Pub. No. WO90/04628, PCT Pub. Date May 3, 1990
PCT Filed Oct. 17, 1989, Ser. No. 488,058
Claims priority, application United Kingdom, Oct. 18, 1988, [redacted]
Int. Cl.[5] C10M *149/06, 159/12*
U.S. Cl. 252—51.5 A **11 Claims**

1. A process for producting a dispersant/VI improver for use in finished lubricating oil compositions which process comprises reacting in a normally liquid inert organic solvent
(a) a copolymer of an olefin and a monomer having the structure:



wherein X and X^1 are the same or different and are selected from the group consisting of —OH, —O—hydrocarbyl, $—NH_2$, —Cl, —Br, and together is an oxygen atom provided that at least one of X and X^1 is such that the copolymer can function as a carboxylic acylating agent,

(b) a hydrocarbyl substituted succinimide derived from a polyalkene containing at least 30 carbon atoms, and
(c) a primary or secondary amine or mixture thereof.

5,356,551

MULTIFUNCTIONAL VISCOSITY INDEX IMPROVER FOR LUBRICATING OIL COMPOSITIONS

David Y. Chung, Edison, and John E. Johnston, Westfield, both of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 220,310, Jul. 18, 1988, abandoned. This application Dec. 20, 1991, Ser. No. 878,084
Int. Cl.[5] C10M *105/22, 133/52*
U.S. Cl. 252—51.5 A **27 Claims**

1. Lubricating oil multifunctional viscosity index improver-dispersant additive intended for lubricating oil compositions exhibiting improved low temperature viscometric properties comprising reaction product of:
(a) an oil soluble ethylene copolymer comprising from about 15 to 90 wt. percent ethylene and from about 10 to 85 wt. percent of at least one C_3 to C_{28} alpha-olefin monomer, having a number average molecule weight of from about 5,000 to 500,000, grafted with ethylenically unsaturated carboxylic acid material having 1 or 2 acid moieties or anhydride moiety;
(b) polyamine having at least two primary amino groups; and
(c) an amount of high functionality long chain hydrocarbyl substituted dicarboxylic acid or anhydride having an average functionality of at least 1.2 wherein said long chain hydrocarbyl is derived from olefin polymer having a number average molecular weight of from about 400 to about 10,000.

5,356,552

CHLORINE-FREE LUBRICATING OILS HAVING MODIFIED HIGH MOLECULAR WEIGHT SUCCINIMIDES

James J. Harrison, Novato; William R. Ruhe, Jr., Benecia, both of Calif.; Jack E. Morris, Poortugaal, Netherlands, and Jacques Cazin, Montivilliers, France, assignors to Chevron Research and Technology Company, A Division of Chevron U.S.A. Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 28,433, Mar. 9, 1993. This application Oct. 12, 1993, Ser. No. 135,095
The portion of the term of this patent subsequent to Aug. 2, 2011, has been disclaimed.
Int. Cl.[5] C10M *133/44*
U.S. Cl. 252—51.5 A **74 Claims**

1. A lubricating oil composition that is essentially free of chlorine, said lubricating oil composition comprising:
(a) a major proportion of an oil of lubricating viscosity; and
(b) a minor amount of a polyamino alkenyl or alkyl succinimide sufficient to be compatible with fluoroelastomer seals and simultaneously control engine deposits, wherein the succinimide comprises the reaction product of:
(i) an alkenyl- or alkyl-substituted succinic anhydride derived from a polyolefin having a Mn of from 2000 to 2700 and a Mw/Mn ratio of from 1 to 5; and
(ii) a polyalkylene polyamine having an average nitrogen atom to molecule ratio of greater than 4.0;
wherein the reaction product is post-treated with a cyclic carbonate; and
wherein the level of chlorine in the composition is less than 50 ppm.

5,356,553

SOLID ELECTROLYTE

Michiyuki Kono, Neyagawa; Kenji Motogami, Takatsuki, and Shigeo Mori, Kyoto, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Oct. 6, 1992, Ser. No. 957,258
Claims priority, application Japan, Oct. 15, 1991, 3-296173
Int. Cl.[5] H01G *9/02*
U.S. Cl. 252—62.2 **3 Claims**

1. A solid electrolyte prepared by dissolving a solvent and an electrolyte salt in a trifunctional polymer and crosslinking the resultant product by active radiation or heating, and characterized by that said trifunctional polymer is a trifunctional terminal acryloyl-modified alkylene oxide polymer which has the formula:



in which R is a glycerol or trimethylolpropane residue, R' is a lower alkyl group, R'' is hydrogen or methyl group and m or n is 0 or an integer of at least 1 and $130 \geqq m+n \geqq 35$, and the amount of said solvent is 220 to 950 weight % based on said trifunctional terminal acryloyl-modified alkylene oxide polymer.

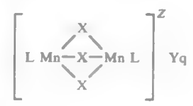
5,356,554

BLEACH CATALYST COMPOSITION, MANUFACTURE AND USE THEREOF IN DETERGENT AND/OR BLEACH COMPOSITIONS

Francois Delwel, Dordrecht, and Marten R. van Vliet, Rotterdam, both of Netherlands, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Nov. 19, 1992, Ser. No. 978,554
Claims priority, application United Kingdom, Nov. 20, 1991, 9124581
Int. Cl.[5] G11D *3/395*
U.S. Cl. 252—94 **11 Claims**

1. A bleach catalyst composition in the form of non-friable composite granules characterised in that each individual granule is free from easily oxidisable organic materials; and comprises:
(i) from 0.5 to 8% by weight of a manganese complex catalyst selected from the group consisting of formula I, II and III as defined below:



(I)

wherein Mn is manganese which can independently be in the III or IV oxidation state;
X is independently a coordinating or bridging species selected from the group consisting of H_2O, O_2^{2-}, O^{2-}, $-OH$, HO_2^-, SH^-, S^{2-}, >SO, Cl^-, SCN^-, N_3^-, N^{3-}, RSO_3^-, $RCOO^-$, NH_2^- and NR_3, with R selected from H, alkyl, aryl, both optionally substituted and R^1COO, where R^1 is an alkyl, aryl, both optionally substituted;
L is a ligand which is an organic molecule containing a number of nitrogen atoms which coordinate via all or some of the nitrogen atoms to the manganese;
Z denotes the charge of the complex and is an integer which can be positive or negative;
Y is a monovalent or multivalent counter-ion leading to charge neutrality, which is dependent upon the charge of Z of the complex; and
$q=z/$ [charge Y];

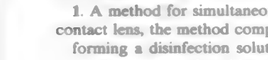
VOL 1167 ISS 3 OC 18 1994 UMI

$$[LMn^{IV}(OR)_3]Y, \quad (II)$$

wherein Mn is manganese in the +4 oxidation state; R is a C_1–C_{20} radical selected from the group consisting of alkyl, cycloalkyl, aryl, benzyl and radical combinations thereof;
at least two R radicals may also be connected to one another so as to form a bridging unit between two oxygens that coordinate with the manganese;
L is a ligand selected from a C_3–C_{60} radical having at least 3 nitrogen atoms coordinating with the manganese; and
Y is an oxidatively-stable counterion dependent;

$$[L\ MnX_p]^zYq \quad (III)$$

wherein Mn Can be either in the II, III, or IV oxidation state;
X is independently a coordinating species with the exception of RO^-, selected from Cl^-, Br^-, I^-, F^-, NCS^-, N_3^-, I_3^-, NH_3, $RCOO^-$, RSO_3^-, RSO_4^- in which R is alkyl, aryl, both optionally substituted, OH^-, O_2^{2-}, HOO^-, H_2O, SH, CN^-, OCN^-, S_4^{2-} and mixtures thereof;
p is an integer from 1–3;
z denotes the charge of the complex and is an integer which can be positive zero or negative:
Y is a counter-ion the type of which is dependent upon the charge z of the complex;
$q = z/[\text{charge } Y]$; and
L is a ligand being a macrocyclic organic molecule of the following formula:



wherein t is 2; s is 3 and R^1, R^2 and R^3 can each independently be H, C_1–C_6 alkyl, aryl, both optionally substituted;
(ii) from 0 to 90% by weight of an inert salt selected from the group consisting of chlorides, carbonates and mixtures thereof; and
(iii) from 5 to 91% by weight of a binding agent selected from the group consisting of water-soluble non-oxidisable polymers, alkalimetal silicates, saturated fatty acid soap mixtures and mixtures thereof.

5,356,555

NON-OXIDATIVE METHOD AND COMPOSITION FOR SIMULTANEOUSLY CLEANING AND DISINFECTING CONTACT LENSES USING A PROTEASE WITH A DISINFECTANT

Stanley W. Huth, Newport Beach; Sam W. Lam, Laguna Niguel, and Abraham M. Espiritu, Oceanside, all of Calif., assignors to Allergan, Inc., Irvine, Calif.

Filed Sep. 14, 1992, Ser. No. 944,567
Int. Cl.[5] **A61L** *2/16;* **C11D** *3/386, 3/48;* **G02C** *13/00*
U.S. Cl. 252—106 **8 Claims**

1. A method for simultaneously cleaning and disinfecting a contact lens, the method comprising the steps of:
forming a disinfection solution comprising about 0.0001% polyhexamethylene biguanide, about 0.05% edetate disodium, about 0.37% sodium chloride, about 1.20% tromethamine, and about 0.025% tyloxapol;
providing an effective and efficacious amount of subtilisin A in an amount of from about 0.0008 to 0.036 Anson units per single lens treatment, wherein when the subtilisin A is combined with the disinfection solution, the log kill against *Pseudomonas aeruginosa* and against *Candida albicans* at 4 hours does not significantly decrease;
combining the contact lens, the disinfection solution and the subtilisin A; and
soaking the lens in the resulting solution for a period of time sufficient to clean and disinfect.

5,356,556

MANFUACTURE OF RIGID FOAMS AND COMPOSITIONS THEREFOR

Rik De Vos, Rotselaar, Belgium, assignor to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 974,352, Nov. 10, 1992, Pat. No. 5,238,970, which is a continuation of Ser. No. 852,071, Mar. 16, 1992, abandoned. This application May 14, 1993, Ser. No. 61,007
Claims priority, application United Kingdom, Apr. 3, 1991, 9106976; Jun. 12, 1991, 9112622; Aug. 16, 1991, 9117749; Nov. 1, 1991, 9123205
Int. Cl.[5] **C09K** *3/00;* **C08J** *9/12*
U.S. Cl. 252—182.2 **13 Claims**

1. Polyisocyanate or polyol composition comprising an inert, insoluble, non-blowing liquid.

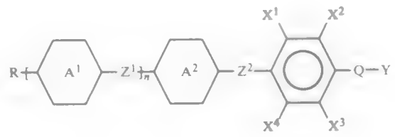
5,356,557

ELECTROOPTICAL SYSTEM

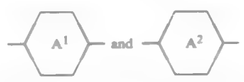
Raymond Jubb, Darmstadt; Ulrich Finkenzeller, Plankstadt; Eike Poetsch, Mühltal, and Stefan Wilhelm, Heppenheim, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Fed. Rep. of Germany

Filed Mar. 13, 1992, Ser. No. 851,562
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1991, 4108091; Mar. 13, 1991, 4108448
Int. Cl.[5] **C09K** *19/52;* **G02F** *1/13*
U.S. Cl. 252—299.01 **29 Claims**

1. In an electrooptical system comprising:
two electrode layers, a liquid-crystal mixture and an optically transparent polymeric medium between said electrode layers, one of the electrode layers being formed as an active matrix having nonlinear addressing elements integrated into the pixel, while the other electrode layer forms the counterelectrode;
wherein the liquid-crystal molecules of said liquid-crystal mixture have an irregular alignment in the switched-off state;
wherein one of the refractive indices of said liquid-crystal mixture essentially corresponds to the refractive index n_m, of said polymeric medium and/or wherein the quotient of the mass of said liquid-crystal mixture divided by the mass of said optically transparent polymeric medium is 1.5 or more; and
wherein said system has reduced transmission in one of the two switching states compared with the other state, irrespective of the polarization of the incident light;
the improvement comprising:
said liquid-crystal mixture contains one or more compounds of the formula I

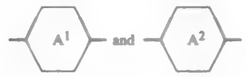


wherein
Z^1 and Z^2 are each, independently, a single bond, $—CH_2CH_2—$, —COO—, —OCO— or —C≡C—,



are each independently, trans-1,4-cyclohexylene, 1,4-phenylene, 2-fluoro-1,4-phenylene, 3-fluoro-1,4-phenylene,

2,3-difluoro-1,4-phenylene or 3,5-difluoro-1,4-phenylene, and one of



can also be pyrimidine-2,5-diyl, pyridine-2,5-diyl or trans-1,3-dioxane-2,5-diyl,
X^1, X^2, X^3 and X^4 are each, independently, H or F,
Q is CF_2, OCF_2, C_2F_4, OC_2F_4, or a single bond,
Y is H, F or Cl
n is 0, 1 or 2, and
R is alkyl having up to 12 carbon atoms in which one or two non-adjacent CH_2 groups can be replaced by —O—and-/or —CH=CH—; and
to increase the solubility of said liquid-crystal mixture in the precursor of said polymeric medium, said precursor contains 0.1%–95.0% of a component A, wherein component A comprises one or more fluorinated, oligofluorinated, or perfluorinated monomers, one or more fluorinated, oligofluorinated, or perfluorinated oligomers one or more fluorinated, oligofluorinated, or perfluorinated prepolymers, or combinations thereof.

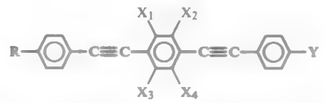
5,356,558

TOLANE DERIVATIVES, LIQUID CRYSTAL COMPOSITIONS CONTAINING THE DERIVATIVES AND LIQUID CRYSTAL DISPLAY DEVICES USING THE COMPOSITIONS

Shuhei Yamada; Shuji Ikukawa; Jun Ito, and Jitsuko Nakayama, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Jul. 21, 1993, Ser. No. 94,353
Claims priority, application Japan, Jul. 28, 1992, 4-201333; Sep. 18, 1992, 4-250006; Jan. 8, 1993, 5-001933; Mar. 10, 1993, 5-049571; May 24, 1993, 5-121701
Int. Cl.[5] **C09K** *19/52;* **C07C** *255/50, 25/24;* **G02F** *1/13*
U.S. Cl. 252—299.01 **12 Claims**

9. A liquid crystal composition containing at least one tolane derivative represented by the following general formula:



(1)

wherein R represents a straight-chain alkyl group having 1 to 10 carbon atoms, each of X_1, X_2, X_3 and X_4 represents a fluorine atom or a hydrogen atom wherein at least one X represents a fluorine atom, and Y represents a nitrile group or a straight-chain alkyl group having 1 to 10 carbon atoms.

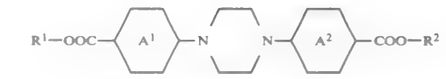
5,356,559

OPTICALLY ACTIVE PIPERAZINYL DERIVATIVES AS LIQUID CRYSTALS

Stephen Kelly, Möhlin, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jul. 7, 1992, Ser. No. 909,930
Claims priority, application Switzerland, Jul. 19, 1991, 2164/91
Int. Cl.[5] **C09K** *19/34, 19/54;* **C07D** *239/02, 211/90*
U.S. Cl. 252—299.61 **6 Claims**

1. An optically active compound of the formula:



I

wherein rings A^1 and A^2 are the same and are pyridine-2,5-diyl, pyrimidine-2,5-diyl or 1,4-phenylene, which is unsubstituted or substituted with at least one of halogen, cyano and methyl; R^1 and R^2 are the same and are branched alkyl with 1 to 18 carbon atoms in which a $—CH_2—$ group or two non-adjacent $—CH_2—$ groups can be replaced by —O—, —COO— and/or —OOC— and/or one $—CH_2—CH_2—$ group can be replaced by —CH=CH—.

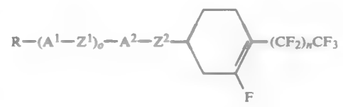
5,356,560

2-FLUOROPERFLUOROALKYLCYCLOHEXENE DERIVATIVES

Volker Reiffenrath, Rossdorf, and Herbert Plach, Darmstadt, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Aug. 20, 1993, Ser. No. 109,568
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1992, 4227772
Int. Cl.[5] **C09K** *19/52;* **C07C** *23/10, 43/20;* **C07D** *213/62*
U.S. Cl. 252—299.61 **12 Claims**

1. 2-Fluoroperfluoroalkylcyclohexene derivatives of the formula I



I

where
R is an alkyl or alkenyl radical having up to 18 carbon atoms which is unsubstituted or substituted by CN or by at least one halogen and in which one or more non-adjacent CH_2 groups can be replaced by a radical selected from the group consisting of —O—, —S—, —CO—, —O—CO—, —CO—O— and —O—,
A^1 and A^2 are each, independently of one another,
a) a 1,4-phenylene radical, in which one or two CH groups can be replaced by N,
b) a 1,4-cyclohexylene radical, in which one or two non-adjacent CH_2 groups can be replaced by —O— or —S—,
c) a 1,4-cyclohexenylene, piperidine-1,4-diyl, 1,4-bicyclooctylene or naphthalene-2,6-diyl radical,
where the radicals a) and b) can be monosubstituted or polysubstituted by halogen atoms, cyano groups and/or methyl groups,
Z^1 and Z^2 are each, independently of one another, —CO—O—, —O—CO—, $—CH_2CH_2—$, —C≡C—, —CH=CH—, $—OCH_2—$, $—CH_2O—$ or a single bond, or one of the radicals Z^1 and Z^2 is alternatively $—(CH_2)_4—$ or $—CH=CH—CH_2CH_2—$,
o is 0, 1 or 2, and
n is 0–7.

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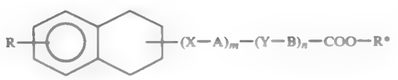
5,356,561

CARBOXYLATE COMPOUNDS, LIQUID CRYSTAL COMPOSITIONS AND LIQUID CRYSTAL ELEMENTS CONTAINING SAID COMPOUNDS AND METHOD OF OPTICAL MODULATION USING SAID ELEMENTS

Toyoji Shimizu, Tokyo; Shinichi Nishiyama, Kimitsu; Nobuyuki Doi, Kimitsu; Shoichi Miyakoshi, Kimitsu; Tooru Yamanaka, Kimitsu; Katsuo Taniguchi, Ichihara, and Hideo Hama, Kimitsu, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

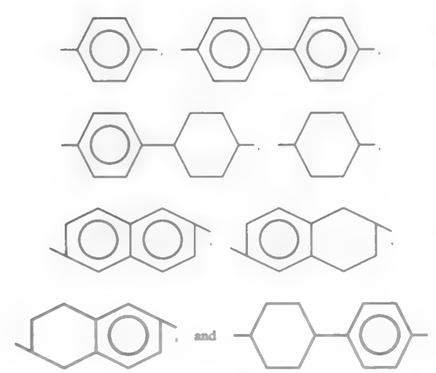
Continuation-in-part of Ser. No. 623,557, Dec. 7, 1990, abandoned. This application Dec. 24, 1991, Ser. No. 813,032
Claims priority, application Japan, Dec. 7, 1989, 1-318456; Feb. 23, 1990, 2-43533; Feb. 23, 1990, 2-43534; Jun. 25, 1990, 2-166393
The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.
Int. Cl.[5] C09K *19/32;* C07C *69/76*
U.S. Cl. 252—299.62 27 Claims

1. A carboxylate compound represented by the following formula (A):



(A)

wherein R is a group selected from the group consisting of alkyl of 3–20 carbon atoms, alkoxy of 3–20 carbon atoms and halogenated alkyl of 3–20 carbon atoms, X and Y each represent —COO—, A and B each independently, represent a member selected from the group consisting of



and R* is an optically active group of 4 to 20 carbon atoms containing at least one asymmetric carbon atom, wherein hydrogen atoms attached to the carbon atoms of said optically active group may be substituted with halogen atoms, and m and n are each, independently, an integer of from 0 to 2, with the proviso that both m and n are not both 0 at the same time.

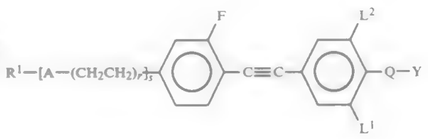
5,356,562

FLUORO TOLANS AND LIQUID CRYSTALLINE MEDIA

Simon Greenfield, Creekmoor; Emma Brown, Dorset, both of Great Britain, and Reinhard Hittich, Modautal, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP92/00736, § 371 Date Jun. 3, 1992, § 102(e) Date Jun. 3, 1992, PCT Pub. No. WO92/18448, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 2, 1992, Ser. No. 852,258
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1991, 91105897; Dec. 10, 1991, 91121165
Int. Cl.[5] C09K *19/30, 19/12;* C07C *43/225, 25/24*
U.S. Cl. 252—299.63 10 Claims

1. Fluoro tolans of the formula I



I

wherein

R^1 denotes alkyl with up to 12 carbon atoms wherein one or two non-adjacent CH_2 groups may also be replaced by —O—, —O—CO—, —CO—O— and/or —CH=CH—,

A is trans-1,4-cyclohexylene or 1,4-phenylene,

r is 0 or 1,

s is 0 or 1,

Q is $—CF_2—$, $—OCF_2—$ or a single bond,

L^1 is H,

L^2 is H or F, and

Y is F.

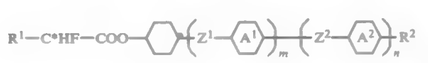
5,356,563

LIQUID CRYSTALLINE MIXTURES HAVING A CHIRAL TILTED SMECTIC PHASE

Richard Buchecker, Zurich; Stephen Kelly, Möhlin, and Frans Leenhouts, Kaiseraugst, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

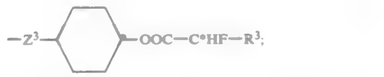
Division of Ser. No. 898,395, Jun. 11, 1992, Pat. No. 5,244,597, which is a continuation of Ser. No. 346,189, May 2, 1989, abandoned. This application Jun. 9, 1993, Ser. No. 74,077
Claims priority, application Switzerland, May 26, 1988, 1989/88; Apr. 5, 1989, 1248/89
Int. Cl.[5] C09K *19/30, 19/34;* C07D *239/02, 211/72*
U.S. Cl. 252—299.63 9 Claims

1. An optically active compound of the formula



I

wherein m is the integer 0 or 1 and R^2 is a group of the formula



II

R^1 and R^3 each independently are an alkyl or alkenyl group in which optionally one methylene group is replaced by oxygen; Z^1, Z^2 and Z^3 each independently are a single covalent bond, $—CH_2O—$, $—OCH_2—$, $—CH_2CH_2—$, —COO— or —OOC—; n stands for the number 0 or 1; rings A^1 and A^2 each independently are 1,4-phenylene unsubstituted or substituted with at least one of halogen, cyano or methyl, the 1,4-phenylene having optionally 1 CH group or 2 CH groups replaced by nitrogen; and C* denotes a chiral carbon atom.

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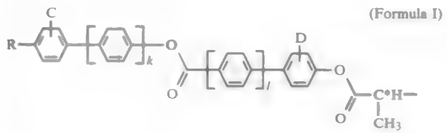
FERROELECTRIC LIQUID CRYSTAL MATERIALS AND LIQUID CRYSTAL COMPOSITIONS CONTAINING THE SAME

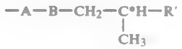
Wen-Liang Tsai, Hsinchu; Hwei-Long Kuo, and Shu-Hui Yang, both of Taipei, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jul. 8, 1993, Ser. No. 89,171
Int. Cl.[5] C09K *19/20, 19/12;* C07C *69/76;* G02F *1/13*
U.S. Cl. 252—299.64 19 Claims

1. An optically active liquid crystal compound represented by the following formula:

(Formula I)





wherein:

A: is selected from the group consisting of oxygen and sulfur;

B: is selected from the group consisting of $—(CH_2)_m—$ and $—(CH_2)_n—O—$;

R: is an alkyl or alkoxyl group having 1 to 22 carbons;

R': is an alkyl group having 2 to 8 carbons or an ether group having 2 to 8 carbons;

m: is an integer from 0 to 4;

n: is an integer from 2 to 5;

k: is an integer of 0 or 1;

l: is an integer of 0 or 1;

C: is selected from the group consisting of hydrogen atom and halogen atoms;

D: is selected from the group consisting of hydrogen atom and halogen atoms; and

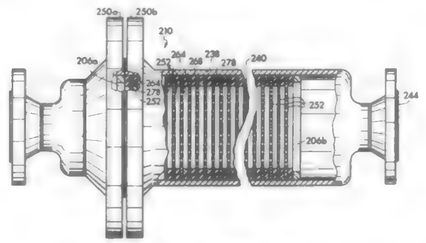
*: represents a chiral center.

5,356,565

IN-LINE FOAM GENERATOR FOR HYDROCARBON RECOVERY APPLICATIONS AND ITS USE

George P. Southwell, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Aug. 26, 1992, Ser. No. 935,623
Int. Cl.[5] B01F *5/06;* B01J *13/00;* F21B *43/12*
U.S. Cl. 252—307 21 Claims



1. A foam generator for producing a foam from a foaming fluid, said foam having utility in hydrocarbon recovery applications, said foam generator comprising:

a foaming chamber having an inside chamber wall, an inlet, an outlet, and a continuous flowpath from said inlet to said outlet, said flowpath contained within said inside wall;

a plurality of screens substantially permeable to said foam and said foaming fluid positioned in series within said foaming chamber across said flowpath, wherein each said screen has a peripheral portion and a central portion;

a plurality of first spacers having a first radial width, each said spacer positioned between consecutive screens and separably engaging each said screen, said first radial width defining a cross sectional area and a radial boundary of said flowpath in substantial parallel alignment with the axis of said foaming chamber; and

a plurality of second spacers positionably interchangeable with said plurality of first spacers, said plurality of second spacers having a second radial width defining a smaller or larger cross sectional area of said flowpath than said first radial width.

12. A method of manufacturing a foam from a foaming fluid for use in hydrocarbon recovery applications, said method comprising:

preparing said foaming fluid by combining an aqueous solution of a shear-sensitive polymer, a foaming agent and a gas;

conveying said foaming fluid through a flowpath having a plurality of fluid permeable screens consecutively positioned in series, wherein said flowpath has a cross sectional area having a first radial boundary defined by a first radial width of a plurality of first spacers, each of said plurality of first spacers positioned between a consecutive pair of said plurality of screens and separably engaging each screen of said consecutive pair to maintain a substantially uniform incremental pressure drop across said plurality of screens; and

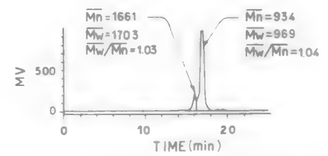
adjusting said cross sectional area of said flowpath by substituting a plurality of second spacers for said plurality of first spacers, said plurality of second spacers having a second radial width defining a second radial boundary of said cross sectional area to modify said substantially uniform incremental pressure drop across said plurality of screens.

5,356,566

POLYESTER COMPOUNDS AND ORGANIC GELLING AGENTS COMPRISING SAME

Toshiaki Kobayashi, Nara, and Sachio Kitagawa, Yawata, both of Japan, assignors to New Japan Chemical Co., Ltd., Japan

Filed Jun. 18, 1993, Ser. No. 78,030
Claims priority, application Japan, Jun. 26, 1992, 4-193490; Jun. 26, 1992, 4-193492
Int. Cl.[5] B01J *13/00*
U.S. Cl. 252—315.1 12 Claims

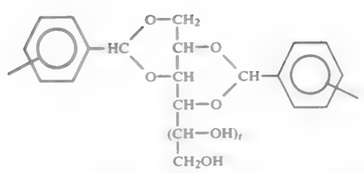


1. A polyester compound having a repeating unit represented by the formula

—OC—A—COO—BO— (1)

wherein A is a 1,3:2,4-dibenzylidenesorbitol or 1,3:2,4-dibenzylidenexylitol residue represented by the formula

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(2)

wherein t is 1 or 0, and B is a residue formed by removal of two hydroxyl groups from a polyhydric alcohol.

5,356,567

LITHIUM ALUMINUM COMPLEX HYDROXIDE SALT STABILIZER FOR RESINS

Masahide Ogawa, Shibata; Kunio Goto, Tsuruoka; Shoji Shoji, Tsuruoka; Yoshinobu Komatsu, Tsuruoka, and Akira Tatebe, Tsuruoka, all of Japan, assignors to Mizusawa Industrial Chemicals, Ltd., Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 994,955
Claims priority, application Japan, Dec. 27, 1991, 3-358208
Int. Cl.[5] C09K *15/32;* **C08K** *3/10*
U.S. Cl. 252—400.1 **5 Claims**

1. A resin stabilizer composed of particles of a lithium aluminum complex hydroxide salt represented by the following formula

$$(Al_2Li(OH)_6)_nX.mH_2O$$

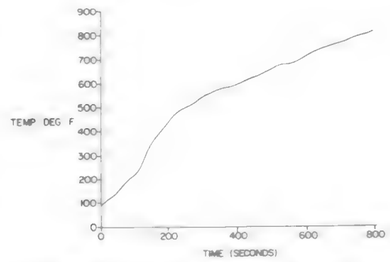
wherein
X is an inorganic or organic anion,
n is a valence number of anion X, and
m is a number of not more than 3,
said particles having been surface-treated with a coating agent selected from the group consisting of a fatty acid, a metal soap, a silane-coupling agent, an aluminum-coupling agent, a titanium-coupling agent, a was, rosin and petroleum resins.

5,356,568

INTUMESCENT HEAT- AND FIRE-RESISTANT COMPOSITION AND SUBSTRATE COATED THEREWITH

Harvey S. Levine, 6901 Harrowdale Rd., Apt. 102, Baltimore, Md. 21209

Filed Oct. 29, 1990, Ser. No. 604,230
Int. Cl.[5] C09D *5/18*
U.S. Cl. 252—606 **7 Claims**



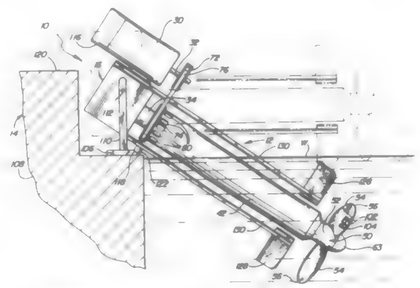
1. An intumescent heat-resistant and fire-resistant coating composition comprising, by weight:
(a) 9.0 – 14.0% of an organic binder comprising a mixture of an organic film-forming polymeric material selected from the group consisting of a vinyl toluene/butadiene copolymer, a vinyl toluene/acrylic copolymer, a vinyl toluene/-thermoplastic alkyl, a styrene/butadiene copolymer, a styrene/acrylate copolymer, a vinyl chloride polymer, a vinylidene chloride polymer and a vinyl acetate polymer; and a chlorinated rubber containing at least about 67% by weight of chlorine;
(b) 7.0 – 14.6% of an inorganic binder comprising a mixture of an air-setting cementitious material comprising a calcium aluminate cement and silica;
(c) 6.0 – 12.0% of a heat-activated organic blowing agent comprising melamine;
(d) 5.0 – 12.0% of a carbonific comprising dipentaerythritol or tripentaerythritol;
(e) 17.0 – 35.0% of a phosphorous containing material which, under the action of heat, reacts with one or more of the remaining ingredients in the composition to form water and phosphorous and which is selected from the group consisting of ammonium polyphosphate, tris(2,3-dibromopropyl) phosphate, tris(beta-chloroethyl) phosphate, quanidine phosphate, urea phosphate, melamine phosphate, monoammonium phosphate, diammonium phosphate and mixtures thereof;
(f) 2.0 – 10.0% of a halogen containing material comprising a chlorinated paraffin which, under the action of heat, produces a fire-extinguishing halogen gas;
(g) 3.9 – 10.3% of inorganic materials resistant to heat comprising a mixture of inorganic fibers and inorganic particles; and
(h) > 25% of an organic solvent for said organic components of the composition.

5,356,569

LIQUID AERATING APPARATUS

Richard Von Berg, 4403 Alvin St., Saginaw, Mich. 48603

Continuation-in-part of Ser. No. 974,948, Nov. 12, 1992, Pat. No. 5,300,261. This application Mar. 10, 1994, Ser. No. 209,426
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—87 **15 Claims**



1. Apparatus for aerating a liquid comprising a drive shaft having therein an aeration fluid passage in communication with an aeration fluid source; means journaling said drive shaft for rotation about an axis; drive means coupled to said drive shaft for rotating the drive shaft; and a propeller fixed to said drive shaft for rotation therewith, said propeller being immersible in said liquid and having a plurality of helically extending blades each of which has a root, a leading edge, a trailing edge, and a tip, each of said blades being joined at its root to said drive shaft and having an airfoil profile between said edges defining a suction side of said blade and a thrust side of said blade whereby rotation of said blade in said liquid produces a negative pressure on said suction side which is greatest at a zone adjacent said trailing edge, said zone being radially inward of said blade tip and more than half the distance from said axis to said blade tip, each of said blades having an internal chamber communicating with said aeration fluid passage and terminating radially inward of said blade tip, each of said

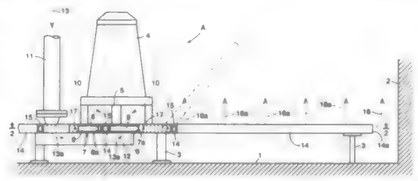
chambers having a primary aeration fluid outlet port at said zone, whereby rotation of said propeller in said liquid causes the aeration fluid to be drawn into the chamber of each of said blades through said passage and discharged into said liquid through said primary outlet port, none of said blades having an aeration port in communication with said aeration fluid passage closer to said axis than about half the distance of said blade from said axis to its tip, and none of said blades having an aeration port the area of which is greater than that of said primary aeration port.

5,356,570

APPARATUS FOR AERATING LIQUIDS

Karl Golob, Bonn, Fed. Rep. of Germany; Heinrich Ebner, Linz, Austria, and Konrad Ditscheid, Bonn, Fed. Rep. of Germany, assignors to Heinrich Frings GmbH & Co KG, Bonn, Fed. Rep. of Germany

Filed Sep. 10, 1993, Ser. No. 120,005
Claims priority, application Austria, Sep. 10, 1992, 1804/92
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—93 **10 Claims**



1. Apparatus for aerating liquids, which apparatus includes a gas- and liquid-centrifuging rotor adapted to be arranged in the bottom region of a liquid-holding container for rotation about a vertical axis of rotation so as to entrain liquid and gas into the form of a liquid-gas mixture and to centrifuge the liquid-gas mixture horizontally outwardly of the rotor, a stator surrounding the rotor and constructed to conduct respective portions of the liquid-gas mixture from the rotor to the outer perimeter of the stator, and a plurality of elongated distributing pipes having respective intake and discharge ends and connected at their intake ends to the stator at a plurality of circumferentially spaced locations for conducting the liquid-gas mixture portions horizontally outwardly away from the outer perimeter of the stator; characterized in that the distributing pipes **(14)**, which extend over substantially the entire basal area of the aeration region, are provided over substantially their entire length with respective upwardly directed distribution openings **(15)** to enable parts of the liquid-gas mixture portions traveling through the distributing pipes **(14)** to enter the body of liquid along the entire lengths of the distributing pipes before reaching the discharge ends of the latter.

5,356,571

Patent Not Issued For This Number

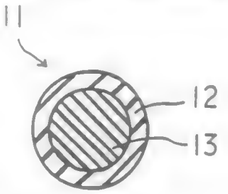
5,356,572

METHOD FOR MANUFACTURING SHEATH-CORE ION EXCHANGE FIBERS

Yousuke Takai, Hyogo, Japan, assignor to Daiwabo Create Co., Ltd., Osaka, Japan

Division of Ser. No. 791,240, Nov. 13, 1991, Pat. No. 5,314,922. This application Jul. 30, 1993, Ser. No. 99,568
Claims priority, application Japan, Nov. 19, 1990, 2-313716
Int. Cl.[5] B29C *35/10;* **D01D** *10/00;* **D01F** *8/06, 11/04*
U.S. Cl. 264—22 **2 Claims**

2. A method of manufacturing sheath-core ion exchange fibers comprising the steps of forming sheath-core conjugate fibers by melt spinning syndiotactic poly(1,2-butadiene) having a melting point (Tm °C.) of $75 \leqq Tm < 150$ as a sheath component and a polypropylene polymer or copolymer as a core component, carrying out a cross-linking treatment on said conjugate fibers with ultraviolet rays or radioactive rays, and subsequently carrying out a chemical treatment or physico-chemical treatment on said fibers to introduce ion exchange



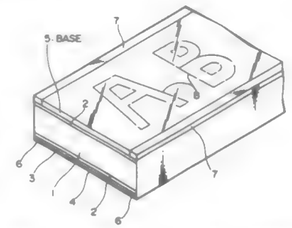
functional groups selected from the group consisting of sulfonic acid groups and sulfonic acid salt groups thereinto.

5,356,573

SNOW SKI BASE MATERIAL AND SKI BASE MANUFACTURE

Norihiko Kageyama, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Division of Ser. No. 640,860, Jan. 14, 1991, Pat. No. 5,189,130. This application Nov. 23, 1992, Ser. No. 980,236
Claims priority, application Japan, Jan. 19, 1990, 2-9550
Int. Cl.[5] H05B *6/00*
U.S. Cl. 264—25 **14 Claims**



1. A method of making a snow ski base material, wherein said base material consists essentially of ultra high molecular weight polyethylene having a molecular weight of 500,000 to 8,000,000, a light transmissivity of 10 to 33.7%, a density of not more than 0.93 g/cm^3 and a degree of crystallinity quality of not more than 55%, and is treated by a two-step process of heating to a controlled melting state followed by quenching under normal atmospheric pressure, said method further including the steps of charging the ultra high molecular weight polyethylene into a metal mold and hot pressing the ultra high molecular weight polyethylene therein.

5,356,574

PROCESS FOR PRODUCING PITCH BASED ACTIVATED CARBON FIBERS AND CARBON FIBERS

Toshio Tamaki; Hideyuki Nakajima; Yoshiyuki Nishimura, and Hiroshi Ejiri, all of Kamisu, Japan, assignors to Petoca, Ltd., Tokyo, Japan

Filed Sep. 10, 1993, Ser. No. 118,742
Claims priority, application Japan, Sep. 22, 1992, 4-252940; Mar. 16, 1993, 5-080306
Int. Cl.[5] D01F *9/145*
U.S. Cl. 264—29.2 **6 Claims**

1. A process for producing activated carbon fibers consisting of optically anisotropic components and optically isotropic components, which comprises
spinning into fibers a pitch for spinning,
infusibilizing the fibers thus obtained, and
activating the infusibilized fibers,

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wherein the pitch for spinning is prepared by melt mixing (A) a first optically isotropic pitch having a softening point of 230°–300° C. obtained by heat treatment of a pitch while blowing an oxygen containing gas into the pitch and (B) 10–50 parts by weight, based on 100 parts by weight of the pitch (A), of a second optically isotropic pitch having a softening point of 200°–270° C., said second optically isotropic pitch having a property of being converted into an optically anisotropic pitch by a stress at the time of spinning thereof.

5,356,575

METHOD FOR CONTROLLING THE TREND OF THE CHANGE-OVER POINT

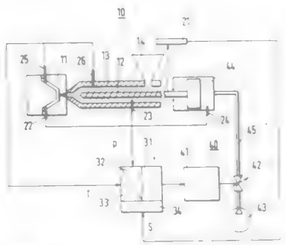
Dietmar Krosse, Wiehe; Helmut Schreiner, Nuremberg, and Ulrich Reichstein, Wiehe, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Oct. 1, 1992, Ser. No. 955,080

Claims priority, application European Pat. Off., Oct. 1, 1991, 91 250 266-3

Int. Cl.[5] **B29C** *45/76*

U.S. Cl. 264—40.1 **7 Claims**



1. In a machine for injection molding thermoplastic materials in a molding tool by seriatim injection cycles, wherein an injection pressure stage and a subsequent holding pressure stage are employed, and wherein parameters of a change-over point from the injection pressure to the holding pressure have a trend of varying, a method for regulating the trend of the change-over point in each injection cycle, which comprises

(a) establishing upper and lower pressure, and right and left time boundary target parameters for a working window,

(b) establishing upper and lower temperature boundary target parameters for a working band,

(c) defining the change-over point within said working window, by specifying a pressure, at a given time,

(d) measuring the actual pressure within the molding tool at the time of changing from the injection pressure to the holding pressure, and detecting any pressure and time differences from the boundary target parameters of the working window,

(e) measuring the actual temperature within the molding tool and detecting any temperature differences from the boundary target parameters for the working band,

(f) shifting the change-over point in proportion to the detected differences, subject to the conditions that the (i) changing of the time is in the same direction as any detected difference, (ii) changing of the pressure is in the opposite direction from any detected difference, and (iii) changing of the temperature in the same direction as the detected difference, and of the pressure is in the opposite direction of the detected difference.

5,356,576

PROCESS FOR THE MANUFACTURE OF PLASTIC MOLDINGS WITH DECORATIVE COATING

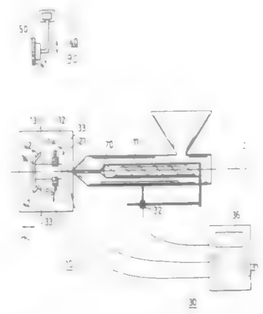
Gunther Fischbach, Lauf Pegnitz, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 23, 1992, Ser. No. 854,714

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1991, 4110445

Int. Cl.[5] **B29C** *45/18, 45/76*

U.S. Cl. 264—40.4 **20 Claims**



1. Process for the manufacture of moldings with a decorative material coating, the decorative material coating having a lower side and a decorated upper side, the plastic molding with a decorative material coating being manufactured by injection molding in an injection molding machine, the injection molding machine having injection means which injection means advances and introduces a molding compound into a mold cavity located in a mold clamping device, the mold clamping device having a movable mold part, the mold cavity having a mold surface, the process comprising the following steps:

inserting the decorative material coating into the mold cavity and holding the decorative material coating so that the decorated upper side of the decorative coating faces the mold surface of the mold cavity;

moving the movable mold part of the mold clamping device in a closing direction;

at least substantially closing the mold clamping device;

injecting a molding compound through a first nozzle directly into the mold cavity, not later than after at least substantially closing the mold clamping device;

simultaneously measuring the displacement of the injection means while injecting the molding compound, and thereby measuring the amount of molding compound injected into the mold cavity;

opening at least a second nozzle through which molding compound is also injected, said at least one second nozzle being connected directly into the mold cavity,

said opening of said at least a second nozzle comprising opening control element means controlling solely said at least a second nozzle to permit simultaneous flow of molding compound through said at least one second nozzle directly into the mold cavity during the injecting of the molding compound through the first nozzle into the mold cavity, said control element means being opened in response to said measuring of the displacement of the injection means to permit flow of molding compound through said at least one second nozzle;

said opening of said at least a second nozzle comprising opening said control element means independently of said injecting through said first nozzle;

said control element means being opened in response to the measuring of a displacement of the injection means corresponding to at least one fixed volumetric fill level of the mold cavity to permit said flow of molding compound through said at least one second nozzle;

said first nozzle and said at least one second nozzle each injecting molding compound at separate locations into the mold cavity;

maintaining the internal mold pressure in the mold cavity at a uniform pressure level by opening said at least one second nozzle to maintain said uniform pressure level, said opening said at least one second nozzle to maintain said uniform pressure level being based on the displacement of the injection means;

at least substantially filling the mold cavity with molding compound;

waiting a specified length of time to allow setting of the molding compound; and

ejecting the molding connected to the decorative material.

5,356,577

CONTROLLED RELEASE OF METERED QUANTITIES OF FINELY DIVIDED SOLIDS WITH A VENTURI NOZZLE AND REGULATED CONTROL

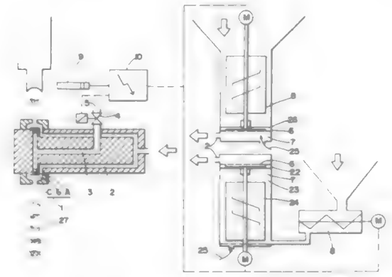
Josef Boldis; Volker I. Glasel, both of Biberach; Ekkehard Flaischlen, Ingoldingen, and Gunther M. Voss, Diessen, all of Fed. Rep. of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

Continuation of Ser. No. 792,821, Nov. 15, 1991, abandoned, which is a continuation of Ser. No. 331,927, Mar. 31, 1989, abandoned. This application May 21, 1993, Ser. No. 65,974

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1988, 3811260

Int. Cl.[5] **B39C** *33/58, 43/58*

U.S. Cl. 264—40.7 **8 Claims**



1. A process for controlled release of powdered solids in fixed cycles and in metered individual amounts onto objects which are traveling past comprising the steps of:

(a) a preliminary metering of the solids into a homogenization chamber by means of a metering device which is coupled proportionally with respect to the fixed cycle of the objects travelling past and which is situated upstream of the homogenization chamber;

(b) continuously homogenizing the lubricating powder in said chamber to produce a homogeneous powder/gas mixture;

(c) transporting the homogenized powder/gas mixture from the homogenization chamber to a venturi nozzle; and

(d) supplying a gaseous transporting medium through a micro-metering valve to the venturi nozzle as a function of the frequency and speed at which the objects are traveling past providing synchronized pulses of the gaseous transporting medium so as to accelerate defined quantities of homogenized powder/gas mixture through the venturi nozzle in the form of bundles of powder of a defined size.

5,356,578

MOLD FOR SLIP CASTING AND METHOD OF SLIP CASTING

Keiichiro Isomura; Toshihiko Funahashi; Ryojo Uchimura, all of Chiba, and Kazuki Ogasahara, Chiyoda, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Continuation-in-part of Ser. No. 474,082, Apr. 12, 1990, abandoned. This application Jan. 11, 1993, Ser. No. 2,948

Claims priority, application Japan, Aug. 8, 1988, 63-250843; Sep. 12, 1988, 63-226351

Int. Cl.[5] **B28B** *1/26*

U.S. Cl. 264—42 **2 Claims**

1. A mold for high pressure slip casting comprising boron nitride and at least one other ceramic constituent, said mold having air permeability, wherein:

a weight proportion of boron nitride relative to a total weight of boron nitride and said at least one other ceramic constituent is 10 to 50%,

an average pore diameter is 0.1 to 2 μm,

a porosity is 10 to 40%, and

a roughness represented by Ra of a wall surface of said mold is not larger than 3.0 μm.

2. A method for forming a ceramic product by slip casting comprising:

preparing a slip casting mold comprising boron nitride and at least one other ceramic constituent, with an average pore diameter of 0.1 to 2 μm, a porosity of 10 to 40% and a roughness Ra of a wall surface of said slip casting mold not larger than 3.0 μm,

preparing a slip of ceramic material,

pouring said slip into said slip casting mold, and

casting said slip to form said ceramic product by depositing said slip onto said wall surface of said slip casting mold.

5,356,579

METHODS OF MANUFACTURE AND USE FOR LOW DENSITY HYDRAULICALLY BONDED CEMENT COMPOSITIONS

Hamlin M. Jennings, Evanston, Ill., and Simon K. Hodson, Santa Barbara, Calif., assignors to E. Khashoggi Industries, Santa Barbara, Calif.

Continuation-in-part of Ser. No. 565,602, Aug. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 526,231, May 18, 1990, abandoned. This application Apr. 21, 1993, Ser. No. 50,705

Int. Cl.[5] **B28B** *1/08, 1/26, 3/00;* **C04B** *40/02*

U.S. Cl. 264—42 **76 Claims**

1. A method for preparing a hydraulically bonded article of low density from a hydraulic cement composition, the method comprising the steps of:

applying pressure to a hydraulic cement composition having a solid removable aggregate dispersed therein within a mold, the pressure being sufficiently high to form a mechanically self-supporting structure of a predetermined configuration corresponding substantially to a predetermined configuration of the hydraulically bonded article;

removing the mechanically self-supporting structure from the mold;

hydrating the mechanically self-supporting structure with an aqueous solution without substantial mechanical mixing of the aqueous solution and the hydraulic cement composition of the mechanically self-supporting structure; and

removing the solid removable aggregate from the hydraulic cement composition by causing the solid removable aggregate to undergo a phase change, the removal of the solid removable aggregate leaving a predetermined level of porosity within the hydraulically bonded article, thereby forming the hydraulically bonded article of low density.

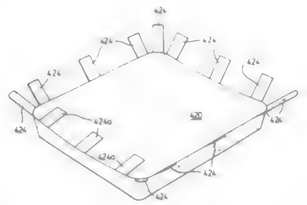
VOL 1167 ISS 3 OCT 18 1994 UMI

5,356,580

METHOD OF USING A VENTED MOLD

Leslie E. Clark, Maple; Craig A. Hunter, Milton; Robert B. Magee, Caledon East; Gerry V Wetering, Georgetown, and Wilfred W. T. Cheng, Oakville, all of Canada, assignors to Woodbridge Foam Corp., Mississauga, Canada

Filed Sep. 2, 1992, Ser. No. 939,704
Int. Cl.[5] B29C *67/22*
U.S. Cl. 264—51 28 Claims



1. A method of producing an article in a mold comprising an upper mold and a lower mold defining a mold cavity, the process comprising the steps of:

dispensing a liquid foamable polymeric composition into the mold cavity;

allowing the liquid foamable polymeric composition to expand to substantially fill the mold cavity;

venting gases in the mold cavity through at least one vent in the mold to allow the gases to exit from the mold, the vent comprising a passageway between an interior of the mold and an exterior of the mold;

selecting the size of each vent such that movement of the liquid foamable polymeric composition in the vent is restricted;

at least partially curing the liquid foamable polymeric composition in the vent, slowing the movement of the composition therein;

preventing the liquid foamable polymeric composition from exiting from the vent; and

wherein the size of each vent is also selected such that the at least partially cured polymeric composition, which is extruded into said vent passageway: (i) does not exit the vent passageway to the exterior of the mold, and (ii) is a ribbon of foam material which, when folded back against said article, may be covered with a cover material to produce a covered article of acceptable appearance and texture without the need to remove said ribbon from said article.

5,356,581

METHOD FOR PRODUCING PELLETS FROM FILM

James L. Stuart, Booneville, Ind., assignor to Replas Incorporated, Evansville, Ind.

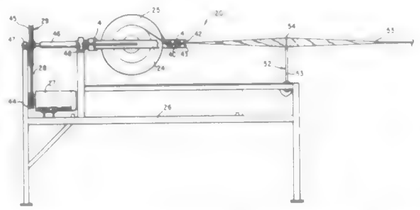
Division of Ser. No. 674,164, Mar. 25, 1991, Pat. No. 5,139,403.
This application May 29, 1992, Ser. No. 890,917
Int. Cl.[5] B29C *53/14*
U.S. Cl. 264—103 4 Claims

3. A method of changing rolled film into dense material comprising the steps of:

holding a first roll of film in a cradle with said roll having a first axis of rotation and said cradle having a second axis of rotation perpendicular to said first axis;

rotating said cradle around said second axis of rotation;

pulling said film from said roll in the direction of said second axis as said roll is rotated about said first axis and twisting



said film pulled therefrom into dense material as a strand; and,

heating said strand.

5,356,582

CONTINUOUS HOLLOW FILAMENT, YARNS, AND TOWS

Arun P. Aneja, Greenville; James H. Drew, Goldsboro, both of N.C., and Benjamin H. Knox, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 753,529, Sep. 3, 1991, Pat. No. 5,261,472, Ser. No. 753,769, Sep. 3, 1991, Pat. No. 5,229,060, Ser. No. 786,582, Nov. 1, 1991, Pat. No. 5,244,616, Ser. No. 786,583, Nov. 1, 1991, Pat. No. 5,145,623, Ser. No. 786,584, Nov. 1, 1991, Pat. No. 5,223,197, Ser. No. 786,585, Nov. 1, 1991, Pat. No. 5,223,198, Ser. No. 925,042, Aug. 5, 1992, abandoned, Ser. No. 925,041, Aug. 5, 1992, abandoned, and Ser. No. 926,538, Aug. 5, 1992, abandoned, said Ser. No. 925,042, Ser. No. 925,041, and Ser. No. 926,538, each is a continuation-in-part of Ser. No. 647,381, Jan. 29, 1991, abandoned, and Ser. No. 860,776, Mar. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 647,371, Jan. 29, 1991, abandoned, said Ser. No. 753,529, Ser. No. 753,769, Ser. No. 786,582, Ser. No. 786,583, Ser. No. 786,584, and Ser. No. 786,585, each is a continuation-in-part of Ser. No. 338,251, Apr. 14, 1989, Pat. No. 5,066,447, which is a continuation-in-part of Ser. No. 53,309, May 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 824,363, Jan. 30, 1986, abandoned. This application Nov. 9, 1992, Ser. No. 979,776
Int. Cl.[5] D01D *5/24, 5/253;* D02J *1/08, 1/22*
U.S. Cl. 264—103 20 Claims

1. A spin-orientation process for preparing a bundle of polyester continuous filaments that are hollow, having one or more longitudinal voids, and being of void content (VC) at least about 10%; wherein said hollow filaments are formed by a melt-spinning process comprising the steps of: i) melting polyester polymer of about 13 to about 23 LRV and with a zero-shear melting point ($T_M°$) of about 240 to about 265 C, and a glass transition temperature (T_g) of about 40 C to about 80 C; (ii) extruding the resulting melt through a plurality of segmented orifices arranged so as to provide an extrusion void area (EVA) of about 0.2 mm^2 to about 2 mm^2, and so that the ratio of EVA to total extrusion area (EA) is about 0.6 to about 0.9 such that the ratio of EVA to spun filament denier $(dpf)_s$ is about 0.2 to about 0.6, and post-coalescing the resulting plurality of extruded polyester melt streams to form uniform hollow filaments; (iii) quenching the extruded melt-streams using a protective delay shroud; (iv) converging the quenched hollow filaments into a multi-filament bundle while applying spin finish; and (v) withdrawing the multi-filament bundle at a withdrawal speed (V_S) in a range of about 2000 to about 5000 m/min; such process conditions being selected to provide an as-spun filament bundle having: a residual elongation of about 40% to about 160%, tenacity-at-7% elongation (T_7) of about 0.5 to about 1.75 g/d and a break tenacity $(T_B)_n$, normalized to 20.8 polymer LRV, of at least 5g/d, a $(1\text{-}S/S_m)$-ratio of at least 0.4 and differential shrinkage (DHS-S) less than about +2%,

where S is the boil-off shrinkage, S_m is the maximum shrinkage potential and DHS is the dry heat shrinkage (measured at 180 C), and a maximum shrinkage tension (ST_{max}) of less than 0.2 g/d at a peak shrinkage tension temperature $T(ST_{max})$ of about 5 to about 30 C greater than about the polymer glass transition temperature (T_g).

5,356,583

METHOD OF MAKING A MODIFIED BURN CHARACTERISTIC SARANEX FILM

Harvey C. Tung, Newark, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 801,995, Dec. 3, 1991, Pat. No. 5,250,350.
This application Jul. 9, 1993, Ser. No. 89,009
Int. Cl.[5] B29C *47/06*
U.S. Cl. 264—171 6 Claims

1. The method of making an extruded film with both gas barrier properties and modified burn characteristics comprising:

providing a polyethylene skin blend comprising in percent by weight from about 70 to about 80 percent of LDPE, from about 2 to about 13 percent of a slip agent, and from about 8 to about 30 percent of a fire retardant composition, as a stream of plastified material at a temperature of about 175 to about 220 degrees C.;

while concurrently providing an EVA copolymer glue layer blend comprising in percent by weight from about 70 to about 90 percent of EVA copolymer, from about 1 to about 6 percent of slip agent, and from about 8 to about 30 percent of the fire retardant composition, as a stream of plastified material at a temperature of about 160 to about 190 degrees C.;

while also concurrently providing a barrier core blend comprising in percent by weight about 92 to about 98 percent of VDC copolymer with vinyl chloride and the balance substantially EVA copolymer, as a stream of plastified material at a temperature of about 150 to about 180 degrees C.; and

dividing the stream of polyethylene skin blend and the stream of glue layer blend and coextruding the divided streams plus the barrier core blend to form a substantially symmetrical five-layer coextruded film with the barrier core layer having a polyethylene skin layer on each face and interposed between each of the skin layers and the barrier core layer a glue layer, and the fire retardant composition being a polyhalogenated organic compound-/antimony oxide blend in a low density polyethylene carrier.

2. The method of making a coextruded film with both gas barrier properties and modified burn characteristics comprising:

providing a polyethylene skin blend comprising in percent by weight from about 70 to about 80 percent of CPE, from about 2 to about 13 percent of a slip agent, and from about 8 to about 30 percent of a fire retardant composition, as a stream of a plastified material at a temperature of about 175 to about 220 degrees C.;

while concurrently providing an EVA copolymer glue layer blend comprising in percent by weight from about 70 to about 90 percent EVA copolymer, from about 1 to about 6 percent slip agent, and from about 8 to about 30 percent of the fire retardant composition as a stream of plastified material at a temperature of about)60 to about 190 degrees C.;

while also concurrently providing a barrier core blend comprising in percent by weight about 92 to about 98 percent of VDC copolymer with vinyl chloride and the balance substantially EVA copolymer, as a stream of plastified material at a temperature of about 150 to about 180 degrees C.; and

dividing the stream of the glue layer blend into two streams and coextruding the divided streams along the stream of polyethylene skin blend and the stream of barrier core blend to form a four-layer coextruded film with a barrier core layer having on each face thereof a glue layer, and a polyethylene skin layer over one of the glue layers, the glue layer not covered serving as a seal layer, and the fire retardant composition being a polyhalogenated organic compound/antimony oxide blend in a low density polyethylene carrier.

5,356,584

POLYBENZAZOLE FIBERS WITH ULTRA-HIGH PHYSICAL PROPERTIES AND METHOD FOR MAKING THEM

Robert A. Bubeck; Chieh-Chun Chau, both of Midland; Stephen J. Nolan, Saginaw; Steven Rosenberg, Midland; Mark D. Newsham, Midland, and Myrna Serrano, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 985,060, Dec. 3, 1992, Pat. No. 5,286,833.
This application Nov. 15, 1993, Ser. No. 152,547
Int. Cl.[5] D01D *5/04, 10/02*
U.S. Cl. 264—205 2 Claims

1. A process for preparing a polybenzazole fiber with ultra-high physical properties comprising the steps of:

(a) spinning a lyotropic liquid-crystalline polybenzazole polymer dope that contains polybenzazole polymer and a solvent through a spinneret to create a dope fiber;

(b) drawing the dope fiber across an air gap; and

(c) removing a major part of the solvent from the dope fiber; under conditions such that the dope fiber in the air gap is clear.

5,356,585

PROCESS OF EXTRUDING SNYTHETIC THERMOPLASTIC RESINS USING ORGANOSILICON RESINOUS COMPOSITIONS AS EXTRUSION LUBRICANTS

David J. Romenesko, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jul. 1, 1993, Ser. No. 86,409
Int. Cl.[5] B29C *45/00, 47/00*
U.S. Cl. 264—211 4 Claims

1. In a method of extruding a synthetic thermoplastic resin in which a processing aid in the form of a lubricant is added to the thermoplastic resin in order to facilitate processing of the thermoplastic resin, and the resin is extruded, the improvement comprising utilizing as the lubricant for the thermoplastic resin, from 100 to 3,000 parts per million of an organosilicon resinous composition selected from the group consisting of:

(i) an organosilicon resinous copolymer which includes in the molecule $R_3SiO_{1/2}$ units, $R_2SiO_{2/2}$ units, $RSiO_{3/2}$ units, and $SiO_{4/2}$ units, in a molar ratio such that the number average molecular weight of the resinous copolymer is between 1,200 to 10,000, and in which R represents a radical selected from the group consisting of alkyl radicals of one to six carbon atoms; aryl radicals; alkenyl radicals; trifluoropropyl radicals; and mixtures thereof;

(ii) a mixture of an organosilicon resinous copolymer which includes in the molecule $R_3SiO_{1/2}$ units, $R_2SiO_{2/2}$ units, $RSiO_{3/2}$ units, and $SiO_{4/2}$ units, in a molar ratio such that the number average molecular weight of the resinous copolymer is between 1,200 to 10,000, in which R represents a radical selected from the group consisting of alkyl radicals of one to six carbon atoms; aryl radicals; alkenyl radicals; trifluoropropyl radicals; and mixtures thereof; and a siloxane polymer of the formula $R_3SiO(R_2SiO)_n$-SiR_3 in which R represents a radical selected from the group consisting of alkyl radicals of one to six carbon atoms; aryl radicals; alkenyl radicals; and trifluoropropyl radicals; and n has a value of between one and one hundred thousand;

(iii) a mixture of an organosilicon resinous copolymer which includes in the molecule $R_3SiO_{1/2}$ units, $R_2SiO_{2/2}$ units, $RSiO_{3/2}$ units, and $SiO_{4/2}$ units, in a molar ratio such that the number average molecular weight of the resinous

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copolymer is between 1,200 to 10,000, in which R represents a radical selected from the group consisting of alkyl radicals of one to six carbon atoms; aryl radicals; alkenyl radicals; trifluoropropyl radicals; and mixtures thereof; and an absorbing filler selected from the group consisting of silica, calcium carbonate, talc, mica, and clay;

(iv) a mixture of an organosilicon resinous copolymer which includes in the molecule $R_3SiO_{1/8}$ units, $R_2SiO_{2/2}$ units, $RSiO_{3/2}$ units, and $SiO_{4/2}$ units, in a molar ratio such that the number average molecular weight of the resinous copolymer is between 1,200 to 10,000, in which R represents a radical selected from the group consisting of alkyl radicals of one to six carbon atoms; aryl radicals; alkenyl radicals; trifluoropropyl radicals; and mixtures thereof; a siloxane polymer of the formula $R_3SiO(R_2SiO)_nSiR_3$ in which R represents a radical selected from the group consisting of alkyl radicals of one to six carbon atoms; aryl radicals; alkenyl radicals; and trifluoropropyl radicals; and n has a value of between one and one hundred thousand; and an absorbing filler selected from the group consisting of silica, calcium carbonate, tale, mica, and clay.

5,356,586

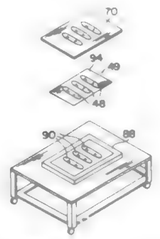
METHOD OF FABRICATING A STRUCTURAL MEMBER HAVING A STIFFENER BEAD THEREIN

Alexander C. Dublinski, Northford; Edward J. Fabian, Oxford; Philip J. Ramey, Milford, and Darryl M. Tosi, North Haven, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 687,795, Apr. 19, 1991, Pat. No. 5,271,986. This application Aug. 9, 1993, Ser. No. 81,766

Int. Cl.[5] B29C *67/14*

U.S. Cl. 264—258 **6 Claims**



1. The method of fabricating a wall member comprising bonded plies of high strength woven fabric and having at least one elongated stiffener bead therein, which stiffener bead has two parallel sides and two substantially elliptical ends extending smoothly from the sides, wherein the stiffener bead sides and ends join the wall member tangentially, and wherein the stiffener bead displacement from the wall member between the sides defines a sector of a circle, and further wherein the composite fabric forming the wall member is continuous and uninterrupted for the full length and width of the wall member and through the stiffener bead comprising the steps of:

a. providing a caul plate fabricated of fluoroelastomer material so as to be conformable under heat and pressure, and shaped to define one of two opposite surfaces of the wall member and stiffener bead being fabricated, said caul plate including a stiffener bead cavity formed therein;

b. laying up upon the caul plate a plurality of continuous and uninterrupted prepreg plies of high strength composite woven fabric each extending for the full length and width of the wall member under fabrication and into the stiffener bead;

c. debulking the caul plate with the prepreg plies laid up thereon;

d. providing a metal member to serve as a mold portion;

e. providing a fluoroelastomeric plug contoured the precise shape of the other of said two opposite surfaces of the stiffener bead, and positioning the plug loosely upon the metal member so that the metal member and the plug cooperate to define the other of said two opposite surfaces of the wall member;

f. positioning the debulked caul plate with the composite material laid up thereon onto the metal plate so that the plug is positioned in the stiffener bead cavity so as to form an assembly for curing; and

g. curing the assembly of the caul plate with the composite material so laid up thereon and the plug positioned in the stiffener bead cavity so that the conformable caul plate and plug cooperate as the plug expands under heat and pressure to cause the plug to bear against the composite plies as to cause the composite plies to bear against the full bead cavity other surface, and so as to thereby form the desired wall member with stiffener bead.

5,356,587

PROCESS FOR PRODUCING HOSE HAVING CONNECTING PORTION

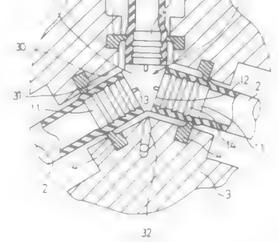
Kenichi Mitsui; Hajime Ogawa, and Seiji Takada, all of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Oct. 14, 1992, Ser. No. 959,917

Claims priority, application Japan, Oct. 14, 1991, 3-265059; Oct. 14, 1991, 3-265066; Oct. 14, 1991, 3-265068

Int. Cl.[5] B29C *45/00*

U.S. Cl. 264—263 **8 Claims**



1. A process for producing a hose having a connecting portion, comprising the steps of:

connecting a hose and a pipe by inserting an end of the pipe into the hose;

providing an injection mold, the mold comprising mold halves, one of the mold halves including a first sealing member disposed on a molding surface thereof and another one of said mold halves including a second sealing member disposed on a molding surface thereof, the first sealing member and the second sealing member each having mating surfaces and being capable of forming a sealing ring adapted for holding and sealing around an entire periphery of said hose when they are combined;

disposing said pipe with said hose connected in said mold such that said first sealing member retains said hose;

combining said first sealing member and said second sealing member such that said sealing ring is formed, whereby mating surfaces of said first sealing member and said second sealing member deviate from the center of said sealing ring toward said second sealing member thereby inhibiting the hose from being pinched by the mating surfaces; and

injection molding a resin coating portion integrally coating a connecting portion between said hose and said pipe.

5,356,588

METHOD FOR FORMING A FIBER REINFORCED THERMOPLASTIC RESIN SHAPED ARTICLE

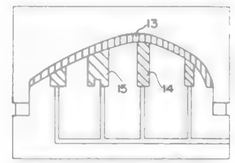
Takahisa Hara, Kawanishi; Masahito Matsumoto, Ibaraki; Nobuhiro Usui, Takatsuki; Takeo Kitayama, Ibaraki, and Shigeyoshi Matubara, Osaka, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Dec. 18, 1992, Ser. No. 992,699

Claims priority, application Japan, Dec. 18, 1991, 3-334836

Int. Cl.[5] B29C *45/14*

U.S. Cl. 264—257 **7 Claims**



1. A method for preparing a fiber reinforced thermoplastic resin shaped article comprising the steps of:

preheating a fiber reinforced thermoplastic resin sheet to expand it in a thickness direction,

supplying the expanded sheet between a first mold and a second mold,

pressurizing the sheet under the condition that a clearance between the first mold and the second mold at the time of the completion of mold clamping is larger than a thickness of the original unheated fiber reinforced thermoplastic resin sheet,

supplying a molten thermoplastic resin in a recess provided in at least one of the first and second molds through a resin passage provided in the mold, so that a portion formed from the molten thermoplastic resin in the recess is integrated by fusion with a portion formed from the fiber reinforced thermoplastic resin sheet, and

cooling the sheet.

5,356,589

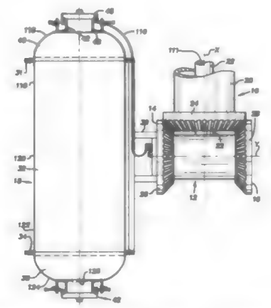
METHOD AND APPARATUS FOR FORMING ROTATIONALLY CAST TANK LINER HAVING AN END FITTING

Charles Sugalski, Portage, Ohio, assignor to Essef Corporation, Chardon, Ohio

Filed Mar. 9, 1993, Ser. No. 28,231

Int. Cl.[5] B29C *33/02, 33/12, 33/40, 39/10*

U.S. Cl. 264—265 **7 Claims**



1. A method of rotationally casting a tank liner having a uniform thickness and a molded-in access fitting comprising the steps of providing a hollow mold having a mold cavity surface conforming to a surface of said liner, said mold having wall portions of increased thickness at selected sites, depositing a predetermined amount of thermoplastic resin in said hollow mold, rotating said mold about two axes of revolution while subjecting said mold in its entirety to an elevated temperature to liquify said resin and coat said mold cavity surface with said liquid resin, and increasing a quantity of heat supplied to said mold at least at one of said selected sites at a rate proportional to said increased thickness of said wall portion at said at least one selected site so that a temperature of said surface of said mold cavity at said at least one selected site is increased at a substantially uniform rate to attain said elevated temperature to thereby provide for formation of said tank liner having said uniform thickness and molded-in access fitting, cooling said mold to solidify said liner and removing said liner from said mold.

7. Apparatus for rotationally casting a plastic liner for a pressure vessel having an access fitting rotationally cast therein and having a uniform thickness, said apparatus comprising a rotational casting arm having a mold-supporting surface rotatable about two axes of revolution, a hollow mold having a mold cavity surface conforming to an outside surface of said liner to be molded and being heated to an elevated temperature to liquify a plastic molding composition, means removably attaching said mold-supporting surface to said hollow mold, said mold including an aperture, mounting means for removably attaching said access fitting to said mold, said access fitting having a neck and flange, said neck extending axially in said aperture and said flange extending in said mold radially outward of said neck, said flange and neck defining an inside surface which together with said surface of said mold cavity, cooperates to form a shape of said liner and is coatable with said plastic molding composition to form said liner, said flange having an outside surface which is retained against a portion of said mold cavity by said mounting means, said neck having an outside surface projecting outwardly from said aperture, and means mounted on said mold to direct heated air toward said outside surface of said neck to provide for formation of said plastic liner having said uniform thickness by increasing a quantity of heat supplied to said mold at said access fitting at a rate proportional to a mass of said fitting so that a temperature at said inside surface of said fitting attains said elevated temperature of said mold cavity surface in a relatively short tim.

5,356,590

METHOD OF MOULDING AN ATTACHMENT STRUCTURE TO A MOULDED PART

Paul Melanson, Tecumseh, Canada, assignor to Tooling Technology Centre Inc., Windsor, Canada

Filed Nov. 30, 1992, Ser. No. 983,496

Claims priority, application Canada, Aug. 4, 1992, 2075330

Int. Cl.[5] B29C *33/42, 33/44, 45/44*

U.S. Cl. 264—328.1 **3 Claims**

1. A method of manufacturing a moulded part having an inner surface, an outer surface and an attachment structure moulded to said inner surface, said attachment structure comprising a thin-walled boss having an arcuate wall and a platform extending thereacross, said platform spaced from said inner surface, said method utilizing a first mould having a complementary design of the outer surface of said moulded part and a second mould having a complementary design of the inner surface of said moulded part, said second mold having a boss cavity presenting an outer wall surface for moulding an outer face of the arcuate wall and a base for moulding the platform, said method comprising the steps of:

seating an L-shaped plug within said boss cavity until substantially co-planar with said complementary design of the inner surface, said L-shaped plug having a toe portion for moulding an inner face of the arcuate wall and the platform of said thin-walled boss, wherein the distance between the toe portion and the outer wall surface does not

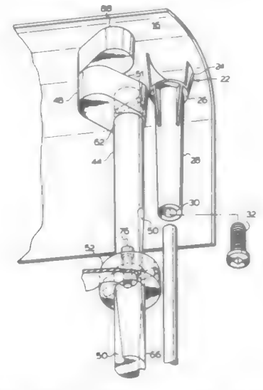
VOL 1167 ISS 3 OCT 18 1994 UMI

exceed 60% of the thickness of the moulded part where the thin-walled boss is to be moulded;

relatively moving said first and second mould together closing a mould cavity complementary to said moulded part and communicating with said boss cavity;

injecting molten material into said mould cavity and boss cavity;

waiting a predetermined amount of time to allow said molten material to harden forming said moulded part;



opening said mould cavity by relatively moving said first and second moulds apart;

extending said L-shaped plug from said boss cavity while urging the moulded part from said second mould, rotating said plug for rotating said toe portion from between the platform of said thin-walled boss and said inner surface of the moulded part, freeing said thin-walled boss from said L-shaped plug; and

removing said moulded part from said first and second mould.

5,356,591

TAILORING EXPANSION PROPERTIES OF BALLOONS FOR MEDICAL DEVICES

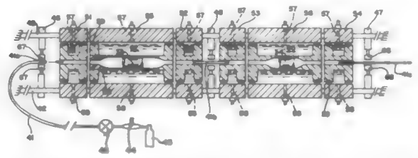
Leonard Pinchuk, Miami; Robert S. Shonk, Davie, and Thomas Trotta, Miami, all of Fla., assignors to Cordis Corporation, Miami Lakes, Fla.

Continuation of Ser. No. 838,143, Feb. 18, 1992, Pat. No. 5,236,659, which is a division of Ser. No. 452,713, Dec. 19, 1989, Pat. No. 5,108,415, which is a division of Ser. No. 384,723, Jul. 29, 1989, Pat. No. 4,906,244, which is a continuation-in-part of Ser. No. 253,069, Oct. 4, 1988, abandoned. This application May 14, 1993, Ser. No. 62,846

The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.

Int. Cl.[5] **B29C** *49/08, 49/64*

U.S. Cl. 264—573 **7 Claims**



1. A process for tailoring expansion properties of a balloon for a medical device, the process comprising the steps of:

longitudinally stretching a length of tubing having an initial diameter and made of material capable of being tailored by the steps hereof to provide drawn tubing;

radially expanding the thus drawn tubing to form a balloon member, said balloon member having a non-distended working diameter and having a hoop expansion ratio, which hoop expansion ratio is an approximate ratio of said non-distended working diameter to said initial diameter of the tubing; and

said radially expanding step including selecting said hoop expansion ratio such that the balloon member exhibits a tailored maximum inflated diameter to which the balloon stretches without bursting during dilatation, said hoop expansion ratio being selected in accordance with the fact that said maximum inflated diameter increases as said hoop expansion ratio decreases.

5,356,592

METHOD OF STERILIZING A PACKAGING MATERIAL BY MEANS OF A STERILIZING AGENT IN LIQUID FORM

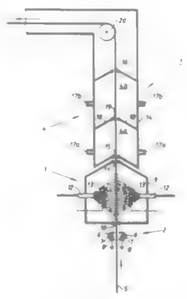
Gyula Balla, Malmö, and Bo Berlin, Staffanstorp, both of Sweden, assignors to Tetra Laval Holdings & Finance SA, Pully, Switzerland

Continuation of Ser. No. 782,304, Oct. 24, 1991, abandoned. This application Nov. 18, 1992, Ser. No. 978,077

Claims priority, application Sweden, Nov. 7, 1990, 9003543

Int. Cl.[5] **A61L** *2/18;* **B08B** *5/04, 6/00*

U.S. Cl. 422—28 **13 Claims**



1. A method of sterilizing a packaging material having two sides with a sterilizing agent in liquid form, comprising the steps of:

ionizing air on both sides of the packaging material;

discharging, to ground potential, both sides of the packaging material to eliminate electrostatic surface charges occurring thereon in the ionized air on both sides of the packaging material;

applying the agent to both sides of the discharged packaging material in an electrostatically charged spray to form a coherent, homogeneous film on the packaging material, the electrostatically charged spray being formed by directing jets of the agent from spraying means past high-tension electrodes placed between the spraying means and the packaging material; and

heating the packaging material to drive away the agent from the sterilized packaging material.

5,356,593

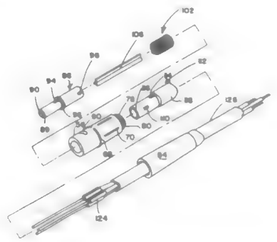
APPARATUS FOR MEASUREMENT OF BLOOD SATURATION AND HEMATOCRIT

Robert A. Heiberger, Boulder; Jon S. Ingebrigtsen, Lakewood, and James R. Price, Westminster, all of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Continuation of Ser. No. 656,804, Feb. 15, 1991, abandoned. This application Sep. 10, 1992, Ser. No. 943,281

Int. Cl.[5] **A61M** *1/14;* **A61B** *5/00;* **G01N** *21/84*

U.S. Cl. 422—45 **28 Claims**



5. A probe including at least one end, each said end comprising

a probe tip with a smooth face in which lie the extremities of three optical fibers and

an axially extending key adapted to ride on a ramp to, and mate with, a notch to prevent relative rotation between said tip and a side arm and maintain fiber optic orientation relative to said side arm,

said three optical fibers,

a collar, said collar including

a pair of camming slots circumferentially spaced 180° for cooperation with ears on said side arm, each of said slots including

a first portion angularly related to the axis of said collar to on rotation in a first direction drive said ears toward said collar and

a second portion angularly related to said axis to on said rotation drive said ears away from said collar,

a pair of longitundinally extending grooves for cooperation with said ears to allow their movement into said slots, and

spring support means, and

spring means biasing said tip away from said collar.

5,356,594

PORTABLE VOLATILE ORGANIC COMPOUND MONITORING SYSTEM

Edward M. Neel, Warwick, R.I.; John F. Dwinell, Foxboro, and Michael T. Nemergut, III, Westborough, both of Mass., assignors to Thermo Environmental Instruments Inc., Franklin, Mass.

Filed Mar. 3, 1992, Ser. No. 846,272

Int. Cl.[5] **G01N** *21/72*

U.S. Cl. 422—54 **14 Claims**

1. A portable volatile organic compound monitoring system for monitoring a device that includes a coded identification tag, said system comprising housing structure, tag reader structure in said housing structure, and analyzer and data storage unit, said unit comprising:

means defining an analysis chamber, a sample probe fixed to said housing structure and coupled via a conduit to said analysis chamber;

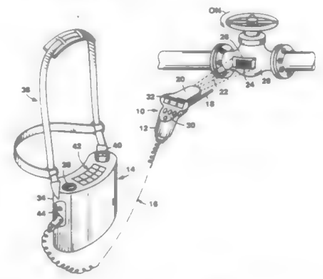
means for drawing a gas sample to be analyzed through said sample probe into said analysis chamber;

ionization apparatus coupled to said analysis chamber for ionizing a gas sample drawn into said analysis chamber through said sample probe from the device being monitored;

sensor apparatus responsive to ionized gas in said analysis chamber for producing an output signal as a function of an ionization characteristic of the ionized gas;

first storage means for storing a plurality of response factors as a function of various types of volatile organic compounds to be monitored;

second storage means for storing tag information read by said tag reader structure;



circuitry means responsive to tag information stored in said second storage means for selecting a response factor from said first storage means; and

microprocessor apparatus responsive to response factor information from said first storage means selected in response to said stored tag information from said second storage means and said sensor apparatus output signal for producing an output indicative of volatile organic compound concentration at the monitored device.

5,356,595

AUTOMATED SMEAR GENERATOR

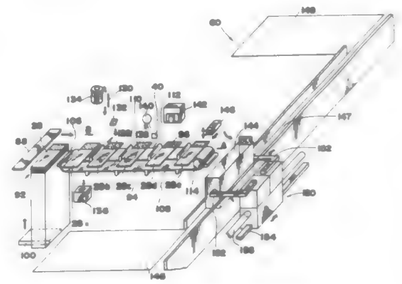
Shigeo Kanamori; Kensaku Aota, both of Hyogoken; Takashi Demachi, Kobe; Takahiro Inoue, and Kiyoyuki Tanaka, both of Hyogoken, all of Japan, assignors to TOA Medical Electronics Co., Ltd., Nakamachi, Japan

Division of Ser. No. 577,689, Sep. 4, 1990, Pat. No. 5,209,903. This application Nov. 12, 1992, Ser. No. 975,407

Claims priority, application Japan, Sep. 6, 1989, 1-230675; Oct. 6, 1989, 1-118146; Jun. 13, 1990, 2-62283; Jun. 13, 1990, 2-62284; Jun. 13, 1990, 2-62285; Jun. 13, 1990, 2-62286; Jun. 13, 1990, 2-62287

Int. Cl.[5] **G01N** *21/00*

U.S. Cl. 422—65 **5 Claims**



1. An automated smear generator comprising:

a conveyor;

means for delivering at least one slide to said conveyor;

means, at a first stopping position along said conveyor, for depositing a drop of blood on said at least one slide;

said means for depositing including means for varying a volume of said drop of blood;

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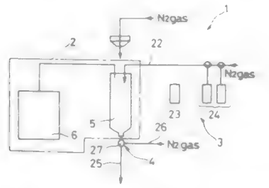
a smearing device located downstream of said means for depositing;
said smearing device including means for smearing said drop of blood to produce a smeared blood sample;
said means for smearing including a smearing glass;
said means for smearing further including means for varying an angle of said smearing glass relative to a surface of said at least one slide;
said means for smearing further including means for varying a rate of which said smearing glass is drawn across said at least one slide;
said means for depositing, said means for varying an angle, and said means for varying a rate cooperating to make said smeared blood sample uniform;
means for cleaning said smearing glass after said smeared blood sample is produced;
said means for cleaning being operative when said smearing glass is in a vertical position after smearing;
means for unloading said at least one slide from said conveyor;
said smearing device further including:
an arm having a rotary shaft;
a holder connected to said arm for holding said smearing glass;
means for moving said holder into a vertical position by rotating said arm;
said means for moving including a stationary member disposed adjacent to said smearing device; and
stationary member rotating said arm by abutting thereagainst when said smearing device moves toward said means for cleaning.

5,356,596

APPARATUS FOR ISOLATION OF SYNTHETIC PEPTIDE WITHOUT MECHANICAL LOSS

Kiyoshi Nokihara; Rintaro Yamamoto, and Shin Nakamura, all of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Feb. 24, 1993, Ser. No. 22,036
Claims priority, application Japan, Feb. 28, 1992, 4-043312
Int. Cl.[5] C08F *2/00;* **B01L** *3/00;* **C12M** *1/00*
U.S. Cl. 422—131 **5 Claims**



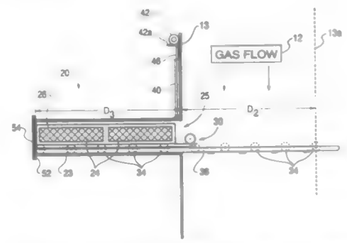
1. An apparatus for isolation of a synthetic peptide, for use with a multiple-channel solid phase peptide synthesizing device wherein elongated peptides synthesized in amino-acid coupling stages are linked to an insoluble particulate support matrix in a solid phase of synthetic peptide production, said apparatus comprising:
at least one reaction vessel, said reaction vessel comprising a reaction chamber having a supply opening with a flange at one end thereof and a drainage port at another end thereof, and a filter covering said drainage port which is impermeable to said support matrix, wherein said solid-phase peptide synthesis is performed in said reaction chamber;
means for opening and closing said drainage port operatively connected to said reaction vessel, said means for opening and closing said drainage port comprising a removable stopper;
means for supporting said reaction vessel by said flange operatively connected to said reaction vessel, said means for supporting said reaction vessel comprising a tube into which said reaction vessel is insertable and which has a support opening at one end;
means for supplying inert gas under regulatable pressure into said reaction chamber through said supply opening thereby forcing a liquid phase of a peptide product past said filter and through said drainage port, operatively connected to said reaction vessel, said means for supplying inert gas under regulatable pressure comprising a blow unit removably engageable with said flanged supply opening of said reaction vessel.

5,356,597

IN-DUCT FLUE GAS CONDITIONING SYSTEM

Robert A. Wright, Behner Crossing, and George R. Dennis, Indianapolis, both of Ind., assignors to Wilhelm Environmental Technologies, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 864,847, Apr. 17, 1992, Pat. No. 5,288,303, and a continuation-in-part of Ser. No. 882,835, May 14, 1992, Pat. No. 5,288,309, and a continuation-in-part of Ser. No. 907,159, Jul. 1, 1992, Pat. No. 5,240,470. This application Jul. 30, 1992, Ser. No. 922,576
The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.
Int. Cl.[5] B01D *50/00, 53/36*
U.S. Cl. 422—169 **25 Claims**



17. An SO_2/SO_3 converter system for flue gas conditioning, comprising:
a flue gas duct for receiving a flue gas stream
a foraminous ceramic substrate, said foraminous ceramic substrate forming a plurality of open and generally parallel flow paths for flue gas, said foraminous ceramic substrate having bonded to the surfaces forming the flue gas flow paths a SO_2/SO_3 catalyst composition providing a controlled conversion of SO_2/SO_3 at a temperature greater than about 750° F.; and
means for moving said substrate into and out of said flue gas stream in response to means for determining a need for SO_2/SO_3 conversion.

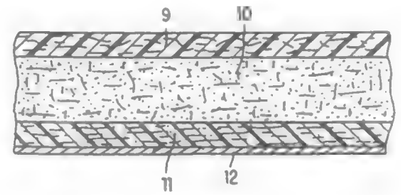
5,356,598

CATALYTIC EXHAUST UNIT FOR AN AUTOMOBILE VEHICLE

Mohamed Boubehira, 205 Avenue Franklin Roosevelt, 69500 Bron; Omar Chouchou, 10 Chemin de la Perivaure, 42700 Firminy; Alain Bourgin, 19 rue Gauthier-dumont, 42100 Saint-Etienne, and Nadir Abdechakour, Le Forum, 42000 Saint-Etienne, all of France

Continuation-in-part of Ser. No. 475,323, Feb. 5, 1990, abandoned. This application Feb. 28, 1992, Ser. No. 842,978
Claims priority, application France, Feb. 16, 1989, 89 02370
Int. Cl.[5] B01D *53/36*
U.S. Cl. 422—180 **15 Claims**

1. An exhaust unit for an automobile vehicle intended for the chemical treatment of a gaseous mixture in contact with a catalytic material, comprising a body with an entry and an exit for the flow of said mixture, the interior of the body comprising at least one compartment between the entry and the exit of the unit, a treatment receptacle being arranged in one of said at least one compartment, the receptacle being provided with an entry for the gaseous mixture and with an exit for a treated mixture, and a mass of catalytic material arranged in the receptacle and permeable to the passage of the gaseous mixture between the entry and the exit from the receptacle, the catalytic material comprising partially sintered metals, with the



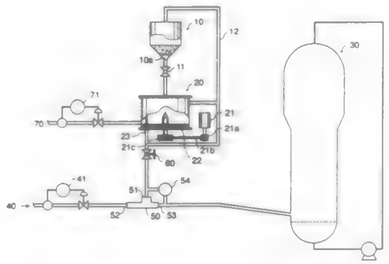
exclusion of metallic oxide, the mass of the catalytic material being arranged in a succession of at least two catalyst beds from the entry to the exit of the receptacle, wherein the first bed consists of pure copper and each of the other beds comprises at least one layer of one metal in a pure state, selected from the group consisting of copper, iron, nickel, cobalt, cadmium, and chromium and at least one layer comprising a mixture of two said metals.

5,356,599

CONTINUOUS POWDER CATALYST SUPPLY APPARATUS AND CATALYST SUPPLY SYSTEM

Yasuhiro Miura, Chiba; Kozo Miyazaki, Sodegaura; Yoshio Iino, Ichihara; Mitsuru Tamura, Sodegaura; Yukio Fukada, Ichihara, and Hiroshi Akimoto, Numazu, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka and Akatake Engineering Co., Ltd., Shizuoka, both of Japan

Filed Feb. 12, 1993, Ser. No. 17,289
Claims priority, application Japan, Feb. 14, 1992, 4-028308
Int. Cl.[5] B01J *8/08;* **B67D** *5/00*
U.S. Cl. 422—219 **19 Claims**



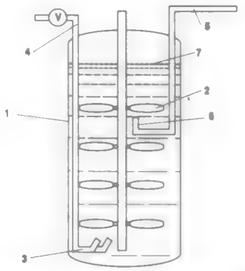
1. A powder catalyst supply apparatus comprising:
storage means having an inlet port for receiving a catalyst, and a supply port for supplying the catalyst from said storage means;
supply means, arranged in said storage means, for substantially continuously supplying the catalyst received by said storage means to the supply port; and
forcible discharge means for forcibly discharging the catalyst, supplied from said supply means, through the supply port with a pressurized gas;
said forcible discharge means comprising a pressurized gas supply chamber, arranged within said storage means, for applying a pressure to the supply port by using the pressurized gas.

5,356,600

OXYGEN ENRICHMENT METHOD AND SYSTEM

Kazuo Kiyonaga, Honolulu, Hi.; Lawrence M. Litz, Pleasantville, and Thomas J. Bergman, North Tarrytown, both of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Sep. 24, 1990, Ser. No. 586,945
Int. Cl.[5] B01F *1/00;* **B01J** *8/00;* **C12M** *1/04, 1/06*
U.S. Cl. 422—234 **5 Claims**



1. A method for enhancing the dissolution and/or reaction of oxygen in liquids comprising:
(a) maintaining a body of liquid in a mixing vessel;
(b) injecting a feed air stream into said body of liquid from an air injection point as air bubbles for dissolution and/or reaction of oxygen therein in said liquid;
(c) passing a portion of the liquid in the mixing vessel through a gas-liquid nozzle;
(d) passing oxygen or an oxygen-rich gas through said gas-liquid nozzle to provide a fine dispersion of oxygen bubbles in said portion of the liquid passed through the gas-liquid nozzle;
(e) separately injecting the fine dispersion of oxygen bubbles in said portion of liquid passed through the gas-liquid nozzle into the mixing vessel from an oxygen injection point positioned apart from the air injection point so as to minimize mixing of additional oxygen bubbles with the coexisting air bubbles injected from said air injection point;
whereby the oxygen content of the liquid is enhanced over that obtained if the same amount of oxygen were combined with the feed air stream being injected into said body of liquid, thereby enhancing the dissolved oxygen concentration in the liquid and/or the oxygen utilization efficiency of the dissolution and/or reaction operation.

5,356,601

APPARATUS AND PROCESS FOR EXTRACTING METAL VALUES FROM FOUNDRY SANDS

Jaime V. Torres, Pachuca, Mexico, assignor to Instituto Nacional de Investigaciones Nucleares, Mexico

Filed May 26, 1992, Ser. No. 888,970
Int. Cl.[5] C01G *55/00, 3/00*
U.S. Cl. 423—1 **12 Claims**

1. A process for extraction of metal values from foundry sands by means of an apparatus comprising a thermostated column being in flow communication with an air supply source and connected to a heating system adapted to maintain said column at a predetermined temperature; said process comprising the steps of:
a) heating the column to a temperature of from approximately 40° to 60° C.;
b) supplying the column with air in the approximate amount of 800 to 2300 cc/1/min for each liter of pulp to be processed;
c) adding from 4 to 15 g. of a compound of the family of the bisulphites to the column per liter of distilled water;

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d) adding from 10 to 40 g. of a mineral acid to the column per liter of distilled water;
e) introducing finely ground foundry sands to the column;
f) adding from 0.3 to 1.5 of a cationic surfactant to the column for adjusting the pH of the solution obtained by combining the components added in the preceding steps between a range of 1–3;
g) processing the solution in the column for a period of from 8–24 hours;
h) extracting the solution from the column and heating same to a temperature of from 50°–70° C. for about 20 minutes; and
i) filtering the solution mentioned in the preceding step in order to obtain the metals in solution.

5,356,602

PROCESS FOR PREPARING ALUMINUM SULFATE

Mitsuo Tanjo, Sendai; Toshio Ashitani, Niihama; Tetsuo Fujita, Niihama; Katsuhiro Sakata, Niihama, and Mikitoshi Nakada, Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Dec. 22, 1992, Ser. No. 994,645
Claims priority, application Japan, Dec. 25, 1991, 3-342573; Jun. 30, 1992, 4-172459
Int. Cl.[5] C01F *7/74;* C01B *17/90*
U.S. Cl. 423—128 8 Claims

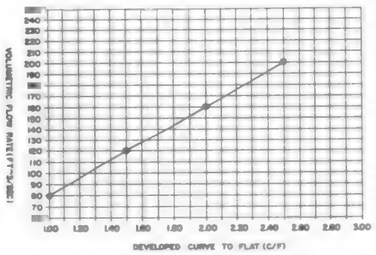
1. A process for preparing aluminum sulfate from sulfuric acid having more than 0.1% by weight of hydrogen peroxide, comprising the steps of (a) adjusting the concentration of hydrogen peroxide in said sulfuric acid to 1.1% by weight or less by a step selected from the group consisting of reducing hydrogen peroxide in said sulfuric acid by the addition of sodium sulfite, sodium thiosulfate, sulfurous acid, or hydrazine, decomposing hydrogen peroxide in said sulfuric acid in the presence of a catalyst, and oxidatively decomposing hydrogen peroxide in said sulfuric acid with an oxidizing agent, and (b) contacting said sulfuric acid having an adjusted concentration with an alumina-containing composition selected from the group consisting of aluminum hydroxide, bauxite, and alumstone.

5,356,603

METHOD FOR THE PRODUCTION OF HYDROCYANIC ACID USING A CORRUGATED CATALYST

William A. Hochella, Coatesville, and Steven A. Heffernen, Ambler, both of Pa., assignors to Johnson Matthey Inc., Valley Forge, Pa.

Continuation of Ser. No. 716,540, Jun. 17, 1991, abandoned. This application Jan. 26, 1993, Ser. No. 9,348
The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.
Int. Cl.[5] C01C *3/14*
U.S. Cl. 423—235 21 Claims



1. The method for catalytic production of hydrocyanic acid which comprises using as catalyst a corrugated element fabricated from metal consisting essentially of a metal selected from the group consisting of platinum, rhodium, palladium and alloys of mixtures thereof, said element being a plurality of sheets selected from the group consisting of a fibrous sheet, a knitted gauze, a woven gauze, and combinations thereof, said sheets being in contact with each other, said element being configured to have a curve to flat ratio C/F above 1 and said element further configured so that the initial product of the formula: curve to flat ratio (C/F) of the corrugations multiplied by mesh count per inch (N) and wire diameter in inches (d_w) for said element is greater than at least about 0.08 but less than about 10.

5,356,604

PROCESS FOR REMOVING HALOGENATED ORGANIC COMPOUNDS FROM WASTE GASES

Wedigo von Wedel, Friedrichsdorf; Edgar Bilger, Hasselroth; Ernst-Robert Barenschee, Hanau, and John Tarabocchia, Friedrichsdorf, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Nov. 17, 1992, Ser. No. 976,341
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1991, 4138876; Mar. 27, 1992, 4210055
Int. Cl.[5] B01J *8/00*
U.S. Cl. 423—245.2 9 Claims

1. A process for removing halogenated organic compounds selected from the group consisting of polychlorinated dibenzodioxins and polychlorinated dibenzofurans from waste gases containing said halogenated organic compounds which comprises contacting said waste gases with Caro's acid or an aqueous solution of its salt.

5,356,605

RECOVERY OF UO_2/PU O_2 IN IFR ELECTROREFINING PROCESS

Zygmunt Tomczuk, Lockport, and William E. Miller, Naperville, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 28, 1992, Ser. No. 967,652
Int. Cl.[5] C01G *56/00, 43/08*
U.S. Cl. 423—251 19 Claims

15. A process for converting PuO_2 and UO_2 values present in an electrorefiner to the chlorides, comprising contacting the PuO_2 and UO_2 with Li metal in the presence of an alkali metal chloride salt substantially free of rare earth and actinide chlorides for a time and at a temperature sufficient to convert the UO_2 and PuO_2 to metals while converting Li metal to Li_2O, providing an oxygen electrode for transporting O_2 out of the electrorefiner and a cathode, applying an emf to the electrorefiner electrodes sufficient to cause the Li_2O to decompose to O_2 and Li metal but insufficient to decompose the alkali metal chloride salt to remove O_2 from the electrorefiner environment leaving U and Pu and Li metal and converting the U and Pu to chlorides by reaction with $CdCl_2$.

5,356,606

PEROXIDIC COMPOSITIONS

Graham R. Horne, Rawtenstall, England, and Nicholas A. Troughton, Brussels, Belgium, assignors to Solvay Interox Limited, Cheshire, England

PCT No. PCT/GB91/01589, § 371 Date Apr. 27, 1993, § 102(e) Date Apr. 27, 1993, PCT Pub. No. WO92/06036, PCT Pub. Date Apr. 16, 1992
PCT Filed Sep. 17, 1991, Ser. No. 50,159
Claims priority, application United Kingdom, Oct. 2, 1990, 9021393.5
Int. Cl.[5] C01B *15/12, 35/12*
U.S. Cl. 423—265 22 Claims

1. A process for enhancing the physical stability of an aqueous peroxidic solution of an alkali metal oxyboron compound containing alkali metal to boron in a substoichiometric mole ratio which is characterised by introducing into the solution an effective stabilizing amount of cyclohexane-1,2-diaminotetra(methylene phosphonic acid) or a water soluble salt thereof.

12. A composition having improved physical stability comprising an aqueous peroxidic solution of an alkali metal oxyboron compound containing alkali metal to boron in a substoichiometric mole ratio into which there has been introduced an effective stabilizing amount of cyclohexane-1,2-diamino-tetra(methylene phosphonic acid) or a water soluble salt thereof.

5,356,607

PROCESS FOR THE HYDROTHERMAL PRODUCTION OF CRYSTALLINE SODIUM DISILICATE

Guenther Just, Hilden, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jun. 2, 1992, Ser. No. 852,249
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1989, 3939919
Int. Cl.[5] C01B *33/32*
U.S. Cl. 423—334 20 Claims

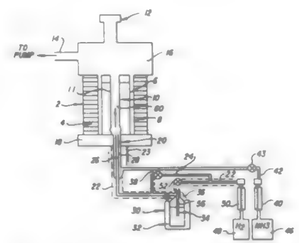
1. A process for the hydrothermal preparation of solid, crystalline, sodium disilicate with a purity in excess of 95% in the β-form, with a molar ratio of $Na_2O:SiO_2$ of 1:2, wherein:
(A) quartz sand, caustic soda solution, and, optionally, an aqueous solution of amorphous sodium disilicate, in a molar ratio of $Na_2O:SiO_2$ that corresponds to the composition of the desired final product and with a total solids concentration of from 50 to 75% by weight, are heated to a reaction temperature of at least 235° C. in a pressure vessel; and, optionally,
(B) the concentration of the reaction mixture formed in step (A) is increased by removing water from the reaction mixture; and, if step (B) has been performed,
(C) at least part of the amount of water removed in step (B) is added to the mixture formed in step (B) during or immediately after it has been cooled to from 90° C. to 130° C.; and
(D) the obtained crystalline sodium disilicate is recovered.

5,356,608

PREPARATION OF A HIGH PURITY ALUMINUM NITRIDE ANTENNA WINDOW BY ORGANOMETALLIC PYROLYSIS

Joseph J. Gebhardt, Malvern, Pa., assignor to Martin Marietta Corporation, King of Prussia, Pa.

Division of Ser. No. 114,691, Oct. 29, 1987. This application Mar. 16, 1989, Ser. No. 336,453
Int. Cl.[5] C01B *21/072*
U.S. Cl. 423—412 9 Claims



1. A method of producing a high temperature aluminum nitride antenna window comprising
a) mounting a substrate shaped into a desired form of the antenna window in a reaction chamber;
b) removing atmospheric air and moisture from the chamber and heating the substrate at a temperature in the range of about 500° C. to about 800° C.;
c) conducting a heated, gaseous aluminum-containing organic compound into the reaction chamber, the gaseous aluminum-containing organic compound being derived from the aluminum-containing organic compound in the liquid state, and introducing ammonia gas into the reaction zone, the ammonia gas and gaseous aluminum-containing organic compound being maintained in separation prior to the reaction zone;
d) mixing the heated gaseous aluminum-containing organic compound and the ammonia gas in the reaction zone while maintaining the temperature of the substrate at a temperature of about 500° C. to about 800° C., whereby high purity aluminum nitride is produced;
e) collecting the high purity aluminum nitride on the substrate by deposition;
f) continuing to feed the heated, gaseous aluminum-containing organic compound and the ammonia gas into the reaction zone until the desired amount of aluminum nitride is deposited on the substrate;
g) cooling the substrate and removing the substrate from the reaction chamber; and
h) removing the aluminum nitride layer deposited on the substrate from the substrate to provide the antenna window.

5,356,609

METHOD FOR PREPARING BASIC ALUMINUM HALIDES BY REACTING ALUMINUM HALIDE WITH ALUMINUM

Rocco Giovanniello, Port Jervis, N.Y., assignor to Westwood Chemical Corp., Middletown, N.Y.

Continuation-in-part of Ser. No. 81,638, Aug. 3, 1987. Pat. No. 4,871,525, which is a continuation-in-part of Ser. No. 922,753, Oct. 24, 1986, abandoned, which is a continuation of Ser. No. 817,047, Jan. 8, 1986, abandoned. This application Jul. 6, 1988, Ser. No. 215,639
Int. Cl.[5] A61K *7/38;* C01F *7/56*
U.S. Cl. 423—462 36 Claims

1. A process for preparing a basic aluminum halide having the empirical formula:

$$Al_2(OH)_{6-y}X_y{\cdot}nH_2O$$

where n has a numerical value of about 0.8 to about 4, X is chlorine, bromine or iodine and y has a numerical value of about 0.7 to about 3, which comprises:
(a) reacting aluminum metal with an aluminum halide hexahydrate having the formula $AlX_3{\cdot}6H_2O$ wherein X is chlorine, bromine or iodine by heating in water at a temperature of about 50° C. to about 100° C., the concentration of the product in the solution being about 8 to about 25% by weight of the solution; and
(b) recovering the basic aluminum compound from the hot solution by spray drying;
whereby the polymer distribution of the product formed as characterized by size exclusion chromatography is:
(c) 100% of the polymers are found in Bands II , III and IV, with no part of the product found in Band I; and
(d) Band III contains at least 25% of the polymer.

5,356,610

METHOD FOR REMOVING IMPURITIES FROM AN ALKALI METAL CHLORATE PROCESS

Stina Eriksson, Stöde, and Ulla-Kari Holmström, Sundsvall, both of Sweden, assignors to Eka Nobel AB, Bohus, Sweden

Filed May 6, 1993, Ser. No. 57,558
Claims priority, application Sweden, Mar. 9, 1993, 9300780-5
Int. Cl.[5] C01B *11/14*
U.S. Cl. 423—475 15 Claims

1. A method for removing calcium ions and silicon compounds from a liquor in an alkali metal chlorate process, comprising the sequential steps of (a) adding carbonate ions to the liquor for precipitating calcium carbonate; (b) adding an iron-containing compound to the liquor from step (a) for forming

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and precipitating a complex of iron ions and a silicon compound; and (c) thereafter co-separating the complex of iron ions precipitate, the silicon compound precipitate, and the calcium carbonate precipitate and thereby forming a purified liquor.

5,356,611

METHOD OF RECOVERING IODINE

Ralf Herkelmann; Werner Rudolph, both of Hanover, and Dirk Seffer, Neustadt, all of Fed. Rep. of Germany, assignors to Solvay Fluor und Derivate GmbH, Hanover, Fed. Rep. of Germany

Filed Nov. 2, 1993, Ser. No. 144,515

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1992, 4238915

Int. Cl.[5] C01B *7/14*

U.S. Cl. 423—501 **9 Claims**

1. A method for recovering iodine from an aqueous solution containing iodine, iodide or mixtures of iodine and iodide, said method comprising the steps of:

if iodine is present, reducing the iodine to iodide;

separating the iodide from said aqueous solution by ion exchange absorption with an iodide-selective anion exchanger;

eluting iodide from the anion exchanger by treating the ion exchanger with lye to obtain an iodide-containing eluate solution;

treating the iodide-containing eluate solution with a cation exchanger until the solution has a pH of less than 4;

oxidizing the iodide in the treated solution with H_2O_2 to form iodine, and

isolating the resulting iodine.

5,356,612

ANTIPERSPIRANT AND METHOD OF MAKING SAME

Maria A. Curtin, South Easton, and Alan M. Phipps, Framingham, both of Mass., assignors to The Gillette Company, Boston, Mass.

Division of Ser. No. 594,349, Oct. 3, 1990, which is a continuation-in-part of Ser. No. 336,675, Apr. 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 181,564, Apr. 14, 1988, abandoned. This application Jul. 6, 1993, Ser. No. 85,278

Int. Cl.[5] A61K *7/34, 7/38, 9/12;* **C01G** *9/02*

U.S. Cl. 423—623 **16 Claims**

1. A method of increasing the antiperspirant efficacy of basic aluminum chloride which comprises mixing said basic aluminum chloride with monosilicic acid in aqueous solution, the amount of said basic aluminum chloride being from 5% to 20% by weight and the amount of said monosilicic acid being from 0.03% to 8% by weight based on the weight of said mixed solution.

5,356,613

X-RAY CONTRAST AGENTS, COMPOSITIONS AND METHODS

Youlin Lin, Chesterfield; Rebecca A. Wallace, Manchester, and David H. White, Florissant, all of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

PCT No. PCT/US91/01827, § 371 Date May 8, 1992, § 102(e) Date May 8, 1992

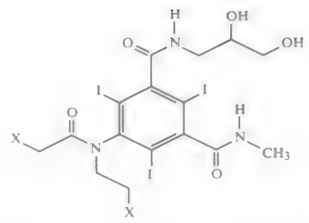
PCT Filed Mar. 18, 1991, Ser. No. 829,026

The portion of the term of this patent subsequent to May 28, 2008, has been disclaimed.

Int. Cl.[5] A61K *49/04;* **C07C** *233/05*

U.S. Cl. 424—5 **12 Claims**

1. A compound of the formula:



wherein the X groups may be the same or different selected from a group consisting of hydroxy and alkoxy.

5,356,614

PROCESS OF PREPARING MICROPARTICULATE COLLAGEN COLLAGEN-BASED PRODUCTS PRODUCED THEREBY AND METHOD OF APPLYING SAME

Vinay K. Sharma, Long Valley, N.J., assignor to Mixro-Collagen Pharmaceutics, Ltd., Brick, N.J.

Continuation-in-part of Ser. No. 835,557, Feb. 14, 1992, which is a division of Ser. No. 405,520, Sep. 11, 1989. This application Dec. 2, 1992, Ser. No. 985,802

Int. Cl.[5] A61L *15/00*

U.S. Cl. 424—45 **7 Claims**

1. A process for particulating collagen, which comprises:

a) introducing collagen with an inert media into a ball mixing zone;

b) ball milling for a time sufficient to form microparticulate collagen having a particle size of from 0.1 to 5.0 μm; and

c) recovering said microparticulate collagen.

5,356,615

ANTIPLAQUE ORAL COMPOSITIONS

Abdul Gaffar, Princeton, N.J., assignor to Colgate Palmolive Company, New York, N.Y.

Filed Jan. 30, 1991, Ser. No. 648,504

Int. Cl.[5] A61K *7/16, 7/26*

U.S. Cl. 424—49 **16 Claims**

1. An antiplaque oral composition which comprises an orally acceptable vehicle or base for such composition, an effective antiplaque proportion of triclosan and a phenolic flavor for the oral composition in a proportion which significantly increases the antiplaque action of the triclosan on the teeth of a user of the oral composition, wherein the composition is a toothpaste, gel dentifrice, tooth powder, mouthrinse, mouthwash, tooth hardener, anticalculus composition, gum or lozenge, the phenolic flavor includes each of eucalyptol, thymol, methyl salicylate and menthol, each in amount of at least about 5% by weight of the phenolic flavor, the proportion of triclosan to such phenolic flavor therein is in the range of about 5:1–1:100, and the percentages of triclosan and such phenolic flavor in the composition are in the ranges of about 0.01 to 1% and about 0.02 to 2%, respectively.

5,356,616

NAIL LACQUER PRIMARY FILM FORMING RESIN

Milan F. Sojka, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 26,706, Mar. 5, 1993, Pat. No. 5,302,379. This application Jan. 7, 1994, Ser. No. 178,982

Int. Cl.[5] A61K *7/04*

U.S. Cl. 424—61 **6 Claims**

1. In a nail lacquer which includes a film forming resin, a plasticizer, and a solvent, the improvement comprising utilizing as the film forming resin a graft copolymer having a main backbone chain of acrylic ester units and methacrylic ester units, the main backbone chain having grafted thereto pendant trialkoxysilyl groups and pendant vinylbenzyl chloride groups, the trialkoxysilyl grafts being grafted to only acrylic ester units and the vinylbenzyl chloride grafts being grafted to other of the remaining unsubstituted acrylic ester units.

5,356,617

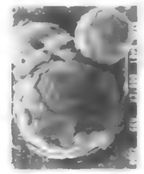
PIGMENT-MATERIAL-MICROSPHERE COMPLEXES AND THEIR PRODUCTION

David S. Schlossman, W. Orange, N.J., assignor to Kobd Products, Inc., South Plainfield, N.J.

Continuation-in-part of Ser. No. 523,315, May 14, 1990, Pat. No. 5,314,683. This application Dec. 7, 1992, Ser. No. 986,260

Int. Cl.[5] A61K *7/021, 7/035*

U.S. Cl. 424—63 **20 Claims**



1. An improved cosmetic compound consisting essentially of a pigment material and microsphere complex of bulk density less than said pigment material's bulk density, said microsphere complex comprising:

a) microsphere-material particles having an average particle size less than 1000 microns;

b) a plurality of organic or inorganic pigment particles covalently bonded to each said microsphere particle; and

c) a coupling agent residue extending between said pigment particles and each said microsphere particle whereby said pigment particles are covalently bonded to said microsphere particles;

one of said microsphere or said pigment materials being an organic material and the other being inorganic, and said coupling agent residue being derived from a coupling agent reactive with said microsphere particles and reactive with said pigment material particles.

5,356,618

PSYLLIUM DRINK MIX COMPOSITIONS

Bruce P. Daggy, and Lee A. Hord, both of Mason, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 14, 1993, Ser. No. 62,369

Int. Cl.[5] A61K *35/78*

U.S. Cl. 424—78.01 **20 Claims**

1. A psyllium husk-containing drink mix composition comprising:

(a) from about 10% to about 99% psyllium husk;

(b) from about 0.1% to about 75% of calcium citrate malate; and

(c) from about 0% to about 90% carrier material; and wherein further said composition is in a form mixable with a liquid to form a suspension of the psyllium husk.

5,356,619

Patent Not Issued For This Number

5,356,620

PHARMACEUTICAL COMPOSITIONS CONTAINING N-(3,4-DIMETHOXYCINNAMOYL) ANTHRANILIC ACID

Tokihiko Yamamoto, Nagoya; Taibei Shibazaki, Toyoake; Yukiyoshi Ajisawa, Okaya; Ryoji Yamamoto, and Yukihiko Kinoshita, both of Matsumoto, all of Japan, assignors to Kissei Pharmaceutical Co. Ltd. and Nitten Ophthalmic Research Institute Company, both of Japan

Continuation of Ser. No. 432,911, Nov. 7, 1989, abandoned. This application Apr. 3, 1991, Ser. No. 680,786

Claims priority, application Japan, Apr. 4, 1989, 1-085521

Int. Cl.[5] A61K *31/16, 31/185*

U.S. Cl. 424—78.04 **3 Claims**

1. A pharmaceutical composition for the topical treatment of eye or nose allergic conjunctivitis or allergic rhinitis which consists essentially of an aqueous solution containing (a) 0.1–2 weight percent, based on the composition volume, of N-(3,4-dimethoxycinnamoyl)anthranilic acid or a pharmaceutically acceptable salt thereof; (b) about 4–8 weight units of polyvinylpyrrolidone per weight unit of the N-(3,4-dimethoxycinnamoyl)anthranilic acid component; (c) about 0.7–3 weight units of a basic compound per weight unit of the N-(3,4-dimethoxycinnamoyl)anthranilic acid component; (d) about 0.025–0.1 weight percent, based on the composition volume, of a surface active agent; and (e) a preservative quantity of benzalkonium chloride or benzethonium chloride; wherein the aqueous solution has a buffered pH in the range of about 6.5–8.5, and is precipitate-free.

5,356,621

METHOD OF ATTRACTING FLIES

Yuichiro Tabaru, and Akio Saito, both of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Filed Feb. 10, 1993, Ser. No. 971,983

Claims priority, application Japan, Aug. 30, 1990, 2-229327

Int. Cl.[5] A01N *25/02, 57/16, 37/00;* **A61K** *35/78*

U.S. Cl. 424—84 **17 Claims**

1. A method of attracting flies of the Muscidae family or the Muscinae family comprising providing in a locus where said flies exist a fly attractant composition extracted from a bamboo with an extractive solvent selected from the group consisting of water and C_1–C_4 alcohol.

5,356,622

FLEA MIDGUT-SUPERNATANT VACCINES

Andrew W. Heath, Menlo Park; Miles Yamanaka, Redwood City; Ann Arfsten, Fremont, and Beverly Dale, Los Altos, all of Calif., assignors to Paravax, Inc., Fort Collins, Colo.

Filed Dec. 13, 1991, Ser. No. 806,482

Int. Cl.[5] A61K *39/35*

U.S. Cl. 424—265.1 **4 Claims**

1. A composition for protection of a mammalian subject against infestation by fleas, which composition consists essentially of an amount of the soluble components of fed or unfed flea midgut effective to reduce said infestation wherein said composition is prepared by a method which comprises

homogenizing and then sonicating fed or unfed flea midgut to obtain a homogenate/sonicate;

separating said homogenate/sonicate into a supernatant fraction consisting essentially of the soluble components of said homogenate/sonicate and a fraction containing membranes and fragments thereof by centrifuging said homogenate/sonicate at at least about 100,000×g to obtain said supernatant and a pellet; and

recovering the supernatant containing said soluble components.

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5,356,623

BACILLUS THURINGIENSIS CRYET1 TOXIN GENE AND PROTEIN TOXIC TO LEPIDOPTERAN INSECTS

Michael A. von Tersch, and José M. González, both of Ewing Township, N.J., assignors to Ecogen Inc., Langhorne, Pa.

Filed Mar. 17, 1993, Ser. No. 32,364
Int. Cl.[5] C12N *1/21, 1/22, 15/32;* A01N *63/00*
U.S. Cl. 424—93.2 12 Claims

10. A method of controlling susceptible lepidopteran insects comprising applying to a host plant for such insects an insect-controlling effective amount of an insecticidal protein identical to a protein produced by a *Bacillus thuringiensis* bacterium deposited with the NRRL having accession number NRRL B-18972 and being designated as strain EG7094, having activity against Plutella xylostella insects.

5,356,624

BIOLOGICAL TREATMENT FOR CONTROLLING WOOD DETERIORATING FUNGI

Suki C. Croan, and Terry L. Highley, both of Madison, Wis., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 23, 1993, Ser. No. 51,716
Int. Cl.[5] A01N *63/00*
U.S. Cl. 424—93.43 1 Claim

1. A method for retarding growth of wood-degrading fungi on wood comprising treating said wood with an effective amount of viable, nonsporulating *Streptomyces rimosus* SC-36 NRRL 21063.

5,356,625

MICROGRANULAR PREPARATION USEFUL IN THE DELIVERY OF BIOLOGICALLY ACTIVE MATERIALS TO THE INTESTINAL REGIONS OF ANIMALS

Thomas K. S. Ying, Rowville, Australia, assignor to Enzacor Properties Limited, St. Helier, Channel Islands

Filed Feb. 27, 1989, Ser. No. 316,354
Claims priority, application Australia, Aug. 28, 1986, PH 7715; PCT Int'l Appl., Aug. 17, 1987, PCT/AU87/00270
Int. Cl.[5] A61K *37/54, 37/48, 9/50, 33/00*
U.S. Cl. 424—94.1 29 Claims

1. A microgranular preparation having a core comprising one or more biologically active materials, the core being concentrically encapsulated within a water-soluble, organic solvent-insoluble film consisting essentially of gelatin, and an enteric coating comprising a polymer which is insoluble in acid but soluble in alkali or intestinal juice.

5,356,626

SYNTHETIC FECAL FLUID COMPOUND

Richard S. Yeo, Dunwoody, and Debra N. Welchel, Alpharetta, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 806,063, Dec. 11, 1991, abandoned. This application Jun. 1, 1993, Ser. No. 69,661
Int. Cl.[5] A61K *9/08, 31/79, 35/78*
U.S. Cl. 424—195.1 2 Claims

1. A synthetic fecal fluid composition consisting of:
approximately 80 percent by total weight water, approximately 15 percent by total weight polyvinylpyrrolidone and approximately 5 percent by total weight psyllium hydrophilic muccilloid.

5,356,627

WATERPROOF COSMETIC COMPOSITIONS

Kathleen Da Cunha, Stamford, Conn.; Lisa Deaninger, Amityville, N.Y.; Katherine Stevens, Islip Terrace, N.Y., and Rebecca Pasciuta, North Babylon, N.Y., assignors to Estee Lauder, Inc., New York, N.Y.

Filed Feb. 1, 1993, Ser. No. 12,089
Int. Cl.[5] A61K *7/02, 7/032*
U.S. Cl. 424—401 21 Claims

1. A waterproof cosmetic composition useful as a mascara, comprising a dimethicone-silica copolymer, a volatile organic solvent, and at least one cosmetically acceptable wax, in a cosmetic emulsion.

5,356,628

HYDROPHOBIC EXTRACTED NEEM OIL-A NOVEL FUNGICIDE

James C. Locke, Silver Spring; James F. Walter, Ashton, and Hiram G. Larew, III, Hyattsville, all of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y. and The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation of Ser. No. 959,835, Oct. 13, 1992, abandoned, which is a continuation of Ser. No. 947,867, Sep. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 456,762, Dec. 26, 1989, abandoned. This application Dec. 2, 1993, Ser. No. 161,524
Int. Cl.[5] A01N *25/00*
U.S. Cl. 424—405 11 Claims

1. A fungicide comprising a fungicidally effective amount of a non-polar, hydrophobic solvent extracted neem oil which has less than 1 weight percent of azadirachtin, and which has been treated to remove the non-polar solvent, wherein the non-polar, hydrophobic solvent has neem oil solubility and substantially no azadirachtin and water solubility.

5,356,629

COMPOSITION FOR EFFECTING BONE REPAIR

Thomas W. Sander, Newtown, and Donald S. Kaplan, Weston, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Jul. 12, 1991, Ser. No. 728,748
Int. Cl.[5] A61F *2/02, 2/28*
U.S. Cl. 424—422 12 Claims

1. A composition suitable to effect bone repair comprising from about 64 to about 94% by weight of biocompatible particles dispersed in from about 6 to about 36% by weight of a matrix selected from the group consisting of cellulose ether, collagen, hyaluronic acid, pharmaceutically acceptable salt of hyaluronic acid, ester of hyaluronic acid and pharmaceutically acceptable salt of hyaluronic acid ester and mixtures thereof to provide a measured stiffness of about 0.01 lb/in to about 10 lb/in when wetted with liquid medium,
wherein said biocompatible particles are formed from polymethylmethacrylate coated with polyhydroxyethylmethacrylate,
whereby said composition, when wetted, forms a moldable semi-solid mass which can be suitably worked for implantation into bone and will remain in moldable semi-solid form as long as not permitted to dry out.

5,356,630

DELIVERY SYSTEM FOR CONTROLLED RELEASE OF BIOACTIVE FACTORS

Cato T. Laurencin, Somerville, Mass.; Paul A. Lucas, Macon, Ga.; Glenn T. Syftestad, Sacramento, Calif.; Abraham Domb, Baltimore, Md.; Julianne Glowacki, Jamaica Plan, and Robert S. Langer, Newton, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 742,264, Aug. 7, 1991, abandoned, which is a continuation of Ser. No. 313,953, Feb. 22, 1989, abandoned. This application May 7, 1993, Ser. No. 59,516
Int. Cl.[5] A61F *2/28;* A61K *37/12;* C07K *15/20, 17/08*
U.S. Cl. 424—426 5 Claims

1. A method of selectively delivering a bioactive substance for inducing formation of cartilage and bone in an animal or wound healing to a specific physical site in an animal comprising implanting in the animal at the selected site a delivery composition comprising a shaped matrix sized and adapted for administration of the bioactive substance to an animal, wherein
a. the matrix is formed of from about 10 percent to about 90 percent by weight of a surface eroding polyanhydride or polyorthoester polymer; and
b. the matrix contains from about 90 percent to about 10 percent by weight of a bioactive substance selected from the group consisting of a mixture of water soluble chondrogenic or osteogenic proteins derived from demineralized bone matrix, TGF-beta, EGF, FGF and PDGF;
wherein the composition erodes at a controlled rate over a period of time as a result of hydrolysis of the polymer, thereby administering the bioactive substance to the animal in an amount effective to induce formation of cartilage and bone or wound healing, wherein the same amount administered to the animal in the absence of the matrix is not effective to induce formation of cartilage and bone or wound healing.

5,356,631

PHARMACEUTICAL COMPOSITION

Andrew R. Clark, Loughborough, and Anne M. Hollingworth, Shepshed, both of England, assignors to Fisons plc, Ipswich, England

Division of Ser. No. 835,014, Feb. 12, 1992, Pat. No. 5,198,221, which is a continuation of Ser. No. 522,998, May 14, 1990, abandoned. This application Jan. 28, 1993, Ser. No. 10,480
Claims priority, application United Kingdom, May 17, 1989, 89/11259
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[5] A23K *1/18*
U.S. Cl. 424—438 8 Claims

1. A pharmaceutical inhalation composition comprising soft pellets of nedocromil sodium of diameter greater than 30 μm, each pellet comprising a plurality of individual particles loosely held together such that upon inhalation the pellets disintegrate to the constituent particles, the mass median diameter of the constituent particles being from 5 to 10 μm with a particle size geometric standard deviation of from 1.5 to 3.0.

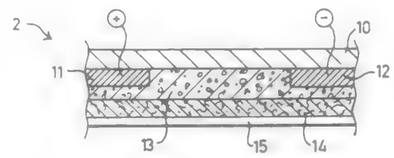
5,356,632

TRANSDERMAL DRUG DELIVERY DEVICE

Joseph Gross, Moshav Mazor, and Shlomo Zucker, Michmoret, both of Israel, assignors to S.I. Scientific Innovations Ltd., Petach Tikva, Israel

Filed Sep. 12, 1991, Ser. No. 759,006
Int. Cl.[5] A61F *13/00*
U.S. Cl. 424—449 20 Claims

1. A transdermal drug delivery device for application to a subject'skin, comprising:
a base member of insulating material;
an anode electrode and a cathode electrode supported on said base member in spaced relation to each other to define a gap therebetween;
means for connecting said electrodes to a voltage source;
and an insulating layer releasably containing a liquid drug to be delivered covering said gap and both of said electrodes



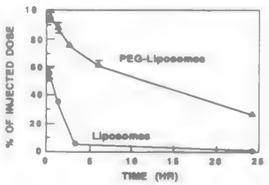
such that neither of said electrodes comes into contact with the subject's skin when applied thereto.

5,356,633

METHOD OF TREATMENT OF INFLAMED TISSUES

Martin C. Woodle, Menlo Park; Francis J. Martin, San Francisco, and Shi K. Huang, Castro Valley, all of Calif., assignors to Liposome Technology, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 642,321, Jan. 15, 1991, Pat. No. 5,213,804, which is a continuation-in-part of Ser. No. 425,224, Oct. 20, 1989, Pat. No. 5,013,556. This application Oct. 7, 1992, Ser. No. 958,100
Int. Cl.[5] A61K *9/127, 37/22*
U.S. Cl. 424—450 6 Claims



1. A method of concentrating a therapeutic compound in an inflamed dermal region in a subject, comprising
administering to the subject, by parenteral injection, a composition of liposomes (i) composed of vesicle-forming lipids including an amphipathic vesicle-forming lipid derivatized with a hydrophilic biocompatible polymer selected from the group consisting of a polyethylene glycol having a molecular weight between about 300 and 5,000 daltons, polyglycolic acid (PGA), polylactic acid (PLA), a copolymer of PGA and PLA, and polyvinyl alcohol (ii) having a selected mean particle diameter in the size range between about 0.07–0.20 microns, and (iii) containing in liposome-entrapped form, a therapeutic compound effective against the source of the inflammation, and
by said injecting, concentrating the liposomes in the inflamed region, thereby to concentrate liposome-entrapped compound at the site of inflammation.

5,356,634

CONTROLLED-RELEASE DELIVERY SYSTEM

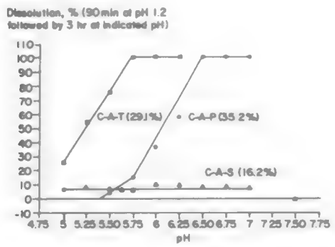
Stephen H. Wu; Carol J. Greene, both of Kingsport; Shane K. Kirk, Church Hill, and David S. Kashdan, Kingsport, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Nov. 13, 1992, Ser. No. 975,758
Int. Cl.[5] A61K *9/20*
U.S. Cl. 424—464 8 Claims

1. An enteric coating composition, comprising a blend of
(a) a cellulose acetate phthalate polymer having phthalyl values ranging from about 15 to 25%, an inherent viscos-

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ity of about 0.3–1.0 g/dL, and a molecular weight of about 15,000 to 75,000; and



(b) a cellulose acetate phthalate polymer having phthalyl values ranging from about 10 to about 40%.

5,356,635

CARBOHYDRATE GLASS MATRIX FOR THE SUSTAINED RELEASE OF A THERAPEUTIC AGENT

Siva N. Raman, St. Louis, Mo., and John P. Cunningham, Terre Haute, Ind., assignors to Mallinckrodt Veterinary, Inc., Mundelein, Ill.

Continuation of Ser. No. 802,581, Dec. 5, 1991, abandoned. This application Jul. 13, 1993, Ser. No. 91,883

Int. Cl.[5] A61K *9/14, 37/02, 37/36, 47/26*

U.S. Cl. 424—484 **20 Claims**

1. A sustained release composition comprising an amorphous carbohydrate glass matrix, a biologically active therapeutic agent and a hydrophobic substance, where the carbohydrate glass matrix comprises a carbohydrate and an agent which retards recrystallization of the carbohydrate glass matrix.

5,356,636

STABLE VITAMIN AND/OR CAROTENOID PRODUCTS IN POWDER FORM, AND THE PREPARATION THEREOF

Joachim U. Schneider, Weisenheim; Horst Schumacher, Bobenheim; Wolfgang Bewert, Frankenthal; Guenter Gaus, Biblis, and Udo Rheude, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 16, 1992, Ser. No. 991,318

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1991, 4141351

Int. Cl.[5] A61K *9/14*

U.S. Cl. 424—489 **6 Claims**

1. A process for preparing stable dry powders which are insoluble in hot water and which contain one or more fat-soluble vitamins and/or one or more carotenoids, which comprises the following steps:

a) preparing an aqueous dispersion containing essentially these fat-soluble active substances, film-forming colloids and reducing sugars,

b) converting this dispersion into dry vitamin and/or carotenoid products in powder form and

c) thermally curing the powder at from 60° to 180° C.,

wherein gelatin in amounts of from 20 to 35% of the weight of the powder dry matter, in combination with one or more physiologically tolerated amino compounds which are free or bonded in the manner of a salt and which contain a basic primary amino group and, in addition, either another amino group, a hydroxyl group, an alkoxy group or a carboxyl group, and/or in combination with sufficient basic alkali metal or alkaline earth metal compound for the dispersion to have a pH of from 7.5 to 10.

5,356,637

METHOD FOR PREPARING AN ENZYMATIC HYDROLYSATE

Pierre C. Loosen, Tessenderlo, Belgium; Philippe R. Bressollier, Limoges, France; Raymond A. Julien, Limoges, France; Claude H. Pejoan, S.-Sylvestre, France, and Bernard G. Verneuil, Verneuil-sur-Vienne, France, assignors to Tessenderlo Chemie N.V., Tessenderlo, Belgium

PCT No. PCT/BE91/00001, § 371 Date Sep. 4, 1992, § 102(e) Date Sep. 4, 1992, PCT Pub. No. WO91/10369, PCT Pub. Date Jul. 25, 1991

PCT Filed Sep. 11, 1991, Ser. No. 927,639

Claims priority, application Belgium, Jan. 12, 1990, 9000044

Int. Cl.[5] A23L *1/00*

U.S. Cl. 426—7 **14 Claims**

1. Method for preparing a di- and tripeptide-rich enzymatic hydrolysate from a protein mixture, in the presence of a proteolytic enzyme, comprising the following steps:

the starting protein mixture is prepared by heat treatment with a temperature between 70° C. and 100° C. at atmospheric pressure at a pH between 4.0 and 8.0 during a period of time between 30 and 45 minutes;

the mixture is subjected to enzymatic hydrolysis with the help of one sole enzyme, added in a ratio of 1 to 4% by weight in regard to the protein which corresponds to 24 to 96 International Units (I.U.) per gram of substrate or 0.024 to 0.096 Anson-unit per gram of substrate, in such a manner that a hydrolysate containing not less than 75 mol. % of di- and tripeptides is obtained with a hydrolyse yield of at least 70 weight-% in regard to the protein mixture; and

the hydrolysate is extracted by liquid/solid separation, and then the partially hydrolysed soluble proteins as well as the macropeptides with a molecular mass of more than 10,000 are removed therefrom by ultrafiltration, without affecting the net di- and tri-peptides yield of the product.

5,356,638

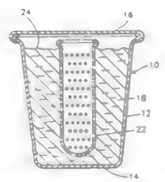
METHOD AND APPARATUS FOR DEHYDRATION OF YOGURT DURING TRANSPORTATION AND STORAGE

Cyrus O. Varan, 19 Siempre Verde NE., Albuquerque, N. Mex. 87123

Filed Mar. 11, 1993, Ser. No. 29,617

Int. Cl.[5] A23C *23/00*

U.S. Cl. 426—8 **5 Claims**



1. An upright open top cup in which a mixture of milk and a curing agent for forming yogurt may be placed for coagulation therein and from which undesirable serum may be drained from the yogurt prior to consumption of the dehydrated yogurt, said cup including peripheral side walls and being closed at its bottom by a bottom wall extending between said peripheral side walls, a removable cover for said open top of said cup, an upright open top peripheral walled and test tube-like sieve closed at its bottom and constructed of porous material, said sieve being of a height slightly less than the height of said cup and being of a diameter considerably less than the diameter of the interior of said cup, said sieve being downwardly insertable within at least partially coagulated yogurt contained within said cup to a level below the open top of said cup with the bottom of said sieve spaced above said cup bottom and the top of said sleeve spaced above the elevated level of yogurt in said cup and below said cover when the latter is placed in position to close the top of said cup.

5,356,639

PROCESS FOR PRODUCING CHEESE CONTAINING SUBSTANTIALLY ALL THE CASEIN AND WHEY PROTEINS IN MILK

Graeme W. Jameson, Kew, and Brian J. Sutherland, Springvale South, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization/Australian Dairy Corporation, Campbell, Australia

Continuation of Ser. No. 68,360, Jun. 29, 1987, abandoned, which is a continuation of Ser. No. 370,136, Apr. 20, 1982, abandoned, which is a continuation-in-part of Ser. No. 288,885, Jul. 31, 1981, abandoned. This application Apr. 16, 1993, Ser. No. 49,638

Int. Cl.[5] A23C *9/142, 19/024, 19/028, 19/08*

U.S. Cl. 426—40 **27 Claims**

1. A process for production of cheese from milk comprising:

(a) ultrafiltering the milk;

(b) diafiltering the milk, said ultrafiltering and diafiltering being carried out so as to produce a retentate having a solids composition desired in said cheese and having a concentration ratio of from about 3:1 to 6:1 compared to the milk treated in step (a);

(c) adding to said retentate from about 0.5 to 1.5 percent sodium chloride, by weight of the retentate, before forming any coagulum to maintain said retentate in the liquid phase during fermenting;

(d) fermenting said retentate with a lactic acid producing culture to produce a liquid fermented retentate, said fermenting being carried out with the pH of the retentate decreasing during fermentation from the pH of the retentate after diafiltration to a pH between about 4.9 and about 5.5, said fermented retentate containing no coagulum; and

(e) preheating said fermented retentate prior to evaporation to a temperature in the range of about 60° C.–100° C. and sufficient to prevent phase separation in the form of the appearance of free fat during evaporation and then continuously evaporating water from said fermented retentate under a pressure below atmospheric pressure to produce said cheese comprising substantially all of the casein and whey proteins originally present in said milk.

5,356,640

PROCESS OF MAKING CHEESE BY FERMENTING CONCENTRATED MILK

Graeme W. Jameson, Kew, and Brian J. Sutherland, Springvale South, both of Australia, assignors to The Commonwealth of Australia Commonwealth Scientific and Industrial Research Organization and Australian Dairy Corporation, Campbell, Australia

Continuation of Ser. No. 68,357, Jun. 29, 1987, abandoned, which is a continuation of Ser. No. 288,885, Jul. 31, 1981, abandoned. This application Apr. 16, 1993, Ser. No. 49,639

Claims priority, application Australia, Dec. 5, 1980, PE6782

Int. Cl.[5] A23C *19/024, 19/028, 19/05, 9/142*

U.S. Cl. 426—40 **21 Claims**

1. A process for production of cheese from milk comprising:

(a) ultrafiltering the milk;

(b) diafiltering the milk, said ultrafiltering and diafiltering being carried out so as to produce a retentate having a solids composition desired in said cheese and having a concentration ratio of from about 3:1 to 6:1 compared to the milk treated in step (a);

(c) increasing the ionic strength of said retentate by adding about one percent sodium chloride, by weight of the retentate, before forming any coagulum to maintain said retentate in the liquid phase during fermenting;

(d) fermenting said retentate with a lactic acid-producing bacteria to produce a liquid fermented milk retentate containing no coagulum, said fermenting being carried out with the pH decreasing during fermentation from the pH of the retentate after diafiltration to a pH between about 4.9 and about 5.5; and

(e) continuously evaporating water from said fermented retentate under a pressure below atmospheric pressure to produce said cheese comprising substantially all of the casein and whey proteins originally present in said milk.

5,356,641

PROCESS FOR PREPARING AN OAK WOOD EXTRACT AND DISTILLATE

David Bowen, Baltimore; Jan Benning, Cockeysville; Chris Bronzert, Owings Mills, and Alan Ellison, Hampstead, all of Md., assignors to Indopco, Inc., d/b/a Quest International Flavors & Food Ingredients Company, Owings Mills, Md.

Filed May 10, 1993, Ser. No. 58,706

Int. Cl.[5] A23L *1/0534, 1/22*

U.S. Cl. 426—52 **5 Claims**

1. A process for obtaining a distillate and an extract comprises:

(a) mixing oak wood in subdivided or particulate form with water, alcohol or mixture thereof;

(b) enzymatically digesting the mixture obtained in (a) at elevated temperature;

(c) adding wine or alcohol to the digestion mixture after the digestion is completed;

(d) refluxing the resulting mixture at elevated temperature until the liquid phase becomes dark and no longer changes color;

(e) separating the resulting liquid phase from the wood; and

(f) distilling the liquid phase to obtain a clear or water-white distillate and a dark syrup-like extract both of which are suitable for addition to wine or other alcoholic beverages, vinegar, non-alcoholic beverages or sauces to improve the flavor or organoleptic properties thereof.

5,356,642

PROCESS FOR PREPARING AN ENROBED RICE AND PASTA COMBINATION

Patrick J. Patterson, Palatine, and Hideo Tomomasu, Crystal Lake, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Mar. 4, 1992, Ser. No. 845,887

Int. Cl.[5] A23L *1/16, 1/182;* **A23P** *1/08*

U.S. Cl. 426—93 **33 Claims**

1. A rice and pasta combination product prepared by: (a) combining from about 5% to about 95% by weight quick-cooking rice and from about 5% to about 95% by weight quick-cooking pasta to form a mixture; (b) applying an aqueous composition to said mixture; (c) contacting said mixture with from about 1% to about 40% by weight edible coating material to form a coated mixture; and (d) drying said coated mixture to a moisture content in the range of from about 3% to about 12% by weight.

5,356,643

CHEESE-BASED DRY FLAKE PRODUCTS AND SNACK ITEMS AND PROCESSES FOR PRODUCING THE SAME

Van Miller, R.R. #2, Brisbane Erin, Ontario, Canada N0B 1T0 , and Rene Miller, 9 Carey Crescent, Guelph, Ontario, Canada N1H 7J9

Continuation-in-part of Ser. No. 26,738, Mar. 5, 1993, and a continuation-in-part of Ser. No. 77,103, Jun. 16, 1993, and a continuation-in-part of Ser. No. 77,104, Jun. 16, 1993. This application Mar. 23, 1994, Ser. No. 216,452

Int. Cl.[5] A23C *19/00;* **A21D** *13/00*

U.S. Cl. 426—94 **46 Claims**

1. An edible cheese-based fat system which may be molded or spread onto a belt for manufacture into flake products;

wherein said edible cheese-based fat system is intended for incorporation into baked goods and flour confections or for use in snack items and comprises from substantially zero to 2% by weight of moisture, from about 20% to about 50% by weight of cheese-solids, with the balance of said edible cheese-based fat system being a cheese-compatible and bakery-compatible oil that is substantially liquid

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at about 35° C. to about 40° C., and which exhibits a solid fat index curve characteristic having defined ranges of solid fat and liquid fat components at defined temperatures, as follows:

10.0° C.—43–66% solid fats, balance liquid fats
21.1° C.—32–52% solid fats, balance liquid fats
26.6° C.—20–44% solid fats, balance liquid fats
33.3° C.—6–25% solid fats, balance liquid fats
40.0° C.—0–5% solid fats, balance liquid fats;

wherein said cheese solids are naturally occurring cheese solids derived from cheeses from which substantially all water has been removed, and said cheese solids comprise the remaining butterfat, protein, and lactose constituents of said cheeses;

wherein said cheese-compatible and bakery-compatible oil is selected from the group consisting of suitable vegetable oils, liquid butterfats, and other liquid dairy fats, and mixtures thereof, and exhibits the said solid fat index curve characteristics and similar melting points as those of butterfat;

wherein said cheese-compatible and bakery-compatible oil is miscible with the butterfat constituent of said cheese-solids, in any proportion at temperatures of about 35° C. to about 40° C., so as to make a substantially homogenous mixture therewith, in which said protein and lactose constituents are held in suspension; and

wherein said cheese-based fat system is such that when said homogenous mixture solidifies at about 6° C. to about 12° C., said cheese-based fat system will remain substantially solidified at room temperature of about 20° C. ±, up to temperatures below about 35° C.

5,356,644

LOW CALORIE FAT SUBSTITUTE

Michael E. Hendrick, Groton, and Robert A. Reimer, Mystic, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 607,216, Oct. 29, 1990, abandoned, and Ser. No. 301,576, Jan. 25, 1989, abandoned. This application Oct. 6, 1992, Ser. No. 957,648
Int. Cl.[5] A23L *1/307*
U.S. Cl. 426—99 **16 Claims**

1. A method of reducing the fat content of a food containing triglycerides comprising replacing at least a portion of the normally present triglyceride with a low calorie fat composition, said low calorie fat composition comprising:

(a) an inner shell of a non-caloric or low calorie core material, said core material selected from the group consisting of polydextrose, non-fibrous cellulose derivatives, erythritol, micronized bran and waxes; and combinations thereof;

(b) an outer shell consisting essentially of a digestible solid or semi-solid fat substantially coating said inner core material, wherein said composition is in the form of free flowing material consisting of solid particles of a size of less than about 250 microns, said composition having a mean caloric value of from about 1.5 to about 6 calories per gram said composition substantially insoluble under conditions of food preparation, provided that if the core material is cellulose, the cellulose is non-fibrous.

5,356,645

MICROWAVE PUFFABLE PORK SKIN PRODUCT AND PROCESS FOR PREPARING A MICROWAVE PUFFED PORK SKIN PRODUCT

Ramon A. Del Villar, Tulancingo Hidalgo, Mexico, assignor to Pelcer, S.A., Hidalgo, Mexico

Division of Ser. No. 984,237, Dec. 1, 1992, which is a continuation of Ser. No. 590,694, Sep. 28, 1990, abandoned. This application Oct. 7, 1993, Ser. No. 132,906
Int. Cl.[5] A23L *1/312*
U.S. Cl. 426—107 **15 Claims**

1. A process for preparing a microwave puffed pork product comprising the steps of:

(a) steam-cooking pork skin portions to reduce the fat and moisture content thereof;

(b) cooking the steam cooked pork skin portions in oil at a temperature of about 100°–120° C. for a time sufficient to obtain a moisture content in the pork skin portions of about 5–15 wt. %;

(c) placing into a microwavable container a composition consisting essentially of the pork skin portions from step (b); and

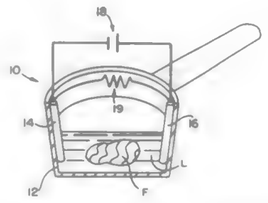
(d) puffing said composition of part (c) by application of microwave energy.

5,356,646

ELECTRON SOURCE COOKING METHOD

Branimir Simic-Glavaski, 2481 Edgehill Rd., Cleveland, Ohio 44106, and Michael G. Simic, 9404 Bac Pl., Gaithersburg, Md. 20877

Filed Dec. 7, 1992, Ser. No. 986,389
Int. Cl.[5] A23L *1/00*
U.S. Cl. 426—237 **9 Claims**



1. A method of cooking food without depleting the electron content of said food comprising the steps of,

placing the food within a cooking medium containing a volumetric body, and

applying a low voltage DC electric current, of sufficient magnitude to create a reducing environment, to flow through said cooking medium to provide said reducing environment in which the food is cooked, said applying comprising supplying free electrons for absorption by said food during a thermal cooking process, such that the tendency for the cooked food to be carcinogenic is diminished.

5,356,647

METHOD FOR REDUCING MOISTURE LOSS IN COOKED MEATS

Charles R. Mason, Yonkers, N.Y.; Edward C. Coleman, New Fairfield, Conn.; Dalip K. Nayyar, Washingtonville, and Sharon R. Birney, Yorktown Heights, both of N.Y., assignors to Kraft General Foods, Inc., Northfield, Ill.

Filed Jul. 27, 1993, Ser. No. 97,529
Int. Cl.[5] A23L *1/314*
U.S. Cl. 426—243 **15 Claims**

1. A method of reducing moisture loss and enhancing the flavor impact of surface-applied seasonings in a cooked meat consisting essentially of:

coating the meat with a coating combination by first coating the meat surface with gylcerol; and then

applying a season coating to the coated surface of the meat; and

cooking the coated, seasoned meat, the coating combination consisting of from about 20 to 33% glycerol and from about 67 to 80% seasoning.

5,356,648

FROZEN DESSERTS WITH FLAVOR STRANDS

Cornelis Kortschot, Cambridge, Canada, assignor to Research Applications Inc., Cambridge, Canada

Filed Oct. 22, 1992, Ser. No. 964,895
Claims priority, application United Kingdom, Oct. 23, 1991, 9122482.4
Int. Cl.[5] A23G *9/14*
U.S. Cl. 426—249 **9 Claims**

1. A process for the manufacture of a frozen dessert comprising a frozen dessert base and substantially continuous ribbons or strands of a solid anhydrous flavoring composition contained therein, said process comprising the steps of:

providing said flavoring composition, comprising fat and oil fractions formulated such that said flavoring composition can be conditioned from a solid or semi-solid paste into a high-viscosity semi-liquid composition which can be pumped and such that the viscosity of the composition rises rapidly and the composition once again becomes a solid or semi-solid on being cooled a few degrees by contact with partially frozen dessert base;

so conditioning said flavoring composition into a high-viscosity semi-liquid composition; and

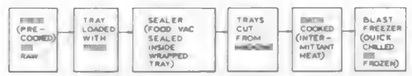
pumping said flavoring composition to inject it as a substantially continuous ribbon or strand into a stream of partially frozen dessert base, whereupon the viscosity of said flavoring composition rises rapidly and it once again becomes a solid or semi-solid.

5,356,649

METHOD AND APPARATUS FOR PROCESSNG AND PACKAGING FOODS

Richard LaMotta, 93 Haights Cross Rd., Chappaqua, N.Y. 10514, and James Guido, 10 Belmont Pl., Yonkers, N.Y. 10701

Filed Jan. 11, 1993, Ser. No. 2,887
Int. Cl.[5] B05B *55/00*
U.S. Cl. 426—396 **6 Claims**



1. A method of processing and packaging food in compartmented plastic trays, the method comprising the steps of: placing different food products into the open top of the compartments of the tray; sealing the top of each compartment with a thin oxygen barrier film, under vacuum; heating the sealed tray to a predetermined temperature for a given time period in an enclosed environment into which steam is introduced during timed periods at given intervals, and cooling quickly.

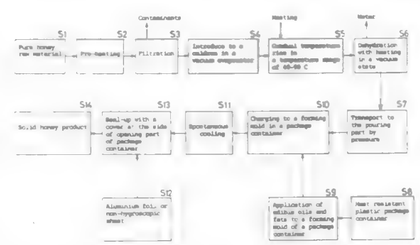
5,356,650

PROCESS FOR PRODUCING SOLID HONEY

Taizo Kanayama, Tokyo, Japan, assignor to Bee K Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 474,454, Feb. 2, 1990, abandoned. This application Nov. 27, 1991, Ser. No. 798,057
Claims priority, application Japan, Feb. 9, 1989, 1-30395
Int. Cl.[5] A23L *1/08, 3/40*; A23P *1/10*; B65B *25/06*
U.S. Cl. 426—396 **1 Claim**

1. A process for producing solid honey, comprising: preheating a raw honey to a temperature of about 35°–40° C. In a heating caldron; filtering the pre-heated raw honey to produce a pure honey; dehydrating the pure honey in a concentrating caldron received within a vacuum evaporator under vacuum for a period of about one hour, while gradually and continuously raising the temperature of the pre-heated pure honey during said period from an initial temperature of about 40° C. To a final temperature of about 90° C., according to the heating curve shown in FIG. 2, to concentrate said honey to a saccharinity reading of about 91–95 degree; transporting the resultant concentrated pure honey by pressure to a pouring implement; pouring the heated concentrated pure honey into containers comprising a molding cavity having applied thereto a predetermined amount of palm oil effective to prevent adhesion of the concentrated pure honey to said molding cavity; allowing the honey to cool and solidify within the molding cavity to form a solid honey having a shape defined by the molding cavity; and sealing the containers with a sheet of non-hygroscopic material so as to seal solidified pure honey in the container.

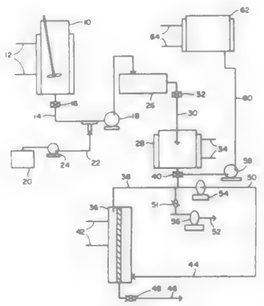


5,356,651

MANUFACTURING METHOD FOR PRODUCING STERILE MILK USING DYNAMIC MICROFILTRATION

Peter J. Degen, Huntington, N.Y.; Tony Alex, Kendall Park, N.J., and Joseph W. Dehn, Jr., Great Neck, N.Y., assignors to Pall Corporation, East Hills, N.Y.

Filed Dec. 30, 1992, Ser. No. 998,371
The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.
Int. Cl.[5] A23C *1/00*; B01D *61/00*
U.S. Cl. 426—491 **15 Claims**



1. In a method for treating raw milk to produce treated milk having a lower bacterial content than the raw milk, comprising homogenizing the milk and within about 5 minutes from the homogenization, subjecting the milk to dynamic microfiltration by passing the milk through a membrane having an average pore size sufficient to reduce the bacterial content of the milk flowing therethrough, to yield a filtrate which has a lower bacterial content than the initial raw milk and a concentrate having a higher bacterial content than the initial raw milk, the improvement comprising the sequential steps of

(1) removing the dynamic microfilter from milk filtration service after the filtration capacity of the membrane has dropped below a predetermined value and flushing the membrane with water, said flushing continuing until at

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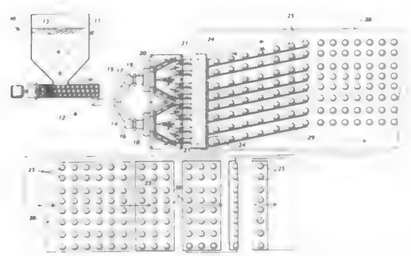
least a predetermined level of filtration capacity has been restored to the microfilter;
(2) returning the microfilter to milk filtration service;
(3) repeating steps (1) and (2) one or more times;
(4) subjecting the membrane to chemical cleaning for a period of time sufficient to restore the filtration capacity of the membrane to at least a minimum predetermined level; and
(5) returning the microfilter to milk filtration service.

5,356,652

METHOD OF DISTRIBUTING BAKER'S DOUGH

Sterrett P. Campbell, 995 Peachtree Dunwoody Ct., Atlanta, Ga. 30328

Continuation-in-part of Ser. No. 932,373, Aug. 19, 1992, Pat. No. 5,264,232. This application Sep. 15, 1993, Ser. No. 122,006
Int. Cl.[5] A21D *6/00*
U.S. Cl. 426—503 **12 Claims**



1. A method of distributing baker's dough from a single stream of dough into separate streams of dough of substantially equal weight comprising:
moving a stream of dough toward a first dough separating sharp,
separating the stream of dough into two diverging streams of dough with the first dough separating sharp,
moving each of the two diverging streams of dough toward second dough separating sharps,
separating each of the two diverging streams of dough into four streams of dough with the second dough separating sharps, and
adjusting the positions of the first and second dough separating sharps and the diverging streams of dough with respect to each other to control the amount of dough moving in the separated streams of dough.

5,356,653

REDUCED CALORIE BAKERY FILLINGS

Patrick J. Lathrop, Seattle, Wash., assignor to Bunge Foods Corporation, Seattle, Wash.

Filed Apr. 9, 1992, Ser. No. 866,324
Int. Cl.[5] A23L *1/05*
U.S. Cl. 426—573 **6 Claims**

1. A reduced calorie bakery filling comprising:
(i) about 10% to about 35% by weight of a sweetener, said sweetener consisting essentially of a high fructose corn syrup said high fructose corn syrup comprising about 40% to about 60% dextrose, about 30% to about 50% fructose and about 5% to about 15% other saccharides;
(ii) about 2% to about 8% by weight of a food starch; and
(iii) about 0.05% to about 1% by weight of a food gum,
wherein said reduced calorie bakery filling has less than 60% by weight total solids,
and wherein said reduced calorie bakery filling has 1.08 calories or less per gram.

5,356,654

GELLING SYSTEM

Charles Speirs, Wissendine, and Karen E. White, Melton Mowbray, both of United Kingdom, assignors to Mars G.B. Limited, Slough, United Kingdom

PCT No. PCT/GB90/01477, § 371 Date Mar. 11, 1992, § 102(e) Date Mar. 11, 1992, PCT Pub. No. WO91/04674, PCT Pub. Date Apr. 18, 1991
PCT Filed Sep. 26, 1990, Ser. No. 838,455
Claims priority, application United Kingdom, Sep. 26, 1989, [redacted] 21658.4
Int. Cl.[5] A23L *1/0532, 1/0524*
U.S. Cl. 426—575 **18 Claims**

1. A method for producing a coherent fully gelled product using a gelling system comprising alginate or pectate, or mixtures thereof, calcium ions and a calcium ion sequestrant, which comprises producing an aqueous mixture containing an effective amount of a gelling agent selected from the group consisting of water soluble or water dispersible gellable alginate, pectate, and mixtures thereof, a thermolabile calcium ion sequestrant which sequestrant is present in an amount of from 1 to 70% by weight based on the weight of calcium ions to be added, and mixing an effective amount of a sparingly water soluble calcium ion source into said mixture at a temperature at least 10° C. below the threshold temperature for the gelling system, which threshold temperature is below 130+ C., and raising the temperature of the mixture at least to the threshold temperature to cause gelation.

5,356,655

STARCH-THICKENED ACIDIC FOODSTUFFS AND METHOD OF PREPARATION

Pamela J. White; Linda M. Pollak, and Lawrence A. Johnson, all of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa and The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 27, 1993, Ser. No. 53,146
Int. Cl.[5] A23L *1/0522*
U.S. Cl. 426—578 **16 Claims**

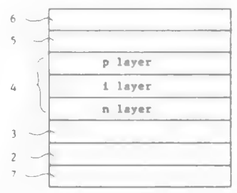
1. In a foodstuff mixture containing starch as a thickener and which has an acidic pH below 5.5, the improvement comprising using as said starch in said mixture an effective thickening amount of a sugary-2 starch obtained from sugary-2 genotype maize seeds.

5,356,656

METHOD FOR MANUFACTURING FLEXIBLE AMORPHOUS SILICON SOLAR CELL

Lee-Ching Kuo, Hsinchu; Jinn-Shing King, Taipei; Wen-Yueh Hsu, Hsinchu, and Yu-Tai Tsai, Taichung, all of, assignors to Industrial Technology Research Institute, Chutung, Taiwan

Filed Mar. 26, 1993, Ser. No. 38,176
Int. Cl.[5] B05D *1/00*
U.S. Cl. 427—58 **6 Claims**



1. A method for manufacturing a flexible amorphous silicon solar cell comprising following steps:
a) applying a polyimide (PI) varnish coating on a glass substrate;

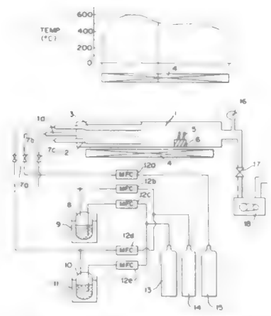
b) imidizing said PI varnish coating to form a PI film on said glass substrate;
c) depositing in vacuum a metal film on said PI film, and having said metal film patternized;
d) depositing in vacuum an amorphous silicon film on said metal film, and having said amorphous silicon film patternized;
e) depositing in vacuum a transparent electrode film on said amorphous silicon film, and having this transparent electrode film patternized;
f) applying a transparent protective film over said transparent conducting film;
g) separating said PI film from said glass substrate; and
h) applying a protective film on a back side of said PI film.

5,356,657

METHOD OF MANUFACTURING AN ELECTROLUMINESCENT DEVICE

Kousuke Terada, Tenri; Akiyoshi Mikami, Yamatotakada; Kouji Taniguchi, Shiki; Koichi Tanaka, Nara; Masaru Yoshida, Ikoma, and Shigeo Nakajima, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 442,634, Nov. 29, 1989, Pat. No. 5,087,531. This application Oct. 18, 1991, Ser. No. 779,235
Claims priority, application Japan, Nov. 30, 1988, 63-304820; Nov. 30, 1988, 63-304821
Int. Cl.[5] H01J *9/12*
U.S. Cl. 427—66 **10 Claims**



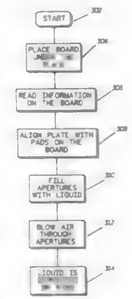
1. A vapor phase growing method for an electroluminescent device comprising the steps of:
providing a substrate having a top surface, a bottom surface, and side surfaces;
providing a quartz reaction tube having a temperature gradient from 300° C. to 700° C. for housing said substrate;
introducing a raw material for a group II–VI compound semiconductor matrix and HCl gas into the quartz reaction tube;
introducing a raw material for an electroluminescent center element and HCl gas into the quartz reaction tube;
decomposing said raw materials in said quartz reaction tube to form first and second reactants, respectively;
introducing hydrogen sulfide into the quartz reaction tube; and
reacting said hydrogen sulfide with said first and second reactants to form an electroluminescent film having a crystal structure of a hexagonal system on said substrate;
wherein the step of decomposing is at a temperature higher than the step of reacting, and
wherein the center element of the electroluminescent film includes an initial growing layer in a concentration Ci of 0.5 to 4 atom % within a thickness of 02 μm from the side surfaces of the substrate and in a concentration Cr of 0.15 to 0.7 atom % at the residual portion whereby Ci is greater than Cr.

5,356,658

FLEXIBLE HIGH SPEED LIQUID DISPENSER

Allen D. Hertz, Boca Raton; Henry F. Liebman, Tamarac, and Frank C. Immacolato, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 19, 1993, Ser. No. 92,858
Int. Cl.[5] B05D *1/00*
U.S. Cl. 427—96 **13 Claims**



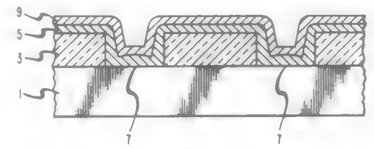
1. A method for dispensing liquid on a substrate, comprising the steps of:
providing a circuit carrying substrate having a plurality of pads:
providing a plate above the circuit carrying substrate, the plate having a plurality of apertures which conform to the pattern of the plurality of pads of at least one component on the circuit carrying substrate;
providing liquid in the plurality of apertures;
aligning the plurality of apertures with the plurality of pads; and
transferring the liquid out of the plurality of apertures onto the plurality of pads substantially simultaneously.

5,356,659

METALLIZATION FOR SEMICONDUCTOR DEVICES

Desu Seshubabu, Willoughby Hills, Ohio; Hans P. W. Hey, and Ashok K. Sinha, both of Allentown, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 581,241, Sep. 7, 1990, abandoned, which is a continuation of Ser. No. 892,389, Jul. 31, 1986, abandoned. This application Oct. 4, 1993, Ser. No. 131,277
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—96 **7 Claims**



1. A method of making a semiconductor device comprising the steps of: forming a plurality of first aluminum conductors overlying selected portions of a first dielectric layer overlying portion of a semiconductor substrate, said first aluminum conductors having exposed top and side surfaces,

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characterized by the further step of selectively depositing a metal on said exposed top and side surfaces of said first aluminum conductors to form encapsulated bimetallic structures, wherein said metal has a hardness greater than that of said aluminum conductors;

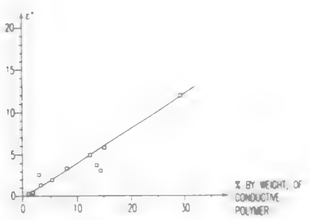
and comprising the further step of subjecting said encapsulated bimetallic structures to a subsequent processing step that tends to promote the growth of hillocks on said first aluminum conductors, whereby the deposited metal suppresses the growth of said hillocks on said top and side surfaces of said first aluminum conductors.

5,356,660

METHOD FOR OBTAINING COMPOSITE CONDUCTIVE MATERIALS BASED ON CONDUCTIVE POLYMERS, WITH CONTROLLED DIELECTRICAL PROPERTIES

Philippe Michel, Asnieres; Marie Vergnolle, Palaiseau, and Olivier Sagnes, Corbreuse, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Sep. 25, 1992, Ser. No. 950,585
Claims priority, application France, Sep. 27, 1991, 91 11911
Int. Cl.[5] B05D *1/00*
U.S. Cl. 427—121 7 Claims



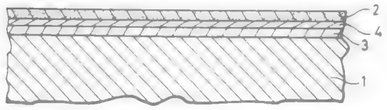
1. A method of obtaining a film of a composite conductive material comprising codepositing a conductive polymer latex and an insulating filmogenic polymer latex, wherein particles of said conductive polymer latex are stabilized by a highly steric cellulose derivative surfactant or by a highly ionic polymer surfactant comprising sulfonate groups so as to minimize the percolation effect.

5,356,661

HEAT TRANSFER INSULATED PARTS AND MANUFACTURING METHOD THEREOF

Akira Doi; Shosaku Yamanaka, and Hiromu Kawai, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 616,893, Nov. 21, 1990, abandoned. This application Mar. 29, 1993, Ser. No. 39,803
Int. Cl.[5] C23C *16/00*
U.S. Cl. 427—124 13 Claims



1. A method of manufacturing a heat dissipating, electrically insulated component, comprising the following steps:

(a) forming a heat transfer substrate of a sintered alloy selected from the group consisting of Cu-W alloy and Cu-Mo alloy,

(b) forming a metal barrier layer on a surface of said substrate, said barrier layer consisting of a metal selected from the group consisting of W and Mo and combinations thereof, and

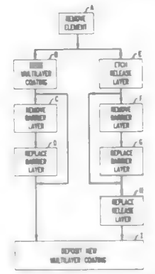
(c) forming an electrically insulating ceramic layer on said barrier layer, said barrier layer preventing a copper diffusion from said substrate of one of Cu-W and Cu-Mo into said ceramic layer.

5,356,662

METHOD FOR REPAIRING AN OPTICAL ELEMENT WHICH INCLUDES A MULTILAYER COATING

Kathleen R. Early, Middletown; Donald M. Tennant, Freehold; Warren K. Waskiewicz, Clinton, and David L. Windt, Springfield, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 5, 1993, Ser. No. 856
Int. Cl.[5] B32B *35/00*; B05D *5/06*
U.S. Cl. 427—140 9 Claims



1. A method for repairing an optical element having a peak reflectivity at a principal x-ray wavelength, wherein: the optical element comprises a substrate; the substrate comprises a glass or ceramic material; the substrate has a principal surface; the optical element further comprises a first multilayer coating overlying the principal surface; the first multilayer coating comprises plural silicon and molybdenum layers in alternation; and the method comprises the steps of:

a) dissolving a substantial portion of the first multilayer coating in a single, aqueous, etchant solution that comprises an alkaline hydroxide and potassium ferricyanide, resulting in essentially complete removal of said coating in a single etching step; and then

b) forming a second multilayer coating on the substrate such that said second coating overlies the principal surface, said second coating having substantially the same composition and structure as the first multilayer coating, said forming step carried out such that the resulting repaired optical element exhibits a peak reflectivity at least 80% of the highest peak reflectivity ever exhibited by the optical element before the dissolving step.

5,356,663

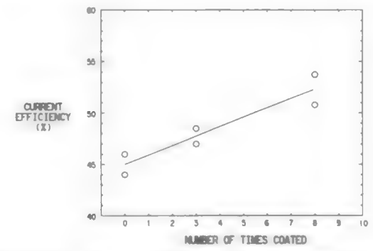
PROCESS FOR MAKING AND REPAIRING ION EXCHANGE MEMBRANES AND FILMS

Stephen A. Perusich; William H. Tuminello, and Shoibal Banerjee, all of Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 935,350, Aug. 28, 1992, Pat. No. 5,273,694. This application Jul. 14, 1993, Ser. No. 89,022
Int. Cl.[5] B32B *35/00*
U.S. Cl. 427—140 6 Claims

6. A process for repairing an ion exchange membrane or film comprising applying a composition to said ion exchange membrane or film, the composition comprising a solution of a carboxylic fluorinated polymer having an equivalent weight of more than about 900 and containing tetrafluoroethylene units,

or a blend of such carboxylic fluorinated polymer with a sulfonic fluorinated polymer, and a solvent which is selected from the group consisting of (i) a perfluorinated cycloalkane, (ii)



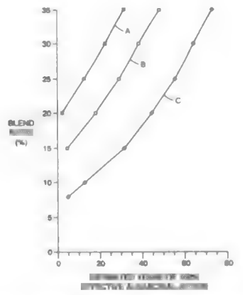
perfluorinated aromatic compounds, or (iii) perfluorotrialkylamine, said solvent having a critical temperature of greater than about 150° C.

5,356,664

METHOD OF INHIBITING ALGAE GROWTH ON ASPHALT SHINGLES

Sankar B. Narayan, White Bear Lake; William T. Fay, St. Paul, both of Minn.; Billy L. George, Hudson, Wis.; Christine A. Sobon, Roseville, and Mark H. Kayser, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 945,127, Sep. 15, 1992, and a continuation-in-part of Ser. No. 945,128, Sep. 15, 1992. This application Jun. 11, 1993, Ser. No. 75,779
Int. Cl.[5] B05D *7/00*
U.S. Cl. 427—186 7 Claims



1. A method of inhibiting algae growth on an asphalt shingle surface exposed to varying humidity using a blend of copper-containing algae-resistant granules and non-algae-resistant granules, the copper-containing algae-resistant granules comprising a substrate granule having at least one inner ceramic coating layer comprising cuprous oxide and a seal coating having a thickness covering the inner layer and which is at time t_o devoid of copper, the method comprising the steps of:

(a) selecting a period of time t_f during which effective algae inhibition on the surface is to be achieved;

(b) selecting an initial loading of cuprous oxide in the inner ceramic layer of the copper-containing algae-resistant granules;

(c) calculating a weight ratio of copper-containing algae-resistant granules to non-algae-resistant granules to achieve a leach rate of copper ions through the seal coating of the copper-containing algae-resistant granules at time t_f necessary to achieve effective algae inhibition on the surface at time t_f; and

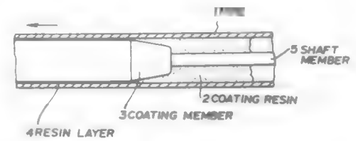
(d) providing the copper-containing algae-resistant granules and the non-algae-resistant granules in the weight ratio calculated in step (c) on an asphalt shingle surface.

5,356,665

METHOD OF MANUFACTURING A PIPE COATED WITH A RESIN LAYER ON THE INNER SURFACE THEREOF

Kuniaki Seki; Shinichi Nishiyama; Hajime Abe, and Noboru Hagiwara, all of Ibaraki, Japan, assignors to Hitachi Cable, Ltd., Japan

Division of Ser. No. 821,919, Jan. 15, 1992, Pat. No. 5,207,248, which is a continuation of Ser. No. 572,515, Aug. 24, 1990, which is a continuation of Ser. No. 453,208, Dec. 26, 1989, which is a continuation of Ser. No. 218,221, Jul. 13, 1988, abandoned. This application Feb. 16, 1993, Ser. No. 17,900
Claims priority, application Japan, Jul. 14, 1987, 62-175750
Int. Cl.[5] B05D *7/22*
U.S. Cl. 427—239 9 Claims



1. A method for manufacturing a pipe coated with a resin layer on an inner surface thereof comprising the steps of,

coating a resin mixture including a thermal melting fluoro resin and tetrafluoroethylene-propylene copolymer on an inner surface of a pipe member to provide a resin layer thereon,

drying said resin layer provided on the inner surface of said pipe member, and

heating said pipe member at a temperature above a melting point of said thermal melting fluoro resin included in said resin mixture.

5,356,666

PROCESS FOR REDUCING THE FILAMMABILITY OF ARAMIDS

Charles E. Jackson, Jr., New Castle, Del.; Robert V. Kasowski, West Chester, Pa., and Kiu-Seung Lee, Richmond, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 9, 1993, Ser. No. 28,671
Int. Cl.[5] B05D *1/00*
U.S. Cl. 427—307 16 Claims

1. A process for reducing the flammability of an aramid article, which comprises, contacting an aqueous solution of a tungsten compound with an article of a solvent swollen aramid or a never dried aramid to introduce an amount of tungsten in the article sufficient to reduce its flammability and then drying the article.

5,356,667

LASER DYE IMPREGNATED SILICA SOL-GEL MONOLITHS

Larry L. Hench; Joseph H. Simmons; Bing-Fu Zhu, and Romulo Ochoa, all of Gainesville, Fla., assignors to The University of Florida, Gainesville, Fla.

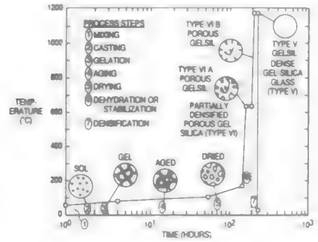
Division of Ser. No. 550,871, Jul. 11, 1990, Pat. No. 5,222,092. This application May 19, 1993, Ser. No. 63,558
Int. Cl.[5] C09K *11/00*
U.S. Cl. 427—384 11 Claims

1. A method of making a dye laser, comprising the steps of:

(a) hydrolyzing and polycondensing one or more silicon alkoxide precursors to form a sol comprising a plurality of silica particles suspended in a liquid;

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(b) cross-linking said silica particles to form a gel;
(c) aging said gel to form an aged gel;
(d) removing said liquid from said aged gel to form a dried, aged gel;
(e) stabilizing said dried, aged gel to form a highly porous, consolidated silica sol-gel monolith;
(f) immersing said highly porous, consolidated silica sol-gel



monolith in a solution comprising at least one laser dye and at least one solvent until the solution enters the pores of the monolith to a sufficient degree to form a laser dye impregnated silica sol-gel monolith; and
(g) drying said impregnated silica sol-gel monolith to vaporize substantially all the solvent present within the pores of said monolith to form a substantially solvent free laser dye impregnated silica sol-gel monolith.

5,356,668

FLUORINATING POLYMER SURFACES

Duncan M. Paton, Renfrewshire; Timothy R. Ashton, Ayrshire, and Roshan Maini, Renfrewshire, all of Scotland, assignors to Vascutek Limited, Renfrewshire, Scotland

PCT No. PCT/GB91/02180, § 371 Date Aug. 4, 1992, § 102(e) Date Aug. 4, 1992, PCT Pub. No. WO92/10532, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 9, 1991, Ser. No. 917,088
Claims priority, application United Kingdom, Dec. 7, 1990, 9026687
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—2.25 **8 Claims**

1. A process for forming a fluorinated surface on a polymer, the process comprising the steps of:
a) forming a solution of perfluorocarbon in a solvent for the perfluorocarbon wherein the solvent is selected from the group consisting of perfluoroalkanes, perfluorocycloalkanes and mixtures thereof;
b) bringing the solution into contact with the polymer surface; and
c) removing the solvent from the solution in contact with the polymer surface.

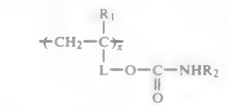
5,356,669

COMPOSITE COLOR-PLUS-CLEAR COATING UTILIZING CARBAMATE-FUNCTIONAL POLYMER COMPOSITION IN THE CLEARCOAT

John W. Rehfuss, West Bloomfield, and Donald L. St. Aubin, Westland, both of Mich., assignors to BASF Corporation, Southfield, Mich.

Filed Oct. 23, 1992, Ser. No. 965,577
Int. Cl.[5] B05D *7/00*
U.S. Cl. 427—407.1 **14 Claims**

1. A method of producing a color-plus-clear composite coating on a substrate comprising the steps of applying a colored coating composition to said substrate, and applying a clear coating composition over the colored coating composition, wherein the clear coating composition is a curable coating composition comprising:
(a) a first component comprising a polymer backbone having appended thereto at least one carbamate functional group, said first component represented by randomly repeating units according to the formula:



wherein
R_1 represents H or CH_3,
R_2 represents H,
L represents a divalent linking group,
A represents repeat units derived from one or more ethylenically unsaturated monomers,
x represents 10 to 90 weight %, and
y represents 90 to 10 weight %, and
(b) a second component comprising a compound having a plurality of functional groups that are reactive with said carbamate group.

5,356,670

COMPOSITE COATING WITH PRIMARY OR TERTIARY AMINE-BLOCKED AROMATIC SULFONIC ACID CATALYST

Rodney L. Briggs, Linden; Donald H. Campbell, Milford, and Mark R. Montagne, Southfield, all of Mich., assignors to BASF Corporation, Southfield, Mich.

Filed Dec. 15, 1992, Ser. No. 999,386
Int. Cl.[5] B05D *7/16*
U.S. Cl. 427—410 **13 Claims**

1. A method of coating a substrate with a composite coating, comprising the steps of:
(a) applying a coating composition comprising:
(1) a polymer component having active hydrogen-containing groups thereon,
(2) an aminoplast curing agent,
(3) an acid cure catalyst, and
(4) a substituted or unsubstituted alkyl amine having at least one alkyl substituent of at least 8 carbon atoms, and
(b) applying, on top of the coating composition (a), a clear coating composition comprising an epoxy-functional component and an acid-functional or anhydride-functional component.

5,356,671

CONCRETE SPRAYING PROCESS

Josef F. Drs, Vienna, Austria, assignor to Sandoz Ltd., Basle, Switzerland

Continuation of Ser. No. 929,650, Aug. 12, 1992, abandoned, which is a continuation of Ser. No. 662,873, Mar. 1, 1991, abandoned. This application Mar. 17, 1993, Ser. No. 32,215
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1990, 4006725
Int. Cl.[5] B05D *1/02*
U.S. Cl. 427—427 **15 Claims**

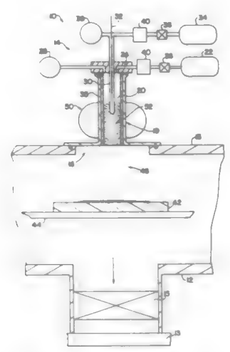
1. A process for improving the rebound properties of sprayed concrete, which comprises adding to a dry concrete mix, prior to spraying, a micro-silica powder which has been pretreated by spraying said powder with from 2 to 25% by weight thereof of at least one liquid chosen from water, an alkanolamine, a polyol, or an aqueous solution of at least one material chosen from an air entraining agent, a stabilizer, a water reducing agent, a hardening accelerator, an alkanolamine, a polyol or a water-soluble cellulosic compound, to form a micro-silica containing dry concrete mix, combining said micro-silica containing dry concrete mix with water to form an aqueous concrete mixture and spraying said aqueous mixture onto a substrate, wherein said dry concrete mix comprises cement and aggregate.

5,356,672

METHOD FOR MICROWAVE PLASMA ASSISTED SUPERSONIC GAS JET DEPOSITION OF THIN FILMS

Jerome J. Schmitt, III, New Haven, and Bret L. Halpern, Bethany, both of Conn., assignors to Jet Process Corporation, New Haven, Conn.

Filed May 9, 1990, Ser. No. 521,100
Int. Cl.[5] C23C *16/50*
U.S. Cl. 427—446 **7 Claims**



1. A method for depositing a film upon a substrate, said method comprising the steps of:
providing a vacuum chamber having a port allowing for access to a vacuum chamber interior,
positioning the substrate within said vacuum chamber interior;
depositing the film on said substrate by providing controlled entry of a reactant gas substantially at room temperature into the interior of the vacuum chamber by means of a gas jet apparatus affixed to said vacuum chamber port, said gas jet apparatus comprising
an outer nozzle having an interior cavity;
means for providing carrier gas, substantially at room temperature to said outer nozzle interior cavity;
an inner nozzle located within said outer nozzle interior cavity for providing a supersonic jet of reactant gas from an inner nozzle tip configured to provide said reactant gas directly to an outer surface of said substrate, said inner nozzle tip being recessed from said vacuum chamber port within said outer nozzle interior cavity;
a discharge means configured about said gas jet apparatus for generating a discharge in said carrier and reactant gas only in a portion of said outer nozzle interior cavity extending from approximately said inner nozzle tip towards said vacuum chamber; and
evacuating gas from said vacuum chamber for maintaining a pressure in said vacuum chamber.

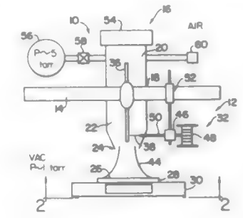
5,356,673

EVAPORATION SYSTEM AND METHOD FOR GAS JET DEPOSITION OF THIN FILM MATERIALS

Jerome J. Schmitt, New Haven, and Bret L. Halpern, Bethany, both of Conn., assignors to Jet Process Corporation, New Haven, Conn.

Filed Mar. 18, 1991, Ser. No. 670,693
Int. Cl.[5] C23C *16/50*
U.S. Cl. 427—446 **39 Claims**

36. A method for depositing a film upon a substrate, said method comprising the steps of:
providing a vacuum chamber having a port allowing for access to a vacuum chamber interior,
positioning a substrate within said vacuum chamber interior;
providing controlled entry of a carrier gas into the interior of the vacuum chamber at a pressure greater than a pressure in said vacuum chamber by means of a gas jet apparatus having an interior cavity and being affixed to said vacuum chamber port,
providing a supersonic jet of gas directly to an outer surface of said substrate by means of a gas jet apparatus nozzle tip extending into said vacuum chamber interior;
evaporating material stored in an evaporation means configured within said gas jet apparatus interior cavity registered with and inwardly displaced from said gas jet apparatus nozzle tip into said first gas jet apparatus interior cavity;
providing a first reactant gas to said gas jet downstream from said evaporation means prior to said gas jet impacting said substrate outer surface and
evacuating gas from said vacuum chamber to maintain a pressure in said vacuum chamber.

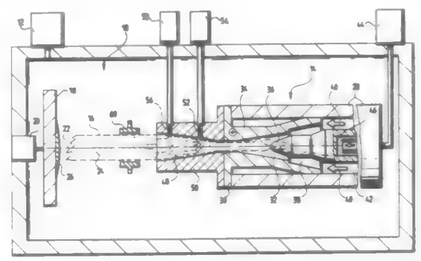


5,356,674

PROCESS FOR APPLYING CERAMIC COATINGS USING A PLASMA JET CARRYING A FREE FORM NON-METALLIC ELEMENT

Rudolf Henne, Boeblingen; Winfried Weber, Leinfelden-Echterdingen; Guenter Schiller, Gerlingen; Werner Schnurberger, Stuttgart, and Michael Kabs, Hanau, all of Fed. Rep. of Germany, assignors to Deutsche Forschungsanstalt fuer Luft-Raumfahrt e.V., Bonn and W. C. Heraeus GmbH, Hanau, both of Fed. Rep. of Germany

PCT No. PCT/EP90/00674, § 371 Date Feb. 19, 1991, § 102(e) Date Feb. 19, 1991, PCT Pub. No. WO90/13681, PCT Pub. Date Nov. 15, 1990
Continuation of Ser. No. 870,788, Apr. 16, 1992, abandoned, which is a continuation of Ser. No. 635,165, Feb. 19, 1991, abandoned. This PCT application Apr. 26, 1990, Ser. No. 41,122
Claims priority, application Fed. Rep. of Germany, May 4, 1989, 3914722
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—449 **45 Claims**

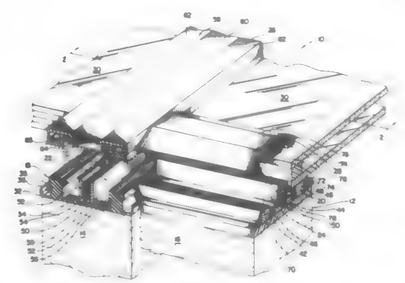


1. A process for applying a coating of ceramic material to a substrate by plasma spraying, wherein a material forming the coating of ceramic material is added to a plasma jet as a material to be sprayed, comprising the steps of:

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providing a plasma torch;
introducing a primary plasma gas comprising argon and additional gas other than argon for increasing enthalpy to said plasma torch to produce a plasma jet having an enthalpy of more than 20 MJ/kg at 10,000° C.;
providing a material to be sprayed, said material including a chemical compound having the property of decomposing at least partially when heated in an inert environment before reaching its melting point,
providing a non-metallic element from the group N, C, B or from the main groups VIa or VIIa of the Periodic Table,
introducing said material to be sprayed and said non-metallic element into said plasma jet downstream of a high-current arc of said plasma torch, wherein said plasma jet heats said non-metallic element to a free dissociated or ionized form not bound to a foreign element;
heating said material to be sprayed in said plasma jet to a temperature of at most 1000 degrees C. above the melting point of said chemical compound and;
spraying said material to be sprayed, with said plasma jet, onto said substrate.

5,356,675
GLAZING SYSTEM
Frederick C. Unger, 179 Bayview Ave., Berkley, Mass. 02779, and Ronald M. Hays, 232 Ryerson Rd., Warwick, N.Y. 10990
Filed Dec. 28, 1992, Ser. No. 997,690
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—34 **18 Claims**



1. A glass panel assembly for use on a supporting frame structure, the supporting frame structure comprising at least one elongated support element having a vertical or inclined support surface, said glass panel assembly comprising:
a) an elongated base plate made of a resilient elastomeric material, said base plate including a base portion which is adapted to be received on and supported by said support element so that said base portion extends longitudinally along the support surface thereof, said base plate further comprising an elongated longitudinally extending attachment portion extending upwardly from said base portion when said base portion is in an upwardly facing horizontal disposition and received on the support element, and an elongated longitudinally extending support pad portion extending upwardly from said base portion in spaced relation to said attachment portion when said base portion is in said horizontal disposition and received on the support element;
b) an elongated rigid longitudinally extending attachment element adapted to be received in coextensive relation on said attachment portion;
c) first fastening means for securing said attachment element to the support element through said base plate;
d) a glass panel adapted to be received and supported on said support pad portion, said glass panel having an edge and being adapted to be positioned so that said edge is in spaced relation to said attachment element on said base plate;
e) an elongated pressure cap including an elongated rigid cap portion and an elongated resilient pressure pad made of an elastomeric material on said cap portion, said pressure cap being adapted to be received in an assembled position on said glass panel so that said glass panel is captured between said pressure pad and said support pad portion; and
f) second fastening means for securing said pressure cap to said attachment element so that said pressure cap is maintained in the assembled position thereof with said pressure pad in pressurized engagement with said glass panel adjacent said edge.

5,356,676
COEXTRUDED BIAXIALLY STRETCHED TUBULAR FILM
Michael H.-C. von Widdern, Walsrode, and Gunter Weber, Fallingbostel, both of Fed. Rep. of Germany, assignors to Wolff Walsrode AG, Walsrode, Fed. Rep. of Germany
Filed Aug. 17, 1992, Ser. No. 931,175
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1991, 4128082; Sep. 13, 1991, 4130485
Int. Cl.[5] A22C *13/00*
U.S. Cl. 428—34.8 **16 Claims**

1. A coextruded, biaxially stretched tubular film for covering goods packaged in the liquid or pasty state which undergo a heat treatment after filling the tubular film consisting of at least three layers, comprising
as the outer layer at least one layer of an aliphatic polyamide,
as the core layer at least one oxygen barrier layer of an ethylene/vinyl alcohol copolymer or a partially aromatic polyamide, and
as the inner layer at least one water vapor barrier layer of an olefinic polymer having the property of adherence to a filling.

5,356,677
SHRINKABLE THERMOPLASTIC PACKAGING FILMS
Daniel Meilhon, Sort-en-Chalosse, France, and Herbert F. Wollak, Plan-les-Ouates (GE), Switzerland, assignors to Sodap, Dax-Cedex, France and Du Pont de Nemours International S.A., Geneva, Switzerland
Filed Oct. 9, 1992, Ser. No. 958,705
Claims priority, application France, Oct. 11, 1991, 91 12554
Int. Cl.[5] B65B *53/00*
U.S. Cl. 428—34.9 **31 Claims**

1. A shrinkable coextrudate thermoplastic film packaging material comprising (a) at least one layer of a polyolefin; and (b) at least one layer of an ionic copolymer which comprises the copolymerizate of (1) an α-olefin of formula $R—CH=CH_2$ wherein R is hydrogen or an alkyl radical having from 1 to 8 carbon atoms, with (2) an α,β-ethylenically unsaturated carboxylic acid having from 3 to 8 carbon atoms, and, (3) 0–20% by weight of at least one other monoethylenically unsaturated comonomer, with the proviso that from 10% to 90% of the caroxylic acid functional groups of said copolymer are ionized by means of metallic ions distributed over the copolymer, and said film being shaped by coextrusion of (a) said polyolefin layer and (b) said ionic copolymer layer under the following operating conditions:
(i) a lengthwise stretch ratio of 2 to 25; and
(ii) a frost line height of less than 160 cm; the ratio

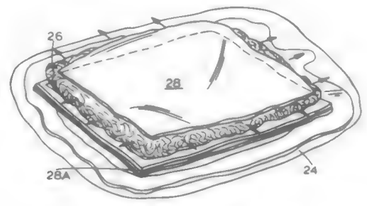
$$\frac{\text{Lengthwise stretch ratio}}{\text{Frost line height (in cm)}}$$

being such as to provide a ratio of:

$$\frac{\text{Elmendorf tear strength in machine direction}}{\text{Elmendorf tear strength in substantially perpendicular direction}}$$

greater than or equal to 2.

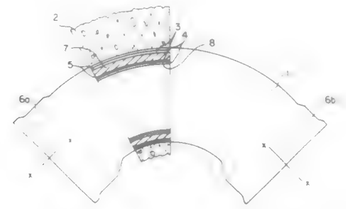
5,356,678
POUCH FOR ABSORBING FLUID
Kevin Heitzhaus, Crystal Lake; Lisa Sherman, Palatine, and John Hughes, Long Grove, all of Ill., assignors to American Colloid Company, Arlington Heights, Ill.
Continuation-in-part of Ser. No. 858,206, Mar. 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 785,889, Oct. 30, 1991, abandoned, which is a continuation of Ser. No. 343,812, Apr. 24, 1989, abandoned. This application Mar. 17, 1993, Ser. No. 26,336
The portion of the term of this patent subsequent to Mar. 17, 2010, has been disclaimed.
Int. Cl.[5] B65D *85/84*
U.S. Cl. 428—35.6 **34 Claims**



1. A pouch for absorbing liquid comprising:
an outer liquid-permeable, flexible sheet material surrounding a volume of liquid-swellable, liquid-absorbent material, said liquid-absorbing material contained within said outer sheet material in an amount sufficient such that upon absorption of liquid, said liquid-absorbing material swells to a volume that is greater than an inner volume of said pouch, defined by seals along at least three edges of said outer sheet material;
said outer sheet material including at least one paper sheet material layer having a wet tensile strength below about 40 grams per 25 mm in the cross-machine direction and a dry tensile strength of at least about 200 grams in the cross-machine direction, said sheet material sealed along at least said three edges to define said inner pouch volume to contain said liquid-absorbent material therein; and
said paper sheet material layer wet strength being such that the swollen liquid-absorbent material will tear the paper sheet material layer to permit the liquid-absorbent material to expand beyond the periphery of the pouch upon absorption of liquid by said liquid-absorbent material.

5,356,679
PIPE SURFACE COATING WITH CONVERSION AND THERMOSETTING RESIN LAYER, AND PROCESS FOR THE COATING APPLICATION
Gerard Houis, Nancy, and Jean-Marc Pedeutour, Blenod les Pont-a-Mousson, both of France, assignors to Pont-A-Mousson S.A., Nancy, France
Filed Dec. 4, 1992, Ser. No. 985,337
Claims priority, application France, Dec. 24, 1991, 91 16343
Int. Cl.[5] B29D *22/00, 23/00;* **B32B** *1/08*
U.S. Cl. 428—35.9 **17 Claims**

1. A multilayer coated ferrous metal element of a water system pipe comprising a ferrous metal element of a water system pipe coated on its entire inner and outer surface with a multilayer coating comprising from the metal element surface

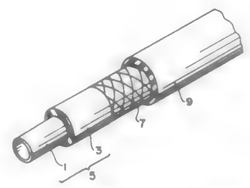


outward, a conversion layer, and a thermosetting synthetic resin layer of constant thickness.

5,356,680
INDUSTRIAL FABRICS OF CONTROLLED AIR PERMEABILITY AND HIGH AGEING RESISTANCE AND MANUFACTURE THEREOF
Wolf R. Krummheuer, Wuppertal; Hans A. Graefe, Schwelm, and Volker Siejak, Duisburg, all of Fed. Rep. of Germany, assignors to Akzo N.V., Arnhem, Netherlands
Filed Jul. 16, 1992, Ser. No. 913,728
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1991, 4123537; Jun. 13, 1992, 4219386
Int. Cl.[5] B29D *22/00*
U.S. Cl. 428—36.1 **27 Claims**

1. An industrial woven fabric having a controlled air permeability <120 l/dm$^2\times$min, measured under a test pressure difference of 500 Pa, and high ageing-resistance, wherein the air permeability does not change by more than 15% from its original value after storage at very high and very low temperatures or after storage at very high and very low atmospheric humidities, and wherein the fabric is made of a yarn having a hot air shrinkage of less than 9% at about 190° C.

5,356,681
MULTI-LAYER RUBBER HOSE AND METHOD FOR PRODUCING THE SAME
Masayoshi Ichikawa, and Tomoaki Okita, both of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan
Filed Apr. 5, 1993, Ser. No. 43,019
Claims priority, application Japan, Apr. 8, 1992, 4-086982
Int. Cl.[5] B29D *9/00*
U.S. Cl. 428—36.8 **6 Claims**



1. A multi-layer rubber hose resistant to gasohol comprising:
a fluorinate rubber layer comprising a vulcanizate of a fluorinated rubber compound containing a ternary fluorinated rubber as a polymer component, and a vulcanization system comprising an organic polyol system and a quaternary ammonium salt, the organic polyol being present in the amount of about 0.9 to about 4.8 parts per 100 parts of the ternary fluorinated rubber, a vulcanization induction time (T_{10}) satisfying the equation,

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4 minutes $\leq T_{10}+$(vulcanization temperature $-170°$ C.) minutes/10° C. ≤ 7 minutes; and

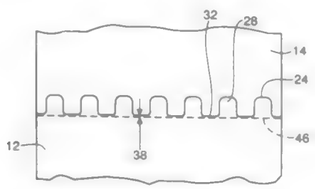
a nitrile rubber layer adhered to said fluorinated rubber layer comprising a vulcanizate of a nitrile rubber compound containing a bonded functional monomer in the amount of 0.5–20% in which there is a functional group having an active hydrogen, about 5 to 30% by weight of polyvinyl chloride based on the amount of the nitrile rubber and polyvinyl chloride, a co-crosslinking agent and a vulcanization system comprising an organic peroxide system.

5,356,682

ULTRASONICALLY SPLICED WEB

Wallace S. Stewart, Penfield, and James W. Morsch, Henrietta, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 17, 1993, Ser. No. 79,024
Int. Cl.[5] B32B *3/06*
U.S. Cl. 428—57 **8 Claims**



1. A spliced web formed by joining a trailing end of a first web to a leading end of a second web, the spliced web comprising:

a transverse end edge on the leading end and a transverse end edge on the trailing end, each end edge being extended across the width of its respective web, at least one of the end edges having a length substantially exceeding the transverse width of its respective web, the at least one end edge comprising alternating fingers and spaces extended longitudinally of the web;

the end edges being overlapped; and

the material of the end edges having been locally melted to join the leading and trailing ends into a splice between the webs.

5,356,683

EXPANDABLE COATING COMPOSITION

Scott L. Egolf, Lansdale, and Reginald T. Smart, Horsham, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 28, 1993, Ser. No. 144,962
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—60 **4 Claims**

1. A method for making a wallcovering, comprising;

applying a layer of an expandable aqueous coating to a substrate layer, said coating comprising:

a polymeric binder, said binder comprising latex particles, said latex particles comprising a copolymer having a glass transition temperature of about $-20°$ C. to about $+60°$ C. and a weight average molecular weight of about 20,000 to about 500,000; and

expandable particles, said expandable particles comprising a liquid blowing agent contained within a thermoplastic shell;

heating the coated substrate to dry the layer of coating and expand the expandable particles.

5,356,684

OPTICAL RECORDING MEDIUM AND METHOD OF MANUFACTURING THEREOF

Masaomi Ebe; Masataka Uchidoi; Yoshihiko Iwama; Hiroshi Sato, and Yoshitaka Nonaka, all of Yamanashi, Japan, assignors to Pioneer Electronic Corporation, Tokyo and Pioneer Video Corporation, Yamanashi, both of Japan

Filed Jul. 31, 1992, Ser. No. 922,477
Claims priority, application Japan, Mar. 13, 1992, 4-055277
Int. Cl.[5] B32R *3/00*
U.S. Cl. 428—64 **2 Claims**

TABLE 1

	COMPOSITION OF REFLECTIVE FILM (at. %)					PICTURE QUALITY					STABILITY OF FILM	LIGHT
	Al	Pd	Cu	Si	Mn							
A*	100					○	△	•	•	•		
B*	99.0	1.00				○	○	○	•	•		
C*	98		2.00			○	○	○	•	△		
D*	98.9		-	1.10		○	○	•	•	•		
E*	98.0				0.05	○	○	○	•	△		
F	98.7	0.07			1.25	○	○	○	○	○		
G	98.7		0.07		1.25	○	○	○	○	○		
H	98.7		-	0.07	1.25	○	○	○	○	○		
I*	98.0	0.7			1.3	○	○	○	•	•		
J*	98.3	-	0.7		1.3	○	○	○	•	•		
K*	98.3			0.7	1.3	○	○	•	•	•		

* FOR COMPARISON

1. An optical recording medium which is provided with a light reflective film covering an information signal recorded surface of a transparent synthetic resin plate, wherein said light reflective film is a deposited layer formed by a vacuum deposition of an aluminum metal alloy containing 0.05–0.2 wt.% of at least one metal selected from the group of iron, copper and silicon, and also containing 0.7–3.0 wt.% of manganese.

5,356,685

RECORDABLE OPTICAL ELEMENT HAVING A LEUCO DYE

James C. Fleming, Webster, and Michael R. Detty, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 19, 1993, Ser. No. 19,935
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—64 **13 Claims**



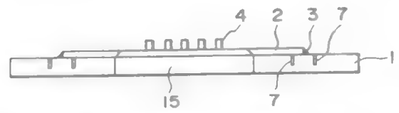
1. A recordable optical element having a substrate and on the surface of said substrate, a dye-containing recording layer and a light reflecting layer, the improvement wherein said dye is a tellurapyranyl Te(IV) leuco dye which upon thermal reduction becomes a near-infrared absorption tellurapyranyl dye.

5,356,686

X-RAY MASK STRUCTURE

Hidehiko Fujioka, Yamato; Takeshi Miyachi, Zama; Yasuaki Fukuda, Hadano; Yuji Chiba, Isehara; Nobutoshi Mizusawa, Yamato; Takao Kariya, Hino, and Shunichi Uzawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 681,738, Apr. 8, 1991, abandoned. This application Jan. 14, 1994, Ser. No. 182,513
Claims priority, application Japan, Apr. 9, 1990, 2-092017
Int. Cl.[5] G03F *9/00;* **G21K** *5/00*
U.S. Cl. 428—65 **6 Claims**



1. An X-ray mask structure, comprising:

a mask substrate having a pattern;

a supporting frame carrying and supporting said mask substrate;

a plurality of fixing means provided at different positions, each of said fixing means fixing said mask substrate to said supporting frame through an adhesive material; and

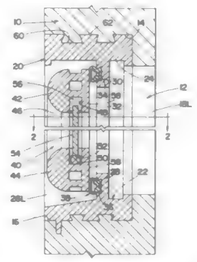
stress releasing groove means provided in at least one of said mask substrate and said supporting frame, wherein said groove means is so disposed as to be free from receiving any portion of the adhesive material, and each of said fixing means is substantially surrounded by a corresponding portion of said groove means to substantially isolate each of said fixing means.

5,356,687

WINDOW FRAME FOR CONCRETE WALL PANEL

Tatsuo Suenaga; Hiroaki Nakagawa; Shin Terauchi; Takeo Kikuchi; Shinnosuke Aiba; Mikio Kobayashi; Yutaka Katsuta; Kenji Ago; Katsumi Kosuge; Yasuyuki Matsubara; Masato Tanaami; Shunichi Sugishita; Hideki Ikeda; Toshio Furuya, all of Tokyo; Shigeyuki Akihama, Kanagawa, and Takahiro Arai, Saitama, all of Japan, assignors to Kajima Corporation and Kabushiki Kaisha F R C, both of Tokyo, Japan

Filed Apr. 6, 1993, Ser. No. 43,268
Claims priority, application Japan, Apr. 8, 1992, 4-087155
Int. Cl.[5] B32B *1/04, 3/02*
U.S. Cl. 428—70 **5 Claims**



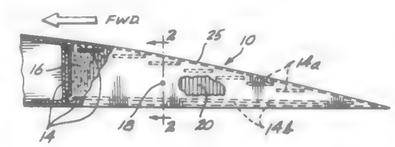
1. In a window closure for embedding in poured concrete prior to setting, the improvement comprising: an extruded fiber-reinforced concrete window frame sill; an extruded fiber-reinforced concrete window frame lintel; a pair of extruded fiber-reinforced window frame jambs, said sill, lintel, and pair of jambs each having outer and inner faces, dovetail-type mortise and tenon projections extending normally from said outer faces, and rectangular flange projections having front sides and back sides extending normally from said inner faces, including a longitudinally extending dovetail-type mortise cavity in the front side of each of said flanges, said window frame sill, window frame lintel, and pair of window frame jambs being cut to length and cemented together to form a window frame; an elastoplastic seal having a dovetail-type tenon portion fitted in said dovetail-type mortise cavities of said flanges; extruded concrete glazing sash top, bottom,and pair of side members having outer, inner, front, and back faces, including window pane glazing grooves in said inner faces; a window pane placed in said glazing grooves, said top, bottom, and pair of side members being cemented together to form a glazing sash, and said glazing sash being cemented to said elastoplastic seal, whereby said glazing sash and said window frame form said window closure.

5,356,688

HONEYCOMB STRUCTURE END CLOSURE

Robert D. MacLean, Bellevue, and Donald J. Mihalevic, Federal Way, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 8, 1993, Ser. No. 45,542
Int. Cl.[5] B32B *3/12*
U.S. Cl. 428—73 **5 Claims**



1. In combination:

a honeycomb core structure;

having a skin covering and an exposed honeycomb core end section;

a sealant disposed in said exposed honeycomb core end section;

a closure plate;

said closure plate having an aperture and angled flanges;

said angled flanges embedded in said sealant.

5,356,689

PROCESS PROVIDING DURABLE STAIN-RESISTANCE USING METHACRYLIC ACID POLYMERS

Engelbert Pechhold, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 26, 1993, Ser. No. 51,824
Int. Cl.[5] B32B *3/02*
U.S. Cl. 428—96 **11 Claims**

1. A process for imparting to polyamide substrates resistance to staining by acid dyes which is durable to shampooing and resistance to yellowing caused by exposure to UV and NO_x, comprising applying to said substrate (A) one or more epoxy resins and (B) a polymeric stain-resist agent consisting essentially of (i) copolymers containing more than 75 weight percent methacrylic acid and less than 25 weight percent of one or more other ethylenically unsaturated monomers, or (ii) polymers prepared by polymerizing (a) methacrylic acid or (b) mixtures of methacrylic acid and one or more other ethylenically unsaturated monomers, in the presence of a sulfonated hydroxyaromatic-formaldehyde condensation product.

5,356,690

Patent Not Issued For This Number

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5,356,691

FLEXIBLE COMPOSITE SHEET FOR ELECTRIC INSULATION

Koji Yamamoto, and Kazuhisa Fujisawa, both of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Sep. 30, 1992, Ser. No. 953,838
Claims priority, application Japan, Sep. 30, 1991, 3-280431; Oct. 29, 1991, 3-311981
Int. Cl.[5] B32B 5/08
U.S. Cl. 428—112 7 Claims

1. An electric insulation composite sheet having excellent heat resistance and flexibility, comprising a multifunctional epoxy resin having an epoxy equivalent of 150–300 g/eq, a polyanhydride hardener having the formula



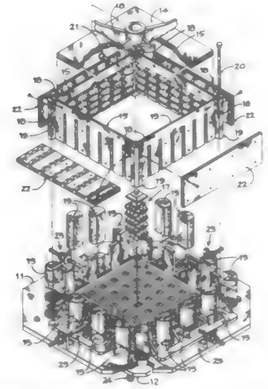
wherein m is an integer of 10–20 and n is an integer of 2–20, and a reinforcing fiber.

5,356,692

GRID STRUCTURE WITH SINUOUS INTERSTICES

John M. Perez, Sunnyvale, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Jul. 27, 1992, Ser. No. 922,613
Int. Cl.[5] B32B 3/12; D03D 41/00; B05D 5/00
U.S. Cl. 428—116 49 Claims



1. A method of fabricating a grid structure having sinuous interstices defined by intersecting grid sections, said intersecting grid sections having specified undulate surfaces, said method comprising:

a) arranging filamentary material according to a predetermined pattern to form generally planar intersecting grid sections;

b) inserting cocoons made of filamentary material into corresponding interstices defined by said generally planar intersecting grid sections, the filamentary material of said cocoons in said interstices extending transversely with respect to the filamentary material that is arranged to form said generally planar intersecting grid sections;

c) inserting expandable mandrels into corresponding cocoons, said mandrels having undulate surfaces conforming generally to the undulate surfaces specified for the intersecting grid sections of the grid structure that is to be fabricated;

d) expanding said mandrels within said corresponding cocoons so as to compress the filamentary material of said cocoons together with the filamentary material arranged to form said generally planar intersecting grid sections, said mandrels when expanded thereby converting said compressed filamentary material into intersecting grid sections with undulate surfaces, the undulate surfaces of said intersecting grid sections conforming generally to the undulate surfaces specified for the intersecting grid sections of the grid structure that is to be fabricated;

e) causing said compressed filamentary material that has been converted into said intersecting grid sections with undulate surfaces to be impregnated substantially uniformly with a matrix material;

f) causing said matrix material that has impregnated said compressed filamentary material to cure, thereby forming said grid structure having sinuous interstices; and

g) removing said mandrels from said sinuous interstices after said matrix material has cured.

5,356,693

OFFSET BLANKET HAVING DEFINED PRINTING SURFACE CHARACTERISTICS

Seiji Tomono, Nishinomiya; Yasuhiko Kondo; Tetsuya Fuchikami, both of Akashi, and Hisao Kagano, Takarazuka, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Dec. 17, 1992, Ser. No. 992,223
Claims priority, application Japan, Dec. 27, 1991, 3-360498
Int. Cl.[5] B32B 3/10
U.S. Cl. 428—141 3 Claims

1. An offset blanket comprising a supporting layer and a surface printing layer laminated on said supporting layer, wherein said surface printing layer has a surface configuration having a mean peak height Sm, represented by the following equation,

$$S_m = \frac{S_1 + S_2 + \ldots + S_n}{n}$$

wherein S_m is about 25 um to about 70 um and each of S_1, S_2, . . . S_n refers to the distance between a point where a section curve of said surface printing layer crosses an average line in a direction from one peak to a corresponding valley present in a measurement length and a point where said section curve crosses said average line in a direction from the next peak to its corresponding valley; and

n refers to the number of peaks present in said measurement length.

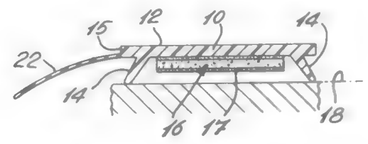
5,356,694

EXTRUDED CONNECTOR STRIP

Steven E. Knapp, Brossard, Canada, assignor to RCR International, Inc., Quebec, Canada

Filed Mar. 18, 1993, Ser. No. 33,347
Int. Cl.[5] B32B 3/28, 27/14
U.S. Cl. 428—169 12 Claims

1. An extruded connector strip comprising; an elongated attachment body having a flat rear attachment wall, a pair of thin spaced-apart parallel flexible spacer ribs extending from said rear attachment wall, said spacer ribs being disposed at diverging angles and sloped outwardly towards a respective elongated end edge of said attachment body, an adhesive transfer tape secured to said rear attachment wall, said tape being a double sided adhesive tape, said spacer ribs extending beyond an outer adhesive surface of said transfer tape when said tape is secured to said flat rear attachment wall between said flexible spacer ribs, said spacer ribs permitting said attachment



body to be located with said rear attachment wall positioned over a connecting surface of an object to which it is intended to be secured and preventing said outer adhesive surface from contacting said connecting surface until pressure is applied to said attachment body causing said spacer ribs to flex and said outer adhesive surface to contact said connecting surface to adhere thereto, said outer adhesive surface having a retention force greater than the restoring force of said spacer ribs.

5,356,695

STRUCTURE OF PANEL

Takeo Mori, Susono; Eiichi Hamada, Toyota, and Tomohisa Kato, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Kabushiki Kaisha Toyota System Research, Nagoya, both of Japan

Filed Jan. 7, 1993, Ser. No. 1,761
Claims priority, application Japan, Jan. 10, 1992, 4-020659; Nov. 13, 1992, 4-327506
Int. Cl.[5] B32B 1/00; B60J 7/00
U.S. Cl. 428—174 6 Claims



1. A panel structure comprising:

a peripheral portion; and

an intermediate portion integrally provided with said peripheral portion;

wherein at least said intermediate portion of said panel includes a curved surface having a substantially constant sum of the maximum curvature and the minimum curvature at every point on a surface of said intermediate portion, said curved surface extending continuously with a surface of said peripheral portion so as to be smooth over the panel, wherein said panel has a substantially uniform thickness.

5,356,696

APPARATUS AND METHOD FOR SEALING EDGES OF CORRUGATED PLASTIC MATERIAL

Gary W. Fetterhoff, 1505 E. Reno, Broken Arrow, Okla. 74012

Division of Ser. No. 919,353, Jul. 23, 1992, Pat. No. 5,304,056, which is a continuation-in-part of Ser. No. 686,036, Apr. 16, 1991, Pat. No. 5,183,672. This application Aug. 12, 1993, Ser. No. 106,053
Int. Cl.[5] B32B 3/02, 3/28
U.S. Cl. 428—182 5 Claims

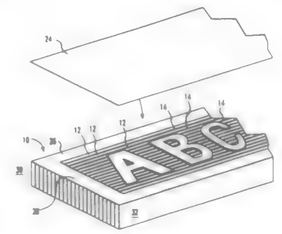
1. A substantially rigid corrugated plastic material having at least one edge sealed with a seal line pattern comprising a series of generally parallel grooves.

5,356,697

SYNTHETIC WOOD-SIGN SUBSTITUTE

William P. Jonas, 102 Tenth Ave., Apt. 4, Belmar, N.J. 07719

Filed Sep. 7, 1993, Ser. No. 116,847
Int. Cl.[5] B32B 5/18
U.S. Cl. 428—195 11 Claims



1. The combination comprising:

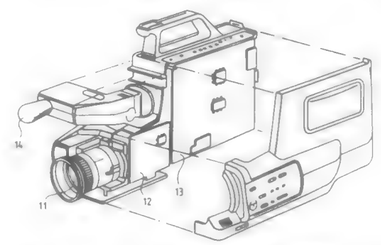
a substrate composed of a plurality of overlying foam laminations of a first density spaced apart one from another by a plurality of separators of a second density, with said separators being of a greater density than that of said overlying foam laminations, with said separators being of a narrower width than said overlying foam laminations, with said foam laminations being colored throughout, and with said substrate forming a panel for a sign, with said substrate having a flat facing surface and side edge surfaces forming a panel for said sign, and also including a colored signage information laid out horizontally atop said facing surface, with said plurality of overlying foam laminations and said plurality of separators being laid out vertically.

5,356,698

ADHESIVE AGENT FOR SUBSTRATE OF ELECTROLESS PLATING, PRINTED CIRCUIT BOARD USING SAME, AND METHOD OF PRODUCING SAME

Mineo Kawamoto; Haruo Akahoshi, both of Hitachi; Akio Takahashi, Hitachioota; Akio Mukoh, Mito; Kazuo Tanje, Katsuta; Toyofusa Yoshimura, Naka; Tokihito Suwa, Katsuta; Iwao Kaminaga, Hitachi, and Toshiyuki Chida, Naka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 674,691, Mar. 25, 1991, abandoned. This application Jan. 5, 1993, Ser. No. 705
Claims priority, application Japan, Mar. 27, 1990, 2-77830
Int. Cl.[5] B32B 9/00
U.S. Cl. 428—209 32 Claims



1. A substrate for printed circuit board, comprising an adhesive layer on a circuit forming plane, said adhesive layer being a cured resin produced by curing a composition comprising an

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epoxy resin, a synthetic rubber, and a phenol resin, the epoxy resin, the synthetic rubber and the phenol resin constituting three resin components of the composition, a vulcanizing agent, a photosensitive hardener which produces Lewis acid upon irradiation with ultraviolet rays, an inorganic filler powder having hydroxyl groups which release hydroxyl groups upon heating, and an organic solvent, wherein the composition has been cured by being irradiated with ultraviolet rays followed by heating until the composition is cured.

5,356,699

POLYMERIC PACKAGING FILM COMPRISING AROMATIC VEGETABLE OIL

Victor A. Goldade, Kozara Str. 5, KV. 30, 246028, Gomel; Elena N. Aleshkevich, Jacilejnaya 4, KV. 99, 246032, Gomel; Sergey V. Bezrukov, Feduninskogo 6, KV. 88, 246021, Gomel; Leonid S. Pinchuk, Petchenko Str. 14, KV. 17, 246050, Gomel; Grigory V. Rechits, Ilicha 10, KV. 12, 046003, Gomel, all of U.S.S.R., and Vladimir N. Kestelman, 9201 Collins Ave., Pennsauken, N.J. 08110

Filed Sep. 27, 1991, Ser. No. 767,045
Int. Cl.[5] B32B 7/02
U.S. Cl. 428—212 2 Claims

1. A polyolefin packaging, unitary film characterized by extended functional capabilities, and improved qualify and operational characteristics having a film structure varying across its thickness from monolithic to porous, with a density gradient ranging from ρ at the monolithic surface to ($\frac{1}{8}$ to $\frac{1}{4}$)ρ at the porous surface, where ρ is the density of monolithic polyolefin, the pores of the polyolefinic film communicating with said porous surface and filled with liquid additives, and further characterized in that to increase the storage term of food products and simplify packaging technology, the pores of the film contain as a specific oil additive of at least one aromatic vegetable selected from the group consisting of fennel, laurel, onion, lovage root, tarragon, caraway, thyme, marjoram, mustard, lemon and pinks, alone or in solutions in a plasticizer, said film comprising, in mass percentage:

Polyolefin	85–99.5
aromatic vegetables	0.5–5
Plasticizer	0–10.

5,356,700

AROMATIC POLYAMIDE FIBER-POLYESTER FIBER-BLENDED SPUN YARN FABRIC

Makoto Tanaka, Toyonaka; Genji Nakayama, Ibaraki; Noboru Takimoto, Yao, and Koichi Hosoyama, Ikoma, all of Japan, assignors to Teijin Limited, Osaka, Japan

PCT No. PCT/JP91/00778, § 371 Date Dec. 10, 1992, § 102(e) Date Dec. 10, 1992, PCT Pub. No. WO91/19842, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 11, 1991, Ser. No. 952,540
Claims priority, application Japan, Jun. 11, 1990, 2-149866
Int. Cl.[5] D03D 15/12
U.S. Cl. 428—229 8 Claims

1. An aromatic polyamide fiber-polyester fiber-blended spun yarn fabric, comprising a fabric made of spun yarns consisting essentially of a uniform blend of:

(A) 60 to 95% by weight of a first fiber component consisting of aromatic polyamide; and

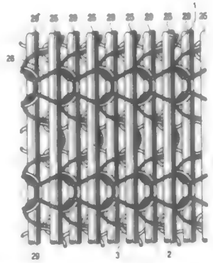
(B) 5 to 40% by weight of a second fiber component consisting of polyester fibers, the fabric having a limiting oxygen index of at least 26.

5,356,701

BLANK FOR THE MANUFACTURING OF FIBER-REINFORCED COATINGS OR METAL COMPONENTS

William Wei, Munich, and Thomas Stoll, Reutlingen, both of Fed. Rep. of Germany, assignors to MTU Muenchen, Fed. Rep. of Germany

Filed Mar. 11, 1993, Ser. No. 29,667
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1992, 4208100
Int. Cl.[5] D03D 3/00
U.S. Cl. 428—232 13 Claims



1. A blank material for manufacturing fiber reinforced coatings and metal components comprising:

a plurality of fibers made from a material which has a high tensile strength and is stable at high temperatures, wherein the material is SiC;

a knitted metal wire material comprising a plurality of metal wire meshes made of titanium, the metal wire material including lower metal wire meshes and upper metal wire meshes;

said fibers being knitted into and held in said wire material in an orientation in which said fibers are separated from each other and are parallel to each other and to an axis of said blank;

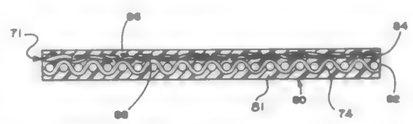
wherein the fibers are woof yarns and are arranged in an upper layer and in a lower layer, the lower layer being surrounded by the lower metal wire meshes, and the upper layer being surrounded by the upper metal wire meshes, and the fibers extend in straight lines.

5,356,702

SOUND DAMPENER FOR DISK BRAKES

Everett W. Harrison, 508 N. Shore Dr., South Haven, Mich. 49090

Continuation of Ser. No. 937,546, Aug. 28, 1992, Pat. No. 5,289,904. This application Nov. 16, 1993, Ser. No. 153,577
Int. Cl.[5] B32B 5/26, 33/00
U.S. Cl. 428—236 10 Claims



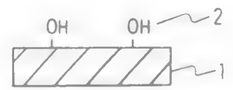
1. A dampening element for dampening the sound in a disk brake assembly comprising a thermally stable, nonmetallic composition surrounding a zone of random glass fibers and a layer of woven glass.

5,356,703

CHEMICALLY ADSORBED FILM AND METHOD OF MANUFACTURING THE SAME

Tadashi Ohtake, Neyagawa; Norihisa Mino, Settu, and Kazufumi Ogawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 13, 1992, Ser. No. 912,688
Claims priority, application Japan, Jul. 17, 1991, 3-176708; Jul. 17, 1991, 3-176709
Int. Cl.[5] B32B 7/04; B05D 1/36
U.S. Cl. 428—245 5 Claims



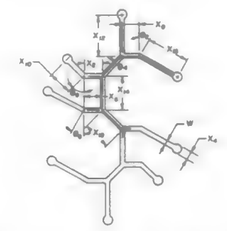
1. A chemically adsorbed monomolecular film comprising a monomolecular film adsorbed to a substrate surface by covalent S-bonds, wherein the monomolecular film is a Langmuir-Blodgett film, a chemical adsorption film or an accumulated chemical adsorption film and wherein the monomolecular film is adsorbed to the substrate surface by bonding molecules having at one end a halosulfinyl group of the formula —(S=O)—X or a halosulfonyl group of the formula —(O=S=S)—X.

5,356,704

TOBACCO SMOKE FILTER

Bobby M. Phillips, Jonesborough; Steven A. Wilson, Piney Flats, and Mark A. Pollock, Johnson City, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Continuation of Ser. No. 994,568, Dec. 21, 1992, Pat. No. 5,275,859. This application Oct. 8, 1993, Ser. No. 134,155
Int. Cl.[5] A24D 3/04; B05D 3/00
U.S. Cl. 428—297 16 Claims



1. A filter comprising a generally cylindrical inner member, an outer member generally concentrically surrounding said inner member and a plugwrap generally concentrically surrounding said outer member, either said inner member or said outer member being a filter element of tow having filaments extending in an axial direction with respect to said filter, and the other of said inner member or outer member comprising at least one fiber having at least one continuous groove which is capable of spontaneously transporting water on the surface thereof wherein said fiber satisfies the equation

$$(1-X\cos\theta_a)<0,$$

wherein

θ_a is the advancing contact angle of water measured on a flat film made from the same material as the fiber and having the same surface treatment, if any,

X is a shape factor of the fiber cross-section that satisfies the following equation

$$X=\frac{P_w}{4r+(\pi-2)D}$$

wherein

P_w is the wetted perimeter of the fiber and r is the radius of the circumscribed circle circumscribing the fiber cross-section and D is the minor axis dimension across the fiber cross-section,

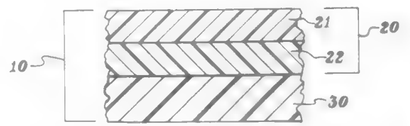
and at least one tobacco smoke modifying agent in combination with said fiber.

5,356,705

LAMINATED, WEATHERABLE FILM-CAPPED SIDING STRUCTURE

Robert H. Kelch, and Steven E. Finlayson, both of Granville, Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 9, 1992, Ser. No. 819,198
Int. Cl.[5] B32B 27/08
U.S. Cl. 428—332 5 Claims



1. A laminated weatherable film-capped siding structure with improved dimensional stability and having a reduced incidence of oil canning comprising

(a) a polymeric substrate; and

(b) a weatherable film extruded separately from said polymeric substrate and thermally laminated to said polymeric substrate, said weatherable film having at least one weatherable layer consisting essentially of a weatherable styrene acrylonitrile copolymer impact-modified with olefinic elastomer or acrylic elastomer, and said weatherable film having a uniform gauge.

5,356,706

RELEASE COATING FOR ADHESIVE TAPES AND LABELS

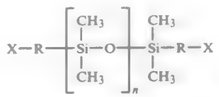
A. Andrew Shores, 212 Carroll Canal, Venice, Calif. 90291

Filed Dec. 14, 1992, Ser. No. 990,709
Int. Cl.[5] B32B 7/12
U.S. Cl. 428—352 14 Claims

1. A process for manufacturing a pressure sensitive adhesive tape or label comprising the steps of

i. providing an isocyanate terminated prepolymer comprising the reaction product of a composition comprising in admixture:

A. a di-omegaorganofunctional dimethylsiloxane oligomer represented by the formula:



wherein n=2–200, R is a simple divalent aliphatic hydrocarbon radical, and X is an active Hydrogen containing radical selected from the group consisting of

a. —SH,

b. —NHR, wherein R is H or simple alkyl, and

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c. —O-(-CH_2CHR_4O-)$_p$H, wherein R_4 is H or CH_3 and p=0–100;

B. an aromatic or aliphatic diisocyanate,

C. a carboxyl containing diol of the general formula

$$\begin{array}{c} (COOH)_m \\ | \\ HO-R-OH \end{array},$$

wherein R is a trivalent or tetravalent radical with 4–16 carbon atoms, m=1 or 2, and optionally

D. an organic monomer having 2 active Hydrogens selected from the group consisting of —OH, —SH, —NH, —NH-Alkyl

ii. chain extending said prepolymer with an aliphatic primary or secondary diamine and solubilizing the copolymer formed in water, with a tertiary amine;

iii. coating a backing member with a solution comprising a major proportion of water and a minor proportion of said copolymer;

iiii. removing the water from the backing by heat and

iiiii. coating the backing with a pressure sensitive adhesive.

5,356,707

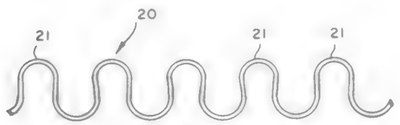
NON-LINEAR CARBONACEOUS FIBER

Francis P. McCullough, Jr., Lake Jackson, Tex.; Bhuvenesh C. Goswami, Clemson, S.C., and Stephen E. Hill, Angleton, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 5, 1993, Ser. No. 26,928

Int. Cl.[5] D02C *3/00*

U.S. Cl. 428—367 **9 Claims**



1. A non-linear fire resistant carbonaceous fiber or tow of fibers, said fiber having a reversible deflection ratio equal to or less than 1.2:1, and a pseudo-elongatability of from about 0.2 to 18%.

5,356,708

INSULATED WIRE

Yuki Matsuura; Isao Ueoka, and Koichi Iwata, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

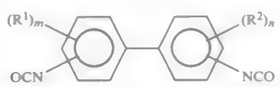
Filed Nov. 23, 1992, Ser. No. 978,975

Claims priority, application Japan, Nov. 22, 1991, 3-307574; Jun. 18, 1992, 4-159384; Jul. 20, 1992, 4-192360

Int. Cl.[5] H01B *3/18*

U.S. Cl. 428—375 **16 Claims**

1. An insulated wire comprising a conductor and an insulating coating made from a polyamideimide base coating, which polyamideimide comprises an acid component and a diisocyanate component containing 10 to 80% by mole of an aromatic diisocyanate compound based on the whole amount of the diisocyanate component of the formula:



(I)

wherein R^1 and R^2 are the same or different and each is a hydrogen atom, an alkyl group, an alkoxy group or a halogen atom, and m and n are the same or different and each represents a number from 1 to 4.

5,356,709

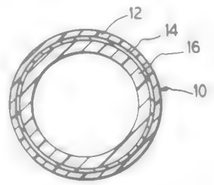
NON-PVC COEXTRUDED MEDICAL GRADE PORT TUBING

Lecon Woo, Libertyville, Ill.; Y. Wilson Cheung, Belchertown, Mass.; Jerry D. Bartos, Murietta, Calif.; Michael T. K. Ling, Vernon Hills, Ill.; Indrajit T. Patel, Algonquin, Ill., and Ying-Cheng Lo, Green Oaks, Ill., assignors to Baxter International, Inc., Deerfield, Ill.

Filed May 14, 1992, Ser. No. 883,009

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—376 **20 Claims**



1. A non-PVC coextruded medical grade port tubing comprising a multi-layer tubing having:

(a) an outer layer including a blend of (i) polypropylene copolymer and (ii) styrene-ethylene-butylene-styrene copolymer;

(b) a tie layer disposed adjacent and bonded to the outer layer (a); and

(c) a core layer disposed adjacent and bonded to said tie layer (b) opposite said outer layer (a) including a blend of (i) polyamide and (ii) ethylene vinyl acetate.

5,356,710

FIRE RETARDANT MULTI-LAYER STRUCTURES COMPRISING POLY(VINYL CHLORIDE) COMPOSITIONS EXHIBITING INCREASED ADHESIVITY TO POLYAMIDE COMPOSITIONS AND MULTI-LAYER STRUCTURES COMPRISING THE SAME

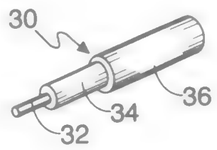
Robert E. Rinehart, Fredon, N.J., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Mar. 4, 1991, Ser. No. 663,970

The portion of the term of this patent subsequent to Jun. 28, 2011, has been disclaimed.

Int. Cl.[5] B32B *27/08;* **D02G** *3/00*

U.S. Cl. 428—378 **9 Claims**



1. A multi-layer structure consisting essentially of:

a substrate comprising an electrical conductor or an optical fiber;

a first layer surrounding said substrate, said first layer comprising a poly(vinyl chloride), a plasticizer and more than zero percent and up to 10 percent by weight of a vinyl chloride-vinyl acetate-vinyl alcohol terpolymer; and

a second layer surrounding said first layer and comprising a polyamide and an ethylene-bis-tetrabromophthalimide.

5,356,711

ARTICLE COMPRISING AT LEAST ONE METAL WIRE EMBEDDED IN A VULCANIZED ELASTOMERIC MATERIAL

Luciano Garro, and Enzo Falzoigher, both of Milan, Italy, assignors to Pirelli Coordinamento Pneumatici S.p.A., Milan, Italy

Filed Dec. 27, 1991, Ser. No. 813,390

Claims priority, application Italy, Dec. 27, 1990, 22547 A/90

Int. Cl.[5] B32B *19/00*

U.S. Cl. 428—379 **11 Claims**



1. An article of manufacture comprising at least one metal wire embedded in a vulcanized elastomeric matrix obtained from a mixture comprising at least one vulcanizable elastomer and at least one vulcanization agent of elemental sulfur, characterized in that the metal wire is of galvanized steel and in that the vulcanizable mixture comprises at least 0.2% by weight of trimercaptotriazine, with respect to the weight of said elastomer, and 0.1–0.5% by weight of a cobalt containing material, with respect to the weight of said elastomer, said galvanized wire in the presence of said mixture exhibits improved adhesion relative to a brass coated wire.

5,356,712

MAGNETITE PARTICLES

Masachika Hashiuchi; Akira Oyama, and Tadashi Yamanishi, all of Tamano, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Sep. 3, 1992, Ser. No. 940,313

Claims priority, application Japan, Sep. 13, 1991, 3-261345

Int. Cl.[5] C01G *49/08*

U.S. Cl. 428—404 **3 Claims**

1. Magnetite particles containing a silicon and/or silicon oxide compound in the interior thereof and also a silicon and/or silicon oxide compound exposed on the surface thereof, said silicon and/or silicon oxide compound on the surface being in an amount of from 0.1 to 2.0% by weight in terms of silicon with respect to the total amount of each of said magnetite particles and the ratio of the amount of the exposed silicon and/or silicon oxide compound to the total amount of said silicon and/or silicon oxide compound in each of said magnetite particles in terms of silicon, being in the range of 0.05 to 0.7, each of said magnetite particles having a shape of a sphere with a maximum diameter and a minimum diameter which satisfy the following relationships: (maximum diameter)/(minimum diameter)=1.00–1.1.

5,356,713

MAGNETIZABLE COMPOSITE MICROSPHERES OF HYDROPHOBIC CROSSLINKED POLYMER, PROCESS FOR PREPARING THEM AND THEIR APPLICATION IN BIOLOGY

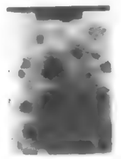
Dominique Charmot, and Christine Vidil, both of Paris, France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Continuation of Ser. No. 501,929, Mar. 30, 1990, abandoned. This application Jun. 1, 1993, Ser. No. 70,053

Claims priority, application France, Mar. 31, 1989, 89 04231

Int. Cl.[5] B32B *5/16;* **G01N** *33/553*

U.S. Cl. 428—407 **9 Claims**



1. Magnetizable composite microspheres of hydrophobic crosslinked vinylaromatic polymer which are approximately from 0.05 to 10 μm in diameter, and which comprise:

(1) a core comprising magnetizable particles less than 300×10^{-4} μm in diameter coated with an approximately mono molecular layer of a non-water-soluble dispersing agent; and

(2) a shell consisting essentially of a hydrophobic crosslinked copolymer formed from at least one hydrophobic vinylaromatic monomer and at least one polyethylenically unsaturated emulsifying polymer which is soluble in said vinylaromatic monomer(s) and capable of crosslinking with said vinylaromatic monomer(s), wherein said shell is substantially free from said magnetic particles relative to said core.

5,356,714

METHOD OF PRIMING OR ONE-COAT PAINTING OF PLASTICS USING WATER-BORNE PAINTS

Kirsten Fritsche, Würzburg; Dieter Faul, Bad Dürkheim, both of Fed. Rep. of Germany; Hartmut Metzdorf, Lara Lake, Australia, and Jörg Budde, Senden, Fed. Rep. of Germany, assignors to BASF Lacke + Farben Aktiengesellschaft, Munster, Fed. Rep. of Germany

PCT No. PCT/EP91/01532, § 371 Date Apr. 6, 1993, § 102(e) Date Apr. 6, 1993, PCT Pub. No. WO92/03513, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 13, 1991, Ser. No. 983,544

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1990, 4027128

Int. Cl.[5] B32B *27/38*

U.S. Cl. 428—413 **6 Claims**

4. An article having a water-borne paint coating, said coating comprising effective film forming amounts of an at least partially protonated product of the reaction of

(A) a butadiene-acrylonitrile copolymer having an acrylonitrile content of from 5 to 45% by weight and a butadiene content of from 55 to 95% by weight which contains, per molecule, on average from 1.4 to 3.0 amino groups selected from the group consisting of primary, secondary and tertiary amino groups and mixtures thereof, and has a number average molecular weight of from 500 to 15,000, or a mixture of such butadiene-acrylonitrile copolymers, and

(B) an organic compound which has a number average molecular weight of from 140 to 10,000 and contains, on statistical average, at least 1.5 epoxide groups per molecule, selected from the group consisting of

glycidyl ethers of aliphatic diols,

glycidyl ethers of polyphenols,

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aromatic epoxy resins obtainable by allowing the above-mentioned glycidyl ethers to react with a polyphenol and reacting the resultant product with epichlorohydrin, and

glycidyl ethers of polyols obtainable by polymerization of ethylene oxide, propylene oxide, tetrahydrofuran or other cyclic ethers,

or a mixture of such organic compounds,

where components (A) and (B) are employed in the preparation of the reaction product in such amounts that from 1.05 to 20 equivalents of reactive amine hydrogen atoms from component (A) are present per equivalent of epoxide groups from component (B) for priming or one-coat painting of plastics.

5,356,715

VIBRATION DAMPING RESINS AND VIBRATION DAMPING COMPOSITES

Harold H. Levine, Encinitas, Calif.; J. Brandon Simons, Crystal Lake, Ill.; Randall J. Meyer, Woodstock, Ill.; Christine M. Zack, Crystal Lake, Ill., and Steven J. Ney, Woodstock, Ill., assignors to Morton International, Inc., Chicago, Ill.

Filed Jul. 31, 1992, Ser. No. 923,089

Int. Cl.[5] B32B *15/08*; **C08F** *20/00*

U.S. Cl. 428—416 **8 Claims**

1. A viscoelastic, vibration-damping resin consisting essentially of the reaction product between bisphenol-derived epoxy resins having terminal epoxy functionalities, epoxy equivalent weights of between about 100 and about 2000 and epoxy functionalities of between 2 and about 3 and containing only carbon, hydrogen and oxygen atoms and carboxyl-terminated blocks of either 1) polyester blocks having acid numbers between about 20 and about 110 and carboxyl functionalities of between 2 and about 2.5; or 2) polyether blocks of weight average molecular weight of between about 400 and 3000 and carboxyl functionalities of between 2 and about 2.5, said polyester or polyether blocks containing only carbon, hydrogen and oxygen atoms, the ratio of equivalents of epoxy functionality and carboxyl functionality being between about 0.95 and about 1.05 and being adjusted so that said vibration-damping resin, if used to adhere two sheets of metal, provides a composite loss factor of at least about 0.05 over a temperature range of at least about 100° F. (55.5° C.).

5,356,716

WATERPROOFING SEALER/REPELLENT COMPOSITIONS FOR CONCRETE, MASONRY AND POROUS SURFACES

Pratim R. Patel, 404-201 Benner Rd., Allentown, Pa. 18104

Filed Sep. 4, 1992, Ser. No. 941,377

Int. Cl.[5] B32B *27/40*; **C08L** *75/00*

U.S. Cl. 428—423.1 **14 Claims**

1. A waterproofing sealer/repellent composition (100 parts by weight) that protects and extends the life of porous substrate selected from the group consisting of concrete, masonry, wood, cloth, leather, stone and clay products, comprising:

a. about 0.2 to 10 parts by wt. of polyurethane dispersions-/emulsions;

b. about 1 to 3 parts by wt. of aqueous alkalimetal alkylsiliconates;

c. about 0 to 0.5 parts by wt. of alkali silicates;

d. about 0.005 to 2 parts by wt. of additives;

e. about 0 to 20 parts by wt. of diluents used as anti-freeze agents;

f. the balance parts by wt. of demineralised water.

8. A porous substrate selected from the group consisting of concrete, masonry, wood, cloth, leather, stone and clay, coated with the composition of claim 1.

5,356,717

MAGNETIC CARD HAVING EMBOSSED PORTIONS AND A MAGNETIC LAYER HAVING MAGNETIC POWDERS SPECIFIED BINDER RESINS AND A TENSILE ELONGATION AT BREAK OF 50 PERCENT OR MORE

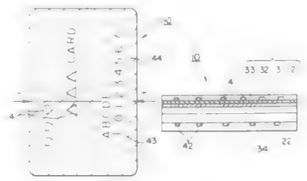
Koji Choki, Itami; Masaharu Saito, Ibaraki; Kunimasa Kobayashi, Narashino; Toru Tachiwada, Koshigaya, and Katsufumi Awaya, Kawaguchi, all of Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan

Filed Dec. 21, 1992, Ser. No. 993,656

Claims priority, application Japan, Dec. 24, 1991, 3-341391

Int. Cl.[5] G11B *05/00*

U.S. Cl. 428—425.9 **5 Claims**



1. A magnetic card which comprises a substrate of a thermoplastic resin and a magnetic recording layer mainly composed of magnetic powders, a binder and a polyisocyanate provided on the whole surface of at least one side of the substrate, said binder comprising:

at least one resin A in an amount of 50% by weight or less, said resin A selected from the group consisting of vinyl chloride-vinyl acetate copolymer, polyvinyl butyral resin, styrene-maleic acid resin and rosin-modified maleic acid resin and:

a resin B in an amount of 50% by weight or more, said resin B having a tensile strength at break of 500 kg/cm^2 or less and a tensile elongation at break of 100% or more, said resin B selected from the group consisting of polyester resin and polyurethane resin;

wherein embossed portions are formed in a given area; and

wherein the magnetic recording layer consists of a magnetic film which contains 70% by weight or more of magnetic powders having a coercive force of 300 Oe or higher and which has a tensile elongation at break of 50% or more.

5,356,718

COATING APPARATUS, METHOD OF COATING GLASS, COMPOUNDS AND COMPOSITIONS FOR COATING GLASSS AND COATED GLASS SUBSTRATES

Patricia R. Athey, O'Hara Township, Allegheny County; Douglas S. Dawson, McCandless Township, Allegheny County; David E. Lecocq, Lower Burrell; George A. Neuman, Pittsburgh; John F. Sopko, Trafford, and Royann L. Stewart-Davis, Plum Boro, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

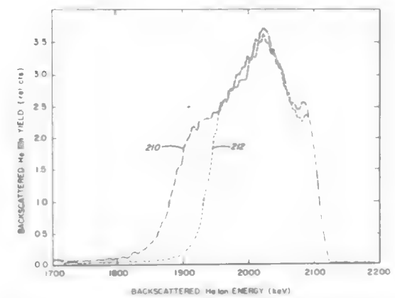
Filed Feb. 16, 1993, Ser. No. 17,930

Int. Cl.[5] B32B *17/06*

U.S. Cl. 428—428 **17 Claims**

1. A transparent substrate having an amorphous coating thereon composed of one or more mixed metal oxides and

having up to 15 atomic percent of an element dispersed therethrough selected from the group consisting of phosphorus,



aluminum and boron wherein the mixed metal oxide itself excludes phosphorus, aluminum and boron.

5,356,719

FLUOROSILICONE RELEASE AGENT COMPOSITION

Yuji Hamada, Chiba, and Keiichi Shimoda, Saitama, both of Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1993, Ser. No. 160,641

Claims priority, application Japan, Jan. 27, 1993, 5-031276

Int. Cl.[5] B32B *9/04*

U.S. Cl. 428—447 **20 Claims**

1. A composition comprising:

(A) 100 parts by weight of an organopolysiloxane that contains in each molecule at least 1fluorine-containing organic group and at least 2 alkenyl groups;

(B) 0.1 to 40 parts by weight of an organohydrogenpolysiloxane that contains at least 2 silicon-bonded hydrogen atoms in each molecule;

(C) 0.01 to 20 parts by weight of an organopolysiloxane that contains in each molecule at least 1 fluorine-containing organic group, with the proviso that said organopolysiloxane (C) contains neither alkenyl groups nor silicon-bonded hydrogen groups; and

(D) a catalytic amount of a hydrosilylation catalyst.

5,356,720

SHAPED SELF-SUPPORTING CERAMIC COMPOSITE BODIES COMPRISING SILICON NITRIDES

David K. Creber, Kingston, Canada; William B. Johnson, and Marc S. Newkirk, both of Newark, Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 786,660, Nov. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 724,236, Jul. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 659,523, Feb. 22, 1991, Pat. No. 5,236,786, which is a continuation of Ser. No. 295,488, Jan. 10, 1989, abandoned, which is a continuation of Ser. No. 861,024, May 8, 1986, Pat. No. 4,923,823. This application May 28, 1993, Ser. No. 68,567

Int. Cl.[5] C04B *35/65*

U.S. Cl. 428—545 **35 Claims**

1. A shaped self-supporting ceramic composite body, comprising:

a three-dimensionally interconnected polycrystalline ceramic matrix incorporating at least one filler material, said ceramic matrix comprising at least one ceramic material comprising at least one polycrystalline oxidation reaction product comprising silicon nitride(s) and the remainder of said polycrystalline ceramic matrix including at least one of a metallic constituent of silicon parent metal and voids; and

at least one material contacting said polycrystalline ceramic matrix, said at least one material comprising at least one barrier material or at least one barrier material that has undergone chemical changes or alterations during formation of said polycrystalline ceramic matrix, said at least one barrier material comprising a material selected from the group consisting of titanium nitride, zirconium nitride and aluminum nitride, wherein at least a portion of at least one surface of said at least one material is removably attached to at least a portion of said polycrystalline ceramic matrix.

5,356,721

COMPONENT FOR NOISE-DAMPED TRANSMISSION

Walter Knoess, Füssen, Fed. Rep. of Germany, assignor to Sinterstahl Gesellschaft m.b.H., Fuessen, Fed. Rep. of Germany

Continuation of Ser. No. 992,454, Dec. 17, 1992, abandoned. This application Nov. 29, 1993, Ser. No. 159,041

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1992, 4211318

Int. Cl.[5] B22F *5/08*

U.S. Cl. 428—347 **7 Claims**

1. A noise damping component for mechanical transmissions, comprising: an axially symmetrical sintered shaped part having a plurality of individual concentric zones of material, said shaped part having a central region, an inner rim zone close to the axis of symmetry, and an outer rim zone remote from the axis of symmetry, the rim zones formed from a material having a high strength and being largely free from voids and the central region being formed of a highly porous, comparatively ductile material, wherein the central region has a void volume of more than 10 to 50% by volume of the material forming said central region.

5,356,722

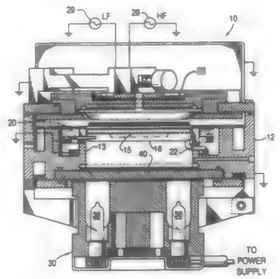
METHOD FOR DEPOSITING OZONE/TEOS SILICON OXIDE FILMS OF REDUCED SURFACE SENSITIVITY

Bang Nguyen, Fremont; Ellie Yieh, Millbrae, and Maria Galiano, San Jose, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Jun. 10, 1992, Ser. No. 896,296

Int. Cl.[5] C23C *16/00*

U.S. Cl. 427—569 **6 Claims**



1. A method of depositing a dielectric planarizing layer over metal lines over a silicon oxide layer on a silicon wafer comprising:

a) depositing a first silicon oxide layer on said wafer by generating a plasma from tetraethoxysilane and a nitrogen-containing gas, and

b) depositing a second silicon oxide layer on said first silicon oxide layer by thermal chemical vapor deposition of tetraethoxysilane, ozone and oxygen.

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5,356,723

MULTILAYER PLATED ALUMINUM SHEETS

Masanari Kimoto, Kobe; Tetsuaki Tsuda, Nishinomiya; Masanori Tsuji, Haanaa; Yoshihiko Hoboh, Osaka; Hiroshi Ikeda, Nagoya; Takao Aimu, Nagoya; Hideyuki Uto, Nagoya; Kiyoyuki Fukui, Kobe, and Keizo Namba, Nagoya, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka and Sumitomo Light Metal Industries, Ltd., Tokyo, both of Japan

Filed Dec. 17, 1992, Ser. No. 992,111

Claims priority, application Japan, Dec. 18, 1991, 3-335229; Jul. 2, 1992, 4-175755; Jul. 3, 1992, 4-177103

Int. Cl.[5] B32B *15/20*

U.S. Cl. 428—650 34 Claims

1. A multilayer plated aluminum sheet suitable for use in automobile body panels, comprising an aluminum sheet made of aluminum or an aluminum alloy, the aluminum sheet having a first layer of pure zinc or a zinc-base alloy formed by displacement plating on the surface of the aluminum sheet, and one or more layers of electroplated coating formed on the first layer by electroplating in an acidic sulfate bath, at least one layer of the electroplated coating being a pure zinc or zinc-base alloy and either the first layer or one layer of the electroplated coating or both being a zinc-base alloy.

5,356,724

EXCELLENT FAR-INFRARED RADIATING MATERIAL

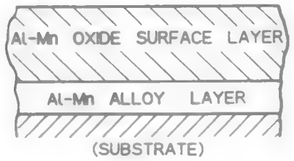
Tetsuaki Tsuda, Nishinomiya; Yasuhiro Yamamoto, Kobe; Junichi Uchida, Ashiya; Hirohisa Seto, Kobe; Kunihiro Fukui, Kawanishi, and Shinya Hikino, Amagasaki, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Jan. 15, 1993, Ser. No. 5,378

Claims priority, application Japan, Jan. 16, 1992, 4-005887; Nov. 6, 1992, 4-297227

Int. Cl.[5] B32B *15/20*

U.S. Cl. 428—629 24 Claims



1. A material for producing far-infrared radiation comprising a substrate and an oxide surface layer derived from an Al—Mn alloy on the substrate, the oxide surface layer being porous with an average pore diameter of 0.01–2.0 micrometers and a porosity of 10^3–10^{12} pores/cm^2, the weight ratio of Mn/Al of the oxide surface layer being 0.001–2.0, and the thickness of the oxide surface layer being 0.1–100 micrometers.

5,356,725

CORROSION-RESISTANT ALUMINUM ALLOY BRAZING COMPOSITE

Edgar G. Eichhorn, and Arthur C. Scott, both of Livermore, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Pleasanton, Calif.

Filed Sep. 9, 1993, Ser. No. 118,272

Int. Cl.[5] B32B *15/20;* F28F *21/08*

U.S. Cl. 428—654 6 Claims

1. An aluminum alloy brazing composite consisting of a aluminum alloy core and an aluminum alloy cladding on at least one side of the core, wherein the core alloy consists essentially of manganese from about 0.8 to about 1.5%, silicon from about 0.45 to about 0.75%, titanium from about 0.03 to about 0.1%, a combined magnesium, copper and zinc content not in excess of about 0.15%, an iron content not in excess of about 0.3%, the total quantity of other impurities not exceeding about 0.15%, balance aluminum; and wherein the cladding consists of an AA 4XXX series aluminum alloy.

5,356,726

MAGNETIC RECORDING MEDIUM COMPRISING A MAGNETIC LAYER HAVING FERROMAGNETIC POWDER, A SPECIFIED BINDER AND A LUBRICANT COMPOSITION WHICH INCLUDES A SPECIFIED TERTIARY BRANCHED CHAIN FATTY ACID ESTER

Yasuo Nishikawa; Kazuko Hanai; Akira Ushimaru, all of Kanagawa; Yuzo Higaki, and Tatsuya Yamada, both of Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 769,266, Oct. 1, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 48,587

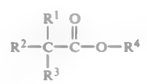
Claims priority, application Japan, Oct. 1, 1990, 2-260488

Int. Cl.[5] G11B *5/00*

U.S. Cl. 428—694 BP 4 Claims

1. A magnetic recording medium comprising a non-magnetic support having a magnetic recording layer formed thereon, wherein said magnetic recording layer mainly contains a ferromagnetic powder and a binder, and said binder comprises at least one resin containing at least one polar group selected from the group consisting of an epoxy group, —NH_2, —OH, —COOM, —SO_3M, —OSO_3M, —PO_3M_2 and —OPO_3M_2 in an amount of 1×10^{-3} to 1×10^{-7} equivalent per g of said binder, wherein each M independently represents a hydrogen atom, an alkali metal or substituted or unsubstituted ammonium, and wherein said at least one resin is present in said magnetic recording layer in an amount of 5% by weight or more of total amount of said binder, and

wherein said magnetic recording layer further contains a tertiary branched chain fatty acid ester represented by formula (I) and a lubricating agent different in chemical structure from said tertiary branched chain fatty acid ester:



(I)

wherein each of R^1, R^2 and R^3 independently represents a hydrocarbon group having 1 to 18 carbon atoms, and R^4 represents a hydrocarbon group having 1 to 24 carbon atoms, and total number of carbon atoms in said tertiary branched chain fatty acid ester is 12 to 40, and said tertiary branched chain fatty acid ester is present in an amount of from 0.5 to 3.0% by weight based on amount of ferromagnetic powder, and wherein said different lubricating agent is selected from the group consisting of myristic acid, stearic acid and oleic acid, and is present in an amount of from 0.1 to 2 times the amount of said tertiary branched chain fatty acid ester.

5,356,727

CARBONACEOUS MATERIAL PROTECTED AGAINST OXIDATION BY BORON CARBONITRIDE

Yves Grenie; André Marchand, both of Merignac, and Frédéric Saugnac, Talence, all of France, assignors to Aerospatiale Societe Nationale Industrielle, France

Continuation of Ser. No. 556,846, Jul. 20, 1990, abandoned. This application Apr. 17, 1992, Ser. No. 870,800

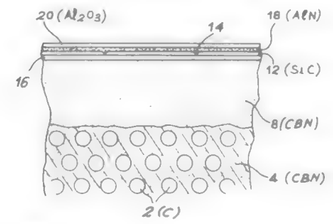
Claims priority, application France, Jul. 21, 1989, 89 09872

Int. Cl.[5] B32B *18/00;* B64G *1/58*

U.S. Cl. 428—698 49 Claims

1. Carbonaceous material protected against oxygen at a temperature up to 2000° C., comprising an external coating in boron carbonitride and at least one outer ceramic layer covering said external coating, said external coating containing

essentially a solid solution of carbon, boron and nitrogen, with an atomic %:



$C_{0.30}B_{0.35}N_{0.35}$.

5,356,728

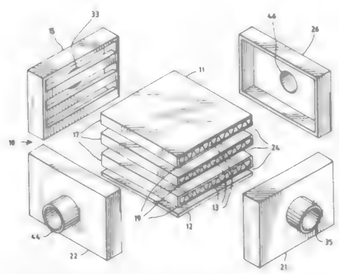
CROSS-FLOW ELECTROCHEMICAL REACTOR CELLS, CROSS-FLOW REACTORS, AND USE OF CROSS-FLOW REACTORS FOR OXIDATION REACTIONS

Uthamalingam Balachandran, Hinsdale; Roger B. Poeppel, Glen Ellyn; Mark S. Kleefisch, Naperville; Thaddeus P. Kobylinski, Lisle, and Carl A. Udovich, Joliet, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Apr. 16, 1993, Ser. No. 48,668

Int. Cl.[5] H01M *8/00*

U.S. Cl. 429—8 24 Claims



1. An electrochemical reactor cell for reacting oxygen from an oxygen-containing gas stream with hydrocarbyl compounds in another gas stream which comprises a gas stream defining a direction of steam flow containing either the oxygen-containing gas or the hydrocarbyl compounds and positioned therein a ceramic core having an outer surface including a flat entrance surface and a flat exit surface spaced apart from and parallel to the entrance surface, and at least one core channel therebetween for flow of one or more gases from the entrance surface to the exit surface and defining a direction of channel flow which direction is non parallel to the direction of stream flow, wherein each channel has at least one channel wall disposed between the channel and a portion of the outer surface of the ceramic core comprising a gas-impervious mixed metal oxide material of a perovskite structure having electron conductivity and oxygen ion conductivity. and wherein the reactor cell is free of means for completion of an external electric circuit.

5,356,729

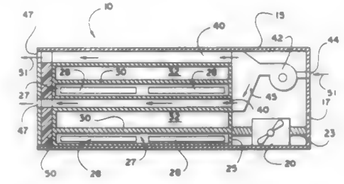
DIFFUSION CONTROLLED AIR MANAGER FOR METAL-AIR BATTERY

Christopher S. Pedicini, Marietta, Ga., assignor to AER Energy Resources, Inc., Atlanta, Ga.

Filed Jun. 15, 1993, Ser. No. 77,827

Int. Cl.[5] H01M *12/08*

U.S. Cl. 429—27 22 Claims



1. An enclosure for a metal-air cell, comprising:

a housing for enclosing at least one metal-air cell, said housing effectively preventing exchange of gases between the interior of said housing and the surrounding environment with the exception of diffusion through one or more ventilation openings, said ventilation opening or openings sized to preferentially diffuse oxygen into said housing upon reduction of the oxygen concentration within said housing caused by operation of said cell; and

a fan positioned to circulate and mix gases within said housing without creating an inlet or outlet flow disruptive of said diffusion.

5,356,730

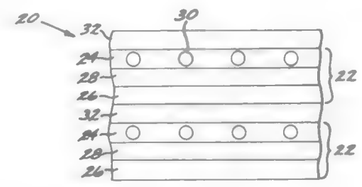
MONOLITHIC FUEL CELL HAVING IMPROVED INTERCONNECT LAYER

Nguyen Q. Minh, Fountain Valley; Timothy R. Armstrong, Palos Verdes Pen., and James J. Van Ackeren, Wilmington, all of Calif., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Mar. 26, 1993, Ser. No. 37,778

Int. Cl.[5] H01M *8/12*

U.S. Cl. 429—32 9 Claims



1. A fuel cell, comprising:

a pair of electrodes, including

an anode, and

a cathode;

a solid electrolyte disposed between the anode and the cathode; and

interconnect means for providing an electrical connection located adjacent to one of the electrodes but not adjacent to the solid electrolyte, the interconnect means including an interconnect layer having a composition selected from the group of electrically conducting materials consisting of

(i) a mixture of an electrical conductor and a matrix material that is sinterable in an oxidizing atmosphere at a temperature of less than about 1500 C.,

(ii) a mixture of a lanthanum chromite-based ceramic and a yttrium chromite-based ceramic, and

(iii) a yttrium chromite-based ceramic of the form Y_{w-x}-

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$_yCa_xZr_yCr_{1-x}Zn_zO_3$, where w is from about 0.9 to about 1.1, x is from about 0.1 to about 0.3, y is from about 0.001 to about 0.1, z is from about 0.1 to about 0.3, and v is from about 1 to about 1.2.

5,356,731

MOLTEN CABONATE FUEL CELL WITH SINTERED $LICOO_2$ ELECTRODE

Eric F. Sitters, Purmerend, and Lambertus Plomp, Amsterdam, both of Netherlands, assignors to Stichting Energieonderzoek Centrum Nederland, Petten, Netherlands

Continuation of Ser. No. 753,100, Aug. 30, 1991, abandoned. This application Sep. 27, 1993, Ser. No. 126,738

Claims priority, application Netherlands, Aug. 30, 1990, 9001916

Int. Cl.[5] H01M *4/86*

U.S. Cl. 429—45 1 Claim

1. A molten carbonate fuel cell containing an electrode which is a unitary sintered porous body of $LiCoO_2$.

5,356,732

ALKALINE STORAGE CELL ACTIVATION METHOD

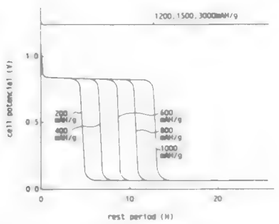
Masayuki Terasaka, Tsuna; Masaki Higuchi, and Kenji Arisawa, both of Sumoto, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed May 28, 1993, Ser. No. 68,050

Claims priority, application Japan, May 29, 1992, 4-139448; Sep. 30, 1992, 4-262484; Nov. 25, 1992, 4-315136

Int. Cl.[5] H01M *10/44*

U.S. Cl. 429—52 6 Claims



1. A method for activating an alkaline storage cell which has never been charged and which comprises a non-sintered type nickel positive electrode comprised of a metallic cobalt powder, the method comprising:

charging the storage cell with an amount of 1000 mAH or lower per 1 g of the metallic cobalt powder included in the positive electrode;

resting the charged storage cell; and

conducting a conditioning operation comprising charging and discharging the storage cell which has been rested.

5,356,733

BATTERY ACID DEFLECTOR

Greg Green, Oak Grove, Mo., and Tosh Uba, Lakewood, Colo., assignors to Hawker Energy Products, Inc., Warrensburg, Mo.

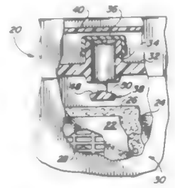
Filed Oct. 29, 1993, Ser. No. 146,285

Int. Cl.[5] H01M *2/36*

U.S. Cl. 429—72 6 Claims

5. In a normally sealed multi-cell, lead-acid battery of the starved electrolyte type utilizing in situ formation, wherein each cell of the battery comprises a compartment having a lid with a filling port and houses a cell pack, located beneath and spaced from the filling port, the cell pack comprising at least one porous positive plate, at least one porous negative plate, and a porous, relatively fragile microfiber glass mat separator interleaved between the plates, the improvement comprising:

a deflector platform for each cell integral with the lid and having a deflecting surface located between the filling port and the cell pack of each cell of the battery; the deflecting surface being in a plane that intersects a sidewall of the battery without passing through the cell pack whereby when the battery is being filled with electrolyte



by drawing a high vacuum on one or more of the cells, the electrolyte impinges on the deflecting surface and is deflected laterally to avoid directly striking the cell pack thereby precluding damage to the cell pack and in particular, the porous relatively fragile microfiber glass mat separator of the cell pack.

5,356,734

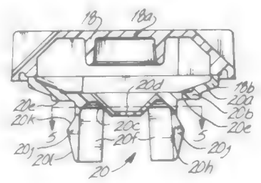
BATTERY CLOSURE MEANS

Nawaz M. Oureshi, La Mirada, Calif., assignor to Trojan Battery Company, Sante Fe Springs, Calif.

Continuation-in-part of Ser. No. 120,527, Nov. 13, 1987, abandoned. This application Apr. 21, 1988, Ser. No. 184,276

Int. Cl.[5] H01M *2/12*

U.S. Cl. 429—88 6 Claims



1. Battery closure means having at least two interconnected stoppers for simultaneous insertion in individual cell access openings in a battery cover wherein each such opening includes one or more ears disposed at an angle to the plane of said opening for locking engagement with a rotatable bayonet plug, comprising in combination,

each of said stoppers comprising an arm engageable with said ear and having a surface a portion of which is disposed at the angle of disposition of the corresponding ear for engagement therewith upon rectilinearly simultaneous insertion of said stoppers into said openings.

5,356,735

HEATED/COOLED BATTERY

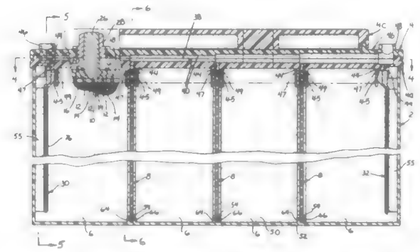
Clarence A. Meadows, Muncie, and James R. Bish, Anderson, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 10, 1993, Ser. No. 58,187

Int. Cl.[5] H01M *10/50*

U.S. Cl. 429—120 13 Claims

1. In a multicell, electric storage battery comprising a monobloc container having bottom, end and side walls defining a plurality of cell compartments, a cover for said container, a plurality of galvanic cell elements each housed in a separate cell compartment within said container, and an electrically nonconductive intercell partition engaging said side and bottom walls for separating one said cell compartment from the next, the improvement wherein said partition comprises first and second external faces on opposite sides thereof each of said faces confronting a one of said elements in an adjacent cell compartment, at least one liquid flow passage formed in said partition interjacent said faces, inlet means at one end of said passage for supplying liquid to said passage, outlet means at the



other end of said passage for exhausting said liquid from said passage, and conduit means connected to said inlet and said outlet means for respectfully supplying and removing said liquid from said passage, whereby liquids can be circulated through said passages to add heat to or extract heat from within the innards of said battery directly through said faces.

5,356,736

ORGANIC ELECTROLYTE SOLUTION TYPE CELL

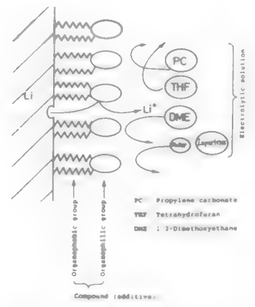
Fusaji Kita; Akira Kawakami, both of Osaka, and Kozo Kajita, Shiga, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Continuation of Ser. No. 738,607, Jul. 31, 1991, abandoned, which is a division of Ser. No. 499,667, Mar. 27, 1990, Pat. No. 5,085,594. This application Dec. 7, 1992, Ser. No. 987,251

Claims priority, application Japan, Mar. 31, 1989, 1-81681

Int. Cl.[5] H01M *10/40*

U.S. Cl. 429—197 14 Claims



1. An organic electrolytic solution cell comprising a positive electrode, a negative electrode which comprises lithium and an electrolytic solution of a lithium salt in a polar solvent which contains a compound comprising an organophobic group having at least one straight chain alkyl group with at least three carbon atoms and an organophilic group selected from the group consisting of a ketone group, an ether group and an ester group, said organophobic and organophilic group being directly connected.

5,356,737

Patent Not Issued For This Number

5,356,738

RETICLE COMPRISING PHASE SHIFTER WITH A TAPERED EDGE

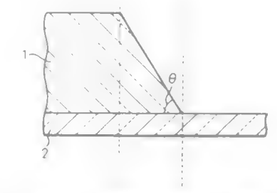
Hiroyuki Inoue; Kenji Anzai, and Kimiaki Tanaka, all of Tokyo, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 24, 1991, Ser. No. 813,030

Claims priority, application Japan, Dec. 28, 1990, 2-416009

Int. Cl.[5] G03F *9/00*

U.S. Cl. 430—5 14 Claims



1. A photo mask for forming a light exposure pattern in a photolithography process of a fabricating semiconductor device, comprising:

a glass substrate; and,

a phase shifter formed as a pattern on the glass substrate, the edge of said phase shifter having a tapered structure.

5,356,739

STAINPROOF PROTECTOR MADE FROM FLUORINE-CONTAINING ALIPHATIC CYCLIC POLYMER FOR PREVENTING STAINING OF LITHOGRAPHIC MASKS

Toru Kawasaki, Ichihara; Masao Unoki, Yokohama, and Masaru Nakamura, Tokyo, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 531,166, May 31, 1990, abandoned. This application Jan. 22, 1993, Ser. No. 7,818

Claims priority, application Japan, May 31, 1989, 1-136178

Int. Cl.[5] G03F *7/11*

U.S. Cl. 430—5 14 Claims

1. A stainproof protector for preventing a mask for lithography from staining, which has a protective film made of a polymer having a fluorine-containing aliphatic cyclic structure.

5,356,740

RADIATION-SENSITIVE COMPOSITIONS

Alfred Steinmann, Praroman, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 20, 1992, Ser. No. 979,498

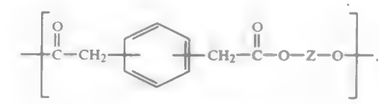
Claims priority, application Switzerland, Nov. 26, 1991, 3462/91-1

Int. Cl.[5] G03C *3/00*

U.S. Cl. 430—18 12 Claims

1. A radiation-sensitive composition comprising

(a) a polyester containing structural repeating units of formula (I)



(I)

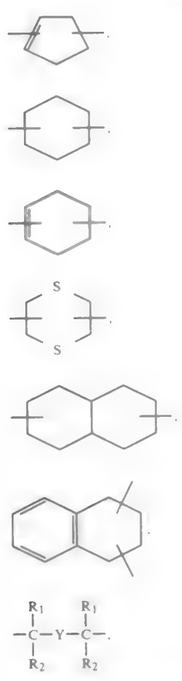
wherein Z is a radical of formulae (IIa)–(IIh)



(IIa)

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-continued



(IIb)

(IIc)

(IId)

(IIe)

(IIf)

(IIg)

(IIh)

wherein Y is a direct bond, C_1–C_{20}alkylene, phenylene, —CH_2—C_6H_4—CH_2—, cyclopentylene or cyclohexylene, and R_1 and R_2 are each independently of the other hydrogen, methyl or ethyl, with the proviso that R_1 and R_2 are not simultaneously hydrogen, and

(b) a substance that generates acid upon exposure to actinic radiation.

5,356,741

CONTROL OF THE ACID/BASE ENVIRONMENT IN PHOTOCONDUCTIVE ELEMENTS

Kathleen M. Carmichael, Williamson; Sharon E. Normandin, Macedon; Donald P. Sullivan, Rochester; Edward F. Grabowski, Webster, and Emery G. Tokoli, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 815,226, Dec. 31, 1991, abandoned. This application Jun. 3, 1993, Ser. No. 71,360

Int. Cl.[5] G03G *5/04*

U.S. Cl. 430—56 **16 Claims**

1. The method of controlling variations in the electrical characteristics of an electrophotographic imaging member due to the presence of acidic or basic impurities in a photoconductive element of the imaging member, which method comprises:

coating a substrate with a dispersion comprising at least one of a charge generating material or a charge transporting material, a solution comprising a weak acid or a weak base and a conjugate salt of the weak acid or the weak base, and a binder resin;

and drying the dispersion to form a photoconductive element on the substrate.

5,356,742

DIPYRENYLAMINE DERIVATIVES AND ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR COMPRISING THE SAME

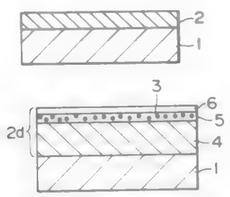
Tomoyuki Shimada, Shizuoka; Masaomi Sasaki, Susono; Tamotsu Aruga, Mishima, and Hiroshi Adachi, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 28, 1992, Ser. No. 842,993

Claims priority, application Japan, Mar. 1, 1991, 3-059475; Jul. 9, 1991, 3-195880

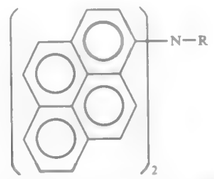
Int. Cl.[5] G03G *5/047, 5/09*

U.S. Cl. 430—59 **42 Claims**



1. An electrophotographic photoconductor comprising an electroconductive substrate and a photoconductive layer formed thereon, said photoconductive layer comprising a sensitizer dye and a dipyrenylamine derivative of formula (I):

(I)



wherein R is selected from the group consisting of an alkyl group with 1 to 12 carbon atoms, an aryl group and a heterocyclic aromatic hydrocarbon group, each of which may have a substituent.

41. The electrophotographic photoconductor as claimed in claim 1, wherein said photoconductive layer comprises a charge generation layer containing a charge generating material, and a charge transfer layer containing said dipyrenylamine derivative as a charge transporting material.

5,356,743

ELECTROPHOTOGRAPHIC IMAGING MEMBERS CONTAINING POLYARYLAMINE POLYESTERS

John F. Yanus, Webster; William W. Limburg, Penfield, and Dale S. Renfer, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 798,308, Nov. 25, 1991, abandoned. This application Nov. 8, 1993, Ser. No. 148,818

Int. Cl.[5] G03G *5/047, 5/09*

U.S. Cl. 430—59 **18 Claims**

1. An electrostatographic imaging member comprising a support layer, at least one charge generating layer and a charge transport layer, at least said charge generating layer or said charge transport layer comprising a polyarylamine polymer represented by the formula:

FORMULA I



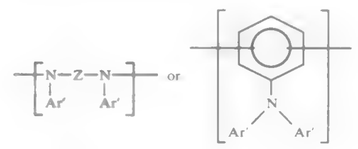
wherein:

n is between about 5 and about 5,000

p is between about 0 and about 5,000

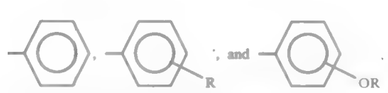
X′ and X″ are a biradical independently selected from the group consisting of alkylene, arylene, substituted alkylene, substituted arylene and ether linkages represented by —R—O—R— where R is an alkylene moiety of 1–25 carbon atoms optionally interrupted by ether oxygens,

Q is a divalent group derived from a hydroxy terminated arylamine reactant containing the group:

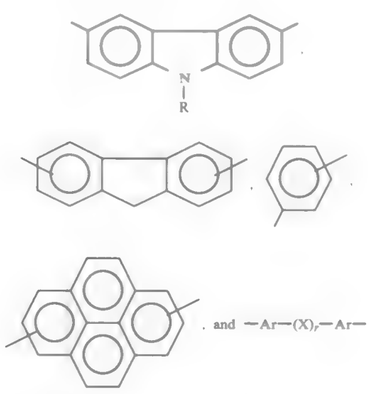


wherein:

Ar′ is selected from the group consisting of:

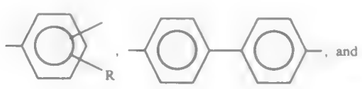


Z is selected from the group consisting of:

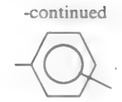


r is 0 or 1,

Ar is selected from the group consisting of:

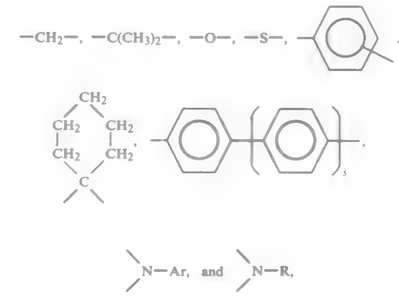


-continued



R is selected from the group consisting of —CH_3, —C_2H_5, —C_3H_7, and —C_4H_9,

X is selected from the group consisting of:



s is 0, 1 or 2,

Q′ is a divalent group derived from a hydroxy terminated group, and

the weight average molecular weight of the polyarylamine polymer is between about 10,000 and about 1,000,000.

2. An electrostatographic imaging member according to claim 1 wherein said charge generating layer is between said support layer and said charge transport layer.

3. An electrostatographic imaging member according to claim 2 wherein said charge transport layer comprises said polyarylamine polymer.

5,356,744

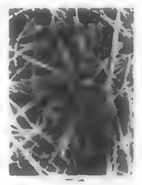
CONDUCTIVE LAYERS USING CHARGE TRANSFER COMPLEXES

John F. Yanus, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 27, 1989, Ser. No. 457,856

Int. Cl.[5] G03G *15/04*

U.S. Cl. 430—62 **33 Claims**



1. An electrically conductive composition comprising about 1 to about 40 weight percent of a charge transfer complex of a TCNQ salt and a donor molecule, wherein said charge transfer complex is in the form of at least one member selected from the group consisting of fibrils and sphericulites, said composition having been obtained by evaporating a solvent containing said TCNQ salt and donor molecule, said solvent having a relative evaporation rate less than about 30.

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5,356,745

INCREASING ADHESION OF POLYESTER AND PLASTICIZED POLYVINYL BUTYRAL LAYERS

Francis A. Sliemers, and George P. Nance, both of Columbus, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 15, 1989, Ser. No. 436,840
Int. Cl.[5] G03G *15/04*; B32B *17/10*
U.S. Cl. 430—66 12 Claims

1. A laminate comprising a polyester layer having a surface film of plasma-polymerized chlorosilane in face-adhering contact with a layer of plasticized polyvinyl butyral.

5,356,746

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER, ELECTROPHOTOGRAPHIC APPARATUS, DEVICE UNIT AND FACSIMILE MACHINE

Satomi Sugiyama, Kawasaki; Yoshio Kashizaki, Yokohama; Koichi Suzuki, Kawasaki, and Shintetsu Go, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,384
Claims priority, application Japan, Oct. 15, 1991, 3-293901
Int. Cl.[5] G03G *5/06*
U.S. Cl. 430—73 11 Claims

1. An electrophotographic photosensitive member, comprising: an electroconductive support and a photosensitive layer disposed on the electroconductive support, wherein the photosensitive layer comprises a triazene compound represented by the following formula (2):



wherein Ar is a substituted or unsubstituted aryl group having a valence of n, or a substituted or unsubstituted aromatic heterocyclic group having a valence of n; R is hydrogen, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted aralkyl group; A is a substituted or unsubstituted aryl group or a substituted or unsubstituted aromatic heterocyclic group; and n is 2 or 3.

5,356,747

TONER FOR DEVELOPING ELECTROSTATIC IMAGE AND PROCESS FOR PRODUCTION THEREOF

Mikio Uno, Kanagawa; Takashi Shintaku, Tokyo, and Takatsugu Takehara, Kanagawa, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Mar. 11, 1993, Ser. No. 29,612
Claims priority, application Japan, Mar. 11, 1992, 4-052784; Dec. 2, 1992, 4-323365
Int. Cl.[5] G03G *9/09*
U.S. Cl. 430—109 9 Claims

1. A toner for developing electrostatic images, comprising at least a resin and a granulated carbon black having a grain hardness of 2 g or less as starting raw materials blended therein.

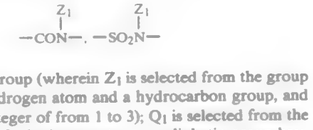
5,356,748

LIQUID DEVELOPER FOR ELECTROSTATIC PHOTOGRAPHY

Seiji Horie; Kenji Sano; Nobuo Suzuki, and Shu Watarai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

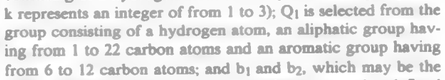
Filed Nov. 10, 1992, Ser. No. 974,215
Claims priority, application Japan, Nov. 21, 1991, 3-306070
Int. Cl.[5] G03G *9/135*
U.S. Cl. 430—115 20 Claims

1. A positively chargeable liquid developer for electrostatic-photography comprising a non-aqueous solvent having a volume specific resistance of at least 10^9 Ωcm and resin grains dispersed therein, wherein said resin grains contain a dispersion stabilizing resin which is dissolved or dispersed in a colloidal form in said non-aqueous solvent and which mainly comprises a graft copolymer composed of (1) at least one macromonomer (M) having a weight average molecular weight of from 1×10^3 obtained by bonding a terminal carboxyl group bonded to the main chain of a polymer containing at least one polymer component represented by the following general formula (I) to an epoxy compound having at least one polymerizable double bond group, using a quaternary ammonium salt as a reaction catalyst, said at least one macromonomer containing said quaternary ammonium salt, and (2) at least one monomer represented by the following general formula (II):



(I)

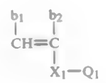
wherein X_0 is selected from the group consisting of





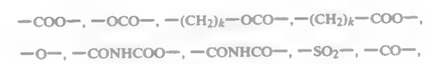
and a phenylene group (wherein Z_1 is selected from the group consisting of a hydrogen atom and a hydrocarbon group, and k represents an integer of from 1 to 3); Q_1 is selected from the group consisting of a hydrogen atom, an aliphatic group having from 1 to 22 carbon atoms and an aromatic group having from 6 to 12 carbon atoms; and b_1 and b_2, which may be the same or different, have the same meanings as a_1 and a_2 defined in the general formula (I).

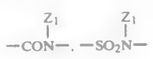
(wherein Z_1 is selected from the group consisting of a hydrogen atom and a hydrocarbon group, and k represents an integer of 1 to 3); a_1 and a_2, which may be the same or different, each is selected from the group consisting of a hydrogen atom, a halogen atom, a cyano group, a hydrocarbon group, —COO—Z_2 and —COO—Z_2 bonded via a hydrocarbon group is selected from the group consisting of a hydrogen atom and a hydrocarbon group which may be substituted); and Q_0 represents an aliphatic group having from 4 to 22 carbon atoms;



(II)

wherein X_1 is selected from the group consisting of





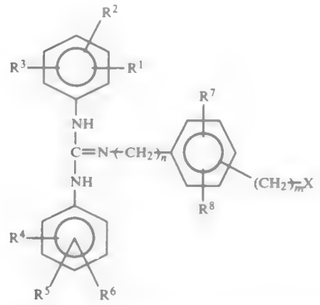
5,356,749

IMAGING METHOD COMPRISING A DEVELOPER HAVING A NOVEL GUANIDINE TYPE COMPOUND

Kazuyoshi Hagiwara, and Katsuhiko Tanaka, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 599,499, Oct. 18, 1990, Pat. No. 5,246,810.
This application Jun. 23, 1993, Ser. No. 79,826
Claims priority, application Japan, Oct. 18, 1989, 1-269070
Int. Cl.[5] G03G *13/08*
U.S. Cl. 430—122 27 Claims

1. An image forming method comprising the steps of:
charging a chargeable body by a charging means;
forming an electrophotographic latent image on said chargeable body by a latent image forming means, and
developing said electrophotographic latent image by a developer, wherein said developer includes a toner comprising a binder resin and a guanidine type compound having the following formula:



wherein R^1 to R^8 are each a hydrogen atom, an alkyl group having from 1 to 18 carbon atoms, a substituted or unsubstituted phenyl group, a substituted or unsubstituted naphthyl group, a substituted or unsubstituted tolyl group or a substituted or unsubstituted xylyl group; R^1 to R^8 are the same or different and together form a ring with adjacent substituents; X is a halogen atom, an hydroxyl group or an alkoxy group; and m and n are each an integer having a value of 1 to 8.

5,356,750

DYE RELEASING COUPLERS FOR HEAT IMAGE SEPARATION SYSTEMS

John Texter, Rochester; Thomas R. Welter, Webster; David T. Southby, and Jared B. Mooberry, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 21, 1992, Ser. No. 993,580
The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.
Int. Cl.[5] G03C *5/54*
U.S. Cl. 430—203 56 Claims

25. A diffusion transfer process for forming a color photographic image comprising the steps of:
providing an aqueous-developable photographic color diffusion transfer element comprising a single dimensionally stable support and one or more layers comprising radiation sensitive silver halide, a thermal solvent for facilitating the thermal diffusion of dyes through a hydrophilic binder, a dye-releasing coupler, and hydrophilic binder, wherein said dye is heat diffusible in said binder and thermal solvent, and wherein said dye-releasing coupler is of the structure

Cp—L-Dye

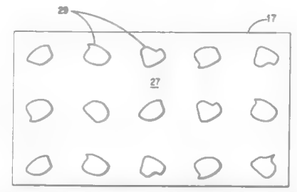
where
Cp is a coupler radical selected from the group comprising cyan dye forming radicals, magenta dye forming radicals, yellow dye forming radicals, black dye forming radicals, and colorless product forming radicals, said Cp being substituted in the coupling position with a divalent linking group, L;
Dye is a dye radical exhibiting selective absorption in the visible spectrum; and where said —L-Dye group couples off upon reaction of said coupler radical with the oxidation product of a primary amine developing agent, and such that the Dye radical is subsequently released from the —L-Dye group;
and wherein said element is devoid of any developing agent or electron transfer agent;
exposing said element to actinic radiation;
processing said element by contacting said element to an external aqueous bath containing compounds selected from the group consisting of color developer compounds of the primary amine type;
washing said element;
drying said element to remove the imbibed water; and
heating said element to effect dye diffusion transfer to an image receiving layer.

5,356,751

METHOD AND PRODUCT FOR PARTICLE MOUNTING

Allan Cairncross, Hockessin, Del., and Ulrich Klabunde, West Chester, Pa., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Continuation of Ser. No. 923,128, Jul. 31, 1992, abandoned. This application Dec. 27, 1993, Ser. No. 173,258
Int. Cl.[5] G03F *7/34*, *7/28*; G02B *21/34*
U.S. Cl. 430—253 19 Claims



1. A process for mounting free-flowing particles in an array having at least 50% singly or doubly mounted particles, comprising the steps of: (a) providing a support surface having an array of tacky areas which have a size and bonding strength suitable for adhesion of either one or two of said particles; and (b) flowing said particles across the support surface to allow particles to contact the tacky areas and adhere thereto.

5,356,752

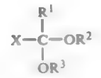
COMPOUNDS WITH ACID-LABILE PROTECTIVE GROUPS USEFUL IN POSITIVE-WORKING RADIATION-SENSITIVE MIXTURES

Ivan Cabrera, Gross-Gerau; Walter Spiess, Dieburg, and Georg Pawlowski, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 28, 1992, Ser. No. 920,848
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1991, 4125258
Int. Cl.[5] G03C *1/492*
U.S. Cl. 430—270 17 Claims

1. A positive-working radiation-sensitive mixture, comprising:
(a) a compound that generates a strong acid under the action of actinic radiation,
(b) a compound having at least one C—O—C bond that can be cleaved by the acid generated by the compound (a), said compound represented by the formula I

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in which

X is a phenyl, (1)naphthyl or (2)naphthyl radical that is substituted by at least one tert.-butoxycarbonyloxy group and optionally by further substituents,

R^1 is a hydrogen atom, a (C_1–C_6)-alkyl radical, a (C_6–C_{10})-aryl radical or one of the radicals X, and

R^2 and R^3 are identical or different and are a (C_1–C_{12})-alkyl radical in which up to three methylene groups are optionally replaced by bridge members having at least one hetero atom, said bridge members being selected from the group consisting of —O—, —S—, —NR^4—, —CO—, —CO—O—, —CO—NH—, —O—CO—NH—, —NH—CO—NH—, —CO—NH—CO—, —SO_2—, —SO_2—O— or —SO_2—NH—, a (C_3–C_{12})-alkenyl, (C_3–C_{12})-alkynyl, (C_4–C_{12})-cycloalkyl, (C_4–C_{12})-cycloalkenyl and (C_8–C_{16})-aralkyl radical, up to three methylene groups of the aliphatic moiety of the (C_8–C_{16})-aralkyl radical being optionally replaced by bridge members of the abovementioned type and the aromatic moiety of the (C_8–C_{16})-aralkyl radical being optionally substituted by fluorine, chlorine or bromine atoms or by (C_1–C_4)-alkyl, (C_1–C_4)-alkoxy, nitro, cyano or tert.-butoxycarbonyloxy groups,

R^4 being an acyl radical, and

(c) a binder that is insoluble in water but soluble or at least swellable in aqueous-alkaline solution.

5,356,753

POSITIVE RESIST MATERIAL

Motoyuki Yamada, Saitama; Osamu Watanabe, Niigata; Akinobu Tanaka, Kanagawa; Hiroshi Ban, Kanagawa, and Yoshio Kawai, Kanagawa, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd. and Nippon Telegraph and Telephone Corp., both of Tokyo, Japan

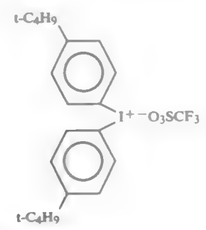
Filed Nov. 12, 1992, Ser. No. 973,398

Claims priority, application Japan, Nov. 11, 1991, 3-321540

Int. Cl.[5] G03C *1/492*

U.S. Cl. 430—270 **5 Claims**

1. A positive resist material for high energy-sensitive positive resists which can be developed in aqueous alkali solution, said material comprising (A) a polyhydroxystyrene resin having a molecular weight distribution in the range of $1.00 < Mw/Mn \leqq$ to 1.50, wherein some hydroxyl groups are substituted by t-butoxycarbonyloxy groups, (b) a solution blocking agent, and (C) an onium salt, and being characterized in that said solution blocking agent contains at least one t-butoxycarbonyloxy group per molecule, said onium salt is bis(p-t-butylphenyl) iodonium trifluoromethylsulfonate represented by the following formula (1):



(1)

and the weight proportions of (A), (B), (C) are given by the relations $0.07 \leqq B \leqq 0.40$, $0.005 \leqq C \leqq 0.15$, $0.55 \leqq A$, $A+B+C=1$.

5,356,754

CROSSLINKING CURABLE RESIN COMPOSITION

Kenji Kushi; Ken-ichi Inukai; Takayuki Iseki, and Seiya Koyanagi, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Sep. 25, 1992, Ser. No. 950,500

Int. Cl.[5] G03C *1/73*

U.S. Cl. 430—288 **5 Claims**

1. A crosslinking curable resin composition of a combined gross weight of 100 parts by weight comprising:

(a) 5–30 parts by weight of at least one compound possessing in one molecule on the average 1.5 or more (meth)acryloyloxy groups, which is obtained by reacting (meth)acrylic acid or chloride (meth)acrylate with a reaction product formed by adding, to a polyatomic alcohol possessing 3 or more OH groups in one molecule, an alkylene oxide of propylene oxide singly or formed from a combination of propylene oxide and ethylene oxide, with propylene oxide incorporated in an amount of 67% molar or greater, in the amount of 5–12 moles per mole of OH group in said polyatomic alcohol,

(b) 5–30 parts by weight of at least one crosslinkable monomer other than that stated above in (a), possessing in one molecule 2 or more ethylenically unsaturated groups,

(c) 45–75 parts by weight of a thermoplastic polymer for use as a binder, the thermoplastic polymer in turn being formed of 15–35 wt % of at least one α,β-unsaturate carboxyl group containing a monomer having 3–15 carbon atoms, and 65–85 wt % of another copolymerizable monomer, and

(d) 0–10 parts by weight of a photopolymerization initiator.

5,356,755

METHOD FOR PRODUCING PRINTED CIRCUIT BOARD USING PHOTOCURABLE RESIN LAMINATE

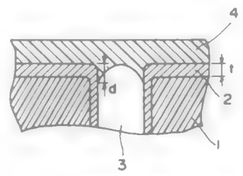
Hideki Matsuda; Jiro Sato, and Toru Mori, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 555,484, Aug. 16, 1990, abandoned. This application Apr. 13, 1993, Ser. No. 46,368

Claims priority, application Japan, May 17, 1989, 1-121325; Sep. 18, 1989, 1-240262; Nov. 27, 1989, 1-304878

Int. Cl.[5] H05K *3/42;* **G03F** *7/038*

U.S. Cl. 430—313 **6 Claims**



1. A method for producing a printed circuit board, which comprises the steps of:

(1) providing a metal-clad insulating base board having on both surfaces thereof a metallic conductive layer and having a plurality of through-holes with their respective entire inner walls covered with a metallic conductive layer, said through-holes containing at least one through-hole having a diameter of not greater than 0.5 mm;

(2) applying to both surfaces of said metal-clad insulating base board a photocurable resin laminate comprising a support and a photocurable resin layer disposed on one surface of said support, so that both surfaces of said metal-clad insulating base board, which are inclusive of both terminal openings of each through-hole, are each covered with one surface of the photocurable resin layer remote from said support,

said photocurable resin layer having:

(a) a viscosity of from 10^4 to 5×10^5 poises as measured at 90° C.;

(b) a thickness of from 30 to 150 μm; and

(c) an ultraviolet ray transmittance of from 40 to 95% with respect to ultraviolet rays having a wave-length of 365 nm,

wherein the application of said photocurable resin laminate to both surfaces of the metal-clad insulating base board is conducted under pressure so that a portion of said photocurable resin layer remote from said support intrudes locally in the inner side of each of the inner circumferential edges of both terminal openings of each through-hole and extends from said inner circumferential edge of each terminal opening along and on the inner wall of said through-hole to a depth which is not smaller than 0.3 in terms of an index n, which is defined as a ratio of said depth to the thickness of the metallic conductive layer on each surface of the metal-clad insulating base board;

(3) exposing the photocurable resin layer on each surface of the metal-clad insulating base board to ultraviolet radiation through a predetermined transmitting pattern to form an exposed resin layer containing a photocured resin latent image covering both terminal openings of each through-hole;

(4) subjecting the exposed resin layer on each surface of the metal-clad insulating base board to development with a developer to form an image of the photocured resin corresponding to said photocured resin latent image; and

(5) etching the metallic conductive layer on each surface of the metal-clad insulating base board in areas other than the image of the photocured resin as an etching resist.

5,356,757

IMMOBILIZED ENZYME FILM, PROTEIN IMMOBILIZED FILM AND PROCESS FOR FORMING THE SAME

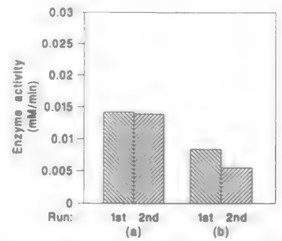
Kiseko Shionoya, and Atsushi Saito, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 6, 1992, Ser. No. 972,560

Claims priority, application Japan, Nov. 8, 1991, 3-319711; Jan. 17, 1992, 4-025944

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—315 **11 Claims**



1. An immobilized enzyme film, characterized in that said film is formed using an enzyme solution prepared by adding 1 to 3 parts by weight of a 50 to 100 wt % water-soluble crosslinking agent having at least two epoxy groups in the molecule wherein said water-soluble crosslinking agent is ethylene polyethylene glycol diglycidyl ether and 1 to 3 parts by weight of a 1 to 2 wt % glutaraldehyde to 1 to 3 parts by weight of a 10 to 50 wt % aqueous protein solution containing an enzyme.

5,356,756

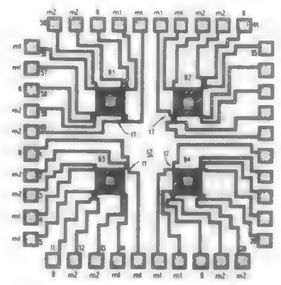
APPLICATION OF MICROSUBSTRATES FOR MATERIALS PROCESSING

Richard Cavicchi, Washington Grove; Stephen Semancik, Mt. Airy; John S. Suehle, Westminster, and Michael Gaitan, Gaithersburg, all of Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Oct. 26, 1992, Ser. No. 965,943

Int. Cl.[5] C23C *16/00*

U.S. Cl. 430—315 **20 Claims**



1. A method of preparing a plurality of micro-samples of materials for investigation which comprises:

providing a substrate having a plurality of micro-hotplates, wherein each of said plurality of micro-hotplates can be individually temperature controlled; and

depositing a material film on said plurality of micro-hotplates while thermally cycling selected ones of said plurality of micro-hotplates to form a micro-sample on each of said plurality of micro-hotplates.

5,356,758

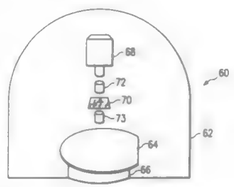
METHOD AND APPARATUS FOR POSITIVELY PATTERNING A SURFACE-SENSITIVE RESIST ON A SEMICONDUCTOR WAFER

Kevin J. Orvek, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 569,250, Aug. 15, 1990, abandoned, which is a continuation of Ser. No. 290,946, Dec. 28, 1988, abandoned. This application Jan. 15, 1992, Ser. No. 823,086

Int. Cl.[5] G03C *5/16*

U.S. Cl. 430—322 **4 Claims**



1. A method for positively imaging a surface-sensitive photoresist, comprising the steps of:

formulating a photoresist composition consisting essentially of a phenol-containing resin containing no additional photoactive compound;

coating a semiconductor surface of a workpiece with the photoresist composition to form a photoresist layer;

superimposing a positive image reticle over said photoresist layer;

selectively exposing said photoresist layer to deep ultraviolet light through said positive image reticle to crosslink phenol molecules within said photoresist layer to form a positive image;

during said step of exposing said photoresist layer to ultravi-

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olet light, selectively heating said photoresist layer to a temperature within the range of 90° C. to 140° C. to increase the crosslink reaction rate of phenol molecules within said photoresist layer;

introducing a gaseous hexamethyldisilazane capable of permeating noncrosslinked regions of said photoresist layer into a chamber containing the workpiece;

forming silicon bonds with the gaseous hexamethyldisilazane and said resin except in said exposed areas; and

removing said photoresist layer from said exposed areas to form a positive image in said photoresist layer on said semiconductor surface.

5,356,759

COLOR REVERSAL IMAGE FORMING PROCESS USING HIGH CHLORIDE EMULSIONS AND HIGH CHLORIDE DEVELOPING SOLUTIONS

Akio Mitsui, and Takatoshi Ishikawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

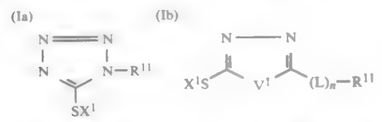
Filed Nov. 19, 1992, Ser. No. 978,743

Claims priority, application Japan, Nov. 20, 1991, 3-332674

Int. Cl.[5] G03C *7/46, 1/08, 7/26, 7/32*

U.S. Cl. 430—379 **16 Claims**

1. A color reversal image forming process using a color reversal photographic material, which comprises an exposure step, a black and white development step, a reversal step, a color development step and a desilvering step, said color reversal photographic material comprises a support and one or more silver halide emulsion layers and at least one dye-forming coupler in the said one or more silver halide emulsion layers, wherein at least one silver halide emulsion layer comprises silver halide containing chloride of not less than 90 mole %, iodide of 0 mole % and bromide of not more than 10 mole %, and the at least one silver halide emulsion layer further contains a compound represented by the formula (Ia) or (Ib):



wherein R^{11} is an alkyl group, an alkenyl group, a heterocyclic group or an aryl group; X^1 is hydrogen, an alkali metal atom, an ammonium group or a precursor thereof; V^1 is an oxygen atom, a sulfur atom, =NH or =N—(L)$_n$—R^{12} (wherein R^{12} is an alkyl group, an alkenyl group or an aryl group, and n′ is 0 or 1); L is a divalent linking group; and n is 0 or 1, and

wherein the black and white development step uses a processing solution which contains chloride ion in an amount of 5×10^{-3} mol/l to 1×10^{-1} mol/l and substantially does not contain bromide ion, and the color development step uses a processing solution which contains chloride ion in an amount of 5×10^{-3} mol/l to 1×10^{-1} mol/l and substantially does not contain bromide ion.

5,356,760

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL WITH BLACK DYE FORMING COUPLER

Mitsuhiro Okumura, Sagamihara, and Shigeo Tanaka, Tachikawa, both of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 16,536

Claims priority, application Japan, Feb. 20, 1992, 4-070245

Int. Cl.[5] G03C *5/40, 7/30, 7/34*

U.S. Cl. 430—402 **11 Claims**

1. A silver halide photographic light-sensitive material having a silver halide emulsion layer on a support, wherein the silver halide in the silver halide emulsion layer is silver bromochloride having a silver bromide content of 0.1 to 2.0 mol % and containing substantially no silver iodide; the silver halide emulsion layer containing a coupler selected from a resorcinol-based dye-forming coupler and a meta-aminophenol-based coupler, and gelatin in a coating weight of 1.0 to 1.5 g/m^2.

5,356,761

DEVELOPMENT OF SILVER HALIDE PHOTOSENSITIVE MATERIAL AND DEVELOPER

Kiyoshi Morimoto; Hiroshi Hayakawa; Takashi Toyoda, and Mitsunori Hirano, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

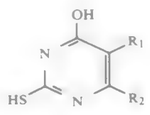
Continuation of Ser. No. 861,521, Apr. 1, 1992, abandoned. This application Feb. 28, 1994, Ser. No. 202,887

Claims priority, application Japan, Apr. 2, 1991, 3-094955; Apr. 18, 1991, 3-112275; Jul. 5, 1991, 3-191288

Int. Cl.[5] G03C *5/305*

U.S. Cl. 430—488 **5 Claims**

1. A method for developing a silver halide photosensitive material after exposure comprising the step of treating the material with a developer containing a six-membered heterocyclic compound of the general formula (I) in an amount of from 0.01 to 5 grams per liter:



(I)

wherein R_1 and R_2 are independently selected from the group consisting of a hydrogen atom, halogen atom, alkyl, aryl, aralkyl, hydroxyl, mercapto, carboxyl, sulfo, phosphono, nitro, cyano, alkoxycarbonyl, aryloxycarbonyl, carbamoyl, sulfamoyl, and alkoxy group, the sum of carbon atoms in both R_1 and R_2 ranges from 2 to 20, and R_1 and R_2, taken together, may form a saturated ring structure, wherein a replenisher containing a compound of formula (I) is added to the developer to maintain a concentration of compound (I) in the developer of from 0.01 to 5 grams per liter.

5,356,762

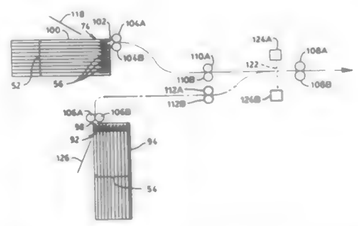
FILM-SHEET ASSEMBLAGE FOR PEEL-APART SELF-DEVELOPING FILM

Leonard Polizzotto, Stow, and Robert J. Boyea, Wellesley Hills, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 936,513, Aug. 28, 1992, Pat. No. 5,292,612. This application Nov. 24, 1993, Ser. No. 157,959

Int. Cl.[5] G03C *5/54;* **G03B** *19/10*

U.S. Cl. 430—496 **2 Claims**



2. A negative sheet element assemblage of a self-developing peel-apart film unit comprising:

a carrier sheet having a leading end, a trailing end and a pocket formed on said leading end for engagement by force transmitting means for movement therewith, and

a photosensitive sheet having a leading end, a trailing end, a photosensitive side and a non-photosensitive side, with the leading end of said non-photosensitive side being attached to said carrier sheet and the trailing end thereof being unattached thereto, and with the leading and trailing ends of said carrier sheet extending beyond said photosensitive sheet.

5,356,763

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Osamu Takahashi, and Nobutaka Ohki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

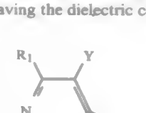
Filed Mar. 1, 1993, Ser. No. 24,437

Claims priority, application Japan, Mar. 4, 1992, 4-081393

Int. Cl.[5] G03C *1/46*

U.S. Cl. 430—505 **18 Claims**

1. A silver halide color photographic material comprising a support having provided thereon (A) at least three silver halide emulsion layers each containing at least one different coupler for forming a different dye by a coupling reaction with the oxidation product of an aromatic primary amine developing agent and each having a different light sensitivity, and (B) at least one light-insensitive anti-color mixing layer provided between each of said silver halide emulsion layers, wherein at least one of said silver halide emulsion layers contains silver halide grains having a silver chloride content of 90 mole % or more and a magenta coupler represented by the following formula (I) and each of at least two of the anti-color mixing layers contains at least one anti-color mixing agent having a molecular weight of 350 or more and at least one high boiling organic solvent having the dielectric constant of 5.0 or more:



(I)

wherein R_1 represents a hydrogen atom or a substituent; Z_a, Z_b, and Z_c each represent methine, substituted methine, =N—, or —NH—; Y represents a hydrogen atom or a group capable of splitting off upon a coupling reaction with the oxidation product of a developing agent; provided that a dimer or polymer may be formed via R_1, Y or Z_a, Z_b or Z_c each of which is a substituted methine.

5,356,764

DYE IMAGE FORMING PHOTOGRAPHIC ELEMENTS

Richard P. Szajewski, Rochester; Gary L. House, Victor; Thomas B. Brust; Debra L. Hartsell, both of Rochester; Donald L. Black, Webster; Anne E. Bohan, and James P. Merrill, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 940,404, Sep. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 826,338, Jan. 27, 1992, abandoned. This application Jun. 1, 1993, Ser. No. 69,236

Int. Cl.[5] G03C *1/035, 7/305*

U.S. Cl. 430—505 **20 Claims**

1. A color photographic element comprised of a support and, coated on the support, at least one unit containing a radiation sensitive emulsion layer comprised of a dispersing medium and silver halide grains and, in reactive association with the emulsion layer, an image-dye forming compound, where

(A) within at least one emulsion layer at least 50 percent of total grain projected area is accounted for by tabular grains (a) bounded by {100} major faces having adjacent edge ratios of less than 10, (b) each having an aspect ratio of at least 2, and (c) internally at their nucleation site containing iodide and at least 50 mole percent chloride and

(B) in reactive association with said one emulsion layer, a



development inhibitor releasing compound that contains a development inhibitor group and is capable of reacting with oxidized developing agent thereby to release such group.

5,356,765

Patent Not Issued For This Number

5,356,766

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Yoko Idogaki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

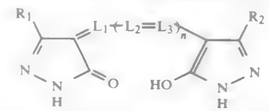
Continuation of Ser. No. 993,608, Dec. 21, 1992, abandoned. This application Jan. 27, 1994, Ser. No. 186,891

Claims priority, application Japan, Dec. 19, 1991, 3-353948

Int. Cl.[5] G03C *1/06, 1/825*

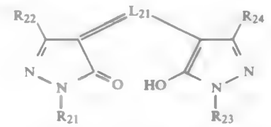
U.S. Cl. 430—522 **3 Claims**

1. A silver halide photographic black-and-white light-sensitive material comprising a support having provided thereon at least one light-sensitive emulsion layer and two non-light sensitive hydrophilic colloid layers farther from the support than the light-sensitive emulsion layer, at least one solid fine grain dispersion of a dye represented by formula (I) is incorporated into the non-light sensitive hydrophilic colloid layer closer to the light-sensitive emulsion layer, and at least one solid fine grain dispersion of a dye represented by formula (II) is incorporated into the non-light sensitive hydrophilic colloid layer farther from the light-sensitive emulsion layer:



(I)

wherein R_1 and R_2 each represents an alkyl group, an aryl group, a cyano group, —COOR$_3$, —COR$_3$, —CONR$_4$R$_5$, —NR$_4$R$_5$, —NR$_4$COR$_3$, —NR$_4$CONR$_4$R$_5$, —OR$_3$, —SR$_3$, —SOR$_3$, or —SO$_2$R$_3$; R_3 represents an alkyl group or an aryl group; R_4 and R_5 each represents a hydrogen atom, an alkyl group, or an aryl group; and R_3 and R_4, or R_4 and R_5 may be combined with each other to form a five- or six-membered ring; L_1, L_2 and L_3 each represents a methine group; and n represents 0 or 1, provided that R_1, R_2, L_1, L_2, and L_3 do not include a group having a proton capable of being ionized or a salt thereof;



(II)

wherein R_{21} and R_{23} each represents a hydrogen atom or an aryl group having at least one substituent group selected from a carboxyl group, a sulfonamide group, and a sulfamoyl group;

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R_{22} and R_{24} each represents an alkyl group, an aryl group, —OR_{26}, —$COOR_{26}$, —COR_{25}, —SR_{26}, —SOR_{25}, —SO_2R_{25}, —$CONR_{26}R_{27}$, —$NR_{26}COR_{25}$, —$NR_{26}CONR_{26}R_{27}$, —$NR_{25}R_{26}$, or a cyano group; R_{25} represents an alkyl group or an aryl group; R_{26} and R_{27} each represents a hydrogen atom, an alkyl group, or an aryl group; and R_{25} and R_{26}, or R_{26} and R_{27} may be combined with each other to form a five- or six-membered ring; and L_{21} represents a methine group, provided that where R_{21} and R_{23} are a hydrogen atom, R_{22} and R_{24} each are OH and COOH.

5,356,767

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING AN ACYLACETAMIDE TYPE YELLOW DYE FORMING COUPLER HAVING AN ACYL GROUP AND A COMPOUND CAPABLE OF RELEASING A DEVELOPMENT INHIBITOR

Masayoshi Toyoda, and Yasuhiro Yoshioka, both of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 13, 1992, Ser. No. 850,950
Claims priority, application Japan, Mar. 14, 1991, 3-74829
Int. Cl.[5] G03C *7/36, 7/305*
U.S. Cl. 430—544 **19 Claims**

1. A silver halide photographic light-sensitive material comprising:

a support; and

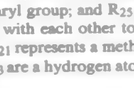
at least one light-sensitive silver halide emulsion layer formed on said support,

wherein at least one of said light-sensitive silver halide emulsion layers contains at least one type of an acylacetamide type yellow dye forming coupler having an acyl group represented by formula (I) below, and at least one type of a compound represented by formula (W) below:

Formula (I)



wherein R_1 represents a monovalent group and Q represents a nonmetallic atomic group required to form, together with C, a 3- to 5-membered hydrocarbon ring, R_1 is not a hydrogen atom and does not combine with Q to form a ring, and Y_R represents a residue remaining after removing the acyl group:



from the acylacetamido yellow dye forming coupler represented by formula (I):

Formula (W)



wherein A represents a group whose bond with a moiety having the formula $\{(L_1)_l—(B)_m\}_p—(L_2)_n—DI$ cleaves when reacting with an oxidized form of an aromatic primary amine developing agent, L_1 represents a group whose bond (a bond with $(B)_m$) on the right side of L_1 in formula (W) cleaves when a bond on the left side of L_1 cleaves, B represents a group whose bond with the right side of B in formula (W) cleaves when reacting with the oxidized form of a developing agent, L_2 represents a group whose bond on the right side of L_2 in formula (W) cleaves when a bond on the left side of L_2 cleaves, DI represents a development inhibitor, each of l, m and n independently represents 0 or 1, and p represents an integer of 0 to 3, if p represents a plural number, p $(L_1)_l—(B)_m$'s may be the same or different.

5,356,768

LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC ELEMENTS CONTAINING SURFACTANTS WITH A COMBINED HLB GREATER THAN 20

Walter Bertramini, Albissola Superiore, and Agostino Baldassarri, Savona, both of Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 783,541, Oct. 28, 1991, abandoned. This application Jun. 10, 1993, Ser. No. 74,977
Claims priority, application Italy, Oct. 29, 1990, 21912 A/90
Int. Cl.[5] G03C *1/08, 7/26, 1/005, 1/494*
U.S. Cl. 430—546 **9 Claims**

1. A light-sensitive silver halide color photographic element comprising a silver halide emulsion layer including a) at least one 2,5-diacylaminophenol cyan coupler dissolved in water-immiscible immiscible high-boiling organic solvent droplets dispersed in said emulsion layer in reactive association with at least one non-ionic surfactant compound having a HLB higher than 10 and at least one anionic surfactant compound, the combination of said surfactants providing a HLB value higher than 20, and b) at least one cationic carbocyanine spectral sensitizing dye comprising two heterocyclic nuclei joined by a linkage of three methine groups.

5,356,769

METHINE COMPOUND AND SILVER HALIDE LIGHT-SENSITIVE MATERIAL CONTAINING THE METHINE COMPOUND

Takanori Hioki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

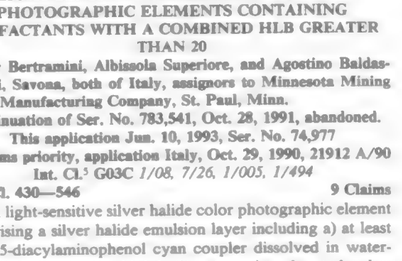
Filed Mar. 16, 1993, Ser. No. 31,824
Claims priority, application Japan, Mar. 17, 1992, 4-090094
Int. Cl.[5] G03C *1/12, 1/20*
U.S. Cl. 430—584 **2 Claims**

1. A silver halide light-sensitive material containing at least one methine compound selected from the group consisting of methine compounds represented by formulas (I), (II) and (III):

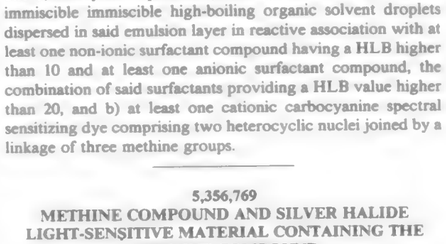
(I)



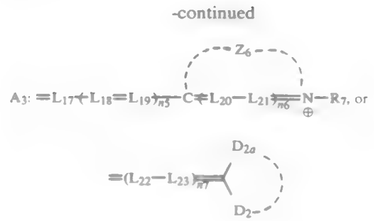
(II)



(III)



-continued



wherein Z_1, Z_2, Z_3, Z_4 and Z_6 each represents a group of atoms required for forming a five- or six-membered nitrogen-containing heterocyclic ring; Z_5 represents a group of atoms required for forming a five-membered or six-membered nitrogen-containing heterocyclic ring; R_1, R_2, R_4, R_6 and R_7 each represents an alkyl group; R_3 represents a substituted or unsubstituted alkyl group; R_5 and R_{5a} each represents an alkyl group, an aryl group or a heterocyclic group; R_8 represents an alkyl group, an aryl group or a heterocyclic group; Q_1, Q_2 and Q_{2a} each represents a group of atoms required for forming a five-, six- or seven-membered ring; the moiety consisting of D_1 and D_{1a} and the moiety consisting of D_2 and D_{2a} each represents a group of atoms required for forming a non-cyclic or cyclic acid nucleus; L_1, L_2, L_3, L_4, L_5, L_6, L_7, L_8, L_9, L_{10}, L_{11}, L_{12}, L_{12a}, L_{13}, L_{13a}, L_{14}, L_{15}, L_{16}, L_{17}, L_{18}, L_{19}, L_{20}, L_{21}, L_{22} and L_{23} each represents a methine group; n_1, n_2, n_3, n_4 and n_6 each represents 0 or 1; n_5 and n_7 each represents an integer not less than 0; M_1, M_2 and M_3 each represents a counter ion for neutralizing charge; m_1, m_2 and m_3 each represents a number not less than 0 required for neutralizing charge in the molecule; and A_2 has the same meaning as A_1.

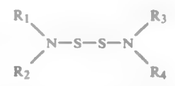
5,356,770

COLOR PHOTOGRAPHIC MATERIALS AND METHODS WITH STABILIZED SILVER CHLORIDE EMULSIONS

Roger Lok, and Jess B. Hendricks, III, both of Rochester, N.Y., assignors to Eastman Kodak Compamn, Rochester, N.Y.

Continuation of Ser. No. 890,884, May 29, 1992, abandoned. This application Sep. 28, 1993, Ser. No. 127,531
Int. Cl.[5] G03C *1/09*
U.S. Cl. 430—611 **19 Claims**

1. A color photographic material, comprising a substrate bearing a silver chloride emulsion, the silver chloride emulsion including a diamino disulfide and a sulfinate, the diamino disulfide and the sulfinate being included in a weight ratio of from about 1:1 to about 1:20, the diamino disulfide being of the formula:



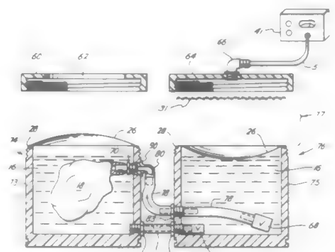
wherein R_1, R_2, R_3 and R_4 are individually selected from the group consisting of hydrogen, alkyl, aryl, heterocyclic rings, substituted aryl and substituted heterocyclic rings, said substituted aryl and substituted heterocyclic rings including at least one substituent selected from the group consisting of alkyl, alkoxy and halogen, or at least one of (a) R_1 and R_2 and (b) R_3 and R_4 form a substituted or unsubstituted heterocyclic ring.

5,356,771

COMBINED PERFUSION AND OXYGENATION ORGAN PRESERVATION APPARATUS

Bobby J. O'Dell, San Antonio, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Filed Mar. 11, 1993, Ser. No. 29,881
Int. Cl.[5] A01N *1/02*
U.S. Cl. 435—1 **12 Claims**



1. An apparatus for perfusing and oxygenating living tissue, comprising:

a pumping compartment;

a perfusion compartment coupled to said pumping compartment and containing a perfusate;

a tissue compartment coupled to said perfusion compartment and containing a perfusate and adapted to receive a living tissue;

a first one-way passage means coupling said perfusion compartment and said tissue compartment for transmitting perfusate from said perfusion compartment to a living tissue in said tissue compartment;

a second one-way passage means coupling said perfusion compartment and said tissue compartment for transmitting perfusate from said tissue compartment to said perfusion compartment;

a flexible, gas-permeable membrane sealingly interposed between said pumping compartment and said perfusate within said perfusion compartment for enabling gas to permeate between said pumping compartment and said perfusion compartment, said membrane operable upon pressure differentials across the membrane to flex in a first direction so as to displace perfusate through said first passage means from said perfusion compartment into said tissue compartment and in an opposite direction to displace perfusate from said tissue compartment through said second passage means into said perfusion compartment; and

gas circulation means coupled to said pumping compartment for forcing an oxygen-containing gas into said pumping compartment to permeate the oxygen-containing gas through said membrane into said perfusing compartment and to expand said membrane into said perfusing compartment so as to pump gas-enriched perfusate from said perfusing compartment through said first one-way passage means into said tissue compartment.

5,356,772

PROCESS FOR PREPARING AN IMPROVED WESTERN BLOT IMMUNOASSAY

Emerson W. Chan; William G. Robey, both of Libertyville, and Werner Schulze, Waukegan, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 350,180, May 9, 1989, abandoned. This application Dec. 5, 1990, Ser. No. 622,311
Int. Cl.[5] C12Q *1/70;* **C12P** *19/38;* **G01N** *33/53*
U.S. Cl. 435—5 **14 Claims**

1. A method of detecting the presence of at least one biologically active substance in a sample comprising:

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(a) purifying at least one antigenic reactive substrate on at least one gel from at least one impure mixture;
(b) excising from each said gel at least one segment which contains at least one said purified substrate;
(c) selectively transferring each said purified substrate from said segment to a solid support, wherein said purified substrate is effectively attached to said solid support;
(d) contacting said purified substrate bearing solid support with a sample suspected of containing at least one immunologically active substance, wherein said active substance and said purified substrate form a binding pair; and
(e) detecting the presence of said binding pair on said solid support.

wherein more than one segment containing said purified substrate is separated from the same gel.

5,356,773

GENERATION OF UNIDIRECTIONAL DELETION MUTANTS

Wenyan Shen, and Mary M. Y. Waye, both of Toronto, Canada, assignors to Kinetic Investments Limited, Ontario, Canada

Continuation of Ser. No. 352,335, May 16, 1989, abandoned. This application Sep. 17, 1991, Ser. No. 762,735
Int. Cl.[5] C12Q *1/68*
U.S. Cl. 435—6 **21 Claims**

1. A process for preparing a set of truncated sequences of test DNA useful for dideoxy-sequencing, which comprises the steps:

inserting a test DNA sequence into a sequencing plasmid or phage vector, said sequencing vector containing in sequential order: a priming site for initiation of sequencing, an anchor site consisting of 5–200 nucleotide bases of predetermined identity, and a selection marker segment; the test DNA being inserted into the sequencing vector at a location such that the selection market segment is disposed between the inserted test DNA and the anchor site;

hybridizing a population of oligonucleotide probes to said sequencing vector, said probes comprising a nucleotide sequence composed of 5–200 nucleotide bases complementary to said anchor site of said sequencing vector linked to an additional sequence of random bases of at least 4 nucleotides;

replicating said sequencing vectors with annealed probe by deletion mutagensis so as to produce a population of deletion mutants of said sequencing vectors that lack the selection marker but contain randomly truncated sequences of said test DNA;

selecting for said deletion mutants by transforming bacterial cells incapable of tolerating the product of the selection marker of said sequencing vector with the deletion mutants of said replicating step.

5,356,774

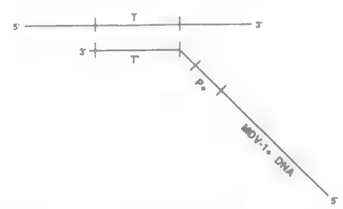
REPLICATIVE RNA-BASED AMPLIFICATION/DETECTION SYSTEMS

Vladimir D. Axelrod; Fred R. Kramer, both of New York, N.Y.; Paul M. Lizardi, Cuernavaca, Mexico, and Donald R. Mills, Englewood, N.J., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation of Ser. No. 241,624, Sep. 8, 1988, abandoned, which is a continuation-in-part of Ser. No. 191,450, May 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 852,692, Apr. 16, 1986, Pat. No. 4,957,858. This application Jul. 2, 1992, Ser. No. 908,833
Int. Cl.[5] C12Q *1/68*
U.S. Cl. 435—6 **18 Claims**

1. A single-stranded DNA molecule comprising in 3′ to 5′ order the following:

(a) a nucleic acid sequence capable of hybridizing with a target nucleic acid sequence;
(b) a promoter sequence which recognizes and binds to a DNA-dependent RNA polymerase; and
(c) a DNA template sequence encoding an RNA replicatable by an RNA-dependentRNA polymerase, so positioned,



relative to the promoter that the template sequence is transcribed into the RNA.

5,356,775

PRIMARY STRUCTURE FOR FUNCTIONAL EXPRESSION FROM COMPLEMENTARY DNA OF A MAMMALIAN ATP-SENSITIVE POTASSIUM CHANNEL

Steven C. Hebert, Wellesley, and Kevin Ho, Newton, both of Mass., assignors to Brigham & Women's Hospital, Boston, Mass.

Filed Jul. 29, 1992, Ser. No. 921,178
Int. Cl.[5] C12N *15/12, 15/10, 15/63*
U.S. Cl. 435—6 **10 Claims**

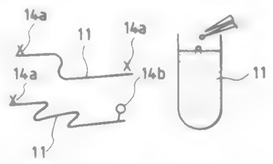
1. An isolated nucleic acid molecule encoding a peptide consisting essentially of the amino acid sequence depicted in Sequence ID No. 2.

5,356,776

DNA MEASURING METHOD

Hideki Kambara, Hachiouji; Kazunori Okano, Shiki; Satoshi Takahashi, Kokubunji; Keiichi Nagai, Higashiyamato, and Tetsuo Nishikawa, Itabashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 9, 1992, Ser. No. 942,470
Claims priority, application Japan, Sep. 10, 1991, 3-230045; Sep. 18, 1991, 3-237757
Int. Cl.[5] C12Q *1/70*
U.S. Cl. 435—6 **13 Claims**



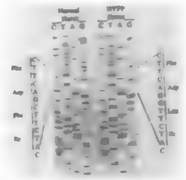
1. A method for measuring the length of a DNA molecule which comprises orienting said DNA molecule into a straight line and transferring said DNA molecule to a buffer solution employing electrophoresis or liquid flow, said DNA molecule being labeled with fluorescence at at least both termini of said DNA molecule, measuring the time interval between the detection of fluorescence emitted from each terminal fluorophore at a predetermined portion irradiated with an excitation light and calculating the distance between the fluorescence labels at both termini from said time interval and a known migration rate of the DNA molecule.

5,356,777

METHODS OF DETECTING PERIODIC PARALYSIS IN HORSES

Eric P. Hoffman, Pittsburgh, Pa.; Sharon J. Spier, Winters, Calif.; Jeffrey A. Rudolph, Pittsburgh, Pa.; Glen Byrns, and Domenico Bernoco, both of Davis, Calif., assignors to University of Pittsburgh, Pittsburgh, Pa.

Filed Oct. 1, 1992, Ser. No. 954,830
Int. Cl.[5] C12Q *1/68;* C12P *19/34;* C07H *21/02, 21/04*
U.S. Cl. 435—6 **13 Claims**



1. A method for detecting the genetic mutation in horses that causes hyperkalaemic periodic paralysis (HYPP) wherein said mutation is in the horse adult skeletal muscle sodium channel alpha subunit gene, domain IV, segment S_3, said method comprising:

obtaining genomic DNA or RNA from a fetus, living, or deceased horse;
amplifying said DNA or reverse transcribed RNA; and
detecting the presence or absence of a mutation consisting of a C to G single base change in said gene, wherein the DNA sequence of said gene in HYPP-affected horses consists of 5′-AACATCTTGGACTTCGT (SEQ ID NO: 2) and the corresponding DNA sequence in nonaffected horses consists of 5′-AACATCTTCGACTTCGT (SEQ ID NO: 1).

5,356,778

METHOD FOR DETECTION OF GRAM-NEGATIVE BACTERIAL LIPOSACCHARIDES IN BIOLOGICAL FLUIDS

Eric J. Hansen, Plano; Robert S. Munford, Dallas, both of Tex., and Jussi Mertsola, Kaarina, Finland, assignors to Board of Regents, The University of Texas, Austin, Tex.

PCT No. PCT/US91/04864, § 371 Date Feb. 5, 1993, § 102(e) Date Feb. 5, 1993, PCT Pub. No. WO92/01228, PCT Pub. Date Jan. 23, 1992
Continuation-in-part of Ser. No. 553,072, Jul. 13, 1990, Pat. No. 5,198,339. This PCT application Jul. 10, 1991, Ser. No. 972,498
Int. Cl.[5] G01N *33/579, 33/53, 33/569*
U.S. Cl. 435—7.2 **36 Claims**

1. A method for detecting bacterial endotoxin in a sample, comprising the steps of:

(a) contacting a sample suspected of containing a bacterial endotoxin with at least one antibody which specifically binds said/bacterial endotoxin, the sample being contacted with the antibody under conditions effective to bind the antibody to endotoxin that may be present in the sample;
(b) washing antibody-bound endotoxin to remove contaminants; and
(c) detecting endotoxin with an amoebocyte lysate.

5,356,779

ASSAY FOR DIRECT BINDING OF PEPTIDES THAT ARE T-CELL EPITOPES TO MHC GENE PRODUCTS ON INTACT ANTIGEN-PRESENTING CELLS AND THE USE THEREOF FOR SCREENING SUSCEPTIBILITY OF AUTOIMMUNE DISEASES

Edna Mozes, and Israel Pecht, both of Rehovot, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

Filed Dec. 10, 1990, Ser. No. 624,730
Claims priority, application Israel, Dec. 10, 1989, 92629
Int. Cl.[5] G01N *33/564, 33/567*
U.S. Cl. 435—7.24 **7 Claims**

1. An assay for screening the susceptibility of a mammal to an immunological disorder, comprising:

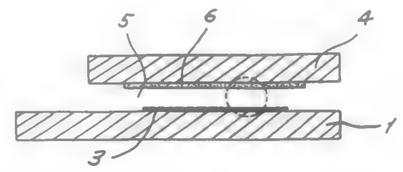
labelling with a ligand a peptide that is a T-cell epitope having a sequence corresponding to a stretch of the sequence of the antigen relevant to the disorder and binds to gene products of the major histocompatibility complex (MHC), classes I and II, on the surface of intact living antigen presenting cells;
incubating intact living antigen-presenting cells with the labelled peptide, thus directly binding the peptide to the cells; and
monitoring the extent of binding by the addition of a probe that reacts with the ligand and measuring peptide bound cells versus peptide-unbound cells, whereby the extent of the binding of the peptide to the antigen-presenting cells is correlated to the susceptibility to the disorder.

5,356,780

DETERMINIATION OF SUBSTRATE OF COENZYME REQUIRING ENZYME

Grenville A. Robinson, London, United Kingdom, and John G. Hurrell, Carmel, Ind., assignors to Applied Research Systems Holding N.V., Netherlands

PCT No. PCT/GB91/01781, § 371 Date Mar. 17, 1993, § 102(e) Date Mar. 17, 1993, PCT Pub. No. WO92/07266, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 14, 1991, Ser. No. 30,151
Claims priority, application United Kingdom, Oct. 15, 1990, 9022304
Int. Cl.[5] C12Q *1/00;* G01N *33/53*
U.S. Cl. 435—7.6 **10 Claims**



1. A method of assaying within a liquid sample a substrate for a coenzyme-requiring enzyme which method comprises contacting the sample with an assay system including (i) a substrate analogue and (ii) a moiety which specifically binds the substrate without catalyzing the conversion of the substrate; the substrate analogue being a substance which competes with the substrate for binding to the moiety, and determining the presence or amount of the substrate by monitoring the extent to which there are formed or remain complexes between the moiety and at least one of the substrate analogue and the substrate; wherein the moiety is selected from the group consisting of an apoenzyme which is not bound to its functional coenzyme, a partly denatured enzyme, a deactivated enzyme, a genetically engineered deactivated enzyme and a deactivated artificial enzyme.

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5,356,781

ZYMOGEN ACTIVATION PEPTIDES (ZAP) IN THE DIAGNOSIS OF DISEASE

John Hermon-Taylor, and Brian M. Austen, both of London, England, assignors to Bioscience International, Inc., Boston, Mass.

Continuation of Ser. No. 145,857, Jan. 20, 1988, abandoned, and a continuation-in-part of Ser. No. 78,737, Jul. 28, 1987, Pat. No. 4,948,723, which is a continuation-in-part of Ser. No. 3,728, Jan. 16, 1987, abandoned. This application Jun. 26, 1991, Ser. No. 721,234

Claims priority, application United Kingdom, Jul. 28, 1986, 8618333

The portion of the term of this patent subsequent to Aug. 14, 2007, has been disclaimed.

Int. Cl.[5] G01N *33/543;* C12N *9/96;* C07K *7/06, 14/00*

U.S. Cl. 435—4.9 22 Claims

1. A immunological method of detecting the activation of pancreatic zymogens in a patient which comprises:

(a) providing a sample of the patient's body fluid; and

(b) detecting the presence or absence in the sample of peptides which have the same carboxy-terminal pentapeptide sequence as the activation peptides of pancreatic zymogens (PAP), the pancreatic zymogen being selected from the group consisting of trypsinogen, prophospholipase A_2, procolipase, proelastase 1, proelastase 2. prekallekrein, procarboxypeptidases A and procarboxypeptidases B, said presence of absence indicating the existence or progress of the activation of said zymogens in said patient.

5,356,782

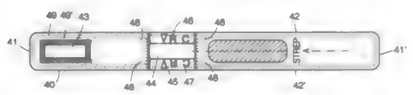
ANALYTICAL TEST APPARATUS WITH ON BOARD NEGATIVE AND POSITIVE CONTROL

David R. Moorman; David J. Ledden; David D. Webster, and Brian A. Heald, all of Indianapolis, Ind., assignors to Boehringer Mannheim Corporation, Indianapolis, Ind.

Filed Sep. 3, 1992, Ser. No. 940,059

Int. Cl.[5] G01N *33/53, 33/543, 33/50*

U.S. Cl. 435—7.9 30 Claims



1. An apparatus for determining an analyte of interest in a liquid sample comprising an absorptive material and having a plurality of zones in the direction of fluid flow, wherein:

(i) a first negative control zone of said absorptive material contains an immobilized reactant which does not bind to said analyte of interest;

(ii) a second analytical zone of said absorptive material contains an immobilized reactant which specifically binds to said analyte of interest; and

(iii) a third positive control zone of said absorptive material contains both (a) an immobilized reactant which specifically binds to said analyte of interest, and (b) a portion of the analyte of interest in solubilizible form, wherein said portion of the analyte is solubilized when contacted with the liquid sample and reacts with the immobilized reactant of said third zone.

5,356,783

INHIBITOR OF TISSUE FACTOR ACTIVITY

Vincenzo Buonassisi, and Patricia C. Colburn, both of Lake Placid, N.Y., assignors to W. Alton Jones Cell Science Center, Inc., Lake Placid, N.Y.

Division of Ser. No. 830,462, Feb. 5, 1992, Pat. No. 5,219,994, which is a continuation of Ser. No. 707,314, May 29, 1991, abandoned, which is a continuation of Ser. No. 268,893, Nov. 8, 1988, abandoned. This application Jan. 25, 1993, Ser. No. 8,586

Int. Cl.[5] C07K *15/28;* G01N *33/535, 33/577;* A61K *39/395*

U.S. Cl. 435—7.9 9 Claims

1. A purified antibody having an antibody binding region specific to an epitope of a purified and isolated tissue factor inhibiting protein, said protein comprising a sulfated glycoprotein having a molecular weight of about 45 kDa, wherein

(a) said protein has the ability to inhibit the activity of tissue factor; and

(b) said glycoprotein includes the amino acid sequence:

X_1-X_2-Glu-Glu-Asp-Glu-Glu-Phe-Thr-X_3-Ile-Thr-Asp-Ile-Lys-Pro-Pro-Leu-Gln-Lys-Pro-Thr, where X_1, X_2, and X_3 can be the same or different and denote any amino acid.

5,356,784

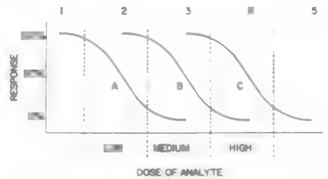
DETERMINATION OF CONCENTRATION BY AFFINITY TITRATION

Lawrence M. Kauvar, San Francisco, Calif., assignor to Terrapin Technologies, Inc., South San Francisco, Calif.

Filed Mar. 30, 1993, Ser. No. 39,786

Int. Cl.[5] G01N *33/53, 33/543*

U.S. Cl. 435—7.9 20 Claims



1. A method to determine the concentration of an analyte in a sample, which method comprises:

(a) applying said sample to a multiplicity of test regions, which contain a series of ligands of systematically varying affinity for a specific binding partner, wherein said specific binding partner specifically binds said analyte, wherein said test regions are arranged in a pattern to permit orderly retrieval of test results in each test region, and wherein said applying is conducted in the presence of a constant amount of said specific binding partner, under conditions wherein said ligand and said analyte compete for said specific binding partner;

(b) detecting said specific binding partner bound to the ligand in each test region; and

(c) determining the concentration of analyte by determining the number of test regions to which specific binding partner is bound and comparing said number to the number that would be bound by a known concentration of analyte.

5,356,785

IMMUNOASSAYS HAVING AT LEAST TWO TEST SPOTS AND REFERENCE SPOT

Philip McMahon, Falmouth; Larry Chaney, and Quentin Tonelli, both of Portland, all of Me., assignors to Idexx Laboratories, Inc., Westbrook, Me.

Continuation of Ser. No. 145,522, Jan. 19, 1988, abandoned. This application May 2, 1991, Ser. No. 700,068

Int. Cl.[5] G01N *33/543*

U.S. Cl. 435—7.92 11 Claims

1. A kit for the semi-quantitative measurement of an analyte in a liquid sample by competitive immunoassay, said analyte comprising a first member of a specific binding pair, said specific binding pair comprising a first member and second member which specifically bind to each other, said kit comprising a solid support bearing:

a first test area exposed to receive sample, said first test area comprising a first amount of at least one member of said specific binding pair, said first test area producing a first signal in said immunoassay responsive to analyte in said sample;

a second test area exposed to receive sample, said second test area comprising a second amount of at least one member of said specific binding pair, said second test area producing a second signal in said immunoassay responsive to the amount of said analyte in said sample, said second signal being of an intensity different from the intensity of said first signal for a given amount of analyte in said sample; and

a reference area which provides u reference signal of predetermined detectable intensity in said immunoassay independent of the amount of said analyte in said sample, said reference area comprising a reactant which reacts with a labeled component used in said immunoassay to provide said reference signal, said reactant being present in an amount to provide said reference signal, said reference signal being of an intensity related quantitatively to the intensities of each of said signal levels generated by each of said test areas in the presence of a predetermined standard analyte level, according to the following relationship the intensity of said reference signal is distinguishably above the intensity of the signal from one of said test spots and distinguishable below the intensity of the signal from the other test spot;

whereby the intensity of the signal from said reference area can be compared with the intensity of signals from each of said test areas in the presence of an unknown quantity of the analyte in said sample to determine the amount of said analyte in said sample relative to said predetermined standard analyte level.

5,356,786

INTERFERANT ELIMINATING BIOSENSOR

Adam Heller, and Ruben Maidan, both of Austin, Tex., assignors to E. Heller & Company, Austin, Tex.

Continuation of Ser. No. 664,054, Mar. 4, 1991, abandoned. This application Dec. 2, 1993, Ser. No. 161,682

The portion of the term of this patent subsequent to Nov. 16, 2010, has been disclaimed.

Int. Cl.[5] C12Q *1/54, 1/28;* C07C *1/00;* C12M *1/40*

U.S. Cl. 435—14 15 Claims

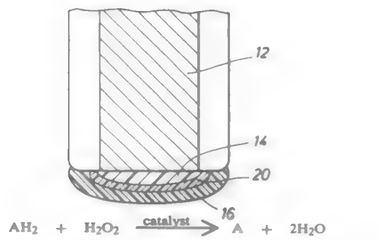
1. A biosensor comprising:

an electrode on which an analyte is electrooxidized at a given applied potential; and

an interferant-eliminating layer substantially covering the electrode but electrically isolated therefrom at the given applied potential,

said interferant-eliminating layer comprising a catalyst which is capable of catalizing substantial oxidation of a plurality of interferants but not substantial oxidation of the analyte,

wherein the catalyst mediates the following reaction:



where AH_2 represents an interfering compound and A represents a non-interfering compound.

5,356,787

METHOD OF IDENTIFYING COMPOUNDS THAT MODULATE MYOCARDIAL CALCIUM-INDEPENDENT PHOSPHOLIPASE A_2 ACTIVITY

Richard Gross, St. Louis, Mo., assignor to Washington University, St. Louis, Mo.

Filed Apr. 23, 1993, Ser. No. 53,616

Int. Cl.[5] C12Q *1/34;* G01N *23/00*

U.S. Cl. 435—18 23 Claims

1. A method of identifying compounds that modulate the activity of myocardial calcium-independent phospholipase A_2 comprising the steps of:

a) performing a test assay comprising:

i) combining myocardial calcium-independent phospholipase A_2 40 kDa catalytic subunit, 85 kDa phosphofructokinase isoform, adenosine triphosphate, a substrate and a test compound to form a reaction mixture, wherein apparent molecular weights are determined by electrophoresis using 10% sodium dodecyl sulfate polyacrylamide gels;

ii) maintaining said reaction mixture for a reaction time sufficient to allow myocardial calcium-independent phospholipase A_2 to process said substrate;

iii) determining myocardial calcium-independent phospholipase A_2 activity; and

b) comparing said activity to activity that results in a control assay which does not include said test compound.

5,356,788

ISOLATION, QUANTITATION AND PURIFICATION OF INSECTICIDAL PROTEINS FROM *BACILLUS THURINGIENSIS*

Marianne Puaztai and Carey; Paul R. Carey, both of Ottawa; Timothy Lessard, Richmond; Makoto Yaguchi, Ottawa, all of Canada

Continuation of Ser. No. 836,967, Feb. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 493,453, Mar. 14, 1990, abandoned. This application Aug. 5, 1993, Ser. No. 102,491

Int. Cl.[5] C12Q *1/37;* C12N *1/20;* G01N *33/567*

U.S. Cl. 435—23 25 Claims

1. A process for separating and identifying proteinaceous protoxins expressed by a multi-gene strain of *Bacillus thuringiensis,* which process comprises the steps of:

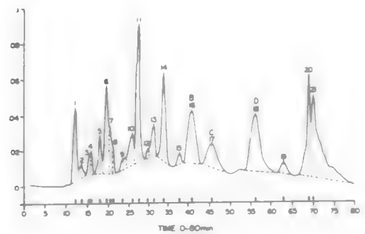
providing a material comprising biologically active protoxins of *Bacillus thuringiensis;*

subjecting said material comprising said biologically active protoxins of *Bacillus thuringiensis* directly to hydrolysis with a proteolytic enzyme in an aqueous suspension at a pH in the range of 10–12, to generate a mixture of solubilized daughter toxins in biologically active state, said

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hydrolysis being carried out for a time sufficient to assure substantially complete liberation of said toxins;

subjecting said mixture of solubilized daughter toxins to high performance anion-exchange liquid chromatography at a substantially constant pH in the range of 10–12, and under aqueous conditions corresponding to the use of a first eluent containing only a buffer and the gradual introduction over a predetermined period of time of at least one



other eluent containing the buffer and a suitable salt, the changes in time of the concentration of the salt in the at least one other eluent being such that the daughter toxins, in biologically active state, are separated from each other and from other products of hydrolysis; and

identifying and where required quantifying the protoxins from the chromatographic signals produced by the daughter toxins.

5,356,789

METHODS FOR DETECTING ACETOHYDROXYACID SYNTHASE INHIBITORS

Dale L. Shaner, Lawreceville, N.J., assignor to American Cyanamid Company, Wayne, N.J.

Filed May 28, 1993, Ser. No. 68,458

Int. Cl.[5] C12Q *1/26;* A01N *27/00, 35/06, 57/02*

U.S. Cl. 435—25 19 Claims

1. An in vivo method for determining whether a compound inhibits acetohydroxyacid synthase which comprises:

(a) treating a first acetohydroxyacid synthase inhibitor-susceptible plant or plant part with an effective amount of the compound and an effective amount of a ketol-acid reductoisomerase inhibitor;

(b) treating a second acetohydroxyacid synthase inhibitor-susceptible plant or plant part from the same population of the same species with the effective amount of the ketol-acid reductiosomerase inhibitor alone; and

(c) measuring the amounts of acetolactate and acetohydroxybutyrate present in the treated plants or plant parts to determine if the amount of acetolactate and acetohydroxybutyrate present in (a) is less than the amount of acetolactate and acetohydroxybutyrate present in (b).

5,356,790

HIGHLY SENSITIVE ASSAY METHOD FOR MYO-INOSITOL, COMPOSITION FOR PRACTICING SAME, NOVEL MYO-INOSITOL DEHYDROGENASE, AND PROCESS FOR PRODUCING SAME

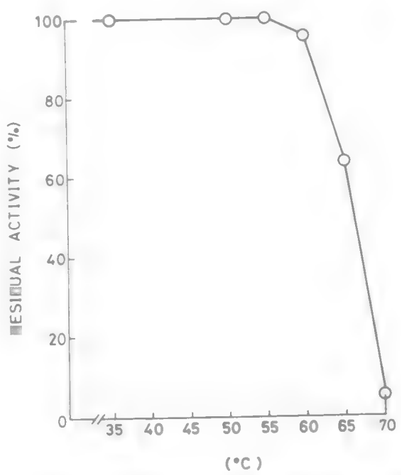
Shigeru Ueda; Mamoru Takahashi; Hideo Misaki; Shigeyuki Imamura, and Kazuo Matsuura, all of Shizuoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 761,465, Sep. 18, 1991, abandoned. This application Aug. 16, 1993, Ser. No. 106,693

Claims priority, application Japan, Sep. 18, 1990, 2-249775; Sep. 18, 1990, 2-249776

Int. Cl.[5] C12Q *1/26, 1/32;* C12N *11/00;* C07H *1/00*

U.S. Cl. 435—26 5 Claims

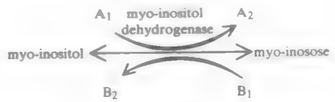


1. A method of assaying myo-inositol comprising reacting a specimen containing myo-inositol with the following reagents:

a) myo-inositol dehydrogenase which, in the presence of a thionicotinamide adenine dinucleotide group (thio-NAD-group) and a nicotinamide adenine dinucleotide group (NAD group) as coenzymes, catalyzes a reversible reaction forming myo-inosose from myo-inositol,

b) A_1 and

c) B_1; to effect a cycling reaction



wherein A_1 is a thio-NAD group or NAD group, A_2 is a reduced form of A_1, when A_1 is a thio-NAD group, B_1 is a reduced NAD group and when A_1 is an NAD group, B_1 is a reduced thio-NAD group, and wherein B_2 is an oxidized form of B_1; and

measuring a change in the amount of A_2 generated or B_1 consumed by the cycling reaction

wherein A_1 and B_1 are each used at a concentration of 0.02–100 mM, and wherein said myo-inositol dehydrogenase is used at a concentration of 5–1000 U/ml.

5,356,791

ASSAY FOR DETERMINING THE EFFICACY OF PAF-ACETHER AND/OR LA-PAF ANTAGONISTS

Ruth Korth, Palestrinastr. 9, D-8000, München, Fed. Rep. of Germany

Division of Ser. No. 704,554, May 23, 1991, abandoned. This application Mar. 3, 1992, Ser. No. 845,088

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1990, 4017818; Oct. 26, 1990, 4034090

Int. Cl.[5] C12Q *1/02;* A01N *57/26, 43/62*

U.S. Cl. 435—29 8 Claims

1. An assay for determining the efficacy of a paf-acether antagonist, comprising the following steps:

a) platelets or cancer cells are mixed with radioactive, colored or fluorescent paf-acether in the presence of the antagonist to be determined and, in the presence of one or more compounds selected from the group consisting of lipoproteins, lipoprotein-associated-paf, and cholesterol to form a mixture,

b) platelets or cancer cells (of the same type used in step 9) are mixed with radioactive, colored or fluorescent paf-acether in the presence of one or more compounds selected from the group consisting of lipoproteins, lipoprotein-associated-paf, and cholesterol and in the absence of a paf-acether antagonist to form a mixture,

c) the platelets or cancer cells are separated from the mixtures of steps a) and b),

d) the radioactive, colored, or fluorescent paf-acether bound to the platelets or cancer cells is measured, and

e) the efficacy of the paf-acether antagonist is determined from the relationship between the amount of labelled paf-acether which is bound to the platelets or cancer cells according to a) in the presence of the antagonist and the amount of labelled paf-acether which is bound to the platelets or cancer cells according to b) in the absence of the antagonist.

5,356,792

BIOCHEMICAL OXYGEN DEMAND ANALYZER AND METHODS OF ANALYSIS USING KLEBSIELLA MICROORGANISMS

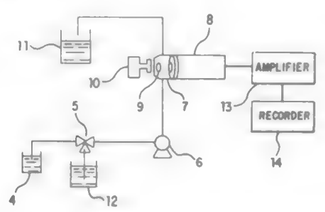
Shigeru Maeda; Akira Ohki, both of Kagoshima; Takeshi Sato, Toki; Naho Kato, Aichi; Hirofumi Akano, Handa; Yoshiya Kawamura, Kounan; Hatagaki Keizo, Handa; Yasushi Takahashi, Handa; Mikio Yamada, Handa, and Hajime Okumura, Handa, all of Japan, assignors to Nakano Vinegar Co., Ltd., Aichi, Japan

Filed Nov. 19, 1992, Ser. No. 978,843

Claims priority, application Japan, Nov. 22, 1991, 3-307694; Mar. 12, 1992, 4-053804; Oct. 14, 1992, 4-276363

Int. Cl.[5] C12Q *1/24;* G01N *27/40*

U.S. Cl. 435—29 15 Claims



12. A method of BOD analysis using a BOD analyzer having a microbe sensor comprising an oxygen electrode and a microbe membrane in contact with said oxygen electrode, said membrane containing microorganisms for detecting levels of BOD in a liquid supply, comprising the steps of:

selecting microorganisms from the genus Klebsiella for use in said microbe sensor; and

immobilizing said selected microorganisms in said microbe membrane.

5,356,793

METHOD FOR TESTING THE SENSITIVITY OF ANTICANCER DRUG

Masahiro Koezuka, Nara; Naohito Kondo, Osaka; Sachiko Oda, Osaka; Hisayuki Kobayashi, Osaka, and Masayuki Yasutomi, Osaka, all of Japan, assignors to Nitta Gelatin Inc., Osaka, Japan

Filed Feb. 1, 1991, Ser. No. 649,526

Claims priority, application Japan, Mar. 15, 1990, 2-66328; Oct. 3, 1990, 2-267343

Int. Cl.[5] C12M *1/00, 3/00;* C12N *5/06, 5/00*

U.S. Cl. 435—32 6 Claims

1. A method for testing the sensitivity of anticancer drugs comprising the steps of:

(a) proliferating cancer cells in a collagen gel substrate after contacting the cells with an anticancer drug, wherein fibroblast cells which are contained in cancer tissues proliferate together with the cancer cells of step (a),

(b) proliferating cancer cells for a control in a collagen gel substrate without contacting with the anticancer drug, wherein fibroblast cells which are contained in cancer tissues proliferate together with the cancer cells of step (b),

(c) obtaining a picture image for the cancer cells of step (a) and a control picture image for the cancer cells of step (b), each picture image comprising first images of proliferated cancer cells and colonies composed of the proliferated cancer cells, and second images of proliferated fibroblast cells, and

(d) measuring the growth of the cancer cells proliferated in said substrates of step (a) and step (b) by:

(1) inputting both picture images after growth into an image processor,

(2) selectively extracting the first images, respectively, from said both picture images using the image processor, and

(3) determining the colony count or volume of said cancer cells using the image processor and using the selectively extracted first images from said picture image for the cancer cells of step (a) and the selectively extracted first picture images from said control picture image for the cancer cells of step (b) to compare the colony count or volume of the cancer cells of step (a) with the colony count or volume of the cancer cells of step (b).

5,356,794

PURIFIED ENZYMATIC PREPARATION DERIVED FROM *CHROMOBACTERIUM VIOLACEUM*, METHOD FOR PREPARING IT AND ITS USE IN THE PRODUCTION OF α, β-DEHYDROTRYPTOPHANYL-PEPTIDES

Pierre Fromageot, le Chesnay, and Roger Genet, Limours, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 4, 1992, Ser. No. 941,218

Claims priority, application France, Sep. 5, 1991, 91 10973

Int. Cl.[5] C12P *21/00;* C12N *9/04, 9/06, 9/08*

U.S. Cl. 435—68.1 4 Claims

3. A purified enzymatic preparation derived from *Chromobacterium violaceum* having:

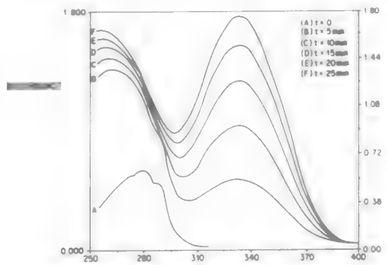
(i) L-tryptophan dehydrogenase activity,

(ii) a specific activity of between 35 and 45 units for N-acetyl-L-tryptophanamide (NATA), wherein said units represents a mole of product formed per second per mole of heme,

(iii) an apparent molecular weight of approximately 680 kDa,

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(iv) an isoelectric point of about 4, and
(v) a temperature optimum for activity greater than 80° C.;



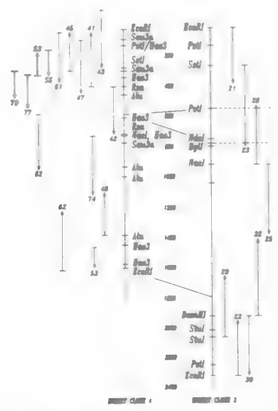
wherein said preparation catalyzes the conversion of tryptophanyl residues to dehydrotryptophanyl residues at a pH of from 3 to 8.

5,356,795

CLONING CDNAS FOR THE HUMAN INTERLEUKIN-2 RECEPTOR (55 RD PROTEIN)

Warren J. Leonard, Washington, D.C., and Warner C. Greene, Potomac, Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 373,676, Jun. 28, 1989, abandoned, which is a continuation of Ser. No. 634,380, Jul. 25, 1984, abandoned. This application Feb. 18, 1992, Ser. No. 837,563
Int. Cl.[5] C12N *15/12*
U.S. Cl. 435—69.1 **14 Claims**



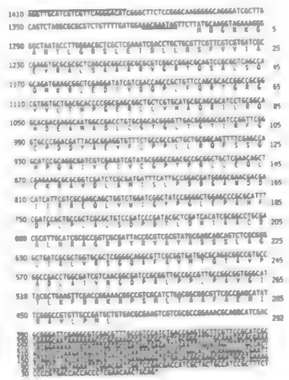
1. An isolated and purified recombinant DNA molecule comprising bp 181–999 in FIG. 4 which encodes a human interleukin-2 receptor.

5,356,796

REPRESSOR PROTEIN AND OPERON FOR REGULATING EXPRESSION OF POLYPEPTIDES AND ITS USE IN THE PREPARATION OF 2,2-DIALKYGLYCINE DECARBOXYLASE OF *PSEUDOMONAS CEPACIA*

John W. Keller, Fairbanks, Ak., assignor to The University of Alaska, Fairbanks, Ak.

Continuation-in-part of Ser. No. 501,814, Mar. 30, 1990, Pat. No. 5,210,025. This application Sep. 28, 1992, Ser. No. 952,817
Int. Cl.[5] C12N *15/31, 15/63, 15/67, 15/70*
U.S. Cl. 435—69.1 **40 Claims**



1. A purified repressor protein consisting essentially of the amino acid sequence shown in SEQ ID NO: 11.

5,356,797

MEMBRANE EXPRESSION OF HETEROLOGOUS GENES

David W. Niesel, League City; J. Scott Moncrief, and Linda H. Phillips, both of Galveston, all of Tex., assignors to Board of Regents, The University of Texas, Austin, Tex.

Filed Nov. 15, 1991, Ser. No. 792,525
Int. Cl.[5] C12N *1/21, 15/30, 15/70, 15/74*
U.S. Cl. 435—69.3 **24 Claims**

1. An isolated DNA containing a sequence encoding an exportation polypeptide which is selected from the group consisting of
(a) SEQ ID NO:1;
(b) SEQ ID NO:2 ;
(c) DNA sequences complementary to (a) or (b); and
(d) Fragments of (a), (b) or (c) that encode an exportation polypeptide or fragments homologous to sequences encoding said polypeptide which localized to a *S. typhimurium* or *E. coli* cell membrane.

5,356,798

RECOMBINANT PROTEIN PRODUCTION IN SERUM-FREE MEDIUM

Leif Kongerslev, Birkerod, and John Pedersen, Kokkedal, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Filed Apr. 23, 1993, Ser. No. 48,938
Claims priority, application Denmark, Apr. 24, 1992, 0537/92
Int. Cl.[5] C12P *21/06;* **C12N** *5/00;* **C07K** *3/00;* **A61K** *35/14*
U.S. Cl. 435—69.6 **6 Claims**

1. In a method of making recombinant blood coagulation factors expressed in a mammalian host cell cultured in a serum-free medium, wherein the improvement comprises adding an egg yolk fraction free of lipoprotein and lipids to the serum-free medium.

5,356,799

ANTISENSE GENE SYSTEMS OF POLLINATION CONTROL FOR HYBRID SEED PRODUCTION

Steven F. Fabijanski, Ottawa, and Paul G. Arnison, Georgetown, both of Canada, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Continuation of Ser. No. 306,438, Feb. 3, 1989, abandoned, which is a continuation of Ser. No. 151,906, Feb. 3, 1988, abandoned. This application Jun. 2, 1992, Ser. No. 892,635
Int. Cl.[5] C12N *15/00, 5/00;* **A01H** *1/00;* **C07H** *21/04*
U.S. Cl. 435—172.3 **32 Claims**

1. A method of producing hybrid seed from plants from a species of pollen-producing plants that is capable of being genetically transformed, comprising the steps of:
(a) producing a genetically transformed plant by:
(i) inserting into the genome of a plant cell of said species that can be regenerated into a differentiated, whole plant;
I. a sense gene that confers on said plant resistance to a herbicide or an antibiotic
and
II. a recombinant DNA molecule comprising:
(A) a DNA sequence that codes for RNA that is complementary to the RNA sequence encoded by said sense gene
and
(B) a pollen-specific Brassica promoter which functions in said plant cell to cause transcription of said DNA sequence into RNA,
(ii) obtaining a transformed plant cell which has been transformed with said sense gene and said recombinant DNA and
(iii) regenerating from said transformed plant cell a plant that is genetically transformed with said sense gene and said recombinant DNA molecule such that (A) said recombinant DNA molecule interferes with the expression of said sense gene and (B) said genetically transformed plant can be rendered male sterile by said herbicide or antibiotic;
(b) increasing the number of genetically transformed plants by:
(i) fertilizing said genetically transformed plant with pollen produced by a suitable male fertile plant and obtaining seed which, when germinated, yields a plurality of genetically transformed plants; or
(ii) clonally propagating said genetically transformed plant to obtain a plurality of genetically transformed plants; and
(c) effecting a hybrid cross by pollinating said genetically transformed plants with pollen from suitable male fertile plant donors.

5,356,800

STABILIZED LIQUID ENZYMATIC COMPOSITIONS

Percy A. Jaquess, Tigrett, Tenn., assignor to Buckman Laboratories International, Inc., Memphis, Tenn.

Filed Nov. 30, 1992, Ser. No. 983,360
Int. Cl.[5] C12N *9/96;* **C11D** *1/18*
U.S. Cl. 435—188 **49 Claims**

1. A formulation for stabilizing a liquid enzymatic composition consisting essentially of:
(a) at least one water-soluble coupling agent selected from a short carbon chain alcohol and a short carbon chain glycol,
(b) at least one of (i) a polyethoxylated alkyl diamine and
(ii) an amine oxide, and
(c) water
wherein ingredient (a) is present in an amount effective to increase the solubility of ingredient (b) in said water, and said ingredient (b) is present in an amount effective to stabilize one or more enzymes contained in a liquid enzymatic composition.

5,356,801

RECOMBINANT DNA ENCODING A DESULFURIZATION BIOCATALYST

John Ramboseck; Chris S. Piddington; Brian R. Kovacevich, all of Seattle, Wash.; Kevin D. Young, Grand Forks, and Sylvia A. Denome, Thompson, both of N. Dak., assignors to Energy BioSystems Corporation, The Woodlands, Tex.

Continuation-in-part of Ser. No. 911,845, Jul. 10, 1992, abandoned. This application Jul. 9, 1993, Ser. No. 89,755
Int. Cl.[5] C12P *21/06;* **C12N** *9/14, 1/20;* **C07H** *19/00*
U.S. Cl. 435—195 **20 Claims**

1. A recombinant DNA molecule from Rhodococcus origin wherein said DNA molecule encodes a biocatalyst capable of desulfurizing a fossil fuel which contains organic sulfur molecules.

5,356,802

FUNCTIONAL DOMAINS IN FLAVOBACTERIUM OKEANOKOITES (*FOKI*) RESTRICTION ENDONUCLEASE

Srinivasan Chandrasegaran, Baltimore, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed Apr. 3, 1992, Ser. No. 862,831
Int. Cl.[5] C12N *9/22, 15/55, 15/62*
U.S. Cl. 435—199 **6 Claims**

1. An isolated DNA segment encoding the N-terminus of a Type IIS endonuclease which contains the sequence-specific recognition activity of said Type IIS endonuclease, said Type IIS endonuclease being FokI restriction endonuclease and said N-terminus having a molecular weight of about 41 kilodaltons as determined by SDS-polyacrylamide gel electrophoresis wherein said isolated DNA segment encodes amino acids 1–382 of said FokI restriction endonuclease.

5,356,803

ANTIMICROBIAL COMPOSITION CONTAINING TYPE II ENDOGLYCOSIDASE AND ANTIMICROBIAL AGENT

Richard S. Carpenter, Cincinnati, Ohio; Pushkaraj J. Lad, San Mateo, Calif., and Ann M. Wolff, Cincinnati, Ohio, assignors to Genencor International, Inc., So. San Francisco, Calif. and The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 428,362, Oct. 27, 1989, abandoned. This application Mar. 30, 1992, Ser. No. 869,356
The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.
Int. Cl.[5] C12N *9/24, 9/40, 9/78;* **D06M** *16/00*
U.S. Cl. 435—200 **15 Claims**

1. An antimicrobial composition consisting essentially of from about 1 ppm to about 1200 ppm of a Type II endoglycosidase selected from the group consisting of Endo-D, Endo-H, Endo-F and PNGaseF and from about 0.5 ppm to about 1200 ppm of an antimicrobial agent; provided that the antimicrobial agent is not a lysozyme.

5,356,804

CLONING AND EXPRESSION OF BIOLOGICALLY ACTIVE HUMAN ALPHA-GALACTOSIDASE A

Robert J. Desnick; David F. Bishop, and Yiannis A. Ioannou, all of New York, N.Y., assignors to Mount Sinai School of Medicine of the City of New York, New York, N.Y.

Filed Oct. 24, 1990, Ser. No. 602,824
Int. Cl.[5] C12N *9/40, 15/00, 5/00, 1/20*
U.S. Cl. 435—208 **17 Claims**

1. A method for producing human α-galactosidase A comprising:
(a) culturing a mammalian cell containing a chromosomally integrated nucleotide sequence encoding human α-galactosidase A controlled by a regulatory sequence that pro-

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motes gene expression and a selectable marker controlled by the same or different regulatory sequence, so that the α-galactosidase A nucleotide sequence is stably overexpressed and an enzymatically active α-galactosidase A enzyme is secreted by the mammalian cell; and

(b) isolating enzymatically active α-galactosidase A enzyme from the mammalian cell culture.

5,356,805

GAMMA-POLYGLUTAMATE HYDROLASE

Toshio Tanaka; Makoto Taniguchi, both of Osaka; Osamu Hiruta, and Kazumichi Uotani, both of Kanagawa, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 25,344

Claims priority, application Japan, Mar. 3, 1992, 4-045517; Jan. 25, 1993, 5-009665

Int. Cl.[5] C12N *9/58, 9/14, 9/52*

U.S. Cl. 435—223 1 Claim

1. An isolated γ-polyglutamate hydrolase which has the following physicochemical properties:

(1) it hydrolyzes γ-polyglutamic acid with an endo action and liberates γ-oligoglutamic acid;

(2) it hydrolyzes γ-polyglutamic acid and liberates oligoglutamic acid but does not act on α-polyglutamic acid, and does not hydrolyze γ-glutamylglutamic acid, glutathione and γ-glutamylnaphthylamide which is a synthetic substrate of γ-glutamyl transpeptidase (γ-GTP);

(3) it has an optimum pH of 5.0 and a stable pH range of from 4.0 to 6.0;

(4) it has an optimum reaction temperature of 37° C. and is stable up to 40° C. at pH 5.0 for 1 hour; and

(5) it has a molecular weight, measured by gel filtration, of about 68,000.

5,356,806

IMMORTALIZED HUMAN CELL LINES CONTAINING EXOGENOUS CYTOCHROME P450

Curtis C. Harris, Bethesda; Harry V. Gelboin, Chevy Chase; Frank J. Gonzalez, Bethesda, all of Md., and Andrea M. A. Pfeifer, Vevey, Switzerland, assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C. and Nestec, S.A.

Continuation-in-part of Ser. No. 787,777, Nov. 6, 1991, Pat. No. 5,164,313, and a continuation-in-part of Ser. No. 636,712, Jan. 2, 1991, which is a continuation-in-part of Ser. No. 265,883, Nov. 1, 1988, abandoned, which is a continuation-in-part of Ser. No. 114,508, Oct. 30, 1987, Pat. No. 4,885,238, said Ser. No. 787,777, is a continuation-in-part of Ser. No. 58,387, Jun. 5, 1987, abandoned. This application Apr. 13, 1992, Ser. No. [illegible]

Int. Cl.[5] C12N *5/10*

U.S. Cl. 435—240.2 3 Claims

1. A non-tumorigenic, immortalized, human bronchial epithelial cell line which expresses an exogenous cytochrome P450 gene contained in said cell line, wherein said cell line is produced by introducing said exogenous cytochrome P450 gene into a BEAS-2B cell line deposited as ATCC CRL 9609.

5,356,807

CULTURED CELL LINE OF ADULT DIPLOID CELLS FROM HUMAN BRAIN AND MENINGEAL TISSUE

John P. Blass, Bronxville, and Ronald S. Black, Ossining, both of N.Y., assignors to Cornell Research Foundation, Ithaca, N.Y.

Filed Sep. 8, 1992, Ser. No. 940,926

Int. Cl.[5] C12N *5/00*

U.S. Cl. 435—240.2 5 Claims

1. A cultured cell line originating from adult human brain and adult human meninges tissue, said cell line consisting of diploid cells that express neuronal markers but do not express glial markers found in cells taken from adult brain tissue.

5,356,808

HIGHLY FERMENTABLE, HIGH MALTOSE, NON-CRYSTALLIZING STARCH CONVERSION SYRUP

James C. Purdue, West Lafayette, Ind.; Kevin D. Kapper, Decatur, Ill.; Michael D. Bunch, Forsyth, Ill., and Jerry L. Turner, Shelbyville, Ill., assignors to A.E. Staley Manufacturing Company, Decatur, Ill.

Continuation-in-part of Ser. No. 41,952, Apr. 2, 1993, abandoned. This application Jan. 6, 1994, Ser. No. 178,226

Int. Cl.[5] C12P *19/00, 19/22, 19/20, 19/14*

U.S. Cl. 435—254.2 3 Claims

1. A highly fermentable, high maltose, non-crystallizing starch conversion syrup having a minimum fermentable equivalent of 95%, a maltose content ranging from about 40 to 65%, a dextrose content ranging from about 35 to 50%, a maltotriose content of less than 3% and a value for the dextrose content plus the maltose content of at least 93%.

5,356,809

PROCESSES FOR IN VIVO PRODUCTION OF ASTAXANTHIN AND PHAFFIA RHODOZYMA YEAST OF ENHANCED ASTAXANTHIN CONTENT

Eric A. Johnson, Madison, Wis.; Huei-hsiung Yang, Rockville, Md.; Beril Gelday-Tuncer, Bostanli-Karsiyaka, Turkey; William T. Hall, Rockville, Md.; David Schreiber, Columbia, Md., and Kwok Ho, San Diego, Calif., assignors to Igene Biotechnology, Inc., Columbia, Md.

Division of Ser. No. 399,183, Aug. 23, 1989, which is a continuation of Ser. No. 385,961, Jul. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 229,536, Aug. 8, 1988, abandoned. This application Feb. 14, 1992, Ser. No. 837,120

Int. Cl.[5] C12N *1/16;* C12P *23/00*

U.S. Cl. 435—255.1 4 Claims

1. Phaffia strain IGI887J0.

5,356,810

ASTAXANTHIN-PRODUCING YEAST CELLS, METHODS FOR THEIR PREPARATION AND THEIR USE

Bent Flens, Stenlose; Ib Christensen, Allerød; Robert Larsen, Virum; Steffen R. Johansen, Ega, all of Denmark, and Eric A. Johnson, Madison, Wis., assignors to Gist-brocades N.V., Netherlands

Continuation of Ser. No. 424,306, Nov. 12, 1989, abandoned. This application Jul. 27, 1992, Ser. No. 919,986

Claims priority, application Denmark, Apr. 15, 1987, 1998/87

Int. Cl.[5] C12N *1/16;* C12P *23/00*

U.S. Cl. 435—225.1 1 Claim

1. An isolated pure culture of a strain of *Phaffia rhodozyma* which when grown under conditions comprising an oxygen transfer rate of at least 30 mmoles/l/hour on YM medium at 20°–22° C. for 5 days in 500 ml shake flasks with two baffles containing 50 ml of the medium and subjected to orbital shaking at 150 rpm, produces astaxanthin in an amount of at least 600 μg per g *Phaffia rhodozyma* dry matter, as determined by HPLC analysis, wherein said strain is *Phaffia rhodozyma* deposited under accession No. 224-87 CBS, accession No. 225-87 CBS, or accession No. 215-88 CBS, or a mutant thereof which retains the astaxanthin-producing capability.

5,356,811

METHOD OF PROCESSING STABILIZED ALOE VERA GEL OBTAINED FROM THE WHOLE ALOE VERA LEAF

Billy C. Coats, 4433 Crooked La., Dallas, Tex. 75229

Continuation-in-part of Ser. No. 872,942, Apr. 21, 1992, abandoned. This application May 10, 1993, Ser. No. 60,237

Int. Cl.[5] C07G *17/00;* A01N *65/00*

U.S. Cl. 435—267 3 Claims

1. A process for extracting aloe vera gel from the leaf of aloe vera without the application of heat, the process comprising the steps of:

(a) mechanically slicing and grinding whole aloe vera leaves;

(b) mixing the ground aloe vera leaves in the presence of approximately 20 grams per 55 gallons of a cellulose dissolving compound comprising cellulase to form a mixture of aloe vera gel, aloin and aloe vera leaf pulp;

(c) removing the aloe vera leaf pulp by extruding the mixture through at least one filter to obtain an aloe vera gel and aloin mixture;

(d) adding approximately two pounds of activated powdered carbon per 50 gallons of aloe vera gel and aloin mixture obtained in step (c) to absorb the aloin;

(e) removing the aloin laded activated powdered carbon to obtain aloe vera gel having an aloin content of less than about 1 ppm;

(f) extruding the aloe vera gel obtained in step (e) through at least one filter that removes carbon material from the mixture down to a size on the order of 10 microns;

(g) mixing the aloe vera gel obtained in step (f) with a solution of glucose oxidase and catalase in a ratio of about 3.8 glucose oxidase units to about 1 catalase unit and with approximately 12.8 ounces of sodium benzoate per 100 gallons of the mixture;

(h) exposing the aloe vera gel obtained in step (g) to ultraviolet light radiation having an approximate wavelength of 254 nanometers for approximately 10 minutes; and

(i) extruding the aloe vera gel obtained in step (h) through at least one organic filter.

5,356,812

PROCESSES FOR PRODUCTION OF OPTICALLY ACTIVE 3-PHENYL-1,3-PROPANEDIOL BY ASYMMETRIC ASSIMILATION

Akinobu Matsuyama; Michio Ito, both of Arai; Yoshinori Kobayashi, Joetsu, and Naoki Kawada, Tsukuba, all of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP91/01064, § 371 Date Apr. 7, 1992, § 102(e) Date Apr. 7, 1992, PCT Pub. No. WO92/02631, PCT Pub. Date Feb. 20, 1992

PCT Filed Aug. 9, 1991, Ser. No. 844,609

Claims priority, application Japan, Aug. 10, 1990, 2-211861; Oct. 15, 1990, 2-276101; Jul. 4, 1991, 3-164354

Int. Cl.[5] C12P *41/00*

U.S. Cl. 435—280 12 Claims

1. A process for increasing the optical purity of (R)-3-phenyl-1,3-propanediol comprising:

providing a mixture of (R) and (S) enantiomers of 3-phenyl-1,3-propanediol,

subjecting said mixture to a microorganism selected from the group consisting of *Candida lambica, Hanesnula minuta, Rhodotorula rubra, Protaminobacter ruber, Aspergillus niger, Aspergillus ficuum, Alternaria kiduchiana, Macrophomina phaseoli, Preussia terricola,* and *Talaromyces flavus* var. flavus, or a preparatus derived therefrom, that is capable of selectively utilizing the (S)-3-phenyl-1,3-propanediol enantiomer, and

recovering the residual, optically active 3-phenyl-1,3-propanediol.

5,356,813

PROCESS FOR THE DESULFURIZATION AND THE DESALTING OF A FOSSIL FUEL

Daniel J. Monticello, The Woodlands, Tex., assignor to Energy BioSystems Corporation, The Woodlands, Tex.

Filed Apr. 30, 1992, Ser. No. 876,187

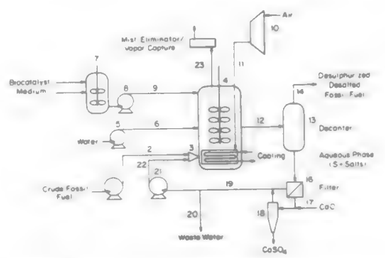
Int. Cl.[5] C10G *32/00, 29/20;* C02F *3/00, 3/02*

U.S. Cl. 435—282 7 Claims

1. A process for reducing organic sulfur and inorganic salts from a fossil fuel containing organic sulfur compounds and inorganic salts, comprising the steps of:

(a) contacting the fossil fuel with an aqueous phase containing a biocatalyst having carbon-sulfur bond cleavage ability selected from the group consisting of *Rhodococcus* sp. ATCC 53968, mutants of said *Rhodococcus* ATCC 53968 retaining the carbon-sulfur bond cleavage ability of said *Rhodococcus* ATCC 53968 or cell-free fractions thereof, thereby forming a fossil fuel and aqueous phase mixture;

(b) maintaining the mixture under conditions sufficient for cleavage of the carbon-sulfur bonds of the organic sulfur compounds, by said biocatalyst to form inorganic sulfur compounds and for water-induced solubilization of said



inorganic salts and said inorganic sulfur compounds to occur; and

(c) separating the fossil fuel having a reduced organic sulfur and inorganic salt content from the resulting aqueous phase, whereby the resulting aqueous phase has a concentration greater than about 0.5 percent by weight of said inorganic salts.

5,356,814

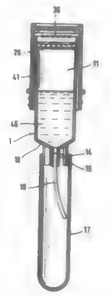
DISAGGREGATION DEVICE FOR CYTOLOGICAL SPECIMENS

Charles L. Carrico, Jr.; William A. Fox, both of Burlington; James W. Geyer, and Ernest A. Knesel, Jr., both of Greensboro, all of N.C., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 953,035, Sep. 29, 1992. This application Aug. 30, 1993, Ser. No. 112,003

Int. Cl.[5] C12M *3/02*

U.S. Cl. 435—286 10 Claims



1. The combination of a device for disaggregating cytological material contained within a sample vial, and a tube for receiving dissaggregated cytological material from the device, which comprises:

(a) the device comprising:

(i) an elongated hollow body configured and dimensioned to be slidably inserted into the sample vial, the body having a top end, a bottom end and sides;

(ii) sealing means for forming a liquid-impervious seal between the sample vial and the body when the body is inserted into the sample vial;

(iii) a shear plate disposed across the bottom end of the

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body, the shear plate defining a plurality of holes of predetermined size effective to disaggregate the cytological material and to permit the disaggregated cytological material to traverse the shear plate and enter the body when the body is inserted into the sample vial; and

(iv) a curved hose having a proximate end and a distal end, the proximate end being coupled to the top end of the body so that the disaggregated cytological material is permitted to flow from the top end of the body into and through the hose; and

(b) the tube having an open end, a closed end, an interior surface and an exterior surface, the tube at its open end being configured and dimensioned to be securable to the top end of the body;

such that when the tube is secured to the body, the hose is configured and dimensioned so that its distal end contacts the interior surface of the tube.

5,356,815

APPARATUS FOR MICROBIOLOGICAL ANALYSIS OF BIOLOGICAL SAMPLES IN LIQUID SUSPENSION BY LIGHT-SCATTERING TECHNIQUE

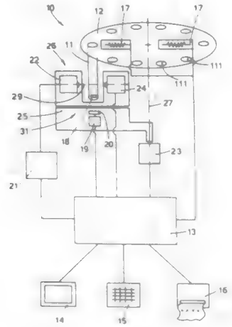
Alfredo Ciotti, Udine, Italy, assignor to S.I.R.E. Sas di De Monte R., Italy

Filed Apr. 7, 1993, Ser. No. 43,746

Claims priority, application Italy, Apr. 16, 1992, UD92A000061

Int. Cl.[5] C12M *1/34*

U.S. Cl. 435—291 **10 Claims**



1. Apparatus for microbiological analysis of biological samples in liquid suspension by light-scattering technique, said apparatus comprising:

a plurality of test tube containers (**11**) made of a material transparent to electromagnetic radiations of a determined wave length;

a stand (**12**) with seatings (**111**) for positioning said containers (**11**) with a substantially vertical axis and including a thermostat system (**17**) for maintaining said containers within a predetermined temperature range,

a stirring assembly (**31**) that includes keeper means (**18**) located within each container (**11**) for agitating the contents of each container,

a reading means (**26**), which comprises a focussing and collimation system (**22**) having an axis of emission (**29**) substantially orthogonal to the vertical axis of the container (**11**) and also a monitoring device (**24**) for providing an output related to the radiation scattering of the contents of each container,

a programmable means (**13**) for recording the output in radiation scattering of each container over time, for computing a curve fitting the recorded output for each container, for comparing each computed curve with stored curves of containers with known concentrations of known microbes, and for providing an indication of the concentration and microbe as an output, wherein said reading means (**26**) and the individual containers (**11**) are movable relative to each other, and

said monitoring device (**24**) comprises at least one monitor (**28**) which, at least for a period of time during the analysis, is positioned on a plane substantially orthogonal to the vertical axis of one of said containers (**11**) and containing the axis (**29**) of emission and said one of said containers is also positioned at least at a fixed angle between 0° and 180° C. in relation to the axis (**29**) of emission.

5,356,816

METHOD AND COMPOSITIONS USING POLYPEPTIDES OF ARABIDOPSIS THALIANA

Michael F. Thomashow, East Lansing, Mich., assignor to Board of Trustees Operating Michigan State University, East Lansing, Mich.

Division of Ser. No. 794,398, Nov. 19, 1991. This application Jan. 11, 1993, Ser. No. 2,886

Int. Cl.[5] C07H *17/00*; A61K *35/78*

U.S. Cl. 435—320.1 **2 Claims**

1. A cDNA encoding a 15 kilodalton polypeptide having a sequence:

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1   AAA AAC TCC TCC TTT CAT TTC CAA ACA
                                    AAA ACT TCT TTT TAT TCT CAC  48

49  ATC TTA AAG ATC TCT CTC ATG GCG ATG
                                    Met Ala Met

                TCT TTC TCA GGA GCT GTT CTC  96
                Ser Phe Ser Gly Ala Val Leu  10
                      5                 10

97  ACT GGT ATG GCT TCT TCT TTC CAC AGC
    11  Thr Gly Met Ala Ser Ser Phe His Ser
                          15

                GGA GCC AAG CAG AGC AGC TTC 144
                Gly Ala Lys Gln Ser Ser Phe  26
                      20                25

145 GGC GCT GTC AGA GTC GGC CAG AAA ACT
    27  Gly Ala Val Arg Val Gly Gln Lys Thr
                    30                35

                CAG TTC GTC GTC GTT TCT CAA 192
                Gln Phe Val Val Val Ser Gln  42
                            40

193 CGC AAG AAG TCG TTG ATC TAC GCC GCT
    43  Arg Lys Lys Ser Leu Ile Thr Ala Ala
                45

                AAA GGT GAC GGC AAC ATC CTC 240
                Lys Gly Asp Gly Asn Ile Leu  58
                            55

241 GAT GAC CTC AAC GAG GCC ACA AAG AAA
    59  Asp Asp Leu Asn Glu Ala Thr Lys Lys
              60                65

                GCT TCA GAT TTC GTG ACG GAT 288
                Ala Ser Asp Phe Val Thr Asp  74
                            70

289 AAA ACA AAA GAG GCA TTA GCA GAT GGT
    75  Lys Thr Lys Glu Ala Leu Ala Asp Gly
          75                80

                GAG AAA GCG AAA GAC TAC GTT 336
                Glu Lys Ala Lys Asp Tyr Val  90
                      85                90
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-continued

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337 GTT GAA AAA AAC AGT GAA ACC GCA GAT
91  Val Glu Lys Asn Ser Glu Thr Ala Asp

                ACA TTG GGT AAA GAA GCT GAG 384
                Thr Leu Gly Lys Glu Ala Glu 106
                  100                   105

385 AAA GCT GCG GCG TAT GTG GAG GAG AAA
107 Lys Ala Ala Ala Tyr Val Glu Glu Lys
                  110

                GGA AAA GAA GCC GCA AAC AAG 432
                Gly Lys Glu Ala Ala Asn Lys 122
                  115               120

433 GCG GCA GAG TTC GCG GAG GGT AAA GCA
123 Ala Ala Glu Phe Ala Glu Gly Lys Ala
                  125               130

                GGA GAG GCT AAG GAT GCC ACA 480
                Gly Glu Ala Lys Asp Ala Thr 138
                            135

481 AAG TAG GGT CTT ACC TAA TCA GTT AAT
139 Lys

                TTC AAG CAC TTA AAC TCG TAG 528

529 ATA TAT TGA TCC ATA TCC TCT CTC TTC

                ATG TTT AAT AGT ACT TAC AAT 576

577 AAG ATG AGT CTG TTG TAA TTT CTA TTA

                ATT TCA CAT CAC AAC TGA AAT 624

625 AAG ATA TGG TAT CCA CAG TCA CCG TCA

                CAT TCT TTA ATG TTT TGC AAA 672

673 ATA TTC AAT AGA CAA ATT AAA TAA AAA

                AAA AAA AAA
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as set forth in SEQ ID NO:1.

5,356,817

METHODS FOR DETECTING THE ONSET, PROGRESSION AND REGRESSION OF GYNECOLOGIC CANCERS

Laurence A. Cole, Hamden, Conn., assignor to Yale University, New Haven, Conn.

Continuation of Ser. No. 204,447, Jun. 9, 1988, abandoned. This application Jan. 24, 1991, Ser. No. 645,308

Int. Cl.[5] G01N *33/00*

U.S. Cl. 436—64 **9 Claims**

8. A method to screen a female patient having a high risk of developing ovarian cancer comprising:

(a) assaying a plasma or tissue sample from the patient for the presence of CA 125, and at or about the same time,

(b) assaying a bodily non-blood sample from said patient for the presence of human chorionic gonadotropin beta-subunit core fragment, wherein the detection of both CA 125 and human chorionic gonadotropin beta-subunit core fragment is an indication that the female patient has a high risk of developing ovarian cancer.

5,356,818

SMOG MONITOR

Graham M. Johnson, Ryde, Australia, assignor to Commonwealth Scientific and Industrial Research Organisation, Campbell, Australia

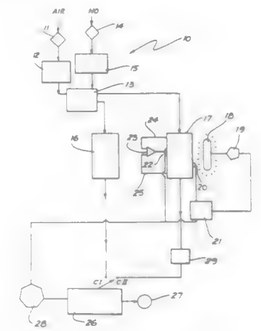
PCT No. PCT/AU89/00367, § 371 Date Apr. 8, 1991, § 102(e) Date Apr. 8, 1991, PCT Pub. No. WO90/02329, PCT Pub. Date Aug. 3, 1990

PCT Filed Aug. 30, 1989, Ser. No. 671,873

Claims priority, application Australia, Aug. 30, 1988, PJ0144; Sep. 19, 1988, PJ0488; Jun. 23, 1989, PJ4900

Int. Cl.[5] G01N *33/00*

U.S. Cl. 436—116 **2 Claims**



1. A method for determining rate coefficient of smog formation in air, the method comprising:

(a) adding excess nitric oxide to an air sample to provide an excess nitric oxide/air mixture;

(b) permitting the mixture to react for a first selected reaction period wherein excess nitric oxide in the mixture reacts with substantially all ozone in the mixture;

(c) determining a first nitric oxide concentration of the mixture after the first selected reaction period;

(d) illuminating the mixture of (a) or the mixture after the first selected reaction period for a second selected reaction period under reference temperature and illumination conditions;

(e) permitting the mixture, after illumination, to react for a third selected reaction period wherein excess nitric oxide in the mixture reacts with any ozone present in the mixture;

(f) determining a second nitric oxide concentration of the mixture after the third selected reaction period; and

(g) determining the rate coefficient of smog formation from the first and second nitric oxide concentrations, the reference temperature and illumination conditions and the duration of the second selected reaction period.

5,356,819

METHOD OF DETERMINING CHEMICAL AND/OR PHYSICAL PROPERTIES OF A GASEOUS ATMOSPHERE

Manfred Ritschel, Linowskistrasse 11, D-5303 Bornheim 4, Fed. Rep. of Germany

PCT No. PCT/EP92/00429, § 371 Date Nov. 6, 1992, § 102(e) Date Nov. 6, 1992, PCT Pub. No. WO92/15865, PCT Pub. Date Sep. 17, 1992

PCT Filed Feb. 27, 1992, Ser. No. 946,424

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1991, 4107295

Int. Cl.[5] G01N *25/18, 31/00*

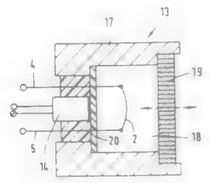
U.S. Cl. 436—147 **13 Claims**

1. A method of determining at least one of chemical proper-

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ties, physical properties and physical states of a gas atmosphere, comprising the steps of:

a. bringing the gas atmosphere into contact with a heatable surface while heating up the heatable surface from a starting temperature to a predetermined higher temperature by the addition of energy thereto over a period of heating time;



b. discontinuing the addition of energy when the predetermined higher temperature is reached; and

c. evaluating heat discharged by the heatable surface under the influence of the gas atmosphere as a function of time to generate a measuring signal.

5,356,820

HAPTENS, TRACERS, IMMUNOGENS AND ANTIBODIES FOR IMMUNOASSAYS FOR PROPOXYPHENE

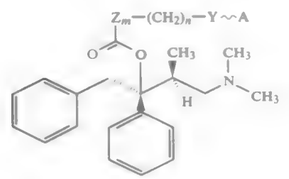
Robert E. Dubler, Gurnee; Jonathan Grote, Grayslake, and Donna R. Kuhn, Prospect Heights, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 736,890, Jul. 29, 1991, Pat. No. 5,239,086. This application May 12, 1993, Ser. No. 60,937

Int. Cl.[5] G01N *33/542*

U.S. Cl. 436—537 **9 Claims**

1. In an improved immunoassay for determining the presence or amount of dextropropoxyphene and/or nordextropropoxyphene in a sample having a step of contacting said sample with antibodies raised in response to an immunogen, the improvement comprising utilizing as immunogen an immunogen derived from a substantially optically pure hapten, said immunogen corresponding to the formula (X):



wherein

Z is —NH—;

Y is —NH—,—(CO)NH—, or —NH(CO)—;

m is 0 or 1;

n is an integer of from 1 to 3; and

A is an antigenicity-conferring carrier moiety.

5,356,821

METHOD FOR MANUFACTURING SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

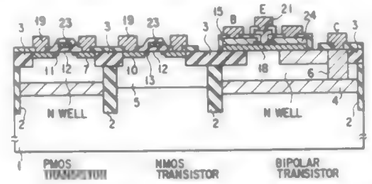
Hiroshi Naruse, Kawasaki, and Shin-ichi Taka, Yokosuka, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 12, 1993, Ser. No. 104,907

Claims priority, application Japan, Aug. 15, 1992, 4-238930

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—34 **2 Claims**



1. A method for manufacturing a semiconductor integrated circuit, comprising the steps of:

forming a gate insulating film on a MOS field effect transistor forming region of a semiconductor substrate;

forming a monocrystalline SiGe base region in a portion which is located on a bipolar transistor forming region of said semiconductor substrate and to which said semiconductor substrate is exposed;

forming a polycrystalline SiGe layer on said gate insulating film and on an entire surface of said semiconductor substrate including said monocrystalline SiGe base region;

selectively etching said polycrystalline SiGe layer to form a polycrystalline SiGe gate electrode on the gate insulating film of said MOS field effect transistor forming region, as well as to form an external base leading electrode of the polycrystalline SiGe layer on said monocrystalline SiGe base region of said bipolar transistor forming region;

forming source and drain regions in said MOS field effect transistor forming region; and

diffusing impurities into a surface region of said monocrystalline SiGe base region to form an emitter region.

5,356,822

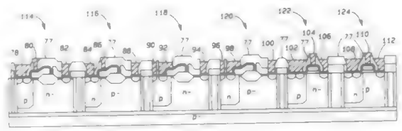
METHOD FOR MAKING ALL COMPLEMENTARY BICDMOS DEVICES

John Lin, Ellicott City, and Andras F. Cserhati, Columbia, both of Md., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Jan. 21, 1994, Ser. No. 184,516

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—34 **14 Claims**



1. A method for making complementary DMOS, bipolar and MOS transistors on a silicon layer of a SOI substrate comprising the steps of:

implanting an n-type dopant and a p-type dopant into selected regions of said silicon layer to form a plurality of n^- and p^- regions;

etching through the silicon layer to electrically isolate said n^- and p^- regions from each other;

oxidizing the surfaces of said n^- and regions to form a first oxide layer;

growing local oxidized regions on selected pairs of said n^- and p^- regions, each of said selected pairs comprising one n^- region and one p^- region;

growing a high quality oxide layer on said n^- and p^- regions;

forming a gate for a DMOS transistor over the channel regions of said high quality oxide layer of at least a first pair of said selected pair of n^- and p^- regions, said gate extending over said local oxidized regions;

forming a field plate for a bipolar transistor over the base region of said n^- and p^- regions of at least a second pair of said n^- and p^- regions, said field plate extending over said local oxidized regions;

forming a gate for a MOS transistor on said high quality thin oxide layer on said n^- and p^- regions of at least a third pair of said n^- and p^- regions;

implanting a p-type dopant into said n^- regions of said at least a first pair, said at least a second pair and said at least a third pair of n^- regions adjacent to one side of said gates and said field plates to form p body areas in said n^- region;

implanting an n-type dopant into said p^- regions of said at least a first pair, said at least a second pair and said at least a third pair adjacent to said gate for said DMOS transistor to said gate of said MOS transistor, and said field plate of said bipolar transistor to form n body areas in said p^- region;

implanting an n-type dopant into selected areas of said p body areas, said n body areas, and said n^- regions to form selected n^+ areas;

implanting a p-type dopant into selected areas of said p body areas, said n body areas and said p^- regions to form selected p^+ areas;

growing a low temperature oxide layer on said substrate covering said gates and field plates, said n^- and p^- regions and said n^+ and p^+ areas;

etching windows through said low temperature oxide layer exposing predetermined regions of said n^+ and p^+ areas and selected areas of said gates and field plates; and

depositing a first metal in said predetermined regions exposed by said windows to form electrical contacts to said n^+ and p^+ areas, said gates and said field plates completing the fabrication of the complementary n and p DMOS transistors, complementary n and p bipolar transistors and complementary n and p MOS transistors.

5,356,823

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Tatsuro Mitani, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 631,840, Dec. 21, 1990, abandoned. This application Feb. 27, 1992, Ser. No. 841,206

Claims priority, application Japan, Dec. 22, 1989, 1-334548

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—40 **3 Claims**

1. A method of manufacturing a semiconductor device, comprising the steps of:

forming a first insulating layer in a selected region on a semiconductor layer;

forming a second insulating layer on a surface and a side wall of said first insulating layer;

etching back said second insulating layer to leave a first side wall insulating layer on the side wall of said first insulating layer;

mesa-etching said semiconductor layer by anisotropic dry etching, using said first insulating layer and said first side wall insulating layer as masks, to form a side wall for element isolation;

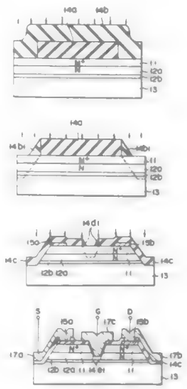
forming a source electrode and a drain electrode in a selected region of the surface of said semiconductor layer;

forming a third insulating layer having a gate opening on the surface of said semiconductor layer;

forming a fourth insulating layer on a surface and an end face of said gate opening;

etching back said fourth insulating layer to leave a second side wall insulating layer on a side wall of said gate opening of said third insulating layer;

gate-recess-etching said semiconductor layer by said anisotropic dry etching, using said third insulating layer and



said second side wall insulating layer as masks, to form a gate recess thereon;

forming a fifth insulating layer on the entire surface of a resultant structure and etching back said fifth insulating layer to form a third side wall insulating layer on a side wall of said gate recess; and

forming a gate electrode in said gate recess.

5,356,824

PROCESS FOR THE PRODUCTION OF A THIN FILM TRANSISTOR HAVING A DOUBLE GATE AND AN OPTICAL MASK

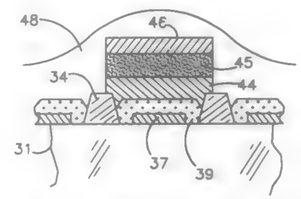
Yannick Chouan, Louannec, and Madeleine Bonnel, St Quay Perros, both of France, assignors to France Telecom Establissement Autonome de Droit Public, France

Filed Feb. 25, 1993, Ser. No. 22,175

Claims priority, application France, Feb. 26, 1992, 92 02219

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—41 **10 Claims**



1. Process for the production of a thin film transistor having a lower gate and an upper gate, comprising the steps of:

a) depositing a layer of a first conductor on an electrical insulating substrate (31) for producing the source and drain (34) of the transistor,

b) producing photosensitive resin patterns (33) on the first conductor layer for fixing the location and dimensions of the transistor source and drain,

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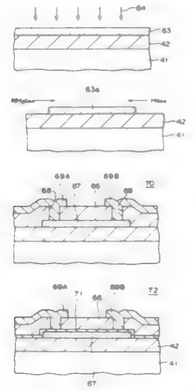
c) eliminating areas of the first conductor layer which are not covered with resin,
d) isotropically depositing on the structure obtained in step c) a layer (**37**) of a second conductor constituted by an opaque metal and which will form the lower gate of the transistor,
e) carrying out a heat treatment on the structure obtained in step d) in order to bring about a contraction of the resin patterns,
f) isotropically depositing a first electrical insulating layer (**39**) on the complete structure obtained in step e),
g) dissolving the resin patterns in order to eliminate the second conductor and the first insulating layer deposited on the resin patterns,
h) depositing a layer (**44**) of a semiconductor material on the structure obtained in step g),
i) depositing a second electrical insulating layer (**45**) on the semiconductor layer,
j) depositing a layer (**46**) of a third conductor on the second insulating layer for producing the upper gate of the transistor,
k) patterning and etching the stack of layers comprising the third conductor layer, the second electrical insulating layer and the semiconductor material layer in order to define the dimensions of the transistor, and
l) passivating the structure obtained in step k) with a third electrical insulating layer (**48**).

5,356,825

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

Hiroki Hozumi, and Shinichi Araki, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP90/01698, § 371 Date Sep. 26, 1991, § 102(e) Date Sep. 26, 1991, PCT Pub. No. WO91/10262, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 26, 1990, Ser. No. 752,592
Claims priority, application Japan, Dec. 26, 1989, 1-337007
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—60 **1 Claim**



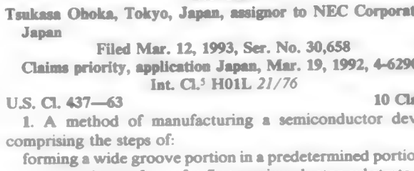
1. A method of manufacturing a semiconductor device, comprising the steps of:
ion-implanting an impurity into a semiconductor film to be a resistor to change said semiconductor film from polycrystalline to amorphous;
patterning said implanted semiconductor film to form the shape of a resistor;
first heat-treating said patterned semiconductor film in atmosphere including hydrogen gas and ammonia gas at a temperature of 500° to 800° C.; and
thereafter second heat-treating said heat-treated semiconductor film to activate said semiconductor film, thereby forming said resistor.

5,356,826

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE PROVIDED WITH CAPACITOR AND RESISTOR

Kiyoshi Natsume, Shizuoka, Japan, assignor to Yamaha Corporation, Japan

Filed Aug. 5, 1993, Ser. No. 102,586
Claims priority, application Japan, Aug. 7, 1992, 4-211812
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—60 **28 Claims**



1. A method of manufacturing a semiconductor device having at least a MOSFET and a capacitor element formed on the surface of a semiconductor substrate, comprising the steps of:
(a) forming a gate oxide film on the surface of said semiconductor substrate:
(b) forming a polycrystalline silicon layer on said gate oxide film;
(c) forming a dielectric film for a capacitor insulating film on said polycrystalline silicon layer;
(d) removing said dielectric film while leaving unremoved an area corresponding to an upper electrode of said capacitor element;
(e) forming a refractory material layer covering said polycrystalline silicon layer and said dielectric film;
(f) forming a masking member covering said refractory material layer at the area corresponding to the upper electrode of said capacitor element and an area corresponding to a gate electrode of said MOSFET, and
(g) removing said refractory material layer at an area other than said areas corresponding to the upper electrode and the gate electrode and removing said polycrystalline silicon layer not covered with said dielectric film, by using said mask member as an etching mask and said dielectric film as an etching stopper,
wherein the gate electrode of said MOSFET has a polycide structure of said polycrystalline silicon layer and said refractor material layer, and said capacitor element has the structure such that said dielectric film is sandwiched between said polycrystalline silicon layer and said refractory material layer.

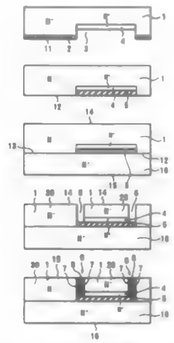
5,356,827

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

Tsukasa Oboka, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 12, 1993, Ser. No. 30,658
Claims priority, application Japan, Mar. 19, 1992, 4-62903
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—63 **10 Claims**

1. A method of manufacturing a semiconductor device, comprising the steps of:
forming a wide groove portion in a predetermined portion of one major surface of a first semiconductor substrate, the wide groove portion having a bottom surface formed to be flat;
forming a first insulating film on the bottom surface of said groove portion;
polishing the major surface of said first semiconductor substrate except for a surface of said first insulating film in said groove portion to form a mirror-polished surface on the same level as the surface of said first insulating film,



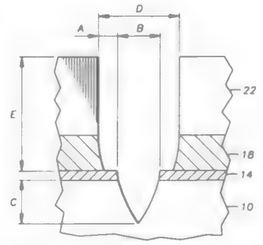
said polishing of the major surface of said first semiconductor device and said first insulating film having a flat face with the same level; and
bonding to cause an adherence between one major surface of a second semiconductor substrate and the flat face of said first semiconductor substrate and said first insulating film without gap by direct bonding and heat-treating the resultant structure, thereby forming a composite semiconductor substrate.

5,356,828

METHOD OF FORMING MICRO-TRENCH ISOLATION REGIONS IN THE FABRICATION OF SEMICONDUCTOR DEVICES

Stephen W. Swan, Sterling, and Ellen G. Piccioli, Marlboro, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 1, 1993, Ser. No. 86,598
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—67 **14 Claims**



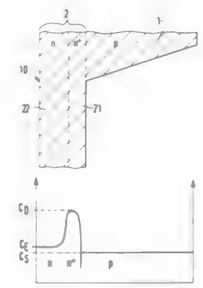
1. A method of forming micro-trench isolation regions in the fabrication of semiconductor devices comprising:
forming a first silicon dioxide layer on a semiconductor substrate surface;
depositing a hard film layer on the first silicon dioxide layer;
depositing a layer of photoresist over the hard film layer and patterning the photoresist to provide open regions having widths between 0.2 μm to 0.5 μm and an aspect ratio of photoresist and hard film layer thickness to open region width of between 2:1 to 7:1;
etching the exposed hard film by a plasma etch process to form micro-trenches in the substrate surface having widths between 1000 Å to 3500 Å;
removing the layer of photoresist to expose the hard film layer;
implanting an n- or p-channel-stop inplant into the substrate and aligned with the micro-trenches; and
forming and planarizing a second silicon dioxide layer in the micro-trenches of the substrate surface.

5,356,829

SILICON DEVICE INCLUDING A PN-JUNCTION ACTING AS AN ETCH-STOP IN A SILICON SUBSTRATE

Martin Willman, Reutlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 11, 1991, Ser. No. 775,777
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1990, 4035628
Int. Cl.[5] H01L *21/302*
U.S. Cl. 437—74 **5 Claims**



1. A method of making a silicon device, said method comprising the steps of:
a. providing a p-doped monocrystalline silicon substrate (**1**) with a doping concentration C_S;
b. making a pn-junction by forming a first n-doped layer portion (**21**) directly on one side of the p-doped monocrystalline silicon substrate (**1**) with a doping concentration C_D greater than said doping concentration C_S of said silicon substrate;
c. depositing epitaxially at least one other n-doped layer portion (**22**) having a doping concentration C_E on said first n-doped layer portion (**21**) to form a silicon layer comprising the first n-doped layer portion and the at least one other n-doped layer portion; and
d. etching a portion of said p-doped monocrystalline silicon substrate (**1**) so as to form a blind hole extending from another side of said silicon substrate opposite to said side on which said first n-doped layer portion (**21**) is formed in step b) to said pn-junction, said etching being such that said hole ends at said pn-junction.

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5,356,830

SEMICONDUCTOR DEVICE AND ITS MANUFACTURING METHOD

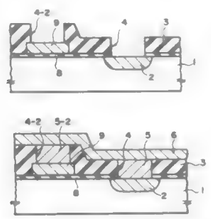
Susumu Yoshikawa; Shuichi Samata, both of Yokohama; Satoshi Maeda, Ooita, and Shizuo Sawada, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 406,591, Sep. 13, 1989, abandoned. This application Dec. 17, 1990, Ser. No. 627,922

Claims priority, application Japan, Sep. 19, 1988, 63-234317

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—89 **14 Claims**



1. A method for manufacturing a semiconductor device, comprising:

forming an impurity diffusion layer in a semiconductor substrate, forming two gates separated by a predetermined interval over a surface of said substrate and forming a first insulating layer on each of said gates;

forming a first polysilicon conductive layer on said first insulating layer, said first polysilicon conductive layer being connected to said impurity diffusion layer and extending on said first insulating layer a distance greater than said predetermined interval;

forming a second insulating layer over an entire area of said surface of said substrate on which said gates are formed;

forming in said second insulating layer a hole having a diameter larger than said predetermined interval between said gates;

forming in said hole, by a selective epitaxial method, a second polysilicon conductive layer connected to said first polysilicon conductive layer, said selective epitaxial method being performed within a furnace of a chemical vapor deposition apparatus; and

forming within said furnace by polysilicon deposition a third polysilicon conductive layer connected to said second polysilicon conductive layer,

wherein said forming of the second polysilicon conductive layer and the third polysilicon conductive layer is continuously performed in a same furnace without exposure to an atmosphere outside the furnace and absent formation of an oxide film between the second and third polysilicon conductive layers.

5,356,831

METHOD OF MAKING A MONOLITHIC INTEGRATED CIRCUIT HAVING COMPOUND SEMICONDUCTOR LAYER EPITAXIALLY GROWN ON CERAMIC SUBSTRATE

Joseph A. Calviello, Kings Park, and Grayce A. Hickman, Hicksville, both of N.Y., assignors to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 511,589, Apr. 20, 1990, Pat. No. 5,164,359. This application Oct. 28, 1992, Ser. No. 968,057

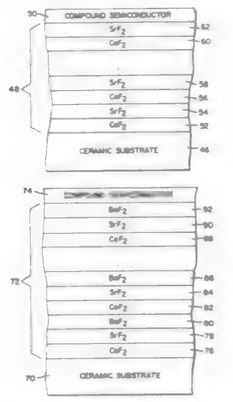
Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—110 **6 Claims**

1. A semiconductor processing technique for depositing a single crystal compound semiconductor layer on a ceramic substrate, comprising:

providing a ceramic substrate;

growing a superlattice-strained-structure of sequential layers of CaF_2 and SrF_2 on said substrate;



epitaxially growing a compound element semiconductor layer on said superlattice-strained-structure.

5,356,832

METHOD OF MAKING SURFACE EMISSION TYPE SEMICONDUCTOR LASER

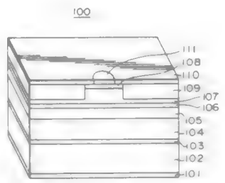
Katsumi Mori; Tatsuya Asaka, and Hideaki Iwano, all of Nagano, Japan, assignors to Seiko Epson Corporation, Nagano, Japan

Continuation-in-part of Ser. No. 756,981, Sep. 9, 1991, Pat. No. 5,182,757. This application Dec. 31, 1992, Ser. No. 999,137

Claims priority, application Japan, Sep. 12, 1990, 2-242000

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—129 **17 Claims**



1. A method of making a surface emission type semiconductor laser for emitting a laser beam in a direction perpendicular to a semiconductor substrate, comprising the steps of forming a multilayered semiconductor layer on said semiconductor substrate to define at least one optical resonator means including a pair of reflecting mirrors and a plurality of semiconductor layers between said pair of reflecting mirrors; forming a photoresist mask on said multilayered semiconductor layer; etching the layers including at least a cladding layer in said multilayered semiconductor layer by the use of said photoresist mask to form at least one column-like portion; and forming a II-VI group compound semiconductor epitaxial layer surrounding said at least one column-like portion by vapor phase epitaxy method to form a buried layer.

5,356,833

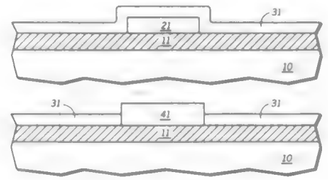
PROCESS FOR FORMING AN INTERMETALLIC MEMBER ON A SEMICONDUCTOR SUBSTRATE

Papu D. Maniar, and Faivel S. Pintchovski, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 5, 1993, Ser. No. 43,104

Int. Cl.[5] H01L *21/44, 21/48*

U.S. Cl. 437—187 **20 Claims**



1. A process for forming an intermetallic member over a semiconductor substrate comprising the steps of:

depositing a first layer over the substrate, wherein the first layer includes an element selected from a group consisting of yttrium, zirconium, niobium, lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, .gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, hafnium, and tantalum;

dry etching the first layer to form a patterned first layer;

forming a second layer over the substrate, wherein the second layer includes an element selected from a group consisting of rhodium, iridium, palladium, and platinum;

reacting the patterned first layer and the second layer to form the intermetallic member, wherein the intermetallic member includes a material having a molecular formula of AB_3, wherein;

A is an element selected from a group consisting of yttrium, zirconium, niobium, lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, hafnium, and tantalum; and

B is an element selected from a group consisting of rhodium, iridium, palladium, and platinum.

5,356,834

METHOD OF FORMING CONTACT WINDOWS IN SEMICONDUCTOR DEVICES

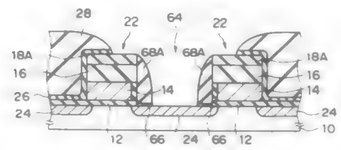
Shigeki Sugimoto, and Katsuya Okumura, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 23, 1993, Ser. No. 35,656

Claims priority, application Japan, Mar. 24, 1992, 4-66431; Mar. 25, 1992, 4-67130

Int. Cl.[5] H01L *21/441*

U.S. Cl. 437—190 **18 Claims**



1. A manufacturing method of semiconductor devices, comprising the steps of:

forming a plurality of pattern portions containing internal wiring layers over a semiconductor substrate;

forming interlayer insulating films for insulating said internal wiring layers from each other over said semiconductor substrate;

forming an opening portion, in said interlayer insulating films, which allows said substrate and at least one of said pattern portions to appear; and

forming a sidewall insulating film on the sidewall of at least one of said pattern portions appearing in said opening portion.

5,356,835

METHOD FOR FORMING LOW RESISTANCE AND LOW DEFECT DENSITY TUNGSTEN CONTACTS TO SILICON SEMICONDUCTOR WAFER

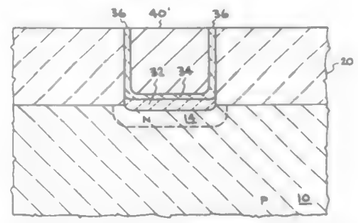
Sasson Somekh, Los Altos Hills; Jaim Nulman, Palo Alto, and Mei Chang, Cupertino, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 677,681, Mar. 29, 1991, Pat. No. 5,250,467. This application Jun. 16, 1993, Ser. No. 78,364

The portion of the term of this patent subsequent to Jun. 16, 2010, has been disclaimed.

Int. Cl.[5] H01L *21/44, 21/48*

U.S. Cl. 437—192 **17 Claims**



1. A process for forming an electrical contact through an insulation layer to a silicon semiconductor wafer thereunder which comprises:

a) depositing, in a deposition station, a layer of titanium over:

i) exposed surfaces of said insulation layer, including sidewall insulation surfaces of a contact opening previously formed through said insulation layer to said silicon wafer; and

ii) a surface of said silicon wafer exposed by said contact opening;

b) transferring said titanium-coated, wafer from said deposition station to an annealing station in a vacuum apparatus without exposing said titanium to oxygen-containing gases;

c) annealing said deposited titanium in the presence of a nitrogen-bearing gas, and in the absence of an oxygen-containing gas, to form titanium silicide over the exposed silicon wafer surface at the bottom of said contact opening, and titanium nitride on said titanium silicide and on the surfaces of said insulation layer

d) transferring said wafer from said annealing station to a CVD station in a vacuum apparatus; and

e) depositing a layer of tungsten by a CVD process over:

i) said titanium nitride surfaces on said SiO_2 insulating layer; and

ii) said titanium nitride on said titanium silicide formed over said silicon substrate;

to thereby form a good electrical contact between said tungsten in said contact opening and said silicon wafer through said silicide, and a good bond between said tungsten and said titanium nitride formed on said insulating layer surfaces.

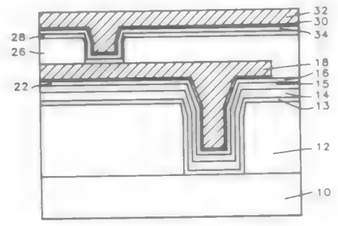
VOL 1167 ISS 3 OC 18 1994 UMI

5,356,836

ALUMINUM PLUG PROCESS

Kuang-Chao Chen, and Shaw-Tzeng Hsia, both of Taipei, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Aug. 19, 1993, Ser. No. 108,224
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—194 29 Claims



19. The method of metallization of an integrated circuit comprising:

providing an insulating layer over a conducting layer on a semiconductor substrate;

providing at least one contact opening through said insulating layer to said conducting layer;

depositing a barrier metal layer composed of titanium over the surface of said substrate and within said contact opening wherein most of said barrier metal is deposited on the bottom of said contact opening rather than on the sides of said opening by a collimator process:

cold sputtering an aluminum layer over said barrier metal layer at a temperature of less than about 150° C. and a deposition rate of more than about 180 Angstroms/sec.; and

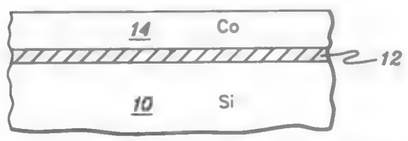
hot sputtering an aluminum layer over said cold-sputtered layer at a temperature of more than about 500° C. and at a deposition rate of less than about 50 Angstroms/sec. wherein said cold and hot sputtering are continuous operations to complete said metallization of said integrated circuit.

5,356,837

METHOD OF MAKING EPITAXIAL COBALT SILICIDE USING A THIN METAL UNDERLAYER

Peter J. Geiss, Underhill, Vt.; Thomas J. Licata, Lagrangeville; Herbert L. Ho, Washingtonville, both of N.Y., and James G. Ryan, Newtown, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1993, Ser. No. 145,429
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—200 34 Claims



1. A process for forming an epitaxial cobalt silicide film in a semiconductor device, comprising the steps of:

forming a refractory metal layer comprising tungsten, chromium, molybdenum, a mixture thereof, or a silicide of tungsten, chromium, or molybdenum, said refractory metal layer formed overlying a silicon substrate;

forming a cobalt layer overlying said refractory metal layer; and

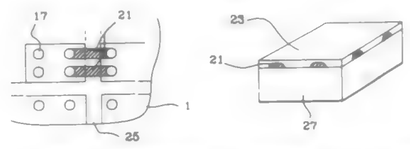
annealing said cobalt layer at a temperature sufficiently high to form said epitaxial cobalt silicide film overlying said silicon substrate.

5,356,838

MANUFACTURING METHOD OF A SEMICONDUCTOR DEVICE

Gu Sung Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 25, 1993, Ser. No. 140,826
Claims priority, application Rep. of Korea, Jan. 13, 1993, 1993-349
Int. Cl.[5] H01L *21/302*
U.S. Cl. 437—226 16 Claims



1. A method of manufacturing a semiconductor device comprising the steps of:

disposing a conductive paste between a first and a second solder bump, said first and second solder bumps being disposed on a first and a second electrode of a semiconductor substrate, respectively;

forming a protective layer over said conductive paste, said first and second solder bumps, said first and second electrodes, and said semiconductor substrate;

scribing a line on said protective layer across said conductive paste; and

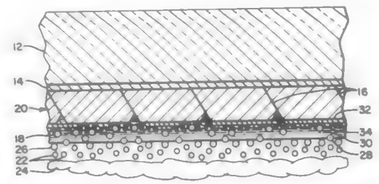
separating said semiconductor substrate along said scribe line to expose a portion of said conductive paste associated with each solder bump.

5,356,839

ENHANCED QUALITY THIN FILM CU(IN,GA)SE$_2$ FOR SEMICONDUCTOR DEVICE APPLICATIONS BY VAPOR-PHASE RECRYSTALLIZATION

John R. Tuttle, Denver; Miguel A. Contreras; Rommel Noufi, both of Golden, and David S. Albin, Denver, all of Colo., assignors to Midwest Research Institute, Kansas City, Mo.

Filed Apr. 12, 1993, Ser. No. 45,860
Int. Cl.[5] H01L *21/302*
U.S. Cl. 437—225 26 Claims



1. A process for fabricating thin film semiconductor devices, comprising the steps of:

forming a Cu-rich, phase-separated, compound mixture comprising $Cu(In,Ga)Se_2$:Cu_xSe on a substrate; and

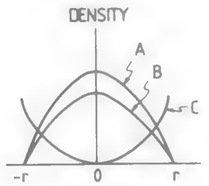
converting Cu_xSe in the mixture to $Cu_w(In,Ga)_ySe_z$ by exposing said Cu_xSe to (In,Ca) and Se.

5,356,840

DISTRIBUTED INDEX OF REFRACTION TYPE OPTICAL ELEMENT AND METHOD OF MAKING THE SAME

Satoshi Noda, Akishima, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 844,935, Mar. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 569,902, Aug. 20, 1990, abandoned. This application Feb. 2, 1993, Ser. No. 12,785
Claims priority, application Japan, Aug. 21, 1989, 1-214733
Int. Cl.[5] C03C *3/00*
U.S. Cl. 501—12 14 Claims



1. A method for making a gradient index optical glass, comprising the steps of:

imparting a gradient of concentration to a gel with respect to an element contained therein;

densifying said gel to a glass; and

imparting gradients of concentration to said glass produced in said densifying step with respect to univalent cations of another two elements.

5,356,841

GLASS-CERAMIC COMPOSITE

Hidetoshi Mizutani; Kazunori Miura, and Kazuo Kondo, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Feb. 25, 1992, Ser. No. 841,030
Claims priority, application Japan, Feb. 27, 1991, 3-033216
Int. Cl.[5] C03C *14/00*
U.S. Cl. 501—32 17 Claims

1. A glass-ceramic composite consisting essentially of non-crystallized glass and a ceramic containing at least one of alumina and mullite at the ratio by weight of eighty through fifty-five to twenty through forty-five, said non-crystallized glass containing 40 to 52 percent by weight of SiO_2, 27 to 37 percent by weight of Al_2O_3, 11 to 13 percent by weight of MgO, 2 to 8 percent by weight of B_2O_3, 2 to 8 percent by weight of CaO, and 0.1 to 3 percent by weight of ZrO_2.

5,356,842

COMPOSITE CERAMIC POWDER AND PRODUCTION PROCESS THEREOF

Akira Yamakawa, and Koichi Sogabe, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Continuation of Ser. No. 813,893, Dec. 23, 1991, abandoned. This application Mar. 19, 1993, Ser. No. 33,960
Claims priority, application Japan, Dec. 26, 1990, 2-406913; Jan. 21, 1991, 3-019234; Feb. 12, 1991, 2-038887
Int. Cl.[5] C04B *35/52, 35/58, 35/02*
U.S. Cl. 501—87 22 Claims

1. A heat-treated composite ceramic powder consisting essentially of matrix ceramic particles and fine crystalline particles of ceramic, metal, or metal compounds which are different from said matrix ceramic particles, and dispersed in each of said matrix ceramic particles, said matrix ceramic particles consisting of at least one crystalline compound selected from the group consisting of nitrides, carbides, and oxides of Si, Al, Zr, Ti, Mg, and B, said fine crystalline particles consisting of at least one substance selected from the group consisting of Ti, Zr, Hf, V, Nb, Ta, Mo, W, Fe, Co, Ni, Cu, Ag, Au, Pt, Pd, B, Mg, Al, and Si, their nitrides, carbides, oxides, and metal compounds, and mixtures thereof, the average particle size of said matrix ceramic particle being not more than 5 μm and that of said fine crystalline particles is not more than 1 μm, there being 0.01% to 50% by weight of said dispersed fine crystalline particles based on said composite ceramic powder, not more than 1.0% by weight of said fine crystalline particles being contained as matrix impurities in the form of a solid solution in said matrix ceramic particles, incidental impurities being contained in said composite ceramic powder and being other than said matrix impurities, said incidental impurities amounting to not more than 2.0% by weight based on said composite ceramic powder.

5,356,843

DIELECTRIC CERAMIC COMPOSITIONS AND DIELECTRIC RESONATORS

Kojiro Okuyama, Ikoma; Yoichiro Yokotani, Suita, and Koichi Kugimiya, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 3, 1993, Ser. No. 115,643
Claims priority, application Japan, Sep. 10, 1992, 4-241640; Feb. 15, 1993, 5-025284
Int. Cl.[5] C04B *35/49*
U.S. Cl. 501—134 3 Claims

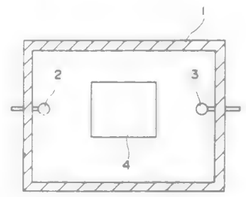
1. A dielectric ceramic comprising as the main component a complex oxide formed of both Zr and Ti, at least one component selected from the group (A) consisting of Mg, Co, Zn, Ni and Mn and at least one component selected from the group (B) consisting of Nb and Ta, said main component comprising a $ZrTiO_4$ phase substituted with at least one component of group (A) and at least one component of group (B), or the main component has a crystal structure comprising a $ZrTiO_4$ phase substituted with at least one component of group (A) and at least one component of group (B), wherein the molar fraction ratio of the total amount of group (A) to the total amount of group (B) is from 0.5 to 1.0.

5,356,844

DIELECTRIC CERAMIC COMPOSITION AND DIELECTRIC RESONATOR

Seiichiro Hirahara; Nobuyoshi Fujikawa; Shinichi Enami, and Toyomi Nishi, all of Kokubu, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Jun. 23, 1993, Ser. No. 82,024
Claims priority, application Japan, Jun. 24, 1992, 4-165889; May 18, 1993, 4-115562
Int. Cl.[5] C04B *35/46*
U.S. Cl. 501—136 8 Claims



1. A dielectric ceramic composition expressed by the following formula

$$aLn_2O_x.bAl_2O_3.cCaO.dTiO_2$$

wherein Ln denotes a rare earth element, and a, b, c, d and x are numerals satisfying the following relationships:

$a+b+c+d=1$,

$0.056 \leqq a \leqq 0.214$,

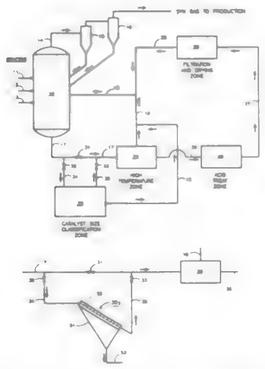
VOL 1167 ISS 3 OC 18 1994 UMI

$0.056 \leqq b \leqq 0.214$,
$0.286 \leqq c \leqq 0.500$,
$0.230 < d < 0.470$ and
$3 \leqq x \leqq 4$.

5,356,845
PROCESS FOR THE REACTIVATION OF NICKEL-ALUMINA CATALYSTS

LeRoy R. Clavenna; Stephen M. Davis, and Brent E. Beasley, all of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed May 11, 1993, Ser. No. 60,333
Int. Cl.[5] B01J *38/72, 21/20, 23/94;* **C10J** *3/46*
U.S. Cl. 502—21 **22 Claims**



1. In a process for the production of hydrogen and carbon monoxide from a low molecular weight hydrocarbon by contact with a fluidized bed of nickel-on-alumina catalyst at elevated temperature in the presence of steam and oxygen, in a reaction zone operated in a net reducing atmosphere, the steps comprising

withdrawing a portion of said catalyst and contacting said catalyst with an oxygen-containing gas at a temperature elevated sufficiently to convert the nickel component of said catalyst to nickel aluminate, and disperse said nickel aluminate within the alumina support, without sintering said alumina support, and

recycling said catalyst after contact with the oxygen-containing gas to the reaction zone to reduce the nickel aluminate component of the catalyst, and increase the activity of the catalyst vis-a-vis that of the catalyst initially withdrawn from the reaction zone.

5,356,846
HYDROREFINING CATALYST CONTAINING RUTHENIUM SULPHIDE, ITS SYNTHESIS AND HYDROREFINING PROCESS USING THE SAID CATALYST

Michele Breysse, Caluire; Martine Cattenot, Villeurbanne; Thierry Des Courieres, Lyon; Christian Gachet, Ecully, and Jean-Louis Portefaix, Caluire, all of France, assignors to Elf Antar France, Courbevoie, France

PCT No. PCT/FR92/00178, § 371 Date Dec. 28, 1992, § 102(e) Date Dec. 28, 1992, PCT Pub. No. WO92/15399, PCT Pub. Date Sep. 17, 1992
PCT Filed Feb. 27, 1992, Ser. No. 967,135
Claims priority, application France, Feb. 28, 1991, 91 02404
Int. Cl.[5] B01J *29/08*
U.S. Cl. 502—64 **27 Claims**

1. Catalyst for hydrorefining hydrocarbon feedstocks, containing ruthenium sulphide on zeolite, characterised in that the zeolite is in nonacidic form.

5,356,847
NICKEL CATALYST

John H. Henderson, Solon, Ohio, assignor to Engelhard Corporation, Iselin, N.J.

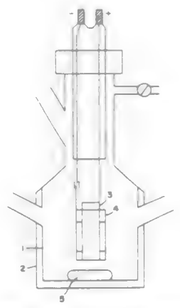
Filed Nov. 10, 1992, Ser. No. 974,264
Int. Cl.[5] B01J *21/16, 23/70*
U.S. Cl. 502—84 **20 Claims**

1. A formed nickel catalyst supported by a refractory metal oxide support material, said formed supported catalyst being useful in fixed bed hydrogenation of fatty materials and comprising from about 10% to about 50% by weight of nickel and from about 3 to about 30% by weight of at least one clay mineral binder.

5,356,848
CATALYTIC COMPOSITION FOR THE POLYMERIZATION OF OLEFINS AND ITS PROCESS OF PREPARATION

Jean M. Brusson, Lambersart; Karel Bujadoux, Lens; Francis Petit, Villenuve D'Asco; Jean M. Fuchs, Bouvigny Boyeffles, and Andre' Mortreux, Hem, all of France, assignors to Norsolor, Paris, France

Division of Ser. No. 741,621, Aug. 7, 1991, Pat. No. 5,264,088, which is a division of Ser. No. 369,229, Jun. 2, 1989, Pat. No. 5,068,014. This application Sep. 7, 1993, Ser. No. 117,319
Claims priority, application France, Jun. 23, 1988, 88 08447
Int. Cl.[5] B01J *31/00*
U.S. Cl. 502—117 **5 Claims**



1. A catalytic composition for the polymerization of olefins comprising:

(a) at least one titanium compound, the titanium compound being essentially a titanium (III) compound, the overall content of titanium (II) and titanium (IV) being less than or equal to 15% of the total titanium content;

(b) at least one halogenated organo-aluminum compound of formula $X_2Al(CH_2)_nAlX_2$, in which X is a halogen and n is between 1 and 10; and

(c) at least one magnesium halide in suspension in a solvent of at least one α,ω-di-halogenoalkane.

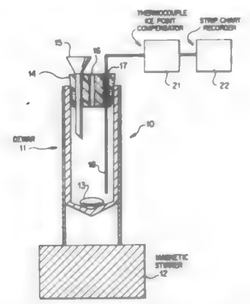
5,356,849
CATALYTIC CARBON

Thomas M. Matviya, and Richard A. Hayden, both of Pittsburgh, Pa., assignors to Calgon Carbon Corporation, Pittsburgh, Pa.

Filed Jan. 21, 1993, Ser. No. 7,164
Int. Cl.[5] B01J *21/18;* **C01B** *31/12, 31/10, 13/00*
U.S. Cl. 502—180 **4 Claims**

1. A carbonaceous char having a $t-\frac{3}{4}$ time at a given Apparent Density less than or equal to:

(15.9 cc min)×(Apparent Density)−2.98 min, where $t-\frac{3}{4}$ time is equal to three-fourths of the elapsed time required for 0.250 gms of said carbonaceous char from ambient temperatures to decompose 0.42 mole of H_2O_2 in an aqueous solution having a pH of about 7.



5,356,850
CATALYST FOR THE DEHALOGENATION OF α-HALOGENATED CARBOXYLIC ACIDS

Yves Correia, Chateau Arnoux; Dominique Jourdain, Saint Auban; Joseph Nowocien, and Alexandre Salerno, both of Chateau Arnoux, all of France, assignors to Societe Elf Atochem S.A., France

Filed Oct. 16, 1992, Ser. No. 961,809
Claims priority, application France, Oct. 18, 1991, 91 12915
Int. Cl.[5] B01J *21/18, 21/06, 23/40, 23/41*
U.S. Cl. 502—185 **7 Claims**

1. Catalyst comprising:

a) a rare metal of ruthenium, rhodium, palladium, osmium, iridium or platinum which has been deposited on an inert support wherein the inert support is selected from carbon, silica, silicon carbide, aluminum and boron carbide, and which has been used to dehalogenate α-halogenated carboxylic acids in the presence of hydrogen, and

b) a rare metal of ruthenium, rhodium, palladium, osmium, iridium or platinum which has been deposited on an inert support, wherein the inert support is selected from carbon, silica, silicon carbide, aluminum and boron carbide; and which is such that the granulometry of b) is very much less than that of a), to form a homogeneous mixture as a result of the action of currents of α-halogenated carboxylic acids and hydrogen.

5,356,851
CATALYST CONTAINING A GROUP VIII METAL AND A GROUP IIIA METAL DEPOSITED ON A SUPPORT

Patrick Sarrazin, Rueil Malmaison, and Jean-Paul Boitiaux, Poissy, both of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Apr. 2, 1993, Ser. No. 42,191
Claims priority, application France, Apr. 2, 1992, 92 04151
Int. Cl.[5] B01J *23/62, 23/82, 37/02, 21/00*
U.S. Cl. 502—185 **18 Claims**

1. A catalyst containing at least one group VIII metal and at least one group IIIA metal selected from the group consisting of gallium and indium, said metals being deposited on a catalyst support, said catalyst being produced by a process comprising:

a) impregnating the support with a solution of a group IIIA compound precursor of said group IIIA metal, the metal concentration of the group IIIA compound precursor being chosen so that 0.01 to 10% of the group IIIA metal is fixed on the support,

b) impregnating the product of (a) obtained with a solution of a group VIII compound precursor of said group VIII metal, the metal concentration of the group VIII compound precursor being chosen so that 0.01 to 10% of the group VIII metal is fixed on the support, and

c) calcining the product of (b) at 110° to 600° C.

5,356,852
ACTIVATED CARBON STRUCTURES

Evelyn M. DeLiso; Irwin M. Lachman; Mallanagouda D. Patil, and Kenneth E. Zaun, all of Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Continuation-in-part of Ser. No. 632,921, Dec. 24, 1990, abandoned. This application Jan. 13, 1993, Ser. No. 3,794
Int. Cl.[5] B01J *20/28, 20/26, 20/20*
U.S. Cl. 502—402 **22 Claims**

1. A method of making a thin-walled honeycomb structure of activated carbon material comprising the steps of

(1) admixing into a substantially homogeneous mixture

(a) 70–100 parts by weight of particulate activated carbon,

(b) 1–15 parts by weight of a first, thermally gellable binder selected from cellulose ethers and derivatives thereof, and

(c) 1–10 parts by weight of a second binder selected from the group consisting of polyvinyl alcohol resins, poly(-vinylpyrolidone), silicone resins, polyethylene glycol resins, polyethylene oxides, and mixtures of these;

(2) adding a plasticizing liquid selected from the group consisting of water, organic solvents, and mixtures thereof to the mixture in an amount sufficient to plasticize the mixture;

(3) extruding the plasticized mixture through a die to form a green honeycomb shape of the thin-walled structure; and

(4) drying the green honeycomb structure at a temperature up to about 225° C. to form the thin-walled honeycomb structure.

15. A honeycomb structure produced by the method of claim 1.

5,356,853
THERMAL TRANSFER IMAGE RECEIVING SHEET, PRODUCTION PROCESS THEREFOR AND THERMAL TRANSFER SHEET

Takeshi Ueno; Mineo Yamauchi; Mikio Asajima, and Katsuyki Oshima, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Filed Sep. 5, 1991, Ser. No. 755,116
Claims priority, application Japan, Sep. 7, 1990, 2-235618; Sep. 27, 1990, 2-255162; Sep. 27, 1990, 2-255163; Sep. 27, 1990, 2-255167; Oct. 4, 1990, 2-265105; Oct. 4, 1990, 2-265110; Nov. 2, 1990, 2-297597; Jan. 21, 1991, 3-019192; Mar. 1, 1991, 3-057703
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 **7 Claims**



1. A thermal transfer image receiving sheet comprising a substrate sheet and a dye receptor layer disposed on at least one surface side of the substrate sheet,

wherein the dye receptor layer has been formed on the substrate sheet by superposing the substrate sheet onto a receptor layer transfer film comprising a substrate film and the dye receptor layer disposed on one surface side thereof which is peelable from the substrate film so that the receptor layer transfer film is bonded to the substrate sheet to form a laminate and the substrate film is then peeled from the laminate, said dye receptor layer being disposed on the substrate sheet through a medium of an adhesive layer including a foaming agent.

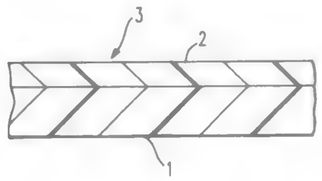
VOL 1167 ISS 3 OC 18 1994 UMI

5,356,854

DYE AND DYE CARRIER INK RIBBON FOR THERMAL DYE TRANSFER HARD COPY

Kengo Ito, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 30, 1992, Ser. No. 828,130
Claims priority, application Japan, Jan. 30, 1991, 3-010204
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 2 Claims



1. A dye carrier ink ribbon, comprising a substrate and an ink layer formed on said substrate, said ink layer being formed of a) a binder and b) a hydrophilic cationic dye in which the inorganic counter ion in said cationic dye is exchanged with a hydrophobic organic ion, and wherein the hydrophobic organic ion is derived from anionic surface active agents.

5,356,855

Patent Not Issued For This Number

5,356,856

Patent Not Issued For This Number

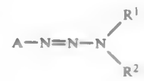
5,356,857

TRIAZENE DYES FOR USE IN THERMAL TRANSFER PRINTING

Luc Vanmaele, Lochristi, Belgium, assignor to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed May 17, 1993, Ser. No. 61,568
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 6 Claims

1. Dye donor element comprising on a support a dye layer, said dye layer containing a dye according to formula (I):



(I)

wherein A is the residue of a diazotisable heteroaromatic amine, R^1 and R^2 independently represent hydrogen, an alkyl group, a substituted alkyl group, an alkenyl group, a substituted alkenyl group, an aryl group, a substituted aryl group, acycloalkyl group, a substituted cycloalkyl group, an aralkyl group, or R^1 and R^2 represent the atoms necessary to complete a ring system or a substituted ring system.

5,356,858

RECEIVING SHEET FOR SUBLIMATION TYPE HEAT TRANSFER RECORDING

Kenji Yabuta, and Hideki Sekiguchi, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Division of Ser. No. 704,044, May 22, 1991, abandoned. This application Jun. 11, 1993, Ser. No. 75,094
Claims priority, application Japan, May 28, 1990, 2-138959; Jun. 4, 1990, 2-146683
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 4 Claims

1. A process for producing a receiving sheet for heat transfer recording which comprises the following steps:

(a) a step of forming an intermediate layer by coating a composition comprising an addition-polymerizable compound on a substrate,

(b) a step of curing the intermediate layer by irradiation with radiation, and

(c) a step of forming an ink-receiving layer by coating a composition comprising a thermoplastic resin on the intermediate layer.

5,356,859

RELEASE AGENT FOR THERMAL DYE TRANSFER RECEIVING ELEMENT

Kin K. Lum, Webster, N.Y.; Noel R. Vanier, Fort Collins, Colo.; Teh-Ming Kung, and Linda S. Flosenzier, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 20, 1993, Ser. No. 170,621
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 12 Claims

5. A process of forming a dye transfer image comprising imagewise-heating a dye-donor element and transferring a dye image to a dye-receiving element comprising a support having thereon a dye image-receiving layer to form said dye transfer image, wherein said dye image-receiving layer or an overcoat layer thereon comprises a polyoxyalkylene-modified dimethylsiloxane graft copolymer with at least one alkylene oxide pendant chain containing more than 45 alkoxide units.

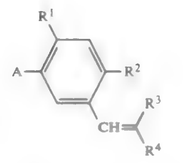
5,356,860

STYRENE DERIVATIVES USEFUL AS HERBICIDES AND DEFOLIANTS

Bernd Schaefer, Dierbach; Lothar Rueb, Speyer; Peter Schaefer, Bad Duerkheim; Karl-Otto Westphalen, Speyer; Matthias Gerber, Mutterstadt, and Helmut Walter, Obrigheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

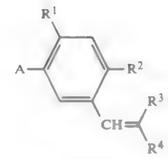
Continuation of Ser. No. 813,635, Dec. 26, 1991, abandoned. This application May 14, 1993, Ser. No. 61,535
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1990, 4042194
Int. Cl.[5] C07D *209/48, 207/24, 237/26, 513/14;* A01N *37/32, 43/38*
U.S. Cl. 504—165 4 Claims

1. A styrene derivative of the formula I



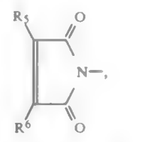
I

where R^1 is hydrogen or halogen, R^2 is halogen, R^3 is hydrogen, halogen or C_1–C_4-alkyl, R^4 is cyano or C_1–C_6-alkylcarbonyl and A is a heterocyclic radical selected from the groups A_1 to A_5

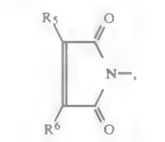


I

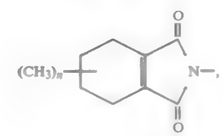
where R^1 is hydrogen or halogen, R^2 is halogen, R^3 is hydrogen, halogen or C_1–C_4-alkyl, R^4 is cyano or C_1–C_6-alkylcarbonyl and A is a heterocyclic radical selected from the groups A_1 to A_5



A_1

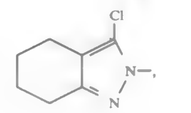


A_1

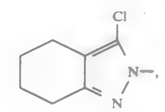


A_2

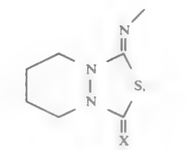
A_2



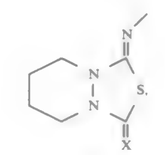
A_3



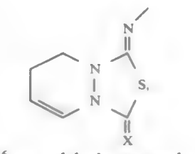
A_3



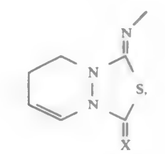
A_4



A_4



A_5



A_5

where R^5 and R^6 are each hydrogen, methyl or ethyl, n is 0 or 1 and X is oxygen or sulfur, with the proviso that n is 0, R^1 is hydrogen or fluorine, R^2 is chlorine, R^3 is chlorine, and R^4 is methylcarbonyl when A is the radical A_2 or agriculturally useful salts thereof.

2. A method for the defoliation of cotton, wherein the cotton plants are treated with an effective amount of a styrene derivative of the formula I

where R^5 and R^6 are each hydrogen, methyl or ethyl, n is 0 or 1 and X is oxygen or sulfur, with the proviso that R^4 is C_1–C_6-alkylcarbonyl when R^1 is hydrogen and at the same time A is the radical A_2 where n is 0, or agriculturally useful salts thereof.

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5,356,861

HOMOGENOUS HERBICIDAL ADJUVANT BLEND COMPRISING GLYPHOSATE, AMMONIUM SULFATE, AND ALKYL POLYSACCHARIDE

Joe V. Gednalski, Riverfalls, Wis., and Robert W. Herzfeld, Stillwater, Minn., assignors to Cenex/Land O'Lakes Agronomy Company, St. Paul, Minn.

Filed Nov. 19, 1993, Ser. No. 154,970
Int. Cl.[5] A01N *25/30, 57/04*
U.S. Cl. 504—206 **2 Claims**

1. (Amended) A homogeneous blend for use with glyphosate, the blend comprising water, ammonium sulfate and alkyl polysaccharide, with a concentration of about 8.5 pounds of ammonium sulfate for about 2.5 gallons of the blend.

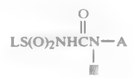
5,356,862

HERBICIDAL SULFONYLUREAS

William T. Zimmerman, Landenberg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wimington, Del.

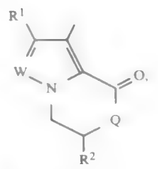
PCT No. PCT/US91/00023, § 371 Date Jul. 22, 1992, § 102(e) Date Jul. 22, 1992, PCT Pub. No. WO91/10668, PCT Pub. Date Jul. 25, 1991
Continuation-in-part of Ser. No. 468,283, Jan. 22, 1990. This PCT application Jan. 9, 1991, Ser. No. 915,838
Int. Cl.[5] A01N *43/54;* **C07D** *403/12, 417/12, 413/12*
U.S. Cl. 504—215 **33 Claims**

1. A compound of the formula

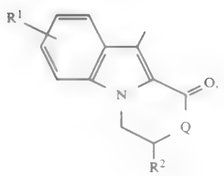


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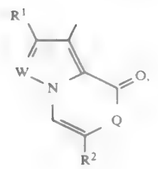
wherein:
L is



L-1

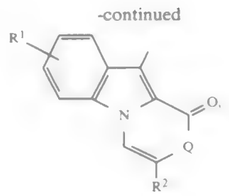


L-2

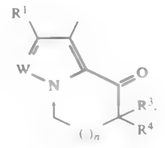


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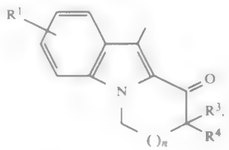
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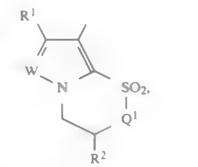
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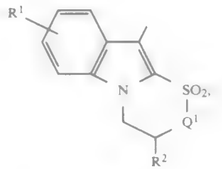
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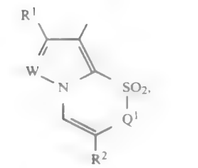
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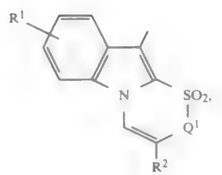
L-7



L-8

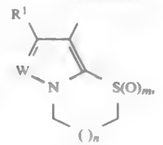


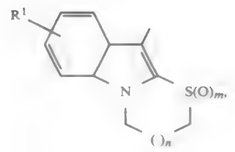
L-9

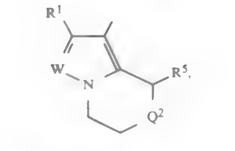


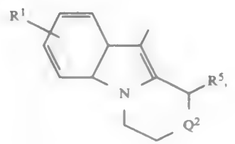
L-10

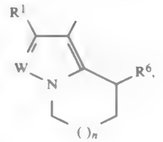
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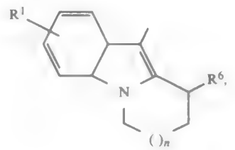


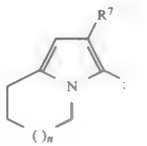


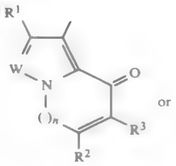








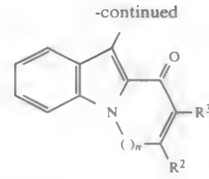




or

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L-11



L-19

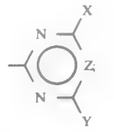
L-12 Q is O, S or NR^8;
Q^1 is O or NR^8;
Q^2 is O, S or NCH_3;
R is H or CH_3;
R^1 is H, CH_3, Cl or Br;
R^2 is H or CH_3;
R^3 is H, CH_3, F, Cl or Br;
R^4 is H, CH_3, F, Cl or Br;
R^5 is H or C_1–C_3 alkyl;

L-13 R^6 is H, C_1–C_3 alkyl, C_1–C_3 alkoxy, F, Cl, (C_1–C_2 alkyl)carbonyloxy or C_1–C_2 alkylsulfonyloxy;
R^7 is CO_2R^9, $CO_2NR^{10}R^{11}$, $S(O)_2NR^{10}R^{11}$ or $S(O)_2R^{12}$;
R^8 is H, C_1–C_4 alkyl, C_1–C_4 haloalkyl, allyl, propargyl or C_2–C_4 alkoxyalkyl;
R^9 is C_1–C_4 alkyl;
R^{10} is H or C_1–C_2 alkyl;
R^{11} is H or C_1–C_2 alkyl;

L-14 R^{12} is C_1–C_3 alkyl;
w is CR^{13} or N;
R^{13} is H, CH_3, Cl or Br;
m is 0, 1 or 2;
n is 0 or 1;
A is

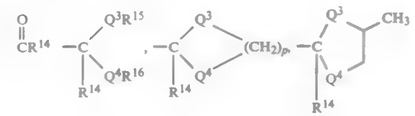
A-1

L-15



L-16 X is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, halogen, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino or di(C_1–C_3 alkyl)amino;
Y is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 alkylthio, C_1–C_4 haloalkylthio, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino, di(C_1–C_3 alkyl)amino, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, C_2–C_5 alkylthioalkyl, C_2–C_5 alkylsulfinylalkyl, C_2–C_5 alkylsulfonylalkyl, C_1–C_4 haloalkyl, C_2–C_4 alkynyl, C_3–C_5 cycloalkyl, azido, cyano,

L-17



L-18 or $N(OCH_3)CH_3$;
p is 2 or 3;
Q^3 and Q^4 are independently O or S;
R^{14} is H or C_1–C_3 alkyl;
R^{15} and R^{16} are independently C_1–C_3 alkyl; and
Z is CH, CCH_3, CC_2H_5, CCl or CBr;
and their agriculturally suitable salts; provided that
1) when X is halogen, then Z is CH and Y is OCH_3, OCH_2CH_3, NH_2, $NHCH_3$, $N(CH_3)_2$, OCF_2H, OCF_2Br or $N(OCH_3)CH_3$; and

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2) when X or Y is C_1 haloalkoxy, then Z is CH.

5,356,863

URACIL DERIVATIVES

Jun Satow, Funabashi; Kenzou Fukuda, Onoda; Kaoru Itoh, Funabashi; Hiroshi Kita, Funabashi; Yasuo Kawamura, Funabashi; Koichi Suzuki, Saitama; Tsutomu Nawamaki, Saitama; Shigeomi Watanabe, Saitama; Toshiharu Endo, Saitama, and Kimihiro Ishikawa, Saitama, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP91/01716, § 371 Date Oct. 21, 1993, § 102(e) Date Oct. 21, 1993, PCT Pub. No. WO92/11244, PCT Pub. Date Jul. 9, 1992

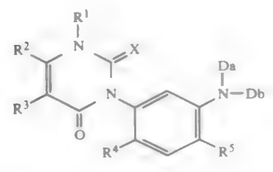
PCT Filed Dec. 16, 1991, Ser. No. 75,529

Claims priority, application Japan, Dec. 17, 1990, 2-402753; May 27, 1991, 3-121420; Nov. 15, 1991, 3-300341

Int. Cl.[5] **A01N** *43/80, 47/02, 47/04, 47/20;* **C07D** *239/54, 239/56, 401/10, 403/10*

U.S. Cl. 504—243 **6 Claims**

1. An uracil derivative, which is represented by the formula (1):



(1)

in which

R^1 represents a hydrogen atom, a C_1 to C_3 alkyl group or a C_1 to C_3 haloalkyl group;

R^2 represents a C_1 to C_6 haloalkyl group;

R^3 represents a hydrogen atom, a C_1 to C_6 alkyl group, a C_1 to C_6 haloalkyl group, a hydroxymethyl group, a halogen atom or a nitro group;

R^4 represents a hydrogen atom or a halogen atom;

R^5 represents a hydrogen atom, a halogen atom, a nitro group or a cyano group;

X represents an oxygen atom or a sulfur atom;

D_a and D_b each independently represents a hydrogen atom, a C_1 to C_8 alkyl group, a C_1 to C_6 haloalkyl group, a C_3 to C_8 cycloalkyl group, a C_3 to C_8 cycloalkyl(C_1 to C_4)alkyl group, a C_2 to C_8 alkenyl group, a C_3 to C_8 alkynyl group, a C_2 to C_8 haloalkenyl group, a C_3 to C_8 haloalkynyl group, a C_3 to C_8 halocycloalkyl group, a C_3 to C_8 halocycloalkyl(C_1 to C_4)alkyl group, $CH(OH)CCl_3$, Ar in which Ar represents a phenyl group or a naphthyl group each of which may be substituted by one or two or more substituents and the substituent may be selected from a C_1 to C_4 alkyl group, a C_3 to C_6 cycloalkyl group, a C_1 to C_4 haloalkyl group, a C_3 to C_6 halocycloalkyl group, a halogen atom, a cyano group, a nitro group, a hydroxy group, a C_1 to C_4 alkoxy group, a C_1 to C_4 haloalkoxy group, a C_1 to C_4 alkylcarbonyl group, a carboxyl group, a C_1 to C_4 alkoxycarbonyl group, an amino group, a C_1 to C_4 alkylamino group, an acetamino group, a N,N-dimethylamino group and a methanesulfonyl group,

$—L^1$—Ar in which Ar has the same meaning as above, and L^1 represents a C_1 to C_6 alkyl chain, a C_2 to C_6 alkenyl chain or a C_2 to C_6 alkynyl chain each of which may be branched,

Het in which Her represents a 5-membered heterocyclic residue, a 6-membered heterocyclic residue or a fused heterocyclic residue each of which contains, as a ring constituent atom, at least one atom selected from a sulfur atom, an oxygen atom and a nitrogen atom and may be substituted by one or two or more substituents, and the substituent may be selected from a C_1 to C_4 alkyl group, a C_3 to C_6 cycloalkyl group, a C_1 to C_4 haloalkyl group, a C_3 to C_6 halocycloalkyl group, a halogen atom, a cyano group, a nitro group, a hydroxy group, a C_1 to C_4 alkoxy group, a C_1 to C_4 haloalkoxy group, a C_1 to C_4 alkylcarbonyl group, a carboxyl group, a C_1 to C_4 alkoxycarbonyl group, an amino group, a C_1 to C_4 alkylamino group, an acetamino group, a N,N-dimethylamino group and a methanesulfonyl group,

$—L^1$—Het in which Het and L^1 have the same meanings as above,

$—L^2—D^{52}$ in which D^{52} represents a hydrogen atom, a C_1 to C_{20} alkyl group, a C_1 to C_{20} haloalkyl group, a C_3 to C_8 cycloalkyl group, a C_3 to C_8 cycloalkyl(C_1 to C_4)alkyl group, a C_2 to C_8 alkenyl group, a C_3 to C_8 alkynyl group, a C_2 to C_8 haloalkenyl group, a C_3 to C_8 haloalkynyl group, a C_3 to C_8 halocycloalkyl group, a C_3 to C_8 halocycloalkyl(C_1 to C_4)alkyl group, a C_1 to C_4 alkoxy(C_1 to C_4)alkyl group,

Ar (Ar has the same meaning as above), $—L^1$—Ar group (Ar and L^1 have the same meanings as above), Het (Het has the same meaning as above)or $—L^1$—Het (Het and L^1 have the same meanings as above), and L^2 represents —(O)—, —C(S)—, $—SO_2—$, —S(O)—, —S—, —O—, —C(O)O—, —C(O)S—, —C(S)O—, —C(S)S— or —C(O)C(O)O—,

$—L^3—O—D^{52}$ in which D^{52} has the same meaning as above, and L^3 represents a C_1 to C_6 alkyl chain, a C_2 to C_6 alkenyl chain or a C_2 to C_6 alkynyl chain each of which may be substituted by one or two or more substituents and may be branched and the substituent may be selected from a C_1 to C_4 alkyloxycarbonyl group, a C_1 to C_4 haloalkyl group, a C_1 to C_4 alkoxy(C_1 to C_4)alkyl group, a C_1 to C_4 alkylthio group,

Ar (Ar has the same meaning as above), $—L^1$—Ar group (Ar and L^1 have the same meanings as above), Het (Het has the same meaning as above)and $—L^1$—Het (Het and L^1 have the same meanings as above),

$—L^3—S—D^{52}$ in which D^{52} and L^3 have the same meanings as above,

$—L^3—(O)—D^{52}$ in which D^{52} and L^3 have the same meanings as above,

$—L^3—C(S)—D^{52}$ in which D^{52} and L^3 have the same meanings as above,

$—L^3—C(O)O—D^{52}$ in which D^{52} and L^3 have the same meanings as above,

$—O—L^3—C(O)O—D^{52}$ in which D^{52} and L^3 have the same meanings as above,

$—L^3—C(O)S—D^{52}$ in which D^{52} and L^3 have the same meaning as above,

$—O—L^3—C(O)S—D^{52}$ in which D^{52} and L^3 have the same meanings as above,

$—(O)—ND^{52}D^{53}$ in which D^{52} has the same meaning as above, and D^{53} represents a hydrogen atom, a C_1 to C_8 alkyl group, a C_1 to C_8 haloalkyl group, a C_1 to C_6 alkoxy group, a C_1 to C_6 alkylcarbonyl group, a C_1 to C_6 haloalkylcarbonyl group, a C_1 to C_6 alkoxycarbonyl group, a C_1 to C_6 alkylsulfonyl group, a C_1 to C_6 haloalkylsulfonyl group, Ar (Ar has the same meaning as above), $—L^1$—Ar group (Ar and L^1 have the same meanings as above), —(O)—Ar (Ar has the same meaning as above), —C(O)—Ar (Ar has the same meaning as above)or $—SO_2—$Ar (Ar has the same meaning as above), and alternatively D^{52} and D^{53} together with a nitrogen atom to which they are attached may form a 5- to 7-membered ring, and ring constituent atoms are selected from a carbon atom, a nitrogen atom, an oxygen atom and a sulfur atom,

$—C(S)—ND^{52}D^{53}$ in which D^{52} and D^{53} have the same meanings as above,

$—L^3—C(O)—ND^{52}D^{53}$ in which D^{52}, D^{53} and L^3 have the same meanings as above,

$—L^3—C(S)—ND^{52}D^{53}$ in which D^{52}, D^{53} and L^3 have the same meanings as above,

$—SO_2—ND^{52}D^{53}$ in which D^{52} and D^{53} have the same meanings as above,

$—SO_2O—D^{53}$ in which D^{53} has the same meaning as above,

$—SO_2O—Si(CH_3)_3$,

$—SO_2—L^1—Si(CH_3)_3$ in which L^1 has the same meaning as above,

$—SO_2CH_2SO_2CH_3$,

$—P(O)(OD^{52})(OD^{53})$ in which D^{52} and D^{53} have the same meanings as above,

$—P(O)(OD^{52})(SD^{53})$ in which D^{52} and D^{53} have the same meanings as above,

$—P(O)(OD^{52})D^{53}$ in which D^{52} and D^{53} have the same meanings as above,

$—P(O)(SD^{52})D^{53}$ in which D^{52} and D^{53} have the same meanings as above,

$—P(S)(OD^{52})(OD^{53})$ in which D^{52} and D^{53} have the same meanings as above,

$—P(S)(OD^{52})(SD^{53})$ in which D^{52} and D^{53} have the same meanings as above,

$—P(S)(OD^{52})D^{53}$ in which D^{52} and D^{53} have the same meanings as above,

$—P(S)(SD^{52})D^{53}$ in which D^{52} and D^{53} have the same meanings as above,

$—L^3—P(O)(OD^{52})(OD^{53})$ in which D^{52}, D^{53} and L^3 have the same meanings as above,

$—L^3—P(O)(OD^{52})(SD^{53})$ in which D^{52}, D^{53} and L^3 have the same meanings as above,

$—L^3—P(O)(OD^{52})D^{53}$ in which D^{52}, D^{53} and L^3 have the same meanings as above,

$—L^3—P(O)(SD^{52})D^{53}$ in which D^{52}, D^{53} and L^3 have the same meanings as above,

$—L^3—P(S)(OD^{52})(OD^{53})$in which D^{52}, D^{53} and L^3 have the same meanings as above,

$—L^3P—P(S)(OD^{52})(SD^{53})$in which D^{52}, D^{53} and L^3 have the same meanings as above,

$—L^3—P(S)(OD^{52})D^{53}$ in which D^{52}, D^{53} and L^3 have the same meanings as above,

$—L^3—P(S)(SD^{52})D^{53}$ in which D^{52}, D^{53} and L^3 have the same meanings as above,

$—C(D^{53})(P(O)(OD^{52})_2)_2$ in which D^{52} and D^{53} have the same meanings as above,

$=CD^{52}D^{54}$ in which D^{52} has the same meaning as above, and D^{54} represents a hydrogen atom, a halogen atom, a C_1 to C_6 alkyl group, a C_1 to C_6 alkoxy group, a C_1 to C_6 alkylthio group or Ar (Ar has the same meaning as above),

$—L^3—CN$ in which L^3 has the same meaning as above,

$—ND^{52}D^{53}$ in which D^{52} and D^{53} have the same meanings as above,

$—CH=N—O—D^{52}$ in which D^{52} has the same meaning as above,

$=CD^{54}—ND^{52}D^{53}$ in which D^{52}, D^{53} and D^{54} have the same meanings as above,

$—L^2—D^{55}$ in which L^2 has the same meaning as above, and D^{55} represents a C_1 to C_6 alkyl group, a C_2 to C_6 alkenyl group or a C_2 to C_6 alkynyl group each of which may be substituted by one or two or more of a C_1 to C_6 haloalkyl group or one or two or more of a C_1 to C_4 alkyloxycarbonyl group and may be branched, or

$—L^1—SO_2—D^{56}$ in which L^1 has the same meaning as above, and D^{56} represents a C_1 to C_6 alkyl group;

and alternatively D_a and D_b may form a 3- to 8-membered ring and the ring constituent atoms are selected from a carbon atom, a nitrogen atom, an oxygen atom, a sulfur atom and a phosphorus atom, and the ring may be substituted by one or two or more of a substituent, and the substituent may be selected from a C_1 to C_4 alkyl group, a C_3 to C_6 cycloalkyl group, a C_1 to C_4 haloalkyl group, a C_3 to C_6 halocycloalkyl group, a halogen atom, a cyano group, a nitro group, a hydroxy group, a C_1 to C_4 alkoxy group, a C_1 to C_4 haloalkoxy group, a C_1 to C_4 alkylcarbonyl group, a carboxyl group, a C_1 to C_4 alkoxycarbonyl group, an amino group, a C_1 to C_4 alkylamino group, an acetamino group, a N,N-dimethylamino group and a methanesulfonyl group:

provided that except for the case where D_a and D_b both represent hydrogen atoms, the case where D_a represents $—L^2—D^{52}$ (L^2 represents $—SO_2—$, and D^{52} represents the C_1 to C_4 alkyl group or the C_1 to C_3 haloalkyl group) and D_b represents the hydrogen atom, the C_1 to C_4 alkyl group, the C_2 to C_5 alkenyl group, the C_3 to C_5 alkynyl group, the C_2 to C_5 acyl group, the C_1 to C_4 alkylsulfonyl group or the (C_1 to C_3 alkoxy) C_1 to C_2 alkyl group are excluded.

5,356,864

NEW HERBICIDAL FLUOROBENZOTHIAZOLYLOXYACETAMIDES

Heinz Förster, Wuppertal; Klaus Wagner, Bergisch Gladbach; Hans-Joachim Santel, Leverkusen; Klaus Lürssen, and Robert R. Schmidt, both of Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

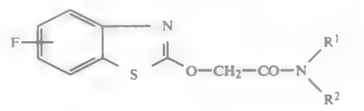
Filed Sep. 9, 1993, Ser. No. 119,462

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1992, 4230903

Int. Cl.[5] **A01N** *43/78;* **C07D** *277/62*

U.S. Cl. 504—267 **14 Claims**

1. A fluorobenzothiazolyloxyacetamide of the formula



(I)

in which

R^1 represents hydrogen or an optionally substituted radical from the group consisting of alkyl, alkenyl, alkinyl and aralkyl,

R^2 represents an optionally substituted radical from the group consisting of alkyl, alkenyl, alkinyl, cycloalkyl, cycloalkenyl, aralkyl, aryl, alkoxy, alkenyloxy or alkinyloxy, or

R^1 and R^2, together with the nitrogen atom to which they are bonded, form an optionally substituted, saturated or unsaturated nitrogen heterocycle which can contain further heteroatoms and to which a benzo group can be fused.

5,356,865

SUBSTITUTED 5-ALKOXY-1,2,4-TRIAZOL-3-(THI)ONES

Klaus-Helmut Müller, Duesseldorf; Klaus König, Odenthal; Joachim Kluth, Langenfeld; Klaus Lürssen, Bergisch Gladbach; Hans-Joachim Santel, Leverkusen, and Robert R. Schmidt, Bergish Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

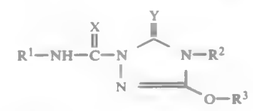
Continuation-in-part of Ser. No. 757,785, Sep. 11, 1991, abandoned. This application Nov. 6, 1992, Ser. No. 976,185

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1990, 4030063

Int. Cl.[5] **A01N** *43/653;* **C07D** *249/12*

U.S. Cl. 504—273 **7 Claims**

1. A 5-alkoxy-1,2,4-triazol-3-(thi)one of the formula



(I)

in which

R^1 represents methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, n-, i-, s- or t-pentyl, n-, i-, s- or t-hexyl, propargyl, n- or i-butinyl, n- or i-pentinyl, or represents straight-chain or branched halogenoalkyl having 1 to 4 carbon atoms and 1 to 4 identical or different halogen atoms, or represents cyanomethyl, cyanoethyl or n- or i-cyanopropyl, or repre-

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sents cyclopropyl, cyclopropylmethyl, cyclopentyl, cyclopentylmethyl, cyclohexyl or cyclohexylmethyl, each of which is optionally monosubstituted to trisubstituted by identical or different substituents, the substituents in the cyclic and if appropriate in the aliphatic moiety being selected from the group consisting of fluorine, chlorine, bromine, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, cyano, methanediyl, ethanediyl, butanediyl and butadienediyl, or represents phenyl, benzyl or phenylethyl, each of which is optionally monosubstituted to trisubstituted by identical or different substituents selected from the group consisting of fluorine, chlorine, bromine, methyl, ethyl and trifluoromethyl, or represents in each case straight-chain or branched phenylpropyl, phenylbutyl, phenylpentyl or phenylhexyl,

R^2 represents methyl, ethyl, n-propyl, i-propyl or cyclopropyl, n-, i-, s- or t-butyl,

R^3 represents methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, n- or i-pentyl,

X represents oxygen and

Y represents oxygen.

5,356,866

FUROBENZOPYRAN DERIVATIVES, PROCESS FOR PREPARATION OF SAME AND HERBICIDES CONTAINING SAME AS ACTIVE COMPONENTS

Kiyoshi Arai; Masayuki Ooka; Fumiaki Koizumi; Sadafumi Koda; Yasunaga Iwasaki, and Yoshiro Kanemoto, all of Mobara, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

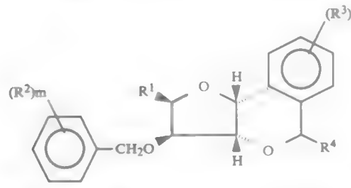
Filed May 24, 1993, Ser. No. 65,495

Claims priority, application Japan, May 28, 1992, 4-136801; Mar. 8, 1993, 5-046218

Int. Cl.[5] A01N *43/16;* **C07D** *311/78*

U.S. Cl. 504—292 **6 Claims**

4. A herbicide containing a furobenzopyran derivative of the general formula (I):



(I)

in which R^1 is a lower alkyl group, R^2 is a lower alkyl group, lower alkoxy group, halogen atom or lower alkyl group substituted by a halogen atom, R^3 is a lower alkyl group, lower alkoxy group, halogen atom, lower alkyl group substituted by a halogen atom, phenoxy group or benzyloxy group, R^4 is a hydrogen atom or lower alkyl group and m and n are any integers between 0 and 4, as an active component.

5,356,867

METHOD AND COMPOSITION COMPRISING VINYL OR VINYLIDENE HALIDE POLYMERS FOR CONTROLLING WATER LOSS IN PLANTS

Leslie H. Fuchigami, Corvallis, Oreg., and Darrell Badertscher, Washougal, Wash., assignors to State of Oregon Acting By And Through the Oregon State Board of Higher Education on Behalf of Oregon State Univeristy, Eugene, Oreg.

Filed Apr. 8, 1992, Ser. No. 866,046

Int. Cl.[5] A01N *29/02*

U.S. Cl. 504—356 **24 Claims**

1. A process for reducing the rate of water loss in plants, the process comprising applying to a surface of a plant a sufficient amount of a composition to reduce the plant's water vapor transmission rate to less than about 0.15 g H_2O. g FW^{-1}.48 h^{-1}, the composition comprising water and from at least about forty weight percent of a polymer material having monomer subunits of the formula $H_2C{=}CR_1$, R_2, wherein R_1 is selected from the group consisting of halogens, and R_2 is selected from the group consisting of hydrogen and halogens.

5,356,868

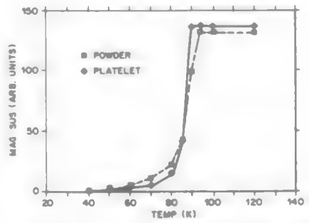
HIGHLY ORIENTED SUPERCONDUCTOR OXIDE CERAMIC PLATELETS AND PROCESS FOR THE PRODUCTION THEREOF

Naomi Naito, Newtonville, and Lorraine A. Jachim, Bedford, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jul. 3, 1989, Ser. No. 375,309

Int. Cl.[5] C01F *17/00*

U.S. Cl. 505—126 **4 Claims**



1. A process for production of highly oriented platelets of a superconducting rare earth barium copper oxide ceramic material from suitable precursor materials comprising the steps of:

calcining in a non-reducing atmosphere a homogeneous mixture consisting essentially of stoichiometric proportions of the precursor materials, in an aluminum oxide vessel;

wherein the calcining step is a two-stage step comprising calcining the precursor mixture at a first calcination temperature of about 980° C. for at least about 15 hours to form an intermediate product, and further calcining the intermediate product at a second calcination temperature of about 972° C. for at least about an additional 10 hours;

wherein the calcining and further calcining steps combined are sufficient to effect diffusion of at least one of the precursor material throughout the mixture.

5,356,869

METAL OXIDE SUPERCONDUCTING POWDER COMPRISED OF FLAKE-LIKE SINGLE CRYSTAL PARTICLES

Donald W. Capone, Bolingbrook, and Joseph Dusek, Downers Grove, both of Ill., assignors to Arch Development Corporation, Chicago, Ill.

Continuation of Ser. No. 101,771, Sep. 28, 1987, abandoned. This application Dec. 17, 1990, Ser. No. 629,089

The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.

Int. Cl.[5] C01G *3/02;* **H01L** *39/24*

U.S. Cl. 505—430 **5 Claims**

1. A method for forming a superconducting metal oxide comprised of crystals having a nonsymmetric morphology and superconducting anisotropy, said method comprising the steps of:

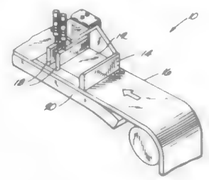
providing a superconducting metal oxide material in the form of a polycrystalline powder;

pressing said polycrystalline powder into a coherent mass;

sintering said coherent mass by heating said coherent mass to a temperature on the order of its melting point for an extended period so as to cause the crystals of the superconducting metal oxide to grow to larger single crystal

particles, said particles being on the order of X microns in diameter; and

reducing said coherent mass to a powder comprised of predominantly flattened-discs with a- and b- crystallographic axes in a plane of each flattened disc and a c-axis perpendicular to each flattened disc, said flattened discs being smaller single crystal particles of said superconducting metal oxide, created by grinding the coherent mass down to particle sizes on the order of Y microns in diameter,



where Y<<X, the grinding causing cleaving of each of said larger single crystal particles along planes of said a- and b-axes and wherein each of said flattened discs is superconducting in the plane of each of the discs and perpendicular to the c-axes thereof; and

aligning the powders of said ground flattened discs to form said superconducting metal oxide into a mass of preferentially-oriented smaller single crystal particles with the c-axes of the particles positioned generally parallel.

5,356,870

METHOD FOR PROCESSING SUPERCONDUCTING THIN FILMS

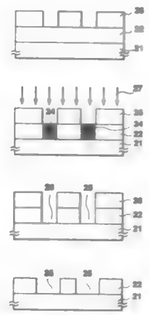
Shuji Fujiwara; Ryokan Yuasa; Hiroaki Furukawa; Masaaki Nemoto, and Masao Nakao, all of Tsukuba, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 19, 1993, Ser. No. 33,898

Claims priority, application Japan, Mar. 26, 1992, 4-68368; Nov. 13, 1992, 4-304134

Int. Cl.[5] B05D *5/00*

U.S. Cl. 505—329 **15 Claims**



1. A method of processing a superconducting thin film formed on a substrate comprising the steps of:

irradiating an ion beam to a superconducting thin film made of oxide superconducting material to form a damaged layer; and

removing said damaged layer by using a halogen solution.

5,356,871

METHOD OF MAKING A SUPERCONDUCTIVE FIBER

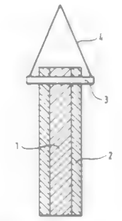
Jean-Claude Bobo, Orphin, and Alain Wicker, Paris, both of France, assignors to Alcatel Alsthom Compagnie General d'Electricite, Paris Cedex, France

Filed Jun. 9, 1992, Ser. No. 895,847

Claims priority, application France, Jun. 10, 1991, 91 07028

Int. Cl.[5] H01L *39/12;* **C03C** *25/02*

U.S. Cl. 505—420 **2 Claims**



1. A method of making a high critical temperature superconductive fiber of Bi-Pb-Sr-Ca-Cu-O system, comprising the steps of:

a) melting a first mixture of oxygen-bearing Bi, Pb, Sr, Ca and Cu compounds in relative proportions of x atoms of Bi, y atoms of Pb, 2 atoms of Sr, 2 atoms of Ca, 3 atoms of Cu, with $1.9<x+y<2.3$, casting said first melted mixture to obtain a rod of vitreous material, solidifying said rod, and annealing said rod,

b) melting a second mixture of oxygen-bearing Bi, Sr, Ca and Cu compounds in relative proportions of x' atoms of Bi, 2 atoms of Sr, 1 atom of Ca, and 2 atoms of Cu, with $1.5<x'<2.2$, casting said second melted mixture to obtain a tube of vitreous material, solidifying said tube, and annealing said tube,

c) assembling said rod and tube into a preform by placing said rod into said tube,

d) drawing said preform into a fiber having a core and a sheath, and

e) annealing said fiber in air,

whereby said core of said fiber has a critical temperature greater than 90K and the sheath of said fiber has a critical temperature of less than 77K; wherein, during cooling of the fiber, a difference in expansion coefficients of the sheath and the core provides a mechanical texturing effect enhancing superconducting current transport properties of the core; and wherein said drawn fiber is an electrically insulated superconductive fiber.

5,356,872

"METHOD OF MAKING HIGH TC SUPERCONDUCTING THIN FILMS WITH FULLERENES BY EVAPORATION"

Walter Eidelloth, deceased, late of Yorktown, N.Y.; James T. Busch, legal representative, Arlington, Va.; Richard J. Gambino, Yorktown Heights, N.Y.; Rodney Ruoff, Menlo Park, Calif., and Claudia D. Tesche, Helsinki, Finland, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 98,094, Jul. 28, 1993, Pat. No. 5,332,723. This application Mar. 17, 1994, Ser. No. 215,778

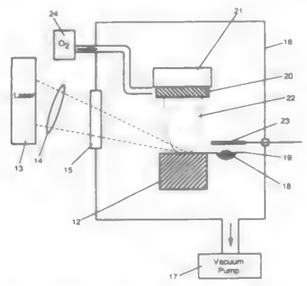
Int. Cl.[5] B05D *3/06, 5/12;* **C23C** *14/00*

U.S. Cl. 505—474 **5 Claims**

1. A method of making a high temperature superconductor comprising the steps of providing an evacuated chamber containing a partial pressure of oxygen between 10 and 300 mTorr, suppling in said chamber a solid source of a cuprate high temperature superconductor, a source of fullerene molecules and a

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substrate, and simultaneously evaporating from both sources so that the vapor from both sources is deposited on said substrate to form a cuprate high temperature superconductor thin film.



5,356,873

METHOD FOR PROVIDING NUTRITIONAL REQUIREMENTS TO PATIENTS HAVING A CHRONIC INFLAMMATION REACTION

David A. Mark, Oak Park, and Gary Pace, Northfield, both of Ill., assignors to Clintec Nutrition Co., Deerfield, Ill.

Filed Nov. 5, 1992, Ser. No. 971,949
Int. Cl.[5] A61K *37/00, 31/195;* **A23L** *1/305*
U.S. Cl. 514—2 **16 Claims**

1. A method for providing nutritional requirements to a patient having a chronic inflammation reaction comprising the steps of administering to the patient an enteral composition that has a sufficiently reduced arginine content to reduce the nitric oxide formation in the patient but provides at least 16% of the total calories of the enteral composition as protein.

5,356,874

ANGIOGENIC FACTOR ISOLATED FROM LIVE YEAST CELL DERIVATIVES AND ITS USE IN TREATING WOUNDS OR BURNS IN MAMMALS

J. Peter Beatley, Portland, Oreg., assignor to The State of Oregon Acting by and Through the State Board of Higher Education on Behalf of the Oregon Health Sciences University, Portland, Oreg.

Continuation of Ser. No. 521,149, May 9, 1990, Pat. No. 5,238,925. This application Feb. 22, 1993, Ser. No. 21,277
The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.
Int. Cl.[5] A61K *37/02;* **C07K** *15/00, 3/02*
U.S. Cl. 514—2 **6 Claims**

1. A topical pharmaceutical formulation for treating wounds or burns in mammals comprising a purified isolated mixture of angiogenic polypeptides having molecular weights ranging between about 6,000 daltons and about 17,000 daltons as determined by SDS-PAGE, said angiogenic polypeptides isolated from a live yeast cell derivative and a pharmaceutically acceptable topical carrier.

5,356,875

ANTI-THROMBIN POLYPEPTIDES AND PHARMACEUTICAL COMPOSITIONS THEREOF

Paolo Sarmientos, Milan; Philippe de Taxis du Poet, Brussels; Giampaolo Nitti, Monza, and Emanuela Scacheri, Legnano, all of Italy, assignors to Farmitalia Carlo ERBA S.r.l., Milan, Italy

Filed Feb. 26, 1992, Ser. No. 842,089
Claims priority, application United Kingdom, Feb. 28, 1991, 9104260.6; Sep. 18, 1991, 9119954.7
Int. Cl.[5] A61K *37/02;* **C12N** *15/00*
U.S. Cl. 514—12 **3 Claims**

1. A purified polypeptide having the amino acid sequence of SEQ ID NO: 1, 2, 3, 50, 51, 52, 53, 54, 55, 56, 57, 58 or 59 of the Sequence Listing.

5,356,876

METHODS OF TERMINATING PREGNANCY

Lawrence L. Espey, San Antonio, Tex., assignor to Trinity university, San Antonio, Tex.

Continuation-in-part of Ser. No. 819,830, Jan. 13, 1992, abandoned. This application Aug. 21, 1992, Ser. No. 933,981
Int. Cl.[5] A61K *37/00, 37/38, 37/24*
U.S. Cl. 514—12 **8 Claims**

1. A method of terminating pregnancy in a mammal by inducing ovarian follicular maturation and ovulation during the period from the first day of conception to the end of the first trimester of the normal gestation period for the mammal, the method comprising:

injecting into the mammal a dosage of fertility promoting hormones selected from the group consisting of hMG, and the combination of FSH and LH, wherein the fertility promoting hormones are injected for up to seven consecutive days and wherein the fertility promoting hormones have a FSH activity of from seventy-five to three hundred I.U. and an LH activity of from seventy-five to three hundred I.U.

5,356,877

METHODS FOR PROMOTING GROWTH USING PORCINE GROWTH HORMONE ANALOGS

Lawrence M. Souza, Thousand Oaks, Calif., assignor to Amgen, Inc., Thousand Oaks, Calif. and SmithKline Beckman Corporation, Philadelphia, Pa.

Division of Ser. No. 920,951, Jul. 28, 1992, Pat. No. 5,244,882, which is a division of Ser. No. 810,320, Dec. 19, 1991, abandoned, which is a division of Ser. No. 24,837, Mar. 12, 1987, Pat. No. 5,104,806. This application Jun. 22, 1993, Ser. No. 81,501
Int. Cl.[5] A61K *37/36*
U.S. Cl. 514—12 **4 Claims**

1. A method for promoting growth in an animal comprising administering to an animal an effective dose of a porcine growth hormone analog comprising the amino acid sequence represented by the formula

Z-pGH$_{1\text{-}31}$-pGH$_{39\text{-}190}$

wherein Z is hydrogen, MET, ALA, or MET-ALA and is essentially free of other proteins of porcine origin.

5,356,878

GEL FILTRATION OF FACTOR VIII

William J. Brockway, Oakland, and Richard L. Seng, Guerneville, both of Calif., assignors to Miles Inc., Berkeley, Calif.

Division of Ser. No. 587,815, Sep. 24, 1990, Pat. No. 5,177,591, which is a continuation of Ser. No. 135,966, Dec. 21, 1987, abandoned. This application Jan. 4, 1993, Ser. No. 852
Int. Cl.[5] A61K *35/14;* **C07K** *13/00, 3/20*
U.S. Cl. 514—21 **3 Claims**

1. An antihemophilic factor concentrate, free of non-human protein, substantially free of viral infectious agents, having 1–10 mg human serum albumin per ml of reconstituted solution, having a ratio of von Willebrand activity units/ml to the antihemophilic factor clotting activity units/ml of 0.75 to 2.00, and having a specific activity of at least 40 units of antihemophilic factor clotting activity per mg protein, excluding said human serum albumin, the concentrate being free of a viral inactivation compound.

5,356,879

D-TAGATOSE AS ANTI-HYPERGLYCEMIC AGENT

Lee R. Zehner, Brookeville; Gilbert V. Levin, Annapolis; James P. Saunders, Rockville, and James R. Beadle, Elkridge, all of Md., assignors to Biospherics, Incorporated, Beltsville, Md.

Filed Feb. 14, 1992, Ser. No. 835,496
Int. Cl.[5] A61K *31/70*
U.S. Cl. 514—25 **6 Claims**

1. A method for preventing the formation of advanced glycosylation end-products in a mammal comprising administering to said mammal an effective amount of D-tagatose.

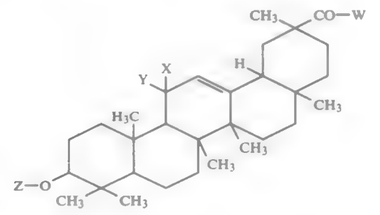
5,356,880

GLYCYRRHETINIC ACID DERIVATIVES

Masayasu Kurono; Yoshiro Ishiwata; Syoji Yokochi; Kyoichi Asano; Takahiko Mitani; Takuji Kakigami; Noriyuki Iwata; Kougaku Isogawa; Yutaka Baba; Hiroyuki Ohwaki; Kiichi Sawai; Hiromoto Kimura; Masato Fukushima; Ryoichi Unno, and Tamaki Ohtuka, all of Nagoya, Japan, assignors to Sanwa Kagaku Kenkyusho Co., Ltd., Nagoya, Japan

Filed May 28, 1992, Ser. No. 889,709
Claims priority, application Japan, May 30, 1991, 3-127271; Mar. 12, 1992, 4-053929
Int. Cl.[5] A61K *31/58;* **C07J** *43/00*
U.S. Cl. 514—26 **7 Claims**

1. A glycyrrhetinic acid compound of the formula

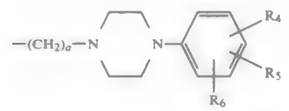


wherein:

X and Y are a hydrogen atom or taken together form an oxo group;

Z is a monosaccharide or disaccharide; and

W is OR_1, NHR_1 or R_1, where R_1 is a group of the formula



where a is 2; and R_4, R_5 and R_6 are each hydrogen, a halogen or an amino, alkylamino, acylamino, hydroxy, alkyloxy, carboxy, formyl, alkylcarbonyl, alkoxycarbonyl, aryloxycarbonyl, carbamoyl, nitro, cyano, thiol, alkylthio, or a phenyl group;

or a pharmaceutically acceptable salt thereof.

6. An composition containing a glycyrrhetinic acid derivative or a pharmaceutically acceptable salt thereof as claimed in claim 1 together with a pharmaceutically acceptable carrier.

5,356,881

PLANT-DERIVED WILDLIFE REPELLENTS

Anthony J. Verbiscar, 491 Crestvale Dr., Sierra Madre, Calif. 91024

Filed Sep. 28, 1992, Ser. No. 952,062
Int. Cl.[5] A61K *31/705, 31/56, 31/35, 31/34*
U.S. Cl. 514—26 **10 Claims**

1. A method for repelling wildlife using products from *Nerium oleander* and *Urginea maritima* which after application by spraying, brushing or dipping, with solutions or suspensions, on plant, animal or other targets susceptible to damage by animals or birds, cause nausea or emesis when ingested.

5,356,882

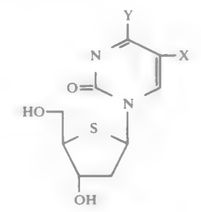
ANTIVIRAL PYRIMIDINE NUCLEOSIDES

Richard Walker, and Paul L. Coe, both of Birmingham, United Kingdom, assignors to University of Birmingham, Birmingham, United Kingdom

Continuation of Ser. No. 552,191, Jul. 13, 1990, abandoned. This application Jun. 30, 1993, Ser. No. 84,433
Claims priority, application United Kingdom, Jul. 17, 1989, 8916323.2; Oct. 4, 1989, 8922393.7
Int. Cl.[5] A61K *31/70;* **C07G** *3/00*
U.S. Cl. 514—49 **11 Claims**

1. A compound selected from the β-anomer of the pyrimidine 4'-thionucleoside of the formula I

(I)



wherein Y is selected from the group consisting of hydroxy and amino, and X is selected from the group consisting of chloro, bromo, iodo, trifluoromethyl, $C_{2\text{-}6}$ alkyl, $C_{2\text{-}6}$ alkenyl, $C_{2\text{-}6}$ haloalkenyl and $C_{2\text{-}6}$ alkynyl provided Y is not hydroxy when X is ethyl, and physiologically functional derivatives thereof.

5,356,883

WATER-INSOLUBLE DERIVATIVES OF HYALURONIC ACID AND THEIR METHODS OF PREPARATION AND USE

Jing-Wen Kuo, Stoneham; David A. Swann, Lexington, both of Mass., and Glenn D. Prestwich, Harbor, N.Y., assignors to Research Foundation of State University of N.Y., Albany, N.Y. and Anika Research, Inc., Woburn, Mass.

Continuation-in-part of Ser. No. 809,399, Dec. 18, 1991, abandoned, which is a division of Ser. No. 388,578, Aug. 1, 1989, abandoned. This application Jul. 28, 1992, Ser. No. 920,698
Int. Cl.[5] A61K *31/725, 31/735, 47/26;* **C08L** *1/00*
U.S. Cl. 514—54 **6 Claims**

1. A method of separating healing tissues nd maintaining said separation during the healing process after surgery, said method comprising introducing into a surgical site, either during surgery or post-operatively, a water insoluble biocompatible gel comprising a modified hyaluronic acid in which at least about 5% of carboxyl functionalities have been derivatized, and wherein essentially all of the derivatized functionalities are O-acyl or N-acyl ureas, said gel causing said separation of the healing tissues to be established and maintained post-operatively for a period of at least about seven days.

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5,356,884

HETERO-BRANCHED CYCLODEXTRINS

Koji Hara; Koki Fujita; Nobuhiro Kuwahara, all of Yokohama; Sumio Kitahata, Osaka, and Kyoko Koizumi, 14-3, 3-chome Kasugaoka, Fujiidera-shi, Osaka, all of Japan, assignors to Ensuiko Sugar Refining Co., Ltd., Yokohama; Osaka-shi and Kyoko Koizumi, both of Osaka, all of Japan

Filed Oct. 8, 1992, Ser. No. 958,579

Claims priority, application Japan, Nov. 13, 1991, 3-324021

Int. Cl.[5] C08B *37/16;* **C12P** *19/18*

U.S. Cl. 514—58 **9 Claims**

1. A hetero-branched cyclodextrin comprising a glucosyl or a maltosyl group side chain, and a mannosyl group α-bonded to a hydroxyl group of the glucosyl group or the maltosyl group of the side chain.

5,356,885

SUBSTITUTED OXOTREMORINE DERVATIVES AND PHARMACEUTICAL USE THEREOF

Eugene J. Trybulski, Park Ridge, N.J.; Richard H. Kramss, Newburgh, and Herbert Brabander, Nanuet, both of N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Filed Apr. 24, 1991, Ser. No. 690,749

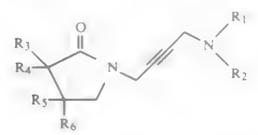
The portion of the term of this patent subsequent to Jun. 26, 2007, has been disclaimed.

Int. Cl.[5] A61K *31/675, 31/040;* **C07D** *401/06, 207/08*

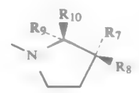
U.S. Cl. 514—63 **59 Claims**

1. A compound selected from those of the formula:

FORMULA I



wherein R_3 and R_4 are independently selected from the group consisting of hydrogen, (C_1–C_6)alkyl, hydroxy, amino, azido, (C_7–C_{10})acyloxy, (C_1–C_{10})alkoxycarbonyloxy, (C_1–C_{10})alkylaminocarbonyloxy, or (C_1–C_{10})dialkylaminocarbonyloxy with the proviso that when one of R_3 or R_4 is hydroxy, the other one is (C_1–C_6)alkyl or when one of R_3 or R_4 is amino, azido, (C_7–C_{10})acyloxy, (C_1–C_{10})alkoxycarbonyloxy, (C_1–C_{10})alkylaminocarbonyloxy or (C_1–C_{10})dialkylaminocarbonyloxy then the other one is hydrogen; when R_3 or R_4 is (C_1–C_6)alkyl and the other is hydrogen, then R_1 and R_2 can not be (C_1–C_6)alkyl, or R_1 and R_2 taken together with the associated nitrogen may not be pyrrolidine, piperidine, aziridine or azetidine; R_5 and R_6 are independently selected from hydrogen, amino, azido, (C_7–C_{10})acyloxy, (C_1–C_{10})alkoxycarbonyloxy, (C_1–C_{10})alkylaminocarbonyloxy or (C_1–C_{10})dialkylaminocarbonyloxy with the proviso that when R_3 and R_4 are other than hydrogen, R_5 and R_6 are hydrogen; R_1 and R_2 are each (C_1–C_6)alkyl or R_1 is (C_1–C_6)alkyl and R_2 is —(CH_2.)$_n$—R_{17} where n=2–6 and R_{17} is selected from the group consisting of hydroxy, (C_1–C_{10})acyloxy, trialkylsilyloxy or R_1 and R_2 taken together with their associated N(itrogen) is selected from the group consisting of aziridine, azetidine, pyrrolidine, piperidine, imidazole or moieties of the formula:



where R_7 and R_8 are independently selected from the group consisting of (C_1–C_{10})acyloxy, (C_1–C_6)alkoxy, aroyloxy, substituted aroyloxy, (C_1–C_6)alkylthio, (C_1–C_6)alkyldithio, (C_1–C_6)acylthio, hydroxy, thio, trialkylsilyloxy or hydrogen; R_9 and R_{10} are independently selected from the group consisting of hydrogen, hydroxymethyl, halomethyl or trialkylsilyloxymethyl with the proviso that only one of R_7, R_8, R_9 and R_{10} can be one of the above disclosed substituents other than hydrogen and with the proviso that when R_3, R_4, R_5 and R_6 are all hydrogen, R_7 or R_8 must be (C_7–C_{10})acyloxy.

5,356,886

ANTIVIRAL PHOSPHONO-ALKEN DERIVATIVES OF PURINES

Michael R. Harnden, and Martin J. Parratt, both of Epsom, England, assignors to Beecham Group p.l.c., Middlesex, En-[illegible]

PCT No. PCT/GB91/01171, § 371 Date Jan. 19, 1993, § 102(e) Date Jan. 19, 1993, PCT Pub. No. WO92/01698, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 15, 1991, Ser. No. 965,260

Claims priority, application United Kingdom, Jul. 19, 1990, 9015865.0; May 18, 1991, 9110774.8

Int. Cl.[5] A61K *31/675;* **C07F** *9/6561*

U.S. Cl. 514—81 **8 Claims**

1. A compound of formula (I), or a pharmaceutically acceptable salt thereof:

(I)



wherein

X is —CH_2O or —CH_2;

R_1 is hydroxy or amino;

R_2 is hydrogen or amino;

R_3 is hydrogen, hydroxymethyl or acyloxymethyl, wherein the acyl group of said acyloxymethyl is selected from the group consisting of C_{1-7} alkanoyl and benzoyl optionally substituted in the phenyl ring by one, two or three substituents selected from the group consisting of fluoro, chloro, bromo, C_{F4}alkyl and C_{1-4} alkoxy, wherein the alkyl moiety of said C_{1-4} alkyl and C_{1-4} alkoxy substituents is selected from the group consisting of methyl, ethyl, n- and iso-propyl, n-, sec-, iso- and tert-butyl.

R_4 is a group of formula:



wherein

R_5 and R_6 are independently selected from hydrogen, C_{1-6} alkyl and phenyl optionally substituted by one, two or three substituents selected from the group consisting of fluoro, chloro, bromo, C_{1-4} alkyl and C_{1-4} alkoxy, wherein the alkyl moiety of said C_{1-4} alkyl and C_{1-4} alkoxy substituents is selected from the group consisting of methyl, ethyl, n- and so-propyl, n-, sec-, iso- and tert-butyl.

6. A compound selected from the group consisting of:

(E)-9-(4-phosphonobut-3-enyloxy)guanine,

(E)-9-[4-(diisopropoxyphosphoryl)but-3-enyloxy]adenine,

(E)-9-(4-phosphonobut-3-enyloxy)adenine,

(E)-9-[4-(diisopropoxyphosphoryl)but-3-enyl]adenine,

(E)-9-(4-phosphonobut-3-enyl)adenine,

(E)-9-(4-phosphonobut-3-enyl)guanine,

(E)-2,6-diamino-9-[4-(diisopropoxyphosphoryl)but-3-enyl]purine,

(E)-2,6-diamino-9-(4-phosphonobut-3-enyl)purine,

(Z)-9-[4-(diethoxyphosphoryl)but-3-enyloxy]adenine,

(Z)-9-4-(phosphonobut-3-enyloxy)adenine,

(Z)-9-(4-(phosphonobut-3-enyloxy)guanine,

(E)-9-[4-(diisopropoxyphosphoryl)-2(hydroxymethyl)but-3-enyloxy]guanine,

(E)-9-(2-hydroxymethyl-4-phosphonobut-3-enyloxy)guanine,

(E)-9-[4-(diisopropoxyphosphoryl)-2(hydroxymethyl)but-3-enyloxy]adenine,

(E)-9-(2-hydroxymethyl-4-phosphonobut-3-enyloxy)adenine,

(E)-9-[4-(diisopropoxyphosphoryl)-2-(hydroxymethyl)but-3-enyl)adenine,

(E)-9-(2-hydroxymethyl-4-phdsphonobut-3-enyl)adenine, and

(E)-9-(2-hydroxymethyl-4-phosphonobut-3-enyl)guanine.

5,356,887

PHARMACEUTICAL COMPOSITIONS CONTAINING INSOLUBLE CALCIUM SALTS OF AMINO-HYDROXYBUTYLIDENE BISPHOSHONIC ACID5

Gerald S. Brenner, Norristown, and Drazen Ostovich, Hatfield, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 924,432, Jul. 31, 1992, abandoned, which is a continuation of Ser. No. 714,467, Jun. 13, 1991, abandoned, which is a continuation of Ser. No. 561,026, Aug. 1, 1990, abandoned, which is a continuation-in-part of Ser. No. 472,987, Jan. 31, 1990, abandoned. This application Sep. 7, 1993, Ser. No. 118,832

Int. Cl.[5] A61K *31/66*

U.S. Cl. 514—108 **20 Claims**

1. A pharmaceutical composition comprising an aqueous suspension of from about 0.05% to about 3% ((4-amino-1-hydroxybutylidene)-1,1-bisphosphonic acid) monocalcium salt.

5,356,888

1,1-DIOXO-CEPHEM-4-CARBOTHIOLIC ACID DERIVATIVES

Marco Alpegiani, Milan; Pierluigi Bissolino, San Giorgio di Lomellina; Ettore Perrone, Boffalora Ticino; Francesco Di Matteo; Piergiuseppe Orezzi, both of Milan, and Giuseppe Cassinelli, Voghera, all of Italy, assignors to Farmitalia Carlo Erba, Milan, Italy

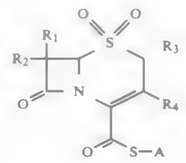
Continuation of Ser. No. 457,812, Jan. 12, 1990, abandoned. This application Oct. 22, 1991, Ser. No. 780,549

Claims priority, application United Kingdom, May 13, 1988, 8811358.1

Int. Cl.[5] C07D *501/20;* **A61K** *31/545*

U.S. Cl. 514—204 **18 Claims**

1. A compound of formula I



wherein

A represents

(a) a hydrogen atom,

(b) a straight chain or branched chain alkyl group having from 1 to 20 carbon atoms,

(c) a straight chain or branched chain alkenyl group having from 2 to 10 carbon atoms,

(d) an C_{6-10} aryl group,

(e) a cycloalkyl group being of monocyclic, bicyclic or bridged ring form and having from 3 to 10 carbon atoms,

(f) an aralkyl group in which the aryl part is as defined in (d) above and the alkyl part is as defined in (b) above,

(g) a cycloalkylalkyl group in which the cycloalkyl part is as defined in (e) above and the alkyl part is as defined in (b) above,

each of the groups defined in (b) to (g) above being unsubstituted or substituted by one or more of

(i) a halogen atom,

(ii) an amino or a group of the formula NHR_a, NR_aR_b, $NHCOR_c$, $NHCOOR_c$ or $NHSO_2R_a$ wherein each of R_a and R_b independently represents a straight chain or branched chain alkyl group having from 1 to 7 carbon atoms, or said alkyl group substituted by a carboxy group, a phenyl group or a benzyl group and R_c represents a 2-carboxyethyl or 3-carboxypropyl group or any of the groups which R_a may represent,

(iii) a group of the formula COR_d, $COOR_d$, CO_2CH_2——COR_d or $CONHR_d$ wherein R_d represents a hydrogen atom, a 2-carboxy-2-aminoethyl or diphenylmethyl group or any of the groups which R_c may represent or

(iv) as a ring substituent only, a straight chain or branched chain alkyl, alkenyl or alkynyl group each of which has up to 4 carbon atoms and is optionally substituted by a carboxy group or a cycloalkyl group having from 3 to 6 carbon atoms;

R_1 represents

(1) a fluorine, chlorine, bromine or iodine atom

(2) a group A as above defined, or

(3) a group OA wherein A is as above defined;

R_2 represents hydrogen;

R_3 represents a hydrogen atom or a methyl group, and

R_4 represents

(1) a group A as above defined,

(2) a group CH_2OA wherein A is as above defined,

(3) a group CH_2SA, CH_2SOA or CH_2SO_2A wherein A is as above defined,

(4) a group CH_2OCOA or CH_2OZ wherein A and Z are as above defined, or a salt thereof with a pharmaceutically acceptable anion or cation.

5,356,889

2-(9-FLUORENONYL)-CARBAPENEM INTERMEDIATES

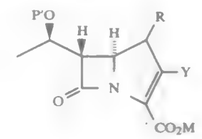
Mark L. Greenlee, Rahway; Frank P. DiNinno, Old Bridge; Lovji D. Cama, Tenafly, and James V. Heck, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 594,808, Oct. 9, 1990, abandoned, which is a continuation-in-part of Ser. No. 561,547, Aug. 1, 1990, Pat. No. 5,034,384. This application Oct. 26, 1992, Ser. No. 966,969

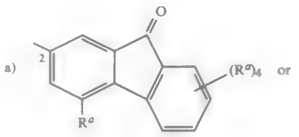
Int. Cl.[5] A01N *43/00;* **A61K** *31/395;* **C07D** *487/00*

U.S. Cl. 514—210 **32 Claims**

1. A compound of formula

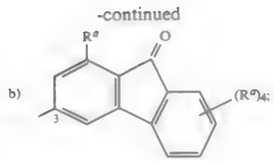


wherein: Y is

a)  or

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-continued



R is H or CH_3;

P′ is a removable hydroxyl protecting group; each R^a group is independently selected from the group consisting of hydrogen and the radicals set out below, provided that one R^a is selected from Type I substitutents and zero to three R^a radicals are selected from Type II substituents; wherein the Type I substituents are:

Type I.

a)



where

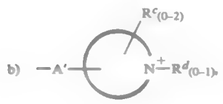
A is $(CH_2)_m$—Q—$(CH_2)_n$, where m is 0 to 6 and n is 1 to 6 and Q is a covalent bond, O, S, SO, SO_2, NH, —SO_2NH—, —NHSO_2—, —CONH—, —NHCO—, —SO_2N(C_1–C_4alkyl)—, —N(C_1–C_4alkyl)SO_2—, —CON(C_1–C_4alkyl)—, —N(C_1–C_4alkyl)CO—, —CH=CH—, —CO—, —OC(O)—, —C(O)O— or N(C_1–C_4alkyl) and $(CH_2)_m$ is attached to the fluoren-9-one moiety;



is a 5- or 6-membered monocyclic heterocycle or an 8-, 9- or 10-membered bicyclic heterocycle, the heterocycle having a first nitrogen in an aromatic 5- or 6-membered first ring, with attachment of the heterocycle to A by way of said first nitrogen and said nitrogen is quaternary by virtue of the attachment in addition to the ring bonds thereto, with the first ring having 0 or 1 of either O or S, with the first ring having 0 to 3 additional nitrogen atoms, with the first ring optionally fused to a 3- or 4-membered moiety to form the optional second ring, with the moiety having at least one carbon atom, with the moiety having 0 to 1 of either O or S, with the moiety having 0 to 2 nitrogen atoms, and with the moiety being saturated or unsaturated and the second ring aromatic or non-aromatic;

R^c is R^a as defined under Type II below, hydrogen, or —NR^vR^z (where R^v and R^z are defined type in II below), but independently selected from R^a and from each other if more than one R^c is present, and is attached to a carbon ring atom or a nitrogen heteroatom the valency of which is not satisfied by the ring bonds;

b)



where



is a 5- or 6-membered monocyclic heterocycle or an 8-, 9- or 10-membered bicyclic heterocycle, the heterocycle having a first nitrogen in an aromatic 5- or 6-membered first ring, with said first nitrogen quaternary by virtue of a substituent R^d in addition to the ring bonds thereto, with said first nitrogen neutral in the absence of a substituent R^d, with attachment of the heterocycle to A′ by way of a carbon atom of a ring, with the first ring having 0 or 1 of either O or S, with the first ring having 0 to 2 additional nitrogen atoms, with the first ring optionally fused to a 3- or 4-membered moiety to form the optional second ring, with the moiety having at least one carbon atom, with the moiety having 0 or 1 of either O or S, with the moiety having 0 to 2 nitrogen atoms, and with the moiety being saturated or unsaturated and the second ring aromatic or non-aromatic;

R^c is as defined above;

R^d is hydrogen, NH_2, O^-, or C_1–C_4 alkyl (where the alkyl group is optionally mono-substituted with R^q as defined under IIc below);

A′ is $(CH_2)_m$—Q—$(CH_2)_n$, where m is 0 to 6 and n is 0 to 6, Q is as given above except that when m and n are both 0 then Q is not a covalent bond and $(CH_2)_m$ is attached to the fluoren-9-one moiety;

c) —A_p—$N^+R^vR^w)_{(0-1)}(R^z)$, where

R^v and R^z are as defined under II below, R^v and R^z may further be together a C_2–C_4 alkylidene radical to form a ring (optionally mono-substituted with R^q as defined below) interrupted by N(O)R^e or $N^+(R^e)_2$ (where R^e is hydrogen, C_1–C_4 alkyl, or C_1–C_4 alkyl mono-substituted with R^q as defined below),

R^w is hydrogen, C_{1-4} alkyl, O^-, NH_2, or absent in which case the nitrogen is neutral, .

R^w, R^v and R^z may further together form a C_5–C_{10} tertiary alkylidene radical which with N^+ forms a bicyclic ring, where the tertiary alkylidene radical is optionally mono-substituted with R^q as defined below and where the tertiary carbon of the tertiary alkylidene radical is optionally replaced with nitrogen, N^+R^e (where R^e is defined above) or N^+—O^-,

p is 0 or 1, and

A is as defined above;

d)



where



is a 5- or 6-membered monocyclic heterocycle or an 8-, 9- or 10-membered bicyclic heterocycle, the heterocycle having a first nitrogen in a first ring, with the first ring saturated or unsaturated and non-aromatic, with the first nitrogen quaternary by virtue of one or two substituents R^d in addition to the ring bonds thereto, with the first nitrogen alternatively neutral by virtue of zero or one substituent R^d in addition to the ring bonds thereto, with attachment of the heterocycle to A′ by

way of a carbon atom or non-quaternary nitrogen atom of a ring, with the first ring having in addition to carbon and the first nitrogen, 0 to 1 of a member selected from the group consisting of the non-quaternary nitrogen of attachment, O, S, S(O), $S(O)_2$ and NR^e, where R^e is defined above, with the first ring optionally fused to a 2-, 3- or 4-membered moiety to form the optional second ring, with the moiety optionally having in addition to carbon the non-quaternary nitrogen of attachment, and with the moiety saturated or unsaturated and the second ring non-aromatic;

R^d is defined above and where more than one R^d is present on a nitrogen, at least one R^d is hydrogen or C_1–C_4 alkyl;

A′ is defined above;

p is defined above; and

R^q is defined below;

wherein the Type I, R^a substituent is balanced with the anionic form of Z, where

Z is a member selected from the group consisting of methanesulfonyloxy, trifluoromethanesulfonyloxy, fluorosulfonyloxy, p-toluenesulfonyloxy, 2,4,6-triisopropylbenzenesulfonyloxy, p-bromobenzenesulfonyloxy, p-nitrobenzenesulfonyloxy, bromo and iodo;

and wherein the Type II substituents are:

Type II

a) a trifluoromethyl group which is —CF_3;

b) a halogen atom selected from the group consisting of —Br, —Cl, —F, and —I;

c) C_1–C_4 alkoxy radical which is —OC_{1-4} alkyl, wherein the alkyl is optionally mono-substituted by R^q, where

R^q is a member selected from the group consisting of —OH, —OP′ (where P′ is defined above), —OCH_3, —CN, —C(O)NH_2, —OC(O)NH_2, CHO, —OC(O)N(CH_3)$_2$, —SO_2NH_2, —$SO_2N(CH_3)_2$, —$SOCH_3$, —SO_2CH_3, —F, —CF_3, —$COOM^a$ (where M^a is hydrogen, alkali metal, methyl, phenyl or M, where M is as defined below), tetrazolyl (where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by M^a as defined above) and —SO_3M^b (where M^b is hydrogen, an alkali metal or M, where M is as defined below);

d) a hydroxy or protected hydroxy group which is —OH or —OP′, where P′ is as defined above;

e) a carbonyloxy radical which is —O(C=O)R^z, where

R^z is C_{1-4} alkyl or phenyl, each of which is optionally mono-substituted by R^q as defined above;

f) a carbamoyloxy radical which is —O(C=O)N(R^v)R^z, where

R^v and R^z are independently H, C_{1-4} alkyl (optionally mono-substituted by R^q as defined above), together a 3- to 5-membered alkylidene radical to form a ring (optionally substituted with R^q as defined above) or together a 2- to 4-membered alkylidene radical, interrupted by —O—, —S—, —S(O)— or —$S(O)_2$— to form a ring (where the ring is optionally mono-substituted with R^q as defined above);

g) a sulfur radical containing —$S(O)_n$—R^z where n=0–2, and R^z is defined above;

h) a sulfamoyl group which is —$SO_2N(R^v)R^z$ where R^v and R^z are as defined above;

i) azido which is N_3;

j) a formamido group which is —N(R^t)(C=O)H, where R^t is H or C_{1-4} alkyl, and the alkyl thereof is optionally mono-substituted by R^q as defined above;

k) a (C_1–C_4 alkyl)carbonylamino radical which is —N(R^t)(C=O)C_{1-4} alkyl, where R^t is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;

l) a (C_1–C_4 alkoxy)carbonylamino radical which is —N(R^t)(C=O)OC_{1-4} alkyl, where R^t is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;

m) a ureido group which is —N(R^t)(C=O)N(R^v)R^z where R^t, R^v and R^z are as defined above;

n) a sulfonamido group which is —N(R^t)SO_2R^z, where R^z and R^t are as defined above;

o) a cyano group which is —CN;

p) a formyl or acetalized formyl radical which is —(C=O)H or —$CH(OCH_3)_2$;

q) (C_1–C_4 alkyl)carbonyl radical wherein the carbonyl is acetalized which is —$C(OCH_3)_2C_{1-4}$ alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;

r) carbonyl radical which is —(C=O)R^z, where R^z is as defined above;

s) a hydroximinomethyl radical in which the oxygen or carbon atom is optionally substituted by a C_1–C_4 alkyl group which is —(C=NOR^z)R^v where R^v and R^z are as defined above, except they may not be joined together to form a ring;

t) a (C_1–C_4 alkoxy)carbonyl radical which is —(C=O)OC_1-4 alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;

u) a carbamoyl radical which is —(C=O)N(R^v)R^z where R^v and R^z are as defined above;

v) an N-hydroxycarbamoyl or N(C_1–C_4 alkoxy)carbamoyl radical in which the nitrogen atom may be additionally substituted by a C_1–C_4 alkyl group which is —(C=O)—N(OR^v)R^z where R^v and R^z are as defined above, except they may not be joined together to form a ring;

w) a thiocarbamoyl group which is —(C=S)N(R^v)R^z where R^v and R^z are as defined above;

x) carboxyl which is —$COOM^b$, where M^b is as defined above;

y) thiocyanate which is : —SCN;

z) trifluoromethylthio which is —SCF_3;

aa) tetrazolyl, where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by hydrogen, an alkali metal or a C_1–C_4 alkyl optionally substituted by R^q as defined above;

ab) an anionic function selected from the group consisting of: phosphono: [P=O(OM^b)$_2$]; alkylphosphono: {P=O(OM^b)—[O(C_1–C_4 alkyl)]}; alkylphosphinyl: [P=O(OM^b)—(C_1–C_4 alkyl)]; phosphoramido: [P=O(OM^b)N(R^v)R^z and P=O(OM^b)NHR^x]; sulfino: (SO_2M^b); sulfo: (SO_3M^b); acylsulfonamides selected from the structures: CONM-$^bSO_2R^x$, CONM$^bSO_2$N(R^v)R^z, SO_2NM^{b}CON(R^v)R^z; and SO_2NM^{b}CN, where

R^x is phenyl or heteroaryl, where heteroaryl is a monocyclic aromatic hydrocarbon group having 5 or 6 ring atoms, in which a carbon atom is the point of attachment, in which one of the carbon atoms has been replaced by a nitrogen atom, in which one additional carbon atom is optionally replaced by a heteroatom selected from O or S, and in which from 1 to 2 additional carbon atoms are optionally replaced by a nitrogen heteroatom, and where the phenyl and heteroaryl are optionally mono-substituted by R^q, as defined above; M^b is as defined above; and R^v and R^z are as defined above;

ac) C_5–C_7 cycloalkyl group in which one of the carbon atoms in the ring is replaced by a heteroatom selected from O, S, NH, or N(C_1–C_4 alkyl) and in which one additional carbon may be replaced by NH or N(C_1–C_4 alkyl), and in which at least one carbon atom adjacent to each nitrogen heteroatom has both of its attached hydrogen atoms replaced by one oxygen thus forming a carbonyl moiety and there are one or two carbonyl moieties present in the ring;

ad) C_2–C_4 alkenyl radical, optionally mono-substituted by one of the substituents a) to ac) above and phenyl which is optionally substituted by R^q as defined above;

ae) C_2–C_4 alkynyl radical, optionally mono-substituted by one of the substituents a) to ac) above;

af) C_1–C_4 alkyl radical;

ag) C_1–C_4 alkyl mono-substituted by one of the substituents a)–ac) above;

ah) a 2-oxazolidinonyl moiety in which the point of attachment is the nitrogen atom of the oxazolidinone ring, the ring oxygen atom is optionally replaced by a heteroatom selected from S and NR^t (where R^t is as defined above) and one of the saturated carbon atoms of the oxazolidinone ring is option-

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ally mono-substituted by one of the substituents a) to ag) above;

M is a removable carboxyl protecting group.

5,356,890

S-NITROSO DERIVATIVES OF ACE INHIBITORS AND THE USE THEREOF

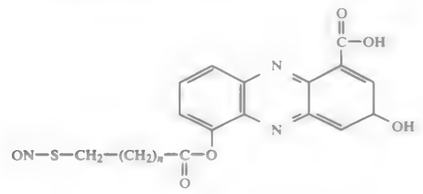
Joseph Loscalzo, Dedham, and John Cooke, Needham Heights, both of Mass., assignors to Brigham and Women's Hospital, Boston, Mass.

Division of Ser. No. 715,588, Jun. 14, 1991, Pat. No. 5,187,183, which is a division of Ser. No. 328,397, Mar. 24, 1989, Pat. No. 5,025,001, which is a continuation-in-part of Ser. No. 206,763, Jun. 15, 1988, Pat. No. 5,002,964. This application Feb. 4, 1993, Ser. No. 13,404

Int. Cl.[5] **A61K** *31/395, 31/445, 31/495;* **C07D** *241/46, 205/10*

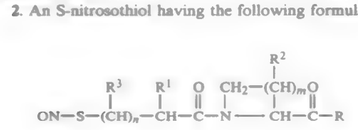
U.S. Cl. 514—210 **15 Claims**

1. An S-nitrosothiol derivative having the formula:



wherein n is 1–5.

2. An S-nitrosothiol having the following formula:



wherein,

R is hydroxy, NH_2, NHR^4, NR^4R^5 or C_1–C_7 alkoxy, wherein

R^4 and R^5 are C_1–C_4 alkyl, aryl, or C_1–C_4 alkyl substituted by aryl;

R^1 is hydrogen, C_1–C_7 alkyl or C_1–C_7 alkyl substituted by phenyl, amino, guanidino, NHR^6 or NR^6R^7, wherein R^6 and R^7 are methyl, or C_1–C_4 carboxylic acyl;

R^2 is hydrogen, hydroxy, C_1–C_4 alkoxy, aryloxy or C_1–C_7 alkyl;

R^3 is hydrogen, C_1–C_7 alkyl or C_1–C_7 alkyl substituted by phenyl;

m is 1 or 3; and

n is 0 to 2 .

5,356,891

PHENYLALKYL AMINE DERIVATIVES HAVING ANTI-ISCHAEMIC ACTIVITY

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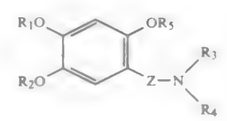
Continuation of Ser. No. 778,754, Oct. 18, 1991, abandoned, which is a continuation of Ser. No. 586,214, Sep. 21, 1990, abandoned. This application Nov. 16, 1992, Ser. No. 974,816

Claims priority, application European Pat. Off., Sep. 22, 1989, 89202383.9

Int. Cl.[5] **A01N** *43/46, 43/40;* **C07D** *211/68, 215/04*

U.S. Cl. 514—212 **3 Claims**

1. Compounds having anti-ischaemic activity of the formula



(1)

wherein:

R_1+R_2 together form an alkylene group having 1–3 C-atoms which may be substituted with one or more alkyl group(s) having 1–3 C-atoms;

Z is methylene optionally substituted with one or two alkyl group(s) having 1–3 C-atoms, or with one phenyl group or phenylalkyl group with 1–3 C-atoms in the alkyl group, which phenyl groups may be substituted with a group $(R_6)_p$ wherein R_6 is halogen, hydroxy, alkyl or hydroxyalkyl having 1–5C-atoms, alkoxy having 1–3 C-atoms, S-alkyl, S(O)-alkyl or $S(O)_2$-alkyl having 1–3 C-atoms, amino, mono- or dialkylamino having 1–3 C-atoms per alkyl group, trifluoromethyl, trifluoromethoxy, a sulphonylamido group SO_2NHR or a carbalkoxy group COOR wherein R is alkyl having 1–4 C-atoms, the group COOH, SO_3H,$COHN_2$, the amidino group or cyano group, and p has the value 0–3;

wherein R_3+R_4 together with the nitrogen atom form a saturated or unsaturated heterocyclic group of 5–7 ring atoms, which may contain a second hetero-atom from the group consisting of oxygen, sulphur and nitrogen, which ring may be substituted with a group $(R_6)_p$ wherein R_6 and p have the above mentioned meanings, or with phenylalkyl, phenylalkenyl, thienylalkenyl, pyridinylalkenyl, phenylalkynyl, thienylalkynyl or pyridinylalkynyl having at most 3 C-atoms in the alkyl, alkenyl or alkynyl part, which groups may be substituted with a group $(R_6)_p$ wherein R_6 and p have the above-mentioned meanings, or which ring may be fused with a phenyl group;

R_5 is alkyl having 1–12 C-atoms, alkenyl or alkynyl having 3–12 C-atoms, cycloalkyl having 3–8 C-atoms, cycloalkylalkyl having 3–8 ring atoms and 1–5 C-atoms in the alkyl group, phenylalkyl Or heteroaryl-alkyl having 1–5 C-atoms in the alkyl sub-group, phenylalkenyl, heteroarylalkenyl, phenylalkynyl or heteroaryl-alkynyl having 3–5 C-atoms in the alkenyl sub-group or alkynyl sub-group, which groups may be substituted with a group $(R_6)_p$ wherein R_6 and p have the above-mentioned meanings, and which alkyl sub-groups, alkenyl sub-groups and alkynyl sub-groups may contain a group —O—, —S— or CO, or a pharmacologically acceptable salt thereof.

5,356,892

TREATMENT AND CONTROL OF OCULAR DEVELOPMENT

Alan M. Laties, Philadelphia, and Richard A. Stone, Havertown, both of Pa., assignors to The Trustees of The University of Pennsylvania, Philadelphia, Pa.

Division of Ser. No. 522,241, May 11, 1990, Pat. No. 5,122,522, which is a continuation-in-part of Ser. No. 369,293, Jun. 21, 1989, abandoned. This application Mar. 24, 1992, Ser. No. 856,826

The portion of the term of this patent subsequent to Jun. 16, 2009, has been disclaimed.

Int. Cl.[5] **A61K** *31/55, 31/495*

U.S. Cl. 514—220 **5 Claims**

1. A method of controlling the abnormal postnatal growth of the eye of a animal which comprises the ocular administration of effective amounts of therapeutically a muscarinic pharmacological agent known to be effective in brain, neural tissue and/or neural ganglia, which agent is relatively less selective toward the smooth muscles at the front of the eye.

5,356,893

BENZANILIDE DERIVATIVES

John Bradshaw; John W. Clitherow, and Ian B. Campbell, all of Ware, Great Britain, assignors to Glaxo Group Limited, London, England

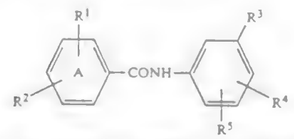
Filed Sep. 17, 1992, Ser. No. 945,878

Claims priority, application United Kingdom, Sep. 18, 1991, 9119920.8

Int. Cl.[5] **A61K** *31/535, 31/495;* **C07D** *417/12, 295/135*

U.S. Cl. 514—227.2 **22 Claims**

1. A compound of formula (I):



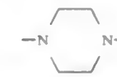
(I)

or a physiologically acceptable salt or solvate thereof wherein

R^1 represents a halogen or hydrogen atom or a C_{1-6}alkyl or C_{1-6}alkoxy group;

R^2 represents a phenyl group optionally substituted by one or two substituents selected from a halogen atom, C_{1-6}alkyl, hydroxyC_{1-6}alkyl, C_{1-6}alkoxy, hydroxy, —CF_3, —CN, —NO_2, —CO_2R^{10}, —COR^6, —SR^6, —SOR^6, —SO_2R^6, —$CR^6{=}NOR^7$, —$CONR^6R^7$, $CONR^6(CH_2)_mCO_2R^7$, —$CONR^6(CH_2)_mOC_{1-4}$alkyl, —$SO_2NR^6R^7$, —$OC(O)NR^6R^7$, —$(CH_2)_nNR^8R^9$, —$(CH_2)_nOC(O)C_{1-4}$alkyl or a C_{1-4}alkoxyalkyl group optionally substituted by a C_{1-4}alkoxy or hydroxy group;

R^3 represents the group



R^4 and R^5, which may be the same or different, each independently represent a hydrogen atom or a halogen atom, or a group selected from hydroxy, C_{1-6} alkoxy or C_{1-6}alkyl;

R^6, R^7 and R^8, which may be the same or different, each independently represent a hydrogen atom or a C_{1-6}alkyl group;

or —NR^6R^7 forms a saturated heterocyclic ring selected from pyrrolidino, piperidino, morpholino or thiomorpholino;

R^9 represents a hydrogen atom or a group selected from C_{1-6}alkyl, —COR^{12} or —SO_2R^{13};

or —NR^8R^9 forms a saturated heterocyclic ring selected from pyrrolidino, piperidino, morpholino, thiomorpholino, 2-oxo-1-pyrrolidino, 4-oxo-3-thiazolidino or 2-oxo-tetrahydro-1,3-thiazino;

R^{10} represents a hydrogen atom or a C_{1-6}alkyl group optionally substituted by one or two substituents selected from a C_{1-6}alkyl group, C_{1-6}alkoxy group, hydroxy or —NR^6R^7;

R^{11} represents a hydrogen atom or a C_{1-6}alkyl group;

R^{12} represents a hydrogen atom or a group selected from C_{1-6}alkyl, C_{1-6}alkoxy or a C_{1-4} alkoxyalkyl group;

R^{13} represents a C_{1-6}alkyl or phenyl group;

m represents an integer from 1 to 3; and

n represents zero or an integer from 1 to 3.

21. A compound selected from:

4′-[(2-methoxyethoxy)methyl]-N-[4-methoxy-3-(4-methyl-1-piperazinyl)phenyl]-2′-methyl-[1,1′-biphenyl]-4-carboxamide;

4′-cyano-N-[4-methoxy-3-(4-methyl-1-piperazinyl)phenyl]-2′-methyl-[1,1′-biphenyl]-4-carboxamide;

N-[4-methoxy-3-(4-methyl-1-piperazinyl)phenyl]-N′,N′,2′-trimethyl-[1,1′-biphenyl]-4,4′-dicarboxamide;

4′-(dimethylamino)-N-[4-methoxy-3-(4-methyl-1-piperazinyl)phenyl]-2′-methyl-[1,1′-biphenyl]-4-carboxamide;

2-chloro-N′-[4-methoxy-3-(4-methyl-1-piperazinyl)phenyl]-N,N-dimethyl-[1,1′-biphenyl]-4,4′-dicarboxamide;

N-[4-chloro-3-(4-methyl-1-piperazinyl)phenyl]-N′,N′,2′-trimethyl-[1,1′-biphenyl]-4,4′-dicarboxamide;

N-(1,1-dimethylethyl)-N′-[4-methoxy-3-(4-methyl-1-piperazinyl) phenyl]-2-methyl[1,1′-biphenyl]-4,4′-dicarboxamide;

4′-[(1-azetidinyl)carbonyl]-N-[4-methoxy-3-(4-methyl-1-piperazinyl) phenyl]-2′-methyl[1,1′-biphenyl]-4-carboxamide;

4′-acetyl-2′-trifluoromethyl-N-[4-methoxy-3-(4-methyl-1-piperazinyl)phenyl]-[1,1′-biphenyl]-4-carboxamide;

N-[4-bromo-3-(4-methyl-1-piperazinyl)phenyl]-N′,N′,2′-trimethyl-[1,1′-biphenyl]-4,4′-dicarboxamide;

4′-hydroxy-N-[4-methoxy-3-(4-methyl-1-piperazinyl)-phenyl]-[1,1′-biphenyl]-4-carboxamide;

4′-acetyl-N-[4-methoxy-3-(4-methyl-1-piperazinyl)phenyl]-2′-methyl-[1,1′-biphenyl]-4-carboxamide;

N-[4-methoxy-3-(4-methyl-1-piperazinyl)phenyl]-2′-methyl-4′-(4-morpholinylcarbonyl)-[1,1′-biphenyl]-4-carboxamide;

4′-acetyl-2′-methoxy-N-[4-methoxy-3-(4-methyl-1-piperazinyl) phenyl][1,1′-biphenyl]-4-carboxamide;

N-[4-methoxy-3-(4-methyl-1-piperazinyl)phenyl]-N′,N′-dimethyl[1,1′-biphenyl]-4,4′-dicarboxamide;

N-[4-methoxy-3-(4-methyl-1-piperazinyl)phenyl]-2′methyl-4′-[(1-pyrrolidinyl)carbonyl][1,1′-biphenyl]-4-carboxamide;

N,N-diethyl-N-[4-methoxy-3-(4-methyl-1-piperazinyl)-phenyl]-2-methyl[1,1′-biphenyl]-4,4′-dicarboxamide;

N-[4-methoxy-3-(4-methyl-1-piperazinyl)phenyl]-2′-methyl-4′-[(methylsulphonyl)amino]-[1,1′-biphenyl]-4-carboxamide;

N-butyl-N′-[4-methoxy-3-(4-methyl-1-piperazinyl)phenyl]-N,2-dimethyl[1,1′-biphenyl]-4,4′-dicarboxamide;

N-[4-methoxy-3-(4-methyl-1-piperazinyl)phenyl]-N′,N′-dipropyl[1,1′-biphenyl]-4,4′-dicarboxamide;

N-[4-methoxy-3-(4-methyl-1-piperazinyl)phenyl]-2-methyl-4′-(methylsulphinyl)-[1,1′-biphenyl]-4-carboxamide;

4′-acetyl-N-[4-methoxy-3-(4-methyl-1-piperazinyl)phenyl]-2-methyl-[1,1′-biphenyl]-4-carboxamide;

N-[4-methoxy-3-(4-methyl-1-piperazinyl)phenyl]-2′-methyl-4′-methylamino-[1,1′-biphenyl]-4-carboxamide;

ethyl [4′-[[[4-methoxy-[3-(4-methyl-1-piperazinyl)]phenyl-]amino]carbonyl]-2-methyl-([1,1′-biphenyl]-4-yl)]methyl carbamate;

4′-[[[4-methoxy-3-(4-methyl-1-piperazinyl)phenyl]amino]-carbonyl]-2′-methyl-[1,1′-biphenyl]-4-dimethylcarbamate;

4′-[[(methoxyacetyl)methylamino]methyl]-N-[4-methoxy-3-(4-methyl-1-piperazinyl)phenyl]-2′-methyl-[1,1′-biphenyl]-4-carboxamide;

or a physiologically acceptable salt or solvate thereof.

5,356,894

MORPHOLINYL SUBSTITUTED [1,2,4]-TRIAZOLO[1,5-A]TRIAZINE AS ANTAGONIST

Peter W. Rodney, 32a Lime Grove, Macclesfield, Cheshire; Geraint Jones, 16 Packsaddle Park, Prestbury, Macclesfield, Cheshire; Michael G. Collis, 1 The Shrubbery; Valley Road, Barham, Canterbury, Kent, and Simon M. Poucher, 3 Richmond Avenue, Handforth, Wilmslow, Cheshire, all of England

Continuation-in-part of Ser. No. 708,265, May 28, 1991, Pat. No. 5,270,311. This application Jul. 21, 1993, Ser. No. 94,572

Claims priority, application United Kingdom, May 29, 1990, 9011913.2; May 29, 1990, 9011914.0; Jan. 22, 1991, 9101379.7; Jan. 22, 1991, 9101380.5; Feb. 27, 1991, 9104125.1; Dec. 22, 1992, 9226735.0

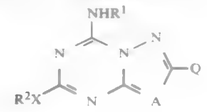
Int. Cl.[5] **A61K** *31/535;* **C07D** *413/06*

U.S. Cl. 514—233.2 **8 Claims**

1. A compound of the formula I:

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Q is furyl or thienyl, optionally bearing 1 or 2 substituents independently selected from (1–4C) alkyl and halogeno;
R^1 is hydrogen, (1–6C)alkyl, or (1–4C)alkanoyl;
R^2 is a group of the formula $R^5.Xa.CH_2.CH_2$— in which the group $R^5.Xa$— is morpholino; and



(I)

wherein:
X is oxy, thio or an imino group of formula —NRa— in which Ra is hydrogen or (1–6C) alkyl; and
A is N; or
a pharmaceutically acceptable salt thereof.

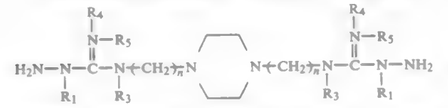
5,356,895

1,4 PIPERIZINO INHIBITORS OF NON-ENZYMATIC CROSS-LINKING OF PROTEINS

Peter C. Ulrich, Tenafly, N.J., and Anthony Cerami, Shelter Island, N.Y., assignors to The Rockefeller University, New York, N.Y.

Division of Ser. No. 605,654, Oct. 30, 1990, Pat. No. 5,140,048, which is a continuation-in-part of Ser. No. 264,930, Nov. 2, 1988, Pat. No. 4,983,604, which is a continuation-in-part of Ser. No. 119,958, Nov. 13, 1987, Pat. No. 4,908,446, which is a continuation-in-part of Ser. No. 798,032, Nov. 14, 1985, Pat. No. 4,758,583, which is a continuation-in-part of Ser. No. 590,820, Mar. 19, 1984, Pat. No. 4,665,192. This application May 27, 1992, Ser. No. 889,141
Int. Cl.[5] C07D *241/04;* **A61K** *31/495*
U.S. Cl. 514—255 **3 Claims**

1. A composition for inhibiting the advanced glycosylation of a target protein comprising a compound of the formula



wherein R_1 is hydrogen or a lower alkyl group of 1–6 carbon atoms, or a hydroxyethyl group; R_3 is hydrogen, or a lower alkyl group of 1–6 carbon atoms; R_4 is hydrogen, a lower alkyl group of 1–6 carbon atoms or an amino group; R_5 is hydrogen, or a lower alkyl group of 1–6 carbon atoms; and their pharmaceutically acceptable acid addition salts and an acceptable carrier therefor.

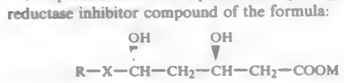
5,356,896

STABILIZED PHARMACEUTICAL COMPOSITIONS COMPRISING AN HMG-COA REDUCTASE INHIBITOR COMPOUND

Mohan B. Kabadi, Marlboro, and Richard V. Vivilecchia, Rockaway, both of N.J., assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 805,667, Dec. 12, 1991, abandoned. This application Dec. 22, 1992, Ser. No. 995,252
Int. Cl.[5] A61K *31/505, 31/435, 31/44, 31/405, 31/19*
U.S. Cl. 514—256 **27 Claims**

1. A pharmaceutical composition comprising an HMG-CoA reductase inhibitor compound of the formula:



I

wherein
R is an organic radical,
X is —CH═CH—, and
M is a physiologically acceptable cation,
and an alkaline stabilizing medium capable of imparting a pH of at least 8 to an aqueous solution or dispersion of the composition wherein the alkaline stabilizing medium comprises at least one pharmaceutically acceptable carbonate salt.

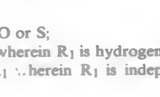
5,356,897

3-(HETEROARYL)-PYRAZOLOLI[1,5-A]PYRIMIDINES

Teruo Oku, Tsukuba; Yoshio Kawai, Ushiku; Hiroshi Marusawa, Yokohama; Hitoshi Yamazaki; Yoshito Abe, both of Tsukuba, and Hirokazu Tanaka, Tsuchiura, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Aug. 17, 1992, Ser. No. 931,093
Claims priority, application United Kingdom, Sep. 9, 1991, 9119267; Mar. 2, 1992, 9204464
Int. Cl.[5] A61K *31/505;* **C07D** *487/04*
U.S. Cl. 514—258 **8 Claims**

1. A compound of the formula:



wherein R^1 is aryl which may have suitable substituent(s) or 5 to 6 -membered heteromonocyclic group which may have suitable substituent(s),
R^2 is 5 to 6-membered heteromonocyclic group which may have suitable substituent(s),

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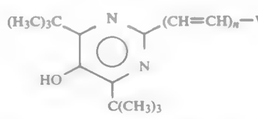
5,356,898

SUBSTITUTED 4,6-DI-TERTIARY-BUTYL 5-HYDROXY-PYRIMIDINES

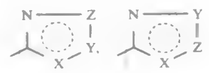
Thomas R. Belliotti, Phoenixville, Pa.; Catherine R. Kostlan, Saline, and David T. Connor, Ann Arbor, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

PCT No. PCT/US92/00442, § 371 Date Jul. 1, 1993, § 102(e) Date Jul. 1, 1993, PCT Pub. No. WO92/13844, PCT Pub. Date Aug. 20, 1992
Continuation-in-part of Ser. No. 648,114, Jan. 31, 1991, abandoned. This PCT application Jan. 17, 1992, Ser. No. 84,188
Int. Cl.[5] A61K *31/505;* **C07D** *239/02*
U.S. Cl. 514—269 **25 Claims**

1. A compound of the formula



or a pharmaceutically acceptable acid addition or base salt thereof, and hydrates thereof; wherein n is an integer of zero or one;
W is



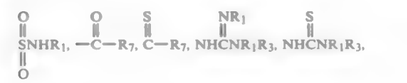
wherein X is O or S;
Z is NR_1 or N wherein R_1 is hydrogen or lower alkyl;
Y is (1) C—SR_1 wherein R_1 is independently as defined above,

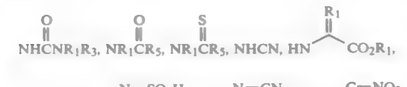


wherein R_2 is lower alkyl,

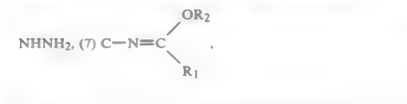


wherein R_2 is as defined above, (4) C—NR_1R_3 wherein R_1 is independently as defined above and R_3 is hydrogen or lower alkyl, (5) COR_1 wherein R_1 is independently as defined above, (6) CR_4 wherein R_4 is halogen, CF_3, CO_2R_1, or









wherein m is 1,2 or 3; R_{11} and R_{13} are hydrogen or lower alkyl; X_{10} is halogen or NO_2; R_5 is H, lower alkyl or OR_1, R_7 is lower alkyl, phenyl, or CF_3; and R_1, R_2, and R_3 are independently as defined above.

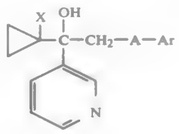
5,356,899

SUBSTITUTED HYDROXYALKYLPYRIDINES

Hans-Ludwig Elbe, Wuppertal; Stefan Böhm, Cologne; Ralf Tiemann, Leverkusen; Stefan Dutzmann, Hilden, and Heinz-Wilhelm Dehne, Monheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 27, 1993, Ser. No. 113,482
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1992, 4229643
Int. Cl.[5] A01N *43/40*
U.S. Cl. 514—277 **12 Claims**

1. A substituted hydroxyalkylpyridine of the formula



in which
X represents halogen,
A represents oxygen or sulphur and
Ar represents optionally substituted aryl,
or an addition product thereof with an acid or metal salt.

5,356,900

METHOD OF TREATING CHRONIC HERPES VIRUS INFECTIONS USING AN OPIATE RECEPTOR ANTAGONIST

Bernard Bihari, 29 W. 15th St., New York, N.Y. 10011, and Finvola Drury, Rochester, N.Y., assignors to Bernard Bihari, New York, N.Y.

Continuation of Ser. No. 973,545, Nov. 9, 1992, abandoned, which is a continuation of Ser. No. 839,277, Feb. 25, 1992, abandoned, which is a continuation of Ser. No. 658,662, Feb. 21, 1991, abandoned, which is a continuation of Ser. No. 433,152, Nov. 8, 1989, Pat. No. 5,013,739, which is a continuation-in-part of Ser. No. 129,862, Dec. 4, 1987, Pat. No. 4,888,346, which is a continuation of Ser. No. 916,180, Oct. 7, 1986, abandoned. This application May 10, 1993, Ser. No. 58,685
Int. Cl.[5] A61K *31/44*
U.S. Cl. 514—282 **6 Claims**

1. The method of treating humans suffering from chronic herpes virus infections, which comprises the step of administering by a pharmacologically effective mode to such patient an essentially pure opiate receptor antagonist having a selectively higher blocking action against Mu opiate receptors than against Delta receptors in an amount which is effective to exert a substantial opiate receptor blocking action against Mu receptors but insufficient to exert such action against Delta receptors.

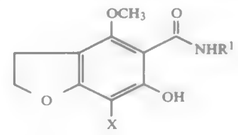
5,356,901

BENZOFURANCARBOXAMIDES HAVING BASIC SUBSTITUENTS, THE PREPARATION THEREOF, AND THERAPEUTIC AGENTS CONTAINING THEM

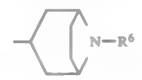
Rainer Schlecker, Bissersheim; Hans-Juergen Teschendorf, Dudenhofen, and Liliane Unger, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 634,756, Dec. 27, 1990, abandoned, which is a division of Ser. No. 598,785, Oct. 15, 1990, Pat. No. 5,151,437, which is a continuation of Ser. No. 221,653, Jul. 20, 1988, abandoned. This application Feb. 16, 1993, Ser. No. 22,885
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1987, 3724756
Int. Cl.[5] C07D *451/12;* **A61K** *31/55*
U.S. Cl. 514—304 **11 Claims**

1. A benzofurancarboxamide of the formula:



wherein
X is hydrogen or methoxy;
R^1 is a bicyclo system of the structure



wherein
R^6 is a branched or unbranched C_{1-6} alkyl, or benzyl which may be methyl- or halogen-substituted on the nucleus; and
the symbol || is a single or double bond.

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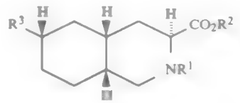
5,356,902

DECAHYDROISOQUINOLINE COMPOUNDS AS EXCITATORY AMINO ACID RECEPTOR ANTAGONISTS

Paul L. Ornstein, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 6, 1992, Ser. No. 972,679
Int. Cl.[5] A01N *43/42*; C07D *217/00*
U.S. Cl. 514—307 16 Claims

1. A compound of the formula

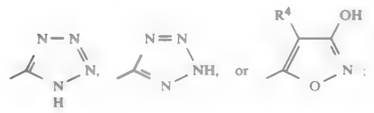


wherein:

R^1 is hydrogen, C_1–C_{10} alkyl, arylalkyl, alkoxycarbonyl, aryloxycarbonyl, or acyl;

R^2 is hydrogen, C_1–C_6 alkyl, substituted alkyl, cycloalkyl, or arylalkyl;

R^3 is a group of the formula



R^4 is hydrogen, C_1–C_4 alkyl, CF_3, phenyl, bromo, iodo, or chloro; or a pharmaceutically acceptable salt thereof.

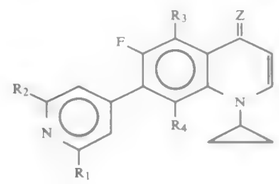
5,356,903

1-CYCLOPROPYL-4-PYRIDYL-QUINOLINES

Michael A. Eissenstat, West Sand Lake, N.Y., and Gee-Hong Kuo, Blue Bell, Pa., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Apr. 22, 1993, Ser. No. 52,027
Int. Cl.[5] A61K *31/47*
U.S. Cl. 514—311 10 Claims

1. A compound of formula;



wherein;

R_1 is hydrogen, lower-alkyl, or trifluoromethyl;

R_2 is lower-alkyl, trifluoromethyl or CH_2X where X is hydroxy, chloro, lower-alkylamino or dilower-alkyl-amino;

R_3 and R_4 are each individually hydrogen or fluoro;

Z is NR_5 or CR_6R_7;

R_5 is hydrogen, aryl, arylthio, arylsulfonyl, lower-alkyl, cycloalkyl, heterocycloalkyl, amino-lower-alkyl, lower-alkylamino-lower-alkyl, dilower-alkylamino-lower-alkyl, lower-alkoxy, hydroxy or NR_8R_9;

R_6 is hydrogen, cyano, lower-alkoxycarbonyl, lower-alkanoyl, nitro or lower-alkylsulfonyl;

R_7 is hydrogen, cyano, lower-alkoxycarbonyl, lower-alkanoyl, nitro, aryl, or lower-alkylsulfonyl;

R_8 is hydrogen, lower-alkyl, aryl, heterocycloalkyl, carbamyl, alkanoyl, aroyl, hydroxy-lower-alkyl; and

R_9 is hydrogen, lower-alkyl or lower-alkanoyl or a pharmaceutically acceptable acid addition salt thereof.

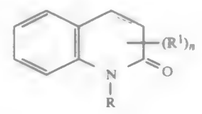
5,356,904

CARBOSTYRIL OXYTOCIN RECEPTOR ANTAGONISTS

Roger M. Freidinger, Lansdale; Joseph M. Pawluczyk, Warminster; Douglas J. Pettibone, Shalfont, and Peter D. Williams, Harleysville, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 7, 1992, Ser. No. 957,491
Int. Cl.[5] A61K *31/47*
U.S. Cl. 514—312 5 Claims

1. A method of preventing preterm labor in a mammal in need thereof, comprising the step of administering to said mammal a pharmacologically effective amount of a compound of the formula:

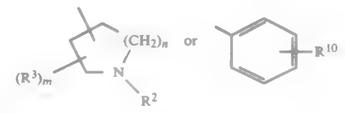


wherein

R^1 is hydrogen; nitro; lower alkoxy; lower alkoxycarbonyl; lower alkyl; halogen; amino having one to two substituents selected from the group consisting of lower alkanoyl, lower alkyl, benzoyl and phenyl lower alkoxycarbonyl; hydroxy; cyano; carboxy; lower alkanoyloxy; or hydrazinocarbonyl;

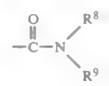
q is an integer of 1 to 3 and

R is a group of the formula



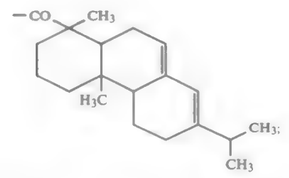
wherein

R^2 is hydrogen; lower alkoxycarbonyl; phenoxycarbonyl which phenyl ring may be substituted by one to three substituents selected from nitro and an amino having optionally one or two substituents selected from a lower alkanoyl, lower alkyl or benzoyl; phenyl lower alkenylcarbonyl; phenyl lower alkanoyl substituted by amino which in turn is substituted by lower alkoxycarbonyl; alkanoyl; alkenylcarbonyl; phenylsulfonyl substituted by lower alkoxy; a group of the formula



wherein

R^8 and R^9 are the same or different and are each hydrogen or phenyl substituted by lower alkoxy, lower alkyl, halogen, amino substituted by lower alkyl, lower alkanoyl or nitro; carbonyl substituted by a heterocyclic ring substituted by one to three substituents selected from phenyl lower alkoxycarbonyl, phenyl lower alkoxy, oxo, lower alkyl or lower alkylenedioxy; a group of the formula



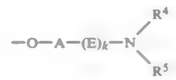
naphthylcarbonyl; thienyl lower alkanoyl; tricyclo[3.3.1.1]decanyl(lower)alkanoyl; tricyclo[3.3.1.1.]-decanylcarbonyl; or a group of the formula



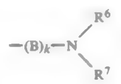
wherein p is 0 or an integer of 1 to 3, and R^{13} is hydroxy; alkoxy; alkoxy having one or two substituents selected from hydroxy, lower alkanoyloxy, tri-lower alkylammonium, lower alkoxy, or a group of the formula



wherein R^{32} and R^{33} are the same or different and are each hydrogen, lower alkyl, hydroxy-substituted lower alkyl, lower alkanoyl, tetrahydropyranyl lower alkyl, phenyl, phenyl lower alkyl wherein the alkyl moiety may optionally be substituted by hydroxy and the phenyl ring may optionally be substituted by a lower alkoxy, or a pyridyl lower alkyl; or R^{32} and R^{33} may be bound to nitrogen to form a 5 or 6 membered saturated heterocyclic ring which may be intervened with nitrogen, oxygen or sulfur wherein the heterocyclic group may optionally be substituted by a member selected from carbamoyl, lower alkyl, phenyl lower alkyl, phenyl or hydroxy-substituted lower alkyl; carboxy-substituted alkoxy; halogen-substituted lower alkoxy; lower alkoxycarbonyl-substituted alkoxy; lower alkanoyloxy-substituted lower alkoxy; lower alkenyloxy substituted lower alkoxy; lower alkoxy lower alkoxy; lower alkylsulfonyloxy-substituted lower alkoxy; benzoyloxy-substituted lower alkoxy; tricyclo[3.3.1.1-]decanyl-substituted lower alkoxy; lower alkoxy lower alkoxy substituted by one or two substituents selected from hydroxy and an amino being optionally substituted by lower alkyl; morpholinyl-substituted lower alkoxy; benzimidazolylsulfinyl-substituted lower alkoxy; a group of the formula



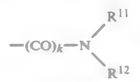
wherein A is alkylene, k is an integer of 0 or 1, E is —CO— or —OCO—, R^4 and R^5 are the same or different and are each hydrogen; lower alkyl which may optionally be substituted by hydroxy or cyano; lower alkenyl, lower alkynyl; phenyl lower alkyl; lower alkanoyl which may optionally have one to three substituents of a halogen atom; benzoyl which phenyl ring may optionally be substituted by a member selected from nitro and an amino having optionally one or two substituents selected from lower alkyl, lower alkanoyl or phenyl lower alkoxycarbonyl; phenyl; lower alkoxycarbonyl; lower alkoxycarbonyl lower alkyl wherein the lower alkyl moiety may optionally be substituted by hydroxy or an amino having optionally a phenyl lower alkoxycarbonyl substituent; an amido having optionally a lower alkyl substituent; a pyrrolidinyl-substituted carbonyl which pyrrodinyl ring may optionally be substituted by phenyl lower alkoxycarbonyl; amino-substituted lower alkanoyl wherein the lower alkanoyl moiety may optionally be substituted by a member selected from phenyl lower alkoxycarbonyl amino, hydroxy, phenyl optionally having a hydroxy substituent, carbamoyl, imidazolyl or a lower alkylthio, and the amino group may optionally have a substituent selected from a lower alkyl optionally having a hydroxy substituent, lower alkenyl, phenyl lower alkyl optionally having a lower alkoxy substituent on the phenyl ring, lower alkylsulfonyl, lower alkanoyl, lower alkylsulfonyl, a phenylsulfonyl which phenyl ring may optionally be substituted by a lower alkyl group, nitro or amino having optionally one or two substituents selected from a lower alkyl and a lower alkanoyl; amido-substituted lower alkyl wherein the lower alkyl moiety optionally has a substituent selected from phenyl optionally having a hydroxy substituent, imidazolyl, carbamoyl or a lower alkylthio, and the amido group may optionally have a lower alkyl substituent; amino-substituted lower alkyl which may optionally be substituted by a lower alkyl or a lower alkanoyl; anilinocarbonyl; piperidinyl which may optionally be substituted by phenyl lower alkyl; cycloalkyl, cycloalkenylcarbonyl; cycloalkylcarbonyl which may optionally have one to three substituents selected from hydroxy and a lower alkanoyloxy; tetrahydropyranyl-substituted lower alkyl wherein the tetrahydropyranyl ring may optionally have one to four substituents selected from hydroxy and a lower alkoxy; lower alkanoyl which is substituted by a 5 or 6 membered saturated heterocyclic group selected from pyrrolidinyl, piperazinyl, piperidinyl and morpholinyl wherein the heterocyclic group may have optionally a substituent selected from a lower alkyl and phenyl; piperidinyl-substituted carbonyl which may optionally be substituted by a lower alkanoyl; lower alkanoyloxy lower alkyl; pyridyl-substituted lower alkyl; or an amido acid residue which can form an amido group with its amino group or R^4 and R^5 may bind together with the nitrogen atom to which they bond to form a 5 or 6 membered saturated or unsaturated heterocyclic group which may be intervened or not with nitrogen, oxygen, or sulfur, wherein the heterocyclic group may optionally be substituted by a member selected from a phenyl having optionally a substituent selected from a lower alkoxy and a halogen atom, oxo, hydroxy, lower alkenyl, carboxy, phenyl lower alkyl having an optional hydroxy substituent on the lower alkyl moiety, lower alkanoyl lower alkyl having optionally a hydroxy substituent, benzoyl, an amido having optionally a lower alkyl substituent, anilinocarbonyl, benzoyl lower alkyl lower alkylsulfonyl, piperidinyl, pyrimidyl, pyridyl, and lower alkoxycarbonyl; carbamoyloxy-substituted lower alkoxy; lower alkylthio-substituted lower alkoxy; alkinyloxy; phenoxy; lower alkanoyloxy; lower alkylsulfonyloxy; lower alkynyl; phenyl lower alkoxy; cycloalkyl; cycloalkyloxy; cycloalkenyloxy; imidazo[4,5-c]pyridyl-carbonyl lower alkoxy; a group of the formula



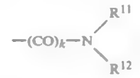
wherein k is as defined above, B is a lower alkylene or a group —CO— and R^6 and R^7 are the same or different and are each hydrogen, lower alkyl, lower alkanoyl having optionally one to three halogen substituents, carboxy

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lower alkyl, lower alkoxycarbonyl, lower alkoxycarbonyl lower alkyl, lower alkenyl, amido-substituted lower alkyl having an optional lower alkyl substituent, or a phenyl lower alkoxycarbonyl, or R^6 and R^7 may bind together with a nitrogen atom to which they bond to form a 5 or 6 membered, saturated or unsaturated heterocyclic group which may be intervened or not with nitrogen, oxygen or sulfur, wherein the heterocyclic group may optionally have a substituent selected from a lower alkoxycarbonyl, lower alkyl, lower alkylthio, or oxo; nitro; halogen; lower alkylsulfonyl; lower alkyl which may optionally have one to three substituents selected from a halogen, hydroxy, phenyl and lower alkoxy; cyano-substituted lower alkoxy, pyrrolyl-substituted lower alkoxy; cyano; lower alkoxycarbonyl; amidino; carbamoyl; carboxy; lower alkanoyl; benzoyl; lower alkoxycarbonyl lower alkyl; carboxy lower alkyl; lower alkoxy lower alkyl; lower alkanoyloxy lower alkyl; hydroxyimino; substituted lower alkyl; phenyl; lower alkylthio; lower alkylsulfinyl; lower alkenyl optionally having a hydroxy substituent; lower alkylenedioxy, lower alkylsilyl; pyrimidylthio-substituted lower alkoxy; pyrimidylsulfinyl-substituted lower alkoxy; pyrimidylsulfonyl-substituted lower alkoxy; imidazolylthio-substituted lower alkoxy which may optionally have a lower alkyl substituent; imidazolylsulfonyl-substituted lower alkoxy which may optionally have a lower alkyl substituent; ammonium-lower alkoxy having three substituents selected from lower alkoxy, lower alkenyl and oxo; phenylthio-substituted lower alkoxy which phenyl ring may optionally have a substituent selected from nitro and amino; phenylsulfonyl-substituted lower alkoxy which phenyl ring may optionally have a substituent selected from nitro and an amino having optionally one or two substituents selected from a lower alkanoyl and lower alkyl; pyridylthio-substituted lower alkoxy; or a pyridylsulfonyl-substituted lower alkoxy which pyridyl ring may optionally be substituted by oxo; n is an integer of 1 or 2; m is 0 or an integer of 1 to 3; R^3 is a lower alkyl; R^{10} is a group of the formula



wherein k is as defined above and R^{11} and R^{12} are the same or different and are each hydrogen, lower alkyl, phenyl lower alkyl, lower alkenyl, benzoyl which may optionally have a lower alkoxy substituent, tricyclo[3.3.1.1]decanyl, a phenyl which may optionally have a lower alkoxy substituent or a cycloalkyl, or R^{11} and R^{12} may bind together with the nitrogen atom to which they bond to form a saturated or unsaturated heterocyclic group which may be intervened or not with nitrogen, oxygen or sulfur, wherein the heterocyclic group may optionally have a substituent selected from a benzoyl, a lower alkanoyl, phenyl lower alkyl and a phenyl which may optionally be substituted by a lower alkoxy and a lower alkonoyl; the bond between 3 and 4 positions of the carbostyril ring is a single bond or double bond; provided that when R^1 is hydrogen and the k in the formula



is 0, R^{11} and R^{12} are not simultaneously hydrogen atoms and including the pharmaceutically acceptable salts of the compounds of the formula I.

5,356,905

NEUROPROTECTIVE 3-PIPERIDINO-4-HYDROXYCHROMAN DERIVATIVES AND ANALOGS

Todd W. Butler, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

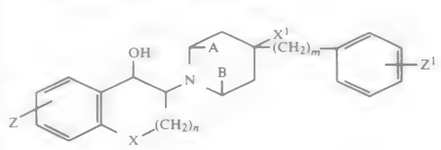
PCT No. PCT/US90/00674, § 371 Date Jul. 23, 1992, § 102(e) Date Jul. 23, 1992, PCT Pub. No. WO91/12005, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 6, 1990, Ser. No. 916,130

Int. Cl.[5] A61K *31/445;* **C07D** *211/14, 405/04*

U.S. Cl. 514—320 **17 Claims**

1. A compound having the formula



wherein

A and B are taken together and are —CH_2CH_2— or A and B are taken separately and are each H;

X is CH_2 or O;

X^1 is H or OH;

Z is H, F, Cl, Br or OH;

Z^1 is H, F, Cl, Br or (C_1–C_3)alkyl;

n is 0 or 1; and

m is 0 or an integer from 1 to 6; or a pharmaceutically acceptable salt thereof.

5,356,906

(N-PHTHALIMIDOALKYL) PIPERIDINES USEFUL AS TREATMENTS FOR PSYCHOSIS

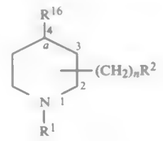
Engelbert Ciganek, Kennett Square, Pa.; Sang W. Tam, Hockessin, and Ann S. Wright, Wilmington, both of Del., assignors to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Continuation-in-part of Ser. No. 602,024, Oct. 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 428,097, Oct. 27, 1989, abandoned. This application Apr. 30, 1992, Ser. No. 876,542

Int. Cl.[5] A61K *31/445*

U.S. Cl. 514—323 **10 Claims**

1. A method of treating physiological or drug induced psychosis or dyskinesia in a mammal comprising administering to the mammal an antipsychotic or anti-dyskinetic effective amount of a compound having the formula:



(I)

or a pharmaceutically acceptable salt or an N-oxide thereof wherein:

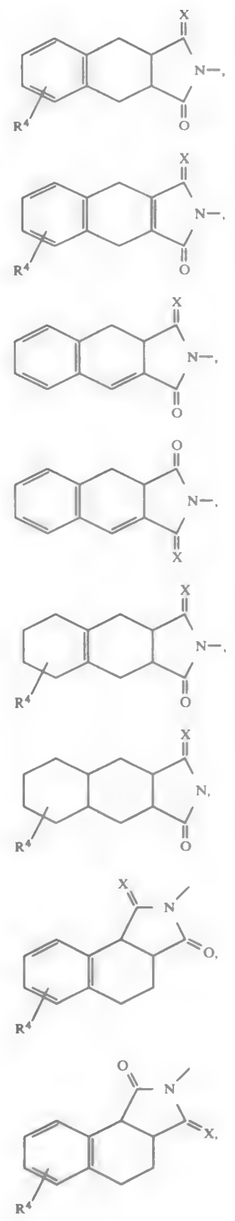
a is a single or double bond, provided that when a is a double bond, $R^2(CH_2)_n$ is attached at C-4 and R^{16} is not present;

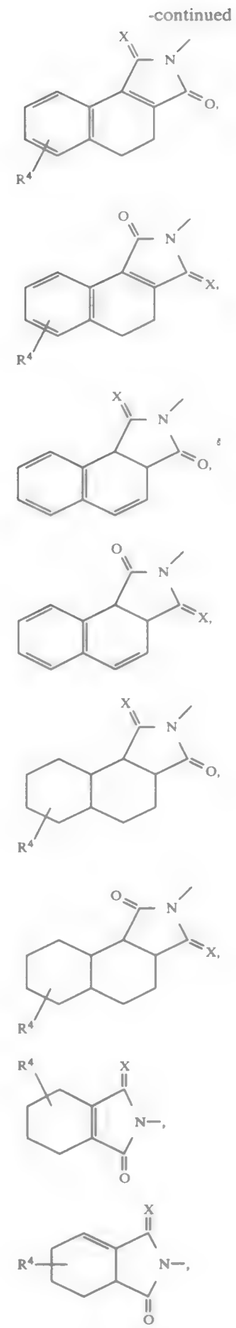
n is 1–4, provided that when $(CH_2)_n$ is attached to the 2-position of the piperidine ring then n is 2–4;

R^1 is $(CH_2)_mR^3$ or $(CH_2)_pAr$, where m is 1–4 and p is 1–4;

R^2 is

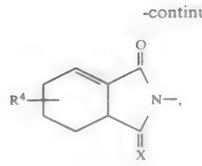
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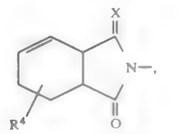


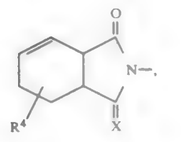


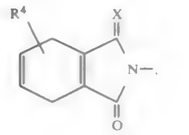
VOL 1167 ISS 3 OCT 18 1994 UMI

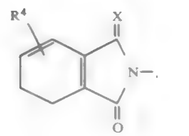
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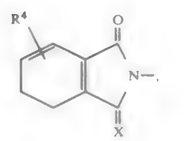


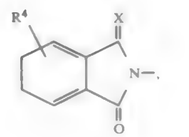


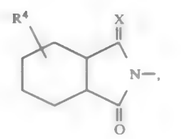




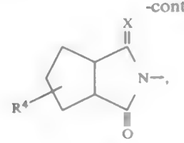


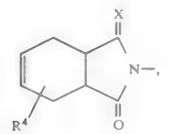


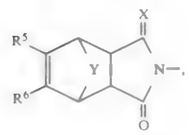


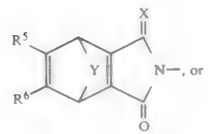


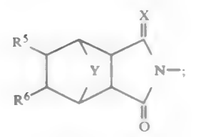
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R^3 is cycloalkyl of 3 to 8 carbon atoms;

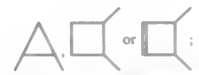
R^4 is 1–4 substituents independently selected from the group consisting of H, halogen, NO_2, NH_2, haloalkyl of 1 to 3 carbon atoms and 1 to 7 halogen atoms, C_1–C_3 alkyl, $NHCOR^7$, NHCO-phenyl, OH, OR^8 and Ar';

R^5 and R^6 independently are H, alkyl of 1 to 3 carbon atoms, Ar'' or taken together form a 2–5 carbon atom alkyl or alkenyl group;

R^7 and R^8 independently are H or alkyl of 1 to 3 carbon atoms;

X is O; H_2; (H, OH); (R^9, OH); (Ar''', OH); (H, R^9); or (H, OR^{10});

Y is CH_2, CHR^{10}, $C(R^{10})_2$, CH_2CH_2, $(CH_2)_3$,



Ar, Ar', Ar'' and Ar''' independently are phenyl, naphthyl, each optionally substituted with 1–5 substituents independently selected from the group consisting of:

H, halogen, OH, alkoxy of 1 to 3 carbon atoms, $NR^{11}R^{12}$, SH, $S(O)_tR^{13}$, where t is 0–2, haloalkyl of 1 to 3 carbon atoms and 1 to 7 halogen atoms, alkyl of 1 to 3 carbon atoms, CO_2H, carboalkoxy of 2 to 6 carbon atoms, CN, NO_2, SO_2NH_2, SO_3H, $CO_2NR^{14}R^{15}$, or phenyl;

R^9 is selected from the group consisting of:

alkyl of 1–20 carbon atoms or alkenyl or alkynyl of 2–20 carbon atoms, said alkyl, alkenyl, or alkynyl group being optionally substituted with substituents independently selected from:

1–2 cycloalkyl groups of 3–8 carbons,
1–6 halogen,
1–3 OH,
1–3 OR^{10},
1–2 Ar'''';
cycloalkyl of 3–8 carbon atoms; or
Ar'''';

R^{10} is alkyl of 1–3 carbon atoms;

Ar'''' is phenyl, naphthyl, pyrrolyl, furyl, thienyl, indolyl, benzofuryl, benzothienyl, pyridyl, pyrimidyl, quinolyl, or isoquinolyl, each of which may be substituted with 0–5 groups independently selected from the group consisting of:

H, halogen, OH, alkoxy of 1 to 3 carbon atoms, $NR^{11}R^{12}$, SH, $S(O)_tR^{13}$, where t is 0–2, haloalkyl of 1 to 3 carbon atoms and 1 to 7 halogen atoms, alkyl of 1 to 3 carbon atoms, CO_2H, carboalkoxy of 2 to 6 carbon atoms, CN, NO_2, SO_2NH_2, SO_3H, $CO_2NR^{14}R^{15}$, or phenyl;

R^{11}–R^{15} independently are H or alkyl of 1 to 3 carbon atoms; and

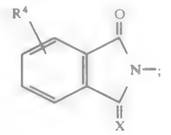
R16 is H; alkyl of 1–12 carbons; phenyl or 1–2-naphthyl optionally substituted with one or two substituents independently selected from the group consisting of:

F, Cl, Br, I, perfluoroalkyl, or alkoxy, or 2- and 3-thienyl;

provided however that:

(1) when R^1 is $(CH_2)_pAr$ (p is 1);

R^2 is



and is attached at the C-4 position on the piperidine ring; then X cannot be H2; and

(2) when $(CH_2)_nR_2$ is attached to the 4-position of the piperidine ring, then R^{16} is H, alkyl or aryl.

5,356,907

1-CYCLOALKYLPYRIDONES AS ANALGESICS

Francois Clemence; Michel Fortin, and Odile Le Martret, all of Paris, France, assignors to Roussel UCLAF, France

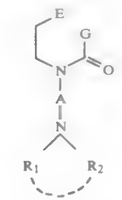
Division of Ser. No. 598,545, Oct. 16, 1990, abandoned. This application Oct. 1, 1992, Ser. No. 955,049

Claims priority, application France, Oct. 17, 1989, 89 13545

Int. Cl.[5] A61K *31/445;* **C07D** *409/04*

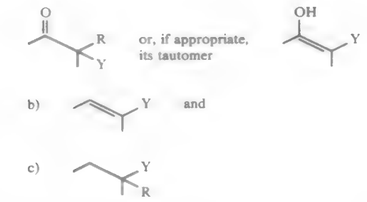
U.S. Cl. 514—324 **11 Claims**

1. A compound selected from the group consisting of all possible racemic, enantiomeric and diastereoisomeric forms of a compound of the formula



I

wherein E and G together form a group selected from the group consisting of a)



R is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl or alkynyl of 2 to 6 carbon atoms optionally substituted with carbocyclic aryl radicals of 6 to 14 carbon atoms selected from the group consisting of phenyl, naphthyl, and indentyl optionally substituted with at least one member of the group consisting of halogen, —OH, —CF_3, alkoxy of 1 to 6 carbon atoms, —NO_2, —CN, —NH_2, free and alkyl esterified carboxy or carboxy salified with a non-toxic, pharmaceutically acceptable base, acyl of 1 to 7 carbon atoms selected from the group consisting of formyl, acetyl, propionyl and benzoyl, alkylamino, dialkylamino, acyloxy of 1 to 7 carbon atoms selected from the group consisting of formyloxy, acetyloxy, propionyloxy and benzoyloxy, —CN, carbamoyl and halogen, Y is selected from the group consisting of benzothienyl, thienyl, pyridyl, pyrrolyl, tetrazolyl, thiazolyl, isothiazolyl, oxazolyl, benzoxyazolyl, thionaphthyl and indolyl, A is cycloalkyl of 3 to 6 carbon atoms optionally substituted with at least one substituent selected from the group consisting of halogen, hydroxy, alkyl, alkenyl, phenyl, naphthyl, benzyl, phenethyl, cycloalkyl, alkoxy, methoxymethyl, 1-ethoxy ethyl, phenoxy, benzyloxy, mercapto, alkylthio, carbocyclic arylthio, carbocyclic aralkylthio, amino, amino-ethyl, mono or dialkylamino, nitro, cyano, azido, optionally alkyl esterified carboxy, formyl, acetyl, propionyl, benzoyl, acetoxy, propionyloxy, phthalimido, acetamido, benzamido, alkyoxycarbonylamino, and benzyloxycarbonylamino, R_1 and R_2 together with the nitrogen to which they are attached form a member selected from the group consisting of pyrrolidino, piperidino, morpholino and piperazinyl optionally substituted with at least one substituent selected from the group consisting of halogen, hydroxy, alkyl, alkenyl, phenyl, naphthyl, benzyl, phenethyl, cycloalkyl, alkoxy, methoxymethyl, 1-ethoxyethyl, phenoxy, benzyloxy, mercapto, alkylthio, arylthio, aralkylthio, amino, aminoethyl, mono or dialkylamino, nitro, cyano, azido, optionally alkyl esterified carboxy, formyl, acetyl, propionyl, benzoyl, acetoxy, propionyloxy, phthalimido, acetamido, benzamido, alkoxycarbonylamino, and benzyloxycarbonylamino or a non-toxic, pharmaceutically acceptable salt with acid or base.

5,356,908

FUNGICIDAL OXAZOLIDINONES

Detlef Geffken, Hamburg, Fed. Rep. of Germany, and Dennis R. Rayner, Centerville, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

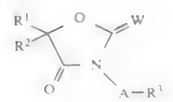
Division of Ser. No. 778,079, Dec. 19, 1991, Pat. No. 5,223,523, which is a continuation-in-part of Ser. No. 341,741, Apr. 21, 1989, Pat. No. 4,957,933, and Ser. No. 341,742, Apr. 21, 1989, abandoned. This application Feb. 16, 1993, Ser. No. 25,636

Int. Cl.[5] C07D *263/00, 413/00*

U.S. Cl. 514—333 **14 Claims**

1. A method of controlling fungus disease in plants that comprises treating the locus to be protected with an effective amount of a compound of Formula I,

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I

wherein:
A is O or NR^4;
W is O or S;
R^1 is H; C_1 to C_6 alkyl; C_1 to C_6 haloalkyl; C_3 to C_6 cycloalkyl; C_2 to C_6 alkenyl; C_2 to C_6 alkenyl; C_2 to C_6 alkoxyalkyl; C_1 to C_3 alkyl substituted with C_3 to C_6 cycloalkyl, phenyl or benzyl, wherein said phenyl or benzyl ring is substituted on the ring with R^6, and the benzylic carbon is substituted with R^7;
R^2 is phenyl substituted with R^5 and R^6; naphthyl substituted with 1 to 2 groups selected form R^6; thienyl substituted with R^5 and R^6; furyl substituted with R^6; pyridyl substituted with one of the following:
R^6, phenoxy substituted with R^6, or phenylthio substituted with R^6;
C_1 to C_2 alkyl substituted with phenoxy or phenylthio, said phenoxy or phenylthio being substituted on the ring with R^6;
C_1 to C_6 alkyl; or
C_5 to C_7 cycloalkyl; and
R^1 and R^2 can be taken together, along with the carbon to which they are attached, to form a carbocyclic or heterocyclic ring (containing O, N—R^7, or S) of 5 to 7 ring atoms in which the heterocyclic ring can be fused with an R^5-substituted benzene ring or an R^6-substituted thiophene ring, the heteroatom not being attached to the spiro center; and the carbocyclic ring can be fused with 1 to 2 R^5-substituted benzene rings or with an R^6-substituted thiophene ring;
R^3 is phenyl substituted with R^{10}; benzyl substituted on the benzylic carbon with a group selected from R^7 and substituted on the phenyl ring with R^{10}; naphthyl substituted with R^{10}; additionally, R^3 can be thienyl substituted with R^{10}, furyl substituted with R^{10}, or pyridyl substituted with R^{10}; or R^3 can be C_2 to C_{10} alkyl or C_5 to C_7 cycloalkyl;
R^4 is hydrogen; formyl; C_2 to C_4 alkylcarbonyl; C_2 to C_4 haloalkylcarbonyl; C_2 to C_4 alkoxyalkylcarbonyl; C_2 to C_4 alkoxycarbonyl; C_2 to C_5 alkylaminocarbonyl; C_1 to C_4 alkylsulfonyl; C_1 to C_4 alkyl; C_4 to C_6 cycloalkyl; phenylaminocarbonyl where said phenyl is substituted with R^{10}; and R^4 can be C_3 to C_4 alkenyl or C_3 to C_4 alkenyl; or
R^3 and R^4 can be taken together, along with the nitrogen atom to which they are attached, to form a pyrrolidino, piperidino ring substituted with R^{10}, which rings can be fused to an R^{10}-substituted benzene ring;
R^5 is hydrogen; C_1 to C_{12} alkyl; C_1 to C_{12} haloalkyl; C_1 to C_{12} alkoxy, C_3 to C_{12} alkenyl; C_3 to C_{12} haloalkenyl; C_3 to C_{12} alkenyloxy; C_3 to C_{12} alkenyl; C_3 to C_{12} haloalkenyl; C_3 to C_{12} alkylthio; C_1 to C_{12} haloalkylthio; C_1 to C_{12} haloalkoxy; C_1 to C_{12} alkylsulfonyl; C_1 to C_{12} haloalkylsulfonyl; nitro phenyl substituted with R^6; phenoxy substituted with R^6; phenylthio substituted with R^6; cyano; C_3 to C_{12} alkynyloxy, C_2 to C_{12} alkoxyalkyl; C_2 to C_{12} alkoxyalkoxy; phenoxymethyl substituted on the phenyl ring with R^6; benzyloxy substituted on the phenyl ring with R^6; phenethyloxy substituted on the phenyl ring with R^6; phenethyl substituted on the phenyl ring with R^6; benzyl substituted on the phenyl ring with R^6; C_2 to C_{12} carboalkoxy; C_5 to C_6 cycloalkyl; NMe_2; or NR^8R^9;
R^6 is hydrogen; 1 to 12 halogen; C_1 to C_4 alkyl; trifluoromethyl; C_1 to C_4 alkoxy; methylthio; nitro; phenoxy; C_2 to C_6 cycloalkyloxy; or C_5 to C_6 cycloalkyl;
R^7 is hydrogen; or C_1 to C_4 alkyl;
R^8 is H; or C_1 to C_4 alkyl;
R^9 is H; phenyl substituted with H; 1–2 halogen; CF_3; C_1 to C_2 alkyl; or C_1 to C_2 alkoxy; and
R^{10} is 0–2 groups selected from H; CF_3; CF_3O; NO_2; CO_2Me; halogen; C_1 to C_5 alkyl; C_1 to C_5 alkoxy; or CN; provided that when the phenyl ring is disubstituted, one of the alkyl or alkoxy groups is no larger than C_1;
provided that, when A is oxygen, R^3 is phenyl substituted with R^5 to R^6.

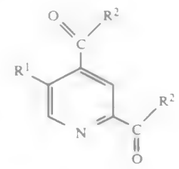
5,356,909

SUBSTITUTED PYRIDINE-2,4-DICARBOXYLIC ACID COMPOUNDS AND THE USE THEREOF AND MEDICAMENTS

Ekkehard Baader, Königstein/Taunus; Martin Bickel, Bad Homburg; Dietrich Brocks, Wiesbaden; Volkmar Günzler, Marburg-Cappel; Stephan Henke, and Hartmut Hanauske-Abel, Dexheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 606,451, Oct. 31, 1990, Pat. No. 5,143,926, which is a division of Ser. No. 164,406, Mar. 4, 1988, Pat. No. 5,004,748. This application Jun. 25, 1992, Ser. No. 903,749
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1987, P3707429.6
Int. Cl.[5] **C07D** *213/81;* **A61K** *31/44*
U.S. Cl. 514—335 **7 Claims**

1. A substituted pyridine-2,4-dicarboxylic acid derivative of the formula I



(I)

in which:
R^1 is a substituent of the formula —OR^3, or —$N(R^3)_2$, in which R^3 is hydrogen or C_1-C_9-alkyl, C_1-C_9-alkenyl, C_1-C_9-alkynyl or C_1-C_9-alkylcarbonyl, these radicals being optionally mono- or disubstituted by
halogen, hydroxyl, nitro, cyano, amino, C_1-C_4-alkoxy, carboxyl, C_1-C_4-alkoxycarbonyl, C_1-C_4-alkylcarbonyloxy or C_1-C_4-alkyl- or C_1-C_4-dialkylamino,
or optionally substituted by phenyl, naphthyl, thienyl, furyl, pyrrolyl or pyridyl, these aryl or heteroaryl radicals mentioned being in turn optionally monosubstituted by halogen, carboxyl, amino, C_1-C_4-alkyl- or C_1-C_4-dialkylamino or hydroxyl, and it also being possible for the two substituents R^3 in —$N(R^3)_2$ to differ independently of one another, and
R^2 denotes a substituent of the formula -OR^4 or -NR^4R^5, in which R^4 denotes hydrogen or C_1-C_{12}-alkyl, which is optionally mono- or disubstituted by
halogen, hydroxyl, cyano, carboxyl, C_1-C_4-alkoxy, C_1-C_4-alkoxycarbonyl, C_1-C_4-alkylcarbonyloxy, or C_1-C_4-alkyl- or C_1-C_4-dialkylamino, or is optionally substituted by phenyl, which is in turn optionally mono-, di- or trisubstituted by halogen, C_1-C_4-alkyl or C_1-C_4-alkoxy, it also being possible for the substituents to differ independently of one another in the case of polysubstitution, or
R^4 denotes cyclohexyl, which is optionally benzo-fused, or
R^4 denotes phenyl, naphthyl, thienyl, furyl, pyrrolyl or pyridyl, the phenyl, naphthyl and pyridyl radicals being optionally mono-, di- or trisubstituted and the thienyl, furyl and pyrrolyl radicals being optionally monosubstituted by halogen, C_1-C_4-alkyl or C_1-C_4-alkoxy, it also being possible for the substituents to differ independently of one another in the case of polysubstitution, and
R^5 denotes hydrogen or C_1-C_3-alkyl, R^5 in the case of C_1-C_3-alkyl radicals together with R^4, which in this case denotes C_1-C_5-alkyl, optionally forming a heterocyclic saturated 6-membered ring, it also being possible for the heterocyclic 6-membered ring to contain a second nitrogen atom and in turn to be substituted by phenyl or phenyl-C_1-C_3-alkyl,
and it also being possible for the two radicals R^2 bonded to the pyridine skeleton via the carbonyl group in the 2- and 4-position to differ independently of one another, and it also being possible for all the alkyl radicals mentioned with more than 2 carbon atoms to be branched, or the physiologically tolerated salt, excluding the compounds in which R^1 denotes the substituent of the formula —OR^3 or —$N(R^3)_2$ and R^2 denotes the substituent of the formula —OR^4.

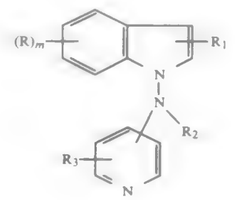
5,356,910

USE OF N-(PYRIDINYL)-1H-INDOL-1-AMINES FOR THE TREATMENT OF OBSESSIVE-COMPULSIVE DISORDER

Sathapana Kongsamut, Madison; Craig P. Smith, Hillsborough, and Ann T. Woods, High Bridge, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Jul. 19, 1993, Ser. No. 92,848
Int. Cl.[5] **A61K** *31/44, 31/40, 31/405*
U.S. Cl. 514—339 **20 Claims**

1. A method of alleviating an obsessive compulsive disorder which comprises administering to a patient suffering from an obsessive compulsive disorder an effective amount of a compound depicted below,



where
m is 1 or 2;
R is H, halogen, loweralkyl, loweralkoxy, aryloweralkoxy, hydroxy, nitro, amino, loweralkylamino or diloweralkylamino;
R_1 is H or loweralkyl;
R_2 is H or loweralkyl; and
R_3 is H, halogen or loweralkyl,
or a pharmaceutically acceptable acid addition salt thereof.

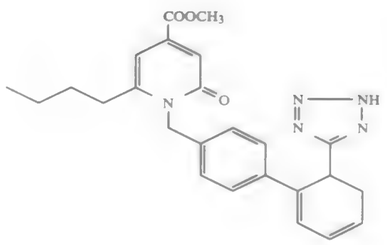
5,356,911

SUBSTITUTED BIPHENYLPYRIDONES

Matthias Müller-Gliemann, Wuppertal; Martin Beuck, Erkrath; Stanislav Kazda; Johannes-Peter Stasch, both of Wuppertal; Andreas Knorr, Erkrath; Stefan Wohlfeil, Hilden; Walter Hübsch, Wuppertal; Jürgen Dressel, Wuppertal; Peter Fey, Wuppertal; Rudolf Hanko, Duesseldorf; Thomas Krämer, Wuppertal; Ulrich Müller, Wuppertal, and Siegfried Zaiss, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 2, 1992, Ser. No. 970,364
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1991, 4137151; Jul. 1, 1992, 4221583
Int. Cl.[5] **C07D** *401/10;* **A61K** *31/44*
U.S. Cl. 514—340 **4 Claims**

1. A compound of the formula



or a salt thereof.

5,356,912

3-(5-ISOXAZOLYL)-1-METHYL-1,2,3,6-TETRAHYDROPYRIDINE USEFUL FOR TREATING ALZHEIMER'S DISEASE

Lone Nielsen, Copenhagen; Frank Wätjen, Vaerloese; Jens W. Kindtler, Kokkedal; Preben H. Olesen, Copenhagen, and Per Sauerberg, Valby, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Division of Ser. No. 268,940, Nov. 8, 1988, Pat. No. 5,262,427. This application Nov. 12, 1993, Ser. No. 151,402
Claims priority, application Denmark, Nov. 13, 1987, 5952/87; Dec. 28, 1987, 6870/87; Mar. 2, 1988, 1102/88
Int. Cl.[5] **C07D** *413/04;* **A61K** *31/44*
U.S. Cl. 514—340 **5 Claims**

1. 3-(5-Isoxazolyl)-1-methyl-1,2,5,6-tetrahydropyridine.

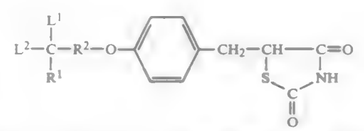
5,356,913

USE OF INSULIN SENSITIZING AGENTS TO TREAT HYPERTENSION

Jerry R. Colca, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 919,515, Jul. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 478,090, Feb. 9, 1990, abandoned. This application Apr. 22, 1993, Ser. No. 52,216
Int. Cl.[5] **A61K** *31/44, 31/425*
U.S. Cl. 514—342 **3 Claims**

1. A method for treating patients who are not exhibiting diabetes but are exhibiting or are susceptible to insulin-resistant hypertension comprising administering to said patient of an effective amount of a thiazolidinedione derivative of the general Formula I



wherein R^1 is alkyl of 1 to 10 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, phenyl alkyl of 7 to 11 carbon atoms, phenyl or 2-pyridyl substituted at the 5 or 6 position by ethyl;
wherein R^2 means a bond or a lower alkylene group;
wherein L^1 and L^2 are the same or different and each is lower alkyl or L^1 and L^2 are combined to form an alkylene group, provided that when R^1 is other than alkyl, L^1 and L^2 may further be hydrogen.

VOL 1167 ISS 3 OC 18 1994 UMI

5,356,914

1,2,5,6-TETRAHYDROPYRIDINE OXIME DERIVATIVES

Steven M. Bromidge; Barry S. Orlek, and Steven Dabbs, all of Harlow, England, assignors to Beecham Group p.l.c., England

PCT No. PCT/GB91/01751, § 371 Date Apr. 5, 1993, § 102(e) Date Apr. 5, 1993, PCT Pub. No. WO92/06959, PCT Pub. Date Apr. 30, 1992

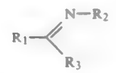
PCT Filed Oct. 9, 1991, Ser. No. 39,156

Claims priority, application United Kingdom, Oct. 12, 1990, 9022232.4; Mar. 27, 1991, 9106490.7

Int. Cl.[5] **C07D** *213/89;* **A61K** *31/44*

U.S. Cl. 514—354 **6 Claims**

1. A compound of Formula (I) or a pharmaceutically acceptable salt thereof:



(I)

wherein R_1 represents a 1,2,5,6-tetrahydropyridin-3-yl group N-substituted by R_{10} wherein R_{10} represents OH; C_{1-8} alkanoyloxy, C_{1-8} alkoxycarbonyloxy, phenyl C_{1-4} alkanoyloxy and —OCONHR$_{12}$ wherein R_{12} is hydrogen, C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-8} alkynyl, C_{3-8} cycloalkyl, phenyl or phenyl C_{1-4} alkyl, or R_{10} is COOZ in which Z represents C_{1-18} alkyl optionally substituted by tri C_{1-6} alkylsilyl or C_{1-6} alkylsulphonyl, C_{2-18} alkenyl, C_{2-18} alkynyl, C_{3-8} cycloalkyl C_{1-4} alkyl, C_{3-10} cycloalkyl, phenyl or phenyl C_{1-4} alkyl; C_{1-8} alkoxy; C_{2-8} alkenyloxy; C_{2-8} alkynyloxy; C_{3-8} cycloalkyloxy; or COR$_{13}$ wherein R_{13} represents hydrogen, C_{1-8} alkyl, phenyl or phenyl C_{1-4} alkyl; any of the above phenyl moieties is optionally substituted by up to 3 substituents independently selected from C_{1-6} alkoxy, C_{1-6} alkyl, halo, C_{1-6} alkoxycarbonyl, cyano, C_{1-6} alkylthio or C_{1-6} alkylsulphonyl; R_2 is a group OR$_4$ where R_4 is C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, a group OCOR$_5$ where R_5 is hydrogen or R_4, or a group NHR$_6$ or NR$_7$R$_8$ where R_6, R_7 and R_8 are independently C_{1-2} alkyl; and R_3 is chloro, fluoro, bromo, C_{1-3} alkyl substituted by one, two or three halogen atoms, or R_3 is a group $(CH_2)_nR_9$ where R_9 is —CN, —OH, —OCH$_3$, —SH or SCH$_3$ and n is O or 1, with the provisio that when n is O, R_9 is not —OH or —SH.

5,356,915

TETRALONES WITH PHARMACOLOGICAL ACTIVITY, COMPOSITIONS CONTAINING THEM

Carmen Almansa; Concepción González; Ma. Carmen Torres; Elena Carceller, and Javier Bartrolí, all of Barcelona, Spain, assignors to J. Uriach & Cia. S.A., Barcelona, Spain

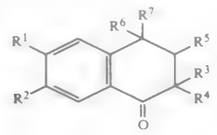
Filed Apr. 20, 1993, Ser. No. 49,865

Claims priority, application Spain, Oct. 19, 1992, 92 02203

Int. Cl.[5] **A61K** *31/44;* **C07D** *213/89*

U.S. Cl. 514—357 **24 Claims**

1. A compound of formula I:



wherein:

R^1 and R^2 independently represent hydrogen, C_{1-4} alkyl, hydroxy, C_{1-4} alkoxy, formyl, C_{1-4} alkylcarbonyl, C_{1-4} alkylthiocarbonyl, carboxyl, C_{1-4} alkoxycarbonyl, C_{1-4} alkoxythiocarbonyl, C_{1-4} alkylcarbonyloxy, C_{1-4} alkylthiocarbonyloxy, hydroxy-(C_{1-4}) alkyl, mercapto-(C_{1-4}) alkyl, perfluoro-(C_{1-4}) alkyl, nitro, amino, cyano, halogen, trifluoromethoxy, ethynyl, trimethylsilylethynyl, C_{1-4} alkylsulfinyl, arylsulfinyl, C_{1-4} alkylsulfonyl, arylsulfonyl, C_{1-4} alkoxysulfinyl, C_{1-4} alkoxysulfonyl, C_{1-4} alkylcarbonylamino, C_{1-4} alkoxycarbonylamino, aminosulfinyl, aminosulfonyl, aminocarbonyl, aminothiocarbonyl, C_{1-4} alkylsulfinylamino, C_{1-4} alkylsulfonylamino, C_{1-4} alkoxysulfinylamino, C_{1-4} alkoxysulfonylamino, (C_{1-4} alkyl)carbonyl(C_{1-4} alkyl), nitro-(C_{1-4} alkyl), cyano-(C_{1-4} alkyl), (C_{1-4} alkyl)C(=NOH), (C_{1-4} alkyl)C(=NNH$_2$) or (C_{1-4} alkoxy)C(=NH), the above amino groups being optionally substituted by one or two C_{1-4} alkyl groups;

R^3 and R^4 are the same or different and independently represent a C_{1-4} alkyl group, or R^3 and R^4 together form a C_{2-5} polymethylene chain;

R^5 is hydrogen and then R^6 represents hydrogen, hydroxy or C_{1-4} alkoxy, or R^5 is hydroxy and then R^6 is hydrogen, or else R^5 and R^6 together with the ring carbons form a bond or a group of formula:



R^7 is a 2-, 3- or 4-pyridyl radical which can be optionally substituted by a hydroxy group or whose nitrogen atom can be optionally in the form of the N-oxide; or pharmaceutically acceptable salt or solvate thereof.

5,356,916

1,2,4-OXADIAZOLE DERIVATIVES HAVING MONOAMINE OXIDASE B ENZYME-INHIBITORY ACTIVITY

Hatsunori Toyofuku, Yokohama; Jun Matsumoto, Kanagawa; Toshie Takahashi, Yamato; Masakazu Ebie, Gifu; Naomi Sasada, Isehara; Mitsuzi Agata; Shohei Sawaki, both of Kanagawa, and Masayoshi Goto, Isehara, all of Japan, assignors to Wakamoto Pharmaceutical Co., Ltd., Tokyo, Japan

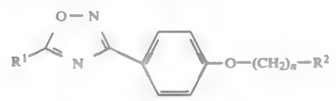
Filed Jan. 31, 1992, Ser. No. 830,298

Claims priority, application Japan, Mar. 22, 1991, 3-081198

Int. Cl.[5] **C07D** *271/06;* **A61K** *31/41*

U.S. Cl. 514—364 **13 Claims**

9. A method of using a pharmaceutical composition containing a 1,2,4-oxadiazole derivative represented by the following formula (I) or an acid salt thereof;



(I)

wherein R^1 represents a lower alkyl or cycloalkyl group, a lower alkyl group substituted with halogen atoms, a lower alkylamino group or a phenyl group; R^2 represents a hydrogen atom, a lower dialkylamino group, a cyclic alkylamino group, a cyclic amino group having an oxygen or nitrogen atom in the ring, a phenyl group which may be substituted with a halogen atom, a pyridyl group, an imidazolyl group, an alkyl imidazolyl group, a benzimidazolyl group or a 2-oxopyrolidinyl group; and n is 1, 2 or 3, to treat Parkinson's disease comprising administering an effective amount of said composition to a patient suffering from Parkinson's disease.

5,356,917

ARYL-SUBSTITUTED RHODANINE DERIVATIVES

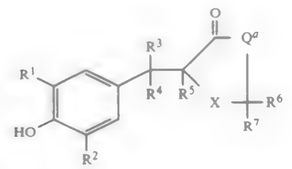
Jill A. Panetta, Zionsville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 839,693, Feb. 20, 1992, abandoned, which is a continuation of Ser. No. 504,147, Apr. 3, 1990, abandoned, which is a continuation-in-part of Ser. No. 335,063, Apr. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 304,919, Feb. 1, 1989, abandoned, which is a continuation of Ser. No. 114,278, Oct. 27, 1987, abandoned, which is a continuation of Ser. No. 869,488, Jun. 2, 1986, abandoned, which is a continuation-in-part of Ser. No. 764,160, Aug. 9, 1985, abandoned. This application Aug. 24, 1993, Ser. No. 111,226

Int. Cl.[5] **C07D** *277/14;* **A61K** *31/425*

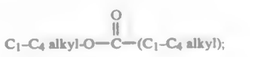
U.S. Cl. 514—369 **90 Claims**

1. A compound of the formula (I):



wherein:

R^1 and R^2 are each independently hydrogen, C_1-C_6 alkyl, C_1-C_6 alkoxy or



C_1–C_4 alkyl-O—C(=O)—(C_1–C_4 alkyl);

R^3 is hydrogen or C_1-C_6 alkyl;

R^4 and R^5 are each hydrogen, or when taken together form a bond;

R^6 and R^7 are each hydrogen;

X is

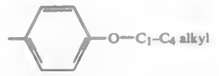


where m is 0, 1 or 2; and

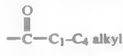
Q is NR^8 where R^8 is C_2-C_6 alkenyl, C_3-C_8 cycloalkyl, —SO_2CH_3 or —$(CH_2)_n$—Y, where n is an integer from 0 to 3, both inclusive, and Y is cyano, OR^9,



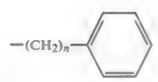
tetrazolyl, —NR^{11}R^{12}, —SH, —S(C_1-C_4 alkyl) or



where R^9 is hydrogen, C_1-C_4 alkyl, tosyl or



R^{10} is C_1-C_4 alkoxy or NH_2; R^{11} and R^{12} are each independently hydrogen, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, —$(CH_2)_q$OH, —$(CH_2)_q$N(C_1-C_4 alkyl)$_2$, —$(CH_2)_q$S(C_1-C_4 alkyl) or



where q is an integer from 1 to 6, both inclusive, and n is as defined above, or R^{11} and R^{12} taken together form a morpholinyl, piperidinyl, piperazinyl or N-methylpiperazinyl ring.

5,356,918

OXAZOLIDINONE COMPOUNDS AND METHOD OF USING THE SAME AS A VASODILATOR

Sadao Ishihara; Fujio Saito; Takao Yoshioka; Hiroyuki Koike; Shigeki Miyake, and Hiroshi Mizuno, all of Tokyo, Japan, assignors to Sankyo Company, Ltd., Tokyo, Japan

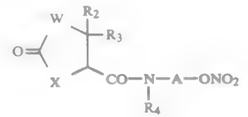
Division of Ser. No. 856,491, Mar. 24, 1992, Pat. No. 5,298,516. This application Dec. 6, 1993, Ser. No. 162,675

Claims priority, application Japan, Mar. 27, 1991, 3-63088; May 8, 1991, 3-102751; Dec. 13, 1991, 3-330304

Int. Cl.[5] **C07D** *263/24;* **A61K** *31/42*

U.S. Cl. 514—376 **27 Claims**

1. A compound of formula (I):



(I)

wherein:

W represents an oxygen atom and X represents a group of formula —N(R^1)—, or W represents a group of formula —N(R^1)— and X represents an oxygen atom;

R^1 represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms or an aralkyl group in which an aryl group, as defined below, is a substituent on an alkyl group having from 1 to 4 carbon atoms;

R^2 and R^3 are independently selected from the group consisting of:

hydrogen atoms;

alkyl groups having from 1 to 6 carbon atoms;

aralkyl groups in which an aryl group, as defined below, is a substituent on an alkyl group having from 1 to 4 carbon atoms;

aryl groups, as defined below;

aromatic heterocyclic groups having an aromatic ring containing 5 or 6 ring atoms of which from 1 to 3 are hetero-atoms selected from the group consisting of nitrogen, oxygen and sulfur atoms and the remaining ring atoms are carbon, said heterocyclic group being unsubstituted or being substituted by at least one substituent selected from the group consisting of substituents (a), defined below; and fused ring systems in which an aromatic heterocyclic group, as defined above, is fused to a benzene ring;

R^4 represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms or an aralkyl group in which an aryl group, as defined below, is a substituent on an alkyl group having from 1 to 4 carbon atoms; and

A represents an alkylene group having from 2 to 6 carbon atoms in a straight or branched carbon chain and being unsubstituted or being substituted by one carboxy substituent;

said aryl groups have from 6 to 10 ring carbon atoms in at least one aromatic ring and are unsubstituted or are substituted by at least one substituent selected from the group consisting of substituents (b), defined below;

substituents (a) are selected from the group consisting of:

VOL 1167 ISS 3 OC 18 1994 UMI

alkyl groups having from 1 to 6 carbon atoms; and
groups of formula —NR^aR^b, where R^a and R^b are independently selected from the group consisting of hydrogen atoms and alkyl groups having from 1 to 6 carbon atoms;
substituents (b) are selected from the group consisting of:
alkyl groups having from 1 to 6 carbon atoms;
alkoxy groups having from 1 to 6 carbon atoms;
halogen atoms;
groups of formula —NR^aR^b, where R^a and R^b are as defined above;
hydroxy groups; and
nitro groups;
and pharmaceutically acceptable salts and esters thereof.

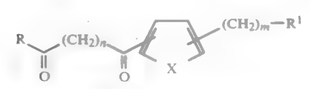
5,356,919

LEUKOTRIENE B_4 SYNTHESIS INHIBITORS

Stevan W. Djuric, Glenview; Richard A. Haack, and Julie M. Miyashiro, both of Chicago, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed May 30, 1991, Ser. No. 707,522
Int. Cl.[5] A61K *31/41;* **C07D** *257/04*
U.S. Cl. 514—381 **6 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof
wherein X is —CH=CH—;
wherein R^1 is tetrazole;
wherein R is an alkyl of from 1 to 20 carbons, —$(CH_2)_pCF_3$ or —$(CH_2)_qR^3$ wherein R^3 is alkoxy, phenoxy or alkoxy substituted phenoxy wherein the alkoxy group has from 1 to 8 carbons;
wherein p and q are integers from 0 to 20;
wherein n is 0 or 1; and
wherein m is 0, 1, 2, or 3.

5,356,920

IMIDAZOL-2-YL DERIVATIVES OF SUBSTITUTED BICYCLIC COMPOUNDS

Paolo Cozzi; Daniele Fancelli; Severino Dino, all of Milan; Augusto Chiari, Florence, and Giancarlo Ghiselli, Busto Arsizio, all of Italy, assignors to Farmitalia Carlo Erba SRL., Milan, Italy

PCT No. PCT/EP91/02228, § 371 Date Jul. 24, 1992, § 102(e) Date Jul. 24, 1992, PCT Pub. No. WO89/08646, PCT Pub. Date Sep. 21, 1989
PCT Filed Nov. 26, 1991, Ser. No. 915,835
Claims priority, application United Kingdom, Nov. 28, 1990, 9025848
Int. Cl.[5] A61K *31/415;* **C07D** *405/02, 233/60*
U.S. Cl. 514—397 **4 Claims**

1. A compound selected from:
ethyl 5-[2-benzyl-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran-6-yl]oxy-2,2-dimethylpentanoate;
ethyl 5-[2-(2-phenylethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran-6-yl]oxy-2,2-dimethylpentanoate;
isopropyl 5-[2-(2-phenylethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran-6-yl]oxy-2,2-dimethylpentanoate;
ethyl 5-[2-(2-(4-fluorophenyl)ethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran-6-yl]oxy-2,2-dimethylpentanoate;
ethyl 1-[3-(2-(2-phenylethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran-6-yl]oxypropyl]cyclopentane-1-carboxylate;
ethyl 5-[2-(2-phenylethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran-7-yl]oxy-2,2-dimethylpentanoate;
5-[2-(2-(4-fluorophenyl)ethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran-6-yl]oxy-2,2-dimethyl-N-isobutylpentanamide;
5-[2-(2-phenylethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran-6-yl]oxy-2,2-dimethyl-N-cyclohexylpentanamide;
5-[2-(2-phenylethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran-6-yl]oxy-2,2-dimethyl-N-(2,4-dimethoxyphenyl)pentanamide;
5-[2-(2-phenylethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran-6-yl]oxy-2,2-dimethyl-N-(2,4,6-trifluorophenyl)pentanamide;
5-[2-(2-phenylethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran-6-yl]oxy-2,2-dimethyl-N-(2,4,6-trimethoxyphenyl)pentanamide;
5-[2-(2-phenylethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran-6-yl]oxy-2,2-dimethyl-N-(2,6-diisopropylphenyl)pentanamide;
5-[2-(2-(4-fluorophenyl)ethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran-6-yl]oxy-2,2-dimethyl-N-(2,6-diisopropylphenyl)pentanamide;
5-[2-(2-(2,4-difluorophenyl)ethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran-6-yl]oxy-2,2-dimethyl-N-(2,4-dimethoxypenyl)pentanamide;
5-[2-(2-(4-fluorophenyl)ethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran-6-yl]oxy-2,2-dimethyl-N-cyclohexylpentanamide;
1-[3-[2-(2-phenylethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran-6-yl]oxypropyl]cyclopentane-1-N-(2,6-diisopropylphenyl)carboxamide;
1-[3-[2-(2-phenylethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran-6-yl]oxypropyl]cyclopentane-1-N-cyclohexylcarboxamide;
1-[3-[2-(2-(2,4-difluorophenyl)ethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran-6-yl]oxypropyl]cyclopentane-1-N-(2,6-diisopropylphenyl)carboxamide;
5-[2-(2-(2,4-difluorophenyl)ethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran-6-yl]oxy-2,2-dimethyl-N-(2,6-diisopropylphenyl)pentanamide;
5-[2-(2-(4-fluorophenyl)ethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-benzopyran-6-yl]oxy-2,2-dimethyl-(N-(2,4-dimethoxyphenyl)pentanamide;
6-(4,4-dimethyl-5-oxooctyl)oxy-2-propyl-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran;
6-(4,4-dimethyl-5-oxooctyl)oxy-2-(2-phenylethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran;
6-(4,4-dimethyl-6-cyclohexyl-5-oxohexyl)oxy-2-(2-phenylethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran; and
methyl 5-[2-(2-(2,4-difluorophenyl)ethyl)-3-(1-methyl-1H-imidazol-2-yl)-2H-1-benzopyran-6-yl]oxy-2,2-dimethylpentanoate
and the pharmaceutically acceptable salts thereof; each compound existing either as a single isomer or as a mixture of isomers thereof.

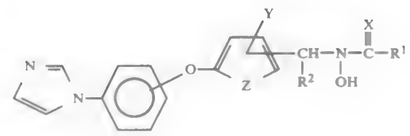
5,356,921

IMIDAZOLYLPHENOL COMPOUNDS, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM, AND PROCESSES FOR PREPARING SUCH COMPOUNDS AND COMPOSITIONS

Joachim Ammann, Aachen; Michael Haurand, Stolberg; Cornelia Geist, Aachen; Werner Englberger, Stolberg, and Oswald Zimmer, Wuerselen, all of Fed. Rep. of Germany, assignors to Gruenenthal GmbH, Aachen, Fed. Rep. of Germany

Filed Feb. 17, 1993, Ser. No. 19,193
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1992, 4204686
Int. Cl.[5] A61K *31/535;* **C07D** *233/60*
U.S. Cl. 514—397 **16 Claims**

1. A 3- or 4- (1H-imidazol-1-yl) phenol compound corresponding to the formula I



(I)

wherein
R^1 represents NH_2 or CH_3,
R^2 represents H or CH_3,
X represents O or S,
Y represents H, OH or OCH_3, and
Z represents —CH=CH—, O or S, or a pharmaceutically acceptable salt thereof.

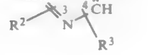
5,356,922

IMIDAZOLE COMPOUNDS, PROCESSES FOR THEIR PREPARATION, PHARMACEUTICALS BASED ON THESE COMPOUNDS AND SOME INTERMEDIATES

Rolf Graeve, Taunusstein; Ismahan Okyayuz-Baklouti, Wiesbaden, and Dirk Seiffge, Mainz, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 652,606, Feb. 8, 1991, Pat. No. 5,232,922.
This application May 7, 1993, Ser. No. 57,887
Int. Cl.[5] A61K *31/415, 31/535;* **C07D** *413/12*
U.S. Cl. 514—398 **5 Claims**

1. An imidazole compound of the formula I



(I)

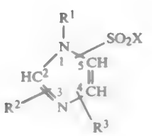
in which
R^1 is $(C_1–C_6)$-alkyl,
R^2 and R^3 are identical or different and in each case are H, halogen, or $(C_1–C_3)$-alkyl,
X is an amino group of the formula II



(II)

in which
R^4 is H, and
R^5 is a $(C_2–C_5)$-alkyl radical or said $(C_2–C_5)$-alkyl radical in which there is a phenylene radical between 2 carbon atoms and its aliphatic carbon atoms are substituted by a total of 1 or 2 of the following groups:
C_6H_4OH,
CN,
$(C_2–C_3)$-alkynyl,
NH_2, NHR^6 or $N(R^6)_2$ in which R^6 is identical or different and is $(C_1–C_3)$-alkyl, $(C_2–C_4)$-alkoxyalkyl or benzyl,
or a physiologically tolerable sale thereof.

2. A pharmaceutical composition for the prophylaxis or treatment of disturbances of the microcirculation, which comprises an effective amount of at least one imidazole compound of the formula I



(I)

in which
R^1 is $(C_1–C_6)$-alkyl,
R^2 and R^3 are identical or different and in each case are H, halogen, or $(C_1–C_3)$-alkyl,
X is OH, or an amino group of the formula II



(II)

in which
R^4 is H, or $(C_1–C_7)$-alkyl or said $(C_1–C_7)$-alkyl substituted by CN, NH_2 or COOH, and
R^5 is $(C_1–C_8)$-alkyl in which, when it contains more than 1 carbon atom, there can also be a phenylene radical between 2 carbon atoms and in which the aliphatic carbon atoms are substituted by 1 or more of:
OH,
$(C_1–C_3)$-alkoxy,
phenyl, or phenyl substituted by 1 to 3 of OH, $(C_1–C_3)$-alkyl, $(C_1–C_3)$-alkoxy-COOH, or $(C_1–C_3)$-alkoxy-$(C_1–C_4)$-alkyl,
COOH,
$COO(C_1–C_3)$-alkyl,
$CONH_2$,
CN,
$(C_2–C_5)$-alkynyl,
NH_2,
NHR^6, $N(R^6)2$ or $N^{\oplus}(R^6)_3$ in which R^6 is identical or different and is $(C_1–C_4)$-alkyl, $(C_2–C_6)$-alkoxyalkyl or phenylalkyl, having 1–3 carbon atoms in the alkyl moiety,
NH-CO-$(C_1–C_6)$-alkyl,
or at least one physiologically tolerable salt thereof together with a physiologically acceptable excipient.

5,356,923

1-HYDROXY-4(3-CYCLOPENTYLOXY-4-METHOXY-PHENYL)-2-PYRROLIDONE AND ANTI-HYPERTENSIVE USE THEREOF

Reijo Bäckström, Helsinki; Erkki Honkanen; Atso Raasmaja, both of Espoo, and Inge-Birtt Linden, Helsinki, all of Finland, assignors to Orion-yhtymä Oy, Espoo, Finland

PCT No. PCT/FI91/00123, § 371 Date Oct. 22, 1992, § 102(e) Date Oct. 22, 1992, PCT Pub. No. WO91/16303, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 26, 1991, Ser. No. 940,853
Claims priority, application United Kingdom, Apr. 26, 1990, 9009395
Int. Cl.[5] C07D *207/46;* **A61K** *31/40*
U.S. Cl. 514—425 **4 Claims**

1. 1-Hydroxy-4-(3-cyclopentyloxy-4-methoxyphenyl)-2-pyrrolidone.

VOL 1167 ISS 3 OCT 18 1994 UMI

5,356,924

PESTICIDAL BENZODIOXOLE

Martin Anderson, Kent; Antony G. Brinnand, and Roger E. Woodall, all of Kent, England, assignors to Shell Research Limited, United Kingdom

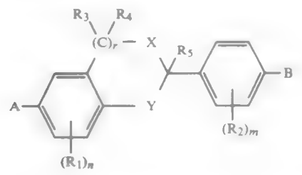
Division of Ser. No. 727,051, Jul. 9, 1991, Pat. No. 5,212,171. This application Feb. 22, 1993, Ser. No. 20,416

Claims priority, application United Kingdom, Jul. 31, 1990, [illegible]

Int. Cl.[5] C07D *319/02, 319/08;* A61K *31/335*

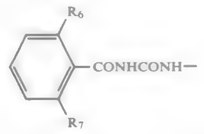
U.S. Cl. 514—434 10 Claims

1. A compound of the formula:



(I)

wherein R_1 and R_2 each independently represents a halogen atom or an alkyl, alkoxy, haloalkyl, haloalkoxy, alkoxycarbonyl, alkenoxy, cyano or nitro group; R_3 and R_4 each independently represents a hydrogen atom or an alkyl group; R_5 represents a hydrogen atom, or an alkyl, alkoxy or alkoxycarbonylalkyl group; X and Y each independently represents an oxygen atom or a group N—R, in which R is a hydrogen atom or an alkyl group; n is 0–3; r is 0; m is 0–4; and A or B represents a group of the formula:



(II)

wherein R_6 represents a hydrogen or halogen atom, or an alkyl group; and R_7 represents a halogen atom or an alkyl group; the other of A and B being a hydrogen atom or as for R_1 or R_2.

5,356,925

N-(MERCAPTOALKYL)UREAS AND CARBAMATES

Bernard R. Neustadt, West Orange, and Alan Bronnenkant, Verona, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

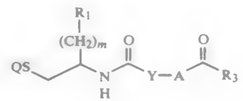
PCT No. PCT/US91/05587, § 371 Date Feb. 11, 1993, § 102(e) Date Feb. 11, 1993, PCT Pub. No. WO92/03410, PCT Pub. Date Mar. 5, 1992

Continuation-in-part of Ser. No. 568,569, Aug. 16, 1990, Pat. No. 5,173,506. This PCT application Aug. 14, 1991, Ser. No. 969,163

Int. Cl.[5] A61K *31/165, 31/385;* C07C *327/08*

U.S. Cl. 514—435 10 Claims

1. A compound having the structural formula



wherein:

A is a monocyclic or bicyclic arylene;

Q is hydrogen or R_9CO—;

Y is —O—, —S— or $—NR_8$—;

R_1 is lower alkyl, cyclolower alkyl or aryl;

R_8 is hydrogen; lower alkyl; cyclolower alkyl; lower alkyl substituted with hydroxy, lower alkoxy, mercapto, lower alkylthio or aryl; or aryl;

R_3 is $—OR_5$ or $—NR_5R_6$;

R_5 and R_6 are independently selected from the group consisting of hydrogen, lower alkyl, hydroxy lower alkyl, lower alkoxy lower alkyl and aryl lower alkyl;

R_9 is hydrogen, lower alkyl or aryl; and

m is 1 or 2;

or a pharmaceutically acceptable salt thereof.

5,356,926

3-ALKYLOXY-, ARYLOXY-, OR ARYLALKYLOXY-BENZO [β]THIOPHENE-2-CARBOXAMIDES AS INHIBITORS OF CELL ADHESION

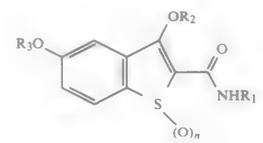
Diane H. Boschelli, Plymouth; David T. Connor, and Clifford D. Wright, both of Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 840,361, Feb. 24, 1992, Pat. No. 5,208,253. This application Feb. 9, 1993, Ser. No. 15,005

Int. Cl.[5] A61K *31/38;* C07D *333/68*

U.S. Cl. 514—445 11 Claims

1. A compound of the formula



wherein n is the number 0 or 1;

R_1 is hydrogen or lower alkyl provided R_1 is not hydrogen when n is 0;

R_2 is lower alkyl, and

R_3 is hydrogen or lower alkyl or a pharmaceutically acceptable salt thereof.

5,356,927

METHODS OF TREATING PLASMODIUM AND BABESIA PARASITIC INFECTIONS

Theodore F. Taraschi, Tabernacle, N.J., and Bruno Pouvelle, Philadelphia, Pa., assignors to Thomas Jefferson University, Philadelphia, Pa.

Filed Dec. 2, 1992, Ser. No. 984,915

Int. Cl.[5] A61K *31/335*

U.S. Cl. 514—449 2 Claims

1. A method of treating a Plasmodium or Babesia infection in a mammal comprising administering to a mammal suffering from a Plasmodium or Babesia infection a therapeutically effective amount of taxol.

5,356,928

CYTOTOXIC AGENTS

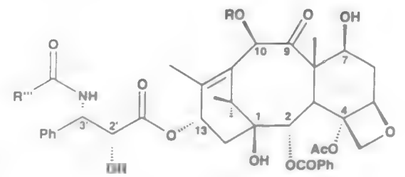
Christopher K. Murray; David T. Bailey, both of Boulder; S. Kent Peterson, Denver, and Jeffrey T. Beckvermit, Boulder, all of Colo., assignors to Hauser Chemical Research, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 973,076, Nov. 6, 1992, abandoned. This application Sep. 17, 1993, Ser. No. 122,921

Int. Cl.[5] C07D *305/14;* A61K *31/335*

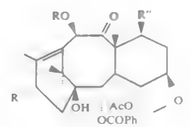
U.S. Cl. 514—449 8 Claims

1. A pharmaceutical composition comprising a carrier and an effective cytotoxic amount of the compound:



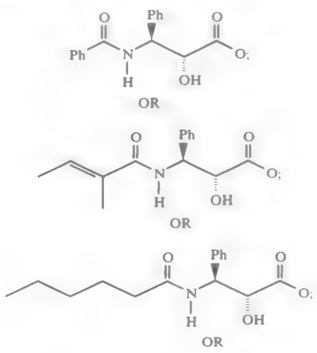
1 taxol: R = Ac, R''' = C_6H_5

2 Taxotere: R = H, R''' = OtBu



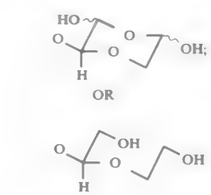
Wherein R represents Ac or H;

R′ represents:



OH; and

R″ represents:



5,356,929

REDUCED AND QUATERNIZED PSORALENS AS PHOTO-ACTIVATED THERAPEUTICS

Ned D. Heindel, Easton, Pa., and Jeffrey D. Laskin, Piscataway, N.J., assignors to Lehigh University, Bethlehem, Pa.

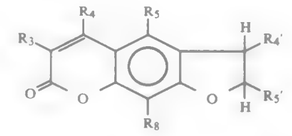
Continuation-in-part of Ser. No. 633,268, Dec. 21, 1990, Pat. No. 5,216,176, which is a continuation-in-part of Ser. No. 300,869, Jan. 23, 1989, abandoned. This application Apr. 23, 1993, Ser. No. 52,660

Int. Cl.[5] C07D *307/77*

U.S. Cl. 514—455 32 Claims

1. A photochemotherapeutic compound wherein said compound is a psoralen from the group consisting of

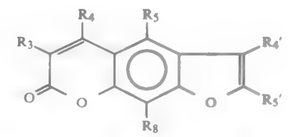
(A) a compound having the structure of Formula I



I

wherein R_3 is H, amino, nitro, carboethoxy, halo or alkyl,
wherein R_4 is H, methyl or trifluromethyl,
wherein R_5 is H or alkoxy,
wherein R_4' and R_5' are alkylamino or halo, and
wherein R_8 is H, alkyl, halo, haloakyl or alkoxy,

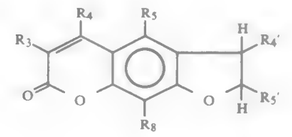
(B) a compound having the structure of Formula II



II

wherein R_3 is H, alkyl or halo,
wherein R_4 is H, methyl or trifluoromethyl,
wherein R_5 is H or alkoxy,
wherein R_4' and R_5' are alkylammonium, alkyl or halo, and at least one of R_4' and R_5' is alkylammonium, and
wherein R_8 is H, alkyl, halo, haloalkyl or alkoxy, and,

(C) a compound having the structure of Formula III



III

wherein R_3 is H, amino, alkyl or halo,
wherein R_4 is H, methyl or trifluoromethyl,
wherein R_5 is H or alkoxy,
wherein R_4' and R_5' are alkyl, halo or alkylammonium and at least one of R_4' and R_5' is alkylammonium, and
wherein R_8 is alkyl, halo, haloalkyl or alkoxy.

VOL 1167 ISS 3 OCT 18 1994 UMI

5,356,930

AMIDE DERIVATIVES, THEIR PRODUCTION PROCESSES AND THEIR COMPOSITIONS FOR THE CONTROL OF INSECT PESTS

Hiroshi Kisida; Akira Shuto, both of Takarazuka; Noriyasu Sakamoto, Nishinomiya; Noritada Matsuo, Itami; Hiroaki Fujimoto, and Kimitoshi Umeda, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

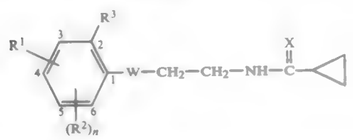
Continuation of Ser. No. 881,470, May 11, 1992, abandoned. This application Aug. 5, 1993, Ser. No. 102,337

Claims priority, application Japan, May 20, 1991, 3-145520

Int. Cl.[5] A01N *37/18*

U.S. Cl. 514—599 **3 Claims**

1. A method for controlling insect pests belonging to Hemiptera which comprises applying to the insect pests or the locus where the insect pests propagate an effective amount of an amide derivative of the formula:



wherein R^1 is a group of the formula: —Y—$C_6H_{(5-m)}(R^4)_m$ or a group of the formula: —Z—R^5; R^2 is a hydrogen atom; R^3 is a chlorine atom; R^4 is, the same or different, a hydrogen atom, a fluorine atom, a chlorine atom or a methyl group; R^5 is a C_3–C_6 alkyl group or an alkoxyalkyl group having 3 to 6 carbon atoms; W is an oxygen atom; X is an oxygen atom or a sulfur atom; Y is an oxygen atom or a methylene group Z is an oxygen atom or a single bond when R^5 is a C_3–C_6 alkyl group, or a single bond when R^5 is an alkoxyalkyl group having 3 to 6 carbon atoms; n is a integer of 1; m is an integer 1 or 2.

5,356,931

USE OF α-ARYLACRYLIC DERIVATIVES FOR CONTROLLING PESTS

Reinhard Kirstgen, Neustadt; Rainer Otter, Landenbach; Christoph Kuenast, Otterstadt; Uwe Kardorff, Mannheim; Wolfgang Steglich, Bonn-Roettgen, and Gunda Bertram, Bonn, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

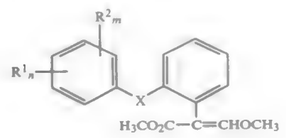
Division of Ser. No. 757,409, Sep. 10, 1991, abandoned. This application Jan. 4, 1993, Ser. No. 574

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1990, 4029192

Int. Cl.[5] A01N *47/10, 37/10, 47/40*

U.S. Cl. 514—478 **9 Claims**

1. A method of controlling arachnids, wherein the arachnids are treated with an arachnicidally effective amount of an alpha-arylacrylic acid derivative of the formula I



where

X is ethenylene;

n is 0 or 1;

m is 0, 1, 2, 3, or 4, and the radicals R^2 may be different when m is 2, 3, or 4;

R_1 is cyano, cyanato, thiocyanato, nitro hydroxyl, or carboxyl, C_1–C_4-haloalkyl, C_1–C_4 haloalkoxy, C_3–C_8-cycloalkyl, C_5–C_8-cycloalkenyl or C_5–C_8-cycloalkadienyl, where these groups may carry from one to five halogen atoms, one phenyl, phenoxy or phenylthio group or may carry from one to three of the following groups: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio; C_2–C_6-alkenyl or C_2–C_6-alkynl, where these groups may carry from one to five halogen atoms, one phenyl, phenoxy or phenylthio group or may carry from one to three of the following groups: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio; amino which may carry one, C_1–C_6-alkylcarbonyl, C_1–C_6-alkoxycarbonyl, C_1–C_6-alkylaminocarbonyl, di-C_1–C_6-alkylaminocarbonyl; benzyloxycarbonyl, benzoyl, phenyl-C_1–C_4-alkyl, phenyl-C_1–C_4-alkoxy, or phenoxy-C_1–C_4-alkyl, where the aromatic groups may carry from one to five halogen atoms or may carry from one to three of the following groups: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio;

or R^1 together with R^2 in the ortho-position may form a 1, 3-butadiene-1, 4-diyl group, where this group may carry from one to four halogen atoms or may carry one or two of the following groups: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio; or a three-membered or four-membered chain consisting of carbon members and an oxygen member, where this chain may carry from one to three C_1–C_4-alkyl groups, and

R^2 is halogen; C_1–C_{10}-alkyl, C_1–C_6-alkoxy, C_2–C_{10}-alkynyloxy or C_5–C_{10}-alkadienyloxy, where these groups may carry from one to five halogen atoms, one phenyl, phenoxy or phenylthio group or may carry from one to three of the following groups: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio; benzyloxy or benzylthio, where the aromatic groups may carry from one to five halogen atoms, one phenyl, phenoxy or phenylthio group or may carry from one to three of the following groups: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkylthio, provided that n is not 0 when m is 0; n is not 0 when m is 1 and R^2 denotes halogen in 4-position of the phenyl radical or when m is 2 and R2 denotes halogen in 2- and 6-position of the phenyl group.

5,356,932

METHODS AND COMPOSITIONS FOR CONTROLLING INTRAOCULAR PRESSURE WITH TRANSITION METAL COMPLEXES

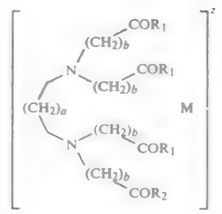
Hans R. Moll, Weatherford; Mark T. DuPriest, Fort Worth, and Daniel Kuzmich, Lewisville, all of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 680,641, Apr. 2, 1991, abandoned, which is a continuation of Ser. No. 354,583, May 22, 1989, abandoned. This application Aug. 9, 1993, Ser. No. 104,242

Int. Cl.[5] A61K *31/295*

U.S. Cl. 514—502 **12 Claims**

1. A method for controlling intraocular pressure in persons suffering from primary open angle glaucoma which comprises, administering a composition comprising a therapeutically effective amount of a transition metal complex comprising an organic liquid which is a non-hetero compound of the following structure:



wherein:

a is 0 or 1;

b is 1 or 2;

M is a transition metal [Fe^{+3}, Fe+2, Co^{+3}, Cr^{+3}, V^{+3}, Cu^{+2} or Mn^{+2}]; and

R_1=R_2=—OH or —O^-; or

R_1=—OH or —O^- and R_2=—O-alkyl, (C_1 through C_{18}), —O-aryl, —alkyl-aryl, —NH-$(CH_2)_n$-NH-peptide or protein, wherein n=1–6, or —NR_3R_4, wherein R_3 and/or R_4 can be hydrogen, any saturated or unsaturated alkyl or cycloalkyl group (C_1 through C_{18}), any aryl, alkylaryl, heteroalkyl and heteroaryl group with or without one or more functional groups such as F, Cl, Br or I; amino, imino or nitrilo; alcohol, ether, carbonyl or carboxyl including esters and amides; thiol, thioether, sulfoxide or sulfone; thiocarboxyl and sulfonate including esters and amides; and any phosphorous containing functional group; and one or more of any H-atom present in the four acid-moieties and/or in the diamine moiety may be substituted by one or more of the following groups: straight chain and/or branched saturated and unsaturated alkyl groups up to 14 carbons; single and/or polynuclear aryl groups up to 14 carbons; alkyl-aryl groups up to 14 carbons; and z is −1 when R_1=R_2=—O^- or OH and M is Fe^{+3}, Co^{+3}, Cr^{+3} or V^{+3}; z is −2 when R_1=R_2=—O^- or —OH and M is Fe^{+2}, Cr^{+2} or Mn^{+2}; is 0 when R_1 is —O^- or —OH, —R_2 is an ester or amide and M is Fe^{+3}, Co^{+3}, Cr^{+3} or V^{+3}.

5,356,933

ANTIFUNGAL COMPOUNDS

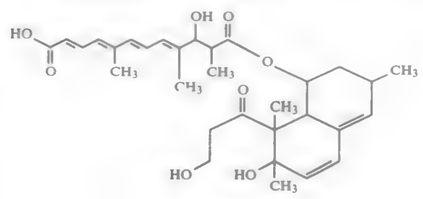
Gregory M. Brill, Wildwood; James B. McAlpine, Libertyville, both of Ill., and Ronald R. Rasmussen, Burlington, Wis., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 874,671, Apr. 27, 1992, abandoned. This application Jun. 28, 1993, Ser. No. 84,335

Int. Cl.[5] A01N *37/06;* **C07C** *61/22*

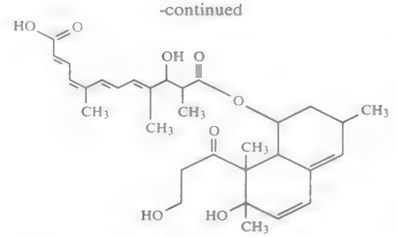
U.S. Cl. 514—548 **5 Claims**

1.A compound selected from the group consisting of



and

-continued



and the pharmaceutically acceptable salts and prodrugs thereof.

5,356,934

SELECTED SEROTONIN SUBTYPE RECEPTOR AGONIST TO TREAT SLEEP APNEA

David W. Robertson, Greenwood, and David T. Wong, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 946,827, Sep. 16, 1992, abandoned, which is a continuation of Ser. No. 501,060, Mar. 29, 1990, abandoned. This application Jun. 21, 1993, Ser. No. 80,597

The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.

Int. Cl.[5] A61K *31/135*

U.S. Cl. 514—649 **4 Claims**

1. A method for treating sleep apnea in mammals which comprises administering to a mammal requiring sleep apnea treatment an effective amount of (R)-fluoxetine or a pharmaceutically acceptable acid addition salt or solvate thereof.

5,356,935

REDUCED PHENANTHRENES

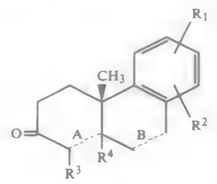
James E. Audia, Indianapolis; Thomas C. Britton, Carmel, and Patrick G. Spinazze, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 13, 1993, Ser. No. 166,471

Int. Cl.[5] A61K *31/335, 31/135;* **C07C** *211/42;* **C07D** *303/32*

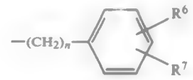
U.S. Cl. 514—656 **16 Claims**

1. A compound of the formula I



wherein each of dotted lines A and B represents a single bond or a double bond, provided that B does not represent a double bond unless A also represents a double bond;

R^1 and R^2 independently represent hydrogen, halo, trifluoromethyl, C_1–C_4 alkyl, —$(CH_2)_nCOR^5$, or



provided that no more than one of R^1 and R^2 represents hydrogen;

n represents 0–3;

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R^5 represents hydroxy, C_1–C_3 alkyl, C_1–C_3 alkoxy, phenoxy, phenyl, amino, C_1–C_3 alkylamino or di $<C_1$–C_3 alkyl $)$ amino;
R^6 and R^7 independently represent hydrogen, C_1–C_4 alkyl, halo or trifluoromethyl;
when A is a single bond, R^3 and R^4 together represent epoxy;
when A is a double bond, R^3 represents amino or azido, and R^4 is absent.

5,356,936

PROCESS FOR PRODUCING HYDROPHILIC POLYMER MEMBRANES

Barbara F. Howell; Ravanasamudram S. Venkatachalam, both of Arnold, and John P. Wehrle, Riverdale, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 28, 1993, Ser. No. 128,289
Int. Cl.[5] C08J *5/20*
U.S. Cl. 521—27 **10 Claims**

1. A process for enhancing the crosslinking and hydrophilicity of a hydrophilic polymer that is disposed as a coating on a porous membrane to form a coated membrane said process comprising exposing said coated membrane to an oxygen plasma to form a highly hydrophilic membrane having increased efficiency and durability for separating hydrophobic and hydrophilic materials wherein said hydrophilic polymer is prepared from monomers selected from the group consisting of methylacrylamidopropyltrimethyl ammonium chloride, N-n-butyl acrylamide, N-n-butyl methacrylamide, acrylamide-methyl-propane sulfonic acid N,N-di-n-butylacrylamide, and 2-sulfoelthyl methacrylate.

5,356,937

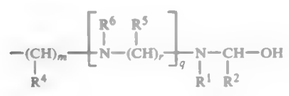
RESINS AND PROCESSES FOR PREPARING THEM

Jürgen Eiffler, and Hans-Peter Schneider, both of Stade, Fed. Rep. of Germany, assignors to The Dow Chemical Company, Midland, Mich.

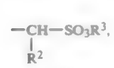
Division of Ser. No. 293,787, Jan. 5, 1989, abandoned. This application Aug. 19, 1992, Ser. No. 932,156
Int. Cl.[5] C08F *8/00;* **B01J** *39/00*
U.S. Cl. 521—33 **19 Claims**

1. A resin having
(a) a polymeric matrix selected from the group consisting of cross-linked polystyrene, cross-linked poly-(alpha-methyl styrene), cross-linked polymers of styrene being substituted at the benzene ring with $C_{1\text{-}6}$-alkyl and cross-linked polymers of alpha-methyl styrene being substituted at the benzene ring with $C_{1\text{-}6}$-alkyl and
(b) functional groups of formula V being bound to the aromatic rings of the polymeric matrix

(V)



wherein:
R^1 is hydrogen, alkyl or 1 to 12 carbon atoms, cycloalkyl of 3 to 12 carbon atoms, $—(CH_2)_n—COOR^7$, $—(CH_2)_p—SO_3R^3$, $—(CH_2)_p—PO_3(R^7)_2$, or



each R^2 independently is hydrogen, alkyl of 1 to 12 carbon atoms, cycloalkyl of 3 to 12 carbon atoms or alkenyl of 2 to 12 carbon atoms, aryl, aralkyl, aralkenyl, $—(CH_2)_n—COOR^7$, $—(CH_2)_p—SO_3R^3$, $—(CH_2)_p—PO_3(R^7)_2$ or $—CH(—SO_3R^3)_2$,
each R^3 independently is hydrogen or a cation,
each R^4 independently is hydrogen, alkyl, cycloalkyl or aryl,
each R^5 independently is hydrogen, alkyl of 1 to 3 carbon atoms, hydroxy or $—COOR^7$,
each R^6 independently is hydrogen, alkyl of 1 to 12 carbon atoms, cycloalkyl of 3 to 12 carbon atoms, $—(CH_2)_n—COOR^7$, $—(CH_2)_p—SO_3R^3$ or $—(CH_2)_p—PO_3(R^7)_2$,
each R^7 independently is hydrogen, a cation, alkyl of 1 to 12 carbon atoms or cycloalkyl of 3 to 12 carbon atoms,
m is from 1 to 3,
n is from 1 to 12,
p is from 1 to 6,
r is from 1 to 6, and
q is 0.

5,356,938

RECYCLING OF CURED AMINOPLAST RESINS

Juergen Weiser, Schriesheim; Wolfgang Reuther, Heidelberg, and Erwin Hahn, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 15, 1994, Ser. No. 196,493
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1993, 4305298
Int. Cl.[5] C08J *11/04*
U.S. Cl. 521—40 **4 Claims**

1. A process for recycling cured aminoplast resins, wherein cured aminoplast resins, which may contain fillers, are treated with an aqueous sulfite, hydrogen sulfite or disulfite solution resulting in the production of low molecular weight degradation products comprising methylolureas, methylolamino substituted 1,3,5-triazines and methylolamines modified with sulfite groups.

5,356,939

PROCESS FOR MAKING RUBBER ARTICLES AND RUBBER ARTICLES MADE THEREBY

Thomas G. Burrowes, Lincoln; Bobby L. Purviance, Hickman; Charles W. Quiner, and Delyn M. Stork, both of Lincoln, all of Nebr., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 932,411, Aug. 19, 1992, abandoned. This application Jun. 21, 1993, Ser. No. 78,956
Int. Cl.[5] C08J *11/04*
U.S. Cl. 521—41.5 **7 Claims**

1. A process for producing a rubber article containing uncured rubber comprising:
a. providing an uncured rubber composition devoid of any curing agents comprising:
i. 100 parts by weight of a raw rubber in admixture with
ii. from 10 to 330 phr of a cured ground rubber based on i.; and
b. shaping said composition into a rubber article.

5,356,940

PROCESS FOR PRODUCING A FINE PORED SILICONE FOAM

Franz J. Giesen, Bergheim, Fed. Rep. of Germany, assignor to H. B. Fuller Licensing & Financing, Inc., Arden Hills, Minn.

Filed Oct. 22, 1993, Ser. No. 141,299
Int. Cl.[5] C08J *9/02*
U.S. Cl. 521—77 **18 Claims**

1. A process for producing a fine pored silicone foam by free foaming a two-component mixture of a reaction component A and a crosslinking component B, wherein:
reaction component A, a silicone composition, contains a silicone polymer having at least two double bonds per molecule, a complexed organo-platinum catalyst, fumed silica, and water;
reaction component B, a crosslinking component, contains a polydimethyl hydrogen siloxane crosslinking agent, and additionally contains a silicone polymer having at least two double bonds per molecule, and fumed silica; and,
the process includes the steps of:
pressurizing the reaction mixture to a pressure of about 70 psi or greater in a storage vessel for dissolving a gas into the reaction mixture before it is withdrawn from the storage vessel; and
foaming the mixture by heating to a temperature of 150°–220° C.

5,356,941

GAME BALLS HAVING IMPROVED CORE COMPOSITIONS

Michael J. Sullivan, Chicopee, Mass., and Terence Melvin, Somers, Conn., assignors to Lisco, Inc., Tampa, Fla.

Filed Feb. 28, 1992, Ser. No. 843,565
Int. Cl.[5] C08J *9/00*
U.S. Cl. 521—96 **25 Claims**

1. A softball or baseball comprising a core and a cover, wherein the core is comprised of about 100 parts by weight of a thermoplastic olefin resin having polymer radicals; from about 0.25 to about 5 parts by weight of a blowing agent; from about 0.5 to about 15 parts by weight of a nucleating agent; and from about 0.25 to about 1.5 parts by weight of a peroxide crosslinking agent which forms irreversible covalent bonds between the polymer radicals such that the core is a blown cell structure having a substantially uniform cellular crossection and a substantially consistent average cell size, the peroxide crosslinking agent further providing heat resistance in the core.

5,356,942

HYDROXYL GROUP-CONTAINING AMINE-BORON ADDUCTS AS REDUCED ODOR CATALYST COMPOSITIONS FOR THE PRODUCTION OF POLYURETHANES

Ann C. L. Savoca, Sinking Springs; Michael Louie, Bethlehem, and Mark L. Listemann, Whitehall, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 839,519, Feb. 20, 1992, Pat. No. 5,166,223, which is a continuation-in-part of Ser. No. 829,786, Jan. 31, 1992, Pat. No. 5,162,379, which is a continuation-in-part of Ser. No. 763,107, Sep. 20, 1991, Pat. No. 5,086,081. This application Jun. 10, 1992, Ser. No. 896,285
Int. Cl.[5] C08J *9/00*
U.S. Cl. 521—103 **13 Claims**

1. In a method for catalyzing the trimerization of an isocyanate and/or the reaction between an isocyanate and an active hydrogen-containing compound using a catalyst composition, the improvement which comprises employing a catalyst composition consisting of (a) an addition product consisting of a hydroxyl group-containing tertiary amine urethane catalyst and a boron compound of the formula

$$R_nB(OH)_{3-n}$$

where

n=0 or 1, and
R=C_1–C_8 alkyl, C_5–C_8 cycloalkyl or C_6–C_{10} aryl,
and, optionally, (b) a tertiary amine urethane catalyst or an organotin urethane catalyst, or both.

5,356,943

RIGID FOAMS

Ernst O. Dueber, Tervuren, and Berend Eling, Wezembeek-Oppem, both of Belgium, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 196,400, May 19, 1988, abandoned. This application Sep. 29, 1989, Ser. No. 414,569
Int. Cl.[5] C08G *18/00*
U.S. Cl. 521—124 **19 Claims**

1. A method for the preparation of rigid foams comprising reacting a polymethylene polyphenyl polyisocyanate composition with a polyfunctional active hydrogen compound under foam-forming conditions, the polyisocyanate composition containing not more than 20% by weight of diisocyanates and not more than 20% by weight of polyisocyanates containing more than 5 isocyanate groups per molecule, the remainder of said polyisocyanate composition comprising polyisocyanates selected from the group consisting of tri-, tetra-, and penta-isocyanates.

5,356,944

HIGH MELT INDEX POLYSTYTENE FOAM AND METHOD

James E. Blythe, Williamson; Edward A. Colombo, Penfield; Charles M. Krutchen, Pittsford; Phillip A. Williams, Naples, and Wen-Pao Wu, Pittsford, all of N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 988,521, Dec. 10, 1992, abandoned, which is a division of Ser. No. 734,836, Jul. 24, 1991, Pat. No. 5,286,429, which is a continuation-in-part of Ser. No. 586,313, Sep. 4, 1990, abandoned, which is a continuation of Ser. No. 211,625, Jun. 27, 1988, abandoned. This application Jan. 14, 1994, Ser. No. 181,483
Int. Cl.[5] C08J *9/08, 9/12*
U.S. Cl. 521—146 **3 Claims**

1. A polystyrene foam structure consisting essentially of a polystyrene having a melt index of about 8 or more, the foam cell structure of which having been defined by extrusion with a blowing agent consisting essentially of carbon dioxide to yield said foam having a basis weight of less than about 20 gm/in^2 an da density of about 6 $lbs./ft^3$ or less.

5,356,945

REACTIVE POLYURETHANES

Joachim Werner, Dormagen; Ulrich Liman, Monheim; Walter Meckel, Neuss; Armin Zenner, Dormagen, and Wolfgang Pätzold, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 15, 1993, Ser. No. 77,003
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1992, 4220419
Int. Cl.[5] C08G *18/00*
U.S. Cl. 521—159 **9 Claims**

1. A polyurethane with a softening temperature above 80° C. which is NCO-free, which is essentially linear and which is reactive via masked isocyanate groups, comprising the reaction product of
I) one or more organic diisocyanates of which at least a proportion is symmetric,
II) one or more essentially linear polyhydroxyl compounds having molecular weights of between 400 and 6000 and glass transition temperatures below 0° C.,
III) an organic compound having at least a proportion of masked NCO groups, and
IV) one or more diols having molecular weights of 60 to 600, wherein the ratio of the molecular weight of components II) to the molecular weight of component IV)is at least 3:1,
wherein
a) components I), II), III), and IV) are reacted in the molten or liquid form at a temperature below the unmasking temperature of the masked NCO groups,
b) the amount of masked NCO groups relative to total number of masked and free NCO groups before reaction is between 1 and 20%, and
c) the ratio of free NCO groups in components I) and III) to the groups which react with NCO groups in components II) and IV) is not more than 1.1:1.

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5,356,946

PROCESS FOR PREPARING REACTION INJECTION MOLDINGS

Robson M. Mafoti, Pittsburgh, Pa.; Josef Sanders, Leverkusen, Fed. Rep. of Germany, and Robert P. Yeater, Moundsville, W. Va., assignors to Miles Inc., Leverkusen, Fed. Rep. of Germany

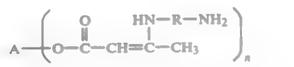
Filed Dec. 9, 1991, Ser. No. 805,735
Int. Cl.[5] C08G 18/00
U.S. Cl. 521—163 1 Claim

1. A process for the preparation of a reaction injection molded elastomer comprising injecting a reaction mixture into a closed mold via a RIM machine, with the ratio of components being such that the isocyanate index is from about 70 to about 130, said reaction mixture comprising

(a) an organic di- or/or polyisocyanate,

(b) an amine terminated chain extender, and

(c) a compound of the formula



wherein A represents a polyfunctional radical left by the removal of the hydroxyl groups from a polyol of functionality n, R represents a aliphatic hydrocarbon radical, and n is an integer of from 2 to 6; wherein compound (c) is derived from the reaction of a polyfunctional acetoacetic acid ester and 1,5-diamino-2-methylpentane.

5,356,947

CONTROLLABLE RADIATION CURABLE PHOTOINIFERTER PREPARED ADHESIVES FOR ATTACHMENT OF MICROELECTRONIC DEVICES AND A METHOD OF ATTACHING MICROELECTRONIC DEVICES THEREWITH

Mahfuza B. Ali, and Jean M. Pujol, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 501,273, Mar. 29, 1990, abandoned. This application Oct. 29, 1992, Ser. No. 968,251
Int. Cl.[5] C08F 2/50, 265/06, 285/00
U.S. Cl. 522—57 11 Claims

1. An adhesive comprising the condensation reaction product of

(a) a polymer prepared by the ultraviolet light induced polymerization of

(i) monofunctional acrylate monomers chosen from the group consisting of methyl (meth)acrylate, isooctyl acrylate, ethyl acrylate, isobornyl acrylate, norbornyl acrylate, butyl acrylate, phenethyl methacrylate, dimethylaminoethyl methacrylate and trimethoxysilylpropyl methacrylate and mixtures thereof, and

(ii) difunctional ethylenically-unsaturated monomers chosen from the group consisting of 2-vinyl-4,4-dimethyl-2-oxazoline-5-one, hydroxyethyl (meth)acrylate, glycidyl (meth)acrylate, isocyanatoethyl methacrylate, (meth)acrylic acid, pentaerythritol tri(meth)acrylate and dimethylamino methacrylate and mixtures thereof; and

(iii) a photoiniferter chosen from the group consisting of xylylene bis (N,N-diethyldithiocarbamate), benzyl carbazolyl thiocarbamate, xylylene carbazolyldithiocarbamate, durene $\alpha,\alpha',\alpha'',\alpha'''$-tetrakis (N,N-diethyldithiocarbamate), benzyl N,N-diethyldithiocarbamate, and mixtures thereof; with

(b) a condensation-reactive ethylenically-unsaturated monomer chosen from the group consisting of 2-vinyl-4,4-dimethyl-2-oxazolin-5-one, hydroxyethyl methacrylate, hydroxyethyl acrylate, glycidyl acrylate, glycidyl methacrylate, isocyanatoethyl methacrylate, acrylic acid, methacrylic acid, dimethylaminoethyl methacrylate, pentaerythritol triacrylate, pentaerythritol trimethacrylate, and mixtures thereof;

wherein no additional photoinitiator other than said photoiniferter is present, and

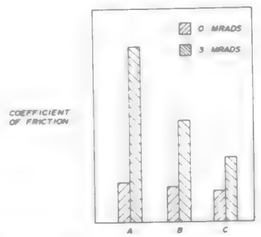
wherein said condensation reaction product is controllably crosslinked in a stepwise fashion by intermittent controlled exposure to an ultraviolet radiation source.

5,356,948

LUBRICIOUS RADIATION STABLE POLYMERIC COMPOSITION AND METHOD FOR STERILIZING THEREFROM

Donald N. Payne, Jr., Durham, N.C.; Jess M. Waller, Akron, Ohio; Richard P. Clarke, Raleigh, N.C.; George R. Titus, Raleigh, N.C., and David A. Martin, Raleigh, N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 576,750, Sep. 4, 1990. This application Jan. 26, 1994, Ser. No. 186,488
Int. Cl.[5] C08J 3/28, 5/16; C08K 5/20
U.S. Cl. 522—75 3 Claims



1. A method for sterilizing a flexible shaped article having a lubricious surface while retaining the surface lubricity of the article comprising subjecting to a sterilizing amount of high energy radiation a flexible, shaped article comprising a composition including a polyolefin having a crystalline content of about 20 to 90 percent and a weight distribution wherein the ratio of the weight average molecular weight to the number average molecular weight is no greater than 6, a mobilizing amount of a liquid mobilizer compatible with said polyolefin having a density of about 0.6 to 1.9 grams per cubic centimeter, a radiation stabilizing amount of a hindered piperidine stabilizer, a clarifying amount of a dibenzylidene sorbitol clarifier, and a lubricating amount of erucylerucamide to produce a sterilized article which retains its flexibility.

5,356,949

ADHESIVE COMPOSITION COMPRISING (METH)ACRYLATE POLYMER AND EPOXY RESIN

Mikio Komiyama, Yokohama; Yasunao Miyazawa, Urawa; Kazuyoshi Ebe, Minamisaitama, and Takanori Saito, Ohmiya, all of Japan, assignors to Lintec Corporation, Tokyo, Japan

Division of Ser. No. 653,232, Feb. 8, 1991, Pat. No. 5,110,388, which is a division of Ser. No. 380,548, Jul. 14, 1989, Pat. No. 5,118,567. This application Feb. 21, 1992, Ser. No. 837,117
Claims priority, application Japan, Jul. 21, 1988, 63-183158
Int. Cl.[5] C08F 2/50; C09J 4/06, 163/02, 133/06
U.S. Cl. 522—102 1 Claim

1. An adhesive composition for forming an adhesive layer which is curable by irradiation with an energy beam and wherein the so cured adhesive layer is capable of developing tackiness again by heating, said composition consisting essentially of:

(a) 100 parts by weight of a (meth)acrylate polymer substantially free from C—C double bonds and having at least 50 mol % of units derived from at least one (meth)acrylate and a weight average molecular weight of from about 40,000 to 1,500,000;

(b) from 400 to 2,000 parts by weight of an epoxy resin having an average of at least 1.8 vicinal epoxy groups per molecule and a weight average molecular weight of from 100 to 10,000;

(c) from 10 to 1,000 parts by weight of a photopolymerizable low molecular weight compound having at least one C—C double bond and having a weight average molecular weight of from 100 to 30,000;

(d) a heat activatable latent curing agent for said epoxy resin; and

(e) a photopolymerization initiator for said photopolymerizable low molecular weight compound.

5,356,950

GRAFTED POLYMERS OF AN ISOMONOOLEFIN AND AN ALKYLSTYRENE

Donald A. White, Keasbey, and Hsien C. Wang, Edison, both of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 674,633, Mar. 25, 1991, abandoned. This application Apr. 26, 1993, Ser. No. 53,969
Int. Cl.[5] C08F 257/02, 259/00, 255/08
U.S. Cl. 522—116 25 Claims

1. A grafted polymer derived from

(A) a copolymer selected from the group consisting of a copolymer of a C_4 to C_7 isomonoolefin and an alkylstyrene, a halogen-containing copolymer of a C_4 to C_7 isomonoolefin and an alkylstyrene, and mixtures thereof, and

(B) an unsaturated organic compound which grafts to the alkyl group bonded at the styrene ring of the copolymer, the compound selected from the group consisting of an unsaturated carboxylic acid, an unsaturated carboxylic acid derivative and mixtures thereof.

5,356,951

COMPOSITION FOR DENTAL RESTORATIVE MATERIAL

John A. Yearn, Palos Heights, Ill., and Tetsuro Sakuma, Tokorozawa, Japan, assignors to GC Corporation, Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 995,825
Claims priority, application Japan, Jan. 13, 1992, 4-021660
Int. Cl.[5] A61K 6/08; C08J 3/20
U.S. Cl. 523—116 10 Claims

1. A composition for dental restorative material comprising:

(a) a first methacrylate or acrylate monomer having at least one unsaturated double bond,

(b)

(i) a composite filler obtained by curing and pulverizing a mixture of a first glass powder component having a maximum particle diameter of 10 μm or less and a mean particle diameter of 0.1 to 5 μm with a second methacrylate or acrylate monomer having at least one unsaturated double bond,

(ii) a second glass powder component having a maximum particle diameter of 10 μm or less and a mean particle diameter of 0.1 to 5 μm, and

(iii) a fine-particle filler having a mean particle diameter of 0.01 to 0.04 μm, and

(c) a photopolymerization initiator.

5,356,952

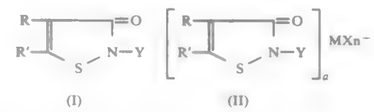
STABILIZED AQUEOUS SOLUTIONS OF 3-ISOTHIAZOLONES

Hans-Jürgen Schmidt, Speyer, Fed. Rep. of Germany, assignor to Thor Chemie GmbH, Fed. Rep. of Germany

Division of Ser. No. 868,312, Apr. 14, 1992, Pat. No. 5,286,871, which is a continuation of Ser. No. 582,499, Sep. 14, 1990, Pat. No. 5,153,213. This application Oct. 14, 1993, Ser. No. 136,971
Claims priority, application European Pat. Off., Nov. 10, 1989, 89-120912.4
Int. Cl.[5] C08K 5/3415
U.S. Cl. 523—122 12 Claims

1. A composition comprising a polymer emulsion and a polymer emulsion preserving amount of a stabilized composition wherein the stabilized composition comprises in intimate admixture:

(A) an aqueous solution comprising at least one 3-isothiazolone compound of the general Formula I or II:



(I) (II)

wherein Y is a hydrogen atom or an alkyl group of from 1 to 18 carbon atoms, an alkenyl or alkynyl group of from 2 to 8 carbon atoms, a cycloalkyl group of from 5 to 8 carbon atoms, an aralkyl group of from 7 to 11 carbon atoms or an aryl group of from 6 to 10 carbon atoms;

R and R' are each selected from hydrogen, halogen or an alkyl group of from 4 to 8 carbon atoms;

M is a cation selected from a metal cation, an ammonium cation or an ammonium cation substituted with at least one organic group, a pyridinium cation or a pyrimidinium cation;

X is an anion forming a compound with the cation M; and

a is 1 or 2 and n is a whole number which satisfies the valence of the cation M when completely reacted with anion X, alone, or in further combination with a stabilizer for I or II; and

(B) a small effective stabilizing amount for said 3-isothiazolone compound of at least 0.1 wt. %, based on the whole solution, of a manganese-free inorganic oxidizing agent comprising hydrogen peroxide, sodium perborate or a mixture thereof, in combination with a stabilizer for said oxidizing agent, with the proviso that the ratio of weight percent of hydrogen peroxide to weight percent of isothiazolone is no more than about 0.33 and the ratio of weight percent of sodium perborate to weight percent of isothiazolone is no more than about 1.33.

5,356,953

RESIN COMPOSITION FOR ARTIFICIAL MARBLE, BULK MOLDING COMPOUND AND SHEET MOLDING COMPOUND USING THE SAME, AND PROCESS FOR PREPARING ARTIFICIAL MARBLE USING THE SAME

Koki Harada, and Yasuhisa Odagawa, both of Ibaraki, Japan, assignors to Hitachi Chemical Company Limited, Tokyo, Japan

Filed Jan. 13, 1994, Ser. No. 181,206
Claims priority, application Japan, Jan. 20, 1993, 5-007476
Int. Cl.[5] C08L 67/06
U.S. Cl. 523—171 23 Claims

1. A resin composition for artificial marble comprising:

(I) an unsaturated polyester obtained by using a divalent alcohol containing hydrogenated bisphenol A as an essential component and an α,β-ethylenic unsaturated dibasic acid;

(II) a copolymerizable monomer;

(III) an unsaturated alcohol which can be copolymerized with the unsaturated polyester (I) and the copolymerizable monomer (II); and

(IV) a low molecular weight styrene-maleic anhydride copolymer having a molar ratio of styrene to maleic anhydride being 3:1 to 7:1 and a number average molecular weight of less than 5,000,

wherein the unsaturated alcohol (III) is used in such an amount that the weight ratio of the unsaturated alcohol (III) to the copolymerizable monomer (II) is 1:99 to 50:50, the weight ratio of the unsaturated polyester (I) to (the copolymerizable monomer (II)+the unsaturated alcohol (III)) is 30:70 to 70:30, and the weight ratio of the styrene-

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maleic anhydride copolymer (IV) to (the unsaturated polyester (I)+the copolymerizable monomer (II)+the unsaturated alcohol (III)) is 10:90 to 40:60.

5,356,954

METHOD FOR PREPARING AN ELECTRICALLY CONDUCTIVE ORGANOSILOXANE COMPOSITION

Hiroshi Adachi, Chiba, and Noriyuki Suganuma, Fukui, both of Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1993, Ser. No. 21,932

Claims priority, application Japan, Feb. 28, 1992, 4-079048

Int. Cl.[5] C08K *9/00*

U.S. Cl. 523—200 **3 Claims**

1. A method for preparing an electrically conductive organosiloxane composition, said method comprising the steps of

1) first blending to homogeneity

(A) 100 weight parts polyorganosiloxane containing silicon-bonded organic groups and at least 2 silicon-bonded hydroxyl groups or hydrolyzable groups in each molecule and exhibiting a viscosity of 20 to 1,000,000 centistokes at 25° C.

with

(B) 1 to 50 weight parts of a silane containing at least 3 silicon-bonded hydrolyzable groups in each molecule or a partial hydrolysis/condensation product of said silane,

2) and then blending the resultant mixture with

(C) 5 to 800 weight parts of a particulate light colored filler selected from the group consisting of metal oxides and titanates, wherein the particles of said filler are coated with an electrically conductive material.

5,356,955

ARTIFICIAL POLYMER LATICES IN CORE-SHELL FORM AND METHOD OF PREPARATION

Marinus E. J. Dekkers, Schenectady, N.Y., and Mary E. Adams, Beauvais, France, assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 773,800, Oct. 9, 1991, abandoned. This application Nov. 23, 1992, Ser. No. 980,444

Int. Cl.[5] C08F *265/08, 257/02, 255/04, 255/06*

U.S. Cl. 523—201 **10 Claims**

1. A stable aqueous latex comprising copolymer particles with a core consisting of styrene and acrylonitrile structural units, a shell grafted onto and substantially encapsulating said core and comprising structural units derived from at least one aliphatic olefin as a first shell monomer and, optionally, at least one non-conjugated diene as a second shell monomer; and a compatibilizing amount of a copolymer of said core monomers and said shell monomer or monomers.

5,356,956

AQUEOUS DISPERSION OF COMPOSITE PARTICLES FORMED OF A CORE PORTION MAINLY COMPRISING A CARBOXYL GROUP-CONTAINING ACRYLIC POLYMER AND A SKIN LAYER PORTION COVERING THE CORE PORTION AND MAINLY COMPRISING AN ACRYLIC POLYMER

Masami Uemae, Hiratsuka, and Takeshi Komatsu, Ninomiya, both of Japan, assignors to Nippon Carbide Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 863,080, Apr. 3, 1992. This application Jun. 17, 1993, Ser. No. 77,640

Claims priority, application Japan, Apr. 5, 1991, 3-99738

Int. Cl.[5] C08L *83/00*

U.S. Cl. 523—201 **16 Claims**

1. An aqueous coating composition comprising:

an aqueous dispersion of an acrylic polymer comprising particles of the acrylic polymer dispersed in an aqueous medium, wherein the particles of the acrylic polymer are composite particles comprising a core part mainly comprising a carboxyl group-containing acrylic polymer (A) whose glass transition temperature is in the range of −20° C. to 10° C. and a skin layer part covering the core part and mainly comprising an acrylic polymer (B) whose glass transition temperature is −20° C. or less, the polymer (A) and the polymer (B) are contained in amounts of 50 to 95 weight % and 50 to 5 weight % based on the weight of the particles, respectively, and the glass transition (Tg_A) of the polymer (A) is higher than the glass transition temperature (Tg_B) of the polymer (B); and

an inorganic filler.

5,356,957

LIGHT ANTI-CHIPPING COATING

Yasuo Nanri, Chiryu; Mitsuo Hironaga, Toyota, and Akio Sato, Chiryu, all of Japan, assignors to Nihon Tokushu Toryo Co., Ltd., Tokyo, Japan

Division of Ser. No. 662,380, Feb. 26, 1991, Pat. No. 5,212,215, which is a continuation of Ser. No. 193,718, May 13, 1988, abandoned, which is a continuation-in-part of Ser. No. 922,606, Oct. 24, 1986, abandoned. This application Jan. 19, 1993, Ser. No. 4,847

Claims priority, application Japan, Oct. 29, 1985, 60-240474; Dec. 17, 1985, 60-281981; Apr. 21, 1986, 61-90113

The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.

Int. Cl.[5] C08J *9/32*

U.S. Cl. 523—218 **4 Claims**

1. A light, anti-chipping coating consisting essentially of a blend of 100 parts by weight of a polyvinyl chloride resin capable of forming a plastisol, from 50 to 200 parts by weight of a plasticizer for said resin, from 2 to 20 parts by weight of additives and from 80 to 350 parts by weight of filler component, said filler component consisting of from 0.5 to 9% by weight, based on the weight of said filler component, of inorganic hollow filler particles selected from the group consisting of hollow glass microspheres, hollow silica microspheres and mixtures thereof and organic hollow filler particles consisting of expanded thermoplastic microspheres and the balance being solid calcium carbonate filler powder.

5,356,958

IMPACT RESISTANT THERMOPLASTIC SYNTACTIC FOAM COMPOSITE AND METHOD

Abraham M. Matthews, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 20, 1993, Ser. No. 107,644

Int. Cl.[5] C08J *9/32*

U.S. Cl. 523—219 **2 Claims**

1. A process for preparing dry syntactic foam flakes comprising the steps of: mixing thermoplastic resin with dichloroacetic acid in a 1:10 to 1:20 wt. ratio of resin to acid to form a mixture; heating said mixture up to about 100° C. while stirring a sufficient amount of time to form a homogeneous and stable viscous resin solution; adding to said solution a sufficient amount of glass microspheres and short fibers to form a composition of resin, glass microspheres and fibers respectively; stirring said composition; agitating said composition in a container with water to form coagulated flakes of resin, glass microballoons and fibers; draining said water and dichloroacetic acid from said container; and neutralizing then drying said flakes.

5,356,959

EPOXY RESINS FOR TERNARY SULFONIUM ELECTROCOATING COMPOSITIONS

Klaus Huemke, Freidelsheim, and Christian Sinn, Kiel, both of Fed. Rep. of Germany, assignors to BASF Lacke & Farben Aktiengesellschaft, Muenster, Fed. Rep. of Germany

Filed Jul. 27, 1993, Ser. No. 96,991

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1992, 4224882

Int. Cl.[5] C08G *59/50;* **C08L** *63/02*

U.S. Cl. 523—404 **7 Claims**

1. An epoxy resin, obtained by reacting

A) a polyfunctional epoxide, which carries on average 1.5 to 2.5 epoxy groups per molecule and has an epoxide equivalent weight of from 100 to 2000, with based on 1 mol of epoxy groups from

B) 0.1 to 0.5 mol of an alkylphenol, the alkyl groups of which carry from 6 to 20 carbon atoms, and

C) from 1 to 100 mmol of a polyoxyalkylenediol obtained from 1,2-propylene oxide, or of a copolymer obtained from 1,2-propylene oxide and other alkylene oxides selected from the group consisting of ethylene oxide, tetrahydrofuran and mixtures thereof, which has an average molecular weight (M_w) of from 200 to 5000 and, on average, from 1 to 4 sulfonic acid groups bonded to methyl groups per molecule, and also

D) from 0.2 to 0.3 mol of a diol, which is

d1) a phenolic diol and/or

d2) a polyoxyalkylenediol which has an average molecular weight (M_w) of from 200 to 5000 which does not contain a sulfonic acid group bound to a methyl group, with the proviso that the reaction product of A), B), C) and D) has an epoxide equivalent weight of from 1000 to 5000.

5,356,960

CATHODIC ELECTROCOATING COMPOSITIONS CONTAINING AN ANTICRATER AGENT

Ding Y. Chung, Rochester Hills, and Allisa Gam, Troy, both of Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 11, 1993, Ser. No. 104,692

Int. Cl.[5] C08G *59/50;* **C08L** *63/00;* **C25D** *13/06*

U.S. Cl. 523—404 **12 Claims**

1. An improved cathodic electrocoating composition, comprising an aqueous carrier having dispersed therein a film forming binder comprising an epoxy-amine adduct and a blocked polyisocyanate crosslinking agent; wherein the improvement consists essentially of an anticrater agent which consists essentially of a reaction product produced by reacting constituents consisting of poly epoxy hydroxy ether resin, polyoxyalkylene diamine and an alkyl alkoxy silane having an amino, glycidyl or isocyanate functional group; said constituents being reacted at 70°–130° C. for a sufficient time to form the reaction product having a number average molecular weight of about 1,000–6,000 determined by Gel Permeation Chromatography (GPC) using polystyrene as the standard; wherein the anticrater agent is used in an amount of about 0.5–10% by weight, based on the weight of the binder, to reduce craters in a coating formed from the electrocoating composition.

5,356,961

AQUEOUS EPOXY RESIN COMPOSITION

Toshiaki Nishimura; Kiichiro Seki, and Yasushi Ohnuma, all of Hiratsuka, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

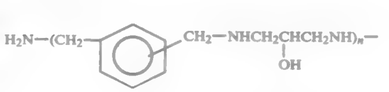
Filed Oct. 15, 1992, Ser. No. 961,375

Claims priority, application Japan, Dec. 26, 1991, 3-345191

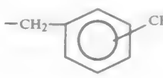
Int. Cl.[5] C08K *3/20;* **C08L** *63/02*

U.S. Cl. 523—414 **13 Claims**

1. An aqueous epoxy resin composition which consists essentially of an (i) epoxy resin; (ii) an amidoamine obtained by the reaction of a carboxylic acid with a polyamine compound of the formula (I)



(I)



wherein n is an integer of 1 or greater indicating the number of the repeating units, said polyamine compound being obtained by the reaction of epichlorohydrin with xylylenediamine; and (iii) water.

5,356,962

CARBOHYDRATE SUBSTITUTED DIBENZO[D,G][1,3,2]DIOXAPHOSPHOCIN STABILIZERS

Stephen D. Pastor, Danbury, Conn., and Joseph E. Babiarz, Amawalk, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 918,323, Jul. 22, 1992, Pat. No. 5,310,890. This application Feb. 17, 1994, Ser. No. 198,015

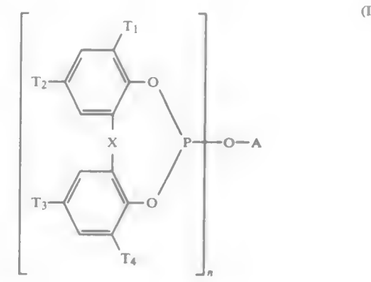
Int. Cl.[5] C08J *5/00;* **C08K** *5/00;* **C08L** *23/12*

U.S. Cl. 524—27 **11 Claims**

1. A stabilized composition which comprises

(a) an organic material subject to oxidative or thermal degradation, and

(b) an effective stabilizing amount of a compound of formula I



(I)

wherein

n is 1 to 6,

X is methylene, alkylidene of 2 to 8 carbon atoms or —S—,

T_1, T_2, T_3 and T_4 are independently alkyl of 1 to 12 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, aryl of 6 to 10 carbon atoms or phenylalkyl of 7 to 15 carbon atoms, and

A is a carbohydrate residue which is a radical, diminished by a hydroxyl or thiol group or an amine hydrogen atom, of a protected monohydroxy-functional, monothiol-functional or monoamine-functional sugar, thio-sugar or amino-sugar or derivatives thereof belonging to the group of sugar alcohols, esters of sugar acid, aldo-sugar acid or keto-sugar acid, amino-sugar, sugar mercaptal or deoxy-sugar.

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5,356,963

HYDROPHILIC HOT MELT ADHESIVES

Thomas F. Kauffman, Easton, Pa.; Gary Raykovitz, Flemington, N.J.; Lydia Wagner, Bedminster, N.J.; Matthew Sharak, Franklin Park, N.J., and Charles Paul, Madison, N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Jul. 16, 1993, Ser. No. 93,506
Int. Cl.[5] C08J 5/10; C08L 1/26
U.S. Cl. 524—43 10 Claims

1. A hot melt pressure sensitive adhesive composition consisting essentially of 5 to 50% by weight hydroxypropyl cellulose; a styrene block copolymer present in an amount up to 30% by weight; 5 to 40% by weight plasticizer, about 85% of which may be a water insoluble plasticizer, 20 to 70% by weight tackifying resin; and 0 to 3% by weight stabilizer, the components totaling 100% by weight.

5,356,964

STABILIZED POLYOLEFIN COMPOSITION

Tamaki Ishii, Suita; Shinichi Yachigo, Toyonaka; Fumitoshi Kojima, Ibaraki, and Kanako Ida, Ashiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 10, 1992, Ser. No. 988,696
Claims priority, application Japan, Dec. 11, 1991, 3-327387
Int. Cl.[5] C08K 5/3492, 5/11
U.S. Cl. 524—100 13 Claims

1. A polyolefin composition comprising a polyolefin and, per 100 parts by weight of the polyolefin, the following components:

(A) 0.01 to 1 part by weight of a hindered phenolic compound selected from the group consisting of 1,3,5-tris(3,5-di-t-butyl-4-hydroxybenzyl) isocyanurate, 1,3,5-tris(4-t-butyl-3-hydroxy-2,6-dimethylbenzyl) isocyanurate, and calcium bis(ethyl 3,5-di-t-butyl-4-hydroxybenzylphosphonate);

(B) 0.01 to 1 part by weight of an acrylate compound represented by the formula (I):



(I)

wherein R^1 is an alkyl of 1 to 5 carbon atoms, R^2 is an alkyl of 1 to 8 carbon atoms, R^3 is hydrogen or an alkyl of 1 to 8 carbon atoms, and R^4 is hydrogen or methyl;

(C) 0.01 to 1 part by weight of an organic phosphorous compound selected from the group consisting of bis(2,6-di-t-butyl-4-methylphenyl) pentaerythritol diphosphite, bis(2,4-di-t-butylphenyl) pentaerythritol diphosphite, tris(2,4-di-t-butylphenyl) phosphite, tetrakis(2,4-di-t-butylphenyl) 4,4'-biphenylene diphosphonite, 2,2'-ethylidenebis(4,6-di-t-butylphenyl) fluorophosphite, and 2,2'-methylenebis(4,6-di-t-butylphenyl) octyl phosphite; and

(D) 0.01 to 1 part by weight of a hindered piperidine compound selected from the group consisting of a polycondensate of dimethyl succinate with 1-(2-hydroxyethyl)-4-hydroxy-2,2,6,6-tetramethylpiperidine, poly[{(6-(1,1,3,3-tetramethylbutyl)imino-1,3,5-triazin-2,4-diyl}{(2,2,6,6-tetramethyl-4-piperidyl)imino}hexamethylene{(2,2,6,6-tetramethyl-4-piperidyl)imino}], and poly[(6-morpholino-1,3,5-triazin-2,4-diyl){(2,2,6,6-tetramethyl-4-piperidyl-)imino}hexamethylene{(2,2,6,6-tetramethyl-4-piperidyl-)imino}].

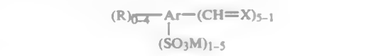
5,356,965

FLAME-RESISTANT POLYCARBONATE MOLDING COMPOSITIONS

Richard Weider, Leverkusen; Thomas Scholl, Bergisch Gladbach; Klaus Kircher, Leverkusen, and Klaus Horn, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 940,565, Sep. 4, 1992, abandoned. This application May 11, 1993, Ser. No. 60,379
Int. Cl.[5] C08K 5/15, 5/42
U.S. Cl. 524—108 8 Claims

1. A thermoplastic molding composition comprising polycarbonate resin and about 0.005 to 10% by weight of a halogen-free sulphonic acid salt conforming to



(1)

wherein

Ar denotes an aromatic group having one to 4 aromatic rings,

M is a metal of Group 1a, 1b, 2a or 2b of the Periodic System of Elements,

R denotes hydrogen or a halogen-free radical selected from the group consisting of C_1–C_6-alkyl, C_6–C_{10}-aryl, C_1–C_6-alkoxy, acylamino group and acylimino group, and

X stands for oxygen or a halogen-free polyvalent group having the structure R'(—O—)$_{2-6}$ or two halogen-free monovalent R'—O—groups,

R' denotes a halogen-free C_2–C_{20}-alkyl or alkylene group, a halogen-free C_6–C_{10}-aryl or arylene group or a halogen-free C_7–C_{20}-aralkyl or aralkylene group which may link together several structural units (I).

5,356,966

3-(CARBOXYMETHOXYPHENYL)BENZOFURAN-2-ONE STABILISERS

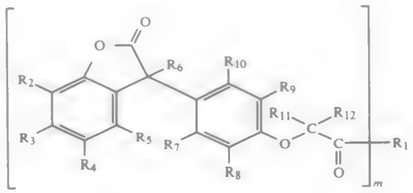
Peter Nesvadba, Marly, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 17, 1993, Ser. No. 64,193
Claims priority, application Switzerland, May 22, 1992, 1653/92
Int. Cl.[5] C08K 5/15
U.S. Cl. 524—111 12 Claims

1. A composition comprising

a) an organic material subject to oxidative, thermal or light-induced degradation and

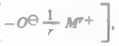
b) at least one compound of the formula (1),



(1)

in which R_2, R_3, R_4 and R_5, independently of one another, are hydrogen, C_1–C_{25}alkyl, C_7–C_9phenylalkyl, unsubstituted or C_1–C_4alkyl-substituted phenyl, unsubstituted or C_1–C_4alkyl-substituted C_5–C_8cycloalkyl; C_1–C_{18}alkoxy, hydroxyl, C_1–C_{25}alkanoyloxy, C_3–C_{25}alkenoyloxy, C_3–C_{25}alkanoyloxy which is interrupted by oxygen, sulfur or >N—R_{13}; C_6–C_9cycloalkylcarbonyloxy, benzoyloxy or C_1–C_{12}alkyl-substituted benzoyloxy, in which R_{13} is hydrogen or C_1–C_8alkyl, or furthermore the radicals R_2 and R_3 or the radicals R_4 and R_5 together with the carbon atoms to which they are bonded form a phenyl

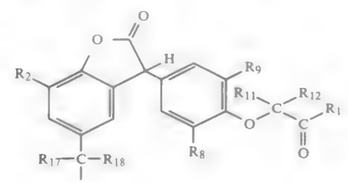
ring, R_4 is additionally $(CH_2)_n$—COR_{14}, in which n is 0, 1 or 2, R_{14} is hydroxyl,



C_1–C_{18}alkoxy or

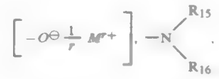


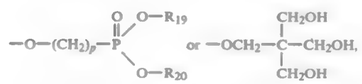
R_{15} and R_{16}, independently of one another, are hydrogen or C_1–C_{18}alkyl, M is an r-valent metal cation and r is 1, 2 or 3, R_7, R_8, R_9 and R_{10}, independently of one another, are hydrogen, C_1–C_4alkyl or C_1–C_4alkoxy, with the proviso that at least one of the radicals R_7, R_8, R_9 and R_{10} is hydrogen, R_{11} and R_{12}, independently of one another, are hydrogen, C_1–C_4alkyl or phenyl, and, in the case where R_3, R_5, R_6, R_7 and R_{10} are hydrogen, R_4 is additionally a radical of the formula (2),



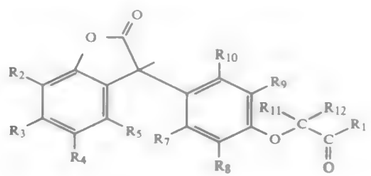
(2)

in which R_2, R_8, R_9, R_{11} and R_{12} are as defined above and R_1 is as defined below for m = 1 and R_{17} and R_{18}, independently of one another, are hydrogen, C_1–C_{12}alkyl or phenyl, or R_{17} and R_{18} together with the carbon atom to which they are bonded form a C_5–C_7cycloalkylidene ring which is unsubstituted or substituted by 1 to 3 C_1–C_4alkyl, m is an integer from the range of 1 to 6, and, in the case where m is 1, R_1 is hydroxyl, C_1–C_{30}alkoxy, C_3–C_{30}alkoxy which is interrupted by oxygen, sulfur or >N—R_{13}; C_7–C_9phenylalkoxy, C_5–C_{12}cycloalkoxy, C_2–C_{18}alkenyloxy, unsubstituted or C_1–C_{12}alkyl-substituted phenoxy,



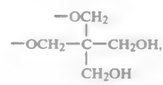


R_{13}, R_{15}, R_{16}, r and M are as defined above, R_{19} and R_{20}, independently of one another, are C_1–C_4alkyl, p is 1 or 2, and R_6 is hydrogen or a radical of the formula (3),

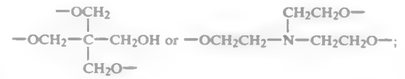


(3)

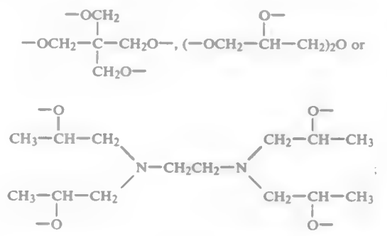
in which R_1, R_2, R_3, R_4, R_5, R_7, R_8, R_9, R_{10}, R_{11} and R_{12} are as defined above; or in the case where m is 2, R_1 is C_2–C_{12}alkanedioxy, C_3–C_{25}alkanedioxy which is interrupted by oxygen, sulfur or >N—R_{13};



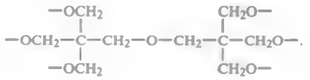
—OCH_2—CH=CH—CH_2O— or —OCH_2—C≡C—CH_2O—, in which R_{13} is as defined above; or, in the case where m is 3, R_1 is C_3–C_{10}alkanetrioxy,



or, in the case where m is 4, R_1 is C_4–C_{10}alkanetetraoxy,



or, in the case where m is 5, R_1 is C_5–C_{10}alkanepentaoxy; or in the case where m is 6, R_1 is C_6–C_{10}alkanehexaoxy or



5,356,967

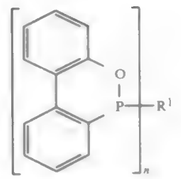
6-ARYL-6H-DIBENZO[C,E][1,2]OXAPHOSPHORINE STABILIZERS FOR PLASTICS

Manfred Böhshar, Kelkheim/Taunus; Hans-Jerg Kleiner, Kronberg/Taunus, and Gerhard Pfahler, Augsburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

PCT No. PCT/EP91/01158, § 371 Date Dec. 23, 1992, § 102(e) Date Dec. 23, 1992, PCT Pub. No. WO92/00306, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 22, 1991, Ser. No. 962,187
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1990, 4021195; Jun. 3, 1991, 4118147
Int. Cl.[5] C07B 49/00; C07F 9/6574; C08K 5/5377
U.S. Cl. 524—117 16 Claims

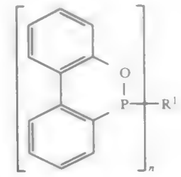
1. A process for the preparation of a dibenzo[c,e][1,2]-oxaphosphorine of the formula I

VOL 1167 ISS 3 OC 18 1994 UMI



where n=1 or 2 and in which R^1, as a monovalent radical, is a phenyl radical, which may carry 1 to 3 substituents, or a naphthyl radical, which may carry 1 to 5 substituents, the substituents being identical or different nonaromatic hydrocarbon, alkoxy, alkylthio or dialkylamino radicals, in each case having 1 to 8 carbon atoms, aryl or aryloxy, in each case having 6 to 10 carbon atoms, or halogen having an atomic number of from 9 to 35, or, as a divalent radical, is a phenylene or biphenylene radical which is unsubstituted or substituted by up to 4 nonaromatic hydrocarbon radicals having 1 to 8 carbon atoms, or is a naphthylene radical which is unsubstituted or carries 1 to 4 nonaromatic hydrocarbon radicals having 1 to 8 carbon atoms as substituents, which comprises, in a first step, reacting a hydrocarbon halide R^1-$(Hal)_n$ in which R^1 is as defined above, n=1 or 2, and the halogen has an atomic weight of at least 35, under Grignard conditions with an at least stoichiometric amount of magnesium to give the corresponding Grignard compound $R^1(MgHal)_n$, and reacting the latter, in a second step, with 6-chloro-6H-dibenzo[c,e][1,2]oxaphosphorine, forming the compound of the formula I.

12. A plastic molding composition comprising from 90 to 99.99% by weight of the composition of a thermoplastic or thermoset resin and from 0.01 to 10% by weight (of the composition) of a dibenzo[c,e][1,2]oxaphosphorine of the formula



where n=1 or 2 and in which R^1, as a monovalent radical, is a phenyl radical, which optionally carries 1 to 3 substituents, or a naphthyl radical, which optionally carries 1 to 5 substituents, the substituents being identical or different nonaromatic hydrocarbon, alkoxy, alkylthio or dialkylamino radicals, in each case having 1 to 8 carbon atoms, aryl or aryloxy, in each case having 6 to 10 carbon atoms, or halogen having an atomic number of from 9 to 35, or, as a divalent radical, is a phenylene or biphenylene radical which is unsubstituted or substituted by up to 4 nonaromatic hydrocarbon radicals having 1 to 8 carbon atoms, or is a naphthylene radical which is unsubstituted or carries 1 to 4 nonaromatic hydrocarbon radicals having 1 to 8 carbon atoms as substituents.

5,356,968

COATING AGENTS

Robert Rupaner, Ludwigshafen; Michael W. Mueller, Plankstadt; Maximilian Angel, Schifferstadt, and Klaus Boehlke, Hessheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 12, 1993, Ser. No. 3,436

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1992, 4202301

Int. Cl.[5] C08K *5/41*

U.S. Cl. 524—157 **9 Claims**

1. A coating agent comprising an emulsion polymer obtained (I) by free radical emulsion polymerization of a monomer mixture of

A) from 15 to 60% by weight of an acrylic ester having a primary or secondary C_1–C_{18}-alkyl group, which may be interrupted by oxygen atoms, as alcohol radical, a methacrylic ester having a primary or secondary C_5–C_{18}-alkyl group, which may be interrupted by oxygen atoms, as alcohol radical, or a mixture thereof,

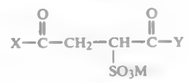
B) from 15 to 50% by weight of an acrylic or methacrylic ester having a tertiary C_4–C_8-alkyl group as alcohol radical, an acrylic or meth-acrylic ester having a C_6–C_2-alcohol radical that is an alicyclic or aromatic group or contains an alicyclic or aromatic group, a meth-acrylic ester having a primary or secondary C_1–C_4-alkyl group as alcohol radical, acrylo- or methacrylonitrile, acryl- or methacrylamide, a vinyl ester of a C_1–C_8-carboxylic acid, or a mixture thereof,

C) from 10 to 50% by weight of one or more C_8–C_{12}-aromatic vinyl compounds,

D) from 8 to 20% by weight of an olefinically unsaturated C_3–C_5-mono- or C_4–C_8-dicarboxylic acid or anhydride or a mixture thereof, and

E) from 0 to 5% by weight of further copolymerizable monomers having functional groups in the presence, based on the monomer mixture of A to E, of an emulsifier mixture of

(a) from 0.5 to 7% by weight of one or more anionic emulsifier of the formula I



I

(I) where

M is an alkali metal or ammonium which may be substituted by from one to four C_1–C_4-alkyl or C_1–C_4-hydroxyalkyl groups, and

X and Y are identical or different and each is $O—(C_nH_{2n}O)_m—R$, OM or NHR, wherein at least one of the radicals X and Y is $O—(C_nH_{2n}O)_m—R$ or NHR, R is C_6–C_{18}-alkyl, C_6–C_{18}-alkenyl, C_5–C_8-cycloalkyl, (C_1–C_{12}-alkyl)aryl or phenyl, n is from 2 to 4, and m is from 0 to 30,

(b) from 0.1 to 10 parts by weight per part by weight of (a) of at least one further different anionic emulsifier, and

(c) from 0 to 10 parts by weight per part by weight of (a) of one or more nonionic emulsifiers.

5,356,969

HYDROXYL FUNCTIONAL DERIVATIVES OF EPOXIDIZED DIENE BLOCK COPOLYMERS AND PROCESS FOR MAKING THEM (II)

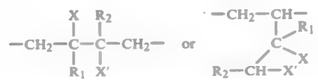
Robert C. Bening; James R. Erickson, both of Katy; David J. St. Clair; Carma J. Gibler, both of Houston, and Joe J. Flores, Sugarland, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 863,648, Apr. 3, 1992, Pat. No. 5,300,586. This application Mar. 24, 1994, Ser. No. 217,470

Int. Cl.[5] C08F *8/30*

U.S. Cl. 525—123 **15 Claims**

1. A liquid diene polymer containing less than 1 Meq/g polymer of hydroxyl groups and comprised of alcohol units of the formula



where R_1 and R_2 are hydrogen or alkyl radicals and X and X′

are either —OH or —Cl and at least one of them is —OH, wherein the polymer is crosslinked with an isocyanate.

5,356,970

HYDROXYL FUNCTIONAL DERIVATIVES OF EPOXIDIZED DIENE BLOCK COPOLYMERS AND PROCESS FOR MAKING THEM (II)

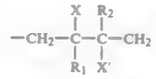
Robert C. Bening; James R. Erickson, both of Katy; David J. St. Clair; Carma J. Gibler, both of Houston, and Joe J. Flores, Sugarland, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 863,648, Apr. 3, 1992, Pat. No. 5,300,586. This application Mar. 24, 1994, Ser. No. 217,397

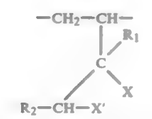
Int. Cl.[5] C08F *8/32*

U.S. Cl. 525—164 **15 Claims**

1. A liquid diene polymer containing less than 1 Meq/g polymer of hydroxyl groups and comprised of alcohol units of the formula



or



where R_1 and R_2 are hydrogen or alkyl radicals and X and X′ are either —OH or —Cl and at least one of them is —OH, wherein the polymer is crosslinked with an amino resin.

5,356,971

THERMOSETTING POWDER COATING MATERIAL

Chiaki Sagawa, Tokyo; Manabu Katagiri, Yokohama, both of Japan, and Toru Kurashina, Petaling Jaya Selango Darul Ehsan, Malaysia, assignors to NOF Corporation, Japan

Continuation-in-part of Ser. No. 959,579, Oct. 13, 1992, Pat. No. 5,223,562. This application Jun. 28, 1993, Ser. No. 84,060

Claims priority, application Japan, Oct. 11, 1991, 3-292367; Aug. 10, 1992, 4-234191

Int. Cl.[5] C08L *91/06, 27/12*

U.S. Cl. 524—275 **16 Claims**

1. A thermosetting powder coating composition comprising a resin composition containing (a) 60 to 97 weight % of a flouroresin having reactive group for crosslinking in the molecule which contains 10 weight % or more of fluorine and has glass transition temperature in the range from 35° to 120° C., (b) 3 to 40 weight % of a hardener which can form crosslinking by reaction with the reactive group for crosslinking in the flouroresin (a), (c) 0.01 to 10 weight parts of a synthetic wax or a natural wax based on 100 weight parts of the resin composition and (d) 0.001 to 1.0 weight parts of a material as a coupling agent based on 100 weight parts of the resin composition.

5,356,972

NUCLEATING AGENTS FOR POLY(ETHYLENE TEREPHTHALATE)

Leslie H. Sperling, Bethlehem, Pa., and Leonard W. Barrett, Maplewood, Minn., assignors to Istituto Guido Donegani S.p.A., Novara and Enichem S.p.A., Milan, both of Italy

Filed Jul. 29, 1992, Ser. No. 921,139

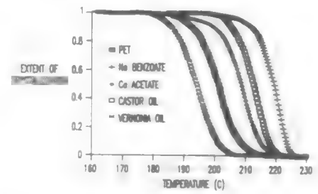
Int. Cl.[5] C08K *5/11, 5/09, 5/04*

U.S. Cl. 524—313 **23 Claims**

1. A thermoplastic molding composition, comprising:

a) a poly(ethylene terephthalate); and

b) a nucleating agent for said poly(ethylene terephthalate) selected from the group consisting of 1) hydroxyl group-containing unsaturated triglyceride oils, 2) mixtures of a hydroxyl group-containing unsaturated triglyceride oil



and a metal salt of an organic acid, and 3) a covalently bonded compound obtained by reacting a hydroxyl group-containing unsaturated triglyceride oil with a partially neutralized organic dicarboxylic acid.

5,356,973

AQUEOUS BASED COATING COMPOSITIONS HAVING IMPROVED METALLIC PIGMENT ORIENTATION

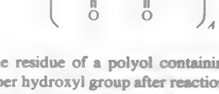
Dennis Taljan, North Ridgeville, Ohio; James E. Poole, Gibsonia, and Marvis E. Hartman, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 31, 1992, Ser. No. 938,912

Int. Cl.[5] C08K *5/11*

U.S. Cl. 524—314 **16 Claims**

1. An aqueous based coating composition containing a polymeric film forming resin; characterized in that the aqueous based coating composition contains as an additive from about 1 to about 40 percent by weight based on resin solids of the composition of an oligomeric ester having an acid value of from about 100 to about 500 of the structure



where X is the residue of a polyol containing from 1 to 50 carbon atoms per hydroxyl group after reaction with an acid or an anhydride, R is an organic moiety from the acid or anhydride, and A has an average value of 2 or greater.

5,356,974

HYDROXYL FUNCTIONAL DERIVATIVES OF EPOXIDIZED DIENE BLOCK COPOLYMERS AND PROCESS FOR MAKING THEM (II)

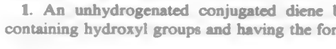
Robert C. Bening; James R. Erickson, both of Katy; David J. St. Clair; Carma J. Gibler, both of Houston, and Joe J. Flores, Sugarland, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 863,648, Apr. 3, 1992, Pat. No. 5,300,586. This application Mar. 24, 1994, Ser. No. 217,472

Int. Cl.[5] C08F *8/00*

U.S. Cl. 525—332.8 **3 Claims**

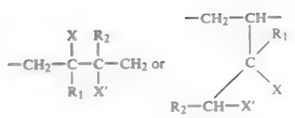
1. An unhydrogenated conjugated diene block polymer containing hydroxyl groups and having the formula



where B is a block comprising conjugated diene monomer, said block having a molecular weight of from 3000 to 7000. and x is 0 or 1, and

wherein A is a polymer block having a molecular weight of from 600 to 1200 and containing a higher concentration of alcohol units than B, said alcohol units having the formula

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wherein R_1 and R_2 are hydrogen or alkyl radicals and X and X' are either —OH or —Cl and at least one of them is —OH, and

wherein Y is a coupling agent or coupling monomers or initiator, and

wherein less than 1 Meq/g polymer of hydroxyl groups is present in the polymer, r>0, q≧0, r+q is from 1 to 100 and n and p are 0 or 1.

5,356,975

HYDROXYL FUNCTIONAL DERIVATIVES OF EPOXIDIZED DIENE BLOCK COPOLYMERS AND PROCESS FOR MAKING THEM (II)

Robert C. Bening; James R. Erickson, both of Katy; David J. St. Clair; Carma J. Gibler, both of Houston, and Joe J. Flores, Sugarland, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 863,648, Apr. 3, 1992, Pat. No. 5,300,586. This application Mar. 24, 1994, Ser. No. 217,517

Int. Cl.[5] C08F *8/00*

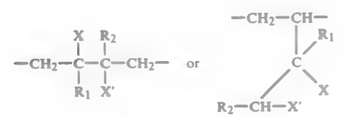
U.S. Cl. 525—332.8 **6 Claims**

1. A conjugated diene block polymer containing hydroxyl groups and having the formula

$$S_z—A—S_{z'}$$

where S is a polymer block of a monoalkenyl aromatic hydrocarbon and where z and z' are 0 or 1 and at least one of z or z' is 1, and

where A is a polymer block having a molecular weight of from 600 to 1200 and comprising a random distribution of hydrogenated polymerized diene monomer and alcohol units of the formula



wherein R_1 and R_2 are hydrogen or alkyl radicals and X and X' are either —OH or —Cl and at least one of them is —OH, and alcohol units is present in an amount such that less than 1 Meq/g polymer of hydroxyl groups are present in the polymer.

5,356,976

2,4-DIALKYL-6-*SEC*- ALKYLPHENOLS

Paul Dubs, Marly, and Rita Pitteloud, Praroman, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

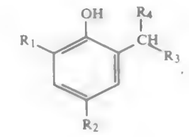
Filed Jul. 12, 1993, Ser. No. 90,836

Claims priority, application European Pat. Off., Jul. 15, 1992, 92810538.6

Int. Cl.[5] C07C *39/06;* **C08K** *5/13*

U.S. Cl. 524—348 **27 Claims**

1. A compound of formula I



(I)

wherein

R_1 is C_1–C_4n-alkyl, isopropyl, s-butyl, cyclopentyl, cyclohexyl or α-methylbenzyl,

R_2 is C_4–C_{18}tert-alkyl or α,α-dimethylbenzyl,

R_3 is C_1–C_{28}alkyl, and

R_4 is methyl or ethyl, with the proviso that the —CHR_3R_4 group contains at least 4 carbon atoms.

13. A composition comprising (a) an organic material which is susceptible to degradation induced by oxidation heat or actinic light, and (b) at least one compound of formula I or mixture thereof.

5,356,977

HYDROPHILICIZING SEALER TREATMENT FOR METAL OBJECTS

Chi-Fan Hsu, Farmington Hills, Mich., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 62,090, May 14, 1993, abandoned. This application Jul. 12, 1993, Ser. No. 89,932

Int. Cl.[5] C08J *3/03;* **C08K** *5/06*

U.S. Cl. 524—366 **20 Claims**

1. A concentrate composition for preparing a hydrophilicizing treatment by dilution with water, said concentrate composition consisting essentially of:

(A) from about 0.3 to about 60 % by weight of a component selected from the group consisting of water soluble homopolymers and copolymers of alkylene imines and salts of such alkylene imine polymers;

(B) from about 0.5 to about 40 % by weight of a component of water soluble alkali metal silicates; and, optionally,

(C) not more than about 60 % by weight of a component of water soluble hydroxyl terminated polymers of (i) ethylene oxide or (ii) mixtures of ethylene oxide and propylene oxide; and, optionally,

(D) an anti-microbial effective amount of a anti-microbial agent; and, optionally,

(E) up to about 20 % by weight of a component of water soluble non-silicate alkalinizing agents; and, optionally.

(F) water.

5,356,978

METHOD OF DISPERSING A TACKY ADDITIVE IN A SOLUTION OF A POLYMER

Philip J. Garrison, Houston, Tex., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Sep. 24, 1993, Ser. No. 125,721

Int. Cl.[5] C08K *5/04, 5/09, 5/34*

U.S. Cl. 524—400 **20 Claims**

1. A method of dispersing a tacky insoluble additive in a solution of a polymer in a first non-polar solvent comprising

(1) preparing a dispersion which comprises

(a) said additive,

(b) a second non-polar solvent in which said additive is insoluble, and

(c) an insoluble infusible non-reactive dispersant, where said additive is added to said second non-polar solvent only after or together with said dispersant, and

(2) adding said dispersion to said solution.

5,356,979

COATING RESIN AND ANTIFOULING COATING COMPOSITION

Seiji Tai, Hitachi; Hisanori Takusari, Ibaraki; Hiroyuki Tanaka, Hitachi; Isamu Moribe, Tokushima, and Chie Ohdoi, Kanazawa, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 996,134

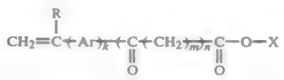
Claims priority, application Japan, Dec. 25, 1991, 3-343331; Feb. 26, 1992, 4-039355; Feb. 28, 1992, 4-043085; Mar. 3, 1992, 4-045009; Mar. 3, 1992, 4-045010; Mar. 3, 1992, 4-045011; May 11, 1992, 4-117362; Jun. 25, 1992, 4-167456; Jul. 2, 1992, 4-175253; Nov. 2, 1992, 4-294293

Int. Cl.[5] C08K *3/10;* **C08L** *33/00;* **C08F** *118/00;* **C09J** *4/00*

U.S. Cl. 524—401 **9 Claims**

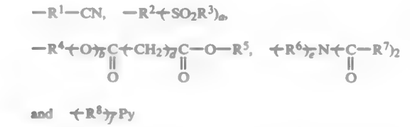
1. An antifouling coating composition comprising:

(a) a coating resin comprising a polymer obtained by polymerizing an unsaturated monomer of the following formula (I) alone or together with one or more other unsaturated monomers copolymerizable therewith:



(I)

wherein R is a hydrogen atom or a straight or branched alkyl group having 1–4 carbon atoms; Ar is a benzene ring or naphthalene ring; k, m and n represent independently a number of 0 or 1; and X is a substituent selected from those represented by the following formulae:



and 

wherein R^1, R^4, R^6 and R^8 are each a straight, branched or alicyclic alkylene group having 1–6 carbon atoms; R^2 is a C_{1-6} straight, branched or cyclic hydrocarbon group connecting 0 and SO_2R^3; a is an integer of 1 to 3 indicating the number of SO_2R^3 groups bonded to R^2; R^3 represents, independently when plural, a straight, branched or cyclic alkyl group, having 1–22 carbon atoms, an aryl group having 6–10 carbon atoms, which may have a substituent, or an aralkyl group having 7–18 carbon atoms, which may have a substituent, when a is 2 or 3, R^3's may be the hydrocarbon groups forming a cyclic structure with each other; b, d, e and f are each a number of 0 or 1; R^5 is a straight or branched alkyl group having 1–4 carbon atoms, two R^7's represent independently a straight, branched or alicyclic alkyl group, having 1–22 carbon atoms, an aryl group having 6–10 carbon atoms or an aralkyl group having 7–10 carbon atoms, or two R^7's may combine to form a cyclic structure; and Py stands for a substituted or non-substituted 2-, 3- or 4- pyridyl group; and

(b) an antifouling agent.

5,356,980

AQUEOUS SILICONE DISPERSIONS CROSSLINKABLE INTO FLAME-RESISTANT ELASTOMERIC STATE

Michel Feder, Ilifurth, and Claude Laurent, Seynod, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Continuation of Ser. No. 666,378, Mar. 8, 1991, abandoned. This application Jan. 11, 1993, Ser. No. 2,547

Claims priority, application France, Mar. 8, 1990, 90 03221

Int. Cl.[5] C08J *5/10;* **C08K** *3/38;* **C08L** *83/04*

U.S. Cl. 524—405 **13 Claims**

1. An aqueous silicone dispersion crosslinkable into flame-resistant elastomeric state by elimination of water therefrom, having a solids content of at least 40% by weight, comprising (A) an oil-in-water emulsion of an α,ω-(dihydroxy)polydiorganosiloxane including a stabilizing amount of at least one anionic or nonionic surfactant, or mixture thereof, (B) an effective crosslinking amount of at least one crosslinking agent therefor, (C_1) a non-siliceous inorganic filler material, and (C_2) a borax hydrate powder in an amount effective to ceramize said dispersion when in cross-linked flame-resistant elastomeric state, said silicone dispersion not including a siliceous filler.

5,356,981

STABILIZER FOR CHLORINATED RESIN AND STABILIZED CHLORINATED RESIN COMPOSITION

Koji Tsuruga, and Kiyotatsu Iwanami, both of Saitama, Japan, assignors to Asahi Denka Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 588,259, Sep. 26, 1990, abandoned. This application Jan. 19, 1993, Ser. No. 6,132

Claims priority, application Japan, Sep. 26, 1989, 1-249816

Int. Cl.[5] C08K *11/00, 3/10*

U.S. Cl. 524—413 **4 Claims**

1. A stabilizer for a rigid polyvinyl chloride resin comprising a reaction product obtained from a water-soluble inorganic copper compound and a hydrotalcite compound represented by the following general formula (I) at a ratio of from 0.01 to 2 parts by weight of the water-soluble inorganic copper compound per part by weight of the hydrotalcite compound;

$$Mg_{1-x}Al_x(OH)_2A^m_{x/2}\cdot mH_2O \quad (I)$$

wherein x is a real number falling within a range of $0<X\leqq 0.5$; A represents a CO_3 or SO_4 group; and m is a real number, wherein said inorganic copper compound is adsorbed into the hydrotalcite.

5,356,982

BASIC CALCIUM ALUMINUM HYDROXY PHOSPHITES, A PROCESS FOR THEIR PRODUCTION AND THEIR USE

Coriolan Razvan, Karlsfeld; Reinhard Beck, Munich; Alfred Kürzinger, Karlsfeld; Michael Rosenthal, and Albert W. Pürzer, both of Munich, all of Fed. Rep. of Germany, assignors to Bärlocher GmbH, Fed. Rep. of Germany

PCT No. PCT/DE92/00144, § 371 Date Aug. 6, 1993, § 102(e) Date Aug. 6, 1993, PCT Pub. No. WO92/15523, PCT Pub. Date Sep. 17, 1992

PCT Filed Feb. 21, 1992, Ser. No. 98,308

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1991, 4106411

Int. Cl.[5] C01B *25/45;* **C08K** *3/32*

U.S. Cl. 524—414 **8 Claims**

1. A basic calcium aluminum hydroxy phosphite compound represented by the general formula:

$$Ca_xAl_2(OH)_{2(x+3-y)}(HPO_3)_y\cdot mH_2O$$

wherein

x is 3 to 12;

$$\frac{2x+5}{2} > y > o$$

with the proviso that y≠1 if x=3 to 8; and

m is 0 to 12.

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5,356,983

PARTICULATE AMMONIUM PHOSPHATE OF SMALL SIZE

Bhima R. Vijayendran, Moaroeville; Seetha Eswarakrishnan, Allison Park, and Carol L. Knox, Moaroeville, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 1, 1993, Ser. No. 24,710
Int. Cl.[5] C08K *3/28, 3/34*
U.S. Cl. 524—416 17 Claims

1. In a composition comprising polyolefin and particles of ammonium phosphate selected from the group consisting of ammonium dihydrogen phosphate, diammonium hydrogen phosphate and a mixture of ammonium dihydrogen phosphate and diammonium hydrogen phosphate, which particles are distributed throughout said polyolefin, the improvement wherein at least 90 percent by weight of said particles of ammonium phosphate have sizes of 150 micrometers or smaller.

5,356,984

METHOD FOR MOLDING MAGNETS AND COMPOSITIONS FOR USE THEREIN

John W. Carbone, Schenectady; James Day, Scotia, and Michael L. Todt, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 14, 1994, Ser. No. 194,956
Int. Cl.[5] C04B *35/00;* C08K *3/10;* C08L *67/00*
U.S. Cl. 524—431 9 Claims

1. A method for producing a permanent magnet which comprises intimately blending ferromagnetic metallic particles with at least one macrocyclic condensation oligomer composition in the solid state and with macrocyclic oligomer polymerization catalysts and initiators in amounts effective to convert said oligomer composition to a linear polymer, to form a solid mixture in which the proportion of said metallic particles is at least about 60% by volume, and compression molding said mixture at a temperature and pressure effective to convert said oligomer composition to a linear polymer.

5,356,985

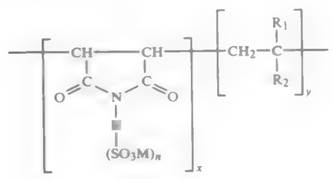
HIGHLY-CONCENTRATED AQUEOUS POLYACRYLONITRILE EMULSIONS AND A METHOD FOR THEIR PREPARATION

Günter Sackmann, Leverkusen; Siegfried Korte; Heinrich Alberts, both of Odenthal, and Rolf-Volker Meyer, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 20, 1993, Ser. No. 123,256
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1992, 4233026
Int. Cl.[5] C08F *2/16*
U.S. Cl. 524—460 8 Claims

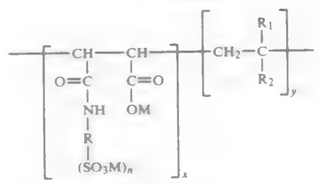
1. A method of preparing aqueous emulsions of acrylonitrile (co)polymers with acrylonitrile contents from 80 to 100 weight % in the (co)polymer, characterized in that monomer mixtures containing at least 80 weight % of acrylonitrile are polymerized in aqueous emulsion in the presence of radical initiators and in the presence of a polymeric emulsifying agent comprising a polymer containing structural units corresponding to formulae (I) and/or (II)

(I)



-continued

(II)



where

M represents a cation-forming radical,

n is 1 or 2,

R represents a hydrocarbon chain with 1 to 10 C atoms or an aromatic radical with 6 to 10 C atoms, or $-(CH_2)_2NH(CH_2)_2-$,

R_1 represents H or $-CH_3$,

R_2 represents H, a C_1–C_{16} alkyl radical, or phenyl

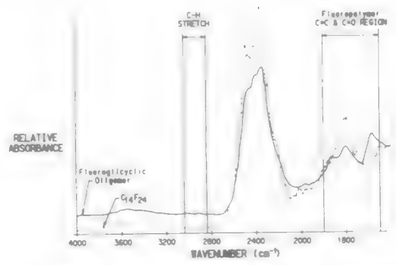
x and y are selected so that the weight average molecular weight M_w of the polymer is 2000 to 500,000 and the x:y ratio is 1:4 to 1:1.

5,356,986

PLASTICIZED FLUOROPOLYMERS

Charles W. Stewart, Newark, and Peter D. Spohn, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 935,354, Aug. 28, 1992, abandoned. This application Aug. 20, 1993, Ser. No. 107,645
Int. Cl.[5] C08K *5/02*
U.S. Cl. 524—462 20 Claims



1. A plasticized fluoropolymer composition for fabrication into an article, comprising a fluoropolymer derived from at least one monomer selected from the group consisting of fluoroolefins and fluorinated vinyl ethers of the formula CY_2=CYOR or CY_2=CYOR'OR, where Y is H or F, and —R and —R'— are independently completely-fluorinated or partially-fluorinated alkyl and alkylene groups containing 1–8 carbon atoms, said fluoropolymer plasticized with about 2–400 phr of high-boiling, highly-fluorinated, polycyclic alkane for fabrication into an article, said composition being dimensionally stable at room temperature and substantially void-free.

5,356,987

METHOD OF CURING A TOPCOAT

Maurice A. S. Stephenson, Philadelphia, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 699,345, May 13, 1991, Pat. No. 5,225,248. This application Dec. 11, 1992, Ser. No. 989,047
Int. Cl.[5] C08L *29/02*
U.S. Cl. 524—512 9 Claims

1. A basecoat composition comprising pigment and a non-silane containing film-forming binder, which basecoat composition comprises a curing catalyst for said non-silane containing film-forming binder and also at least one curing catalyst for a silane functional acrylic polymer in a clearcoat composition for use over the basecoat composition, which silane functional acrylic polymer is, however, not contained in the basecoat composition, and wherein said catalyst for said silane functional acrylic polymer is at least one organometallic curing catalyst which is present in the basecoat composition in the amount of from 0.1 to 5% by weight of the composition.

5,356,988

ACRYLIC POLYMER AQUEOUS DISPERSION MADE THROUGH A MICRO DISPERSION

Joseph L. Nothnagel, Maple Grove, Minn., assignor to Cargill, Incorporated, Minneapolis, Minn.

Continuation-in-part of Ser. No. 731,489, Jul. 17, 1991, abandoned. This application Jun. 22, 1992, Ser. No. 901,934
Int. Cl.[5] C08F *6/24;* C08K *5/06;* C08L *33/08*
U.S. Cl. 524—556 14 Claims

1. A process for making a water dispersion of a water dispersible salt of an acrylic polymer, the process comprising:

mixing an acrylic polymer, a base selected from the group consisting of an amine and ammonia, and an organic solvent selected from the group consisting of a substantially water immiscible organic solvent, ethylene glycol monobutyl ether and mixtures thereof in an amount effective to disperse the acrylic polymer in the organic solvent, the organic solvent capable of being separated from water by virtue of its immiscibility therewith, the acrylic polymer having a carboxyl groups, a weight average molecular weight in the range of from about 30,000 to about 300,000 and an acid value in the range of from about 15 to about 100;

salifying the acrylic polymer with the base to provide a salified polymer having at least 60% of the carboxyl groups of the acrylic polymer converted to amine or ammonia salt;

mixing the salified acrylic polymer dispersed in the organic solvent with water or mixing the acrylic polymer dispersed in the organic solvent with water to provide a salified polymer/organic solvent/water azeotropic mixture having a boiling point in the range of from about 85° C. to about 99° C.; and

heating the azeotropic mixture to remove the organic solvent; condensing the organic solvent being heated and removed from the azeotropic mixture; separating the condensed organic solvent from water which has been removed with the organic solvent; and returning the separated water to the azeotropic mixture to provide an aqueous dispersion of the salt of the acrylic polymer having at least 30 weight percent acrylic polymer and salt thereof as solids and less than 2 weight percent of the organic solvent, and having at least 60% of the carboxyl groups of the acrylic polymer converted to an amine or ammonia salt.

5,356,989

AQUEOUS DISPERSION

Hiroshi Tachika; Keiichiro Togawa, and Hiroshi Fujimoto, all of Ohtsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 898,960, Jun. 12, 1992. This application Jan. 18, 1994, Ser. No. 183,136
Claims priority, application Japan, Jun. 13, 1991, 3-169189
Int. Cl.[5] C08J *3/03;* C08G *63/20*
U.S. Cl. 524—608 10 Claims

1. An aqueous dispersion comprising the following components (A), (B), (C), and (D):

(A) a polyester resin comprising a polycarboxylic acid component and a polyol component,

the polycarboxylic acid component containing aromatic dicarboxylic acid having no metal sulfonate groups in an amount in the range of 50 to 99.99 mole percent, and dicarboxylic acid having a metal sulfonate group in an amount in the range of 0.01 to 2 mole percent based on the total moles of the polycarboxylic acid component,

the polyol component containing diol in an amount in the range of 30 to 100 mole percent based on the total moles of the polyol component, the diol having an alkyl group with 1 to 3 carbon atoms on a side chain, and the total number of carbon atoms in the diol being 6 to 25, and

the polyester resin having a number average molecular weight in the range of 6,000 to 30,000 and having an acid number of 50 equivalents/10^6 g or more, wherein said acid number of said polyester resin is achieved by an addition reaction of a polyester resin with an acid anhydride,

(B) a water soluble organic compound having a boiling point in the range of 60° to 250° C.,

(C) water, and

(D) a neutralizer;

components (A), (B), and (C) being contained in the dispersion in an amount in the range of 1 to 70 percent by weight, 0 to 69 percent by weight, and 9 to 99 percent by weight, respectively, and

components (A), (B), (C), and (D) satisfying the following expressions (1) and (2):

$$B/(B+C) \text{ (weight ratio)} = 0\text{–}0.7 \quad (1)$$

$$D/A \text{ (equivalent ratio)} \ 0.1\text{–}20 \quad (2).$$

5,356,990

BLENDS OF IMMISCIBLE POLYMERS HAVING NOVEL PHASE MORPHOLOGIES

Mark S. Pucci, Elk Grove Village, Ill., assignor to Morton International, Inc., Chicago, Ill.

Filed May 31, 1991, Ser. No. 709,667
Int. Cl.[5] C08L *51/06, 29/04, 23/06*
U.S. Cl. 525—57 7 Claims

1. A process of preparing a two-phase blend of between about 35 wt. % and about 60 wt. % poly(ethylene vinyl alcohol) (EVOH) and between about 40 wt. % and about 65 wt. % graft polyethylene material, said graft polyethylene material comprising polyethylene having grafted thereto between about 0.05 and about 10 wt. percent, based upon the weight of polyethylene, unsaturated carboxylic acid or carboxylic anhydride, the method comprising pre-melting said EVOH and adding said graft polyethylene material in solid form to said pre-melted EVOH, mixing said EVOH and said graft polyethylene material to achieve a melt-blend of said EVOH and said graft polyethylene material and cooling said melt-blend to achieve a solidified blend; whereby a two-phase morphology is achieved in which said EVOH forms a continuous phase having discrete, dispersed domains of graft polyethylene material contained therein, wherein said two-phase blend has improved gas barrier properties relative to a blend of equal proportions formed by co-melting said polyethylene and said EVOH.

5,356,991

POLYESTER-BASED SHOCK-RESISTANT COMPOSITIONS AND PROCESS FOR THEIR PREPARATION

Antonio Chiolle, Ferrara, and Gaetano Andreoli, Occhiobello, both of Italy, assignors to Ausimont S.p.A., Milan, Italy

Division of Ser. No. 815,915, Jan. 2, 1992, Pat. No. 5,252,665, which is a continuation of Ser. No. 55,078, May 28, 1987, abandoned. This application May 18, 1993, Ser. No. 62,652
Claims priority, application Italy, May 29, 1986, 20606 A/86
Int. Cl.[5] C08L *67/02*
U.S. Cl. 525—66 9 Claims

1. A polymeric composition comprising:

(a) from 55 to 98% by weight of a saturated polybutylenetephthalate polyester;

(b) from 1 to 35% by weight of a butadiene/styrene/methyl methacrylate terpolymer rubber containing from 58–62%

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by weight polybutadiene, from 12–18% by weight styrene and from 24–26% by weight methylmethacrylate, and having a cross-linking degree, gel content, of 94–99% by weight with a Tg less than 0° C.;

(c) from 1 to 10% by weight of an block copolyester having a melting point lower than 190° C., and obtained by polycondensation or transesterification of an aromatic dicarboxylic acid with diol having the formula (I)



(I)

wherein R is a linear or branched alkylene radical containing 2 to 20 carbon atoms, or an arylene or cycloalkylene radical containing from 6 to 20 carbon atoms, and with a polyetherglycol having the formula:



(II)

wherein R_1 is a linear or branched alkylene radical containing from 2 to 20 carbon atoms, and m is an integer greater than 2, and such that the molecular weight of the polyetherglycol is within the range of from 300 to 10,000; and

(d) from 1 to 25% of a thermoplastic material selected from polycarbonates and polyurethanes relative to the total composition.

5,356,992

COMPATIBILIZED BLENDS OF PPE/POLYETHYLENE COPOLYMER

Steve G. Cottis, Hightstown, and Kavilipalayam M. Natarajan, North Brunswick, both of N.J., assignors to Enichem S.p.A., Milan, Italy

and a continuation-in-part of Ser. No. 898,829, Jun. 15, 1992, Pat. No. 5,286,793. This application Feb. 26, 1993, Ser. No. 23,914

Int. Cl.[5] C08L *33/02, 71/12*

U.S. Cl. 525—68 **16 Claims**

1. A process for preparing a compatible polymer blend, comprising reactive melt mixing a mixture consisting essentially of

A) 40 to 80% by weight polyphenylene ether,

B) 20 to 60% by weight of a C_{2-4} olefin-(alkyl)acrylic acid random copolymer containing from 4 to 15 wt. % acrylic acid monomer units, and

C) 0.1–3.0wt.%, based on the sum of (A) and (B), of a carboxylic anhydride.

5,356,993

COREACTIVE CONJUGATED DIENE POLYMER COMPOSITIONS WHICH PHASE SEPARATE WHEN CURED

James R. Erickson, Katy; Michael A. Masse, Richmond; Steven H. Dillman, Houston; Esther M. Zimmermann, Houston, and Dale L. Handlin, Jr., Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 12, 1993, Ser. No. 90,855

Int. Cl.[5] C08F *297/02*

U.S. Cl. 525—89 **14 Claims**

1. A phase separated cured polymeric composition, comprising:

from 20 to 70% by weight of a first epoxidized polymer of at least one saturated or unsaturated conjugated diene;

from 1 to 30% by weight of a second epoxidized polymer having segments that phase separate from the first epoxidized polymer, wherein the second epoxidized polymer is an epoxidized linear polymer having the structure epoxidized isoprene-styrene/hydrogenated butadiene-epoxidized isoprene; and

from 0% to 80% by weight of a tackifying resin.

5,356,994

ADHESIVE/SEALANT COMPOSITION COMPRISING A RUBBER COMPONENT

Markus Koch, Bad Homburg, Fed. Rep. of Germany, assignor to Bostik, Inc., Middleton, Mass.

Filed Jul. 7, 1992, Ser. No. 909,786

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1991, 4122849

Int. Cl.[5] C08L *9/00, 47/00, 53/00*

U.S. Cl. 525—98 **22 Claims**

1. A hot-vulcanisable adhesive/sealant composition comprising a rubber component and a vulcanisation system, the rubber component comprising a mixture of a butadiene solid rubber and a butadiene or isoprene liquid rubber, and wherein the liquid rubber comprises carboxylic acid groups.

5,356,995

LIGHT-STABILIZED BINDERS FOR COATING COMPOSITIONS

Andreas Valet, Eimeldingen, Fed. Rep. of Germany; Roger Meuwly, Givisiez, and Mario Slongo, Tafers, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 815,887, Jan. 9, 1992, Pat. No. 5,198,498, which is a continuation of Ser. No. 647,595, Jan. 29, 1991, abandoned. This application Dec. 16, 1992, Ser. No. 991,679

Claims priority, application Switzerland, Feb. 6, 1990, 377/90

Int. Cl.[5] C08L *33/02, 33/08, 33/10*

U.S. Cl. 525—100 **12 Claims**

1. A curable composition comprising

(a) a silicon-containing copolymer,

(b) a (meth)acrylic copolymer, and

(c) at least one curing agent, each of which two said copolymers contains functional groups which are able to react with the curing agent,

wherein only component (a) contains a UV absorber which is a derivative of 2-(2-hydroxyphenyl)benzotriazole or of o-hydroxyphenyl-s-triazine in copolymerised form.

5,356,996

COATING COMPOSITION

Yasushi Nakao, Hiratsuka; Junshi Adachi, Tokyo, and Motoshi Yabuta, Hadano, all of Japan, assignors to Kansai Paint Company, Limited, Amagasaki, Japan

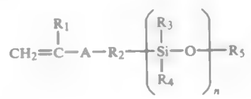
Filed Feb. 18, 1994, Ser. No. 199,022

Claims priority, application Japan, Feb. 22, 1993, 5-057694

Int. Cl.[5] C08L *61/28, 83/04*

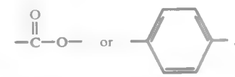
U.S. Cl. 525—158 **4 Claims**

1. A coating composition comprising: (a) an acrylic polymer prepared by copolymerizing about 2.5 to about 30% by weight of an alkoxysilane-containing vinyl monomer which is represented by the formula



(I)

wherein A is



R_1 is a hydrogen atom or a methyl group, R_2 is a bivalent aliphatic saturated hydrocarbon group having 1 to 6 carbon atoms, R_3 and R_4 are the same or different and are each a phenyl group, an alkyl group having 1 to 6 carbon atoms or an alkoxy group having 1 to 10 carbon atoms, R_5 is an alkyl group

having 1 to 10 carbon atoms, and n is an integer of 1 to 100, about 5 to about 50% by weight of an acetoacetoxy-containing vinyl monomer and about 20 to about 92.5% by weight of a vinyl monomer which is copolymerizable with the above vinyl monomers, and (b) an amino resin in an amount of about 5 to about 50% by weight based on the total amount of resin solids in the coating composition.

5,356,997

TIRE TREAD COMPOUND MADE WITH STRAIN CRYSTALLIZABLE 3,4-POLYISOPRENE

Johnny D. Massie, II, Hudson; Wen-Liang Hsu, Copley; Adel F. Halasa, Bath, and Paul H. Sandstrom, Tallmadge, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 930,629, Aug. 17, 1992, Pat. No. 5,239,023, which is a continuation-in-part of Ser. No. 716,475, Jun. 17, 1991, Pat. No. 5,151,398, which is a division of Ser. No. 602,546, Oct. 24, 1990, Pat. No. 5,082,906. This application Oct. 30, 1992, Ser. No. 968,916

Int. Cl.[5] C08F *36/08;* **C08L** *9/00*

U.S. Cl. 525—237 **17 Claims**

1. A polyisoprene rubber comprised of isoprene repeat units, wherein the polyisoprene rubber is strain crystallizable, wherein the polyisoprene rubber has a low gel content of less than about 10%, wherein from about 65% to about 85% of the isoprene repeat units are of the 3,4-microstructure, wherein from about 15% to about 35% of the isoprene repeat units are of the cis-1,4-microstructure, and wherein essentially no isoprene repeat units are of the trans-1,4-microstructure or 1,2-microstructure.

5,356,998

GRAFT POLYMER BASED ON ULTRAHIGH MOLECULAR WEIGHT POLYETHYLENE

John Hobes, Dinslaken, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 761,301, Sep. 17, 1991, abandoned. This application Aug. 9, 1993, Ser. No. 105,466

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1990, 4030564

Int. Cl.[5] C08F *267/04*

U.S. Cl. 525—285 **24 Claims**

1. A graft polymer consisting essentially of 95 to 99.9 parts by weight of polyethylene having a mean average molecular weight of at least 1,000,000 g/mol as a base polymer, and 5 to 0.1 parts by weight of a graft monomer selected from the group consisting of alkenecarboxylic acid and alkenecarboxylic anhydride.

5,356,999

MULTIFUNCTIONAL VISCOSITY INDEX IMPROVERS BASED ON POLYMERS CONTAINING SULFONAMIDES

Maria M. Kapuscinski, Carmel; Benjamin J. Kaufman, Hopewell Junction, and Robert T. Biggs, Walden, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 29, 1990, Ser. No. 605,069

Int. Cl.[5] C08F *269/00;* **C10L** *1/14*

U.S. Cl. 525—286 **4 Claims**

1. A polymer containing a carbon-carbon backbone and pendant units derived from a nitroso-compound containing sulfonamide bonded thereon prepared in a one step process by an "ENE" reaction performed during a mechano-chemical processing of solid rubber mastification at a temperature of about 60° C. to about 180° C.

5,357,000

GRAFTED COPOLYMERS HIGHLY ABSORBENT TO AQUEOUS ELECTROLYTE SOLUTIONS

Iqbal Ahmed, Bartlesville, Okla., and Henry L. Hsieh, Pittsboro, N.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 917,700, Jul. 21, 1992, Pat. No. 5,206,326, which is a continuation of Ser. No. 665,880, Mar. 7, 1991, abandoned. This application Apr. 26, 1993, Ser. No. 53,038

The portion of the term of this patent subsequent to Apr. 23, 2010, has been disclaimed.

Int. Cl.[5] C08F *255/02, 251/02*

U.S. Cl. 525—296 **11 Claims**

1. A graft copolymer formed by:

(A) graft polymerizing onto a first polymer of polypropylene wherein said polypropylene is present in an amount from about 1 weight percent to about 50 weight percent; at least one comonomer wherein said comonomer is present in an amount from about 75 mole percent to about 90 mole percent and is selected from the group consisting of acrylamide, methacrylamide, acrylonitrile, acrylic acid, methacrylic acid, alkali salts of acrylic acid, alkali salts of methacrylic acid, 2-methacryloyloxyethyldiethylamine, 2-acrylamido-2-methylpropane sulfonic acid, alkali salts of 2-acrylamido-2-methylpropane sulfonic acid, 2-methyacryloyloxyethane sulfonic acid, alkali salts of 2-methacryloyloxyethane sulfonic acid, N-vinyl-2-pyrrolidone and combinations of two or more thereof; and

(B) graft copolymerizing therewith an ampholytic ion pair monomer wherein said ampholytic ion pair monomer is present in an amount from about 2 mole percent to about 25 mole percent and having an ammonium cation and a sulfonate anion wherein

(i) the ammonium cation is 2-methacryloyloxyethyldiethylammonium; and

(ii) the sulfonate anion is selected from the group consisting of 2-acrylamido-2-methylpropane sulfonate, 2-methacryloyloxyethane sulfonate, vinyl sulfonate, styrene sulfonate and any combination of two or more thereof; and

(C) partially saponifying neutralization of said graft copolymer formed in step (B).

5,357,001

OPTICALLY ACTIVE AMINO ACID SULPHOXIDE AND AMINO ACID SULPHONE DERIVATIVES, THEIR PREPARATION, THEIR POLYMERISATION AND USE AS ADSORBENTS FOR CHROMATOGRAPHIC RESOLUTION OF RACEMATES

Michael Grosse-Bley, Köln; Bruno Bömer, Bergisch Gladbach; Rolf Grosser, Leverkusen; Walter Lange, Köln; Franz-Peter Hoever, Köln, and Dieter Arit, Köln, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 23, 1993, Ser. No. 81,537

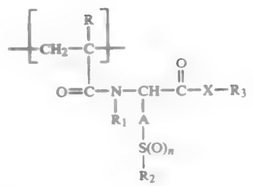
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1992, 4221711

Int. Cl.[5] C08F *8/34, 20/58, 20/60, 28/00*

U.S. Cl. 525—326.1 **9 Claims**

1. An optically pure crosslinked insoluble polymer containing at least 40 mol % of structural units of the formula

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(V)

in which

n is 1 or 2,

R represents hydrogen, methyl or fluorine,

R_1 represents hydrogen or C_1-C_4-alkyl or together with R_2 forms a methylene group or a dimethylene group, each of which can be mono- or disubstituted by C_1-C_4-alkyl,

R_2 represents a straight-chain, branched or cyclic alkyl radical having up to 10 C atoms, C_6-C_{14}-aryl,



C_2-C_{10}-acyl, substituted or unsubstituted benzoyl or benzyl or together with R_1 forms a bridge,

R_3 represents a straight-chain, branched or cyclic alkyl radical having up to 20 C atoms which is unsubstituted or mono- to trisubstituted by halogen, alkoxy having 1 to 4 C atoms, aralkoxy having 7 to 16 C atoms or aryl having 6 to 10 C atoms,

X denotes oxygen or an NR_4 group in which R_4 represents hydrogen or C_1-C_4-alkyl or together with R_3 forms a nitrogen-containing 5- to 7-membered ring which may be mono- or disubstituted by C_1-C_4-alkyl- or C_1-C_6-alkoxycarbonyl, and

A represents a methylene or dimethylene group which is unsubstituted or mono- or disubstituted by C_1-C_4-alkyl.

5,357,002

POLYMER CONTAINING CHELATING GROUPS, PROCESS FOR PREPARING IT AND ITS USE IN WATER PURIFICATION

Alessandro Lezzi, Milan; Arnaldo Roggero, San Donato Milanese, and Sandra Cobianco, Coazze, all of Italy, assignors to Eni Chem Synthesis S.p.A., Palermo, Italy

Filed Dec. 18, 1992, Ser. No. 992,716

Claims priority, application Italy, Dec. 19, 1991, MI91A003417; Dec. 1, 1992, MI92A002750

Int. Cl.[5] C08F *8/34, 8/32, 8/38, 8/26*

U.S. Cl. 525—332.2 **8 Claims**

1. Water insoluble polymer having the general formula (I)

$$P\text{—}(\text{—}(\text{—O—R—})_n\text{—}(\text{NH—Q})_p\text{—F})_m \quad (I)$$

wherein

P is a water insoluble polymer matrix formed by condensing functional groups on the polymer with a polyethylene glycol or an alkylene oxide;

R is $\text{—}CH_2CH_2\text{—}$ or mixtures of $\text{—}CH_2CH_2\text{—}$ and $\text{—}CH_2CH(CH_3)\text{—}$, with the molar ratio of the units in the mixture being at least 3:1;

n is 3 to 50;

m is a numeral such that the % by weight of all of the $(\text{—O—R—})_n(\text{NH—Q})_p\text{—F}$ hydrophilic chains is higher than 1% by weight of total weight of (I);

Q is a difunctional aliphatic or aromatic hydrocarbon radical of from 2 to 6 carbon atoms;

p is 0 or 1;

F is a chelating group selected from the group consisting of dithiocarbamate and methyl-thiourea when p is 1 or from thiol and isothiouronium when p is 0.

5,357,003

POLYMER MIXTURE WHICH COMPRISES A POLYPHENYLENE ETHER, A POLYAMIDE AND AN AROMATIC GROUP CONTAINING POLYSILOXANE

Hendrikus J. E. Smits, Roosendaal; Roelof van der Meer, Halsteren, both of Netherlands, and Adelbert H. L. Groothuis, Evansville, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 15, 1989, Ser. No. 436,583

Claims priority, application Netherlands, Nov. 16, 1988, 8802819; Jul. 25, 1989, 8901916

Int. Cl.[5] C08L *71/12, 77/06, 83/04*

U.S. Cl. 525—393 **12 Claims**

1. A polymer mixture, comprising polyphenylene ether resin, polyamide resin, and a polysiloxane compound, wherein said polysiloxane compound comprises at least one group which includes at least one aromatic constituent.

5,357,004

COPOLYMERS OF POLYASPARTIC ACID

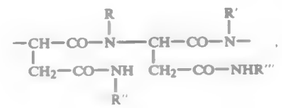
Gary J. Calton, Elkridge, and Louis L. Wood, Rockville, both of Md., assignors to Srchem Incorporated, Elkridge, Md.

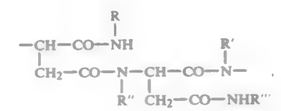
Continuation-in-part of Ser. No. 44,900, Apr. 7, 1993, Pat. No. 5,286,810, and a continuation-in-part of Ser. No. 926,242, Aug. 7, 1992, abandoned. This application Feb. 14, 1994, Ser. No. 195,036

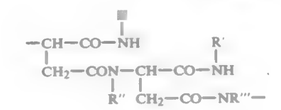
Int. Cl.[5] C08G *69/48*

U.S. Cl. 525—435 **11 Claims**

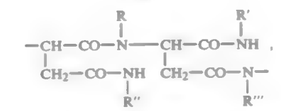
1. A composition comprising a polyamide having in its molecules at least one of the groups







and



wherein R, R', R'' and R''' each is independently a hydrogen or an alkyl or substituted alkyl having 1 to 36 carbons, together with at least one of the groups



wherein Z represents a hydrogen atom, an alkali metal or an alkaline earth metal or ammonium ion, as a repeating unit, wherein at least one of the R groups is an integral part of an internal peptide bond.

5,357,005

REACTIVE SURFACE FUNCTIONALIZATION

Stephen L. Buchwalter, Hopewell Junction; Charles R. Davis, Endicott; Ronald D. Goldblatt, Rye Brook, and Richard R. Thomas, Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 11, 1991, Ser. No. 805,213

The portion of the term of this patent subsequent to May 28, 2008, has been disclaimed.

Int. Cl.[5] C08F *20/00, 283/04;* **B05D** *3/04;* **C08L** *77/06*

U.S. Cl. 525—436 **35 Claims**

1. A method comprising treating a dielectric polymer selected from the group consisting of: polyamides, polyesters, polyurethanes, polysiloxanes, phenolics, polysulfides, polyacetals, polyethylenes, polyisobutylenes, polyacrylonitriles, polyvinylchlorides, polystyrenes, polymethylmethacrylates, polyvinylacetates, polytetrafluoroethylenes, polyisoprenes, polycarbonates, polyethers, polyimides, polybenzimidazoles, polybenzoxazoles, polybenzothiazoles, polyoxadiazoles, polytriazoles, polyquinoxalines, polyimidazopyrrolones and copolymers containing an aromatic constituent and a constituent selected from a vinyl and cyclobutane group, said constituents containing at least one of the group of Si, Ge, Ti, Zn and Fe, by exposing said dielectric polymer to a water vapor plasma wherein said water vapor containing plasma is generated in an electric field from an electric power of from about 10^{-3} watts/cm^3 to about 1000 watts/cm^3 at a temperature of from about ambient to about the glass transition temperature of said treated polymer body and a pressure in the range from about 10^{-6} atmospheres to about 5 atmospheres for a period of time ranging from about 0.1 minute to about 1 hour, to form reactive sites on the surface of said dielectric polymer;

contacting said treated dielectric polymer surface with a composition of matter selected from the group consisting of an epoxy compound, an acid chloride, an isocyanate, or prepolymers of said epoxy compound, said acid chloride or said isocyanate, said composition reacting with said reactive sites to graft said composition of matter thereon and forming a reaction product thereon.

5,357,006

PREPARATION OF RECYCLATE POLYOLS, AND THE USE THEREOF IN THE PREPARATION OF POLYURETHANES

Michael Gassan, Senftenberg; Bernhard Naber; Vera Neiss, both of Schwarzheide; Peter Moeckel, Luetzschena, and Wolfgang Weissflog, Halle, all of Fed. Rep. of Germany, assignors to BASF Schwarzheide GmbH, Schwarzheide, Fed. Rep. of Germany

Filed Oct. 7, 1993, Ser. No. 132,854

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1992, 4234335.6

Int. Cl.[5] C08L *75/04*

U.S. Cl. 525—453 **8 Claims**

1. A process for the preparation of recyclate polyols having a low amine content by reacting polyurethanes and/or polyurea-polyurethanes with short-chain compounds containing at least 2 OH groups in the presence of catalysts, which comprises metering in monofunctional and/or difunctional glycidyl ethers over the entire course of the reaction.

5,357,007

METHOD FOR MAKING A SOLVENTLESS SILICONE PRESSURE SENSITIVE ADHESIVE COMPOSITION AND PRODUCT

Jeffrey H. Wengrovius, Scotia; Timothy B. Burnell, Schenectady, and Peter M. Miranda, Glenville, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 12, 1993, Ser. No. 30,739

Int. Cl.[5] C08F *283/00*

U.S. Cl. 525—478 **6 Claims**

1. A method for making a heat curable silicone PSA which reduces environmental risks comprising mixing together,

(a) a free-flowing silicone resin powder having a primary particle size range of from about 0.1 to about 200 nanometers which has been formed by spray drying in a dry-gas stream at a temperature in the range of from 90° C. to 300° C., an organic solvent dispersion of an organo siloxane hydrolyzate comprising triorganosiloxane units and SiO_2 units and having an organo to silicon ratio of about 0.5 to about 1.5,

(b) a substantially linear alkenyl siloxane,

(c) a substantially linear silicon hydride siloxane, and,

(d) an amount of a hydrosilylation catalyst which is effective for curing the heat curable silicone PSA, where the heat curable silicone PSA has a ratio of hydrogen atoms attached to silicon and alkenyl groups attached to silicon having a value of from 0.8 to about 2 and there is utilized from 50 to 500 parts by weight of (b), (c) and (d), per 100 parts of (a).

5,357,008

LATENT CURING AGENT FOR EPOXY RESIN AND ITS PREPARATION

Hsi-Chuan Tsai, Kanagawa, and Souichi Muroi, Shizuoka, both of Japan, assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jan. 14, 1993, Ser. No. 4,376

Claims priority, application Japan, Jan. 22, 1992, 009415; Jan. 24, 1992, 011199; Dec. 14, 1992, 333070; Dec. 18, 1992, 338239

Int. Cl.[5] C08F *283/00*

U.S. Cl. 525—526 **6 Claims**

1. A method for the preparation of fine powder of a latent curing agent for epoxy resin which comprises the steps of:

(a) substantially stoichiometrically reacting an amine compound having only one active amino-hydrogen with a polyfunctional epoxy compound in the presence of a dispersion stabilizer in an organic solvent capable of dissolving both said amine compound and said epoxy compound but incapable of dissolving the amine compound-/epoxy compound adduct formed therefrom at elevated temperatures with agitation to form spherical particles of said amine compound/epoxy compound adduct;

(b) reacting said particles with a polyfunctional epoxy compound in the presence of said dispersion stabilizer in said organic solvent at elevated temperatures with agitation; and

(c) recovering the particles thus formed from the reaction mixture.

5,357,009

POLYMER SCALE PREVENTIVE AGENT

Toshihide Shimizu, Urayasu, and Mikio Watanabe, Ibaraki, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 4, 1993, Ser. No. 71,267

Claims priority, application Japan, Jun. 4, 1992, 4-170096

Int. Cl.[5] B05D *1/30;* **C08F** *2/00*

U.S. Cl. 526—62 **3 Claims**

1. A process of producing a polymer of a monomer having an ethylenically unsaturated double bond, which comprises polymerizing the monomer in a polymerization vessel having a

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coating on its inner wall surfaces, whereby polymer scale is prevented from being deposited,

wherein said coating has been formed by applying an alkaline solution containing a condensation product of (A) an aliphatic diamine compound and (B) an aromatic tetracarboxylic acid anhydride, followed by drying.

5,357,010

PROCESS FOR THE PREPARATION OF A POLYCHLOROPRENE POLYMER

Francois Sauterey, Chant/Sur/Drac; Paul Branlard, Lyon, and Paul Poullet, Grenoble, all of France, assignors to Enichem Elastomeres France SA, Courbevoie, France

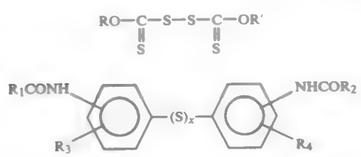
Continuation of Ser. No. 899,129, Jun. 16, 1992, abandoned, which is a continuation of Ser. No. 622,142, Dec. 4, 1990, abandoned, which is a continuation of Ser. No. 334,713, Apr. 7, 1989, abandoned. This application Feb. 25, 1993, Ser. No. 22,836

Claims priority, application France, Apr. 8, 1988, 88/04657

Int. Cl.[5] C08F *2/24*

U.S. Cl. 526—220 **10 Claims**

1. A process for the preparation of a polychloroprene polymer, comprising polymerizing chloroprene in alkaline aqueous emulsion, in the presence of a free-radical initiator and a combination chain-transfer agent, said combination chain-transfer agent comprising an effective amount of (1) at least one xanthogen disulfide and (2) at least one bis(acylaminophenyl)-polysulfide for forming a polychloroprene polymer, said polymerization being carried out without elemental sulfur and wherein the at least one xanthogen disulfide has a formula according to Formula (I) and the at least one bis(acylaminophenyl)-polysulfide has a formula according to Formula (II):



(I)

(II)

wherein R and R', which may be identical or different, are each alkyl radicals having from 1 to 8 carbon atoms; R_1 and R_2, which may be identical or different, are each a linear or branched chain alkyl radical, an aryl radical or an arylalkyl radical, R_3 and R_4 which are identical or different, are each hydrogen, a methyl radical, or ethyl radical; and x ranges from 2 to 4.

5,357,011

PROCESS FOR PRODUCING VINYL CHLORIDE-BASED POLYMERS

Shuji Ohnishi, Lake Jackson, Tex., and Tadashi Amano, Kamisu, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 30, 1993, Ser. No. 159,248

Claims priority, application Japan, Dec. 1, 1992, 4-349683

Int. Cl.[5] C08F *4/38*

U.S. Cl. 526—228 **6 Claims**

1. A process for producing a vinyl chloride-based polymer, which comprises suspension polymerizing vinyl chloride monomer or a vinyl chloride-containing monomeric mixture in an aqueous medium in the presence of an oil-soluble polymerization initiator,

wherein said oil-soluble polymerization initiator consists essentially of

(A) at least one compound having a 10-hour half-life temperature, at a concentration of 0.1 mol/l in benzene, of not lower than 35° C. selected from the group consisting of peroxycarbonate compounds and peroxyester compounds, and

(B) isobutyryl peroxide,

said oil-soluble initiator (B) being present in an amount ranging form 0.01 to 0.04% by weight based on the amount of said monomer or monomeric mixture and ranging from 10 to 30% by weight based on the total amount of said oil-soluble initiators (A) and (B).

5,357,012

WATER-INSOLUBLE CYCLODEXTRIN POLYMERS AND PROCESSES FOR THEIR PREPARATION

Peter Nuesstein; Guenther Standinger, both of Munich; Franz-Heinrich Kreuzer, Martinsried, and Wolfgang Schmitt-Sody, Wolfratshausen, all of Fed. Rep. of Germany, assignors to Consortium für elektrochemische industrie GmbH, Munich, Fed. Rep. of Germany

PCT No. PCT/EP91/00562, § 371 Date Sep. 25, 1992, § 102(e) Date Sep. 25, 1992, PCT Pub. No. WO91/14710, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 22, 1991, Ser. No. 927,434

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1990, 4009825

Int. Cl.[5] C08F *24/00*

U.S. Cl. 526—238.2 **4 Claims**

1. A water-insoluble hydrophilic cyclodextrin polymer selected from the group consisting of

with the exception of a homopolymer of methacrylate cyclodextrin;

a copolymer of a methacrylate substituted cyclodextrin;

a homopolymer of glyceryl methacrylate substituted cyclodextrin;

a copolymer of glyceryl methacrylate substituted cyclodextrins;

a homopolymer of methacrylate hydroxyalkyl cyclodextrin containing C_2 to C_4 hydroxyalkyl units;

a copolymer of methacrylate hydroxyalkyl cyclodextrin containing C_2 to C_4 hydroxyalkyl units;

a homopolymer of glyceryl methacrylate hydroxyalkyl cyclodextrin containing C_2 to C_4 hydroxyalkyl units;

a copolymer of glyceryl methacrylate hydroxyalkyl cyclodextrin containing C_2 to C_4 hydroxyalkyl units;

each of said above-noted methacrylate containing polymers having an AS value between 0.3 and 0.9; and

a copolymer of the said substituted cyclodextrin derivatives with a water-soluble ethylenically unsaturated comonomer selected from the group consisting of acrylamide, 1-vinyl-2-pyrrolidone, hydroxyethyl acrylate and hydroxyethyl methacrylate.

5,357,013

HYDROPHILIC OXYGEN PERMEABLE POLYMERS

Ronald E. Bambury, Fairport, N.Y., and Dong J. Choo, Seoul, Rep. of Korea, assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

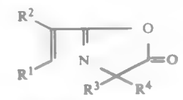
Continuation of Ser. No. 479,316, Feb. 13, 1990, abandoned, which is a division of Ser. No. 153,901, Feb. 9, 1988, Pat. No. 4,910,277. This application Sep. 17, 1992, Ser. No. 947,080

The portion of the term of this patent subsequent to Mar. 20, 2007, has been disclaimed.

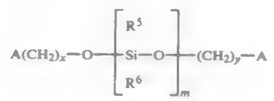
Int. Cl.[5] C08F *226/06, 224/00, 230/08*

U.S. Cl. 526—260 **3 Claims**

1. A contact lens composition formed by polymerizing a mixture comprising a hydrophobic polysiloxane monomer and a wetting agent which is a compound represented by the general formula



where R^1 and R^2 independently denote a hydrogen atom or a lower alkyl radical with one to six carbon atoms, and R^3 and R^4 independently denote alkyl radicals with one to six carbon atoms or a cycloalkyl radical with 5 or 6 carbon atoms; with the proviso that said hydrophobic monomer does not include a siloxane monomer represented by the formula



where A denotes an acrylate or methacrylate radical, R^5 and R^6 independently denote alkyl radicals with one to six carbon atoms or phenyl radicals, and x and y are on the average one to six.

5,357,014

STYRENIC RESIN MOLDING AND PROCESS FOR PRODUCING SAME

Takaaki Uchida; Tomoaki Takebe; Keisuke Funaki, all of Ichihara, and Komei Yamasaki, Sodegaura, all of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1992, Ser. No. 923,475

Claims priority, application Japan, Aug. 9, 1991, 3-200401; Oct. 15, 1991, 3-266419

Int. Cl.[5] C08F *12/00*; C08J *5/18*

U.S. Cl. 526—347.2 **6 Claims**

1. An orientable or thermoformable non-oriented styrenic resin molding which comprises a styrenic polymer having a high degree of syndiotactic configuration or a composition thereof, said molding having a crystallinity of 25% or more, wherein the upper limit of crystallinity is defined by requiring that the molding possess a spherulite radius of 10 μm or less and a haze of 5% or less.

5,357,015

ELECTRIC FIELD CURING OF POLYMERS

Yair Haruvy, Rehovot, Israel, and Stephen E. Webber, Austin, Tex., assignors to Board of Regents, The University of Texas, Austin, Tex.

Continuation-in-part of Ser. No. 707,140, May 29, 1991, Pat. No. 5,272,240. This application Mar. 10, 1993, Ser. No. 28,786

Int. Cl.[5] C08G *77/06*

U.S. Cl. 528—10 **12 Claims**

1. A method of accelerated curing of an organosiloxane sol-gel film, comprising applying a high voltage direct current electric field across the film bulk wherein said voltage is between about 4 to about 12 Kv to provide a current between about 0.5 to about 40 μamps.

5,357,016

PREPARATION AND PROCESSING OF POLYDIORGANOSILOXANES

Donald K. Takehara, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Sep. 20, 1993, Ser. No. 122,967

Int. Cl.[5] C08G *77/08*

U.S. Cl. 528—14 **23 Claims**

1. A method for the production of polydiorganosiloxanes wherein the method which comprises contacting a reaction mixture

(A) at least one organosilicon compound having in the molecule at least one silanol group the remaining substituents being silicon bonded organic substituents wherein the silicon-bonded organic substituents are selected from the group consisting of monovalent hydrocarbon groups having from 1 to 14 carbon atoms and monovalent substituted hydrocarbon groups having from 1 to 10 carbon atoms in which the substituents are selected from the group consisting of halogen, mercapto, hydroxyl, and ester, with

(B) a cation exchanged acid treated montmorillonite clay.

5,357,017

MACROCYCLIC POLY-CONJUGATED SYSTEM AND MACROCYCLIC POLY-CONJUGATED COMPOSITION

Keizo Nakajima; Nobuo Somoda, both of Osaka; Kazuyoshi Tanaka, Uji, and Tokio Yamabe, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 30, 1993, Ser. No. 112,977

Claims priority, application Japan, Aug. 31, 1992, 4-230872; Jun. 24, 1993, 5-153573

Int. Cl.[5] C08G *77/08*

U.S. Cl. 528—15 **7 Claims**

1. A macrocyclic poly-conjugated system comprising a polymeric principal chain containing a conjugated cyclic structure of at least seven atoms, and rings adjacent to each other coupled at coupling sites by sharing a conjugated group or by a conjugated bond.

5,357,018

POLYSILOXANE-POLYOXYALKYLENE BLOCK COPOLYMERS WITH DIFFERENT POLYOXYALKYLENE BLOCKS IN THE AVERAGE MOLECULE

Georg Burkhart, Essen; Rolf-Dieter Langenhagen, Hattingen; Andreas Weier, Essen, and Volker Zellmer, Bottrop, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

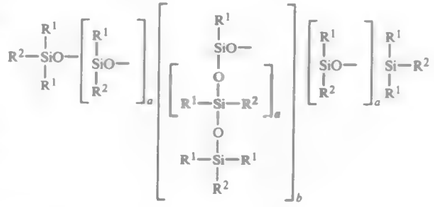
Division of Ser. No. 144,990, Oct. 29, 1993. This application Dec. 29, 1993, Ser. No. 175,043

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1992, 4239054

Int. Cl.[5] C08G *77/46*

U.S. Cl. 528—15 **6 Claims**

1. A polysiloxane-polyoxyalkylene block copolymer having different polyoxyaikylene blocks in an average molecule, comprising the general formula



wherein

R^1 is an alkyl group with 1 to 4 carbon atoms or a phenyl group, with the proviso that at least 90% of the R^1 groups are methyl groups,

R^2 has the same meaning as the R^1 group or represents the $—R^4{}_x—O—R^3$ group, wherein

R^4 is a divalent alkylene group, with or without branches,

X has a value of 0 or 1, and

R^3 is a mixture of

(a) at least one polyoxyalkylene group A with an average molecular weight of 350 to 6,000, consisting of >90 to 100% by weight of oxyethylene units and 0 to <10% by weight of oxypropylene units, and

(b) at least one polyoxyalkylene group B with an average molecular weight of 700 to 5,500, consisting of 30 to 90% by weight of oxyethylene units and 70 to 10% by weight of oxypropylene units,

with the proviso that

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(1) there is at least one $—R^4_xOR^3$ group in the average block copolymer,
(2) there are at least 3 polyoxyalkylene groups of different molecular weight, or different oxyethylene content or both in the average block copolymer,
(3) the polyoxyalkylene group A has an average molecular weight of not less than 700, and
(5) the ratio of polyoxyalkylene groups A: B (in mole %) is 5 to 60 : 10 to 95 the sum of the mole percentages adding up to 100,

b has a value of 0 to 10,
has a value of 10 to 100, when b=0, or
has a value of 3 to 70, when b>0 and ≦4, or has a value of 3 to 30, when b>4.

5,357,019

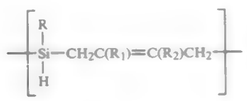
CARBOSILANE POLYMERS PREPARED FROM BUTADIENE

William P. Weber, and Guo-Hong Wang, both of 3341 Country Club Dr., Los Angeles, Calif. 90019

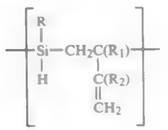
Continuation of Ser. No. 4,857, Jan. 15, 1993, abandoned. This application Jan. 31, 1994, Ser. No. 189,128
Int. Cl.[5] C08G *77/08*
U.S. Cl. 528—15 **12 Claims**

1. A crosslinkable carbosilane polymer prepared by reacting 1,3-butadiene or substituted 1,3-butadiene or mixtures thereof with at least one dichlorosilane reactant in the presence of a reducing metal in an organic solvent and isolating the polymer from the reaction, the polymer containing repeating units of both formula (I) and formula (II)

(I)



(II)



in which formulae, independently in each formula, R is hydrogen, lower alkyl, an aromatic radical, or a cyclohexyl radical; and R_1 and R_2 are, independently, H, and aliphatic or aromatic radical or halogen.

5,357,020

POLYSILOXANE WITH CHROMANOL MOIETY

Jeffrey M. Cogen, Flemington, N.J.; William B. Herdle, White Plains, N.Y., and Sari-Beth Samuels, Ramsey, N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

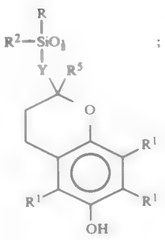
Filed Sep. 29, 1993, Ser. No. 128,856
Int. Cl.[5] C08G *77/04*
U.S. Cl. 528—27 **5 Claims**

1. A polysiloxane having at least one chromanol moiety, wherein the polysiloxane has the formula:

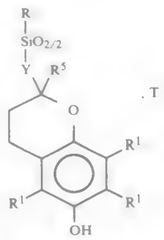
$$M_aD_bD^*_cT_dT^*_eQ_fM^*_g$$

wherein

M is $R—SiO_{\frac{1}{2}}$; M^* is $R^2—SiO_{\frac{1}{2}}$; D is $SiO_{2/2}$;

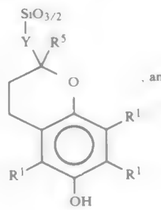


D^* is



. T is $RSiO_{3/2}$.

T^* is



. and Q is $SiO_{4/2}$

R is selected from the group consisting of an alkyl group having 1 to 20 carbon atoms, a phenyl group, an alkoxy group having 1 to 20 carbon atoms, and an alkenyl group having 1 to 20 carbon atoms;
R^1 is selected from the group consisting of hydrogen and an alkyl having 1 to 12 carbon atoms;
R^2 is selected from the group consisting of
(i) an alkoxy having 1 to 20 carbon atoms,
(ii) hydrogen,
(iii) hydroxy,
(iv) phenoxy,
(v) halo,
(vi) an alkyl having 1 to 20 carbon atoms,
(vii) alkenyl having 1 to 4 carbon atoms, and
(viii) acyloxy having 1 to 12 carbon atoms;
(ix) an alkylamino group having 1 to 20 carbon atoms,
(x) a dialkylamino group having 2 to 40 carbon atoms;
R^5 is an alkyl group having 1 to 10 carbon atoms;
Y is a linking group selected from the group consisting of
(i) —O—,
(ii) $—C_nH_{2n}—$,
(iii) $—C_mH_{2m}O—$,
(iv) $—CO_2C_nH_{2n}—$, and
(v) $—C_mH_{2m}CO_2C_nH_{2n}—$;
n has a value ranging from 2 to 12 and m has a value ranging from 1 to 12;
and wherein
a and g each range from 0 to 202;
b and c each range from 0 to 200;
d, e, and f each range from 0 to 50;
and a+g is equal to 2f+d+e+2−2p with p being the number of rings present in the polysiloxane and ranging from 0 to 10; and c+e+g≦1.

5,357,021

REACTIVE CARBODIIMIDE COMPOSITIONS

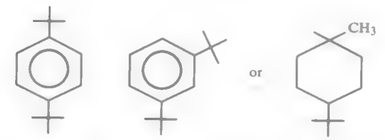
Anthony J. Tye, Toledo; George G. Beck, Whitehouse, and Patrick J. Mormile, Bowling Green, all of Ohio, assignors to BASF Corporation, Parsippany, N.J.

Filed Jul. 21, 1993, Ser. No. 95,076
Int. Cl.[5] C08G *18/30*
U.S. Cl. 528—28 **7 Claims**

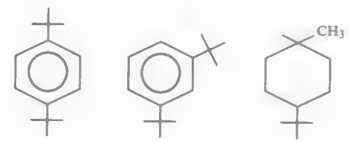
1. A carbodiimide compound having the formula:

$$X—Y—[—R_1—N=C=N—R_2—]_n—[—Y—Z—Y—R_2—]_m—N=C=N—[—R_1—N=C=N—R_2—]_{n-1}—Y—X$$

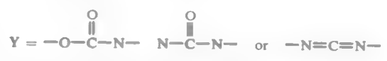
Wherein:
m is from 0 to 1
n is from 1 to 10
R_1=A divalent hydrocarbon residue from a diisocyanate having a tertiary hydrocarbon selected from the group consisting of:



R_2=A divalent hydrocarbon residue from a diisocyanate selected from:



or residues from aliphatic, branched aliphatic or cycloaliphatic diisocyanates, biurets, allophonates, isocyanurates or uretdiones thereof.
X=Any radical with substituents that are unreactive towards a carbodiimide.



Z=A polyvalent radical with substituents that are unreactive towards a carbodiimide to function as an extending or branching site.

5,357,022

METHOD FOR MAKING THERMOPLASTIC SILICONE-POLYPHENYLENE ETHER BLOCK COPOLYMERS AND BLOCK COPOLYMER BLENDS AND PRODUCTS OBTAINED THEREFROM

Timothy E. Banach, Glenville; Margaret L. Blohm, Schenectady, both of N.Y., and Kevin M. Snow, Mt. Vernon, Ind., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 784,857, Oct. 30, 1991, abandoned. This application Apr. 16, 1993, Ser. No. 46,444
The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.
Int. Cl.[5] C08G *77/46*
U.S. Cl. 528—29 **6 Claims**

1. A flame retardant silicone-polyphenylene ether block copolymer resulting from the oxidative coupling of 2,6-xylenol and a polydiorganosiloxane having terminal 2-methoxy-4-trimethylenephenol groups.

5,357,023

ORGANOPOLYSILOXANES HAVING SILETHYLENE LINKAGES AND A CURABLE COMPOSITION COMPRISING THE SAME

Yoshio Inoue; Masatoshi Arai; Kazutoshi Fujioka, and Tsuneo Kimura, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ohtemachi, Japan

Continuation of Ser. No. 645,801, Jan. 25, 1991, abandoned, which is a continuation of Ser. No. 291,006, Dec. 28, 1988, abandoned, which is a continuation-in-part of Ser. No. 145,894, Jan. 20, 1988, abandoned. This application Jun. 29, 1993, Ser. No. 83,387
Claims priority, application Japan, Jan. 26, 1987, 62-15413; Jan. 26, 1987, 62-15414
Int. Cl.[5] C08G *77/20*
U.S. Cl. 528—32 **12 Claims**

1. An organopolysiloxane having, in a molecule, at least one organosilyl-substituted ethyl group represented by the general formula:

$$[CH_2=CR^1—CO—O+CH_2\tfrac{}{}_{\overline{3}}SiR_2—O]_aR_{3-a}Si—C_2H_4—,$$

in which R^1 is a hydrogen atom or a methyl group, R is a substituted or unsubstituted monovalent hydrocarbon group, the subscript a is 2 or 3 and the subscript b is 1, 2 or 3.

5,357,024

METHOD FOR PREPARING A POLYSILOXANE AND TITANATE COMPOSITION FOR HIGH REFRACTIVE INDEX COATINGS

Yves Leclaire, Paris, France, assignor to Essilor International, Creteil, France

Continuation of Ser. No. 604,485, Oct. 29, 1990, abandoned. This application Jul. 19, 1993, Ser. No. 92,922
Claims priority, application France, Oct. 30, 1989, 89 14224
Int. Cl.[5] C08G *77/06*
U.S. Cl. 528—39 **26 Claims**

1. A method for preparing a polysiloxane and titanate composition comprising a siloxane prepolymer incorporating titanium and suitable for producing high refractive index antiabrasion coatings, said method comprising providing as a first constituent of said prepolymer a practically water-free hydrolyzate of an alkoxy silane having condensable silanol groups obtained by the hydrolysis of an organosilane with a stoichiometric quantity of water with respect to any groups in said organosilane which are hydrolyzable into silanol groups, providing as a second constituent of said prepolymer a carboxylic acid ester of titanium having the formula I

$$(RCOO)_nTiR'_{(4-n)} \qquad (I),$$

wherein:

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n is an integer of from 1 to 4 inclusive,

R is a hydrogen atomo or an alkyl group of 1–5 C atoms, and

R′ is a hydrogen atom, a hydroxy group, or an alkoxy group of 1–5 C atoms; reacting said first and second constituents to completion to form said siloxane prepolymer incorporating the titanium in the absence of added water; and thereafter adding water to cause hydrolysis of any remaining hydrolyzable groups to further the prepolymerization, the proportions of reactants resulting in a stable aqueous sol containing from 20–30% by weight of TiO_2 with respect to the weight of solid materials of the final composition of said sol.

5,357,025

SEALANT WITH SILOXAPHOBIC SURFACE, COMPOSITION, AND METHOD TO PREPARE SAME

Michael G. Altes; Louise C. Bergman, both of Midland; Nedeljko V. Gvozdic; Jerome M. Klosowski, both of Bay City, and Virginia K. O'Neil, Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 935,495, Aug. 25, 1992. This application Oct. 14, 1993, Ser. No. 136,507

Int. Cl.[5] C08G *77/24*

U.S. Cl. 528—42 **15 Claims**

1. A method comprising, under conditions to exclude moisture from contacting ingredients,

(1) mixing a fluorocarbon alcohol containing per molecule at least one fluorocarbon group of the formula $C_xF_{(2x+1)}$— in which x has an average value of at least 6 and a hydrolyzable silane of the average general formula

$$R_{(4-c)}SiY_c$$

wherein R is a monovalent hydrocarbon radical, c has an average value of from 2 to 4 inclusive and Y is a hydrolyzable group selected from the group consisting of ketoximo, alkoxy, acyloxy, alkenyloxy, and amido, make a mixture where there is at least 0.01 mole of fluorocarbon alcohol per one mole of hydrolyzable silane molecule,

92) heating the mixture of (1) until some of the fluorocarbon alcohol reacts with the hydrolyzable silane wherein a C—O—Si bond is formed and a reaction mixture of the hydrolyzable silane and the fluorocarbon alcohol results and comprises, unreacted fluorocarbon alcohol, unreacted hydrolyzable silane and a reaction product of the hydrolyzable silane and the fluorocarbon alcohol, and

(3) mixing the produce of (2) with a room temperature curing elastomeric polyorganosiloxane composition in an amount such that there is from 0.1 to 7 weight percent of the fluorocarbon group based on the total weight of the composition to make a room temperature curing sealant which produces a siloxaphobic surface when cured by exposure to atmospheric conditions.

5,357,026

FLAME RETARDANT SRIM COMPOSITIONS

Usama E. Younes, Newtown Square, Pa., assignor to ARCO Chemical Technology, L.P., Greenville, Del.

Filed Jul. 19, 1991, Ser. No. 732,542

Int. Cl.[5] C08G *18/08;* **C08L** *75/04;* **C08K** *3/20, 3/40*

U.S. Cl. 528—53 **15 Claims**

1. A fire retardant reaction injection molded (RIM) composition made by the process comprising reacting in a closed mold ingredients comprising

a polyol;

a polyisocyanate;

at least one catalyst effective to simultaneously promote trimerization of the polyisocyanate and reaction of the polyol and the polyisocyanate; and

a halogenated flame retardant vinyl resin having an average particle diameter of about 1–10 microns;

to produce a rigid, non-cellular isocyanurate-containing RIM composition.

5,357,027

POLYCARBONATE RESIN COMPOSITION

Takashi Komatsu, Ichihara, Japan, assignor to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 670,365, Mar. 14, 1991, Pat. No. 5,185,425, which is a continuation-in-part of Ser. No. 585,739, Sep. 20, 1990, abandoned. This application Sep. 30, 1992, Ser. No. 954,757

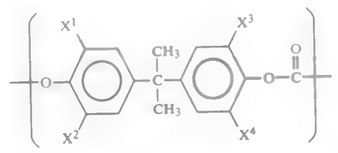
Claims priority, application Japan, Oct. 24, 1989, 1-274788; Mar. 14, 1990, 2-61144

Int. Cl.[5] C08G *64/00*

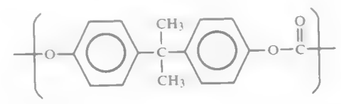
U.S. Cl. 528—198 **11 Claims**

1. A polycarbonate resin composition comprising (A) 100 parts by weight of a polycarbonate comprising

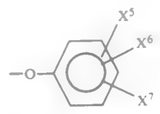
(1) a main chain comprising a repeating unit (I) represented by the formula:



wherein X^1 to X^4 are each a halogen atom, and a repeating unit II represented by the formula:



(2) a trihalogenophenoxy group represented by the formula:



wherein X^5 to X^7 are each a halogen atom, as the end group thereof; and

said polycarbonate having a viscosity average molecular weight of 10,000 to 50,000 and the repeating unit (I) in the main chain is in a proportion of 1 to 10 mol %; and (B) 1 to 10 parts by weight of a halogen-containing flame retarder having a halogen content of 30% by weight or more.

TABLE 3

No.	Polycarbonate (PC-1)	Polycarbonate (PC-2)	Halogen-containing Flame Retarder BC-52[e7]	Halogen-containing Flame Retarder EC-36[e8]
Example 8	100	0	4.7	0
Comparative Example 6	100	0	12	0
Example 9	100	0	0	4.4
Comparative Example 7	100	0	0	12
Example 10	0	100	3.3	0
Comparative Example 8	0	100	12	0
Example 11	0	100	0	3.0

TABLE 3-continued

No.	Flow Value[e9] (ml/sec)	Izod Impact Resistance (kg/cm-cm)	Flame Retardance 1/16 inch	Flame Retardance 1/32 inch	Total Light-trans-mittance (%)
Comparative Example 9	0	100	0	12	
Example 8	2.7×10^{-2}	81	—	V-0	90
Comparative Example 6	3.5×10^{-2}	13	—	V-0	88
Example 9	2.9×10^{-2}	83	—	V-0	90
Comparative Example 7	4.2×10^{-2}	11	—	V-0	89
Example 10	6.1×10^{-2}	81	V-0	—	85
Comparative Example 8	7.4×10^{-2}	15	V-0	—	87
Example 11	6.3×10^{-2}	84	V-0	—	90
Comparative Example 9	7.9×10^{-2}	11	V-0	—	88

[e7]Polycarbonate oligomer of tetrabromobisphenol A

[e8]Epoxy resin containing tetrabromobisphenol A

[e9]Measured according to JIS-K-7210 (Load: 160 kg/cm^2)

[e10]Measured according to JIS-K-7110 by the use of a sample piece of $\frac{1}{8}$ inch in thickness.

[e11]Vertical Combustion Test was carried out according to Underwriter's Laboratories Subject 94 (UL-94)

[e12]Measured according to JIS-K-7105.

5,357,028

METHOD OF PREPARING POLYCARBONATES AND POLYESTER CARBONATES

Ralf Pakull, Köln; Gerhard Fennhoff, Willich; Werner Striver, and Jürgen Kirsch, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

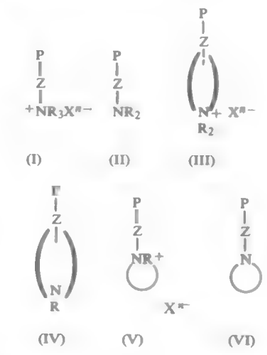
Filed Sep. 28, 1993, Ser. No. 127,918

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1992, 4233345

Int. Cl.[5] C08G *64/00*

U.S. Cl. 528—196 **11 Claims**

1. In the interfacial polycondensation process of preparing thermoplastic carbonate polymers selected from the group consisting of polycarbonates, polyester carbonates, copolycarbonates and copolyester carbonates having a weight average molecular weight of 10,000 to 200,000 comprising reacting at least one diphenol with at least one carbonate donor, and with or without a dicarboxylic acid dichloride in the presence of catalysts, the improvement comprising using as a catalyst at least one resin conforming to



(I) (II) (III)

(IV) (V) (VI)

where

P represents a cross-linked base polymer which is either an addition polymer or a condensation polymer and is insoluble in common solvents;

Z presents a bond between the N atom and said P, and

R represents a substituent of the nitrogen atom N,

said P having a degree of cross-linking of 0.5–80%.

5,357,029

MACROCYCLIC POLYIMIDE OLIGOMERS AND METHOD FOR THEIR PREPARATION

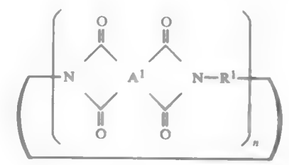
Tohru Takekoshi, Scotia, and Jane M. Terry, Schenectady, both of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Continuation-in-part of Ser. No. 80,550, Jun. 24, 1993, abandoned. This application Dec. 8, 1993, Ser. No. 164,087

Int. Cl.[5] C08G *73/10*

U.S. Cl. 528—322 **20 Claims**

1. A composition comprising macrocyclic polyimide oligomers of the formula



(I)

wherein each A^1 is independently a mono- or polycyclic aromatic radical, each R1 is independently a non-silicon-containing organic radical or a bis(alkylene)polydiorganosiloxane radical and n is at least 1; with the proviso that neither A^1 nor R^1 contains a spiro(bis)indane moiety.

5,357,030

PROCESS FOR PRODUCING AND POLYAMIDE COMPOSITIONS COMPRISING LACTAMYL PHOSPHITES AS CHAIN EXTENDING AGENTS

Bruce VanBuskirk, Dover; Murali K. Akkapeddi, and Jeffrey H. Glans, both of Morristown, all of N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Jun. 3, 1992, Ser. No. 892,844

Int. Cl.[5] C08G *69/42, 69/48;* **C08K** *5/49*

U.S. Cl. 528—337 **15 Claims**

1. A composition comprising:

a polyamide; and

a lactamyl phosphite in an amount of from about 1 to about 10 parts by weight relative to 100 parts by weight of the polyamide.

9. A process for producing chain extended polyamide compositions comprising the process step of:

reacting one or more lactamyl phosphites with one or more polyamides, wherein the amount of said phosphites is from about 1 to about 10 parts by weight relative to 100 parts of phosphites and polyamides reacted.

5,357,031

AROMATIC COPOLYAMIDES, PROCESS FOR THEIR PREPARATION AND SHAPED ARTICLES MADE THEREFROM

Georg-Emerich Miess, Regensburg; Karl Heinrich, Grossaitingen, and Peter Klein, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jul. 6, 1993, Ser. No. 87,919

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1992, 4222390

Int. Cl.[5] C08G *69/32*

U.S. Cl. 528—337 **15 Claims**

1. An aromatic copolyamide which is soluble in organic copolyamide solvents and contains at least 95 mol %, based on

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the polymer, of recurring structural units of formulae I, II and III

$$-R^1-NH-R^3-NH-, \quad (I)$$

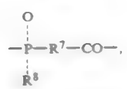
$$-R^1-NH-R^4-NH-, \quad (II)$$

$$-R^1-NH-R^5-NH-, \quad (III)$$

in which at least some of the radicals R^1 are a group of formula —OC—R^2—CO—, in which R^2 is a divalent aromatic radical having valence bonds in the para-position or in a comparable coaxial of parallel position to one another, and in which the remaining radicals R^1 are selected from the group consisting of formula IV and V



(IV)



(V)

in which R^6 is an alkyl cycloalkyl or aryl radical, R^7 is an alkylene, cycloalkylene or arylene radical, and R^8 is an alkyl, cycloalkyl or aryl radical, and in which the radicals of the formula IV and V within a polymer molecule yield a phosphorus content from 0.1 to 0.5% by weight based on the polymer, R^3 is a divalent aromatic radical having valence bonds in the para-position or in a comparable coaxial or parallel position to one another, R^4 is a radical of the formula VI

$$-Ar^1-X-Ar^2- \quad (VI),$$

in which Ar^1 and Ar^2, independently of one another, are a divalent aromatic radical whose valence bonds are in the para-position or in a comparable coaxial or parallel position to one another, or Ar^2 additionally is a divalent aromatic radical whose valence bonds are in the meta-position or in a comparable angled position to one another, and X is a group of the formula —O—, —S—, —SO_2, —O—phenylene—O— or alkylene, and R^5 has one of the meanings defined for R^2 and R^4 selected in each case in a molecule.

5,357,032

COPOLYIMIDES AND A PROCESS FOR THE PREPARATION THEREOF

Sah Bong Rhee; Ji Y. Chang, both of Yousung-Ku; Bong S. Moon, Suh-Ku, and Ji-Woong Park, Yoosung-Ku, all of Rep. of Korea, assignors to Korea Research Institute of Chemical Technology, Daejun, Rep. of Korea

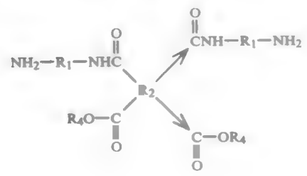
Filed Aug. 17, 1992, Ser. No. 930,376

Claims priority, application Rep. of Korea, Nov. 13, 1991, 91-20171

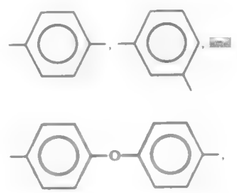
Int. Cl.[5] C08G *73/10, 69/26*

U.S. Cl. 528—353 **11 Claims**

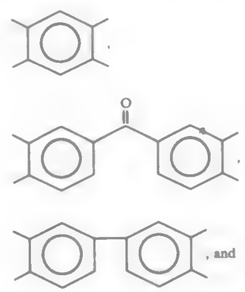
1. A compound of the general formula,



wherein the arrows denote isomerism, R_1 is a divalent aromatic group selected from the group consisting of



R_2 is a tetravalent aromatic group selected from the group consisting of



and R_4 is a monovalent aliphatic group selected from the group consisting of ethyl and isopropyl.

5,357,033

FILM FORMING AROMATIC ORGANIC POLYMERS HAVING ENHANCED DIELECTRIC CONSTANT VALUES AND METHOD FOR MAKING

John T. Bendler, Schenectady; Toharu Takekoshi, and Clive W. Reed, both of Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 1, 1993, Ser. No. 41,387

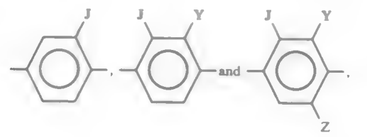
Int. Cl.[5] C08G *69/26, 73/10*

U.S. Cl. 528—353 **11 Claims**

1. A method for making a film forming aromatic organic polymer having a Tg in the range of from about 100° C. to 300° C. and a dielectric constant greater than 3, comprising polymerizing under solvent casting or melt extrusion conditions, a mixture of aromatic organic monomers having at least two reactive functional groups selected from the group consisting of amino, anhydride, and carboxy, and derivatives thereof, selected from the group consisting of silylated amino, isocyanto, anhydride acid chloride, and carboxylic acid chloride, where among the aromatic organic monomers reacted, there is utilized at least 5 mole percent, based on the total moles of the aromatic organic monomers polymerized, aromatic organic monomers substituted with at least one orientable organic dipolar group having a net dipole moment of at least 0.5 Debye, and selected from the group consisting of,

$$-CH_i-(X)_k.$$

where X is a polar radical selected from the group consisting of —CN, —F, —Cl, —Br, —NO_2 and —$CONH_2$, and a mixture thereof, i is equal to 1 or 2, k is equal to 1 or 2, and the sum of i+k is equal to 3, and, a member selected from the group consisting of,



where J, Y and Z are the same or different polar radicals selected from the group consisting of —CN, —F, —Cl, —Br, —NO_2, —$CONH_2$, —CH_2F, —CHF_2, and a mixture thereof.

5,357,034

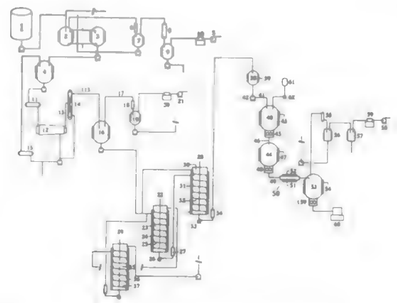
LACTIDE POLYMERIZATION

Israel D. Fridman, Belmont; John Kwok, Holden; Ronald J. Downey, Leominster, all of Mass., and Speros P. Nemphos, League City, Tex., assignors to Camelot Technologies Inc., Leominster, Mass.

Filed Sep. 8, 1992, Ser. No. 941,731

Int. Cl.[5] C08G *63/08*

U.S. Cl. 528—354 **33 Claims**



1. A process for the polymerization of polylactic acid comprising:

(i) dehydrating aqueous lactic acid and polymerizing lactic acid by condensation to a molecular weight from 400 to 5,000;

(ii) heating and reacting an equilibrium mixture comprising mainly polylactic acid having a molecular weight from 400 to 5,000, and small amounts of water, lactic acid, lactide and linear oligomers of lactic acid; depolymerizing polylactic acid to form lactide;

(iii) distilling off a vapor phase comprising mainly lactide, lactic acid, linear oligomers of lactic acid and water;

(iv) in a separate unit operation further fractionating the distillate from step (iii) into crude lactide and a distillate phase, comprising in addition to lactide, water, lactic acid, and linear oligomers, which is optionally recycled to step (I);

(v) purifying the crude lactide by melt crystallization; and

(vi) bulk or solution polymerizing the purified lactide.

5,357,035

CONTINUOUS PROCESS FOR MANUFACTURE OF LACTIDE POLYMERS WITH PURIFICATION BY DISTILLATION

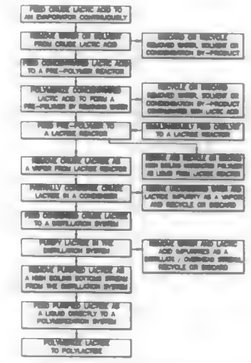
Patrick R. Gruber, St. Paul; Eric S. Hall, Crystal; Jeffrey J. Kolstad, Wayzata; Matthew L. Iwen, Minneapolis; Richard D. Benson, Maple Plain, and Ronald L. Borchardt, Eden Prairie, all of Minn., assignors to Cargill, Incorporated, Minnetonka, Minn.

Continuation of Ser. No. 926,901, Aug. 7, 1992, Pat. No. 5,258,488, each and Ser. No. 927,149, is a continuation of Ser. No. 825,059, Jan. 24, 1992, Pat. No. 5,142,023. This application Sep. 16, 1993, Ser. No. 122,145

The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.

Int. Cl.[5] C08G *63/08;* **C07D** *319/12*

U.S. Cl. 528—354 **22 Claims**



1. A process for preparing a polylactide; said process including the steps of:

(a) providing a crude lactide mixture including meso-lactide and at least one of L-lactide and D-lactide;

(b) purifying the crude lactide mixture into at least one purified lactide fraction by distillation without steps of solvent extraction or recrystallization from solvent; and,

(c) reacting the purified lactide fraction to form polylactide.

5,357,036

ORGANIC SURFACE-TREATING AGENT

Kazushi Miyata, Osaka; Shoji Saibara, Takatsuki, and Tomohiro Harada, Kyoto, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

PCT No. PCT/JP91/00647, § 371 Date Jan. 15, 1992, § 102(e) Date Jan. 15, 1992, PCT Pub. No. WO91/18060, PCT Pub. Date Nov. 28, 1991

PCT Filed May 16, 1991, Ser. No. 793,382

Claims priority, application Japan, May 16, 1990, 2-126250

Int. Cl.[5] C08G *75/00*

U.S. Cl. 528—373 **7 Claims**

1. An organic surface-treating agent consisting essentially of repeating units of carbon and hydrogen atoms forming a lipophilic linear backbone chain, at least two side chains selected from at least one member of the group consisting of an ester, ether, ketone and phenyl group on said backbone chain and a hydrophilic or reactive functional group joined to at least one molecular end of said backbone chain, wherein said organic surface-treating agent has a number average molecular weight of at least 300.

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5,357,037

PHOSPHOROUS-CONTAINING DUROMERS OF OLIGOPHOSPHITES

Burkhard Köhler, and Wolfgang Ebert, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

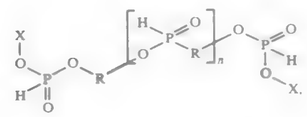
Continuation of Ser. No. 36,804, Mar. 25, 1993, abandoned, which is a division of Ser. No. 982,891, Nov. 30, 1992, Pat. No. 5,237,041. This application Apr. 8, 1994, Ser. No. 225,426

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1991, 4140543

Int. Cl.[5] C08G 79/02

U.S. Cl. 528—400 4 Claims

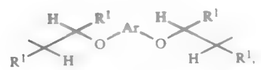
1. Oligophosphites corresponding to formula I



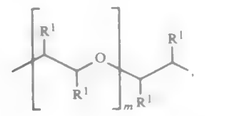
(I)

wherein

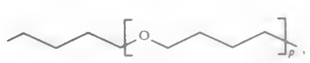
R denotes a C_2–C_{44}-alkylene group or corresponds to formula (II), (IV) or (V)



(II)

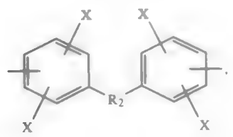


(IV)



(V)

Ar stands for a C_6–C_{14} arylene group or corresponds to formula (III)



(III)

wherein

R^1 stands for a C_1–C_4-alkyl group or hydrogen and the groups R^1 may be identical or different,

R^2 stands for a C_1–C_{12}-alkylidene, a C_6–C_{12}-cycloalkylidene, a C_2–C_{20}-alkylene, an araliphatic, divalent C_7–C_{26} group, an oxygen atom, a carbonyl group, a sulphur atom, a sulphone group or a chemical bond,

X stands for a C_1–C_4-alkyl group,

m and p stand for natural numbers from 1 to 200 and

n stands for a natural number from 1 to 20.

5,357,038

PROCESS AND COMPOSITION FOR PROVIDING DOUBLE METAL CYANIDE CATALYZED POLYOLS HAVING ENHANCED REACTIVITY

John W. Reisch; Deborah M. Capone, both of Guilford, and Ronald S. Blackwell, Waterbury, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 923,647, Aug. 3, 1992, Pat. No. 5,266,681. This application Sep. 2, 1993, Ser. No. 114,860

The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.

Int. Cl.[5] C08G 59/68, 65/04

U.S. Cl. 528—414 14 Claims

1. A process for enhancing the reactivity of a polyol produced using a double metal cyanide catalyst which comprises, after removing any residual double metal cyanide catalyst, contacting said polyol with between 0.5 and 10 ppm, based upon the weight of said polyol, of a base selected from the group consisting of an alkali metal hydroxide, alkali metal alkoxide, alkaline earth metal hydroxide, alkaline earth metal alkoxide, and combinations thereof, said polyol being free of ethylene oxide capping, wherein said removing of residual double metal cyanide catalyst is effected by treating the polyol with a treating agent which is an oxidant other than hydrogen peroxide.

5,357,039

NEW PAINT BINDERS

Brigitte Hase, Erkrath; Ulrich Eicken, Duesseldorf; Herbert Fischer, Duesseldorf; Horst-Juergen Krause, Duesseldorf; Wolfgang Gress, Wuppertal, and Norbert Stork, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Division of Ser. No. 721,514, Jul. 12, 1991, Pat. No. 5,233,020. This application Apr. 26, 1993, Ser. No. 53,072

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1990, 3900455

Int. Cl.[5] C09D 179/00; C08G 73/02, 73/04, 73/06

U.S. Cl. 528—423 8 Claims

1. A poly-N-acylalkyleneimine composition corresponding to formula I



(I)

in which R—CO is selected from the group consisting of the acyl radical of a mono- or polyunsaturated, aliphatic C_{16-22} carboxylic acid and a mixture of said radicals, R′—CO is selected from the group consisting of the acyl radical of a C_{1-22} carboxylic acid and a mixture of said radicals, m and n independently of one another have the value 2 or 3, x and y represent the percentages by weight of the particular polymer units, x having a value of about 20 to about 100% and y having a value of about 80 to 0%.

5,357,040

FINE POWDERS OF KETONE-CONTAINING AROMATIC POLYMERS AND PROCESS OF MANUFACTURE

James E. McGrath, Blacksburg, Va.; Keith R. Lyon, Maplewood, Minn.; Richey M. Davis, Blacksburg, Va.; Ann Texier, Lille, France, and Atilla Gungor, Istanbul, Turkey, assignors to The Center for Innovative Technology, Herndon; Virginia Polytechnic Institute & State University and Virginia Tech Intellectual Properties, Inc., both of Blacksburg, all of Va.

Filed Feb. 24, 1993, Ser. No. 22,049

Int. Cl.[5] C08J 3/12

U.S. Cl. 528—490 5 Claims

1. A method of preparing particles of polyarylketones, comprising the steps of:

preparing an amorphous polyarylketimine precursor;

hydrolyzing said polyarylketimine precursor; and

controlling the hydrolyzing conditions during said hydrolyzing step to produce particles of polyarylketones of a particular size and shape.

5,357,041

HEPARIN- AND SULFATIDE-BINDING PEPTIDES FROM THE TYPE I REPEATS OF HUMAN THROMBOSPONDIN

David D. Roberts, Bethesda; Nenghua Guo, Chevy Chase, and Henry C. Krutzsch, Bethesda, all of Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Dec. 6, 1991, Ser. No. 801,812

Int. Cl.[5] A61K 37/00, 37/02; C07K 5/00, 7/00

U.S. Cl. 530—326 9 Claims

1. A synthetic peptide having about 4 to about 17 amino acid residues and consisting essentially of a sequence having a binding affinity for heparin or sulfated glycoconjugates in the range of 10^7 to 10^5 molar^{-1}, wherein said peptide comprises a subsequence -Trp-Ser-Xaa-Trp-, wherein Xaa- is an amino acid selected from the group consisting of Pro, Glu, Ala, His, and Ser; wherein said subsequence essentially lacks a charge.

5,357,042

SYNTHETIC PEPTIDES CAPABLE OF ELICITING FIBRIN-SPECIFIC MONOCLONAL ANTIBODIES LACKING FIBRINOGEN-CROSS-REACTIVITY

Gary R. Matsueda, Winchester; Edgar Haber, Weston, and Kwan Hui, Brighton, all of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Continuation of Ser. No. 454,954, Dec. 22, 1989, abandoned, which is a division of Ser. No. 824,228, Jan. 30, 1986, Pat. No. 4,927,916, which is a continuation-in-part of Ser. No. 603,155, Apr. 23, 1984, abandoned. This application Aug. 24, 1992, Ser. No. 932,729

Int. Cl.[5] A61K 31/02; C07K 7/06, 15/28

U.S. Cl. 530—328 4 Claims

1. A compound selected from the group consisting of those of the formula:

1) H_2N-A-B-C-D-E-F-G-CO-R^1 wherein

A is glycine;

B is histidine or proline;

C is arginine;

D is proline or valine;

E is leucine or valine;

F is aspartic acid or glutamic acid;

G is lysine or arginine;

R^1 is selected from the group consisting of R^2, lys-arg-CO—R^2, and lys-arg-glu-COR^2;

R^2 is cys-CO—R^3, OH, OM or —NR^4R^5;

R^3 is —OH, —OM or —NR^4R^5;

M is a pharmaceutically acceptable cation or a lower branched or unbranched alkyl group;

R^4 and R^5 are the same or different and selected from the group consisting of hydrogen and a lower branched or unbranched alkyl group;

2) the acid addition salts thereof.

5,357,043

PREPARATION OF OLIGOPEPTIDE OR AMINO ACID ALKYL ESTER.HCL SALTS

Hubertus J. A. V. Delahaye, Nuth; Johan T. Tinge, Sittard; Adelbert A. H. Drinkenburg; Antonius J. J. M. Teunissen, both of Geleen, and Willem Klop, Limbricht, all of Netherlands, assignors to Holland Sweetener Company V.O.V., Maastricht, Netherlands

Filed Dec. 18, 1992, Ser. No. 993,008

Claims priority, application Netherlands, Dec. 20, 1991, 9103143

Int. Cl.[5] C07K 3/04, 3/08

U.S. Cl. 530—334 16 Claims

1. A process for preparing an alkyl ester hydrochloric acid salt of the dipeptide aspartylphenylalanine or an alkyl ester hydrochloric acid salt of the amino acid phenylalanine, wherein said alkyl group can be chosen from the group consisting of methyl, ethyl, isopropyl or n-propyl, which comprises esterifying an aspartylphenylalanine hydrochloric acid salt or a phenylalanine hydrochloric acid salt with a C_1–C_3 alcohol in the presence of a catalytically effective amount of an acid catalyst, comprising an acid ion exchange resin and hydrochloric acid, wherein said hydrochloric acid is present at a concentration of 0.01–0.5 moles per mole aspartylphenylalanine hydrochloric acid salt or phenylalanine hydrochloric acid salt and wherein said process is carried out in a liquid phase.

5,357,044

CECROPINS FUSION PROTEINS

Jiunu Lai; Jar-How Lee; Yun-Long Liu, all of Los Angeles; Dan S. Ray, Encino, and Gary Wilcox, Malibu, all of Calif., assignors to Xoma Corporation, Berkeley, Calif.

Division of Ser. No. 637,199, Jan. 19, 1991, Pat. No. 5,206,154, which is a division of Ser. No. 474,304, Feb. 5, 1990, Pat. No. 5,028,530, which is a continuation of Ser. No. 797,472, Nov. 13, 1985, abandoned, which is a continuation-in-part of Ser. No. 695,309, Jan. 28, 1985, abandoned. This application Feb. 11, 1993, Ser. No. 16,303

Int. Cl.[5] G07K 13/00; C12N 15/62

U.S. Cl. 530—350 7 Claims

1. A fusion protein comprising a first segment having an amino acid sequence of a cecropin and a second segment having the amino acid sequence of a polypeptide capable of suppressing the bactericidal properties of said cecropin when fused to it, and said fusion protein having a selective cleavage site between said first segment and said second segment.

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5,357,045

REPETITIVE PCM DATA DEVELOPING DEVICE

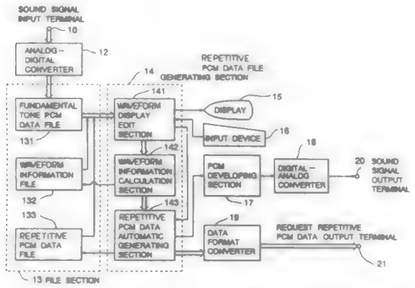
Kazuhiko Tabei, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 22, 1992, Ser. No. 964,615

Claims priority, application Japan, Oct. 24, 1991, 3-277995; Dec. 24, 1991, 3-356196

Int. Cl.[5] G10H *1/057, 7/00*

U.S. Cl. 84—603 **9 Claims**



6. A repetitive PCM data developing device comprising:

means for obtaining musical note data and its envelope PCM data from previously prepared musical score information,

means for storing said musical note data and said envelope PCM data,

means, operatively coupled to said means for storing, for showing the content of said musical note data and said envelope PCM data to edit the data, and

means, operatively coupled to said means for storing, for preparing repetitive PCM data based on each musical note data and envelope PCM data within said musical score information.

5,357,046

AUTOMATIC PERFORMANCE APPARATUS AND METHOD

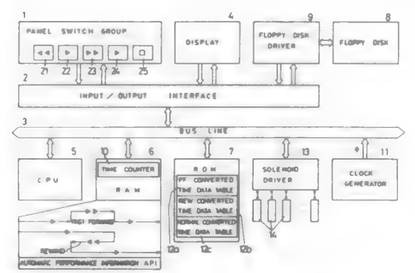
Haruhiko Matsui, and Tessai Kondo, both of Hamamatsu, Japan, assignors to Kawai Musical Inst. Mfg. Co., Ltd., Shizuoka, Japan

Filed Jan. 25, 1993, Ser. No. 8,499

Claims priority, application Japan, Jan. 24, 1992, 4-011432; Jan. 24, 1992, 4-011433

Int. Cl.[5] G10H *1/18*

U.S. Cl. 84—609 **13 Claims**



1. An automatic performance apparatus comprising:

storage means for storing a plurality of sets of music information and time information;

information reading means for reading out said sets of music information and time information in a sequence of progress of performance from said storage means;

time counting means for counting elapsed time;

time data conversion means for converting, at the time of a fast forward or rewind of automatic performance, elapsed time data counted by said time counting means into data of a greater value or a value of which is reduced progressively over a lapse of time at a rate greater than the rate of change in said elapsed time data;

selection means for selecting the converted time data from said time data conversion means and the elapsed time data counted by said time counting means;

comparing means for comparing said converted or elapsed time data selected by said selection means with the time information read out by said information reading means; and

music processing means for executing the fast forward or rewind of automatic performance through a routine based on music information read out by said information reading means according to the result of comparison by said comparing means.

5,357,047

METHOD AND DEVICE FOR CONVERTING SOURCE PIANO PLAYING DATA FOR AUTOMATIC PLAYING PIANO

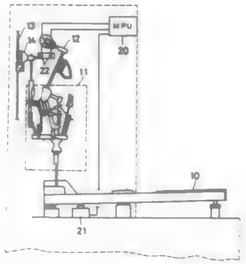
Yoshimasa Isozaki, and Shinya Koseki, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Jun. 25, 1992, Ser. No. 904,172

Claims priority, application Japan, Jun. 26, 1991, 3-154460

Int. Cl.[5] G10F *5/00*

U.S. Cl. 84—47 **3 Claims**



1. A converting device of playing data in an automatic playing piano comprising:

detecting means for detecting a position of a hammer;

calculation means for calculating playing data depending on the detected position of a hammer;

correcting means for correcting the calculated playing data including a correction value of a piano;

recording means for recording the corrected data; and

driving means for driving a key in accordance with the corrected data;

wherein said correction value is decided by an equation:

$$y = A \log(m(p)/(r))$$

where m(p) and m(r) respectively show ratios of an automatic playing piano and of a standard piano, and each of the ratios is represented as follows:

$$m = (A1/A2)*(B1/B2)*(C1/C2)$$

where A1 and A2 respectively show lengths from a fulcrum of a key to a front edge thereof and from the fulcrum to an actuator of an action mechanism, B1 and B2 respectively show lengths from the actuator to a fulcrum of the action and from the fulcrum of the action to an action point of a

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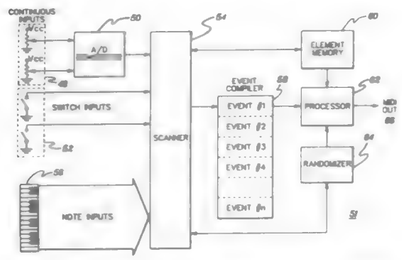
hammer, and C1 and C2 respectively show lengths from an action point of a hammer mechanism to a fulcrum thereof and from the fulcrum to a string striking point.

5,357,048

MIDI SOUND DESIGNER WITH RANDOMIZER FUNCTION

John J. Sgroi, 112 Edward St., Schenectady, N.Y. 12304

Filed Oct. 8, 1992, Ser. No. 958,264
Int. Cl.[5] G10H *5/00*
U.S. Cl. 84—645 34 Claims



5. A MIDI Controller for controlling the total sound produced by a plurality of MIDI sound generators connected to and controlled by the MIDI Controller, comprising:

note input means for providing note inputs;

switch input means for providing switch inputs;

element memory means for storing a plurality of master programs;

a sound change event command buffer for storing event commands;

scanner means for generating the event commands based on contents of the element memory upon occurrence of changes in the note inputs and switch inputs, the scanner means writing the event commands to the event buffer;

processor means for reading event commands from the event buffer and converting the event commands into MIDI commands; and

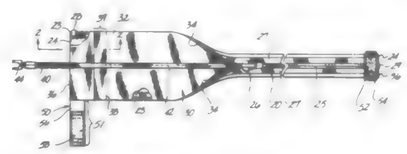
randomizer means coupled to said processor for facilitating selective randomization of timbre and at least one of the following elements: pitch, volume and dynamic response.

5,357,049

CLOSABLE ELECTRICAL SHIELDING JACKET

Walter A. Plummer, III, Santa Ana, Calif., assignor to The Zippertubing Co., Los Angeles, Calif.

Filed May 19, 1993, Ser. No. 64,395
Int. Cl.[5] H01B *7/34*
U.S. Cl. 174—36 19 Claims



1. An electrical shielding jacket comprising:

a flexible elongated casing having inner and outer surfaces, two edges and two ends;

a flexible electrically conductive shield positioned adjacent the inner surface of the casing;

casing closing means extending along each casing edge for joining the two casing edges for forming a tube; and

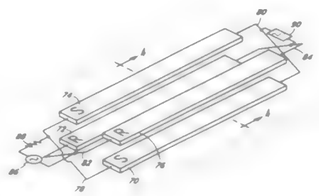
flexible and closing means secured to the casing for augmenting the casing closing means and located adjacent a casing end.

5,357,050

APPARATUS AND METHOD TO REDUCE ELECTROMAGNETIC EMISSIONS IN A MULTI-LAYER CIRCUIT BOARD

Jozef B. Baran, Moreno Valley, and Edward D. Suski, Lake Forest, both of Calif., assignors to AST Research, Inc., Irvine, Calif.

Filed Nov. 20, 1992, Ser. No. 979,590
Int. Cl.[5] H01B *11/00*
U.S. Cl. 174—33 9 Claims



1. An apparatus for connecting a signal source to a load on a multiple layer circuit board so as to reduce electromagnetic emissions when a signal is provided to the load from the signal source, comprising:

a first signal line and a first return line on a first plane of the multiple layer circuit board, the first signal line and the first return line each having a source end and a load end;

a second signal line on a second plane of the multiple layer circuit board wherein the second signal line is spaced above and follows the path of the first return line, the second signal line having a source end and a load end;

a second return line on the second plane of the multiple layer circuit board wherein the second return line is spaced above and follows the path of the first signal line, the second return line having a source end and a load end; and

respective conductive connections between the source ends of the first and second signal lines, between the load ends of first and second signal lines, between the source ends of the first and second return lines, and between the load ends of the first and second return lines, such that the first and second signal lines carry a common signal from a signal source to a load in parallel, and the first and second return lines provide a common return path from the load to the signal source in parallel.

8. A method of suppressing electromagnetic emissions in a multiple layer circuit board when a signal is provided from a signal source to a load, the signal having a signal voltage and a return voltage, and the load having a first terminal and a second terminal, the method comprising the steps of:

providing a first signal line and a first return line on a first plane of a multiple layer circuit board;

providing a second signal line on a second plane of the multiple layer circuit board wherein the second signal line is spaced substantially above and follows the path of the first return line;

providing a second return line on the second plane of the multiple layer circuit board wherein the second return line is spaced substantially above and follows the path of the first signal line;

providing conductive connections of the first and second signal lines to the first terminal of a load;

providing conductive connections of the first and second return lines to the second terminal of the load; and

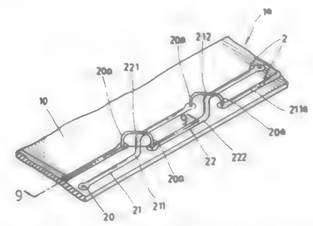
applying a signal to the load by applying a signal voltage to the first and second signal lines and applying a return voltage to the first and second return lines.

5,357,051

PRINTED CIRCUIT BOARD FOR REDUCING RADIO FREQUENCY INTERFERENCES

Richard H. Hwang, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (104), Taiwan

Filed Jan. 31, 1994, Ser. No. 188,928
Int. Cl.[5] H05K *1/02*
U.S. Cl. 174—33 1 Claim



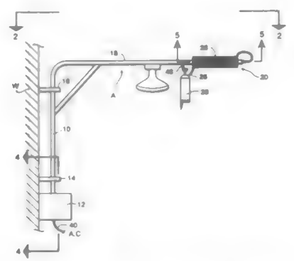
1. A printed circuit board comprising: at least a twisted pair consisting of a first and a second conductive strip bonded of a same side of a single-sided printed circuit board, the first and the second conductive strips continuously twisting with each other to form a signal communication loop between a transmitter and a receiver, each said conductive strip including a plurality of conductor segments each conductor segment sinuously bonded on a side of said single-side printed circuit board, and a plurality of jumpers each said jumper having two bare wires inserted into said printed circuit board to be bridged between two contiguous conductor segments of each said conductive strip to cross over the other conductor segment of the other conductive strip, thereby continuously twisting said first conductive strip with said second conductive strip by forming a plurality of conjugated pairs each conjugated pair formed by an upper jumper of one conductive strip between two conductor segments of one conductive strip, and a lower conductor segment of the other conductive strip traversing under said jumper to form a generally X-shaped configuration from a projective top view of each said conjugated pair of said two conductive strips.

5,357,052

OVERHEAD ELECTRICAL POWER SUPPLY SYSTEM

Fahmee Hakeem, 14032 Cordary Ave., Hawthorne, Calif. 90250

Filed May 26, 1992, Ser. No. 887,901
Int. Cl.[5] H02G *3/26*
U.S. Cl. 174—48 18 Claims



1. An overhead electrical power supply system for delivery of electrical power to a plurality of motorized instruments in an environment which has a generally vertical wall and which instruments have motors which are operable with electrical power, said power supply system comprising:

a) a plurality of conduits secured to said wall and extending outwardly from said wall and having free ends;

b) hook-like retaining means at the free ends of certain of said conduits for releasably retaining the instruments which are operable with electrical power;

c) cooperative coupling means on said instruments and cooperating with the retaining means so that said electrical instruments can be easily lifted off of and easily resuspended on said retaining means;

d) electrical conductors located in at least some of the conduits and extending to said retaining means; and

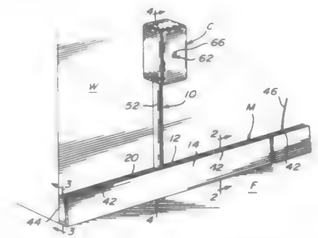
e) means for supplying electrical power through the conductors to each of said retaining means.

5,357,053

SAFETY BASEBOARD MOLDING FOR CONCEALING INDOOR DOMESTIC WIRING

George Manaras, 1194 Tecumseh, Dollard-des-Ormeaux, Québec, Canada H9B 2Y9

Filed Sep. 8, 1992, Ser. No. 941,888
Claims priority, application Canada, Mar. 4, 1992, 2062256
Int. Cl.[5] H02G *3/26*
U.S. Cl. 174—48 20 Claims



1. A molding for concealing the wiring of an appliance comprising an elongated member adapted to be mounted at least to one of a wall and a floor, and an elongated cover means adapted to be removably engaged to said elongated member, said elongated member means and said cover means defining, when assembled, an elongated channel adapted to receive therein the wiring and defining horizontally spaced apart openings with the wiring being insertable therein, said openings for passing wiring being only defined on a top wall of said molding, whereby at least part of the wiring of the appliance can be laid in said channel and can be passed through a first and a second of said openings for emerging from said molding respectively adjacent the appliance and a wall outlet associated therewith.

5,357,054

ELECTRICAL CONDUIT, JUNCTION BOX AND CABLE INSTALLATION METHOD AND APPARATUS

William L. Beckerich, 6216 N. Olney, Indianapolis, Ind. 46220

Filed Oct. 15, 1992, Ser. No. 961,155
Int. Cl.[5] H02G *3/26*
U.S. Cl. 174—48 25 Claims

1. A method of installing electrical circuiting in a building and comprising the steps of:

temporarily magnetically attaching an electrical box to a structural member in a building at a desired location on the member;

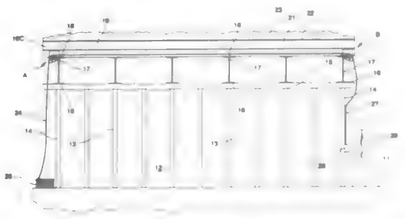
permanently fastening the box to the member by a fastener;

temporarily magnetically attaching an electrical wire housing to the member at a desired location on the member;

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permanently fastening the housing to the member at the desired location; and

pulling an electrical wiring cable up over a cable guide magnetically held to a first joist and pulling the cable



horizontally to a second joist spaced from the first joist; and

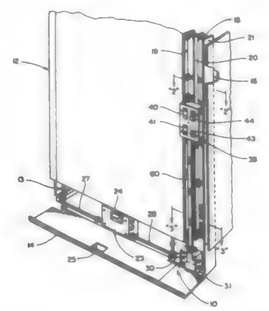
passing a portion of the cable through the housing into the electrical box.

5,357,055

ELECTRIC ROUTING SYSTEM FOR MODULAR OFFICE PARTITIONING SYSTEMS

Donald J. Sireci, 9 Oxford Dr., Lincolnshire, Ill. 60069

Filed Oct. 26, 1992, Ser. No. 966,513
Int. Cl.[5] H02G *3/28*
U.S. Cl. 174—48 9 Claims



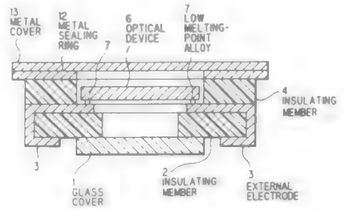
1. An electric routing system for modular office partitioning systems having modular panels with a baseline frame and a fairly narrow vertical frame along one side of the panel, comprising: a baseline box adapted to be mounted in the baseline frame, an electric receptacle mounted in the baseline box, a junction box adapted to be mounted in the lower end of the panel vertical frame, horizontal routing conduit connecting the baseline box and the junction box, conductors connecting the receptacle in the baseline box to the junction box through the routing conduit, a vertical box adapted to be mounted above the junction box in the vertical frame having an enclosed receptacle portion, an enclosed rigid raceway connecting the junction box and the vertical box receptacle portion, and a receptacle in the receptacle portion of the vertical box adapted to receive electrical conductors from the junction box.

5,357,056

CHIP CARRIER FOR OPTICAL DEVICE

Tuyosi Nagano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 35,949
Claims priority, application Japan, Mar. 23, 1992, 4-64818; Aug. 27, 1992, 4-228120
Int. Cl.[5] H01L *23/02*
U.S. Cl. 174—52.4 9 Claims



1. A chip carrier for an optical device, comprising:

an insulating board with an aperture which is narrow enough to mount said optical device over said aperture on said insulating board and wide enough to optically couple said optical apparatus to an external device;

a lead on said insulating board, said lead electrically connecting said optical device to said external apparatus,

a conductive spot member arranged between said lead and an electrode of said optical device;

a metal cover for sealing said optical device; and

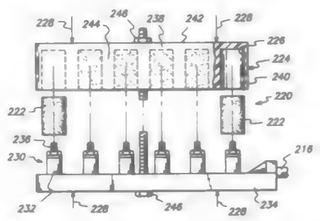
a transparent cover for sealing said aperture on a side of said insulating board opposite said optical device.

5,357,057

PROTECTED ELECTRICAL CONNECTOR

Christian A. M. Debbaut, Cary, N.C., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 396,575, Aug. 21, 1989, Pat. No. 5,140,746, which is a continuation of Ser. No. 183,546, Apr. 18, 1988, Pat. No. 4,864,725, which is a continuation of Ser. No. 38,415, Apr. 9, 1987, abandoned, which is a continuation of Ser. No. 756,559, Jul. 17, 1985, abandoned, which is a continuation of Ser. No. 507,433, Jun. 23, 1983, abandoned, which is a continuation-in-part of Ser. No. 504,000, Jun. 13, 1983, Pat. No. 4,634,207, which is a continuation-in-part of Ser. No. 434,011, Oct. 12, 1982, Pat. No. 4,600,261. This application Aug. 21, 1992, Ser. No. 933,285
The portion of the term of this patent subsequent to Jan. 6, 2004, has been disclaimed.
Int. Cl.[5] H02G *15/06, 15/10*
U.S. Cl. 174—84 R 25 Claims



1. A device for protecting an electrical contact and wire connection, comprising:

(1) a gel formed prior to making the connection between the electrical contact and wire, said gel having an elastic modulus of less than 10^6 dynes/cm^2, an ultimate elongation of at least 200%, and is capable of undergoing elastic deformation around the electrical contact and wire;

(2) a container for the gel; and

(3) a force member adapted to cooperate with and act on said container to move the container and gel from a first position to a second position whereby upon connection of the electrical contact and wire said gel within the container is elastically deformed and maintained in direct engagement with said electrical contact and wire so that said electrical contact and wire connection is environmentally sealed.

5,357,058

RESIN-INSULATED CABLE

Kazuo Tanihira, Yachiyo, and Hirofumi Yoshinaga, Tokyo, both of Japan, assignors to Fujikura Ltd., Tokyo, Japan

Division of Ser. No. 624,708, Dec. 3, 1990, Pat. No. 5,223,062.
This application Jun. 23, 1993, Ser. No. 57,709
Int. Cl.[5] H01B *7/08, 7/36*
U.S. Cl. 174—112 11 Claims



1. A resin-insulated cable comprising:

a plurality of electrical conductors arranged substantially in parallel;

two insulating resin tapes with which said conductors are coated so as to be interposed therebetween; and

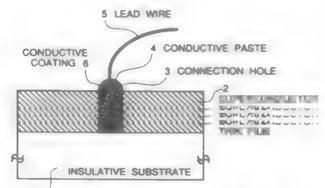
a pressed and baked porous insulating resin tape faced with one of said insulating resin tapes and having on at least one surface thereof ink printed characters so that ink of said characters penetrated into pores of said porous insulating resin tape is sealed therein, said at least one surface being in contact with said one insulating resin tape.

5,357,059

CONSTRUCTION OF ELECTRICAL CONNECTION TO OXIDE SUPERCONDUCTOR

Saburo Tanaka; Hideo Itozaki, and Hidenori Nakanishi, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 29, 1990, Ser. No. 545,618
Claims priority, application Japan, Jun. 29, 1989, 1-167570
Int. Cl.[5] H01B *12/00*
U.S. Cl. 505—220 12 Claims



1. A superconductor circuit comprising:

an oxide superconductor layer overlying a support;

a contact hole perforated only in said oxide superconductor layer; and

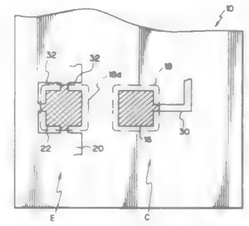
an electrical conductor wire connected to said oxide superconductor layer at a portion of said oxide superconductor exposed on an inner surface of said contact hole.

5,357,060

PATTERN STRUCTURE OF A PRINTED CIRCUIT BOARD

Koji Yamashita, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 2, 1992, Ser. No. 939,016
Claims priority, application Japan, Sep. 4, 1991, 3-070736[U]
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—267 5 Claims



1. A pattern structure of a printed circuit board for a surface mounting device, comprising:

a first pad connected to a signal line;

a second pad provided in a ground pattern portion; and

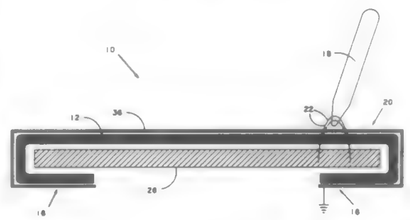
a cut formed in a peripheral portion of said second pad to trim said second pad to have an area that is substantially the same as the area of said first pad.

5,357,061

DIGITIZER TABLET HAVING HIGH PERMEABILITY GRID SHIELD

Randolph E. Crutchfield, Scottsdale, Ariz., assignor to CalComp Inc., Anaheim, Calif.

Filed Apr. 30, 1992, Ser. No. 877,831
Int. Cl.[5] G08C *21/00*
U.S. Cl. 178—18 33 Claims



2. In a digitizer tablet having conductive grids on a substrate, the improvement to reduce weight and thickness while improving signal strength and shielding characteristics comprising:.

a) a shield member disposed one of (i) in contact with, and (ii) spaced from the substrate, and parallel thereto, said shield member being of a metal having a high magnetic permeability; and,

b) a low resistance, eddy current-developing conductive material disposed over an outer surface of the substrate whereby signal errors caused by said shield member are reduced.

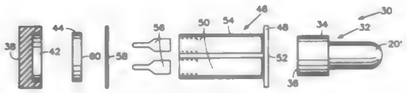
VOL 1167 ISS 3 OCT 18 1994 UMI

5,357,062

PRESSURE SENSING APPARATUS FOR DIGITIZER PEN TIP

Lynn H. Rockwell, Mesa; Kenneth B. Jacobson, Scottsdale; James S. Watson, and Steven M. Palay, both of Phoenix, all of Ariz., assignors to CalComp Inc., Anaheim, Calif.

Filed Jan. 28, 1993, Ser. No. 10,536
Int. Cl.[5] G08C *21/00*
U.S. Cl. 178—18 29 Claims



1. In a pen cursor for use in performing writing motions on the surface of a tablet, a sensor for mounting in a tip portion of the pen cursor to develop a signal output indicating longitudinal force on a writing tip of the pen cursor comprising:

a) a tip member extending from the tip portion of the pen cursor and mounted for longitudinal movement, said tip member having a plunger portion extending therefrom within the pen cursor;

b) a resistive member disposed within the pen cursor behind said plunger portion;

c) a conductive member separate from said plunger and disposed within the pen cursor adjacent said resistive member behind said plunger portion;

d) compressing means for said plunger portion to force said resistive member and said conductive member together in electrical contact over a contacting area which is directly proportional to the amount of longitudinal pressure on said plunger portion;

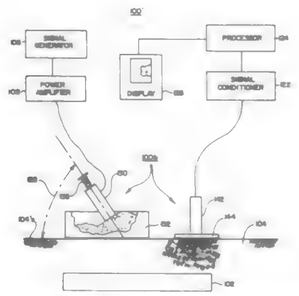
e) connection means for connecting a voltage across said contacting area whereby resistance as a function of longitudinal pressure on said plunger portion can be measured.

5,357,063

METHOD AND APPARATUS FOR ACOUSTIC ENERGY IDENTIFICATION OF OBJECTS BURIED IN SOIL

Larry J. House, and Douglas B. Pape, both of Columbus, Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Filed Jul. 12, 1993, Ser. No. 90,494
Int. Cl.[5] G01V *1/04;* H04R *1/20*
U.S. Cl. 181—108 9 Claims



1. Apparatus utilizing acoustic energy for identifying objects buried in soil comprising:

acoustic energy source means for coupling acoustic energy into soil, said acoustic energy source means being oriented at an oblique angle relative to a surface of said soil and comprising:

an acoustic energy generator;

a first duct having a first end which is beveled at said oblique angle for facing said soil surface and a second end; and

an exponential horn for coupling said acoustic energy generator to the second end of said first duct;

acoustic energy receiver means positioned relative to said acoustic energy source means for receiving acoustic energy reflected from said soil and objects buried in said soil, said acoustic energy receiver means being oriented substantially perpendicular to said soil surface and generating signals representative of received acoustic energy and comprising:

an acoustic energy receiver; and

a second duct having first and second substantially square ends, said first end facing said soil surface and receiving said acoustic energy receiver therein;

processor means for processing said signals generated by said acoustic energy receiver means to generate image signals; and

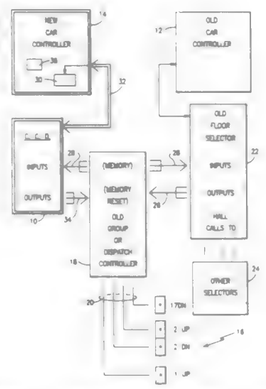
imaging means for generating images representative of said received acoustic energy in response to said image signals.

5,357,064

ELEVATOR HALL CALL CROSS-CANCELLATION DEVICE

Robert C. Boyce, Windsor; Brian D. Ellsworth, Tolland; David M. Hughes, New Britain; Bertram F. Kupersmith, Avon, and Paul A. Stranieri, Bristol, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Dec. 21, 1992, Ser. No. 994,227
Int. Cl.[5] B66B *1/14, 1/52*
U.S. Cl. 187—247 2 Claims



1. A method for dispatching an elevator in response to a given hall call activated when a prospective passenger pushes a given hall call button, comprising:

A) registering said given hall call in a hall call memory

said hall call memory includes a plurality of set/reset coils including a given set/reset coil which electrically corresponds with said given hall call button, each set/reset coil having a one to one electrical correspondence with a hall call button, each set/reset coil being set in response to pushing of its corresponding hall call button, each set/reset coil for being reset in response to answering of the corresponding hall call by either an new elevator controller or a old elevator controller, said new elevator dispatching a first elevator to answer hall calls registered in said hall call memory, said old elevator controller dispatching a second elevator for answering hall calls registered in said hall call memory;

said hall call memory being read by said new elevator controller by means of a cross cancellation device which is electrically connected to said new elevator controller by means of a bidirectional serial communications link, said cross cancellation device multiplexing discrete outputs from said set/reset coils in said hall call memory for providing signals indicative of the state of said set/reset coils to said new elevator controller,

said hall call memory being read by said old elevator controller by means of a selector which is electrically connected to said hall call memory by discrete inputs, one discrete input per set/reset coil, in response to said old elevator answering said registered hall call said selector providing a discrete output to said given set/reset coil in said hall call memory thereby resetting said given set/reset coil thereby canceling the hall call registered in said hall call memory

said cross cancellation device including

an input interfacing means, responsive to registered hall calls in said hall call memory, for providing the signals indicative of the state of the set/reset coils, and

an output interfacing means, responsive to signals from the new elevator controller for resetting the set/reset coils, for providing cancellation signals coils,

serial link interfacing means, responsive to the state of the set/reset coils, sensed by the input interface, for providing signals indicative of those states to the new elevator controller and responsive to hall call cancellation signals for providing discrete outputs to said set/reset coils of said hall call memory via the output interface means thereby resetting them and canceling the hall call registered there;

B) under operation of software stored in said new elevator controller, reading said given set/reset coil in said hall call memory for determining if said given hall call has been answered by said old elevator controller,

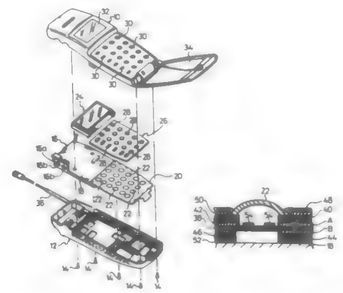
C) dispatching said first elevator to answer said hall call in the event that the old elevator controller has not answered said given hall call.

5,357,065

CIRCUIT UNIT FOR ELECTRONIC INSTRUMENT HAVING KEY-PAD ARRANGEMENT

Fumio Mitamura, and Mitsuo Inagaki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 9, 1993, Ser. No. 88,344
Claims priority, application Japan, Jul. 10, 1992, 4-183580
Int. Cl.[5] H01H *13/70*
U.S. Cl. 200—5 A 10 Claims



1. A circuit unit incorporated in an electronic instrument having a key-pad arrangement, which unit comprises:

a printed circuit board;

a flexible switch circuit sheet attached to said printed circuit board and having a plurality of switch pads arranged thereon; and

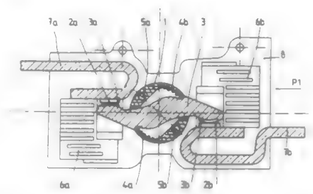
at least one circuit pattern formed in said flexible switch circuit sheet so as to construct a switch circuit together with said switch pads, said circuit pattern including a plurality of line sections extended between said switch pads, and a plurality of terminals provided along a peripheral edge of said flexible switch circuit sheet for establishing electric connection between said printed circuit board and said flexible switch circuit sheet.

5,357,066

OPERATING MECHANISM FOR A FOUR-POLE CIRCUIT BREAKER

Robert Morel, Herbeys, and Xavier Thomassin, Meylan, both of France, assignors to Merlin Gerin, France

Filed Oct. 20, 1992, Ser. No. 963,755
Claims priority, application France, Oct. 29, 1991, 91 13457
Int. Cl.[5] H01H *3/00, 9/20*
U.S. Cl. 200—17 R 12 Claims



1. An operating mechanism for a four-pole circuit breaker for simultaneously operating the four poles, the four poles being arranged side-by-side along a transverse direction such that a main pole is adjacent to a symmetry plane and an auxiliary pole is furthest away from the main pole, the auxiliary pole including a rotary elementary switching bar rotatable around a first transverse axis, at least one stationary contact, and a rotary contact cooperable with said at least one stationary contact, the rotary contact being rotatably coupled to the rotary elementary switching bar via at least one contact pressure spring, said operating mechanism comprising:

a main opening and closing mechanism connected to said main pole;

an auxiliary opening and closing mechanism connected to said auxiliary pole, said auxiliary opening and closing mechanism comprising spring means for exerting a torque on the rotary elementary switching bar in a closed position of the circuit breaker, said torque opposing a force exerted by the contact pressure spring on the rotary elementary switching bar, said spring means being arranged so as to exert substantially no torque on the rotary elementary switching bar when the circuit breaker is in an open position; and

coupling means for coupling said main opening and closing mechanism and said auxiliary opening and closing mechanism to each other.

5,357,067

CAM ARRANGEMENT FOR USE IN ROTARY POSITION INDICATORS

David W. Keck, Michigan City, Ind., assignor to Dwyer Instruments, Inc., Michigan City, Ind.

Filed May 18, 1993, Ser. No. 63,493
Int. Cl.[5] F16H *53/04;* H01H *19/62*
U.S. Cl. 200—30 A 8 Claims

1. In a rotary position indicator, for devices such as valves and switches, of the type that includes a shaft rotatable its longitudinal axis,

a cam arrangement therefor comprising:

a spline of annular configuration including a centrally dis-

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posed bore proportioned to receive the shaft in slip-fit relation thereto and oppositely disposed end portions of annular configuration between which there is disposed an external rim surfacing for said spline that is in substantially coaxial relation to said spline bore,

with said spline rim surfacing being toothed circumferentially of said spline to provide indentations in said spline rim surfacing that are in equal, closely spaced, relation, circumferentially of said spline rim surfacing, about said spline bore,

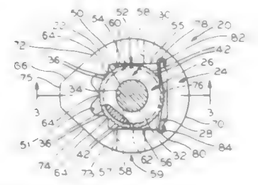
and with said spline rim surfacing having a groove circumferentially thereof,

means for keying said spline to the shaft for rotatable movement therewith,

a generally annular cam received over said spline in substantial coplanar relation thereto,

said cam comprising:

an internal profile that provides aperturing for said cam proportioned for loosely receiving said spline for coplanar back and forth motion with respect thereto in opposite



directions and that defines internally cam tooth means for meshing with certain of said spline indentations on one side of said spline, and

an external profile shaped to provide a camming portion for predetermined dwell and a camming portion for actuation of the device controlled thereby on rotation of the shaft,

and resilient means interposed between said spline groove and said cam for biasing said cam to selectively present said cam tooth means into said meshing relation with said spline indentations,

whereby, said cam arrangement provides the in-field option of adjusting the position of said cam rotationally of said spline to change the rotary position indication of same by manually shifting said cam against the action of said resilient means to separate said tooth means from said spline indentations, and then manually rotating said cam relative to said spline to said changed position, whereupon on release of said cam relative to said spline, said cam tooth means thereof meshes with those of said spline indentations that provide the adjusted position of said cam relative to said spline.

5,357,068

SULFUR HEXAFLUORIDE ISOLATING CIRCUIT-BREAKER AND USE THEREOF IN PREFABRICATED STATIONS, SUBSTATIONS, AND BAYS

Paul Rozier, Chalon Sur Saone, France, assignor to GEC Alsthom SA, Paris, France

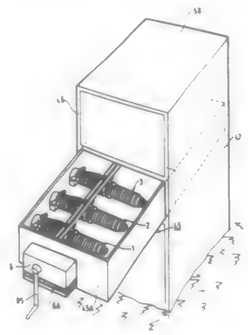
Filed Nov. 17, 1992, Ser. No. 977,791

Claims priority, application France, Nov. 20, 1991, 91 14313

Int. Cl.[5] H01H *33/52, 33/48*

U.S. Cl. 200—148 R **9 Claims**

1. A multipole sulfur hexafluoride isolating circuit-breaker of any technology in which each pole comprises an insulating case filled with sulfur hexafluoride and provided with first and second metal endplates, the case containing a set of fixed contacts connected to a first jaw terminal outside the case and mechanically and electrically connected to the first endplate, a set of moving contacts electrically connected to a second jaw terminal outside the case, secured to the second endplate, and mechanically connected to a drive mechanism, wherein, for each pole, the moving contacts are electrically connected via sliding contacts to a fixed metal tube extending inside the case and coaxial therewith, the tube opening out inside a sealed casing, said second jaw terminal being secured to the casing, said moving contacts being connected to a drive rod disposed inside said tube and hinged inside the casing to a first end of mechanical transmission means passing through the casing in a sealed manner and having a second end outside the casing hinged to a first end of an insulating rod whose other end is hinged via a crank to a control shaft which is common to the various poles of the isolating circuit-breaker, the control shaft being disposed parallel to a metal bar to ground potential having the poles of the isolating circuit-breaker fixed thereto, the poles being fixed substantially in the middles of their respective cases, the various cases being disposed parallel to each other and perpendicularly to said bar, the ends of said bar



being pivotally mounted to two opposite faces of a substantially rectangular drawer, the disconnecting function of the isolating circuit-breaker being provided by rotating said bar through 90° relative to the drawer, the drawer being large enough to contain the set of poles, the control shaft being associated with a control box containing a mechanism for storing drive energy and means for driving said control shaft in rotation or in translation in order to cause all of the poles to perform their circuit-breaker function simultaneously, wherein the circuit-breaker is placed in a metal chest in which the drawer is capable of sliding, said chest carrying a sliding flap that co-operates with a fixed flap to prevent access to a busbar compartment when the drawer is in its open position, and wherein said sliding flap is moved by a disk fixed to the chest and rotated by said bar, the disk rotating a shaft by means of a linkage, said shaft being fixed to at least one connecting rod co-operating with a crank hinged to said sliding flap.

5,357,069

STRUCTURE OF SLIDING SWITCH CONTACTS

Minoru Nishio; Shigeo Hara, both of Niwa; Masaru Suzuki, Chiryu, and Kazuhisa Kubota, Niwa, all of Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Tokyo, Japan

Filed Nov. 2, 1992, Ser. No. 970,461

Claims priority, application Japan, Nov. 6, 1991, 3-099366[U]; Jan. 24, 1992, 4-002110[U]

Int. Cl.[5] H01H *1/36*

U.S. Cl. 200—252 **32 Claims**

1. A sliding switch comprising:

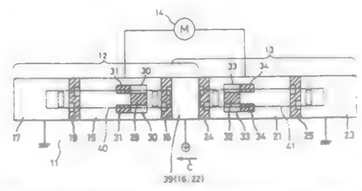
a first group of fixed contacts having a first common fixed contact, a first positive fixed contact, and a first negative fixed contact;

a second group of fixed contacts having a second common fixed contact connected to said first common fixed contact via a load, a second positive fixed contact, and a second negative fixed contact;

a first movable contact disposed so as to slide between a first operating position and a second operating position with a neutral position placed therebetween and to slide on said first group of fixed contacts as said first movable contact slides, said first movable contact being adapted to contact said first common fixed contact and one of said first positive and negative fixed contacts in the neutral position and the first operating position and to contact said first common fixed contact and the other one of said first positive and negative fixed contacts in the second operating position;

a second movable contact disposed so as to slide between the first operating position and the second operating position with the neutral position placed therebetween in synchronism with said first movable contact and to slide on said second group of fixed contacts as said

second movable contact slides, said second movable contact being adapted to contact said second common fixed



contact and one of said second positive and negative fixed contacts in the neutral position and the second operating position and to contact said second common fixed contact and the other one of said second positive and negative fixed contacts in the first operating position;

a first insulation portion disposed in one of said first positive and negative fixed contacts so as to temporarily move said first movable contact away from said one of said first positive and negative fixed contacts before said second movable contact moves away from one of said fixed contacts of said second group of fixed contacts when said first and second movable contacts slide from the first operating position to the neutral position; and

a second insulation portion disposed in one of said second positive and negative fixed contacts so as to temporarily move said second movable contact away from said one of said second positive and negative fixed contacts before said first movable contact moves away from one of said fixed contacts of said first group of fixed contacts when said first and second movable contacts slide from the second operating position to the neutral position.

5,357,070

SLIDE SWITCH ON-OFF INDICATOR AND LOCK APPARATUS

William H. Parsons, Jr., 10074 Devenshire Dr., Baton Rouge, La. 70809

Filed Jul. 26, 1993, Ser. No. 96,252

Int. Cl.[5] H01H *3/20*

U.S. Cl. 200—331 **20 Claims**

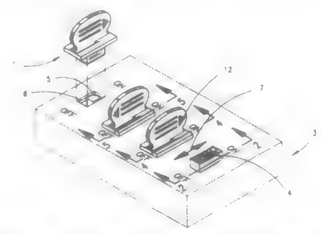
1. An electrical slide switch handle extension comprising:

a) an upper portion in the form of an elevated, elliptical shaped, disk;

b) a flange connected to said upper portion and extending perpendicular to said upper portion;

c) a rectangular lower portion, extending below said flange, having a cavity therein adapted to fit an operating handle of a recessed slide switch; and

d) a means located in said cavity for urging said slide switch handle to an "on" or "off" position depending on which direction said handle extension is pointing when said



switch handle extension engages said switch operating handle.

5,357,071

SWITCH DEVICE HAVING STRUCTURE FOR MINIMIZING VIBRATION OF AN OPERATING KNOB

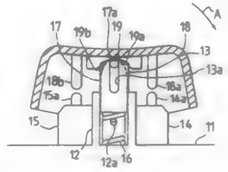
Akira Hanaki, Aichi, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Mar. 15, 1993, Ser. No. 31,727

Claims priority, application Japan, Mar. 24, 1992, 4-015328[U]

Int. Cl.[5] H01H *21/24*

U.S. Cl. 200—557 **5 Claims**



1. A switch device comprising:

a base body;

an operating knob swingably provided over said base body, said operating knob having an articular recess including opposed sloped surfaces;

a slider having opposite inner and outer end portions slidably provided on said base body, the outer end portion of said slider being engaged with said articular recess to hold said operating knob at a neutral position, said slider being slidably actuating one of said sloped surfaces of said articular recess in accordance with swinging said operating knob;

a holding unit for holding said slider to slidably move said slider in a substantially vertical direction, said holding unit including guide pins protruded from the outer end portion of said slider, and guide pin guiding portions fixed to said base body for guiding said guide pins.

5,357,072

WIRE CONSOLIDATOR FOR WIRECUT EDM

William M. Garwick, Columbus, Ohio, assignor to TMTT Enterprises, Inc., Columbus, Ohio

Filed Mar. 25, 1993, Ser. No. 37,014

Int. Cl.[5] B23H *7/02, 11/00;* **B23D** *25/00*

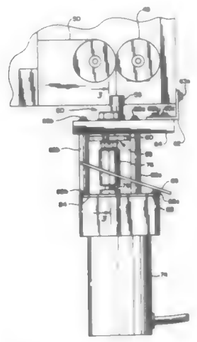
U.S. Cl. 219—69.12 **18 Claims**

1. In a wirecut EDM machine having an advancing electrode wire, a wire driver assembly for advancing said electrode wire, and a roller assembly for drawing expended electrode wire from said EDM machine, apparatus for consolidating said expended wire comprising:

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a wire shearing assembly having at least one shear tip movable along a predetermined locus and actuable to move said at least one shear tip at a rate effective for shearing said wire into predetermined lengths;

a guide bushing interposed between said roller assembly and said wire shearing assembly and having a guide opening extending therethrough for receiving said wire from said roller assembly and locating said wire within said locus for shearing impact with said at least one shear tip;



a cutter plate adapted to receive said guide bushing and having a shearing surface and a passageway extending from said guide opening to said shearing surface for receiving said wire from said guide bushing and orienting it generally normal to said shearing surface;

a biasing assembly for biasing said at least one shear tip against said shearing surface; and

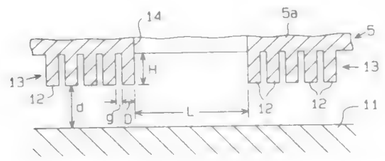
a drive assembly for actuating said wire shearing assembly to move said shear tip at said effective rate.

5,357,073

ELECTRICAL DISCHARGE MACHINE

Takayuki Tominaga, Chiryu; Michio Hisanaga, Nagoya, and Tadashi Hattori, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 8, 1993, Ser. No. 27,532
Claims priority, application Japan, Mar. 9, 1992, 4-050947
Int. Cl.[5] B23H *1/04*
U.S. Cl. 219—69.15 **8 Claims**



1. An electrode for electrical discharge machining, comprising:

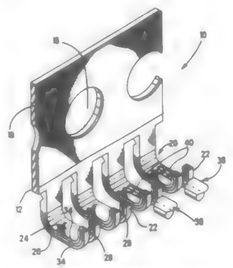
a base plate on which a plurality of needlelike electrodes forming at least one electrode group are mounted, the needlelike electrodes being present in craters formed by the electric discharges produced by their respective adjacent needlelike electrodes.

5,357,074

ELECTRICAL INTERCONNECTION DEVICE

Joseph M. Pawlikowski, Lancaster, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 17, 1993, Ser. No. 108,158
Int. Cl.[5] B23K *1/00*
U.S. Cl. 219—85.18 **7 Claims**



1. A device for providing sufficient thermal energy to melt a fusible electrically conductive material and thereby provide electrically-conductive connections between a plurality of conductors of an electrical cable to corresponding opposed aligned contact pads on a surface of an electrical article, usable in conjunction with a source of constant amplitude high frequency alternating current of known frequency, said device comprising:

an integral member formed from strip of a first metal having low electrical resistance and minimal magnetic permeability, said integral member defining a first layer having a carrier strip section and a plurality of fingers initially integrally coextending in a common direction along respective axis therefrom, each associated with and spaced to correspond with respective ones of said contact pads of said electrical article and having pad-proximate surfaces and opposed conductor-proximate surfaces;

said carrier strip section having defined on a major surface thereof and integrally joined to said first layer thereof a second layer of a second metal having high electrical resistance and high magnetic permeability, said second layer having a thickness at least equal to one skin depth of said second metal, given said known frequency, said carrier strip section thereby defining a heater body; and

said fingers being adapted to be disposed adjacent and between a corresponding contact pad of said electrical article and a respective conductor of said cable, each said finger including an end portion extending transversely in a manner intersecting a respective said axis, said end portion including a conductor-receiving aperture extending therethrough parallel to said respective axis, said finger having fusible electrically conductive material on said conductor-proximate and pad-proximate surfaces thereof, whereby upon disposing said conductors on said conductor-proximate surfaces of respective ones of said fingers and placing said fingers adjacent respective ones of said contact pads of said electrical article such that each said finger is disposed adjacent and physically between a corresponding conductor of said cable and a respective contact pad of said electrical article, such that upon said heater body being subjected to said constant current of known frequency, said heater body generates and transfers said sufficient thermal energy from said heater body to said finger to melt said fusible material disposed therealong thereby electrically and mechanically interconnecting said fingers to associated ones of both said corresponding and respective conductors and contact pads, whereafter said heater body is detachable from said fingers along said electrical article thereby electrically isolating the interconnections in which the fingers remain a permanent part

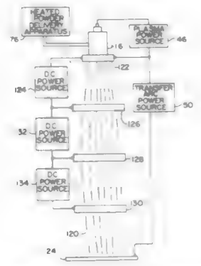
of an electrically-conductive connection between the conductors of said cable and the contact pads of said electrical article.

5,357,075

PLASMA SYSTEMS HAVING IMPROVED THERMAL SPRAYING

Erich Muehlberger, San Clemente, Calif., assignor to Electro-Plasma, Inc., Irvine, Calif.

Division of Ser. No. 529,859, May 29, 1990, Pat. No. 5,225,655.
This application Dec. 14, 1992, Ser. No. 989,765
Int. Cl.[5] B23K *9/00, 9/04*
U.S. Cl. 219—121.47 **17 Claims**



1. A plasma system comprising the combination of:

a workpiece;

a plasma gun spaced from the workpiece and operative to provide a plasma stream to the workpiece;

means for introducing a particulate substance into the plasma gun for entrainment into the plasma stream;

an electrode disposed in the plasma stream between the plasma gun and the workpiece;

a DC power source coupled between the electrode and the plasma gun; and

a transfer arc power source coupled between the workpiece and the plasma gun.

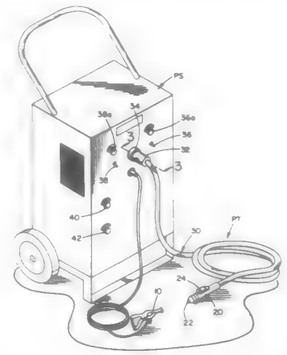
5,357,076

PLASMA TORCH WITH IDENTIFICATION CIRCUIT

George D. Blankenship, Chardon, Ohio, assignor to The Lincoln Electric Company, Cleveland, Ohio

Division of Ser. No. 684,310, Apr. 12, 1991, Pat. No. 5,208,436.
This application Nov. 2, 1992, Ser. No. 970,387
The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.
Int. Cl.[5] B23K *9/10*
U.S. Cl. 219—121.54 **30 Claims**

1. In a torch assembly including a torch having specific characteristics determinative of the desired operating parameters of said torch, said torch assembly having connector means for selectively connecting said torch to a universal control station for providing electrical power and gas to said torch which are to match said operating parameters, the improvement comprising: said torch assembly including identification circuit means including two resistors for identifying said torch, said identification circuit means having an electrical property unique to said specific characteristics of said torch, said electrical property being the resistance of each of said resistors; and



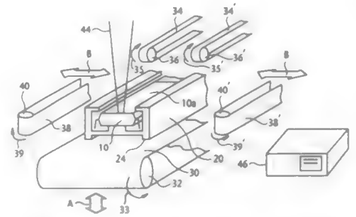
means for interrogating said identification circuit means to sense said electrical property.

5,357,077

APPARATUS FOR MARKING SEMICONDUCTOR DEVICES

Hisayuki Tsuruta, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 19, 1994, Ser. No. 183,325
Claims priority, application Japan, Jan. 20, 1993, 5-007120
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.68 **4 Claims**



1. An apparatus for marking packaged semiconductor devices, comprising:

a tubular holder for holding therein a plurality of packaged semiconductor devices in a single file, which is generally rectangular in cross-sectional shape and has two opposite side walls, a downside wall and an upside wall which has a lengthwise opening to expose an upside face of each of the packaged semiconductor device in the holder;

a belt conveyor comprising a conveyor belt on which said tubular holder is placed with said downside wall in contact with the belt, the conveyor belt being arranged so as to pass a marking station where a laser beam is projected from a laser beam marker so as to impinge on the upside face of one of semiconductor devices in said tubular holder;

at least one upper guide belt which makes tight contact with the upside wall of said tubular holder on said conveyor belt and is driven so as to advance in the same direction as said conveyor belt;

at least one side guide belt which makes tight contact with one of the two side walls of said tubular holder on said conveyor belt and is driven so as to advance in the same direction as said conveyor belt;

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first shift means for varying a first distance which is the distance between said conveyor belt and said at least one upper guide belt;

second shift means for varying a second distance which is the distance between each of said at least one side guide belt and a plane which is perpendicular to said conveyor belt and contains a longitudinal center axis of the conveyor belt; and

control means for computing said first and second distances according to the height and width of said tubular holder and controlling the operation of said first and second shift means according to the results of computation of said first and second distances.

5,357,078

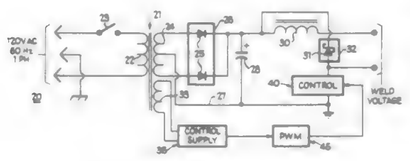
PRECISION LINEAR VARIABLE CURRENT CONTROL

Leonard S. Smith, Minneapolis, and Gary L. Cook, Eagan, both of Minn., assignors to Snap-on Incorporated, Kenosha, Wis.

Filed Dec. 17, 1992, Ser. No. 992,154

Int. Cl.[5] B23K *9/09*

U.S. Cl. 219—130.51 20 Claims



1. A power supply for causing an unregulated pulsed unidirectional welding current to flow in an arc between a workpiece and a consumable electrode in an arc welding system, said power supply comprising: a substantially constant potential power transformer having a primary winding adapted for connection to a source of AC power and a secondary winding, rectifying means coupled to said secondary winding for producing a DC current, and open-loop modulating means unresponsive to the arc coupled in series between said rectifying means and the arc for pulse width modulating the DC current to produce the pulsed welding current.

5,357,079

COOKTOP WITH UPWARDLY ANGLED CONTROL SURFACE

Karlheinz Henry, Trostberg, and Georg Brandl, Palling, both of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeräte GmbH, Munich, Fed. Rep. of Germany

Filed May 20, 1993, Ser. No. 64,846

Claims priority, application Fed. Rep. of Germany, May 20, 1992, 4216677

Int. Cl.[5] F24C *15/10, 7/08, 15/00*

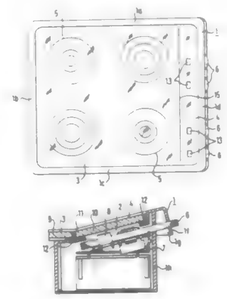
U.S. Cl. 219—453 10 Claims

1. A cooktop, comprising:

a horizontal cooking surface having boundary sides and at least one cooking location;

a narrow control surface disposed at an angle relative to said cooking surface along at least one of said boundary sides of said cooking surface, said control surface sloping upwardly, being oriented toward said cooking surface and directly adjoining said cooking surface in a flush manner, at least substantially seamlessly;

at least one of operating and indicator devices and at least one heating element for said at least one cooking location; and



a cooktop frame supporting said cooking and control surfaces, said at least one heating element, and said at least one of operating and indicator devices.

5,357,080

COOKTOP WITH CONTROL SURFACE ON FRAME LEG

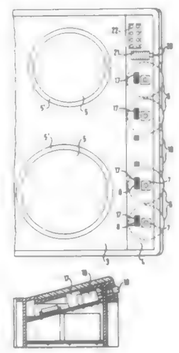
Roland Vetter, Giengen-Sachsenhausen; Georg Brandl, Palling; Jörg Ramonat, Traunstein, and Günter Varnhorn, Giengen, all of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeräte GmbH, Munich, Fed. Rep. of Germany

Filed May 20, 1993, Ser. No. 64,847

Claims priority, application Fed. Rep. of Germany, May 20, 1992, 4216678

Int. Cl.[5] F24C *7/08, 15/00*

U.S. Cl. 219—453 13 Claims



1. A cooktop, comprising:

a substantially horizontal cooking surface having at least one cooking location;

a cooktop frame to be inserted into a kitchen work counter, said cooktop frame surrounding said cooking surface and having a frame leg protruding above said cooking surface, said frame leg having an outer leg surface extending downward in the inserted portion of the cooktop;

control devices for said cooking locations being disposed at least on said frame leg, said control devices including at least one operating device disposed on said outer leg surface of said frame leg; and

a control surface associated with said frame leg and bordering said downward extending outer leg surface, said control surface serving as part of said cooking surface and

being immediately adjacent to and rising at an angle upward relative to said cooking surface, and indicator devices being associated with said at least one operating device and being disposed on said control surface.

5,357,081

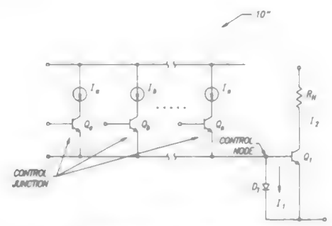
POWER SUPPLY FOR INDIVIDUAL CONTROL OF POWER DELIVERED TO INTEGRATED DRIVE THERMAL INKJET PRINTHEAD HEATER RESISTORS

Jaime H. Bohorquez, Escondido, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 21, 1993, Ser. No. 7,221

Int. Cl.[5] H05B *1/02*

U.S. Cl. 219—497 13 Claims



1. A circuit for controlling the power applied to the heater resistor of a thermal inkjet printer printhead, said heater resistor being connected to a first source of current, said circuit comprising:

a first transistor having a first terminal connected to said heater resistor and a second terminal connected to a return path for said heater resistor and

means for maintaining a constant voltage at a third terminal of said transistor, said third terminal being the control terminal thereof and said means for maintaining a constant voltage including a diode connected between said second and third terminals of said first transistor to conduct when the junction between said second and third terminals of said transistor conducts.

5,357,082

APPARATUS FOR PROVIDING VISUAL INDICATION IN AN ELECTRIC COOKING APPLIANCE

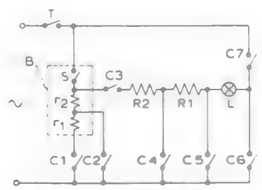
George A. Higgins, Hagley, United Kingdom, assignor to Ceramaspeed Limited, United Kingdom

Filed Jan. 5, 1993, Ser. No. 477

Claims priority, application United Kingdom, Jan. 10, 1992, 9200515.6

Int. Cl.[5] H05B *1/02*

U.S. Cl. 219—506 5 Claims



1. Apparatus for providing a visual indication in a heater of an electric cooking appliance, the appliance incorporating a user-operable multi-position switch for switching the heater from one power output to another, and the heater incorporating at least one heating element which is capable of emitting a significant amount of visible radiation, and having multiple positive power outputs wherein the apparatus includes means for de-energising and subsequently re-energising the at least one heating element as the heater is switched from one positive power output to another, to thereby produce a brief dimming of brightness of the one heating element, and the desired visual indication.

5,357,083

ELECTRO-WELDING SLEEVE OBTAINED BY FABRICATION METHOD

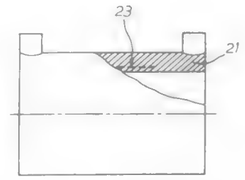
Vincent S. B. D'Auria, Cap D'Ail, France, assignor to Boulet D'Auria, Terlizzi & Cie, and Gaz De France, both of France

Division of Ser. No. 532,450, Jun. 4, 1990. This application May 21, 1992, Ser. No. 886,731

Claims priority, application France, Jun. 9, 1989, 89 07647

Int. Cl.[5] H05B *3/06;* B29C *65/34*

U.S. Cl. 219—535 3 Claims



1. An electric resistance welding connector comprising a plastic material sleeve provided with a heating wire and connecting terminal parts and made by a method of manufacturing an electric resistance welding connector, in which method:

the plastic material sleeve is molded as a single piece to a cylindrical shape delimited by an outside surface and an inside surface;

a helical groove is formed in the outside surface of the sleeve, said groove having a predetermined depth from said outer surface toward said inner surface, the turns of said helical groove having a predetermined spacing pattern along the axial direction of said cylindrically shaped sleeve;

a wire is heated and then placed, under tension, in the bottom of the groove to anchor said wire in said groove so that said wire is located in a desired position with respect to the inner surface of said sleeve and so that the turns of said wire in the groove are axially separated by predetermined amounts established by the axial spacing pattern of the helical groove; and

the plastics material of the single piece sleeve heated by means of the wire is smoothed so as to totally cover the wire and close the groove,

whereby said wire remains embedded under tension in the sleeve.

5,357,084

DEVICE FOR ELECTRICALLY INTERCONNECTING CONTACT ARRAYS

Michael J. McKee, New Cumberland, and Joseph M. Pawlikowski, Lancaster, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Nov. 15, 1993, Ser. No. 152,645

Int. Cl.[5] H05B *6/10*

U.S. Cl. 219—605 6 Claims

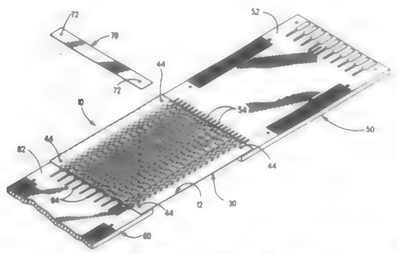
1. A jumper cable assembly for providing sufficient thermal energy to melt a fusible electrically conductive material and thereby provide electrically-conductive connections between an array of contact pads of a surface of a first electrical article to a corresponding array of contact pads on a surface of a second electrical article, usable in conjunction with a source of

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constant amplitude high frequency alternating current of known frequency, said jumper assembly comprising:

at least a first layer of insulating film having inner and outer major surfaces;

an array of electrical conductors disposed on said inner surface of said first film layer, each said conductor having first and second connecting portions at opposed ends thereof, each said conductor being formed from a first layer adjacent said first film layer, said first layer being a first metal having high electrical resistance and high magnetic permeability, said first conductor layer having a thickness at least equal to one skin depth of said first metal, given said known frequency, and a second conductor layer of a second metal integrally joined to said first conductor layer, said second metal having low electrical resistance and minimal magnetic permeability, each said conductor thereby defining a heater body; and



fusible electrically conductive material disposed on at least said second metal layer of said first and second connecting portions of each conductor,

whereby upon disposing said arrays of said first and second connecting portions of said conductors on corresponding arrays of contact pads of said first and second electrical articles with said second conductor layers adjacent respective said contact pads of said first and second electrical articles, and upon said heater bodies being subjected to said constant current of known frequency, each said heater body generates and transfers said sufficient thermal energy from said heater body to said connecting portions to melt said fusible material disposed therealong thereby electrically and mechanically interconnecting said conductors of said jumper cable assembly to corresponding contact pads of said respective first and second electrical articles.

5,357,085

INDUCTION HEATING OF POLYMER MATRIX COMPOSITE FIBER STRANDS

Philip C. Sturman, Jr., Rexford, N.Y., assignor to General Electric Company, Gehenectady, N.Y.

Filed Nov. 29, 1993, Ser. No. 160,706

Int. Cl.[5] H05B *6/10*

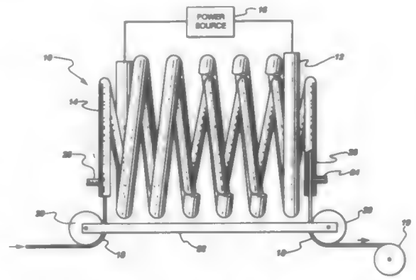
U.S. Cl. 219—636 **10 Claims**

1. An apparatus for heating a polymer matrix composite workpiece, said apparatus comprising:

a helical induction coil;

a power source connected to said induction coil;

a helical guide tube situated adjacent to said induction coil; and



means for drawing a polymer matrix composite workpiece through said guide tube.

5,357,086

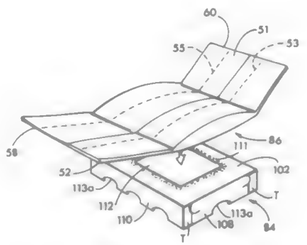
MICROWAVE CORN POPPING PACKAGE

Charles H. Turpin, Minneapolis, and James W. Montealegre, Shoreview, both of Minn., assignors to Golden Valley Microwave Foods Inc., Edina, Minn.

Continuation-in-part of Ser. No. 959,681, Oct. 13, 1992, which is a continuation-in-part of Ser. No. 852,291, Mar. 16, 1992, abandoned. This application Mar. 15, 1993, Ser. No. 25,010

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—732 **14 Claims**



1. An expandable popcorn package for popping popcorn in a microwave oven comprising,

a bag body formed rom flexible microwave transparent sheet material including superimposed upper and lower face panels having parallel left and right side edges with longitudinally extending centrally projecting gussets folded between the upper and lower face panels,

a charge of popcorn and shortening contained within the bag,

said bag having top and bottom ends with top and bottom seals between the face panels adjacent to the ends of the bag,

said seals bonding the upper and lower face panels together and bonding the gussets between the face panels to thereby seal the ends of the bag,

said bag being adapted to expand to accommodate the expansion of the popcorn as it pops therein during microwave cooking,

a detached and automatically self-attaching stand that is separate from the bag for being placed below the bag to support said bag during cooking of the popcorn in a microwave oven,

said stand having a horizontally disposed supporting wall and a plurality of upright side walls at right angles to the supporting wall,

said stand rests upon a horizontal food supporting surface within the microwave oven and the bag rests on and in contact with the horizontal supporting wall of the stand during popping of the popcorn, and

a heat-activated adhesive between the bag and the horizontal supporting wall of the stand for bonding the bag to the stand in response to heat transferred to said adhesive during microwave cooking of the popcorn within the microwave oven.

5,357,087

METHOD FOR CONTROLLING A POWER RELAY FOR ACTUATING A MAGNETRON OF A MICROWAVE OVEN

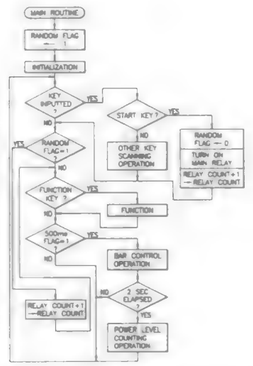
Kyunghwan Choi, Kyungsangnam, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 14, 1993, Ser. No. 76,145

Claims priority, application Rep. of Korea, Jun. 15, 1992, 1992-10386

Int. Cl.[5] H05B *6/68*

U.S. Cl. 219—721 **6 Claims**



1. A method of controlling a power relay for actuating a magnetron of a microwave oven, comprising the steps of:

incrementing a count number of a relay counter of the microwave oven upon application of power to the microwave oven, continuously during a predetermined period, until a start key signal is inputted;

incrementing the count number of the relay counter whenever the start key signal is inputted;

incrementing a present count number of the relay counter whenever the power relay is toggled from an off state to an on state;

incrementing an interrupt number, which number is a number of times there has been an interruption of the microwave oven; and

driving the power relay for actuating the microwave oven when the incremented count number and incremented interrupt number are equal.

5,357,088

METHOD FOR MELTING A PHOTOGRAPHIC COMPOSITION GEL TO A SOL USING MICROWAVE ENERGY

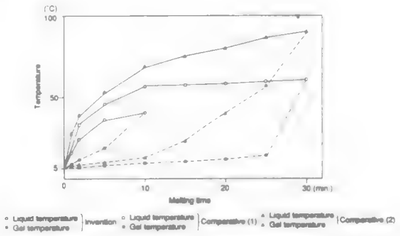
Shinichi Suzuki; Hideaki Kimura, both of Hino; Kazuyoshi Ichikawa, Tokyo, and Sanae Oyama, Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed May 4, 1992, Ser. No. 878,417

Claims priority, application Japan, May 9, 1991, 3-104338

Int. Cl.[5] H05B *6/54*; **G03C** *1/02*

U.S. Cl. 219—772 **11 Claims**



1. A method of converting a photographic composition gel to a photographic composition sol comprising the steps of:

(a) keeping the photographic composition gel in a light shielding dielectric container,

(b) determining the thickness of the gel in said container,

(c) determining a microwave frequency which is capable of penetrating the gel to a depth corresponding to said thickness,

(d) placing the gel in said container in a dielectric heating apparatus which has means for generating the determined microwave frequency; and

(e) irradiating the gel in said container with the determined microwave energy to heat the gel and melt it into a sol state.

5,357,089

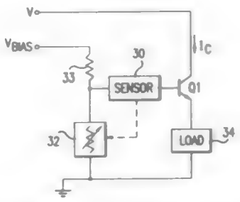
CIRCUIT AND METHOD FOR EXTENDING THE SAFE OPERATING AREA OF A BJT

John S. Prentice, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Feb. 26, 1993, Ser. No. 23,117

Int. Cl.[5] H03F *3/04*

U.S. Cl. 330—298 **35 Claims**



8. An integrated circuit for operating a base biased transistor at voltages above its BV_{CEO} comprising means for providing a base bias for a transistor and means for reducing said bias in response to the detection of a reverse base current.

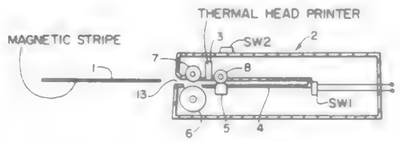
VOL 1167 ISS 3 OC 18 1994 UMI

5,357,090

COPY SERVICE ACCOUNTING DEVICE AND SYSTEM FOR PRINTING A COPY CHARGE IN BAR CODE FORM

Katsunori Masai, Amagasaki, Japan, assignor to Mita Industrial Co., Ltd.

Filed Jun. 17, 1992, Ser. No. 900,822
Claims priority, application Japan, Jul. 8, 1991, 3-167112
Int. Cl.[5] G06F *15/20*
U.S. Cl. 235—375 6 Claims



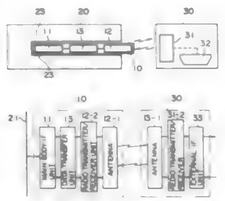
1. A copy service accounting device for calculating a copy charge on the basis of data on a copy number output from a copying machine comprising:
a printing means for printing the copy charge in bar code form on a card-like sheet;
a slit through which the card-like sheet is inserted; and
a copy enabling signal output means for outputting a copy enabling signal to the copying machine when insertion of the card-like sheet through the slit is detected, wherein the copy service accounting device is connected to the copying machine.

5,357,091

CARD TYPE INPUT/OUTPUT INTERFACE DEVICE AND ELECTRONIC DEVICE SYSTEM USING THE SAME

Masayuki Ozawa, and Shigeru Suzuki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 30, 1992, Ser. No. 875,800
Claims priority, application Japan, Apr. 30, 1991, 3-124635
Int. Cl.[5] G06K *5/00*
U.S. Cl. 235—380 37 Claims



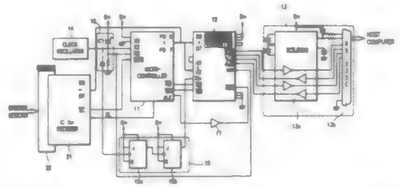
1. A card type input/output interface device comprising:
first data transmission means for transferring data between a main body of an electronic device and the card type input/output interface device;
second data transmission means, coupled to said first data transmission means, for transferring data between an external device and the card type input/output interface device; and
a card supporting said first and second data transmission means,
said first data transmission means being accommodated in said main body when the card type input/output interface device is inserted into a slot provided in said main body of the electronic device so as to transfer data between said card type input/output interface device and said electronic device.

5,357,092

BARCODE COMMUNICATION INTERFACE SYSTEM AND METHOD THEREFOR

Ki H. Lee, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 30, 1991, Ser. No. 785,084
Claims priority, application Rep. of Korea, Oct. 31, 1990, 17509/1990
Int. Cl.[5] G06K *7/10*; G06F *15/21*
U.S. Cl. 235—462 6 Claims



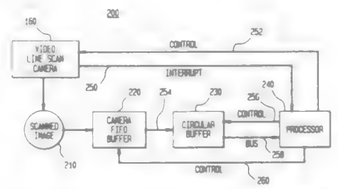
1. A barcode transmission interface system, comprising:
a clock oscillator for supplying a system clock signal to a microcontroller;
frequency-demultiplying means for frequency-demultiplying the system clock signal of said clock oscillator and supplying the frequency demultiplied system clock signal to a communication controller;
decoding means for decoding barcode data and outputting the decoded barcode data together with an interrupt signal;
the microcontroller for receiving decoded barcode data from said decoding means in response to the interrupt signal which is outputted from said decoding means, said microcontroller outputting to the communication controller only barcode data which is correctly decoded without error;
the communication controller for transmitting to a host computer barcode information data outputted from said microcontroller and transmitting data from said host computer to the microcontroller;
interface means for sending and receiving information between said communication controller and the host computer; and
reset means for applying a reset signal to the microcontroller and the communication controller.

5,357,093

SYSTEM AND METHOD FOR CONVERTING BAR CODE SCAN LINE DATA INTO MACHINE-READABLE CODE

Cheryl E. Netter, Golden; Larry K. Carmichael, Westminster; David L. Trachy, Louisville; Frederick G. Munro, and Robert W. Schmidt, both of Broomfield, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Feb. 1, 1993, Ser. No. 11,862
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—462 24 Claims



1. A system for converting a bar code to a machine-interpretable code comprising:

scan data capturing means for simultaneously capturing a plurality of substantially parallel lines of scan data representative of the bar code;
locating means for searching pixels of said scan data in a specified direction to locate a specified pixel sequence;
start character locating means for invoking said locating means to search said scan data in a first direction for a predefined start sequence, wherein said start sequence begins at a start position in a starting line of said scan data;
end character locating means for invoking said locating means to search said scan data in a second direction for a predefined end sequence, wherein said end sequence ends at an end position in an ending line of said scan data;
composite line building means for selecting pixel values of said scan data in positions between said start position and said ending position, if said start sequence and said end sequence are found within said scan data, and inserting said pixel values in an array to form a composite line;
conversion means for converting said composite line into a bar and space array of width values; and
bar label building means for decoding said bar and space array into the machine interpretable code.

5,357,094

TWO-CHANNEL XOR BAR CODE AND OPTICAL READER

Dwight G. Baldwin, Austin, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 632,138, Dec. 21, 1990, abandoned.
This application Mar. 31, 1992, Ser. No. 861,067
Int. Cl.[5] G06K *19/06, 7/10*
U.S. Cl. 235—494 5 Claims



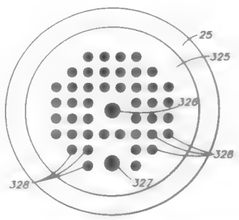
5. An apparatus for optically scanning a substrate which has a bar code printed thereon, and for decoding the bar code, the bar code having two generally parallel channels comprising a series of marks and spaces representing first and second bit sequences, respectively, each bit in said first sequence being associated with a bit in said second sequence, forming successive pairs of associated bits, wherein the data is encoded in the logical exclusive-or combination of each of said successive pairs of bits, and the widths of each of the marks and spaces in the bar code is either short or long, the long width being approximately equal to twice the short width, the apparatus comprising:
housing means;
means, located within said housing means, for providing light;
lens means located within said housing means for directing said light along a path which intercepts the location of the substrate to be scanned;
first and second light receiving detection means located within said housing means;
means for collecting light reflected from both channels of the bar code on the substrate, and for transmitting (i) light reflected from a first one of the channels to said first detection means and (ii) light reflected from a second one of the channels to said second detection means; and
processor means connected to said first and second detection means for (i) converting the outputs of said first and second detection means into said first and second bit sequences, respectively, (ii) correlating the bits in said first and second bit sequences into successive pairs, and (iii) determining the logical exclusive-or combination of said successive pairs of bits, said processor means converting said output of said first and second detection means into said first and second bit sequences by (i) detecting each mark/space transition in each channel, (ii) measuring the time intervals between each said transition, said time intervals corresponding to the widths of each mark and space, and (iii) constructing said bit sequences based on said time intervals by establishing a discrimination value for determining whether each of said time intervals corresponds to said short width or said long width.

5,357,095

REAGENT BOTTLE IDENTIFICATION AND REAGENT MONITORING SYSTEM FOR A CHEMICAL ANALYZER

Bruce Weyrauch, Newman Lake; Norman Kelln, Spokane; Leon Schmidt, Spokane; Charles Butts, Spokane; James Clark, Spokane; Kelsey Loughlin, Spokane, and Gary Richardson, Mica, all of Wash., assignors to Schiapparelli Biosystems, Inc., Fairfield, N.J.

Filed Jul. 16, 1992, Ser. No. 916,221
Int. Cl.[5] G06K *19/06*
U.S. Cl. 235—494 3 Claims



2. An identification label for use on the bottom surface of a reagent bottle having a bottle identification code for subsequent reading of the bottle identification code by an automated chemical analyzer, comprising:
a label having a surface background on which a contrasting pattern of dots is imprinted;
the pattern of dots including a spaced pair of imprinted position reference dots in the form of a central position dot located at the approximate center of the label and an orientation dot spaced radially outward from the central position dot at the rim of the pattern, the central position dot and orientation dot defining and orienting a label area containing both of them:
the remaining label area being divided into a plurality of bit fields with the positions of the bit fields surrounding and being defined by the spaced pair of position reference dots, the spacing between the imprinted pair of reference dots being substantially greater than the spacing between adjacent bit fields about the label area and also being greater than the spacing between each of the imprinted reference dots and the bit fields adjacent to it; and
bit dots imprinted in selected bit fields about the label area;
the imprinted position reference dots having a minimum area and the imprinted bit dots having a maximum area, the minimum area of the imprinted position reference dots being greater than the maximum area of the imprinted bit dots, the imprinted position reference dots being distinguishable from the imprinted bit dots by their relatively greater areas and spacing;
wherein each bit field maps to a single bit of a multi-bit binary bottle identification code, the binary value of each bit of the multi-bit binary identification code determining whether a bit dot is present in the mapped bit field.

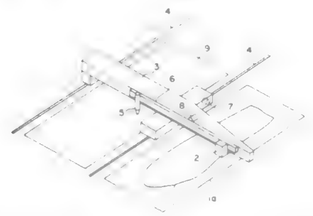
VOL 1167 ISS 3 OCT 18 1994 UMI

5,357,096

LINE TRACING METHOD AND LINE TRACING APPARATUS

Yasuo Koike, and Tokuji Tanaka, both of Tokyo, Japan, assignors to Koike Sanso Kogyo Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,697
Claims priority, application Japan, Mar. 31, 1992, 4-103883
Int. Cl.[5] B23K *7/00*
U.S. Cl. 250—202 **3 Claims**



1. A line tracing method for moving a camera having plural optical/electrical elements arrayed in matrix, comprising the steps of:

setting a reference point 0 at a given point on the picture and setting plural coaxial circle scanning lines about the reference point 0, said coaxial circles having different radii from each other;

converting picture information taken by the camera into binary signals;

scanning pixels of the converted picture information and detecting locations of pixels on intersections of a traced line and each coaxial scanning line;

deciding vectors from the reference point 0 to each detected pixel on the intersections;

calculating a vector angle between the vectors; and

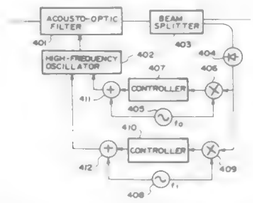
determining a moving speed of the camera according to the vector angle.

5,357,097

METHOD AND APPARATUS FOR CONTROLLING ACOUSTO-OPTIC FILTER

Takahiro Shiozawa, and Naoki Shimosaka, both of Tokyo, Japan, assignors to Nec Corporation, Tokyo, Japan

Filed Nov. 25, 1992, Ser. No. 981,319
Claims priority, application Japan, Nov. 25, 1991, 3-308621; Dec. 17, 1991, 3-353352
Int. Cl.[5] G01J *1/32;* **G02F** *1/11*
U.S. Cl. 250—205 **9 Claims**



1. A method for controlling an acousto-optic filter in which a signal beam with a desired wavelength is extracted from a wavelength multiplex signal, said method comprising the steps of:

detecting intensity of an output signal beam from the acousto-optic filter; and

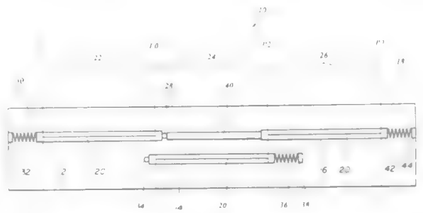
variably controlling simultaneously a frequency and an amplitude of a high-frequency signal that drives said acousto-optic filter to maximize the intensity of said output signal beam.

5,357,098

MOUNTING STRUCTURE FOR ELECTRO-OPTICAL DEVICES

Hans M. Van Gent, LD Venlo, Netherlands, assignor to OCE-Nederland, B.V., Venlo, Netherlands

Filed Jun. 25, 1993, Ser. No. 81,156
Claims priority, application European Pat. Off., Jun. 29, 1992, 92201912.0
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **5 Claims**



1. A mounting structure for a plurality of elongated electro-optical devices disposed along a line on a common substrate in such a manner that the positional relationship between the borders of the operative ranges of the individual devices is maintained irrespective of thermal expansion of the devices or the substrate, said mounting structure comprising:

a common substrate for supporting a plurality of elongated electro-optical devices,

a plurality of electro-optical devices on said common substrate having operative ranges slightly smaller than a length of each respective electro-optical device, staggered with overlapping end portions so that their operative ranges are adjoined to one another, said adjacent ends of two of said devices being fixed on said substrate such that said operative ranges of these two devices are adjoined at a reference position (P0), with respective remaining ends of said two devices being free to move longitudinally relative to said common substrate, and

a spacer having a length and a thermal expansion coefficient matched to those of said electro-optical devices fixed with one end in a vicinity of said reference position P0, and its other end being free to move longitudinally, one end of a third electro-optical device being held in engagement with said free end of said spacer.

5,357,099

CONTACT TYPE IMAGE SENSOR HAVING ORIGINAL SUPPORT MEMBER WITH A REFLECTING SURFACE

Masami Tabata, Isehara; Takahiro Kaihotsu, Fujisawa, and Nobuyoshi Tanaka, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 3, 1993, Ser. No. 145,234
Claims priority, application Japan, Nov. 4, 1992, 4-318015; Apr. 9, 1993, 5-105984
Int. Cl.[5] H01J *40/14;* **H01L** *27/14*
U.S. Cl. 250—208.1 **8 Claims**

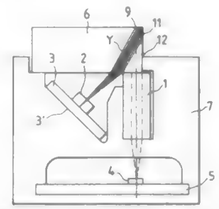
1. A contact type image sensor comprising:

(a) a light source to emit a light with a predetermined inclination angle for the direction of a normal line of the surface of an original at a position of a read line;

(b) an original supporting member for leading the light from said light source to said read line and for supporting the original;

(c) a photoelectric converting device section for receiving the light from said original surface; and

(d) a reflecting surface for reflecting a part of the light from the light source and for leading to said read line, in which said reflecting surface is provided for at least a part of said



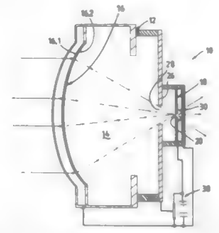
original supporting member locating on the side opposite to the arrangement side of the light source with regard to the read line.

5,357,100

IONIZING RADIATION CONVERTER WITH CATADIOPTRIC ELECTRON FOCUSING

Albert G. Du Toit, Pretoria, South Africa, assignor to CSIR, South Africa

Filed Jan. 26, 1993, Ser. No. 9,295
Claims priority, application South Africa, Jan. 27, 1992, 92/0541
Int. Cl.[5] H01J *31/50*
U.S. Cl. 250—214 VT **12 Claims**



1. An ionizing radiation converter comprising:

a vacuum tight enclosure; a cathode responsive to ionizing radiation located towards one end of the enclosure; an anode located towards another end of the enclosure; the anode defining a pinhole and comprising an impinging electron responsive region facing away from the cathode; ionizing radiation barrier means located between the cathode and anode and defining a single aperture; and catadioptric electron focusing means; whereby, in use, the catadioptric electron focusing means, anode and cathode force photoelectrons, emitted by the cathode as a result of input ionizing radiation received on the cathode, to move in a direction towards and through the aperture and pinhole, whereafter the direction of movement of said photoelectrons is changed so that the photoelectrons impinge on the impinging electron responsive region to provide an intensified signal representative of the input radiation.

5,357,101

ELECTRO-OPTICAL TRANSCEIVER WITH NONIMAGING CONCENTRATOR

George A. Plesko, Media, Pa., assignor to GAP Technologies, Incorporated, Media, Pa.

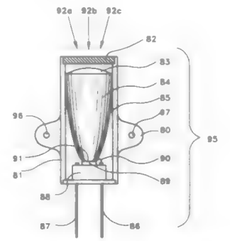
Filed Sep. 15, 1992, Ser. No. 945,157
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—216 **58 Claims**

1. An optical scanning system comprising:

a light source;

a scan element for scanning a light beam from said light source;

an optical element coupled to said scan element for receiving light from said light source and directing light toward a target;



a nonimaging light collector for receiving and concentrating reflected light from said target; and

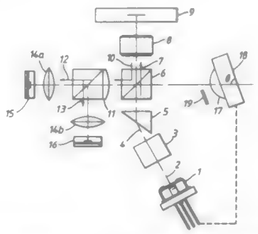
a photoelectric converter for receiving concentrated light from said nonimaging light collector and producing electrical signals which are responsive to said received light.

5,357,102

TILTED LIGHT DETECTION DEVICE FOR PREVENTING UNDESIRABLE RETRO-REFLECTION

Sou Ishika, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 5, 1993, Ser. No. 26,743
Claims priority, application Japan, Mar. 25, 1992, 4-066490
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—216 **10 Claims**



1. A light detection device for detecting an incident beam of light, comprising:

a convergent lens tilted at a prescribed angle to an axis of said incident beam of light, said convergent lens having a focal point at a predetermined distance;

means, tilted at said prescribed angle to said axis of said incident beam of light, for detecting said incident beam of light passing through said convergent lens, said detecting means having a receiving surface located at a position different than said focal point for receiving said incident beam of light; and

means for shading a light reflected off of said receiving surface and passing back through said convergent lens so as to prevent said reflected light parallel to said axis of said incident beam of light from returning in the direction of the incident beam.

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5,357,103

LIGHT RECEIVING MODULE WITH OPTICAL FIBER COUPLING

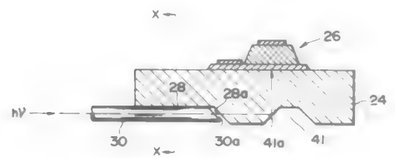
Goro Sasaki, Yokohama, Japan, assignor to Sumitomo Electric Industries, Inc., Japan

Filed Sep. 29, 1992, Ser. No. 953,082

Claims priority, application Japan, Oct. 2, 1991, 3-255382; Oct. 3, 1991, 3-256525

Int. Cl.[5] H01J *5/16*

U.S. Cl. 250—227.24 **6 Claims**



1. A light receiving module comprising:

a semiconductor substrate having a groove in a first main surface thereof;

a light receiving element mounted on a second main surface of said semiconductor substrate, said first main surface facing said second main surface through said substrate;

an optical fiber fixed in said groove, said optical fiber having first and second end portions, said first end portion having an edge surface inclined with respect to a light transmission direction in said optical fiber, said second end portion being adapted to transmit light input to said optical fiber for transmission of input light to said first end portion for output thereof; and

said groove being defined by at least two side surfaces of said substrate that extend in a same direction, and an end wall of said substrate that crosses said side surfaces, said first end portion of said fiber abutting against said end wall of said groove, whereby light input to said optical fiber passes through said fiber and is reflected at said inclined edge surface of said first end portion to pass through said substrate to be input to a light receiving area of said light receiving element.

5,357,104

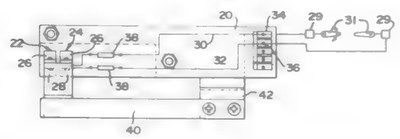
OPTO-LEAF SWITCH FOR PINBALL GAMES HAVING AN INTERRUPTER MEANS MOUNTED ON A LEAF SPRING ACTUATOR ARM

Charles R. Bleich, Cary, Ill., assignor to Williams Electronics Games, Inc., Chicago, Ill.

Filed Jun. 23, 1993, Ser. No. 81,472

Int. Cl.[5] G01D *5/34*

U.S. Cl. 250—229 **4 Claims**



1. An optical leaf switch assembly for a pinball game comprising:

a) a first optical detector consisting of a light emitter and a light receiver for detecting the light from said emitter and for completing a circuit in response thereto;

b) at least one flipper located in said circuit, said flipper being actuated when said circuit is completed;

c) interrupter means movable between a first, blocking position in which light is prevented from reaching the receiver and a second position in which light from the emitter is allowed to reach the receiver, said interrupter means being mounted on a leaf spring actuator arm that is normally biased to said first position; and

d) a player operated button operatively connected to said actuator arm for moving said interrupter means to the second position.

5,357,105

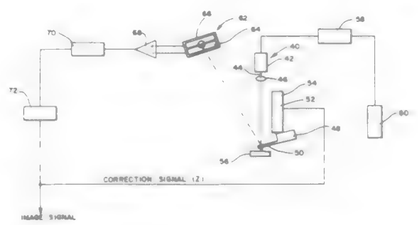
LIGHT MODULATED DETECTION SYSTEM FOR ATOMIC FORCE MICROSCOPES

Robert S. Harp, Westlake Village, and David J. Ray, Agoura Hills, both of Calif., assignors to Quesant Instrument Corporation, Agoura Hills, Calif.

Filed Nov. 9, 1993, Ser. No. 149,290

Int. Cl.[5] G01N *23/00*; **G01B** *11/00*

U.S. Cl. 250—234 **11 Claims**



1. A scanning force microscope device comprising in combination:

a. a sensing probe having a reflective surface on one side and a scanning tip on the opposite side, said tip adapted to be positioned adjacent a surface to be scanned;

b. illuminating means for generating a radiant energy beam and for applying said beam to said reflective surface;

c. modulating means for periodically changing said radiant energy beam in a predetermined fashion to produce a modulated energy beam;

d. position control means for moving said scanning tip in a predetermined pattern to follow the contours of a surface to be scanned;

e. detector means in the path of the portion of said modulated energy beam returned from said reflective surface and operable in response to changes in the energy beam position caused by tip movement in a predetermined direction to produce a motion signal representative of tip movement corresponding to the contours of the scanned surface; and

f. demodulating means for recovering the information contained in the modulated signal produced by said detector means, whereby tip motion in a direction orthogonal to scanning motion results in motion of said modulated radiant energy beam which is demodulated to produce an electrical signal corresponding to and representative of the surface contour of a scanned surface.

5,357,106

SENSOR FOR DETECTING BEAM POSITION AND START OF SCAN POSITION

James M. Wilson, Glendora, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 1, 1993, Ser. No. 130,253

Int. Cl.[5] H01J *3/14*

U.S. Cl. 250—236 **2 Claims**

1. A sensor for a raster scanner, comprising:

a first and a second element for receiving a scanning beam thereacross;

each of said first and second elements having a first edge and a second edge;

said first and said second elements having a common reference axis in the direction of scan;

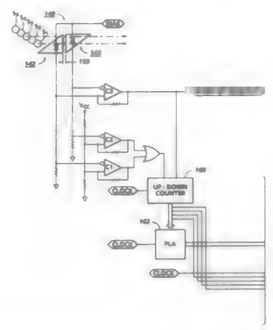
said second edge of said first element being spaced from said first edge of said first element in the direction of scan on the reference axis;

said second edge of said second element being spaced from said first edge of said second element in the direction of scan on the reference axis;

the distance between said first edge and said second edge of said first element on the reference axis being equal to the distance between said first edge and said second edge of said second element on the reference axis;

said first edge of said first element being parallel to said second edge of said second element, but not parallel to said second edge of said first element and said first edge of said second element;

said second edge of said first element being adjacent to and spaced from said first edge of said second element;



said second edge of said first element being parallel to said first edge of said second element and being orthogonal to the direction of scan;

means for measuring the distance that the light beam travels from the first edge of the first element to the second edge of first element and for measuring the distance that the light beam travels from the first edge of the second element to the second edge of second element;

a position detecting means being operably connected to said measuring means for comparing the distance traveled by the light beam across each of said elements to determine the position of the light beam relative to the reference axis;

start of scan detecting means operably connected to said first element and said second element for detecting the light beam crossing the space between said first and said second elements.

5,357,107

ELECTROSTATIC DEFLECTOR WITH GENERALLY CYLINDRICAL CONFIGURATION

Harald Ibach, Aachen; Dieter Bruchmann, Aldenhoven, and Sieghart Lehwald, Jülich, all of Fed. Rep. of Germany, assignors to Forschungszentrum Julich GmbH, Julich, Fed. Rep. of Germany

Filed Feb. 2, 1993, Ser. No. 12,537

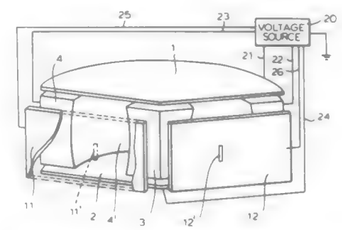
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1992, 4202985; Nov. 27, 1992, 4239866

Int. Cl.[5] H01J *40/00, 47/00*

U.S. Cl. 250—305 **17 Claims**

1. An electrostatic deflector for energy selection of a beam of charged particles, comprising:

a plurality of main deflector plates forming cylinder sectors around a cylinder axis to which electrostatic potentials are applied resulting in dispersion planes perpendicular to the cylinder axis, said main deflector plates being shaped and said potentials being applied to generate a path of said beam from an input side of said deflector to an output side thereof transverse to said axis by virtue of a deflecting field which is increasingly weakened to both sides of a central portion of the beam toward the main deflector plates relative to a field of ideal cylindrical shape, thereby



causing the second order angular abberation of the beam within the dispersion plane to substantially vanish; and

a pair of end deflector plates at opposite ends of the main deflector plates and having a repulsive potential with respect to said beam to effect focussing of said beam perpendicular to a dispersion plane of the deflector.

5,357,108

CANTILEVER TYPE DISPLACEMENT ELEMENT, AND SCANNING TUNNELING MICROSCOPE OR INFORMATION PROCESSING APPARATUS USING SAME

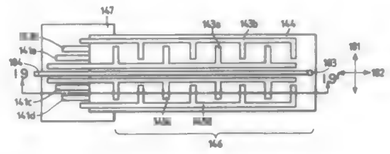
Yoshio Suzuki, Atsugi; Yutaka Hirai, Tokyo; Osamu Takamatsu; Masaru Nakayama, both of Atsugi; Takayuki Yagi, Machida; Yuji Kasanuki, Isehara; Keisuke Yamamoto, Yamato, and Yasuhiro Shimada, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 9, 1992, Ser. No. 895,621

Claims priority, application Japan, Jun. 11, 1991, 3-165282

Int. Cl.[5] H01J *37/26*

U.S. Cl. 250—306 **36 Claims**



25. A scanning tunneling microscope comprising:

a cantilever type displacement element including a piezoelectric layer and at least two pairs of electrodes for applying a voltage to said piezoelectric layer, at least one of said electrode pairs being a comb-shaped electrode pair having respectively comb-tooth portions disposed separately as facing and alongside of each other in the width direction of the cantilever,

a probe and an outgoing electrode connected to the probe, and

means for displaying/driving said element and a voltage application circuit connected to the probe and to the outgoing electrode of said element,

said probe being positionable in close proximity of a sample to be observed for applying a voltage therebetween to generate an electrical current and detecting the current to output the surface information of the sample based on the current detected.

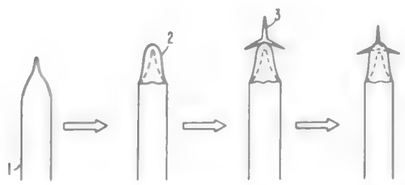
VOL 1167 ISS 3 OCT 18 1994 UMI

5,357,109

PROBE FOR SCANNING TUNNELING MICROSCOPE AND MANUFACTURING METHOD THEREOF

Osamu Kusumoto, Sakai, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 25, 1993, Ser. No. 65,899
Claims priority, application Japan, Jun. 3, 1992, 4-142401
Int. Cl.[5] H01J 37/26
U.S. Cl. 250—306 8 Claims



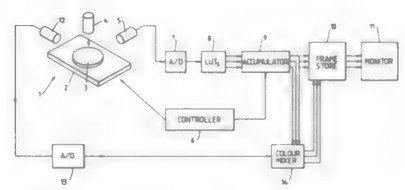
1. A probe for a scanning tunneling microscope, comprising a needle crystal fixed to a tip part of a conductive fine wire via a metal-conductive material which has a melting point lower than a melting point of a material of the fine wire and lower than a melting point or a sublimation point of the needle crystal.

5,357,110

VISUAL COLOR MAPPING X-RAY ANALYSIS APPARATUS

Peter J. Statham, High Wycombe, England, assignor to Link Analytical Limited, Witney, England

Filed Apr. 16, 1993, Ser. No. 48,387
Claims priority, application United Kingdom, May 1, 1992, 9209500
Int. Cl.[5] H01J 37/00
U.S. Cl. 250—307 16 Claims



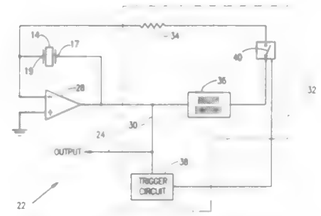
1. Apparatus for displaying a visual image of an X-ray response of a specimen, the apparatus comprising:
a source for exciting X-ray emissions from a specimen;
a detector for detecting X-ray photons emitted from an array of pixels defined by the specimen;
a visual colour component generating circuit for generating, for each pixel of said array of pixels, sets of visual colour component signals related to the energies of x-ray photons emitted from each pixel and detected by the detector, wherein the range of detected X-ray energies is mapped into a range of visual colours;
an accumulator circuit for combining the respective colour component signals for each pixel of said array of pixels into a single set of colour components for each pixel; and
a display responsive to the colour component signals from the accumulator circuit to display an image defined by the colour components.

5,357,111

PYROELECTRIC DETECTOR APPARATUS

Jacob J. Vecht, Jerusalem, Israel, assignor to Ophir Optronics Ltd., Jerusalem, Israel

Filed Aug. 17, 1993, Ser. No. 108,124
Claims priority, application Israel, Mar. 31, 1993, 105245
Int. Cl.[5] H01L 27/146
U.S. Cl. 250—338.3 26 Claims



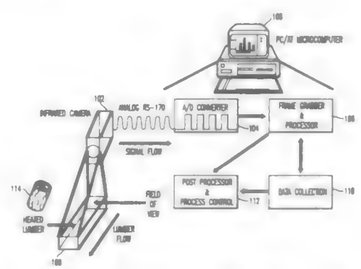
1. Pyroelectric detection apparatus comprising:
a pyroelectric detector operative to produce an electric output in response to pulsed incident radiation; and
a discharge circuit for discharging the electric output operative to impose an effective high impedance on the pyroelectric detector during at least a portion of the duration of each radiation pulse and to impose a low effective resistance during the intervals between the radiation pulses.

5,357,112

METHOD FOR DETERMINING THE PRESENCE OF KNOTS OR VOIDS IN WOOD

Philip H. Steele, Starkville, Miss., and Michael Hittmeier, Alpharetta, Ga., assignors to Mississippi State University: Forest Products Laboratory, Mississippi State, Miss.

Filed Jul. 14, 1993, Ser. No. 90,932
Int. Cl.[5] G01N 21/01, 25/72
U.S. Cl. 250—340 6 Claims



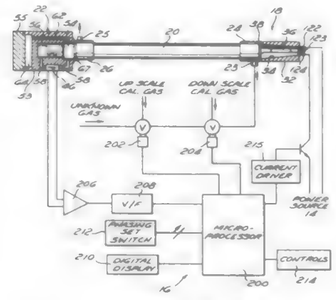
1. A method for detecting knots and voids in solid wood, comprising:
uniformly heating said wood,
obtaining an infrared image of said heated wood,
inspecting said image to determine locations in said wood wherein the temperature is different from the remainder of said wood, wherein said locations reflecting a temperature different from that of the remainder of said wood correspond to a knot or void in said wood.

5,357,113

INFRARED GAS MIXTURE ANALYZER

Max D. Liston, Irvine; Todd I. Harrison, Santa Ana; Paul K. Hsei, Huntington Beach, and Wayne F. Blackburn, Irvine, all of Calif., assignors to Liston Scientific Corp., Irvine, Calif.

Filed Nov. 18, 1992, Ser. No. 977,662
Int. Cl.[5] G01N 21/37
U.S. Cl. 250—344 14 Claims



1. A detector for an infrared gas analyzer, said detector comprising:
(a) a front detection cell for receiving infrared radiation;
(b) a rear detection cell for receiving infrared radiation from said front detection cell;
(c) a gas flow sensor communicating with said front and rear detection cells; and
(d) an auxiliary chamber in fluid communication with said front detection cell.

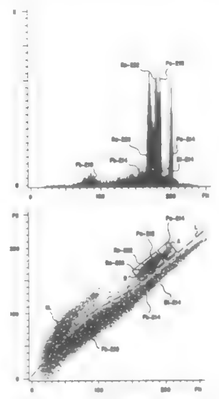
5,357,114

METHOD FOR USE IN LIQUID SCINTILLATION COUNTING FOR DETECTING, RECORDING AND ANALYZING SCINTILLATION PHENOMENA

Lauri Kaihola, Littoinen; Pertti Mäntynen, Forssa, and Jarmo Nurmi, Kuusisto, all of Finland, assignors to Wallac Oy, Turku, Finland

PCT No. PCT/FI91/00144, § 371 Date Jan. 8, 1993, § 102(e) Date Jan. 8, 1993, PCT Pub. No. WO91/17461, PCT Pub. Date Nov. 14, 1991
PCT Filed May 9, 1991, Ser. No. 969,282
Claims priority, application Finland, May 10, 1990, 902332
Int. Cl.[5] G01T 1/204
U.S. Cl. 250—364 19 Claims

1. Method for use in liquid scintillation counting for detecting, recording and analyzing scintillation phenomena due to ionizing radiation comprising the steps of:
(a) placing a sample in a measuring chamber;
(b) detecting and measuring the sample by means of at least two light detectors;
(c) recording the measurement of the sample;
(d) reconstructing at least a 2-D representation of the measurement subsequent to recordation of the measurement;
(e) analyzing the representation of the measurement from the reconstruction of the measurement; and,



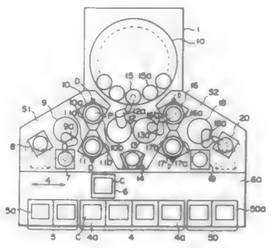
(f) recording information resulting from said analyzing of the measurement.

5,357,115

PROCESSING METHOD FOR WAFERS

Teruo Asakawa, Yamanashi; Tetsu Osawa, Sagamihara, and Noboru Hosaka, Yamanashi, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Continuation of Ser. No. 842,421, Feb. 27, 1992, Pat. No. 5,248,886. This application Aug. 20, 1993, Ser. No. 109,733
Claims priority, application Japan, Mar. 1, 1991, 3-062660
The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.
Int. Cl.[5] H01J 37/20
U.S. Cl. 250—442.11 13 Claims



1. A method of processing wafers using a system including,
a first casing defining a space in which the pressure is greatly decreased and wafers are processed,
a mount member arranged in the first casing for supporting the wafers,
a second casing defining a space connected to the space defined by the first casing having a path through which the wafers are transferred, a pressure in the space defined by the second casing being greatly decreased,
a pair of carrying-in openings formed in the second casing to allow the wafers to be carried into the second casing,
a pair of carrying-out openings formed in the second casing and distinct from the carrying-in openings, to allow the wafers to be carried out of the second casing,
a pair of first load lock chambers, each connected to one of

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the carrying-in openings and each having a gate for opening and closing one of the carrying-in openings,

a pair of second load lock chambers, each connected to one of said pair of carrying-out openings and each having a gate for opening and closing one of the pair of carrying-out openings, each load lock chamber defining a space in which pressure is independently controllable,

transfer means arranged in the second casing, for transferring said wafers from one of the pair of first load lock chambers onto the mount member, and for transferring said wafers from the mount member through one of the carrying-out openings into one of the second load lock chambers,

a pair of carrying-in ports, one formed in each of said pair of first load lock chambers so that the pair of first load lock chambers communicates with a space outside the first and second casings, each of said carrying-in ports being opened and closed by a respective gate,

carrying-in means for carrying said wafers into one of the first load lock chambers through one of the carrying-in ports,

a pair of carrying-out ports, one formed in each of said second pair of load lock chambers so that the said second pair of load lock chambers communicates with a space outside the first and second casings, each of said pair of carrying-out ports being opened and closed by a respective gate, and

carrying-out means for carrying out said wafers from one of the pair of second load lock chambers through one of the carrying-out ports,

said method comprising the steps of:

transferring unprocessed wafers into the pair of first load lock chambers, respectively, through the carrying-in ports by the carrying-in means;

closing the gates of the carrying-in ports;

changing a pressure in the pair of first load lock chambers to a pressure closer to the pressure in the space defined by the second casing;

opening the gates of the carrying-in openings;

transferring the wafers in the first load lock chambers through the carrying-in openings onto the mount member arranged in the first casing by the transfer means;

processing the wafers in the first casing; and

transferring the processed wafers into at least one of the pair of the second load lock chambers from the mount member through the corresponding carrying-out opening;

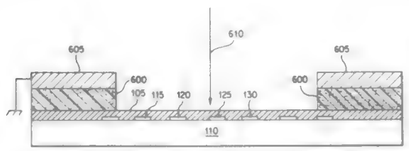
wherein the unprocessed wafers are alternately transferred into the pair of the first load lock chambers, and one of the wafers is transferred into one of the first load lock chambers while another one of the wafers is transferred out of the other of the first load lock chambers.

5,357,116

FOCUSED ION BEAM PROCESSING WITH CHARGE CONTROL

Christopher G. Talbot, Menlo Park, and Thomas M. Trexler, San Jose, both of Calif., assignors to Schlumberger Technologies, Inc., San Jose, Calif.

Filed Nov. 23, 1992, Ser. No. 980,371
Int. Cl.[5] H01J *37/30*
U.S. Cl. 250—492.21 **14 Claims**



1. A method of controlling charge build-up on a specimen to which a focused charged-particle beam is applied, comprising the steps of:

a. applying an anti-static fluid to a surface region of a specimen, the fluid comprising a mixture of a volatile liquid carrier and a conductive material;

b. allowing said liquid carrier to evaporate such that a layer of said conductive material remains on the surface region of the specimen;

c. scanning a focused charged-particle beam over a portion of said region to sputter away the layer of conductive material over said portion for exposing a surface area of the specimen to the charged-particle beam;

d. applying the focused charged-particle beam to said exposed surface area to modify the specimen; and

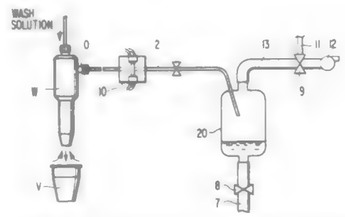
e. applying a solvent to the specimen to remove any of said conductive material remaining on the surface region of the specimen following modification of the specimen in step d.

5,357,117

METHOD OF MONITORING THE PRESENCE OR ABSENCE OF LIQUID AND APPARATUS THEREFOR

Hidechika Hayashi, Yokohama, and Yukio Mitsuhisa, Sagamihara, both of Japan, assignors to Tosoh Corporation, Yamaguchi, Japan

Filed May 12, 1993, Ser. No. 59,369
Claims priority, application Japan, May 15, 1992, 4-147903
Int. Cl.[5] G01N *15/06*
U.S. Cl. 250—573 **16 Claims**



1. A method of monitoring discharge of a liquid, comprising the steps of:

measuring a presence or absence of the liquid discharged at an optional area of a passage for the liquid during discharging of the liquid from a vessel through the passage;

comparing a measurement result obtained in said measuring step with a reference measurement result which is obtained when discharge of the liquid is reliably carried out; and

determining whether a discharge operation for the liquid has been reliably performed.

5,357,118

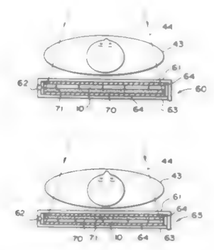
RATIATION IMAGE READ-OUT APPARATUS, RADIATION IMAGE RECORDING METHOD AND APPARATUS, STIMULABLE PHOSPHOR SHEET, AND CASSETTE

Takayoshi Fukuoka, Tokyo; Satoshi Arakawa, Kanagawa, and Ikuo Mori, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 5,866, Jan. 15, 1993, which is a continuation of Ser. No. 546,503, Aug. 8, 1990, abandoned. This application Apr. 4, 1994, Ser. No. 222,528
Claims priority, application Japan, Aug. 10, 1989, 1-207357; Sep. 5, 1989, 1-230199; Sep. 11, 1989, 1-235329
Int. Cl.[5] G01N *23/04;* **G03G** *5/16*
U.S. Cl. 250—582 **20 Claims**

1. A radiation image recording method wherein a stimulable phosphor sheet provided with a layer of a stimulable phosphor is exposed to radiation, which carries information about an image, and the image is thereby stored on the stimulable phosphor sheet, said stimulable phosphor exhibiting such properties that, when it is exposed to radiation and is then exposed to stimulating rays, it emits light in proportion to the amount of energy stored thereon during its exposure to the radiation,

the radiation image recording method comprising the steps of:



i) locating a layer of a phosphor such that it faces the layer of said stimulable phosphor, said phosphor exhibiting such properties that, when it is exposed to the radiation, it produces fluorescence having wavelengths falling within the stimulation wavelength range of said stimulable phosphor, and

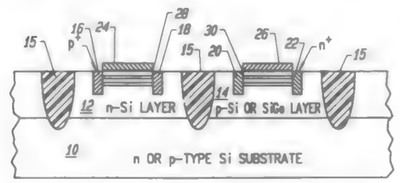
ii) thereafter irradiating the radiation to said stimulable phosphor sheet.

5,357,119

FIELD EFFECT DEVICES HAVING SHORT PERIOD SUPERLATTICE STRUCTURES USING SI AND GE

Kang L. Wang, Santa Monica, and Jin S. Park, Gardena, both of Calif., assignors to Board of Regents of the University of California, Oakland, Calif.

Filed Feb. 19, 1993, Ser. No. 19,719
Int. Cl.[5] H01L *27/12*
U.S. Cl. 257—18 **20 Claims**



1. A field effect device comprising

a monocrystalline silicon semiconductor substrate,

a first epitaxial layer of silicon grown on said substrate and doped with a first conductivity type dopant,

a plurality of layers of semiconductor material epitaxially grown on said first epitaxial layer, said plurality of layers comprising alternate single layers of silicon and of germanium semiconductor materials, thereby forming a plurality of heterojunctions in a superlattice structure,

a source and a drain formed in spaced apart regions in said first epitaxial layer with said superlattice structure therebetween, and

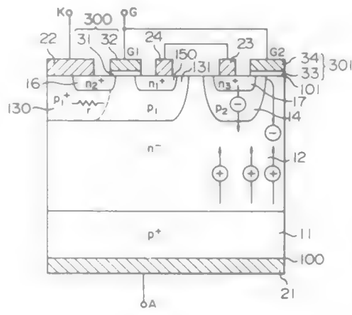
a gate contact formed over said superlattice structure.

5,357,120

COMPOUND SEMICONDUCTOR DEVICE AND ELECTRIC POWER CONVERTING APPARATUS USING SUCH DEVICE

Mutsuhiro Mori, Hitachi, Japan, assignor to Hitachi Ltd., Tokyo, Japan

Filed Jul. 14, 1992, Ser. No. 912,989
Int. Cl.[5] H02H *7/122;* **H01L** *27/06, 29/74, 29/10*
U.S. Cl. 257—38 **9 Claims**



1. A compound semiconductor device comprising:

a semiconductor substrate which is comprised of a first semiconductor region of a first conductivity type adjacent to a first main surface, a second semiconductor region of a second conductivity type which is adjacent to said first semiconductor region and to a second main surface and which has a carrier density lower than that of said first semiconductor region, third and fourth semiconductor regions of the first conductivity type which extend from the second main surface into said second semiconductor region and which are separated from one another by the second semiconductor region and each of which has a carrier density higher than that of the second semiconductor region, a fifth semiconductor region of the second conductivity type which extends from the second main surface into said third semiconductor region and which has a carrier density higher than that of said third semiconductor region, and sixth and seventh semiconductor regions of the second conductivity type which extend from the second main surface into said fourth semiconductor region and which are separated from one another by said fourth semiconductor region, wherein each of said sixth and seventh regions has a carrier density higher than that of said second semiconductor region;

a first main electrode which is in ohmic contact with said first semiconductor region on the first main surface of the semiconductor substrate;

a second main electrode which is in ohmic contact with said fourth and seventh semiconductor regions on the second main surface of the semiconductor substrate;

a first insulating gate electrode provided on the second main surface of the semiconductor substrate so as to lie over the second, third, and fifth semiconductor regions;

a second insulating gate electrode provided on the second main surface of the semiconductor substrate so as to lie over the sixth, fourth, and seventh semiconductor regions;

first means for mutually electrically connecting said first and second insulating gate electrodes; and

second means for mutually electrically connecting the fifth and sixth semiconductor regions, wherein the second means is not in contact with the third semiconductor region.

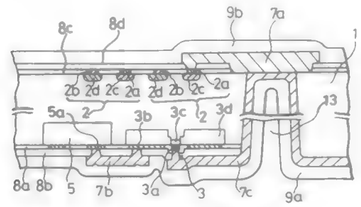
VOL 1167 ISS 3 OC 18 1994 UMI

5,357,121

OPTOELECTRONIC INTEGRATED CIRCUIT

Miyo Miyashita; Takayuki Katoh; Teruyuki Shimura, and Kazuhiko Nakahara, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1992, Ser. No. 944,981
Claims priority, application Japan, Oct. 14, 1991, 3-296352
Int. Cl.[5] H01L *29/161, 29/205, 29/225, 33/00*
U.S. Cl. 257—79 8 Claims



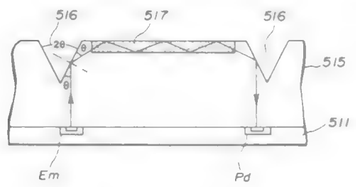
2. An optoelectronic integrated circuit comprising:
a first semiconductor substrate having opposed first and second surfaces;
a second semiconductor substrate having opposed first and second surfaces;
a light responsive element for converting an optical signal into an electrical signal disposed on the first surface of the first semiconductor substrate; and
an electronic circuit for processing the electrical signal disposed on the first surface of the second semiconductor substrate wherein said first and second semiconductor substrates are united at the second surfaces of the first and second semiconductor substrates and have thicknesses so that light incident on the light responsive element is substantially completely absorbed by the first and second semiconductor substrates before reaching the electronic circuit.

5,357,122

THREE-DIMENSIONAL OPTICAL-ELECTRONIC INTEGRATED CIRCUIT DEVICE WITH RAISED SECTIONS

Akihiko Okubora; Chiaki Takano; Kiyoshi Tanaka, and Hideto Ishikawa, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 2, 1992, Ser. No. 939,694
Claims priority, application Japan, Sep. 5, 1991, 3-252758; Sep. 6, 1991, 3-254258
Int. Cl.[5] H01L *27/14*
U.S. Cl. 257—84 6 Claims



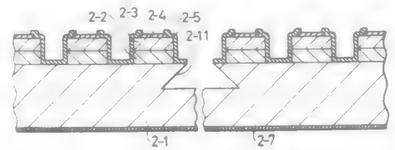
1. An optical-electronic integrated circuit device, comprising:
an optical interconnection base plate having a plurality of raised sections, said plurality of raised sections having sidewalls and defining a groove between said raised sections;
semiconductor substrates on said plurality of raised sections; and
at least one light emitting element on one of said semiconductor substrates; and
at least one light receiving element on another of said semiconductor substrates;
wherein said sidewalls of said raised sections have inclined surfaces, and optical signals are emitted from said light emitting element, then reflected at said inclined surfaces and received into said light receiving element through said groove between said raised sections.

5,357,123

LIGHT EMITTING DIODE ARRAY WITH DOVETAIL

Satoru Sugawara, Natori, Japan, assignor to Ricoh Company, Ltd., Tokyo and Ricoh Research Institute of General Electronics Co., Ltd., Natori, both of Japan

Filed May 3, 1993, Ser. No. 57,482
Claims priority, application Japan, May 14, 1992, 4-122190; Feb. 18, 1993, 5-029271
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—88 16 Claims



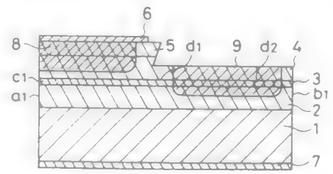
1. A light emitting diode array having a plurality of light emitting diodes arranged in a line on a semiconductor substrate, wherein said semiconductor substrate has end faces in a direction perpendicular to an arranging direction of the light emitting diodes and a Dovetail grooved mesa shape on each of said end faces in a direction perpendicular to an arranging direction of the light emitting diodes.

5,357,124

SUPERLUMINESCENT DIODE WITH STRIPE SHAPED DOPED REGION

Kenichi Kajiwara, Kamakura; Satoshi Arimoto, and Etsuji Omura, both of Itami, all of Japan, assignors to Mitsubishi Precision Co. Ltd, Kanagawa and Mitsubishi Denki Kabushiki, Tokyo, both of Japan

Filed Jul. 2, 1993, Ser. No. 84,952
Claims priority, application Japan, Jul. 22, 1992, 4-194393
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—95 7 Claims



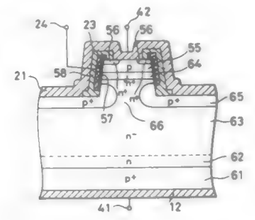
1. A superluminescent diode comprising:
a substrate;
a double heterojunction structure comprising a first conductivity type first cladding layer, an undoped active layer, and a second conductivity type second cladding layer, said second conductivity type being opposite said first conductivity type, Said layers being successively disposed on said substrate, said double hetero heterojunction structure having opposed front and rear facets transverse to said layers;
a second conductivity type first diffused region in said second cladding layer having a stripe shape and a length extending from the front facet halfway toward the rear facet through which a current is injected into said active layer; and
a second conductivity type second diffused region spaced from said first diffused region, disposed between the rear facet and said first diffused region, and extending through said second cladding layer and said active layer and into said first cladding layer.

5,357,125

POWER SWITCHING SEMICONDUCTOR DEVICE INCLUDING SI THYRISTOR AND MOSFET CONNECTED IN CASCADE

Naoki Kumagi, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Sep. 11, 1992, Ser. No. 943,547
Claims priority, application Japan, Sep. 13, 1991, 3-233502
Int. Cl.[5] H01L *29/00, 29/06*
U.S. Cl. 257—133 12 Claims



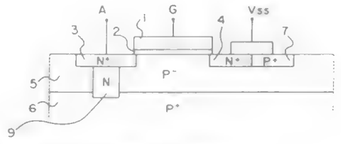
1. A semiconductor device, comprising:
a normally-on static induction thyristor having a source and a gate; and
a MOSFET connected in cascade with said static induction thyristor, said MOSFET having a source and a drain, wherein the source of said static induction thyristor is connected to the drain of said MOSFET, and the gate of said static induction thyristor is connected to the source of said MOSFET,
wherein said normally-on static induction thyristor is a trench gate type normally-on static induction thyristor which additionally has a drain and which includes
a first layer of a first conductivity type, which functions as the drain of said static induction thyristor,
a second layer of a second conductivity type which is formed on said first layer,
a highly doped third region of the second conductivity type which is selectively formed in a surface of said second layer, and functions as the source of said static induction thyristor,
grooves formed at both sides of said third region, said grooves having bottoms, and
fourth regions of the first conductivity type which function as the gate of said static induction thyristor, each of said fourth regions being formed in the surface of said second layer at the bottoms of said grooves in such a fashion that said fourth regions form a channel therebetween in said second layer,
wherein said MOSFET includes
a drain region consisting of said third region of said static induction thyristor
a base layer of the first conductivity type which is formed on said drain region
source regions of the second conductivity type which are selectively formed in a surface of said base layer,
insulating films formed on side walls of said base layer between said source regions and said drain region, and
gate electrodes which are disposed on said insulating films, and
wherein said semiconductor device further includes
a first main electrode making contact with said first layer of said static induction thyristor, and
a second main electrode making common contact with said base layer and source regions of said MOSFET, and said fourth regions of said thyristor.

5,357,126

MOS TRANSISTOR WITH AN INTEGRATED PROTECTION ZENER DIODE

Jean Jimenez, Voiron, France, assignor to SGS-Thomson Microelectronics S.A., Saint-Genis Pouilly, France

Filed Nov. 19, 1992, Ser. No. 978,777
Claims priority, application France, Nov. 21, 1991, 91 14753
Int. Cl.[5] H01L *27/02*
U.S. Cl. 257—173 37 Claims



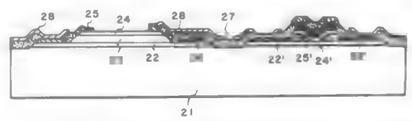
1. A lateral MOS transistor, comprising:
a substrate including a first low-doped surface layer of a first conductivity type substantially coating a second more highly-doped underlying layer of the first conductivity type;
a drain region of a second conductivity type formed in the first surface layer;
a source region of the second conductivity type formed in the first surface layer;
a substrate contacting region formed in the first surface layer; and
a region of the second conductivity type extending through the surface layer from a portion of the drain region to the underlying layer.

5,357,127

PIN HETEROJUNCTION PHOTO DIODE WITH UNDERCUT GATE JIFET

Ki S. Park, DongKu; Kwang Y. Oh, Yuseongku, and Yong T. Lee, Jungku, all of Rep. of Korea, assignors to Electronics and Telecommunications, Daejeon, Rep. of Korea

Continuation of Ser. No. 634,540, Dec. 27, 1990, abandoned.
This application Oct. 20, 1992, Ser. No. 964,113
Claims priority, application Rep. of Korea, Dec. 30, 1989, 1989-20674
Int. Cl.[5] H01L *27/14*
U.S. Cl. 257—189 4 Claims



1. A circuit integrating an optical detector and an amplifier on a single chip, comprising:
a semi-insulating InP substrate;
a PIN optical detector having a n type Inp first layer formed on the semi-insulating InP substrate, an undoped InGaAs optical absorption layer formed on the n type InP first layer, a p type InP clad layer formed on the undoped

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InGaAs optical absorption layer, a first metal formed on the p type InP clad layer, and a second metal formed on the n type InP first layer, the first and second metals comprising a metal capable of forming ohmic contacts with P-type semiconductors and N-type semiconductors, respectively;

a self-aligned field effect transistor having a n type InP channel layer formed on the semi-insulating InP substrate, a p type InP gate layer formed on the n type InP channel layer to act as a gate of the transistor, the p type InP gate layer being undercut on two sides to form a generally "V"-shaped cross-section of the p type InP gate layer having a bottom in contact with the n type InP channel layer and a top with two outwardly extending arms each having a flange extending outward in a generally parallel direction to the n type InP channel layer, a third metal formed on the p type InP gate layer, and a fourth metal formed on the n type InP channel layer, the third and fourth metals comprising a metal capable of forming ohmic contacts with P-type semiconductors and N-type semiconductors, respectively;

a polyimide coated on all portions except an absorption window of the PIN optical detector as well as metal contact holes for electrical interconnections among elements; and

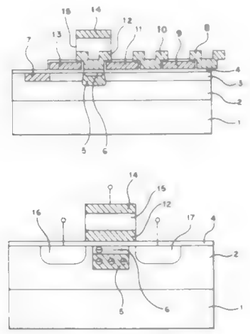
an interconnection metal for electrically wiring the elements.

5,357,128

CHARGE DETECTING DEVICE

Uya Shinji, Kyungki, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Rep. of Korea

Filed Aug. 27, 1993, Ser. No. 113,616
Int. Cl.[5] H01L *29/796; G11C 19/28*
U.S. Cl. 257—239 **3 Claims**



1. A charge detecting device having a structure in which a buried type charge sensing channel and a surface type floating surface channel crossing with the buried type charge sensing channel in three-dimensions, the surface type floating surface channel having a surface potential varying depending on a charge amount of the buried type charge sensing channel, the device being characterized by:

a surface channel region disposed on the buried type charge sensing channel, the surface channel region having a conductivity opposite to that of the buried type charge sensing channel;

a surface-invertible buried channel isolation region disposed between the buried type charge sensing channel and each of a source and a drain; and

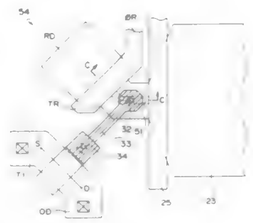
carriers of the surface type floating surface channel and the buried type charge sensing channel corresponding to electrons of the same polarity.

5,357,129

SOLID STATE IMAGING DEVICE HAVING HIGH-SENSITIVITY AND LOW-NOISE CHARACTERISTICS BY REDUCING ELECTROSTATIC CAPACITY OF INTERCONNECTION

Shinya Kamimura, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 24, 1993, Ser. No. 157,725
Claims priority, application Japan, Dec. 28, 1992, 4-347453; Sep. 9, 1993, 5-224233
Int. Cl.[5] H01L *29/78, 27/14, 31/00*
U.S. Cl. 257—239 **4 Claims**



1. A solid state imaging device comprising:

a semiconductor substrate of a first conductive type;

a well of a second conductive type provided on the semiconductor substrate, the second conductive type of the well being the conductive type reverse to the first conductive type of the semiconductor substrate;

a photoelectric conversion section having a first semiconductor layer of the first conductive type provided within the well and serving for converting incident light into signal charges at a junction plane between the first semiconductor layer and the well;

a transfer section having a second semiconductor layer of the first conductive type provided within the well and a third semiconductor layer of the second conductive type provided under the second semiconductor layer and thicker in concentration of dopants than the well, and serving for transferring signal charges received from the photoelectric conversion section through the second semiconductor layer;

a floating diffusion layer being comprised of a fourth semiconductor layer of the first conductive type provided within the well and serving for receiving the signal charges outputted by the transfer section; and

a driver transistor having a gate electrode connected to the floating diffusion layer via an interconnection and serving for outputting a signal corresponding to a potential of the floating diffusion layer,

wherein channel, source, and drain regions of the driver transistor are provided within the well, and

wherein under the source and drain regions of the driver transistor there is further provided a fifth semiconductor layer of the second conductive type which is thicker in concentration of dopants than the well.

5,357,130

LOW-NOISE CRYOGENIC MOSFET

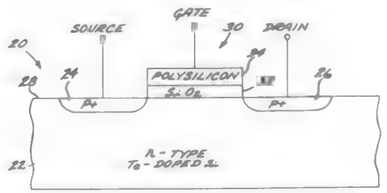
Frank J. Scholz, San Diego; James W. Roach, La Mesa, and Wing Y. Lum, San Diego, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 24, 1992, Ser. No. 919,641
Int. Cl.[5] H01L *27/01, 29/167*
U.S. Cl. 257—288 **20 Claims**

1. A microelectronic device, comprising:

a doped silicon substrate wafer, the dopant comprising an element having an ionization energy in the substrate of more than about 0.1 eV, there being no contaminant element having an ionization energy of less than about 0.1 eV in the substrate present in a concentration of more than about 10^{12} per cubic centimeter; and

a metal-oxide-semiconductor field effect transistor in the substrate wafer including



a source,

a drain, and

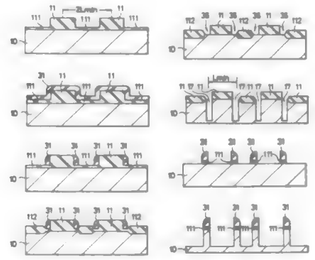
a gate intermediate the source and the drain.

5,357,131

SEMICONDUCTOR MEMORY WITH TRENCH CAPACITOR

Hideo Sunami, Hinodemachi; Tokuo Kure, Kokubunji; Yoshifumi Kawamoto, Kanagawa; Masao Tamura, and Masanobu Miyao, both of Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 753,944, Sep. 3, 1991, abandoned, and a continuation-in-part of Ser. No. 180,770, Apr. 12, 1988, abandoned, which is a continuation of Ser. No. 726,978, Apr. 25, 1985, abandoned, which is a continuation-in-part of Ser. No. 654,459, Sep. 26, 1984, abandoned, said Ser. No. 753,944, is a continuation-in-part of Ser. No. 636,720, Jan. 2, 1991, abandoned, which is a division of Ser. No. 201,100, May 31, 1988, Pat. No. 4,984,030, which is a division of Ser. No. 904,397, Sep. 8, 1986, Pat. No. 4,751,557, which is a continuation of Ser. No. 474,002, Mar. 10, 1983, abandoned. This application Jul. 19, 1993, Ser. No. 93,033
Claims priority, application Japan, Mar. 10, 1982, 57-36418; Sep. 28, 1983, 58-177952; Dec. 28, 1983, 58-246948; Apr. 25, 1984, 59-81750
Int. Cl.[5] H01L *27/108*
U.S. Cl. 257—301 **5 Claims**



1. A semiconductor memory comprising capacitors which are information storage portions, and insulated-gate field effect transistors which read out signal charges in said information storage portions, a part of said each capacitor being formed on side walls of an island region which is surrounded with a recess provided in a surface region of a semiconductor substrate, said island region being electrically isolated from other regions of said semiconductor substrate by said recess, wherein a plurality of said recesses are formed to provide a plurality of said islands, and wherein said plurality of recesses are respectively formed by the use of oxide regions spaced apart from one another;

wherein said oxide regions used to form said recesses include oxide mask regions and field oxide regions, wherein said oxide mask regions and said field oxide regions alternate with one another at the surface region of the semiconductor substrate;

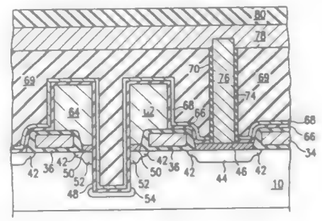
wherein a pitch between said recesses is equal to ½ of a pitch between said oxide mask regions.

5,357,132

DYNAMIC RANDOM ACCESS MEMORY CELL

Timothy E. Turner, Roanoke, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 869,758, Apr. 16, 1992, which is a division of Ser. No. 320,064, Mar. 6, 1989, Pat. No. 5,143,861. This application Sep. 8, 1993, Ser. No. 118,096
Int. Cl.[5] H01L *29/68, 29/78, 29/92*
U.S. Cl. 257—305 **4 Claims**



1. A structure for a dynamic random access memory integrated circuit device, comprising:

a substrate having an upper surface;

an isolation trench having two sides and a substantially flat bottom in the substrate, wherein the trench defines first and second substrate areas on either side thereof, and wherein the trench has a doped channel stop region in the substrate at the bottom thereof;

first and second gate electrodes spaced from the trench over the first and second substrate areas, respectively;

first and second bit line source/drain regions formed in the substrate upper surface adjacent the first and second gate electrodes, respectively, wherein the gate electrodes lie between the trench and the bit line source/drain regions;

first and second capacitor source/drain regions formed in the substrate upper surface adjacent the first and second gate electrodes, respectively, and lying between the gate electrodes and contacting the sides of the trench, wherein the trench extends deeper below the substrate surface than do the capacitor source/drain regions;

first and second bit line contacts to the first and second bit line source/drain regions, respectively;

first and second tungsten plugs connected to the first and second capacitor source/drain regions, respectively, and extending substantially vertically above the first and second gate electrodes, respectively to form first and second lower capacitor plates;

an insulating layer over the tungsten plugs and extending down into the trench; and

a conductive layer over the insulating layer, forming an upper capacitor plate corresponding to the lower capacitor plates;

wherein the lower capacitor plates, together with the upper capacitor plate, form charge storage capacitors for DRAMs.

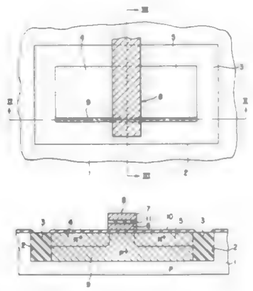
VOL 1167 ISS 3 OC 18 1994 UMI

5,357,133

SEMICONDUCTOR MEMORY DEVICE HAVING IMPROVED WRITE CHARACTERISTIC

Shigeru Morita, Fujisawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 30, 1992, Ser. No. 982,844
Claims priority, application Japan, Nov. 29, 1991, 3-315836
Int. Cl.[5] H01L 29/78, 27/02
U.S. Cl. 257—316 7 Claims



1. A semiconductor device comprising:
a semiconductor substrate of a first conductivity type;
a groove formed in said semiconductor substrate;
a buried element isolation region formed in said groove;
source and drain diffusion regions of a second conductivity type formed inside said buried element isolation region;
an electrode wiring layer disposed above a portion of said buried element isolation region and said diffusion regions, wherein said electrode wiring layer comprises a two-layered structure consisting of a control gate and a floating gate; and
a side-wall diffusion region of the first conductivity type extending along a portion of said groove, wherein said side-wall diffusion region contacts said source and drain diffusion regions and wherein said side-wall diffusion region is formed at a position corresponding to at least said electrode wiring layer,
wherein a surface of said buried element isolation region is formed as a recessed portion to have a level lower than that of a surface of said semiconductor substrate, an end of said floating gate being formed in said recessed portion of said buried element isolation region, whereby electric field concentration easily occurs between said side-wall diffusion region and said floating gate.

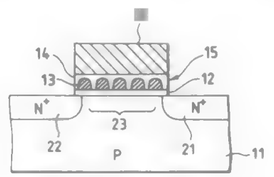
5,357,134

NONVOLATILE SEMICONDUCTOR DEVICE HAVING CHARGE TRAP FILM CONTAINING SILICON CRYSTAL GRAINS

Noriyuki Shimoji, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 964,211, Oct. 20, 1992, abandoned. This application Feb. 23, 1994, Ser. No. 200,313
Claims priority, application Japan, Oct. 31, 1991, 3-313313; Oct. 31, 1991, 3-313314; Oct. 31, 1991, 3-313315; Oct. 31, 1991, 3-313318
Int. Cl.[5] H01L 29/78
U.S. Cl. 257—325 6 Claims

1. A nonvolatile semiconductor storage device comprising:
a gate structure in which an insulating film, a charge trap film, and a conductive film are stacked on a substrate; and
drain and source diffusion layers formed in said substrate at opposite sides of said gate structure, whereby a charge is held in said charge trap film to thereby store information, wherein said charge trap film includes a polysilicon film having a plurality of silicon crystal grains, each grain



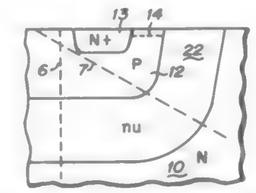
being coated with a thermal insulating film so as to isolate the crystal grains from each other.

5,357,135

DMOST JUNCTION BREAKDOWN ENHANCEMENT

Sheldon Aronowitz, San Jose; George P. Walker, Capitola; Peter Meng, Sunnyvale; Farrokh Mohammadi, Los Altos, and Bhaskar V. S. Gadepally, San Jose, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 822,333, Jan. 16, 1992, abandoned. This application Feb. 18, 1994, Ser. No. 198,686
Int. Cl.[5] H01L 29/10, 29/78
U.S. Cl. 257—369 9 Claims



1. A diffused metal oxide semiconductor transistor having a first diffused body region of a first conductivity type facing an epitaxial drain region of the opposite conductivity type to produce a PN junction that is reverse biased in normal operation and said PN junction has a breakdown voltage that is determined by avalanche carrier production, said epitaxial drain region of said opposite conductivity type comprising:
A second diffused region of the same conductivity type as said epitaxial drain region, wherein said second diffused region completely encompasses said first diffused body region, said second diffused region having a thickness substantially less than that of said epitaxial drain region, and said second diffused region has reduced conductivity as compared to said epitaxial drain region, whereby said breakdown voltage, at which said avalanche carrier production occurs, is increased relative to a structure lacking said second diffused region.

5,357,136

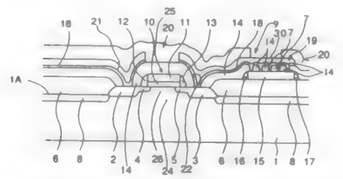
SEMICONDUCTOR DEVICE WITH ANCHORED INTERCONNECTION LAYER

Kentaro Yoshioka, Ohiramura, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Apr. 2, 1993, Ser. No. 42,401
Claims priority, application Japan, Apr. 10, 1992, 4-090719
Int. Cl.[5] H01L 27/02, 23/48, 29/46
U.S. Cl. 257—383 19 Claims

1. A semiconductor device, comprising:
a plurality of active regions on said semiconductor substrate, at least one of said active regions having therein and thereon a transistor, said transistor having a gate electrode;

an isolation layer formed on said major surface for isolating said active regions;
a conductive layer formed on said isolation layer;
an insulation layer covering said conductive layer and having at least one opening exposing said conductive layer;
a barrier metal layer on said insulation layer, said barrier metal layer connected to a diffusion region of said transistor, said barrier metal layer extending into said at least one opening to contact said conductive layer; and



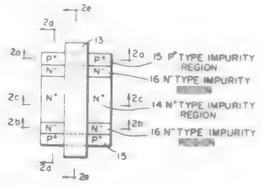
an interconnection layer formed on said barrier metal layer and electrically connected to said diffusion layer, a portion of said interconnection layer over said at least one opening and said conductive layer, said portion of said interconnection layer forming a bonding pad, wherein said insulation layer covers a portion of said isolation layer between said diffusion region and said bonding pad, said barrier metal layer and said interconnection layer extending from said conductive layer to said diffusion region on said insulation layer.

5,357,137

SEMICONDUCTOR DEVICE

Masahide Hayama, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Aug. 27, 1992, Ser. No. 936,017
Claims priority, application Japan, Aug. 28, 1991, 3-240313
Int. Cl.[5] H01L 29/78
U.S. Cl. 257—396 6 Claims



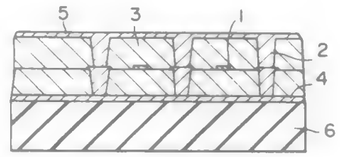
1. A semiconductor device comprising:
a semiconductor substrate of a first conductivity type,
source and drain regions of a second conductivity type formed in said substrate so as to be separated from each other about a first line on said substrate,
a pair of first impurity regions of said second conductivity type formed in said substrate so as to be connected to opposed ends of said source region and extending parallel to said first line, said first impurity regions having lower impurity concentration than do said source regions,
a pair of second impurity regions of said second conductivity type formed in said substrate so as to be connected to opposed ends of said drain region and extending parallel to said first line, said pair of second impurity regions having lower impurity concentration than that of said drain regions,
a pair of third impurity regions of said first conductivity type formed in said substrate and extending along said first line and commonly connected to said pair of first and pair of second impurity regions, respectively, such that said pair of first impurity regions are sandwiched between said source region and said pair of third impurity regions, and said pair of second impurity regions are sandwiched between said drain region and said pair of third impurity regions, said third impurity regions having higher impurity concentration than does said substrate,
a gate oxide film formed on said substrate, and
a gate electrode formed on said gate oxide film so as to be located above an area between said source region and said drain region and extending along said first line,
wherein said first conductivity type is a P-type, the impurity concentration of said first and second impurity regions is set to be in the range of 10^{14} cm^{-3} to 10^{15} cm^{-3}, and the impurity concentration of said third impurity regions is set to be in the range of 10^{12} cm^{-3} to 10^{14} cm^{-3}.

5,357,138

COAXIAL WIRING PATTERN STRUCTURE IN A MULTILAYERED WIRING BOARD

Yoshinobu Kobayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 21, 1992, Ser. No. 838,697
Claims priority, application Japan, Feb. 22, 1991, 3-050708
Int. Cl.[5] H01L 23/48, 29/40; H03F 3/60; H03B 5/12
U.S. Cl. 257—664 1 Claim



1. A coaxial wiring pattern structure, comprising:
a substrate;
a grounded lower conductive layer formed on said substrate;
a lower dielectric layer selectively formed on said lower conductive layer, said lower dielectric layer comprising lower dielectric portions disposed on said lower conductive layer so as to define spaces therebetween;
a signal wiring pattern selectively formed on said lower dielectric layer;
an upper dielectric layer formed of a photosensitive dielectric material on said signal wiring pattern and said lower dielectric layer so as to cover said signal wiring pattern provided on said lower dielectric layer, said upper dielectric layer comprising upper dielectric portions disposed on respective ones of said lower dielectric portions;
a grounded upper conductive layer formed on said upper dielectric layer;
grounded conductive layers extending between said upper and lower conductive layers, said grounded conductive layers being disposed in said spaces.

5,357,139

PLASTIC ENCAPSULATED SEMICONDUCTOR DEVICE AND LEAD FRAME

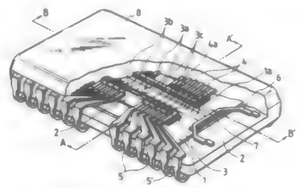
Akihiro Yaguchi, Ibaraki; Asao Nishimura, Ushiku; Makoto Kitano, Tsuchiura; Ryuji Kohno; Nae Yoneda, both of Ibaraki; Ichiro Anjoh, Koganei, and Gen Murakami, Tama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 662,617, Feb. 27, 1991, abandoned. This application Sep. 8, 1993, Ser. No. 117,639
Claims priority, application Japan, Feb. 28, 1990, 2-45412
Int. Cl.[5] H01L 23/50, 23/48
U.S. Cl. 257—666 9 Claims

1. A plastic encapsulated semiconductor device in which at least on two places on the circuit formation face of a semicon-

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ductor chip with a circuit being formed thereon, insulating films are bonded, wherein above each of said insulating films, first inner leads for electrical connection are positioned, so that said first inner leads for electrical connection are arranged to face each other, wherein a plurality of second electric signal inner leads are further arranged in positions apart from said first inner leads for electrical connection wherein the semiconductor chip, the insulating films, the first inner leads for electrical connection and the second electric signal inner leads are encapsulated with plastic, and wherein the positions of each of the opposing faces of said insulating films themselves and each of the opposing faces of said first inner leads for electrical connection are arranged so as not to be aligned with each other.



5,357,140

SEMICONDUCTOR DEVICE CAPABLE OF LAMINATING A PLURALITY OF WIRING LAYERS WHICH ARE MORE THAN FOUR LAYERS

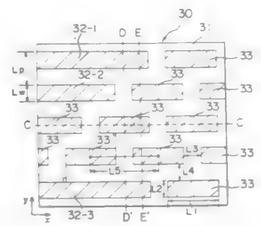
Yasuhiko Kozasa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 2, 1993, Ser. No. 115,027

Claims priority, application Japan, Sep. 2, 1992, 4-234594

Int. Cl.[5] H01L *23/48, 29/40*

U.S. Cl. 257—752 **5 Claims**



1. A semiconductor device comprising a silicon substrate and a plurality of wiring layers which are laminated on said silicon substrate, each of said plurality of wiring layers comprising an insulator layer and circuit patterns formed on said insulator layer, said circuit patterns being spaced apart from one another by at least a predetermined pitch Lp and having pattern widths which are not narrower than a predetermined minimum width Lw, at least one of said plurality of wiring layers further comprising a plurality of rectangular dummy patterns, which each have a pair of long sides and a pair of short sides, formed on a vacant area outside said circuit patterns of said insulator layer, each of said pair of long sides being parallel with a first direction, each of said pair of short sides being parallel with a second direction orthogonally crossing said first direction;

said plurality of rectangular dummy patterns being staggered such that projections of at least some of the rectangular dummy patterns only partially overlap adjacent rectangular dummy patterns, wherein said short sides of adjacent rectangular dummy patterns do not lie in a line, a first length L1 of each of said pair of long sides in each of said plurality of rectangular dummy patterns being defined by an inequality given by:

$$3Lp+Lw \geq L1 \geq Lp+Lw.$$

5,357,141

ELECTRONIC DEVICE

Werner Nitschke, Ditzingen; Reinhard Pfeufer, Möglingen; Wolfgang Drobny, Besigheim, and Peter Taufer, Renningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

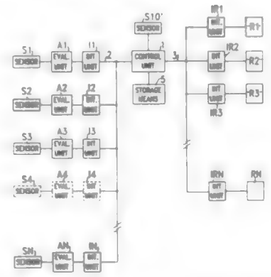
Continuation of Ser. No. 585,109, Nov. 21, 1990, abandoned.

This application Jan. 13, 1993, Ser. No. 5,852

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1988, 3811217

Int. Cl.[5] B60R *21/02*

U.S. Cl. 307—10.1 **22 Claims**



1. A device for controlling motor vehicle safety devices comprising:

a plurality of sensors mounted on the motor vehicle and adapted to transmit output signals indicative of an acceleration of the motor vehicle;

a control unit coupled to the sensors and to the safety devices, the control unit evaluating the signals transmitted by at least one of the sensors and controlling actuation of the safety devices as a function of the evaluated signals;

a serial data transmission line coupling each of the sensors to each of the other sensors and to the control unit;

the serial data transmission line providing bidirectional communication of signals among the sensors, and between each of the sensors and the control unit;

each of the sensors receiving all of the signals transmitted over the serial data transmission line by each of the other sensors and by the control unit;

each of the sensors processing the signals received from each of the other sensors;

each of the sensors processing the signals received from the control unit; and

each of the sensors determining when to transmit a respective signal over the serial data transmission line as a function of the signals received and processed from each of the other sensors and of the signals received and processed from the control unit.

5,357,142

ELECTRIC CONNECTION BOX WITH IGNITION SWITCH

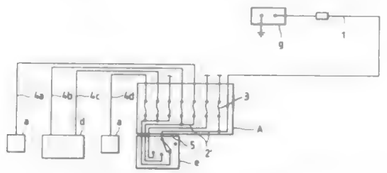
Minoru Kubota, and Yoshiaki Nakayama, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed May 14, 1993, Ser. No. 60,963

Claims priority, application Japan, May 19, 1992, 4-032914[U]; Jun. 9, 1992, 4-149325

Int. Cl.[5] H05K *7/00*

U.S. Cl. 307—10.1 **5 Claims**



1. An electrical connection box which electrically connects a battery to an electrical accessory in a vehicle, the combination comprising:

a connection box housing attachable to a body of said vehicle;

a bus bar circuit provided in said housing and including a plurality of conductive paths, one of said paths being electrically connected to said battery;

a fuse circuit provided in said housing and being electrically connected to another one of said conductive paths and to said electrical accessory;

an ignition switch unit secured to said housing and including an electrical switch which is electrically connected to said bus bar circuit in such a manner as to selectively interconnect said one path to said another path.

5,357,143

ELECTRONIC DOOR LOCKING MECHANISM

David D. Lehr, 7430 Eagle Dr., Lincoln, Nebr. 68507, and Daniel S. Lehr, 6416 Francis St., Lincoln, Nebr. 68505

Filed Aug. 2, 1993, Ser. No. 101,897

Int. Cl.[5] E05F *15/18*

U.S. Cl. 307—10.1 **4 Claims**



1. A vehicle including a driver's station separated from a cargo storage area by a bulkhead having a door mounted therein,

said door including a key-operated door locking mechanism for locking and unlocking the door,

said vehicle including an ignition switch which is movable between on and off positions,

and an electrical circuit means operatively connecting said ignition switch and said door locking mechanism which unlocks said door locking mechanism for a predetermined length of time after said ignition switch has been moved from its on position to its off position.

5,357,144

COMPLEMENTARY LOGIC CIRCUIT

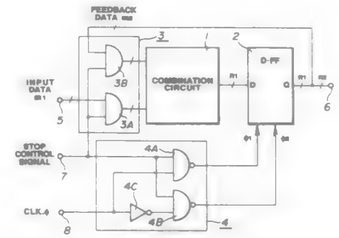
Masato Tanaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 15, 1993, Ser. No. 5,906

Claims priority, application Japan, Jan. 17, 1992, 4-025863

Int. Cl.[5] H03K *17/18, 356*

U.S. Cl. 307—247.1 **8 Claims**



1. A complementary logic circuit constituting a sequence circuit the operation thereof being stopped in response to a stop control signal, comprising:

delay circuit means including a group of dynamic delay type flip-flops;

combination circuit means connected to said delay circuit means for receiving and combining a plurality of inputs at a respective plurality of input terminals and feeding a combination signal representing said inputs to said delay circuit means;

input control means connected to said plurality of input terminals of said combination circuit means for setting said inputs of said combination circuit means to a predetermined logic level during an operation stop period in response to the stop control signal; and

operation stop control means connected to said delay circuit means and to said stop control signal for setting said delay circuit means to be inactive during the operation stop period in response to the stop control signal, so that said delay circuit means is brought into a data through condition for the operation stop period.

5,357,145

INTEGRATED WAVESHAPING CIRCUIT USING WEIGHTED CURRENT SUMMING

Para K. Segaram, Campbell, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 22, 1992, Ser. No. 994,660

Int. Cl.[5] H03K *5/01*

U.S. Cl. 307—268 **14 Claims**

1. A waveshaping circuit for generating complementary output data signals, the waveshaping circuit comprising:

a phase-lock-loop stage that generates a plurality of incrementally-delayed timing signals in response to an externally-provided oscillator signal;

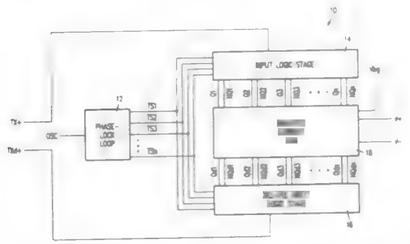
an input stage that generates a plurality of pairs of logic signals in response to the plurality of incrementally-delayed timing signals, each timing signal generating one corresponding pair of logic signals by periodically latching an input data signal so that a logic state and an inverse logic state of the input data signal are simultaneously provided by the corresponding pair of logic signals;

a delayed input stage that generates a plurality of pairs of delayed logic signals in response to the plurality of incrementally-delayed timing signals, each timing signal generating one corresponding pair of delayed logic signals by

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periodically latching a delayed input data signal so that a logic state and an inverse logic state of the delayed input data signal are simultaneously provided by the corresponding pair of logic signals, each pair of delayed logic signals corresponding to one pair of logic signals; and

a weighted current sum stage that generates both the output data signal and the complementary output data signal in response to both the plurality of pairs of logic signals and the plurality of pairs of delayed logic signals, each pair of



logic signals and its corresponding pair of delayed logic signals simultaneously generating both an incremental portion of the output data signal and an incremental portion of the complementary output data signal so that an instantaneous value of the output data signal is determined by summing together the incremental portions of the output data signal while an instantaneous value of the complementary output data signal is also determined by summing together the incremental portions of the complementary output data signal.

5,357,146

GLITCH-FREE CLOCK MULTIPLEXER

Martin E. Heimann, Chatham, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 31, 1992, Ser. No. 999,416

Int. Cl.[5] H03K *5/13, 17/00*

U.S. Cl. 307—269 **5 Claims**



1. An integrated circuit including a multiplexer for selecting one of at least two clock signals as the output signal, comprising:

a first shift register for receiving a select input, the first shift register clocked by a first clock signal, said first shift register providing a first shift register output and an inverted first shift register output;

a second shift register for receiving the select input, the second shift register clocked by a second clock signal, said second shift register providing a second shift register output;

a third shift register for receiving as an input the first shift register output, said third shift register clocked by the second clock signal, said third shift register providing a third shift register output;

a fourth shift register for receiving as an input the second shift register output, said fourth shift register clocked by the first clock signal, said fourth shift register providing an inverted fourth shift register output;

first gate means for receiving as inputs the second clock signal, the third shift register output, and the second shift register output, the first gate means providing a first gate means output that is low when all inputs are in a high state, and is high when at least one input is in a low state;

second gate means for receiving as inputs the first clock signal, the inverted fourth shift register output, and the first shift register output, the second gate means providing a second gate means output that is low when all inputs are in a high state, and is high when at least one input is in a low state; and

third gate means for receiving as inputs the first and second gate means outputs, the third gate means providing an output that is low when both inputs are in a high state and high when at least one input is in a low state.

5,357,147

WAVE-SHAPING APPARATUS

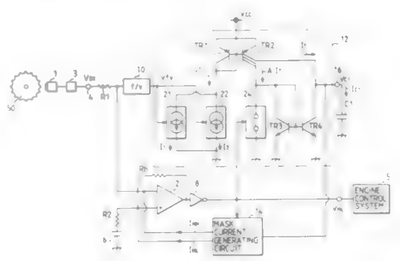
Hiroyuki Ina, Kariya; Takashi Harada, Hekinan; Masakazu Honda, Chiryu; Hiroyuki Ban, and Tomohisa Yamamoto, both of Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 9, 1993, Ser. No. 45,536

Claims priority, application Japan, Apr. 10, 1992, 4-090873

Int. Cl.[5] H03K *5/153;* **H03L** *7/06*

U.S. Cl. 307—271 **18 Claims**



1. A waveshaping apparatus for waveshaping an analog input signal into a rectangular output signal having a plurality of signal levels, said apparatus comprising:

an analog signal source for generating an analog input signal;

a reference signal source for generating a reference signal corresponding to a reference signal level of said analog input signal;

comparison means for comparing said analog input signal with said reference signal to vary the signal level of said output signal when said analog input signal reaches said reference signal level;

mask means for separating the signal levels of said analog input signal and said reference signal in accordance with a varying direction of said analog input signal for a predetermined mask time after said analog input signal reaches said reference signal level; and

mask time setting means for setting said mask time for said mask means to be shortened as a varying speed of said analog input signal increases, said setting means setting said mask time in accordance with a characteristic that a variation of said mask time made when the varying speed of said analog input signal is low is smaller than a variation of said mask time made when the varying speed of said analog input signal is high.

5,357,148

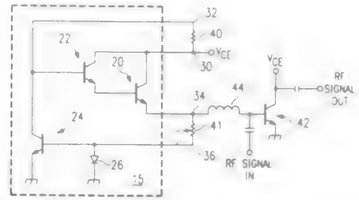
DEVICE FOR BIASING AN RF DEVICE OPERATING IN QUASI-LINEAR MODES WITH VOLTAGE COMPENSATION

Craig K. Rotay, Lansdale, Pa., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Dec. 29, 1992, Ser. No. 998,122

Int. Cl.[5] H03K *17/16*

U.S. Cl. 307—296.6 **9 Claims**



1. A biasing device for actively biasing the base of an RF device operating in quasi-linear modes, said biasing providing a source of low impedance current and high current capability, comprising:

first and second transistors each having a collector, an emitter and a base;

the base of said first transistor connected to the collector of said second transistor;

means, directly connected between the base of the first transistor and the collector of the second transistor, for increasing the voltage at the collector of the second transistor in order to keep the second transistor out of saturation; and

the emitter of said first transistor being connected (1) by way of a resistor to the base of the second transistor and (2) to the base of the RF device, for actively biasing the base of the RF device when operating in a quasi-linear mode, thereby providing a source of low impedance current and high current capability,

whereby said means for increasing prevents the second transistor from operating in saturation.

5,357,149

TEMPERATURE SENSOR CIRCUIT AND CONSTANT-CURRENT CIRCUIT

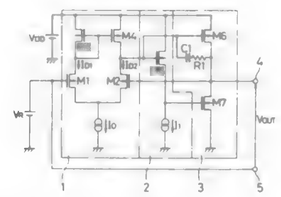
Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 24, 1992, Ser. No. 873,228

Claims priority, application Japan, Aug. 9, 1991, 3-224897; Jan. 14, 1992, 4-024558

Int. Cl.[5] H01L *31/00;* **H03K** *3/01;* **G06G** *7/12*

U.S. Cl. 307—310 **9 Claims**



1. A temperature sensor circuit comprising:

a differential pair circuit; said differential pair circuit including a first MOS transistor and a second MOS transistor which are different in gate-width and gate-length ratio from each other, a load circuit for said first and second MOS transistors, and a constant current source for driving said first and second MOS transistors; and

a feedback circuit; said feedback circuit receiving an output of said differential pair circuit and feedback-controlling said differential pair circuit so that a drain current of said first MOS transistor and a drain current of said second MOS transistor are made equal to each other;

wherein a reference voltage is applied to an input end of said first MOS transistor and an output of said feedback circuit is applied to an input end of said second MOS transistor, and an output voltage proportional to temperature is derived from said input ends of said first MOS transistor and said second MOS transistor.

5,357,150

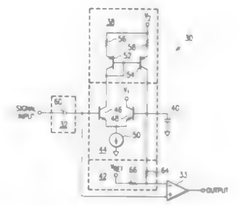
DEFECT TOLERANT ENVELOPE FOLLOWER

Glen A. Jaquette, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 6, 1992, Ser. No. 972,395

Int. Cl.[5] H03K *17/30*

U.S. Cl. 307—358 **19 Claims**



1. A peak detector qualifier, comprising:

means for providing an envelope voltage;

a differential amplifier coupled to receive the envelope voltage and an information signal, said differential amplifier having a first state when an amplitude of the information signal is greater than the envelope voltage;

a current mirror, coupled to said differential amplifier and said providing means, for generating a predetermined current when said differential amplifier is in said first state, whereby said providing means is activated by the predetermined current; and

a voltage divider for establishing a threshold voltage responsive to the envelope voltage.

5,357,151

INTRINSICALLY SAFE LOGIC AND-CIRCUIT HAVING TWO INPUTS

Benoît Fumery, Montrouge Cedex, France, assignor to Matra Transport, France

Filed Jun. 29, 1993, Ser. No. 83,434

Claims priority, application France, Sep. 2, 1992, 92 10484

Int. Cl.[5] H03K *19/20, 19/007*

U.S. Cl. 307—442 **5 Claims**

1. Logic AND circuit having two circuit inputs and comprising, in a cascade arrangement:

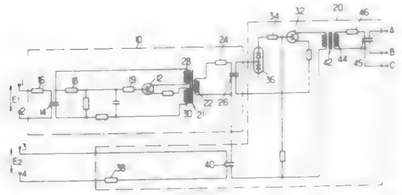
a threshold oscillator having a power supply input connected to a first of said circuit inputs and constructed to deliver an output signal only if a voltage on said first input exceeds a predetermined threshold; and

a clamping amplifier having an input connected to receive said output signal, constructed to provide an output signal exceeding a given value only when simultaneously the voltage on a power supply input thereof constituting said second circuit input exceeds another predetermined threshold and said output signal is received from said threshold oscillator, said amplifier being designed so as to be unable to oscillate spontaneously,

wherein said oscillator, of a type using variation of the dy-

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namic impedance of the emitter of a transistor thereof, comprises a single transistor whose emitter and collector circuits contain two primary windings of a transformer whose secondary winding constitutes a tuned circuit in association with a four-lead capacitor and whose base is biased from said first input via a filter cell having a parallel-connected four-lead capacitor, so connected that an input current flows across the plates of the capacitor and



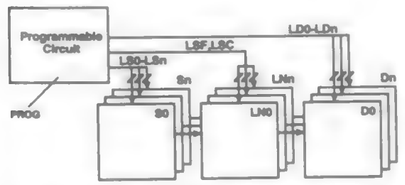
wherein the clamping amplifier includes a single transistor connected to said second input via a filter cell having a parallel-connected four-lead capacitor, with one of its emitter and collector circuits containing the primary winding of another transformer whose secondary winding contains a resonant circuit with a parallel-connected four-lead capacitor from whose terminals an alternating output signal is taken.

5,357,152

LOGIC SYSTEM OF LOGIC NETWORKS WITH PROGRAMMABLE SELECTED FUNCTIONS AND PROGRAMMABLE OPERATIONAL CONTROLS

Earle W. Jennings, III, Richardson, Tex., and George H. Landers, Mountain View, Calif., assignors to Infinite Technology Corporation, Richardson, Tex.

Filed Nov. 10, 1992, Ser. No. 974,237
Int. Cl.[5] H03K *19/173, 19/086*
U.S. Cl. 307—465 17 Claims



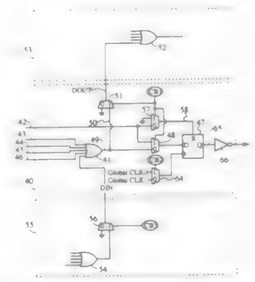
1. A logic system comprising a programmable circuit to generate a plurality of output logic signals derived from logic signals input to said programmable circuit; and a logic network, separate from said programmable circuit, comprising a plurality of preconfigured or preconfiguarable logic functions, connected to receive said plurality of logic signals from said programmable circuit; at least a first one of said plurality of logic signals selecting a particular one of said logic functions to be performed by said logic network; and at least a second one of said logic signals controlling the operation of the selected logic function by said logic network.

5,357,153

MACROCELL WITH PRODUCT-TERM CASCADE AND IMPROVED FLIP FLOP UTILIZATION

David Chiang, Saratoga; Napoleon W. Lee, Fremont; Thomas Y. Ho, Milpitas; David A. Harrison, Cupertino; Nicholas Kucharewski, Jr., Pleasanton, and Jeffrey H. Seltzer, San Jose, all of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Jan. 28, 1993, Ser. No. 10,378
Int. Cl.[5] H03K *19/177*
U.S. Cl. 307—465 11 Claims



1. A programmable logic circuit comprising:
a plurality of input lines;
a dedicated line;
a flip flop having a flip flop data input terminal and a flip flop output terminal;
a first logic gate receiving input signals from said plurality of input lines, said first logic gate having a first logic gate output terminal; and
a cascade circuit having first and second programmable states, said cascade circuit connecting said first logic gate output terminal to said flip flop data input terminal when in said first programmable state, said cascade circuit connecting said first logic gate output terminal to an input terminal of a second logic gate and connecting said dedicated line to said flip flop data input terminal when in said second programmable state.

5,357,154

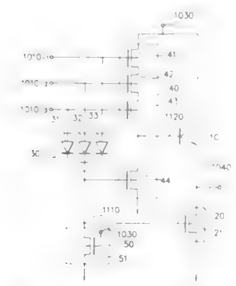
LEVEL CONVERTER CIRCUIT FOR CONVERTING ECL-LEVEL INPUT SIGNALS

Takashi Oguri, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 14, 1992, Ser. No. 960,814
Claims priority, application Japan, Oct. 15, 1991, 3-296169
The portion of the term of this patent subsequent to Dec. 19, 2010, has been disclaimed.
Int. Cl.[5] H03K *19/01*
U.S. Cl. 307—475 7 Claims

1. A level converter circuit for level converting an input signal having ECL levels into an output signal having logic levels differing from the ECL levels of the input signal, the level converter circuit comprising:
a first bipolar transistor having a collector connected to a power source, an emitter connected to an output terminal, and a base;
a first charge discharge means connected between the output terminal and a reference voltage and including an input terminal;
a first logic circuit including at least one diode inputting at least one input signal having ECL levels and having an output terminal connected to the input terminal of the first charge discharge means; and
a second logic circuit inputting the at least one input signal having ECL levels and having an output terminal connected to the base of the first bipolar transistor, wherein

the first and second logic circuits generate a first state having the first bipolar transistor turned on and the first charge-level discharge means turned off and a second



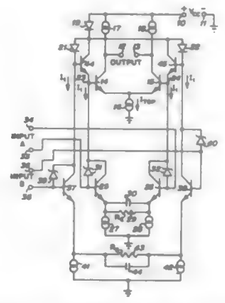
state having the first bipolar transistor turned off and the first charge-discharge means turned on, the first and second states being responsive to the at least one input signal.

5,357,155

DUAL INPUT SIGNAL SUMMER CIRCUIT

Donald T. Wile, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 7, 1992, Ser. No. 926,594
Int. Cl.[5] H03K *5/22*; G06F *7/24*
U.S. Cl. 307—492 6 Claims



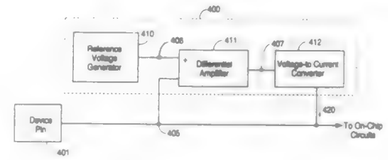
1. A dual input signal summer circuit comprising:
an output stage that includes first and second differentially operated output stage bipolar transistors, the respective bases of the first and second output stage bipolar transistors being connected to first and second signal summing nodes;
a first input stage that includes first and second differentially operated first input stage bipolar transistors, the respective collectors of the first and second first input stage bipolar transistors being connected to the first and second signal summing nodes, the respective bases of the first and second first input stage bipolar transistors being connected to receive first and second signals of a first differential input signal;
a first emitter follower bipolar buffer transistor having a base, an emitter and a collector, the emitter of the first buffer transistor being connected to the first signal summing node;
a second emitter follower bipolar buffer transistor having a base, an emitter and a collector, the emitter of the second buffer transistor being connected to the second signal summing node; and
a second input stage that includes first and second differentially operated second input stage bipolar transistors, the respective bases of the first and second second input stage bipolar transistors being connected to receive first and second signals of a second differential input signal, the collector of the first second input stage bipolar transistor being connected to the base of the first buffer transistor, the collector of the second second input stage bipolar transistor being connected to the base of the second buffer transistor.

5,357,156

ACTIVE CLAMP CIRCUIT SCHEME FOR CMOS DEVICES

Scott K. Herrington, Austin, Tex., assignor to Lattice Semiconductor Corporation, Hillsboro, Oreg.

Filed Jul. 10, 1992, Ser. No. 911,841
Int. Cl.[5] H03B *1/04*; H03K *5/153*
U.S. Cl. 307—542 26 Claims



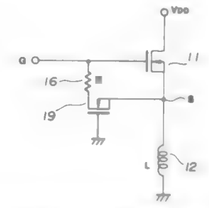
1. An integrated circuit, comprising:
a reference voltage generator which supplies a first reference voltage;
means for comparing the first reference voltage and a first voltage associated with a node to produce a second voltage; and
means for comparing the first and second voltages to provide current to the node responsive to the difference between the first and second voltages.

5,357,157

POWER MOSFET CIRCUIT INCLUDING SHORT CIRCUITING MEANS FOR DETECTING THE POTENTIAL OF THE SOURCE TERMINAL

Kraisorn Throngnumchai, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 16, 1991, Ser. No. 777,616
Claims priority, application Japan, Nov. 5, 1990, 2-297122
Int. Cl.[5] H03K *17/687, 17/60, 3/01*
U.S. Cl. 307—570 26 Claims



1. A power MOSFET circuit comprising:
a power MOSFET for switching on and off an inductive load in response to a gate input signal, said power MOSFET comprising a drain terminal connected with a power source, a source terminal connected with the inductive load, a gate terminal for receiving said gate input signal; and
a short-circuiting means for detecting a potential of said source terminal of said power MOSFET and short-circuiting said gate and source terminals of said power MOS-

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FET only when the potential of said source terminal of said power MOSFET is lower than a ground potential;

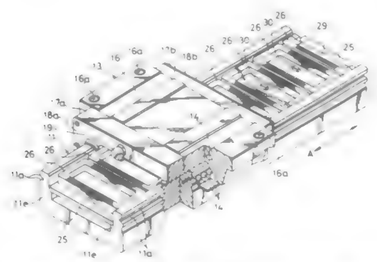
wherein said short-circuiting means includes a means for detecting said potential of said source terminal of said power MOSFET and forming a short circuit between said gate and source terminals of said power MOSFET only when said potential of said source terminal is lower than said ground potential.

5,357,158

DIRECT CURRENT LINEAR MOTOR AND A DIRECT DRIVE UNIT ON WHICH IT IS EQUIPPED

Seiji Takei, Kanagawa, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Jan. 22, 1993, Ser. No. 7,781
Claims priority, application Japan, Feb. 13, 1992, 4-058859
Int. Cl.[5] H02K *41/00*
U.S. Cl. 310—12 4 Claims



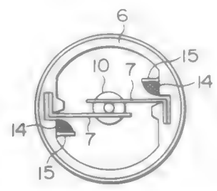
1. A direct current linear motor comprising: a primary side containing an armature coil group and a coil yoke arranged in the vicinity of said armature coil group; and, a secondary side having a field magnet alternately mounted along the direction in which N and S magnetic poles are to move; wherein, said primary side and secondary side are arranged such that the above-mentioned armature coil group and above-mentioned field magnet are mutually opposing each other so that the above-mentioned primary side and above-mentioned secondary side perform relative movement by supplying an electrical current to the above-mentioned armature coil group; and wherein, the above-mentioned coil yoke, together with an insulated wiring pattern formed on said yoke, acts as a circuit board by loading electronic components onto the above-mentioned coil yoke.

5,357,159

MINIATURE MOTOR

Kenji Hagiwara; Isao Shibuya, and Kazutoshi Yoshimura, all of Matsudo, Japan, assignors to Mabuchi-Motor Co., Ltd., Matsudo, Japan

Filed Jun. 16, 1993, Ser. No. 78,440
Claims priority, application Japan, Jun. 23, 1992, 4-164411; Oct. 28, 1992, 4-289761
Int. Cl.[5] H02K *13/10, 5/12*
U.S. Cl. 310—40 MM 10 Claims



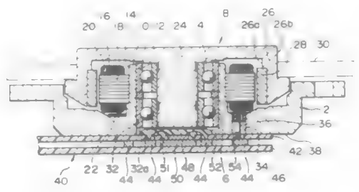
1. A miniature motor comprising a case made of a metallic material, formed into a bottomed hollow cylindrical shape and having permanent magnets fixedly fitted to the inner circumferential surface thereof, a rotor consisting of an armature facing said permanent magnets and a commutator, and a case cap fitted to the open end of said case and having brushes making sliding contact with said commutator and input terminals electrically connected to said brushes; said rotor being rotatably supported by bearings provided on the bottom of said case and said case cap, an internal space defined by said case and said case cap is filled with an atmosphere including one of polymethacrylate, polyacrylate, polyisobutylene, low molecular weight polyethylene, low molecular weight polyprolylene, ehtylenepropylene copolymer, polyvinyl acetate and polybutene.

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IC CONTROLLED DC MOTOR

Isao Kaneda, Moriyama; Kohei Yonemura, Yokaichi, both of Japan; Sandro Cerato, Merate, and Carlo C. De Martiis, Milan, both of Italy, assignors to Nippon Densan Corporation, Kyoto, Japan and SGS Thomson Microelectronics srl, Agrate Briana, Italy

Filed Jan. 22, 1993, Ser. No. 6,307
Claims priority, application Japan, Jan. 24, 1992, 4-011425
Int. Cl.[5] H02K *7/14, 11/00, 7/08*
U.S. Cl. 310—67 R 10 Claims



1. A DC motor comprising:

a housing having a hollow cylinder, a shaft disposed in said hollow cylinder, a rotor rotatable relative to the housing, a bearing provided between said cylinder and said shaft, a rotor magnet carried by said rotor, a stator mounted on an outer surface of said hollow cylinder, a flexible printed circuit board including a wiring pattern and fixedly mounted on said housing, and an IC chip mounted on said flexible printed circuit board, said hollow cylinder, said shaft and said flexible printed circuit board defining an accommodating space and said IC chip mounted on the flexible printed circuit being accommodated in said accommodating space.

5,357,161

MOTOR ENCLOSURE

Nicholas R. Daniels, Dellwood, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

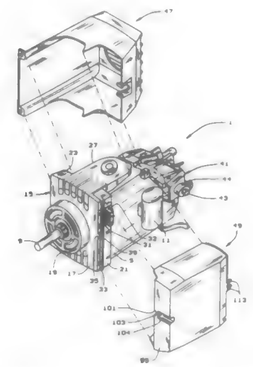
Filed Sep. 9, 1993, Ser. No. 118,967
Int. Cl.[5] H02K *5/04, 5/26*
U.S. Cl. 310—89 15 Claims

1. An enclosure for a motor assembly, said motor assembly having a stator, a rotor, a shaft extending from the rotor, a first end shield and a second end shield which rotatably support the shaft, and a voltage change switch, said motor assembly defining a front, a back, and sides extending between said first and second end shields; the enclosure including:

a housing which at least partly covers one of said endshields and extends along a back surface of said motor assembly to the other of said endshields, said housing covering a portion of a front of said motor assembly; and

and a pivotable cover encasing said voltage change switch

and the portion of said motor assembly front not covered by said housing, said cover being pivotally connected to said housing, said cover being pivotable between a first



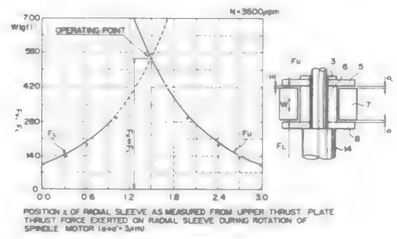
closed position in which said voltage change switch is inaccessible and an open position in which said voltage change switch is accessible.

5,357,162

SPINDLE MOTOR USING DYNAMIC PRESSURE BEARINGS

Shunichi Aiyoshizawa, Tokyo; Kazuto Hirokawa; Kazuyuki Kasahara, both of Kanagawa, and Tohru Maruyama, Kanagawa, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Feb. 25, 1993, Ser. No. 22,134
Claims priority, application Japan, Feb. 28, 1992, 4-78374
Int. Cl.[5] H02K *5/16, 7/08;* F16C *32/06*
U.S. Cl. 310—90 8 Claims



1. A spindle motor, comprising:

a cylindrical radial bearing member having opposite end surfaces and an outer circumferential surface, said outer circumferential surface comprising a sliding portion and at least said sliding portion comprising a ceramic material;

two thrust plates in direct contact with said opposite end surfaces of said radial bearing member, said thrust plates having thrust plate surfaces, said thrust plate surfaces comprising sliding portions, and at least said sliding portions comprising a ceramic material;

wherein said cylindrical radial bearing member and said two thrust plates together form a stationary member having a through hole, said stationary member is fixed to a stationary shaft extending through said through hole by a fixing member, and a stator core is mounted on said stationary member;

a cylindrical radial sleeve having an outer circumferential surface, an inner circumferential surface and opposite end surfaces rotatably supported by said outer circumferential surface of said cylindrical radial bearing member and said thrust plate surfaces of said thrust plates, said thrust plate surfaces facing said opposite end surfaces of said cylindrical radial sleeve, and said surfaces of said cylindrical radial sleeve having sliding portions, and at least said sliding portions comprising a ceramic material;

wherein a plurality of dynamic pressure generating grooves are formed on one of said opposite end surfaces of said cylindrical radial sleeve and said thrust plate surfaces of said thrust plates, and wherein said cylindrical radial bearing member, said thrust plates and said cylindrical radial sleeve together form a radial pneumatic dynamic pressure bearing and thrust pneumatic dynamic pressure bearings; and

a rotating member disposed around and integral with said outer circumferential surface of said cylindrical radial sleeve, said rotating member having a rotor magnet fixed thereto so as to face said stator core, and said rotor magnet and said stator core together forming a motor section;

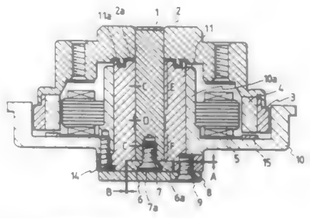
wherein $(a+a')/A < (b+b')/L$, where $(a+a')$ is a total thrust clearance between said opposite end surfaces of said cylindrical radial sleeve and said thrust plate surfaces, A is the diameter of each of said thrust plate surfaces, $(b+b')$ is a total clearance between said outer circumferential surface of said cylindrical radial bearing member and said inner circumferential surface of said cylindrical radial sleeve, and L is the axial length of said cylindrical radial sleeve.

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MOTOR WITH DYNAMIC-PRESSURE TYPE BEARING DEVICE

Shinichi Minakuchi, Iyo, and Nobuhiro Yoshino, Ooza, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 6, 1993, Ser. No. 57,388
Claims priority, application Japan, May 8, 1992, 4-115689; May 8, 1992, 4-115692; May 11, 1992, 4-30500[U]; May 15, 1992, 4-123116
Int. Cl.[5] H02K *7/08*
U.S. Cl. 310—90 34 Claims



1. A motor comprising:

a base;

a cylindrical member fixedly secured to said base;

a shaft rotatably inserted into a hollow of said cylindrical member;

a hub fixedly secured to an upper end portion of said shaft;

a ring-like rotor magnet fixedly secured to said hub;

an armature fixedly secured onto said base to be in opposed relation to said ring-like rotor magnet so as to construct motor drive means for driving said motor;

a disc-like plate coaxially and fixedly secured to a lower end portion of said shaft, a diameter of said disc-like plate being greater than a diameter of said shaft,

plate means disposed in opposed relation to a lower surface of said disc-like plate; and

dynamic-pressure type bearing means comprising radial dynamic-pressure groove means having a predetermined

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groove configuration to generate a radial dynamic pressure in a radial direction of said shaft and axial dynamic-pressure groove means having a predetermined groove configuration to generate an axial dynamic pressure in an axial direction of said shaft, said radial dynamic pressure groove means being formed in at least one of an outer circumferential surface of said shaft and an inner surface of said cylindrical member which are in opposed relation to each other and said axial dynamic-pressure groove means being formed in at least one of said lower surface of said disc-like plate and a surface of said plate means disposed in opposed relation to said lower surface of said disc-like plate,

wherein said disc-like plate is encased in a cylindrical hole formed at a lower portion of said cylindrical member and a diameter of said cylindrical hole is determined so that a gap is formed between an inner circumferential surface of said cylindrical hole and an outer circumferential surface of said disc-like plate which are in opposed relation to each other, a thickness of said disc-like plate being determined so as to satisfy a condition of the thickness of said disc-like plate > said gap × 20.

5,357,164

ULTRASONIC MOTOR

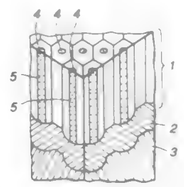
Hiroyuki Imabayashi, Sagamihara; Takanao Fujimura, Kodaira, and Tomoki Funakubo, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 20, 1993, Ser. No. 65,195

Claims priority, application Japan, Jun. 8, 1992, 4-147565

Int. Cl.[5] H01L *41/18*

U.S. Cl. 310—323 **16 Claims**



1. An ultrasonic motor characterized by comprising:

an ultrasonic oscillator for generating ultrasonic oscillation on a specific surface;

a movable body pressure-bonded to the specific surface of said ultrasonic oscillator for moving said body in a desired direction by said ultrasonic oscillation; and

a sliding element provided on one of a contact surface of said ultrasonic oscillator and a contact surface of said movable body said sliding element comprising a porous oxide coating having small holes in which hydrators are formed which substantially entirely fill said small holes in the porous oxide coating, and which do not physically change the structure of the porous oxide coating.

5,357,165

GLASS FRONT-PANEL

Kazuo Shibaoka, Itami; Toshio Akimoto, Yokkaichi, and Kouichi Suzuki, Nishinomiya, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Continuation of Ser. No. 757,340, Sep. 10, 1991, abandoned. This application Jul. 29, 1993, Ser. No. 99,261

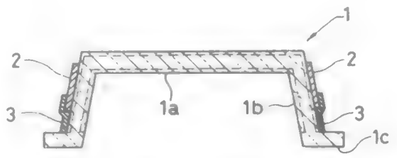
Claims priority, application Japan, Sep. 13, 1990, 2-243425

Int. Cl.[5] H01J *29/86*

U.S. Cl. 313—477 R **3 Claims**

1. A glass front-panel for a cathode ray tube comprising:

an electron gun unit for emitting an electron beam in response to an input video signal; phosphor means emitting light when exposed to the electron beam from the electron gun unit; an image displaying portion on which the phosphor means is disposed; a side wall portion contiguous to the image displaying portion; a flange portion contiguous to the side wall portion, wherein said image displaying portion and said side wall portion having a surface layer and an interior layer, said surface layer containing more potassium ions than those in said interior layer of corresponding said image displaying portion and said side wall portion so as to be resistive to coloring action of the electronic beam, as a result of the surface layer undergoing an ion exchanging treatment in molten salt that contains the



potassium ions, wherein said flange portion thereof substantially lacks said surface layer as a result of another ion exchanging treatment in an aqueous solution containing hydrogen fluoride; a rear panel stuck to and forming a vessel together with the glass front-panel to accommodate the electron gun unit; an external terminal electrically connected to the electron gun unit; and a belt-like electrode for smoothing the electric potential on the surface of the periphery of the front glass-panel is provided at least on one side of the outer periphery or the inner periphery of said wall portion; said belt-like electrode having an electric resistivity of 10^5 to 10^9 Ω cm.

5,357,166

CATHODE-RAY TUBE HAVING ALTERNATING ELECTRIC FIELD REDUCTION DEVICE

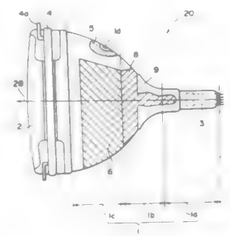
Takashi Sugahara, and Kiyohiko Sato, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1992, Ser. No. 870,088

Claims priority, application Japan, Apr. 18, 1991, 3-116902; Dec. 6, 1991, 3-349720

Int. Cl.[5] H01J *29/06, 29/86*

U.S. Cl. 313—479 **17 Claims**



1. A cathode-ray tube, comprising:

a funnel part, including a neck part for housing an electron gun arranged in a rear end of the cathode-ray tube, a funnel body part including a grounded first conductive film for adding a capacitance on part of an external surface, and a cone part for connecting the neck part and the funnel body part;

a face panel, including a fluorescent film on an internal surface of the face panel, connected to a front end of the funnel body part;

a deflection yoke for deflecting an electron beam irradiated by the electron gun, mounted on the funnel part from the cone part to the neck part; and

alternating electric field reduction means for reducing an alternating electric field irradiated from the deflection yoke to a front surface of the face panel through the funnel part, wherein the alternating electric field reduction means includes a grounded second conductive member embedded in a predetermined area of the funnel part.

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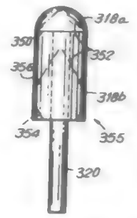
HIGH PRESSURE DISCHARGE LAMP WITH A THERMALLY IMPROVED ANODE

Paul G. Mathews, Chesterland; Rocco T. Giordano, Garfield Heights; Gary R. Allen, Chesterland; Timothy P. Dever, Fairview Park; Viktor K. Varga, Willoughby Hills, and Jeffrey D. Johnson, Mentor, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 8, 1992, Ser. No. 910,487

Int. Cl.[5] H01J *17/10, 61/06*

U.S. Cl. 313—632 **19 Claims**



1. A high pressure discharge lamp, comprising:

(a) a refractory arc tube with an internal, hermetically sealed arc chamber;

(b) a fill in said arc chamber for facilitating light generation; and

(c) an anode and a cathode extending into said hermetically sealed arc chamber and being spaced apart from each other;

(d) said anode comprising:

(i) a generally elongate shank of refractory metal;

(ii) a cylindrically shaped refractory metal sleeve on a portion of said shank, wherein an outer diameter of the metal sleeve is more than twice a diameter of the shank; and

(iii) an end proximally facing said cathode, comprising a substantially solid mass of refractory metal, and being integrally joined to both said shank and said metal sleeve.

5,357,168

MAGNETRON HAVING A CATHODE WITH TAPERED END SHIELDS

Seok K. See, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Sep. 16, 1992, Ser. No. 945,794

Claims priority, application Rep. of Korea, Sep. 17, 1991, 1991-15211

Int. Cl.[5] H01J *23/05, 25/50*

U.S. Cl. 315—39.51 **2 Claims**

1. A cathode and anode assembly for a magnetron having an electrostatic capacitance associated therewith, comprising:

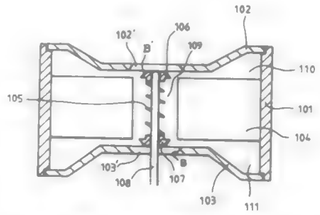
an anode cylinder having an inner surface and first and second ends,

anode vanes attached to the inner surface of the anode cylinder which define a space at the first and second ends of said anode cylinder,

upper and lower magnetic pole pieces mounted respectively on the first and second ends of the anode cylinder, said upper and lower magnetic pole pieces including upper and lower holes respectively,

a center bar disposed in the space defined by said anode vanes,

upper and lower end shields located respectively at the first and second ends of said anode cylinder, said upper end shield located directly below the upper hole of the upper magnetic pole piece and said lower end shield located directly above the lower hole of the lower magnetic pole piece, said upper and lower end shields having upper and



lower shield holes which respectively receive said center bar, and

a coil filament positioned on said center bar,

wherein said upper and lower holes of the upper and lower magnetic pole pieces have respective outward tapered inner circumferential surfaces and said upper and lower end shields have respective outward tapered outer circumferential surfaces corresponding to the outward tapered inner circumferential surfaces of the upper and lower holes, resulting in an increase in the electrostatic capacitance of the magnetron.

5,357,169

SWITCHING APPARATUS FOR AN INTERIOR LIGHT IN A MOTOR VEHICLE

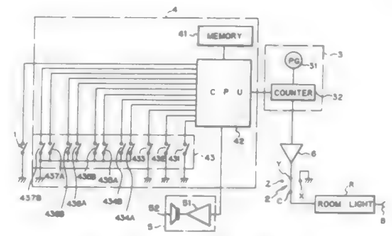
Morihiko Toyozumi, and Nobuya Inamori, both of Mie, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Oct. 23, 1992, Ser. No. 965,025

Claims priority, application Japan, Oct. 25, 1991, 3-307025

Int. Cl.[5] B60Q *1/00, 7/00*

U.S. Cl. 315—77 **11 Claims**



1. A switching system for a motor vehicle whereby an interior light is controlled according to received ones of an on signal and an off signal generated by a signaling device, comprising:

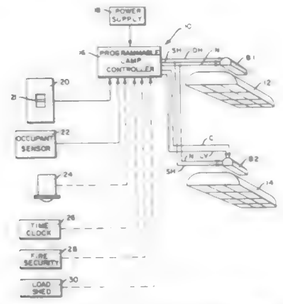
a regulator responsive to said off signal generating a number; and

a delay circuit responsive to said number for generating a delay period corresponding to a period of time from receipt of said off signal until said light is to be turned off,

wherein said regulator comprises a memory storing delay data and a microprocessor generating said number in response to said data.

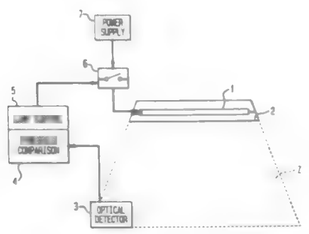
VOL 1167 ISS 3 OCT 18 1994 UMI

5,357,170
LIGHTING CONTROL SYSTEM WITH PRIORITY OVERRIDE
David G. Luchaco, Macungie, and James M. Yorgey, Allentown, both of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.
Filed Feb. 12, 1993, Ser. No. 16,632
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—159 **14 Claims**



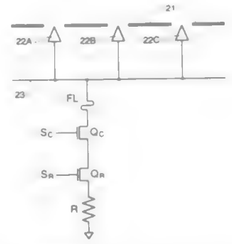
1. A lighting control system comprising a logic and control unit which is selectively operable in either a normal mode, in which certain lighting parameters are preset, or in an adjustment mode, in which certain of said parameters are adjustable by manually adjusting the position of a movable member, said logic and control means being responsive to movement of said movable member to cause said logic and control unit to switch from its normal operating mode to its adjustable mode, said logic and control unit operating to change lighting levels at a preset rate when said logic and control unit is operating in its normal mode, to change lighting levels at a faster rate when operating in its adjustment mode.

5,357,171
GAS DISCHARGE LAMP SYSTEM WITH AUTOMATIC SHUTOFF MEANS
Lothar Waldhauer, Lohhof, Fed. Rep. of Germany, assignor to Heraeus Noblelight GmbH, Hanau, Fed. Rep. of Germany
Filed Oct. 13, 1992, Ser. No. 959,670
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1991, 4133614
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—151 **9 Claims**



1. A self-monitoring irradiation system including
a discharge lamp (**1**) filled with a fill mixture of gas and substances having respective characteristic emission lines,
a plurality of said substances emitting predominantly in a first spectral range; and
a further radiation-emitting substance contained in said fill, and having an emission line which is in a second spectral range, of lower frequency than said first range,
an optical detector (**3**), arranged in an irradiation zone of said discharge lamp, and having a response characteristic such that an output signal of said detector correlates with intensity of said emission line in said second spectral range; and
lamp control means (**5**), having an input connected to an output of said optical detector (**3**), for monitoring of said output signal, and an output interrupting (**6**) supply of energy to said discharge lamp upon occurrence of:
insufficient intensity of radiation of said emission line in said second spectral range.

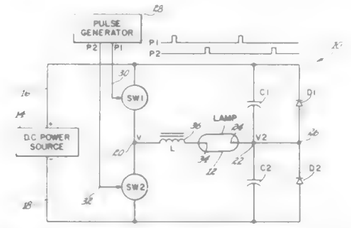
5,357,172
CURRENT-REGULATED FIELD EMISSION CATHODES FOR USE IN A FLAT PANEL DISPLAY IN WHICH LOW-VOLTAGE ROW AND COLUMN ADDRESS SIGNALS CONTROL A MUCH HIGHER PIXEL ACTIVATION VOLTAGE
John K. Lee; Stephen L. Casper, and Tyler A. Lowrey, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.
Continuation-in-part of Ser. No. 864,702, Apr. 7, 1992, Pat. No. 5,210,472. This application Feb. 1, 1993, Ser. No. 11,927
Int. Cl.[5] H05B *41/36;* **H01J** *17/36*
U.S. Cl. 315—167 **5 Claims**



4. A current-regulated, vacuum micro-electronic triode comprising:
a grid which is continuously maintained at a first potential;
a field emission cathode to which a second potential or a third potential may be selectively applied, said second potential being close enough to said first potential so as to suppress field emission, said third potential being sufficiently low, with respect to said first potential, to induce field emission;
a pull-down current path between the cathode and a node held at a fourth potential that is less than or equal to said third potential, said path comprising a current-regulating resistor and at least one field-effect transistor, said resistor and said transistor being series coupled, with said resistor being directly coupled to said node, said transistor being selectively activatable so as to enable selective application of said second potential or said third potential to said cathode.

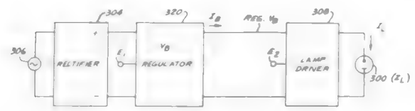
5,357,173
BALLAST CIRCUIT ARRANGEMENT FOR A HIGH PRESSURE SODIUM LAMP
David J. Kachmarik, North Olmsted, and Louis R. Nerone, Brecksville, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Nov. 5, 1992, Ser. No. 971,806
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—209 R **7 Claims**

1. A method of operating a high pressure metal vapor lamp which utilizes a ballast circuit arrangement having a resonant tank portion, the high pressure metal vapor lamp of a type having a filling of sodium with an envelope provided with spaced electrodes disposed therein for producing, at a rated power input, an arc therebetween to ignite said lamp, which method comprises the steps of:
(a) energizing said lamp by applying to the electrodes thereof a bidirectional voltage waveform having a frequency, time duration and magnitude sufficient to provide a forcing voltage to said lamp at approximately said rated power input;
(b) in response to said bidirectional voltage waveform, developing for said lamp a quasi-resonant bidirectional current waveform which oscillates at a prescribed frequency having a first group of high magnitude harmonics, the harmonic content of which is below an acoustic resonant



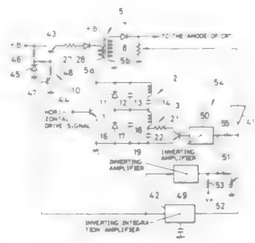
nodes of said lamp and a second group of harmonics which occur outside of a second bandwidth associated with said bidirectional current waveform, the harmonic content of which coincides with the resonant nodes of said lamp, said bidirectional current waveform being generated so as to avoid the use of a keep-alive current portion associated therewith; and (c) at a prescribed time following the energizing of said lamp, by selection of an appropriate time constant for said resonant tank circuit, causing said quasi-resonant bidirectional current waveform to decay with a fall time rapid enough to quickly reduce the magnitude of the harmonics in the second bandwidth to suppress excitation of said acoustic resonant nodes and thus prevent arc instability in said lamp.

5,357,174
FEEDBACK-CONTROLLED CIRCUIT AND METHOD FOR POWERING A HIGH INTENSITY DISCHARGE LAMP
Louis R. Nerone, Brecksville, and David J. Kachmarik, North Olmsted, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Nov. 5, 1992, Ser. No. 971,791
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—224 **19 Claims**



1. A circuit for powering a high intensity discharge lamp, comprising:
(a) means for supplying a d.c. bus voltage;
(b) first feedback-controlled means for regulating on a conductor supplying bus current the bus voltage in response to a first error signal in such manner as to minimize the first error signal, the first error signal being substantially proportional to the difference between (1) a dynamic peak current signal substantially proportional to peak lamp current and (2) a first set point signal for peak lamp current;
(c) second feedback-controlled means for driving said lamp with the regulated bus voltage in response to a second error signal in such manner as to minimize the second error signal and thereby regulate power in said lamp, the second error signal being substantially proportional to the difference between (1) a dynamic average current signal substantially proportional to average bus current and (2) a dynamic second set point signal substantially proportional to the difference between (i) a dynamic bus voltage signal substantially proportional to the regulated bus voltage and (ii) a third set point signal relating to lamp power; and,
(d) wherein said second feedback-controlled means includes first and second current loops arranged to conduct current through said lamp in respective first and second opposite directions, first and second power switches for sequentially placing said lamp in alternate ones of said first and second current loops, and, said first and second current loops each including inductive and capacitive elements selected to cause respective first and second-loop current waveforms to each have a resonating portion mainly determined by the value of said inductive and capacitive elements.

5,357,175
DEFLECTION AND HIGH VOLTAGE CIRCUIT
Noriyuki Kamada, and Masataka Uchida, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Mar. 12, 1993, Ser. No. 30,873
Claims priority, application Japan, Apr. 10, 1992, 4-091014
Int. Cl.[5] H01J *29/70*
U.S. Cl. 315—411 **11 Claims**



1. An improved horizontal deflection and high-voltage circuit comprising:
a source circuit for supplying a source DC voltage, said source circuit including a power voltage control element which controls a level of said source DC voltage in response to a control signal;
a horizontal deflection circuit including a switching element responsive to a horizontal drive signal for supplying a current to a horizontal deflection winding in order to generate a scanning current developed by said source DC voltage;
a flyback transformer coupled at a first terminal to said power voltage control element of said source circuit and at a second terminal to a trace capacitance and modulator capacitance connected in series to each other, for charging said series connected trace capacitance and said modulator capacitance from said source DC voltage, with load circuits magnetically coupled to said flyback transformer drawing load current from said source DC voltage;
a high voltage circuit including a rectifier for rectifying the secondary winding voltage of said flyback transformer for supplying to an anode of a CRT to generate a high voltage;
means for defining a horizontal size according to the variation in voltage of said high voltage, and
a voltage control signal generator having a predetermined time constant characteristic, for producing said control

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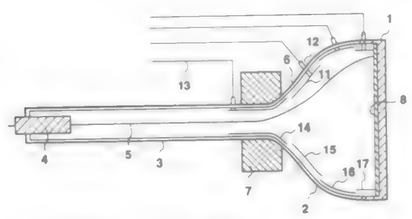
signal of said source DC voltage, supplied to said source circuit, according to a variation in voltage of said high voltage, and for producing an additional control signal for said means for defining a horizontal size in response to said variation in voltage of said high voltage, variation rates of said control signal and said additional control signal are determined by said predetermined time constant characteristic.

5,357,176

CATHODE RAY TUBE

Chie Nishio; Shunichi Igeta, and Koji Nakamura, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1992, Ser. No. 902,844
Claims priority, application Japan, Jun. 27, 1991, 3-156371
Int. Cl.[5] H01J *29/80*
U.S. Cl. 315—376 **18 Claims**



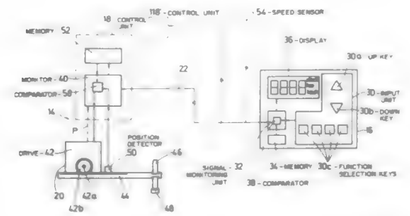
1. A cathode ray tube comprising:
a vacuum tube having a panel,
a fluorescent surface of said panel,
a funnel,
an electron gun for producing a beam of electrons,
a single electromagnetic deflector, and
a plurality of static deflector means for deflecting and accelerating said beam of electrons, wherein said beam of electrons is accelerated by electric fields formed by said plurality of static deflectors after said beam of electrons passes through said single electromagnetic deflector,
wherein voltages applied to each of said plurality of static deflector means are below a voltage applied to said fluorescent surface of said panel.

5,357,177

ELECTRICAL ADJUSTMENT DEVICE

Rainer Fey, Schweinfurt, and Albert Thein, Hassfurt, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 15, 1993, Ser. No. 31,523
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1992, 4212320
Int. Cl.[5] B62M *19/00;* **F16H** *63/00*
U.S. Cl. 318—3 **8 Claims**



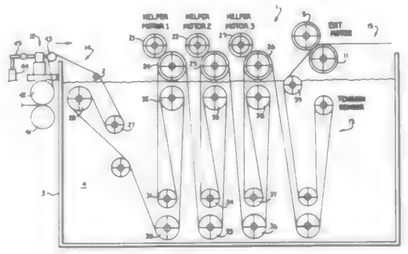
1. An electrical derailleur device for a bicycle, comprising:
a chain actuating element carrying a derailleur chain wheel and being displaceable to effect gear switching by positioning a chain for engagement with a respective gear wheel of a plurality of gear wheels;
a drive means for displacing the chain actuating element;
a presetting means for presetting at least one target value of a parameter indicating a displacing position of said chain actuating element for each of the plurality of gear wheels, said target value corresponding to a displacing position in which said gear switching to a respective gear wheel is effected;
a control means for manually commanding gear switching to a desired gear wheel of said plurality of gear wheels, wherein said control means is connected to said presetting means for controlling said drive means in correspondence with a desired target value corresponding to said desired gear wheel;
a sensor means for detecting an actual displacing position of said chain actuating element and for providing a sensor signal corresponding to said actual displacing position, wherein said sensor means is arranged at or adjacent to said chain actuating element and connected to said control means;
a moving means for moving, in an adjustment mode, said chain actuating element to an adjusted displacing position for a respective one of said gear wheels, of which engagement with said chain is to be adjusted; and
a storing commanding means for commanding storage in said presetting means said sensor signal provided by said sensor means corresponding to said adjusted displacing position of said chain actuating element as an adjusted target value.

5,357,178

WEB TENSIONING CONTROL SYSTEM

Brian A. Kapitan, Oak Creek, Wis., assignor to Gettys Corporation, Racine, Wis.

Filed Jul. 9, 1993, Ser. No. 89,050
Int. Cl.[5] B65H *59/38*
U.S. Cl. 318—7 **36 Claims**



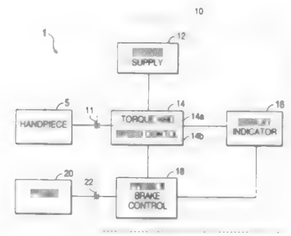
1. In a web tensioning system including a single exit drive motor and a plurality of helper drive motors, each said drive motor being controlled by a separate motor control circuit, each said control circuit comprising:
(a) a web speed based control loop;
(b) a separate web tension based control loop; and
(c) means for alternatively selecting either said speed based control loop or said tension based control loop for controlling the corresponding drive motor.

5,357,179

HANDHELD LOW VOLTAGE MACHINING TOOL

Louis A. Abbagnaro; William J. Siegel, both of Silver Spring; Charles H. McDavid, Jr., Baltimore; Charles M. Cardno, Ellicott City, all of Md.; James L. Mason, Jacobus, Pa.; Anthony Q. Tang, McLean, Va.; Robert S. Quasney, Sr., Pasadena, and Robert G. Brown, Annapolis, both of Md., assignors to Pace, Incorporated, Laurel, Md.

Filed Jun. 19, 1992, Ser. No. 901,228
Int. Cl.[5] B23B *45/02;* **H02P** *3/12*
U.S. Cl. 318—17 **20 Claims**



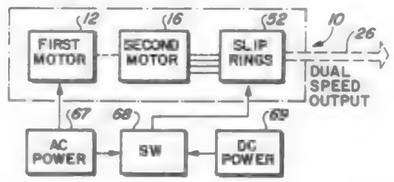
1. A handheld low voltage machining tool comprising a handpiece having securing means for rotatably securing one of a plurality of different machining tool bits in an exchangeable manner and an electric drive motor for rotating said securing means; an electrically conductive probe; and a control unit that is connectable to said probe for supplying power thereto, said control unit being connectable to said handpiece for controlling operation thereof; wherein said control unit includes brake means for stopping rotation of said tool bit, and brake control means for detecting when said probe and a machining tool bit secured in said holding means are brought into contact with a common electrically conductive path.

5,357,180

COMPOSITE ROTATING MACHINE

Marcus E. Speicher, 1004 N. Walnut Ave., Celina, Ohio 45822

Filed Aug. 12, 1992, Ser. No. 928,338
Int. Cl.[5] H02K *16/00*
U.S. Cl. 318—49 **17 Claims**



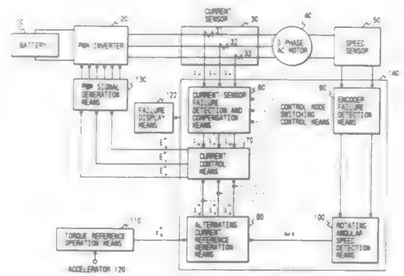
1. A composite rotating machine for operating on alternating current electrical power comprising:
a first motor having a stator and a first rotor, the rotor being supported for rotation about a common central axis under the influence of electromagnetic fields developed in the stator;
a second motor having a rotatable field structure and a second rotor, the rotatable field structure and the second rotor being supported for rotation about said common central axis;
means physically coupling the field structure of the second motor to the rotor of the first motor in driving relationship therewith, said coupling means comprising a first spoked hub member mounted for rotation about said shaft between the first rotor and the rotatable field structure and a second spoked hub member at the end of the rotatable field structure remote from said first spoked hub member, wherein said spoked hub members each comprise a central hub supported by bearings on said shaft and a plurality of spoke elements extending radially outward form said hub at substantially equi-angularly spaced positions about the hub, and means affixing each of the spoke elements adjacent its outer extremity to the rotatable field structure;
means for applying a-c power from an external source to the stator of the first motor and to the field structure of the second motor; and
at least one output shaft coupled to be driven by the second rotor, whereby the output shaft can be driven at speeds in excess of the synchronous speed of the first motor.

5,357,181

FAILURE DETECTION METHOD FOR ELECTRIC VEHICLES AND FAIL-SAFE CONTROL METHOD USING THIS METHOD

Nobuyoshi Mutoh, Katsuta; Ryoso Masaki; Tsutomu Omae, both of Hitachi; Sanshiro Obara, Tokai, and Shotaro Naito, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 8, 1993, Ser. No. 133,376
Claims priority, application Japan, Oct. 13, 1992, 4-273983
Int. Cl.[5] B60L *3/00*
U.S. Cl. 318—139 **24 Claims**



1. An electric vehicle equipped with a battery for supplying electric power, a PWM inverter for converting DC current of that battery into AC power of variable voltage and variable frequency, a three phase AC motor for driving the vehicle, current sensors for detecting the current flowing through that three phase AC motor, a three phase AC current reference generation means that generates a three phase AC current reference for controlling the phase current that flows through the winding of that three phase AC motor, and a signal generation means that generates the signal which is applied to the gate of the PWM inverter based on the three phase AC current reference and the current of the three phase AC motor, wherein a failure detection method for the electric vehicle comprises the step of using at least two phase currents that are detected directly by the current sensors in determining disorder in that current sensors.

5,357,182

SHOPPING CART THEFT PREVENTION SYSTEM

Steven M. Wolfe, 2024 N. Argyle, Apt. E, Los Angeles, Calif. 90068, and John V. Biondo, Jr., 6712 Beck Ave., North Hollywood, Calif. 91606

Filed Jan. 27, 1993, Ser. No. 9,836
Int. Cl.[5] H02P *3/12;* **B60R** *25/08;* **B62B** *5/04*
U.S. Cl. 318—379 **14 Claims**

1. A system to prevent the theft of shopping carts from a predetermined area in the vicinity of a store, said area having at least one path through which store patrons may exit away

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from the store, each said shopping cart having a plurality of wheels on which the cart may be rolled, said system comprising:

Means to generate a first signal of a predetermined character;

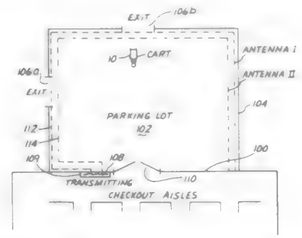
first signal radiating means connected to said means to generate a first signal and disposed to radiate said predetermined first signal across each exitable path from said predetermined area;

a direct current permanent magnet gear motor mechanically engaged with at least one of the wheels of the cart, said motor having a rotatable shaft and said shaft being engaged to rotate with said one wheel at a multiple of rotations for each rotation of said wheel with which it is engaged;

said motor having a pair of output terminals for the voltage generated by said motor upon rotation of said motor shaft;

circuit means to detect the first signal radiated by said first signal radiating means when the circuit means is brought within a predetermined proximity of said radiating means, and battery means to power said circuit means;

said circuit means being connected to the pair of output terminals, and normally maintained in a first condition wherein voltage potential between said pair of output terminals is available for providing a source of electrical energy, but said circuit means being shiftable to a second condition wherein said pair of terminals are shorted by connection to each other, thereby producing a counter-electromagnetic force inhibiting further rotation of the motor shaft;



said circuit means, upon detecting the predetermined first signal, shifting from its normally maintained first condition to its second condition,

whereby with further rotation of the motor shaft being inhibited, such inhibition renders difficult further rotation of said one wheel of the cart with which said motor shaft is mechanically engaged.

9. A combination to brake a rotatable wheeled vehicle to inhibit its movement from a predetermined area, said combination comprising:

rotatable means magnetically to generate an electric current at a pair of terminals by rotation of said rotatable means, said rotatable means being mechanically coupled to at least one wheel of said vehicle, so that rotation of said at least one wheel, upon movement of the vehicle, causes the generation of an electric current at said terminals;

electrically powered circuit means associated with said rotatable means and connected to said pair of terminals, said circuit means being responsive to a predetermined signal to effect a shorting of said pair of terminals, thereby developing a counter EMF which inhibits further rotation of said rotatable means and of said at least one wheel to which it is mechanically coupled; and

signal generating means, being disposed to radiate such predetermined signal at one or more points about said predetermined area, such that, when an attempt is made to roll the vehicle from said area, said signal causes said circuit means to respond and short said terminals, thereby developing such counter EMF to brake the at least one wheel of said vehicle.

5,357,183

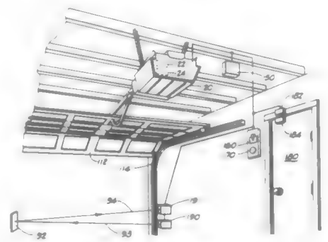
AUTOMATIC CONTROL AND SAFETY DEVICE FOR GARAGE DOOR OPENER

Chii C. Lin, 2700 N. Shannon Ave., Bethany, Okla. 73008

Continuation-in-part of Ser. No. 832,797, Feb. 7, 1992, Pat. No. 5,247,232. This application Mar. 26, 1993, Ser. No. 37,328

Int. Cl.[5] **E05F** *15/20*

U.S. Cl. 318—468 **9 Claims**



1. An automatic control and safety device for powered garage door of the type having an electric reversible motor to raise and lower the door, comprising:

control relay means actuatable to closed position to enable a garage door to open or close;

control activating means energizable to provide an electrical signal output to activate said control relay means;

reclose control means responsive to passage of vehicle through the garage door for providing a signal to energize said control activating means, said reclose control means being not responsive to passage of an object distinctly smaller than a vehicle through the garage door; and

safety reverse control means responsive to closing movement of said garage door and obstruction in the door way for changing the state of the movement of said garage door if said obstruction occurs, the closing movement of said garage door being monitored by two switching means and a movement monitoring circuit, the obstruction in the door way being monitored by a infrared beam across the garage door frame opening.

5. An automatic control and safety device for powered garage door of the type having an electrical reversible motor to raise and lower the door, comprising:

control relay means actuatable to closed position to enable a garage door to open or close;

control activating means energizable to provide an electrical signal output to activate said control relay means;

oscillator and warning means for providing a first signal to enable the operation of a safety warning means and a second signal to energize said control activating means after the garage door is open for a predetermined period of time;

sound activated control means for energizing said control activating means when a service entrance door switch is activated and a vehicle door is slammed shut causing a loud sound; and

obstruction detection means comprised of photoelectric sensors mounted across the garage door frame opening for controlling energization of said control activating means.

5,357,184

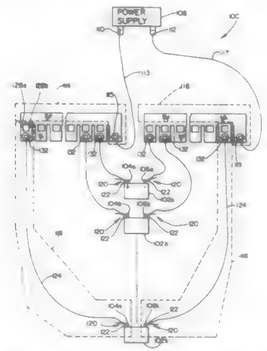
FUSE SYSTEM FOR A MULTIPLE BATTERY CHARGER

Michael D. McGowan, Blackjack, and Wayne R. Humphrey, St. Louis, both of Mo., assignors to Associated Equipment Corporation, St. Louis, Mo.

Filed Apr. 29, 1992, Ser. No. 875,374

Int. Cl.[5] **H01M** *10/46*; **H02B** *1/01*

U.S. Cl. 320—2 **18 Claims**



1. A fuse system for a battery charger for charging a plurality of batteries, each battery having first and second terminals, wherein the charger includes a power supply having first and second terminals corresponding to the first and second terminals, respectively, of the batteries, said fuse system comprising:

first and second bus bars;

means for connecting the first terminal of the power supply to the first bus bar and for connecting the second terminal of the power supply to the second bus bar; and

a plurality of connector means for separately connecting the first bus bar to the first terminal on each of the batteries and for separately connecting the second bus bar to the second terminal on each of the batteries;

wherein each of the plurality of connector means comprises:

means for engaging one of the terminals of the corresponding battery;

an electrical conductor; and

a fuse link in series with the electrical conductor, said conductor and said link connected between the engaging means and the respective bus bar; and

wherein at least some of the fuse links and at least one of the bus bars are formed from a conductive material comprising:

a central conduction member;

a plurality of terminals adapted to be connected to the electrical conductors; and

a plurality of said fuse links, each projecting from the central conduction member and terminating in one of the terminals,

whereby the plurality of batteries are charged simultaneously in parallel connection.

5,357,185

UNIVERSAL BATTERY CHARGER

Stephen Chen, Changhua City, Taiwan, assignor to E Lead Electronic Co., Ltd., Chuang Hua City, Taiwan

Filed Mar. 17, 1993, Ser. No. 32,257

Int. Cl.[5] **H01M** *10/46*

U.S. Cl. 320—2 **12 Claims**

1. A universal battery pack charger adapted for rechargeable battery packs of different type, comprising:

a charger case;

a receiving cavity disposed on said charger case;

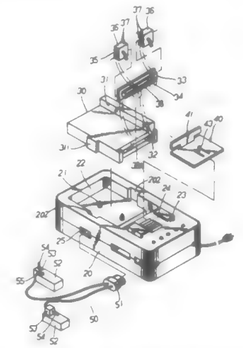
a battery pack mounting seat removably located within said receiving cavity;

a slidable abutment plate having a vertical abutment member disposed at one side thereof;

a locking means disposed under said abutment plate;

a slide passage disposed adjacent to said receiving cavity;

a restraint means disposed in said passage being in engagement with said locking means so as to selectively retain



said abutment plate in place which is slidably moved in said slide passage;

an adjustment slide means movably associated with said battery pack mounting seat being vertically adjusted in its position;

a pair of sliding terminal seats horizontally slidably associated with said adjustment slide means being provided with a vertical and a horizontal probe pin thereon;

a recessed plug-in cavity disposed on said charger case.

5,357,186

CIRCUIT FOR DETECTING THE INTER-PHASE VOLTAGE OF AN ALTERNATOR FOR IMPLEMENTING A REGULATOR ASSOCIATED WITH SUCH AN ALTERNATOR

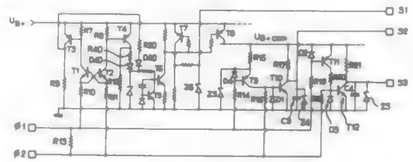
Alessio Pennisi, Milan; Fabio Marchio, Gallarate, both of Italy; Jean-Marie Pierret, Paris, and Didier Canitrot, Saint-Maur des Fosses, both of France, assignors to Valeo Equipements Electriques Moteur, Creteil, France and SGS-Thomson Microelectronics, Brianza, Italy

Filed Jun. 17, 1992, Ser. No. 900,015

Claims priority, application France, Jun. 18, 1991, 91 07436

Int. Cl.[5] **H03K** *5/24*

U.S. Cl. 320—9 **12 Claims**



1. A detection circuit for detecting a voltage difference between phases of a polyphase alternator for the purpose of controlling the putting into operation of a regulator for regulating the charging of a motor vehicle battery by said alternator, the circuit comprising differential discrimination means for comparing the difference in voltage between a pair of phase signals delivered by the alternator, wherein the differential discrimination means comprises a pair of first and second

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transistors each constituting means for comparing the difference in voltage between the pair of phase signals with first and second threshold voltages defined by their emitter-base junction voltages, respectively, said first and second threshold voltages being of small magnitude and of opposite polarity with respect to each other.

5,357,187

AUTOMATIC CONTINUOUS RAPID CHARGING CIRCUIT FOR RECHARGEABLE BATTERIES, AND METHOD THEREOF

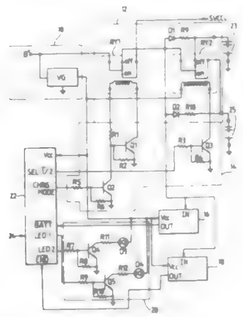
Bum-chul Park, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 395,491, Aug. 18, 1989, abandoned. This application Jun. 4, 1991, Ser. No. 785,906

Claims priority, application Rep. of Korea, Dec. 31, 1988, [6094/1988]

Int. Cl.[5] H02J *7/04*

U.S. Cl. 320—20 **14 Claims**



6. A battery recharger for sequentially charging a plurality of rechargeable batteries, comprising:

means for supplying a charging voltage and a circuit operating voltage, wherein said circuit operating voltage is produced from the charging voltage;

switching means for selectively supplying the charging voltage to each of the plurality of rechargeable batteries;

driving means for selectively driving the switching means to sequentially supply the charging voltage to said each of the plurality of rechargeable batteries;

battery detecting means for determining whether said each of the plurality of rechargeable batteries is respectfully coupled to each of a plurality of terminals; and

charge completion detecting means for determining whether charging of said each of the plurality of batteries is completed through a charging operation of a predetermined duration

displaying means for displaying whether said each of the plurality of rechargeable batteries is being charged, said displaying means comprising:

a first plurality of transistors, an emitter of each transistor of said first plurality of transistors being coupled to a reference potential,

a plurality of light emitting diodes, a cathode of each light emitting diode of said plurality of light emitting diodes being respectively coupled to a collector of each transistor of said first plurality of transistors, and

a first plurality of resistors.

5,357,188

CURRENT MIRROR CIRCUIT OPERABLE WITH A LOW POWER SUPPLY VOLTAGE

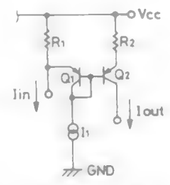
Isoshi Takeda, and Shigeyoshi Hayashi, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Jul. 22, 1992, Ser. No. 918,449

Claims priority, application Japan, Jul. 25, 1991, 3-208595

Int. Cl.[5] G05F *3/26*

U.S. Cl. 323—315 **2 Claims**



1. A current mirror circuit comprising:

a first reference voltage terminal and a second reference voltage terminal;

a first resistor and a second resistor that are connected to the first reference voltage terminal;

a constant current source;

a first transistor having an emitter that is connected to the first reference voltage terminal via the first resistor, and a base and a collector that are not only connected to each other but connected to the second reference voltage terminal via the constant current source; and

a second transistor of the same junction type as the first transistor, the second transistor having an emitter that is connected to the first reference voltage terminal via the second resistor, and having a base that is connected to the base of the first transistor;

wherein the emitter of the first transistor and the collector of the second transistor are connected to an input terminal and an output terminal of the current mirror circuit, respectively.

5,357,189

ANALOG INPUT APPARATUS

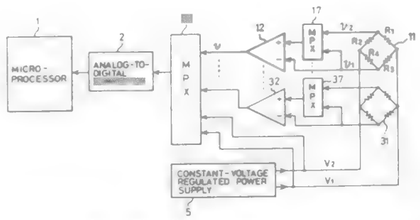
Noritaka Egami, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1992, Ser. No. 957,032

Claims priority, application Japan, Oct. 7, 1991, 3-285454; Apr. 13, 1992, 4-118541

Int. Cl.[5] G01R *1/02;* **G01B** *7/18*

U.S. Cl. 324—130 **1 Claim**



1. An analog input method wherein a resistance value change is converted into a voltage by means of a bridge circuit and said voltage is amplified, then the resultant voltage is converted into a digital value by an analog-to-digital converter and the digital value is fed into data processing means, said analog input method which comprises the steps of:

providing a first multiplexer, a differential analog amplifier, and a second multiplexer;

switching voltages at two middle points of said bridge circuit by means of said first multiplexer for feeding into two input terminals of said differential analog amplifier;

after feeding one middle-point voltage of said bridge circuit into one input terminal of said differential analog amplifier and the other middle-point voltage of said bridge circuit into the other input terminal of said differential analog amplifier, feeding output of said differential analog amplifier through said second multiplexer into said analog-to-digital converter for converting it into digital form;

feeding the resultant digital value into said data processing means as a measured value;

after feeding one middle-point voltage of said bridge circuit into two input terminals of said differential analog amplifier, feeding output of said differential analog amplifier through said second multiplexer into said analog-to-digital converter for converting it into digital form; and

feeding the resultant digital value into said data processing means as a correction value of said measured value.

5,357,190

CROSS COIL TYPE INDICATOR IN WHICH THE WIRE OF EACH COIL IS CONNECTED TO A TERMINAL BY SOLDERING

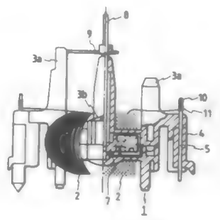
Yukio Ohike, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,175

Claims priority, application Japan, Aug. 26, 1991, 3-067514[U]

Int. Cl.[5] G01R *11/30, 11/36*

U.S. Cl. 324—143 **2 Claims**



1. A cross coil indicator comprising:

a coil bobbin;

a pair of coils respectively formed by winding a wire around said coil bobbin, said coils being disposed orthogonally to each other;

a magnet rotor disposed in an inner portion of said coil bobbin, said magnet rotor rotating with a center axis thereof at a predetermined angle determined in accordance with a composite magnetic field generated by passing a current through said coils;

pin connectors disposed on an outer peripheral portion of said coil bobbin,

wherein each pin connector has a first wire winding portion formed at an end portion of said pin connector and a second wire winding portion formed below said first winding portion, an end portion of said wire being wound around said first and second winding portions and wherein only said first portion is soldered.

5,357,191

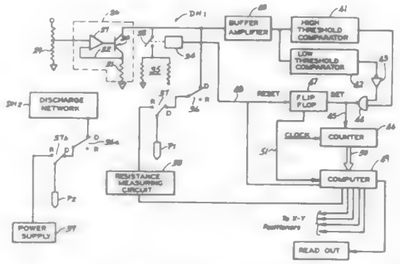
METHOD AND APPARATUS FOR TESTING CIRCUIT BOARDS

James R. Grace, Cromwell, Conn., assignor to Probot, Inc., Branford, Conn.

Filed Nov. 9, 1992, Ser. No. 973,185

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—754 **20 Claims**



12. A system for testing networks on a circuit board for integrity where the circuit board has networks on at least one side thereof comprising a fixture for holding said circuit board, a pair of probes, each of said probes being movable in an X–Y plane to contact networks, a voltage source, means in said circuit board or external thereto providing a conductive reference plane with respect to said networks, means for charging said probes to a predetermined voltage from said voltage source, a discharge circuit connected to each of said probes whereby the charge on a probe and any network in contact with a probe discharges through said discharge circuit when said means for charging is disconnected from a probe, means for measuring the discharge time of a contacted network, a resistance measuring circuit, a power source, and switching means for disconnecting said probes from respective discharge circuits and connecting one of said probes to said power source and the other probe to said resistance measurement circuit whereby said probes contact networks or portions of a network on said board to make resistance measurements thereon.

5,357,192

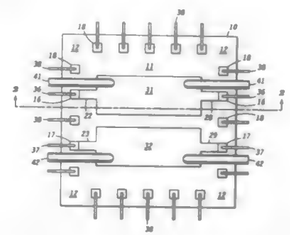
METHOD OF CONTACTING A SEMICONDUCTOR DIE WITH PROBES

James C. Van Zee, Phoenix, and Gregory L. Westbrook, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 1, 1993, Ser. No. 11,576

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—758 **17 Claims**



1. A method of contacting a semiconductor die with probes, comprising the steps of:

providing a semiconductor die having a major surface with a plurality of bonding pads disposed on the major surface

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adjacent a periphery of the semiconductor die, each of the plurality of bonding pads having a width and a length;

forming at least one conductive plane on the major surface, the at least one conductive plane having a width which is greater than the widths of each of the plurality of bonding pads;

electrically coupling a first end of the at least one conductive plane with a bonding pad on one side of the semiconductor die and a second end of the at least one conductive plane with a bonding pad on the opposite side of the semiconductor die;

providing a first probe having a first diameter and an end, the end of the first probe positioned a first distance above the conductive plane;

providing a second probe having a second diameter and an end, the end of the second probe positioned a second distance above one of the plurality of bonding pads, wherein the first and second distances are unequal;

contacting the at least one conductive plane with the end of the first probe; and

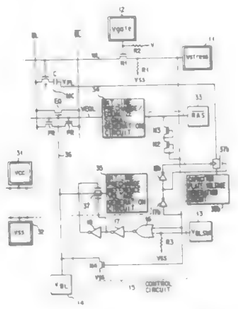
contacting one of the plurality of bonding pads with the end of the second probe.

5,357,193

SEMICONDUCTOR MEMORY HAVING A VOLTAGE STRESS APPLYING CIRCUIT

Hiroaki Tanaka, Yokohama, and Masaru Koyanagi, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 26, 1991, Ser. No. 813,523
Claims priority, application Japan, Dec. 27, 1990, 2-418764
Int. Cl.[5] G01R *31/28*; G11C *7/00*
U.S. Cl. 324—158.1 **10 Claims**



1. A semiconductor memory operable in a normal operation and a voltage stress test operation comprising:

a plurality of dynamic memory cells arranged in rows and columns;

bit lines, each bit line being connected to dynamic memory cells of a corresponding column;

word lines, each word line being connected to dynamic memory cells of a corresponding row;

a bit line precharge power source line for supplying a precharge voltage to said bit lines;

a bit line precharge circuit connected between said bit line precharge power source line and said bit lines;

a bit line precharge signal generation circuit connected to said bit line precharge circuit and controlled so as to be in one of (i) an active state in which a precharge control signal is generated for setting said bit line precharge circuit in an ON state when a control signal is input from an external portion, and (ii) an inactive state in which the precharge control signal is not generated;

a first pad to which a stress voltage is applied from the external portion during the voltage stress test operation;

a first switching circuit connected between said first pad and a first predetermined number of word lines, the first predetermined number of word lines being larger than a second predetermined number of word lines selected during the normal operation in accordance with a word line selecting signal, said first switching circuit transmitting the stress voltage to the first predetermined number of word lines at a time when the stress voltage is applied to said first pad; and

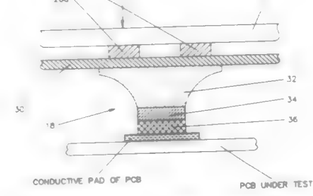
a control circuit controlled by one of the stress voltage applied to said first pad and a stress test control voltage supplied to said first switching circuit, said control circuit controlling said bit line precharge signal generation circuit to be active in the voltage stress testing operation.

5,357,194

TESTING BED AND APPARATUS INCLUDING SAME FOR TESTING PRINTED CIRCUIT BOARDS AND OTHER LIKE ARTICLES

Shimon Ullman; Amiram Caspi, both of Rehovot; Eldad Giberman, Mevaseret Zion; Emmanuel Elyasaf, and Abraham Gross, both of Rehovot, all of Israel, assignors to Orbotech Ltd., Yavne, Israel

Filed Jun. 28, 1993, Ser. No. 82,706
Int. Cl.[5] G01R *31/26*
U.S. Cl. 324—754 **22 Claims**



1. A testing bed for use in testing printed circuit boards, multi-chip modules, and other articles having electrically-conductive nets on a surface thereof which nets include pads serving as test or functional points for the nets, said testing bed comprising:

a light-transmissive supporting member;

a plurality of spaced, parallel, strips of light-transmissive, electrically-conductive material on one face of said supporting member;

a plurality of probe elements on said one face of the supporting member overlying and in contact with said strips, each of said probe elements including an outer electrically-conductive contact point for contact with a pad of the article to be tested;

a photoconductive material between said probe elements and said strips forming a photoconductive gate whose electrical conductivity substantially increases when illuminated by light;

and illuminating means for projecting a light spot at selected locations on the face of the supporting member opposite to that of said strips;

said strips being spaced sufficiently close to each other such that at least two are bridged by one of said pads;

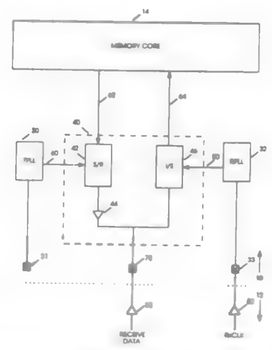
said light spot being sufficiently small so as to selectively illuminate only single ones of said strips.

5,357,195

TESTING SET UP AND HOLD INPUT TIMING PARAMETERS OF HIGH SPEED INTEGRATED CIRCUIT DEVICES

James A. Gasbarro, Mountain View, and Mark A. Horowitz, Palo Alto, both of Calif., assignors to Rambus, Inc., Mountain View, Calif.

Division of Ser. No. 894,525, Jun. 5, 1992, Pat. No. 5,268,639. This application Aug. 20, 1993, Ser. No. 109,655
Int. Cl.[5] G01R *31/00*
U.S. Cl. 324—158.1 **9 Claims**



1. A method for testing an integrated circuit device, comprising the steps of:

generating a clock signal and a data signal using an integrated circuit tester, the data signal comprising an input test pattern;

coupling the data signal to a data pin of the integrated circuit device, and coupling the clocks signal to a clock input pin of the integrated circuit device, such that the clock causes the integrated circuit device to sample the data signal and store the input test pattern;

adjusting a phase relation between the clock signal and the data signal to test an input set-up timing parameter or an input hold timing parameter for the integrated circuit device;

reading the input parameter test pattern from the integrated circuit device to verify the test of the input set-up timing parameter or the input holding timing parameter;

testing a clock to output timing parameter for the data pin of the integrated circuit device.

5,357,196

CIRCUIT FOR CONVERTING A FREQUENCY OF AN INPUT SIGNAL SO A SIGNAL HAVING A DIGITAL VALUE CORRESPONDING TO THE FREQUENCY

Akio Ito, Konosu, Japan, assignor to Jeco Company Limited, Japan

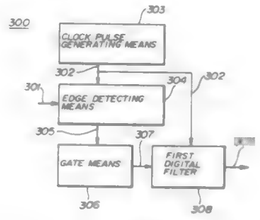
Filed Jul. 30, 1992, Ser. No. 922,758
Claims priority, application Japan, Aug. 6, 1991, 3-196838; Feb. 25, 1992, 4-037941
Int. Cl.[5] G01P *3/481, 3/489*; G01R *23/10*
U.S. Cl. 324—166 **16 Claims**

1. A measuring circuit for conducting measurement by converting a frequency of a pulse train input signal having rising and trailing edges to a signal having digital values in correspondence with said frequency, said measuring circuit also displaying a measurement value on a display and comprising:

clock pulse generating means for generating clock pulses having a frequency higher than the frequency of said input signal;

edge detecting means, connected to said clock pulse generating means, for detecting either the rising edges or the trailing edges of said input signal after sampling said input signal on the basis of said clock pulses and for outputting an edge detection signal, which edge detection signal represents an existence/nonexistence of the edges of said input signal, the edge detection signal being synchronous with said clock pulses;

gate means, connected to said edge detecting means, for outputting a signal representing a first factor when receiving the edge detection signal from said edge detecting means, said first factor determining a measurement sensitivity of said circuit; and



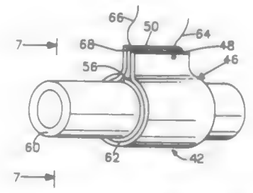
a first digital filter, connected in circuit to said gate means to receive said signal representing said first factor and connected in circuit to said clock pulse generating means to receive said clock pulses, for outputting a signal having digital values, which values correspond to the frequency of said input signal and which values are determined by said first factor on the basis of sampling effected synchronously with a cycle of said clock pulses.

5,357,197

INDUCTIVE DEBRIS MONITOR WITH MULTI-TURN DETECTOR

Lev Sorkin, Fanwood, N.J., assignor to Smiths Industries, N.J.

Filed Nov. 10, 1992, Ser. No. 974,242
Int. Cl.[5] G01N *27/74, 33/28*; G01R *33/12*
U.S. Cl. 324—204 **8 Claims**



7. A detector for use with an inductive debris monitor for detecting chip particles carried by a fluid in a tube, comprising:

an elongated conductive strip having opposed first and second ends and opposed first and second side edges, the strip defining a first terminal portion adjacent the first end extending away from the tube, a first slot extending into a portion of the first side adjacent the first terminal portion such that a first narrow strip section is defined between said first slot and said second side edge of said strip, a tube engaging portion adjacent the first slot and extending circumferentially around the tube, at least one second slot extending into the second side at a location intermediate the tube engaging portion and the second end such that at least one second narrow strip section is defined between said second slot and said first side edge of said strip, said first narrow strip section being interposed between portions of said strip defining said second slot and said second

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narrow strip section being interposed between portions of said strip defining said first slot, at least one overlap portion intermediate the second slot and the second end circumferentially overlapping the tube engaging portion, said second end extending away from said tube in spaced relationship to said first end, a dielectric material interposed between said overlapping portions of said strip.

5,357,198

APPARATUS FOR MAGNETIC INSPECTION USING MAGNETIC SHIELD

Seigo Ando, and Yasuhiro Matsufuji, both of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

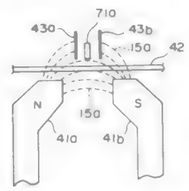
PCT No. PCT/JP92/00096, § 371 Date Sep. 29, 1992, § 102(e) Date Sep. 29, 1992, PCT Pub. No. WO92/14145, PCT Pub. Date Aug. 20, 1992

PCT Filed Jan. 31, 1992, Ser. No. 927,498

Claims priority, application Japan, Feb. 4, 1991, 3-013568; Feb. 18, 1991, 3-023306; Feb. 18, 1991, 3-023307

Int. Cl.[5] G01N *27/83;* G01R *33/12*

U.S. Cl. 324—242 14 Claims



11. A magnetic inspection apparatus comprising:

magnetizer means for generating a magnetic field in an object to be inspected, said magnetizer means having a pair of magnetic poles provided in facing relation to said object;

a plurality of magnetic sensor means for detecting a leakage magnetic flux due to a defect of said object, each said magnetic sensor means having sides which face said magnetic poles;

a pair of shield plates, each shield plate having a low coercive force, situated in facing relation to said sides of said magnetic sensor means which face said magnetic poles; and

wherein each of said shield plates has an L-shaped cross-sectional configuration comprised of a vertical portion extending in a direction perpendicular to said object, and a horizontal portion attached to an end portion of said vertical portion facing said object, said horizontal portion extending towards an adjacent one of said magnetic poles.

5,357,199

SLAVED RADIO FREQUENCY FIELD AND LIGHT POLARIZATION MAGNETOMETER

Jean-Michel Leger, Meylan; Jean Crescini, Domene, and Christophe Guttin, Virieu, all of France, assignors to Commissariat a l'Energie Atomique, France

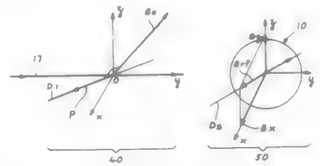
Filed Jul. 8, 1993, Ser. No. 89,289

Claims priority, application France, Jul. 16, 1992, 92 08783

Int. Cl.[5] G01R *33/24*

U.S. Cl. 324—301 4 Claims

1. Optical pumping and resonance magnetometer incorporating a cell (10) filled with a gas (12), whose atoms have a gyromagnetic ratio (γ), said cell being immersed in an ambient magnetic field Bo, which is the field to be measured, a light source (14) emitting a light beam (15), a linear polarizer (16) traversed by said beam (15) and giving said beam a linear polarization in accordance with a first direction (D_1), the linearly polarized beam (17) then traversing the cell (10), a photodetector (24) receiving the light beam (18) which has traversed the cell (10), said photodetector (24) supplying an electric signal, means (20, 22) for applying a radio frequency field (B_{rf}) to said cell (10), said radio frequency field having a second direction (D_2) and a certain frequency, means (21, 22, 23) for making this frequency dependent on the LARMOR frequency $F=\gamma Bo$, a means (26) for measuring said frequency (F), the amplitude of the ambient magnetic field Bo being deducted from the frequency F by the relation $Bo=F/\gamma$, said magnetometer being characterized in that it also comprises first slaving means (40) acting on the first direction (D_1), which is that of the polarization of the light beam, in order to regulate said first direction to 90° of the direction of the ambient magnetic field Bo, said first means (40) incorporating a first synchronous detection circuit (42) receiving the electric signal



supplied by the photodetector (24) and a reference (V_{RF}) voltage from the means for applying a radio frequency field (22) at the frequency F of the radio frequency signal, said circuit (42) outting the amplitude (A_1) in phase quadrature with the reference signal (V_{RF}), and said first slaving means (40) verifying that the amplitude (A_2) of the double frequency signal is not zero, the amplitude (A_1) of the component at the frequency (F) being used for controlling means for rotating the polarizer (16) in order to rotate the polarization direction (D_1) until said amplitude (A1) is zero, the first direction then being slaved perpendicular to the ambient magnetic field (Bo) and second slaving means (50) acting on the second direction (D_2), which is that of the radio frequency field (B_{rf}) in order to make said second direction (D_2) coincide with the first (D_1).

5,357,200

MAGNETIC RESONANCE IMAGING METHOD AND APPARATUS

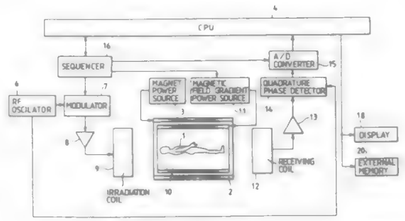
Koji Kajiyama, Kamagaya, Japan, assignor to Hitachi Medical Corp., Tokyo, Japan

Filed May 28, 1993, Ser. No. 67,624

Claims priority, application Japan, May 29, 1992, 4-138540

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—309 10 Claims



1. A magnetic resonance imaging method, the combination comprising the steps of:

(1) generating a static magnetic field in which an object is placed;

(2) repeatedly exciting the object so as to generate a plurality of spin echoes each time the object is excited;

(3) differently phase-encoding the plurality of spin echoes and reading out the plurality of spin echoes phase-encoded thus so that the plurality of spin echoes read out thus produce a first raw image data set covering a substantial half of a raw image data space in a phase-encoding direction thereof and are assigned to a plurality of corresponding regions in the substantial half partitioned in the phase-encoding direction, respectively;

(4) estimating a second raw image data set covering the remaining substantial half of the raw image data space in the phase-encoding direction thereof on the basis of the first raw image data set; and

(5) producing an image of the object corresponding to the raw image data space on the basis of the first and second raw image data sets.

5,357,201

Patent Not Issued For This Number

5,357,202

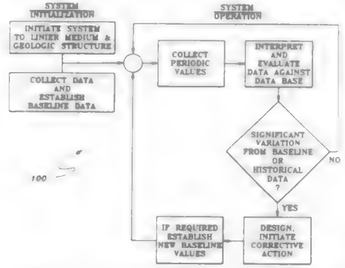
PLURAL ELECTRODE METHOD FOR MEASURING SUBSURFACE CHANGES IN CONDUCTIVITY AS AN INDICATION OF FLUID MIGRATION

Michael E. Henderson, 5400 Equity Ave., Ste. B, Reno, Nev. 89502

Filed Dec. 19, 1991, Ser. No. 810,332

Int. Cl.[5] G01V *3/02;* G01M *3/16;* G01N *27/04;* G01R *27/08*

U.S. Cl. 324—557 7 Claims



6. A method for monitoring the presence and migratory proclivity of a fluid in a medium having discernable conductivity, the method including the steps of:

installing a plurality of electrodes proximate to an area of expected fluid migration;

initializing said electrodes with respect to the pre-existing characteristics of the medium to obtain a baseline measurement of potential difference between the electrodes representative of medium conductivity;

applying a current to the medium at selected time intervals;

measuring the potential difference between said electrodes as representative of conductivity at said selected time intervals;

archiving the measurements obtained at the selected time intervals during the measuring step for future reference, each of said measurements indexed with reference to prevailing conditions in existence at the time of the measurements;

repeating said current applying and measuring steps at a later time to obtain a current measure of the potential difference under currently existing prevailing conditions;

comparing the currently obtained measurements to archived measurements archived during prevailing conditions in existence which are similar to the currently existing prevailing conditions to detect changes in potential difference between the currently obtained measurements and the archived measurements;

displaying results of the changes detected during said comparing step indicating a difference between current measurements and archived measurements indexed with similar prevailing conditions;

and signaling in the presence of a measurement having a significant variation from the baseline measurements and the archived measurements which may be correlative of fluid migration.

5,357,203

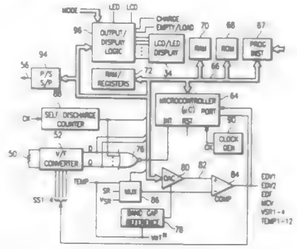
BATTERY MONITORING CIRCUIT FOR OPERATING WITH HIGH BATTERY DISCHARGE RATES

John E. Landau, Dallas; Wallace E. Matthews, Richardson, and David L. Freeman, Plano, all of Tex., assignors to Benchmarq Microelectronics, Inc., Carrollton, Tex.

Filed Jul. 8, 1992, Ser. No. 910,685

Int. Cl.[5] H02J *7/04;* G01N *27/416;* G01R *31/36*

U.S. Cl. 324—427 12 Claims



1. A battery monitoring circuit for operating with high battery discharge rates, comprising:

a voltage monitor for monitoring the voltage of the battery and providing a monitored voltage output;

a discharge rate sensor for monitoring the rate at which charge is removed from the battery as a rate of discharge;

a processor for processing the monitored voltage output from said voltage monitor to determine select operating parameters of the battery for use in monitoring the operation of the battery, said processor operating, in a normal operating mode, to determine said select operating parameters and, in an inhibit mode, to prevent said operating parameters from being determined by said processor, and

an inhibit circuit for controlling said processor to operate in the inhibit mode when said rate of discharge is above a predetermined discharge rate, said inhibit circuit returning said processor to the normal operating mode when said rate of discharge falls below said predetermined discharge rate.

5,357,204

ONE-SHOT CLOCK GENERATOR CIRCUIT

Ernest Knoll, Tirat Hacarmel, Israel, assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 1, 1993, Ser. No. 115,233

Int. Cl.[5] H03K *3/00*

U.S. Cl. 328—62 22 Claims

1. A circuit for generating a first and a second clocking signal having non-overlapping phases, the circuit comprising:

a first differentiator having an input and an output, said input coupled to a first digital signal, said first differentiator generating a first digital pulse in response to a transition in logic state of said first digital signal and providing said first digital pulse on said output;

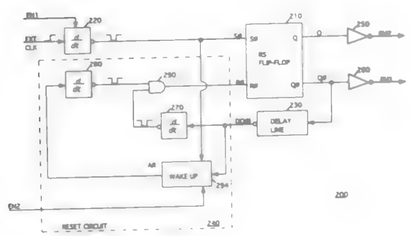
a flip-flop having a first input coupled to said output of said first differentiator wherein said flip-flop enters a first logic state upon receiving said first digital pulse at said first input; a second input coupled to receive a second digital pulse wherein said flip-flop enters a second logic state upon receiving said second digital pulse, a first output for outputting a second digital signal, and a second output for outputting a third digital signal wherein said third digital signal represents a binary complement of said second digital signal;

a first inverter having an input coupled to said first output of

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said flip-flop, said first inverter outputting the first clocking signal;

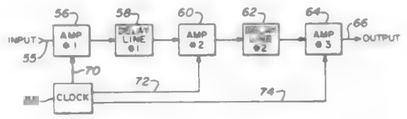
a delay circuit having an input coupled to said second output of said flip-flop, said delay circuit generating on an output a fourth digital signal representing a binary complement of said third digital signal, the delay circuit causing said fourth digital signal to be delayed with respect to said third digital signal by a first predetermined amount of time;



a second differentiator having an input coupled to said output of said delay circuit said second differentiator generating on an output said second digital pulse in response to a transition in the logic state of said fourth digital signal and said output of said second differentiator coupled to said second input of said flip-flop; and

a second inverter having an input coupled to said second output of said flip-flop, said second inverter outputting the second clocking signal;

amplifier stages respectively of the m amplifier stages for causing a predetermined time delay before an amplified input signal from one of the m amplifier stages is coupled to the succeeding one of the m amplifier stages; and



a switching circuit for stabilizing said m amplifier stages by sequentially energizing each of the m amplifier stages such that only one of the m amplifier stages is energized at any one time so as to prevent feedback signals being coupled from one amplifier stage to another.

5,357,205

Patent Not Issued For This Number

5,357,206

SEQUENTIAL AMPLIFIER

Darrell L. Ash, Sachse, Tex., assignor to R.F. Monolithics, Inc., Dallas, Tex.

Filed Jan. 21, 1993, Ser. No. 8,522

Int. Cl.[5] H03F *1/14*

U.S. Cl. 330—51 9 Claims

1. A sequential amplifier comprising:

m amplifier stages for amplifying an input signal, where m is ≧ than 3, said m amplifier stages becoming unstable when any two of said m amplifier stages are energized simultaneously;

m−1 delay lines, each delay line coupling two successive

5,357,207

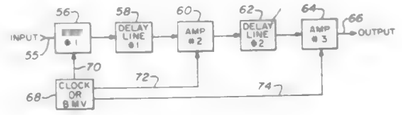
SEQUENTIAL AMPLIFIER

Darrell L. Ash, Sachse, Tex., assignor to R.F. Monolithics, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 8,522, Jan. 21, 1993. This application Jun. 23, 1993, Ser. No. 81,802

Int. Cl.[5] H03F *1/14*

U.S. Cl. 330—51 10 Claims



1. A sequential amplifier comprising:

m successive amplifier stages, each amplifier stage having time periods for amplifying an input signal and where m≧3;

m−1 delay lines, each delay line coupling two successive amplifier stages respectively of the m amplifier stages for causing a predetermined time delay before an amplified input signal from one of the m amplifier stages is coupled to a succeeding one of the m amplifier stages; and

switching means for energizing only each two successive ones of the m amplifier stages such that their amplifying time periods overlap for a portion of time only so long as no feedback occurs that causes oscillation between said two successive ones of the amplifier stages to obtain maximum gain of the input signal.

5,357,208

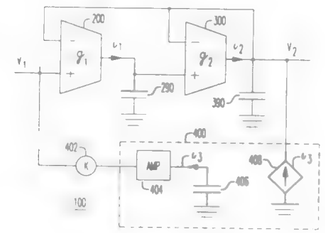
BOOST FUNCTION FOR FILTERS

Dale H. Nelson, Shillington, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 26, 1993, Ser. No. 37,210

Int. Cl.[5] H03F *3/68*

U.S. Cl. 330—126 31 Claims



1. An integrated circuit including a biquadratic filter the transfer function of which has a pair of zeroes in the numerator and a pair of complex conjugate poles in the denominator, the biquadratic filter for receiving an input signal and providing a filtered output signal, the integrated circuit comprising:

a first circuit for constructing the complex conjugate poles of the filter transfer function, the first circuit responsive to the input signal and having a first input port for receiving the input signal, the first circuit having an output port at which an output current signal is presented, the output port coupled to a first capacitor, the first capacitor having first and second plates, the first plate coupled to the output port, the second plate coupled to a reference voltage;

a second circuit for constructing the zero pair of the filter transfer function independence of the poles, the second circuit having an input coupled to the first input port of the first circuit for receiving the input signal, the second circuit including a differentiator for differentiating the input signal to produce a differentiated input signal, the second circuit providing an output current summed with the output current of the first circuit to produce the filtered output signal, the second circuit output current being proportional to the differentiated input signal, whereby the filter pole frequencies determined by the first circuit are independent of the filter gain determined by the second circuit.

5,357,209

LIMITING AMPLIFIER

Heinz B. Mader, Weinfelden, Switzerland; Johan U. Tingsborg, Solna, and Carl-Gustaf Thisell, Stockholm, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed May 14, 1992, Ser. No. 883,114

Claims priority, application Sweden, May 15, 1991, 9101459-7

Int. Cl.[5] H03F *3/45*

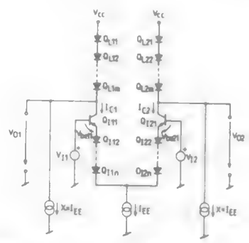
U.S. Cl. 330—252 11 Claims

1. A limiting amplifier having an amplifier input and an amplifier output, and comprising:

at least one amplifier stage between said amplifier input and said amplifier output, said amplifier stage including at least one amplifying component and load components,

an output signal limiting means limiting the maximum amplitude of an output signal and the amplification of said amplifier,

said output signal limiting means including a current drain means connected to an output of said amplifier stage and being arranged to draw current through said load components, wherein the current drain means draws a current the amount of which is selectively adjusted to obtain a



predetermined maximum output voltage, wherein said amplifier stage is a differential amplifier stage having a differential input and a differential output, said differential output having two terminals, and wherein the output signal limiting means includes first and second current drain means, the first current drain means is connected to one of said terminals, and the second current drain means is connected to the other one of said terminals.

5,357,210

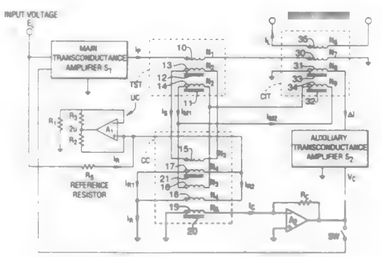
TRANSCONDUCTANCE AMPLIFIER CIRCUIT

Petar N. Miljanic, Belgrade, Yugoslavia, and Eddy So, Gloucester, Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Jul. 7, 1993, Ser. No. 141,367

Int. Cl.[5] H03F *1/26*

U.S. Cl. 330—15.1 8 Claims



1. A transconductance amplifier circuit comprising:

(a) a transconductance amplifier for generating an alternating output current corresponding to an alternating input voltage,

(b) a reference resistor for providing a reference current corresponding to the input voltage, and

(c) current comparator means for comparing currents respectively proportional to said output and reference currents and for generating a feed-forward error signal proportional to an unbalance ampere-turns signal between said compared currents,

characterized by an output transformer comprising

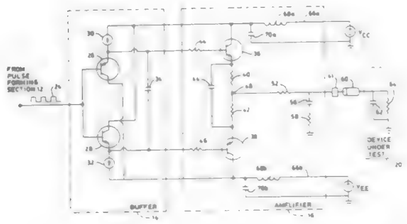
(d) inner and outer coaxially arranged toroidal magnetic cores,

(e) a primary winding and a correction winding extending around the outer core to couple electromagnetically with both cores,

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(f) a detection winding located between the cores to couple electromagnetically only with the inner core,
(g) means for connecting the primary winding to receive the output current from the transconductance amplifier,
(h) means for connecting the correction winding to receive the error signal, and
(i) means for connecting the detection winding to the current comparator means to inject thereinto a current corresponding to the error of the output transformer.

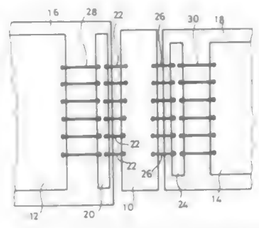
5,357,211
PIN DRIVER AMPLIFIER
Stephen W. Bryson; Alan T. Kondo, both of Cupertino, and Don N. Lee, San Jose, all of Calif., assignors to Raytheon Company, Lexington, Mass.
Filed May 3, 1993, Ser. No. 56,093
Int. Cl.[5] H03F *3/26*
U.S. Cl. 330—263 20 Claims



1. In a pin driver adapted for transmitting driver pulses of predetermined voltage levels and timing to a device under test, an output amplifier comprising:
a complementary pair of transistors;
a pair of resistors coupled in series between corresponding terminals of said complementary pair of transistors;
an output terminal adapted for connecting a transmission line leading to said device under test;
an output resistor coupled between said output terminal and a node between said pair of series resistors; and
means for maintaining a substantially constant reverse termination impedance for said transmission line notwithstanding changes in output impedance at said corresponding terminals of said complementary pair of transistors.

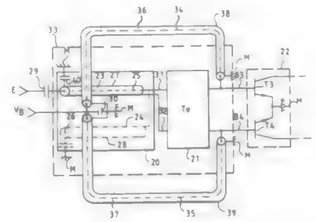
5,357,212
MICROWAVE AMPLIFIER
Masaki Kohno, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 28, 1993, Ser. No. 97,906
Claims priority, application Japan, Jul. 30, 1992, 4-203408
Int. Cl.[5] H03F *3/60*
U.S. Cl. 330—277 23 Claims

1. A microwave amplifier comprising:
a microwave amplifying device having an input and an output;
an input matching circuit connected to the input of said microwave amplifying device; and
an output matching circuit connected to the output of said microwave amplifying device wherein each of said input and output matching circuits is a distributed constant circuit comprising microstrip lines disposed on a dielectric substrate and at least one of said input and output matching circuits includes a connecting section for connecting that matching circuit to said microwave amplifying device, said connecting section comprising a first microstrip line having a first width equal to that of the matching circuit to which said connecting section is connected and a second microstrip line continuous and integral with said



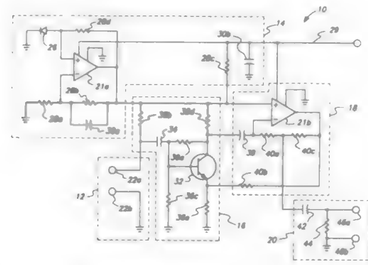
first microstrip line and having a second width smaller than said first width.

5,357,213
HIGH-FREQUENCY WIDE BAND AMPLIFIER HAVING REDUCED IMPEDANCE
Jean Michel, Trappes; Jean-Claude Combe, Villiers St Paul, and Herminio de Faria, l'Isle Adam, all of France, assignors to Thomson-Lgt Laboratoire General des Telecommunications, Conflans Sainte Honorine, France
Filed Oct. 8, 1993, Ser. No. 131,965
Claims priority, application France, Oct. 9, 1992, 92 12031
Int. Cl.[5] H03F *3/60*
U.S. Cl. 330—286 4 Claims



1. A high-frequency wideband power amplifier organized around a ground circuit used as a reference potential, of the type comprising, in succession from an input to an output, a first balancing transformer, to an input of which there is injected a signal E to be amplified, an input impedance transformer, an amplifier stage comprising at least two transistors, an output impedance transformer and a second balancing transformer delivering the input signal E as an amplified signal S, wherein said amplifier further comprises a plurality of high-frequency transmission line sections transmitting a plurality of bias voltages to input and output terminals of said amplifier stage such that a high-frequency impedance is seen at said input and output terminals of said amplifier stage, wherein said high-frequency impedance is negligible in relation to a high-frequency impedance seen at each transistor terminal and a negligible series impedance exists at said input and output terminals of said amplifier stage with respect to a baseband of the signal E to be amplified such that the bias voltage applied to one end of each of the line sections is transmitted almost identically to the other end thereof which is connected to a transistor terminal, each line section respectively transmitting an input bias voltage to each transistor having an identical high-frequency impedance and identical length ranging from $\lambda/8$ to $3\lambda/8$, where λ corresponds to a wavelength of a carrier of the signal E to be amplified, and wherein each line section respectively transmits an output bias voltage to each transistor and has identical impedance and identical length ranging from $\lambda/8$ to $3\lambda/8$.

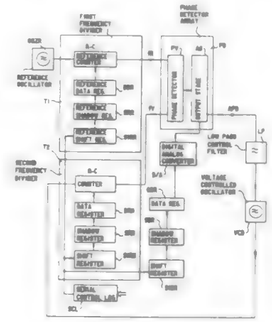
5,357,214
METHODS AND APPARATUS FOR MICROPHONE PREAMPLIFICATION
Lawrence F. Heyl, Mountain View, and Douglas M. Farrar, Los Altos, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Jun. 3, 1993, Ser. No. 71,513
Int. Cl.[5] H03F *21/00*
U.S. Cl. 330—297 6 Claims



1. Apparatus for pre-amplification of an electronic signal from a microphone comprising:
a microphone input for the electronic signal;
a voltage reference source comprising
a first operational amplifier having two inputs and an output,
a diode coupled to a first input of the first operational amplifier, and
a first capacitor coupled across an electrical connection from the output and a second input of the first operational amplifier;
a common emitter amplifier coupled to the microphone input and the voltage reference source; and
a line driver amplifier coupled to the common emitter amplifier and the voltage reference source, the line driver amplifier having an output for a pre-amplified electronic signal.

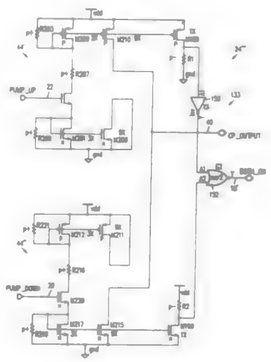
5,357,215
METHOD OF SETTING PHASE LOCKED LOOPS BY COMPARING OUTPUT SIGNALS IN A PHASE DETECTOR
Reinhard Greiderer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed May 14, 1993, Ser. No. 61,846
Claims priority, application Fed. Rep. of Germany, May 20, 1992, 4216714
Int. Cl.[5] H03L *7/093, 7/16, 7/10, 7.08*
U.S. Cl. 331—16 3 Claims

1. In a method for adjusting phase lock loop variables in a phase lock loop having at least two frequency dividers supplying respective output signals, and a phase detector comparing the output signals of the at least two frequency dividers, the phase detector having an input and having an output stage supplying an output variable voltage being dependent on a phase difference at the input to the phase detector and being influenced by a further electrical variable, the improvement which comprises asynchronously setting the shadow registers, changing the frequency divider ratios of the at least two frequency dividers to change the existing phase difference, synchronously varying with the shadow registers the further



variable, and determining the output variable voltage of the phase detector upon a change in the frequency divider ratios.

5,357,216
CURRENT SOURCING AND SINKING CIRCUIT FOR DRIVING A VCO CHARGE PUMP
Thai M. Nguyen, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Jan. 13, 1993, Ser. No. 3,928
Int. Cl.[5] H03L *7/089, 7/093*
U.S. Cl. 331—25 18 Claims



1. A current sourcing and sinking circuit for sourcing and sinking selected output currents, comprising:
first current sourcing/sinking means for receiving a first control signal and in accordance therewith providing a first output current, and including a first current sourcing-/sinking circuit topology with first current source means for providing said first output current and first current sink means for selectively sinking a second output current, wherein said first current source and sink means are isolated from one another;
second current sourcing/sinking means for receiving a second control signal and in accordance therewith sinking a third output current, and including a second current sourcing/sinking circuit topology with second current sink means for sinking said third output current and second current source means for selectively providing a fourth output current, wherein said second current sink and source means are isolated from one another; and

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a circuit node connecting said first current source means and said second current sink means for receiving said first output current therefrom and providing said third output current thereto, respectively;

wherein said first and second current sourcing/sinking circuit topologies are substantially similar.

5,357,217

SIGNALS GENERATOR HAVING NON-OVERLAPPING PHASES AND HIGH FREQUENCY

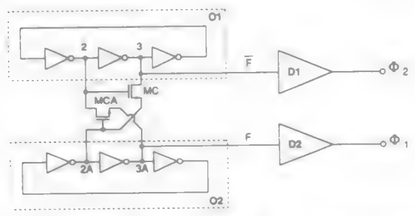
Gianmarco Marchesi, Rivergaro, and Guido Torelli, Alessio, both of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed May 13, 1993, Ser. No. 62,468

Claims priority, application European Pat. Off., May 15, 1992, 92830230.6

Int. Cl.[5] H03B *27/00*

U.S. Cl. 331—57 **28 Claims**



1. An integrated circuit for generating non-overlapping complementary clock signals, comprising:

first and second mutually matched ring oscillators, each comprising an odd number of inverting digital gates connected in a loop, at least one of said inverting gates of each said oscillator being connected to be driven by a first node of said oscillator and configured to drive a second node of said oscillator in opposition to said first node;

a first switch connected to be driven by said first node of said first oscillator, and connected so that said second node of said first oscillator is connected to said first node of said second oscillator when said first switch is turned on; and

a second switch connected to be driven by said first node of said second oscillator, and connected so that said second node of said second oscillator is connected to said first node of said first oscillator when said second switch is turned on:

wherein at least one node of said first oscillator is connected to provide a first clock signal, and the corresponding node of said second oscillator is connected to provide a second clock signal which does not overlap with said first clock signal.

5,357,218

SELF-SHIELDING MICROSTRIP ASSEMBLY

William J. Wingfield, Lauderhill; Mark A. Crandall, and Leng H. Ooi, both of Sunrise, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 3, 1993, Ser. No. 55,585

Int. Cl.[5] H03B *5/18, 7/12;* **H01P** *7/08*

U.S. Cl. 331—96 **14 Claims**

1. A microstrip assembly for attachment to a carrier, comprising:

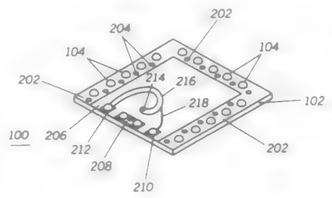
a substrate having first and second opposed major surfaces;

a ground plane disposed on the first major surface;

a transmission line disposed on the second major surface;

at least two interconnection terminals disposed on the second major surface, at least one of said at least two interconnection terminals electrically coupled to the ground plane and the other of said at least two interconnection terminals is electrically coupled to the transmission line; and

spacer means located between the second major surface of the substrate and the carrier for providing an air gap



between the second surface of the substrate and said carrier upon the microstrip assembly being attached to said carrier, the air gap providing for the transmission line to exhibit an increase in Q value.

5,357,219

PULSE WIDTH MODULATOR INCLUDING INCREMENTER/DECREMENTER

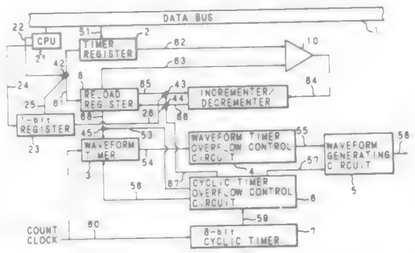
Takeshi Fujii, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1993, Ser. No. 128,789

Claims priority, application Japan, Oct. 5, 1992, 4-266014

Int. Cl.[5] H03K *7/08*

U.S. Cl. 332—109 **8 Claims**



1. A pulse width modulator, comprising:

first timing means (7) for repetitively timing one waveform cycle, by repeating the counting operation of a source clock till coinciding with a predetermined count data;

first storing means (2) for storing n-bit input digital data D;

second timing means (3), to which the data D stored in said first, storing means (2) is loaded as the count data, for timing a first period corresponding to "one cycle of the source clock×D", by counting the source clock till coinciding with the loaded count data;

waveform generating means (5) for generating a first level signal in a first period timed by said second timing means (3), and a second level signal in a second period corresponding to the remaining period, in the respective one-waveform cycles timed by said first timing means (7);

second storing means (8) for storing data D1 stored as an initial value of the data D in said first storing means (2), and loading to said second timing means (3) every time the one waveform cycle is timed by said first timing means (7);

comparing means (10) for comparing data D2 and the data D1 stored in said second storing means (8), when the data D1 stored in said first storing means (2) is changed to the data D2; and

incrementing/decrementing means (9), which function as an incrementer when the comparing result by said comparing means (10) shows that the data D2 is larger than the data D1 and as a decrementer when smaller, for incrementing or decrementing the data D1 stored in said second storing means (8) every time the one waveform cycle is timed by said first timing means (7).

5,357,220

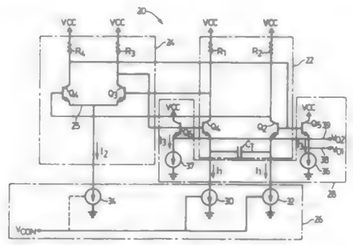
EMITTER-COUPLED OSCILLATOR WITH DIFFERENTIAL SWITCHING CONTROL

John R. Francis, Burlington, Canada, assignor to Gennum Corporation, Burlington, Canada

Filed Jan. 21, 1993, Ser. No. 6,402

Int. Cl.[5] H03B *5/04, 5/24;* **H03L** *1/02, 7/099*

U.S. Cl. 331—113 R **10 Claims**



1. An emitter-coupled oscillator circuit suitable for monolithic integration, said emitter-coupled oscillator circuit comprising:

(a) switching means for producing at an output port an output signal having a variable oscillation frequency, and said switching means having first and second inputs for receiving a differential control signal and said switching means including first and second terminals for connecting to a capacitor;

(b) output port means coupled to the output port of said switching means for outputting said output signal;

(c) frequency control means coupled to the first and second terminals of said switching means for adjusting the oscillation frequency of said output signal; and

(d) switching control means for producing a differential control signal at first and second outputs coupled to the first and second inputs respectively of said switching means and switching means being responsive to said differential control signal for producing said output signal, and said switching control means having a control terminal coupled to said frequency control means.

5,357,221

REGULATION OF MODULATOR I AND Q SIGNAL PHASING

Jorma Matero, Oulu, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Aug. 25, 1992, Ser. No. 934,945

Claims priority, application Finland, Aug. 27, 1991, 914028

Int. Cl.[5] H03C *1/00, 3/00;* **H03B** *27/00;* **H03L** *1/02*

U.S. Cl. 332—123 **5 Claims**

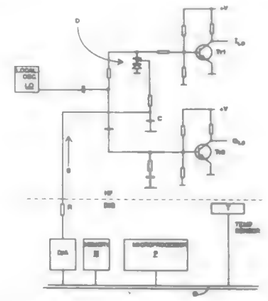
1. An electronic apparatus including a circuit for generating first and second output signals from an input signal, the first and second output signals having a quadrature phase relationship therebetween, comprising:

local oscillator means for providing said input signal;

a first signal branch connected to said local oscillator means for receiving said input signal and for providing said first output signals;

a second signal branch connected to said local oscillator means for receiving said input signal and or providing said second output signals, said second signal branch including phase control means for subjecting said input signal to a determine phase shift and responsive to an applied DC control signal to adjust a phase shift error through said phase shift means from said determined phase shift, so as to assure that said second output signal exhibits said quadrature phase relationship with said first output signals;

a memory for storing a digital parameter indicative of a DC control signal that when applied to said phase control means enables an alteration of a phase shift of said input



signal through said phase control means to said determined phase shift;

a microprocessor associated with said memory for accessing said digital parameter; and

a digital-to-analog converter coupled to said phase control means for converting said digital parameter to said DC control signal and applying said DC control signal to said phase control means.

5,357,222

VOLTAGE CONTROLLED COMPONENT INCLUDING A CAPACITIVE DIODE BIASED TO OPERATE IN THE LINEAR REGION

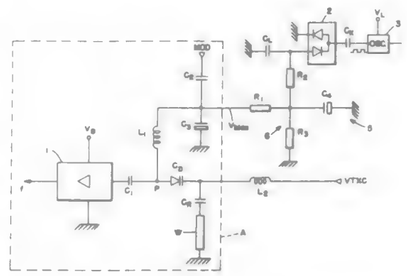
Seppo Hietala, Turko, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Oct. 7, 1992, Ser. No. 958,036

Claims priority, application Finland, Oct. 9, 1991, 914763

Int. Cl.[5] H03B *7/12*

U.S. Cl. 332—124 **3 Claims**



1. A voltage controlled oscillator (VCO) comprising:

a voltage-controlled capacitance diode having first and second terminals and further exhibiting a capacitance voltage response characteristic which includes a linear portion and a nonlinear portion, said linear portion dependent upon an applied bias voltage;

means for applying a bias voltage to said first terminal of said capacitance diode which causes said capacitance diode to operate in said linear portion;

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means for applying a control voltage to said second terminal of said capacitance diode, said control voltage being of opposite polarity to said bias voltage; and

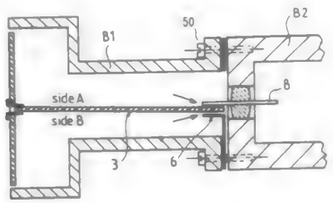
modulation means for applying a modulation voltage to said first terminal of said capacitance diode which causes substantially linear changes in said capacitance of said capacitance diode in accord with changes in said modulation voltage, whereby an output frequency of said VCO exhibits substantially linear frequency changes in accord with changes in said modulation voltage.

5,357,223

CONNECTION DEVICE BETWEEN AN ANTENNA AND A MICROELECTRONIC ENCLOSURE

Olivier Forgeot, Fontenay le Fleury, France, assignor to Dassault Electronique, Saint Cloud, France

Filed Feb. 26, 1993, Ser. No. 22,927
Claims priority, application France, Feb. 26, 1992, 92 02236
Int. Cl.[5] H01P *5/10*
U.S. Cl. 333—26 **6 Claims**



1. An electronic device, comprising an antenna enclosure having a circuit with an antenna etched thereon and a balun circuit for feeding the antenna, connected to a microelectronic enclosure provided with an airtight connection including a sealed glass bead at least one conducting wire passing through the glass bead, wherein the balun circuit comprises at least first and second tracks on each side of a dielectric substrate, at least one immediate electrical contact being provided between the conducting wire from the enclosure and the first of the tracks on the balun circuit, and having a direct mechanical fixing of the antenna enclosure to the microelectronic enclosure, including an earth transfer conductor connected to the second of the balun tracks and in contact with the microelectronic enclosure, the immediate contact between the conducting wire and the antenna balun using a clamp soldered to the balun and being configured to receive the conducting wire from the microelectronic enclosure.

5,357,224

CONTINUOUSLY-VARIABLE MONOLITHIC RF AND MICROWAVE ANALOG DELAY LINES

Fred Sterzer, Princeton, N.J., assignor to MMTC, Inc., Princeton, N.J.

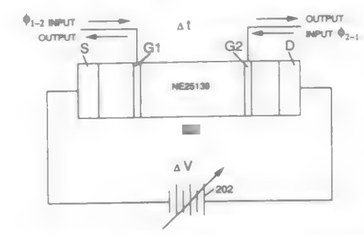
Filed Aug. 5, 1993, Ser. No. 102,206
Int. Cl.[5] H03H *7/20*
U.S. Cl. 333—139 **14 Claims**

1. A voltage-controlled delay line comprising:

a multi-gate field-effect transistor (FET) composed primarily of a given material; wherein said multi-gate FET includes a source at one end thereof and a drain at the other end thereof, a first gate spaced from both said source and said drain and situated in between them, and a second gate situated in between said first gate and said drain and spaced a given distance from said first gate;

means for applying an input signal to one of said first and second gates and for extracting an output signal from the other of said first and second gates; and

delay-control means for applying a delay-control voltage between said source and said drain of said dual-gate FET to effect a time delay of said output signal with respect to said input signal by an amount determined by (1) said



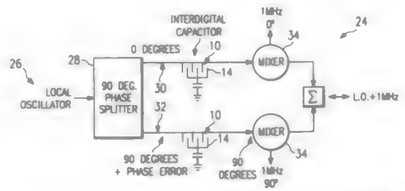
given material, (2) said given distance, and (3) the magnitude of said delay-control voltage.

5,357,225

METHOD AND APPARATUS FOR ADJUSTING THE IMPEDANCE OF A MICROSTRIP TRANSMISSION LINE

Duane L. Mortensen, Lucas, Tex., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Dec. 23, 1992, Ser. No. 996,099
Int. Cl.[5] H01P *1/18, 1/00*
U.S. Cl. 333—161 **7 Claims**



1. A method for adjusting the impedance of a microstrip transmission line comprising the steps of:

coupling a first conductive finger region to the microstrip transmission line, the first conductive finger region including a plurality of removable individual conductive fingers providing a predetermined level of impedance to the microstrip transmission line;

coupling a second conductive finger region to ground, the second conductive finger region including a plurality of removable individual conductive fingers providing a predetermined level of impedance to the microstrip transmission line;

locating the first conductive finger region and the second conductive finger region so that the individual conductive fingers of the first conductive finger region are substantially perpendicular to the microstrip transmission line and parallel and interspersed with the individual conductive fingers of the second conductive finger region;

removing individual conductive fingers from the first conductive finger region to alter the impedance of the microstrip transmission line; and

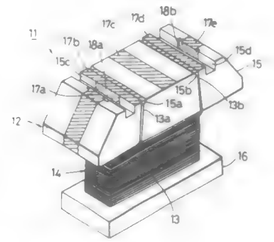
removing individual conductive fingers from the second conductive finger region to alter the impedance of the microstrip transmission line.

5,357,226

NOISE FILTER

Takahiro Azuma, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed May 19, 1993, Ser. No. 64,838
Claims priority, application Japan, May 20, 1992, 4-127588
Int. Cl.[5] H03H *7/06*
U.S. Cl. 333—172 **5 Claims**



1. A noise filter comprising:

two pairs of electrodes formed on the outer surface of a first part of said dielectric body,

respective recess portions formed on the outer surface of said dielectric body between each of the two pairs of electrodes, thereby forming respective capacitors between each pair of electrodes, and

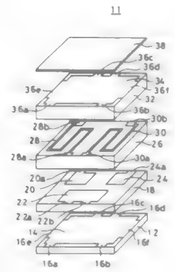
respective resistance films formed along each recess portion.

5,357,227

LAMINATED HIGH-FREQUENCY LOW-PASS FILTER

Ken Tonegawa, and Hisatake Okamura, both of Nagaokakyo, Japan, assignors to Murata Mfg. Co., Ltd., Japan

Filed Apr. 16, 1993, Ser. No. 48,381
Claims priority, application Japan, Apr. 16, 1992, 4-124177; Apr. 16, 1992, 4-124178; Dec. 17, 1992, 4-355743
Int. Cl.[5] H03H *7/00*
U.S. Cl. 333—185 **10 Claims**



1. A laminated high-frequency low-pass filter comprising:

a first dielectric layer;

an earth electrode formed on said first dielectric layer;

a second dielectric layer connected to said first dielectric layer such that said earth electrode is disposed between said first and second dielectric layers;

a first and a second capacitive open-circuit stub electrode formed on said second dielectric layer;

a third dielectric layer connected to said first and second dielectric layers;

a strip line electrode comprising an inductor and being formed on said third dielectric layer, said strip line electrode having first and second ends;

a first connector connecting said first capacitive open-circuit stub electrode and said first end of said strip line electrode;

a second connector connecting said second capacitive open circuit stub electrode and said second end of said strip line electrode;

a capacitor formed by said strip line electrode, said first and second capacitive open-circuit stub electrodes and said first and second connectors, said first and second connectors connecting said capacitor and said inductor in parallel;

wherein a parallel resonance frequency between said inductor and said capacitor is approximately equal to the frequency at the wavelength

$$\lambda = 2L\sqrt{\epsilon_r}$$

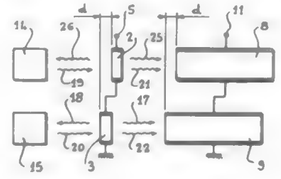
wherein L is a line length of said strip line electrode, and ϵ_r is a relative dielectric constant around said strip line electrode.

5,357,228

SURFACE ACOUSTIC WAVE FILTER HAVING CHANNELS WHICH ARE OFFSET

Pierre Dufilie, Le Rouret, France, assignor to Thomson-CSF, Puteaux, France

PCT No. PCT/FR91/00024, § 371 Date Jul. 13, 1992, § 102(e) Date Jul. 13, 1992, PCT Pub. No. WO91/11856, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 15, 1991, Ser. No. 890,606
Claims priority, application France, Feb. 2, 1990, 90 01227
Int. Cl.[5] H03H *9/64*
U.S. Cl. 333—195 **8 Claims**



1. Surface-acoustic wave filter having a two-channel structure (**14**, **2**, **8** and **15**, **3**, **9**) on a substrate, each channel, extending longitudinally on the substrate, comprising a respective input transducer (**2**, **3**) electrically connected to an input terminal (**5**) of the filter, and a respective output transducer (**8**, **9**) electrically connected to an output terminal (**11**) of the filter, each said input transducer (**2**, **3**) being acoustically connected directly to the corresponding output transducer (**8**, **9**), and a respective surface-acoustic wave reflector (**14**, **15**) is acoustically connected directly to the corresponding one (**2**, **3**) of said input transducers; and wherein respective direct acoustic path distances (**16**, **18**) between the respective reflectors (**14**, **15**) and the corresponding transducers (**2**, **3**) to which they are directly acoustically connected differ by a multiple of a quarter of the wavelength (λ) of the surface-wave propagating wavelength (λ) wherein said multiple is an odd integer; and wherein the respective input transducers are short type transducers and the respective output transducers (**8**, **9**) are long-type weighted transducers having respective weightings to confer on the filter a desired impulse-response curve.

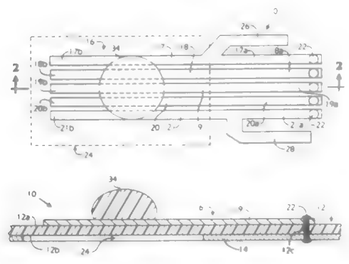
VOL 1167 ISS 3 OCT 18 1994 UMI

5,357,229

METHOD FOR TUNING A MICROSTRIP DEVICE USING A PLASTIC DIELECTRIC SUBSTANCE

Robert H. Benton, Mountain View, Calif., assignor to Pacific Monolithics, Inc., Sunnyvale, Calif.

Filed Nov. 1, 1993, Ser. No. 145,976
Int. Cl.[5] H01P *1/203*
U.S. Cl. 333—205 13 Claims



1. A method of tuning a microstrip device comprising a dielectric substrate and having electrically coupled conductors on a surface of the substrate, the method comprising the steps of:

measuring the frequency response of the device; and

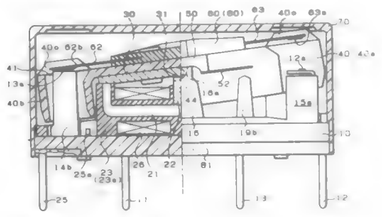
applying a plastic dielectric substance over a progressively larger surface area of the electrically coupled conductors until the device has a desired frequency response.

5,357,230

ELECTROMAGNETIC RELAY

Shoichi Mikawa, Kumamoto, Japan, assignor to OMRON Corporation, Kyoto, Japan

Continuation of Ser. No. 28,501, Mar. 9, 1993, abandoned. This application Nov. 5, 1993, Ser. No. 147,444
Claims priority, application Japan, Mar. 27, 1992, 4-070797
Int. Cl.[5] H01H *51/22*
U.S. Cl. 335—78 9 Claims



1. An electromagnetic relay in which a movable block is mounted on an upper surface of an electromagnetic block disposed on a base for a swing movement and contacts are switched by the movable block being energized and deenergized, comprising

a pair of supports projecting on an upper surface of the base which are opposed with respect to the electromagnetic block,

a pair of shafts projecting from both opposite side walls of said movable block to be engaged with said supports, and

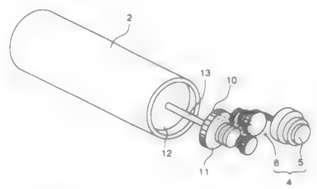
a load spring fixed to said movable block.

5,357,231

PHOTORECEPTOR FOR A COPIER HAVING SUPPRESSED FLUCTUATION COMPONENT

Tadashi Miwa; Toru Makino, and Ken Nonaka, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed May 6, 1993, Ser. No. 58,974
Claims priority, application Japan, Sep. 11, 1992, 4-269409; Sep. 14, 1992, 4-271108; Sep. 14, 1992, 4-271110
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—200 17 Claims



1. An apparatus for use in an image forming device, for rotating a rotation member having a given length in an axial direction, comprising:

a shaft provided at an axis of said rotation member, for rotating said rotation member, said rotation member and said shaft constituting a driven system;

a driving source;

a transmitting member for transmitting a driving force from said driving source to said shaft, said transmitting member including tooth members engaging with each other to transmit driving force, said driving source and said transmitting member constituting a driving system;

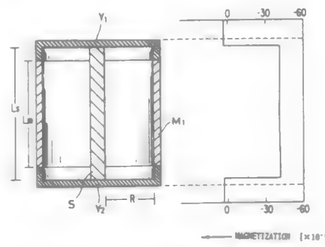
said driven system and said driving system being constructed whereby an oscillation frequency of said driven system is lower than both a frequency of fluctuation component caused per one rotation of said driving system and a frequency of fluctuation component caused per engagement of one tooth of each of said tooth members.

5,357,232

MAGNETOSTRICTIVE ELEMENT

Kazutaka Suzuki, and Teruo Mori, both of Chiba, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Dec. 2, 1992, Ser. No. 984,554
Claims priority, application Japan, Dec. 12, 1991, 3-351481
Int. Cl.[5] H01F *7/00*; G04F *5/00*; H04R *25/00*; H01L *41/06*
U.S. Cl. 335—215 6 Claims



1. A magnetostrictive element comprising:

a generally cylindrical magnetostrictive member containing a rare earth metal element and iron;

a generally cylindrical hollow outer magnet disposed coaxially about, spaced apart from, and surrounding said magnetostrictive member; and

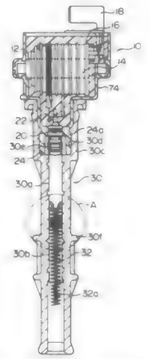
soft magnetic yoke means for magnetically coupling said magnetostrictive member and said outer magnet to form a closed magnetic circuit therebetween, wherein an axial length of said outer magnet is shorter than an axial length of said magnetostrictive member.

5,357,233

IGNITION APPARATUS FOR INTERNAL COMBUSTION ENGINE

Zyunichi Wada, Aichi, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 11, 1992, Ser. No. 928,013
Claims priority, application Japan, Aug. 23, 1991, 3-212464; Jun. 1, 1992, 4-140703
Int. Cl.[5] H01F *27/04*
U.S. Cl. 336—107 17 Claims



16. An ignition apparatus for providing a peaked high-voltage current to a spark plug in an internal combustion engine, said apparatus comprising:

an ignition coil for generating a peaked high-voltage output from a predetermined input-current decrease; and

an extension member including a first cylindrical metal portion extending from the ignition coil, a second cylindrical metal portion adapted to be connected to the spark plug, and an elastic member operably engaging the first and second portions to enable relative movement therebetween, said elastic member including (i) an intermediate coil spring portion with an outer diameter substantially equal to outer diameters of the first and second cylindrical metal portions, said intermediate coil spring portion having tightly wound coil turns contacting one another, and (ii) two coil spring portions having outer diameters slightly smaller than inner diameters of said first and second portions, said two coil spring portions having loosely wound coil turns disposed in spaced relation from one another.

5,357,234

CURRENT LIMITING FUSE

Robert M. Pimpis, Dover, N.H.; Richard J. Perreault, Amesbury, Mass.; George F. Walker, Jr., Lee, N.H.; David E. Suuronen, Newburyport, Mass., and Edward J. Knapp, Jr., Stratham, N.H., assignors to Gould Electronics Inc., Eastlake, Ohio

Filed Apr. 23, 1993, Ser. No. 52,355
Int. Cl.[5] H01H *85/14*
U.S. Cl. 337—246 31 Claims

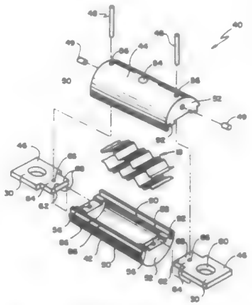
1. A fuse comprising

an insulative housing made from two plastic housing pieces that have been joined together, said housing including

a tubular portion with two ends, and

end portions located at each of said two ends of said tubular portion, each of said end portions having a slot therethrough;

terminals extending through both of said slots, each of said terminals having an internal portion inside said housing, an external portion outside of said housing, and a middle portion between said internal and external portions and located within one of said slots; and



a fusible element having ends connected to respective internal portions of both of said terminals,

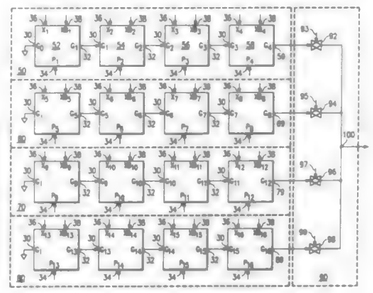
wherein said housing is made from a thermoplastic material that has a continuous use temperature greater than 120° C. and includes 20%–40% filler, and said housing pieces are ultrasonically welded to each other.

5,357,235

PARALLELIZED MAGNITUDE COMPARATOR

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Apr. 30, 1992, Ser. No. 876,959
The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.
Int. Cl.[5] G05B *1/03*; G06F *7/02*
U.S. Cl. 340—146.2 26 Claims



1. A magnitude comparator, comprising:

a plurality of bit comparators, divided into comparator groups that each generate a comparator group output signal, wherein each of said bit comparators has a first binary bit input signal, a second binary bit input signal, a compare input signal and a compare output signal, and compares the magnitude between the first binary bit input signal and the second bit input signal and generates the compare output signal, wherein the compare input signal of each bit comparator is the compare output signal generated by the previous bit comparator and wherein the

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compare output signal of each bit comparator is provided as the compare input signal of the subsequent bit comparator; and

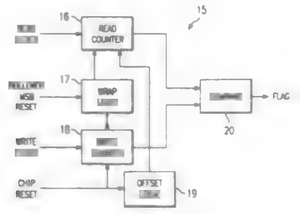
a control element, having control input signals connected to the comparator group outputs of said comparator groups, which selects one of the comparator group outputs of said comparator groups to be output from said control element.

5,357,236

PARALLELIZED DIFFERENCE FLAG LOGIC

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed May 29, 1992, Ser. No. 890,919
Int. Cl.[5] G06F 7/02
U.S. Cl. 340—146.2 35 Claims



1. Difference flag circuitry, comprising:

a plurality of bit comparators divided into comparator groups that generate an output signal, wherein each of said bit comparators compares the magnitude between a bit of a first binary value and a bit of a second binary value;

a control element, having inputs connected to the outputs of said comparator groups, which selects one of the outputs of said comparator groups to be output from said control element;

means for generating a flag, by setting said first binary value to a value which is offset from said second binary value by the value of said flag; and

means for preventing said difference flag circuitry from indicating the incorrect number of data bits written into but not yet read from a memory.

5,357,237

IN A DATA PROCESSOR A METHOD AND APPARATUS FOR PERFORMING A FLOATING-POINT COMPARISON OPERATION

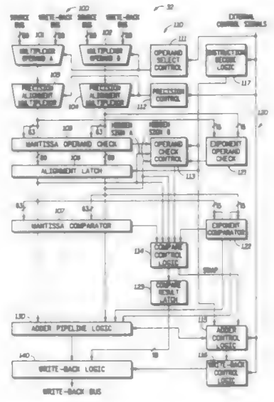
David R. Bearden; Raymond L. Vargas, and Elie I. Haddad, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 4, 1992, Ser. No. 941,011
Int. Cl.[5] G06F 7/012; H03K 5/22
U.S. Cl. 340—146.2 12 Claims

1. In a data processor having an execution unit for executing a plurality of floating-point operations using a plurality of data operands, each of said data operands having a mantissa portion and an exponent portion, a method for performing a floating-point comparison operation to determine an ordering of a first data operand and a second data operand, said method comprising the steps of:

performing a first bit-wise comparison of said exponent portion of said first data operand with said exponent portion of said second data operand, to determine an exponent comparison result while simultaneously performing a second bit-wise comparison of said mantissa portion of said first data operand with said mantissa portion of said second data operand to determine a mantissa comparison result;

using an operand sign bit of each of said first data operand and said second data operand and said exponent comparison result to order said first data operand and said second data operand if said exponent portions of said first data operand and said second data operand are not equal; and



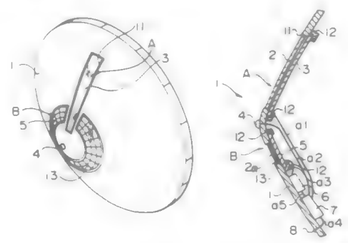
using said operand sign bit of each of said first data operand and said second data operand and said mantissa comparison result to order said first data operand and said second data operand if said exponent portions of said first data operand and said second data operand are equal.

5,357,238

WHEEL MARKER FOR VEHICLE INCLUDING SOLAR CELL

Toshiyuki Terada, Tokyo, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1992, Ser. No. 929,174
Claims priority, application Japan, Aug. 20, 1991, 3-072994
Int. Cl.[5] B60Q 1/00
U.S. Cl. 340—425.5 15 Claims



1. A wheel marker for a vehicle including a solar cell and disposed on a wheel cap to be mounted on a wheel of a vehicle, comprising:

said wheel cap having an exposed outer surface and an inner surface facing said wheel,

a light emitting section radially extending toward a center of said wheel cap,

a solar cell electricity generating section arranged around the central part of said wheel cap on the inner surface and including an opening in the wheel cap to receive sunshine in the day time, said solar cell electricity generating section including a solar cell,

a brightness detecting photosensor disposed at the center of said wheel cap, said brightness detecting photosensor being located on the outer surface of said wheel cap,

an inverter located on the inner surface of said wheel cap, and

a battery serving as a power source for said light emitting section, photosensor and inverter, said battery being located on the inner surface of said wheel cap and being charged by said solar cell,

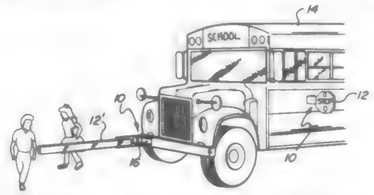
said light emitting section, photosensor, inverter and battery being electrically connected together so as to cause the light emitting section to change its light output with changes in the light detected by the photosensor.

5,357,239

ACTUATING DEVICE FOR BUS SAFETY GATE AND STOP SIGN

Ronald C. Lamparter, Grosse Pointe Shores, Mich., assignor to Transpec, Inc., Troy, Mich.

Filed May 17, 1993, Ser. No. 61,722
Int. Cl.[5] B60Q 1/26
U.S. Cl. 340—433 21 Claims



1. An actuating device (10) for operating a safety unit (12,12') mounted on a vehicle (14) and moveable between a retracted position adjacent the vehicle and an extended position extending outwardly from the vehicle, said actuating device (10) comprising:

a housing (16) fixedly mounted on said vehicle (14);

a bracket (18) pivotably mounted on said housing (16) for movement about a predetermined pivot axis between said retracted and said extended positions;

drive means (20) for pivoting said bracket (18) about said pivot axis between said retracted position and said extended position;

a helical torsion spring (22) having a plurality of coils (24), said spring being mounted about said pivot axis and torsionally interconnecting said bracket (18) and said drive means (20) to translate motion from said drive means to said bracket and to allow relative movement between said bracket and said drive means when a predetermined force is applied to said bracket (18);

characterized by including coiling means (32,42) for loading said spring (22) in a coiling direction whenever said bracket moves relative to said drive means so that said spring (22) will never be weakened by uncoiling.

5,357,240

EAS TAG WITH MECHANICALLY VIBRATING MAGNETIC ELEMENT AND IMPROVED HOUSING AND METHOD OF MAKING SAME

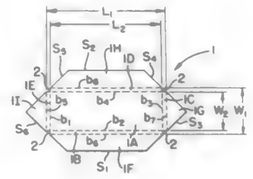
Robert J. Sanford, Coconut Creek; John Kowalczyk, and John D. Wulf, both of Boca Raton, all of Fla., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed Oct. 16, 1992, Ser. No. 962,274
Int. Cl.[5] G08B 13/14
U.S. Cl. 340—572 63 Claims

1. An EAS tag comprising:

a tag body including: a central region; side wall regions connected to and integral with the central region; first fold lines at the junctions of said central region and said side wall regions at which said side wall regions are folded; flap regions connected to and integral with said side wall regions; and second fold lines at the junctions of said side wall regions and said flap regions at which said flap regions are folded so as to come together to form a closed cover facing and spaced from said central region, thereby forming a closed housing;

and a first magnetic element, said first magnetic element



being disposed in said closed housing and mechanically vibrating in response to an interrogation field.

5,357,241

FAIL-SAFE LEAK DETECTOR

James G. Welch, Jr., Rte. 2, Box 333, Carencro, La. 70520; James W. Simmons, Rte. 1, Box 1080, Cotter, Ark. 72626, and Demetrius Vassiliou, 3420 Clearmount Ave., Odessa, Tex. 79761

Division of Ser. No. 739,467, Aug. 2, 1991, Pat. No. 5,229,750.
This application May 17, 1993, Ser. No. 61,748
Int. Cl.[5] G06B 21/00
U.S. Cl. 340—605 6 Claims

1. A fail-safe hot-water tank having a source for supplying water thereto, the fail-safe hot-water tank comprising:

(a) a tank for holding water;

(b) means for heating the contained water;

(c) a first passageway from the source of water to the tank;

(d) a first valve for keeping the first passageway open in the absence of detection of a water leak, and for keeping the passageway closed in response to the detection of a water leak from the tank;

(e) means for closing the first valve in response to the detection of a water leak from the tank, thereby shutting off the supply of water to the tank;

(f) a second valve for draining water from the tank to the external environment in response to the detection of a water leak from the tank;

(g) a second passageway from the second valve to the external environment;

(h) means for disconnecting the heating means in response to the detection of a water leak from the tank, thereby discontinuing the heating of the contained water; and

(i) a plurality of independent and repetetive means for detecting leakage of water from the tank, said detecting means being critically and sequentially dependent on differences of water level and so constructed and arranged that all of the independent and repetetive detecting means would have to fail in order for a leakage of water from the tank not to be detected, thereby providing and ensuring fail-safe leak detection.

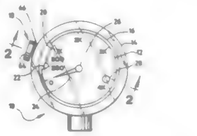
VOL 1167 ISS 3 OC 18 1994 UMI

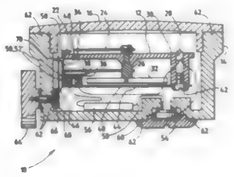
5,357,242

AIR PRESSURE GAUGE WITH SELF CONTAINED ADJUSTABLE ALARMS

Ralph R. Morgano, 901 Cromwell Ave., Westchester, Ill. 60154; Russell N. Reiling, 2527 Bucida Dr., Sarasota, Fla. 34239, and Russell N. Reiling, Jr., PSC 251 Box 1265, APO AP 96542-5368, Guam

Filed Dec. 8, 1992, Ser. No. 986,670
Int. Cl.[5] G08B 21/00
U.S. Cl. 340—626 4 Claims





1. An air tank pressure gauge for use by scuba divers comprising:

a dial having a pressure indicator range from 0 lbs. to about 4,000 lbs. and marks corresponding thereto, a cutout portion for limiting the travel of an alarm pointer to between 250 lbs. and 1,000 lbs., and an air tank pressure indicator needle attached to a rotatable center hub for indicating their air tank pressure;

a light emitting diode mounted in an LED holder which is attached to the dial near the 4,000 lb. mark;

a shoulder screw screwed into the LED holder;

a coiled Bourdon tube assembly connected to the center hub;

an indicator lever pivotally attached to the shoulder screw and having a horizontal portion, a first ninety-degree bend, a vertical portion, a second ninety-degree bend, and terminating in said alarm pointer;

two electrically-conductive contacts mounted on the horizontal portion of the indicator lever near the first ninety-degree bend, said contacts connected in series to the light emitting diode, a battery, and an audible alarm;

a shorting lever pivotally attached at one end to the rotatable center hub and having an electrically-conductive shorting bar mounted at the opposite end of the lever such that when the air tank pressure reaches a predetermined level, the shorting lever aligns with the horizontal portion of the indicator lever, causing the shorting bar to contact the electrically-conductive contacts, completing an electrical circuit and thereby energizing the audible alarm and the light emitting diode.

5,357,243

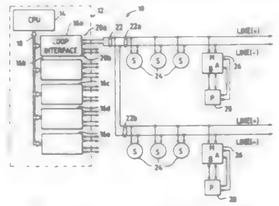
ELECTRICAL UNIT WITH AN ADJUSTABLE MECHANICAL SWITCH FOR ADDRESS VERIFICATION

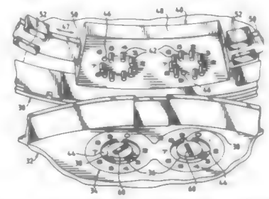
Lee D. Tice, Bartlett, Ill., assignor to Pittway Corporation, Chicago, Ill.

Filed Oct. 15, 1992, Ser. No. 961,496
Int. Cl.[5] H04Q 01/04; E05B 63/00; G08B 29/18
U.S. Cl. 340—825.07 37 Claims

1. An addressable device for receiving address coded signals from a central control, said device comprising:

a base and an electrical unit, said base and said unit being releasably couplable together to form the device and having a mechanical latch for latching said base and said unit together, said unit having a receiver for receiving address coded signals from said central control, said unit having an adjustable mechanical switch for setting an address therefor, said base having a key for fitting into said mechanical switch, said key having an address wherein said key couples with said switch and permits said fitting together of said base and said unit in response to a match





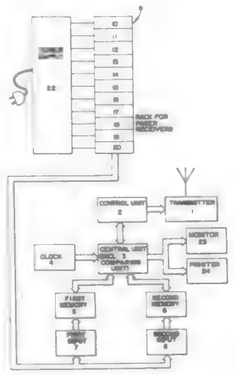
of addresses therebetween, said key and switch preventing said fitting together in the absence of said match.

5,357,244

PAGER SYSTEM WITH USE MONITORING

Nicolaas C. van Zijl, Woudrichem, Netherlands, assignor to Ericsson Radio Systems B.V., Emmen, Netherlands

Filed Jun. 5, 1992, Ser. No. 894,074
Claims priority, application Netherlands, Jun. 6, 1991, 9100977
Int. Cl.[5] G08B 5/22
U.S. Cl. 340—825.17 20 Claims



1. An electronic communication monitoring system comprising:

a plurality of portable receivers each having an energy source, each receiver including a communication system to communicate specific information to a user of the receiver, the communication system configured to communicate specific information upon receipt of a specific code by the receiver;

a control unit coupled to a transmitter to signal the receiver by transmitting through the transmitter the specific code for the receiver;

a first memory for storing information of each receiver;

a second memory for storing reference data of each receiver;

a clock having a time data output; and

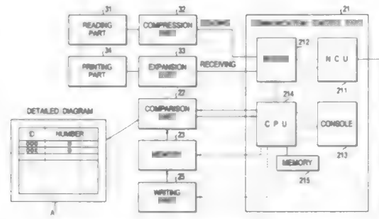
a central unit directly coupled to the control unit, to the first memory, to the second memory, and to the clock, the central unit including a comparison device for comparing the information of the receiver from the first memory to the reference data of each receiver from the second memory and the time data output to detect an undesired situation relating to the receiver and to communicate the undesired situation to the control unit wherein the control unit will cause the transmitter to transmit the specific code of the receiver corresponding to the undesired situation.

5,357,245

COMMUNICANT VERIFIER

Takashi Hagiwara, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 819,663, Jan. 13, 1992, abandoned, which is a continuation of Ser. No. 585,678, Sep. 20, 1990, abandoned. This application Dec. 1, 1993, Ser. No. 159,698
Claims priority, application Japan, Sep. 20, 1989, 1-244722
Int. Cl.[5] H04Q 1/00
U.S. Cl. 340—825.34 8 Claims



1. A communicant verifier for verifying a communicant and deciding whether a communication apparatus should continue communication based on a verifying result for the communicant, when the communication apparatus begins communication with the communicant, comprising:

ID memory means for memorizing an ID for identifying a communicant,

writing means for receiving the ID for an addressee communicant and registering the ID in said ID memory means, when the communication apparatus performs a sending operation, and

comparison means for receiving the ID from the addressee communicant, sequentially comparing the ID with each ID memorized in said ID memory means, and having the communication apparatus continue receiving only if conformance is detected, when the communication apparatus performs a receiving operation.

5,357,246

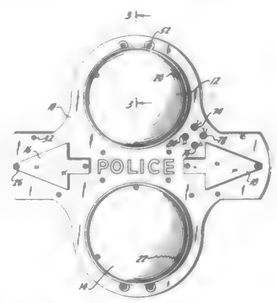
TORSO-MOUNTED SIGNAL DEVICE

Martin E. Wendelken, Jr., P.O. Box 176, New Milford, N.J. 07407

Filed Apr. 23, 1992, Ser. No. 872,362
Int. Cl.[5] G08G 1/095
U.S. Cl. 340—908 1 Claim

1. An electronic portable torso mounted signal device for directing vehicular traffic comprising:

A plurality of translucent lenses attached to a board, two of said lenses being circular shaped, one being red in color and one being green in color, two of said lenses being arrow shaped, and green in color, said board including a midline defining upper and lower sections, and being constructed to include a left and right extremity which are centrally located and projecting laterally and perpendicular to said board's midline, wherein said left extremity includes one of said arrow shaped lenses attached thereto for directing oncoming traffic to turn right and said right extremity includes the second said arrow shaped lens attached thereto for signaling oncoming traffic to turn left; said red circular lens is centrally located on said upper section of said board, said green circular lens is centrally



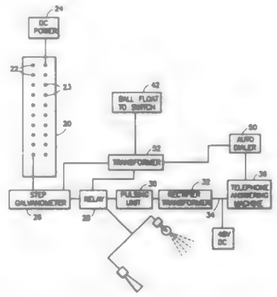
located on said lower section of said board, said lenses being illuminated by lamps mounted behind each of said lenses, a storage battery for supplying electrical current to said lamps, a plurality of switches being connected to said battery and said lamps to select and control the illumination of said lamps in singular or in combination, whereby a variety of directives with respect to traffic control are achieved.

5,357,247

METHOD AND EQUIPMENT FOR ALERTING OF DANGEROUS WATER LEVELS

Constantine Marnel, 20 Lavery La., and Mino Marnel, 10 Point Lookout, both of Milford, Conn. 06460

Filed Feb. 16, 1993, Ser. No. 17,792
Int. Cl.[5] G08B 23/00
U.S. Cl. 340—984 3 Claims



1. An improved, onboard boat water level alarm to alert at a remote location that water level is rising comprising a water level sensor, said sensor communicating with a step galvanometer, said galvanometer measuring diminutive DC current flow between horizontally paired electrodes when said electrodes are immersed in water, said electrodes receiving said diminutive DC electrical current from an external source, said step galvanometer being in communication with a relay, when said DC current source attains predetermined current levels said galvanometer activates said relay, said relay activating a counting pulsing unit, said pulsing unit pulses electrical power

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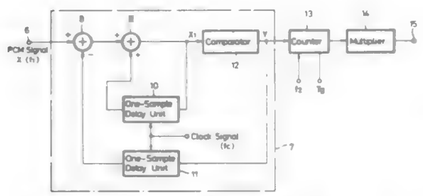
to a rectifier transformer which is in communication with a telephone answering machine; said pulsing unit and said rectifier transformer supplying a milliamp AC ringer surge to said answering machine, said surge activating said answering machine, said answering machine incorporating therein a time and date stamp mechanism, said mechanism recording time and date of said current flow through said water; said answering machine also being connected to a cellular telephone auto dialer, said answering machine communicating a signal to activate said auto dialer, said auto dialer having means to relay a prerecorded message, said activated auto dialer communicating said message to a remote location, a receiver of said message communicating with said answering machine via said cellular telephone, to hear previously recorded time and date stamp, said galvanometer, relay, pulsing unit, answering machine and telephone dialer are interconnected with telephone cable which is powered with a 48 V DC power source.

5,357,248

SAMPLING RATE CONVERTER

Takeshi Sasaki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 704,393, May 23, 1991, abandoned. This application Mar. 29, 1993, Ser. No. 39,528
Claims priority, application Japan, May 25, 1990, 2-134167
Int. Cl.[5] H03M *5/10*
U.S. Cl. 341—61 **4 Claims**



1. A sampling rate converter comprising:
a pulse-density modulator for converting a pulse-code-modulated signal, which has been sampled with a first sampling frequency, into a pulse-density-modulated signal;
a counter for counting pulses of said pulse-density-modulated signal and producing a count at each sampling period determined by a second sampling frequency;
said pulse-density-modulator comprising adder means, and comparator means having an input connected to an output of said adder means, and a one-sample delay unit having an input connected to an output of said adder unit, and an output of said one-sample delay unit being connected to a second input of said adder means.

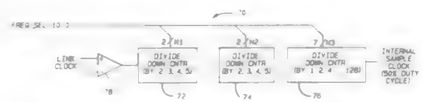
5,357,249

APPARATUS AND METHOD FOR HIGH SPEED FLEXIBLE MULTIPLEXING FOR FIBER OPTIC DATA TRANSMISSIONS

Daniel J. Azarea, Encino, and Christian R. Wiher, Hermosa Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 21, 1991, Ser. No. 779,756
Int. Cl.[5] H03M *9/00*
U.S. Cl. 341—100 **37 Claims**

1. A digital circuit for converting an electrical parallel digital data signal to an electrical serial digital data signal for transmission of the data, said circuit comprising:
a microcontroller for controlling the operation of the digital circuit; and
an input conditioner circuit including a parallel-to-serial logic circuit for converting electrical parallel data into electrical serial data, said parallel-to-serial logic circuit including a parallel-to-serial shift register for accepting parallel data at a sample clock rate and emitting serial data at a link clock rate, said input conditioner circuit further including a frequency divider circuit, said frequency divider circuit including three divide down counters selectively programmable by the microcontroller for dividing down the link clock rate to the sample clock rate in a desirable fashion such that the number of serial data bits per data word being shifted out of the parallel-to-serial



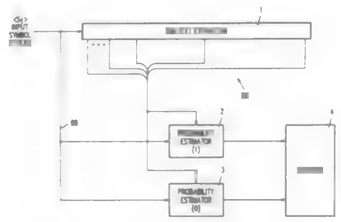
shift register is selectively set to a particular data word length by the ratio of the link clock rate to the sample clock rate, wherein a first divide down counter accepts two parallel select lines from the microcontroller, a second divide down counter also accepts two parallel select lines from the microcontroller and a third divide down counter accepts seven parallel select lines from the microcontroller, said link clock signal being input into the first divide down counter and said sample clock being output from the third divide down counter.

5,357,250

ADAPTIVE COMPUTATION OF SYMBOL PROBABILITIES IN N-ARY STRINGS

Paul D. Healey, San Jose, and Jorma J. Rissanen, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 20, 1992, Ser. No. 979,699
Int. Cl.[5] H03M *7/00*
U.S. Cl. 341—107 **43 Claims**



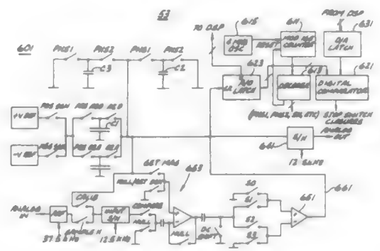
1. A method for estimating a probability that a given symbol of a finite alphabet will occur in a symbol string of symbol of the finite alphabet, the method comprising the steps of:
weighting occurrences of previously occurring symbols held in a storage medium with weight factors which are greater for more recently occurring symbols than for less recently occurring symbols; and
calculating a probability that the next occurring symbol will be the given symbol based on the weighted previous occurrences of the given symbol;
wherein the step of weighting includes defining a plurality of intervals within the storage medium, the given symbol having a respective number of occurrences in each of the plurality of intervals, the previously occurring symbols being weighted according to the number of intervals within which the previously occurring symbols fall.

5,357,251

ELECTRONIC FILTERS, SIGNAL CONVERSION APPARATUS, HEARING AIDS AND METHODS

Robert E. Morley, Jr., Richmond Heights; A. Maynard Engebretson, Ladue; George L. Engel, Crestwood, and Thomas J. Sullivan, Kirkwood, all of Mo., assignors to Central Institute For The Deaf, St. Louis, Mo.

Division of Ser. No. 792,706, Nov. 15, 1991, Pat. No. 5,225,836, which is a division of Ser. No. 180,170, Apr. 11, 1988, Pat. No. 5,111,419, which is a continuation-in-part of Ser. No. 172,266, Mar. 23, 1988, Pat. No. 5,016,280. This application Apr. 30, 1993, Ser. No. 56,054
Int. Cl.[5] H03M *1/12*
U.S. Cl. 341—172 **20 Claims**



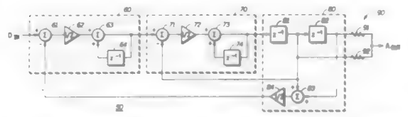
1. Electronic signal conversion apparatus comprising:
means for temporarily holding a sample of an analog signal which is to be converted to a digital value;
first and second capacitors;
switch means generally operable for executing selective operations including selectively charging at least one of the first and second capacitors, selectively discharging at least one of the first and second capacitors, and selectively connecting the first and second capacitors so that a redistribution of charge between them occurs;
means for operating said switch means to make it perform a sequence of the selective operations among which operations the redistribution of charge repeatedly occurs a number of times until a predetermined electrical condition, involving the sample of the analog signal, occurs; and
means for producing a digital value as a function of the number of times the redistribution of charge occurs, so that the digital value so produced when the operations are executed is representative of the digital value to which the sample of the analog signal is converted.

5,357,252

SIGMA-DELTA MODULATOR WITH IMPROVED TONE REJECTION AND METHOD THEREFOR

Robert C. Ledzius, Austin, and James S. Irwin, Paige, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 22, 1993, Ser. No. 34,967
Int. Cl.[5] H03M *3/00*
U.S. Cl. 341—143 **23 Claims**



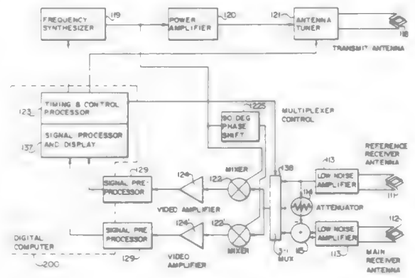
1. A sigma-delta modulator with improved tone rejection, comprising:
a first stage having an input terminal for receiving an input signal, a feedback input terminal for receiving a first feedback signal, and an output terminal for providing a first output signal;
a second stage having an input terminal coupled to said output terminal of said first stage, a feedback input terminal for receiving a second feedback signal, and an output terminal for providing a second output signal;
filter means coupled to said first and second stages, for attenuating a frequency domain characteristic of said second output signal near a frequency equal to one-half of a frequency of a clock of the sigma-delta modulator to provide a filtered signal, and for providing said filtered signal as said first feedback signal; and
feedback means coupled to said second stage, for providing said second feedback signal in response to said second output signal;
the sigma-delta modulator providing an output signal thereof in response to said second output signal.

5,357,253

SYSTEM AND METHOD FOR EARTH PROBING WITH DEEP SUBSURFACE PENETRATION USING LOW FREQUENCY ELECTROMAGNETIC SIGNALS

Paul Van Etten, Clinton, and Russell D. Brown, Holland Patent, both of N.Y., assignors to Earth Sounding International, Marina Del Ray, Calif.

Filed Apr. 2, 1993, Ser. No. 42,395
Int. Cl.[5] G01S *13/24, 7/292*
U.S. Cl. 342—22 **34 Claims**



1. A system for earth exploration by generating and radiating low frequency electromagnetic energy deeply into the earth and analyzing return information, the system comprising:
a) means for generating a series of pulsed electromagnetic signals in a low frequency range less than about 3 Megahertz, so as to form a series of electromagnetic pulses having respective spectra which collectively cover a portion of the low frequency range that is substantially larger than any individual pulse's spectrum;
b) means for radiating the electromagnetic pulses into the earth, so as to penetrate the earth to substantial depths;
c) means for detecting electromagnetic reflections from subsurface layers or objects; and
d) means for extracting deep subsurface return information from the electromagnetic reflections.

5,357,254

LOCATION MONITORING SYSTEM

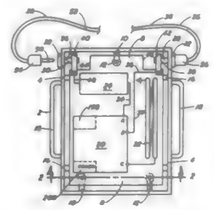
Carl L. C. Kah, Jr., 778 Lakeside Dr., N. Palm Beach, Fla. 33408

Division of Ser. No. 777,189, Sep. 18, 1985, Pat. No. 5,245,314. This application Jul. 26, 1993, Ser. No. 97,156
Int. Cl.[5] G01S *13/74*
U.S. Cl. 342—42 **9 Claims**

1. A microwave receiving device for receiving a signal from a microwave transmitting device, said receiving device and transmitting device being mounted on relatively movable ob-

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jects, the microwave receiving device having a microwave receiving circuit means, said receiver circuit means having range determination means for determining the range to the transmitter in order to discriminate between at least two ranges, said two ranges being a short range and a longer range, said last named means including a variable position switch, said variable position switch having a short range setting and a longer range setting, an alarm means, an electronic switching



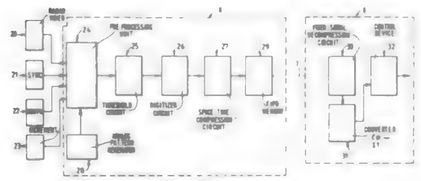
means positioned between said alarm means and said range determination means, said range determination means sending an output signal to said electronic switching means to control it, said electronic switching means will not permit said alarm means to be actuated when the range is determined to be less than said set range, said electronic switching means will permit said alarm means to be actuated when the separation range between transmitter and receiver exceeds said set range.

5,357,255

SYSTEM FOR THE REMOTE DISPLAY OF OUTPUT DATA OF AT LEAST ONE RADAR

Bernard C. Giraudy, Taverny, France, assignor to Sopelem-Sofretec, Bezons, France

Filed Apr. 21, 1993, Ser. No. 50,885
Claims priority, application France, Jun. 18, 1992, 92 07421
Int. Cl.[5] G01S *7/04*
U.S. Cl. 342—58 **9 Claims**



1. A system for remote display of radar output data on a remote television display assembly unit comprising a television monitor associated with a videographic memory, said data containing at least one videographic signal and scanning data, said system comprising in combination:

pre-processing means for processing different radar output data in real time, said pre-processing means receiving additional input from an analog test pattern generator, said pre-processing means being connected to a thresholding circuit means;

said thresholding circuit means being adapted to partially or completely threshold background noise of said videographic signal received at its input, said thresholding circuit means being connected to a digitizer circuit means;

said digitizer circuit means, digitizing said videographic signal after thresholding, being connected to space-time compression means effecting space-time compression of said digitized videographic signal, containing real time data and background noise, said space-time compression being connected to FIFO memory means;

said FIFO memory means, storing in real time said digitized compression videographic signal, being connected to transmission means;

said transmission means, transmitting in real time in a proprietary serial format said scanning data and compressed videographic signal to said remote television display assembly unit;

said remote television display assembly unit comprising transmission receiver means for receiving data from said transmission means, said remote television display assembly unit including a real time videographic decompression circuit means for decompressing said compressed videographic signal, said videographic decompression circuit means being connected to converter means;

said converter means for converting said videographic signal data entered in polar coordinates into cartesian coordinates,

said conversion performed with the aid of compression and scanning data; said converter means being connected to control means;

said control means controlling the content of said videographic memory associated with said television monitor display to control said videographic memory as a function of videographic signal and scanning data, permitting display of a complete image of said radar data;

said control means being connected to after glow processor means;

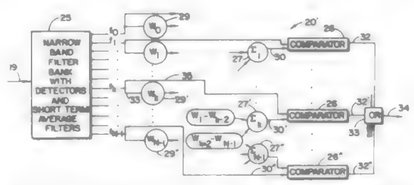
said after glow processor means controlling certain zones of said videographic memory in accordance with a mathematical treatment formula, writing to said videographic memory, through multiplexer means disposed therebetween; said multiplexer means further receiving data from radar input for display in real time of a complete radar image with a determined background noise level.

5,357,256

RADAR RECEIVER WITH ADAPTIVE CLUTTER THRESHOLD REFERENCE

Salvador J. Peperone, Columbia, Md., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Aug. 17, 1993, Ser. No. 108,201
Int. Cl.[5] G01S *13/526*
U.S. Cl. 342—160 **8 Claims**



1. The method of detecting a moving target signal below the level of clutter in the intermediate frequency return signals of a radar receiver, comprising:

delaying the intermediate frequency signals of said radar receiver;

multiplying the delayed intermediate frequency signals with undelayed intermediate frequency signals from said radar receiver to provide correlated signals;

decomposing said correlated signals into the spectral frequency components of said correlated signals;

weighting said spectral frequency components;

forming a plurality of individual thresholds from selected ones of said weighted spectral frequency components;

individually comparing each of said spectral frequency components with an individual one of said thresholds, the selection of said weighted spectral frequency components to form each of said thresholds being such that the spectral frequency component being compared with a threshold is not used in forming that threshold; and

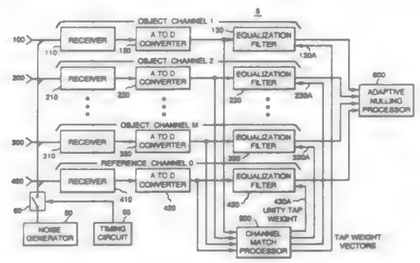
detecting a target signal whenever any one of said spectral frequency components exceeds the threshold against which that spectral frequency component is being compared.

5,357,257

APPARATUS AND METHOD FOR EQUALIZING CHANNELS IN A MULTI-CHANNEL COMMUNICATION SYSTEM

Robert L. Nevin, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 5, 1993, Ser. No. 43,080
Int. Cl.[5] G01S *7/40*
U.S. Cl. 342—165 **23 Claims**



1. Apparatus for equalizing a reference channel and at least one object channel in a communication system comprising:

a reference channel receiver for receiving said reference channel;

an object channel receiver for receiving said object channel;

a white noise generator coupled to said reference channel receiver and said object channel receiver,

reference channel sampling means, coupled to said reference channel receiver to produce reference channel sampled signals;

object channel sampling means, coupled to said object channel receiver to produce object channel sampled signals;

power spectral density estimate determining means, coupled to said object channel sampling means, for determining power spectral density estimates from said object channel sampled signals;

cross-spectral density estimate determining means, coupled to said reference channel sampling means and said object channel sampling means, for determining cross-spectral density estimates in said object channel with respect to said reference channel from said reference channel sampled signals and said object channel sampled signals;

dividing means, coupled to said power spectral density estimate determining means and said cross-spectral density estimate determining means, for dividing said power spectral density estimates by said cross-spectral density estimates to derive a correlation ratio which specifies an equalization filter weight vector, and

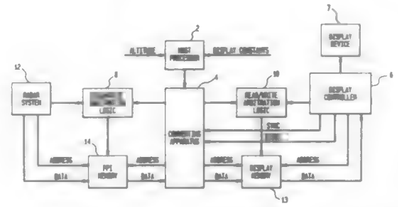
first equalization filtering means, situated in said object channel, for filtering said object channel as specified by said equalization filter weight vector to equalize said object channel with respect to said reference channel.

5,357,258

ARRANGEMENT FOR CONVERTING A PLAN POSITION INDICATOR RADAR DISPLAY TO A SCALED PERSPECTIVE DISPLAY

Reed R. May, Boca Raton, Fla., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Nov. 26, 1993, Ser. No. 157,252
Int. Cl.[5] G01S *7/512*
U.S. Cl. 342—185 **14 Claims**



1. An arrangement for converting a plan position indicator radar display to a scaled perspective display, comprising:

first memory means for storing plan position indicator image data;

second memory means;

converting means connected to the first memory means and to the second memory means for converting the stored plan position indicator image data to perspective display image data, and for transferring the perspective display image data to the second memory means, whereby said perspective display image data is stored in the second memory means ready for direct display on a bit-mapped display means; and

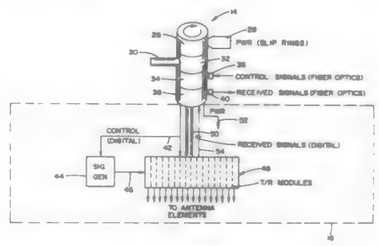
means for addressing the first memory means for each pixel of the data stored in the second memory means, whereby the second memory means is completely filled with the most appropriate pixel values at a frame rate for eliminating further pixel filling and erasing.

5,357,259

AIRCRAFT DEPLOYABLE ROTATING PHASED ARRAY ANTENNA

Paul Nosal, Bethpage, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Aug. 13, 1993, Ser. No. 106,874
Int. Cl.[5] G01S *1/44*
U.S. Cl. 342—398 **6 Claims**



1. An aircraft surveillance antenna comprising:

a foil-shaped enclosure deployable from within a fuselage of an aircraft;

a plurality of phased array antenna elements located in the enclosure;

a drive shaft connected at a first end to the enclosure and at another end to the aircraft for selectively rotating the enclosure 360°; and

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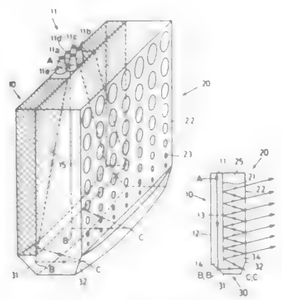
a rotary joint disposed along the drive shaft for coupling therethrough
electrical power and control signals to the antenna elements; and
received signals from the antenna elements;
the antenna being capable of simultaneous mechanical rotation and electronic radar scan.

5,357,260

ANTENNA SCANNED BY FREQUENCY VARIATION

Antoine Roederer, Breloftpark 32, Noordwijk, and Markus Kari, Prof. Aalbersiaan 11, Noordwijkerhout, both of Netherlands

Continuation of Ser. No. 720,081, Jun. 24, 1991, abandoned.
This application Jan. 15, 1993, Ser. No. 5,880
Claims priority, application France, Jul. 10, 1990, 90 08743
Int. Cl.[5] H01Q 3/22, 15/23, 11/02
U.S. Cl. 343—754 9 Claims



1. An antenna for radiating radio frequency electromagnetic energy emitted from an exciter, the direction of radiation being controllable by altering the frequency of said radio frequency electromagnetic energy about a design center frequency f_0 and a wavelength λ_0, comprising:
radiating means for receiving at an input a plane wave of radio frequency electromagnetic energy having frequency f and wavelength λ and subjecting the plane wave to a plurality of successive reflections within said radiating means;
and wherein said radiating means includes first and second parallel reflecting members, where said first parallel reflecting member is at ground potential and serves also as a reference plane against which the incidence angle of incoming radio frequency energy at said input of said radiating means is measured, and wherein said first and second parallel reflecting members are spaced apart by a distance h greater than the wavelength λ of said plane wave of radio frequency electromagnetic energy received at said input thereby causing a phase shift of said plane wave between two consecutive reflection points on said second parallel reflecting member, said phase shift varying as a function of the frequency f and wavelength λ of plane wave, and wherein said second parallel reflecting member is permeable to radio frequency electromagnetic energy thereby allowing a fraction of the plane wave of radio frequency energy reflecting between said first and second parallel reflecting members to radiate to the outside after predetermined reflections in order to generate a set of radiated waves radiated from said radiating means, said set of radiated waves defining a transmission pattern having a main lobe whose direction is variable as a function of said frequency f and wavelength λ; and
reflector means for receiving radio frequency energy at an input and reflecting said radio frequency energy as said plane wave into said input of said radiating means at a predetermined angle of incidence α to said first parallel reflecting member, and wherein said reflector means includes a hyperbolic reflector;
exciter means for receiving said radio frequency electromagnetic energy from said exciter at an input near the focal point (A) of said hyperbolic reflector and directing said radio frequency electromagnetic energy into said input of said reflector means; and
a plurality of feed horns located near said focal point (A) each of which is slightly away from said focal point (A) spatially offset from the other, and each of which may be selected to couple energy from said exciter into said exciter means thereby enabling two dimensional scanning by selection of an appropriate combination of feed horn and frequency of radio frequency electromagnetic energy,
and wherein the angle of radiation of said set of radiated waves θ is governed by the following relationship

$$\theta = \arcsin\{(m - n(\lambda/\lambda_0)\cos^2\alpha)/(n\sin\alpha)\}$$

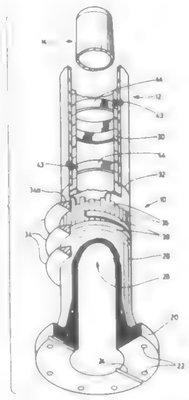
where
θ = the angle of radiation of said main lobe relative to said second parallel reflecting surface;
λ = the wavelength of the radio frequency electromagnetic energy received from said exciter;
λ_0 = the wavelength of the design center frequency for operation of said antenna in radiating radio frequency electromagnetic energy received from said exciter;
α = the angle of incidence of said plane wave of radio frequency
electromagnetic energy into said radiating means relative to said reference plane; and m and n are integers selected in such a manner that the radiation angle θ equals the angle of incidence α at said design center frequency having wavelength λ_0.

5,357,261

ANTENNA FOR MATCHED TRANSMISSION SYSTEM

Don E. Brandigampola, 131 Dimson Ave., Guelph, Ontario, Canada N1G 3C5

Filed Mar. 8, 1993, Ser. No. 27,647
Int. Cl.[5] H01Q 9/30, 1/32
U.S. Cl. 343—900 6 Claims



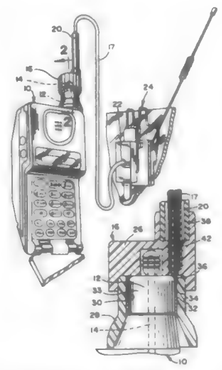
1. A free standing antenna for use in association with high-stress environments for radiating or receiving radio wave transmissions, said environments subjecting said antenna to extremes of stress including flexing stress and temperature stress, and said antenna comprising;
an insulating, non-radiating mounting base member adapted to be secured adjacent to said high-stress environment , said base member being formed of glass fibre reinforced resin materials containing fibres extending in a longitudinal direction, along an axis of said base, and further fibres running in a generally annular fashion in planes generally transverse to said axis, and said base member further defining a fastening flange, and a plurality of fastening holes formed in said fastening flange;
an insulating non-radiating generally tapering neck portion formed of glass fibre reinforced resin extending upwardly from said fastening flange;
an insulating non-radiating generally cylindrical junction head formed of glass fibre reinforced resin and extending integrally upwardly from said tapering neck portion, said head and said neck portion being integral with said base member and located along a common central axis;
a metallic antenna column secured to said cylindrical head, said column being formed of hollow tubular metal defining outer and inner wall surfaces, and progressively tapering from a larger end to a smaller end;
a metallic cylindrical antenna junction at said larger end of said antenna column adapted to make a snug fit over said glass fibre reinforced resin cylindrical junction head of said base member;
at least three metallic electrical connection means secured to said metallic antenna column adjacent said larger end at spaced apart points along said column for attachment of electrical connections thereto from radio equipment;
a generally dome shaped cap secured to said smaller end of said column, and,
a hollow cylindrical damping housing secured within said column adjacent to but spaced below said cap, said damping housing being located offset relative to the central axis of said antenna column.

5,357,262

AUXILIARY ANTENNA CONNECTOR

Herbert R. Blaese, 3314 Olcott Ave., Chicago, Ill. 60634

Continuation of Ser. No. 805,463, Dec. 10, 1991, abandoned.
This application Aug. 17, 1993, Ser. No. 108,175
Int. Cl.[5] H01Q 1/50, 1/00
U.S. Cl. 343—906 12 Claims



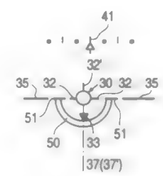
9. An antenna system for communication with antenna input/output circuitry of a portable hand held transmitter/-receiver having a radiating antenna, which comprises:
a length of conductive cable having a proximal end and a distal end and comprising a main conductor and a ground conductor;
a connector attached at said proximal end to said main conductor;
means at said distal end for conductive connection with an antenna;
said connector being adapted for removable physical connection over the radiating antenna of said transmitter/-receiver and for providing proximity coupling of said main conductor to said transmitter/receiver for transfer of electrical energy free of direct electrical connection between said main conductor and the antenna input/output circuitry;
said connector being in physical connection to said transmitter/receiver through an outer casing which is made of an electrically non-conductive material, said transfer of electrical energy communicating through said non-conductive material.

5,357,263

DISPLAY INSTRUMENT FOR AIRCRAFT FOR SHOWING THE AIRCRAFT ORIENTATION, PARTICULARLY THE ROLLING AND PITCHING POSITION OR THE FLIGHT PATH ANGLE

Gerhard Fischer, Immenstaad, and Werner Fuchs, Markdorf, both of Fed. Rep. of Germany, assignors to Dornier Luftfahrt GmbH, Fed. Rep. of Germany

Filed Mar. 20, 1992, Ser. No. 854,836
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1991, 4109016
Int. Cl.[5] G09G 3/02
U.S. Cl. 345—9 8 Claims



1. A display system for aircraft for showing the attitude comprising a projection system including devices for displaying symbol features representative of the aircraft position in the exterior view of a pilot, said symbol features including:
an artificial horizon symbol which is stabilized fixed to the earth for displaying the artificial horizon;
an airplane symbol which represents the aircraft; and
an information symbol concentrically surrounding the airplane symbol in the form of a variable circular curve of a circular ring segment;
wherein the information symbol having an arc length, has a radial center axis, the information symbol changing in size as a function of measured values depending on at least one of the roll angle (ϕ) with respect to its angular position, the pitch position (θ) relative to the dimension of the circular ring segment, and a flight path angle relative to a course of the aircraft;
wherein the relative position of the airplane and information symbol with respect to one another provide a flight path indication with respect to the pilot's exterior view of the outside world; and
wherein the arc length of the information symbol amounts to 180°−2 times the flight path angle.

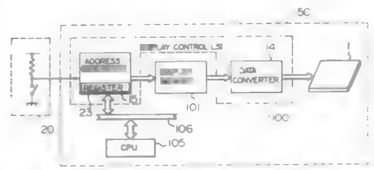
VOL 1167 ISS 3 OCT 18 1994 UMI

5,357,264

DISPLAY CONTROLLER FOR DOT MATRIX DISPLAY

Hiromichi Itoh, Yokohama; Shigenobu Ishimoto, Chigasaki; Yoshihiro Hayashi, Narashino, and Susumu Onodera, Yokohama, all of Japan, assignors to Hitachi, Ltd. and Hitachi Video & Information System, Inc., both of Tokyo, Japan

Filed Apr. 16, 1992, Ser. No. 869,173
Claims priority, application Japan, Apr. 18, 1991, 3-086444
Int. Cl.[5] G09G 3/00
U.S. Cl. 345—112 8 Claims



1. An information processing system including a display controller having a plurality of display modes for displaying display data having smaller vertical number of pixels than a vertical number of pixels of a display and having address generation means for generating read addresses for a display memory of the display data representing the display modes, comprising:

a single hardware switch means responsive to an operation by a user dedicated to generating a signal representing one of the display modes designed by the user and for outputting the signal directly to said display controller without passing through a CPU for executing an application program;

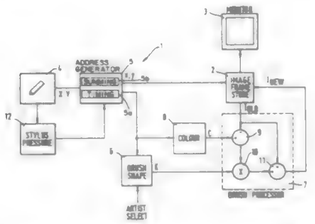
said address generation means generating a read address representing the display mode corresponding to said signal applied thereto.

5,357,265

ELECTRONIC GRAPHIC SYSTEM

Anthony D. Searby, and Paul R. N. Kellar, both of Newbury, England, assignors to Quantel Limited, Newbury, England

Continuation-in-part of Ser. No. 510,162, Apr. 17, 1990, Pat. No. 5,276,787. This application Mar. 6, 1991, Ser. No. 665,300
Claims priority, application United Kingdom, Jan. 31, 1991, 9102071.8
Int. Cl.[5] G06F 15/72
U.S. Cl. 345—153 16 Claims



8. An electronic graphic system for modifying image data representing an image in accordance with user defined data to create modified data representing a modified image, the system comprising:

a memory for storing image data;

user operable input means for identifying areas of image data in the memory; and

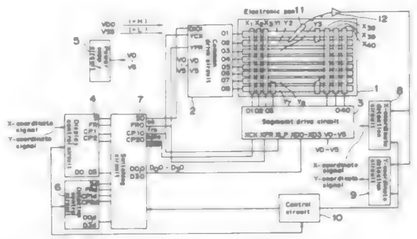
modifying means for modifying image data in each identified area by combining the image data with data representing a user selected color in accordance with a preselected algorithm, the input means being sensitive to pressure applied hereto and being arranged to generate a pulse signal comprising a generate a pulse signal comprising sequence of strobe pulses at instances of time separated from each other by respective periods of time determined by the instantaneous pressure applied to the input means by a user, each strobe pulse of the pulse signal being used to initiate the modifying of image data by the modifying means.

5,357,266

DISPLAY-INTEGRATED TYPE TABLET DEVICE

Takao Tagawa, 2074-11, Mise-cho, Kashihara, Japan

Filed Mar. 11, 1992, Ser. No. 849,733
Claims priority, application Japan, Mar. 12, 1991, 3-046751; Mar. 18, 1991, 3-052393; Apr. 9, 1991, 3-075415; Feb. 4, 1992, 4-019004
Int. Cl.[5] G09G 3/02
U.S. Cl. 345—173 18 Claims



1. A display-integrated type tablet device, comprising:

a liquid crystal panel having a plurality of first electrodes arrayed in parallel to one another and a plurality of second electrodes arrayed in parallel to one another in a direction other than the direction in which the first electrodes are arrayed;

an electronic pen having at its tip an electrode coupled with the first electrodes and the second electrodes of the liquid crystal panel by floating capacity;

a display control circuit for producing a display control signal and display data for displaying an image to the plurality of first electrodes and the plurality of second electrodes of the liquid crystal panel;

a detection control circuit for producing a detection-scanning control signal for scanning the first electrodes and the second electrodes to detect coordinates of the tip of the electronic pen on the liquid crystal panel;

a switching circuit for switchedly selecting a side of the display control circuit for a display period to produce the display control signal and display data from the display control circuit and for switchedly selecting a side of the detection control circuit for a coordinate detection period to produce the detection-scanning control signal from the detection control circuit, under control of a control circuit;

a second-electrode drive circuit for generating a second-electrode drive signal during the display period to select in turn among the second electrodes according to the display control signal and for generating a second-electrode scan signal during the coordinate detection period to feed a scan voltage to the second electrodes in turn according to the detection-scanning control signal from the switching circuit;

a first-electrode drive circuit for generating a first-electrode drive signal during the display period to display pixels relative to the second electrodes selected by the second-electrode drive signal according to the display control signal and display data and for generating a first-electrode scan signal during the coordinate detection period to feed a scan voltage to the first electrodes in turn according to the detection-scanning control signal from the switching circuit; and

a coordinate detection circuit for receiving an input of induced voltage developed to the electrode of the electronic pen according to the second-electrode scan signal and the first-electrode scan signal fed from the second-electrode drive circuit and the first-electrode drive circuit to the second electrodes and the first electrodes, respectively, and then detecting coordinates of the tip of the electronic pen by a predetermined procedure on the basis of the induced voltage derived from the electronic pen to produce an x-coordinate signal and a y-coordinate signal, wherein

the control circuit sets the display period and the coordinate detection period, and controls the switching circuit in such a way that after the first-electrode drive signal and the second-electrode drive signal for effecting display have been applied to the last first electrode and the last second electrode in the display period, respectively, for a specified time period, the scanning of the first electrodes and the second electrodes for coordinate detection is not immediately started, but a specified idle time is allowed until the display period is succeeded by the coordinate detection period;

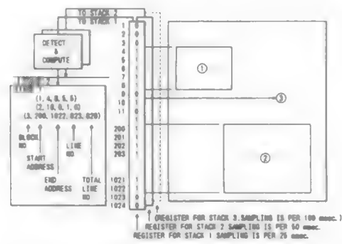
wherein the idle time is so set that when a voltage applied to the first electrodes and the second electrodes and set by a first signal for setting the state in which a voltage is applied to the first electrodes and the second electrodes during the display period is switched to a voltage applied to the first electrodes and the second electrodes and set by a second signal for setting the state in which a voltage is applied to the first electrodes and the second electrodes during the coordinate detection period, the idle time is approximately equal to a period over which an induced voltage developed to the tip electrode of the electronic pen reaches a reference level for the coordinate detection period.

5,357,267

IMAGE INFORMATION CONTROL APPARATUS AND DISPLAY SYSTEM

Hiroshi Inoue, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 964,556, Oct. 21, 1992, abandoned, which is a continuation of Ser. No. 721,245, Jun. 26, 1991, abandoned. This application Dec. 3, 1993, Ser. No. 161,097
Claims priority, application Japan, Jun. 27, 1990, 2-171102
Int. Cl.[5] G09G 3/36
U.S. Cl. 345—201 11 Claims



1. An image information control apparatus, for performing partial writing to a VRAM, said apparatus comprising:

a partial write detector for detecting and storing accessed addresses of the VRAM in units of lines in a scanning direction, said detector comprising at least two memory units arranged so that, during one predetermined time period, one of the memory units is used in a detecting operation to detect new accessed-address information while another of the memory units is used to retain previously detected information and, during a succeeding time period, the functions of the memory units are switched so that the other of the memory units is used in the detecting operation while the one of the memory units is used to retain the information detected in the preceding time period;

means for performing calculations to recognize partial write information from contents of each of the two memory units;

further memory units for storing the respective calculation results;

means for comparing contents of the further memory units to determine a size relationship between partial write areas;

means for controlling a partial write signal on the basis of the size relationship between partial write areas and externally outputting the signal; and

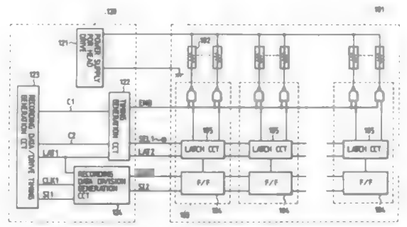
means for forcibly interrupting partial writing, even during execution, in accordance with a state of an external refresh control signal, performing refresh, and resuming partial writing in accordance with a partial write state and a change in state of the refresh control signal.

5,357,268

INK JET RECORDING HEAD IN WHICH THE EJECTION ELEMENTS ARE DRIVEN IN BLOCKS

Hideaki Kishida, Yamato; Akira Katayama, Yokohama; Kimiyuki Hayasaki, Yokohama; Nobuyuki Watanabe, Yokohama; Jiro Moriyama, Yokohama; Toshiaki Hirosawa, Hiratsuka; Torachika Osada, Kawasaki; Hidemi Kubota, Tokyo; Yutaka Koizumi, Tokyo, and Mineo Kaneko, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 649,725, Feb. 1, 1991, Pat. No. 5,173,717.
This application Aug. 24, 1992, Ser. No. 933,928
Claims priority, application Japan, Feb. 2, 1990, 2-22173; Feb. 2, 1990, 2-22184; Feb. 2, 1990, 2-22193; Feb. 26, 1990, 2-45315
Int. Cl.[5] B41J 2/05
U.S. Cl. 347—13 17 Claims



1. A recording method comprising the steps of:

providing an ink jet recording head including a plurality of ink passages disposed correspondingly to a plurality of ejection outlets for ejecting ink, a plurality of energy generators which generate energy for ejecting ink, a common chamber for communicating with said ink passages and drive elements which drive and control said energy generators in accordance with recording data to be input and control signals;

dividing recording data into intervals of a predetermined number;

transferring the divided recording data in the sequence to said drive elements of said recording head; and

driving at the same time said energy generators in intervals of the predetermined number to eject ink.

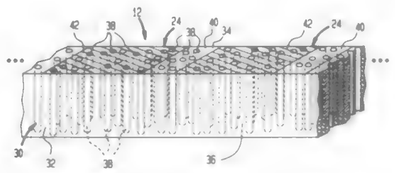
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5,357,269

ELECTRICAL PRINT HEAD FOR THERMAL PRINTER

Alexander M. Zeltser, San Diego, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 1, 1992, Ser. No. 891,015
Int. Cl.[5] B41J *2/335*
U.S. Cl. 346—76 PH 17 Claims



1. A print head for a thermal printer comprising:
a print head having a body of relatively non-conductive matrix material, the body having a top surface, a bottom surface and a length;
a plurality of thin closely spaced apart conductive members within the body, the conductive members having top ends and bottom ends, and being arranged essentially parallel to each other at suitable angles to the top and bottom surfaces of the body, the conductive members being formed in situ by directional solidification of one member of a group comprising a eutectic and a near eutectic consisting of very fine metal-like conductive members within the matrix material, the members being highly conductive relative to the matrix material and being laterally insulated and supported by the head body; and
a plurality of small-area conductive tabs arranged in closely spaced relation along the length of the top surface of he body of the head, such respective one of the tabs being connected to the upper ends of the conductive members within the area of said each respective one of the tabs the bottom ends of the members being contact an electro-resistive donor element lying against the bottom surface of the head body such that closely spaced electrodes of the print head are formed by multiple of said conductive members connected respectively to the conductive tabs.

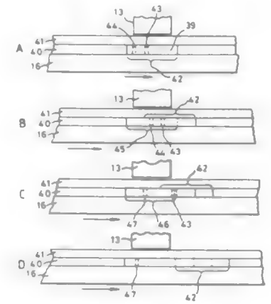
5,357,270

THERMAL TRANSFER PRINTING

Raymond J. Herbert, Leigh-on-Sea, United Kingdom, assignor to Neopost Limited, Essex, United Kingdom

Continuation of Ser. No. 629,570, Dec. 18, 1990, abandoned. This application Sep. 30, 1992, Ser. No. 953,771
Claims priority, application United Kingdom, Dec. 22, 1989, [redacted]
Int. Cl.[5] B41J *2/315*
U.S. Cl. 346—76 PH 12 Claims

1. A method of thermal transfer printing including the step of feeding a ribbon having an ink layer together with a print receiving medium at a speed equal to that at which said print receiving medium is fed relative to a thermal print head, said thermal print head including selectively heatable print elements, and the step of heating selected areas of said ink layer of said ribbon by heating selected ones of said print elements to effect ink transfer from said ink layer of said ribbon to said print receiving medium and including the steps of repeatedly heating said selected ones of said print elements a plurality of times and controlling the speed at which said ribbon and print receiving medium are fed to cause repeated heating of each of said selected areas a plurality of times and thereby to ensure



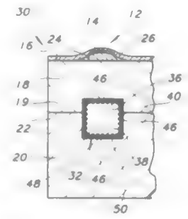
that the required transfer of ink is effected to produce a high quality print impression on said print receiving medium.

5,357,271

THERMAL PRINTHEAD WITH ENHANCED LATERLA HEAT CONDUCTION

Christopher A. Wiklof, Everett, and Kenneth D. Lakey, Bothell, both of Wash., assignors to Intermec Corporation, Everett, Wash.

Filed Jan. 19, 1993, Ser. No. 5,664
Int. Cl.[5] B41J *2/335*
U.S. Cl. 346—76 PH 17 Claims



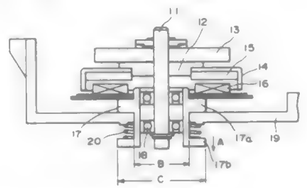
1. A thermal printhead for printing on a thermally sensitive print medium, the print medium being movable relative to the printhead in a direction of printing, comprising:
a support base having a first side positionable toward the print medium and a reverse second side;
a plurality of heating elements mechanically attached to the first side of the support base, the heating elements being arranged to define an array extending in an array direction generally transverse to the direction of printing, the heating elements generating heat when activated for thermal printing and being positioned in proximity with the print medium to transfer a portion of the generated heat thereto during thermal printing, the heating elements retaining a portion of the generated heat as residual heat; and
an elongated heat conduction member coupled to the support base in the thermal contact with the plurality of heating elements to absorb heat generated by the heating elements and being oriented in general alignment with the array to distribute any absorbed heat along the array in the array direction, the conduction member distributing the residual heat generated by any heating elements along a first portion of the array greater than the residual heat generated by other heating elements along a second portion of the array to the other heating elements to equalize heating element temperatures along the array, the conduction member being a fluid-tight conduction chamber containing a heat transfer fluid in a liquid state which changes to a gaseous state above a preselected temperature, the heating elements along the first portion of the array generating temperatures in the conduction chamber along the first portion of the array below the preselected temperature when operating under a normal activation schedule and the heating elements generating temperatures in the conduction chamber along the first portion of the array at or above the preselected temperature when the heating elements along the first portion of the array are operating under a heavier than normal activation schedule, such that the residual heat generated by the heating elements along the first portion of the array operating under the heavier than normal activation schedule will generate a temperature in the conduction chamber along the first portion of the array above the preselected temperature and cause the heat transfer fluid to change from the liquid state to the gaseous state, and while in the gaseous state the heat transfer fluid moves longitudinally through the conduction chamber to a cooler portion thereof whereat the heat transfer fluid returns to the liquid state and transfers heat to the heating elements along the second portion of the array.

5,357,272

DEFLECTION SCANNER WHICH IS ELASTICALLY FIXED IN ITS HOUSING

Hideaki Watanabe, Akita, and Mikio Nakasugi, Chofu, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1992, Ser. No. 916,628
Claims priority, application Japan, Jul. 29, 1991, 3-211483; Jul. 29, 1991, 3-211484; Nov. 13, 1991, 3-297186
Int. Cl.[5] G01D *9/42*; F16C *27/00*
U.S. Cl. 346—108 37 Claims



11. A laser beam printer, comprising:
a light source;
deflecting means for deflecting a beam emitted from said light source;
driving means including a rotatable bearing for rotating said deflecting means;
supporting means for supporting the bearing of said driving means;
storage means for accommodating said supporting means;
elastic means for elastically fixing said supporting means in said storage means; and
a photosensitive body for receiving the light beam deflected by said deflecting means.

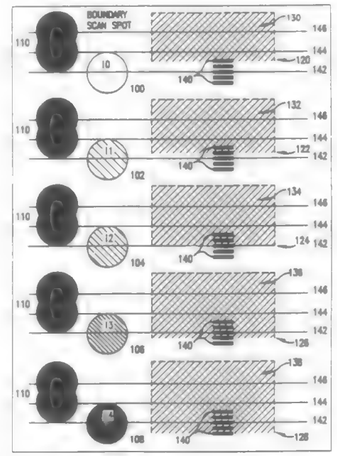
5,357,273

RESOLUTION CONVERSION VIA INTENSITY CONTROLLED OVERSCANNED ILLUMINATION FOR OPTICAL PRINTERS AND THE LIKE HAVING HIGH GAMMA PHOTOSENSITIVE RECORDING MEDIA

Douglas N. Curry, Menlo Park, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 736,989, Aug. 8, 1991, Pat. No. 5,138,339. This application Jul. 24, 1992, Ser. No. 918,092
Int. Cl.[5] G01D *9/42*
U.S. Cl. 346—108 10 Claims

1. A method for resolution conversion by microaddressing an image transition in a printer writing successive print lines by intensity modulation of a writing device, each successive print line containing print bits that form a cumulative exposure of a photosensitive surface, the successive print lines being separated by a pitch distance in a process direction, the print line having a print line center and a print line width greater than the pitch distance, the image transition being a transition between a current image bit located on a current print line and an adjacent image bit located on an adjacent print line, the current image bit and the adjacent image bit having one of a first bit state and a second bit state, the current image bit and the adjacent image bit being printed so as to be separated in the process direction, the method comprising steps of:
writing the print bit at maximum intensity when (1) the current image bit is in the first bit state and the adjacent image bit is in the second bit state, (2) the print line center passes through the current image bit and (3) the pitch distance is less than or equal to twice a displacement distance in the process direction from the print line center to the image transition beginning an image formation;
writing the print bit at less than maximum intensity when (1) the current image bit is in the first bit state and the adjacent image bit is in the first bit state, (2) the print line center passes through the current image bit and (3) the pitch distance is greater than twice a displacement distance, wherein the step of writing the print bit at less than maximum intensity including a step of intensity modulating the writing device based on a location of the image transition located at one of a plurality of microaddresses extending above and below the print line center, the plurality of microaddresses equally dividing the pitch distance; and
writing the print bit at less than maximum intensity when (1) the current image bit is in the first bit state and the adjacent image bit is in the second bit state, (2) the print line center passes through the current image bit, and (3) the pitch distance is greater than twice the displacement distance, wherein the step of writing the print bit at less than maximum intensity including a step of intensity modulating the writing device based on a location of the image transition located at one of a plurality of microaddresses extending above and below the print line center, the plurality of microaddresses equally dividing the pitch distance.



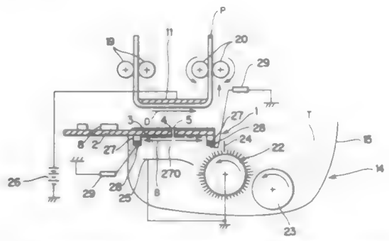
VOL 1167 ISS 3 OC 18 1994 UMI

5,357,274

IMAGE RECORDING APPARATUS WITH A VIBRATING PARTICLE CONTROLLER

Tetsuya Kitamura, No. 1-13-4, Fukumitsunishi, Gifu-shi, Gifu-Ken, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Dec. 21, 1992, Ser. No. 994,317
Claims priority, application Japan, Dec. 20, 1991, 3-338553; Jan. 29, 1992, 4-14061
Int. Cl.[5] B41J 2/415
U.S. Cl. 347—55 26 Claims



1. An image recording apparatus for recording an image on an image recording medium, comprising:

supply means for supplying electrically charged particles;

a particle controller having at least one aperture, said particle controller receiving the electrically charged particles from said supply means and selectively allowing the electrically charged particles to pass through the at least one aperture in accordance with image data supplied to the particle controller;

a back electrode positioned to confront said supply means through said particle controller, said back electrode being spaced from said particle controller by a space enabling passage of an image recording medium, said back electrode electrostatically attracting the electrically charged particles having passed through the at least one aperture of said particle controller in a direction toward said back electrode so that the electrically charged particles may be attached to the image recording medium positioned in the space to thereby form an image of the electrically charged particles on the image recording medium; and

vibration applying means for vibrating said particle controller with a vibration acceleration having a value equal to or larger than 500 G, wherein G is gravitational acceleration,

wherein said vibration applying means vibrates said particle controller, at least at an area around the at least one aperture, with a vibration amplitude having a value smaller than half a thickness of said particle controller.

5,357,275

INK JET RECORDING APPARATUS AND PUMP MECHANISM FOR USE THEREWITH

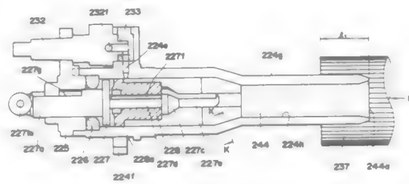
Masaharu Ikado, and Yoji Ara, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 677,470, Mar. 29, 1991, abandoned.
This application Dec. 30, 1993, Ser. No. 176,285
Claims priority, application Japan, Mar. 30, 1990, 2-081086; Apr. 11, 1990, 2-095407; Apr. 11, 1990, 2-095481; Apr. 11, 1990, 2-095778
Int. Cl.[5] B41J 2/165
U.S. Cl. 347—31 76 Claims

1. A pump mechanism for an ink jet recording apparatus using an ink jet recording head having a discharge port, said mechanism comprising:

a pump having a suction portion for sectioning matter from an enclosing member for enclosing the discharge port of the recording head, said pump switching between suction and non-suction operation of the suction portion by a reciprocating motion of a piston along a reciprocation path within a cylinder, wherein the cylinder is free from having a valve;

a holding member connected to said pump for holding waste ink from said pump, said holding member opening to the atmosphere; and



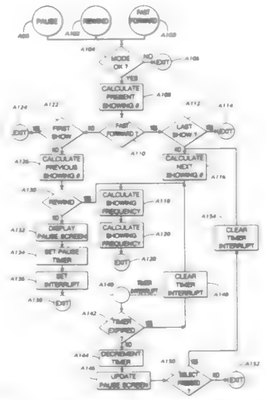
a prevention mechanism provided in said pump for preventing a backflow of ink within said pump from the suction portion of said pump to outside of said pump due to the reciprocating motion of the piston, said prevention mechanism comprising a waste ink absorbing member disposed between the reciprocation path of said piston in said pump and said holding member.

5,357,276

METHOD OF PROVIDING VIDEO ON DEMAND WITH VCR LIKE FUNCTIONS

Robert O. Banker, Cumming; Jeffrey B. Huppertz, Alpharetta; Michael T. Hayashi, Lawrenceville; David B. Lett, Duluth; Voytek E. Godlewski, Atlanta, and Michael W. Raley, Lilburn, all of Ga., assignors to Scientific-Atlanta, Inc., Norcross, Ga.

Filed Dec. 1, 1992, Ser. No. 984,038
Int. Cl.[5] H04N 7/16, 7/173
U.S. Cl. 348—7 4 Claims



1. A method of time shifting the viewing of a programmed event in a near video on demand (NVOD) system including a plurality of near video on demand channels, each channels having the event shown spontaneously and sequentially on each of the channels, but time shifted a different number of predetermined time increments, wherein each programmed event has a first show interval, a last show interval and a plurality of show intervals therebetween and wherein the duration between show intervals is equal to the duration of the predetermined time increments, the method comprising the steps of:

viewing the programmed event on a preset NVOD channel;

periodically providing a present showing number which corresponds to the relative time that has passed since a start of the programmed event;

selecting a forward time shift for viewing the program event;

determining if the present showing number is during a last show interval when the forward time shift is selected;

tuning in response to said forward time shift being selected from the present NVOD channel to a NVOD channel carrying the program event which started the event one time increment later than the present NVOD channel when the present showing number is determined to occur before the last show interval; and

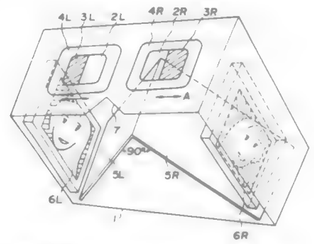
preventing tuning in response to said forward time shift being selected when the present showing number is determined to occur during the last show interval.

5,357,277

STEREOSCOPIC IMAGING USING MEMORY EFFECT LIQUID CRYSTAL DISPLAYS

Hirokazu Nakayoshi, Kanagawa; Yoshiki Shirochi, Chiba; Seizi Sato, Kanagawa; Hiroyuki Shiota, Chiba; Hiroshi Mamiya, and Naoki Kamaya, both of Tokyo, all of Japan, assignors to Sony Coporation, Japan

Filed Sep. 28, 1992, Ser. No. 951,854
Claims priority, application Japan, Oct. 4, 1991, 3-256836
Int. Cl.[5] H04N 7/18
U.S. Cl. 348—55 5 Claims



1. An imaging system comprising:

display means comprising first and second display elements of an image retaining type to be viewed by left and right eyes of a viewer, respectively;

a drive circuit for said first and second display elements for alternately supplying image data to said first and second display elements at every field of an input image signal such that, when one field is being supplied to one of said first and second display elements, the image data of the field previously supplied to the other of said first and second display elements is maintained by said other of said first and second display elements;

said imaging system further comprising first and second mirrors respectively arranged in front of said first and second display elements at an angle of 90° relative to each other such that images from said first and second display elements reflect off said first and second mirrors to said left and right eyes of said viewer;

wherein said input image signal can comprise either a three dimensional video signal or a conventional video signal;

said imaging system further comprising display driving circuits respectively for said first and second display elements utilizing a write/hold terminal for image refresh operation such that a write mode is adopted for writing new image data to one of said first and second display elements and a hold mode is adopted for maintaining previous image data at said one of said first and second display elements when said new image data is not being written thereto, said display driving circuits controlling switching between said write mode and said hold mode;

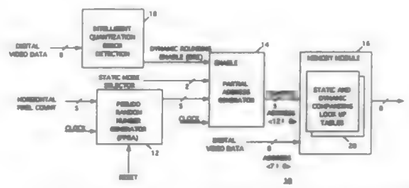
wherein a 3-D playback switch is provided between a sync separator and said write/hold terminal of one of said display driving circuits and an inverter is provided, inverting a signal between said sync separator and said 3-D playback switch, and connected with the write/hold terminal of the other of said display driving circuits.

5,357,278

INTEGRATED LINEAR/NON-LINEAR STATIC AND CONTROLLABLE DYNAMIC COMPANDING

William Herz, Newark, and David Rossmere, San Jose, both of Calif., assignors to Sony Electronics, Inc., Park Ridge, N.J.

Filed Jan. 14, 1993, Ser. No. 4,507
Int. Cl.[5] H04N 7/12
U.S. Cl. 348—384 25 Claims



1. In a digital video system comprising a plurality of digital video data, an apparatus for selectively generating values used to perform static and dynamic companding for a plurality of transfer functions for shifting/modifying said digital video data from a first plurality of data ranges to a second plurality of corresponding data ranges, said apparatus comprising:

a) memory means for storing an integrated collection of lookup tables comprising a plurality of lookup tables having values used to perform static and dynamic companding for said transfer functions for shifting/modifying said digital video from said first plurality of data ranges to said second plurality of corresponding data ranges, said values used to perform static and dynamic companding being accessed using composite addresses, each of said composite addresses comprising a plurality of bits;

b) partial address generation means coupled to said memory means for receiving a plurality of static/dynamic companding scheme selection control signals and controllable pseudo-random numbers as inputs, and generating a plurality of higher order bits for each of said composite addresses, the remaining lower order bits for each of said composite addresses being set correspondingly to equal said digital video data being shifted/modified by a processor of said digital video system coupled to said memory means;

c) companding scheme selection control signal generation means coupled to said partial address generation means for generating said companding scheme selection control signals; and

d) pseudo-random number generation means coupled to said partial address generation means for receiving values of a video control counter, and generating said controllable pseudo-random numbers, said generated controllable pseudo-random numbers being replicable within a specified area of a video image controlled by said video control counter.

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5,357,279
AUTOMATIC KNEE CONTROL CIRCUIT

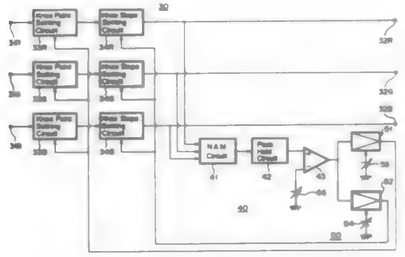
Takashi Nakamura, and Satoshi Yamaga, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Continuation of Ser. No. 667,593, Mar. 8, 1991. This application Feb. 24, 1993, Ser. No. 22,402

Claims priority, application Japan, Mar. 26, 1990, 2-75900; Mar. 28, 1990, 2-79112

Int. Cl.[5] H04N *5/30, 5/235, 5/52*

U.S. Cl. 348—207 **18 Claims**



1. An automatic knee control circuit for a video camera having image sensing means generating a video signal, said automatic knee control circuit comprising:

video signal compressing means supplied with said video signal and providing an output video signal, said video signal compressing means including knee point setting means and knee slope setting means, said knee point setting means receiving said video signal and a first control signal and producing a knee point output signal and said knee slope setting means receiving said knee point output signal and a second control signal and producing said output video signal;

detecting means supplied with said output video signal of said video signal compressing means, for generating a detected output; and

control means supplied with said detected output for generating said first control signal and said second control signal, said control signal generating means including signal dividing means for dividing said detected output into said first and second control signals with a first predetermined dividing ratio and a second predetermined dividing ratio, respectively;

wherein said first control signal produced by said control means in accordance with said first predetermined dividing ratio is supplied to said knee point setting means for controlling a knee point and said second control signal produced by said control means in accordance with said second predetermined ratio is supplied to said knee slope setting means for controlling a knee slope;

whereby said knee point setting means and said knee slope setting means are independently controlled;

said video signal compressing means further comprises:

first level control means supplied with a first processed input video signal for providing a first level control output signal;

clipping means comprised in said knee point setting means for receiving a second processed input video signal and said first control signal, said clipping means providing said knee point output signal;

second level control means supplied with said knee point output signal from said clipping means for providing a second level control output signal;

adder means for adding said first level control output signal and said second level control output signal; and

said knee slope setting means comprising means for controlling said first level control output signal and said second level control output signal differentially in accordance with said second control signal.

5,357,280
AUTOMATIC FOCUSING APPARATUS USING SCANNING LINE WEIGHTING OF A VIDEO SIGNAL TO DETERMINE AN IN-FOCUS CONDITION

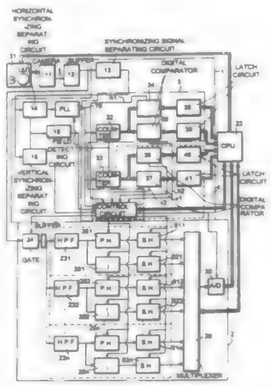
Masao Yajima, and Kazuo Higashiura, both of Shimosuwa, Japan, assignors to Sankyo Seiki Mfg. Co., Ltd., Nagano, Japan

Filed Apr. 15, 1992, Ser. No. 868,778

Claims priority, application Japan, Apr. 17, 1991, 3-85286

Int. Cl.[5] H04N *5/732*

U.S. Cl. 348—349 **10 Claims**



1. An automatic focusing apparatus to be used for an optical system having a field comprising:

means for providing a video signal representing a light image received by an optical system from a subject;

in-focus state detecting area determining means for determining an in-focus state detecting area within the field taken by the optical system and for providing a signal representative of said area; and

in-focus signal generating means responsive to said video signal and said in-focus state detecting area signal for providing a digital signal containing information for generating an in-focus signal including:

a plurality of independent, parallel signal processing circuits responsive to a selected portion of said video signal, each signal processing circuit having an output and further including a high pass filter, each high pass filter of each signal processing circuit having filtering characteristics distinct from those of every other high pass filter;

a multiplexer having an output, said multiplexer for providing a time-shared signal of the uncombined outputs from all said signal processing circuits; and

an A/D converter having an output and being responsive to said multiplexer output for providing at its output a digital signal representative of said multiplexer output; and

a CPU responsive to the output of said A/D converter for storing in-focus signals transmitted by said in-focus signal generating means and for detecting the in-focus condition for the subject within the area predetermined by the in-focus state detecting area determining means on the basis of the stored in-focus signals.

5,357,281
IMAGE PROCESSING APPARATUS AND TERMINAL APPARATUS

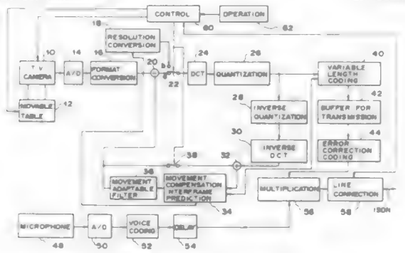
Keiichi Ikeda, Kawasaki, and Hiroyuki Horii, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 3, 1992, Ser. No. 970,782

Claims priority, application Japan, Nov. 7, 1991, 3-291719; Apr. 23, 1992, 4-104426; Jul. 8, 1992, 4-180790

Int. Cl.[5] H04N *7/133, 7/137*

U.S. Cl. 348—401 **19 Claims**



1. An image processing apparatus comprising:

conversion means for converting an objective image into an image signal;

smoothing means for smoothing the image signal;

coding means for coding the image signal which has been smoothed by said smoothing means; and

control means for controlling said smooth means to smooth the image signal in accordance with a converting state of said conversion means.

5,357,282
VIDEO DECODER WITH PARALLEL IMPLEMENTATION

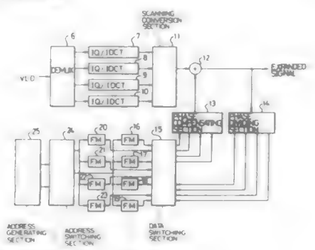
Dong H. Lee, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Sep. 30, 1993, Ser. No. 128,704

Claims priority, application Rep. of Korea, Sep. 30, 1992, 92-17866

Int. Cl.[5] H04N *7/13*

U.S. Cl. 348—403 **9 Claims**



1. An image decoder comprising:

a demultiplexer for dividing a video signal for a frame into four phases respectively comprising an 8×8 block;

a plurality of inverse quantization and inverse discrete cosine transform means for respectively inverse quantizing and inverse discrete cosine transforming said divided video signals of the 8×8 block;

phase compensating means for matching each of the phases of respective motion compensation video signals;

scanning conversion means for matching respective scanning orders of said inverse quantized and inverse discrete cosine transformed video signals with the motion compensated video signal for each frame to generate a scanning converted video signal for each frame.;

an adder for adding said scanning converted video signal for each frame to said motion compensated video signal of the corresponding frame;

phase dividing means for dividing the video signal for a frame from said adder into four phases on the X axis;

data switching means for controlling order of reading and writing timings of the video signals to be provided to said phase compensating means and the video signals output by said phase dividing means;

a plurality of pairs of frame memories for alternately reading and writing the respective phases of the video signals from said data switching means in each of the four phases;

address switching means for controlling order of read and write addresses of said plurality of pairs of frame memories so as to alternate between the pairs of frame memories; and

address generating means for generating said read and write addresses of said plurality of pairs of frame memories through said address switching means.

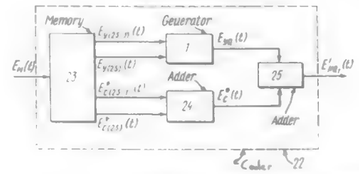
5,357,283
REFLECTED MODULATED TELEVISION SYSTEM

Vladimir E. Tesler, and Irina A. Averbukh, both of prospekt Mira, 91, kirpus I, kv. 120, Moscow, Russian Federation

Continuation of Ser. No. 490,650, May 29, 1990, abandoned. This application Sep. 20, 1993, Ser. No. 124,426

Int. Cl.[5] H04N *7/08*

U.S. Cl. 348—433 **25 Claims**



1. A method of transmitting by time-division multiplexed signals containing information about luminance and chrominance of a picture in a composite color television signal in a television system, wherein said luminance information of said multiplexed signals allocated to an entire active line interval and time-compressed chrominance signals of said multiplexed signals containing said chrominance information are allocated to horizontal blanking intervals comprising the steps of:

generating said composite color television signal with reflected modulated signals containing reflected lower sidebands information about individual characters of said picture, said reflected modulated signals including reflected modulated luminance signals and chrominance signals;

at the transmitting side, selecting video signals containing information about individual characteristics of the picture used to quadrature modulate subcarriers at the zero and $\pm\mu/_2$ phases, to generate said reflected modulated signals at subcarrier frequencies selected so as to ensure the required phase shifts between unmodulated subcarriers in adjacent lines of a frame and in identically numbered lines of adjacent frames;

transmitting during respective time intervals said reflected modulated signals within said composite color television signals;

at the receiving side, separating message of said reflected modulated signals from said composite color television signals;

directing information contained in said messages to processing channels for processing;

delaying said messages by time intervals constituting multiples of a television scan;

executing conjoint processing of said delayed and undelayed messages of said reflected modulated signals by multiplying said delayed and undelayed messages by harmonic signals with appropriate phases, algebraic summing of the products of multiplications of the delayed and undelayed messages of said reflected modulated signals in each processing channel, and separating corresponding video

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signals which modulate said quadrature modulated subcarriers at the transmitting side from a sum of signal voltages of each of said processing channels, said separated corresponding video signals including said reflected luminance signals and color-difference signals by processing said reflected modulated reflected luminance signals and chrominance signals; and

equalizing time scales of said reflected luminance signals and said color-difference signals and aligning said luminance signals and said color-difference signals along a time base.

5,357,284

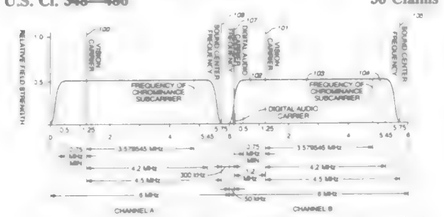
COMPATIBLE DIGITAL AUDIO FOR NTSC TELEVISION

Craig C. Todd, Mill Valley, Calif., assignor to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Filed Mar. 29, 1990, Ser. No. 501,608

Int. Cl.[5] H04N *7/00*

U.S. Cl. 348—486 **50 Claims**



1. Apparatus for transmitting digitally encoded sound signals on a modulated carrier associated with a standard NTSC color television broadcast signal, wherein the signal components of the NTSC signal are contained within an RF bandwidth of nominally 6 MHz, the FM sound signal carrier frequency is nominally 4.5 NHz above the vision carrier frequency, the NTSC color subcarrier frequency is nominally 3.579545 MHz above the vision carrier frequency, and in the RF spectrum of broadcast and cable systems the standard spacing between the vision carrier frequencies of adjacent channel NTSC signals is 6 MHz, and wherein the standard NTSC color television signal may have its FM sound carrier modulated in accordance with the BTSC multi-channel television sound system, comprising

modulated carrier signal generation means for receiving sound signals and for generating in response thereto a digitally modulated Quadrature Phase Shift Keyed (QPSK) carrier signal, and

carrier frequency setting means for setting the frequency of said digitally modulated carrier signal with respect to the components of said NTSC television broadcast signal and for setting the level of said digitally modulated carrier signal, wherein aid carrier signal is set at a frequency about 1.2 MHz below the vision carrier frequency of the NTSC signal and the level of said carrier signal is set at about −23 dB relative tot he peak vision carrier level.

5,357,285

METHOD FOR THE SORTING OF PROGRAM LOCATIONS

Olufemi Sanya; Norbert Eigeldinger, and Rainer Fechner, all of Villingen, Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

PCT No. PCT/EP90/01334, § 371 Date Feb. 5, 1993, § 102(e) Date Feb. 5, 1993, PCT Pub. No. WO91/03102, PCT Pub. Date Mar. 7, 1991

PCT Filed Aug. 14, 1990, Ser. No. 836,307

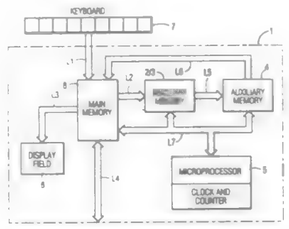
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1989, 3927837.9

Int. Cl.[5] H04N *5/44*

U.S. Cl. 348—716 **4 Claims**

1. A method for a program location sorting in an entertainment electronics device with which, in a memory facility, ratings can be inputted by way of programming, for one program location to be addressed, by one key from a keyboard for providing an output by addressing the program location for control purposes, comprising the following steps:

a) addressing of a first program location by depressing a first key of the keyboard for a predetermined time interval so that a counting circuit is activated for the purpose of timing and, within the operation time, data allocated to the first program location is read into first auxiliary memory from a main memory;



b) likewise, with the following selection of a second program location by depressing a second key of the keyboard for a predetermined time interval within a time-window which is determined by the counting circuit, the data allocated to this second program location is read from the main memory into a second auxiliary memory;

c) the rating of the first program location is allocated to the second program location and the rating of the second program location is allocated to the first program location through an exchange of data, and after the conclusion of the exchange of data, the exchanged data is stored in the main memory while the program location allocated to a particular key is retained.

5,357,286

ON-SCREEN INFORMATION SUPERIMPOSING CIRCUIT

Duk-won Hwang, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Aug. 28, 1992, Ser. No. 936,307

Claims priority, application Rep. of Korea, Aug. 30, 1991, 91-15148

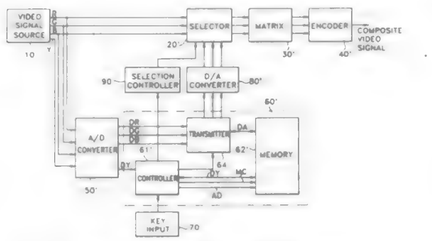
Int. Cl.[5] H04N *9/74*

U.S. Cl. 348—589 **8 Claims**

1. An on-screen information superimposing circuit which superimposes on-screen information onto a main picture signal for a video signal processor including a video signal source for separating and outputting color signals and a luminance signal, said circuit comprising:

an A/D converter means for converting and outputting said color signals and luminance signal outputted from said video signal source into digital color signals and a digital luminance signal;

an on-screen information generator means for detecting on-screen information made of said digital color signals according to the digital luminance signal output from said



A/D converter, for storing the detected on-screen information, and for outputting the stored information; and

a D/A converter means for converting said on-screen information output from said on-screen information generator means into an analog signal so as to be superimposed on said main picture signal.

5,357,287

METHOD OF AND APPARATUS FOR MOTION ESTIMATION OF VIDEO DATA

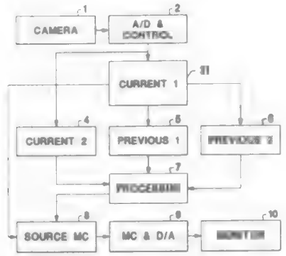
Hyung S. Koo; Myeong K. Do; Ji H. Yeo; Jong H. Lee, and Chong H. Moon, all of Seoul, Rep. of Korea, assignors to Korean Broadcasting System, Rep. of Korea

Filed Oct. 28, 1993, Ser. No. 142,054

Claims priority, application Rep. of Korea, May 20, 1993, 93 P 8704

Int. Cl.[5] H04N *7/137, 7/01*

U.S. Cl. 348—699 **6 Claims**



1. A method of estimating motion in video data in a high definition television comprising the steps of:

(a) initializing horizontal and vertical block addresses, temporary horizontal and vertical motion vectors, horizontal and vertical count values, and horizontal and vertical motion vectors of blocks divided from an image, and setting a minimum absolute error to a largest value;

(b) determining an absolute error for each of a plurality of blocks divided from a search area in the image, setting the minimum one of the determined absolute errors as a temporary absolute error, and setting motion vectors of the block having the temporary absolute error as temporary horizontal and vertical motion vectors;

(c) comparing the temporary absolute error set in step (b) with the minimum absolute error;

(d) substituting the temporary absolute error for the minimum absolute error and substituting the temporary horizontal and vertical motion vectors for the horizontal and vertical motion vectors of the block having the temporary absolute error when the minimum absolute error is larger than the temporary absolute error;

(e) incrementing the horizontal count value by one;

(f) dividing the incremented horizontal count value by a predetermined value of detecting whether the modulo is zero;

(g) storing the minimum absolute error and the horizontal and vertical motion vectors in a memory at locations corresponding to current horizontal and vertical block addresses, and incrementing the horizontal block addresses by one, when zero has been detected in step (f); p1 (h) dividing the vertical count value by the predetermined value and detecting whether the modulo is zero, for checking whether the block has been displayed vertically by the predetermined number of pixels;

(i) setting the minimum absolute error to the largest value, and initializing the temporary horizontal and vertical motion vectors and the horizontal and vertical motion vectors, when zero has been detected in step (h);

(j) replacing the horizontal and vertical motion vectors and the minimum absolute error with the values stored in the memory locations corresponding to the current horizontal and vertical block addresses, when zero has not been detected in step (h);

(k) detecting whether a current pixel is a last horizontal pixel when zero has not been detected in step (f) or after steps (i) and (j);

(l) incrementing the vertical count value by one and setting the horizontal block address to zero when the last horizontal pixel has been detected in step (k);

(m) dividing the vertical count value by the predetermined value, and detecting whether the modulo is zero and whether the current pixel is the last horizontal pixel, when the last horizontal pixel has not been detected or after step (k);

(n) setting the minimum absolute error to the largest value, initializing the temporary horizontal and vertical motion vectors and the horizontal and vertical motion vectors, and incrementing the vertical block address value by one, when both the modulo is zero and the last horizontal pixel has been detected in step (m);

(o) incrementing the vertical block address value by one, and replacing the minimum absolute error and the horizontal and vertical motion vectors by the values stored in the memory locations corresponding to the current horizontal and vertical block addresses, when the modulo is not zero or the last horizontal pixel has not been detected in step (m); and

(p) detecting whether and edge of the image has been detected after steps (n) and (o), completing the finding of motion vectors when the edge of active image has been detected by determining horizontal and vertical positions of the block having the minimum absolute error, and repeating steps (b)–(p) when the edge of the image has not been detected.

5,357,288

LIQUID CRYSTAL PROJECTOR AND METHOD OF PROJECTING IMAGE

Yasunori Hiroshima; Tsuyoshi Inoue, and Hidetaka Sakurazawa, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 8, 1992, Ser. No. 986,674

Claims priority, application Japan, Dec. 10, 1991, 3-325730

Int. Cl.[5] H04N *9/31*

U.S. Cl. 348—742 **13 Claims**

9. A method of projecting a projection image, comprising the steps of:

inputting video data;

performing a synchronization separation with respect to the inputted video data to generate a timing signal;

performing a color separation with respect to the inputted

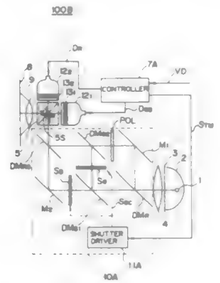
VOL 1167 ISS 3 OCT 18 1994

video data to generate luminance signals for R, G and B components, respectively;

emitting a projection light;

separating the emitting projection light into R, G and B components by a liquid crystal shutter in a time divisional manner to selectively transmit and shut each R, G and B component on the basis of the generated timing signal;

writing into a liquid crystal light valve panel, images corresponding to the R, G and B components based on the generated luminance signals at a timing every 1/6 field in every ⅓ field per color component during a first half of



said every ⅓ field respectively, in the time divisional manner on the basis of the generated timing signal, said liquid crystal valve panel comprising cells each having an action time not greater than a time period of said 1/6 field;

inputting the separated projection light to said liquid crystal light valve panel, while opening said liquid crystal shutter at the timing every ⅓ field including said 1/6 field per color component respectively, whereby to read out said written images every ⅓ field per color component respectively; and

magnifying and projecting an output light from said liquid crystal light valve panel onto a screen.

5,357,289

PROJECTOR LENS SYSTEM HAVING THREE LENS GROUPS FOR IMAGE PROJECTOR

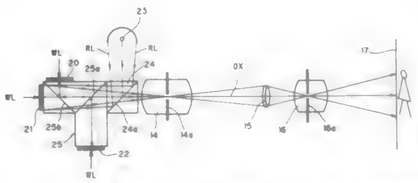
Toshio Kouno, Hoya; Shintaro Nakagaki, Miura; Ighiro Negishi; Tetsuji Suzuki, both of Yokosuka; Fujiko Tatsumi, Yokohama; Ryusaku Takahashi, and Keiichi Maeno, both of Yokosuka, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation of Ser. No. 913,445, Jul. 14, 1992. This application Jan. 13, 1994, Ser. No. 180,705

Claims priority, application Japan, Jul. 17, 1991, 3-201074

Int. Cl.[5] H04N *9/31*

U.S. Cl. 348—757 **2 Claims**



1. An image projector for projecting a tri-color composite light image on a screen comprising:

a light source emitting a reading light;

image forming means provided correspondingly with Red, Green and Blue color images;

a tri-color separation and composition optical system for obtaining a tri-color composite beam from said image forming means, and

a lens system comprising a first lens group for focusing a light image, a second lens group for converging an incident light and a third lens group having a focal length "f_3" for projecting a magnified image on said screen, said first, second and third lens groups are disposed along an optical axis in the order named, wherein said first lens group being positioned so as to form a composite light image having an imagery magnification "ml" nearby said second lens group by focusing said tri-color composite beam coming from said tri-color separation and composition optical system, said second lens group being positioned nearby an object focal point of said third lens group to converge said tri-color composite beam from said first lens group into said third lens group, said third lens group being positioned so as to project said tri-color composite image beam on said screen as a magnified image at a short projection distance, with the overall focal length "f" of said lens system being equal to f_3/ml and with the value of the focal length "f_3" of said third lens group and the value of said imagery magnification "ml" selected such that the focal length "f" of the lens system has a value shorter than the back-focal length defined as a distance between a front surface of said first lens group and an object focal point thereof.

5,357,290

LIQUID CRYSTAL DISPLAYING APPARATUS CAPABLE OF RECEIVING TELEVISION SIGNALS THAT DIFFER IN BROADCASTING FORMAT

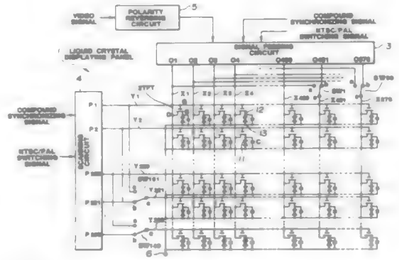
Shigenobu Horibe, Saitama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 18, 1992, Ser. No. 946,637

Claims priority, application Japan, Sep. 25, 1991, 3-246085

Int. Cl.[5] H04N *3/12, 5/66*

U.S. Cl. 348—792 **8 Claims**



1. A liquid crystal displaying apparatus capable of displaying a plurality of television signals having different numbers of scanning lines, comprising:

a liquid crystal displaying means for forming pixels at respective intersections of a plurality of data lines and a plurality of scanning lines and having a number of pixels corresponding to a first television signal having the largest number of scanning lines among the plurality of television signals;

a liquid crystal driving means for feeding scanning signals to the respective scanning lines of the liquid crystal displaying means in response to the received television signals, feeding television video information reversing polarity at a predetermined period to the respective data lines, making a display in a first region of the liquid crystal displaying means at the time of receiving the first television signal and making a display in a second region narrower than the first region at the time of receiving another television signal; and

a blank part displaying means for making a display by feed

information from a predetermined alternating signal and a part of the scanning signals used in a display in the second region to the pixels corresponding to the part of the difference between the first and second regions at the time of receiving the other television signal.

5,357,291

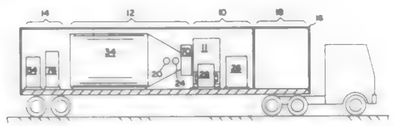
TRANSPORTABLE ELECTRON BEAM SYSTEM AND METHOD

Peter R. Schonberg, Scotts Valley; George G. Hoberg, Atherton; Russell G. Schonberg, Los Altos Hills, and David R. Fadness, San Jose, all of Calif., assignors to Zapit Technology, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 941,788, Sep. 8, 1992. This application Dec. 18, 1992, Ser. No. 992,614

Int. Cl.[5] H01J *37/00*

U.S. Cl. 250—492.3 **44 Claims**



1. A transportable electron beam conversion system for the transformation of volatile organic compounds comprising:

an electron beam source;

a reaction chamber;

means for directing an electron beam from said electron beam source into said reaction chamber to directly interact with volatile organic compounds in gaseous form flowing therethrough;

inlet means for flowing a gas including volatile organic compounds in a gaseous state into said reaction chamber following a flow through preprocessing means;

said preprocessing means comprising at least one preprocessing station comprising one or more of the following: particle filters; moisture traps; atomizers; temperature control means; and pressure control means;

means to reconfigure said system by adding thereto or taking therefrom active preprocessing stations;

said reaction chamber being in the path of said gas so that the gas to be treated moves through said reaction chamber;

outlet means for flowing and removing a treated gas from the reaction chamber in a gaseous state; and

transport means for moving the electron beam source and the reaction chamber from one site to another.

5,357,292

EYEGLASSES WITH ADJUSTABLE TEMPLE INCLINATION

Klaus Wiedner, Fürth, Fed. Rep. of Germany, assignor to Uvex Safety, LLC, Smithfield, R.I.

Filed May 18, 1993, Ser. No. 64,504

Claims priority, application Fed. Rep. of Germany, May 26, 1992, 9207109[U]

Int. Cl.[5] G02C *5/20;* **A61F** *9/02*

U.S. Cl. 351—105 **4 Claims**

1. Glasses, in particular industrial safety or sports glasses, with an integral continuous sight piece and with inclination-adjustable side pieces articulated on a frame piece,

wherein the sight piece (1) has lateral backwards oriented appendixes (3) formed in one piece with it and extending about in parallel to the wear's head,

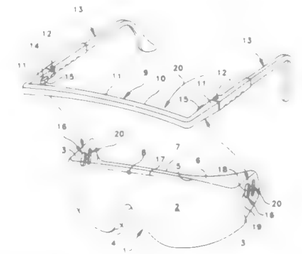
wherein a frame piece (9) with lateral appendixes (11') is arranged along the upper edge (5) of the sight piece (1) surrounding the latter and the latter's appendixes (3),

wherein the frame piece (9) with the articulated side pieces (13) is supported on the sight piece (1) pivotably around a horizontal pivot axis (17),

wherein pins (14) are arranged on the inside of each of the appendixes (11'),

wherein the pins (14) engage with semicircular slits (16) concentric of the pivot axis (17) in the appendixes (3) of the sight piece (1),

wherein, to arrest the pins (14) in certain angular positions of



the slits (16), the latter are formed by a plurality of approximately annular locking recesses (18) intersecting to form locking protrusions (19) and approximately corresponding to the cross-section of the pin (14), and

wherein at least one further slit (20) extends at a distance in parallel to the slit (16) with the locking protrusions (19) to form an elastic web (23) located in between.

5,357,293

APPARATUS FOR ANALYZING DEPTH PERCEPTION

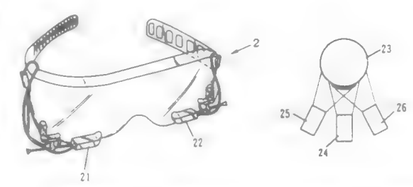
Kenya Uomori, and Mitsuho Yamada, both of Kyoto, Japan, assignors to ATR Auditory and Visual Perception Research Laboratories, Kyoto, Japan

Filed Mar. 11, 1993, Ser. No. 29,481

Claims priority, application Japan, Sep. 29, 1992, 4-259461

Int. Cl.[5] A61B *3/14*

U.S. Cl. 351—209 **6 Claims**



1. An apparatus for analyzing depth perception of a subject, comprising:

target presenting means for presenting a target for generating depth perception of said subject;

eye movement detecting means for detecting movement of both eyes of said subject; and

calculating means, coupled to said eye movement detecting means, for removing a saccade component by calculating velocity or acceleration of the eye movement detected by said eye movement detecting means, extracting only vergence eye movement and calculating an amplitude of said vergence eye movement, a change in convergence angle, and cross-correlation of velocity or acceleration of left and right eye movement to determine depth perception of said subject.

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5,357,294

METHOD FOR DISPLAYING OPTICAL PROPERTIES OF CORNEAS

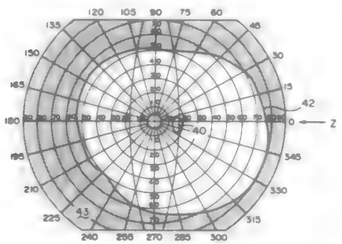
Kimiya Shimizu, Suite 503, 9-6, Nishikubo 2-chome, Musashino-shi, Tokyo, and Shunichi Tanaka, Suite 302, 9-8, Yushima 1-chome, Bunkyo-ku, Tokyo, both of Japan

Filed Jul. 9, 1993, Ser. No. 88,023

Claims priority, application Japan, Jul. 13, 1992, 4-207030

Int. Cl.[5] A61B *3/107*

U.S. Cl. 351—212 2 Claims



1. In a method for displaying optical properties of corneas comprising the steps of:

establishing a cornea map by dividing a cornea of a three-dimensional shape into a plurality of minute areas in a predetermined coordinate system;

establishing a pseudo-two-dimensional position matrix corresponding to said minute areas and made of a plurality of components;

having a cornea analyzer measure the optical properties of said minute areas to generate data matrices corresponding to the components constituting the position matrix; and

displaying said data matrices in relevant positions on said cornea map using any of color pallets and graphic patterns associated with the data values involved;

the improvement comprising the steps of:

generating a plurality of data matrices about a plurality of corneas having different conditions;

calculating an arithmetic mean value of each of the components constituting said data matrices so as to prepare a mean value matrix; and

displaying said mean value matrix in relevant position on said cornea map using any of color pallets and graphic patterns associated with the mean value of each of said components.

5,357,295

IMAGE PROJECTING APPARATUS PROVIDED WITH CARTRIDGE LOADER

Takanori Saitoh, Ebina; Hiroshi Tanimoto, Zama; Jun Nishiseko, Yokohama, and Shuichi Saito, Machida, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 943,377, Sep. 10, 1992, abandoned, which is a continuation of Ser. No. 618,059, Nov. 26, 1990, abandoned. This application Oct. 28, 1993, Ser. No. 144,721

Claims priority, application Japan, Nov. 27, 1989, 1-308125; Nov. 27, 1989, 1-308126; Sep. 7, 1990, 2-238795; Sep. 7, 1990, 2-238796

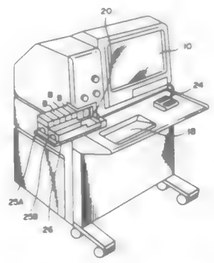
Int. Cl.[5] G03B *23/12*

U.S. Cl. 353—26 A 21 Claims

1. A cartridge loading device for attachment to an image projecting apparatus serving to project an image recorded in a microfilm held in a cartridge, said cartridge loading device comprising:

a container for accommodating a plurality of cartridges, said container being detachable from a body of said image projecting apparatus;

a container loader for supporting said container, said container loader including a supporting portion for supporting said container and including means for detachably attaching said container thereto, wherein the supporting portion is exposed to the outside so that said container attached to the supporting portion is easily detached therefrom and from said body of said image projecting apparatus; and



cartridge moving means for sequentially extracting said cartridges from said container attached to said container loader and for setting the extracted cartridges in place in an image reading position provided for said image projecting apparatus and located externally of said container.

5,357,296

CAMERA WITH A BUILT-IN MAGNETIC HEAD

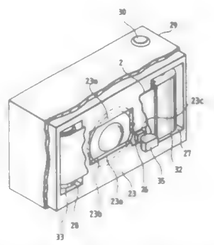
Minoru Kato, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 879,922, May 8, 1992, abandoned. This application Nov. 10, 1993, Ser. No. 150,284

Claims priority, application Japan, May 14, 1991, 3-138523

Int. Cl.[5] G03B *29/00*

U.S. Cl. 354—76 4 Claims



1. A camera with a built-in magnetic head, comprising:

a camera body having a film-cartridge receiving chamber at one side thereof and a spool chamber at another side thereof;

a drive tube rotatably supported by the camera body;

a bodytube housed in said drive tube and incorporating a photographing lens therein;

said bodytube being extendable and retractable relative to the camera body by rotation of the drive tube;

a magnetic head adapted to be abutted against a magnetic track formed on the film for writing magnetic information on the film;

a pad for pinching the film with the magnetic head; and

a notch formed at a portion of the camera body which is located between said film-cartridge receiving chamber and said spool chamber and laterally outwardly of the outer periphery of the bodytube, and housing one of the magnetic head and the pad such that the entirety of said one of the magnetic head and the pad within said notch is disposed laterally outwardly of the outer periphery of the bodytube.

5,357,297

CAMERA CAPABLE OF SENSING DEFICIENCY IN LIGHT QUANTITY OF FLASH AND CONTROL METHOD THEREFOR

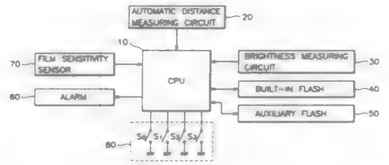
Yong-joon Jeong, and Soon-kil Seo, both of Kyeongsangnam, Rep. of Korea, assignors to Samsung Aerospace Industries, Ltd., Kyeongsangnam, Rep. of Korea

Filed Aug. 18, 1993, Ser. No. 107,630

Claims priority, application Rep. of Korea, Oct. 23, 1992, 1992-19598

Int. Cl.[5] G03B *15/03, 17/38*

U.S. Cl. 354—127.1 28 Claims



1. A camera capable of sensing deficiency in light quantity of flash, comprising:

lens means having an opening for controlling the amount of light entering into the camera;

flash means having a guide number for emitting light;

means for measuring a distance from an object to the camera;

means for determining whether the distance measured by said distance measuring means is greater than a reference value;

means for indicating the result of determination by said determining means; and

auxiliary flash means having a guide number for emitted light, wherein said determining means includes means for determining said reference value based on the guide numbers of said flash means and said auxiliary flash means and the opening of said lens means.

5,357,298

CAMERA

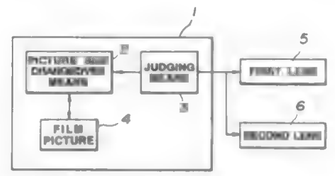
Toshihiko Imai; Mitsumasa Okubo, and Yasushi Odanaka, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,457

Claims priority, application Japan, Oct. 15, 1991, 3-266486

Int. Cl.[5] G03B *17/02, 17/00*

U.S. Cl. 354—159 30 Claims



1. A camera loaded selectively with one of a first film having perforations formed in side edges and a second film having the same width as that of said first film and no perforations formed in side edges, said camera comprising:

a picture size changeover means for selectively setting a photographing picture frame to a first picture size corresponding to said first film and a second picture size corresponding to said second film;

a first lens installable and removable in and from said camera and having an image circle corresponding to said first picture size;

a second lens installable and removable in and from said camera and having an image circle corresponding to said second picture size; and

a means for judging which lens, said first lens or said second lens, is installed in said camera,

whereby when said judging means judges that said first lens is installed in a state where said picture size changeover means is set to said second picture size, said picture size is so set as to be forcibly changed over to said first picture size.

5,357,299

CONVERSION ARRANGEMENT FOR OPTICAL UNITS FOR USE WITH CAMERAS

Alan R. Cheeseman, Binley, England, assignor to Van Diemen Films Limited, Leicester, England

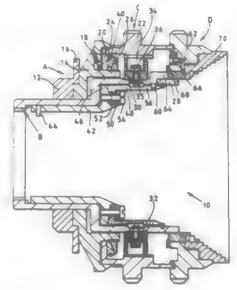
PCT No. PCT/GB90/00330, § 371 Date Feb. 26, 1992, § 102(e) Date Feb. 26, 1992, PCT Pub. No. WO90/10250, PCT Pub. Date Sep. 7, 1990

PCT Filed Mar. 2, 1990, Ser. No. 752,522

Claims priority, application United Kingdom, Mar. 2, 1989, 8904748

Int. Cl.[5] G03B *1/18*

U.S. Cl. 354—195.1 21 Claims



1. A conversion arrangement for coupling an optical unit to a camera body, the conversion arrangement comprising:

a mounting means for attachment to the camera body;

a generally cylindrical carrier for attachment to said optical unit, said carrier being coaxially coupled to said mounting means for axial movement relative thereto:

a focusing ring coaxial with and coupled to said mounting means and said carrier for rotation relative thereto wherein rotation of said focusing ring causes said carrier to move axially of said mounting means for focusing said optical unit; and

means biased into radial engagement with said focusing ring for inhibiting axial movement of said focusing ring relative to said carrier in the absence of rotational movement of said focusing ring relative to said carrier, said inhibiting means being operable to control axial movement of said carrier during rotation of said focusing ring.

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5,357,300

LENS HOLDING DEVICE CAPABLE OF ADJUSTING LENS POSITION

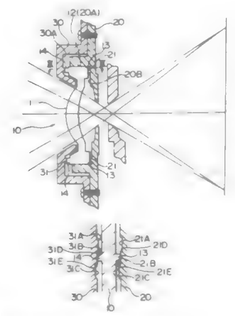
Toshio Yanagi, Machida; Kiyoaki Hazama, and Masayoshi Era, both of Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jul. 28, 1992, Ser. No. 920,663

Claims priority, application Japan, Aug. 19, 1991, 3-065310[U]

Int. Cl.[5] G03B *1/18*

U.S. Cl. 354—195.1 19 Claims



1. A lens holding device comprising:

(a) a lens including a peripheral portion around which a plurality of protruded portions are provided substantially equidistant to each other;

(b) a lens receiving member in which a plurality of stairs are provided at positions corresponding to said protruded portions, each of said stairs having a plurality of steps and risers; and

(c) a lens pressing member in which a plurality of stairs are provided at positions to face said stairs of said lens receiving member, each of said stairs having a plurality of steps and risers, said stairs determining the position of said lens on the optical axis thereof in association with said stairs of said lens receiving member utilizing a predetermined difference in height between adjacent steps, wherein said lens is sandwiched between said lens receiving member and said lens pressing member so that said lens position is fixed on said optical axis, and said lens position is adjusted from a most advanced position to a most retreated position along said optical axis by selecting a preferred step height in each of said stairs, further wherein rotation of said lens around said optical axis is restrained with said risers adjacent to said selected steps of said stairs.

5,357,301

CAMERA HAVING INTERCHANGEABLE FILM CHAMBERS

Derek V. Prosser, 4418 Perry St., Denver, Colo. 80212

Filed Jan. 24, 1994, Ser. No. 190,861

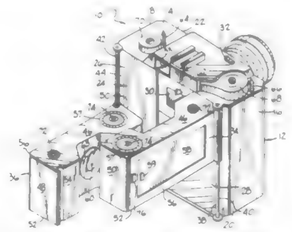
Int. Cl.[5] G03B *19/06, 19/10*

U.S. Cl. 354—210 10 Claims

1. A photographic camera comprising:

a) a plurality of film chambers for housing film, with each of said film chambers comprising a top wall, opposite first and second side walls, a bottom wall, a front wall and a back wall, with said front wall having an openable chamber shutter means disposed therein, and with each chamber having a film advancement means;

b) a camera body comprising a top wall, opposite first and second side walls, a bottom wall, a front wall, and a receiving chamber defined by the top, side and bottom walls, said receiving chamber having a plurality of receiving portions, with each of said receiving portions capable of releasably receiving one of the film chambers, with said front wall having a shutter-operable lens means disposed therethrough in alignment with one receiving portion of the receiving chamber and in alignment with the chamber shutter means of a film chamber situated therein; and



c) opener means within the camera body which cooperates with the chamber shutter means of the film chamber situated within the receiving portion in alignment with the lens means of the camera body to thereby open the chamber shutter means.

5,357,302

APPARATUS FOR FEEDING PHOTOGRAPHIC FILM HAVING TWO PERFORATIONS PER FRAME

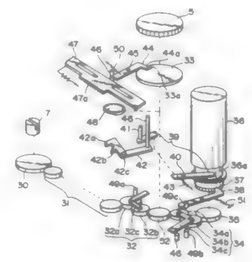
Kunio Kawamura, Kawachinagano; Yasuo Hawai, Higashiosaka; Sadafusa Tsuji, Tondabayashi; Shuji Izumi, Sakai; Masaaki Chikasaki, Toyonaka; Michihiro Iwata, and Hiroyuki Okada, both of Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 31, 1991, Ser. No. 814,826

Claims priority, application Japan, Jan. 4, 1991, 3-000030; Jan. 4, 1991, 3-000031; Jan. 4, 1991, 3-000032

Int. Cl.[5] G03B *1/22*

U.S. Cl. 354—213 12 Claims



1. A film feeding apparatus for a film having two perforations each formed at a predetermined position of a frame in correspondence with the exposure plane of each frame, with an interval in a frame between a first perforation and a second perforation being different from an interval between said first perforation of said frame and a second perforation of a succeeding frame, said film feeding apparatus comprising:

a first claw capable of engaging said first perforation;

a second claw capable of engaging said second perforation;

supporting means for supporting said first and second claws so that said first and second claws are movable between an operating position at which said first and second claws are capable of engaging said first and second perforations respectively and a move-away position spaced at a predetermined interval from said operating position;

feeding means for feeding said film;

stopping means for preventing said feeding means from feeding said film by detecting that said film has been fed by one frame due to an engagement of said first claw with said first perforation and that of said second claw with said second perforation;

moving means for moving said supporting means to said move-away position when the feeding of said film starts as a result of the exposure of each frame;

urging means for urging said supporting means to said operating position except when said moving means operates; and

engagement preventing means for preventing said second claw from engaging said first or second perforation when said first claw is not in engagement with said first perforation.

5,357,303

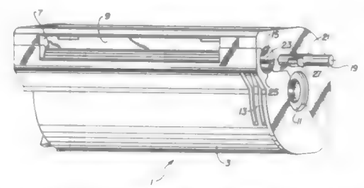
FILM CASSETTE WITH LOCKABLE LIGHT SHIELD

Michael L. Wirt, Avon, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 17, 1994, Ser. No. 198,221

Int. Cl.[5] G03B *17/26*

U.S. Cl. 354—275 6 Claims



2. A film cassette comprising light blocking means supported for rotation to a light blocking position for preventing ambient light from entering the cassette interior and to a non-blocking position, is characterized in that:

said light blocking means has a cavity configured for permitting a driver element to rotate in said cavity initially without rotating the light blocking means and then into driving engagement with the light blocking means to allow the driver element to rotate the light blocking means from its light blocking position to its non-blocking position; and

a locking pawl protrudes into said cavity to secure said light blocking means in its light blocking position and is adapted to be displaced from the cavity to release the light blocking means when the driver element is rotated initially in the cavity without rotating the light blocking means.

5,357,304

IMAGE DEVELOPMENT APPARATUS AND METHOD

Kiyotaka Wakamiya; Yuuichi Aki, both of Tokyo, and Minoru Inagaki, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

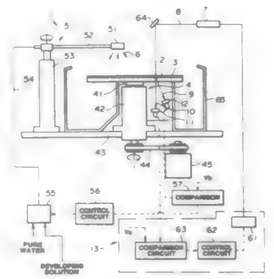
Filed Mar. 22, 1993, Ser. No. 35,251

Claims priority, application Japan, Mar. 25, 1992, 4-066518; Mar. 25, 1992, 4-066519

Int. Cl.[5] G03D *13/00, 5/00*

U.S. Cl. 354—298 12 Claims

1. Image developing apparatus for processing a disk base plate carrying an optically sensitive film having portions exposed by a recording beam for use in producing optical master disks, comprising a drive means for rotating the disk base plate, development solution supply mean for supplying developing solution onto the optically sensitive film while the disk base plate is rotated by the drive means to dissolve the exposed portions of the optically sensitive film, a laser beam source for irradiating dissolved exposed portions during supply of developing solution, photoelectric conversion means for detecting zero and first order diffracted light from the dissolved exposed portions, and control means responsive to the photoelectric conversion means to stop supply of developing solution based on the detection of the diffracted light, wherein the control means further comprises light amount control means for controlling the intensity of the laser beam irradiated on the optically sensitive film in dependence upon the detected level of the zero-order diffracted light.



5,357,305

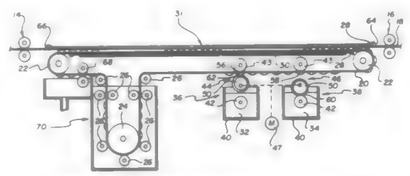
APPARATUS FOR PROCESSING PHOTOSENSITIVE MATERIALS

Francis C. Long, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 26, 1991, Ser. No. 749,827

Int. Cl.[5] G03D *5/00*

U.S. Cl. 354—318 11 Claims



1. A photographic processing apparatus intended to process a photosensitive material with first and second processing ingredients, said photographic processing apparatus comprising:

a series of discrete liquid-absorbing/-releasing means;

applicator means for applying a first processing ingredient and a second processing ingredient to respective ones of said liquid-absorbing/-releasing means in a recurring succession to first cause one of the liquid-absorbing/-releasing means to absorb the first processing ingredients and then another of the liquid-absorbing/-releasing means to absorb the second processing ingredient; and

transport means for moving respective ones of said liquid-absorbing/-releasing means and a photosensitive material into mutual contact to release a first processing ingredient and a second processing ingredient onto the photosensitive material in a recurring succession to mix the first and second processing ingredients along the photosensitive material.

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5,357,306

PHOTOGRAPHIC PROCESSING APPARATUS

David A. Skye, Harpenden, and Leslie J. H. Pummell, Rickmansworth, both of Great Britain, assignors to Eastman Kodak Company, Rochester, N.Y.

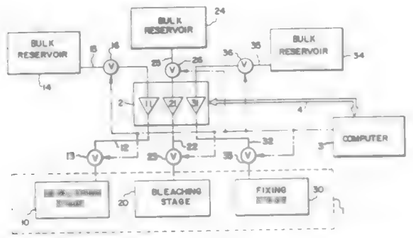
PCT No. PCT/EP91/00914, § 371 Date Nov. 23, 1992, § 102(e) Date Nov. 23, 1992, PCT Pub. No. WO91/18326, PCT Pub. Date Nov. 28, 1991

PCT Filed May 15, 1991, Ser. No. 952,613

Claims priority, application United Kingdom, May 23, 1990, 9011558.8

Int. Cl.[5] G03D *3/02*

U.S. Cl. 354—324 9 Claims



1. A method of replenishing a photographic process comprising a plurality of different processing stages to maintain component concentration of each stage within specified limits, the method comprising the steps of:

monitoring the amount of material being processed;

determining the amount of replenishment material required to maintain the component concentrations in each stage;

dispensing one or more replenishment materials from one or more bulk reservoirs of replenishment material to a separate intermediate container for each replenishment material dispensed, wherein said intermediate container is operable to store smaller amounts of said replenishment material;

dispensing from said intermediate containers said required amount of replenishment material to the appropriate stage; and

after each said dispensing and prior to dispensing further replenishment material, refilling said intermediate containers with replenishment material from bulk reservoirs containing each respective replenishment material;

characterized in that the amount of replenishment material dispensed to each stage is determined by weighing means, replenishment material for each processing stage being stored and dispensed separately.

5,357,307

APPARATUS FOR PROCESSING PHOTOSENSITIVE MATERIAL

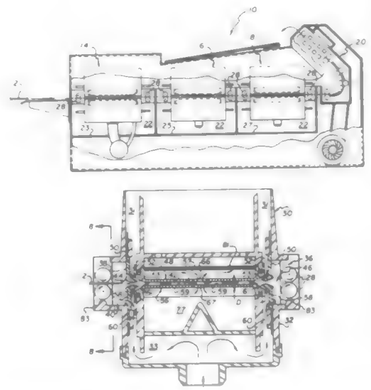
Thomas W. Glanville, Churchville; Douglas O. Hall, Canandaigua; Jan M. Munson, Ontario; Bruce R. Muller, Rochester, and David G. Sherburne, Ontario, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 25, 1992, Ser. No. 981,687

Int. Cl.[5] G03D *3/02, 13/02*

U.S. Cl. 354—324 22 Claims

1. In an apparatus for processing photosensitive material, the apparatus having, a processing chamber, said chamber having an entrance and an exit for allowing a photosensitive material to travel through the processing chamber, first supply means for supplying processing fluid to the processing chamber to create a first fluid layer on one side of the photosensitive material, a first drain for removing processing fluid from the first fluid layer, second supply means for supplying processing fluid to the processing chamber to create a second fluid layer on the opposite side of the photosensitive material, a second drain for removing processing fluid from the second fluid layer, the first drain comprises a first duct having an inlet and outlet, the inlet of the first duct being connected to the first drain and the outlet of the first duct being fluidly connected to a sump tank, the improvement comprising:



means for minimizing oxidation of the processing solution, comprising a blanket placed in the first duct for covering the processing solution passing therethrough.

5,357,308

AUTOMATIC ZOOM CAMERA AND DRIVING METHOD THEREFOR

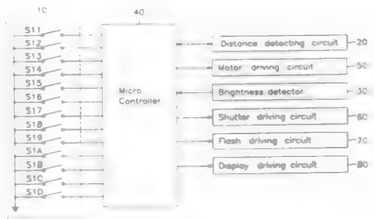
Bonjeong Goo, Kyeongsangnam-do, Rep. of Korea, assignor to Samsung Aerospace Industries, Inc., Kyeongsangnam-do, Rep. of Korea

Filed May 5, 1993, Ser. No. 57,308

Claims priority, application Rep. of Korea, Nov. 6, 1992, 92-20812

Int. Cl.[5] G03B *5/00, 13/36, 15/05*

U.S. Cl. 354—400 9 Claims



1. An automatic zoom camera comprising:

a switch block to sense information about an automatic zoom mode, a strobe mode, a sensitivity of film and a zoom position;

a distance detecting means for sensing the distance of an object;

a brightness detecting means for sensing the information about an environmental brightness;

a micro controller for charging a strobe, deciding whether a first release switch is turned ON, sensing a distance of an object, environmental brightness and a sensitivity of film in case the first release switch is turned ON, deciding whether a present operation mode is the automatic zoom mode, carrying out an automatic zoom processing subroutine to minimize changes of colour and shading of a photograph in accordance with the distance of the object, the sensitivity of the film and deciding whether a second release switch is turned ON in case the present operation mode is not the automatic zoom mode or carrying out the automatic zoom processing subroutine, taking a photograph along with an automatic focus adjusting and an exposing operation in case said second release switch is turned ON, transferring the film after being photographed, and terminating all operations;

a flash driving means for compensating a lack of sufficient light by driving a strobe in response to an output signal of the micro controller;

a shutter driving means for automatically adjusting a focus, adjusting an exposure value, and taking a photograph in response to the output signal of the micro controller; and

a motor driving means for automatically controlling the transfer of the film and the movement of a lens group in response to the output signal of the micro controller.

5,357,309

DISTANCE MEASURING DEVICE FOR A CAMERA

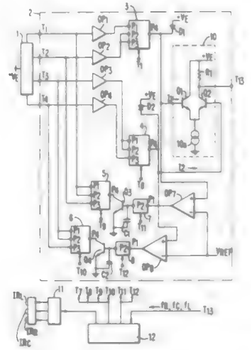
Yoichi Seki, Chiba, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1993, Ser. No. 40,062

Claims priority, application Japan, Mar. 31, 1992, 4-018672[U]

Int. Cl.[5] G03B *13/36;* G01C *3/08*

U.S. Cl. 354—403 12 Claims



1. A camera distance measuring device comprising:

center, left and right infrared-emitting diode means for emitting a center beam for centrally illuminating a subject, and left and right peripheral beams for illuminating subjects in left and right peripheral regions, respectively;

a position sensitive device having a plurality of electrodes consisting of a first outer electrode, a second outer electrode, and first and second intermediate electrodes between said first and second outer electrodes, said electrodes being positioned to produce outputs in response to light from said diode means that is reflected from a subject;

a plurality of amplifiers having inputs separately connected to said first electrode, said second electrode, said first intermediate electrode, and said second intermediate electrode; and

arithmetic circuit means, electrically connected with said amplifiers, for calculating center, left and right distance data from a composite output delivered synchronously from the amplifiers of said plurality of amplifiers and responsive to each of said center, left and right peripheral beams reflected from the subject onto said position sensitive device.

5,357,310

CORRELATION PHASE DIFFERENCE TYPE FOCUS DETECTING INTERPOLATION

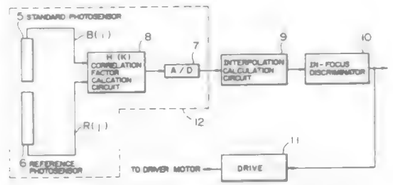
Kazuo Kawamura, Asaka; Takashi Miida, Kanagawa; Hiroshi Iwabuchi, Kanagawa, and Jun Hasegawa, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 900,284, Jun. 18, 1992, abandoned. This application Jan. 27, 1994, Ser. No. 187,136

Claims priority, application Japan, Jun. 20, 1991, 3-148888

Int. Cl.[5] G03B *3/00;* G01C *3/08;* G01J *1/20*

U.S. Cl. 354—408 12 Claims



1. A distance detecting method comprising the steps of:

disposing a pair of optical systems spaced apart by a base line length in the direction perpendicular to an optical axis;

disposing a standard photosensor and a reference photosensor on a focal plane of said pair of optical systems, said standard and reference photosensors each having a plurality of photosensor elements;

focusing an image of an object onto said standard and reference photosensors, comparing a standard optical signal that is output by said standard photosensor with a reference optical signal that is output by said reference photosensor while changing the phase of said reference optical signal relative to the phase of said standard optical signal, and calculating correlation factors;

detecting a phase having an extreme value of said correlation factors, wherein correlation factors occur before and after said extreme value;

calculating a first correlation factor change value representing a rate of change of said correlation factors occurring before said extreme value and a second correlation change value representing a rate of change of said correlation factors occurring after said extreme value;

calculating a compensation value based on the rate of changes of the correlation factors occurring before and after said extreme value by comparing said first and second correlation factor change values;

correcting at least one of said correlation factors in accordance with said compensation value and producing at least one corrected correlation factor; and

performing an interpolation calculation based on at least one of said correlation factors and said at least one corrected correlation factor, and obtaining a phase having an extreme value based on a result of said interpolation calculation.

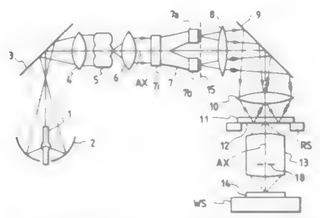
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5,357,311

PROJECTION TYPE LIGHT EXPOSURE APPARATUS AND LIGHT EXPOSURE METHOD

Naomasa Shiraishi, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 988,016, Dec. 9, 1992, abandoned, which is a continuation of Ser. No. 835,575, Feb. 14, 1992, abandoned. This application Jun. 21, 1993, Ser. No. 79,355
Claims priority, application Japan, Feb. 25, 1991, 3-30351; Feb. 28, 1991, 3-34512
Int. Cl.[5] G03B *27/42*
U.S. Cl. 355—53 46 Claims



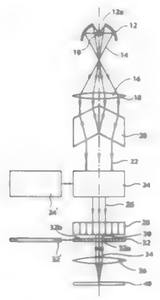
1. A projection type light exposure apparatus comprising:
a mask having a fine pattern and at least one auxiliary pattern spaced from said fine pattern by a predetermined distance along an edge of said fine pattern;
a projection optical system for projecting said fine pattern on said mask onto a photosensitive substrate; and
an illumination optical system for supplying an illumination light to said mask;
said illumination light being irradiated from at least one local area centered at a position eccentric from an optical axis of said illumination optical system in or a vicinity of a Fourier transform plane of said mask in said illumination optical system.

5,357,312

ILLUMINATING SYSTEM IN EXPOSURE APPARATUS FOR PHOTOLITHOGRAPHY

Keiichiro Tounai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 28, 1993, Ser. No. 128,002
Claims priority, application Japan, Oct. 1, 1992, 4-263451
Int. Cl.[5] G03B *27/54, 27/42*
U.S. Cl. 355—67 6 Claims



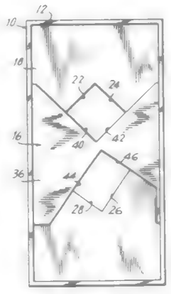
1. An illuminating system in an exposure apparatus for transferring a pattern on a reticle to a substrate having a photosensitive surface, the illuminating system comprising:
a light source;
first optical means for forming light rays emitted from the light source into a light beam having a circular cross-sectional shape;
second optical means for uniformalizing said light beam;
an aperture diaphragm which has a light beam shaping aperture and is positioned between said second optical means and the reticle; and
third optical means for variously reducing or magnifying the diameter of the light beam emerged from said first optical means.

5,357,313

CROPPER

Gideon Lewin, 25 W. 39th St., New York, N.Y. 10018, and Ted Fahn, Nyhavn 51, 1051 Copenhagen K, Denmark

Filed Feb. 4, 1994, Ser. No. 103,550
Int. Cl.[5] G03B *27/58*
U.S. Cl. 355—74 8 Claims



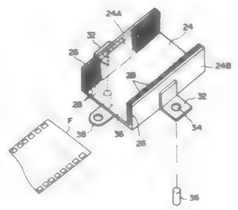
1. A cropper for use in the photographic or graphic design arts comprising:
a first sheet consisting of a thin rigid material and equipped with a flanged track around its perimeter, said first sheet being further equipped with a pentagonal shaped window that is bounded by and within said perimeter,
a second sheet consisting of a thin rigid material that fits into and is slidably movable within said flanged track of said first sheet forming a first window and a second window.

5,357,314

FILM ACCUMULATOR AND FILM ACCUMULATOR/HOLDER

Toshiro Tahara; Tadashi Seto, and Izumi Seto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 23, 1992, Ser. No. 948,583
Claims priority, application Japan, Jan. 29, 1992, 4-014237; Feb. 12, 1992, 4-025202; Feb. 24, 1992, 4-036409
Int. Cl.[5] G03B *27/62*
U.S. Cl. 355—75 22 Claims



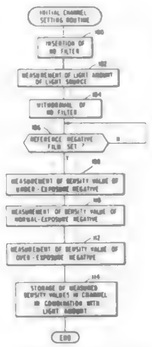
1. A film accumulator for accumulating a plurality of elongated, strip-like photographic films which are consecutively fed out, comprising:
a support portion on which the plurality of films which are consecutively fed out are placed one on top of the other in an accumulated state; and
holding means for holding portions of the plurality of films placed on said support portion, wherein said holding means has a multiplicity of projections for holding the plurality of films by engaging the widthwise sides of the plurality of films.

5,357,315

METHOD OF DETERMINING EXPOSURE CONDITION

Kenji Suzuki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 29, 1992, Ser. No. 968,485
Claims priority, application Japan, Oct. 30, 1991, 3-284893
Int. Cl.[5] G03B *27/80*
U.S. Cl. 355—77 8 Claims



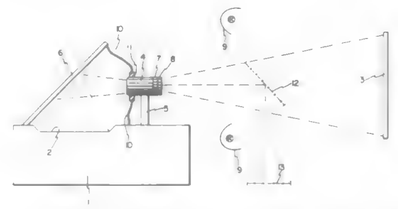
1. A method of determining an exposure condition for a negative film, comprising the steps of:
measuring a density value of a reference film and a light amount of a light source at a time of measuring of said density value of said reference film;
storing said density value and said light amount as a stored density value and a stored light amount, respectively;
measuring a current light amount of a light source used when exposing a negative film to be printed;
calculating a difference between said current light amount and said stored light amount;
correcting said stored density value of said reference film according to said difference;
measuring, a density value of said negative film to be printed under said current light amount; and
calculating an exposure condition for said negative film by the use of a density difference between said corrected density value and said density value of said negative film.

5,357,316

ELECTROPHOTOGRAPHIC COPYING DEVICE

Georg-Ulrich Kempf, Augustastrasse 8, 2057 Wentorf, Fed. Rep. of Germany

Continuation of Ser. No. 884,048, May 14, 1992, abandoned, which is a continuation of Ser. No. 403,914, Sep. 1, 1989, abandoned, which is a continuation of Ser. No. 176,936, Apr. 4, 1988, abandoned. This application Jan. 22, 1993, Ser. No. 10,443
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1987, 3711701
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—202 2 Claims



1. A camera attachment for an electrophotographic copying machine having a housing including an upper surface with a generally horizontally disposed image entrance window and an exposing device within the housing behind the image entrance window, the attachment comprising:
an upward extending arm releasably mountable upon the housing;
an objective lens mounted upon the arm, having a freely accessible incident light receiving optical surface, and an optical axis which is generally parallel to the upper surface when the arm is mounted on the housing;
a releasably mountable reflective surface, disposed at angles of about 45° to the axis of the objective and the upper surface of the housing;
and wherein the objective, reflective surface, and entrance window are arranged, such that reflected light from a remote illuminated opaque object enters the freely accessible optical surface and is directed by the objective lens and the reflective surface to form an original two-dimensional image upon the entrance window detectable by the exposing device for reproduction by the electrophotographic copying machine.

5,357,317

ELECTROSTATIC RECORDING APPARATUS USING VARIABLE BIAS DEVELOPING VOLTAGE

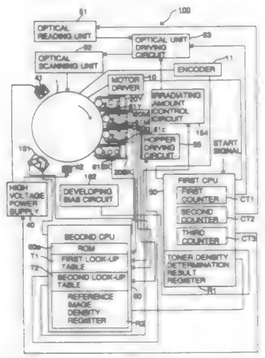
Masakazu Fukuchi; Shizuo Morita; Shizuo Kayano, and Kunihisa Yoshino, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Mar. 2, 1993, Ser. No. 25,641
Claims priority, application Japan, Mar. 10, 1992, 4-087667; Apr. 9, 1992, 4-116973; Apr. 14, 1992, 4-121436; Apr. 14, 1992, 4-121437; Apr. 16, 1992, 4-122636
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—208 6 Claims

1. An image forming apparatus for forming a color toner image on a photoreceptor, comprising:
means for forming a latent image, corresponding to one of a plurality of different color compositions of a color image, on the photoreceptor;
means for developing said latent image with a developer in a color corresponding to said one of said plurality of different color compositions;
means for applying a developing bias between said photoreceptor and said developing means;
means for controlling a toner concentration of said developer, in said color corresponding to said one of said plu-

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rality of different color compositions, so that said toner concentration of said developer is equalized;
means for forming a reference color toner image in said color corresponding to said one of said plurality of different color compositions, on said photoreceptor;
means for detecting a toner deposition amount of said reference color toner image; and



means for increasing said developing bias when said toner concentration of said developer, in said color corresponding to said one of said plurality of different color compositions, is equalized and said toner deposition amount of said reference color toner image is smaller than a predetermined value.

5,357,318

COLOR IMAGE FORMING APPARATUS WITH INTERCHANGEABLE CHARGING AND TRANSFERRING DEVICES

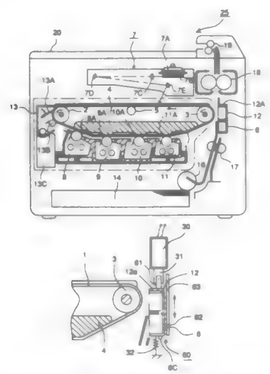
Satoshi Haneda; Masakazu Fukuchi, both of Hachioji, and Shizuo Morita, Tachikawa, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 892,743, Jun. 4, 1992, abandoned. This application May 12, 1993, Ser. No. 60,504

Claims priority, application Japan, Aug. 19, 1991, 3-206882; Aug. 30, 1991, 3-220336

Int. Cl.[5] G03G *15/00, 15/02, 15/16*

U.S. Cl. 355—210 **4 Claims**



1. A color image forming apparatus in which a belt-shaped photoreceptor is stretched around rollers to be advanced in a direction of travel, one stretched portion of said photoreceptor being disposed to face a plurality of developing means, and another stretched portion of said photoreceptor, oriented in parallel to said one stretched portion, being disposed to face exposure means, said apparatus comprising:
(a) means for charging said photoreceptor; and
(b) means for transferring a toner image from said photoreceptor onto a recording sheet, said charging means and said transferring means being located downstream in said direction of travel from said plurality of developing means; and
(c) cleaning means for removing residual toner from said photoreceptor, said cleaning means being provided adjacent to said plurality of developing means,
wherein said charging means and said transferring means are incorporated in a single unit, the charging and transfer functions of said charging means and said transfer means being interchangeable, and wherein said single unit is either slidable or rotatable between a first position where said charging operation is conducted and a second position where said transfer operation is conducted.

5,357,319

IMAGE FORMING APPARATUS HAVING IMAGE QUALITY CONTROL

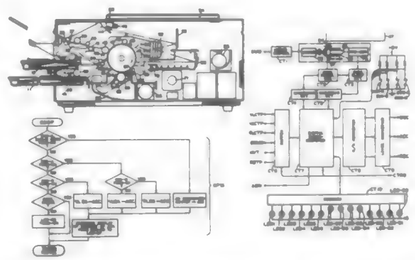
Nao Nagashima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 713,077, Jun. 11, 1991, abandoned, which is a division of Ser. No. 412,433, Sep. 25, 1989, Pat. No. 5,043,765, which is a continuation of Ser. No. 145,740, Jan. 19, 1988, abandoned, which is a continuation of Ser. No. 653,629, Sep. 24, 1984, Pat. No. 4,688,239, which is a continuation of Ser. No. 364,607, Apr. 1, 1982, abandoned, which is a continuation of Ser. No. 195,429, Oct. 9, 1980, abandoned. This application Mar. 23, 1993, Ser. No. 35,885

Claims priority, application Japan, Oct. 13, 1979, 54-132075; Oct. 13, 1979, 54-132076; Oct. 13, 1979, 54-132077

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—208 **7 Claims**



1. An image recording apparatus, comprising:
image forming means, including a plurality of processing means, for forming an image on a recording medium;
control means, said control means including detecting means for detecting parameters effecting the quality of an image formed by said image forming means, wherein said control means is operable for automatically controlling a plurality of variable operating conditions of said plurality of processing means in accordance with the detected value of said parameter so as to regulate image quality;
selecting means for manually selecting whether to perform image formation using the automatic control of said operating conditions, based on the detected parameter values by said control means,
wherein said detecting means further comprises a plurality of manual switching means independently operable to control whether image forming conditions associated with each manual switching means should be performed with or without automatic control of said operating conditions, and wherein in the case said selecting means selects the image formation without automatic control, one of said plurality of manual switching means operates to set at least one of the operating conditions to a predetermined value, and another of said plurality of manual switching means operates to set at least another of the operating conditions in accordance with the detected value of said parameter.

5,357,320

ELECTROPHOTOGRAPHIC APPARATUS

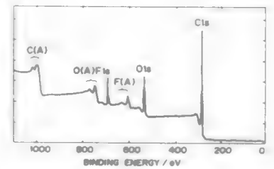
Noboru Kashimura, Tokyo; Harumi Sakoh, Kawasaki; Kazushige Nakamura, Yokohama; Shoji Amamiya, Kawasaki; Takashige Kasuya, Soka; Haruyuki Tsuji, Yokohama; Masaaki Yamagami, Yokohama, and Tatsuya Ikezue, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1993, Ser. No. 114,925

Claims priority, application Japan, Sep. 4, 1992, 4-260627; Sep. 4, 1992, 4-260628; Sep. 4, 1992, 4-260629; Sep. 4, 1992, 4-260630

Int. Cl.[5] G03G *5/00*

U.S. Cl. 355—211 **9 Claims**



1. An electrophotographic apparatus comprising an electrophotographic photosensitive member and a transfer means, wherein;
said electrophotographic photosensitive member comprises a conductive support having on its surface a photosensitive layer, and said electrophotographic photosensitive member has a surface layer comprised of a binder resin, fluorine atom- or silicon atom-containing compound particles incompatible with the binder resin, and a fluorine atom- or silicon atom-containing compound compatible with the binder resin; the proportion of fluorine atoms and silicon atoms to carbon atoms, (F+Si)/C, in said surface layer as measured by X-ray photoelectron spectroscopy being from 0.01 to 1.0; and
said transfer means comprises a multiple-transfer means.

5,357,321

DRUM SUPPORTING HUB AND DRUM ASSEMBLY

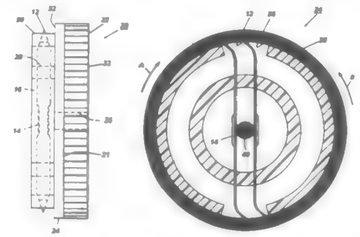
James G. Steazel, Rochester, and Edward P. Imes, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 4, 1994, Ser. No. 177,033

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—211 **15 Claims**

1. A drum supporting hub for comprising a disk shaped member having a circular periphery, a hole extending axially through the center of said disk shaped member, and at least one long thin electrically conductive resilient member secured to said disk shaped member, said resilient member having a central section adjacent said hole and having opposite ends, each of said ends terminating into at least one pointed tip adjacent said circular periphery of said disk shaped member for engagement with a cylindrical drum upon insertion of said hub into



said drum, and said resilient member having a major plane substantially parallel to the axis of said disk shaped member.

5,357,322

CHARGER

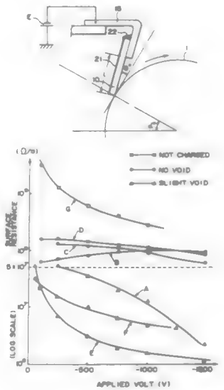
Norihisa Hoshika, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 645,451, Jan. 24, 1991, abandoned. This application Dec. 28, 1992, Ser. No. 996,871

Claims priority, application Japan, Jan. 24, 1990, 2-14092; Jan. 24, 1990, 2-14093

Int. Cl.[5] G03G *15/02*

U.S. Cl. 355—219 **36 Claims**



1. A charging device for charging a moving member to be charged, comprising:
a charging member for contact with the member to be charged, wherein said charging member extends in a direction along a generating line of said member to be charged and has a first layer contactable to the member to be charged and a second layer disposed further from the member to be charged than the first layer; and
means for applying a voltage to said charging member;
wherein said first layer has a surface resistivity at a surface contactable to the member to be charged not less than 5×10^7 ohm/square, and said second layer has a volume resistivity of not more than 1×10^9 ohm.cm.

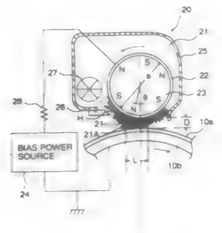
VOL 1167 ISS 3 OC 18 1994 UMI

5,357,323

MAGNETIC BRUSH CHARGING DEVICE

Satoshi Haneda; Kunio Shigeta; Sachie Hosokoezawa; Masakazu Fukuchi; Shizuo Morita, and Hiroyuki Nomori, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Oct. 15, 1993, Ser. No. 138,411
Claims priority, application Japan, Oct. 26, 1992, 4-287715; Oct. 26, 1992, 4-287716; Nov. 12, 1992, 4-302486
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—219 9 Claims



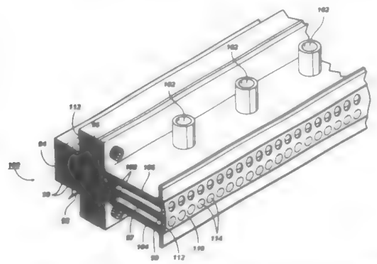
1. An image forming apparatus for developing a latent image on a photoreceptor with toner, comprising:
sleeve means for charging the photoreceptor;
magnetic particles for forming a magnetic brush on a surface of said sleeve means;
driving means for moving said magnetic brush; and
power applying means for applying an alternating current between 20 and 500 μA/cm onto a charging area between said sleeve means and said photoreceptor;
wherein said sleeve means is located in a vicinity of said photoreceptor so that said magnetic brush is in contact with a surface of said photoreceptor.

5,357,324

APPARATUS FOR APPLYING VIBRATORY MOTION TO A FLEXIBLE PLANAR MEMBER

David B. Montfort, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 29, 1993, Ser. No. 158,322
Int. Cl.[5] G03G *15/14*
U.S. Cl. 355—273 31 Claims



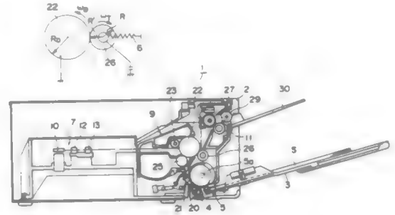
1. A system for enhancing transfer of toner from an image bearing member, comprising:
means for applying vibratory energy to the image bearing member to facilitate toner release therefrom;
a cover interposed between said applying means and the image bearing member; and
vacuum means for drawing the image bearing member toward said cover.

5,357,325

IMAGE FORMING APPARATUS HAVING TRANSFER MEMBER ROTATING FASTER THAN IMAGE BEARING MEMBER

Hideshi Kawaguchi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 301,475, Jan. 26, 1989, abandoned. This application Feb. 6, 1991, Ser. No. 652,222
Claims priority, application Japan, Jan. 30, 1988, 63-021633
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—277 31 Claims



1. An image forming apparatus comprising:
an image bearing member rotatably disposed;
a rotating member for biasing a sheet against said image bearing member, said rotating member transferring, at a nip portion between said image bearing member and said rotating member, an image on said image bearing member onto the sheet;
drive force transmitting means for transmitting a drive force from a drive means to said image bearing member;
a first gear provided on said image bearing member;
a second gear provided on said rotating member, said second gear engaging with said first gear and the drive force being transmitted from said first gear to said second gear;
a pair of rotary feeding members disposed downstream of said rotating member in the sheet moving direction, wherein the distance from a nip portion between said image bearing member and said rotating member to a nip portion between said pair of rotary feeding member is set shorter than the length of the sheet;
wherein upon image transfer, a peripheral speed of a nip portion of said rotating member is set larger than a peripheral speed of a nip portion of said image bearing member such that the image bearing member will receive a first force in a rotating direction thereof from said rotating member, said first gear receiving a second force in a direction opposite to the first force from said second gear when transferring the image;
wherein said image forming apparatus satisfies the following inequality: $R_D\omega_D < R'\omega_T$, where R_D is the radius of said image bearing member, R′ is the minimum radius of said rotating member, ω_D is the angular velocity of said image bearing member, and ω_T is the angular velocity of said rotating member.

5,357,326

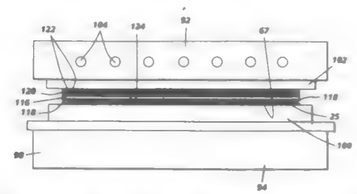
HIGH QUALITY COLOR HIGHLIGHT PRINTS USING B/W XEROGRAPHY

Abraham Cherian, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 21, 1993, Ser. No. 95,643
Int. Cl.[5] G03G *8/00, 15/14*
U.S. Cl. 355—278 16 Claims

1. Method of forming a simulated photographic print, said method including the steps of:
xerographically forming a wrong reading toner image on one side of a transparent substrate;
contacting said toner image with one side of a colored backing member;

contacting another side of said colored backing member with an abhesive member;
contacting a non-image side of said transparent substrate with a flat rigid surface;
simultaneously applying heat and pressure at predetermined values to said transparent substrate, said abhesive member



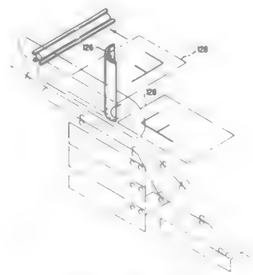
and said colored backing member whereby said substrate and said backing member adhere to each other to form said simulated photographic print;
separating said abhesive member from said another side of said colored backing member; and
separating said simulated photographic print from said flat rigid surface.

5,357,327

SHEET DECURLING SYSTEM INCLUDING CROSS-CURL

Suzzette R. Solano, Victor; Christian O. Abreu, Rochester; Patrick T. Ferrari, Walworth; John J. Bigenwald, Penfield; Robert P. Rebres, Honeoye Falls; Theodore J. Kellogg, Rochester, and Thomas R. Alexander, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 864,276, Apr. 6, 1992, abandoned. This application Dec. 1, 1992, Ser. No. 983,928
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—282 20 Claims



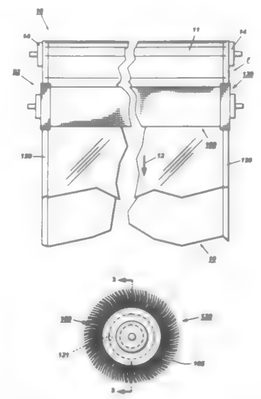
1. A system for decurling a sheet having a length and a width which is being advanced in a predetermined orientation with one of said length or said width oriented parallel to a direction of movement along a predetermined path within a printing machine, comprising:
means for generating a flow of room ambient air;
means for directing the flow of room ambient air onto the sheet;
a decurler adapted to apply mechanical force to the sheet after the flow of room ambient air has been directed onto the sheet by said directing means;
means for rotating the sheet to advance the sheet to the decurler in an orientation with the other of said length or said width oriented parallel to the direction of movement along the predetermined path.

5,357,328

GROUND STRIP BRUSH CLEANER

Douglas A. Landy, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 16, 1993, Ser. No. 46,553
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—301 10 Claims



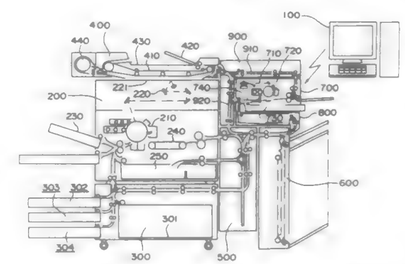
1. An apparatus for cleaning particles from a surface having an electrical ground strip along a marginal region of the surface, comprising:
a housing defining an open ended chamber;
a brush, rotatably mounted in the chamber of said housing, for removing particles from the surface; and
means, attachable to said brush, for cleaning particles from the ground strip of the surface, said cleaning means being insulative to prevent shorting with the ground strip.

5,357,329

IMAGE FORMING APPARATUS HAVING TWO IMAGE FORMING UNITS

Takayuki Ariyama, Atsugi; Kiyoshi Emori, Toyokawa; Koji Shakushi, Toyohashi; Hiroya Sugawa, Toyokawa, and Masamichi Kishi, Okazaki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 11, 1992, Ser. No. 928,113
Claims priority, application Japan, Aug. 26, 1991, 3-213732; Aug. 26, 1991, 3-213741; Aug. 26, 1991, 3-213758; Aug. 26, 1991, 3-213766
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—309 24 Claims



1. An image forming apparatus which comprises: a first

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image forming means for forming an image on a recording sheet;

a first accommodating means for accommodating recording sheets adapted to be supplied to the first image forming means;

a first supply means for supplying the recording sheets one at a time from the first accommodating means to the first image forming means;

a second image forming means for forming an image on a recording sheet;

a second accommodating means for accommodating recording sheets adapted to be supplied to the second image forming means;

a second supply means for supplying the recording sheets one at a time from the second accommodating means towards the second image forming means; and

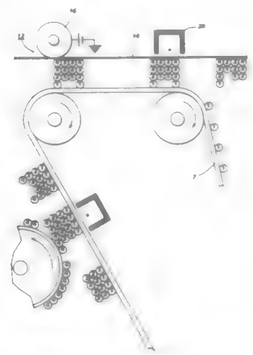
a third supply means for supplying the recording sheets from the first accommodating means to the second accommodating means without passing through any of the first and second image forming means.

5,357,330

MULTILAYER TONER TRANSFER ORDERING

Oscar G. Hauser, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 12, 1992, Ser. No. 974,541
Int. Cl.[5] G03G *15/16*
U.S. Cl. 355—326 R **10 Claims**



1. Electrophotographic imaging apparatus for forming multicolor toner images, said apparatus comprising:

first means for producing a single color toner image with a first colored toner on an image supporting surface of a first image receiving member;

second means for producing a single color toner image with a second colored toner on an image supporting surface of a second image receiving member;

third means for producing a single color toner image with a third colored toner on an image supporting surface of a third image receiving member, said first, second and third toners each being of a different color from another;

means for transferring each toner image from said image receiving members onto an intermediate image receiving member, said toner image from the first toner image producing means deposited directly on said intermediate image receiving member, and said toner from said second and third toner image producing means successively deposited superposed upon the previous toner image to form a multi layer toner image;

said second toner image producing means provided with a selected colored toner, having the characteristics that variations in mass per unit area of said toner cause a most significant color shift in an image on a final support of the first toner, second toner and third toner; and

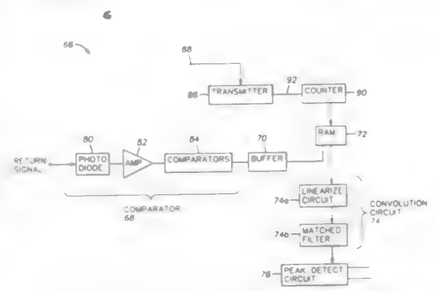
means for transferring the multi layer toner image from the intermediate image receiving member to a final support, said transfer characterized by leaving a residual amount of toner of said first toner image on said intermediate image receiving member.

5,357,331

SYSTEM FOR PROCESSING REFLECTED ENERGY SIGNALS

Stuart W. Flockencier, 1713 Knob Hill, Cedar Hill, Tex. 75104

Continuation-in-part of Ser. No. 724,748, Jul. 2, 1991, Pat. No. 5,243,553. This application Mar. 24, 1993, Ser. No. 36,348
Int. Cl.[5] G01C *3/08*
U.S. Cl. 356—5 **20 Claims**



1. A system for processing an analog light signal transmitted by a light source and reflected by a target, comprising:

(a) an analog-to-digital converter to receive analog light signals and convert the received light signals into digital electrical signals;

(b) a memory having a plurality of addresses to store digital signals received from the analog-to-digital converter;

(c) a counter providing counter values to regulate the storage of the digital signals in the memory;

(d) a real time return system including a peak detector operatively coupled to the converter to identify the receipt of a target-reflected signal and store the value of the counter occurring at the time of such receipt; and

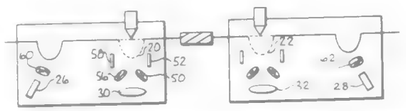
(e) convolution and peak detecting circuits to utilize the stored counter value to located digital signals representative of the reflected pulse in the memory, and to process the representative digital signals.

5,357,332

APPARATUS FOR, AND METHOD OF, DETERMINING THE EFFECTIVENESS OF A SPLICE OF OPTICAL FIBER

Timothy M. Chappel, Simi Valley, Calif., assignor to Photonix Industries, Los Angeles, Calif.

Filed Aug. 11, 1992, Ser. No. 928,493
Int. Cl.[5] G01N *21/84, 21/59*
U.S. Cl. 356—73.1 **7 Claims**



1. Apparatus for determining the effectiveness of a splice of two optical fibers, including,

first light emission means for providing on one side of the splice for a first light emission,

first light detecting means for providing for a first light detection in spaced relationship to the first light emission at a position closer to the splice than the first light emission, the first light detecting means including a first light detector,

second light emitting means for providing on a second side of the splice for a second light emission,

second light detecting means for providing for a second light detection in spaced relationship to the second light emission at a position closer to the splice than the second light emission, the second light detecting means including a second light detector,

third means for providing at different times for the first light detection by the first light detector from the first light emission and from the second light emission and for the second light detection by the second light detector from the first light emission and the second light emission,

fourth means responsive to the detections by the first light detector and the second light detector for processing such detections to provide an indication of the effectiveness of the splice,

the first light detecting means including a first lens for directing to the first light detector light passing through a first one of the fibers from the first light emitting means and for directing to the first light detector light passing through the first fiber from the second light emitting means,

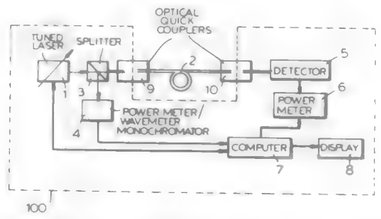
the second light detecting means including a second lens for directing to the second light detector light passing through the other one of the fibers from the first light emitting means and for directing to the second light detector light passing through the other fiber from the second light emitting means.

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APPARATUS FOR MEASURING THE EFFECTIVE REFRACTIVE INDEX IN OPTICAL FIBERS

Carlo DeBernardi, Turin; Salvatore Morasca, Como, and Fabio Pozzi, Stradella, all of Italy, assignors to Cselt-Centro Studi E Laboratori Telecomunicazioni SpA, Turin, Italy

Filed Dec. 11, 1992, Ser. No. 989,332
Claims priority, application Italy, Dec. 23, 1991, T091A001016; Aug. 5, 1992, T092A000681
Int. Cl.[5] G01N *21/45*
U.S. Cl. 356—73.1 **6 Claims**



1. An apparatus for measuring an effective refractive index of an optical fiber, said apparatus comprising:

means for temporarily connecting a stretch of a fiber under test to the apparatus;

a source of light radiation of a wavelength variable within a predetermined interval;

means for sending the radiations emitted by the source into the stretch of fiber;

a detector for collecting radiation outgoing from the stretch of fiber;

means connected to the output of said detector, for measuring intensity of the radiation collected by the detector as the wavelength of said source varies; and

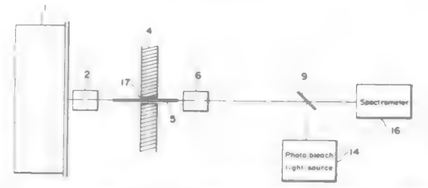
a computing unit, connected to the source for controlling the wavelength variation and also connected to the intensity measuring means, to determine the oscillation period of the fiber transmittance of reflectivity and to obtain the effective index value from such a period.

5,357,334

SPECTROANALYZER CORRECTING FOR DETERIORATION OF TRANSMISSIBILITY

Yoichi Ishiguro; Haruhiko Aikawa; Minoru Watanabe, all of Yokohama; Yoshiaki Ichige, and Fumitoshi Okamoto, both of Naka, all of Japan, assignors to Sumitomo Electric Industries Ltd., Osaka and Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, both of Japan

Filed Dec. 18, 1992, Ser. No. 992,647
Claims priority, application Japan, Dec. 18, 1991, 3-335062
Int. Cl.[5] G01J *3/443*
U.S. Cl. 356—73.1 **4 Claims**



1. A spectroanalyzer correcting for deterioration of transmissibility, comprising:

an optical fiber having first and second ends, said first end facing an object to be tested to receive a measurement light from said object and said first end of said optical fiber being exposed to a radiation environment;

a monitoring light source separated from said radiation environment, said monitoring light source supplying a modulated white light to said second end of said optical fiber;

a first semitransparent reflector arranged between said object and said first end of said optical fiber, said first semitransparent reflector, for reflecting the modulated white light issued from said first end to return the reflected light to said first end of said optical fiber;

a spectroanalyzing means including a spectrometer (10), a photo-electric converter (11) and a signal processor (12), said signal processor electrically separating a first electrical signal corresponding to the light from the object and a second electrical signal corresponding to the white light issued from the second end and, to normalize the first electrical signal with the second electrical signal to produce a detection signal; and

a second semitransparent reflector arranged between said monitoring light source and said second end of said optical fiber, said second semitransparent reflector guiding the white light and the light issued from the object both of which are emitted from said second end to said spectrometer of said spectroanalyzing means and said second semitransparent reflector passing the modulated white light issued from said monitoring light source to guide to the second end of said optical fiber.

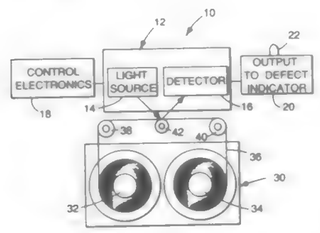
VOL 1167 ISS 3 OC 18 1994 UMI

5,357,335

OPTICAL DETECTION DEVICE FOR SCREENING MAGNETIC TAPE

Johnny K. Sparks, White Bear Lake; Roger J. Anderson, St. Paul, and Michael K. Hoel, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 31, 1993, Ser. No. 40,527
Int. Cl.[5] G01N *21/89*
U.S. Cl. 356—237 15 Claims



1. An optical detection device for screening magnetic tape for physical defects, including:

a row of at least two light emitting diodes, wherein the diodes are configured to direct light toward a magnetic tape to be screened, and wherein the row of diodes extends across the width of the tape and is substantially perpendicular to the direction of travel of the tape;

first and second rows, substantially parallel to the row of diodes, each of which includes at least two detectors, wherein the first row is positioned between the row of diodes and the second row, and wherein the detectors in both rows are configured to receive light from the diodes which has been reflected from a surface of the tape when physical defects on the tape are not present; and

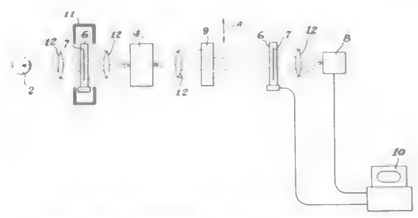
a pair of mirrors, wherein one mirror is positioned at each end of the first row of detectors, whereby light emitted from the diodes toward each edge of the tape is reflected at the tape surface toward each mirror, where it is reflected toward the detectors at each end of the first row when physical defects are not present.

5,357,336

METHOD AND APPARATUS FOR MULTIVARIATE CHARACTERIZATION OF OPTICAL INSTRUMENT RESPONSE

Harry D. Ruhl, Jr., and Kenneth R. Beebe, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 8, 1991, Ser. No. 742,620
Int. Cl.[5] G01J *3/42*
U.S. Cl. 356—319 20 Claims



4. A method for recalibrating optical instruments of the type having a light source and a light detector for generating a response in the form of a spectrum characteristic of a sample, comprising the steps of:

a) placing a sample between the light source and detector;

b) generating a spectrum corresponding to the sample;

c) placing an etalon between the light source and detector and in series with the sample;

d) generating a combined spectrum of the etalon and the sample;

e) extracting the spectrum for the sample from the combined spectrum for the etalon and sample to give a resulting spectrum of the etalon; and

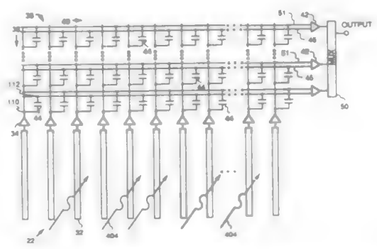
f) comparing the resulting spectrum with a reference spectrum and varying the instrument response so that the resulting spectrum matches the reference spectrum.

5,357,337

HIGH SPEED INTERFEROMETER FOURIER TRANSFORM SPECTROMETER INCLUDING A WEIGHTED CAPACITIVE MATRIX

Gerald J. Michon, Waterford, and Jerome J. Tiemann, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 20, 1992, Ser. No. 979,022
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—346 24 Claims



1. A high speed interferometer Fourier transform spectrometer, comprising:

a linear detector array for receiving an interferogram, said linear detector array comprising a plurality of detector means;

a weighted matrix comprising a plurality of transform coefficient means, arranged in a group of columns and a group of rows, each one of said columns coupled in parallel with a respective one of said detector means; and

a plurality of differential means coupled to said weighted matrix, each one of said differential means coupled to a respective one of said rows of said weighted matrix corresponding to a wavelength of said interferogram, the magnitude of a respective transform coefficient means of said weighted matrix being selected to optimize a trade-off between goals of maximum output signal from a respective one of said differential means and minimum output signal from all other differential means of said weighted matrix when said respective one of said differential means algebraically adds output signals of said transform coefficient means of said respective one of said rows.

5,357,338

PATH LENGTH CONTROLLER WITH OFFSET BIAS FOR A RING LASER GYRO

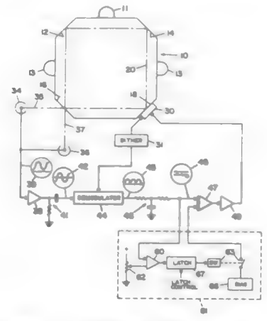
Thomas J. Hutchings, Thousand Oaks, Calif., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Filed Jul. 11, 1983, Ser. No. 512,257
Int. Cl.[5] H01L *41/08;* G01C *19/64*
U.S. Cl. 356—350 22 Claims

1. In a ring laser having a plurality of mirrors forming a ring laser path and containing a lasing gas and means for delivering energy to said gas, wherein the position of at least one mirror is controlled by a transducer to tune said laser path, and wherein a servo senses the amplitudes of the counterpropagating laser beams in the lasing gas and controls the position of said at least one mirror and transducer to position said at least one mirror at a position wherein the intensities of the laser beams are maximum, the improvement comprising:

dithering signal means connected to drive said transducer to dither said at least one mirror;

bias signal means for delivering a bias signal into said servo;



switching means for connecting and disconnecting said bias signal to and from said servo;

comparison means connected to compare the amplitude of the input control signal of said servo to a predetermined threshold signal and to control said switching means in response to the difference between said compared signals; and

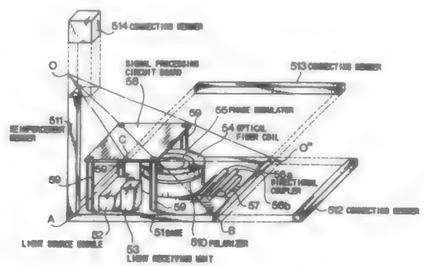
latch means connected between said comparison means and said switching means to minimize reconnection of said bias signal into said servo.

5,357,339

MULTI-AXIS FIBER-OPTIC GYROSCOPE ASSEMBLY IN WHICH EACH GYROSCOPE COMPRISES ⅛ OF A SPECIFIC SHAPE

Tatsuo Terasoka; Yoshiyuki Hiramoto; Hirokazu Shiga, and Shigeo Toya, all of Hitachi, Japan, assignors to Hitachi Cable Limited, Tokyo, Japan

Filed Jun. 24, 1992, Ser. No. 903,418
Claims priority, application Japan, Jun. 25, 1991, 3-153379
Int. Cl.[5] G01C *19/72*
U.S. Cl. 356—350 6 Claims



1. A fiber-optic gyroscope, comprising:

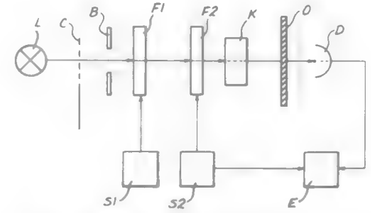
three fiber-optic gyroscope units (50), each gyroscope unit (50) including optical components (52–56) and a signal processing circuit (58) for allowing the unit (50) to operate as a fiber-optic gyroscope to detect rotational angular velocity about one axis, each gyroscope unit (50) having a shape obtained by dividing a polyhedron solid into three equal bodies which are symmetrical with respect to the axis of symmetry of the solid, and the three single-axis gyroscope units (50) being united together in symmetrical positions with respect to the axis of symmetry to form a fiber-optic gyroscope which can detect rotational angular velocities about three orthogonal axes.

5,357,340

METHOD FOR SPECTROSCOPY USING TWO FABRY-PEROT INTERFERENCE FILTERS

Michael Zöchbauer, Oberursel, Fed. Rep. of Germany, assignor to Hartmann & Braun, Fed. Rep. of Germany

PCT No. PCT/DE90/00747, § 371 Date Mar. 10, 1992, § 102(e) Date Mar. 10, 1992, PCT Pub. No. WO91/05988, PCT Pub. Date May 2, 1991
PCT Filed Oct. 1, 1990, Ser. No. 838,771
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1989, 3934106
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—352 1 Claim



1. Method for Fabry-Perot spectroscopy using a spectrometer the radiation path of which being provided with a radiation source, two successive Fabry-Perot interference filters through which the radiation passes, a blend of substances to be examined, and a detector for receiving radiation flux having passed through the filters and the blend, said Fabry-Perot interference filters having been adjusted to the same optical layer thickness, the optical layer thickness of one of the Fabry-Perot interference filters is continually varied by modulation, the improvement comprising

producing an interferogram of an envelope (FIG. 5) of a transmission curve which envelope results from superpositioning of the Airy-functions of the two Fabry-Perot interference filters, whereby the envelope represents the difference in the optical layer thickness of the two Fabry-Perot interference filters, receiving a radiation flux having passed through the filters and the blend, by means of the detector and over a broad band in order to make use of the envelope part of the transmission curves; and

mathematically converting the interferogram received by the detector into a spectrum as a function of the wave number.

5,357,341

METHOD FOR EVALUATING INTERFEROGRAMS AND INTERFEROMETER THEREFOR

Michael Küchel, Oberkochen; Karl-Heinz Schuster, Bad Wurzach, and Klaus Freischlad, Aalen-Unterkochen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Jul. 13, 1992, Ser. No. 912,285
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1991, 4124223
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—353 26 Claims

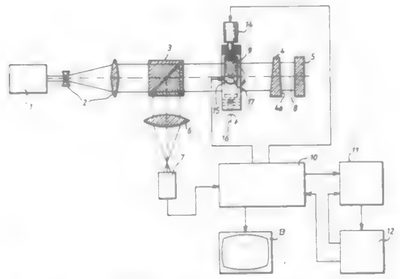
1. A method of recording and evaluating interferograms of a

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test object, the method comprising the steps of: providing an interferometer for producing said interferograms and having a light source providing spatially and temporally coherent light and having optical components for transmitting object test waves and reference waves produced in the interferometer which interfere to produce a first interferogram component, and for transmitting additional waves of said light which interfere to produce a second interferogram component, said additional waves of light being produced by unwanted scattering and reflection in said optical;

providing a camera having a light-sensitive surface for receiving said first and second interferogram components thereon;

recording a first interferogram or a first set of interferograms of a superposition of said first and second interferogram components;



generating a movement of said test and reference waves relative to said additional waves;

recording a second interferogram or a second set of interferograms of a superposition of said first and second interferogram components after said movement;

providing a computer connected to said camera and preparing a first phase map in said computer from said first interferogram or said first set of interferograms;

preparing a second phase map in said computer from said second interferogram or said second set of interferograms; and,

evaluating said first and second phase maps in said computer to eliminate said second interferogram components from said phase maps.

5,357,342

PROCESS AND APPARATUS FOR MEASURING DEGREE OF POLARIZATION AND ANGLE OF MAJOR AXIS OF POLARIZED BEAM OF LIGHT

Derek E. Decker, Carmel, and John S. Toeppen, Livermore, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 30, 1992, Ser. No. 996,935
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—364 **10 Claims**

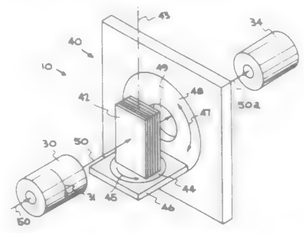
1. A process for calibrating the measurement of the phase angle and major axis of the polarization of a polarized beam at a diagnostic point with a measurement of the same parameter at a point of interest along the polarized beam path prior to the diagnostic point which comprises:

a) measuring the phase angle of the polarization of the beam and angle of the major axis at said point of interest, using a first rotatable polarizer and a first detector;

b) then measuring these parameters again at a diagnostic point using a second rotatable polarizer and a second detector;

c) disposing a compensation apparatus, including a tunable partial polarizer, along the beam path leading to said second detector; and

d) adjusting said tunable partial polarizer both by rotating said tunable partial polarizer around an axis normal to the beam path and also rotating said tunable partial polarizer



around the axis of the beam path until the detected phase of the beam polarization at said second detector equals the phase measured at the point of interest;

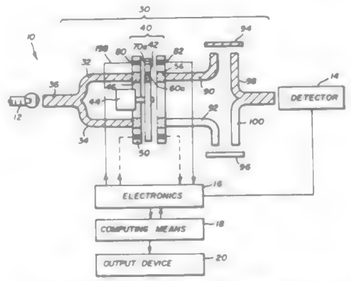
to thereby compensate for any differences between the phase angle measured at said point of interest and the phase angle measured at said diagnostic point.

5,357,343

SPECTROPHOTOMETER HAVING MEANS FOR SIMULTANEOUS MODULATION, SWITCHING AND WAVELENGTH SELECTION OF A LIGHT SOURCE

Alan J. Lowne, victor; James R. Sandifer, Rochester; David S. Uerz, Ontario; Steven C. Switalski, and Hsue-Yang Liu, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 737,824, Jul. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 591,204, Oct. 1, 1990, abandoned. This application Sep. 28, 1992, Ser. No. 951,607
Int. Cl.[5] G01N *21/25*; G01J *3/00*
U.S. Cl. 356—418 **11 Claims**



1. A spectrophotometer comprising a single light source, a single detector, signal generating means responsive to said detector for generating a signal representing the amount of light detected by said detector, optic means for separately illuminating both a reference and a sample with a light beam from said source that is transmitted to said detector, said optic means including:

i) a rotatable chopper,

ii) means for rotating said chopper to intercept the light beam, said optic means being constructed to alternately pass through said chopper a light beam for said reference and a light beam for said sample, said chopper further including a plurality of pass-through apertures, each with a bandpass filter constructed to pass through said chopper only light of preselected wavelengths, said optic means being further constructed and positioned to direct said

reference light beam and said sample light beam at illumination spots on said chopper that are aligned with the circle of rotation of said pass-through apertures, and

iii) a plurality of trigger means for sensing when said pass-through filters are aligned with one of said light beams, said trigger means being separately operatively connected to said signal-generating means and comprising at least one energy emitter and energy detector coupled with energy relay members on said chopper that either allow detection of said energy or prevent detection,

wherein said illumination spots on said chopper are disposed at an angle that is smaller than the degrees of the angular separation of said pass-through apertures,

said energy emitter/detector combinations and said relay men%bets of said trigger means are present in the following relationship:

$$n \times N = q \times Z$$

wherein n=the number of said light beams, N=the number of said pass-through apertures, q=the number of said emitter/detector combinations, and Z=the number of said relay members,

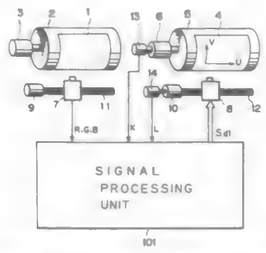
said means for generating a signal includes nN integrators, wherein n and N have the same meaning as before, and means for multiplexing said signal between said integrators wherein each said integrator receives the signal for an individual combination of one of said light beams and one of said filters and said integrators are triggered on and off by said relay members.

5,357,344

METHOD OF AND APPARATUS FOR RECORDING HALFTONE IMAGE

Toshio Kasamatsu, and Takuya Yamaguchi, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Apr. 20, 1990, Ser. No. 531,698
Claims priority, application Japan, Sep. 16, 1988, 63-232789
Int. Cl.[5] H04N *1/23, 1/40*
U.S. Cl. 358—298 **9 Claims**



1. An apparatus for recording a halftone image which includes a halftone area and a solid area, said apparatus comprising:

recording means for recording the halftone image;

first means for providing first halftone data representing said halftone image in said halftone area and for providing second halftone data associated with said solid area;

second means, coupled to said first means, for generating a first halftone dot signal for said halftone area and a second halftone dot signal for said solid area;

means for generating a detection signal indicating a location of said halftone area and said solid area on said halftone image; and

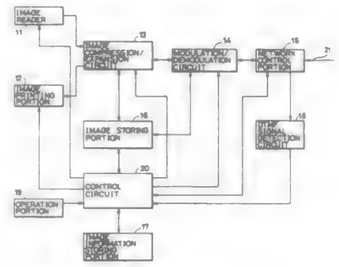
means for selecting and supplying to the recording means one of said first halftone dot signal and said second halftone dot signal according to said detection signal.

5,357,345

FACSIMILE APPARATUS CAPABLE OF SUCCESSIVELY RETRIEVING RELATED IMAGE DATA

Yoshiro Nakano, and Takashi Takenaka, both of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 29, 1991, Ser. No. 784,515
Claims priority, application Japan, Oct. 31, 1990, 2-295686
Int. Cl.[5] H04N *1/21, 1/32*
U.S. Cl. 358—403 **18 Claims**



1. A facsimile apparatus comprising:

image data inputting means for inputting a plurality of portions of related image date,

input data storing means for storing said plurality of portions of related input image data and also non-image data,

retrieving means for retrieving at least one of the plurality of portions of related image data stored in said storing means, in response to a retrieval request signal from a destination facsimile apparatus,

transmitting means for transmitting said at least one of the plurality of portions of the related image data retrieved by said retrieving means;

controlling means for controlling said transmitting means to be ready again for accepting a retrieval request signal after an operator interruption process which is performed after transmission of said at least one of the plurality of portions of related image data; and

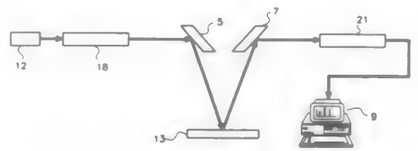
said transmitting means transmitting remaining data portions without a series of operation signals exchanged with said destination facsimile apparatus in response to retrieval request signals therefrom after said operator interruption process.

5,357,346

SOLDERABILITY TESTER METHODOLOGY

Brett Piekarski, College Park; George K. Lucey, Burtonsville, both of Md., and John Langan, Santa Barbara, Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 24, 1992, Ser. No. 980,400
Int. Cl.[5] G01N *21/55*
U.S. Cl. 356—448 **12 Claims**



1. A method for evaluating the solderability of various substrates in a passive, non-destructive manner comprising

evaluating a substrate for which solderability is to be determined using a differential reflectometer to determine the reflectance of said substrate;

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using this reflectance measurement to determine the type of, thickness of or presence of an oxide layer on said substrate; and

correlating said oxide layer thickness or presence determination to the solderability properties of said substrate.

5,357,347

COMMUNICATION SYSTEM WITH INOPERABILITY DETECTOR SUCH AS "INK OUT" DETECTOR IN RECEIVING MACHINE

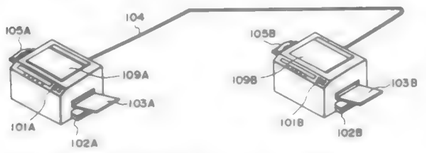
Masayuki Hirose, Kawasaki, and Fumio Mikami, Hachiohji, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 942,330, Sep. 9, 1992, abandoned, which is a continuation of Ser. No. 513,687, Apr. 24, 1990, abandoned. This application Sep. 14, 1993, Ser. No. 120,325

Claims priority, application Japan, Apr. 25, 1989, 1-106714; Apr. 25, 1989, 1-106715; Apr. 25, 1989, 1-106716

Int. Cl.[5] H04N *1/32, 1/00, 1/46*

U.S. Cl. 358—296 **19 Claims**



1. An image communication apparatus, comprising:

transmitting means for transmitting image data from a single image source, said transmitting means being operable in a color communication mode and a monochromatic communication mode;

discriminating means for discriminating a result responsive to a signal from an image receiving station during image data transmission, said signal representing inoperability in the color communication mode or the monochromatic communication mode; and

control means responsive to said discriminating means to control the communication mode or the color monochromatic communication mode of said transmitting means.

5,357,348

IMAGE FORMING APPARATUS PRODUCING A COMPOSITE IMAGE OF DOCUMENTS OF DIFFERENT SIZES

Akihiro Moro, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 19, 1993, Ser. No. 34,881

Claims priority, application Japan, Jun. 29, 1992, 4-170581

Int. Cl.[5] H04N *1/387*

U.S. Cl. 358—450 **9 Claims**

1. An image forming method comprising the steps of:

reading a first original image of a first document;

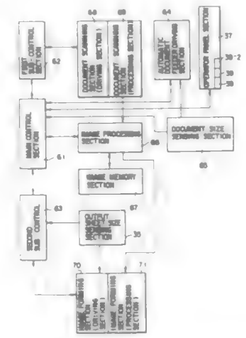
forming a first reduced image having a first reduced image size by reducing the read image of the first document;

reading a second original image of a second document;

forming a second reduced image having a second reduced image size by reducing the read image of the second document;

comparing a sum of the first and second reduced image sizes to a size of a copying sheet;

outputting the first reduced image from a memory when the sum of the sizes of the first and second reduced images is larger than the size of the copying sheet; and



forming the first reduced image on the copying sheet and storing the second reduced image in the memory.

5,357,349

TONAL CONVERSION METHOD FOR A PICTURE

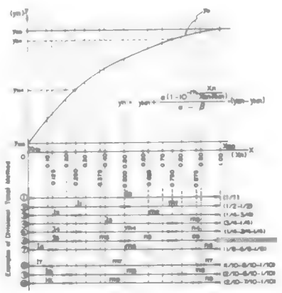
Takashi Numakura, and Iwao Numakura, both of Tokyo, Japan, assignors to Yamatoyo & Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1991, Ser. No. 790,752

Claims priority, application Japan, Nov. 9, 1990, 2-302681

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—456 **8 Claims**



1. A tonal conversion method comprising:

determining a value Y_o as a variable Y_n in a tonal conversion formula so as to define a reference tonal conversion curve (y_o) which can be used to obtain a picture of a desired tone from a reference photographic original picture having density values ranging from a highlight H part density value D_{Ho} to a shadow S part density value D_{So}, the reference tonal conversion curve (y_o) being defined by tonal conversion intensity values (y_n) of the tonal conversion formula using the value Y_o as the variable Y_n and light intensity values X_{Ho} and X_{So} converted from the corresponding density values D_{Ho} and D_{So};

determining a value of the variable Y_n in the tonal conversion formula based on the following formula,

$$Y_n = (Y_o) \times ((X_{Hn} - X_{Sn})/(X_{Ho} - X_{So}))$$

so as to define an individual tonal conversion curve (y_n) of an individual photographic original picture having a density value range D_{Hn} to D_{Sn} which falls within the density value range of

D_{So} to D_{Sn}, the individual tonal conversion curve (y_n) being defined by tonal conversion intensity values (y_n) of the tonal conversion formula using the determined value of the variable Y_n and light intensity values X_{Hn} and X_{Sn} converted from the corresponding density values D_{Hn} and D_{Sn};

viewing a photographic original picture with a scanner to measure a density D_n of each pixel of the photographic original picture and to generate a corresponding first halftone representation of the photographic original picture; and

tonal converting the first halftone representation of the photographic original picture into a tonal converted second halftone representation of the photographic original picture, said tonal converting step including,

(a) converting the density D_n of each pixel of the photographic original picture into a corresponding light intensity X_n of each pixel based on a photographic density characteristic curve of the photographic original picture expressed in a D-X orthogonal coordinate system in which a D-axis denotes density values and an X-axis denotes light intensity values,

(b) determining a tonal conversion intensity value (y_n) for each pixel from the light intensity X_n of each pixel and from the determined value of the variable Y_n and the light intensity values X_{Hn} and X_{Sn} using the tonal conversion formula, and,

(c) generating the tonal converted second halftone representation of the photographic original picture based on the determined tonal conversion intensity value (y_n) for each pixel,

wherein the tonal conversion formula is represented as follows,

$$y_n = y_{Hn} + \frac{\alpha(1 - 10^{-\gamma_n \cdot \frac{X_n}{X_{Sn} - X_{Hn}}})}{\alpha - \beta} \cdot (y_{Sn} - y_{Hn})$$

where

n: becoming n when applied to the individual photographic original picture, while becoming 0 when applied to the reference photographic original picture;

X_n: showing a basic light intensity information value ($X_n = X_{n'} - X_{Hn}$) determined by subtracting the light intensity information value (X_{Hn}) of a corresponding pixel, which value (X_{Hn}) is determined from the density information value (D_{Hn}) of the brightest (H) part of the photographic original picture via the photographic density Characteristic curve, from the light intensity information Value ($X_{n'}$) of a corresponding pixel from the density information value (D_n) of an arbitrary pixel on the photographic original picture by making use of the photographic density characteristic curve;

X_{Sn}, X_{Hn}: light intensity information values (X_{Sn}, X_{Hn}) of corresponding pixels determined from the density information values (D_{Sn}, D_{Hn}) of the darkest (S) and brightest (H) parts on the photographic original picture via the photographic characteristic curve, respectively;

y_n: (of the reference or individual) a tonal intensity value preset to a pixel on a reproduced picture corresponding to an arbitrary pixel on the photographic original picture;

y_{Hn}: (of the reference or individual) a tonal intensity value preset to the brightest (H) part on the photographic original picture;

Y_{Sn}: (of the reference or individual) a tonal intensity value preset to the darkest (S) part on the photographic original picture;

α: a surface reflectance of a printed paper used to express a printed picture;

β: a value determined by $\beta = 10^{-\gamma_n}$; and

Y_n: an arbitrary coefficient.

5,357,350

IMAGE FORMING APPARATUS

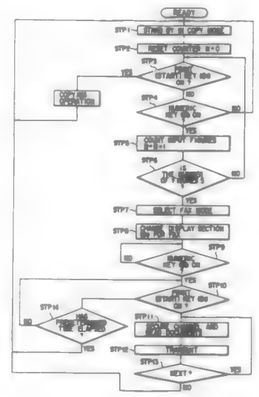
Tomohiro Matsunai, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Feb. 14, 1994, Ser. No. 196,286

Claims priority, application Japan, Mar. 23, 1993, 5-063751

Int. Cl.[5] H04N *1/32*

U.S. Cl. 358—468 **4 Claims**



4. An image forming apparatus comprising:

means for reading of a document to output image data therefrom;

means for forming an image on an image bearing member based on the image data from said reading means;

means for transmitting the image data from said reading means outside through a communication line;

means for inputting a numeric value to set the numeric value input by said inputting means as the number of times of performing an image forming operation by said forming means, and to set the numeric value as a number for specifying a destination which is to receive the output from said reading means by said transmitting means;

means for detecting the number of figures of the numeric value input by said inputting means; and

means for controlling one of said forming means and said transmitting means to perform one of the image forming operation and a transmitting operation based on the numeric value input by said inputting means, said controlling means controls said forming means when the number of figures of the numeric value detected by said detecting means is smaller than a predetermined number, and said controlling means controls said transmitting means when the number of figures is larger than the predetermined number.

5,357,351

IMAGE READING DEVICE

Yoshihiro Nakajima; Akihiro Takada, both of Osaka; Hiromi Yamashita, and Noriyuki Tomita, both of Amagasaki, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of Japan

Filed Feb. 17, 1993, Ser. No. 18,690

Claims priority, application Japan, Feb. 21, 1992, 4-034629

Int. Cl.[5] H04N *1/028*

U.S. Cl. 358—482 **10 Claims**

1. An image reading device for reading an image on a document which is moving at a predetermined relative movement speed in a lengthwise direction of the document, the device comprising:

a base plate;

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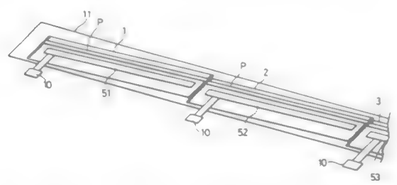
a plurality of image sensors attached on the base plate, each image sensor including:

a substrate in the form of a strip extending in a widthwise direction of the document, the substrate having reference mark means for attachment on either end thereof;

an array of first to n-th photoelectric conversion elements arranged on the substrate in a straight line along the widthwise direction of the document, with an identical spaced photoelectric conversion element interval between adjacent elements, each photoelectric conversion element receiving reflected light from the document and generating image data corresponding to the intensity of the received reflected light;

an array of shift registers arranged on the substrate along the photoelectric conversion array and connected in correspondence with the respective photoelectric conversion elements for scanning the photoelectric conversion array in an order of first to n-th elements at a predetermined scanning period; and

reference mark means at at least one end thereof for aligning the image sensors relative to each other; and



the plurality of image sensors being attached on the base plate side by side in the widthwise direction of the document by:

attaching a first said image sensor on the base plate in a position of the photoelectric conversion array lying at a predetermined inclination angle with respect to the widthwise direction of the document, the predetermined inclination angle being defined by the predetermined relative movement speed and the predetermined scanning period; and

attaching a second said image sensor on the base plate in the position of the photoelectric conversion array lying at the predetermined inclination angle after adjusting, based on the reference mark means on the first and second image sensors, a lengthwise space between the first element of the second image sensor and the n-th element of the first image sensor to a predetermined distance in a direction opposite to the relative movement direction of the image sensor, the predetermined distance being defined by the predetermined relative movement speed and the predetermined scanning period.

5,357,352

IMAGE-DEPENDENT COLOR SHIFTING OF STRONGLY COLOR SHIFTED IMAGES

Reiner Eschbach, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 4, 1993, Ser. No. 131,172

Int. Cl.[5] A04N *1/46*

U.S. Cl. 358—518 **12 Claims**

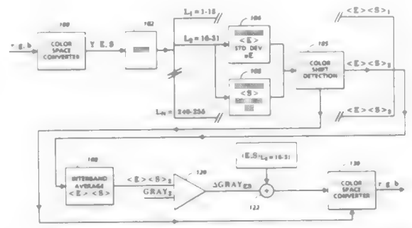
1. A method of correcting color shift produced by improper imaging in a natural scene image including the steps of:

converting an electronically encoded natural scene image described in terms of color density color space signals to an electronic encoding in terms of luminance and chrominance color space signals;

sorting each luminance color space signal forming the image into one of a plurality of predetermined luminance magnitude bands;

for each luminance magnitude band, calculating a band average chrominance signal from chrominance signals corresponding to luminance signals sorted into each band to determine an average color in each luminance magnitude band;

for each calculated band average chrominance signal, smoothing interband differences between band average chrominance signals for a plurality of luminance magnitude bands, by averaging each calculated band average chrominance signals with a plurality of the other calculated band average chrominance signals corresponding to



the plurality of luminance magnitude bands to calculate an interband average chrominance value;

comparing each interband average chrominance value with neutral gray color signal to determine a color shift correction signal for a corresponding luminance magnitude band;

for each luminance magnitude band, adding the correction signal to the color of each signal in the band to shift the color of the natural scene image;

directing the color shifted signals to an output for viewing.

5,357,353

IMAGE FORMING APPARATUS

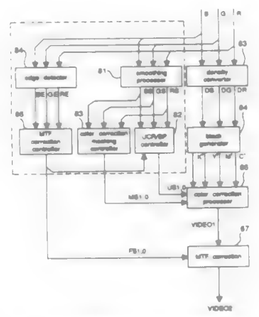
Yoshihiko Hirota, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 15, 1992, Ser. No. 883,523

Claims priority, application Japan, May 17, 1991, 3-113392; May 20, 1991, 3-114678; May 20, 1991, 3-114679; May 20, 1991, 3-114680; May 20, 1991, 3-114681; May 20, 1991, 3-114682

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—530 **27 Claims**



1. An image data processor, comprising:

receive means for receiving electric signals representing color data on the colors of a plurality of pixels comprising an image;

filtering means for filtering the color data electric signals received by said receive means;

processing means for processing the color data electric signals and outputting the processed data;

decision means for deciding a characteristic of each pixel based on the color data electric signals subjected to the filtering by said filtering means; and

control means for changing contents of the processing of said processing means according to the characteristic decided by said decision means.

10. An image data processor, comprising:

receive means for receiving additive mixture color data for a plurality of pixels comprising an image;

filtering means for filtering the additive mixture color data received by said receive means;

hue decision means for deciding hue of each pixel according to the additive mixture color data subjected to the filtering by said filtering means;

memory means for storing a plurality of linear masking coefficients in correspondence to a plurality of hue;

select means for selecting a linear masking coefficient among the plurality of linear masking coefficients according to the hue decided by said hue decision means; and

masking means for converting the additive mixture color data received by said receive means to subtractive mixture color data and for performing linear masking processing by using the linear masking coefficient selected by said select means.

14. An image data processor, comprising:

receive means for receiving three primary color data for a plurality of pixels comprising an image;

saturation decision means for deciding saturation of each pixel according the three primary color data received by said receive means;

memory means for storing a plurality of first and second coefficients in correspondence to saturation;

select means for selecting first and second coefficients among the plurality of the first and second coefficients stored by said memory means according to the saturation decided by said decision means;

black data generation means for multiplying the minimum of the three primary color data with the first coefficient selected by said select means and for sending the product of the multiplication as a black data; and

color data generation means for subtracting a product from the three primary color data received by said receive means, which product being obtained by multiplying the minimum of the three primary color data with the second coefficient selected by said select means, and for outputting the difference of the subtraction as modified three primary color data.

21. An image data processor, comprising:

receive means for receiving three primary color data for a plurality of pixels comprising an image;

edge detection means for detecting if each pixel is at a edge portion according to the three primary color data received by said receive means and for detecting a gradient direction at the edge for each of the three primary color data; and

edge emphasis means for emphasizing the edge for a pixel which is detected by said edge detection means to be located at an edge portion only when the gradient directions at the edge for the three primary colors agree with each other.

27. An image processing method, comprising the steps of:

receiving three primary color data for a plurality of pixels;

detecting saturation of each pixel;

detecting if each pixel is at an edge portion or at a flat portion;

increasing an under color remove ratio for the three primary color data and performing smoothing processing if the pixel is at a flat portion and the saturation of the pixel is low;

decreasing the under color remove ratio for the three primary color data and performing smoothing processing if the pixel is at the flat portion and the saturation of the pixel is high; and

decreasing the under color remove ratio for the three primary color data and performing edge emphasis if the pixel is at an edge portion.

5,357,354

COLOR IMAGE PROCESSING APPARATUS CAPABLE OF DISCRIMINATING BETWEEN A MONOCHROMATIC DOCUMENT AND A COLOR DOCUMENT

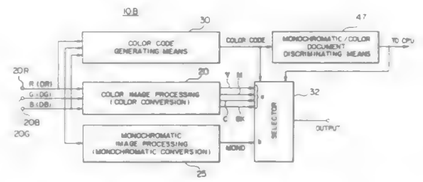
Masshiko Matsunawa, Ome; Seiichiro Hiratsuka, Hachioji; Koji Washio, Hachioji; Hiroshi Tokunaga, Hachioji; Tadao Kishimoto, Hachioji, and Takashi Hasebe, Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 440,316, Nov. 22, 1989, abandoned. This application Jan. 11, 1993, Ser. No. 3,864

Claims priority, application Japan, Nov. 26, 1988, 63-298966; Dec. 9, 1988, 63-311625; Dec. 9, 1988, 63-311626

Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—530 **10 Claims**



1. An image processing apparatus for processing a digital color image signal representing an image made up of pixels, comprising:

means for scanning the image to generate a plurality of digital color component image signals for each pixel;

means for dividing said plurality of digital color component image signals of each pixel into at least two group signals;

first processing means for processing one of said two group signals to generate a color code signal for each pixel with which said image is discriminated as one of a color image and a monochromatic image;

means for generating a color balance adjusting signal; and

second processing means, disposed in parallel to said first processing means, for processing another of said two group signals to generate a plurality of image reproducing signals for each pixel, said second processing means including means for modifying the color balance between a plurality of color components of a reproduced image on the basis of said color balance adjusting signal.

5,357,355

DOUBLE SIDED THIN PANEL DISPLAY UNIT FOR DISPLAYING THE SAME IMAGE

Ryoichi Arai, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 14, 1992, Ser. No. 882,817

Claims priority, application Japan, Jun. 7, 1991, 3-136412

Int. Cl.[5] G02F *1/1335, 1/13, 1/133*

U.S. Cl. 359—39 **3 Claims**

1. A double sided panel display unit having a phase one and a phase two which alternately take place, said unit comprising:

a) a luminescent panel display having

a-1) a transparent substrate,

a-2) a plurality of anode patterns formed on said transparent substrate,

a-3) a fluorescent film covering said plurality of anode patterns on said transparent substrate,

a-4) a plurality of grid members provided in a spaced relation with said plurality of anode patterns, and hav-

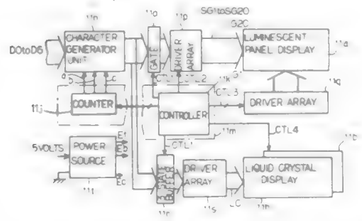
VOL 1167 ISS 3 OC 18 1994 UMI

ing a grid voltage level sequentially applied thereto for causing said fluorescent film to produce visual images in cooperation with said plurality of anode patterns during said phase one and under the control of a controller, and

a-5) a filament means provided in a spaced relation with said plurality of grid members, and heated for sequentially radiating thermions toward said plurality of anode patterns;

b) a liquid crystal shutter provided in front of said luminescent panel display, and responsive to a first control signal for turning on and off;

c) a pair of polarizing plates provided on both sides of said liquid crystal shutter, and different in an angle of polarization at about 90 degrees from each other, said pair of polarizing plates allowing said visual images to be displayed while said liquid crystal shutter turns on during said phase one; and



d) a liquid crystal display unit provided at the back of said luminescent panel display, and supplied with light from all of said anodes of every anode pattern incorporated in said luminescent panel display through said transparent substrate for producing visual images similar to the visual images produced by said luminescent panel display during periods while said controller supplies a second control signal thereto during said phase two so that the liquid crystal of said liquid crystal display unit selectively turns on for passing said light,

said liquid crystal shutter turning on responsive to said first control signal and while the luminescent panel display reproduces said visual images during said phase one, said liquid crystal shutter turning off responsive to said second control signal and while the liquid crystal display unit reproduces said visual images.

5,357,356

ELECTRO-OPTICAL DEVICE AND METHOD FOR FORMING THE SAME

Toshimitsu Konuma; Takeshi Nishi; Michio Shimizu, and Kouji Moriya, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Dec. 23, 1992, Ser. No. 996,408

Claims priority, application Japan, Dec. 27, 1991, 3-360117

Int. Cl.[5] G02F *1/13*

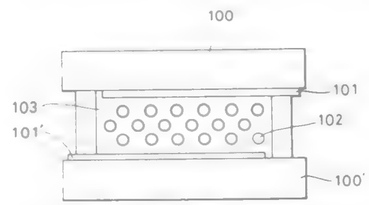
U.S. Cl. 359—52 **23 Claims**

9. A method for forming an electro-optical device comprising the steps of:

mating a pair of substrates with a space therebetween;

introducing a mixture comprising a liquid crystal and a photocurable resin into said space; and

irradiating said mixture with a light to harden said photocurable resin, the reaction initiator for said photocurable resin having a characteristic light absorption peak wavelength,



wherein said light absorption peak wavelength minus 20 nm to said light absorption peak wavelength plus 20 nm accounts for 90% or more of said light.

5,357,357

LIQUID CRYSTAL DISPLAY DEVICES WITH ORGANIC THIN FILM FORMED BY COMPRESSING MOLECULES ON LIQUID SURFACE AND TRANSFERRING TO SUBSTRATE BY HORIZONTAL LIFTING

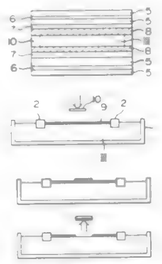
Shuji Imazeki; Yasushi Tomioka; Naoki Tanaka, all of Saitama; Yoshio Taniguchi, Hino; Hideaki Kawakami, Chiba; Katsumi Kondo, Katsuta, and Masami Yamasaki, Saitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 19, 1990, Ser. No. 584,971

Claims priority, application Japan, Sep. 20, 1989, 1-241975; Sep. 20, 1989, 1-241990; Sep. 25, 1989, 1-246289

Int. Cl.[5] G02F *1/1337, 1/1335;* C09K *19/00*

U.S. Cl. 359—76 **23 Claims**



1. A liquid crystal display device comprising substrates, a polarizer, electrodes, at least one of which is transparent, and optionally semiconductor substrates, at least one of which is transparent, an orientation-controlling film of an organic thin film in which molecules constituting said organic thin film are uniformly oriented in a particular direction in the surface of the film and a liquid crystal layer, wherein said organic thin film is obtained by compressing the film-forming molecules spread at a gas/liquid interface unidirectionally or in anti-parallel direction, thereby forming a thin film at the gas/liquid interface in which said film forming molecules have been oriented in said particular direction in the surface of the film, and then transferring said thin film by a horizontal lifting or horizontal immersing method to a substrate.

22. A method for producing a liquid crystal display device comprising the steps of:

forming an orientation-controlling film by compressing film-forming molecules spread at a gas/liquid interface unidirectionally or in anti-parallel direction facing each other, to thereby form a thin film at the gas/liquid interface in which said film-forming molecules have been oriented in a particular direction in the surface of the film; and

then transferring said thin film to a substrate by a horizontal lifting method or horizontal immersing method.

5,357,358

NEMATIC LIQUID CRYSTAL DISPLAY WITH SURFACE BISTABILITY AND CONTROL BY FLEXOELECTRIC EFFECT

Georges Durand, Orsay; Riccardo Barberi, Gif sur Yvette, both of France; Michelle Giocondo, Arcavacata di Rende, Italy, and Philippe R. Martinot Lagarde, Marcoussis, France, assignors to Centre National de la Recherche Scientifique (CNRS), Paris, France

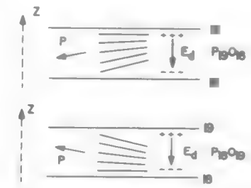
PCT No. PCT/FR91/00496, § 371 Date Feb. 11, 1993, § 102(e) Date Feb. 11, 1993, PCT Pub. No. WO92/00546, PCT Pub. Date Jan. 9, 1992

PCT Filed Jun. 21, 1991, Ser. No. 966,026

Claims priority, application France, Jun. 22, 1990, 90 07847; Sep. 19, 1990, 90 11548

Int. Cl.[5] G02F *1/1337, 1/137, 1/13*

U.S. Cl. 359—76 **42 Claims**



1. Bistable-effect liquid crystal optical device comprising two transparent plates provided with control electrodes and between which there is placed a nematic liquid crystal material wherein

the transparent plates have on inside surfaces a surface treatment for defining two stable configurations of liquid crystal material molecules on said inside surfaces of the transparent plates, said two stable configurations having different azimuthal orientations and different zenithal orientations with respect to said transparent plates so as to generate two flexoelectric polarizations having components normal to the electrodes and of opposite directions, and

there are provided electrical supply means for applying to the device pulses of electric field perpendicular to the plates and oriented selectively in one direction or the other.

5,357,359

ALL-OPTICAL POLARIZATION INDEPENDENT OPTICAL TIME DIVISION MULTIPLEXER AND DEMULTIPLEXER WITH BIREFRINGENCE COMPENSATION

Kentaro Uchiyama; Toshio Morioka, and Masatoshi Saruwatari, all of Kanagawa, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Aug. 11, 1993, Ser. No. 105,812

Claims priority, application Japan, Aug. 13, 1992, 4-216232

Int. Cl.[5] H04J *4/00*

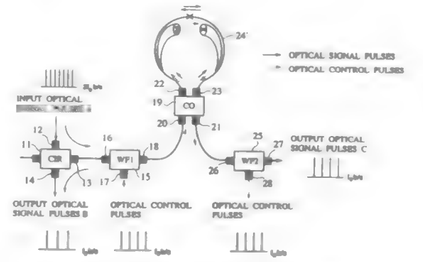
U.S. Cl. 359—123 **20 Claims**

11. A polarization independent optical time division multiplexer, comprising:

wavelength-division-multiplexing coupler means for wavelength-division-multiplexing time-division-multiplexed first optical signal pulses and optical control pulses, and splitting the first optical signal pulses at a splitting ratio of 1:1 into two ports, the optical control pulses being in a polarization state in which two orthogonally polarized components have a substantially identical amplitude;

an optical Kerr medium with birefringence, for connecting said two ports of the wavelength-division-multiplexing coupler means, the optical Kerr medium incorporating birefringence compensation means for compensating a polarization dispersion between two principal axes of the birefringence; and

wavelength division demultiplexer means for supplying time-division-multiplexed second optical signal pulses to the optical Kerr medium through the wavelength-division-multiplexing coupler means;



wherein time-division-multiplexed optical signal pulses in which the first and second optical signal pulses are time-division-multiplexed at the optical Kerr medium are outputted from one of the wavelength-division-multiplexing coupler means and the wavelength division demultiplexer means.

5,357,360

OPTICAL DATA NETWORK HAVING ADJUSTABLE DELAYS FOR SWITCHING OVER TO BACKUP UNIT

Andreas Imhoff; Hendrik Keller; Udo Reimann, and Walter Wessely, all of München, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

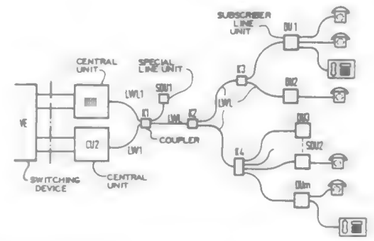
PCT No. PCT/DE91/00514, § 371 Date Jan. 11, 1993, § 102(e) Date Jan. 11, 1993, PCT Pub. No. WO92/01341, PCT Pub. Date Jan. 23, 1992

PCT Filed Jun. 24, 1991, Ser. No. 966,062

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1990, 4022027

Int. Cl.[5] H04J *14/02, 14/08*

U.S. Cl. 359—125 **9 Claims**



1. An optical data network having an active central unit connected between a switching device and an optical subscriber line network and a plurality of subscriber line units connected by optical waveguides and couplers, each of which transmit or exchange data via the active central unit using a time-division multiplexing method, comprising: at least one further back-up central unit connected functionally in parallel with the active central unit, the central units being connected to the subscriber line network by optical waveguides; each of the central units having a controllable transmission delay device in a transmission path thereof and a controllable reception delay device in a reception path thereof, the reception delay

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device of the back-up central unit being set by received signals; at least one special line unit connected to the subscriber line network, which special line unit has a controllable delay device in a transmission path thereof; the special line unit having in a reception path thereof a measuring device for determining the delay difference between send signals of the active central unit and of the back-up central unit; and the special line unit transmitting a correction signal, by means of which the transmission delay device of the back-up central unit is controlled until delays for the send signals of both central units are the same.

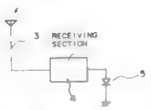
5,357,361

DISCRIMINATING LIGHT-EMITTING OPTICAL APPARATUS

Jun-ichi Nishizawa, 6-16, Komegafukuro 1-chome, Aoba-ku, Sendai-shi, Miyagi-ken, Japan

Filed Jun. 10, 1992, Ser. No. 896,370
Claims priority, application Japan, Jul. 15, 1991, 3-198265
Int. Cl.[5] H04B *10/00*
U.S. Cl. 359—142 21 Claims





17. A discriminating light-emitting apparatus including receiving means for receiving an optical signal and transmitting means for transmitting an optical signal, said receiving means comprising:

a cylindrical casing having a power source for emitting a visible light-emitting diode built in a central portion thereof;

a plurality of light receiving elements arranged at an inside of said casing such that said light receiving elements are in concentrical relation to said casing and face outwardly;

a conical mirror-surface reflecting plate for guiding light from outside to said light receiving elements and a convex lens for enhancing light-receiving sensitivity, arranged respectively in front of said light receiving elements; and

a generally hemispherical lid having a lens effect covering a circumference of a plurality of visible light-emitting diodes arranged on an upper portion of said casing;

said transmitting means comprising:

a case within which are received a power source for emitting an infrared light-emitting diode and a drive circuit;

a manual-operating drive switch disposed on an upper surface of said case;

a convex lens projecting from a side surface of said case and movable along an optical-axis direction for regulating a light emitting angle; and

an infrared light-emitting diode for issuing an optical signal through said convex lens; and

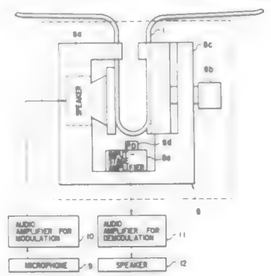
wherein the optical signal issues by turning on said drive switch of said transmitting means, said light receiving element reacts and turns on in response to the optical signal thereby supplying electric current to said visible light-emitting diodes to radiate the diodes.

5,357,362

OPTICAL TELEPHONE USING OPTICAL MODULATOR

Yuji Azuma, Tokorozawa; Yoshihiro Shibata, Higashimurayama; Shinji Tamura, Tokorozawa; Nobuo Kuwaki, Iruma; Nobuhiro Ikawa, Tokyo; Akira Fukuda, Kushiro, and Akio Kuwahara, Tokushima, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Division of Ser. No. 831,562, Feb. 5, 1992, Pat. No. 5,259,045.
This application May 7, 1993, Ser. No. 59,467
Claims priority, application Japan, Feb. 13, 1991, 3-020027; Dec. 4, 1991, 3-320641
The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.
Int. Cl.[5] H04B *10/12, 10/04;* G02B *6/26*
U.S. Cl. 359—151 2 Claims



1. An optical telephone comprising:

an optical modulator including optical fiber guide means for guiding an optical fiber having a U-shaped bending region formed in an optical transmission path, means for adjusting a bending width of said optical fiber so as to cause an increase in the amount of change in a bending loss with respect to a change in the bending width, thereby increasing the degree of modulation, and electromagnetic transducer means for vibrating one straight portion of said optical fiber;

means, electrically connected to said electromagnetic transducer means, for modulating a voice into an electrical signal and for supplying the electrical signal to said electromagnetic transducer means; and

means, arranged near said bending region of said optical fiber, for receiving light leaking from said bending region, for converting the light into an electrical signal, and for demodulating the electrical signal into a voice.

5,357,363

INTERCONNECTIONS HAVING IMPROVED SIGNAL-TO-NOISE RATIO

Chung-Sheng Li, Berkeley, Calif.; Karen Liu, Montclair, N.J.; Harold S. Stone, Chappaqua, N.Y., and Franklin F. Tong, Stamford, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

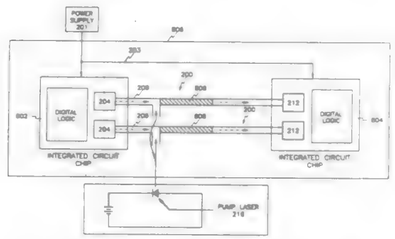
Continuation of Ser. No. 699,053, May 13, 1991, abandoned.
This application Sep. 24, 1993, Ser. No. 126,131
Int. Cl.[5] G02C *6/28*
U.S. Cl. 359—161 16 Claims

1. A method for improving the signal-to-noise ratio of an electrical data signal transmitted between a first integrated circuit chip and a second integrated circuit chip on a circuit board, said method comprising:

amplifying the electrical data signal at the first integrated circuit chip with an electrical amplifier to produce an amplified electrical data signal, said electrical amplifier being supplied by a power distribution network, said amplified electrical data signal having a low power level to prevent said electrical amplifier from causing significant disturbances in said power distribution network such that a plurality of said electrical amplifiers can be proximately located and operated concurrently without significant noise coupling occurring between said plurality of said electrical amplifiers through said power distribution network;

converting said amplified electrical data signal to a low intensity optical data signal for transmission to the second integrated circuit chip;

transmitting said low intensity optical data signal through an optical path;



optically amplifying said low intensity optical data signal within the optical path;

receiving said amplified optical data signal at the second integrated circuit chip; and

detecting said amplified optical data signal to produce an electrical signal representing said first electrical data signal:

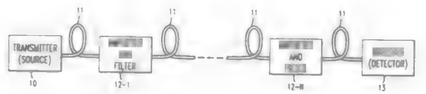
wherein said low intensity optical data signal has insufficient amplitude prior to being optically amplified to be reliably detected at the second integrated circuit chip.

5,357,364

SOLITON TRANSMISSION SYSTEM HAVING SLIDING-FREQUENCY GUIDING FILTERS

James P. Gordon, Rumson, and Linn F. Mollenauer, Colts Neck, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 25, 1992, Ser. No. 904,239
Int. Cl.[5] H04B *10/12*
U.S. Cl. 359—173 9 Claims



1. A lightwave transmission system supporting soliton propagation in a particular band of frequencies and comprising an optical fiber transmission medium including both a plurality of optical amplifiers spaced apart along the optical fiber transmission medium and a plurality of optical filters spaced apart along the optical fiber transmission medium, the lightwave transmission system CHARACTERIZED IN THAT,

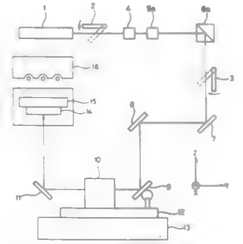
each optical filter exhibits a nominal center frequency substantially different from the nominal center frequency of each other optical filter to move the frequency of the soliton toward its nominal center frequency, each nominal center frequency being in the particular band of frequencies.

5,357,365

LASER BEAM IRRADIATING APPARATUS ENABLING UNIFORM LASER ANNEALING

Takashi Ipposhi, and Tadashi Nishimura, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1993, Ser. No. 62,631
Claims priority, application Japan, Oct. 26, 1992, 4-287453
Int. Cl.[5] G02B *26/08;* H01L *21/477*
U.S. Cl. 359—205 24 Claims



1. A laser beam irradiating apparatus containing means for scanning for irradiating a surface of an object with a laser beam through an optical system while scanning the surface to anneal the object, wherein

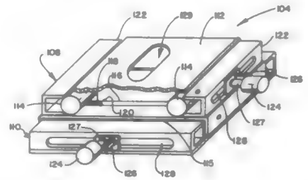
the optical system includes, at least partially, a plurality of optical components formed of an optical material having a smaller thermal expansion coefficient than that of an optical material BK7.

5,357,366

MECHANICAL STAGE ADJUSTMENT MECHANISM

Stanley P. Marchlenski, 3420 Loper Rd. NE., Newark, Ohio 43055

Continuation-in-part of Ser. No. 986,938, Dec. 8, 1992, Pat. No. 5,264,967. This application Aug. 30, 1993, Ser. No. 112,960
Int. Cl.[5] G02B *21/26*
U.S. Cl. 359—393 16 Claims



1. A mechanical stage for mounting and locating a specimen for viewing comprising in combination,

a pair of plates,

said plates being mounted for transverse movement with respect to each other,

at least one plate having a planar surface, a first rail mounted adjacent said one plate, and said rail having a slot parallel with said planar surface,

a first pair of wheels mounted on said rail and including an axle on the axis of rotation of each of said wheels, each wheel having a peripheral surface,

one said axle extending through said slot, said one axle having a knob at one end,

said knob and its associated wheel and axle being secured to rotate together, said associated axle being mounted to rotate relative to said rail,

a strap having a width greater than its thickness and having

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its ends secured to said rail, said strap extending from one said end (1) to the peripheral surface of the wheel most remote from said one end, (2) around the peripheral surface of said remote wheel and between the two wheels, (3) around the peripheral surface of the other wheel, and (4) past said remote wheel to its other secured end,

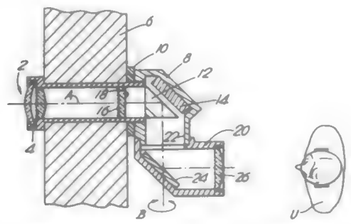
said strap having adequate tension to prevent relative movement between the peripheral surfaces of said wheels and said strap upon rotation of said associated wheel and knob.

5,357,367

SPYHOLE VIEWER

Pinchas Goldstein, 59 Shaulzon Street, Jerusalem, Israel

Filed Oct. 29, 1992, Ser. No. 968,525
Claims priority, application Israel, Nov. 1, 1991, 099941
Int. Cl.[5] G02B *3/08*
U.S. Cl. 359—400 **18 Claims**



1. A spyhole viewer for a door or wall, comprising:

an objective system for producing a real, inverted image and mounted in a tubular member fixedly installable in said door or wall;

at least one reflector means for angularly deflecting the light beams from said objective system;

erector means for inverting said inverted image and located behind at least one element of said objective system;

an image surface upon which said real image will appear;

a housing fixedly attachable to said tubular member and accommodating at least said reflector means and a projection lens mounted therein in coaxiality with said optical axis as deflected by said reflector means,

characterized in that, on its way from said objective system to said projection lens, said optical axis is angularly deflected at least once.

5,357,368

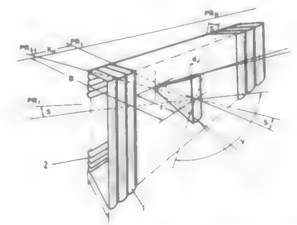
SCREEN FOR THE REPRODUCTION OF THREE-DIMENSIONAL STATIC OR MOVING IMAGES, AND METHOD OF MANUFACTURING IT

Juan Dominquez-Montes, Comunidad de Canarias No. 68, 28230 Las Rozas, Madrid, Spain

PCT No. PCT/ES90/00013, § 371 Date Dec. 3, 1990, § 102(e) Date Dec. 3, 1990, PCT Pub. No. WO90/16009, PCT Pub. Date Dec. 27, 1990
PCT Filed Apr. 23, 1990, Ser. No. 598,694
Claims priority, application Spain, Jun. 21, 1989, P8902155
Int. Cl.[5] G03B *21/60*
U.S. Cl. 359—454 **16 Claims**

1. A projection screen for reproducing three-dimensional images with a horizontal parallax, said images being captured from a plurality of different horizontally aligned points and being projected onto the screen by the same plurality of different horizontally aligned projection lenses, the screen comprising, a transparent sheet of parallel horizontal cylindrical lenses (2) and, another transparent sheet of parallel other cylindrical lenses (1), the sheets being substantially parallel to each other, the transversal size of the other cylindrical lenses (1) being so small that they cannot be perceived and a resultant horizontal aperture (G) of the other cylindrical lenses (1) is greater than a value obtained when the distance between two adjacent projection lenses is divided by the projection distance and less than twice this value, the transversal size of the horizontal cylindrical lenses (2) also being so small that they cannot be perceived, the cylindrical lenses (1, 2) having semi-circular cross sections and a common focal plane, wherein at least one

(a) the cylindrical lenses (1, 2) are covered by a transparent substance with a refractive index (n') different from the refractive lens index (n) of the cylindrical lenses (1, 2) in



order to decrease the resultant horizontal aperture (G), the refractive index (n') being determined so that the resultant horizontal aperture (G) is obtained, and

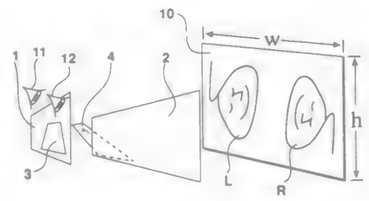
(b) the other cylindrical lenses (1) are arranged at an angle alpha with respect to the horizontal cylindrical lenses (2) which angle alpha is greater than 0° and smaller than 90°, said angle alpha being determined so that the resultant horizontal aperture (G) is obtained.

5,357,369

WIDE-FIELD THREE-DIMENSIONAL VIEWING SYSTEM

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Filed Dec. 21, 1992, Ser. No. 993,416
Int. Cl.[5] G02B *27/22*
U.S. Cl. 359—462 **20 Claims**



1. In a stereoscopic display and viewing system, wherein a pair of left and right stereoscopic images are displayed in adjacent side-by-side array on a two dimensional rectangular imaging surface, the improved display and viewing means which comprises:

(a) left and right stereoscopic images displayed in a sideways fashion on said imaging surface, the two images rotated about the normal to said imaging surface in opposite directions by 90 degrees from their usual upright orientations; and

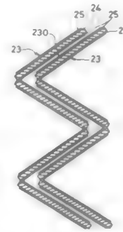
(b) viewing means comprising a right pair of light deflection means and a left pair of light deflection means, with respective means of support to secure said light deflection means between a viewer and said imaging surface, said light deflection means being held at fixed and predetermined angular relationships so as to deflect the lines of sight to each of a viewer's eyes from the respective stereoscopic image, in such a manner that the projected views of the left and right images appear rotated by 90 degrees in opposite directions into a normal upright orientation and shifted so as to appear merged in front of the viewer, thereby creating the stereoscopic illusion of depth from said images.

5,357,370

POLARIZER AND LIGHT VALVE IMAGE PROJECTOR HAVING THE POLARIZER

Yoshito Miyatake, Neyagawa, and Shinya Sannohe, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 27, 1992, Ser. No. 888,773
Claims priority, application Japan, May 29, 1991, 3-124312
Int. Cl.[5] G02B *5/30, 27/28*
U.S. Cl. 359—495 **20 Claims**



1. A polarizer comprising at least one polarization-selective mirror, each of which includes:

a glass substrate having first and second surfaces; and

an optical thin film having a higher refractive index than a refractive index of said glass substrate and being disposed on both said first and second surfaces of said glass substrate,

each said at least one polarization-selective mirror being obliquely arranged with respect to a given optical axis and satisfying the conditions

$$\frac{n_1^2}{\cos^2\theta_1} = \frac{n_0 n_2}{\cos\theta_0 \cos\theta_2}$$

and

$$d = \frac{\lambda}{4n_1\cos\theta_1},$$

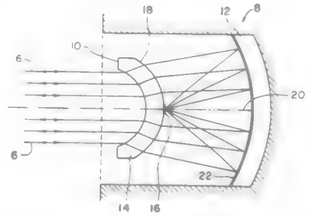
wherein n_0 represents the refractive index of an exterior medium; n_1 represents the refractive index of the optical thin film; n_2 represents the refractive index of the glass substrate; d represents the thickness of the optical thin film; θ_0 represents an incident angle at which light enters from the exterior medium into the optical thin film; θ_1 represents an angle of refraction of the light within said optical thin film; θ_2 represents an angle of refraction of the light within said glass substrate; λ represents the main wavelength of the light travelling through air.

5,357,371

LASER RETROREFLECTOR ARRAY HAVING CAT-EYE RETROREFLECTORS

Peter O. Minott, Bowie, Md., assignor to The United States of America as represented by the Administrator, National Aeronautics & Space Administration, Washington, D.C.

Filed Sep. 22, 1992, Ser. No. 949,199
Int. Cl.[5] G02B *5/126*
U.S. Cl. 359—534 **11 Claims**



6. A cat-eye retroreflector for reflecting a laser beam in an opposite direction, comprising:

a spherical corrector plate having a concave front surface through which the laser beam passes, and

a spherical primary mirror, having a common center with said spherical corrector plate, disposed behind said spherical corrector plate to reflect the laser beam back towards a rear surface of said corrector plate, and

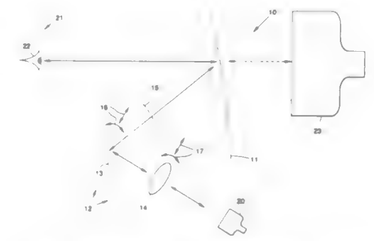
wherein a convex rear surface of said spherical corrector plate includes a partial mirror.

5,357,372

ULTRA-COMPACT, WIDE FIELD OF VIEW VIRTUAL IMAGE DISPLAY OPTICAL SYSTEM

Chungte W. Chen, Irvine, and Ronald G. Hegg, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 7, 1992, Ser. No. 864,863
Int. Cl.[5] G02B *27/14*
U.S. Cl. 359—637 **24 Claims**



1. A virtual image display optical system for enlarging an image of an image source viewed by an operator, said system comprising:

a combiner and a relay group disposed along an optical path between the image source and the operator, wherein the relay group is comprised of a concave mirror and at least one refractive lens; and

wherein an intermediate image is formed between the combiner and concave mirror, and wherein the concave mirror is tilted to balance the asymmetric aberrations generated by the combiner.

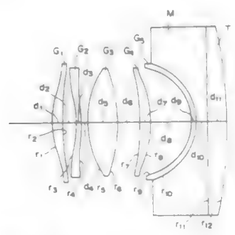
VOL 1167 ISS 3 OC 18 1994 UMI

5,357,373

IMAGE PROJECTION LENS

Takayuki Yoshioka, and Akira Nitta, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 14, 1993, Ser. No. 76,470
Claims priority, application Japan, Jun. 15, 1992, 4-155453
Int. Cl.[5] G02B *13/18, 9/60*
U.S. Cl. 359—649 12 Claims



1. A projection lens comprising:

a first-group lens, a second-group lens, a third-group lens, a fourth-group lens and a fifth-group lens arranged in this order from a screen side,

the first-group lens including a positive lens, the second-group lens including a negative lens, the third-group lens including a positive lens, a fourth-group lens including a positive lens, and the fifth-group lens including a negative lens,

each of the first-group lens and the second-group lens having an aspherical lens surface, one of the third-group lens and the fourth-group lens being an aspherical lens, and the negative lens of the fifth-group lens having a concave surface oriented to the screen side,

the projection lens having a half view angle equal to or greater than 34° and satisfying the following conditions (a)–(f):

(a) $0.04<d_4/f_0<0.08$

(b) $0.2<\phi_1<0.9$

(c) $-0.6<\phi_2<0$

(d) $0.7<\phi_3<1.0$

(e) $0<\phi_4<0.5$

(f) $-1.36<\phi_5<-0.6$

where:

f_0: focal distance of the overall system

d_4: on-axis interval between the second-group lens and the third-group lens

ϕ_1: power of the first-group lens

ϕ_2: power of the second-group lens

ϕ_3: power of the third-group lens

ϕ_4: power of the fourth-group lens

ϕ_5: power of the fifth-group lens

(where ϕ_1–ϕ_5 are values obtained when an optical power of an overall system is set to 1).

5,357,374

ZOOM LENS SYSTEM

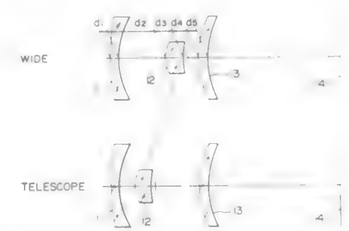
Kazunori Ohno, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed May 12, 1993, Ser. No. 59,655
Claims priority, application Japan, May 18, 1992, 4-124628
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—689 10 Claims

1. A zoom lens system consisting of three groups, wherein intervals between the groups are varied to change a focal length, characterized in that:

a first group consists of a negative lens;

a second group consists of a positive meniscus lens directing a strong convex surface thereof toward an object; and



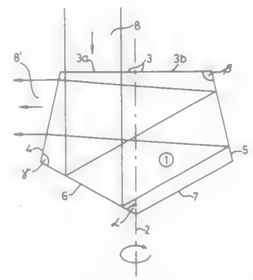
a third group consists of a negative meniscus lens, which directs a strong convex surface thereof toward the object.

5,357,375

SYMMETRICAL PRISM BEAM DEFLECTOR

Thomas J. Härig, Eppstein, and Manfred Maul, Sulzbach, both of Fed. Rep. of Germany, assignors to Linotype-Hell AG, Eschborn, Fed. Rep. of Germany

Filed Jun. 4, 1993, Ser. No. 71,471
Int. Cl.[5] G02B *26/10, 5/04*
U.S. Cl. 359—211 23 Claims



1. A device for deflecting an optical beam, comprising:

a prism having an entry face as well as reflection faces and exit faces;

the prism having a substantially symmetrical structure with reference to a rotational axis;

the entry face being oriented substantially perpendicularly relative to the rotational axis;

sides of the prism facing away from the entry face being designed as said reflection faces and which have an inclination relative to the rotational axis and adjoin one another in a region of the rotational axis; and

sides of the prism facing away from the rotational axis being designed as said exit faces and which adjoin the entry face and a respective reflection face and extend from the entry face with increasing distance from the rotational axis.

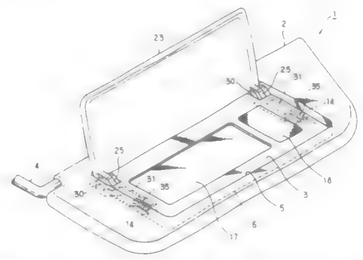
5,357,376

VANITY MIRROR

Yoshihide Yoshida, Shimizu, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Jan. 15, 1993, Ser. No. 5,233
Claims priority, application Japan, Feb. 17, 1992, 4-061509
Int. Cl.[5] B60J *3/00*
U.S. Cl. 359—844 6 Claims

1. A vanity mirror comprising a mirror which is installed in a base casing and a front cover which opens and closes in front of said mirror, said vanity mirror further comprising: mounting means formed on said front cover in the vicinity of an axial support that connects said front cover to said base casing; an axial support pin provided in said mounting means and said axial support for rotatably coupling together said front cover and said base casing; rectangular spaces which surround rear portions of said mounting means and are formed in said base casing; a movable sliding piece and a coil spring installed in each one of said spaces; pressing points formed on said mounting means, one of said pressing points being in contact with a



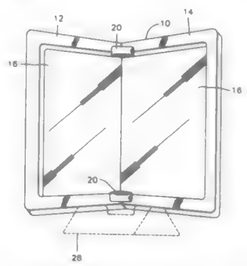
pressing surface of said sliding piece when said front cover is opened and another of said pressing points being in contact with said pressing surface of said sliding piece when said front cover is closed; and said pressing surface of each Of said sliding piece installed in each one of said spaces pressing against said pressing points of said mounting means of said front cover via said coil springs; and wherein when the front cover is closed, the closed front cover and the coil spring installed in each one of said spaces are in a parallel positional relationship.

5,357,377

TRUE IMAGE MIRROR

C. Lee Payne, Jr.; Lisa G. Barde, and Frans M. Weterring, all of Atlanta, Ga., assignors to Lawrence C. Zaglin, Atlanta, Ga.

Filed Sep. 23, 1992, Ser. No. 949,162
Int. Cl.[5] G02B *5/08, 7/18;* E05D *1/00*
U.S. Cl. 359—855 9 Claims



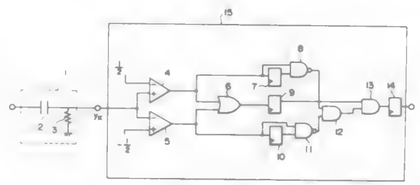
1. A hinge assembly including first and second hinge leaves each incorporating a base panel having corresponding first and second ends, said hinge leaves each being adapted to be mounted from a corresponding element of a pair of elements to be relatively hingedly supported for swinging between a closed closely juxtaposed position and at least one open position, each of said base panels including a pair of elongated, generally parallel sidewalls extending along and projecting outwardly from opposite longitudinal margins thereof and an arcuate end wall extending between said sidewalls at said first end thereof and curving toward said second end thereof to define an open ended housing, said housing including wide and narrow housings, the spacing between said sidewalls of said wide housing being greater than the spacing between the outer sides of the sidewalls of said narrow housing, said second end of said base panel of said narrow housing and the end of the arcuate end wall of said wide housing remote from said first end of said base panel of said wide housing being joined by an integral living hinge, the spacing between said second end of the base panel of said wide housing and the end of the corresponding end wall adjacent the open end of the wide housing being sufficiently greater than the distance between said living hinge and the arcuate end wall of said narrow housing to enable said narrow housing be swung laterally into the open end of said wide housing.

5,357,378

DATA REPRODUCING APPARATUS WITH MEANS FOR DIFFERENTIATING A READ HEAD OUTPUT SIGNAL AND MEANS FOR THREE VALUE DETECTION OF THE RESULT DIFFERENTIATED

Yoshiyuki Urakawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 9, 1992, Ser. No. 959,130
Claims priority, application Japan, Oct. 11, 1991, 3-292141
Int. Cl.[5] G11B *5/09;* H03M *5/06;* H04L *25/34, 25/49*
U.S. Cl. 360—46 4 Claims



1. A data reproducing apparatus for reproducing binary recorded data from a single layer film medium on which the recorded data have been vertically magnetically recorded by means of a ring head, comprising:

differentiating means for differentiating a signal reproduced by a ring head from the single layer film medium; and

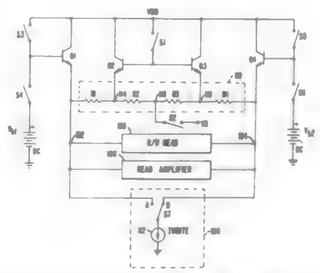
detecting means for three-value detecting the differentiation signal from said differentiating means.

5,357,379

READ/WRITE CIRCUIT WITH SWITCHABLE HEAD RESISTANCE FOR READ AND WRITE MODES

Richard L. Gower, San Jose, Calif., assignor to Exar Corporation, San Jose, Calif.

Filed Jul. 2, 1993, Ser. No. 86,745
Int. Cl.[5] G11B *5/09, 15/12*
U.S. Cl. 360—46 11 Claims



1. A read/write circuit for a magnetic data storage system, comprising:

a first and a second head terminal for coupling to a two-terminal magnetic head, said magnetic head performing a

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read operation in a read mode and a write operation in a(write mode;

current switching means, coupled across said first and second head terminals, for switching a direction of current through said magnetic head in said write mode;

a plurality of resistors switchably coupled across said first and second head terminals; and

resistor switching means coupled to said plurality of resistors, for coupling a first number of said plurality of resistors across said first and second head terminals in said read mode, and coupling a second number of said plurality of resistors across said first and second head terminals in said write mode.

5,357,380

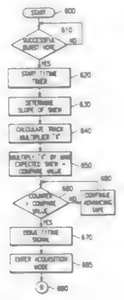
METHOD AND APPARATUS FOR INDICATING WHEN EACH TRACK IS IN BURST IN A MULTITRACK TAPE DEVICE

Charles E. Bailey; Steven R. Bentley; Sushama M. Paranjape; Fernando Quintana, and Stephen C. West, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 14, 1993, Ser. No. 77,477

Int. Cl.[5] G11B *5/09, 20/20*

U.S. Cl. 360—51 **6 Claims**



1. A method for indicating when all of the tracks in a multitrack tape device susceptible to track skew, are in burst, said method comprising the steps of:

achieving a successful burst vote when at least a predetermined portion of said tracks detect a burst;

starting a first counter;

determining a slope of said track skew;

calculating a track multiplier;

multiplying said track multiplier by a predetermined maximum expected skew to provide a first compare value; and

issuing a signal indicating that each of said tracks are in burst when said first counter exceeds said compare value.

5,357,381

FLEXIBLE MAGNETIC DISC DRIVE APPARATUS FOR DESIGNATING ALTERNATE SECTORS FOR DEFECTIVE SECTORS

Takehiko Yasuda, Shiwa, and Yoshiya Kikuchi, Esashi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 10, 1992, Ser. No. 819,191

Claims priority, application Japan, Jan. 18, 1991, 3-004607

Int. Cl.[5] G11B *5/09*

U.S. Cl. 360—53 **40 Claims**

1. A disc drive system comprising:

(a) a disc-type recording medium which includes:

a user area, including primary sectors having logical sector numbers indicative of addresses thereof, for recording data information,

an alternate area, including a predetermined number of alternate sectors having serially numbered logical sector numbers, for being substituted for defective ones of said primary sectors, and

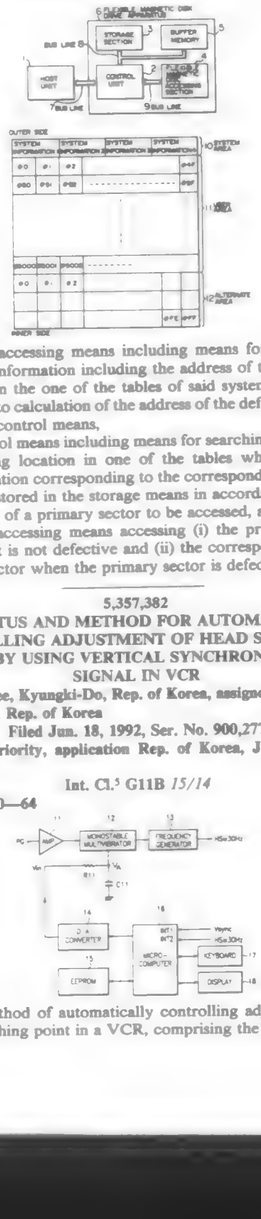
a system area, having a predetermined number of tables in which items are arranged corresponding to the alternate sectors, each of said items including defect information indicative of a defective primary sector associated with said selected one of said alternate sectors, and

(b) a disc drive apparatus comprising:

disc accessing means for detecting defective ones of said primary sectors and determining addresses of the detected defective sectors;

control means for calculating an address of an alternate sector corresponding to a detected defective sector in accordance with the address of the defective sector and a location in one of the tables corresponding to the address of the corresponding alternate sector; and

storage means for storing the defect information in the tables during initialization of the disc accessing means,



said disc accessing means including means for registering defect information including the address of the defective sector in the one of the tables of said system area in response to calculation of the address of the defective sector by the control means,

said control means including means for searching said corresponding location in one of the tables which includes information corresponding to the corresponding alternate sector stored in the storage means in accordance with an address of a primary sector to be accessed, and

the disc accessing means accessing (i) the primary sector when it is not defective and (ii) the corresponding alternate sector when the primary sector is defective.

5,357,382

APPARATUS AND METHOD FOR AUTOMATICALLY CONTROLLING ADJUSTMENT OF HEAD SWITCHING POINT BY USING VERTICAL SYNCHRONIZATION SIGNAL IN VCR

Seung E. Lee, Kyungki-Do, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Jun. 18, 1992, Ser. No. 900,277

Claims priority, application Rep. of Korea, Jun. 21, 1991, 10358/1991

Int. Cl.[5] G11B *15/14*

U.S. Cl. 360—64 **8 Claims**

8. A method of automatically controlling adjustment of a head switching point in a VCR, comprising the steps of:

inputting a head switching signal and a vertical synchronous signal;

determining an amount of time in which a vertical synchronous signal lags behind a switching point of the head switching signal;

generating control data to control the switching point of the head switching signal according to the amount of time determined in said determining step; and

selectively storing said control data in response to an input signal.

5,357,383

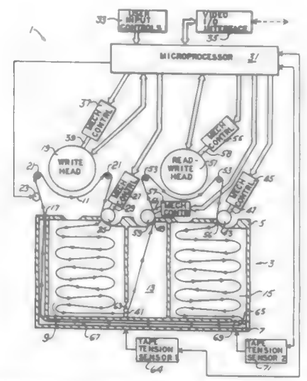
MULTICOMPARTMENT VIDEO TAPE AND PLAYER THEREFOR

Joseph K. Godwin, 1517 Bob Lunn Pl., El Paso, Tex. 79935

Filed Feb. 8, 1994, Ser. No. 193,478

Int. Cl.[5] G11B *15/48, 27/36, 23/02*

U.S. Cl. 360—74.3 **7 Claims**



1. A simultaneous record and playback video system comprising:

a video cassette cartridge having a top end and a bottom end;

a magnetic tape located within said video cassette cartridge;

a first compartment of said video cassette cartridge;

a top exit opening located on said top end of said video cassette cartridge;

a first top opening leading into said first compartment from said top end of said video cassette cartridge;

a first rotary head;

first control means for directing a portion of said magnetic tape exiting said top exit opening around a portion of said first rotary head and then into said first top opening;

a middle compartment of said video cassette cartridge located adjacent said first compartment thereof;

a tape transfer opening for allowing tape to exit said first compartment and enter said middle compartment;

a middle top opening leading from said top end of video cassette cartridge into said middle compartment;

a last compartment of said video cassette cartridge located adjacent said middle compartment;

a last top opening leading from said top end of said video cassette cartridge into said last compartment;

a second rotary head; and

a second control means for directing a portion of said magnetic tape within said middle compartment out through said middle top opening around a portion of said second rotary head and then into said last top opening.

5,357,384

ROTATING DISK DATA STORAGE APPARATUS CAPABLE OF PREVENTING HEAD TRAVEL WHEN THE DISK IS NOT LOADED

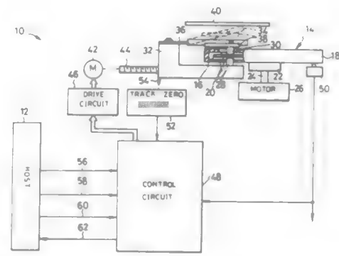
Hiroshi Tsuyuguchi, Tokyo; Shinichiro Tanaka, Hatuyama; Tohru Miura, Mitaka; Miya Enami, Higashikurume; Hikaru Tamada, Inagi, and Yoshiaki Sakai, Higashikurume, all of Japan, assignors to TEAC Corporation, Tokyo, Japan

Continuation of Ser. No. 774,079, Oct. 9, 1991, abandoned. This application Jan. 10, 1994, Ser. No. 179,654

Claims priority, application Japan, Oct. 15, 1990, 2-275670

Int. Cl.[5] G11B *21/02*

U.S. Cl. 360—75 **3 Claims**



1. An apparatus for data transfer, under the direction of a host system, with a rotating data storage disk being replaceably held in a preassigned data transfer position within the apparatus, the disk having a principal plane and a multiplicity of concentric annular data tracks on a major surface thereof, the data tracks including a reference track, the apparatus comprising:

(a) a data transducer movable between a working position, in which the transfer is capable of data transfer with the major surface of the rotating disk being held in the preassigned data transfer position, and a retracted position in which the transducer permits the disk to be loaded in and unloaded from the apparatus;

(b) support means for holding the transducer in the retracted position when the disk is not in the data transfer position, and in the working position when the disk is in the data transfer position;

(c) a transducer positioning means including an electric stepper motor for moving the transducer from track to track on the disk, the support means moving with the transducer across the tracks on the disk;

(d) a stepper motor drive circuit for applying drive pulses to the stepper motor in order to cause controlled rotation thereof;

(e) input means for inputting stepping pulses from the host system;

(f) a stepper motor control circuit connected between the input means and the stepper motor drive circuit for causing the stepper motor drive circuit to apply the drive pulses to the stepper motor in response to the stepping pulses;

(g) a disk sensor for producing an output indicative of whether the disk is in the data transfer position or not;

(h) circuit means connected between the input means and the stepper motor control circuit and also connected to the disk sensor for preventing the delivery of the stepping pulses from the input means to the stepper motor control circuit when the disk is not in the data transfer position, [in order to avoid the movement of the support means in sliding contract with the fixed member,

(i) a reference track sensor for delivering to the host system a true reference track signal indicative of whether the transducer is positioned over the reference track on the disk;

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second input means for inputting a stepping direction signal from the host system, the input stepping direction signal being applied to the stepper motor control circuit in order to determine the direction of rotation of the stepper motor and hence the direction of travel of the transducer toward or away from the reference track; and

(k) second circuit means connected to the disk sensor and the second input means for delivering to the host system a false reference track signal falsely indicating that the transducer is positioned over the reference track on the disk, when the disk is not in the data transfer position add when, at the same time, the stepping direction signal indicates the travel of the transducer toward the reference track.

5,357,385

TRAY-TYPE CASSETTE LOADING COMPATIBLE WITH TWO DIFFERENT SIZED CASSETTES FOR RECORDING/REPRODUCING APPARATUS

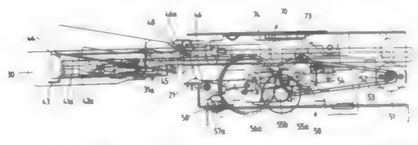
Toshiaki Shimizu, Kanagawa; Shigeru Yokota, Yokohama, and Mitsuhiko Hara, Kawasaki, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation of Ser. No. 568,897, Aug. 17, 1990. This application Oct. 14, 1992, Ser. No. 961,028

Claims priority, application Japan, Aug. 17, 1989, 1-211872; Aug. 31, 1989, 1-226141

Int. Cl.[5] G11B *5/008*

U.S. Cl. 360—96.5 10 Claims



1. A cassette loading device for a cassette recording/reproducing apparatus including a body having a front panel, comprising:

a cassette tray displaceable in a horizontal direction and reciprocally movable between a first position in which said cassette tray is retracted into the body of the recording/reproducing apparatus for loading a cassette in a predetermined position, and a second position in which said cassette tray is ejected forwardly from the front panel of the body for attachment and detachment of the cassette relative to said cassette tray;

a holder disposed in said cassette tray for holding the cassette, said cassette being one of a first cassette and a second cassette which is smaller in size than said first cassette, said holder including a first holder member for supporting thereon the first cassette and a second holder member disposed below said first holder member for supporting thereon the second cassette, said first holder member having an opening complementary in contour to the shape of the second cassette and receptive of the second cassette for guiding the second cassette when the second cassette is disposed on said second holder member, said second holder member being horizontal, said first holder member having a rearward end pivoted to a rearward end of said second holder member, said first holder member being tiltable with respect to said second holder member and said cassette tray in response to the movement of said cassette tray between said first and second positions, the second holder member being pivotally stationary when the first holder member pivotally tilts;

means responsive to the movement of said cassette tray toward said second position for causing said first holder member to tilt up relative to said second holder member and said cassette tray, with a forward end of said first holder member directed upwardly;

said cassette tray including at least one slide plate movable along with said cassette tray at a speed which is different from the speed of movement of said cassette tray, said slide plate being engageable with said first holder member to progressively tilt the latter about a rearward end thereof due to a difference between the amount of movement of said slide plate as said cassette tray approaches said second position.

5,357,386

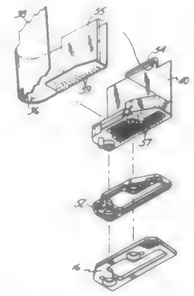
DISC DRIVE WITH HEAD/DISC ASSEMBLY HAVING SEALED CONNECTORS

Mehdi S. Haidari, Eden Prairie, and William J. Kostecka, Jordan, both of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Nov. 13, 1992, Ser. No. 976,214

Int. Cl.[5] G11B *33/14;* H01R *9/09*

U.S. Cl. 360—97.02 4 Claims



1. A disc drive system having a head/drive assembly and a circuit board external to the head/drive assembly, the disc drive system comprising:

a base casing having a bottom side, side edges, a first connector hole extending through the bottom side, and a second connector hole extending through the bottom side;

a top casing coupled to the base casing to form an enclosure enclosing the head/drive assembly;

a spindle motor coupled to the base casing;

a magnetic media disc in the enclosure coupled to the spindle motor;

a transducer for recording data to and retrieving data from the magnetic media disc;

an actuator coupled to the base casing;

a track accessing arm having a first end coupled to the transducer and a second end coupled to the actuator;

a first connector member mounted in the first connector hole, the connector member connecting electrical signals from an interior of the enclosure to an exterior of the enclosure and having a retaining lip with a protruding portion;

a first flexible electrical conductor having a first end electrically coupled to the actuator and a second end electrically coupled to the first connector member;

a stiffener bonded to the second end of the first flexible electrical conductor, with the protruding portion of the retaining lip overlying and engaging the stiffener to hold the stiffener in place;

a second connector member mounted in the second connector hole, the second connector member connecting electrical signals from an interior of the enclosure to an exterior of the enclosure;

a second flexible electrical conductor electrically coupled between the spindle motor and the second connector member;

a first gasket between the first connector member and first connector hole, the first gasket having an aperture through which the first connector member extends through so that electrical signals can be transferred from an interior of the enclosure to an exterior of the enclosure while sealing between the base casing and the first connector hole, wherein the first gasket is formed from a material which minimizes outgassing; and

a second gasket between the second connector member and the base casing, the second gasket having an aperture through which the second connector member extends so that electrical signals can be transferred from an interior of the enclosure to an exterior of the enclosure while sealing between the base casing and the second connector hole, wherein the second gasket is formed from a material which minimizes outgassing.

5,357,387

DISK DRIVING APPARATUS WITH INCLINED SURFACE ON ENGAGING PIN AND WITH PROTECTOR PLATE OVER MOTOR

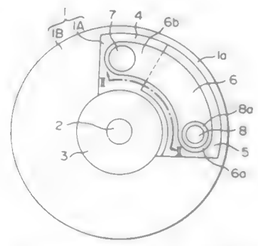
Jiroh Kawana, Hanamaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 3, 1992, Ser. No. 940,324

Claims priority, application Japan, Sep. 11, 1991, 3-231419; Sep. 11, 1991, 3-231420

Int. Cl.[5] G11B *5/016*

U.S. Cl. 360—99.05 10 Claims



1. A storage medium disk driving apparatus comprising:

a rotary plate including a centering section formed on a central portion of a first surface of said rotary plate and a recessed section formed on a peripheral portion of said rotary plate and opened toward said first surface;

a fixing plate received in said recessed section and having a proximal end portion pivotally attached to a surface of the peripheral portion of said rotary plate; and

an engaging projection formed on a distal end portion of said fixing plate and having a bevelled surface formed on a distal side portion of said engaging projection, said bevelled surface extending from a peripheral, upstanding side of said engaging projection at a canted angle wherein said bevelled surface is moved to extend substantially in parallel to said rotary plate in response to elastic deformation of said fixing plate caused by a pressing force applied to said distal end portion.

5,357,388

SHORTED DUAL ELEMENT MAGNETORESISTIVE REPRODUCE HEAD EXHIBITING HIGH DENSITY SIGNAL AMPLIFICATION

Neil Smith, San Diego, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 802,576, Dec. 5, 1991, Pat. No. 5,193,038, which is a division of Ser. No. 500,978, Mar. 29, 1990, Pat. No. 5,084,794. This application Nov. 16, 1992, Ser. No. 349,922

Int. Cl.[5] G11B *5/127*

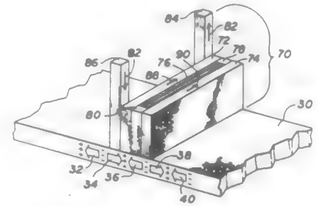
U.S. Cl. 360—113 10 Claims

1. A magnetic head assembly for detecting magnetically recorded signals having recorded wavelengths, said magnetic head assembly comprising:

a) a first thin film magnetoresistive element,

b) a second thin film magnetoresistive element,

c) a planar non-magnetic thin film spacer in contact with said magnetoresistive elements for separation of said first and said second magnetoresistive elements, said spacer further comprising electrically conductive regions, whereby said electrically conductive regions of said spacer provide electrical shorting between said first and said second magnetoresistive elements,



d) means for longitudinal concurrent current flow in said first and said second elements, whereby said elements unsaturatedly mutually magnetically bias each other,

e) means for coupling magnetic signal fields from said magnetically recorded signals to said first and said second magnetoresistive elements in a direction perpendicular to said current flow, whereby said first and said second magnetoresistive elements are concurrently responsive to said signal fields, and

f) means for detecting the resistance change in said magnetoresistive elements in response to said signal fields.

5,357,389

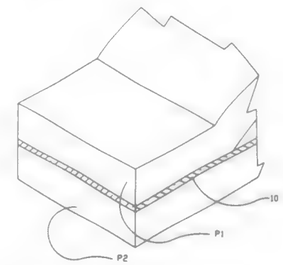
ALUMINA MATERIAL USEFUL WITH THIN FILM HEADS

Curtis N. Blanchette, Los Gatos; David P. Maddex, and Richard F. Shimek, both of San Jose, all of Calif., assignors to Read-Rite Corporation, Milpitas, Calif.

Division of Ser. No. 786,095, Oct. 31, 1991, Pat. No. 5,256,266. This application Aug. 2, 1993, Ser. No. 100,212

Int. Cl.[5] G11B *5/235*

U.S. Cl. 360—120 2 Claims



1. A thin film magnetic head comprising:

first and second magnetic pole layers for providing magnetic flux;

a nonmagnetic transducing gap layer disposed between said magnetic layers, said gap layer being formed of a crypto-crystalline alumina material having crystal grain sizes less than 1 micron and of molecular size.

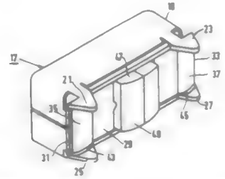
VOL 1167 ISS 3 OC 18 1994 UMI

5,357,390

MAGNETIC TAPE WITH A CYLINDRICAL MAGNETIC HEAD HOUSING

Norbert C. Vollmann, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 23, 1992, Ser. No. 949,654
Claims priority, application European Pat. Off., Dec. 11, 1991, 91203255.4
Int. Cl.[5] G11B *15/60*
U.S. Cl. 360—130.21 17 Claims



1. A magnetic tape apparatus for cooperating with a magnetic tape, said apparatus comprising:

a) a magnetic head unit, said magnetic head unit comprising

i) a magnetic head for communicating with the magnetic tape, said magnetic head having a head face, a transducing gap which terminates in the head face and defines a gap plane, and a first mounting surface which extends at least substantially perpendicularly to said gap plane and at least substantially parallel to said head face; and

ii) a housing holding said magnetic head, said housing having a front section adjacent said head face, said front section including (a) a pair of tape guides, each located at a respective opposing lateral side of said transducing gap and including a guide surface for engaging a major side of the magnetic tape, said tape guides defining a tangent plane connecting the tape guide surfaces, and (b) a second mounting surface parallel to said tangent plane, said magnetic head being mounted in said housing with said first mounting surface parallel to and in alignment with said second mounting surface; and

b) tape transport means for transporting said magnetic tape past said transducing gap and in contact with said tape guides.

5,357,391

AUDIO TAPE CASSETTE, AUDIO TAPE AND PRODUCTION METHOD OF THE SAME

Yoshiharu Katsuta, Takatsuki; Kouzaburo Sato, Kameoka; Yuki Sakamoto, Nara; Yoshiyuki Takahira, Suita, and Yasuo Yamasaki, Kyoto, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Feb. 26, 1992, Ser. No. 841,483
Claims priority, application Japan, Feb. 27, 1991, 3-056109
Int. Cl.[5] G11B *5/704, 23/087*
U.S. Cl. 360—132 6 Claims

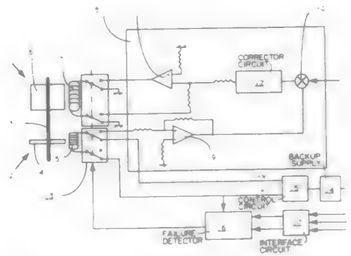
1. An audio tape cassette comprising in combination a magnetic tape wound around a hub, a cassette shell, and guiding parts, wherein said cassette shell, guiding parts, and hub are formed of a polypropylene resin including a first type of inorganic particles dispersed therein, said magnetic tape having a magnetic layer and a back coating layer, said back coating layer comprising a crystalline polyester resin and a second type of inorganic particles different from said first type of inorganic particles dispersed therein, said second type of inorganic particles having a hardness not larger than that of said first type of inorganic particles, said magnetic layer having a CP value which is not larger than 1000 μm.

5,357,392

MOTOR DRIVE DEVICE COMPRISING A TACHO-GENERATOR THAT CAN BE CONFIGURED AS A BACK-UP MOTOR

Patrick Guyomard, Paris; Marc Audion, Massy; Jean Rambeaud, Issy les Moulineaux, and Philippe Riviere, Paris, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Jul. 9, 1992, Ser. No. 911,069
Claims priority, application France, Jul. 9, 1991, 91 08602
Int. Cl.[5] H02K *23/36*
U.S. Cl. 361—23 7 Claims



1. A fail safe motor drive system having a convertible tachometer, the system comprising:

a single motor having a supply winding, and a rotor connected to a movable part;

a single tachometer having a sensing winding and coupled to the motor rotor;

a regulator circuit connected between the output of the tachometer sensing winding and the motor supply winding for creating a servo loop therebetween;

a failure detection circuit interfacing with the regulator circuit for detecting failure of the motor;

a power supply; and

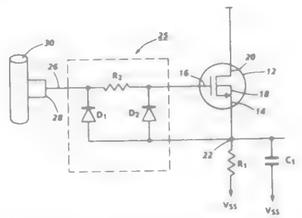
switching means responsive to a signal from the failure detection circuit for switching the sensing winding of the tachometer across the power supply thereby converting the tachometer to a motor mode that continues to drive the movable part in the event of a motor failure.

5,357,393

INTEGRATED ULTRA LOW LEAKAGE HIGH VOLTAGE PROTECTION CIRCUIT

Mohamad M. Mojaradi, Los Angeles; Guillermo Lao, Hawthorne, and Dale Sumida, Los Angeles, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed May 5, 1992, Ser. No. 878,581
Int. Cl.[5] H02H *3/20*
U.S. Cl. 361—56 10 Claims



1. A high voltage integrated circuit comprising:

a device;

said device having an input and a given node;

a protection means;

said protection means having a common substrate with said device;

said common substrate is floating;

a common input for said protection means and said device;

said protection means having an output;

said protection means having a resistor, a first Zener diode and a second Zener diode;

each of said Zener diodes having a cathode and an anode;

said cathodes of said first and said second Zener diodes being electrically connected to each other through said resistor;

said cathode of said first Zener diode being electrically connected to said common input and said cathode of said second Zener diode being electrically connected to said output of said protection means;

said input of said device being electrically connected to said output of said protection means;

said common input being electrically connected to said device through said output of said protection means;

said floating substrate being electrically connected to said given node of said device whereby the voltage applied to said input is followed by said given node of said device and said substrate; and

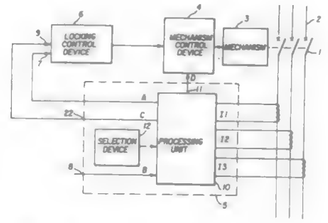
said anodes of said first and said second Zener diodes both being electrically connected to said given node of said device for limiting the voltage at said input of said device to a voltage not exceeding the breakdown voltage of said first and said second Zener diodes.

5,357,394

CIRCUIT BREAKER WITH SELECTIVE LOCKING

Philippe Piney, Villard Bonnot, France, assignor to Merlin Gerin, France

Filed Sep. 15, 1992, Ser. No. 945,268
Claims priority, application France, Oct. 10, 1991, 91 12600
Int. Cl.[5] H01H *77/00*
U.S. Cl. 361—72 10 Claims



1. A circuit breaker comprising:

contacts;

a contact actuating mechanism;

mechanism control means for controlling the contact actuating mechanism, wherein the mechanism control means controls the contact actuating mechanism to open the contacts when a tripping signal is applied to a tripping input of the mechanism control means;

locking control means, in response to a lock signal, which controls the operation of the mechanism control means to lock the contact actuating mechanism in a position corresponding to an open position of the contacts; and

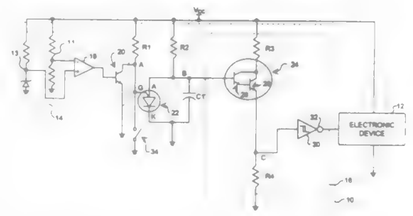
an electronic trip device for generating the tripping signal when a fault occurs on a power supply system to be monitored, wherein the electronic trip device includes detecting means for detecting the type of fault causing the generation of the tripping signal, selection means for selecting one of a plurality of predetermined types of fault, and means for generating and supplying the lock signal to the locking control means when the type of fault detected by the detecting means corresponds to the predetermined type of fault selected by selection means.

5,357,395

UNDERVOLTAGE PROTECTION CIRCUIT, SYSTEM AND METHOD OF OPERATING SAME

Steven A. Bissell, Austin; Robert B. Hyde, Round Rock, and Marvin W. Rasmussen, Austin, all of Tex., assignors to Schlumberger Technology Corporation, Austin, Tex.

Filed Jun. 25, 1992, Ser. No. 904,392
Int. Cl.[5] H02H *3/24*
U.S. Cl. 361—92 20 Claims



9. A system for inhibiting the operation of a load device, comprising:

a load device coupled to receive power from a DC power supply voltage;

an undervoltage protection circuit powered by said DC power supply voltage and connected to send a reset signal to said load device during an undervoltage time period in which said DC power supply voltage is less than a reference voltage, to continue sending said reset signal for a set delay period after said voltage time period ceases, and to maintain coupling of said DC power supply voltage and to said load device during said undervoltage time period and during said set delay period after said undervoltage time period ceases, said protection circuit comprising:

a sensing circuit adapted to compare said DC power supply voltage with said reference voltage and produce a relatively low voltage during said undervoltage time period;

a latching network coupled to receive said low output voltage and programmably form a corresponding conductive discharge path;

a current limiting resistor and storage capacitor coupled to said latching network to provide a discharge of said capacitor through said conductive discharge path; and

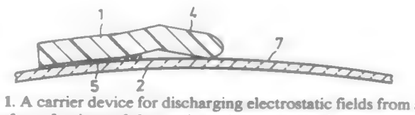
a buffer means for receiving voltage from said discharged capacitor and for producing said reset signal.

5,357,396

EARTH DISCHARGE CARRIER

Per V. Alm, Rönnvägen 3, Växjä, Sweden A-350 52

PCT No. PCT/SE90/00292, § 371 Date Nov. 4, 1992, § 102(e) Date Nov. 4, 1992, PCT Pub. No. WO91/17560, PCT Pub. Date Nov. 14, 1991
PCT Filed May 4, 1990, Ser. No. 945,974
Int. Cl.[5] H02B *1/16*
U.S. Cl. 361—212 8 Claims



1. A carrier device for discharging electrostatic fields from a surface of an item of electronic equipment which has an electrically conductive layer applied over said surface, the device comprising a strip of flexible electrically conducting material having elastic properties, adhesive means adhering a first part

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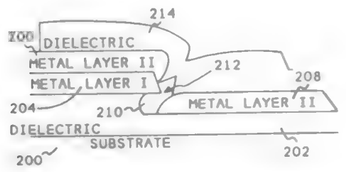
of the strip to said surface, a second part of the strip having direct galvanic contact with said electrically conductive layer, and an electrical conductor connecting the strip to an earth connection point.

5,357,397

ELECTRIC FIELD EMITTER DEVICE FOR ELECTROSTATIC DISCHARGE PROTECTION OF INTEGRATED CIRCUITS

David J. Leary, Ft. Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 15, 1993, Ser. No. 30,983
Int. Cl.[5] H05K 1/18
U.S. Cl. 361—220 9 Claims



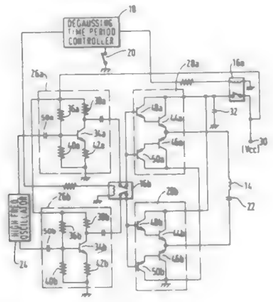
1. A device for protecting circuits from electrostatic discharge, said device comprising:
a first trace connected to an input circuit path to be protected from electrostatic discharge, wherein said first trace is formed with a point thereon;
a second trace connected to a discharge path; wherein said discharge path comprises a connection to either a circuit ground or a circuit supply voltage, and further wherein said second trace is formed having a convex surface with a convex side facing said first trace; and
a separation between said first trace and said second trace, wherein said first and second traces are constructed so that a minimal distance between said traces occurs between said point and said second trace.

5,357,398

DEGAUSSING CIRCUIT

Naoyoshi Kamijoh, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 676,177, Mar. 28, 1991, abandoned.
This application Jan. 8, 1993, Ser. No. 3,823
Claims priority, application Japan, Mar. 28, 1990, 2-76661
Int. Cl.[5] H01F 13/00
U.S. Cl. 361—267 8 Claims



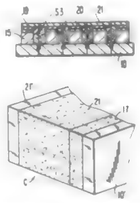
1. A degaussing circuit comprising:
a degaussing coil;
an oscillator means for supplying first and second alternating currents having a predetermined frequency, said first alternating current having a phase that is the inverse of that of said second alternating current;
first and second power amplification means for amplifying said first and second alternating currents, respectively, and for driving said degaussing coil by applying said amplified first and second alternating currents to said degaussing coil;
a first capacitor means for applying a gradually reducing bias to said first and second power amplification means to operationally empower said first and second power amplification means;
a bias source for supplying a bias to said first capacitor means;
first switch means for charging said first capacitor means with said bias from said bias source in an ON state and for causing said first capacitor means to apply said gradually reducing bias to said first and second power amplification means in an OFF state; and
a time period controller for regulating the operation period of the switch means, thus causing the first capacitor means to charge and discharge.

5,357,399

MASS PRODUCTION METHOD FOR THE MANUFACTURE OF SURFACE MOUNT SOLID STATE CAPACITOR AND RESULTING CAPACITOR

Ian Salisbury, S. Devon, England, assignor to AVX Corporation, New York, N.Y.

Filed Sep. 25, 1992, Ser. No. 951,128
Int. Cl.[5] H01G 9/05
U.S. Cl. 361—529 20 Claims



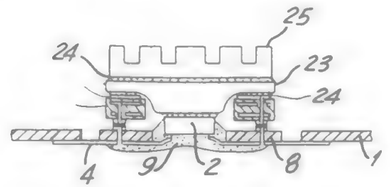
20. A surface mountable solid state capacitor formed by the method of providing a metallic planar substrate, applying to said substrate a wafer of powdered solid state capacitor forming metal, said wafer having a lower surface engaging said substrate and an upper surface spaced from and parallel to said substrate, sintering said wafer while in contact with said substrate to integrate said powdered metal into a porous mass and electrically and mechanically bond said wafer to said substrate, dividing said sintered wafer into a plurality of discrete units along first severance lines perpendicular to said substrate, anodizing said units to provide a dielectric coating, forming a conductive counter-electrode coating over said dielectric coating, said counter-electrode coating covering said upper surface, electrically and mechanically bonding a planar unitary metallic anode plate to said upper surface in covering relation of said plurality of units, and thereafter forming a second series of cuts perpendicular to said substrate through said anode plate and substrate in registry with said first severance lines.

5,357,400

TAPE AUTOMATED BONDING SEMICONDUCTOR DEVICE AND PRODUCTION PROCESS THEREOF

Koichi Takekawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 25, 1992, Ser. No. 981,233
Claims priority, application Japan, Nov. 26, 1991, 3-336345
Int. Cl.[5] H05H 7/20
U.S. Cl. 361—704 11 Claims



1. A tape automated bonding (TAB) semiconductor device comprising:
a longitudinally extending film carrier tape (1) made of an insulating film having positioning sprocket holes (6), and an array of plural assembly sets of;
each assembly set including;
a device hole (3) provided in said carrier tape for housing a semiconductor chip (2) having a plurality of bumps (22),
a set of outer lead holes (20) provided in said carrier tape and surrounding said device hole,
a suspender (8) of an insulator frame formed on said carrier tape between said device hole and said set of outer lead holes,
a plurality of lead conductors (4) formed on carrier said tape and supported by said suspender, each lead conductor having a first end portion bonded to an associated one of said bumps of said chip land a second end portion,
a multi-metal-layer film tape (15) having at least one conductor layer (16) and fixed on said suspender,
connecting means (13, 14, 17) for connecting a predetermined lead conductor to said at least one conductor layer of said multi-metal-layer film tape, and
a set of test pads (5) each being provided on said carrier tape at said second end portion of an associated one of said lead conductors for testing electrical properties of said chip.

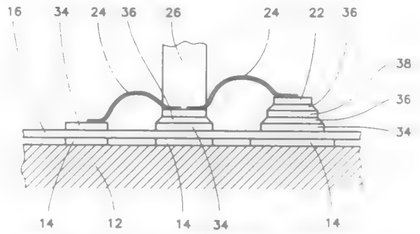
5,357,401

ELECTRONIC CIRCUIT ARRANGEMENT

Christian Göbl, Nürnberg, and Dieter Löwer, Schwabach, both of Fed. Rep. of Germany, assignors to Export-Contor Aussenhandelsgesellschaft mbH, Nürnberg, Fed. Rep. of Germany

Filed Oct. 5, 1992, Ser. No. 956,808
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1991, 4132947
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—712 37 Claims

1. An electronic circuit arrangement comprising
a cooling component (12);
a heat-conductive paste layer (14) of defined geometry disposed on the cooling component;
a thermally conductive and electrically insulating substrate carrier (16), wherein the substrate carrier is a flexible foil made of organic polymers and provided with structured metal laminate layers, forming a multilayer structure and wherein the substrate carrier is disposed on the heat-conductive paste layer (14);
at least one power semiconductor component (22) to be cooled, and wherein the power semiconductor component (22) is contacted through a conductor path for providing an electrical connection with an outer connection element (26) and internal connection elements (24) of an electronic circuit arrangement;
a heat-conductive paste (30) providing an integral joint wherein the heat-conductive paste is disposed between the thermally conductive and electrically insulating substrate



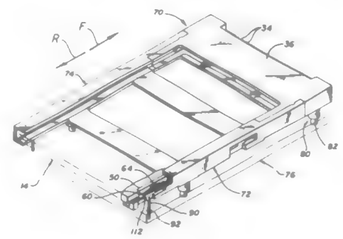
carrier and the power semiconductor component in a way of a layer for providing a transfer of heat from the power semiconductor component to the thermally conductive and electrically insulating substrate carrier such that the power semiconductor component (22) is disposed on the substrate carrier (16) through the integral joint.

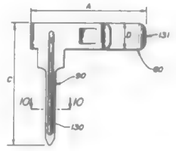
5,357,402

CARD-RECEIVING ELECTRONIC DEVICE HAVING GROUNDING SPRING

John W. Anhalt, Orange, Calif., assignor to ITT Corporation, Secaucus, N.J.

PCT No. PCT/US92/01565, § 371 Date May 15, 1992, § 102(e) Date May 15, 1992, PCT Pub. No. WO93/17471, PCT Pub. Date Sep. 2, 1993
PCT Filed Feb. 24, 1992, Ser. No. 857,914
Int. Cl.[5] H05K 5/00, 5/02
U.S. Cl. 361—753 6 Claims





1. A card-receiving electronic device that includes a circuit board having an upper surface, a plurality of conductive traces and a ground plane, said electronic device also including a card-receiving mechanism mounted over said circuit board upper surface with said mechanism including a pair of primarily horizontally-extending guide tracks that guide a card in longitudinal movement into and out of said mechanism, characterized by:
a grounding spring having an elongated upper portion forming a card-contacting part positioned along one of said

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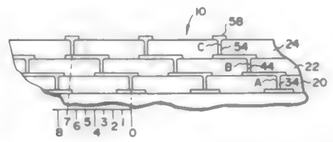
guide tracks, and having a downwardly-extending leg with a lower leg end electrically connected to said circuit board ground plane.

5,357,403

ADAPTIVE LITHOGRAPHY IN A HIGH DENSITY INTERCONNECT STRUCTURE WHOSE SIGNAL LAYERS HAVE FIXED PATTERNS

Theodore R. Haller, Scotia, and Robert J. Wojnarowski, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 29, 1990, Ser. No. 545,793
Int. Cl.[5] H05K 1/11
U.S. Cl. 361—794 3 Claims



1. In an electronic system of the type including a plurality of electronic components each including contact pads, a high density interconnect structure bonded to said components and including dielectric material and a pattern of conductors disposed on or in said dielectric material, the conductors of said high density interconnect structure electrically interconnecting said contact pads of said electronic components, the improvement comprising:

said pattern of conductors of said high density interconnect structure including a component alignment conductor layer and a signal conductor layer;

said dielectric material of said high density interconnect structure including a first layer of dielectric material bonded to said electronic components;

said component alignment conductor layer is a power or ground layer disposed on said first layer of dielectric material and including a plurality of alignment conductors, each of which overlaps an associated one of said contact pads, said first layer of dielectric material having a plurality of first via holes therein, each of said first via holes being disposed within the overlap between one of said contact pads and its associated alignment conductor;

each of said alignment conductors extending into ohmic contact with its associated contact pad in the one of said first via holes which is disposed in their overlap;

said dielectric material of said high density interconnect structure including a second layer of dielectric material disposed over said component alignment conductor layer and exposed portions of said first layer of dielectric material;

said signal conductor layer being disposed on said second layer of dielectric material and including conductive runs and a plurality of signal conductor cover pads each associated with a particular one of said contact pads;

said second layer of dielectric material having a plurality of second via holes therein, each of said second via holes being disposed in an overlap between one of said alignment conductors and an associated one of said signal conductor cover pads which extends into ohmic contact with that alignment conductor in that second via hole;

an alignment conductor and its associated contact pad and its associated signal conductor cover pad comprising an associated set in which the contact pad is connected to its associated signal conductor cover pad by the alignment conductor; and

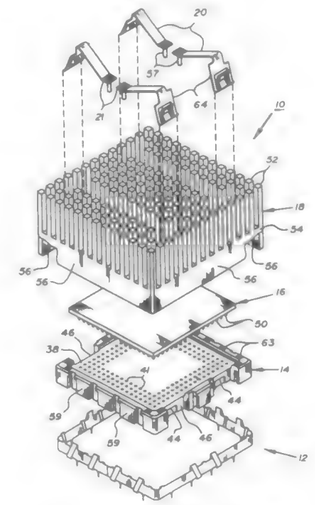
in at least one of said associated sets, said signal conductor cover pad is not aligned over a center line of the alignment conductor.

5,357,404

EMI SHIELD, AND ASSEMBLY USING SAME

Edward J. Bright, Middletown; Jay F. Maltais, Harrisburg, and Attalee S. Taylor, Palmyra, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 991,611, Dec. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 845,405, Mar. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 793,769, Nov. 18, 1991, abandoned. This application Nov. 22, 1993, Ser. No. 156,520
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—818 13 Claims



4. An electronic package assembly, comprising:

an electronic package having electrical leads extending therefrom and communicating electrically with the contents of said package;

a socket receiving said leads and holding said package on said socket;

a shielding device comprising an electrically-conductive frame surrounding peripheral portions of said socket and secured thereto, to minimize electromagnetic emissions from said assembly;

an electrically-conductive heat sink overlying said package for dissipating heat generated within said package; and

retainer means extending from said sink to said socket and having releasable latch means securing one end of said retainer means to said socket;

said heat sink having a depending skirt extending downward therefrom and completely surrounding said socket outside of said shielding device;

said frame having means for electrically connecting with a ground circuit, and having electrically-conductive tabs extending outwardly from said frame and in contact with said skirt;

said retainer means extending from said sink downward, inside said frame and said heat-sink skirt, to at least one position on said socket inside of said frame; and

detent means on said socket at said at least one position inside said frame, securing said latch means to said socket;

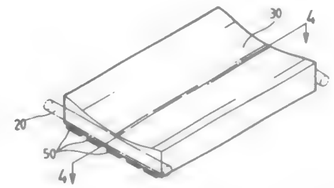
whereby said socket and said package are shielded on all sides.

5,357,405

BACKLIGHTING DEVICE FOR LIQUID CRYSTAL DEVICES

Jong-ho Park, Suwon, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Oct. 29, 1993, Ser. No. 142,922
Claims priority, application Rep. of Korea, Nov. 13, 1992, 92-22350
Int. Cl.[5] F21V 8/00
U.S. Cl. 362—31 3 Claims



1. A backlighting device for use in LCD devices including:

a light-guiding plate having a light-transmitting first face and an opposed light-transmitting second face, said first face including a semicylindrical concave surface about an axis along a first direction;

lamps disposed at each of two opposed edges of said light-guiding plate perpendicular to the first direction;

a light-diffusing plate disposed on said first face of said light-guiding plate;

a light-reflecting plate disposed on said second face of said light-guiding plate; and

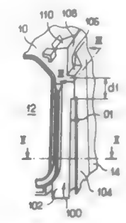
reflecting film patterns disposed between said light-guiding plate and said light reflecting plate.

5,357,406

MOTOR VEHICLE HEADLAMP FITTED WITH IMPROVED VENTILATION MEANS

Marc Saget, Ezanville, and Ghislaine Pinson, Villeneuve la Garenne, both of France, assignors to Valeo Vision, Bobigny, France

Filed Dec. 18, 1992, Ser. No. 993,314
Claims priority, application France, Dec. 20, 1991, 91 15912
Int. Cl.[5] B60Q 1/06
U.S. Cl. 362—61 12 Claims



1. A motor vehicle headlamp having a housing defining a closed inside space, said headlamp including ventilation means comprising air inlet means and air outlet means for ventilating said inside space, wherein said air outlet means comprises:

a hollow column formed on said housing and extending essentially vertically across a substantial part of the height of said housing, said column being closed at an upper end thereof,

an air outlet duct extending essentially horizontally between said inside space of said housing and the internal space of said hollow column in an upper region thereof, and

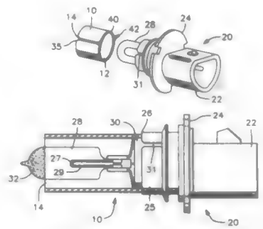
an elongate opening provided along an outside wall of said column remote frown said housing and extending essentially vertically, said elongate opening providing air communication between said internal space of the hollow column and the outside.

5,357,407

LIGHT ATTENUATOR FOR HIGH/LOW BEAM VEHICLE HEADLIGHT BULB

Michael E. Woods, 1162 Ridge Rd., Pylesville, Md. 21132

Filed May 10, 1993, Ser. No. 58,368
Int. Cl.[5] B60Q 1/00
U.S. Cl. 362—61 9 Claims



1. A light attenuator sleeve for attachment to a high/low beam vehicle bulb having a high beam filament and a low beam filament, the attenuator sleeve comprising:

a sleeve body having a degree of opaqueness for attenuating the light emitted from said high beam filament such that the intensity of light emitted by said bulb when the high beam filament is energized is substantially equal to that emitted by said low beam filament, said body comprising a proximal end and distal end each having a substantially circular rim;

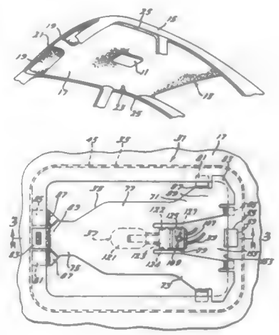
removable attaching means suitable for removably attaching the proximal end Of the sleeve body to a support member which supports the base of the high/low beam vehicle bulb.

5,357,408

INTERIOR LAMP FOR AN AUTOMOTIVE VEHICLE

Mark T. Lecznar, Grosse Pointe Woods, and William P. Mykytiuk, Taylor, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Oct. 8, 1993, Ser. No. 134,095
Int. Cl.[5] B60Q 3/00
U.S. Cl. 362—74 18 Claims



1. A lamp assembly for use in the interior of an automotive vehicle comprising:

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a lens having a central portion thereof which is substantially optically transparent therethrough, said lens further having an appearance surface and an upper surface both of which are bordered by a peripheral edge therearound, said upper surface of said lens having a first fastening member and a second fastening member extending upward therefrom, said second fastening member being spatially interposed away from said first fastening member;

an illumination source;

an electricity carrying conductive member having said illumination source electrically connected thereto; and

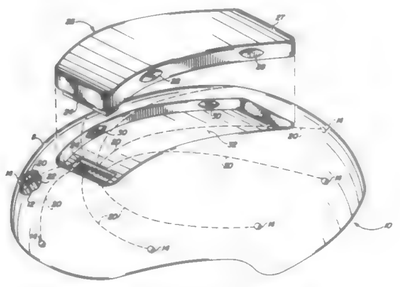
a shield being defined by at least two attachment arms with a central segment therebetween, each of said attachment arms of said shield having at least two projecting fingers extending therefrom such that said fingers are offset from one another, said first fastening member of said lens being fastened to said shield such that said lens is retained therebelow, said central segment of said shield further having a mounting portion proximate therewith such that said illumination source is affixed thereto, said illumination source being substantially juxtapositioned between said central segment of said shield and said upper surface of said lens.

5,357,409

ILLUMINATED SAFETY HELMET

Terry L. Glatt, 117 Lake Emerald Dr., Oakland Park, Fla. 33309

Filed Mar. 12, 1993, Ser. No. 31,294
Int. Cl.[5] F21L *15/12*
U.S. Cl. 362—105 **20 Claims**



1. An illuminated safety helmet, comprising:

a protective core for covering a portion of a wearer's head, said core being impact absorbent;

a plurality of light emitting diodes disposed around said core;

control circuitry configured to sequentially illuminate said light emitting diodes;

a power source for powering said control circuitry and said light emitting diodes;

a housing for enclosing said control circuitry and said power source;

means for electrically connecting said housing to said light emitting diodes; and

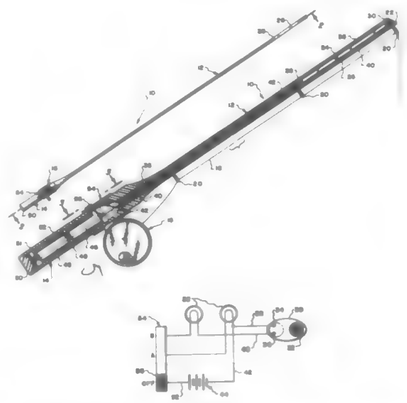
means for removably attaching said housing to said core.

5,357,410

LIGHTED FISHING POLE

Michael J. Cota, and Anthony J. Cota, both of 5493 Domino Ave., Santa Maria, Calif. 93455

Filed Sep. 23, 1993, Ser. No. 125,665
Int. Cl.[5] A01K *87/00*; **F21V** *33/00*
U.S. Cl. 362—109 **3 Claims**



1. A lighted fishing pole comprising:

a handle from which extends an elongated bendable rod having a lengthwise axis;

a fishing reel mounted on said handle with fishing line extending from said reel, said fishing line being mounted on and in juxtaposition to said bendable rod and then exteriorly of said bendable rod;

said bendable rod having an outermost section, said outermost section extending in the lengthwise direction along said lengthwise axis, said outermost section being of a length substantially less than the total length of said bendable rod, said outermost section being illuminatable, said outermost section terminating at a free end;

a light source embedded within said bendable rod and located at said outermost section, activation of said light source causes illumination of said outermost section;

a battery source of power mounted in said handle, a manually operated switch mounted on said handle, said manually operated switch controlling the activation of said light source by power from said battery source, said manually operated switch having three different positions with one position being off not activating said light source and a second position permitting activation of said light source and a third position causing continuous activation of said light source; and

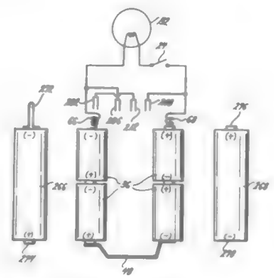
a movement actuatable switch mounted on said free end of said outermost section, said movement actuatable switch being embedded within said rod, said light source being connected to said movement actuatable switch, upon said movement actuatable switch sensing sufficient movement of said free end of said outermost section said light source is activated When said manually operated switch is in said second position.

5,357,411

FLASHLIGHT FOR FIREFIGHTING AND OTHER SPECIALIZED USES

W. Kenneth Menke, and W. Kenneth Menke, III, both of 415 Park Ave., Glendale, Mo. 63122

Division of Ser. No. 938,905, Aug. 31, 1992, Pat. No. 5,239,451. This application Jun. 25, 1993, Ser. No. 82,768
Int. Cl.[5] F21L *7/00*
U.S. Cl. 362—183 **17 Claims**



1. A flashlight comprising:

a body portion having an exterior and a hollow interior, the interior being configured to contain at least one standard battery as a power source of the flashlight;

a lamp mounted on the body portion of the flashlight, the lamp containing an electric light;

a first electric circuit contained in the body portion and the lamp, the first electric circuit being capable of providing electric communication between the electric light contained in the lamp and a standard battery when said standard battery is contained in the body interior to power illumination of the electric light;

a rechargeable battery pack configured to be contained in the body portion interior and connected in the first electric circuit to power illumination of the electric light; and,

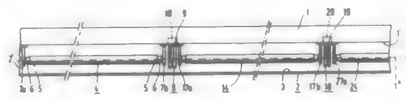
a second electric circuit contained in the body portion, the second electric circuit connecting the rechargeable battery pack in the second electric circuit when the rechargeable battery pack is contained in the interior of the body portion and the second electric circuit not connecting the standard battery in the second electric circuit when the standard battery is contained in the interior of the body portion.

5,357,412

LINE ILLUMINATION DEVICE AND MOUNTING MEMBER FOR THIS DEVICE

Jean Paul Entrop, and Gerrit J. Van Den Beld, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 5, 1992, Ser. No. 878,649
Claims priority, application European Pat. Off., May 7, 1991, 91201091.5; Sep. 17, 1991, 91202386.8; Apr. 10, 1992, 92201033.5
Int. Cl.[5] F21S *3/00*
U.S. Cl. 362—219 **17 Claims**



1. A line illumination device comprising:

a carrier,

a plurality of tubular fluorescent lamps in a linear arrangement and each of which has end portions with respective lamp caps,

a plurality of lampholder pairs which are connected to the carrier and in each of which a respective fluorescent lamp is held via its lamp caps, characterized in that

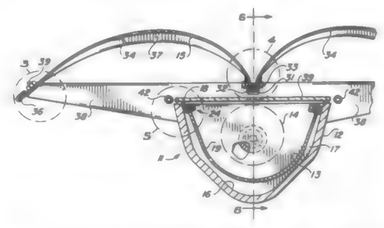
between each two adjacent tubular fluorescent lamps a respective single-ended capped compact fluorescent lamp is accommodated, with its lamp cap in a lamp holder which is mounted proximate to the carrier, whereby said line illumination device provides greater evenness in brightness and illuminance.

5,357,413

ARMORED LIGHTING FIXTURE

Michael C. Mandall, 5442 E. Cambridge Ave., Phoenix, Ariz. 85018

Filed May 7, 1993, Ser. No. 58,032
Int. Cl.[5] F21V *7/00*
U.S. Cl. 362—300 **7 Claims**



1. An armored lighting fixture for providing wide-area illumination, said fixture comprising an armored housing formed of armor plate and having a top opening, a first reflector structure positioned in said housing, means for resiliently supporting said first reflector structure in said housing, a lamp positioned in said first reflector structure and carried thereby, said first reflector structure reflecting light from said lamp upwardly through the opening in said housing, and a second reflector structure positioned above said housing for receiving light from said lamp and from said first reflector structure and for reflecting that light downwardly and outwardly past said housing.

5,357,414

MODULAR CANTILEVERED ELECTRICAL LIGHT FIXTURE

Mark T. Dane, Milwaukee; Henry J. Griesmer, Hartford; Catherine Alexander, Milwaukee; Peter M. Zimmerman, Menomonee Falls; Pinkston S. Harper, Milwaukee; Steven A. Nickel, Sussex; Ronald A. Crawford, Cedarburg; Donald J. Zach, Greendale; Robert T. Jones, Sussex; James F. Morton, Milwaukee, and Brian K. Johnston, Jackson, all of Wis., assignors to Phoenix Products Company, Inc., Milwaukee, Wis.

Filed Jan. 22, 1993, Ser. No. 7,220
Int. Cl.[5] F21S *1/02*
U.S. Cl. 362—431 **7 Claims**

3. A modular cantilevered electrical light fixture, comprising:

a tubular support arm having a mounting end and a cantilevered end;

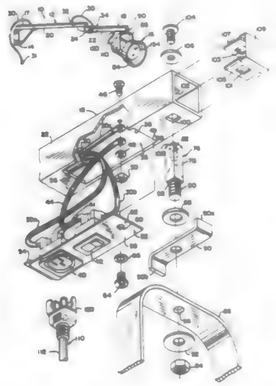
an electric light head;

means securing said electric light head to said arm at said cantilevered end;

lamp wiring electrically connected to said head at a head end of said wiring and having a first connector plug-half at a plug end of said wiring which is opposite from said head end;

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a mounting bracket secured to said arm at said mounting end;
an opening formed in said arm adjacent said cantilevered end, said opening defining thereunder a connecting zone within said arm;
an electrical power supply line extending through said arm, said supply line having conductor ends in said connecting zone within the arm and exiting said arm adjacent to said mounting end;
a cover secured to the arm over the opening; and
a second connector plug-half secured to said arm adjacent said opening, said conductor ends being electrically con-



nected to said second connector plug-half in the connecting zone within the arm, said first and second connector pug-halves mating in releasable engagement with one another to provide an electrical connection between said electrical power supply line and said lamp wiring;
wherein said cover has an ear at an ear end which is offset from a facial plane of said cover by approximately a wall thickness of said tubular support arm and is hooked over an edge of said opening behind a wall of said arm, said cover overlaps an exterior surface of said arm adjacent to said opening and further comprising means at an end of said cover which is opposite from said ear end securing said cover against said arm.

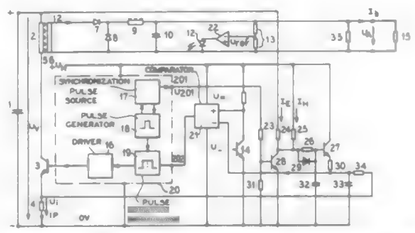
5,357,415

SWITCHING REGULATOR HAVING AT LEAST ONE REGULATED OUTPUT VOLTAGE

Karl-Heinz Kramer, Geretsried, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 2, 1993, Ser. No. 100,243
Claims priority, application European Pat. Off., Aug. 5, 1992, 92113375.7
Int. Cl.[5] H02M *3/335;* **G05F** *1/40*
U.S. Cl. 363—21 **20 Claims**

1. A switching regulator, comprising:
a power switch arranged in a main circuit of a primary side of the switching regulator in series with a current-measuring resistor;
a control circuit having a pulse generator and a pulse-duration modulator connected thereto and an output for outputting a sequence of turn-on pulses to a control terminal of the power switch for driving the power switch into conduction;
a first comparator having a first input connected to the current-measuring resistor via a ramp voltage source;
the ramp voltage source having an auxiliary transistor that has an emitter operationally connected to a further resistor that is connected in series with the current-measuring resistor;
the auxiliary transistor having a base connected to a capacitor that is connected to at least one discharge current branch containing a charging current path connected to a fixed DC voltage source and containing an electronic switch;



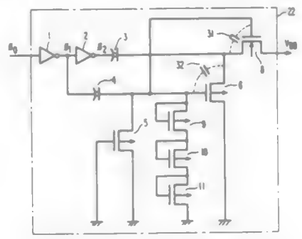
the electronic switch of the discharge current branch being controllable with the control circuit such that the electronic switch is nonconductive over the duration of the turn-on pulses and is driven conductive at least during a prescribed part of the turn-on pulse pauses; and
the first input of the first comparator connected to the further resistor.

5,357,416

VOLTAGE GENERATING CIRCUIT CAUSING NO THRESHOLD VOLTAGE LOSS BY FET IN OUTPUT VOLTAGE

Toshihiro Kitano, and Takeshi Kajimoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1993, Ser. No. 71,498
Claims priority, application Japan, Jul. 27, 1992, 4-199479
Int. Cl.[5] H02M *3/18*
U.S. Cl. 363—60 **11 Claims**



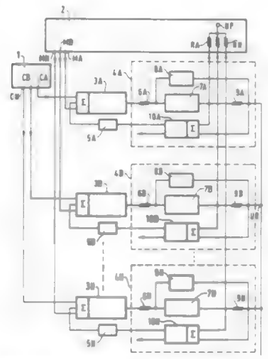
10. A substrate bias voltage generating circuit generating a negative substrate bias voltage through an output node, comprising:
means for generating first and second complementary clock signals;
a first capacitor having first and second electrodes, the first electrode being connected to receive the first clock signal;
an NMOS transistor having its source electrode connected to the second electrode of said first capacitor, and its drain electrode connected to said output node;
a second capacitor having first and second electrodes, the first electrode connected to receive the second clock signal;
a first PMOS transistor having its gate electrode connected to the second electrode of said second capacitor, and a first electrode of said first PMOS transistor connected to the source electrode of said NMOS transistor and a second electrode of said first PMOS transistor connected to a power supply potential; and
a second PMOS transistor having its gate electrode connected to the power supply potential, and a first electrode of said second PMOS transistor connected to the second electrode of said second capacitor and a second electrode of said second PMOS transistor connected to the power supply potential;
wherein said NMOS transistor has its gate electrode connected to the second electrode of said second capacitor.

5,357,417

DISTURBANCE-LIMITING CIRCUIT OF REDUNDANT TYPE FOR REGULATION EQUIPMENT

Jean-Pierre Desvaux, Ablon sur Seine, France, assignor to Cegelec, Lavallois Perret, France

Filed Jun. 25, 1992, Ser. No. 904,144
Claims priority, application France, Jun. 25, 1991, 91 07789
Int. Cl.[5] H02J *1/14*
U.S. Cl. 363—71 **3 Claims**



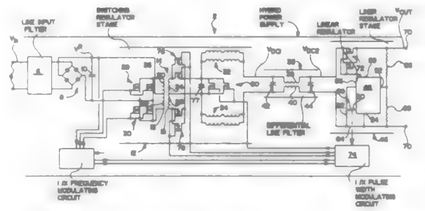
1. In a disturbance-limiting circuit for use in a regulation apparatus for an actuator controlled from a reference-generating unit via a plurality of regulator modules each of said regulator modules providing a control signal in the form of a voltage and being connected to the actuator at a common point via a respective resistor so that the control valued delivered to the actuator is a mean value of the voltages respectively supplied by said regulator modules, the improvement comprising a plurality of voting circuits respectively inserted between an output of a respective one of the regulator modules and the corresponding respective resistor connected to the common point; each voting module including an impedance adapter connected via a high impedance input to the output of the respective regulator module and at an output of the corresponding respective resistor, said adapter output further being connected to a downstream resistor constituting part of a loop to the input of said adapter, a clipping circuit connected in said loop, said loop being further connected, at a point between said downstream resistor and said clipping circuit, in common to loops of each of said voting modules.

5,357,418

HYBRID POWER SUPPLY FOR CONVERTING AN ALTERNATING INPUT SIGNAL INTO A DIRECT OUTPUT SIGNAL

Robert Clavel, 3385 Rue Petit, St Hubert, Quebec, Canada J3Y 3J2

Filed May 2, 1991, Ser. No. 694,943
Int. Cl.[5] H02M *7/217, 3/337*
U.S. Cl. 363—89 **11 Claims**



1. A hybrid power supply for converting an alternating input signal fed to its input into a direct output signal produced at its output, said hybrid power supply comprising:
a rectifier for converting said alternating input signal into a mono-alternation signal;
a capacitor for smoothing said mono-alternation signal into a direct signal;
a switching regulator stage coupled to said capacitor for generating a pre-regulated direct signal having a constant amplitude, said switching regulator stage including a high frequency transformer having primary and secondary windings both center tapped, two power transistors having cut-off and conduction states for controlling conduction periods of corresponding sections of said primary winding, and two integrating chokes for converting a high frequency signal generated by said secondary winding to said pre-regulated direct signal;
a 1/X frequency modulating circuit for generating two switching pulsed signals of constant pulse width at a variable frequency according to a 1/X function in relation to said direct signal originating from said capacitor, said switching pulsed signals being 180° phase-shifted one from the other, whereby said switching pulsed signals alternatively trigger the states of the power transistors of said switching regulator stage;
a linear regulator stage coupled to said switching regulator stage for regulating said pre-regulated direct signal, and for generating said direct output signal; and
a differential line filter coupled between said switching regulator stage and linear regulator stage.

5,357,419

COMPACT AND EFFICIENT TRANSFORMERLESS POWER CONVERSION SYSTEM

Rudolf Limpaecher, Topsfield, Mass., assignor to D.C. Transformation Inc., Rowley, Mass.

Continuation of Ser. No. 864,031, Apr. 6, 1992, Pat. No. 5,270,913. This application Sep. 15, 1993, Ser. No. 121,693
Int. Cl.[5] H02M *3/07, 7/04*
U.S. Cl. 363—140 **59 Claims**

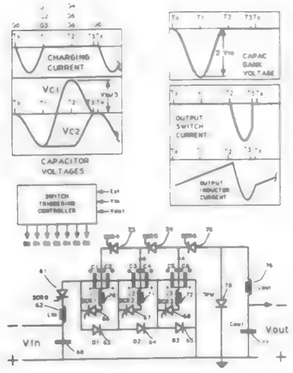
1. A transformerless power conversion system comprising:
a plurality of capacitors connected in series;
a charging circuit connected to said plurality of capacitors, said charging circuit charging the plurality of capacitors from a voltage source to a predetermined voltage;
a circuit for inverting the polarity of the charge stored in selected capacitors of said plurality of capacitors, said polarity inverting circuit including a plurality of inductor circuits, each of which can be switchably coupled to a corresponding different one of the selected capacitors to

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form a resonant circuit which aids in inverting the polarity of a stored charge in that capacitor;

a discharging circuit for extracting power from the plurality of capacitors at a transformed voltage and

a control circuit controlling the operation of the charging circuit, the inverting circuit and the discharging circuit, said control circuit establishing a charging phase in which the charging circuit charges the plurality of capacitors, an



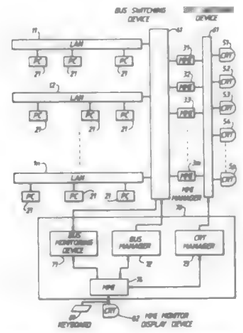
inversion phase in which said inverting circuit to invert the polarity of said selected capacitors, and a discharge phase in which the discharge circuit extracts power from the plurality of capacitors, wherein a cycle of operation includes a charging phase, an inversion phase and a discharge phase, and wherein said control circuit causes said power conversion system to go through many cycles of operation per second.

5,357,420

INTEGRATED CONTROL SYSTEM

Tetsuji Gohi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Sep. 24, 1992, Ser. No. 950,141
Claims priority, application Japan, Sep. 30, 1991, 3-252489
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—131 **3 Claims**



1. An integrated control system comprising:

a plurality of independent control systems, each of the independent control systems having a data transmission channel;

a plurality of control terminal means for controlling the independent control systems;

a plurality of interface control means for performing interface control between the independent control systems and each of the control terminal means;

first switching means for switching connections between each of the control systems and each of the interface control means;

second switching means for switching connections between each of the interface control means and each of the control terminal means;

control means for controlling the first and second switching means in response to an external instruction; and

external control terminal means for supplying the external instruction,

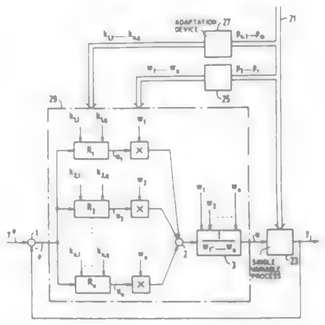
wherein the control means includes bus monitor means for monitoring states of the data transmission channels of the independent control systems, first switching control means for controlling the first switching means, second switching control means for controlling the second switching means, and interface means connected to the bus monitor means for performing interface control between the external control terminal means and the first and second switching control means.

5,357,421

METHOD FOR CLOSED-LOOP CONTROL OF TECHNICAL PROCESSES USING MULTIPLE CONTROLLERS

Wilfried Tautz, Forchheim, and Georg Weihrich, Uttenreuth, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 3, 1993, Ser. No. 12,686
Claims priority, application European Pat. Off., Feb. 4, 1992, 92101811.0
Int. Cl.[5] G05B *15/00;* **G11B** *15/18*
U.S. Cl. 364—133 **14 Claims**



1. A method for performing closed-loop process control using a plurality of controllers operating in parallel, comprising the steps of:

a) allocating each of said plurality of controllers to a selected working point;

b) weighting a plurality of output signals from said plurality of controllers in dependence upon a plurality of working-point parameters that have a dominant influence on the performance to be controlled; and

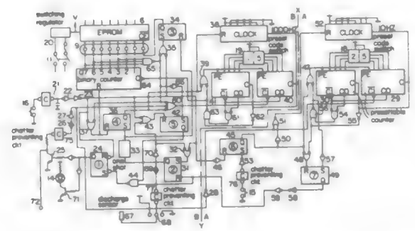
c) formulating a weighted mean value from a sum of the weighted plurality of output signals from said plurality of controllers and a sum of a plurality of corresponding weights, wherein said weighted mean value effects the process as a manipulated variable.

5,357,422

READ-ONLY SEQUENCE CONTROLLER

Yoshikazu Kuze, 31-3, Higashimagome 1-chome, Ohta-ku, Tokyo, Japan

Filed Nov. 12, 1993, Ser. No. 151,120
Claims priority, application Japan, Nov. 16, 1992, 4-350067
Int. Cl.[5] G05B *11/01;* **G06F** *15/46*
U.S. Cl. 364—143 **3 Claims**



1. A read-only sequence controller for controlling operation of a machine, having

a main circuit and a sub-circuit;

said main circuit comprising:

a first clock pulse generating circuit for producing first clock pulses, a first presettable counter for counting the first clock pulses and for producing a command signal after every preset count has been reached;

said sub-circuit comprising:

a memory, a second clock pulse generating circuit for producing second clock pulses, a second presettable counter for counting the second clock pulses and for producing a read clock pulse after every preset count has been reached, a binary counter for counting the read clock pulse and for producing outputs for addressing said memory, so that the memory produces data outputs, relays responsive to the data outputs for operating the machine, and a control circuit for controlling start and stop operations of the counters,

the control circuit comprising:

a start control circuit responsive to the command signal for starting said second clock pulse generating circuit, second presettable counter, and binary counter;

a sensor detecting a discharge of a work from the machine and for producing a discharge signal;

re-start control circuit responsive to a count end signal of said binary counter, to said discharge signal, and to said command signal, for re-starting said second clock pulse generating circuit, second presettable counter, and binary counter;

a stop control circuit responsive to an absence of said discharge signal, to said count end signal for producing stop signals, and to said command signal for stopping said first and second presettable counters.

5,357,423

APPARATUS AND METHOD FOR AUTOMATICALLY ADJUSTING POWER OUTPUT OF AN ULTRASONIC GENERATOR

James M. Weaver, Ambler, and Michael J. Sowers, Lansdale, both of Pa., assignors to Kulicke and Soffa Investments, Inc., Del.

Filed Feb. 22, 1993, Ser. No. 20,367
Int. Cl.[5] G05B *13/02;* **H01L** *21/607*
U.S. Cl. 364—148 **13 Claims**

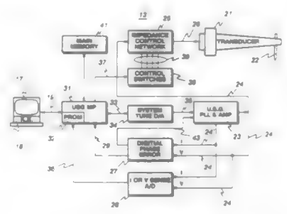
6. A method of controlling the power delivered to a bonding tool during a bonding operation, comprising the steps of:

connecting a variable impedance network comprising resistance components connected in series between an ultrasonic power generator and an ultrasonic transducer of the type adapted to hold a bonding tool,

providing a microprocessor for controlling the output of said ultrasonic generator and said variable impedance network,

sensing the output values of said ultrasonic generator coupled to said ultrasonic transducer to determine the bonding load,

controlling the value of said variable impedance network in a preferred mode of operation by,



calculating a predetermined desired network impedance (Z_{NW}) to be inserted in series between said ultrasonic power generator and said ultrasonic transducer for a bonding operation to deliver a predetermined amount of power through said ultrasonic transducer, and

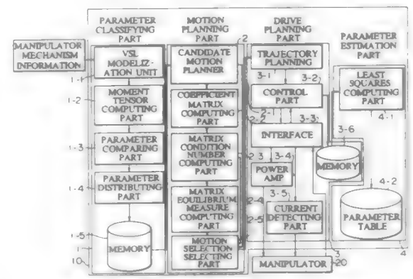
switching said desired network impedance (Z_{NW}) value in series between said ultrasonic power generator and said ultrasonic transducer before a bonding operation.

5,357,424

DYNAMIC MODEL PARAMETER IDENTIFICATION SYSTEM

Takao Kakizaki, Kodaira; Koji Otani, Tokyo, and Kenji Kogure, Kokubunji, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Mar. 30, 1993, Ser. No. 39,997
Claims priority, application Japan, Mar. 31, 1992, 4-077901
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—149 **8 Claims**



1. A dynamic model parameter identification system for manipulators having links and a joint, said system comprising:

parameter classifying means for classifying a plurality of parameters, said parameter classifying means approximates said links by means of symmetrical and homogeneous virtual solid links, calculates the inertial parameters of said manipulator, and classifies the calculated inertial parameters into groups according to influence on control of said manipulator;

motion planning means for determining motions of said manipulator, said motion planning means calculates the

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condition number for parameter coefficient sub-matrix formed by terms corresponding to the parameters under consideration, calculates the number of equilibriums from the quotient of the maximum and minimum values of the vector normal of the rows of said coefficient sub-matrix, and determines the motion for parameter identification so that said condition number and said number of equilibriums are both below predetermined values;

driving means for driving said manipulator according to said motion planned by said motion planning means;

motion measuring means for measuring motion of said manipulator and driving force applied to said manipulator; and

parameter estimating means for estimating parameters based on a linear equation consisting of unknown vectors, drive torque vectors and parameter coefficient matrix consisting of motion measurement.

5,357,425

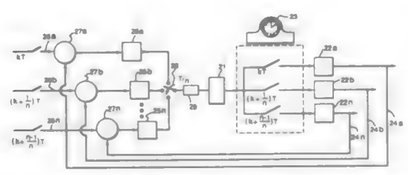
METHOD AND APPARATUS FOR CONTROLLING A REAL TIME SYSTEM

Karl D. Minto, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 13, 1991, Ser. No. 654,695

Int. Cl.[5] G05B *9/03*

U.S. Cl. 364—178 **13 Claims**



1. A method for inherently controlling a real time system comprising the steps of:

temporally sampling the system with a plurality of redundant sensors at predetermined sampling intervals;

alternately and asynchronously scheduling the sampling of the plurality of redundant sensors to provide a corresponding plurality of asynchronous, temporally redundant sampling signals;

transmitting the asynchronous plurality of temporally redundant sampling signals to each of a corresponding plurality of controllers; and

alternately and asynchronously multiplexing a subinterval portion from each of the plurality of signals corresponding to each of the plurality of controllers to responsively partition each sampling interval into a corresponding plurality of subintervals, wherein each controller of the plurality controls the system for each respective subinterval of each sampling interval.

5,357,426

PROGRAMMABLE APPARATUS FOR STORING DISPLAYING AND SERVING FOOD AND DRINK

Minoru Morita; Mitsumasa Kumagai, both of Oura, and Toshihiro Sekiguchi, Ooizumi, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Feb. 1, 1993, Ser. No. 12,285

Claims priority, application Japan, Jan. 30, 1992, 4-015261

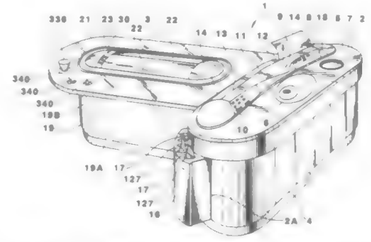
Int. Cl.[5] G06F *9/00*

U.S. Cl. 364—400 **15 Claims**

15. A party production apparatus, comprising:

a table counter including a frame, a table provided on said frame, a food displaying section formed in said table, a storage chamber formed in said frame for accommodating a plurality of dishes therein, and a transport apparatus for transporting an arbitrary one of the dishes accommodated in said storage chamber to said food transporting section;

a controller connected to said table counter for control of the operation of portions of said table counter, said controller including register means for storing therein a party program including a plurality of operations for successive execution in a time series relationship in accordance with said program, controlling means for controlling said transport means of said table counter to execute a plurality of operations to transport the dishes to said food displaying section, display means for displaying thereon information, confirming means for confirming a progressing condition of the party program, fast feeding operating means for skipping an operation in the party program, and speech recognizing means for inputting speech thereto and for recognizing the speech; and



a controller executing the operations in accordance with the order stored in said register means and in response to contents of the speech recognized by said speech recognizing means, to cause, when said controller advances the control sequence thereof to a next operation, said display means to display contents of speech input to said speech recognizing means, to cause said display means to display a result of recognition by said speech recognizing means, to cause said display means to display a progressing condition of the party program in response to an operation to said confirming means, and to advance the control sequence to a next operation skipping a particular operation in the party program in response to an operation to said fast feeding means.

5,357,427

REMOTE MONITORING OF HIGH-RISK PATIENTS USING ARTIFICIAL INTELLIGENCE

Pauline A. Langen, Simsbury; Jeffrey S. Katz, West Hartford, both of Conn.; Gayle Dempsey, Needham, Mass., and James Pompano, East Haven, Conn., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 15, 1993, Ser. No. 31,752

Int. Cl.[5] G06F *15/42*

U.S. Cl. 364—413.02 **12 Claims**

1. A method of remote monitoring at least one patient by using a telephone and artificial intelligence through a monitoring device which is used by the patient, without the patient having to read the monitoring device, comprising the steps of:

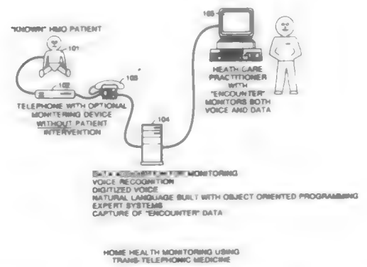
recording patient information including patient data, medical history and other considerations relevant to treatment of the patient concerned;

generating several questions which could be asked of the patient by an attending physician and which questions are of the physician's own choice;

creating a telephone monitoring encounter with the patient to be monitored in the doctor's own voice without the use of a modem;

using artificial intelligence (AI) for parsing said several questions to create a selection and sequence of selected questions chosen by AI from said several questions based on progressive patient response;

at the end of said sequence of selected questions, obtaining a reading signal from the monitoring device through telephone lines without a modem and by using a telephone cord splitter;



and applying physician laid down criteria for evaluating said progressive patient response and the obtained reading signal to determine any course of action necessary.

5,357,428

METHODS AND APPARATUS FOR MAPPING ELECTROPHYSIOLOGICAL POTENTIALS IN LIVING SUBJECTS

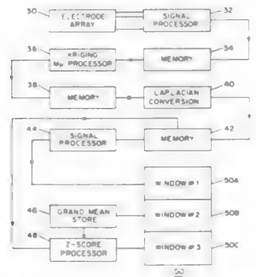
Charles L. Stone, Jr., Darien, Conn., assignor to Micro-Tek, Inc., Westport, Conn.

Continuation of Ser. No. 763,862, Sep. 20, 1991, Pat. No. 5,247,436, which is a continuation of Ser. No. 382,622, Feb. 23, 1989, abandoned, which is a continuation-in-part of Ser. No. 85,971, Aug. 14, 1987, abandoned. This application Apr. 5, 1993, Ser. No. 42,821

The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.

Int. Cl.[5] G06F *15/42;* **A61B** *5/04*

U.S. Cl. 364—413.05 **25 Claims**



8. An apparatus for displaying features of underlying neural activity at a desired point in an area of interest in a human or animal comprising:

a plurality of electrodes for positioning at points in the area of interest and means for deriving therefrom electrical signals as measures of the physiological potentials at such points;

an electronic means to derive by a Kriging interpolation program a grid of estimated potential values of an area corresponding to the area of interest with a greater coordinate density than the number of original points;

means for sampling the values of a selected point in the grid of estimated potential values corresponding to the desired point; and

means for displaying the value of the estimated potential at the desired point in a plot against time in successive sampling intervals.

5,357,429

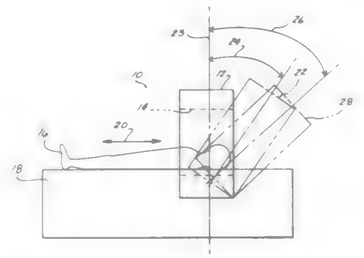
THREE-DIMENSIONAL MODEL GENERATION USING MULTIPLE ANGLE TOMOGRAPHIC SCAN PLANES

Richard A. Levy, 127 Fieldcrest St., Apt. #204, Ann Arbor, Mich. 48103

Filed Apr. 2, 1992, Ser. No. 861,947

Int. Cl.[5] G06F *15/42*

U.S. Cl. 364—413.15 **2 Claims**



1. A method for generating a three-dimensional model of a surface of an imaged object from two-dimensional tomographic data comprising the steps of:

inclining a tomographic data generator apparatus at a predetermined non-perpendicular angle with respect to the longitudinal axis of the scanner/imaged object;

generating a plurality of contiguous, substantially parallel, tomographic cross-sectional slices of the imaged object, each cross-sectional slice being inclined at a predetermined, non-perpendicular angle with respect to the longitudinal axis of the scanner/imaged object;

generating a plurality of two-dimensional data sets collectively defining the three-dimensional surface of the body from the tomographic cross-sectional slices;

repeating the above steps a plurality of times, during each time inclining the tomographic data generator apparatus at a different, non-perpendicular angle with respect to the longitudinal axis of the imaged object;

selecting two-dimensional data set which results in the most accurate three-dimensional image of the imaged object; and

generating a three-dimensional model from the selected two-dimensional data set.

5,357,430

SYSTEM FOR TEXT TRANSLATION

Ulrike Rackow, Aachen, and Ulrike Schwall, Munich, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 13, 1992, Ser. No. 959,840

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1991, 4135261

Int. Cl.[5] G06F *15/38*

U.S. Cl. 364—419.08 **14 Claims**

1. A computer implemented method for translating an unhyphenated compound word from a source language to a target language, said method comprising the steps of:

storing in a memory a multiplicity of constituent words in the source language and translations of said constituent words into the target language;

comparing the constituent words in memory to a plurality of different beginning segments of the compound word and identifying one of said constituent words which matches one of said segments;

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fetching from said memory and combining translations of said one constituent word and another constituent word



that follows said one constituent word in said compound word.

5,357,431

CHARACTER STRING RETRIEVAL SYSTEM USING INDEX AND UNIT FOR MAKING THE INDEX

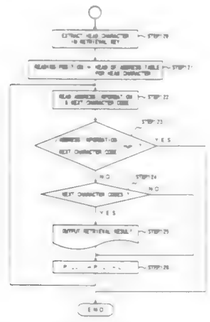
Masahiro Nakada; Kenichi Utsumi; Takashi Tsubokura; Masaru Nakahara; Satoshi Itami; Hiroshi Suzuki; Kyouko Miyabe, and Satoshi Komura, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 25, 1993, Ser. No. 8,810

Claims priority, application Japan, Jan. 27, 1992, 4-012074; Sep. 29, 1992, 4-260078

Int. Cl.[5] G06F *15/38*

U.S. Cl. 364—419.13 **31 Claims**



1. A character string retrieval system for retrieving a character string corresponding to a retrieval key input thereto from a text file including a plurality of characters, said system comprising:

an index indicating position data identifying a position of each of characters in the text file and indicating next character data identifying either a character or a character string formed of a plurality of characters arranged next to each of the characters in the text file;

selecting means for selecting a first character from characters forming the character string corresponding to the retrieval key;

determining means for determining, with reference to said index, whether or not a character or a character string next to the first character, selected by said selecting means, in the retrieval key is equal to a character or a character string identified by the character data corresponding to the first character; and

output means for outputting a retrieval result when said determining means determines that a character or a character string next to the first character in the retrieval key is equal to a character or a character string identified by the character data corresponding to the first character, the retrieval result being obtained based on the position data corresponding to the first character in said index.

5,357,432

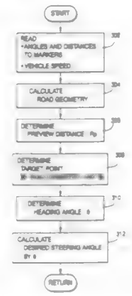
AUTOMATIC LATERAL GUIDANCE CONTROL SYSTEM

Donald L. Margolis, El Macero, and Yoshiyuki Yasui, Davis, both of Calif., assignors to Aisin Seiki Kabushiki Kaisha, Japan

Continuation of Ser. No. 592,295, Oct. 3, 1990, abandoned. This application Nov. 24, 1993, Ser. No. 156,943

Int. Cl.[5] G06F *15/50*

U.S. Cl. 364—424.02 **29 Claims**



1. An apparatus for automatically guiding a moving vehicle with respect to a road having a plurality of markers positioned therealong, said apparatus comprising:

means for sensing the position, relative to said vehicle, of a predetermined number of said markers and for generating position signals in response thereto;

means for calculating a path approximating said road in accordance with said position signals;

means for sensing the speed of said vehicle and for generating speed signals in response thereto;

means for calculating a preview distance as a function of the speed of said vehicle in accordance with said speed signals;

means for identifying a point along said approximate path that is spaced apart from said vehicle by said preview distance; and

means for generating a control signal for use in steering said vehicle substantially toward said point such that said vehicle is guided substantially along said road.

5,357,433

GAIT GENERATION SYSTEM FOR A LEGGED MOBILE ROBOT

Toru Takenaka, and Tadaaki Hasegawa, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 20, 1993, Ser. No. 65,213

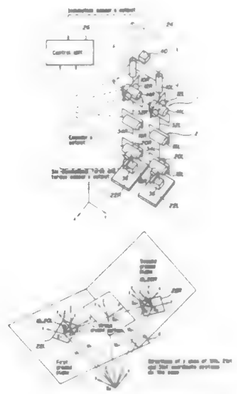
Claims priority, application Japan, May 22, 1992, 4-155916

Int. Cl.[5] B62D *57/02;* **G05B** *19/00*

U.S. Cl. 364—424.02 **14 Claims**

1. A system for generating a gait of a legged mobile robot with a plurality of legs in walking on a terrain including at least a first surface and a second surface such that the robot legs are in simultaneous contact with the first and second surfaces, comprising:

first means for assuming a virtual third surface which varies between the first and second surfaces;



second means for assuming target ZMP (Zero Moment Point) on the virtual third surface; and

third means for generating a gait of the robot such that a ZMP kinematically determined from the motion of the robot coincides with the target ZMP.

5,357,434

METHOD AND APPARATUS FOR ADAPTING MOTOR VEHICLE DRIVE SLIP THRESHOLD VALUES FOR A DRIVE SLIP AND/OR A BRAKE SLIP CONTROL SYSTEM TO TIRES

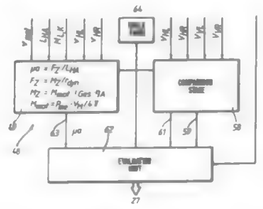
Richard Zimmer, Fellbach; Armin Müller, Backnang, and Rainer Freitag, Nürtingen, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Jan. 27, 1992, Ser. No. 826,948

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1991, 4102301

Int. Cl.[5] B60T *8/56*

U.S. Cl. 364—426.02 **8 Claims**



5. A device for carrying out the method for adapting slip threshold values for a drive slip control system and a brake slip control system for a road vehicle, comprising (a) an electronic control unit configured to generate from processing output signals of wheel speed sensors representative of at least one of level and frequency of the wheel speeds of the driven and the non-driven vehicle wheels, required drive signals for the drive slip control system and the brake slip control system such that, in the case of a drive slip control, a vehicle wheel tending to spin is decelerated again by actuating its associated wheel brake and, if such braking is insufficient to reduce the drive slip below a threshold value, the engine torque is reduced and, in the case of brake slip control, the braking forces are reduced when a threshold value of at least one of brake slip and the wheel decelerations is exceeded, and (b) an additional electronic processing unit inputted with rotational speed of the vehicle engine, at least one of mass delivery rate of combustion air quantity supplied to the engine and fuel quantity supplied to the engine, wheel speeds of the driven and of the non-driven vehicle wheels, and axle load, LHA, at the driven vehicle wheels, to determine the adhesion coefficient instantaneously utilized in driving operation, from the relationship

$$\mu_a = F_z / L_{HA}$$

in which F_z is applicable traction force of a drive train of the vehicle which, in turn, is determined by the relationship

$$F_z = M_z / r_{dyn}$$

in which r_{dyn} is the dynamic rolling radius of the driven vehicle wheels and M_z is the propulsive torque of the drive train, which is applied via a roadway and which, in turn, is determined from the relationship

$$M_z = M_{mot} \cdot i_{Ges} \cdot \eta_A$$

in which i_{Ges} is the overall transmission ratio of the drive train, η is the total mechanical efficiency of the drive train of the vehicle, and M_{mot} is the output torque of the engine which, in turn, is determined from the relationship

$$M_{mot} = p_{me} \cdot V_M / 4\pi$$

in which V_M is total displacement of the vehicle engine and p_{me} is mean combustion pressure in the engine which is determined from a family of curves characteristic of the vehicle engine wherein operatively associated with the electronic processing unit are an electronic computer stage to continuously generate an electrical output signal characteristic of the utilized adhesion coefficient, a comparison stage to continuously generate an output signal characteristic of the slip of the driven vehicle wheels, and an evaluating unit synchronized with the electronic computer stage and the comparison stage to form from a multiplicity of mutually correlated instantaneous adhesion coefficient and drive slip value pairs a continuous sliding mean of the instantaneous adhesion coefficient and drive slip quotient as a quantity characteristic of the tires and to adjust, in dependence on the drive slip quotient, the threshold values to initiate a respective mode of control in drive slip control and in brake slip control.

5,357,435

TRACTION CONTROL SYSTEM FOR AUTOMOTIVE VEHICLES

Sota Yasuda, Kanagawa, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Dec. 28, 1992, Ser. No. 997,064

Claims priority, application Japan, Dec. 27, 1991, 3-346600

Int. Cl.[5] B62D *6/00*

U.S. Cl. 364—426.03 **8 Claims**

1. A traction control system for an automotive vehicle, comprising:

a traction reducing means for reducing traction created through at least one driven wheel, said traction reducing means being operated during an acceleration-slip control;

an acceleration-slip detecting means for monitoring an acceleration-slip state of said at least one driven wheel;

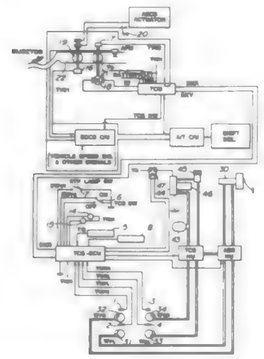
a turning degree deriving means for deriving a degree of turn of the vehicle;

a change-rate derivation means for deriving a rate of change in said turning degree; and

a driving-torque recovery control means for increasingly compensating a recovery amount of driving torque cre-

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ated by said at least one driven wheel in accordance with a decrease in the turning degree of the vehicle, during the acceleration-slip control when said recovery control



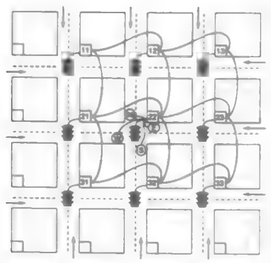
means determines on the basis of the rate of change in the turning degree that the vehicle is in a transient state from turning to straight-ahead driving.

5,357,436

FUZZY LOGIC TRAFFIC SIGNAL CONTROL SYSTEM

Stephen L. Chiu, Thousand Oaks, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Oct. 21, 1992, Ser. No. 964,319
Int. Cl.[5] G06F *15/48*
U.S. Cl. 364—436 15 Claims



1. A method of controlling a traffic signal at an intersection, comprising the steps of:

providing a microprocessor connected to the traffic signal;

defining control parameters of cycle time, phase split, and offset time for the traffic signal;

generating data of traffic flow through the intersection and a neighboring intersection, said data including direction of dominant traffic flow through the intersection and degree of saturation on competing approaches to the intersection;

characterizing said traffic flow data using membership functions;

applying fuzzy logic decision rules to said characterized traffic flow data; and

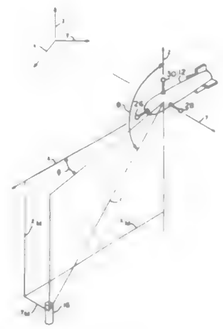
adjusting said traffic signal control parameters based on said fuzzy logic decision rules applied to said characterized traffic flow data, including the steps of adjusting said phase split to reduce the difference between saturation on said competing approaches to the intersection, adjusting said cycle time to maintain a desired degree of saturation on one of said approaches having the highest saturation, and adjusting said offset time incrementally to improve traffic flow in said dominant direction.

5,357,437

MAGNETIC MARKER POSITION FIXING SYSTEM FOR UNDERWATER VEHICLES

Donald G. Polvani, Arnold, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jul. 1, 1992, Ser. No. 907,086
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 22 Claims



1. A method of resetting a current position value of a vehicle navigation system in a three-dimensional search area comprising the steps of:

(a) placing at least one magnetic marker external to the vehicle and in a selected initial location in the search area, the marker generating a magnetic induction that is detectable up to a selected range;

(b) detecting at the vehicle, signals that represent the magnitude of the marker's magnetic induction in components of a cartesian coordinate system;

(c) converting the magnetic induction signals to position coordinates; and

(d) changing said current position value to reset it to an updated value as a function of said position coordinates.

5,357,438

ANTI-COLLISION SYSTEM FOR VEHICLES

Dan Davidian, 16 Mania Shochat, Holon, Israel

Filed Jun. 3, 1993, Ser. No. 70,817
Claims priority, application Israel, Jun. 4, 1992, 102097
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—461 20 Claims

1. An anti-collision system for moving vehicles, comprising:

means for determining the speed of a moving vehicle;

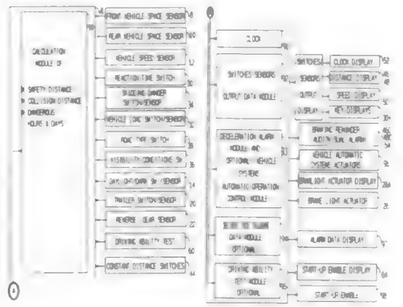
means for measuring the distance of the moving vehicle from an object;

a computer for receiving a number of parameters, including the speed of the vehicle, and for computing from said parameters a danger-of-collision distance to said object;

and a collision alarm actuated by said computer when the measured distance of said object is equal to or less than said danger-of-collision distance computed by the computer;

characterized in that said system also includes a control panel having parameter presetting means for presetting preselected parameters which are utilized by said computer for computing said danger-of-collision distance to said object;

said preselected parameters including at least one vehicle parameter concerning a preselected condition of the vehi-



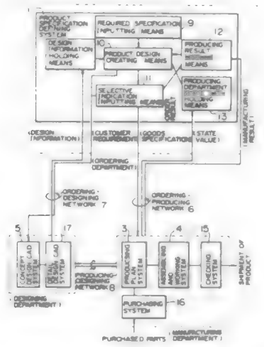
cle, and at least one environmental parameter concerning a preselected condition of the environment.

5,357,439

CUSTOM-MADE MANUFACTURING SYSTEM AND CUSTOM-MADE MANUFACTURING METHOD

Kichie Matsuzaki, Yokohama; Kaoru Imai, Yamato; Hideaki Suzuki, Yokohama; Hideaki Matoba, Yokohama; Masahiro Watanabe, Yokohama; Hidetoshi Inaba, Sapporo; Hisashi Onari, Yokohama; Masahito Uno, Kanagawa; Toru Mita; Ichiro Taniguchi, both of Yokohama; Koichi Sugimoto, Hiratsuka, and Yoshio Matsumoto, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 11, 1991, Ser. No. 666,927
Claims priority, application Japan, Mar. 9, 1990, 2-56348
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—468 16 Claims



1. A custom manufacturing system comprising:

means for selectively indicating a particular product having custom product specifications required by a customer;

a product ordering department having means for receiving said required product specifications input by said customer;

a design department for designing custom product design information for said specified product according to said input required custom product specifications, said design department having means for storing said custom product design information;

a production department for manufacturing said product according to said custom product design information, said production department having means for outputting and storing production status information and means for storing end product manufacturing information, wherein said production department receives said custom product design information from said design department via a transmitting means;

means for estimating and showing at least one of completion time data and cost data according to said custom product design information and said production status information; and

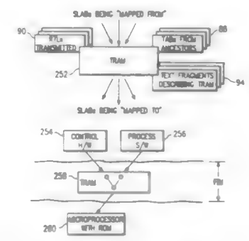
means for creating and displaying a product design having said input custom required specifications, according to said product design information, said production status information and said end product information.

5,357,440

METHOD AND APPARATUS FOR AIDING SYSTEM DESIGN

Marvin T. Talbott, Plano; Henry L. Burks, Dallas; Richard W. Shaw, Plano; Michael Amundsen; Katherine K. Hutchison, both of Dallas, and Donald D. Strasburg, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 661,356, Feb. 26, 1991, abandoned.
This application Oct. 23, 1992, Ser. No. 966,128
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—467 8 Claims



1. A method of aiding system design with a computer, wherein the computer performs the following steps comprising:

decomposing the system design into a first set of objects and a second set of objects, each of said objects having a parent-child hierarchical relationship, wherein a child object of said objects defines a portion of a parent object;

generating information links between said first set of objects and said second set of objects on a plurality of different hierarchical levels, said information links describing relationships between said first set of objects .and said second set of objects;

tracing allocatable requirements between said first set of objects and said second set of objects: and

maintaining a matrix of interrelations between said information links describing said relationships between said first set of objects and said second set of objects.

5,357,441

MOISTURE CONTENT MEASURING APPARATUS AND METHOD

J. Scott Petty, Hanover; Christopher Ferguson, Framingham; Joseph R. Adamski, Sudbury, all of Mass., and Joseph E. Musil, Ely, Iowa, assignors to Raytheon Company, Lexington, Mass.

Filed Mar. 11, 1994, Ser. No. 29,854
Int. Cl.[5] G08B *21/00*
U.S. Cl. 364—469 17 Claims

1. A method for continuously producing signals representing

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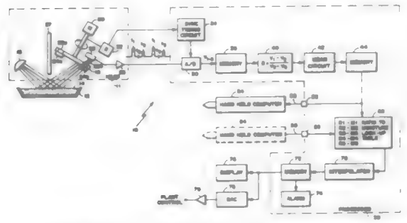
moisture content of a material at a sensor station, comprising the steps of:

activating said sensor station to produce calibration data corresponding to measurements of light at two different wavelengths reflected from said material;

transferring said calibration data to a hand held computer;

measuring moisture content of a sample of said material;

inputting said measured moisture content of said sample into said hand held computer to create a table correlating data



corresponding to measurements of light reflected at said two wavelengths reflected from said material to moisture content of said material;

transferring said table to said sensor station; and

continuously generating at said sensor station real time data corresponding to measurements of light at said two wavelengths reflected from said material and using said table and said real time data to continuously produce signals representing moisture content.

5,357,442

SEWING DATA PROCESSING APPARATUS

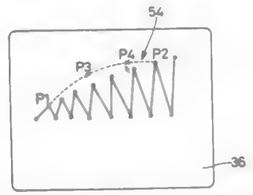
Kiyokazu Sekine, Kuwana, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 794,519, Nov. 19, 1991, abandoned. This application Jan. 5, 1994, Ser. No. 177,788

Claims priority, application Japan, Dec. 29, 1990, 2-415838

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—470 **13 Claims**



1. An apparatus for processing sewing data used by a sewing machine, comprising:

storing means for storing stitch position data indicative of stitch positions adapted to be penetrated by a sewing machine of said sewing machine to form stitches into a work sheet;

a display which displays straight line segments connecting points representing said stitch positions in a sewing order;

producing means for producing data indicative of a defining line;

modifying means for modifying said stitch position data such that a portion of said stitch positions are modified stitch positions that are located on said defining line and a portion of said stitch positions are unmodified stitch positions that are located off said defining line, such that said modified stitch positions alternate with said unmodified stitch positions,

said display displaying straight line segments connecting each of the modified stitch positions located on said defining line with a preceding and a following one of the unmodified stitch positions located off said defining line in said sewing order; and

a data utilization device which utilizes said stitch position data modified by said modifying means, to form said stitches into said work sheet.

5,357,443

METHOD OF ESTIMATING PROPERTIES OF STEEL PRODUCT

Yoshiyuki Watanbe; Shinichi Shimomura, both of Kimitsu; Atsuhiko Yoshie; Masaaki Fujioka, both of Futsu; Kiyoshi Nishioka, Kimitsu; Satoshi Akamatsu, and Takashi Fujita, both of Futsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

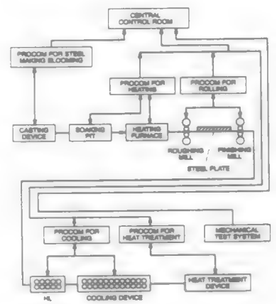
PCT No. PCT/JP92/00720, § 371 Date Feb. 3, 1993, § 102(e) Date Feb. 3, 1993, PCT Pub. No. WO92/21970, PCT Pub. Date Oct. 12, 1992

PCT Filed Jun. 4, 1992, Ser. No. 978,703

Claims priority, application Japan, Jun. 4, 1991, 3-159410; Jun. 4, 1991, 3-159411; Jul. 25, 1991, 3-207163; Jul. 25, 1991, 3-207165; Sep. 12, 1991, 3-260469; Nov. 21, 1991, 3-331621

Int. Cl.[5] G06F *15/46; B22D 11/16*

U.S. Cl. 364—472 **11 Claims**



9. A method of estimating, based on steel ingredients and production conditions, fine quality of a steel product produced by subjecting a slab cast according to a continuous casting process or an ingot making process to at least reheating, rolling, cooling and tempering, the steel having a metallic structure state after each processing step, comprising the steps of:

completing a computation for determining the state of the metallic structure after rolling including at least the grain diameter of austenite, the intergranular area of austenite per unit volume, the dislocation density in austenite and the state of solid solution and precipitation based on the state of the metallic structure before the rolling and the temperature of the steel product computed from rolling conditions including at least the size of the steel product on inlet and outlet sides in each pass and the period of time between passes;

completing a computation for determining the state of the metallic structure after cooling including at least the fraction of each structure of ferrite, pearlite, bainite and martensite, the grain diameter of ferrite and the state of solid solution and precipitation based on the state of the metallic structure before the cooling and the temperature of the steel product computed from cooling conditions including at least classification into water cooling and air cooling and the water quantity density and the travel rate within device;

completing a computation for determining the state of the metallic structure after tempering including at least the

fraction of each structure of ferrite, pearlite, bainite and martensite based on the state of the metallic structure before the tempering and tempering conditions including at least heating and cooling conditions; and

when the steel product has a final metallic structure state, completing a computation for determining the properties of the steel product based on the final state of the metallic structure.

5,357,444

RETARDING CONTROL APPARATUS WHICH OPERATES ON THE BASIS OF SIGNALS SUCH AS A SHIFT LEVER POSITION SIGNAL

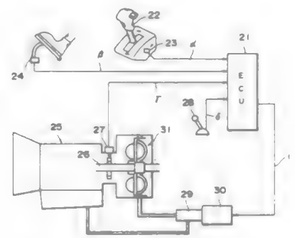
Toshiaki Ishiguro, Chita, and Takayuki Ishihara, Toyokawa, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 660,558, Feb. 25, 1991, abandoned. This application Jan. 21, 1994, Ser. No. 183,790

Claims priority, application Japan, Feb. 28, 1990, 2-45664; Mar. 23, 1990, 2-72000

Int. Cl.[5] F02D *45/00;* **B60K** *41/06*

U.S. Cl. 364—426.01 **3 Claims**



1. A retarding control apparatus for controlling operation of a retarder, which is connected to an automatic transmission, by operating a retarder actuating device through manipulation of a retarder changeover switch, comprising:

shift position sensing means for sensing a shift position of a shift lever;

throttle opening detecting means for detecting a throttle opening; and

control means, to which are inputted a shift position signal from said shift position sensing means, a throttle opening signal from said throttle opening detecting means, and a changeover signal from said retarder changeover switch, for outputting an operating signal to the retarder actuating device;

wherein when said control means receives the changeover signal as an input from the retarder changeover switch for operating the retarder and decides that a manual downshift has taken place based upon the shift position signal and throttle opening signal, said control means diminishes the operating signal to the retarder actuating device in such a manner that the retarder produces a braking force that is reduced by a prescribed value.

5,357,445

TAPER ANGLE SETTING AND DISPLAYING METHOD FOR PROGRAMMING UNIT

Naoki Watanabe, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1990, Ser. No. 511,695

Claims priority, application Japan, May 30, 1989, 1-136347

Int. Cl.[5] G06F *15/46*

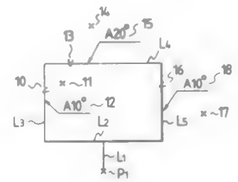
U.S. Cl. 364—474.26 **4 Claims**

1. A method of setting and displaying a taper angle for a programming device, comprising the steps of:

defining a machining locus on a display screen;

specifying on said display screen an indication point which is used for a tapering operation at a desired position on said machining locus defined on said display screen;

specifying on said display screen an inclination angle of a taper formed by said tapering operation;



selecting a relative position with respect to said machining locus to specify an inclination direction of said taper on said display screen; and

displaying said inclination angle and inclination direction thus specified, as a taper indicating symbol, on a side of said machining locus.

5,357,446

PUNCHING MACHINING DEVICE FOR PLATES

Akira Maeda, and Kanichi Tsuchiya, both of Fujisawa, Japan, assignors to Sankyo Kogyo Co., Ltd., Fujisawa, Japan

Filed Oct. 18, 1991, Ser. No. 779,045

Claims priority, application Japan, Nov. 8, 1990, 2-302892

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—474.02 **4 Claims**

1. A punch machining device for a plate, comprising:

a vertically movable upper die including a horizontally arranged punch holder, said punch holder having a large number of punches for punching the plate, said punches having upper and lower ends and vertically slidably extending through the punch holder,

a stripper plate vertically movably situated under the punch holder, said stripper palte having holes to allow the punches to pass therethrough and returning means situated between the stripper plate and the punch holder, said returning means urging the stripper plate in a direction away from the punch holder,

a lower die situated under the stripper plate to form a passage for the plate to be punched between the lower die and the stripper plate, said lower die having through holes at portions corresponding to the punches to receive the lower ends of the punches when punching operation by moving the upper die together with the stripper plate toward the lower die is carried out so that punch debrises caused by punching operation drop and pass,

feeding means for transferring the palte intermittently into the passage between the lower die and the stripper plate in synchronous with the punching operation,

pressing heads installed on the punch holder for the respective punches, each pressing head having a head part for

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immovably holding the punch relative to the punch holder to thereby allow the punch to make ah ole in the plate in the punching operation and a stepped part for allowing the punch to slide upwardly through the punch holder in the punching operation so that the punch does not make a hole,

pressing head drivign means attached to the respective pressing heads, each pressing head driving means operating the pressing head to lcoate one of the head part and the stepped part above the upper end of the punch to thereby selectively activate the punch for making a hole in the plate, and

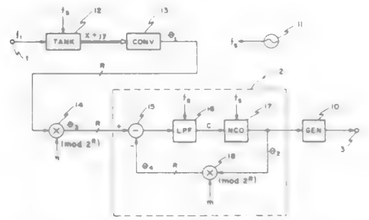
a control device including original figure reading means or reading original figure and making image data, editing means for editing the original figure image data outputted from the original figure reading means, and machining data making means for ararnging a hole pattern in respect of the edited image data and making machining data corresponding to a punching pattern, said pressing head driving means being controlled in response to the machining data outputted fromthe machining data making means and being actuated in compliance with the punching pattern so that desired pattern of holes is made in the plate in the punching operation.

5,357,447

RATE CONVERSION APPARATUS

Osamu Ichiyoshi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Oct. 4, 1991, Ser. No. 771,727
Claims priority, application Japan, Oct. 5, 1990, 2-266608
Int. Cl.[5] G06F *7/68, 1/04*
U.S. Cl. 364—484 **14 Claims**



1. A rate conversion apparatus for converting a first periodical signal of frequency f1 (Hz) into a second periodical signal of frequency f2 (Hz) where f2=(n/m) f1, (where m and n are mutually prime integers), said apparatus comprising:

clock pulse generating means for generating an operation clock signal having a frequency fs which is higher than the highest of said f1 or f2 frequencies;

phase extracting means comprising a complex digital tank means, driven by said operation clock signal supplying a reference timing in the phase of said first periodical signal, for extracting the frequency f1 component from said first periodical signal in a complex form and converting the extracted component into a first R-bit binary signal indicating the phase of the first periodical signal;

first multiplying means for generating a third R-bit phase signal by multiplying said first phase with said n (modulo 2);

subtracting means for generating a phase error signal by subtracting a fourth phase signal from said third phase signal;

digital filter means, driven by said operation clock signal supplying a reference timing of said phase error signal, for receiving said phase error signal and converting it into a smoothed phase error signal;

periodic signal phase generating means, driven by said operation clock signal supplying a reference timing of said smoothed phase error signal, for generating a second R-bit phase signal of said second periodical signal, which is phase/frequency-controlled by said smoothed phase error signal;

second multiplying means for generating said fourth phase signal by multiplying said second phase signal by said m (modulo 2; and

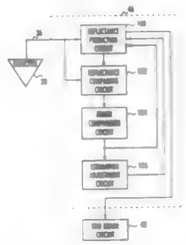
clock generating means for generating said second periodical signal wherein said second phase signal provides control of frequency and phase.

5,357,448

METHOD AND APPARATUS FOR CONTROLLING THE PRINTING OF AN IMAGE HAVING A PLURALITY OF PRINTED COLORS

Alan R. Stanford, Mukwonago, Wis., assignor to Quad/Tech, Inc., Pewaukee, Wis.

Filed Feb. 2, 1993, Ser. No. 12,439
Int. Cl.[5] G01J *3/46*
U.S. Cl. 364—526 **25 Claims**



1. A device for determining the effective dot density of each of a plurality of base colors in an image from a plurality of actual reflectance values of the image, comprising:

an initial value source configured to produce a plurality of initial calibration parameters;

an adjustment circuit configured to produce a plurality of operating calibration parameters;

a dot density circuit configured to produce a plurality of effective dot density estimates;

a reflectance prediction circuit coupled to the initial value source, the adjustment circuit and the dot density circuit to receive a plurality of initial and operating calibration parameters and a plurality of effective dot density estimates and generate, in response thereto, a plurality of predicted reflectance values;

a reflectance comparing circuit coupled to the reflectance prediction circuit and being disposed to receive the predicted reflectance values therefrom, the reflectance comparing circuit being further disposed to receive the plurality of actual reflectance values, and generate a reflectance error based on the differences between the predicted reflectance values and the actual reflectance values;

an error comparison circuit coupled to the reflectance comparing circuit and the reflectance prediction circuit, the error comparison circuit being disposed to receive the reflectance error from the reflectance comparing circuit, the error comparison circuit comparing the reflectance error with a maximum acceptable error value and generating a signal indicative of the results of the comparison;

the estimation adjustment circuit being coupled to the error comparison circuit and the reflectance prediction circuit;

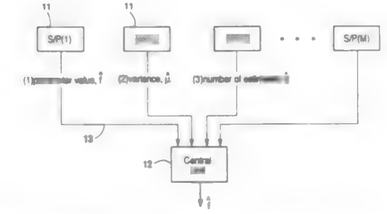
wherein the estimation adjustment circuit generates a plurality of adjusted effective dot density estimates to the reflectance prediction circuit when the reflectance error is greater than the predetermined maximum error, and wherein the reflectance prediction circuit generates the estimated effective dot density estimates for use as the actual effective dot densities of the base colors when the reflectance error is less than the predetermined maximum error.

5,357,449

COMBINING ESTIMATES USING FUZZY SETS

Sang G. Oh, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 692,093, Apr. 26, 1991, abandoned.
This application Dec. 23, 1992, Ser. No. 997,624
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—551.01 **11 Claims**



1. A distributed sensor system for estimating a value of a physical parameter, comprising:

a plurality of sensors for detecting a physical process and quantifying said physical process as a parameter;

a plurality of sensor processors, each of said sensor processors being associated with one of said sensors, respectively, wherein each of said sensor processors is programmed to calculate an estimate and a variance for each observation of said sensors;

a central unit in communication with said sensor processors, wherein said central unit is programmed to convert said estimate from each of said sensor processors in accordance with fuzzy logic and a membership function from a plurality of membership functions and combining said plurality of membership functions and determining a minimum area under a curve corresponding to said combined membership functions, to determine a final estimate; and

a communications link from each of said sensor processors to said central unit.

5,357,450

AUTOMATED MAINTENANCE SYSTEM FOR COMPUTER NUMERICALLY CONTROLLED MACHINES

R. David Hemmerle, Blue Ash, Ohio; James E. Randolph, Jr., Wilmington, and John G. J. Frezza, Leland, both of N.C., assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 920,069, Jul. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 800,948, Dec. 2, 1991, abandoned. This application Feb. 10, 1994, Ser. No. 189,862
Int. Cl.[5] G01B *7/30*
U.S. Cl. 364—551.01 **12 Claims**

1. An alignment system for a computer numerically controlled (CNC) machine having movable machine components, said alignment system comprising:

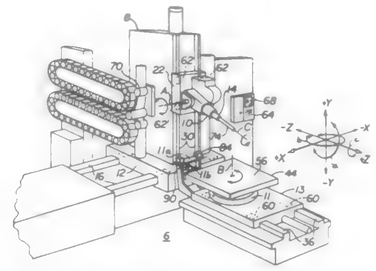
a spindle having a spindle mounted tool holding means;

a probe to measure relative positions of the machine components, said probe being mountable in said tool holding means;

control means for moving said spindle mounted probe to probe at least two different positions of a movable machine component;

computing means for using said at least two different positions to evaluate a geometric condition of the machine component with respect to at least one degree of freedom of motion of said machine component; and

means for providing alignment instructions for an operator to follow to align the machine component in response to the geometric condition of the machine component, the geometric condition being an angular misalignment of the



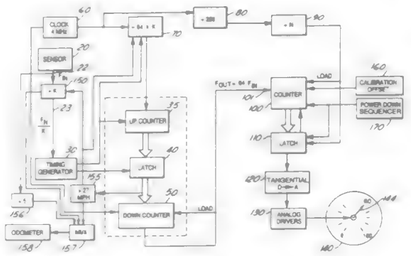
machine component requiring human adjustments to properly realign the machine component.

5,357,451

DIGITAL SYSTEM CONTROLLER WITH PROGRAMMABLE RANGES FOR ANALOG SPEEDOMETER AND TACHOMETER GAUGES

James T. Beaudry, Plymouth; Ivan A. Pacek, Saline, and John D. Acker, Clarkston, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 7, 1993, Ser. No. 1,610
Int. Cl.[5] G01P *1/04*
U.S. Cl. 364—561 **12 Claims**



1. A method for displaying a periodic input signal, having a widely variable frequency, on an analog gauge having a meter deflection over the total deflection arc representative of the frequency of the input signal, comprising the steps of:

receiving the input signal,

generating an intermediate signal, having a frequency substantially greater than the frequency of the input signal, by multiplying the frequency of the input signal by a first constant,

counting the intermediate signal frequency for a time period that is directly proportional to the maximum sweep deflection arc of the meter times a second constant and inversely proportional to the maximum expected frequency of the input signal, and

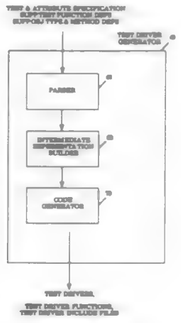
driving the deflection of the gauge proportional to the counted intermediate signal frequency, thereby causing a more accurate and responsive linear deflection of the gauge over the total deflection arc due to the higher frequency of the counted intermediate signal.

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5,357,452
AUTOMATIC GENERATION OF AUTO-CHECKING TESTING FUNCTIONS

Luigi A. Pio-di-Savoia; Jonathan Gibbons, both of Mountain View; James D. Halpern, Belmont, and Roger Hayes, San Francisco, all of Calif., assignors to San Microsystems, Inc., Mountain View, Calif.

Filed Jun. 30, 1992, Ser. No. 906,697
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—579 **20 Claims**



1. In a computer system comprising a software component, wherein said software component comprises a procedure, and an interface for invoking said procedure, a method for generating an auto-checking test function for said procedure, said method comprising the steps of:

(a) identifying and specifying said procedure using a plurality of procedure semantic expressions, each of said procedure semantic expressions being constructed using selected ones of comparison operators, Boolean operators, calls to said procedure, auxiliary and special functions, said auxiliary functions being user supplied, and said computer system further having

i) a special Boolean function having an exception specified as its argument, said special Boolean function returning an affirmative value when its argument is raised after execution of said procedure; and

ii) a special temporal function having at least one variable name as its argument, said special temporal function returning a pre-execution value for each of said at least one variable name after execution of said procedure; and

(b) generating said auto-checking test function based on said identification and specification made using said plurality of procedure semantic expressions.

5,357,453
DISCRETE COSINE TRANSFORM CIRCUIT

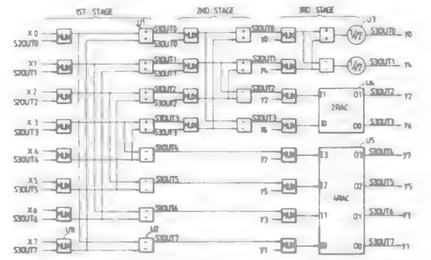
Ki C. Kim, and Byung K. Min, both of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed Dec. 30, 1993, Ser. No. 175,504
Claims priority, application Rep. of Korea, Dec. 30, 1992, 1992-26634
Int. Cl.[5] G06F *15/332*
U.S. Cl. 364—725 **5 Claims**

1. A discrete cosine transform circuit comprising a shuffle circuit with n (n is an integer) shuffle stages, said n shuffle stages sequentially having $2^n, 2^{n-1}, \ldots, 2^1$ input/output stages in such a manner that a first one of said n shuffle stages has the 2^n input/output stages and a nth one of said n shuffle stages has the 2^1 input/output stages, said nth shuffle stage including first and second RACs for performing a discrete cosine transform using a distributed arithmetic process, said first RAC having 2^{n-2} input/output stages, said second RAC having 2^{n-1} input-/output stages, wherein the improvement comprises:

path switching means connected to the input stages of said shuffle circuit for changing a transfer path of output information from the output stages of said shuffle circuit according to whether the discrete cosine transform to be processed is a forward discrete cosine transform or an inverse discrete cosine transform;

first selection means connected to the input stages of said first RAC for selecting information according to whether



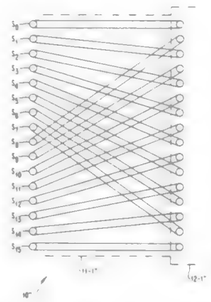
the discrete cosine transform to be processed is the forward discrete cosine transform or the inverse discrete cosine transform and applying the selected information to said first RAC; and

second selection means connected to the input stages of said second RAG for selecting information according to whether the discrete cosine transform to be processed is the forward discrete cosine transform or the inverse discrete cosine transform and applying the selected information to said second RAC.

5,357,454
FAST WALSH TRANSFORM PROCESSOR

Paul W. Dent, Stehag, Sweden, assignor to Ericsson GE Mobile Communications Holding, Inc., Paramus, N.J.

Filed Jul. 25, 1991, Ser. No. 735,805
Int. Cl.[5] G06F *15/40*
U.S. Cl. 364—727 **10 Claims**



1. A processor for generating a Walsh transform by substantially simultaneously calculating M combinations of M input values, wherein $M=2^N$, N is a positive integer, and the input values are two's-complement binary values, comprising:

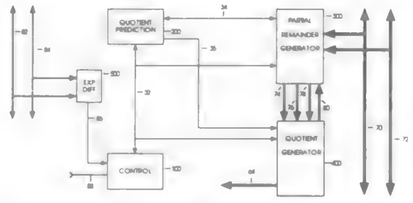
N stages electrically connected in sequence, wherein each stage comprises a criss-cross network of M conductors electrically connected in a predetermined pattern to a set of M/2 butterflies, each butterfly comprising means for calculating a sum and a difference of two respective values presented by each butterfly's respective criss-cross network and presenting the sum and difference to respective conductors of the next stage's criss-cross network,

wherein the input values are presented to a criss-cross network of a first stage bit-serially and least-significant-bit first, and substantially synchronously therewith, the Walsh transform of the input values is bit-serially produced least significant bit first by butterflies of an N-th stage.

5,357,455
FLOATING POINT REMAINDER GENERATOR FOR A MATH PROCESSOR

Harshvardhan Sharangpani, Santa Clara, and Luke Girard, San Jose, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 9, 1992, Ser. No. 959,063
Int. Cl.[5] G06F *7/50*
U.S. Cl. 364—767 **25 Claims**



1. A remainder circuit, comprising:

SRT divider circuit receiving a significand portion of a first data value and a significand portion of a second data value, the SRT divider generating a quotient and a partial remainder by performing a plurality of division cycles according to an SRT division having a radix greater than 2;

correction circuit generating a corrected quotient and a corrected partial remainder by correcting the quotient and the partial remainder if the partial remainder is negative;

restoring divider circuit generating a final quotient and a final remainder by performing a radix 2 restoring division cycle on the corrected quotient and the corrected partial remainder if a number of bits in the final quotient is an odd number.

5,357,456
ARITHMETIC CIRCUIT

Terumi Fukuda, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 16, 1993, Ser. No. 18,069
Claims priority, application Japan, Feb. 18, 1992, 4-029847
Int. Cl.[5] G06F *7/50*
U.S. Cl. 364—784 **10 Claims**

1. An arithmetic circuit for generating a sum signal and a carry-out signal each of a one-bit binary data, said arithmetic circuit comprising:

an input member for inputting first and second operands and a carry-in signal, each of said first and second operands and said carry-in signal being a one-bit binary data;

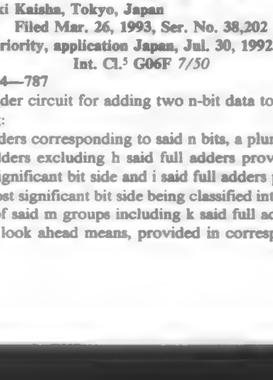
a first input-level detecting section, operatively coupled to said input member, for outputting a first active signal during a first period at a first node when both said first and second operands are 1;

a second input-level detecting section, operatively coupled to said input member, for outputting a second active signal during said first period at a second node when said first operand is 1 and said second operand is 0;

a precharge section, operatively coupled to said first and second nodes, for precharging said first and second nodes during a second period occurring alternately with said first period;

adding means, operatively coupled to said first and second input-level detecting sections, for generating a sum of said first operand and said second operand and said carry-in signal, and for outputting said sum as said sum signal; and

a carry signal control section, operatively coupled to said first and second input-level detecting sections, having first switching means for setting said carry-out signal at 1 responsive to said first active signal, a transfer gate for



transferring said carry-in signal as said carry-out signal responsive to said second active signal, and second switching means, separately from said first switching means, for setting said carry-out signal at 0 responsive to an absence of said first and second active signals during said first period,

wherein said second switching means comprises first means turned on responsive to an absence of said first active signal, and second means connected in a series to first means and turned on responsive to an absence of said second active signal.

5,357,457
ADDER WITH CARRY LOOK AHEAD CIRCUIT

Hideyuki Terane, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1993, Ser. No. 38,202
Claims priority, application Japan, Jul. 30, 1992, 4-203788
Int. Cl.[5] G06F *7/50*
U.S. Cl. 364—787 **9 Claims**

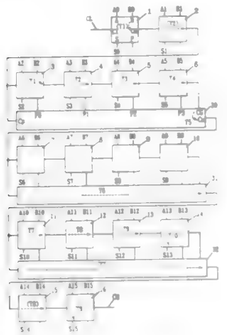
1. An adder circuit for adding two n-bit data to each other, comprising:

n full adders corresponding to said n bits, a plurality of said full adders excluding h said full adders provided on the least significant bit side and i said full adders provided on the most significant bit side being classified into m groups, each of said m groups including k said full adders; and

m carry look ahead means, provided in correspondence to

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said m groups, each being connected to said k full adders included in corresponding said group,



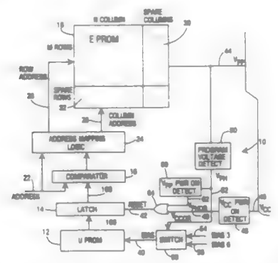
said h and said i representing integers of at least 1 and not more than k respectively.

5,357,458

SYSTEM FOR ALLOWING A CONTENT ADDRESSABLE MEMORY TO OPERATE WITH MULTIPLE POWER VOLTAGE LEVELS

James Yu, and Tiao-Hua Kuo, both of San Jose, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 25, 1993, Ser. No. 83,736
Int. Cl.[5] G11C *15/00*
U.S. Cl. 365—49 **18 Claims**



11. An improved programmable read only memory having redundant addresses and operable with first and second power voltage levels comprising:

content addressable memory means for controlling access to the redundant addresses of the programmable read only memory and for storing addresses of the programmable read only memory;

first input voltage means for providing a first bias to the content addressable memory;

second input voltage means for providing a second bias to the content addressable memory;

selection means coupled to the first input voltage means and the second input voltage means for decoupling the first input voltage means from the content addressable memory and coupling the second input voltage means to the content addressable memory in response to coupling the second power voltage level to the programmable read only memory;

first power on reset means coupled to the content addressable memory for initializing the content addressable memory when the first power voltage level is initially coupled to the content addressable memory; and

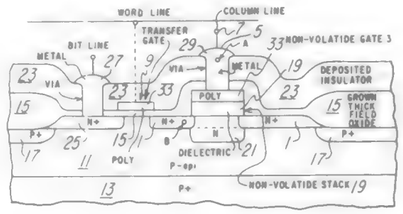
second power on reset means coupled to the content addressable memory for initializing the content addressable memory when the second power voltage level is initially coupled to the programmable read only memory.

5,357,459

NONVOLATILE CAPACITOR RANDOM ACCESS MEMORY

Richard A. Chapman, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 547,545, Aug. 6, 1990, abandoned, which is a division of Ser. No. 426,520, Oct. 25, 1989, which is a continuation of Ser. No. 283,039, Dec. 5, 1988, which is a continuation of Ser. No. 755,232, Jul. 15, 1985, Pat. No. 5,281,825. This application Aug. 22, 1991, Ser. No. 748,483
Int. Cl.[5] G11C *11/24, 11/40*
U.S. Cl. 365—149 **7 Claims**



1. A memory cell having:

(a) one or two transistors; and

(b) a capacitor programmable into a high or a low capacitance, said capacitor comprising;

(i) a nonvolatile gate,

(ii) a nonvolatile stack thereunder for storing charge,

(iii) a heavily doped n+ type region adjacent on at least one side to said nonvolatile gate wherein said n+ region extends beneath said stack,

(iv) an n-type tank disposed beneath said nonvolatile stack to a depth and electrically connected to said n+ type region, and

(v) a p-type substrate underlying the n+ region and the n-type tank.

5,357,460

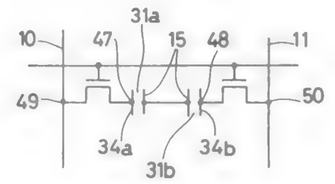
SEMICONDUCTOR MEMORY DEVICE HAVING TWO TRANSISTORS AND AT LEAST ONE FERROELECTRIC FILM CAPACITOR

Tatsushi Yusuki; Shigeo Onishi; Kenichi Tanaka, all of Nara; Keizo Sakiyama, Kashihara, and Katsuji Iguchi, Koriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 27, 1992, Ser. No. 888,856
Claims priority, application Japan, May 28, 1991, 3-121520; Jul. 17, 1991, 3-176544; Sep. 2, 1991, 3-220871; Dec. 20, 1991, 3-338739
Int. Cl.[5] G11C *11/22*
U.S. Cl. 365—145 **5 Claims**

3. A semiconductor memory device which comprises unit memory cells each including two transistors each having a source/drain region and a gate electrode and two capacitors each having a capacitor dielectric film, an upper electrode and a lower electrode, the upper electrodes and the capacitor dielectric films respectively being integrally formed, the gate electrode of each transistor being connected to a common word line, one source/drain region of each transistor being connected to a bit line and a reversed bit line respectively and the other source/drain region being connected to each lower

electrode of the capacitor, and the bit line, the reversed bit line and the word line being disposed under the lower electrodes of



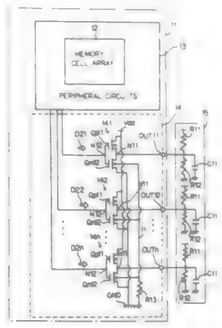
the capacitors and wherein the capacitor dielectric film uses a ferroelectric film.

5,357,461

OUTPUT UNIT INCORPORATED IN SEMICONDUCTOR INTEGRATED CIRCUIT FOR PREVENTING SEMICONDUCTOR SUBSTRATE FROM FLUCTUATING IN VOLTAGE LEVEL

Hideo Inaba, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 18, 1991, Ser. No. 778,653
Claims priority, application Japan, Oct. 18, 1990, 2-279752
Int. Cl.[5] G11C *7/00, 7/02*
U.S. Cl. 365—181 **7 Claims**



1. An output unit incorporated in an integrated circuit fabricated on a semiconductor substrate, comprising:

a) a plurality of output inverting circuits, each implemented by a series combination of a first transistor of a first channel conductivity type, a common node and a second transistor of a second channel conductivity type, coupled between a first voltage line and a second voltage line electrically connected with said semiconductor substrate;

b) a plurality of output data pins each coupled with one of said common nodes; and

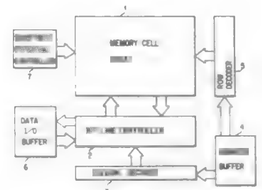
c) a resistive means coupled between said second voltage line and said semiconductor substrate.

5,357,462

ELECTRICALLY ERASABLE AND PROGRAMMABLE NON-VOLATILE SEMICONDUCTOR MEMORY WITH AUTOMATIC WRITE-VERIFY CONTROLLER

Tomoharu Tanaka, Yokohama; Yoshiyuki Tanaka, Tokyo; Hiroshi Nakamura, Yokohama, and Hideko Odaira, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 21, 1992, Ser. No. 948,002
Claims priority, application Japan, Sep. 24, 1991, 3-243743; Dec. 25, 1991, 3-343363
Int. Cl.[5] G11C *16/02*
U.S. Cl. 365—185 **19 Claims**



1. An electrically erasable and programmable non-volatile semiconductor memory device comprising:

a semiconductive substrate;

a plurality of bit lines on said substrate;

an array of rows and columns of memory cells connected to said bit lines on said substrate, each of said memory cells including a transistor having an insulated carrier storage layer and a control gate electrode insulatively disposed above said carrier storage layer, said transistor allowing electrical charge carriers to tunnel to or from said carrier storage layer for a data write;

sense/latch circuit means coupled to said bit lines, for selectively performing a sense operation and a data latch operation for latching a write data;

program controller means for writing the write data into a selected memory cell or cells of said memory cells during a predetermined length of time period, for reading the contents of said selected memory cell or cells to verify whether a resultant threshold voltage thereof is within a predetermined range, and for, if an insufficiently written memory cell transistor is found, writing the write data again into the insufficiently written memory cell transistor;

data setter means for performing a logic operation with respect to a read data corresponding to the contents of said selected memory cell or cells and said write data being latched in said sense/latch circuit means, for automatically updating a rewrite data being stored in said sense/latch circuit means with respect to every bit line in accordance with the actual write state as being presently verified; and

said sense/latch circuit means including a flip-flop circuit which remains as a latch circuit at the beginning of the verify operation, and functions as a sense amplifier circuit after being reset.

5,357,463

METHOD FOR REVERSE PROGRAMMING OF A FLASH EEPROM

Wayne I. Kinney, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Nov. 17, 1992, Ser. No. 977,644
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—185 **8 Claims**

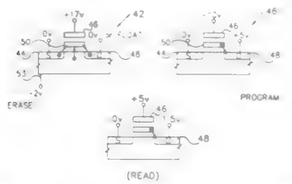
1. A method of erasing, programming, and verifying flash electrically erasable programmable read-only memory cells,

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each cell having a source, drain, control gate, floating gate, and substrate; the method comprising:

a. applying a positive high voltage to each cell control gate while grounding or floating the drain, thereby erasing a cell data bit and providing a high threshold voltage V_t on each cell;

b. programming each cell by applying a negative second voltage to each cell control gate while grounding the source and applying a voltage V_{CC} to the drain to program a "one" or grounding the drain to program a "zero", thereby providing a lower V_t on each "one" cell;



c. verifying the programming and threshold voltage of each cell by a read verification cycle, said read cycle further comprising:

i. applying voltage V_{CC} to a selected cell gate and grounding unselected cell gates;

ii. applying a positive voltage to a selected cell drain and floating an unselected cell drain; and then

d. repeating the programming and read verification cycle only on selected cells having a threshold voltage V_t above a preferred threshold voltage distribution curve, until all cells have a V_t that lie below the preferred voltage distribution curve.

5,357,464

SEMICONDUCTOR MEMORY HAVING WRITING AND READING TRANSISTORS, METHOD OF FABRICATION THEREOF, AND METHOD OF USE THEREOF

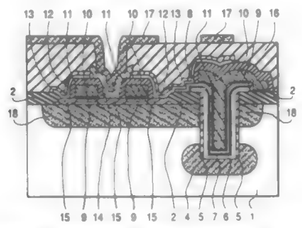
Shuji Shukuri, Koganei; Toru Koga, Urawa; Shinichiro Kimura, Kunitachi; Digh Hisamoto, Kokubunji; Kazuhiko Sagara, Hachiouji; Tokuo Kure, Tokyo, and Eiji Takeda, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 26, 1993, Ser. No. 22,937

Claims priority, application Japan, Mar. 2, 1992, 4-044388

Int. Cl.[5] G11C *11/40*

U.S. Cl. 365—185 **8 Claims**



1. A method of operating a semiconductor memory having memory cells with (a) a writing transistor and (b) a reading transistor with a floating gate, with a single bit line electrically connected to source-drain regions of the writing and reading transistors, and with a single word line electrically connected to gate electrodes of the writing and reading transistors, the floating gate being electrically connected to a source-drain. path of the writing transistor, comprising the steps of:

setting a potential of the word lines, in a standby state, to a value between a potential for writing data into the memory and a potential for reading data from the memory; and

performing both (a) decreasing the potential of the word line in order to perform one of reading data in the memory or writing data into the memory; and (b) increasing the potential of the word line in order to perform the other of reading data in the memory or writing data into the memory.

5,357,465

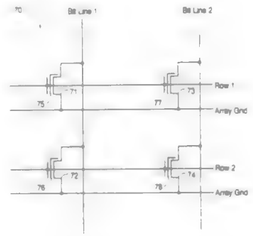
SINGLE TRANSISTOR EEPROM MEMORY CELL

Nagesh Challa, Sunnyvale, Calif., assignor to Nexcom Technology, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 625,807, Dec. 11, 1990, Pat. No. 5,222,040. This application Mar. 5, 1993, Ser. No. 26,940

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—185 **45 Claims**



1. An electrically erasable programmable read-only memory ("EEPROM") array having a plurality of word lines, a plurality of data-carrying lines, and a plurality of EEPROM cells having respective word line—data-carrying line associations, wherein each of the EEPROM cells comprises:

a first device region having a direct electrical connection to the associated data-carrying line;

a second device region;

a channel region disposed between the first and second device regions for accommodating a channel operatively induced therein between the first and second device regions;

a floating gate overlapping the channel region and at least a part of the first device region and insulated from the first device region by a tunnel dielectric; and

a control gate overlapping the floating gate and coupled to the associated word line.

5,357,466

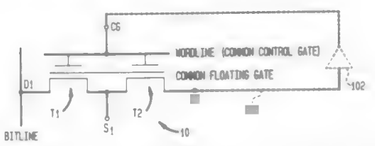
FLASH CELL WITH SELF LIMITING ERASE AND CONSTANT CELL CURRENT

Gary Hong, Hsin-Chu, Taiwan, assignor to United Microelectronics Corporation, Hsin-Chu, Taiwan

Filed Jul. 14, 1993, Ser. No. 92,191

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—185 **6 Claims**



6. A memory cell comprising first and second MOS transistors having a common source, first and second separate drains, a common floating gate and a common control gate, said first transistor having a larger threshold voltage than said second transistor, said cell being erasable by applying a voltage to said common source to discharge said floating gate and feeding back a voltage from said second drain to said common control gate to limit said discharge, said cell being readable by applying a read voltage to said common control gate and generating a preset constant current between said common source and said first drain.

5,357,467

SECURITY CIRCUIT FOR PROTECTING DATA STORED IN MEMORY

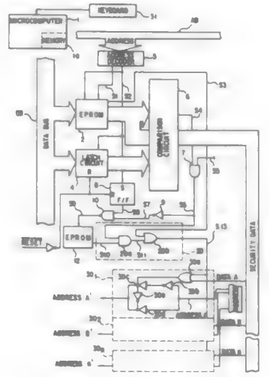
Shuji Hayashi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 27, 1993, Ser. No. 141,547

Claims priority, application Japan, Oct. 27, 1992, 4-288562; Oct. 7, 1993, 5-251502

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—189.05 **14 Claims**



11. A security circuit comprising:

first storing means for storing data the contents of which must be kept secret;

second storing means for storing security data having a plurality of bits;

a latch circuit for latching key data for releasing the security set by the security data;

a comparison circuit for comparing the security data stored in said second storing means with the key data latched by said latching circuit, outputting a coincidence signal when the security data coincides with the key data, and outputting a non-coincidence signal when the security data does not coincide with the key data;

a plurality of address changing circuits each supplied with a corresponding one bit of an address signal for reading out data stored in said first storing means, a corresponding one bit of the security data and an output signal from said comparison circuit, for changing the address signal when receiving a non-coincidence signal from said comparison circuit and outputting the address signal as it is when receiving a coincidence signal; and

a plurality of data changing circuits connected to an output terminal of said first storing means and supplied with data read out from said first storing means and the security data, for changing the data read out from said first storing means according to the security data when receiving a non-coincidence signal from said comparison circuit.

5,357,468

SEMICONDUCTOR MEMORY DEVICE

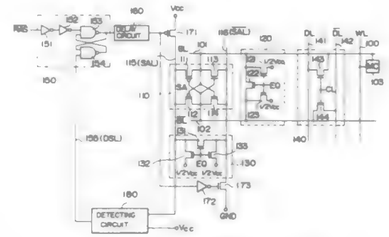
Norihiko Satani; Shizuo Cho; Yuichi Matsushita, and Tetsuya Mitoma, all of Miyazaki, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed May 18, 1993, Ser. No. 63,208

Claims priority, application Japan, May 19, 1992, 4-126086

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—189.01 **7 Claims**



5. A semiconductor memory device comprising:

a first node connected to receive a first power supply potential from a first power supply;

a memory cell for storing data therein;

a bit line connected to the memory cell;

a sense amplifier connected to a second node and coupled to the bit line, for amplifying a potential of the bit line;

a switching circuit connected between the first and second nodes;

a detecting circuit for detecting a potential of the second node and outputting a detection signal when the potential of second node is substantially equal to the power supply potential;

a control circuit having one input for receiving an address signal having a first or second logic level and having another input for receiving the detection signal, the control circuit being effective for causing the switching circuit to be conductive when the address signal is in the first logic level and causing the switching circuit to be substantially nonconductive in response to the detection signal after the address signal has returned to the second logic level.

5,357,469

METHOD FOR DATA TRANSFER FOR A SEMICONDUCTOR MEMORY USING COMBINED CONTROL SIGNALS TO PROVIDE HIGH SPEED TRANSFER, AND SEMICONDUCTOR MEMORY FOR CARRYING OUT THE METHOD

Diether Sommer, Munich, and Dominique Savignac, Ismaning, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 30, 1991, Ser. No. 769,172

Claims priority, application Fed. Rep. of Germany, May 6, 1991, 4114744

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—193 **10 Claims**

1. In a method for data transfer between a plurality of memory cells and at least one input/output terminal of a semiconductor memory, in which a first memory call address is defined for a data transfer by an address control signal, the improvement which comprises:

controlling a data transfer operation with the address control signal and an output enable control signal by

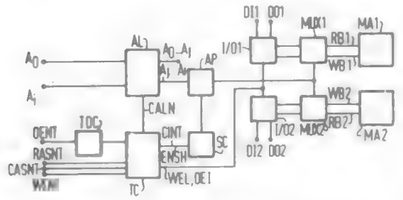
placing the address control signal in its active state and defining a first memory cell address,

placing the output enable control signal in its active state, initiating the data transfer with regard to the first memory cell address after the address control signal and the

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output enable control signal have been placed in their active states,

subsequently at least once placing the output enable control signal in its inactive state and back in its active state while maintaining the address control signal in its active state, and



defining a further memory cell address each time the output enable control signal is placed back in its active state and proceeding with the data transfer with regard to the further memory cell address, and

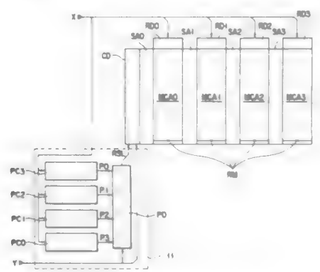
also defining a further memory cell address each time the output enable control signal is placed into its inactive state and proceeding with the data transfer with regard to the further memory cell address.

5,357,470

SEMICONDUCTOR MEMORY DEVICE HAVING REDUNDANCY MEMORY CELLS

Toshimasa Namekawa, Yokohama, and Yoshio Okada, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Mar. 22, 1993, Ser. No. 35,196
Claims priority, application Japan, Mar. 23, 1992, 4-064979
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—200 **16 Claims**



1. A semiconductor memory device comprising:

a plurality of memory cell arrays;

a plurality of first decoders for decoding a first memory address, each of said first decoders being connected to a corresponding memory cell array;

a second decoder connected to each memory cell array for decoding a second memory address;

a plurality of redundancy memory cells, each arranged for a corresponding memory cell array;

a plurality of programming circuits, each of said programming circuits corresponding to one of said memory cell arrays, and each receiving the first memory address and outputting a signal of a predetermined logic level corresponding to a defective memory cell in a corresponding one of said memory cell arrays; and

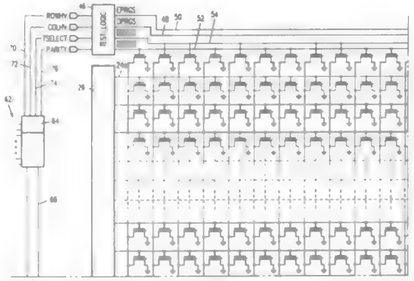
a programmable decoder for receiving the second memory address and the output signals from said programming circuits, for controlling a decoding state of the second memory address according to the logic levels of the output signals from said programming circuits and for outputting a redundancy memory cell select signal which selects one of said redundancy memory cells to replace a specified defective memory cell based on the decoding state.

5,357,471

FAULT LOCATOR ARCHITECTURE AND METHOD FOR MEMORIES

Varkey P. Alapat, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 20, 1992, Ser. No. 856,004
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—201 **24 Claims**



24. Apparatus for testing addressing logic of an M by N memory array having M rows and N columns of memory cells which are addressable during normal operation of said memory array by a row address and a column address received on address pins, and which are connected by a plurality of selectable row lines and column lines, the apparatus comprising:

an (N+1)th column of memory cells, each of which can be in a turned-on state or a turned-off state, each memory cell in said (N+1)th column being connected to a row line of said memory array, wherein each memory cell in said (N+1)th column can be in said turned-on state only if the row line to which it is connected is a selected row line;

a first sensing circuit connected to said (N+1)th column of memory cells which outputs a first signal if at least one of said memory cells in said (N+1)th column is in said turned-on state and outputs a second signal, different from said first signal, if no more than one of said memory cells in said (N+1)th column is in said turned on state;

an (M+1)th row of memory cells, each of which can be in a turned-on state or a turned-off state, each memory cell in said (M+1)th row being connected to a column line of said memory array, wherein each memory cell in said (M+1)th row can be in said turned-on state only if the column line to which it is connected is a selected column line;

a second sensing circuit connected to said memory cells in said (M+1)th row which outputs a third signal if at least one of said memory cells in said (M+1)th row is in said turned-on state, and outputs a fourth signal, different from said third signal, if no more than one of said memory cells in said (M+1)th row is in said turned on state.

5,357,472

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE

Shozo Shirota, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1993, Ser. No. 31,788
Claims priority, application Japan, Jun. 29, 1992, 4-196186
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—201 **9 Claims**

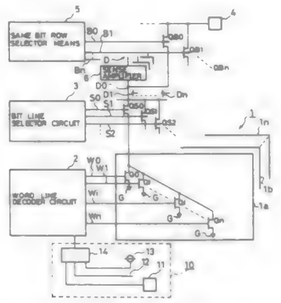
1. A non-volatile semiconductor memory device comprising:

a plurality of memory cell arrays coupled to a data bus, each said memory cell array comprising a plurality of memory cells, said plurality of memory cells comprising field effect transistors having a gate width;

a word line selector circuit for designating a word line of each said memory cell array and activating a gate electrode of said memory cell connected to a designated word line;

a plurality of bit line switching elements for interconnecting said data bus and said memory cell arrays, said plurality of bit line switching elements comprising field effect transistors, wherein a gate width of said plurality of bit line switching elements is much greater than said gate width of said plurality of memory cells;

a bit line selector circuit for designating a bit line of each said memory cell array and activating a gate electrode of one of said plurality of bit line switching elements, whereby



data in any memory cell in each said memory cell array selected by each said selector circuit is read out or written in through said data bus;

an external terminal for receiving an arbitrary input voltage;

a plurality of same bit train switching elements for interconnecting said external terminal and said data bus, said plurality of same bit train switching elements comprising field effect transistors, wherein a gate width of said plurality of same bit train switching elements is greater than said gate width of said plurality of memory cells; and

same bit train selector means for selecting and activating a gate electrode of one of said plurality of same bit train switching elements and forming a current path extending from a specific memory cell in said memory cell arrays of a selected same bit train to said external terminal, whereby a current is driven to flow through said specific memory cell via said current path by applying said arbitrary input voltage to said external terminal.

5,357,473

SEMICONDUCTOR STORAGE SYSTEM INCLUDING DEFECTIVE BIT REPLACEMENT

Masahiro Mizuno; Takashi Fujita; Hiroshi Baba, and Keizo Hama, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 718,015, Jun. 20, 1991, abandoned.
This application Oct. 6, 1993, Ser. No. 132,768
Claims priority, application Japan, Sep. 8, 1990, 2-211362
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—201 **30 Claims**

1. A semiconductor storage system comprising:

(a) a semiconductor storage element array including a plurality of semiconductor memory elements having a possibility of containing defective bits, for storing information;

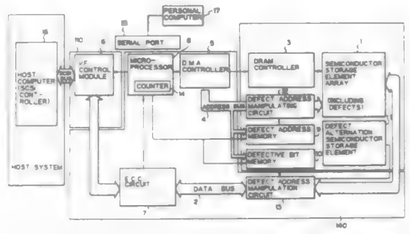
(b) a data bus, having a plurality of bits, for transferring data to said semiconductor storage element array;

(c) an address bus, having a plurality of bits, for providing an address to said semiconductor storage element array;

(d) a read/write controller for controlling reading of data from and writing of data to said semiconductor storage element array;

(e) an interface control module for controlling transfer of data and commands to and receipt of data and commands from an outside system;

(f) a microprocessor for controlling said read/write controller and said interface control module;



(g) a defect address memory for storing defective addresses of said semiconductor storage element array where said defective bits have been detected and substitute addresses to be correspondingly substituted for said defective address; and

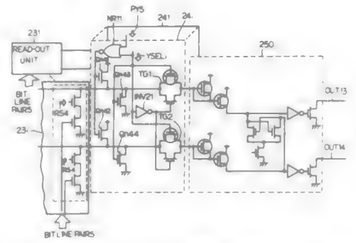
(h) a defect address manipulating circuit for providing said corresponding substitute address from said defective address memory to said semiconductor storage element array when said defective address is accessed through said address bus.

5,357,474

DYNAMIC RANDOM ACCESS MEMORY DEVICE HAVING PRECHARGE CIRCUIT FOR INTERMITTENTLY AND SELECTIVELY CHARGING DATA LINE PAIRS

Tatsuya Matano; Tadahiko Sugibayashi, and Hiroshi Takada, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 18, 1993, Ser. No. 136,884
Claims priority, application Japan, Oct. 19, 1992, 4-279720
Int. Cl.[5] G11C *7/02*
U.S. Cl. 365—203 **14 Claims**



1. A semiconductor memory device comprising:

a) a plurality of addressable memory cells arranged in rows and columns;

b) a plurality of bit line pairs grouped into a plurality of bit line pair groups assigned respective first addresses, and associated with said plurality of addressable memory cells for transferring a plurality of data bits in the form of potential differences;

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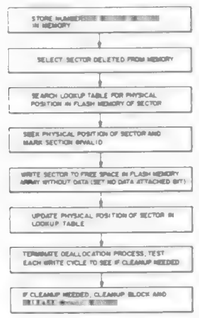
c) a plurality of data line pairs respectively assigned second addresses;
d) a first selecting means responsive to first address decoded signals indicative of one of said first addresses assigned to one of said plurality of bit line pair groups for transferring data bits between said bit line pairs of the selected bit line pair group and said plurality of data line pairs, respectively;
e) a second selecting means responsive to second address decoded signals indicative of one of said second addresses for transferring one of said data bits between the data line pair assigned the second address and a data amplifier circuit; and
f) a charging means coupled between a source of current and said plurality of data line pairs for charging to a predetermined voltage level before data bits are transferred to said plurality of data line pairs, said charging means isolating said plurality of data line pairs from said source of current when one of the data line of each data line pair reaches said predetermined level.

5,357,475

METHOD FOR DETACHING SECTORS IN A FLASH EEPROM MEMORY ARRAY

Robert N. Hasbun, Shingle Springs; Steven E. Wells, Citrus Heights, and Richard P. Garner, Cameron Park, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 30, 1992, Ser. No. 969,466
Int. Cl.[5] G11C *29/00, 11/34*
U.S. Cl. 365—218 **4 Claims**



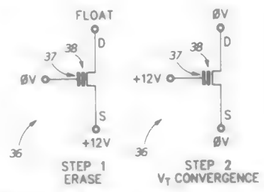
1. A method of releasing sectors of memory in a flash EEPROM memory array comprising the steps of:
storing a list of sectors to be deleted in a first table,
selecting a sector from the first table,
searching a second table for a physical position of the sector,
seeking the sector specified by the physical position in the flash EEPROM memory array,
marking a header of the sector found as invalid,
writing in free space in the flash EEPROM memory array without data a new header for the sector found,
updating the second table with a new physical position of the new header for the sector, and
repeating the steps of selecting a sector from the first table until a selected number of sectors listed in the first table have been selected.

5,357,476

APPARATUS AND METHOD FOR ERASING A FLASH EEPROM

Clinton C. K. Kuo; Ko-Min Chang, and Henry Y. Choe, all of Austin, Tex., assignors to Motorola, Inc., Schaumberg, Ill.

Filed Jun. 1, 1993, Ser. No. 69,327
Int. Cl.[5] G11C *11/34*
U.S. Cl. 365—218 **11 Claims**



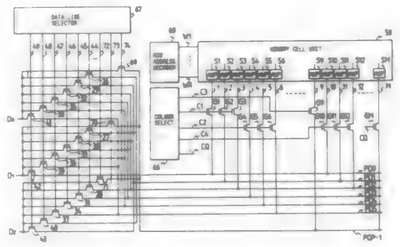
1. An apparatus for erasing an array of flash EEPROM cells and for converging a threshold voltage distribution of the array to a predetermined voltage range, the flash EEPROM cells arranged in columns and rows, each flash EEPROM cell including a control grate, a floating gate, a source, and a drain, the drains of the flash EEPROM cells in each of the columns connected to a bit line, the sources connected in common, and the control gates of the flash EEPROM cells in each of the rows connected to a word line, the apparatus comprising:
an erasing circuit for electrically bulk erasing the flash EEPROM array by applying a high voltage to the commonly connected sources and coupling the control gates to a ground potential to reduce a threshold voltage of each flash EEPROM cell to a relatively low voltage, and the erasing circuit for converging the distribution of threshold voltages within the predetermined voltage range by coupling the source and drain of each flash EEPROM cell of the array to the ground potential and applying the high voltage to the control gate of each flash EEPROM cell for a predetermined length of time after electrically bulk erasing the flash EEPROM array.

5,357,477

SEMICONDUCTOR MEMORY HAVING MULTIPLE DATA I/O WITH BIT ALIGNED ACCESS FUNCTION

Akihiro Matsumoto, and Hideo Nishimatsu, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 18, 1992, Ser. No. 884,449
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.02 **4 Claims**



1. A memory for pixel data bits derived from a multi-position pixel head comprising:
N main data lines for the pixel data bits, where N denotes a given natural number greater than one;

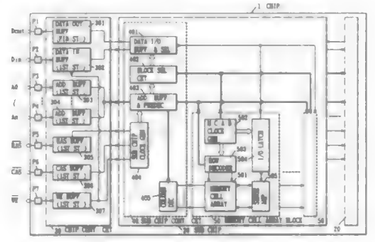
a memory cell array unit;
a plurality of memory cell bit lines connected to the memory cell array unit;
a plurality of column selecting gates connected to the memory cell bit lines;
a plurality of ordered sub data lines, the number of sub data lines being greater than N;
a column selector for feeding the column selecting gates with a signal for simultaneously selecting a plurality of successively numbered sub data lines so that bits are simultaneously transferred between said successively numbered sub data lines and corresponding bit lines of the memory cell array unit, where the selected plurality of sub-data lines is at least N;
multiple data line selecting gates selectively feeding bits between the N main data lines and the plural sub data lines; and
a data line selector responsive to a signal indicative of the pixel head position for controlling the data line selecting gates so bits are selectively simultaneously coupled between any of the N main data lines and at least N of the sub data lines.

5,357,478

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE INCLUDING A PLURALITY OF CELL ARRAY BLOCKS

Shigeru Kikuda; Shigeru Mori; Yoshikazu Morooka; Hiroshi Miyamoto; Makoto Suwa, and Mitsuya Kinoshita, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1991, Ser. No. 767,332
Claims priority, application Japan, Oct. 5, 1990, 2-268809
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.03 **8 Claims**



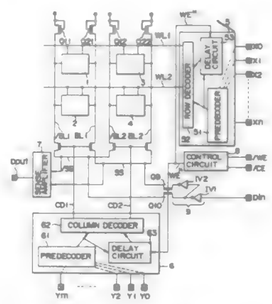
1. A semiconductor integrated circuit device formed on a chip, comprising:
a plurality of sub chips, and
first controlling means for controlling an operation of said plurality of sub chips,
each of said plurality of sub chips including:
a plurality of cell array blocks, and
second controlling means located at the center of said plurality of cell array blocks for controlling an operation of said plurality of cell array blocks,
each of said plurality of cell array blocks including:
a cell array, and
third controlling means for controlling an operation of said cell array;
wherein said first controlling means includes:
a pad, and
first buffer means for applying a signal of said pad to said plurality of sub chips or applying a signal applied from said plurality of sub chips to said pad;
said second controlling means includes:
second buffer means for applying a signal applied from said first controlling means to said plurality of cell array blocks or applying a signal applied from said plurality of cell array blocks to said first controlling means,
selecting means responsive to the signal applied from said first controlling means for selecting one of said plurality of cell array blocks and activating the same, and
first signal generating means responsive to the signal applied from said first controlling means for generating a control signal for controlling said second buffer means and said selecting means; and
said third controlling means includes:
inputting and outputting means for inputting a signal applied from a corresponding second controlling means to said cell array or applying a signal output from said cell array to the corresponding second controlling means, and
second control signal generating means responsive to the signal applied from the corresponding second controlling means for controlling said inputting and outputting means.

5,357,479

STATIC RANDOM ACCESS MEMORY CAPABLE OF PREVENTING ERRONEOUS WRITING

Masataka Matsui, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 30, 1991, Ser. No. 693,608
Claims priority, application Japan, May 1, 1990, 2-115481
Int. Cl.[5] G11C *7/00, 8/00*
U.S. Cl. 365—230.06 **13 Claims**



1. A static memory comprising:
means for receiving an address signal and a write signal;
a plurality of word lines;
a plurality of bit lines;
a memory cell array including memory cells arranged in a matrix, each memory cell being coupled to one of the word lines and to one of the bit lines;
a row address decoder, coupled to the receiving means and to the word lines, for selecting one of the word lines in response to a change in the address signal, by decoding the address signal, the row address decoder having a first response time between a change in the address signal and selecting one of the word lines when the write signal indicates a write operation, and a response time shorter than the first response time when the write signal indicates no write operation; and
a column address decoder, coupled to the receiving means and to the bit lines, for selecting one of the bit lines in response to a change in the address signal, by decoding the address signal, the column address decoder having a second response time between a change in the address signal and selecting one of the bit lines when the write signal indicates a write operation, and a response time shorter than the second response time when the write signal indicates no write operation.

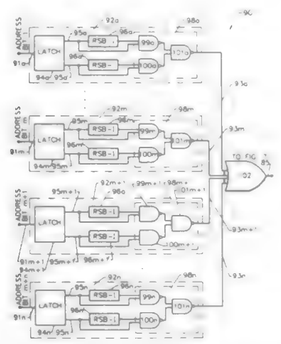
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5,357,480

ADDRESS CHANGE DETECTING SYSTEM FOR A MEMORY

Albert W. Vinal, Cary, N.C., assignor to Thunderbird Technologies, Inc., Research Triangle Park, N.C.

Division of Ser. No. 708,459, May 31, 1991, Pat. No. 5,304,874. This application Feb. 25, 1994, Ser. No. 201,982
Int. Cl.[5] G11C *8/00*; H03K *19/017*
U.S. Cl. 365—233.5 11 Claims



1. A system for detecting a change in at least one of a plurality of binary valued inputs comprising:

a plurality of Transition Detection Delay Units (TDLU), each of which includes an input and an output, the input of a respective TDLU being connected to a respective one of said binary valued inputs, each TDLU comprising:

a latch, having an input and TRUE and COMPLEMENT outputs, the latch input being said TDLU input;

first and second Delay Ring Segment Buffers (D-RSB), each having an input and an output, said D-RSBs producing a predetermined delay from said input to said output, the input of said first D-RSB being connected to said TRUE output and the input of said second D-RSB being connected to said COMPLEMENT output; and

a logic gate network having first, second, third and fourth inputs and an output, said first, second third and fourth logic gate network inputs being connected to said TRUE output, said COMPLEMENT output, said output of said first D-RSB and said output of said second D-RSB, respectively, with the output of said logic gate network being the output of said TDLU; and

an OR gate network, having said plurality of inputs and an output, a respective TDLU output being connected to a respective OR gate network input, with the output of said OR gate network providing a signal, having a duration corresponding to said predetermined delay, upon detection of a change in at least one of said plurality of inputs.

5,357,481

BOREHOLE LOGGING TOOL

Robert A. Lester; Paul G. Junghans; Donald J. Hilliker; Mathew G. Schmidt; Jose R. Casarsa, and Gregory J. Wilkinson, all of Houston, Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Filed Nov. 4, 1992, Ser. No. 971,225
Int. Cl.[5] G01V *1/40*
U.S. Cl. 367—31 11 Claims

1. An improved acoustic logging tool assembly adapted to be drawn through a borehole for measuring selected properties of the sidewall material of the borehole, comprising:

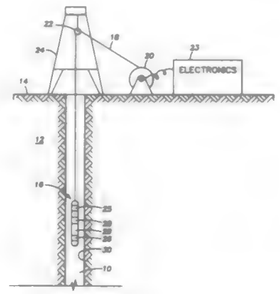
a sonde, said sonde including a plurality of segments that are rotatable relative to one another;

a first driver transducer mounted on a first one of said segments for launching oppositely-directed acoustic beams having principle axes directed toward the sidewall of the borehole along a selected azimuth and along the complement thereof for exciting asymmetrical flexural waves in said sidewall material;

at least a second segment for containing at least a first receiver transducer having binaural axes of sensitivity, said second segment being spaced-apart from said first segment, the binaural axes of sensitivity being aligned parallel with said selected azimuth and its complement for receiving acoustic waves resulting from propagation of said flexural waves through said sidewall material;

a second driver transducer, substantially identical with said first driver transducer, mounted on a third segment adjacent said first segment;

at least a fourth segment for containing at least one second



receiver transducer substantially identical with said first receiver transducer, said fourth segment being adjacent to said second segment; and

means for rotating said third and fourth segments relative to said first and second segments in a selected one of two discrete axial acoustic beam orientations; and wherein each said first and second driver transducer comprises a dipole bender-bar transducer including an elongated inert element, the opposite ends of which are fixedly secured to respective ones of said first and third segments which form stable inertial reaction masses; first and second polarized ceramic piezoelectric crystals each having an exposed face and an inner face, the inner faces of the respective crystals being conductively secured to opposite side of said inert element, the exposed faces of the crystals being oppositely polarized.

5,357,482

WELL INSPECTION METHOD

Terence P. O'Sullivan, East Kalimantan, Indonesia, and William C. Allen, Pasadena, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 473,227, Jan. 31, 1990, Pat. No. 5,072,388. This application Nov. 22, 1991, Ser. No. 796,416
The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.
Int. Cl.[5] G01V *1/40*; G01N *29/04*
U.S. Cl. 367—35 21 Claims

1. A method for determining the presence of a fluid contacting an outer surface of an underground pipe, said determining method using a sonic signal produced by a wire line logging instrument placed radially inward from an inner surface of said pipe, at least a portion of said signal being capable of reflection and the reflected portion detected by said instrument and wherein the detected signal has an indicator of each of said surfaces, with the indicator of said outer surface being affected by a property of said fluid contacting said outer surface, which method comprises the steps of:

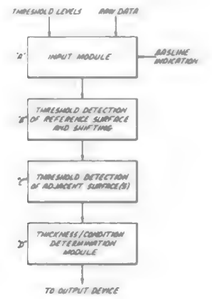
a) placing said instrument in an underground location proximate to the major axis of said pipe;

b) generating a first sonic signal;

c) detecting a first reflected signal from said placed instrument;

d) discerning the location and amplitude of said outer surface indicator in said first reflected signal;

e) changing the axial location of said instrument;



f) generating a second sonic signal;

g) detecting a second reflected signal at the changed location;

h) discerning the location and amplitude of said outer surface indicator in said second reflected signal; and

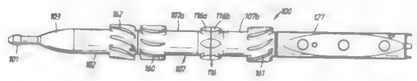
i) determining the presence of said fluid contacting said outer surface from a calculation dependent upon a difference between said discerned indicators.

5,357,483

DOWNHOLE TOOL

Frank A. S. Innes, Aberdeen, Scotland, assignor to Halliburton Logging Services, Inc., Houston, Tex.

Continuation of Ser. No. 12,489, Feb. 2, 1993, abandoned. This application Oct. 7, 1993, Ser. No. 133,763
Claims priority, application United Kingdom, Oct. 14, 1992, 9221563.1
Int. Cl.[5] G01V *1/40*
U.S. Cl. 367—84 7 Claims



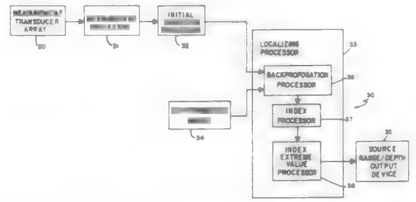
1. A downhole tool for generating pressure pulses in a drilling fluid, the tool comprising an elongate body for positioning in a drill collar of a drill string; a plurality of blades spaced around said body, each blade being divided into an independent front section and rear section, forming a set of front sections and a set of rear sections at least one of said set of front sections and said set of rear sections being mounted for rotation and being angularly displaceable relative to one another between a first position in which the sections are aligned and a second position in which the rear blade sections obstruct the fluid flow between the front sections to generate a pressure pulse; a first set of driving blades in front of said plurality of blades for generating a torque on the blade sections, the driving blades being curved in a first direction; and escapement means to permit stepwise rotation of the blade sections between said first and second positions; wherein the tool additionally comprises means positioned in front of the set of front sections to reduce swirl of the drilling fluid immediately upstream of said set of front sections.

5,357,484

METHOD AND APPARATUS FOR LOCATING AN ACOUSTIC SOURCE

Bruce J. Bates, and Susan M. Bates, both of Portsmouth, R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 22, 1993, Ser. No. 147,237
Int. Cl.[5] G01S *3/80*
U.S. Cl. 367—118 30 Claims



1. A method for determining the range and depth of an object in a given volume of a medium from a remote sampling site in the medium wherein the given volume is characterized by having a maximum range from the sampling site and wherein an acoustic field propagates from the object to the sampling site and the medium has known acoustically pertinent variables corresponding to known physical acoustic energy transfer characteristics at different ranges and depths throughout the medium, said method comprising the steps of:

sampling the distribution of the acoustic field at the sampling site as a function of depth;

processing the sampled acoustic field distribution and acoustically pertinent variables for each range and depth in an iterative process whereby during each iteration said processing generates a signal with a given amplitude; and

locating a range and a depth at which the signal has an extreme value whereby the range and depth at which the extreme value exists are used to determine the range to and depth of the object.

5,357,485

Patent Not Issued For This Number

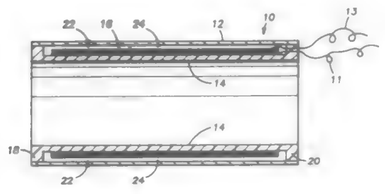
VOL 1167 ISS 3 OC 18 1994 UMI

5,357,486

ACOUSTIC TRANSDUCER

Richard E. Pearce, Ft. Worth, Tex., assignor to Innovative Transducers Inc., Haltom City, Tex.

Filed Dec. 2, 1992, Ser. No. 989,372
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—159 10 Claims



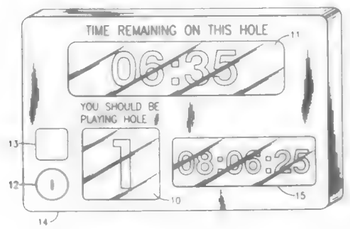
1. An acoustic transducer, comprising:
a rigid inert cylindrical member having inner and outer wall surfaces;
a flexible inert mandrel having opposite upset end portions;
an active transducer element formed from a piezoelectric film strip wrapped a plurality of times around said inert mandrel; and
means for sealingly securing said opposite upset end portions of said flexible inert mandrel to the inner surface of said rigid inert cylindrical member.

5,357,487

VARIABLE TIME SEGMENT PACE TIMING DEVICE

James W. Coleman, III, Amherst, N.H., assignor to Linkstime Management Systems, Inc., Amherst, N.H.

Filed Jan. 11, 1991, Ser. No. 639,986
Int. Cl.[5] G04B *47/00;* G04F *8/00;* A63B *69/36*
U.S. Cl. 368—10 10 Claims



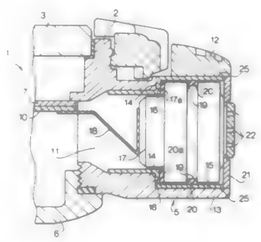
1. A variable time segment pace timing apparatus in which a plurality of different time segments are sequenced for a golfer comprising:
(a) a timer housing;
(b) a hole timer, contained in said timer housing, wherein said hole timer is adjusted to a preset time for each hole and counts backward from said preset time toward zero;
(c) a hole display, contained in said timer, which indicates which hole on the golf course is presently being played;
(d) an alarm, contained in said timer housing, operatively coupled to the hole timer wherein said alarm sounds when said hole timer has reached the termination of an adjusted time duration;
(e) means for activating said pace timing device, contained in said timer housing, having the function of clearing, resetting and starting the pace timing apparatus; and
(f) means for powering said pace timing device, contained in said timer housing.

5,357,488

WATCH HAVING A SENSOR

Yurie Udo; Toshio Murata, both of Tanashi, and Tadashi Nakamura, Tokyo, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/00884, § 371 Date Dec. 30, 1992, § 102(e) Date Dec. 30, 1992, PCT Pub. No. WO92/01248, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 1, 1991, Ser. No. 962,585
Claims priority, application Japan, Jul. 3, 1990, 2-174462; Apr. 19, 1991, 3-35134[U]
Int. Cl.[5] G04B *47/06*
U.S. Cl. 368—11 7 Claims



1. A watch comprising:
a watch case;
a sensor holding portion provided in the watch case, the sensor holding portion having a sensor housing space, an axis of which is oriented to a radial direction of said watch case;
a sensor protecting tube secured in the sensor housing space;
a sensor provided in the sensor protecting tube in such a position that a sensing portion thereof is outwardly oriented at a side of the watch case; and
two packings provided between the inside wall of the sensor protecting tube and the sensor, one of the packings being disposed to be compressed in the axial direction of the sensor housing space.

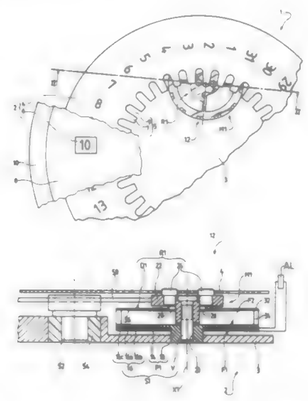
5,357,489

TIMEPIECE PROVIDED WITH DRIVING MEANS FORMED BY A PIEZO-ELECTRIC MOTOR

Roland Luthier, St-Sulpice, Switzerland, assignor to Asulab S.A., Bienne, Switzerland

Filed Sep. 8, 1993, Ser. No. 117,808
Claims priority, application Switzerland, Sep. 9, 1992, 2845/92-8
Int. Cl.[5] G04B *19/20;* G04F *5/00*
U.S. Cl. 368—37 19 Claims

1. A timepiece of the type comprising:
display means including an annular disc carrying time information thereon and having interior toothing for driving said annular disc, and



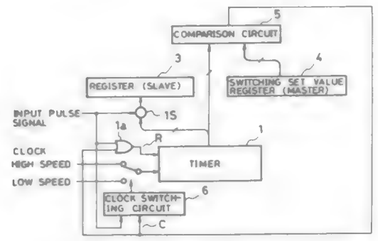
driving means including a piezo-electric motor having a rotor and a stator, said rotor engaging directly with said interior toothing.

5,357,490

MEASURING TIMER SYSTEM

Takashi Kashine, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jul. 30, 1992, Ser. No. 922,457
Claims priority, application Japan, Aug. 1, 1991, 3-215854
Int. Cl.[5] G04F *8/00, 10/00*
U.S. Cl. 368—119 1 Claim



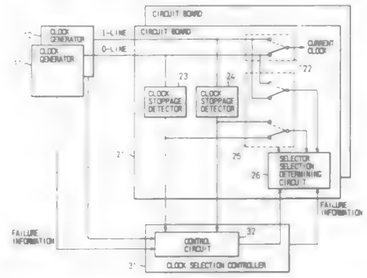
1. An improved time measuring system for measuring the time period between previous and subsequent input pulses comprising:
a timer having a reset input for resetting a timer count value, a clock input for incrementing said timer count value, and a timer count value output indicating said timer count value;
a clock signal switch, having inputs coupled to receive high speed and low speed clock signals, for selectively outputting one of said clock signals to said clock input in response to the setting or resetting of a control signal;
a slave register coupled to said count value output for storing a count value of the high-speed clock pulses from said count value output;
a switching value register for storing a predetermined count value equal to a number of low speed clock cycles that equal a predetermined time interval that is smaller than the time interval between the previous and subsequent input pulses;
a comparison circuit, having inputs coupled to receive said predetermined count value stored in said switching value register and said timer count value from said timer, for setting a coincidence signal when said predetermined count value and said timer count value coincide, said control signal derived from said coincidence signal to reset said timer and select the high-speed clock signal.

5,357,491

CLOCK SELECTION CONTROL DEVICE

Hiroshi Yamasaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 31, 1994, Ser. No. 189,037
Claims priority, application Japan, Sep. 8, 1993, 5-223221
Int. Cl.[5] G04F *5/00, 1/04*
U.S. Cl. 368—156 7 Claims



1. A clock selection control device for selecting one of two clock signals supplied to each of a plurality of circuit units in parallel to each other, comprising:
clock selection control means, connected to the sources of said two clock signals and to said plurality of circuit units, for determining a clock signal to be selected and for supplying to each of said plurality of circuit units control information directing the selection of said determined clock signal;
a plurality of clock failure detecting means, respectively connected to said plurality of circuit units, for detecting an abnormality in the clock signal being supplied to each of said plurality of circuit units and for outputting a clock failure signal when an abnormality is detected; and
a plurality of selection determining means respectively connected to said plurality of circuit units, each selection determining means changing the clock signal selection independently of said control information, when said clock failure signal is output for the clock signal selected in the circuit unit connected thereto.

5,357,492

APPARATUS FOR INDICATING TIMES AND/OR DATE IN PORTABLE RECORDING UNIT

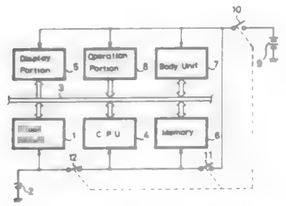
Tomonari Sagane, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 28, 1993, Ser. No. 82,377
Claims priority, application Japan, Jul. 2, 1992, 4-175668
Int. Cl.[5] G04B *19/24*
U.S. Cl. 368—204 8 Claims

1. A clock apparatus, comprising:
a clock circuit having a display for displaying time and date;
a non-volatile memory;
a replaceable power source for driving said clock circuit;
an apparatus which is turned on and off by a user and which is associated with the time and date display of said clock circuit;
memory resetting means for reading current time and date data of said clock circuit and reading time and date data

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stored in said memory when a user turns on said associated apparatus, and for comparing the clock circuit data with the memory data, and if there is coincidence, not resetting the memory, and if there is not coincidence, resetting the memory to the current time and date data of the clock circuit; and



clock circuit resetting means for resetting said clock circuit to time and date data stored in said memory when said removable power source is removed and replaced by a new removable power source.

5,357,493

MAGNETO-OPTIC MEMORY DEVICE FOR OVERWRITING INFORMATION ON MAGNETO-OPTIC RECORDING MEDIUM BY USING A PAIR OF LIGHT SPOTS WITHOUT USING AN EXTERNAL MAGNETIC FIELD

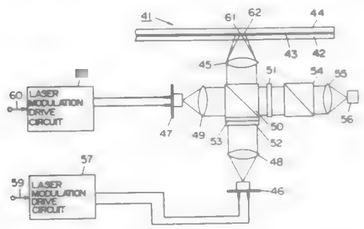
Yukinori Okazaki, and Mieko Kobukata, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 696,991, May 3, 1991, abandoned, which is a continuation of Ser. No. 329,785, May 13, 1989, abandoned. This application Aug. 24, 1992, Ser. No. 933,771

Claims priority, application Japan, Jul. 24, 1987, 62-186244

Int. Cl.[5] G11B *13/04*

U.S. Cl. 369—13 **3 Claims**



1. A magneto-optic memory device for thermo-magnetically recording information on a magneto-optic recording film and reproducing the information by a magneto-optic effect,

said magneto-optic recording film being composed of a ferromagnetic material having a compensation temperature which lies within a range between a temperature of said magneto-optic recording film in the information reproducing mode and the Curie temperature of the ferromagnetic material and at which said magneto-optic recording film has spontaneous magnetization of a magnitude necessary for recording the information,

said memory device comprising:

light source means for irradiating an information recording position on said recording film with a first light spot and a second light spot which has a light spot diameter greater than a diameter of said first light spot and which is substantially concentric with said first light spot, said light source means comprising first and second lasers having different wavelengths for irradiating said first and second light spots, respectively, and beam combining means for causing said first and second light spots to be substantially concentric, said beam combining means comprising a beam combining prism disposed to receive light emitted from said first and second lasers and a dichroic mirror disposed between said beam combining prism and said first laser;

first modulating means for controlling an intensity of said first light spot so that a temperature at an information recording position of said recording film reaches near the Curie temperature when recording the information; and

second modulating means for (i) modulating an intensity of said second light spot between a high intensity and a low intensity so that a temperature around the information recording position of said recording film is changed in accordance with an information signal to be recorded between a first temperature when the second light spot is at said low intensity, said first temperature being lower than the compensation temperature of said recording film and causing a first spontaneous magnetization of a magnitude necessary for recording the information, and a second temperature when the second light spot is at said high intensity, said second temperature being higher than the compensation temperature of said recording film and causing a second spontaneous magnetization of a magnitude necessary for recording the information, and for (ii) controlling said first modulating means to modulate said intensity of said first light spot in accordance with said information signal to be recorded;

wherein both erasing and rerecording of information are simultaneously performed by making use of changes of a direction of a magnetic field caused by said first and said second spontaneous magnetization without using external magnetic field generating means.

5,357,494

MAGNETO-OPTICAL PLAYBACK METHOD

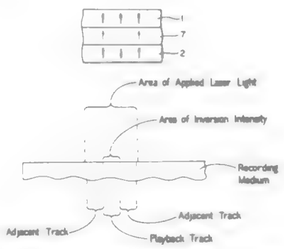
Katsuhisa Aratani, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 578,434, Sep. 7, 1990, abandoned. This application Dec. 30, 1993, Ser. No. 175,693

Claims priority, application Japan, Sep. 8, 1989, 1-233601

Int. Cl.[5] G11B *11/12, 13/04*

U.S. Cl. 369—13 **4 Claims**



1. A magneto-optical playback method for playing back an information signal from a magneto-optical recording medium, comprising the steps of:

providing a recording medium comprising a magneto-optical playback layer and a magnetic recording layer, both having perpendicular magnetization, and a transparent dielectric layer, superposed on one another, said recording medium so formed as to satisfy the condition that a playback output R-Ok (where R stands for the reflectivity of said medium and Ok for the Kerr rotation angle thereof) is minimum at a temperature T1, lower than a threshold temperature T_{th}, which causes inversion of the magnetization of said playback layer, wherein said information signal has been recorded on said recording layer and has been transferred from the recording layer to the playback layer, during a recording process;

applying a playback laser light to said medium in the presence of an external magnetic field to selectively raise the temperature of said playback layer to above T_{th}, to selectively invert the magnetization of said playback layer alone without inverting the magnetization of said recording layer,

detecting a reflected laser light therefrom to obtain a playback output; and

deriving an output signal corresponding to said playback output in response to the inversion state of said playback layer.

3. A magneto-optical playback method, comprising the steps of:

providing a recording medium comprising a magneto-optical playback layer and a magnetic recording layer, both having perpendicular magnetization direction, and a transparent dielectric layer superposed on one another, said playback layer so formed as to satisfy the condition that a playback output R· Ok (where R stands for the reflectivity of said medium and Ok for the Kerr rotation angle thereof) is minimum at a temperature T1 lower than a threshold temperature Tth which causes inversion of the magnetization of said playback layer, said information signal having been transferred from the recording layer to the playback layer, during a recording, said recording medium further comprising an intermediate magnetic layer located between said playback layer and said recording layer, said intermediate layer having a Curie temperature Tc3 higher than said threshold temperature Tth and magnetically coupled, during the recording on said recording layer, to both said playback layer and recording layer at a temperature lower than said Curie temperature Tc3;

applying a playback laser light to said medium in the presence of an external magnetic field to selectively raise the temperature of said playback layer to above threshold temperature Tth, to a temperature of about said temperature Tc3, to selectively invert the magnetization of said playback layer alone without inverting the magnetization of said recording layer;

detecting a reflected laser light from the recording medium to obtain a playback output;

deriving an output signal corresponding to said playback output in response to the inverted magnetization of said playback layer.

4. A magneto-optical playback method for playing back an information signal from a magneto-optical recording medium, comprising the steps of:

providing a recording medium comprising a magneto-optical playback layer and magnetic recording layer, both having perpendicular magnetization, and a transparent dielectric layer superposed on one another, the recording medium having a plurality of information tracks, said playback layer is so formed as to satisfy the condition that a playback output R-Ok (where R stands for the reflectivity of said medium Ok for Kerr rotation angle thereof) is minimum at a temperature T1 lower than a threshold temperature Tth which causes inversion of the magnetization of said playback layer, wherein said information signal has been recorded on said recording layer and has been transferred from the recording layer to the playback layer during a recording process;

applying a playback laser light to said medium in the presence of an external magnetic field to selectively raise the temperature of said playback layer to above Tth, to selectively invert the magnetization of said playback layer alone without inverting the magnetization of said recording layer, wherein said laser light is applied to an area including a portion of an objective track subjected for playing back recorded information, to raise the temperature of said portion to about the temperature Tth to cause said inversion of the magnetization of the playback layer, while said laser light is simultaneously applied to a portion of an adjacent track, said portion is heated to a temperature below said predetermined temperature Tth;

detecting a reflected laser light therefrom to obtain a playback output; and

deriving an output signal corresponding to said playback output in response to the inversion state of said playback layer in said objective track, a contribution to said output signal as a result of an information signal recorded on said adjacent track being substantially smaller than the contribution to output signal from said objective track.

5,357,495

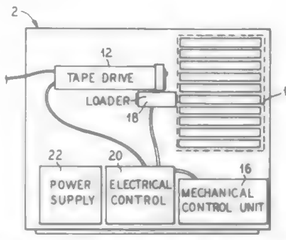
STACKER/AUTOLOADER SYSTEM WITH INTELLIGENT MEDIA STORAGE MAGAZINE CONTROL

Erik Solhjell, Oslo, Norway, assignor to Tandberg Data A/S, Oslo, Norway

Filed Jul. 2, 1992, Ser. No. 907,566

Int. Cl.[5] G11B *17/22*

U.S. Cl. 369—34 **13 Claims**



1. A system for stacking or autoloading a plurality of removable storage media for use in a drive, said system comprising:

a magazine for storing said plurality of removable storage media;

transport means for loading or unloading a selected one of said plurality of said storage media from said magazine;

positioning means for moving said magazine to a specified position relative to said transport means to enable loading or unloading of said selected one of said plurality of storage media from said magazine;

control means for controlling operation of said positioning means, said transport means and said drive;

identifying means inseparably and integrally related to said magazine, including a plate with a coded pattern uniquely identifying said magazine, the coded pattern further indicative of information relating to said plurality of said storage media from said magazine; and

determining means for sensing said pattern indicative of said magazine being moved by said positioning means, for verifying said magazine has been loaded, and for verifying a correct magazine has been moved by said positioning means.

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5,357,496

OPTICAL DISK DRIVE FOCUS SERVO CONTROL SYSTEM WITH FOCUS SERVO BEING TURNED OFF OR HAVING GAIN REDUCED AFTER TRACKING SERVO HAS BEEN OFF A PREDETERMINED TIME PERIOD

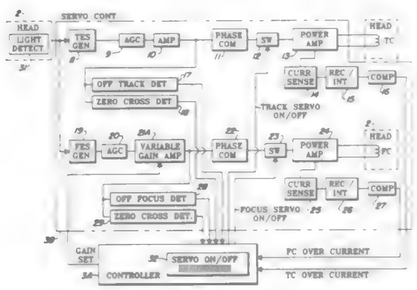
Toru Ikeda, and Shigenori Yanagi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Continuation of Ser. No. 20,209, Feb. 19, 1993, abandoned. This application Jan. 27, 1994, Ser. No. 188,357

Claims priority, application Japan, Feb. 27, 1992, 4-041220

Int. Cl.[5] G11B *7/095*

U.S. Cl. 369—44.29 **13 Claims**



1. A focus servo control system for an optical disk drive unit, comprising:

a laser light source;

an optical disk having a data recording surface illuminated with a spot of light from said laser light source;

an optical head for receiving reflected light from said optical disk surface, which corresponds to said spot of light applied to said optical disk surface, and for obtaining an electric signal corresponding to said received light;

a servo controller having a track servo loop for moving said optical head radially of said optical disk on the basis of an error signal obtained from the electric signal obtained by said optical head and a focus servo loop for controlling the focus of said spot of light by moving said optical head perpendicularly to the surface of said optical disk on the basis of an error signal obtained from the electric signal obtained by said optical head; and

a controller for detecting a length of time during which an "off" state of said track servo loop in said servo controller continues, and for turning off said focus servo loop when the detected length of time exceeds a predetermined value.

5,357,497

METHOD FOR DETECTING DEFECTS ON MAGNETO-OPTIC RECORDING MEDIUM

Kenichi Ogawa, Tsurugashima, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

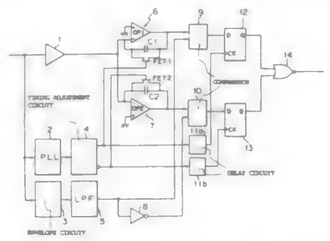
Filed Jan. 23, 1992, Ser. No. 824,562

Claims priority, application Japan, Jul. 5, 1991, 3-165962

Int. Cl.[5] G11B *3/90, 5/09, 5/02*

U.S. Cl. 369—58 **3 Claims**

1. A method for detecting defects on a magneto-optic recording medium, comprising: a recording step for recording a constant frequency signal on said magneto-optic recording medium, a reproducing step for reproducing the constant frequency signal by playing the magneto-optic disk, an integrating step for separately integrating positive and negative side waveforms of the reproduced signal, and a detecting step for comparing a peak value from either of the integrated outputs with a reference value and for detecting a level drop thereof.



5,357,498

DISC DRIVE APPARATUS THAT POSITIONS AN OBJECTIVE LENS WITHIN A DISC CARTRIDGE AT THE TIME WHEN THE DISC IS ROTATED

Tadao Yoshida, Kanagawa, and Hirotoshi Fujisawa, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

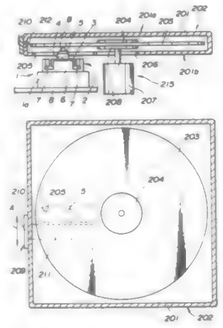
PCT No. PCT/JP92/00029, § 371 Date Sep. 14, 1992, § 102(e) Date Sep. 14, 1992, PCT Pub. No. WO92/13342, PCT Pub. Date Jun. 8, 1992

PCT Filed Jan. 16, 1992, Ser. No. 923,968

Claims priority, application Japan, Jan. 25, 1991, 3-025569

Int. Cl.[5] G11B *7/085*

U.S. Cl. 369—106 **7 Claims**



1. A disc drive apparatus for recording and/or reproducing informational signals on an optical disc housed within a disc cartridge when the disc cartridge is loaded into the disc drive apparatus, the disc cartridge having an opening which is exposed when the disc cartridge is loaded into the disc drive apparatus, the apparatus comprising:

a disc table connectable to the optical disc when the optical disc is loaded into the disc drive apparatus;

driving means for rotating the disc table;

an optical pick-up device having a light source and an objective lens, the objective lens converging a light beam from the light source upon the optical disc along an optical axis; and

lifting means for moving the objective lens into the disc cartridge through the opening only when the disc table is rotated.

5,357,499

OPTICAL DISK AND OPTICAL DISK REPRODUCING APPARATUS

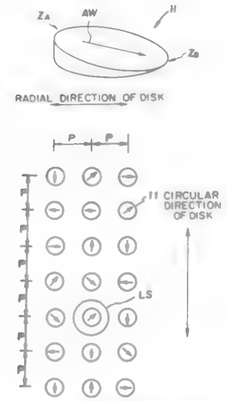
Takayuki Nomoto, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 975,468

Claims priority, application Japan, Jan. 20, 1992, 4-007839

Int. Cl.[5] G11B *7/13, 7/007*

U.S. Cl. 369—120 **13 Claims**



10. An optical disk reproducing apparatus for reproducing information from an optical disk comprising: a substrate of disk shape; a recording medium formed on said substrate, and having a recording surface on which a plurality of tracks are formed; and information pits formed on the tracks, wherein each of said information pits has a first pit portion having a first level from the recording surface and a second pit portion having a second level lower than the first level, and a pit direction angle indicating an angle between a direction connecting the first pit portion and the second pit portion to each other and a circular direction of said optical disk is equal to one of predetermined equiangular angles around the center of the information pit, the pit direction angle corresponding to recorded information pieces,

said optical disk reproducing apparatus comprising:

light projection means for projecting a laser beam having a predetermined wavelength onto the recording surface under a condition of a predetermined numerical aperture;

photodetector means having equiangular light receiving surfaces, for generating light detection signals from a reflected laser beam reflected by the recording surface and incident on the equiangular light receiving surfaces, one of dividing lines for dividing an entire light receiving surface of the photodetector means being substantially parallel to the circular direction of the optical disk;

an optical system having a light path in which the reflected laser beam projected onto a center line of the track is received in a center portion of the entire light receiving surface;

operation means, coupled to said photodetector means, for generating information signals as predetermined functions of the light detection signals from said light receiving surfaces; and

information reproducing means, coupled to said operation means, for reproducing the recorded information pieces from the information signals.

5,357,500

MINIATURIZED DISC PLAYER

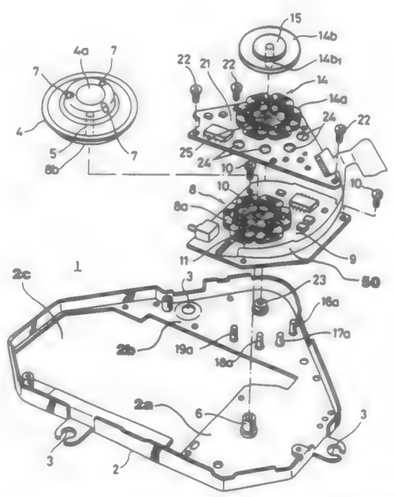
Tetsu Yanagisawa, Tokyo, Japan, assignor to Sony Corporation, Japan

Continuation of Ser. No. 947,988, Sep. 21, 1992, abandoned, which is a continuation of Ser. No. 701,814, May 17, 1991, abandoned, which is a division of Ser. No. 629,623, Dec. 18, 1990, Pat. No. 5,119,362. This application Feb. 17, 1994, Ser. No. 197,563

Claims priority, application Japan, Dec. 28, 1989, 1-152098[U]; Dec. 28, 1989, 1-152099[U]

Int. Cl.[5] G11B *21/02*

U.S. Cl. 369—215 **5 Claims**



1. A disc drive mechanism mounted on a mechanical chassis comprising:

a mechanical chassis formed with an opening and first and second plate portions;

a turntable for supporting a disc, said turntable being rotatably mounted to said first plate portion of said chassis;

a turntable motor for rotating said turntable including a first rotor magnet and a first stator coil;

a first circuit board which is discrete from said chassis and located beneath said turntable, said first circuit board being deteachably mounted to said first plate portion of said chassis;

a pickup device capable of moving in said opening and translationally with respect to said turntable;

a pickup device motor for moving said pickup device translationally, said pickup device motor including a second rotor magnet and a second stator coil which are mounted on said second plate portion of said chassis;

a second circuit board which is discrete from said first circuit board, said second circuit board being detachably mounted to said second plate portion of said chassis and connected to said first circuit board by a cable; and

a plurality of gears rotatably mounted on said second plate portion via said second circuit board and connected between said pickup device motor and said pickup device;

wherein either of said first rotor magnet and said first stator coil are mounted to said first circuit board and either of said second rotor magnet and said second stator coil are mounted to said second circuit board.

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5,357,501

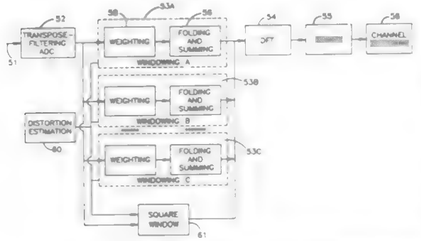
Patent Not Issued For This Number

5,357,502

DEVICE FOR THE RECEPTION OF DIGITAL DATA TIME FREQUENCY INTERLACING, NOTABLY FOR RADIO BROADCASTING AT HIGH BIT RATE TOWARDS MOBILE RECEIVERS WITH NYQUIST TEMPORAL WINDOW

Damien Castelain; Joël Richard; Roselyne Halbert-Lasselle, all of Rennes, and Daniel Pommier, Breal Sous Montfort, all of France, assignors to France Telecom and Telediffusion de France SA, Paris, France

Continuation-in-part of Ser. No. 648,897, Jan. 31, 1991, abandoned. This application Mar. 30, 1993, Ser. No. 39,964
Claims priority, application France, Feb. 6, 1990, 90 01493
Int. Cl.[5] H04B 7/02; H04L 1/02
U.S. Cl. 370—19 10 Claims



1. A receiver of a digital source signal, comprising digital symbols, transmitted using a plurality of simultaneously broadcast orthogonal frequency carriers, the receiver comprising:

means for forming a digital baseband signal from a received signal including:

a local oscillator for transposing the received signal into a demodulated signal,

baseband filtering means for filtering the demodulated signal to form an analog baseband signal, and

analog-digital conversion means for digitizing the analog baseband signal to form the digital baseband signal consisting of successive temporal samples;

a temporal windowing module coupled to said analog-digital conversion means for forming a series of successive samples the temporal windowing module including means for weighting said digital baseband signal, the weighting being carried out according to a Nyquist temporal window with non-zero roll-off having a first ascending flank with duration t_r, a constant portion with duration $t_s - t_r$, where t_s and t_r are predetermined time periods, and a second descending flank symmetric to the first ascending flank, the Nyquist temporal window being defined by a mathematical function f simultaneously meeting the following conditions, x being a real variable representing time:

$$f(-t_r/2+x)+f(-t_r/2-x)=1 \text{ for } 0 \leqq x \leqq t_r/2;$$

$$f(t_s-t_r/2+x)+f(t_s-t_r/2-x)=1 \text{ for } 0 \leqq x \leqq t_r/2; \text{ and}$$

$$f(x)=1 \text{ for } 0 \leqq x \leqq t_s-t_r; \text{ and}$$

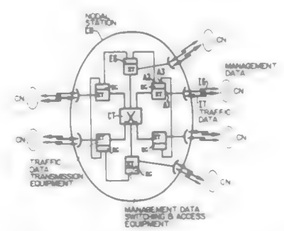
transformation means for mathematically transforming said series of successive samples into a set of frequential coefficients thus forming a transformed signal.

5,357,503

DYNAMIC MANAGEMENT SYSTEM FOR A SET OF EQUIPMENTS INTERCONNECTED BY A TELECOMMUNICATION NETWORK

Jean Montarges, Fontenay le Fleury, and Claude Destouesse, Argenteuil, both of France, assignors to Alcatel Telspace, Nanterre Cedex, France

Filed Feb. 17, 1993, Ser. No. 18,541
Claims priority, application France, Feb. 19, 1992, 92 01879
Int. Cl.[5] H04L 12/24, 12/46, 12/56; H04Q 11/04
U.S. Cl. 370—58.3 6 Claims



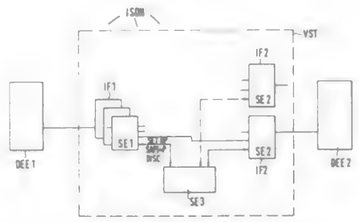
1. Dynamic management system for managing a set of traffic data transmission equipments connected by a traffic telecommunication network transmitting traffic data for operation together in variable configurations matched to requirements of network users, said system comprising a management support telecommunication network having a plurality of nodes constituted by a management data switching and access equipments each associated with at least one of said respective traffic data transmission equipment, said management data switching and access equipments being interconnected to form a meshed network being topologically independent of the traffic telecommunication network and said management data switching and access equipments using flooding mode broadcasting for transmitting management data.

5,357,504

FACILITY AND METHOD FOR D CHANNEL PACKET SWITCHING

Gerd Siegmund, Stuttgart, Fed. Rep. of Germany, assignor to Alcatel N.V., Netherlands

Filed Feb. 19, 1992, Ser. No. 837,740
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1991, 4106183
Int. Cl.[5] H04J 3/12
U.S. Cl. 370—60 5 Claims



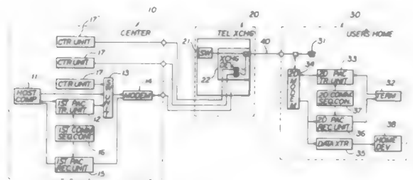
1. Facility for D channel packet switching through a digital exchange (VST) in an integrated services digital network (ISDN) between a first data terminal (DEE1) and a second data terminal (DEE2) which are connectable to a first interface (IF1) of a plurality of first interfaces of the exchange (VST) and to a second interface (IF2) of a plurality of second interfaces of the exchange (VST), respectively, each of the first interfaces containing a first control unit (SE1) controlling all OSI Layer 2 functions, and each of the second interfaces containing a second control unit (SE2) controlling all OSI Layer 2 functions, the exchange (VST) further including a third control unit (SE3) controlling all OSI Layer 3 functions which is connected to the first control units (SE1) and, in response to a setup message and upon receipt of a packet-data identifier (SAPI=p) from the first data terminal (DEE1), by means of a connection between the third control unit (SE3) and a second control unit (SE2) associated with the second data terminal (DEE2) sets up a connection between the associated first control unit (SE1) and the second control unit (SE2) associated with the second data terminal (DEE2) for the direct exchange of packet data.

5,357,505

DEVICE FOR BIDIRECTIONAL COMMUNICATION ON A TELEPHONE LINE

Mihoji Tsumura, and Shinnosuke Taniguchi, both of Osaka, Japan, assignors to Ricos Co., Ltd., Osaka, Japan

Filed Mar. 30, 1992, Ser. No. 860,058
Int. Cl.[5] H04Q 11/04
U.S. Cl. 370—60 8 Claims



1. A device for bidirectional communication on a telephone line, said device making use of idle time on a telephone network, which connects the switching system of a telephone exchange with a telephone in a user's home, for the transmission of data from a center independent of said telephone exchange by way of said telephone network to said user's home, said center being equipped with

control means which outputs download data and control signals, and receives upload data,

data switching means which establishes a communication sequence in accordance with said control signals received from said control means,

first packet transmission means which converts the download data received from said control means into packet form and outputs said packets to said data switching means,

first packet receiving means which receives signals from said telephone network, selects from amongst said signals, packets addressed to said control means, extracts upload data from said packets and outputs said upload data to said control means, and

first communication sequence control means which controls the sequence of incoming and outgoing communications in respect of said first packet transmission means and said first packet receiving means, and

said user's home being equipped with

a terminal which outputs upload data and which receives download data,

second packet transmission means which converts upload data received from said terminal into packets which it outputs to the aforementioned telephone network,

second packet receiving means which receives signals from said telephone network, selects from amongst said signals, packets addressed to the aforementioned terminal, extracts download data from said packets and outputs said download data to said terminal, and

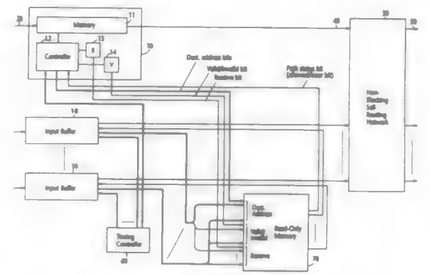
second communication sequence control means which controls the sequence of incoming and outgoing communications in respect of said second packet transmission means and said second packet receiving means.

5,357,506

ATM SELF-ROUTING SWITCHING SYSTEM HAVING INPUT BUFFERS ADAPTIVELY CONTROLLED BY CONTENTION TEST RESULTS

Tsugio Sugawara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 14, 1992, Ser. No. 990,002
Claims priority, application Japan, Dec. 13, 1991, 3-330762
Int. Cl.[5] H04Q 11/04
U.S. Cl. 370—60 4 Claims



1. A self-routing switching system comprising:

a non-blocking self-routing network having a plurality of inlets and a plurality of outlest for routing cells applied to any of said inlets to any of said outlets without causing a collision with other cells, each of the cells containing a destination address of the cell;

timing control means for generating a cell transmit timing signal to define a cell transmission cycle, and a contention timing signal at a rate higher than the rate of said cell transmit timing signal to define a plurality of contention cycles within the cell transmission cycle;

a plurality of input buffers for receiving incoming cells, said input buffers corresponding respectively to the inlets of said network, each of said buffers having a plurality of cell positions identified by a cell pointer and generating a reserve bit indicating that a cell of the buffer is a winner of a contention during a previous contention cycle; and

contention detection means for receiving said destination addresses and said reserve bits from said input buffers and, in response thereto, generating path status bits corresponding respectively to said buffers, each of the path status bits indicating that a cell of the corresponding buffer is a loser of a contention when there is a match between the destination address of the cell of the corresponding buffer and the destination address of a cell of any other buffers if said reserve bit is not received from the corresponding buffer, or indicating that the cell of the corresponding buffer is a winner of a contention when there is a mismatch between the destination address of the cell of the corresponding buffer and the destination address of a cell of any other buffers or when said reserve bit is received from the corresponding buffer,

each of said buffers being responsive to said contention timing signal for reading a destination address from a cell position identified by the cell pointer thereof and supplying the retrieved address and said reserve bit to said contention detection means, and shifting the cell pointer in a direction away from an output end of the buffer when the corresponding path status bit indicates that the cell of the buffer is a loser or a contention and generating said reserve bit when the corresponding path status bit indicates that the cell of the buffer is a winner of a contention, and

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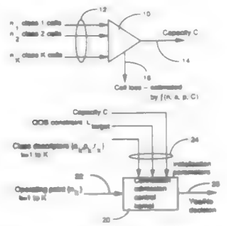
being responsive to the cell transmit timing signal for launching a cell stored therein from said output end to the corresponding inlet of said network when the corresponding path status bit indicates that the cell of the buffer is a winner of a contention.

5,357,507

FAST CONNECTION ADMISSION CONTROL FOR ATM NETWORKS

David A. Hughes, and Manabu Kato, both of Tokyo, Japan, assignors to Northern Telecom Limited, Montreal, Canada

Filed Aug. 24, 1993, Ser. No. 110,998
Int. Cl.[5] H04J 3/12, 3/22
U.S. Cl. 370—60 8 Claims



1. In an ATM network system for handling traffic having K classes of calls to the ATM network where K is a positive integer, a method for managing the ATM network system by controlling admission of one of said calls to the ATM network system having an operating point expressed by $n=\{n_1, n_2 \ldots n_k\}$ in a K dimensional coordinate system with K axes, where each of said axes represents the number of the calls in one of said classes and n_k is the number of the calls in a class k, k=1 to K, comprising steps of:

(a) setting, at initialization or reinitialization of the ATM network system in the K dimensional coordinate system, lower and upper planes, the lower plane being a plane below which the ATM network system always has an acceptable quality-of-service parameter and the upper plane being a plane above which the ATM network system always has an unacceptable quality-of-service parameter;

(b) receiving a call connect request of one of said calls specifying a class descriptor of said one of said calls;

(c) obtaining the operating point of the ATM network system, assuming that said one of said calls is admitted to the ATM network system;

(d) determining the ATM network system as having the acceptable quality-of-service parameter if the operating point is between the upper and lower planes and an estimated cell loss probability f of the ATM network system is less than a preset target long term cell loss probability, the estimated cell loss probability f being obtained according to the relationship,

$$f = \frac{e^{\mu(s)-sC}}{s^2 E(x)\sqrt{2\pi\mu''(s)}}$$

where E(x) is an average aggregate arrival rate, C is a capacity of the ATM network system and s satisfies the following relationship,

$$\mu'(s)=C$$

wherein $\mu(s)$ is defined by

$$\mu(s) = \sum_{k=1}^{K} n_k \mu_k(s)$$

where $\mu_k(s)$ is a skewed expectation for a single source of the class k, and $\mu'(s)$ and $\mu''(s)$ are derivatives of $\mu(s)$; and

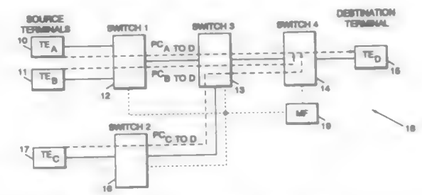
(e) admitting said one of the calls to access the ATM network system whenever the ATM network system is determined to have the acceptable quality-of-service parameter.

5,357,508

CONNECTIONLESS ATM NETWORK SUPPORT USING PARTIAL CONNECTIONS

Jean-Yves Le Boudec, Adliswil; Hong L. Truong, Gattikon, and Rainer Oechsle, Langnau am Albis, all of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 22, 1992, Ser. No. 918,347
Claims priority, application European Pat. Off., Apr. 27, 1992, 92810298.7
Int. Cl.[5] H04L 12/50, 12/56
U.S. Cl. 370—58.3 20 Claims



11. An apparatus for transferring connectionless (CL) data messages in an ATM (asynchronous transfer mode) network (18) comprising a plurality of terminals (10, 11, 15, 17), switching nodes (12–14, 16), and a management function unit (19), said data messages being transmitted in the payload portions of ATM cells having a virtual path identifier/virtual connection identifier (VPI/VCI) field, from an activated terminal, i.e. the source terminal (10) attached to a source switching node (12), to an activated terminal, i.e. the destination terminal (15) attached to a destination switching node (14), the apparatus comprising:

a) means for establishing a partial connection, i.e. a unidirectional virtual channel connection, from said source terminal (10) to said destination switching node (14), by said source terminal (10), before transmitting an ATM cell to said destination terminal (15), requesting a partial connection identifier (PCI) by sending a request message (PCI-REQuest) to said source switching node (12), said request message comprising the higher layer address of said destination terminal (15),

b) means for providing the requested partial connection identifier (PCI) to said source terminal (10) by sending from said source switching node (12) to said source terminal (10) a response message (PCI-RESponse), comprising said requested partial connection identifier which said source terminal (10) must apply to the virtual path identifier/virtual channel identifier (VPI/VCI) field of said ATM cells,

said partial connection identifier being either directly provided by said source switching node in case that said partial connection is already established from said source switching node to said destination node and a respective entry is found in a table (61) of said switching node, or

said partial connection identifier being requested from said management function unit (19) by forwarding said request message to said management function unit for

looking up in a table (64) maintained and controlled by said management function unit, said table (64) comprising the higher layer addresses of all terminals being activated and the corresponding location address (L@) of the port to which each said activated terminal is attached,

c) means for transmitting said ATM cells from said source terminal to said destination terminal after receipt of the requested partial connection identifier by inserting said partial connection identifier into the virtual path identifier/virtual connection identifier (VPI/VCI) field of said ATM cells prior to transmitting said ATM cells to said source switching node,

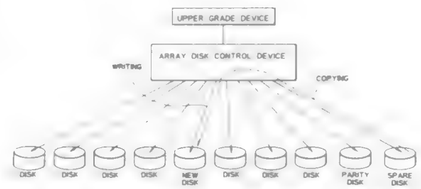
d) means for routing said ATM cells along said partial connections, identified by said partial connection identifier, via said destination node to said destination terminal.

5,357,509

DATA WRITING DURING PROCESS OF DATA RESTORATION IN ARRAY DISK STORAGE SYSTEM

Yumiko Ohizumi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 2, 1991, Ser. No. 801,572
Claims priority, application Japan, Nov. 30, 1990, 2-339963
Int. Cl.[5] G06F 11/00
U.S. Cl. 371—10.1 7 Claims



1. A method of writing data to disk storages in an array disk storage system during a process of restoring data in said disk storages;

said array disk storage system including a plurality of regular disk storages for storing data, a spare disk storage used when a fault occurs in the disk storages, a disk storage for parity, and a control device for controlling an input and output of data to and from the disk storages under a control of an upper grade device, the method comprising the steps of:

when one of the plurality of regular disk storages and the disk storage for parity becomes faulty, restored data generated from the data stored in a functioning remainder of the plurality of disk storages is written to the spare disk storage, and the restored data is copied to a new disk storage which has replaced the faulty disk storage,

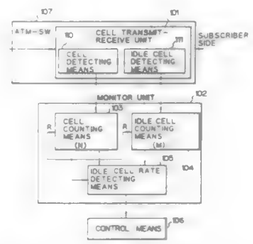
wherein writing of new data is carried out such that new data is written to both the spare disk storage and the new disk storage to which writing of restored data from the spare disk storage is being carried out, in response to an instruction from the upper grade device to write the new data, said writing of new data being carried out while the restored data which is restored in the spare disk storage is being coped into the new disk storage.

5,357,510

APPARATUS AND A METHOD FOR SUPERVISING AND CONTROLLING ATM TRAFFIC

Reiko Norizuki; Ryuji Hyodo; Kenji Tanaka; Osamu Sekihata; Hiroyuki Hatta; Susumu Eda, and Katsumi Oomuro, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 19, 1993, Ser. No. 19,835
Claims priority, application Japan, Feb. 19, 1992, 4-031864; Mar. 19, 1992, 4-063339; May 18, 1992, 4-124622
Int. Cl.[5] H04L 12/56
U.S. Cl. 370—60.1 3 Claims



1. An apparatus for supervising and controlling ATM traffic, and which collects traffic information, comprising:

cell detecting means for outputting a cell detecting signal whenever detecting a user information cell flowing through an ATM switch unit;

idle cell detecting means for outputting an idle cell detecting signal whenever detecting an idle cell flowing through an ATM switch unit;

cell counting means for counting said cell detecting signals output from said cell detecting means;

idle cell counting means for counting said idle cell detecting signals output from said idle cell detecting means;

idle cell rate detecting means for detecting an idle cell rate from both counts output from said cell counting means and said idle cell counting means at regular intervals; and

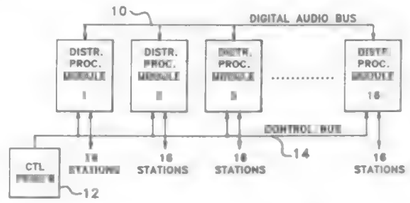
control means for performing the operation of traffic control in accordance with said idle cell rate provided from said idle cell rate detecting means at regular intervals.

5,357,511

DISTRIBUTED PROCESSING IN A DIGITAL AUDIO MIXING NETWORK

Jeffrey M. DiNapoli, Louisville, and John L. Melanson, Boulder, both of Colo., assignors to Peak Audio, Inc., Boulder, Colo.

Filed Mar. 22, 1993, Ser. No. 34,022
Int. Cl.[5] H04J 3/02; H04M 3/56
U.S. Cl. 370—62 17 Claims



1. Apparatus for distributing the processing of digital audio data in a multiplexed network having a plurality of audio stations to be connected for mixing, said apparatus comprising:

a multiplex bus means for carrying all of the digital audio

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data from the audio stations in the network in a multiplex manner;

a plurality of module means distributed on said bus means for distributed processing of audio data as the data is input to the network from a first audio station, is output from the network to a second audio station and is mixed with audio data from any of the other audio stations in proportion to a selected gain associated with the other station; and

a plurality of processing means in each of said module means for performing the distributed processing, each of said processing means for input/output processing audio data for one or more audio stations connected to said processing means; and

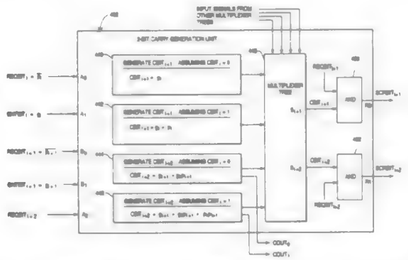
each of said processing means for mixing the audio data from one or more of the audio stations in proportion to their selected gain for mixed audio output to said second station to provide mixed audio output data back to said multiplex bus means whereby the processing of audio data from input through mixing to output for any or all of the audio stations may be distributed to a plurality of said processing means.

5,357,512

CONDITIONAL CARRY SCHEDULER FOR ROUND ROBIN SCHEDULING

Manpreet S. Khaira, and Nitin Y. Borkar, both of Beaverton, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 30, 1992, Ser. No. 998,945
Int. Cl.[5] H04L *12/40;* **G06F** *13/00*
U.S. Cl. 370—85.2 **8 Claims**



5. A conditional carry scheduling method for a round robin scheduler that performs a scheduling cycle to schedule use of a shared resource to one of a plurality of clients, each client j supplying a request bit $REQBIT_j$ that is asserted when use of the shared resource is requested, each client also having an input for receiving a grant bit $GNTBIT_j$ and circuitry responsive to an asserted $GNTBIT_j$ for using the shared resource during a subsequent communication cycle, said REQBITs and GNTBITs being arranged in a predetermined order of bit positions, said conditional carry scheduling method supplying a scheduler carry result bit $SCRBIT_j$ for each client j, said conditional carry scheduling method comprising the steps of:

a) supplying a $REQBIT_i$, a $GNTBIT_i$, a $REQBIT_{i+1}$, a $GNTBIT_{i+1}$ from two adjacent bit positions i and i+1, a $REQBIT_{i+2}$ from the next adjacent bit position, and a carry select CS input indicative of a carryin bit $CBIT_i$ to each of a plurality of two-bit carry generation units; and

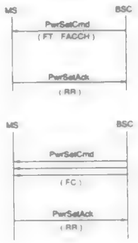
b) responsive thereto, computing a $SCRBIT_{i+1}$ and a $SCRBIT_{i+2}$ in each two-bit carry generation unit.

5,357,513

TRANSMISSION POWER LEVEL ADJUSTMENT IN RADIO TELEPHONY

Stanley E. Kay, Rockville; John E. Corrigan, III, Chevy Chase; Daniel R. Wendling, Darnestown; Ashok D. Mehta, North Potomac, all of Md., and Michael I. Parr, San Diego, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 622,232, Dec. 6, 1990, Pat. No. 5,299,198. This application Sep. 9, 1993, Ser. No. 118,553
Int. Cl.[5] H04J *3/16*
U.S. Cl. 370—95.3 **11 Claims**



1. In a radio telephony system having a plurality of transmitting stations, each station transmitting information bursts to another station, the bursts being transmitted on radio carrier frequencies divided into time slots for carrying the information bursts wherein delays of undetermined duration may occur between subsequent information bursts, a method for generating an adjustment request regarding the power with which the information bursts are transmitted from a transmitting station to a receiving station comprising:

detecting an information burst transmission at the receiving station;

measuring the time which elapses following the detected information burst;

comparing the elapsed time with a predetermined threshold value;

if the elapsed time exceeds the threshold, requesting a further transmission from the transmitting station;

if a response is received to the request for a further transmission, measuring the power of the received response;

transmitting to the transmitting station a control message for requesting an adjustment to the transmission power level in response to the measurement.

5,357,514

DISTRIBUTED BIT-BY-BIT DESTUFFING CIRCUIT FOR BYTE-STUFFED MULTIFRAME DATA

Norio Yoshida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 10, 1992, Ser. No. 832,893
Claims priority, application Japan, Feb. 8, 1991, 3-039332; Mar. 25, 1991, 3-086104
Int. Cl.[5] H04J *3/07*
U.S. Cl. 370—102 **6 Claims**

1. A byte destuffing circuit for receiving a data signal in a byte interleaved multiple frame structure, recovering a clock sequence from the received data signal and deriving a destuffing control signal from a stuff byte contained in said data signal, comprising:

a buffer memory;

a write address generator for generating a write address signal for each byte of said data signal and supplying the write address to said memory in response to the recovered clock sequence for storing said data signal into the memory, said write address generator being responsive to said destuffing control signal for suspending the generation of

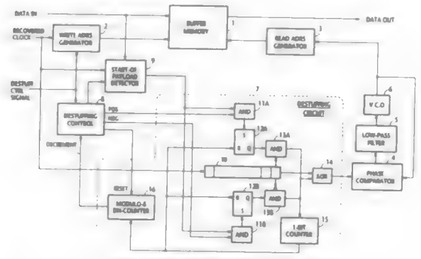
a write address when said destuffing control signal is positive;

destuffing means responsive to said destuffing control signal for effecting the destuffing of a bit on said recovered clock sequence during each of successive eight frames, said destuffing means comprising means for counting occurrences of said destuffing control signal and producing therefrom a stuff-byte count, bit-by-bit destuffing circuit means for destuffing a bit on said recovered clock sequence during each of successive eight frames when said stuff-byte count is equal to or greater than one, and reset means arranged to start counting the destuffed bit to produce a destuffed-bit count when the stuff count increases from zero to one or decreases from N to M (where N is greater than M and M is equal to or greater than one) and decrementing said stuff-byte count by one when the destuffed-bit count reaches a predetermined value;

a phase comparator for making a phase comparison between the destuffed clock sequence and a read clock sequence;

a voltage-controlled oscillator responsive to a phase difference detected by said phase comparator for generating said read clock sequence; and

a read address generator for generating a read address for each byte of said data signal and supplying the read address to said buffer memory in response to said read clock sequence for reading said data signal from said buffer memory.



5,357,515

NON-INTERRUPTION TRANSMISSION LINE SWITCHING SYSTEM IN A DUPLEX TRANSMISSION NETWORK

Kiyoshi Murol, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 27, 1993, Ser. No. 68,688
Claims priority, application Japan, May 28, 1992, 136892
Int. Cl.[5] H04J *3/06;* **H04L** *5/14*
U.S. Cl. 370—102 **3 Claims**

1. A transmission line switching system for use in a duplex transmission network comprising:

a first and a second transmission line;

a first and a second transmitting device connected to said first and said second transmission lines, respectively, and supplied with a common virtual container signal having a virtual container, the first and second transmitting devices transmitting to said first and said second transmission lines a first and a second transmission line frame signal respectively, each of which comprises a transmission line frame comprising an original pointer and said virtual container, said original pointer designating a location of a leading edge of said virtual container in said transmission line frame;

a first and a second pointer renewing unit connected to said first and said second transmission lines, respectively, for processing said first and said second transmission line frame signals into a first and a second device frame signal, respectively, each of which comprises a device frame comprising a renewed pointer and said virtual container, said renewed pointer designating a location of the leading edge of said virtual container in said device frame, said device frames of said first and said second device frame signals being synchronized with each other; and

a selecting unit connected to said first and said second pointer renewing units for selecting one of said first and said second device frame signals as a selected device frame signal;

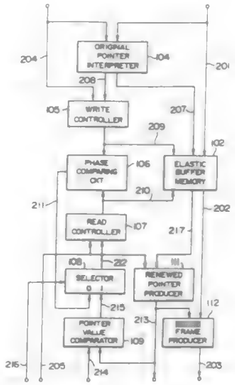
said transmission line switching system including in said first pointer renewing unit:

a first buffer memory connected to said first transmission line;

a first interpreter connected to said first transmission line for interpreting the original pointer of said first transmission line signal as a first interpreted original pointer to produce a first interpreted signal representative of said first interpreted original pointer;

a first write controller connected to said first interpreter for controlling writing of the virtual container of said first transmission line signal in said first buffer memory in response to said first interpreted signal by supplying a first write address signal to said first buffer memory;

a first read controller for controlling reading of said virtual



container out of said first buffer memory in response to a first controller stuff request signal by supplying a first read address signal to said first buffer memory;

a first comparing circuit for comparing said first read address signal with said first write address signal to produce a first primary stuff request signal;

a first buffer memory and said first interpreter for producing the renewed pointer of said first device frame signal in response to said first interpreted signal by monitoring said first buffer memory; and

a first frame producer connected to said first buffer memory and said first renewed pointer producer for producing said first device frame signal;

said transmission line switching system including in said second pointer renewing unit;

a second buffer memory connected to said second transmission line;

a second interpreter connected to said second transmission line for interpreting the original pointer of said second transmission line signal as a second interpreted signal representative of said second interpreted original pointer;

a second write controller connected to said second interpreter for controlling writing of the virtual container of said second transmission line signal in said second buffer memory in response to said second interpreted signal by

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supplying a second write address signal to said second buffer memory;

a second read controller for controlling reading of said virtual container out of said second buffer memory in response to a second controller stuff request signal by supplying a second read address signal to said second buffer memory;

a second comparing circuit for comparing said second read address signal with said second write address signal to produce a second primary stuff request signal;

a second renewed pointer producer connected to said second buffer memory and said second interpreter for producing the renewed pointer of said second device frame signal in response to said second interpreted signal by monitoring said second buffer memory; and

a second frame producer connected to said second buffer memory and said second renewed pointer producer for producing said second device frame signal;

said transmission line switching system comprising in said first pointer renewing unit;

a first pointer comparator connected to said first and said second renewed pointer producers for comparing the renewed pointer of said first device frame signal with the renewed pointer of said second device frame signal to produce a first subsidiary stuff request signal; and

a first selector connected to said first pointer comparator for selecting one of said first primary stuff request signal and said first subsidiary stuff request signal as a first selected stuff request signal which is for use as said first controller stuff request signal;

said transmission line switching system comprising in said second pointer renewing unit;

a second pointer comparator connected to said first and said second renewed pointer producers for comparing the renewed pointer of said second device frame signal with the renewed pointer of said first device frame signal to produce a second subsidiary stuff request signal; and

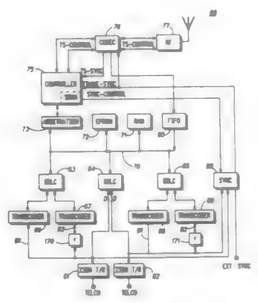
a second selector connected to said second pointer comparator for selecting one of said second primary stuff request signal and said second subsidiary stuff request signal as a second selected stuff request signal which is for use as said second controller stuff request signal.

5,357,516

APPARATUS FOR USE IN TIME DIVISION MULTIPLEXED COMMUNICATION SYSTEMS

Jeffrey W. Klingberg, Ft. Worth, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 25, 1992, Ser. No. 857,147
Int. Cl.[5] H04B *7/212*
U.S. Cl. 370—118 **18 Claims**



18. A time division multiplexed (TDM) communication system for transmitting a serial signal comprised of a first and a second portion of an input signal, said TDM communication system comprising:

storage means for storing said first and second portions of said input signal;

transfer means for accessing said storage means and directing said storage means to store said first and second portions of said input signal in a first and a second time slot storage area, respectively, of said storage means;

control means for sequentially reading said first and second time slot storage areas of said storage means forming said serial signal; and

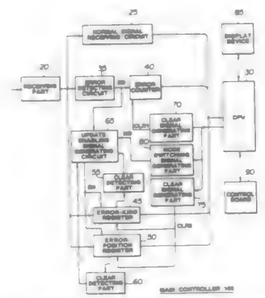
transmission means for transmitting said serial signal.

5,357,517

ERROR DISPLAY DEVICE OF DATA TRANSMISSION SYSTEM

Makoto Takebe, Kanagawa, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP90/01706, § 371 Date Jun. 23, 1992, § 102(e) Date Jun. 23, 1992, PCT Pub. No. WO91/10301, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 26, 1990, Ser. No. 862,553
Claims priority, application Japan, Dec. 26, 1989, 1-336887
Int. Cl.[5] H04L *1/00*
U.S. Cl. 371—5.1 **2 Claims**



1. An error display device of a data transmission system in which a plurality of nodes are connected to a main controller to transmit data, the main controller being adapted to discriminate presence or absence of an error, an error content and an error position from an error signal contained in a data frame signal transmitted from the nodes and to display the error content and error position wherein the main controller comprises:

an error kind register for temporarily storing therein a signal corresponding to the error content;

an error position register for temporarily storing therein a signal corresponding to the error position;

clear operating means for instructing to clear storage data in the error kind register and the error position register;

update control means having a first mode in which the storage data in the error kind register and the error position register are updated each time an error is detected as well as a second mode in which storage data in the error kind register and the error position register are cleared when a clear instruction from the clear operating means is inputted, the data in the error kind register and the error position register being updated by the error content and the error position when an error is detected first after the clear instruction, and thereafter the updating of the error kind register and the error position register is disabled until a next clear instruction of the clear operating means is inputted, the update control means controlling storage updating operations of the error kind register and the error position register in either one of said two modes;

error counting means for counting the number of errors detected in the error signal; and

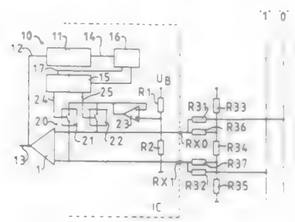
display means for displaying thereon the temporary storage data in the error kind register and the error position register and an output of the error counting means.

5,357,518

NETWORK INTERFACE

Cornelius Peter, Ottersweier, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 898,347, Jun. 8, 1992, which is a continuation of Ser. No. 466,283, Mar. 19, 1990. This application May 19, 1993, Ser. No. 63,987
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—11.2 **15 Claims**



1. Network interface for a network having at least two computers with at least two bus lines, comprising comparing means operating as a difference receiver which inputs are coupled to the bus lines; monitoring means for data integrity and including continuously counting means for counting time intervals and having a resetting input, said counting means being reset if received information is found usable after appropriate evaluation by said monitoring means, said counting means detecting the operativeness of the bus lines if its count is below a predetermined counting state and issuing an error signal indicative of a fault in a bus line if said counting state is reached; and emergency means which are activated in dependence on said error signal from the monitoring means, said emergency means including switching means which, for restoring a transmission, in a first step are controlled so that they apply a predetermined emergency potential at a first one of the inputs of the comparing means and, after failing of error detection by the monitoring means, the information receipt takes place through an input conductor which is not subjected to said predetermined emergency potential, and that during a further error detection by the monitoring means the switching means of the emergency means in a second step are controlled so that they supply a predetermined emergency potential to a second one of the inputs of the comparing means and the connection of the first input with the predetermined emergency potential is interrupted and after failing of error detection by the monitoring means the information receipt takes place through the first input conductor which is not subjected to said predetermined emergency potential.

5,357,519

DIAGNOSTIC SYSTEM

Stephen R. Martin, San Jose, and Randall O. Mooney, Jr., Boulder Creek, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

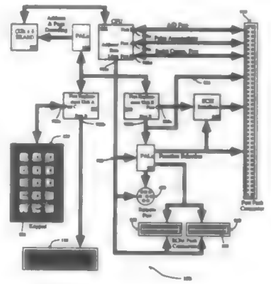
Filed Oct. 3, 1991, Ser. No. 771,127
Int. Cl.[5] G01R *31/28;* **G06F** *11/00*
U.S. Cl. 371—15.1 **3 Claims**

1. An apparatus for testing computer systems comprising:

a. a base unit, the base unit comprising a central processing unit for executing instructions, issuing commands, and receiving data from a first computer system;

b. a first connecting module which contains at least one connector for coupling to the first computer system, said connector being coupled to an existing connector on the first computer system, said first connecting module being interchangeable with a second module for interfacing with a second computer system, said at least one connector comprising a disk drive connector; and

c. a first nonvolatile memory module coupled to the base unit, the first nonvolatile memory module comprising a first set of tests for the first computer system, the first nonvolatile memory module being interchangeable with a second nonvolatile memory module comprising a second set of tests for a second computer system, said first set of



Diagnostic Tool Bus Unit

tests including an initialization circuit causing said first computer system to initially attempt to execute an internally-stored set of diagnostic routines, and if said initialization circuit is unsuccessful at causing said first computer system to attempt to execute said internally-stored set of diagnostic routines, then said initialization circuit causing said apparatus to emulate a disk drive through said disk drive connector and causing said first computer system to perform a bootstrap initialization of said first computer system from said apparatus by loading a set of externally-stored diagnostic routines from said first nonvolatile memory module.

5,357,520

METHOD AND APPARATUS FOR PRECOMPENSATION VALUE DETERMINATION IN A PRML DATA CHANNEL

Patrick C. Arnett, Morgan Hill, Calif.; Jonathan D. Coker; Richard L. Galbraith, both of Rochester, Minn.; Yaw-Shing Tang, Saratoga, and Roger W. Wood, Gilroy, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 31, 1992, Ser. No. 830,032
Int. Cl.[5] G11C *29/00*
U.S. Cl. 371—21.2 **6 Claims**

1. Apparatus for determining an adjustable write precompensation value in a partial-response maximum-likelihood (PRML) data channel including an adjustable precompensation function for modulating the write data waveform, said apparatus comprising:

means for writing a predetermined test pattern;

means for reading back said written predetermined test pattern;

means for detecting an error in sample values in said read back predetermined test pattern;

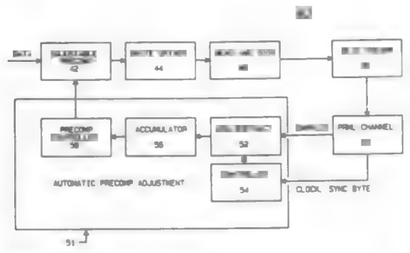
means for adjusting said adjustable write precompensation value responsive to said means for detecting an error;

said error detecting means and said adjustable write precom-

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pensation value adjusting means being included within said PRML data channel; and

wherein said predetermined test pattern has a selected dominant frequency component and said predetermined test pattern is insensitive to PRML channel misequalization; and



wherein said predetermined test pattern includes a first component part and a second component part, said first component part providing a reference pattern for gain and timing control and said second component part being used by said error detecting means; and

wherein said first component part of said predetermined test pattern is written as repeating 2-length magnets.

5,357,521

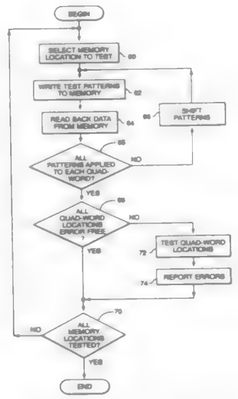
ADDRESS SENSITIVE MEMORY TESTING

Chingshun Cheng, Austin, and Paul J. Roy, Round Rock, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 869,088, Apr. 19, 1992, which is a continuation of Ser. No. 479,776, Feb. 14, 1990, abandoned. This application Mar. 10, 1993, Ser. No. 33,066

Int. Cl.[5] G11C *29/00*

U.S. Cl. 371—21.3 **5 Claims**



1. A method of diagnosing a memory location in a computer memory comprising the steps of:

segregating an address for the memory location into a plurality of portions;

writing a test data pattern to the memory location;

determining, based on an error in said memory location, an address sensitive check word corresponding to the test data pattern by:

determining parity for each of the plurality of portions;

selecting particular error correction code check bytes, for each of the plurality of portions based upon said parity; and

combining the particular error correction code check bytes to create the address sensitive check word;

writing the address sensitive check word to an error correction location associated with the memory location;

reading a first value from the memory location and a second value from the error correction location;

comparing the test data pattern to the first value, and comparing the address sensitive check word to the second value, to identify a type of error for said memory location.

5,357,522

TEST CIRCUIT OF INPUT/OUTPUT MACROCELL OF ERASABLE AND PROGRAMMABLE LOGIC DEVICE

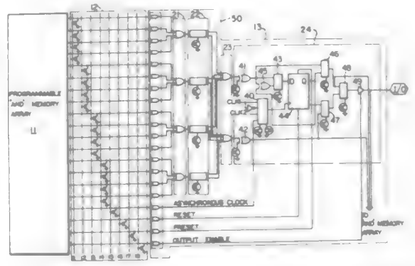
Chang W. Ha, Geumjeong-ku, Rep. of Korea, assignor to Hyundai Electronics Co., Ltd., Kyoungkido, Rep. of Korea

Filed Sep. 25, 1991, Ser. No. 766,427

Claims priority, application Rep. of Korea, Sep. 28, 1990, 1990-15563

Int. Cl.[5] H03K *19/20*

U.S. Cl. 371—22.2 **1 Claim**



1. In an erasable and programmable logic device including an "AND" memory array having a plurality of output bit lines for generating product terms and a plurality of output word lines connected to user input lines, and an Input/Output macrocell having a first plurality of inputs to which the generated product terms are applied, groups of the first plurality of inputs being OR'ed together by a logic OR'ing means in the Input-/Output macrocell, a test circuit for testing the Input/Output macrocell, comprising:

a plurality of extra conductor lines connected to external input terminal means;

a first plurality of EPROM transistors, each having a drain thereof connected to an output bit line which generates a product term constituting one of a group of inputs to be OR'ed together in the Input/Output macrocell, and each having a gate thereof connected to one common extra conductor line; and

a second plurality of EPROM transistors, each having a drain thereof connected to an output bit line which generates a product term not to be OR'ed, but to be used as separate control signals in the Input/Output macrocell, and each having a gate thereof connected to a separate extra conductor line.

5,357,523

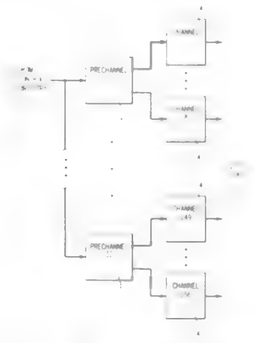
MEMORY TESTING SYSTEM WITH ALGORITHMIC TEST DATA GENERATION

Richard Bogholtz, Jr., Mahopac; Louis J. Bosch, Hopewell Junction; Kevin C. Gower, Wappingers Falls, and Thomas Mitchell, Cornwall, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1991, Ser. No. 810,007

Int. Cl.[5] G01R *31/28;* **G06F** *11/00*

U.S. Cl. 371—27 **7 Claims**



1. A system for providing test data for testing a semiconductor memory having a plurality of input pins, comprising: control means for supplying control signals; at least one prechannel for developing test data in a predetermined manner responsive to said control signals, each of said at least one prechannel comprising:

start means for providing a seed data pattern in response to one of said control signals; configuration means for providing a desired configuration;

generation means for successively developing generated data patterns, in response to another one of said control signals, beginning from said seed data pattern, such that every distinct data pattern of said seed data pattern is successively developed in a forward sequence without repetition of any distinct data pattern and, subsequently, said distinct data patterns are successively developed in a reverse sequence

relative to said forward sequence; and

selection means for successively selecting data from said seed data pattern and each of said generated data patterns, according to said desired configuration, for developing said test data; and

a plurality of channels, each channel receiving test data from a corresponding one of said at least one prechannel, and each channel applying said test data to a corresponding one of said plurality of input pins;

wherein each of said at least one prechannel provides test data to at least two corresponding channels such that each of said at least one prechannel is in close proximity to the channels corresponding thereto.

5,357,524

APPARATUS FOR CONVERTING A DIGITAL SIGNAL

Yoshihide Shimpuku, Kanagawa; Hiroyuki Ino, Tokyo, and Yasuyuki Chaki, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 23, 1993, Ser. No. 21,237

Claims priority, application Japan, Feb. 24, 1992, 4-036696

Int. Cl.[5] G06F *11/00*

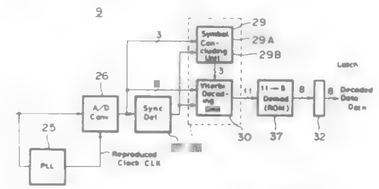
U.S. Cl. 371—30 **7 Claims**

7. A reproduced data demodulating apparatus in which a synchronization of digital reproduced data is detected and said reproduced data is demodulated to obtain decoded data, said apparatus comprising:

analog to digital converting means for converting the reproduced data into an 11-bit digital signal;

reference value memory means in which there are stored 3-bit waveform values of code patterns selected as references;

subtracting means for obtaining differences between said waveform values of code patterns stored as references and final three bits of converted reproduced data from said analog to digital converting means;



pattern distance calculating means for calculating a distance between said differences output from said subtracting means and a respective waveform value of each code pattern;

minimum value selecting means for selecting a minimum calculated distance from said pattern distance calculating means;

decoding means for decoding said reproduced data on the basis of a maximum likelihood Viterbi algorithm into an 11-bit code; and

demodulating means for demodulating said 11-bit code decoded by said decoding means into 8-bit data.

5,357,525

MULTIPLEX TRANSMISSION SYSTEM

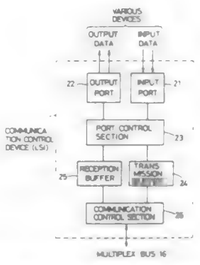
Hiroo Moriue; Yutaka Matsuda; Kyosuke Hashimoto; Kiyoshi Inoue, all of Hiratsuka; Seiji Hirano; Osamu Michihira, both of Hiroshima; Yoshikazu Nobutoki, Higashihiroshima, and Hiroaki Sakamoto, Fukuyama, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo and Mazda Motor Corp., Hiroshima, both of Japan

Filed Mar. 31, 1992, Ser. No. 860,897

Claims priority, application Japan, Apr. 2, 1991, 3-070029; Aug. 23, 1991, 3-211761

Int. Cl.[5] G08C *25/02;* **H04L** *1/18*

U.S. Cl. 371—32 **5 Claims**



1. A multiplex transmission system having a plurality of multiplex nodes interconnected by a common multiplex transmission line for transmitting a frame of data among the multiplex nodes through the multiplex transmission line, at least one multiplex node comprising:

transmission memory means, including a transmission buffer memory, for storing data to be inputted;

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communication control means for transmitting/retransmitting said data stored in the transmission memory means to the multiplex transmission line; and

port control means for checking a retransmission of data by the communication control means when a change of the data to be inputted is detected, and being responsive to a check result from said port control means for controlling said transmission memory means to stop storing said data having said change until a retransmission of the data is ended.

5,357,526

METHOD AND APPARATUS FOR CORRECTING ERRORS OF COMPRESSED DATA

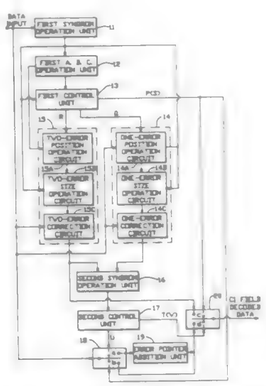
Gook H. Jang, and Tae S. Yang, both of Seoul, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 28, 1992, Ser. No. 997,778

Claims priority, application Rep. of Korea, Dec. 27, 1991, 24541/1991

Int. Cl.[5] G06F *11/10*

U.S. Cl. 371—37.4 10 Claims



1. An apparatus for correcting errors of compressed data, comprising:

third deinterleave means for receiving compressed digital data and converting burst errors of the compressed digital data into random errors;

C_1 field decoder means for receiving compressed-data from first deinterleave means and decoding data columns of the compressed data in a horizontal direction;

second deinterleave means for converting burst errors of the C_1 field-decoded compressed data into random errors;

C_2 field decoder means for receiving the C_1 field-decoded compressed data from the second deinterleave means and decoding data rows of the compressed data in a vertical direction;

the first deinterleave means for converting burst errors of the C_2 field-decoded compressed data into random errors; and

correction means for receiving the output data from the first deinterleave means, carrying out a block substitution for a correction of each pointer of the data, based on the number of pointers of the C_1 field-decoded compressed data, and outputting corrected data.

5,357,527

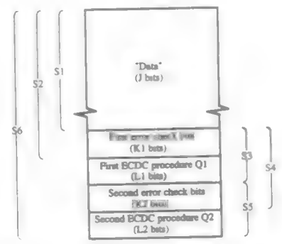
VALIDATION OF RAM-RESIDENT SOFTWARE PROGRAMS

Thomas M. Coates, Portola Valley, and John F. Schipper, Palo Alto, both of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Dec. 31, 1992, Ser. No. 999,160

Int. Cl.[5] G06F *11/10*

U.S. Cl. 371—37.4 10 Claims



1. A method for transmitting and verifying the accuracy of a software program transmitted to a recipient thereof, the method comprising the steps of:

receiving and storing a software program, expressed as an ordered set of J bits, that is to be transmitted;

expressing a selected first forward error correction, error coding, detection and correction (ECDC) procedure as an ordered set of L1 bits plus K1 associated error check bits, and applying this first ECDC procedure and associated error check bits to the set of J bits representing the software program;

expressing a selected second ECDC procedure as an ordered set of L2 bits plus K2 associated error check bits, and applying this second ECDC procedure and associated error check bits to the set of L1+K1 bits representing the first ECDC procedure;

transmitting the J bits representing the software program, the L1+K1 bits representing the first ECDC procedure, and the L2+K2 bits representing the second ECDC procedure; and

applying the second ECDC procedure to the ordered set of L1+K1 bits to verify the validity of, or correct, these L1+K1 bits; and

applying the first ECDC procedure to the ordered set of J bits to verify the validity of, or correct, these J bits.

5,357,528

DEPTH-2 THRESHOLD LOGIC CIRCUITS FOR LOGIC AND ARITHMETIC FUNCTIONS

Noga Alon, Tel Aviv, Israel, and Jehoshua Bruck, Palo Alto, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 25, 1991, Ser. No. 720,953

Int. Cl.[5] G06F *11/00*

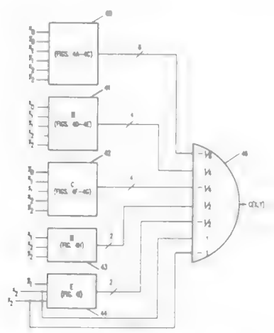
U.S. Cl. 371—37.9 4 Claims

1. A threshold logic circuit for combining two n-bit words $X=x_{n-1} \ldots x_0$ and $Y=y_{n-1} \ldots y_0$ according to a logic or arithmetic function, comprising:

in a first gating level, a plurality of first threshold logic gate means, respective groups of the first threshold logic gate means corresponding to respective delta polynomials, each threshold logic gate means in each group responsive to a respective combination of bits of X and Y for producing an output indicative of a value of a respective term in a delta polynomial function, each delta polynomial function producing a large absolute value for a single set of variable values and relatively small absolute values for all other sets of variable values; and

in a second gating level, a second threshold logic gate means

connected to the plurality of first logic gate means for generating an output indicative of the sign function of a



polynomial including the weighted sum of all of the delta polynomials.

5,357,529

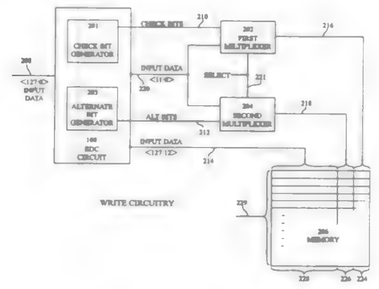
ERROR DETECTING AND CORRECTING APPARATUS AND METHOD WITH TRANSPARENT TEST MODE

David A. Tatosian, Stow; Donald W. Smelser, Bolton, and Paul M. Goodwin, Littleton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 24, 1992, Ser. No. 872,977

Int. Cl.[5] H03M *13/00*

U.S. Cl. 371—40.1 13 Claims



9. An apparatus for testing computer memory, comprising:

a check bit generator to generate a set of check bits based upon a multi-bit data word according to a predetermined routine, the multi-bit data word including a first group of bits and a second group of bits, wherein the second group of bits is equal in number to the check bits;

a bus to provide the first group of bits to first storage bits in the memory;

a first multiplexer operable in a normal mode to write the second group of bits to second storage bits of the memory, and in a swap mode to write a set of alternate bits to the second storage bits;

a second multiplexer operable in a normal mode during the normal mode of the first multiplexer to write the set of check bits to third storage bits of the memory, and in a swap mode during the swap mode of the first multiplexer to write the second group of bits to the third storage bits.

5,357,530

DATA OUTPUT CONTROL CIRCUIT

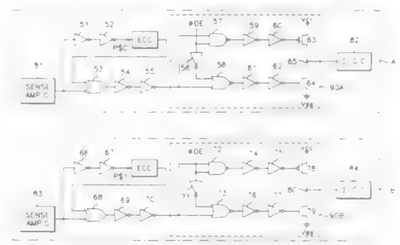
Hyong-Gon Lee, and Sung-Hee Cho, both of Suwon, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 25, 1992, Ser. No. 934,249

Claims priority, application Rep. of Korea, Oct. 28, 1991, 1991-18997

Int. Cl.[5] G06F *11/10*

U.S. Cl. 371—40.1 19 Claims



13. A semiconductor memory device comprising:

an error correcting code circuit for providing corrected data by detecting and correcting a memory cell defected by an undesired data transition; and

a data output control circuit for controlling output of said corrected data from an output buffer to an output terminal, said data output control circuit comprising:

signal detector means coupled to receive an external buffered signal, for detecting a transition of said external buffered signal indicative of said undesired data transition, said signal detector means providing first and second detected signals indicative of the transition of said external buffered signal, said signal detector means comprising:

first delay means for delaying said external buffered signal for a first predetermined delay period to provide a first delayed signal;

first NAND gate means for logically combining said external buffered signal and said first delayed signal to provide a first intermediate signal;

first inverter means for inverting said first intermediate signal to provide a first inverted signal indicative of said first detected signal; and

NOR gate means for logically combining said external buffered signal and said first delayed signal to provide said second detected signal;

first controller means coupled to receive said first and second detected signals, for selecting said output buffer from a plurality of output buffers by providing a control signal indicative of a selected output buffer, said first controller means comprising:

second NAND gate means coupled to receive said first and second detected signals, for logically combining said first and second detected signals to provide a second intermediate signal;

first converter means for providing a triggered signal in response to said second intermediate signal; and

second converter means for providing said control signal in response to said triggered signal; and

second controller means coupled to receive said control signal, for providing a driving signal in dependence upon said control signal to drive the selected output buffer, said second controller means comprising:

second delay means for delaying said control signal for a second predetermined delay period to provide a second delayed signal;

third NAND gate means for logically combining said

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control signal and said second delayed signal to provide a third intermediate signal;

second inverter means for inverting said third intermediate signal to provide a second inverted signal; and

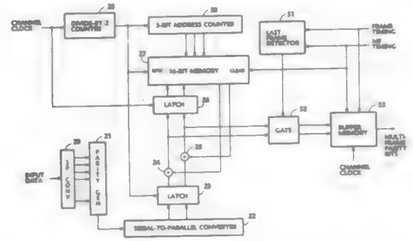
fourth NAND gate means for logically combining said second inverted signal and an output enable signal to provide said driving signal during an enabling period.

5,357,531

MULTIFRAME CHANNEL PARITY COUNTER

Hiroyuki Tanaka, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 634,074, Dec. 26, 1990, abandoned.
This application Jan. 21, 1994, Ser. No. 185,312
Claims priority, application Japan, Dec. 27, 1989, 1-339116
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—49.1 7 Claims



1. A transmitter comprising:

parity bit generator means for receiving a multiframe signal comprising a plurality of frames each having a plurality of channels each containing plural data bits, and deriving a parity bit from each of the channels of the received multiframe signal;

memory means for temporarily storing a summed parity bit therein;

modulo-2 adder means for receiving a parity bit from the parity bit generator means and a parity bit from said memory means to produce a summed parity bit, and rewriting the parity bit in said memory means with the summed parity bit;

means for detecting a last frame of said multiframe signal; and

multiplexer means for multiplexing a summed parity bit from said modulo-2 adder means with a subsequent multiframe signal in response to the detection of said last frame.

5,357,532

WAVELENGTH VARIABLE LASER DEVICE

Shinichiro Aoshima, and Haruyasu Ito, both of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Feb. 9, 1993, Ser. No. 15,436
Claims priority, application Japan, Feb. 10, 1992, 4-023913
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—20 40 Claims

1. A wavelength tunable laser device comprising:

a main resonator for resonating a laser beam, wherein said main resonator includes:

at least two main resonator mirrors,

a laser medium provided in a manner so as to be between said main resonator mirrors, and

an optical input/output port for outputting a laser beam resonated by said main resonator mirrors and the laser medium from the inside of said main resonator to the outside thereof, and for inputting said laser beam from the outside of said main resonator to the inside thereof;

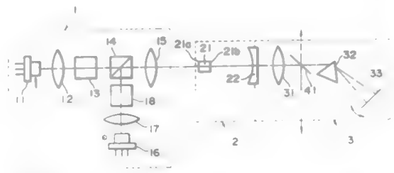
a sub-resonator for selecting a desired wavelength of the laser beam output from said main resonator and for returning the laser beam of the desired wavelength back to said laser medium, wherein said sub-resonator includes:

wavelength selection means for wavelength-selecting a laser beam output from said optical input/output port,

optical feedback means for allowing the wavelength-selected laser beam to be fed back to said main resonator through said optical input/output port, and

at least one sub-resonator mirror resonating with said optical feedback means;

means for optically coupling said sub-resonator to said main



resonator, said means collimating the laser beam output from said optical input/output port of said main resonator so as to substantially increase the amount of laser beam returned back from said sub-resonator to said main resonator;

an optical output port for taking out the laser beam to the outside of said wavelength tunable laser device,

wherein said optical output port is provided in any one of an excitation means, said mean resonator and said sub-resonator; and

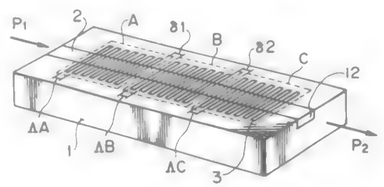
said excitation means excites said laser medium.

5,357,533

FREQUENCY DOUBLER AND LASER SOURCE

Kiminori Mizuuchi, Neyagawa; Kazuhisa Yamamoto, Settsu; Makoto Kato, Nishinomiya; Hisanao Sato, Ibaraki, and Hiroaki Yamamoto, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 23, 1993, Ser. No. 35,957
Claims priority, application Japan, Mar. 27, 1992, 4-070726
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—22 34 Claims



1. A frequency doubler comprising:

(a) a nonlinear optical crystal substrate through which light having a phase is transmitted in a light transmitting direction; and

(b) a periodic domain inverted layer in said nonlinear optical crystal substrate, said periodic domain inverted layer comprising:

(i) at least two zones in which a domain of said periodic domain inverted layer is periodically inverted at different periods of domain inversion in said light transmitting direction; and

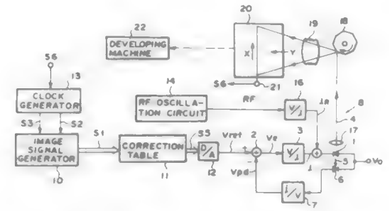
(ii) means for modulating the phase of said light, provided between adjacent ones of said zones where the periods of domain inversion are different from one another.

5,357,534

LIGHT BEAM SCANNING RECORDING APPARATUS

Hiroaki Yasuda, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 9, 1993, Ser. No. 87,893
Claims priority, application Japan, Jul. 28, 1992, 4-201276
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—24 2 Claims



1. A light beam scanning recording apparatus, in which a recording material is scanned with a laser beam having been produced by a single-longitudinal mode semiconductor laser and having been directly modulated in accordance with an image signal, and a continuous tone image is thereby recorded on the recording material,

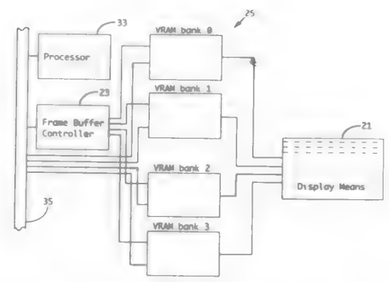
wherein the improvement comprises means for superimposing a radio-frequency current upon a drive current of said semiconductor laser; and for setting an amplitude of said radio-frequency current at a value which causes said semiconductor laser to oscillate in a multiple longitudinal mode only when said drive current of said semiconductor laser falls within a range; wherein said range corresponds to an optical output power yielding a recorded optical density of not higher than 2.0.

5,357,535

SEMICONDUCTOR LASER INCLUDING AN ALUMINUM-RICH ALGAAS ETCH STOPPING LAYER

Akihiro Shima; Takeshi Miura; Tomoko Kadowaki, and Norio Hayafuji, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 6, 1993, Ser. No. 1,547
Claims priority, application Japan, Jan. 14, 1992, 4-026093
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—46 3 Claims



1. A semiconductor laser device having a stripe ridge extending in a resonator length direction comprising:

a semiconductor substrate;

a first conductivity type lower cladding layer disposed on said semiconductor substrate;

an active layer disposed on said lower cladding layer;

a second conductivity type first upper cladding layer comprising $Al_xGa_{1-x}As$, where x is from 0.38 to 0.6, disposed on said active layer;

an etching stopper layer comprising $Al_yGa_{1-y}AS$, where y is more than 0.6, disposed on said first upper cladding layer; and

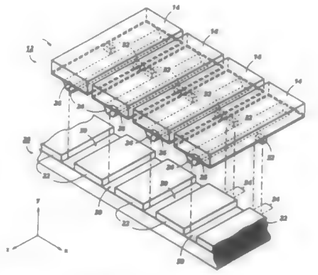
a second conductivity type second upper cladding layer comprising $Al_zGa_{1-z}As$, where z is from 0.38 to 0.6, disposed on said etching stopper layer wherein said stripe ridge is produced by etching portions of said second upper cladding layer.

5,357,536

METHOD AND APPARATUS FOR THE POSITIONING OF LASER DIODES

John R. Andrews, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 7, 1993, Ser. No. 57,797
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—50 26 Claims



1. A multiple diode laser array comprising:

a heatsink having a generally planar surface;

a plurality of laser diodes, each of said plurality of laser diodes including a wafer having a series of epitaxially grown layers deposited upon a surface thereof to form an emitter, and a ridge-shaped waveguide defining the position of the emitter; and

alignment means, disposed at preset intervals along the planar surface of said heatsink and adapted to associate with the waveguides of said plurality of laser diodes, for controlling the spacing of said laser diodes with respect to one another to assure accurate spacing of the emitters therein.

5,357,537

RING LASER

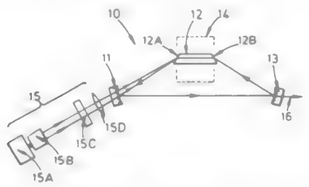
Gareth T. Maker, Glasgow, Scotland, assignor to University of Strathclyde, Glasgow, Scotland

Filed Sep. 9, 1993, Ser. No. 119,350
Claims priority, application United Kingdom, Sep. 9, 1992, 9219095.8
Int. Cl.[5] H01S *3/083*
U.S. Cl. 372—94 6 Claims

1. A ring laser comprises a laser cavity formed by three elements which are mutually spaced apart, the first element being a concave mirror which is substantially wholly reflective to the radiation in the cavity but transmissive to pump wavelength radiation, the second element being a rod of a suitable gain medium, the ends of the rod being mutually inclined and each end of the rod being inclined to the rod axis essentially at Brewster's angle, and the third element being a concave mirror adapted to provide an output beam from the cavity, the arrangement being such that one Brewster angled face of the rod is also inclined at a wedge angle to the longitudinal axis of the

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rod to cause the cavity to be non-planar, and the gain medium is selected to exhibit the Faraday effect and is enveloped in a



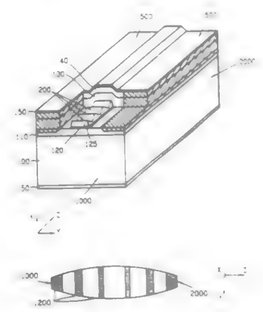
constant strength magnetic field aligned with the axis of the rod.

5,357,538

DISTRIBUTED FEEDBACK LASER STRUCTURE

Anne Talneau, Paris, and Josette Charil, Meudon, both of France, assignors to France Telecom, Paris, France

Filed Apr. 21, 1993, Ser. No. 51,057
Claims priority, application France, Apr. 24, 1992, 92 05076
Int. Cl.[5] H01S *3/08, 3/19*
U.S. Cl. 372—96 **15 Claims**



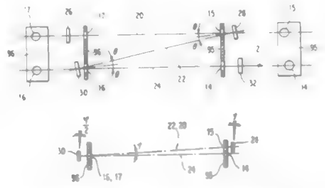
1. A distributed feedback semiconductor laser structure of the type having a guidance zone providing lateral guidance by refractive index variation, including a phase-shifting diffraction grating extending parallel to a longitudinal Z axis between two end regions along a light propagation direction, for obtaining coupling within the structure between light propagating in one direction and light propagating in the opposite direction, said diffraction grating including patterns distributed along the structure and generally parallel to a Y axis extending transversely to said light propagation direction wherein the geometrical characteristics of the patterns of the diffraction grating are chosen so as to implement coupling of varying amplitude along the longitudinal Z axis of the structure between said end regions, and wherein a width of said guidance zone measured parallel to said Y axis varies when considered along the longitudinal Z axis such that a phase shift induced by said variation in width compensates for a phase shift induced by the variation in the coupling amplitude.

5,357,539

LASER OSCILLATING APPARATUS WITH MIRROR ANGLE ADJUSTMENT

Akihiro Otani; Satoshi Nishida; Masaki Kuzumoto, and Tetuya Endo, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 1, 1992, Ser. No. 955,060
Claims priority, application Japan, Oct. 1, 1991, 3-253717
Int. Cl.[5] H01S *3/086, 3/04;* **G02B** *5/10*
U.S. Cl. 372—107 **12 Claims**



9. A laser oscillating apparatus for outputting a laser beam by exciting a laser medium within a resonator, comprising:

a plurality of resonator mirrors comprising at least a partial reflector and first and second total reflectors for determining resonator light paths and disposed so that said resonator light paths have a Z-shaped turning pattern with said first and second reflectors being oppositely disposed along said pattern;

a plurality of apertures, comprising at least a first and second aperture, disposed in an aperture member opposite a corresponding one of said reflectors for selecting a beam mode; and

wherein beam mode control factors of said first and second apertures, which are respectively located along said Z-shaped turning pattern and immediately before said first and second total reflectors positioned at both ends of a slanting light path in said Z-shaped turning pattern, are made smaller than the beam mode control factors of others of said plurality of apertures.

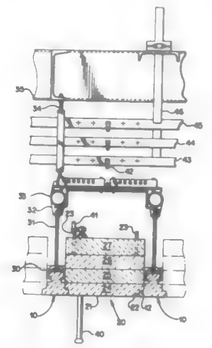
5,357,540

HIGH TEMPERATURE INDUSTRIAL FURNACE ROOF STRUCTURE

Frank P. Merkle, Hanover; Larry L. Horn, Galena, and Barry R. James, Apple River, all of Ill., assignors to Merkle Engineers Inc., Galena, Ill.

Filed Aug. 28, 1992, Ser. No. 937,607
Int. Cl.[5] F27D *1/02*
U.S. Cl. 373—73 **20 Claims**

1. A refractory hanger brick for high temperature industrial furnace roof construction, said hanger brick comprising: a lower face portion having a generally flat rectangular lower face with its length at least about 2½ times its width, said lower face portion having an outwardly extending filler brick support ledge for said length of said hanger brick on opposite sides to provide support for adjacent filler bricks, an upper narrower hanger portion of said hanger brick having a hanger recess to provide bearing for a hanger suspending said hanger brick and extending on each side for said length of said hanger brick, a plurality of spaced generally laterally extending lugs above each said hanger recess to retain a hanger in fixed position and to provide a plurality of hanger positions along said length of said hanger brick, one end face of said hanger brick having an extending end ridge generally parallel to said lower face, and



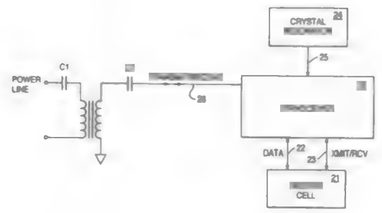
the opposite end face of said hanger brick having an end recess sized to mate with an end ridge of an adjacent hanger brick.

5,357,541

TRANSCEIVER PROVIDING SELECTABLE FREQUENCIES AND SPREADING SEQUENCES

Brooks E. Cowart, Mountain View, Calif., assignor to Echelon Corporation, Palo Alto, Calif.

Continuation of Ser. No. 830,121, Jan. 30, 1992, Pat. No. 5,189,683, which is a continuation of Ser. No. 684,038, Apr. 11, 1991, Pat. No. 5,146,471, which is a continuation-in-part of Ser. No. 328,058, Mar. 23, 1989, Pat. No. 4,979,183. This application Apr. 29, 1993, Ser. No. 20,589
Int. Cl.[5] H04K *1/10*
U.S. Cl. 375—1 **1 Claim**



1. An integrated circuit for transmitting and receiving digital information across various communications media comprising:

a generator for generating a reference frequency;

a transmitter for modulating a predetermined spread spectrum signal with a digital bit stream using binary phase shift keying for transmission to another integrated circuit under control of said reference frequency;

a receiver for acquiring and decoding with a local predetermined sequence, a previously transmitted spread spectrum signal modulated using binary phase shift keying to recover said digital bit stream; and

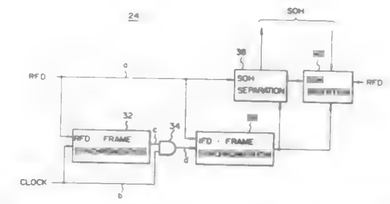
wherein said predetermined spread spectrum signal has a fixed relationship to said local predetermined sequence and each of said predetermined spread spectrum signal and said local predetermined sequence has a fixed relationship to said reference frequency.

5,357,542

REPEATER STATION WHEREIN INPUT FRAME DATA ARE ACCESSIBLE

Eiji Suzaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 854,681, Mar. 20, 1992, abandoned. This application Dec. 8, 1993, Ser. No. 162,903
Claims priority, application Japan, Mar. 20, 1991, 3-56510
Int. Cl.[5] H04B *7/17;* **H04L** *25/52*
U.S. Cl. 375—3 **5 Claims**



1. A repeater station for relaying a series of first information signals constructed by inserting first auxiliary signals in accordance with a first frame form into a series of second information signals including second auxiliary signals conforming to a second frame form, comprising:

first frame synchronization means to which the first information signals and clock signals ticking time of the first information signals are input, for performing frame synchronization of the first information signals with regard to the first frame form by operating in accordance with the clock signals, to thereby output first timing signals indicating the timing of the first auxiliary signals;

gate means to which the clock signals and the first timing signals are input, for inhibiting the clock signals during the timing of the first auxiliary signals and for allowing the clock signals to pass through during other timings; and

second frame synchronization means, to which the first information signals and the clock signals which pass through the gate means are input, for performing frame synchronization of the first information signals with regard to the second frame form by operating in accordance with the clock signals passing through the gate means, to thereby output second timing signals indicating the timing of the second auxiliary signals included in the first information signals.

5,357,543

DATA COMMUNICATION EQUIPMENT

Shinichi Hinokimoto, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 12, 1992, Ser. No. 850,022
Claims priority, application Japan, Mar. 15, 1991, 3-050056
Int. Cl.[5] H04B *3/46*
U.S. Cl. 375—10 **15 Claims**

1. A data communication equipment for transmitting a data signal containing a series of block data including two successive block data and a time space having no signal, occurring between the two successive block data, the time space being in excess of an allowed time period of a no signal condition and being subject to insertion therein of a different signal having at least the potential of altering the block data of the transmitted data signal and introducing errors therein, said data communication equipment comprising:

discrimination means for discriminating the existence of a time space in the series of block data and producing a corresponding discrimination output;

means for generating a line hold signal; and

transmission means, responsive to the discrimination output, for inserting and transmitting the line holding signal during the time space discriminated by said discrimination

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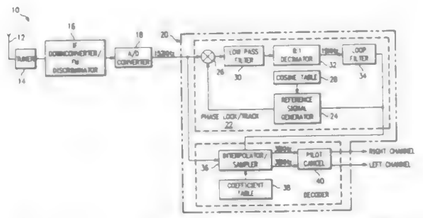
means in the series of block data, the line holding signal filling the no signal time space and preventing the insertion therein of a different signal, the line holding signal not having the potential of altering the block data of the transmitted data signal and thus not introducing errors therein.

5,357,544

DEVICES, SYSTEMS, AND METHODS FOR COMPOSITE SIGNAL DECODING

Thomas G. Horner, Rockwall, Tex.; Robert E. Christensen, Medford, Mass., and Alireza Lovrich, Houston, Tex., assignors to Texas Instruments, Incorporated, Dallas, Tex.

Filed Jul. 21, 1992, Ser. No. 918,189
Int. Cl.[5] H04L *27/06*
U.S. Cl. 375—94 20 Claims



10. Circuitry for decoding a digitized composite signal including a pilot signal at a pilot frequency and first and second information modulated with a subcarrier at a multiple of the pilot frequency, said digitized composite signal sampled at a sampling frequency, comprising:

mixing circuitry operable to mix said digitized composite signal with a reference signal from a reference signal generator to provide a mixed down composite signal including a mixed down pilot signal;

a filter for extracting said mixed down pilot signal, the amplitude and sign of the mixed down pilot signal proportional to the phase difference between the pilot signal and the reference signal;

feedback circuitry coupling said mixed down pilot signal from said filter to said reference signal generator, said reference signal generator operable to adjust the phase of the reference signal as a function of the amplitude and sign of the mixed down pilot signal such that the reference signal is approximately ninety degrees out of phase with the received pilot signal;

a decoder operable to identify the samples of the digitized composite signal taken closest to the start of each period of said pilot signal by identifying those samples when the amplitude and sign of said mixed down pilot signal is minimized; and

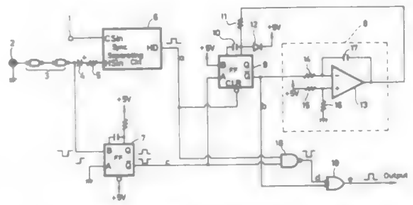
said decoder operable to select samples of the digitized composite signal taken at points in time which are nearest when the sine of the phase angle of the subcarrier is plus and minus one, said points being determined based on said sampling frequency and said samples of the composite signals taken closest to the start of each period of said pilot signal.

5,357,545

SYNCHRONIZING SIGNAL DETECTING CIRCUIT

Tomohisa Hirano, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 2, 1992, Ser. No. 892,283
Claims priority, application Japan, Jun. 7, 1991, 3-163675
Int. Cl.[5] H04L *7/04;* H04N *5/06;* H03L *7/00*
U.S. Cl. 375—111 6 Claims



1. A synchronizing signal detecting circuit comprising:

(a) synchronizing detecting means for detecting a synchronizing signal from an input signal and detecting a detected pulse;

(b) pulse width control means for controlling a width of the detected pulse output from said synchronizing detecting means so that the width of said detected pulse corresponds to a frequency of detected pulses in the synchronizing signal; and

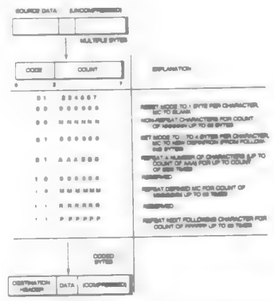
(c) pulse width restricting means connected to an output of said pulse width control means for restricting the width of said detected pulse controlled by said pulse width control means to a predetermined width.

5,357,546

MULTIMODE AND MULTIPLE CHARACTER STRING RUN LENGTH ENCODING METHOD AND APPARATUS

Teresa A. Meriwether, Cary, N.C., and Bhaskar Sinha, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 31, 1992, Ser. No. 923,293
Int. Cl.[5] H04B *1/66*
U.S. Cl. 375—122 10 Claims



1. A method of Run Length Encoding digital data for compressed transmission to a receiver for decompression comprising steps at a transmitter of:

generating a first sequence control byte (SCB) whenever a change in character byte encoding from 1 to n bytes per character is desired, said SCB having at least a first and a second control data field encoded so that said first field has the digital value 01 and said second field has the digital value 000000, said values indicating to a receiver that a change in character byte encoding mode is to be carried out on characters received following said SCB; and

encoding a second control byte to follow said SCB, said second control byte indicating to said receiver the number of bytes per character to be used in decompressing received data at said receiver; and

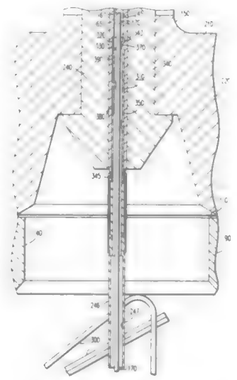
encoding a third control field to follow said second control byte, said third control field indicating to said receiver the identity of the master repeat character.

5,357,547

VIBRATION DAMPENER FOR DAMPENING VIBRATION OF A TUBULAR MEMBER

Franklin D. Obermeyer; Willis B. Middlebrooks, both of Pensacola, Fla., and Edmund E. DeMario, Columbia, S.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 18, 1992, Ser. No. 853,556
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—254 4 Claims



1. In a nuclear reactor pressure vessel having a plurality of fuel assemblies disposed therein and having liquid coolant flowing through the pressure vessel, a vibration dampener for dampening flow-induced vibration of an instrumentation tube adapted to extend into an associated one of the fuel assemblies and adapted to slidably receive a flux measuring instrument therein for measuring the flux in the fuel assembly, the instrumentation tube defining a longitudinal axis therethrough and sized to be received in a tubular conduit capable of guiding the instrumentation tube into the fuel assembly, the tubular conduit having an inside surface for surrounding the instrumentation tube, comprising:

(a) a sleeve coaxially alignable with the instrumentation tube and connectable to the inside surface of the conduit and sized to be interposed between the conduit and the instrumentation tube, said sleeve defining a longitudinal axis therethrough, said sleeve having an interior surface for surrounding the instrumentation tube and an exterior surface for matingly engaging the inside surface of the conduit, the interior surface and the exterior surface of said sleeve defining an annular wall therebetween;

(b) a pair of coaxially-aligned inwardly-directed dimples integrally attached to the interior surface of said sleeve for supporting the instrumentation tube; and

(c) an elongate inwardly-directed flexible spring member disposed radially opposite said dimples and formed from a pair of parallel slots cut through the wall of said sleeve and interposed between the slots for biasing the instrumentation tube into abutting engagement with said dimples, said spring member being disposed at an angle of approximately 180° with respect to said dimples, said spring member including:

(i) a first end portion and a second end portion thereof integrally attached to the wall; and

(ii) an inwardly-directed raised nodule formed therefrom for contacting the instrumentation tube;

whereby as flow-induced vibration causes the instrumentation tube to radially outwardly translate out of coaxial alignment with said sleeve to further engage said spring member and disengage said dimples, said spring member radially outwardly flexes a predetermined distance after which the spring member radially inwardly flexes to bias the instrumentation tube into abutting relationship with said dimples so that the instrumentation tube is brought into coaxial alignment with said sleeve; and

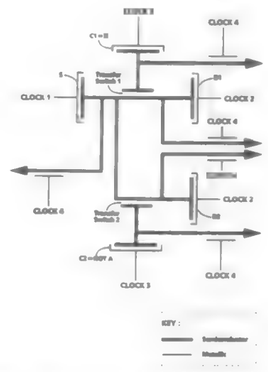
whereby as said sleeve and the instrumentation tube are brought into coaxial alignment, the vibration of the instrumentation tube is dampened.

5,357,548

REVERSIBLE CHARGE TRANSFER AND LOGIC UTILIZING THEM

Ralph C. Merkle, Sunnyvale, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 4, 1992, Ser. No. 971,782
Int. Cl.[5] G11C *19/28*
U.S. Cl. 377—57 2 Claims



1. A method for performing logic operations, said method comprising the steps of

conditionally transferring an identifiable charge packet from at least one source to at least one destination under the control of at least one condition that has a logical state that changes in the presence and absence of another identifiable charge packet; and

preserving the identities of all of said charge packets.

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5,357,549

METHOD OF DYNAMIC RANGE COMPRESSION OF AN X-RAY IMAGE AND APPARATUS EFFECTUATING THE METHOD

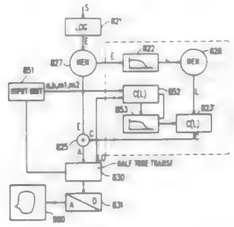
Hanns-Ingo Maack, Norderstedt, and Ulrich Neitzel, Hamburg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 22, 1991, Ser. No. 781,534

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1990, 4037716; Jul. 5, 1991, 4122264

Int. Cl.[5] G01N *23/04*

U.S. Cl. 378—62 9 Claims



1. A method of dynamic range compression in an X-ray image, to whose picture elements digital input-picture values are assigned, comprising the steps of forming low-pass picture values (L) from input-picture values (E), and for each picture element forming an output picture value (A) by superpositioning an associated input picture value (E) and an equalizing value (C) which depends on an associated low-pass picture value (L), such that the output picture value is greater than the input-picture value at relatively small low-pass picture values and is less than the input-picture value (E) at relatively large low-pass picture values.

5,357,550

APPARATUS FOR DIAGNOSING VASCULAR SYSTEMS IN ORGANISM

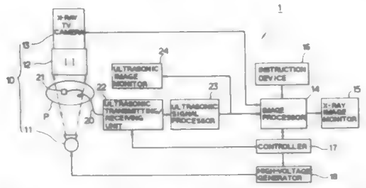
Hiroshi Asahina, Nishinasuno, and Massyuki Nishiki, Otawara, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 9, 1992, Ser. No. 942,272

Claims priority, application Japan, Sep. 9, 1991, 3-228971

Int. Cl.[5] H05G *1/64*

U.S. Cl. 378—98.5 51 Claims



25. An apparatus for diagnosing a vascular system of an organism having a lumen in which an inner wall is formed therein, the vascular system including a blood vessel, the apparatus comprising:

means for fluorographing the vascular system to be diagnosed by X-rays, said X-rays being transmitted through the organism and converted to electrical image signals;

means for obtaining, in response to a synchronization signal, fluoroscopic two-dimensional image data in accordance with the image signals supplied by the X-ray fluorographing means;

means for probing the vascular system using ultrasonic signals, the ultrasonic probing means comprising an ultrasonic probe transferrably inserted into the lumen of the vascular system via a catheter incorporating the ultrasonic probe, the ultrasonic probe being able to obtain ultrasonic echoes representing ultrasonic tomographic images of the vascular system, and the ultrasonic echoes being converted into electrical image signals;

means for obtaining, in response to the synchronization signal, tomographic two-dimensional image data in accordance with the image signals supplied by the ultrasonic probing means;

means for determining a structure of the vascular system in accordance with the fluoroscopic two-dimensional image data and the tomographic two-dimensional image data; and

means for displaying the structure of the vascular system.

5,357,551

X-RAY ANALYSIS APPARATUS WITH PULSE AMPLITUDE SHIFT CORRECTION AND DETECTOR READING CIRCUIT MEANS SUITED FOR USE IN SUCH AN APPARATUS

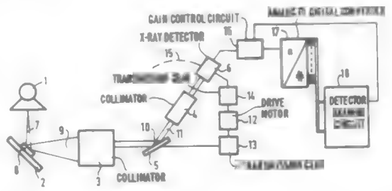
Hendrik J. J. Bolk, and Georges C. P. Zieltjens, both of Almelo, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 15, 1993, Ser. No. 48,087

Claims priority, application European Pat. Off., Apr. 15, 1992, 92201072.3

Int. Cl.[5] G01N *23/223*

U.S. Cl. 378—98 16 Claims



1. An x-ray analysis apparatus comprising an x-ray source, a sample holder, an x-ray detector with pulse counting amplification means and gain control means being controlled by a correction signal, an analog-to-digital converter for converting analog pulse-amplitudes produced by said x-ray detector into digital signals, and detector reading circuit means comprising an address-to-data conversion means for receiving said digital signals as addresses and for producing pulse-frequency signals as data in response to said addresses, and pulse-frequency signal comparison means for producing correction signals in correspondence with differences between said pulse-frequency signals.

5,357,552

BEARING ARRANGEMENT FOR THE ROTATING ANODE OF AN X-RAY TUBE

Wolfgang Kutschera, Aurachtal, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 4, 1993, Ser. No. 101,728

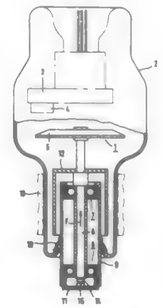
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1992, 4228964

Int. Cl.[5] H01J *35/10*

U.S. Cl. 378—132 10 Claims

1. A bearing arrangement for use in an x-ray tube having a rotating anode with an axially extending shaft, said arrangement comprising:

rolling bearing means for bearing said shaft and for absorbing axial forces; and



magnet means for generating an axially directed force acting on said rolling bearing means for suppressing play in said rolling bearing means.

5,357,553

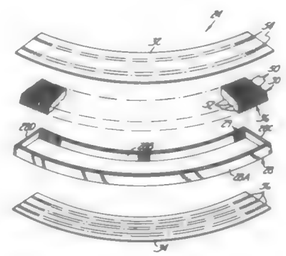
RADOIGRAPHIC GRID

Daniel J. Ferlic, 406 Birchwood Ave., White Bear Lake, Minn. 55110, and Randolph M. Ferlic, 2254 S. 86th Ave., Omaha, Nebr. 68131

Filed Feb. 28, 1994, Ser. No. 203,001

Int. Cl.[5] G21K *1/00*

U.S. Cl. 378—154 20 Claims



1. A radiographic grid comprising:

a grid housing having first and second side walls;

a first cover sheet disposed on the grid housing; and

a plurality of x-ray radiation absorbing lamellae disposed between the first and second side walls of the grid housing, each of the plurality of lamellae having alignment means protruding from a lateral edge thereof for engaging the cover sheet such that each of the lamellae are maintained in alignment with respect to each other.

5,357,554

APPARATUS AND METHOD FOR REDUCING X-RAY GRID LINE ARTIFACTS

Gerald S. Schneiderman, Waukesha, and Daniel R. Unger, Milwaukee, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Sep. 30, 1993, Ser. No. 129,970

Int. Cl.[5] G21K *1/00*

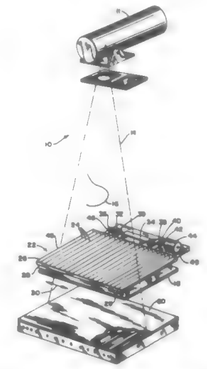
U.S. Cl. 378—155 13 Claims

7. A method of moving a radiographic grid of an X-ray imaging system reciprocally between two end points along a linear axis, steps of said method comprising:

upon commencement of an X-ray exposure, moving the grid at a first rate of movement in a direction toward one end point;

then periodically decreasing the rate of movement until the grid reaches a given distance from the one end point;

when the grid reaches a given distance from the one end point, increasing movement of the grid to a second rate;



when the grid reaches the one end point, reversing movement of the grid to second direction toward the other end point;

moving the grid in the second direction at a third rate of movement for a predefined distance wherein said third rate of movement is faster than the rate of movement at the given distance; and

thereafter, decreasing the rate of movement.

5,357,555

METHOD FOR THE OPERATION OF AN X-RAY INSTALLATION HAVING AN X-RAY RADIATOR

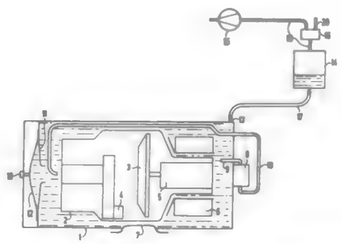
Heinz Gerth, Nurenberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 1, 1993, Ser. No. 84,137

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1992, 4225221

Int. Cl.[5] H01J *35/10*

U.S. Cl. 378—200 10 Claims



1. A method for the operation of an x-ray installation having an x-ray radiator, which comprises an x-ray tube located in a liquid-filled housing comprising the step of:

degasifying the liquid at intervals wherein said x-ray radiator is not operating.

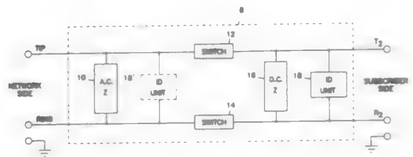
VOL 1167 ISS 3 OC 18 1994 UMI

5,357,556

SYSTEM AND METHOD FOR TELEPHONE NETWORK TESTING

Stephen A. Dresser, Norwalk, Calif., assignor to Pacific Bell, San Francisco, Calif.

Filed Aug. 10, 1992, Ser. No. 927,333
Int. Cl.[5] H04M *3/22, 3/26, 3/30*
U.S. Cl. 379—27 18 Claims



1. A system for testing a telephone network between a central office and an individual subscriber loop therein, the system comprising:

(a) means, disposed at a demarcation point between the network and the subscriber loop and remotely activated and deactivated from the central office, for isolating the network from the subscriber loop without effecting normal service, wherein an off-hook condition on the subscriber loop breaks down the means for isolating and bridges the subscriber loop to the network to provide transparent service therebetween;

(b) means, coupled across the subscriber loop at the demarcation point, for providing an AC signature impedance so that the subscriber loop's operation can be tested from the central office; and

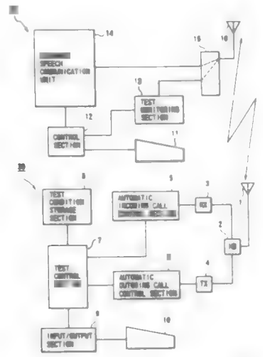
(c) means, disposed at the demarcation point between the network and the subscriber loop and remotely activated and deactivated from the central office, for selectively sending a unique code, assigned and associated with the subscriber loop, to the central office.

5,357,557

INTER-MOBILE-TERMINAL TESTING METHOD IN CELLULAR AUTOMOBILE TELEPHONE SYSTEM

Yukinori Sakakura, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Nov. 5, 1992, Ser. No. 971,596
Claims priority, application Japan, Nov. 6, 1991, 3-318309
Int. Cl.[5] H04M *1/24, 4/00;* H04Q *9/00;* H04B *7/00*
U.S. Cl. 379—27 2 Claims



1. An inter-mobile-terminal testing method in a cellular automobile telephone system including a cellular automobile telephone exchange and test mobile terminals respectively arranged in cells, a communication test being performed between said cells, comprising the steps of:

transmitting and down-loading test sequence information indicating a test sequence, next terminal number information indicating a terminal which is to make a next call, and test data from said cellular automobile telephone exchange to each of said terminals;

outputting a test start command from said cellular automobile telephone exchange to a first terminal serving as a start point;

causing said first terminal to make a call, through said cellular automobile exchange, to a second terminal as a next terminal in accordance with the next terminal number information in response to the test start command so as to transmit the test data thereto;

causing said second terminal to transmit connection determination information indicating success in connection of the call and data determination information indicating correct reception of the test data through said cellular automobile exchange to a third terminal as a next terminal together with the test data;

subsequently executing the same procedure up to an nth terminal as a last terminal; and

acquiring an accumulated result of the connection determination information between said respective terminals and the data determination information in said cellular automobile telephone exchange.

5,357,558

RADIO COMMUNICATION APPARATUS FOR ISDN

Munehiro Yoshikawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 27, 1992, Ser. No. 826,001
Claims priority, application Japan, Jan. 31, 1991, 3-010550
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—58 4 Claims

	Terminal ID	Subaddress	DDI	Attribute Data
Master Station	0000	123401	—	------
1st Remote Station	0001	23	—	------
2nd Remote Station	0002	31	—	------
3rd Remote Station	0003	32	1234	------
4th Remote Station	0004	104	1222	------
5th Remote Station	0005	301	—	------

1. A radio communication apparatus for providing radio communication between a digital line network and a plurality of sub telephones, the apparatus comprising:

memory means for storing a subaddress and a direct dial-in number for each of the plurality of sub telephones;

receiving means for receiving an incoming signal transmitted from the digital line network;

first discriminating means for determining when the incoming signal has a direct dial-in number included in the incoming signal and for comparing the direct dial-in number of the incoming signal to the direct dial-in numbers stored in the memory means when the incoming signal has a direct dial-in number;

second discriminating means for determining when the incoming signal has a subaddress included in the incoming signal and for comparing the subaddress of the incoming signal to the subaddresses stored in the memory means when the incoming signal has a subaddress; and

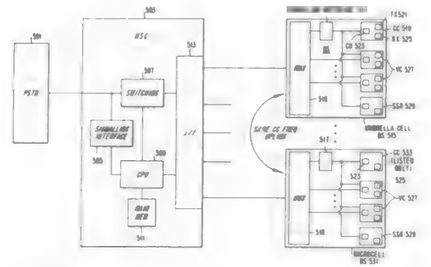
transmitting means for transmitting the incoming signal to a discriminated sub telephone having at least one of a direct dial-in number and a subaddress that matches a respective one of a direct dial-in numbers and a subaddresses in the incoming signal.

5,357,559

LISTENING CONTROL CHANNEL IN A CELLULAR MOBILE RADIOTELEPHONE SYSTEM

Harald Kallin, Sollentuna, and Anna Fallgren, Stockholm, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Dec. 12, 1991, Ser. No. 806,141
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—59 16 Claims



1. In a cellular mobile radiotelephone system having at least one microcell and an umbrella cell with a coverage area that mostly or entirely overlaps a coverage area of said microcell and having supervisory means servicing said umbrella cell and said microcell, a call access method comprising the steps of:

listening for call accesses on a bidirectional control channel of said umbrella cell and unidirectional uplink control channels of said microcells;

communicating information concerning call accesses received by said umbrella cell and said microcell to said supervisory means;

selecting in said supervisory means a cell to handle a call access if a suitable cell is available; and

instructing said umbrella cell to respond to said call access on said bidirectional control channel of said umbrella cell.

5,357,560

ADAPTABLE ALARM INTERFACE UNIT FOR USE WITH ELECTRONIC AUTOMOBILE ALARM SYSTEMS AND THE LIKE

Michael Nykerk, Canoga Park, Calif., assignor to Electronic Security Products of California, Inc., Canoga Park, Calif.

Continuation of Ser. No. 914,969, Jul. 16, 1992, abandoned. This application Apr. 14, 1994, Ser. No. 227,586
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—59 9 Claims

MICROFICHE APPENDIX INCLUDED
(56 Microfiche, 1 Pages)

1. An alarm system for protecting a mobile personal property, the alarm system including:

an existing alarm device including:

a control unit,

a sensor coupled to the control unit, the sensor generating a violation signal in response to a violation condition against the mobile personal property, the control unit generating an alarm signal in response to the violation signal and in response to an arm signal,

an alarm siren coupled to the control unit, the alarm siren sounding an audible alarm in response to the alarm signal, and

an arming circuit coupled to the control unit, the arming circuit generating the arm signal in response to the existing alarm device being armed, and generating a disarm signal in response to the existing alarm device being disarmed; and

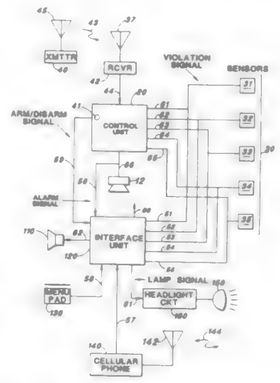
an interface unit including:

a controller coupled to the sensor and receiving the violation signal therefrom, and coupled to the control unit and receiving the alarm signal therefrom,

a cellular telephone interface coupled to the controller, the cellular telephone interface being responsive to a ring signal from a cellular telephone, the ring signal being passed by the cellular telephone interface to the controller,

an arm input coupled to the controller and coupled to the arming circuit, the controller receiving the arm signal and the disarm signal via the arm input,

a speech processor coupled to the controller and receiving the alarm signal and the ring signal therefrom,



a memory device coupled to the speech processor, the memory device storing a plurality of stored speech data signals, the speech processor selecting a first of the plurality of stored speech data signals in response to the ring signal from the cellular telephone and selecting a second of the plurality of stored speech data signals in response to the alarm signal and the arm signal from the existing alarm device, and

a speaker that generates a plurality of audible voice messages, the speaker generating a first of the plurality of audible voice messages in response to the speech processor selecting the first of the plurality of stored speech data signals, and generating a second of the plurality of audible voice messages in response to the speech processor selecting the second of the plurality of stored speech data signals.

5,357,561

COMMUNICATION UNIT CONTROL FOR WIDE AREA COMMUNICATION SYSTEMS

Gary W. Grube, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 10, 1992, Ser. No. 911,571
Int. Cl.[5] H04M *11/00;* H04Q *7/00*
U.S. Cl. 379—60 13 Claims

1. A method for establishing communication with a communication device in a communication system including a plurality of operatively interconnected communication sub-systems each having defined coverage areas, the communication system also including a wide area communication system having a communication coverage area which overlaps the communication coverage areas of the plurality of communication subsystems, one of the plurality of communication subsystems

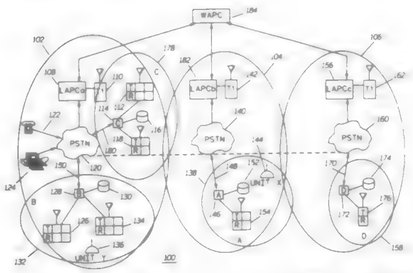
VOL 1167 ISS 3 OC 18 1994 UMI

being the communication device's home communication sub-system, the method comprising the steps of:

initiating a call message to the communication device;

determining if the communication device is located in the communication device's home communication sub-system;

determining at the wide area system which of the communication sub-systems to recommend to be used by the communication unit considering the type of call message that is being sent to the communication device and the communication device's capabilities;



transmitting a message over the wide area system directed to the communication device if the communication device cannot be found in the communication device's home communication sub-system;

receiving the wide area system message at the communication device; and

switching the communication device to operate in a communication sub-system directed by the wide area system message.

5,357,562

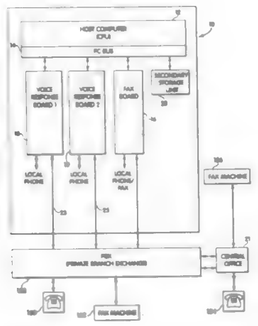
AUTOMATED FACSIMILE/VOICE MEMORY MANAGING SYSTEM

Ram Metser, 110 Babcock St., Brookline, Mass. 02146, and Ofer Reviv, 45 Sherman Rd., Chestnut Hill, Mass. 02167

Filed Jul. 20, 1992, Ser. No. 916,887

Int. Cl.[5] H04M *1/64, 11/00*

U.S. Cl. 379—67 2 Claims



2. An automated facsimile and voice memory managing system controllable from a touch-tone telephone, said system having a system configuration and storage means for storing voice information and facsimile document information, said system comprising:

a) means for answering a telephone call made by a person from said touch-tone telephone;

b) means for instructing the person by voice commands stored in said system to select different keys on said touch-tone telephone in order to perform the following steps:

i) vary different parameters of said system configuration,

ii) store new voice information in said system, and

iii) store new facsimile document information in said system; and

c) means for performing the following steps in response to the selection of the different keys of said touch-tone telephone by the person:

i) changing said different parameters of said system configuration,

ii) actuating said system to store new voice information in said system for use by a subsequent user of said system, and

iii) actuating said system to store new facsimile document information in said system for transmission to a subsequent user of said system,

iv) setting a maximum number of documents that can be retrieved by a user of said system during each telephone call by the user,

v) determining whether to transmit a cover page to a user of said system during each transmission of stored facsimile document information,

vi) setting a maximum number of times that said system will attempt to transmit facsimile document information to a user,

vii) determining whether facsimile document information will be sent to a user over a same telephone line utilized by the user to order the facsimile document information or over a different telephone line,

viii) setting said system to dial an outdialing prefix when required by a PBX,

ix) determining whether a facsimile document is sendable to an international telephone number,

x) setting the time of said system,

xi) setting the date of said system,

xii) replacing stored voice information with other different voice information,

xiii) replacing stored voice information with factory set default voice information, and

xiv) resetting all parameters to original stored, factory set default parameters.

5,357,563

DATA CARD TERMINAL FOR RECEIVING AUTHORIZATIONS FROM REMOTE LOCATIONS

James H. Hamilton, Lawrenceville, Ga.; Peter R. Cavicchi, N. Babylon, N.Y.; Timothy W. Depew, Ft. Lauderdale, Fla.; Shelley K. Friedman, Boca Raton, Fla.; Edward G. Kligfeld, Ft. Lauderdale, Fla.; Paul W. Noblett, Jr., Ft. Lauderdale, Fla.; Diane T. Vogt, Sunrise, Fla.; James T. Stills, Atlanta, Ga.; Gregory A. Philmon, Loganville, Ga.; Parameswaran B. Nair, Acworth, Ga., and Murray A. Morton, Coral Springs, Fla., assignors to MicroBilt Corporation, Atlanta, Ga.

Division of Ser. No. 820,401, Jan. 10, 1992. This application Jun. 17, 1993, Ser. No. 79,501

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—91 41 Claims

1. A data card terminal operative for receiving electronic authorizations in connection with a proposed transaction associated with a data card presented by a cardholder to a merchant, comprising:

first communication means for automatically connecting the terminal for data communications with a transaction processing host computer system via a first telecommunications link;

second communications means for automatically connecting the terminal for data communications with the transaction processing host computer system via a separate second telecommunications link in response to failure to establish said first telecommunications link;

third communications means for automatically connecting the terminal for communications with an audio response unit (ARU) via a separate third telecommunications link in response to failure to establish said first telecommunications link and failure to establish said second telecommunications link;

means for requesting authorization indicia from transaction processing host computer system via said first telecommunications link or said second telecommunications link in connection with a proposed transaction;

audio means for providing an audible authorization indicia from the audio response unit (ARU) to the merchant;

means for receiving the manual entry of said audible authorization indicia from the merchant as manually entered authorization indicia; and

means for storing authorization indicia received from said transaction processing host computer system or said manually entered authorization indicia.

5,357,564

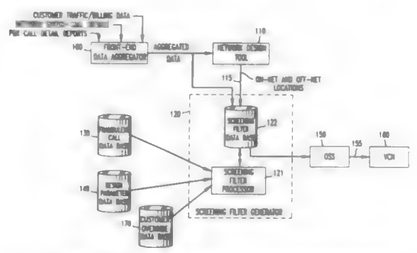
INTELLIGENT CALL SCREENING IN A VIRTUAL COMMUNICATIONS NETWORK

Alok K. Gupta, Marlboro; Monowar Hossain, Middletown, and Paramdeep S. Sahni, Marlboro, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 12, 1992, Ser. No. 929,876

Int. Cl.[5] H04M *1/66*

U.S. Cl. 379—188 24 Claims



1. A processor for generating screening information used to control the admission of calls to a customer's virtual private communications network, said processor including

means for receiving (a) first information relating to historical communications traffic patterns for said customer, and (b) second information relating to fraudulent calls applied to said network, and

means for generating said screening information as a joint function of said first and second information.

5,357,565

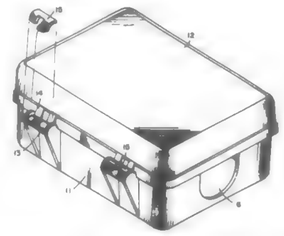
HINGE SHIELD FOR NETWORK INTERFACE ENCLOSURE

Walter K. Butler, III, Sebago Lake; James G. Beahm, Cumberland, and Thomas H. Blaisdell, Cape Neddick, all of Me., assignors to Siecor Puerto Rico, Inc., Hickory, N.C.

Filed Dec. 16, 1992, Ser. No. 990,998

Int. Cl.[5] E05D *11/00*

U.S. Cl. 379—412 5 Claims



1. A telephone network interface enclosure comprising: a base having a hinge pin, the base and hinge pin having been integrally molded as one piece; a cover having a hinge hook, the geometry of the hinge hook being complementary to the hinge pin, the cover and hinge hook having been integrally molded as one piece; and a hinge shield attached to the hinge pin, the combination of the hinge shield and hinge hook substantially totally covering the hinge pin.

5,357,566

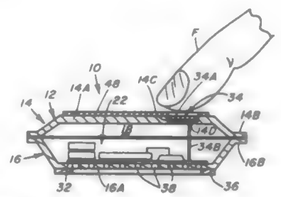
OBJECT-ORIENTED PROGRAMMABLE DEDICATED DIALER DEVICE AND METHOD OF PROGRAMMING AND CALIBRATING THE DEVICE

Thomas W. Dowling, Jr., El Paso, Tex.; Robert Hotto, La Jolla, Calif.; Yinon Barzilai, El Paso, Tex., and Yuval Shenkel, San Diego, Calif., assignors to Fone-It Inc., El Paso, Tex.

Filed Apr. 12, 1993, Ser. No. 45,918

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—355 18 Claims



1. A dedicated dialer device, comprising:

(a) a hollow body defining an interior cavity therein;

(b) control means disposed in said interior cavity for storing a predetermined telephone number and for producing a plurality of tones necessary to dial the stored predetermined telephone number, said control means being an automatic telephone number dialing mechanism disposed in said interior cavity, said dialing mechanism including a microcontroller, a power supply and a sound-generating transducer being electrically connected together, said microcontroller storing the predetermined telephone number; and

(c) a touch sensor connected to said control means and being

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operable in response to a user touching said touch sensor for converting said control means in a non-switching manner from a deactivated state to an activated state to cause said control means to dial the stored predetermined telephone number, said touch sensor including an electrically-conductive touch plate mounted to the exterior of said hollow body, drive circuitry disposed in said internal cavity and electrically coupled to said microcontroller and conductor means extending from said touch plate to said drive circuitry and electrically connecting said touch plate to said drive circuitry, said drive circuitry being set at an electrical potential sufficiently different from that of a human user such that said drive circuitry is adapted to receive an injection of electrical current sufficient to cause actuation of said microcontroller in response to a human user physically touching said touch plate.

5,357,567

METHOD AND APPARATUS FOR VOLUME SWITCHED GAIN CONTROL

David L. Barron, Scottsdale; James A. Stephens, Chandler, and William C. Yip, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 14, 1992, Ser. No. 930,254
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—390 **20 Claims**

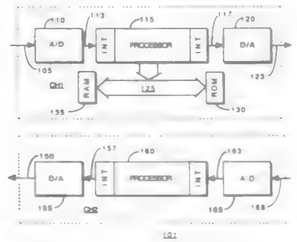


FIG. 1

1. A method for adjusting a signal level, said method comprising steps of:

providing a first input signal;

providing a second input signal;

determining first and second minimum signal levels of the first and second input signals;

determining first and second peak signal levels of the first and second input signals;

processing the first and second minimum signal levels and the first and second peak signal levels to provide a first control signal and a second control signal, the first and second control signals being continuously variable over a range and varying contrarily to one another;

adjusting a first output signal level in accordance with the first control signal; and

adjusting a second output signal level in accordance with the second control signal;

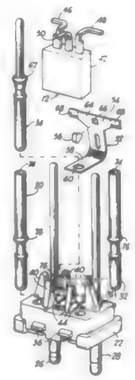
wherein said first and second adjusting steps cause either the first output signal or the second output signal to be attenuated and cause either the second output signal or the first output signal to not be attenuated.

5,357,568

TELEPHONE LINE OVERVOLTAGE PROTECTION METHOD AND APPARATUS

Dimitris J. Pelegris, Mount Prospect, Ill., assignor to Oneac Corporation, Libertyville, Ill.

Continuation of Ser. No. 895,380, Jun. 8, 1992, abandoned. This application Jan. 24, 1994, Ser. No. 185,767
Int. Cl.[5] H02H *3/20, 3/08*
U.S. Cl. 361—119 **15 Claims**



9. An overvoltage protection device used with a pair of telephone lines comprising:

a first base housing defining a plurality of terminal-pin receiving channels;

a second housing arranged for mating engagement with said first base housing;

first voltage clamping means connected between a pair of INPUT terminal-pins and a ground terminal-pin for clamping voltage signals on said lines at a first predetermined voltage potential;

second voltage clamping means connected between said first voltage clamping means and a pair of OUTPUT terminal-pins for clamping voltage signals on said lines at a second predetermined voltage potential; said second voltage clamping means including a bidirectional voltage suppressor device, resistance means connected in series with said lines and capacitance means connected between said bidirectional voltage suppressor device and said resistance means; said pair of INPUT terminal pins, said ground pin and said pair of OUTPUT terminal pins located in said terminal pin receiving channels of said first base housing;

said first voltage clamping means formed by a solid state protective device and a failure mode mechanism supported by said first base housing, said failure mode mechanism consisting of a fusible pellet and a unitary electrically conductive fail safe member adapted for simultaneously connecting both of said lines to ground with said INPUT terminal-pins responsive to increased temperature of said solid state protective device;

each of said pair of INPUT terminal-pins, said pair of OUTPUT terminal-pins and said ground terminal-pin received within a corresponding one of said terminal-pin receiving channels;

each of said pair of INPUT terminal-pins, said pair of OUTPUT terminal-pins, and said ground terminal-pin having an enlarged stop collar portion locating each of said terminal-pins within said first base housing and each of said terminal-pins having elongated pin portions extending both above and below said first base housing;

said failure mode unitary electrically conductive fail safe member being a stamped and formed member having a base portion supported by said first base housing and

defining an aperture receiving said ground terminal-pin in electrical contact engagement; and

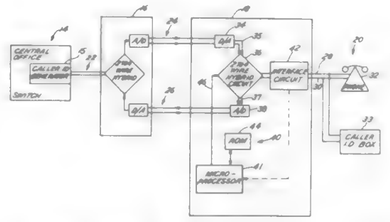
said failure mode unitary electrically conductive stamped and formed fail safe member having a vertically extending upper portion with a pair of opposed ends respectively located adjacent to said pair of INPUT terminal-pins; and said upper portion having means for locating and retaining said fusible pellet between said solid state protective device and said upper portion.

5,357,569

TRANS-HYBRID LOSS COMPENSATOR FOR ON HOOK TRANSMISSION

Frank X. Garcia, and Bruce R. Miller, both of Aurora, Ill., assignors to Teltrend Inc., St. Charles, Ill.

Filed May 3, 1993, Ser. No. 56,413
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—399 **5 Claims**



1. A hybrid converter system for use with a digital transmission line system, said system including a customer loop telephone line, interconnected to a telephone, and receive and transmit digital carrier transmission lines, comprising, in combination:

a digital to analog converter for converting a receive digital data signal from said receive digital carrier transmission line to a receive analog signal;

a hybrid converter, for accepting said receive analog signal and transmitting said receive analog signal to said customer loop telephone line, and for accepting a transmit analog telephone signal from said customer loop telephone line and transmitting said transmit analog telephone signal to a summing circuit, said hybrid converter including

an inverter for inverting said receive analog signal and said transmit analog telephone signal with respect to each other,

a variable amplifier for variably adjusting said receive analog signal and providing an adjusted signal, said variable amplifier providing higher and lower adjusted signals in response to a control signal, and

said summing circuit accepting said transmit analog telephone signal and said adjusted signal and providing a combined signal to an analog to digital converter, said analog to digital converter for converting said combined signal to a transmit digital data signal on said transmit digital carrier transmission line;

an interface circuit for sensing direct current in said telephone line and providing an off hook signal when said telephone goes off hook; and

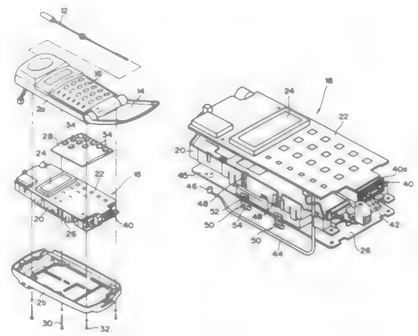
a microprocessor, interconnected to said variable amplifier and interface circuit, said microprocessor receiving said off hook signal from said interface circuit and providing said control signal to said variable amplifier, causing said variable amplifier to produce said lower level adjusted signal upon said telephone going off hook.

5,357,570

INTERFACE CONNECTOR MOUNTING STRUCTURE FOR WIRELESS TERMINAL DEVICE

Masashi Tomura, and Hisamitsu Takagi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 14, 1992, Ser. No. 944,358
Claims priority, application Japan, Sep. 18, 1991, 3-237992
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—433 **2 Claims**



1. A wireless terminal device comprising:

a casing;

a shielding chassis housed in said casing, said shielding chassis formed by a surface of a resin molding having a conductive surface and having a first mounting surface and a second mounting surface;

a first printed circuit board mounted on said first mounting surface of said shielding chassis, said first circuit board having mounted thereon a liquid crystal display, a plurality of key tops and control circuit parts;

a second printed circuit board mounted on said second mounting surface, said second printed circuit board having mounted thereon a feed connector;

an interface connector mounted on said first printed circuit board, said interface connector having a coaxial contact for connection to an external antenna;

a coaxial cord connected at one end thereof to said coaxial contact;

a coaxial connector connected to the other end of said coaxial cord, said coaxial connector being removably connected to said feed connector; and

holding means for holding said coaxial cord along a side surface of said shielding chassis.

5,357,571

METHOD FOR POINT-TO-POINT COMMUNICATIONS WITHIN SECURE COMMUNICATION SYSTEMS

Dean E. Banwart, Elgin, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 1, 1993, Ser. No. 84,119
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—21 **18 Claims**

9. In a secure communication system that includes a plurality of communication units, wherein each communication unit of the plurality of communication units stores a limited set of encryption key variables, a method for a communication unit of the plurality of communication units to participate in a point-to-point communication within the secure communication system, the method comprises the steps of:

a) when initiating the point-to-point communication, receiving, by the communication unit, a request for a point-to-point communication from an operator of the communica-

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tion unit, wherein the request identifies at least one destination communication unit;

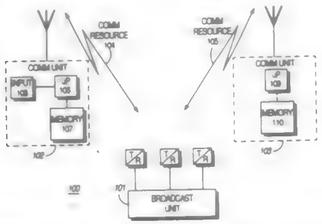
b) when initiating the point-to-point communication, generating, by the communication unit, a private call key valuable by modifying an encryption key variable of the limited set of encryption key variables based on a predetermined function;

c) when initiating the point-to-point communication, transmitting, by the communication unit to the at least one destination communication unit, identity of the encryption key valuable and information pertaining to the predetermined function;

d) when acting as a destination communication unit in the point-to-point communication, receiving, by the communication unit, identity of the encryption key variable and the information pertaining to the predetermined function, wherein the identity of the encryption key variable and information pertaining to the predetermined function have been transmitted by a transmitting communication unit;

e) when acting as the destination communication unit in the point-to-point communication, generating, by the communication unit, the private call key variable based on the encryption key variable and the information pertaining to the predetermined function; and

f) when acting as the destination communication unit in the point-to-point communication, privately communicating between the communication unit and the transmitting communication unit.

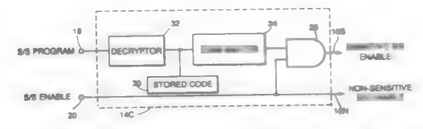


5,357,572

APPARATUS AND METHOD FOR SENSITIVE CIRCUIT PROTECTION WITH SET-SCAN TESTING

Mark E. Bianco, Pomona; Douglas A. Dwyer; David J. Knobbe, both of Brea; James P. Baukus, Westlake Village; Allan R. Kramer, Simi Valley, and Faik S. Ozdemir, Thousand Oaks, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 22, 1992, Ser. No. 949,281
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—23 27 Claims



14. An electrical circuit having a plurality of interconnected subcircuits, some of which are sensitive subcircuits protected from reverse engineering, a set/scan test input for testing said subcircuits in a set/scan test mode, respective bypass circuits for bypassing said subcircuits, respective switches for steering a set/scan test signal between a subcircuit and the bypass circuit for said subcircuit, and a set/scan control means for controlling the operation of said switches during a normal set/scan test, wherein the improvement comprises

access control means coupled between the set/scan control means and the switches for said sensitive subcircuits to control the operation of said switches and thereby the access of set/scan test signals to said sensitive subcircuits, and

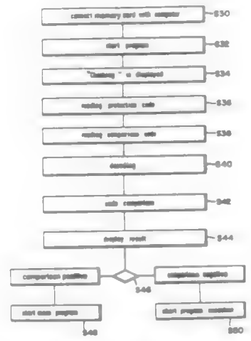
selectable means, coupled to said access control means, for operating said access control means to convert said control means from an initial state enabling the access of set/scan signals to said sensitive subcircuits, to a secure state in which said access control means operates the switches for said sensitive subcircuits to override said set/scan control means and inhibit the access of set/scan test signals to at least some of said sensitive subcircuits.

5,357,573

MEMORY CARD

Kenn D. Walters, Vaterstetten, Fed. Rep. of Germany, assignor to Intelligent Solution Services GmbH, Marzling, Fed. Rep. of Germany

Filed Aug. 12, 1992, Ser. No. 928,006
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1991, 9109977
Int. Cl.[5] H04K *1/00*; H04L *9/00*
U.S. Cl. 380—25 10 Claims



1. A protected PCMCIA/JEIDA standard memory card for use as a mass memory device for computer systems such as palmtop, notebook and laptop computers, comprising a read-write memory means for storing data and application programs, a control means for controlling the read-write memory means, and an interface means for connecting the memory card to a computer system, wherein an unchangeable protection code is stored on a read-only memory means on the memory card.

5,357,574

COHERENT SIGNAL GENERATION IN DIGITAL RADIO RECEIVER

John E. Whitecar, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

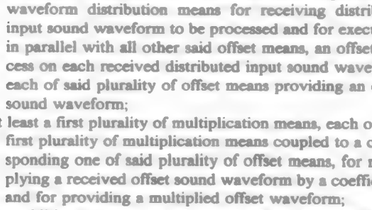
Filed Dec. 14, 1992, Ser. No. 990,143
Int. Cl.[5] H04H *5/00*
U.S. Cl. 381—4 12 Claims

1. A radio receiver generating a coherent signal in response to an input frequency in an input signal, comprising:

summing means having first and second inputs and an output for generating a notch-filtered signal according to the difference between signals applied to said first and second inputs, said first input being coupled to receive said input signal and said second input being coupled to receive said coherent signal;

a signal source providing a reference signal having a frequency about equal to said input frequency;

adaptive means receiving said reference signal and said notch-filtered signal for generating said coherent signal such that said notch-filtered signal is minimized; and



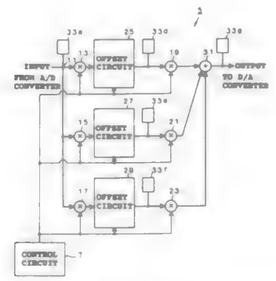
mixer means coupled to said summing means and said adaptive means for mixing said notch-filtered signal in response to said coherent signal.

5,357,575

SOUND PROCESSING SYSTEM

Mineo Kitamura, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan

Filed Jan. 26, 1993, Ser. No. 11,483
Claims priority, application Japan, Mar. 30, 1992, 4-074566
Int. Cl.[5] H03G *3/00*
U.S. Cl. 381—61 13 Claims



1. A sound processing system, for processing an input waveform, comprising:

waveform distribution means for distributing an input sound waveform to a plurality of offset means;

a plurality of offset means, each offset means coupled to said waveform distribution means for receiving distributed input sound waveform to be processed and for executing, in parallel with all other said offset means, an offset process on each received distributed input sound waveform, each of said plurality of offset means providing an offset sound waveform;

at least a first plurality of multiplication means, each of said first plurality of multiplication means coupled to a corresponding one of said plurality of offset means, for multiplying a received offset sound waveform by a coefficient, and for providing a multiplied offset waveform;

one addition means, coupled to each of said first plurality of said multiplication means, for summing each of said multiplied offset waveforms and for providing one, summed processed waveform; and

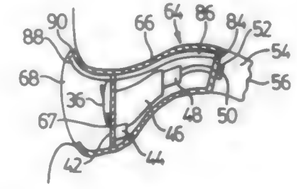
a second plurality of multiplication means, coupled between said waveform distribution means and said plurality of offset means, each of said second plurality of multiplication means operative for multiplying a received, distributed, input sound waveform by a coefficient, each of said second plurality of multiplication means providing a multiplied, distributed, sound waveform to a corresponding one of said plurality of offset means.

5,357,576

IN THE CANAL HEARING AID WITH PROTRUDING SHELL PORTION

Horst Arndt, Kitchener, Canada, assignor to Unitron Industries Ltd., Kitchener, Canada

Filed Aug. 27, 1993, Ser. No. 112,278
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—68.6 11 Claims



1. A hearing aid comprising:

(a) a shell adapted to be inserted into the ear canal of a user, said shell comprising a thin annular wall adapted to extend axially along said canal and defining a cavity within said shell,

(b) sound receiving and amplification means in said cavity of said shell, including a microphone for receiving sound, an amplifier for producing an amplified sound signal, and an output transducer for producing amplified sound,

(c) said shell having an inner end having an opening therein for delivery of amplified sound from said output transducer to the user's tympanic membrane, and having a faceplate located outwardly from said inner end and extending across said cavity, said sound receiving and amplification means being located between said faceplate and said inner ends,

(d) said annular wall having an extended wall portion extending, as an integral continuation of said annular wall, outwardly axially along said canal past said faceplate, said extended wall portion also being a thin wall and being shaped to extend into and to lie at least in part against the surface of the concha area of the user's ear when the shell is inserted into the user's ear canal with the inner end of said shell adjacent the user's tympanic membrane and with said faceplate recessed within the user's ear canal,

(e) said extended wall portion being shaped to anchor said shell and prevent it from moving into the ear canal and constituting a grip for insertion and removal of said hearing aid, and permitting access to said faceplate.

5,357,577

VACUUM TUBE MICROPHONE APPARATUS

Tomohiro Waji; Kazunaga Takahashi; Satoshi Yamazaki, all of Kanagawa; Kiichi Yoshida, Saitama; Osamu Kohno; Tohru Enokuma, both of Tokyo, and Eiichi Tanaka, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 28, 1992, Ser. No. 953,124
Claims priority, application Japan, Sep. 30, 1991, 3-251672
Int. Cl.[5] H04R *3/00*
U.S. Cl. 381—122 11 Claims

1. A microphone apparatus comprising:

a main housing;

means for converting a sound signal to an electric signal disposed in said main housing;

a vacuum-tube housing connected to said main housing;

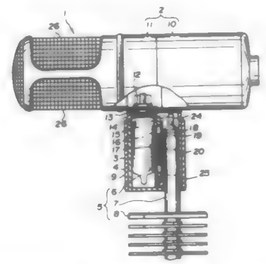
a vacuum-tube amplifier disposed in said vacuum-tube housing mounted on said main housing and connected to said means for converting for amplifying said electric signal;

a thermo-ionic cooling element for absorbing heat generated by said vacuum-tube amplifier and having a first surface for absorbing said heat and a second surface for radiating said heat, said first surface receiving heat from said vacu-

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um-tube amplifier through contact with said vacuum-tube housing;

a heat conducting device in contact with said second surface of said thermo-ionic cooling element for conducting said heat radiated by said second surface of said cooling element;



means for absorbing condensation on an outer surface of said vacuum-tube housing, said means for absorbing being wrapped around said outer surface of said vacuum-tube housing; and

fins mounted on said heat conducting device for radiating said heat.

5,357,578

ACOUSTIC OUTPUT DEVICE, AND ELECTRONIC APPARATUS USING THE ACOUSTIC OUTPUT DEVICE

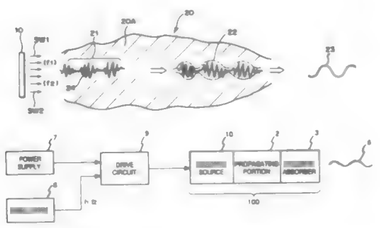
Shinnosuke Taniishi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1993, Ser. No. 155,137

Claims priority, application Japan, Nov. 24, 1992, 4-313317; Jan. 19, 1993, 5-006973

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—158 17 Claims



1. An acoustic output device comprising:

an acoustic source for generating sound waves having at least two different frequencies;

a sound-wave generator for propagating sound waves from said acoustic source and generating a sound wave having a frequency conforming to a difference between said different frequencies; and

an acoustic absorber provided on a sound-wave output side of said sound-wave generator in order to absorb sound waves from said acoustic source.

5,357,579

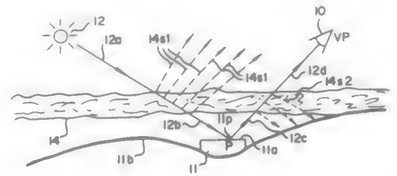
MULTI-LAYER ATMOSPHERIC FADING IN REAL-TIME COMPUTER IMAGE GENERATOR

Gregory C. Buchner, Sunnyvale, Calif., and William A. Kelly, Daytona Beach, Fla., assignors to Martin Marietta Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 754,494, Sep. 3, 1991, abandoned. This application Jul. 15, 1993, Ser. No. 91,380

Int. Cl.[5] G09B *9/08*; G06F *15/00*

U.S. Cl. 382—1 20 Claims



1. A method for modifying the color (chromicity and intensity) of light to be emitted at each pixel of a display scene in a computer image generation (CIG) system, responsive to a fading effect of scattering through a plurality n of different atmospheric layers on the visibility F_p from a viewpoint VP of each separate one of a multiplicity of viewed points P on each visible polygon surface in that scene, comprising the steps of:

(a) providing (1) a signal containing at least altitude Alt_{VP} data for the viewpoint VP for the present scene to be displayed, (2) a separate data signal representing a location of each of the plurality of viewed points P of the present scene, and (3) a set of other data signals, each representing a beginning altitude Alt L_i, for $1 \leq i \leq n$, for the i-th one of the plurality n of scattering layers;

(b) providing an associated different one of a multiplicity of input data signals C_p for the color of each separate point P in the present scene;

(c) separately generating, for each point P of the scene, an inverse range data signal, responsive to a viewscreen data signal, obtained from the VP and P data signals, of a viewscreen location (I_p,J_p) of a viewray from the viewpoint VP to that viewed point P;

(d) generating another data signal representing an altitude Alt_p of the viewed point P;

(e) generating, from the Alt_p and Alt_{VP} data signals and the set of Alt L_i data signals, an effective cumulative layer half-fading reciprocal distance $(1/Df_{eff_cumm})$ data signal;

(f) generating a data signal representing a total diminished visibility F_p of point P from viewpoint VP through all of the intervening scattering layers, responsive to selected ones of the inverse range, viewed point altitude, viewpoint altitude and effective cumulative layer half-fading reciprocal distance data signals; and

(g) modifying the received data signals C_p, responsive to the point P diminished visibility data signal F_p, to an output data signal C_f used to determine the color and intensity of the visible light emitted by at least one display pixel associated with each viewed point P of the scene then being displayed.

5,357,580

TEMPORAL FILTERING OF COLOR DOPPLER SIGNAL DATA

Steven F. Forestieri, Santa Clara, and Ray S. Spratt, San Jose, both of Calif., assignors to Diasonics Ultrasound, Inc., Milpitas, Calif.

Filed Mar. 3, 1992, Ser. No. 845,218

Int. Cl.[5] G06K *9/44*

U.S. Cl. 382—6 13 Claims

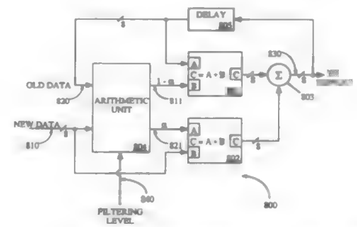
1. An apparatus for temporal filtering of color doppler imaging information representing velocity in an ultrasonic color doppler imaging system comprising:

a. a means for storing previous color imaging information said color representing a first frequency which represents a first velocity of flow of a substance in a subject under examination at a first position from a previous time period;

b. a means for storing current color imaging information said color representing a second frequency which represents a second velocity of flow of the substance in said subject under examination at said first position from a current time period;

c. a means for determining the larger of either said first or said second frequency;

d. a means for generating an alpha value responsive to the means for determining the larger of either said first or said second frequency, the alpha value being in a range at or



between a minimum and maximum values and having the maximum value when the larger of either the first or second frequency is greater than or equal to a maximum frequency and having the minimum value when the larger of either the first or second frequency is less than or equal to a minimum frequency; and

e. a means for generating output color imaging information including:

i. a first multiplying means for generating a first product of said alpha value and said current color imaging information;

ii. a second multiplying means for generating a second product of said maximum value minus said alpha value and said previous color imaging information; and

iii. a summing means for summing said first product and said second product to generate said output color imaging information.

5,357,581

METHOD AND APPARATUS FOR THE SELECTIVE FILTERING OF DOT-MATRIX PRINTED CHARACTERS SO AS TO IMPROVE OPTICAL CHARACTER RECOGNITION

George A. Hadgis, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 1, 1991, Ser. No. 786,476

Int. Cl.[5] G06K *9/36*

U.S. Cl. 382—9 4 Claims

1. Apparatus for the selective filtering of dot-matrix printed characters in a document containing dot-matrix printed characters and other types of printed characters scanned pixel by pixel and providing a signal indicating the location in the document image where said dot-matrix printed characters are detected, said apparatus comprising:

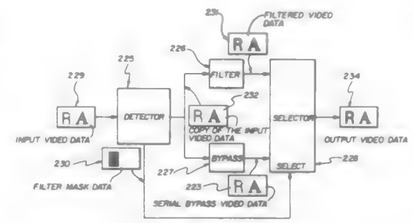
means for scanning a document to provide an input video data signal;

means for detecting the presence of dot-matrix printed characters in said input video data signal and generating a filter mask signal;

means for filtering said input video data signal along a first path;

means for delaying said input video data signal by a predetermined amount along a second path;

means for selecting filtered video data of a dot-matrix character from said first path in response to the presence of said filter mask signal and selecting unaltered video image data of other types of printed characters from said second path in the absence of said filter mask signal; and



outputting a new stream of video image data of altered and unaltered characters recognizable by an optical character recognition algorithm.

5,357,582

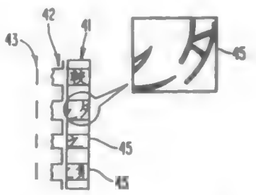
CHARACTER BOUNDARY IDENTIFICATION METHOD AND SYSTEM

Yeong-Shuean Lin, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Continuation of Ser. No. 720,235, Jun. 25, 1991, Pat. No. 5,253,305. This application May 13, 1993, Ser. No. 62,922

Int. Cl.[5] G06K *9/36*

U.S. Cl. 382—9 10 Claims



1. An electronic image processing system comprising

a memory for storing a predetermined, fixed length table of character boundary address entries suitable for use in connection with the digital image of a document, said table being predetermined before any digital images of said document are obtained,

a scanner for forming a digital image representative of a document,

means for identifying lines of text in said digital image,

means for forming a vertical shadow of each line of text identified by said means for identifying lines of text,

means for dividing said shadow into fixed length segments of bits, each fixed length shadow segment indexing a corresponding character boundary address entry of said predetermined table, and

means for determining character boundaries in each line of text by retrieving the corresponding character boundary address entry indexed by each fixed length shadow segment from said predetermined table, each particular retrieved character boundary address entry containing information for locating any character boundary within the portion of the line of text whose corresponding fixed length shadow segment indexed the predetermined table to retrieve the particular entry.

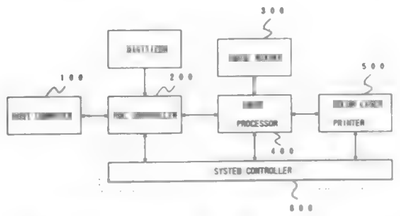
VOL 1167 ISS 3 OCT 18 1994 UMI

5,357,583

GRAPHICS PROCESSING APPARATUS FOR SMOOTHING EDGES OF IMAGES

Takashi Sato; Hiroki Kubozono, both of Yokohama; Hitomi Kumazaki, Koshigaya; Masaki Sano, Yokohama; Kan Tomita, and Yoshiaki Hanyu, both of Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 16, 1992, Ser. No. 914,746
Claims priority, application Japan, Jul. 19, 1991, 3-204777
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—22 **10 Claims**



1. An apparatus for smoothing edges of images, comprising:
first detection means for determining with respect to each pixel of an image, whether or not an edge of the image starts on a scanline when each scanline of the image is scanned, and for defining a control datum based on whether or not said edge starts on the scanline;
second detection means for detecting a duration of beam power modulation corresponding to edge pixels of the image on the scanline, said edge pixels being intersected by a line defined by said image, and for defining a duration datum indicating said duration of beam power modulation;
third detection means for detecting an outermost edge pixel in said edge pixels on the scanline;
means for defining a beam power datum indicating an intensity level of light beam power corresponding to said outermost edge pixel detected by said third detection means;
output means for outputting said image for each scanline, the output means having a light source for emitting a light beam; and
control means for modulating light beam power of said light source in a continuous range from said intensity level indicated by said beam power datum to a predetermined level with respect to said edge pixels on the scanline, so that an image with smooth edges is generated by modulating the light beam power in accordance with the control datum and the duration datum.

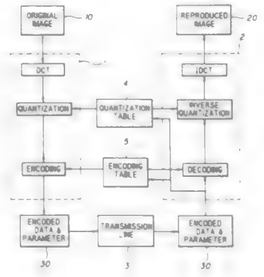
5,357,584

METHOD AND APPARATUS FOR COMPRESSING AND EXTENDING AN IMAGE

Kensuke Yamaoka, Hokkaido, Japan, assignor to Hudson Soft Co., Ltd., Japan

Filed Feb. 1, 1993, Ser. No. 11,681
Claims priority, application Japan, Feb. 7, 1992, 4-056000
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—56 **3 Claims**

1. An apparatus for compressing and expanding an image, comprising;
a compression circuit for compressing image data to provide compressed image data by a predetermined compression factor;
said compression circuit, comprises:
means for transforming said image data to provide transformed image data by using a discrete cosine transformation;
means for quantizing said transformed image data to provide quantized image data in accordance with quantization table data corresponding to said predetermined and optimum compression factors;
means for encoding said quantized image data to provide encoded image data in accordance with encoding table data; and
means for transmitting said encoded image data along with said quantization and encoding table data to said expansion circuit;
an expansion circuit for expanding said compressed image data to provide reproduced image data by expansion data corresponding to said predetermined compression factor;
said expansion circuit, comprises;
means for receiving said encoded image data along with said quantization and encoding table data;
means for decoding said encoded image data to provide said quantized image data in accordance with said encoding table data;
means for inversely quantizing said quantized image data to provide said transformed image data in accordance with said quantization table data; and



means for inversely transforming said transformed image data to provide said reproduced image data by using said discrete cosine transformation;
an evaluation circuit for evaluating said predetermined compression factor to provide an optimum compression factor in accordance with a comparison between said image data and said reproduced image data, said optimum compression factor being used in place of said predetermined compression factor for a subsequent compressing process by said compression circuit;
said evaluation circuit, comprises:
means for comparing said image data and said reproduced image data in each block pixel by pixel to provide block noise;
means for holding said block noise; and
means for generating said optimum compression factor in accordance with said predetermined compression factor and said block noise.

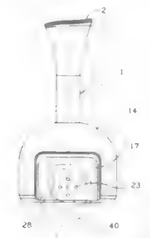
5,357,585

HEADPHONE ASSEMBLY

Rajendra Kumar, Akron, Ohio, assignor to Khyber Technologies Corporation, Fairlawn, Ohio

Filed Jul. 9, 1993, Ser. No. 88,685
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—183 **15 Claims**

1. A headphone comprising:
a headband adapted to extend along a portion of a user's head;
a first ear piece mounted on the headband;
means for attaching the ear piece to the headband;
said ear piece having a shell formed with a partially enclosed acoustic cavity having an open lower end adapted to accept and partially enclose only an upper portion of a user's ear, with a lower portion of the user's ear extending through said open end;
said acoustic cavity has an inverted U-shape formed by spaced parallel sidewalls and an endwall substantially perpendicular to said sidewalls; and in which said open end of the cavity is formed in said endwall; and
a speaker element mounted adjacent the acoustic cavity of the shell and adjacent a user's ear.

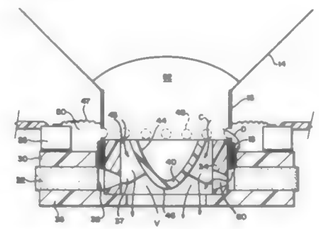


5,357,586

FLOW-THROUGH AIR-COOLED LOUDSPEAKER SYSTEM

David D. Nordschow, Montrose, Minn.; Terry D. Taylor, Chattanooga, and Robert O. Wright, Knoxville, both of Tenn., assignors to The Nordschow/Wright Loudspeaker Company, Chattanooga, Tenn.

Filed May 16, 1991, Ser. No. 700,691
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—199 **46 Claims**



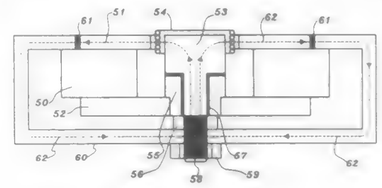
1. A loudspeaker comprising:
a speaker cone;
a generally annular electrical winding forming a voice coil and former therefor defining an interior air chamber and attached to said speaker cone for vibrating the latter;
a generally annular pole piece arranged substantially coaxially of said voice coil and a permanent magnet cooperable with said pole piece for driving said speaker cone in response to an electrical signal applied to said coil; and
a cooling system for the loudspeaker including a member having an aerodynamically-shaped surface disposed to define an air gap with said pole piece, said air gap lying in communication with said chamber, said surface being aerodynamically-shaped to define with said pole piece a cavity having an increasing cross-sectional area in a direction away from said gap and thereby defining a low-pressure region for inducing a linear rectified flow of air between said interior chamber and said cavity without substantial reverse flow of air therebetween in response to vibratory movement of said speaker cone.

5,357,587

DISTORTION REDUCTION IN LOUDSPEAKERS

Robert M. Grodinsky, 4448 W. Howard, Skokie, Ill. 60076, and David G. Cornwell, 3735 N. Ridgeway, Chicago, Ill. 60618

Filed Dec. 23, 1992, Ser. No. 995,833
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—199 **17 Claims**



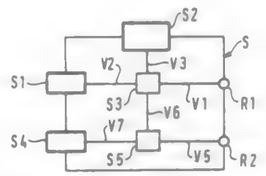
1. A loudspeaker system comprising:
a magnetic structure including a permanent magnet, a magnetically permeable pole piece and first and second magnetically permeable plates for developing a unidirectional magnetic field in an air gap between said pole piece and said first magnetically permeable plate;
an AC signal carrying voice coil mounted for movement in said air gap, said voice coil undesirably generating distortion producing AC energy in the form of AC magnetic flux and eddy currents in said magnetic structure; and
means dividing said magnetically permeable pole piece into at least first and second pole piece sections that are electrically isolated for reducing the distortion effects of said AC energy, said second pole piece section being physically directly connected to said second magnetically permeable plate.

5,357,588

OPTO-ELECTRONIC TRANSDUCER DEVICE FOR OPTICAL LINK TERMINATION EQUIPMENT AND APPLICATION THEREOF TO VARIOUS TYPES OF OPTICAL LINK

Francois Marcel, Orsay, France; Charles Eldering, Madrid, Spain, and Serge Allaire, Beaumont-le-Roger, France, assignors to Alcatel Cit, Paris, France

Filed Apr. 27, 1993, Ser. No. 52,758
Claims priority, application France, Apr. 29, 1992, 92 05299
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—16 **15 Claims**



1. Opto-electronic transducer device for optical link termination equipment comprising:
a first connection port (R1) for said optical link,
first and second supports (S1, S2) supporting respective first and second opto-electronic transducer means, and
a third support (S3) supporting a first beam switching means, these components being located in a common structure (S) and disposed relative to each other so as to enable optical transmission between said first connection port and said first beam switching means and between each of said opto-electronic transducer means and said first beam switching means, so defining within said structure first, second and third optical transmission channels (V1, V2,

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V3), characterized in that it further comprises a second connection port (R2) for said optical link and a fourth support (S4) supporting a third opto-electronic transducer means, these latter two components being also located in said structure (S) and disposed relative to each other and relative to the previous components to enable optical transmission between said third opto-electronic transducer means and said second connection port, so defining within said structure a fourth optical transmission channel (V4).

5,357,589

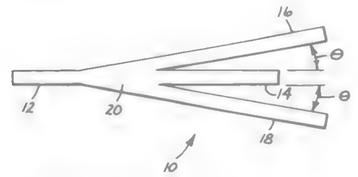
MULTI-BRANCH DIGITAL OPTICAL SWITCH

James C. Brown, Jr., Brooklyn Center; Sarat K. Mohapatra, Woodbury, and William C. Tait, Oak Park Heights, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 905,035, Jun. 26, 1992, abandoned. This application Jan. 13, 1994, Ser. No. 180,697

Int. Cl.[5] G02B *6/26*

U.S. Cl. 385—16 **9 Claims**



1. A multi-branch digital switch, including:
a main waveguide, having first and second ends;
a center branch waveguide, joined at one end to the second end of the main waveguide;
two side branch waveguides, each joined at one end to the second end of the main waveguide; wherein each side branch waveguide diverges from the center branch waveguide at an angle sufficiently small that modal evolution in the switch is substantially adiabatic; and wherein the center branch waveguide extends only as far as is necessary to ensure that coupling between the side branch waveguides is negligible after the center branch waveguide is terminated; and
means for raising the index of refraction of one side branch waveguide above the index of refraction of the center branch waveguide while lowering the index of refraction of the other side branch waveguide below the index of the center branch waveguide.

5,357,590

DEVICE FOR OPTICALLY COUPLING A PLURALITY OF FIRST OPTICAL WAVEGUIDES TO A PLURALITY OF SECOND OPTICAL WAVEGUIDES

Franz Auracher, Baierbrunn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellshcaft, Munich, Fed. Rep. of Germany

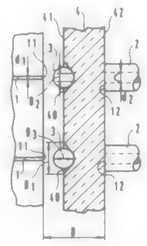
Filed Apr. 7, 1993, Ser. No. 43,813

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1992, 4212857

Int. Cl.[5] G02B *6/32, 6/26*

U.S. Cl. 385—33 **24 Claims**

1. In a device for producing an optical coupling between a plurality of first waveguides and a plurality of second waveguides, wherein the first and second waveguides have end faces which lie opposite one another in pairs and are arranged at a distance from one another and wherein optical lenses are arranged between every pair of the end faces of the first and second waveguides lying opposite one another, the improvement comprising a carrier member being formed of a plate arranged between the end faces of the first and second waveguides which lie opposite to one another, said plate having one flat surface facing toward the first waveguides and one flat surface facing toward the second waveguides, and the plate having means on one surface for holding lenses between the pairs of end faces of the first and second waveguides, at least



one of the plurality of first and second waveguides being waveguides of an IOC which are integrated on a substrate with end faces at a rim edge of the substrate, and the means for holding lenses being on a flat surface of the carrier facing toward the end faces of the waveguides at said rim edge.

5,357,591

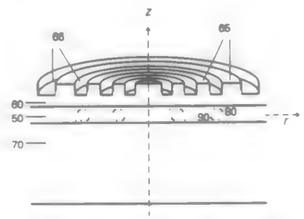
CYLINDRICAL-WAVE CONTROLLING, GENERATING AND GUIDING DEVICES

Yuan Jiang, and Jill Hacker, both of 300 M St., SW., Rm. 708, Washington, D.C. 20024

Filed Apr. 6, 1993, Ser. No. 42,732

Int. Cl.[5] G02B *6/34*

U.S. Cl. 385—37 **12 Claims**



1. An apparatus for controlling guided cylindrical waves comprising a disk-like waveguide, in which a guided cylindrical wave at a wavelength can propagate, said waveguide consisting of at least one disk-like wave-transmitting thin film, whose thickness varies such that a plurality of concentric-circle ridges and grooves is formed on one surface of said thin film, whereby said ridges and grooves have a plurality of circular interfaces, said ridges and grooves and said interfaces are around a center axis,
said guided cylindrical wave propagating in said waveguide, due to the thickness variation in said thin film, having different radial wavevectors on two sides of each of said interfaces,
said guided cylindrical wave being partially reflected by said interfaces, being partially transmitted across said interfaces and being partially diffracted away from said thin film by said interfaces due to the radial wavevector differ-

[redacted]

the intensities and phases of the reflected waves, the transmitted waves and the diffracted waves due to said interfaces being controlled by a sequence of phase changes, $\Delta\psi$, n=1, 2, . . . , M, where M is a total number of said interfaces.
said phase changes being calculated by the following equation,

$$\tan(\Delta\psi_n) = \frac{i(q_{n,12}q_{n,22} - q_{n,21}q_{n,11})}{q_{n,12}q_{n,22} + q_{n,21}q_{n,11}}$$

where $q_{n,11}$, $q_{n,12}$, $q_{n,21}$, and $q_{n,22}$ are complex quantities and are calculated by the following matrix equation and initial condition

$$\begin{pmatrix} q_{n,11} & q_{n,12} \\ q_{n,21} & q_{n,22} \end{pmatrix} =$$

$$\begin{pmatrix} H_m^{(1)}(u_{n+1}r_n) & H_m^{(2)}(u_{n+1}r_n) \\ \frac{1}{u_{n+1}^2}\frac{dH_m^{(1)}(u_{n+1}r_n)}{dr} & \frac{1}{u_{n+1}^2}\frac{dH_m^{(2)}(u_{n+1}r_n)}{dr} \end{pmatrix}^{-1}$$

$$\begin{pmatrix} H_m^{(1)}(u_nr_n) & H_m^{(2)}(u_nr_n) \\ \frac{1}{u_n^2}\frac{dH_m^{(1)}(u_nr_n)}{dr} & \frac{1}{u_n^2}\frac{dH_m^{(2)}(u_nr_n)}{dr} \end{pmatrix}$$

$$\begin{pmatrix} q_{n-1,11} & q_{n-1,12} \\ q_{n-1,21} & q_{n-1,22} \end{pmatrix}$$

$$\begin{pmatrix} q_{0,11} & q_{0,12} \\ q_{0,21} & q_{0,22} \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

where
m is an integer,
$H_m^{(1)}$ and $H_m^{(2)}$ are mth order Hankel functions of the first and second kind respectively.
r_n is a radius of an nth circular interface of said circular interfaces from said center axis, and
u_n and u_{n+1} are the radial wavevectors of said guided cylindrical wave immediately inside said nth circular interface and immediate outside said nth circular interface respectively.

5,357,592

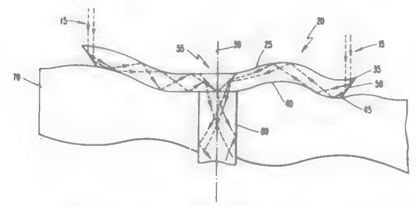
OPTICAL ENERGY CONCENTRATOR/REFLECTOR

Eric H. Neilson, Orlando, Fla., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Aug. 17, 1993, Ser. No. 108,107

Int. Cl.[5] G02B *6/32*

U.S. Cl. 385—47 **20 Claims**



1. An electromagnetic energy concentrator, comprising:
a transparent sheet;
means including a polished surface, disposed in a perimetral region of the sheet, for gathering electromagnetic energy incident on a top surface of the sheet at the perimetral region and directing said electromagnetic energy to a concentrating device; and
a concentrating device including a polished surface, disposed, proximate a center of said sheet, for focusing the directed electromagnetic energy into a waveguide;
wherein a thickness of the sheet is substantially less than a mean distance from the concentrating region to the perimetral region, an area of the perimetral region is substantially less than a total area of the sheet, and the sheet guides the directed electromagnetic energy toward the routing means.

5,357,593

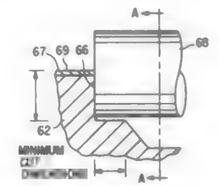
METHOD OF ATTACHING OPTICAL FIBERS TO OPTO-ELECTRONIC INTEGRATED CIRCUITS ON SILICON SUBSTRATES

Franklin B. Boesler, Williamsville, N.Y., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Oct. 12, 1993, Ser. No. 135,384

Int. Cl.[5] G02B *6/42*

U.S. Cl. 385—49 **10 Claims**



1. A method of attaching optical fibers comprising the steps of:
providing a precision groove on a substrate, essentially parallel and in line with a waveguide in a transparent surface layer on said substrate;
providing a vertical face on said waveguide;
providing each of said optical fibers with a perpendicular end face;
providing clearance in said substrate for said perpendicular end face of each of said optical fibers to make face contact with said vertical face on said waveguide; and
clamping said optical fibers in place including applying an ultraviolet curable material to said fibers, disposing a clamping plate transparent to ultraviolet curing radiation over said fibers, and verifying performance with the clamping plate in place.

5,357,594

ENCODING AND DECODING USING SPECIALLY DESIGNED PAIRS OF ANALYSIS AND SYNTHESIS WINDOWS

Louis D. Fielder, Millbrae, Calif., assignor to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Division of Ser. No. 582,956, Sep. 26, 1990, Pat. No. 5,222,189, which is a continuation-in-part of Ser. No. 439,868, Nov. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 303,714, Jan. 27, 1989, abandoned. This application Jun. 16, 1993, Ser. No. 78,594

Int. Cl.[5] G10L *3/02*

U.S. Cl. 395—2.2 **20 Claims**

1. A method for encoding a signal comprising signal samples, said method comprising
generating a window-weighted sample block by weighting a block of said signal samples with a window function, wherein said window function is an analysis window within an analysis-/synthesis window pair, each of length N, and the product of both windows in said pair is a

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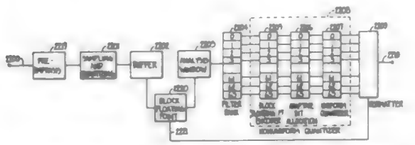
product window of length N with an overlap interval V, said product window when overlapped with a shifted replica of itself sums to a constant value across the overlap interval,

filtering said window-weighted sample block to generate frequency subband information, and

representing said frequency subband information in a form suitable for transmission or storage,

wherein said analysis-/synthesis-window pair is prederived by

(1) generating an initial window having a length of 1+V,



(2) generating an interim window by convolving said initial window with a unit pulse function of length N−V,

(3) defining a scaling factor by convolving said initial window with a unit pulse function of length one,

(4) obtaining said product window by dividing said interim window by said scaling factor, and

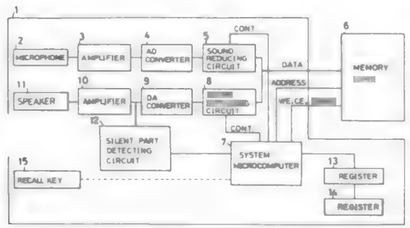
(5) obtaining said window function by taking the Ath power of said product window, wherein 0<A<1.

5,357,595

SOUND RECORDING AND REPRODUCING APPARATUS FOR DETECTING AND COMPENSATING FOR RECORDED PERIODS OF SILENCE DURING REPLAY

Kengo Sudoh, Higashihiroshima, and Yuji Sumitomo, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 24, 1992, Ser. No. 903,281
Claims priority, application Japan, Jul. 8, 1991, 3-166980
Int. Cl.[5] G10L 9/00
U.S. Cl. 395—2.24 15 Claims



1. A sound recording and reproducing apparatus comprising:

a semiconductor memory device for storing a digital signal;

acoustic signal writing means for converting an inputted acoustic signal into a digital signal and writing the digital signal into said semiconductor memory device;

reading out means for addressing and reading out the digital signal from said semiconductor memory device, converting the digital signal into an acoustic signal and outputting the acoustic signal as a sound at the time of sound reproduction;

address storing means for storing an address used in reading the digital signals out from said semiconductor memory device;

silent part detecting means for monitoring a silent part of a reproduced sound and outputting a silent part detecting signal every time the silent part is detected during sound reproduction;

address writing means for writing to said address storing means an address corresponding to the silent part detected by the silent part detecting signal;

input means for inputting a recall instruction; and

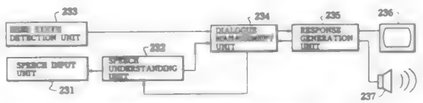
control means for reading out from said semiconductor memory device digital signals at addresses subsequent to those stored in said address storing means corresponding to the silent part of a reproduced sound, converting the digital signals into acoustic signals and outputting the acoustic signals as sound in response to the recall instruction inputted from said input means.

5,357,596

SPEECH DIALOGUE SYSTEM FOR FACILITATING IMPROVED HUMAN-COMPUTER INTERACTION

Yoichi Takebayashi, Kanagawa; Hiroyuki Tsuboi, Hyogo; Yoichi Sadamoto, Chiba; Yasuki Yamashita, Hyogo; Yoshifumi Nagata, Kanagawa; Shigenobu Seto, Kanagawa; Hideaki Shinchi, Kanagawa, and Hideki Hashimoto, Kanagawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki and Toshiba Software Engineering Corp., Tokyo, both of Japan

Filed Nov. 18, 1992, Ser. No. 978,521
Claims priority, application Japan, Nov. 18, 1991, 3-329475
Int. Cl.[5] G10L 9/00
U.S. Cl. 395—2.84 45 Claims



1. A speech dialogue system, comprising:

speech understanding means for understanding a semantic content of an input speech from a user;

dialogue management means for making a semantic content determination of a response output according to said semantic content of said input speech understood by said speech understanding means;

response generation means for generating a speech response and a visual response according to said semantic content of said response output determined by said dialogue management means; and

output means for outputting to said user said speech response and said visual response generated by said response generation means.

5,357,597

CONVOLUTIONAL EXPERT NEURAL SYSTEM (CONEXNS)

Manuel Aparicio, IV, Arlington, and Samuel E. Otto, Grapevine, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

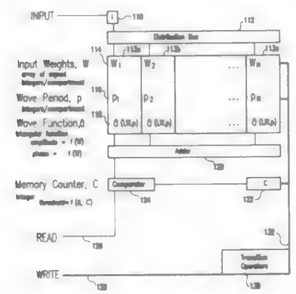
Filed Jun. 24, 1991, Ser. No. 720,278
Int. Cl.[5] G06F 15/18
U.S. Cl. 395—21 6 Claims

5. An architecture for an artificial neuron capable of providing an output corresponding to

an input vector including

at least one compartment means for at least storing data representing at least a domain of a periodic function representing an output in response to an input vector, and

means for generating an additional compartment means for storing data representing at least a domain of another periodic function in response to a predetermined output of



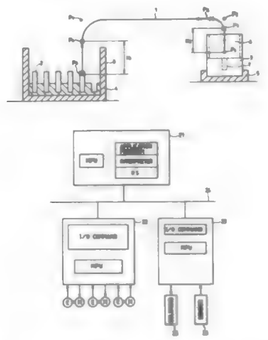
said at least one compartment for a particular input vector.

5,357,598

METHOD AND APPARATUS FOR CONTROLLING AN OBSTACLE AVOIDING ROBOT

Katsumi Ishihara, Tokyo, and Masatoru Yasuhara, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 457,303, Dec. 26, 1989, abandoned.
This application Sep. 18, 1992, Ser. No. 946,791
Claims priority, application Japan, Dec. 27, 1988, 63-327657
Int. Cl.[5] B25J 13/00; G05B 19/18
U.S. Cl. 395—90 15 Claims



1. A method of controlling a robot so as to prevent coming into touch with an obstacle, comprising the steps of:

continuously controlling the robot from a movement in a first direction to a movement in a second direction perpendicular to the first direction, and

concurrently executing the movements in the first and second directions from a predetermined position in the movement in the first direction,

wherein the predetermined position is determined by:

a) inputting a target movement position in the first direction;

b) inputting a target movement position in the second direction;

c) inputting a first distance which is necessary to execute the movement in only the second direction, the first distance being necessary to prevent coming into touch with the obstacle; and

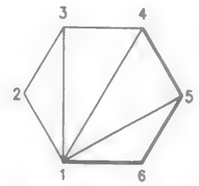
d) calculating said predetermined position on the basis of the target movement in the first direction, the target movement in the second direction and the first distance which were input in said steps a), b), and c).

5,357,599

METHOD AND APPARATUS FOR RENDERING POLYGONS

William L. Luken, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 30, 1992, Ser. No. 922,297
Int. Cl.[5] G06F 7/38, 15/20
U.S. Cl. 395—134 26 Claims



14. In a computer graphics system in which a graphics primitive is converted to an image for display on a display surface, said primitive having vertices defined by vertex data, said image being generated within a rectangular view volume defined by a plurality of clipping boundaries, a method of testing said vertices against said clipping boundaries as a preliminary to rendering said primitive for display on said surface, comprising the steps of:

(a) successively testing a vertex of said primitive against each of said plurality of clipping boundaries to determine whether said vertex is within said boundaries;

(b) if the tested vertex is outside one of said plurality of clipping boundaries, rejecting the vertex and testing a new vertex against the same one of said plurality of clipping boundaries;

(c) repeating step (b) for each vertex of said primitive, testing each new vertex only against said one of said plurality of clipping boundaries, until a vertex is found to be within said one of said plurality of clipping boundaries;

(d) if said new vertex is within said one of said plurality of clipping boundaries, testing said new vertex against each of the remaining of said plurality of clipping boundaries; and

(e) sending a test result for said tested vertices to a rendering process.

5,357,600

METHOD AND APPARATUS FOR THE RENDERING OF CURVED SURFACES USING A CONE OF NORMALS

Leon A. Shirman, San Jose, and Salim S. Abi-Ezzi, Foster City, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Oct. 15, 1992, Ser. No. 961,252
Int. Cl.[5] G06F 15/00
U.S. Cl. 395—133 20 Claims

1. In a computer system comprising a central processing unit (CPU), memory and input/output devices including a graphic display controller coupled to a graphic display device, a method for rendering graphic primitives comprising curved surfaces as graphic images on the graphic display device, said primitives defined in a Model Coordinate (MC) space according to control points, transformed to World Coordinate (WC) space and rendered as images in Device Coordinate (DC)

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space, said graphic display device defined according to the DC space, said method comprising the steps of:

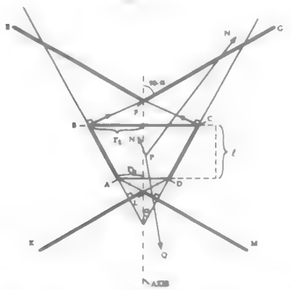
determining a set of normal vectors to the curved surface to be rendered;

constructing a floating cone comprising the set of normal vectors;

generating from the floating cone, a truncated cone anchored at a predetermined location, containing the patch normal vectors and patch control points;

constructing a frontfacing volume and a backfacing volume from the truncated cone;

performing frontfacing/backfacing tests to determine whether elements relative to the curved surface are within the frontfacing or backfacing volumes;



determining the processing elements of the processing pipeline to be executed from whether the elements relative to the curved surface are within the frontfacing or backfacing volumes;

generating pixel data by executing the processing components of the processing pipeline determined, each pixel data specifying the intensity of the pixel to be displayed on the graphic display device;

storing each pixel data in a frame buffer, each pixel data being stored at a location in the frame buffer corresponding to the location of the pixel in the device coordinate space;

said graphic display controller reading the pixel data stored in the frame buffer and generating control signals to actuated the pixel at the location and intensity indicated by the pixel data.

5,357,601

APPARATUS FOR PROCESSING SUPERIMPOSED IMAGE INFORMATION BY DESIGNATING SIZES OF SUPERIMPOSED AND SUPERIMPOSING IMAGES

Hideaki Kagawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 10, 1991, Ser. No. 712,728
Claims priority, application Japan, Jun. 12, 1990, 2-153583
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—135 **6 Claims**

1. An information processing apparatus comprising:

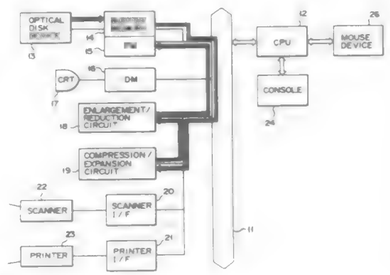
memory means for storing first information, said memory means having an image superimposed area on which images are superimposed;

image receiving means for receiving second information;

means for designating said image superimposed area in said memory means and for determining size data corresponding to said image superimposed area, where said image superimposed area size data includes lengths corresponding to two adjacent sides of said image superimposed area;

means for obtaining size data of said second information, where said second information size data includes lengths corresponding to two adjacent sides of said second information;

means for determining a size changing ratio of said second information in accordance with said lengths of two adjacent sides of said image superimposed area and said lengths of corresponding two adjacent sides of said second information;



means for reading out said second information from said image receiving means; and

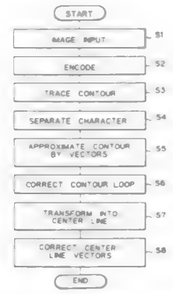
means for changing the size of said second information read out by said reading mean according to said size changing ratio to create resized second information and for supplying said re-sized second information to said image superimposed area to be superimposed on said first information.

5,357,602

APPARATUS FOR TRANSFORMING A TWO-LEVEL IMAGE INTO CONTOUR VECTORS BY DECOMPOSING COMPOSITE FIGURES INTO "UNITARY" (OPEN) AND CLOSED-LOOP FIGURES, ESPECIALLY SUITABLE FOR MINIMIZING MEMORY USE WHILE MAINTAINING SYSTEM PROCESSING SPEED

Junichi Ohta, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 501,736, Mar. 30, 1990, abandoned. This application Jun. 16, 1993, Ser. No. 76,925
Claims priority, application Japan, Apr. 3, 1989, 1-84399
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—142 **5 Claims**



1. An apparatus for transforming a two-level image into contour vectors and forming a center line, the apparatus comprising:

a) dividing and correcting means including:

1) means for extracting a plurality of characteristic points at which an absolute value of a difference in angle between contour vectors is greater than a first threshold;

2) means for determining vectors which connect two of the plurality of characteristic points which are spaced apart a distance which is smaller than a predetermined line width; and

3) means for reconstructing the contour vectors based on the determined vectors, the reconstructing step constituting a step of decomposing a composite figure having (1) at least one unitary figure defined by a single contour loop and (2) at least one closed loop figure defined by two contour loops, into unitary and closed loop figures which are distinguishable from each other; and

b) center line determining means including:

1) means for extracting, from among the contour vectors reconstructed by the dividing and correcting means, (1) a first contour vector and (2) a second contour vector closest to and opposite in direction from the first contour vector; and

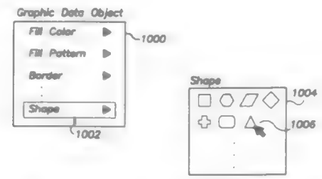
2) means for sequentially determining, based on the first and second extracted contour vectors, the center line.

5,357,603

METHOD AND SYSTEM FOR CHANGING A SHAPE TYPE WHILE MAINTAINING EXISTING GRAPHIC CHARACTERISTICS

David C. Parker, Menlo Park, Calif., assignor to Microsoft Corporation, Redmond, Wash.

Filed Jun. 15, 1992, Ser. No. 898,792
Int. Cl.[5] G06F *3/14*
U.S. Cl. 395—156 **20 Claims**



1. A method performed by a computer of changing a polygon type of a graphic data object, comprising the steps of:

(a) obtaining a first polygon type for the graphic data object in response to a first user selection, the first polygon type being a rectangle with four sides;

(b) obtaining graphic characteristics for the graphic data object having the first polygon type in response to a second user selection;

(c) obtaining a second polygon type for the graphic data object in response to a third user selection, the second polygon type having a number sides that is different than the number of sides of the first polygon type; and

(d) drawing the graphic data object having the second polygon type, and having the graphic characteristics selected by the second user selection for the first polygon type.

5,357,604

GRAPHICS PROCESSOR WITH ENHANCED MEMORY CONTROL CIRCUITRY FOR USE IN A VIDEO GAME SYSTEM OR THE LIKE

Jeremy E. San, London; Ben Cheese, Melbourn Royston; Carl N. Graham, and Peter R. Warnes, both of London, all of England, assignors to A/N, Inc., Redmond, Wash.

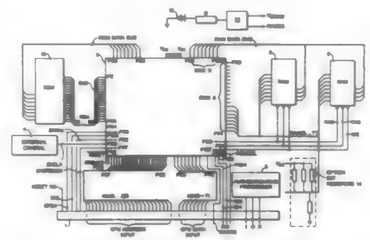
Continuation of Ser. No. 828,459, Jan. 30, 1992, abandoned. This application Apr. 8, 1994, Ser. No. 224,411
Int. Cl.[5] G06F *3/00, 15/62*
U.S. Cl. 395—162 **59 Claims**

1. In a video game system having a main console including a game microprocessor for executing a video game program stored in an external memory system and a picture processing unit coupled to said game microprocessor and a video random access memory, coupled to said picture processing unit, for storing data for use in generating a video display, said video game external memory system comprising:

a cartridge for removable connection to said main console, said cartridge providing a housing for at least:

a program memory for storing said video game program;

an additional memory for storing at least video graphics data; and



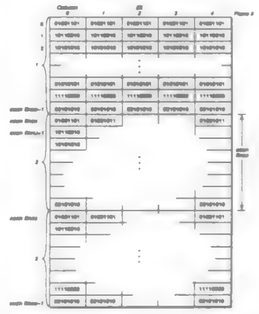
a graphics processor, coupled to said program memory, and said additional memory, and coupled to said game microprocessor when said cartridge is connected to said main console for executing at least part of said video game program, said external memory system including a program memory controller for controlling access to said program memory and an additional memory controller for controlling access to said additional memory.

5,357,605

METHOD AND SYSTEM FOR DISPLAYING PATTERNS USING A BITMAP DISPLAY

Wesley O. Rupel, Bellevue, and Walter C. Moore, Seattle, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 244,449, Sep. 13, 1988, abandoned. This application Oct. 23, 1990, Ser. No. 601,939
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—164 **10 Claims**



3. A method of replicating a pattern in a selected area of a bitmap memory, the bitmap memory having a latch register, the pattern having one column and a plurality of rows of data, the selected area having a plurality of columns and rows, the latch register being one column wide, a column being a plurality of bits wide, the method comprising the steps of:

a. loading the latch register with the data from the first row of the pattern;

b. determining the rows in the selected area into which the data in the first row of the pattern is to be replicated;

c. writing the data in the latch register as loaded in step a to

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each column in each determined row without reloading the latch register; and

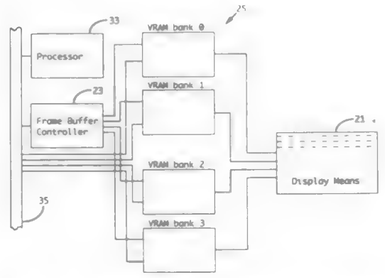
d. repeating steps a through c for the second and succeeding rows in the pattern to effect the replication of the pattern throughout the selected area of the bitmap memory.

5,357,606

ROW INTERLEAVED FRAME BUFFER

Dale R. Adams, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Feb. 25, 1992, Ser. No. 842,852
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—164 **9 Claims**



1. An improved frame buffer in a computer system having a display means, said display means having multiple display lines, said improved frame buffer comprising:

a) multiple banks of display memory wherein each said display memory bank provides display data for a different non-contiguous set of said display lines of said display means; and,

b) separate display memory access logic for each said display memory bank, wherein said separate display memory logic comprises:

i) means for decoding, in response to receiving a read or write command, a provided memory address and to provide a decoded row address and a decoded column address to one of said display memory banks; and

ii) means for determining whether said decoded row address matches a previous decoded row address and accessing said display memory bank associated with said separate display memory access logic if said decoded row address matches said previous decoded row address.

5,357,607

FILE STORAGE PROCESS FOR ELECTRONIC PRINTING SYSTEMS HAVING MULTIPLE DISKS

Kitty Sathi, Pittsford; Ronald A. Ippolito, Rochester; Randall J. Stegbauer, Ontario, and Colleen R. Enzien, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

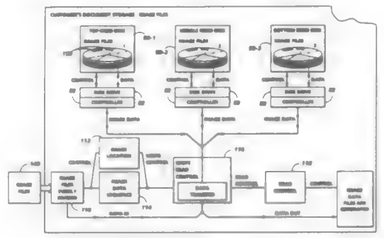
Filed Apr. 1, 1991, Ser. No. 678,926
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—166 **15 Claims**

1. A file storage process for a printing system in which said printing system includes printer means for producing prints from image data and plural disks providing permanent memory for storing system files, wherein the plural disks include a first disk with a plurality of platters and a second disk with a plurality of platters, comprising the steps of:

a) segregating said system files into critical files requiring a high level of file integrity and non-critical files requiring a lower level of file integrity;

b) storing said critical files in duplicate on each of said disks to provide file backup and assure said high level of file integrity such that one critical file is stored in one or more of the platters of the first disk and another critical file is stored in one or more platters of the second disk;

c) separating of said non-critical files into a series of segments each having a predetermined number of bytes with a total number of said segments being an even multiple of the number of said disks;



d) separating said segments into blocks with the number of said segments in each block being equal to the number of said disks; and

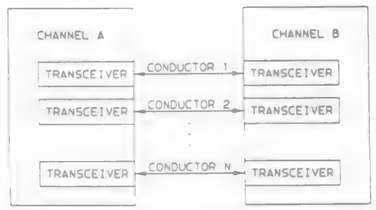
e) storing said blocks of segments on said disks so that each of said segments in each of said blocks is stored on only one of said disks and one of said blocks is stored in one or more of the platters of the first disk and another of said blocks is stored in one or more platters of the second disk.

5,357,608

CONFIGURABLE, RECOVERABLE PARALLEL BUS

Neil G. Bartow, Saugerties; Robert S. Capowski, Verbank; Louis T. Fasano, Poughkeepsie; Thomas A. Gregg, Highland; Gregory Salyer, Woodstock, and Douglas W. Westcott, Rhinebeck, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 20, 1992, Ser. No. 839,657
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—200 **33 Claims**



1. In a data processing complex with interconnected elements wherein the elements are directly interconnected by physical links each physical link comprising multiple conductors, a method of establishing an operational link between first and second elements of said complex comprising:

determining operational connectivity between said first and second elements of said complex for every conductor interconnecting said first and second elements;

marking as configured in a configured-conductor table all of said conductors which have been determined to operationally connect said first and second elements;

generating an intended-operational-link, said intended-operational-link being a set of conductors which are allowed to form an operational link;

comparing said intended-operational-link to said configured-conductor table;

repeating said generation and said comparison steps if said intended-operational-link contains any conductor which is not marked as configured in said configured-conductor table; and

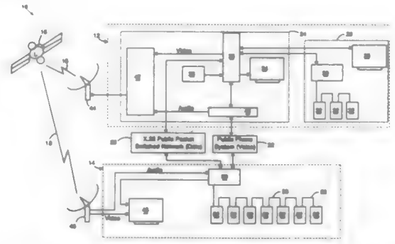
establishing said operational link from said intended-operational-link if all of said conductors in said intended-operational-link are marked as configured in said configured-conductor table, said operational link providing a maximum bandwidth for configured conductors interconnecting said first and second elements.

5,357,609

SITE CONTROLLER WITH ECHO SUPPRESSION

Robert E. Sellers, Santa Clara, and Gary D. Alford, Campbell, both of Calif., assignors to One Touch Systems, Inc., Santa Clara, Calif.

Filed Mar. 25, 1992, Ser. No. 858,319
Int. Cl.[5] G06F *13/38*
U.S. Cl. 395—200 **4 Claims**



1. A voice communication system for canceling feedback howl and satellite delay echo between two remote locations interconnected by a satellite-based communications link, the system comprising:

a first noise gate and level detector channel having a speech input connected to a first dynamic range processor with a log circuit and voltage controlled amplifier (VCA) for communicating a first audio signal from a first site to a second site via said satellite-based communications link; and

a second noise gate and level detector channel having a speech input connected to a second dynamic range processor with a log circuit and voltage controlled amplifier (VCA) for communicating a second audio signal from said second site to said first site via said satellite-based communications link;

wherein, the amplitude of a first voice signal is sensed in the first channel and the amplitude of a second voice signal is sensed in the second channel and such sensing is used by the first and second channels to half-duplex control a gating of said first and second voice signals through said satellite-based communications link and to adjust the amplitudes of said first and second voice signals with respective ones of said first and second VCAs.

5,357,610

METHOD FOR PARALLEL DATA TRANSMISSION USING A SERIAL DATA TRANSMISSION DEVICE

Mamoru Takai, Saita, Japan, assignor to Megasoft Inc., Saita, Japan

Filed Apr. 1, 1992, Ser. No. 862,659
Claims priority, application Japan, May 27, 1991, 3-121357
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—200 **16 Claims**

1. A method for parallel data transmission in a system having (i) a modem, (ii) at least one modem status terminal connected to said modem, (iii) at least one modem control terminal connected to said modem, (iv) at least one serial signal output terminal connected to said modem, (v) a modem status register, (vi) a modem control reqister, (vi) a line control register, and (vii) processing means connected to said at least one modem status terminal, said at least one modem control terminal, said at least one serial signal output terminal, said modem status register, said modem control register, and said line control register, comprising the steps of:

detecting modem status information from said modem with said at least one modem status terminal;

storing said modem status information in said modem status register;

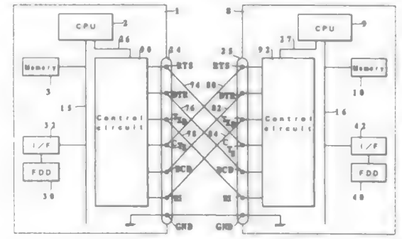
transmitting said modem status information from said modem status register to said processing means;

transmitting modem control signals from said at least one modem control terminal, via said processing means, to said modem control register;

storing said modem control signals in said modem control register;

outputting data signals via said at least one modem control terminal;

controlling signal logic levels of the data signals output from said at least one modem control terminal in accordance



with said modem control signals stored in said modem control register;

receiving incoming line control signals, which include break signals, via said at least one modem status terminal;

transmitting said break signal from said at least one modem status terminal, via said processing means, to said line control register;

storing said break signals in said line control register;

outputting data signals via said at least one serial signal output terminal;

controlling signal logic levels of the data signals output from said at least one serial signal output terminal in accordance with said break signals stored in said line control register;

inputting data signals via said at least one modem status terminal; and

perceiving signal logic levels of said data signals input via said at least one modem status terminal using said processing means and in accordance with the modem status information transmitted to said processing means.

5,357,611

CENTRALIZED SUPERVISORY CONTROL SYSTEM FOR CENTRALLY SUPERVISING A PLURALITY OF SUPERVISED APPARATUSES

Toshihito Kaneshima, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Filed Jun. 29, 1992, Ser. No. 905,346
Claims priority, application Japan, Jul. 4, 1991, 3-164109
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—200 **2 Claims**

1. A centralized supervisory control system comprising:

a centralized supervisory control center for centrally supervising a plurality of supervised apparatuses; said centralized supervisory control center detecting exact times of functions or events in any of the supervised apparatuses;

said supervised apparatuses each including means for dividing failure and event information produced by said super-

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vised apparatuses into units of blocks and outputting said blocks as status data; and

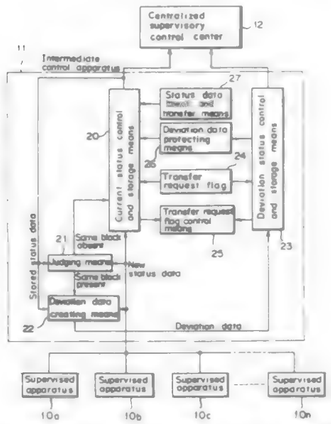
an intermediate control apparatus operatively connecting each of said supervised apparatuses to said centralized supervisory control center, said intermediate control apparatus collecting continuously the information sent from said supervised apparatuses;

said intermediate control apparatus comprising:

current status control and storage means for receiving the blocks as status data sent from any of said supervised apparatuses and storing into a link-like queue said blocks as status data on a first-in first-out basis as stored blocks together with indications of the times at which said blocks as status data were output;

judging means for comparing, after blocks as status data are stored into said current status control and storage means, said stored blocks with blocks coming anew from said supervised apparatuses to determine if said blocks coming anew already exist as stored blocks;

deviation data creating means for comparing, when said judging means detects a block coming anew which is the same as a stored block, the previously stored status data with the newly received status data in the same block to



determine if said newly received status data contain any deviation, and creating, if such deviation exists, deviation data made of the content of said deviation and a time-of-day indication applicable to said deviation;

deviation status control and storage means for storing said deviation data consecutively into a link-like queue on a first-in first-out basis;

transfer request flag control means for turning on a transfer request flag so as to transfer to said centralized supervisory control center data selected from a group consisting of said deviation data and latest status data within said current status control and storage means, the transfer request flag being turned on when said deviation status control and storage means has stored said deviation data, or when said judging means has not detected a block coming anew which is the same as a stored block and causing said newly received status data to be stored as said latest status data into said current status control and storage means; and

transfer means for transferring to said centralized supervisory control center data selected from the group consisting of said deviation data and said latest status data when said transfer request flag is turned on.

5,357,612

MECHANISM FOR PASSING MESSAGES BETWEEN SEVERAL PROCESSORS COUPLED THROUGH A SHARED INTELLIGENT MEMORY

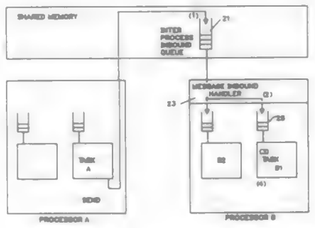
Haissam Alaiwan, Cagnes sur Mer, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 644,046, Jan. 22, 1991, abandoned. This application Jan. 11, 1993, Ser. No. 91,117

Claims priority, application European Pat. Off., Feb. 27, 1990, 90400528.9

Int. Cl.[5] **G06F** *13/38; G06Z 12/00, 15/56*

U.S. Cl. 395—200 **6 Claims**



1. In a multi-processor system comprising a plurality of processors coupled by a shared memory and running a plurality of sending and receiving tasks, and wherein each processor is provided with a local operating system and an intertask communication interface for managing system calls issued by the tasks, a method for passing messages between said plurality of sending and receiving tasks, comprising steps in each said processor of:

allocating to each said processor a separate interprocessor inbound queue space in said shared memory;

issuing an open system call from said sending task running in a first said processor to said intertask communication interface of said first processor which interface identifies in response to said open system call, the location in said shared memory allocated to said separate interprocessor inbound queue of a second processor running said receiving task corresponding to said sending task;

issuing a sending system call by said sending task running in said first processor to said intertask communication interface of said first processor, said sending system call comprising the identification of the location in said shared memory of said separate interprocessor inbound queue of said second processor and of the messages to be passed from said sending to said receiving tasks;

activating a serving program means running in each said processor for periodically dequeuing messages from said separate interprocessor inbound queue allocated to each said processor; and

issuing a receive system call by said receiving task to said intertask communication interface of said second processor running said receiving task, which processor provides the messages dequeued from said separate interprocessor inbound queue to said receiving task.

5,357,613

TIME-DOMAIN BOUNDARY BUFFER METHOD AND APPARATUS

Jay T. Cantrell, Dallas, and Edward R. Schurig, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 16, 1992, Ser. No. 945,547

Int. Cl.[5] **G06F** *13/14*

U.S. Cl. 395—250 **25 Claims**

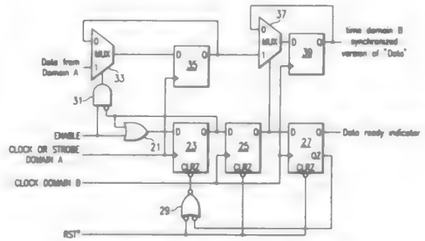
1. A time domain boundary buffer circuit for coupling a first time domain bus to a second time domain, comprising:

a plurality of data inputs coupled to said first time domain bus;

a strobe input coupled to a strobe signal of said first time domain bus;

a clock input coupled to a clock signal of said first time domain bus;

a data ready circuit coupled to said strobe input and to said clock input, for capturing transitions at said strobe input responsive to said clock input;



a data buffer circuit coupled to said data inputs, and said strobe input for synchronizing data from said first time domain bus into said second time domain; and

said data buffer circuit receiving said data at said data inputs in response to a transition at said strobe input, and subsequently synchronizing said data into said second time domain.

5,357,614

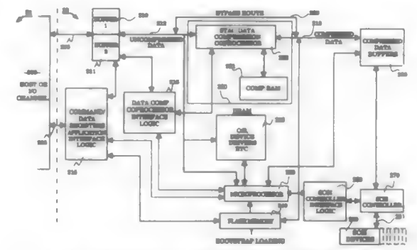
DATA COMPRESSION CONTROLLER

Ravi Pattisam, Parma, and Gary T. DalSanto, Stow, both of Ohio, assignors to Rexon/Tecmar, Inc., Solon, Ohio

Filed Sep. 17, 1992, Ser. No. 946,763

Int. Cl.[5] **G06F** *13/14*

U.S. Cl. 395—250 **13 Claims**



1. A data compression controller for streaming data transfers between a host system and at least one device, said host system coupled to said controller through a host channel, said data compression controller comprising:

first buffer means for storing data of first format;

second buffer means for storing data of second format;

compression coprocessor coupled to said first buffer means and said second buffer means for converting data between said first format and second format at a determined compression ratio, said compression coprocessor maintaining a compression history corresponding to data of said first and second formats, said compression coprocessor generating a first completion interrupt upon completion;

input/output (I/O) means coupled to said second buffer means for transferring data of said second format between said device and said second buffer means, said I/O means generating a second interrupt upon completion;

compression coprocessor interface means coupled to said compression coprocessor for initiating transfer of one of said data of first and second formats into said compression coprocessor, said compression coprocessor interface means also causing the output of said compression coprocessor to be coupled to one of said second and first buffer means, respectively, said compression coprocessor interface means monitoring said compression coprocessor and transferring said first completion interrupt when said compression coprocessor is completed;

application interface means coupled to said host channel, said application interface means communicating with said host system for loading and unloading said first buffer means and second buffer means, said application interface means monitoring said first buffer means and issuing a third completion interrupt when said first buffer means is filled to a predetermined level, said application interface means also monitoring said second buffer means and issuing a fourth completion interrupt when said second buffer means is filled to a predetermined level;

I/O interface means for transferring said data of second format between said I/O means and said device, said I/O interface means coupling said I/O means to said device when said second buffer means is filled to said predetermined level, said I/O interface means monitoring said I/O means and transferring said second interrupt;

processor means for performing multitasking among said compression compressor, said first buffer means, said second buffer means, said host channel and said I/O means responsive to one of said first, second, third, and fourth completion interrupts received, said processor means performing formatting and error checking of data of said second format in said second buffer means; and

program memory means coupled to said processor means and said compression compressor, said program memory storing a predetermined operating system for operating said processor means, said program memory means storing one of a plurality of predetermined device drivers unique to said device coupled to said host system for driving said device.

5,357,615

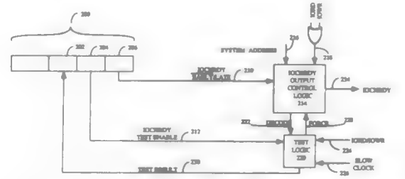
ADDRESSING CONTROL SIGNAL CONFIGURATION IN A COMPUTER SYSTEM

Greg A. Peek, and Craig D. Cedros, both of Beaverton, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 19, 1991, Ser. No. 811,465

Int. Cl.[5] **G06F** *15/02*

U.S. Cl. 395—275 **21 Claims**



12. A circuit for testing, configuring, and controlling timing of a resource addressing control signal in a computer system, said circuit comprising:

a control/test register being readable and programmable by a processor;

resource addressing control logic coupled to said control/test register, said resource addressing control logic having means for generating a resource addressing control signal on an output line, said resource addressing control logic including means for receiving an address from said processor, means for receiving an addressing command signal from said processor, and means for receiving an addressing control mode stored in said control/test register, said resource addressing control signal changing state in a manner corresponding to said addressing control mode; and

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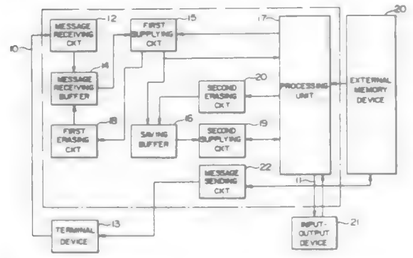
test logic coupled to said resource addressing control logic and said control/test register, said test logic including means for modifying said resource addressing control signal and means for determining if said addressing command signal changes state in response to said resource addressing control signal modified by said means for modifying changing state, a corresponding result being produced by said means for determining and being received by said control/test register.

5,357,616

ON-LINE COMPUTER SYSTEM CAPABLE OF SAFELY AND SIMPLY PROCESSING A MESSAGE SIGNAL

Takayuki Ban, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 21, 1992, Ser. No. 822,957
Claims priority, application Japan, Jan. 21, 1991, 3-021668
Int. Cl.[5] G06F *11/00, 11/16*
U.S. Cl. 395—275 **3 Claims**



1. An on-line computer system for processing an input message signal into a processed message signal, comprising:

a message receiving circuit supplied with said input message signal for producing a received message signal;

message holding means connected to said message receiving circuit for holding said received message signal as a held message signal;

memorizing means supplied with a first supplied message signal for memorizing means supplied with a first supplied message signal for memorizing said first supplied message signal as a memorized message signal;

processing means supplies with said first supplied message signal and a second supplied message signal for processing said first and said second supplied message signals into said processed message signal and for producing a first request signal, a second request signal, and a normal end signal representing a normal end of processing said first and said second supplied message signals;

first supplying means connected to said message holding means, said memorizing means, and said processing means and supplied with said first request signal for supplying said held message signal as said first supplied message signal to said memorizing means and to said processing means and for producing an erasing signal after supply of said first supplied message signal;

first erasing means connected to said message holding means and said first supplying means for erasing said held message signal from said message holding means when said first erasing means is supplied with said erasing signal;

second supplying means connected to said memorizing means and said processing means for supplying said memorized message signal to said processing means as said second supplied message signal when said second supplying means is supplied with said second request signal; and

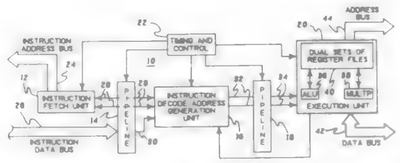
second erasing means connected to said memorizing means and said processing means for erasing said memorized message signal from said memorizing means when said second erasing means is supplied with said normal end signal.

5,357,617

METHOD AND APPARATUS FOR SUBSTANTIALLY CONCURRENT MULTIPLE INSTRUCTION THREAD PROCESSING BY A SINGLE PIPELINE PROCESSOR

Gordon T. Davis, Raleigh, N.C., and Sebastian Ventrone, Jericho, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 22, 1991, Ser. No. 796,194
Int. Cl.[5] G06F *9/00, 9/38, 9/40*
U.S. Cl. 395—375 **23 Claims**



19. A method for substantially concurrent processing of dual instruction threads from a single program within a single pipelined processor including a timer and controller for controlling the timing and sequence of operations on instructions of said dual instruction threads, a first instruction thread being defined by a first series of instructions and a second instruction thread being defined by a second series of instructions, said single pipelined processor including a first register file set containing working contents for said first instruction thread and a second register file set containing working contents for said second instruction thread, said substantially concurrent processing method comprising the steps of:

(a) fetching an instruction from said first instruction thread;

(b) decoding said instruction fetched from sad first instruction thread while simultaneously fetching an instruction from said second instruction thread;

(c) executing said decoded instruction fetched from said first instruction thread while simultaneously decoding said instruction fetched from said second instruction thread and fetching another instruction from said first instruction thread, said executing step (c) including storing working results of said executed decoded instruction fetched from said first instruction thread in said first register file set;

(d) executing said decoded instruction fetched from said second instruction thread while simultaneously decoding said another instruction fetched from said first instruction thread and fetching another instruction from said second instruction thread, said executing step (d) including storing working results of said executed decoded instruction fetched from said second instruction thread in said second register file set; and

(e) repeating steps (c) & (d) for a plurality of instructions in said first instruction thread and said second instruction thread such that said dual instruction threads are separately processed substantially concurrently in a time division manner within said single pipelined processor.

5,357,618

CACHE PREFETCH AND BYPASS USING STRIDE REGISTERS

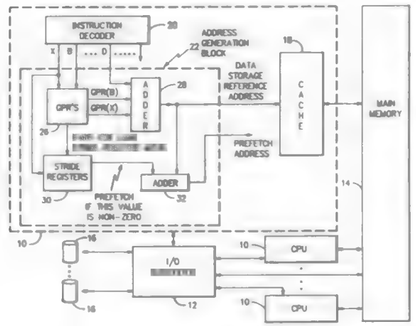
Jamshed H. Mirza, Woodstock, N.Y., and Steven W. White, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 15, 1991, Ser. No. 686,221
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—400 **10 Claims**

5. In a computer system having a memory hierarchy including a main memory and a cache memory addressed by a central processing unit, said central processing unit including a plurality of addressing registers and an address generation mechanism for performing an address generation cycle and thereby generating a data storage address to said cache memory, the improvement in said address generation mechanism comprising:

storage reference instruction means for issuing storage reference instructions for transferring data between said cache memory and said central processing unit, said storage reference instruction means including at least one fixed bit field for specifying at least one addressing register, of said plurality of addressing registers, from which said at least one addressing register said data storage address is generated;

stride register means including a plurality of stride registers for storing stride values respectively representing a displacement between consecutive ones of data storage addresses generated by said address generation mechanism for an address register specified by a storage reference instruction from said storage reference instruction means, said plurality of stride registers corresponding in number to a number of said plurality of addressing registers, respective ones of said plurality of stride registers being associated with respective ones of said plurality of addressing registers on a one-to-one basis;



previous address register means including a plurality of previous address registers for storing data storage addresses generated to access said cache memory, said data storage addresses being stored in a previous address register, of said plurality of previous address registers, specified by said at least one fixed bit field in said storage reference instruction at an end of said address generation cycle, said plurality of stride registers corresponding in number to a number of said plurality of previous address registers, respective ones of said plurality of stride registers being associated with respective ones of said plurality of previous address registers on a one-to-one basis;

subtraction means for subtracting a previous data storage address stored in said previous address register means for a current data storage address generated by said address generation mechanism to generate an output, said output being predicted stride value;

means responsive to a non-zero predicted stride value output by said subtraction means for generating a prefetch address to said cache memory; and

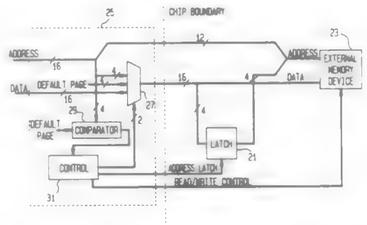
comparator means for comparing a non-zero predicted stride value output by said subtraction means with a stride value stored in said stride register means to generate a prefetch enabling signal if a match occurs.

5,357,619

PAGED MEMORY SCHEME

Neal A. Crook, Reading, England; Vincent G. Gavin, Galway, Ireland; Robert J. Galuszka, Reading, England; John M. Lenthall, Galway; Bipin Mistry, Edgware, England; Clinton Choi, London, England, and Paul L. Bruce, Basingstoke, England, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 10, 1992, Ser. No. 819,267
Int. Cl.[5] G06F *12/06, 13/00*
U.S. Cl. 395—400 **25 Claims**



1. An apparatus for supplying a system address having p address bits, the system address comprising a first string of m bits and a second string of n bits, wherein p=m+n, the apparatus comprising:

a register having m inputs lines, a control input, and m output lines, the first string of m bits being supplied to the m input lines of the register by an accessing device, the register being pre-loaded with a predetermined default page value, an enable signal asserted at the control input of the register operates to coupled the m bits at the input lines to the m output lines of the register;

a comparator, having first and second inputs and an output, the first input of the comparator coupled to the first string of m bits in the system address, the second input of the comparator is coupled to receive the default page value, such that a binary value is asserted at the output in dependence on agreement between the m bits at the first input and the default page value at the second input of the comparator; and

a control device having an input coupled to the output of the comparator and a first output coupled to the control input of the register, such that when the m bits and the default page value are not in agreement in the comparator, the control device is responsive to the binary value output by the comparator to send the enable signal to the control input of the register to coupled the m bits at the m input lines to the m output lines of the register.

5,357,620

BIT ADDRESSING SYSTEM

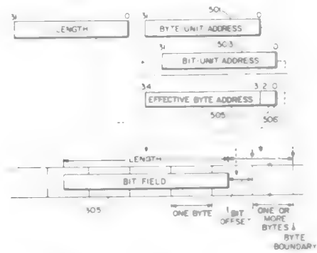
Hiroaki Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 477,384, Feb. 9, 1990, abandoned. This application Sep. 1, 1993, Ser. No. 115,125
Claims priority, application Japan, Feb. 9, 1989, 1-31447
Int. Cl.[5] G06F *12/00, 12/04*
U.S. Cl. 395—400 **6 Claims**

1. A bit address system for producing an effective base address and an effective bit offset address in response to an instruction including an addressing operand, said addressing operand including first and second fields, said bit addressing system comprising means responsive to a content of said first field for obtaining bit-unit address information of N bits, N being an integer more than one, said bit-unit address information being represented in two's complement form and having a sign bit as a most significant bit thereof, means responsive to a content of said second field for obtaining base address informa-

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tion, a shifter/sign-expander for shifting said bit-unit address information by M bits in a direction of less significant bits and expanding said sign bit by said M bits in a direction of more significant bits to generate shifted/sign-expanded address information, M being an integer and smaller than N, said shifter/-sign-expanded address information being thereby constituted of most significant N bits and least significant M bits, said most



significant N bits of said shifted/sign-expanded address information including (M+1) bits each having a content identical to said sign bit, and an adder adding said base address information with said most significant N bits of said shifted/sign-expanded information to produce said effective base address, said least significant M bits of said shifted/sign-expanded address information being derived as said effective bit offset address.

5,357,621

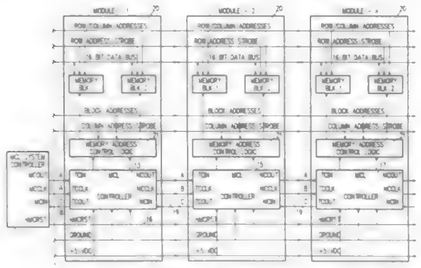
SERIAL ARCHITECTURE FOR MEMORY MODULE CONTROL

Darrell L. Cox, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 578,699, Sep. 4, 1990, abandoned. This application Oct. 12, 1993, Ser. No. 135,361

Int. Cl.[5] G06F *12/06, 13/00*

U.S. Cl. 395—400 **3 Claims**



1. In an expandable memory system for use in a computer system comprising a system controller and at least one memory module, each memory module including a module controller associated therewith, the first said module controller coupled to said system controller, and in series with additional module controllers forming a serial network with said system controller, a method for configuring the memory system comprising the steps of:

sending an interface clear command from said system controller serially to said first module controller in said serial network;

sending a configuration command having an encoded first address from said system controller to said first module controller, said first address being assigned to said first module controller;

responding to said address assignment by said first module controller incrementing said address modifying said configuration command and sending said modified configuration command with said incremented address from said first module controller to said system controller;

sending a memory size interrogate command from said system controller to said first module controller;

responding to said interrogate command by sending an encoded memory size signal from said first module controller to said system controller, said encoded memory size signal representative of the memory capacity of said first memory module associated with said first module controller;

formulating and sending a base address command having an encoded first base address from said system controller to said first module controller, said first base address assigned to a first memory module associated with said first module controller from said system controller;

sending a pass-through command to said first module controller setting said first module controller to a pass through mode; and

thereafter sending an interface clear command to said first module controller for pass through to any subsequent module controller coupled to said first module controller.

5,357,622

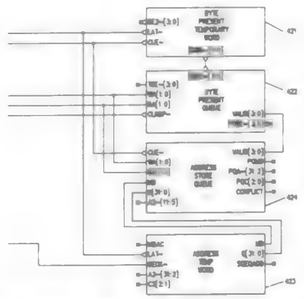
APPARATUS FOR QUEING AND STORING DATA WRITES INTO VALID WORD PATTERNS

Terry J. Parks, Round Rock; Darius D. Gaskins, Austin; Michael L. Longwell, Austin, and Keith D. Matteson, Austin, all of Tex., assignors to Dell U.S.A., L.P., Austin, Tex.

Filed Sep. 27, 1990, Ser. No. 589,341

Int. Cl.[5] G06F *12/00*

U.S. Cl. 395—425 **18 Claims**



1. A digital computer system, including at least one central processor unit (CPU) and having at least one memory for storing data words of a predetermined size (full word) that are written by the CPU, each said full word being made up of a plurality of separately storable data segments, each said data segment being designated by a segment enable signal, the computer system comprising:

a CPU bus;

a memory bus;

data register means, electrically connected between the CPU and the memory via the CPU bus and the memory bus, respectively, for receiving at least a portion of the plurality of the data segments written from the CPU for storage in the memory, the data register means storing only a subset of all possible combinations of said data segments;

address register means, electrically connected to the CPU via the CPU bus, for receiving memory addresses corresponding to the data segments written from the CPU;

segment present register means, electrically connected to the data register means and the address register means, for receiving the designated segment enable signals and for indicating positions of the data segments within the data words;

control means, electrically connected to the data register means, for assembling the data segments in the data register means corresponding to the positions indicated by the segment present register means and corresponding to the memory addresses, and for presenting to the memory the full words, partial words made up of less than the plurality of data segments, and unassembled data segments for storage therein at the corresponding memory addresses; and

valid segment enable means, electrically connected to said address register means, said segment present register means, and said control means, for testing all combinations of data segment positions and for providing an output only when the combinations of data segments is valid to enable the control means to assemble the data segments, said valid segment enable means receiving the positions of the data segments presently in the data register means from the segment present register means and the positions of the data segments to be stored in the data register means from the address register means and combining said positions to test for a valid combinations of the data segments.

5,357,623

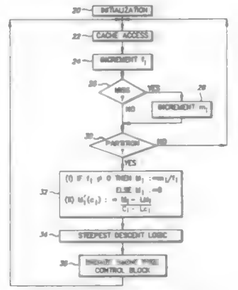
DYNAMIC CACHE PARTITIONING BY MODIFIED STEEPEST DESCENT

Igal Megory-Cohen, Givat Ela, Israel, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 1, 1991, Ser. No. 786,490

Int. Cl.[5] G06F *12/08*

U.S. Cl. 395—425 **3 Claims**



1. In a computer system comprising a CPU, a storage subsystem attaching said CPU, and a cache intercoupling said CPU and subsystem, said cache being initially partitioned into a plurality of local caches, each local cache i being of size Lc_i and being subject to a miss ratio of LM_i, a method for dynamically adjusting the partition of said local caches referenced by counterpart classes of CPU executed processes, comprising the iterative steps of

(a) tracking, for each local cache (i) of current size c_i, the number of current references (f_i) to said local cache and the number of current references (m_i) which result in a cache miss, the number of cache misses m_i from each of the tracked local caches being distributed over a unimodal surface; and

(b) adjusting local cache sizes c_i for a weighted miss ratio function ($w=\Sigma F_i{*}M_i(c_i)$) as a vector in the direction of the steepest descent projected on a functional hyperplane representative of a constrained sum of individual cache sizes intersecting the unimodal surface, where $F_i=f_i/\Sigma f_i$, $M_i(c_i)=m_i/f_i$.

5,357,624

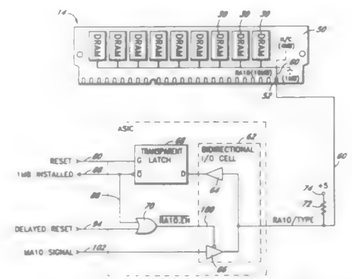
SINGLE INLINE MEMORY MODULE SUPPORT SYSTEM

Thomas J. Lavan, El Toro, Calif., assignor to AST Research, Inc., Irvine, Calif.

Continuation of Ser. No. 781,405, Oct. 23, 1991, abandoned. This application Mar. 31, 1994, Ser. No. 220,940

Int. Cl.[5] G06F *12/00*

U.S. Cl. 395—425 **11 Claims**



1. A support system for a computer system which enables a computer to recognize and address a plurality of circuit boards, each of said circuit boards installed in a receiving socket having a fixed number of pins, wherein a required number of signals transmitted between said support system and said circuit board and between said circuit board and said support system may be larger than can be transmitted by the fixed number of pins of said receiving socket, said support system comprising:

a single pin on said receiving socket shared by a first signal for conveying information from said circuit board to said support system and a second signal for conveying information from said support system to said circuit board, said first signal having one of first and second logic states;

a latch in said support system that stores the logic state of said first signal upon receiving an active reset signal from said computer system; and

a transmission enable logic system in said support system that enables transmission of said second signal from said support system to said circuit board via said single pin when said reset signal is no longer active when said first signal is in said first logic state and that disables transmission of said second signal from said support system to said circuit board on said single pin when said first signal is in said second logic state.

5,357,625

SYSTEM FOR IDENTIFYING COMMON FORMATS AND PROTOCOLS AND ALLOCATING RESPECTIVE BUFFERS SPACES FOR SIMULTANEOUS COMMUNICATION

Gregory J. Arends, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 26, 1992, Ser. No. 966,958

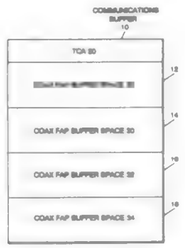
Int. Cl.[5] G06F *15/16, 12/06*

U.S. Cl. 395—500 **8 Claims**

1. In a system comprising a controller, having a communications buffer, connected to a 3270-type device by a transmission medium (Coax) for communicating using the 3270 data stream, said controller supporting a plurality of formats and protocols (FAPs) for operating over said Coax, and a device supporting a plurality of Coax FAPs wherein said controller and said device communicate over said Coax using one of said Coax FAPs, a method of configuring said system for supporting Coax FAPs common to said device and said controller comprising the steps of:

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identifying a first set of Coax FAPs which said device supports;
identifying a second set of Coax FAPs which said controller supports;
identifying a third set of Coax FAPs which contain at least two common FAPs supported by both said device and said controller; and
configuring said system so that at least two of said common Coax FAPs of said third set of Coax FAPs are enabled for simultaneous communication between said device and said controller over said Coax, said system configuring step



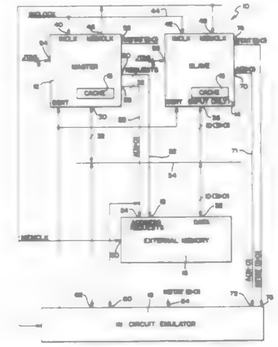
comprising the steps of partitioning said communication buffer into a plurality of communications areas with each one of said communications areas corresponding to different ones of said third set of Coax FAPs and further partitioning said communications buffer so that it has a terminal control area (TCA) consisting of a plurality of buffer spaces containing control information relating to different ones of said communications areas, wherein said system simultaneously uses said communications areas and said buffer spaces associated with said at least two enabled common Coax FAPs to communicate information with said device.

5,357,626

PROCESSING SYSTEM FOR PROVIDING AN IN CIRCUIT EMULATOR WITH PROCESSOR INTERNAL STATE

William M. Johnson, and David B. Witt, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Continuation of Ser. No. 743,679, Aug. 12, 1991, abandoned.
This application Oct. 20, 1993, Ser. No. 139,607
Int. Cl.[5] G06F *11/00*; G01R *31/28*
U.S. Cl. 395—500 22 Claims

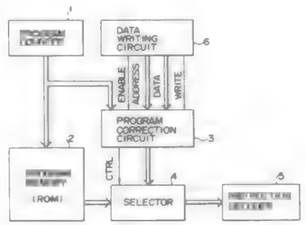
13. An arrangement for verifying, with an in circuit emulator, instructions to be executed by a processor, said instructions to be executed including external instructions stored in an addressable external memory and internal instructions stored in an addressable internal instruction cache, said arrangement being arranged to provide said in circuit emulator with an internal execution parameter resulting from the execution of said internal instructions and comprising:
a first processor including an address output for providing external memory addresses for fetching said external instructions stored in said external memory, an instruction input for receiving said external instructions fetched from said external memory, an internal instruction cache for storing said internal instructions, and a first status output coupled to said in circuit emulator for providing said in circuit emulator with execution status signals corresponding to the execution of said external and internal instructions;
a first external address bus coupling said first processor address output to said external memory and to said in circuit emulator;
an external instruction bus coupling said first processor instruction input and said in circuit emulator to said external memory for conveying said external instructions fetched from said external memory;
a second processor including an instruction input coupled to said external instruction bus for receiving said external instructions fetched from said external memory and an internal instruction cache for storing said internal instructions, said first and second processors being arranged to enable said second processor to duplicate the executions by said first processor of said external and internal instructions, and said second processor further including an address output for providing said in circuit emulator with said internal execution parameter; and
a second external address bus coupling said second processor address output to said in circuit emulator for providing said internal execution parameter to said in circuit emulator, said internal instruction parameter including a non sequential fetch address to said first and second processor internal instruction caches.



5,357,627

MICROCOMPUTER HAVING A PROGRAM CORRECTION FUNCTION

Azuma Miyazawa, Mitaka, and Toshiaki Ishimaru, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 496,807, Mar. 21, 1990, abandoned.
This application Mar. 31, 1993, Ser. No. 40,562
Claims priority, application Japan, Mar. 28, 1989, 1-76047; May 25, 1989, 1-131861; Dec. 18, 1989, 1-325876
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 26 Claims

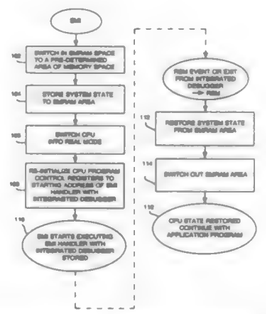


5. A microcomputer system comprising
a one-chip microcomputer including a program memory means for storing a program data, a program counter means for addressing said program memory means, and an instruction decoder means for decoding the program data read out from said program memory means addressed by said program counter means;
first nonvolatile memory means, which is electrically programmable, having a first storage area for storing a pair of an address data denoting an address of said program memory means where a program data to be corrected is stored, and a second storage area for storing adjustment data for adjusting said microcomputer system, the first nonvolatile memory means being arranged as a different chip from said one-chip microcomputer;
comparison means for comparing an output from said program counter means with the address data stored in said first nonvolatile memory means, and for outputting a coincidence signal when a coincidence is detected therebetween;
second nonvolatile memory means, which is electrically programmable, for storing a correction program data, and for outputting the correction program data in response to the coincidence signal, the second nonvolatile arranged as a different chip from said one-chip microcomputer; and
selection means for receiving the output from said program memory means and an output from said second nonvolatile memory means, for, when the coincidence signal is output, supplying the output from said second nonvolatile memory means to said instruction decoder means, and for, when the coincidence signal is not output, supplying the output from said program memory means to said instruction decoder means, said selection means including inhibition means for inhibiting the program data stored in said second nonvolatile memory means from being supplied to said instruction decoder means even when the output of said program counter means coincides with data stored in said first nonvolatile memory means; and
said inhibition means including means for inhibiting the program data stored in said second nonvolatile memory means from being supplied to said instruction decoder means when the output of said program counter means coincides with the address data stored in said first nonvolatile memory means and the address data has a predetermined value.

5,357,628

COMPUTER SYSTEM HAVING INTEGRATED SOURCE LEVEL DEBUGGING FUNCTIONS THAT PROVIDE HARDWARE INFORMATION USING TRANSPARENT SYSTEM INTERRUPT

Desmond Yuen, San Leandro, Calif., assignor to Intel Corporation, Santa Clara, Calif.
Continuation of Ser. No. 858,301, Mar. 25, 1992, abandoned.
This application Oct. 19, 1993, Ser. No. 138,894
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 6 Claims



1. An improved computer system comprising a central processing unit (CPU) coupled to at least one memory unit for executing at least an operating system comprising a plurality of said CPU's instructions, said CPU further having at least two modes of program execution, a real mode and a protected mode, and at least one interrupt for interrupting program execution, wherein the improvement to said computer system comprises:
(a) a dedicated memory area in said at least one memory unit, said dedicated memory area being not mapped as part of main memory space thereby keeping said dedicated memory area inaccessible to said operating system and other programs, if any, executed by said CPU;
(b) an interrupt processing program, having source level debugging functions, for serving an unmaskable interrupt and allowing a user to perform source level debugging and have access to hardware information, said interrupt processing program being prestored in said dedicated memory area;
(c) said at least one interrupt of said computer system including said unmaskable interrupt for interrupting execution of said operating system and other programs, if any, causing said dedicated memory area to be switched in and mapped to a pre-determined segment of said main memory space, storing said current system state data of said computer system into said dedicated memory area, switching said CPU into said real mode of execution, reinitializing said CPU's control registers to a predetermined address, and starting execution of said interrupt processing program including said debugging functions in said real mode, said unmaskable interrupt being unmaskable by said operating system and said other programs if any, and having a higher priority than other interrupts, said predetermined address being starting address of said interrupt processing program;
(d) interrupt triggering means for detecting a debugging request and triggering said unmaskable interrupt upon detecting said debugging request; and
(e) resumption means for restoring said saved system data in said CPU upon completion of said debugging performed by said user, causing said dedicated memory area to be switched out and unmapped from said main memory space, and resuming execution of said operating system and other program, if any;
whereby allowing said user to perform said debugging and have access to hardware information without having to use an external emulator.

5,357,629

SYSTEM FOR RECORDING STRUCTURED READ ONLY DATA TABLE REVISIONS AND FORMING A DIRECTORY TO THE LATEST REVISIONS OF TABLE ELEMENTS

Richard E. Dinnis, Stratford, Conn.; Michael T. Powers, Sudbury, Mass., and William J. Ziegler, Meriden, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Sep. 16, 1991, Ser. No. 760,638
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 5 Claims

1. In a data processing device having a first read only memory and a random access memory and output means, a method of retrieving a literal string selected from a plurality of literal strings stored in said first memory comprising the steps of:
a) storing a plurality of literal tables in said first memory, each table of said plurality of literal tables comprising:
11) at least one of said literal strings
a2) a sequence of string locating data elements, each of said data elements comprising a tag I.D. identifying a literal string comprised in said table and address information for enabling said data processing device to retrieve said identified literal string; and
a3) a header, comprising a set of identification parameters for identifying said table, and a revision number, said revision number identifying said table as comprising a

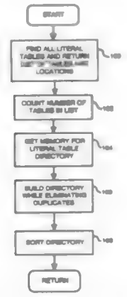
VOL 1167 ISS 3 OC 18 1994 UMI

particular revision of lateral tables having an identical set of identification parameters.

b) assembling a directory of said literal tables, said directory comprising groups of entries corresponding to literal tables having an identical set of identification parameters in said random access memory, said entries being ordered within said groups in accordance with said revision numbers, each of said entries including address information enabling said data processing device to access said corresponding literal tables;

c) receiving a request to retrieve a selected literal string, said request including a specified set of identification parameters and a tag I.D. for said selected literal string;

d) accessing one of said groups in said directory corresponding to said specified set of identification parameters and



accessing an entry in said one group corresponding to the most recent revision of literal tables having said specified set of identification parameters;

e) accessing said address information in said entry corresponding to said most recent revision, and then accessing said sequence of string locating data elements for one of said literal tables corresponding to said most recent revision to determine if said selected literal string is comprised in said one of said literal tables; and,

f) if so, retrieving said selected literal string for output to said output means; and,

g) if said selected literal string is not found repeating steps e through f for the next most recent revision level; and

h) if said selected literal string is not found in any of said literal tables corresponding to said set of selected identification parameters, exiting to a predetermine error routine.

5,357,630

NAME RESOLUTION METHOD FOR A DISTRIBUTED DATA BASE MANAGEMENT SYSTEM

Valentin Oprescu, Evanston, and Manoj Dalmia, Carol Stream, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 21, 1991, Ser. No. 780,182
Int. Cl.[5] G06F *15/21*
U.S. Cl. 395—600 **12 Claims**

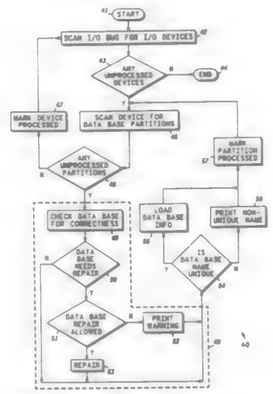
1. In a distributed data base management system, a method for performing name resolution during a start-up operation of said system, said method comprising the steps of:

(a) scanning an input/output bus for an unprocessed input-/output device, the unprocessed input/output device being defined as an input/output device with respect to which steps (c) through (f) have not yet been performed;

(b) exiting said method if said unprocessed input/output device is not found;

(c) scanning said unprocessed input/output device for an unprocessed data base partition of a data base, the unprocessed data base partition being defined as a data base partition with respect to which steps (d) through (f) have not yet been performed, said data base partition having an information regarding said data base, the information of said data base identifying one or more data sets within the data base;

(d) marking said unprocessed input/output device as processed if said unprocessed data base partition is not found in step (c);



(e) outputting a name of said data base partition and returning to step (c) if a name of said data base is not unique; and

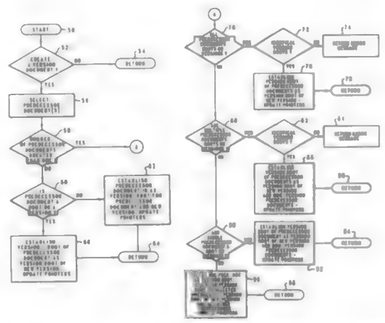
(f) loading said information of said data base into a memory and returning to step (c) if said name of said data base is unique.

5,357,631

METHOD AND SYSTEM FOR CREATING AND MAINTAINING MULTIPLE DOCUMENT VERSIONS IN A DATA PROCESSING SYSTEM LIBRARY

William E. Howell, North Richland Hills; Hari N. Reddy, Grapevine, and Diana S. Wang, Trophy Club, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 9, 1991, Ser. No. 805,447
Int. Cl.[5] G06F *15/40, 15/20*
U.S. Cl. 395—600 **9 Claims**



1. A method in a data processing system implemented library for maintaining multiple versions of a document within said library, wherein said document may include one or more successor versions and/or one or more predecessor documents which are related to said document, said method comprising the data processing system implemented steps of:

uniquely identifying an original document within said library as a root document;

establishing a version-root identifier to be associated with all successor versions of said original document which may thereafter be created within said library;

for each successor version of said original document, automatically associating said version-root identifier with each successor document of said original document which is therefore created within said library; and

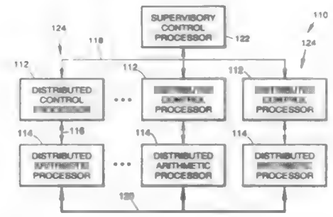
for each successor version of said original document and a second predecessor document, automatically associating said version-root identifier with said successor version and said second predecessor document wherein all documents related to said original document and created after said original document was identified as a root document within said library will have an identical version-root identifier associated therewith.

5,357,632

DYNAMIC TASK ALLOCATION IN A MULTI-PROCESSOR SYSTEM EMPLOYING DISTRIBUTED CONTROL PROCESSORS AND DISTRIBUTED ARITHMETIC PROCESSORS

Chao-Kuang Pian, Anaheim, and Hans L. Habereder, Orange, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 462,250, Jan. 9, 1990, abandoned. This application Aug. 8, 1991, Ser. No. 742,781
Int. Cl.[5] G06F *9/46, 9/445*
U.S. Cl. 395—650 **6 Claims**



1. A distributed data flow signal processing network for processing data flow signal processing primitive tasks in a manner that balances the processing load among nodes of the network, said network comprising:

a plurality of distributed control processors, each comprising a central processing unit coupled to a data memory, and to a program memory having a queue, and wherein one of the distributed control processors comprises a supervisory control processor having additional queues equal in number to the number of distributed control processors in the network, and wherein each of the additional queues are associated with a respective one of the distributed control processors;

a first communication link coupled between each of the distributed control processors for transferring control messages therebetween;

a plurality of distributed arithmetic processors, each comprising a central processing unit and a data memory, and wherein individual ones of the plurality of distributed arithmetic processors are respectively associated with a selected one of the plurality of distributed control processors to form a plurality of processing nodes;

a second communication link coupled between each respective processor of the plurality of distributed control processors and its associated distributed arithmetic processor that forms a respective processing node, for transferring control messages and data blocks therebetween; and

a third communication link comprising a data bus coupled between each of the distributed arithmetic processors for transferring data blocks therebetween;

each of the distributed control processors assigned one or more types of the signal processing primitive tasks in the application to have processing control over said primitive tasks so that the distributed arithmetic processor associated with the distributed control processor assigned a given type of primitive task is given preference for execution of the given task, each of the distributed control processors comprising means for monitoring the number of signal processing primitive tasks in its program memory queue that are to be processed by its associated arithmetic processor and for transferring processing control over selected tasks to the supervisory control processor if the number of processing tasks are above a predetermined limit;

the supervisory control processor comprising means for monitoring the number of processing tasks to be performed by each of the processing nodes, and for causing the execution by selected ones of the processing nodes of said processing tasks for which processing control has been transferred by said distributed control processor, to allocate the processing load among all the nodes to redistribute the processing load among the distributed arithmetic processors.

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DESIGN PATENTS

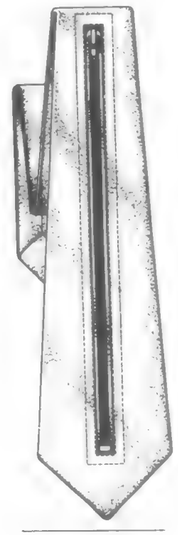
GRANTED OCT. 18, 1994

ERRATA

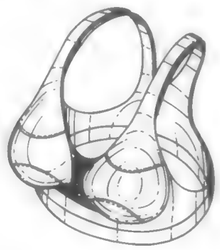
For CLASS	See PATENT NO.
D7 -335	D 351,507
D7 -545	D 351,522
D21-214	D 351,643
D21-219	D 351,644

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351,491
NECKTIE
William J. Just, Ste. 200, 91 West Wieuca Rd., Atlanta, Ga. 30342
Continuation of Ser. No. 442,685, Nov. 29, 1989, abandoned. This application Aug. 26, 1993, Ser. No. 12,186
Term of patent 14 years
U.S. Cl. D2—605



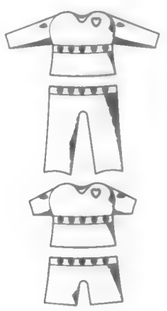
351,492
COMBINED SPORT AND NURSING BRA
Jerilyn Nieslanik, Box 157, Carbondale, Colo. 81623
Filed Dec. 11, 1992, Ser. No. 2,387
Term of patent 14 years
U.S. Cl. D2—708



351,493
WINGED APPLIQUE FOR A SHIRT
Diane C. DeCinque, 27 South Hood Ave., Audubon, N.J. 08106
Filed Apr. 12, 1993, Ser. No. 6,889
Term of patent 14 years
U.S. Cl. D2—741



351,494
CLOTHING ENSEMBLE FOR A DOLL
Marilyn D. Mintz, P.O. Box 1411, Los Gatos, Calif. 95031
Division of Ser. No. 538,166, Jun. 14, 1990. This application Nov. 30, 1992, Ser. No. 2,016
Term of patent 14 years
U.S. Cl. D2—746

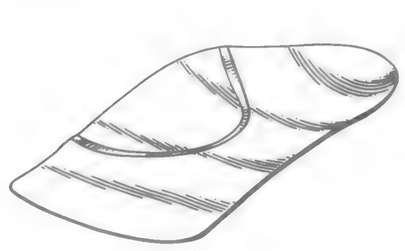


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351,495
SHOE SOLE
Yutaka Nagai, and Kazumi Kobayashi, both of Kobe, Japan, assignors to Asics Corporation, Hyogo, Japan
Filed Nov. 15, 1993, Ser. No. 15,289
Claims priority, application Japan, May 21, 1993, 5-14841
Term of patent 14 years
U.S. Cl. D2—959



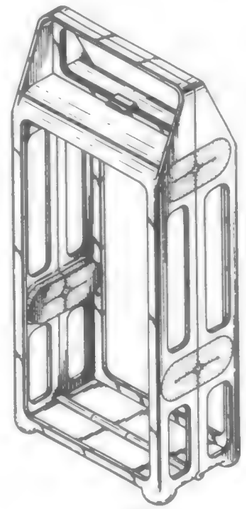
351,496
SHOE INSERT MEMBER
Dennis N. Brown, Blaine, Wash., assignor to Northwest Podiatric Laboratory, Inc., Blaine, Wash.
Filed Nov. 30, 1993, Ser. No. 15,836
Term of patent 14 years
U.S. Cl. D2—961



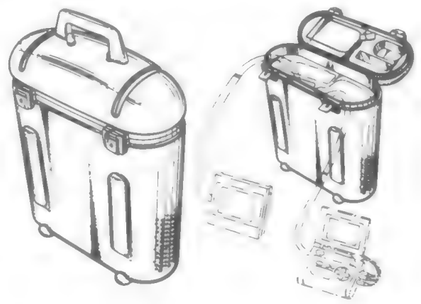
351,497
HEATED SOCK
James W. Yates, Rte. 1, Box 585, and Ronnie L. Yates, P.O. Box 3441, both of Wise, Va. 24293
Filed May 18, 1992, Ser. No. 884,564
Term of patent 14 years
U.S. Cl. D2—983



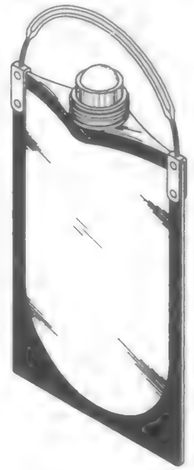
351,498
FISHING ROD CARRIER AND HOLDER
Joel C. Stebbins, Deephaven, Minn., assignor to Carter Airborne Corporation, Deephaven, Minn.
Filed Apr. 30, 1992, Ser. No. 876,230
Term of patent 14 years
U.S. Cl. D3—259



351,499
CASE FOR A MULTIMEDIA MARKETING SYSTEM
Jean-Philippe Gay, Image Works, 19725 Sherman Way, Ste. 385, Canoga Park, Calif. 91306, and Douglas M. Brown, III, 5225 Penfield Ave., Woodland Hills, Calif. 91364
Filed Apr. 19, 1993, Ser. No. 7,397
Term of patent 14 years
U.S. Cl. D3—201



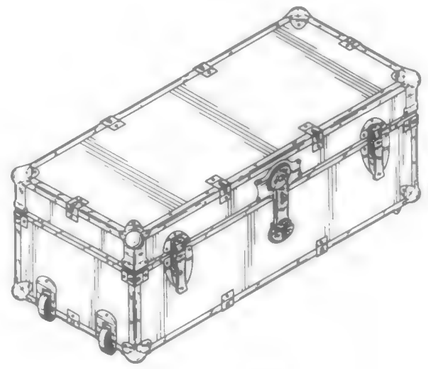
351,500
CANTEEN
Tzyy-Huei Yang, No. 11, Lane 666, Her Tou Road, Tou Chean Li, Her Mei Chen, Changhua Hsien, Taiwan
Filed Oct. 1, 1992, Ser. No. 102
Term of patent 14 years
U.S. Cl. D3—202



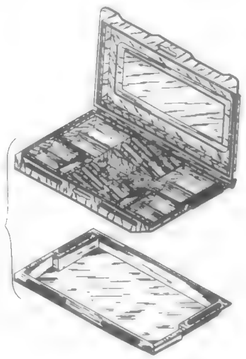
351,501
CARRYING BAG FOR INFANT-RELATED ITEMS
Theodore E. Esquivel, 807 Date St., #B, Montebello, Calif. 90640
Filed Apr. 2, 1993, Ser. No. 6,617
Term of patent 14 years
U.S. Cl. D3—233



351,502
WHEELED TRUNK
James J. Weir, Chester, Va., and Richard J. Rekuc, Pattenburg, N.J., assignors to Seward Luggage Corporation, Petersburg, Va.
Filed May 4, 1993, Ser. No. 7,802
Term of patent 14 years
U.S. Cl. D3—272



351,503
BATTERY HOLDER
Harvey S. Bach, 2665 SW. 119 Ct., Miami, Fla. 33175
Filed Feb. 4, 1992, Ser. No. 834,491
Term of patent 14 years
U.S. Cl. D3—273



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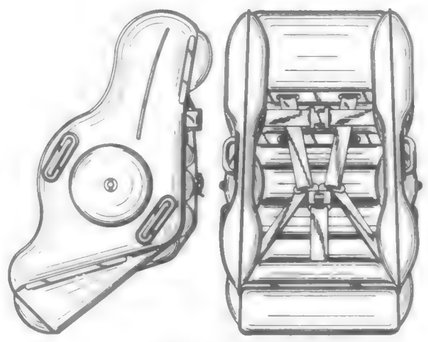
351,504
CARRYING CASE
Richard A. Tarozzi, Gales Ferry, Conn., assignor to Binney & Smith Inc., Easton, Pa.
Filed May 24, 1993, Ser. No. 8,714
Term of patent 14 years
U.S. Cl. D3—276



351,505
BACK SCRATCHING PAD
James Mastellone, 824 E. Ocean Blvd., Stuart, Fla. 34994
Filed Nov. 8, 1993, Ser. No. 15,027
Term of patent 14 years
U.S. Cl. D4—116



351,506
INFLATABLE CHILD VEHICLE SEAT
Lawrence Artz, Wilton, Conn., assignor to Starmark Inc., Brooklyn, N.Y.
Filed Sep. 3, 1992, Ser. No. 940,174
Term of patent 14 years
U.S. Cl. D6—333



351,507
BARBECUE GRILL
Melvin J. Gregory, 15 Edinburgh Gardens, Claydon Ipswich Suffolk IP6 0DT, United Kingdom
Filed Apr. 1, 1993, Ser. No. 7,923
Claims priority, application United Kingdom, Oct. 13, 1992, 2026385
Term of patent 14 years
U.S. Cl. D7—335



351,508
ROLLING STOOL WITH STORAGE CONTAINMENTS
Claudio Bonazza, Mission Viejo, Calif., assignor to Venice Trading Co., Inc., Costa Mesa, Calif.
Filed Oct. 5, 1992, Ser. No. 301
Term of patent 14 years
U.S. Cl. D6—336



351,509
RECLINER
Herbert B. Goldberg, Northbrook, Ill., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Jul. 21, 1992, Ser. No. 918,385
The portion of the term of this patent subsequent to May 31, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—367



351,510
CHAIR
Roberto Lucci, and Paolo Orlandini, both of Milan, Italy, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jun. 29, 1993, Ser. No. 10,192
Term of patent 14 years
U.S. Cl. D6—372

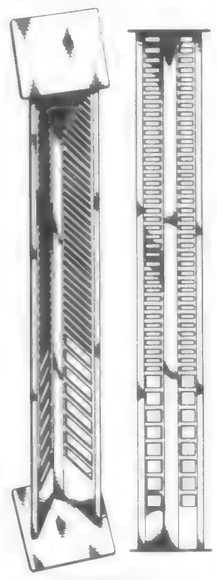


351,511
CHAIR
Darrell C. Ferguson, Charleston, S.C., assignor to Lineage Home Furnishings, Inc., High Point, N.C.
Filed May 19, 1992, Ser. No. 885,208
Term of patent 14 years
U.S. Cl. D6—379

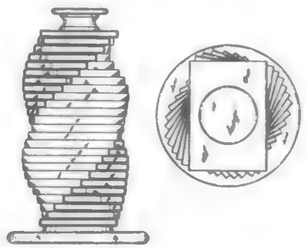


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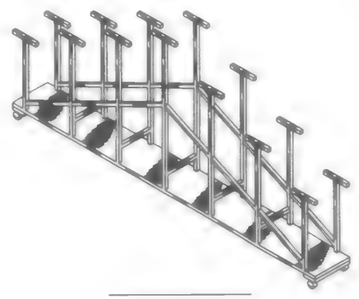
351,512
COMPACT DISK AND CASSETTE STORAGE UNIT
Arnold B. Thielen, 21678 Hazelnut Sq., Sterling, Va. 22170-2395
Filed Mar. 13, 1992, Ser. No. 882,522
Term of patent 14 years
U.S. Cl. D6—407



351,513
COMPACT DISC HOLDER
Keith L. Kreppein, 215 Ringold St., Peekskill, N.Y. 10566
Filed Dec. 3, 1992, Ser. No. 2,168
Term of patent 14 years
U.S. Cl. D6—407



351,514
BOOT STORAGE RACK
Kenneth J. Nodine, 61502 E. 210 Rd., Fairland, Okla. 74343
Filed Mar. 10, 1993, Ser. No. 5,736
Term of patent 14 years
U.S. Cl. D6—411



351,515
TABLE
H. Thomas Keller, High Point, N.C., assignor to Schnadig Corp., Chicago, Ill.
Filed Feb. 19, 1993, Ser. No. 4,997
Term of patent 14 years
U.S. Cl. D6—451

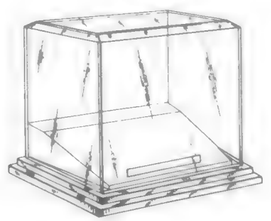
351,516
ARTICLE DISPLAY STRUCTURE
John Yeh, 660 S. Aberdeen, Anaheim Hills, Calif. 90266
Filed Aug. 10, 1992, Ser. No. 927,377
Term of patent 14 years
U.S. Cl. D6—466



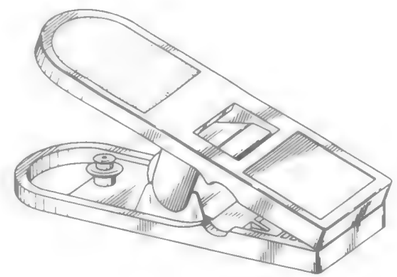
351,517
ARCHERY CABINET
Vaughn A. Rickards, 2225 14th Avenue West, Bradenton, Fla. 34205
Filed Dec. 21, 1992, Ser. No. 2,750
Term of patent 14 years
U.S. Cl. D6—470



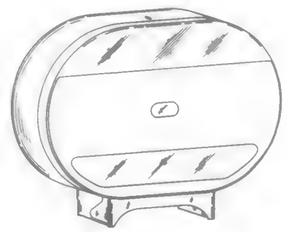
351,518
DISPLAY CASE
Ronald Burgess, 235-26 147th Dr., Rosedale, N.Y. 11422
Filed Jan. 4, 1993, Ser. No. 3,188
Term of patent 14 years
U.S. Cl. D6—470



351,519
TOWEL CLAMP
Nicholas A. De Marco, 18085 2nd St., Fountain Valley, Calif. 92078
Filed Jul. 31, 1992, Ser. No. 924,339
Term of patent 14 years
U.S. Cl. D6—513

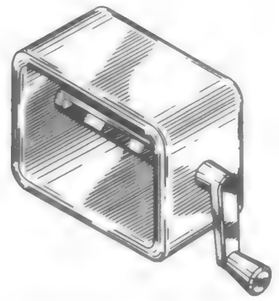


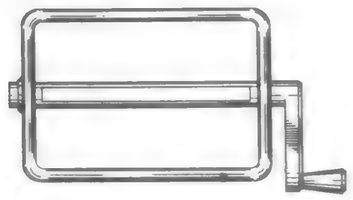
351,520
JUMBO ROLL TISSUE DISPENSER
Alan D. Frazier, West Chester; Richard P. Lewis, Oaks, and Paul F. Tramontina, Perkasie, all of Pa., assignors to Scott Paper Company, Philadelphia, Pa.
Filed May 26, 1993, Ser. No. 8,730
Term of patent 14 years
U.S. Cl. D6—523



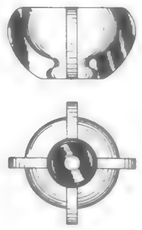
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351,521
TOOTHPASTE TUBE SQUEEZER
Hillery Knight, III, 14015 Superior Rd. #807, East Cleveland, Ohio 44118
Filed Oct. 20, 1993, Ser. No. 14,299
Term of patent 14 years
U.S. Cl. D6—541

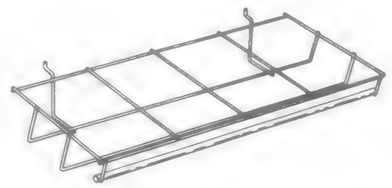




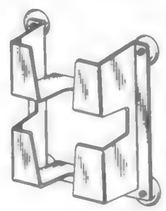
351,522
TABLE TOP POT
Judith L. Deimler, 131 North 3rd St., Steelton, Pa. 17113
Filed Jan. 27, 1993, Ser. No. 4,103
Term of patent 14 years
U.S. Cl. D7—545



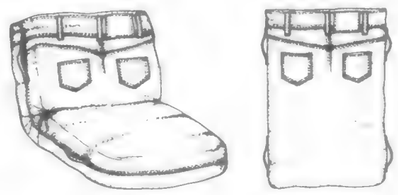
351,523
DISPLAY RACK
Gunter Rosenthal, St-Benoit, Canada, assignor to G. Rosenthal Import Ltd., Montreal, Canada
Filed Jan. 27, 1994, Ser. No. 17,999
Claims priority, application Canada, Dec. 20, 1991, 20129113
Term of patent 14 years
U.S. Cl. D6—566



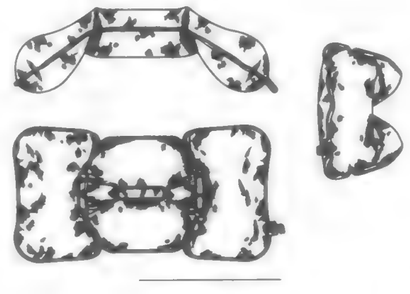
351,524
DISPLAY SHELF
Paul Belokin, Jr., 7808 I-35N & Milam Rd., Denton, Tex. 76201
Filed Sep. 14, 1992, Ser. No. 945,352
Term of patent 14 years
U.S. Cl. D6—570



351,525
JEAN BEAN BAG SEAT CUSHION
George Alexander, 2600 Cardena Ave., Villa #9, Coral Gables, Fla. 33134
Filed Dec. 11, 1991, Ser. No. 805,823
Term of patent 14 years
U.S. Cl. D6—597



351,526
INFLATABLE PILLOW
Peter T. Tarquinio, 684 Valle Vista Dr., Sierra Madre, Calif. 91024
Filed Oct. 18, 1993, Ser. No. 14,323
Term of patent 14 years
U.S. Cl. D6—604



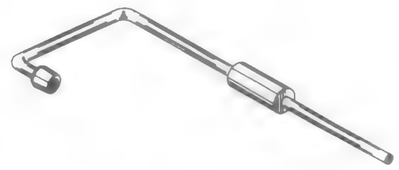
351,527
BOARD FOR SUPPORTING REMOTE CONTROLS
Arthur A. Baca, 304 S. 7th St., and Richard Bond, 307 E. Mesa, both of, Gallup, N. Mex. 87301
Filed Oct. 19, 1992, Ser. No. 565
Term of patent 14 years
U.S. Cl. D6—467



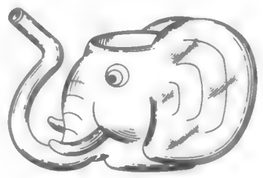
351,528
STORAGE UNIT
Shahriar Dardashti, 236 S. Oakhurst Dr., Beverly Hills, Calif. 90212
Filed Jul. 2, 1992, Ser. No. 909,802
Term of patent 14 years
U.S. Cl. D6—630



351,529
BREWING BLOWOUT TUBE
Walter T. Scott, Jr., 7708 Casasia Ct., Orlando, Fla. 32835
Filed Oct. 16, 1992, Ser. No. 530
Term of patent 14 years
U.S. Cl. D7—398

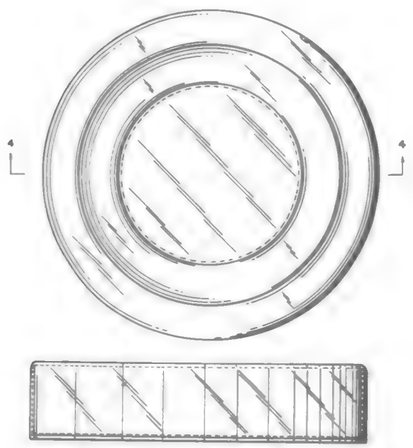


351,530
ELEPHANT HEAD DRINKING CUP
Vladislav P. Petrasek, 139 Sheldon St., El Segundo, Calif. 90245
Filed Jan. 8, 1993, Ser. No. 3,368
Term of patent 14 years
U.S. Cl. D7—516



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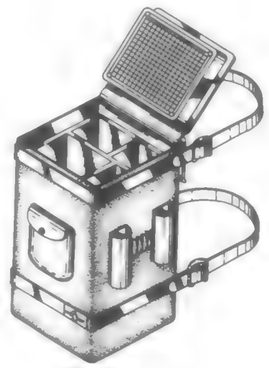
351,531
STADIUM SIMULATING TRANSPARENT BOWL
Raymond Brennan, 1345 Cardinal Dr., Pittsburgh, Pa. 15243
Filed Jan. 4, 1992, Ser. No. 894,786
Term of patent 14 years
U.S. Cl. D7—584



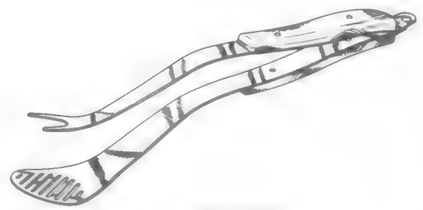
351,532
CHILLER BOTTLE
Anthony H. Wolfenden, Victoria, Australia, assignor to The Decor Corporation Pty. Ltd., Victoria, Australia
Filed Oct. 14, 1992, Ser. No. 441
Claims priority, application Australia, May 15, 1992, 1246/92
Term of patent 14 years
U.S. Cl. D7—605



351,533
COOLER FOR GOLFERS
Clifton C. Lynam, Jr., 725 N. Beadle St., Papillion, Nebr. 68046
Filed May 19, 1993, Ser. No. 8,519
Term of patent 14 years
U.S. Cl. D7—605



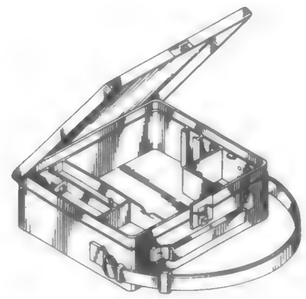
351,534
BARBECUE TONGS
Jonathon J. Weber, Bloomfield Hills, Mich., assignor to Que Pro, Inc.
Filed Jan. 29, 1993, Ser. No. 4,228
Term of patent 14 years
U.S. Cl. D7—686



351,535
WINE RACK
Jimmy R. Renegar, 427 N. Pine St., Charlotte, N.C. 28202
Filed May 11, 1993, Ser. No. 8,200
Term of patent 14 years
U.S. Cl. D7—701



351,536
LUNCHBOX
Jude D. Maydwell, 73 E. Franklin St., Ephrata, Pa. 17522-2446
Filed May 3, 1993, Ser. No. 7,804
Term of patent 14 years
U.S. Cl. D7—709



351,537
CATCHER FOR HEDGE TRIMMINGS
Cresencio Y. Yagin, 242 OE St., Kihei, Hi. 96753
Filed Jul. 2, 1993, Ser. No. 10,216
Term of patent 14 years
U.S. Cl. D8—1



351,538
WEEDING TOOL
Sidney E. Gatewood, 25170 Waldorf, Roseville, Mich. 48066
Filed Jan. 24, 1993, Ser. No. 9,884
Term of patent 14 years
U.S. Cl. D8—9



351,539
SPADE HANDLE
Aaro Huttunen, Karjaa, and Torbjörn Lundmark, Billnäs, both of Finland, assignors to Fiskars Oy Ab, Helsinki, Finland
Filed Jun. 15, 1993, Ser. No. 9,543
Claims priority, application Finland, Dec. 16, 1992, 987/92
Term of patent 14 years
U.S. Cl. D8—10

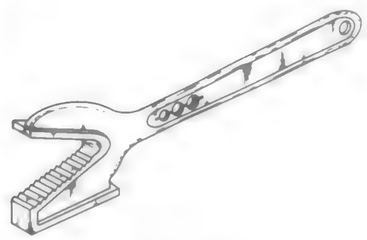


351,540
BROKEN DIFFERENTIAL AXLE REMOVAL TOOL
Robert W. Combe, 4044 Liberty Ave., Ogden, Utah 84403
Filed Oct. 20, 1993, Ser. No. 14,302
Term of patent 14 years
U.S. Cl. D8—14

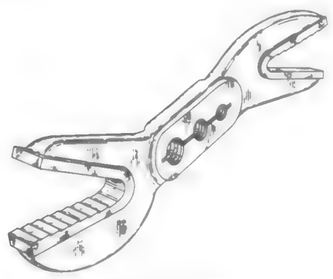


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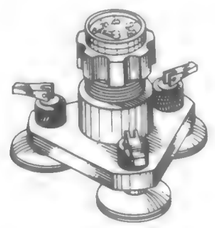
351,541
COMBINED WRENCH AND THREAD RETRACING TOOL
Jackson A. Smith, P.O. Box 1058, Alder Grove, British Columbia, Canada V0X 1A0
Filed Aug. 18, 1993, Ser. No. 11,927
Term of patent 14 years
U.S. Cl. D8—28



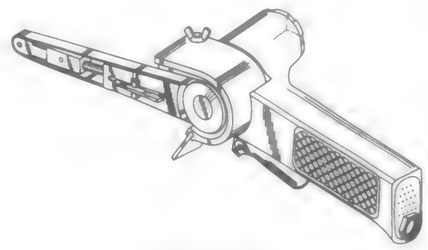
351,542
COMBINED WRENCH AND THREAD RETRACING TOOL
Jackson A. Smith, P.O. Box 1058, Alder Grove, British Columbia, Canada V0X 1A0
Filed Aug. 18, 1993, Ser. No. 11,959
Term of patent 14 years
U.S. Cl. D8—28



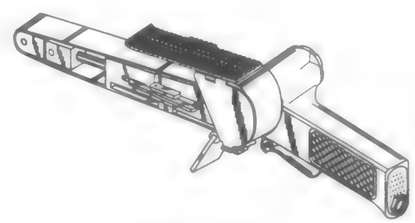
351,543
GLASS CRACK REPAIR TOOL
Michael J. Callahan, 733 Lake St., Suite 313, and James A. Fikse, 300 7th Ave. South, No. 15, both of Kirkland, Wash. 98033
Filed Aug. 7, 1992, Ser. No. 926,896
Term of patent 14 years
U.S. Cl. D8—51



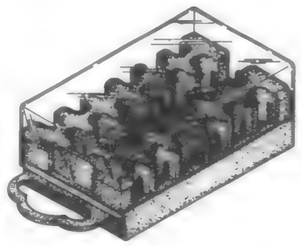
351,544
COMPACT BELT SANDER
Nobuyuki Izumisawa, Tokyo, Japan, assignor to Shinano, Inc., Japan
Filed Aug. 13, 1993, Ser. No. 11,809
Term of patent 14 years
U.S. Cl. D8—62



351,545
BELT SANDER
Nobuyuki Izumisawa, Tokyo, Japan, assignor to Shinano, Inc., Japan
Filed Sep. 10, 1993, Ser. No. 12,853
Term of patent 14 years
U.S. Cl. D8—62



351,546
UNION TOOLBOX
Yu H. Li, 3, Tung Chien Lane, Chin Tun Village Hua Tan Hsiang, Changhua, Taiwan
Filed Mar. 15, 1993, Ser. No. 5,866
Term of patent 14 years
U.S. Cl. D8—71



351,547
SCREWDRIVER AND REMOVABLE BIT ASSEMBLY
William Herrala, 410 W. Walled Lake Dr., Walled Lake, Mich. 48088
Filed Sep. 28, 1992, Ser. No. 952,181
Term of patent 14 years
U.S. Cl. D8—82



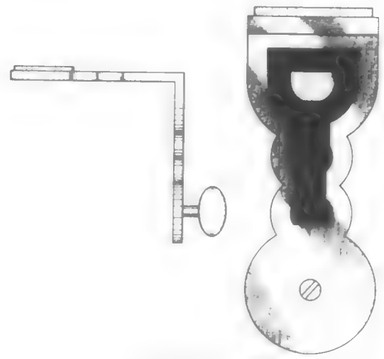
351,548
PAIR OF HANDLES FOR A CRIMPING TOOL
Hakan Bergkvist, Bromma, and Mikael Nilsson, ä/ lvdalen, both of Sweden, assignors to Pressmaster Tool AB, Alvdalen, Sweden
Filed Oct. 5, 1992, Ser. No. 28
Claims priority, application Sweden, Apr. 3, 1992, 920773
Term of patent 14 years
U.S. Cl. D8—107



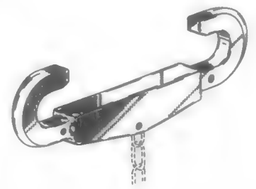
351,549
TOOL HANDLE
Grace Lee, No. 5-11, Lane 211, Jen Hwa Rd., Ta Li Hsiang, Taichung Hsien, Taiwan
Filed Oct. 19, 1992, Ser. No. 640
Term of patent 14 years
U.S. Cl. D8—107



351,550
TOILET SEAT LIFTING HANDLE
Bryan C. Clark, and Carol A. Clark, both of P.O. Box 503, Hagaman, N.Y. 12086
Filed Feb. 22, 1993, Ser. No. 5,054
Term of patent 14 years
U.S. Cl. D8—307



351,551
HOLDER FOR A VEHICLE STEERING WHEEL LOCK BAR
John R. Wilcox, Farrell, Pa., assignor to Winner International, Sharon, Pa.
Division of Ser. No. 796,231, Nov. 22, 1991. This application Apr. 26, 1993, Ser. No. 7,490
Term of patent 14 years
U.S. Cl. D8—343



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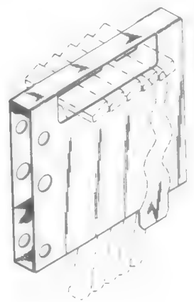
351,552
FAIRLEAD
Neil M. Williams, Sandringham, Australia, assignor to Ronstan 2000 Pty. Ltd., Sandringham, Australia
Filed Dec. 1, 1992, Ser. No. 2,058
Term of patent 14 years
U.S. Cl. D8—356



351,553
DOORSTOP
Karen W. Marks, 60 Duncan La., Centerville, Mass. 02632, assignor to Karen W. Marks and Robert J. Marks, Jr., Osterville, Mass.
Continuation-in-part of Ser. No. 820,346, Jan. 14, 1992, Pat. No. Des. 344,674. This application Dec. 10, 1993, Ser. No. 16,197
Term of patent 14 years
U.S. Cl. D8—402



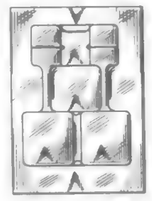
351,554
PACKAGE FOR SAFETY RAZORS
Jisu Kim, Yonkers, N.Y., assignor to Tritec International Corp., New York, N.Y.
Filed Apr. 14, 1992, Ser. No. 869,155
Term of patent 14 years
U.S. Cl. D9—342



351,555
LIGHT STRING HOLDER
Tim A. Blott, 2816 - 49 Street. S.W., Calgary, Alberta, Canada
Filed Jun. 1, 1993, Ser. No. 8,983
Term of patent 14 years
U.S. Cl. D9—343



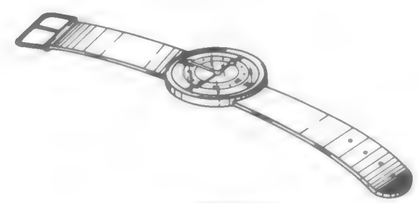
351,556
STUD AND CLASP PACKAGE
Vladimir Reil, 30524 Ganado Dr., Rancho Palos Verdes, Calif. 90274
Filed Nov. 9, 1993, Ser. No. 13,693
Term of patent 14 years
U.S. Cl. D9—415



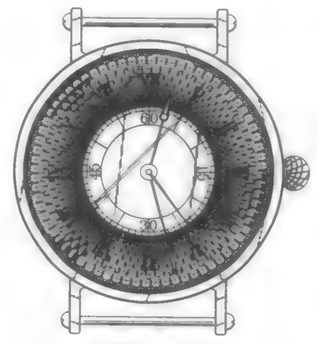
351,557
LADDER CARTON
Robert J. Noble, Jr., Greenville, Pa., assignor to Werner Co., Greenville, Pa.
Filed Apr. 15, 1993, Ser. No. 7,143
Term of patent 14 years
U.S. Cl. D9—418



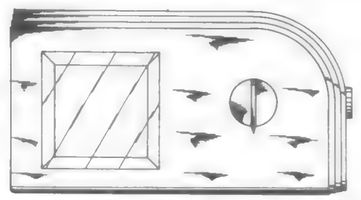
351,558
WRIST WATCH
Junho Moon, 548 S. Broadway, Tarrytown, N.Y. 10591
Filed Nov. 6, 1991, Ser. No. 789,151
Term of patent 14 years
U.S. Cl. D10—32



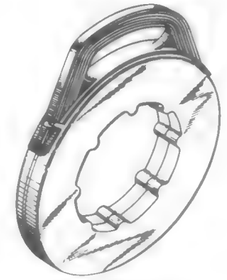
351,559
WATCH
Jacques C. Helleu, Garches, France, assignor to Holland & Holland Limited, New York, N.Y.
Filed May 6, 1992, Ser. No. 880,315
Term of patent 14 years
U.S. Cl. D10—39



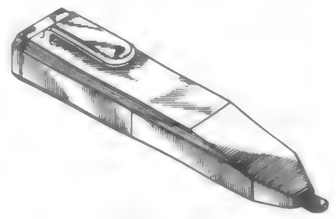
351,560
SKIN PROGRAMMER
Peter Schneider, Koenigstein, Fed. Rep. of Germany, assignor to The Gillette Company, Boston, Mass.
Filed May 29, 1992, Ser. No. 894,798
Term of patent 14 years
U.S. Cl. D10—56



351,561
FISH TAPE CASING
W. Keith Moffatt, Freeport, and John T. Hagan, Rockford, both of Ill., assignors to Greenlee Textron Inc., Rockford, Ill.
Filed Jul. 2, 1993, Ser. No. 10,308
Term of patent 14 years
U.S. Cl. D10—72



351,562
CURRENT SENSING DEVICE
W. Keith Moffatt, Freeport, and John T. Hagan, Rockford, both of Ill., assignors to Greenlee Textron Inc., Rockford, Ill.
Filed Jul. 2, 1993, Ser. No. 10,309
Term of patent 14 years
U.S. Cl. D10—78

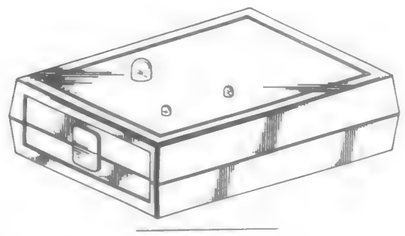


351,563
LOCKED SECURITY COVER FOR A SMOKE ALARM
Robert DellaVilla, 2230 Greenspoint Ave., Schenectady, N.Y. 12303
Filed Dec. 16, 1993, Ser. No. 16,395
Term of patent 14 years
U.S. Cl. D10—104



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351,564
SIGNALLING INDICATOR MODULE FOR SECURITY SYSTEMS
Al J. Schepis, 4230 Mayapple Ct., Norcross, Ga. 30092
Filed Mar. 23, 1994, Ser. No. 20,300
Term of patent 14 years
U.S. Cl. D10—104



351,565
WATCH DIAL
Akie Ito, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jul. 1, 1992, Ser. No. 907,438
Term of patent 14 years
U.S. Cl. D10—126



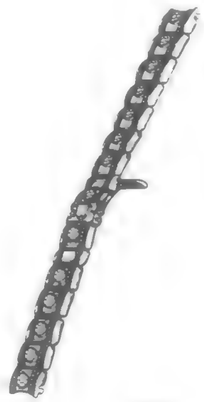
351,566
WATCH BAND SEGMENT
Jean-Pierre Chodat, Auvernier, Switzerland, assignor to Ebel, S.A., La Chaux-de-Fonds, Switzerland
Filed Nov. 6, 1992, Ser. No. 1,223
Claims priority, application World Int. Prop. O., May 19, 1992, 022888
Term of patent 14 years
U.S. Cl. D11—3



351,567
WATCH BAND
Jean-Pierre Chodat, Auvernier, Switzerland, assignor to Ebel, S. A., La Chaux-de-Fonds, Switzerland
Filed Jun. 9, 1993, Ser. No. 9,220
Claims priority, application World Int. Prop. O., Dec. 22, 1992, 002018
Term of patent 14 years
U.S. Cl. D11—15



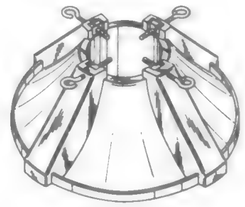
351,568
BRACELET WITH BRILLIANTS
Christiane Pandel, Chambesy, Switzerland, assignor to Rolex Watch U.S.A., Inc., New York, N.Y.
Filed Jan. 6, 1993, Ser. No. 3,428
Term of patent 14 years
U.S. Cl. D11—16



351,569
ARTIFICIAL FRUIT
Yang Chin-Sheng, 4 Fr. No. 26 Lane 358 Yung An Street, Tainan, Taiwan
Filed Jul. 30, 1993, Ser. No. 11,304
Term of patent 14 years
U.S. Cl. D11—117



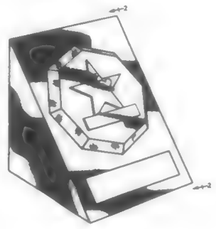
351,570
CHRISTMAS TREE STAND
Stephen L. Filipp, Lubbock, Tex., assignor to Gary Products Group, Inc., Lubbock, Tex.
Filed Aug. 10, 1993, Ser. No. 11,678
Term of patent 14 years
U.S. Cl. D11—130.1



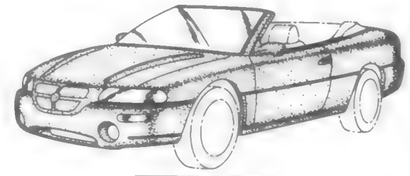
351,571
PLANT RECEPTACLE
Guido Schmidt, Dinklage, and Günther Orschulik, Vechta, both of Fed. Rep. of Germany, assignors to Gebr. Poeppelmann, Kunststoffwerk-Werkzeugbau, Lohne, Fed. Rep. of Germany
Filed Jul. 15, 1993, Ser. No. 10,720
Term of patent 14 years
U.S. Cl. D11—148



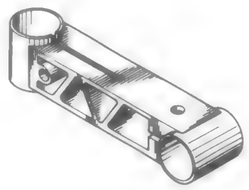
351,572
AWARD
John D. Lenington, Jr., 3618 N. Country Club Rd. #255, Irving, Tex. 75062
Filed Feb. 12, 1993, Ser. No. 4,762
Term of patent 14 years
U.S. Cl. D11—157



351,573
AUTOMOBILE BODY
Richard C. Kong, La Costa, Calif.; Dennis Myles, W. Bloomfield, Mich.; Erich O. Kugler, Royal Oak, Mich.; Robert J. Janosko, Bloomfield Hills, Mich.; Timothy W. Anness, San Diego, and Daniel J. Sims, Lake Forest, both of Calif., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Apr. 17, 1992, Ser. No. 870,710
The portion of the term of this patent subsequent to Apr. 5, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—92

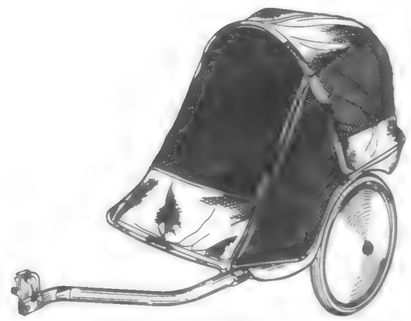


351,574
HANDLEBAR STEM
Robert Chang, Taichung Hsien, Taiwan, assignor to Kalloy Industrial Co., Ltd., Taichung Hsien, Taiwan
Filed Sep. 3, 1993, Ser. No. 12,665
Term of patent 14 years
U.S. Cl. D12—118

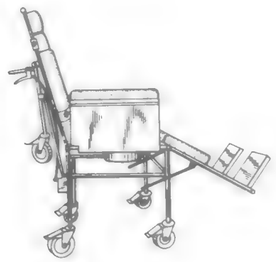


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351,575
TRAILER FOR TOWING BEHIND A BICYCLE
Timothy J. Fenton, Wooster, Ohio, and Christopher D. Hageman, New Canaan, Conn., assignors to Cannondale Corporation, Georgetown, Conn.
Filed Jul. 21, 1993, Ser. No. 10,968
Term of patent 14 years
U.S. Cl. D12—102



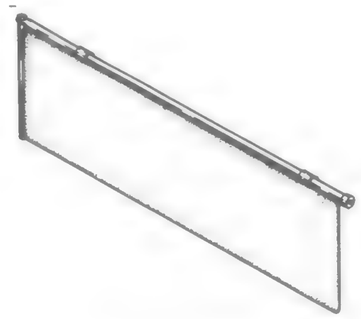
351,576
PATIENT'S CHAIR
Raymond P. Brooks, Lake Kiowa, Tex., assignor to R. P. Brooks Trust, Lake Kiowa, Tex.
Filed Jan. 26, 1993, Ser. No. 4,082
Term of patent 14 years
U.S. Cl. D12—128



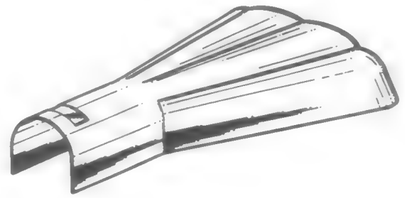
351,577
HANDLEBAR COVER
Timothy J. Dietz, Springboro, Ohio, assignor to Huffy Corporation, Miamisburg, Ohio
Filed Dec. 7, 1992, Ser. No. 2,262
Term of patent 14 years
U.S. Cl. D12—178



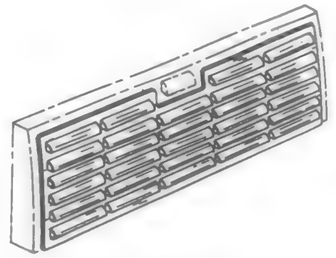
351,578
ADD-ON SUNVISOR
Joe Whitt, 595 Westshore Rd., Casper, Wyo. 82601
Filed Sep. 23, 1993, Ser. No. 13,368
Term of patent 14 years
U.S. Cl. D12—191



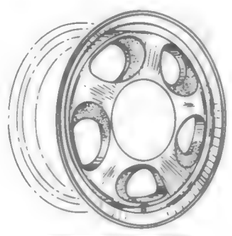
351,579
TAIL-PIPE EXTENSION
Arnold Simpson, 66 Barkwin Drive, Etobicoke, Ontario, Canada M9W 2W3
Filed Mar. 26, 1993, Ser. No. 6,353
Claims priority, application Canada, Feb. 17, 1993, 17-02-93-2
Term of patent 14 years
U.S. Cl. D12—194



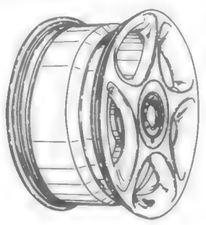
351,580
TRUCK TAILGATE FAIRING
Eddie R. Montgomery, 5016 Fershill Dr., St. Louis, Mo. 63128
Division of Ser. No. 860,347, Mar. 30, 1992, Pat. No. Des. 345,335. This application Jan. 7, 1994, Ser. No. 17,238
Term of patent 14 years
U.S. Cl. D12—196



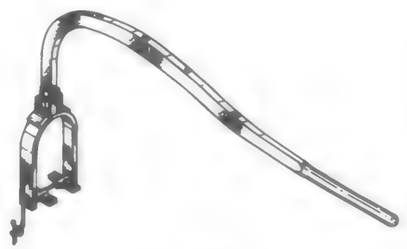
351,581
FRONT FACE SEGMENT OF A VEHICLE WHEEL
Suny Chung, Anaheim, Calif., assignor to American Racing Equipment, Inc., Rancho Dominguez, Calif.
Filed Jan. 28, 1993, Ser. No. 4,186
Term of patent 14 years
U.S. Cl. D12—209



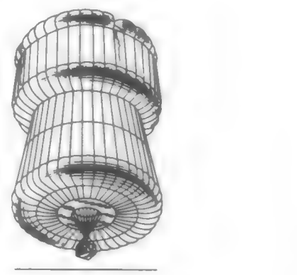
351,582
VEHICLE WHEEL
Alberto Echazabel, Hialeah Gardens, Fla., and Claudio Bernoni, Albano Terme, Italy, assignors to Motoring Accessories, Inc., Miami, Fla.
Filed Jan. 23, 1993, Ser. No. 11,162
Term of patent 14 years
U.S. Cl. D12—209



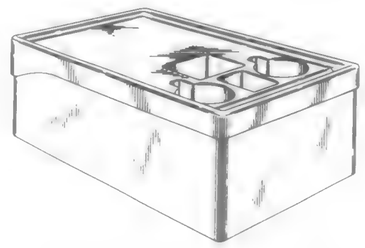
351,583
BOAT TILLER
Nicholas J. Plennert, and Irene Plennert, both of 7908 Coyle, Whitmore Lake, Mich. 48189
Filed Feb. 18, 1993, Ser. No. 5,015
Term of patent 14 years
U.S. Cl. D12—317



351,584
BALLOON
Louis Hainguerlot, Paris, France, assignor to Champagne Moet & Chandon, S.A., Epernay, France
Filed Apr. 5, 1990, Ser. No. 504,994
Claims priority, application France, Oct. 6, 1989, 896240
Term of patent 14 years
U.S. Cl. D12—323

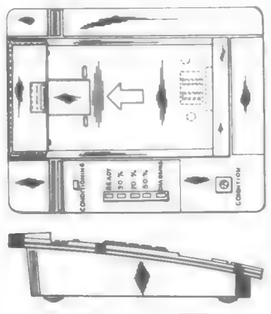


351,585
VAN TRAY
Robert S. Scheurer, P.O. Box 539, Wichita Falls, Tex. 76307
Continuation-in-part of Ser. No. 812,356, Dec. 20, 1991, Pat. No. D. 341,249. This application Feb. 5, 1993, Ser. No. 4,469
Term of patent 14 years
U.S. Cl. D12—424

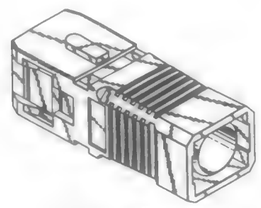


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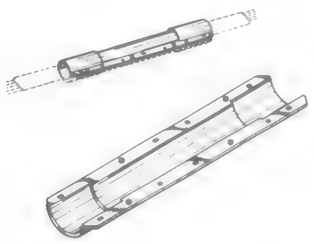
351,586
BATTERY CHARGER FOR CELLULAR PHONE BATTERIES
Gershon N. Cooper, Encino, Calif., assignor to Alliance Research Corporation, Chatsworth, Calif.
Filed Feb. 10, 1992, Ser. No. 833,399
Term of patent 14 years
U.S. Cl. D13—107



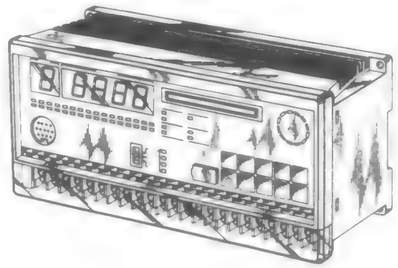
351,587
WINDOWED SC FIBER OPTIC CONNECTOR
Julius T. Puchammer, Edison, N.J., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 16, 1993, Ser. No. 5,878
Term of patent 14 years
U.S. Cl. D13—133



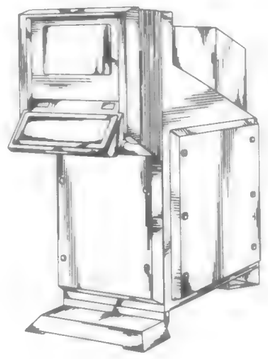
351,588
CONDUIT SPLICE COMPONENT
Jerry E. McCain, Rte. 2, Box 48-B, Springville, Ala. 35146
Filed Mar. 25, 1992, Ser. No. 857,303
Term of patent 14 years
U.S. Cl. D13—154



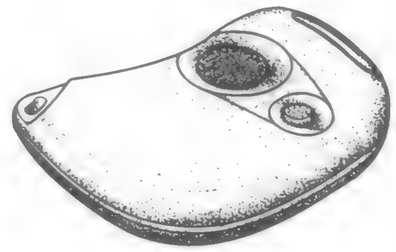
351,589
PROGRAMMABLE ELECTRONIC CAM-OPERATED SWITCH
Norio Shimizu, and Teruo Matsuno, both of Tokyo, Japan, assignors to Koyo Electronic Industries Co., Ltd., Tokyo, Japan
Filed May 25, 1993, Ser. No. 8,698
Claims priority, application Japan, Dec. 10, 1992, 4-36529
Term of patent 14 years
U.S. Cl. D13—162



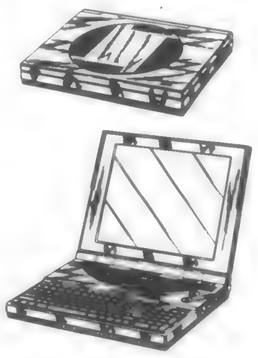
351,590
PROCESS CONTROL EQUIPMENT ENCLOSURE
George S. Whaley, Eastlake, and David A. Rolnicki, North Olmsted, both of Ohio, assignors to Elsag International B.V., Amsterdam Zuidoost, Netherlands
Filed Feb. 16, 1993, Ser. No. 4,913
Term of patent 14 years
U.S. Cl. D13—163



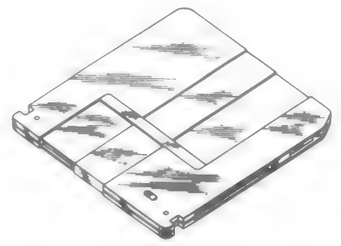
351,591
REMOTE CONTROL UNIT FOR CONTROLLING THE DOOR LOCKS OF MULTIPLE CARS
Tse H. Chen, No. 22 Lane 351, Di Hwa Street, Taipei, Taiwan
Filed Jun. 21, 1993, Ser. No. 9,717
Term of patent 14 years
U.S. Cl. D13—168



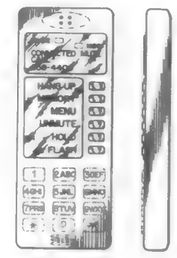
351,592
COMPUTER
Tetsuji Abe, Osaka, and Yoshihiko Sugiyama, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 15, 1991, Ser. No. 792,758
Claims priority, application Japan, May 16, 1991, 3-14267
The portion of the term of this patent subsequent to Dec. 28, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—106



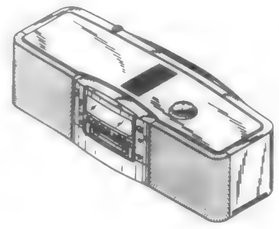
351,593
OPTICAL DISK CARTRIDGE
Benichi Miyazaki, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 8, 1993, Ser. No. 5,514
Claims priority, application Japan, Sep. 10, 1992, 4-26861
Term of patent 14 years
U.S. Cl. D14—114



351,594
MOBILE TELEPHONE HANDSET
Kam-Cheong A. Tsoi, Westminster, Colo., assignor to U.S. West Advanced Technologies, Inc., Boulder, Colo.
Filed Jul. 8, 1993, Ser. No. 10,467
Term of patent 14 years
U.S. Cl. D14—138

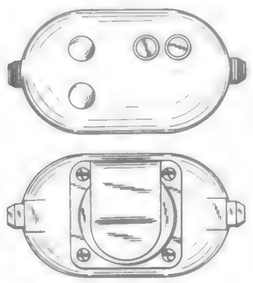


351,595
DIGITAL AUDIO DISC RECORDER COMBINED WITH A RADIO TUNER
Rie Furui, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 15, 1992, Ser. No. 2,636
Claims priority, application Japan, Jul. 22, 1992, 4-22018
Term of patent 14 years
U.S. Cl. D14—168



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351,596
RADIO
Elizabeth M. Pierotti, Grand View, N.Y., and Joseph L. Ungari, Everett, Wash., assignors to Authentic Fitness Corporation, Van Nuys, Calif.
Filed Dec. 9, 1993, Ser. No. 16,143
Term of patent 14 years
U.S. Cl. D14—192



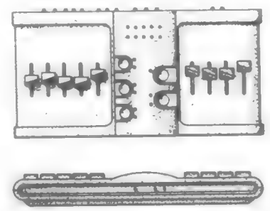
351,597
HEADPHONE
Mitsuhiro Nakamura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 18, 1992, Ser. No. 1,636
Claims priority, application Japan, Jun. 16, 1992, 4-17784
Term of patent 14 years
U.S. Cl. D14—205



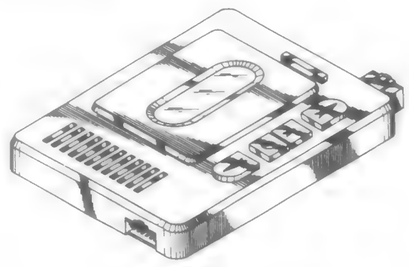
351,598
HEADPHONE
Mitsuhiro Nakamura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 18, 1992, Ser. No. 1,643
Claims priority, application Japan, Jun. 16, 1992, 4-17785
Term of patent 14 years
U.S. Cl. D14—205



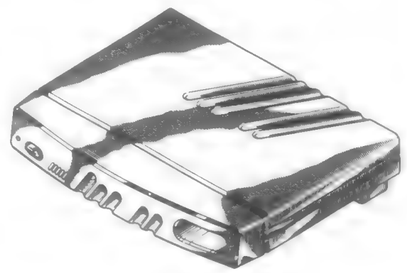
351,599
AUDIO/VIDEO EDITOR
Ka-Cheong Chui, Hong Kong, Hong Kong, and Ming Huang Chen, Taipei, Taiwan, assignors to Guardforce Corporation, Taipei, Taiwan
Filed Apr. 12, 1993, Ser. No. 6,898
Term of patent 14 years
U.S. Cl. D14—217



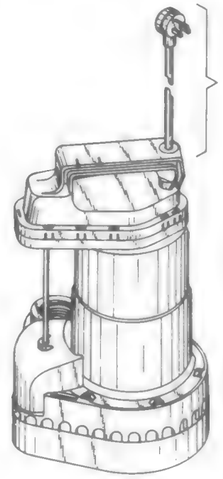
351,600
MICRO-CASSETTE RECORDER FOR AUTOMOBILE PORTABLE PHONES
Onorio Moscone, 31720 Cyril, Fraser, Mich. 48026
Filed Jul. 9, 1993, Ser. No. 10,486
Term of patent 14 years
U.S. Cl. D14—240



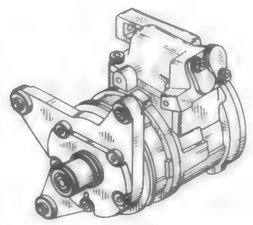
351,601
MOBILE EXTERNAL RADIO MODEM
Roman P. Rak, Delta, Canada, assignor to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 18, 1993, Ser. No. 6,208
Term of patent 14 years
U.S. Cl. D14—242



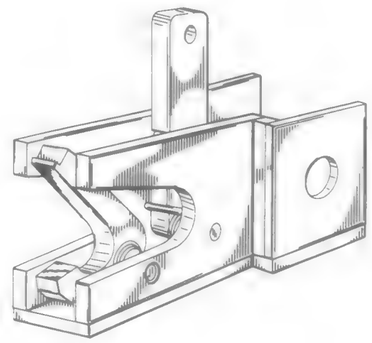
351,602
SUMP PUMP
Mark Rosebraugh, Montgomery, Ill.; Brian M. Mitsch, Perrysville, Ohio; Roby Jones, Mansfield, Ohio; Jay Martin, Earlville, Ill., and Bill Tusten, Olathe, Kans., assignors to General Signal Corporation, Stamford, Conn.
Filed Feb. 5, 1993, Ser. No. 4,504
Term of patent 14 years
U.S. Cl. D15—7



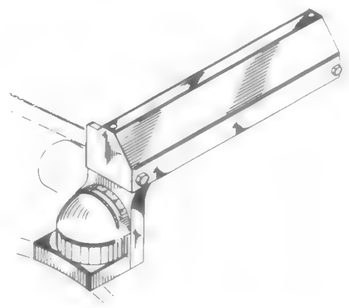
351,603
COMPRESSOR FOR A VEHICLE AIR CONDITIONER
Hayato Ikeda; Muneharu Murase; Mitsuhiro Hattori, and Koichi Ito, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan
Filed Nov. 1, 1991, Ser. No. 787,972
Term of patent 14 years
U.S. Cl. D15—9



351,604
SELF LATCHING HITCH
Joe H. Eudy, Rte. 1, Box 16, Danville, Ala. 35619, assignor to Arthur Groover; Aaron Boyd Clark, both of Hartselle and Joe H. Eudy, Danville, all of Ala.
Continuation-in-part of Ser. No. 740,410, Aug. 5, 1991, Pat. No. 5,244,047. This application May 7, 1993, Ser. No. 7,969
Term of patent 14 years
U.S. Cl. D15—28

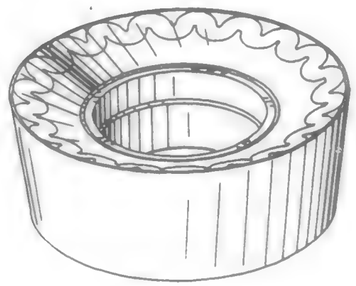


351,605
COMPOUND MITER SAW SLIDE BAR MECHANISM
Ruey-Zon Chen, Taichung, Taiwan, assignor to Rexon Industrial Corporation, Ltd., Taichung Hsian, Taiwan
Filed Nov. 12, 1992, Ser. No. 1,371
Term of patent 14 years
U.S. Cl. D15—138

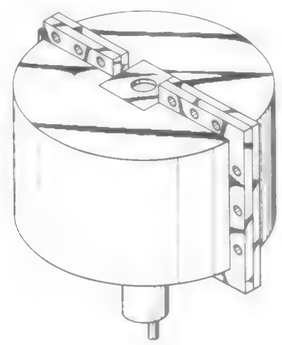


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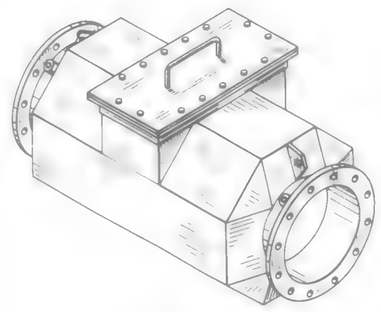
351,606
CUTTING INSERT FOR MILLING CUTTERS
Lars Markusson; Hans Lindberg, and Lars-Gunnar Wallstrom, all of Sandviken, Sweden, assignors to Sandvik AB, Sandviken, Sweden
Filed Jul. 16, 1992, Ser. No. 914,095
Claims priority, application Sweden, Jan. 17, 1992, 92-0111
Term of patent 14 years
U.S. Cl. D15—139



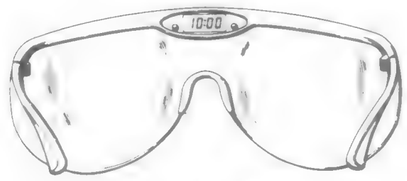
351,607
WELL HEAD STUFFING BOX LEAK DETECTOR AND CONTAINER
Robert L. Walker, 1425 E. Fourth St., Odessa, Tex. 79761
Filed Jul. 20, 1993, Ser. No. 10,817
Term of patent 14 years
U.S. Cl. D15—150



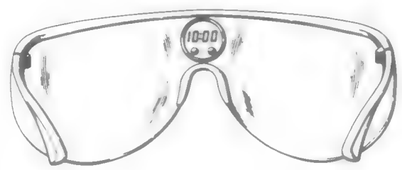
351,608
INDUSTRIAL CATALYTIC CONVERTER
Douglas E. Cox, Tulsa, Okla., assignor to Miratech Corporation, Tulsa, Okla.
Filed May 7, 1993, Ser. No. 8,113
Term of patent 14 years
U.S. Cl. D15—199



351,609
COMBINED SUNGLASSES AND TIMEPIECE
Sandra Schwartz, 8601 NW. 47th St., Lauderhill, Fla. 33351
Filed May 4, 1993, Ser. No. 7,820
Term of patent 14 years
U.S. Cl. D16—313



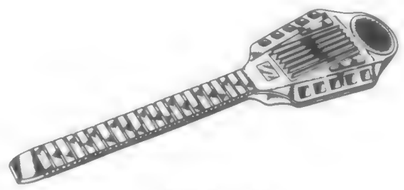
351,610
COMBINED SUNGLASSES AND TIMEPIECE
Sandra Schwartz, 8601 NW. 47th St., Lauderhill, Fla. 33351
Filed May 4, 1993, Ser. No. 7,822
Term of patent 14 years
U.S. Cl. D16—313



351,611
GLASSES
Wen-Te Wang, No. 246-1, Kang-Kou, Kang-Kou Tsun, An-Ting Hsiang, Tainan Hsien, Taiwan
Filed May 11, 1993, Ser. No. 8,156
Term of patent 14 years
U.S. Cl. D16—300



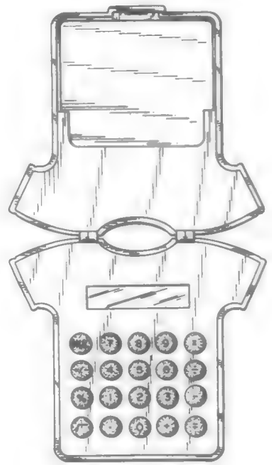
351,612
ELECTRONIC MUSICAL INSTRUMENT WITH A KEYBOARD STRUMMER
Franklin N. Eventoff, 7086 Atwood Rd., Ferndale, Wash. 98248
Filed Apr. 9, 1993, Ser. No. 7,931
Term of patent 14 years
U.S. Cl. D17—1



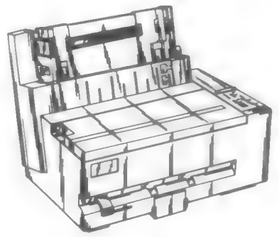
351,613
MULTI-FUNCTION ELECTRONIC ORGANIZER
Hiroshi Sakaguchi, Kyoto; Kenji Kondo, Nara, and Masaki Kawamura, Hiroshima, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Oct. 5, 1992, Ser. No. 44
Term of patent 14 years
U.S. Cl. D18—7



351,614
CALCULATOR
Richard F. M. Peersmann, ET Scheveningen, Netherlands, assignor to Polyflame International B.V., Roelofarendsveen, Netherlands
Filed Jan. 5, 1993, Ser. No. 3,275
Term of patent 14 years
U.S. Cl. D18—7

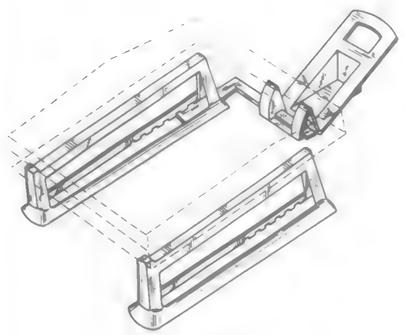


351,615
PRINTER
Edmund H. James, III; Peter J. Mendel; Thomas E. Pangburn, all of Lexington, and Robert C. Redding, Versailles, all of Ky., assignors to Lexmark International, Inc., Greenwich, Conn.
Filed Jun. 14, 1993, Ser. No. 9,488
Term of patent 14 years
U.S. Cl. D18—55

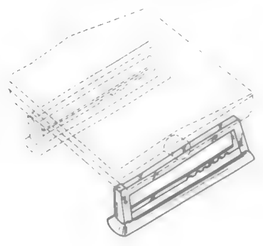


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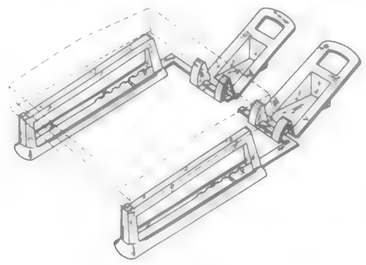
351,616
PRINTER STAND WITH PAPER RETAINER
Gary J. Troy, Nottingham, and Edward L. Hames, Peterborough, both of N.H., assignors to Curtis Manufacturing Company, Inc., Jaffrey, N.H.
Filed Mar. 16, 1992, Ser. No. 851,865
Term of patent 14 years
U.S. Cl. D18—56



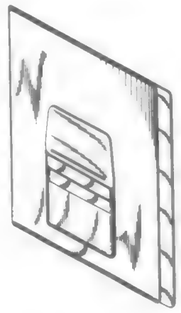
351,617
PRINTER SUPPORT STAND
Gary J. Troy, Nottingham, and Edward L. Hames, Peterborough, both of N.H., assignors to Curtis Manufacturing Company, Inc., Jaffrey, N.H.
Filed Mar. 9, 1992, Ser. No. 847,819
Term of patent 14 years
U.S. Cl. D18—59



351,618
PRINTER STAND WITH PAPER RETAINERS
Gary J. Troy, Nottingham, and Edward L. Hames, Peterborough, both of N.H., assignors to Curtis Manufacturing Company, Inc., Jaffrey, N.H.
Filed Mar. 16, 1992, Ser. No. 852,104
Term of patent 14 years
U.S. Cl. D18—59



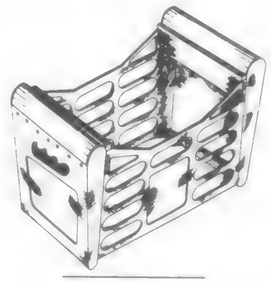
351,619
FILE FOLDER
Warren Struhl, Lyndhurst, N.J., assignor to Paperdirect, Inc., Lyndhurst, N.J.
Filed Dec. 16, 1992, Ser. No. 2,688
Term of patent 14 years
U.S. Cl. D19—26



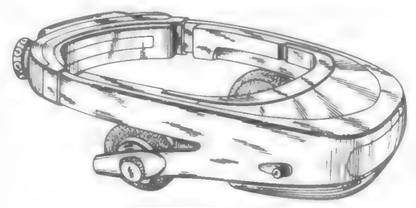
351,620
TIP HOUSING FOR A WRITING INSTRUMENT
Hong Chung, Flat B-3 & B-4, 2/F, Burlington House, 90-94 Nathan Road, Tsimshatsui, Kowloon, Hong Kong
Filed Jun. 4, 1991, Ser. No. 709,767
Term of patent 14 years
U.S. Cl. D19—54



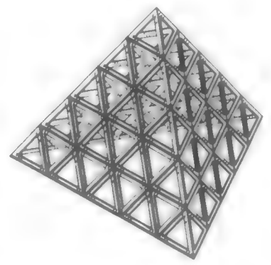
351,621
FILE CONTAINER FOR TEACHERS' RESOURCE MATERIAL
Bruce A. Terzian, Dedham, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Jun. 16, 1993, Ser. No. 9,662
Term of patent 14 years
U.S. Cl. D19—90



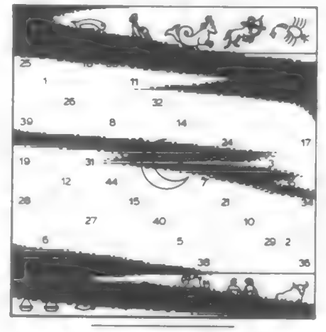
351,622
HELMET FOR PROVIDING VIRTUAL REALITY ENVIRONMENTS
Richard Holmes, Nuneaton, United Kingdom, assignor to W Industries Limited, Leicester, United Kingdom
Filed Jun. 22, 1993, Ser. No. 9,721
Claims priority, application United Kingdom, Jan. 29, 1993, 2018779
Term of patent 14 years
U.S. Cl. D21—240



351,623
TRIGON GAME BOARD
Michael Seiler, 10 Elmwood Ct., Plainview, N.Y. 11803
Filed Jan. 8, 1993, Ser. No. 3,372
Term of patent 14 years
U.S. Cl. D21—23



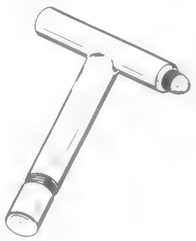
351,624
LOTTO NUMBER CHOOSING BOARD GAME
Jose Vasquez, 125 Slabough, Mission, Tex. 78572
Filed Mar. 15, 1993, Ser. No. 5,881
Term of patent 14 years
U.S. Cl. D21—25



351,625
VIDEO GAME JOYSTICK CONTROLLER
Robert L. Carter, Lake Oswego; David W. Reeves, Aloha; Clarence A. Hoffman, Salem, all of Oreg., and Gary L. Moffett, Vancouver, Wash., assignors to Thrustmaster, Inc., Tigard, Oreg.
Filed Jul. 1, 1993, Ser. No. 10,325
Term of patent 14 years
U.S. Cl. D21—48

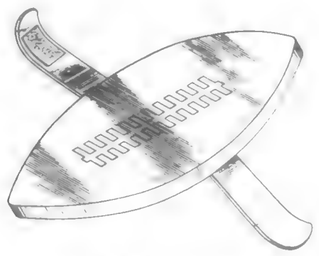


351,626
REFILLABLE BINGO DABBER
Ella Henderson, 5802 Briarwick, Houston, Tex. 77016
Filed Apr. 12, 1991, Ser. No. 684,364
Term of patent 14 years
U.S. Cl. D21—51

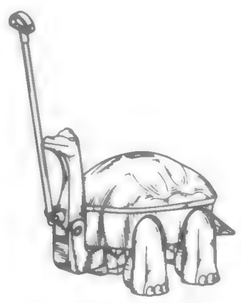


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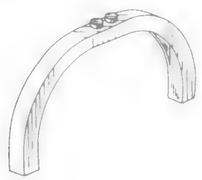
351,627
HAND-HELD NOISEMAKER
John C. Beckwith, 416 Windsor Dr., Goodyear, Ariz. 85338
Filed Jun. 10, 1993, Ser. No. 9,300
Term of patent 14 years
U.S. Cl. D21—64



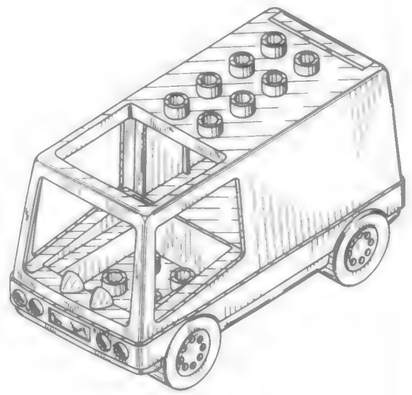
351,628
TOY TROLLEY HAVING A DINOSAUR CONFIGURATION
Ting-Hsing Chen, No. 855, Chung Shan Rd., Kuei Jen Hsiang, Tainan Hsien, Taiwan
Filed Aug. 23, 1993, Ser. No. 12,123
Term of patent 14 years
U.S. Cl. D21—74



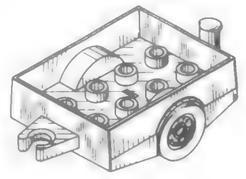
351,629
ELEMENT FOR A TOY BUILDING SET
Jan Ryaa, Billund, and Lene Köhler, Jelling, both of Denmark, assignors to Interlego, A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,301
Term of patent 14 years
U.S. Cl. D21—108



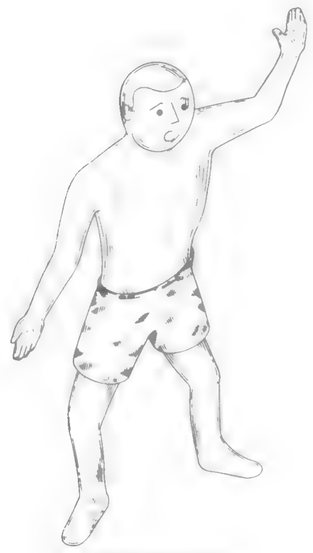
351,630
TOY CAR
Arne E. Jensen, Gentofte, and Thomas A. Thomsen, Copenhagen, both of Denmark, assignors to Interlego A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,310
Term of patent 14 years
U.S. Cl. D21—134



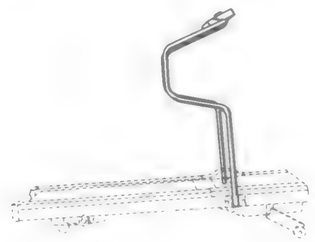
351,631
TOY TRAILER
Thomas A. Thomsen, and Ede F. Ruszkai, both of Copenhagen, Denmark, assignors to Interlego A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,300
Term of patent 14 years
U.S. Cl. D21—141



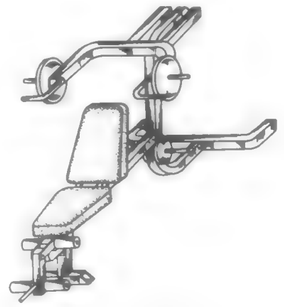
351,632
PRACTICE DUMMY FOR SPORTS
David L. Mitchell, Rte. 1 Box 235-3, West Union, W. Va. 26456
Filed Apr. 2, 1993, Ser. No. 6,623
Term of patent 14 years
U.S. Cl. D21—171



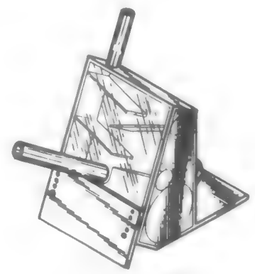
351,633
COMBINED HANDLE AND CONSOLE UNIT FOR AN EXERCISER
Curt G. Bingham, Salt Lake City, Utah, assignor to Proform Fitness Products, Inc., Logan, Utah
Filed Apr. 8, 1993, Ser. No. 6,864
Term of patent 14 years
U.S. Cl. D21—191



351,634
MULTIPURPOSE PHYSICAL EXERCISER
Tian-Jyu Cheng, 9th Floor, No. 69 Lane 399 Chung Hsiao Road, Lin Kou, Taipei Hsien, Taiwan
Filed May 26, 1993, Ser. No. 8,777
Term of patent 14 years
U.S. Cl. D21—195



351,635
BATTING PRACTICE MACHINE
Gregory Sherman, 1736 Pomona Dr., Las Cruces, N. Mex. 88001
Filed Jun. 18, 1993, Ser. No. 9,586
Term of patent 14 years
U.S. Cl. D21—210

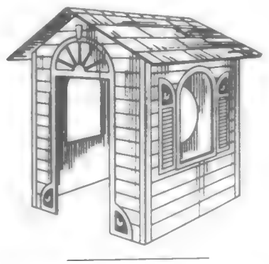


351,636
WATERCRAFT
Bryan E. Newton, 10 Boondah Road, Warriewood, N S W 2102, Australia
Filed Jun. 15, 1993, Ser. No. 9,515
Claims priority, application Australia, Dec. 15, 1992, 3627/92
Term of patent 14 years
U.S. Cl. D21—228

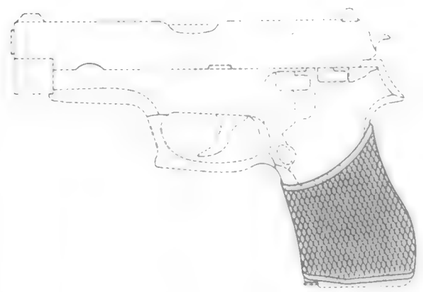


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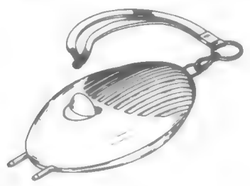
351,637
CHILDREN'S PLAYHOUSE
Daniel A. Neidig, 11626 Lawn Dale Ave., Plymouth, Ind. 46563
Filed Dec. 8, 1992, Ser. No. 2,301
Term of patent 14 years
U.S. Cl. D21—240



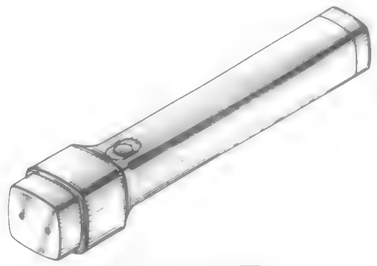
351,638
RUBBER GRIP FOR HANDGUN
Barry R. Scott, 41162 Montelimar Ct., Murrietta, Calif. 92562, and Richard D. Wade, 9018 Ahmann Ave., Whittier, Calif. 90603
Filed Nov. 1, 1993, Ser. No. 14,742
Term of patent 14 years
U.S. Cl. D22—108



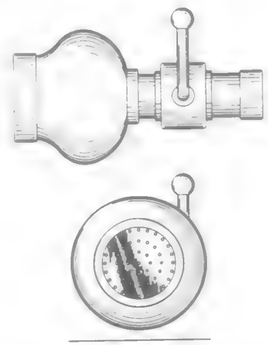
351,639
STUN GUN
Chen K. Su, 1150 Oaks Blvd., Naples, Fla. 33999
Filed Nov. 4, 1993, Ser. No. 15,050
Term of patent 14 years
U.S. Cl. D22—117



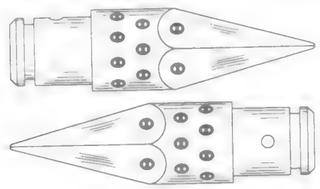
351,640
ELECTRONIC STUNNING WEAPON
Richard N. de Anda, and Dale R. Hollis, both of 2899 Agoura Rd. - Ste. 202, Westlake Village, Calif. 91361
Filed Dec. 13, 1993, Ser. No. 16,257
Term of patent 14 years
U.S. Cl. D22—117



351,641
SHOWER HEAD
Jim Buecker, 4702 Rocks Rd., Street, Md. 21154
Filed Apr. 15, 1993, Ser. No. 7,020
Term of patent 14 years
U.S. Cl. D23—213



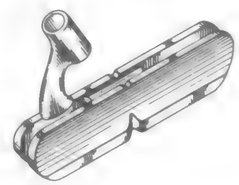
351,642
NOZZLE FOR A FIREFIGHTING TOOL
Wallace F. Mitchell, St. Marys Rd. and Hwy. 60, Mettawa, Ill.
Filed Oct. 15, 1993, Ser. No. 14,229
Term of patent 14 years
U.S. Cl. D23—213



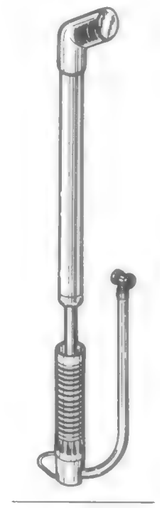
351,643
YARD GOLF CLUB
Peter M. Gabany, St. Louis, Mo., assignor to Leisure Master Incorporated, St. Louis, Mo.
Filed Oct. 19, 1992, Ser. No. 644
Term of patent 14 years
U.S. Cl. D21—214



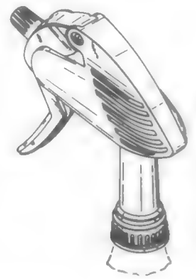
351,644
GOLF PUTTER HEAD
David B. Jensen, 911 W. Jefferson, Dallas, Tex. 75208
Filed May 27, 1992, Ser. No. 888,804
Term of patent 14 years
U.S. Cl. D21—219



351,645
AIR PUMP
Masahiro Furusawa, 12-3, Ryouke 1-chome, Urawa-shi, Saitama-ken, Japan
Filed May 22, 1992, Ser. No. 886,474
Term of patent 14 years
U.S. Cl. D23—231

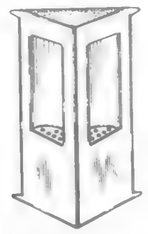


351,646
TRIGGER SPRAYER
Donald D. Foster, St. Charles, and Martin S. Laffey, O'Fallon, both of Mo., assignors to Contico International, Inc., St. Louis, Mo.
Filed Feb. 4, 1994, Ser. No. 18,407
Term of patent 14 years
U.S. Cl. D23—226

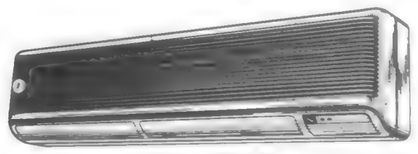


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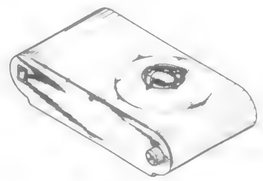
351,647
FOOT REST FOR SHOWERS
Caroline Saltzbaugh, 6426 Woodland Dr., Dallas, Tex. 75225
Filed Mar. 11, 1993, Ser. No. 5,765
Term of patent 14 years
U.S. Cl. D23—304



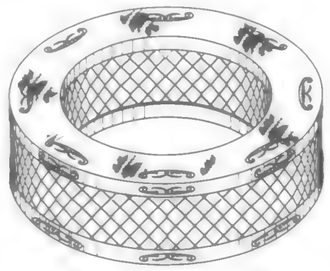
351,648
AIR CONDITIONER
Hideyuki Ikeda; Shigeru Saito, and Eiji Horino, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 22, 1993, Ser. No. 9,718
Term of patent 14 years
U.S. Cl. D23—351



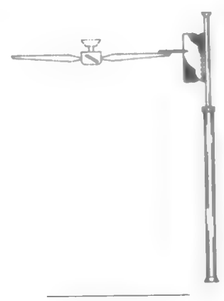
351,649
COMBINED BACTERICIDAL OZONIC AIR CLEANER AND COVER THEREFOR
Sung-Hui Lin, 4th Fl., No. 37, Lane 320, Li Shan St., Taipei, Taiwan
Filed Feb. 10, 1994, Ser. No. 18,619
Term of patent 14 years
U.S. Cl. D23—364



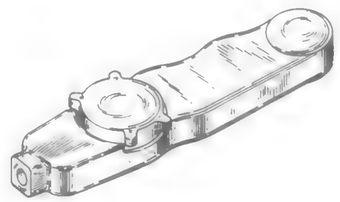
351,650
AIR FILTER ELEMENT
Dallas A. Vavra, P.O. Box 3041, Matthews, N.C. 28106
Filed Oct. 4, 1993, Ser. No. 13,869
Term of patent 14 years
U.S. Cl. D23—365



351,651
CEILING FAN BALANCE CORRECTOR
Philip A. Schott, 321 Fortune Rd., Youngsville, La. 70592
Filed Sep. 8, 1992, Ser. No. 939,885
Term of patent 14 years
U.S. Cl. D23—411



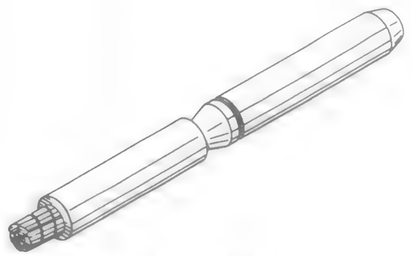
351,652
STEERABLE MEDICAL CATHETER HANDLE
Russell B. Thompson, Menlo Park; Jeffrey N. Reynolds, Santa Clara; George A. Ross, San Jose; Patrick M. Owens, Cupertino, and Jerome Jackson, Sunnyvale, all of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.
Filed Jun. 21, 1993, Ser. No. 9,755
Term of patent 14 years
U.S. Cl. D24—138



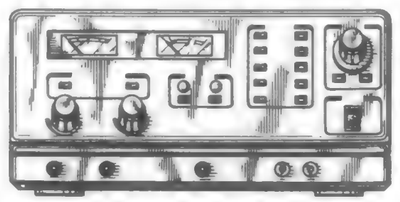
351,653
LAPAROSCOPIC GRASPER
Tibor Koros, and Gabriel Koros, both of 610 Flinn Ave., Moorpark, Calif. 93021
Filed Jan. 29, 1993, Ser. No. 4,250
Term of patent 14 years
U.S. Cl. D24—143



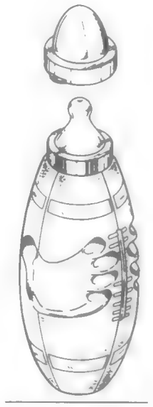
351,654
DENTAL BURR
Frederick T. Wauchope, 5464 Dundas Street West, Suite 302, Etobicoke Ontario, Canada M9B 1B4
Filed May 26, 1992, Ser. No. 888,219
Claims priority, application Canada, Nov. 25, 1991, 25-11-91-6
Term of patent 14 years
U.S. Cl. D24—152



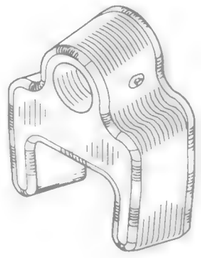
351,655
EPILATOR HOUSING
Margaret M. Smith, 10610 Huston St., North Hollywood, Calif. 91601, and Graham J. Muir, 2063 Hietter Ave., Simi Valley, Calif. 93063
Filed Mar. 9, 1993, Ser. No. 5,693
Term of patent 14 years
U.S. Cl. D24—170



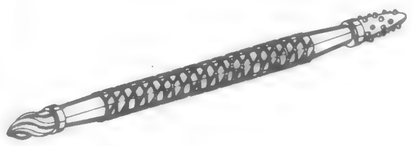
351,656
BABY BOTTLE
Paul T. Collins, Rte. 3 Box 451, Tuttle, Okla. 73089
Filed Feb. 18, 1993, Ser. No. 5,018
Term of patent 14 years
U.S. Cl. D24—198



351,657
BABY BOTTLE HOLDER
Georgia L. Griffin, 1398 SE. 64th Ct., Hillsboro, Oreg. 97123
Filed Jul. 6, 1993, Ser. No. 10,352
Term of patent 14 years
U.S. Cl. D24—199

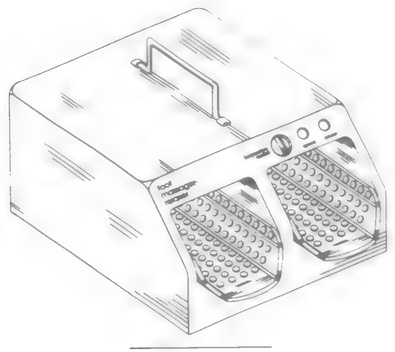


351,658
COMBINED TOOTH AND GUM MASSAGER
Debra A. Beckman, 1210 Ridge Rd., Longwood, Fla. 32750
Filed Apr. 12, 1993, Ser. No. 6,893
Term of patent 14 years
U.S. Cl. D24—211



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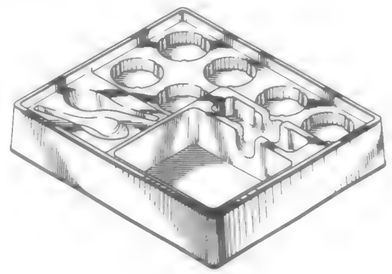
351,659
FOOT MASSAGER
Wayne D. Gingerich, 7597 County Rd. 77, Millersburg, Ohio 44654
Filed Aug. 2, 1993, Ser. No. 11,192
Term of patent 14 years
U.S. Cl. D24—213



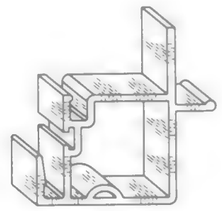
351,660
ELECTRIC MASSAGER
Kuniharu Ichikawa, Kyoto, and Yasunari Maeda, Hirakata, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Jul. 16, 1992, Ser. No. 913,895
Claims priority, application Japan, Jan. 17, 1992, 4-962; Jan. 17, 1992, 4-964
Term of patent 14 years
U.S. Cl. D24—214



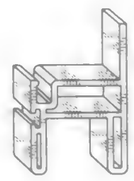
351,661
COMBINED ORGANIZER AND TRAY FOR AN ENDODONTIC DENTAL KIT
Dan E. Fischer, Sandy, Utah, assignor to Ultradent Products, Inc., South Jordan, Utah
Filed Feb. 16, 1993, Ser. No. 4,936
Term of patent 14 years
U.S. Cl. D24—230



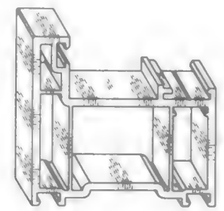
351,662
WINDOW COMPONENT EXTRUSION
Douglas L. Cole, Seattle, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Apr. 22, 1993, Ser. No. 7,418
Term of patent 14 years
U.S. Cl. D25—124



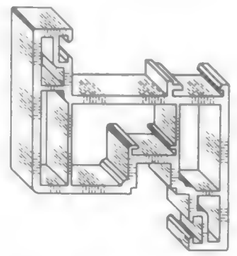
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WINDOW COMPONENT EXTRUSION
Douglas L. Cole, Seattle, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Apr. 22, 1993, Ser. No. 7,423
Term of patent 14 years
U.S. Cl. D25—124



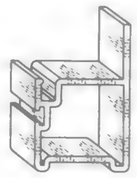
351,664
WINDOW COMPONENT EXTRUSION
Douglas L. Cole, Seattle, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Apr. 22, 1993, Ser. No. 7,457
Term of patent 14 years
U.S. Cl. D25—124



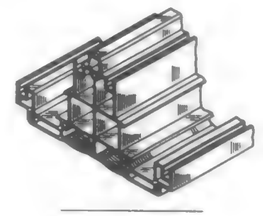
351,665
WINDOW COMPONENT EXTRUSION
Douglas L. Cole, Seattle, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Apr. 22, 1993, Ser. No. 7,861
Term of patent 14 years
U.S. Cl. D25—124



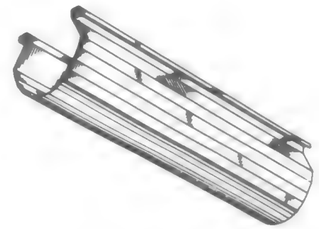
351,666
WINDOW COMPONENT EXTRUSION
Douglas L. Cole, Seattle, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Apr. 22, 1993, Ser. No. 7,862
Term of patent 14 years
U.S. Cl. D25—124



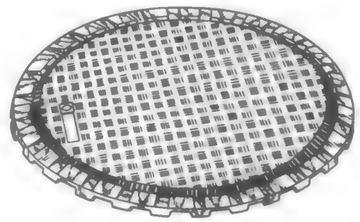
351,667
RAIL ELEMENT
Joseph C. Barcroft, 102 Sweetwater Club Blvd., Longwood, Fla. 32750
Filed Aug. 2, 1993, Ser. No. 11,378
Term of patent 14 years
U.S. Cl. D25—124



351,668
CURVED MOUNTED CEILING PANEL
Guy H. Lim; Cornelis Louwerens, both of NB Rotterdam, and Willem Rijnders, XH Papendrecht, all of Netherlands, assignors to Hunter Douglas International N.V., Curacao, Netherlands
Filed Jan. 23, 1991, Ser. No. 646,016
Claims priority, application World Int. Prop. O., Jul. 23, 1990, DM/017196
Term of patent 14 years
U.S. Cl. D25—121

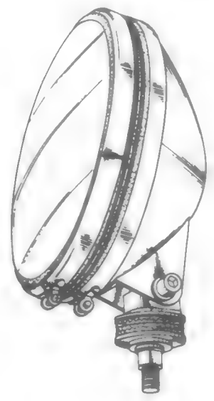


351,669
UTILITY ACCESS COVER ASSEMBLY
John R. Newton, Storrs Park, United Kingdom, assignor to 3-D Composites Limited, Heanymore House, United Kingdom
Filed Sep. 25, 1992, Ser. No. 951,698
Term of patent 14 years
U.S. Cl. D25—36

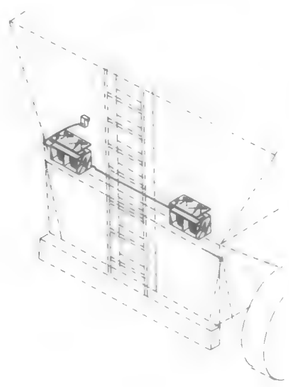


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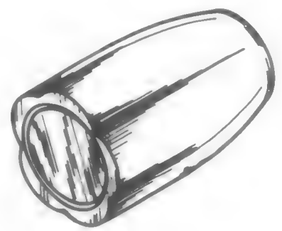
351,670
FOG LIGHT
Wen-Tsung Tsai, No. 59-3, Lane 410, Sec. 2, Wen Hua Rd., Pan Chiao, Taipei, Taiwan
Filed Jun. 5, 1992, Ser. No. 894,790
Term of patent 14 years
U.S. Cl. D26—29



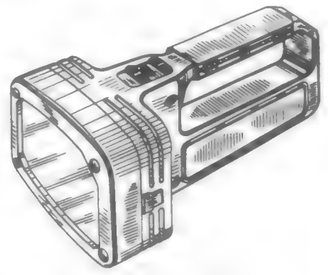
351,671
SET OF REAR SIGNAL LIGHTS FOR A VEHICLE
Josef E. Beacom, 2652 Merritt St., Springfield, Ohio 45503
Filed Jul. 9, 1992, Ser. No. 910,985
Term of patent 14 years
U.S. Cl. D26—35



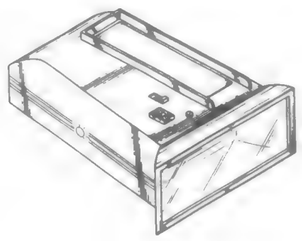
351,672
FLASH LIGHT HEAD
Tzong-Tsair Tzay, No.11 Alley 103 Lane 39 Shih Chien Street, Tainan, Taiwan
Filed Nov. 18, 1992, Ser. No. 1,627
Term of patent 14 years
U.S. Cl. D26—37



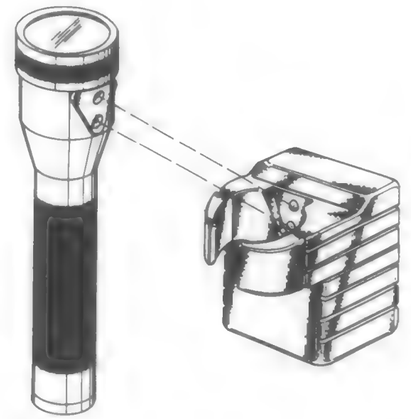
351,673
PORTABLE LIGHT
Kenneth R. Fenne, Glen Ellyn, Ill., assignor to BRK Electronics, Inc., Aurora, Ill.
Filed Jan. 28, 1993, Ser. No. 4,219
Term of patent 14 years
U.S. Cl. D26—37



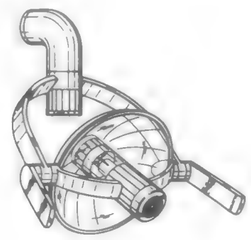
351,674
HAND-HELD LIGHT FOR PERSONAL PROTECTION
Michael J. Journeau, and Renee Vukovich, both of 18479 Conley St., Detroit, Mich. 48234
Filed Dec. 11, 1992, Ser. No. 2,398
Term of patent 14 years
U.S. Cl. D26—38



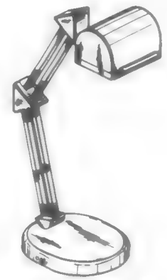
351,675
COMBINED FLASHLIGHT AND RECHARGER THEREFOR
Raymond L. Sharrah, Collegeville; Charles W. Craft, Lansdale, and Paul A. Jordan, Audubon, all of Pa., assignors to Streamlight, Inc., Norristown, Pa.
Filed Jan. 13, 1993, Ser. No. 3,683
Term of patent 14 years
U.S. Cl. D26—38



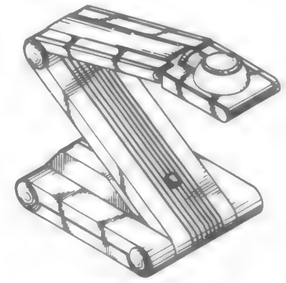
351,676
WORK ZONE LIGHT FOR MEDICAL PURPOSES
Tilman Phleps, Lorsch, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Feb. 3, 1993, Ser. No. 4,380
Term of patent 14 years
U.S. Cl. D26—63



351,677
ADJUSTABLE TABLE LAMP
Se K. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed May 6, 1993, Ser. No. 8,062
Claims priority, application United Kingdom, Nov. 25, 1992, 2027397
Term of patent 14 years
U.S. Cl. D26—65



351,678
ADJUSTABLE TABLE LAMP
Chien-Chung Chen, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (10477), Taiwan
Filed Jul. 1, 1993, Ser. No. 10,147
Term of patent 14 years
U.S. Cl. D26—65

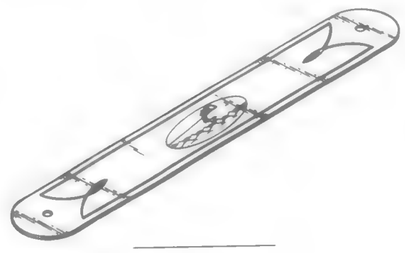


351,679
ARCH-SHAPED TABLE LAMP
Chien-Chung Chen, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (10477), Taiwan
Filed Jul. 1, 1993, Ser. No. 10,167
Term of patent 14 years
U.S. Cl. D26—107

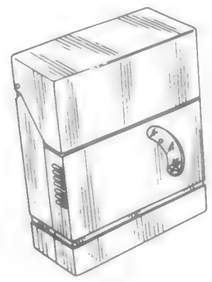


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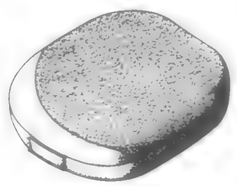
351,680
ADAPTER PLATE FOR MOUNTING HEADLIGHTS ON BOATS
Bill Henley, Rte. 3, Box 344-E, Killen, Ala. 35645
Filed Mar. 6, 1992, Ser. No. 845,486
Term of patent 14 years
U.S. Cl. D26—138



351,681
CIGARETTES CONTAINER
Jean-Baptiste Lechere, Chatel la Lune, Le Noyer en Ouche, France 27190
Filed Aug. 10, 1993, Ser. No. 11,677
Claims priority, application France, Feb. 23, 1993, 930.972
Term of patent 14 years
U.S. Cl. D27—189



351,682
COMPACT CASE
Howard H. McIlvain, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Apr. 15, 1993, Ser. No. 7,135
Term of patent 14 years
U.S. Cl. D28—78



351,683
SOAP BAR
John C. Crawford, Lake Mahopac, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Apr. 10, 1992, Ser. No. 867,865
Term of patent 14 years
U.S. Cl. D28—8.1



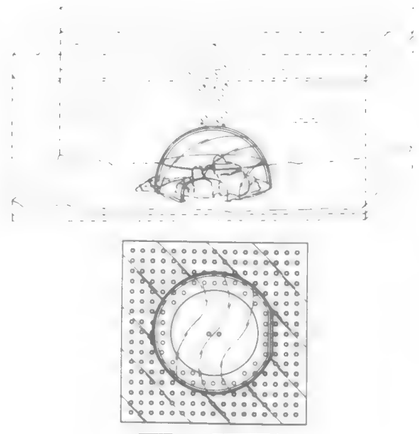
351,684
RIDER'S SAFETY HELMET
Yen-Ming Jeng, 48 Feng-Lien Street, Hsin-Feng Hsian, Hsin-chu, Taiwan
Filed Dec. 15, 1992, Ser. No. 2,561
Term of patent 14 years
U.S. Cl. D29—102



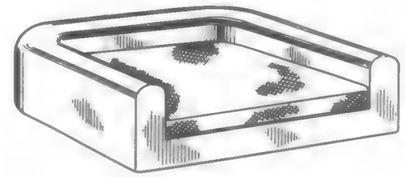
351,685
HELMET
Eitaro Kamata, Tokyo, Japan, assignor to Shoei Kako Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 17, 1992, Ser. No. 853,174
Claims priority, application Japan, Dec. 24, 1991, 3-38873
Term of patent 14 years
U.S. Cl. D2—105



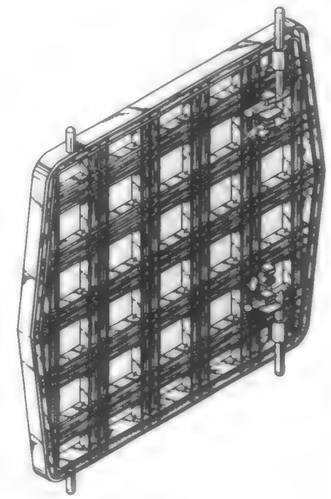
351,686
AMPHIBIOUS ANIMAL HABITAT
Robert L. O'Dell, 2897 Pinyon, Apt. No. 1, Grand Junction, Colo. 81501
Filed Dec. 11, 1992, Ser. No. 2,473
Term of patent 14 years
U.S. Cl. D30—106



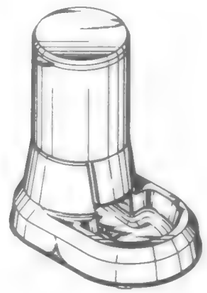
351,687
BED FOR PETS
Franklin McMahon, New York, N.Y., assignor to Univier International Corporation, New York, N.Y.
Filed Nov. 2, 1992, Ser. No. 1,020
Term of patent 14 years
U.S. Cl. D30—118



351,688
KENNEL DOOR
Melaney Northrop, Cleburne, and Thomas B. Murphy, Arlington, both of Tex., assignors to Doskocil Manufacturing Company, Inc., Arlington, Tex.
Filed Jan. 14, 1993, Ser. No. 3,701
Term of patent 14 years
U.S. Cl. D30—119

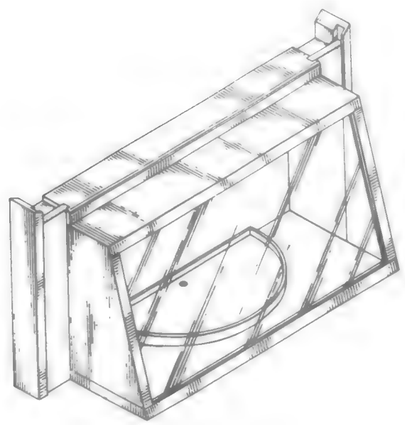


351,689
PET FEEDER
Ralph VanSkiver, Arlington, Tex., assignor to Doskocil Manufacturing Company, Inc., Armonk, N.Y.
Filed Mar. 30, 1993, Ser. No. 6,476
Term of patent 14 years
U.S. Cl. D30—121



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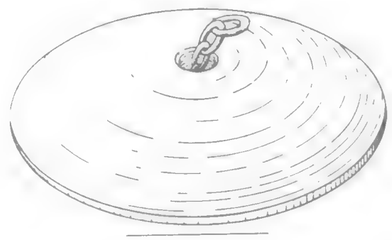
351,690
WINDOW-MOUNTED BIRD FEEDER
Jerry P. Honeycutt, 214 Tonset Rd., Orleans, Mass. 02653
Filed Apr. 19, 1993, Ser. No. 7,153
Term of patent 14 years
U.S. Cl. D30—124



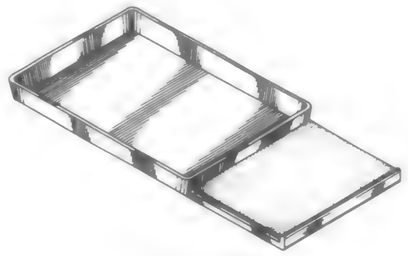
351,691
FOOD DISPENSER FOR BIRDS
Leslie Lipton, 42 Dene Road, Northwood, Middlesex HA6 2DA, England
Filed Dec. 3, 1992, Ser. No. 2,177
Term of patent 14 years
U.S. Cl. D30—127



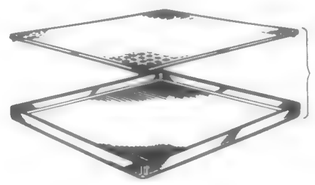
351,692
PET TETHER
Jimmy F. Cossey, 519 Rock St., Dardanelle, Ark. 72834
Continuation-in-part of Ser. No. 405,019, Sep. 11, 1989, abandoned. This application Jul. 27, 1992, Ser. No. 919,578
Term of patent 14 years
U.S. Cl. D30—154



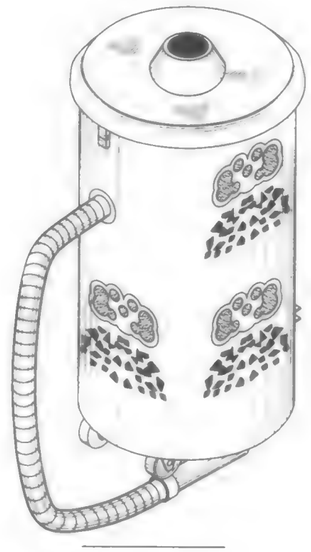
351,693
TRAY FOR USE WITH KITTY LITTER BOX
Candice Sutton, 1753 E. Palmdale Blvd. #C-133, Palmdale, Calif. 93550
Filed May 3, 1993, Ser. No. 7,791
Term of patent 14 years
U.S. Cl. D30—161



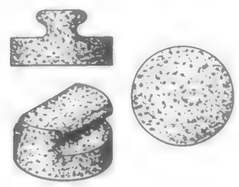
351,694
MAT FOR USE ADJACENT TO LITTER BOX
David S. Evans, 2572 Riva Rd., Suite #15B, Annapolis, Md. 21401
Filed Jun. 3, 1993, Ser. No. 9,096
Term of patent 14 years
U.S. Cl. D30—161



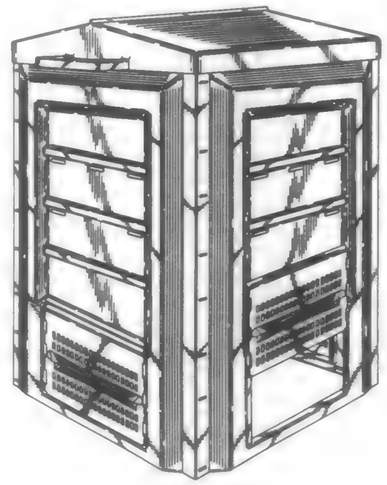
351,695
CHIMNEY VACUUM CLEANER
Eddie Martinez, 2532 N. Arkansas, Wichita, Kans. 67204, and Claudine Cartwright, 550 W. Central - Apt 908, Wichita, Kans. 67203
Filed Aug. 12, 1992, Ser. No. 928,219
Term of patent 14 years
U.S. Cl. D32—23



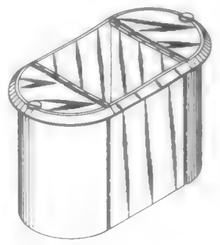
351,696
SPONGE
Raymond C. Adolf, Doylestown, Pa., assignor to Nation/Ruskin, Inc., Montgomeryville, Pa.
Filed Jul. 5, 1990, Ser. No. 548,640
Term of patent 14 years
U.S. Cl. D32—40



351,697
COMPOST BIN
William P. Biotnick, Jupiter, Fla., assignor to DeJay Corporation, Palm Beach Gardens, Fla.
Filed Apr. 8, 1993, Ser. No. 6,826
Term of patent 14 years
U.S. Cl. D34—1

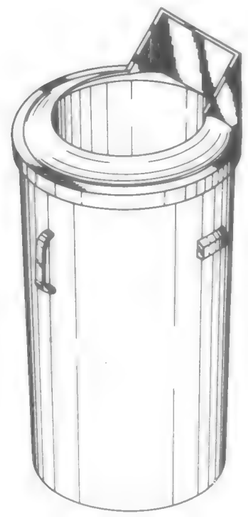


351,698
COMPARTMENTALIZED TRASH RECEPTACLE
Bernd Brüssing, Ulm/Donau, Fed. Rep. of Germany, assignor to Helit Innovative Buroprodukte, Kierspe, Fed. Rep. of Germany
Filed May 5, 1993, Ser. No. 8,461
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1992, M9208806.6
Term of patent 14 years
U.S. Cl. D34—1

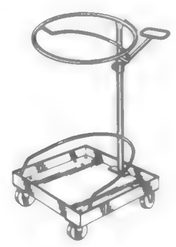


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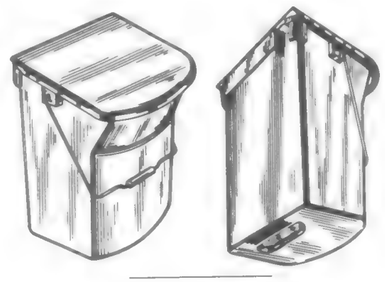
351,699
TRASH COLLECTION CONTAINER WITH EXTENDED LIP
Ricky Temple, and Virginia Temple, both of 2104 Handley St., Texarkana, Tex. 75501
Filed Jul. 29, 1993, Ser. No. 11,193
Term of patent 14 years
U.S. Cl. D34—1



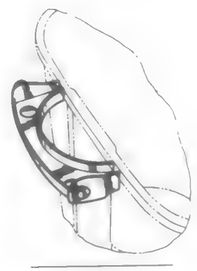
351,700
MOBILE GARBAGE BAG SUPPORT
Melvin Uzelman, 1321 - 30 Street South, Lethbridge, Alberta, Canada T1K 2Z1
Filed Feb. 7, 1994, Ser. No. 18,458
Term of patent 14 years
U.S. Cl. D34—5



351,701
COMPOST PAIL
Kim R. Sawatsky, 13014 Dixie Road, Brampton, Ontario, Canada L6T 3S1
Filed Apr. 23, 1993, Ser. No. 7,399
Term of patent 14 years
U.S. Cl. D34—7



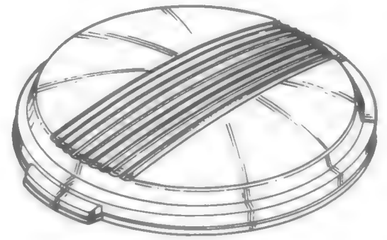
351,702
INTEGRAL HANDLE FOR TRASH CONTAINER
John D. Breen, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 14, 1994, Ser. No. 17,474
Term of patent 14 years
U.S. Cl. D34—10



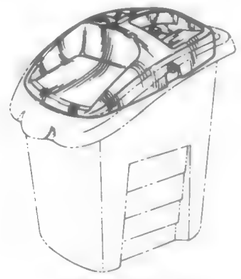
351,703
TRASH CONTAINER HANDLE
John D. Breen, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 14, 1994, Ser. No. 17,477
Term of patent 14 years
U.S. Cl. D34—10



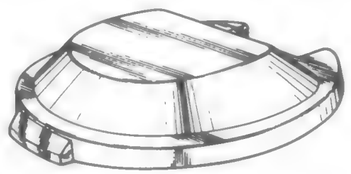
351,704
LID FOR TRASH CONTAINER
John D. Breen, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Dec. 3, 1993, Ser. No. 16,002
Term of patent 14 years
U.S. Cl. D34—11



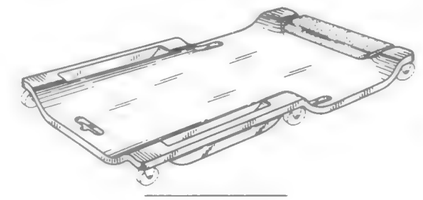
351,705
COMBINED DUST PAN AND TRASH CONTAINER LID
David A. Bird, and Mitchell L. Wilgus, both of Akron, Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 13, 1994, Ser. No. 17,424
Term of patent 14 years
U.S. Cl. D34—11



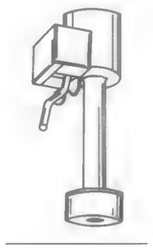
351,706
TRASH CONTAINER LID
John D. Breen, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 14, 1994, Ser. No. 17,476
Term of patent 14 years
U.S. Cl. D34—11



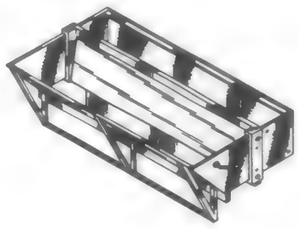
351,707
MECHANICS CREEPER
Leonard Pill, 4109 Melrose Ave., Los Angeles, Calif. 90029
Filed Aug. 16, 1993, Ser. No. 11,846
Term of patent 14 years
U.S. Cl. D34—23



351,708
COMBINED VACUUM LIFTER HEAD AND OPERATING VALVE THEREFORE
Roland Andersson, Fjäras, Sweden, assignor to Pritec AB, Fjaras, Sweden
Filed Oct. 1, 1992, Ser. No. 49
Claims priority, application Sweden, Apr. 1, 1992, 920742
Term of patent 14 years
U.S. Cl. D34—28



351,709
CHUTE FOR CONCRETE AND INSULATION
Walter L. Williams, 11505 Nassau Dr, NE., Albuquerque, N. Mex. 87111
Filed Jun. 10, 1993, Ser. No. 9,317
Term of patent 14 years
U.S. Cl. D34—28



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351,710

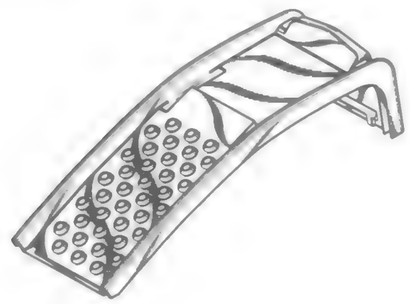
VEHICLE RAMP

Robert K. Richardson, Minerva, Ohio, assignor to Ganeaux Industries, Inc., Salem, Ohio

Filed Jul. 19, 1993, Ser. No. 10,795

Term of patent 14 years

U.S. Cl. D34—32



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF OCTOBER, 1994

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.E. Staley Manufacturing Company: *See*—
Purdue, James C.; Kapper, Kevin D.; Bunch, Michael D.; and Turner, Jerry L., 5,356,808, Cl. 435-254.200.

A/N, Inc.: *See*—
San, Jeremy E.; Cheese, Ben; Graham, Carl N.; and Warnes, Peter R., 5,357,604, Cl. 395-162.000.

Abalos, Martin: *See*—
Moore, H. Jack, Jr.; and Abalos, Martin, 5,355,841, Cl. 122-17.000.

ABB Vetco Gray Inc.: *See*—
Gariepy, James A.; and Eckert, Lawrence A., 5,355,961, Cl. 166-387.000.

Abbagnaro, Louis A.; Siegel, William J.; McDavid, Charles H., Jr.; Cardno, Charles M.; Mason, James L.; Tang, Anthony Q.; Quasney, Robert S., Sr.; and Brown, Robert G., to Pace, Incorporated. Hand-held low voltage machining tool. 5,357,179, Cl. 318-17.000.

Abbott Laboratories: *See*—
Brill, Gregory M.; McAlpine, James B.; and Rasmussen, Ronald R., 5,356,933, Cl. 514-548.000.
Chan, Emerson W.; Robey, William G.; and Schulze, Werner, 5,356,772, Cl. 435-5.000.
Dubler, Robert E.; Grote, Jonathan; and Kuhn, Donna R., 5,356,820, Cl. 436-537.000.

Abdechakour, Nadir: *See*—
Boubehira, Mohamed; Chouchou, Omar; Bourgin, Alain; and Abdechakour, Nadir, 5,356,598, Cl. 422-180.000.

Abe, Akira, to Sony Corporation. Reel lock for video cassette. 5,356,089, Cl. 242-343.000.

Abe, Hajime: *See*—
Seki, Kuniaki; Nishiyama, Shinichi; Abe, Hajime; and Hagiwara, Noboru, 5,356,665, Cl. 427-239.000.

Abe, Kimihiro; and Koumatsu, Seiji, to Yazaki Corporation. Connector waterproofing stopper. 5,356,312, Cl. 439-587.000.

Abe, Yoshito: *See*—
Oku, Teruo; Kawai, Yoshio; Marusawa, Hiroshi; Yamazaki, Hitoshi; Abe, Yoshito; and Tanaka, Hirokazu, 5,356,897, Cl 514-258.000.

Abecassis, Max. Gameboard and scale model game. 5,356,151, Cl. 273-243.000.

Abi-Ezzi, Salim S.: *See*—
Shirman, Leon A.; and Abi-Ezzi, Salim S., 5,357,600, Cl. 395-133.000.

Abreu, Christian O.: *See*—
Solano, Suzzette R.; Abreu, Christian O.; Ferrari, Patrick T.; Bigenwald, John J.; Rebres, Robert P.; Kellogg, Theodore J.; and Alexander, Thomas R., 5,357,327, Cl. 355-282.000.

ABZ Manufacturing, Inc.: *See*—
Morgan, David R.; and McClelland, Wayne C., 5,356,116, Cl 251-308.000.

ACF Industries Inc.: *See*—
Dugge, Richard H., 5,355,809, Cl. 105-424.000.

Achelpohl, Fritz; and Sandmeier, Hermann, to Windmoeller & Hoelscher. Carrying handle assembly for bags having flat bottoms and a method and an apparatus for producing the same. 5,356,221, Cl. 383-21.000.

Acker, John D.: *See*—
Beaudry, James T.; Pacek, Ivan A.; and Acker, John D., 5,357,451, Cl. 364-561.000

Ackerman, Bryan; and Prokuda, Brian, to Dow Chemical Company, The. Metal conductor element. 5,356,306, Cl. 439-387.000.

Adachi, Hiroshi; and Suganuma, Noriyuki, to Dow Corning Toray Silicone Co., Ltd. Method for preparing an electrically conductive organosiloxane composition. 5,356,954, Cl. 523-200.000.

Adachi, Hiroshi: *See*—
Shimada, Tomoyuki; Sasaki, Masaomi; Aruga, Tamotsu; and Adachi, Hiroshi, 5,356,742, Cl. 430-59.000.

Adachi, Junshi: *See*—
Nakao, Yasushi; Adachi, Junshi; and Yabuta, Motoshi, 5,356,996, Cl. 525-158.000.

Adachi, Kenro: *See*—
Ito, Kenichiro; Nojiri, Hiromi; and Adachi, Kenro, 5,355,748, Cl. 74-650.000.
Itoh, Kenichiro; Nojiri, Hiromi; and Adachi, Kenro, 5,355,981, Cl. 192-35.000.

Adam, Jean-Marie: *See*—
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Adamczyk, Andrew A., Jr.; Hurley, Ronald G.; and Pakko, James D., to Ford Motor Company. Automotive engine exhaust aftertreatment system including hydrocarbon adsorber with sample processing oxygen sensor regeneration control. 5,355,672, Cl. 60-274.000.

Adams, Dale R., to Apple Computer, Inc. Row interleaved frame buffer. 5,357,606, Cl. 395-164.000.

Adams, Keith B.: *See*—
Peter, Steven B.; Adams, Keith B.; Casas, Baldomero; and Sawicki, John E., 5,356,539, Cl. 210-668.000.

Adams, Mary E.: *See*—
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Adams, Paul E.: *See*—
Blystone, Sheri L.; Cleveland, William K. S.; and Adams, Paul E., 5,356,546, Cl. 252-35.000.

Adams, Ronald D.: *See*—
Pietrafitta, Joseph J.; and Adams, Ronald D., 5,355,897, Cl. 128-898.000.

Adamski, Joseph R.: *See*—
Petty, J. Scott; Ferguson, Christopher; Adamski, Joseph R.; and Musil, Joseph E., 5,357,441, Cl. 364-469.000.

Adasek, Kenneth P. Adjustable length ski guard. 5,356,180, Cl 280-814.000.

Advanced Micro Devices, Inc.: *See*—
Johnson, William M.; and Witt, David B., 5,357,626, Cl. 395-500.000.
Yu, James; and Kuo, Tiao-Hua, 5,357,458, Cl. 365-49.000.

Advanced Surface Technology, Inc.: *See*—
Loh, Ih-Houng; and Hudson, David M., 5,355,832, Cl. 118-723.0MW.

AER Energy Resources, Inc.: *See*—
Pedicini, Christopher S., 5,356,729, Cl. 429-27.000.

Aero Transportation Products: *See*—
Early, Stephen R., 5,355,808, Cl. 105-377.00R.

Aeroquip Corporation: *See*—
Parks, Richard D.; Kulikowski, Ernest F.; Fournier, Paul J. E.; Fortman, Douglas R.; and Boland, John D., 5,356,045, Cl. 222-153.000.

Aerospatiale Societe Nationale Industrielle: *See*—
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Ag-Chem Equipment Co., Inc.: *See*—
Monson, Robert J., 5,355,815, Cl. 111-200.000.

Agar, Robert S. Batten mounting system. 5,355,650, Cl. 52-716.100.

Agari, Norimasa, to Nippon Thompson Co., Ltd. Linear motion rolling guide unit. 5,356,223, Cl. 384-15.000.

Agata, Mitsuzi: *See*—
Toyofuku, Hatsunori; Matsumoto, Jun; Takahashi, Toshie; Ebie, Masakazu; Sasada, Naomi; Agata, Mitsuzi; Sawaki, Shohei; and Goto, Masayoshi, 5,356,916, Cl. 514-364.000.

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Aginfor AG fur Industrielle Forschung: *See*—
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Ago, Kenji: *See*—
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Agrawal, Rakesh; Dawson, Bruce K.; Hopkins, Jeffrey A.; and Xu, Jianguo, to Air Products and Chemicals, Inc. Cryogenic air separation process producing elevated pressure nitrogen by pumped liquid nitrogen. 5,355,682, Cl. 62-41.000.

Aguirre, Andres; and Chickering, James M., to Siemens Medical Electronics, Inc. Pulse signal extraction apparatus for an automatic blood pressure gauge. 5,355,890, Cl. 128-680.000.

Ahluwalia, Rajesh K.: *See*—
Im, Kwan H.; and Ahluwalia, Rajesh K., 5,355,843, Cl. 122-367.200.

Ahmed, Iqbal; and Hsieh, Henry L., to Phillips Petroleum Company. Grafted copolymers highly absorbent to aqueous electrolyte solutions. 5,357,000, Cl. 525-296.000.

Ai, Yu-Fang. Adjustable clamp fixture with multi-directional opening. 5,356,124, Cl. 269-134.000.

Aiba, Shinnosuke: *See*—
Suenaga, Tatsuo; Nakagawa, Hiroaki; Terauchi, Shin; Kikuchi, Takeo; Aiba, Shinnosuke; Kobayashi, Mikio; Katsuta, Yutaka; Ago, Kenji; Kosuge, Katsumi; Matsubara, Yasuyuki; Tanaami, Masato; Sugishita, Shunichi; Ikeda, Hideki; Furuya, Toshio; Akihama, Shigeyuki; and Arai, Takahiro, 5,356,687, Cl. 428-70.000.

Aikawa, Haruhiko: *See*—
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Aimu, Takao: *See—*
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Air Products and Chemicals, Inc.: *See—*
Agrawal, Rakesh; Dawson, Bruce K.; Hopkins, Jeffrey A.; and Xu, Jianguo, 5,355,682, Cl. 62-41.000.
Peter, Steven B.; Adams, Keith B.; Casas, Baldomero; and Sawicki, John E., 5,356,539, Cl. 210-668.000.
Savoca, Ann C. L.; Louie, Michael; and Listemann, Mark L., 5,356,942, Cl. 521-103.000.
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Aircom Metal Products, Inc.: *See—*
Lyon, Ronald W., 5,355,556, Cl. 16-266.000.

Aisin Seiki Kabushiki Kaisha: *See—*
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Margolis, Donald L.; and Yasui, Yoshiyuki, 5,357,432, Cl. 364-424.020.
Ozawa, Yasuo, 5,355,846, Cl. 123-41.210.

Aiyoshizawa, Shunichi; Hirokawa, Kazuto; Kasahara, Kazuyuki; and Maruyama, Tohru, to Ebara Corporation. Spindle motor using dynamic pressure bearings. 5,357,162, Cl. 310-90.000.

Ajisawa, Yukiyoshi: *See—*
Yamamoto, Tokihiko; Shibazaki, Taihei; Ajisawa, Yukiyoshi; Yamamoto, Ryoji; and Kinoshita, Yukihiko, 5,356,620, Cl. 424-78.040.

Akahoshi, Haruo: *See—*
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Akamatsu, Satoshi: *See—*
Watanbe, Yoshiyuki; Shimomura, Shinichi; Yoshie, Atsuhiko; Fujioka, Masaaki; Nishioka, Kiyoshi; Akamatsu, Satoshi; and Fujita, Takashi, 5,357,443, Cl. 364-472.000.

Akano, Hirofumi: *See—*
Maeda, Shigeru; Ohki, Akira; Sato, Takeshi; Kato, Naho; Akano, Hirofumi; Kawamura, Yoshiya; Keizo, Hatagaki; Takahashi, Yasushi; Yamada, Mikio; and Okumura, Hajime, 5,356,792, Cl. 435-29.000.

Akatake Engineering Co., Ltd.: *See—*
Miura, Yasuhiro; Miyazaki, Kozo; Iino, Yoshio; Tamura, Mitsuru; Fukada, Yukio; and Akimoto, Hiroshi, 5,356,599, Cl. 422-219.000.

Aker, Gary I., to Fairchild Space and Defense Corporation. Attenuating linged deployment apparatus. 5,356,095, Cl. 244-173.000.

Aki, Yuuichi: *See—*
Wakamiya, Kiyotaka; Aki, Yuuichi; and Inagaki, Minoru, 5,357,304, Cl. 354-298.000.

Akihama, Shigeyuki: *See—*
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Akimoto, Hiroshi: *See—*
Miura, Yasuhiro; Miyazaki, Kozo; Iino, Yoshio; Tamura, Mitsuru; Fukada, Yukio; and Akimoto, Hiroshi, 5,356,599, Cl. 422-219.000.

Akimoto, Toshio: *See—*
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Akiyama, Toru: *See—*
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Akkapeddi, Murali K.: *See—*
VanBuskirk, Bruce; Akkapeddi, Murali K.; and Glans, Jeffrey H., 5,357,030, Cl. 528-337.000.

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Hakeem, Fahmee. Overhead electrical power supply system. 5,357,052, Cl. 174-48.000.

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Orvek, Kevin J., 5,356,758, Cl. 430-322.000
Talbott, Marvin T.; Burks, Henry L.; Shaw, Richard W.; Amundsen, Michael; Hutchison, Katherine K.; and Strasburg, Donald D., 5,357,440, Cl. 364-467.000.

Texter, Ann: *See—*
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Texter, John; Welter, Thomas R.; Southby, David T.; and Mooberry, Jared B., to Eastman Kodak Company. Dye releasing couplers for heat image separation systems. 5,356,750, Cl. 430-203.000.

Textile Printing Company: *See—*
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Th. Goldschmidt AG: *See—*
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Thein, Albert: *See—*
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Thein, Rafael, to Cendis Medical. Element for fixing ligaments. 5,356,435, Cl. 623-15.000.

Thenaisie, Jacky: *See—*
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Thermo Environmental Instruments Inc.: *See—*
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Thermo King Corporation: *See—*
Brownfield, Jerry A., 5,355,692, Cl. 62-212.000.

Thiede, Danny S., to Thiele Engineering Company. Packaging machine with adjustable sides for a bucket. 5,355,658, Cl. 53-566.000.

Thiele Engineering Company: *See—*
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Thiokol Corporation: *See—*
Decker, Owen H.; Lloyd, Ben A.; and Mumford, Neal A., 5,356,499, Cl. 156-175.000.

Thirion De Briel, Jacques; and Dalbiez, Andre , to Valeo. Clutch friction wheel, especially for a motor vehicle clutch. 5,355,985, Cl. 192-107.00C.

Thisell, Carl-Gustaf: *See—*
Mader, Heinz B.; Tingsborg, Johan U.; and Thisell, Carl-Gustaf, 5,357,209, Cl. 330-252.000.

Thomas, Edward V.; Robinson, Mark R.; Haaland, David M.; and Alam, Mary K., to Sandia Corporation. Reliable noninvasive measurement of blood gases. 5,355,880, Cl. 128-633.000.

Thomas, Frank P. Mailbox mounting device to absorb lateral impact. 5,356,072, Cl. 232-39.000

Thomas Jefferson University: *See—*
Taraschi, Theodore F.; and Pouvelle, Bruno, 5,356,927, Cl. 514-449.000.

Thomas, Richard R.: *See—*
Buchwalter, Stephen L.; Davis, Charles R.; Goldblatt, Ronald D.; and Thomas, Richard R., 5,357,005, Cl. 525-436.000.

Thomashow, Michael F., to Board of Trustees Operating Michigan State University. Method and compositions using polypeptides of arabidopsis thaliana. 5,356,816, Cl. 435-320.100.

Thomassen, Jan M.; and Lekang, Odd-Ivar, to Eka Nobel AB. Method for removing parasites. 5,355,838, Cl. 119-219.000.

Thomassin, Xavier: *See—*
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Thompson, Hugh A.; Young, Gerald A.; Osborn, Thomas W., III; Chappell, Charles W.; Hammons, John L.; Horney, James C.; and Hines, Lee M., to Procter & Gamble Company, The. Absorbent particles, especially catamenials, having improved fluid directionality, comfort and fit. 5,356,405, Cl. 604-384.000.

Thompson, Marion E. Point-of-purchase displays and signs with light transmitting visual effects. 5,355,600, Cl. 40-435.000.

Thompson, Nigel, to MCG Closures Limited. Container closure with tamper evident band. 5,356,020, Cl. 215-252.000.

Thompson, Trevor; and Campbell, Bernard J., to Mars Incorporated. Coin mechanism. 5,356,332, Cl. 453-3.000.

Thomson-CSF: *See—*
Dufilie, Pierre, 5,357,228, Cl. 333-195.000.
Guyomard, Patrick; Audion, Marc; Rambeaud, Jean; and Riviere, Philippe, 5,357,392, Cl. 361-23.000.
Michel, Philippe; Vergnolle, Marie; and Sagnes, Olivier, 5,356,660, Cl. 427-121.000.
Pribat, Daniel; Gerard, Bruno; and Legagneux, Pierre, 5,356,510, Cl. 117-95.000.

Thomson-Lgt Laboratoire General des Telecommunications: *See—*
Michel, Jean; Combe, Jean-Claude; and de Faria, Herminio, 5,357,213, Cl. 330-286.000.

Thor Chemie GmbH: *See—*
Schmidt, Hans-Jurgen, 5,356,952, Cl. 523-122.000.

Thornell, Ernest L., to Handi-Pac, Inc. Light display drive for a rocking toy. 5,356,329, Cl. 446-485.000.

Three Bond Co., Ltd.: *See—*
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Throne, James L.; Beal, Christopher I.; and Balasko, Michael M., to Geon Company, The. Blow molding extrustion head. 5,356,282, Cl. 425-381.000.

Throngnumchai, Kraisorn, to Nissan Motor Co., Ltd. Power MOSFET circuit including short circuiting means for detecting the potential of the source terminal. 5,357,157, Cl. 307-570.000.

Thunderbird Technologies, Inc.: *See—*
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Thurman, Jeffrey R.: *See—*
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Tibbitts, Gordon A.: *See—*
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Tice, Lee D., to Pittway Corporation. Electrical unit with an adjustable mechanical switch for address verification. 5,357,243, Cl. 340-825.070.

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Tielrooy, Robert W., to Van Dam Machine, B.V. Device for printing objects comprising means for bringing the images of a number of printing plates in register and method applied with the device. 5,355,797, Cl. 101-177.000.

Tiemann, Jerome J.: *See*—
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Tiemann, Ralf: *See*—
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Tihon, Claude; Burton, John H.; Staehle, Bradford G.; and Mikulich, Michael A., to American Medical Systems, Inc. Resectable self-expanding stent. 5,356,423, Cl. 606-194.000.

Ting, Charles, to T. L. Products' Promoting Co., Ltd. A Corporation of Taiwan. Shaking toy. 5,356,326, Cl. 446-175.000.

Tinge, Johan T.: *See*—
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Tipps, Steven V. Container for toxic waste. 5,356,022, Cl. 220-404.000.

Tipton, Allison D.; and Fialko, Margaret, to Signode Corporation. Strap guide for guiding strap through aligned openings in pallet stringers. 5,355,786, Cl. 100-25.000.

Tire Shuttle, Inc.: *See*—
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Toba, Katsuaki; Noro, Yutaka; and Inoue, Takuya, to Sumitomo Wiring Systems, Ltd. Connector assembly for a flexible wiring plate. 5,356,308, Cl. 439-495.000.

Tobias, Marc W. Method and apparatus for decoding a pin tumbler lock. 5,355,701, Cl. 70-394.000.

Todd, Craig C., to Dolby Laboratories Licensing Corporation. Compatible digital audio for NTSC television. 5,357,284, Cl. 348-486.000.

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Tomczuk, Zygmunt; and Miller, William E., to United States of America, Energy. Recovery of UO_2/Pu O_2 in IFR electrorefining process. 5,356,605, Cl. 423-251.000.

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Tominaga, Takayuki; Hisanaga, Michio; and Hattori, Tadashi, to Nippondenso Co., Ltd. Electrical discharge machine. 5,357,073, Cl 219-69.150.

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Tomiyama, Yoshio, to Kubota Corporation. Lawn mower having a steering handle switchable between a walking mode and a riding mode. 5,355,661, Cl. 56-10.800.

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Tomura, Masashi; and Takagi, Hisamitsu, to Fujitsu Limited. Interface connector mounting structure for wireless terminal device. 5,357,570, Cl. 379-433.000.

Tonegawa, Ken; and Okamura, Hisatake, to Murata Mfg. Co., Ltd. Laminated high-frequency low-pass filter. 5,357,227, Cl. 333-185.000.

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Zenner, Michael N., to Toro Company, The. Caster wheel suspension and shaft tensioning system for turf maintenance equipment. 5,355,664, Cl. 56-15.800.

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Zilberman, Ekhiel; and Lerner, Felix, to Electrochemical Industries (Frutarom) Ltd. Method for the preparation of metal soap aqueous dispersions. 5,356,544, Cl. 252-17.000.

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Zimmer, Richard; Muller, Armin; and Freitag, Rainer, to Mercedes-Benz AG. Method and apparatus for adapting motor vehicle drive slip threshold values for a drive slip and/or a brake slip control system to tires. 5,357,434, Cl. 364-426.020.

Zimmerman, George M., deceased; and by Zimmerman, Patricia W., legal representative. Magnetic-field amplifier. 5,356,534, Cl. 210-222.000.

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Zimmerman, William T., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonylureas. 5,356,862, Cl. 504-215.000.

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Zochbauer, Michael, to Hartmann & Braun. Method for spectroscopy using two Fabry-Perot interference filters. 5,357,340, Cl. 356-352.000.

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Zwart, Klaas. Centraliser. 5,355,950, Cl. 166-241.600.

Zweekly, Jeffrey A.: *See—*
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Zweekly, Raymond T.; and Zweekly, Jeffrey A., to Inventive Fabrications, Inc. Bearing changer. 5,355,574, Cl. 29-262.000.

Zysko, Jan A., to United States of America, National Aeronautics and Space Administration. Optically broadcasting wind direction indicator. 5,355,724, Cl. 73-107.060.

4P Emballages France: *See—*
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Battelle Memorial Institute: *See*—
Smith, Richard D.; Udseth, Harold R.; and Olivares, Jose A., Re. 34,757, Cl. 204-299.00R.

Best, Mark F.: *See*—
Boulos, Edward N.; Best, Mark F.; and Surowiec, Roman, Re. 34,760, Cl. 501-71.000.

Boulos, Edward N.; Best, Mark F.; and Surowiec, Roman, to Ford Motor Company. Blue glass compositions. Re. 34,760, Cl. 501-71.000.

Boyette, Gladys D. Removable book marker strip. Re. 34,759, Cl. 281-29.000.

Dafinger, Willibald; Gabler, Wolfdietrich; Pichl, Eduard; and Hierzegger, Roman, to Wacker-Chemie GmbH. Process for the preparation of trichloroethylene. Re. 34,761, Cl. 570-230.000.

Farley, David L.; and Fink, Kent T., to Osca. Travelling disc valve apparatus. Re. 34,758, Cl. 166-319.000.

Fink, Kent T.: *See*—
Farley, David L.; and Fink, Kent T., Re. 34,758, Cl. 166-319.000.

Ford Motor Company: *See*—
Boulos, Edward N.; Best, Mark F.; and Surowiec, Roman, Re. 34,760, Cl. 501-71.000.

Gabler, Wolfdietrich: *See*—
Dafinger, Willibald; Gabler, Wolfdietrich; Pichl, Eduard; and Hierzegger, Roman, Re. 34,761, Cl. 570-230.000.

Goble, E. Marlowe; and Somers, W. Karl. Procedure for verifying isometric ligament positioning. Re. 34,762, Cl. 606-96.000.

Hierzegger, Roman: *See*—
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Olivares, Jose A.: *See*—
Smith, Richard D.; Udseth, Harold R.; and Olivares, Jose A., Re. 34,757, Cl. 204-299.00R.

Osca: *See*—
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Smith, Richard D.; Udseth, Harold R.; and Olivares, Jose A., to Battelle Memorial Institute. Combined electrophoresis-electrospray interface and method. Re. 34,757, Cl. 204-299.00R.

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Udseth, Harold R.: *See*—
Smith, Richard D.; Udseth, Harold R.; and Olivares, Jose A., Re. 34,757, Cl. 204-299.00R.

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Caspari, Richard B.; Trott, Arthur F.; and Bays, F. Barry, to Linvatec Corp. Method of arthroscopic suturing of tissue. B1 4,923,461, 10-18-94, Cl. 606-146.000.

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Chiuminatta, Edward; and Chiuminatta, Alan R. Saw for cutting uncured concrete. B1 4,938,201, 10-18-94, Cl. 125-13.010.

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CLASS 136

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225 5,356,485
230 5,356,486

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253 5,356,487
256 5,356,488

CLASS 137

1 5,355,905
98 5,355,906
218 5,355,907
614.04 5,355,908
5,355,909
858 5,355,910

CLASS 139

55.1 5,355,911
110 5,355,912

CLASS 140

123.6 5,355,913

CLASS 141

83 5,355,915
384 5,355,917

CLASS 144

2 N 5,355,918
193 R 5,355,919
338 5,355,920
364 5,355,921

CLASS 148

101 5,356,489
247 5,356,490
253 5,356,491
273 5,356,492
320 5,356,493
330 5,356,494
551 5,356,495

CLASS 152

209 R 5,355,922
381.6 5,355,923
418 5,355,924
455 5,355,925
527 5,355,926

CLASS 156

[illegible] 5,356,496
87 5,356,497
158 5,356,498
175 5,356,499
229 5,356,500
256 5,356,501
267 5,356,502
272.2 5,356,503
281 5,356,504
461 5,356,505
553 5,356,506
555 5,356,507
566 5,356,508
629 5,356,511
634 5,356,512
636 5,356,513
643 5,356,514
5,356,515
667 5,356,516

CLASS 160

7 5,355,927
84.1 R 5,355,928

CLASS 162

72 5,356,517
224 5,356,518
281 5,356,519

CLASS 164

20 5,355,929
34 5,355,930
5,355,931
95 5,355,932
120 5,355,933
255 5,355,934
416 5,355,935
435 5,355,936
479 5,355,937

CLASS 165

12 5,355,938
5,355,939
55 5,355,940
67 5,355,941
104.33 5,355,942
112 5,355,943
149 5,355,944
159 5,355,945
172 5,355,946
176 5,355,947

CLASS 166

228 5,355,948
236 5,355,949
241.6 5,355,950
250 5,355,951
5,355,952
5,355,953
292 5,355,954
293 5,355,955
296 5,355,956
297 5,355,957
307 5,355,958
319 Re.34,758
321 5,355,959
374 5,355,960
387 5,355,961

CLASS 169

70 5,355,962

CLASS 172

383 5,355,963

CLASS 173

1 5,355,964
141 5,355,965

CLASS 174

33 5,357,050
5,357,051
36 5,357,049
48 5,357,052
5,357,053
5,357,054
5,357,055
52.4 5,357,056
84 R 5,357,057
112 5,357,058
267 5,357,060

CLASS 175

57 5,355,966
65 5,355,967
320 5,355,968
432 5,355,969

CLASS 178

18 5,357,061
5,357,062

CLASS 180

53.1 5,355,971
68.3 5,355,972

CLASS 181

108 5,357,063
258 5,355,973

CLASS 182

2 5,355,970
187 5,355,974

CLASS 187

247 5,357,064
270 5,355,975
406 5,355,976

CLASS 188

2 F 5,355,977
264 D 5,355,978
290 5,355,979

CLASS 190

115 5,355,980

CLASS 192

35 5,355,981
45.1 5,355,982
56 F 5,355,983
70.17 5,355,984
107 C 5,355,985
107 R 5,355,986

CLASS 194

209 5,355,987
217 5,355,988
317 5,355,989

CLASS 198

323 5,355,990
412 5,355,991
495 5,355,992
642 5,355,993
750 5,355,994
5,355,995
780 5,355,996

CLASS 200

5 A 5,357,065
17 R 5,357,066
30 A 5,357,067
148 R 5,357,068
252 5,357,069
331 5,357,070
557 5,357,071

CLASS 203

81 5,356,520

CLASS 204

153.12 5,356,521
192.15 5,356,522
192.23 5,356,523
194 5,356,524
299 R Re.34,757
5,356,525

CLASS 205

122 5,356,526
155 5,356,527
5,356,528
224 5,356,529

CLASS 206

45.13 5,355,997
145 5,355,998
153 5,355,999
282 5,356,000
315.1 5,356,001
5,356,002
315.7 5,356,003
316.2 5,356,004
362.4 5,356,005
363 5,356,006
443 5,356,007
449 5,356,008
524 5,356,009
532 5,356,010
534 5,356,011
5,356,012
579 5,356,013
600 5,356,014

CLASS 208

108 5,356,530

CLASS 209

214 5,356,015

CLASS 210

86 5,356,531
107 5,356,532
123 5,356,533
222 5,356,534
416.5 5,356,535
607 5,356,537
634 5,356,538
668 5,356,539
758 5,356,540
791 5,356,541

CLASS 215

11.3 5,356,016
216 5,356,017
237 5,356,018
252 5,356,019
5,356,020
349 5,356,021

CLASS 219

69.12 5,357,072
69.15 5,357,073
85.18 5,357,074
121.47 5,357,075
121.54 5,357,076
121.68 5,357,077
130.51 5,357,078
453 5,357,079
5,357,080
497 5,357,081
506 5,357,082
535 5,357,083
605 5,357,084
636 5,357,085
721 5,357,087
732 5,357,086
772 5,357,088

CLASS 220

4.24 5,356,023
9.2 5,356,024
263 5,356,025
306 5,356,026
338 5,356,027
404 5,356,022
462 5,356,028
465 5,356,029
601 5,356,030
610 5,356,031

CLASS 221

47 5,356,032
194 5,356,033

CLASS 222

61 5,356,034
78 5,356,035
83.5 5,356,036
95 5,356,037
96 5,356,038
107 5,356,039
129 5,356,040
135 5,356,041
153 5,356,042
5,356,043
5,356,044
5,356,045
156 5,356,046
158 5,356,047
185 5,356,048
383 5,356,049
394 5,356,050
396 5,356,051
420 5,356,052
456 5,356,053
610 5,356,054

CLASS 223

28 5,356,055
46 5,356,056
112 5,356,057

CLASS 224

32 R 5,356,058
42.43 5,356,059
252 5,356,060
275 5,356,061

CLASS 226

31 5,356,062

CLASS 227

132 5,356,063
177 5,356,064

CLASS 228

4.5 5,356,065
8 5,356,066
44.5 5,356,067

CLASS 229

87.05 5,356,068
104 5,356,069
120.17 5,356,070
160 5,356,071

CLASS 232

39 5,356,072

CLASS 235

375 5,357,090
380 5,357,091
462 5,357,092
5,357,093
494 5,357,094
5,357,095

CLASS 236

12.22 5,356,074

CLASS 239

222.11 5,356,075
311 5,356,076
383 5,356,077
447 5,356,078
585.1 5,356,079
724 5,356,080

CLASS 241

1 5,356,081
24 5,356,082
92 5,356,083
171 5,356,084

CLASS 242

18 R 5,356,085
289 5,356,090
319 5,356,091
334.4 5,356,088
343 5,356,089
523 5,356,092
525 5,356,087
596.7 5,356,086
610.4 5,356,093

CLASS 244

49 5,356,094
134 A 5,356,096
139 5,356,097
173 5,356,095

CLASS 246

169 A 5,356,098

CLASS 248

118.1 5,356,099
122 5,356,100
156 5,356,101
205.5 5,356,102
220.2 5,356,103
5,356,104
221.3 5,356,105
243 5,356,106
311.2 5,356,107
346 5,356,108
448 5,356,109
550 5,356,110

CLASS 250

202 5,357,096
205 5,357,097
208.1 5,357,098
5,357,099
214 VT 5,357,100
216 5,357,101
5,357,102
227.24 5,357,103
229 5,357,104
234 5,357,105
236 5,357,106
305 5,357,107
306 5,357,108
5,357,109
307 5,357,110
338.3 5,357,111
340 5,357,112
344 5,357,113
364 5,357,114
442.11 5,357,115
492.21 5,357,116
492.3 5,357,291
573 5,357,117
582 5,357,118

CLASS 251

129.11 5,356,112
129.15 5,356,111
167 5,356,113
176 5,356,114
294 5,356,115
308 5,356,116

CLASS 252

1 5,356,542
11 5,356,543
17 5,356,544
28 5,356,545
35 5,356,546
46.4 5,356,547
49.3 5,356,548
49.6 5,356,549
51.5 A 5,356,550
5,356,551
5,356,552
62.2 5,356,553
94 5,356,554
106 5,356,555
182.2 5,356,556
299.01 5,356,557
5,356,558
299.61 5,356,559
5,356,560
299.62 5,356,561
299.63 5,356,562
5,356,563
299.64 5,356,564
307 5,356,565
315.1 5,356,566
400.1 5,356,567
606 5,356,568

CLASS 254

126 5,356,117
423 5,356,118

CLASS 256

26 5,356,119

CLASS 257

18 5,357,119
38 5,357,120
79 5,357,121
84 5,357,122
88 5,357,123
95 5,357,124
133 5,357,125
173 5,357,126
189 5,357,128
239 5,357,129
5,357,130
288 5,357,131
301 5,357,132
305 5,357,133
316 5,357,134
325 5,357,135
369 5,357,136
383 5,357,137
396 5,357,138
664 5,357,139
666 5,357,140
752

CLASS 261

87 5,356,569
93 5,356,570

CLASS 264

22 5,356,572
25 5,356,573
29.2 5,356,574
40.1 5,356,575
40.4 5,356,576
40.7 5,356,577
42 5,356,578
5,356,579
51 5,356,580
103 5,356,581
5,356,582
171 5,356,583
205 5,356,584
211 5,356,585
257 5,356,588
258 5,356,586
263 5,356,587
265 5,356,589
328.1 5,356,590
573 5,356,591

CLASS 266

175 5,356,120

CLASS 267

140.12 5,356,121
140.13 5,356,122
140.14 5,356,123

CLASS 269

134 5,356,124

CLASS 270

53 5,356,125

CLASS 271

10 5,356,126
11 5,356,127
204 5,356,128
212 5,356,129
263 5,356,130
288 5,356,131

CLASS 273

26 R 5,356,132
32 A 5,356,133
32 R 5,356,134
57.2 5,356,135
58 R 5,356,136
73 R 5,356,137
77 A 5,356,138
84 R 5,356,139
85 CP 5,356,140
119 R 5,356,141
121 A 5,356,142
126 A 5,356,143
138 A 5,356,144
149 R 5,356,145
187.1 5,356,146
195 A 5,356,147
201 5,356,148
218 5,356,149
232 5,356,150
243 5,356,151
247 5,356,152
248 5,356,153
284 5,356,155
437 5,356,156

CLASS 277

1 5,356,157
95 5,356,158

CLASS 280

14.2 5,356,159
30 5,356,160
33.991 5,356,161
43.18 5,356,162
47.27 5,356,163
79.6 5,356,164
275 5,356,165
491.4 5,356,166
492 5,356,167
605 5,356,168
607 5,356,169
618 5,356,170
650 5,356,171
5,356,172
728 A 5,356,173
5,356,174
5,356,175
737 5,356,176
751 5,356,177
777 5,356,178
5,356,179
814 5,356,180

CLASS 281

29 Re.34,759

CLASS 285

86 5,356,181
258 5,356,182
305 5,356,183
405 5,356,184

CLASS 292

149 5,356,185
216 5,356,186

CLASS 294

66.1 5,356,188
82.11 5,356,189
99.1 5,356,187
171 5,356,190

CLASS 296

95.1 5,356,191
97.6 5,356,192
136 5,356,193
146.9 5,356,194
180.1 5,356,195

CLASS 297

5 5,356,196
129 5,356,197
195.1 5,356,198
313 5,356,199
328 5,356,200
352 5,356,201
391 5,356,202
423.45 5,356,203
440.16 5,356,204
452.41 5,356,205

CLASS 301

5.7 5,356,209

CLASS 303

116.1 5,356,210
119.2 5,356,211

CLASS 307

10.1 5,357,141
5,357,142
5,357,143
247.1 5,357,144
268 5,357,145
269 5,357,146
271 5,357,147
296.6 5,357,148
310 5,357,149
358 5,357,150
442 5,357,151
465 5,357,152
5,357,153
475 5,357,154
492 5,357,155
542 5,357,156
570 5,357,157

CLASS 310

12 5,357,158
40 MM 5,357,159
67 R 5,357,160
89 5,357,161
90 5,357,162
5,357,163
323 5,357,164

CLASS 312

263 5,356,212
317.1 5,356,206
334.46 5,356,207

CLASS 313

477 R 5,357,165
479 5,357,166
632 5,357,167

CLASS 315

39.51 5,357,168
77 5,357,169
151 5,357,171
159 5,357,170
167 5,357,172
209 R 5,357,173
224 5,357,174
376 5,357,176
411 5,357,175

CLASS 318

3 5,357,177
7 5,357,178
17 5,357,179
49 5,357,180
139 5,357,181
379 5,357,182
468 5,357,183

CLASS 320

2 5,357,184
5,357,185
9 5,357,186
20 5,357,187

CLASS 323

315 5,357,188

CLASS 324

130 5,357,189
143 5,357,190
158.1 5,357,193
5,357,195
166 5,357,196
204 5,357,197
242 5,357,198
301 5,357,199
309 5,357,200
427 5,357,203
557 5,357,202
754 5,357,191
5,357,194
758 5,357,192

CLASS 328

62 5,357,204

CLASS 329

301 5,357,205

CLASS 330

15.1 5,357,210
51 5,357,206
5,357,207
126 5,357,208
252 5,357,209
263 5,357,211
277 5,357,212
286 5,357,213
297 5,357,214
298 5,357,089

CLASS 331

16 5,357,215
25 5,357,216
57 5,357,217
96 5,357,218
113 R 5,357,220

CLASS 332

109 5,357,219
123 5,357,221
124 5,357,222

CLASS 333

26 5,357,223
139 5,357,224
161 5,357,225
172 5,357,226
185 5,357,227
195 5,357,228
205 5,357,229

CLASS 335

78 5,357,230
215 5,357,232

CLASS 336

107 5,357,233

CLASS 337

246 5,357,234

CLASS 340

146.2 5,357,235
5,357,236
5,357,237
425.5 5,357,238
433 5,357,239
572 5,357,240
605 5,357,241
626 5,357,242
825.07 5,357,243
825.17 5,357,244
825.34 5,357,245
908 5,357,246
984 5,357,247

CLASS 341

61 5,357,248
100 5,357,249
107 5,357,250
143 5,357,252
172 5,357,251

CLASS 342

22 5,357,253
42 5,357,254
58 5,357,255
160 5,357,256
165 5,357,257
185 5,357,258
398 5,357,259

CLASS 343

754 5,357,260
900 5,357,261
906 5,357,262

CLASS 345

9 5,357,263
112 5,357,264
153 5,357,265
173 5,357,266
201 5,357,267

CLASS 346

76 PH 5,357,269
5,357,270
5,357,271
108 5,357,272
5,357,273

CLASS 347

13 5,357,268
31 5,357,275
55 5,357,274

CLASS 348

7 5,357,276
55 5,357,277
207 5,357,279
349 5,357,280
384 5,357,278
401 5,357,281
403 5,357,282
433 5,357,283
486 5,357,284
589 5,357,286
699 5,357,287
716 5,357,285
742 5,357,288
757 5,357,289
792 5,357,290

CLASS 351

105 5,357,292
209 5,357,293
212 5,357,294

CLASS 353

26 A 5,357,295

CLASS 354

76 5,357,296
127.1 5,357,297
159 5,357,298
195.1 5,357,299
5,357,300
210 5,357,301
213 5,357,302
275 5,357,303
298 5,357,304
318 5,357,305
324 5,357,306
5,357,307
400 5,357,308
403 5,357,309
408 5,357,310

CLASS 355

53 5,357,311
67 5,357,312
74 5,357,313
75 5,357,314
77 5,357,315
200 5,357,231
202 5,357,316
208 5,357,317
5,357,319
210 5,357,318
211 5,357,320
5,357,321
219 5,357,322
5,357,323
273 5,357,324
277 5,357,325
278 5,357,326
282 5,357,327
301 5,357,328
309 5,357,329
326 R 5,357,330

CLASS 356

5 5,357,331
73.1 5,357,332
5,357,333
5,357,334
237 5,357,335
319 5,357,336
346 5,357,337
350 5,357,338
5,357,339
352 5,357,340
353 5,357,341
364 5,357,343
418 5,357,346

CLASS 358

296 5,357,347
298 5,357,344
403 5,357,345
450 5,357,348
456 5,357,349
468 5,357,350
482 5,357,351
518 5,357,352
530 5,357,353
5,357,354

CLASS 359

39 5,357,355
52 5,357,356
76 5,357,357
5,357,358
123 5,357,359
125 5,357,360
142 5,357,361
151 5,357,362
161 5,357,363
173 5,357,364
205 5,357,365
211 5,357,375
393 5,357,366
400 5,357,367
454 5,357,368
462 5,357,369
495 5,357,370
534 5,357,371
637 5,357,372
649 5,357,373
689 5,357,374
855 5,357,377

CLASS 360

46 5,357,378
5,357,379
51 5,357,380
53 5,357,381
75 5,357,382
74.3 5,357,383
96.5 5,357,385
97.02 5,357,386
99.05 5,357,387
113 5,357,388
120 5,357,389
130.21 5,357,390
132 5,357,391

CLASS 361

23 5,357,392
56 5,357,393
72 5,357,394
92 5,357,395
119 5,357,568
212 5,357,396
220 5,357,397
267 5,357,398
529 5,357,399
704 5,357,400
712 5,357,401
753 5,357,402
794 5,357,403
818 5,357,404

CLASS 362

31 5,357,405
61 5,357,406
5,357,407
74 5,357,408
105 5,357,409
109 5,357,410
183 5,357,411
219 5,357,412
300 5,357,413
431 5,357,414

CLASS 363

21 5,357,415
60 5,357,416
71 5,357,417
89 5,357,418
140 5,357,419

CLASS 364

131 5,357,420
133 5,357,421
143 5,357,422
148 5,357,423
149 5,357,424
178 5,357,425
400 5,357,426
413.02 5,357,427
413.05 5,357,428
413.15 5,357,429
419.08 5,357,430
419.13 5,357,431
424.02 5,357,432
5,357,433
426.01 5,357,444
426.02 5,357,434
426.03 5,357,435
436 5,357,436
449 5,357,437
461 5,357,438
467 5,357,440
468 5,357,439
469 5,357,441
470 5,357,442
472 5,357,443
474.02 5,357,446
474.26 5,357,445
484 5,357,447
526 5,357,448
551.01 5,357,449
5,357,450
5,357,451
579 5,357,452
725 5,357,453
727 5,357,454
767 5,357,455
784 5,357,456
787 5,357,457

CLASS 365

49 5,357,458
145 5,357,460
149 5,357,459
181 5,357,461
185 5,357,462
5,357,463
5,357,464
5,357,465
5,357,466
189.01 5,357,468
189.05 5,357,467
193 5,357,469
200 5,357,470
201 5,357,471
5,357,472
5,357,473
203 5,357,474
218 5,357,475
5,357,476
230.02 5,357,477
230.03 5,357,478
230.06 5,357,479
233.5 5,357,480

CLASS 366

79 5,356,208
178 5,356,213
285 5,356,214
293 5,356,215

CLASS 367

31 5,357,481
35 5,357,482
[illegible] 5,357,483
118 5,357,484
140 5,357,485
159 5,357,486

CLASS 368

10 5,357,487
11 5,357,488
37 5,357,489
119 5,357,490
156 5,357,491
204 5,357,492

CLASS 369

13 5,357,493
5,357,494
34 5,357,495
44.29 5,357,496
58 5,357,497
106 5,357,498
120 5,357,499
215 5,357,500

CLASS 370

19 5,357,502
58.3 5,357,503
5,357,508
60 5,357,504
5,357,505
5,357,506
5,357,507
60.1 5,357,510
62 5,357,511
85.2 5,357,512
95.3 5,357,513
102 5,357,514
5,357,515
118 5,357,516

CLASS 371

5.1 5,357,517
10.1 5,357,509
11.2 5,357,518
15.1 5,357,519
21.2 5,357,520
21.3 5,357,521
22.2 5,357,522
30 5,357,524
32 5,357,525
37.4 5,357,526
5,357,527
37.9 5,357,528
40.1 5,357,529
5,357,530
49.1 5,357,531

CLASS 372

20 5,357,532
22 5,357,533
24 5,357,534
46 5,357,535
50 5,357,536
94 5,357,537
96 5,357,538
107 5,357,539

CLASS 373

73 5,357,540

CLASS 374

31 5,356,216
45 5,356,217
124 5,356,218
138 5,356,219
161 5,356,220

CLASS 375

1 5,357,541
3 5,357,542
10 5,357,543
94 5,357,544
111 5,357,545
122 5,357,546

CLASS 376

254 5,357,547

CLASS 377

57 5,357,548

CLASS 378

62 5,357,549
98 5,357,551
98.5 5,357,550
132 5,357,552
154 5,357,553
155 5,357,554
200 5,357,555

CLASS 379

27 5,357,556
5,357,557
58 5,357,558
59 5,357,559
5,357,560
60 5,357,561
67 5,357,562
91 5,357,563
188 5,357,564
355 5,357,566
390 5,357,567
399 5,357,569
412 5,357,565
433 5,357,570

CLASS 380

21 5,357,571
23 5,357,572
25 5,357,573

CLASS 381

[illegible] 5,357,574
61 5,357,575
68.6 5,357,576
122 5,357,577
158 5,357,578
183 5,357,585
199 5,357,586
5,357,587

CLASS 382

1 5,357,579
6 5,357,580
9 5,357,581
5,357,582
22 5,357,583
56 5,357,584

CLASS 383

21 5,356,221
63 5,356,222

CLASS 384

15 5,356,223
41 5,356,224
100 5,356,225
119 5,356,226
463 5,356,227

CLASS 385

16 5,357,588
5,357,589
33 5,357,590
37 5,357,591
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CLASS 395

2.2 5,357,594
2.24 5,357,595
2.84 5,357,596
21 5,357,597
90 5,357,598
133 5,357,600
134 5,357,599
135 5,357,601
142 5,357,602
156 5,357,603
162 5,357,604
164 5,357,605
5,357,606
166 5,357,607
200 5,357,608
5,357,609
5,357,610
5,357,611
5,357,612
250 5,357,613
5,357,614
275 5,357,615
5,357,616
375 5,357,617
400 5,357,618
5,357,619
5,357,620
5,357,621
425 5,357,622
5,357,623
5,357,624
500 5,357,625
5,357,626
575 5,357,627
5,357,628
600 5,357,629
5,357,630
5,357,631
650 5,357,632

CLASS 400

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605 5,356,230
636 5,356,231
642 5,356,229

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CLASS 401

52 5,356,232

CLASS 403

4 5,356,233
170 5,356,234
350 5,356,235
359 5,356,236
374 5,356,237

CLASS 404

84.1 5,356,238

CLASS 405

227 5,356,239
229 5,356,240
233 5,356,241
262 5,356,242

CLASS 406

74 5,356,243

CLASS 408

1 R 5,356,244
56 5,356,245

CLASS 409

131 5,356,247
132 5,356,248

CLASS 410

83 5,356,249
86 5,356,250
154 5,356,251

CLASS 411

45 5,356,252
188 5,356,253
302 5,356,254
431 5,356,255

CLASS 413

8 5,356,256

CLASS 414

495 5,356,257
501 5,356,258
694 5,356,259
700 5,356,260
744.7 5,356,261
786 5,356,262
790.7 5,356,263

CLASS 415

119 5,356,264

CLASS 416

97 R 5,356,265

CLASS 417

45 5,356,266
53 5,356,267
68 5,356,268
297 5,356,269
307 5,356,270
310 5,356,271
366 5,356,272
423.12 5,356,273
435 5,356,274

CLASS 418

9 5,356,275
55.2 5,356,276
179 5,356,277

CLASS 422

28 5,356,592
45 5,356,593
54 5,356,594
65 5,356,595
131 5,356,596
169 5,356,597
180 5,356,598
219 5,356,599
234 5,356,600

CLASS 423

1 5,356,601
128 5,356,602
235 5,356,603
245 2 5,356,604
251 5,356,605
265 5,356,606
334 5,356,607
412 5,356,608
462 5,356,609
475 5,356,610
501 5,356,611
623 5,356,612

CLASS 424

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45 5,356,614
49 5,356,615
61 5,356,616
63 5,356,617
78.01 5,356,618
78.04 5,356,620
84 5,356,621
93.2 5,356,623
93.43 5,356,624
94.1 5,356,625
195.1 5,356,626
265.1 5,356,622
401 5,356,627
405 5,356,628
422 5,356,629
426 5,356,630
438 5,356,631
449 5,356,632
450 5,356,633
464 5,356,634
484 5,356,635
489 5,356,636

CLASS 425

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381 5,356,282
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CLASS 426

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8 5,356,638
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52 5,356,641
93 5,356,642
94 5,356,643
99 5,356,644
107 5,356,645
237 5,356,646
243 5,356,647
249 5,356,648
396 5,356,649
5,356,650
491 5,356,651
503 5,356,652
573 5,356,653
575 5,356,654
578 5,356,655

CLASS 427

2.25 5,356,668
58 5,356,656
66 5,356,657
96 5,356,658
5,356,659
121 5,356,660
124 5,356,661
140 5,356,662
5,356,663
186 5,356,664
239 5,356,665
307 5,356,666
384 5,356,667
407.1 5,356,669
410 5,356,670
427 5,356,671
446 5,356,672
5,356,673
449 5,356,674
569 5,356,722

CLASS 428

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34.8 5,356,676
34.9 5,356,677
35.6 5,356,678
35.9 5,356,679
36.1 5,356,680
36.8 5,356,681
57 5,356,682
60 5,356,683
64 5,356,684
5,356,685
65 5,356,686
70 5,356,687
73 5,356,688
96 5,356,689
112 5,356,691
116 5,356,692
141 5,356,693
169 5,356,694
174 5,356,695
182 5,356,696
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232 5,356,701
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297 5,356,704
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367 5,356,707
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378 5,356,710
379 5,356,711
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407 5,356,713
413 5,356,714
416 5,356,715
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425.9 5,356,717
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545 5,356,720
629 5,356,724
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654 5,356,725
694 BP 5,356,726
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CLASS 429

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27 5,356,729
32 5,356,730
45 5,356,731
52 5,356,732
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88 5,356,734
120 5,356,735
197 5,356,736

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5,356,739
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59 5,356,743
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66 5,356,746
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109 5,356,748
115 5,356,749
122 5,356,750
203 5,356,751
253 5,356,752
270 5,356,753
5,356,754
288 5,356,755
313 5,356,756
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5,356,758
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496 5,356,763
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611 5,356,771

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CLASS 434

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263 5,356,294
267 5,356,295
317 5,356,296
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CLASS 435

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4.9 5,356,781
5 5,356,772
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5,356,774
5,356,775
5,356,776
5,356,777
7.2 5,356,778
7.24 5,356,779
7.6 5,356,780
7.9 5,356,782
5,356,783
5,356,784
7.92 5,356,785
14 5,356,786
18 5,356,787
23 5,356,788
25 5,356,789
26 5,356,790
29 5,356,791
5,356,792
32 5,356,793
68.1 5,356,794
69.1 5,356,795
5,356,796
69.3 5,356,797
69.6 5,356,798
172.3 5,356,799
188 5,356,800
195 5,356,801
199 5,356,802
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223 5,356,805
225.1 5,356,810
240.2 5,356,806
5,356,807
5,356,808
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280 5,356,812
282 5,356,813
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291 5,356,815
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147 5,356,819
537 5,356,820

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5,356,826
63 5,356,827
67 5,356,828
74 5,356,829
89 5,356,830
110 5,356,831
129 5,356,832
187 5,356,833
190 5,356,834
192 5,356,835
194 5,356,836
200 5,356,837
225 5,356,839
226 5,356,838

CLASS 439

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63 5,356,298
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108 5,356,301
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198 5,356,303
205 5,356,304
364 5,356,305
387 5,356,306
421 5,356,307
495 5,356,308
532 5,356,309
535 5,356,310
536 5,356,311
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607 5,356,313
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701 5,356,315
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877 5,356,318

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80 5,356,320

CLASS 441

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64 5,356,323
079 5,356,324
120 5,356,325

CLASS 446

175 5,356,326
220 5,356,327
242 5,356,328
485 5,356,329
491 5,356,330

CLASS 451

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32 5,355,638
165 R 5,355,632
237 5,355,631
461 5,355,635
490 5,355,634
496 5,355,639

CLASS 452

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CLASS 453

3 5,356,332
40 5,356,333

CLASS 454

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52 5,356,335
155 5,356,336
156 5,356,337

CLASS 460

69 5,356,338

CLASS 464

24 5,356,339
87 5,356,340
146 5,356,341
156 5,356,342

CLASS 472

57 5,356,343
92 5,356,344

CLASS 473

36 5,356,345
54 5,356,346

CLASS 474

28 5,356,347
70 5,356,348
78 5,356,349

CLASS 475

153 5,356,350
331 5,356,351
348 5,356,352

CLASS 477

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CLASS 482

9 5,356,353
35 5,356,354
43 5,356,355
62 5,356,356
96 5,356,357
5,356,358
97 5,356,359
99 5,356,360
111 5,356,361
142 5,356,362

CLASS 493

197 5,356,363
395 5,356,364

CLASS 494

14 5,356,365
37 5,356,366
58 5,356,367

CLASS 501

12 5,356,840
32 5,356,841
71 Re.34,760
87 5,356,842
134 5,356,843
136 5,356,844

CLASS 502

21 5,356,845
64 5,356,846
84 5,356,847
117 5,356,848
180 5,356,849
185 5,356,850
5,356,851
402 5,356,852

CLASS 503

227 5,356,853
5,356,854
5,356,856
5,356,857
5,356,858
5,356,859

CLASS 504

165 5,356,860
206 5,356,861
215 5,356,862
243 5,356,863
267 5,356,864
273 5,356,865
292 5,356,866
356 5,356,867

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220 5,357,059
329 5,356,870
420 5,356,871
430 5,356,869
474 5,356,872

CLASS 514

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5,356,874
12 5,356,875
5,356,876
5,356,877
21 5,356,878
25 5,356,879
26 5,356,880
5,356,881
49 5,356,882
54 5,356,883
58 5,356,884
63 5,356,885
81 5,356,886
108 5,356,887
204 5,356,888
210 5,356,889
5,356,890
5,356,891
212 5,356,892
220 5,356,894
227.2 5,356,893
233.2 5,356,894
255 5,356,895
256 5,356,896
258 5,356,897
269 5,356,898
277 5,356,899
282 5,356,900
304 5,356,901
307 5,356,902
311 5,356,903
312 5,356,904
320 5,356,905
323 5,356,906
324 5,356,907
333 5,356,908
335 5,356,909
339 5,356,910
340 5,356,911
5,356,912
342 5,356,913
354 5,356,914
357 5,356,915
364 5,356,916
369 5,356,917
376 5,356,918
381 5,356,919
397 5,356,920
5,356,921
398 5,356,922
425 5,356,923
434 5,356,924
435 5,356,925
445 5,356,926
449 5,356,927
5,356,928
455 5,356,929
478 5,356,931
502 5,356,932
548 5,356,933
599 5,356,930
649 5,356,934
656 5,356,935

CLASS 521

27 5,356,936
33 5,356,937
40 5,356,938
41.5 5,356,939
77 5,356,940
96 5,356,941
103 5,356,942
124 5,356,943
146 5,356,944
159 5,356,945
163 5,356,946

CLASS 522

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75 5,356,948
102 5,356,949
116 5,356,950

CLASS 523

5,356,951
122 5,356,952
171 5,356,953
200 5,356,954
201 5,356,955
5,356,956
218 5,356,957
219 5,356,958
404 5,356,959
5,356,960
414 5,356,961

CLASS 524

27 5,356,962
43 5,356,963
100 5,356,964
108 5,356,965
111 5,356,966
117 5,356,967
157 5,356,968
275 5,356,971
313 5,356,972
314 5,356,973
348 5,356,976
366 5,356,977
400 5,356,978
401 5,356,979
405 5,356,980
413 5,356,981
414 5,356,982
416 5,356,983
431 5,356,984

460 5,356,985
462 5,356,986
512 5,356,987
556 5,356,988
608 5,356,989

CLASS 525

57 5,356,990
[illegible] 5,356,991
68 5,356,992
[illegible] 5,356,993
98 5,356,994
100 5,356,995
123 5,356,969
158 5,356,996
164 5,356,970
237 5,356,997
285 5,356,998
286 5,356,999
296 5,357,000
326.1 5,357,001
332.2 5,357,002
332.8 5,356,974
5,356,975
393 5,357,003
435 5,357,004
436 5,357,005
453 5,357,006
478 5,357,007
526 5,357,008

CLASS 526

62 5,357,009
220 5,357,010
228 5,357,011
238.2 5,357,012
260 5,357,013
347.2 5,357,014

CLASS 528

10 5,357,015
14 5,357,016
15 5,357,017
5,357,018
5,357,019
27 5,357,020
28 5,357,021
29 5,357,022
32 5,357,023
39 5,357,024
42 5,357,025
53 5,357,026
196 5,357,028
198 5,357,027
322 5,357,029
337 5,357,030
5,357,031
353 5,357,032
5,357,033
354 5,357,034
5,357,035
373 5,357,036
[illegible] 5,357,037
414 5,357,038
423 5,357,039
490 5,357,040

CLASS 530

326 5,357,041
328 5,357,042
334 5,357,043
350 5,357,044

CLASS 570

230 Re.34,761

CLASS 600

28 5,356,368

CLASS 601

70 5,356,369

CLASS 602

16 5,356,370
22 5,356,371
58 5,356,372

CLASS 604

[illegible] 5,356,373
5,356,374
30 5,356,375
5,356,376
5,356,377
65 5,356,378
[illegible] 5,356,379
85 5,356,380
93 5,356,381
105 5,356,382
110 5,356,383
5,356,384
5,356,385
118 5,356,386
164 5,356,388
5,356,389
5,356,390
175 5,356,391
198 5,356,387
5,356,392
222 5,356,393
256 5,356,394
263 5,356,395
283 5,356,396
292 5,356,397
321 5,356,398
339 5,356,399
356 5,356,400
359 5,356,401
375 5,356,402
378 5,356,403
384 5,356,405
415 5,356,406

CLASS 606

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5 5,356,409
48 5,356,408
62 5,356,410
63 5,356,411
74 5,356,412
75 5,356,413
88 5,356,414
96 Re.34,762
133 5,356,415
140 5,356,416
146 B1 4,923,461
151 5,356,417
159 5,356,418
170 5,356,419
182 5,356,420
185 5,356,421
194 5,356,423
223 5,356,424

CLASS 607

14 5,356,425
112 5,356,426
122 5,356,427
142 5,356,428

CLASS 623

[illegible] 5,356,429
10 5,356,430
11 5,356,431
5,356,432
5,356,433
13 5,356,434
15 5,356,435
16 5,356,436

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708 351,492
741 351,493
746 351,494
959 351,495
961 351,496
983 351,497
D3— 201 351,499
202 351,500
233 351,501
259 351,498
272 351,502
273 351,503
276 351,504
D4— 116 351,505
D6— 333 351,506
336 351,508
367 351,509
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407 351,512
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451 351,515
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398 351,529
516 351,530
545 351,522
584 351,531
605 351,532
351,533
686 351,534
701 351,535
709 351,536
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[illegible] 351,538
10 351,539
14 351,540
28 351,541
351,542
51 351,543
62 351,544
351,545
71 351,546
82 351,547
107 351,548
351,549
307 351,550
343 351,551
356 351,552
402 351,553
D9— 342 351,554
343 351,555
415 351,556
418 351,557
D10— 32 351,558
39 351,559
56 351,560
72 351,561
78 351,562
104 351,563
126 351,565
D11— 3 351,566
15 351,567
16 351,568
117 351,569
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[illegible] 351,571
157 351,572
D12— 92 351,573
102 351,575
118 351,574
128 351,576
178 351,577
191 351,578
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196 351,580
209 351,581
351,582
317 351,583
323 351,584
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D13— 107 351,586
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168 351,591
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139 351,606
150 351,607
199 351,608
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313 351,609
351,610
D17— 1 351,612
D18— 7 351,613
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55 351,615
56 351,616
59 351,617
351,618
D19— 26 351,619
54 351,620
[illegible] 351,621
D21— 23 351,623
25 351,624
48 351,625
[illegible] 351,627
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351,629
134 351,630
141 351,631
171 351,632
191 351,633
195 351,634
210 351,635
214 351,643
219 351,644
228 351,636
240 351,622
351,637
D22— 108 351,638
117 351,639
351,640
D23— 213 351,641
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226 351,646
231 351,645
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351 351,648
364 351,649
365 351,650
411 351,651
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170 351,655
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199 351,657
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214 351,660
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65 351,677
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161 351,693
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7 351,701
10 351,702
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11 351,704
351,705
351,706
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28 351,708
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32 351,710

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P— 7.1 8,940
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9 8,942
8,943
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40.1 8,947
41.1 8,948
41.3 8,949
43.2 8,950
[illegible] 8,951

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PATENTS

01	5,355,597		5,356,076		5,356,715		5,357,432		5,356,316		5,356,658
	5,355,895		5,356,094		5,356,722		5,357,436		5,356,421		5,356,667
	5,355,971		5,356,101		5,356,725		5,357,452		5,356,439		5,357,089
	5,355,986		5,356,105		5,356,730		5,357,455		5,356,465		5,357,218
	5,356,253		5,356,107		5,356,734		5,357,458		5,356,586		5,357,240
	5,356,291		5,356,110		5,356,784		5,357,465		5,356,627		5,357,254
02	5,355,616		5,356,115		5,356,835		5,357,471		5,356,629		5,357,258
	5,356,524		5,356,147		5,356,877		5,357,475		5,356,644		5,357,409
	5,356,796		5,356,149		5,356,878		5,357,519		5,356,672		5,357,547
04	5,355,592		5,356,158		5,356,881		5,357,520		5,356,673		5,357,592
	5,355,647		5,356,159		5,357,019		5,357,527		5,356,817	13 :	5,355,554
	5,355,867		5,356,161		5,357,044		5,357,541		5,356,905		5,355,756
	5,356,153		5,356,165		5,357,049		5,357,548		5,356,962		5,355,820
	5,356,218		5,356,176		5,357,050		5,357,556		5,357,038		5,355,962
	5,357,061		5,356,185		5,357,052		5,357,560		5,357,064		5,355,999
	5,357,062		5,356,190		5,357,075		5,357,572		5,357,191		5,356,102
	5,357,150		5,356,197		5,357,081		5,357,579		5,357,247		5,356,431
	5,357,192		5,356,198		5,357,105		5,357,580		5,357,427		5,356,492
	5,357,380		5,356,206		5,357,106		5,357,594		5,357,428		5,356,626
	5,357,413		5,356,225		5,357,113		5,357,600		5,357,629		5,356,652
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06	5,355,537		5,356,292		5,357,119		5,357,606		5,356,374		5,357,276
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	5,355,606		5,356,296		5,357,135		5,357,624		5,356,509		5,357,563
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	5,355,626		5,356,300		5,357,153		5,357,632		5,356,666	16 :	5,355,615
	5,355,667		5,356,305		5,357,155		4,938,201		5,356,751		5,355,911
	5,355,677		5,356,323		5,357,182	08	5,355,600		5,356,958		5,356,240
	5,355,687		5,356,324		5,357,195		5,355,737		5,356,986		5,356,278
	5,355,712		5,356,361		5,357,205		5,355,752	11 :	5,356,242		5,356,538
	5,355,727		5,356,378		5,357,211		5,355,928		5,356,795		5,357,172
	5,355,781		5,356,388		5,357,214		5,356,081		5,357,591		5,357,463
	5,355,783		5,356,391		5,357,216		5,356,168	12 :	Re.34,759		5,357,621
	5,355,807		5,356,393		5,357,229		5,356,193		5,355,613	17 :	5,355,540
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	5,355,856		5,356,487		5,357,291		5,357,093		5,355,829		5,355,871
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	5,355,921		5,356,525		5,357,363	[redacted]	5,355,802		5,356,134		5,356,059
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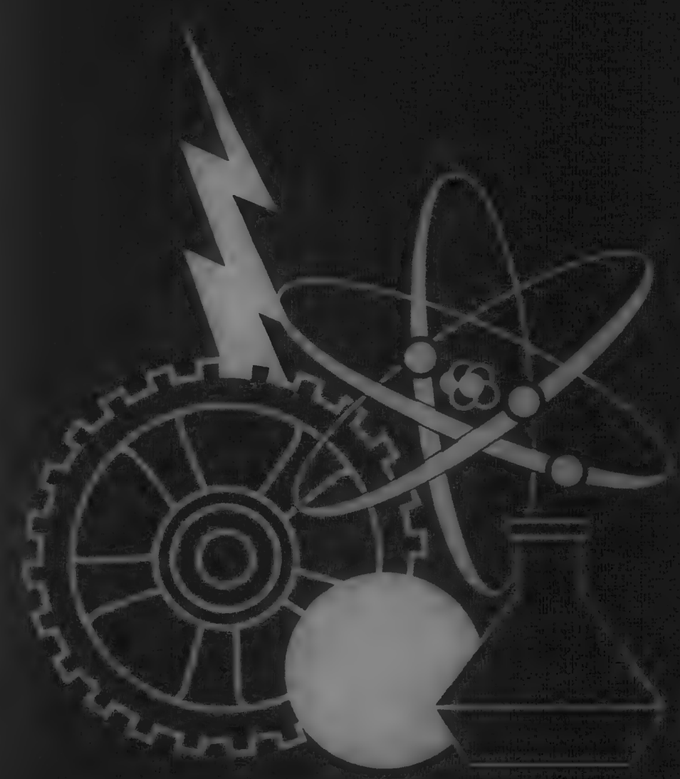
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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1166 O.G. 94, on Sept. 27, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1994, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1165 O.G. 81, on Aug. 23, 1994.

International fees were changed, effective on May 1, 1993, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1994, and were announced in the *Official Gazette* at 1165 O.G. 132, on Aug. 30, 1994.

The schedule of PCT fees (in U.S. dollars), effective Oct. 1, 1994, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	210.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	640.00
—Corresponding prior U.S. national application filed	420.00
—Supplemental search fee, per additional invention (payable only upon invitation	180.00
European Patent Office as ISA	1537.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
—For the first 10 national or regional offices designated	128.00
—For each designation in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee	128.00
—Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	460.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	690.00
—Additional examination fee, per additional invention (payable only upon invitation)	240.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4)	46.00	92.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	330.00	660.00
USPTO was ISA but not IPEA	365.00	730.00
USPTO was neither ISA nor IPEA		
—Filed without a search report from the European Patent Office or the Japanese Patent Office	490.00	980.00
—Filed with a search report from the European Patent Office or the Japanese Patent Office	425.00	850.00
Other National fees		
—For each independent claim in excess of 3	38.00	76.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	120.00	240.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Sept. 9, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on October 22, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

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Utility Patents 5,058,207 through 5,060,312
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 20, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,700,403 through 4,701,961
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 18, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,409,689 through 4,411,022
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $480.00
By other than a small entity $960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $965.00
By other than a small entity $1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,450.00
By other than a small entity $2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $640.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED August 17, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,494	06/937,662	09/08/87
(4,605,185)	(06/769,593)	(08/12/86)
Re. 32,857	07/048,959	02/07/89
(4,605,889)	(06/642,992)	(08/12/86)
Re. 33,358	07/231,222	10/02/90
(4,604,842)	(06/706,489)	(08/12/86)
4,344,191	06/225,216	08/17/82
4,344,194	06/215,801	08/17/82
4,344,197	06/270,325	08/17/82
4,344,230	06/297,019	08/17/82
4,344,251	06/227,814	08/17/82
4,344,256	06/217,476	08/17/82
4,344,270	06/274,738	08/17/82
4,344,292	06/226,984	08/17/82
4,344,381	06/220,710	08/17/82
4,344,405	06/218,350	08/17/82
4,344,430	06/246,117	08/17/82
4,344,442	06/257,025	08/17/82
4,344,482	06/221,326	08/17/82
4,344,486	06/238,874	08/17/82
4,344,503	06/227,713	08/17/82
4,344,504	06/248,504	08/17/82
4,344,546	06/249,694	08/17/82
4,344,556	06/280,834	08/17/82
4,344,584	06/240,110	08/17/82
4,344,608	06/318,318	08/17/82
4,344,654	06/241,257	08/17/82
4,344,672	06/221,062	08/17/82
4,344,677	06/301,705	08/17/82
4,344,717	06/259,418	08/17/82
4,344,758	06/251,175	08/17/82
4,344,771	06/242,494	08/17/82
4,344,775	06/216,953	08/17/82
4,344,786	06/222,106	08/17/82
4,344,787	06/303,671	08/17/82
4,344,810	06/244,491	08/17/82
4,344,820	06/218,258	08/17/82
4,344,823	06/252,346	08/17/82
4,344,828	06/297,852	08/17/82
4,344,845	06/218,645	08/17/82
4,344,851	06/225,528	08/17/82
4,344,874	06/258,302	08/17/82
4,344,886	06/238,608	08/17/82
4,344,887	06/263,839	08/17/82
4,344,888	06/287,052	08/17/82
4,344,917	06/218,337	08/17/82
4,344,940	06/325,708	08/17/82
4,344,959	06/251,043	08/17/82
4,344,971	06/249,727	08/17/82
4,344,973	06/308,123	08/17/82
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4,345,006	06/292,943	08/17/82
4,345,010	06/218,992	08/17/82
4,345,023	06/225,534	08/17/82
4,345,039	06/269,492	08/17/82
4,345,046	06/270,757	08/17/82
4,345,047	06/217,616	08/17/82
4,345,050	06/239,722	08/17/82

Patent Number	Serial Number	Issue Date
4,345,054	06/221,333	08/17/82
4,345,055	06/265,477	08/17/82
4,345,061	06/216,678	08/17/82
4,345,062	06/262,287	08/17/82
4,345,072	06/251,540	08/17/82
4,345,073	06/229,651	08/17/82
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4,345,139	06/221,507	08/17/82
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4,604,983	06/721,358	08/12/86
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4,947,799	07/256,320	08/14/90
4,947,801	07/342,030	08/14/90
4,947,802	07/317,635	08/14/90
4,947,809	07/241,984	08/14/90
4,947,813	07/302,599	08/14/90
4,947,819	07/320,652	08/14/90
4,947,822	07/342,558	08/14/90
4,947,823	07/270,056	08/14/90
4,947,826	07/464,329	08/14/90
4,947,828	07/338,900	08/14/90
4,947,831	07/205,823	08/14/90
4,947,833	07/289,904	08/14/90
4,947,834	07/305,432	08/14/90
4,947,841	07/273,022	08/14/90
4,947,847	07/227,988	08/14/90
4,947,859	07/301,796	08/14/90
4,947,862	07/263,867	08/14/90
4,947,867	07/244,280	08/14/90
4,947,871	07/220,803	08/14/90
4,947,873	07/386,949	08/14/90
4,947,876	07/311,963	08/14/90
4,947,877	07/308,490	08/14/90
4,947,883	07/330,210	08/14/90
4,947,894	06/801,802	08/14/90
4,947,895	07/341,780	08/14/90
4,947,896	07/267,131	08/14/90
4,947,899	06/853,955	08/14/90
4,947,905	07/040,278	08/14/90
4,947,906	07/299,635	08/14/90
4,947,918	07/394,671	08/14/90
4,947,920	07/261,419	08/14/90
4,947,921	07/449,976	08/14/90
4,947,931	07/458,414	08/14/90
4,947,938	07/222,063	08/14/90
4,947,941	07/242,187	08/14/90
4,947,944	07/327,961	08/14/90
4,947,956	07/455,940	08/14/90
4,947,958	07/333,345	08/14/90
4,947,960	07/400,556	08/14/90
4,947,962	07/396,094	08/14/90
4,947,965	07/315,918	08/14/90
4,947,977	07/275,946	08/14/90
4,947,985	07/478,750	08/14/90
4,947,989	07/370,200	08/14/90
4,947,991	07/341,365	08/14/90
4,947,997	07/330,794	08/14/90
4,948,008	07/398,894	08/14/90
4,948,009	07/458,555	08/14/90
4,948,010	07/334,630	08/14/90
4,948,012	07/278,049	08/14/90
4,948,016	07/242,472	08/14/90
4,948,019	07/332,526	08/14/90
4,948,021	07/304,640	08/14/90
4,948,022	07/390,388	08/14/90
4,948,024	07/381,557	08/14/90
4,948,033	06/929,501	08/14/90
4,948,035	07/466,001	08/14/90
4,948,040	07/290,463	08/14/90
4,948,045	07/296,703	08/14/90
4,948,052	07/335,849	08/14/90
4,948,053	07/294,746	08/14/90
4,948,059	07/430,280	08/14/90
4,948,062	07/429,370	08/14/90
4,948,064	07/286,233	08/14/90
4,948,071	07/337,087	08/14/90
4,948,077	07/306,496	08/14/90
4,948,080	07/230,906	08/14/90
4,948,084	06/800,444	08/14/90
4,948,089	07/192,282	08/14/90
4,948,094	07/392,084	08/14/90
4,948,096	07/435,119	08/14/90
4,948,100	07/424,929	08/14/90
4,948,101	07/360,895	08/14/90
4,948,104	07/352,858	08/14/90
4,948,111	07/255,244	08/14/90
4,948,114	07/272,856	08/14/90
4,948,117	07/312,688	08/14/90
4,948,118	07/273,095	08/14/90
4,948,120	07/369,067	08/14/90
4,948,122	07/383,415	08/14/90
4,948,123	07/451,887	08/14/90
4,948,125	07/404,121	08/14/90
4,948,126	07/023,808	08/14/90
4,948,129	07/412,119	08/14/90
4,948,130	07/231,529	08/14/90
4,948,136	07/354,840	08/14/90
4,948,139	07/157,965	08/14/90
4,948,141	07/378,198	08/14/90
4,948,142	07/441,326	08/14/90
4,948,145	07/309,634	08/14/90
4,948,146	07/307,384	08/14/90
4,948,147	07/442,540	08/14/90
4,948,148	07/370,465	08/14/90
4,948,157	07/121,477	08/14/90
4,948,158	07/325,047	08/14/90
4,948,160	07/297,418	08/14/90
4,948,162	07/309,599	08/14/90
4,948,170	07/162,516	08/14/90
4,948,171	07/228,999	08/14/90
4,948,177	07/332,201	08/14/90
4,948,178	07/371,745	08/14/90
4,948,182	07/261,199	08/14/90
4,948,184	07/297,397	08/14/90
4,948,187	07/322,931	08/14/90
4,948,188	07/421,822	08/14/90
4,948,191	07/438,242	08/14/90
4,948,192	07/346,491	08/14/90
4,948,197	07/409,762	08/14/90
4,948,211	07/305,095	08/14/90
4,948,220	07/367,037	08/14/90
4,948,232	07/378,476	08/14/90
4,948,243	07/301,063	08/14/90
4,948,245	07/219,039	08/14/90
4,948,251	07/351,091	08/14/90
4,948,262	07/369,971	08/14/90
4,948,264	06/882,564	08/14/90
4,948,266	07/364,147	08/14/90
4,948,271	07/436,789	08/14/90
4,948,276	07/363,979	08/14/90
4,948,280	07/336,840	08/14/90
4,948,281	07/416,815	08/14/90
4,948,284	07/187,518	08/14/90

Patent Number	Serial Number	Issue Date
4,948,286	07/173,974	08/14/90
4,948,287	07/387,240	08/14/90
4,948,291	07/241,866	08/14/90
4,948,296	07/135,023	08/14/90
4,948,298	07/124,854	08/14/90
4,948,301	07/313,205	08/14/90
4,948,302	07/305,649	08/14/90
4,948,304	07/131,557	08/14/90
4,948,306	07/229,568	08/14/90
4,948,312	07/341,133	08/14/90
4,948,314	07/375,638	08/14/90
4,948,317	07/345,310	08/14/90
4,948,318	07/332,718	08/14/90
4,948,320	07/400,491	08/14/90
4,948,323	07/208,473	08/14/90
4,948,325	07/440,443	08/14/90
4,948,328	07/421,664	08/14/90
4,948,340	07/414,828	08/14/90
4,948,341	07/193,707	08/14/90
4,948,345	07/348,713	08/14/90
4,948,347	07/376,515	08/14/90
4,948,350	07/400,543	08/14/90
4,948,361	07/440,182	08/14/90
4,948,368	07/313,653	08/14/90
4,948,369	07/051,431	08/14/90
4,948,374	07/339,988	08/14/90
4,948,375	07/234,153	08/14/90
4,948,394	06/773,575	08/14/90
4,948,401	07/243,040	08/14/90
4,948,403	07/407,112	08/14/90
4,948,406	07/249,188	08/14/90
4,948,415	07/305,611	08/14/90
4,948,420	07/231,883	08/14/90
4,948,422	07/309,552	08/14/90
4,948,429	07/366,908	08/14/90
4,948,431	07/330,056	08/14/90
4,948,435	07/140,547	08/14/90
4,948,436	07/288,857	08/14/90
4,948,440	07/252,538	08/14/90
4,948,441	07/232,067	08/14/90
4,948,445	07/264,023	08/14/90
4,948,447	07/312,181	08/14/90
4,948,456	07/364,399	08/14/90
4,948,459	07/293,274	08/14/90
4,948,467	07/353,289	08/14/90
4,948,475	07/250,947	08/14/90
4,948,476	07/384,153	08/14/90
4,948,482	07/287,017	08/14/90
4,948,483	07/394,725	08/14/90
4,948,486	07/394,536	08/14/90
4,948,488	07/379,810	08/14/90
4,948,489	07/340,604	08/14/90
4,948,496	07/351,282	08/14/90
4,948,499	07/337,668	08/14/90
4,948,504	07/327,278	08/14/90
4,948,511	07/339,020	08/14/90
4,948,518	07/330,598	08/14/90
4,948,519	07/422,115	08/14/90
4,948,520	07/091,943	08/14/90
4,948,528	07/303,373	08/14/90
4,948,529	07/213,448	08/14/90
4,948,532	07/323,000	08/14/90
4,948,535	07/467,274	08/14/90
4,948,539	07/250,325	08/14/90
4,948,540	07/227,069	08/14/90
4,948,542	07/339,619	08/14/90
4,948,543	07/366,684	08/14/90
4,948,553	07/353,270	08/14/90
4,948,557	07/304,874	08/14/90
4,948,562	07/310,012	08/14/90
4,948,565	07/343,014	08/14/90
4,948,566	07/100,490	08/14/90
4,948,570	07/378,319	08/14/90
4,948,573	07/355,033	08/14/90
4,948,582	07/333,520	08/14/90
4,948,583	07/342,672	08/14/90
4,948,597	07/356,504	08/14/90
4,948,601	07/419,472	08/14/90
4,948,605	07/169,042	08/14/90
4,948,613	07/156,143	08/14/90
4,948,616	07/347,385	08/14/90
4,948,617	07/275,285	08/14/90
4,948,618	07/403,782	08/14/90
4,948,624	07/336,994	08/14/90
4,948,633	07/397,286	08/14/90
4,948,645	07/388,243	08/14/90
4,948,653	07/382,891	08/14/90
4,948,661	07/314,896	08/14/90
4,948,672	07/335,249	08/14/90
4,948,674	07/241,594	08/14/90
4,948,698	07/418,660	08/14/90
4,948,701	07/430,137	08/14/90
4,948,731	06/893,482	08/14/90
4,948,732	07/412,707	08/14/90
4,948,733	07/035,604	08/14/90
4,948,740	07/323,867	08/14/90
4,948,757	07/307,930	08/14/90
4,948,761	07/339,199	08/14/90
4,948,768	07/383,108	08/14/90
4,948,784	07/163,961	08/14/90
4,948,795	07/337,064	08/14/90
4,948,797	07/269,773	08/14/90
4,948,800	07/374,211	08/14/90
4,948,810	07/306,867	08/14/90
4,948,812	07/125,308	08/14/90
4,948,821	07/233,437	08/14/90
4,948,826	07/329,060	08/14/90
4,948,830	07/254,628	08/14/90
4,948,835	07/201,474	08/14/90
4,948,838	07/191,784	08/14/90
4,948,858	07/159,906	08/14/90
4,948,863	07/341,621	08/14/90
4,948,866	07/402,577	08/14/90
4,948,867	07/361,370	08/14/90
4,948,868	07/218,559	08/14/90
4,948,870	07/350,828	08/14/90
4,948,873	06/921,770	08/14/90
4,948,879	07/272,781	08/14/90
4,948,893	07/394,893	08/14/90
4,948,894	07/446,747	08/14/90
4,948,895	07/420,983	08/14/90
4,948,898	07/317,081	08/14/90
4,948,899	07/397,850	08/14/90
4,948,905	07/408,894	08/14/90
4,948,907	07/228,078	08/14/90
4,948,908	07/073,447	08/14/90
4,948,912	06/904,884	08/14/90
4,948,918	07/373,329	08/14/90
4,948,924	07/251,124	08/14/90
4,948,927	07/252,647	08/14/90
4,948,928	07/394,446	08/14/90
4,948,930	07/344,101	08/14/90
4,948,935	07/334,161	08/14/90
4,948,945	07/331,260	08/14/90
4,948,946	07/099,724	08/14/90
4,948,947	07/224,169	08/14/90
4,948,949	07/346,364	08/14/90
4,948,955	07/289,662	08/14/90
4,948,959	07/219,392	08/14/90
4,948,970	07/299,036	08/14/90
4,948,978	07/318,165	08/14/90
4,948,982	07/375,349	08/14/90
4,948,985	07/278,769	08/14/90
4,948,987	07/312,820	08/14/90
4,948,989	07/304,502	08/14/90
4,948,993	07/290,741	08/14/90
4,949,004	07/307,190	08/14/90
4,949,007	07/358,534	08/14/90
4,949,017	07/350,783	08/14/90
4,949,021	07/270,625	08/14/90
4,949,022	07/303,320	08/14/90
4,949,026	07/129,589	08/14/90
4,949,027	07/327,066	08/14/90
4,949,030	07/081,840	08/14/90
4,949,047	07/100,637	08/14/90
4,949,053	07/401,917	08/14/90

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Patent Number	Serial Number	Issue Date
4,949,055	07/334,107	08/14/90
4,949,056	06/759,729	08/14/90
4,949,060	07/378,049	08/14/90
4,949,061	07/376,613	08/14/90
4,949,066	07/191,383	08/14/90
4,949,068	07/277,016	08/14/90
4,949,071	07/381,477	08/14/90
4,949,075	07/199,039	08/14/90
4,949,076	07/258,298	08/14/90
4,949,077	07/415,630	08/14/90
4,949,079	07/046,722	08/14/90
4,949,093	07/155,412	08/14/90
4,949,095	07/277,179	08/14/90
4,949,108	07/180,981	08/14/90
4,949,109	07/333,600	08/14/90
4,949,117	07/288,887	08/14/90
4,949,124	07/203,158	08/14/90
4,949,131	07/210,017	08/14/90
4,949,165	07/154,913	08/14/90
4,949,167	07/368,141	08/14/90
4,949,171	07/275,387	08/14/90
4,949,174	07/314,574	08/14/90
4,949,178	07/035,107	08/14/90
4,949,184	07/391,298	08/14/90
4,949,185	07/398,978	08/14/90
4,949,192	07/011,651	08/14/90
4,949,203	07/166,595	08/14/90
4,949,217	07/370,517	08/14/90
4,949,227	07/429,746	08/14/90
4,949,228	07/200,411	08/14/90
4,949,229	07/360,572	08/14/90
4,949,231	07/399,717	08/14/90
4,949,234	07/332,328	08/14/90
4,949,235	07/439,683	08/14/90
4,949,245	07/260,714	08/14/90
4,949,247	07/159,362	08/14/90
4,949,249	07/390,471	08/14/90
4,949,252	07/205,362	08/14/90
4,949,255	07/241,415	08/14/90
4,949,281	07/183,603	08/14/90
4,949,282	07/221,250	08/14/90
4,949,294	07/264,244	08/14/90
4,949,310	07/273,601	08/14/90
4,949,316	07/405,918	08/14/90
4,949,321	07/102,725	08/14/90
4,949,324	07/437,262	08/14/90
4,949,353	07/293,264	08/14/90
4,949,359	07/241,034	08/14/90
4,949,363	07/325,758	08/14/90
4,949,364	07/255,377	08/14/90
4,949,372	07/269,636	08/14/90
4,949,375	07/337,414	08/14/90
4,949,377	07/291,578	08/14/90
4,949,378	07/483,982	08/14/90
4,949,379	07/348,294	08/14/90
4,949,382	07/254,000	08/14/90
4,949,385	07/173,809	08/14/90
4,949,386	07/197,324	08/14/90
4,949,398	07/204,334	08/14/90
4,949,400	07/176,331	08/14/90

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(C); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,506,058	06/589,429	03/19/85	03/14/84	08/17/94
4,516,482	06/603,417	05/14/85	04/24/84	08/29/94
4,568,847	06/522,049	02/04/86	08/10/83	08/17/94
4,569,136	06/571,840	02/11/86	01/19/84	08/15/94
4,579,658	06/504,971	04/01/86	06/16/83	08/31/94
4,590,730	06/722,081	05/27/86	04/10/85	08/25/94
4,593,985	06/668,346	06/10/86	11/05/84	08/31/94
4,600,631	06/605,916	07/15/86	05/01/84	08/09/94
4,763,671	06/858,891	08/16/88	04/25/86	08/29/94
4,776,334	07/021,387	10/11/88	03/03/87	08/29/94
4,825,708	07/109,392	05/02/89	10/19/87	08/26/94
4,850,135	07/160,923	07/25/89	02/26/88	07/21/94
4,850,378	07/108,237	07/25/89	10/14/87	08/30/94
4,876,749	07/271,731	10/21/89	11/15/88	08/29/94
4,880,622	06/865,504	11/14/89	05/20/86	08/31/94
4,891,184	07/289,543	01/02/90	12/23/88	08/17/94
4,907,985	07/370,992	03/13/90	06/26/89	08/09/94
4,908,807	07/346,422	03/13/90	05/01/89	08/26/94
4,918,979	07/200,161	04/24/90	05/31/88	08/09/94
4,920,370	07/029,755	04/24/90	03/24/87	08/09/94
4,927,929	07/226,866	05/22/90	08/01/88	08/10/94
4,928,981	07/308,559	05/29/90	02/10/89	08/30/94
4,936,395	07/169,673	06/26/90	03/18/88	08/29/94
4,937,852	07/161,680	06/26/90	02/29/88	08/31/94

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

Re. 33,206, Re. S.N. 08/297,244, Aug. 25, 1994, Cl. 604/349, MALE CONDOM CATHETER HAVING ADHESIVE ON ROLLED PORTION, James A. Conway, et. al., Owner of Record: *Mentor Corporation, Goleta, Calif.*, Attorney or Agent: Stephen D. Gross, Ex. Gp.: 3306

4,648,961, Re. S.N. 08/277,825, July 20, 1994, METHOD OF PRODUCING HIGH AROMATIC YIELDS THROUGH AROMATICS REMOVAL AND RECYCLE OF REMAINING MATERIAL, Robert L. Jacobson, et. al., Owner of Record: *Chevron Research And Technology Co., Richmond, Calif.*, Attorney or Agent: William L. Mathis, Ex. Gp.:3500

4,857,081, Re. S.N. 08/297,968, Aug. 30, 1994, Cl. 55/16, SEPARATION OF WATER FROM HYDROCARBONS AND HALOGENATED HYDROCARBONS, John A. Taylor, Owner of Record: *Separation Dynamics International, Ltd., Farm Hills, Mich.*, Attorney or Agent: Kenneth I. Kohn, Ex. Gp.: 1305

5,015,951, Re. S.N. 08/061,917, May 14, 1993, Cl. 324/232, APPARATUS AND METHODS FOR MEASURING PERMEABILITY AND CONDUCTIVITY IN MATERIALS USING MULTIPLE WAVENUMBER MAGNETIC INTERROGATIONS, James R. Melcher (deceased), Owner of Record: *Massachusetts Institute of Technology, Cambridge, Mass.*, Attorney or Agent: James M. Smith, Ex. Gp.: 2607

5,044,412, Re. S.N. 08/294,730, Aug. 23, 1994, Cl. 144/208, METHOD AND APPARATUS FOR DEBARKING LOGS, John P. Price, et. al., Owner of Record: *Price Industries, Monticello, Ark.*, Attorney or Agent: Mark Rogers, Ex. Gp.: 3201

5,136,397, Re. S.N. 08/284,952, Aug. 2, 1994, Cl. 347/748, LIQUID CRYSTAL VIDEO PROJECTOR HAVING LAMP AND COOLING CONTROL AND REMOTE OPTICS AND PICTURE ATTRIBUTE CONTROLS, Kiyoshi Miyashita, Owner of Record: *Seiko Epson Corp., Tokyo-To, Japan*, Attorney or Agent: G. Gregory Schivley, Ex. Gp.: 2602

5,139,388, Re. S.N. 08/292,397, Aug. 18, 1994, Cl. 414/799, LOAD FORMER PALLETIZER, Merrill D. Martin, Owner of Record: *Martin Family Trust, Oakland, Calif.*, Attorney or Agent: James R. Cypher, Ex. Gp.: 3107

5,139,853, Re. S.N. 08/292,793, Aug., Cl. 428/213, APPARATUS AND METHOD FOR LINING LANDFILLS, RESERVOIRS, HAZARDOUS WASTE DISPOSAL SITES AND THE LIKE, Michael C. Mathieson, et. al., Owner of Record: *Gundle Lining Construction Corp., Houston, Tex.*, Attorney or Agent: Timothy N. Trop, Ex. Gp.: 1513

5,161,495, Re. S.N. 08/297,630, Aug. 29, 1994, Cl. 123/90.33, LUBRICATION ARRANGEMENT FOR ENGINE, Tetsushi Saito, Owner of Record: *Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka-Ken, Japan*, Attorney or Agent: William H. Shreve, Ex. Gp.: 3402

5,181,896, Re. S.N. 08/293,884, Aug. 19, 1994, Cl. 482/97, INCLINE PRESS EXERCISE MACHINE, Gary J. Jones, Owner of Record: *PNC Bank, Ohio National Association, Cincinnati, Ohio*, Attorney or Agent: Thomas J. Burger, Ex. Gp.: 3302

5,214,631, Re. S.N. 08/296,239, Aug. 25, 1994, Cl. 369/59, DISC RECORDING/REPRODUCING APPARATUS HAVING A SERVO SYSTEM CAPABLE OF SUCCESSIVELY RECORDING AND REPRODUCING TRACKS ON A DISC IRRESPECTIVE OF TURBULENCE OF THE SERVO SYSTEM DUE TO A DISTURBANCE, Yasuaki Maeda, et. al., Owner of Record: *Sony Corp., Tokyo, Japan*, Attorney or Agent: Charles P. Sammut, Ex. Gp.: 2615

5,294,085, Re. S.N. 08/291,980, Aug. 17, 1994, Cl.. 248/544, SHOCK AND VIBRATION ISOLATION APPARATUS FOR MOTOR VEHICLE SEATS, David Lloyd, et. al., Owner of Record: *Mac Ride, Inc.*, Attorney or Agent: Thomas J. Nikolai, Ex. Gp.: 3505

5,295,408, Re. S.N. 08/292,885, Aug. 19, 1994, Cl. 502.6, ADJUSTABLE CABLE STRAND END FITTING, James J. Nagle, et. al., Owner of Record: *Nagle Industries, Inc., Clawson, Mich.*, Attorney or Agent: Michael R. Dinnin, Ex. Gp.: 3502

5,322,880, Re. S.N. 08/290,636, Aug. 15, 1994, Cl. 524/459, THIXOTROPIC ADHESIVE GEL, Peter S. Columbus, et. al., Owner of Record: *Borden Inc., Columbus, Ohio*, Attorney or Agent: Thomas P. Pavelko, Ex. Gp.: 1505

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 33,620, Reexam. No. 90/003,420, Apr. 28, 1994, Cl. 062/215, CONTINUOUSLY VARIABLE CAPACITY REFRIGERATION SYSTEM, Jacob P. Persem, Owner of Record: *Margaux, Inc., Conyers, Ga.*, Attorney or Agent: George M. Thomas, Hopkins & Thomas, Atlanta, Ga., Ex. Gp.: 3404, Requester: Flehr, Hohbach Test Albritton & Herbert, San Francisco, Calif.

4,098,622, Reexam. No. 90/003,292, Dec. 30, 1993, Cl. 148/331, EARTH-WORKING IMPLEMENT, Theodore M. Clarke, et. al., Owner of Record: *Case Corp., Racine, Wis.*, Attorney or Agent: Au Buchon, F. David: Willian Brinks Olds Hofer Gilson & Lione, Chicago, Ill., Ex. Gp.: 1101. Requester: John E. Miller, Calfee Halter & Griswold, Cleveland, Ohio

4,598,614, Reexam. No. 90/003,424, May 4, 1994, Cl. 081/058.3, HAND LEVER TURNING MECHANISM, Heinrich Kipp, Owner of Record: *Monroe Engineering Products, Inc., Bloomfield Hills, Mich.*, Attorney or Agent: W.R. Duke Taylor, Harness Dickey & Pierce, Bloomfield Hills, Mich., Ex. Gp.: 3203, Requester: Owner

4,824,408, Reexam. No. 90/003,427, May 9, 1994, Cl. 440/006, REMOTELY CONTROLLED STEERING APPARATUS FOR OUTBOARD TROLLING MOTORS, Walter P. Aertker, et. al., Owner of Record: *N. Elton Dry, New Orleans, La., Charles C. Garvey, Jr., Houston, Tex.*, Attorney or Agent: Charles C. Garvey, Jr., Pravel Gambrell Hewitt Kimball & Krieger, Houston, Tex., Ex. Gp.: 3102, Requester: Jerry W. Mills, Baker & Botts, Dallas, Tex.

4,833,301, Reexam. No. 90/003,429, May 11, 1994, Cl. 219/388, MULTI-ZONE THERMAL PROCESS SYSTEM UTILIZING NON-FOCUSED INFRARED PANEL EMITTERS, Edward J. Furtek, Owner of Record: *Vitronics Corp., New Market, N.H.*, Attorney or Agent: Lawrence M. Green, Wolf Greenfield & Sacks, Boston, Mass., Ex. Gp.: 2106, Requester: Conceptronic, Inc., c/o Weingarten Schurgin Gagnebin & Hayes, Boston, Mass.

4,847,889, Reexam. No. 90/003,426, May 5, 1994, Cl. 379/067, SINGLE-LINE, PLUG-IN TELEPHONE ANSWERING MACHINE, Kapali Eswaran, Owner of Record: *Inventor*, Attorney or Agent: None, Ex. Gp.: 2601, Requester: Code-A-Phone Corp., Clackamas, Oreg.

4,943,285, Reexam. No. 90/003,421, Apr. 28, 1994, Cl. 604/275, UNDULATING RECTAL SPECTRUM, Robert A. Hawkes, Owner of Record: *Specialty Health Products, Inc., Phoenix, Ariz.*, Attorney or Agent: C. Robert Von Hellens, Cahill, Sutton & Thomas, Phoenix, Ariz., Ex. Gp.: 3306, Requester: Jeanne Sant, Ojai, Calif.

5,073,433, Reexam. No. 90/003,326, Jan. 14, 1994, Cl. 428/134, THERMAL BARRIER COATING FOR SUBSTRATES AND PROCESS FOR PRODUCING IT, Thomas A. Taylor, Owner of Record: *Praxain, S.T. Technology, North Haven, Conn.*, Attorney or Agent: Cornelius F. O'Brien, Danbury, Conn., Ex. Gp.: 1508, Requester: Owner

5,092,780, Reexam. No. 90/003,425, May 4, 1994, Cl. 434/433, SYSTEM PERFORMANCE SIMULATOR, Martin Vlach, Owner of Record: *Analogy, Inc., Beaverton, Oreg.*,

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Attorney or Agent: James G. Stewart, Kolisch, Hartwell Dickinson Mc Cormack & Heuser, Portland, Oreg., Ex. Gp.: 3303, Requester: Mentor Graphics Corp.,Wilsonville, Oreg.

5,107,274, Reexam. No. 90/003,422, May 5, 1994, Cl. 343/756, COLLOCATED NON-INTERFERING DUAL FREQUENCY MICROWAVE FEED ASSEMBLY, Rodney A. Mitchell, et. al., Owner of Record: *Antenna Down Link, Las Vegas, Nev.*, Attorney or Agent: James R. Bruggemann, Pretty Schroeder Bruggemann & Clark, Los Angeles, Calif., Ex. Gp.: 2514, Requester: Chaparral Communications, Inc., San Jose, Calif.

5,193,706, Reexam. No. 90/003,372, Mar. 28, 1994, Cl. 220/324, TOOLBOX, Thomas E. Hanna, et. al., Owner of Record: *Rubbermaid, Inc., Wooster, Ohio,* Attorney or Agent: Renner Kenner Greive Bobak Taylor & Weber, Akron, Ohio, Ex. Gp.: 2401, Requester: Owner

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Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED SEPTEMBER 05, 1994
DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
94,361	71/057,606	12/02/1913
308,227	71/339,471	11/28/1933
308,261	71/340,281	11/28/1933
308,267	71/334,808	11/28/1933
308,269	71/336,565	11/28/1933
308,292	71/328,620	11/28/1933
308,313	71/340,179	11/28/1933
580,210	71/620,298	09/22/1953
583,029	71/542,012	12/01/1953
583,032	71/573,885	12/01/1953
583,039	71/607,172	12/01/1953
583,045	71/611,615	12/01/1953
583,055	71/619,206	12/01/1953
583,067	71/623,672	12/01/1953
583,074	71/627,145	12/01/1953
583,075	71/627,701	12/01/1953
583,084	71/628,833	12/01/1953
583,086	71/629,810	12/01/1953
583,092	71/631,365	12/01/1953
583,108	71/633,803	12/01/1953
583,110	71/634,146	12/01/1953
583,111	71/634,147	12/01/1953
583,115	71/635,006	12/01/1953
583,124	71/635,671	12/01/1953
583,129	71/636,308	12/01/1953
583,131	71/636,974	12/01/1953
583,136	71/637,768	12/01/1953
583,140	71/637,846	12/01/1953
583,143	71/638,005	12/01/1953
583,147	71/638,319	12/01/1953
583,151	71/639,031	12/01/1953
583,153	71/639,586	12/01/1953
583,161	71/640,527	12/01/1953
583,168	71/641,125	12/01/1953
583,169	71/641,201	12/01/1953
583,173	71/641,740	12/01/1953
583,178	71/642,371	12/01/1953
583,184	71/642,578	12/01/1953
583,187	71/642,771	12/01/1953
583,190	71/642,889	12/01/1953
583,194	71/643,205	12/01/1953
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583,213	71/645,534	12/01/1953
583,214	71/645,647	12/01/1953
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972,188	72/432,524	11/06/1973
973,670	72/419,669	11/27/1973
973,674	72/438,846	11/27/1973
973,675	72/438,874	11/27/1973
973,677	72/441,378	11/27/1973
973,678	72/442,515	11/27/1973
973,684	72/407,331	11/27/1973
973,693	72/415,054	11/27/1973
973,694	72/419,867	11/27/1973
973,695	72/435,114	11/27/1973
973,696	72/434,697	11/27/1973
973,703	72/433,533	11/27/1973
973,706	72/434,688	11/27/1973
973,708	72/440,368	11/27/1973
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973,722	72/421,721	11/27/1973
973,723	72/445,575	11/27/1973
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973,732	72/406,786	11/27/1973
973,735	72/413,627	11/27/1973
973,744	72/442,267	11/27/1973
973,749	72/403,252	11/27/1973
973,751	72/415,517	11/27/1973
973,752	72/415,518	11/27/1973
973,755	72/437,382	11/27/1973
973,760	72/438,776	11/27/1973
973,761	72/438,786	11/27/1973
973,762	72/438,844	11/27/1973
973,763	72/438,845	11/27/1973
973,770	72/438,141	11/27/1973
973,772	72/421,183	11/27/1973
973,774	72/425,547	11/27/1973
973,776	72/436,609	11/27/1973
973,777	72/438,918	11/27/1973
973,778	72/442,624	11/27/1973
973,784	72/437,991	11/27/1973
973,785	72/438,381	11/27/1973
973,786	72/438,382	11/27/1973
973,792	72/412,494	11/27/1973
973,804	72/441,328	11/27/1973
973,812	72/447,852	11/27/1973
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973,819	72/448,946	11/27/1973
973,824	72/449,706	11/27/1973
973,825	72/450,088	11/27/1973
973,826	72/450,503	11/27/1973
973,828	72/450,629	11/27/1973
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973,831	72/390,899	11/27/1973
973,834	72/410,024	11/27/1973
973,838	72/424,177	11/27/1973
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973,842	72/430,372	11/27/1973
973,844	72/431,431	11/27/1973
973,848	72/434,992	11/27/1973
973,851	72/389,517	11/27/1973
973,853	72/404,114	11/27/1973
973,854	72/405,756	11/27/1973
973,856	72/409,582	11/27/1973
973,857	72/410,292	11/27/1973
973,862	72/420,649	11/27/1973
973,867	72/453,921	11/27/1973
973,875	72/423,718	11/27/1973
973,881	72/434,665	11/27/1973
973,885	72/438,494	11/27/1973
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973,908	72/405,400	11/27/1973
973,910	72/296,495	11/27/1973
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973,914	72/417,928	11/27/1973
973,915	72/419,900	11/27/1973
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973,920	72/422,205	11/27/1973
973,922	72/423,647	11/27/1973
973,924	72/425,052	11/27/1973
973,930	72/434,600	11/27/1973
973,931	72/434,982	11/27/1973
973,932	72/434,823	11/27/1973
973,933	72/429,508	11/27/1973
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973,952	72/440,050	11/27/1973
973,957	72/435,884	11/27/1973
973,961	72/403,325	11/27/1973
973,963	72/430,232	11/27/1973
973,965	72/434,152	11/27/1973
973,969	72/413,380	11/27/1973
973,970	72/414,717	11/27/1973
973,971	72/416,341	11/27/1973
973,972	72/425,233	11/27/1973
973,974	72/429,667	11/27/1973
973,975	72/430,761	11/27/1973
973,976	72/431,001	11/27/1973
973,983	72/433,242	11/27/1973
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973,988	72/420,336	11/27/1973
973,990	72/437,484	11/27/1973
973,992	72/454,071	11/27/1973
973,993	72/454,086	11/27/1973
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974,002	72/431,288	11/27/1973
974,005	72/434,757	11/27/1973
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974,029	72/432,791	11/27/1973
974,030	72/434,397	11/27/1973
974,032	72/435,449	11/27/1973
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974,038	72/437,287	11/27/1973
974,041	72/438,676	11/27/1973
974,044	72/442,459	11/27/1973
974,047	72/451,627	11/27/1973
974,051	72/414,233	11/27/1973
974,053	72/432,845	11/27/1973
974,054	72/441,145	11/27/1973
974,056	72/438,318	11/27/1973
974,062	72/404,999	11/27/1973
974,066	72/424,592	11/27/1973
974,071	72/427,902	11/27/1973
974,072	72/431,543	11/27/1973
974,073	72/436,554	11/27/1973
974,075	72/380,357	11/27/1973
974,082	72/429,649	11/27/1973
974,083	72/430,651	11/27/1973
974,086	72/434,154	11/27/1973
974,087	72/435,840	11/27/1973
974,099	72/454,592	11/27/1973
974,103	72/414,491	11/27/1973
974,105	72/448,116	11/27/1973
974,106	72/419,635	11/27/1973
974,109	72/444,815	11/27/1973
974,110	72/446,929	11/27/1973
974,118	72/441,813	11/27/1973
974,121	72/334,353	11/27/1973
974,122	72/408,471	11/27/1973
974,126	72/440,545	11/27/1973
974,127	72/441,467	11/27/1973
974,128	72/444,468	11/27/1973
974,130	72/448,452	11/27/1973
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974,139	72/403,020	11/27/1973
974,144	72/416,604	11/27/1973
974,145	72/417,396	11/27/1973
974,147	72/419,126	11/27/1973
974,151	72/431,949	11/27/1973
974,153	72/434,169	11/27/1973
974,154	72/436,988	11/27/1973
974,155	72/441,703	11/27/1973
974,156	72/441,832	11/27/1973
974,158	72/446,902	11/27/1973
974,160	72/402,136	11/27/1973
974,163	72/408,929	11/27/1973
974,173	72/434,730	11/27/1973
974,178	72/440,854	11/27/1973
974,183	72/412,453	11/27/1973
974,185	72/430,903	11/27/1973
974,187	72/440,575	11/27/1973
974,188	72/441,726	11/27/1973
974,189	72/442,071	11/27/1973
974,193	72/415,912	11/27/1973
974,194	72/429,509	11/27/1973
974,196	72/441,641	11/27/1973
974,200	72/431,829	11/27/1973
974,201	72/434,867	11/27/1973
974,202	72/434,868	11/27/1973
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974,215	72/426,807	11/27/1973
974,216	72/427,677	11/27/1973
974,219	72/436,308	11/27/1973
974,220	72/436,481	11/27/1973
974,221	72/442,086	11/27/1973
974,223	72/403,737	11/27/1973
974,224	72/411,116	11/27/1973
974,228	72/437,666	11/27/1973
974,232	72/410,121	11/27/1973
974,233	72/410,122	11/27/1973
974,235	72/438,674	11/27/1973
974,236	72/413,801	11/27/1973
974,237	72/413,919	11/27/1973
974,238	72/408,460	11/27/1973
974,239	72/423,425	11/27/1973

Errata

"All reference to Patent No. 5,342,735 to Koji Nozaki of Japan for 'PHOTORESIST COMPOSITIONS CONTAINING A COPOLYMER OF AN ALIPHATIC POLYCYCLIC MONOMER HAVING ALPHA, BETA-UNSATURATED NITRILE WITH ANOTHER POLYERMIZABLE MONOMER' appearing in the *Official Gazette* of August 30, 1994 should be deleted since no patent was granted."

Notice of Change in Registration Examination Dates

In view of the rapidly growing number of individuals applying to take the registration examination, the increased investigation workload in the Office of Enrollment and Discipline, and the constraints on the U.S. Patent and Trademark Office for funding and staffing, the examination scheduled for May of 1995 will be the only examination given in calendar year 1995. At this time, it is anticipated that only one examina-

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tion will be given in subsequent calendar years 1996, 1997 and 1998 and that the examination in each of these calendar years is tentatively scheduled to be held on the third Wednesday of August.

For further information, contact the Office of Enrollment and Discipline by writing to the following address: U.S. Patent and Trademark Office, Box OED, Washington, D.C. 20231.

September 23, 1994 BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Department of Commerce
Patent and Trademark Office

37 CFR Part 1
[Docket No. 940965 - 4265]

RIN: 0651-AA67

Revision of Affidavits Under 37 CFR 1.131

Agency: Patent and Trademark Office, Commerce
Action: Notice of proposed rulemaking
Summary: The Patent and Trademark Office (Office) proposes to amend the rules of practice relating to submission of affidavits or declarations under 37 CFR 1.131 (a) to implement the relevant provisions of Public Law No. 103 - 182 and the GATT (General Agreement on Trade and Tariffs), and to provide relief in certain circumstances where a common assignee holds both an application and a patent claiming patentably indistinct, but not identical, inventions.
Date: Written comments must be submitted on or before December 1, 1994. No oral hearing will be held.
Addressees: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: Charles E. Van Horn, Deputy Assistant Commissioner for Patent Policy and Projects, or by fax to (703) 305-8825.
For Further Information Contact: Charles E. Van Horn by telephone at (703) 305-9054 or Hiram Bernstein by telephone at (703) 305-9282 or by mail marked to the attention of Charles E. Van Horn, Deputy Assistant Commissioner for Patent Policy and Projects, and addressed as above.
Supplementary Information: Public Law No. 103-182 (November 4, 1993) implementing the North American Free Trade Agreement (NAFTA), amended 35 U.S.C. 104 to provide that for the purpose of obtaining a patent, an applicant can show a date of invention in the United States, or in a NAFTA country which occurred after the date of implementation (i.e., December 8, 1993). Although GATT enabling legislation has not been passed, these proposed rule changes assume that it will be passed, and therefore changes to 37 CFR 1.131(a) similar to NAFTA would be required. See Article 27, paragraph 1, of the Agreement on Trade-related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods, of the GATT. In the event that the GATT enabling legislation is not enacted when the final rules are published, the proposed rule changes relative to the GATT will be withdrawn.

The Office proposes to amend 37 CFR 1.131(a), which is currently limited to facts showing a completion of the invention in the United States, to allow for a submission of facts in an affidavit or declaration that show completion of the invention in a NAFTA or a World Trade Organization (WTO) Member country. The WTO is established under the GATT agreement to resolve disputes between signatories to the agreement. The facts presented must demonstrate completion of the invention prior to the effective date of a reference thought to bar the grant of a patent or the patentability of a claim in a patent under reexamination.

Additionally, the Office recognizes that there is a potential conflict between existing 37 CFR 1.131(a) and 37 CFR 1.602(a). Section 1.131(a) prohibits affidavits or declarations thereunder when the same patentable invention as defined in 37 CFR 1.601(n) (i.e., patentably indistinct inventions) is claimed. An interference under 35 U.S.C. § 135, rather than antedating under § 1.131(a), is generally the available remedy. However, 37 CFR 1.602(a) provides that when the applications or the application and patent are owned by a single party, interferences are not declared or continued unless good cause is shown. This can result in a hardship where there is an issued patent that can no longer be amended as by filing a continuation-in-part application. Where there are two or more pending applications, the conflict can be avoided by filing a continuation-in-part application incorporating the conflicting inventions in a single application.

The Office proposes to amend 37 CFR 1.131 to broaden its application to a single party where inventions of a pending application and a patent held by the party are patentably indistinct but not identical. Under the proposed additions to § 1.131, an affidavit or declaration could be filed by a party to avoid a 35 U.S.C. § 103 rejection based on a 35 U.S.C. §§ 102(a) or (e) patent owned by that party, where the patent claimed an invention that was patentably indistinct, but not identical to an invention claimed in an application or patent undergoing reexamination.

The proposed addition to § 1.131 would not affect the use of the issued patent in a rejection based on double patenting. However, where patentably indistinct but not identical inventions are claimed, a double patenting rejection can be avoided by filing an appropriate terminal disclaimer. In addition, petitions under § 1.183 will be entertained for waiver of § 1.131 requirements in appropriate instances where two pending applications claiming patentably indistinct but not identical inventions are held by a single party.

Discussion of Specific Rules:

Section 1.131(a), if amended to (a)(1) as proposed, would allow a § 1.131 affiant or declarant to rely upon facts occurring in a NAFTA or a WTO Member country to show completion of the invention. The term "domestic" would be changed to "U.S." The section is proposed to be amended from a single sentence to three sentences.

Section 1.131(a)(2), if added as proposed, would limit the availability of acts showing completion of the invention in a NAFTA or WTO Member country to those acts occurring subsequent to the effective date of the agreements.

Section 1.131(a)(3), if added as proposed, would allow a showing of prior invention to be made in a pending application or a patent that is undergoing reexamination where a single party holds both the application or patent undergoing reexamination and another patent where the claimed inventions were, at the time the later invention was made, both owned by the single party or subject to an obligation of assignment to that party. Further, in order to rely on proposed § 1.131(a)(3), the inventions claimed in the application or in the patent undergoing reexamination and in the other patent must not be identical as set forth in 35 U.S.C. § 102.

Other Considerations:

The proposed rule changes are in conformity with the requirements of the Regulatory Flexibility Act, 5 U.S.C. 601 et seq., Executive Order 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. The Office of Management and Budget has determined that the proposed rule changes are not significant for the purposes of E.O. 12866.

The Assistant General Counsel for Legislation and Regulation of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the proposed rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)), because the proposed rules would affect only a small number of applications and would provide a streamlined and simplified procedure, eliminating the need for requesting waiver of the rules.

The Patent and Trademark Office has also determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

These rule changes will not impose any additional burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Lawyers, Reporting and record keeping requirements.

For the reasons set forth in the preamble, and pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. § 6, the Office proposes to amend Title 37 of the Code of Federal Regulations as set forth below, with deletions indicated by brackets ([ ]) and additions indicated by arrows (cb).

Part 1 - Rules of Practice in Patent Cases

1. The authority citation for 37 C.F.R., Part 1, would continue to read as follows:

Authority: 35 U.S.C. § 6, unless otherwise noted.

2. Section 1.131 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.131 Affidavit or declaration of prior invention to overcome cited patent or publication.

(a) c(1)b When any claim of an application or a patent under reexamination is rejected on reference to a [domestic] cU.S.b patent which substantially shows or describes but does not claim the same patentable invention, as defined in § 1.601(n), as the rejected invention, or on reference to a foreign patent or to a printed publication, [and] the inventor of the subject matter of the rejected claim, the owner of the patent under reexamination, or the person qualified under §§ 1.42, 1.43 or 1.47, [shall make] cmay overcome the patent or publication by filing an appropriateb oath or declaration c.b [as to] cThe oath or declaration must includeb facts showing a completion of the invention in this country cor in a NAFTA or WTO Member countryb before the filing date of the application on which the [domestic] cU.S.b patent issued, or before the date of the foreign patent, or before the date of the printed publication [, then][.] cWhen an appropriate oath or declaration is made,b the patent or publication cited shall not bar the grant of a patent to the inventor or the confirmation of the patentability of the claims of the patent, unless the date of such patent or printed publication is more than one year prior to the date on which the inventor's or patent owner's application was filed in this country.

c(a)(2) A date of completion of the invention may not be established under this section before December 8, 1993, in a NAFTA country, or before _____ in a WTO Member country other than a NAFTA country.

(a)(3) Notwithstanding the provisions of paragraph (a)(1), a showing may be made under this section where the inventions defined by a claim in an application or a patent under reexamination and by a claim in another U.S. patent are not identical as set forth in 35 U.S.C. 102, and where the inventions were, at the time the later invention was made, owned by the same person or subject to an obligation of assignment to the same person.b

* * * * *

September 26, 1994 BRADFORD R. HUTHER
Acting Assistant Secretary of Commerce and Acting Commissioner of Patents and Trademarks

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Patent and Trademark Office
Performance Review Board Membership

Agency: Patent and Trademark Office, Commerce
Action: Announcement of Membership of the Patent and Trademark Office Performance Review Board
Summary: In conformance with the Civil Service Reform Act of 1978, 5 U.S.C. 4314 (c) (4), the Patent and Trademark Office is modifying the composition of its Performance Review Board to achieve the maximum possible degree of fairness and equity in the process of appraising, rating and rewarding the performance of senior executives and employees in the Senior-Level and Administratively-Determined pay categories.

This notice (1) announces the appointments of three new members of the Performance Review Board; and (2) establishes rotational term limits for each member to assure consistency, stability and objectivity in the performance appraisal process.
Address: Comments should be addressed to Director, Office of Human Resources, Patent and Trademark Office, One Crystal Park, Suite 700, Washington, D.C. 20231.
For Further Information Contact: Colleen Woodard at the above address or telephone (703) 305-8062.
Supplementary Information: The Patent and Trademark Office Performance Review Board is comprised of the following individuals:

Bradford R. Huther, Chairperson
Associate Commissioner
and Chief Financial Officer
Patent and Trademark Office
Washington, D.C. 20231
Term - expires September 30, 1996

Theodore Morris (New Member)
Director, Patent Examining Group 1500
Patent and Trademark Office
Washington, D.C. 20231
Term - expires September 30, 1996

Carol C. Darr
Associate Administrator,
Office of International Affairs
National Telecommunications
and Information Administration
Department of Commerce
Washington, D.C. 20230
Term - expires September 30, 1995

Nicholas P. Godici (New Member)
Director, Patent Examining Group 3200
Patent and Trademark Office
Washington, D.C. 20231
Term - expires September 30, 1996

Paula J. Schneider (New Member)
Principal Associate Director for Programs
Office of the Director
Bureau of the Census
Washington, D.C. 20233
Term - expires September 30, 1996

J. O. Thomas
Deputy Assistant Commissioner
for Patent Process Services
Patent and Trademark Office
Washington, D.C. 20231
Term - expires September 30, 1995

Karl E. Bell
Deputy Director of Administration
National Institute of Standards
and Technology
Gaithersburg, Md. 20899
Term - expires September 30, 1995

Belkis Leong-Hong
Director, Center for Information Management
Defense Information Systems Agency
Falls Church, Va. 22041
Term - expires September 30, 1996

Gerald R. Lucas
Director, Eastern Administrative
Support Center
Department of Commerce

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Norfolk, Va. 23510
Term - expires September 30, 1996

BRADFORD R. HUTHER
Acting Assistant Secretary of Commerce and
Acting Commissioner of Patents and Trademarks

Department of Commerce
Patent and Trademark Office
37 CFR Part 1
[Docket No. 940968-4268]
RIN: 0651-AA71

Patent Appeal and Interference Practice

Agency: Patent and Trademark Office, Commerce.
Action: Notice of Proposed Rulemaking
Summary: The Patent and Trademark Office proposes to amend the rules of practice in patent cases, Part 1 of Title 37, Code of Federal Regulations, relating to patent appeal and interference proceedings. The proposed changes include amendments to conform the interference rules to 35 U.S.C. 104 as amended by Public Law 103-182, 107, 2057 (1993) (North American Free Trade Agreement Implementation Act Stat. and a number of clarifying and housekeeping amendments.
Dates: Written comments must be submitted no later than November 30, 1994. A public hearing will be held on December 7, 1994. Requests to present oral testimony must be received no later than December 2, 1994.
Addresses: Address written comments to Board of Patent Appeals and Interferences, P.O. Box 15647, Arlington, Virginia 22215, marked to the attention of Fred E. McKelvey. Written comments will be available for public inspection in the interference copy room, which is located on the 10th floor of Crystal Gateway 2, 1225 Jefferson Davis Highway, Arlington, Virginia.
For Further Information Contact: Fred E. McKelvey by telephone at (703) 603-3320 or by mail marked to the attention of Fred E. McKelvey at P.O. Box 15647, Arlington, Virginia 22215.
Supplementary Information:

I. Amendments responsive to adoption of Public Law 103-182.

Several of the proposed amendments to the interference rules (i.e., 37 CFR §§ 1.601 *et seq.*) are responsive to Public Law 103-182, 107 Stat. 2057 (1993) (North American Free Trade Agreement Implementation Act), which amended 35 U.S.C. 104 to permit reliance on activities occurring in a "NAFTA country" to prove a date of invention. Paragraph (b) of § 104 as amended states that "the term 'NAFTA country' has the meaning given that term in section 2(4) of the North American Free Trade Agreement Implementation Act." That section of Public Law 103-182 has been codified at 19 U.S.C. 3301(4), which reads:

> (4) NAFTA country Except as provided in section 3332 of this title, the term "NAFTA country" means—
>
> (A) Canada for such time as the [North American Free Trade] Agreement is in force with respect to, and the United States applies the Agreement to, Canada; and
>
> (B) Mexico for such time as the Agreement is in force with respect to, and the United States applies the Agreement to, Mexico.

Accordingly, it is proposed to amend 37 CFR § 1.601 by adding a new paragraph (r) defining the terms "NAFTA country" and "non-NAFTA country" and to amend the following interference rules, which set forth the requirements for preliminary statements, so as to permit reliance on activities occurring in a NAFTA country: §§ 1.622(b), 1.623(a) , 1.624(a) and 1.628(b)(2).

37 CFR 1.684, which relates to the taking of testimony in a foreign country, is proposed to be deleted and reserved in view of proposed amendments to §§ 1.671 and 1.672. Section 1.671 is proposed to be amended by redesignating paragraph (h) as paragraph (i) and adding new paragraphs (h) and (j). New paragraph (h) would set forth the requirements for a motion under § 1.635 to compel testimony or the production of documents or things in a foreign country. New paragraph (j) would provide that the weight to be given testimony taken in a foreign country will be determined on a case-by-case basis. Little, if any, weight would be given to testimony taken in a foreign country unless the party taking the testimony proves by clear and convincing evidence (1) that giving false testimony in an interference proceeding is punishable as perjury under the laws of the foreign country where the testimony is taken and (2) that the punishment in a foreign country for giving such false testimony is similar to the punishment for perjury committed in the United States. The proposed amendments to § 1.672 include amending paragraphs (a) and (b), redesignating current paragraphs (c) through (f) as paragraphs (e) through (h) and adding new provisions identified as paragraphs (c) and (d). Paragraph (a) as proposed to be amended would limit a party's case-in-chief testimony to affidavits, except where testimony is to be compelled under 35 U.S.C. 24 or compelled from a party or in a foreign country. New paragraph (c) would provide that where an opponent objects to the admissibility of any evidence contained in or submitted with an affidavit, the opponent must file and serve objections stating with particularity the nature of the objection, to which the party may respond by filing supplemental affidavits and supplemental official records and printed publications. New paragraph (c) further would provide that any objections to the admissibility of any evidence contained in or submitted with a supplemental affidavit shall be by a motion to suppress under § 1.656(h). New paragraph (d) of § 1.672 would require any cross-examination of affiants to be by deposition within the United States, which is defined in current § 1.601(p) as the United States of America, its territories and possessions. New paragraph (d) of § 1.672 would require that the party whose witness is to be cross-examined notice the deposition under § 1.673(e), obtain a court reporter and provide a translator if the witness will not testify in English. Although not set forth in the proposed rules, any party attending the deposition can bring its own translator or the parties can agree to share the cost of single mutually agreeable translator. Paragraphs (g) and (h) of § 1.671 as proposed to be amended would provide that a party seeking to compel testimony or production of documents or things pursuant to 35 U.S.C. 24 or to compel testimony or production from a party or in a foreign country would have to first file a § 1.635 motion to obtain permission from an administrative patent judge. A motion to compel testimony or the production of documents or things in a foreign country would have to show that the witness has been asked to testify in the United States and has refused to do so or that the individual or entity having possession, custody, and control of the document or thing has refused to produce the document or thing in the United States, even though the moving party has offered to pay the expenses involved in bringing the witness or the document or thing to the United States. When permission has been obtained from the administrative patent judge, the party, after also complying with the current requirements for an oral conference (§ 1.673(g)) and service of documents and a proffer of access to things (§ 1.673(b)), would be required to notice the deposition under § 1.673(a).

Section 1.616 is proposed to be amended by adding a paragraph (c) stating that to the extent that any information under the control of an individual or entity located in a NAFTA country concerning knowledge, use, or other activity relevant to proving or disproving a date of invention has been ordered to be produced by an administrative patent judge or the Board (§ 1.671(h)), but is not produced for use in the interference to the same extent as such information could be made available in the United States, the administrative patent judge or the Board shall draw such adverse inferences as may be appropriate under the circumstances, or take such other action permitted by statute, rule, or regulation, in favor of the party that requested the information in the interference, including imposition of appropriate sanctions under § 1.616(a).

Section 1.647, which currently requires a party who relies on a non-English language document to provide an English-language translation and an affidavit attesting to its accuracy, is proposed to be amended to extend these requirements to non-English language documents that a party is required to produce via discovery (see § 1.671(h)).

II. Attorney fees and expenses.

Section 1.616 is proposed to be amended by redesignating current paragraphs (a) through (e) as paragraphs (a)(1) through (a)(4) and (a)(6) and adding a new paragraphs (a)(5) and (b). New paragraph (a)(5) would authorize the award of compensatory (as opposed to punitive) expenses and/or attorney fees as a sanction for failing to comply with the rules or an order, since there are occasions when such a sanction would be more commensurate in scope with the infraction than the sanctions that are currently authorized. New paragraph (b) would authorize the imposition of a sanction, including a sanction in the form of compensatory expenses and/or attorney fees, against a party for taking or maintaining a frivolous position.

III. Certificates of prior consultation.

Paragraph (b) of § 1.637 currently requires that a miscellaneous motion under § 1.635 contain a certificate stating that the moving party has conferred with all opponents in a good faith effort to resolve by agreement the issues raised by the motion and indicating whether any other party plans to oppose the motion. It is proposed to amend paragraph (b) to extend the requirement for such a certificate to motions filed under §§ 1.633 and 1.634 and also to require the certificate to indicate that the reasons and facts in support of the motion were discussed with each opponent and, if an opponent has indicated that it will oppose the motion, to identify the issues and/or facts believed to be in dispute. The proposed requirement for consultation should result in a reduction in the number of issues raised by motions under § 1.633 and 1.634 as well as a reduction in the number of motions filed under those rules.

IV. Service of a "developing record."

In addition to the amendments to § 1.672 discussed above under the heading "Amendments responsive to adoption of Public Law 103-182," it is proposed to amend §§ 1.672, 1.682, 1.683 and 1.688 to require each party to serve on each opponent a "developing record" that will evolve into the record required to be filed under § 1.653. Specifically, in § 1.672, it is proposed to amend paragraph (b) to provide that a party presenting testimony of a witness by affidavit shall, no later than the time set by the administrative patent judge for serving affidavits, file (which includes serve) the affidavit, whether it is a new affidavit or an affidavit that was previously filed by that party during *ex parte* prosecution of an application or under § 1.608 or 1.639(b).

Sections 1.682, 1.683 and 1.688 are proposed to be amended to parallel the proposed amendments to § 1.672. Specifically, paragraph (a) of § 1.682 as proposed to be amended would provide that a party may introduce into evidence, if otherwise admissible, an official record or printed publication not identified in an affidavit or on the record during an oral deposition of a witness, by filing (which includes serving) a copy of the official record or publication no later than the time set for filing affidavits under § 1.672(b), thereby dispensing with the current requirement to file a notice of intent to rely on the official record or printed publication. In § 1.683, paragraph (a) as proposed to be amended would provide that a party may introduce into evidence, if otherwise admissible, testimony by affidavit or oral deposition from another interference, proceeding, or action involving the same parties by filing (which includes serving) a copy of the affidavit or a copy of the deposition transcript no later than the time set for filing affidavits under § 1.672(b), thereby dispensing with the current requirement for a party to file a motion under § 1.635 for leave to rely on such testimony. Section 1.688 as proposed to be amended would provide that, if otherwise admissible, a party may introduce into evidence an answer to a written request for an admission or an answer to a written interrogatory obtained by discovery under § 1.687 by filing a copy of the request for admission or the written interrogatory and the answer no later than the time set for filing affidavits under § 1.672(b). Thus, all evidence filed under §§ 1.672, 1.682, 1.683 and 1.688 that relates to a party's case-in-chief should be filed together no later than the date set by an administrative patent judge for the party to serve affidavits under § 1.672(b) for its case-in-chief and all evidence under those sections that relates to the party's rebuttal should be filed no later than the date set for the party to serve affidavits under § 1.672(b) for its case-in-rebuttal.

The pages of all affidavits and deposition transcripts would be required to have sequential numbers that would also serve as the record page numbers for the affidavits and transcripts in the party's record when it is filed under § 1.653. Likewise, the exhibits identified in the affidavits and deposition transcripts and any official records and printed publications served under § 1.682(a) would be required to have sequential numbers which would serve as the exhibit numbers when the exhibits are filed with the party's record. Affidavits and § 1.683(a) testimony would have to be accompanied by an index giving the name of each witness and the number of the page where the testimony of each witness begins. The exhibits would have to be accompanied by an index briefly describing the nature of each exhibit and giving the number of the page of affidavit or § 1.683(a) testimony where each exhibit identified in an affidavit or during an oral deposition is first identified and offered into evidence.

An opponent who objects to the admissibility of any evidence filed under §§ 1.672(b), 1.682(b), 1.683(a) and 1.688(a) would have to file objections under §§ 1.672(c), 1.682(c), 1.683(b) and 1.688(b) no later than the date set by the administrative patent judge for filing objections to affidavits under paragraph § 1.672(c). An opponent who fails to challenge the admissibility of the evidence on a ground that could have been raised in a timely objection under §§ 1.672(c), 1.682(c), 1.683(b) or 1.688(b) would not be permitted to move under § 1.656(h) to suppress the evidence on that ground. If an opponent timely files an objection to evidence filed under §§ 1.672(b), 1.682(b), 1.683(a) or 1.688(a), the party may respond by filing supplemental affidavits and, in the case of objections to evidence filed under §§ 1.672(b), 1.682(b) and 1.683(a), may also file supplemental official records and printed publications. No objection to the admissibility of supplemental evidence shall be made, except as provided by § 1.656(h). The page numbers of the supplemental affidavits would be sequentially numbered beginning with the number following the last page number of the testimony served under §§ 1.672(b), 1.683(a) and 1.688(a). Likewise, any additional exhibits identified in the supplemental affidavits and any supplemental official records and printed publications would be given sequential numbers beginning with the number following the last number of the previously identified exhibits. After the time expires for filing objections and supplemental affidavits, or earlier when appropriate, the administrative patent judge would set a time within which any opponent may file a request to cross-examine an affiant on oral deposition.

If any opponent requests cross-examination of an affiant, the party shall notice a deposition at a reasonable location within the United States under § 1.673(e) for the purpose of cross-examination. Any redirect and recross shall take place at the deposition. Within 45 days of the close of the period for taking cross-examination (§ 1.678 is proposed to be amended to change the time for filing certified transcripts from 45 days to 30 days), the party would serve (but not file) a copy of each deposition transcript on each opponent together with copies of any additional documentary exhibits identified by a witness during a deposition. The pages of the transcripts served under this paragraph and the accompanying exhibits would be sequentially numbered in the manner discussed above. The deposition transcripts would be accompanied by an index of the names of the witnesses, giving the number of the page where cross-examination, redirect and recross of each witness begins, and an index of exhibits of the type specified in § 1.672(b). At this point in time, the opponent will have been served with all of the testimony that will appear in the party's record (with the same page numbers) as well as all of the documentary exhibits that will accompany the record (with the same exhibit numbers).

Since the proposed amendments to § 1.672 would require a party, during its testimony period, to file all affidavits on which it intends to rely at final hearing, it is proposed to delete as unnecessary paragraph (e) of § 1.671, which requires a party to give notice of intent to rely on an affidavit filed by that party during *ex parte* prosecution of an application or an affidavit under § 1.608 or 1.639(b).

V. Withdrawal of previous notices.

Some of the clarifying and housekeeping amendments proposed in part VI below originally appeared in the same or similar form in two previous notices of proposed rulemaking, which are hereby withdrawn:

(a) RIN:0651-AA53 — "Patent Interference Practice - Notice of Proposed Rulemaking," 57 Fed Reg 2698 (Jan. 23, 1992), *reprinted in* 1135 Off. Gaz. Pat. Office 37 (Feb. 11, 1992); and

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(b) RIN:0651-AA66 — "Patent Interference Practice - Separate Patentability of Claims," 58 Fed. Reg. 39704 (July 26, 1993), reprinted in 1153 Off. Gaz. Pat. Office 59 (Aug. 17, 1993).

VI. Miscellaneous amendments.

Throughout the rules, the term "examiner-in-chief" has been replaced by "administrative patent judge" to reflect the change in the title of the members of the Board. See Commissioner's Notice of October 13, 1993, *published as* "New Title for Examiners-in-Chief," 1156 Off. Gaz. Pat. Office 332 (Nov. 9, 1993).

In § 1.11, it is proposed to amend paragraph (e) to allow access to the file of an interference involving a reissue application once the interference has terminated or an award of priority or judgment has been entered as to all counts. Although it was intended that the public have access to any interference that involves a case which is open to the public and § 1.11(b) provides that a reissue application is open to the public, interferences involving reissue applications were inadvertently not included in current § 1.11(e).

In § 1.192, which specifies the contents of the brief of an appellant for final hearing in an *ex parte* appeal, it is proposed to amend paragraph (a) in three respects. The first proposal is to simplify the language used to refer to a brief filed by an applicant who is not represented by a registered practitioner. The second is to delete the requirement that such a brief be in substantial compliance with the requirements of paragraphs (c)(1), (2), (6) and (7), because experience has shown that it is better to evaluate such briefs on a case-by-case basis. The third is to codify the "good cause" standard that is currently used to determine whether the Board will consider any arguments or authorities not included in the brief. It is proposed to make clarifying amendments to paragraphs (c), (c)(5) and (c)(5) (ii), to redesignate current paragraphs (c)(1) through (c)(7) as paragraphs (c)(3) through (c)(9), and to add new paragraphs (c)(1) and (c)(2) that would require an appellant who has filed an appeal to the Board to identify the real party in interest and any related appeals and interferences. The proposed requirement to identify the real party in interest is derived from Federal Circuit Rule 47.4 and Federal Circuit Form 7. For some time, it has been necessary to know the identity of the real party in interest. This information would permit members of the Board to comply with ethics regulations associated with working on matters in which the member has an interest. The proposed requirement to identify related appeals and interferences is derived in part from Federal Circuit Rule 47.5 and, if adopted, would prevent the Board from entering inconsistent decisions in related cases.

Section 1.601 is proposed to be amended in several ways. Paragraph (f) as proposed to be amended would specify that a count should be sufficiently broad as to encompass the broadest corresponding patentable claim of each of the parties without being so broad as to be unpatentable over the prior art and also to indicate that a phantom count is unpatentable to all parties under the written description requirement of the first paragraph of 35 U.S.C. 112. Paragraph (g) as proposed to be amended would broaden the definition of "effective filing date" to mean the actual filing date when the involved application or patent is not entitled to the benefit of the filing date of an earlier application. Specifically, paragraph (g) would provide that the effective filing date of an application is the filing date of an earlier application accorded to the application under 35 U.S.C. 119, 120, 121 or 365, or, if no benefit is accorded, the filing date of the application. The effective filing date of a patent would be defined as the filing date of an earlier application accorded to the patent under 35 U.S.C. 120, 121, or 365(c) or, if no benefit is accorded, the filing date of the application which matured into the patent. The reference to 35 U.S.C. 121 is included to eliminate any doubt that a divisional application may be entitled to an earlier filing date in accordance with 35 U.S.C. 121.

Paragraph (j) is proposed to be amended by changing "which" to "that." Paragraph (l) is proposed to be amended by changing "assignee" to "assignee of record in the Patent and Trademark Office." Paragraph (q) is proposed to be amended by deleting "a panel of" as superfluous.

Section 1.602 is proposed to be clarified by changing "within 20 days of" to "within 20 days after."

Sections 1.603 and 1.606 are proposed to be amended by deleting the third sentence ("Each count shall define a separate patentable invention.") as redundant in view of the identical sentence in § 1.601(f). In addition, it is proposed to clarify §§ 1.603 and 1.606 by amending them to require each application to contain, or be amended to contain, at least one patentable claim which corresponds to each count.

In section 1.604, it is proposed to amend paragraph (a)(1) by changing "his or her" to "its."

In § 1.605, it is proposed to amend paragraph (a) for clarification.

Section 1.606 is also proposed to be amended to note that the claim in the application need not be, and most often will not be, identical to a claim in the patent.

In § 1.607, it is proposed to amend paragraph (a)(4) by changing "his or her" to "its" and to add a new paragraph (a)(6) requiring an applicant seeking an interference with a patent to demonstrate compliance with 35 U.S.C. 135(b), which provides:

> A claim which is the same as, or for the same or substantially the same subject matter as, a claim of an issued patent may not be made in any application unless such a claim is made prior to one year from the date on which the patent was granted.

Requiring an applicant to show compliance with § 135(b) before an interference is declared will prevent an interference from being declared where the applicant cannot satisfy § 135(b) with respect to any claim alleged to correspond to the proposed count.

In § 1.608, it is proposed to amend paragraphs (a) and (b) in several respects. First, both paragraphs are proposed to be amended to delete the information about effective filing dates, which would appear instead in § 1.601(g) as proposed to be amended. Second, it is proposed to relax the current requirement of paragraph (a) for an affidavit filed by the applicant. Paragraph (a) as proposed to be amended would permit a statement to be filed by the applicant or a practitioner of record. Third, it is proposed to change "sufficient cause" in paragraph (b) and in other interference rules to "good cause" in order to make it clear that only one "cause" standard is intended. Fourth, it is proposed to change "8 1/2 x 11 inches (21.8 by 27.9 cm.)" to "21.8 by 27.9 cm. (8 1/2 x 11 inches)."

In § 1.609, it is proposed to amend paragraphs (b)(2) and (b)(3) to require the examiner's statement (i.e., the form PTO-850, also known as the initial interference memorandum) to explain why each claim designated as corresponding to a count is directed to the same patentable invention as the count and why each claim designated as not corresponding to a count is not directed to the same patentable invention as the count. The proposed amendment, if adopted, would provide the Board and the parties with the benefit of the examiner's reasoning and would provide a better foundation for considering preliminary motions to designate claims as corresponding or as not corresponding to a count.

In § 1.610, it is proposed to amend paragraph (a) by deleting the language "a panel consisting of at least three members of" as superfluous and by deleting the reference to § 1.640(e), which is proposed to be amended to allow a request for reconsideration under § 1.640(c) to be decided by an individual administrative patent judge rather than by the Board. It is further proposed to amend paragraph (b) by deleting "Unless otherwise provided in this section," as unnecessary in light of the proposed amendment to paragraph (a).

Section 1.611 is proposed to be amended by redesignating paragraph (a)(8) as paragraph (a)(9) and adding a new paragraph (a)(8) requiring that a notice of declaration of interference indicate why each claim designated as corresponding to a count is directed to the same patentable invention as the count and why each claim designated as not corresponding to a count is not directed to the same patentable invention as the count. This information should assist the parties in deciding whether to move to have claims designated as corresponding or not corresponding to the count. An administrative patent judge can satisfy this requirement by enclosing a copy of the examiner's statement with the parties' copies of the declaration notice. It is also proposed to capitalize the first word in each of paragraphs (d)(2) and (d)(3).

In § 1.612, it is proposed to amend paragraph (a) to change "opposing party's" to "opponent's" and to add a sentence referring to § 1.11(e) concerning public access to interference files.

In § 1.614, it is proposed to clarify the meaning of paragraph (a) by changing "the Board shall assume jurisdiction" to "the Board acquires jurisdiction."

In § 1.616, in addition to authorizing an award of compensatory attorney fees and expenses in appropriate circumstances, as discussed above, it is proposed to amend current paragraph (b) (which is proposed to be redesignated as paragraph (a)(2)) to permit a party to be sanctioned for failing to comply with the rules or an order by entering an order precluding the party from filing any type of paper. Paragraph (b) currently permits entry of an order precluding the filing of a motion or a preliminary statement.

Section 1.617 is proposed to be amended to authorize a party against whom a § 1.617(a) order to show cause has been issued to respond with an appropriate preliminary motion under § 1.633(c), (f) or (g). A preliminary motion under § 1.633(c) to redefine the interference, under § 1.633(f) for benefit of the filing date of an earlier application or under § 1.633(g) attacking the benefit accorded a patentee may be appropriate where the count set forth in the notice declaring the interference is not the same as the count proposed in the applicant's showing under § 1.608(b). A preliminary motion under § 1.633(f) or (g) may also be appropriate where the count set forth in the notice declaring the interference is the same as the count proposed in the applicant's showing under § 1.608(b), but the notice either fails to accord the applicant the benefit of the filing date of an earlier application whose benefit was requested in the § 1.608(b) showing or accords the patentee the benefit of the filing date of an earlier application whose benefit the § 1.608(b) showing argued should not be accorded the patentee.

In § 1.618, it is proposed to amend paragraph (a) for clarification and to state that a paper that has been returned as unauthorized will not thereafter be considered in the interference. Paragraph (a) currently states that a paper that has been returned as unauthorized will not thereafter be considered by the Patent and Trademark Office.

In § 1.625, it is proposed to simplify paragraph (a) by deleting "the invention was made in the United States or abroad and" as surplusage. Section 1.626 is proposed to be simplified by changing "earlier application filed in the United States or abroad" to "earlier filed application." The same change is proposed for §§ 1.630, 1.633(f), 1.633(g) , 1.637(c)(1)(vi) , 1.637(e)(1)(viii) , 1.637(e)(2)(vii) and 1.637(h)(4).

In § 1.628, it is proposed to amend paragraph (a) by changing "ends of justice" to "interest of justice" to be consistent with the language used in §§ 1.628(a) and 1.687(c), since a single standard is intended. Paragraph (a) of § 1.628 is also proposed to be amended to apply the "interest of justice" requirement only to corrected preliminary statements that are filed on or after the due date for serving preliminary statements. Where the moving party has not yet seen the opponent's statement, an opponent will not normally be prejudiced by the filing of a corrected statement.

In § 1.629, it is proposed to amend paragraphs (a), (c)(1) and (d) to make them consistent with the proposed amendment of the definition of "effective filing date" in § 1.601(g).

In § 1.631, it is proposed to amend paragraph (a) to delete "by the examiner-in-chief" (second occurrence) as superfluous.

Section 1.632 is proposed to be amended to more precisely state that a notice of intent to argue abandonment, suppression or concealment must be filed "within ten days after," rather than "within ten days of," the close of the testimony-in-chief of the opponent.

In § 1.633, it is proposed to amend paragraph (a) to specify that a claim shall be construed in light of the specification of the application or patent in which it appears. This amendment would administratively set aside the judicially created rule of *In re Spina*, 975 F.2d 854, 856, 24 USPQ2d 1142, 1144 (Fed. Cir. 1992), to the extent it held that the interference rules require that an ambiguous claim copied from a patent for interference purposes be construed in light of the disclosure of the patent. A claim that has been added to a pending application for any purpose, including to provoke an interference, would be given the broadest reasonable interpretation consistent with the disclosure of the application to which it is added, as are claims which are added during *ex parte* prosecution. As explained *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989),

> [d]uring patent examination the pending claims must be interpreted as broadly as their terms reasonably allow. When the applicant states the meaning that the claim terms are intended to have, the claims are examined with that meaning, in order to achieve a complete exploration of the applicant's invention and its relation to the prior art. *See In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969) (before the application is granted, there is no reason to read into the claim the limitations of the specification). The reason is simply that during patent prosecution when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed. *Burlington Industries, Inc. v. Quigg*, 822 F.2d 1581, 1583, 3 USPQ2d 1436, 1438 (Fed. Cir. 1987); *In re Yamamoto*, 740 F.2d 1569, 1571, 222 USPQ 934, 936 (Fed. Cir. 1984).

If a party believes an opponent's claim corresponding to the count is ambiguous when construed in light of the opponent's disclosure, the party should move under § 1.633(a) for judgment against the claim on the ground of unpatentability under the second paragraph of 35 U.S.C. 112. In paragraph (a), it is also proposed to delete "by reference to the prior art of record" as unnecessary.

Paragraphs (a)(1) and (a)(2) of § 1.633 are proposed to be amended by deleting some unnecessary language from each paragraph and by changing "derivation" to "Derivation" in paragraph (a)(2). Paragraph (b), which concerns motions for judgment on the ground of no interference-in-fact, is proposed to be amended by stating that it is possible for claims of opponents presented in "means plus function" format to define separate patentable inventions even though the claims of the opponents contain the same literal wording. The reason is that the sixth paragraph of 35 U.S.C. 112, which is applicable to "means plus function" limitations in application claims and patent claims, provides that such limitations are to be construed as covering the corresponding structure disclosed in the associated application or patent and equivalents thereof. *In re Donaldson Co.*, 16 F.3d 1189, 29 USPQ2d 1845 (Fed. Cir. 1994).

Paragraph (i) of § 1.633 in its current form authorizes a party who opposes a preliminary motion under § 1.633(a), (b) or (g) to file a preliminary motion under § 1.633(c) or (d). It is proposed to amend paragraph (i) to additionally authorize a party-patentee to file a preliminary motion under § 1.633(h) to add to the interference an application for reissue of the party's involved patent. Because a reissue application can include an amended or new claim to be designated as corresponding to a count, the proposed amendment would give a patentee an option similar to that afforded in the same situation to a party-applicant, who can file a preliminary motion under § 1.633(c)(2) to amend a claim in, or add a claim to, its involved application to be designated as corresponding to a count.

In § 1.637, it is proposed to amend paragraph (a) to incorporate the substance of the Notice of the Chairman of the Board of Patent Appeals and Interferences of August 10, 1990, *published as* "Interferences - Preliminary Motions for Judgment," 1118 Off. Gaz . Pat. Office 19 (Sept. 11, 1990). Paragraph (a) as proposed to be amended would state that where a party files a preliminary motion for judgment against an opponent under § 1.633(a) based on unpatentability over prior art having a date that appears to make the prior art equally applicable to the moving party, it will be presumed, without regard to the dates alleged in the preliminary statement of the party, that the cited prior art is also applicable to the party unless there is included with the motion an explanation, and evidence if appropriate, as to why the prior art does not apply to the party. The proposed amendment differs from the notice by providing that if the motion fails to include a sufficient explanation or evidence, the party will not be permitted to rely on any such explanation or evidence in response to or in any subsequent action in the interference. The notice had directed the administrative patent judge to request a satisfactory explanation from the party, a procedure which results in delaying a decision on the preliminary motion. Paragraph (a) is further proposed to be clarified by changing "Every" in the second sentence to "Each."

Paragraph (c)(1) of § 1.637 sets forth the requirements for a preliminary motion to add or substitute a proposed count. It is proposed to amend paragraph (c)(1)(v) in two respects. The first is to require a moving party to show that the proposed count is patentable over the prior art. The second is to specify that a proposed substitute count need only be shown to be

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patentably distinct from the other counts proposed to remain in the interference, since a proposed substitute count need not be patentably distinct from the count it is to replace. Paragraph (c)(1)(vi) is proposed to be amended to clarify that a preliminary motion under § 1.633(c)(1) need not be accompanied by a preliminary motion for benefit under § 1.633(f) unless the moving party seeks benefit with respect to the proposed count. It is also proposed to add a new paragraph (c)(1)(vii) specifying that where an opponent is accorded the benefit of the filing date of an earlier filed application in the notice of declaration of the interference, the moving party must show why the opponent is not also entitled to benefit of the filing date of the earlier filed application with respect to the proposed count. Otherwise, the opponent will be presumed to be entitled to the benefit of the earlier filed application with respect to the proposed count. The amendment would eliminate the need for an opponent to respond to a § 1.633(c)(1) motion with a preliminary motion under § 1.633(f) claiming benefit, which has the effect of delaying a decision on the § 1.633(c)(1) motion.

Paragraphs (c)(2)(ii) and (iii) of § 1.637 are proposed to be amended for clarification. Paragraphs (c)(2)(iv) and 1.637(c)(3)(iii), which relate to § 1.633(f) motions for benefit, are proposed to be deleted and reserved as unnecessary, since motions under § 1.633(c)(2) and (3) do not affect the count. Paragraph (c)(3)(ii), which applies to motions under § 1.633(c)(3) to designate a claim as corresponding to a count, is proposed to be amended to have claims compared to claims, as is the case in § 1.633(c)(4)(ii), which applies to motions filed under § 1.633(c)(4) to designate a claim as not corresponding to a count. The proposed amendment avoids the need to compare claims to counts, which are subject to different rules of construction than are claims.

Paragraph (c)(4)(ii) of § 1.637 is proposed to be amended to require that a party moving to designate a claim as not corresponding to a count must show that the claim could not serve as the basis for a preliminary motion under § 1.633(c)(1) to add a new count. The proposed amendment, if adopted, would preclude a party from moving to designate one of its claims as not corresponding to the count where an opponent's disclosure would support a similar claim, in which case the party could file a § 1.633(c)(1) preliminary motion proposing a claim to be added to the opponent's application and suggesting that the proposed claim and the party's claim in question be designated as corresponding to a proposed new count.

Paragraph (d)(4) of § 1.637, which authorizes a party to file a motion for benefit together with a motion under § 1.633(d), is proposed to be deleted and reserved as unnecessary, because motions filed under § 1.633(d) do not affect the count. Paragraphs (e)(1)(viii) and (e)(2)(vii) are proposed to amended to make it clear that a preliminary motion under § 1.633(e)(1) or (2) need not be accompanied by a preliminary motion for benefit under § 1.633(f) unless the moving party seeks benefit with respect to the proposed count. Paragraphs (e)(1)(ix) and (e)(2)(viii) are proposed to be added to specify that where an opponent is accorded the benefit of the filing date of an earlier filed application in the notice of declaration of the interference, the moving party must show why the opponent is not entitled to benefit of the earlier filed application with respect to the proposed count; otherwise, the opponent will be presumed to be entitled to benefit of the earlier filed application with respect to the proposed count. Paragraph (f)(2) of § 1.637 is proposed to be amended to change "abroad" to "in a foreign country" and to delete both occurrences of "filed abroad" as superfluous.

Paragraph (h) of § 1.637 is proposed to be amended to explain that a preliminary motion to add a reissue application that includes a new or amended claim to be designated as *not* corresponding to a count will be given the same treatment as a preliminary motion proposing to amend a claim in, or add a new claim to, an involved application to be designated as not corresponding to the count, i.e., the preliminary motion will be dismissed. *See L'Esperance v. Nishimoto*, 18 USPQ2d 1534, 1537 (Bd. Pat. App. & Int. 1991) (interference rules do not authorize a motion by party-applicant to amend or add a claim to be designated as not corresponding to the count).

In § 1.638, it is proposed to amend paragraph (b) for clarification by changing "a reply" to "any reply."

In § 1.639, it is proposed to amend paragraph (a), which requires that a motion, opposition or reply be accompanied by the evidence on which a party intends to rely in support of or in opposition to a motion, to be consistent with paragraphs (c) through (g), which permit some types of evidence to be filed after filing of the motion, opposition or reply. It is also proposed to amend paragraph (d)(1) by changing "call" to "use."

In § 1.640, it is proposed to amend paragraph (b) in several respects. The first is to provide that a decision on a preliminary motion shall be deferred to final hearing unless an administrative patent judge or the Board is of the opinion that a decision on a preliminary motion will materially advance the resolution of the interference. The second is to state that a matter raised by a party in support of or in opposition to a motion that is deferred to final hearing will not be entitled to consideration at final hearing unless the matter is raised in the party's brief at final hearing. It is also proposed to amend paragraph (b) to state that where the administrative patent judge determines that the interference shall proceed to final hearing on the issue of priority or derivation, a time shall be set for each party to file a paper identifying any decisions of the administrative patent judge that the party wishes to have reviewed at final hearing as well as identifying any deferred or belatedly filed motions that the party wishes to have considered at final hearing. Paragraph (b) as proposed to be amended would also require that any evidence a party wishes to have considered with respect to the decisions and motions to be considered or reviewed at final hearing, including any affidavits filed by the party under § 1.608(b) or 1.639(b), would have to be served on the opponent during the testimony-in-chief period of the party.

Paragraph (b)(1) of § 1.640 is proposed to be amended for clarification. Paragraph (b)(2), which currently states that a preliminary motion filed after a decision is entered on preliminary motions under § 1.633 will not be considered except as provided by § 1.655(b), is proposed to be amended to state that a preliminary motion filed after the time expires for filing preliminary motions will not be considered except as provided by § 1.645(b) by changing "1.655(b)" to "1.645(b)," which relates to consideration of belatedly filed papers in general.

Paragraph (c) of § 1.640, which currently requires an administrative patent judge or the Board to specifically authorize an opposition to a request for reconsideration of a decision by an administrative patent judge, is proposed to be amended to authorize an opponent to file an opposition, thereby saving the administrative patent judge or the Board the time it would otherwise take to determine whether an opposition should be authorized. If adopted, the administrative patent judge would continue to have the authority to deny a request for reconsideration without waiting for an opposition. In order to conserve the resources of the Board, it is also proposed to delete the last sentence of § 1.640(c) so as to authorize a single individual administrative patent judge to decide a request for reconsideration. Paragraph (c) is also proposed to be amended to require that a request for reconsideration be filed by hand or Express Mail. Paragraph (d)(1), which currently states that an order to show cause under that section can be based on a decision on a motion which is dispositive of the interference against a party as to any count, is proposed to be amended to include decisions on dispositive matters raised sua sponte by an administrative patent judge.

Paragraph (e) of § 1.640 is proposed to be amended to incorporate the substance of the Deputy Commissioner's Notice of December 8, 1986, *published as* "Interference Practice: Response to Order to Show Cause Under 37 CFR 1.640," 1074 Off. Gaz. Pat. Office 4 (Jan. 6, 1987), *reprinted in* 1086 Off. Gaz. Pat. Office 282 (Jan. 5, 1988). Specifically, paragraph (e) as proposed to be amended would provide that where the order to show cause was issued under § 1.640(d)(1), the party may respond with a paper (i) requesting that final hearing be set to review the decision which is the basis for the order and identifying every other decision of the administrative patent judge that the party wishes to have reviewed by the Board at a final hearing, or (ii) fully explaining why judgment should not be entered. Any other party would be permitted to file a response to the paper within 20 days of the date of service of the paper. Where the order was issued under § 1.640(d)(1) and the paper includes a request for final hearing, the response must identify every decision of the administrative patent judge that the responding party wishes to have reviewed by the Board at a final hearing. Where the order was issued under § 1.640(d)(1) and the paper does not include a request for final hearing, the response may include a request for final hearing, which must identify every decision of the administrative patent judge that the responding party wishes to have reviewed by the Board at a final hearing. Where only the response includes a request for a final hearing, the party who filed the paper would have 14 days from the date of service of the response in which to file a supplemental paper identifying any other decision of the administrative patent judge that the party wishes to have reviewed by the Board at a final hearing. The paper or the response thereto would have to be accompanied by a motion (§ 1.635) requesting a testimony period if a party wishes to introduce any evidence to be considered at final hearing (§ 1.671), such as affidavits previously filed under § 1.639(b). A request for a testimony period would be construed as including a request for final hearing. Where the paper contains an explanation of why judgment should not be entered in accordance with the order and no party has requested a final hearing, the decision that is the basis for the order would be reviewed based on the contents of the paper and the response. If the paper fails to show good cause, the Board would enter judgment against the party against whom the order issued.

Section 1.641 currently indicates that an administrative patent judge who, during the pendency of an interference, becomes aware of a reason why a claim designated to correspond to a count may not be patentable should notify the parties of the reason and set a time within which each party may present its views, which the administrative patent judge will consider in determining how the interference shall proceed. It is proposed to amend § 1.641 to indicate that a party's views may include argument or appropriate preliminary motions under § 1.633(c), (d) and (h), including any supporting evidence.

In § 1.643, it is proposed to amend paragraph (b) for clarification and also to change "ends of justice" to "interest of justice" to be consistent with the language used in other interference rules, including §§ 1.628(a) and 1.687(c).

In § 1.644, it is proposed to simplify paragraph (a) by changing "a panel consisting of more than one examiner-in-chief" to "the Board." Paragraphs (a)(1), (b) and (c) are proposed to be amended by changing both occurrences of "panel" to "Board." Paragraphs (a)(2) and (b) are proposed to be changed to provide that a petition seeking to invoke the supervisory authority of the Commissioner shall not be filed prior to the party's brief for final hearing; these paragraphs currently provide that such a petition shall not be filed prior to a decision of the Board awarding judgment.

Paragraph (b) of § 1.644 is proposed to be clarified by amending it to state that a petition under § 1.644(a) shall be considered timely if it is made as part of, or simultaneously with, a proper motion under § 1.633, 1.634, or 1.635 when granting the motion would require waiver of a rule. In other words, a petition under § 1.644(a)(2) must seek waiver of a rule prospectively rather than retroactively.

Paragraph (d) of § 1.644 is proposed to be amended to provide that the statement of facts in a petition preferably should be in numbered paragraphs and also to delete the second sentence as unnecessary. Paragraph (f) is proposed to be amended to change the "15 days" in which to request reconsideration of a decision by the Commissioner to "14 days." In paragraph (g), it is proposed to delete the quotation marks around "Express Mail."

Section 1.645, which in its current form permits consideration of a belatedly filed paper only if accompanied by a motion under § 1.635 which shows sufficient cause (§ 1.645(b)) why the paper was not timely filed, is proposed to be amended in several respects. First, it is proposed to change "sufficient cause" to "good cause" in order to use a single "cause" standard throughout the interference rules. Second, it is proposed to amend paragraph (b) to permit consideration of a belatedly filed paper if an administrative patent judge or the Board, sua sponte, is of the opinion that it would be in the interest of justice to consider the paper. An example would be where the delay is short (e.g., one day) and there is no prejudice to an opponent. For purposes of the sections other than § 1.645, a belatedly filed paper is considered "timely filed" if accompanied by a motion under § 1.635 which is granted.

Paragraph (d) of § 1.645 is proposed to be amended by deleting "In an appropriate circumstance" as superfluous in view of the language "may stay proceedings," which indicates that the administrative patent judge has the discretion to stay an interference.

In § 1.646, it is proposed to amend paragraph (a)(2) by deleting the reference to § 1.684, which is proposed to be deleted. It is proposed to amend paragraph (c)(1) by inserting "or causing a copy of the paper to be handed" after "By handing a copy of the paper" to make it clear that the paper need not be personally delivered by the party, i.e., that delivery by hand can effected by a commercial courier, for example. In paragraph (c)(4), it is proposed to change "mail" (second occurrence) to "first class mail" to make it clear that the service date specified in that paragraph applies only to first class mail. It is also proposed to redesignate paragraph (c)(5) as paragraph (c)(6) and to add a new paragraph (c)(5) which clarifies that a party may serve by Express Mail and that when service is effected by Express Mail, the date of service is considered to be the date of deposit with the U.S. Postal Service. Paragraph (d) is proposed to be amended to delete the quotation marks around "Express Mail." Paragraph (e) is proposed to be amended to state that the due date for serving a paper is the same as the due date for filing the paper in the Patent and Trademark Office.

In § 1.651, it is proposed to amend paragraph (a)(2) by deleting "(testimony includes testimony to be taken abroad under § 1.684)" in order to be consistent with the proposal to delete § 1.684. Paragraphs (c)(2) and (c)(3) are proposed to be amended to be consistent with the proposed amendment to the definition of "effective filing date" in § 1.601(g). In paragraph (d), it is proposed to change "abroad under § 1.684" to "in a foreign country."

In § 1.653, it is proposed to amend paragraph (a) in several ways. The first is to change the references to paragraphs of § 1.672 to be consistent with the proposed redesignation of certain paragraphs of § 1.672, discussed below. The second is to delete "of fact" in the clause "agreed statements of fact under § 1.672(f)" (proposed to be redesignated as § 1.672(h)), because agreed statements under § 1.672(f) can set forth either (1) how a particular witness would testify if called or (2) the facts in the case of one or more of the parties. The third is to delete "under § 1.684(c)," since § 1.684 is proposed to be deleted. A fourth proposed amendment to § 1.653(a) is to indicate that in addition to the types of testimony already set forth in paragraph (a), testimony includes copies of written interrogatories and answers and written requests for admissions and answers, which might be obtained where a motion for additional discovery under § 1.687(c) is granted.

Paragraph (b) of § 1.653 is proposed to be amended to be consistent with the proposed redesignation of certain paragraphs of § 1.672, to delete the reference to § 1.684(c), which is proposed to be cancelled, and for clarity. Paragraphs (c)(1) and (c)(4) of § 1.653 are proposed to be amended to make it clear that the only testimony to be included in a party's record is testimony submitted on behalf of the party. Having copies of the same testimony appear in both parties' records unnecessarily encumbers the records and is confusing in that a given page of testimony will have different page numbers in the different records, with the result that the briefs of the parties will refer to different record pages for the same testimony.

It is proposed that paragraph (c)(5) of § 1.653 be deleted and reserved. Paragraph (c)(5) currently requires that the record filed by each party include each notice, official record and printed publication relied upon by the party and filed under § 1.682(a). This requirement is considered unnecessary because such notices, official records and printed publications are in the nature of exhibits under § 1.653(i), which are submitted with but not included in the record. The inclusion of exhibits in the record merely increases the size of the record without serving any useful purpose.

Paragraph (g) of § 1.653 is proposed to be amended and paragraphs (f) and (h) deleted and reserved to eliminate the current distinction between typewritten and printed records. Paragraph (g) is also proposed to be amended to change "8 1/2 x 11 inches (21.8 by 27.9 cm.)" to "21.8 by 27.9 cm. (8 1/2 x 11 inches)" and to delete the requirement for justified margins and to require that the records be bound with covers at their left edges in such manner as to lie flat when open to any page and in one or more volumes of convenient size (approximately 100 pages per volume is suggested) and that when there is more than one volume, the numbers of the pages contained in each volume must appear at the top of the cover for each volume. Paragraph (i) is proposed to be amended to state that exhibits include documents and things identified in

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affidavits or on the record during the taking of oral depositions as well as official records and publications submitted pursuant to § 1.682(a).

In § 1.654, it is proposed to amend paragraph (a) by changing "shall" in the second sentence to "may" for clarity and also to reduce the time for oral argument by a party from 60 minutes to 30 minutes, because most hearings have required no more than 30 minutes per side and a panel has the discretion to grant more time at the hearing, where necessary.

In § 1.655, it is proposed to amend paragraph (a) by changing the standard of review from "erroneous or an abuse of discretion" to "an abuse of discretion." The recitation of a separate "error" standard is unnecessary, because an abuse of discretion may be found when (1) the decision of an administrative patent judge is clearly unreasonable, arbitrary or fanciful, (2) the decision is based on an erroneous conclusion of law, (3) the findings of the administrative patent judge are clearly erroneous, or (4) the record contains no evidence upon which the administrative patent judge rationally could have based the decision. *See, e.g., Heat and Control, Inc. v. Hester Industries, Inc.*, 785 F.2d 1017, 228 USPQ 926 (Fed. Cir. 1986); *Western Electric Co. v. Piezo Technology, Inc. v. Quigg*, 860 F.2d 428, 8 USPQ2d 1853 (Fed. Cir. 1988).

It is proposed to amend paragraph (b) of § 1.655 to clarify which matters a party is not entitled to raise for consideration at final hearing. As proposed to be amended, paragraph (b) would provide that a party shall not be entitled to raise for consideration at final hearing a matter which properly could have been raised by a motion under § 1.633 or 1.634 unless (1) the matter was properly raised in a motion that was timely filed by the party under § 1.633 or 1.634 and the motion was denied or deferred to final hearing, (2) the matter was properly raised by the party in a timely filed opposition to a motion under § 1.633 or 1.634 and the motion was granted over the opposition or deferred to final hearing, or (3) the party shows good cause why the issue was not properly raised by a timely filed motion or opposition. It is also proposed to amend paragraph (b) of § 1.655 to state that a change of attorneys during the interference generally does not constitute good cause for failing to file a timely motion or opposition.

It is further proposed, in response to *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993), to amend paragraph (b) of § 1.655 by adding a sentence explaining that a party who fails to contest, by way of a timely filed preliminary motion under § 1.633(c), the designation of a claim as corresponding to a count may not subsequently argue the separate patentability or the lack of separate patentability of claims designated as corresponding to the count. The Patent and Trademark Office conducts interference proceedings to determine who, as between two or more applicants for patent or one or more applicants for patent and one or more patentees, is the first inventor of a patentable invention. A primary examiner determines in the first instance whether the claims in a pending application interfere with the claims in another pending application or unexpired patent. When the examiner is of the view that an interference exists, the Board is notified (§ 1.609). The interference is assigned to an administrative patent judge (§ 1.610), who issues a notice declaring the interference (§ 1.611). Each separately patentable invention involved in the interference is defined by a count, which is merely a vehicle for contesting priority of invention (i.e., who made the invention defined by the count first) and determining the evidence relevant to the issue of priority. A preliminary determination is made by the Patent and Trademark Office as to which claims should be designated to correspond to the count. The claims that are initially determined to define the same patentable invention are designated as corresponding to the count. All other claims are designated as not corresponding to the count. The designation of claims provides a starting point in an interference. There is a presumption that the designation of a claim as corresponding or as not corresponding to a count is correct.

The interference rules authorize a party to file a preliminary motion to redefine an interference by designating a claim as corresponding (§ 1.633(c)(3)) or not corresponding (§ 1.633(c)(4)) to a count. Prior to Van Geuns, the Patent and Trademark Office interpreted the interference rules as requiring a party to file a preliminary motion under § 1.633(c)(4) to designate a claim as not corresponding to the count as a condition for arguing at final hearing that a claim designated as corresponding to the count is patentably distinct from another claim designated as corresponding to the count. *See Brooks v. Street*, 16 USPQ2d 1374, 1377 (Bd. Pat. App. & Int. 1990); *Flehmig v. Geisa*, 13 USPQ2d 1052, 1054 (Bd. Pat. App. & Int. 1989); *Kwon v. Perkins*, 6 USPQ2d 1747, 1750 (Bd. Pat. App. & Int. 1988), *aff'd on other grounds*, 886 F.2d 325, 12 USPQ2d 1308 (Fed. Cir. 1989); *see also Lamont v. Berguer*, 7 USPQ2d 1580, 1582 (Bd. Pat. App. & Int. 1988). However, in *Van Geuns* the Federal Circuit interpreted the rules differently, stating:

> [T]he position of the Commissioner that claims designated as corresponding to a count stand or fall with the patentability of the subject matter of the count is overbroad.

988 F.2d at 1185, 26 USPQ2d at 1060. The Court further stated:

> [W]e conclude that a party to an interference, who has failed to timely contest the designation of claims as corresponding to a count, has not conceded that claims corresponding to a count are anticipated or made obvious [i.e., are unpatentable] by the prior art when the subject matter of a count is determined to be unpatentable for obviousness. The PTO must determine, based on the actual prior art reference or references, whether claims not [designated as] corresponding exactly to the count are unpatentable.
>
> . . . The interference rules do not specify whether a party may argue the patentability of claims separately to the EIC [examiner-in-chief, now administrative patent judge] and the board.

Id. at 1186, 26 USPQ2d at 1060 (bracketed material added by the Commissioner). The proposed amendment to § 1.655(b) is designed to overcome the Federal Circuit's interpretation of the rules and to create a presumption that all claims designated as corresponding to a count are directed to the same patentable invention.

It is proposed to amend paragraph (c) of § 1.655 by changing "To prevent manifest injustice" to "In the interest of justice" to be consistent with the language used in other interference rules.

In § 1.656, it is proposed to redesignate paragraphs (b)(1) through (b)(6) as paragraphs (b)(3) through (b)(8), respectively, and to add new paragraphs (b)(1) and (b)(2) requiring the brief to include (1) a statement of interest identifying every party represented by the attorney in the interference and the real party in interest if the party named in the caption is not the real party in interest and (2) a statement of related cases indicating whether the interference was previously before the Board for final hearing and identifying any related appeal or interference which is pending before, or which has been decided by, the Board, or which is pending before, or which has been decided by, the Court of Appeals for the Federal Circuit or a district court in a proceeding under 35 U.S.C. 146. A related appeal or interference is one which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending interference. Appeals are mentioned because related issues may be present before the Board simultaneously in an ex parte appeal and an interference. It is also proposed to amend current paragraph (b)(3) (proposed to be redesignated as paragraph (b)(5)) to specify that statements of fact preferably should be presented in numbered paragraphs.

Current paragraph (b)(4) of § 1.656 (proposed to be redesignated as paragraph (b)(6)) requires that the opening brief of the junior party contain the contentions of the party with respect to the "issues to be decided," which has been construed to include the matter of whether some of the senior party's evidence of conception was inadmissible hearsay. *Suh v. Hoefle*, 23 USPQ2d 1321, 1323 (Bd. Pat. App. & Int. 1991). As support, the Board relied on *Fisher v. Bouzard*, 3 USPQ2d 1677 (Bd. Pat. App. & Int. 1987), and *Moller v. Harding*, 214 USPQ 730 (Bd. Pat. Int. 1982). Both of these cases concern interferences declared under the "old" interference rules (i.e., § 1.201 *et seq.*), of which § 1.254 specified that the opening brief of the junior party shall "present a full, fair statement of the questions involved, including his position with respect to the priority evidence on behalf of other parties." Current § 1.656(b)(4) does not expressly require, and was not intended to imply, that the opening brief of the junior party must address the evidence of any other party with respect to the issue of priority or any other issue. In order to clarify that the opening brief of a junior party need not address the evidence of the other parties, it is proposed to amend current paragraph (b)(4) to require that the junior party's opening brief contain the contentions of the party "with respect to the issues it is raising for consideration at final hearing." These issues would include the junior party's case-in-chief for priority with respect to an opponent or derivation by an opponent as well as matters raised in any denied or deferred motions of the junior party that are to be reviewed or considered at final hearing. Where the reply brief of the junior party includes a new argument in response the case-in-chief of the senior party as presented in the senior party's opening brief, the senior party may move under § 1.635 for leave to file a reply to the junior party's reply brief, which motion must be accompanied by a copy of the senior party's reply.

Paragraph (d) of § 1.656 is proposed to be amended to state that unless ordered otherwise by an administrative patent judge, briefs shall be double-spaced (except for footnotes, which may be single-spaced) and shall comply with the requirements of § 1.653 (g) for records except the requirement for binding. As a result, the current distinction between printed and typewritten briefs would be eliminated.

Paragraphs (e), (g) and (h) of § 1.656 are proposed to be amended to require an original and four copies (currently an original and three copies are required) of each brief, any proposed findings of fact and conclusions of law, any motion under 37 CFR 1.635 to suppress evidence and any opposition to a motion to suppress evidence.

Paragraph (g) of § 1.656, which permits a party to file proposed findings of fact and conclusions of law, is further proposed to be amended to require paragraph numbers for the findings of fact and conclusions of law.

Paragraph (h) is further proposed to be amended to state that a party's failure to challenge the admissibility of the evidence of an opponent on a ground that could have been raised in a timely objection under §§ 1.672(c), 1.682(c), 1.683(b) or 1.688(b) constitutes a waiver of the right to move under § 1.656(h) to suppress the evidence on that ground at final hearing.

Paragraph (i) of § 1.656 currently provides that if a junior party fails to file an opening brief for final hearing, an order may be issued by the administrative patent judge requiring the junior party to show cause why the failure to file a brief should not be treated as a concession of priority and further provides that judgment may be rendered against the junior party if the junior party "fails to respond" within a time period set in the order. The expression "fails to respond" has been misinterpreted by some junior parties as meaning that the mere filing of a response of any kind to the order to show cause should be sufficient to avoid the entry of judgment. Such an interpretation was not intended and if adopted would effectively negate § 1.656(i). The term "respond" is proposed to be changed to "show good cause" in order to make it clear that a junior party's failure to file a timely opening brief will not be excused unless good cause is shown to explain or justify the failure to file a brief. The language of the rule will then be consistent with the other interference rules concerning orders to show cause, e.g., § 1.640(c) and 1.652.

Section 1.657 is proposed to be amended to be consistent with the proposed changes to the definition of "effective filing date" in § 1.601(g) and to state that in an interference involving an application and a patent where the effective filing date of the application is after the date the patent issued, a junior party has the burden of establishing priority by clear and convincing evidence, and that in other interferences the junior party has the burden of establishing priority by a preponderance of the evidence. The proposed amendment would codify the holding of *Price v. Symsek* 988 F.2d 1187, 1190-91, 26 USPQ2d 1031, 1033 (Fed. Cir. 1993), as clarified by *Bosies v. Benedict*, 27 F.3d 539, 541-42, 30 USPQ2d 1862, 1864 (Fed. Cir. 1994).

In § 1.658, it is proposed to amend paragraph (a) to state that when the Board enters a decision awarding judgment as to all counts, the decision shall be regarded as a final decision for the purpose of judicial review (35 U.S.C. 141-144, 146) unless a request for reconsideration under paragraph (b) of this section is timely filed. In paragraph (b), third sentence, it is proposed to delete the phrases "[w]here reasonably possible" and "such that delivery is accomplished" as unnecessary and to add a sentence specifying that a decision on reconsideration is a final decision for the purpose of judicial review (35 U.S.C. 141-144, 146). It is also proposed to amend paragraph (b) by changing "reply to a request for reconsideration" to "opposition to a request for reconsideration" to be consistent with the terminology employed in § 1.640(c) regarding requests for reconsideration of decisions on preliminary motions.

Section 1.660 is proposed to be amended by adding a new paragraph (e) explaining that the failure of a party to comply with the notice provisions of § 1.660 may result in sanctions under § 1.616, that knowledge by, or notice to, an employee of the Office other than an employee of the Board, of the existence of the reexamination, application for reissue, protest, or litigation shall not be sufficient, and that the notice contemplated by this section is notice addressed specifically to an administrative patent judge or the Board.

In § 1.662, it is proposed to amend paragraph (a) by changing "filing by an applicant or patentee" in the second sentence to "filing by a party" to make it clear that the terminal disclaimer can be signed by the party's attorney or agent of record. For the same reason, it is proposed to change "by an applicant" to "by a party" in the third sentence of paragraph (a), which concerns abandonment of an involved application.

In paragraph (b) of § 1.662, the first sentence is proposed to be amended to change "omits all claims of the patent corresponding to the counts of the interference for the purpose of avoiding the interference" to "does not include a claim that corresponds to a count" in order to make it clear that judgment may not be entered where the reissue application includes a new or amended claim that should be designated as corresponding to a count, even if the patentee argues that it should be designated as not corresponding to a count. Similarly, it is proposed to change "reissue other than for the purpose of avoiding the interference" to "reissue which includes a claim that corresponds to a count."

In § 1.671, it is proposed to amend paragraph (a) by changing "*evidence* from another interference, proceeding, or action filed under § 1.683" to "*testimony* from another interference, proceeding, or action filed under § 1.683" in order to be consistent with the terminology of § 1.683. It is proposed to amend paragraphs (c)(6) and (c)(7) of § 1.671 to change "by oral deposition or affidavit" to "by affidavit or oral deposition." Paragraph (f) is proposed to be amended to clarify that the requirement for the significance of documentary and other exhibits to be discussed with particularity by a witness applies only to documentary and other exhibits identified by a witness in an affidavit or during oral deposition. Paragraph (f) does not apply to official records and printed publications submitted into evidence pursuant to § 1.682(a).

In § 1.672, in addition to the proposed amendments discussed above under the heading "Amendments responsive to adoption of Public Law 103-182," it is proposed to amend paragraph (b) by deleting the third sentence, which specifies the type of paper to be used for affidavits, as being superfluous in view of § 1.677(a). In paragraph (d), it is proposed to delete the fifth sentence ("A party electing to present testimony of a witness by deposition shall notice a deposition of the witness under § 1.673(a).") as superfluous in view of the second sentence of § 1.672(d).

In § 1.673, it is proposed to amend paragraph (b) by changing the time for service of evidence to be relied on at an oral deposition from "at least three days" prior to the conference required by § 1.673(g) when service is by hand or by Express Mail to "at least three working days" prior to the conference. It is also proposed to amend paragraph (b) to change the time for service by any other means from 10 days to 14 days prior to the conference. It is proposed to amend paragraph (d) of § 1.673 by deleting the second sentence as unnecessary, since all depositions for a case-in-chief would have to be approved by an administrative patent judge. It is also proposed to delete the quotation marks around "Express Mail" in paragraph (b).

Also in § 1.673, it is proposed to clarify paragraph (e) by changing "party electing to present testimony by affidavit" to "party who has presented testimony by affidavit."

In paragraph (a) of § 1.674, which specifies before whom depositions may be taken, it is proposed to delete the reference to "United States or a territory or insular possession of the United States" in order to make this paragraph applicable to depositions for testimony compelled in foreign countries.

In § 1.675, it is proposed to amend paragraph (d), which concerns reading and signing of a transcript by the witness, to take into account that the witness might refuse to read and/or sign the transcript of the deposition, in which case the circum-

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stances under which the witness refused to sign must be noted on the certificate by the officer who prepared the certified transcript (§ 1.676(c)).

In § 1.676, it is proposed to amend paragraph (a)(4) by changing "opposing party" to "opponent."

Section 1.677, which in its current form specifies the required form for transcripts of depositions, is proposed to be amended to also apply to affidavits. Furthermore, it is proposed to delete the reference to "typewritten" matter, to change "pica-type" to "11 point type" and to change "8 1/2 x 11 inches (21.8 by 27.9 cm.)" to "21.8 by 27.9 cm. (8 1/2 x 11 inches)."

In § 1.678, it is proposed to change the section heading from "Transcript of deposition must be filed" to "Time for filing transcript of deposition" for clarity and to amend the text by changing the time for filing the certified transcript from 45 days to 30 days.

In § 1.679, it is proposed to change "transcript" to "transcript of a deposition" for clarity and also to delete "for printing (§ 1. 653 (g))" as unnecessary.

In § 1.682, in addition to the proposed amendments discussed above under the heading "Service of a "'developing record,'" it is proposed to amend paragraph (a) by changing "identified during the taking of testimony of a witness" to "identified in an affidavit or on the record during an oral deposition of a witness" for clarity. It is also proposed to delete and reserve paragraph (a)(4) ("where appropriate, be accompanied by a certified copy of the official record or a copy of the printed publication (§ 1.671(d))") as superfluous in view of Rules 901 and 902 of the Federal Rules of Evidence, which apply to interference proceedings (§ 1.671(b)) and require authentication of evidence that is not self-authenticating. Finally, it is proposed to capitalize the first word in each of paragraphs (a)(2) , (a)(3) and (a)(4).

In § 1.685, it is proposed to amend paragraph (d) for clarification.

In § 1.687, it is proposed to amend paragraph (c) to refer to 1.647 concerning translations of documents in a foreign language.

Other Considerations: These proposed rules conform with the requirements of the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, Executive Order 12866, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.* The Office of Management and Budget has determined that these proposed rules are not significant for the purposes of Executive Order 12866.

The Assistant Counsel for Legislation and Regulation of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the proposed rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)), because the changes clarify existing rules setting forth the procedures used in patent appeals and interferences.

The Patent and Trademark Office has determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

These rule changes will not impose any additional burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et. seq.*, since no record keeping or reporting requirements within the coverage of the Act are placed upon the public.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Courts, Inventions and patents.

For the reasons set out in the preamble, it is proposed to amend 37 CFR Part 1 wherein removals are indicated by brackets ([]) and additions by arrows (cb) as follows:

PART 1 - Rules of Practice in Patent Cases

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.11 is proposed to be amended by revising paragraph (e) to read as follows:

§ 1.11 Files open to public

* * * * *

(e) The file of any interference involving a patent, a statutory invention registration, c reissue application,b or an application on which a patent has been issued or which has been published as a statutory invention registration, is open to inspection by the public, and copies may be obtained upon paying the fee therefor, if: (1) the interference has terminated, or (2) an award of priority or judgment has been entered as to all parties and all counts.

3. In § 1.192, it is proposed to revise paragraphs (a), (c), (c)(5) and (c)(5)(ii), redesignate current paragraphs (c)(1) through (c)(7) as paragraphs (c)(3) through (c)(9) and add new paragraphs (c)(1) and (c)(2) to read as follows:

§ 1.192 Appellant's brief.

(a) [The appellant] cAppellantb shall, within 2 months from the date of the notice of appeal under § 1.191 [in an application, reissue application, or patent under reexamination,] or within the time allowed for response to the action appealed from, if such time is later, file a brief in triplicate. The brief must be accompanied by the requisite fee set forth in § 1.17(f) and must set forth the authorities and arguments on which [the] appellant will rely to maintain the appeal. Any arguments or authorities not included in the brief cwillb [may] be refused consideration by the Board of Patent Appeals and Interferences c, unless good cause is shownb.

* * * * *

(c) The brief shall contain the following items under appropriate headings and in the order [here] indicated cbelowb unless cthe brief is filed by an applicant who is not represented by a registered practitionerb [there is no attorney or agent of record in the application or reexamination proceeding, the brief was not prepared by a registered practitioner, and the brief was not signed by a registered practitioner, wherein the brief will be accepted as complying with this paragraph provided it is at least in substantial compliance with the requirements of paragraphs (c)(1), (2), (6) and (7)]:

c(1) *Real Party in Interest*. A statement identifying the real party in interest, if the party named in the caption of the brief is not the real party in interest, and the parent companies, subsidiaries (except wholly owned subsidiaries) and affiliates that have issued shares to the public of the real party in interest.

(2) *Related Appeals and Interferences*. A statement identifying by number and filing date all other appeals or interferences known to appellant, the appellant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.b

[(1)] c(3)b *Status of Claims*. A statement of the status of all the claims, pending or cancelled, and identifying the claims appealed.

[(2)] c(4)b *Status of Amendments*. A statement of the status of any amendment filed subsequent to final rejection.

[(3)] c(5)b *Summary of Invention*. A concise explanation of the invention defined in the claims involved in the appeal, which shall refer to the specification by page and line number, and to the drawing, if any, by reference characters.

[(4)] c(6)b *Issues*. A concise statement of the issues presented for review.

[(5)] c(7)b *Grouping of Claims*. For each ground of rejection which appellant contests and which applies to more than one claim, [it will be presumed that] the rejected claims cshallb stand or fall together cwith the broadest claim, and only the broadest claim will be considered by the Board of Patent Appeals and Interferencesb unless:

c(i)b a statement is included that the rejected claims do not stand or fall together, and

c(ii)b in [the appropriate part or parts of] the argument under subparagraph c(c)(8)b [(c)(6)] of this section appellant presents reasons as to why appellant considers the rejected claims to be separately patentable cfrom the broadest claim. Merely pointing out what a claim covers is not an argument

as to why the claim is separately patentable from the broadest claimsb.

[(6)] c(8)b *Argument*. The contentions of [the] appellant with respect to each of the issues presented for review in subparagraph c(c)(6)b [(c)(4)] of this section, and the basis therefor, with citations of the authorities, statutes, and parts of the record relied on. Each issue should be treated under a separate heading.

* * * * *

(v) For any rejection other than those referred to in paragraphs c(c)(8)(i)b [(c)(6)(i)] to (iv) of this section, the argument shall specify the errors in the rejection and the specific limitations in the rejected claims, if appropriate, or other reasons, which cause the rejection to be in error.

[(7)] c(9)b *Appendix*. An appendix containing a copy of the claims involved in the appeal.

(d) If a brief is filed which does not comply with all the requirements of paragraph (c) of this section, [the] appellant will be notified of the reasons for non-compliance and provided with a period of one month within which to file an amended brief. If [the] appellant does not file an amended brief during the one-month period, or files an amended brief which does not overcome all the reasons for non-compliance stated in the notification, the appeal will cstandb[be]dismissed.

4. Section 1.601 is proposed to be amended by revising paragraphs (f), (g), (j), (k), (l) and (q) and adding a new paragraph (r) to read as follows:

§ 1.601 Scope of rules, definitions.

* * * * *

(f) A *count* defines the interfering subject matter between (1) two or more applications or (2) one or more applications and one or more patents. cA count should be broad enough to encompass the broadest corresponding patentable claim of each of the parties. A count may not be so broad as to be unpatentable over the prior art.b When there is more than one count, each count shall define a separate patentable invention. Any claim of an application or patent [which] cthat is designated tob correspond[s] to a count is a claim involved in the interference within the meaning of 35 U.S.C. 135(a). A claim of a patent or application cdesignated to correspond to a count thatb [which] is identical to a count is said to "correspond exactly" to the count. A claim of a patent or application cdesignated to correspond to a count that b[which] is not identical to a count [, but which defines the same patentable invention as the count,] is said to "correspond substantially" to the count. When a count is broader in scope than all claims which correspond to the count, the count is a "phantom count." A phantom count is [not patentable to any party] cunpatentable to all parties under the written description requirement of the first paragraph of 35 U.S.C. 112b.

(g) The *effective filing date* of an application [or a patent] is the filing date of an earlier application accorded to the application [or patent] under 35 U.S.C. 119, 120, c121,b or 365 cor, if no benefit is accorded, the filing date of the application. The *effective filing date* of a patent is the filing date of an earlier application accorded to the patent under 35 U.S.C. 120, 121, or 365(c) or, if no benefit is accorded, the filing date of the application which issued as the patent.b

* * * * *

(j) An *interference-in-fact* exists when at least one claim of a party [which] cthatb corresponds to a count and at least one claim of an opponent [which] cthatb corresponds to the count define the same patentable invention.

(k) A *lead* attorney or agent is a registered attorney or agent of record who is primarily responsible for prosecuting an interference on behalf of a party and is the attorney or agent whom an cadministrative patent judgeb [examiner-in-chief] may contact to set times and take other action in the interference.

(l) A *party* is (1) an applicant or patentee involved in the interference or (2) a legal representative or an assignee cof record in the Patent and Trademark Officeb of an applicant or patentee involved in an interference. Where acts of a party are normally performed by an attorney or agent, "party" may be construed to mean the attorney or agent. An "inventor" is the individual named as inventor in an application involved in an interference or the individual named as inventor in a patent involved in an interference.

* * * * *

(q) A *final decision* is a decision awarding judgment as to all counts. An *interlocutory order* is any other action taken by an cadministrative patent judgeb [examiner-in-chief] or [a panel of] the Board in an interference, including the notice declaring an interference.

c(r) *NAFTA country* means NAFTA country as defined in section 2(4) of the North American Free Trade Agreement Implementation Act. A "non-NAFTA country" is a country other than the United States or a NAFTA country.b

5. Section 1.602 is proposed to be amended by revising paragraph (c) to read as follows:

§ 1.602 Interest in applications and patents involved in an interference.

* * * * *

(c) If a change of any right, title, and interest in any application or patent involved or relied upon in the interference occurs after notice is given declaring the interference and before the time expires for seeking judicial review of a final decision of the Board, the parties shall notify the Board of the change within 20 days cafterb [of] the change.

6. Section 1.603 is proposed to be revised to read as follows:

§ 1.603 Interference between applications; subject matter of the interference.

Before an interference is declared between two or more applications, the examiner must be of the opinion that there is interfering subject matter claimed in the applications which is patentable to each applicant subject to a judgment in the interference. The interfering subject matter shall be defined by one or more counts. [Each count shall define a separate patentable invention.] Each application must contain, or be amended to contain, at least one cpatentableb claim which corresponds to each count. All claims in the applications which define the same patentable invention as a count shall be designated to correspond to the count.

7. Section 1.604 is proposed to be revised by changing paragraph (a)(1) to read as follows:

§ 1.604 Request for interference between applications by an applicant.

(a) * * *

(1) Suggesting a proposed count and presenting at least one claim corresponding to the proposed count or identifying at least one claim in [his or her] citsb application that corresponds to the proposed count,

* * * * *

8. Section 1.605 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.605 Suggestion of claim to applicant by examiner.

(a) cIf no claim in an application is drawn to the same patentable invention claimed in another application or patent, theb [The] examiner may suggest that an applicant present a claim [in an application] cdrawn to an invention claimed in another application or patentb for the purpose of an interference with another application or a patent. The applicant to whom the claim is suggested shall amend the application by presenting the suggested claim within a time specified by the examiner, not less than one month. Failure or refusal of an applicant to timely present the suggested claim shall be taken without further action as a disclaimer by the applicant of the invention defined by the suggested claim. At the time the suggested claim is presented, the applicant may also (1) call the examiner's atten-

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tion to other claims already in the application or which are presented with the suggested claim and (2) explain why the other claims [would be more appropriate to] cshouldb be included in any interference which may be declared.

* * * * *

9. Section 1.606 is proposed to be revised to read as follows:

§ 1.606 Interference between an application and a patent; subject matter of the interference.

Before an interference is declared between an application and an unexpired patent, an examiner must determine that there is interfering subject matter claimed in the application and the patent which is patentable to the applicant subject to a judgment in the interference. The interfering subject matter will be defined by one or more counts. [Each count shall define a separate patentable invention.] cTheb [Any] application must contain, or be amended to contain, at least one cpatentableb claim which corresponds to each count. cThe claim in the application need not be, and most often will not be, identical to a claim in the patent.b All claims in the application and patent which define the same patentable invention as a count shall be designated to correspond to the count. At the time an interference is initially declared (§ 1.611), a count shall not be narrower in scope than any patent claim which corresponds to the count and any single patent claim will be presumed, subject to a motion under § 1.633(c), not to contain separate patentable inventions.

10. Section 1.607 is proposed to be amended by revising paragraph (a)(4) and adding a new paragraph (a)(6) to read as follows:

§ 1.607 Request by applicant for interference with patent.

(a) * * *

(4) Presenting at least one claim corresponding to the proposed count or identifying at least one claim already pending in [his or her] citsb application that corresponds to the proposed count, and, if any claim of the patent or application identified as corresponding to the proposed count does not correspond exactly to the proposed count, explaining why each such claim corresponds to the proposed count, and

(5) * * *

c(6) Explaining how the requirements of 35 U.S.C. 135(b) are met, if the claim presented or identified under paragraph (a)(4) of this section was not present in the application until more than one year after the issue date of the patent.b

* * * * *

11. Section 1.608 is proposed to be amended by revising paragraphs (a) and (b) thereof to read as follows:

§ 1.608 Interference between an application and a patent; prima facie showing by applicant.

(a) When the [earlier of the filing date or] effective filing date of an application is three months or less after the [earlier of the filing date or] effective filing date of a patent, [the applicant,] before an interference will be declared, ceither the applicant or the applicant's attorney or agent of recordb shall file [an affidavit] ca statementb alleging that there is a basis upon which ctheb applicant is entitled to a judgment relative to the patentee.

(b) When the [earlier of the filing date or the] effective filing date of an application is more than three months after the [earlier of the filing date or the] effective filing date [under 35 U.S.C. 120] of a patent, the applicant, before an interference will be declared, shall file (1) evidence which may consist of patents or printed publications, other documents, and one or more affidavits which demonstrate that applicant is *prima facie* entitled to a judgment relative to the patentee and (2) an explanation stating with particularity the basis upon which the applicant is *prima facie* entitled to the judgment. Where the basis upon which an applicant is entitled to judgment relative to a patentee is priority of invention, the evidence shall include affidavits by the applicant, if possible, and one or more corroborating witnesses, supported by documentary evidence, if available, each setting out a factual description of acts and circumstances performed or observed by the affiant, which collectively would *prima facie* entitle the applicant to judgment on priority with respect to the [earlier of the filing date or] effective filing date of the patent. To facilitate preparation of a record (§ 1.653 (g) and (h)) for final hearing, an applicant should file affidavits on paper which is c21.8 by 27.9 cm. (8 1/2 x 11 inches)b [8 1/2 x 11 inches (21.8 by 27.9 cm.)]. The significance of any printed publication or other document which is self-authenticating within the meaning of Rule 902 of the Federal Rules of Evidence or § 1.671(d) and any patent shall be discussed in an affidavit or the explanation. Any printed publication or other document which is not self-authenticating shall be authenticated and discussed with particularity in an affidavit. Upon a showing of cgoodb [sufficient] cause, an affidavit may be based on information and belief. If an examiner finds an application to be in condition for declaration of an interference, the examiner will consider the evidence and explanation only to the extent of determining whether a basis upon which the application would be entitled to a judgment relative to the patentee is alleged and, if a basis is alleged, an interference may be declared.

12. Section 1.609 is proposed to be amended by revising paragraph (b)(2) and (b)(3) to read as follows:

§ 1.609 Preparation of interference papers by examiner.

* * * * *

(b) * * *

(2) The claims of any application or patent which correspond to each count, stating whether the claims correspond exactly or substantially to each count cand an explanation why each claim designated as corresponding to a count is directed to the same patentable invention as the countb;

(3) The claims in any application cor patentb which [are deemed by the examiner to be patentable over any] cdo not correspond to eachb count cand an explanation why each claim designated as not corresponding to a count is not directed to the same patentable invention as the countb; and

* * * * *

13. Section 1.610 is proposed to be amended by revising the section heading and paragraphs (a) through (e) to read as follows:

§ 1.610 Assignment of interference to cadministrative patent judgeb [examiner-in-chief], time period for completing interference.

(a) Each interference will be declared by an cadministrative patent judgeb [examiner-in-chief] who may enter all interlocutory orders in the interference, except that only [a panel consisting of at least three members of] the Board shall (1) hear oral argument at final hearing, (2) enter a decision under §§ 1.617, c1.640(e)b [1.640(c) or (e)], 1.652, 1.656(i) or 1.658 or (3) enter any other order which terminates the interference.

(b) As necessary, another cadministrative patent judgeb [examiner-in-chief] may act in place of the one who declared the interference. [Unless otherwise provided in this section, at] cAtb the discretion of the examiner-in-chief assigned to the interference, a panel consisting of two or more members of the Board may enter interlocutory orders.

(c) Unless otherwise provided in this subpart, times for taking action by a party in the interference will be set on a case-by-case basis by the cadministrative patent judgeb [examiner-in-chief] assigned to the interference. Times for taking action shall be set and the cadministrative patent judgeb [examiner-in-chief] shall exercise control over the interference such that the pendency of the interference before the Board does not normally exceed two years.

(d) An cadministrative patent judgeb [examiner-in-chief] may hold a conference with the parties to consider: (1) Simplification of any issues, (2) the necessity or desirability of amendments to counts, (3) the possibility of obtaining admissions of fact and genuineness of documents which will avoid unnecessary proof, (4) any limitations on the number of expert witnesses, (5) the time and place for conducting a deposition (§ 1.673(g)), and (6) any other matter as may aid in the disposition of the interference. After a conference, the cadministrative patent judgeb [examiner-in-chief] may enter any order which may be appropriate.

(e) The cadministrative patent judgeb [examiner-in-chief] may determine a proper course of conduct in an interference for any situation not specifically covered by this part.

14. Section 1.611 is proposed to be amended by redesignating paragraph (c)(8) as paragraph (c)(9), adding a new paragraph (c)(8) and revising paragraphs (b), (c)(7) and (d) to read as follows:

§ 1.611 Declaration of interference.

* * * * *

(b) When a notice of declaration is returned to the Patent and Trademark Office undelivered, or in any other circumstance where appropriate, an cadministrative patent judgeb [examiner-in-chief] may (1) send a copy of the notice to a patentee named in a patent involved in an interference or the patentee's assignee of record in the Patent and Trademark Office or (2) order publication of an appropriate notice in the *Official Gazette*.

(c) * * *

(7) The claim or claims of any application or any patent which correspond to each count; [and]

(8) cWhy each claim designated as corresponding to a count is directed to the same patentable invention as the count and why each claim designated as not corresponding to a count is not directed to the same patentable invention as the count; and

(9)b The order of the parties:

(d) The notice of declaration may also specify the time for: (1) Filing a preliminary statement as provided in § 1.621(a); (2) cServingb [serving] notice that a preliminary statement has been filed as provided in § 1.621(b); and (3) cFilingb [filing] preliminary motions authorized by § 1.633, oppositions to the motions, and replies to the oppositions.

* * * * *

15. Section 1.612 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.612 Access to applications.

(a) After an interference is declared, each party shall have access to and may obtain copies of the files of any application set out in the notice declaring the interference, except for affidavits filed under § 1.131 and any evidence and explanation under § 1.608 filed separate from an amendment. A party seeking access to any abandoned or pending application referred to in the [opposing party's] copponent'sb involved application or access to any pending application referred to in the [opposing party's] copponent'sb patent must file a motion under § 1.635. cSee § 1.11(e) concerning public access to interference files.b

* * * * *

16. Section 1.613 is proposed to be amended by revising paragraphs (c) and (d) to read as follows:

§ 1.613 Lead attorney, same attorney representing different parties in an interference, withdrawal of attorney or agent.

* * * * *

(c) An cadministrative patent judgeb [examiner-in-chief] may make necessary inquiry to determine whether an attorney or agent should be disqualified from representing a party in an interference. If an cadministrative patent judgeb [examiner-in-chief] is of the opinion that an attorney or agent should be disqualified, the cadministrative patent judgeb [examiner-in-chief] shall refer the matter to the Commissioner. The Commissioner will make a final decision as to whether any attorney or agent should be disqualified.

(d) No attorney or agent of record in an interference may withdraw as attorney or agent of record except with the approval of an cadministrative patent judgeb [examiner-in-chief] and after reasonable notice to the party on whose behalf the attorney or agent has appeared. A request to withdraw as attorney or agent of record in an interference shall be made by motion (§ 1.635).

17. Section 1.614 is proposed to be amended by revising paragraphs (a) and (c) to read as follows:

§ 1.614 Jurisdiction over interference.

(a) The Board cacquiresb [shall assume] jurisdiction over an interference when the interference is declared under § 1.611.

* * * * *

(c) The examiner shall have jurisdiction over any pending application until the interference is declared. An cadministrative patent judgeb [examiner-in-chief], where appropriate, may for a limited purpose restore jurisdiction to the examiner over any application involved in the interference.

18. Section 1.615 is proposed to be amended by revising paragraphs (a) and (b) to read as follows:

§ 1.615 Suspension of ex parte prosecution.

(a) When an interference is declared, ex parte prosecution of an application involved in the interference is suspended. Amendments and other papers related to the application received during pendency of the interference will not be entered or considered in the interference without the consent of an cadministrative patent judgeb examiner-in-chief].

(b) Ex parte prosecution as to specified matters may be continued concurrently with the interference with consent of the administrative patent judgeb [examiner-in-chief].

19. Section 1.616 is proposed to be amended by revising the section heading, introductory text and paragraphs (a) through (e) to read as follows and by adding new paragraphs (b) and (c) to read as follows:

§ 1.616 Sanctions for failure to comply with rules or order cor for taking or maintaining a frivolous positionsb.

c(a)b An cadministrative patent judgeb [examiner-in-chief] or the Board may impose an appropriate sanction against a party who fails to comply with the regulations of this part or any order entered by an cadministrative patent judgeb [examiner-in-chief] or the Board. An appropriate sanction may include among others entry of an order:

c(1)b [(a)] Holding certain facts to have been established in the interference;

c(2)b [(b)] Precluding a party from filing a cpaperb [motion or a preliminary statement];

c(3)b [(c)] Precluding a party from presenting or contesting a particular issue;

c(4)b [(d)] Precluding a party from requesting, obtaining, or opposing discovery;[or]

c(5)b [(e)] cAwarding compensatory expenses and/or compensatory attorney fees; or

(6)b Granting judgment in the interference.

c(b) An administrative patent judge or the Board may impose a sanction, including a sanction in the form of compensatory expenses and/or compensatory attorney fees, against a party for taking or maintaining a frivolous position.

(c) To the extent that any information under the control of an individual or entity located in a NAFTA country concerning knowledge, use, or other activity relevant to proving or disproving a date of invention has been ordered to be produced by an administrative patent judge or the Board (§ 1.671(h)), but has not been produced for use in the interference to the same extent as such information could be made available in the United States, the administrative patent judge or the Board shall draw such adverse inferences as may be appropriate under the circumstances, or take such other action permitted by statute, rule, or regulation, in favor of the party that requested the

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information in the interference, including imposition of appropriate sanctions under paragraph (a) of this section.b

20. Section 1.617 is proposed to be amended by revising paragraphs (a), (b), (d), (e), (g) and (h) to read as follows:

§ 1.617 Summary judgment against applicant.

(a) An cadministrative patent judgeb [examiner-in-chief] shall review any evidence filed by an applicant under § 1.608(b) to determine if the applicant is *prima facie* entitled to a judgment relative to the patentee. If the cadministrative patent judgeb [examiner-in-chief] determines that the evidence shows the applicant is *prima facie* entitled to a judgment relative to the patentee, the interference shall proceed in the normal manner under the regulations of this part. If in the opinion of the cadministrative patent judgeb [examiner-in-chief] the evidence fails to show that the applicant is *prima facie* entitled to a judgment relative to the patentee, the cadministrative patent judgeb [examiner-in-chief] shall, concurrently with the notice declaring the interference, enter an order stating the reasons for the opinion and directing the applicant, within a time set in the order, to show cause why summary judgment should not be entered against the applicant.

(b) The applicant may file a response to the order c,which may include an appropriate preliminary motion under § 1.633(c), (f) or (g),b and state any reasons why summary judgment should not be entered. Any request by the applicant for a hearing before the Board shall be made in the response. Additional evidence shall not be presented by the applicant or considered by the Board unless the applicant shows good cause why any additional evidence was not initially presented with the evidence filed under § 1.608(b). At the time an applicant files a response, the applicant shall serve a copy of any evidence filed under § 1.608(b) and this paragraph.

* * * * *

(d) If a response is timely filed by the applicant, all opponents may file a statement cand may oppose any preliminary motion filed under § 1.633(c), (f) or (g) by the applicantb within a time set by the cadministrative patent judgeb [examiner-in-chief]. The statement may set forth views as to why summary judgment should be granted against the applicant, but the statement shall be limited to discussing why all the evidence presented by the applicant does not overcome the reasons given by the cadministrative patent judgeb [examiner-in-chief] for issuing the order to show cause. cExcept as required to oppose a motion under § 1.633(c), (f) or (g) by the applicant, evidenceb [Evidence] shall not be filed by any opponent. An opponent may not request a hearing.

(e) Within a time authorized by the cadministrative patent judgeb [examiner-in-chief], an applicant may file a reply to any statement cor oppositionb filed by any opponent.

* * * * *

(g) If a response by the applicant is timely filed, the cadministrative patent judgeb [examiner-in-chief] or the Board shall decide whether the evidence submitted under § 1.608(b) and any additional evidence properly submitted under cparagraphsb [paragraph] (b) cand (e)b of this section shows that the applicant is *prima facie* entitled to a judgment relative to the patentee. cIf the applicant is not *prima facie* entitled to a judgment relative to the patentee, the Board shall enter a final decision granting summary judgment against the applicant. Otherwise, an interlocutory order shall be entered authorizing the interference to proceed in the normal manner under the regulations of this subpart.

(h) Only an applicant who filed evidence under § 1.608(b) may request a hearing. If that applicant requests a hearing, the Board may hold a hearing prior to entry of a decision under paragraph (g) of this section. The cadministrative patent judgeb [examiner-in-chief] shall set a date and time for the hearing. Unless otherwise ordered by the cadministrative patent judgeb [examiner-in-chief] or the Board, the applicant and any opponent will each be entitled to no more than 30 minutes of oral argument at the hearing.

21. Section 1.618 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.618 Return of unauthorized papers.

(a) cAn administrative patent judge or the Board shall enter an order directing theb [The Patent and Trademark Office shall] return to a party cofb any paper presented by the party when the filing of the paper is not authorized by, or is not in compliance with the requirements of, this subpart. Any paper returned will not thereafter be considered [by the Patent and Trademark Office] in the interference. A party may be permitted to file a corrected paper under such conditions as may be deemed appropriate by an cadministrative patent judgeb [examiner-in-chief].

* * * * *

22. Section 1.621 is proposed to be amended by revising paragraph (b) to read as follows:

§ 1.621 Preliminary statement, time for filing, notice of filing.

* * * * *(b) When a party files a preliminary statement, the party shall also simultaneously file and serve on all opponents in the interference a notice stating that a preliminary statement has been filed. A copy of the preliminary statement need not be served until ordered by the cadministrative patent judgeb [examiner-in-chief].

23. Section 1.622 is proposed to be amended by revising paragraph (b) to read as follows:

§ 1.622 Preliminary statement, who made invention, where invention made.

* * * * *

(b) The preliminary statement shall state whether the invention was made in the United States c, a NAFTA country (and, if so, which NAFTA country),b or [abroad] cin a non-NAFTA countryb. If made cin a non-NAFTA countryb [abroad], the preliminary statement shall state whether the party is entitled to the benefit of the second sentence of 35 U.S.C. 104.

24. Section 1.623 is proposed to be amended by revising the section heading and paragraph (a) to read as follows:

§ 1.623 Preliminary statement; invention made in United States cor a NAFTA countryb.

(a) When the invention was made in the United States cor a NAFTA country,b or a party is entitled to the benefit of the second sentence of 35 U.S.C. 104, the preliminary statement must state the following facts as to the invention defined by each count:

* * * * *

25. Section 1.624 is proposed to be amended by revising cthe section heading and paragraphs (a), (a)(1) through (a)(6) and (c) to read as follows:

§ 1.624 Preliminary statement; invention made [abroad] cin a non NAFTA countryb.

(a) When the invention was made cin a non-NAFTA countryb [abroad] and a party intends to rely on introduction of the invention into the United States cor a NAFTA countryb ,the preliminary statement must state the following facts as to the invention defined by each count:

(1) The date on which a drawing of the invention was first introduced into the United States cor a NAFTA countryb.

(2) The date on which a written description of the invention was first introduced into the United States cor a NAFTA countryb.

(3) The date on which the invention was first disclosed to another person in the United States cor a NAFTA countryb.

(4) The date on which the inventor's conception of the invention was first introduced into the United States cor a NAFTA countryb.

(5) The date on which an actual reduction to practice of the invention was first introduced into the United States cor a NAFTA countryb. If an actual reduction to practice of the invention was not introduced into the United States cor a NAFTA countryb, the preliminary amendment shall so state.

(6) The date after introduction of the inventor's conception into the United States cor a NAFTA countryb when active exercise of reasonable diligence in the United States cor a NAFTA countryb toward reducing the invention to practice began.

* * * * *

(c) When a party alleges under paragraph (a)(1) of this section that a drawing was introduced into the United States cor a NAFTA country,b a copy of that drawing shall be filed with and identified in the preliminary statement. When a party alleges under paragraph (a)(2) of this section that a written description of the invention was introduced into the United States cor a NAFTA country,b a copy of that written description shall be filed with and identified in the preliminary statement. See § 1.628(b) when a copy of the first drawing or first written description introduced in the United States cor a NAFTA countryb cannot be filed with the preliminary statement.

26. Section 1.625 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.625 Preliminary statement; derivation by an opponent.

(a) When [the invention was made in the United States or abroad and] a party intends to prove derivation by an opponent from the party, the preliminary statement must state the following as to the invention defined by each count:

* * * * *

27. Section 1.626 is proposed to be revised to read as follows:

§ 1.626 Preliminary statement; earlier application.

When a party does not intend to present evidence to prove a conception or an actual reduction to practice and the party intends to rely solely on the filing date of an earlier cfiledb application [filed in the United States or abroad] to prove a constructive reduction to practice, the preliminary statement may so state and identify the earlier cfiledb application with particularity.

28. Section 1.627 is proposed to be amended by revising paragraph (b) to read as follows:

§ 1.627 Preliminary statement; sealing before filing, opening of statement.

* * * * *

(b) A preliminary statement may be opened only at the direction of an cadministrative patent judgeb [examiner-in-chief].

29. Section 1.628 is proposed to be amended by revising paragraphs (a) and (b)(2) to read as follows:

§ 1.628 Preliminary statement; correction of error.

(a) A material error arising through inadvertence or mistake in connection with (1) a preliminary statement or (2) drawings or a written description submitted therewith or omitted therefrom, may be corrected by a motion (§ 1.635) for leave to file a corrected statement. The motion shall be supported by an affidavit cstating the date the error was first discovered,b [and shall show that the correction is essential to the ends of justice and] shall be accompanied by the corrected statement [. The motion] candb shall be filed as soon as practical after discovery of the error. cIf filed on or after the date set by the administrative patent judge for service of preliminary statements, the motion shall also show that correction of the error is essential to the interest of justice.b

(b) * * *

(2) shall attach to the preliminary statement the earliest drawing or written description made in or introduced into the United States cor a NAFTA countryb which is available. The party shall file a motion (§ 1.635).to amend its preliminary statement promptly after the first drawing, first written description, or drawing or written description first introduced into the United States cor a NAFTA countryb becomes available. A copy of the drawing or written description may be obtained, where appropriate, by a motion (§ 1.635) for additional discovery under § 1.687 or during a testimony period.

30. Section 1.629 is proposed to be amended by revising paragraphs (a), (c)(1) and (d) to read as follows:

§ 1.629 Effect of preliminary statement.

(a) A party shall be strictly held to any date alleged in the preliminary statement. Doubts as to (1) definiteness or sufficiency of any allegation in a preliminary statement or (2) compliance with formal requirements will be resolved against the party filing the statement by restricting the party to [the earlier of] its [filing date or] effective filing date or to the latest date of a period alleged in the preliminary statement[,] as may be appropriate. A party may not correct a preliminary statement except as provided by § 1.628.

* * * * *

(c)* * *

(1) Shall be restricted to the [earlier of the] party's [filing date or] effective filing date and

* * * * *

(d) If a party files a preliminary statement which contains an allegation of a date of first drawing or first written description and the party does not file a copy of the first drawing or written description with the preliminary statement as required by § 1.623(c), § 1.624(c), or § 1.625(c), the party will be restricted to the [earlier of the] party's [filing date or] effective filing date as to that allegation unless the party complies with § 1.628(b). The content of any drawing or written description submitted with a preliminary statement will not normally be evaluated or considered by the Board.

* * * * *

31. Section 1.630 is proposed to be revised to read as follows:

§ 1.630 Reliance on earlier application.

A party shall not be entitled to rely on the filing date of an earlier cfiledb application [filed in the United States or abroad] unless (a) the earlier application is identified (§ 1.611(c)(5)) in the notice declaring the interference or (b) the party files a preliminary motion under § 1.633 seeking the benefit of the filing date of the earlier application.

32. Section 1.631 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.631 Access to preliminary statement, service of preliminary statement.

(a) Unless otherwise ordered by an cadministrative patent judgeb [examiner-in-chief], concurrently with entry of a decision [by the examiner-in-chief] on preliminary motions filed under § 1.633, any preliminary statement filed under § 1.621(a) shall be opened to inspection by the senior party and any junior party who filed a preliminary statement. Within a time set by the cadministrative patent judgeb [examiner-in-chief], a party

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shall serve a copy of its preliminary statement on each opponent who served a notice under § 1.621(b).

* * * * *

33. Section 1.632 is proposed to be revised to read as follows:

§ 1.632 Notice of intent to argue abandonment, suppression or concealment by opponent.

A notice shall be filed by a party who intends to argue that an opponent has abandoned, suppressed c,b or concealed an actual reduction to practice (35 U.S.C. 102(g)). A party will not be permitted to argue abandonment, suppression, or concealment by an opponent unless the notice is timely filed. Unless authorized otherwise by an cadministrative patent judge [examiner-in-chief], a notice is timely when filed within ten (10) days afterb [of]the close of the testimony-in-chief of the opponent.

34. Section 1.633 is proposed to be amended by revising paragraphs (a), (a)(1), (a)(2), (b)(2), (f), (g) and (i) to read as follows:

§ 1.633 Preliminary motions.

* * * * *

(a) A motion for judgment cagainstb [on the ground that] an opponent's claim corresponding to a count con the ground that the claimb is not patentable to the opponent. In cdeciding an issue raised inb [determining] a motion filed under this paragraph, a claim [may] cwillb be construed [by reference to the prior art of record] cin light of the specification of the application or patent in which it appearsb. A motion under this paragraph shall not be based on:

(1) Priority of invention [of the subject matter of a count] by the moving party as against any opponent or

(2) Derivationb [derivation] of the cinventionb [subject matter of a count] by an opponent from the moving party. See § 1.637(a).

(b) * * *

(2) no claim of a party which corresponds to a count is identical to any claim of an opponent which corresponds to that count. See § 1.637(a). cWhen claims of opponents are presented in "means plus function" format, it may be possible for the claims of the opponents not to define the same patentable invention even though the claims contain the same literal wording.b

(f) A motion to be accorded the benefit of the filing date of an earlier cfiledb application [filed in the United States or abroad]. See § 1.637 (a) and (f).

* * * * *

(g) A motion to attack the benefit accorded an opponent in the notice declaring the interference of the filing date of an earlier cfiledb application [filed in the United States or abroad]. See § 1. 637 (a) and (g).

* * * * *

(i) When a motion is filed under paragraph (a) , (b) , or (g) of this section, an opponent, in addition to opposing the motion, may file a motion to redefine the interfering subject matter under paragraph (c) of this section [or]c,b a motion to substitute a different application under paragraph (d) of this section c, or a motion to add a reissue application to the interference under paragraph (h) of this sectionb.

* * * * *

35. Section 1.636 is proposed to be amended by revising paragraphs (a) through (d) to read as follows:

§ 1.636 Motions, time for filing.

(a) A preliminary motion under § 1.633 (a) through (h) shall be filed within a time period set by an cadministrative patent judgeb [examiner-in-chief].

(b) A preliminary motion under § 1.633 (i) or (j) shall be filed within 20 days of the service of the preliminary motion under § 1.633 (a), (b), (c)(1), or (g) unless otherwise ordered by an cadministrative patent judgeb [examiner-in-chief].

(c) A motion under § 1.634 shall be diligently filed after an error is discovered in the inventorship of an application or patent involved in an interference unless otherwise ordered by an cadministrative patent judgeb [examiner-in-chief].

(d) A motion under § 1.635 shall be filed as specified in this subpart or when appropriate unless otherwise ordered by an cadministrative patent judgeb [examiner-in-chief].

36. Section 1.637 is proposed to be amended by revisinq paragraphs (a), (b), (c)(1)(v), (c)(1)(vi), (c)(2)(ii), (c)(2)(iii), (c)(3)(ii), (c)(4)(i), (c)(4)(ii), (d), (e)(1)(viii.), (e)(2)(vii), (f)(2), (h)(3), (h)(4) to read as follows, deleting paragraphs (c)(2)(iv), (c)(3)(iii), (d)(4) and redesignating them as "Reserved," and adding paragraphs (c)(1)(vii), (e)(1)(ix), (e)(2)(viii) to read as follows:

§ 1.637 Content of motions.

(a) A party filing a motion has the burden of proof to show that it is entitled to the relief sought in the motion. cEachb [Every] motion shall include (1) a statement of the precise relief requested, (2) a statement of the material facts in support of the motion, cpreferably in numbered paragraphs,b and (3) a full statement of the reasons why the relief requested should be granted. cIf a party files a motion for judgment under § 1.633(a) against an opponent based on the ground of unpatentability over prior artb and the dates of the cited prior art are such that the prior art appears to be applicable to the party, it will be presumed, without regard to the dates alleged in the preliminary statement of the party, that the cited prior art is applicable to the party unless there is included with the motion an explanation, and evidence if appropriate, as to why the prior art does not apply to the party. If the motion fails to include a sufficient explanation or evidence, the party will not be permitted to rely on any such explanation or evidence in response to or in any subsequent action in the interference.b

(b) A motion under [§] c§§ 1.633, 1.634 orb 1.635 shall contain a certificate by the moving party stating that the moving party has conferred with all [opposing parties] copponentsb in an effort in good faith to resolve by agreement the issues raised by the motion. cThe certificate shall indicate that the reasons and facts in support of the motion were discussed with each opponent and, if an opponent has indicated that it will oppose the motion, identify the issues and/or facts believed to be in dispute.b [A moving party shall indicate in the motion whether any other party plans to oppose the motion.] The provisions of this paragraph do not apply to a motion to suppress evidence (§ 1. 656(h)).

(c) * * *

(1) * * *

(v) Show that each proposed count cis patentable over the prior art andb defines a separate patentable invention from every other count cproposed to remainb in the interference.

(vi) Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of any earlier cfiledb application [filed in the United States or abroad]c, if benefit of the earlier filed application is desired with respect to a proposed countb.

c(vii) If an opponent is accorded the benefit of the filing date of an earlier filed application in the notice of declaration of the interference, show why the opponent is not entitled to benefit of the earlier filed application with respect to the proposed count. Otherwise, the opponent will be presumed to be entitled to the benefit of the earlier filed application with respect to the proposed count.b

(2) * * *

(ii) Show that the cclaimb proposed cto be amendedb or added [claim] defines the same patentable invention as the count.

(iii) Show the patentability to the applicant of each cclaim proposed to beb amended or added [claim] and apply the terms of the cclaim proposed to beb amended or added [claim] to the disclosure of the application; when necessary a moving party applicant shall file with the motion [an] ca proposedb amendment [making the amended] cto the application amending the claim corresponding to the countb or [added] cadding the proposed additionalb claim to the application.

(iv) cReserved.b [Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of any earlier application filed in the United States or abroad.]

(3) * * *

(ii) Show the claim defines the same patentable invention as canother claim whose designation as corresponding tob the count cthe moving party does not disputeb.

(iii) cReserved.b [Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of any earlier application filed in the United States or abroad.]

(4) * * *

(ii) Show c(A) thatb the claim does not define the same patentable invention as any other claim [designated] cwhose designationb in the notice declaring the interference as corresponding to the count cthe party does not dispute and (B) that the claim cannot serve as the basis for a motion under § 1.633(c)(1) to add a new countb.

* * * * *

(d) A preliminary motion under § 1.633(d) to substitute a different application cof the moving partyb shall:

* * * * *

(4) cReserved.b [Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of an earlier application filed in the United States or abroad].

(e) * * *

(1) * * *

(viii) Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of an earlier cfiledb application [filed in the United States or abroad] c, if benefit is desired with respect to a proposed countb.

c(ix) If an opponent is accorded the benefit of the filing date of an earlier filed application in the notice of declaration of the interference, show why the opponent is not entitled to benefit of the earlier filed application with respect to the proposed count. Otherwise, the opponent will be presumed to be entitled to the benefit of the earlier filed application with respect to the proposed count.b

(2) * * *

(vii) Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of an earlier cfiledb application [filed in the United States or abroad]c, if benefit is desired with respect to a proposed countb.

c(viii) If an opponent is accorded the benefit of the filing date of an earlier filed application in the notice of declaration of the interference, show why the opponent is not entitled to benefit of the earlier filed application with respect to the proposed count. Otherwise, the opponent will be presumed to be entitled to the benefit of the earlier filed application with respect to the proposed count.b

(f) * * *

(2) When the earlier application is an application filed in the United States, certify that a complete copy of the file of the earlier application, except for documents filed under § 1.131 or § 1.608, has been served on all opponents. When the earlier application is an application filed cin a foreign countryb [abroad], certify that a copy of the application [filed abroad] has been served on all opponents. If the earlier cfiledb application [filed abroad] is not in English, the requirements of § 1.647 must also be met.

* * * * *

(h) * * *

(3) Show the patentability of all claims in, or proposed to be added to, the application for reissue which correspond to each count and apply the terms of the claims to the disclosure of the application for reissue; when necessary a moving applicant for reissue shall file with the motion an amendment adding any proposed claim to the application for reissue. cA patentee may not move under § 1.633(h) to add a reissue application that includes new or amended claims to be designated as not corresponding to a count.b

(4) Be accompanied by a motion under § 1.633(f) requesting the benefit of the filing date of any earlier cfiledb application [filed in the United States or abroad] c, if benefit is desiredb.

37. Section 1.638 is proposed to be amended by revising paragraphs (a) and (b) to read as follows:

§ 1.638 Opposition and reply, time for filing opposition and reply.

(a) Unless otherwise ordered by an cadministrative patent judgeb [examiner-in-chief], any opposition to any motion shall be filed within 20 days after service of the motion. An opposition shall (1) identify any material fact set forth in the motion which is in dispute and (2) include an argument why the relief requested in the motion should be denied.

(b) Unless otherwise ordered by an cadministrative patent judgeb [examiner-in-chief], canyb[a] reply shall be filed within 15 days after service of the opposition. A reply shall be directed only to new points raised in the opposition.

38. Section 1.639 is proposed to be amended by revising paragraphs (a), (c) and (d)(1) to read as follows:

§ 1.639 Evidence in support of motion, opposition, or reply.

(a) cExcept as provided in paragraphs (c) through (g) of this section, proofb [Proof] of any material fact alleged in a motion, opposition, or reply must be filed and served with the motion, opposition, or reply unless the proof relied upon is part of the interference file or the file of any patent or application involved in the interference or any earlier application filed in the United States of which a party has been accorded or seeks to be accorded benefit.

* * * * *

(c) If a party believes that additional evidence in the form of testimony that is unavailable to the party is necessary to support or oppose a preliminary motion under §1.633 or a motion to correct inventorship under § 1.634, the party shall describe the nature of any proposed testimony as specified in paragraphs (d) through (g) of this section. If the cadministrative patent judgeb [examiner-in-chief] finds that testimony is needed to decide the motion, the cadministrative patent judgeb [examiner-in-chief] may grant appropriate interlocutory relief and enter an order authorizing the taking of testimony and deferring a decision on the motion to final hearing.

(d) * * *

(l) Identify the person whom it expects to [call] cuseb as an expert;

* * * * *

39. Section 1.640 is proposed to be amended by revising paragraphs (a), (b), (b)(1), (b)(2), (c), (d), (d)(1), (d)(3) and (e) to read as follows:

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§ 1.640 Motions, hearing and decision, redeclaration of interference, order to show cause.

(a) A hearing on a motion may be held in the discretion of the cadministrative patent judgeb [examiner-in-chief]. The cadministrative patent judgeb [examiner-in-chief] shall set the date and time for any hearing. The length of oral argument at a hearing on a motion is a matter within the discretion of the cadministrative patent judgeb [examiner-in-chief]. An cadministrative patent judgeb [examiner-in-chief] may direct that a hearing take place by telephone.

(b)cUnless an administrative patent judge or the Board is of the opinion that a decision on a preliminary motion would materially advance the resolution of the interference, decision on a preliminary motion shall be deferred to final hearing.b Motions cotherwiseb will be decided by an cadministrative patent judgeb [examiner-in-chief]. An cadministrative patent judgeb [examiner-in-chief] may consult with an examiner in deciding motions involving a question of patentability. An cadministrative patent judgeb [examiner-in-chief] cmay take up motions for decision in any order andb may grant or deny any motion or take such other action which will secure the just, speedy, and inexpensive determination of the interference. cA matter raised by a party in support of or in opposition to a motion that is deferred to final hearing will not be entitled to consideration at final hearing unless the matter is raised in the party's brief at final hearing. If the administrative patent judge determines that the interference shall proceed to final hearing on the issue of priority or derivation, a time shall be set for each party to file a paper identifying any decisions on motions or on matters raised sua sponte by the administrative patent judge that the party wishes to have reviewed at final hearing as well as identifying any deferred motions that the party wishes to have considered at final hearing. Any evidence that a party wishes to have considered with respect to the decisions and motions identified by the party or by an opponent for consideration or review at final hearing, including any affidavit filed by the party under § 1.608 or 1.639(b), shall be served on the opponent during the testimony-in-chief period of the party.b

(1) cWhen appropriate after the time expires for filing replies to oppositions to preliminary motionsb [When preliminary motions under § 1.633 are decided], the cadministrative patent judgeb [examiner-in-chief] will [, when necessary,] set a time for filing any amendment to an application involved in the interference and for filing a supplemental preliminary statement as to any new counts cwhich may becomeb involved in the interference cif a preliminary motion to amend or substitute a count has been filedb. Failure or refusal of a party to timely present an amendment required by an cadministrative patent judgeb [examiner-in-chief] shall be taken without further action as a disclaimer by that party of the invention involved. A supplemental preliminary statement shall meet the requirements specified in § 1.623, § 1.624, § 1.625, or § 1.626, but need not be filed if a party states that it intends to rely on a preliminary statement previously filed under § 1.621(a). cAt an appropriate time in the interference, and when necessaryb [After the time expires for filing any amendment and supplemental preliminary statement], can order will be entered redeclaring [the examiner-in-chief will, if necessary, redeclare] the interference.

(2) After cthe time expires for filing preliminary motionsb [a decision is entered on preliminary motions filed under § 1.633], a further cpreliminaryb motion under § 1.633 will not be considered except as provided by § [1.655(b)] c1.645(b)b.

(c) When a decision on any motion under § 1.633, § 1.634, or § 1.635 cor on any matter raised sua sponte by an administrative patent judgeb is entered which does not result in the issuance of an order to show cause under paragraph (d) of this section, a party may file a request for reconsideration within 14 days after the date of the decision. cThe request for reconsideration shall be served by hand or Express Mail.b The filing of a request for reconsideration will not stay any time period set by the decision. The request for reconsideration shall specify with particularity the points believed to have been misapprehended or overlooked in rendering the decision. cAn opponent may file an opposition within 14 days after service of the request for reconsideration.b [No opposition to a request for reconsideration shall be filed unless requested by an examiner-in- chief or the Board. A decision of a single examiner-in-chief will not ordinarily be modified unless an opposition has been requested by an examiner-in-chief or the Board. The request for reconsideration shall be acted on by a panel of the Board consisting of at least three examiners-in-chief, one of whom will normally be the examiner-in-chief who decided the motion].

(d) An cadministrative patent judgeb [examiner-in-chief] may issue an order to show cause why judgment should not be entered against a party when:

(1) A decision on a motion cor on a matter raised sua sponte by an administrative patent judgeb is entered which is dispositive of the interference against the party as to any count:

* * * * *

(3) The party is a junior party whose preliminary statement fails to overcome the [earlier of the filing date or] effective filing date of another party.

(e) When an order to show cause is issued under paragraph (d) of this section, the Board shall enter judgment in accordance with the order unless, within 20 days after the date of the order, the party against whom the order issued files a paper which shows good cause why judgment should not be entered in accordance with the order.

c(1) If the order was issued under paragraph (d)(1) of this section, the paper may (i) request that final hearing be set to review any decision which is the basis for the order as well as any other decision of the administrative patent judge that the party wishes to have reviewed by the Board at final hearing, or (ii) fully explain why judgment should not be entered.

(2)b Any other party may file a response to the paper within 20 days of the date of service of the paper. cIf the order was issued under paragraph (d)(1) of this section and the paper includes a request for final hearing, the response must identify every decision of the administrative patent judge that the responding party wishes to have reviewed by the Board at a final hearing. If the order was issued under paragraph (d)(1) of this section and the paper does not include a request for final hearing, the response may include a request for final hearing, which must identify every decision of the administrative patent judge that the responding party wishes to have reviewed by the Board at a final hearing. Where only the response includes a request for a final hearing, the party that filed the paper has 14 days from the date of service of the response in which to file a supplemental paper identifying any other decision of the administrative patent judge that the party wishes to have reviewed by the Board at a final hearing.

(3) The paper or the response thereto should be accompanied by a motion (§ 1.635) requesting a testimony period if a party wishes to introduce any evidence to be considered at final hearing (§ 1.671). A request for a testimony period shall be construed as including a request for final hearing.

(4) If the paper contains an explanation of why judgment should not be entered in accordance with the order and no party has requested a final hearing, the decision that is the basis for the order shall be reviewed based on the contents of the paper and the response. If the paper fails to show good cause, the Board shall enter judgment against the party against whom the order issued.b [If the party against whom the order was issued fails to show good cause, the Board shall enter judgment against the party. If a party wishes to take testimony in response to an order to show cause, the party's response should be accompanied by a motion (§ 1.635) requesting the testimony period. See § 1.651(c)(4).]

40. Section 1.641 and the section heading are proposed to be revised to read as follows:

§ 1.641 Unpatentability discovered by cadministrative patent judgeb [examiner-in-chief].

c(a)b During the pendency of an interference, if the administrative patent judgeb [examiner-in-chief] becomes aware of a reason why a claim cdesignated to correspondb [corresponding] to a count may not be patentable, the cadministrative patent judgeb [examiner-in-chief] may center an order notifyingb [notify] the parties of the reason and set a time within which each party may present its views c, which may include

argument and any appropriate preliminary motions under § 1.633(c), (d) or (h), including any supporting evidenceb.

c(b) If a party timely files a preliminary motion in response to the order of the administrative patent judge, any opponent may file an opposition pursuant to § 1.638(a). If an opponent files an opposition, the party may reply pursuant to § 1.638(b).

(c)b After considering any timely filed views, cincluding any timely filed preliminary motions under § 1.633,b the cadministrative patent judgeb [examiner-in-chief] shall decide how the interference shall proceed.

41. Section 1.642 is proposed to be revised to read as follows:

§ 1.642 Addition of application or patent to interference.

During the pendency of an interference, if the cadministrative patent judgeb [examiner-in-chief] becomes aware of an application or a patent not involved in the interference which claims the same patentable invention as a count in the interference, the cadministrative patent judgeb [examiner-in-chief] may add the application or patent to the interference on such terms as may be fair to all parties.

42. Section 1.643 is proposed to be amended by revising paragraph (b) to read as follows:

§ 1.643 Prosecution of interference by assignee.

* * * * *

(b) An assignee of a part interest in an application or patent involved in an interference may file a motion (§ 1.635) for entry of an order authorizing it to prosecute the interference. The motion shall show (1) the inability or refusal of the inventor to prosecute the interference or (2) other cause why cit is in the interest ofb [the ends of] justice cto permitb [require that] the assignee of a part interest [be permitted] to prosecute the interference. The cadministrative patent judgeb [examiner-in-chief] may allow the assignee of a part interest to prosecute the interference upon such terms as may be appropriate.

43. Section 1.644 is proposed to be amended by revising paragraphs (a), (a)(1), (a)(2), (b), (c), (d), (f) and (g) to read as follows:

§ 1.644 Petitions in interferences.

(a) There is no appeal to the Commissioner in an interference from a decision of an cadministrative patent judgeb [examiner-in-chief]or cthe Boardb [a panel consisting of more than one examiner-in-chief] . The Commissioner will not consider a petition in an interference unless:

(1) The petition is from a decision of an cadministrative patent judgeb [examiner-in-chief] or [a panel] cthe Boardb and the cadministrative patent judgeb [examiner-in-chief] or the [panel] cBoardb shall be of the opinion

* * * * *

(2) The petition seeks to invoke the supervisory authority of the Commissioner [and is not filed prior to the decision of the Board awarding judgment] and does not relate to

* * * * *

(3) * * *

(b) A petition under paragraph (a)(1) of this section filed more than 15 days after the date of the decision of the cadministrative patent judgeb [examiner-in-chief] or the [panel] cBoardb may be dismissed as untimely. A petition under paragraph (a)(2) of this section shall not be filed prior to cthe party's brief for final hearing (see § 1.656)b [the decision by the Board awarding judgment]. Any petition under paragraph (a)(3) of this section shall be timely if it is made as part of, or simultaneously with, a proper motion under § 1.633, § 1.634, or § 1.635 cwhen granting the motion would require waiver of a ruleb. Any opposition to a petition shall be filed within 15 days of the date of service of the petition.

(c) The filing of a petition shall not stay the proceeding unless a stay is granted in the discretion of the cadministrative patent judgeb [examiner-in-chief, the panel], cthe Board,b or the Commissioner.

(d) Any petition must contain a statement of the facts involved c, preferably in numbered paragraphs,b and the point or points to be reviewed and the action requested. [Briefs or memoranda, if any, in support of the petition or opposition shall accompany or be embodied therein.] The petition will be decided on the basis of the record made before the cadministrative patent judgeb [examiner-in-chief] or the [panel] cBoardb and no new evidence will be considered by the Commissioner in deciding the petition. Copies of documents already of record in the interference shall not be submitted with the petition or opposition.

* * * * *

(f) Any request for reconsideration of a decision by the Commissioner shall be filed within c14b[15]days of the decision of the Commissioner and must be accompanied by the fee set forth in §1.17(h). No opposition to a request for reconsideration shall be filed unless requested by the Commissioner. The decision will not ordinarily be modified unless such an opposition has been requested by the Commissioner.

(g) Where reasonably possible, service of any petition, opposition, or request for reconsideration shall be such that delivery is accomplished within one working day. Service by hand or[”]Express Mail[”]complies with this paragraph.

* * * * *

44. Section 1.645 is proposed to be amended by revising paragraphs (a), (b) and (d) to read as follows:

§ 1.645 Extension of time, late papers, stay of proceedings.

(a) Except to extend the time for filing a notice of appeal to the U.S. Court of Appeals for the Federal Circuit or for commencing a civil action, a party may file a motion (§ 1.635) seeking an extension of time to take action in an interference. See § 1.304(a) for extensions of time for filing a notice of appeal to the U.S. Court of Appeals for the Federal Circuit or for commencing a civil action. The motion shall be filed within sufficient time to actually reach the cadministrative patent judgeb [examiner-in-chief] before expiration of the time for taking action. A moving party should not assume that the motion will be granted even if there is no objection by any other party. The motion will be denied unless the moving party shows good cause why an extension should be granted. The press of other business arising after an cadministrative patent judgeb [examiner-in-chief] sets a time for taking action will not normally constitute good cause. A motion seeking additional time to take testimony because a party has not been able to procure the testimony of a witness shall set forth the name of the witness, any steps taken to procure the testimony of the witness, the dates on which the steps were taken, and the facts expected to be proved through the witness.

(b) Any paper belatedly filed[,]will not be considered except upon motion (§ 1.635) which shows cgoodb [sufficient] cause why the paper was not timely filed[.] cor an administrative patent judge or the Board, sua sponte, is of the opinion that it would be in the interest of justice to consider the paper.b See § 1.304(a) for exclusive procedures relating to belated filing of a notice of appeal to the U.S. Court of Appeals for the Federal Circuit or belated commencement of a civil action.

* * * * *

(d) [In an appropriate circumstance, an] cAn administrative patent judgeb [examiner-in-chief] may stay proceedings in an interference.

45. Section 1.646 is proposed to be amended by revising paragraphs (a)(1), (a)(2), (b), (c), (c)(1), (c)(4), (c)(5), (d) and (e), redesignating paragraph (c)(5) as (c)(6) and inserting a new

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paragraph (c)(5) to read as follows:

§ 1.646 Service of papers, proof of service.

(a) * * *

(1) Preliminary statements when filed under § 1.621; preliminary statements shall be served when service is ordered by an cadministrative patent judgeb [examiner-in-chief].

(2) Certified transcripts and exhibits which accompany the transcripts filed under §[§] 1.676 [or 1.684]; copies of transcripts shall be served as part of a party's record under § 1.653(c).

(b) Service shall be on an attorney or agent for a party. If there is no attorney or agent for the party, service shall be on the party. An cadministrative patent judgeb [examiner-in-chief] may order additional service or waive service where appropriate.

(c) Unless otherwise ordered by an cadministrative patent judgeb [examiner-in-chief], or except as otherwise provided by this subpart, service of a paper shall be made as follows:

(1) By handing a copy of the paper cor causing a copy of the paper to be handedb to the person served.

* * * * *

(4) By mailing a copy of the paper by first class mail; when service is by cfirst classb mail the date of mailing is regarded as the date of service.

(5) cBy mailing a copy of the paper by Express Mail; when service is by Express Mail the date of deposit with the U.S. Postal Service is regarded as the date of service.

(6)b When it is shown to the satisfaction of an cadministrative patent judgeb [examiner-in-chief] that none of the above methods of obtaining or serving the copy of the paper was successful, the cadministrative patent judgeb [examiner-in-chief] may order service by publication of an appropriate notice in the *Official Gazette*.

(d) An cadministrative patent judgeb [examiner-in-chief] may order that a paper be served by hand or["]Express Mail["].

(e) cThe due date for serving a paper is the same as the due date for filing the paper in the Patent and Trademark Office.b Proof of service must be made before a paper will be considered in an interference. Proof of service may appear on or be affixed to the paper. Proof of service shall include the date and manner of service. In the case of personal service under paragraphs (c)(1) through (c)(3) of this section, proof of service shall include the names of any person served and the person who made the service. Proof of service may be made by an acknowledgment of service by or on behalf of the person served or a statement signed by the party or the party's attorney or agent containing the information required by this section. A statement of an attorney or agent attached to, or appearing in, the paper stating the date and manner of service will be accepted as *prima facie proof of service*.

46. Section 1.647 is proposed to be revised to read as follows:

§ 1.647 Translation of document in foreign language.

When a party relies on a document cor is required to produce a documentb in a language other than English, a translation of the document into English and an affidavit attesting to the accuracy of the translation shall be filed with the document.

47. Section 1.651 is proposed to be amended by revising paragraphs (a), (a)(2), (c)(1), (c)(2), (c)(3) and (d) to read as follows:

§ 1.651 Setting times for discovery and taking testimony, parties entitled to take testimony.

(a) At an appropriate stage in an interference, an cadministrative patent judgeb [examiner-in-chief] shall set

* * * * *

(2) testimony periods for taking any necessary testimony [(testimony includes testimony to be taken abroad under § 1.684)].

* * * * *

(C) * * *

(1) The cadministrative patent judgeb [examiner-in-chief] orders the taking of testimony under § 1.639(c);

(2) The party alleges in its preliminary statement a date of invention prior to the [earlier of the filing date or] effective filing date of the senior party;

(3) A testimony period has been set to permit an opponent to prove a date of invention prior to the [earlier of the filing date or] effective filing date of the party and the party has filed a preliminary statement alleging a date of invention prior to that date; or

* * * * *

(d) Testimony, including any testimony to be taken cin a foreign countryb [abroad under § 1.684], shall be taken and completed during the testimony periods set under paragraph (a) of this section. A party seeking to extend the period for taking testimony must comply with § 1.635 and § 1.645(a).

48. Section 1.652 is proposed to be revised to read as follows:

§ 1.652 Judgment for failure to take testimony or file record.

If a junior party fails to timely take testimony authorized under § 1.651, or file a record under § 1.653(c), an cadministrative patent judgeb [examiner-in-chief], with or without a motion (§ 1.635) by another party, may issue an order to show cause why judgment should not be entered against the junior party. When an order is issued under this section, the Board shall enter judgment in accordance with the order unless, within 15 days after the date of the order, the junior party files a paper which shows good cause why judgment should not be entered in accordance with the order. Any other party may file a response to the paper within 15 days of the date of service of the paper. If the party against whom the order was issued fails to show good cause, the Board shall enter judgment against the party.

49. Section 1.653 is proposed to be amended by deleting paragraphs (c)(5), (f) and (h) and redesignating them as "Reserved" and by revising paragraphs (a), (b), (c), (c)(1), (c)(4), (g) and (i) to read as follows:

§ 1.653 Record and exhibits.

(a) Testimony shall consist of affidavits under [§] c§§b 1.672(b) c, (c)b and [(e)] c(g), 1.682(c), 1.683(b) and 1.688(b)b, transcripts of depositions under §§ [1.672(b) and (c)] c1.671(g) and 1.672(a) when a deposition is authorized by an administrative patent judge, transcripts of depositions under §§ 1.672(d), 1.682(d), 1.683(c) and 1.688(c)b, agreed statements [of fact] under §[1.672(f)] c1.672(h)b, [and] transcripts of interrogatories, cross-interrogatories, and recorded answers cand copies of written interrogatories and answers and written requests for admissions and answersb under §[1.684(c)] c1.688(a)b.

(b) An affidavit shall be filed as set forth in §[1.672(b)] c1.677b. A certified transcript of a deposition c,b including a deposition cross-examining an affiant, shall be filed as set forth in [§] c§§b 1.676 c, 1.677 and 1.678b. An original agreed statement shall be filed as set forth in c§ 1.672(h)b [§ 1.672(f). A transcript of interrogatories, cross-interrogatories, and recorded answers shall be filed as set forth under §1.684(c)] .

(c) In addition to the items specified in paragraph (b) of this section and within a time set by an cadministrative patent judge,b [examiner-in-chief] each party shall file three copies and serve one copy of a record consisting of:

(1) An index of the names of [each witness] cthe witnesses for the party,b giving the pages of the record where the direct

testimony and cross-examination of each witness begins.

* * * * *

(4) Each (i) affidavit cby a witness for the partyb, (ii) transcript, including transcripts of cross-examination of any affiant cwho testified for the party and transcripts of compelled deposition testimony by a witness for the partyb, (iii) agreed statement relied upon by the party, and (iv) transcript of interrogatories, cross-interrogatories and recorded answers [filed under paragraph (b) of this section] .

(5) c) Reserved.b [Each notice, official record, and publication relied upon by the party and filed under § 1.682(a).]

* * * * *

(f) cReserved.b [The record may be typewritten or printed.]

(g) [When the] cTheb record [is printed, it] may be produced by standard typographical printing or by any cotherb process capable of producing a clear black permanent imageb. All printed matter except on covers must appear in at least 11 point type on opaque, unglazed paper. [Margins must be justified.] Footnotes may not be printed in type smaller than 9 point. The cpageb [pages] size shall be c21.8 by 27.9 cm. (81/2 by 11 inches) (letter size)b [81/2 by 11 inches (21.8 by 7.9 cm.)] with [type] cprintedb matter c16.5 by 24.1 cm. (61/2 by 91/2 inches)b [61/2 by 91/2 inches (16.5 by 24.1 cm.)] . The record shall be bound cwith covers at their left edges in such manner asb to lie flat when open cto any page and in one or more volumes of convenient size (approximately 100 pages per volume is suggested). When there is more than one volume, the numbers of the pages contained in each volume shall appear at the top of the cover for each volumeb.

(h) cReserved.b [When the record is typewritten, it must be clearly legible on opaque, unglazed, durable paper approximately 8? by 11 inches (21.8 by 27.9 cm.) in size (letter size). Typing shall be double-spaced on one side of the paper in not smaller than pica-type with a margin of 1? (3.8 cm.) on the left-hand side of the page. The pages of the record shall be bound with covers at their left edges in such manner to lie flat when open in one or more volumes of convenient size (approximately 100 pages per volume is suggested). Multigraphed or otherwise reproduced copies conforming to the standards specified in this paragraph may be accepted.]

(i) Each party shall file its exhibits with the record specified in paragraph (c) of this section. cExhibits include documents and things identified in affidavits or on the record during the taking of oral depositions and official records and publications filed by the party under § 1.682(a).b One copy of each documentary exhibit shall be served. Documentary exhibits shall be filed in an envelope or folder and shall not be bound as part of the record. Physical exhibits, if not filed by an officer under § 1.676(d), shall be filed with the record. Each exhibit shall contain a label which identifies the party submitting the exhibit and an exhibit number, the style of the interference (e.g., Jones v. Smith), and the interference number. Where possible, the label should appear at the bottom right-hand corner of each documentary exhibit. Upon termination of an interference, an cadministrative patent judgeb [examiner-in-chief] may return an exhibit to the party filing the exhibit. When any exhibit is returned, [the examiner-in-chief] can orderb shall cbe enteredb [enter an appropriate order] indicating that the exhibit has been returned.

* * * * *

50. Section 1.654 is proposed to be amended by revising paragraphs (a) and (d) to read as follows:

§ 1.654 Final hearing.

(a) At an appropriate stage of the interference, the parties will be given an opportunity to appear before the Board to present oral argument at a final hearing. An cadministrative patent judge mayb [examiner-in-chief shall] set a date and time for final hearing. Unless otherwise ordered by an cadministrative patent judgeb [examiner-in-chief] or the Board, each party will be entitled to no more than c30b[60]minutes of oral argument at final hearing. cA party who does not file a brief for final hearing (§ 1.656(a)) shall not be entitled to appear at final hearing.b

* * * * *

(d) After final hearing, the interference shall be taken under advisement by the Board. No further paper shall be filed except under § 1.658(b) or as authorized by an cadministrative patent judgeb [examiner-in-chief] or the Board. No additional oral argument shall be had unless ordered by the Board.

51. Section 1.655 is proposed to be amended by revising paragraphs (a), (b) and (c) to read as follows:

§ 1.655 Matters considered in rendering a final decision.

(a) In rendering a final decision, the Board may consider any properly raised issue including (1) priority of invention, (2) derivation by an opponent from a party who filed a preliminary statement under § 1.625, (3) patentability of the invention, (4) admissibility of evidence, (5) any interlocutory matter deferred to final hearing, and (6) any other matter necessary to resolve the interference. The Board may also consider whether centry ofb any interlocutory order was [erroneous or] an abuse of discretion. All interlocutory orders shall be presumed to have been correct and the burden of showing [error or] an abuse of discretion shall be on the party attacking the order. When two or more interlocutory orders involve the same issue, the last entered order shall be presumed to have been correct.

(b) A party shall not be entitled to raise for consideration at final hearing a matter which properly could have been raised by a motion under §§ 1.633 or 1.634 unless (1) the cmatter was properly raised in ab motion cthatb was [properly] ctimelyb filed cby the party under §§ 1.633 or 1.634 and the motion was denied or deferred to final hearingb (2) the matter was properly raised by[a] ctheb party in[an] ca timely filedb opposition to a motion under §§ 1.633 or 1.634 and the motion was granted over the opposition cor deferred to final hearingbor (3) the party shows good cause why the issue was not [timely] cproperlyb raised by ca timely filedb motion or opposition. cA change of attorneys during the interference generally does not constitute good cause. A party who fails to contest, by way of a timely filed preliminary motion under § 1.633(c), the designation of a claim as corresponding to a count may not subsequently argue to an administrative patent judge or the Board the separate patentability or lack of separate patentability of claims designated to correspond to the count.b

(c) cIn the interest of justiceb [To prevent manifest injustice], the Board may cexercise its discretion tob consider an issue even though it would not otherwise be entitled to consideration under this section.

52. Section 1.656 is proposed to be amended by revising paragraphs (a), (d), (e), (g), (h) and (i), redesignating paragraphs (b)(1) through (b)(6) as (b)(3) through (b)(8) and adding new paragraphs (b)(1) and (b)(2) to read as follows:

§ 1.656 Briefs for final hearing.

(a) Each party shall be entitled to file briefs for final hearing. The cadministrative patent judgeb [examiner-in-chief] shall determine the briefs needed and shall set the time and order for filing briefs.

(b) * * *

(1) cA statement of interest indicating:

(i) The full name of every party represented by the attorney in the interference.

(ii) The name of the real party in interest if the party named in the caption is not the real party in interest.

(2) A statement of related cases indicating:

(i) Whether the interference was previously before the Board for final hearing.

(ii) The name and number of any related appeal or interference which is pending before, or which has been decided by, the Board, or which is pending before, or which has been decided by, the U.S. Court of Appeals for the Federal Circuit or a district court in a proceeding under 35 U.S.C. 146. A

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related appeal or interference is one which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending interference.

(3)b * * *

c(4)b [(2)] A statement of the issues presented for decision in the interference.

c(5)b [(3)] A statement of the facts c, preferably in numbered paragraphs,b relevant to the issues presented for decision with appropriate references to the record.

c(6)b [(4)] An argument, which may be preceded by a summary, which shall contain the contentions of the party with respect to the issues cit is raising for consideration at final hearingb [to be decided], and the reasons therefor, with citations to the cases, statutes, other authorities, and parts of the record relied on.

c(7)b [(5)] A short conclusion stating the precise relief requested.

c(8)b [(6)] An appendix containing a copy of the counts.

* * * * *

(d) cUnless ordered otherwise by an administrative patent judge, briefs shall be double-spaced (except for footnotes, which may be single-spaced) and shall comply with the requirements of § 1.653(g) for records except the requirement for binding.b [Briefs may be printed or typewritten. If typewritten, legal-size paper may be used. The opening brief of each party in excess of 50 legal-size double-spaced typewritten pages or any other brief in excess of 25 legal-size double-spaced typewritten pages shall be printed unless a satisfactory reason be given why the brief should not be printed. Any printed brief shall comply with the requirements of § 1.653(g). Any typewritten brief shall comply with the requirements of § 1.653(h), except legal-size paper may be used and the binding and covers specified are not required.]

(e) An original and cfourb [three] copies of each brief must be filed.

* * * * *

(g) Any party, separate from its opening brief, but filed concurrently therewith, may file an original and cfourb [three] copies of concise proposed findings of fact and conclusions of law. Any proposed findings of fact shall be cin numbered paragraphs andb supported by specific references to the record. Any proposed conclusions of law shall be cin numbered paragraphs andb supported by citation of cases, statutes, or other authority. Any [opposing party] copponentb, separate from its opening or reply brief, but filed concurrently therewith, may file a paper accepting or objecting to any proposed findings of fact or conclusions of law; when objecting, a reason must be given. The Board may adopt the proposed findings of fact and conclusions of law in whole or in part.

(h) If a party wants the Board in rendering its final decision to rule on the admissibility of any evidence, the party shall file with its opening brief an original and cfourb [three] copies of a motion (§ 1.635) to suppress the evidence. The provisions of § 1.637(b) do not apply to a motion to suppress under this paragraph. Any objection previously made to the admissibility of cthe evidence of an opponentb [an opponent's evidence] is waived unless the motion required by this paragraph is filed. cA party that failed to challenge the admissibility of the evidence of an opponent on a ground that could have been raised in a timely objection under § 1.672(c), 1.682(c), 1.683(b) or 1.688(b) may not move under this paragraph to suppress the evidence on that ground at final hearing.b An original and cfourb [three] copies of an opposition to the motion may be filed with an opponent's opening brief or reply brief as may be appropriate.

(i) When a junior party fails to timely file an opening brief, an order may issue requiring the junior party to show cause why the Board should not treat failure to file the brief as a concession of priority. If the junior party fails to cshow good causeb [respond] within a time period set in the order, judgment may be entered against the junior party.

53. Section 1.657 is proposed to be revised to read as follows:

§ 1.657 Burden of proof as to date of invention.

c(a)b A rebuttable presumption shall exist that, as to each count, the inventors made their invention in the chronological order of the earlier of their [filing dates or] effective filing dates. The burden of proof shall be upon a party who contends otherwise.

c(b) In an interference involving copending applications or involving a patent and an application having an effective filing date on or before the date the patent issued, a junior party shall have the burden of establishing priority by a preponderance of the evidence.

(c) In an interference involving an application and a patent and where the effective filing date of the application is after the date the patent issued, a junior party shall have the burden of establishing priority by clear and convincing evidence.b

54. Section 1.658 is proposed to be amended by revising paragraphs (a) and (b) to read as follows:

§ 1.658 Final decision.

(a) After final hearing, the Board shall enter a decision resolving the issues raised at final hearing. The decision may (1) enter judgment, in whole or in part, (2) remand the interference to an cadministrative patent judgeb [examiner-in-chief] for further proceedings, or (3) take further action not inconsistent with law. A judgment as to a count shall state whether or not each party is entitled to a patent containing the claims in the party's patent or application which correspond to the count. When the Board enters a decision awarding judgment as to all counts, the decision shall be regarded as a final decision cfor the purpose of judicial review (35 U.S.C. 141-144, 146) unless a request for reconsideration under paragraph (b) of this section is timely filedb.

(b) Any request for reconsideration of a decision under paragraph (a) of this section shall be filed within one month after the date of the decision. The request for reconsideration shall specify with particularity the points believed to have been misapprehended or overlooked in rendering the decision. Any [reply] coppositionb to a request for reconsideration shall be filed within 14 days of the date of service of the request for reconsideration. [Where reasonably possible, service] cServiceb of the request for reconsideration shall be [such that delivery is accomplished] by hand or["]Express Mail.["]The Board shall enter a decision on the request for reconsideration. If the Board shall be of the opinion that the decision on the request for reconsideration significantly modifies its original decision under paragraph (a) of this section, the Board may designate the decision on the request for reconsideration as a new decision. cA decision on reconsideration is a final decision for the purpose of judicial review (35 U.S.C. 141- 144, 146).b

* * * * *

55. Section 1.660 is proposed to be amended by adding paragraph (e) to read as follows:

§ 1.660 Notice of reexamination, reissue, protest or litigation.

* * * * *

c(e) The notice required by this section is designed to assist the administrative patent judge and the Board in efficiently handling interference cases. Failure of a party to comply with the provisions of this section may result in sanctions under § 1.616. Knowledge by, or notice to, an employee of the Office other than an employee of the Board, of the existence of the reexamination, application for reissue, protest, or litigation shall not be sufficient. The notice contemplated by this section is notice addressed specifically to an administrative patent judge or the Board.b

56. Section 1.662 is proposed to be amended by revising paragraphs (a) and (b) to read as follows:

§ 1.662 Request for entry of adverse judgment; reissue filed by patentee.

(a) A party may, at any time during an interference, request and agree to entry of an adverse judgment. The filing by ca partyb [an applicant or patentee] of a written disclaimer of the invention defined by a count, concession of priority or unpatentability of the subject matter of a count, abandonment of the invention defined by a count, or abandonment of the contest as to a count will be treated as a request for entry of an adverse judgment against the applicant or patentee as to all claims which correspond to the count. Abandonment of an application [by an applicant], other than an [applicant] capplicationb for reissue having a claim of the patent sought to be reissued involved in the interference, will be treated as a request for entry of an adverse judgment against the applicant as to all claims corresponding to all counts. Upon the filing by a party of a request for entry of an adverse judgment, the Board may enter judgment against the party.

(b) If a patentee involved in an interference files an application for reissue during the interference and cthe reissue application does not include a claim that corresponds to a countb [omits all claims of the patent corresponding to the counts of the interference for the purpose of avoiding the interference], judgment may be entered against the patentee. A patentee who files an application for reissue cwhich includes a claim that corresponds to a countb [other than for the purpose of avoiding the interference] shall c, in addition to complying with the provisions of § 1.660(b),b timely file a preliminary motion under § 1.633(h) or show good cause why the motion could not have been timely filed or would not be appropriate.

* * * * *

57. Section 1.664 is proposed to be amended by revising paragraphs (a) and (b) to read as follows:

§ 1.664 Action after interference.

(a) After termination of an interference, the examiner will promptly take such action in any application previously involved in the interference as may be necessary. Unless entered by order of an cadministrative patent judgeb [examiner-in-chief], amendments presented during the interference shall not be entered, but may be subsequently presented by the applicant subject to the provisions of this subpart provided prosecution of the application is not otherwise closed.

(b) After judgment, the application of any party may be held subject to further examination, including an interference with another application.

58. Section 1.671 is proposed to be amended by revising paragraphs (a), (c)(1), (c)(2), (c)(6), (c)(7), (f) and (g) to read as follows, deleting paragraph (e) and redesignating it as "Reserved", redesignating current paragraph (h) as (i), and adding new paragraphs (h) and (j) to read as follows:

§ 1.671 Evidence must comply with rules.

(a) Evidence consists of testimony and exhibits, official records and publications filed under § 1.682, [evidence] ctestimonyb from another interference, proceeding, or action filed under § 1.683, and discovery relied upon under § 1.688, and the specification (including claims) and drawings of any application or patent:

* * * * *

(C) * * *

(1) *Courts of the United States, U.S. Magistrate, court, trial court,* or *trier of fact* means cadministrative patent judgeb [examiner-in-chief] or Board as may be appropriate.

(2) *Judge* means cadministrative patent judgeb [examiner-in- chief].

* * * * *

(6) *Before the hearing* in Rule 703 means before giving testimony by caffidavit orb oral deposition [or affidavit].

(7) *The trial or hearing* in Rules 803(24) and 804(5) means the taking of testimony by caffidavit orb oral deposition [or affidavit].

* * * * *

(e) cReserved.b [A party may not rely on an affidavit filed by that party during *ex parte* prosecution of an application, an affidavit under § 1.608, or an affidavit under § 1.639(b) unless: (1) A copy of the affidavit is or has been served and (2) a written notice is filed prior to the close of the party's relevant testimony period stating that the party intends to rely on the affidavit. When proper notice is given under this paragraph, the affidavit shall be deemed filed under § 1.672(b). A copy of the affidavit shall be included in the record (§ 1.653).]

(f) The significance of documentary and other exhibits cidentified by a witness in an affidavit or during oral depositionb shall be discussed with particularity by[a] cthe witness [during oral deposition or in an affidavit].

(g) A party must file a motion (§ 1.635) seeking permission from an cadministrative patent judgeb [examiner-in-chief] prior to ccompellingb [taking] testimony or cproduction ofb [seeking] documents or things under 35 U.S.C. 24 cor from a partyb. The motion shall describe the general nature and the relevance of the testimony, document, or thing. cIf permission is granted, the party shall notice a deposition under § 1.673 and may proceed to take testimony. The testimony of the witness shall be taken on oral deposition.b

c(h) A party must file a motion (§ 1.635) seeking permission from an administrative patent judge prior to compelling testimony or production of documents or things in a foreign country.

(1) In the case of testimony, the motion shall:

(i) Describe the general nature and relevance of the testimony;

(ii) Identify the witness by name or title;

(iii) State why the party believes the witness can be compelled to testify in the foreign country; and

(iv) Demonstrate that the witness has been asked to testify in the United States and has refused to do so even though the party has offered to pay the expenses of the witness to travel to the United States.

(2) In the case of production of a document or thing, the motion shall:

(i) Describe the general nature and relevance of the document or thing;

(ii) State why the party believes production of the document or thing can be compelled in the foreign country; and

(iii) Demonstrate that the individual or entity having possession, custody, and control of the document or thing will not produce the document or thing in the United States even though the party has offered to pay the expenses of producing the document or thing in the United States.b

c(i)b [(h)] Evidence which is not taken or sought and filed in accordance with this subpart shall not be admissible.

c(j) The weight to be given testimony taken in a foreign country will be determined on a case-by-case basis. Little, if any, weight may be given to testimony taken in a foreign country unless the party taking the testimony proves by clear and convincing evidence (1) that giving false testimony in an interference proceeding is punishable as perjury under the laws of the foreign country where the testimony is taken and (2) that the punishment in a foreign country for giving such false testimony is similar to the punishment for perjury committed in the United States.b

59. Section 1.672 is proposed to be amended by revising paragraphs (a), (b), (c) and (d), redesignating paragraphs (c), (d), (e) and (f) as paragraphs (e), (f), (g) and (h), respectively, and by adding new paragraphs (c) and (d) to read as follows:

§ 1.672 Manner of taking testimony.

(a) cUnless testimony must be compelled under 35 U.S.C. 24 or compelled from a party or in a foreign country, testimonyb [Testimony] of a witness cshallb [may] be taken by [oral deposition or] affidavit in accordance with this subpart. cTestimony which must be compelled under 35 U.S.C. 24 or com-

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pelled from a party or in a foreign country shall be taken by oral deposition.b

(b) [A party wishing to take the testimony of a witness whose testimony will not be compelled under 35 U.S.C. 24 may elect to present the testimony of the witness by affidavit or deposition.] A party [electing to present] cpresentingb testimony of a witness by affidavit shall, prior to the [close of the party's relevant testimony period, file and serve] ctime set by the administrative patent judge for serving affidavits, file a copy of theb[an] affidavit [of the witness or, where appropriate, a notice under § 1.671(e). To facilitate preparation of the record (§ 1.653 (g) and (h)), a party should file an affidavit on paper which is 81/2 by 11 inches (21.8 by 27.9 cm)] . cIf the affidavit relates to a party's case-in-chief, it shall be filed no later than the date set by an administrative patent judge for the party to file affidavits for its case-in-chief. If the affidavit relates to a party's case-in-rebuttal, it shall be filed no later than the date set by an administrative patent judge for the party to file affidavits for its case-in-rebuttal.b A party shall not be entitled to rely on any document referred to in the affidavit unless a copy of the document is filed with the affidavit. A party shall not be entitled to rely on any thing mentioned in the affidavit unless the opponent is given reasonable access to the thing. A thing is something other than a document. cThe pages of affidavits filed under this paragraph and of any other testimony filed therewith under §§ 1.683(a) and 1.688(a) shall be given sequential numbers which shall also serve as the record page numbers for the affidavits and other testimony in the party's record to be filed under § 1.653. Exhibits identified in the affidavits or in any other testimony filed under §§ 1.683(a) and 1.688(a) and any official records and printed publications filed under § 1.682(a) shall be given sequential exhibit numbers which shall also serve as the exhibit numbers when the exhibits are filed with the party's record. The affidavits, testimony filed under §§ 1.683(a) and 1.688(a) and exhibits shall be accompanied by an index of the names of the witnesses, giving the number of the page where the testimony of each witness begins, and by an index of the exhibits briefly describing the nature of each exhibit and giving the number of the page where each exhibit is first identified and offered into evidence.

(c) If an opponent objects to the admissibility of any evidence contained in or submitted with an affidavit filed under paragraph (b) of this section, the opponent must, no later than the date set by the administrative patent judge for filing objections under this paragraph, file objections stating with particularity the nature of each objection. An opponent that fails to challenge the admissibility of the evidence contained in or submitted with an affidavit on a ground that could have been raised in a timely objection under this paragraph will not be entitled to move under § 1.656(h) to suppress the evidence on that ground. If an opponent timely files objections, the party may, within 20 days of the due date for filing objections, file supplemental affidavits and supplemental official records and printed publications to overcome the objections. No objection to the admissibility of the supplemental evidence shall be made, except as provided by § 1.656(h). The pages of supplemental affidavits filed under this paragraph shall be sequentially numbered beginning with the number following the last page number of the party's testimony submitted under paragraph (b) of this section. The page numbers assigned to the supplemental affidavits shall also serve as the record page numbers for the supplemental affidavits in the party's record filed under § 1.653. Additional exhibits identified in supplemental affidavits and any supplemental official records and printed publications shall be given sequential numbers beginning with the number following the last number of the exhibits submitted under paragraph (b) of this section. The exhibit numbers shall also serve as the exhibit numbers when the exhibits are filed with the party's record. The supplemental affidavits shall be accompanied by an index of the names of the witnesses and an index of exhibits of the type specified in paragraph (b) of this section.

(d)b After the ctime expires for filing objections and supplemental affidavits, or earlier when appropriate,b [affidavit is filed and within a time set by an examiner-in-chief,] cthe administrative patent judge shall set a time within whichb any opponent may file a request to cross-examine [the witness] can affiantb on oral deposition. If any opponent requests cross-examination of an affiant, the party shall notice a deposition cat a reasonable location within the United Statesb under § 1.673(e) for the purpose of cross-examination by any opponent. Any redirect and recross shall take place at the deposition. At any deposition for the purpose of cross-examination of a witness [whose testimony is presented by affidavit], the party shall not be entitled to rely on any document or thing not mentioned in one or more of the affidavits filed under [this paragraph] cparagraphs (b) and (c) of this sections,b except to the extent necessary to conduct proper redirect. [A party electing to present testimony of a witness by deposition shall notice a deposition of the witness under § 1.673(a).] The party who gives notice of a deposition shall be responsible cfor providing a translator if the witness does not testify in English,b for obtaining a court reporter and for filing a certified transcript of the deposition as required by § 1.676. cWithin 45 days of the close of the period for taking cross-examination, the party shall serve (but not file) a copy of each transcript on each opponent together with copies of any additional documentary exhibits identified by the witness during the deposition. The pages of the transcripts served under this paragraph shall be sequentially numbered beginning with the number following the last page number of the party's supplemental affidavits submitted under paragraph (c) of this section. The numbers assigned to the transcript pages shall also serve as the record page numbers for the transcripts in the party's record filed under § 1.653. Additional exhibits identified in the transcripts shall be given sequential numbers beginning with the number following the last number of the exhibits submitted under paragraphs (b) and (c) of this section. The exhibit numbers assigned to the additional exhibits shall also serve as the exhibit numbers when those exhibits are filed with the party's record. The deposition transcripts shall be accompanied by an index of the names of the witnesses, giving the number of the page where cross-examination, redirect and recross of each witness begins, and an index of exhibits of the type specified in paragraph (b) of this section.

(e) Reserved.b [(c) A party wishing to take the testimony of a witness whose testimony will be compelled under 35 U.S.C. 24 must first obtain permission from an examiner-in-chief under § 1.671(g). If permission is granted, the party shall notice a deposition of the witness under § 1.673 and may proceed under 35 U.S.C. 24. The testimony of the witness shall be taken on oral deposition.]

c(f)b [(d)] cWhen a deposition is authorized underb [Notwithstanding the provisions of] this subpart, if the parties agree in writing, ctheb[a]deposition may be taken before any person authorized to administer oaths, at any place, upon any notice, and in any manner, and when so taken may be used like other depositions.

c(g)b [(e)] If the parties agree in writing, the testimony of any witness may be submitted in the form of an affidavit without opportunity for cross-examination. The affidavit of the witness shall be filed in the Patent and Trademark Office.

c(h)b [(f)] If the parties agree in writing, testimony may be submitted in the form of an agreed statement setting forth: (1) How a particular witness would testify if called or (2) the facts in the case of one or more of the parties. The agreed statement shall be filed in the Patent and Trademark Office. See § 1.653(a).

60. Section 1.673 is proposed to be amended by revising paragraphs (a), (b), (c), (c)(2), (d), (e) and (g) to read as follows:

§ 1.673 Notice of examination of witness cwhen deposition testimony is authorizedb.

(a) A party [electing] cauthorizedb to take testimony of a witness by deposition shall, after complying with paragraphs (b) and (g) of this section, file and serve a single notice of deposition stating the time and place of each deposition to be taken. Depositions cto be taken in the United Statesb may be noticed for a reasonable time and place in the United States. [Unless the parties agree in writing, a] cAb deposition may not be noticed for any other place without approval of an cadministrative patent judgeb [examiner-in-chief (see § 1.684)] . The notice shall specify the name and address of each witness and the general nature of the testimony to be given by the witness. If the name of a witness is not known, a general description sufficient to identify the witness or a particular

class or group to which the witness belongs may be given instead.

(b) Unless the parties agree cor an administrative patent judge or the Board determineb otherwise, a party shall serve, but not file, at least three cworkingb days prior to the conference required by paragraph (g) of this section, if service is made by hand or["]Express Mail,["]or at least c14b [ten] days prior to the conference if service is made by any other means, the following:

* * * * *

(c) A party shall not be permitted to rely [at any deposition] on any witness not listed in the notice, or any document not served or any thing not listed as required by paragraph (b) of this section:

(1) * * *

(2) except upon a motion (§ 1.635) promptly filed which is accompanied by any proposed notice, additional documents, or lists and which shows [sufficient] cgoodb cause why the notice, documents, or lists were not served in accordance with this section.

(d) Each [opposing party] copponentb shall have a full opportunity to attend a deposition and cross-examine. [If an opposing party attends a deposition of a witness not named in a notice and cross-examines the witness or fails to object to the taking of the deposition, the opposing party shall be deemed to have waived any right to object to the taking of the deposition for lack of proper notice.]

(e) A party cwho has presentedb [electing to present] testimony by affidavit and [who] is required to notice depositions for the purpose of cross-examination under § 1.672(b), shall, after complying with paragraph (g) of this section, file and serve a single notice of deposition stating the time and place of each cross-examination deposition to be taken.

* * * * *

(g) Before serving a notice of deposition and after complying with paragraph (b) of this section, a party shall have an oral conference with all opponents to attempt to agree on a mutually acceptable time and place for conducting the deposition. A certificate shall appear in the notice stating that the oral conference took place or explaining why the conference could not be had. If the parties cannot agree to a mutually acceptable place and time for conducting the deposition at the conference, the parties shall contact an cadministrative patent judgeb [examiner-in-chief] who shall then designate the time and place for conducting the deposition.

* * * * *

61. Section 1.674 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.674 Persons before whom depositions may be taken.

(a) cAb [Within the United States or a territory or insular possession of the United States a] deposition shall be taken before an officer authorized to administer oaths by the laws of the United States or of the place where the examination is held.

* * * * *

62. Section 1.675 is proposed to be amended by revising paragraph (d) to read as follows:

§ 1.675 Examination of witness, reading and signing transcript of deposition.

* * * * *

(d) Unless the parties agree in writing or waive reading and signature by the witness on the record at the deposition, when the testimony has been transcribed a transcript of the deposition shall c, unless the witness refuses to read and/or sign the transcript of the deposition,b be read by the witness and then signed by the witness in the form of: (1) An affidavit in the presence of any notary or (2) a declaration.

63. Section 1.676 is proposed to be amended by revising paragraph (a)(4) to read as follows:

§ 1.676 Certification and filing by officer, marking exhibits.

(a) * * *

(4) The presence or absence of any [opposing party] copponentb.

* * * * *

64. Section 1.677 is proposed to be amended by revising the section heading and paragraph (a) to read as follows:

§ 1.677 Form of can affidavit orb a transcript of deposition.

(a) cAn affidavit or ab[A]transcript of a deposition must be [typewritten] on opaque, unglazed, durable paper approximately c21.8 by 27.9 cm. (81/2 by 11 inches)b [8? by 11 inches (21.8 by 27.9 cm.)] in size (letter size). [Typing] cThe printed matterb shall be double-spaced on one side of the paper in not smaller than c11 Point typeb [pica-type] with a margin of c3.8 cm. (11/2 inches)b [11/2 inches (3.8 cm.)] on the left-hand side of the page. The pages must be consecutively numbered throughout the entire record of each party (§ 1.653(d)) and the name of the witness [must be typed] cshall appearb at the top of each page (§ 1.653(e)). cIn transcripts of depositions, theb [The] questions propounded to each witness must be consecutively numbered unless paper with numbered lines is used and each question must be followed by its answer.

* * * * *

65. Section 1.678 and the section heading are proposed to be revised to read as follows:

§ 1.678 cTime for filing transcriptb [Transcript] of deposition [must be filed].

Unless otherwise ordered by an cadministrative patent judgeb [examiner-in-chief], a certified transcript of a deposition must be filed in the Patent and Trademark Office within[45] c30b days from the date of deposition. If a party refuses to file a certified transcript, the cadministrative patent judgeb [examiner-in-chief] or the Board may take appropriate action under § 1.616. If a party refuses to file a certified transcript, any opponent may move for leave to file the certified transcript and include a copy of the transcript as part of the opponent's record.

66. Section 1.679 is proposed to be revised to read as follows:

§ 1.679 Inspection of transcript.

A certified transcript cof a depositionb filed in the Patent and Trademark Office may be inspected by any party. The certified transcript may not be removed from the Patent and Trademark Office [for printing (§ 1.653(g))] unless authorized by an cadministrative patent judgeb [examiner-in-chief] upon such terms as may be appropriate.

67. Section 1.682 is proposed to be amended by deleting paragraphs (a)(4) and (b) and redesignating them as "Reserved," revising paragraphs (a), (a)(2), (a)(3), and (c) and adding a new paragraph (d) to read as follows:

§ 1.682 Official records and printed publications.

(a) A party may introduce into evidence, if otherwise admissible, [any] canb official record or printed publication not identified cin an affidavit orb on the record during can oral depositionb [the taking of testimony] of a witness, by filing [a notice offering] ca copy ofb the official record or cprintedb publication [into evidence]. If the cofficial record or printed publicationb [evidence] relates to the party's case-in-chief,

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cit shall be filed together with any affidavits filed by the party under § 1.672(b) for its case-in-chief or, if the party does not serve any affidavits under § 1.672(b) for its case-in-chief, no later than the date set by an administrative patent judge for the party to file affidavits under § 1.672(b) for itsb [the notice shall be filed prior to close of testimony of the party's] case-in-chief. If the cofficial record or printed publicationb [evidence] relates to rebuttal, cit shall be filed together with any affidavits filed by the party under § 1.672(b) for the its case-in-rebuttal or, if the party does not file any affidavits under § 1.672(b) for its case-in-rebuttal, no later than the date set by an administrative patent judge for the party to file affidavits under § 1.672(b) for itsb [the notice shall be filed prior to close of testimony of the party's] case-in-rebuttal. [The notice] cOfficial records and printed publications filed under this paragraph shall be assigned sequential exhibits numbers by the party in the manner set forth in § 1.672(b). The official record and printed publications shall be accompanied by a paper whichb shall:

(1) * * *

(2) cIdentifyb [identify] the portion thereof to be introduced in evidence, candb

(3) cIndicateb [indicate] generally the relevance of the portion sought to be introduced in evidence c.b [, and]

(4) cReserved.b [where appropriate, be accompanied by a certified copy of the official record or a copy of the printed publication (§ 1.671(d)).]

(b) cReserved.b [A copy of the notice, official record, and publication shall be served.]

(c) Unless otherwise ordered by an cadministrative patent judgeb [examiner-in-chief], any written objection cby an opponentb to the [notice] cpaperb or to the admissibility of the official record or printed publication shall be filed [within 15 days of service of the notice] cno later than the date set by the administrative patent judge for the opponent to file objections under § 1.672(c) to affidavits submitted by the party under § 1.672(b). An opponent who fails to challenge the admissibility of the official record or printed publication on a ground that could have been raised in a timely objection under this paragraph will not be entitled to move under § 1.656(h) to suppress the evidence on that ground. If an opponent timely files an objection, the party may respond by filing supplemental affidavits and supplemental official records and printed publications, which must be filed together with any supplemental evidence filed by the party under § 1.672(c) or, if the party does not file any supplemental evidence under § 1.672(c), no later than the date set by an administrative patent judge for the party to file supplemental affidavits under § 1.672(c). No objection to the admissibility of the supplemental evidence shall be made, except as provided byb [See also] § 1.656(h). cThe pages of supplemental affidavits and the exhibits filed under this section shall be sequentially numbered by the party in the manner set forth in § 1.672(c). The supplemental affidavits and exhibits shall be accompanied by an index of witnesses and an index of exhibits of the type required by § 1.672(b).

(d) Any request by an opponent to cross-examine on oral deposition the affiant of a supplemental affidavit submitted under paragraph (c) of this section shall be filed no later than the date set by the administrative patent judge for the opponent to file a request to cross-examine an affiant with respect to an affidavit served by the party under § 1.672(b) or (c). If any opponent requests cross-examination of an affiant, the party shall file notice of a deposition for a reasonable location within the United States under § 1.673(e) for the purpose of cross-examination by any opponent. Any redirect and recross shall take place at the deposition. At any deposition for the purpose of cross-examination of a witness, the party shall not be entitled to rely on any document or thing not mentioned in one or more of the affidavits filed under this paragraph, except to the extent necessary to conduct proper redirect. The party who gives notice of a deposition shall be responsible for providing a translator if the witness does not testify in English, for obtaining a court reporter and for filing a certified transcript of the deposition as required by § 1.676. Within 45 days of the close of the period for taking crossexamination, the party shall serve (but not file) a copy of each deposition transcript on each opponent together with copies of any additional documentary exhibits identified by the witness during the deposition. The pages of deposition transcripts and exhibits served under this paragraph shall be sequentially numbered by the party in the manner set forth in § 1.672(d). The deposition transcripts shall be accompanied by an index of the names of the witnesses, giving the number of the page where cross-examination, redirect and recross of each witness begins, and an index of exhibits of the type specified in § 1.672(b).b

68. Section 1.683 is proposed to be amended by revising paragraphs (a) and (b) and adding a new paragraph (c) to read as follows:

§ 1.683 Testimony in another interference, proceeding, or action.

(a) cA party may introduce into evidence, if otherwise admissible,b [Prior to close of a party's appropriate testimony period or within such time as may be set by an examiner-in-chief, a party may file a motion (§ 1.635) for leave to use in an interference] testimony cby affidavit or oral depositionb [of a witness] from another interference, proceeding, or action involving the same parties [, subject to such conditions as may be deemed appropriate by an examiner-in-chief.] cby filing a copy of the affidavit or a copy of the transcript of the oral deposition. If the testimony relates to the party's case-in-chief, it shall be filed together with any affidavits served by the party under § 1.672(b) for its case-in-chief or, if the party does not file any affidavits under § 1.672(b) for its case-in-chief, no later than the date set by an administrative patent judge for the party to file affidavits under § 1.672(b) for its case-in-chief. If the testimony relates to rebuttal, it shall be filed together with any affidavits served by the party under § 1.672(b) for its case-in-rebuttal or, if the party does not file any affidavits under § 1.672(b) for its case-in- rebuttal, no later than the date set by an administrative patent judge for the party to file affidavits under § 1.672(b) for its case-in-rebuttal. Pages of affidavits and deposition transcripts served under this paragraph and any new exhibits served therewith shall be assigned sequential numbers by the party in the manner set forth in § 1.672(b).b The [motion] ctestimony shall be accompanied by a paper which specifiesb [shall specify] with particularity the exact testimony to be used and cdemonstratesb [shall demonstrate] its relevance.

(b) [Any objection to the admissibility of the testimony of the witness shall be made in an opposition to the motion. See also] cUnless otherwise ordered by an administrative patent judge, any written objection by an opponent to the paper or the admissibility of the testimony filed under this section shall be filed no later than the date set by the administrative patent judge for the opponent to file any objections under § 1.672(c) to affidavits submitted by the party under § 1.672(b). An opponent who fails to challenge the admissibility of the testimony on a ground that could have been raised in a timely objection under this paragraph will not be entitled to move under § 1.656(h) to suppress the evidence on that ground. If an opponent timely files an objection, the party may respond with a supplemental affidavit and supplemental official records and printed publications, which must be filed together with any supplemental evidence filed by the party under § 1.672(c) or, if the party does not file any supplemental evidence under § 1.672(c), no later than the date set by an administrative patent judge for the party to file supplemental evidence under § 1.672(c). No objection to the admissibility of the evidence contained in or submitted with a supplemental affidavit shall be made, except as provided byb § 1.656(h). cThe pages of supplemental affidavits and the exhibits filed under this section shall be sequentially numbered by the party in the manner set forth in § 1.672(c). The supplemental affidavits and exhibits shall be accompanied by an index of witnesses and an index of exhibits of the type required by § 1.672(b).

(c) Any request by an opponent to cross-examine on oral deposition the affiant of an affidavit or supplemental affidavit submitted under paragraph (a) or (b) of this section. shall be filed no later than the date set by the administrative patent judge for the opponent to file a request to cross-examine an affiant with respect to an affidavit filed by the party uner § 1.672(b) or (c). If any opponent requests cross-examination of an affiant, the party shall file a notice of deposition for a reasonable location within the United States under § 1.673 (e) for the purpose of cross- examination by any opponent. Any

redirect and recross shall take place at the deposition. At any deposition for the purpose of cross-examination of a witness, the party shall not be entitled to rely on any document or thing not mentioned in one or more of the affidavits filed under this paragraph, except to the extent necessary to conduct proper redirect. The party who gives notice of a deposition shall be responsivle for providing a translator if the witness does not testify in English, for obtaining a court reporter and for filing a certified transcript of the deposition as required by § 1.676. Within 45 days of the close of the period for taking cross-examination, the party shall serve (but not file) a copy of each deposition transcript on each opponent together with copies of any additional documentary exhibits identified by the witness during the deposition. The pages of deposition transcripts an exhibits served under this paragraph shall be sequentially numbered by the party in tha manner set forth in § 1.672(d). The deposition transcripts shall be accompanied by an index of the names of the witnesses, giving the number of the page where cross-examination, redirect and recross of each witness begins, and an index of exhibits of the type specified in ss 1.672(b).b

69. Section 1.684 is proposed to be deleted and redesignated as "Reserved," as follows:

§ 1.684 cReserved.b [Testimony in a foreign country.]

(a) An examiner-in-chief may authorize testimony of a witness to be taken in a foreign country. A party seeking to take testimony in a foreign country shall, promptly after the testimony period is set, file a motion (§ 1.635):

(1) Naming the witness.

(2) Describing the particular facts to which it is expected that the witness will testify.

(3) Stating the grounds on which the moving party believes that the witness will testify.

(4) Demonstrating that the expected testimony is relevant.

(5) Demonstrating that the testimony cannot be taken in this country at all or cannot be taken in this country without hardship to the moving party greatly exceeding the hardship to which all opposing parties will be exposed by the taking of the testimony in a foreign country.

(6) Accompanied by an affidavit stating that the motion is made in good faith and not for the purpose of delay or harassing any party.

(7) Accompanied by written interrogatories to be asked of the witness.

(b) Any opposition under § 1.638(a) shall state any objection to the written interrogatories and shall include any cross-interrogatories to be asked of the witness. A reply under § 1.638(b) may be filed and shall be limited to stating any objection to any cross-interrogatories proposed in the opposition.

(c) If the motion is granted, taking of the testimony abroad must be completed within the testimony period set under § 1.651 or within such time as may be set by the Examiner-in-Chief. The moving party shall be responsible for obtaining answers to the interrogatories and cross-interrogatories before an officer qualified to administer oaths in the foreign country under the laws of the United States or the foreign country. The officer shall prepare a transcript of the interrogatories, cross-interrogatories, and recorded answers to the interrogatories and cross-interrogatories and shall transmit the transcript to Box Interference, Commissioner of Patents and Trademarks, Washington, D.C. 20231. with a certificate signed and sealed by the officer and showing:

(1) The witness was duly sworn by the officer before answering the interrogatories and cross-interrogatories.

(2) The recorded answers are a true record of the answers given by the witness to the interrogatories and cross-interrogatories.

(3) The name of the person by whom the answers were recorded and, if not recorded by the officer, whether the answers were recorded in the presence of the officer.

(4) The presence or absence of any party.

(5) The place, day, and hour that the answers were recorded.

(6) A copy of the recorded answers was read by or to the witness before the witness signed the recorded answers and that the witness signed the recorded answers in the presence of the officer. The officer shall state the circumstances under which a witness refuses to read or sign recorded answers.

(7) The officer is not disqualified under § 1.674.

(d) If the parties agree in writing, the testimony may be taken before the officer on oral deposition.

(e) A party taking testimony in a foreign country shall have the burden of proving that false swearing in the giving of testimony is punishable as perjury under the laws of the foreign country. Unless false swearing in the giving of testimony before the officer shall be punishable as perjury under the laws of the foreign country where testimony is taken, the testimony shall not be entitled to the same weight as testimony taken in the United States. The weight of the testimony shall be determined in each case.]

70. Section 1.685 is proposed to be amended by revising paragraphs (d) and (e) to read as follows:

§ 1.685 Errors and irregularities in depositions.

* * * * *

(d) An objection to the cdeposition on any grounds, such as theb competency of a witness, admissibility of evidence, manner of taking the deposition, the form of questions and answers, any oath or affirmation, or conduct of any party at the deposition c,b is waived unless an objection is made on the record at the deposition stating the specific ground of objection. Any objection which a party wishes considered by the Board at final hearing shall be included in a motion to suppress under § 1.656(h).

(e) Nothing in this section precludes taking notice of plain errors affecting substantial rights although they were not brought to the attention of an cadministrative patent judgeb [examiner-in-chief] or the Board.

71. Section 1.687 is proposed to be amended by revising paragraph (c) to read as follows:

§ 1.687 Additional discovery.

* * * * *

(c) Upon a motion (§ 1.635) brought by a party within the time set by an cadministrative patent judgeb [examiner-in-chief] under § 1.651 or thereafter as authorized by § 1.645 and upon a showing that the interest of justice so requires, an cadministrative patent judgeb [examiner-in-chief] may order additional discovery, as to matters under the control of a party within the scope of the Federal Rules of Civil Procedure, specifying the terms and conditions of such additional discovery. cSee § 1.647 concerning translations of documents in a foreign language. b

* * * * *

72. Section 1.688 is proposed to be amended by revising paragraphs (a) and (b) and adding a new paragraph (c) to read as follows:

§ 1.688 Use of discovery.

(a) If otherwise admissible a party may introduce into evidence, an answer to a written request for an admission or an answer to a written interrogatory obtained by discovery under § 1.687 by filing a copy of the request for admission or the written interrogatory and the answer. If the answer relates to a party's case-in-chief, the answer shall be [filed prior to the close of testimony of the party's] cserved together with any affidavits served by the party under § 1.672(b) for its case-in-chief or, if the party does not serve any affidavits under § 1.672(b) for its case-in-chief, no later than the date set by an administrative patent judge for the party to serve affidavits under § 1.672(b) for itsb case-in-chief. If the answer relates to the party's rebuttal, the [admission or] answer shall be [filed prior to the close of testimony of the party's] cserved together with any affidavits served by the party under § 1.672(b) for the its case-in-rebuttal or, if the party does not serve any affidavits under § 1.672(b) for its case-in-rebuttal, no later than the date set by an administrative patent judge for the party to serve affidavits under § 1.672(b) for itsb case-in-rebuttal.

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c(b)b Unless otherwise ordered by an cadministrative patent judgeb [examiner-in-chief], any written objection to the admissibility of an answer shall be filed [within 15 days of service of the answer.] cno later than the date set by the administrative patent judge for the opponent to file any objections under § 1.672(c) to affidavits submitted by the party under § 1.672(b). An opponent who fails to challenge the admissibility of an answer on a ground that could have been raised in a timely objection under this paragraph will not be entitled to move under § 1.656(h) to suppress the evidence on that ground. If an opponent timely files an objection, the party may respond with supplemental affidavits, which must be filed together with any supplemental evidence filed by the party under § 1.672(c) or, if the party does not file any supplemental evidence under § 1.672(c), no later than the date set by an administrative patent judge for the party to file supplemental affidavits under § 1.672(c). No objection to the admissibility of the evidence contained in or submitted with a supplemental affidavit shall be made, except as provided byb § 1.656(h). cThe pages of supplemental affidavits and the exhibits filed under this section shall be sequentially numbered by the party in the manner set forth in § 1.672(c). The supplemental affidavits and exhibits shall be accompanied by an index of witnesses and an index of exhibits of the type required by § 1.672(b).

(c) Any request by an opponent to cross-examine on oral deposition the affiant of a supplemental affidavit submitted under paragraph (b) of this section shall be filed no later than the date set by the administrative patent judge for the opponent to file a request to cross-examine an affiant with respect to an affidavit filed by the party under § 1.672(b) or (c). If any opponent requests cross-examination of an affiant, the party shall file a notice of deposition for a reasonable location within the United States under § 1.673(e) for the purpose of cross-examination by any opponent. Any redirect and recross shall take place at the deposition. At any deposition for the purpose of cross-examination of a witness, the party shall not be entitled to rely on any document or thing not mentioned in one or more of the affidavits filed under this paragraph, except to the extent necessary to conduct proper redirect. The party who gives notice of a deposition shall be responsible for providing a translator if the witness does not testify in English, for obtaining a court reporter and for filing a certified transcript of the deposition as required by § 1.676. Within 45 days of the close of the period for taking cross-examination, the party shall serve (but not file) a copy of each deposition transcript on each opponent together with copies of any additional documentary exhibits identified by the witness during the deposition. The pages of deposition transcripts and exhibits served under this paragraph shall be sequentially numbered by the party in the manner set forth in § 1.672(d). The deposition transcripts shall be accompanied by an index of the names of the witnesses, giving the number of the page where cross-examination, redirect and recross of each witness begins, and an index of exhibits of the type specified in § 1.672(b).b

[(b)] c(d)b A party may not rely upon any other matter obtained by discovery unless it is introduced into evidence under this subpart.

73. Section 1.690 is proposed to be amended by revising paragraphs (a), (b) and (c) to read as follows:

§ 1.690 Arbitration of interferences.

(a) Parties to a patent interference may determine the interference or any aspect thereof by arbitration. Such arbitration shall be governed by the provisions of Title 9, United States Code. The parties must notify the Board in writing of their intention to arbitrate. An agreement to arbitrate must be in writing, specify the issues to be arbitrated, the name of the arbitrator or a date not more than thirty (30) days after the execution of the agreement for the selection of the arbitrator, and provide that the arbitrator's award shall be binding on the parties and that judgment thereon can be entered by the Board. A copy of the agreement must be filed within twenty (20) days after its execution. The parties shall be solely responsible for the selection of the arbitrator and the rules for conducting proceedings before the arbitrator. Issues not disposed of by the arbitration will be resolved in accordance with the procedures established in 37 CFR, Subpart E of Part 1, as determined by the cadministrative patent judgeb [examiner-in-chief].

(b) An arbitration proceeding under this section shall be conducted within such time as may be authorized on a case-by-case basis by an cadministrative patent judgeb [examiner-in-chief].

(c) An arbitration award will be given no consideration unless it is binding on the parties, is in writing and states in a clear and definite manner (1) the issue or issues arbitrated and (2) the disposition of each issue. The award may include a statement of the grounds and reasoning in support thereof. Unless otherwise ordered by an cadministrative patent judgeb [examiner-in-chief], the parties shall give notice to the Board of an arbitration award by filing within twenty (20) days from the date of the award a copy of the award signed by the arbitrator or arbitrators. When an award is timely filed, the award shall, as to the parties to the arbitration, be dispositive of the issue or issues to which it relates.

* * * * *

September 23, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Certificates of Correction
For Week of October 25, 1994

B1 4,847,303	5,124,358	5,224,684	5,273,354
D. 349,449	5,129,665	5,226,404	5,273,567
D. 349,567	5,131,665	5,228,936	5,274,460
D. 349,764	5,131,907	5,230,742	5,275,354
D. 349,852	5,133,043	5,231,184	5,275,787
D. 350,034	5,137,532	5,233,011	5,275,815
D. 350,201	5,141,747	5,233,090	5,276,340
P. 8,505	5,142,209	5,235,568	5,276,503
P. 8,544	5,143,462	5,236,949	5,276,597
P. 8,653	5,147,706	5,239,069	5,277,086
Re. 34,600	5,149,000	5,240,702	5,277,681
Re. 34,704	5,150,713	5,241,167	5,277,857
4,789,033	5,154,368	5,241,470	5,278,153
4,804,619	5,154,872	5,241,676	5,278,441
4,848,870	5,155,086	5,242,523	5,278,515
4,850,817	5,155,794	5,243,661	5,279,161
4,864,298	5,162,745	5,245,361	5,281,093
4,888,170	5,166,499	5,247,627	5,281,840
4,895,705	5,168,173	5,247,658	5,283,241
4,921,930	5,174,559	5,248,508	5,283,618
4,939,910	5,178,691	5,248,914	5,283,935
4,981,790	5,181,970	5,250,491	5,284,568
5,005,815	5,186,448	5,250,519	5,284,742
5,015,571	5,187,045	5,250,766	5,284,754
5,017,577	5,188,565	5,250,784	5,284,756
5,024,688	5,191,451	5,251,353	5,286,509
5,039,561	5,191,452	5,255,889	5,286,562
5,040,658	5,192,469	5,256,562	5,286,589
5,042,026	5,196,916	5,258,750	5,286,639
5,047,625	5,200,990	5,259,190	5,286,810
5,052,378	5,203,462	5,259,373	5,287,355
5,052,379	5,204,740	5,260,912	5,288,408
5,052,836	5,208,604	5,261,719	5,288,421
5,052,990	5,209,335	5,263,126	5,288,759
5,064,576	5,210,361	5,263,573	5,288,985
5,065,571	5,211,134	5,264,577	5,289,625
5,075,245	5,212,062	5,264,607	5,290,797
5,084,456	5,212,164	5,265,614	5,291,067
5,086,598	5,213,998	5,265,883	5,291,274
5,093,574	5,214,547	5,267,246	5,292,841
5,096,179	5,217,522	5,267,453	5,292,893
5,097,834	5,217,583	5,269,483	5,292,962
5,100,151	5,219,353	5,269,744	5,292,977
5,112,305	5,220,547	5,270,143	5,293,038
5,112,400	5,221,457	5,271,389	5,294,303
5,120,374	5,221,619	5,271,618	5,294,614
5,121,418	5,222,687	5,271,896	5,294,960
5,121,536	5,223,618	5,272,548	5,295,667

5,295,936	5,302,007	5,307,395	5,314,805	5,320,669	5,325,928	5,333,027	5,337,543
5,296,095	5,302,387	5,307,575	5,315,014	5,320,720	5,326,854	5,333,363	5,337,632
5,296,097	5,303,076	5,307,593	5,315,541	5,320,773	5,326,995	5,333,496	5,337,751
5,296,477	5,303,245	5,307,720	5,316,289	5,320,920	5,327,084	5,333,509	5,337,809
5,296,566	5,303,652	5,308,656	5,317,086	5,320,957	5,327,276	5,333,525	5,338,135
5,296,615	5,303,863	5,309,387	5,317,187	5,321,043	5,327,551	5,333,697	5,338,286
5,296,616	5,303,917	5,309,391	5,317,437	5,321,065	5,327,863	5,333,699	5,338,505
5,296,680	5,303,970	5,309,399	5,317,506	5,321,106	5,328,232	5,333,786	5,338,519
5,296,793	5,304,815	5,309,478	5,317,745	5,321,486	5,328,247	5,333,987	5,338,832
5,296,946	5,304,988	5,310,388	5,317,748	5,321,520	5,328,899	5,334,266	5,338,945
5,296,984	5,305,068	5,310,504	5,317,868	5,321,666	5,329,183	5,334,351	5,339,397
5,296,985	5,305,122	5,310,591	5,317,871	5,321,794	5,329,496	5,335,291	5,339,490
5,297,764	5,305,165	5,310,602	5,318,057	5,321,830	5,329,760	5,335,418	5,340,062
5,298,263	5,305,475	5,310,812	5,318,123	5,322,212	5,330,391	5,336,039	5,340,126
5,298,772	5,305,483	5,311,748	5,318,262	5,322,324	5,330,820	5,336,052	5,340,317
5,298,909	5,305,521	5,311,988	5,318,579	5,322,632	5,330,911	5,336,328	5,340,448
5,298,966	5,305,842	5,312,169	5,318,604	5,323,393	5,330,959	5,336,768	5,340,469
5,300,067	5,306,097	5,312,366	5,318,827	5,324,140	5,330,965	5,336,914	5,340,558
5,300,087	5,306,560	5,312,503	5,319,282	5,325,004	5,331,000	5,337,084	5,341,481
5,300,257	5,306,778	5,312,789	5,319,345	5,325,204	5,331,086	5,337,111	5,342,052
5,300,386	5,306,812	5,313,132	5,319,370	5,325,280	5,331,552	5,337,448	5,342,290
5,300,645	5,306,940	5,313,220	5,319,402	5,325,607	5,331,600	5,337,475	5,342,606
5,301,199	5,307,112	5,313,272	5,319,542	5,325,654	5,332,629	5,337,477	5,343,131
5,301,399	5,307,113	5,313,312	5,319,696	5,325,761	5,332,707	5,337,514	5,344,715
5,301,545	5,307,174	5,313,421	5,319,885	5,325,796	5,333,011	5,337,531	5,345,087
5,301,577	5,307,262	5,313,584	5,320,541				

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Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
August 22-26, 1994

Date Issued	Type of Case	Proceeding or App'n No	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
8 22	OPP (R)	81,072	Levy Strauss & Co. v. R Josephs Sportswear Inc.	2(e)(1)	Request for Reconsideration Denied (Opposition Dismissed)		"ACTION SLACKS" [men's pants and shorts]		No
							"CAIN'S BOLD TASTE" [barbecue sauce]	"CAIN'S" [coffee, tea, spices, culinary herbs, culinary seeds, MSG, meat tenderizer and vegetable flakes and salts]	No
8 25	EX	74/118,901	John E. Cain Co	2(d)	Refusal Reversed		"PCA" [collective membership mark indicating membership in an association of carpet cleaners]		No
8 25	OPP	86,567	Racine Industries, Inc. v. Bane-Clene Corp.	2(e)(1)	Opposition Dismissed				

(EX=EX PARTE APPEAL, OPP=OPPOSITION (C=CANCELLATION, CU=CONCURRENT USE, (R)=REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR MAIL

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Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
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	Milwaukee Public Library	(414) 286-3247
Wyoming	Casper: Natrona County Public Library	Not Yet Operational

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PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	11/01/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	08/26/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	01/11/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	11/11/93
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/09/93
ELECTRICAL EXAMINING GROUPS		
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SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	03/22/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—GERALD GOLDBERG, Director	305-9600	09/28/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—CARLTON CROYLE, Director	308-0771	10/03/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/07/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—BOBBY R. GRAY, Director	305-4700	03/10/93
DESIGN, GROUP 2900—ROBERT E. GARRETT, Director	308-0511	01/05/93
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	10/11/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—N. GODICI, Director	308-1148	09/21/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	10/28/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	05/07/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	08/26/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during September 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.
Patents.....Numbers 4,045,824 to 4,051,551 inclusive
Plant Patents.....4,097 to 4,116

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of Sept. 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/22/94	07/07/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/12/94	06/28/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/21/94	07/11/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/07/94	05/25/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/07/94	04/06/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/06/94	06/27/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/15/94	05/11/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/09/94	07/20/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/13/94	05/07/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/21/94	07/25/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/01/94	05/06/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/24/94	07/13/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/31/94	05/24/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	03/11/94	—0—
Renewals (All Classes)	06/03/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

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2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

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REEXAMINATIONS

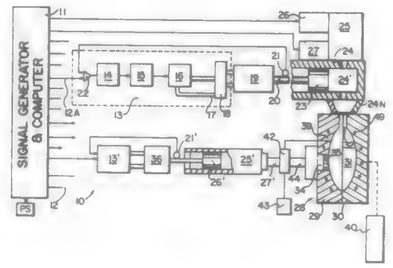
OCTOBER 25, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,318,874 (2413th)
MOLDING APPARATUS

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Reexamination Request No. 90/002,866, Oct. 29, 1992.
Reexamination Certificate for Patent No. 4,318,874, issued Mar. 9, 1982, Ser. No. 950,017, Oct. 10, 1978.
Continuation-in-part of Ser. No. 483,037, Jun. 25, 1974, Pat. No. 4,120,922, and a continuation-in-part of Ser. No. 297,452, Oct. 13, 1972, Pat. No. 3,820,928, which is a continuation of Ser. No. 849,014, Aug. 11, 1969, abandoned, which is a continuation of Ser. No. 721,401, Apr. 15, 1968, Pat. No. 3,616,495, and a continuation-in-part of Ser. No. 421,817, Dec. 29, 1964, Pat. No. 3,462,524, and a continuation-in-part of Ser. No. 439,549, Mar. 15, 1965, abandoned
Int. Cl.[5] B29C *45/77*
U.S. Cl. 264—40.1



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

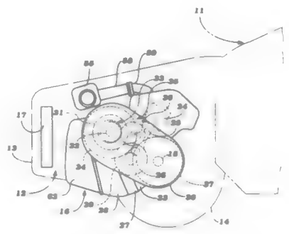
Claims **1–5** are cancelled.

[**1**. A method for molding articles comprising:
generating a first reference signal defining a command control signal and applying said first signal to initiate the operation of a first motor operating a first prime mover for a first molding material,
generating a first feedback signal indicative of the operation of said first motor,
summing said first command control signal and said first feedback signal and generating a first difference signal,
applying said first difference signal to control said first motor to operate in a manner to predetermine the flow of said first molding material to said mold cavity,
generating a second reference command signal and applying said second command signal to initiate operation of a second motor operating a second prime mover for a second molding material,
generating a second feedback signal indicative of the operation of said second motor,
summing said second command signal and said second feedback signal and generating a second difference signal and
applying said second difference signal to control said second motor to operate in a manner to predetermine the flow of said second molding material to said mold cavity whereby predetermined quantities of said first and second molding material are simultaneously admitted to the cavity of said mold.

B1 5,113,807 (2414th)
COOLING SYSTEM FOR ENGINE

Manabu Kobayashi, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Reexamination Request No. 90/003,204, Sep. 22, 1993.
Reexamination Certificate for Patent No. 5,113,807, issued May 19, 1992, Ser. No. 554,256, Jul. 17, 1990.
Claims priority, application Japan, Jul. 19, 1989, 1-186614; Jul. 19, 1989, 1-186616
Int. Cl.[5] F02B *75/18*
U.S. Cl. 123—41.74



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **12–32** and **35–45** is confirmed.

Claims **1**, **8**, **10**, **33** and **46** are determined to be patentable as amended.

Claims **2–7**, **9**, **11**, and **34** dependent on an amended claim, are determined to be patentable.

1. A cooling system for an internal combustion engine having a plurality of aligned cylinders, a heat exchanger disposed parallel to and on one side of said engine, a cooling jacket for said engine, a centrifugal type water pump disposed between the cylinders at the ends of said engine and on the side of said engine adjacent said heat exchanger for circulating coolant through said engine cooling jacket and through said heat exchanger, *said water pump communicating with an engine cooling jacket inlet opening formed contiguous to said water pump and between said end cylinders,* said coolant pump including a coolant pump drive shaft rotating about an axis parallel to the heat exchanger, and a thermostatic valve *having a thermostat housing* for controlling the flow between *a water outlet opening in* said engine cooling jacket *disposed between said end cylinders* and the heat exchanger, positioned on the side of said engine adjacent said water pump and between the cylinders at the ends of said engine.

B1 Des. 265,595 (2412th)
PIPE

Todd Galanter, 2729 N. Frederick Ave., Milwaukee, Wis. 53211

Reexamination Request No. 90/003,231, Oct. 28, 1993.
Reexamination Certificate for Patent No. Des. 265,595, issued Jul. 27, 1982, Ser. No. 174,702, Aug. 1, 1980.
U.S. Cl. D27—162

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AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:



The single design claim is cancelled.

[The ornamental design for a pipe, as shown.]

REISSUES

OCTOBER 25, 1994

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,763

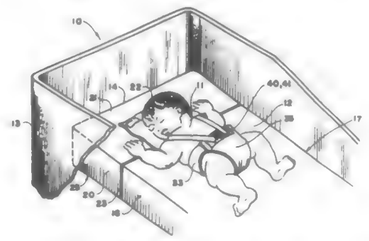
BEDDING ARTICLE FOR SUPPORTING INFANTS WITH GASTROESOPHAGEAL REFLUX CONDITION, AND OTHERS

Ann Tucker, P.O. Box 641117, Kenner, La. 70064

Original No. 4,989,286, dated Feb. 5, 1991, Ser. No. 432,920, Nov. 7, 1989. Continuation-in-part of Ser. No. 118,635, Nov. 9, 1987, abandoned. Application for reissue Feb. 5, 1993, Ser. No. 14,315

Int. Cl.[5] A47G *9/04*

U.S. Cl. 5—482 **12 Claims**



12. A bedding article for supporting persons upon an underlying mattress in an inclined position comprising:

(a) a band of bedding material defining a partial covering for the mattress and forming a tensile load carrying connection therewith, the band having a lower end portion positioned during use at the middle area of the mattress;

(b) a support sling, connected to the band of bedding material at the lower end portion thereof and including a central panel portion, a left panel portion, and a right panel portion that can connet to define a diaper that covers the person's groin and pelvic area, with leg apertures accommodating the person's legs, the leg apertures being pointed generally away from the tensile load carrying connection so that when the mattress is inclined, the diaper supports the person and the band carries the person's weight to prevent a sliding of the person down the mattress during use; and

(c) wherein the band includes an endless band that encircles the mattress, with a first closed end adapted to register with an en dof the mattress, and a second open lower end.

Re. 34,764

EXHAUST GAS DISCHARGE SYSTEM FOR TWO-STROKE INTERNAL COMBUSTION ENGINE

Alan J. Blair, Marino, Northern Ireland, assignor to Outboard Marine Corporation, Waukegan, Ill.

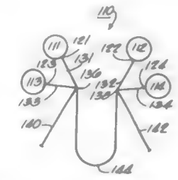
Original No. 5,101,626, dated Apr. 7, 1992, Ser. No. 554,542, Jul. 19, 1990. Application for reissue Apr. 2, 1993, Ser. No. 42,620

Int. Cl.[5] F02B *27/04*

U.S. Cl. 60—313 **40 Claims**

1. A two stroke internal combustion engine comprising first, second, third, and fourth cylinders which sequentially fire in the stated series and at an even firing interval of 90° and which include respective first, second, third, and fourth exhaust ports which open and close in response to piston movement, and an exhaust gas discharge means communicating with said exhaust ports, including a duct portion, and being operable, in response to firing of said second cylinder and opening of said second exhaust port, to afford passage of exhaust gas from said second exhaust port so as to provide an outgoing positive acoustical pressure wave which travels in said duct portion and which arrives at said first exhaust port prior to closure of said first exhaust port and to provide a returning negative acoustical pressure wave which travels in said duct portion after substantial completion of the travel of said outgoing positive acoustical pressure wave in said duct portion and which arrives at said second exhaust port prior to closing of said second exhaust port.

18. An internal combustion engine in accordance with claim 1 wherein said exhaust gas discharge means includes a first exhaust pipe having a first end and having a second end communicating



with the atmosphere, a second exhaust pipe having a first end and having a second end communicating with the atmosphere, a third exhaust pipe having a first end communicating with said first end of said first exhaust pipe and having a second end communicating with said first end of said second exhaust pipe, first exhaust conduit means for conducting exhaust gases from said first exhaust port to said first end of said first exhaust pipe and from said third exhaust port to said first end of said first exhaust pipe, and second exhaust conduit means for conducting exhaust gases from said second exhaust port to said first end of said second exhaust pipe and from said fourth exhaust port to said first end of said second exhaust pipe.

Re. 34,765

RECORDING MEDIUM ANNEALING PROCESS

Jerry L. Alexander, St. Paul Park; Sankar B. Narayan, White Bear Lake; Sten R. Gerfast, Mendota Heights, and Charles E. Nelson, Roseville, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Original No. 4,729,805, dated Mar. 8, 1988, Ser. No. 895,322, Aug. 11, 1986. Division of Ser. No. 711,825, Mar. 14, 1985, Pat. No. 4,623,570. Application for reissue Nov. 2, 1988, Ser. No. 265,905

Int. Cl.[5] G11B *5/85, 5/84*

U.S. Cl. 156—160 **10 Claims**



9. A process for producing a magnetic disc comprising (1) bonding a recording medium film disc comprising a biaxially oriented flexible polyethylene terephthalate film substrate having a magnetic layer coated thereon to at least one side of an annular support wherein a gap is formed between the back surface of the recording medium film and the annular support and, then, (2) annealing the magnetic disc at a temperature in the range of 66° C. to 93° C. for 4 minutes to 36 hours.

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Re. 34,766

LAMINATING AND COATING ADHESIVE, ITS MANUFACTURING AND USE

Ekkehard Merz, and Robert Singer, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Fed. Rep. of Germany

Filed May 6, 1991, Ser. No. 696,189
Int. Cl.[5] B05C *3/02*; C09J *3/16*
U.S. Cl. 156—326 11 Claims

6. In the process for coating comprising applying an aqueous adhesive dispersion to a solid substrate, drying and recovering a solid substrate coated with an adhesive coating, the improvement consisting essentially of employing a laminating and coating adhesive in aqueous dispersion form comprising:

(1) an aqueous dispersion of a copolymer of monomer units selected from the group consisting of:

(a) a vinyl ester of an alkanoic acid having from 1 to 18 carbon atoms,

(b) an acrylic acid ester of an alkanol having from 1 to 18 carbon atoms, and

(c) mixtures thereof, with

(d) from 0.1% to 10% by weight, based on the total monomer content of an ethylenically-unsaturated functional group-containing monomer having hydroxyl and carbonyl groups as functional groups selected from the group consisting of [alkenoic acids having from 3 to 8 carbon atoms, alkenedioic acids having from 4 to 8 carbon atoms, N-methylolamides of said alkenoic acids and N-methylolamides and di-N-methylolamides of said alkenedioic acids,] *N-methylolacrylamide and N-methylolmethacrylamide,* and

(e) from 0 to 55% of other monomers copolymerizable with components (a), (b), (c) and (d),

(2) from 0.05% to 20% by weight, based on the copolymer weight, of an epoxy compound having at least one epoxy group per molecule and having a mean epoxy equivalent weight of from 80 to 1,000, said epoxy compound being added after completion of copolymerization, and

(3) from 0.05% to 20% by weight, based on the copolymer weight, of a polyamide hardener, said polyamide hardener being added after completion of copolymerization,

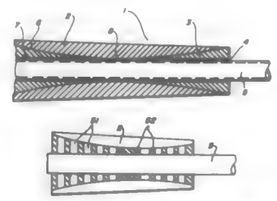
said laminating and coating adhesive being capable of laminating at temperatures of between 60° and 100° C.

Re. 34,767

HANDLE DEVICE FOR SPORTS EQUIPMENT SHAFTS

Tsai C. Soong, 1839 Jackson Rd., Penfield, N.Y. 14625

Original No. 5,160,139, dated Nov. 3, 1992, Ser. No. 775,450, Oct. 15, 1991. Application for reissue May 27, 1993, Ser. No. 67,941
Int. Cl.[5] A63B *53/14*
U.S. Cl. 273—81 R 5 Claims



1. A sports equipment including a shaft having a longitudinal handle portion at one end for manipulation by a user during playing use of the equipment, the handle portion comprising a sleeve unit arranged around an outer surface of said end of the shaft and adapted for manual gripping by the user of the equipment, said unit including a sleeve member arranged to encircle the outer surface of said shaft end and an elastic media element arranged between said sleeve member and said outer surface of said end, said sleeve member having an inner surface adjacent to and extending along said elastic media element and being spaced from said outer surface of said shaft end and out of contact therewith, said elastic media element being positioned whereby the manipulation of the handle portion during use of the sports equipment produces relative longitudinal rocking movement between said sleeve member and said one end of the shaft, said inner surface of said sleeve member facing said media element and being shaped such that it convex towards the media element and convex [at the longitudinal center of the sleeve member] *along the longitudinal axis of said sleeve member between opposite ends of said sleeve member.*

Re. 34,768

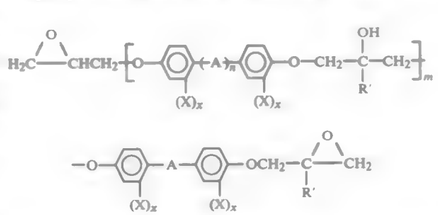
HYDANTOIN OR BARBITURIC ACID-EXTENDED EPOXY RESIN COMPOSITION

Tzong-Ming Lee, Tainan, and Ker-Min Chen, Hsinchu, both of Taiwan, assignors to Industrial Technology Research Institute, Taiwan

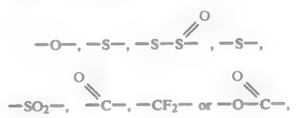
Original No. 5,006,615, dated Apr. 9, 1991, Ser. No. 538,904, Jun. 15, 1990. Application for reissue Apr. 29, 1992, Ser. No. 875,449
Int. Cl.[5] C08L *63/02*
U.S. Cl. 525—526 1 Claim

1. A resin composition for making a printed circuit board comprising:

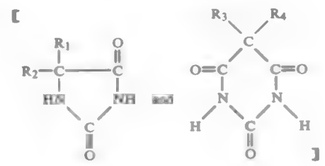
(1) a modified epoxy resin obtained by reacting (a) a low molecular weight epoxy resin having at least two epoxide groups which [have] *has* the following formula,



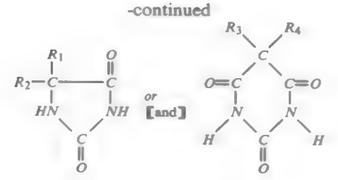
where A denotes a divalent hydrocarbon with 1–10 carbon atoms or a group represented by



X denotes a monovalent hydrocarbon with 1–10 carbon atoms or a halogen, m is 1–10 on average, n is 0 or 1, x is 0 to 4, R′ represents H or a hydrocarbon group with 1–4 carbon atoms, (b) [a mononucleus chain extending agent containing N-heterocyclic fatty groups and] *an N-heterocyclic fatty amino chain-extending agent having* at least two active hydrogen atoms [or] represented by the formula



-continued



wherein R_1, R_2, R_3 and R_4 each denotes a hydrogen atom or an alkyl group having 1–10 carbon atoms and (c) at least one catalyst for catalyzing the reaction between components (a) and (b), the amount of the modified epoxy resin being 10–70% by weight based on the total weight of the cured resin composition,

(2) 5–50% by weight based on the total weight of the resin composition, of at least one polyfunctional epoxy resin having at least 3 epoxy groups per molecule,

(3) 20–40% by weight based on the total weight of the resin composition, of at least one bromine containing-epoxy resin having an equivalent of 330–1500 with a bromine content of 10–50% based on the bromine containing-epoxy resin,

(4) at least one curing agent selected from the group [including] *consisting of* anhydrides, amines, acids, Lewis acids, imidazoles, complex salts of Lewis acid and phenols, the amount of the active reactive groups in each mole of the curing agent being 0.5–1.5 per epoxide equivalent,

(5) 0.001–5% by weight, based on the total weight of the resin composition, of at least one accelerator for catalyzing the curing reaction of the components (1), (2), (3) and (4).

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PLANT PATENTS

GRANTED OCTOBER 25, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,952
HYBRID TEA ROSE PLANT NAMED DEVSTAR
Stanley G. Marciel, and Jeanne A. Marciel, both of Aptos, Calif., assignors to DeVor Nurseries, Inc., Watsonville, Calif.
Filed Nov. 4, 1993, Ser. No. 148,827
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—14 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea rose class, substantially as shown and described.

8,953
HYBRID TEA ROSE PLANT NAMED MACHORO
Sam McGredy, Auckland, New Zealand, assignor to DeVor Nurseries, Inc., Watsonville, Calif.
Filed Nov. 4, 1993, Ser. No. 148,825
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—20 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea rose class, substantially as shown and described.

8,954
CHERRY ROOTSTOCK GI 148/1
Werner Gruppe, Linden/Hessen, and Hanna Schmidt, Ahrensburg, both of Fed. Rep. of Germany, assignors to Inter-Plant Patent Marketing, Inc., Niagara-On-The-Lake, Canada
Filed Jul. 29, 1992, Ser. No. 922,123
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—37 1 Claim

1. A new and distinct variety of charry hybrid tree as described herein.

8,955
"EARLY ROSA" PLUM TREE
David A. Wilson, 10735 E. Mission Ave., Le Grand, Calif. 95333
Filed Nov. 2, 1993, Ser. No. 148,971
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—38.1 1 Claim

1. A new and distinct variety of plum tree substantially as illustrated and described which is somewhat remotely similar to the "Santa Rosa" plum tree (unpatented), but from which it is distinguished by producing fruit which are mature for commercial harvesting and shipment approximately June 14 to June 19, or about seven to ten days before the "Santa Rosa" plum tree, in the northern San Joaquin Valley of California and which has a bright cherry red to dark purple skin coloration.

8,956
PEACH TREE "AUGUST LADY"
Ron D. Peters, 41018 Road 56, Reedley, Calif. 93654
Filed Aug. 6, 1993, Ser. No. 103,191
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—43.2 1 Claim

1. A new and distinct variety of peach tree to be denominated varietally as "August Lady" substantially as illustrated and described, and which is characterized principally as to the novelty by its production of fruit which are somewhat similar in their overall characteristics to the fruit produced by the "Summer Lady" peach tree [U.S. Plant Pat. No. 5,865] from which the present variety was derived as a mutation, but which is distinguished therefrom and characterized principally as to novelty by producing fruit which are ripe for commercial harvesting and shipment approximately 12 days later than the fruit produced by the "Summer Lady" peach variety at the same geographical location in the San Joaquin Valley of Central California.

8,957
SCABIOUS PLANT NAMED PINK MIST
David R. Tistram, Old Rectory, Binsted, Arundel, W. Sussex, BN18 OLL, England
Filed Aug. 25, 1993, Ser. No. 111,600
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68.1 1 Claim

1. A new and distinct Scabious plant named Pink Mist, as illustrated and described.

8,958
PULMONARIA EXCALIBUR
Dan M. Heims, Portland, Oreg., assignor to Terra-Nova Nurseries, Inc., Portland, Oreg.
Filed Dec. 30, 1993, Ser. No. 176,135
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68.1 1 Claim

1. A new and distinct hybrid of Pulmonaria substantially as shown and described, characterized by unique metallic finish and coloration on foliage with undulating margins.

8,959
SPRAY CARNATION NAMED WHITE OPALE
Jean Brizard, Paris, France, assignor to Laboratorie de Physiologie Vegetale, Le Pradet, France
Filed Nov. 4, 1992, Ser. No. 971,505
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—70.3 1 Claim

1. A new and distinctive spray carnation plant, substantially as herein shown and described, characterized in particular by its recurrent profuse production of very large size flowers, the petals of which are in general of ivory color and are slightly pale pink at the center with a greenish base; the flowers being carried on an erect stem.

8,960
CHRYSANTHEMUM PLANT NAMED WHITE ROCHELLE
Susan M. Polys, Salinas, Calif., assignor to Yoder Brothers, Inc., Chualar, Calif.
Filed May 17, 1993, Ser. No. 62,258
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—82.1 1 Claim

1. A new and distinct Chrysanthemum plant named White Rochelle, as described and illustrated.

8,961
GERANIUM NAMED KLEGREO
Siegfried Klemm, Stuttgart, Fed. Rep. of Germany, assignor to Klemm & Sohn, Stuttgart-Muhlhausen, Fed. Rep. of Germany
Filed Dec. 23, 1993, Ser. No. 172,618
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.12 1 Claim

1. A new and distinct geranium cultivar substantially as herein shown and described, particularly distinguished by its compact growth and very round and strong umbels with long lasting flowers of a dark pink color, having abundant dark foliage.

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[5,561]

GERANIUM NAMED KLEGOM

Siegfried Klemm, Stuttgart, Fed. Rep. of Germany, assignor to Klemm & Sohn, Stuttgart-Muhlhausen, Fed. Rep. of Germany

Filed Dec. 23, 1993, Ser. No. 172,619
Int. Cl.[5] A01H 5/00
U.S. Cl. Plt.—87.12 1 Claim

1. A new and distinct geranium cultivar substantially as herein shown and described, particularly distinguished by its compact and harmonical growth, lavender pink flowers with a red center and medium green leaves, and early precocity and good weather resistance.

[5,563]

BERMUDA GRASS 'VAUGHN'S #1'

Terrell Vaughn, Rte. 1, Box 231, Walling, Tenn. 38587

Filed Jun. 25, 1993, Ser. No. 82,923
Int. Cl.[5] A01H 5/00
U.S. Cl. Plt.—90 1 Claim

1. A new and distinct variety of Bermuda grass substantially as herein shown and described, characterized particularly as to novelty by its tall-growing characteristic, tis winter hardiness, its very vigorous rooting; its excellent feed quality; and resistance to helminthosporium leaf spot.

PATENTS

GRANTED OCT. 25, 1994

ERRATA

For CLASS	See PATENT NO.
451-311	5,357,714
451-357	5,357,715
451-390	5,357,716
451-494	5,357,717
451-075	5,357,718
123-509	5,357,944
474-113	5,358,074
244-015	5,358,156
249-142	5,358,214
273-001	5,358,237
400-605	5,358,351
414-277	5,358,375
414-412	5,358,376
623-066	5,358,475
606-198	5,358,496
606-224	5,358,498
095-045	5,358,556
095-082	5,358,557
264-257	5,358,583
148-421	5,358,584
148-514	5,358,585
148-671	5,358,586
149-018	5,358,587
117-099	5,358,596
422-184	5,358,697
422-218	5,358,698
424-450	5,358,752
549-328	5,359,081
546-099	5,359,092
556-187	5,539,116
568-332	5,539,129
174-101	5,539,143
505-213	5,539,149

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ERRATA—CONTINUED

200-144	5,539,174
346-076	5,539,351
346-143	5,539,359
346-157	5,539,360
348-006	5,539,419
348-384	5,539,420
348-818	5,539,421
360-137	5,539,504
369-032	5,539,623
358-445	5,539,694

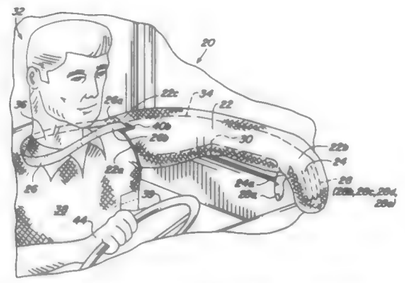
PATENTS

GRANTED OCTOBER 25, 1994

GENERAL AND MECHANICAL

5,357,633
ARM PROTECTIVE GARMENT
George V. Rael, 3945 Ruffin Ave. SW., Albuquerque, N. Mex. 87105

Filed Feb. 25, 1993, Ser. No. 22,144
Int. Cl.[5] A41D *13/08*
U.S. Cl. 2—16 8 Claims



1. An arm protective garment, consisting essentially of:

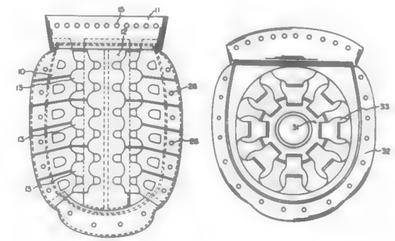
(a) an elongated tubular sleeve of flexible material having a pair of opposite ends and defining an elongated internal cavity extending between said opposite ends, said sleeve defining an opening at one of said opposite ends thereof for slipping over a hand and arm of a person and for receiving and enclosing the arm in said internal cavity of said sleeve up to but not including a shoulder of the person connected to the arm such that said sleeve is of a length only covering the arm and hand of the person, said opening defined at said one end of said sleeve being disposed in a generally oblique relationship to the length of the sleeve so as to define an upper portion protruding beyond a lower portion of said one end of said sleeve;

(b) a mitten defined by the other of said opposite ends of said sleeve having an internal pocket defined by a closed terminal end portion of said internal cavity of said sleeve for receiving and enclosing the hand of the person therein, said mitten having only a thumb opening defined therein on a side portion of said sleeve for permitting extension therethrough of a thumb of the enclosed hand of the person to the exterior of said mitten such that said mitten encloses all of the fingers on the hand of the person, permitting only the thumb on the hand to protrude outwardly through said thumb opening of said mitten, said mitten being formed as an integral portion of said sleeve such that said sleeve and mitten constitute a continuous tubular enclosure and said internal cavity of said sleeve and said internal pocket of said mitten communicate with one another for receiving the hand and arm of the person; and

(c) an elongated flexible strap having a pair of opposite ends, one of said opposite ends of said strap being fixedly attached to said upper portion of said one end of said sleeve and the other of said opposite ends of said strap being releasably attached to said upper portion of said one end of said sleeve side by side with said one end of said strap, the portion of said strap extending between said opposite ends thereof being adapted to encircle the neck of the person adjacent to the arm of the person so as to provide the only means to releasably retain said sleeve and mitten on the arm and hand of the person.

5,357,634
WEBBING FOR SPORTS GLOVE
Akio Aoki, Osaka, Japan, assignor to Trion Corporation, Osaka, Japan

Filed Jan. 27, 1994, Ser. No. 188,074
Int. Cl.[5] A41D *13/08*
U.S. Cl. 2—19 15 Claims



1. A webbing for a ball-catching glove having separate protective coverings for the thumb and forefinger between which the webbing is laced comprising:

a) a center web comprising flexible sheet material having an outer edge defining the shape thereof and there being a plurality of link holes through the web spaced along the outer edge;

b) a plurality of folding links each comprising flexible sheet material having an outer edge defining the shape of the link, the shape of said link being substantially symmetrical about a fold line with link holes on opposite sides of the fold line which link holes align when the folding link is folded along the fold line, one of each said links being partially fitted through one of said link holes in the center web and folded so that its link holes align; and

c) an edge piece comprising flexible sheet material having an outer edge defining a rim and an inner edge with a plurality of tabs extending therefrom, each tab being fitted into the aligned link holes of one of the plurality of folding links and being folded back along a fold line onto the edge piece and stitched thereto, there being a plurality of small holes along the edge of the edge piece to enable lacing of the rim to the glove.

5,357,635
VENTILATED BEEKEEPER'S SUIT
Philip G. Lemoine, 801 Little Farms Ave., Metairie, La. 70506

Continuation-in-part of Ser. No. 567,618, Aug. 7, 1990, Pat. No. 5,249,307, which is a continuation-in-part of Ser. No. 232,674, Aug. 16, 1988, Pat. No. 4,985,933. This application Jul. 2, 1993, Ser. No. 85,100
The portion of the term of this patent subsequent to Jan. 22, 2008, has been disclaimed.
Int. Cl.[5] A41D *13/00;* A42B *3/00*
U.S. Cl. 2—84 7 Claims

1. A ventilated suit for protection against insect bites, the suit comprising an integral suit body formed of substantially uniform flexible multi-layered material having more than 50% of void space and being substantially air permeable, wherein said material comprises:

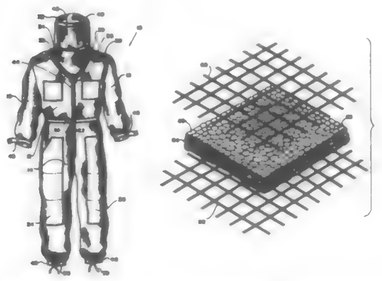
a first outside net fabric layer;

a second inside net fabric layer; and

an intermediate layer of flexible porous open cell cellular plastic material positioned intermediate the first and second layers for defining a thickened protective barrier

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against insect stings, and wherein the outside, inside and intermediate layers in composite provide a uniformly



thick and flexible material allowing air ventilation without impeding movements of a user.

5,357,636

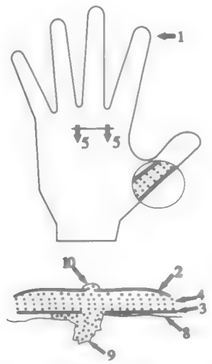
FLEXIBLE PROTECTIVE MEDICAL GLOVES AND METHODS FOR THEIR USE

Karl P. Dresdner, Jr., 235 W. 48th St., Apt. #18N, New York City, N.Y. 10036; Kenneth H. Dangman, 400 Riverside Dr., Apt. #1A, New York City, N.Y. 10032, and Edward A. Jazlowiecki, 15 Sachems Trail, West Simsbury, Conn. 06092

Filed Jun. 30, 1992, Ser. No. 906,829

Int. Cl.[5] A41D *13/10, 19/00*

U.S. Cl. 2—161.7 **20 Claims**



1. A flexible protective glove with a liquid-impermeable wall having the capability to provide a non-liquid antiseptic composition treatment to a hand and to a hand wound should the wound occur underneath the glove while the glove is being worn when a wall of the glove is punctured by an object that may be contaminated with an infectious pathogen, comprising:

(a) a glove wall with a liquid-impermeable outer layer comprised of a first material having a thickness of about 1 mil to about 40 mils and a liquid-impermeable less elastic inner layer composed of a second material having a thickness of about 0.3 mils to about 30 mils wherein the first material and the second material form the walls of a compartment capable of providing a non-liquid antiseptic composition;

(b) wherein the non-liquid antiseptic composition in the compartment comprises an antiseptic or a number of substances that can form the non-liquid antiseptic composition when the object punctures the glove wall and causes a combination of a portion of the substances, wherein at least a portion of the glove wall contains the non-liquid antiseptic composition when the glove wall is punctured by the object;

(c) the glove wall capable of providing a physical barrier as a means of protection to the hand while the glove is being worn by an individual until a portion of the glove wall is punctured by an object;

(d) the glove wall capable of being punctured by the object while the glove is being worn on the hand;

(e) the glove wall having the flexibility to allow the hand of an individual in need of wearing the glove to easily and adequately perform delicate, dexterous and complex work including the work performed by a surgeon, a medical doctor, a dentist, a laboratory worker, a health care worker, a law enforcement worker, and a hospital worker;

(f) the glove having the capability to provide a coating to at least a portion of the object puncturing the glove wall; the coating comprising the non-liquid antiseptic composition; the coating on the object providing a means for immediately transfering some of the non-liquid antiseptic composition onto the hand and into the hand wound by the object puncturing the glove wall while the glove is being worn; the non-liquid antiseptic composition transferred to the hand and to the hand wound having the capability to provide an immediate non-liquid antiseptic composition treatment to the hand and hand wound;

(g) the glove having the additional capability to transfer some of the non-liquid antiseptic composition from a section of the glove wall having a hole resulting from the object puncturing the glove wall; the hole in the inner glove layer is relatively larger than the hole in the outer glove layer and may be used to help to direct a relatively larger transfer of non-liquid antiseptic composition from the glove to the hand and to the hand wound than from the glove to the outer surface of the glove; and

(h) the glove having the capability of treating the hand and the hand wound with the non-liquid antiseptic composition when the object punctures the glove wall, when the object contacts the hand, when the object may wound the hand, and when the object may contaminate the hand and the hand would with the infectious pathogen; wherein the non-liquid antiseptic composition transferred to the hand and the hand wound can help to protect the hand, the hand wound, and the systemic circulation of the individual by killing, inactivating, and otherwise destroying the infectious pathogen that may be contaminating the hand and the hand wound.

5,357,637

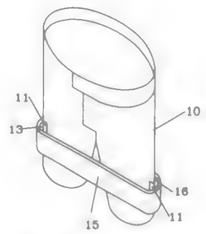
EXERCISE PANTS AND EXERCISE BAND ASSEMBLY

Derrick F. Moore, 1909 Winona Dr., Plano, Tex. 75074

Filed Dec. 3, 1993, Ser. No. 160,971

Int. Cl.[5] A41D *1/06*

U.S. Cl. 2—227 **19 Claims**



1. An elastic exercise band for use with and in combination with an article of clothing, comprising:

an elongated elastic band having first and second ends, and of a length to extend around a wearer's legs above the knees;

attachment means on said article of clothing;

at least two attachment mean on said elastic band for attaching the elastic band to the attachment means on the article of clothing above the knees; and

a pair of attachments devices on said elastic band to attach said first end to said second end.

5,357,638

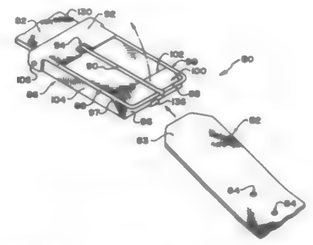
BELT BUCKLE WITH CONDOM CONTAINER

John A. Mayzel, 1931 Hampshire Road, Victoria, British Columbia, V8R 5T9, Canada

Continuation of Ser. No. 992,509, Dec. 17, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 200,580

Int. Cl.[5] A41F *9/00*

U.S. Cl. 2—312 **7 Claims**



1. A belt buckle, comprising:

a loop-shaped member having a front and a back;

a elongated tongue hingedly connected to the back of the loop-shaped member and extending to the front thereof on one side thereof;

means for connecting a first end of a belt to the back of the loop-shaped member;

a container hingedly connected to the back of the loop-shaped member on a side thereof opposite the tongue, the container having an opening adjacent the front of the loop-shaped member;

a cover connected to the loop-shaped member and releasably covering the opening in the container, the cover being spaced-apart from the front of the loop-shaped member with an opening therebetween for receiving a second end of the belt, whereby the container is uncovered when the container is hingedly moved away from the loop-shaped member and the cover.

5,357,639

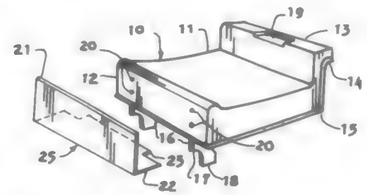
BATH SEAT AND SPLASH SHIELD

John R. Zellner, 1610 King Ave., Kings Mills, Ohio 45034

Filed May 13, 1993, Ser. No. 76,595

Int. Cl.[5] A47K *3/12*

U.S. Cl. 4—579 **6 Claims**



1. In a bathing system including a bathtub on a bathroom floor, said bathtub having a front wall and a back wall, said front wall including a top and an inner side, the combination comprising a removable bath seat having a front overlying the tub front wall, and a splash shield wherein said splash shield has a foot in slidable engagement with the top of the tub front wall and extending horizontally beneath the seat front, said shield having an upright portion extending upwardly from the top of the tub front wall and spaced from the seat front to direct splashed water into the tub and to form a passage to accept a shower curtain.

5,357,640

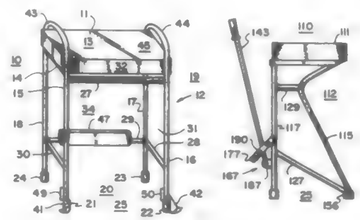
DRESSING-AID-AND-TRANSFER DEVICE

Michael A. McKenney, Gardiner, and Daniel McKenney, Augusta, both of Me., assignors to McKenney Group, Portland, Me.

Continuation-in-part of Ser. No. 50,503, Apr. 20, 1993, abandoned. This application Nov. 16, 1993, Ser. No. 155,571

Int. Cl.[5] A61G *7/10, 7/14*

U.S. Cl. 5—81.1 **26 Claims**



1. A device designed to aid in dressing and transferring an incapacitated patient, said device comprising:

a. a space frame having a plurality of support legs defining a device perimeter;

b. a horizontally-oriented substantially planar chest support connected to said space frame at an upper region thereof, wherein said chest support is adapted to support the chest of said patient; and

c. pivot means connected to one or more of said support legs at lower ends thereof, said pivot means for pivoting said space frame from a vertical orientation toward said patient, wherein said patient is in a sitting position, and, upon placing the chest of said patient in contact with said chest support, for pivoting said space frame back to a vertical orientation with said patient supported on said chest support.

5,357,641

PATIENT POSITIONERS FOR USE ON OSCILLATING AIR SUPPORT SURFACES

Paul E. Schubert, Raleigh, N.C., assignor to Kinetic Concepts, Inc., San Antonio, Tex.

Filed Jan. 21, 1992, Ser. No. 823,281

Int. Cl.[5] A61G *7/057, 7/07, 7/075*

U.S. Cl. 5—453 **7 Claims**

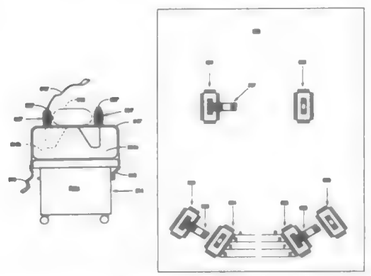
1. An apparatus for positioning a person situated on an oscillating air support system for maximizing the therapeutic benefits of the oscillation provided by such system and preventing the patient from sliding side-to-side, comprising:

a flexible overlay sheet to be placed on a top surface of an oscillating air support system;

said sheet comprising a first support pocket and a second support pocket, each said pocket being located on the top surface of said sheet;

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a hook and loop type connector, said hook and loop type connector being secured to said sheet; and



each said support pocket being closed on all edges except a front edge which is used to accept supports.

5,357,642

SUPPORT PILLOW WITH AUDIO COMFORTER

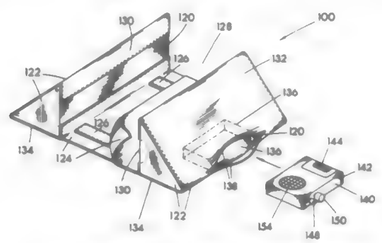
L. Jason Clute, 3555 Shadow Creek Dr., Danville, Calif. 94506

Filed Jul. 20, 1993, Ser. No. 93,889

The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.

Int. Cl.[5] A47D *13/08, 15/00;* **A47G** *9/00*

U.S. Cl. 5—655 **2 Claims**



1. A support pillow with audio comforter structured for maintaining a human infant primarily on its side and for emitting sound to aid in sleep, said support pillow comprising:

a first elongated member having at least one vertically oriented, generally planar, side wall connected to a base,

a second elongated member having at least one vertically oriented, generally planar, side wall connected to a base,

said support pillow including a channel, said channel having oppositely disposed vertically oriented sides defined by said side walls of the first elongated member and the second elongated member in spaced relationship to one another, the spacing between said side walls being sufficient for a human infant to lie between said side walls within said channel and to be maintained primarily on its side,

said support pillow including means connecting between the bases of said first and second elongated member for allowing adjustments in the spacing between said side walls and thus in the width of said channel for accommodating differently sized human infants,

said bases of said first and second elongated members in combination with said means connecting between the bases defining a generally flat anti-roll bottom on said support pillow for preventing a human infant within said channel from rolling said support pillow,

sound producing and emitting means attached to said support pillow including tone generation means for audible broadcast by an audio speaker for emitting sound which is audible to a human infant when lying within said channel, said sound producing and emitting means being battery powered and lacking an electrical extension powering cord,

said support pillow further including at least one of said elongated members having open means for providing air space, with said open means structured so as to prevent a human infant's nose and mouth from engaging said elongated member to a degree sufficient to significantly interfere with the infant's breathing in the event the infant is improperly placed on said support pillow.

5,357,643

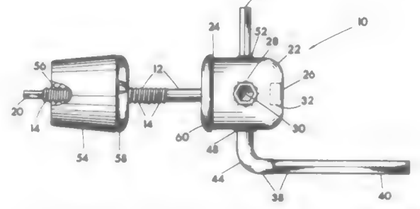
MULTIPURPOSE TOOL AND BICYCLE SEAT CLAMP COMBINATION

Robert L. Seals, 13524 Autumn La., Chico, Calif. 95926

Continuation of Ser. No. 994,267, Dec. 21, 1992, abandoned. This application Nov. 1, 1993, Ser. No. 144,495

Int. Cl.[5] B25F *1/00*

U.S. Cl. 7—138 **1 Claim**



1. A combination of a bicycle seat attached to a seat post with said seat post inserted into a bicycle seat tube, a pair of pinch lugs on said seat tube squeezing said seat tube tightly onto said seat post, said pinch lugs squeezed together by a cam-action quick-release clamp removably connected to said pinch lugs, said cam-action quick release clamp comprising an elongated shaft having a first end and a second end, said elongated shaft having threads thereon beginning adjacent said first end and extending a distance toward said second end of said elongated shaft, a nut having a threaded bore threadably engaged with said threads of said elongated shaft, said second end of said elongated shaft having an affixed head, a housing movably placed over said head, said housing having at least one exposed hexagonal socket thereon for manipulating fasteners, an L-shaped handle having a first exposed end fashioned into a first size hexagonal wrench, said handle having a second exposed end fashioned into a hexagonal wrench sized differently relative to said first size hexagonal wrench, a portion of said handle between the first and second exposed ends of the handle rotatably positioned and retained within said housing, said portion of said handle within said housing including a cam positioned relative to said head so that movement of said handle and thus said cam results in repositioning said housing relative to said head, said hexagonal socket of said housing and the hexagonal wrenches of said handle suitably structured for manipulating fasteners such as bolts and the like on a bicycle when said cam-action quick release clamp is removed rom said pinch lugs.

5,357,644

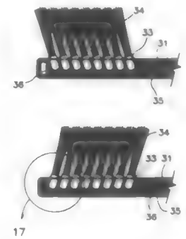
ADJUSTABLE TOOTHBRUSH

Bertrand R. Theriault, 26 Ouellet Street, Edmundston, N.B., Canada E3V 3H9

Filed Aug. 2, 1993, Ser. No. 100,384

Int. Cl.[5] A46B *13/02, 13/08;* **A61C** *17/34*

U.S. Cl. 15—22.1 **20 Claims**



1. A toothbrush having:

an elongated handle,

a hollow brush body having;

an elongated exterior surface extending from and parallel to the longitudinal axis of said handle, said exterior surface being adapted to receive a plurality of spaced apart bristle bundles, and

an elongated interior space forming the hollow portion of said body, said hollow portion having at least one guiding surface defining a longitudinal direction parallel to said longitudinal axis and a transverse direction, and at least two fulcrum means, said fulcrum means being mounted transversely to said guiding surface, and on opposite sides of said interior space,

a plurality of spaced apart bristle bundles, each said bristle bundle having a free end, a mounting end, a neutral central axis defined by the bristles of the respective bristle bundles, and a holder covering said mounting end, each said holder being defined by a base, wherein each said holder is locally mounted adjacent said exterior surface with a part of each said holder extending within said hollow portion, and wherein said neutral central axis of each of said bundles is substantially perpendicular to said guiding surface when said bristle bundles are oriented perpendicular to said exterior surface,

an elongated cam plate mounted within said hollow portion, said cam plate having a drive end and a driven end, said cam plate having dimensions smaller than the dimensions of said hollow portion, said cam plate being linearly movable longitudinally within said hollow portion and following said guiding surface, said cam plate also being movable transversely following said guiding surface, and said cam plate also having a pivotal movement, wherein said pivotal movement is effected by levering said cam plate over said fulcrum means.

said driven end of said cam plate having a plurality of spaced apart cavities, each said cavity is adapted to receive a respective one of said bases, such that a movement of said cam plate is transmitted to said bristle bundles in harmony,

a cam mounted within said hollow portion, and adapted for rotation about a fixed axis, said fixed axis being perpendicular to the longitudinal direction of movement of said cam plate,

a cam actuating means to effect a rotational displacement of said cam,

a connecting means on said drive end of said cam plate to transmit said rotational displacement of said cam to said cam plate,

whereby a longitudinal component of a displacement of said cam is ultimately transmitted directly to said bases of said holders, and a transverse component of a displacement of said cam is ultimately transmitted indirectly, over said fulcrum means, to said bases of said holders,

and whereby a relative movement of each said base of each said holder with respect to a respective mounting location of each said holder at said exterior surface causes said bristle bundles to deflect from their respective neutral central axis, in a direction relative to an angular position of said cam.

5,357,645

APPARATUS FOR CLEANING AND DRYING HARD DISK SUBSTRATES

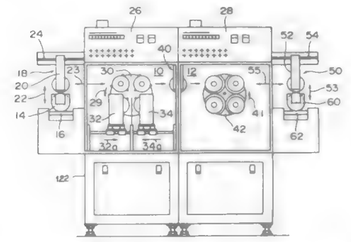
Masami Onodera, Niigata, Japan, assignor to System Seiko Co., Ltd., Niigata, Japan

Continuation-in-part of Ser. No. 797,861, Nov. 26, 1991. This application May 14, 1993, Ser. No. 61,107

Claims priority, application Japan, Apr. 9, 1989, 1-228993

Int. Cl.[5] B08B *11/02*

U.S. Cl. 15—97.1 **10 Claims**



1. An apparatus for cleaning and then drying hard disk substrates, comprising:

a first index table intermittently rotatable about a first axis;

a second index table intermittently rotatable about a second axis;

at least three first substrate carriers, disposed on said first index table and circumferentially spaced at equal angular intervals, for carrying a plurality of hard disk substrates; and

at least three second substrate carriers, disposed on said second index table and circumferentially spaced at equal angular intervals, for carrying a plurality of hard disk substrates,

means for transferring said hard disk substrates between said index tables,

means for mounting said hard disk substrates on said first and second substrate carriers,

means for cleaning said hard disk substrates,

means for removing said hard disk substrates from said first and second substrate carriers,

means for drying said hard disk substrates,

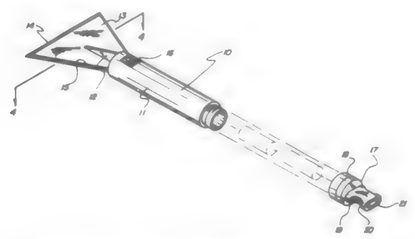
wherein upon rotation of said first index table, said first substrate carriers move successively through a first substrate mounting position in which a hard disk substrate is mounted on one of said first substrate carriers, a substrate cleaning position in which a hard disk substrate mounted on one of said first substrate carriers at said first substrate mounting position is cleaned by said cleaning means, and a first substrate removing position in which a hard disk substrate cleaned at said substrate cleaning position is removed from one of said first substrate carriers by said removing means, and

wherein upon rotation of said second index table, said second substrate carriers move successively through a second substrate mounting position in which a hard disk substrate removed from said first substrate removing position is mounted on one of said second substrate carriers, a substrate drying position in which a hard disk substrate mounted on one of said second substrate carriers, at said

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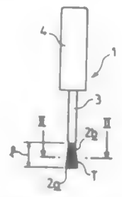
second substrate mounting position is dried by said drying means, and a second substrate removing position in which a hard disk substrate dried at said substrate drying station is removed form one of said second substrate carriers by said removing means.

5,357,646
HEATED ICE SCRAPER
David H. J. Kim, 88 Charles St. E. Apt. 202, Toronto, Ontario, Canada M4Y 2W7
Filed Jun. 7, 1993, Ser. No. 71,854
Int. Cl.[5] A47L *1/06, 13/08*
U.S. Cl. 15—111 2 Claims



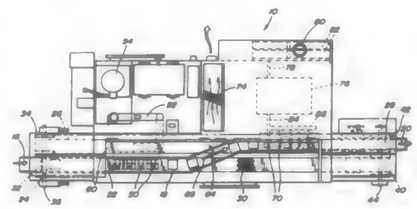
2. A heated ice scraper comprising:
an elongated, hollow, tubular body portion for receiving a plurality of batteries therewithin, said body portion having a first end and a second end, with a tapered housing extending from said first end and threads circumscribing said second end;
a threaded cap member threadably engaged to said threads circumscribing said second end of said tubular body portion, said cap being operable to removably capture said batteries within said tubular body portion;
a blade member having an outer periphery and a forward edge, with a scraper blade formed in said forward edge for scraping ice from a surface, said blade member being received within and mounted to said tapered housing of said body portion;
a resistance wire embedded within said blade member and extending around said blade member proximate said periphery and said scraper blade, said resistance wire being operable to generate heat upon energization thereof for melting ice in contact with said blade member;
a switch electrically connectable to said plurality of batteries for selectively energizing said resistance wire;
a receptacle fixedly secured to said threaded cap member, said receptacle having an exterior and a substantially hollow interior with a pair of diametrically opposed recess formed upon said exterior, with each of said recesses having a slot directed therethrough into communication with said hollow interior;
a handle member having a handle member first end and a handle member second end;
a brush member having a plurality of bristles extending therefrom, said brush member being coupled to said handle member second end; and,
means for removably coupling said handle member first end to said receptacle, said means for removably coupling said handle member to said receptacle comprising a pair of resilient clips coupled to said handle member first end, said clips lying in a common plane and being operable to enter said hollow interior and snap into said slots of said receptacle.

5,357,647
BRUSH FOR THE APPLICATION OF NAIL VARNISH OR A SIMILAR PRODUCT
Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France
Filed Feb. 4, 1993, Ser. No. 13,737
Claims priority, application France, Feb. 11, 1992, 92 01498
Int. Cl.[5] A46B *9/06*
U.S. Cl. 15—159.1 21 Claims



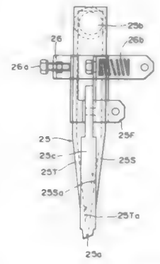
1. Brush for the application for nail coating product, comprising bristles disposed substantially parallel to one another in a tuft and fixed to a support, characterized in that the bristles are formed by a mixture of bristles of small cross section, and bristles having a larger cross section than said small cross section the proportion of large bristles being between 2% and 95% by volume in relation to the total volume of the tuft of the brush, said larger cross section bristles providing a means to increase a length of said tuft for more effective application of nail coating product, the length of said tuft of bristles being between 11 and 25 mm.

5,357,648
PART WASHING AND DRYING MACHINE
Andrew Noestheden, Tecumseh, Canada, assignor to Valiant Machine & Tool, Inc., Windsor, Canada
Filed Apr. 16, 1993, Ser. No. 46,457
Int. Cl.[5] B08B *3/02*
U.S. Cl. 15—302 6 Claims



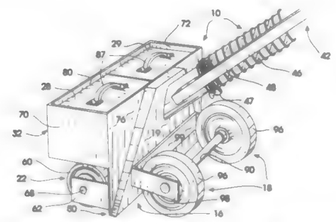
1. Apparatus for washing and then drying parts comprising:
a housing having an inlet for receiving parts to be washed and an outlet for discharging parts after drying,
a first conveyor having one end adjacent said housing inlet for receiving parts to be washed,
a second conveyor having one end adjacent said housing outlet;
means for driving said first and second conveyors,
means for spraying a liquid washing solution on said parts on said first conveyor,
means for transferring said parts from said first conveyor to said second conveyor after said liquid spraying means,
means for directing a gas stream onto said parts on said second conveyor to thereby dry said parts,
wherein said first and second conveyors each comprise an endless chain, a pair of spaced apart sprockets both of said chains being disposed around said sprockets so that said first and second conveyors are disposed in a side by side relationship and are coplanar with each other,
a stationary transfer rail extending diagonally across said first and second conveyors at a mid point between said sprockets, and
means for shielding said second conveyor from said liquid spraying means so that said second conveyor remains substantially dry.

5,357,649
NOZZLE FOR CARPET WASHER
Shuuichi Hasegawa; Shinichiro Takahashi, and Kazushige Nozawa, all of Shizuoka, Japan, assignors to Amano Corporation, Yokohama, Japan
Filed Apr. 28, 1993, Ser. No. 53,408
Claims priority, application Japan, Apr. 30, 1992, 4-036168[U]
Int. Cl.[5] A47L *11/20*
U.S. Cl. 15—320 1 Claim



1. A nozzle for a carpet washer operated to travel on a carpet while supplying a cleansing liquid foam onto a surface of said carpet under pressure of a pump and brushing said surface of said carpet with a washing brush, dirty water produced as a result of said brushing being drawn into a sewage tank through said nozzle, said nozzle comprising a combination of a pair of generally inverted-T-shaped shell halves, each said shell half having an edge portion on an inner surface thereof with each one of said edge portions being inclined upwardly in the drawing direction of said dirty water and extending in a horizontal direction across said shell halves in vertically spaced relation to each other.

5,357,650
CARPET WATER REMOVER
Bill G. Finley, P.O. Box 245, Searcy, Ark. 72143
Filed May 17, 1993, Ser. No. 61,524
Int. Cl.[5] A47L *11/29*
U.S. Cl. 15—401 4 Claims



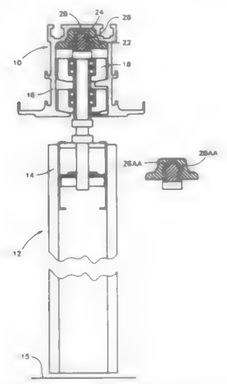
1. A liquid removal tool for deflooding carpets, carpet pads or rugs, said tool comprising:
a front and a rear;
a rigid, hollow, vacuum chamber disposed between said front and said rear and comprising a front face, a rear face, a pair of spaced apart sides, and a lower, generally rectangular open suction inlet extending between said sides for suctioning liquids to be removed;
wheel means rigidly mounted to said vacuum chamber adjacent said rear for facilitating movement of said tool, said wheel means comprising a given diameter;
cylindrical roller means normally supporting said tool and rigidly mounted to said vacuum chamber adjacent said front for liberating liquid by contacting and compressing said carpet, carpet pad or rug whereby to establish a pool of liquid adjacent said open suction inlet for subsequent intake by said vacuum chamber, said vacuum chamber being in fluid flow communication with said pool of liquid, said roller means comprising a given diameter;
an elongated, rigid tubular handle angularly coupled at the rear of said machine to said vacuum chamber in fluid flow communication with said suction inlet, said handle adapted at its remote end to be coupled to a conventional vacuum source whereby to establish vacuum chamber suction, said handle comprising a translucent portion providing for visual observation of liquid as it is drawn through said handle;
weight box means rigidly secured to said vacuum chamber at the front of said tool above said roller means for containing a plurality of weights for variably weighting said tool, wherein said weight box means establishes a center of mass horizontally spaced-apart from said vacuum chamber at the front of said tool and vertically spaced above said roller means enabling the user of said tool to easily transfer weight to the roller means by lifting upwardly on the handle to pivot the wheel means out of contact with the carpet, carpet pad or rug being deflooded; and,
wherein said wheel means are offset from said suction inlet by strut means projecting rearwardly from said tool and said wheel means is spaced above said carpet, carpet pad or rug so that when the weight of said weight box means is transferred to said roller means by lifting upwardly on said handle, said wheel means is displaced out of contact with said carpet, carpet pad or rug and the weight of the tool is concentrated upon said roller means and said suction inlet, and when said handle is pressed downwardly, said roller means is pivoted out of contact with said carpet, carpet pad or rug being deflooded.

5,357,651
PROGRAMMABLE MULTI-DIRECTIONAL TROLLEY FOR WALL PANELS
Norman P. Jones, Petersburg, and Michael L. Saathoff, Williamsville, both of Ill., assignors to Kwik-Wall Company, Springfield, Ill.
Filed Jan. 22, 1993, Ser. No. 7,610
Int. Cl.[5] E05D *13/02;* A47H *1/04*
U.S. Cl. 16—95 R 7 Claims

1. In a multi-panel room divider system having a plurality of panels and channels supporting trolleys attached to said panels for moving said panels along said channels to different areas in a room, said trolleys having wheels engaging said channels, the improvement comprising programming means for blocking or passing said panels on said channel, said programming means comprising characterized gate means for blocking or passing said panels past said gate means, said gate means passing or blocking said panels responsive to characterized guide means on separate panels, said gate means comprising a characterized female member attached to said channel and receiving in mat-

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ing relation a correspondingly characterized male guide means member, said guide means member being supported upon and



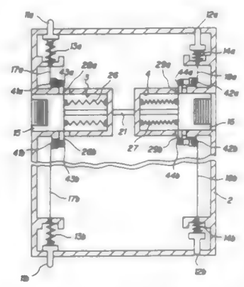
extending from said trolleys in spaced relation from the wheels of the trolleys.

5,357,652

LID OPENING/CLOSING APPARATUS

Satoshi Yamada, Kanagawa, Japan, assignor to Kato Hatsujo Kaisha, Ltd., Kanagawaken, Japan

Filed Feb. 11, 1993, Ser. No. 16,316
Claims priority, application Japan, Mar. 25, 1992, 4-067041; Aug. 11, 1992, 4-214122
Int. Cl.[5] E05D *15/50*
U.S. Cl. 16—232 8 Claims



1. A lid operating mechanism for opening and closing a lid body from left and right sides of a box body having front and rear side walls, left and right side walls, and a bottom wall, comprising:

a pair of left side hinge pins provided along a left side edge of said lid body for movement between a projecting position where said left side hinge pins project from front and rear ends of said lid body and a retracted position where said left side hinge pins retract into said lid body;

a pair of right side hinge pins provided along a right side edge of said lid body for movement between a projecting position where said right side hinge pins project from front and rear ends of said lid body and a retracted position where said right side hinge pins retract into said lid body;

bearing holes provided on upper left and right inside corners of said front and rear walls of said box body for receiving said hinge pins in said projecting position to thereby secure said lid body to said box body for rotation;

bias means provided within said lid body biasing said hinge pins toward said projecting position;

left and right side square recesses extending inwardly from said left and right side edges of said lid body and having top and bottom walls, side walls, and a rear wall;

left and right side operation buttons provided within said square recesses for sliding toward and away from each other in a widthwise direction of said lid body between an opening position where said left or right side button is depressed for opening said lid body and a closing position where said left or right side button respectively is released after said lid body is closed;

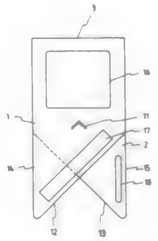
left and right side cable means directly connecting said left and right side hinge pins and said left and right side operation buttons, respectively, and having a first section extending in said widthwise direction and a second section extending in a lengthwise direction of said lid body so that when said left or right side operating button is depressed into said opening position, said left or right side cable means, respectively, pulls said left or right side hinge pins, respectively, into said retracted position to thereby allow opening of said lid body about said right or left side hinge pins, respectively.

5,357,653

CLIP FOR PAPER OR OTHER OBJECTS

Johanna L. M. van Ardenne, Voorschoten, Netherlands, assignor to Multibridge B.V., Voorschoten, Netherlands

Filed Jul. 31, 1992, Ser. No. 922,544
Claims priority, application Netherlands, Jul. 31, 1991, 9101313
Int. Cl.[5] B42F *1/02*
U.S. Cl. 24—67.9 5 Claims



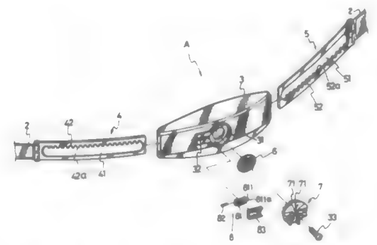
1. A clip for retaining together sheets of paper or other materials comprising a single thin strip of resilient sheet-like material bent upon itself to define an end fold (3) and first and second holding legs; said first holding leg having a first upper end and the second holding leg having a second upper respectively interconnected at said end fold, said first upper end defining a small angle α with said second upper end; said first leg having a bend (5) spaced from said end fold so as to define said first upper end therebetween; said first leg further having a central portion (6) adjoining said bend and said central portion defining an obtuse angle β with said first upper end at said bend such that said first upper end, said bend and said central portion are spaced from said second holding leg; said first leg having a lower portion (8) extending from said central portion and biased flatly against said second leg, to exert a force thereon such that at least the second upper end of said second leg curves away from the first upper end of said first leg; said first and second holding legs each having first and second lower ends respectively opposite said end fold and said lower ends intersecting at an angle with respect to each other so as to define a reverse V-shaped push-on space; said first and second lower ends each terminating in a single rounded point.

5,357,654

RATCHET DIVING MASK STRAP

Hsieh Hsing-Chi, 1 Fl, No. 22, Lane 125, Jen Ai Street, Sanchung City, Taipei Hsien, Taiwan

Filed Mar. 19, 1993, Ser. No. 33,924
Int. Cl.[5] A42B *3/04*; A61F *9/02*
U.S. Cl. 24—68 B 1 Claim



1. A ratchet diving mask strap comprising:

two elastic straps with a first end of each strap secured to a frame of a diving mask, a second end of the straps being connected with upper and lower racks, respectively the upper rack including a depression area with a row of teeth on an upper inner surface thereof, the lower rack including a depression area with a row of teeth on an lower inner surface thereof, with the upper and lower racks being disposed in a guard cover so as to overlap, thereby forming a region with teeth on a top side and teeth on a lower side;

the guard cover including an arced hollow body with an adjusting knob seat and a check catch seat on a front side thereof;

a gear disposed in the guard cover and engaged with the teeth so that the gear can actuate the upper and lower racks, thus tightening and loosening the elastic strap when the gear is turned;

an adjusting knob including a plurality of tooth recesses at a lower end thereof, the adjusting knob being disposed in an adjusting knob seat in the guard cover and connected with the gear; and

a check device comprising a latch button and a spring disposed in the check catch seat of the guard cover, a protruding pin provided at a front end of the latch button, the rear end of the protruding pin being nested with the spring, the spring thereby urging the protruding pin into the tooth recesses of the adjusting knob, the front end of the protruding pin including a unidirectional inclined plane which permits the adjusting knob to run in only one direction when the protruding pin is engaged.

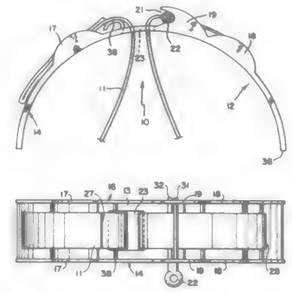
5,357,655

FIXING TIE

Philip F. Hayward, 47 Firbank, Euxton, Chorley, Lancashire, United Kingdom PR7 6HP

Filed Jan. 14, 1993, Ser. No. 4,455
Int. Cl.[5] B65D *63/00*
U.S. Cl. 24—68 R 5 Claims

1. A fixing tie comprising a flexible fixing strap and adjustment clip means, said adjustment clip means being shaped to define a mounting in which a tightening pin which receives said strap can be mounted for rotation thereby to tighten the strap, said clip further being provided with one or more tabs formed integrally with the clip capable of being moved by



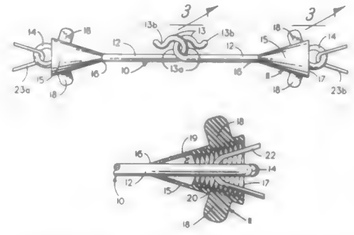
bending or crimping into contact with the strap whereby said strap can be retained in position in said clip when tightened.

5,357,656

REPAIR DEVICE FOR STRANDED WIRE FENCE

Gerald D. Trowbridge, 34485 Highway 93, St. Ignatius, Mont. 59865

Filed Oct. 4, 1993, Ser. No. 131,370
Int. Cl.[5] A44B *13/00*
U.S. Cl. 24—370 5 Claims



1. A repair device for a broken fence wire, comprising in combination:

a fastener having two similar releasably interconnectable portions, each portion having a medial linear body, a first outer hook opening inwardly towards the body to interconnect the end portion of a fence wire and a second inner hook opening inwardly toward the body to releasably interconnect with the other fastener portion; and

wire nuts carried by each body portion, each wire nut having a body with means to aid manipulation, and defining a medial conical channel having an orifice at its apex to movably fit upon the medial linear body of each fastener and an orifice at its base to fit over at least the body facing open portion of the outer hook and fasten a fence wire connected to the outer hook.

5,357,657

KARABINER FOR CLIMBING AND POTHOLING

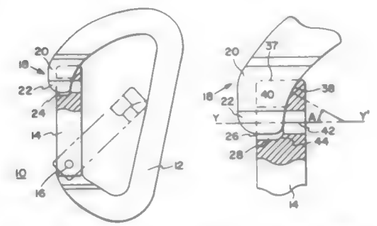
Paul Petzl, Barraux, France, assignor to Zedel, Crolles, France

Filed Dec. 15, 1993, Ser. No. 166,941
Claims priority, application France, Jan. 11, 1993, 93 00214
Int. Cl.[5] A44B *13/00*
U.S. Cl. 24—599.9 8 Claims

1. A karabiner, notably for climbing and potholing, comprising:

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a C-shaped body, and a movable finger pivotally mounted on a spindle supported by one of the ends of the body,
a male part at the other end of the body, having a transverse cross-section in the shape of a reverse T, composed of a central tab associated with a terminal protuberance in the form of a cap,
a female part arranged in the finger opposite the spindle, and having a first front orifice for access to an internal recess to accommodate the protuberance, and a central notch extending the first orifice towards the apex of the finger to accommodate the tab,



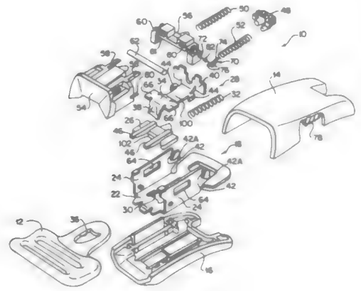
and an internal stop of the female part coming into engagement with the conjugate edge of the male part in the closed position of the finger, wherein the finger comprises in addition a second rear outlet orifice making the internal volume of the recess communicate with the outside environment, on the opposite side from the first orifice, and the second outlet orifice is appreciably facing the protuberance at the end of closing travel of the finger to ensure removal of the mud to the outside, and self-cleaning of the locking zone inside the recess.

5,357,658

BUCKLE APPARATUS

Kohben Tanaka, Aichi, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki Seisakusho, Aichi, Japan

Filed Mar. 18, 1993, Ser. No. 33,554
Claims priority, application Japan, Mar. 23, 1992, 4-015148[U]; Mar. 23, 1992, 4-015149[U]
Int. Cl.[5] A44B *11/25*
U.S. Cl. 24—641 **19 Claims**



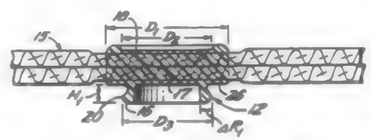
1. A buckle apparatus comprising:
a buckle body covered with a cover;
a tongue plate insertable into and removable from said buckle body;
a lock plate supported by said buckle body so as to engage said tongue plate inserted thereinto, said lock plate being swingable between a first position for engaging said tongue plate and a second position for releasing said engagement;
a lock pin held by a holder and positioned in contact with said lock plate, said lock pin being movable in tongue plate insertion and removal directions, said lock pin moving in said tongue plate removal direction so as to prevent said lock plate from swinging toward said second position, and moving in said tongue plate insertion direction so as to allow said lock plate to swing toward said second position;
a release button supported by said buckle body for pressing said holder to move said lock pin in said tongue plate insertion direction;
teeth provided on one of said cover and said buckle body;
an engaging member attached to said holder and being engagable with said teeth; and
means for engaging said engaging member with said teeth when inertial force acts to move said lock pin in said tongue plate insertion direction.

5,357,659

PLASTIC ARTICLE IN SITU MOLDED TO A POROUS SUBSTRATE

Walter T. Ackermann, 159 Fern Hill Rd., Watertown, Conn. 06795

Continuation of Ser. No. 427,720, Oct. 27, 1989, abandoned, which is a continuation of Ser. No. 314,772, Feb. 23, 1989, abandoned, which is a continuation of Ser. No. 62,968, Jun. 17, 1987, abandoned, which is a division of Ser. No. 889,880, Jul. 28, 1986, Pat. No. 4,735,753. This application Dec. 27, 1990, Ser. No. 633,758
Int. Cl.[5] A44B *17/00*
U.S. Cl. 24—662 **8 Claims**



1. As an article of manufacture, a unitary single-piece snap-fastener stud having a central axis of symmetry and in-situ molded to an unapertured portion of porous substrate from a solid pellet of plastic material, said stud having a functional stud formation at one axial end and having a mounting base at its other axial end; said functional stud formation being a circumferentially continuous cup-shaped annulus that is open in the direction away from the base end, and the outer surface of said annulus having a convex bead at axial offset from the base end and within the axial span of the annulus, the bead region of said annulus having stiffly compliant deformability upon interfering snap-action fit to and removal from a mating snap-fastener socket, said molded stud being the product of compressive deformation of the pellet in contact with the substrate and under such ultrasonic modulation of continuous force normal to the substrate as to create many point contacts each of which acts as a small area of energy focus for local initiation of melting engagement of the solid pellet with the substrate in full-thickness solidly consolidated impregnation of the substrate over the area of said mounting base, and said mounting base extending over the area within a perimeter which peripherally continuously surrounds said functional stud formation.

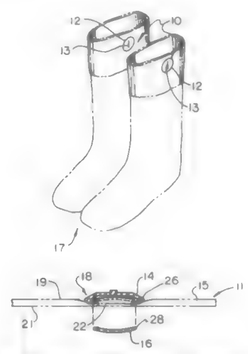
5,357,660

SOCK PAIRING APPARATUS

Richard E. Smith, 144 Ovid St., Seneca Falls, N.Y. 13148

Filed Apr. 15, 1993, Ser. No. 45,882
Int. Cl.[5] A41F *1/00*; A44B *17/00*
U.S. Cl. 24—662 **9 Claims**

1. A new and improved sock pairing apparatus, comprising:
a plurality of pairs of sock clamp assemblies, each sock clamp assembly adapted to clamp onto a sock and each pair of sock clamp assemblies adapted to clamp onto a pair of socks, wherein each sock clamp assembly includes a first clamping element and a second clamping element,
wherein one sock of a pair of socks is capable of being clamped between one first clamping element and one second clamping element, wherein another sock of the pair of socks is capable of being clamped between another first clamping element and another second clamping element,
wherein a plurality of pairs of first clamping elements are retained on a first common support, wherein a plurality of pairs of second clamping elements are retained on a second common support,



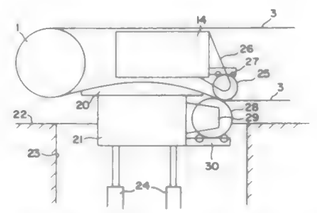
wherein said respective pairs of first clamping elements bear respective pairs of similar indicia, wherein said similar indicia are numerical indicia, and wherein said pairs of first clamping elements bearing similar numerical indicia are arrayed on said first common support in a numerical sequence,
wherein said locking assembly means on said first clamping element include a circumferential, C-shaped flange, and
said second clamping element includes a flexible, resilient disk element which includes a circumferential edge which pushes a portion of the sock wall into said circumferential, C-shaped flange and fits into said circumferential, C-shaped flange when a sock clamp assembly is installed on the sock.

5,357,661

STRETCHING MACHINE

Gunnar Eriksen, Borgen, and Sissel W. Olsen, Tranby, both of Norway, assignors to Kvaerner Eureka a.s., Tranby, Norway

Continuation of Ser. No. 942,115, Sep. 2, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 200,881
Claims priority, application Norway, Jul. 23, 1992, 922928
Int. Cl.[5] D06C *3/00, 7/00*
U.S. Cl. 26—51 **6 Claims**



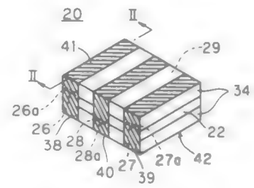
1. In a stretching machine for treating removable belts supported on rollers, the stretching machine comprises two rollers over which the belt is trained in a loop and means to move the rollers towards and away from each other to slacken and stretch the belt, the improvement comprising a belt contact means having a contact surface adapted to contact the belt on the outside of the loop and between the rollers, said contact surface being a stationary convex surface that deflects the belt inwardly by imparting to the belt a single outwardly concave outer surface over all that portion of the belt in contact with said contact surface, means to heat the belt contact means, a press roller adapted to make press contact with the belt on the inside of the loop opposite said belt contact means, and power means to rotate said press roller.

5,357,662

METHOD OF MANUFACTURING CHIP-TYPE PIEZOELECTRIC-RESONATOR

Ryoji Takagi, and Yoshiharu Kuroda, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Sep. 15, 1993, Ser. No. 122,233
Claims priority, application Japan, Sep. 16, 1992, 4-246727
Int. Cl.[5] H01L *41/22*
U.S. Cl. 29—25.35 **5 Claims**



1. A method of manufacturing a chip-type piezoelectric-resonator, comprising the steps of:
preparing a mother substrate having a piezoelectric substrate and a plurality of piezoelectric resonance elements, each piezoelectric resonance element including corresponding vibration electrodes that are arranged on said piezoelectric substrate so as to be opposite to each other through said piezoelectric substrate, and respective terminal electrodes that are connected with said vibrating electrodes;
applying metal paste onto said mother substrate to form thick-film electrodes covering at least parts of said terminal electrodes;
forming thermosetting protective resin members to cover both major surfaces of said mother substrate;
dividing said mother substrate covered with said protective resin members to obtain respective ones of said plurality of piezoelectric resonance elements thereby exposing sections of said thick-film electrodes on divided surfaces formed on said respective ones of said resonance elements by the dividing step; and
forming external electrodes on said divided surfaces so as to be connected with said thick-film electrodes, thereby obtaining a plurality of chip-type piezoelectric resonators.

5,357,663

SLIDE FASTENER COUPLING ELEMENT FORMING APPARATUS

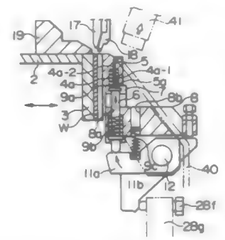
Koitsu Morioka, and Tsunetaka Aoki, both of Toyama, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jun. 25, 1993, Ser. No. 81,106
Claims priority, application Japan, Jul. 6, 1992, 4-178286
Int. Cl.[5] B21D *53/56*
U.S. Cl. 29—34 A **8 Claims**

1. An apparatus for successively forming slide fastener coupling elements, comprising supplying means for supplying a

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blank wire of a generally Y-shape cross section intermittently at a predetermined pitch, a cutting die having an insertion hole for the passage of the blank wire W and movable back and forth in a direction of cutting the blank wire, a bulge forming die connected with a forward end in the stroke direction of said cutting die for forming a bulge for a coupling head portion of the coupling element, a cutting punch fixedly mounted on a



frame and slidable on an upper surface of said cutting die, and a bulge forming punch situated upwardly of said bulge forming die and vertically movable toward and away from said bulge forming die, wherein said apparatus further includes removing means for ejecting the freshly formed coupling element from said bulge forming die, said removing means being adapted to be situated downwardly of the freshly formed coupling element for pushing the coupling element upwardly.

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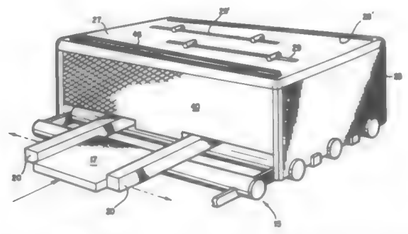
CURTAIN APPARATUS

James N. Donnelly, 4622 N. 525W, LaPorte, Ind. 46350

Filed Oct. 6, 1993, Ser. No. 132,763

Int. Cl.[5] B21C *43/00*; F16P *1/00*

U.S. Cl. 29—81.08 **10 Claims**



1. In a milling apparatus having a moveable guide arm which is adjusted according to various sizes of mill stock, a woven mesh metal curtain apparatus comprising:

a hood, a top plate of said hood having a first slot and a second slot;

a fixed woven mesh metal curtain, first mounting means for mounting said fixed woven mesh metal curtain within said first slot in a fixed operating position with respect to said top plate;

a moveable woven mesh metal curtain, second mounting means for mounting said moveable woven mesh metal curtain within said second slot in an adjustable operating position with respect to said top plate; and

a mover bracket secured to the moveable guide arm, and engagement means for detachably engaging said moveable woven mesh metal curtain with respect to said mover bracket.

5,357,665

APPARATUS FOR EXECUTING HEMMING PROCESS

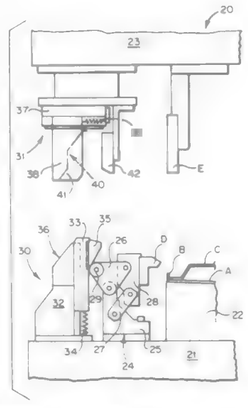
Kuniaki Fukui, and Norihiro Adachi, both of Aichi, Japan, assignors to Sanyo Machine Works, Ltd., Aichi, Japan

Filed Jul. 21, 1993, Ser. No. 93,960

Claims priority, application Japan, Feb. 19, 1993, 5-030176

Int. Cl.[5] B23P *11/00*

U.S. Cl. 29—243.58 **4 Claims**



1. An apparatus for executing a hemming process, wherein an individual inner panel is loaded on an outer panel placed on a lower mold to cause an individual hem flange previously being formed at an edge of said outer panel to be folded onto said inner panel before being superposed thereon via descending movement of an upper mold, said apparatus comprising:

a pre-hemming structure which movably supports a blade for preliminarily folding said hem flange in the hem-flange preliminary folding direction by means of a movable member movably being supported outside of said lower mold;

a lower cam structure having a lower slide base; a lower slider; means for biasing the lower slider in the upward direction and ascendingly and descendingly supported by said lower slide base; and a transmitting cam which is secured to said lower slide base for urging said movable member in the hem-flange preliminary-folding direction in association with descending movement of said lower slider;

a regular folding blade, mounted to the upper mold, secured to a position above said hem flange of said upper mold;

an upper slide structure secured to a predetermined position of said upper mold situated above said lower cam structure and comprising an upper slide base and an upper slider which is slidably supported in the horizontal direction by an upper slide base, wherein, in association with descending movement of said upper mold, a bottom surface of said upper slider coming into contact with a top surface of said lower slider to cause said lower slider to descend; and

a lower sliding surface and an upper sliding surface formed on said lower slider and said upper slider, wherein, after completion of preliminarily folding said hem flange by operating said preliminary folding blade, said surfaces respectively cause said upper slider to externally slide via descending movement of said upper slider, in association with functional operation of said upper slider, to lower said upper mold to eventually cause said upper slider to leave said lower slider.

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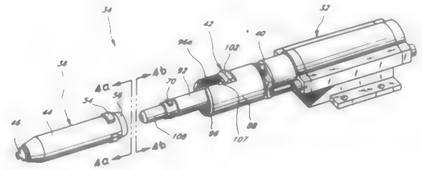
FASTENER INSTALLATION TOOL HEAD QUICK DISCONNECT ASSEMBLY

Ahmed A. El Dessouky, Pico Rivera, and Michael A. Kleyman, Sherman Oaks, both of Calif., assignors to Textron Inc., Providence, R.I.

Filed Nov. 18, 1993, Ser. No. 154,591

Int. Cl.[5] B21J *15/10*

U.S. Cl. 29—243.521 **24 Claims**



1. A fastener installation tool comprising:

a tool body including piston therein for providing pulling force on a fastener stem;

an adapter assembly attached to a forward end of the tool body and including a housing and a drawbar concentrically positioned within the housing and connected to said piston;

a tool head assembly including a sleeve and a collet concentrically positioned within the sleeve; and

connectors on said adaptor assembly and said tool head assembly joining said adaptor housing and said sleeve and simultaneously joining said drawbar to said collet;

said housing and said drawbar being interconnected to prevent relative rotation with respect to each other and to permit relative reciprocation with respect to each other before said adaptor assembly is joined to said tool head assembly, and said sleeve and said collet being interconnected to prevent relative rotation with respect to each other and to permit relative reciprocation with respect to each other before said tool head assembly is joined to said adaptor assembly so that said housing, sleeve, drawbar and collet are properly angularly oriented when said housing and said sleeve are connected by said connectors and said drawbar and said collet are properly oriented when they are simultaneously connected by said connectors.

5,357,667

PROCESS FOR PRODUCING A SHEET-METAL JACKET FOR PALLET CONTAINERS WITH AN INNER CONTAINER OF A SYNTHETIC RESIN

Udo Schutz, Ruckersteg 4, D-5418 Selters, Fed. Rep. of Germany

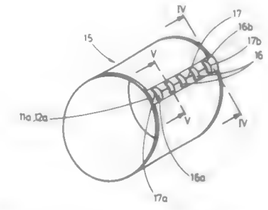
Filed Feb. 1, 1993, Ser. No. 11,714

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1992, 4204010

Int. Cl.[5] B21D *51/06*

U.S. Cl. 29—509 **2 Claims**

1. In a process for the production of a sheet-metal jacket, comprising bending a rectangular cut-to-size blank of steel sheet into a tubular member, joining together abutting rims of the tubular member, drawing the tubular member of steel sheet over a stretching press having expanding jaws, and, by moving the expanding jaws of the stretching press apart, stretching broad sides of the sheet-metal jacket to cause flow of the sheet-metal and thus to cold-harden the sheet-metal; the improvement comprising performing said joining step by folding narrow sides of the rectangular sheet-metal blank back to form folded rims, hooking the folded rims of the tubular member bent from the sheet-metal blank together, forming a series of spaced-apart connecting straps by cutting and embossing outwardly spaced-apart portions of the folded rims while leaving portions of the rims between said spaced-apart portions undeformed, and inserting a wire through the connecting straps to lock the folded rims together prior to performing said drawing



and stretching steps, the improvement further comprising performing said stretching step with a single expanding jaw of the stretching press in contact with the hooked-together folded rims of the tubular member.

5,357,668

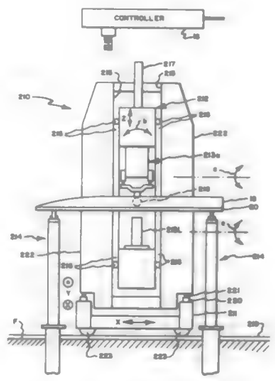
METHOD AND APPARATUS FOR POSITIONING A WORKPIECE AND TOOLING

Bradley M. Roberts, Williamsville, N.Y., assignor to Gemcor Engineering Corp., Buffalo, N.Y.

Filed Jun. 29, 1993, Ser. No. 84,515

Int. Cl.[5] B23Q *7/00*

U.S. Cl. 29—559 **23 Claims**



1. A method of providing a proper positional relationship between a workpiece assembly and tooling carried by a movable frame, said workpiece assembly having a top surface and said assembly comprising two or more workpieces one of which is atop workpiece having an upper surface, which tooling is used to initially clamp together the two or more workpieces and to then fasten the workpieces together, the tooling including an upper clamp bushing having a lower surface and carried by an upper pressure foot plate, the lower surface of the upper clamp bushing establishing a desired workplane when the upper pressure foot plate is fully lowered and the upper bushing is in proper engagement with the upper surface of the top workpiece; the method comprising the following steps:

providing a workpiece holding apparatus;

providing a movable frame and tooling mounted on the frame, the tooling being movable in a horizontal plane and including an upper pressure foot plate movable from a raised retracted position to fully lowered position, and an

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upper clamp bushing carried by the upper pressure foot plate for limited vertical shifting movement with respect to the upper pressure foot plate, the upper clamp bushing having a lower planar workpiece engaging surface;

moving the tooling in a horizontal plane with the upper pressure foot plate in its raised retracted position to an operational position where the upper clamp bushing is substantially in line with a location where a fastener is to be inserted;

moving the upper pressure foot plate downwardly towards its fully lowered position; and

a) either sensing when the upper pressure foot plate has attained its fully lowered position, and then, causing relative movement between the workpiece assembly and the tooling in such a manner that the top surface of the workpiece is in flush clamping contact with the lower surface of the upper clamp bushing if the top surface of the workpiece assembly is not in flush clamping contact with the lower surface of the upper clamp bushing; or

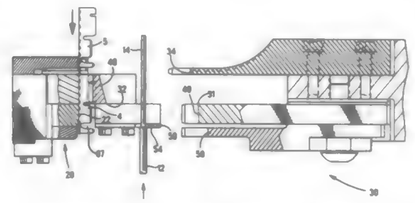
b) sensing when the lower surface of the upper clamp bushing is in force applying contact with the top surface of the workpiece assembly, and then causing relative movement between the workpiece assembly and the tooling in such a manner that the top surface of the workpiece is in flush contact with the lower surface of the upper clamp bushing and then causing relative movement between the upper pressure foot plate and the workpiece assembly until the upper pressure foot plate has achieved its fully lowered position.

5,357,669

CRIMPING AND SHEARING APPARATUS

David W. Orphanos, Mohrsville, and David J. Erb, Harrisburg, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 9, 1993, Ser. No. 28,674
Int. Cl.[5] B23P 19/00; H01R 43/04
U.S. Cl. 29—566.3 15 Claims



1. An apparatus for crimping a terminal to a conductor, the terminal having a crimpable portion adapted to receive the conductor and a non-crimpable portion from which said conductor is to be excluded, the apparatus comprising:

anvil tooling having a terminal support surface for supporting the terminal during the crimping operation; a ram movable toward and away from the anvil tooling, the ram having a first cutting edge which defines a boundary between a conductor permitted zone and a conductor excluded zone during movement of the ram toward the anvil tooling, the ram having a conductor capture member disposed in the conductor permitted zone and adapted to capture a conductor introduced in a conductor reception zone between the ram and the anvil tooling and transport the conductor to the terminal;

a conductor shearing element disposed in the conductor excluded zone, the conductor shearing element having a second cutting edge adapted to cooperate with the first cutting edge during movement of the ram toward the anvil tooling for trimming any portion of the conductor which extends across the boundary;

a stop member disposed in the conductor permitted zone and having a stop face at a distance from the boundary for engaging an edge of a protective straw that is disposed over a portion of the conductor;

a straw capture member carried by the ram and adapted to capture the straw during movement of the ram toward the anvil tooling and transport the straw to the terminal;

a first crimping die connected for movement in synchronization with the ram and disposed for crimping the terminal to the conductor which has been transported thereto; and,

a second crimping die connected for movement in synchronization with the ram and disposed for crimping the terminal to the straw which has been transported thereto;

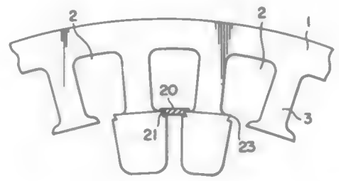
wherein when the terminal is supported on the terminal support surface such that the crimpable portion is in the conductor permitted zone and the non-crimpable portion is in the conductor excluded zone, and when the conductor is introduced in the reception zone such that a portion of the conductor extends across the boundary, movement of the ram toward the anvil tooling trims the conductor at the boundary whereby the conductor which is captured by the conductor capture member and transported to the terminal does not extend beyond the crimpable portion of the terminal and is crimpable therein by the first crimping die.

5,357,670

GUIDE JIG FOR GUIDING A DOVE-SHAPED STATOR WEDGE

Ryoichi Taji, and Takushi Takizawa, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 934,896, Aug. 26, 1992, Pat. No. 5,239,220, which is a continuation of Ser. No. 690,250, Apr. 24, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 52,241
Claims priority, application Japan, Apr. 26, 1990, 2-108639
Int. Cl.[5] H02K 15/10
U.S. Cl. 29—734 1 Claim



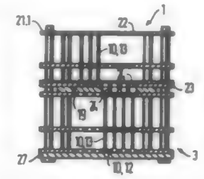
1. A guide jig for guiding a wedge, having a dove tail shaped cross-section including a v-shaped recess on opposite sides thereof defining a v-shaped projection, to a radially inner side of each of a plurality of slots formed in a ring-shaped core and for guiding a pre-wound coil into said plurality of slots, characterized in that said guide jig also has a dove tail shape including a v-shaped recess on opposite sides thereof substantially complimenting said v-shaped projection of said wedge, wherein said v-shape projections of said wedge are respectively received in opposing v-shaped recesses of adjacent guide jigs so as to be retained thereby.

5,357,671

DEVICE FOR LOADING AN ADAPTER FOR A DEVICE FOR TESTING PRINTED CIRCUIT BOARDS

Heimo Gladik, Dornstatdt-Temmenhausen; Hans-Hermann Higgen, Stadthagen; Ruediger Dehmel, and Martin Maelzer, both of Wunstorf, all of Fed. Rep. of Germany, assignors to Luther & Maelzer GmbH, Wunstorf, Fed. Rep. of Germany

Division of Ser. No. 768,857, Oct. 8, 1991, Pat. No. 5,285,149.
This application Sep. 14, 1993, Ser. No. 120,741
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1990, 4004933; Nov. 12, 1990, 4035978
Int. Cl.[5] H05K 3/30
U.S. Cl. 29—739 17 Claims



1. An apparatus for loading an adapter for a printed circuit board testing device with adapter pins having enlarged heads and smaller contact ends, said apparatus comprising at least one main magazine which has holes for receiving adapter pins to hang by their heads, said holes being arranged at grid points of a test contact arrangement in a printed circuit board testing device; an intermediate magazine that has holes at the aforementioned grid points, said holes being larger than the holes of said main magazine for receiving adapter pins, head first from the main magazine; and at least one selection plate in which the holes are provided at the aforementioned grid points to form a hole pattern that corresponds at least in part to the hole pattern of the adapter, the holes in the selection plate being as large as the holes in said intermediate magazine, a hole-free closing plate fixed on one side of the intermediate magazine, the selection plate being arranged between the side of the main magazine that holds the heads of the adapter pins and the side of the intermediate magazine opposite the closing plate, the holes of the selection plate being formed as through holes that are coaxial with the holes of the main magazine and the intermediate magazine.

5,357,672

METHOD AND SYSTEM FOR FABRICATING IC PACKAGES FROM LAMINATED BOARDS AND HEAT SPREADER

Keith G. Newman, Sunnyvale, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

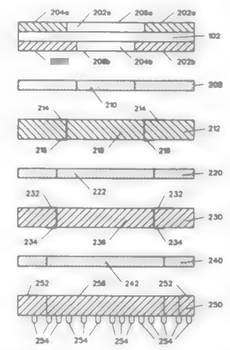
Filed Aug. 13, 1993, Ser. No. 106,026
Int. Cl.[5] H05K 3/36, 3/46
U.S. Cl. 29—830 9 Claims

1. A method for fabricating a plurality of integrated circuit packages from printed wiring board panels and a heat spreader laminated together, said method comprising the steps of:

(a) laminating a plurality of panels of printed wiring boards to a metal panel, forming the laminated printed wiring board panels a plurality of cavities for receiving integrated circuit dice having connection pads thereon, the printed wiring boards of the laminated panels having contact pads connected to a predetermined conductive path, and at least one of the printed wiring boards having external connection means connected to conductive paths other than said predetermined conductive paths;

(b) interconnecting related conductive paths connected to the contact pads of the printed wiring boards and the external connection means of said at least one printed wiring boards;

(c) placing an integrated circuit dice having connection pads thereon into each of said plurality of cavities and attaching the integrated circuit dice connection pads to the respective printed wiring board contact pads; and



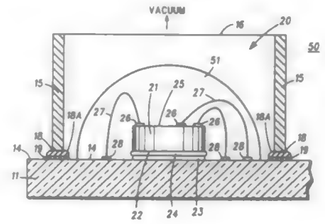
(d) cutting sections of the metal panel and printed wiring board panels into individual integrated circuit packages.

5,357,673

SEMICONDUCTOR DEVICE ENCAPSULATION METHOD

Anthony J. Polak, Lake Zurich, Ill.; David J. Schifferle, East Aurora, N.Y., and Tom Wang, Northbrook, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 749,756, Aug. 26, 1991, Pat. No. 5,258,650.
This application Oct. 1, 1993, Ser. No. 131,060
Int. Cl.[5] H05K 3/34
U.S. Cl. 29—840 10 Claims



1. A method for providing a semiconductor device encapsulation assembly comprising the steps of:

providing a protective outer structure having a base and surrounding walls which form an internal cavity open at one end and otherwise sealed;

providing a plurality of conductor paths on said base such that some of these paths are within said cavity;

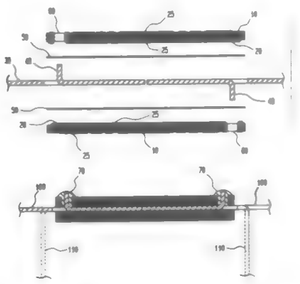
mounting a semiconductor device on said base such that said semiconductor device is in said cavity;

providing electrical connections for electrically connecting said semiconductor device to said plurality of conductor paths on said base, said cavity with said base, said surrounding walls, said conductor paths, said semiconductor device and said provided electrical connections forming a pre-existing assembly; and

applying in an initial liquid form within said cavity in said are-existing assembly an encapsulation material which completely covers said semiconductor device and said electrical connections, wherein said encapsulation material comprises a thixotropic flurosiloxane material.

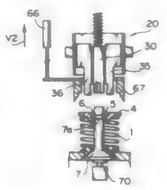
VOL 1167 ISS 4 OC 25 1994 UMI

5,357,674
METHOD OF MANUFACTURING A PRINTED CIRCUIT BOARD
Marvin Lumbard, Los Gatos, Calif., assignor to Siemens Components, Inc., Iselin, N.J.
Division of Ser. No. 876,640, Apr. 30, 1992, Pat. No. 5,311,407.
This application Aug. 4, 1993, Ser. No. 101,637
Int. Cl.[5] H05K *3/36, 3/40*
U.S. Cl. 29—843 13 Claims



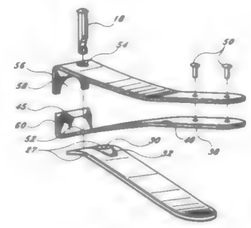
1. A method for manufacturing a printed circuit board (PCB), comprising the steps of:
coating a plurality of PCB substrates, at least one having a plurality of PCB connection holes formed therethrough, with a solder mask;
forming a leadframe having a plurality of leads and associated solder tabs formed thereon;
inserting said solder tabs through a plurality of corresponding clearance holes formed in a prepreg sheet so that the prepreg sheet overlays the leadframe;
aligning said PCB connection holes of said PCB substrates over said solder tabs;
laminating said PCB substrates, prepreg sheet and leadframe together so that the prepreg sheet and the leadframe are sandwiched between PCB substrates; and
soldering said solder tabs to said PCB connection holes.

5,357,675
COTTER ASSEMBLING THE METHOD AND COTTER ASSEMBLING APPARATUS
Shojiro Danmoto, Edosaki, and Takeshi Yakou, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 25, 1993, Ser. No. 22,627
Claims priority, application Japan, Feb. 28, 1992, 4-043356; Feb. 10, 1993, 5-022698
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—888.01 12 Claims



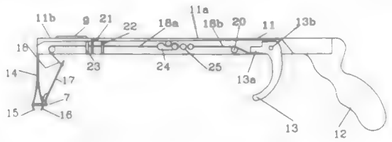
1. A cotter assembling method for assembling a shaft member slidably or pivotally arranged on a main body that is conveyed continuously along an assembly line, a compression spring for causing the shaft member to perform a predetermined operation, a retainer for holding the compression spring in a compressed state, and a pair of cotters for setting the retainer in a holding state with respect to the shaft member, said cotter assembling method comprising the steps of:
holding the cotters in a supply posture state, thereby allowing their assembly to the shaft member;
conveying the cotters to an upper end of the shaft member arranged on the continuously conveyed main body;
displacing the retainer from a cotter fitting position of the shaft member against a force of the compression spring to a displaced position; and
assembling the cotters to the shaft member at the cotter fitting position in accordance with a return operation of the retainer by the force of the compression spring.

5,357,676
NAIL BLUNT CLIPPER
Ronald Bannett, 4530 N. Hiatus Rd., Unit #109, Sunrise, Fla. 33351
Filed May 10, 1993, Ser. No. 60,024
Int. Cl.[5] A45D *29/02, 29/06*
U.S. Cl. 30—28 4 Claims



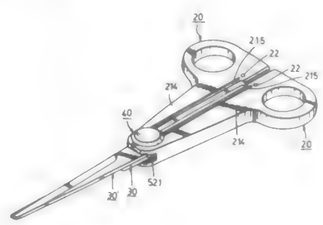
4. An apparatus for cutting a nail, comprising:
an upper tine comprising an elongated, planar, angled body portion, said upper tine having a proximal end and a distal end, said upper tine having a top surface and a bottom surface, said upper tine further having an aperture defined normal therethrough adjacent said distal end;
a lower tine comprising an elongated, planar, angled body portion, said lower tine having a proximal end and a distal end, said lower tine having a top surface and a bottom surface, said lower tine further having an aperture defined normal therethrough adjacent said lower tine distal end, said lower tine rigidly attached to said upper tine at said upper and lower tine proximal ends, said upper tine and said lower tine diverging from said upper and lower tine proximal ends, said upper and lower tine apertures being aligned;
means for cutting said nail disposed at the distal end of each of said upper and lower tines, respectively, said means for cutting comprising a first flange portion integrally joined to said upper tine distal end and extending from said bottom surface of said upper tine and a second flange portion integrally joined to said lower tine distal end and extending from said top surface of said lower tine, said first flange portion having a tapered edge to provide a shearing surface, said second flange portion defining a crescent shaped surface, said first flange and said second flange forming a crescent-shaped nail receiving aperture;
a handle for reciprocating said upper tine and said lower tine between a first, open position and a second, closed position, said handle having a proximal end and a distal end, said handle having a top surface and a bottom surface, said handle further having an aperture near said handle distal end in alignment with said upper tine aperture and said lower tine aperture, said handle further having a protrusion near said handle distal end extending outward from said bottom surface of said handle, said handle distal end further defining an angled flange portion disposed adjacent to, and flush against, said upper tine, said first, open position defining for said crescent shaped nail receiving aperture and said second position defined by engaging said tapered edge and said crescent shaped surface, said first flange and said second flange overlapping and being slidably engaged in said second position; and
a cylindrical guide member for mechanically communicating said upper tine, said lower tine and said handle in a sliding joint to restrict said upper tine and said lower tine to vertical movement, said guide member having a hooked top end, said guide member extending through each of said upper tine aperture, said lower tine aperture and said handle aperture, respectively, said hooked top end pivotally connecting said handle flange portion to said upper tine.

5,357,677
TOE NAIL CLIPPER APPARATUS
Juston W. West, Lamesa, Tex., assignor to The Juston West Co., Rockwell, Tex.
Filed Sep. 27, 1993, Ser. No. 127,168
Int. Cl.[5] A45D *29/02*
U.S. Cl. 30—28 17 Claims



1. A toe nail clipping apparatus comprising:
an elongated body formed of two parts pivotally connected to each other by a pivot hinge
a pistol grip handle on a first end of said elongated body;
a nail clipping device on a second end of said elongated body, having two spring members, joined together at first ends of said spring members and connected to said elongated body at said joined first ends, and having two cutting jaws biased apart on second ends of said spring members, and a lever for moving the two jaws together for cutting a nail;
an actuating trigger connected to said elongated body by a pivotal connection adjacent said pistol grip handle; and
a cord connected between said trigger and said lever for moving said lever in a direction away from said trigger and toward said two spring members, moving the two cutter jaws together when said trigger is rotated around said pivotal connection toward said pistol grip handle.

5,357,678
SCISSOR WITH RETRACTABLE CUTTING BLADES
Chih-Yeng Wei, No.1, Lane 30, Sec.3, Je-Ho Rd., Pei-Tun Dist., Taichung City, Taiwan
Filed Feb. 10, 1994, Ser. No. 194,428
Int. Cl.[5] B26B *13/00*
U.S. Cl. 30—255 3 Claims



1. A scissor including
a pair of handles, each of which having a front end, a rear end, and a substantially straight inner portion formed with a recess which extends longitudinally from said front end to a point adjacent said rear end, said pair of handles being connected pivotally at said front end,
a pair of cutting blades in superposed contact with each other when said scissor is closed, said cutting blades being retractable into said recesses of said handles and being formed with aligned pivot holes adjacent to rear ends thereof, and
a blade connector extending into said pivot holes of said cutting blades to connect pivotally said cutting blades,
wherein the improvement comprises:
each of said handles having a retaining unit formed in said recess, said retaining unit including a longitudinal guide projection which defines a longitudinal rail groove in said recess, said rail groove having a wider portion adjacent to said front end, said inner portions of said handles facing each other and being formed with a respective pair of pivot ears on said front end, said pivot ears of one of said handles being superposed on said pivot ears of the other one of said handles, each of said handles further having opposite sides provided with a respective first rounded protrusion adjacent to said rear end;
a pair of connecting pins, each of which connecting pivotally one of said pivot ears on one of said handles and one of said pivot ears on the other one of said handles to connect pivotally said handles at said front end, each of said connecting pins having a head portion formed with a second rounded protrusion;
each of said cutting blades having a dull edge and being formed with an anchor projection at said rear end thereof, said anchor projection extending slidably into said rail groove of a respective one of said handles;
said blade connector being hollow;
a slide unit including two slide pieces, each of which resting slidably on a corresponding one of said opposite sides of said handles, one of said slide pieces being formed with a tubular projection, the other one of said slide pieces having a shaft projection which extends between said inner portions of said handles and through said blade connector and which is received fittingly in said tubular projection, each of said slide pieces having an inner side formed with an annular groove, said slide unit being movable between a first position, wherein said annular grooves receive removably said first rounded protrusions on said handles and said cutting blades are retracted into said recesses of said handles, and a second position, wherein said annular grooves receive removably said second rounded protrusions of said connecting pins and said cutting blades are extended from said recesses of said handles; and
a pair of spring units, each of which being received in said wider portion of said rail groove in a respective one of said handles and having a curved end section which abuts against said dull edge of a respective one of said cutting blades to bias said cutting blades toward each other.

5,357,679
BAG OPENING DEVICE
Lori A. Hanna, 508 Valley Dr., Dickinson, Tex. 77539
Filed Oct. 15, 1993, Ser. No. 136,170
Int. Cl.[5] B67B *7/00*
U.S. Cl. 30—294 17 Claims

1. A bag opening device comprising:
a first plate having a neck extending rearwardly therefrom;
a second plate connected to said first plate in a V-shaped configuration in a first position, said first and second plates being squeezable to a second position in which said first plate is in parallel relationship to said second plate, said second plate having a neck extending rearwardly therefrom, said necks being joined together, each of said necks having a width less than a width of said first and second plates, said first and second plates being integrally formed together of a memory-retentive polymeric material; and

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a blade affixed centrally to a surface of one of said plates, said blade being distal the other of said plates in the first



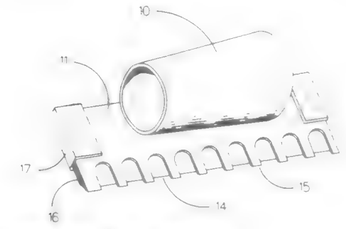
position and in contact with the other of said plates in said second position.

5,357,680

FINGER RAZOR

Angelo J. Monistere, 4317 Winfield St., Metairie, La. 70001

Filed Jan. 6, 1993, Ser. No. 1,523
Int. Cl.[5] B26B *27/00, 21/00*
U.S. Cl. 30—298 4 Claims



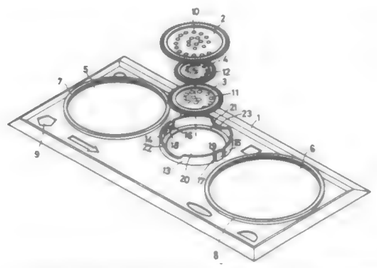
1. A finger razor device comprising:
a finger sleeve for the insertion of a finger from either hand of a user;
means attached to said finger sleeve for retaining a razor therein, said means including a base plate with teeth spaced along a bottom portion thereof; and
a razor fastened within said receiving means, whereby hair may be simultaneously held and cut using only one hand of the user.

5,357,681

GEAR SOCKET STRUCTURE FOR A DESIGNING RULE

Ming-Chieh Chen, No. 2-12, Chang Lu Rd., Chang-Hwa City, Taiwan

Filed Feb. 7, 1994, Ser. No. 192,643
Int. Cl.[5] B43L *11/00*
U.S. Cl. 33—27.11 2 Claims



1. A gear socket structure for a designing rule, said designing rule having a body portion and at least one gear hole, a gear socket formed into a round cylinder on said body portion; said gear socket having a wall with a given height for accommodating a plurality of gears; means for holding said gears in said gear socket, said means including two leaf springs being provided on said wall of said gear socket, and each of said leaf springs having an inward catch hook on top thereof; a bottom of said gear socket having a round opening with a ring-shaped flange to support said gears.

5,357,682

CORNERBEAD ALIGNMENT APPARATUS

Harvey Henderson, Jr., Pembroke Pines, Fla., assignor to Best Manufacturing Co., Inc., Davie, Fla.

Filed Nov. 9, 1993, Ser. No. 149,373
Int. Cl.[5] G01C *15/10*
U.S. Cl. 33—339 5 Claims



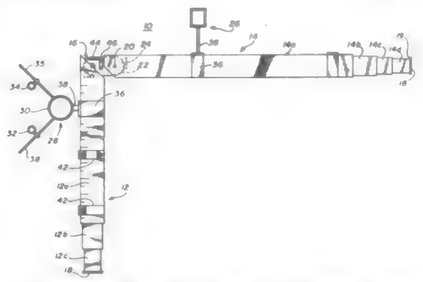
1. An apparatus for alignment of an edge of cornerbead comprising:
a first clip means for attachment to an upper portion of an edge of a section of cornerbead, said first clip means comprising:
a body;
a first hook means formed at one end of said body, said first hook means for engaging metal lath of the section of cornerbead, said first hook means comprising a hook member extending outwards from a side of said body; and
a second hook means formed at an opposite end of said body, said second hook means for engaging the edge of the section of cornerbead, said second hook means comprising a semi-cylindrical member extending outwardly from said side of said body, said semi-cylindrical member having an interior area generally matching an exterior of the edge of the section of cornerbead, said semi-cylindrical member having a hole formed therein, said hole extending through said semi-cylindrical member transverse to a longitudinal axis of said semi-cylindrical member;
a second clip means for attachment to a lower portion of the edge of the section of cornerbead, said second clip means having an identical configuration as said first clip means; and
a line connected to and extending between said first and second clip means, said line having its end received within respective said holes of said second hook means of said first and second clip means.

5,357,683

COMPACT CARPENTER'S MARKING TOOL

Hector Trevino, 2972 Royal La., Dallas, Tex. 75229-3604

Filed Aug. 14, 1991, Ser. No. 975,448
Int. Cl.[5] G01B *5/14*
U.S. Cl. 33—528 12 Claims



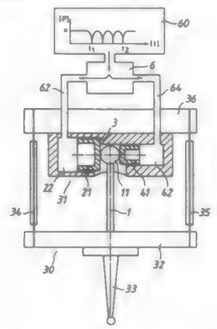
1. A marking tool that can be used for locating structural fixtures comprising:
a unitary hollow body portion;
first and second arms slidably contained entirely within said unitary hollow body portion, each arm having telescopic elements that are slidably extensible from a minimum to a maximum length;
each of said first and second arms being extensible perpendicular to each other to position said body portion in a preselected location;
means for pivotally coupling said arms together at two spaced pivot points, such that said arms can move continuously from a position in axial alignment with each other, to a position side-by-side and parallel to each other; and
at least one template associated with said body portion such that by adjusting the length of said first and second arms, said body portion and its associated template may be positioned over a selected one of said fixtures for locating the same.

5,357,684

CENTERING DEVICE FOR A MECHANICAL PROBE

Matthias Lindner, Bad Nauheim; Michael Philipp, Feldatal, and Heinz-Eckhard Habermehl, Lauterbach, all of Fed. Rep. of Germany, assignors to Leitz Messtechnik GmbH, Wetzlar, Fed. Rep. of Germany

Filed Feb. 4, 1993, Ser. No. 13,740
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1990, 4027136; Feb. 15, 1992, 4204632
Int. Cl.[5] G01B *5/20*
U.S. Cl. 33—559 12 Claims



1. A centering device for a feeler pin in a mechanical probe comprising:
a driver, connected to the feeler pin; and
first and second restoring means acting on the driver in opposite directions,
wherein only one stop is provided for the first restoring means and no stop is provided for the second restoring means, and
wherein the first restoring means, which in a position of rest lies against the stop, exerts, at least close to the position of rest, a restoring force on the driver twice as great as that exerted by the second restoring means.

5,357,685

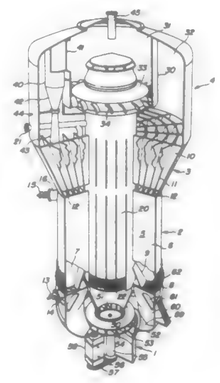
Patent Not Issued For This Number

5,357,686

APPARATUS FOR DRYING A MOIST PARTICULATE MATERIAL WITH SUPERHEATED STEAM

Arne S. Jensen, Sovaenget, Denmark, assignor to Niro Holding A/S, Copenhagen K, Denmark

PCT No. PCT/DK91/00196, § 371 Date Jan. 5, 1993, § 102(e) Date Jan. 5, 1993, PCT Pub. No. WO92/01200, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 8, 1991, Ser. No. 956,484
Claims priority, application Denmark, Jul. 9, 1991, 1651/90
Int. Cl.[5] F26B *3/10, 17/10*
U.S. Cl. 34—169 5 Claims



1. An apparatus for drying a moist particulate material having a non-uniform particle size with superheated steam, which apparatus comprises a cylindrical vessel comprising a number of parallel, substantially vertical elongated chambers located in ring form, one or more of the chambers having a closed bottom and the remaining chambers having a steam-permeable bottom, the adjacent chambers being interconnected through openings in the walls at lower ends of the chambers and upper ends of the chambers being connected with a transfer zone, means for supplying moist particulate material to a chamber having a steam-permeable bottom, means for discharging dried material from a chamber having a closed bottom, means for supplying

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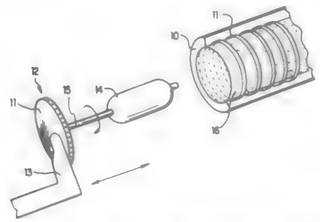
superheated steam to an area below the steam-permeable bottoms of the chambers, means for discharging steam from the transfer zone, means for reheating the discharged steam and recirculating it to the area below the steam-permeable bottoms of the chambers, and means for emitting flows of superheated steam substantially parallel to the bottoms of the chambers and in a selected non-radial direction so as to increase or decrease the retention time of the material in the chambers, said emission means being located in the lowermost portion of at least some of the chambers having steam-permeable bottoms.

5,357,687

METHOD AND APPARATUS FOR DRYING/CURING RIGID CYLINDRICAL AND FLEXIBLE BELT SUBSTRATES

Eugene A. Swain, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 23, 1993, Ser. No. 96,358
Int. Cl.[5] F26B *25/00*
U.S. Cl. 34—247 **23 Claims**



1. An apparatus for curing rigid cylindrical and flexible belt substrates, comprising:

a curing chamber defining a central axis;

a support structure selectively receivable within the curing chamber along the central axis of the curing chamber and including means for supporting at least one substrate along a substrate axis parallel to the central axis and means for rotating the at least one substrate about the substrate axis;

curing means encircling the central axis to surround the at least one substrate within the curing chamber for expelling temperature controlled low velocity fluid toward the at least one substrate as the at least one substrate rotates about the substrate axis without axial movement relative to the curing chamber; and

inductive coils encircling the central axis to surround at least a portion of the at least one substrate within the curing chamber for indirectly heating the at least one substrate.

5,357,688

METHOD AND APPARATUS FOR TREATING A PULVERULENT OR PARTICULATE MATERIAL OR PRODUCT WITH GAS

Mogens A. Christensen, Virum, Denmark, assignor to Niro A/S, Soborg, Denmark

PCT No. PCT/DK91/00240, § 371 Date May 4, 1993, § 102(e) Date May 4, 1993, PCT Pub. No. WO92/04113, PCT Pub. Date Mar. 19, 1992
PCT Filed Aug. 21, 1991, Ser. No. 984,587
Claims priority, application European Pat. Off., Sep. 11, 1990, [illegible]
Int. Cl.[5] F26B *3/08*
U.S. Cl. 34—369 **21 Claims**

1. A method of treating a particulate material or product with gas, said method comprising

continuously feeding the material to a first position on a bed plate,

directing flows of gas upwardly through first and second pluralities of openings in the bed plate so as to fluidize the material thereon, the bed plate being divided laterally into elongated zones each zone extending substantially between said first position and a second position, the openings of each of said first and second pluralities being substantially uniformly distributed over the area of at least one of said zones, and the number of openings of said second plurality being different in adjacent zones, the gas flows through the openings of said first plurality of openings being directed so that each such gas flow has a flow component directed parallel with the plane of the bed

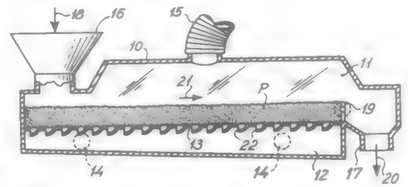


plate and towards said first position thereon, while each of the gas flows directed through the openings of the second plurality has a flow component directed parallel with the plane of the bed plate and towards said second position thereon, and

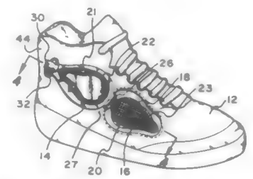
moving the fluidized material along the bed plate in a general direction towards the second position thereon and discharging material from the bed plate at said second position.

5,357,689

VENTILATED FOOTWEAR WITH CLOSURE FLAPS

Lyndon Awai, Apt. A-6, Bartram Beach Apartments, 2-4 S. Bartram Ave., Atlantic City, N.J. 08401

Filed May 4, 1993, Ser. No. 56,787
Int. Cl.[5] A43B *7/06*
U.S. Cl. 36—3 A **5 Claims**



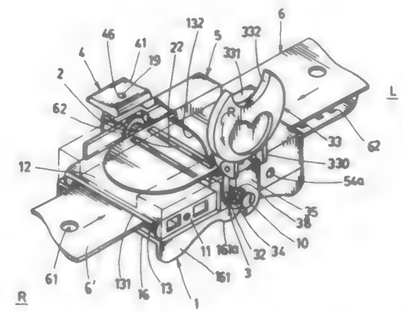
1. An article of footwear in the form of an athletic shoe having an outer surface said shoe including an inwardly facing side panel, an outwardly facing side panel and a tongue area, said shoe further comprising ventilation means incorporated in said outer surface-for allowing air to circulate therethrough, said ventilation means comprising first and second vent openings in said outer surface, one of said openings located on each side panel of said shoe adjacent said tongue area and first and second vent covering flaps, each of said openings having one of said flaps attached adjacent thereto, said flaps being hinged to said outer surface adjacent said tongue area for selectively causing said vent openings to be in an open air circulating position or a closed position, each of said flaps being adapted to be opened in a direction substantially transverse to the lengthwise direction of said shoe, said flaps and said vent openings having mutually engaging surfaces for sealably closing said vent openings, said flaps being adapted to engage said openings in said closed position and being adapted to engage each other via a frictional fastening extension and a loop attached to said flaps when in said open position.

5,357,690

CENTRALLY FASTENED SHOE BUCKLE

Diana Ho, c/o Hung Hsing Patent Service Center P.O. Box 55-1670, Taipei (104), Taiwan

Filed Aug. 30, 1993, Ser. No. 113,349
Int. Cl.[5] A43B *11/00*; A43C *11/00*
U.S. Cl. 36—50.1 **5 Claims**



1. A shoe buckle comprising: a buckle body positioned on a central tongue of a shoe; two straps respectively secured to two upper side portions of a shoe upper and protruding inwardly to the buckle body of the shoe; a reel pivotally secured in the buckle body for fastening the two straps; a fastening means provided on a front end portion of said buckle body for driving the reel for fastening the straps for wearing the shoe on a wearer's foot; and a releasing means provided on a rear end portion of said buckle body for releasing the two straps for removing the shoe, thereby enabling a stable and convenient fastening of a shoe;

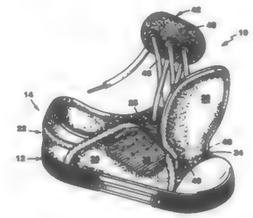
said buckle body including: a strap holder having an upper platform formed on an upper surface of the strap holder for slidably laying thereon a first strap secured to a left side portion of the shoe upper of the shoe, a lower slot notched in a lower plate portion in the strap holder for slidably passing therein a second strap secured to a right side portion of the shoe upper, two side arcuate bottom extensions protruding downwardly from a bottom plate below the lower plate portion of the strap holder to be firmly rested on the two upper side portions of the shoe, a central arcuate bottom extension protruding downwardly from the bottom plate below the lower plate portion to be firmly rested on a tongue portion of the shoe, a central slot longitudinally notched in a central portion of the upper platform for receiving the reel therein, a first socket formed on a front end portion of the central slot, and a second socket formed on a rear end portion of the central slot for pivotally holding the reel between the two sockets; and said reel including: an axle having a central hole longitudinally formed therein to be fixedly engaged with a spindle rotatably mounted in the two sockets about a longitudinal axis, a pair of round wheels respectively formed on both a front end and a rear end of the axle and rotatably held in two recesses recessed in the two sockets, and a plurality of keys longitudinally juxtapositionally formed on the axle each said key radially protruded from the axle about the longitudinal axis and each said key engageable with each corresponding longitudinal slit transversely slotted in each said strap, whereby upon a winding of the reel, the straps can be inwardly fastened as driven by the plurality of keys of the reel when operatively driven by a fastening means.

5,357,691

EASILY FASTENED SHOE

Paula Hyde, Newton, and Jennifer May, Brookline, both of Mass., assignors to The Keds Corporation, Cambridge, Mass.

Continuation of Ser. No. 59,111, May 7, 1993, abandoned. This application Feb. 15, 1994, Ser. No. 196,903
Int. Cl.[5] A43B *23/26, 11/00*
U.S. Cl. 36—54 **8 Claims**



1. A shoe comprising

a sole; and

an upper mounted on said sole, said upper having a vamp comprising

a pair of side quarters which define a foot receiving opening therebetween,

a fastener assembly which, in a first position, extends across the opening to join the two side quarters, and which is moveable to a second position, in which it is clear of said foot-receiving opening, and which is hinged so that, when moved to the second position, it remains in that position until it is moved back to the first position,

a toe portion which defines the front of said opening said toe portion being sized to, in combination with a portion of said sole, define a toe box shaped to receive a wearer's toes, and

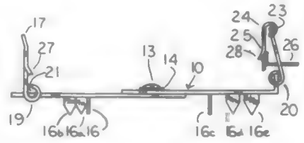
a substantially hourglass-shaped tongue, extending from the toe portion, which is moveable between a first, normal position, in which said tongue extends across the opening, between said side quarters, and a second position, in which said tongue is clear of the opening, said tongue having a pair of notches, one notch at each side edge of said tongue, wherein said tongue is held in said second position by the notches being engaged with a front edge of the side quarters until it is moved back to said normal position.

5,357,692

PORTABLE ICE WALKING ASSISTANCE DEVICE

Richard F. Murray, 18 Lincoln St., Essex Junction, Vt. 05452

Filed Aug. 23, 1993, Ser. No. 110,783
Int. Cl.[5] A43C *15/00*
U.S. Cl. 36—62 **5 Claims**



1. A portable ice walking assisting device for use by individuals in slippery conditions, comprising:

a plurality of horizontal plates;

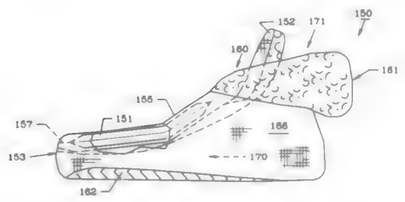
said horizontal plates having adjustable connection means for permitting said plates to be connected to each other;

said horizontal plates further having a plurality of vertical

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spikes extending downward from said horizontal plates for providing traction for said device;
said horizontal plates further having rotatable end portions for permitting said device to be positioned to the sole of the user's shoe;
said rotatable end portions having hooking means for attaching said end portions to said horizontal plates;
said hooking means allowing said rotatable end portions to lay parallel to said horizontal plate when folded for storage;
said rotatable end portions further having protruding means for holding said rotatable portions against said soles of said shoes;
one of said rotatable end portions further having extending means for locking said device on said sole; and
said extending means having release means for retracting said extending means when said device is to be removed from said sole.

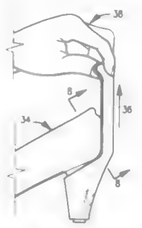
5,357,693
FOOTWEAR WITH THERAPEUTIC PAD
Byron C. Owens, Asheboro, N.C., assignor to Vesture Corporation, Randleman, N.C.
Continuation-in-part of Ser. No. 969,959, Dec. 3, 1992, which is a continuation-in-part of Ser. No. 871,826, Apr. 21, 1992, abandoned, which is a continuation of Ser. No. 643,344, Jan. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 486,806, Feb. 26, 1990, abandoned. This application Nov. 1, 1993, Ser. No. 144,345
Int. Cl.[5] A43B *7/02, 19/00*
U.S. Cl. 36—71 **12 Claims**



1. Footwear with a therapeutic pad, comprising:
(a) a sole;
(b) an upper portion connected to said sole to form a foot cavity therebetween, said upper portion including a toe area;
(c) a tongue joined to said upper portion in the toe area to form a therapeutic pad compartment between said tongue and said upper portion; and
(d) a microwavable, liquid-filled therapeutic pad removably positioned within the therapeutic pad compartment above said tongue proximate the toe area and extending substantially throughout the toe area.

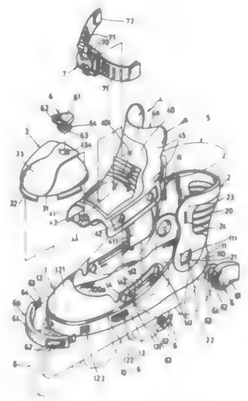
5,357,694
HEEL PROTECTOR
K. Joan Manck, 4080 Normandy Dr., Lee's Summit, Mo. 64082
Continuation-in-part of Ser. No. 799,714, Nov. 26, 1991, abandoned, which is a continuation of Ser. No. 407,199, Sep. 14, 1989, abandoned. This application Feb. 16, 1993, Ser. No. 17,761
Int. Cl.[5] A43B *23/30*
U.S. Cl. 36—72 B **3 Claims**

1. A protector for a shoe heel and back comprising:
an elongated sheet of material comprising relatively soft, single-cell sponge rubber having a thickness of approximately 3/32", capable of being stretched so as to create an elastic force and having a relatively high coefficient of friction, said elongated sheet of material having upper and lower portions, a pair of side edges, a lower edge, an interior surface engaging and in direct contact with the shoe heel and back and an outer surface not engaging the shoe heel and back;
a layer of stretch-type nylon fabric bonded to said surface not engaging the shoe heel and back, whereby the strength and durability of the protector is increased;
means attached to said lower edge of said elongated sheet of material for releasably securing said protector to the shoe heel;
means attached to the lower portion of said elongated sheet of material for protecting the shoe heel and back; and



a flap created by the upper portion of said elongated sheet of material, whereby said flap may be pulled by a user, after said protector is secured to the shoe heel, so as to stretch said protector and create an elastic force before folding said flap into an inner portion of the shoe and pressing said flap against a rear interior wall of the shoe so as to secure said protector to the shoe using surface traction created by said elastic force and said high coefficient of friction of said elongated sheet of material.

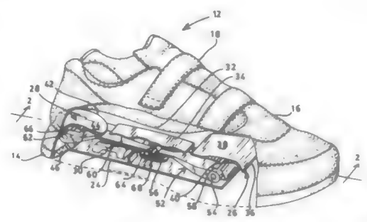
5,357,695
INTERCHANGEABLY ASSEMBLED SHOE
Jinny Lu, Taichung, Taiwan, assignor to Montype Supply Co., Ltd., Taichung, Taiwan
Filed Oct. 21, 1993, Ser. No. 138,976
Int. Cl.[5] A43B *5/16, 7/08*
U.S. Cl. 36—115 **9 Claims**



1. An assembled shoe comprising:
a sole 1 mounted on a foot sporting article 8 having an ankle portion 11, a toe portion 12, and a pair of intermediate side sole portions 13 between said ankle portion 11 and said toe portion 12;

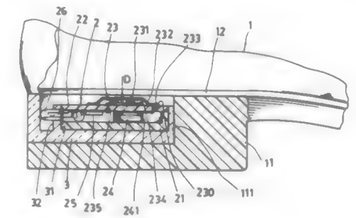
a rear shield 2 detachably coupled to said ankle portion 11 of said sole by a plurality of ventilation couplings 6; each said ventilation coupling 6 passing through said rear shield and said ankle portion for securing the rear shield 2 on said ankle portion 11 of said sole 1;
a toe box member 3 detachably embedded in a toe portion of said sole having at least one ventilation coupling 6 secured on said toe box member for coupling a front portion of an instep member with said toe box member;
the instep member 4 detachably secured to said pair of said intermediate side sole portions of said sole by a plurality of ventilation couplings 6;
a lining 5 inserted in said shoe for serving as a packing for a wearer's foot; and
a plurality of buckle means 7 operatively fastening said instep member on said sole and fastening said instep member to said rear shield for firmly fastening said instep member and said rear shield for a stable wearing of the shoe; and
each said ventilation coupling 6 having air passage formed therethrough for communicating a shoe interior with an outside of said shoe.

5,357,696
DEVICE FOR MEASURING FORCE APPLIED TO A WEARER'S FOOT
Frank B. Gray, 5104 Lyons View Pike, Knoxville, Tenn. 37919, and John L. Parris, 314 Keanon Rd., Knoxville, Tenn. 37909
Continuation-in-part of Ser. No. 877,230, May 1, 1992, Pat. No. 5,269,081. This application Oct. 12, 1993, Ser. No. 134,962
Int. Cl.[5] A61B *5/11*
U.S. Cl. 36—136 **21 Claims**



1. A device for measuring force applied to a foot of a wearer, said device providing an indication to the wearer when the force equals or exceeds a preselected value, said device comprising:
a body member for attachment to a foot of a wearer so as to support at least a portion of the foot, said body member having a sole portion defining an upper surface for support of the foot and a lower surface to contact a support surface, said sole portion provided with at least one cavity, said cavity having a bottom wall;
a covering member to close an upper opening into said cavity;
at least one force concentrator unit within said cavity, said force concentrator unit having a platform with a top surface in contact with said covering member, said platform having a lower surface to concentrate force applied to said platform by the foot to a central location of said force concentrator unit;
a mounting frame within said cavity supported on said bottom wall of said cavity;
a force sensing resistor unit mounted within said cavity and interposed between, and in contact with, said force concentrator unit and a top surface of said mounting frame, said force sensing resistor unit providing a variable electrical output signal whose value is a function of the force applied to said force sensing resistor unit by said force concentrator unit; and
a signal processor for receiving said electrical output signal from said force sensing resistor unit.

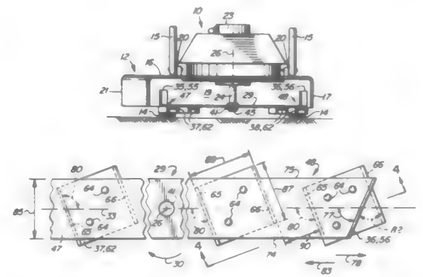
5,357,697
SAFETY ILLUMINATED SHOE
Wen-Tsung Lin, P.O. Box 74-9, Taipei, Taiwan
Filed Feb. 10, 1994, Ser. No. 194,395
Int. Cl.[5] A43B *23/00;* **F21L** *15/08*
U.S. Cl. 36—137 **1 Claim**



1. A safety illuminated shoe comprising:
a shoe (1) having a transparent holder (3) secured in a rear recess in a heel of the shoe; and
an illuminating means (2) detachably embedded in an inner socket (31) of the transparent holder (3) having a plurality of illuminator clips (32) circumferentially formed on the holder (3) for holding a plurality of illuminators (26) of the illuminating means (2), said illuminating means being covered by an insole (12) inside an upper of the shoe;
said illuminating means (2) including: a housing (21), a printed circuit board (22) secured in an upper portion of the housing (21), a flip-flap trigger switch (23) mounted on the printed circuit board (22), a plurality of batteries (24) secured on the printed circuit board (22), an integrated circuit (25) and a plurality of said illuminators (26) secured on the printed circuit board (22) with the integrated circuit (25) for timing control of illumination of the illuminators (26) when actuating the flip-flap trigger switch (23);
the improvement which comprises:
said flip-flap trigger switch (23) of the illuminating means (2) including: a base flange (230) secured on the printed circuit board (22), an upper disk portion (231) made of electrically conductive material and connected with the base flange (230) by a shallow conical wall (232) generally formed as truncated cone shape with the shallow conical wall (232) protruding and tapered upwardly from the base flange (230) to be connected with the upper disk portion (231) generally horizontally flattened, a first leading wire (233) connected between the upper disk portion (231) and a first pole of the batteries (24) which are secured under the printed circuit board (22) for supporting the printed circuit board, a lower contactor plate (234) secured on the printed circuit board (22) and positioned under the upper disk portion (231) and electrically connected to a second pole of the batteries (24) by a second leading wire (235), whereby upon depression of the upper disk portion (231) as trodden by a user's foot on the insole (12) of the shoe to close the upper disk portion (231) with the lower contactor plate (234), the illuminators (26) will be powered and lit on by the batteries (24) for safety illumination through the transparent holder (3) fixed in the heel (11) of the shoe (1).

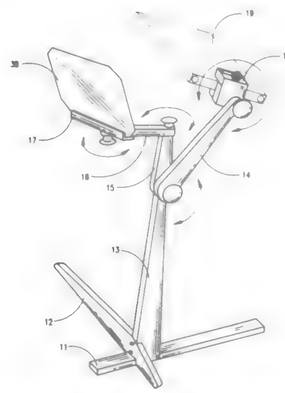
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5,357,698
SNOW BLOWER ATTACHMENT FOR LAWNMOWERS AND METHOD OF CLEARING SNOW
Alfred F. Phillips, 3484 Sunheights Dr., Victoria, British Columbia, Canada V9C 3P7
Filed Nov. 3, 1993, Ser. No. 145,108
Int. Cl.[5] E01H *5/09;* A01D *34/73*
U.S. Cl. 37—243 20 Claims



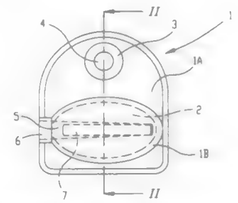
17. A method of clearing snow or other particulate or fragmented material, the method comprising the steps of:
(a) moving generally vertically disposed lower vane means in a circular lower arc about a generally vertical axis of rotation to cut the snow or material, the lower vane means being inclined obliquely to respective tangents to the lower arc to move the cut material inwardly towards the axis;
(b) moving generally vertically disposed upper vane means in a circular upper arc disposed above the lower arc about the said axis, the upper vane means being inclined obliquely to respective tangents to the upper arc to move the material outwardly away from the axis.

5,357,699
ERGONOMICALLY ADJUSTABLE NEEDLECRAFT SUPPORT STRUCTURE
Robert S. Padawer, 2208 S. Elder Cir., Broken Arrow, Okla. 74012
Filed Mar. 3, 1993, Ser. No. 25,664
Int. Cl.[5] D05C *1/00;* D06C *3/08;* A47B *57/08*
U.S. Cl. 38—102 20 Claims



1. A free-standing, adjustable needlecraft support and pattern holding device of an ergonomically adaptable design, the improvement comprising in combination:
A) a three part base and leg assembly of a wooden construction comprising;
1) a first narrow longitudinal horizontal part, of a profile to permit passage under furniture, having a cut-out portion at approximately one-quarter of the length thereof for conjunctive engagement with;
2) a second transverse horizontally disposed stabilizing part, of a profile higher than said first part at approximately one-quarter of the length thereof a cut-out portion for mating engagement with said first part and;
3) a third vertically rising support leg part of a narrow isosceles triangular configuration, which is truncated and rounded at a point short of the apex thereof, the base of which is matingly engagable with said first part and said second part, said three parts being provided with corresponding bores therethrough to accommodate;
B) conjoinment means whereby said longitudinal transverse and vertical parts are joined together by a plurality of threaded mechanical fasteners passing through said corresponding bores to form a rigid unitary construction, said construction being configured for reversible assembly to accommodate the requirements of right or left handed persons further comprises;
C) a vertical extension member, having a saddle-like cut-out portion, including a dimensioned horizontal bore therethrough at the lower end thereof, providing for non-adjustable, cooperative attachment to, or removal from, the upper truncated and rounded extremity of said rising support leg, said vertical extension member having a vertical dimensioned bore provided with internal metallic threads at the center of the distal, or upper truncated end thereof, to accommodate the rotatable and frictionally adjustable and lockable attachment of;
D) a horizontal outwardly extending swivel arm, having a centralized, dimensioned, vertical bore adjacent the proximal end thereof, to accommodate the passage therethrough of a knobbed, externally threaded, metallic fastener into operable engagement with the said internal metallic threads of said vertical extension member, for it's rotatable and frictionally adjustable and lockable attachment, upon and to, said vertical extension member, said arm having adjacent the distal or opposing end thereof, a second vertical, dimensioned bore, passing through the center of its width to accommodate the passage therethrough, (from the opposing direction) of a second knobbed, externally threaded, metallic fastener provided for retention, operable engagement, rotation and frictional adjustment and locking of;
E) a book or pattern support having a correspondent dimensioned vertically disposed bore, comprising metallic internally threaded means therein, at the center of the length thereof, for operable engagement with the threaded end of said knobbed, externally threaded, metallic fastener means and is thereby mechanically engaged for retention, horizontal rotation upon, or frictional adjustable and locking to, said outwardly extending swivel arm;
F) an adjustable work support arm attached to, and extending outwardly from the point of conjunction with the upper extremity of said vertical support leg and said vertical extension member, said work support arm being angularly adjustable in the vertical plane and frictionally adjustable and lockable by threaded means, to accommodate the ergonomic, physical and comfort requirements of the user;
G) a work-piece holding clamp, comprising a fixed jaw having a cork-lined gripping surface and a screw-operated movable jaw having a similar gripping surface, movable in a short arcuate path, relative to said fixed jaw, to cooperatively grip irregular work-pieces, said clamp being attached in frictionally adjustable and lockable rotational engagement to the distal or outermost end of said work support arm;
H) the frictionally adjustable and lockable conjointment means comprising cooperative metallic, internally and externally threaded means.

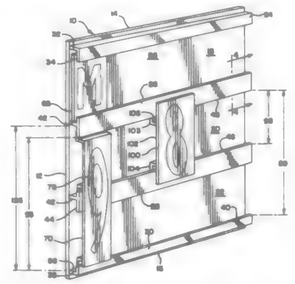
5,357,700
ANIMAL IDENTIFICATION DEVICE WITH OUTER CARRIER MOLDED AROUND INTERNAL CAPSULE
Klaus Schulte, Mölnbo, Sweden, assignor to Alfa-Laval Agriculture International AB, Tumba, Sweden
PCT No. PCT/SE91/00476, § 371 Date Jan. 22, 1993, § 102(e) Date Jan. 22, 1993, PCT Pub. No. WO92/02127, PCT Pub. Date Feb. 20, 1992
PCT Filed Jul. 4, 1991, Ser. No. 965,281
Claims priority, application Sweden, Aug. 7, 1990, 9002591-7
Int. Cl.[5] A01K *11/00*
U.S. Cl. 40—301 8 Claims



1. An identification device adapted for attachment to an animal comprising:
a carrier made in one piece of a relatively soft material and having a first part adapted to be attached to the animal, a second part formed for enclosing a signal means for wireless cooperation with sensing equipment situated at a distance from the animal and a third part interconnecting said first and second parts and formed to provide flexibility in the connection between the first and second parts; and
a capsule carried by said second part of the carrier and made of a relatively hard material, said capsule having an inner cavity formed for receiving the signal means, said soft carrier material being molded around said capsule and the capsule being formed in one piece and having an opening communicating with said inner cavity for the introduction of said signal means into said inner cavity.

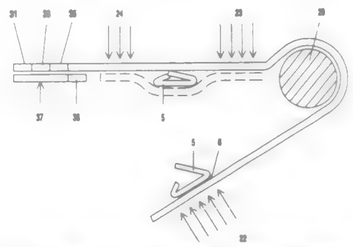
5,357,701
REPLACEABLE FIGURE PANELS FOR AN ATTRACTION BOARD
Anton Grate, 405 Westridge, Joliet, Ill. 60435
Filed Aug. 6, 1993, Ser. No. 102,811
Int. Cl.[5] G09F *7/02*
U.S. Cl. 40—618 8 Claims

1. A figure panel for an attraction board having a plurality of parallel spaced horizontal tracks, each track having an upper inner surface and a parallel lower inner surface, a downwardly extending upper lip and an upwardly extending lower lip, said upwardly extending lower lip extending upwardly a first distance and said downwardly extending upper lip extending downwardly a second distance, said second distance being greater than said first distance, said figure panel comprising:
a panel having a central portion, first and second opposing peripheral edges, and an inner surface,
a first flange adjacent said first peripheral edge and extending outwardly of said center portion, said first flange offset from said inner surface,
a second flange adjacent said second peripheral edge and extending outward of said center portion, said second flange offset from said inner surface,
said first flange spaced from said second flange a distance to retain said first flange under one of said downwardly extending upper lips of a first track and said second flange



will be retained under one of said upwardly extending lower lip of a second track to thereby retain said figure panel on said attraction board and
a third flange offset from said inner surface and positioned between said first and said second flanges.

5,357,702
AIRLINE LUGGAGE MARKING STRIP
Ton Van Tull, Arnhem, and Jan Seegers, Zevenaar, both of Netherlands, assignors to Esselte Meto International GmbH, Heppenheim, Fed. Rep. of Germany
Filed Apr. 20, 1993, Ser. No. 49,846
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1992, 4213495
Int. Cl.[5] G09F *3/10*
U.S. Cl. 40—630 20 Claims

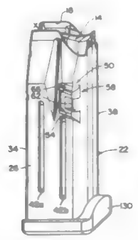


8. Airline luggage marking strip for marking checked airline luggage by being wrapped around a handle of the luggage, said marking strip comprising:
a main strip for being wrapped around the handle of the airline luggage, said main strip comprising a first surface on a first side of said main strip and a second surface on a second side of said main strip, the first side of said main strip being disposed opposite the second side of the main strip;
an auxiliary strip for being at least partially removed to permit the wrapping of the main strip around the airline luggage handle, said auxiliary strip comprising a first surface on a first side of said auxiliary strip and a second surface on a second side of said auxiliary strip, the first side of said auxiliary strip being disposed opposite the second side of said auxiliary strip;
said first surface of said auxiliary strip having a first portion and a second portion;

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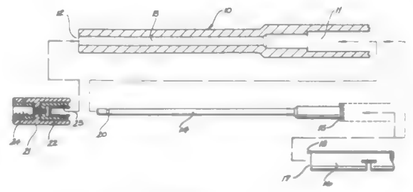
said first surface of said main strip having a first portion and a second portion;
an adhesive attaching said first portion of said main strip to said first portion of said auxiliary strip, said first portion of said auxiliary strip being directly attached to said first portion of said main strip by means of said adhesive;
first coating means, disposed on at least one of:
said first surface of said main strip, and
said first surface of said auxiliary strip, for selectively permitting, along said second portion of said auxiliary strip and said second portion of said said main strip, separation of said second portion of said auxiliary strip and said second portion of said main strip from each other;
said first coating means providing at least some adhesion between said second portion of said auxiliary strip and said second portion of said main strip;
said main strip having a third portion separate from said first portion of said main strip and said second portion of said main strip;
said first coating means being disposed on at least one of said second portion of said main strip and said third portion of said main strip, said first coating means being configured to attach said second portion of said main strip and said third portion of said main strip to each other such that the main strip is disposed around the handle of the airline luggage; and
said adhesive providing a substantially stronger degree of adhesion between said first portion of said main strip and said first portion of said auxiliary strip than is provided by said first coating means between said second portion of said main strip and said second portion of said auxiliary strip.

5,357,703
CARTRIDGE MAGAZINE HAVING A METAL BODY USED WITH A PLASTIC FIREARM
M. Gaines Chesnut, Golden; Marc Ulasik, Longmont, and Dennis D. Sweet, Evergreen, all of Colo., assignors to Ram-Line, Inc., Wheatridge, Colo.
Filed Jan. 13, 1993, Ser. No. 2,852
Int. Cl.[5] F41A *9/70*
U.S. Cl. 42—50 **17 Claims**



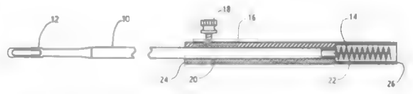
1. A magazine for use with a firearm that includes a firearm latch positioned in a well of the firearm, comprising:
a magazine body having first and second side walls and first and second end walls and being made of a first material comprising metal and including retainer means disposed on an outer surface of one of said walls;
a follower assembly disposed within said magazine body for use in moving cartridges relative to said magazine body; and
a latch member separate from said magazine body but connected to said retainer means and overlying at least portions of said retainer means, said latch member being made of a second material different from said metal of said first material, said magazine body and said latch member, when connected together, defining a combination with the majority of said combination being made from said metal first material and wherein, when said magazine body is held in the firearm, a portion of the firearm latch engages said latch member for holding said magazine body in the firearm well.

5,357,704
FIREARM LOCK
Ivan Benkovic, Sydney, Australia, assignor to PIP Industrial Services Pty, Ltd., New South Wales, Australia
PCT No. PCT/AU91/00465, § 371 Date Jun. 8, 1993, § 102(e) Date Jun. 8, 1993, PCT Pub. No. WO92/06345, PCT Pub. Date Apr. 16, 1992
PCT Filed Oct. 9, 1991, Ser. No. 70,429
Claims priority, application Australia, Oct. 9, 1990, PK2728
Int. Cl.[5] F41A *17/02, 17/44*
U.S. Cl. 42—70.11 **4 Claims**



1. A firearm lock, comprising:
an inextendable rod means sized to be received through a bore of a gun barrel, the rod means having first and second ends, the first end of the rod means having a circumferential groove;
a first end member fixed to the first end of the rod means and being sized and shaped so as to reside in a firing chamber of the gun in the manner of a cartridge; and
a second end member being lockably securable proximate the second end of the rod means at a distance from the first end member approximately equal to the length of the bore, the second member having a plurality of locking balls, a wedge means and a lockable screw drive means for engaging the wedge means to drive the locking balls radially inwardly relative the second end of the rod means to engage the locking balls in the groove;
wherein with the rod means disposed within the bore, the first end member residing within the firing chamber and the second end member secured to the rod means, the first end member cannot be withdrawn from the firing chamber.

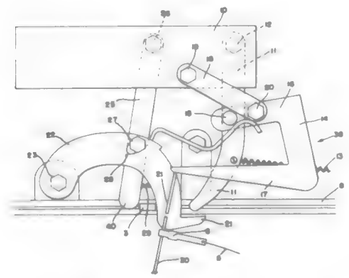
5,357,705
GUN CLEANING ROD
David J. Stengel, 2626 Broadway, Redwood City, Calif. 94063
Filed Feb. 24, 1993, Ser. No. 22,334
Int. Cl.[5] F14A *29/02*
U.S. Cl. 42—95 **5 Claims**



1. A gun cleaning device, comprising:
a rigid rod having a first end and a second end,
a wire brush attached to said first end of said rigid rod,
a patch holding loop for holding a cleaning patch attached to said second end of said rigid rod,

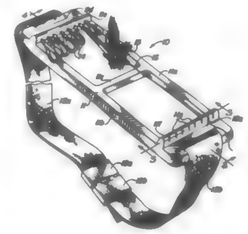
a coaxial cylindrical handle slidingly attached to said rigid rod intermediate said first end and said second end, said handle having a first end defining a first shoulder stop and a second end defining a second shoulder stop, said second end of said cylindrical handle having a coaxial through bore having a sliding fit with respect to said rigid rod, said second end of said cylindrical handle having a threaded transverse bore connecting with said through bore, a locking screw disposed within said threaded transverse bore, said first end of said cylindrical handle having a coaxial internal cavity, said internal cavity being axially connected with said through bore, said internal cavity having a length and a diameter of sufficient size to accommodate said wire brush inside said internal cavity,
said gun cleaning device having at least three positions, including:
a brush-use position wherein said first end of said rigid rod is extended from said coaxial cylindrical handle such that said first shoulder stop delimits an effective working length of said first end of said rigid rod and said locking screw is tightened to lock said device in said brush-use position,
a cleaning patch-use position wherein said second end of said rigid rod is extended from said coaxial cylindrical handle such that said second shoulder top delimits an effective working length of said second end of said rigid rod, and said locking screw is tightened to lock said device in said cleaning patch-use position,
and a storage position wherein said internal cavity of said coaxial cylindrical handle is positioned such that it covers said wire brush, and said locking screw is tightened to lock said device in said storage position.

5,357,706
ARRANGEMENT FOR UNHOOKING SNELL IN AUTOMATIC LONGLINE-HANDLING MACHINE
Thor Berg, Ovrebakken 10, N-8613, Selfors, Norway
PCT No. PCT/NO91/00084, § 371 Date Feb. 22, 1993, § 102(e) Date Feb. 22, 1993, PCT Pub. No. WO92/00007, PCT Pub. Date Jan. 9, 1992
PCT Filed Jun. 12, 1991, Ser. No. 974,571
Claims priority, application Norway, Jun. 22, 1990, 902806
Int. Cl.[5] A01K *83/00*
U.S. Cl. 43—4 **9 Claims**



1. A device for unhooking snell in an automatic longline-handling machine comprising:
an elongated guide portion;
a longitudinal and circular track formed in said guide portion, said track having a rectangular opening provided therein, wherein said track feeds a main line;
at least one swivel member, each having an eye opening for connecting to respective hooks and snells, wherein the eyes run in the opening;
a snell follower, first affected by said eye running in the opening, further controls an unhooking bar for separating the at least one swivel member from a respective hook; and
a speed bar with a torsion spring which unlocks a strained hook kicker which guides the separated hook into a hook store.

5,357,707
FLY FISHING LEADER CARRIER
Mark B. Lewis, 219 Dakota Ave., Fort Myers Beach, Fla. 33931
Filed Dec. 6, 1993, Ser. No. 161,809
Int. Cl.[5] A01K *97/06*
U.S. Cl. 43—57.2 **2 Claims**



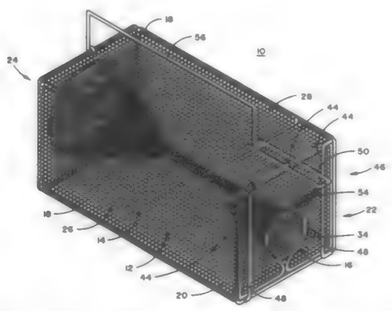
1. A fishing leader carrier designed to retrievably store a selection of spaced apart fishing leaders on the back of a fisherman comprising
an open faced rigid elongated rectangular fishing leader holder,
said rigid fishing leader holder including means for removably storing under tension a selection of spaced apart fishing leaders, and
an elongated flexible strap having one end attached to one end of the elongated fishing leader holder and its other end attached to the opposite end of the fishing leader holder,
said strap being of sufficient length to fit over one shoulder of the fisherman and to position the fishing leader holder flat against the back of the fisherman,
said strap including a separable two-part buckle to enable the elongated strap to be readily separated into two parts while the fishing leader holder is positioned against the fisherman's back and then the two parts of the strap are joined together.

5,357,708
AQUATIC TRAP
Richard F. Peters, 421 Creamery Rd., Hinsdale, Mass. 01235, and Steven R. Peters, 36 Phillip Dr., Oxford, Pa. 19363
Filed Aug. 9, 1993, Ser. No. 103,586
Int. Cl.[5] A01K *69/00*
U.S. Cl. 43—100 **5 Claims**

1. An aquatic trap, comprising:
an oblong shaped chamber bounded by a netted periphery that is permeable by water;
at least one inlet passing through said netted periphery, said inlet converging toward the interior of said chamber;
a rotatable wall portion formed in said netted periphery, said rotatable wall portion being connected to said netted periphery by a pivotal connection;
said rotatable wall portion being rotatable about said pivotal connection from a closed position in which said rotatable wall portion is substantially within the plane of said netted periphery to an open position in which said rotatable wall portion is substantially outside of the plane of said netted periphery;
biasing means for biasing said rotatable wall portion toward said closed position;

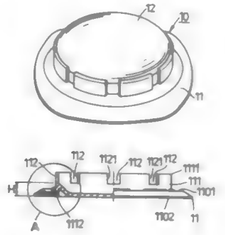
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frame means extending about said chamber and supporting said netted periphery, said frame means comprising:
first and second end frames; and
a plurality of elongated side rods interconnecting said first and second end frames;
said rotatable wall portion comprising a rotatable door disposed adjacent to said first end frame;
said biasing means comprising:
a cantilevered beam member projecting outward beyond said netted periphery adjacent said first end frame; and
a spring member extending between said cantilevered beam member and said rotatable door; and



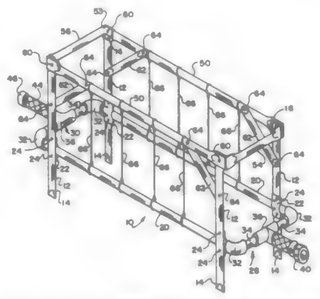
stop means for abutting said rotatable door in said closed position against the biasing action of said biasing means, said stop member having at least one cross member disposed across said first end frame;
said chamber being substantially rectangular in cross section;
each of said first and second end frames being substantially rectangular;
said inlet being disposed within said rotatable door, said inlet comprising a substantially conical netted surface projecting toward the interior of said chamber therefrom.

5,357,709
APPARATUS FOR STORING A BAIT WHICH CONTAINS AN INSECTICIDAL INGREDIENT
Wen-Jen Lin, No. 120, Feng-Chou Rd., Feng-Yuan City, Taiwan
Filed May 7, 1993, Ser. No. 58,413
Int. Cl.[5] A01M *1/20*
U.S. Cl. 43—131 **2 Claims**



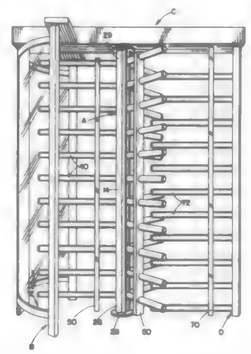
1. An apparatus for storing a bait which contains an insecticidal ingredient, said apparatus comprising:
a flat seat having a top face and a bottom face, a central recess formed in said top face, a hollow cylinder having an upper end and a lower end formed integrally in said central recess of said flat seat, said hollow cylinder having a plurality of circumferentially and equally spaced notches formed adjacent to said upper end of said hollow cylinder and a plurality of walls which defines the respective openings in said hollow cylinder, said top face of said flat seat having first and second annular recesses concentrically formed and adjacent to an external surface of said hollow cylinder in a consecutive relationship, said first annular recess having an inside diameter identical to an outside diameter of said second annular recess, said second annular recess being deeper than said first annular recess, said external surface of said hollow cylinder having a radial projection which extends into said second annular recess at a level which is adjacent to said top face of said flat seat, said flat seat having a guiding face with a slope inclined downward from said top face adjacent to said first annular recess and toward said bottom face at an outer periphery of said flat seat; and
a cover member having a cylindrical member which caps rotatably said hollow cylinder, said cylindrical member having an upper closed end and a lower open end, said lower open end having an outwardly extending annular flange which is inclined downward in a slope identical to said slope of said guiding face of said flat seat, said annular flange having an outside diameter which is identical to an outside diameter of said first annular recess, said annular flange having an inclined upper face and an inclined lower face which is parallel with said upper inclined face, said lower face having a positioning ring member depending from an outer periphery of said annular flange and a hook ring member which is L-shaped in cross section which depends from said inclined lower face between the outer periphery and an inner periphery of said annular flange, said hook ring member and said inclined lower face of said annular flange together defining an annular receiving groove, said positioning ring member being inserted in said first annular recess, said hook ring member extending into said second annular recess, said radial projection of said hollow cylinder extending into said annular receiving groove so that said cover member can be rotatably retained relative to said flat seat, said cylindrical member having a plurality of holes registered correspondingly with said openings of said hollow cylinder when said cover member is rotated to a predetermined position with respect to said hollow cylinder.

5,357,710
PLANT WATERING TRELLIS
Robert E. Dulik, 23 McKinley Ave., Uniontown, Pa. 15401, and Daniel A. Dulik, Belle Vernon, Pa., assignors to Robert E. Dulik, Uniontown, Pa.
Filed Sep. 10, 1993, Ser. No. 119,977
Int. Cl.[5] A01G *29/00*
U.S. Cl. 47—48.5 **20 Claims**



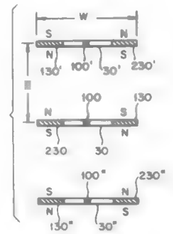
1. A plant watering trellis comprising:
a plurality of support posts;
a plurality of bottom frame members connected to said support posts, said bottom frame members configured for carrying liquid therein, with at least one of said bottom frame members including a plurality of orifices for distributing the liquid along the length of said bottom frame member;
a first coupling means in fluid communication with one of said bottom frame members for coupling said bottom frame members to a fluid transportation system;
a plurality of top frame members positioned above and spaced from said bottom frame members and connected to said support posts;
a plurality of brace members extending from said top frame members to said support posts and connected thereto; and
plant supporting means extending between and connected to said top and bottom frame members.

5,357,711
SUPPORT BAR FOR TURNSTILE ARMS
Emmanuel M. Trikilis, 1545 W. 130th St., Brunswick, Ohio 44212
Filed Nov. 4, 1992, Ser. No. 972,178
Int. Cl.[5] E05D *15/02*
U.S. Cl. 49—42 **17 Claims**



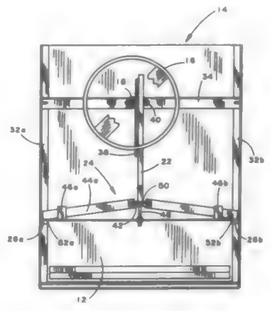
1. A revolving door construction comprising:
an elongated pivot column mounted on a subjacent floor surface;
a plurality of spaced barrier members arranged in at least one row, wherein a first end of each of said barrier members is secured to said pivot column;
a support bar spaced from said pivot column, said support bar having a plurality of longitudinally spaced apertures extending therethrough, a respective one of said barrier members extending through a respective one of said support bar apertures; and,
a securing means for securing said support bar to said plurality of barrier members wherein said support bar includes a lower end which is normally spaced from said subjacent floor surface and wherein said support bar lower end contacts said floor surface when a downward force is exerted on at least one of said barrier members thereby providing support for said barrier members to prevent said barrier members from becoming detached from said pivot column.

5,357,712
ADJUSTABLE SCREEN HAVING MAGNETICALLY LATCHING LOUVERS
Edward C. Streeter, 89 Park Place, Park Parade, Harrogate, North Yorkshire HG1 5NS, United Kingdom
Filed Apr. 30, 1993, Ser. No. 55,184
Int. Cl.[5] E06B *7/08*
U.S. Cl. 49—92.1 **4 Claims**



1. An electromagnetically operated screen having a plurality of louvers turnable about transversely spaced coplanar rotational axes, said louvers being supported only at their ends by terminals, characterized by a first permanent magnet fixed to each terminal adjacent the longitudinal edges thereof on the same side of its respective rotational axis, the magnetic axis of each magnet being directed to repel the magnet on the adjacent terminal, and a complementary latching component fixed to each terminal adjacent the other longitudinal edge thereof on the opposite side of its respective rotational axis from said first magnet, the magnet on one terminal and the latching component on an adjacent terminal being located in the terminal portions that overlap in the closed attitude of the louvers.

5,357,713
APPARATUS FOR OPENING A GRAIN DOOR
Sid Jiskoot, Sanborn, and Walter Lammers, Boyden, both of Iowa, assignors to Dethmers Manufacturing Company, Des Moines, Iowa
Filed May 11, 1993, Ser. No. 60,581
Int. Cl.[5] E05F *11/00*
U.S. Cl. 49—276 **6 Claims**



1. An opener for a door having a door frame to which the door is slidably connected comprising:
(a) A lift bar operably connected to the door;
(b) means for manually lifting said lift bar;
(c) a support secured to the door frame;
(d) means for leveraging the door open against said support, wherein said leveraging means is operably connected to said lift bar; and

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(e) second means to lift the door to bypass said leveraging means after the door has opened a predetermined distance.

5,357,714

APPARATUS FOR SHAPING THE ENDS OF TUBULAR WORKPIECES WITH RECESSES OF DIFFERENT DIAMETERS

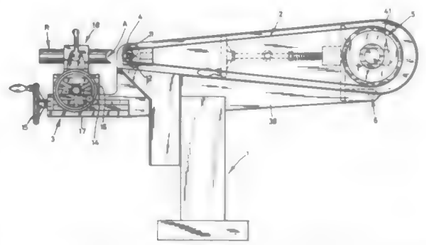
Jan J. Landhuis, Vriezenveen, Netherlands, assignor to Almi Machinefabriek BV, Vriezenveen, Netherlands

Filed Jun. 3, 1993, Ser. No. 71,562

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1993, 4310887

Int. Cl.[5] B24B *21/12, 21/20*

U.S. Cl. 451—311 **9 Claims**



1. An apparatus for recessing the ends of tubular workpieces with different diameters, comprising:

(a) a grinding belt machine frame;

(b) a revolving driven grinding belt trained around front and rear pulleys, the front pulley having a diameter which corresponds to a diameter of a desired recess and being rotatable about a first axis;

(c) a first support member connected to the grinding belt machine frame and having a longitudinal slide, a transverse slide and a clamping device that holds and carries the workpiece on the longitudinal slide for retractable movement against the grinding belt at the front pulley; and

(d) said clamping device being mounted for swivel movement about an axis that is nonintersecting and aligned perpendicularly with said first axis, said clamping device including a stationary counteracting jaw and a movable clamping jaw that is movable towards and away from said stationary counteracting jaw, the longitudinal slide having an axis of displacement, the transverse slide having an axis of displacement and being movably disposed on the longitudinal slide, said movable clamping jaw being mounted on the transverse slide, the axis about which the clamping device swivels extending transverse to the axis of displacement of the longitudinal slide and transverse to the axis of displacement of the transverse slide.

5,357,715

SANDER

Shinichi Hiramatsu, Anjo, Japan, assignor to Makita Corporation, Anjo, Japan

Filed Jun. 3, 1993, Ser. No. 70,846

Claims priority, application Japan, Jun. 8, 1992, 4-174870

Int. Cl.[5] B24B *23/00*

U.S. Cl. 451—357 **8 Claims**

1. A sander comprising:

a body;

drive means mounted on said body;

a spindle rotatably driven by said drive means;

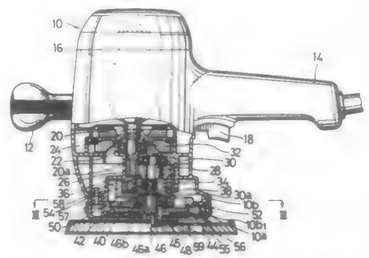
a connecting shaft mounted on said spindle and rotatable relative to said spindle around an axis displaced from the rotational axis of said spindle;

an abrasive disc fixedly mounted on said connecting shaft;

a sun gear fixed to said connecting shaft coaxially therewith;

an internal gear rotatably supported by said body and in engagement with said sun gear; and

engaging means mounted on said body and having an engaging member and an operational member operable by an



operator, said engaging member being movable between a first position and a second position through operation of said operational member, said engaging member at said first position fixing said internal gear, and said engaging member at said second position permitting rotation of said internal gear.

5,357,716

HOLDING DEVICE FOR HOLDING OPTICAL ELEMENT TO BE GROUND

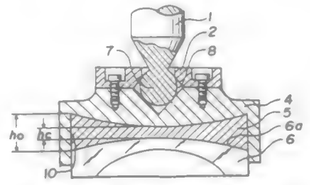
Takayuki Kishida; Mitsuaki Takahashi, both of Hachiooji; Kazuo Ushiyama, Akishima, and Masaki Watanabe, Hachiooji, all of Japan, assignors to Olympus Optical Company Limited, Japan

Continuation of Ser. No. 700,992, May 10, 1991, abandoned, which is a continuation of Ser. No. 600,592, Oct. 17, 1990, abandoned, which is a continuation of Ser. No. 421,261, Oct. 13, 1989, abandoned. This application Mar. 15, 1993, Ser. No. 32,443

Claims priority, application Japan, Oct. 20, 1988, 63-137174[U]; Oct. 27, 1988, 63-271799; Nov. 11, 1988, 63-147294[U]

Int. Cl.[5] B24B *41/06*

U.S. Cl. 451—390 **10 Claims**



1. A holding device for holding an optical element having two opposed majors surface separated by a peripheral edge surface during a grinding process, comprising:

a holding member rotatably and tiltably supported on a shaft and having a recessed receiving surface configured and dimensioned to releasably engage with an outer peripheral edge surface of the optical element; and

a pressure distributing member having an undivided surface in contact with one major surface of the optical element for contacting and supporting the entire one major surface of the optical element, the pressure distributing member being deformable in varying amounts at portions thereof which are subjected to varying amounts of grinding pressure produced during grinding of the other major surface

of the optical element, the contact with said entire one major surface and the varying amounts of deformation of the pressure distributing member being effective to uniformly distribute the grinding pressure along the one major surface of the optical element.

5,357,717

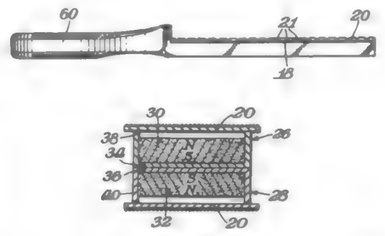
MANUAL FILE AND SHARPENING TOOL

Daniel D. Friel, Jr., Kennett Square, Pa., and Edwin Parkell, Galena, Md., assignors to Edgecraft Corporation, Avondale, Pa.

Filed Jan. 8, 1993, Ser. No. 2,229

Int. Cl.[5] B24D *15/00*

U.S. Cl. 451—494 **19 Claims**



1. A tool for filing or abrading surfaces or for sharpening instruments such as knives, chisels, and the like comprising two spaced thin ferromagnetic rails having generally coplanar edges, magnetic means including a magnet between said rails, said magnet having a first pole and a second pole, a ferromagnetic plate having an exposed abrasive coated surface, said plate being adjacent and generally parallel to and spaced from said first pole, said second pole being remote from said plate with said first pole being between said plate and said second pole, said plate being mounted against said rails with said plate against said edges of said rails, and said plate being magnetically held to said edges of said rails by magnetic flux concentrated from said second pole of said magnet which conducts the flux to said plate through said rails with sufficient force to hold said plate in position against said rails when said tool is manually operated without the need for a retaining cavity and without the need for abutting structure to further restrain said plate from lateral moving during use.

5,357,718

WAFER RINSING APPARATUS

Itaru Kanno, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1993, Ser. No. 45,162

Claims priority, application Japan, Oct. 19, 1992, 4-279915

Int. Cl.[5] B24C *3/32*

U.S. Cl. 451—75 **4 Claims**

1. A wafer rinsing apparatus including:

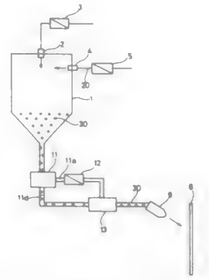
an ice making hopper for making ice particles by heat exchange between fine droplets of liquid to be frozen and a low-temperature liquefied gas,

separating means connected to said ice making hopper for separating said ice particles and vaporized gas generated from said low-temperature liquefied gas,

jetting means for jetting said ice particles separated by said separating means toward a wafer to rinse the surface of said wafer,

particle removing means attached to said separating means for removing particles from said vaporized gas separated by said separating means, and

mixing means attached to said separating means, said particle removing means and said jetting means for mixing said ice particles separated by said separating means with said vaporized gas with said particles removed by said particle



removing means and feeding the mixture to said jetting means.

5,357,719

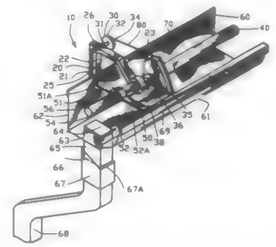
ROTATABLE GUTTER SYSTEM

Eric E. Lewis, 4975 SE. 35th Ave., Ocala, Fla. 34480

Filed Apr. 19, 1993, Ser. No. 47,999

Int. Cl.[5] E04D *13/04*

U.S. Cl. 52—11 **14 Claims**



1. An improved rotatable gutter system for mounting on a building for disposing of debris collected therein, comprising:

a plurality of supporting brackets mounted to the building;

each of said supporting brackets having a journal mount;

a rod rotatably supported in said journal mounts of said supporting brackets and defining an axis of rotation;

an elongated trough defining a center of mass;

a plurality of trough supports for longitudinally mounting said elongated trough on said rod with said rod being disposed substantially above said center of mass of said elongated trough for maintaining said elongated trough in an upright position:

eccentric means affixed to said rod;

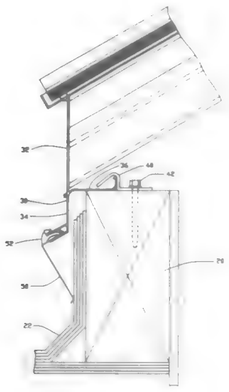
a cable affixed to said eccentric means for remotely transmitting energy to said eccentric means;

said eccentric means variably transmitting energy from said cable to said rod to rotate said elongated trough about said rotational axis from said upright position into an inverted position for inverting said elongated trough to permit debris collected therein to fall therefrom; and

said center of mass of said elongated trough rotating said elongated trough from said inverted position into said upright position upon release of said energy from said cable.

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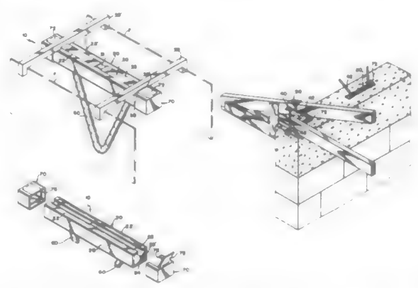
5,357,720
SKYLIGHT SILL WITH BUILT-IN REGLET FOR REMOVABLE FLASHING
William F. O'Keeffe, and Sonny Q. Garcia, both of San Francisco, Calif., assignors to O'Keeffe's Inc., San Francisco, Calif.
Filed Jul. 19, 1993, Ser. No. 93,776
Int. Cl.[5] E04D *13/14*
U.S. Cl. 52—58 22 Claims



1. A roofing system for preventing moisture from penetrating between a roofing membrane and a skylight curb supporting a skylight, comprising:
a flashing for covering at least an edge portion of the roofing membrane;
a reglet provided around the skylight curb for removably securing said flashing in proper position with respect to said roofing membrane edge portion, said flashing and said reglet together seal the edge portion against moisture penetration between said roofing membrane and said skylight curb, wherein upon detachment of said flashing from said reglet, no part of the roofing system is in contact with the roofing membrane; and
a removable gasket for removably securing said flashing to said reglet.

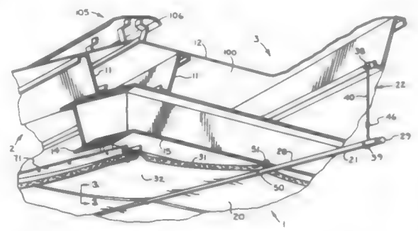
5,357,721
ADJUSTABLE BEAM HOLDER
Gustavo O. Alvarez, 1705 W. 42 St. #102, Hialeah, Fla. 33012
Continuation-in-part of Ser. No. 10,046, Jan. 28, 1993, Pat. No. 5,335,470. This application Dec. 22, 1993, Ser. No. 171,497
Int. Cl.[5] E04B *1/38*
U.S. Cl. 52—92.2 5 Claims

1. An adjustable beam holder adapted to be used with parallel spaced apart forming boards having upper edges aligned with respect to each other to define a plane and said holder being adapted to securely hold a truss assembly having a plurality of beams, comprising:
A) an elongated case member having two ends and said case member being defined by top, lateral and bottom walls defining a space therein and said top wall includes a longitudinally extending slot that extends from end to end;
B) elongated connector means removably mounted to said slot and including protruding a platform member;
C) at least two detachable arm members transversely and removably mounted to said connector means and said detachable arm members adapted to rest over the upper edges of said forming boards and said detachable arm members further including means for removable engagement to said protruding platform member;
D) anchorage means rigidly mounted to said bottom wall and said anchorage means extending perpendicularly and away from said bottom wall;
E) clamp means adapted to engage one of said beams of said truss assembly; and



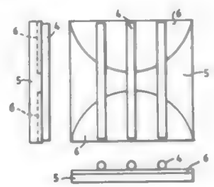
F) fastening means for urging said clamp means towards said case member and said fastening means being removably and slidably mounted to said case member.

5,357,722
INSULATION SYSTEM
John A. Kessler, 11507 Rosehill, Overland Park, Kans. 66210
Filed Feb. 6, 1991, Ser. No. 651,574
Int. Cl.[5] E04B *7/02*
U.S. Cl. 52—93.1 10 Claims



1. An insulation system in combination with a building having a roof structure comprising a framework of parallel and relatively widely-spaced main support beams, parallel and relatively narrowly-spaced purlins supported by and extending perpendicularly to said main support beams and a plurality of roof panels mounted in covering relationship to said purlins; said insulation system comprising:
(a) a plurality of generally linear and continuous insulation support members suspended respectively from at least some of said purlins so as to extend substantially entirely between opposite sides of said building in parallel and spaced relation below said purlins and in perpendicular and spaced relation below said main support beams;
(b) a plurality of strips of insulating material strung across said insulation support members in side-by-side alignment so as to extend in perpendicular alignment to said insulation support members generally from an eave of said building to a peak of said building such that said strips of insulating material are supported by said insulation support members and form a substantially continuous and uninterrupted surface extending between the opposite ends of said building; said strips of insulating material having a fibrous glass insulation blanket and a facing such that said facing is wider than said fibrous glass insulation blanket so as to form flaps extending beyond opposed sides of said fibrous glass insulation blanket;
(c) said strips of insulating material being secured together to form said continuous and uninterrupted surface by a sealing seam comprising:
(1) a fold in said flaps of said adjacently-aligned strips of insulating material; said folds formed by folding said flaps back over upon themselves towards said flap of said adjacently-aligned strip of insulating material; and
(2) first fastening means for fastening said folds of said adjacently-aligned strips of insulating material in abutting relationship so as to seal between adjacent strips;
(d) an insulation attachment structure secured to said framework at said peak of said building so as to extend substantially across said building in parallel relation to said purlins and below said main support beams; said strips of insulation securable at one end of said insulation attachment structure by second fastening means;
(e) said strips of insulating material are secured at an opposite end to an eave strut by third fastening means; and
(f) ventilation means for allowing outside air to circulate between said strips of insulating material and said roof structure.

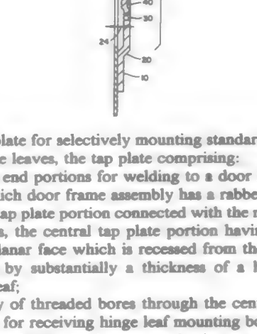
5,357,723
VIBRATION DAMPING DEVICE
Teruo Sasaki; Kazuhiro Fujisawa, both of Kobe; Akemi Kawanabe, and Seinosuke Kato, both of Nishinomiya, all of Japan, assignors to Sumitomo Rubber Industries, Ltd, Hyogo, Japan
Filed Jul. 6, 1993, Ser. No. 86,025
Claims priority, application Japan, Aug. 4, 1992, 4-206889
Int. Cl.[5] E04B *1/98*
U.S. Cl. 52—167 RS 7 Claims



1. A vibration damping device comprising:
an upper structure;
a lower structure;
rolling bodies interposed between said upper structure and said lower structure to horizontally swingably support said upper structure;
rigid members; and
elastomeric members are disposed between said rolling bodies and said upper and lower structures,
wherein rolling surfaces are formed by said elastomeric members and said rigid members for said rolling bodies.

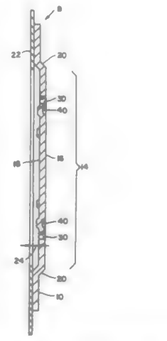
5,357,724
STAIR TREAD
Munekatsu Sonoda, Kawaguchi, Japan, assignor to Sonoda Factory Co., Ltd., Tokyo, Japan
Filed Jun. 17, 1993, Ser. No. 77,397
Claims priority, application Japan, Dec. 21, 1992, 4-091802[U]
Int. Cl.[5] E04F *11/00*
U.S. Cl. 52—182 3 Claims

1. A stair tread, comprising:
a core member of metal including a substantially horizontal core section and side core sections extending downward from end edges of the horizontal core section;
a covering of synthetic rubber over the core member surfaces;
an upwardly projecting lip formed where the synthetic rubber covers the side core sections of the horizontal core section, with the outside surface of the lip being flush with the surface of the synthetic rubber that covers the side



core sections; wherein the synthetic rubber that covers the end edges and the lip are integrally in a one-piece formation.

5,357,725
UNIVERSAL TAP PLATE FOR MOUNTING EITHER HEAVY-WEIGHT OR LIGHT-WEIGHT HINGES
Raymond A. Ferry, McKenzie, Tenn., assignor to Republic Builders Products, Inc., McKenzie, Tenn.
Filed Sep. 14, 1993, Ser. No. 121,281
Int. Cl.[5] E06B *1/04*
U.S. Cl. 52—210 12 Claims



1. A tap plate for selectively mounting standard and heavy-weight hinge leaves, the tap plate comprising:
mounting end portions for welding to a door frame assembly, which door frame assembly has a rabbet surface;
a central tap plate portion connected with the mounting end portions, the central tap plate portion having a substantially planar face which is recessed from the rabbet face surface by substantially a thickness of a heavy-weight hinge leaf;
a plurality of threaded bores through the central tap plate portion for receiving hinge leaf mounting bolts;
a plurality of severable buttons projecting upward from the central portion planar face by a height substantially equal to a difference between the heavy-weight hinge leaf thickness and a standard-weight hinge leaf thickness, the buttons being disposed adjacent the threaded bores.

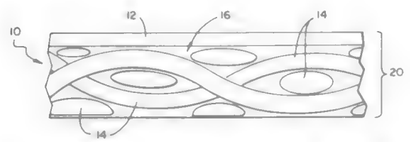
VOL 1167 ISS 4 OCT 25 1994 UMI

5,357,726

COMPOSITE MATERIALS FOR STRUCTURAL END USES

John A. Effenberger, Bedford; Keith G. Koerber, Goffstown; Francis M. Enzien, Penacook; Michael P. Cushman, New Boston, all of N.H., and Milton B. Punnett, East Aurora, N.Y., assignors to Chemfab Corporation, Merrimack, N.H.

Continuation of Ser. No. 617,195, Nov. 23, 1990, abandoned, Continuation-in-part of Ser. No. 305,748, Feb. 2, 1989, abandoned. This application Aug. 31, 1993, Ser. No. 119,442
The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.
Int. Cl.[5] E04C *1/00*
U.S. Cl. 52—309.7 33 Claims



1. A tensioned-fabric structure comprising a supporting element holding a textile composite material comprising
   a. a fibrous reinforced load-bearing element having a textile component and a coating component, said coating component comprising a TFE polymer; and
   b. at least one preformed hydrophobic protective film element comprising a TFE polymer and including one or a mixture of additives selected from the group consisting of a colorant, a dyestuff and a biological agent;

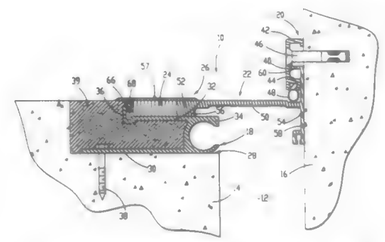
wherein at least one surface of said load-bearing element is laminated, at least in part, to said preformed hydrophobic protective film element.

5,357,727

EXPANSION JOINT

Glen Duckworth, Arlington, Tex.; Bill Heisterberg, Casa Grande, Ariz.; Mark Honstra, San Ramon, Calif.; Trest Polina, Norman, Okla.; Stephen Newcomb, Moore, Okla., and Heary Gohlke, Norman, Okla., assignors to Balco/Metalines, Inc., Wichita, Kans. and Hexcel Corporation, Pleasanton, Calif.

Filed Jul. 14, 1993, Ser. No. 91,872
Int. Cl.[5] E01C *11/12*
U.S. Cl. 52—396.06 9 Claims



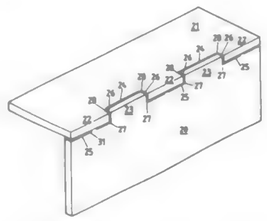
1. An expansion joint assembly for bridging a pair of adjacent, elongated, relatively shiftable structural sections presenting therebetween an expansion void of nominal width, said assembly comprising:
   a pair of elongated supports respectively coupled to said sections adjacent said void;
   an elongated bridging member presenting a pair of side margins and having a width greater than the nominal width of said void, each of said side margins operatively engaging a corresponding support for spanning said void, there being a space between at least one of said side margins and adjacent portions of the corresponding support for accommodating movement of the bridging member during shifting of said sections; and
   a filler disposed within said space and comprising a compressible, resilient body including a plurality of walls defining a series of openings in the body permitting the latter to alternately compress and expand in response to relative movement between the member and supports.

5,357,728

JOINTING OF BUILDING PANELS AND SHEETS

Robert J. Duncanson, 161/2 Sukhumvit Road, Bangkok, Thailand

PCT No. PCT/AU90/00171, § 371 Date Oct. 24, 1991, § 102(e) Date Oct. 24, 1991, PCT Pub. No. WO90/13402, PCT Pub. Date Nov. 15, 1990
PCT Filed May 2, 1990, Ser. No. 768,880
Int. Cl.[5] E04B *1/38*
U.S. Cl. 52—592.4 8 Claims



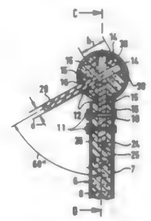
1. Improved means for joining together a pair of panels, wherein each of said panels comprises means for nesting with the other of said panels with a complementary interfitting, with said interfitting comprising a frictional engagement between said panels at a plurality of sites and wherein a gap of approximately uniform width and an equidistant spacing between said panels, extends between said panels at the position of their complementary interfitting, said gap is interrupted by said plurality of sites, with said gap being filled with adhesive,
   wherein at least one of the pair of panels comprises a plurality of tongue formations and the other of the pair of panels comprises a plurality of recesses having a shape substantially complementary to said tongue formations, whereby said tongue formations of one panel are receivable in the recesses of the other panel, at least one of said complementary tongue formations and recesses comprises a plurality of integrally formed projections, with said projections being positioned, shaped, and dimensioned such that said tongue formation is frictionally fitted within said complementary recess by virtue of said projections between the tongue formation and the walls of the recess, and wherein opposed facing surfaces of said tongue formation and said walls of the recess are spaced apart so as to form a gap of approximately uniform width which extends between the tongue formation and the walls of the recess, interrupted by said projections.

5,357,729

FRAMEWORK MADE FROM THIN-WALLED ROUND COMPOSITE FIBRE RODS

Rainer Schütze, Braunschweig, Fed. Rep. of Germany, assignor to Deutsche Forschungsanstalt fur Luft-u Raumfahat e.V., Braunschweig, Fed. Rep. of Germany

Filed Feb. 23, 1993, Ser. No. 21,317
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1992, 4205834; Sep. 17, 1992, 4231067
Int. Cl.[5] E04H *12/02*
U.S. Cl. 52—653.2 12 Claims



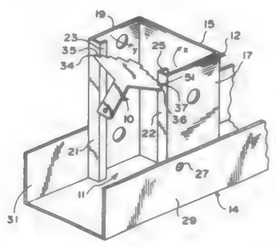
1. A framework of thin-walled, round composite fibre rods comprising a pressure-resistant foam core and walls, said walls comprising at least one layer of axially parallel unidirectional elongate fibres, said framework comprising strut rods, transverse or diagonal rods, and connection elements for connecting said strut rods to said transverse or diagonal rods, said connection elements comprising joint plates of composite fibre material and having a plurality of edges, wherein axially-parallel recesses are provided in said walls of said strut rods, said recesses having a width corresponding to the thickness of said joint plates, and said recesses extending diagonally through said foam core of said strut rods up to the opposite side of said walls of said strut rods, wherein said joint plates are inserted into said recesses and glued at the inward one of said edges to the inside of said walls of said strut rods opposite said recesses, and also glued to said foam core at their widths engaging said strut rods, and wherein said transverse or diagonal rods have ends, said ends being provided with slots, said slots having a width corresponding to said thickness of said joint plates, whereby said slots overlap said joint plates at both sides thereof.

5,357,730

METAL STUD SPREADER

George R. Pickeral, 25 Jefferson Dr., White Plains, Md. 20695

Filed Jun. 4, 1993, Ser. No. 71,397
Int. Cl.[5] E04G *21/16*
U.S. Cl. 52—749 4 Claims



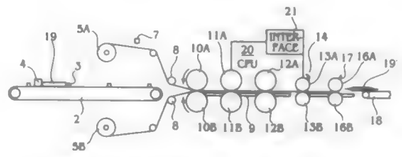
1. A metal stud spreader for use with a metal stud, said metal stud spreader being substantially planar, said metal stud having a U-channel, comprising:
   a handle portion;
   an intermediate body portion;
   a head portion; and
   said head portion having a series of bosses of increasing width to accommodate U-channels of different widths, and wherein said bosses are adapted.

5,357,731

PACKAGING MACHINE

Graham Conway; Jeffrey Bloomfield, and Oliver F. Chastney, all of Norfolk, England, assignors to Datum Appropriate Technology Limited, Norwich, United Kingdom

Filed May 29, 1992, Ser. No. 891,656
Claims priority, application United Kingdom, May 30, 1991, 9111635
Int. Cl.[5] B65B *51/16*
U.S. Cl. 53—374.4 5 Claims



1. An apparatus for sealing a wrapping around an item, the item having two spaced opposite, longitudinal edges and two ends, comprising:
   An edge sealing unit including:
   (i) a framework;
   (ii) a first pair of cooperative sealing members mounted on said framework for sealing a longitudinal edge of the wrapping as the wrapping is formed around the item, said first pair being operatively compressed together to a selected extent of compression and having a first motorised adjustment means with mechanical stop means having at least three different stop positions adapted to adjust the extent of compression in pre-determined steps at least between two pre-determined levels of compression other than zero compression during sealing operation of the apparatus; and
   (iii) a second pair of cooperative sealing members mounted on said framework independently of said first pair of co-operative sealing members for sealing an opposed longitudinal edge of the wrapping, said second pair being operatively compressed together to a selected extent of compression and having a second motorised adjustment means with mechanical stop means having at least three different stop positions adapted to adjust the extent of compression in pre-determined steps at least between two pre-determined levels of compression other than zero compression during sealing operation of the apparatus; and
   an end sealing unit and end cutting unit for sealing and cutting the wrapping ends,
   wherein said first and second adjustment means each comprises a cam and an operatively associated cam follower, each of said cams having two or more cam stop surfaces with different heights to adjust the extent of compression between two or more pre-determined levels of compression other than zero compression.

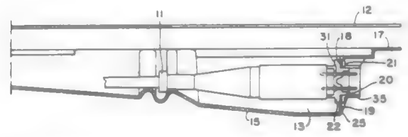
VOL 1167 ISS 4 OCT 25 1994 UMI

5,357,732

METHOD FOR ASSEMBLING PACKAGE FOR AN ACTIVE MEDICAL DEVICE

David R. Markle, Paoli, Pa.; Stuart P. Hendry, Bierton, and Michael P. Irvine, Watlington, both of United Kingdom, assignors to Biomedical Sensors, Ltd., High Wycombe, England

Division of Ser. No. 888,569, May 22, 1992, Pat. No. 5,246,109.
This application May 20, 1993, Ser. No. 64,615
Int. Cl.[5] B65B *31/02, 5/08, 61/00*
U.S. Cl. 53—410 3 Claims



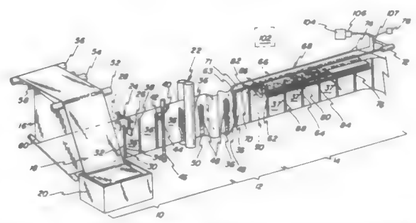
1. A method for assembling a package containing an active medical device having sensors comprising the following steps:
making an opening in a wall of a recess defined by a film member, which recess is shaped to receive the active medical device;
inserting the active medical device in the recess;
inserting through the opening in the wall a band of an inner part of a junction mounted through a flat portion of the wall;
placing a gasket against the wall and about the band so the gasket is flush against the wall;
installing an outer part coaxially about the band whereat it extends beyond the opening to hold the gasket tightly against the wall to form a sterile barrier; and
placing a lid against a flange of the film member to cover the recess and thereby contain the active medical device within a sterile field in the recess.

5,357,733

ASEPTIC PACKAGING APPARATUS AND METHOD INCLUDING A CONTROL SYSTEM FOR ACCURATELY DISPENSING MATERIAL

Roy J. Weikert, 645 S. High St., Covington, Ohio 45318

Filed Feb. 26, 1993, Ser. No. 23,887
Int. Cl.[5] B65B *3/02, 3/30, 9/08*
U.S. Cl. 53—455 26 Claims



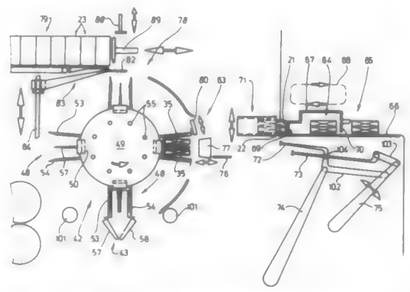
23. A method of packaging fluent material in successive pouches, said method comprising the steps of:
supplying a continuous web formed as a closed tube having upper and lower edges and including spaced seam lines extending upwardly from said lower edge to a location spaced from said tube upper edge to form a series of pouches which are interconnected at the tops thereof by an integral tubular portion of said web and which are individually open to to said tubular portion,
conveying said web of pouches along an elongated filling pipe with said filling pipe received within said tubular portion,
continuously supplying fluent material to be packaged to said pipe for discharge therefrom into said pouches,
continuously monitoring the mass of said material supplied to said pipe,
controlling the rate at which said web of pouches is conveyed along said pipe in response to the monitored mass of material supplied to said pipe to ensure that a consistent quantity of material is discharged into each of said pouches,
maintaining a predetermined amount of slack in said web prior to said web reaching said pipe, and
expanding said pouches adjacent to said pipe to facilitate discharge of said material into said pouches.

5,357,734

APPARATUS FOR PRODUCING PACKAGE COMPOSED OF PART PACKS

Heinz Focke, Verden, and Hans-Jürgen Bretthauer, Bremen, both of Fed. Rep. of Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Jan. 14, 1993, Ser. No. 4,292
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1992, 4200921
Int. Cl.[5] B65B *47/04, 11/28*
U.S. Cl. 53—579 17 Claims



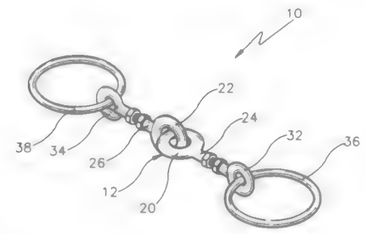
1. Apparatus for producing packages (23), composed of at least two cuboid part packs (25, 26) each for receiving a group (21, 22) of cigarette packs (20), from a single one-piece blank (24), said apparatus comprising:
a) a folding turret (42) which has an axis for rotation thereabout, and which has a plurality of radially directed pockets (48), each for receiving a package (23) from an open radially outer side;
b) wherein each pocket (48) has a central stationary folding blade (51) and lateral movable pocket walls (53, 54),
c) wherein said folding blade (51) extends in a radially and axially directed plane relative to said folding turret, and has an axial main extension direction,
d) wherein said pocket walls (53, 54) are movable between an almost parallel first position, relative to said folding blade 51, with a radially directed opening, and an open or spread second position for forming a larger said radially directed opening, and have means for pivotably mounting said pocket walls (53,54) for movement between said first and second positions, and
e) means for folding said one piece blanks over said folding blades and into said pockets.

5,357,735

ADJUSTABLE HORSE BIT

Donald G. Fry, 3766 Sankey Rd., Pleasant Grove, Calif. 95668

Filed Aug. 23, 1993, Ser. No. 110,779
Int. Cl.[5] B68B *1/06*
U.S. Cl. 54—9 2 Claims



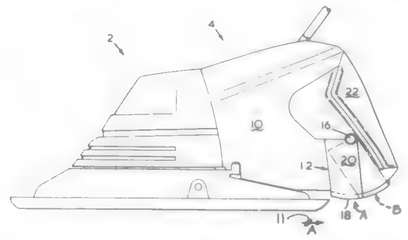
1. An adjustable horse bit comprising:
a mouthpiece positionable within a mouth of an animal, said mouthpiece having respectively opposed ends thereof;
a pair of strap anchors coupled to said mouthpiece;
at least one adjustment means coupled to said mouthpiece to vary a width thereof, said at least one adjustment means comprising a pair of threaded rods, each of said pair of threaded rods being threadably engaged to one of said respectively opposed ends of said mouthpiece and to one of said pair of strap anchors; and,
at least one nut threadably engaged to at least one of said pair of threaded rods for securing an angular position of said at least one of said pair of threaded rods.

5,357,736

LAWN MOWER WITH MEANS FOR SELECTIVELY COLLECTING GRASS AND GRASS PLUS GARDEN DEBRIS, AND METHOD OF USING

W. Roger Thomas, Cleveland, and Craig D. Webster, Jesmond, both of England, assignors to Black & Decker Inc., Newark, Del.

Filed Jun. 26, 1992, Ser. No. 904,790
Claims priority, application United Kingdom, Jun. 29, 1991, 9114130
Int. Cl.[5] A01D *34/70*
U.S. Cl. 56—12.8 9 Claims



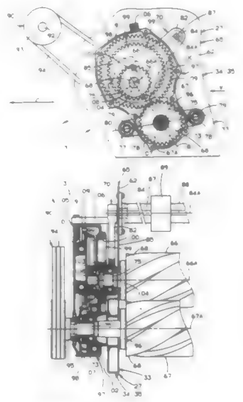
9. A method for using a lawn mower of the type which collects grass cuttings and garden debris to collect, selectively, grass cuttings deposited on the ground and garden debris including leaves lying on the ground, wherein said lawn mower includes a motor-driven blade rotatable about as substantially vertical axis, at least one fan rotatable about said vertical axis to produce an airstream and adjustable means having a member connected to said mower for grass collection in which grass collection is aided by suction from said airstream, comprising the steps of:
selectively adjusting said member of said means for grass collection to one of a first position on said mower in which said means for grass collection collects said grass cut by said mower and deposited on the ground and not said garden debris, and a second position on said mower in which said means for grass collection collects at least said garden debris.

5,357,737

MOWER HAVING A DEVICE FOR DRIVING PROCESSING ROLLERS OF THE MOWER

Rino Ermacora, St Jean Saverne, and Bernard Wattron, Haegen, both of France, assignors to Kuhn S.A., Saverne Cedex, France

Filed Oct. 18, 1993, Ser. No. 136,880
Claims priority, application France, Oct. 16, 1992, 92 12629
Int. Cl.[5] A01D *43/10, 34/76, 69/06, 34/66*
U.S. Cl. 56—16.4 R 25 Claims



1. A mower comprising:
a mowing group equipped with cutting elements and extending crosswise to a direction of work of said mower;
first and second counter-rotating processing rollers having axes of rotation which extend at least approximately parallel to one another for causing a flow of cut product to pass between said first and second processing rollers, each of said first and second processing rollers comprising a drive shaft;
a device for guiding said first and second processing rollers for allowing said first and second processing rollers to adjust to a thickness of the flow of the product to be processed;
drive elements that are used for driving said first processing roller; and
transmission elements which can comprise some of said drive elements, said transmission elements transmitting a rotation movement from said first processing roller to said second processing roller, regardless of a spacing of the first and second processing rollers allowed by the guide device during work;
wherein:
said transmission elements are installed in a housing, said housing comprising a first part and a second part which are hinged to one another by a joint, said joint having a geometric axes which is directed at least approximately parallel to the axes of rotation of the first and second processing rollers; and
each of said first and second parts is mounted to pivot at least approximately around the axis of rotation of a corresponding one of said first and second processing rollers.

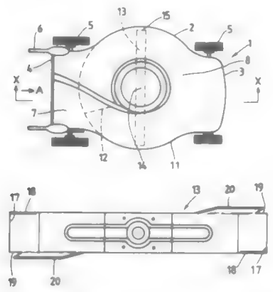
VOL 1167 ISS 4 OC 25 1994 UMI

5,357,738

APPARATUS FOR THE TREATMENT OF LAWNS

Bruce Griffiths, Bloemfontein, South Africa, assignor to Southern Cross Industries (Proprietary) Limited, Bloemfontein, South Africa

Filed Jun. 28, 1993, Ser. No. 83,365
Claims priority, application South Africa, Mar. 25, 1993, 93/2118
Int. Cl.[5] A01D *34/64*
U.S. Cl. 56—17.5 8 Claims



1. Apparatus suitable for treating lawns comprising:
a shallow generally cylindrical housing having an opening bottom and adapted, in use, to have its axis perpendicular to a lawn to be cut;
a blade, mounted within the housing to rotate about an axis co-axial with that of the housing, the blade extending radially from the axis and rotating in a plane near the bottom to the housing; a grass exit chute communicating with the inside of the housing;
a source of rotational power for rotating the blade;
means whereby a user may optionally change the direction of rotation of the blade; and
means for allowing grass cut during use of the apparatus to pass out of the housing into the chute when the blade is rotating in a first direction and causing cut grass to move in said first direction; and to deflect cut grass in the housing away from the chute when the blade is rotating in a second direction and causing the cut grass to move in said second direction and, whereby there is a deflector means within the housing adjacent the chute, the deflector means being positioned to deflect grass cuttings cut by the blade moving in the second direction from entering the chute.

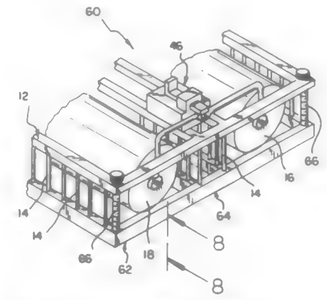
5,357,739

ROLLER RAKE APPARATUS

Leamon L. Nuss, 3845 Main St., Hinsdale, N.Y. 14743

Filed Jul. 9, 1993, Ser. No. 87,579
Int. Cl.[5] A01D *7/00*
U.S. Cl. 56—400.14 4 Claims

1. A roller rake apparatus comprising:
a substantially rectangular frame having a front member, a rear member, a pair of center members, and a pair of side members, said side members being orthogonally connected to respectively opposed ends of both said front member and said rear member, and said center members being orthogonally connected to medial portions of both said front member and said rear member, with said center members being positioned in a parallel, spaced relationship to one another;
a handle having a lower end with a substantially U-shaped member secured to said lower end thereof, said U-shaped member being pivotally coupled to said frame;
a plurality of rake tines projecting orthogonally downward from said frame;
a pair of generally L-shaped first roller support arms pivotally mounted to said frame said first roller support arms each having a distal end positioned medially between said front member and one of said center members;
a pair of generally L-shaped second roller support arms pivotally mounted to said frame, said second roller support arms each having a distal end positioned medially between said rear member and another of said center members;



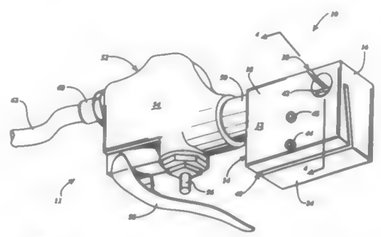
a first cylindrical roller rotatably mounted to said pair of first roller support arms between said distal ends of said first roller support arms;
and,
a second cylindrical roller rotatably mounted to said second roller support arms between said distal ends of said second roller support arms.

5,357,740

AIR SPLICING DEVICE AND METHOD

Darron Moreland, 1009 Foster St., Dalton, Ga. 30721

Continuation of Ser. No. 727,577, Jul. 9, 1991, abandoned. This application May 19, 1993, Ser. No. 64,761
Int. Cl.[5] D01H *15/00*
U.S. Cl. 57—22 4 Claims



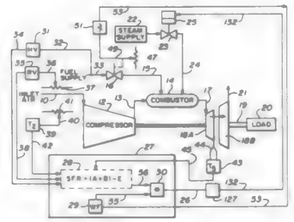
1. A splicing device comprising:
a splicing chamber for receipt of high pressure fluid and for receipt of parallel, and unidirectional oriented lengths of yarn, the splicing chamber having a longitudinal axis joining first and second ends of the chamber, a chamber exterior, and a chamber interior;
one and only one chamber inlet located substantially perpendicular to the chamber longitudinal axis, through which high pressure fluid is introduced into the chamber;
a chamber outlet through which high pressure fluid is discharged from the interior of the chamber, the outlet being substantially perpendicular to the chamber inlet;
means for introducing high pressure fluid into the chamber interior at a single location;
a single yarn receiver to operatively and simultaneously admit the plurality of yarn lengths to the interior of the splicing chamber so that the yarn lengths are oriented within the splicing chamber interior in a unidirectional manner; and
a severing means that extends into the interior of the splicing chamber, whereby as the high pressure fluid is discharged from the chamber, it causes the yarn length fibers to mutually intertwine and form a splice.

5,357,741

NO_x AND CO CONTROL FOR GAS TURBINE

George C. Talabisco, and Gregory P. Holland, both of Olean, N.Y., assignors to Dresser-Rand Company, Corning, N.Y.

Filed May 1, 1992, Ser. No. 877,667
Int. Cl.[5] F02C *3/30*
U.S. Cl. 60—39.05 26 Claims



14. A method for automatically maintaining substantially constant nitrogen oxide and minimizing CO emissions from a gas turbine burning a gaseous or liquid fossil fuel injected into a combustor through at least one fuel input valve comprising the steps of:
determining the actual fuel flow, W_f, injected into the combustor;
providing a steam source;
coupling a steam valve between the steam source and the combustor for providing a predetermined amount of steam, W_s, into the combustor; and
automatically controlling the steam valve to provide a steam flow, W_s, that provides a steam-to-fuel ratio, SFR, that will maintain substantially constant nitrogen oxide and carbon monoxide emissions from the gas turbine according to the formula:

$$W_s = SFR \times W_f$$

where W_s equals steam flow in pounds per hour, W_f equals fuel flow in pounds per hour and SFR equals the steam-to-fuel ratio corrected for variations in relative humidity, ambient temperature, fuel heating value, and turbine firing temperature.

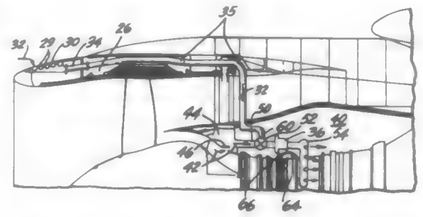
5,357,742

TURBOJET COOLING SYSTEM

Franklin E. Miller, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 31,302, Mar. 12, 1993, abandoned. This application Jan. 12, 1994, Ser. No. 180,396
Int. Cl.[5] F02C *6/18;* F02K *11/00;* B64B *1/24*
U.S. Cl. 60—39.07 6 Claims

1. A cooling system for a turbojet engine, comprising:
nacelle means defining an air inlet leading into said engine, said nacelle means having port means disposed about said inlet for admitting air through said nacelle for promoting laminar flow around said nacelle;
duct means disposed within said nacelle and communicating with said port means;
a core engine disposed within said turbojet engine:
core air inlet means disposed within said nacelle for providing air to said core engine;
bypass means for bypassing air from said core air inlet mean around said core engine;
pump means communicating with said duct means and said bypass mean for drawing cooling air from said duct means said bypass means and directing said air around said core engine; and
valve means communicating with said duct means, said bypass means and said pump means;
said valve means being adapted to regulate airflow from said bypass means and said duct means into said pump means and to permit mixing of said air drawn from said bypass



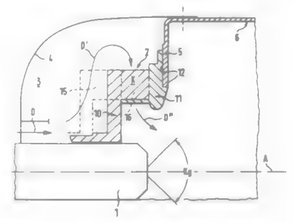
means with said air drawn from said duct means, wherein said valve means permits a reduction in ram air usage and specific fuel consumption of said turbojet engine during selected operating conditions of said turbojet engine relative to an otherwise similar turbojet engine utilizing engine cycle air as the sole source of cooling air directed around a core engine of the otherwise similar turbojet engine.

5,357,743

BURNER FOR GAS TURBINE ENGINES

Nikolaos Zarzalis, Dachau, and Franz Joos, München, both of Fed. Rep. of Germany, assignors to MTU Motoren-Und Turbinen-Union Muenchen GmbH, Fed. Rep. of Germany

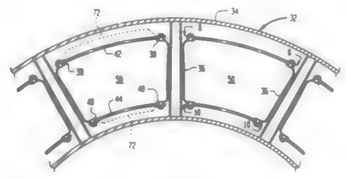
Filed Aug. 25, 1993, Ser. No. 111,481
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1992, 4228817
Int. Cl.[5] F02C *9/20*
U.S. Cl. 60—39.23 20 Claims



1. A burner for gas turbine engines having a fuel nozzle comprising:
a ring-shaped swirling device coaxially arranged with respect to said fuel nozzle and forming flow ducts tangential to an inner circular passage of said ring-shaped swirling device along a circumference of the device between profiled surfaces for an adjustable feeding of combustion air;
wherein said ring-shaped swirling device comprises two annular disks each with profiled surfaces forming said flow ducts by engaging claws, the cross-sections of said flow ducts being controlled by respective axial displacement of at least one of said two annular disks with said engaging claws.

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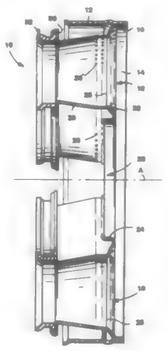
5,357,744
SEGMENTED TURBINE FLOWPATH ASSEMBLY
Robert P. Czachor, Cincinnati, and Christopher C. Glynn, Hamilton, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio
Continuation of Ser. No. 896,021, Jun. 9, 1992, abandoned. This application Jul. 1, 1993, Ser. No. 86,406
Int. Cl.[5] F02C *7/00*
U.S. Cl. 60—39.32 10 Claims



1. A gas turbine annular flowpath assembly located about a longitudinal centerline axis for channeling combustion gases comprising:
an annular outer casing;
a plurality of circumferentially spaced apart, radially extending airfoils each having a radially outer band extending axially and circumferentially therefrom and a radially inner band extending axially and circumferentially therefrom;
a plurality of flowpath radially outer panels, each forming a circumferential segment of said annular flowpath assembly and having a radially outwardly extending member fixedly joined to said outer casing, each outer panel extending circumferentially between and circumferentially overlapping adjacent ones of said outer bands radially thereover;
a plurality of flowpath radially inner panels, each forming a circumferential segment of said annular flowpath assembly and, each inner panel extending circumferentially between and circumferentially overlapping adjacent ones of said inner bands radially thereover;
means for joining together said outer bands and panels, and said inner bands and panels, respectively, at said respective overlaps thereof for restraining radial movement while allowing circumferential movement therebetween; and
said outer and inner panels being disposed in pairs between adjacent ones of said airfoils to define a flow duct therebetween for channeling said combustion gases, said flow duct being supported and suspended from said outer casing by said outer panel.

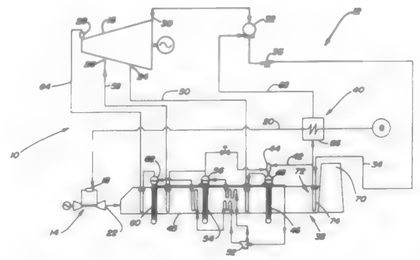
5,357,745
COMBUSTOR CAP ASSEMBLY FOR A COMBUSTOR CASING OF A GAS TURBINE
George W. Probert, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Continuation of Ser. No. 859,005, Mar. 30, 1992, abandoned. This application Mar. 15, 1994, Ser. No. 214,053
Int. Cl.[5] F23R *3/46*
U.S. Cl. 60—39.37 7 Claims

1. A combustor cap assembly comprising:
an outer sleeve;
an impingement cooling plate fixed within and to a forward end of the outer sleeve, the impingement cooling plate formed with a plurality of primary fuel nozzle openings arranged in a circular array about a center axis of the assembly, a single centrally located secondary fuel nozzle opening, and a plurality of cooling apertures smaller than said primary and secondary nozzle openings and adapted to permit combustion air to flow therethrough and thereby cool said impingement cooling plate;
a plurality of open-ended, tubular nozzle cups fixed to the impingement plate in alignment with corresponding ones of said primary fuel nozzle openings; and a plurality of



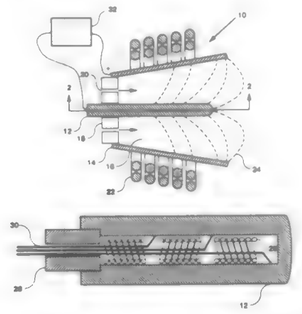
annular nozzle collars fixed to respective rearward ends of said tubular nozzle cups.

5,357,746
SYSTEM FOR RECOVERING WASTE HEAT
Gerald A. Myers, Longwood, and Peter S. Lee, Oviedo, both of Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 22, 1993, Ser. No. 168,490
Int. Cl.[5] F02C *6/18, 7/224*
U.S. Cl. 60—39.182 13 Claims



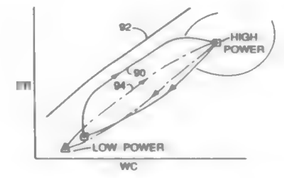
1. A combined cycle power plant, comprising:
a combustion-type turbine having a fuel inlet and an outlet for emitting hot gases that are combustion products;
a fuel line communicated with said inlet of said combustion-type turbine;
a steam-type turbine having a steam inlet and a steam outlet;
a condenser in communication with said steam outlet for condensing spent steam from said steam type turbine into a liquid condensate;
a deaerator;
a pump for supplying condensate from said condenser to said deaerator;
at least one heat exchanger for heating deaerated condensate from said deaerator with said hot gases;
a heat recovery device for preheating said condensate before said condensate enters said deaerator; and
a fuel-condensate heat exchanger for transferring heat from said preheated condensate to fuel that is contained in said fuel line.

5,357,747
PULSED MODE CATHODE
Roger M. Myers, N. Ridgeville, and Vincent K. Rawlin, Wellington, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Jun. 25, 1993, Ser. No. 81,893
Int. Cl.[5] H01J *1/14, 1/15;* H05B *31/26*
U.S. Cl. 60—203.1 14 Claims



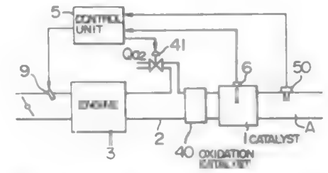
1. A magnetoplasmadynamic thruster having a substantially cylindrical anode forming a chamber, means for supplying a propellant to said chamber, means for providing a magnetic field in said chamber, and an improved cathode assembly having a predetermined operating temperature mounted within said chamber coaxially with said anode, said cathode assembly comprising
an elongated hollow metal cylinder having a closed end,
means within said hollow metal cylinder for heating said cathode to said predetermined operating temperature, and
a pulse forming network operatively connected to said anode and heated cathode for operating said thruster in a pulsed mode.

5,357,748
COMPRESSOR VANE CONTROL FOR GAS TURBINE ENGINES
Syed J. Khalid, Palm Beach, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Nov. 9, 1992, Ser. No. 973,440
Int. Cl.[5] F02C *9/20*
U.S. Cl. 60—204 3 Claims



1. A method for thrust variation with reduced compressor RPM excursion in a gas turbine engine having in downstream order, a fan, pivoting compressor vanes and compressor rotor blades, which engine is operated during a deceleration and during a follow-on acceleration comprising:
a) comparing compressor corrected RPM, $N2/\sqrt{T}$ Engine Inlet, with the value given by a transient schedule for a given Aj on a plot of said $N2/\sqrt{T}$ Engine Inlet, against corrected fan RPM, $N1/\sqrt{T}$ Engine Inlet,
b) noting any deviation between $N2/\sqrt{T}$ Engine Inlet and said value,
c) pivoting said vanes to correct said deviation and
d) repeating such steps as guided by said schedule, in a closed loop fashion responsive to compressor corrected RPM, so as to vary fuel demand and engine thrust while maintaining a relatively high compressor corrected RPM scheduled as a function of fan corrected RPM.

5,357,749
APPARATUS FOR CONTROLLING EXHAUST CONCENTRATION
Minoru Ohsuga, Katsuta; Toshimichi Minowa, Ibaraki; Nobuo Kurihara, Hitachiota, and Yoshishige Ohyama, Katsuta, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan
Filed May 14, 1992, Ser. No. 883,200
Claims priority, application Japan, May 14, 1991, 3-107951
Int. Cl.[5] F01N *3/20*
U.S. Cl. 60—274 25 Claims



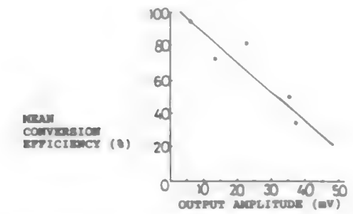
1. A method of controlling the efficiency of reducing NOx in an exhaust gas issued from an internal combustion engine, by a NOx reducing catalyst disposed in an exhaust system of the internal combustion engine, through which the exhaust gas of oxidizing atmosphere passes, comprising:
controlling an air-fuel mixture, supplied to the internal combustion engine, at a level leaner than a theoretical air-fuel ratio, but not leaner than a lean combustion limit; and
controlling the concentration of HC in the exhaust gas flowing into the NOx reducing catalyst so that a concentration ratio NOx/HC in the exhaust gas flowing into the NOx reducing catalyst falls within a range where the concentration of the HC is greater than that of the NOx.

5,357,750
METHOD FOR DETECTING DETERIORATION OF CATALYST AND MEASURING CONVERSION EFFICIENCY THEREOF WITH AN AIR/FUEL RATIO SENSOR
Yasuo Ito, Nagoya; Nobuhiro Hayakawa, Chita, and Tessho Yamada, Nagoya, all of Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan
Continuation-in-part of Ser. No. 684,077, Apr. 12, 1991, abandoned. This application Jan. 6, 1993, Ser. No. 1,225
Claims priority, application Japan, Apr. 12, 1990, 2-96935
Int. Cl.[5] F01N *3/20*
U.S. Cl. 60—274 9 Claims

1. A method for measuring the conversion rate of a catalyst which converts harmful and toxic components of exhaust gas of an internal combustion engine, the method being able to measure the conversion rate of component gases, NO_x, CO and HC, of the exhaust gas, the method comprising the steps of:
(a) providing an oxygen sensor on the upstream side of said catalyst and an air/fuel ratio sensor on a downstream side of the catalyst;
(b) measuring the output amplitude of the air/fuel ratio sensor; and
(c) comparing a predetermined said mean conversion rate of HC, CO, and NO_x with the output amplitude of said

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air/fuel ratio sensor to determine a mean conversion rate of the catalyst for NO_x when said oxygen sensor determines that the exhaust gas is lean and for HC or CO when said oxygen sensor determines that the exhaust gas is rich.

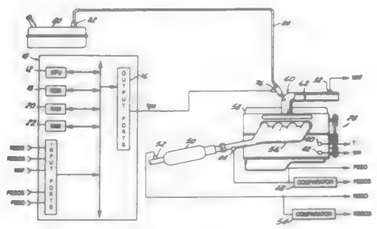


5,357,751

AIR/FUEL CONTROL SYSTEM PROVIDING CATALYTIC MONITORING

Daniel V. Orzel, Westland, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 8, 1993, Ser. No. 43,713
Int. Cl.[5] F01N 3/20
U.S. Cl. 60—274 10 Claims



1. A method for indicating efficiency of a catalytic converter positioned in the engine exhaust, comprising the steps of:

providing a converter test cycle by determining when the engine has completed operation within each of a plurality of inducted airflow ranges for at least a minimum duration in each of said airflow ranges;

generating each of said minimum durations by determining when a preselected number of transitions from a first state to a second state has occurred in an exhaust gas oxygen sensor positioned upstream of the converter while the engine is operating in one of said airflow ranges; and

indicating degraded converter efficiency during said test cycle by calculating a ratio between said transitions in said upstream exhaust gas oxygen sensor to transitions in a downstream exhaust gas oxygen sensor positioned downstream of the converter.

5,357,752

CONTROL OF SECONDARY AIR TO AN ELECTRICALLY HEATED CATALYST USING FEEDBACK CONTROL

Robert P. Lucchesi, North Brunswick, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Aug. 17, 1993, Ser. No. 108,205
Int. Cl.[5] F01N 3/20
U.S. Cl. 60—274 7 Claims

1. An internal combustion engine hydrocarbon, CO, and NO_x emissions control system comprising:

(a) an internal combustion engine;

(b) an engine exhaust manifold/pipe attached to and in gaseous communication with said internal combustion engine for directing exhaust gases produced by said engine away from said engine;

(c) an electrically heated catalytic converter for controlling engine hydrocarbon and CO emissions during engine start-up/warm-up or engine hot start cycle in gaseous communication with said internal combustion engine by means of the exhaust manifold/pipe which introduces engine exhaust gases into said electrically heated catalytic converter;

(d) a pipe extending from said electrically heated catalytic converter for directing exhaust gases treated in said electrically heated catalytic converter away from said converter;

(e) a heated oxygen sensor in gaseous communication with the exhaust gases in the pipe extending from said electrically heated catalytic converter, said heated oxygen sensor measuring the oxygen or air/fuel ratio in the exhaust gases exiting the electrically heated catalytic converter and producing a signal voltage of between zero and one volt in response to said oxygen content or air/fuel ratio;

(f) a controller means in electrical communication with the heated oxygen sensor;

(g) a supplementary air pump in electrical communication with and under the control of the controller means and in gaseous communication with the engine exhaust manifold/pipe wherein said controller means is adjusted to turn on the supplementary air pump when the signal voltage received by said controller means from said heated oxygen sensor is at least about 0.25 volt;

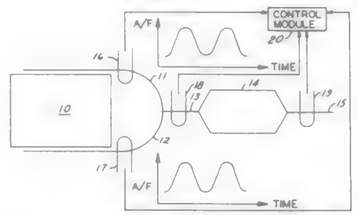
(h) a catalytic converter attached to the pipe extending from the electrically heated catalytic converter for catalytically treating the exhaust gases from the electrically heated catalytic converter.

5,357,753

CATALYST MONITOR FOR A Y PIPE EXHAUST CONFIGURATION

Wallace R. Wade, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 16, 1993, Ser. No. 167,303
Int. Cl.[5] F02B 3/00
U.S. Cl. 60—274 7 Claims



1. A method of monitoring a catalyst processing the exhaust gas from an internal combustion engine having two exhaust gas banks wherein the exhaust gas passes from each side of the internal combustion engine through a Y-shaped exhaust path to the catalyst wherein two legs of the Y exhaust path are coupled as the banks of the engine and a trunk of the Y exhaust path is coupled to the catalyst and a first exhaust gas oxygen sensor is located upstream of the catalyst in the trunk of the Y exhaust path and a second exhaust gas oxygen sensor is located downstream of the catalyst, the first and second exhaust gas oxygen sensors acting together to perform a catalyst monitoring function, including the steps of:

sensing the switching rate of the first upstream exhaust gas oxygen sensor;

disabling the catalyst monitoring function when exhaust gas oxygen sensor switching of the first upstream exhaust gas oxygen sensor is below a minimum threshold value;

recording the number of exhaust gas oxygen sensor switches for the first upstream and second downstream sensors for a specified mass air flow condition when the first upstream exhaust gas oxygen sensor is switching above the minimum threshold value;

determining a ratio indicating catalyst hydrocarbon processing efficiency by dividing the number of second downstream exhaust gas oxygen sensor switches by the number of first upstream exhaust gas oxygen switches after a specified number of first upstream exhaust gas oxygen switches have been recorded; and

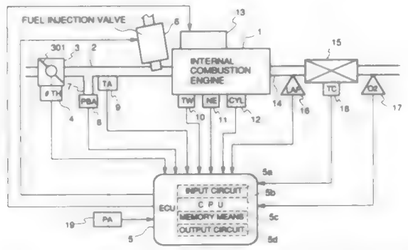
indicating a fault when the exhaust gas oxygen switch ratio exceed a specified value.

5,357,754

CATALYST DETERIORATION-DETECTING DEVICE FOR INTERNAL COMBUSTION ENGINES

Ken Ogawa; Atsushi Kato, and Yoshikazu Oshima, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 17, 1993, Ser. No. 122,362
Claims priority, application Japan, Sep. 18, 1992, 4-275405
Int. Cl.[5] F02D 41/14
U.S. Cl. 60—276 9 Claims



1. A catalyst deterioration-detecting device for an internal combustion engine having an exhaust passage, at least one catalyst means arranged in said exhaust passage for purifying exhaust gases emitted from said engine, a first exhaust component concentration sensor arranged in said exhaust passage upstream of said catalyst means, for detecting concentration of a specific component in said exhaust gases, a second exhaust component concentration sensor arranged in said exhaust passage downstream of said catalyst means, for detecting concentration of said specific component, operating condition-detecting means for detecting operating conditions of said engine, desired air-fuel ratio-calculating means for calculating a desired air-fuel ratio of a mixture supplied to said engine in response to operating conditions of said engine detected by said operating condition-detecting means, correction means for correcting said desired air-fuel ratio based on an output value from said second exhaust component concentration sensor, and control means for feedback-controlling an air-fuel ratio of a mixture supplied to said engine to the corrected desired air-fuel ratio in response to said concentration of said specific component detected by said first exhaust component concentration sensor,

the catalyst deterioration-detecting device comprising:

average value-calculating means for calculating an average value of said output value from said second exhaust component concentration sensor;

fluctuation width-calculating means for calculating an output fluctuation width with respect to said average value, based on said output value from said second exhaust component concentration sensor; and

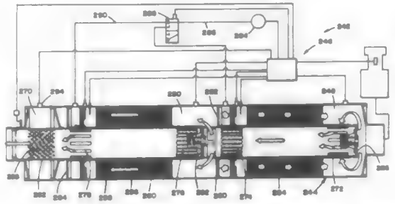
deterioration-determining means for determining whether said catalyst means is deteriorated, based on said average value calculated by said average value-calculating means and said output fluctuation width calculated by said fluctuation width-calculating means.

5,357,755

TRAP APPARATUS WITH BYPASS

Gary R. Gillingham, Prior Lake; Marty A. Barris, Lakeville; Charles O. Reinhart, Minneapolis; Julian A. Imes, Jr., Bloomington; Erland D. Anderson, Farmington, and Peter A. Betts, Prior Lake, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 589,050, Sep. 27, 1990, Pat. No. 5,212,948. This application Mar. 23, 1993, Ser. No. 36,044
Int. Cl.[5] F01N 3/02
U.S. Cl. 60—288 11 Claims



1. Apparatus for processing exhaust gases from an engine, said apparatus comprising:

(a) a housing with inlet means, outlet means, and first and second fluid flow paths with respect to said inlet means upstream and said outlet means downstream;

(b) an acoustic element within said housing for attenuating a sound of exhaust gases along said first and second fluid flow paths;

(c) means, within said housing, for filtering particulates from the exhaust gas along said first fluid flow path; said means for filtering comprising a ceramic filter element;

(d) means, forming a section of said second fluid flow path, for bypassing a portion of said means for filtering to direct exhaust gases from said first fluid flow path to said second fluid flow path;

(i) said means for bypassing including an upstream valve relative to said ceramic filter element and a downstream valve relative to said ceramic filter element; said upstream and downstream valves being in said housing and each being a part of one of said inlet means and said outlet means; said upstream valve being open When said downstream valve is closed, and vice versa;

(ii) said upstream valve and said downstream valve comprising tubular shutter valves; and,

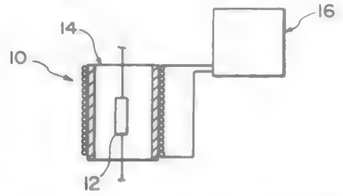
(iii) said means for bypassing further including a disk shutter valve between said upstream valve and said ceramic filter element;

(e) means for regenerating said means for filtering; and,

(g) means for controlling said regenerating means and said bypassing means.

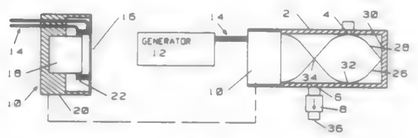
VOL 1167 ISS 4 OC 25 1994 UMI

5,357,756
BIPOLAR PULSE FIELD FOR MAGNETIC REFRIGERATION
Martin S. Lubell, Oak Ridge, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.
Filed Sep. 23, 1993, Ser. No. 125,277
Int. Cl.[5] F25B *21/00*
U.S. Cl. 62—3.1 18 Claims



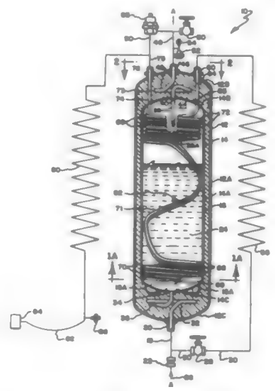
1. A field source for a magnetic refrigeration apparatus, comprising:
first means for generating a steady state magnetic field of predetermined flux density;
a first body of magnetocaloric material disposed within the influence of the magnetic field of the first means;
second means for generating a steady state magnetic field of opposite polarity and substantially the same predetermined flux density as the first means;
a second body of magnetocaloric material disposed within the influence of the magnetic field of the second means; and
third means for generating an alternating magnetic field cycling between substantially the same flux density as the first and second means,
the first and second means being in the influence of the third means to thereby magnetically charge and discharge the first and second bodies of magnetocaloric material.

5,357,757
COMPRESSION-EVAPORATION COOLING SYSTEM HAVING STANDING WAVE COMPRESSOR
Timothy S. Lucas, Glen Allen, Va., assignor to Macrosonix Corp., Glen Allen, Va.
Continuation of Ser. No. 943,534, Sep. 11, 1992, abandoned, which is a continuation of Ser. No. 665,316, Mar. 6, 1991, Pat. No. 5,167,124, which is a division of Ser. No. 380,719, Jul. 12, 1989, Pat. No. 5,020,977, which is a continuation-in-part of Ser. No. 256,322, Oct. 11, 1988, abandoned. This application Oct. 26, 1993, Ser. No. 141,697
Int. Cl.[5] F25B *9/00*
U.S. Cl. 62—6 3 Claims



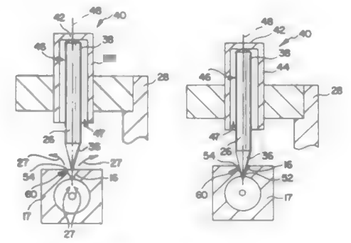
1. A method of compressing a fluid compression-evaporation refrigerant comprising the steps of:
introducing a fluid compression-evaporation refrigerant to be compressed into a chamber having at least one inlet and at least one outlet; and
establishing a standing wave in the fluid compression-evaporation refrigerant in the chamber, so that the fluid refrigerant is compressed.

5,357,758
ALL POSITION CRYOGENIC LIQUEFIED-GAS CONTAINER
Martin D. Andonian, 25 Fairbank Rd., Lexington, Mass. 02173
Filed Jun. 1, 1993, Ser. No. 69,444
Int. Cl.[5] F17C *9/02*
U.S. Cl. 62—45.1 36 Claims



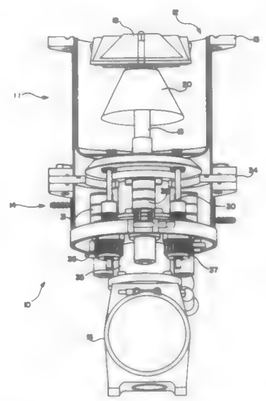
1. An apparatus that is useful for holding a cryogenic fluid comprising a liquefied-gas and a gas, and that provides for conducting heat energy to the liquefied-gas and the gas independent of the direction of the gravitational field and the spatial orientation of the apparatus to produce a breathable gas from the cryogenic fluid, which comprises:
(a) inner container means provided to hold the cryogenic fluid;
(b) insulation means housing the inner container means in a surrounding relationship to retard ambient heat conduction and radiation to the liquefied-gas and the gas comprising the cryogenic fluid held in the inner container means;
(c) first heat energy conduction means mounted outside the inner container means and in fluid flow communication with the inside of the inner container means, wherein the liquefied-gas and the gas comprising the cryogenic fluid held in the inner container means are movable through the first heat energy conduction means to conduct heat energy to the cryogenic fluid and provide a raised energy fluid;
(d) second heat energy conduction means mounted inside the inner container means and at least partially immersed in the liquefied-gas independent of the spatial orientation of the apparatus, wherein the raised-energy fluid from the first heat energy conduction means is movable through the second heat energy conduction means to conduct heat energy from the raised-energy fluid to the liquefied-gas still held in the inner container means; and
(e) third heat energy conduction means mounted outside the inner container means and connectable for fluid flow communication with the raised-energy fluid movable through the second heat energy conduction means and for fluid flow communication with the liquefied-gas and the gas comprising the cryogenic fluid held inside the inner container means, wherein the third heat energy conduction means provides for conducting heat energy to the raised-energy fluid moved through the second heat energy conduction means and to the cryogenic fluid moved directly from the inner container means to the third heat energy conduction means to provide the breathable gas.

5,357,759
FLUID FLOW REGULATOR
Shmuel Segev, Haifa; Ofer Glinka, Kiryat-Motzkin, and Amos Arbel, Nofit, all of Israel, assignors to State of Israel - Ministry of Defence, Israel
Filed Aug. 10, 1993, Ser. No. 105,021
Claims priority, application Israel, Aug. 25, 1992, 102933
Int. Cl.[5] F25B *19/00*
U.S. Cl. 62—51.2 13 Claims



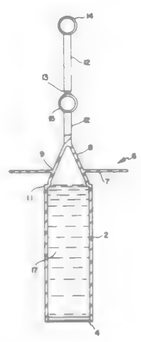
8. A cryocooler which comprises:
a conduit for receiving a pressurized cooling fluid and defining a fluid outlet port, and
means for regulating the rate of fluid escape from said conduit via said outlet port, which includes:
a needle arranged for variable positioning relative to said outlet port, and
a temperature responsive needle positioning means for positioning said needle relative to said port as a function of temperature, being characterized that said needle is floatingly mounted relative to said needle positioning means.

5,357,760
HYBRID CRYOGENIC VACUUM PUMP APPARATUS AND METHOD OF OPERATION
Graham J. Higham, Danville, Calif., assignor to Ebara Technologies Inc., Santa Clara, Calif.
Filed Jul. 22, 1993, Ser. No. 95,956
Int. Cl.[5] B01D *8/00*
U.S. Cl. 62—55.5 17 Claims



1. Apparatus for vacuum pumping an enclosed chamber to remove hydrogen and other gases from the chamber, said apparatus comprising:
a first pumping device in fluid communication with said enclosed chamber, said first pumping device having cryosurfaces mounted therein for cryocondensation and cryotrapping of the principal gases present in said enclosed chamber, said cryosurfaces being free of any sorbent material;
a second pumping device in fluid communication with said first pumping device and including at least one getter pump for removing by chemical sorption the active gases not removed from said enclosed chamber by said first pumping device; and,
a unitary housing enclosing in a single body said first pumping stage and said second pumping stage.

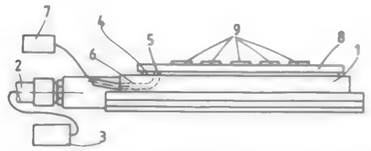
5,357,761
UNIVERSAL THERMAL INSERT FOR BEVERAGE CONTAINERS
Curtis S. Schauer, 49 Rock Harbor W., Foster City, Calif. 94404
Filed Oct. 1, 1993, Ser. No. 130,363
Int. Cl.[5] F25D *3/00*
U.S. Cl. 62—56 6 Claims



5. The method of chilling or retaining chilled, a body of liquid contained In a container having a selectively closable opening, a bottom wall and side wall defining the hollow interior of the container, comprising the steps of:
a. arranging the empty container to enable access to the closable opening;
b. Inserting through said closable opening a tube within which is enclosed a body of frozen or chilled refrigerant material, said tube enclosing said body of frozen or chilled refrigerant material being provided with a plurality of symmetrically disposed flexible, resilient, radially extending flexible resilient stabilizing fin assemblies;
c. arranging said tube after insertion into said empty container so that said plurality of radially extending flexible resilient fins impinge resiliently against the side walls of said container;
d. filling said container through sold opening with a liquid to be chilled or maintained chilled;
e. thereafter closing said opening In said container to retain the liquid to be chilled or maintained chilled within the container, sold liquid able to flow freely around said inserted tube and through the opening of said container.

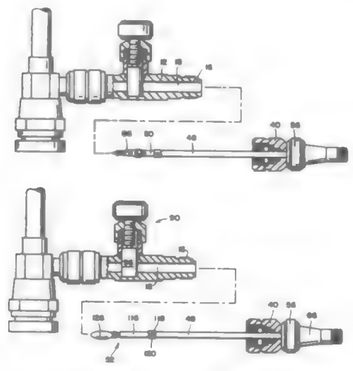
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5,357,762
METHOD FOR FIXING PIECES BY FREEZING, AND DEVICE FOR IMPLEMENTING THE METHOD
Henri Charton, Le Brassus, Switzerland, assignor to Societe Anonyme De La Manufacture D'Horlogerie Audemars, Piquet & Cie, Le Brassus, Switzerland
Filed Jun. 28, 1993, Ser. No. 83,450
Claims priority, application Switzerland, Jul. 2, 1992, 2093/92
Int. Cl.[5] B23Q *3/08*; F25D *19/00*
U.S. Cl. 62—64 8 Claims



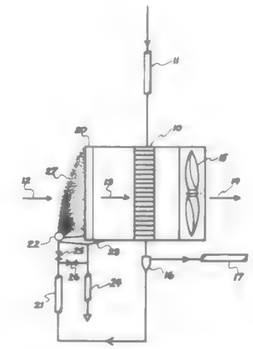
1. A method for fixing at least one piece onto a support by freezing for the purpose of machining said piece, wherein a main support is cooled to below the freezing temperature of a first freezing liquid, wherein a thermally conducting auxiliary support is fixed to the main support, a film of antifreeze liquid having previously been laid down between the main support and a first face of the auxiliary support in contact with the main support, wherein at least a part of a second face of said auxiliary support being in contact with said piece is wetted with said first freezing liquid and wherein said piece is fixed by freezing onto the auxiliary support by cooling the main support by a temperature below the freezing temperature of said first freezing liquid and above the freezing temperature of said antifreeze liquid.

5,357,763
PUMP DOWN TOOL WITH INFLATABLE VALVE MEMBER
Joseph Vogel, Box 59, Lake Rd., Delanson, N.Y. 12053
Filed Mar. 18, 1994, Ser. No. 210,680
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—77 13 Claims



1. In a refrigeration system including a liquid line, an evaporator, a suction line, a compressor, a condenser and a supply of refrigerant, wherein said refrigerant is sequentially cycled through the liquid line, evaporator, suction line and condenser by said compressor, a method for evacuating the refrigerant contained within the liquid line, evaporator and suction line of said refrigeration system and for capturing the evacuated refrigerant within said condenser, comprising the steps of:
inserting an inflatable member into said liquid line;
blocking said liquid line by inflating said inflatable member; and
evacuating the refrigerant contained within the liquid line, evaporator and suction line of said refrigeration system by actuating said compressor, said evacuated refrigerant being captured within the condenser of said refrigeration system, said inflatable member preventing the evacuated refrigerant from reentering said liquid line.

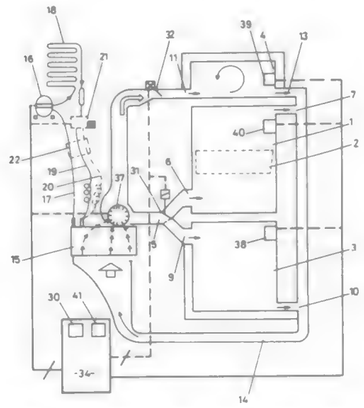
5,357,764
CONDENSATE EVAPORATOR
Daniel H. Dickman, Racine, Wis., assignor to Dickman & Dickman, Inc., Racine, Wis.
Filed Oct. 27, 1992, Ser. No. 967,035
Int. Cl.[5] F25D *7/00*; F25B *9/00*
U.S. Cl. 62—93 5 Claims



1. In a compressed gas cooling system, wherein vapor-laden compressed gas is cooled by a stream of uncompressed gas and wherein liquid condensed by such cooling is removed from the compressed gas stream, the method of precooling said uncompressed gas which consists of discharging said condensate to an gas permeable element and passing said uncompressed gas past said element.

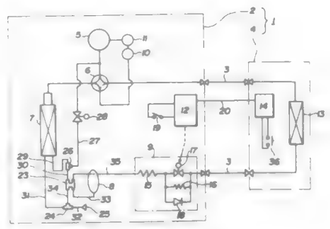
5,357,765
COOLING DEVICE
David A. Thomas, and McGill: Ian C. McGill, both of Auckland, New Zealand, assignors to Fisher & Paykel Limited, Auckland, New Zealand
Continuation-in-part of Ser. No. 976,212, Nov. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 784,505, Oct. 31, 1991, Pat. No. 5,209,073. This application Aug. 24, 1993, Ser. No. 111,001
Claims priority, application New Zealand, Nov. 1, 1990, 235931
Int. Cl.[5] F25D *17/00*
U.S. Cl. 62—187 13 Claims

1. A cooling device comprising two groups of chambers, to be maintained substantially at selected but different temperatures, a first group of chambers comprising a freezer group and a second group of chambers comprising a refrigeration group arranged to be operated at a higher temperature than said freezer group, each group comprising at least one chamber, temperature sensing means arranged to cyclically sense temperature levels in each said group of chambers at substantially predetermined intervals, temperature data storage means adapted to receive and store sensed temperature data and to establish a temperature history for at least one chamber in at least one said group, a refrigeration plant including a compressor, evaporator, and a condenser, a common air How passageway passing across said evaporator, separate air flow passageways from and to said common air flow passageway for each of said two groups of chambers, said separate air flow passageways each being fed by said common air flow passageway, valve means controlling air flow in each said separate air flow passageway, air flow control means which determine whether each said valve means is to allow, prevent or merely restrict the air flow in a selected said separate air flow passageway, temperature selection means to select a temperature at which said evaporator is to run or at least tend towards, air pressure means to cause air movement in said air flow passageways as controlled by said valve means to effect cyclical cooling of said groups of chambers and controlling said valve means, said air pressure means and said compressor to effect cooling of said groups of chambers and logic sequencing means responsive to data from said temperature data storage means and arranged to pass signals to said cycle control means to control the sequence of actuation of said air pressure means, said valve means and said compressor in accordance with said data obtained from said temperature data storage means and said programmed



instructions in a sequence such that cooling of said freezer group is effected by causing air to flow through said freezer group but not said refrigeration group and over said evaporator with said compressor being energized or not depending on the sensed temperature data in said temperature data storage means from said freezer group, and, provided the sensed temperature in said freezer group has substantially reached a predetermined low temperature to said cycle control means and an appropriate signal has been given by said logic sequencing means indicating that cooling is required in said refrigeration group, said cycle control means causes air to flow through said refrigeration group but not through said freezer group and over said evaporator with said compressor being energized or not depending on the sensed temperature data in said temperature data storage means from said refrigeration group, both said air pressure means and said compressor being de-energized by said cycle control means when the sensed temperature in said refrigeration group is at or near a predetermined low temperature, selected ones of the above sequences being then cyclically followed according to signals received by said cycle control means from said logic sequencing means as a result of cyclically sensing the temperatures of said freezer and refrigeration groups of chambers.

5,357,766
AIR CONDITIONER
Akira Shiraishi, Chiyoda; Hiroshi Yatogo; Toshio Takashima, both of Ohizumi, and Kazuo Mori, Ohta, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Apr. 20, 1993, Ser. No. 49,074
Claims priority, application Japan, Apr. 27, 1992, 4-107709
Int. Cl.[5] F25B *41/00*
U.S. Cl. 62—197 11 Claims



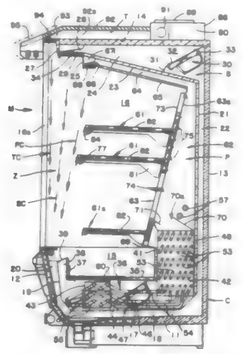
1. An air conditioner comprising:
a refrigeration compressor, an external heat exchanger, an expansion device including first and second expansion means, and an internal heat exchanger to effect a refrigeration cycle, and a valve to direct the flow of refrigerant for heating and cooling operations,
means for separately mounting said external and internal heat exchangers in respective external and internal units which are to be at spaced locations,
means for connecting said compressor, valve, external and internal heat exchangers and expansion device to perform a refrigerant cycle, including refrigerant piping of some length for connecting said separated external and internal heat exchangers,
said first expansion means of said expansion device maintaining a high-low pressure of the refrigeration cycle at a desired state when the length of said refrigerant piping is below a predetermined length and said second expansion means maintaining the high-low pressure at the desired state when said refrigerant piping is longer than said predetermined length, and
control means for selectively activating one or both of said first and second expansion means according to the length of the said refrigerant piping and the state of the heating or cooling operation of the air conditioner for changing the volume of expansion produced by said expansion device to adjust the high-low pressure of the refrigeration cycle.

5,357,767
LOW TEMPERATURE DISPLAY MERCHANDISER
Harold L. Roberts, St. Peters, Mo., assignor to Hussmann Corporation, Bridgeton, Mo.
Continuation-in-part of Ser. No. 60,154, May 7, 1993. This application Nov. 22, 1993, Ser. No. 155,190
Int. Cl.[5] A47F *3/04*
U.S. Cl. 62—256 26 Claims

26. A refrigerated food merchandiser having a cabinet with an open front product display area having a plurality of vertically adjustable shelves therein, a primary cold air recycling system constructed and arranged for maintaining substantially constant food product temperatures of about 0° F. or lower in the product area, said primary air system including a primary air passage through the cabinet having a primary air discharge at the upper front of the display area and a primary air return at the lower front of the display area and including the formation of a first primary air curtain downwardly across the open front of the display area between said primary discharge and return openings, said shelves being constructed and arranged with air channeling duct means in communication with the primary air passage to receive refrigerated air therefrom and to

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form a plurality of other successive primary low temperature air curtains discharged downwardly across discrete display area sections of the open front and on the inward side of the first primary air curtain to the primary return opening, the primary air system having primary air moving means for circulating the primary air in a first refrigerating direction through the primary air passage in the cabinet and the shelf duct means to form said primary air curtains across the open front and to said primary return opening for recycling and discharging primary evaporator means constructed and arranged to cool such primary air in said primary air passage to maintain a predetermined coil exit air temperature of said primary air for providing the substantially constant product temperature in said display area, a secondary non-refrigerated air recycling system having a closed air passage through the cabinet with a secondary air discharge adjacent to the primary air discharge



and a secondary air return adjacent to said primary air return, including secondary air moving means for circulating secondary air through said secondary passage and forming a downwardly discharged secondary air curtain across the open front of the cabinet on the outward side of the primary air curtains to said secondary air return, and defrost means associated with said primary air system and constructed and arranged for periodically defrosting said primary evaporator means thereof including means for reversing said primary air moving means for circulating heated primary defrost air in a second reverse air flow defrosting direction through and in heat exchange relation with said evaporator means and thence outwardly through the primary return opening while maintaining the normal operation of said secondary air system including air flow into the adjacent secondary air return to thereby induce the flow of primary defrost air into the secondary air return during defrosting operations.

5,357,768

REFRIGERANT RECLAIM METHOD AND APPARATUS

Leon R. Van Steenburgh, Jr., 1900 S. Quince St., Unit G, Denver, Colo. 80231

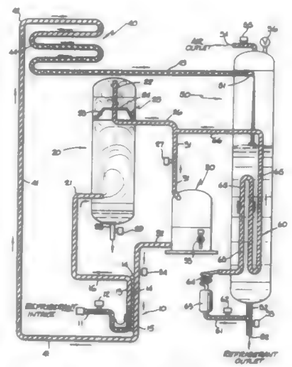
Continuation of Ser. No. 332,235, Mar. 31, 1989, Pat. No. 5,195,333, which is a continuation of Ser. No. 109,958, Oct. 19, 1987, abandoned. This application Feb. 1, 1993, Ser. No. 15,168
The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—292 10 Claims

4. A refrigerant recovery and purification system comprising:

a compressor;

means for connecting said compressor to a container from which a refrigerant is to be recovered;

refrigerant holding means in fluid communication with said compressor; and



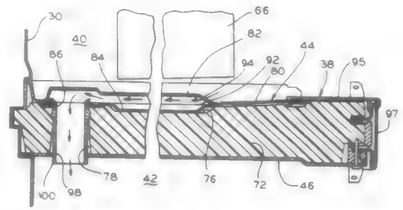
means for selectively circulating substantially all of said refrigerant in a closed path from said refrigerant holding means through said compressor and back to said refrigerant holding means.

5,357,769

BOTTOM MOUNT REFRIGERATOR AIR RETURN SYSTEM

John Crabtree, and Daryl L. Harmon, both of Evansville, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 10, 1993, Ser. No. 58,827
Int. Cl.[5] F25D *11/02*
U.S. Cl. 62—441 14 Claims



1. In a refrigeration apparatus including a cabinet defining a fresh food compartment above a freezer compartment separated by an insulated separator, means for providing refrigerated air to said freezer compartment, and air flow control means for selectively directing a portion of said refrigerated air to said fresh food compartment, an improved air return system comprising:

a separator top operatively associated with said separator in the fresh food compartment and including return means defining an air flow path for channeling return air flow, said return means including an inlet proximate a front of the separator and an outlet proximate a rear of the separator; and

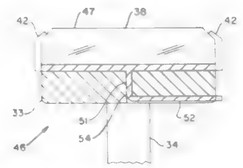
an air flow passage through said separator in communication with said outlet for returning refrigerated air to said freezer compartment.

5,357,770

JEWELRY WITH INTERCHANGEABLE ORNAMENTAL MEMBERS

Carolyn H. Lanyi, 3299 Bloomfield Park Dr., West Bloomfield, Mich. 48323

Continuation of Ser. No. 866,842, Apr. 10, 1992, abandoned.
This application Jun. 18, 1993, Ser. No. 79,211
Int. Cl.[5] A44C *17/02*
U.S. Cl. 63—29.1 14 Claims



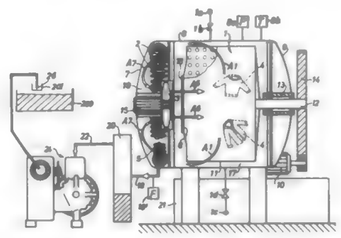
1. An article of jewelry with a detachable ornamental member comprising: a setting which is adapted to be worn by a person, said setting having an aperture for receiving an ornamental member; the ornamental member detachably mounted on said setting, said ornamental member comprising a base, a gemstone mounted on said base, said base having a slender rectangular locating portion which is formed from the same piece as said base engaging said aperture for positioning said ornamental member on said setting, and a single locking portion attached to said locating portion and extending out of said aperture for retaining said ornamental member on said setting, said single locking portion being rotatable from a position which is aligned with said aperture for mounting and removing said ornamental member from said setting and being rotatable to a locking position which is non-aligned with said aperture.

5,357,771

DRY-CLEANING APPARATUS PERMITTING USE OF IGNITABLE OR POTENTIALLY EXPLOSIVE SOLVENTS

Ulrich Schaal, Konstanz, Fed. Rep. of Germany, assignor to Rewatec AG, Zuckenried, Switzerland

Division of Ser. No. 917,830, Jul. 21, 1992, Pat. No. 5,301,379.
This application Oct. 28, 1993, Ser. No. 144,540
Claims priority, application Switzerland, Aug. 8, 1991, 02346/91
Int. Cl.[5] D06F *43/02, 43/08*
U.S. Cl. 68—18 C 8 Claims



1. A dry-cleaning machine for dry-cleaning of goods, optionally textile goods, with a solvent which is combustible and potentially explosive,

said machine having

a perforated rotatable drum (1) and motor means (10, 12, 14) coupled to the drum for rotating the drum, said drum receiving the goods (4) to be cleaned;

a tubular housing (8) surrounding the drum;

means for introducing solvent into the perforated drum (1) whereby the goods in the drum will be contacted by the solvent;

a closure door (7) at an axial end of the drum; and

wherein

the door (7) is outwardly bulged to form an internally concave reception space (19) in fluid communication with the drum;

a ventilator (3) is provided located in said reception space;

heat exchange means (2,5) are provided, located in said reception space;

a fluid circulation duct means (16,17) for circulating solvent-air mixtures over the heat exchange means and through the drum and the goods therein; and

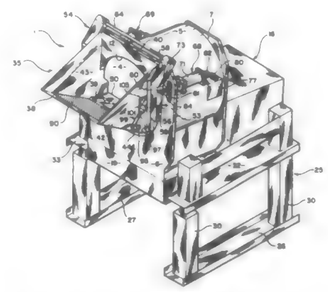
a vacuum pump (24) and connection duct means (18) coupled to the fluid circulation duct means (16,17) for selectively applying vacuum or under-pressure to the connection duct means, the reception space, and the interior of the drum.

5,357,772

LAUNDRY MACHINE WITH COMBINATION DRUM DOOR/LOADING HOPPER

Charles W. Hendren, West Chester, Ohio, assignor to American Laundry Machinery, Ltd., Cincinnati, Ohio

Filed Apr. 19, 1993, Ser. No. 47,284
Int. Cl.[5] D06F *39/00*
U.S. Cl. 68—210 13 Claims



1. A laundry machine comprising:

a drum having an opening through which launderable items may be delivered into and withdrawn from said drum;

a hopper unit defining an internal passage between first and second open ends thereof, said hopper unit being movably mounted with respect to said drum between in-use and non-use positions;

means for moving said hopper unit between said in-use position wherein the second open end of said hopper unit is aligned with said opening in said drum such that launderable items placed in the first open end of said hopper unit can pass through said internal passage and into said drum and said non-use position wherein the second open end of said hopper unit is located remote from said opening to permit removal of launderable items from within said drum; and

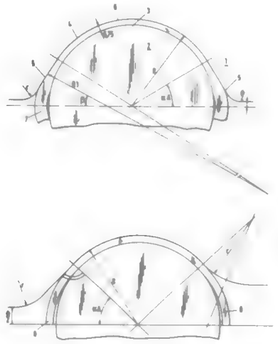
a closure member pivotally attached to said hopper unit within said passage, said closure member being movable between an open position wherein launderable items can freely pass through said internal passage and a closed position wherein said closure member closes said internal passage.

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5,357,773
METHOD OF LONGITUDINAL ROLLING OF SEAMLESS PIPE

Johann H. Rohde, Ratingen; Burkhart Schifferings; Rolf Kümmerling, both of Duisburg; Jochen Vochsen, Mönchengladbach; Karl H. Häusler, Korschenbroich, and Gunther Voswinckel, Mönchengladbach, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 976,361, Nov. 16, 1992, abandoned. This application Nov. 29, 1993, Ser. No. 159,951
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1991, 4138178
Int. Cl.[5] B21B *17/02*
U.S. Cl. 72—10 2 Claims



1. A method of longitudinal rolling of seamless steel pipes in a continuous rolling procedure on an internal tool in a two stand rolling mill train, wherein the rolling stands have rolls which are mounted offset relative to each other, the method comprising rolling each pipe in two successive rolling passes, each rolling pass having open roll groove sides and a roll groove bottom, wherein a wall thickness reduction of portions of the pipe is effected in the groove bottom of the first rolling pass which corresponds to a final wall thickness of the pipe or the reduction is slightly less than the final wall thickness of the pipe, and wherein the portions of the pipe rolled at the groove sides of the first rolling pass are rolled in the groove bottom of the second rolling pass to obtain the final wall thickness of the pipe by spreading in the direction of the circumference, and simultaneously applying a controlled tensile force on the pipe between the two rolling passes so as to reduce an increase of the circumference to the pipe caused by the spreading and to stretch the pipe in longitudinal direction without reducing the final wall thickness or with only a slight reduction of the final wall thickness.

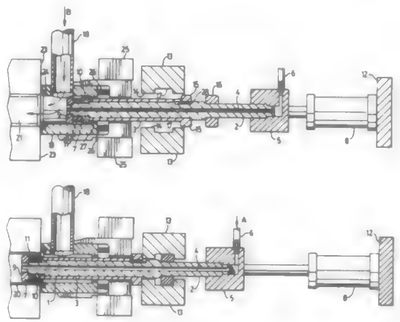
5,357,774
SEAL HEAD FOR TUBE EXPANSION APPARATUS

Gerrald A. Klages, 109 Anderson Street, Woodstock, Ontario, Canada N4S 8X5 ; Frank S. Krasnicki, 308-274 Kingswood Drive, Kitchener, Ontario, Canada N2E 2K2, and Murray R. Mason, R.R. #8, Woodstock, Ontario, Canada N4S 7W3

Continuation of Ser. No. 860,553, Mar. 30, 1992, Pat. No. 5,235,836, which is a continuation of Ser. No. 489,109, Mar. 6, 1990, abandoned. This application Aug. 16, 1993, Ser. No. 106,728
Int. Cl.[5] B21D *39/08*
U.S. Cl. 72—62 16 Claims

1. A fill and pressurization apparatus for filling and pressurizing a hollow tube through an open end thereof,

A. a fluid conductor in communication with a high flow-low pressure circuit and adapted to define a fluid conduit between said circuit and the open end of the tube,

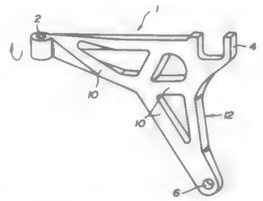


B. a movable shaft having a bore in communication with a low flow-high pressure circuit, said shaft movable into a position communicating said bore with the interior of the hollow tube and separating said fluid conduit therefrom.

5,357,775
PROCESS FOR PRODUCING SUSPENSION COMPONENT OF LIGHT ALLOY

Yasushi Nakazawa; Yasunori Oku, and Kaoru Kusaka, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 12, 1993, Ser. No. 17,059
Claims priority, application Japan, Feb. 14, 1992, 4-059260
Int. Cl.[5] B21C *23/14*
U.S. Cl. 72—254 3 Claims



1. A process for producing a suspension component made of light alloy having a first part to be connected to a vehicle body, a second part to be connected to a wheel, and a central portion between the first part and the second part, said first and second parts being directed in a different direction from other portions, comprising the steps of:

determining a shape of a material of said suspension component into an extrudable shape by turning said first and second parts into a direction of other portions, and subjecting said material to an extrusion:

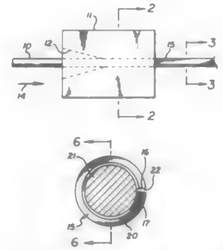
cutting off the extruded product at a predetermined thickness; and

twisting said first and second parts of the cut off product while averting twisting in the central portion, thereby directing said first and second parts to a required direction.

5,357,776
METHOD OF FORMING BUSHING RINGS

John A. Duran, Glendora, Calif., assignor to Avibank Mfg., Inc., Burbank, Calif.

Filed Jun. 16, 1993, Ser. No. 78,756
Int. Cl.[5] B21C *1/00*; B21F *45/00*
U.S. Cl. 72—275 8 Claims



1. A method for forming adjustable bushing segments of predetermined length consisting of the steps of:

drawing an elongated resilient metallic wire having essentially a round diameter through a die cold forming said wire into an elongated wire portion having, in cross-section, an elongated base, an elongated top spaced from the base and extending generally parallel thereto, first side means interconnecting one elongated side of said base to one elongated side of said top, and second side means interconnecting the other elongated side of said base to the other elongated side of said top forming said top of a width less than the width of said base extending in a direction normal to the longitudinal axis of said wire portion;

cutting said wire portion at spaced locations along its longitudinal axis in a direction normal to the longitudinal axis of said wire portion into a plurality of portions;

bending one of said plurality of wire portions only about an elongate rigid cylindrical form while contacting the form until opposed cut ends of said one wire portion are contiguous but spaced from each other; and

removing said bent wire portion from said form thereby forming a bushing segment.

5,357,777
POSITIONING APPARATUS FOR A FRAME RACK FOR INSPECTION AND ALIGNMENT OF AUTOMOTIVE VEHICLE UNIBODIES AND FRAMES

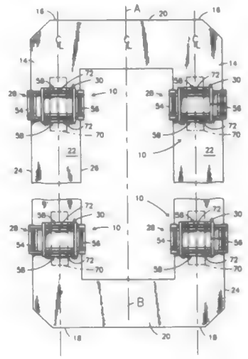
Sam Castellano, 6202 36th Ave. South, Tampa, Fla. 33619

Filed May 28, 1993, Ser. No. 68,929
Int. Cl.[5] B21D *1/12*
U.S. Cl. 72—305 12 Claims

1. An apparatus for adjustably positioning an automotive vehicle on a frame rack used for repair of the frame of the vehicle, the vehicle having a plurality of automotive wheels, and the frame rack having two substantially parallel, spaced apart longitudinal members, each of said members including a top surface, a first outboard facing edge and a second inboard facing edge, said apparatus comprising:

four carriages, each mounted for independent longitudinal movement over the top surface of the longitudinal members; two of said four carriages so mounted on each one of the longitudinal members of the frame rack; and

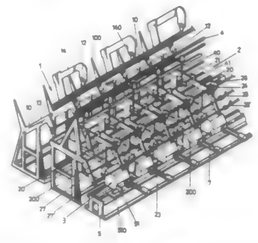
a dolly mounted on each said carriage for movement transverse to said longitudinal movement of said carriage, each said dolly comprising two spaced apart support beams attached thereto that are aligned transverse to said longitudinal movement of said carriage, said support beams being joined by two spaced apart tie beams, said support beams and said tie beams being adapted to receive a portion of a corresponding one of the automotive wheels therebetween.



5,357,778
AUTOMATIC REINFORCED BAR BENDING APPARATUS

Wen-Sheng Tsai, No. 14, Lane 11, Alley 193, Chungcheng N. Road, Sanchung City, Taiwan

Filed Oct. 8, 1993, Ser. No. 133,361
Int. Cl.[5] B21D *7/02*, *43/12*
U.S. Cl. 72—306 5 Claims



1. An automatic reinforced bar bending apparatus comprising a dispensing machine, a feeding machine located on a lower front side of said dispensing machine, and a bending machine located on a lower front side of said feeding machine;

said dispensing machine having a main-frame in a predetermined length, a plurality of upward inclined supporting arms for supporting multiple reinforced bars thereon disposed on a top portion of said main-frame at a predetermined interval and each having a downward extending front end and an upward extending rear stop member, a plurality of dispensing arms each disposed between two adjacent supporting arms and having a pivotally connected conic dispensing plate at its front end for moving excessive reinforced bars on said supporting arms toward said stop members of the supporting arms, and a shaft rod disposed at the front end of said supporting arms and having stop plates pivotally coupled thereto separately located near one side of said supporting arms and being rotatably displaced responsive to a control signal from a microswitch disposed below one of said stop plates closest to one lateral end of said dispensing machine; and each of

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said supporting arms further having a first driving chain which is connected to a first motor located under said dispensing machine via a rotary shaft of said first driving chain;

said feeding machine having a main-frame in a predetermined length corresponding to that of said dispensing machine, a plurality of conveying arms disposed on a top portion of said feeding machine corresponding to said supporting arms of said dispensing machine in both the numbers and the spaced intervals and each having a downward extending tapered front extension, and a sliding carriage disposed above said main-frame of said feeding machine; said sliding carriage consisting of a plurality of downward extended rods each of which having a toothed wheel rotatably disposed at a lower end thereof to control the passing of said reinforced bars to said tapered front extension of said conveying arms; said conveying arms each being further provided with a second driving chain which is connected to a second motor located under said feeding machine, a driving shaft disposed on said conveying arm near a front side of said second driving chain, a catch disk disposed on said driving shaft at one side of said conveying arm, and a vertical stop plate disposed between said catch disk and said second driving chain such that said vertical stop plate is connected with a clutch control box of said second driving chain; every two adjacent tapered front extensions of said conveying arms having two parallelly spaced shafts disposed therebetween, on said parallel shafts two arch hook-like stop plates being correspondingly disposed and being actuated by two first pneumatic cylinders disposed behind said arch hook-like stop plates; and a sensor being disposed on an outer side of one of said catch disks disposed at one lateral end of said feeding machine;

said bending machine being slidably seated on a base and consisting of a plurality of bending units each of which is powered by a driving motor mounted behind said bending unit such that said driving motor drives a main shaft inside said bending unit to turn by engaging with a gear set connected with said main shaft; said main shaft having a front end slightly protruded out of a front portion of said bending unit such that an operating disk is fitted over said protruded front end of said main shaft and a projected shaft is fixedly disposed on one end of said operating disk opposite to said main shaft while said main shaft can be actuated to extend outward by a third pneumatic cylinder connected behind said gear set; said base having a left aligning board and a right stopping board fixed to a left and a right end thereof, respectively; and said left aligning board being controlled to move by a second pneumatic cylinder disposed at a left side thereof for aligning one end of said reinforced bars to be bent;

said reinforced bar bending apparatus being operated in such a manner that a large number of reinforced bars are placed on said supporting arms of said dispensing machine and moved forward by said first driving chain thereof and when a predetermined amount of reinforced bars are moved to said stop plates of said dispensing machine and touch said microswitch, said first driving chain is stopped and then reversely rotated, so that said reinforced bars which have not entered said stop plates are moved back down to said rear stop members of said supporting arms by said dispensing plates of said dispensing arms, and meanwhile, said stop plate moves downward, permitting the reinforced bars located thereon to fall down to said conveying arms of said feeding machine and smoothed by said toothed wheels of said sliding carriage; after passing through said toothed wheels, said reinforced bars move to a front end of said conveying arms and touch said vertical stop plates, making the same to control said clutch control box to lock and stop said second driving chain, letting said reinforced bars enter said catch disks one by one, and once said sensor detects that one of said reinforced bars is actually located in said catch disks, the same are rotated to move said reinforced bar down to said hook-like stop plates of said parallel shafts, and each time said catch disks catch a reinforced bar, said sensor counts once until the counted number reaches a preset number of said reinforced bars to be bent, and when said preset number is reached, said first pneumatic cylinders of said hook-like stop plates drive the same to turn downward, letting said reinforced bars fall down onto said projected shafts in front of said bending units of said bending machine, whereby said main shafts of said bending units extend forward just above said reinforced bars and said main shafts and said operating disks are rotated so as to bend the reinforced bars into a square frame step by step.

5,357,779

CAN BODY MAKER WITH MAGNETIC RAM BEARING AND REDRAW ACTUATOR

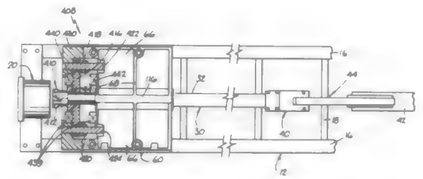
Roger A. Hahn, Arvada; Phillip W. Gold, Lakewood, and Harold Cook, Jr., Evergreen, all of Colo., assignors to Coors Brewing Company, Golden, Colo.

Continuation-in-part of Ser. No. 912,811, Jul. 13, 1992, Pat. No. 5,257,523, which is a continuation-in-part of Ser. No. 724,881, Jul. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 578,938, Sep. 7, 1990, abandoned, and Ser. No. 871,400, Apr. 21, 1992, abandoned, which is a continuation of Ser. No. 578,938, Sep. 7, 1990, abandoned. This application Mar. 23, 1993, Ser. No. 36,179

The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.

Int. Cl.[5] B21D *24/10*

U.S. Cl. 72—347 **20 Claims**



1. Can body making apparatus for forming can body preforms into elongated can bodies comprising:

a stationary support frame;

a housing having forming and ironing dies located therein mounted on said support frame;

a redraw assembly located adjacent to said housing;

an elongated ram having a longitudinal axis, a first end portion and a second end portion, said first end portion having an outer surface adapted for movement into said redraw assembly to contact a can body preform in said redraw assembly and to move said can body preform out of said redraw assembly and through said forming and ironing dies to form an elongated can body;

reciprocating drive means for providing reciprocating axial displacement for said elongated ram;

said redraw assembly having a redraw sleeve for contacting a can body preform;

said redraw sleeve having a longitudinal axis in alignment with said longitudinal axis of said elongated ram;

redraw carriage means for supporting and axially displacing said redraw sleeve relative to said elongated ram;

first electromagnetic coil means mounted at a fixed location adjacent to said housing and having a central coil axis in alignment with said longitudinal axis of said redraw sleeve for selectively providing an electromagnetic field for urging said redraw carriage means toward said housing;

second electromagnetic coil means mounted at a fixed location and having a central coil axis for selectively providing an electromagnetic field;

said redraw carriage means located between said first and second electromagnetic coil means;

control means having a first portion to operate said first and second electromagnetic coil means to move said redraw sleeve toward said housing and into said can body preform and move said can body preform against a portion of said housing and apply a pressure on said can body preform; and

said control means having a second portion to operate at least one of said first and second electromagnetic coil means to control the amount of pressure applied by said redraw sleeve on said can body preform.

5,357,780

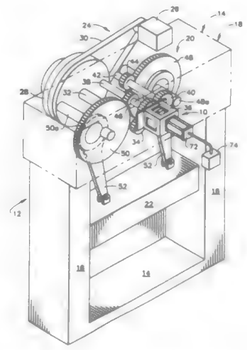
PRESS SLIDE LOCKING APPARATUS

Rudi Bradnstetter, Adelberg, Fed. Rep. of Germany, and Decio Rozenbojm, Columbus, Ohio, assignors to Schuler Incorporated, Columbus, Ohio

Division of Ser. No. 867,336, Apr. 13, 1992, Pat. No. 5,269,059. This application Sep. 14, 1993, Ser. No. 122,011

Int. Cl.[5] B23P *11/00;* **B21J** *13/04*

U.S. Cl. 72—444 **11 Claims**



1. An installable slide locking apparatus which is installable on a press mechanism which mechanism includes a driving gear train means that is operable for driving a reciprocatable press slide between raised and lowered positions; the gear train means being rotatably drivable to reciprocate the press slide between the raised and lowered positions; said installable locking apparatus comprising:

a housing assembly mountable on a housing of the gear train means, said housing assembly being constructed to allow mechanical coupling of said installable locking apparatus to the gear train means;

gear coupling means in said housing assembly and being directly coupled to the gear train means; and,

locking gear means in said housing assembly including a locking gear operable to be movable between locking and unlocking conditions with respect to said gear coupling means, such that when said locking gear is in said locking condition it engages said gear coupling means and said coupling means is prevented from rotating and the gear train is prevented from transmitting motion.

5,357,781

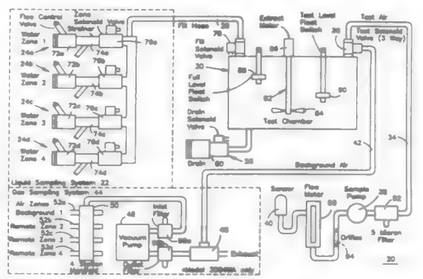
METHOD AND APPARATUS FOR SAMPLING AND DETECTING GASES IN A FLUID

George H. Tikijian, Zionsville, Ind., assignor to SenTech Corporation, Indianapolis, Ind.

Filed Jan. 22, 1993, Ser. No. 8,369

Int. Cl.[5] G01M *3/04;* **G01N** *1/10*

U.S. Cl. 73—19.1 **25 Claims**



1. A method of monitoring a liquid containing a test gas at each of a plurality of zones and of determining the concentration of the test gas within the liquid above a threshold level, said method comprising a repetitively taking Of one sample of the liquid at a time at each of the plurality of zones; for each sample, said sample taking comprising the steps of:

a) conveying the one sample of the liquid from the one zone to a test chamber;

b) separating the test gas from the one sample of the liquid conveyed to the test chamber;

c) conveying the test gas released into the test chamber from the one sample of the liquid taken from the test chamber to a sensor;

d) operating the sensor to detect the presence of the released test gas of a concentration above the threshold level to produce an alarm indicative thereof;

e) discharging the one sample taken from the one zone from the test chamber; and

f) flushing the one sample taken from the one zone from the test chamber with the liquid taken from another zone of the plurality of zones before introducing the next sample of liquid from the other zone into the test chamber.

5,357,782

LEAK DETECTION IN HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS USING AN ENVIRONMENTALLY SAFE MATERIAL

Richard G. Henry, Mayfield Heights, Ohio, assignor to Advanced Research Technologies, Park Ridge, Ill.

Filed Jun. 25, 1993, Ser. No. 81,119

Int. Cl.[5] G01N *37/00*

U.S. Cl. 73—40.7 **8 Claims**

1. A method of detecting leaks in heating, ventilating and air conditioning systems employing hydrofluorocarbon refrigerants and a refrigerant lubricant comprising the steps of:

preparing a mixture of naphthalamide as a fluorescent optical brightener with a refrigerant lubricant;

adding a predetermined amount of the mixture to the lubricant reservoir of the heating, ventilating and air conditioning system employing a refrigerant liquid consisting of a hydrofluorocarbon refrigerant and a refrigerant lubricant;

operating the system for a predetermined period to allow the mixture to thoroughly mix with the refrigerant liquid throughout the system;

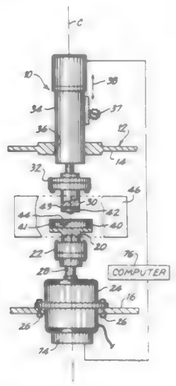
examining the system with an ultraviolet lamp directed at the system;

determining the presence of a leak by the presence of a

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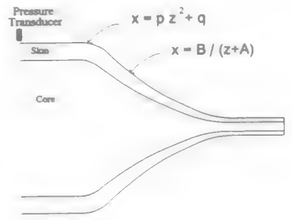
colored fluorescence detectable under the ultraviolet light;
and said naphthalamide and refrigerant lubricant appearing at a leak sight remaining to provide an indication of said leak.

5,357,783
DYNAMIC SHEAR RHEOMETER AND METHOD
Alan R. Eschbach, Hampton, N.J., assignor to Rheometrics, Inc., Piscataway, N.J.
Continuation of Ser. No. 803,948, Dec. 6, 1991, Pat. No. 5,271,266. This application Oct. 14, 1993, Ser. No. 135,648
The portion of the term of this patent subsequent to Dec. 21, 2010, has been disclaimed.
Int. Cl.[5] G01N *11/02*
U.S. Cl. 73—54.33 **8 Claims**



1. An improvement in an apparatus for measuring rheological properties of a viscoelastic test specimen at different temperatures, at which different temperatures the viscoelastic properties exhibit a relatively wide difference, wherein the test specimen is placed between and coupled with opposed plates, one of the opposed plates is oscillated angularly relative to the other of the opposed plates, and the angular displacement of one of the plates relative to the other of the plates and the torque associated with the relative angular displacement are measured by measuring means within a predetermined range of measurement of torque and angular displacement for determining the rheological properties, the improvement comprising:
a first contact surface on one of the opposed plates for being coupled with the test specimen when the test specimen is at one of the different temperatures;
a second contact surface on said one of the opposed plates for being coupled with the test specimen when the test specimen is at another of the different temperatures; and
selective coupling means for selectively coupling the first contact surface with the test specimen to establish a first contact area between said one of the opposed plates and the test specimen when the test specimen is at said one of the different temperatures and is coupled with the other of the opposed plates, said selective coupling means including further means for effecting relative movement between the second contact surface and the test specimen in a direction essentially normal to said angular displacement to selectively couple the second contact surface with the test specimen to establish a second contact area between said one of the opposed plates and the test specimen when the test specimen is at said another of the different temperatures and is coupled with the other of the opposed plates;
the first contact area being different in area from the second contact area such that, by virtue of the difference in area between the first and second contact areas, the torque and the relative angular displacement measured by the measuring means at each of said one and said another of the different temperatures fall within the predetermined range.

5,357,784
LUBRICATED FLOW ELONGATIONAL RHEOMETER
John R. Collier, Baton Rouge, La., assignor to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.
Filed Aug. 4, 1993, Ser. No. 101,982
Int. Cl.[5] G01N *11/08*
U.S. Cl. 73—54.14 **8 Claims**



1. A method for measuring the elongational viscosity η_e of a fluid, comprising the steps of:
(a) flowing the fluid through a die, at least a portion of which die comprises a semi-hyperbolically shaped, axially symmetric section, wherein said flowing is lubricated, whereby the fluid undergoes substantially pure elongational flow and substantially no shear flow in the semi-hyperbolically shaped section;
(b) measuring the pressure drop ΔP of the fluid as it flows through the semi-hyperbolically shaped section; and
(c) calculating the elongational viscosity η_e from a relationship equivalent to the form

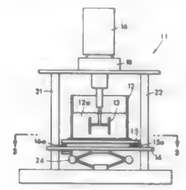
$$\eta_e = a\,LA_e\frac{\Delta P}{Q} - b\frac{\rho QL}{A_e}$$

wherein a and b are constants determined by the shape of the die, L is the centerline length of the semi-hyperbolically shaped section, A_e is the cross sectional area of the fluid as the fluid exits the semi-hyperbolically shaped section, ΔP is the pressure drop of the fluid in the semi-hyperbolically shaped section, Q is the volumetric flow rate of the fluid, and η is the density of the fluid.

5,357,785
METHOD AND DEVICE FOR DETERMINING RHENOLOGICAL PROPERTIES
Raymond T. Hemmings, Mississauga, and Edward G. Kimber, Burlington, both of Canada, assignors to Radian Corporation, Austin, Tex. and Inco Limited, Canada
Filed Jun. 4, 1993, Ser. No. 72,980
Int. Cl.[5] G01N *11/14*
U.S. Cl. 73—54.32 **19 Claims**

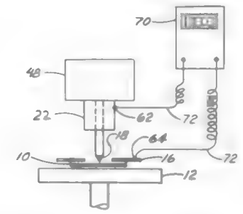
1. A device for the rheological property determination of a slurry type material, the device comprising support means for supporting a container having a sample of the slurry type material therein, said device further comprising means for mixing the sample within said container at one or more substantially known rates of speed throughout the mixing, means for permitting the container to move during the mixing with a displacement substantially directly related to the torque of the mixing, and load cell means mounted on said device and being

responsive to the induced displacement of the container by generating an electrical signal proportional to the torque, for



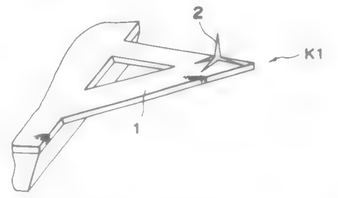
direct determination of the torque of mixing and thereby of the rheological properties of the material.

5,357,786
DEVICE FOR DETERMINING MECHANICAL PROPERTIES OF MATERIALS
Charles A. Lung, and On K. Chang, both of San Jose, Calif., assignors to Valence Technology, Inc., San Jose, Calif.
Filed Aug. 4, 1993, Ser. No. 101,871
Int. Cl.[5] G01N *3/48*
U.S. Cl. 73—81 **18 Claims**



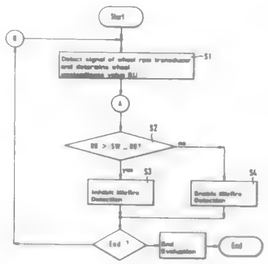
12. A device for testing the firmness of a substantially flat sample having opposite first and second major surfaces, the sample containing a polymeric, semi-solid, colloid or gel material, comprising:
a) a support having a planar surface and an electrically conductive portion on the planar surface for holding the sample on its first surface, the support comprising a balance having a sensor responsive to application of force on the planar surface in a direction normal to the planar surface;
b) a stylus to impinge on the second major surface of the sample when the stylus is displaced toward the sample;
c) means for moving the stylus toward the sample to cause the stylus to contact the second major surface of the sample and to penetrate a predetermined distance through the second major surface into the sample; and
d) means for detecting initial contact between the second surface of the sample and the stylus, the means comprising a first electrical contact which comprises the sample and the electrically conductive portion of the support, a second electrical contact on the stylus, and a meter between the contacts; whereby when the stylus just touches the second surface an electrical circuit is closed as indicated by the meter, and when the stylus penetrates a predetermined distance through the second major surface into the sample the support responds to the force imposed by such displacement as indicated by the balance, and the displacement and force are correlated to produce values related to the firmness, hardness, toughness or degree of cure of the material.

5,357,787
CANTILEVER FOR ATOMIC FORCE MICROSCOPE AND METHOD OF MANUFACTURING THE SAME
Hiroyuki Kado, Osaka, and Takao Tohda, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation of Ser. No. 909,671, Jul. 7, 1992, abandoned. This application Feb. 24, 1994, Ser. No. 201,087
Claims priority, application Japan, Jul. 15, 1991, 3-173709; Dec. 26, 1991, 3-344517; Mar. 13, 1992, 4-54665
Int. Cl.[5] G01B *5/28*
U.S. Cl. 73—105 **15 Claims**



1. A cantilever for an atomic force microscope, comprising:
a cantilever body; and
a probe on said cantilever body, said probe consisting of a structure made up of four needle crystals combined with one another.

5,357,788
MISFIRE DETECTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE
Anton Kantschar, Eberdingen-Hochdorf; Martin Klenk, Backnang, and Christian Köhler, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed May 14, 1993, Ser. No. 61,047
Claims priority, application Fed. Rep. of Germany, May 14, 1992, 4215938
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—117.3 **4 Claims**



1. In a misfire detection system for an internal combustion engine of a motor vehicle, an arrangement for inhibiting the detection of misfires in a misfire detection system, the arrangement comprising:
sensing means for detecting wheel rpm fluctuations of at least one wheel of the motor vehicle and for providing a signal indicative of said fluctuations as a function of time;
forming means for receiving said signal and forming a wheel unsteadiness value therefrom;
comparison means for comparing said wheel unsteadiness value to a threshold value;

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misfire detection inhibit means for inhibiting the detection of misfires when said threshold value is exceeded; and,

means for measuring time intervals T1, T2, T3 during which said sensing means supplies, in each of said time intervals, the same pregiven equal number of pulses; and, means for computing the wheel unsteadiness value (RU) pursuant to the equation:

$$RU=[(T2-T1)-(T3-T2)]/(T^3).$$

5,357,789

MISFIRE DETECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

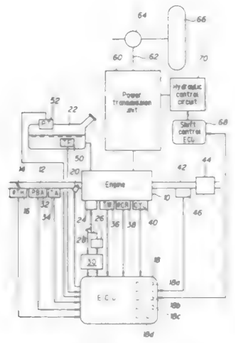
Shigetaka Kuroda; Kazutomo Sawamura; Hiroshi Maruyama, and Masayoshi Yamanaka, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1993, Ser. No. 149,570

Claims priority, application Japan, Nov. 10, 1992, 4-326013

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—117.3 **9 Claims**



1. A system for detecting misfire for an internal combustion engine, comprising;

first means for detecting whether misfire has occurred in the engine;

second means for detecting a pressure in a fuel tank provided in a vehicle on which the engine is mounted;

third means for detecting a temperature of the fuel supplied to the engine;

fourth means for presuming, on the basis of the detected in-fuel tank pressure and the fuel temperature, if the fuel is in a condition in which vapor lock would occur; and

fifth means for inactivating the operation of said first means when the fuel is presumed to be in the condition.

5,357,790

MISFIRING DETECTING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Yasuhiko Hosoya, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 841,028, Feb. 25, 1992, abandoned. This application Feb. 8, 1993, Ser. No. 14,676

Claims priority, application Japan, Feb. 27, 1991, 3-33022; Feb. 28, 1991, 3-34378

Int. Cl.[5] G01M *15/00;* **F02M** *51/00;* **F02P** *5/145*

U.S. Cl. 73—117.3 **4 Claims**

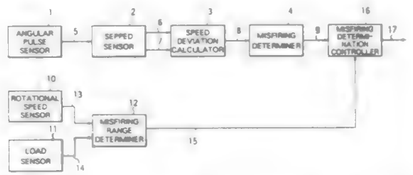
1. A misfiring detecting apparatus for an internal combustion engine, comprising:

means for sensing and calculating angular velocities of a crankshaft of the engine at a crank position before and after top dead center of the engine;

misfiring determination means for determining the occurrence of misfiring in the engine based on a deviation between the angular velocities thus calculated;

means for sensing an operating condition of the engine and outputting a signal corresponding thereto; and

means, responsive to said signal, for disabling said misfiring determination means if said signal is outside of a predetermined engine operating range, wherein said means for sensing an operating condition of the engine comprises a load sensor for sensing an engine load, and said means for disabling said misfiring determination means being disabled if the sensed engine load is less than a predetermined value.



5,357,791

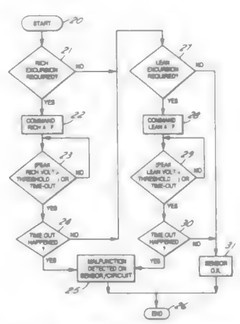
OBD-II EXHAUST GAS OXYGEN SENSOR

Thomas S. Gee, Canton; Thomas A. Schubert, Novi; Paul F. Smith, Dearborn Heights, and Carl W. Squire, Taylor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 15, 1993, Ser. No. 31,407

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—118.1 **3 Claims**



1. A method for determining the functionality of an EGO sensor including the non-intrusive steps of:

reading the exhaust gas oxygen sensor voltage;

comparing the exhaust gas oxygen sensor voltage to a peak rich voltage;

comparing the exhaust gas oxygen voltage to a peak lean voltage;

storing the exhaust gas oxygen sensor voltage as the peak rich voltage if the current exhaust gas oxygen voltage is greater than the previous peak voltage;

storing the exhaust gas oxygen sensor voltage as the peak lean voltage if the exhaust gas oxygen sensor voltage is less than the peak lean voltage; and further including the intrusive steps of:

determining if a rich air/fuel ratio excursion is required;

commanding a rich air/fuel ratio excursion if it is required;

holding the rich air fuel ratio until there is a time out or the peak rich voltage is greater than a threshold rich voltage;

if a time out happened, determining that there is a malfunction of the sensor;

determining if a lean excursion is required;

if yes, commanding a lean air/fuel ratio excursion;

holding the lean A/F excursion until the peak lean voltage is less than a threshold lean voltage or there has been a time out;

if there is a time out, then a malfunction is detected;

if no time out happened, then the sensor is OK; and

if no lean excursion is required, then the sensor is OK.

2. A method for determining the functionality of an upstream or a downstream EGO sensor associated with the exhaust of an internal combustion engine including the steps of:

reading the voltage from each of the exhaust gas oxygen sensors,

storing the peak voltage readings of the exhaust gas sensor voltages;

comparing a peak voltage reading to a predetermined voltage window by comparing the peak voltages of the upstream sensor to a predetermined window and then comparing the peak voltages of the downstream sensor to the predetermined window; and

adding a predetermined time delay between the steps of comparing the peak voltages of the upstream sensor to the predetermined voltage window and comparing the peak voltage of the downstream sensor to the predetermined voltage window.

5,357,792

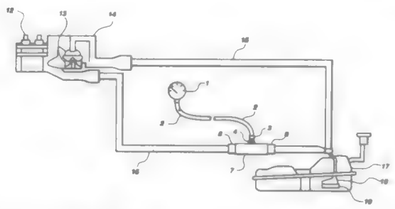
ADAPTOR FOR TESTING FUEL PRESSURE IN AN OPERATING ENGINE

Alan D. Getenby, 542 S. 560 E., Orem, Utah 84058

Filed Jan. 8, 1993, Ser. No. 1,858

Int. Cl.[5] F02M *65/00;* **G01M** *15/00*

U.S. Cl. 73—119 A **16 Claims**



12. A process for testing the pressure in a fuel line of a fuel injection system in an operating engine including:

removing a fuel filter from said fuel line prior to starting the engine;

replacing said fuel filter with an adapter means while the engine is shut down;

providing attachment means for connecting said adaptor means within said fuel line;

providing a side passage in said adaptor means, and a valve in said passage to prevent the escape of fuel;

securing said adaptor means prior to starting the engine to said fuel lines so as to preclude fuel leakage; and

starting said engine.

5,357,793

FLUID METERING APPARATUS

Wijbren Jouwsma, Lochem, Netherlands, assignor to Bronkhorst High-Tech B.V., Ruurlo, Netherlands

Filed Dec. 16, 1992, Ser. No. 991,157

Claims priority, application Netherlands, Mar. 6, 1992, 9200414

Int. Cl.[5] G01F *5/00*

U.S. Cl. 73—202 **6 Claims**

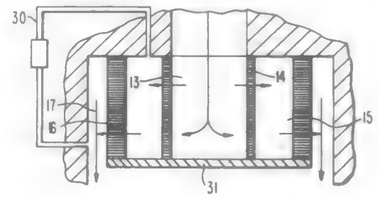
1. An instrument for measuring mass flow or pressure difference in a fluid stream, comprising:

a body having an inlet for the fluid stream;

inside the body a device comprising a turbulence filter for receiving the fluid steam and for forming downstream a laminar flow, a settling chamber downstream of the turbulence filter for receiving and maintaining the laminar flow, and a laminar flow element integrated with the turbulence filter and situated downstream of the settling chamber for maintaining the laminar flow;

an outlet downstream of the laminar flow element;

said device comprising at least one set of plates piled on top of each other, each plate having inflow and outflow openings for the fluid stream, a part of each plate having on one side first and second spaced substantially parallel groove sets which run from the inflow opening to the outflow



opening, said plates being piled on top of each other such that said grooves form channels of such dimensions that the fluid stream flows through them in a laminar manner, the first groove set forming the turbulence filter, the space between the first and second groove sets forming the settling chamber, the second groove set forming the laminar flow element;

means including said body for directing the fluid flow through the turbulence filter, settling chamber and laminar flow element in a straight line;

means for coupling a flow measuring sensor between the settling chamber and a device region downstream of the second groove set.

5,357,794

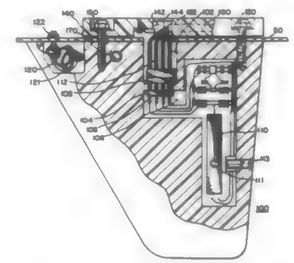
FARADAY EFFECT SMALL BOAT SPEED TRANSDUCER AND WATERPROOF CONNECTION FOR SAME

Paul Nielsen, Wilmington, Del., assignor to Nielsen-Kellerman Co., Marcus Hook, Pa.

Filed Jun. 12, 1992, Ser. No. 897,405

Int. Cl.[5] G01C *21/00;* **G01F** *1/58*

U.S. Cl. 73—181 **11 Claims**



1. A watercraft speed transducer comprising a housing molded in the shape of a fin;

an alternating current coil driven with a regulated alternating current for producing an alternating current magnetic field, the coil comprising a core disposed within the housing;

two input electrodes extending from within the housing and through the housing;

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a grounding electrode electrically connected to circuit ground;

a differential amplifier circuit for amplifying an input voltage, the differential amplifier electronically connected to the coil and providing an output signal to a means for signal processing the differential amplifier comprising at least (i) a circuit for increasing impedance of the amplifier; and (ii) a filtering RF interference,

whereby the coil produces the input voltage upon motion of the transducer through water having dissolved ions therein and a useful speed indication signal is generated from the input voltage produced by moving the transducer through the water at speeds between about 1.6 ft/sec (0.5 m/sec) and 33 ft/sec (10 m/sec),

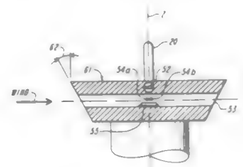
wherein the coil, one-half of a connector and the differential amplifier are disposed on a circuit within the housing, and the one-half connector is for mechanically and electrically connecting an external signal line for transmittinq the output signal outside the housing.

5,357,795

ANEMOMETER TRANSDUCER WIND SET

Robert S. Djorup, 20 Lovewell Rd., Wellesley, Mass. 02181

Filed Mar. 17, 1993, Ser. No. 32,682
Int. Cl.[5] G01W *1/02*; G01F *1/68*
U.S. Cl. 73—170.12 **8 Claims**



1. A directional orthogonal dual component ducted thermal anemometer transducer comprising:

a cylindrical support body through which is radially passed an orthogonal pair of open cylindrical ducts;

said ducts housing at their mid-point a transverse pair of thermal anemometer resistive sensing elements mounted side-by-side, wherein a plane defined by said sensing element axes is parallel to the longitudinal axis of said open duct;

said longitudinal axes of said ducts being parallel to the plane of wind flow response and perpendicular to the axis of said cylindrical support body;

said thermal anemometer sensing elements being provided with electrical connection means, whereby said anemometer sensing elements are self-heated by an electric current passes through said sensing elements, and

mechanical structure supporting said sensing elements, all mounted within said ducts, each with respect to the other.

5,357,796

BALLISTICS MEASURING SYSTEM

John R. Jamison, 84780 Christensen Rd., Eugene, Oreg. 97405

Filed Oct. 1, 1993, Ser. No. 131,200
Int. Cl.[5] G01L *5/14*
U.S. Cl. 73—167 **8 Claims**

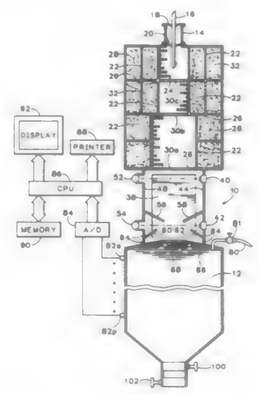
5. An apparatus for measuring projectile ballistics, comprising:

(a) an elongate vessel;

(b) a fluid contained within said vessel;

(c) a plurality of pressure transducers spaced longitudinally along said vessel at predetermined positions for sensing pressure exerted on each transducer by said fluid from within said vessel; and

(d) a projectile launcher in a position communicating between the interior and exterior of said vessel for launching



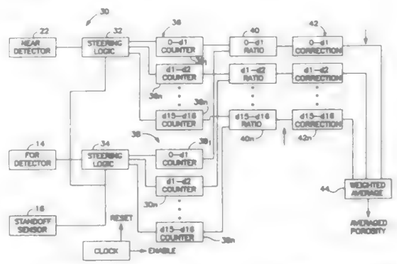
a projectile longitudinally into said vessel and thereby exerting pressure on said fluid.

5,357,797

METHOD AND APPARATUS FOR CORRECTING MWD POROSITY MEASUREMENT

Voldi E. Maki, Jr., and Michael L. Gartner, both of Austin, Tex., assignors to Halliburton Logging Services, Inc., Houston, Tex.

Continuation of Ser. No. 717,236, Jun. 18, 1991, abandoned. This application Sep. 22, 1993, Ser. No. 125,499
Int. Cl.[5] E21B *47/08, 49/00*; G01V *5/04*
U.S. Cl. 73—152 **6 Claims**



1. A method of determining corrected porosity in an MWD porosity measuring system which comprises the steps of:

a) repetitively measuring the porosity during the rotation of the drill string utilizing a radioactive source cooperative with near and far gamma ray detectors to obtain plural indications of apparent porosity;

b) repetitively measuring during the operation of the source and detectors the standoff of the source and detectors relative to the sidewall of the well borehole wherein the expected total range of standoff values is divided into n separate intervals and n values of apparent porosity are determined, to obtain n plural standoff measurements; and

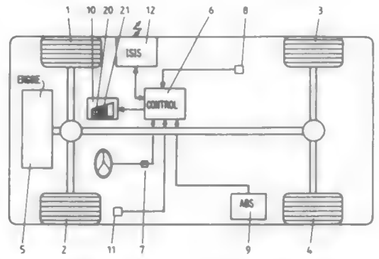
c) as a function of measured standoff, correcting said n apparent porosity indications to obtain corresponding n values of corrected porosity.

5,357,798

PROCESS FOR DETERMINING A SAFETY MARGIN FOR A TRAVELING MOTOR VEHICLE

Alfred Weinzerl; Jürgen Holzinger, both of Graz, and Wolfgang Hirschberg, Ulrich/Steyr, all of Austria, assignors to Steyr-Daimler-Puch AG, Wien, Austria

Filed Jan. 21, 1993, Ser. No. 6,841
Int. Cl.[5] E01C *23/00*; G01M *17/02*
U.S. Cl. 73—146 **10 Claims**



1. A process for determining a safety margin with respect to adhesion between tires and roadway of a motor vehicle travelling along a direction of travel under all conditions of travel comprising

detecting by means of at least one acceleration sensor located on said motor vehicle longitudinal and transverse acceleration values (ax, ay) for said motor vehicle along directions which are longitudinal and transverse to the direction of travel and producing signals indicative thereof,

detecting by means of a rotational wheel sensor a rotational wheel acceleration (Phi) for said motor vehicle and producing a signal indicative thereof,

detecting by means of a steering angle sensor a dynamic steering angle for said motor vehicle and producing a signal indicative thereof,

receiving all of said signals in an electronic processor under all conditions of travel and by means of said electronic processor determining a transverse adhesion value (Siy) as a function of said transverse acceleration value (ay) and said dynamic steering angle,

by means of said electronic processor determining a longitudinal adhesion value (Six) as a function of said longitudinal acceleration value (ax) and said rotational wheel acceleration (Phi),

by means of said electronic processor determining a maximum attainable longitudinal acceleration value (axLIM) and a maximum attainable transverse acceleration value (ayLIM) by multiplying said longitudinal acceleration value (Six) and said transverse acceleration value (Siy) by vehicle specific coefficients (Kx, Ky) respectively,

establishing a limit curve (aLIM) from the maximum attainable acceleration values (axLIM, ayLIM),

forming a current vehicle movement state vector (AF) from a vectorial combination of the longitudinal acceleration (ax) and the transverse acceleration (ay) values,

by means of said electronic processor determining a safety margin value (SAFLIM) under all conditions of travel by comparing the lengths of said vehicle movement state vector (AF) with a collinear limit vector (AMAX) which reaches said limit curve (aLIM), and

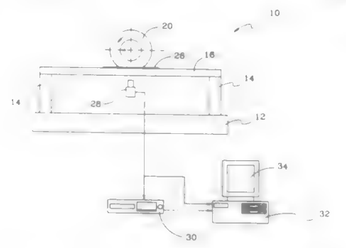
on a display device displaying said safety margin value (SAFLIM) under all conditions of travel.

5,357,799

METHOD AND APPARATUS FOR DETERMINING ABRASION POTENTIAL OF TIRE TREADS

Vladimir Roth; John L. Turner, both of Akron, and Stephen M. Voesberg, Uniontown, all of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Jul. 14, 1992, Ser. No. 913,573
Int. Cl.[5] G01M *17/02*
U.S. Cl. 73—146 **19 Claims**



1. Apparatus for determining abrasion potential for tire treads, comprising:

a glass plate;

a source of illumination adjacent and illuminating said glass plate;

first means for effecting forceful rolling engagement of a tire upon said glass plate;

a reflective sheet interposed between said tire and said glass plate at a contact interface therebetween;

second means for viewing said contact interface between said tire and said glass plate and generating a digitized video image of a selected area thereof, said digitized video image comprising an array of pixels having grey level values corresponding to light intensity at said contact interface and further corresponding directly to a force of engagement of said tire upon said contact interface; and

third means in operative communication with said second means for receiving said digitized video image, and determining therefrom a force of interengagement and an amount of slip between said selected area and said glass plate and an abrasion potential for said selected area as a function of said force and slip.

5,357,800

METHOD FOR AIR TESTING HYDRAULIC BRAKE COMPONENTS

Brian T. Reuter, Farmington, and Gary A. Willi, Ann Arbor, both of Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.

Filed Dec. 30, 1992, Ser. No. 998,963
Int. Cl.[5] G01L *5/28*
U.S. Cl. 73—121 **27 Claims**

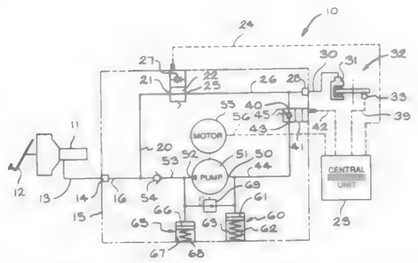
1. A method of testing a hydraulic control unit for controlling the application of pressurized liquid to a hydraulically actuated device, the control unit having an inlet port adapted to be connected to a means for supplying pressurized liquid and an outlet port adapted to be connected to the hydraulically actuated device, the control unit further having valve means connected between the control unit inlet and outlet ports for selectively controlling the liquid pressure at the control unit outlet port and positive displacement liquid pump means having an inlet port communicating with the valve means and a discharge port communicating with the control unit inlet port, the pump means being selectively operable to supply pressurized liquid to the valve means, the test method comprising the steps of:

(a) providing a hydraulic control unit;

(b) providing means for sensing the rate of change of the gas pressure at the inlet port of the hydraulic control unit;

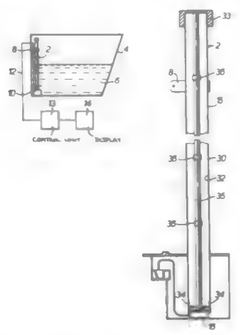
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(c) applying a pressurized gas to the outlet port of the hydraulic control unit;
(d) operating the valve means and the pump means in a predetermined sequence to supply pressurized gas to the pump means inlet port; and



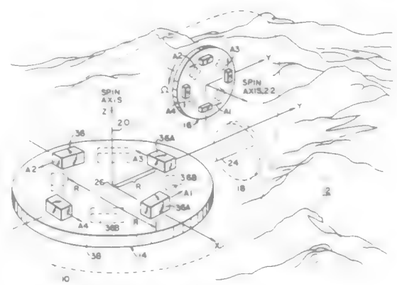
(e) simultaneously with step (d), monitoring the rate of change of the gas pressure sensed in step (b) to determine whether the pump means is operable.

5,357,801
LIQUID-LEVEL GAUGING
David Sinclair, Chineham, England, assignor to Smiths Industries Public Limited Company, London, England
Filed Aug. 11, 1993, Ser. No. 103,636
Claims priority, application United Kingdom, Aug. 29, 1992, 9218425
Int. Cl.[5] G01F 23/28
U.S. Cl. 73—290 V 7 Claims



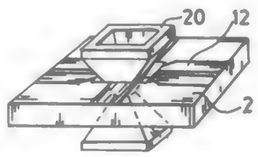
1. An ultrasonic liquid-level sensor comprising:
a tube; means for mounting the tube in a liquid reservoir to extend upwardly; an opening in the tube through which the tube is filled with liquid from the reservoir to the same height as liquid outside the tube; an ultrasonic transducer located at a lower end of the tube; and at least one rod extending within the tube along its length, the rod increasing the amount of energy received by the transducer from reflection off the liquid surface so as thereby to increase the range of operational tilt angles over which the sensor can be used.

5,357,802
ROTATING ACCELEROMETER GRADIOMETER
Giles M. Hofmeyer, Niagara Falls, and Clive A. Affleck, Williamsville, both of N.Y., assignors to Textron, Incorporated, Providence, R.I.
Filed May 7, 1993, Ser. No. 58,419
Int. Cl.[5] G01M 1/12
U.S. Cl. 73—382 G 22 Claims



1. A gravity gradiometer comprising:
a first accelerometer set comprising four accelerometers disposed symmetrically about a rotational axis, said four accelerometers of said first set being spaced apart from said other and from said rotational axis;
a second accelerometer set comprising four accelerometers disposed symmetrically about said rotational axis, said four accelerometers of said second set being spaced apart from each other and from said rotational axis;
means for rotating said first and said second accelerometer sets at a common rotational frequency about said rotational axis, the second accelerometer set lagging the first accelerometer set by forty-five degrees;
means for combining signals of said first accelerometer set to output a first set signal, said combining means combining signals of said second accelerometer set to output a second set signal; and
means for demodulating said first and said second set signals each with inphase and quadrature reference signals at twice the rotational frequency to provide demodulated signals, said gradiometer summing the demodulated signals to obtain a value of gradient independent of the rotational frequency.

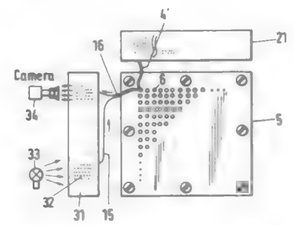
5,357,803
MICROMACHINED MICROACCELEROMETER FOR MEASURING ACCELERATION ALONG THREE AXES
Richard L. Lane, Penfield, N.Y., assignor to Rochester Institute of Technology, Rochester, N.Y.
Filed Apr. 8, 1992, Ser. No. 866,667
Int. Cl.[5] G01P 15/13
U.S. Cl. 73—517 B 18 Claims



1. A microaccelerometer comprising:
a thin planar sheet having first and second substantially planar surfaces, said sheet having a cavity extending between said first and second substantially planar surfaces,

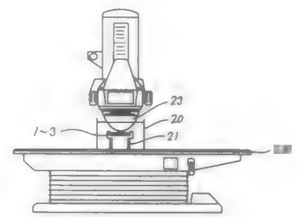
wherein said cavity has a cross-section which has a narrowest point at an interior location in said sheet;
a free-mass having a pair of ends and a central portion between said ends, wherein said free-mass has a cross-section with said central portion being narrower than said narrowest point of said sheet and said ends being wider than said narrowest point of said sheet to locate said free-mass in a position relative to said sheet, whereby said free-mass is restrained by and moveable with respect to said sheet;
sensing means for detecting said free-mass's position relative to said sheet and generating one or more signals indicative of said position of said free-mass;
position correction means for receiving position indication signals from said sensing means, exerting a restorative force on said free-mass to an equilibrium position, and generating one or more signals indicative of said restorative force; and
computing means for generating an acceleration value from said one or more signals indicative of said position of said free-mass and said one or more signals indicative of said restorative force.

5,357,804
DEVICE INCLUDING A PLANAR MATRIX OF FLUID FILLED BAGS FOR MEASURING PRESSURE ACTING ON A SUPPORT
Rolf Wesemann, Stift 8, D-3320 Salzgitter 31; Are Ahrens, Im Winkel 6, D-3171 Hillerse, and Ruediger Baretti, Kaiserstrasse 54, D-4830 Guetersloh, all of Fed. Rep. of Germany
Filed Mar. 29, 1993, Ser. No. 38,945
Int. Cl.[5] G01L 9/00
U.S. Cl. 73—705 11 Claims



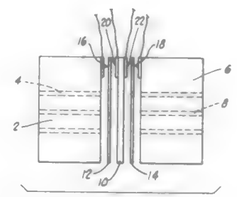
1. A device for measuring pressure acting on a support, comprising:
a plurality of sealed bags filled with a fluid and having flexible walls and arranged in the form of a planar matrix on said support so that said bags may be deformed by said pressure and said pressure transferred to the fluid in said bags;
a plurality of first flexible capillary tubes having first ends connected to said sealed bags and communicating with the fluid in said sealed bags, and having second ends, one first flexible capillary tube being provided for each of said sealed bags;
a plurality of evaluation devices, one evaluation device being provided for each of said first flexible capillary tubes;
a coupling block having insertion openings which have first ends and second ends, said first ends of said insertion openings respectively connected to said second ends of said first flexible capillary tubes; and
a plurality of second flexible capillary tubes having first ends connected to said second ends of said insertion openings and second ends connected to said evaluation devices.

5,357,805
PRESSURE MEASUREMENT APPARATUS FOR INSPECTING THERAPEUTIC ENERGY WAVES
Katsuhiko Fujimoto, Kanagawa; Satoshi Aida, Tokyo; Masamichi Oyanagi, and Nobuki Kudo, both of Tochigi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Apr. 15, 1992, Ser. No. 868,657
Claims priority, application Japan, Apr. 15, 1991, 3-111045; Mar. 16, 1992, 4-055961
Int. Cl.[5] G01L 7/08
U.S. Cl. 73—715 18 Claims



16. A pressure measurement apparatus for inspecting the focal position and the pressure of therapeutic energy waves in a water tank, comprising:
a pressure sensing sheet whose color changes according to pressure applied to it;
a mount for holding said pressure sensing sheet in a flat shape;
a mount holder for holding said first mount;
a marker for setting said focal position that is held above said pressure sensing sheet by said mount holder; and
holder means for holding said mount holder in said water tank.

5,357,806
CAPACITIVE DIFFERENTIAL PRESSURE SENSOR AND METHOD OF MEASURING DIFFERENTIAL PRESSURE AT AN OIL OR GAS WELL
John R. Dennis; Steven L. Cook; Monty E. McElroy, and Charles D. Totty, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed May 3, 1993, Ser. No. 56,095
Int. Cl.[5] G01L 9/12
U.S. Cl. 73—718 18 Claims



1. A capacitive differential pressure sensor, comprising:
a first crystal member;
a first electrode, connected to said first crystal member;
a second crystal member;
a second electrode, connected to said second member;
a third crystal member, connected between said first and second crystal members so that at least a portion of said third crystal member moves relative to said first and second crystal members in response to a difference in pressure applied to said third crystal member through said first and second crystal members;

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a third electrode, connected to said third crystal member so that a first electrical capacitance between said first and third electrodes varies in response to movement of said third crystal member relative to said first crystal member;

a fourth electrode, connected to said third crystal member so that a second electrical capacitance between said second and fourth electrodes varies in response to movement of said third crystal member relative to said second crystal member;

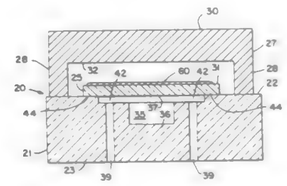
wherein each of said first, second and third crystal members includes a respective Z-cut quartz plate.

5,357,807

MICROMACHINED DIFFERENTIAL PRESSURE TRANSDUCERS

Henry Guckel, and Todd R. Christensen, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 626,581, Dec. 7, 1990, Pat. No. 5,189,777.
This application Oct. 5, 1992, Ser. No. 957,505
Int. Cl.[5] G01L *7/08, 9/06*
U.S. Cl. 73—721 **19 Claims**



14. A micromachined differential pressure transducer comprising:

(a) a single crystal silicon substrate having top and bottom sides;

(b) a deformable polycrystalline silicon membrane mounted to and sealed at its peripheral edges to the top of the substrate and spaced from the substrate at its central portion to define a cavity which is sealed between the membrane and the substrate, the bottom of the cavity in the substrate being spaced from the membrane to allow normal deflections of the membrane but providing an overpressure stop for membrane deflection toward the substrate to prevent damage to the membrane, the membrane having a thickness of about 10 micrometers or less;

(c) at least one channel leading from a remote position in the substrate to the cavity to provide communication therefrom to the cavity;

(d) an overpressure stop formed of electroplated metal mounted to the top of the substrate and having a bridge portion spanning the membrane and spaced therefrom to allow normal deflections of the membrane while providing an overpressure stop to prevent displacements of the membrane away from the substrate which would damage the membrane, the spacing between the overpressure stop bridge and the membrane and between the membrane and the bottom of the cavity being less than about 10 micrometers; and

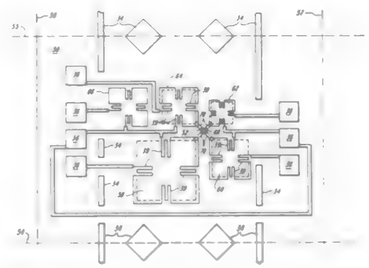
(e) means for sensing the deflections of the membrane.

5,357,808

OVERPRESSURE-PROTECTED, DIFFERENTIAL PRESSURE SENSOR

Clifford D. Fung, Mansfield; Kevin H.-L. Chau, Franklin; P. Rowe Harris, East Wareham; John G. Panagou, South Attleboro, and Gary A. Dahrooge, Worcester, all of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Division of Ser. No. 676,914, Mar. 28, 1991, Pat. No. 5,220,838.
This application Mar. 26, 1993, Ser. No. 38,664
Int. Cl.[5] G01L *7/08, 9/06*
U.S. Cl. 73—721 **17 Claims**



8. A differential pressure sensor comprising

a silicon substrate having opposed front and back surfaces,

an array of cavities formed into said front surface of said substrate, at least one said cavity having a floor which defines a first pressure stop,

a diaphragm having a top and a bottom and spanning and overlying at least said one cavity, wherein the deflection of said diaphragm in response to pressure applied to the top of the diaphragm is limited by the first pressure stop,

standoff means disposed about said diaphragm to support a second pressure stop,

cap means disposed on said standoff means and over said diaphragm to define the second pressure stop to limit the deflection of the diaphragm in response to pressure applied to the bottom of the diaphragm,

at least one port formed in said back of said substrate for applying pressure to the bottom of said diaphragm, and

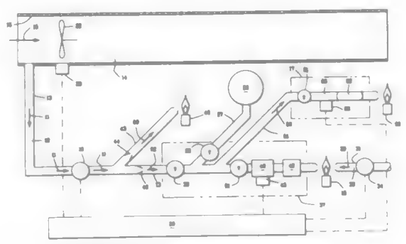
electrical means for detecting the relative deflection of the diaphragm due to a pressure differential across the diaphragm.

5,357,809

VOLUMETRIC FLOW CORRECTOR HAVING A DENSITOMETER

William H. Vander Heyden, Mequon, Wis., assignor to Badger Meter, Inc., Milwaukee, Wis.

Filed Apr. 14, 1993, Ser. No. 48,349
Int. Cl.[5] G01F *15/04*
U.S. Cl. 73—861.02 **24 Claims**



15. A volumetric flow corrector comprising:

a conduit for flowing sample gas from a pipeline;

a sample gas flowmeter for measuring a flowrate (Q*f*) of the sample gas through the conduit, the sample gas being maintained at substantially the same temperature as the pipeline gas in the pipeline when the sample gas flowmeter measures the flowrate (Q*f*) of the sample gas;

a sample gas energy flowmeter for measuring an energy flowrate ($E_{sample\ gas}$) (energy per unit time) of the sample gas flowing through the conduit which is equivalent to an energy flowrate of the sample gas flowing through the conduit at a base condition temperature and pressure;

a sample gas heating value meter for measuring a heating value ($H_{sample\ gas}$) (energy per unit volume) of the sample gas flowing through the conduit which is equivalent to a heating value of the sample gas flowing through the conduit at a base condition temperature and pressure; and

a densitometer for measuring a base condition density of the sample gas flowing through the conduit which is equivalent to a density of the sample gas flowing through the conduit at a base condition temperature and pressure;

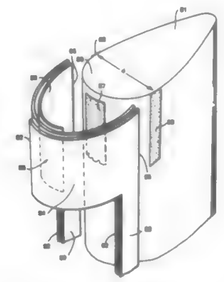
and further comprising a control system which receives a signal representing the flowrate (Q*f*) of the sample gas from the sample gas flowmeter, a signal representing the energy flowrate ($E_{sample\ gas}$) of the sample gas from the sample gas energy flowmeter, a signal representing the heating value ($H_{sample\ gas}$) of the sample gas from the sample gas heating value meter, and a signal representing the base condition density of the sample gas, and calculates a volumetric correction ratio from the sample gas flowrate (Q*f*), the energy flowrate ($E_{sample\ gas}$) of the sample gas, the heating value ($H_{sample\ gas}$) of the sample gas, and the base condition density ($\rho_{sample\ gas}$) of the sample gas.

5,357,810

AIR FLOW MEASURING APPARATUS

Stanislaw B. Czajkowski, Limerick, Israel, assignor to Suparules Limited, Limerick, Israel

Division of Ser. No. 796,770, Nov. 25, 1991, Pat. No. 5,282,388.
This application Oct. 21, 1993, Ser. No. 140,771
Claims priority, application Israel, Nov. 26, 1990, 0/4265/90
Int. Cl.[5] G01L *5/24*
U.S. Cl. 73—861.28 **4 Claims**



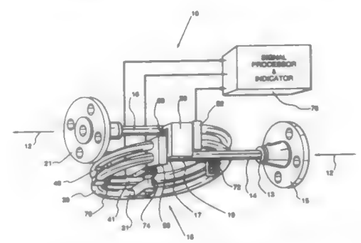
1. An ultrasonic transducer comprising a support member, a piece of resilient material mounted on the support member, a film of piezo-electric material mounted on the support member under tension cross the resilient material, first and second metal foil electrodes in intimate contact with each of the two opposite surfaces of the film respectively, the first and second electrodes overlapping in front of the resilient material, and a respective electrical lead connected to each electrode.

5,357,811

SINGLE TUBE CORIOLIS FLOW METER WITH FLOATING INTERMEDIATE SECTION

Danny Hoang, Santa Clara, Calif., assignor to Exac Corporation, San Jose, Calif.

Filed Feb. 11, 1992, Ser. No. 833,767
Int. Cl.[5] G01F *1/84*
U.S. Cl. 73—861.38 **18 Claims**



1. An apparatus for measuring the mass flow rate of a material flowing through a pipeline, comprising:

a first length of conduit forming an inlet passageway and having a first inlet end for connection to an upstream part of said pipeline and a first outlet end;

a second length of conduit forming an outlet passageway and having a second inlet end and a second outlet end for connection to a downstream part of said pipeline;

connecting plate means connecting said first outlet end to said second inlet end;

upstream metering means including a third length of conduit having a third inlet end and a third outlet end, said third inlet end being communicatively connected to said first outlet end;

downstream metering means including a fourth length of conduit having a fourth inlet end and a fourth outlet end, said fourth outlet end being communicatively connected to said second inlet end;

a fifth length of conduit connecting said third outlet end of said third length of conduit to said fourth inlet end of said fourth length of conduit, said fifth length of conduit being free to move relative to said connecting plate means;

a discrete upstream termination plate for connecting said third inlet end and said fourth inlet end;

a discrete downstream termination plate for connecting said third outlet end and said fourth outlet end;

driver means for causing said upstream metering means to vibrate relative to said downstream metering means;

sensor means for detecting the relative motion between said upstream metering means and said downstream metering means caused by Coriolis induced forces developed therein, and operative to develop corresponding electrical signals; and

signal processing means responsive to said electrical signals and operative to develop an indication of the mass flow rate of material flowing through said lengths of conduit.

5,357,812

WEB STRESS MEASURING ASSEMBLY

Thomas Kübert, Karlstadt-Karlburg, and Erhard H. Glöckner, Eibelstadt, both of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Aug. 13, 1993, Ser. No. 105,958
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1992, 4226791
Int. Cl.[5] G01L *1/04*
U.S. Cl. 73—862.451 **6 Claims**

1. A web stress measuring assembly which is usable to measure the stress in a paper web in a web-fed rotary printing press, said web stress measuring assembly comprising:

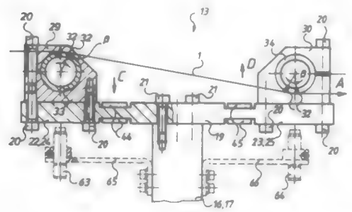
VOL 1167 ISS 4 OC 25 1994 UMI

first and second supports secured to a press frame on first and second sides of a path of paper web travel;

first support arms secured to said first and second supports and having free ends extending upstream along said path of paper web travel;

second support arms secured to said first and second supports and having free ends extending downstream along said path of paper web travel;

a first tubular member having air nozzles secured between said upstream ends of said first support arms;



a second tubular member having air nozzles secured between said downstream ends of said second support arms, a paper web traveling along said path of paper web travel, passing alternatingly over and under said first and second tubular members; and

means for measuring flexure in said first and support second arms caused by a paper web traveling over and under said first and second tubular members and evaluating said flexure to determine stress in a paper web.

5,357,813

PRESSURE SENSOR

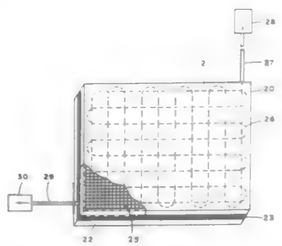
Imanuel Weinberger, Haifa, Israel, assignor to The State of Israel, Ministry of Defence, Tel-Aviv, Israel

Filed Oct. 7, 1992, Ser. No. 958,078

Claims priority, application Israel, Oct. 17, 1991, 99773

Int. Cl.[5] G01L *1/24*

U.S. Cl. 73—865.7 **3 Claims**



1. An essentially planar, pressure actuated sensor device which comprises an upper plate functionally cooperating with a tortuous optical fiber associated with a light emitter means at its one end and with a light detector means at its other end, the application of pressure on said upper plate causing an attenuation of the light detected by said detector means; said sensor characterized in that

it comprises a pressure sensing assembly sandwiched between said upper plate, which is essentially rigid, and a rigid base, said sensing assembly comprising a first layer made of a flexible material, a second planar layer of a network of rigid wires, and between said first and second layers a said tortuous optical fiber arranged in a plane said wires arranged only on one side of said fiber between the two layers in an essentially uniform manner throughout the plane, whereby upon application of pressure on said upper plate, said wires press the optical fiber against the layer of flexible material to produce local bendings of said fibers and said attenuation.

5,357,814

METHOD OF DETECTING ENGAGEMENT/DISENGAGEMENT CHARACTERISTIC OF CONNECTOR AND APPARATUS THEREFOR

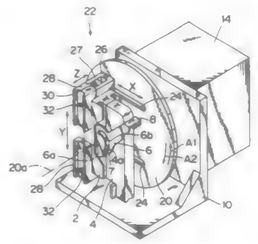
Yasushi Sugiyama, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

Filed Jun. 9, 1993, Ser. No. 73,503

Claims priority, application Japan, Jun. 11, 1992, 4-179254

Int. Cl.[5] G01B *5/30*

U.S. Cl. 73—865.9 **19 Claims**



1. A method of detecting an engagement characteristic of a mating connector which is comprised of a first connector having a lever pivotaly held in a specified position and a second connector attachable or detachable to or from said first connector, said lever being pivoted relative to said first connector in a specified engaging direction while said second connector is temporarily attached to said first connector, so as to engage said second connector with said first connector, said method comprising

pivoting said first connector about a center of pivotal movement of said lever while said second connector is temporarily attached to said first connector;

preventing the pivotal movement of said lever when said first connector is pivoted, so as to pivot said lever relative to said first connector in said engaging direction; and

detecting a load required to preventing the pivotal movement of said lever.

5,357,815

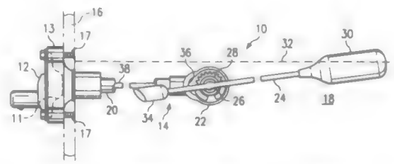
MAGNETICALLY DRIVEN GAUGE WITH VOLTAGE DIVIDER

Cecil M. Williamson, Carrollton, Tex., assignor to Rochester Gauges, Inc., Dallas, Tex.

Continuation of Ser. No. 16,520, Feb. 10, 1993, abandoned. This application Dec. 29, 1993, Ser. No. 174,718

Int. Cl.[5] G01F *23/36, 23/38*

U.S. Cl. 73—866.3 **8 Claims**



1. A gauge for measuring a fluid level, comprising:

(a) a base having a recess and a pivot pin extending therefrom;

(b) a pointer assembly mounted on the pivot pin for rotation about an axis, the pointer assembly including a contact plate thereon, said contact plate including at least one resilient conductive arm and at least one conductive element

(c) a nonconductive board positioned proximate the pointer assembly, said nonconductive board including:

(i) a voltage regulator electrically connected to a first contact and to a resistive element;

(ii) a resistive element formed in a semi-circular arc at a predetermined radius about said axis having first and second ends and contacted by said conductive arm at a point along said resistive element determined by the angular position of the pointer assembly relative to said first axis, said first end connected to said voltage regulator, and said second end connected to a second contact;

(iii) a conductive surface being formed on the board at said axis and contacted by said conductive element; and

(iv) a current amplifier connected to said conductive surface having a third contact connected to the output of said amplifier;

(d) a coupler attached to said pointer assembly for moving the pointer assembly about said axis.

5,357,816

SHOCK DETECTING DEVICE

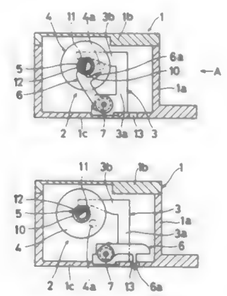
Kazunori Sakamoto, Chiryu; Masanobu Ishikawa, Nagoya, and Yutaka Kondoh, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 5, 1993, Ser. No. 14,248

Claims priority, application Japan, Feb. 7, 1992, 4-022565

Int. Cl.[5] G05G *17/00*

U.S. Cl. 74—2 **3 Claims**



1. An impact sensing apparatus comprising:

a housing having an inner space, a first wall for receiving an impact, and a second wall oriented substantially perpendicular to the first wall; and

a unitary assembly constructed independent of the housing and positioned within the housing for being secured to the housing, said unitary assembly including a frame having a first portion which extends substantially parallel to the first wall, and a second portion which extends away from the first portion and substantially parallel to the second wall, a weight pivotally mounted on the second portion of the frame to rotate about a pivot axis when an impact is applied to the housing, a cam provided on the weight, a firing lever pivotally mounted on the first portion of the frame for moving rotatably through an angle greater than ninety degrees between one position in which a portion of the firing lever engages the cam and another position in which a portion of the firing lever extends outside the housing through a hole formed in the second wall, and a spring urging the firing lever against the cam.

5,357,817

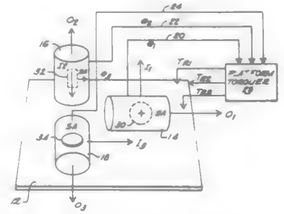
WIDE BANDWIDTH STABLE MEMBER WITHOUT ANGULAR ACCELEROMETERS

Marc S. Weinberg, Needham, Mass., assignor to Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Apr. 19, 1990, Ser. No. 511,230

Int. Cl.[5] G01C *19/02*

U.S. Cl. 74—5.34 **19 Claims**



1. A high bandwidth three axis inertial sensor having three single degree of freedom gyroscope rate sensors comprising:

a platform having first, second and third single degree of freedom rate sensing gyroscopes fixed to the platform with their respective spin, input and output axes fixed to the platform in mutually orthogonal directions;

said first, second and third gyroscopes having respective output signals representative of rate inputs about the corresponding gyroscope input axis in combination with outputs corresponding to angular accelerations about other axes;

means responsive to the outputs of said gyrsoscopes for applying torque to said platform about three axes each corresponding to an input axis of a corresponding gyroscope to minimize motion in response to rate inputs to said platform; and

said torque applying means including means for developing each axis of torque in a manner that each axis of torque is compensated for the rates corresponding to inputs about other axes of rate input.

5,357,818

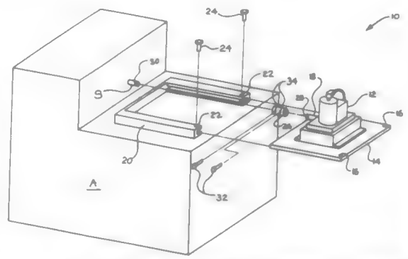
INTERCHANGEABLE ENGINE MOUNTING

James W. Hill, 10 Rasor Dr., Greenville, S.C. 29609

Filed Jun. 23, 1993, Ser. No. 79,883

Int. Cl.[5] F16M *13/00;* **H02K** *5/00*

U.S. Cl. 74—16 **9 Claims**



1. Apparatus for interchangeably powering an appliance having an input device including an appliance through-bore, said apparatus comprising:

a motor having an output shaft for supplying rotary power, a motor through-bore, and a flange;

a bracket for surroundably cooperating with said flange,

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whereby said motor is slid into an operative position with respect to said bracket; and

connectors for locking said flange to said bracket;

power connection means for connecting said output shaft to the appliance input device, said power connection means including a plurality of locking pins, a collar, a first collar through-bore, and a second collar through-bore;

wherein said collar is slipped over said power output shaft and at least one of said locking pins cooperates through said first collar through-bore and said motor through-bore;

whereby said collar is constrained against relative rotation and axial movement therewith by at least one of said locking pins and whereby at least another one of said locking pins cooperates through said second collar through-bore and the appliance through-bore.

5,357,819

DRIVE APPARATUS

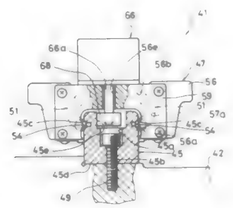
Seiji Takei, Kanagawa, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1992, Ser. No. 993,624

Claims priority, application Japan, Dec. 24, 1991, 3-355623

Int. Cl.[5] F16H *19/02*

U.S. Cl. 74—89 **13 Claims**



1. A drive apparatus comprising at least one elongated track rail mounted on a support, drive track means formed on and extending lengthwise of said rail, slider means mounted on said rail for movement lengthwise of said rail, torque generation means mounted on said slider means and having an output shaft disposed orthogonal to said rail, a drive roller secured to said shaft and disposed in engagement with said track means for driving said slider means lengthwise of said rail and roller bearing means disposed between said slider means and said rail for maintaining said drive roller in engagement with said rail without substantially increasing friction between said drive roller and said rail.

5,357,820

SHIFT CONTROL SYSTEM FOR AUTOMATIC VEHICLE TRANSMISSION

Shuzo Moroto, Nagoya; Takeshi Inuzuka, and Masashi Hattori, both of Anjo, all of Japan, assignors to Aisin Aw Co., Ltd., Japan

Filed Jul. 16, 1993, Ser. No. 92,421

Claims priority, application Japan, Jul. 22, 1992, 4-215760

Int. Cl.[5] F16H *59/04*

U.S. Cl. 74—335 **12 Claims**

1. A shift control system for selectively providing either automatic range shifting or manual shifting of an automatic transmission, by linear movement of a manual valve of a shift controller, said shift control system comprising:

an electric motor having a rotatable output shaft;

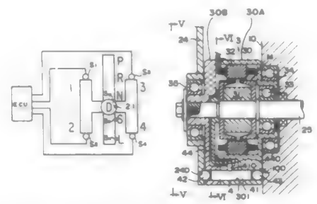
linkage means for converting the turning of said output shaft into linear movement of the manual valve;

means for operating said electrical motor responsive to shift signals to effect said automatic range shifting;

a manual shift lever;

manual shift lever guide means defining a plurality of shift positions including a first portion for the automatic range shifting and a second portion for the manual shifting;

manual shift lever linkage means connecting said manual shift lever to said output shaft for turning said output shaft responsive to movement of said manual shift lever; and



a connecting/disconnecting mechanism for connecting said manual shift lever linkage means to said output shaft with said manual shift lever in one or more shift positions in said first portion of said guide means and for disconnecting said manual lever linkage means from said output shaft in any of the remaining shift positions.

5,357,821

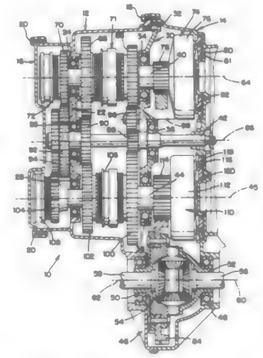
TRANSMISSION AND SHIFT CONTROL

Raymond J. Haka, Rochester; Joel M. Maguire, Dearborn, and Dean E. McCulloch, Rochester Hills, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 13, 1993, Ser. No. 47,510

Int. Cl.[5] F16H *59/00*

U.S. Cl. 74—335 **3 Claims**



1. A countershaft transmission and control comprising:

an input means;

an output means;

selectively engageable clutch means for drivingly connecting the input means with the output means, said clutch means including a housing defining a chamber and a clutch piston slidably disposed in the chamber;

a plurality of gear ratio means disposed between the input means and the output means including a plurality of synchronizer means for selectively individually engaging said gear ratio means to establish selected ratios between the input and output means; and

control means for controlling the synchronizer means including an axially movable shaft, means for selectively moving said shaft, a plurality of fork means for individually selectively connecting said synchronizer means to said shaft, means for selectively connecting said fork means with said shaft to individually enforce linear movement of said fork means with the axial movement of said shaft to effect establishment of selected gear ratios, and piston means movable with said shaft for establishing a fluid pressure level in said chamber to establish the engaged condition of said clutch means.

5,357,822

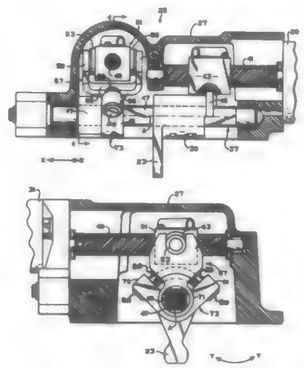
TRANSMISSION SHIFTING MECHANISM AND FORCE ATTENUATOR THEREFOR

Mark L. Lanting, Portage; Stanley W. Crull, Kalamazoo, and Stephen A. Edelen, Battle Creek, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 13, 1993, Ser. No. 46,695

Int. Cl.[5] F16H *59/04, 61/32, 61/34*

U.S. Cl. 74—473 R **8 Claims**



1. A shifting mechanism for controlling the shifting of change-gears of a mechanical change-gear transmission of the type having at least one shift rail movable in a first (Y-Y) transverse direction from a gear-disengaged position to a gear-engaged position; said shifting mechanism comprising a housing and shaft means disposed within said housing and supported therein, said shaft means defining an axis of rotation; a shift finger assembly including a shift finger and being operatively associated with said shaft means and pivotable about said axis of rotation to move said finger in said first (Y-Y) transverse direction; input means including a lever member pivotable about said axis of rotation to cause said pivotal movement of said shaft means and said shift finger; characterized by:

(a) one of said shift finger assembly and said lever member defining a spring seat;

(b) spring means including a first end seated against said spring seat, and a second end operably associated with the other of said shift finger assembly and said lever member, whereby pivotal movement of said lever member in a first (clockwise) rotational direction about said axis of rotation is transmitted through said spring means to resiliently bias said shift finger assembly toward an engaged position, moving said shift finger in said first (Y-Y) transverse direction.

5,357,823

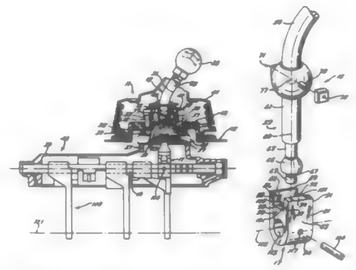
GEARSHIFT ASSEMBLY FOR MANUAL TRANSMISSIONS

George A. Parsons, Grosse Pointe, Mich., assignor to New Venture Gear, Inc., Troy, Mich.

Filed Apr. 14, 1993, Ser. No. 48,424

Int. Cl.[5] F16H *59/04*

U.S. Cl. 74—473 P **15 Claims**



1. A gearshift assembly for permitting a vehicle operator to selectively shift between a plurality of ratio gear positions within a multi-speed manual transmission, comprising:

a shift mechanism being operable to translate in a linear direction and being operable to rotate about its linear axis, said shift mechanism having a plurality of shift forks attached thereto for controlling a plurality of transmission gears;

a gearshift lever having a pivot means thereupon for providing pivotal movement in said linear direction and a neutral crossover direction, said gearshift lever further having an upper bearing surface which determines a crossover pivot ratio and a lower bearing surface which determines a different linear pivot ratio; and

a socket being operable to transfer said upper bearing surface's crossover movement and said lower bearing surface's linear movement to said attached shift mechanism, said shift mechanism attached to said socket substantially below said lower bearing surface.

5,357,824

INDUSTRIAL ROBOT

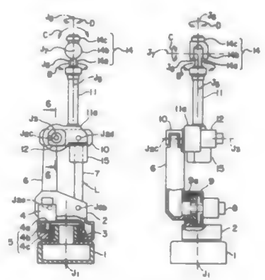
Yasuhiko Hashimoto, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Akashi, Japan

Continuation of Ser. No. 634,462, Dec. 27, 1990, abandoned. This application Nov. 5, 1992, Ser. No. 972,085

Claims priority, application Japan, Dec. 28, 1989, 1-344385

Int. Cl.[5] B25J *9/06*

U.S. Cl. 74—479 BP **22 Claims**



1. An industrial robot, comprising:

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a lower base member;
a first driving motor for driving said lower base member to pivot about a first axis, said first driving motor being provided on said lower base member so that said first driving motor is displaced from the first axis;
first and second lower arms arranged parallel to each other and having lower ends which are pivotally supported on end portions of said lower base member;
said first driving motor and said first and second lower arms being provided on a first side of said robot with respect to the first axis;
an upper base member pivotally mounted on upper ends of said first and second lower arms and having a connecting portion extending at least between the upper ends of said first and second lower arms, said connecting portion located substantially in a common plane with said first and second lower arms;
said lower base member, said first and second lower arms and said upper base member defining a parallelogram;
at least one second driving motor for driving and inclining at least one of said first and second lower arms about their respective second axes, said second driving motor being provided on a second side of said robot which is opposite to the first side with respect to the first axis and said first and second driving motors being provided apart so as not to interfere with each other;
an upper arm pivotally supported on one side of said connecting portion of said upper base member so that said upper arm pivots relative to said upper base member about a third axis which is parallel to said second axes about which said first and second lower arms pivot with respect to said upper and lower base members, and so that said upper arm is pivotal in a plane parallel to and different from said common plane containing said first and second lower arms and said upper base member so as not to interfere with said upper base member and said first and second lower arms when said upper arm rotates; and
a third driving motor for driving said upper arm to pivot about the third axis by which said upper arm is pivotally attached to said upper base member.

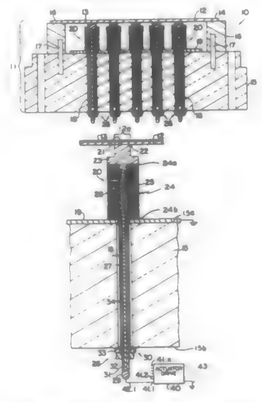
5,357,825

COAXIAL INTEGRATED DEFORMABLE MIRROR ACTUATOR/RETRACTION ARRANGEMENT

Thomas P. Costello, Orlando, and Ronald W. Stopher, Jupiter, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 895,489, Jun. 8, 1992, abandoned. This application Nov. 9, 1993, Ser. No. 150,568
Int. Cl.[5] H01L *41/00*; **G02B** *5/08, 7/18*
U.S. Cl. 74—479 P **15 Claims**

1. An actuator device wherein said actuator device controllably adjusts a spacing of a zone of a mirror faceplate from a substrate that has front and back surfaces facing toward and away from the faceplate, respectively, said substrate further having, a passage extending therethrough substantially normal to the front and back surfaces, said actuator device comprising
an active element having front and back faces facing the faceplate zone and the front surface of the substrate, respectively, and an opening passing therethrough in extension of the passage, said active element being capable of undergoing dimensional changes when exposed to at least one of electric and magnetic fields;
means for subjecting said active element to compression, including
an end element interposed between said front face of said active element and the faceplate zone,
an elongated resilient preloading element extending through said opening and the passage and having one end portion secured to said end element to constitute a preloading unit therewith, and another end portion remote from said one end portion, and
tensioning means disposed at to said another end portion of said preloading element and accessible from the back surface of the substrate for tensioning said preloading element to the extent necessary for said end element to apply a preload pressure to said front face of said active element, said tensioning means including an abutment formation secured to and having a transverse size exceeding that of to said another end portion of said preloading element, a tensioning device surrounding to said another end portion of said preloading element between said abutment formation and the back surface of the substrate and



having an internal thread, and a sleeve disposed in said tensioning device around said other end portion of said preloading element and having an external thread meshing with said internal thread of said tensioning device for said tensioning device to brace itself against the back surface of the substrate and cause said sleeve to engage said abutment formation and exert a tensioning force thereon; and
means for applying to said active element said one field of a controllably variable magnitude for adjusting the spacing to the desired extent.

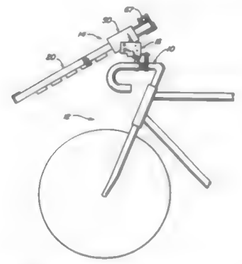
5,357,826

ADJUSTABLE HANDLEBAR FOR BICYCLE

James V. Morrone, 267 Shirley St., Winthrop, Mass. 02152

Continuation of Ser. No. 404,867, Sep. 8, 1989, Pat. No. 5,121,652, and a continuation of Ser. No. 898,466, Jun. 15, 1992, Pat. No. 5,259,266. This application Jun. 21, 1993, Ser. No. 79,391
The portion of the term of this patent subsequent to Jun. 16, 2009, has been disclaimed.
Int. Cl.[5] B62K *21/16*
U.S. Cl. 74—551.3 **8 Claims**

1. An adjustable handlebar apparatus for support on and to be used with a bicycle frame, said apparatus comprising;
a base member,
clamp means for securing the base member to the bicycle frame,
a rocker member disposed on said base member,
means for pivotally supporting the rocker member from the base member,
a handlebar assembly including a handlebar,
a slide member having front and rear end sections and means for securing the handlebar to the rear end section of the slide member, and means interlocking the slide member in



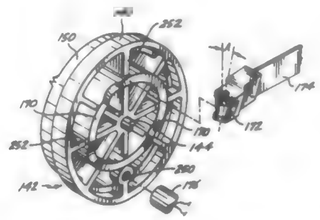
different longitudinally-disposed positions in said rocker member.

5,357,827

TORQUE COMPENSATED CAM ASSEMBLY AND METHOD

Vernon R. Natwick, Los Altos, and Michael W. Lawless, Boulder Creek, both of Calif., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 494,210, Mar. 15, 1990, Pat. No. 5,055,001. This application Jul. 31, 1991, Ser. No. 738,585
Int. Cl.[5] F16H *53/06*
U.S. Cl. 74—569 **20 Claims**



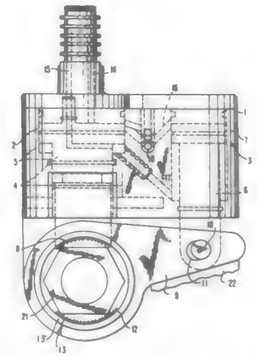
1. A torque compensated cam assembly, comprising:
a. a cam having an axis of rotation and a surface defining a path at a variable distance from the axis of rotation;
b. a cam follower disposed in contact with said surface, the cam follower moving along said surface and experiencing a radially directed force due to its contact with said surface as the cam rotates, the contact between said surface and the cam follower also producing a varying tangential force that acts on the cam as the cam follower moves toward and away from the axis of rotation as the cam follower tracks along said surface of the cam, thus producing a varying torque acting on the cam;
c. a torque compensation track disposed on the cam and having a non-planar surface configured in an inverse relationship to said surface of the cam;
d. a torque compensation follower that is in moving contact with the non-planar surface of the torque compensation track as the cam rotates; and
e. a spring connected to bias the torque compensation follower against the non-planar surface of the torque compensation track, producing a compensating torque that is substantially equal and opposite to the varying tangential torque produced by the cam follower.

5,357,828

FLUID OPERATED TOOL

Steven Spirer, Haworth, N.J., assignor to Unex Corporation, South Hackensack, N.J.

Filed Mar. 3, 1993, Ser. No. 25,842
Int. Cl.[5] B25B *13/46*
U.S. Cl. 81—57.39 **6 Claims**



1. A fluid operated tool for tightening and loosening an element, comprising means for clamping an element to be tightened or loosened; means for turning the element clamped by the clamping means; a fluid operated drive means formed to act on said clamping means and on said turning means so that under the action of said fluid operated drive means said clamping means clamp the element and then said turning means turn the clamped element, said fluid operated drive means including a first fluid operated cylinder-piston unit provided with a first piston which acts on said clamping means and a second fluid operated cylinder-piston unit provided with a second piston which acts on said turning means; means for communicating said fluid operated cylinder-piston units with a source of a working fluid and with one another so that the working fluid is first supplied into said first fluid operated cylinder-piston unit to act first on said first piston and therefore first to clamp the element, and then to said second fluid operated cylinder-piston unit so as to subsequently act on said second piston and therefore to subsequently turn the clamped element, said communicating means including a first passage leading from a source of the working fluid to said first cylinder-piston unit, a second passage communicating said fluid operated cylinder-piston units with one another; and a valve arranged in said second passage and formed so as to open only when a pressure of the working fluid reaches a predetermined level after clamping of the element.

5,357,829

ANTENNA ELEMENT PLIERS

Richard E. Schur, Greencastle, Pa., and Clyde W. Ankeney, Jr., Hagerstown, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 16, 1992, Ser. No. 961,804
Int. Cl.[5] B25B *7/02*
U.S. Cl. 81—418 **5 Claims**

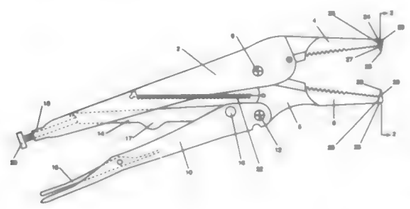
1. Pliers for gripping an object comprising:
a handle,
jaw means extending from said handle,
another handle,
another jaw means extending from said another handle,
means interconnecting said handles for relative movement to thereby effect relative movement of said respective jaw

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each of said jaw means having an interior face portion which terminates to define an externally disposed nose-end termination,

said respective jaw means having their interior face portions positioned in opposition such that the relative movement thereof effects movement of the respective interior face portions and associated nose-end terminations toward and away from each other,

each of said jaw means having a gripping tip affixed to said nose-end termination,



each of said gripping tips extending beyond its respective jaw means in a direction toward the other gripping tip,

said gripping tips being relatively movable toward each other by their respective jaw means into a generally coplanar object gripping position,

the nose-end termination of at least one jaw means defining a generally planar surface oriented at a slant from the direction of movement of its associated gripping tip, and

the gripping tip being attached to the nose-end termination at the slant.

5,357,830

CABLE CUTTING APPARATUS WITH MECHANISM FOR PREVENTING ERRONEOUS CABLE CUTTING

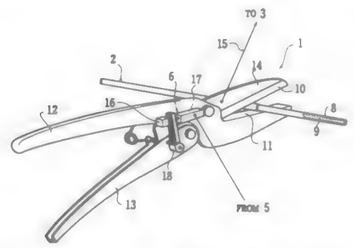
Tadashi Mori; Masao Sakata; Kou Wada, and Toshihiko Odagiri, all of Tokyo, Japan, assignors to NTT Fanet Systems Corporation, Tokyo, Japan

Filed Jul. 1, 1993, Ser. No. 85,984

Claims priority, application Japan, Jul. 1, 1992, 4-174372

Int. Cl.[5] B26B *17/00*

U.S. Cl. 83—13 **20 Claims**



1. A cable cutting apparatus, comprising:

cutting mechanism having cutting blades for cutting a cable;

core potential recognition means for recognizing a potential of the cutting blades in contact with a core of the cable as one of a potential for a cable in use and a potential for a cable out of use; and

locking mechanism means for locking cutting movements of the cutting blades of the cutting mechanism whenever the core potential recognition means recognizes a potential of the cutting blades in contact with the core of the cable as the potential for a cable in use.

13. A method of cutting a cable, comprising the steps of:

bringing cutting blades into contact with a core off the cable;

recognizing a potential of the cutting blades brought into contact with the core of the cable at the bringing step as one of a potential for a cable in use and a potential for a cable out of use;

cutting the cable by the cutting blades when the potential of the cutting blades in contact with the core of the cable is recognized as the potential for a cable out of use at the recognizing step; and

locking cutting movements of the cutting blades whenever the potential of the cutting blades in contact with the core of the cable Is recognized as the potential for a cable in use at the recognizing step.

5,357,831

CROSSCUTTING DEVICE

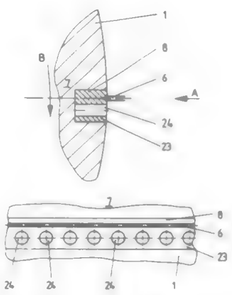
Horst B. Michalik, Hoechberg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Division of Ser. No. 907,070, Jul. 1, 1992, Pat. No. 5,259,283. This application Aug. 17, 1993, Ser. No. 107,315

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1991, 4122110; Jun. 25, 1992, 4220480

Int. Cl.[5] B60B *7/00*

U.S. Cl. 83—347 **3 Claims**



1. A crosscutting device for a folder in a rotary printing press, said crosscutting device comprising:

a cutting cylinder having at least one rigid cutter blade with a cutter tip, said cutter blade extending radially outwardly from, and axially along a peripheral surface of said cutting cylinder;

a cutting groove cylinder cooperatively positioned with said cutting cylinder;

at least one axially extending groove having an underside and first and second longitudinal edges formed on a peripheral surface of said cutting groove cylinder; and

at least one axially extending groove strip assembly enclosed in said at least one groove on said peripheral surface of said cutting groove cylinder, said at least one groove strip assembly including an axially extending cutting groove component having an upperside, and an axially extending resilient pressure spring component, said cutting groove component and said resilient pressure spring component being formed of the same material and being positioned circumferentially adjacent each other in said at least one axially extending groove on said peripheral surface of said cutting groove cylinder, said cutting groove component being situated before said resilient pressure spring component in said at least one groove in a direction of rotation of said cutting groove cylinder, said cutting groove component having a first resiliency, said resilient pressure spring component having a plurality of axially spaced apertures, said apertures being spaced to provide said resilient pressure spring component with a second resiliency which is greater than said first resiliency, said cutter tip contacting said upperside of said cutting groove component during crosscutting of a product passing between said cooperating cutting cylinder and said cutting groove cylinder, said resilient pressure spring component absorbing forces generated on said cutting groove component by contact between said cutter tip and said upperside of said cutting groove component.

5,357,832

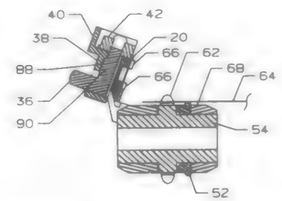
WEB FEED APPARATUS WITH MARGIN CUTTER

Gregory A. Ferguson, New Bedford, Mass., assignor to Precision Handling Devices Inc., Fall River, Mass.

Continuation of Ser. No. 994,731, Dec. 22, 1992, abandoned. This application Nov. 8, 1993, Ser. No. 148,549

Int. Cl.[5] B26D *1/24*

U.S. Cl. 83—423 **29 Claims**



20. A mechanism for cutting a marginal strip along one of the side edges of a web, which mechanism comprises:

(a) a first cutter;

(b) a drive mechanism for rotating said first cutter, said first cutter having a cutting edge;

(c) a second cutter having a cutting edge and being reciprocably movable in a lateral direction parallel to the plane of said web and orthogonal to the direction of movement of said web through said mechanism between alternate positions where said cutting edges of said first and second cutters are in cutting relationship with each other and with said web to cut said marginal strip or are out of said cutting relationship, said second cutter remaining in contact with said web at all times; and

(d) means for selectively moving said second cutter in said lateral direction between said positions.

5,357,833

DEVICE (CLAMP) FOR RETAINING ROLLS OR LOGS BY PRESSURE IN CUTTERS FOR THE PRODUCTION OF TOILET PAPER AND OTHER ITEMS

Guglielmo Biagiotti, Capannori, Italy, assignor to Fabio Perini S.p.A., Lucca, Italy

Continuation of Ser. No. 915,945, Jul. 17, 1992, abandoned. This application Nov. 10, 1993, Ser. No. 150,540

Claims priority, application Italy, Jul. 31, 1991, FI/91/A192; European Pat. Off., Jun. 10, 1992, 92830304.9

Int. Cl.[5] B26D *3/16, 7/02*

U.S. Cl. 83—458 **14 Claims**

1. A log-clamping device for a log-cutting machine capable of cutting one or more logs, including for each log an advancing path with a log-cutting device operating in a log-cutting plane at right angle to the advancing path, and on each side of each log-cutting plane:

a pair of enclosing supports;

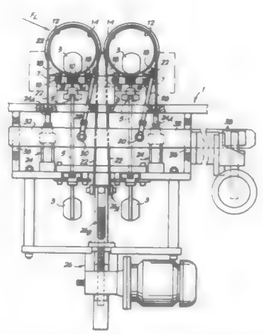
a pair of symmetrically curved, elastically flexible strips, each having an inner surface and an outer surface;

a first end of each strip being supported by a respective one of said pair of enclosing supports with a portion of said strip extending from said support to form, with its inner surface, a sliding seat for the log, the portion of said strip extending from said support capable to spread apart elastically;

an elastic holder;

an adjusting holder;

a strap having a first end which is anchored to said elastic holder and a second end anchored to a mobile adjusting



holder with said strap surrounding said pair of flexible strips, said adjusting holder adjusting a variation of the geometry of said flexible strips in relation to a variation in the diameter of the log to be processed; and

two opposing oscillating cradles arranged adjacent to said enclosing support, said cradles being in contact with the outer surface of each said flexible strip.

5,357,834

MITER SAW

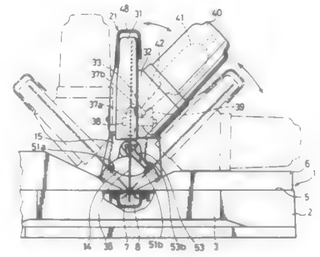
Katsuyasu Ito, and Mitsuyoshi Niinomi, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan

Filed May 18, 1993, Ser. No. 63,289

Claims priority, application Japan, May 22, 1992, 4-156009

Int. Cl.[5] B27B *5/20*

U.S. Cl. 83—471.3 **4 Claims**



1. A miter saw comprising:

a base on which a work is placed;

a miter saw unit supporting a saw blade and having a motor for driving said saw blade, said motor having a motor shaft extending in a longitudinal direction of said motor;

a transmission mechanism for transmitting rotation of said motor to said saw blade;

a support mechanism supporting said miter saw unit relative to said base for vertical pivoting of said miter saw unit relative to said base, and means for mounting said miter saw unit for laterally pivoting between a vertical position and an inclined position, said saw blade having a rotational axis extending substantially horizontally when said miter

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saw unit is at said vertical position, and the rotational axis of said saw blade extending obliquely relative to the horizontal direction when said miter saw unit is at said inclined position;

said motor being positioned on one lateral side of said miter saw unit toward said inclined position and substantially laterally aligned with said saw blade, wherein when in said vertical position said motor extends to a vertical height above said base generally equal to the vertical height of said saw blade above the base;

said rotational axis of the saw blade has a longitudinal direction, and the motor shaft of said motor is positioned so that the longitudinal direction of the saw blade axis and the motor shaft define a plane which is perpendicular to the saw blade and to the base;

said motor shaft of the motor extending obliquely relative to the rotational axis of said saw blade and extending obliquely upward relative to said saw blade and said base when said miter saw unit is at said vertical position, and said support mechanism including means for limiting the pivoting angle of said miter saw unit to a predetermined oblique angle so that the longitudinal axis of said motor lies horizontally when said miter saw unit is pivoted to said predetermined oblique angle.

5,357,835

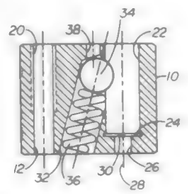
BALL LOCK PUNCH RETAINER

David J. Moellering, 22644 Shadowglen, Farmington Hills, Mich. 48335

Continuation-in-part of Ser. No. 923,152, Jul. 29, 1992. This application Nov. 25, 1992, Ser. No. 981,779

Int. Cl.[5] B26D *7/26*

U.S. Cl. 83—698.31 **13 Claims**



10. A punch retainer comprising a single piece solid body of through hardened tool steel,

a flat surface on the body for engagement with a punch press platen and circumferential sidewalls on the body,

at least one hole in the body for means to fasten the retainer to the press platen,

at least one dowel pin hole in the body and intersecting the flat surface,

at least one punch hole having a sidewall within the body for receipt of a punch and punch retention means extendable into the punch hole,

the improvement comprising a flat bottom terminating the punch hole within the body, and

a relief groove formed in the punch hole sidewall adjacent the flat bottom.

5,357,836

DEVICE FOR RETAINING KNIFE BLADES

S. A. Roland Strömberg, Granstigen 15, S-694 00 Hallsberg, and Rolf A. Larsson, Södra Promenaden 7, S-690 70 Pålsboda, both of Sweden

Filed Jan. 8, 1993, Ser. No. 1,777

Claims priority, application Sweden, Jan. 14, 1992, 9200101-5

Int. Cl.[5] B26D *1/62*

U.S. Cl. 83—698.31 **15 Claims**

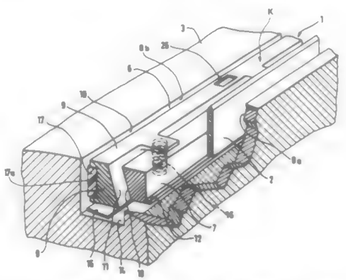
1. Device for retaining knife blades for cutting or perforating a running web, the web running between a rotatable knife-retaining cylinder having a slot therein for retaining a knife blade, and a counter-pressure cylinder, said knife blade retaining device comprising:

(a) a wedge device including:

(1) at least two rulers with wedge surfaces inclined toward a bottom of the slot, including a retaining ruler positioned adjacent to a first side wall of the slot, said retaining ruler having a support portion for retaining a knife blade, and a tightening ruler,

(2) at least one first spring means mounted between the rulers to move the rulers apart in a direction parallel to the blade height;

(b) a height-adjustment device connected to the wedge device to position the wedge device at a height to wedge-



up the knife blade resting on the support portion upon contact between the knife blade and the counter-pressure cylinder; and

(c) at least one second spring means disposed on the tightening ruler to engage a second side wall of the slot when inserted therein, said second spring means occupying a remaining width of the slot when the wedge device and knife blade are inserted therein, the second spring means being compressible for permitting insertion of a knife blade having a dimension differing from a pre-defined blade height dimension which lies within a pre-defined range of tolerance, the second spring means having a spring force for retaining the knife blade in the slot without preventing wedging up of the knife blade upon contact with the counter-pressure cylinder.

5,357,837

STAND UP WOODWIND MOUTHPIECE

William P. Disera, 555 Westminster St., Joliet, Ill. 60435

Continuation-in-part of Ser. No. 478,768, Feb. 12, 1990, Pat. No. D. 318,868, which is a division of Ser. No. 38,343, Apr. 14, 1987, Pat. No. D. 308,069. This application May 20, 1991, Ser. No. 707,887

Int. Cl.[5] G10D *9/02*

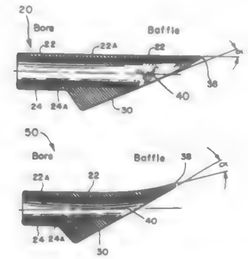
U.S. Cl. 84—383 R **7 Claims**

1. A woodwind mouthpiece, one end of which is adapted to be engaged by the players mouth and teeth and the other end of which is adapted to be installed in a woodwind instrument, comprising:

a base member having a generally elongated shape extending along an axis and being defined by side walls, a top wall and a bottom wall defining an air passageway extending along said axis through said base member which includes a baffle portion adapted to be engaged by the mouth and teeth of the player and a bore portion that is adapted to connect the mouthpiece to a woodwind instrument;

said air passageway provided within the base member extending substantially straight through the baffle and bore portions and having a substantially uniform cross-sectional area therealong; and

a lay surface defined by the bottom wall at a selected acute angle with respect to the axis of said passageway and intersecting the top wall, said lay surface adapted for



supporting a reed on the mouthpiece across an open end of said air passageway adjacent the baffle portion of the mouthpiece.

5,357,838

DRUM

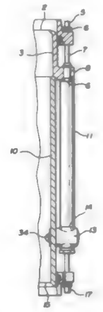
Makoto Kurosaki, Shizuoka, Japan, assignor to Yamaha Corporation, Japan

Filed Aug. 5, 1993, Ser. No. 102,403

Claims priority, application Japan, Aug. 7, 1992, 4-055747[U]

Int. Cl.[5] G10D *13/02*

U.S. Cl. 84—413 **7 Claims**



1. A drum, comprising:

A) a generally cylindrical drum shell having first and second open ends;

B) a drum head support system including:

1) a suspension ring and a first counterhoop which cooperate to hold a drum head along a flat plane with a tension determined by the relative axial locations of said suspension ring and first counterhoop; and,

2) means for adjusting the relative axial locations of said suspension ring and counterhoop to adjust said tension in said drum head;

C) a drum head positioning system for positioning said drum head support system at a location which causes said drum head to cover said first open end of said drum shell, said drum head positioning system including:

1) a second counterhoop located near said second open end of said drum shell;

2) a plurality of axially extending tensioning bars coupling said first and second counterhoops; and

3) connecting means for directly and mechanically connecting each said tensioning bars to said drum shell.

5,357,839

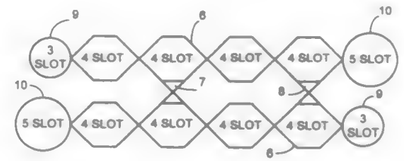
SOLID BRAID STRUCTURE

David S. Brookstein, Wellesley; John Skelton, Sharon; John R. Dent; Robin W. Dent, both of Foxboro, and Donald J. Rose, Sharon, all of Mass., assignors to Albany International Corp., Albany, N.Y.

Continuation of Ser. No. 551,266, Jul. 12, 1990, abandoned. This application Sep. 23, 1993, Ser. No. 126,093

Int. Cl.[5] D04C *1/00*

U.S. Cl. 87—1 **7 Claims**



1. A braid structure comprising:

a plurality of interlocked contiguous layers, each layer formed of yarns extending in serpentine paths crossing at intralayer crossover points disposed at a first distance; and

a plurality of interlayer crossover points between said layers disposed at a second distance larger than said first distance, each interlayer crossover point between two adjacent layers being separated from any other interlayer crossover point between said two adjacent layers by at least two intralayer crossover points, each interlayer crossover point being defined by one yarn from one layer passing to another layer and replacing another yarn from said another layer, and by said another yarn passing from said another layer to said one layer and replacing said one yarn;

said one yarn and said another yarn forming an interlock between said one layer and said another layer.

5,357,840

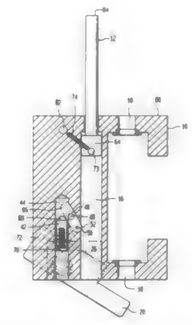
BORE OBSTRUCTION DETECTION INDICATOR

Charles F. Wanits, Ballston Lake, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 4, 1993, Ser. No. 147,246

Int. Cl.[5] F41A *21/00, 35/00*

U.S. Cl. 89—1.1 **7 Claims**



1. A gun bore obstruction detector indicator for an armored vehicle which comprises:

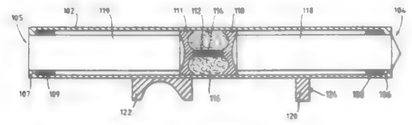
a housing operatively attached to the muzzle end of said gun bore;

triggering means rotatably supported in said housing for

VOL 1167 ISS 4 OC 25 1994 UMI

moving in response to said gun bore hitting an obstruction;
variable tensioning means operatively attached to said housing and said triggering means for changing the torque force necessary to move said triggering means;
caming means operatively connected to said triggering means for translating rotary motion of said triggering means to a vertical movement;
plunger means slidably contacting said caming means for vertically moving in response to said caming means;
indicator shaft means operatively disposed in said housing for indicating when said bore is clear and when said muzzle end has hit an obstruction; and
lever means rotatably supported by said housing for locking said shaft means in an untriggered position when said bore is clear of obstruction and for releasing said shaft means to protrude visably from said housing when said muzzle end of said gun bore has hit an obstruction.

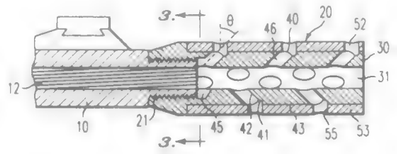
5,357,841
RECOILLESS PROJECTILE LAUNCHER
Robert O. Clark, Tonbridge; Michael J. Hinton, Maidstone, and Russell Meddes, Snodland, all of United Kingdom, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Hants, England
PCT No. PCT/GB92/00373, § 371 Date Jul. 19, 1993, § 102(e) Date Jul. 19, 1993, PCT Pub. No. WO92/16808, PCT Pub. Date Oct. 1, 1992
PCT Filed Mar. 3, 1992, Ser. No. 90,177
Claims priority, application United Kingdom, Mar. 18, 1991, 9105972.9
Int. Cl.[5] F41A *1/10*
U.S. Cl. 89—1.701 **17 Claims**



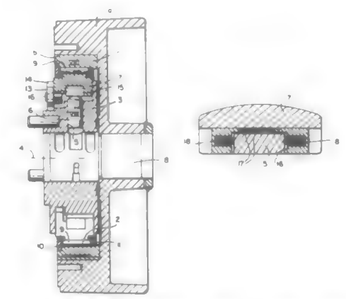
1. A projectile launcher comprising:
a launch tube (2) open at one end (4),
a piston (10) slidably located within the launch tube (2) for thrusting a projectile (18) out of the open end (4) of the launch tube (2).
a braking collar (8), coaxially located within the launch tube (2) between the piston (10) and the open end (4) of the launch tube (2) so that it is constrained over its external surface against radially outward movement, for arresting axial motion of the piston (10) during projectile launch,
and a braking collar support means (6) which is engageable with the braking collar (8) at the open end (4) of the launch tube (2),
wherein the braking collar (8) is comprised of a material in which increasing load causes progressive crushing by a progression of local stress fractures, said collar comprising a means for arresting axial motion of the piston.

5,357,842
RECOIL REDUCING DEVICE
Charles E. Reynolds, 1341 S. River Dr., Tempe, Ariz. 85281
Filed Jul. 9, 1993, Ser. No. 88,388
Int. Cl.[5] F41A *21/36*
U.S. Cl. 89—14.3 **19 Claims**

1. A recoil reducing device for use with a firearm, comprising:
a core having an inner end portion, an outer surface, a cylindrical bore defining a bore axis and an inner longitudinal wall, a plurality of inner openings through said inner longitudinal wall and being substantially forwardly oriented at an oblique angle relative to said bore axis; and
a sleeve surrounding said core, said sleeve including a rear face and an outer longitudinal wall, said outer longitudinal wall contacting the outer surface of said inner longitudinal wall along substantially the length of said outer longitudinal wall, a plurality of outer openings through said outer longitudinal wall being oriented perpendicularly to said bore axis and directly aligned in open communication with said inner openings such that substantially all gases expelled from the firearm during firing are directed away from a shooter.

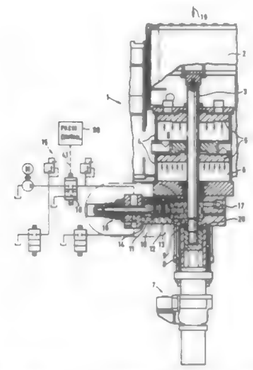


5,357,843
HYDRAULIC PUMPS OR MOTORS OF THE RADIAL CYLINDER TYPE
Ester Errante, Via dei Sessanta 18, 16152 Genova, Italy
Continuation-in-part of Ser. No. 809,475, Dec. 24, 1991. This application Mar. 18, 1993, Ser. No. 33,770
Claims priority, application Italy, Apr. 24, 1990, 12450 A/90
Int. Cl.[5] F01B *13/06*
U.S. Cl. 91—491 **3 Claims**



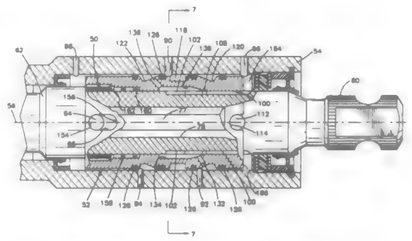
1. A radial cylinder hydraulic pump or motor, comprising:
a stator with a hollow guide element having a cylindrical inner surface,
a rotor which is rotatably mounted within said guide element around an axis offset from the axis of said cylindrical inner surface, said rotor having a plurality of radial cylinders formed therein,
a plurality of radial pistons slidably mounted within said cylinders and having radially outer ends each provided with a guide pad urged against said cylindrical inner surface,
a continuous series of main rollers covering said cylindrical inner surface and interposed between said inner surface and each guide pad of said radial piston, said main rollers having ends supported by two supporting rings connected to said guide element,
a plurality of auxiliary rollers individually interposed in a space between adjacent main rollers and said cylindrical inner surface to prevent direct contact of said adjacent main rollers,
wherein the space between said main rollers is completely filled with oil, and
wherein each of said guide pads is provided at a side thereof facing an associated radial piston with a sliding member interposed between the guide pad and the radial piston, said sliding member being slidably mounted on said guide pad between two end positions along a tangential direction with respect to the axis of rotation of said rotor, each guide pad being provided with spring means for biasing said sliding member towards an intermediate position between said two end positions.

5,357,844
RUN-UP CONTROL FOR THE PRESSURE CHEEK IN A DRAWING APPARATUS
Siegfried Baur, Göppingen, Fed. Rep. of Germany, assignor to L. Schuler GmbH, Fed. Rep. of Germany
Filed Apr. 1, 1993, Ser. No. 41,181
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1992, 4211639
Int. Cl.[5] F01B *1/00*
U.S. Cl. 91—172 **2 Claims**



1. A run-up control for a pressure cheek in a drawing apparatus of a press, comprising:
a first piston rod with a pressure piston with an effective surface which can be acted upon in a drawing direction, the first piston rod being operatively connected with the pressure cheek, said pressure piston defining a main pressure space;
a press control;
a control cylinder having first and second pressure spaces and a second piston rod with a control piston that separates the first and second pressure spaces, the main pressure space being in a constant flow connection with the first pressure space, and the second piston rod extending out of the control cylinder;
a pressure generator;
a pilot valve controlled by the press control, the second pressure space being flow connected to the pressure generator via the pilot valve;
an actuating drive controlled by the press control;
an adjustable stop operatively connected to the actuating drive so as to be adjustable in a longitudinal dimension of the second piston rod;
a fixed stop coupled to the second piston rod, the fixed stop abutting against the adjustable stop when the second pressure space is pressurized via the pilot valve; and
a controllable valve that controls fluid flow to and from the main pressure space and the first pressure space, wherein the controllable valve is controlled to a closed position during run-up of the pressure cheek such that the amount of fluid in the main pressure space and the first pressure space is constant during run-up of the pressure cheek.

5,357,845
POWER STEERING SYSTEM
Henry C. Sangret, St. Clair Shores, Mich., assignor to TRW Inc., Lyndhurst, Ohio
Filed Jun. 24, 1993, Ser. No. 82,047
Int. Cl.[5] F15B *9/10*
U.S. Cl. 91—375 A **21 Claims**



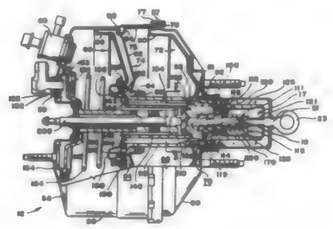
1. A steering system for a vehicle comprising:
a housing;
an input shaft;
means for supporting said input shaft for rotation relative to said housing;
an output member;
means for supporting said output member for rotation relative to said housing and said input shaft;
first and second coaxial valve members, means for supporting said first and second valve members for rotation relative to each other to port pressurized hydraulic fluid to a vehicle power steering motor, one of said first and second valve members being connected to and rotating with said input shaft and the other of said first and second valve members being connected to and rotating with said output member, said second valve member moving axially relative to said first valve member between first and second axial position, said input shaft and said output member being directly interconnected by said second valve member and rotating together relative to said housing to effect manual steering of the vehicle when said second valve member is in its first position, said input shaft rotating relative to said second valve member and said output member to effect power assisted steering of the vehicle by porting pressurized hydraulic fluid to said steering motor when said second valve member is in its second position; and
means for moving said second valve member from its first position to its second position in response to the velocity of the vehicle being below a predetermined value.

5,357,846
TANDEM BRAKE BOOSTER
Robert S. Rudolph, Osceola, and James J. Colpaert, Granger, both of Ind., assignors to AlliedSignal Inc., Morristown, N.J.
Filed Nov. 24, 1993, Ser. No. 158,123
Int. Cl.[5] F01B *19/00;* **F15B** *9/10*
U.S. Cl. 92—48 **7 Claims**

1. A tandem brake booster having a front shell connected to a rear shell to define a housing, said housing being divided into first and second front and rear chambers by first and second walls, said first and second walls being connected to a cylindrical hub member that extends from said first front chamber through said rear shell, said cylindrical hub member having a bore therein and first, second and third passageways, and valve

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means located in said bore and responsive to an input force for selectively interrupting a fluid communication between said first and second front and rear chambers to create a first pressure differential across said first and second walls and for the development of a first output force that is communicated to operate a member, said tandem brake booster being characterized by a first sleeve having a first end and a second end, said first end of said first sleeve having a flange with an opening therein, said first sleeve being located in said bore with said flange engaging said hub to seal said second and third passageways from said first front chamber and align said opening with said first passageway to provide continual communication between said first and second front chambers, a second sleeve having a first end and a second end, said first end of said second sleeve having a radial disc attached thereto, said radial disc



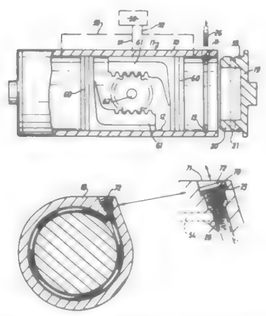
being urged into sealing engagement with said front shell by a return spring while said second end of said second sleeve is located in said first sleeve, said first and second sleeves forming a flow path between a port in said front shell and said second passageway in said hub, said second passageway being connected to said bore by a first radial opening, said bore being connected to said second rear chamber by a second radials opening in said hub, said second rear chamber being continually connected to said first rear chamber by said third passageway in said hub, said hub having an annular seat located between said first and second radial openings, said valve means engaging said annular seat to interrupt communication between said second passageway and said bore in response to movement by an input force to create said first pressure differential for the development of said first output force.

5,357,847

PRESSURE VESSELS HAVING END CLOSURES AND RETAINERS

Duncan R. Stewart, Newent, England, assignor to Hytork Actuators Limited, Gloucester, England

Filed Apr. 17, 1991, Ser. No. 686,438
Int. Cl.[5] F01B *29/00*
U.S. Cl. 92—128 **11 Claims**



1. A pressure vessel comprising a hollow member, an end closure in telescope relationship with the hollow member, flexible continuous means extending around the end closure and operatively connecting the closure and the hollow member, a passage in the hollow member for insertion and withdrawal of the flexible continuous means, an annular pressure seal between the closure and the hollow member, the continuous means at its outer end being secured to a threaded plug sealingly receivable in a bore in the passage.

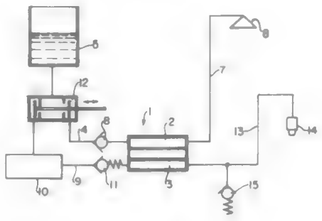
7. A pressure vessel comprising a hollow member, an end closure in telescope relationship with the hollow member, flexible continuous means extending around the end closure and operatively connecting the closure and the hollow member, a passage in the hollow member for insertion and withdrawal of the flexible continuous means, an annular pressure seal between the closure and the hollow member only axially outwards of the continuous means and between the continuous means and the environment external of the hollow member, a threaded member received in the passage and threadedly connected to the closure, and seal means between the threaded member and the hollow member for sealing the passage, said passage being shaped to permit relative axial movement between the threaded member and the hollow member.

5,357,848

COFFEE MACHINE

Arthur Eugster, and Daniel Fischer, both of Romanshorn, Switzerland, assignors to Arthur Eugster AG, Romanshorn, Switzerland

Filed Aug. 5, 1993, Ser. No. 102,689
Int. Cl.[5] A47J *31/30*
U.S. Cl. 99—279 **10 Claims**



1. A coffee machine comprising:
a fresh water reservoir;
a heating block having at least a first flow heater pipe, said heating block being in fluid communication with said reservoir via a first connection line and a second connection line, said first connection line having a check valve disposed therein, said second connection line having a pump disposed therein;
a coffee-making head being in fluid communication with said heating block via a pipe, said pipe ascending from said heating block to said coffee-making head;
a steam nozzle being in fluid communication with said heating block via a steam line; and
means for fluidly connecting said reservoir with said steam outlet when said pump is operating.

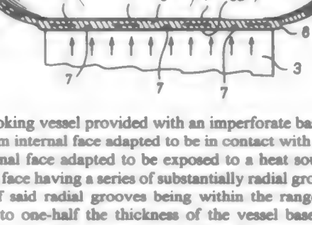
5,357,849

AIR FRYER

Li-Hsin Chang, No. 16-1, Lane 742, San Feng Rd., Feng Yuan City, Taichung Hsien, Taiwan

Filed Jan. 19, 1993, Ser. No. 5,777
Int. Cl.[5] A47J *37/00*
U.S. Cl. 99—340 **5 Claims**

1. An air fryer comprising:
a) a base;
b) a seat attached to said base, said seat defining an upwardly opening space and a lateral opening communicating with the space;
c) a post located in said space defined by the seat so as to be slidably movable with respect to the seat in a generally vertical direction, the post defining a plurality of dents aligned with the lateral opening;
d) releasable catch means located on the seat so as to engage one of the plurality of dents so as to hold the post in a desired position relative to the seat;
e) an arm having a blower thereon;
f) a cap secured to the arm so as to normally cover the base;
g) pivot means pivotally connecting the arm to the post such that the arm may be pivoted upwardly to that the cap may be moved upwardly away from its base; and



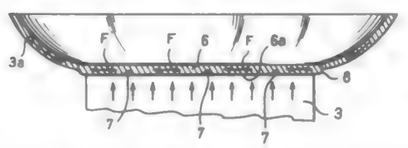
h) a spacer located between said base and said cap, said spacer including two halves, each half having two end portions, each of said end portions of said two halves including a flange formed thereon, said flanges of two halves abutting each other so as to form two pairs of flanges, and two couplers coupling said pairs of flanges together, each of said end portions of a first of said two halves includes a hook formed thereon, and each of said end portions of a second of said two halves includes a cavity defined therein for engagement with said hook of said first half, whereby, said two halves are solidly coupled together.

5,357,850

COOKING VESSEL HAVING A BASE WHICH IS NON-DEFORMABLE UNDER THE ACTION OF HEAT

Alain Coudurier, Albens, France, assignor to Seb S.A., Selongey, France

Continuation of Ser. No. 776,399, Nov. 21, 1991, abandoned.
This application May 26, 1993, Ser. No. 67,173
Claims priority, application France, Mar. 30, 1990, 90 04096; Oct. 5, 1990, 90 12301
Int. Cl.[5] A47J *27/00, 36/02, 37/10*
U.S. Cl. 99—422 **15 Claims**



1. Cooking vessel provided with an imperforate base having a uniform internal face adapted to be in contact with food and an external face adapted to be exposed to a heat source, said external face having a series of substantially radial grooves, the depth of said radial grooves being within the range of one-quarter to one-half the thickness of the vessel base and the width of said radial grooves being within the range of one-fifth to two-and-a-half times the thickness of the base, said radial grooves having side walls that are continuous from end to end of said radial grooves.

5,357,851

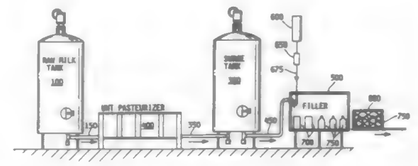
Patent Not Issued For This Number

5,357,852

METHOD AND APPARATUS FOR PRODUCING REDUCED LACTOSE MILK

James J. Kohler, Gem Lake; Alan B. Erickson, Shoreview, and Jenny L. Meyer, Mahtomedi, all of Minn., assignors to Kohler Mix Specialties, White Bear Lake, Minn.

Filed Jun. 2, 1992, Ser. No. 892,231
Int. Cl.[5] A23C *19/00*; B65B *43/42*
U.S. Cl. 99—453 **3 Claims**



1. An apparatus for producing reduced lactose milk products from raw milk, comprising:
a) means for conveying said raw milk to a pasteurizer, said pasteurizer including means for pasteurizing said raw milk;
b) means for conveying pasteurized milk from said pasteurizer to a fill point and means for metering predetermined quantities of said pasteurized milk at said fill point;
c) a lactase enzyme tank at said fill point and having means for metering predetermined quantities of lactase enzyme at said fill point;
d) a filling machine for conveying open containers past said fill point for receiving said metered predetermined quantities of said pasteurized milk and said lactase enzyme into each of said containers, and having means for sealing said containers; and
e) means for storing said containers after sealing for a predetermined length of time; whereby reduced lactose milk is produced.

5,357,853

SPIT SUPPORTED MEAT SLICING APPARATUS

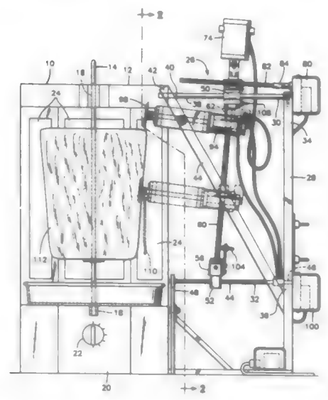
William J. Nelson, and Peter Kjeer, both of Mankato, Minn., assignors to Tack Room Imports, Inc., Mankato, Minn.

Filed Apr. 8, 1993, Ser. No. 44,005
Int. Cl.[5] A22C *17/02*; A47J *37/04*
U.S. Cl. 99—538 **13 Claims**

1. A meat slicing apparatus comprising: an upstanding support, said upstanding support including upper and lower portions; elongated upper and lower supports projecting outwardly from one side of said upper and lower portions, respectively, of said upstanding support; an upstanding guide structure including upper and lower ends supported from and guidingly movable along said upper and lower supports, respectively; a cutting assembly mounted from said guide structure for guided movement therealong and operable to make cuts in an upstanding plane disposed transverse to said upper and

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lower supports; first drive means operable to gradually shift said upper and lower ends along said upper and lower supports



and second drive means operable to shift said cutting assembly up and down said guide structure.

5,357,854

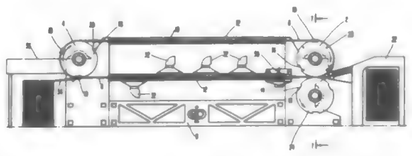
METHOD FOR HIGH-SPEED CALENDERING

Harvey Dahlgren, Irving, and Scott R. Johnson, Lewisville, both of Tex., assignors to Epic Products International Corp., Arlington, Tex.

Division of Ser. No. 928,358, Aug. 12, 1992, Pat. No. 5,275,096. This application Oct. 1, 1993, Ser. No. 130,386

Int. Cl.[5] D21G *1/00*; B30B *15/34*

U.S. Cl. 100—38 **12 Claims**



1. A method of calendering a sheet aligned on a flexible plate, wherein a series of such plates forms a working surface of an endless belt looped around and driveable in a direction of travel by a heated calendering cylinder and a delivering cylinder, comprising the steps of:

rotating the cylinders to drive the belt;

aligning the entire sheet on a surface of the flexible plate;

passing the plate and aligned sheet through a nip formed by the heated calendering cylinder and an impression cylinder;

cooling the plate as it travels between the heated calendering cylinder and the delivering cylinder; and

removing the sheet from the plate as the plate travels around the delivering cylinder.

5,357,855

SCREW PRESS FOR DEWATERING A SLURRY

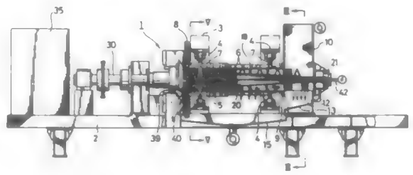
Eiichi Ishigaki, Sakaide, and Yukitoshi Mitani, Marugame, both of Japan, assignors to Ishigaki Mechanical Industry Co., Ltd., Japan

PCT No. PCT/JP91/01268, § 371 Date May 17, 1993, § 102(e) Date May 17, 1993, PCT Pub. No. WO93/05953, PCT Pub. Date Apr. 1, 1993

PCT Filed Sep. 24, 1991, Ser. No. 50,449

Int. Cl.[5] B30B *9/14*

U.S. Cl. 100—48 **9 Claims**



1. A screw press (1) comprising:

a main support (2);

a frame (3) secured to said main support (2);

an outer screen casing (5) rotatably supported by said frame (3) to extend horizontally above said main support (2), said outer screen casing having a slurry supplying side at a first end and a cake discharging side at a second end, said outer screen casing (5) having mesh screens (M1, M2, M3) with a finer mesh on said cake discharging side (40, M3) compared with a mesh on said slurry supplying side (10, M1);

a screw shaft (20) rotatably mounted on said main support (2) coaxially inside said outer screen casing (5) to extend horizontally above said main support (2) so as to gradually reduce a space between said screw shaft (20) and said outer screen casing (5) in the extending direction, said screw shaft (20) being provided with a spiral wing (22) arranged around an outer surface of said screw shaft (20) along its extending length so as to substantially contact with said outer screen casing (5), and said screw shaft (20) having an outer surface with a mesh screen of a finer size compared with said mesh screens of said outer casing (5);

a slurry supplying means (10, 11, 14) disposed at said first end of said outer screen casing (5) to supply a slurry into said space between said outer screen casing (5) and said screw shaft (20); and

at least one rotating means (25) for rotating said screw shaft (20) in one rotational direction and said outer screen casing (5) in the opposite rotational direction.

5,357,856

SQUEEGE DEVICE FOR SUPPLYING INK IN A STENCIL PRINTING DEVICE

Takanori Hasegawa, and Junnosuke Katsuyama, both of Tokyo, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Sep. 9, 1992, Ser. No. 942,461

Claims priority, application Japan, Sep. 13, 1991, 3-235130

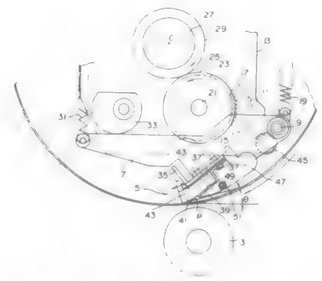
Int. Cl.[5] B41L *13/00*

U.S. Cl. 101—120 **8 Claims**

1. A squeegee device for supplying ink in a stencil printing device from the interior of a cylindrical, ink permeable printing drum which rotates around an axial line thereof with a stencil master plate wrapped around the outer circumferential surface thereof, comprising:

a squeegee blade having a free end and a base end, said squeegee blade being made of a rubber-like elastic material, said free end of said squeegee blade being in engagement with the inner circumferential surface of said cylindrical printing drum, said free end of said squeegee blade having a reverse surface, said squeegee blade having a thickness;

a mounting base, and clamping means for securing said base end of said squeegee blade to said mounting base, a certain length of said free end of said squeegee blade extending beyond said mounting base; and



a spring plate extending along said reverse surface of said squeegee blade, said spring plate extending beyond said mounting base, said spring plate comprising metal and having a thickness less than said thickness of said squeegee blade.

5,357,857

MAGNETICALLY PRESSED DOCTOR BLADE FOR CYLINDRICAL-SCREEN STENCIL

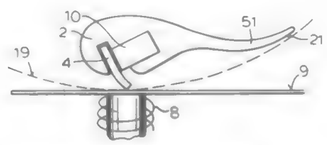
Johannes Zimmer, Ebentaler Str. 133, A-9020 Klagenfurt, Austria

Continuation of Ser. No. 761,882, Sep. 16, 1991, abandoned. This application Mar. 29, 1993, Ser. No. 39,504

Claims priority, application Austria, Jan. 17, 1990, 92/90; Jan. 26, 1990, 181/90

Int. Cl.[5] B41L *13/04*

U.S. Cl. 101—120 **13 Claims**



1. An apparatus for coating a web having a pair of opposite sides with a flowable substance, said apparatus comprising:

a coating station;

means defining a path for displacing the web along the path in a direction of displacement past the coating station;

a surface at the coating station engaging one side of the web and traveling in said direction;

magnetic means at said coating station along the one side of said web generating a magnetic field passing through said web;

means for applying a flowable substance to the other side of the web upstream in the direction from the coating station;

a doctor element at said coating station on the other side of said web and composed at least in part of a magnetically attractable material lying in said magnetic field, whereby said doctor element is drawn toward said web with a pressing force corresponding to a strength of the field in an operative state of the doctor element, the doctor element being in an inoperative state when the field is not generated by the magnetic means;

a wiper on said doctor element having an edge engaging the other side of the web and pressing said flowable substance onto said web and pressing the web against the surface traveling in said direction;

means mounting said doctor element free of connection with a fixed member in the operative state of the doctor element for at least limitedly shifting of the doctor element relative to said magnetic means in said direction exclusively by a combined action of said flowable substance, said surface and said magnetic field on said doctor element, whereby said doctor element is self-positioning with respect to said magnetic field; and

means engageable with said doctor element and ineffective in said operative state for interfering with at least limited shifting of said doctor element relative to said magnetic means in said direction and thereby holding said doctor element in a selected angular orientation about said edge in the inoperative state of said doctor element.

5,357,858

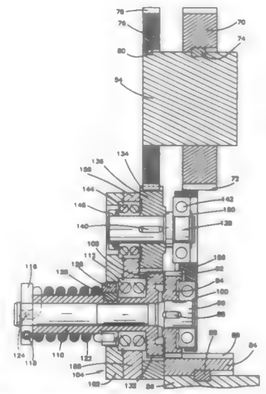
APPARATUS FOR PREVENTING CIRCUMFERENTIAL SEPARATION BETWEEN A BLANKET CYLINDER GEAR AND A PLATE CYLINDER GEAR

Glenn A. Guaraldi, Kingston; Charles L. Krouse, Madbury, and Brian J. Gentle, Rochester, all of N.H., assignors to Heidelberg Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Mar. 4, 1993, Ser. No. 26,470

Int. Cl.[5] B41F *5/00*

U.S. Cl. 101—216 **2 Claims**



1. A printing apparatus comprising:

a first printing cylinder (16) having means for supporting a first printing member (38);

a first cylinder gear (84) which is coaxial with and rotatable with said first printing cylinder (16), said first cylinder gear (84) having gear teeth (86);

a second printing cylinder (14) adjacent to said first printing cylinder (16), said second printing cylinder (14) having means for supporting a second printing member (34) in ink transferring relationship with said first printing member (38) at a nip (46) between said first and second printing cylinders (16, 14);

a second cylinder gear (70) which is coaxial with and rotatable with said second printing cylinder (14), said second cylinder gear (70) having gear teeth (72) in meshing engagement with said gear teeth (86) on said first cylinder gear (16) so as to establish a driving connection directly between said first and second cylinder gears (84, 70); and

means for preventing circumferential separation of said gear teeth (86, 72) on said first and second cylinder gears (84, 70) by applying respective torques to said first and second cylinder gears (84, 70) which are equal and opposite to

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each other and which together apply a net torque with a value of zero;

said means for preventing circumferential separation including a first torque transmitting gear (92), a second torque transmitting gear (108), a third torque transmitting gear (136), and a fourth torque transmitting gear (76), said torque transmitting gears (92, 108, 136, 76) establishing a torque transmitting gear train which extends between said first and second printing cylinders (16, 14) separately from said driving connection;

said first torque transmitting gear (92) having gear teeth (94) in meshing engagement with said gear teeth (86) on said first cylinder gear (84) and being rotatable about an axis;

said second torque transmitting gear (108) being coaxial with said first torque transmitting gear (92) and being rotatable about said axis relative to said first torque transmitting gear (92), said second torque transmitting gear (108) having gear teeth (132);

said third torque transmitting gear (136) having gear teeth (134) in meshing engagement with said gear teeth (132) on said second torque transmitting gear (108);

said fourth torque transmitting gear (76) being coaxially fixed to and rotatable only with said second printing cylinder (14) and said second printing cylinder gear (70), said fourth torque transmitting gear (70) having gear teeth (76) in meshing engagement with said gear teeth (134) on said third torque transmitting gear (136); and

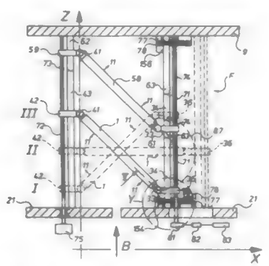
said means for preventing circumferential separation further including spring means (122) for biasing said first and second torque transmitting gears (92, 108) about said axis in respective directions that are opposite to each other.

5,357,825

MATERIAL WEB TURNING BAR ASSEMBLY

Günther O. Eckert, Zellingen, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 10, 1993, Ser. No. 103,913
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1992, 4226386; Apr. 7, 1993, 4311437
Int. Cl.[5] B41F *13/54*
U.S. Cl. 101—228 9 Claims



1. A shiftable material web turning bar assembly for use in a web fed printing press, said assembly comprising:

a printing press having spaced first and second side frames;

a first lead screw and support spindle extending between said first and second side frames;

means supporting said first lead screw and support spindle for movement longitudinally with respect to said side frames;

a second lead screw and support spindle extending between said first and second side frames;

a first material web turning bar extending between said first and second lead screws and support spindles and being hingedly connected at a first end to said first lead screw and support spindle and at a second end to said second lead screw and support spindle; and

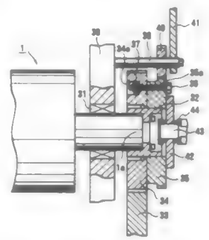
means to drive said first and second lead screws to shift said first and second ends of said first material web turning bar laterally between said first and second side frames.

5,357,860

CYLINDER PHASE ADJUSTMENT CONTROLLING APPARATUS FOR PRINTING PRESS

Satoshi Shibata, and Hisaaki Oyoshi, both of Ibaragi, Japan, assignors to Komori Corporation, Tokyo, Japan

Filed Mar. 24, 1993, Ser. No. 36,460
Claims priority, application Japan, Mar. 27, 1992, 4-025384[U]
Int. Cl.[5] B41F *13/24*
U.S. Cl. 101—248 6 Claims



1. A cylinder phase adjustment controlling apparatus in a printing press having a frame, a drive motor, a cylinder rotatably axially supported on the frame and coupled to the drive motor, the cylinder having an end face, the apparatus comprising:

a first gear phase-adjustably fitted on the cylinder;

a to-be-detected body rotating together with said cylinder, the to-be-detected body fixed on the end face of the cylinder in such a location as to rotate in a synchronous phase with the cylinder;

detecting means, fixed to said frame, for detecting said to-be-detected body;

a rotary angle detector for outputting a rotation pulse in accordance with rotation of said cylinder;

counter means for counting a rotation pulse output from said rotary angle detector, the counter means being reset by a detection output from said detecting means;

a second gear fixed to said cylinder;

a plurality of auxiliary cylinders, each auxiliary cylinder rotated according to a rotating movement of the second gear to adjust print timings of the printing press; and

control means for automatically controlling a phase of said cylinder on the basis of an output from said rotary angle detector after said detecting means detects said to-be-detected body, wherein the control means stops rotation of the cylinder at a preset position for plate replacement in the cylinder when the counter, after being reset, counts a predetermined number of rotation pulses corresponding to a control phase amount after a detection output is output from said detecting means,

wherein the phase adjustment of the cylinder is independently performed by the cylinder phase adjustment controlling apparatus after completion of a printing timing adjustment of the cylinder and the auxiliary cylinders.

5,357,861

MEDICAL STAMP SYSTEM AND METHOD OF USE

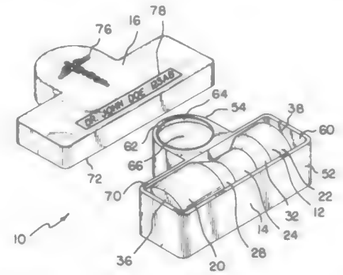
Rodolfo d'Arbelles, and Maryann d'Arbelles, both of Rte. 1 Box 661-C-7, High Springs, Fla. 32643

Filed Aug. 11, 1993, Ser. No. 104,532
Int. Cl.[5] B41F *31/00*
U.S. Cl. 101—327 5 Claims

1. A medical stamp system for use by a physician marking a patient with an intended course of medical action, the system comprising, in combination:

a stamp having a cylindrical upper portion, a cylindrical lower portion and a cylindrical central portion therebetween, the stamp having a conical upper portion between the upper and central portion and a conical lower portion between the lower and central portions, the cylindrical upper and lower portions being of an essentially common diameter with the length of the upper portion being greater than the length of the lower portion, the stamp having opposed planar surfaces at the ends of the upper and lower portions, the stamp having a die for forming indicia on the planar surface of the lower portion with such indicia including caduceus indicative of the medical profession and a term (MyWil) referring to the patient's wili indicative of an intended course of medical action;

a box having a generally rectangular major portion for receipt of the stamp, the box also having a minor region coupled to and offset from the major region with a downwardly extending recess, a fluid impervious liner within the recess, an ink pad within the liner and recess, and indelible ink within the ink pad, with the recess, liner and pad being of a size to receive the lower portion of the stamp for inking the die, the box also having a lid to cover the major and minor regions of the box, the lid having on its exterior surface a caduceus indicative of the medical profession and the name and specific number of a responsible physician.

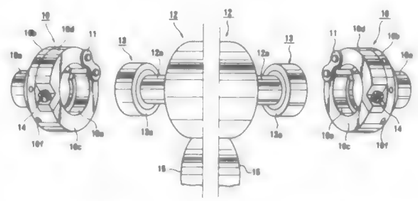


5,357,862

ROLLER HOLDING APPARATUS FOR PRINTING PRESS

Kazutaka Kohara, Chiba, Japan, assignor to Komori Corporation, Tokyo, Japan

Continuation of Ser. No. 956,618, Oct. 5, 1992, abandoned. This application Jan. 24, 1994, Ser. No. 185,441
Claims priority, application Japan, Oct. 11, 1991, 3-090929
Int. Cl.[5] B41F *31/34, 13/20;* B41G *27/32*
U.S. Cl. 101—348 2 Claims



1. A roller holding apparatus for a printing press which holds bearing portions at two end portions of a roller, comprising:

an annular roller holding portion arranged at each of said two end portions, the annular roller holding portion including

a fixing member having a first screw hole, and

an opening and closing member pivotally mounted on said fixing member and capable of being opened and closed, the opening and closing member having a second screw hole substantially equal in diameter to the first screw hole; and

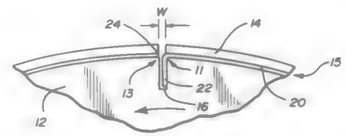
fixing means for causing said fixing member and said opening and closing member of said roller holding portion to secure each of said bearing portions at said two end portions of said roller, said fixing means includes a bolt having a plurality of portions, wherein a first portion of the bolt immediately adjacent to a head portion is non-threaded and has a smaller diameter than a second portion of the bolt, said second portion is threaded and engages with the first screw hole when the annular roller holding portion is in a closed position, said second portion of the bolt also engages with the second screw hole when the annular roller holding portion is in an open position.

5,357,863

PRINTING BLANKET FOR USE WITH A PRINTING CYLINDER TO ACHIEVE A NARROW GAP LOCK-UP

Michael E. McLean; Thomas D. Hower, both of Waynesville; William H. Haddock, Chadler, all of N.C.; Wayne W. Easley, Centerville, Ohio; Melvin D. Pinkston, Hendersonville, N.C.; Charles L. Wilcox, Arden, N.C., and James C. Messer, Jr., Canton, N.C., assignors to Day International, Inc., Dayton, Ohio

Filed Nov. 15, 1991, Ser. No. 792,820
Int. Cl.[5] B41F *27/02*
U.S. Cl. 101—389.1 19 Claims



1. A printing blanket in combination with a magnetic printing cylinder including a gap having first and second edges extending longitudinally along an outer surface of said printing cylinder, said printing blanket comprising:

a plurality of plies and a magnetic backing ply for magnetically adhering said printing blanket to the outer surface of said printing cylinder, said backing ply having first and second ends, said printing blanket being positioned on said printing cylinder such that said first end of said backing ply is bent over said first edge and inwardly into said gap and said second end is mounted substantially adjacent said second edge of said gap wherein said gap has a width of less than about 0.180 inches.

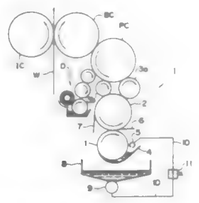
VOL 1167 ISS 4 OC 25 1994 UMI

5,357,864

OFFSET PRINTING APPARATUS WITH INK STORAGE DEVICE

Hideo Ohta, Tokyo, and Masahiko Miyoshi, Ayase, both of Japan, assignors to Kabushikigaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Filed Mar. 7, 1991, Ser. No. 665,547
Claims priority, application Japan, Mar. 9, 1990, 2-56569
Int. Cl.[5] B41C *1/00*; B41F *31/06*
U.S. Cl. 101—483 16 Claims



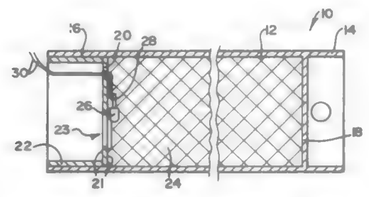
15. A process comprising:
(A) rotating a roller having a circumferential surface;
(B) supplying ink to said roller via an ink storage device communicating with said circumferential surface of said roller;
(C) increasing the pressure of the ink against said roller as said roller progresses through said ink storage device by spacing the ink storage device from said circumferential surface such that the distance between said ink storage device and said circumferential surface progressively decreases in the direction of rotation of said roller along an arc of said circumferential surface to a minimum distance at a downstream end of said arc; and
(D) supplying ink to one of said roller and said ink storage device;
(E) supplying ink from said roller to a plate cylinder roller; and
(F) supplying dampening fluid to said plate cylinder roller via a dampening device.

5,357,865

METHOD OF CLOUD SEEDING

Graeme K. Mather, Nelspruit, South Africa, assignor to Water Research Commission, Pretoria, South Africa

Filed Feb. 21, 1992, Ser. No. 840,007
Claims priority, application South Africa, Feb. 22, 1991, 91/1324
Int. Cl.[5] A01G *15/00*; F42B *4/04*
U.S. Cl. 102—361 20 Claims



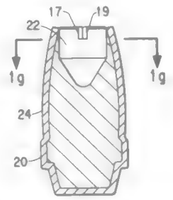
1. A method of cloud seeding for precipitation enhancement, which method comprises the steps of:
burning, in a seeding flare, a pyrotechnic formulation which includes lithium carbonate (Li_2CO_3) and, as an oxidizing agent, at least one compound selected from the group consisting of potassium chlorate ($KClO_3$) and potassium perchlorate ($KClO_4$), to produce hygroscopic seeding particles, which are released from said seeding flare; and
allowing said hygroscopic seeding particles to enter a suitable cloud formation wherein said hygroscopic seeding particles act as nuclei for precipitable water drop formation, thereby enhancing precipitation from said cloud formation.

5,357,866

JACKETED HOLLOW POINT BULLET AND METHOD OF MAKING SAME

David K. Schluckebier, Cabot, Ark., and Joseph W. Jakonczuk, Newark, Del., assignors to Remington Arms Company, Inc., Wilmington, Del.

Filed Aug. 20, 1993, Ser. No. 109,552
Int. Cl.[5] F42B *12/34*
U.S. Cl. 102—509 4 Claims



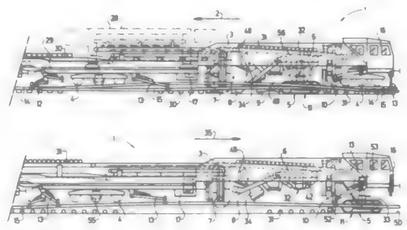
1. A mushrooming hollow point bullet having a base and a lead core having a central recess in a front open end of the core, the core being surrounded by a jacket which has a front open end terminating at the front open end of the core, the improvement comprising a plurality of downwardly projecting spaced slits extending through the front open end of the jacket to form spaced petals having side edges extending through the front open end of the lead core into the central recess to form petals of core material and jacket material between the spaced slits and wherein the jacket material extends into the slits to said central recess which permits the petals of core and jacket material to separate and form outwardly projecting petals.

5,357,867

MACHINE FOR RENEWING OR LAYING A RAILWAY TRACK

Josef Theurer, Vienna, and Manfred Brunninger, Altenberg, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Jul. 9, 1993, Ser. No. 89,779
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1993, 9305927[U]
Int. Cl.[5] E01B *29/00*
U.S. Cl. 104—2 10 Claims



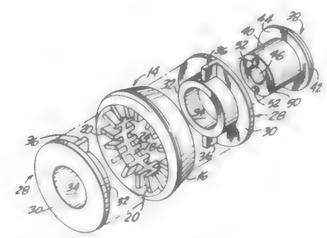
1. A machine for renewing and laying a railway track including two rails and ties supported on a ballast bed, which comprises
(a) an elongated machine frame having two opposite ends,
(b) undercarriages supporting the machine frame at the ends thereof, the undercarriages including at one of the machine frame ends
(1) an undercarriage which is vertically adjustable relative to the machine frame and detachable therefrom, the vertically adjustable undercarriage not being track-bound, and
(2) a track-bound undercarriage which is arranged adjacent the vertically adjustable undercarriage and is detachable from the machine frame,
(c) a first coupling for detachably mounting the vertically adjustable undercarriage on the machine frame,
(d) a second coupling at the track-bound undercarriage for mounting the vertically adjustable undercarriage on the machine frame,
(e) a device for receiving old ties mounted on the machine frame,
(f) a device for laying new ties mounted on the machine frame,
(g) a vertically adjustable device for planing the ballast bed mounted on the machine frame between said devices, and
(h) means mounted on the machine frame for guiding old and new rails.

5,357,868

TROLLEY APPARATUS WITH REINFORCED PLASTIC WHEELS AND INTERLOCKING PLASTIC BUSHINGS

Nissim Maas, Kibbutz Mishmar Haemek, Israel, assignor to Tama Plastic Industry, Kibbutz Mishmar Ha'emek

Continuation of Ser. No. 871,393, Apr. 21, 1992, abandoned.
This application Dec. 30, 1993, Ser. No. 176,498
Int. Cl.[5] B61F *3/16*; B61B *3/00*; F16C *17/12, 35/00*
U.S. Cl. 105—180 27 Claims



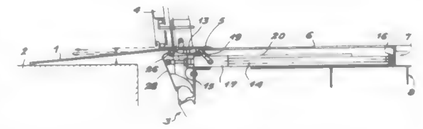
1. A trolley assembly, comprising:
a pair of trolley brackets;
an axle extending outwardly from each of said trolley brackets;
at least one bushing rotatably engaging and supporting each of said axles;
a wheel fixedly attached to each of said bushings and including a radially extending flange portion and stiffening ribs extending axially therefrom; and
a pendant attached to said pair of trolley brackets; wherein said axle, said bushing and said wheel are made of polymer material and said bushing has an axially extending rib adapted to interlock with said stiffening ribs to prevent rotation of the bushing with respect to the wheel.

5,357,869

DEVICE FOR FACILITATING ACCESS TO A RAIL VEHICLE HAVING EXTENDABLE RAMP ASSEMBLY

Jean-Pierre Barjolle, La Rochelle, and Patrick Harguindeguy, Angoulins Sur Mer, both of France, assignors to GEC Alsthom Transport SA, Paris, France

Filed Jun. 29, 1993, Ser. No. 83,260
Claims priority, application France, Jul. 10, 1992, 92 08611
Int. Cl.[5] B61D *47/00*
U.S. Cl. 105—436 2 Claims



1. A device for facilitating access to a rail vehicle having a floor and an entrance doorsill, said device comprising:
a board;
means for mounting said board within said rail vehicle for movement between a retracted position in which it is housed beneath a top face of the floor of the vehicle and an extended position in which it constitutes an access ramp between a platform and said entrance doorsill;
drive means for driving the board;
stop means for stopping the translation of the board in its extended position, said drive means for driving the board being disposed in the plane of the board; and
means for tilting the board downwardly about said stop means, whereby an outside end of the board rests on the platform with the board cooperating with the entrance doorsill to provide a continuous surface without any offset with the entrance doorsill maintained stationary;
wherein said stop means for stopping the board's movement in translation comprises retaining means, engaging the board to limit the stroke of the board in its extended position, and a rod disposed transversely relative to the board, and said board is fitted with said retaining means for engaging said rod;
wherein the board comprises a plate constituting said access ramp and a portion situated in a plane different from that of the plate, the connection between the plate and said portion forming a fork to constitute said retaining means.

5,357,870

ARTICULATED, ORIENTABLE AUDIOVISUAL TELECOMMUNICATION TERMINAL

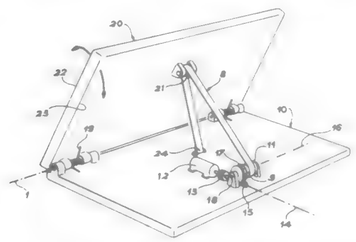
Jacques Guichard; Georges Buchner, both of Paris, and Alain Isckia, Vitry/Seine, all of France, assignors to France Telecom, France

PCT No. PCT/FR92/00681, § 371 Date Apr. 12, 1993, § 102(e) Date Apr. 12, 1993, PCT Pub. No. WO93/02530, PCT Pub. Date Feb. 4, 1993
PCT Filed Jul. 15, 1992, Ser. No. 30,005
Claims priority, application France, Jul. 16, 1991, 91 08959
Int. Cl.[5] A47F *5/12*
U.S. Cl. 108—2 7 Claims

1. Audiovisual telecommunication terminal which is articulated and orientable and which comprises a fixed part (10), a mobile part (20), articulated with respect to the fixed part (10) along a horizontal axis (1) and which is to be placed facing a user and have display means, shooting means, sound recording means and sound restoration means, electronic encoding/decoding control means serving as an interface with a transmission line placed in one of the two parts (10, 20) and motor means (12) for pivoting the mobile part (20) relative to the fixed part, characterized in that the motor means comprise a

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motor (12) mounted on one of the two parts (10, 20) in order to actuate at least one pulley block-type transmission system in



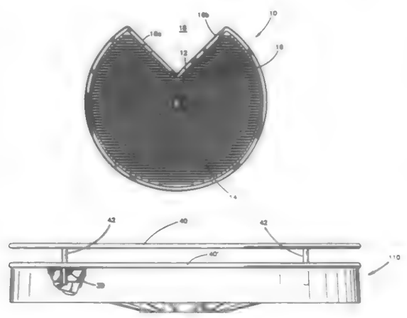
order to angularly move the fixed part (10) towards the mobile part (20).

5,357,871

LAZY SUSAN SHELF

Thomas C. Bowman, Grand Rapids, Mich., assignor to Midwest Design, Inc., Grand Rapids, Mich.

Continuation of Ser. No. 952,314, Oct. 28, 1992. This application Feb. 16, 1993, Ser. No. 18,025
Int. Cl.[5] A47B *17/00*
U.S. Cl. 108—27 4 Claims



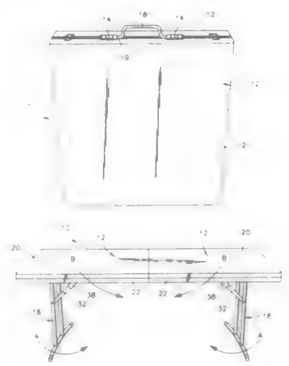
1. A molded polymeric lazy susan shelf comprising:
a central post-receiving hub;
a horizontal support surface extending radially out from said hub;
a peripheral vertical rim at the outer periphery of and integral with said support surface;
said peripheral rim having a radially inner panel and a radially outer panel spaced from each other and integrally joined by an upper surface, thereby defining a space therebetween;
a plurality of vertical, generally cylindrical sleeves in said space between said inner and outer panels at preselected spaced locations of said peripheral rim, each terminating at said upper surface so that said upper surface closes the upper ends of said sleeves;
said sleeves having open bottom ends to receive and guide a drill bit inserted to drill an opening at said upper surface of selected ones of said sleeves; and
said sleeves having an inner surface and being integral with said inner and outer panels to provide lateral support for fence posts inserted therein.

5,357,872

FOLDING TABLE

James K. Wilmore, Gallatin, Tenn., assignor to Globe Business Furniture, Inc., Hendersonville, Tenn.

Filed Nov. 20, 1992, Ser. No. 979,319
Int. Cl.[5] A47B *3/00*
U.S. Cl. 108—35 18 Claims



1. A folding table comprising a table top formed of a pair of molded plastic table top halves and hinge means securing the table top halves together along a transverse center line of the table top for folding the table top halves together into a closed position in which the table top halves are substantially juxtaposed in adjacent planes and an open position in which the table top halves are substantially coplanar, a pair of metal leg assemblies, pivotal attachment means securing the respective leg assemblies to undersurfaces of the respective table top halves for swinging movements of the leg assemblies when the table top is in the open position between folded positions wherein the leg assemblies are substantially juxtaposed against the the leg assemblies are substantially juxtaposed against the undersurfaces of the table top halves and unfolded positions wherein the leg assemblies are substantially perpendicular to the table top halves, and a pair of longitudinal telescopic reinforcing assemblies, each reinforcing assembly comprising a pair of coaxial tubular members each secured along a substantial length of the undersurface of a respective table top half perpendicularly to said center line, and a longitudinal male reinforcing bar slidingly received in one of said tubular members for extending movements across the center line into the other of said tubular members when the table top is in the open position to rigidify the table top, and for retracting movements back into said one of the tubular members when the table top is in the open position to rigidify the table top, and for retracting movements back into said one of the tubular members when the table top is to be folded into the closed position the table further including a pair of transverse metal reinforcing bars secured to the undersurface of the respective table top halves parallel to said center line, wherein the transverse metal supporting bars are located adjacent said center line and fit over portions of the hinge means thereby securing the hinge means to the respective table top halves.

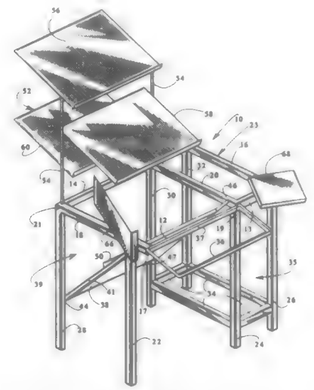
5,357,873

COMPACT COMPUTER STAND

Carl Hilton, 3974 Highgate Rd., Muskegon, Mich. 49441

Filed Jul. 22, 1992, Ser. No. 916,695
Int. Cl.[5] A47B *35/00*
U.S. Cl. 108—50 12 Claims

1. A compact computer stand comprising a rectangular frame supported by at least four legs; a monitor compartment disposed within said stand; an angled monitor shelf disposed within said monitor compartment; means for adjusting the depth within said monitor compartment of a monitor placed on said monitor shelf; a CPU compartment disposed within said stand; a printer shelf structure attached to and above said



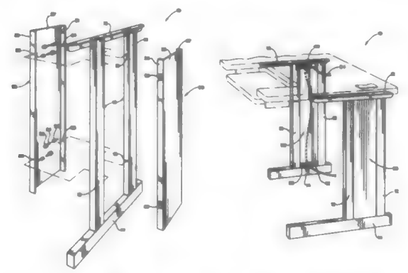
frame; said printer shelf structure comprising a vertical tier of shelves suspended between two supporting rods, said shelves being inclined downward in a non-perpendicular orientation relative to said supporting rods; and a keyboard tray attached to the front of said frame.

5,357,874

CHANNEL ASSEMBLY WITH SNAP-IN INSERT

Dale M. Palmer, Florence, Ala., assignor to ABCO Office Furniture Inc., Florence, Ala.

Filed Jul. 30, 1992, Ser. No. 921,647
Int. Cl.[5] A47B *35/00*
U.S. Cl. 108—50 6 Claims



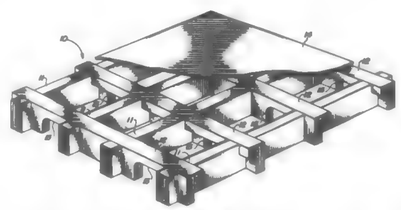
1. A channel assembly with snap-in insert for use in retaining electrical wiring in a table leg assembly having a pair of spaced vertical leg members with each leg member having an interior side wall which faces the other leg member, comprising:
a stationary insert member of a generally U-shaped cross-section formed by a first end wall and a first pair of side walls, said stationary insert member being of a size such that each side wall thereof will fit adjacent a respective interior side wall of the pair of spaced vertical leg members;
a snap-in insert member of a generally U-shaped cross-section formed by a second end wall and a second pair of side walls, said snap-in insert member being of a size such that each side wall thereof will fit adjacent a respective side wall of the stationary insert member; and
means mounted on said leg members for releasably securing said snap-in insert member to said stationary insert member;
wherein the snap-in insert member is of shorter length than the stationary insert member and with said snap-in insert member being positioned relative to said stationary insert member so that an opening is provided adjacent both the upper and lower ends of the snap-in insert member.

5,357,875

CORRUGATED PALLET

Ken N. Winebarger, Lakeland, Fla., and Stanley M. Lee, Tomball, Tex., assignors to Corrugated Pallet Corporation, Lakeland, Fla.

Continuation of Ser. No. 792,182, Nov. 14, 1991, Pat. No. 5,218,913, which is a continuation-in-part of Ser. No. 631,714, Dec. 21, 1990, abandoned, which is a continuation of Ser. No. 321,022, Mar. 9, 1989, Pat. No. 4,979,446. This application Mar. 30, 1993, Ser. No. 40,338
Int. Cl.[5] B65D *19/00*
U.S. Cl. 108—51.3 16 Claims



1. A pallet of corrugated material for the shipment and storage of a load of goods stacked thereon, comprising:
a) a plurality of elongated base members laid longitudinally in parallel, spaced positions; and
b) a plurality of elongated deck members laid laterally in parallel, spaced, positions and intersecting said base members at longitudinally displaced positions therealong to interconnect the same to form a free standing lattice structure;
said base and deck members each having top surfaces located in a common upper horizontal plane to provide a level upper platform, and bottom surfaces located in a common lower horizontal plane to provide a stable, floor-contacting base; wherein each of said base and deck members comprises a solid core of adjacent vertically oriented panels surrounded by an outer covering of parametric horizontal and vertically running panels wherein at least one of said plurality of deck members has cutouts therein to present channels perpendicular to said base member into which tines of pallet lifting equipment can be inserted; and each of said base members being formed with first and second portions, said cutouts being in said first portions and defining lifting surfaces against which the tines inserted in said channels can act to lift said pallet, and said second portions being located adjacent to said first portions and defining backup surfaces of uncut corrugated material in alignment with said cutout lifting surfaces against which said tines can also act when they act against the cutout lifting surfaces during lifting of the pallet.

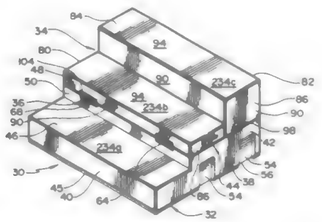
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5,357,876

PORTABLE HINGED RISER

John H. Kniefel; Leslie R. Abraham, both of Owatonna; Glenn G. Kanengieter, deceased, late of Owatonna by Dorette E. Kanengieter, heiress , and Frank C. Krumholz, Owatonna, all of Minn., assignors to Wenger Corporation, Owatonna, Minn.

Filed Nov. 7, 1991, Ser. No. 790,214
Int. Cl.[5] A47B 57/00
U.S. Cl. 108—92 21 Claims



1. A portable support comprising a plurality of operably coupled, substantially closed hollow bodies, said bodies including a base and at least one step member, said base and at least one step member having thin, substantially continuous walls and being substantially filled with a low density material, said support including a hinge means for operably coupling said base and at least one step member, said hinge means having at least one hinge assembly comprising

structure defining a base hinge well in said base;

structure defining a step member hinge well in said at least one step member;

a hinge block shiftably received within said base hinge well and said step member hinge well; and

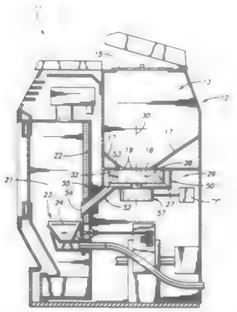
first and second hinge pins operably carried by said hinge block for pivotally coupling said hinge block to said base and step member respectively.

5,357,877

FEED FOR PARTICULATE BURNERS

David L. Nuesmeyer, N. 5530 Cannon, Spokane, Wash. 99205, and Gary W. Brondt, 16220 S. Sherman Rd. #27, Cheney, Wash. 99004

Filed Mar. 16, 1993, Ser. No. 31,962
Int. Cl.[5] F23K 3/10
U.S. Cl. 110—108 27 Claims



1. A particulate delivery system for particulate burners, comprising:

a hopper for receiving particulate fuel and including a hopper bottom with a hopper discharge opening for discharging particulate fuel by gravity therefrom;

a wall including a top edge and a bottom edge and formed about a substantially vertical center axis;

the top edge of the wall being mounted beneath and against the hopper bottom about the discharge opening and extending downwardly therefrom to the bottom edge;

wherein the wall includes a lateral discharge opening spaced radially outward of the hopper discharge opening with respect to said center axis;

a turntable including a peripheral edge and an upwardly facing surface for receiving and movably supporting particulates received from the hopper through the discharge opening therein;

a base for mounting the turntable to the hopper bottom beneath the hopper discharge opening and with the upwardly facing surface of the turntable being positioned beneath and adjacent to the bottom edge of the wall;

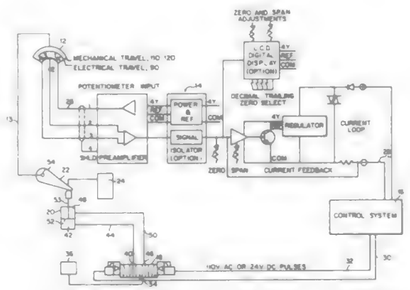
a driver for mounting and rotating the turntable with respect to said center axis, such that particulates on the upwardly facing surface will migrate outwardly and toward the wall and the lateral discharge opening and will eventually drop off the peripheral edge of the turntable at the lateral discharge.

5,357,878

BURNER TILT FEEDBACK CONTROL

Michael S. Hare, c/o Virginia Power, Innsbrook Technical Center, 5000 Dominion Blvd., Glen Allen, Va. 23060

Filed Mar. 19, 1993, Ser. No. 34,761
Int. Cl.[5] F23H 5/00
U.S. Cl. 110—185 14 Claims



1. A control system for an actuating member comprising:

a controller;

a valve member electrically coupled to said controller;

a fluid driven actuator operatively coupled to said valve member;

an actuating member operatively coupled to said fluid driven actuator;

a potentiometer operatively coupled to said actuating member for converting a position of said actuating member into a proportional electrical resistance;

signal converting means for converting said electrical resistance into a proportional electrical current; and

means for conducting said current to said controller,

said controller including means for comparing said current to a control signal indicative of a desired position of said actuating member, and means for generating a voltage pulse to said valve member to displace said fluid driven actuator and move the actuating member toward the desired position whereby feedback control of the position of the actuating member is provided,

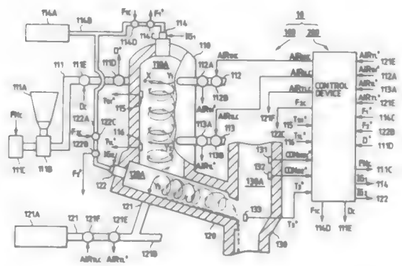
said actuating member controlling a tiltable burner in a coal fired furnace.

5,357,879

DRIED SLUDGE MELTING FURNACE

Shunichi Shiono, and Kazuyuki Suzuki, both of Tokyo, Japan, assignors to Ebara-Infilco Co., Ltd., Tokyo, Japan

Filed May 19, 1993, Ser. No. 63,307
Claims priority, application Japan, May 20, 1992, 4-152783; May 20, 1992, 4-152786; Dec. 18, 1992, 4-355687
Int. Cl.[5] F23N 5/18
U.S. Cl. 110—188 6 Claims



1. A dried sludge melting furnace apparatus in which dried sludge and combustion air are supplied to a primary combustion chamber (PCC), and the dried sludge is converted into slag in said PCC and a secondary combustion chamber (SCC) and then separated from the combustion gas in a slag separation chamber, wherein said apparatus comprises:

(a) a first temperature detector (115) for detecting a temperature T_{1H} of the upper portion of said PCC, and for outputting the detected temperature as a detected PCC upper portion temperature T_{1H}*;

(b) a second temperature detector (116) for detecting a temperature T_{1L} of the lower portion of said PCC, and for outputting the detected temperature as a detected PCC lower portion temperature T_{1L}*;

(c) a nitrogen oxide (NOX) concentration detector (131) for detecting the NOX concentration CON_{NOX} of the combustion gas, said combustion gas being guided together with slag from said SCC and then separated from the slag, and for outputting the detected value as a detected combustion gas NOX concentration CON_{NOX}*;

(d) an oxygen concentration detector (132) for detecting the oxygen concentration CON_{02} of the combustion gas, said combustion gas being guided together with slag from said SCC and then separated from the slag, and for outputting the detected value as a detected combustion gas oxygen concentration CON_{02}*;

(e) a dried sludge supply amount detector (111D) for detecting a supply amount D of dried sludge to said PCC, and for outputting the detected amount as a detected dried sludge supply amount D*;

(f) a first combustion air supply amount detector (112A) for detecting a supply amount AIR_{1H} of combustion air to the upper portion of said PCC, and for outputting the detected amount as a detected PCC upper combustion air supply amount AIR_{1H}*;

(g) a second combustion air supply amount detector (113A) for detecting a supply amount AIR_{1L} of combustion air to the lower portion of said PCC, and for outputting the detected amount as a detected PCC lower combustion air supply amount AIR_{1L}*;

(h) a third combustion air supply amount detector (121E) for detecting the total amount AIR_{TL} of the combustion air supply amounts AIR_{1H} and AIR_{1L} to said PCC and the combustion air supply amount AIR_2 to said SCC, and for outputting the detected amount as a detected total combustion air supply amount AIR_{TL}*;

(i) a fuel supply amount detector (122B) for detecting the supply amount F_2 of fuel to a burner for said SCC, and for outputting the detected amount as a detected SCC burner fuel supply amount F_2*;

(j) a fuzzy controller (220) comprising a first fuzzy inference means (221) for executing fuzzy inference to obtain an inferred PCC upper combustion air supply amount AIR_{1H}' and an inferred PCC lower combustion air supply amount AIR_{1L}' on the basis of fuzzy rules held among a fuzzy set relating to the PCC lower portion temperature T_{1L}, a fuzzy set relating to the PCC upper portion temperature T_{1H}, a fuzzy set relating to the combustion gas NOX concentration CON_{NOX}, a fuzzy set relating to the combustion gas oxygen concentration CON_{02}, a fuzzy set relating to the PCC upper combustion air supply amount AIR_{1H} and a fuzzy set relating to the PCC lower combustion air supply amount AIR_{1L}, in accordance with the detected PCC lower portion temperature T_{1L}*, the detected PCC upper portion temperature T_{1H}*, the detected combustion gas NOX concentration CON_{NOX}* and the detected combustion gas oxygen concentration CON_{02}*, and for outputting the obtained amounts;

(k) a sequence controller (230) for obtaining a target PCC upper combustion air supply amount AIR_{1H}* and a target PCC lower combustion air supply amount AIR_{1L}*, from the inferred PCC upper combustion air supply amount AIR_{1H}' and inferred PCC lower combustion air supply amount AIR_{1L}' given from said first fuzzy inference means (221) of said fuzzy controller (220), the detected PCC upper combustion air supply amount AIR_{1H}*, detected PCC lower combustion air supply amount AIR_{1L}* and detected total combustion air supply amount AIR_{TL}* given from said first to third combustion air supply amount detectors (112A, 113A, 121E), and the detected SCC burner fuel supply amount F_2* given from said fuel supply amount detector (122B), and for outputting said obtained values; and

(l) a PID controller (240) for obtaining a PCC upper combustion air supply amount control signal AIR_{1HC} and a PCC lower combustion air supply amount control signal AIR_{1LC} so that the PCC upper combustion air supply amount AIR_{1H} and the PCC lower combustion air supply amount AIR_{1L} respectively become the target PCC upper combustion air supply amount AIR_{1H}* and the target PCC lower combustion air supply amount AIR_{1L}*, and for respectively outputting the obtained signals to first and second valve apparatuses which control the supply amount of combustion air to the primary combustion chamber (112B, 113B).

5,357,880

RAW SEWAGE DISPOSAL APPARATUS

Mitsuhiro Kishi, Ashikaga, Japan, assignor to Japanic Corporation, Tochigi, Japan

Filed Nov. 22, 1993, Ser. No. 158,747
Claims priority, application Japan, Jan. 28, 1993, 5-031170
Int. Cl.[5] F23G 7/04; A47K 11/02
U.S. Cl. 110—238 19 Claims

1. A raw sewage disposal apparatus comprising:

an incinerator shielded from the outside;

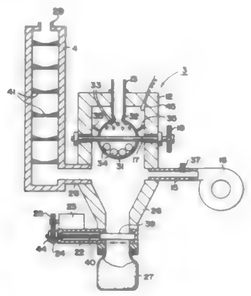
a swing shaft horizontally rotatably supported on said incinerator;

a hollow drying cauldron fixed to said swing shaft and disposed within the incinerator;

an introduction port defined in a peripheral wall of said drying cauldron for introducing raw sewage into said drying cauldron;

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a plurality of spherical stirring balls accommodated in said drying cauldron; and



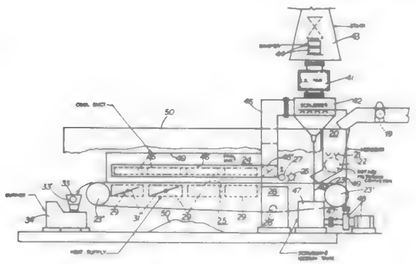
a burner communicating with a lower portion of said incinerator for jetting a flame toward a bottom surface of said drying cauldron.

5,357,881

COMBINED POSITIVE CONTROLLED SLUDGE DRYER AND BURNER

Andrew W. Elcik, Raymond; John J. Devine, Portland; John H. Northrop, Falmouth; Kurt T. Dunn, Topsham, and John F. Healey, Sanford, all of Me., assignors to Northrop Engineering Corporation, Portland, Me.

Filed Feb. 9, 1993, Ser. No. 16,161
Int. Cl.[5] F23G 7/04
U.S. Cl. 110—346 16 Claims



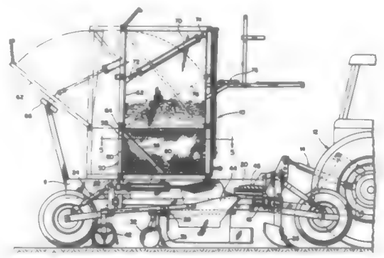
1. A combined positive-controlled cellulose sludge dryer and burner process for drying and burning cellulose sludge that consists of the steps of dewatering the raw sludge by a mechanical press to reduce the water content to some 40% or more of its weight and provide a supply of caked sludge, crumbing the caked sludge, metering and depositing the sludge crumbs onto a travelling wire screen conveyor, passing the material through a drying chamber and between opposing hot air and wet air extraction ducts assemblies to dry the sludge to have a moisture content of some 15%, removing the dried sludge from the wire screen and burning it to heat air for delivery to the hot air ducts and drying chamber to dry the sludge therein and automatically maintaining through appropriate controls a drying temperature of some 300 degrees Fahrenheit within the drying chamber and finally by means of the wet air extracting ducts exhausting the moisture-laden air and gases from the drying chamber to the atmosphere.

5,357,882

SUGAR CANE PLANTER

C. Harold Lemmons, R.R. 1 Box 325, Raymondville, Tex. 78580

Filed Feb. 24, 1993, Ser. No. 21,545
Int. Cl.[5] A01C 7/00
U.S. Cl. 111—111 19 Claims



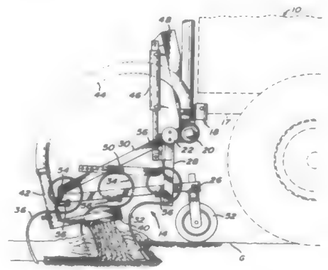
1. A transversely elongated planter, a tractor provided with a rear implement lift mechanism, said planter including front and rear frame portions, said front frame portion including means releasably supported from said lift mechanism for cantilever support of said planter from the rear of said tractor when said lift mechanism is actuated to lift said planter, a large volume seed material bin carried by said frame for front to rear shifting thereon between transport and planting positions, respectively, and means operative to selectively shift said bin between said transport and planting positions.

5,357,883

METHOD AND APPARATUS FOR SPREADING A LIQUID SLURRY

Marcel Depault, Co. Shefford, Canada, assignor to Wic Inc., Wickham, Canada

Continuation-in-part of Ser. No. 857,426, Mar. 24, 1992, abandoned. This application Jun. 24, 1992, Ser. No. 903,455
Int. Cl.[5] A01C 23/02
U.S. Cl. 111—118 17 Claims



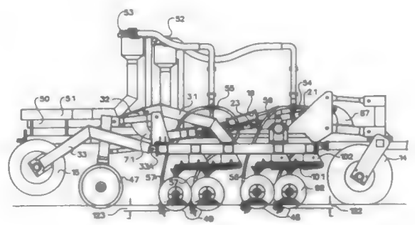
1. An apparatus for spreading fertilizing slurry at root level of growing vegetables in a field in which vegetables have been planted in longitudinal spaced-apart parallel rows, forming paths therebetween, the apparatus including: a vehicle having a chassis with a front end and a rear end; a slurry holding tank on the chassis between the front end and the rear end; a slurry distributing assembly mounted on the chassis at the rear end thereof; means for moving the slurry distributing assembly between a storage position wherein the slurry distributing assembly is inoperative and an application position wherein the slurry distributing assembly is operative; the slurry distributing assembly including a frame mounted to the chassis and a plurality of slurry distributing sub-assemblies, each of the sub-assemblies comprising a plow beam mounted to the frame, the plow beam having an axis parallel to the longitudinal axis of the vehicle, each of the sub-assemblies having at least a plow tooth mounted on the plow beam in the form of a colter tooth and a slurry nozzle mounted to the plow beam behind the colter tooth with the slurry nozzle mounted to the plow beam behind the colter tooth with the slurry nozzle facing towards the soil when the slurry distributing assembly is in the application position, each of the sub-assemblies further comprising a flexible conduit means communicating between the holding tank and the slurry nozzle and pump means for delivering the slurry to the slurry nozzle from the tank, the frame also including a shaft journaled thereto and having an axis extending laterally of the rear end of the chassis; and an actuating means for rotating the shaft about its axis between the application position and the storage position, each of the sub-assemblies further including an arm extending radially rearwardly of the shaft, said plow beam being pivotally connected to a free end of the arm remote from the shaft allowing limited pivoting movement of the plow beam relative to the arm, and the plow beam also having a wheel mounted at a front end thereof, the wheel adapted to contact the soil to support the plow beam whereby for each of the sub-assemblies a furrow may be formed by the colter tooth and the slurry is immediately applied to the furrow at approximately root level relative to the plants.

5,357,884

ALL PURPOSE COULTER DRILL

Gerard F. J. Bourgault, St. Brieux, Canada, assignor to F.P. Bourgault Industries Air Seeder Division Ltd., St. Brieux, Canada

Filed Sep. 30, 1992, Ser. No. 954,035
Claims priority, application Canada, Jul. 8, 1992, 2073370
Int. Cl.[5] A01C 7/00
U.S. Cl. 111—186 20 Claims



1. A seed and fertilizer drill adapted to be pulled by a power source and connected to a fertilizer and seed supply means comprising:

a frame means;

an adjustable support means adapted to vary the height of the drill from the ground; and

a plurality of furrow forming coulter wheels;

said coulter wheels being arranged in at least one row of forward pairs and at least one row of rearward pairs;

each wheel of each of said pairs being spaced part from the other to a distance such that in Operation each wheel of each of said pairs forms a distinct and separate furrow;

each of said pairs of said wheels converging slightly forwardly such that in operation said wheels turn at an acute angle to the line of travel while the planar surfaces of said wheels remain generally perpendicular to the ground;

said wheels of each of said rearward pairs being spaced apart to a lesser distance than said forward pairs;

each of said rearward pairs being adapted to cooperate with and be in slightly offset alignment with, and being located rearwardly of one of said forward pairs;

and further comprising a plurality of packer wheels located rearwardly of said rearward pairs of coulter wheels;

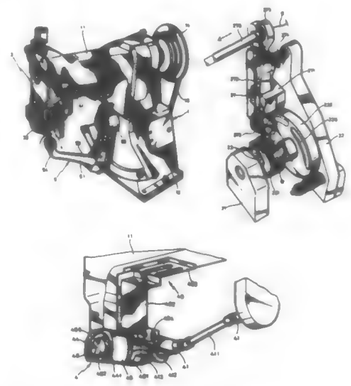
each of said packer wheels being in register with a center line of one of said furrows created by a wheel of one of said forward pairs of coulters wherein, when in operation, as said drill moves forwardly seed is deposited into each furrow created by each wheel of said forward pairs and each wheel of each of a cooperating rearward pair pushes soil outwardly and laterally covering seed in said furrows created by each wheel of a cooperating forward pair while simultaneously creating two second furrows into which fertilizer is deposited and thereafter each of said packer wheels presses the soil over one of said furrows created by said forward pairs of coulters and pushes soil outwardly covering fertilizer deposited in one of said second furrows.

5,357,885

SHOE SEWING MACHINE

Kun-Nan Yang, No. 20, Alley 105, Lane 514, Chung Cheng Road, Hsin Chuang, Taipei Hsien, Taiwan

Filed Jun. 25, 1993, Ser. No. 81,134
Int. Cl.[5] D05B 15/04
U.S. Cl. 112—36 5 Claims



1. A shoe sewing machine, comprising:

a housing having a base on which a hollow bridge is mounted, said bridge having disposed therein a main driving shaft with a pulley engaging a belt secured thereto;

thread feed means which is disposed within the base of said housing, comprising a thread winding device, a thread pinching device, a thread pulling device and a thread shifting device, said thread feed means comprising a right bracket and a left bracket spacedly mounted to a base plate on which said housing is mounted with a shaft rotatably mounted therebetween, a gear being mounted to said shaft and in engagement with the belt of said main driving shaft to be driven thereby, a control disk mounted to the shaft juxtaposing the right bracket within the space between the left and right brackets, a first gear and a cam being mounted to the shaft adjacent to the right bracket, opposite to the control disk, the control disk having formed thereon at least an arc recess extending in a circumferential direction threreof;

stitching means comprising a friction disk secured to one end of the main driving shaft with a pin mounted on the friction disk in an eccentric manner, a needle bar substantially disposed within the bridge of the housing and a retainer plate slidably securing the needle bar to the friction disk,

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said retainer plate having formed thereon a wavy slot for receiving therein the eccentric pin to guide the needle bar so that it moves up and down with a non-uniform speed by the rotation of the friction disk with the main driving shaft;

thread hooking means which is disposed on an under side of the bridge, a transmission providing a non-uniform speed motion to said thread hooking means, said thread hooking means comprising a rotating shuttle disposed in a casing located under said bridge, a spool disposed within a spool enclosure received within a recess of the shuttle, a releasing pivoting seat having attached thereto a resilient plate for engaging and retaining the spool within the shuttle and a resilient holding plate fixed on the bridge to bias the pivoting releasing seat to retain the spool in position, and an adjustment device for adjusting a relative position of the thread hooking means with respect to the bridge of the housing;

a rocking arm extending from the base of the housing, comprising a support for pivotally supporting the rocking arm to the base of the housing and a head opposite to the support, a passage defined within the rocking arm and extending from the support to the head thereof, an elongated strip disposed within the passage and having a hollow shaft connected to an end thereof and extending into a needle slot formed on the head, the elongated strip having an opposite end connected to the thread shifting device, a number of thread escorting rollers being disposed within the passage for guiding a lower thread.

5,357,886

APPARATUS FOR THE PRODUCTION OF TUFTING MATERIAL

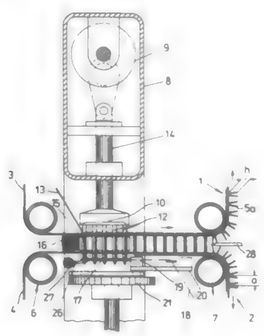
Helmut Piller, Clara-Hätzler-Str. 5, D-8900 Augsburg, Fed. Rep. of Germany

Filed Jul. 28, 1993, Ser. No. 98,604

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1992, 4225859; Nov. 28, 1992, 4240134

Int. Cl.[5] D05C *15/12, 15/14*

U.S. Cl. 112—80.4 **14 Claims**



1. An apparatus for the production of textile pile fabric comprising:

a conveying means driveable in steps for positioning at least one taut support fabric web, said conveying means having at least one tufting needle bar extending athwart a direction of web conveyance, said tufting needle bar bearing a plurality of spaced-apart tufting needles, said tufting needles movable transversely in relation to a plane of web conveyance, the tufting needles entraining one respective pile thread at a time and piercing said at least one support fabric web to form a pile thread loop;

a loop holding means arranged opposite to the tufting needle bar, said loop holding means for reciprocating into the pile thread loop, said conveying means receives two of said at least one support fabric web, the two support fabric webs held taut with a distance apart equal to a sum of individual pile heights; and

a cutting means is positioned at a delivery end of said conveying means between the two support fabric webs for cutting said pile thread loop so as to separate the support fabric webs, wherein each tufting needle bar possesses at least one row of tufting needles extending obliquely in relation to the direction of web conveyance with said plurlity of tufting needles arranged obliquely one behind the other, and wherein a common engagement member of the loop holding means is associated with each such row of tufting needles, a stroke of said engagement member in a longitudinal direction of the row being at least equal to a length of an associated tufting needle row.

5,357,887

SEWING UNIT FOR THE PRODUCTION OF A SEAM

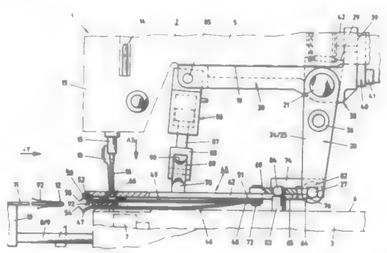
Horst Fenzl, Oerlinghausen, Fed. Rep. of Germany, assignor to Durkopp Adler AG, Fed. Rep. of Germany

Filed Aug. 27, 1993, Ser. No. 112,420

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1992, 4228943

Int. Cl.[5] D05B *21/00*

U.S. Cl. 112—121.15 **13 Claims**



1. A sewing unit for producing a seam in a sewing-material part, comprising:

a sewing machine,

a sewing-material holder, which is mounted displaceably in the unit relative to the sewing machine,

a setting drive arranged in the unit for placing the sewing-material holder in an open condition in which the sewing-material part is not grasped and a clamping condition in which the sewing-material part is grasped, and

a feeding plate arranged in the unit for feeding the sewing-material part into the sewing-material holder with the sewing-material part folded around the feeding plate, and the feeding plate being movable in a feeding direction into the sewing-material holder in its open condition with the sewing-material part, and out from the sewing-material holder in its clamping condition after removal of the sewing-material part from the feeding plate,

the sewing-material holder including upper and lower plate edge parts which are resiliently urged toward each other and thereby frictionally engage the sewing-material part as the sewing-material part is moved between them in said feeding direction by the feeding plate.

5,357,888

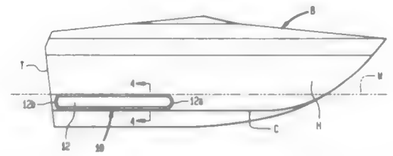
EMERGENCY FLOATATION SYSTEM FOR A WATER CRAFT

David E. Insinna, 2819 Nassau St., Sarasota, Fla. 34231

Filed Dec. 8, 1993, Ser. No. 163,934

Int. Cl.[5] B63B *43/10*

U.S. Cl. 114—69 **4 Claims**



1. An emergency floatation system for a water craft consisting essentially of:

an elongated rigid cover sealingly positioned at a perimeter thereof against a mating generally flat base member, said cover and base member separate one to another and defining an elongated interior volume;

one said base member connected longitudinally against an exterior hull surface of each side of the water craft immediately above and along a chine of the water craft and near to a water line of the water craft, said base member extending forwardly from a stern area of the water craft and laterally outward from a generally uninterrupted hull contour of the water craft;

an elongated inflatable buoyancy tube which, in a normally deflated condition, is positioned within and generally coextensive with, said interior volume;

releasible connecting means positioned within said interior volume for interconnecting said cover and base member, said releasible connecting means permitting forcible detachment of said cover from said base member when said buoyancy tube is inflated, said buoyancy tube in a fully inflated condition defining a volume larger than said interior volume;

a source of compressed gas positioned within said water craft and operably connected to each said buoyancy tube, said compressed gas source containing a volume of compressed gas sufficient to fully inflate each said buoyancy tube;

means operably connected to said compressed gas source for releasing compressed gas from said compressed gas source to inflate each said buoyancy tube.

5,357,889

WATERCRAFT AUTOPILOT ACTUATOR

Robert A. R. Wood, 3396 Marine Dr., West Vancouver, British Columbia, Canada V7V 1M9

Filed Oct. 27, 1993, Ser. No. 143,260

Int. Cl.[5] B63H *25/04*

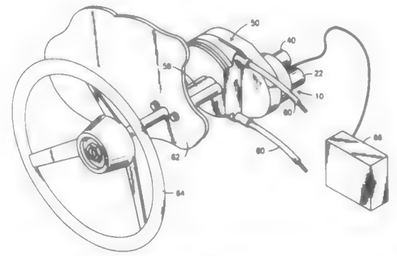
U.S. Cl. 114—144 E **15 Claims**

1. An autopilot actuator for use in a watercraft comprising the autopilot actuator configured to be securely mounted to a rotary helm unit housing under a dashboard panel of a watercraft,

the autopilot actuator having a housing abutting a rear housing wall of the rotary helm unit,

the autopilot actuator housing having a wall enclosing a mechanical clutch unit and a cover plate over the mechanical clutch unit,

the mechanical clutch unit having a gear engaging a steering shaft extension from the rotary helm unit passing through a first bore in the rear housing wall of the rotary helm unit so that actuation of the mechanical clutch unit rotates a gear in the rotary helm unit to input a mechanical force to a telescopic output cable for steering purposes with all



torque contained within the autopilot and rotary helm unit housings.

5,357,890

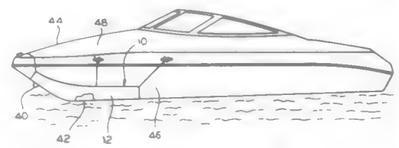
BOAT KEEL/HULL PROTECTOR

John E. Mason, Jr., and Kenneth J. Mason, both of 123 Circle Dr., East, Montgomery, Ill. 60538

Filed Oct. 25, 1993, Ser. No. 143,077

Int. Cl.[5] B63B *59/02*

U.S. Cl. 114—219 **18 Claims**



1. A boat keel/hull protector, comprising:

a flexible, elongated body member having a central portion with oppositely facing surfaces and a pair of opposed side portions with outermost edges remote from said central portion of said body member, said side portions of said body member each tapering from one thickness adjacent said central portion of said body member to a narrower thickness near the corresponding one of said outermost edges thereof;

means associated with said body member for slidably positioning said central portion of said body member onto said keel including a generally V-shaped keel-conforming groove in one of said oppositely facing surfaces of said central portion of said body member; and

means for drawing said side portions of said body member into engagement with said hull and securing said body member against movement relative to said keel and hull after said central portion of said body member has been slidably positioned onto said keel.

5,357,891

TOWED WATERCRAFT

Noboru Kobayashi, and Mitsuhisa Hirano, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Feb. 2, 1993, Ser. No. 12,313

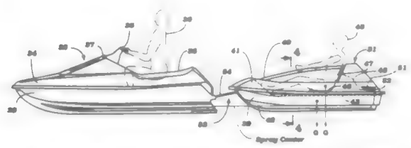
Int. Cl.[5] B63B *21/56*

U.S. Cl. 114—242 **77 Claims**

1. A towed watercraft adapted to be towed by a jet propelled watercraft having a discharge nozzle positioned towards its stern and discharging water generally rearwardly for propulsion thereof, said towed watercraft being comprised of a hull portion adapted to be submerged in part in a body of

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water and a rider's area carried at the upper end of said hull for carrying at least one rider, said rider's area being comprised of a floor area with a seat comprised of at least a seat cushion portion at the rear thereof and spaced above said floor area so



that a rider seated on said seat cushion can have his legs extended forwardly into said floor area, the forward part of said hull portion defining a generally open area through which water discharge from the discharge nozzle of a towing jet propelled watercraft may pass without restriction.

5,357,892

DEFLECTOR

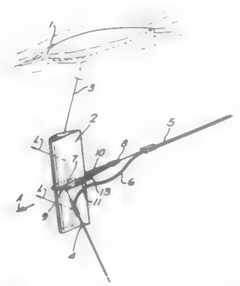
Odd O. Vatne, Oslo; Hans Cappelen, Blommenholm; Øyvind Sorbotten, Haugesund; Tor Elholm, Hosle, and Gunnar Lindemann, Oslo, all of Norway, assignors to Geco A.S., Stavanger, Norway

Filed Mar. 22, 1993, Ser. No. 35,365

Claims priority, application Norway, Mar. 24, 1992, 921155; Mar. 12, 1993, 930904

Int. Cl.[5] B63B *21/66*

U.S. Cl. 114—244 19 Claims



1. A deflector for installing in a tow-line between a towing vessel moving in a path and a tow in water behind said vessel, said tow being at least one of a streamer, a cable having seismic sources thereon, and a seismic source array, said deflector being suspended from a float and positioned between a forward part of said tow-line connected to said towing vessel and a rear part of said tow-line connected to said tow, the deflector comprising:

a deflector body having a streamlined configuration with a longitudinal axis extending downwardly in use when suspended from said float, a first side substantially facing said path of said vessel, a second side opposite to said first side, a forward portion, a rearward portion, a forward edge, a rear edge, a center of lift, an upper section above said center of lift, and a lower section below said center of lift;

a tow-line connection on said tow-line forward part;

a tow-point between said first side of said deflector body and said path of said vessel at said forward portion of said deflector body and lower than said center of lift, said tow-point being a crow's foot comprising an upper element having a forward part connected to said tow-line connection and a rearward part connected to said upper section and forward portion of said deflector body, and a lower element having a forward part connected to said tow-line connection and a rearward part connected to said lower section and forward portion of said deflector body, said rearward parts of said upper and lower elements lying on a line extending parallel to said longitudinal axis of said deflector body, and said upper and lower elements having different lengths;

an adjustable lever pivotally connected by a first pivotal connection to said deflector body adjacent said rear edge thereof and extending rearwardly thereof;

a rear end on said adjustable lever displaced rearwardly of said rear edge of said deflector body;

an attachment point on said rear end of said adjustable lever for connecting said rear part of said tow-line to said adjustable lever; and

means for adjusting said adjustable lever for adjusting the position of said attachment point with respect to said deflector body.

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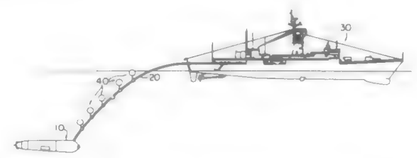
SNAP LOAD SUPPRESSION SYSTEM

Anthony A. Ruffa, Niantic, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 1, 1993, Ser. No. 130,405

Int. Cl.[5] B63G *8/14*

U.S. Cl. 114—245 2 Claims



1. A snap load suppression system for use between a surface vessel and an underwater towed vehicle and comprising:

cable means having first portion adapted to be secured to the towing vessel and a second portion adapted to be secured to the towed vehicle; and

a cable segment provided between said first and said second portions, said cable segment normally being in tension with a plurality of floatation devices secured to said cable segment at locations spaced from one another on said cable segment and remote from said first and said second portions thereof, said plurality of floatation devices comprising inflatable balloons that are each inflated to gas pressures corresponding to different underwater depths, whereby said tensioned cable segment assumes a curved configuration such that heaving of the towing vessel at the surface cannot cause sudden cable tension changes with the result that snap loads on the cable and hence on the towed underwater vessel are avoided.

5,357,894

PLEASURE WATERCRAFT

Clayton J. Jacobson, Box 5338 Elrb, Parker, Ark. 85344

Continuation of Ser. No. 334,760, Apr. 6, 1989, abandoned, which is a continuation of Ser. No. 856,674, Apr. 25, 1986, abandoned. This application Jun. 20, 1990, Ser. No. 540,887

Int. Cl.[5] B63B *1/16*

U.S. Cl. 114—272 21 Claims

1. A watercraft having an aerodynamic configuration comprising:

a central hull;

a pair of sponsons laterally positioned one on either side of said hull;

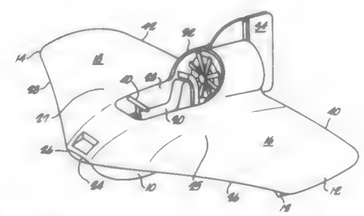
support structures mounting such sponsons to said hull, said structures having a shape of an airfoil to provide a wing section on either side of said hull between said hull and said respective sponson, a forward underside of each said structures extending substantially upwardly and outwardly from said hull to form a dihedral angle therewith; and

a cockpit for seating a pilot positioned along a longitudinal axis of said hull,

the watercraft further having mass elements comprising:

engine means for powering the watercraft;

propulsion means for applying power of said engine means to propel the watercraft;



drive means for transmitting power from said engine means to said propulsion means;

fuel supply means including means for storing and means for supplying fuel to said engine means,

said mass elements distributed with respect to said cockpit in said hull to locate the center of gravity of the watercraft within a select range along the longitudinal axis of said central hull in vertical alignment with a seating position of the pilot in said cockpit,

wherein the central hull has a concave shaped undersurface.

5,357,895

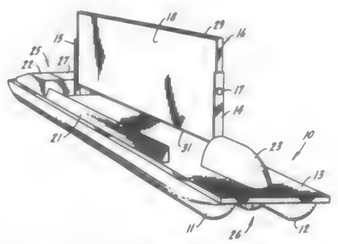
ILLUMINATED MARINE ADVERTISING VESSEL

Peter Ceko, Chicago, Ill., assignor to CEKCOM Corporation, Chicago, Ill.

Filed Jun. 16, 1993, Ser. No. 78,524

Int. Cl.[5] B63B *35/00*

U.S. Cl. 114—343 6 Claims



1. A motor boat for the display of advertising, the motor boat comprising:

a bow, a stern and port and starboard sides,

at least two pontoons including a port pontoon and a starboard pontoon,

a surface deck mounted on top of the port and starboard pontoons,

a motor attached to the surface deck at a stern end thereof,

a billboard mounted in an upright position on the surface deck between two upwardly protruding supports, the billboard disposed between the stern side and the bow side, the billboard being unitary and providing a unitary port surface area facing outward from the port side of the boat and a unitary starboard surface area facing outward from the starboard side of the boat, the unitary port surface area and the unitary starboard surface area being for the display of advertising indicia,

an operator control station disposed between the billboard and the bow side, an upper portion of the operator control station disposed above the surface deck and a lower portion of the operator control station being disposed below the surface deck, the lower portion of the operator control station being at least partially submerged under water when the boat is in operation, the operator control station providing a seat for an operator and housing a steering mechanism,

a port light fixture for illuminating the unitary port surface area,

a starboard light fixture for illuminating the unitary starboard surface area,

the boat being capable of cruising up and down a coastline in a path generally parallel to to the coastline,

whereby the unitary port and starboard surface areas are visible from a coastline as the boat travels up or down the coastline.

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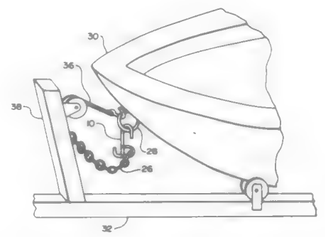
JIFFY LAUNCH BOAT HOOK

Louis Roerig, 6250 6th St. N.E., Fridley, Minn. 55432

Filed Nov. 12, 1993, Ser. No. 151,143

Int. Cl.[5] B63B *21/64*

U.S. Cl. 114—344 1 Claim



1. Apparatus for facilitating the launching of a boat from a boat trailer wherein the boat includes an eyebolt on the bow to receive a hook secured to a winch line, said apparatus comprising: tether means secured at one end to a forward portion of the trailer and provided with hook means at its other end; said tether means being of a length to provide a slight slack thereon when the hook means is engaged in the eyebolt of a boat fully loaded on the trailer; said hook means comprising a generally U-shaped member having one short leg and one long leg end defining a closed loop on one side thereof and an open hook on the other side; wherein the hook means is secured to the tether means by means of the closed loop, and the short leg and the open hook define hook elements to selectively engage the eyebolt during transit and during launching, respectively.

5,357,897

DISTANCE MARKER WITHIN A GOLF COURSE FAIRWAY

John M. Bailey, 1249 Golfside Dr., Sebring, Fla. 33870

Filed Mar. 2, 1994, Ser. No. 204,982

Int. Cl.[5] G09F *19/00*

U.S. Cl. 116—209 2 Claims

1. A visual distance marker for a golf course which is implanted in an elongated fairway of the golf course and is materially unaffected by the operation of a reel-type lawn mower passing thereover, said marker consisting of:

a tubular, generally straight, resilient upstanding marker tube having an upper distal end and a lower end and a

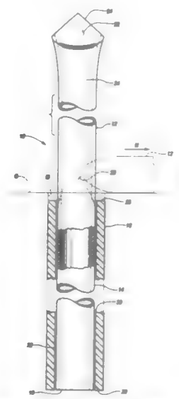
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uniform generally cylindrical cross section along substantially its entire length;

an elongated, straight upright, rigid tubular anchor member completely embedded into a grassy area of the golf course fairway, said anchor member having a length generally in the range of less than half the length of said marker tube, said marker tube having an outside diameter slightly less than an inside diameter of said anchor member;

said marker tube slidably engagable into said anchor member whereby their lower ends are aligned one to another;

said marker tube extending above ground a distance such



that said marker tube may be initially depressed by a leading edge bar of the lawn mower and said marker tube will be subsequently depressed by the mower and rolling bar of the mower, so that said marker tube will not be severed when the grassy area of said fairway is being mowed in any direction across said fairway, said marker tube being sufficiently resilient to return to its original straight and upstanding orientation thereafter;

said marker tube extending above the ground having a particular color indicia thereon for viewably communicating to a golfer the distance of said marker tube from a green associated with said fairway.

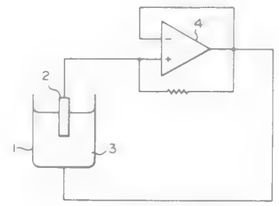
5,357,898

METHOD OF PRODUCING SINGLE CRYSTAL AND APPARATUS THEREFOR

Hisao Kurosawa; Kohei Ito; Masayoshi Sato, all of Fukaya, and Toru Abe, Kumagaya, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Oct. 20, 1992, Ser. No. 963,769
Claims priority, application Japan, Oct. 22, 1991, 3-273634
Int. Cl.[5] C30B *15/20*
U.S. Cl. 117—3 **6 Claims**

1. A method for producing a single crystal, comprising filling a metallic container with a melt of raw material oxides and growing and solidifying a single crystal in a gas atmosphere from the melt, which comprises contacting or dipping an electrode into the melt, first applying an external current through the melt between the electrode and the metallic container and then controlling the current flow between the electrode and the metallic container to maintain the current flow



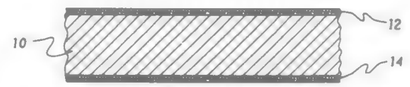
through the melt at essentially zero, thereby preventing melt-out of the container.

5,357,899

EPITAXIAL SILICON MEMBRANES

Ernest Bassous, Bronx; Bernard S. Meyerson, Yorktown Heights, both of N.Y., and Kevin J. Uram, Livermore, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 774,010, Oct. 8, 1991, Pat. No. 5,273,829.
This application Sep. 13, 1993, Ser. No. 120,290
Int. Cl.[5] C30B *1/08*
U.S. Cl. 117—4 **5 Claims**



1. A method of producing an epitaxial silicon membrane, said method comprising the steps of:

growing one or more films of silicon epitaxially using chemical vapor deposition at a temperature in a range of about 500° to about 850° C. on a substrate surface; and

doping at least one of said silicon films during said growing with a dopant selected from the group consisting of: boron in a concentration range greater than 2×10^{20} atoms of boron/cm^3 of silicon; germanium in a concentration range greater than 5×10^{20} atoms of germanium/cm^3 of silicon; and boron and germanium, said boron in a concentration range greater than 2×10^{20} atoms of boron/cm^3 of silicon and said germanium in a concentration range greater than 5×10^{20} atoms of germanium/cm^3 of silicon.

5,357,900

PORTABLE CAGE FOR PETS

Ying-Kuan Ho, No.22, Alley 18, Lane 75, An Ping Road, Tainan, Taiwan

Filed Aug. 11, 1993, Ser. No. 104,633
Int. Cl.[5] A01K *1/03*
U.S. Cl. 119—19 **2 Claims**

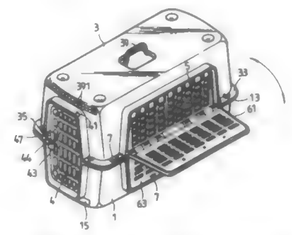
1. A cage comprising:

a base including a front portion having a first opening formed therein, two side portions each having a first access formed therein, two first recesses oppositely formed in an upper portion of each of said first accesses, a first slot and a first bar formed in a bottom portion of each of said first accesses;

a cover including a front portion having a second opening formed there in and two side portions each having a second access formed therein, two second recesses oppositely formed in a lower portion of each of said second accesses,

a cavity formed in one side of said second opening, a second slot and a second bar formed in an upper portion of each of said second accesses;

a door including a plurality of holes formed therein and pivotally coupled between said base and said cover for closing said first opening and said second opening, a board fixed on said door, a knob having an extension engaged into said board and said door, said knob including a catch extended therefrom for engaging will said cavity of said cover so as to retain said door in a closed position;



two grids engaged with said first slots of said base and said second slots of said cover for closing off said first accesses and said second accesses and for allowing air to enter into said cage, and

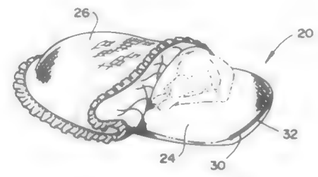
two lids, each including two halves pivotally coupled together by a shaft, said shaft including two end portions rotatably received in said first and second recesses, said two halves of said lids being engaged with said first bars and said second bars, and means for affixing said two halves of said lids to said first bars and said second bars.

5,357,901

PET COMFORTER

Doris B. Batts, 1609 Clearview Ave., Oxon Hill, Md. 20745

Filed Aug. 25, 1993, Ser. No. 111,427
Int. Cl.[5] A01K *1/02*
U.S. Cl. 119—28.5 **2 Claims**



1. A pet comforter, comprising:

a cushion;

a cover for removably receiving said cushion therein;

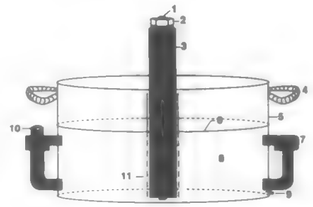
a blanket attached to said cover, said blanket defining a perimeter having a lengthwise dimension greater than a widthwise dimensions, said blanket attached to said cover along a predetermined lengthwise portion of said blanket perimeter, said predetermined lengthwise portion of said blanket perimeter being less than said lengthwise dimension, whereby said blanket can be folded to double thickness at predetermined portions of said blanket when said blanket is positioned over said cushion and said cover.

5,357,902

SELF-MEDICATING APPLICATOR FOR CONTROLLING PESTS ON ANIMALS

R. Andrew Norval; Martin I. Meltzer, both of Gainesville, Fla.; Daniel E. Sonenshine, Virginia Beach, Va., and Michael J. Burridge, Gainesville, Fla., assignors to Old Dominion University, Norfolk, Va. and University of Florida, Gainesville, Fla.

Filed Aug. 5, 1993, Ser. No. 102,599
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—157 **17 Claims**



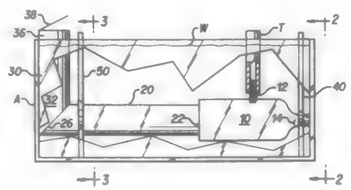
1. A self-medicating applicator device for external application of a liquid to an animal, said device comprising a porous column disposed within a base, wherein said porous column is a cylindrical column having a bottom end and a top end and an aperture through the axial length of said column, said base comprising a housing, having a side wall and a bottom, forming a reservoir and a bait bin.

5,357,903

RETROFITTABLE SUBMERGED TERRARIUM FOR AN AQUARIUM

Christopher Rivera, 243 Koa St. #3, Wahiawa, Hi. 96786

Filed Mar. 18, 1993, Ser. No. 33,007
Int. Cl.[5] A01K *63/00*
U.S. Cl. 119—246 **9 Claims**



9. A process for using a bottle having an interior, comprising:

providing said bottle with an air supply inlet;

placing terrestrial living organisms in said bottle;

submerging said bottle and said organisms in an aquarium; and

waterproofly attaching an upwardly extending access tube, separately from said air supply inlet to said bottle communicating with said interior and extending above said water level.

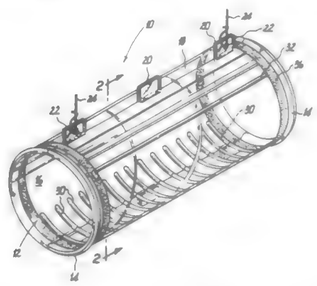
VOL 1167 ISS 4 OC 25 1994 UMI

5,357,904
TOYS FOR CATS
Hiroki Takahashi, and Akio Fujiwara, both of Osaka, Japan, assignors to Hotta Co., Ltd., Osaka, Japan
Filed Sep. 22, 1992, Ser. No. 948,308
Claims priority, application Japan, Jun. 1, 1992, 4-036942
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—708 11 Claims



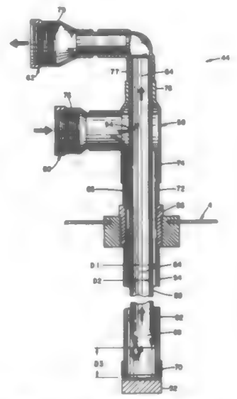
1. A toy for cats, comprising:
a main body including a core element and a braid proper formed by braiding together braid elements, each of which comprises at least one yarn formed by braiding warping or twisting together synthetic fibers;
a bell disposed within an internal space surrounded by said main body.; and
an elastic strap connected to said main body.

5,357,905
EXERCISE APPARATUS FOR SMALL ANIMALS
Richard A. Gordon, 95 W. 3rd St., Freeport, N.Y. 11520
Filed May 6, 1993, Ser. No. 58,569
Int. Cl.[5] A01K *15/02*
U.S. Cl. 119—708 11 Claims



1. Apparatus for use by animals such as ferrets and the like comprising a tubular body having a wall open at each end and having interior and exterior surfaces, suspension means for hanging said body in a substantially horizontal position to permit ingress and egress for said animal through each end and traction means located on the interior surface of the Wall to enable said animal to maneuver within said body.

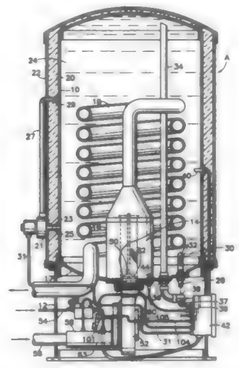
5,357,906
SUBMERSIBLE LIQUID-TO-LIQUID HEAT EXCHANGER
Dennis Brazier, Rte. 1, Box 220, Greenbush, Minn. 56726
Filed Sep. 7, 1993, Ser. No. 116,850
Int. Cl.[5] F22B *1/02*
U.S. Cl. 122—32 18 Claims



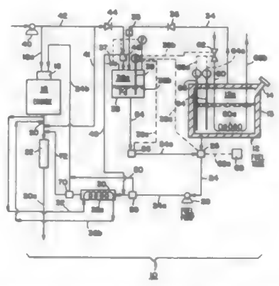
1. Liquid-to-liquid heat exchange apparatus comprising:
(a) a first housing having a first cavity which extends along a longitudinal axis to a closed end;
(b) means secured to said first housing for supporting said first housing to a liquid storage tank and submersing said first housing in a first liquid contained in said storage tank;
(c) a second housing having a longitudinal bore which bore terminates at an open end and an aperture which extends through a sidewall and communicates with said first cavity and bore;
(d) means for supporting said second housing within said first cavity such that the open end is displaced adjacent to said closed end; and
(e) means exposed at said storage tank having a first port communicating with said first cavity and a second port communicating with the bore for coupling a second liquid through said first cavity and bore and said first and second ports and wherein a portion of the flow of said second liquid bypasses said open end.

5,357,907
WATER HEATER WITH REDUCED LOCALIZED OVERHEATING
H. Jack Moore, Jr., Playa Del Rey, and Bijan Gidanian, Granada Hills, both of Calif., assignors to SABH (U.S.) Water Heater Group, Inc., Bala Cynwyd, Pa.
Filed Dec. 14, 1993, Ser. No. 166,729
Int. Cl.[5] F22D *7/00*
U.S. Cl. 122—406.1 8 Claims

1. A water heater comprising a water tank, a burner adapted to heat the water within said tank, a water inlet, a water outlet and water circulating means independent of said inlet and said outlet and connected to circulate the water in said tank responsive to activation of said burner for increasing uniformity of water temperature at different locations up and down said tank.

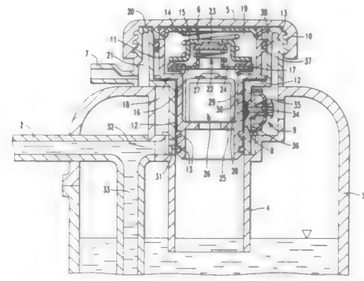


5,357,908
FUEL MODIFICATION METHOD AND APPARATUS FOR REDUCTION OF POLLUTANTS EMITTED FROM INTERNAL COMBUSTION ENGINES
Shiang Sung, New York, N.Y.; John J. Steger, Pittstown, N.J.; Joseph C. Dettling, Howell, N.J., and Patrick L. Burk, Freehold, N.J., assignors to Engelhard Corporation, Iselin, N.J.
Filed Apr. 16, 1993, Ser. No. 49,098
Int. Cl.[5] F02B *43/08*
U.S. Cl. 123—3 17 Claims



1. A method for abating pollutants in the exhaust gas discharged from an internal combustion engine fueled by a liquid hydrocarbon fuel, the method comprising:
(a) heating the liquid hydrocarbon fuel to vaporize therefrom a low boiling point fraction, condensing the low boiling point fraction to obtain therefrom a distillate fuel, and storing the distillate fuel in a storage container;
(b) supplying the distillate fuel to the engine as part of a start-up fuel/air combustion mixture for engine start-up and during an initial engine operating period;
(c) after the initial engine operating period, terminating the supply of distillate fuel to the engine and supplying the liquid hydrocarbon fuel of (a) to the engine as part of a second fuel/air combustion mixture for a subsequent engine operating period;
(d) refining at least one of the distillate fuel and the liquid hydrocarbon fuel by contacting it under cracking or isomerizing conditions with a cracking catalyst prior to supplying the fuel to the engine; and
(e) regenerating the cracking catalyst during operation of the engine by by-passing the supply of distillate fuel or liquid hydrocarbon fuel to the engine around the cracking catalyst, and flowing air through the cracking catalyst under catalyst regeneration conditions.

5,357,909
ARRANGEMENT FOR PROTECTING A COOLING SYSTEM FROM EXCESSIVE PRESSURE
Thomas Attinger, Stuttgart; Wolfgang Kleineberg, Calw; Reiner Bandlow, and Burkhard Raabe, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Stuttgart, Fed. Rep. of Germany
Filed Sep. 30, 1993, Ser. No. 129,747
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1992, 4233038
Int. Cl.[5] F01P *3/22*
U.S. Cl. 123—41.54 10 Claims



1. An arrangement for protecting a cooling system of an internal combustion engine from excessive pressure, said system including a coolant container with a filler mouthpiece arranged in the upper region of, and extending into, the coolant container and having at least one pressure operated valve mounted in an insert received in said filler mouthpiece so as to normally close said filler mouthpiece and further having a ventilation opening providing for communication between a gas volume in the coolant container and the filler mouthpiece, and a flow control element arranged in the ventilation opening in such a way that the ventilation opening is closed when the coolant container is being filled so as to interrupt communication between the gas volume in the coolant container and the filler mouthpiece, said flow control element consisting of an arrowhead-shaped conical valve body arranged in the gas volume and having a pointed end disposed in the ventilation opening, a spring engaging said valve body so as to bias said valve body into said ventilation opening such that said pointed end protrudes into the filler mouthpiece where it is engaged by said insert for displacing said valve body so as to open said ventilation opening when said insert is disposed in said filler mouthpiece.

5,357,910
CYLINDER BLOCK AND HEAD COOLING SYSTEM
Urs Wenger; Hans R. Jenni, both of Langenthal, and Hans P. Goetti, Zetzwil, all of Switzerland, assignors to SMH Management Services AG, Biel, Switzerland
Filed Nov. 2, 1992, Ser. No. 970,714
Claims priority, application France, Oct. 31, 1991, 91 13606
Int. Cl.[5] F02B *75/18*
U.S. Cl. 123—41.74 5 Claims

1. A liquid cooled internal combustion engine having a cylinder block, a cylinder head and at least two cylinders, each having a cylinder liner, comprising a cooling circuit for the

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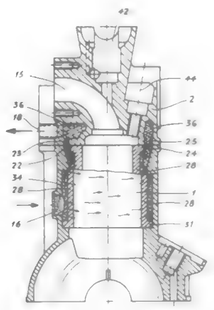
cylinder block and cylinder head for circulating cooling liquid in a path generally perpendicular to the cylinder alignment, said cooling circuit including:

an inlet and an outlet orifice;

an annular chamber surrounding each of said cylinders between the cylinder liner and the cylinder block;

means coupling said input orifice to said annular chambers;

circulation channels arranged in said cylinder head and extending to said outlet orifice; and



ducts coupling each of said annular chambers to said circulation channels for circulating cooling liquid in said annular chambers and said channels in paths generally perpendicular to the axes of said cylinders; said annular chambers and said circulation channels of each of said cylinders having a substantially constant cross-sectional area, said outlet orifice being located on the same side of the engine as said inlet orifice.

5,357,911

FOUR-STROKE RADIAL-PISTON ENGINE

Karl-Erik Lindblad, Alingsås, Sweden, assignor to Kesol Production AB, Alingsas, Sweden

PCT No. PCT/SE89/00582, § 371 Date Jun. 21, 1991, § 102(e) Date Jun. 21, 1991, PCT Pub. No. WO90/04709, PCT Pub. Date May 3, 1990

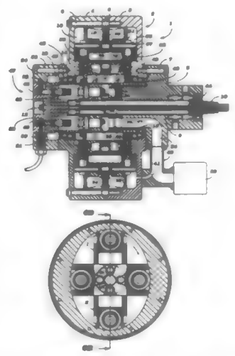
PCT Filed Oct. 24, 1989, Ser. No. 678,966

Claims priority, application Sweden, Oct. 24, 1988, 8803791

The portion of the term of this patent subsequent to Apr. 8, 2092, has been disclaimed.

Int. Cl.[5] F02B *57/00, 75/22*

U.S. Cl. 123—44 B **10 Claims**



1. A four-stroke, radial-piston engine, comprising a stationary housing (2), a drive shaft (10) which is rotationally mounted substantially centrally inside said housing and which supports a hub (11) rotating therewith, at least two radially projecting cylinders (14) which are mounted on the hub to rotate therewith, said cylinders being positioned inside a circumferentially extending chamber (15) in said housing (2) and each having a piston which is mounted for radial reciprocating movement inside its associated cylinder, the piston heads (17) of said pistons facing radially inwards towards the hub (11), a circumferentially extending cam member (19) mounted inside the housing (2) in alignment with the pistons (16) adjacent the radially outwardly extending piston ends (21) and having a cam face facing said pistons, against which cam face abut bearing means (23) mounted on each piston (16) in order to impart a radial movement to said pistons in the direction towards the hub upon rotation of the rotary unit formed by the pistons (16), the cylinders (14), the hub (11), and the drive shaft (10) relatively to the stationary housing (2), and a combustion chamber (25) formed in said hub (11) essentially in alignment with the head (17) of each one of said pistons (16), which combustion chamber has valve-operated inlets and outlets (26, 27) for intake and exhaustion, respectively, of a combustible fuel-air mixture and combusted exhaust gases, whereby said pistons (16) are imparted a radial movement away from the hub (11) in response to the compression-induced increase of pressure and the centrifugal force, characterized in that the inlets and outlets (26, 27) to and from, respectively, each combustion chamber (25) are common and are formed in a valve ring (28) which rotates together with the hub (11) and which is essentially concentric therewith, said valve ring sealingly abutting against a stationary port ring (30) which is essentially concentric with the valve ring and which is connected to the housing (2), said port ring being formed with axial intake and exhaust ports (36, 37) communicating with inlet and outlet ducts (34, 35), said axial intake and exhaust ports alternatingly assuming, upon rotation of said rotary unit (10, 11, 14, 16) respectively to the housing (2), a position in alignment with that inlet and outlet (26, 27) formed in the valve ring (28) that is associated with the respective combustion chamber (25), and in that one spark plug (46) is provided for each combustion chamber (25), said spark plugs being screwed essentially axially into the hub (11) and rotating together with the latter, so that by means of their electrode ends the spark plugs project into their associated one of the combustion chambers essentially in alignment with the common inlet and outlet (26, 27) in the valve ring (28).

5,357,912

ELECTRONIC CONTROL SYSTEM AND METHOD FOR A HYDRAULICALLY-ACTUATED FUEL INJECTION SYSTEM

Travis E. Barnes, Peoria, and Bradley W. Harrell, Normal, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Feb. 26, 1993, Ser. No. 23,279

Int. Cl.[5] F02D *31/00, 7/00*

U.S. Cl. 123—357 **23 Claims**

1. An apparatus adapted for electronically controlling a quantity of fuel that a hydraulically-actuated injector injects into an engine, said apparatus comprising:

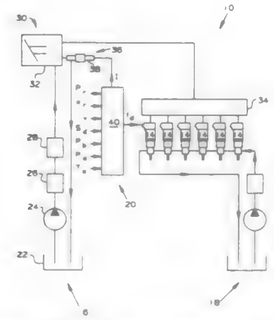
means for determining a desired fuel quantity and delivering a first fuel quantity signal (q_1) indicative of the magnitude of said desired fuel quantity;

engine characteristic control means for determining a maximum allowable fuel quantity that limits at least one characteristic produced by the engine, and delivering a maximum allowable fuel quantity signal (q_h, q_s) indicative of the magnitude of said maximum allowable fuel quantity;

fuel quantity comparing means for comparing the first fuel quantity signal (q_1) to the maximum allowable fuel quantity signal (q_h, q_s), selecting a lesser value of the first fuel quantity signal (q_1) and the maximum allowable fuel quantity signal (q_h, q_s), and delivering a second fuel quantity signal (q_2, q_3) indicative of the magnitude of said selected lesser value;

means for sensing the pressure of actuating fluid used to hydraulically actuate the injector and delivering an actuating fluid pressure signal (P_f) indicative of the magnitude of said sensed actuating fluid pressure; and

converting means for receiving said second fuel quantity signal (q_2, q_3) and the actuating fluid pressure signal (P_f),



converting the second fuel quantity signal (q_2, q_3) into a time duration signal (t_d) that is a function of at least the actuating fluid pressure signal (P_f) and the second fuel quantity signal (q_2, q_3), and delivering the time duration signal (t_d) to the injector to electronically control said fuel quantity independent of fuel injection pressure.

5,357,913

FLAME ARRESTER ARRANGEMENT FOR MARINE PROPULSION ENGINE

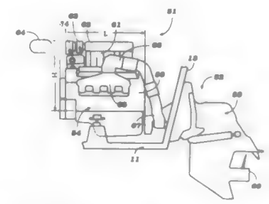
Hideyuki Okumura, and Masanori Urita, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Apr. 12, 1993, Ser. No. 46,011

Claims priority, application Japan, Apr. 10, 1992, 4-116665

Int. Cl.[5] F02M *35/10*

U.S. Cl. 123—184.34 **10 Claims**



1. An internal combustion engine for a marine propulsion unit comprising a cylinder block, an induction system for delivering an intake charge to said engine, an exhaust system for exhausting exhaust gases from said engine, a liquid cooling system for said engine comprising a thermostat housing at one end of said engine and formed in an upper portion thereof, said exhaust system comprising an exhaust elbow for receiving exhaust gases from an exhaust manifold and discharging them to the body of water in which the associated watercraft is operating, said induction system including an intake manifold having a plenum chamber disposed vertically above the upper end of said exhaust elbow and an atmospheric air inlet disposed at said one end of said engine, and a flame arrester for inducting a charge into said manifold inlet end and for restraining flame travel from said inlet end, said flame arrester being positioned vertically above and in overlying relation to said thermostat housing.

5,357,914

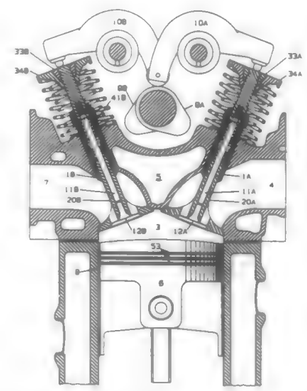
VENTED VALVE MECHANISM FOR INTERNAL COMBUSTION ENGINES

Reggie D. Huff, Tigard, Oreg., assignor to ACRO-Techn Inc., Portland, Oreg.

Filed Aug. 24, 1993, Ser. No. 110,968

Int. Cl.[5] F01L *1/28*

U.S. Cl. 123—79 C **14 Claims**



1. A poppet valve comprising:

a) an outer valve means configured with a hollow stem and means defining at least one vent opening through the base of the outer valve means for communicating a passage between a cylinder and its respective ports;

b) an inner valve means associated with the outer valve means to selectively open and close the vent opening through the outer valve base, the inner valve configured with a valve stem carried within the hollow stem of the outer valve means and an inner valve base means arranged to releasably seal the vent opening through the base of the outer valve means;

c) an outer valve stem spring landing means to retain an inner valve control spring around the outer valve stem in a predetermined linear position at a predetermined preload length; and

d) an outer valve stem spring landing access means to install the inner valve control spring onto and within the spring landing means.

5,357,915

VALVE SYSTEM FOR INTERNAL COMBUSTION ENGINE

Toshio Yamamoto, Tokyo; Seishi Miura, and Koji Takamatsu, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1992, Ser. No. 942,676

Claims priority, application Japan, Sep. 10, 1991, 3-229896; Dec. 3, 1991, 3-318870

Int. Cl.[5] F01L *1/34*

U.S. Cl. 123—90.16 **16 Claims**

1. A valve system for an internal combustion engine having a head, a cover on the head, a cylinder block and at least one valve, comprising

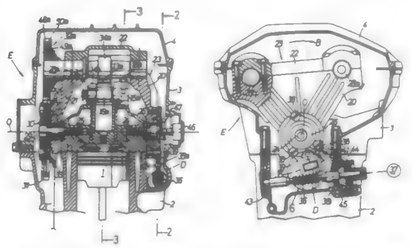
a camshaft support member having a pivotal mounting to the head;

a camshaft rotatably mounted to said camshaft support member at a distance from said pivotal mounting;

a rocker arm pivotally mounted to the head and engaging the valve, said camshaft contacting said rocker arm;

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a drive for said camshaft support member to move said camshaft support member about said pivotal mounting,



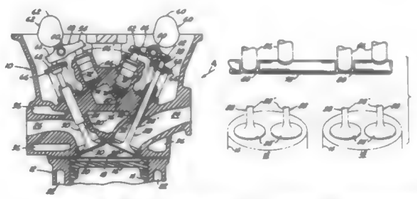
said drive being mounted to one of the head and cylinder block of the engine.

5,357,916

VALVE ADJUSTER MECHANISM FOR AN INTERNAL COMBUSTION ENGINE

John P. Matterazzo, Madison Heights, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 27, 1993, Ser. No. 200,500
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.16 9 Claims



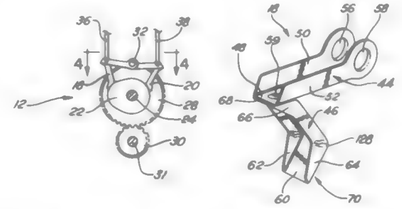
1. A valve regulating mechanism for an internal combustion engine of the type having a combustion chamber, a cylinder head, a pair of intake valves for controlling flow into the combustion chamber, and a camshaft having a lobe portion for each of the intake valves, comprising: a valve lash adjustor supported by the cylinder head for each intake valve; an elongated rocker arm having opposite end portions and a midportion, one of said end portions operatively engaging an intake valve, the other of said end portions supported by one of said lash adjusters, and the midportion being contacted by the camshaft; the cylinder head having a bore extending beneath each lash adjuster; a shaft extending in said bore and capable of being rotated therein; said shaft having an outer cylindrical surface which engages a lash adjuster associated with the first of said pair of intake valves in any rotated position of said shaft; said shaft also having a reduced diameter eccentric portion formed under the other lash adjuster associated with the second of said pair of intake valves, the eccentric portion being radially positioned to define a surface coplanar with said cylindrical surface so that when said shaft is rotated to a first position both of said lash adjusters are supported by the shaft equally whereby the camshaft lobes are effective to operate both of said pair of valves and provide a dual valve mode of operation for the corresponding combustion chamber; said eccentric portion also defining another surface inwardly positioned from said shafts cylindrical surface so that when said shaft is rotated to a second position 180 degrees from the first position the abutting lash adjuster moves radially inward and allows the operatively attached rocker arm to pivot away from the camshaft whereby the corresponding cam lobe is ineffective to operate the associated valve and provide a single valve mode of operation for the corresponding combustion chamber.

5,357,917

STAMPED CAM FOLLOWER AND METHOD OF MAKING A STAMPED CAM FOLLOWER

Robert G. Everts, Chandler, Ariz., assignor to Ryobi Outdoor Products, Inc., Chandler, Ariz.

Filed Feb. 23, 1993, Ser. No. 21,496
Int. Cl.[5] F01L *1/18*
U.S. Cl. 123—90.39 9 Claims



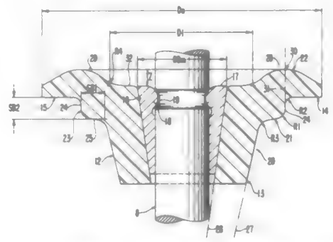
1. A cam follower comprising:
a first portion of generally U-shaped cross-section including a bottom and a pair of parallel spaced apart side walls connected to the bottom, each of the side walls having a hole therethrough, the holes being in coaxial alignment and adapted to accept a shaft; and
a second portion including a first end connected to the first portion and a second distal end adapted to contact a cam surface;
the first and second portions forming a generally V shape.

5,357,918

VALVE OPERATING MECHANISM FOR INTERNAL-COMBUSTION ENGINES

Norbert Hemmerlein, Pforzheim, and Thomas Kannen, Wiernsheim, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Sep. 7, 1993, Ser. No. 116,756
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1992, 230227
Int. Cl.[5] F01L *3/00, 1/24, 3/02, 3/10*
U.S. Cl. 123—90.67 7 Claims



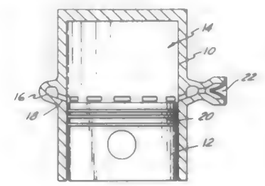
1. A valve operating mechanism for internal-combustion engines comprising:
a valve having a valve shaft end;
a spring plate mounted on an area of the valve which is adjacent to the valve shaft end;
a pressure spring supported on the spring plate and providing a force on the valve towards an end position;
wherein at least the valve, the pressure spring and the spring plate are optimized with respect to their weights to thereby reduce valve operating masses;
wherein the spring plate has a conical hub part which surrounds the valve shaft and is provided with a hub bore, and a supporting part for the pressure spring which extends transversely with respect to the valve shaft, and wherein the spring plate is made of a fiberglass-reinforced plastic and has a first radial widening of a cross-section on a side facing away from the hub bore, between the hub part and the supporting part, and has a second axial widening of the cross-section on the supporting part on an end facing away from the pressure spring; and
wherein the second axial widening of the cross-section is formed by an elevation rising above a plane which includes radially inner and outer most points on the end face of the spring plate.

5,357,919

HYDROCARBON EMISSION CONTROL

Thomas T. Ma, Chelmsford, Great Britain, assignor to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/GB92/00089, § 371 Date Jul. 14, 1993, § 102(e) Date Jul. 14, 1993, PCT Pub. No. WO92/13181, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 16, 1992, Ser. No. 90,130
Claims priority, application United Kingdom, Jan. 19, 1991, 9101214
Int. Cl.[5] F02F *3/14*
U.S. Cl. 123—193.2 3 Claims



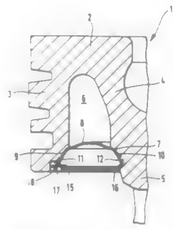
1. A four-stroke spark ignited internal combustion engine comprising a variable volume working chamber (14) defined between a reciprocating piston (12), which has at least one sealing piston ring (20), and a cylinder (10), characterised by an auxiliary chamber (16) having a fixed volume significantly smaller than the maximum volume of the working chamber (14) and communicating with the working chamber (14) by a passage (18) disposed in the cylinder wall at a position above the top piston ring when the piston (12) is near the bottom of its stroke so that end gases at the end of the power stroke are stored in the auxiliary chamber (16), the auxiliary chamber being communicated with said passage (18) to the crankcase when the piston (12) is near the top of its exhaust stroke so that the stored end gases are discharged into the crankcase, with the auxiliary chamber having a one-way valve which is connected so as to permit air to enter the auxiliary chamber but not to escape from the auxiliary chamber.

5,357,920

COOLED MULTI-COMPONENT PISTON FOR INTERNAL COMBUSTION ENGINES

Peter Kemnitz, Kernen; Gotthard Stuska, Fellbach, and Wolfgang Bierkant, Benningen, all of Fed. Rep. of Germany, assignors to Mahle GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00928, § 371 Date Jun. 10, 1993, § 102(e) Date Jun. 10, 1993, PCT Pub. No. WO92/10659, PCT Pub. Date Jun. 25, 1992
PCT Filed Nov. 23, 1991, Ser. No. 75,548
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1990, 4039752; Dec. 13, 1990, 4039754
Int. Cl.[5] F02F *3/00*
U.S. Cl. 123—193.6 5 Claims



1. Cooled multi-component piston for use with an internal combustion engine, comprising
a head part with bosses formed thereon for receiving a piston pin connecting the piston with a piston rod;
an outer annular wall changing at a first end into the bottom of the head part and ending open at its second end for receiving at least one piston ring groove, and with a hollow space joined up radially on the inside with said annular wall and open to the second end of the annular wall, and surrounding the bosses or their supporting parts extending to the bottom of the head part, which supporting parts comprise an annular rib, said hollow space being closed approximately at the level of the second end of the annular wall by an annular wall part so as to form a through-flow cooling oil space, whereby the wall part is clamped under prestress between supports on the bosses or supporting parts of the head part, and radially on the outside on the annular wall, where it rests freely in each case, and with a piston shaft connected with the head part only via the piston pin;
the wall part being an annular surface divided circumferentially at least once and having an outer collet formed on the outer circumference and having an inner collet formed on the inner circumference, said collets extending all around and being slotted radially on the inside and outside by cuts; and
said wall part engaging with the outer collet formed on the outer circumference in a recess on the inner circumference of the annular wall, and with the inner collet formed on the inner circumference in a recess of the annular rib.

5,357,921

CYLINDER BLOCK AND A PROCESS FOR CASTING THE SAME

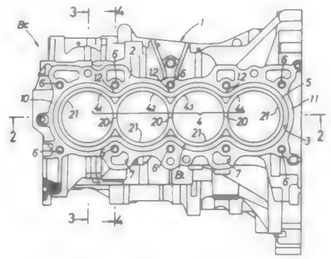
Hisashi Katoh, Saitama; Tadayoshi Nakajima; Tomoyuki Goto, both of Mie; Tsunehisa Hata; Hideyo Miyano, both of Saitama, and Shinsuke Koda, Tochigi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 4, 1993, Ser. No. 456
Claims priority, application Japan, Jan. 6, 1992, 4-000310; Jan. 6, 1992, 4-000311; Jan. 9, 1992, 4-002474
Int. Cl.[5] F02F *1/00*
U.S. Cl. 123—193.2 11 Claims

1. A cylinder block comprising a cylinder block body and a cylinder liner block mounted in the cylinder block body cast-

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ing the cylinder block body with the cylinder liner block positioned in the cylinder body, said cylinder liner block being formed from a material having a rigidity larger than a material forming the cylinder block body, and said cylinder liner block



comprising a liner section mounted by casting in position in a cylinder barrel portion of said cylinder block body and a reinforcing wall section mounted by casting in position in a bearing wall of a crank case portion of said cylinder block body for said reinforcing wall section to support a crank shaft.

5,357,922

UNITARY LADDER FRAME AND CYULINDER BLOCK STRUCTURE AND ENGINE BLOCK HAVING SAME

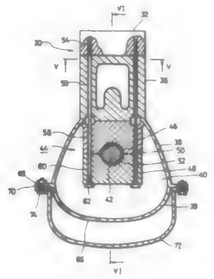
Che-Won Han, Jung, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

Filed Feb. 22, 1994, Ser. No. 199,884

Claims priority, application Rep. of Korea, Sep. 14, 1993, [redacted]

Int. Cl.[5] F02F *7/00*

U.S. Cl. 123—195 H 16 Claims



1. A cylinder block for an internal combustion engine having a plurality of cylinder bores, which comprises:

a flared skirt portion integrally molded with a lower part of said cylinder block; and

a curved ladder frame portion integrally molded with a lower part of said skirt portion, said integrally molded skirt and ladder frame structure defining a chamber suitable for accommodating therein a bearing block mounted to a lower portion of said cylinder block.

5,357,923

ROTARY PISTON INTERNAL COMBUSTION ENGINE

Günter Osterburg, Osnabrück, and Heinrich Stallkamp, Wallenhorst, both of Fed. Rep. of Germany, assignors to Motos Motor-Technik GmbH, Wallenhorst, Fed. Rep. of Germany

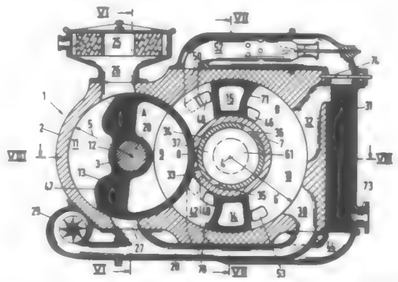
PCT No. PCT/EP91/01003, § 371 Date Nov. 25, 1992, § 102(e) Date Nov. 25, 1992, PCT Pub. No. WO91/19088, PCT Pub. Date Dec. 12, 1991

PCT Filed May 30, 1991, Ser. No. 955,885

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1990, 4017760

Int. Cl.[5] F02B *53/00*

U.S. Cl. 123—204 46 Claims



1. A rotary piston internal combustion engine, comprising:

a common housing having two annular paths that overlap one another in a penetration region of said common housing,

a stationary hollow hub in said housing,

first and second rotary piston systems in said common housing, each said rotary piston system including at least one piston rotor, each said piston rotor having radial, external, peripheral areas in the form of partial cylindrical areas and having end faces, said second rotary piston system being constructed as a double piston system with two piston rotors revolving symmetrically about a common axis and about said stationary hollow hub,

bearing means for mounting the two rotary piston systems on parallel axes in said common housing such that:

said piston rotors of said two rotary piston systems mutually engage by meshing with one another, when said two rotary piston systems rotate in opposite directions,

said piston rotors of said two rotary piston systems move in said two annular paths, respectively,

said partial cylindrical areas of each said piston rotor of said first rotary piston system, during rotation thereof, forming a sealing gap alternately with:

the housing, and

one of said second rotary piston system and said stationary hollow hub, and

said end faces of at least one piston rotor of said second rotary piston system, during mutual engagement of the rotary piston systems, working together with end faces of at least one piston rotor of said first rotary piston system to form sealed areas,

a combustion chamber which is separate from said first and second rotary piston systems,

duct means for connecting said annular paths with said separate combustion chamber such that said separate combustion chamber can receive a compressed mixture from said annular paths,

the stationary hollow hub forming part of the duct means and having at least one control slot, which extends axially and discharges into one said annular path, and

shut-off valve means for controlling flow through said duct means, said shut-off valve means including control bodies fixedly connected with the piston rotors.

5,357,924

DIRECT-INJECTION TYPE COMPRESSION-IGNITION INTERNAL COMBUSTION ENGINE

Shigeru Onishi, Kanazawa, Japan, assignor to Nippon Clean Engine Research Institute Co., Ltd., Ishikawa, Japan

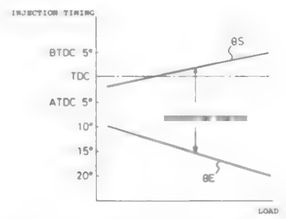
PCT No. PCT/JP92/00777, § 371 Date Feb. 3, 1993, § 102(e) Date Feb. 3, 1993, PCT Pub. No. WO93/00504, PCT Pub. Date Jan. 7, 1993

PCT Filed Jun. 18, 1992, Ser. No. 978,681

Claims priority, application Japan, Jun. 21, 1991, 3-247156; Sep. 10, 1991, 3-230271

Int. Cl.[5] F02F *3/26*

U.S. Cl. 123—276 14 Claims



1. A direct-injection type compression-ignition internal combustion engine, comprising:

a cavity formed in the top surface of a piston;

a fuel injector disposed on an inner wall surface of a cylinder head above a center of the cavity;

a collision portion having a collision surface provided below the fuel injector, wherein fuel injected from the fuel injector is made to collide with the collision surface, and the collided injected fuel is made to disperse from the collision surface in the radial directions of the cavity, in which direct-injection type compression-ignition internal combustion engine the timing of the start of the fuel injection is set to near the compression top dead center so that more than half the injection period of fuel exists after the compression top dead center, the initial combustion is performed in the cavity, and the remaining combustion following the initial combustion is performed between the top surface of the piston around the cavity and the inner wall surface of the cylinder head.

5,357,925

INTERNAL COMBUSTION ENGINE

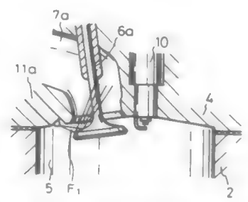
Shizuo Sasaki, Numazu, Japan, assignor to Toyota Jidosha Kabushika Kaisha, Toyoto, Japan

Continuation of Ser. No. 942,531, Sep. 9, 1992, Pat. No. 5,291,865. This application Jan. 25, 1994, Ser. No. 186,084

Claims priority, application Japan, Sep. 13, 1991, 3-234954

Int. Cl.[5] F02B *3/00*

U.S. Cl. 123—298 14 Claims



1. An engine having a cylinder head and a combustion chamber, the engine comprising:

a first intake valve arranged on an inner wall of the cylinder head;

a fuel injector arranged on the inner wall of the cylinder head, wherein an injection direction of the fuel injector is determined so that the fuel injected by the fuel injector impinges upon a rear face of the valve head of the first intake valve when the amount of valve lift of the first intake valve exceeds a predetermined amount, and wherein the fuel injected by the fuel injector moves toward the combustion chamber beneath the first intake valve when the amount of valve lift of the first intake valve is smaller than the predetermined amount; and

injection control means for controlling an injection timing and an amount of fuel injected by the fuel injector during an intake stroke of the engine, wherein the injection control means operates to increase a ratio of an amount of injected fuel impinging upon the rear face of the valve head of the first intake valve to an amount of injected fuel moving toward the combustion chamber beneath the first intake valve as an engine load increases.

5,357,926

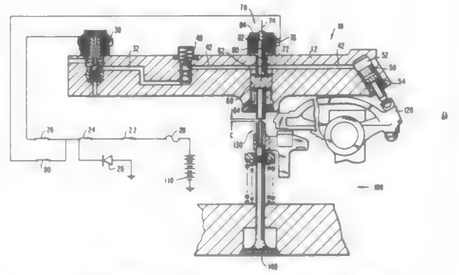
COMPRESSION RELEASE ENGINE BRAKE WITH SELECTIVELY REDUCED ENGINE EXHAUST NOISE

Haoran Hu, Farmington, Conn., assignor to Jacobs Brake Technology Corporation, Wilmington, Del.

Filed Aug. 26, 1993, Ser. No. 112,766

Int. Cl.[5] F01L *13/06*

U.S. Cl. 123—321 13 Claims



1. In a compression release engine brake for braking an associated internal combustion engine by using a first mechanical motion of the engine to cause an exhaust valve of the engine to open near the end of a compression stroke of an engine cylinder associated with said exhaust valve, said engine brake including an output member which acts on an exhaust valve mechanism in response to said first mechanical motion in order to open said exhaust valve, said output member being normally spaced from said exhaust valve mechanism during braking operation by a predetermined clearance, said clearance producing a delay between the commencement of said first mechanical motion and the opening of said exhaust valve, the improvement comprising:

clearance selection means operable by a human operator of said engine during operation of said engine; and

means responsive to said clearance selection means for modifying said clearance to modify the delay between the commencement of said first mechanical motion and the opening of said exhaust valve, said clearance having a first predetermined dimension during normal engine braking operation of said engine brake, and wherein said means for modifying changes the dimension of said clearance from said first predetermined dimension to a second predetermined dimension which produces an amount of engine braking which is lower than the amount of engine braking produced during said normal engine braking operation.

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5,357,927

METHOD OF CONTROLLING AN ENGINE FOR A FLEXIBLE FUEL VEHICLE

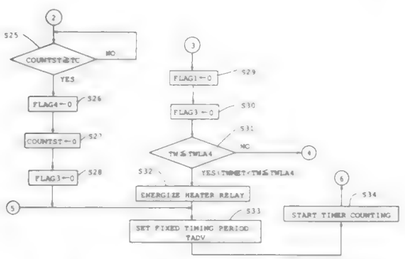
Yoichi Saito, and Takamitsu Kashima, both of Tokyo, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 796,459, Nov. 22, 1991. This application Jan. 14, 1993, Ser. No. 5,983

Claims priority, application Japan, Nov. 27, 1990, 2-327608; Dec. 27, 1990, 2-408076; Jul. 19, 1991, 3-179939

Int. Cl.[5] F02P *5/15*

U.S. Cl. 123—421 7 Claims



1. A control method for starting an engine of a flexible fuel vehicle having an intake manifold connected to said engine for inducing an air-fuel mixture into a cylinder of the engine, a fuel injector inserted in said intake manifold for injecting fuel into said cylinder, a fuel tank mounted on said vehicle for storing flexible fuel, a spark plug inserted in a cylinder head for igniting the flexible fuel, a temperature sensor provided on a crankcase of said engine for detecting coolant temperature as an engine temperature, a crank angle sensor provided in front of a crankshaft for sensing crank angle, and a control unit for controlling ignition timing of said spark plug, the control method comprising the steps of

comparing said engine temperature with a reference temperature stored in a first memory map and a warmup completion temperature,

judging whether said engine temperature is between said reference temperature and said warmup completion temperature,

setting a fixed ignition timing stored in a second memory map corresponding to said engine temperature whenever said engine temperature is between said reference temperature and said warmup completion temperature, and

igniting said spark plug at said fixed ignition timing via said control unit so as to enable optimum starting of said engine in any operating condition of the flexible fuel vehicle.

5,357,928

FUEL INJECTION CONTROL SYSTEM FOR USE IN AN INTERNAL COMBUSTION ENGINE

Masahito Ohtsuka, Shizuoka, Japan, assignor to Suzuki Motor Corporation, Shizuoka, Japan

Filed Feb. 2, 1993, Ser. No. 12,549

Claims priority, application Japan, Mar. 25, 1992, 4-097284; Mar. 27, 1992, 4-100255

Int. Cl.[5] F02D *43/00*

U.S. Cl. 123—424 2 Claims

1. A fuel injection control system for use in an internal combustion engine having a catalyst in an exhaust path thereof, comprising the improvement wherein: each cylinder is provided with fuel injection valve for injecting fuel therein amounting to a reference fuel injection quantity which is established according to a loaded state of said internal combustion engine; each cylinder is provided with a spark plug for producing spark ignition therein at each period of reference ignition timing which is established according to the loaded state of said internal combustion engine; and, controlling means for (1) controlling said fuel injection valve such as to increase and decrease said reference fuel injection quantity by a different amount per cylinder without a change in a total of said reference fuel injection quantity and (2) varying this fuel increase and decrease according to the loaded state of said internal combustion engine, said controlling means further controlling

		FIRST PHASE	SECOND PHASE	THIRD PHASE	FORTH PHASE	FIFTH PHASE
THROTTLE OPENING		th < 20%	20%≤th<40%	40%≤th<60%	60%≤th<80%	80%≤th
FUEL INJECTION TIMING	F1	-2%	-4%	-6%	-8%	-10%
	F2	+2%	+4%	+6%	+8%	+10%
	F3	0%	0%	0%	0%	0%
IGNITION TIMING	T1	-2°	-3°	-4°	-5°	-6°
	T2	-4°	-6°	-8°	-10°	-12°
	T3	0°	0°	0°	0°	0°

said spark plug such as to retard said reference ignition timing by an amount different from one cylinder to another and varying this retardation according to the loaded state of said internal combustion engine, such control being effected by said controlling means only when said internal combustion engine is running in a state which fulfills predetermined conditions.

5,357,929

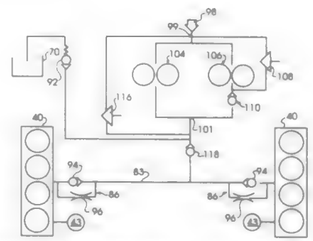
ACTUATION FLUID PUMP FOR A UNIT INJECTOR SYSTEM

James C. McCandless, Palatine, Ill., assignor to Navistar International Transportation Corp., Chicago, Ill.

Filed Sep. 29, 1993, Ser. No. 128,403

Int. Cl.[5] F02M *41/00, 37/04*

U.S. Cl. 123—446 21 Claims



1. A fuel injection actuation fluid pump system connected by a high pressure line to at least one high pressure rail associated with an engine for supplying actuating fluid to hydraulically-actuated, electronically-controlled unit injectors associated therewith, said high pressure rail including sensing means for monitoring the fluid pressure in said high pressure rail, and said engine having an electronic microprocessor control programmed to transmit an underpressure signal when the hydraulic pressure in the high pressure rail falls below a desired or programmed level, said pump system including:

an input port connected to a source of actuating fluid and a discharge port connected to said high pressure line;

a first stage gear pump and a second stage gear pump disposed to provide parallel flow being said input port and said discharge port, said second stage gear pump having a discharge side;

a one-way check valve disposed in fluid communication between the discharge side of said second stage gear pump and said discharge port to prevent flow from said first stage gear pump to the discharge side of said second stage gear pump;

a bypass circuit extending from the discharge side of said second stage gear pump to said input port of said pump system; and

a normally-open, solenoid-actuated bypass valve in said first bypass circuit, said normally-open, solenoid-actuated bypass valve being operatively associated with said microprocessor and being actuated upon the presence of said underpressure signal therefrom to close, thereby resulting in a fluid pressure increase at said discharge side of the second stage gear pump and permitting fluid to flow through said one-way check valve to said discharge port of the pump system.

5,357,930

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Wolfgang Fehlmann, Stuttgart; Wolfgang Braun, Ditzingen, and Dieter Junger, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

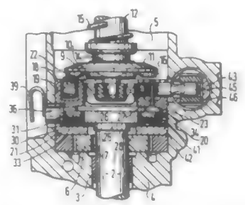
PCT No. PCT/DE91/00439, § 371 Date Nov. 12, 1992, § 102(e) Date Nov. 12, 1992, PCT Pub. No. WO91/19899, PCT Pub. Date Dec. 26, 1991

PCT Filed May 25, 1991, Ser. No. 946,467

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1990, 4019642

Int. Cl.[5] F02M *37/04*

U.S. Cl. 123—449 9 Claims



1. A fuel injection pump, comprising means forming an inner chamber; a drive shaft having an axis and extending into said inner chamber; a front cam plate setting a pump plunger into a reciprocating and rotating movement; a front face coupling which couples said drive shaft with said front cam plate; a roller ring provided with a plurality of rollers for supporting said cam plate; a bolt which sets a position of said roller ring; an injection timer connected with said roller ring; a rotational angle sensor including a stationary part, and a sensor wheel formed as a movable part and arranged on said drive shaft radially opposite to said stationary part; a rotatable support ring extending completely around said axis and having a part which axially overlaps said sensor wheel and carries said stationary part; and a coupling part which couples said support ring with said roller ring and engages in a recess of said roller ring, said stationary part of said sensor being located at one side of said axis while said coupling part is located at another opposite side of said axis.

5,357,931

SUPPLY DEVICE WITH BUILT-IN PIPEWORK

Pierre Semence, Chatou, France, assignor to SOLEX, France

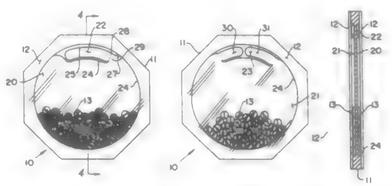
Filed Oct. 26, 1993, Ser. No. 141,081

Claims priority, application France, Oct. 26, 1992, 92 12714

Int. Cl.[5] F02M *55/02, 35/10*

U.S. Cl. 123—456 14 Claims

1. Supply device with built-in pipework for a system supplying an internal combustion engine with fuel by injection of the multipoint type, comprising an air intake distributor/manifold module including two moulded components fixed to one another, and one of which is a pipework casing having an air supply orifice, on which is arranged a butterfly body, and air outlet openings, formed in a flange for Joining to the other component, which is a base element having at least as many pipework branches as the engine has cylinders, and a flange for joining to the casing, which flange is fixed to the flange of the casing with interposition of a sealing gasket, and in which each branch opens out at one of its ends via an inlet opening, corresponding to one, respectively, of the outlet openings from the casing, to emerge in the latter, the pipework branches being secured via their other end to at least one fixing flange of the base element, which flange is equipped with means for fixing the built-in pipework on to the cylinder head of the engine, the pipework casing being designed so that it supports and/or encloses, at least partially, at least one sensor and/or at least one member for controlling an operating parameter of the



engine and, for each cylinder of the engine, each corresponding injector being arranged between the casing and the base element of the module, wherein a fuel distribution rail is built into the casing which has, at each of the two ends of the rail, a tubular fitting for coupling the rail to a fuel supply pipe from a tank and to a pipe for returning the fuel to tank respectively, the casing having, between the two ends of the rail, and for each injector, at least one orifice in communication with the inside of the rail, for supplying the corresponding injector with fuel.

5,357,932

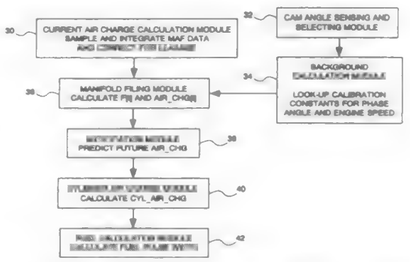
FUEL CONTROL METHOD AND SYSTEM FOR ENGINE WITH VARIABLE CAM TIMING

Eric L. Clinton, Southfield; Scott C. Kochen, Northville, and Larry A. Hardy, Riverview, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 8, 1993, Ser. No. 43,707

Int. Cl.[5] F02D *41/04, 41/18*

U.S. Cl. 123—488 9 Claims



1. A method of determining the amount of fuel to be injected into a cylinder of an internal combustion engine having means for varying the phase angle of at least one camshaft of the engine relative to the crankshaft of the engine, comprising the steps of:

(a) calculating an air charge value based on measured air flow into the engine;

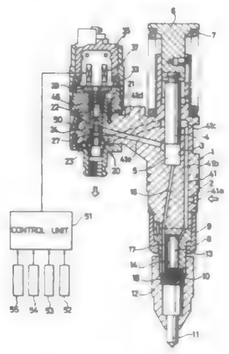
(b) sensing the engine speed and the phase angle of the camshaft relative to said crankshaft at the engine speed sensed;

(c) calculating a manifold filling coefficient as a function of the engine speed and phase angle sensed in step (b);

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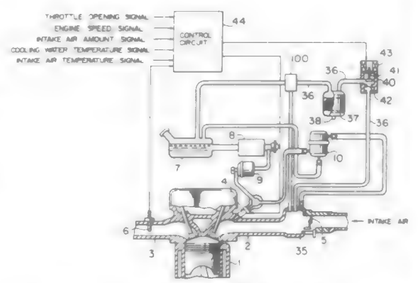
(d) modifying the air charge calculated in step (a) by the manifold filling coefficient calculated in step (c);
(e) calculating a cylinder air charge utilizing the modified air charge produced by step (d); and
(f) calculating a cylinder fuel charge to achieve a desired air/fuel ratio.

5,357,933
FUEL INJECTION DEVICE
Toshiaki Kasahara, and Hiroshi Ishiwata, both of Higashimatsuyama, Japan, assignors to Zexel Corporation, Tokyo, Japan
Filed Jul. 22, 1993, Ser. No. 94,900
Claims priority, application Japan, Jul. 23, 1992, 4-217314
Int. Cl.[5] F02D *1/00, 5/00*
U.S. Cl. 123—506 **6 Claims**



1. An apparatus, comprising:
a plunger barrel having a cylinder therein;
a plunger in said cylinder, said plunger defining a compression chamber in said cylinder;
an injection nozzle communicating with said compression chamber;
a fuel supply path communicating with said compression chamber; and
a solenoid valve in said fuel supply path, said solenoid valve comprising a spill chamber, said spill chamber defining a portion of said fuel supply path, a valve body having a valve head accommodated in said spill chamber, an armature chamber having an armature therein, said armature being connected to said valve body, a solenoid adjacent to said armature, a return spring biasing said valve body in one direction and a communication path communicating said spill chamber and said armature chamber, wherein said communication path comprises an intermediate portion having an orifice of a sectional area smaller than other portions of said communication path;
wherein a spring accommodation chamber accommodates said return spring, a space on the outer periphery of said valve body communicates said spring accommodation chamber and said armature chamber, and said communication path is defined by an axial bore in said valve body communicating with said spill chamber, a radial bore in said valve body communicating said spring accommodation chamber with said axial bore, said spring accommodation space and said space on the outer periphery of said valve body.

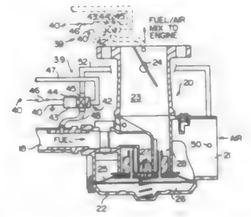
5,357,934
APPARATUS FOR CONTROLLING PRESSURE WITHIN FUEL TANK
Hisashi Iida, Aichi, and Yasuo Tagawa, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Oct. 15, 1993, Ser. No. 136,128
Claims priority, application Japan, Oct. 16, 1992, 4-278496
Int. Cl.[5] F02M *33/02*
U.S. Cl. 123—520 **2 Claims**



1. Apparatus for controlling a pressure within a fuel tank, comprising:
detection means for determining whether an engine is in an operating condition or in a stopped condition;
means for adsorbing evaporated fuel produced within the fuel tank; and
control means for adjusting pressures within the fuel tank, at which the fuel tank is caused to communicate with said evaporated fuel adsorbing means, to a first predetermined level when said detection means determines that the engine is in the operating condition, and to a second predetermined level when said detection means determines that the engine is in the stopped condition, said second predetermined level being higher than said first predetermined level,
in which said evaporated fuel adsorbing means is connected to an intake pipe via a connection pipe, and a valve electrically operated for being opened and closed is provided in said connection pipe,
in which said fuel tank and said evaporated fuel adsorbing means are connected to each other by a valve mechanism independent of said control means, said valve mechanism being opened when the pressure within the fuel tank decreases,
in which said control means comprises a first spring and a second spring which is urged against said first spring, a valve member urged by said second spring, and a first diaphragm mounted on said valve member, and said detection means comprises a second diaphragm, said first spring urging said second diaphragm, and an intake chamber which is disposed on one side of said second diaphragm and receives said first spring therein.

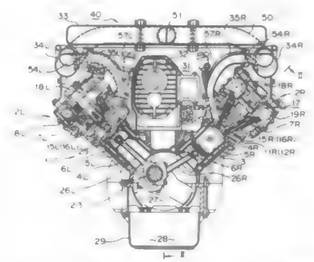
5,357,935
INTERNAL COMBUSTION ENGINE WITH INDUCTION FUEL SYSTEM HAVING AN ENGINE SHUT DOWN CIRCUIT
Lonnie R. Oxley, Versailles, and Allan M. Wesche, Georgetown, both of Ky., assignors to Clark Material Handling Company, Lexington, Ky.
Filed Jun. 22, 1993, Ser. No. 79,574
Int. Cl.[5] F02M *21/04*
U.S. Cl. 123—527 **15 Claims**

1. In an internal combustion engine having a combustion chamber, an induction fuel system for gaseous fuel including a vessel containing a source of pressurized fuel, regulator means connected to the vessel acting to reduce the fuel pressure, mixer means connected to the regulator means for receiving the pressure reduced fuel and mixing it with air to form a fuel/air mixture in accordance with a fuel supply command signal as required by the demands of the engine, and throttle means controlling the quantity of fuel/air mixture inducted into the combustion chamber to satisfy the fuel requirements of



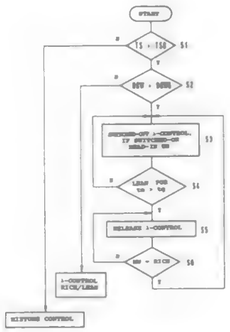
the engine, the improvement comprising an engine shut-down system producing a vacuum signal proportional to the negative pressure existing in the intake manifold, sensing means responsive to an engine condition being monitored, valve means causing the vacuum signal to be delivered to the fuel system to counter the fuel supply command signal causing the fuel system to shut off fuel supply despite the continued presence of a fuel supply command signal.

5,357,936
ENGINE OF A SPARK IGNITION TYPE
Mitsuo Hitomi; Shunji Masuda; Toshihiko Hattori; Kenji Kashiyama, and Junsou Sasaki, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Continuation of Ser. No. 945,506, Sep. 16, 1992, abandoned. This application Dec. 20, 1993, Ser. No. 169,550
Claims priority, application Japan, Sep. 26, 1991, 3-274596; Sep. 26, 1991, 3-274598
Int. Cl.[5] F02M *25/06*
U.S. Cl. 123—571 **27 Claims**



1. An internal combustion engine of a spark ignition type, having a detector means for detecting a load of the engine, said internal combustion engine comprising:
a control means for controlling an amount of fuel so as to make an air-fuel ratio of a mixed fuel to be charged into the engine substantially stoichiometric in a high load region in which the load of the engine detected by the detector means is equal to or larger than a predetermined value, in response to a signal from the detector means; and
a recirculation means for recirculating exhaust gases from the engine into an intake system in the high load region, in response to the signal from the detector means.

5,357,937
METHOD FOR OPERATING AN INTERNAL COMBUSTION ENGINE UNDER FULL LOAD
Bernhard Bauer, Roetz; Ludwig Kettl, Aiterhofen, and Stefan Krebs, Regensburg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Oct. 19, 1993, Ser. No. 139,194
Claims priority, application European Pat. Off., Oct. 19, 1992, 92117861.2
Int. Cl.[5] F02D *41/00*
U.S. Cl. 123—683 **2 Claims**



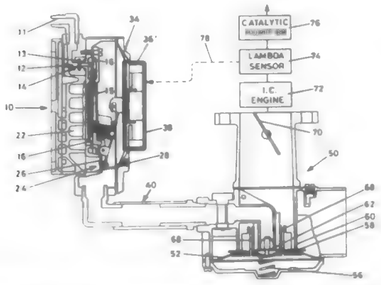
1. A method for operating an internal combustion engine under full load, including:
a lambda control device having a lambda sensor and a lambda control for regulating a fuel-air mixture to be supplied to an internal combustion engine to a set-point value, outside of full load operation, as a function of an output signal of the lambda sensor, and
a mixture control device for setting the fuel-air mixture to a value being less than the set-point value, during full load operation of the internal combustion engine and with the lambda control switched off,
which comprises:
continuously detecting and comparing the output signal of the lambda sensor with a rich and a lean threshold value, with the lambda control switched off,
releasing the lambda control for a selectable number of mixture state changes, if the output signal of the lambda sensor falls below the lean threshold value during a period of time being greater than a preset value, and keeping the lambda control released until a mean value of the lambda control value indicates a rich main mixture.

5,357,938
EXHAUST EMISSION CONTROL IN GASEOUS FUELLED ENGINES
Timothy J. Bedford, Castle Donington, and John W. Kirkland, Ashbourne, both of United Kingdom, assignors to Green Power International Limited, Shropshire, United Kingdom
PCT No. PCT/GB91/00634, § 371 Date Dec. 16, 1992, § 102(e) Date Dec. 16, 1992, PCT Pub. No. WO91/16531, PCT Pub. Date Oct. 31, 1991
Continuation of Ser. No. 937,827, Dec. 16, 1992, abandoned. This PCT application Apr. 22, 1991, Ser. No. 160,362
Claims priority, application United Kingdom, Apr. 22, 1990, [redacted]
Int. Cl.[5] F02D *11/08, 41/14*
U.S. Cl. 123—685 **13 Claims**

1. A fuel supply control for a gaseous fuelled internal combustion engine in which the flow of gaseous fuel is controlled by a diaphragm-actuated valve responsive to atmospheric pressure, characterised in that the diaphragm of the dia-

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phragm-actuated valve carries a moving coil element secured thereto and concentric with a fixed permanent ring magnet, and a lambda sensor in the exhaust gas stream from the engine supplies an electrical feedback signal to the coil to impart a



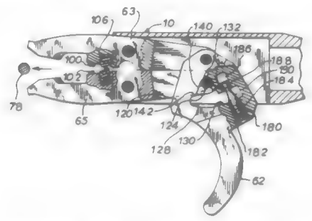
variable bias on the diaphragm in accordance with the oxygen content of the exhaust gas stream as sensed by the lambda sensor, to control the fuel or fuel-and-air supply to the engine in accordance with desired engine operating parameters.

5,357,939

BOW STRING RELEASE WITH CONTINUOUS LOOP WRIST STRAP AND REVERSIBLE TRIGGER MECHANISM

Lynn A. Teutler, Fond du Lac, and Louis R. Linsmeyer, Hustisford, both of Wis., assignors to Tru-Fire Corporation, N. Fond du Lac, Wis.

Filed Nov. 20, 1992, Ser. No. 979,106
Int. Cl.[5] F41B *5/18*
U.S. Cl. 124—35.2 **24 Claims**



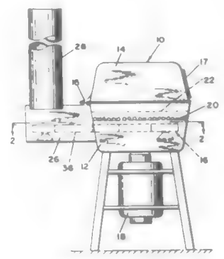
1. A bow string release of the type having a body, a sear mounted in the body and having a string receptive notch for selectively receiving a bow string, the sear movable between a closed, string retaining position and an open, string releasing position, and a trigger mechanism associated with the sear and movable between a ready position for locking the sear in the closed, string retaining position and a fire position for opening the sear and releasing the string, the trigger mechanism comprising:
   a. a trigger base pivotally mounted on the sear by a pivot, the base including a guide slot, said guide slot being generally T-shaped, having a base located adjacent to the pivot and a top section extending a length across the T-shape, the top section including at opposite ends a forward outer reach and a rearward outer reach;
   b. a guide pin secured to the release and received in said guide slot controlling the pivotal movement of the trigger relative to the sear;
   c. a trigger lever secured to the base and projecting outwardly from the release body for moving the guide pin in the guide slot, the guide slot being further characterized in that it permits movement of the trigger lever in both a position forward of the pivot and a position rearward of the pivot for advancing the trigger from the ready position to the fire position; and
   d. wherein the sear is in the open, string releasing position when the guide pin is in the base of the guide slot, the sear being movable to the closed, string retaining position by moving the trigger lever either forward, to advance the guide pin to the forward outer reach, or backward, to advance the guide pin to the rearward outer reach, and wherein the sear is opened and the string is released by moving the trigger lever either forward or backward to return the guide pin to the base of the guide slot.

5,357,940

AFTERBURNER FOR GRILL

Paul A. Kalenian, 104 Meriam Rd., Princeton, Mass. 01541

Continuation of Ser. No. 50,688, Apr. 22, 1993, abandoned, which is a division of Ser. No. 820,267, Jan. 14, 1992, Pat. No. 5,226,407. This application Apr. 11, 1994, Ser. No. 226,104
Int. Cl.[5] A23C *3/00*
U.S. Cl. 126—41 R **4 Claims**



1. A method of operating an outdoor grill for cooking meat products and the like over a heat source wherein said grill includes a support for holding the product being cooked in a cooking zone, said support holding the product spaced above said heat source and which cooking process produces a flow of a large volume of effluent gasses away from said cooking zone and during which cooking process fluids drip from the product being cooked onto the heat source so that a portion of the dripping fluids are ignited and certain components of the gaseous products of combustion include carcinogens, comprising energizing the heat source and then adjustably controlling the removal of said effluent gasses and said products of combustion from both above and from below said cooking zone in a manner to permit substantially all of said effluent gasses and said products of combustion to be selectively removed from under the product being cooked while permitting only a portion of the gasses and said products of combustion to contact the product being cooked.

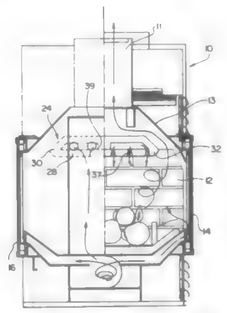
5,357,941

REFRACTORY BAFFLE INSERT FOR FIREPLACE

J. G. Hans Duerichen, 3721 16th Avenue, and Bruce Akre, Kitsequecla Road, both of Smithers, British Columbia, Canada V0J 2N0

Filed May 17, 1993, Ser. No. 62,180
Int. Cl.[5] F24B *1/188*
U.S. Cl. 126—531 **5 Claims**

1. A fireplace for burning solid fuel comprising:
means forming a central combustion zone;
a first air inlet means for supplying air to said central combustion zone;
means forming an exhaust outlet at an upper end of said fireplace for removal of combustion exhaust;
a hollow baffle composed of a refractory material disposed above and extending from one side to another of said fireplace and further extending from a rear wall of said fireplace toward a front of said fireplace, said baffle having at least one inlet in fluid communication with said first air inlet to heat said air, a first upper wall and a second lower wall in spaced relation, said hollow baffle being



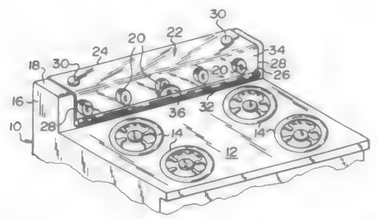
spaced from a front of said fireplace to provide an exhaust path to said exhaust outlet, said second lower wall including a plurality of apertures for dispensing air heated from within said baffle into said central combustion zone, whereby combustion is enhanced in said combustion zone.

5,357,942

GREASE SHIELD FOR RANGE CONTROLS

Lawrence Williams, and Jason L. Williams, both of 12170 Crowe Rd., Milan, Mich. 48160

Filed Apr. 27, 1993, Ser. No. 52,905
Int. Cl.[5] F24C *15/12*
U.S. Cl. 126—211 **5 Claims**



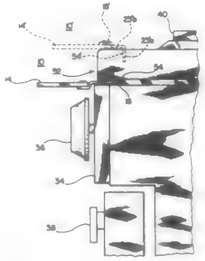
1. In combination, a ferro-magnetic range having a cooking surface having burners and burner range controls located adjacent the cooking surface, and a support surface located adjacent and above said controls, a flexible shield formed of a flexible synthetic plastic film having a first edge, a second edge, lateral edges and a central region located intermediate said first and second edges, a pair of magnets mounted on said shield adjacent said first edge attached to said support surface mounting said shield at said first edge to said range support surface above said range controls, said shield central region between said first and second edges and between said lateral edges, being of sufficient dimension to permit said shield central region to overlie the range controls when in an extended lowered position to protect against grease splatter and the flexibility of said shield permitting said shield to be displaced to a retracted raised position to render the range controls accessible, and a rigid elongated weight mounted on said shield adjacent to and extending the length of said second edge.

5,357,943

SHIELD ASSEMBLY

Billy J. Edgerton, 6218 Beach Bayou Rd., Biloxi, Miss. 39532

Filed Aug. 17, 1993, Ser. No. 107,084
Int. Cl.[5] F24H *3/00*
U.S. Cl. 126—214 D **17 Claims**



1. A shield assembly for use with a stove, which comprises a work surface, heating means disposed on the work surface, at least one control knob disposed on the work surface and a slot disposed through the work surface and into the stove for receiving said shield assembly, the slot being disposed intermediate the control knob and the heating means, said shield assembly comprising:
   a) a shield of generally flat configuration and being made of a material transparent to visible radiation;
   b) a mounting member of a configuration conforming substantially to that of the slot and of dimensions such that said mounting member may be inserted readily into the slot and retained therein; and
   c) means for attaching said shield to said mounting member, whereby said shield is disposed intermediate the heating means and the control knob to overlie and to shield the control knob from spatter of food being cooked on the heater means, said attaching means made of a material which retains its structural integrity in the presence of the heat emanating from the heating means.

5,357,944

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

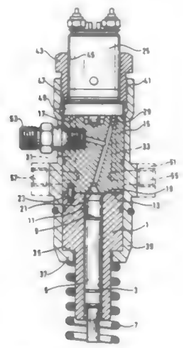
Heinz Rathmayr, Hallein, Austria, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 1, 1993, Ser. No. 69,336
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1992, 4227851
Int. Cl.[5] F02M *51/06, 57/02*
U.S. Cl. 123—509 **7 Claims**

1. A fuel injection pump for internal combustion engines, having a pump element associated with a cylinder of the engine and insertable into a bore of a housing of the engine, the pump element comprising a pump body that has a cylinder bore (3) and a pump piston (5) that is guided therein, said pump piston includes an upper face end (9) that defines a pump work chamber (11), the pump piston being moved axially by a cam drive counter to a force of a restoring spring (7), the pump body is assembled to include a cylinder liner (1) and an intermediate part (15) upon which rests on an upper end a magnet valve

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(25), and that the cylinder liner (1), the intermediate part (15) and the magnet valve (25) are axially guided and braced sealingly against one another, in line with one another, by a resilient sleeve (39).

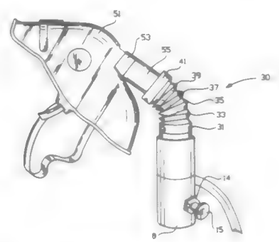


5,357,945

MULTIPOSITIONAL NEBULIZER DEVICE

Robin L. Messina, R.D. #2, Box 353 M, Port Murray, N.J. 07865

Filed Mar. 17, 1993, Ser. No. 32,310
Int. Cl.[5] A61M *11/00, 15/00, 16/10;* A62B *18/02*
U.S. Cl. 128—200.14 6 Claims



1. An improved nebulizer attachment for use with a powered nebulizer machine for converting liquid medication into aerosol, which comprises:

(a) a reservoir chamber for liquid medication, having sides, a base and a top, said reservoir chamber adapted to be oriented substantially vertically during use and having structure for holding said liquid medication, said reservoir chamber having a gas inlet located thereon for connection to a nebulizer machine, and having means therein to intermix gas and liquid medication to create an aerosol, and having an aerosol outlet for connection to a face attachment for delivery of aerosol to a user;

(b) a face attachment indirectly connected to said reservoir chamber;

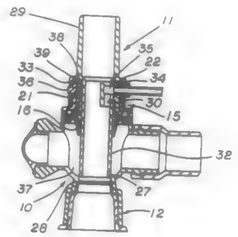
(c) means for maintaining said reservoir chamber in a vertical position without restricting the position of the user, said means for maintaining said reservoir chamber in a vertical position comprising a hollow fitting located between said reservoir chamber and said face attachment, said hollow fitting being formed of a plastic tube having a plurality of circumferential, unconnected corrugations of a semi-flexible nature and having only three rest positions for each such corrugation, one being fully compressed, one being fully open and one being tilted with full compression at one point and fully open at an opposite point to create a single non-180 angle, said unconnected corrugations of said hollow fitting comprising means for changing an angle formed between said reservoir chamber and said face attachment from a first selected position to another selected position, said selected positions created by the user selectively changing the rest positions of one or more of said unconnected corrugations.

5,357,946

VENTILATOR MANIFOLD WITH ACCESSORY ACCESS PORT AND ADAPTORS THEREFORE

Kok-Hiong Kee, and James G. Schneider, both of St. Louis, Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 962,755, Oct. 19, 1992, Pat. No. 5,333,607. This application Jun. 21, 1993, Ser. No. 80,276
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—200.24 12 Claims



1. The combination of a ventilator manifold for use with a respiratory support system, and an adaptor for a respiratory system accessory device, said manifold comprising:

means for fluid flow connection between a patient and a ventilator circuit,

means including an accessory access port for allowing attachment of said adaptor to said manifold, said accessory access port being normally closed against fluid flow therethrough into said manifold, said adaptor comprising a generally hollow tubular member having a proximal end and a distal end, said proximal end having means for releasably attaching to the respiratory system accessory device, and said distal end including opening means for opening said normally closed accessory access port.

5,357,947

FACE MASK

Harold A. Adler, 1457 Eastwind Cir., Westlake Village, Calif. 91361

Filed Aug. 12, 1992, Ser. No. 929,691
Int. Cl.[5] A62B *18/08*
U.S. Cl. 128—201.13 15 Claims



1. A face mask, comprising:

a generally shell-shaped porous mask base having a size and shape to fit generally over the nose and mouth of a person in substantial peripheral conformance with facial contours of the person, said mask base having a relatively large central opening formed therein and defining a peripheral margin extending about said central opening;

means for retaining said mask base in a position over the person's nose and mouth; and

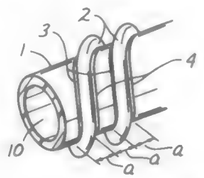
a generally cup-shaped receiver formed from a porous filter material and having one open end and an opposite closed end, said receiver being carried on said mask base in a position over said central opening, with said open end of said receiver being joined to said mask base generally at said peripheral margin, said receiver extending forwardly from said mask base to define a rearwardly open receiver chamber for direct reception of gases exhaled by a person wearing the mask, said receiver chamber extending forwardly a substantial distance from said mask base and said closed end of said receiver being spaced a substantial distance forward of said mask base, said receiver chamber defining an open volume for unrestricted passage of exhaled gases into said receiver chamber, and said receiver further defining a substantial porous surface area in addition to said mask base for further passage of exhaled gases from said receiver chamber and through said porous surface area of said receiver to the surrounding environment at a location spaced substantially forwardly from said mask base, said porous surface area of said receiver being substantially greater than the area of said central opening.

5,357,948

HEATABLE RESPIRATORY HOSE

Heinz Eilentropp, Neyetal 12, D 5272 Wipperfürth, Fed. Rep. of Germany

Filed Jan. 6, 1993, Ser. No. 1,314
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1992, 9200567[U]
Int. Cl.[5] A61M *15/00*
U.S. Cl. 128—204.17 12 Claims



1. Heatable respiratory or respiration hose made of a transparent or translucent material, the hose having a tubular portion with an outer surface, and a helical ridge or bar on said outer surface of the tubular portion, the ridge or bar having a foot portion with which the ridge or bar emerges radially outwardly from the surface; the improvement comprising:

heating conductor means exterior of said hose and said ridge or bar and arranged on and along said foot portion of the ridge and in intimate contact with the surface of the hose said conductor means being specifically arranged on at least one side of the foot portion and attached to the ridge or bar itself and on the surface of the hose so that the conductor means have a consistent spacing from and in relation to the hose and said surface on account of said intimate contact; and

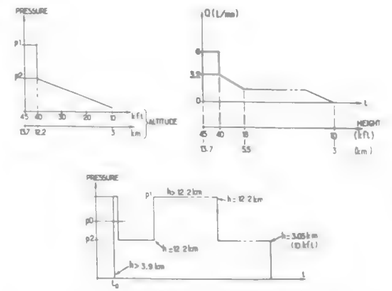
means for electrically connecting the conductor means so as to permit heating current to be fed to the heating conductor.

5,357,949

BREATHING PROTECTION INSTALLATION FOR AIRCRAFT PASSENGERS

Fernand Bertheau, Plaisir, and Gérard Silber, Chilly Mazarin, both of France, assignors to Eros G.I.E., Plaisir, France

Filed Dec. 14, 1992, Ser. No. 988,272
Claims priority, application France, Dec. 13, 1991, 91 15526
Int. Cl.[5] A61M *16/00;* A62B *7/04, 9/02;* F16K *31/26*
U.S. Cl. 128—204.29 7 Claims



1. An emergency oxygen breathing apparatus, said apparatus having means for protecting aircraft passengers from hypoxia at an altitude of up to 13,700 meters, upon aircraft depressurization, comprising: an oxygen storage unit; a distribution unit having an inlet connected to said oxygen storage unit and an outlet, said distribution unit being actuated in response to aircraft depressurization at high altitudes and delivering oxygen through said outlet at pressures which increase with altitude; pipe means for connecting to said outlet; a plurality of passenger masks each having a face cover formed with a circumferential inner flexible sealing lip and connected to said pipe means by a flexible hose having a metering orifice,

said distribution unit having means responsive to cabin altitude for delivering oxygen to said pipe means under a pressure which (a) steadily increases with altitude up to a first predetermined value at a predetermined altitude, (b) abruptly increases to a second predetermined value which is of about two times the first predetermined value as soon as the altitude exceeds said predetermined altitude, and (c) remains constant at said second predetermined value of pressure as long as the altitude exceeds said predetermined altitude.

5,357,950

BREATH ACTUATED POSITIVE PRESSURE DEMAND REGULATOR WITH OVERRIDE

John Wippler, Downey, and Max L. Kranz, La Habra, both of Calif., assignors to Comasec International S.A., Paris, France

Filed Mar. 2, 1993, Ser. No. 25,111
Int. Cl.[5] A62B *7/04*
U.S. Cl. 128—205.24 23 Claims

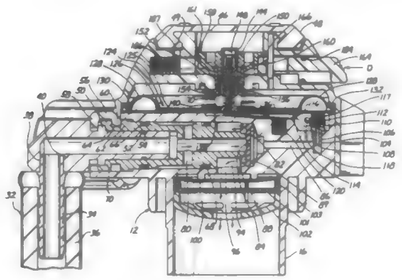
10. In a pressure demand regulator having means for delivering breathing gas to a housing and an exit conduit connected to said means for delivering gas to said housing with valve means interconnecting said gas delivery means to said exit conduit and a spring biased diaphragm in fluid connected relationship to said exit conduit operatively connected to said valve means for providing valving of breathing gas therethrough to said exit conduit the improvement comprising:

connector means connected to said diaphragm having detent means thereon and a sloping surface;

a cam means for radially engaging said sloping surface of said connector means for lifting said detent means con-

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nected to said diaphragm into a detent engagement with a protuberance in said housing so that when said detent



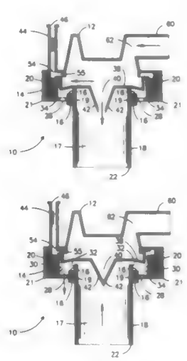
means is lifted by said cam means, it disconnects said diaphragm from said valve means.

5,357,951

CARDIAC PULMONARY RESUSCITATOR APPARATUS VALVE WITH INTEGRAL AIR SAMPLING PORT

Jeff B. Ratner, Pinellas Park, Fla., assignor to Mercury Enterprises, Inc, Clearwater, Fla.

Filed Jun. 2, 1993, Ser. No. 71,071
Int. Cl.[5] A62B *9/02, 7/10, 23/02*
U.S. Cl. 128—205.24 **16 Claims**



16. A patient valve for use in a cardiac pulmonary resuscitator apparatus, the patient valve comprising,

a diaphragm for controlling air flow mounted between a top and bottom portion of a valve housing, said diaphragm moving between two positions, a first position providing gaseous communication between a gas source and the patient's lungs, and a second position providing gaseous communication between an exhalation flow path and the patient's lungs,

means for permitting sampling of gas delivered to the patient, and for sampling gas exhaled by the patient, said sampling means comprising a single tubular port mounted on an outer wall of the valve housing,

a first end of the tubular port connected to a flexible tube leading to an air sampling device and a second end opening leading into the interior of the valve housing adjacent an outer edge of the diaphragm, said tubular port in gaseous communication with said gas source when said diaphragm is in said first position, and in gaseous communication with the patient's lungs when said diaphragm is in said second position, and

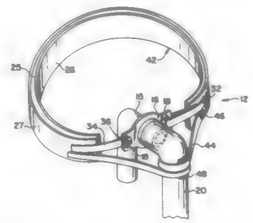
a pair of stops mounted on an inner wall of the valve housing and adjacent to the outer edge of the diaphragm, said pair of stops preventing the diaphragm from covering the second end opening of the tubular port so that air flowing from the patient and the gas source may flow freely through the second end opening to the air sampling device.

5,357,952

MEDICAL TUBE AND TUBE CONNECTOR RETENTION DEVICE

Michael Schuster, Malvern, and Frank Nocella, Upper Holland, both of Pa., assignors to Zipper Medical Products, Inc., Malvern, Pa.

Filed Mar. 9, 1993, Ser. No. 28,426
Int. Cl.[5] A61M *16/00;* **A62B** *9/02, 9/06*
U.S. Cl. 128—207.17 **5 Claims**



1. A device for securing a medical tube comprising a tracheostomy or endotracheal tube and a slotted flange having a first and a second slot, said device positively retaining the medical tube to a ventilator tube connector, the device comprising:

a band, having an exterior surface, a first and a second end, the exterior surface including a first type of textile fastening material;

a first fastening strip having at least a portion of an interior surface that is complementary to the first type of textile fastening material and is releasably affixed to the first end of the band, the first fastening strip being releasably connected to the first slot of the slotted flange;

a second fastening strip having at least a portion of an interior surface that is complementary to the first type of textile fastening material and is affixed to the second end of the band, the second fastening strip being releasably connected to the second slot of the slotted flange;

a third fastening strip having at least a portion of an interior surface that is complementary to the first type of textile fastening material, the third fastening strip being affixed to the second end of the band and releasably the first end of the band; and

means for attaching the ventilator tube connector to the third fastening strip, said means for attaching comprising a loop formed on the ventilator tube connector;

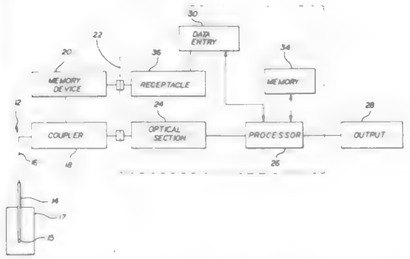
the third fastening strip, in a securing position, connected to said second end of said band, to said means for attaching, and to said first end of said band.

5,357,953

MEASUREMENT DEVICE AND METHOD OF CALIBRATION

Edwin B. Merrick, Stow; Amal Jeryes, Tewksbury; Neal B. Dowling, Jr., Sudbury, all of Mass.; Yuan Young, Encinitas, and Larry Powell, Carlsbad, both of Calif., assignors to Puritan-Bennett Corporation, Carlsbad, Calif.

Filed May 21, 1992, Ser. No. 886,636
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **30 Claims**



1. A measurement apparatus, including a sensor component and an analyzing instrument component, said components being removably connectable, said sensor component being operative to generate a signal in response to certain environmental conditions and said instrument component being operative to generate an output and calibration data interpretive of said signal, comprising:

first memory means secured to said sensor component and interconnectable to said instrument component for storing calibration data relating to said sensor component, wherein said instrument component stores said calibration data into said first memory means;

second memory means located within said instrument component for storing calibration data relating to said instrument component; and

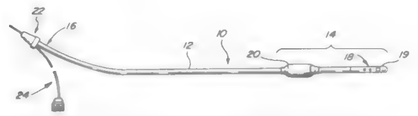
processing means for correcting said signal in accordance with said calibration data stored in said first and said second memory means.

5,357,954

OPTICAL BLOOD OXYGEN SATURATION PROBE FOR INSERTION INTO THE ESOPHAGUS

Gordon Shigezawa, Irvine, and Anthony V. Beran, Santa Ana, both of Calif., assignors to Respiratory Support Products, Inc., Irvine, Calif.

Filed Jan. 4, 1993, Ser. No. 91
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—634 **6 Claims**



1. A probe insertable into the esophagus comprising:

a tubular member, said tubular member being airtight and flexible, having a proximal and a distal portion with the distal portion being sized for insertion into the esophagus of a patient;

a flexible membrane, said tubular member extending to and beyond said flexible membrane and passing centrally thereof, said flexible membrane surrounding and extending away from said tubular member, a set of apertures formed in a side wall of said tubular member beneath said flexible membrane, said membrane vibrating in response to internal heart and respiration sounds of said patient, said tubular member conducting said sounds to said proximal portion;

optical blood oxygen saturation sensing means, located at and integral to said distal portion of said tubular member, for determining the oxygen saturation of blood perfusing tissues of the esophagus without contacting said blood, said means comprising a first light source emitting light of wavelength not absorbed by saturated hemoglobin, said first light source oriented to transmit light at an angle other than the perpendicular from the side wall of said tubular member, a second light source emitting light of wavelength absorbed by saturated hemoglobin, said second light source oriented to transmit light at an angle other than the perpendicular from the side wall of said tubular member; and a sensor means for receiving light reflected from the tissue of the esophagus, said sensor means oriented to receive light at an angle other than the perpendicular from the side wall of said tubular member; and

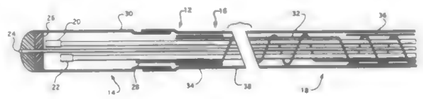
signal transmission means, extending along the interior of said tubular member between said blood oxygen saturation sensing means and said proximal portion of said tubular member, for transmitting an input signal to said sensing means and for transmitting an output signal from said sensing means, the input signal providing for the projection of light onto the tissues of the esophagus and the output signal being responsive to light reflected by said tissues.

5,357,955

REINFORCED CATHETER PROBE

Erich H. Wolf, Vista; Christopher L. Davis; David P. Skarshaug, both of San Diego; Charles S. Bankert, Oceanside; Richard Hannah, Vista, and Samuel D. Riccitelli, Carlsbad, all of Calif., assignors to Puritan-Bennett Corporation, Carlsbad, Calif.

Continuation of Ser. No. 888,545, May 22, 1992, abandoned.
This application Jan. 24, 1994, Ser. No. 185,777
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—634 **21 Claims**



1. A reinforced sensor probe structure comprising:

at least one optical fiber having a distal end, an intermediate portion and a proximal portion;

an analyte sensor disposed on said distal end of said optical fiber;

an analyte permeable sleeve disposed over said distal end of said optical fiber, said analyte permeable sleeve having a proximal end and a distal end;

a reinforcing strand attached to said optical fiber proximal portion and also attached to said optical fiber near said distal end of said optical fiber proximal to said analyte permeable sleeve, to maintain a positive linkage of said proximal end of said optical fiber with said distal end of said optical fiber in the event the optical fiber ruptures; and

a heat shrink tubing member extending over at least the proximal end of said analyte permeable sleeve, and a portion of said reinforcing strand, to maintain a positive linkage of said analyte permeable sleeve with said optical fiber in the event the optical fiber ruptures.

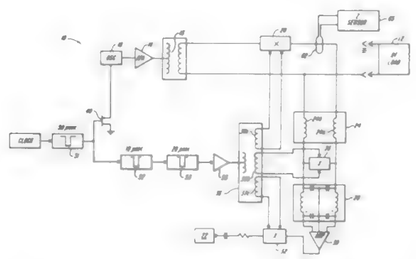
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5,357,956

APPARATUS AND METHOD FOR MONITORING ENDOCARDIAL SIGNAL DURING ABLATION

Paul C. Nardella, North Easton, Mass., assignor to American Cardiac Ablation Co., Inc., Taunton, Mass.

Filed Nov. 13, 1992, Ser. No. 975,382
Int. Cl.[5] A61B 5/04
U.S. Cl. 128—642 22 Claims



1. An improved system for cardiac ablation to inactivate a tissue site of cardiac arrhythmia, such system including an ablation catheter having an ablation electrode, a low impedance coupling for connecting the ablation electrode to an ablation power source, and an electrode monitor for receiving action potential signals developed across a sensing electrode and producing an output indicative thereof, and further comprising:

high impedance coupling means for interconnecting the sensing electrode to the electrode monitor,

a plurality of switch means, including a first switch connected between said low impedance coupling and said ablation electrode, and a second switch connected between said electrode monitor and said high impedance coupling means, for selectively interconnecting said ablation power source and said electrode monitor to the ablation catheter, and

timing means for synchronizing operation of said plurality of switch means to define ablation intervals and quiescent intervals,

wherein said ablation electrode is also said sensing electrode, and said timing means synchronizes operation to disconnect said low impedance coupling from said ablation electrode and pass a sample of action potentials at the tissue site to said electrode monitor during each quiescent interval, both the ablation intervals and quiescent intervals alternating with each other at a frequency above 500 Hz such that ablation and monitoring occur continuously and appear to be performed simultaneously.

5,357,957

ELECTRODE ASSEMBLY FOR EEG HEADSET

Turan M. Itil, and Emin Eralp, both of 150 White Plains Rd., Tarrytown, N.Y. 10591

Division of Ser. No. 739,253, Aug. 1, 1991, Pat. No. 5,273,037.
This application Apr. 28, 1993, Ser. No. 53,432
Int. Cl.[5] A61B 5/0478
U.S. Cl. 128—644 3 Claims

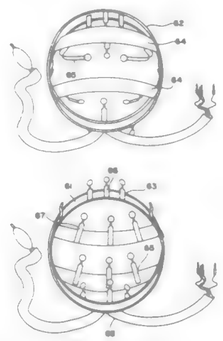
1. An EEG headset system, comprising:

a headset having at least one bellows component movably mounting a plurality of electrode assemblies thereto facing inwardly in a depthwise direction toward the head of a wearer of said headset, wherein said at least one bellows component includes:

a pair of semirigid, elongated strips mounted to said headset spaced apart a given space in parallel transverse to the depthwise direction;

an inflatable, elongated tube mounted in the space between the pair of elongated strips, for expanding and contracting in response to fluid pressure therein,

wherein an innermost one in the depthwise direction of said pair of elongated strips has a plurality of slits formed at positions corresponding to positions at which said plurality of electrode assemblies are to be mounted, said slits having portions of said tube protrudable therethrough under pressure so as to form respective movable pistons for said electrode assemblies; and



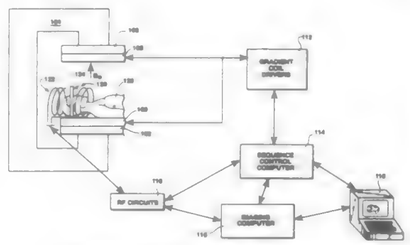
said electrode assemblies each being formed with an electrode mounting element made of an electrically insulative material having one portion mounted to an end of a piston and another portion holding an electrode tip made of a conductive material and having a conductive lead encapsulated in an insulative shielding connected thereto for transmitting electrical signals obtained by the electrode tip to an external signal processing unit.

5,357,958

INTERVENTIONAL MRI SYSTEM AND RF COILS THEREFORE

Leon Kaufman, San Francisco, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Mar. 18, 1993, Ser. No. 33,551
Int. Cl.[5] A61B 5/05
U.S. Cl. 128—653.2 14 Claims



1. An interventional MRI system comprising:

a transverse magnet MRI apparatus;

an interventional appliance having predetermined maximum dimensions and adapted for physical interaction with a portion of a human anatomy to achieve interventional procedures therewithin during MRI within said transverse magnet MRI apparatus; and

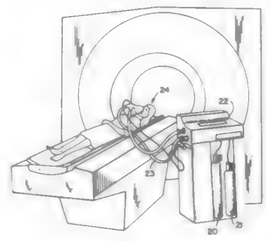
a solenoidal MRI RF coil located within said transverse magnet MRI apparatus and having a diameter less than the maximum dimensions of said appliance further including means to accommodate said appliance when used on a human patient for coupling MRI RF fields to or from the human anatomy and thus facilitating said interventional procedures during MRI.

5,357,959

ALTERED DIPOLE MOMENT MAGNETIC RESONANCE IMAGING METHOD

Royce S. Fishman, Hillsdale, N.J., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Apr. 16, 1993, Ser. No. 47,019
Int. Cl.[5] A61B 5/055
U.S. Cl. 128—653.2 19 Claims



1. A method for carrying out magnetic resonance imaging with improved positive image contrast and quantitative evaluation of physiology said method comprising:

(A) providing a living organic subject having molecules comprised of nuclei with dipole moments;

(B) providing stable xenon to said subject and physically combining stable xenon with structures comprised of said molecules and at least one of lipids and proteins;

(C) applying a magnetic field to the subject and altering the dipole moment in at least some nuclei of said molecules by the secondary effect of stable xenon on the resonance of said structures;

(D) providing radio energy for absorption and re-emission by said altered dipole moment nuclei; and

(E) gathering data based on the reemitted radio energy to produce a magnetic resonance image.

5,357,960

METHOD AND APPARATUS FOR THE QUANTITATIVE DETERMINATION OF OPTICALLY ACTIVE SUBSTANCES

Gerhard Schmidtke, Freiburg; Wolfgang Riedel, Neuenburg, and Helmut Wolf, Merzhausen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/EP89/01175, § 371 Date Jan. 30, 1992, § 102(e) Date Jan. 30, 1992, PCT Pub. No. WO90/04163, PCT Pub. Date Apr. 19, 1990
PCT Filed Oct. 6, 1989, Ser. No. 761,848
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1988, 3834160; Mar. 13, 1989, 3908114
Int. Cl.[5] A61B 5/00
U.S. Cl. 128—633 14 Claims

1. A method for the quantitative determination of optically active substances in vivo comprising the steps of:

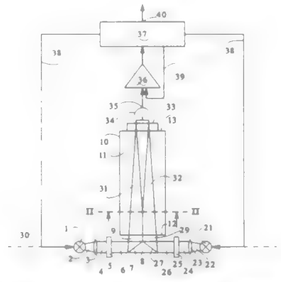
(a) generating a first linearly polarized light beam in a first fixed polarization direction with a first light source;

(b) generating a second linearly polarized light beam in a second fixed polarization direction with a second light source, said second fixed polarization direction deviating by a predetermined angle from said first fixed polarization direction;

(c) alternatingly transluminating a substance to be analyzed with said first and second linearly polarized light beams, by alternatingly switching said first and second light sources on and off with a switching frequency, to produce first and second substantially alternating beams;

(d) directing said first and second substantially alternating beams through an analyzer to a detector to produce first and second detector signals, modulating said first and second light sources with a modulation frequency of at least one decimal order of magnitude greater than said switching frequency to phase-sensitively detect said first and second detector signals; and

(e) generating a comparison signal with said first and second detector signals representative of the concentration of optically active substances in said substance to be analyzed.

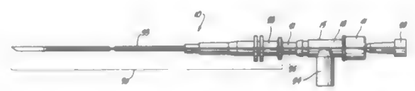


5,357,961

CATHETER GUIDEWIRE AND FLUSHING APPARATUS AND METHOD OF INSERTION

Charles B. Fields, Pittsburg, and Gretchen K. Marchesani, San Jose, both of Calif., assignors to HDC Corporation, San Jose, Calif.

Filed May 12, 1993, Ser. No. 61,481
Int. Cl.[5] A61B 5/02
U.S. Cl. 128—658 18 Claims



1. A method of installing a peripherally installed central catheter comprising:

attaching a connector to a catheter;

inserting a guidewire through the connector and into the catheter;

filling a syringe with a flushing solution;

attaching the syringe to a port on the connector;

depressing a plunger in the syringe such that an amount of the flushing solution from the syringe enters the connector and the catheter, thereby flushing the catheter;

determining the catheter's desired length;

withdrawing the guidewire from the catheter such that the guidewire resides in a majority of the catheter's desired length without detaching the syringe;

trimming the catheter so that only the catheter's desired length remains;

advancing the catheter into a patient;

depressing the plunger in the syringe again such that an additional amount of the flushing solution from the syringe enters the catheter, thereby flushing the catheter and lubricating the guidewire; and

withdrawing the guidewire from the catheter and the connector.

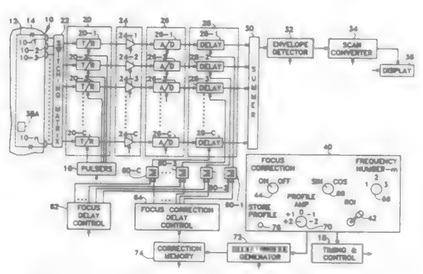
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5,357,962

ULTRASONIC IMAGING SYSTEM AND METHOD WTIH FOCUSING CORRECTION

Philip S. Green, Redwood City, Calif., assignor to SRI International, Menlo Park, Calif.

Filed Jan. 27, 1992, Ser. No. 826,507
Int. Cl.[5] A61B *8/00;* G01N *29/00*
U.S. Cl. 128—660.07 13 Claims



1. In an ultrasonic imaging apparatus for imaging a section within an inhomogeneous object, which apparatus includes a transducer array and transmitter means for energizing elements of the transducer array for beaming ultrasonic energy into the section, said transducer array receiving ultrasonic waves and converting the same to electrical signals,

an array of adjustable signal delay means to which electrical signals from operative elements of the transducer array are connected for electronic correction of focus defects produced by acoustic refractive index inhomogeneities within the object,

visual display means,

means for processing of signals from said signal delay means for visual display of the section at said visual display means,

means under operator control for selecting a region of interest within the section,

manually operated control means under operator control for controlling the adjustable signal delay means to provide a composite delay profile across operative elements of the transducer array, which composite delay profile comprises at least first and second delay profile components corresponding to predetermined first and second spatial frequency terms, respectively, of a series expansion,

time delays provided by the array of adjustable signal delay means being substantially simultaneously adjusted during manual operation of said manually operated control means for amplitude control of said first and second spatial frequency terms, the amplitudes of said first and second spatial frequency terms being adjusted by operator control of said manually operated control means to provide for a composite delay profile which reduces focus defects within the selected region of interest within the section.

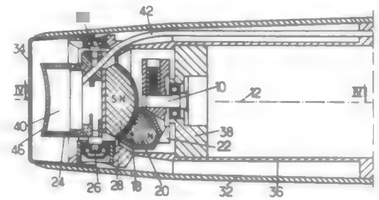
5,357,963

SEALED MAGNETIC DRIVE MEANS WITHOUT A PASSAGE THROUGH A WALL AND ULTRASOUND PROBE COMPRISING AN APPLICATION THEREOF

Jean-Claude Mayol, Quinssaines, and Jérôme Piaton, Montlucon, both of France, assignors to Societe d'Applications Generales d'Electricite et de Mecanique Sagem, France

Filed Mar. 23, 1993, Ser. No. 35,929
Claims priority, application France, Mar. 23, 1992, 92 03463
Int. Cl.[5] A61B *8/00;* F16H *21/40*
U.S. Cl. 128—660.1 10 Claims

5. An ultrasound probe comprising a magnetic drive device enabling a member placed on one side of a non-magnetic wall to be driven by a rotary dive shaft placed on the other side of the wall, comprising means carrying the driven member for rocking movement thereof about an oscillation axis that is orthogonal to an axis of rotation of the drive shaft, an axially magnetized magnet securely connected to said driven member and having an outside surface which has a cross-section in the plane containing said oscillation axis and said axis of rotation of



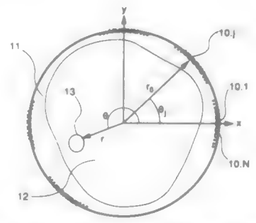
the drive shaft that is in the form of part of a circle centered on said oscillation axis, an axially-magnetized magnet fixed to said drive shaft and offset from said axis of rotation, and an ultrasound transducer carried by said driven member and placed in a space separated from the surrounding medium by said separation wall and by a window that has low ultrasound absorption.

5,357,964

DOPPLER IMAGING DEVICE

Brett A. Spivey, 131 Seeman; Peter J. Martin, 1819 Avenida Mimosa, both of Encinitas, Calif. 92024; Douglas A. Palmer, 1229 Triesta Dr., San Diego, Calif. 92107, and Todd K. Barrett, 3969 Mahaila Ave. #403, San Diego, Calif. 92122

Filed Feb. 8, 1993, Ser. No. 14,856
Int. Cl.[5] A61B *8/06*
U.S. Cl. 128—661.09 29 Claims



1. A Doppler imaging device for providing images of a fluid, containing randomly located scatterers, flowing through a medium comprising:

a) an acoustic transmitting means for transmitting acoustic waves into said medium,

b) an array of at least eight acoustic signal detection means, each detection means defining a channel, for detecting at a plurality of locations acoustic signals reflected from said medium including signals reflected from said scatterers moving in said medium,

c) a computer means for computing images of said fluid moving in said medium utilizing said reflected signals said computer means comprising:

i) conversion means for converting said reflected acoustic signals for each channel into frequency information in order to determine the amplitude of said reflected acoustic signals at at least one Doppler shifted frequency,

ii) a correlation means for forming time averaged detection means channel-to-channel amplitude correlations,

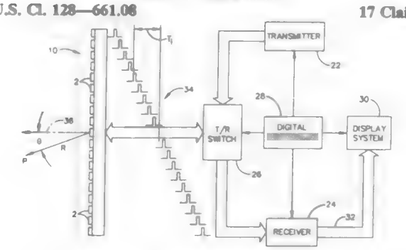
iii) an image formation means for forming images of said fluid moving in said medium using said amplitude correlations.

5,357,965

METHOD FOR CONTROLLING ADAPTIVE COLOR FLOW PROCESSING USING FUZZY LOGIC

Anne L. Hall, New Berlin, and Michael J. Harsh, Waukesha, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Nov. 24, 1993, Ser. No. 158,071
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—661.08 17 Claims



1. In a processor for color flow imaging of the velocity of blood flowing past adjacent tissue, comprising a wall estimate path circuit and a flow estimate path, and having a nonadaptive mode in which said wall estimate path circuit is bypassed and an adaptive mode in which the estimated wall velocity of said adjacent tissue is mixed with I and Q input data in a complex mixer in said wall estimate path circuit and then output to a wall filter in said flow estimate path circuit, the improvement wherein a fuzzy logic processor in said wall estimate path circuit for determining which of said adaptive and nonadaptive modes shall be operative.

5,357,966

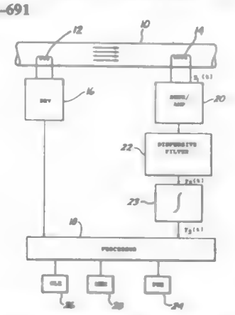
Patent Not Issued For This Number

5,357,967

METHOD AND APPARATUS FOR MEASURING FLOW USING FREQUENCY-DISPERSIVE TECHNIQUES

Robert Dixon, Palmer Lake, Colo.; Theodore R. Lapp, Mission Viejo, and Donald E. Bobo, Jr., Orange, both of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Filed Jun. 4, 1993, Ser. No. 71,838
Int. Cl.[5] A61B *5/029*
U.S. Cl. 128—691 17 Claims



1. A system for measuring fluid flow within a conduit comprising:

heating means for applying heat to the fluid at an upstream position as a series of periodic heat signals;

temperature-sensing means located at a downstream position for measuring a local temperature of the fluid and for generating an electrical fluid temperature signal corresponding to the local temperature;

filter means, having a filtered output signal, connected to the temperature-sensing means for sensing the presence of the periodic heat signals at the downstream position;

processor means, connected to the filter means, for calculating fluid flow as a predetermined function of the filtered output signal;

in which:

each periodic heat signal is sinusoidal and has an instantaneous frequency that varies substantially continuously between a first frequency and a second frequency over a predetermined active input signal period; and

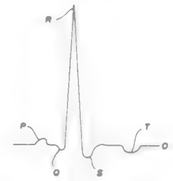
the filter means has a substantially pulse-shaped output signal when the periodic heat signal is applied as an input signal to the filter means.

5,357,968

DIAGNOSING AND TREATING SUBACUTE MYOCARDITIS

Albert M. Lerner, 660 Woodland, Birmingham, Mich. 48009

Continuation-in-part of Ser. No. 675,542, Mar. 25, 1991, Pat. No. 5,213,106. This application Aug. 31, 1992, Ser. No. 938,439
The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.
Int. Cl.[5] A61B *5/0452*
U.S. Cl. 128—696 20 Claims



20. A method for diagnosing subacute cardiac dysfunction in a patient whose sedentary electrocardiogram ST segment and T-wave do not indicate cardiac dysfunction, the method comprising:

electrocardiographically monitoring to detect T-waves of an ambulatory patient who has unexplainable fatigue;

determining the extent to which the T-waves of the ambulatory patient are negative; and

providing a diagnosis of subacute cardiac dysfunction based on the determination of the negative extent of the T-waves.

5,357,969

METHOD AND APPARATUS FOR ACCURATELY DISPLAYING AN ECG SIGNAL

Earl C. Herleikson, Groton, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 18, 1993, Ser. No. 32,895
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—696 8 Claims

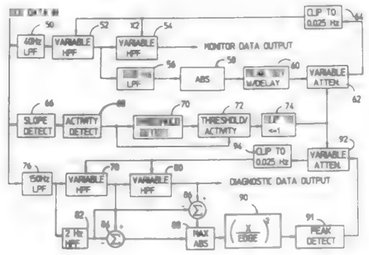
1. A method for accurately displaying an ECG signal, comprising the steps of:

receiving ECG input data;

filtering said ECG input data with a high pass filter having a variable corner frequency, thereby creating an ECG signal;

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detecting the presence of a QRS event in said ECG input data;
in response to said detecting the presence of a QRS event step,

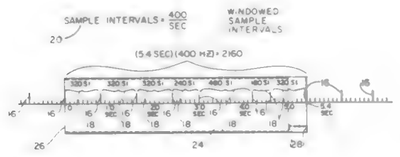


decreasing said variable corner frequency of said high pass filter; and
displaying said ECG signal.

5,357,970
METHOD FOR DETERMINING DOMINANT HEART RATES

David W. Browne, Tampa, Fla., assignor to Critikon, Inc., Tampa, Fla.

Filed Apr. 8, 1993, Ser. No. 44,969
Int. Cl.[5] A61B 5/024
U.S. Cl. 128—706 12 Claims

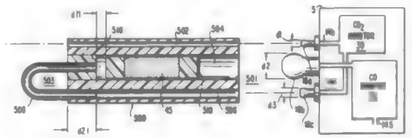


1. A method for determining a dominant heart rate from a series of beat triggers representative of a mixed series of normal heart beats and non-arrhythmic activities, with the beat triggers being determined at a specific sampling rate defining sample intervals, comprising the steps of:
framing a window to include a portion of the series of beat triggers and to be beat-aligned with a first beat trigger and a last beat trigger, the window thereby defining a plurality of trigger intervals for respective adjacent beat triggers, with each trigger interval containing a plurality of the sample intervals existing between the respective adjacent beat triggers;
summing the windowed sample intervals;
for each of the trigger intervals, computing a weight factor based upon the ratio of the summed windowed sample intervals to the number of sample intervals within that trigger interval;
grouping the trigger intervals according to the weight factors;
computing the percentage of the window that each group of weight factors constitutes to determine the dominant group containing the dominant beat triggers; and
analyzing the dominant beat triggers within the dominant group to determine the dominant heart rate.

5,357,971
FILTER UNIT FOR END TIDAL CARBON MONOXIDE MONITOR

Neil J. Sheehan, Palo Alto; Scott R. Rouw, Union City, and Robert T. Stone, Sunnyvale, all of Calif., assignors to Natus Medical Incorporated, Foster City, Calif.

Continuation of Ser. No. 990,425, Dec. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 899,261, Jun. 16, 1992, Pat. No. 5,293,875. This application Mar. 7, 1994, Ser. No. 207,892
Int. Cl.[5] B01D 13/00
U.S. Cl. 128—719 19 Claims

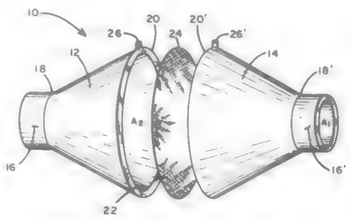


1. A filter unit for use with a non-invasive end-tidal gas flow monitor having a first sensor for detecting the amount of a first gas component in a gas sample, a second sensor for detecting the amount of a second gas component in a gas sample taken from a patient, a first connector in communication with the first sensor, a second connector in communication with the first sensor, a third connector in communication with the second sensor, comprising:
a body having a first end and a second end and first, second, and third lumens extending through the body between the first and second ends;
a first filter for removing undesired selected components from the gas sample, the first filter comprising a consumable filtration medium and being located in one of the second and third lumens; and
a tube segment connecting the second and third lumens at one of the first and second ends, wherein the first lumen forms a first gas flow path between the first and second ends of the body and the second lumen, the tube segment, and the third lumen form a second gas flow path through the body.

5,357,972
DISPOSABLE PNEUMOTACHOGRAPH FLOWMETER

John A. Norlien, Pine Springs, Minn., assignor to Medical Graphics Corporation, St. Paul, Minn.

Filed May 17, 1993, Ser. No. 61,230
Int. Cl.[5] A61B 5/08
U.S. Cl. 128—725 5 Claims



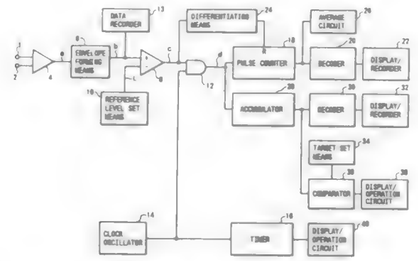
1. A pneumotachograph flowmeter comprising:
(a) a tubular mouthpiece member having a lumen extending the length thereof;
(b) a fabric screen of expanded, PTFE fibers extending transverse to said lumen and having a multiplicity of pores, the size providing a predetermined resistance to fluid flow therethrough with the flow being laminar through said lumen; and

(c) pressure sensing ports in said mouthpiece member disposed on opposite sides of said screen.

5,357,973
MEASURING SYSTEM FOR VITAL MUSCLE ACTIVITY

Yujiro Sunouchi, 217, Fukuma-machi, Munakata-gun, Fukuoka-ken, and Hiroshi Sakamoto, 14-403, Shimo-oori danchi, Oono-jo-shi, Fukuoka-ken, both of Japan

Continuation of Ser. No. 795,428, Nov. 20, 1991, abandoned. This application Apr. 29, 1993, Ser. No. 55,921
Claims priority, application Japan, Nov. 30, 1990, 2-336659
Int. Cl.[5] A61B 5/04
U.S. Cl. 128—733 14 Claims



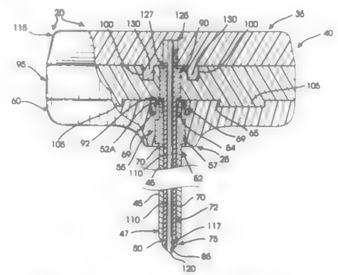
1. A system for measuring the muscle activity of a living organism comprising:
a muscle current detection means suitable for being brought into electrical contact with a subject living organism adjacent a selected muscle thereof for detecting muscle current to provide a corresponding output signal waveform having therein at least oscillatory episode with oscillation peaks therein of various amplitudes.
an envelope waveform forming means for forming envelope waveforms representing muscle activity with each being formed for a corresponding one of those oscillatory episodes occurring in the output waveform of the muscle current detection means and based on the peak amplitude therein,
a timer means for measuring the duration of time for which the values of each envelope waveform formed by the envelope wave forming means are beyond a selected reference level to indicate those durations that said muscle activity was beyond a corresponding muscle activity level, and
a display means for providing an indication of the duration of time measured for each envelope waveform.

5,357,974
BONE MARROW BIOPSY INSTRUMENT

Danny J. Baldridge, Greers Ferry, Ark., assignor to Thomas F. Robinson and John P. Bethell, both of North Little Rock, Ark., part interest to each

Filed Mar. 4, 1993, Ser. No. 27,062
Int. Cl.[5] A61B 10/00
U.S. Cl. 128—754 18 Claims

1. A bone marrow biopsy instrument for surgical extracting bone, marrow, fluids and tissue with a single bone puncture, said instrument comprising:
a rigid, elongated, hollow aspirate needle comprising open distal end for aspirating bone marrow fluid;
a rigid, elongated, hollow biopsy needle telescoped within said aspirate needle, said biopsy needle comprising a distal end normally projecting from said aspirate needle distal end for penetrating a bone and obtaining a solid bone marrow sample, said distal end comprising a symmetrical bulbous, sharpened end for captivating a specimen of bone marrow tissue and a set of at least two diametrically opposed longitudinal relief slots defined in said distal end for enabling said bulbous end to compress shut when said biopsy needle is withdrawn from said bone marrow tissue cavity and said bulbous end enters said aspirate needle; and,

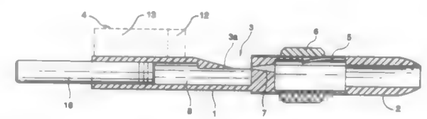


a rigid, elongated, solid stylet removably telescoped within said biopsy needle, said stylet comprising a sharp distal end extending outwardly from said biopsy needle distal end for initially penetrating body tissue and occluding an interior of said biopsy needle.

5,357,975
DEVICE FOR MEASURING THE FLOW-VOLUME OF PULMONARY AIR

Richard Kraemer, and Andreas Schibler, both of Berne, Switzerland, assignors to Isoraw S.A., Aubonne, Switzerland

PCT No. PCT/CH92/00040, § 371 Date Dec. 8, 1992, § 102(e) Date Dec. 8, 1992, PCT Pub. No. WO92/15246, PCT Pub. Date Sep. 17, 1992
PCT Filed Feb. 28, 1992, Ser. No. 940,895
Claims priority, application United Kingdom, Feb. 28, 1991, 9104201
Int. Cl.[5] A61B 5/091
U.S. Cl. 128—725 22 Claims



1. Medical device for measuring the flow-volume of pulmonary air breathed out by a subject, comprising a sound generator, an inlet in fluid communication with said sound generator and into which the subject blows, and a resonance chamber in fluid communication with said sound generator arranged to produce, under the effect of said blow, a note of predetermined frequency and amplitude, means for measuring the length of said note, and a by-pass outlet disposed between said inlet and said sound generator having means to adjustably and measurably vary the opening/closing of said by-pass outlet, the varying means reducing or increasing the amount of air which passes through said sound generator wherein by making measurements ar various openings of said by-pass outlet, the parameters of the expiratory flow-volume curve of the subject can be calculated.

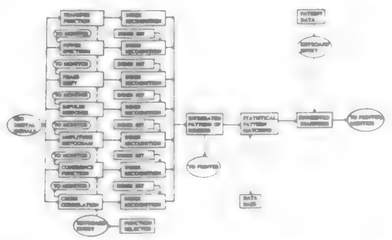
VOL 1167 ISS 4 OC 25 1994 UMI

5,357,976

METHOD OF AND ARRANGEMENT FOR DIAGNOSING BRAIN DISEASE

Genquan Feng, 34 Monroe St. Building C, #J-9, New York, N.Y. 10002-0016, assignor to Genquan Feng, New York, N.Y.

Division of Ser. No. 822,525, Jan. 17, 1992, which is a continuation-in-part of Ser. No. 397,695, Oct. 30, 1989, abandoned. This application Dec. 21, 1992, Ser. No. 994,492
Int. Cl.[5] A61B *5/0476*
U.S. Cl. 128—731 16 Claims



1. A method of diagnosing a brain condition of a patient, comprising the steps of:

(a) acquiring electrocardiographic signals from the patient;

(b) mathematically determining a plurality of functions descriptive of the patient from the electroencephalographic signals;

(c) establishing a set of indices for each function, each index having two states, each indicative of the brain condition of the patient;

(d) recognizing the state of each index for each function;

(e) generating an integrated pattern of the states of the indices from a plurality of the functions;

(f) storing a collection of index patterns, each containing a multitude of patterns of the states of indices for a multitude of patients whose brain condition is known; and

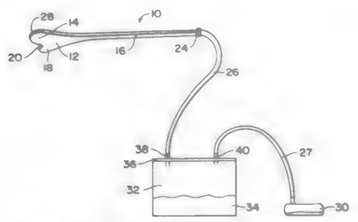
(g) matching the generated integrated pattern against the stored collection of index patterns to determine the brain condition of the patient being diagnosed.

5,357,977

CYTOLOGICAL SAMPLING METHOD AND DEVICE

Ruth Michels, Grand Junction, Colo., assignor to St. Mary's Hospital and Medical Center, Inc., Grand Junction, Colo.

Filed Apr. 23, 1993, Ser. No. 52,407
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—758 26 Claims



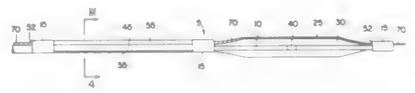
1. A method for sampling cytologic material, comprising suctioning cytologic material directly into a container having fixative contained therein, such that said collected cytologic material is substantially immediately fixed.

5,357,978

RAPID EXCHANGE GUIDEWIRE LOADING ATTACHMENT

Peter I. C. Turk, San Juan Capistrano, Calif., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jan. 12, 1993, Ser. No. 3,356
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—772 7 Claims



1. A catheter comprising:

an elongated shaft having a proximal end and a distal end;

a therapy means for providing medical treatment, the therapy means being mounted generally adjacent to the distal end of the shaft;

a wire guiding means mounted external to the shaft for slidably mounting over a guidewire, the wire guiding means being at least two loops; and

a guidewire loading attachment extending between each pair of loops to facilitate loading of the guidewire into said wire guiding means, the loading attachment comprising:

a snap ring depending from a tubular member defining a guidewire lumen and

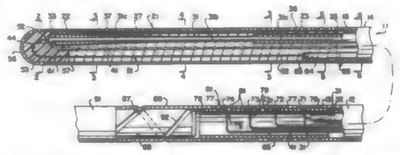
a slot in the snap ring, the slot having a width less than the diameter of the shaft to enable a compression fit of the snap ring upon the shaft.

5,357,979

FLEXIBLE ELONGATE DEVICE HAVING A DISTAL EXTREMITY WITH CURRENT CONTROLLED ADJUSTABLE STIFFNESS AND ADJUSTABLE BEND LOCATION AND METHOD

Mir A. Imran, Palo Alto, Calif., assignor to Intelliwire, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 983,899, Dec. 1, 1992, abandoned. This application Sep. 3, 1993, Ser. No. 116,666
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—772 21 Claims



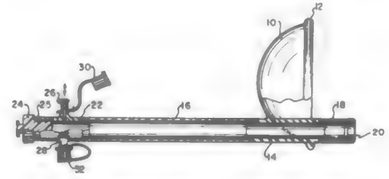
1. A flexible elongate device comprising a flexible elongate member having proximal and distal extremities, a shape-memory element disposed in the flexible elongate member and being capable of assuming martensitic and austenitic states and having first and second portions, a layer of conductive material formed on at least one of said portions, said layer having a conductivity greater than that of the shape-memory element and means connected to the proximal extremity for supplying electrical current to the shape-memory element, said conductive layer serving to conduct current and shunting current flow around that portion of the shape-memory element having the layer of conductive material thereon.

5,357,980

SURGICAL DIAPHRAGM FOR MAINTAINING THE PNEUMOPERITONEUM DURING A LAPAROSCOPIC PROCEDURE

Michael R. Seitzinger, Rte. 7, Box 124, Santa Fe, N. Mex. 87505

Filed Sep. 25, 1992, Ser. No. 951,566
Int. Cl.[5] A61B *17/00*
U.S. Cl. 128—837 2 Claims



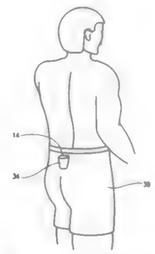
1. A method of maintaining the pneumoperitoneum after a colpotomy incision has been made in the course of laparoscopic gynecological surgery, comprising the step of inserting a diaphragm into the patient's cervix to prevent the escape of gas through the vagina, said diaphragm including a tubular member extending therethrough to enable the passage of fluids and other materials across a barrier provided by said diaphragm, said diaphgram including means enabling a surgeon to selectively seal the tubular member.

5,357,981

APPARATUS AND METHOD FOR THE PREVENTION OF SNORING

Zohar Eilam, 5 Blum Street, Ramat Aviv 69461, and Yehuda Bergman, 8 Zaidman Street, Kiryat Ono 55238, both of Israel

Filed Jul. 7, 1993, Ser. No. 88,134
Int. Cl.[5] A61F *5/56*
U.S. Cl. 128—848 12 Claims



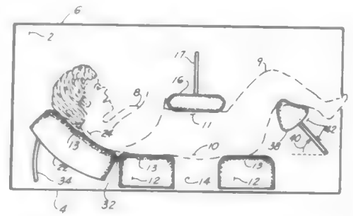
1. A protrusion which is removably attachable to an exterior ventral surface of an article of clothing worn by a subject and is arranged to protrude outwardly from said ventral surface and to cause mild discomfort but no injury to a subject when the subject lies on his back, thereby urging the subject not to lie on his back when asleep, said protrusion comprising a transversely cut generally circular cylinder defined about a cylinder axis, which defines a generally flat ventral surface engagement portion which is inclined with respect to said cylinder axis and a curved cylindrical surface which terminates in a flat surface, perpendicular to said cylinder axis.

5,357,982

PEDIATRIC LUMBAR PUNCTURE IMMOBILIZER

Fredrick C. Shaw, 221 S. Main St., Yazoo City, Miss. 39194

Filed Jan. 25, 1993, Ser. No. 982,387
Int. Cl.[5] A61B *19/00*; A61G *15/00, 7/06*
U.S. Cl. 128—869 3 Claims



1. An Immobilizer for positioning a patient for lumbar puncture comprising:

a flat platform base;

a mid-back support, extending from an edge of, perpendicular to, said platform base, having therein an opening for spinal access;

a cervical stabilizer, pivotally attached to an end of said mid-back support, extending from and perpendicular to said platform base, with means for fixing the position thereof at a chosen angle to said mid-back support, at a position on said platform base;

an abdominal stabilizer, extending from said platform base, opposingly facing said mid-back support, with means for fixing the position thereof on said platform base, oppositely spaced from said mid-back support;

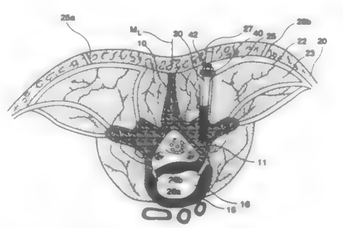
a knee stabilizer, extending from said platform base, with means for fixing the position thereof on said platform base with respect to said mid-back support.

5,357,983

METHOD FOR SUBCUTANEOUS SUPRAFASCIAL PEDICULAR INTERNAL FIXATION

Hallett H. Mathews, Richmond, Va., assignor to Danek Medical, Inc., Memphis, Tenn.

Division of Ser. No. 938,708, Sep. 1, 1992, which is a division of Ser. No. 852,577, Mar. 17, 1992, Pat. No. 5,171,279. This application Jan. 4, 1993, Ser. No. 391
Int. Cl.[5] A61B *19/00*; A61F *2/44, 2/54*
U.S. Cl. 128—898 5 Claims



1. A method for percutaneously resecting the nucleus of a spinal disc in a disk space, comprising the steps of:

a) introducing a pair of cannulae bilaterally into the disc space of the disc;

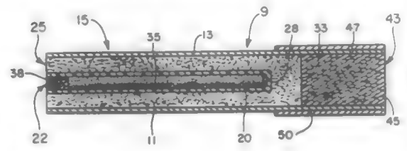
b) perforating the disc annulus at the location of each cannula;

c) inserting a cutting instrument into one cannula and a viewing instrument into the other cannula;

VOL 1167 ISS 4 OC 25 1994 UMI

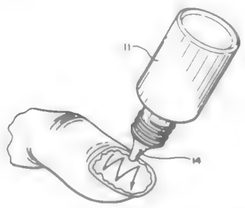
d) resecting the disc nucleus through the one cannula under direct vision through the other cannula; and
e) transposing the cutting instrument and viewing instrument between cannulae and resecting the remaining disc nucleus through the other cannula.

5,357,984
METHOD OF FORMING AN ELECTROCHEMICAL HEAT SOURCE
Ernest G. Farrier, Winston-Salem; Joseph J. Chiou, Clemmons, both of N.C., and Richard L. Lehman, Franklin, N.J., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Continuation of Ser. No. 722,778, Jun. 28, 1991, Pat. No. 5,285,798. This application Apr. 2, 1992, Ser. No. 862,158
Int. Cl.[5] A24B *15/00, 15/18*
U.S. Cl. 131—369 30 Claims



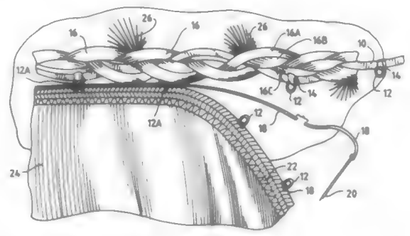
1. A method of forming an electrochemical heat source comprising the steps of:
a) providing particles comprising at least two metallic agents in electrical contact with one another;
b) extruding the particles into an extrusion; and
c) dividing said extrusion to form an individual heat source.

5,357,985
SYSTEM AND METHOD FOR APPLYING A PROTECTIVE COATING AND/OR EXTENSIONS TO FINGERNAILS
Len InDelicato, 18080 Boris Dr., Encino, Calif. 91436, and George H. Carroll, 2392 Foster Ave., Ventura, Calif. 93001
Filed Aug. 18, 1993, Ser. No. 107,629
Int. Cl.[5] A45D *24/00*
U.S. Cl. 132—200 5 Claims



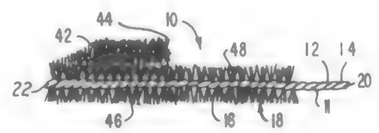
1. A method for applying cyanoacrylate to fingernails, comprising the steps of:
applying a quantity of cyanoacrylate gel directly from a container of the gel through an applicator tip on the container to the upper surface of the fingernail;
using the applicator tip on the container of cyanoacrylate gel to spread and smooth the applied quantity of cyanoacrylate gel on the upper surface of the fingernail;
applying a quantity of accelerator directly from a container of the accelerator through an applicator tip of the container to the cyanoacrylate gel previously applied to the fingernail; and
permitting the accelerator to disperse unaided over the surface of the cyanoacrylate gel to promote rapid and uniform curing of the cyanoacrylate gel.

5,357,986
HAIR LOCKING PROCESS AND APPARATUS
Drucilla W. Hargrett, 9438 Prairie Ave., Chicago, Ill. 60619
Filed Nov. 19, 1993, Ser. No. 155,109
Int. Cl.[5] A41G *3/00*
U.S. Cl. 132—201 8 Claims



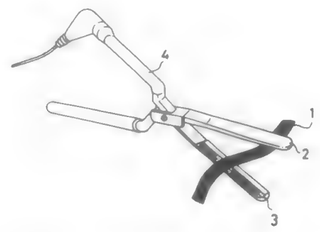
1. A hair locking process for adding hair to the head of a person comprising the steps of:
weaving a base cord having a series of spaced first rings attached thereto into a flat braid; and,
attaching a weft of hair having a corresponding series of second paced rings attached thereto to said flat braid by aligning and interconnecting said first rings to said second rings.

5,357,987
COSMETICS BRUSH WITH DISCONTINOUS BRISTLE FACE
Volker Schrepf, East Islip, N.Y., assignor to Henlopen Manufacturing Co., Inc., Melville, N.Y.
Continuation-in-part of Ser. No. 692,720, Apr. 29, 1991, abandoned. This application Feb. 3, 1993, Ser. No. 12,740
Int. Cl.[5] A45D *40/26*
U.S. Cl. 132—218 17 Claims



1. A mascara brush comprising
(a) an elongated wire core having two runs of wire helically twisted together about a rectilinear axis forming a succession of turns including two contiguous sets of turns, each of said two sets consisting of plural successive turns, respectively disposed distally and proximally along said brush, and
(b) an array of bristles projecting outwardly around said two sets of turns, said array including, in each turn of each of said sets, a plurality of bristles each clamped between the runs of wire and having opposed free tips extending radially therefrom, said array comprising two contiguous portions, respectively disposed distally and proximally along said core and respectively consisting of the bristles clamped in one of said two sets of turns and the bristles clamped in the other of said two sets of turns, the tips of the bristles of each of said portions defining a notional envelope,
(c) said two portions respectively having bristle tips disposed to define envelopes with cross-sections differing from each other such that there is a discontinuity between the envelopes of said two portions, for respectively performing different mascara-applying functions.

5,357,988
HAIR IRON FOR HAIR STRAIGHTENING
Tetsuji Nakamura, 3400-1, Tabata, Kawanabe-cho, Kawanabe-gun, Kagoshima-ken, Japan
Filed Dec. 29, 1992, Ser. No. 997,788
Int. Cl.[5] A45D *1/04*
U.S. Cl. 132—232 5 Claims

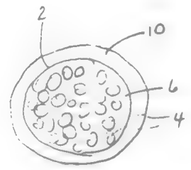


1. A hair iron for straightening hair of a type having a grip part (4) and pressing members (2, 3), said pressing members comprising uneven opposing faces (2*a*, 3*a*) matching each other provided on relative opposing faces of the pressing members, the uneven faces (2*a*, 3*a*) covering only parts of the opposing faces of the pressing members (2, 3), each one of said parts extending from one end of each one of said pressing members a specific length in a width wise direction to form a gap between other parts of the opposing faces so that the hair iron is used in such a manner that the uneven opposing faces (2*a*, 3*a*) are located at the root side of the hair and the gap is located at the tip side of the hair so as to warm the hair in the gap and let it swell and then pressing and deforming the hair by the uneven faces (2*a*, 3*a*), wherein hair is straightened by heating said iron, clasping and pressing hair between the pressing members, shifting the pressing members on the hair little by little from the root to the tip while repeatedly pressing and releasing the hair to deform the hair into a fine wave form by bending it in multiple directions, sliding the pressing members on the hair frictionally from the root to the tip to stretch the hair and finally treating the hair with a perming solution.

5,357,989
DENTAL CLEANSING MEMBER
Naresh Gathani, 35 Derwent Gardens, Wembley, Middx. HA9 8SG, United Kingdom
PCT No. PCT/GB91/02189, § 371 Date Mar. 11, 1993, § 102(e) Date Mar. 11, 1993, PCT Pub. No. WO92/10148, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 10, 1991, Ser. No. 920,488
Claims priority, application United Kingdom, Dec. 10, 1990, 9027022
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—321 8 Claims

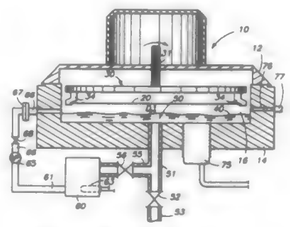
1. A dental cleansing strand member impregnated or coated with pH-sensitive dye, the pH sensitive dye producing a color change when exposed to an acid pH.

5,357,990
FLAVORED DENTAL FLOSS AND PROCESS
Christopher H. Suhonen, Providencia Santiago, Chile, and John A. Kaminski, Newark, Calif., assignors to Gillette Canada Inc., Kirkland, Canada
Continuation-in-part of Ser. No. 809,625, Dec. 17, 1991, Pat. No. 5,226,435, which is a continuation-in-part of Ser. No. 740,824, Aug. 1, 1991, abandoned. This application Mar. 10, 1993, Ser. No. 29,091
The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—321 16 Claims



1. A process for making a shaped, highly flavored interproximal dental cleaning article comprising
a) coating a plurality of filaments of a substrate material formed into a thread with a first liquid or semi-solid wax composition having a temperature above about 60° C.;
b) cooling the coating to a temperature at which the first wax composition has solidified to yield a shaped thread;
c) coating the shaped thread with a second liquid or semi-solid wax composition having a temperature less than the melting temperature of the first wax composition, the wax composition containing a volatile flavoring oil; and
d) solidifying the second wax composition to form a shaped, highly flavored dental cleaning article.

5,357,991
GAS PHASE SEMICONDUCTOR PROCESSOR WITH LIQUID PHASE MIXING
Eric J. Bergman; Timothy J. Reardon, both of Kalispell; Raymon F. Thompson, Lakeside, and Aleksander Owczarz, Kalispell, all of Mont., assignors to Semitool, Inc., Kalispell, Mont.
Continuation of Ser. No. 665,942, Mar. 6, 1991, Pat. No. 5,235,995, which is a continuation-in-part of Ser. No. 526,057, May 21, 1990, Pat. No. 5,238,500, Ser. No. 328,888, Mar. 27, 1989, Pat. No. 5,168,886, Ser. No. 526,243, May 18, 1990, Pat. No. 5,168,887, Ser. No. 464,101, Nov. 2, 1990, abandoned, and Ser. No. 526,052, May 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 524,239, May 15, 1990, abandoned. This application Apr. 26, 1993, Ser. No. 53,523
Int. Cl.[5] B08B *3/10*
U.S. Cl. 134—102.1 72 Claims



46. An apparatus for processing wafers, such as semiconductor wafers, magnetic disks, and optical disks, comprising:

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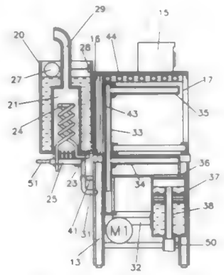
at least one processing bowl; said at least one processing bowl being provided with a liquid phase chemical chamber for holding liquid phase processing chemical therein;
at least one chemical supply for supplying at least one processing chemical to said at least one processing bowl;
at least one head mounted for controlled movement between at least one closed position wherein the head is in an operative relationship with the processing bowl to define a substantially enclosed processing chamber, and at least one open position wherein the head is removed from the processing bowl for loading or unloading wafers;
at least one wafer support for detachably supporting wafers thereon; said at least one wafer support being movable to allow controlled motion of the wafer support and any wafer held thereby;
mixing means for mixing said at least one processing chemical to maintain homogeneity thereof in said at least one processing bowl;
chemical chamber valve means controlling the passage of vapor phase processing chemical from the liquid phase chemical chamber to a wafer being processed in the processing chamber.

5,357,992

HEAT CYCLE TYPE DISHWASHER

Shui-Chuang Yang, No. 29, Min-Tsu Road, Hsueh Chia Jenn, Tainan Hsien, Taiwan

Filed Jun. 24, 1993, Ser. No. 82,221
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—107 **3 Claims**



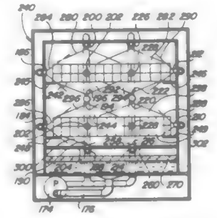
1. A heat cycle type dishwasher including:
a housing body wherein washing and rinsing cycles are performed, a bottom surface of the housing body resembling a rectangular tub body, a top end of the housing body having a crown plate, and
four side walls formed between the crown plate and the bottom, with a first side wall being solid, and each of the other three side walls including a movable door;
a stand mounted under the housing body fort elevating the housing body and mounting other members;
a cylindrical main water reservoir mounted in a position external to the first wall of the housing body and connected to an intake pipe on a side of the reservoir, a bottom of the reservoir including a drain hole; the bottom of the reservoir further having means to receive water from the housing body, the reservoir further including near its bottom a water suction pipe;
an outlet pipe extending downward from the main reservoir, at least two filter nets, one filter net being disposed above the top of the outlet pipe, and at least one filter net being disposed between the outlet pipe and the suction pipe;
a drain pipe connected top the outlet pipe;
a cleaning tub mounted external to the housing body, a side of the cleaning tub including an intake pipe in communication with a level switch to maintain adequate water level, the cleaning tub further including near a bottom a water suction pipe;
a screw tube resembling a screw column mounted within the main water reservoir, one end of the screw tube being connected to the drain hole of the main water reservoir;
a T-joint connecting the screw tube, the intake pipe of the washing tub, and the intake pipe of the cleaning tub, which allows water to flow from the screw tube and into the washing tub and the cleaning tub;
a burner cap mounted beneath the screw tube to heat water;
a washing pump secured to the stand, with an inlet connected to the water suction pipe of the cleaning tub, and an outlet connected to a water supply pipe;
upper and lower spray manifolds connected to the water supply pipe of the washing tub, the upper and lower manifolds being mounted respectively on upper and lower ends of the housing body;
cleaning manifolds connected to the water supply pipe of the washing tub and mounted on the top end inside the housing body; wherein
water in the main water reservoir, after being heated, is distributed to the washing tub and cleaning tub, with water in the washing tub being available for cycle type washing, and with water in the cleaning tub being available for rinsing, and after several alternating washing and rinsing processes, oily and dirty dishes loaded between the upper and lower manifolds are cleaned.

5,357,993

PRODUCE WASHER

Marty St. Martin, 613 E. Grand Ave., Fruita, Colo. 81521

Filed Sep. 25, 1992, Ser. No. 951,167
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—111 **24 Claims**



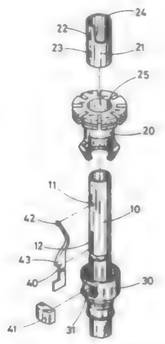
1. A produce washer for washing produce with an ambient temperature washing fluid, said produce washer comprising in combination:
a) a cabinet;
b) a compartment disposed interior to said cabinet for housing the produce, said cabinet including an opening for inserting and removing the produce;
c) a door for closing said opening;
d) at least one washing fluid permeable basket for supporting the produce within said compartment;
e) a trough disposed in said cabinet for containing the washing fluid;
f) a plurality of nozzles for spraying the washing fluid onto produce inserted into said basket, each nozzle of said plurality of nozzles emitting an expanding cone shaped spray having a cross-section perpendicular to the axis of rotation of the cone essentially filled with water droplets to bathe and agitate any debris on the produce that lies within the circumference of the impinging cone of spray;
g) a pump for drawing the washing fluid from said trough and for pumping the washing fluid to said plurality of nozzle;
h) a conduit tree interconnecting said pump with said plurality of nozzles for conveying the washing fluid from said pump to said plurality of nozzles;
i) a shelf for conveying washing fluid expelled from said plurality of nozzles to said trough; and
j) a filter for filtering the washing fluid conveyed to said trough.

5,357,994

HIDDEN SAFETY CONTOURED LEAF SPRING LOCKING DEVICE

Wen C. Chung, 58, Tzu Shing Li, Hsinpu Cheng, Hsinchu Shien, Taiwan

Filed Apr. 26, 1994, Ser. No. 233,881
Int. Cl.[5] A45B *25/14*
U.S. Cl. 135—22 **1 Claim**



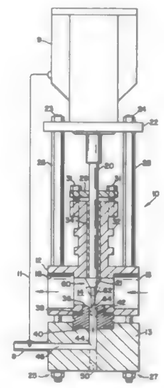
1. A hidden safety contoured leaf spring positioning system for an umbrella structure comprising:
(a) a longitudinally directed tubular center pole defining an inner wall thereof having a through opening and a longitudinally directed through slot formed in a lower section thereof;
(b) a strut spreader slidingly engaged to an external surface of said tubular center pole, said strut spreader having a longitudinally directed through opening defining an internal wall of said strut spreader and a positioning slot formed within an upper section of said internal wall of said strut spreader;
(c) a hollow positioning tube contiguously mounted between said external surface of said tubular center pole and said internal wall of said strut spreader, said hollow positioning tube having a protruding tab extending from an upper section thereof and inserted into said positioning slot, said positioning tube having an upper and a lower positioning hole formed therethrough;
(d) a handle connector slidably engaged with said external surface of said tubular center pole having an insertion hole formed therethrough;
(e) a contoured leaf spring mounted internal said tubular center pole, said contoured leaf spring having a lower end in contact with a spring actuator member extending through said insertion hole of said handle connector, said contoured leaf spring having an upper section forming an elongated arched member contacting said internal wall of said tubular center pole, said contoured leaf spring having an upper end inserted within said tubular center pole through opening for supporting said contoured leaf spring, said contoured leaf spring having a central section having a pawl member inserted into a positioning hole formed through said strut spreader, whereby said pawl member is engaged within said upper positioning hole when said umbrella is closed and said pawl member is engaged within said lower positioning hole when said umbrella is opened.

5,357,995

SELF-CLEANING SLURRY METERING VALVE

Gerald V. King; Kenneth J. Busch, both of Odem, and Thomas M. Kenesson, Corpus Christi, all of Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Mar. 18, 1993, Ser. No. 32,871
Int. Cl.[5] F16K *31/04*; F17D *3/01*
U.S. Cl. 137—8 **24 Claims**



16. A process for directing a metered flow of slurry from a continuous feed of slurry comprises:
passing said continuous feed of slurry through a primary flow path in a slurry metering valve from the inlet of said primary flow path to the outlet end thereof, said metering valve including a valve stem movable through said primary flow path, a valve seat located adjacent said primary flow path, said valve seat containing a passage therethrough communicating with said primary flow path at a valve seat passage inlet and with a downstream outlet passage in said metering valve separate from said primary flow path at a valve seat passage outlet, said valve stem comprising an upper valving portion for movement away and against said valve seat for controlling fluid flow through said outlet passage, said valve stem further comprising a lower portion which is movable through said primary flow path and said valve seat passage, said lower portion of said valve stem containing a metering component and a cleaning component, said metering component including a gradual downward taper to allow control of fluid flow volume through said valve seat passage when said metering component is placed at said valve seat passage inlet, said cleaning component being below said metering component and having a cut-away portion substantially narrower than said metering component to allow greater fluid flow from said primary flow path to effectively flush and remove accumulated solids from said valve seat passage when said cleaning component is placed at said valve seat passage inlet, at least part of said cleaning component of said valve stem being contained within said valve seat passage when said cleaning component is placed at said valve seat passage inlet, metering in said valve a portion of said continuous flow of slurry in said primary flow path through said valve seat passage by placing said metering component at said valve seat passage inlet and directing said metered slurry to said outlet passage, periodically placing said cleaning component of said lower portion of said valve stem at said valve seat passage inlet to flush accumulated solids through said valve seat passage.

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5,357,996

PRESSURE REGULATING SYSTEM

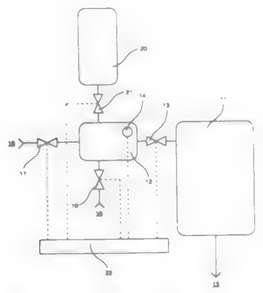
Antonis C. Ioannides, and Alan Pindar, both of Abingdon, Great Britain, assignors to Oxford GlycoSystems Limited, Abingdon, Great Britain

Division of Ser. No. 974,022, Nov. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 740,512, Aug. 5, 1991, abandoned. This application Sep. 8, 1993, Ser. No. 117,982

Claims priority, application United Kingdom, Aug. 18, 1990, 9018182

Int. Cl.[5] G05D *16/20*

U.S. Cl. 137—12 12 Claims



11. A method of providing a fluid output at a precisely controlled pressure from the outlet of a first chamber interconnected to a second chamber, said second chamber having a volume less than that of said first chamber, comprising the steps of

closing off communication between said first and second chambers when the pressure in said first chamber is lower than a predetermined level;

introducing fluid into said second chamber until the pressure therein reaches a predetermined inlet pressure;

restoring communication between said first and second chambers to deliver a pulse of fluid from said second chamber to said first chamber; and

repeating said steps until the pressure in said first chamber reaches said predetermined level.

5,357,997

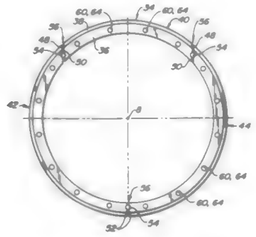
VALVE WITH SEGMENTED RETAINER RING

Bernd Brueggestrath, Bochum, Fed. Rep. of Germany, assignor to Adams GmbH & Co. Armaturen KG, Herne, Fed. Rep. of Germany

Filed Sep. 7, 1993, Ser. No. 118,061

Int. Cl.[5] F16K *1/228*

U.S. Cl. 137—15 29 Claims



27. A method of mounting a seal ring in a valve which has a valve body defining an axial fluid passage and a closure member disposed in the conduit and pivotally mounted to the housing for movements between open and closed positions, the method comprising the steps of:

forming an enlarged diameter housing conduit portion extending from one end of the housing to a face oriented toward the one housing end;

forming a radially inwardly open groove in the enlarged conduit portion intermediate the face and the one housing end;

placing a seal ring having a sealing surface adapted to sealingly engage the closure member against the face;

providing at least three retainer ring segments which together extend over substantially about 360° and which each include a body portion and a flange extending radially outwardly therefrom, each segment extending over an arc of less than 180°;

inserting the flanges of all but one of the segments into the groove so that the segments are disposed in a common plane which includes the groove;

thereafter aligning the one segment with said plane and moving the one segment relative to the housing and to the other segments in a radial direction until its flange is inserted in the groove;

thereafter generating axially acting forces between the seal ring and the body portion biasing the seal ring and the retaining ring apart and thereby the seal ring into sealing engagement with the face; and

transferring the axially acting forces via the flange on the retaining ring segments to the housing.

5,357,998

SAFETY SYSTEM FOR FLUID CONDUIT

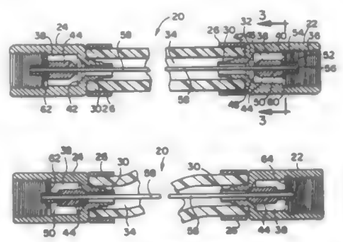
Joseph Abrams, Bala Cynwyd, Pa., assignor to Woodland Technologies, Inc., Bala Cynwyd, Pa.

PCT No. PCT/US91/05707, § 371 Date Feb. 19, 1993, § 102(e) Date Feb. 19, 1993, PCT Pub. No. WO92/03679, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 19, 1991, Ser. No. 983,540

Int. Cl.[5] F16K *17/40*

U.S. Cl. 137—68.1 25 Claims



1. A safety system for a fluid conduit comprising a flexible conduit having first and second ends,

first means at each end of said conduit defining a valve seat, said valve seats normally being a first predetermined distance from each other, and being movable away from each other when said conduit fails,

a valve body disposed at each end, said valve seats being disposed between said valve bodies, said valve bodies and said valve seats cooperating to define valves,

second means connected to said valve bodies for holding them apart a second distance which is greater than the distance between said valve seats,

third means disposed at each of said ends and cooperating with said second means for retaining said valve bodies against movement to permit fluid to flow through said conduit until said conduit fails, and

said second means is operative when said conduit fails and said valve seats move away from each other to retain said valve bodies at said second distance so that said valve seats move toward said valve bodies and close said valves, or if the distance between said valve seats does not change, to permit said valve bodies to move toward each other so that said valve bodies move toward said valve seats to close said valves.

5,357,999

SUBSEA CONTROL SYSTEMS AND APPARATUS

William D. Loth, Agars Plough, Margery Lane, Lower Kingswood, Surrey, KT20 7BP, and Dennis S. Dowdall, 31 Arundel Avenue, Morden, Surrey, SM4 4DR, both of England

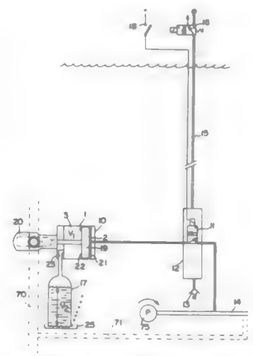
PCT No. PCT/GB91/00490, § 371 Date Sep. 21, 1992, § 102(e) Date Sep. 21, 1992, PCT Pub. No. WO91/15692, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 28, 1991, Ser. No. 924,078

Claims priority, application United Kingdom, Mar. 30, 1990, 9007210

Int. Cl.[5] F16K *17/36*

U.S. Cl. 137—81.2 21 Claims



1. A subsea actuator for operating a subsea component such as a valve, comprising a housing, a movable wall member cooperating with the housing to confine therewith a substantially closed chamber separated by the movable wall member from another fluid space, the wall member being fastened to an elongate output member and being movable under forces acting against opposite sides thereof to displace the output member longitudinally, and inlet means to connect said chamber to either a source of pressurised fluid at a pressure greater than the hydrostatic pressure of the ambient seawater, or to a drain outlet at a pressure not greater than the hydrostatic pressure of the ambient seawater, said actuator being arranged for said other space to be in direct fluid communication with and thereby at the hydrostatic pressure of ambient seawater and said movable wall to be moved in a forward direction when the chamber is connected to the source of pressure fluid and to be moved in a reverse direction when the chamber is connected to the drain outlet.

5,358,000

SIPHON PUMP HAVING A METERING CHAMBER

Michael T. O'Hair, HC #82, Box 145, Betsy Ridge Rd., Ravenna, Ky. 40472

Filed Aug. 17, 1993, Ser. No. 107,124

Int. Cl.[5] F04F *10/00*

U.S. Cl. 137—124 13 Claims

1. A siphon pump system for dispensing a predetermined quantity of water from a water supply source, said pump system comprising:

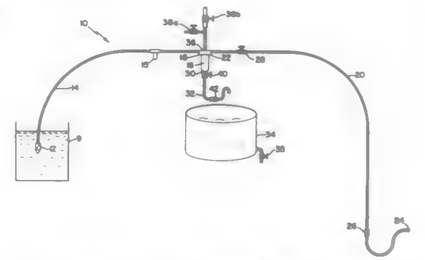
a. a destination container for receiving water from the water supply source;

b. a holding canister including an air inlet valve for allowing air to enter the system and an outlet check valve for controlling the rate of flow of water from the holding canister into the destination container;

c. a first siphon conduit extending from the water supply source to the holding canister, the first siphon conduit having an inlet within the water supply source and an outlet connected with the holding canister and positioned at an elevation above that of the water supply source;

d. a second siphon conduit extending from the holding canister to an outlet at an elevation below the level of the water supply source, the second siphon conduit having a longer length than that of the first siphon conduit;

e. a system flow control valve positioned in the second siphon conduit for controlling the flow of water through the first siphon conduit, the holding canister, and the second siphon conduit;



f. an anti-backflow valve positioned within and adjacent the outlet of the second siphon conduit, for preventing reverse flow of air into the second siphon conduit from the second siphon conduit outlet;

g. a flow control valve in the second siphon conduit upstream of the anti-backflow valve for controlling flow of water through the first siphon conduit, the holding canister, and the second siphon conduit; and

h. a charging inlet at an upper end of the holding canister for initially priming the siphon pump system; and

i. an air admitting valve communicating with an upper end of the holding canister for selectively admitting air into the holding canister to permit water to exit from the holding canister when the air admitting valve is open, and for preventing water from exiting from the holding canister and through the anti-backflow valve when the air admitting valve is closed.

5,358,001

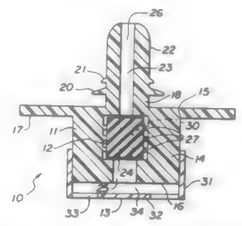
AIR VALVE FOR USE IN AN INFLATABLE BLADDER

Eldon F. Smith, 5911 Princeton-Glendale Rd., Hamilton, Ohio 45011

Filed Mar. 7, 1994, Ser. No. 206,630

Int. Cl.[5] F16K *15/20*

U.S. Cl. 137—223 17 Claims



1. A puncture-proof air valve for use in an inflatable bladder

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to intermittently receive an inflating needle for inflating the bladder with pressurized air and providing an air-tight seal when the needle is removed therefrom, said valve comprising:

(a) a main body member having a core with a first end and a second end, wherein said core has an annular sealing flange extending radially from said first end and a neck extending axially from said first end, and further wherein the main body member has an inflating needle passageway extending through its neck and its core and a chamber interposed in said passageway;

(b) an air-sealing plug positioned in the chamber of the core of the main body member, said plug having a self-sealing inflating needle passageway extending through it and in alignment with the inflating needle passageway of the core; and

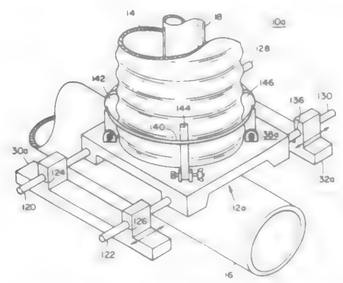
(c) a protective bonnet positioned on the second end of the core of the main body member, said bonnet having at least one air escape opening in a wall thereof to allow the pressurized air from the inflating needle to pass therethrough and into the inflatable bladder, further wherein the bonnet is capable of absorbing a force from the inflating needle to prevent said force from being transmitted to the bladder.

5,358,002

SEWER CHIMNEY SYSTEM

Nicholas D'Alessandro, 1183 Washington St., Canton, Mass. 02021

Continuation-in-part of Ser. No. 107,955, Aug. 17, 1993, Pat. No. 5,299,596. This application Dec. 27, 1993, Ser. No. 173,092
Int. Cl.[5] F16L *5/00*
U.S. Cl. 137—363 9 Claims



1. An improved sewer chimney system for stabilizing and protecting a chimney pipe interconnecting a service pipe and a main sewer line, comprising:

a base for bridging a main sewer line, said base including a hole for accommodating the chimney pipe rising from the main sewer line, a pair of spaced footings for disposition on either side of the main sewer line, a plate containing said hole, and rail means slidably received on said plate and said footings for slidably positioning said plate over the sewer line;

a hollow casing vertically mounted on said base and having a lower open end aligned with said hole in said base for receiving the chimney pipe and having an upper open end for receiving fill about the chimney pipe; said casing including a lateral hole for receiving a service pipe for interconnection with said chimney pipe; and

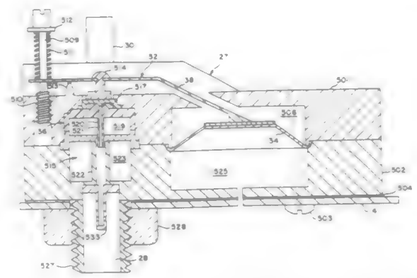
means for attaching said hollow casing to said base for securing it during filling of the casing and during backfilling around the casing.

5,358,003

METHOD AND APPARATUS FOR MAINTAINING LEVEL OF WATER IN ABOVE-GROUND SWIMMING POOL

Edwin R. Langill, 162 Nashua Rd., Pepperell, Mass. 01463

Division of Ser. No. 956,905, Oct. 2, 1992, Pat. No. 5,253,374, which is a division of Ser. No. 816,216, Jan. 3, 1992, Pat. No. 5,154,205. This application Oct. 15, 1993, Ser. No. 137,480
Int. Cl.[5] F16K *31/128*
U.S. Cl. 137—406 2 Claims



1. A pressure-sensitive switch being used in a separate fluid-containing tank of small volume to control fluid flow being removably attached exteriorly to a separate fluid-containing region of large volume, the volume of fluid in which is to be regulated, said region of large volume being in communication with said tank so that the fluid level in said tank corresponds to the fluid level in said region, said switch being disposed within said tank, said switch comprising in combination an inlet **28** adapted to receive fluid from an external fluid source, a feed pipe **30** of sufficient length to extend from said switch to a position outside of said tank by enough margin to ensure that fluid flowing through said feed pipe does not enter said tank but to allow such fluid flow to be solely delivered to said region of large volume in a substantially unimpeded manner at a position above the fluid level of said region of large volume, a main valve, said main valve comprising a main valve diaphragm **516** and a main valve seat **532** surrounding said inlet so that fluid in a said inlet travels through the center of said main valve member into a control chamber **519** so as to press said main valve member against said main valve seat, a pilot valve which when open permits fluid to escape from said control chamber **519** so as to reduce the pressure of said main valve member against said main valve seat and thereby to open said main valve, a lever **38** mounted so as to pivot about a fulcrum and having a diaphragm **34** at one end and a counterbalance means at the other end, said diaphragm **34** forming a portion of the boundary of the fluid-holding part of said tank, whereby the fluid pressure in said tank causes said diaphragm to move as said fluid pressure changes and open and close said pilot valve, the flow of fluid from said control chamber **519** as well as the flow of fluid through said main valve being confined to flow through said outlet **30**.

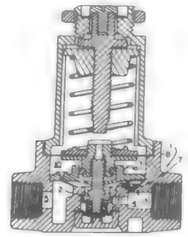
5,358,004

PRESSURE FLUID STABILIZED REGULATOR WITH LEAKAGE ORIFICE

Louis D. Atkinson, 12535 W. Wilbur Ave., New Berlin, Wis. 53151, and David A. Venhaus, Milwaukee, Wis., assignors to Louis D. Atkinson, New Berlin, Wis.

Filed Apr. 19, 1993, Ser. No. 49,207
Int. Cl.[5] G05D *16/02*
U.S. Cl. 137—505.18 8 Claims

1. A pressure regulator comprising a valve body having an inlet port and an outlet port with a wall therebetween, a valved opening in said wall, said valve body adapted to have an associated closure member for selectively closing said valved opening and regulate the output pressure, and a precision totally unobstructed leakport orifice unit connecting said inlet port to said outlet port, said orifice unit including a spaced opening formed in said wall in spaced relation to said valved opening, a separate precision formed orifice member located in said



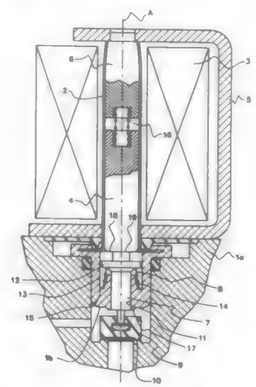
spaced opening and including a body member formed of hard plastic and substantially corresponding to said spaced opening in said wall and having a central opening including a reduced round precision orifice integrally formed within said body member and operative to stabilize the output pressure and eliminate vibration characteristics of said closure member as the valve closure member moves to the closed position.

5,358,005

SOLENOID VALVE WITH DIRT TRAP

Frank van Prooijen, Emmen, and Wim Munsterhuis, Dalen, both of Netherlands, assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 28, 1993, Ser. No. 145,010
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1993, 4305987
Int. Cl.[5] F16K *31/06, 51/00*
U.S. Cl. 137—546 8 Claims



1. A solenoid valve of the type including a valve stem movable by a solenoid armature along an axis which is vertically oriented when the valve is in its normal operating position, the valve stem carrying a closure member and moving within valve guide structure surrounding the stem between the armature and the closure member, wherein the improvement comprises:

a collar on the valve stem at a location between the valve guide and the armature, the external diameter of said collar being larger than the internal diameter of the valve guide; and

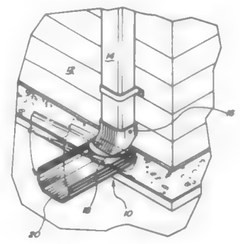
an annular well in the valve guide structure, said annular well encircling the valve stem and opening toward said collar, the diameter of the inner lip of said annular well being smaller than the external diameter of said collar.

5,358,006

ADJUSTABLE DOWNSPOUT EXTENSION ASSEMBLY

Ronald L. Sweers, 6165 E. Atherton Rd., Burton, Mich. 48519

Filed Apr. 2, 1993, Ser. No. 42,159
Int. Cl.[5] F16L *27/00*
U.S. Cl. 137—615 22 Claims



1. An assembly for attachment to the lowermost region of a rainwater downspout, said assembly comprising:

an adaptor, said adaptor being fitted to said lowermost region of said downspout;

a rotatable member rotatably attached to said adaptor;

a first rainwater channel extension, said first rainwater channel extension being to said rotatable member;

a second rainwater channel extension, said second rainwater channel extension being slidably attached to said first rainwater extension;

each of said first and second rainwater channel extensions having a right outer side and a left outer side, each of said right and left outer Sides having an outer sliding member attached thereto;

each of said first and second rainwater channel extensions having a right inner side and a left inner side, each of said right and left inner sides having an inner sliding member attached thereto;

said outer sliding members of said second rainwater channel extension being slidably matable with said inner sliding members of said first rainwater channel extension; and

said first rainwater extension and said second rainwater extension being interchangeable.

5,358,007

DOWNSPOUT WITH SWIVEL AND FLOW DIVERTER

Stanley B. Carlberg, 676 Ashland Ave. W., St. Paul, Minn. 55102

Filed Nov. 15, 1993, Ser. No. 152,989
Int. Cl.[5] F16L *27/00*
U.S. Cl. 137—615 19 Claims

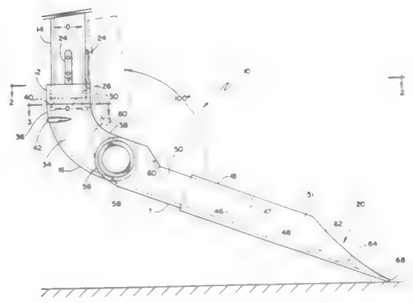
1. An adjustable attachment adaptable to a downspout lower end, comprising:

(a) an elbow conduit member having a fluid passageway extending between an inlet and an outlet, said elbow conduit member having a first securing surface comprising at least one raised portion extending outwardly and disposed proximate said outlet, and wherein said inlet is adapted to couple to said downspout lower end; and

(b) an elongated drain trough extending between a receiving end and a dispensing end, said receiving end having a second securing surface comprising at least one recessed portion conforming to a contour of said raised portion at

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said first securing surface and selectably attachable thereto and defining a pivot point, wherein said drain



trough can be selectively pivoted upwardly about said pivot point while attached to said elbow.

5,358,008

Patent Not Issued For This Number

5,358,009

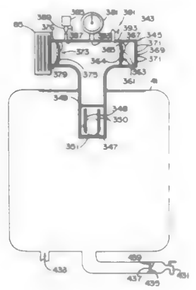
LIQUID STORAGE VESSEL VENTING SYSTEM

Gary J. Cambell, 6480-10th Ave., Blanchard, Mich. 49310

Continuation-in-part of Ser. No. 788,542, Nov. 6, 1991, Pat. No. 5,240,043. This application Jul. 19, 1993, Ser. No. 93,765

Int. Cl.[5] A01G *25/09*

U.S. Cl. 137—899 14 Claims



1. A storage system for liquid comprising:

a receiving valve for the transfer of liquid into said storage system;

a storage tank communicating with said receiving valve for receiving and storing said liquid;

a check valve assembly communicating with said storage tank, said check, valve assembly comprising:

a first check valve including a valve seat and a floating valve which allows air to pass around said floating valve as said storage tank is being filled with liquid and for closing said first check valve when said floating valve is buoyed by said water into said valve seat;

a second check valve including a valve closure in communication with said first check valve, said second check valve only allowing air to flow out of said storage tank;

a third check valve in communication with said first check valve, said third check valve including a valve closure only allowing air to flow into said storage tank; and

an air filter for filtering the air passing through said third check valve into said storage tank.

5,358,010

DUAL PURPOSE PIPE STOPPER MECHANISM

Stephen L. Jiles, 1513 Dogwood Ave., Anaheim, Calif. 92801

Filed May 30, 1991, Ser. No. 709,095

Int. Cl.[5] F16L *55/105*

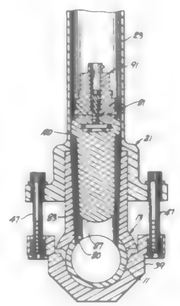
U.S. Cl. 138—94 7 Claims

1. In combination with a pipe and a branch extending transversely from the pipe, a stopper for alternately blocking the pipe and the branch comprising:

(a) a cylindrical deformable resilient body having a distal region movable between the pipe and the branch and a rear region movable within the branch;

(b) means for moving the body between a first position and a second position;

(c) means in the first position for compressing the distal region to block the pipe and relaxing the rear region to unblock the branch; and



(d) means in the second position for compressing the rear region to block the branch and relaxing the distal region to unblock the pipe.

5,358,011

OPTICAL FIBRE DUCTS HAVING INNER LAYER SUITED TO BLOWN FIBRE INSTALLATION AND A FIRE RETARDANT OUTER LAYER

David J. Stockton; Bates, Roger J., both of Ipswich; Clifford F. Cook, Melton, and Philip A. Barker, Ipswich, all of England, assignors to British Telecommunications public limited company, London, England

PCT No. PCT/GB89/00780, § 371 Date Dec. 19, 1990, § 102(e) Date Dec. 19, 1990, PCT Pub. No. WO90/00823, PCT Pub. Date Jan. 25, 1990

PCT Filed Jul. 4, 1989, Ser. No. 623,746

Claims priority, application United Kingdom, Jul. 5, 1988, 8815977.7

Int. Cl.[5] F16L *57/00*

U.S. Cl. 138—103 18 Claims



1. A flexible duct for optical fibre transmission lines, the duct comprising:

an inner layer of a first polymeric material having a bore therethrough, the walls of the bore constituting means for blown fibre installation of optical fibre, and

an outer layer of a second polymeric and fire retardant material surrounding said inner layer, wherein said first material is selected from high density polyethylene incorporating a solid lubricant, carbon loaded high density polyethylene, polyether imide or slip enhanced medium density polyethylene.

5,358,012

HOSE ASSEMBLY HAVING INNER PROTECTIVE VENEER AND BARBED NIPPLE PORTION

Arthur S. Kish, Lyndhurst, Ohio, assignor to JEM Industries, Inc., Willoughby, Ohio

Filed Mar. 18, 1993, Ser. No. 33,124

Int. Cl.[5] F16L *11/08, 9/16, 55/00*

U.S. Cl. 138—109 6 Claims

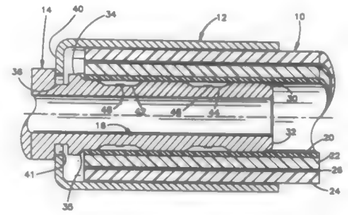
1. A hose assembly comprising:

an elongated tubular member having a nipple portion extending inwardly for a portion of the length thereof from one end of said member.

a non-metallic hose having a free end, said hose frictionally surrounding and receiving said nipple portion, said hose having an inner protective veneer and said hose having an inner diameter corresponding with the outer diameter of said nipple portion;

said nipple portion having at least one reduced diameter annular channel therein and having a plurality of axially spaced circumferential barbs which extend radially outward from said channel with the outer diameter of said barbs being less than the outer diameter of said nipple portion;

a metallic shell having a generally cylindrical body coaxially surrounding said nipple portion with said hose located therebetween, said shell being provided with a plurality of crimps which extend inwardly toward the outer wall of said hose at locations corresponding with said axially



spaced barbs so as to compress said hose therebetween and so said barbs are embedded into said inner protective veneer of said hose;

said barbs extend radially outward from said channel by a distance substantially less than the thickness of said veneer so that each said barb is embedded into said inner protective veneer by a distance substantially less than the thickness of said veneer; and

said barbs include barbs which are axially spaced from each other with axially adjacent said barbs being spaced from each other by a distance approximately equal to the extent that each said barb extends radially outward from said channel.

5,358,013

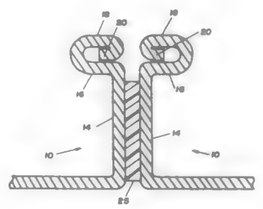
DEFLECTION-RESISTANT SAFETY FLANGE FOR INTEGRALLY-FLANGED DUCT SECTIONS

Lamont R. McClain, St. Louis, Mo., assignor to Engel Industries, Inc., St. Louis, Mo.

Filed Sep. 24, 1993, Ser. No. 126,491

Int. Cl.[5] F16L *23/00, 25/00*

U.S. Cl. 138—109 2 Claims



1. For forming on a conventional progressive roll-forming equipment,

an integral sheet metal safety flange for duct sections, comprising

a first flange portion formed outward from and substantially perpendicular to the surface of such duct section,

a second flange portion continuing from said first portion and bent back substantially parallel to the duct section surface, the extent of said second flange portion being substantially less than that of said first flange portion,

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a third flange portion of substantially the same extent as said second flange portion and being bent reversedly to said second portion and spaced therefrom not less than the thickness of such sheet metal, and

a fourth flange portion bent reversedly inward from said third portion and presented substantially adjacent to an outer surface part of said second portion, said fourth flange portion constituting a margin of the sheet metal from which said flange is formed, the edge of which margin extends safely towards the reversed bend between said second and third flange portions.

5,358,014

THREE LAYER PAPER MAKING DRAINAGE FABRIC

Walter Kovar, Vienna, Austria, assignor to Hutter & Schrantz AG, Vienna, Austria

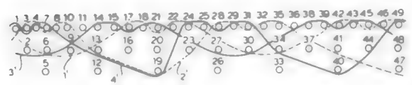
PCT No. PCT/AT91/00060, § 371 Date Oct. 20, 1992, § 102(e) Date Oct. 20, 1992, PCT Pub. No. WO91/17292, PCT Pub. Date Nov. 14, 1991

PCT Filed Apr. 23, 1991, Ser. No. 941,426

Claims priority, application Austria, May 8, 1990, 1037/90

Int. Cl.[5] D03D *13/00, 15/00, 11/00*

U.S. Cl. 139—383 A 4 Claims



1. A drainage fabric for a papermaking machine, comprising:

a warp consisting of a multiplicity of synthetic monofilament warp threads; and

a weft interwoven with said warp and consisting of a top layer of weft threads, a middle layer of weft threads and a bottom layer of weft threads, said warp threads tying said weft threads in groups and including a set of warp threads running only through said top and middle layers of weft threads and other warp threads running through all of said top, middle and bottom layers, each weft thread of said bottom layer being engaged by two nonadjacent warp threads from below and pulled upwardly toward warp threads of said set of warp threads located between weft threads of said middle layer and said bottom layer and acting as a support for the weft threads of said bottom layer which are pulled upwardly.

5,358,015

DRAW-THROUGH GRIPPER FOR THE INSERTION OF AN AUXILIARY WEFT THREAD INTO A SEAM-WEAVING SHED

Hans E. Hacker; Peter Defranceski, and Norbert Kohfink, all of Reutlingen, Fed. Rep. of Germany, assignors to Novatech GmbH Siebe und Technologie fur Papier, Reutlingen, Fed. Rep. of Germany

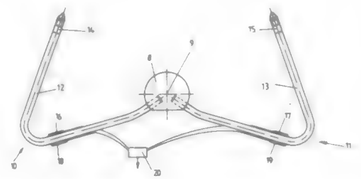
Filed Nov. 10, 1993, Ser. No. 149,729

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1992, 9215498

Int. Cl.[5] D03D *47/16*

U.S. Cl. 139—383 AA 4 Claims

1. A draw-through gripper for the gripping and inserting of an auxiliary weft thread into a seam-weaving shed in a seam-weaving machine comprises a movable gripper arm having a gripping collet at one end for grasping the auxiliary weft thread and measuring means for measuring the mechanical



stress occurring inside the gripper arm mounted on the gripper arm intermediate opposite ends thereof.

5,358,016

APPARATUS FOR MAKING CABLE HARNESSES

Herbert Emmerich, Waiblingen, Fed. Rep. of Germany, assignor to Fraunhofner-Gesellschaft zur Forderung der Angewandten, Fed. Rep. of Germany

PCT No. PCT/DE91/00100, § 371 Date Sep. 10, 1992, § 102(e) Date Sep. 10, 1992, PCT Pub. No. WO91/12708, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 7, 1991, Ser. No. 917,147

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1990, 4003995

Int. Cl.[5] B21F *27/12*

U.S. Cl. 140—92.1 7 Claims

1. An apparatus for making cable harnesses, comprising:

a formboard onto which routing devices such as connector housing cavities, routing aids and the like can be attached for holding and guiding wires during assembly thereof into a cable harness,

and a slip-off plate disposed between the formboard and a cable harness during assembly thereof, said slipoff plate including holes for accommodating attachment of said routing devices to the formboard,

and a slip-off plate moving apparatus for moving the slip-off plate away from the formboard to thereby eject an assembled cable harness from the cable routing devices,

wherein at least one side of said formboard has connector housing cavities from which the connector housing can be ejected;.

and further comprising piston/cylinder units separate from the slip-off plate moving apparatus and operatively coupled to the connector housing to eject the connector housing from the connector housing cavities.

5,358,017

METHOD, SYSTEM AND APPARATUS FOR FORMING LEADS FOR SEMICONDUCTORS PACKAGES

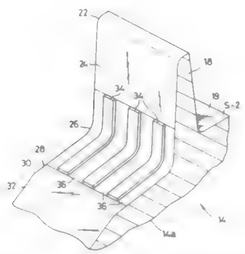
Shuji Ide, Reno, Nev., assignor to Y.K.C. Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1993, Ser. No. 54,438

Claims priority, application Japan, Aug. 25, 1992, 4-247211

Int. Cl.[5] B21F *45/00*

U.S. Cl. 140—105 5 Claims



1. A forming die of a bending device for bending external leads of a semiconductor package, comprising grooves into which said external leads are respectively inserted having lead confronting surfaces of a satin finish.

5,358,018

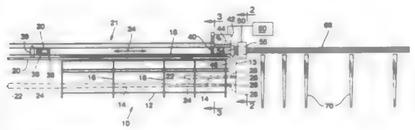
POLE FRAMING APPARATUS

John C. Holbert, 5815 SW. West Hills Rd., Corvallis, Oreg. 97330

Filed Oct. 7, 1993, Ser. No. 134,553

Int. Cl.[5] B27C *9/00*; B27M *1/08*

U.S. Cl. 144—1 A 11 Claims



1. A pole framing apparatus comprising:

a motor operated rotatable tool holder ring, and power actuated tools mounted to the ring;

a longitudinal feed station for lengthwise feeding of unframed poles through the tool holder ring; and

a programmable control controlling rotation of the ring, feeding of the poles through the ring and actuation of the tools, and a program provided for said programmable control to feed poles in a selected manner through the tool holder ring, to rotate the tool holder ring to selected rotative positions, and to operate selective ones of said tools for performing framing operations in accordance with a determined framing pattern.

5,358,019

POCKET CARD HOLDER WITH MONEY CLIP

Yancey E. Sumner, III, 7860 SW 129 Ter., Miami, Fla. 33156

Continuation of Ser. No. 643,837, Jan. 22, 1991, abandoned. This application Oct. 14, 1993, Ser. No. 136,047

Int. Cl.[5] A45C *11/18*

U.S. Cl. 150—147 1 Claim

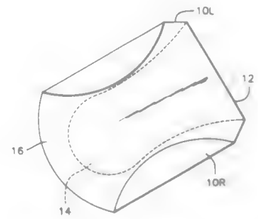
1. A one-piece holder having a size and shape adapted to securely and simultaneously retain both flexible, foldable paper currency and substantially inflexible and rigid plastic cards, said one-piece holder comprising:

a solid longitudinally extending base having a first continuous substantially planar surface and a second, opposed continuous substantially planar surface, two opposed longitudinally extending side edges and two transversely extending end edges, said two end edges extending between respective ends of said longitudinally extending side edges,

a resilient retaining member integrally formed with said base, said resilient retaining member extending from one of said two transversely extending end edges over said first continuous substantially planar surface, said resilient retaining member being biased toward said first continuous substantially planar surface,

a leading edge of said resilient retaining member being continuously curved for avoiding snagging and tearing of clothing, and

two substantially rigid retaining members integrally formed with said base and extending along substantially an entire length of said two opposed longitudinally extending side edges,



said two substantially rigid retaining members each including a first portion extending from said second, opposed continuous substantially planar surface, defining a plane extending substantially perpendicular to said second, opposed continuous substantially planar surface, and a second portion extending from said first portion, defining a plane extending substantially perpendicular to said first portion and extending substantially parallel to said second, opposed continuous substantially planar surface,

said second portion of said two substantially rigid retaining members terminating in continuously curved edges extending over said second, opposed continuous substantially planar surface for avoiding snagging and tearing of clothing, and

said two substantially rigid retaining members defining a retaining channel between said second, opposed continuous planar surface and said two substantially rigid retaining members of a width substantially equal to a width of a credit card.

5,358,020

MOTORCYCLE TIRE WITH NARROW LONGITUDINAL GROOVES

Johann Haas, Munich, Fed. Rep. of Germany, assignor to Metzeler Reifen GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 16, 1993, Ser. No. 33,153

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1992, 4208391

Int. Cl.[5] B60C *11/08*

U.S. Cl. 152—209 R 6 Claims

1. A motorcycle tire, comprising:

a tire body having a running surface with a tire tread and a longitudinal axis defined in a direction of travel;

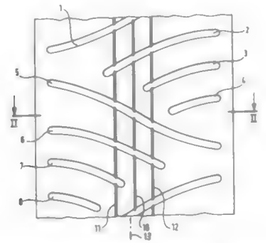
said tire tread having a plurality of main grooves formed therein extending at an angle relative to the longitudinal axis and defining a plurality of tread blocks;

said tire tread having three mutually parallel, longitudinal grooves formed therein extending circumferentially

VOL 1167 ISS 4 OCT 25 1994 UMI

around said tire body, said longitudinal grooves being narrower than said main grooves;

said longitudinal grooves being formed in said running surface symmetrically about the longitudinal axis and each of



said longitudinal grooves intersecting at least some of said main grooves; and

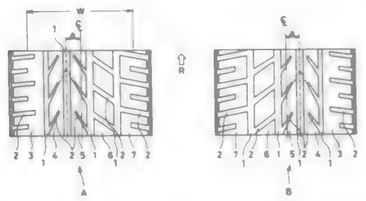
said main grooves having a given depth and said longitudinal grooves having a depth being smaller than said given depth.

5,358,021

PNEUMATIC TIRE HAVING ASYMMETRIC TREAD PATTERN

Motohide Takasugi; Kazuyoshi Saneto, and Masatoshi Kuwajima, all of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,689
Claims priority, application Japan, May 29, 1992, 4-138563
Int. Cl.[5] B60C *11/04*
U.S. Cl. 152—209 A 3 Claims



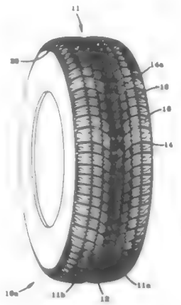
1. A pneumatic tire having an asymmetric tread pattern in which a shoulder rib continuing in a tire circumferential direction is disposed on a tread surface at a shoulder end portion on the outer side of a vehicle when said tire is fitted to the vehicle, and block lines each comprising a plurality blocks are disposed at a shoulder end portion on the inner side of the vehicle, said pneumatic tire further including paired: left and right sub-grooves extending in a tire width-wise direction disposed on the portion of said tire more inward than said shoulder rib at a predetermined pitch in the tire circumferential direction, said paired left and right sub-grooves positioned within respective left and right further ribs in a herringbone pattern widening in a direction opposite to a rotating direction of said tire, apexes of said herringbone pattern being positioned on the outer side of said tire with respect to a tire equator line, said paired right and left sub-grooves being mutually discontinuous at said apexes and open at their other ends to circumferentially extending main grooves; and a further main groove extending in the tire circumferential direction and disposed between said further ribs at said apex portions of said herringbone pattern of said sub-grooves.

5,358,022

PNEUMATIC TIRE HAVING IMPROVED WET TRACTION

William E. Glover, Akron; John S. Attinello, Hartville, and Samuel P. Landers, Uniontown, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 955,961, Oct. 2, 1992, which is a continuation-in-part of Ser. No. 666,811, Mar. 18, 1991. This application Jan. 18, 1994, Ser. No. 181,727
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[5] B60C *11/11*
U.S. Cl. 152—209 R 16 Claims



1. A pneumatic tire for use on paved surfaces having an aspect ratio of 0.35 to 0.80 comprising a pair of annular beads, carcass plies wrapped around said annular beads, a tread disposed over said carcass plies in a crown area of said tire, and sidewalls disposed between said tread and said beads, wherein said tread is directional and has a footprint net-to-gross ratio of 50% to 70% and at least one annular aqua channel having a width of about 10% to 22% of total treadwidth based on the footprint of the tire and a depth of 78% to 100% of total tread depth and a curvate U-shape, and wherein lateral grooves have a leading end initiating within said annular aqua channel and a trailing end terminating in a shoulder area of said tire, said lateral groove intersecting circumferential grooves between said annular aqua channel and said shoulder, intersections of circumferential grooves and lateral grooves defining lugs, wherein individual lugs are traversed by slots which improve traction and contain tie bars which stabilize the lug, and wherein the tread depth is about 0.76 to 1 cm (0.30 to 0.42 in) and the ratio of tie bar thickness to tread depth is 0.36 to 0.46, and wherein said footprint comprises two distinct contact patches, said two contact patches each having a substantially trapezoidal shape wherein said two contact patches are oriented longer-base to longer-base.

5,358,023

ELECTRICALLY OPERATED EXPANDABLE JAMB FOR OPERABLE WALLS

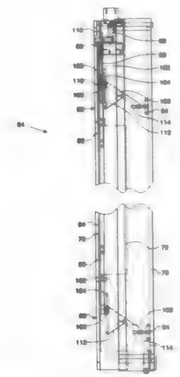
N. Douglas Owens, Lynn, Ind., assignor to Modernfold, Inc., New Castle, Ind.

Filed Mar. 8, 1993, Ser. No. 27,377
Int. Cl.[5] E05D *15/26*
U.S. Cl. 160—199 15 Claims

1. An expandable wall jamb for an operable wall system, comprising:

a first wall section for connection to a stationary wall, the first wall section having first and second opposing surfaces and an outward edge, the outward edge disposed opposite the stationary wall;

a second wall section having a sealing edge and first and second opposing surfaces substantially parallel to the first and second opposing surfaces of the first wall section, the second wall section movable with respect to the first wall section between a retracted position in which the sealing edge of the second wall section is proximate the outward edge of the first wall section and a sealed position in which the sealing edge of the second wall section is extended away from the outward edge of the first wall section for sealing engagement with a structure spaced from the sealing edge of the second wall section when the second wall section is in its retracted position;



an actuator operatively connected to the first and second wall sections, the actuator movable between a first position and a second position such that when the actuator is in the first position, the second wall section is in the retracted position and when the actuator is in the second position, the second wall section is in the sealed position; and

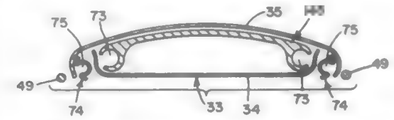
a motor operatively connected to the actuator such that the actuator moves between the first and second actuator positions responsive to the operation of the motor.

5,358,024

WEB COVERED VERTICAL BLIND SLAT ASSEMBLIES

Paul R. Schwaegerle, Oberlin, Ohio, assignor to The Geon Company, Independence, Ohio

Continuation of Ser. No. 898,659, Jun. 15, 1992, abandoned, which is a division of Ser. No. 762,036, Sep. 17, 1991, Pat. No. 5,141,042, which is a continuation of Ser. No. 459,890, Jan. 20, 1990, abandoned. This application Sep. 13, 1993, Ser. No. 120,312
Int. Cl.[5] E06B *9/00*
U.S. Cl. 160—236 4 Claims



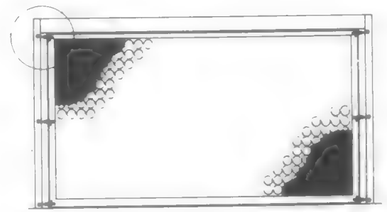
1. An elongate substantially rectangular louver comprising a removable louver slat insert and first and second webs attached thereto wherein said louver slat insert is defined by smooth and continuous lateral edges and smooth inward and outward faces, and wherein said webs attached thereto form a cylindrical web having an inner circumference similar to the outer circumference taken as a smooth line drawn around the inner periphery of said webs and said outer circumference taken as a smooth line around the outer extremes of said louver slat insert, wherein said webs are brought under tension by engaging attachment means on said louver slat insert, said attachment means comprising two opposing, lateral longitudinal inner receiving channels on said louver slat insert for accepting said first web, two inner insert beads each containing an outer longitudinal channel, and two outer insert beads, wherein said inner insert beads attach lateral portions of said first web covering said inward face, the lateral portions removably held within said inner receiving channels, and each said outer insert beads attach lateral portions of said second web covering said outward face, said outward web removably held within said outer longitudinal channels.

5,358,025

FABRIC GARAGE ENCLOSURE

Cliff Wood, 2728 Hop Ranch Rd., Union City, Calif. 94587

Filed Feb. 26, 1993, Ser. No. 23,892
Int. Cl.[5] E06B *9/00*
U.S. Cl. 160—368.1 5 Claims



1. An apparatus for enclosure of the main opening of a garage comprising:

a substantially rectangular non-rigid fabric portion, comprising inner and outer superimposed fabric elements joined together at at least a portion of peripheries thereof, said inner element is of a light color with a plurality of small holes, the outer element being of a color which is dark relative to the color of said inner element and having a plurality of holes large relative to the holes in said inner element, said fabric portion being adapted to fit over the frame structure of the main opening of the garage door;

a plurality of adjustable attachment means, located along the vertical and horizontal sides of the fabric portion, to adjustably secure said fabric portion to the frame structure of the main opening of a garage.

5,358,026

INVESTMENT CASTING PROCESS

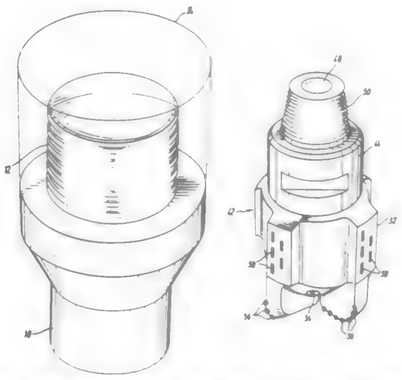
Neil A. A. Simpson, Burn of Daff Farm, Downies, Portlethen, Aberdeen AB1 4QX, United Kingdom

PCT No. PCT/GB89/00881, § 371 Date Apr. 2, 1991, § 102(e) Date Apr. 2, 1991, PCT Pub. No. WO90/01384, PCT Pub. Date Feb. 22, 1990
Continuation of Ser. No. 52,862, Apr. 26, 1993, abandoned, which is a continuation of Ser. No. 669,420, Apr. 2, 1991, abandoned. This PCT application Aug. 2, 1989, Ser. No. 178,940
Claims priority, application United Kingdom, Aug. 2, 1988, 8818382.7; Sep. 14, 1988, 8821521.5
Int. Cl.[5] B22D *19/00*; B22C *9/04*
U.S. Cl. 164—98 2 Claims

1. A method of casting a drill bit or corehead having a cutting part and a shank, said method comprising the steps of providing a shank element which forms at least the basis of said shank, the shank element being of a relatively less hard material, buttering the shank element with metallic coating selected from weld material and spray metal deposit each of lower melting temperature than that of a relatively hard material subsequently to form an outer shell of the cutting part of the drill bit or corehead, providing a ceramic mold of said cutting

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part, suspending the pre-buttered shank element in the ceramic mold, pre-heating the ceramic mold and the shank element to a predetermined casting temperature, and casting the relatively hard material around the shank element to form a relatively



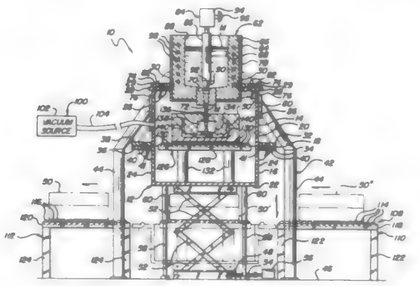
hard outer shell around the shank element, said step of casting comprising the imposition of conditions on said casting step which cause the relatively hard material during casting thereof to produce localized melting of said metallic coating to produce fusion bonding between said shell and said shank element.

5,358,027

VACUUM-ASSISTED GRAVITY POUR CASTING APPARATUS

Douglas R. Callihan, Lebanon; Mark A. Cassel, Hummelstown; Charles H. Kinloch, Cornwall, all of Pa., and Jesse M. Raver, Trenton, Mich., assignors to CMI International, Southfield, Mich.

Filed Mar. 5, 1993, Ser. No. 26,699
Int. Cl.[5] B22D *18/00*
U.S. Cl. 164—256 **20 Claims**



1. An apparatus for casting molten metal into molds, said apparatus comprising:

vacuum enclosure means (12) having separable top (14) and bottom (16) enclosure portions defining a chamber (20) therebetween for enclosing a casting mold, said top enclosure portion (14) having an inlet opening (30) therein;

support means (42) for supporting said top enclosure portion (14) in fixed position above said bottom enclosure portion (16);

means (48) for moving said bottom enclosure portion (16) in relation to said top enclosure portion (14) for selectively opening and closing said enclosure means (12) for enabling casting molds to be cycled into add out of said chamber (20);

vacuum means (100) communicating with said enclosure means (12) for creating a vacuum pressure within said chamber (20); and

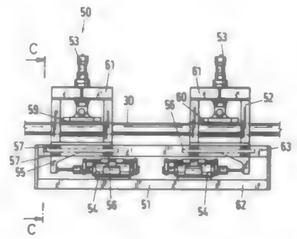
a filling vessel (62) mounted on said top enclosure portion (14) and having an upper portion (78) thereof supported outside of said chamber (20) and exposed to atmosphere and a lower portion (80) extending through said opening (30) into said chamber (20) and having a nozzle (70) for delivering molten metal (M) into said chamber (20) from said vessel (62) for casting within a cavity of the mold, said vessel (62) sealingly engaging said top enclosure portion (14) closing off said opening (30) and perfecting a gas-tight seal between said vessel (62) and said top enclosure portion (14).

5,358,028

HORIZONTAL MULTIPLE-STRAND CONTINUOUS CASTING PLANT AND METHOD OF OPERATING THE PLANT

Franz Keutgen; Heinz-Josef Leuwer, both of Lissendorf; Dieter Perings, Büdesheim; Joachim Von Schnakenburg, Hillesheim; Dietmar Zebrowski, Straelen-Herongen; Peter Stadler, Netphen, and Rüdiger Winterhager, Freudenberg, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 10, 1993, Ser. No. 75,130
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1992, 4219335
Int. Cl.[5] B22D *11/128, 11/20, 11/124*
U.S. Cl. 164—478 **10 Claims**



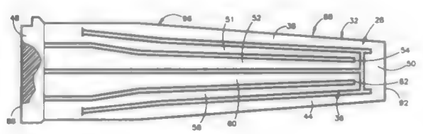
1. A method of operating a horizontal multiple-strand continuous casting plant for producing strands of iron material, the casting plant including a distributor with a plurality of molds, and a strand drawing unit including first and second clamping devices for each strand, the clamping devices being alternatingly movable for clamping the strands for carrying out a pulling movement from an initial position for pulling the strands out of the molds and for releasing the strands for carrying out a return movement back into the initial position, as one clamping device carries out a pulling movement the other carries out a return movement, wherein the strands are clamped individually by the clamping devices during the pulling movements, the method comprising, in the event of a disruption in one of the molds during casting, actuating the first clamping device so as to clamp in a frictionally engaging manner the strand being cast by the disrupted mold during the return movement to carry out a back pushing movement, and disengaging the second clamping device from the strand during the pulling movement.

5,358,029

METHOD AND APPARATUS FOR USE IN PREDICTING FLOW OF FLUID THROUGH PASSAGES IN A PROPOSED AIRFOIL

Gurmohan S. Baveja, Lakewood; Robert M. Brozier, Mentor; Albert C. Hoekenga, North Canton, all of Ohio, and Francis J. O'Connor, Barrington, R.I., assignors to PCC Airfoils, Inc., Cleveland, Ohio

Filed Jul. 29, 1993, Ser. No. 98,969
Int. Cl.[5] B22C *9/00*; B22D *23/00*
U.S. Cl. 164—516 **15 Claims**



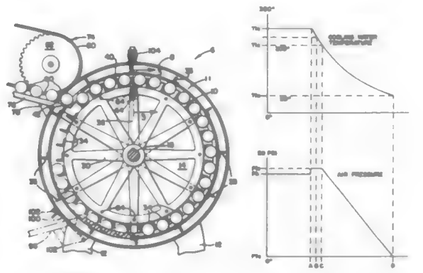
1. A method comprising the steps of covering a pattern of a cooling fluid passage in a proposed airfoil with a layer to form a covering over the pattern, removing the pattern from the covering to form a hollow article having an interior passage having a configuration corresponding to the configuration of the cooling fluid passage in the proposed airfoil and an exterior with a configuration which is substantially different than the configuration of the proposed airfoil, conducting a flow of fluid through the passage in the covering, and determining a characteristic which is a function of fluid flow through the passage in the covering.

5,358,030

METHOD FOR MANAGING RETORT OVER-PRESSURE DURING PRESSURE COOLING

Joost Veltman, Santa Cruz, and Richard W. Ripley, Coarsegold, both of Calif., assignors to FMC Corporation, Chicago, Ill.

Filed May 8, 1992, Ser. No. 880,628
Int. Cl.[5] A61L *2/04, 2/06*; A23L *3/04, 3/06*
U.S. Cl. 165—1 **10 Claims**



1. A method, wherein $F(T_p, T_{fc}, T_{ic}) = (T_p - T_{fc})/T_{ic} - T_{fc})$.

10. A method for pressurizing during cool down an interior of a batch retort vessel and with a final cooling pressure of P_{fc}, which has been hated by steam to a heating temperature and a heating pressure P_h, comprising the steps of:

specifying an initial cooling temperature T_{ic};

specifying a final cooling temperature T_{fc};

providing a non-condensable gas to the interior of the vessel, causing the pressure inside the vessel to be elevated to an initial cooling pressure P_{ic};

continuously providing the non-condensable gas to the interior of the vessel to maintain the pressure inside the vessel at the initial cooling pressure;

introducing a flow of coolant into the vessel;

draining the coolant from the vessel;

measuring the temperature T_p of the coolant drained from the vessel; and

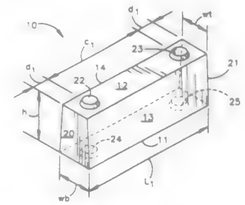
regulating the pressure in the vessel P_p, so that $P_y = P_{fc} + F(T_p, T_{fc}, T_{ic}) \times (P_{ic} - P_{fc})$ when the temperature T_p of the coolant drained from the vessel is less than or equal to the initial cooling temperature T_{ic} and wherein $F(T_p, T_{fc}, T_{ic})$ is a function of T_p, T_{fc}, and T_{ic} and wherein if $T_{fc} \leqq T_p \leqq T_{ic}$ then $0 \leqq F(T_p, T_{fc}, t_{ic}) \leqq 1$ wherein $F(T_p, T_{fc}, T_{ic}) = [(T_p - T_{fc})/(T_{ic} - T_{fc})]^2$.

5,358,031

INTERLOCKING CHECKER BRICKS AND METHOD AND APPARATUS FOR MAKING

Jack Hyde, Pittsburgh, Pa., assignor to North American Refractories Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 899,873, Jun. 12, 1992, Pat. No. 5,299,629. This application Apr. 16, 1993, Ser. No. 48,981
The portion of the term of this patent subsequent to Apr. 5, 2011, has been disclaimed.
Int. Cl.[5] F28D *17/02*
U.S. Cl. 165—9.1 **18 Claims**



1. A checker brick comprising:

a. spaced, substantially rectangular and parallel top and base surfaces;

b. spaced side walls each extending from the top to the base surface;

c. spaced end walls each having a generally trapezoidal shape, the end walls extending from side wall to side wall and from the top to the base surface; and

d. a selected one of said top and base surfaces including at least two projections and the other of said top and base surfaces including at least two mounting recesses, said recesses and projections mating with the like projections and like recesses of other bricks when multiple bricks are stacked atop one another in an interlocking relationship, the total longitudinal center-to-center distances between projections and between recesses being at least equal to twice the distance from each projection and each recess to its nearest end wall.

5,358,032

LSI PACKAGE COOLING HEAT SINK, METHOD OF MANUFACTURING THE SAME AND LSI PACKAGE TO WHICH THE HEAT SINK IS MOUNTED

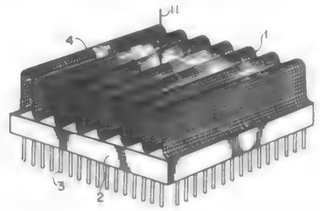
Masatsugu Arai; Akiomi Kohno, both of Ibaraki; Toshio Hatada, Tsuchiura; Yoshihiro Kondo, Hadano; Toshihiro Komatsu, Ibaraki; Kanji Otsuka, Higashiyamoto; Yuji Shirai, Kodaira, and Susumu Iwai, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 4, 1993, Ser. No. 13,423
Claims priority, application Japan, Feb. 5, 1992, 4-019786
Int. Cl.[5] F28F *7/00*
U.S. Cl. 165—80.3 **10 Claims**

1. An LSI package cooling heat sink of a type in which a fluid is made to flow through the heat sink adapted to be mounted on an LSI package, said heat sink comprising fins

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attached to a heat diffusion plate, said fins being formed of a net repeatedly bent with predetermined width so that bent portions of the net are spaced apart from each other with predetermined interval without contacting each other, one of width-wise ends of the bent portions being joined to said heat diffusion plate, said net being formed of first thin wires and second thin wires both of which first and second thin wires are



intersecting with each other, each of said first thin wires being disposed in parallel to said heat diffusion plate, each of said first thin wires being spaced apart, from adjacent first thin wires with a first space, each of said second thin wires intersecting with said first thin wires being spaced apart from adjacent second thin wires with a second space smaller than said first space.

5,358,033

HEAT PIPE, WITH A COOLED BUBBLE TRAP

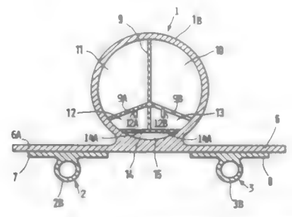
Reinhard Schlitt, Bremen, Fed. Rep. of Germany, assignor to ERNO Raumfahrttechnik GmbH, Bremen, Fed. Rep. of Germany

Filed Nov. 29, 1993, Ser. No. 158,422

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1992, 4240081

Int. Cl.[5] F28D *15/02*

U.S. Cl. 165—104.26 **16 Claims**



1. A heat pipe structure comprising a main heat pipe (1) having a first heat absorbing evaporator end (1B) and a first heat discharging condenser end (1A), at least one auxiliary heat pipe (2 or 3) having a second heat absorbing evaporator end (2B) and a second heat discharging condenser end (2A), said main heat pipe having at least one liquid flow channel for liquid evaporant and at least one vapor flow channel for vaporized evaporant, a first heat exchanger (4) in thermal contact with said first heat discharging condenser end (1A) of said main heat pipe, thermal conductor means (6) thermally interconnecting said first and second heat absorbing evaporator ends of said main heat pipe and of said auxiliary heat pipe, a second heat exchanger (5) thermally connected to said second heat discharging condenser end of said auxiliary heat pipe, thermal insulator means (S) thermally insulating said first (4) and second (5) heat exchangers from each other, and a bubble trap (15) arranged for collecting gas and/or vapor bubbles from said liquid flow channel of said main heat pipe, said auxiliary heat pipe cooling said bubble trap for removing said bubbles.

5,358,034

HEAT EXCHANGER

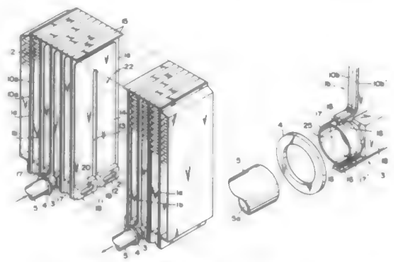
Kunihiko Nishishita; Tadaaki Ishikawa; Yasuyuki Nagakura, and Takashi Sugita, all of Konan, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Sep. 23, 1993, Ser. No. 125,309

Claims priority, application Japan, Sep. 25, 1992, 4-072942[U]; Nov. 27, 1992, 4-087664[U]; Apr. 2, 1993, 5-022159[U]; Apr. 30, 1993, 5-028639[U]

Int. Cl.[5] F78D *1/03*

U.S. Cl. 165—153 **14 Claims**



1. A heat-exchanger comprising:

a plurality of tubular elements stacked one upon the other, each of said tubular elements including two plates joined together at a seam running therebetween, said plates having passage-forming protrusions defining a passage between said plates, and said plates having tank-forming protrusions defining a pair of tanks, said tanks being connected by said passage, the tank-forming protrusions of said plates being aligned in respective rows in the direction in which the tubular elements are stacked, and respective ones of the tanks defined by said tank-forming protrusions in each said row being open to each other;

fins interposed between adjacent ones of said tubular elements and contacting the passage-forming protrusions of the plates of said tubular elements;

inlet/outlet units each comprising a barrel-shaped element protruding from and open to one of the tanks of a respective one of said tubular elements, the barrel-shaped element including respective parts of the plates of said respective one of said tubular elements such that said parts of the barrel-shaped element are located on opposite sides of the seam running between the plates;

inlet/outlet pipes fitted coaxially in contact with and joined to the barrel-shaped elements, respectively; and

reinforcing means for preventing the parts of said barrel-shaped elements from being deformed as the inlet/outlet pipes are fitted to said barrel-shaped elements during the assembly of the heat exchanger, whereby the inlet/outlet pipes remain in contact with the barrel-shaped elements of the inlet/outlet units, respectively, after the plates of each said respective one of said tubular elements have been joined together along the seam running between the plates thereof.

5,358,035

CONTROL CARTRIDGE FOR CONTROLLING A SAFETY VALVE IN AN OPERATING WELL

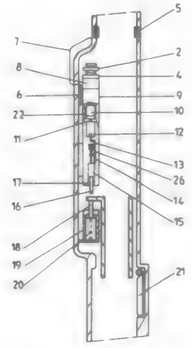
Richard Grudzinski, Vineuil St. Firmin, France, assignor to GEO Research, Roissy-Charles-de-Gaulle, France

Filed Sep. 7, 1993, Ser. No. 117,536

Claims priority, application France, Sep. 7, 1992, 92 10647

Int. Cl.[5] E21B *34/06, 44/00*

U.S. Cl. 166—53 **30 Claims**



1. An operating well, having: well tubing;

a safety valve in said well tubing; and

a control cartridge for controlling the safety valve, said control cartridge comprising:

a cartridge housing mounted in said well tubing;

a receiver for receiving transmitted control signals;

a power supply provided in said housing;

an electronic control system in said housing connected to both said receiver and said power supply;

a hydraulically operated actuator for controlling the safety valve; and

a source of hydraulic fluid in said housing connected with said hydraulically operated actuator for operating said actuator, said source of hydraulic fluid being connected to said power supply.

16. A control cartridge for use in controlling a safety valve in an operating well, comprising:

a cartridge housing;

a receiver for receiving transmitted control signals;

a power supply provided in said housing;

an electronic control system in said housing connected to both said receiver and said power supply;

a hydraulically operated actuator for controlling the safety valve; and

a source of hydraulic fluid in said housing connected with said hydraulically operated actuator for operating said actuator, said source of hydraulic fluid being connected to said power supply.

5,358,036

SAFETY DISC BRAKE ASSEMBLY

Robert A. R. Mills, 8903 Baylor Cr. S.W., Calgary, Alberta, Canada T2V 3N5

Filed Jul. 15, 1993, Ser. No. 92,228

Claims priority, application Canada, Jul. 16, 1992, 2074013

Int. Cl.[5] F04B *49/10*

U.S. Cl. 166—68.5 **20 Claims**

10. A self-regulating disc brake assembly for controllably releasing reactive torque due to torsion stored in a drive string for a down hole submersible pump in a well, comprising:

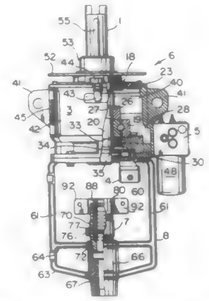
a shaft coupled with the drive string and rotatable therewith;

a fluid reservoir surrounding and rotatably supporting the shaft;

a coupling for connecting the fluid reservoir to a wellhead assembly of the well;

a brake disc affixed to the shaft and rotatable therewith;

a fluid actuated brake mechanism adapted to engage the brake disc and retard rotation of the brake disc, and consequently retard rotation of the shaft and the drive string;



a bi-directional pump for pumping fluid from the reservoir, the pump being driven by a gear affixed to the shaft; and

a control manifold for directing the fluid from the pump back to the reservoir when the drive string is driven in a direction to drive the down hole submersible pump, and for directing fluid to the brake mechanism when the drive string is no longer driven and reactive torque is released from the drive string to turn the drive string in an opposite direction.

5,358,037

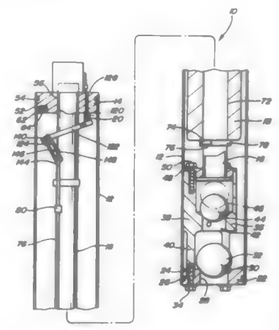
FLOAT OPERATED PNEUMATIC PUMP

David H. Edwards, Ann Arbor; Kevin L. Newcomer, Monroe, and K. Lynn Niehaus, Manchester, all of Mich., assignors to QED Environmental Systems, Inc., Ann Arbor, Mich.

Filed Mar. 29, 1993, Ser. No. 38,835

Int. Cl.[5] E21B *43/00*

U.S. Cl. 166—105 **10 Claims**



1. A pump for directing liquid out of a well, said pump comprising:

an outer tube forming an outer chamber therein;

an inner tube forming an obstruction free inner chamber therein, said inner tube disposed within said outer chamber of said outer tube;

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first inlet means at a first end of said outer tube for permitting liquids to enter said outer chamber;
second inlet means at a first end of said inner tube for permitting liquids to enter said inner chamber;
a discharge housing at a second end of said inner and outer tubes, said discharge housing having a fluid discharge port in communication with said inner chamber of said inner tube;
a gas inlet valve disposed within said discharge housing for selectively admitting in a pump discharge mode and blocking in a pump refill mode a pressurized gas into said outer chamber;
a gas discharge valve disposed within said discharge housing for selectively venting in said pump refill mode and blocking in said pump discharge mode said gas within said outer chamber;
a float slidably disposed within said outer chamber, said float being buoyant in said liquid wherein said float slides from said first end to said second end of said outer tube in response to the level of said liquid in said outer chamber;
actuating means responsive to the position of said float for actuating said gas inlet valve and said gas discharge valve between said pump refill mode and said pump discharge mode, wherein said liquid is admitted into said outer chamber during said pump refill mode and said liquid is forced from said outer chamber through said obstruction free inner chamber during said pump discharge mode, said actuating means comprising:
an actuator rod disposed in said outer chamber, said actuator rod movable by said float;
an actuation arm disposed in said outer chamber, said actuation arm off-center pivotably secured at a first end thereof to said discharge housing and at a second end thereof to said actuator rod, said actuation arm movable by said float between an upward position and a downward position, said actuation arm operable to move said gas inlet valve and said gas discharge valve into said pump refill mode with a load significantly greater than the buoyancy load on said float when in said upward position and operable to move said gas inlet valve and said gas discharge valve into said pump discharge mode when in said downward position;
a first attracting magnet attached to said second end of said actuation arm;
a second attracting magnet disposed within said pump, said first and second attracting magnets operable to attract each other and hold said actuation arm in said upward position, said float operable to separate said first and second attracting magnets and move said actuation arm to said downward position.

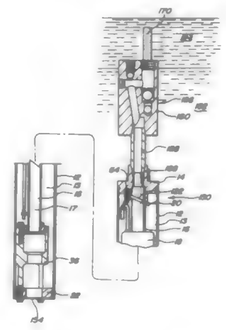
5,358,038

FLOAT OPERATED PNEUMATIC PUMP

David H. Edwards, Ann Arbor; Kevin L. Newcomer, Monroe, and K. Lynn Niehaus, Manchester, all of Mich., assignors to QED Environmental Systems, Inc., Ann Arbor, Mich.

Continuation-in-part of Ser. No. 38,835, Mar. 29, 1993. This application Sep. 3, 1993, Ser. No. 116,288
Int. Cl.[5] E21B *43/00*; F04F *1/06*
U.S. Cl. 166—105 **13 Claims**

1. Apparatus for recovery of liquid hydrocarbons residing as a layer on groundwater below ground level and adapted to be coupled to a waste conduit connected to a waste holding tank remote thereto, said apparatus comprising:
a pump housing having upper and lower end portions with the upper end portion being adapted to be positioned in the interface formed between the groundwater and the layer of hydrocarbons, the housing having its opposite end portions closed and defining interconnected first and second interior chambers for collecting the hydrocarbons,
a float mounted in one of said interior chambers for movement between a first position adjacent the lower end portion of the housing and defining a chamber refill mode and a second position adjacent the upper end portion of the housing and defining a chamber discharge mode,
discharge valve means, including a valve body connected to said upper end portion, for selectively permitting hydrocarbons to enter said one chamber, in the chamber refill mode, and be discharged from said one chamber, in the chamber discharge mode, said discharge valve means comprising
a first passage for communicating hydrocarbons from said layer into the valve body,
first check valve means, in said first passage, for permitting fluid to flow to said one chamber, in the chamber refill mode, and preventing return fluid flow from said one chamber, in the chamber discharge mode,



a second passage for communicating hydrocarbons between said first passage and said one chamber,
a third passage for communicating discharged hydrocarbons from said second passage to said waste conduit,
second check valve means, in said third passage, for permitting fluid to flow from said one chamber, in the chamber discharge mode, and preventing return fluid flow from the waste conduit to said one chamber, and
inlet valve means for supplying compressed gas to said one chamber when said float is in said second position whereby to force the hydrocarbons from said one chamber into the other of said interior chambers and depressurizing said one chamber when said float is in said first position whereby to allow said interior chambers to refill.

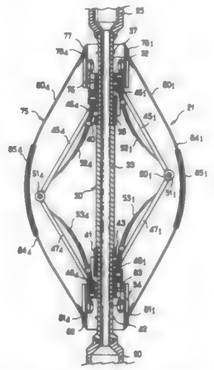
5,358,039

CENTRALIZER FOR A BOREHOLE

Hugh E. Fordham, Sarawak, Malaysia, assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Nov. 4, 1993, Ser. No. 148,140
Claims priority, application France, Nov. 5, 1992, 92 13304
Int. Cl.[5] E21B *17/00*
U.S. Cl. 166—241.1 **24 Claims**

1. A centralizer for a borehole, the centralizer comprising a main assembly suitable for centering a well tool in casing, said main assembly including: an elongate body; first and second longitudinally spaced-apart supports slidably mounted on the body; hinged arm structures disposed around the body, each structure including a first arm hinged on the first support, a second arm hinged on the second support, and a central hinge disposed between the first and second arms so as to move laterally away from the body when the first and second supports are moved towards each other; and spring means for moving the central hinges laterally away from the body; said centralizer further including an adapter assembly comprising curved spring blades removably hinged on the first and second supports, the lengths of the spring blades being selected so that their central portions are further from the body than the central hinges after the spring blades have been secured to the main assembly, the adapter assembly thus cooperating with the



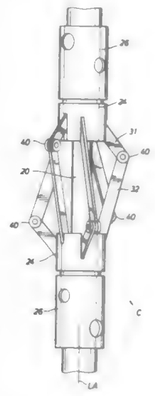
main assembly to form a centralizer which is suitable for centering the well tool in the open hole portion of the borehole.

5,358,040

METHOD AND APPARATUS FOR RUNNING A MECHANICAL ROLLER ARM CENTRALIZER THROUGH RESTRICTED WELL PIPE

Karl S. Kinley, and Charles W. Agee, both of Houston, Tex., assignors to The Kinley Corporation, Houston, Tex.

Filed Jul. 17, 1992, Ser. No. 915,941
Int. Cl.[5] E21B *17/10*
U.S. Cl. 166—241.3 **17 Claims**



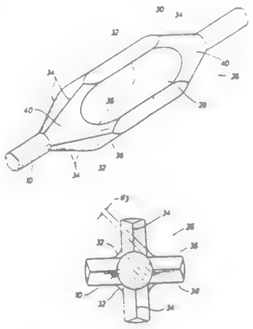
1. A mechanical roller arm centralizer for centering an oil well tool running in a well bore, comprising:
a body portion having walls defining a longitudinal axis;
a plurality of contact points located on centering arms connected to the body and biased to extend outwardly from the body and wherein a first plane normal to the longitudinal axis of the body drawn through a lowermost contact point has a different longitudinal height than a second plane normal to the longitudinal axis of the body drawn through a next lower contact point that is similarly biased and separated circumferentially by at least 80°.

5,358,041

ROD GUIDE

Dan E. O'Hair, Conroe, Tex., assignor to Enterra Patco Oil Field Products, Houston, Tex.

Filed May 26, 1993, Ser. No. 67,730
Int. Cl.[5] E21B *17/10*
U.S. Cl. 166—241.4 **6 Claims**



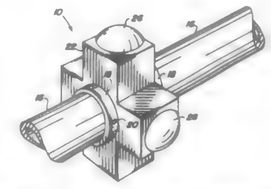
1. A rod guide comprising:
a. a substantially acylindrical body having a substantially star-shaped cross-section in intimate, molded contact with a sucker rod; and
b. at least three blades projecting from the body and molded as a unitary structure with the body such that the body defines a smoothly continuous concave surface between the blades, wherein each blade has first and second axial ends and at least one of said ends of each blade defines a knife blade.

5,358,042

HIGH ANGLE AND HORIZONTAL WELLBORE CENTRALIZER AND METHOD OF USE

Ronald P. Stoltz, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Apr. 7, 1993, Ser. No. 4,320
Int. Cl.[5] F21B *17/10*
U.S. Cl. 166—241.6 **4 Claims**



1. Apparatus for running in a tubing string for carrying out completion activities in a cased high angle or horizontal wellbore of predetermined diameter, comprising:
a tubing string having a known diameter for use in the wellbore;
equipment mounted on the tubing string and extending outwardly therefrom a distance less than the difference between the radii of the tubing string and the wellbore casing;
centralizers mounted on the tubing string at locations upstream and downstream of the equipment; and
the centralizers including spherical rollers which are mounted on unyielding surfaces and extend outwardly from the tubing string a distance substantially equal to the

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difference between the radii of the tubing string and the wellbore casing;

the spherical rollers permitting the tubing string to have both axial and rotational components of movement when being moved through the casing and preventing the equipment mounted on the tubing string from contacting the casing during travel therethrough.

5,358,043

GELLING COMPOSITIONS USEFUL FOR OIL FIELD APPLICATIONS

Ahmad Moradi-Araghi, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 22, 1993, Ser. No. 34,977
Int. Cl.[5] E21B *33/13, 33/138, 43/22, 43/26*
U.S. Cl. 166—270 26 Claims

1. A process for wellbore treatment comprising injecting, into an injection or producing well, a composition which comprises an acrylamide-containing polymer, an iron compound, a ketone compound and a liquid.

5,358,044

DRILLING AND CEMENTING WITH BLAST FURNACE SLAG/SOLUBLE/INSOLUBLE ALCOHOL

Arthur H. Hale, Houston, and Kenneth M. Cowan, Sugar Land, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 27, 1993, Ser. No. 68,330
Int. Cl.[5] E21B *33/14*
U.S. Cl. 166—293 16 Claims

1. A method for drilling and cementing, comprising:

drilling a wellbore with a drill string comprising a drill pipe utilizing a drilling fluid comprising water, blast furnace slag, a water soluble polyalcohol component and a water insoluble alcohol component;

circulating said drilling fluid down said drill pipe and up an annulus between said drill pipe and walls of said borehole, thus laying down a filter cake on said walls of said borehole during said drilling and producing a used drilling fluid;

withdrawing said drill string and inserting a pipe, thus creating an annulus between said pipe and said walls of said borehole;

incorporating an activator system into a portion of said used drilling fluid to produce a cementitious slurry; and

displacing said cementitious slurry into at least a portion of said annulus between said pipe and said walls of said borehole.

5,358,045

ENHANCED OIL RECOVERY METHOD EMPLOYING A HIGH TEMPERATURE BRINE TOLERANT FOAM-FORMING COMPOSITION

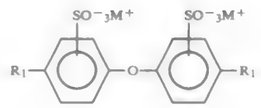
Willard J. Sevigny; Donald L. Kuehne, both of Hercules, and Jeremy Cantor, Benicia, all of Calif., assignors to Chevron Research and Technology Company, a Division of Chevron U.S.A. Inc., San Francisco, Calif.

Filed Feb. 12, 1993, Ser. No. 17,294
Int. Cl.[5] E21B *43/22*
U.S. Cl. 166—273 10 Claims

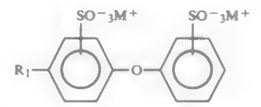
1. A method of recovering hydrocarbons from a reservoir during gas injection into said reservoir comprising:

(a) at least periodically injecting gas and a foam-forming composition into a reservoir wherein the reservoir temperature is not less than about 100° F.;

wherein the foam-forming composition comprises brine having not less than about 10% TDS, an effective foam-forming amount of a surfactant comprising a C_{10-16} AOS having a major amount of at least one of C_{10} AOS and C_{12} AOS, and an effective amount of at least one solubilizing component to increase the brine tolerance of the foam-forming composition, which solubilizing component is a mixture comprising



and



where M is H, an alkali metal, alkaline earth metal, or ammonium, and

R_1 is a linear C_6–C_{16} alkyl group; and

(b) contacting hydrocarbons in the reservoir with the foam and the gas so as to assist in the recovery of hydrocarbons from the reservoir.

5,358,046

OIL RECOVERY PROCESS UTILIZING A SUPERCRITICAL CARBON DIOXIDE EMULSION

Robert D. Sydansk, and Karl D. Dreher, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 22,703, Mar. 1, 1993, which is a continuation-in-part of Ser. No. 1,484, Jan. 7, 1993, Pat. No. 5,307,878. This application Oct. 29, 1993, Ser. No. 145,370
Int. Cl.[5] E21B *43/22*
U.S. Cl. 166—275 35 Claims

1. A process for recovering liquid hydrocarbons from a liquid hydrocarbon-bearing formation beneath an earthen surface comprising:

placing an emulsion in a liquid hydrocarbon-bearing formation beneath an earthen surface to reduce the mobility of said formation, wherein said emulsion comprises a carbon dioxide phase in a supercritical state and an aqueous phase in a liquid state containing a water-soluble polymer and an aqueous solvent;

displacing liquid hydrocarbons from said formation into a liquid hydrocarbon production well bore; and

recovering said liquid hydrocarbons at the surface via said hydrocarbon production well bore.

5,358,047

FRACTURING WITH FOAMED CEMENT

Ronald E. Himes; E. Dwyann Dalrymple; Jeffrey A. Dahl, and Bruce D. Thomas, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 42,368, Apr. 2, 1993. This application Jun. 2, 1993, Ser. No. 70,630
Int. Cl.[5] F21B *33/138, 43/267*
U.S. Cl. 166—280 17 Claims

1. A method of stimulating a subterranean formation comprising the steps of:

(a) injecting a foamed cement slurry composition into said subterranean formation at a pressure sufficient to fracture said subterranean formation, wherein said foamed cement slurry composition comprises hydraulic cement, water, a gas, and a proppant material, wherein, when hardened, said cement composition has a permeability of at least about 0.3 darcies and wherein said proppant material is present in said cement composition in an amount in the range of from about 1.4 to about 45.9 parts by weight per 100 parts by weight of said hydraulic cement and

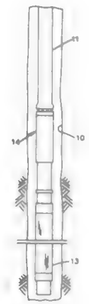
(b) allowing said cement composition to harden in said formation.

5,358,048

HYDRAULIC PORT COLLAR

Robert T. Brooks, Houston, Tex., assignor to CTC International, Houston, Tex.

Filed Apr. 27, 1993, Ser. No. 52,618
Int. Cl.[5] E21B *33/00*
U.S. Cl. 166—285 23 Claims



1. A valve apparatus for use in cementing operations in a well bore, said valve apparatus including:

a tubular valve member having flow ports located intermediate of its length, said valve member being adapted for connection in a well string;

an outer valve sleeve means slidably mounted on said valve member, said valve sleeve means having overlapping, longitudinally movable, telescoping sleeve members and seal elements for sealing off said flow ports in an overlapping position of said sleeve members, said sleeve members being responsive to pressure in the interior of the valve member for moving said sleeve members longitudinally to a separated position where said flow ports are opened,

annular seal means on said valve member located to one side of said flow ports for cooperating with one of said sleeve members located on the other side of said flow ports upon movement of said one sleeve member into sealing engagement with said seal means for sealing off said flow ports; and

an inner sleeve member slidably disposed in the bore of said valve member, said inner sleeve member being movable longitudinally between a first position where said flow ports are open and a second position where said inner sleeve member closes off said flow ports.

5,358,049

CONVERSION OF EMULSION MUD TO CEMENT

Arthur H. Hale, Houston; Kenneth M. Cowan, Sugar Land, and James J. W. Nahm, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 964,978, Oct. 2, 1992, abandoned. This application Feb. 14, 1994, Ser. No. 195,896
Int. Cl.[5] E21B *33/14*
U.S. Cl. 166—293 15 Claims

1. A method for drilling and cementing a well, comprising:

combining blast furnace slag having a particle size within the range of 2,000 to 15,000 cm^2/g with an oil-in-water emulsion drilling fluid, said blast furnace slag being present in an amount within the range of 1 to 100 lbs/bbl of said drilling fluid plus blast furnace slag;

utilizing said drilling fluid in a well drilling operation to form a borehole to produce a used drilling fluid; diluting at least a portion of said used drilling fluid to an extent that on addition of blast furnace slag thereto, the final density of the diluted drilling fluid will be within the range of 30% less to 70% more than the original density;

combining the additional blast furnace slag and an activator with said used drilling fluid to produce a cementitious slurry;

disposing a pipe within said borehole;

passing said cementitious slurry down said pipe; and

displacing said cementitious slurry up into an annulus surrounding said pipe.

5,358,050

METHOD FOR KILLING A GAS BLOWOUT OF A WELL

Joseph H. Schmidt, Anchorage, Ak., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 18, 1993, Ser. No. 32,911
Int. Cl.[5] E21B *33/13*
U.S. Cl. 166—294 5 Claims

1. A method for controlling a gas blowout of a well penetrating an earth formation, comprising the steps of:

pumping a gel composition into said well until the gas emanating therefrom is brought under control and wherein said composition is characterized by a mixture of water, guar, a cross-linking agent and a weighting agent.

5,358,051

METHOD OF WATER CONTROL WITH HYDROXY UNSATURATED CARBONYLS

Klein A. Rodrigues, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Oct. 22, 1993, Ser. No. 141,442
Int. Cl.[5] E21B *33/138*
U.S. Cl. 166—295 19 Claims

1. A method of decreasing the rate of flow of water from a subterranean formation into a wellbore penetrating said formation, said method being comprised of the steps of

introducing into said formation a polymerizable monomer consisting essentially of at least one water soluble hydroxy unsaturated carbonyl together with a suitable initiator and

permitting said carbonyl to polymerize and crosslink in said formation

to thereby decrease the rate of flow of water from said formation.

5,358,052

CONDITIONING OF FORMATION FOR SANDSTONE ACIDIZING

John L. Gidley, Houston, Tex., assignor to John L. Gidley & Associates, Inc., Houston, Tex.

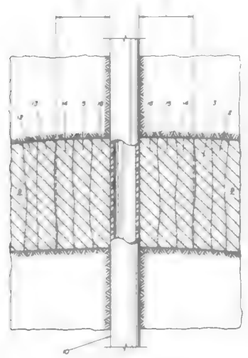
Continuation of Ser. No. 856,687, Mar. 24, 1992, Pat. No. 5,232,050, which is a continuation-in-part of Ser. No. 631,325, Dec. 20, 1990, Pat. No. 5,099,924. This application Jul. 27, 1993, Ser. No. 97,491
The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[5] E21B *43/27*
U.S. Cl. 166—307 8 Claims

1. In a method of matrix acidizing a sandstone oil bearing formation wherein an acid solution containing HF is injected into the formation to react with clays therein, the improvement wherein the following fluids are injected into the formation in advance of the acid solution:

(a) a conditioning fluid selected from the group consisting of carbon dioxide and mixtures of carbon dioxide and another solvent; and

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(b) a solvent having solvency for the oil in the formation and being at least partially soluble in the carbon dioxide, said



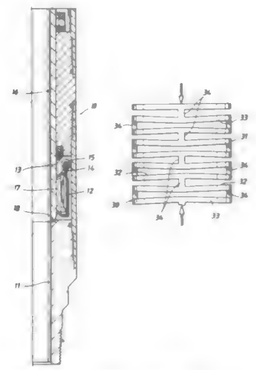
solvent being injected into the formation in advance of the conditioning fluid.

5,358,053

SUBSURFACE SAFETY VALVE

Neil H. Akkerman, Houston, Tex., assignor to AVA International Corporation, Houston, Tex.

Continuation of Ser. No. 678,661, Apr. 1, 1991, abandoned. This application Mar. 16, 1993, Ser. No. 32,767
Int. Cl.[5] E21B *34/10*
U.S. Cl. 166—321 4 Claims



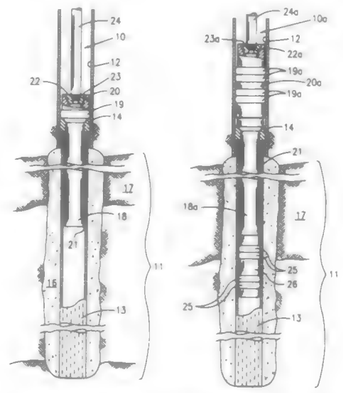
1. A subsurface safety valve, comprising
a tubular body disposable in a well string,
a closure member mounted within the body for movement between positions opening and closing the bore therethrough,
means yieldably urging the closure member to closed position,
means including a flow tube vertically reciprocable within the body and having an annular piston sealably slidable with respect to the body to form an annular pressure chamber on one side of the piston, and means by which hydraulic fluid from a remote source may be introduced into the pressure chamber in order to lower said piston to cause the flow tube to open the closure member; and
curved beam type spring means compressed between the body and piston to raise the flow tube and thereby permit the closure member to be closed upon the exhaust of hydraulic fluid.

5,358,054

METHOD AND APPARATUS FOR CONTROLLING STEAM BREAKTHROUGH IN A WELL

David R. Bert, Bakersfield, Calif., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Jul. 28, 1993, Ser. No. 98,500
Int. Cl.[5] E21B *43/24, 43/08, 43/12, 33/124*
U.S. Cl. 166—386 14 Claims



1. An assembly for controlling the intrusion of fluid into a well from an intrusion zone of a subterranean production formation into a slotted liner having openings therein, said liner being positioned in said well and extending substantially though said production formation, said assembly comprising:
a blank conduit adapted to fit within said slotted liner and having a length sufficient to extend from the top of said liner and span those of said openings in said slotter liner which lie adjacent said intrusion zone to thereby substantially block flow therethrough;
a seal adapter affixed to the top of said blank conduit; and
a seal element mounted on said seal adapter, said seal adapted to block upward flow between said slotted liner and said blank conduit when said conduit is in an operable position within said liner.

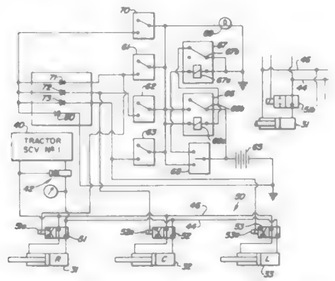
10. A method for controlling the intrusion of steam from an intrusion zone of a formation into a slotted liner of a gravel-packed interval of a wellbore, said slotted liner having openings therein and extending substantially through said gravel-packed interval, said method comprising:
positioning a length of blank conduit into said slotted liner, said blank conduit adapted to fit within said slotted liner and having a length sufficient to extend from the top of said liner and span said intrusion zone whereby said blank conduit will substantially block flow through those of said openings which lie adjacent said intrusion zone thereby preventing flow of steam from said intrusion zone into said liner; and
setting a seal element at the upper end of said blank conduit to thereby block upward flow between said liner and said blank conduit.

5,358,055

PARTIAL WIDTH SEEDING ATTACHMENT

John D. Long, Ankeny, Iowa, and Richard H. Clark, Geneseo, Ill., assignors to Deere & Company, Moline, Ill.

Filed Jan. 22, 1993, Ser. No. 7,863
Int. Cl.[5] A01B *63/32*
U.S. Cl. 172—470 15 Claims



1. In an implement having a frame structure supported for movement forwardly over the ground by a tractor, and a plurality of tools connected to the frame structure for vertical movement with respect thereto between raised transport and lowered field-working positions, first and second hydraulic motors connected to first and second sets, respectively, of the tools, and a selective control connected between the motors and a source of hydraulic fluid under pressure on the tractor, the selective control positionable for normally raising and lowering respective first and second sets of the tools generally in unison, a partial width attachment comprising;
a remotely operable first valve connected between the source and the first hydraulic motor and a remotely operable second valve connected between the source and the second hydraulic motor; and
control means for operating the first valve from a location remote from the first hydraulic motor to maintain first set of tools out of ground contact when the selective control is positioned to normally lower the tools to the field-working position, the control means including single switch means for operating the second valve in unison with the first valve for raising the implement from the ground-working position, and individual valve switches connected between a source of power and the remotely operable valves, and diodes connected between the single switch means and the valves for facilitating overriding of the individual valve switches by the single switch means.

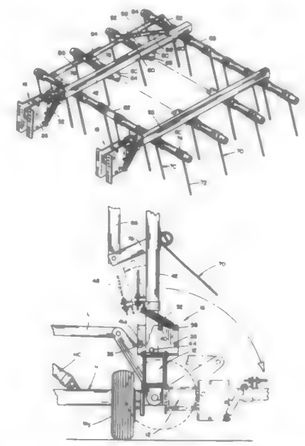
5,358,056

SPRING TOOTH HARROW

Michael B. Gates, R.R. #1, Box 60, Lansford, N. Dak. 58750

Continuation-in-part of Ser. No. 725,342, Jul. 3, 1991, abandoned. This application Feb. 11, 1993, Ser. No. 16,791
Int. Cl.[5] A01B *19/02, 73/02*
U.S. Cl. 172—634 4 Claims

1. A spring tooth harrow, comprising,
an elongated, horizontally disposed and transversely extending draw bar having rearward and forward sides;
said draw bar being wheel supported and having a hitch extending forwardly therefrom for attachment to a tractor;
said draw bar being selectively pivotally mounted, about a horizontal axis, to said hitch, whereby said draw bar may be pivoted from a field position to a transport position;
means for pivoting said draw bar from its field position to its transport position;
a plurality of harrow sections secured to the rearward side of said draw bar and extending rearwardly therefrom;
each of said harrow sections comprising at least first and second horizontally spaced mounting brackets which are selectively vertically adjustably mounted on said draw bar;
first and second arms pivotally connected at their forward ends to said first and second mounting brackets respectively, said first and second arms extending rearwardly therefrom;
a spring means interconnecting each of said arms with its respective mounting bracket for yieldably maintaining the harrow section in ground engagement;
a plurality of horizontally spaced tooth supports selectively rotatably mounted on the underside of said arms and extending therebetween; .
a plurality of spring teeth operably secured to said tooth supports and extending downwardly therefrom;
a selectively movable linkage means interconnecting said tooth supports so that said tooth supports may be rotated as a unit;
an adjustment member pivotally connected at one end to one of said arms, and selectively adjustably connected at an opposite end to said linkage means, for selectively fixing said linkage means in a pre-determined position;



said tooth supports including a forward tooth support, a rearward tooth support, and an intermediate tooth support;
said linkage means including means for selectively rotatably moving said forward tooth support with respect to the other tooth supports;
each of said mounting brackets including a pair of vertically disposed and horizontally spaced apart bracket members having a flat front portion positioned adjacent the rearward side of said draw bar, a flat rear portion extending rearwardly from said flat front portion and at right angles thereto, said flat portions having a plurality of vertically spaced mounting holes formed therein to permit said mounting bracket to be selectively vertically adjustably mounted on said draw bar; and
a stop means extending between said bracket members of each of said brackets above the pivotal connection of said respective arm which is in the pivotal path of said respective arm so that when said draw bar is moved to its said transport position, said stop means limits the forward pivotal movement of said respective arm and the tooth supports secured thereto.

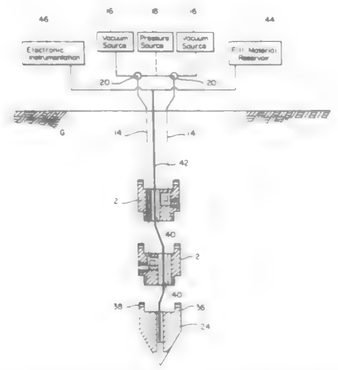
VOL 1167 ISS 4 OC 25 1994 UMI

5,358,057

MODULAR DEVICE FOR COLLECTING MULTIPLE FLUID SAMPLES FROM SOIL USING A CONE PENETROMETER

John F. Peters; Daniel A. Leavell; Landris T. Lee; Stafford S. Cooper; Philip G. Malone, and Richard W. Peterson, all of Vicksburg, Miss., assignors to U.S. Army Corps of Engineers as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 10, 1993, Ser. No. 158,231
Int. Cl.[5] E21B *49/08*
U.S. Cl. 175—20 16 Claims



1. A module for sampling gas and fluid in the ground, comprising:
(a) a cylindrical housing containing a sampling cavity having an opening extending to the exterior of said housing;
(b) a piston horizontally slidably arranged within said housing for reciprocal movement between a closed position, wherein an outer surface of said piston is flush with an exterior surface of said housing, and an open position, wherein said piston is spaced from said housing outer surface to open said sampling opening; and
(c) means for displacing said piston between the open and closed positions, whereby when said piston is in the closed position and said module is driven into the ground, debris is prevented from contaminating said sampling opening, and when said piston is displaced to the open positions, gas and liquid from the soil at the depth of said module is drawn into said sampling cavity via the opening for analysis.

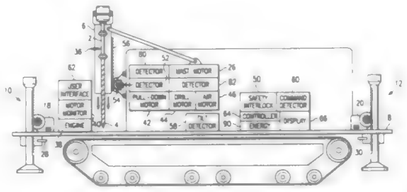
5,358,058

DRILL AUTOMATION CONTROL SYSTEM

Hans F. Edlund, and Marvin L. Haines, both of Roanoke, Va., assignors to Reedrill, Inc., Denison, Tex.

Filed Sep. 27, 1993, Ser. No. 127,262
Int. Cl.[5] E21B *44/00*
U.S. Cl. 175—24 2 Claims

1. In a rotary blasthole drilling apparatus comprising a rotary blasthole drill having a pull-down motor driven by a pump to provide a pull-down force to a drill string and a drill motor to provide rotary force to rotate a drill bit of the drill string, the improvement comprising:
means for setting a rotary torque set point that determines an amount of torque applied to the drill bit by the drill motor;
means for detecting pressure in the pump during a drilling operation; and
processor means, operative under the control of a program stored therein and responsive to signals from the setting means and the detecting means for generating an error signal; and



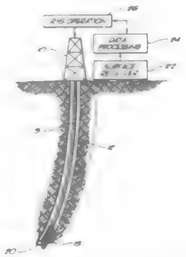
means responsive to the error signal for adjusting a stroke of the pump.

5,358,059

APPARATUS AND METHOD FOR THE DYNAMIC MEASUREMENT OF A DRILL STRING EMPLOYED IN DRILLING

Hwa-Shan Ho, P.O. Box 11170, Spring, Tex. 77391-1170

Filed Sep. 27, 1993, Ser. No. 126,657
Int. Cl.[5] E21B *47/12*
U.S. Cl. 175—45 19 Claims



13. A method of measuring and controlling drilling of a borehole in the earth by a drill string having a bottom hole drilling assembly having a drill bit connected to a lower end of the drill string, the method comprising the steps of:
positioning a first plurality of sensors at a cross-sectional area of said drill string transverse to a longitudinal axis of said drill string;
measuring an instantaneous rotating speed of said drill string with said sensors;
measuring an instantaneous position of a center of said drill string with said sensors; and
processing said instantaneous rotating speed and said instantaneous position so as to indicate a rotating and whirling motion of said cross-section of said drill string.

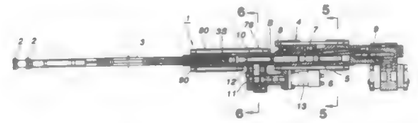
5,358,060

SUCCESSIVE HOLE BORING MACHINE AND LOST STRIKE PREVENTING DEVICE FOR SUCCESSIVE HOLE BORING MACHINE

Yoshio Ebara, Fujioka, Japan, assignor to Furukawa Co., Ltd. and Okumura Corporation, Japan

Filed Jun. 16, 1993, Ser. No. 78,757
Claims priority, application Japan, Jun. 16, 1992, 4-041311[U]; Jun. 16, 1992, 4-156914
Int. Cl.[5] E21B *4/06*
U.S. Cl. 175—108 2 Claims

1. A successive hole boring machine comprising:
a plurality of rods respectively having bits attached to front ends thereof, the plurality of rods being disposed in parallel to one another so that adjacent bits are displaced forwardly and backwardly from each other respectively by a predetermined distance; and
a striking device operatively connected to each of the plurality of rods, the striking device including a striking block, the striking block including:
a single cylinder block accommodating therein a plurality of cylinder tubes;



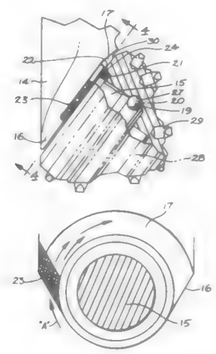
a plurality of striking pistons respectively slidably fitted into the cylinder tubes;
a pressurized fluid source for driving the striking pistons; and
a change-over valve for changing over a fluid path from the pressurized fluid source to each of the striking pistons to change over between a forward movement and a backward movement of each striking piston.

5,358,061

SEAL PROTECTION FOR ROCK BITS

Quan Van Nguyen, Houston, Tex., assignor to Smith International, Inc., Houston, Tex.

Filed Oct. 21, 1993, Ser. No. 141,298
Int. Cl.[5] E21B *10/00*
U.S. Cl. 175—371 12 Claims



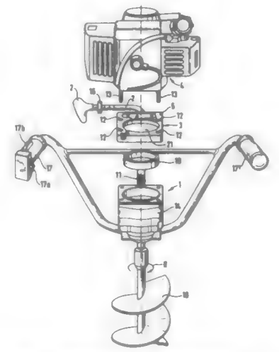
1. A rotary cone rock bit apparatus to minimize the intrusion of detritus into the bearing cavity formed between a bearing and a rotary cone of said rock bit comprising;
a rock bit body having a first pin end and a second cutting end, at least one leg extends from said body toward said second cutting end, said leg rotatively supports said rotary cone from said bearing cantilevered from said leg, a leg backface formed by a shirttail formed at a base of the leg being positioned adjacent a cone backface formed by said rotatable cone, said leg backface in said shirttail forms an enlarged fluid passageway between the leg and the cone backface adjacent the bearing cavity, said enlarged passageway provides a means to allow fluid to flush said detritus from said bearing cavity during operation of said rock bit in an earthen formation.

5,358,062

PORTABLE HANDHELD DRILLING APPARATUS

Klaus-Martin Uhl, Baltmannsweiler; Hans Nickel, Cottenweiler; Helmut Zimmermann, Kernen; Rudolf Krefs, Backnang, and Harald Schliemann, Waiblingen, all of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen

Filed Jul. 29, 1993, Ser. No. 98,891
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1992, 9210140[U]; Jul. 10, 1993, 4323126
Int. Cl.[5] E21B *10/44*
U.S. Cl. 175—394 15 Claims



1. A portable handheld drilling apparatus for receiving and driving a drill which can encounter a drilling resistance during a drilling operation thereby causing said drilling apparatus to undergo an unwanted rotational movement, the drilling apparatus comprising:
a handle for holding by an operator while performing the drilling operation;
a drive motor;
a transmission for driving the drill;
a centrifugal clutch assembly mounted between said drive motor and said transmission;
a brake device movable between an inactive position and a braking position;
a trigger lever movable between a first position wherein said trigger lever is at rest and a second position;
said trigger lever being operatively connected to said brake device so as to trip said brake device into said braking position when said trigger lever moves from said first position into said second position; and,
actuating means for acting upon said trigger lever to cause said trigger lever to move into said second position when said unwanted rotational movement exceeds a pregiven limit value.

5,358,063

DRILL BIT

Jan-Gunnar Hedlund, and Bengt Asberg, both of Houston, Tex., assignors to Sandvik AB, Sandviken, Sweden

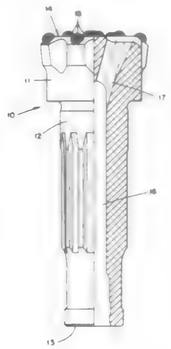
PCT No. PCT/SE91/00841, § 371 Date Sep. 27, 1993, § 102(e) Date Sep. 27, 1993, PCT Pub. No. WO92/11436, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 6, 1991, Ser. No. 75,561
Claims priority, application Sweden, Dec. 21, 1990, 9004101-3
Int. Cl.[5] E21B *10/38*
U.S. Cl. 175—417 11 Claims

1. A drill bit for rock drilling, comprising:
a head and a shaft having a free end,
said head defining a cutting face that carries a number of hard material button inserts having end portions extending outwardly of said cutting face,

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means for transporting flushing medium from the free end of the shaft to the cutting face of the head,

said means for transporting flushing medium including a central passage extending from the free end of the shaft and terminating in the head short of the cutting face and at least one branch passage emanating from the central passage and emerging in the cutting face,



said branch passage being enclosed on all sides thereof, except for the ends, by the head, said branch passage has a widening cross-sectional area in a direction towards the cutting face, the widening of said cross-sectional area of said branch passage is provided along a certain distance L in an axial direction of the drill bit, said distance L≧20 mm.

5,358,064

TRACK-TYPE VEHICLE UNDERCARRIAGE

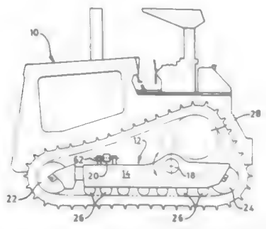
Thomas E. Oertley, Dunlap, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Continuation-in-part of Ser. No. 44,658, Apr. 12, 1993, Pat. No. 5,279,377. This application Nov. 1, 1993, Ser. No. 143,708

The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.

Int. Cl.[5] B62D *55/08*

U.S. Cl. 180—9.5 **15 Claims**



1. A track-type machine having a main frame and an undercarriage structure, including first and second roller frame assemblies, first and second pivot shafts connected respectively to said first and second roller frame assemblies and to said main frame, and an equalizer bar extending between and supported by said first and second roller frame assemblies, the improvement comprising:

said first roller frame assembly having a first longitudinal axial centerline and said second roller frame assembly having a second longitudinal centerline, said first longitudinal axial centerline being substantially non-parallel with said second longitudinal axial centerline.

5,358,065

WHEELED VEHICLE

Derk Nijenhuis, Hoogeveen, Netherlands, assignor to N.C.H. Hydraulische Systemen B.V., Hoogeveen, Netherlands

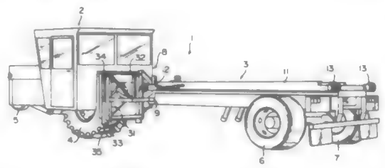
PCT No. PCT/NL91/00198, § 371 Date Jun. 1, 1993, § 102(e) Date Jun. 1, 1993, PCT Pub. No. WO92/06882, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 11, 1991, Ser. No. 39,181

Claims priority, application Netherlands, Nov. 10, 1990, 9002216; Oct. 5, 1991, 9100809

Int. Cl.[5] B60D *7/00;* **B60P** *1/02;* **B62D** *61/12*

U.S. Cl. 180—209 **9 Claims**



1. A wheeled vehicle, comprising: a vehicle body having a longitudinal axis; support means for supporting said vehicle body in a balanced manner on ground, said support means consisting essentially of (1) at least one drive wheel mounted to said vehicle body so that said drive wheel is direction controllable and (2) at least two supporting wheels liftably associated with said vehicle body and being selectively movable between a lowered position wherein said at least two supporting wheels contact ground and a lifted position wherein said at least two supporting wheels are raised from the ground; and coupling means for selectively connecting the vehicle to a load wherein said at least one drive wheel is positioned longitudinally between the coupling means and said at least two supporting wheels such that said vehicle is balanced when said at least two supporting wheels are in said lowered position and out of balance when said at least two supporting wheels are in said lifted position.

5,358,066

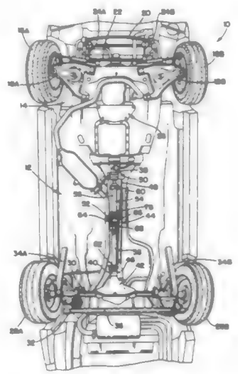
MOTOR VEHICLE DRIVE SYSTEM

William W. Shope, Dearborn, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 17, 1993, Ser. No. 18,590

Int. Cl.[5] B60K *17/24*

U.S. Cl. 180—380 **3 Claims**



1. In a motor vehicle having a sprung mass portion, a power unit supported on said sprung mass portion through a vibratory force attenuating engine mount means, an unsprung mass portion including a drive axle, means resiliently connecting said drive axle to said sprung mass portion for suspension excursions of said drive axle relative to said sprung mass portion, and a longitudinal torque beam having a front end pivotally connected to said power unit and a trailing end rigidly connected to said drive axle for reacting drive torque and brake torque from said drive axle to said power unit,

a drive system comprising:

a tubular front propeller shaft parallel to said torque beam,

a tubular rear propeller shaft parallel to said torque beam,

a first universal joint connecting a first end of said front propeller shaft to an output shaft of said power unit for rotation and for relative pivotal movement,

a second universal joint connecting a first end of said rear propeller shaft to an input shaft of said drive axle for unitary rotation and for relative pivotal movement,

a third universal joint connecting a second end of said rear propeller shaft to a second end of said front propeller shaft for unitary rotation and for relative pivotal movement,

a propeller shaft support including a bearing connected to one of said front and said rear propeller shafts generally adjacent said third universal joint and a housing and a flexible isolator between said bearing and said housing, and

means rigidly connecting said housing of said propeller shaft support to said torque beam whereby said one of said front and said rear propeller shafts is rotatably supported on said torque beam and lateral vibratory forces of said front and said rear propeller shafts are attenuated through said isolator of said propeller shaft support and through said engine mount means and said resilient means connecting said drive axle and said sprung mass portion.

5,358,067

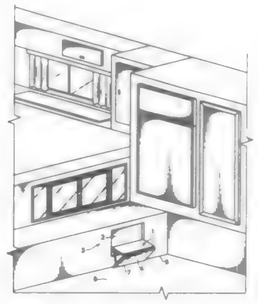
FOLDING STEP FOR MOUNTING ABOVE AN INTERIOR CORNER BETWEEN A WALL AND A FLOOR

Geoffrey N. Ford, Palmdale; Earl J. Cole, Jr., Canyon Country; Herbert G. Hall, Claremont, and Jeffrey A. Souleles, Canyon Country, all of Calif., assignors to Lance Camper Mfg. Corp., Pacoima, Calif.

Filed Sep. 15, 1993, Ser. No. 122,029

Int. Cl.[5] F06C *9/06*

U.S. Cl. 182—91 **4 Claims**



1. A folding step assembly attached to a wall above a floor, with said wall and floor defining an interior corner, the assembly comprising:

a step member having a step surface extending between an inner edge and an outer edge;

means horizontally hinging the inner edge of the step member to the wall at a desired height, such that the step member has a substantially vertical folded position in which the step member rests parallel against the wall and a substantially horizontal unfolded position in which the step member extends away from the wall;

a brace having an upper edge and a lower edge;

means for hinging the outer edge of the step member to the upper edge of the brace, such that the brace has a folded position in which the brace rests parallel against the step member and an unfolded position in which the brace extends below the step member; and

means for limiting the angle between the step member and the brace to a predetermined acute angle with the brace in said unfolded position;

wherein the step assembly is movable from a folded position with the outer edge of the step member resting above the inner edge of the step member, said an unfolded position with the lower edge of the brace resting in said interior corner defined by the wall and said floor,

whereby the unfolded brace supports the outer edge of the step member when the step member is unfolded from the wall.

5,358,068

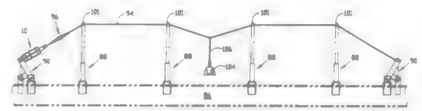
SAFETY SYSTEM INCLUDING CABLE TENSIONER AND SHOCK ABSORBER

Gerald T. Whitmer, Rte. 1, Box 33, Shenandoah Junction, W. Va. 25442

Filed Oct. 30, 1992, Ser. No. 969,006

Int. Cl.[5] B21F *27/00*

U.S. Cl. 182—113 **10 Claims**



1. A safety life line cable tensioner and shock absorber assembly for attaching to a safety life line cable system used with a construction beam such as an I-beam comprising:

an elongated housing having a first and second end with said first end having an opening therein;

an elongated rod having a first end and a portion of said rod extending into said housing through said opening at one end of said housing and having a second end and a portion of said rod extending external of said housing;

an open coil compression spring having an inboard end and an outboard end located in said housing and surrounding at least part of said portion of said rod which extends into said housing;

a spring compression member affixed near said first end of said elongated rod for pushing said inboard end of said compression spring;

a first attachment member located at said second and external end of said rod for attaching said tensioner and shock absorber assembly into a safety cable system;

a second attachment member located at said second end of said housing for attaching said tensioner and shock absorber assembly into a safety cable system; and

an elastomeric shock absorbing member located entirely inside said compression spring and has an outside diameter of substantially the same as the inside diameter of said compression spring whereby said tensioner and shock absorber may be used in a safety system to place a lifeline cable under a desired normal tension and absorb shock loading when a worker's fall is restrained by a lifeline with said elastomeric shock absorbing member expanding in diameter and engaging the inside diameter of said compression spring.

VOL 1167 ISS 4 OC 25 1994 UMI

5,358,069

STEPBOARD FOR LADDERS

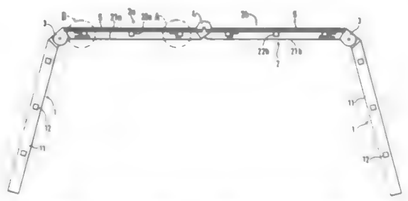
Guenther Krause, Alsfeld, Fed. Rep. of Germany, assignor to Krause-Werk GmbH & Co. KG, Fed. Rep. of Germany

Filed May 5, 1993, Ser. No. 56,876

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1992, 9209912[U]; Dec. 19, 1992, 9217419[U]

Int. Cl.[5] E06C *5/44*

U.S. Cl. 182—118 26 Claims



1. A stepboard for a ladder having a pair of parallel uprights separated by a distance h and connected by a plurality of rungs, the stepboard comprising:

a board having a surface and a width b less than or equal to the separation h between uprights; and

a plurality of retaining members secured to the surface of the board for detachably securing the board to the rungs between the uprights, each of the retaining members comprising a bracket secured to the surface of the board and a Z-shaped retaining hook, the hook comprising a first retaining piece pivotably connected to the bracket for pivoting about an axis parallel to the surface of the board, a second retaining piece extending parallel to the surface of the board, and a web connecting the first and second retaining pieces.

5,358,070

LADDER TOP

Frederick J. Bartnicki, Greenville; Harold L. Bernard, Transfer; Robert Beggs, Fredonia; Donald M. Werner, Hermitage, and Dale R. King, Greenville, all of Pa., assignors to Werner Co., Greenville, Pa.

Continuation of Ser. No. 906,587, Jun. 30, 1992, Pat. No. 5,259,480, which is a continuation of Ser. No. 471,129, Jan. 26, 1990, Pat. No. Des. 340,773, which is a continuation-in-part of Ser. No. 100,432, Sep. 24, 1987, Pat. No. Des. 310,884. This application Nov. 8, 1993, Ser. No. 148,389

The portion of the term of this patent subsequent to Nov. 9, 2010, has been disclaimed.

Int. Cl.[5] E06C *1/00*

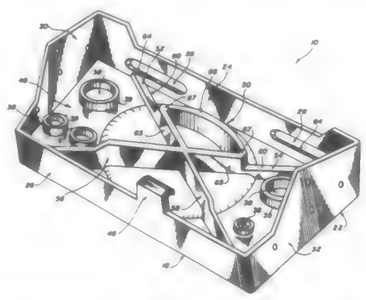
U.S. Cl. 182—173 15 Claims

1. A ladder system comprising:

at least one set of legs;

a top panel having a perimeter, said perimeter having at least a first edge, a second edge, a third edge and a fourth edge, said top panel having a topside and an underside disposed between the first, second, third and fourth edges; and

a first side wall extending in an integral fashion from the underside along the first edge, the first side all having at least one slot through which accessories of the ladder can be attached, an opposing second side wall extending in an integral fashion from the underside along the second edge, a third side wall extending in an integral fashion from the underside along the third edge an din juxtaposition with the first and second side walls, and a fourth side wall opposing said third side wall and extending in an integrai fashion from the underside along the fourth edge an din juxtaposition with the first and second side walls, said at



least one set of legs attached to the ladder top through the third and fourth side walls.

5,358,071

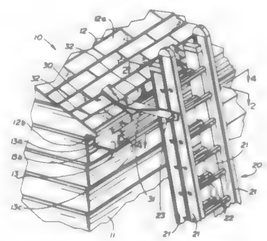
GUTTER PROTECTING LADDER ATTACHMENT

Arthur R. Stennett, 89 West Ave., Tallmadge, Ohio 44278

Filed Jul. 13, 1993, Ser. No. 90,743

Int. Cl.[5] E06C *7/48*

U.S. Cl. 182—214 7 Claims



1. A ladder support attachment for attachment to a ladder having at least one hollow rung, and engagement with a rain gutter and opposed uprights supporting the rung, the attachment comprising:

a) opposed, elongate, parallely disposed support legs;

b) an elongate support rod receivable in the hollow rung;

c) a cross brace interconnecting said support legs adjacent their one ends;

d) the opposed ends of said support legs being releasably attachable to the opposed ends of the support rod;

e) opposed return legs each with a first end connected to each support leg at said one ends and extending from said one ends thereof toward said opposed ends thereof; and

f) engagement means carried by said opposed return legs at a second end thereof which extend toward said opposed ends for engagement with the interior of the rain rain gutter.

5,358,072

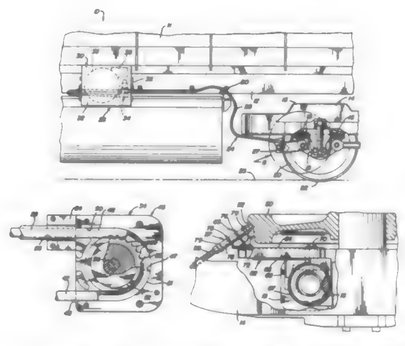
WHEEL FLANGE LUBRICATION WITH ENCLOSED STRAND DRIVE

James G. Szatkowski, Elmhurst; Alexander C. Crosman, III, Downers Grove, and Jay S. Boggess, Justice, all of Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 5, 1993, Ser. No. 27,121

Int. Cl.[5] B61K *3/00*

U.S. Cl. 184—3.2 16 Claims



1. A wheel flange lubrication system for a railway vehicle having a body, a truck having a frame supporting and movable relative to the body and a rail engaging wheel having a flange and carrying bearing means supporting the truck frame on a movable suspension, said system comprising,

a supply unit including a box containing a hub for rotatably receiving a reel having a coiled strand of lubricant and drive means for driving the lubricant strand through the system,

a delivery hose connected to the drive means to receive the strand of lubricant and forming at least a part of a continuous path leading to the wheel flange, and

a bracket mounted on the truck and supporting means defining the path adjacent the wheel flange,

wherein the drive means includes a DC gearmotor drivably mounting a toothed sprocket and means defining an enclosed path for conducting the lubricant strand and into which teeth of the sprocket penetrate for engaging and advancing the strand through the system.

8. A supply unit for solid lubricant delivery and comprising,

a box including a container and a removable cover closing the container for protecting the contents therein,

a hub in the container for rotatably supporting a reel of coiled strand lubricant, the cover when closed retaining the reel on the hub, and

drive means in the container for receiving and advancing the lubricant strand into a connected conduit,

and further comprising a control panel in the container and carrying electrical control means for operating the drive means, the control means being responsive to a free running condition of the drive means to cut off operation thereof.

5,358,073

METHOD AND APPARATUS FOR TENSIONING AN ACCUMULATOR SPRING OF A DRIVE OF A HIGH-VOLTAGE OR MEDIUM-VOLTAGE POWER CIRCUIT BREAKER

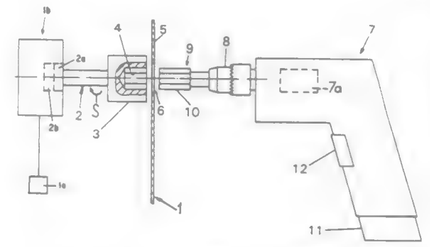
Hans-Rudolf Wöthrich, Oberentfelden, Switzerland, assignor to Sprecher Energie AG, Oberentfelden, Switzerland

Filed Mar. 1, 1993, Ser. No. 24,088

Claims priority, application Switzerland, Feb. 28, 1992, 00635/92

Int. Cl.[5] F03G *1/08*; H01H *3/30*

U.S. Cl. 185—43 7 Claims



1. An apparatus for tensioning an accumulator spring of a power circuit breaker including a housing for the spring and a drive path leading from an input accessible from outside the housing to the spring for tensioning same the improvement comprising the input being formed for engagement by a tool operated by a cordless power tool holder;

A freewheeling mechanism located in the drive path to allow driving only in a direction for increasing tension of the spring; and

an interrupt mechanism located in the drive path to interrupt torque to the spring when fully tensioned.

5,358,074

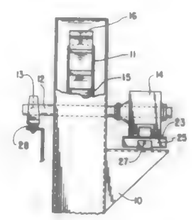
MOTOR DRIVE MOUNTING FOR ELEVATOR LEG

Clayton S. Ellsworth, 1014 Sherwood Rd., Norfolk, Nebr. 68701

Filed Dec. 6, 1993, Ser. No. 161,429

Int. Cl.[5] B66B *11/04*

U.S. Cl. 474—113 5 Claims



1. Adjustment means for aligning at least a first pulley of a transporting device, said transporting device including a flat belt entrained over at least two pulleys at opposite sides of the transporting device, said first pulley having a shaft for rotatable mounting said first pulley, said adjustment means comprising tiltable means for the support of a first end of said shaft, bearing means for the support of the second end of said shaft, only said bearing means being adjustable to a plurality of fixed positions whereby said shaft is tiltingly mounted and controlled.

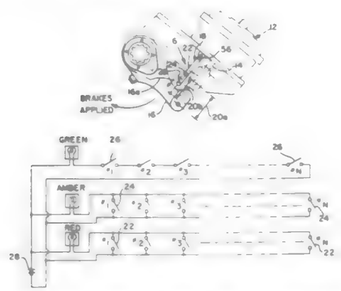
VOL 1167 ISS 4 OC 25 1994 UMI

5,358,075

BRAKE MOVEMENT AND ADJUSTMENT MONITORING DEVICE

Richard J. Jarzombek, 853 Osborn Ave., Baiting Hollow, N.Y. 11933

Filed Jun. 25, 1993, Ser. No. 82,533
Int. Cl.[5] F16D 66/00
U.S. Cl. 188—1.11 3 Claims



1. A vehicle brake wear warning system, comprising:

at least two displacement sensors, each for monitoring movement of a brake component whose movement during each brake actuation increases as a brake wears, each displacement sensor comprising:

a housing with a shaft extending therein;

a connecting rod having a first end extending into the shaft of the housing and an opposite end connected to the brake component so that the connecting rod will move progressively along the shaft as the brake is actuated, the distance that the connecting rod moves in the shaft being dependent on relative wear of the brake;

a piston, attached to the first end of the connecting rod for movement with the connecting rod; and

a sensing means attached to each housing, for sensing the position of a piston within the shaft, to determine the degree of wear to the brake when the brake is actuated;

the sensing means comprising:

a magnet, attached to the piston;

first, second and third sensing switches positioned in serial relation relatively along the housing shaft for sequential operation by magnet for sensing, when the piston is within respective ranges indicating that the brake has a safe level of wear; a level of wear for which an adjustment would be appropriate; and a level of wear that is unsafe, respectively;

a first, a second and a third warning lamp, each differently colored, for monitoring the sensing means, and a battery,

the first sensing switches being normally open switches connected in series with each other and with the first warning lamp and the battery completing the circuit,

the second sensing switches being normally open switches connected in parallel with each other and with the second warning lamp with the battery connected in series therewith,

the third sensing switches being normally open switches connected in parallel with each other and with the third warning lamp and the battery connected in series therewith,

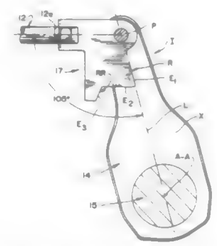
whereby the first lamp will be illuminated only when all displacement sensors detect a level of wear that is safe, the second lamp will be illuminated when at least one displacement sensor detects a level of wear where adjustment is required and the third lamp will be illuminated when at least one displacement sensor detects an unsafe level of wear and the first, second and third lamps will be illuminated sequentially when operating the brake.

5,358,076

INDICATOR UNIT FOR AN AIR BRAKE SYSTEM

Richard L. Lucas, Owosso, Mich., assignor to Midland Brake, Inc., Kansas City, Mo.

Filed Aug. 5, 1993, Ser. No. 102,591
Int. Cl.[5] F16D 66/00
U.S. Cl. 188—1.11 10 Claims



1. In a vehicle brake system having a brake rod means mounted for movement between a non-braking first position and a predetermined safe maximum braking second position, and a pivotally mounted slack adjuster means having a portion thereof operatively connected to a distal segment of the brake rod means, the adjuster means being movable about a pivotal axis in response to the movement of the brake rod means between the first and second positions, an indicator unit comprising a first section mountable on the operative connection between the rod means distal segment and the adjuster means portion, a second section extending laterally from said first section and being adapted to engage and be movable with the brake rod means, and a third section angularly disposed relative to said second section and extending laterally from said first section and being adapted to overlie an exposed surface of the adjuster means, said third section having a first reference means for alignment with an exposed predetermined first segment of the adjuster means when the rod means is in the first position, and a second reference means for alignment with an exposed predetermined second segment of the adjuster means when the rod means is in the second position, said first and second reference means being angularly disposed relative to one another, the angular relationship being intersecting in orientation.

5,358,077

ONE PIECE LIQUID COOLED DISC BRAKE ASSEMBLY

John P. DeConti, 328 Maple St., New Britain, Conn. 06051

Filed Feb. 4, 1993, Ser. No. 13,714
Int. Cl.[5] F16D 55/02, 65/78
U.S. Cl. 188—71.6 32 Claims

1. An improved internally liquid-cooled disc assembly for use in a disc braking system, said disc braking system having a rotatable shaft for transferring rotational energy to said disc assembly and a forced braking means for applying friction against said disc assembly so as to retard said rotational energy, said improved internally liquid-cooled disc assembly comprising:

A. a one-piece disc casting having:

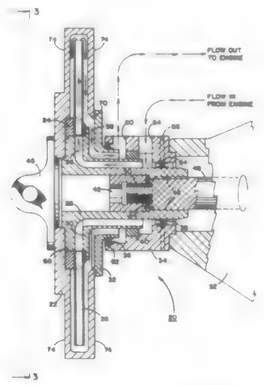
(1) means for securing said rotatable shaft thereto such that rotation of said rotatable shaft causes rotation of said one-piece disc casting;

(2) first and second braking surfaces on opposing sides of said one-piece disc casting, each said braking surface configured to accept friction applied by said forced braking means of said disc braking system; and

(3) at least one cooling cell formed within said one-piece disc casting, each said cooling cell being designed so as to allow a cooling liquid to enter therein and a heated cooling liquid/gas to exit therefrom, said cooling liquid acting to remove thermal energy from said one-piece disc casting by thermal absorption thereby producing said heated cooling liquid/gas;

B. means for conveying said cooling liquid to a radially extended portion of each said cooling cell so as to prevent a vapor lock condition, said conveying means having a first end and a second end associated with each said cooling cell, each said first end positioned radially inward with respect to each said associated cooling cell for receiving said cooling liquid, each said second end positioned radially outward within each said associated cooling cell for discharging said cooling liquid toward said radially extended portion of each said associated cooling cell; and

C. a plurality of flanges for directing said cooling liquid to each said first end of said conveying means and for directing said heated cooling liquid/gas from each said cooling



cell, said plurality of flanges comprising a first flange and a second flange with an incoming flow path formed annularly therebetween, said first flange and said second flange being positioned radially inward with respect to each said first end of said conveying means while also being operatively mated therewith such that said cooling liquid may be supplied directly to each said first end along said incoming flow path, said plurality of flanges further comprising said second flange and a third flange with an outgoing flow path formed annularly therebetween, said second flange and said third flange being positioned radially inward with respect to each said cooling cell while also being operatively mated therewith such that said heated cooling liquid/gas may be removed directly from each said cooling cell along said outgoing flow path.

5,358,078

HYDRAULICALLY-OPERABLE DISK BRAKE FOR BICYCLES OR SIMILAR VEHICLES

Joachim Gajek, Würzburg, and Hannsjörg Stumpf, Schweinfurt, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 2, 1993, Ser. No. 87,216
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1992, 4222044
Int. Cl.[5] F16D 55/18, 55/02
U.S. Cl. 188—72.4 19 Claims

1. A combination of an hydraulically-operable disk brake and a vehicle frame (80) having a wheel hub (300), comprising:

a brake disk (21) adapted to be connected to the wheel hub (300) for rotation therewith around the hub axis (310);

a substantially U-shaped brake caliper (1; 101) having two lateral legs and a central part that connects the two lateral legs;

means, including a guide cylinder (2), for mounting the brake caliper (1; 101) on the vehicle frame (80) such that the two lateral legs straddle the brake disk (21) and the brake disk (21) runs therebetween and such that the brake caliper (1; 101) is shiftable in a direction that is substantially parallel to the hub axis (310);

a first brake-lining part carried in a stationary manner opposite the brake disk (21) on one of the two lateral legs;

a second brake-lining part carried opposite the brake disk (21) on the other of the two lateral legs;

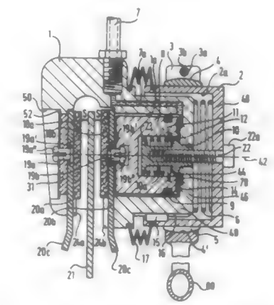
a piston-accommodating opening (1a) in the side of the other lateral leg facing away from the brake disk (21);

a brake piston (8; 108; 208) mounted in the opening (1a) so as to move, in a shift direction that is substantially parallel to the hub axis (310), between an initial end-position that is more distant from the brake disk (21) and a braking position that is located closer to the brake disk (21);

means for establishing a fluid-tight seal between the brake piston (8; 108; 208) and the piston-accommodating opening (1a) throughout said movement;

the brake piston (8; 108;208) having two front-sides, one of the front sides having a T-shaped opening engaging the second brake-lining part and the other front-side limiting a pressurized fluid chamber (70) within the other lateral leg;

a supply line (7,7a) for pressurized fluid connected to the pressurized fluid chamber (70) for the simultaneous shifting of the brake piston (8; 108; 208) and the second brake-



lining part in the direction of the braking position when pressurized fluid is supplied to the pressurized-fluid chamber (70);

first pre-tensioning means (11; 111; 211), acting between the brake piston (8) and the brake caliper (1) for elastically pre-tensioning the brake piston (8; 108; 208) into the initial end-position;

second pre-tensioning means (6), acting between the brake caliper (1; 101) and the guide cylinder (2), for elastically pre-tensioning the brake caliper (1; 101) into an initial end-position in which the one lateral leg that carries the first brake-lining part is spaced a maximum distance from the brake disk (21), the guide cylinder (2) being substantially pot-shaped, with a pot bottom (48) and a pot wall, the other lateral leg of the brake caliper (1) carries a projection (40) that receives the brake piston (8; 108.; 208), which projection (40) is mounted in a shiftable manner in the pot-shaped guide cylinder (2); and

adjusting means (22), acting between the brake caliper (1; 101) and the guide cylinder, for the optional adjustment of the initial end-position of the brake caliper (1; 101) in a manner such that in the initial end-position of the brake caliper (1) and simultaneously in the initial position of the brake piston (8), the distance ("s") between the brake disk (21) and the first brake-lining part is equal to the distance ("s") between the brake disk (21) and the second brake-lining part.

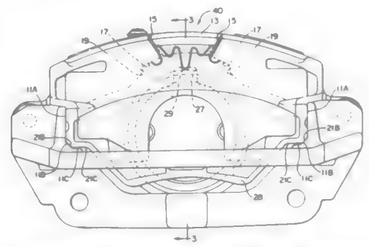
VOL 1167 ISS 4 OC 25 1994 UMI

5,358,079

DISC BRAKE WITH FRICTION PAD BACKING PLATE BIASING SPRING

Glenn G. Brown, Niles, Mich., assignor to AlliedSignal Inc., Morristown, N.J.

Filed Sep. 21, 1993, Ser. No. 124,741
Int. Cl.[5] F16D 65/02
U.S. Cl. 188—73.38 5 Claims



1. A disc brake, comprising a support member having torque receiving portions for engagement by first and second friction pad backing plates, a caliper mounted for axially slidable movement relative to the support member via pin means extending between the caliper and the support member, the first and second friction pad backing plates each having circumferentially spaced apart lateral projections shaped complementary to and engaging the torque receiving portions of said support member, each backing plate having a radially outwardly extending extension with a radially outwardly facing groove centered on the extension relative to the respective backing plate, and a pad spring located between the caliper and the extensions of said backing plates, the pad spring comprising a generally H-shaped unitary leaf spring having a longitudinal central body portion spanning said extensions of the first and second backing plates, the central body portion having a downwardly bent portion forming a longitudinal rib, and a pair of oppositely outwardly extending arms at each end of said central body portion, each arm comprising a resilient finger having multiple change-of-direction bends such that the finger terminates in an upwardly, radially outwardly extending finger end, the caliper having a central opening defined by outer sloped side walls extending to an interior area of said caliper comprising sloped top inner walls extending to radially inwardly extending side walls, the spring located within said central opening such that the fingers engage the outer sloped walls and finger ends engage the sloped top inner walls and the longitudinal rib engages each of said grooves of the extensions of the friction pad backing plates, whereby the pad spring biases the friction pad backing plates against said torque receiving portions of the support plate such that the spring may move freely with any movement between the caliper and friction pad backing plates.

5,358,080

REINFORCED BRAKE ROTOR

Edgar E. Donabedian, Dearborn, Mich., assignor to The Budd Company, Troy, Mich.

Filed Dec. 9, 1992, Ser. No. 987,627
Int. Cl.[5] F16D 65/12
U.S. Cl. 188—218 XL 8 Claims

1. A reinforcement assembly for incorporation into a brake rotor for a motor vehicle, said brake rotor having an annular braking member defining an axis of rotation and including axially spaced annular outboard and inboard braking plates, said braking plates each having a friction surface and being cast within a casting mold, said reinforcement assembly comprising:

a plurality of outboard rings, said rings being substantially concentric, radially spaced apart from one another and lying in a common plane with one another;

at least one outboard spacer extending radially and being connected to said plurality of outboard rings to maintain said outboard rings spaced from one another, said outboard spacer including means for locating said plurality of outboard rings within said casting mold to embed said outboard rings in said outboard braking plate spaced from said friction surface of said outboard braking plate;

a plurality of inboard rings, said inboard rings being substantially concentric, radially spaced apart from one another and lying in a common plane with one another;

at least one inboard spacer extending radially and being connected to said plurality of inboard rings to maintain said inboard rings spaced from one another, said inboard spacer including means for locating said inboard rings within said casting mold to embed said inboard rings in said inboard braking plate spaced from said friction surface of said inboard braking plate; and

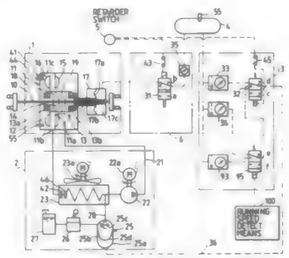
at least one connecting rib extending axially between and connected to said inboard and outboard rings.

5,358,081

HYDRAULIC RETARDER CONTROL SYSTEM

Naoki Kaneda, and Hideyuki Fujinami, both of Saitama, Japan, assignors to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Filed Jun. 18, 1993, Ser. No. 77,773
Claims priority, application Japan, Jun. 22, 1992, 4-185759
Int. Cl.[5] B60T 1/08
U.S. Cl. 188—291 3 Claims



1. A hydraulic retarder control system, comprising:

a hydraulic retarder mounted on a rotary shaft rotatable together with a vehicle wheel comprising a rotor and an unrotatable stator, said hydraulic retarder being always filled with operation liquid;

a clutch device drivable by a drive device for connecting or disconnecting said rotor with or from said rotary shaft;

a closed circuit for connecting the operation liquid inlet and outlet of said hydraulic retarder;

an air/liquid conversion device for applying an air pressure to said operation liquid present in said closed circuit;

pressure reducing means capable of switching the pressure of the air to be supplied from a pressure air source to said air/liquid conversion device; and

running speed detect means for detecting the fact that the running speed of a vehicle is equal to or slower than a given running speed,

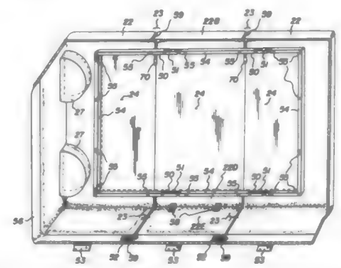
wherein, when there is given a detect signal by said running speed detect means, then the pressure of said pressure reducing means is switched into a higher pressure condition than a set pressure at running speeds exceeding said given running speed, so that a high pressure air from said pressure air source can be supplied to said air/liquid conversion device.

5,358,082

EXPANDABLE LUGGAGE COMBINING HARDSIDE AND SOFTSIDE MATERIALS

James E. Armstrong, IV, 2205 Solmar Dr., Silver Spring, Md. 20904

Filed Nov. 10, 1993, Ser. No. 149,918
Int. Cl.[5] A45C 7/00
U.S. Cl. 190—21 6 Claims



1. An article of luggage for travelling comprising:

(a) a support frame having edges, corners, and small sides formed from a hard durable material and attached to a harder more durable inner frame with mid-section sides of a flexible compliant material between said support frame and secured between said hard, durable material and said harder more durable inner frame and forming at least one center section, a top section and a bottom section;

(b) means for securing said top section and said bottom section to each other for forming a luggage unit of a first size and means for securing said top section to each one side of said center section and said bottom section to the other side of said center section for forming a luggage unit of a second size larger than said first size; means for collapsing and fitting said center section into said secured top section and bottom section after said luggage unit of a first size is formed for carrying and storing said collapsed center section in said luggage unit of smaller size; and a housing for wheels mounted in said bottom section for enabling said luggage to be rolled along a surface;

(c) said center section and said bottom sections having a frame construction such that said frame of said center section adjoins said frame of said top and bottom sections by means of latches on said inner frame, interconnecting locks on said hard molded frame, and slide fasteners on said flexible, compliant material.

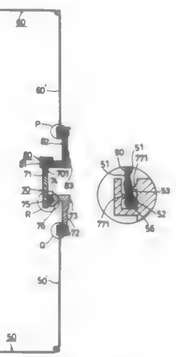
5,358,083

TRUNK CASE

Molton Ku, No. 9, Alley 15, Lane 77, San-Hsing St., Ta-Li Hsiang, Taichung Hsien, Taiwan

Filed Nov. 17, 1993, Ser. No. 153,634
Int. Cl.[5] A45C 13/04
U.S. Cl. 190—123 4 Claims

1. A trunk case including a first and second casing which are hinged together at one side thereof, each of said first and second casings having a substantially flat bottom and a surrounding wall formed around said flat bottom so as to define the respective casing and a frame member mounted along a peripheral edge of said surrounding wall; wherein said surrounding wall has a folded portion formed along the peripheral edge thereof, said folded portion having an insert layer sandwiched fixedly therein and a rigid bar embedded in said folded portion along said peripheral edge, thereby forming a peripheral enlarged portion; and a hard cover sheet is wrapped around said peripheral enlarged portion; and wherein said frame member includes an engaging portion which is formed with a groove that is defined by two opposed plates and a pair of ribs that project respectively from inner surfaces of said opposed plates in a staggered manner, said enlarged portion extending into a bottom of said groove, and said surrounding wall being clamped by said ribs near said enlarged portion.

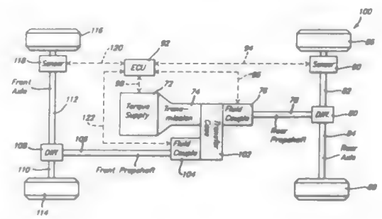


5,358,084

TORQUE MAGNITUDE CONTROL USING ELECTRORHEOLOGICAL FLUIDS

Scott W. Schramm, Novi, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Jan. 19, 1993, Ser. No. 5,820
Int. Cl.[5] F16D 27/00; B60K 41/02
U.S. Cl. 192—21.5 9 Claims



1. A vehicle ground wheel traction control system comprising:

a torque supply source;

an axle differential;

a pair of axle drive shafts, said axle differential being mechanically coupled between said drive shafts;

(a) a fluidic coupling device comprising:

(i) a torque input shaft connected directly to said torque supply source, said input shaft rotatable under the influence of said torque supply source;

(ii) a torque output shaft connected directly to said axle differential;

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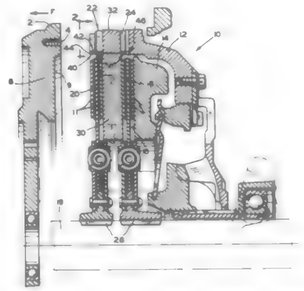
(iii) a first wetted surface plate operably connected to said input shaft so as to rotate with said input shaft;
(iv) a second wetted surface plate operably connected to said output shaft wherein rotation of said second wetted surface plate is adapted to cause rotation of said torque output shaft;
(v) a container means for containing an electrorheological fluid medium, said container means also housing said first and second wetted surface plates;
(vi) a source of electrical energy; and
(vii) a means for applying a variable amount of electrical energy supplied by said source of electrical energy to said electrorheological fluid medium;
(b) sensor means for measuring at least one of the rotational speed and torque of at least one of said axle drive shafts; and
(c) control means operably connected to said sensor means and said means for applying electrical energy for controlling the amount of said electrical energy applied to said fluid in response to said sensor measurement to variably control rotation of said second wetted surface plate in response to a rotation of said first wetted surface plate.

5,358,085

CLUTCH PLATE ANTI-RATTLE AND SEPARATOR DEVICE

Richard A. Flotow, Butler, and Daniel V. Gochenour, Churubusco, both of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Nov. 19, 1991, Ser. No. 796,994
Int. Cl.[5] F16D *13/75*
U.S. Cl. 192—70.25 8 Claims



1. In a multiple disc friction clutch assembly including drive and driven means, said drive means comprising a flywheel, a cover, and a plurality of axially extending circumferentially spaced brackets securing said cover to said flywheel, said drive means comprising a driven shaft and a pair of friction discs axially but non-rotatably moveable on said shaft for transmission of rotary motion to said shaft, said drive means further comprising an axially floating annular drive plate positioned intermediately of said friction discs for selective frictional driving engagement with said discs, said drive plate including a plurality of radially outwardly extending lugs, each lug comprising axially oriented sides, wherein each bracket comprises a slot, wherein each lug is adapted to interdigital registration with one slot of one bracket, and wherein an anti-rattle device is attached to at least one of said lugs for dampening torsional and tumbling energy components of said plate; an improvement wherein said device comprises means for automatically shifting axial positions on said lug as result of axial movement of said lug with respect to said flywheel as said friction discs wear, wherein said device comprises means for maintaining axial separation of said discs during disengagement of said clutch during rotation of said clutch, and wherein said anti-rattle device is retained on said lug by frictional forces only, wherein said device further comprises a thin, generally planar elongate body which defines a major axis adapted to extend generally tangentially to a point on the circumference of said plate, wherein means for retaining said device on said lug comprises a lug-receiving slot extending from one of two elongate boundary edges of said planar body, said body defining a minor axis orthogonal to said major axis, said lug-receiving slot comprising a pair of lug drive edges extending parallel to said minor axis, said edges spaced apart and sized to frictionally engage axially extending sides of said lug, wherein said lug drive edges of said device are greater in length than said sides of said lug, whereby said device is adapted for change of position axially on said lug during wear of said friction discs, and wherein means for said change of position comprises one of said elongate boundary edges, whereby as said friction discs wear, said one elongate boundary edge is adapted for being urged toward said lug by said flywheel.

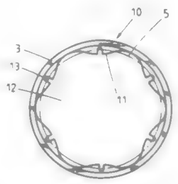
8. An article of manufacture comprising a clutch plate anti-rattle and separator device formed of spring steel adapted to be frictionally installed on a lug of a drive plate, such that apart from frictional means said device is mechanically unrestrained against automatic axial movement with respect to said lug, wherein said movement may be induced by means external to said device, wherein said device further comprises a generally flat, thin, elongate U-shaped body having a longitudinal axis adapted to extend generally tangentially to the circumference of said drive plate, said body defining a lateral axis which defines the symmetrical center of the body, said lateral axis adapted to extend generally parallel to the rotational axis of said drive plate, said body comprising an opening formed in an elongate edge thereof parallel to said longitudinal axis, said opening defining a slot sized to engage said lug in a frictional press-fit relationship, whereby said body is adapted to be shifted along said lateral axis to new positions on said lug by said means external to said body.

5,358,086

FRICTION LINING

Ulrich Muller, Hesselünne, and Norbert Schulz, Marienheide, both of Fed. Rep. of Germany, assignors to Raybestos Industrie-Produkte GmbH, Fed. Rep. of Germany

Filed Jan. 21, 1993, Ser. No. 7,635
Claims priority, application European Pat. Off., Feb. 1, 1992, 92101691.1
Int. Cl.[5] F16D *69/04*
U.S. Cl. 192—107 R 16 Claims



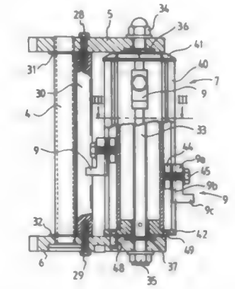
1. Friction lining for a clutch or disc brake, comprising a body of friction material, said body being of annular outline, having means defining a central opening and inner and outer peripheral edges, said body having front and rear axial faces, with said front face forming a friction surface, and rivet-receiving holes providing in at least one of said peripheral edges, said holes being clear of said friction surface, said body also having first and second radially offset portions with said first portion projecting axially beyond said second portion, said first portion carrying said friction surface and said second portion comprising radial projections containing said rivet-receiving holes, said second radially offset portion comprises radial projections, said rivet-receiving holes being formed as radially elongated slots in said radial projections.

5,358,087

DEPTH STOP ASSEMBLY FOR A MACHINE TOOL

Michael J. Moore, 74 Valley Way, Exmouth, Devon, United Kingdom

Filed Feb. 11, 1993, Ser. No. 16,760
Claims priority, application United Kingdom, Feb. 12, 1992, 9202875.2
Int. Cl.[5] F16D *71/04*
U.S. Cl. 192—143 9 Claims



1. A stop assembly for a machine tool of the kind in which a tool head is mounted to move on an axis in first and second opposite directions, said stop assembly comprising an engaging component mounted to move in said first and second directions along a first axis; and a carrier member provided with at least two pre-settable stop elements that are independently adjustable to selected positions on axes other than said first axis, said carrier member being movable to bring each of said stop elements from a position displaced from the path of movement of said engaging component to a position in said path for engagement with said engaging component to thereby enable interruption of the axial movement of said engaging component in said first direction, each of said stop elements serving to limit, in the selected axial position thereof, the stroke of a tool head operatively connected to said engaging component and moving in said first direction.

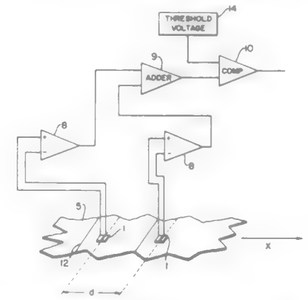
5,358,088

HORIZONTAL MAGNETORESISTIVE HEAD APPARATUS AND METHOD FOR DETECTING MAGNETIC DATA

Elwood E. Barnes, Cochranville; Mark H. Kryder, Bradford Woods, and Keith R. Mountfield, Pittsburgh, all of Pa., assignors to Mars Incorporated, McLean, Va.

Filed Nov. 25, 1992, Ser. No. 981,800
Int. Cl.[5] G07D *7/00*
U.S. Cl. 194—206 41 Claims

9. An apparatus for identifying a magnetic pattern on a medium, comprising:
an array having a first horizontal magnetoresistive sensor spaced a predetermined distance apart from a second horizontal magnetoresistive sensor in a longitudinal direction, wherein the predetermined distance between the sensors is set to equal the separation of magnetic transition data which is characteristic of the magnetic pattern to be identified; and
a logic means connected to the outputs of the first and second magnetic sensors for generating an output signal, wherein the logic means generates an output when both



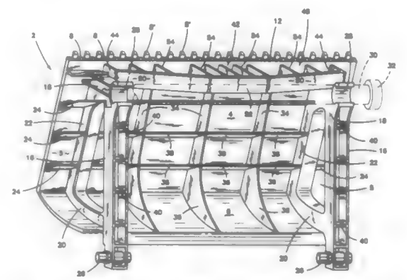
magnetoresistive sensors simultaneously sense magnetic transition data.

5,358,089

PLASTIC ESCALATOR STEP

Hans-Dieter Riedel, Schaeferstrasse 3, 13585 Berlin, Fed. Rep. of Germany

Filed Mar. 1, 1994, Ser. No. 204,108
Int. Cl.[5] B66B *23/12*
U.S. Cl. 198—333 8 Claims



1. A one-piece injection molded escalator step formed substantially solely from a fiberglass-filled resinous material, said step comprising:
a) a tread with an upper passenger-supporting surface thereon; a riser depending downwardly from one end of said tread; and a transverse cleated edge formed on said tread distal of said riser;
b) a pair of side support assemblies integral with said tread and riser, each of said support assemblies including:
i) a tread-reinforcing beam extending beneath said tread from said cleated edge to said riser;
ii) a riser-reinforcing beam merging "with said tread-reinforcing beam, said riser reinforcing beam extending away from said tread to a lower edge of said riser;
iii) a strut merging with said riser reinforcing beam and extending beneath said tread toward said cleated edge of the step and;
iv) a post merging with said tread-reinforcing beam and extending downwardly from said cleated edge toward and merging with said strut;
c) step axle sockets formed on a lower end of said posts, said sockets being operable to receive a transversely extending trailing step axle which is disposed beneath said cleated edge; and
d) means forming a reinforcement structure extending be-

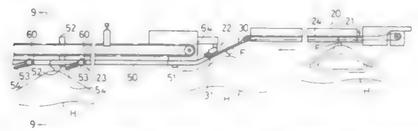
VOL 1167 ISS 4 OC 25 1994 UMI

tween said posts beneath said cleated edge, said reinforcement structure being operable to limit downward deflection of said cleated edge caused by passenger load on said tread.

5,358,090
AUTOMATIC SORTING APPARATUS

Toru Hirao, and Hideki Sato, both of Hanno, Japan, assignors to Tsubakimoto Chain, Co., Osaka, Japan

Filed Mar. 16, 1994, Ser. No. 214,360
Claims priority, application Japan, Mar. 23, 1993, 5-018888
Int. Cl.[5] B65G *37/00*
U.S. Cl. 198—370 1 Claim



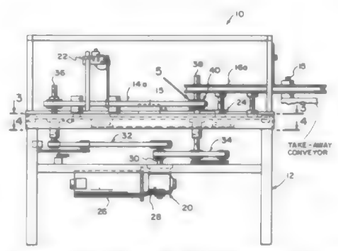
1. An apparatus for sorting articles on hangers comprising:
take-in conveyor means for conveying articles on hangers;
first guide means extending obliquely downwardly from said take-in conveyor means for supporting hooks of hangers received thereon from said conveyor means;
stop means located on the first guide means in the path of the hooks of said hangers and engageable by said hooks for stopping the downward movement of the hooks on the first guide means;
pivoted lifting means for lifting hanger hooks engaged with the stop means over the stop means;
second guide means extending away from said first guide means for supporting hooks of hangers received thereon from said first guide means, said second guide means comprising an elongated member having a plurality of gaps spaced along its length;
pivotable sorting members normally bridging said gaps, the pivotable member at each gap being pivoted at the side closest to the first guide member, said pivotable sorting members being pivotable downwardly to open the gaps;
means for moving articles along the second guide means; and
sorting chutes extending obliquely downwardly from the second guide means, said sorting chutes being aligned with the pivotable sorting members when said sorting members are pivoted downwardly;
whereby articles, spaced apart from one another by the pivoted lifting means, are transported, in spaced relation to one another, along the second guide means, and may be individually routed to selected sorting chutes by selectively pivoting said sorting members.

5,358,091
BOTTLE UNSCRAMBLER

Kenneth J. Herzog, 200 Mill Rd., Riverhead, N.Y. 11901

Filed Jun. 30, 1993, Ser. No. 84,163
Int. Cl.[5] B65G *47/24*
U.S. Cl. 198—399 4 Claims

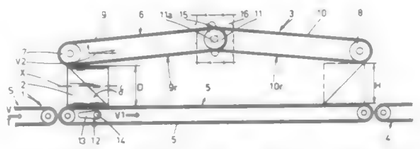
1. An automatic bottle unscrambler positioned between a rotary bottle pre-feeder and a take-away conveyor which comprises:
a) a frame support;
b) a pair of intake carrier belt assemblies spaced apart on said frame support adjacent to the rotary bottle pre-feeder on opposite sides of the center of travel of bottles coming from the rotary bottle pre-feeder;
c) a pair of discharge carrier belt assemblies spaced apart on said frame support at a height higher than said intake carrier belt assemblies, adjacent to and overhanging the take-away conveyor on opposite sides of the center of travel of the bottles going to the take-away conveyor;
d) means in said frame support for manually adjusting the width between said intake carrier belt assemblies and said discharge carrier belt assemblies simultaneously, so as to get a proper side pressure gripping action on the bottles;
e) a drive assembly in said frame support to operate one of said intake carrier belts assemblies and one of said discharge carrier belt assemblies, so as to move the bottles therethrough;
f) a bottle lifter mounted onto said frame support, which extends over and between said intake carrier belt assemblies, whereby said bottle lifter has means to engage a bottle neck and pivot any bottle to an upright position if the neck of the bottle is leading and will ride over the bottle body if the neck of the bottle is trailing; and
g) a bottle kicker mounted to said frame support between said discharge carrier belt assemblies, whereby said bottle kicker is adapted to engage a bottle body to stand up each bottle with the neck trailing, so that said discharge so that said discharge carrier belt assemblies can carry all the bottles in upright positions to the take-away conveyor.



5,358,092
OVERTURNING DEVICE IN MACHINERY FOR WRAPPING GROUPS OF COMMODITIES

Andrea Cinotti, Bologna, Italy, assignor to Wrapmatic, S.p.A., Bologna, Italy

Filed Sep. 22, 1993, Ser. No. 125,339
Claims priority, application Italy, Sep. 30, 1992, BO92 A 000334
Int. Cl.[5] B65G *47/24*
U.S. Cl. 198—415 10 Claims

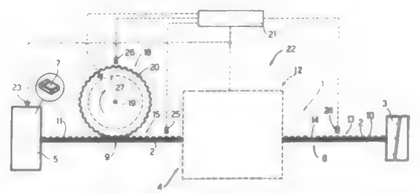


1. An overturning device in machines for wrapping groups of commodities, typically rolls of household paper, comprising:
a feed station through which single commodities advance following a horizontal pass line at a predetermined velocity, each with a wrapping axis disposed parallel to the surface on which it is supported;
a wrapping station by which the commodities are ordered into groups, each with the wrapping axis disposed perpendicular to the supporting surface; overturning means composed of a first conveyor belt occupying substantially the same plane as the supporting surface, interposed between the feed station and the wrapping station and set in motion at a linear velocity comparable to that of the feed station, also a moving surface disposed facing the first belt, consisting in an elastically deformable resilient element looped around at least one pair of wheels, one of which is power driven, wherein the resilient element is disposed with one end adjacent to the runout of the feed station and positioned above the first belt at a distance substantially less than the corresponding dimension of the single commodities when disposed with the wrapping axis parallel to the supporting surface, said moving surface set in motion at a linear velocity of which the component measured in a direction parallel to the first belt is greater than the velocity of the first belt, such that the commodity is taken up and rotated through a right angle into a position with the wrapping axis perpendicular to the first belt, and the end of the resilient element positioned nearer to the feed station is disposed at a height above the first belt substantially equal to the corresponding dimension of the commodity when disposed with the wrapping axis parallel to the supporting surface, further comprising interference means installed immediately preceding the end of the resilient element nearer the feed station, in the conveying direction, at a height less than the corresponding dimension of the commodity, in such a way as to impinge on the topmost rear edge of the commodity and induce its rotation.

5,358,093
DEVICE FOR FEEDING TOBACCO ITEMS, PARTICULARLY CIGARETTES, TO A GROUPING MACHINE

Antonio Gigante, and Antonio Gamberini, both of Bologna, Italy, assignors to G. D. Societa' Per Azioni, Bologna, Italy

Filed Dec. 16, 1993, Ser. No. 168,862
Claims priority, application Italy, Dec. 18, 1992, BO92 A 000443
Int. Cl.[5] B65G *47/26*
U.S. Cl. 198—418.7 3 Claims

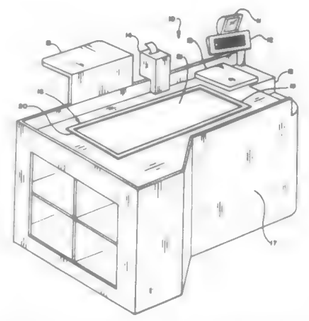


1. A device (4) for feeding tobacco items (2), in particular cigarettes, to a grouping machine (5), in particular a packing machine, for forming the items (2) into groups of "n" items (2) each; characterized by the fact that it comprises conveyor means (9) with seats (11) for a final succession (15) of items (2) presenting gaps (16) defined by the absence of a number of consecutive items (2) equal to "n" or a multiple thereof; phase detecting means (23) for dividing the seats (11) of said conveyor means (9) into groups of "n" seats in time with the grouping machine (5); sensor means (25) for detecting a first and second said group in time with the grouping machine (5) and located respectively at the upstream end and downstream end of each said gap (16); and transfer means (18) for transferring the items (2) housed in said first group into a corresponding position inside said second group.

5,358,094
CONVEYOR BELT WITH ADVERTISEMENTS

Joseph J. Molinaro, 204 Amber Oaks, Sherwood, Ark. 72120, and Mark A. Witcher, 30 Greenhaven Pl., Jacksonville, Ark. 72076

Filed May 13, 1994, Ser. No. 242,283
Int. Cl.[5] B65G *43/00*
U.S. Cl. 198—502.1 6 Claims

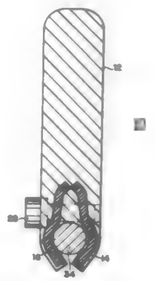


1. A conveyor belt adapted to the changeable display of advertising materials, comprising:
(a) a belt for transporting articles placed thereon;
(b) one or more static cling sheets bearing advertising indicia on a visible surface of said static cling sheets and adhered to an outer surface of said belt by electrostatic attraction.

5,358,095
REMOVABLE CONVEYER FLIGHT

Robert B. Curl, 1935 San LaRue, Twin Falls, Id. 83301

Filed Aug. 23, 1993, Ser. No. 110,391
Int. Cl.[5] B65G *15/44*
U.S. Cl. 198—698 3 Claims



1. A removable conveyor flight for use with the rod of a draper chain link which comprises:
a flight body formed of resilient material and configured to have an upper edge extending up normally from, and in axial alignment with, the rod of a draper chain link, and a pair of opposing arcuately shaped clamp arms for circumferential engagement with the rod of said draper chain link, formed integral with and extending down from and along the bottom edge of said flight body for receiving and removably holding the draper chain rod in interfitting relationship;
a pair of opposing rigid clamps embedded within said resilient flight body, each having an arcuately shaped clamp member embedded within and in arcuate alignment with

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one of the arcuately shaped clamp arms, said opposing clamps each further having a compression tab attached to said arcuate clamp, with each of said compression tabs extending generally upwardly from said clamp, and with the upper ends of said tabs in contact with each other to form a fulcrum point; and

means for selectively drawing the compression tabs toward each other to hold the clamp arms in compressive frictional engagement with the rod of the draper chain link.

5,358,096

CONVEYOR BELT

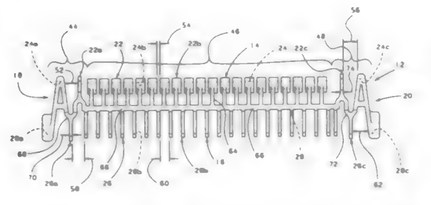
William G. Faulkner, and Marie-Francoise B. Faulkner, both of 6701 Newman Dr., Oklahoma City, Okla. 73162, assignors to William G. Faulkner and Marie-Francoise Bigot Faulkner, both of Oklahoma City, Okla.

Continuation of Ser. No. 69,057, May 27, 1993. This application Oct. 15, 1993, Ser. No. 138,543

The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.

Int. Cl.[5] B65G *21/18*

U.S. Cl. 198—778 21 Claims



1. A conveyor belt adapted to turn on a radius where the conveyor belt has a first side and a second side and the radius is defined as a distance extending from a point spaced a distance from the first side of the conveyor belt to the first side of the conveyor belt, the conveyor belt comprising:

a plurality of link assemblies, each link assembly being constructed of a plastic or ceramic material and having a forward end, a rearward end, a first side and a second side, a plurality of forward link ends being formed on the forward ends of each of the link assemblies with the forward link ends of each link assembly being spaced along the forward end of the link assembly, a forward shaft opening being formed through the forward link ends, a plurality of rearward link ends being formed on the rearward end of each link assembly with the rearward link ends of each link assembly being spaced along the rearward end of the link assembly, a rearward shaft opening being formed through the rearward link ends on each of the link assemblies, the forward end of each link assembly being disposed near the rearward end of another link assembly with the forward shaft openings on each link assembly being aligned with the rearward shaft openings on one of the other link assemblies, the first side of each of the link assemblies cooperating with the first sides of the other link assemblies to form the first side of the conveyor belt and the second side of each of the link assemblies cooperating with the second sides of the other link assemblies to form the second side of the conveyor belt, each link assembly being divided into at least two sections comprising a first section extending from the first side of the link assembly a distance toward the second side of the link assembly, and a second section extending a distance from the first section toward the second side of the link assembly, the forward link ends in the first section being spaced a distance apart and the rearward link ends in the first section being spaced a distance apart, and the forward link ends in the first section being connected to the rearward link ends in the first section by connecting members whereby the forward link ends and the connecting members connected thereto are collapsible generally toward each other or expandable generally away from each other as the conveyor belt is turned on the radius and whereby the rearward link ends and the connecting members connected thereto are collapsible generally toward each other or expandable generally away from each other as the conveyor belt is turned on the radius; and

a plurality of link shafts, each link shaft having a first and a second end, each link shaft having a tapered first section extending a distance from the first end of the link shaft toward the second end of the link shaft and a non-tapered second section extending from the tapered first section a distance toward the second end of the link shaft, the non-tapered second section having a diameter and the tapered first section being tapered to a diameter at the first end of the link shaft which is smaller than the diameter of the non-tapered second section, the forward shaft openings and the rearward shaft openings in each of the link assemblies in the first section being sized to permit the tapered first section of the link shafts to be moved in the forward and rearward shaft openings in the first section of each of the link assemblies as the conveyor belt is moved on the radius.

5,358,097

ACCUMULATION CONVEYOR WITH RETRACTABLE SENSOR

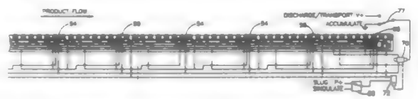
Douglas J. Bakkila; Samuel J. DeMan, both of Grand Rapids; David H. Cotter, Coopersville; Bernard H. Woltjer, Jenison, and Arthur J. Terpstra, Jr., Allendale, all of Mich., assignors to Rapistan Demag Corporation, Grand Rapids, Mich.

Continuation-in-part of Ser. No. 605,544, Oct. 30, 1990, Pat. No. 5,191,967. This application Mar. 5, 1993, Ser. No. 26,856

The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.

Int. Cl.[5] B65G *13/06*

U.S. Cl. 198—781 13 Claims



3. An accumulation conveyor comprising:

a plurality of conveyor sections arranged in tandem, each of said conveyor sections being selectively actuatable in order to convey product to another section and deactuatable in order to accumulate product on that section;

a product sensor associated with each of said conveyor sections and having a sensing position in which that product sensor will sense the presence of product on the associated conveyor section to deactuate that conveyor section;

particular ones of said product sensors each including a retractor that is responsive to actuation of at least the one of said conveyor sections that is downstream of the conveyor section associated with that sensor in order to retract that sensor from said sensing position;

other particular ones of said product sensors each including another retractor that is operative to retract that sensor from said sensing position irrespective of whether any conveyor section downstream of the conveyor section associated with that sensor is actuated; and

a control including a first device to selectively actuate and deactuate the one of said conveyor sections that is the most downstream of said conveyor sections and a second device that is responsive to at least said first device in order to retract each said another retractor only when said first device is actuating said most downstream of said conveyor sections.

5,358,099

BELT CONVEYOR TRAINING IDLERS

Paul Sundstrom, and Alan Huth, both of Calliope, Australia, assignors to Tasman Engineers Pty. Ltd., Calliope, Australia

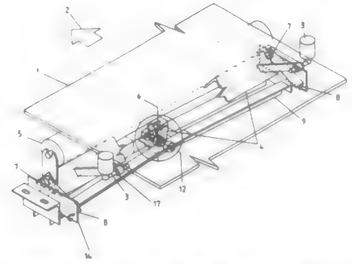
PCT No. PCT/AU91/00488, § 371 Date Apr. 22, 1993, § 102(e) Date Apr. 22, 1993, PCT Pub. No. WO92/06908, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 22, 1991, Ser. No. 39,453

Claims priority, application Australia, Oct. 23, 1990, PK2959

Int. Cl.[5] B65G *39/16*

U.S. Cl. 198—806 20 Claims



1. Apparatus for correcting lateral misalignment of a conveyor belt, comprising

an idler roller upon which the belt is adapted to run;

a base frame;

a tilt frame having the roller rotatably mounted thereon, the tilt frame being pivotally mounted to the base frame;

slewing means, responsive to the lateral misalignment of the conveyor belt, for causing slewing of the tilt frame and roller generally about an axis substantially normal to the belt to thereby urge the belt in a direction opposite to the misalignment;

tilting means responsive to the slewing of the tilt frame to cause the tilt frame and roller to pivot relative to the base frame about an axis substantially parallel to the direction of belt travel to further urge the belt in a direction opposite to the misalignment;

characterised in that the slewing means comprises an abutment member located adjacent each edge of the conveyor belt but spaced therefrom, and wherein the urging of an edge of the conveyor belt against its associated abutment member due to misalignment of the belt causes slewing of the tilt frame and idler roller.

5,358,099

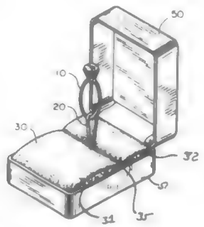
RING DISPLAY

John H. Tavone, 2315 SW. 31st Ave., Hallandale, Fla. 33009

Filed Aug. 2, 1993, Ser. No. 101,238

Int. Cl.[5] A45C *11/04*

U.S. Cl. 206—6.1 10 Claims



1. A ring display which comprises:

a base;

a mounting card for a ring having a decorative surface supported above said base, said mounting card having a groove within the decorative surface adapted to receive the band of a ring and support said ring with its band perpendicular to the plane of the decorative surface, said groove within the decorative surface having at least one hole for the passage of two ends of an elastic cord;

means for supporting the decorative surface of said mounting card above said base;

a ring;

an elastic cord threaded through the band of said ring, wherein the ends of said elastic cord are threaded through at least one hole in said groove and are bonded to the base so as to anchor said ring to said base; and

means for bonding both ends of said elastic cord to said base.

5,358,100

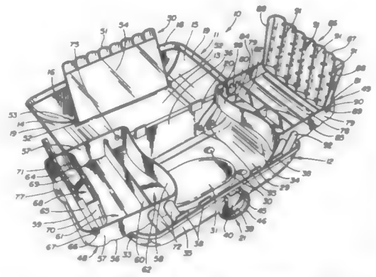
COSMETIC AND JEWELRY ORGANIZER

Stacy L. Wolff, Akron, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio

Filed Jan. 8, 1993, Ser. No. 2,476

Int. Cl.[5] B65D *85/20*

U.S. Cl. 206—45.11 19 Claims



1. A container for holding items comprising a base portion having a bottom surface and walls extending upwardly from said bottom surface to form an open top, a cover portion for selectively closing the open top, at least one tray assembly, and pivot means to translate said tray assembly from a position within said open top of said base portion to a position above at least one of said walls of said base portion, said tray assembly including a tray member and an item holding member pivotally connected to said tray member so that said holding member may be pivoted from a position generally within said tray member to a position extending outwardly from said tray member.

15. A container for holding specific items and other items comprising a base portion having a bottom surface and side walls and end walls extending upwardly from said bottom surface to form an open top, a cover portion for selectively closing the open top, and a tray assembly carried by said base portion, said tray assembly including a pivotal member having a compartment having opposed undulating walls and the specific item carried by said pivotal member is lipstick received between said opposed undulating walls.

16. A container for holding items Of jewelry or cosmetics of a specific configuration and items of any configuration comprising a base portion having a bottom surface and side walls and end walls extending upwardly from said bottom surface to form an open top, a cover portion for selectively closing the open top, and a tray assembly carried by said base portion, said tray assembly including a tray member and a holding member pivotally attached to said tray member, said holding member having apertures therein, the item of a specific configuration carried by said holding member being earrings received in said apertures.

17. A container for holding items comprising a base portion

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having a bottom surface and side walls and end walls extending upwardly from said bottom surface to form an open top, a cover portion for selectively closing the open top, a tray assembly carried by said base portion for holding the items, a case pivotally connected to said cover portion, and a mirror carried by said case such that when said case is pivoted from a closed position to an open position, said mirror is exposed.

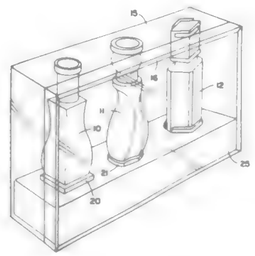
19. A container for holding items comprising a base portion having a bottom surface and side walls and end walls extending upwardly from said bottom surface to form an open top, a cover portion for selectively closing the open top, a recess in said cover portion, a generally U-shaped handle pivotally carried by said cover portion such that it may be positioned in said recess, a hub formed on said cover portion positioned within said handle when said handle is positioned in said recess, said handle and said hub thereby forming a lug on said cover portion, and a recess in said bottom surface, said recess receiving the lug of a like container when the container is stacked on the like container.

5,358,101

DISPLAY CASE AND BOTTLE ASSEMBLY

Carl M. Lombardi, 424 W. Neck Rd., Lloyd Harbour, N.Y. 11743

Filed Mar. 4, 1994, Ser. No. 205,810
Int. Cl.[5] B65D *85/30*
U.S. Cl. 206—45.16 **9 Claims**



8. A display case assembly adapted to store and protectively house at least one container provided with a removable cap whose top end has a distinct geometric shape and a base whose bottom end has a distinct geometric shape, said assembly comprising:

A. said at least one container in said display case;

B. a tray having an upper and a lower wall and a removable cover therefor;

C. an upper retainer plate lying against the upper wall of the tray and provided with at least one projecting socket which is shaped to nest the top end of the at least one container;

D. a compressible pad formed of resilient material seated on the lower wall of the tray; and

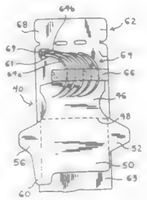
E. a lower retainer plate resting on the pad and compressing same, said lower plate being provided with a single or a projecting socket which is shaped to nest the bottom end of the at least one container whereby the compressed pad which seeks to recover its uncompressed form, acts to hold the at least one container in place within the tray and to absorb shock forces to which the assembly is subjected.

5,358,102

NEEDLE SHIELD DEVICE FOR SURGICAL PACKAGES

David L. Brown, Wallingford, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 852,686, Mar. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 636,227, Dec. 31, 1990, Pat. No. 5,236,082. This application Apr. 30, 1993, Ser. No. 55,959
The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.
Int. Cl.[5] A61B *17/06*
U.S. Cl. 206—63.3 **11 Claims**



1. A suture retainer comprising:

a first panel;

a second panel;

a plurality of sutures positioned between said first panel and said second panel, said sutures terminating in needles positioned external to said first panel and said second panel; and

a needle shield formed separate from said first and second panels and including a first portion mounted to one of said first panel and said second panel beneath said needles and a second portion for enclosing at least a portion of said needles within said needle shield.

5,358,103

CONTAINERIZATION SYSTEM FOR AGROCHEMICALS AND THE LIKE

Leonard E. Hodakowski; Chi-Yu R. Chen; Samuel T. Gouge, all of Raleigh, and Paul J. Weber, Durham, all of N.C., assignors to Rhone-Poulenc Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 150,938, Nov. 12, 1993, which is a continuation of Ser. No. 554,615, Jul. 18, 1990, Pat. No. 5,080,226. This application Mar. 3, 1994, Ser. No. 205,924
The portion of the term of this patent subsequent to Jan. 14, 2009, has been disclaimed.
Int. Cl.[5] B65D *85/82*
U.S. Cl. 206—205 **1 Claim**

1. A containerization system for holding and securing hazardous chemical compounds which comprises a water soluble or dispersible bag which completely encloses a gel formulated to be water soluble or water dispersible, said gel comprising a hazardous chemical compound, said gel having a viscosity of between about 1,000 and 3,000 centipoise.

5,358,104

PACK FOR CIGARETTES OR THE LIKE

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

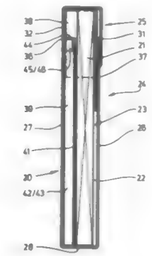
Division of Ser. No. 961,856, Oct. 16, 1992, Pat. No. 5,292,301, which is a division of Ser. No. 690,186, Apr. 19, 1991, Pat. No. 5,187,920. This application Jan. 14, 1994, Ser. No. 180,989
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1990, 4013264
Int. Cl.[5] B65D *85/10*
U.S. Cl. 206—268 **14 Claims**

1. A hinge-lid (25) pack (20), made of thin cardboard and having a height, width and depth, for accommodating a group of elongated cigarettes wrapped in an inner blank (22) to form

a cigarette block (23) having a depth dimension, transverse relative to the longitudinal dimension of the cigarettes, smaller than that of the pack, thereby forming a cavity (38) within the pack (20),

said pack comprising a filling piece (39) disposed in said cavity, wherein:

said filling piece (39) is made of thin cardboard and has a large filling piece wall (41), neighboring side panels (42, 43) folded transversely thereto, and an upper cross-panel (44);



said filling piece wall (41) abuts the cigarette block 923) within said cavity;

said filling piece wall (41) has corner tabs (45, 46) which are separated from said neighboring side panels (42, 43) by a severing cut (47), and which adjoin said upper cross-panel (44); and

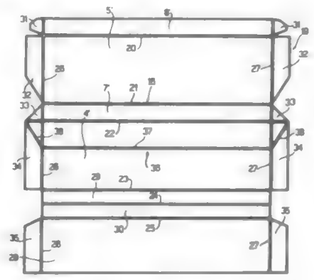
said corner tabs (45, 46) are folded into a retaining position transverse relative to both said filling piece wall (41) and said cross-panel (44).

5,358,105

RIGID PACKAGE, PARTICULARLY FOR CIGARETTES

Silvano Boriani, and Antonio Gamberini, both of Bologna, Italy, assignors to G.D Societa' per Azioni, Bologna, Italy

Filed Jan. 25, 1994, Ser. No. 186,659
Claims priority, application Italy, Feb. 3, 1993, BO93 A 000050
Int. Cl.[5] B65D *85/10*
U.S. Cl. 206—268 **10 Claims**



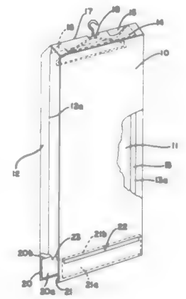
1. A rigid package (2; 40; 50), particularly for cigarettes, comprising a cup-shaped body (9) with an open end defined by a first rear edge (12), a first front edge (14), and first lateral end edges (13) of the cup-shaped body (9); a collar (11) housed partly inside the cup-shaped body (9); and a lid (10) having a second front edge (18), second lateral edges (17), and a second rear edge (15) connected to the first rear edge (12) and defining, with the first rear edge (12), a hinge (16) connecting the lid (10) and the cup-shaped body (9); characterized by the fact that it is formed from a blank (19; 41; 51) wherein preformed bend lines (20–27) define a central panel (4') having lateral tabs (34) and in turn defining the front wall (4) of the package (2; 40; 50); and a first (5') and second (28) peripheral panel on either side of the central panel (4') and in turn respectively defining the rear wall (5) of the package (2; 40; 50) and the collar (11); the second panel (28) being folded on to the inner surface of the central panel (4'); and the central panel (4') and relative tabs (34) presenting a precut ripoff line (36) for detaching said second lateral edges (17) and said second front edge (18) from said first lateral edges (13) and said first front edge (14).

5,358,106

GARMENT BAG WITH OVERLAPPING CLOSURE FLAPS

Heather R. King, 4705 Annaway Dr., Edina, Minn. 55436; Elaine R. Warton, Waukegan, Ill., and Max Ware, Newport Beach, Calif., assignors to Heather R. King, Edina, Minn.

Filed Jul. 19, 1993, Ser. No. 93,466
Int. Cl.[5] B65D *85/18*
U.S. Cl. 206—278 **4 Claims**



1. A clothing bag comprising

imperforate front and back panels each having top, bottom and side edges, and extending continuously from top to bottom and from side to side,

a single access opening formed at the bottom of the panels,

a connecting gusset positively connecting only the top and side edges of the front and back panels to form an enclosure with a bottom access opening and provide the desired garment-receiving space between the two panels, the top having a hanger slit therein to permit the hook of a hanger to extend therethrough to support not only a garment enclosed within the bag, but also the bag itself, and

a pair of overlapping closure flaps respectively formed at the bottom edges of the front and back panels and having mating closure surfaces with releasable pressure sensitive adhesive applied to at least one of the overlapped mating surfaces to permit closing and releasable sealing of the bottom access opening.

5,358,107

PACKAGING COVER FOR A CLEANING APPARATUS HAVING BRISTLES

Les A. Laske, Grayslake, Ill., assignor to Vonco Products, Inc., Lake Villa, Ill.

Filed Mar. 24, 1993, Ser. No. 36,497
Int. Cl.[5] B65D *83/10;* **A46B** *17/04*
U.S. Cl. 206—361 **10 Claims**

1. A packaging cover for bristles of a cleaning apparatus having a base with a neck portion, wherein the bristles are attached to the base, the packaging cover comprising:

two webs of flexible sheet material, a base end, a top end opposite said base end, said webs joined at said top end;

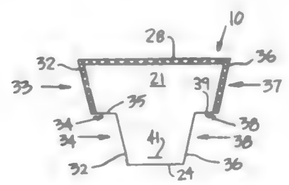
said webs of said sheet material having a first side and a second side each extending between said base end and said

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top end, said first side opposite said second side, and said webs separated from each other along at least a portion of each of said first side and said second side;

each said web having said at least one opening and said first side and said second side of both said webs correspondingly joined along only a joined portion of said first side and said second side, respectively, from said top end;

said first side and said second side of each said web offset inward toward each other and separated from each other

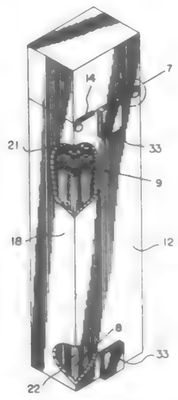


along only a separated portion of said first side and said second side from said base end;

a first intermediate side of each said web formed between said joined portion of said first side and said separated portion of said first side, and a second intermediate side of each said web formed between said joined portion of said second side and said separated portion of said second side; and

said first intermediate side and said second intermediate side generally parallel to said base end.

5,358,108
ARROW STORAGE CONTAINER
Joseph R. Celaya, 1339 W. Nopal Ave., Mesa, Ariz. 85202
Filed Jan. 27, 1994, Ser. No. 186,993
Int. Cl.[5] B65D *85/20*
U.S. Cl. 206—315.11 **4 Claims**



1. An arrow storage container, comprising:

a substantially rectangular rigid housing having a front wall coextensive to a rear wall, a bottom wall orthogonally mounted to the front wall and the rear wall, and spaced side walls fixedly and orthogonally mounted to the bottom wall, the front wall, and the rear wall, with the front wall, the rear wall, the side walls cooperating to define an uppermost periphery parallel to the bottom wall;

at least one hinge mounted to the uppermost periphery at the rear wall;

a lid secured to the hinge;

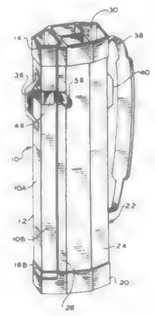
latch means mounted to the lid for securing the lid to the periphery;

a first web fixedly and integrally mounted within the housing to the front wall, the rear wall, and the side walls, with the first web being parallel to and coextensive with the bottom wall;

a second web fixedly mounted within the housing to the front wall, the rear wall, and the side walls and positioned between the uppermost periphery and the first web and arranged in a parallel coextensive relationship relative to the first web; and

a matrix of rigid storage tubes orthogonally directed through the first web and the second web and fixedly secured to the bottom wall, with each of the tubes having an uppermost end arranged to receive an arrow therethrough.

5,358,109
GOLF BAG
James Nichols, Nicholsdeon Productions, Inc., 30 Greenwich Ave. #1A, New York, N.Y. 10011
Filed Sep. 13, 1993, Ser. No. 119,490
Int. Cl.[5] A63B *55/00, 55/06, 55/08*
U.S. Cl. 206—315.3 **24 Claims**



1. A golf bag comprising:

a main bag having an upper opening and being sized to hold golf clubs, said main bag having about a lower end of said main bag distal from said upper opening an upwardly open pocket, said open pocket being outside said main bag and spaced from said upper opening; and

an auxiliary bag having an upper mouth and being sized to hold golf clubs, said auxiliary bag being sized to fit into said pocket, said pocket being directed to orient said auxiliary bag to lie alongside and outside said main bag.

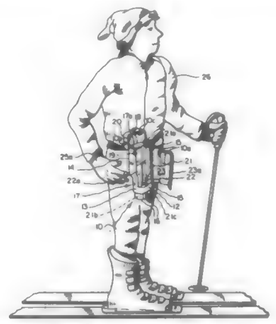
5,358,110
VIDEO CAMERA CARRYING CASE
Jeffery T. Simpson, 1926 E. 6400 South, Salt Lake City, Utah [illegible]121
Filed Sep. 9, 1993, Ser. No. 119,354
Int. Cl.[5] B65D *85/38*
U.S. Cl. 206—316.2 **15 Claims**

1. A video camera carrying case for holding a video camera that has an operating control, a forward portion with an objective lens and a microphone, a rearward portion with a view finder, and an operating side portion adjacent to said operating control and provided with a hand strap, the camera being adapted to be held in operating position and to be operated by a hand of a person carrying it that is inserted between the hand strap and said operating side portion of the camera, said carrying case comprising peripheral side walls defining a video-camera-receiving receptacle having an open top for receiving the camera with its rearward portion uppermost, having a closed bottom, and having a door-opening through a side wall thereof that opens into said operating side portion of the camera and that is normally outermost from the body of a person carrying the camera; a cover for closing the top of said receptacle; and a door secured to said receptacle so as to normally close the said door-opening, whereby the hand of a user may be inserted through said door-opening and under the hand strap of the camera when said door is opened, there being openings at the bottom of the receptacle for the lens and the microphone, respectively, of a received camera, said openings being covered by a transparent material and a sound-passing material, respectively, and the cover for the top of the receptacle being provided with an opening for the view finder of the received camera, which opening is covered by a transparent material, so the camera can be effectively operated without removing it from the case during inclement weather or when it is desired to protect the camera during use.

3. A video camera carrying case holding a video camera that has an objective lens at one end, a view finder at an opposite end, an operating control, and an operating side portion adjacent to said operating control and provided with a hand strap, the camera being adapted to be held and operated by the hand of a user inserted between the hand strap and said operating

strap and said operating side portion of the camera, said carrying case comprising peripheral side walls defining a video-camera-receiving receptacle having an open top for receiving the camera with its rearward portion uppermost, having a closed bottom, and having a door-opening through a side wall thereof that opens into said operating side portion of the camera and that is normally outermost from the body of a person carrying the camera; a cover for closing the top of said receptacle; and a door secured to said receptacle so as to normally close the said door-opening, whereby the hand of a user may be inserted through said door-opening and under the hand strap of the camera when said door is opened, there being openings at the bottom of the receptacle for the lens and the microphone, respectively, of a received camera, said openings being covered by a transparent material and a sound-passing material, respectively, and the cover for the top of the receptacle being provided with an opening for the view finder of the received camera, which opening is covered by a transparent material, so the camera can be effectively operated without removing it from the case during inclement weather or when it is desired to protect the camera during use.

14. A video camera carrying case for holding a video camera that has an operating control, a forward portion with an objective lens and a microphone, a rearward portion with a view finder, and an operating side portion adjacent to said operating control and provided with a hand strap, the camera being adapted to be held in operating position and to be operated by a hand of a person carrying it that is inserted between the hand strap and said operating side portion of the camera, said carrying case comprising peripheral side walls defining a video-camera-receiving receptacle having an open top for receiving the camera with its rearward portion uppermost, and having a closed bottom, a cover for closing the top of said receptacle; openings through said bottom of the receptacle for the lens and the microphone, respectively, of a received video camera, said openings being covered by a transparent material and a sound-passing material, respectively; and an opening through said cover of the receptacle for the view finder of a receiving video camera, which opening is covered by a transparent material, so a received video camera can be effectively operated without removing it from said carrying case during inclement weather or when it is desired to protect the camera during use.

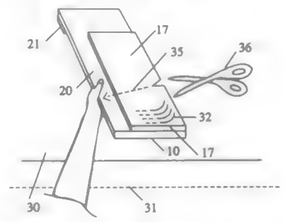


side portion of the camera, said carrying case comprising peripheral side walls defining a video-camera-receiving receptacle that is normally open at one end for receiving the camera and that is closed at an opposite end, one of which side walls is provided with a door-opening; and a door secured to said receptacle and adapted to be closed and opened for covering and uncovering, respectively, said door-opening so as to enable the insertion of a hand of a user into the receptacle and under the hand strap of said camera.

6. A video camera carrying case for holding a video camera that has an operating control, a forward portion with an objective lens and a microphone, a rearward portion with a view finder, and an operating side portion adjacent to said operating control and provided with a hand strap, the camera being adapted to be held in operating position and to be operated by a hand of a person carrying it that is inserted between the hand strap and said operating side portion of the camera, said carrying case comprising peripheral side walls defining a video-camera-receiving receptacle having an open top for receiving the camera with its rearward portion uppermost, having a closed bottom, and having a door-opening through a side wall thereof opening into the interior of said receptacle from adjacent to said bottom of said receptacle to said open top thereof; a cover for closing the top of said receptacle; and a door secured to said receptacle on a hinge axis that extends from adjacent to said bottom of said receptacle to said open top thereof so as to normally close the said door-opening, whereby the hand of a user may be inserted through said door-opening and under the

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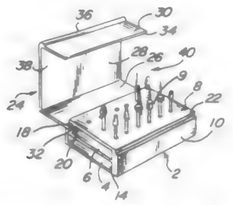
5,358,111
HOLDER FOR USED SURGICAL NEEDLES
Anne T. Greenberg, 316 Oak Street, Winnipeg, Manitoba, Can[illegible] R3M 3R5
Filed Aug. 12, 1993, Ser. No. 105,126
Int. Cl.[5] B65D *83/10*
U.S. Cl. 206—366 **18 Claims**



1. A holder for used surgical needles comprising a substrate consisting solely of a single flat panel formed of a flexible sheets material, the panel having a front surface, rear surface, a first end edge, second end edge, a first side edge and a second side edge, the panel being elongate such that the side edge thereof are longer than the end edges thereof, the sheet material being readily curable by scissors, an elongate strip means of foam material on the front surface into which the used needles can be inserted, the elongate foam strip means extending along the panel from a position adjacent the first end edge to a position adjacent the second end edge and having a width less than that of the so as to be spaced from the first side edge of the panel thus leaving an elongate bare strip of the panel along the front surface of the panel between the first side edge and the foam strip means which bare strip free from the foam material and is bare therealong allowing manual grasping of the panel by the bare strip at different positions therealong, and adhesive means on the rear surface of the panel for attachment of the panel to a support surface.

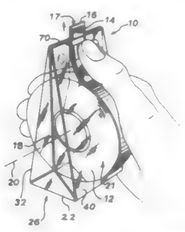
VOL 1167 ISS 4 OC 25 1994 UMI

5,358,112
DENTAL BUR STORAGE DEVICE
Forrest S. Gardner, 10213 Hopeland Ave., Downey, Calif. 90241
Filed Jun. 23, 1993, Ser. No. 81,801
Int. Cl.[5] A61C *1/14*
U.S. Cl. 206—369 2 Claims



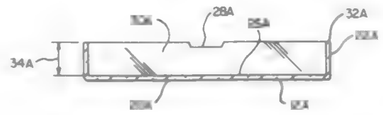
1. A storage device for dental burs comprising:
a metal base member having three parallel support members integrally stacked above each other and having a first open space extending between a top support member and an intermediate support member and a second open space extending between the intermediate support member and a bottom support member, the top support member and the intermediate support member having a plurality of apertures juxtapositioned to receive and vertically support dental burs, the base member further including an integral first pivoting joint member on one side of the base member and an integral locking member on the other side of the base member;
a metal lid member having a solid upper surface pivotally attached to the base member and extending parallel to the top support member when in a closed position, the metal lid member having an integral front wall terminating in a locking lip and an integral back wall terminating in a second pivoting joint member, the metal lid member capable of pivoting about the first and second pivoting joint members to enable a locking action of the locking member on the base member with the locking lip, the first pivoting joint member includes an elongated socket and the second pivoting joint member includes an axle of a dimension which is slidingly engaged for retention in the first pivoting joint member; and
a resilient pin member that extends underneath the top support member and engages the respective ends of the axle to retain it within the elongated socket.

5,358,113
DISPENSER FOR TAPE ROLLS
Ronald G. Hellenbrand, Middleton, Wis., assignor to Miles Kimball Company, Oshkosh, Wis.
Continuation of Ser. No. 897,502, Jun. 11, 1992, abandoned. This application Sep. 13, 1993, Ser. No. 120,693
Int. Cl.[5] B65D *85/671*; B65H *35/04*
U.S. Cl. 206—411 8 Claims



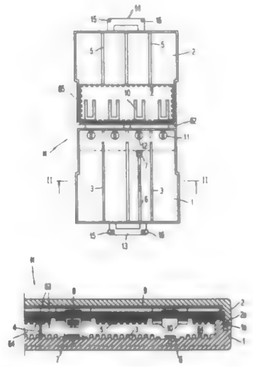
1. A dispenser for a roll of tape comprising:
a base wall formed of a single sheet having opposed parallel first and second side hinge edges and having raised opposed end walls having triangular profiles;
a first side wall formed integrally with the base wall and hingeably attached to the base wall at the first hinge edge to fold between an open position generally co-planar with the base wall and a closed position folded inward toward the base wall, the first side wall also having raised opposed end walls having triangular profiles;
a second side wall formed integrally with the base wall and hingeably attached to the base wall at the second hinge edge also to fold between an open position generally co-planar with the base wall and a closed position folded inward toward the base wall, the second side wall also having raised opposed end walls having triangular profiles, the first and second side walls together forming a cylindrical pocket in the closed position for retaining the roll so that the roll is free to rotate about its axis for dispensing of the tape and for allowing insertion of the roll between the first and second side walls in the open position, the pocket having a longitudinal central axis around which the roll can rotate when positioned in the pocket;
a dispensing slot formed by the abutment of the first side wall and the second side wall, the slot being sized to allow removal of a part of the tape of the roll therethrough from the pocket and whereby rotation of the roll about the axis of the roll is in response to the removal of the tape;
whereby upon folding the side walls into the closed position each of the end walls is positioned adjacent to two other end walls such that the closed dispenser presents triangular end profiles; and
wherein said central longitudinal axis of the pocket is substantially parallel to the first and second hinge edges.

5,358,114
CARD HOLDER
Edward J. Neugebauer, Westlake, Ohio, assignor to Pro-Mold and Tool Company, Inc., Elyria, Ohio
Continuation-in-part of Ser. No. 907,238, Jul. 1, 1992, Pat. No. 5,224,600. This application Oct. 6, 1992, Ser. No. 957,663
Int. Cl.[5] B65D *85/48, 85/62*
U.S. Cl. 206—449 13 Claims



1. A card holder for displaying a plurality of cards having a thickness and a face of a predetermined area, the card holder consisting essentially of:
a transparent rectangular base having a first perimeter and a lip extending along the first perimeter, said lip projecting approximately perpendicularly from and bounding a flat first surface, whereby said lip and said first surface form a rectangular pocket for receiving the plurality of cards, the length and width of said lip being only slightly larger than the length and width of said card; and
a transparent rectangular cover having a second perimeter approximately equal to said first perimeter, said cover including a transparent rectangular plate centrally located therein, said plate having a thickness, a third perimeter less than said second perimeter and a flat rectangular second surface bounded by said third perimeter, said card cover further having a peripheral surface bounded by said second and said third perimeters, whereby upon said base and said cover being assembled, said lip receives and frictionally engages said plate, and said lip contacts said peripheral surface of said cover thereby establishing a separation between said first and second surfaces slightly greater than the thickness of said plurality of cards, the length and width of said cover being the same as the length and width of said face.

5,358,115
DARK BOX FOR STORAGE OF EXPOSED LIGHT SENSITIVE SHEETS
Gerald Pietsch, Kaufbeuren, and Helmut Schausberger, München, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Continuation of Ser. No. 926,922, Aug. 7, 1992. This application Nov. 8, 1993, Ser. No. 149,022
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1991, 4130562
Int. Cl.[5] B65D *85/48*
U.S. Cl. 206—455 11 Claims

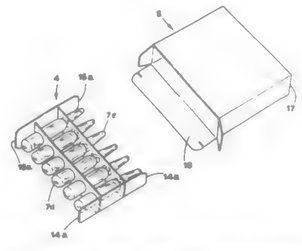


1. A dark box comprising:
a housing defining an internal chamber and having at least one opening for insertion and withdrawal of a plurality of sheets of different formats;
means for sealing and exposing said at least one opening;
adjustable means for dividing said chamber into a plurality of variable-capacity compartments for said sheets of different formats each of said plurality of compartments being adjacent to and spaced from another of said plurality of compartments;
means for storing said sheets of different formats in said plurality of compartments; and
means for simultaneous dispensing of at least two of said stored sheets from at least two of said compartments to at least one developing machine.

5,358,116
PACKAGE FOR CONTAINING TUBULAR PRODUCTS, SUCH AS VIALS AND THE LIKE
Renato Brintazzoli, Bologna, Italy, assignor to San S.R.L., Bologna, Italy
Continuation of Ser. No. 856,085, Mar. 19, 1992, abandoned. This application Oct. 13, 1993, Ser. No. 135,959
Claims priority, application Italy, Jul. 3, 1991, R091U000002
Int. Cl.[5] B65D *85/42*
U.S. Cl. 206—485 4 Claims

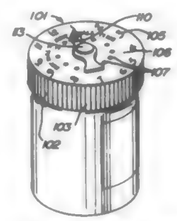
1. In a package for containing tubular products, each of these products constituted by a cylindrical body and a neck, a narrowing portion mutually connecting the body to the neck, said package comprising a box having a length that is longer than said tubular products, a U-shaped support element inserted into said box for supporting at least one tubular product, said support element having a base, a first wing and a second wing each wing having a first edge journaled to an opposite end of said base, and each wing having a second edge which is free, the free edge being opposite to the journaled edge, the wings being upright and the plane of the wings being parallel to each other, said base having two free sides, said first wing having at least a first through hole into which the body of said product is inserted, said second wing having at least a second through hole, made coaxial with said first hole, the second hole approximating the diameter of the narrowing portion, an edge of said second hole having radial splits which form flexible segments which elastically permit the passage of the neck therethrough and which hold said narrowing portion of said tubular product therein.

2. In a package for containing tubular products, each of these products constituted by a cylindrical body and a neck, a narrowing portion mutually connecting the body to the neck, said package comprising a box having a length that is longer than said tubular products, a U-shaped support element inserted into said box for supporting at least one tubular product,



said support element having a base, a first wing and a second wing each wing having a first edge journaled to an opposite end of said base, and, each wing having a second edge which is free, the free edge being opposite to the journaled edge, the wings being upright and the plane of the wings being parallel to each other, the base having two side edges, two flaps hinged to the side edges of said base between said wings, said first wing having at least a first through hole into which the body of said product is inserted, said second wing having at least a second through hole, made coaxial with said first hole, the second hole approximating the diameter of the narrowing portion, an edge of said second hole having radial splits which form flexible segments which elastically permit the passage of the neck therethrough and which hold said narrowing portion of said tubular product therein;
means being hinged to at least one of said flaps to cover and protect the tubular product held in said support element.

5,358,117
MEDICINE CONTAINER CAP WITH TIME INDICATOR
James Adams, P.O. Box 2173, Aspen, Colo. 81612
Continuation-in-part of Ser. No. 934,956, Aug. 25, 1992, Pat. No. 5,279,422. This application Dec. 30, 1993, Ser. No. 175,971
Int. Cl.[5] B65D *83/04*
U.S. Cl. 206—534 16 Claims



1. A cap for a medicine container indicating the time at

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which the next dosage of the medicine is to be taken, said cap comprising:

a body having releasable fastener means for securing the cap to said container, an upper cap surface, a cap underside and a cap center;

indicia substantially circumferentially located on said upper cap surface representing time increments;

a slightly flexible and resilient shaft protruding though said body;

an elongated arm mounted on said shaft for rotatable movement in a spaced and substantially parallel relationship with said upper cap surface to point at the indicia representing the time at which the next dosage of the medicine is to be taken; and

cooperating peg means and indentation means on said arm and said upper cap surface adapted to be releasably engaged to releasably retain said arm in selected orientations relative to said upper cap surface so as to cooperate with said indicia to indicate the time at which the next dosage of medicine is to be taken.

5,358,118

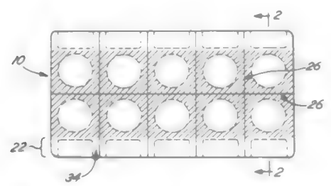
STEPPED EDGE BLISTER PACK

Andrew R. Thompson, Swindon, and Ray W. Marshall, Romford, both of England, assignors to R.P. Scherer Corporation, Troy, Mich.

Continuation of Ser. No. 954,888, Sep. 30, 1992, abandoned. This application Feb. 18, 1994, Ser. No. 198,644

Int. Cl.[5] B65D *83/04*

U.S. Cl. 206—538 **7 Claims**



1. A multi-unit blister pack having an assembled state comprising, in combination:

a base sheet having a substantially rectangular shape defining a base plane and defined by first and second ends and first and second edges, said base sheet including first and second rows of blister pockets extending between said first and second ends substantially parallel to said first and second edges to define corresponding pairs of blister pockets extending between said first and second edges substantially parallel to said first and second ends, said base sheet further including opposed pairs of spaced stepped edge portions along said first and second edges, respectively, each of said opposed pairs substantially aligning with one of said corresponding pairs, said blister pockets and said spaced stepped edge portions extending in the same direction from said base plane, said opposed pairs of said spaced stepped edge portions providing first and second opposed corrugated strengthening external edges in said assembled state structurally reinforcing said multi-unit blister pack; and

a lidding sheet substantially corresponding in shape to said base sheet and peelably adhered thereto to close said blister pockets and to cover said spaced stepped edge portions, said lidding sheet providing free tab portions over each of said spaced stepped edge portions, said lidding sheet including a plurality of tear lines extending between said first and second edges substantially equally spaced between said corresponding pairs of said blister pockets and a removal line extending between said first and second ends of said base sheet substantially equally spaced between said first and second rows, said tear lines and said removal line dividing said lidding sheet into a plurality of pocket portions corresponding to said blister pockets;

said spaced stepped edge portions, said free tab portions, said tear lines and said removal line cooperating to define means for individually removing one of said pocket portions in said assembled state and opening one of said blister pockets by pulling said free tab portion towards said one of said blister pockets.

5,358,119

METHOD OF SEPARATING A MIXTURE OF PLASTICS COMPRISING AT LEAST THREE COMPONENTS USING ELECTROSTATIC TECHNIQUES

Ingo Stahl, Vellmar; Axel Hollstein, Kassel; Ulrich Kleine-Kleffmann; Iring Geisler, both of Bad Hersfeld, and Ulrich Neitzel, Kassel, all of Fed. Rep. of Germany, assignors to Kali und Salz Aktiengesellschaft, Kassel, Fed. Rep. of Germany

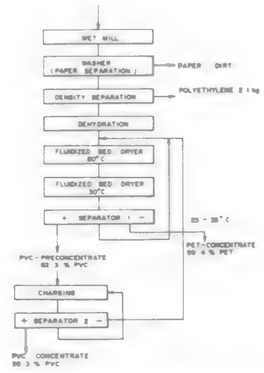
PCT No. PCT/EP92/01613, § 371 Date Apr. 9, 1993, § 102(e) Date Apr. 9, 1993, PCT Pub. No. WO93/03848, PCT Pub. Date Mar. 4, 1993

PCT Filed Jul. 4, 1992, Ser. No. 39,273

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1991, 4127572

Int. Cl.[5] B07C *5/02*

U.S. Cl. 209—3.1 **20 Claims**



1. Process for the separation of crushed plastic particles of a plastic mixture of plastics of a chemically different type, which partly have an overlapping density range and partly a different density range selected from the group consisting of polyethylene (PE), polyethylene terephthalate (PET), polypropylene (PP), polystyrene (PS), and polyvinyl chloride (PVC), comprising the steps of

first separating the plastic particles having a different density range according to the principle of density separation; and

second separating the plastic particles with the same density range via a free-fall separator;

subjecting the plastic mixture to a surface treatment; and

triboelectric charging the plastic mixture.

5,358,120

SELECTIVE SEPARATION OF FINELY-DIVIDED MINERALS BY ADDITION OF SELECTIVE COLLECTOR REAGENT AND CENTRIFUGATION

George E. Gantt, Milledgeville; Thomas J. Adkisson, Macon; Preston B. Gladin, Milledgeville, and Randall E. Ussery, Jr., Gordon, all of Ga., assignors to Engelhard Corporation, Iselin, N.J.

Continuation of Ser. No. 988,393, Dec. 9, 1992, Pat. No. 5,311,997, which is a continuation of Ser. No. 725,713, Jul. 3, 1991, abandoned. This application Mar. 21, 1994, Ser. No. 215,214

Int. Cl.[5] B03B *1/04, 7/00;* B04C *9/00*

U.S. Cl. 209—4 **5 Claims**

1. A method for purifying kaolin clay which consists essentially of the steps of:

(a) providing degritted impure kaolin clay containing particles of a colored iron-contaminated titania impurity, said degritted impure kaolin clay being in the form of a fluid dispersed alkaline aqueous pulp and the dispersant being selected from the group consisting of alum-silica hydrosol, sodium silicate, sodium carbonate, sodium polyacrylate and mixtures thereof, said pulp being free from a phosphate dispersant;

(b) conditioning said pulp from step (a) by agitating it in a squirrel cage mixer with calcium chloride and an anionic collector reagent comprising oleic acid capable of selectively collector-coating said iron-contaminated titania impurity;

(c) subjecting the entirety of the conditioned pulp from step (b) to centrifugation or hydrocloning to sediment selectively collector-coated iron-contaminated impurity; and

(d) separating said sediment from the remainder of the pulp which is a dispersed concentrate of purified kaolin.

5,358,121

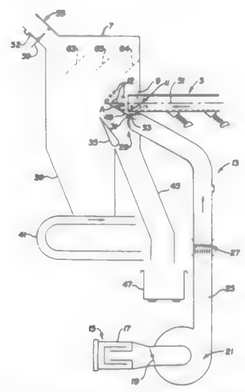
METHOD AND APPARATUS FOR HEAVY MATERIAL SEPARATION

Casimir B. Robak, and Virgil P. Butrum, both of Newburg, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 892,531, May 21, 1992, abandoned, and a continuation-in-part of Ser. No. 606,120, Oct. 31, 1990, abandoned. This application May 9, 1994, Ser. No. 240,080

Int. Cl.[5] B07B *4/00*

U.S. Cl. 209—137 **10 Claims**



1. A method of separating non-aluminum materials from aluminum materials in an incoming stream of shredded used food and beverage cans, including the steps of:

providing a conveyor leading into and having one end in a chute, and an air header means for generating an air stream at a predetermined velocity and air flow;

moving said shredded cans to said end of said conveyor;

directing said air stream generally upwardly and at an angle towards said end of said conveyor;

selecting a predetermined air flow and air velocity of said air stream to lift said aluminum materials from said end of said conveyor as they emerge from said end of said conveyor, before they are permitted to fall, and propel them a predetermined distance from said end of said conveyor; and

collecting the aluminum materials in an aluminum bin which is placed said predetermined distance from said conveyor.

5,358,122

MULTIPLE STAGE TOBACCO CLASSIFIER

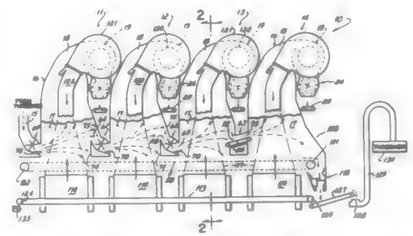
Guy F. Surtees, Wilson, N.C., assignor to The Standard Commercial Tobacco Company, Inc., Wilson, N.C.

Division of Ser. No. 727,974, Jul. 10, 1991, Pat. No. 5,205,415. This application Mar. 29, 1993, Ser. No. 38,707

The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.

Int. Cl.[5] B07B *4/00;* A24B *5/10*

U.S. Cl. 209—139.1 **2 Claims**



1. A multiple stage tobacco classifier comprising in combination:

a plurality of classifying separators, each having means for projecting a stream of mixed tobacco parts across a separation chamber therein and means for carrying lighter tobacco parts from said stream upwardly,

a conveyor means disposed within each separator for receiving heavier tobacco parts falling out of said mixed stream and for conveying said heavier parts through successive downstream separators,

each classifying separator, except for the last downstream separator chamber, having means for receiving remaining tobacco parts in said stream not carried upwardly or falling out, and for delivering such remaining tobacco parts to a projecting means for a downstream separator chamber and,

said projecting means in all chambers being disposed in the same horizontal plane.

5,358,123

MODIFIED Z SECTION TENSION RINGS FOR SCREENS

Lawrence H. Stone, River Vale, N.J., assignor to Kason Corporation, Linden, N.J.

Filed Nov. 26, 1993, Ser. No. 157,533

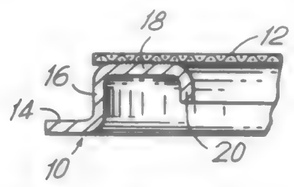
Int. Cl.[5] B07B *1/49*

U.S. Cl. 209—403 **4 Claims**

1. A tension ring structure for attachment to a screen used with anti-blinding devices operating just below said screen, comprising a cross-sectional shape including a lower, outer horizontal flange, a vertical flange, an upper, inner horizontal flange, separated from the level of said outer flange by a distance and to which said screen is directly attached and a drop

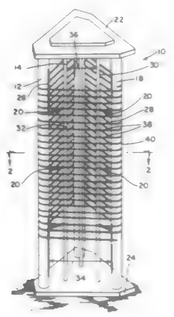
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piece depending from the innermost part of said upper and inner flange only part of the distance to level of said outer



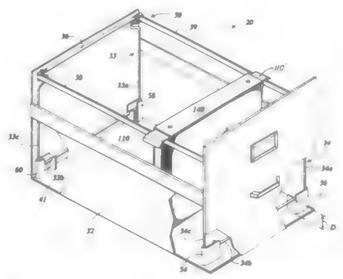
horizontal flange for preventing the jamming of said anti-blinding devices and for providing stiffness for said structure.

5,358,124
STORAGE RACK
Frank Mueller, Kriemhildenstrasse 10, 76185 Karlsruhe, Fed. Rep. of Germany
Filed Aug. 24, 1993, Ser. No. 111,290
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1993, 4303698
Int. Cl.[5] A47G *19/08*
U.S. Cl. 211—41 14 Claims



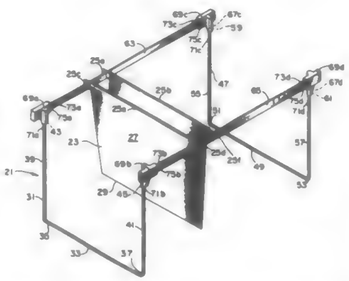
1. A storage rack, comprising:
a support having four substantially parallel linear contact surfaces, said support being arranged to provide an insertion gap between two of the linear contact surfaces and a holding gap opposite said insertion gap, said holding gap being between the other two linear contact surface, said four linear contact surfaces being spaced to form the four corners of a substantially trapezoidal area having two opposing, substantially parallel sides and two opposing, substantially non-parallel sides, said substantially non-parallel sides being angled at an angle of greater than 90 degrees relative to each other, one of said substantially parallel sides being longer than the other substantially parallel side; and
a plurality of cross support extending across said insertion gap and connecting to said support proximate the corners of the longer substantially parallel side said plurality of cross supports being spaced from each other along a length of said insertion gap so as to define a plurality of areas that each can support an object, said holding gap being continuous and unobstructed at least along a length equal to said insertion gap length to permit pivoting of the object until holding engagement with said other two linear contact surfaces.

5,358,125
SYSTEM FOR SUPPORTING BINDERS IN A HANGING FILE
Gary E. Blessing, 4853 Marydale Cir., Lilburn, Ga. 30247
Filed Jan. 18, 1993, Ser. No. 9,537
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—46 10 Claims



1. Apparatus for supporting a hanging file frame in a drawer, the drawer having a plurality of sides and a bottom, said apparatus comprising a plurality of support members, each of said support members having at least one frame-receiving slot formed therein for receiving and retaining a horizontal section of the hanging file frame, said apparatus being adapted for supporting the hanging file frame a selected distance above the bottom of the drawer.

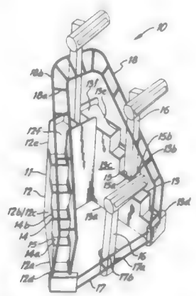
5,358,126
HANGING-FOLDER FILE FRAME
Bruce S. Jones, and William A. Putman, both of Franklin, Tenn., assignors to Pelikan, Inc., Franklin, Tenn.
Filed Nov. 3, 1993, Ser. No. 148,201
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—46 4 Claims



1. A hanging-folder file frame for hanging folders which have two rigid top edge members with hooks at their ends, and a web extending downwardly from one top edge member to a fold line and extending upwardly from the fold line to the other top edge member, said hooks extending downwardly from each end of the top edge members and being adapted to hook over horizontal side rails of a hanging-folder file frame, comprising
a first U-shaped end frame member having a base portion with ends and two legs extending upwardly from the base portion and terminating in top portions,
a second U-shaped end frame member having a base portion with ends and two legs extending upwardly from the base portion and terminating in top portions,

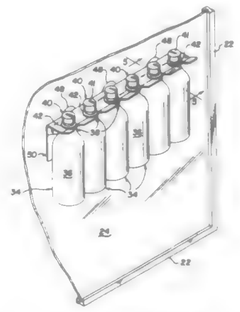
a pair of side rails extending between the first and second U-shaped end frame members,
corner cap means including corner caps connecting the ends of the rails to the top portions of the legs of the end frame members,
a hanging folder hanging on the side rails, and
means on the folder for cross bracing the frame and holding the side rails in position
said end frame member base portions being the only lower transverse members of the frame connecting the side rails together,
and the rigid top edge members of the hanging folders being the only upper transverse member connecting the side rails together at the top of the frame.

5,358,127
SHAVER STAND
Barry A. Ennis, 46 Park Gate Dr., Edison, N.J. 08820
Filed Dec. 3, 1993, Ser. No. 162,644
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—60.1 8 Claims



1. A shaver stand, comprising:
first and second legs each having a bottom surface, substantially parallel side surfaces, a relatively low front part, a relatively high rear part, and a stepped top surface extending between said front and rear parts,
each step of said top surface having a recess adapted to receive a minor end portion of a handle of a disposable razor, each such recess having an internal razor handle supporting surface disposed above the bottom surface of the corresponding leg,
said legs being disposed with their rear parts adjacent one another, their bottom surfaces substantially coplanar, and the side surfaces of one leg being at an acute angle to the side surfaces of the other leg;
a cross member connected between said front parts, said cross member having means for vertically receiving an end part of a handle of a disposable razor; and
first and second elongated mesh means, each of said mesh means being secured to a front part of a corresponding one of said legs and extending above and in juxtaposition with the top surface thereof, each mesh means having an opening above a corresponding recess for accommodating an intermediate portion of said handle,
whereby a disposable razor may be held on each step by engagement of the end of the handle thereof with the corresponding supporting surface, the handle extending through an opening of the corresponding mesh means and being held upright by engagement therewith, and the razor may be removed by grasping a portion of the handle extending above the corresponding mesh means.

5,358,128
BOTTLE RACK FOR REFRIGERATED DISPLAY
Paul Belokin; Martin P. Belokin, both of P.O. Box 1907, Denton, Tex. 76202, and Norman P. Belokin, 3341 Evers Parkway, Denton, Tex. 76207
Filed Nov. 22, 1993, Ser. No. 155,596
Int. Cl.[5] B47F *7/00*
U.S. Cl. 211—75 12 Claims



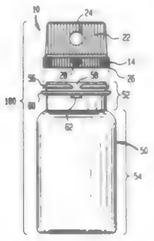
1. A display rack supporting a plurality of bottles adjacent the interior surface of a substantially transparent wall of a refrigerated vault, each bottle having a body portion, a relatively narrow neck portion and a top portion, wherein the display rack comprises:
(a) a back wall having indicia thereon for advertising products contained within a refrigerated vault and mounting the display rack adjacent a generally vertical interior surface of a substantially transparent wall of said refrigerated vault, said back wall having a plurality of openings formed therein for connecting suction cups to said back wall so that the display rack can be removeably mounted to said interior surface;
(b) a ledge extending from said back wall, said ledge having a generally horizontal portion adjacent said back wall and an upwardly deflected portion distal from said back wall; and
(c) a plurality of slots formed in said ledge, each of said slots being of a size adapted to receive the neck portion of a bottle but smaller than the lid portion, whereby the edges of the slots in the ledge support said bottles at the neck portions thereof and the body portions of the bottles can be easily grasped for selection and removal from the display rack.

5,358,129
CHILD RESISTANT BOTTLE
Colin F. Watts, Yardley, Pa., assignor to McNeil-PPC, Inc., Milltown, N.J.
Filed Jun. 24, 1993, Ser. No. 82,132
Int. Cl.[5] B65D *55/02*
U.S. Cl. 215—206 11 Claims

1. A child resistant package comprising:
a container having a base and a neck extending longitudinally therefrom;
a cap for attachment to said container, said cap having detent means for retaining said cap on said neck and said cap having a cover extending transversely to said neck with a hollow cylindrical wall extending therefrom, said detent means placed on said wall;
said neck including retention means for retaining said detent means on said neck, and release means which allow release of said detent means from said neck; and
said cap including grip means comprising a flange extending

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longitudinally from said cover and said flange disposed on said cover across a diameter of said wall, and said detent



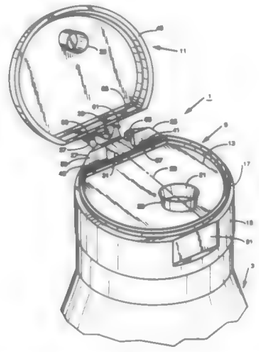
means disposed on said wall perpendicular to a line extending from the midpoint of said flange.

5,358,130

ONE-PIECE CONTAINER CLOSURE WITH LID HELD OPEN FOR DISPENSING

Gary L. Meagen, Wheeling, W. Va., and Herbert V. Dutt, Sarasota, Fla., assignors to Continental Plastics, Inc., Triadelphia, W. Va.

Filed Apr. 26, 1994, Ser. No. 233,080
Int. Cl.[5] B65D *47/00*
U.S. Cl. 215—238 **15 Claims**



1. A one-piece closure for a container comprising:

a cap having a planar end wall, a side wall extending axially from said end wall, means on said side wall for securing said cap to the container, a dispensing opening extending through said end wall; and a pair of projections projecting upward from said planar end wall adjacent an edge of said end wall and spaced apart equally on each side of a diameter of said end wall passing through said dispensing opening;

a planar lid configured to cover said planar end wall except for said projections when closed;

a plug depending from said planar lid for plugging said dispensing opening when said lid is closed;

a support arm attached to said planar lid and extending between said projections when said lid is closed;

an integral hinge pivotally connecting said support arm to said edge of said planar end wall of said cap between said projections for rotation of said lid about a pivot axis between said closed position and an open position; and

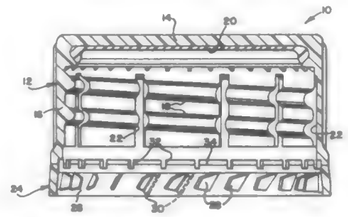
elongated ribs projecting laterally from said support arm and dimensioned to engage said projections and maintain said lid in said open position, said ribs deforming when said lid is moved toward the closed position to allow said support arm to pass between said projections, said projections having recesses in which said ribs are received without engaging said projections when said lid is in said closed position.

5,358,131

TAMPER-INDICATING PLASTIC CLOSURE WITH SEGEMENTED PILFER BAND

Thomas McCandless, and Michael E. Corcoran, both of Crawfordsville, Ind., assignors to H-C Industries, Inc., Crawfordsville, Ind.

Continuation of Ser. No. 901,082, Jun. 19, 1992, abandoned. This application May 14, 1993, Ser. No. 61,829
Int. Cl.[5] B65D *41/34*
U.S. Cl. 215—252 **7 Claims**



1. A tamper-indicating plastic closure for a container having an annular locking ring, comprising:

a closure cap having a top wall portion, and a depending annular skirt portion depending from said top wall portion and including an internal thread formation for engagement with a like thread formation on said container; and

an annular pilfer band partially detachably connected to said skirt portion by a plurality of circumferentially spaced frangible bridges including an annular band portion, and a plurality of circumferentially spaced projections extending inwardly from said annular band portion, said pilfer band being separated and distinguished from said skirt portion by horizontal score means extending partially circumferentially about said closure,

said projections being engageable with said container locking ring during removal of said closure from said container for fracturing said frangible bridges,

said pilfer band including an unscored connector portion connecting said pilfer band to said skirt portion after fracture of said frangible bridges, said connector portion being defined between ends of said circumferentially extending horizontal score means,

said pilfer band including a pair of spaced apart fracturable means, each comprising score means including at least two spaced apart scores defining therebetween a fracturable residual portion of said pilfer band, so that upon removal of said closure from said container and fracture of said frangible bridge means, at least one of said fracturable means fractures by fracture of the residual portion thereof,

said pilfer band including a pair of pilfer band segments, each extending circumferentially from said connector portion to a respective one of said pair of fracturable means, each of said band segments extending no more than about 100° about the circumference of said closure,

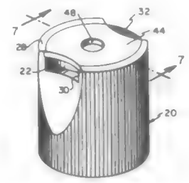
said pilfer band including a third pilfer band segment in substantially diametrically opposed relation to said connector portion and extending between said pair of fracturable means, said third band segment being sufficiently short to permit removal thereof from within said container by an associated automatic washing apparatus.

5,358,132

CAP FOR CONTAINERS

Robert A. Bennett, Easton, Conn., assignor to Bennett, Ambrogio and Conant, Stratford, Conn.

Filed Feb. 23, 1994, Ser. No. 200,730
Int. Cl.[5] B65D *51/18*
U.S. Cl. 220—253 **5 Claims**



1. A cap adapted to be secured to an open end of a container, said cap comprising:

a vertical hollow cylinder provided with an open lower end adapted to be secured to the open end of the container and a closed upper end with a small centrally disposed first opening therein surrounded by a raised peripheral first lip, the cylinder upper end having a second peripheral lip extending upwardly above the first lip, the second lip having first and second oppositely disposed cut out regions communicating with the cylinder upper end;

a first horizontally elongated flexible member having first and second opposite ends each of which is aligned with a corresponding one of the first and second regions, the first member being disposed between the first and second lips, the first member having a flat top surface and a downwardly depending extension which slidably engages the first lip, the extension in a horizontal plane defining a FIG. 8 with left hand and right hand sections, each section having a hole of like shape and size as the raised peripheral first lip, one hole being sealed, the other hole being open, the first member being manually slidable between a closed position at which the one hole seals off the first opening and an open position at which the other hole is aligned with the first opening; and

a second flat horizontal member engaged to the second lip and spaced above the first member, said second member having a second opening vertically aligned with the first opening.

5,358,133

OVER-PACK CONTAINER FOR AN INDUSTRIAL DRUM

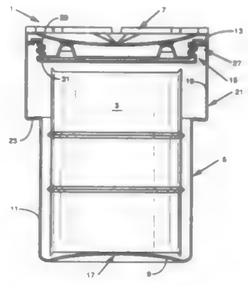
John G Gillispie, and Donald J. Mitchell, both of Wellsburg, W. Va., assignors to Eagle Manufacturing Company, Wellsburg, W. Va.

Filed Mar. 22, 1993, Ser. No. 36,543
Int. Cl.[5] B65D *41/04*
U.S. Cl. 220—304 **3 Claims**

1. An over-pack container for an industrial drum comprising:

a body portion for receipt of a drum, said body portion having a bottom wall, a circular sidewall extending upwardly from said bottom wall and terminating at an inwardly extending upper lip, said upper lip having a downwardly depending leg portion, said downwardly depending leg portion being spaced from said sidewall of said body portion to form a gap therebetween and having an inner surface with threads formed thereon, and said circular sidewall having an outwardly extending flange portion adjacent said upper lip, said flange portion having an outer surface of a polygonal shape with flat outer surfaces; and

a lid comprising a hollow circular member having a threaded outer wall with threads thereon engageable with the threads of said inner surface of the downwardly depending leg portion of said body portion sidewall, said hollow circular member having an outwardly extending portion at an upper region thereof; said outwardly extending portion having a lower sealing surface engageable with the inwardly extending upper lip of the sidewall of said body portion, with spaced projections extending upwardly about the periphery thereof, and said hollow



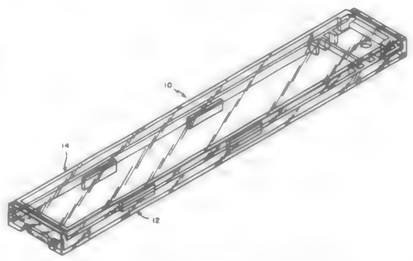
circular member having an upper wall spaced from a lower wall, with radially extending depressions in said upper wall and a circular groove in said lower wall, with a bottom wall in said lower wall forming said circular groove merging with said depressions in said upper wall to provide reinforced sections.

5,358,134

DISPLAY PACKAGE

Richard E. Ripley, Attleboro, Mass., and Marc Solda, Bethlehem, Pa., assignors to Textron Inc., Providence, R.I.

Filed Sep. 13, 1993, Ser. No. 120,587
Int. Cl.[5] B65D *41/18, 85/40*
U.S. Cl. 220—307 **5 Claims**



1. A display package comprising in combination:

a tray defined by a bottom wall, first side walls and first end walls, said first side walls having upper edges, said first end walls having lower portions extending between said first side walls and having upper portions protruding above said upper edges;

a cover defined by a top wall, second side walls and second end walls, said second end walls having lower edges, said second end walls having upper portions extending between said second side walls and having lower portions protruding below said lower edges;

said tray and cover being configured and dimensioned for assembly with said top wall overlying said bottom wall, with the upper edges of said first side walls abutting the lower edges of said second side walls, and with said second end walls tightly confined between said first end walls; and

engagement means associated with the lower portions of

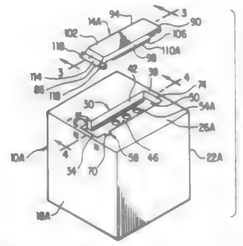
VOL 1167 ISS 4 OC 25 1994 UMI

said first and second end walls for releasably interconnecting the thus assembled tray and cover.

5,358,135
ACCESS DOOR HINGE ATTACHMENT

T. Ray Robbins, Raleigh; Paul D. Johnson, and Robert W. Schmer, both of Knightdale, all of N.C., assignors to Square D Company, Palatine, Ill.

Continuation of Ser. No. 997,475, Dec. 28, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 200,837
Int. Cl.[5] B65D *51/04*
U.S. Cl. 220—337 **15 Claims**



1. An enclosure for housing adjustable electrical components, having a sealable access means, the improvement comprising:

a. said enclosure being generally hollow and having a generally flat top, a first side generally perpendicular to said top, and a second side generally parallel to said first side and spaced apart by said top;

b. a door hingedly attached and removable from said enclosure, generally rectangular in shape, having two parallel spaced apart sides, a hinging end, a latching end spaced apart from said hinging end, a top, a bottom, a hinge pin integrally formed from said hinging end, said hinge pin having a pair of outwardly extending portions perpendicular to each of said two parallel sides, said hinged door movable between a closed position and an open position;

c. an access well receiving said hinged door, said well extending generally between said first and second spaced apart sides of said enclosure said well having a bottom surface being generally flat and parallel to said enclosure top and spaced apart from said enclosure top by a pair of side walls, said bottom surface having at least one access opening passing there through for providing access to the adjustable components contained within said enclosure, said side walls being generally parallel to one another and spaced apart by said well bottom surface, said side walls of said well each having a retaining groove, integrally formed in said side walls and extending inward from said second side of said enclosure, said grooves slidably receiving said outwardly extending portions of said hinge pin so that said outwardly extending portions do not slide outwardly towards and through said second side when said door is being removed;

d. means for selectively retaining said hinge pin in said grooves such that said door is hingably attached to said enclosure without welding and is selectively installed and removed from said enclosure;

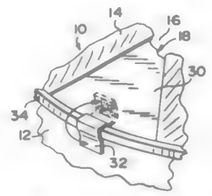
e. means for latching said door securely in the closed position within said access well with the top of said door generally flush with the top of said enclosure; and

f. means mounted to the bottom of said door for sealing said access opening.

5,358,136
RESEALABLE LIQUID CONTAINER

Robert J. Rubendall, 64-36 68th Ave., Apt. 2-L, Glendale, N.Y. 11385

Division of Ser. No. 24,741, Mar. 2, 1993. This application Nov. 2, 1993, Ser. No. 144,409
Int. Cl.[5] B65D *43/20*
U.S. Cl. 220—346 **1 Claim**



1. A resealable liquid container which comprises:

a) a cylindrical body to hold liquid therein;

b) a top end affixed on said cylindrical body, with said top end having an aperture therein; and

c) means built-in said top end at said aperture, for opening and reclosing said aperture, so that when said aperture is opened said liquid can be poured therefrom and when said aperture is closed said liquid will be retained therein, so that said liquid can be maintained in a sanitary condition, wherein said opening and reclosing means includes:

i) a pair of tracks, each formed on a bottom surface of said top end adjacent opposite side edges of said aperture which are closer together at a center of said container then at an outer edge of said container;

ii) a closure member to fit into said pair of tracks, so as to slide between a fully opened position and a fully closed position with respect to said aperture and which must buckle inwardly as it is positioned toward a center of said said container; and

iii) a flange seal formed from a bendable tab onto a front edge of said closure member, so that said flange seal can be mechanically bent so as to engage with a portion of a rim of said top end adjacent said aperture when said closure member is in said fully closed position to retain said closure member thereto and then disengage with the portion of the rim of said top end to allow said closure member to go into said fully opened position.

5,358,137
LIQUID BULK CONTAINER WITH TENSIONING STRAPS

Lyle H. Shuert, Bloomfield Hills, Mich., and Claude Decroix, Saverne, France, assignors to Sotralentz, S.A., Drulingen, France

Continuation of Ser. No. 974,557, Nov. 12, 1992, abandoned. This application Jan. 12, 1994, Ser. No. 180,539
Int. Cl.[5] B65D *19/10*
U.S. Cl. 220—401 **7 Claims**

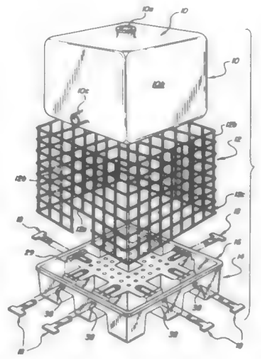
1. A container comprising:

a pallet defining an annular outer peripheral portion defining an upwardly facing annular seat and a central platform portion within the outer peripheral portion;

an annular sleeve including an annular sidewall structure and an annular lower edge portion positioned on said annular seat;

a bulk receptacle positioned on the pallet within the sleeve so that bulk fluid material positioned within the receptacle exerts a force outwardly against the sleeve sidewall structure and a downward force against the pallet platform portion; and

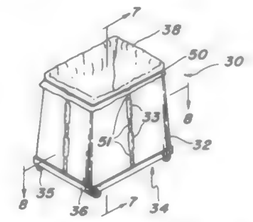
a plurality of flat elongated strap members spaced circumferentially about the pallet, having outer ends passing through openings in the sleeve, and having inner ends positioned above a platform section of the central platform portion of the pallet and beneath the receptacle so as to be anchored between the receptacle and the platform section by the downward force exerted by bulk fluid material in the receptacle wherein the central platform portion of the pallet includes a plurality of circumferentially spaced channels extending inwardly from the outer peripheral portion of the pallet toward the center of the platform portion of the pallet and the inner end of each strap member is positioned beneath the bulk fluid material within the receptacle so that the downward force exerted by the material on the platform portion serves to anchor the inner end of the strap member in the respective channel.



5,358,138
TRASH CONTAINER

Alexander Karwoski, 53 Francis Meyers Rd., New Britain, Pa. 18901

Continuation-in-part of Ser. No. 38,825, Mar. 29, 1993, Pat. No. 5,295,606. This application Oct. 29, 1993, Ser. No. 142,961
The portion of the term of this patent subsequent to Mar. 22, 2011, has been disclaimed.
Int. Cl.[5] B65D *7/04*
U.S. Cl. 220—403 **14 Claims**



1. A two-unit trash container apparatus comprising,

a. a movable means;

b. a rigid drum means having an interior surface and an exterior surface and having a small and a large opening wherein the larger opening is adapted to be positioned upon said movable means;

c. means circumferentially surrounding said movable means and rigid drum means positioned to provide a snug fitting arrangement for semi-permanent attachment to one another,

d. said circumferential surrounding means of said movable means also being dimensioned to locate additional movable means when a plurality are stacked one above another;

e. means located at approximately each quadrant of said rigid drum for providing air passages to allow atmospheric pressure to penetrate;

f. means having an entrance positioned within said drum means and upon said movable means for receiving disposable matter, and said air passages eliminating a partial vacuum that is created between said rigid drum means and said receiving means when filled with disposable matter, and

g. said circumferential surrounding means acting as a basin for retaining spillage in the event that said receiving means is damaged,

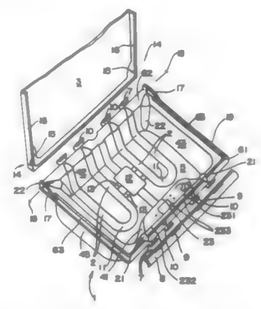
h. means for semi-permanently attaching said receiving means to said drum means,

i. whereby when said receiving means is filled and said attaching means is removed, said two-unit container may be transferred to a site by said movable means where said drum means is easily separated by the elimination of said partial vacuum and by operation of said snug fitting, such that said receiving means may be lifted from said movable means for discarding purposes.

5,358,139
CONTAINER FOR AN OXYGEN SUPPLY UNIT FOR INSTALLATION IN AN AIRCRAFT

Christian Schnoor, Lübeck; Roderich Thometschek, Stockelsdorf, and Wolfgang Rittner, Bad Schwartau, all of Fed. Rep. of Germany, assignors to Drägerwerk AG, Lubeck, Fed. Rep. of Germany

Filed Dec. 4, 1992, Ser. No. 987,111
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1991, 4140265
Int. Cl.[5] B65D *8/00*
U.S. Cl. 220—669 **13 Claims**



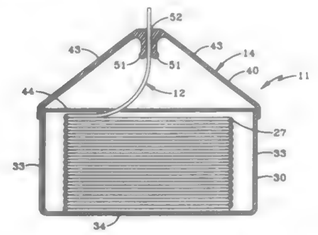
1. A container for an oxygen supply unit including a container bottom and container side walls with a container edge extending around at least a part of said container, a container door pivotable around a joint at a rear container edge, and with profiled rails foldable around hinges at front and rear container edges, in parallel to an axis of rotation of said joint, said rear container edge including tongues forming part of said hinges; and reinforcing means including:

bead-shaped depressions extending from one of said container bottom and said container side wall over said rear container edge said bead-shaped depressions extending from said container bottom over said rear container wall, over said rear container edge whereat each of said first

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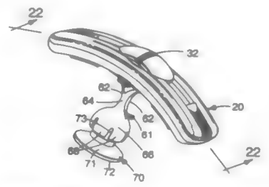
bead-shaped depressions are connected to a corresponding tongue.

5,358,140
ADHESIVE BANDAGE DISPENSING SYSTEM
Mark J. Peliegrino, 3426 Briton Cir. NW., Canton, Ohio 44708
Filed Jan. 31, 1994, Ser. No. 188,728
Int. Cl.[5] G07F 11/66; B65H 3/58
U.S. Cl. 221—25 7 Claims



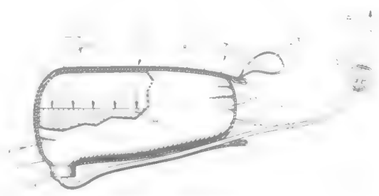
1. A dispensing system for sterile bandages, including:
a) a plurality of bandages;
b) means for enveloping said bandages in an elongated strand and forming an individual sterile compartment for each of the bandages, wherein a generally continuous perforation is formed about each bandage in said envelope means; and
c) dispensing means for containing the elongated strand of bandages, said dispensing means including means for guiding said elongated strand into a dispensing opening formed in said dispensing means, said guiding means providing resistance to the movement of a leading end of said strand out of said opening, so that upon the application of a force to the leading end of the strand adequate to overcome said resistance, the perforation completely breaks to expose at least a portion of a bandage for application of the bandage to a wound.

5,358,141
SUPPORT OR ATTACHMENT MEANS FOR A SHEET DISPENSER
Casey L. Carlson, Edina, and Thomas L. Connolly, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 18, 1993, Ser. No. 63,519
Int. Cl.[5] A01C 1/00
U.S. Cl. 221—185 12 Claims



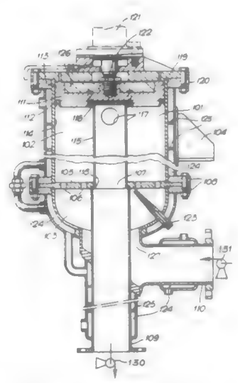
12. An assembly including:
a dispenser for flexible sheets from a stack of sheets disposed one on top of another, said dispenser comprising:
walls having surfaces defining a cavity adapted to receive the stack and an outlet opening for said cavity through which individual sheets from the stack may be manually withdrawn, said walls including a bottom wall defining a bottom surface for said cavity and an opposite outer surface, and end walls defining end surfaces for said cavity at opposite ends of said bottom wall with said outlet opening being located generally centrally between said end walls,
a support member for releasably retaining said dispenser along the back of a user's hand, said support member having finger engagement surfaces that face in opposite directions on opposite sides of said support member and are shaped to engage side surfaces of a user's fingers, said support member including a narrow web like portion between said surfaces adapted to comfortably extend between a user's fingers along said finger engagement surfaces and a retainer portion significantly wider than said web like portion adapted to be positioned along the inner surface of a user's fingers, and
means at the end of the web-like portion opposite said retainer portion and on said walls for releasably attaching said support member to the bottom wall of said dispenser, said means comprising said bottom wall having two transversely extending openings partially defined by lip like portions of said bottom wall extending toward the end walls of said dispenser on opposite sides of said central outlet opening, and opposed hook-like distal end portions of said support member extending through said openings and releasably engaged with said lip like portions.

5,358,142
MOUTH-PRESSURIZED DRINKING BAG
William A. Holmes, 209 Highland Ave., Piedmont, Calif. 94611-3709
Filed Mar. 22, 1993, Ser. No. 34,075
Int. Cl.[5] B65D 35/00; B62J 11/00
U.S. Cl. 222—1 21 Claims



1. A beverage dispenser, comprising:
a collapsible bladder for receiving a beverage and pressurizing air, said bladder having a top and a bottom,
means for mounting said bladder so that said top thereof is uppermost and said bottom thereof is lowermost,
elastic means snugly and substantially surrounding said bladder, such that when said bladder is empty of said beverage and said pressurizing air, said elastic means substantially collapses said bladder, and when said bladder is partially or completely filled with said beverage and said pressurizing air, said elastic means continually exerts a force upon said bladder which urges and tends to compress said bladder to a collapsed condition so as to tend to expel said beverage from said bladder, said elastic means being expanded by a user blowing said pressurizing air into said bladder,
an elongated tube attached to said bottom of said bladder, said tube having a proximal end communicating with said bladder, said tube having a distal end extending away from said bladder, such that when said bladder is partially filled with said beverage, said pressurizing air is blown by mouth into said bladder through said tube to pressurize and thereupon also expand said bladder and expand said elastic means,
whereby, when dispensing is desired, said force continually provided by said elastic means will compress said bladder and force said beverage to automatically flow outwardly through said distal end of said tube.

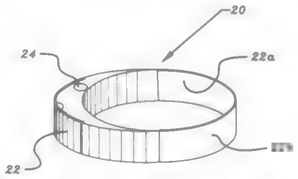
5,358,143
METHOD OF CONTINUOUS OPERATION OF A STORAGE TANK
Michael R. Perry, Kenilworth, United Kingdom, assignor to Courtaulds Fibres (Holdings) Limited, London, England
Filed May 24, 1993, Ser. No. 67,330
Claims priority, application United Kingdom, Jul. 22, 1992, 9215570.4
Int. Cl.[5] B67B 7/00; B67D 5/42
U.S. Cl. 222—1 13 Claims



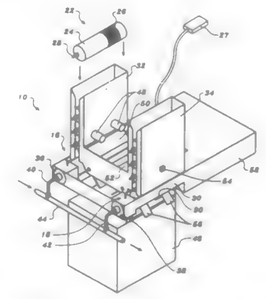
1. A method of storing a liquid in a tank, said liquid being concurrently and continuously fed to and delivered from said tank,
said tank having an end and at least one wall,
said tank having an inlet port connected to a source of supply of said liquid and an outlet port connected to a source of demand for said liquid,
said tank containing a movable follower,
one of said inlet port and said outlet port being situate in the vicinity of said end and the other of said inlet port and said outlet port being attached to and movable with said movable follower,
the present volume of said tank being defined by said end, said at least one wall and the present position of said movable follower within said tank, said present volume changing according to said present position of said movable follower,
said method including the steps of:
1. continuously feeding said liquid to said tank from said source of supply, and concurrently therewith
2. continuously delivering said liquid from said tank to said source of demand, and
3. varying said present position of said movable follower within said tank responsive to changes in the volume of said liquid within said tank consequent upon variations in the respective rates of said feed and said delivery, wherein said volume of said liquid within said tank is always the same as said present volume of said tank.

5,358,144
SELF DEFENSE BRACELET
Jerry L. Mock, 2510 Leonard Rd., Baltimore, Ohio 43105
Filed Oct. 4, 1993, Ser. No. 130,731
Int. Cl.[5] B67D 5/64
U.S. Cl. 222—78 3 Claims

1. A self-defense device for spraying an attacker with a chemical repellant comprising:
a bracelet having a storage compartment for holding the chemical repellant,
said bracelet having first and second opposed ends and first and second opposed arcuate sidewalls extending between said first and second ends for defining said storage compartment,
said bracelet further having an annular upwardly facing surface extending between said first and second ends in a longitudinal direction and extending between said first and second arcuate sidewalls in a transverse direction, nozzle means intercepting said annular surface for directing said chemical repellant from said storage compartment toward said attacker, activatable valve means inside said compartment for selectively causing said chemical repellant to flow through said nozzle means, manual activation means for selectively activating said valve means, said manual activation means being located in said first arcuate sidewall between said first and second opposed ends, and a removable flexible flap for concealing said nozzle, said flexible flap being coextensive with a portion of said surface, said flap being attached to said surface at one end and having a fastener element at another opposed end for affixing said flap to said surface and permitting removal thereof to expose said nozzle.



5,358,145
DISPENSER FOR DELIVERING MICROINGREDIENTS FROM CARTRIDGES
Scott H. Smith; Jason T. Griffith, both of Lynnwood; Fahad A. Rashid; Nima Sthienchoak, both of Seattle; Leslie A. Walter, Redmond, and William D. St. John, Seattle, all of Wash., assignors to Bio Techniques Laboratories, Inc., Redmond, Wash.
Filed Apr. 19, 1993, Ser. No. 49,261
Int. Cl.[5] B67D 5/52
U.S. Cl. 222—137 24 Claims



1. An apparatus for delivering a continual supply of ingredients from cartridges each having a plunger, a forward end, and a rearward end, the apparatus comprising at least one module to dispense a specific microingredient, wherein the module comprises:
(a) a frame having a forward side and a rearward side;
(b) a first hopper attached to the frame for holding at least one cartridge;
(c) a first dispensing station disposed adjacent the first

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hopper for receiving the cartridges from the first hopper and for holding a cartridge during delivery of an ingredient from the cartridge; and

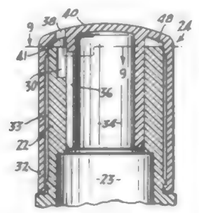
(d) a plunger drive mechanism attached to the frame at the rearward side for advancing the plunger within the first cartridge to thereby dispense an ingredient.

5,358,146

HAND-HELD DISPENSER WITH TWIST-TO-OPEN CAP

Gene Stull, 1 Winston Farm La., Far Hills, N.J. 07931

Filed Oct. 21, 1993, Ser. No. 139,087
Int. Cl.[5] B65D *47/00*
U.S. Cl. 222—148 **10 Claims**



1. A hand-held dispenser for holding and dispensing grooming liquids, household and cosmetic liquids, comprising in combination:

a) a container having a neck with a top edge, said neck defining a bore through which liquid contents of the container are to be discharged,

b) said neck bore having a lower smooth-surfaced bearing portion and in continuation thereof having an upper discharging portion provided with a discharge passage, said neck further having a completely cylindrical exterior surface portion,

c) a cap turnably mounted on and having a crown and a depending outer skirt which latter surrounds the said neck of the container,

d) said cap having a tubular valving portion disposed inside said outer skirt and extending into the container neck with a snug sliding fit therein within said bearing portion,

e) said valving portion having a discharge passage communicating with the interior of the container and adapted to move into and out of registration with the discharge passage of the container neck bore when the cap is turned on the container neck,

f) said cap having an orifice which aligns with the discharge passage of the neck bore when both said discharge passages are in registration with each other,

g) cooperable shoulder means on the exterior of said container neck and the interior of said cap skirt, limiting the turning movement of said cap past its sealing position,

h) cooperable retainer means on the cap skirt and container neck, adapted to bypass each other when the cap is forced axially over the neck so as to retain the cap on the neck, and

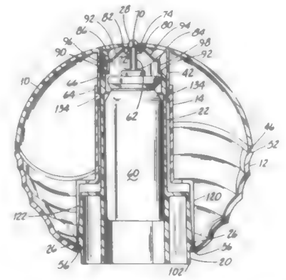
i) cooperable detent means on the completely cylindrical exterior surface portion of the container neck and on the cap for yieldably holding the cap against rotation from its sealing position on the container neck.

5,358,147

SPRAY DISPENSING PACKAGE

Mary B. Adams, Lake County, Ill.; Scott W. Demarest, and Allen D. Miller, both of Racine County, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Sep. 2, 1993, Ser. No. 115,389
Int. Cl.[5] B67D *5/06*
U.S. Cl. 222—183 **17 Claims**



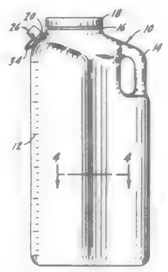
1. A refill package for use within an outer shell having guide means, comprising: a spray container having a can body and a valve which includes s valve stem; a base, and an exterior shroud into which the spray container is inserted, the shroud having a spray nozzle and means to lock the spray container position so that the valve stem is in communication with the spray nozzle, flexing means being attached to the spray container by means of the shroud, the spray nozzle being fitted over the container in fluid communication with the valve stem, the spray nozzle being attached to the can body by the flexing means; the flexing means having a sufficient range of motion to allow the valve to be actuated when pressure is applied to the spray nozzle and wherein the shroud cooperates with the guide means to allow the shell to slide smoothly relative to the refill cartridge when pressure is applied to a top surface of the shell.

5,358,148

URINE COLLECTION CONTAINER

Paul H. Hanifl, Barrington Hills, and Donald R. Harreld, Woodstock, both of Ill., assignors to Sage Products, Inc., Crystal Lake, Ill.

Division of Ser. No. 959,030, Oct. 9, 1992, abandoned. This application Feb. 3, 1994, Ser. No. 191,442
Int. Cl.[5] B65D *37/00*
U.S. Cl. 222—215 **15 Claims**



1. A sealed collection container comprising

a. a hollow container body formed of semi-rigid material, said container body having a top and a bottom and a plurality of deformable sides, each side extending between relatively non-deformable corner portions of said container body;

b. an opening in the top of said body,

c. means closing and sealing said opening,

d. a non-venting spout in the top adjacent said opening, said spout being of a size to permit liquid to be poured from the container when inverted without permitting venting air to enter the spout,

e. means for metering a desired quantity of liquid exiting said container when inverted, comprising said spout in combination with said deformable sides, such that upon inverting said container with fluid therein and the spout open, the sides of said container will naturally slightly deform to meter a quantity of liquid from said container and

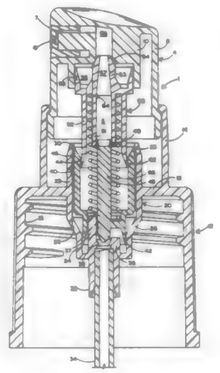
f. means capping said spout.

5,358,149

PRESSURE BUILD-UP PUMP SPRAYER HAVING ANTI-CLOGGING MEANS

Richard K. O'Neill, P.O. Box 2452, Wrightwood, Calif. 92397

Continuation of Ser. No. 992,083, Dec. 17, 1992, abandoned. This application Oct. 13, 1993, Ser. No. 135,854
Int. Cl.[5] G01F *11/00*
U.S. Cl. 222—321 **14 Claims**



1. A manually operated, pressure build-up pump sprayer for dispensing liquid from a container and comprising:

a cap to be removably connected to the container, said cap having a bore extending longitudinally therethrough;

a spray head having an orifice outlet through which liquid from the container is sprayed to the atmosphere, said spray head being interconnected with and moved reciprocally relative to said cap in response to a force manually applied to said spray head;

poppet means engaging said spray head and moving reciprocally through the bore of said cap, said poppet means including cylindrical inner and outer walls concentrically aligned with and spaced from one another such that an inner pressure chamber is formed at the interior of said inner cylindrical wall and an outer pressure chamber is formed in the space between said inner and outer cylindrical walls, said inner pressure chamber communicating fluidically with said orifice outlet of said spray head and said outer pressure chamber having air trapped therein prior to priming said sprayer;

a valve stem received within the inner pressure chamber of said poppet means, a first end of said valve stem engaging the inner wall of said poppet means to form a seal thereagainst; and

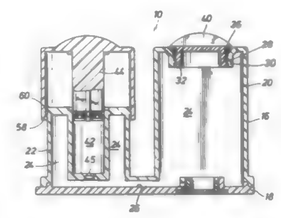
means by which to break the seal formed between the first end of said valve stem and the inner wall of said poppet means while said sprayer is being primed, such that the air trapped within the outer pressure chamber of said poppet means escapes to the atmosphere by way of said inner pressure chamber to permit said outer pressure chamber to be filled with liquid from the container.

5,358,150

PRESSURIZED FLUID DISPENSING DEVICE

Gustav A. Scheuble, Des Plaines, Ill.; Oscar Malmin, Boise, Id., and Fritz Kohnke, Palatine, Ill., assignors to MPL Technologies, Inc., Franklin Park, Ill.

Continuation-in-part of Ser. No. 863,382, Apr. 3, 1992, abandoned, which is a continuation of Ser. No. 584,159, Jul. 3, 1990, abandoned. This application Nov. 6, 1992, Ser. No. 972,577
Int. Cl.[5] B65D *83/00*
U.S. Cl. 222—401 **14 Claims**



1. A pressurized liquid dispensing apparatus, comprising:

a) a sealed reservoir for holding said to be dispensed under a positive pressure;

b) input means through which said liquid can be introduced into the reservoir, and seal means operatively associated with the input means for maintaining liquid in the reservoir under a positive pressure;

c) pump means including an elongated pump chamber for pumping a gas under pressure into the reservoir;

d) one-way valve means located at one end of the chamber between the reservoir and pump means for allowing gas to be introduced into the reservoir by the pump means and preventing liquid in the reservoir from flowing through the one-way valve means into the pump means;

e) output valve means in communication with the reservoir which is closeable for preventing liquid from flowing out of the reservoir;

f) an output conduit, and connecting means for selectively connecting one end of the output conduit to the output valve means;

g) means for opening the output valve means when said one end of said output conduit is connected to the output valve means so that liquid under pressure in the reservoir can flow through the output valve means;

h) a housing in which the reservoir and pump means are formed, the pump means including plunger means movable relative to the housing; and

i) spring means for urging the plunger means away from the one-way valve means;

a pair of hollow columns on opposite sides of the pump chamber, the plunger means including a pair of posts sized and shaped to fit in the columns, and the spring means including a pair of compression springs for cooperating with the columns and posts.

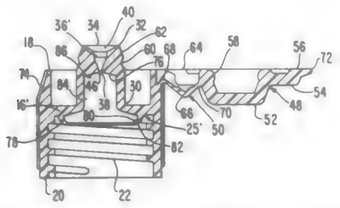
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5,358,151

LIQUID DROPPER DISPENSER

James A. Strassenburgh, Guaynabo, P.R., assignor to Universal Container Corporation, Cayey, P.R.

Filed May 21, 1993, Ser. No. 64,557
Int. Cl.[5] B65D 47/18
U.S. Cl. 222—420 29 Claims



1. A cap for attachment to a liquid container for the dispensing of liquid therefrom, said cap comprising:

a base formed generally as a hollow cylinder and having a first end opposite a second end;

a partition integrally formed with said base and extending tranversely of the axis of said base between the first and second ends of said base, said partition having an upper surface;

a spindle integrally formed with said partition and said base, extending from the upper surface of said partition to a spindle tip and having a nozzle passage that extends axially through said spindle for discharge of fluid from said liquid container, said nozzle passage having an inlet opening and an outlet opening at the spindle tip, wherein a funnel-shaped surface of said cap is adjacent to said inlet opening;

a cover for closing the spindle tip; and

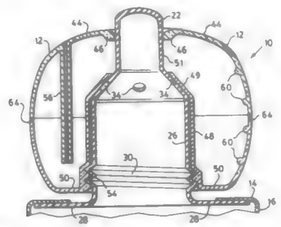
a living hinge for integrally connecting said cover to said base and for providing biased pivotal movement of said cover between a closed position on said spindle tip and an open position angularly displaced therefrom.

5,358,152

DETERGENT DOSER

Stewart Banks, Brantford, Canada, assignor to Sprintvest Corporation NV, Netherlands Antilles

Filed Aug. 3, 1993, Ser. No. 101,191
Int. Cl.[5] B67D 5/64; G01F 11/26
U.S. Cl. 222—442 8 Claims



1. A device for measuring liquid doses from a liquid dispenser having a nozzle provided with a nozzle outlet, comprising:

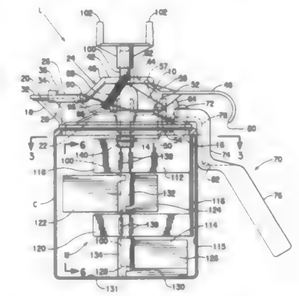
a container having an outer wall and an inner wall defining therebetween a chamber, a passageway extending through said container defined by said inner wall for receiving therein said nozzle, the inner wall including means defining an aperture, the container being movable with respect to said nozzle between a closed position in which said nozzle outlet is closed off by a portion of the inner wall and an open position in which said nozzle outlet and aperture cooperate to provide a liquid flow path between said dispenser and said chamber, and said container including air vent means for venting air from said chamber as liquid flows into said chamber from said liquid dispenser.

5,358,153

MIXING LID INCLUDING A POURING DEVICE FOR CONTAINERS USED ON STIRRING MACHINES

Gary L. Caldwell, Broomfield; Francis A. Heckendorf, Jr., Ft. Collins; Leslie E. Jones, Arvada, all of Colo., and Patrick W. Powell, deceased late of Santa Rosa, Calif. by Joan Powell, Legal Representative, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 30, 1991, Ser. No. 814,421
Int. Cl.[5] B67D 3/00, 5/06
U.S. Cl. 222—505 8 Claims



1. A lid including a pouring device for containers used on stirring machines, comprising:

a) a pouring spout on said lid;

b) an integral one piece slidable closure for said pouring spout having a first rearward opened pouring position and a second forward closed sealed position;

c) said integral one piece slidable closure having a removably secured front slide closure for closing said spout when said slidable closure is in said second forward closed sealed position;

d) said integral one piece slidable closure having a pair of laterally spaced fingers for securing thereto said removably secured front slide closure;

e) said integral one piece slidable closure having a recess positioned behind said fingers;

f) said slidable closure having a rear rocker engagement means;

g) said integral one piece slidable closure having a yoke with a recess positioned adjacent to said rear rocker engagement means thereof;

h) an operating lever having front and rear ends pivotally mounted on said lid intermediate said ends and including a manual actuator on said rear end and a rocker at said front end engageable with said rear rocker engagement means;

(i) spring retaining means being received by said recess of said integral one piece slidable closure and engaging said removably secured front slide closure for maintaining said front slide closure in contact with said pouring spout when said integral one piece slidable closure is in both said first and second positions;

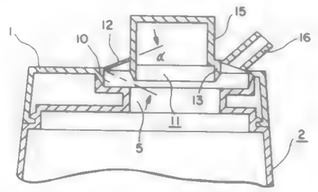
j) spring means under tension connecting said lid with said integral one piece slidable closure for normally maintaining and biasing said slidable closure in said second closed position.

5,358,154

ONE-HAND-OPERABLE CONTAINER CLOSURE

Hans Haim, Herne, Fed. Rep. of Germany, assignor to Georg Menshen GmbH & Co. KG, Finnentrop, Fed. Rep. of Germany

Filed Jul. 26, 1993, Ser. No. 95,594
Claims priority, application European Pat. Off., Jul. 28, 1992, 92113821
Int. Cl.[5] B65D 47/08
U.S. Cl. 222—536 7 Claims



1. Integrally formed closure for a container which is adapted to be operated by one hand including:

a) a capping part for attaching the closure to the container to cover a mouth thereof, and having an essentially rigid structure,

b) a sealing means for, under the influence of an external force, being moved into and out of a sealing relationship with a wall defining a mouth opening for closing and opening said mouth and for being connected along at least a portion of its periphery to the capping part by means of a flexible, thickness-reduced wall portion adapted to be inverted between open and closed end positions which correspond to open and closed positions of the sealing means,

wherein the flexible thickness-reduced wall portion along at least a portion of its peripheral length in the open end position thereof extends beyond an outer contour of the capping part, and

c) a pour element connected to the capping part and having a throughbore which is in communication with the interior of the container when the sealing means is in the open end position,

said sealing means further including a hand manipulation portion for applying external force to the sealing means, said hand manipulation portion extending at least partially beyond the outer contour of the capping part in both the open and closed positions of the sealing means, and being moved to an open position when a force transverse to a longitudinal axis of the container passing through the mouth is applied thereto, and

wherein the flexible thickness-reduced wall portion forms an angle in a range of between 30° to approximately 90° when it moves between said end positions.

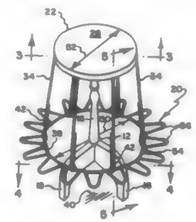
5,358,155

APPARATUS AND METHOD FOR PROVIDING A PLEATED SKIRT EFFECT TO TABLECLOTH

Ethel P. Cleala, 4696 Chapman Pkwy., Hamburg, N.Y. 14075

Filed Feb. 16, 1993, Ser. No. 17,869
Int. Cl.[5] A41H 43/00; A47B 13/08
U.S. Cl. 223—28 19 Claims

11. Apparatus for use with a table having a table top diameter comprising a hoop which includes means for providing a pleated skirt effect to a tablecloth hanging from the table top, said pleated skirt effect means comprising means defining a pattern of undulations about said hoop for receiving folds of the tablecloth between said undulations, the apparatus further comprising means including a plurality of ribbons for suspending said hoop from the table top for supporting the hanging



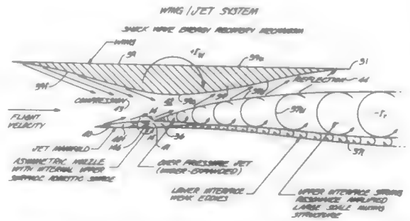
tablecloth with folds thereof received between the undulations.

5,358,156

SUPERSONIC AIRCRAFT SHOCK WAVE ENERGY RECOVERY SYSTEM

Scott Rethorst, South Pasadena, Calif., assignor to Vehicle Research Corporation, South Pasadena, Calif.

Division of Ser. No. 825,289, Jan. 22, 1992, Pat. No. 5,251,846, which is a continuation-in-part of Ser. No. 557,418, Jul. 23, 1990, abandoned. This application Jun. 18, 1993, Ser. No. 79,503
Int. Cl.[5] B64C 3/10, 21/00, 30/00
U.S. Cl. 244—15 8 Claims



1. In an aircraft, a compression wave energy control system comprising:

a wing, said wing having an upper and a lower surface, said upper surface being flat and aligned with the free stream at cruise conditions to generate zero lift and hence no adverse circulation reaction at supersonic speed, said lower surface being gently curved concave downward in both its forward and aft sections, connected by a center convex section to comprise the upper section of a supersonic nozzle, and a nozzle located. below and apart from said wing, said nozzle emitting a jet.

5,358,157

PROTECTIVE FRAME STRUCTURE AT REAR OF VEHICLE

Edward V. Abretske, West Covina, Calif., assignor to Canyon City 4×4, Azusa, Calif.

Filed Feb. 8, 1993, Ser. No. 14,750
Int. Cl.[5] B60R 9/00
U.S. Cl. 224—42.04 17 Claims

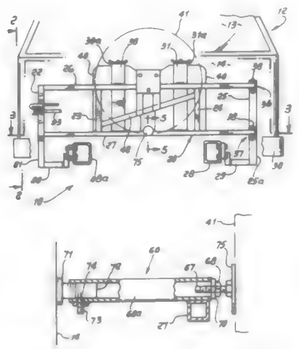
1. Heavy duty protective apparatus mounted at the rear of a vehicle having a vehicle frame and a rear bumper, comprising in combination:

a) a protective frame unit extending laterally of the vehicle rear, and forming protected space between the frame unit and vehicle rear to receive equipment,

b) support structure including hinge means attached to the

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vehicle frame and supporting said frame unit for swinging movement rearwardly away from and independently of the vehicle rear, said support structure including struts extending laterally relative to the vehicle frame and at levels such that said frame unit extends laterally and also swings free of interference with the vehicle rear bumper,



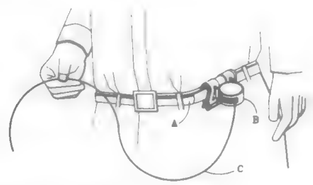
c) and stabilizer means exerting compressive force between the vehicle rear and a tire support carried by the frame unit, said stabilizer means including force transmitting elements which are relatively collapsible in the event of impact against the tire.

5,358,158

FISHING REEL HOLDER

Paul Darr, HCR 68, Box 42, Bridgewater Corners, Vt. 05035, assignor to Paul Darr and Christine M. Baranowski, Bridgewater Corners, Vt.

Filed Jan. 3, 1994, Ser. No. 143,653
Int. Cl.[5] B65H *75/40*
U.S. Cl. 224—162 **1 Claim**



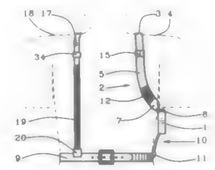
1. A fishing reel holder, comprising.
a) a semi-rigid, one piece belt clip with two sides;
b) touch fastener material permanently affixed to the outer surface of said semi-rigid, one piece belt clip;
c) a first hook tape strip stitched to said touch fastener material close to the bottom edge of the side of said semi-rigid, one piece belt clip furthest from the body of a fisherman wearing said semi-rigid belt clip affixed to said fisherman's belt;
d) a slit in said first hook tape strip;
e) a second hook tape strip identical in size and shape to said first hook tape strip stitched to said touch fastener material close to the bottom edge of the side of said semi-rigid, one piece belt clip located furthest from the body of said fisherman wearing said semi-rigid, one piece belt clip affixed to said fisherman's belt;
f) a slit in said second hook tape strip.

5,358,159

HOLSTER-TYPE HOLDER FOR ELECTRONIC COMMUNICATIONS EQUIPMENT

Edgar Landie, Jr., 882 Brandlwood Way, NW., Lilburn, Ga. 30247

Filed Jun. 7, 1993, Ser. No. 73,454
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—206 **11 Claims**



1. A personal communication shoulder holster comprising:
a shoulder strap constructed of flexible material that is sized and shaped arcuately to lay on top of a shoulder, to encircle down a front side and under an arm to a position adjacent a side and to extend up against a back of the shoulder of a person,
a suspender strap constructed of flexible material that is attachable to the shoulder strap at a moveable position and sized and shaped to extend from the back of the shoulder across the back, over an opposite shoulder and down an opposite side to a waistline of the person,
a waistline attachment on a waistline end of the suspender strap,
a communications case that is sized and shaped to contain a desired communication device and constructed of flexible material that is attachable to the shoulder strap at the position under the arm and adjacent the side of the person, the communications case having an entrance to accept the communication device therethrough,
a case strap attachable to and extendable down from a bottom of the communications case to the waistline of the person,
a waistline attachment on a waistline end of the case strap,
an attachment ridge to which the desired communication device is attachable proximate the entrance to the communications case, and
wherein the suspender strap is attachable to the shoulder strap at a moveable position by means of a shoulder-strap loop in a top end of a shoulder-top section of the shoulder strap through which the suspender strap is extended in contact with a portion of the shoulder strap that is extended from a rear portion of a container-attachment section of the shoulder strap.

5,358,160

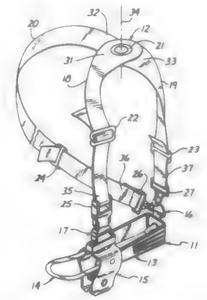
PISTOL CARRYING DEVICE AND RETENTION SYSTEM

John E. Bianchi, 17 Buena Vista Ct., Rancho Mirage, Calif. 92270

Filed Jun. 4, 1993, Ser. No. 71,543
Int. Cl.[5] F41C *33/02*
U.S. Cl. 224—244 **13 Claims**

1. A pistol carrying device, comprising:
a mainframe member of rigid non-leather composition, an elongated spring member and a guard strap member that are connected to the mainframe member, and means for removably connecting a shoulder harness to the mainframe member for purposes of using the pistol carrying device to carry a pistol that has a rearward portion, a muzzle, a barrel with a bore that extends to the muzzle, a trigger intermediate the rearward portion and the muzzle, and a trigger guard;

the mainframe member including a muzzle retainer portion, a bore-engaging protrusion on the muzzle retainer portion, and elongated left and right arm portions that extend from the muzzle portion in spaced apart relationship;
the muzzle retainer portion being shaped and dimensioned to extend across the muzzle of the pistol transverse to the bore, the bore-engaging protrusion being shaped and dimensioned to protrude from the muzzle retainer portion and at least partially into the bore, the left arm portion being shaped and dimensioned to extend from the muzzle retainer portion along a left side of the pistol to a position above the trigger guard, and the right arm portion being shaped and dimensioned to extend from the muzzle retainer portion along a right side of the pistol to a position above the trigger guard;
the spring member having a first end connected to a rearward end of the left arm portion of the mainframe member, the spring member having a second end connected to



a rearward end of the right arm portion of the mainframe member, and the spring member being shaped and dimensioned to extend across the rearward portion of the pistol in order to spring bias the pistol toward the muzzle retainer portion of the mainframe member;
the guard strap member including a strap of flexible material that has a leftside portion connected to the rearward end of the left arm portion and a rightside portion connected to the rearward end of the right arm portion, the strap including means for removably fastening the leftside and rightside portions together through the trigger guard in order to inhibit premature trigger finger contact of the trigger when the pistol is drawn; and
the means for removably connecting a shoulder harness to the mainframe member including means for removably connecting the shoulder harness to the muzzle retainer portion and means for removably connecting the shoulder harness to the rearward ends of the left and right arm portions.

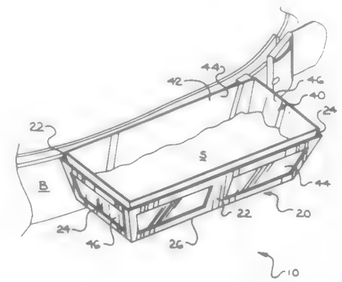
5,358,161

BELT MOUNTED SPACKLE PAN HOLDER

Rocco Perugini, P.O. Box 566, Hazelton, Pa. 18201-0566

Filed Jun. 8, 1993, Ser. No. 72,960
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—252 **6 Claims**

1. A combination spackle pan and spackle pan holder assembly comprising:
a spackle pan having a closed bottom end, an open top end, and inclined peripheral walls;
an open top holder having inclined peripheral walls; and
a clip assembly on one of said inclined peripheral walls of said open top holder adjacent said open top for detachably



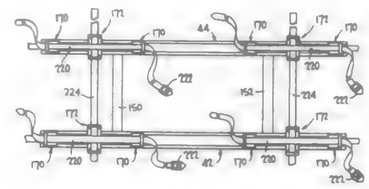
attaching said combination structure to the belt of a person.

5,358,162

EXTERIOR LUGGAGE SYSTEM FOR AUTOMOTIVE VEHICLES

Richard Hill, 11556 Woodbridge Blvd., Seminole, Fla. 34642

Filed Jan. 15, 1993, Ser. No. 5,389
Int. Cl.[5] B60R *9/04*
U.S. Cl. 224—316 **23 Claims**



1. An exterior luggage system for automotive vehicles comprising a roof rack including a pair of spaced rigid elongated support members, each of said support members having an upper slot and a lower slot formed therein, a plurality of strap receiving brackets adjustably mounted in said upper slot, roof engaging support means adjustably mounted in said lower slot, a piece of luggage extending between said spaced support members and being supported thereby, a plurality of straps engaging said strap receiving brackets, said straps extending around and engaging said piece of luggage to retain the piece of luggage in position on said support members, and spaced stop members depending from said piece of luggage for engaging said support members and limiting relative movement between said piece of luggage and said support members.

5,358,163

SUCTION ROLL FOR CONVEYING A FLEXIBLE STRIP

Kazuyuki Naka, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd, Japan

Filed Mar. 16, 1993, Ser. No. 31,591
Claims priority, application Japan, Mar. 19, 1992, 4-63252
Int. Cl.[5] B41F *5/16*
U.S. Cl. 226—97 **5 Claims**

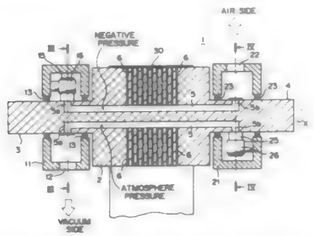
1. A suction roll for applying suction to a flexible strip wound around its circumference and conveying the strip in one direction, said suction roll comprising:
a roll body which has inside a plurality of suction holes extending in a direction of an axis of the roll body such that the suction holes are distributed within the roll body

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about said axis, and the roll body has a large number of pores connecting each suction hole with a circumferential surface of the roll body;

a shaft which protrudes from the roll body at one side, one end of each suction hole reaching a circumferential surface of the shaft;

a negative pressure chamber formed around the shaft; and



means for opening and closing the suction holes, the opening/closing means operating in accordance with rotation of the roll body to connect suction holes which communicate with pores in contact with the strip with the negative pressure chamber, and to cut off suction holes which communicate with pores out of contact with the strip from the negative pressure chamber.

5,358,164

DRIVE APPARATUS FOR A DRIVING OF AT LEAST ONE OSCILLATING SHAFT AND AN INTERMITTENT FEEDING APPARATUS INCLUDING THE DRIVE APPARATUS

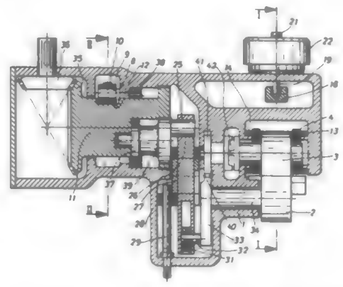
Helmut Messner, Arbon, Switzerland, assignor to Bruderer AG, Frasnacht, Switzerland

Continuation of Ser. No. 728,793, Jul. 8, 1991, abandoned, which is a continuation of Ser. No. 426,733, Oct. 24, 1989, abandoned. This application Dec. 7, 1992, Ser. No. 987,547

Claims priority, application Switzerland, Oct. 26, 1988, 3980/88-4

Int. Cl.[5] **B21D** *43/09*

U.S. Cl. 226—142 **15 Claims**



1. In an apparatus for intermittently feeding a web-shaped workpiece, the apparatus having feeding means for so feeding said workpiece, an improved drive apparatus for oscillating at least one shaft of said feeding means, the drive apparatus comprising:

a pivotable lever pivotable around a pivot axis, said pivotable lever having a longitudinal center axis;

a slide body guided slidably by said lever for travel axially therealong;

a crank having a pivot projecting from one side of said crank, said pivot being received in said slide body, and said crank being coupled to said shaft of said feeding means;

said pivotable lever including a hollow tubular portion having top and bottom walls and opposite side walls, said walls having inner surfaces forming guiding and sliding surfaces for said slide body, said slide body having side surfaces which are in slidable contact with the inner surfaces of said side walls, and top and bottom surfaces which are in slidable contact with the inner surfaces of said top and bottom walls, said top wall having a slot therein extending axially of said lever, said pivot of said crank passing through said slot and pivotably engaging said slide body;

drive means for reciprocating between two end positions coupled to said pivotable lever; and

adjusting means for adjusting a distance between said pivot axis of said pivotable lever and an axis of said pivot of said crank for selecting at least an extent of said feeding of said feeding means.

5,358,165

AUTOMATIC WIRING MACHINE OF CORONA DISCHARGE DEVICE

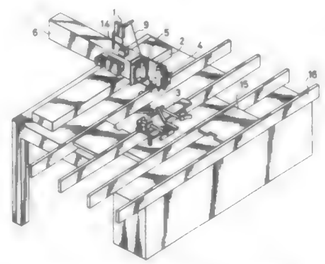
Jun Andoh, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed May 13, 1993, Ser. No. 60,540

Claims priority, application Japan, Jul. 27, 1992, 4-220833

Int. Cl.[5] **H05K** *13/06*

U.S. Cl. 228—4.1 **3 Claims**



1. An automatic wiring machine for wiring a corona discharge device with a wire wound around a spool by displacement of a head, comprising:

a head for wiring a wire through a nozzle along a wiring pattern of the corona discharge device set on a palette and holding the wire;

a tension device for applying a required tension to the supplied wire when said head carries out the wiring;

a welding machine for welding an arranged wire onto the corona discharge device and for fixing the wire; and

a cutting device for cutting an unnecessary portion of the wire,

said wire through the nozzle being guided by a roller.

5,358,166

REFLOW SOLDERING APPARATUS

Haruo Mishina, Ushiku, and Masato Itagaki, Kashiwa, both of Japan, assignors to Hitachi Techno Engineering Co. Ltd., Tokyo, Japan

Filed Apr. 7, 1993, Ser. No. 43,908

Claims priority, application Japan, Apr. 16, 1992, 4-095707

Int. Cl.[5] **B23K** *1/012;* **H05K** *3/34*

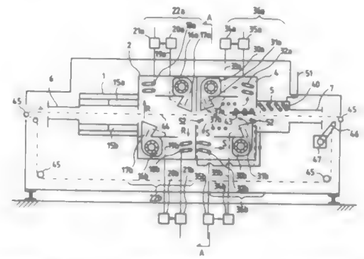
U.S. Cl. 228—42 **11 Claims**

1. A reflow soldering apparatus comprising:

a conveyor for transferring a processing object comprising a circuit substrate which is applied with solder and is

mounted with electronic members to a preheating chamber and a reflow chamber;

each of said preheating chamber and said reflow chamber having means for heating said circuit substrate with said electronic members for melting said solder by impinging a hot gas upon said processing object, each of said preheating chamber and said reflow chamber comprising upper blower means located above said conveyor, near one of an



upstream and a downstream side of a transferring direction of the conveyor, in the chamber, and blowing obliquely toward said conveyor, and lower blower means located below said conveyor, near the other side of the chamber, and blowing obliquely toward said conveyor for circulating said hot gas in the respective chamber; and

means for heating said hot gas disposed in a circulating area of the hot gas.

5,358,167

SOLDERING APPARATUS

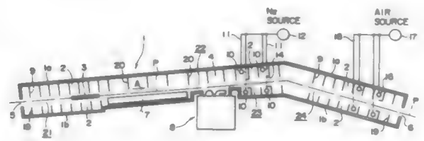
Yoshiaki Tachibana, Yokohama; Kimihiko Nakamura, Tokyo; Masahito Nozue, Tokyo; Toshikazu Yasuoka, Tokyo, and Masaru Kanazawa, Tokyo, all of Japan, assignors to Nihon Den-Netsu Keiki Co., Ltd. and Oki Electric Industry Co., Ltd., both of Japan

Filed Nov. 29, 1993, Ser. No. 158,884

Claims priority, application Japan, Nov. 30, 1992, 4-320144; Dec. 16, 1992, 4-353879

Int. Cl.[5] **B23K** *1/00*

U.S. Cl. 228—42 **10 Claims**



1. A soldering apparatus comprising:

a longitudinally extending, air-tight housing having a top wall, a bottom wall and inlet and outlet openings at both longitudinal ends thereof;

a first zone defined within said housing at a position adjacent to said inlet opening;

a fourth zone defined within said housing at a position adjacent to said outlet opening;

a second zone defined within said housing at a position between said first and fourth zones and contiguous to said first zone;

a third zone defined within said housing at a position between and contiguous to said second and fourth zones;

means for conveying an article to be soldered along a predetermined path extending through said inlet opening, said first to fourth zones and said outlet opening;

means provided in said second zone at a position adjacent to the boundary between said second and third zones for applying a molten solder to the article traveling through said second zone;

a plurality of upper and lower partition plates disposed in each of said first, third and fourth zones to partition each zone into a plurality of open ended chambers, each of said upper plates extending downward from said top wall, each of said lower plates extending upward from said bottom wall, and each of said upper and lower plates terminating so as not to interfere with said path;

means provided within at least one of said chambers of said third zone for diffusing a first, inert gas thereinto so that the inert gas diffuses into each of said first, second and fourth zones with said partition plates serving to minimize turbulent flows of the inert gas; and

means provided within at least one of said chambers of said fourth zone for diffusing a second gas thereinto such that the diffusion of the second gas from the fourth zone to said third zone is substantially prevented while the diffusion of the inert gas from said third zone to said outlet opening through said fourth zone is reduced,

whereby the article to be soldered is passed successively through said inlet opening, first to fourth zones and outlet opening and is soldered during passage through said second zone in the atmosphere of the inert gas.

5,358,168

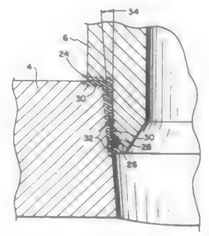
BRAZED HYDRAULIC FITTINGS AND METHOD OF MAKING SAME

Nigel D. L. Williamson, Fort Wayne, Ind., assignor to NWD International, Inc., Ann Arbor, Mich.

Continuation of Ser. No. 915,007, Jul. 16, 1992, abandoned. This application Feb. 9, 1994, Ser. No. 193,902

Int. Cl.[5] **F16L** *13/08;* **B23K** *101/04, 31/02*

U.S. Cl. 228—132 **14 Claims**



1. A process for brazing together two components of a fitting for forming a hydraulic coupling, each of the components defining an internal flow chamber and having a surface extending around an opening in communication with the internal flow chamber, each surface mating with the other surface, said process comprising the steps of:

forming corresponding tapers on each of the mating surfaces;

forming a groove extending around the opening in one of the mating surfaces;

locating a brazing material within said groove;

assembling the mating surfaces in an abutting relation after locating the brazing material within said groove; and

heating said assembly to melt said brazing material whereby said liquid brazing material penetrates between the abutting mating surfaces.

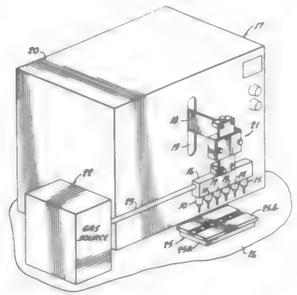
VOL 1167 ISS 4 OCT 25 1994 UMI

5,358,169

METHOD OF SOLDERING LEADS TO ELECTRICAL COMPONENTS

Richard E. Caddock, and Robert C. Bowen, both of Roseburg, Oreg., assignors to Caddock Electronics, Inc., Riverside, Calif.

Filed Jan. 14, 1994, Ser. No. 182,215
Int. Cl.[5] B23K *31/02*; H01L *21/60*
U.S. Cl. 228—180.1 32 Claims



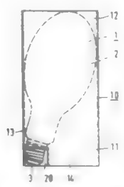
1. A method of soldering a lead to an electrical element, which comprises:
(a) providing an electrical element having an attachment region for a lead;
(b) providing a lead having an attachment surface adapted to engage said attachment region;
(c) providing a ribbon of solder having a precoating of flux thereon, said ribbon being longer than the width of said lead;
(d) sandwiching said ribbon between said attachment region and said attachment surface, and so that a portion of said ribbon extends out instead of being sandwiched between said region and surface; and
(e) directing a flame at said lead in the vicinity of said attachment surface, at a sufficient temperature and for a sufficient time to melt said solder ribbon and draw said extending portion thereof toward said sandwiched elements, to strongly bond said lead to said element.

5,358,170

PACKED ELECTRIC LAMP

Wilhelmus J. J. Van Hest, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 35,135, Mar. 19, 1993, abandoned. This application Jan. 18, 1994, Ser. No. 183,447
Claims priority, application European Pat. Off., Apr. 21, 1992, 92201123.4
Int. Cl.[5] B65D *85/42*
U.S. Cl. 229—87.02 5 Claims



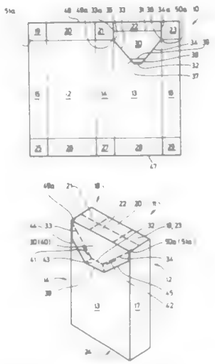
1. A packed electric lamp comprising
an electric lamp having a bulb and a lamp cap;
a packing sleeve with a first and a second end portion and with planar walls interconnected along longitudinally extending edges of said sleeve,
a band formed from two adjoining walls of said planar walls which is folded inwards into the sleeve and which in conjunction with the two adjoining walls forms a pocket in which the lamp cap is accommodated, and
fixing means for axially fixing the lamp in the packing sleeve, characterized in that: said fixing means consists essentially of the band pressing with clamping force against the lamp cap so as to axially fix the lamp in the packing sleeve, and said band is at one end of said sleeve and is formed by only one incision in each of said adjoining walls from which said band is formed.

5,358,171

PACK FOR RECEIVING HANDKERCHIEFS, BLANK FOR THE PACK AND PROCESS FOR PRODUCING SUCH A PACK

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Jan. 28, 1993, Ser. No. 10,052
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1992, 4202258
Int. Cl.[5] B65D *5/54*
U.S. Cl. 229—87.05 17 Claims



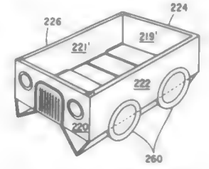
1. A pack for receiving a stack of handkerchiefs made of paper, parchment, thin cardboard or foil, wherein:
a) the pack has a cuboid shape with a large front panel (**13**), a large rear panel (**12**) narrow side panels (**14**, **17**), a narrow bottom panel (**24**) and a narrow end panel (**18**);
b) the end panel (**18**) is formed by at least partially overlapping folding tabs, and wherein a corresponding inner cover tab (**22**), which is located in the plane of the end panel (**18**), adjoins the front wall (**13**);
c) in a region of the front panel (**13**) adjoining the end panel (**18**), there is a withdrawal opening (**40**) which is covered by a closure tab (**30**);
d) for forming the withdrawal opening (**40**) and the closure tab (**30**), the front panel (**13**) is provided, in said region adjoining the end panel (**18**), with incisions (**33**, **34**) extending in the direction of the bottom panel (**24**), lower ends (**37**, **38**) of the incisions (**33**, **34**) being connected to one another via a residual connection (**32**) which is provided for tearing; and
e) in a closed pack, the closure tab (**30**), which is formed by the incisions (**33**, **34**) and the residual connection (**30**), is folded downwards relative to the front panel about the width of a narrow web (**43**) adjoining the residual connection (**32**), the web (**43**) and the closure tab (**30**) adjoining in the upward direction being connected by means of a folding line.

5,358,172

TRANSFORMABLE CARTON

Milton B. Hollander, Stamford, and David R. Jacobs, Norwalk, both of Conn., assignors to Omega Engineering, Inc., Stamford, Conn.

Division of Ser. No. 670,238, Mar. 15, 1991, Pat. No. 5,181,650.
This application Sep. 25, 1992, Ser. No. 951,673
Int. Cl.[5] B65O *5/32*
U.S. Cl. 229—103 2 Claims



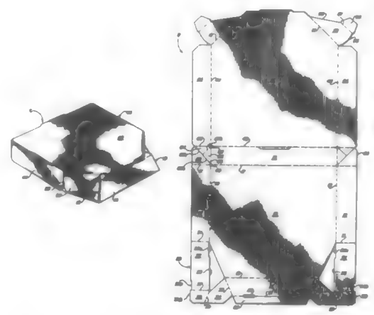
1. A convertible container comprising:
a plurality of sidewalls formed of substantially planar carton stock;
said sidewalls being coupled together in a first position to configure said container in the form of a three-dimensional body having an outer shape generally corresponding to a rectangular solid;
said container having an accessible hollow interior space enclosed by said sidewalls and substantially corresponding tot he outer shape defined by said sidewalls, for storing articles therein, when said sidewalls are in said first position;
portions of certain of said sidewalls being displaceable from said first position to a second position relative to other of said sidewalls and being engageable with said other of said sidewalls in said second position for altering both the inner shape and the outer shape of said container to accommodate different uses of said container, wherein, said plurality of sidewalls comprise two pairs of parallel opposed sidewalls oriented at right angles to each other, each one of said sidewalls having a pair of parallel spaced apart edges, the edges of each sidewall being coupled to an edge of each of two other sidewalls to form a rectangular array, and a pair of parallel opposed endwalls oriented at right angles to the said sidewalls of said rectangular array;
each one of said endwalls is formed of a pair of side flap elements, each of said side flap elements being integrally hingedly coupled along one edge thereof to an adjoining edge of a separate one of the sidewalls of one of said pairs of parallel opposed sidewalls, and a pair of end flap elements integrally hingedly coupled along one edge of each of said end flap elements to an adjoining edge of a separate one of the sidewalls of the other of said pairs of parallel opposed sidewalls which said other pair of sidewalls is oriented at right angles to said one pair of side walls;
at least one end flap of one of said pair of endwalls is provided with a pair of parallel spaced apart slots disposed in parallel relationship with the said one of said pairs of sidewalls, and each side flap element of said one of said endwalls is provided with a medial fold substantially parallel to said one of said pairs of sidewalls and with a tab positioned to engage one of said slots;
said side flap elements of said one of said end walls form extending triangularly cross-sectioned supports for said container having at least one vertex of said triangularly cross-sectioned supports coinciding with said medial fold and extending away from said container for engaging an external support surface, when said tabs are engaged in said slots; and
printed indicia on at least one outer surface of said container in combination with the shape of said container simulate a recognizable object.

5,358,173

CONTAINER CLOSURE FLAP ARRANGEMENT

Noel J. Mertz, Geneva, Ill., assignor to Jefferson Smurfit Corporation, Clayton, Mo.

Filed Mar. 22, 1994, Ser. No. 186,859
Int. Cl.[5] B65D *5/24*, *5/66*
U.S. Cl. 229—110 10 Claims



1. An improved closure flap arrangement for a tray type container with truncated front corners, said container being formed from a unitary blank of foldable paperboard and comprising:
(a) a tray member including a bottom wall panel having a front wall panel, a rear wall panel, and a pair of side wall panels foldably joined to front, rear, and side edges, respectively, thereof and upstanding therefrom;
(b) a cover member including a top wall panel having a rear edge foldably joined to an upper edge of said tray member rear wall, and having a pair of side wall panels foldably joined to side edges thereof and depending therefrom;
(c) a pair of closure flaps foldably joined to diagonally extending front corner edges of said cover member top wall and extending downwardly therefrom, when the container is in a closed condition;
(d) said closure flaps each having:
(i) a lock tab foldably joined to a lower edge thereof and arranged and disposed to be tucked into a related recess of said tray member;
(ii) a curved rear side edge extending rearwardly beyond and overlapping forward edges of said cover member side wall panels to maintain said cover side wall panels against said tray side wall panels when said container is in a closed condition.

5,358,174

CONTAINER

Edwin A. Antczak, 11200 S. Octavia Ave., Worth, Ill. 60482; Mark O. Faltynek, 3424 W. 82nd St., Chicago, Ill. 60652; Daniel F. Garbaczewski, 13713 Cave Creek Ct., Lockport, Ill. 60441, and James J. Garbaczewski, 8175 S. Tripp St., Chicago, Ill. 60652

Filed Feb. 1, 1994, Ser. No. 189,915
Int. Cl.[5] B65D *5/56*
U.S. Cl. 229—110 14 Claims

1. A container comprising:
a two-layer single-faced bottom portion, said bottom portion having a substantially flat layer on the exterior of the container and a corrugated layer on the interior of the container, said corrugated layer being adhesively attached

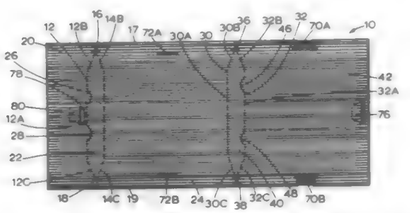
VOL 1167 ISS 4 OCT 25 1994 UMI

directly to said flat layer and having a plurality of substantially parallel flutes;

a first and a second single-faced side wall each integrally formed with said bottom portion, said first and said second side walls each having first and second ends being generally triangular in shape;

a third and a fourth single-faced side wall, said third and said fourth sidewall each being formed partly by a two-layer single-faced cover and partly by said bottom portion;

said two-layer single-faced cover being integrally formed with said third and fourth side walls, said cover having a substantially flat layer on the exterior of the container and a corrugated layer on the interior of the container, said corrugated layer being adhesively attached directly to said flat layer;



at least one two-layer single-faced locking tab integrally formed with said cover, said locking tab having a substantially flat layer and a corrugated layer having a plurality of flutes, said corrugated layer being adhesively attached directly to said flat layer; and

at least one corresponding locking receptacle integrally formed with said bottom portion and having an edge substantially parallel to said plurality of parallel flutes of said bottom portion, the position of each said locking tab coinciding with each said corresponding locking receptacle when said container is assembled so that each said locking tab may be bent downwards to enable a flute of said locking tab to engage said flat layer of said bottom portion by said edge of said locking receptacle to facilitate closure of said cover to said bottom portion.

5,358,175

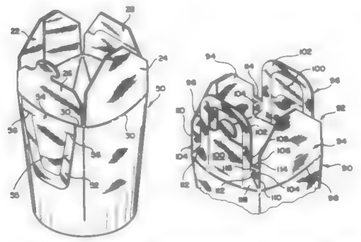
CUP CONTAINER WITH INTERGRAL CLOSURE

Liming Cai, West Chester, Pa., assignor to Dopaco, Inc., Downingtown, Pa.

Filed Mar. 17, 1993, Ser. No. 33,475

Int. Cl.[5] B65D *5/06, 5/46*

U.S. Cl. 229—117.14 **12 Claims**



1. A container formed of foldable sheet material and comprising a body having a closed substantially circular base end and a peripheral wall extending upward from said base end to an upper peripheral rim, said rim defining an open mouth, said body having a substantially circular cross-section along the height thereof from said base end to said rim, a first pair of generally parallel inner closure flaps integral with said rim along and projecting Upwardly from diametrically opposed lengths of said rim, said inner flaps being selectively foldable at said rim to a closed position projecting diametrically across said open mouth of said container, a second pair of outer closure flaps at substantially right angles to said inner closure flaps, said outer closure flaps being integral with said rim along and projecting upward from diametrically opposed second lengths thereof, said outer flaps being selectively foldable about said rim to a closed position diametrically across said open mouth and in overlying relation to said inner flaps, and lock means integral with said outer flaps for interlocking said outer flaps in the closed position thereof, said flaps in the closed positions thereof, inwardly biasing the corresponding lengths of rim and corresponding sections of said peripheral wall therebelow into substantially common planes whereby four planes at approximately right angles are defined about said container body, each of said planes merging into said substantially circular base end, said inner and outer flaps each having opposed side edges upwardly extending relative to said rim, said inner and outer flaps alternating about said rim with each side edge spaced from an adjacent side edge of an adjacent flap, and a sealing gusset between each pair of adjacent side edges, each sealing gusset extending upward from said rim and being integral with said adjacent side edges along lower extents thereof, said adjacent side edges having upper extents extending freely above said gusset in opposed generally parallel relation to each other, each gusset being inwardly foldable between said adjacent side edges along first and second fold lines extending upward from a common point on said rim in linear alignment with the side edge of the adjacent inner flap, said first fold line extending from said rim point co-linear with the adjacent inner flap side edge, said second fold line extending at a diagonal from said rim point to the adjacent side of the adjacent outer flap, whereby, each of said gussets, upon an inward folding of the adjoining inner flap, is inwardly folded about said diagonal fold line to lie inward of the adjacent outer flap to define a seal at the juncture between the adjacent inner and outer flaps.

5,358,176

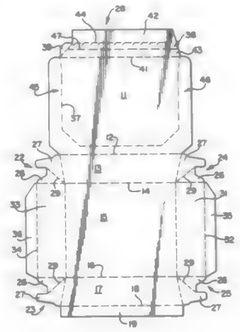
TEAR STRIP OPENING FOR A PAPERBOARD CONTAINER

William R. Rigby, Newark, Del., assignor to Westvaco Corporation, New York, N.Y.

Filed May 5, 1994, Ser. No. 238,730

Int. Cl.[5] B65D *5/54*

U.S. Cl. 229—240 **15 Claims**



1. A paperboard container including at least one closure flap, said closure flap having an inner surface and an outer surface wherein the inner surface of said closure flap is adhered to a panel of said container to close the container, the improvement comprising means for opening said container, said opening means further comprising a removable tear strip incorporated into the closure flap, said tear strip being defined along one edge by a single line of perforations cut through the thickness of the paperboard and along another edge by a partial depth cut line of weakness applied to the inner surface of the closure flap, wherein removal of said tear strip to open the container is accomplished by the combined action of a separation of the paperboard along the single line of perforations and a delamination of the paperboard at the outer surface of the closure flap adjacent to the partial depth cut line of weakness.

5,358,177

FLUID FLOW AND TEMPERATURE CONTROL APPARATUS

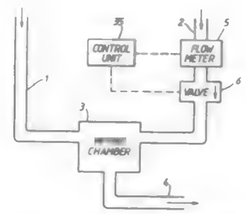
Peter R. Cashmore, Lingfield, England, assignor to The Computer Shower Company Limited, Sidcup, England

Continuation of Ser. No. 695,330, May 3, 1991, abandoned. This application Aug. 10, 1993, Ser. No. 104,409

Claims priority, application United Kingdom, May 15, 1990, 9010842

Int. Cl.[5] B05D *23/13*

U.S. Cl. 236—12.12 **15 Claims**



1. Apparatus for providing liquid at a defined temperature from a mixture of

a first supply of liquid having a temperature higher than said defined temperature, and

a second supply of said liquid having a temperature lower than said defined temperature, the apparatus comprising:

flow rate sensing means located in at least one said supply for sensing the flow rate in said one of said first and second supplies;

adjustment means arranged to control the flow rate in said one of said first and second supplies; and

control means responsive to said flor rate sensing means to control said adjustment means whereby to adjust the flow rate and maintain the defined temperature of the mixed liquid.

5,358,178

VEHICLE CAB HEATER

Allan L. Crocker, 11605 N. Highway 14, Brooklyn, Wis. 53521

Filed Aug. 2, 1993, Ser. No. 100,257

Int. Cl.[5] B60H *1/02*

U.S. Cl. 237—12.3 A **12 Claims**

1. A vehicle cab heater, comprising:

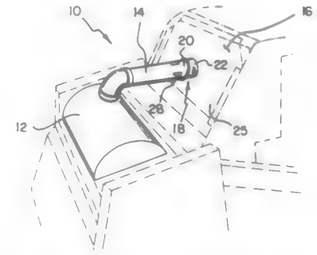
a shroud assembly capable of fitting over a radiator and radiator fan on a water-cooled engine,

a conduit connected between the vehicle cab and said shroud assembly for conveying heated air from the radiator to the vehicle cab, and

a manually operated valve assembly located at an end of said conduit, said valve assembly including an exterior portion located outside of the vehicle cab and including an interior portion located inside the vehicle cab, wherein said valve assembly includes an exterior valve subassembly for controlling air flow from said shroud assembly to outside the vehicle cab, and wherein said valve assembly also includes an interior valve subassembly for controlling air flow from said shroud assembly to inside the vehicle cab,

wherein said exterior valve subassembly includes:

a first external aperture in said conduit, and



a manually adjustable valve element located inside said conduit, said valve element including a first internal aperture capable of being selectively placed in registration with said first external aperture, such that warmed air from said shroud assembly can be selectively retained in or exited from said conduit to outside the vehicle cab.

5,358,179

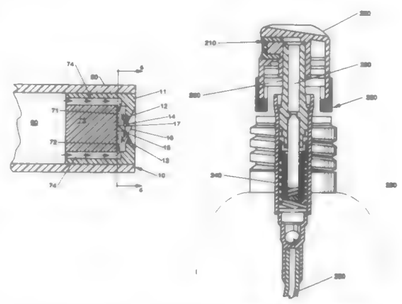
ATOMIZATION SYSTEMS FOR HIGH VISCOSITY PRODUCTS

Mark T. Lund, West Chester, and Gerard L. Buisson, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 18, 1993, Ser. No. 111,726

Int. Cl.[5] B05B *1/26*

U.S. Cl. 239—333 **20 Claims**



1. A dispensing and atomization system for a comparatively high viscosity fluid product, said system comprising:

(a) a comparatively high viscosity fluid product;

(b) a container for storing said product prior to dispensing and atomizing said product;

(c) a manually operated pump sprayer for dispensing said product from said container, said pump sprayer being associated with an opening in said container so as to permit dispensing of said product from within said container when said pump sprayer is actuated during a dispensing operation;

(d) an impingement-type nozzle assembly associated with said pump sprayer for dispensing and atomizing said product, said nozzle assembly including at least two outlet orifices, each of said at least two outlet orifices defining a discharge axis, each of said at least two outlet orifices producing a solid stream of said product along said discharge axis upon actuation of said pump sprayer, said at

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least two orifices being arranged within said nozzle assembly such that the discharge axes of said at least two outlet orifices intersect to effectuate atomization of said product by causing said solid streams of said product to impinge upon one another; and

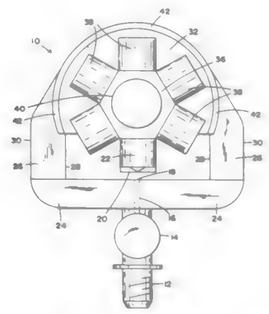
(e) said pump sprayer further including a pre-compression pump mechanism, wherein said product is dispensed only when a pre-determined pressure value is exceeded within said pump sprayer, said pre-determined pressure value ensuring that said product is discharged from said pump sprayer through said nozzle assembly with sufficient velocity to atomize said product via the impingement of said solid streams.

5,358,180

SELECTABLE SPRAY PATTERN LOW VOLUME SPRINKLER

Thomas N. Prassas, Glendale; Shannon Bard, Scottsdale, both of Ariz., and Allan L. Smith, Exeter, Calif., assignors to Aquapore Moisture Systems, Inc., Phoenix, Ariz.

Filed Apr. 6, 1993, Ser. No. 43,479
Int. Cl.[5] B05B *3/00*
U.S. Cl. 239—391 **10 Claims**



1. A low volume water sprinkler, having a selectable spray pattern, comprising in combination:

a water receiving tubular member adapted to connect to an irrigation system and further adapted to convey water therethrough, said tubular member having an orifice therein operable to emit a stream of water therefrom;

support structure means on said tubular member extending into the region of said stream of water from said orifice;

an axle formed of synthetic resin being mounted at one end of the support structure and having an annular groove thereabout;

movable means on said support structure means, said movable means comprising a rotor adapted to rotate about said axle, said rotor also comprising synthetic resin and having an annular internal lip shaped to snap into said groove and retain said rotor;

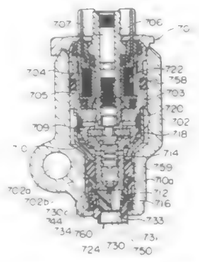
a plurality of water deflecting splash plates mounted on said movable means so as to be selectably movable into the path of said stream of water and deflect said stream of water.

5,358,181

FUEL FEED APPARATUS OF INTERNAL COMBUSTION ENGINE AND MANUFACTURING METHOD THEREFOR

Yasuhide Tani, Nagoya; Kiyoshi Nagata, Anjo, and Haruo Suzuki, Aichi, all of Japan, assignors to Nippondenso Co. Ltd., Kariya, Japan

Division of Ser. No. 896,036, Jun. 9, 1992, Pat. No. 5,211,682. This application Mar. 22, 1993, Ser. No. 35,214
Claims priority, application Japan, Jun. 11, 1991, 3-139251; Apr. 8, 1992, 4-087172
Int. Cl.[5] F02M *69/08, 51/08*
U.S. Cl. 239—409 **5 Claims**



1. A method for manufacturing a fuel feed apparatus of an internal combustion engine comprising a fuel passage for guiding fuel injected from a fuel injection nozzle of a fuel injection valve and assist air passages for jetting assist air against the fuel injected from said fuel injection nozzle, said method comprising the steps of:

forming a cylindrical inner member with the fuel passage extending from one end surface to another end surface thereof;

forming an outer member with a stepped portion substantially at a center of an inner surface thereof, penetrating holes each penetrating from an outside wall to an inside wall thereof at positions intermediate said stepped portion and a first end opening of said outer member;

forming, by inserting said inner member into said outer member through an end opening thereof, assist air passages which extend from said penetrating holes passing between said inner member and said outer member to be disposed around said fuel passage opened in said another end surface of said inner member;

joining said inner member and said outer member to each other at a joining position intermediate said penetrating holes and said first end opening of said outer member; and

attaching said inner member and said outer member thus joined together onto an outside of the fuel injection valve.

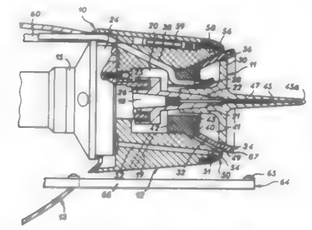
5,358,182

DEVICE WITH ROTATING ATOMIZER HEAD FOR ELECTROSTATICALLY SPRAYING LIQUID COATING PRODUCT

Michel Cappeau, Sassenage, and Laurent Turc, Grenoble, both of France, assignors to Sames S.A., Meylan, France

Filed Jun. 11, 1993, Ser. No. 75,095
Claims priority, application France, Jun. 22, 1992, 92 07559
Int. Cl.[5] B05B *5/04*
U.S. Cl. 239—703 **16 Claims**

1. Device for electrostatically spraying liquid coating product comprising a rotating head for atomizing the coating product, said rotating head being made from an insulative material and comprising an axial charging electrode adapted to be connected to a high voltage supply and projecting in front of said atomizer head for charging the atomized liquid coating product by ionic bombardment.

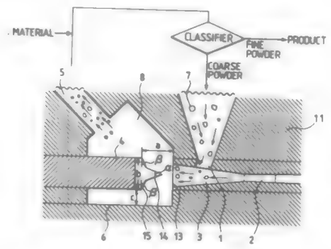


5,358,183

PNEUMATIC PULVERIZER AND PROCESS FOR PRODUCING TONER

Hitoshi Kanda; Satoshi Mitsumura, both of Yokohama, and Kazuhiko Omata, Satte, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 912,694, Jul. 13, 1992, abandoned. This application Jan. 19, 1994, Ser. No. 183,253
Claims priority, application Japan, May 8, 1992, 4-116172
Int. Cl.[5] B02C *19/06*
U.S. Cl. 241—5 **17 Claims**



1. A pneumatic pulverizer comprising:

an accelerating tube for conveying and accelerating a powder material to be pulverized by a high-pressure gas, said accelerating tube including a powder material supply port and a throat portion; and

a pulverizing chamber for finely pulverizing the material conveyed by said accelerating tube, said pulverizing chamber including a colliding member having a colliding surface provided opposite to an outlet of said accelerating tube, said colliding surface having a protruding central portion, and an inclined outer peripheral colliding surface provided on an outer periphery of said protruding central portion for secondarily pulverizing the powder material primarily pulverized by said protruding central portion, and

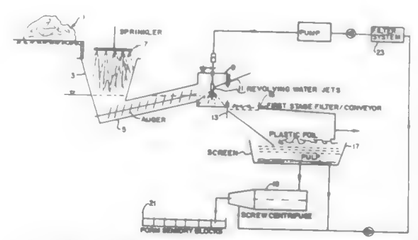
wherein a vertical angle (α) of said protruding central portion is between 10° and 80° and an inclined angle (β) of said outer peripheral colliding surface with respect to a surface perpendicular to a central axis of said accelerating tube is between 5° and 40°, and wherein said pulverizing chamber has a side wall for performing tertiary pulverization on the powder material secondarily pulverized by said outer peripheral colliding surface.

5,358,184

METHOD FOR SEPARATING MULTI-PLY PACKAGING MATERIAL FOR RECYCLING

Joseph Skudrzyk, Frontenac, Mo., assignor to Elite Ink & Coatings, Ltd., Arthur, Ill.

Filed Mar. 16, 1993, Ser. No. 31,840
Int. Cl.[5] B02C *19/12, 23/18*
U.S. Cl. 241—16 **2 Claims**



1. A method of treating heterogenous, multi-ply material for recycling, wherein said heterogenous material being packaging material, comprising:

pre-soaking the package material prior to introduction of said material into said chamber;

introducing said material into said chamber, the step of introducing said material comprises continuously feeding said material into said chamber with an auger;

said material being introduced into said auger by a communicating chute;

the presoaking of said material occurring in said chute;

subjecting said material to high pressure liquid to separate the plies of the packaging material, subjecting said material to high pressure liquid comprises passing said liquid through at least one nozzle to form liquid jets, and rotating said at least one nozzle;

removing said separated packaging material from said chamber;

said removal step includes passing said treated material through an adjustable filter to remove any plastic plies from the paper plies of the recycled packaging material;

carrying away said plastic plies from said chamber; and,

separating said treated paper plies from the liquid, said paper/water separating step includes settling said paper, said paper/water separating step further includes a step of centrifuging said treated paper and said liquid.

5,358,185

METHOD OF DIGESTING WASTE PAPER

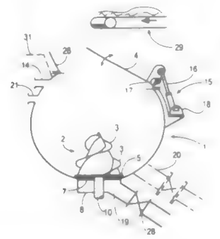
Helmut Konecsny, Baulkham Hills, Australia, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Nov. 29, 1993, Ser. No. 159,431
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1992, 4241039; Feb. 25, 1993, 4305687
Int. Cl.[5] B02C *11/08*; B07K *7/00*
U.S. Cl. 241—18 **9 Claims**

1. A method of digesting waste paper comprising the step of digesting waste paper in a gas-tight pulper container under a gauge pressure of between about 0.3 bar and about 4 bar with

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circulation within the container provided by a rotor provided with vanes or helical surfaces, said gauge pressure being produced by the introduction of compressed gas into said container.



5,358,186

METHOD OF PREPARING GRANULES OF DIPEPTIDE

Takehiko Katsoka; Tadashi Takemoto; Harutoshi Ohura, all of Kawasaki, and Makoto Nishikawa, Yokkaichi, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Aug. 30, 1993, Ser. No. 112,981
Claims priority, application Japan, Sep. 4, 1992, 4-236942
Int. Cl.[5] B02C *7/00*
U.S. Cl. 241—24 **8 Claims**



1. A method of preparing granules of a dipeptide sweetener comprising compacting α-L-aspartyl-L-phenylalanine methyl ester sweetener alone or in the presence of a vehicle of not more than the same weight amount as the weight of the ester, breaking down the sweetener so as to allow it to pass through a screen having pores with diameters in the range of from 1 mm to 10 mm, and then further breaking and classifying the sweetener.

5,358,187

METHODS OF AN APPARATUS FOR PRODUCING IMPROVED BEDDING MATERIALS FROM SCRAP NEWSPAPER

Paula M. L. Ward, P.O. Box 43, Sergeantsville, N.J. 08557

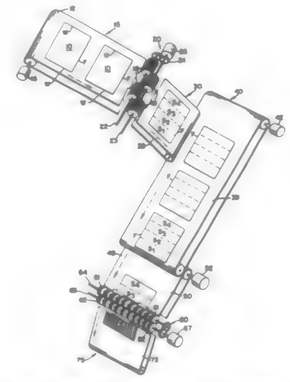
Filed Sep. 9, 1992, Ser. No. 942,436
Int. Cl.[5] B02C *18/00*
U.S. Cl. 241—3 **10 Claims**

1. A method of converting scrap newspapers, assembled in either a standard broadsheet format having a fourteen inch once folded edge and a twice folded edge or a standard tabloid format having a fourteen inch once folded edge, each format also having an eleven inch edge, into discrete paper bits for recycled use as bedding material, which method comprises:

successively advancing individual newspapers along a predetermined planar path in a direction perpendicular to the fourteen inch, once folded edges of the newspapers, said planar path including a linear reference boundary parallel to the direction of advance;

moving each of the advancing newspapers with the eleven inch edges thereof parallel to the direction of advance with a selected one of the eleven inch edges in registration with said linear reference boundary, said selected one of the edges, only in respect to a newspaper of broadsheet format being limited to the twice folded edge thereof;

severing each of the successively advancing newspapers into a plurality of parallel strips by making three parallel cuts perpendicular to the once folded edge and spaced uniformly four inches apart, the cut nearest to the linear reference boundary being spaced four inches therefrom, whereby the entire length of the fourteen inch, once folded edges is divided into three segments of four inches and a remaining end segment of two inches located at the end furthest from said linear reference boundary, and



simultaneously making an additional cut parallel to all of said other cuts and midway between said linear reference boundary and the immediately adjacent one of said other cuts, the additional cut in conjunction with the other of said cuts ensuring that the unfolded dimensions of the parallel strips by twice folded edges do not exceed four inches, and

maintaining the strips in a parallel array while forming a multiplicity of rectangular bits by making a plurality of uniformly spaced apart and simultaneous cuts extending parallel to the once folded edges of the newspapers and perpendicular to the parallel edges of the strips, the uniform spacing of the last mentioned cuts being no greater than about one half inch and no less than about one quarter inch, whereby essentially the total production of rectangular bits falls within a range of two to four inches in length and one quarter to one half inch in width.

5,358,188

SUPERSONIC JET CRUSHER OF COLLISIONAL TYPE

Nobuyasu Makino, Numazu; Nagaki Sato, Shizuoka; Toshiyuki Fukase, and Hiroyuki Yoshikawa, both of Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

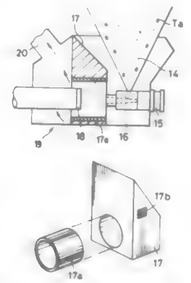
Continuation of Ser. No. 842,995, Feb. 28, 1992, abandoned.
This application Jan. 19, 1994, Ser. No. 183,237
Claims priority, application Japan, Mar. 8, 1991, 3-069105; Jun. 27, 1991, 3-183259
Int. Cl.[5] B02C *19/06*
U.S. Cl. 241—40 **5 Claims**

1. A supersonic jet crusher of a collisional type comprising:

a crushing chamber having at least one detachable outer cover forming a wall of the crushing chamber;

an injecting nozzle for injecting a jet stream into said crushing chamber;

a jet stream path extending from said nozzle to said crushing chamber for supplying a crushing material into said crushing chamber;



a collisional plate positioned in said crushing chamber and disposed in a position in line with said jet stream path and opposite to said injecting nozzle for crushing said crushing material supplied by said jet stream;

a detachable jig disposed in said crushing chamber; and

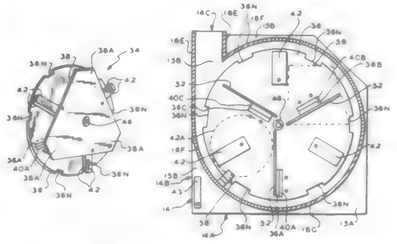
a secondary collisional plate detachably attached to said detachable jig such that the crushing material collides with said collisional plate and further collides with the secondary collisional plate.

5,358,189

PROCESSOR FOR CHIPPING AND SHREDDING VEGETATION

Aldo Vandermolen, 16 Welsh Rd., Essex Fells, N.J. 07021

Filed Sep. 29, 1993, Ser. No. 128,870
Int. Cl.[5] B02C *13/04, 21/02*
U.S. Cl. 241—92 **22 Claims**



1. A processor for chipping and shredding vegetation including wood and at least one other material selected from the group consisting of agricultural products, yard and garden debris, and forestry brush and waste, said processor comprising:

a housing having a hopper opening;

a rotor rotatably mounted in said housing;

a drive means adapted to drive said rotor;

a cutter mounted on said rotor to swing past said hopper opening;

a hopper mounted at said hopper opening on said housing for feeding said material toward and past said cutter;

an angularly spaced plurality of flails mounted alongside said rotor to rotate relative thereto in a full circle; and

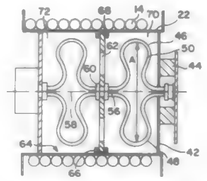
a plurality of radially extending impeller vanes mounted at angularly spaced positions on said rotor between said flails, said flails being sized and positioned to rotate without touching said vanes.

5,358,190

DEVICE FOR STOWING AWAY THICK CABLES

Manfred Fladung, Mömbris, Fed. Rep. of Germany, assignor to Manfred Fladung GmbH, Fed. Rep. of Germany

PCT No. PCT/EP91/01259, § 371 Date Dec. 31, 1992, § 102(e) Date Dec. 31, 1992, PCT Pub. No. WO92/01323, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 4, 1991, Ser. No. 966,054
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1990, 9010213
Int. Cl.[5] B65H *75/02*
U.S. Cl. 242—388 **16 Claims**



1. A device (**10**) for stowing away a supply cable (**14**, **16**) composed of several leads for a central energy supply system on board an aircraft, comprising a rotary winding drum having a hollow cylindrical bearing body (**22**) for single-layer winding of several turns of said cable which in turn is connected by a compensating cable (**46**) inside the bearing body to a fixed connection, with the compensating cable extending in the axial direction of said winding drum such that said compensating cable is more strongly twisted when said connecting cable is unwound from said winding drum and less strongly when wound onto said winding drum, wherein

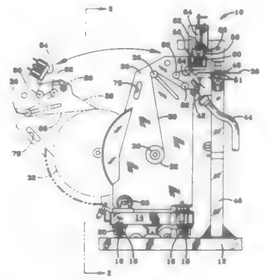
said compensating cable (**46**) thereof exposed in sections are held by a receptacle (**62**, **76**) approximately centrally in said bearing body (**22**) and said receptacle (**62**, **76**) is rotatable about the rotation axis (**58**) of said winding drum (**24**) and relative to said winding drum (**24**).

5,358,191

STORAGE AND SPLICING OF STRIP MATERIAL

Dennis A. Lundell, Uniontown; John P. Roman, Cuyahoga Falls, and Michael W. Smith, Mogadore, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 6, 1991, Ser. No. 755,752
Int. Cl.[5] B65H *19/18*
U.S. Cl. 242—556 **10 Claims**



1. Apparatus for splicing a leading edge of a firs spool of

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strip material to a trailing edge of a second spool of strip material to provide a continuous supply of strip material comprising;

(a) a stationary support;

(b) a first supporting frame on which said first spool is mounted being moveable between a full spool storage position, an empty spool storage position, and a splicing position adjacent said stationary support;

(c) a second supporting frame on which said second spool is mounted being moveable between said full spool storage position, said empty spool storage position and said splicing position adjacent said stationary support;

(d) said first supporting frame and said second supporting frame being positioned in side by side relationship with said first supporting frame in said full spool storage position and said second supporting frame in said splicing position;

(e) guide members for holding said trailing edge of said second spool and said leading edge of said first spool in position for splicing;

(f) a first one of said guide members being a fixed guide member positioned on said stationary support adjacent said second supporting frame in said splicing position for holding said trailing edge;

(g) a second one of said guide members being a moveable guide member mounted on said first supporting frame for movement relative to said first supporting frame to hold said leading edge;

(h) means mounted on said stationary support for moving said moveable guide member towards said fixed guide member to urge said leading edge of said first spool of strip material into splicing engagement with said trailing edge of said second spool of strip material and then away from the other guide member for releasing the splice between said leading edge of said first spool of strip material and said trailing edge of said second spool of strip material; and,

(i) said moveable guide member having a clamp releasably mounted for holding said leading edge of said first spool of strip material on said moveable guide member in said full spool storage position and for releasing said leading edge as it is moved into engagement with said trailing edge of said second spool of strip material.

5,358,192

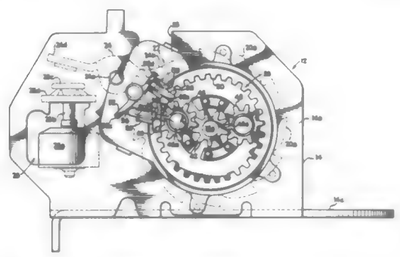
SEAT BELT RETRACTOR HAVING RATTLE SUPPRESSION MECHANISM

Gerald A. Doty, Crown Point, Ind., assignor to Takata, Inc., Auburn Hills, Mich.

Continuation of Ser. No. 795,719, Nov. 21, 1991, abandoned. This application Sep. 17, 1993, Ser. No. 123,579

Int. Cl.[5] **B60R** *22/40*

U.S. Cl. 242—384.5 **17 Claims**



10. A seat belt retractor comprising:

a retractor frame including parallel spaced side plates,

a reel having a supporting shaft journaled for rotation in the side plates and having a seat belt wound thereon,

retractor spring means supported on the retractor frame and being connected to the reel to bias the reel in a belt retracting direction and to permit the reel to rotate in a belt protracting direction to unwind the belt from the reel,

a pair of ratchet wheels secured to the reel on opposite sides of the belt and having peripherally disposed teeth, the ratchet wheels bearing the load of a passenger against further belt protraction at the time of emergency,

a locking pawl extending between the side plates and being supported for pivotal movement about an axis parallel to the reel supporting shaft and movable between an inoperative position spaced from the ratchet teeth and an operative position engaged with the ratchet teeth to lock the reel against rotation in the belt protracting direction bearing loads applied by the belt in the belt protracting direction at the time of an emergency,

an inertial device mounted on the retractor frame between the side plates and having an acceleration responsive member connected to actuate the locking pawl to the operative position when the retractor is subjected to at least a predetermined level of acceleration,

the locking pawl having its center of gravity displaced with respect to its axis of pivotal mounting so that the locking pawl is gravity biased into engagement with the inertial device and out of said operative position,

a rattle suppression mechanism which is driven by the reel, which engages and biases the locking pawl to the inoperative position and immobilizes the acceleration responsive member only when the seat belt is fully wound onto the reel and during an initial protraction of a length of seat belt less than that necessary to secure a passenger with the belt and which disengages and withdraws the bias on the locking pawl when the seat belt is protracted beyond the length of the initial protraction and less than that necessary to secure a passenger with the belt, and

the rattle suppression mechanism including a pawl control mechanism, the pawl control mechanism having a multi-arm lever pivotally carried by the retractor frame and driven by the reel to rotate the pawl control mechanism to either the inoperative position to engage and bias the locking pawl or so to disengage and withdraw bias on the locking pawl.

5,358,193

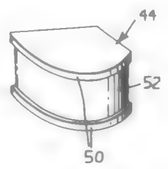
TAPE GUIDE FOR A DATA CARTRIDGE

David D. Madsen, Lakeland, Minn.; David P. Smith, Hudson, Wis., and Robert A. von Behren, Lilydale, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 773,454, Oct. 9, 1991, abandoned. This application Aug. 4, 1993, Ser. No. 102,533

Int. Cl.[5] **G11B** *23/087*

U.S. Cl. 242—342 **18 Claims**



1. A belt driven reel-to-reel tape cartridge having a belt which is mounted around a drive roller and rotatable guide rollers, the belt contacting the tape reels to drive the tape reels on respective tape reel pins wherein the tape is convolutely wound on the tape reels in opposite directions, the tape cartridge comprising:

two tape guides mounted for guiding the tape to and from respective tape reels, and for changing the direction of the tape, wherein each tape guide has a bearing surface and at least one tape guide comprises means, including at least one flange formed on the bearing surface, for guiding and aligning the tape to improve tape tracking, wherein the flange is perpendicular to the bearing surface and the flange provides clearance for the tape without an interference fit, and means for hydrodynamically lifting the tape without any external fluid supply to reduce the friction between the tape backside and the tape guide, wherein the lifting means comprises a surface finish selected to provide hydrodynamic lift to reduce the friction between the tape backside and the tape guide; and

a guide pin disposed intermediate the two tape guides for guiding the tape, wherein the tape guides and guide pin define a tape guide path between the reels, wherein the tape guides have a larger radius of curvature than the guide pin, a coefficient of friction less than 0.1 when the cartridge operates at speeds of at least 2 m/s, and a surface roughness of less than 0.1 micrometers.

5,358,194

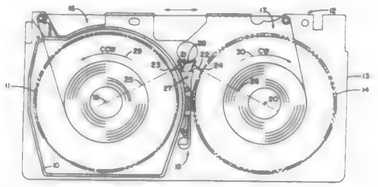
REEL BRAKING MECHANISM FOR TWO PIECE VIDEOCASSETTE SYSTEM

Carole A. Tompkins, Blacksburg, Va., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 811,006, Dec. 20, 1991, abandoned. This application Jan. 19, 1994, Ser. No. 183,630

Int. Cl.[5] **G11B** *23/087*

U.S. Cl. 242—338.3 **1 Claim**



1. A tape cartridge-to-cassette adaptor of the type used with a cassette transport, said transport having a release pin, said adaptor of the type used to convert a single supply reel cartridge to a multiple reel cassette format, said supply reel having a flange, said flange having a plurality of gear form teeth projecting from the periphery of said flange defining a supply reel gear flange, said adaptor comprising:

an adaptor housing having a cartridge reception cavity;

a take-up reel located in said adaptor housing laterally adjacent said cartridge reception cavity, said take-up reel having a flange, said flange having a plurality of gear teeth projecting from the periphery of said flange defining a take-up reel flange;

said take-up reel flange and said supply reel flange lying in the same plane;

said take-up reel having a first axis of rotation and said supply reel having a second axis of rotation, said first axis and said second axis being parallel;

first and second brake levers pivotally mounted about a third axis parallel to said first and second axis and having respective first and second arms;

said first arm adapted to engage the gear teeth of said supply reel gear flange;

said second arm adapted to engage the gear teeth of said take-up reel gear flange;

whereby engagement with said supply reel gear flange and said take-up reel gear flange by said first and second arms defines a locked position;

biasing means for urging said arms into said locked position;

retraction means for disengaging said first and second arms from said supply reel gear flange and said take-up reel gear flange defining an unlocked position; and

said retraction means including user operable winder means for moving said first and second arms into said unlocked position, and release pin operable means, having a pivot axis orthogonal to said first and second axes for moving said first and second arms into said unlocked position.

5,358,195

REEL BRAKING DEVICE FOR A VIDEO CASSETTE RECORDER

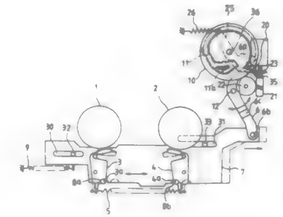
Ki-Young Kang, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Apr. 16, 1993, Ser. No. 48,822

Claims priority, application Rep. of Korea, Apr. 21, 1992, 92.6701

Int. Cl.[5] **G11B** *15/18*

U.S. Cl. 242—343.1 **4 Claims**



1. A braking device for use in a video cassette recorder with a pair of reels, which comprises:

a pair of brake levers disposed adjacent to the reels and biased by a common tension spring for braking the reels and having retainer pins provided at lower end portions thereof;

a slide plate for actuating the brake levers and having recesses adapted to be engaged with the respective retainer pins of the brake levers by the lateral movement thereof;

a swing lever hinged at a side of the slide plate and pivotally mounted at a middle portion thereof for moving the slide plate in the lateral direction;

means for biasing the slide plate so as to urge the swing lever in the clockwise direction;

a cam gear for rotating the swing lever, said cam gear having a camming groove engaged with a cam follower pin of the swing lever, said camming groove defining a cassette loading mode position, a tape loading mode position, a review mode position, a stop mode position, a play mode position, a fast forward and rewind mode position, and a brake mode position and including a feedback passage arranged between the brake mode and the play mode positions for guiding the cam follower pin of the swing lever from the brake mode position to the play mode position in the counterclockwise rotation of the cam gear;

means for driving the cam gear, said driving means including a driving gear provided at an output shaft of a loading motor and a driven gear meshed with the driving gear and the cam gear;

means disposed between the swing lever and the cam gear for locking the swing lever when the cam follower pin of the swing lever reaches the fast forward and rewind mode position of the camming groove by the rotation of the cam gear; and

means for unlocking the swing lever when the cam follower pin of the swing lever begins to leave the fast forward and rewind mode position toward the brake mode position of the camming groove by the rotating actuation of the cam gear.

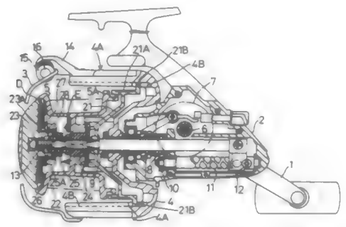
VOL 1167 ISS 4 OC 25 1994 UMI

5,358,196

DRAG MECHANISM FOR A SPINNING REEL

Yuzo Kawabe, Izumi, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Feb. 18, 1992, Ser. No. 836,374
Claims priority, application Japan, Feb. 20, 1991, 3-007517[U]
Int. Cl.[5] A01K *89/027*
U.S. Cl. 242—246 12 Claims



1. A drag mechanism for a spinning reel comprising:
a pressing member mounted on a spool shaft to be unrotatable relative thereto:
an annular frictional section formed on a front surface of a spool, said frictional section having an inner diameter; and
a control member meshed with a screw portion at a forward end of said spool shaft for applying a pressure to said pressing member to adjust a contact pressure between said pressing member and said frictional section;
wherein said control member includes a tubular portion adjacent said pressing member and coaxial with said spool shaft, said tubular portion defining a toothed surface with radially outward directed teeth, and a large diameter portion, said toothed surface having an outer diameter, said large diameter portion having an outer diameter, said outer diameter of said large diameter portion being greater than said outer diameter of said toothed surface, said outer diameter of said large diameter portion being less than said inner diameter of said frictional section, and said pressing member carries a resilient element extending through openings in said pressing member into contact with said toothed surface forwardly of said larger diameter portion, said resilient element being engageable with the disengageable from said toothed surface to produce a sound when said control member is turned.

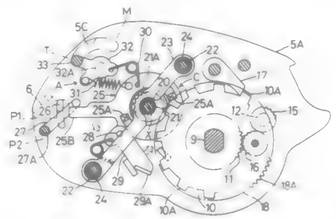
5,358,197

CLUTCH CONTROL MECHANISM FOR BAIT-CASTING REEL

Noboru Sakaguchi, Tondabayashi, Japan, assignor to Shimano Inc., Osaka, Japan

Filed May 4, 1992, Ser. No. 878,204
Claims priority, application Japan, May 9, 1991, 3-031506[U]
Int. Cl.[5] A01K *89/033*
U.S. Cl. 242—261 5 Claims

1. A clutch control mechanism for a bait-casting reel, the mechanism comprising:
a spool shaft for supporting a spool;
a clutch mechanism including an engaging portion provided on said spool shaft and a clutch member engageable with said engaging portion;
shifter means for engaging and disengaging said clutch mechanism, said shifter means being displaceable between a clutch mechanism engaging position and a clutch mechanism disengaging position;
a control lever for displacing said shifter means from said engaging position to said disengaging position, said lever being displaceable between first and second positions corresponding to said engaging and disengaging positions of said shifter means, respectively;
first and second urging means for applying urging forces to said shifter means, and
urging force switchover means for moving said first and second urging means to toggle mode and momentary mode positions;
wherein said clutch control mechanism is arranged such that:
(A) when said first and second urging means are in said toggle mode position, and said control lever is in said first position, said first urging means urges said shifter means toward said engaging position while said second urging means is in a substantially neutral state thereof providing substantially no urging force to said shifter means;
(B) when said first and second urging means are in said toggle position, and said control lever is in said second position, said first urging means urges said shifter means



toward said disengaging position while said second urging means is in the substantially neutral state thereof providing substantially no urging force to said shifter means;
(C) when said first and second urging means are in said momentary mode position and said control lever is in said first position, said second urging means urges said shifter means toward said engaging position and said first urging means is in a substantially neutral state thereof providing substantially no urging force to said shifter means; and
(D) when said first and second urging means are in said momentary mode position and said control lever is in said second position, said second urging means urges said shifter means toward said engaging position while said first urging means is in the substantially neutral state thereof providing substantially no urging force to said shifter means.

5,358,198

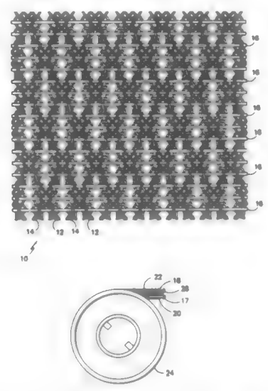
TEREMP FABRIC

Beacum G. Lesley, Pickens, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 908,349, Jul. 6, 1992, abandoned. This application Oct. 15, 1993, Ser. No. 136,400
Int. Cl.[5] G03B *17/26;* D04B *21/00*
U.S. Cl. 242—348.4 7 Claims

3. A container for a roll of light-sensitive strip material provided with an opening for drawing out said light-sensitive strip material from said container, light shielding fabric being provided in said opening, said light shielding fabric comprising a substantially 100% polyester two bar warp knit, weft inserted fabric with the weft inserted yarn being spun, staple yarn and napped and sheared to raise fibers therefrom to prevent light

from entering the opening in said container, the light shielding fabric has a construction formed by the first bar knitting 2-3,



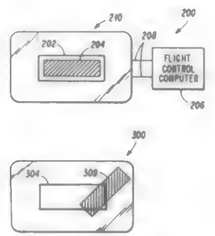
2-1, 1-2, 1-0, 1-2, 2-1 and the second bar knitting 1-0, 1-2, 2-1, 2-3, 2-1, 1-2.

5,358,199

AUTOMATIC FLIGHT CONTROL SYSTEM HAVING UNIFIED GRAPHIC MISTRIM INDICATOR

E. Bernard Hayes, and Charles W. Case, both of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Sep. 17, 1992, Ser. No. 947,026
Int. Cl.[5] G01C *23/00*
U.S. Cl. 244—1 R 20 Claims



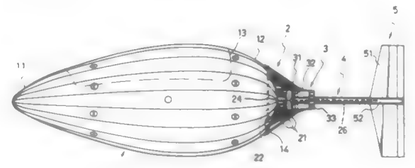
1. An improved automatic flight control system having unified graphic mistrim indicator comprising:
a flight control computer for monitoring the position and status of a plurality of control surface servos;
a single mistrim indicator, for simultaneously displaying the pitch, roll and yaw mistrim conditions of the aircraft;
a plurality of connectors, coupling the mistrim indicator and the flight control computer; and,
said mistrim indicator including a fixed reference frame with a movable reference bar disposed completely within the reference frame when said aircraft is in a proper trimmed configuration and movable outside the reference frame when the aircraft is in any combination of a pitch, roll or yaw mistrim condition.

5,358,200

AIRSHIP

Masahiko Onda, Tsukuba, Japan, assignor to Agency of Industrial Science & Technology and Minstry of International Trade & Industry, Tokyo, Japan

Filed Aug. 20, 1993, Ser. No. 109,256
Claims priority, application Japan, Aug. 21, 1992, 4-245671
Int. Cl.[5] B64B *1//10*
U.S. Cl. 244—96 1 Claim



1. An airship for preventing boundary layer separation by causing a propulsion fan to suck air flowing along the hull surface and jetting it aft, the airship comprising
a gas envelope filled with a buoyant gas,
a duct equipped with an internal propulsion fan and attached to the aft of the gas bag wherein the air flowing along the hull surface is sucked into the duct, the duct including a basket-like framework made of rigid light-weight material and covered with taut fabric material,
a boom projecting aft of said gas bag along an extension of the axis of the propulsion fan, the boom being formed of airtight fabric material and rigidified by a first internal pressure thereof, and
an empennage provided on the distal end of the boom wherein the empennage comprises an airtight fabric material which is rigidified by a second internal pressure thereof,
an air compressor for regulating each of first and second internal pressures of the boom and the empennage, respectively so that when load forces received from an empennage side of said boom exceed prescribed values, one of boom bending and empennage deforming occurs to relieve the load forces and allow the boom and the empennage to resume an original shape and rigidity thereof prior to the load forces being received from the empennage side of the boom.

5,358,201

VEHICLE SKID ASSEMBLY

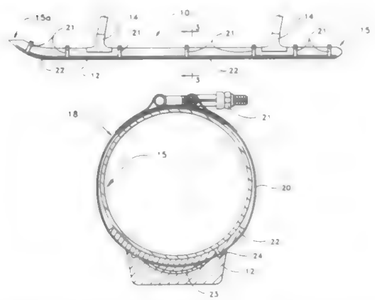
Louis S. Brown, Sr., 401 Colbert Ave., Pensacola, Fla. 32507

Filed Feb. 5, 1993, Ser. No. 14,251
Int. Cl.[5] B64C *25/52*
U.S. Cl. 244—108 34 Claims

1. A helicopter skid assembly for landing on a utility surface comprising:
an elongated tube having an external surface with at least one end terminating in an arcuate configuration;
a single unitary noninflatable elastomeric covering having an inner surface and an outer surface, the entirety of the inner surface of the noninflatable elastomeric covering fixedly coupled to the external surface of the elongated

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tube and extending substantially between the ends of the elongated tube for engaging the utility surface; and



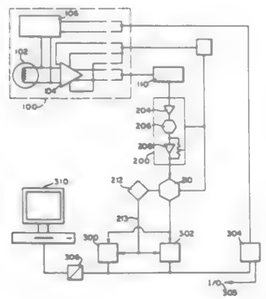
means for attaching the elastomeric covered tube to the helicopter with the at least one end curving in a direction upward from the utility surface.

5,358,202

CAB SIGNAL TRACK CODE ANALYZER SYSTEM

Terry H. Tae, Ambler, Pa.; Roger M. St. Martin, Willingboro; Donald C. Oltmann, Sewell, both of N.J.; James P. Miccolis, Upper Darby, Pa.; James M. Harris, Richboro, Pa.; Joseph F. Doian, Philadelphia, Pa., and James F. Brady, Tyrone, Pa., assignors to Consolidated Rail Corporation, Philadelphia, Pa.

Filed Jul. 21, 1992, Ser. No. 918,847
Int. Cl.[5] B61L *23/00*
U.S. Cl. 246—34 R 18 Claims



1. Apparatus for processing a track code signal for indicating track conditions comprising:

a pickup for inductively receiving and decoding an analog track code signal;

a conditioning circuit for processing the analog track code signal;

a converter for creating a digital track code signal;

a first processor in the form of a microprocessor for inputing the digital track code signal, computing values representative of the characteristics of said signal, and transmitting a first output signal indicative of said values wherein the microprocessor takes data from the analog-to-digital converter and determines signal level, carrier frequency, modulation frequency, and duty cycle of the track code; and

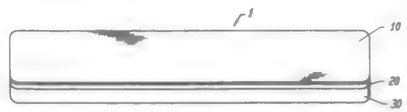
apparatus for displaying said values, whereby the values are indicative of the track conditions.

5,358,203

WRIST REST

Mark R. Smith, Palo Alto, and Philip G. Wessells, Menlo Park, both of Calif., assignors to Silicon Sports, Inc., Menlo Park, Calif.

Continuation of Ser. No. 690,742, Apr. 24, 1991, Pat. No. 5,197,699. This application Jan. 19, 1993, Ser. No. 6,225
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[5] B68G *5/00*
U.S. Cl. 248—118 1 Claim



1. A wrist rest having a length, depth, and thickness, comprising:

a) a support layer;

b) a low friction surface layer bonded to the support layer; and

c) a base layer bonded to the support layer and having a first compression deflection pressure, wherein the support layer has a second compression deflection pressure, the first deflection compression pressure being higher than the second compression deflection pressure,

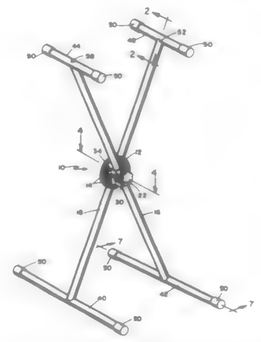
wherein the thickness of the wrist rest is about from ¼ to 1 inches.

5,358,204

FOLDING KEYBOARD STAND

Hideaki Terada, San Diego, Calif., assignor to Casio Manufacturing Corporation, San Diego, Calif.

Filed Oct. 4, 1993, Ser. No. 130,869
Int. Cl.[5] F16M *11/20*
U.S. Cl. 248—164 20 Claims



1. A load support stand with pivoting legs connected intermediate the ends of the legs comprising:

a first engagement disc having a plurality of separate protrusions spaced circumferentially from one another, each protrusion spaced radially outwardly in its entirety from the center of said first disc;

first and second elongated legs adapted to be connected for relative pivotal movement;

said first disc being secured against rotation relative to said first leg, said second leg having an engagement surface;

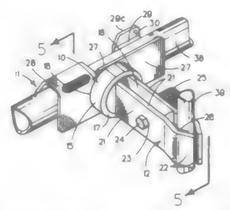
a clamp for pressing said engagement disc against said engagement surface.

5,358,205

DEVICE TO CONNECT I.V. POLE AND PATIENT SUPPORT

Douglas G. Starkey, N. 9022 Cedar Rd., Spokane, Wash. 99208, and Paul Skaggs, S. 104 Freya, Spokane, Wash. 99202

Filed Apr. 16, 1993, Ser. No. 46,815
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—225.31 3 Claims



1. A device to releasably interconnect an elongate element of an intravenous infusion I.V. support and an elongate element of a patient support device in close adjacency, comprising in combination:

a body having first and second substantially parallel sides with a fastening bar extending from the first side of the body;

an I.V. support fastener arm carried by the fastening bar and having two similar opposed jaw elements extending from the fastening bar with adjustable fastening means communicating between the jaws and through the fastening bar to positionally maintain the jaw elements on an I.V. support; and

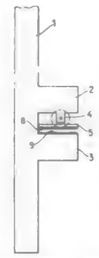
a patient support structure fastening arm carried on the second side of the body for pivotal motion about an axis substantially perpendicular to the body sides and comprising a bracket having an outer surface defining a channel for containment of an element of a patient support device, said bracket being biased to a first pivotal position for releasably fastening the element of the patient support device but pivotal against such bias to attach and release said element of the patient support device.

5,358,206

BRACKET FOR CANTILEVER MOUNTING OF FLAT SHELF PLATES

Joseph A. Pittella, 42 Riviera Dr., San Remo, N.Y. 11754

Continuation of Ser. No. 929,407, Aug. 11, 1992, Pat. No. 5,271,591. This application Sep. 8, 1993, Ser. No. 118,020
The portion of the term of this patent subsequent to Dec. 21, 2010, has been disclaimed.
Int. Cl.[5] A47G *29/02*
U.S. Cl. 248—250 5 Claims



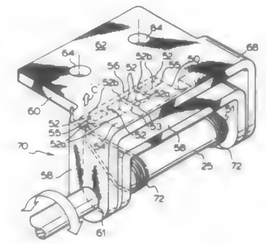
1. Bracket for mounting articles such as shelves, racks and cabinets, comprising first and second projections; and means for clamping part of an article between said projections, said clamping means including a substantially flat plate discrete from said projections and receivable between the same for movement in a direction from one of said projections towards the other of said projections, and means for moving said plate in said direction, said other projection and said plate being designed to be at least approximately coextensive, and said other projection having a substantially flat clamping surface portion which is arranged to confront, and is designed to be at least approximately coextensive with, said plate.

5,358,207

AUTOMOTIVE SEAT TRACK LOCKING MECHANISM

Frank T. West, Almont, Mich., assignor to Bertrand Faure Ltd., Mississauga, Canada

Continuation of Ser. No. 983,904, Dec. 1, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 183,931
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—430 11 Claims



1. A latchable track assembly for use with a seat in a vehicle, said assembly comprising:

first and second slidably engaged track members adapted for relative sliding movement with respect to each other along a first longitudinal axis, with said first track member being secured to said vehicle and said second track member being supported in slidable engagement by said first track member;

said first track member having a first row of consecutive teeth on said first track member with said first row of consecutive teeth in aligned, generally parallel relation to said first axis, said consecutive teeth defining interstices positioned one between each pair of said consecutive teeth;

said second track member having a second row of consecutive teeth on said second track member with said second row of consecutive teeth in aligned, generally parallel relation to said first axis, said consecutive teeth defining interstices positioned one between each pair of said consecutive teeth;

wherein said first and second track members are each generally U-shaped and when in place in said vehicle form a generally enclosed space therebetween, with said first track member being substantially enclosed by said second track member;

wherein at least some of said interstices of said first row of teeth are alignable with a corresponding number of said interstices of said second row of teeth so as to establish a corresponding number of pairs of aligned interstices;

a locking member comprising a plurality of detent portions extending outwardly from the locking member and rigidly joined to one another at their respective outer ends by a spanning portion, the detent portions being dimensioned to be positionable within at least two of said corresponding pairs of aligned interstices in transverse intruding relation to said first row of consecutive teeth;

a bracket member rigidly attached to said second track member and adapted to laterally support said locking

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member in juxtaposed relation to said first track member; and,

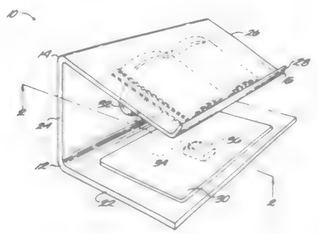
wherein said locking member is mounted on said bracket member such that said detent portions are selectively movable into and out of said aligned interstices in a plane substantially transverse to said first longitudinal axis by corresponding selective operation of said locking member, thereby to selectively retain said first and second track members in fixed longitudinal latched relation with respect to each other; and, wherein said teeth of said first track member are retained within said generally enclosed space, and said spanning portion is at all times also retained within said enclosed space.

5,358,208

DEVICE FOR HOLDING A COMPUTER PAD

Lehman A. Moseley, III, 6005 Ashwood Rd., Columbia, S.C. 29206; Robert E. Buck, IV, 124 E. Selwood La., Columbia, S.C. 29212, and Michael B. Baker, 240 Turkey Farm Rd., Blythewood, S.C. 29016

Filed Dec. 17, 1992, Ser. No. 993,237
Int. Cl.[5] A47B *5/04*
U.S. Cl. 248—441.1 **12 Claims**



1. A device for supporting a first object and a second object, said device comprising a segment of material having three folds, said three folds forming four integral, sequential portions including a first portion defining a first elevation, a second portion adjacent to said first portion, a third portion adjacent to said second portion and oriented and held by said second portion with respect to said first portion so that said third portion is sloped when said first portion is horizontal, said third portion defining a second elevation a distance above said first elevation, and a fourth portion defining a lip adjacent to said third portion, said second portion elevating said second elevation above said first elevation so that a first object can be placed on said first elevation and a second object can be placed on said second elevation, said second portion having means formed therein dimensioned for passing a cable through said second portion.

5,358,209

ANCHORING DEVICE

William H. Ward, 273 Hanover St., Costa Mesa, Calif. 92626

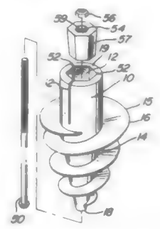
Filed Jun. 22, 1993, Ser. No. 80,911
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—545 **14 Claims**

1. A device for anchoring a hollow shaft of a beach umbrella and the like comprising:

a cylindrical base member sized to fit within the hollow shaft, the member having an tapering interior lumen;

a conical member continuous with an end of the base member and tapering to a rounded tip, the conical member containing a tapering lumen continuous with the lumen of the base member;

an asymmetric buttress-type thread spirally wound around the conical member, the depth of the thread decreasing with the diameter of the conical member to maintain an approximately constant ratio with the diameter of the conical member, the thread having an upper surface facing towards the base member and a lower surface facing towards the rounded tip of the conical member, the upper surface being substantially perpendicular to the longitudinal axis of the conical member, and the lower surface



forming an angle of between about 20° and 60° degrees with a plane perpendicular to the longitudinal axis of the conical member; and

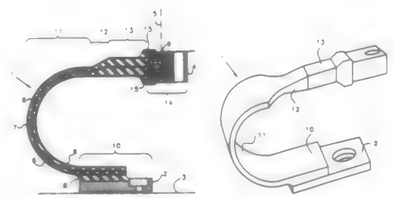
means for attaching the anchoring device to the shaft of a beach umbrella and the like.

5,358,210

DEVICE FOR FILTERING VIBRATION, AND A FIXING SYSTEM COMPRISING A PLURALITY OF SUCH DEVICES FOR FIXING A LOAD ON A SUPPORT

Jean-Michel Simon, Clamart, and Jean-Pierre Ciolczyk, Chalette sur Loing, both of France, assignors to Hutchinson, Paris, France

Filed Mar. 30, 1993, Ser. No. 39,857
Claims priority, application France, Mar. 31, 1992, 92 03873
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—628 **13 Claims**



1. A vibration-filtering device adapted for fixing a load on a support, the device comprising in succession:

a first fastening zone including fastening means for fastening the device to a support;

an arcuate zone;

a beam substantially parallel to the first fastening zone;

a second fastening zone including fastening means for fastening a load to the device; and

at least two spring blades interconnected by an elastomer layer;

the spring blades and the interconnecting elastomer layer passing through the beam to terminate in the second fastening zone close to the fastening means but being separated therefrom by respective elastomer layers;

the spring blades also being separated from one another in the first fastening zone by an elastomer layer; and

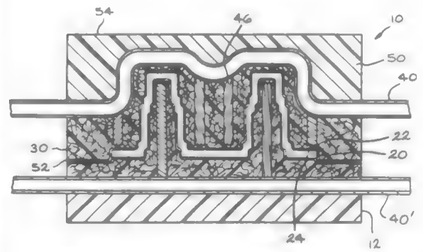
the elastomer layer interconnecting the spring blades having a high damping coefficient in the arcuate zone.

5,358,211

TOOLING AND METHOD OF MAKING

Robert A. Sterett, Jackson, Mich., assignor to Aeroquip Corporation, Maumee, Ohio

Filed Apr. 13, 1993, Ser. No. 46,981
Int. Cl.[5] B29C *33/02, 33/40*
U.S. Cl. 249—80 **26 Claims**



1. Tooling for use in forming limited production articles comprising, in combination:

a mold surface composed of a first layer of a plastic material, said mold surface having interior and exterior walls;

a layer of compressed metallic strands positioned adjacent to said interior wall of said mold surface;

at least one metallic heat exchange tube for containing a fluid cooling agent in thermal communication with said strands;

at least one solid metallic heat transfer rod in thermal communication with said strands and said heat exchange tube, said heat transfer rod being attached to said heat exchange tube, said heat transfer rod extending outwardly from said tube to a point adjacent to said interior wall of said mold surface; and

a second layer of plastic material positioned adjacent to said interior wall of said mold surface to form a mold core, said second layer surrounding and containing said strands, said heat exchange tube and said heat transfer rod, whereby as heat is produced on said mold surface, said heat is transferred to said strands and said heat transfer rod, said heat being dissipated by heat transfer through said fluid cooling agent in said heat exchange tube.

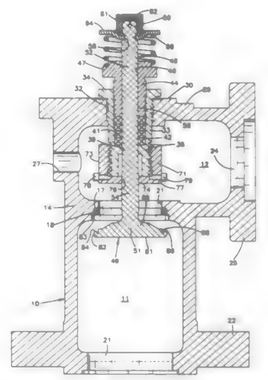
5,358,212

POPPET VALVE HAVING EXTERNAL ADJUSTMENT FOR A FLOW RESTRICTOR

Gregory B. Soltys, Edinboro, and Gregory A. Parkin, Erie, both of Pa., assignors to Copes-Vulcan, Inc., Lake City, Pa.

Filed Oct. 8, 1993, Ser. No. 134,412
Int. Cl.[5] F16K *1/52, 47/08*
U.S. Cl. 251—121 **7 Claims**

1. A valve comprising a valve body having walls defining an inlet chamber and an outlet chamber, said body including a transverse wall separating said inlet and outlet chambers, a valve port opening in said transverse wall, a valve seat on said transverse wall extending around said valve port in said inlet chamber, a valve guide secured in said valve body wall and extending therethrough into said outlet chamber in axial alignment with said valve seat and normal to the plane of the valve seat, said valve guide also extending to the exterior of said valve body and defining an axially extending valve guide bore, a valve poppet having a valve head in said inlet chamber sealingly engageable with said valve seat, said valve poppet having a valve stem extending through said valve guide bore and having an end a spaced distance beyond the exterior of said valve body, cap means secured to said valve stem end, spring means extending around the exterior portion of said valve stem and engageable with said cap means to bias said valve poppet to the closed position with said valve head in sealing engagement with said valve seat, said valve guide having screw threads on the exterior of the end portion adjacent said valve seat, a circular throttle ring threadedly engaged on said valve guide so that relative rotation between said throttle ring and said valve guide moves said throttle ring toward and away from said valve port opening, said throttle ring having an outer surface with a diameter less than the diameter of said valve port opening, said throttle ring having an end wall extending



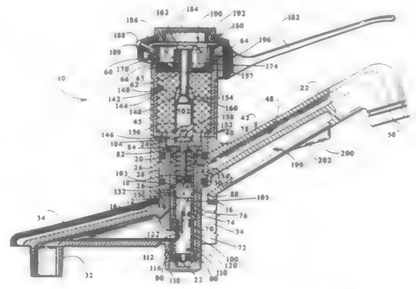
around said valve stem with a noncircular opening therethrough, said valve stem having a mating noncircular portion adjacent said end wall whereby rotation of said valve poppet moves said throttle ring toward and away from said valve port opening, and at least one removable projection on said throttle ring operable to prevent movement of said throttle ring through said valve port opening.

5,358,213

FAUCET HAVING AUTOMATIC AND MANUAL CONTROL CAPABILITY

Joseph J. Pilolla, 853 Cedar Ave., Elmhurst, Ill. 60126

Filed Mar. 31, 1993, Ser. No. 40,835
Int. Cl.[5] F16K *11/078, 31/11*
U.S. Cl. 251—129.03 **22 Claims**



1. A faucet for discharging water automatically or manually comprising a body supporting a single flow control valve mechanism said mechanism defining a chamber having at least one inlet port and at least one outlet port, said mechanism including a valve member positionable in a closed position isolating said inlet and outlet ports from said chamber, said valve member movable to open communication of said inlet and outlet ports with said chamber, a manual actuation mechanism external to said chamber, engageable with said valve member of the flow control valve mechanism to move said

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valve member to open communication of said inlet and outlet ports with said chamber and an electrically operated automatic actuation mechanism external to said chamber engagable with said valve member of the flow control valve mechanism to move said valve member to open communication of said inlet and outlet ports with said chamber independent of the manual actuation mechanism.

5,358,214

MOLD FOR CONCRETE MODULAR PRECASTINGS

Juan B. Batlle, Vinya del Rei 3, 08328-Alella (Barcelona), Spain

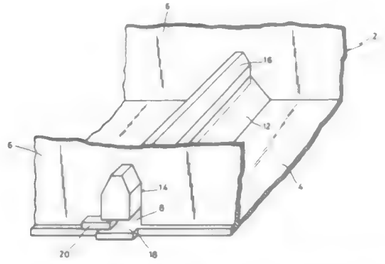
PCT No. PCT/ES92/00013, § 371 Date Oct. 5, 1992, § 102(e) Date Oct. 5, 1992, PCT Pub. No. WO92/13690, PCT Pub. Date Aug. 20, 1992

PCT Filed Feb. 5, 1992, Ser. No. 938,055

Claims priority, application Spain, Feb. 12, 1991, 9100360

Int. Cl.[5] B28B *3/00*

U.S. Cl. 249—142 **14 Claims**



1. A mold for concrete modular precastings comprising:
a bottom;
containment side walls;
a plurality of grooves formed in said bottom and extending crosswise between opposing side walls;
windows formed in each of said opposing side walls as extensions of each groove and having an upper profile;
strips constructed and arranged for insertion into and extending upwardly from said grooves, wherein said strips extend outwardly through said windows and have a height less than the dimension of the window in a direction perpendicular to the mold bottom, each strip being adapted to move in said perpendicular direction within said grooves and windows, between a lowered position in which each strip rests against a bottom of a respective one of said grooves and a raised position in which each strip engages said upper profile of the window; and
means for locking the strips in the raised position.

5,358,215

ENCAPSULATED SOLENOID OPERATED VALVE ASSEMBLY

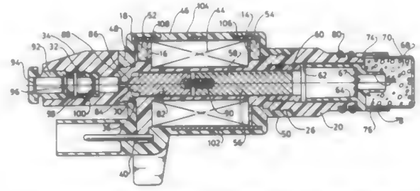
Martin E. Buth, Blytheville, Ark., and Steve Teahundfeld, Germantown, Tenn., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Jun. 25, 1993, Ser. No. 83,155

Int. Cl.[5] F16K *31/06*

U.S. Cl. 251—129.21 **5 Claims**

1. A solenoid valve assembly comprising a spindle with a central opening, a movable valve element in said opening, an electric coil surrounding said central opening;
a fluid fitting at one end of said opening, a mounting boss at the other end of said opening;
a valve orifice in said spindle adapted to register with said valve element when said coil is deenergized, said valve element and said valve orifice thereby providing controlled fluid flow through said central opening;
sealant material surrounding said spindle; and



an encapsulation enclosing said spindle and compressing said sealant material against said spindle thereby hermetically sealing said coil.

5,358,216

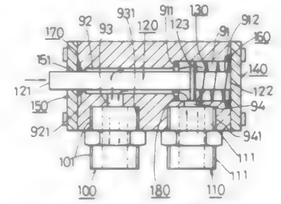
FOOT-OPERATED VALVE

Fang-Shyong Jang, No. 11, Lane 105, Tung-An St., Feng-Yuan City, Taichung Hsien, Taiwan

Filed Feb. 22, 1994, Ser. No. 199,885

Int. Cl.[5] F16K *31/62*

U.S. Cl. 251—295 **5 Claims**



1. A foot-operated valve, comprising:
a valve housing formed with a longitudinal bore which includes a front section and a rear section that has an internal diameter wider than that of said front section to form a shoulder which serves as a valve seat therebetween, said longitudinal bore having an open front end and a closed rear end, said valve housing being further formed with a water inlet hole that is communicated with said rear section of said longitudinal bore, and a water outlet hole that is communicated with said front section of said longitudinal bore;
a valve stem extending into said longitudinal bore and provided with a valve disc which is disposed in said rear section of said longitudinal bore, said valve stem having a front portion which extends sealingly through said open front end of said longitudinal bore;
a first spring means for biasing said valve disc to abut normally against said valve seat so as to block normally communication between said front and rear sections of said longitudinal bore;
a base for securing said valve housing thereon, said base being provided with an upwardly extending mounting seat disposed adjacent to said valve housing and formed with a cylindrical hole that is aligned with said valve stem;
a push rod received slidably in said cylindrical hole and having a head portion and a shank portion, said shank portion abutting against said front portion of said valve stem; and
a pedal having a rear end connected pivotally to said mounting seat and a bottom surface provided with a downwardly extending push plate that abuts against said head portion of said push rod;
whereby, application of pressure on said pedal causes said pedal to pivot, thereby causing said push plate to push said push rod further into said cylindrical hole so as to push said valve stem inwardly of said longitudinal bore to move said valve disc away from said valve seat against action of said first spring means to permit water entering said rear section of said longitudinal bore via said water inlet hole to flow through said water outlet hole via said front section of said longitudinal bore.

5,358,217

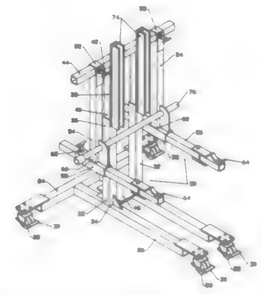
LIFTING APPARATUS

Ernie Dach, #2, 52512 Range Road 214, Ardrossan, Alberta, Canada T0B 0E0

Filed Aug. 5, 1993, Ser. No. 102,270

Int. Cl.[5] B66F *3/00*

U.S. Cl. 254—2 R **13 Claims**



1. A lifting apparatus, comprising:
a. a base;
b. two paced apart tubular members extending substantially vertically from the base, the tubular members having a first end secured to the base and a second remote from the base;
c. two telescopic members telescopically received in the tubular members, the telescopic members being movable relative to the tubular members between extended and retracted positions;
d. a transverse member secured transversely between the telescopic members;
e. a jack positioning seat on the base vertically aligned with the transverse member, such that a jack placed on the jack positioning seat engages the transverse member to telescopically raise telescopic members;
f. a pair of substantially parallel spaced support arms extending from the transverse member, each support arm having lifting points adapted for positioning under an object to be lifted the base being adapted to maintain stability when a load is placed on the lifting points of the support arms;
g. stiffening support members extending upwardly from the second end of the tubular members parallel to the positioning of the telescopic members when in an extended position and on the same side of the telescopic members as the support arms such that the stiffening support members provide lateral support to the telescopic members when a load is placed upon the support arms; and
g. means for locking the telescopic members in a selected position relative to the tubular members when the object being lifted is a the desired height.

5,358,218

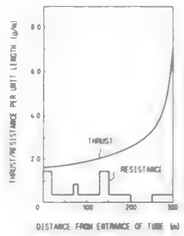
METHOD OF CONSTRUCTING AN OPTICAL WIRING NETWORK

Yoshiaki Terasawa, and Hiroaki Sano, both of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 946,155, Sep. 17, 1992, abandoned, which is a continuation of Ser. No. 674,144, Mar. 25, 1991, abandoned. This application Dec. 17, 1993, Ser. No. 168,179

Int. Cl.[5] B66F *3/24*

U.S. Cl. 254—134.4 **1 Claim**



1. A method of constructing an optical wiring network along a cable installation route which includes a plurality of sections each having different heights, comprising the steps of:
determining at every point of a hypothetical route a viscous drag force to be exerted on an optical fiber cable when it is blown through a tube section by use of a pressure feeding apparatus that provides a prescribed pressure, a friction between the optical fiber cable and the tube section, and a weight of cable;
calculating a total resistance at every point of the hypothetical route based on the determined friction and weight;
determining locations of tube sections so that the total resistance does not exceed the viscous drag force at every point and thereby determining a cable installation route;
installing along the cable installation route a tube network comprising a plurality of tube sections and an entrance end; and
blowing the optical fiber cable through the tube network by use of the pressure feeding apparatus disposed at the entrance end of the tube network so as to install at one continuous time the optical fiber cable.

5,358,219

CRANE CLAW TILT SENSING AND RECOVERY

David K. Shenk, P.O. Box 191, Niwot, Colo. 80544, and Anthony R. Fabrello, Loveland, Colo., assignors to David K. Shenk, Longmont, Colo.

Filed Dec. 20, 1991, Ser. No. 812,184

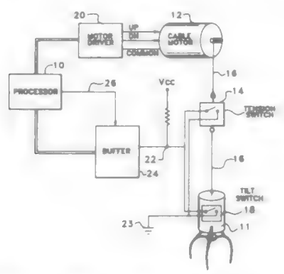
Int. Cl.[5] B66C *13/06;* **B66D** *1/56;* **A63H** *17/12*

U.S. Cl. 254—269 **8 Claims**

1. Apparatus for automatically raising a crane claw when said claw tilts, said apparatus comprising:
means for suspending said claw;
means mounted on said claw for detecting a tilt angle of said claw and generating a tilt signal indicating if said claw is tilting more than a predefined angle;
means for raising and lowering said suspending means and thereby said claw;
means for controlling said raising and lowering means, said controlling means sampling the tilt signal from said tilt detecting means and controlling said raising and lowering

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means to raise said claw when said claw is tilting more than the predefined angle;
means for detecting slack in said suspending means; and



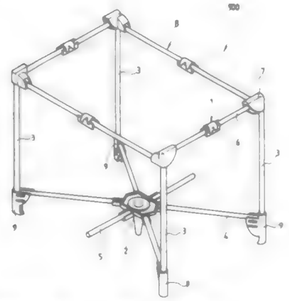
said controlling means responsive to said slack detecting means for controlling said raising and lowering means to raise said claw when slack is detected.

5,358,220

PLAYPEN FRAME STRUCTURE

Hsiung Yu-Kuang, No. 1-1, Hsi-Keng, Tsao Chiao Hsiang, Miao Li Hsien, Taiwan

Filed Mar. 16, 1993, Ser. No. 32,133
Int. Cl.[5] A47D *7/00*
U.S. Cl. 256—25 **8 Claims**



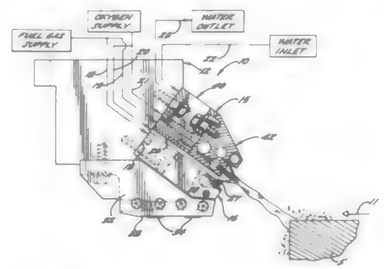
1. A playpen frame structure comprising:
a rectangular top rail structure which is defined by four top rails pivotally connected by four corner joints; and
a leg structure which comprises four upright legs, each having an upper end and a lower end pivotally connected at the upper end thereof to the respective corner joint;
each of the top rails comprising two bar members which are pivotally connected to a common mid-joint, said mid-joint comprising as joint body having two side plates which are substantially parallel with each other and connected together at a portion thereof by a connecting piece to define a space for receiving a terminal portion of each of the two bar members, pivots being provided to secure the terminal portions of the bar members to the joint body to allow the bar members to rotate with respect to the joint body between an expanded position and a folded position, each of said bar members having an interior space in the terminal portion thereof to receive therein a leaf spring-like resilient retaining member which has two retaining pins each biased by the resilience thereof to project out through a hole formed on the bar member and to engage a hole formed on the joint body in order to retain the bar member with respect to the joint body;
a release member is provided to release the engagement between the bar members and the joint body to allow the joint body to be rotated from the expanded position to the folded position;
a reinforcement structure which comprises four reinforcement bars, each having a first end pivotally connected to the lower end of the respective upright leg and extending diagonally therefrom, and pivotally connected at a second end thereof to a central joint, said central joint comprising a central joint body on which four seats are formed for respectively receiving therein and pivotally securing thereon a connector by a pivot, each of the connectors in turn securely connecting the second end of the respective reinforcement bar to define the pivotal connection between the reinforcement bar and the central joint, said central joint body further comprising a central leg extending downward from an underside thereof to provide further support to said playpen frame; and
a bar support member which is in the form of a ring having a central opening to fit over the central leg of said central joint body and movably secured thereon by securing means; the bar support member is used to maintain the reinforcement structure in an extended position, said bar support member having a plurality of support arms extending therefrom a distance sufficient to contact and thus brace the respective connectors.

5,358,221

BLOCK ASSEMBLY FOR USE IN METAL SCARFING APPARATUS

Michael S. Showalter; John G. Dawson, Jr., both of Florence, and Frank J. Gusky, Quinby, all of S.C., assignors to The Esab Group, Inc., Florence, S.C.

Continuation-in-part of Ser. No. 988,450, Dec. 10, 1992, Ser. No. 805,111, Dec. 9, 1991, Pat. No. 5,234,658, and Ser. No. 948,027, Sep. 21, 1992, Pat. No. 5,304,256. This application Mar. 19, 1993, Ser. No. 33,601
Int. Cl.[5] B23K *7/06*
U.S. Cl. 266—51 **10 Claims**



1. A block assembly for directing multiple streams of gas onto the surface of a metal workpiece during a scarfing operation, and comprising
a block of metallic material including opposite front and rear faces, opposite upper and lower faces, and opposite end faces which define a longitudinal direction therebetween,
a plurality of discharge openings positioned adjacent each other in a longitudinal row along said front face and extending rearwardly into said block a substantial distance, and so that each discharge opening defines an inner end which is spaced from said rear face,
a first internal bore extending longitudinally within the interior of said block and communicating with each of said discharge openings at a medial portion of the rearward length of said openings,
a second internal bore extending longitudinally within the interior of said block and communicating with each of said discharge openings adjacent the inner end thereof,

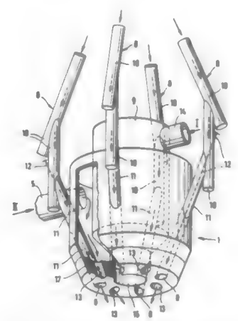
first duct means for delivering a first gas to said first internal bore,
second duct means for delivering a second gas to said second internal bore,
said first duct means and said second duct means each communicating with said rear face of said block,
each of said discharge openings having a portion of relatively large diameter between said front face and said first internal bore, and a portion of relatively small diameter between said first internal bore and said second internal bore, and
said portion of relatively small diameter of each discharge opening being internally threaded so that each discharge opening is adapted to threadedly mount an insert therein which has an externally threaded inner end,
whereby the first and second gases may be concurrently delivered into each of said discharge openings at spaced apart locations and so that the gases flow outwardly from each of said discharge openings at said front face.

5,358,222

APPARATUS FOR OXIDIZING PULVEROUS FUEL WITH TWO GASES HAVING DIFFERENT OXYGEN CONTENTS

Pentti J. Kaasinen, Harjavalta; Launo L. Lilja; Valto J. Mäkitalo, both of Pori, and Lasse J. Valli, Harjavalta, all of Finland, assignors to Outokumpu Engineering Contractors Oy, Espoo, Finland

Filed May 28, 1993, Ser. No. 68,980
Claims priority, application Finland, Jun. 1, 1992, 922532
Int. Cl.[5] C22B *5/12*
U.S. Cl. 266—135 **9 Claims**



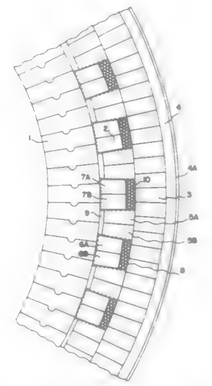
1. A burner for use in oxidizing pulverous fuel to be fed into a flash smelting furnace of the type having a vertical cylindrical reaction shaft and an arch at the top of the reaction shaft through which arch reaction gases and the pulverous fuel are fed to the reaction shaft, the burner comprising: a central vortex generating chamber and a pipe for feeding oxygen as a first reaction gas to said vortex generating chamber, said vortex generating chamber comprising means for creating a turbulent flow of said oxygen and for discharging the turbulent oxygen flow downwardly from the vortex generating chamber through a bottom part of the burner; a first plurality of tubular channels passing around the vortex generating chamber for feeding air as a second reaction gas to and through air openings located at spaced positions arranged in a circle surrounding said oxygen discharging means; and another plurality of tubular channels passing around the vortex generating chamber for feeding pulverous fuel to and through fuel openings located at spaced positions between the air openings on the same circle as the air openings whereby said air and fuel openings form a ring around said oxygen discharge means.

5,358,223

HOT-BLAST MAIN FOR HOT-BLAST STOVE SYSTEM OF A BLAST FURNACE

Nicolaas G. J. Bleijendaal, Akersloot; Jacob Felthuis, Alkmaar, and Ronald J. M. Stokman, Hillegom, all of Netherlands, assignors to Hoogovens Groep B.V., Ca Ijmuiden, Netherlands

Filed Oct. 21, 1993, Ser. No. 139,111
Claims priority, application Netherlands, Oct. 23, 1992, 9201838
Int. Cl.[5] C21B *7/16*
U.S. Cl. 266—138 **6 Claims**



1. A hot-blast main for a hot-blast stove system of a blast furnace, said main having a refractory structure comprising a plurality of courses of refractory bricks, at least a first one of said courses having at least one part thereof comprised of a plurality of expansion-joint forming bricks whose dimensions and arrangement are such that, in the cold condition of the hot blast main, there are provided radial expansion joints between said expansion-joint forming bricks and at least one adjacent part of said hot-blast main, at least some of said plurality of expansion-joint forming bricks of said first course being placed radially staggered relative to at least one adjacent such brick in each case, so that said expansion joints are provided at both the radially inner side and the radially outer side of said first course.

5,358,224

ISOLATOR MOUNT ASSEMBLY

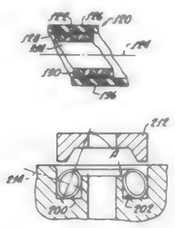
Peter J. Balsells, P.O. Box 15092, Santa Ana, Calif. 92705, assignor to Peter J. Balsells and Joan C. Balsells, Santa Ana, Calif.

Continuation of Ser. No. 656,811, Feb. 14, 1991, abandoned. This application Jul. 23, 1992, Ser. No. 917,283
Int. Cl.[5] B60G *11/52;* **F16F** *1/06*
U.S. Cl. 267—33 **47 Claims**

1. An isolator mount assembly comprising:
a support structure;
a device; and
isolator means, disposed between said support structure and said device for reducing transmission of mechanical vibration therebetween; said isolator means comprising a plurality of canted-coil means, interconnected with one another, for causing the isolator means to exert a generally constant force in a loading direction approximately normal to a center line of said plurality of coil means in response to deflection of the coils within a specific range along said loading direction due to mechanical vibration

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of one of the support structures and the device, and for causing the isolator means to exert a substantially greater



force when the coils are deflected beyond said specific range.

5,358,225

TELESCOPIC SPRING UNIT

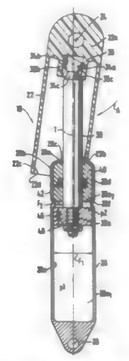
Stefan Völpel, Koblenz; Helmut Morgen, Mannebach, both of Fed. Rep. of Germany, and Errick G. Morris, Doylestown, Pa., assignors to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany

Filed May 21, 1993, Ser. No. 65,575

Claims priority, application Fed. Rep. of Germany, May 22, 1992, 4216990

Int. Cl.[5] F16F *5/00, 9/32*

U.S. Cl. 267—64.12 **13 Claims**



1. A telescopic spring unit (**10**), comprising:

first and second telescopic parts (**26**, **30**) capable of being shifted, one in relation to the other, along a telescopic axis (T) to lengthen or shorten the telescopic spring unit (**10**)

first pivoting means (**28**) for pivotal attachment of the first telescopic part (**26**) to one of a base unit (**16**) and a hinged unit (**14**) of an articulated structural assembly (**12**);

second pivoting means (**24**) for pivotal attachment of the second telescopic part (**30**) to the other of the hinged unit (**14**) and the base unit (**16**) of the articulated structural assembly (**12**);

a locking unit (**22**);

tilting joint means (**32**) for pivotally connecting the locking unit to one (**30**) of the first and second telescopic parts (**26**, **30**) for pivotal movement relative to said one telescopic part (**30**) between a locking position and a release position when the telescopic spring unit (**10**) is in a lengthened state;

the locking unit (**22**) including a stop (**22***b*) for acting in conjunction with a counter-stop (**26***a*) on the other telescopic part (**26**) when the locking unit is in the locking position, the stop (**22***b*) being aligned with the counter-stop (**26***a*) in the direction of the telescopic axis (T) when in the locking position and being out of alignment with the counter-stop (**26***a*) in the direction of the telescopic axis when in the release position; and

means for connecting the pivoting means (**24**, **28**) for said one telescopic part (**30**) to the locking unit (**22**) such that, when the telescopic spring unit (**10**) is in the lengthened state, a compressive force acting on the telescopic spring unit (**10**) through the first and second pivoting means (**24**, **28**) exerts a pivotal moment on the locking unit (**22**) which pivotally biases the locking unit (**22**) towards the locking position.

5,358,226

BRUSH MOUNTING STRUCTURE FOR A CUTTING SUPPORT SURFACE IN AN AUTOMATIC CUTTING MACHINE

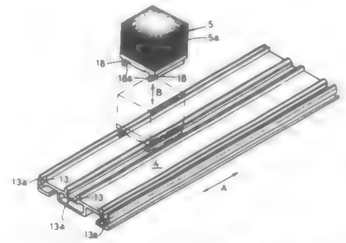
Reiji Arikita, Wakayama, Japan, assignor to Shima Seiki Mfg., Ltd., Wakayama, Japan

Continuation of Ser. No. 941,016, Sep. 4, 1992, abandoned. This application Nov. 22, 1993, Ser. No. 156,608

Claims priority, application Japan, Sep. 6, 1991, 3-227388

Int. Cl.[5] B26D *7/20*

U.S. Cl. 269—21 **6 Claims**



1. A brush mounting structure including a plurality of brush mounting tables, a plurality of brushes secured to each of said brush mounting tables to form a sheet material cutting surface in an automatic cutting machine in which:

each of said brush mounting tables include a lower portion which engages parallel endless drive chains upon which said brush mounting tables are mounted,

each of said brush mounting tables include an upper portion which includes outwardly spaced protruding adjacent pairs of parallel rows of stopping protrusions (**13**) which extend along a length thereto in which each of said pairs of stopping protrusions face away from each other, each of said stopping protrusions (**13**) of each row is provided with oppositely facing first bumps (**13***a*) on an outer end thereof which face away from each other,

each of said brushes (**5**) are provided with a lower part from which multiple bristles protrude outwardly, the lower part of each of said brushes includes a pair of supporting protrusions (**18**) which protrude in a direction opposite from said bristles, each of said pair of protrusions (**18**) are provided with second bumps (**18***a*) that face each other and which interfit over the first bumps (**13***a*) of a pair of the stopping protrusions of each said brush mounting table and are slidable along said pair of stopping protrusions (**13**) and said bumps (**13***a*),

each of said brushes removably engage said pair of stopping protrusions (**13**) of each said brush mounting tables so that each of said brushes may be removed outwardly to disengage said brush from the pair of said stopping protrusions of said brush mounting tables whereby said removed brush can be replaced by a new brush forced onto said stopping protrusions of said brush mounting tables, further in order to have brushes of like wear side-by-side when a brush is removed, said brushes are slid from one end toward the non-removed brushes to replace the removed brush with a brush of like wear and the new brush is placed at an end of the row of brushes.

5,358,227

MARINE ENGINE REPAIR STAND

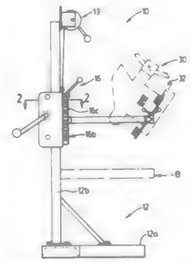
Jonathan R. Bennett, 690 Joseph St., R.R. #1, Peterborough, Ontario, Canada K9J 6X2 , and Reagh Mann, P.O. Fraserville, Ontario K0L 1V0, Canada

Filed Mar. 1, 1993, Ser. No. 24,468

Claims priority, application Canada, Mar. 11, 1992, 2062712-3

Int. Cl.[5] B23Q *1/04*

U.S. Cl. 269—68 **9 Claims**



1. A device repairing a marine engine of the type having a lower unit with an anti-cavitation plate, said device comprising:

a clamp mechanism to clamp said anti-cavitation plate, said clamp mechanism including a pair of first support arms to extend on either side of said lower unit, each of said first support arms having a free end, a pair of second support arms, each of said second support arms coupled to the free end of a respective first support arm for movement in the direction of said lower unit, each of said second support arms having a free end, a pair of clamping plates, each of said clamping plates being coupled to the free end of a respective second support arm and oriented to extend along said anti-cavitation plate, at least one clamp member for clamping said anti-cavitation plate against each of said clamping plates; each of said second support arms being rotatable relative to the respective first support arm to permit said second support arms to be rotated about an axis transverse to said first support arm, thereby permitting said lower unit to be swung to an working position;

a frame to carry said clamp mechanism; said frame including an upright member, a carrier movable along said upright member to move said clamp mechanism from a floor location to a working position above said floor location.

5,358,228

VISE HAVING AN INVERTIBLE V-BLOCK

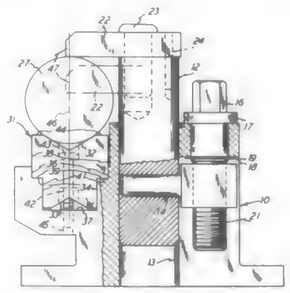
Richard F. Beere, Waterford, Wis., assignor to Beere Tool Company, Inc., Racine, Wis.

Filed Sep. 7, 1993, Ser. No. 116,706

Int. Cl.[5] B25B *5/04*

U.S. Cl. 269—244 **16 Claims**

1. A vise having an invertible V-block, comprising a base piece having two spaced-apart and parallel surfaces, a V-block having four sides thereto and with a first two of said four sides which are on opposite sides of said V-block having two spaced-apart and parallel surfaces spaced apart comparable to the spacing of said base piece surface to be in simultaneous snug sliding contact with respective ones of said surfaces of said base piece in both inverted positions of said V-block to have said V-block slidable onto and off from said base piece surfaces, said V-block having a V-groove on each of/two sides of said four sides where said two sides are on opposite sides of said V-block and intermediate said first two sides and with said V-grooves facing away from each other and with the apex of said V-grooves lying on one common plane parallel to said parallel surfaces of said V-block and with said V-grooves being of two different sizes, said base piece having two shoulders faced toward said base piece parallel surfaces, said V-block having a first set of two shoulders facing in one direction and having a second set of two shoulders facing in a direction opposite said one direction and with said V-block being invertible to have both said sets of said V-block shoulders invertible to be in alternate bearing contact with said base piece two shoulders, all said shoulders of said base piece and said V-block being on respective planes perpendicular to the first-mentioned said plane for support of said V-block on said base piece in the direction of said plane, and a jaw movably mounted on said base piece from a location to one side of the first-mentioned said plane and extending across the first-mentioned said plane and being movable along the first-mentioned plane.



5,358,229

APPARATUS FOR RECEIVING AND DISPENSING FLAT ARTICLES IN A PACKAGING MACHINE

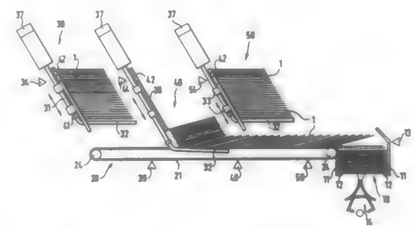
John Groel, Long Valley, N.J., and Guenther-Eberhard Lade, Berglen, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 6, 1993, Ser. No. 132,331

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1992, 4238937

Int. Cl.[5] B65H *5/22, 3/04*

U.S. Cl. 271—3 **4 Claims**



1. An apparatus for receiving and dispensing flat articles in a packaging machine comprising a conveyor system (**20**) having a dispensing end, a dispensing chute adjoining said dispensing end, storage means above said conveyor system for storing said flat articles, said flat articles to be dispensed are lying flat in a stack in said storage means above said conveyor system (**20**), said conveyor system (**20**) extends substantially in a horizontal plane, on which the flat articles that partly cover one another leading by their front edge region are delivered to said dispensing chute (**10**) adjoining said dispensing end of the conveyor

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system (20), said storage means (30) is disposed substantially vertically above the conveyor system (20) for refilling flat articles onto said storage means, said storage means (30) has a forked support (31) which can be lowered at least as far as a conveying plane of the conveyor system (20), a linear drive means (37) which dispenses the flat articles onto said conveyor system from said storage means, and the flat articles are carried along in succession by the conveyor system (20) to said dispensing chute.

5,358,230

SHEET SUPPLYING APPARATUS

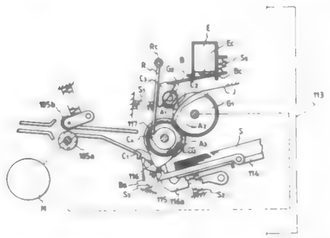
Ikuo Ikemori, Kawasaki; Katsuyuki Yokoi, Yokohama; Hiroyuki Ishii, Toride; Hiroyuki Inoue; Masao Ando, both of Yokohama, and Ryukichi Inoue, Toride, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1993, Ser. No. 49,360

Claims priority, application Japan, Apr. 24, 1992, 4-131888; Jul. 30, 1992, 4-222224

Int. Cl.[5] B65H *3/06*

U.S. Cl. 271—114 16 Claims



1. A sheet supplying apparatus, comprising:

sheet supporting means for supporting a sheet and being shiftable between a supply position and a waiting position;

supply means for feeding out the sheet from said sheet supporting means at said supply position;

biasing means for biasing said sheet supporting means from said waiting position toward said supply position;

shifting means for shifting said sheet supporting means from said supply position to said waiting position in opposition to a biasing force of said biasing means; and

regulating means for regulating the shifting of said sheet supporting means with a force weaker than the biasing force of said biasing means, when said sheet supporting means is shifted from said waiting position to said supply position by said biasing means.

5,358,231

SHEET HANDLING SYSTEM HAVING A SHEET CORRUGATION NIP

Jeffrey L. Andela, deceased, late of Sodus, N.Y. by Christine R. Andela, executrix , assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 4, 1993, Ser. No. 175

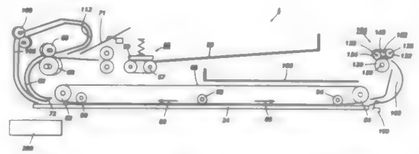
Int. Cl.[5] B65H *29/00*

U.S. Cl. 271—176 11 Claims

1. Sheet handling apparatus for transporting sheets along a path, comprising:

means for corrugating sheets; and

means for receiving a sheet transported along the path, said receiving means responsive to receiving a sheet transported along the path, cooperating with said corrugating means to form a corrugating nip for corrugating the sheet, said receiving means comprises a plurality of spaced belts adapted to engage the sheet being transported along the path to guide the sheet toward the corrugating nip and means, responsive to the sheet engaging said belt, for



pivoting said belts from a sheet receiving position to a sheet corrugating position.

5,358,232

METHOD AND DEVICE FOR PRODUCING DEFINED STACKS OF FOLDED OR UNFOLDED SHEETS

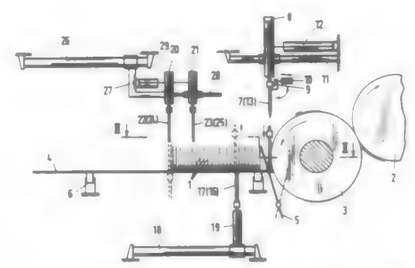
Bernd Arendes, Erkrath; Karl Hallwas, Langenfeld; Klaus Kirsch, Nohen, all of Fed. Rep. of Germany; Johannes Lieverdink, Zelhem, Netherlands, and Manfred Zindorf, Langenfeld, Fed. Rep. of Germany, assignors to Bielomatik Leuze GmbH + Co., Neuffen, Fed. Rep. of Germany

Filed Jan. 29, 1993, Ser. No. 11,529

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1992, 4202540

Int. Cl.[5] B65H *31/06*

U.S. Cl. 271—181 21 Claims



1. A method for producing defined stacks of folded and unfolded sheets or sheet-type objects, said method comprising the steps of:

individually feeding sheets to a horizontal surface;

placing each sheet on edge onto the horizontal surface;

separating the sheets into individual stacks with a separating support by forming a first separating plane defining the beginning of the stack and forming a second separating plane defining the end of the stack by sequentially inserting the separating support transverse to the longitudinal extension of the horizontal surface between the sheets placed on edge on the horizontal surface;

advancing the separating support parallel to the horizontal surface at the stack forming velocity;

introducing at the first separating plane a first support and at the second separating plane a second support;

introducing a transferring support at the first separating plane and subsequently at the second separating plane before introducing the first and second supports for maintaining said first and said second separating planes; and

moving said transferring support along said horizontal surface into said first separating plane for transferring the beginning of the stack to said first support and subsequently moving said transferring support into said second separating plane for transferring the end of the stack to said second support.

5,358,233

SHEET DELIVERY IN A PRINTING MACHINE

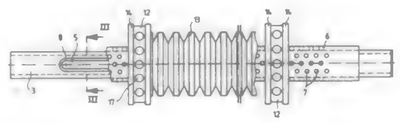
Udo Ganter, Hirschberg-Leutershausen, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Jun. 30, 1993, Ser. No. 85,359

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1992, 4221927

Int. Cl.[5] B65H *29/68*

U.S. Cl. 271—183 10 Claims



1. A sheet delivery in a printing machine in which sheets of a given sheet width are delivered in a given sheet delivery direction at a given sheet delivery speed, comprising

a vacuum system for applying suction air;

a sheet brake in the form of a brake roller including a carrier shaft having a longitudinal axis extending transversely to a given sheet delivery direction; said carrier shaft including a non-rotatably supported carrier pipe, means for communicatingly connecting said carrier pipe to said vacuum system, said carrier pipe having a control slit formed therein for the suction air, said control slit extending axially across said carrier pipe and having a length approximately corresponding to the given sheet width;

a suction body pipe coaxially supported on and surrounding said carrier pipe, said suction body pipe having a multiplicity of perforations formed therein, bearing means for rotatably mounting said suction body pipe on said carrier pipe, and drive means for rotatably driving said suction body pipe at a circumferential speed slower than the given sheet delivery speed;

suction bodies supported on said suction body pipe and being axially shiftable along said longitudinal axis; said suction bodies having peripheral surfaces forming sheet carrier surfaces with suction openings formed therein; said suction bodies being formed of radially assembled segments; and bellows sealingly interconnecting said suction bodies and circumferentially surrounding said suction body pipe; and

means for briefly applying suction air to said suction openings in said sheet carrier surfaces in accordance with a working cycle of the sheet delivery.

5,358,234

CONVEYOR DEVICE FOR CHANGING THE DIRECTION OF SHEETS OF WRAPPING MATERIAL

Silvano Boriani, and Antonio Gamberini, both of Bologna, Italy, assignors to G.D. Societa' Per Azioni, Bologna, Italy

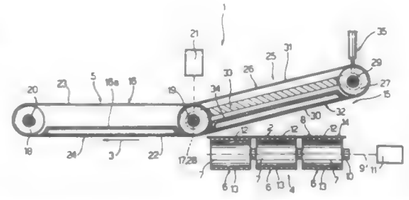
Filed Mar. 12, 1993, Ser. No. 31,234

Claims priority, application Italy, Mar. 24, 1992, BO92 A 000107

Int. Cl.[5] B65H *5/00*

U.S. Cl. 271—225 10 Claims

1. A conveyor device (1) for sheets (2) of wrapping material, said device comprising two successive first and second conveyors (4, 5); a transfer station (15) interposed between said conveyors (4, 5); the first conveyor (4) having an end portion (8) adjacent to the second conveyor (5) and extending through the transfer station (15), the two conveyors (4, 5) forming, at the transfer station (15), a given angle of other than zero, and defining respective substantially coplanar first and second transportation surfaces (14, 24) for said sheets (2); a third conveyor (25) located at the transfer station (15) and defining a transfer surface (32) facing said end portion (8), the third conveyor (25) being a swing conveyor; actuating means (35) connected to the third conveyor (25) for pivoting the transfer surface (32) in relation to the second transportation surface (24) of said second conveyor (5) to and from an operating position substantially coplanar with said end portion (8); the transfer surface (32) and the second transportation surface (24) defining, at any time, a continuous surface; first drive means (11) for



operating the first conveyor (4); second drive means (21) common to the second and third conveyors (5, 25) to drive the second and third conveyors (5, 25) at the same speed and substantially in time with the first conveyor (4); and gripping means (34) for holding said sheets (2) on at least one of said first and third conveyors (4, 25).

5,358,235

SHEET FEEDING APPARATUS

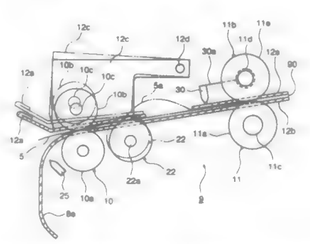
Shinobu Konno, and Masaru Ushio, both of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jul. 1, 1993, Ser. No. 86,165

Claims priority, application Japan, Jul. 21, 1992, 4-215649

Int. Cl.[5] B65H *7/14*

U.S. Cl. 271—227 4 Claims



1. A sheet feeding apparatus for stopping a conveyance of a sheet at a registration location, comprising:

registration means, provided at the registration location, for at least one of stopping and allowing a conveyance of the sheet;

conveying means for conveying said sheet toward said registration means, said conveying means including a pair of conveyance rollers for conveying said sheet, said pair of conveyance rollers being in a releasable pressure contact with said sheet;

detecting means for detecting a leading edge of said sheet, said detecting means being positioned before said registration means, when viewed in a conveyance direction of said sheet, said detecting means generating an edge detection signal upon detection of said leading edge of said sheet;

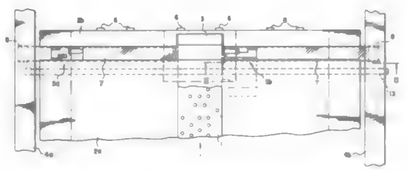
releasing means for releasing said pressure contact of said pair of conveyance rollers with said sheet; and

control means for controlling said releasing means based on said edge detection signal; and wherein:

said control means controls said releasing means to release said pressure contact of said pair of conveyance rollers with said sheet when said registration means allows a conveyance of said sheet at said registration location.

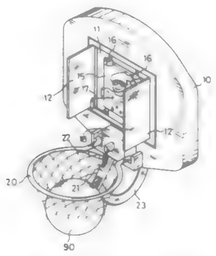
VOL 1167 ISS 4 OC 25 1994 UMI

5,358,236
TABLE COVER
Burkhard Maass, and Jürgen Rautert, both of Heidelberg, Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany
Filed Apr. 7, 1993, Ser. No. 45,043
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1992, 4211922
Int. Cl.[5] B65H *9/16, 9/04*
U.S. Cl. 271—248 9 Claims



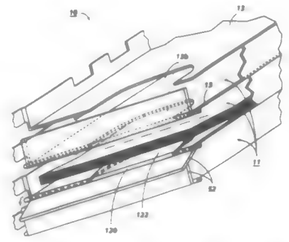
1. Table cover for covering a recess formed in a feed table of a sheet-fed printing press, the recess being disposed in a sheet travel plane and extending over a width of a sheet format adjustable by a selective positioning of a side lay, comprising means defining a flexible surface of a table top extending over a distance corresponding to a maximum range of the width of a sheet format adjustable by the selective positioning of the side lay, said means defining said flexible surface being an integral member, and means for guiding said integral member from a location on one side of the side lay partly around the side lay to a location on an opposite side of the side lay.

5,358,237
BASKETBALL GAME ASSEMBLY
I-chin Yu, No. 20, Lane 492. Shui-Yun Rd., Feng-Yuan, Taiwan
Filed Mar. 15, 1994, Ser. No. 212,846
Int. Cl.[5] A63B *63/08*
U.S. Cl. 273—1.5 R 4 Claims



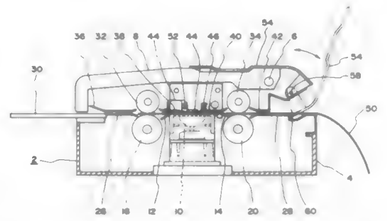
1. A basketball game assembly comprising:
a board including an opening formed therein and including a front portion and a rear portion, at least one door panel pivotally coupled to said board for closing said opening;
channel means provided in said rear portion of said board;
a slide slidably engaged in said channel means and movable toward or away from said door panel;
means coupling said slide to said door panel for opening or closing said door panel when said slide moves toward or away from said door panel;
a ring secured to said front portion of said board;
a beam including a first end pivotally coupled to said board and a second end extended in said ring;
means for biasing said beam to a position in parallel with said ring; and
lever means coupling said beam to said slide;
said door panel being opened by said slide and said lever means when said beam is depressed.

5,358,238
SHARED USER PRINTER OUTPUT DYNAMIC "MAILBOX" SYSTEM
Barry P. Mandel, Fairport, and David R. Kamprath, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Apr. 27, 1993, Ser. No. 54,502
Int. Cl.[5] B65H *39/10*
U.S. Cl. 271—298 30 Claims



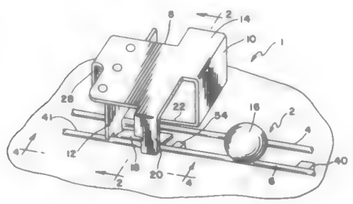
1. In a sheet output mailboxing system for selectively collecting the sheets outputted by a shared users printer in an arrayed plurality of mailbox bins of a limited sheet capacity per bin, for collecting such output sheets therein in collated printer job sets of stacked plural said output sheets per job, and with sheet feeding means for sequentially feeding said output sheets from said printer to said mailbox bins so as to be segregated by bins by respective users of said shared user printer, the improvement wherein the mailbox bins are not permanently assigned to particular users, and are variably assigned, comprising;
a variable bin selector for selectably collecting plural said collated job sets of said shared printer output sheets in a selected bin of said array of mailbox bins,
said variable bin selector providing for stacking a limited number of subsequent job sets from the same printer user on top of prior job sets in the same said selected mailbox bin,
an electronic controller for controlling said variable bin selector for repeatedly variably selecting which ones of said plurality of mailbox bins will be temporarily assigned to particular said shared printer users,
said controller collecting information as to which said mailbox bins have had job sets of another user stacked therein which have not yet been removed, in order to variably select other ones of said mailbox bins to be temporarily assigned to a particular said user,
said controller selecting which ones of said bins will be assigned to a particular user in response to repeated determinations of which said mailbox bins are currently so available for stacking job sets therein, and controlling said variable bin selector means to collect said job sets of output sheets for that particular printer user in those selected bins,
and a variable user indicator system repeatedly updated by said controller for identifying to said users which of said variably assigned mailbox bins contain job sets for a particular user wishing to remove job sets from said mailboxing system,
thereby allowing multiple users to share said printer and said mailboxing system therefor even if the number of said shared users exceeds the number of said plural mailbox bins.

5,358,239
ROTATABLE PAPER DISCHARGE AND GUIDING DEVICE IN A SCANNER
Yutaka Hario, and Kazuma Toyota, both of Tokyo, Japan, assignors to Mutoh Industries, Ltd., Tokyo, Japan
Continuation of Ser. No. 973,619, Nov. 9, 1992, abandoned. This application Apr. 8, 1994, Ser. No. 225,089
Claims priority, application Japan, Nov. 26, 1991, 3-336165; Nov. 26, 1991, 3-336166; Nov. 26, 1991, 3-336167; Nov. 26, 1991, 3-336168; Nov. 26, 1991, 3-336169
Int. Cl.[5] B65H *39/10*
U.S. Cl. 271—303 6 Claims



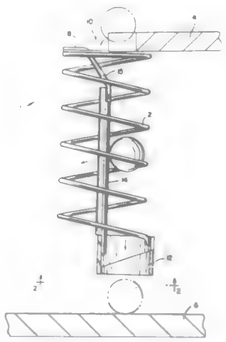
1. A sheet discharge and guiding device in a scanner comprising a base, an upper cover mounted on said base, sheet passage means extending from a front end to a rear end of the scanner intermediate said base and said cover, feed means for feeding a sheet in a first direction through said passage means and a mobile guide plate having guide means for changing the direction of the sheet to a second, opposite direction, rotatable means rotatably mounting said mobile guide plate on said scanner above said passage means adjacent said rear end of said scanner for movement between a first position wherein said mobile guide plate extends upwardly at an angle to said passage means with an end of said mobile guide plate disposed in said passage means for changing the direction of a sheet moving in said passage means from the front end toward the rear end of said scanner upwardly and oppositely onto said cover and a second position wherein said mobile guide plate is disposed in overlying relation on said cover with said one end of said mobile guide plate removed from said passage means to permit a sheet to exit from the rear end of said passage means without contacting said mobile guide plate.

5,358,240
BALL DIVERTER FOR RAISED RAMP
Patrick Lawlor, Marengo, and John Krutsch, Glenview, both of Ill., assignors to Williams Electronics Games, Inc., Chicago, Ill.
Filed May 6, 1993, Ser. No. 58,560
Int. Cl.[5] A63F *7/30*
U.S. Cl. 273—118 R 8 Claims



1. A pinball game having an inclined playfield supporting a rolling ball and a plurality of play features, one of the play features comprising:
a) first means for defining a path of travel for said ball, said first means being elevated relative to the playfield;
b) ball detector means for detecting a ball traveling on said first means;
c) diverter means movable between a first position in which travel of said ball over said first means is interrupted and the ball is retained, and a second position in which travel of said ball over said first means is uninterrupted;
d) means for moving said diverter means in response to the detection of a ball by the ball detector means between said first and second positions to selectively interrupt travel of the ball; and
e) means for removing a retained ball from said path of travel and for depositing it at a location below said path of travel, said means for removing depositing the ball at the location as said diverter means is moved between the first position and the second position.

5,358,241
HELICAL MONORAIL RAMP FOR A PINBALL GAME
Python V. Anghelo, Chicago, and Raymond J. Czajka, Hometown, both of Ill., assignors to Williams Electronics Games, Inc., Chicago, Ill.
Filed Oct. 12, 1993, Ser. No. 134,984
Int. Cl.[5] A63F *7/30*
U.S. Cl. 273—118 R 7 Claims



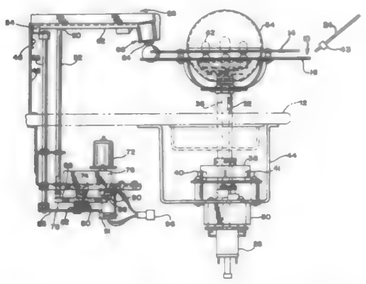
1. A play feature for a pinball game, comprising:
a) a rolling ball;
b) a first surface for supporting the rolling ball;
c) a second surface for supporting the rolling ball disposed below the first surface;
d) a straight rail extending substantially from the first surface to the second surface; and
e) a helical rail surrounding said straight rail, said helical rail being spaced from said straight rail such that the transverse distance between the straight rail and the helical rail is less than the diameter of the ball, the ball being suspended between and in rolling contact with said first and second rails.

5,358,242
BALL STORAGE DEVICE FOR PINBALL GAMES
John T. Trudeau, Bolingbrook, and Ernie Pizzarro, Chicago, both of Ill., assignors to Williams Electronics Games, Inc., Chicago, Ill.
Filed Nov. 12, 1993, Ser. No. 150,977
Int. Cl.[5] A63F *7/30*
U.S. Cl. 273—119 R 10 Claims

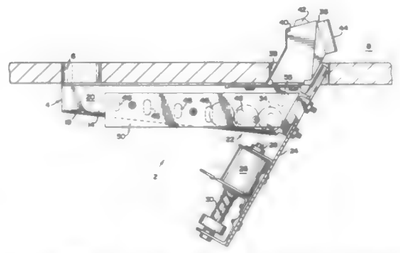
1. A ball storage device for a pinball game having an inclined playfield supporting a plurality of ferromagnetic balls thereon comprising:

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a) a horizontally disposed wheel having a plurality of pinball receiving pockets arrayed around its periphery for receiving balls;
b) means for delivering a ball to said wheel;
c) means for rotating said wheel such that one of said receiving pockets is positioned to receive the ball from the delivering means; and
d) means for removing and discharging balls from said receiving pockets, said means for removing including an electromagnetic arm for lifting balls from said receiving pockets.

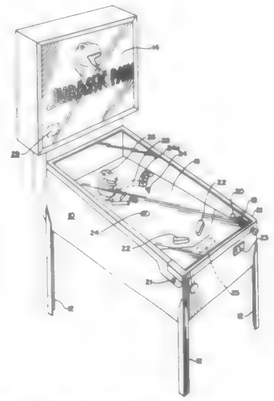


5,358,243
BALL TROUGH FOR PINBALL GAMES
Brian Eddy, Addison, and Carl Biagi, Warrenville, both of Ill., assignors to Williams Electronics Games, Inc., Chicago, Ill.
Filed Sep. 28, 1993, Ser. No. 128,361
Int. Cl.[5] A63F *7/34*
U.S. Cl. 273—121 D **9 Claims**



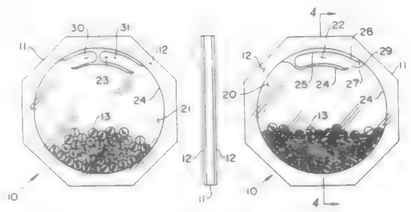
1. A pinball game having an inclined playfield supporting a rolling ball, a plurality of play features, a shooter lane for putting a ball in play and a drain hole allowing the ball to exit the playfield, comprising:
a ball trough comprising:
a) a channel fixed to the playfield and having a first end adjacent the drain hole and a second end adjacent the shooter lane, said channel having a surface for supporting a row of balls thereon and positioned to cause the balls to roll from the first end to the second end by force of gravity;
b) kicker means mounted proximate to said second end for kicking one of the balls out of the channel onto the playfield;
c) means for guiding the kicked ball from the channel to the shooter lane; and
d) means for detecting the presence or absence of said balls in said channel comprising a plurality of switches arranged along the length of the channel, each one of said plurality of switches positioned to sense one of said balls in the row.

5,358,244
PINBALL MACHINE WITH MOVABLE BALL RETRIEVAL TARGET ASSEMBLY
Joseph E. Kaminkow, Arlington Heights, and Edwin Cebula, West Chicago, both of Ill., assignors to Data East Pinball, Inc., Melrose Park, Ill.
Filed Aug. 10, 1993, Ser. No. 104,823
Int. Cl.[5] A63F *7/30*
U.S. Cl. 273—121 A **26 Claims**



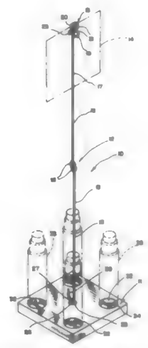
1. A pinball machine which comprises:
a housing which carries a playfield;
a motor assembly within said housing;
a ball detecting sensor;
at least one ball retrieval location;
a movable ball retrieval assembly, within said playfield housing, said ball retrieval assembly being movably connected to said motor assembly;
said motor assembly being responsive to said ball detecting sensor to move said ball retrieval assembly from a first position to said ball retrieval location to retrieve a stationary ball, and being operable to return said ball retrieval assembly to said first position.

5,358,245
LOTTERY NUMBER PICKER
Robert Adell, 31800 S. Brandingham, Franklin, Mich. 48025
Filed Jul. 6, 1993, Ser. No. 86,308
Int. Cl.[5] A63F *3/06, 9/00*
U.S. Cl. 273—144 B **22 Claims**



22. A number picker for selecting lottery numbers comprising: a base, said base having a trap for capturing lottery numbered disks stored in said base, said trap having an outer wall and an inner wall spaced inwardly apart from said outer wall, said inner wall having a hook-shaped end portion at an entrance of said trap extending a short distance outwardly toward said trap's outer wall for impeding thin cylindrical disks in said trap from flowing out of said trap; a ramp at said entrance of said trap for admitting said disks into said trap; and a plurality of thin cylindrical disks stored in said base.

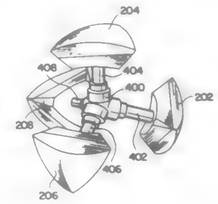
5,358,246
CARD HOLDER AND SIGNAL DEVICE
Jerome J. Dziedzic, 5350 S. Cambridge La., Greenfield, Wis. 53221
Filed Feb. 28, 1994, Ser. No. 202,515
Int. Cl.[5] A63F *9/00*
U.S. Cl. 273—148 A **10 Claims**



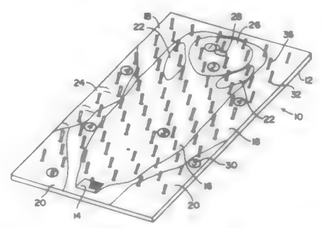
1. A holder for displaying thin sheet material comprising:
a base;
a pair of extensibly connected elongate members, including a lower member having a lower end attached to the base and an upper member having an upper end for holding the sheet material;
a slide mechanism interconnecting the upper end of the lower member and the lower end of the upper member for relative sliding movement between an upper extended position and a lower retracted position; and,
a clip on the upper end of the upper member adapted to receive and releasably hold the sheet material.

5,358,247
PUZZLE BALL
Uwe Meffert, Ap Lei Chau, Hong Kong, assignor to I-Development Institute Ltd., Aberdeen, Hong Kong
Filed Aug. 9, 1993, Ser. No. 103,110
Claims priority, application United Kingdom, Aug. 17, 1992, 9217440.8; Aug. 18, 1992, 9217559.5
Int. Cl.[5] A63F *9/06*
U.S. Cl. 273—153 S **15 Claims**

1. A puzzle comprising:
four interconnected branches, each of said branches defining a branch axis and having a fixed puzzle segment of arcuate triangular shape connected thereto, said fixed puzzle segment being rotatable about a respective branch axis thereof; and
a plurality of free puzzle segments comprising six arcuate square puzzle segments and four arcuate triangular puzzle segments, said fixed and free puzzle segments being coupled together to form a sphere, said segments further being capable of adopting a plurality of positions relative to one another and being movable between said positions by relative rotation of the segments in planes perpendicular to said branch axes.



5,358,248
GOLF BOARD GAME
Joseph R. Jankosky, 421 Toledo Dr., Lower Burrell, Pa. 15068
Filed Jan. 21, 1994, Ser. No. 184,170
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—153 J **3 Claims**



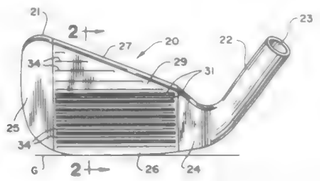
1. A method of playing a golf board game comprising:
(a) superimposing an orthogonally and diagonally aligned array of means for indicating playing piece positions over a playing board having a graphical depiction of a golf hole thereupon including differentiated areas representing a tee, fairway, green, cup, rough, sand traps, water hazards and out-of-bounds;
(b) assigning stroke values to said differentiated areas;
(c) placing detachable playing pieces on all but at least one of said means for indicating playing piece positions;
(d) iteratively jumping first playing pieces over adjacently located second playing pieces onto unoccupied in-line adjacent means for indicating playing piece positions to eliminate said second pieces from said board until no further such jumps can be made; and
(e) tallying a score for the play of said golf hole by summing the stroke values associated with the means for indicating playing piece positions of each remaining playing piece.

5,358,249
GOLF CLUB WITH PLURALITY OF INSERTS
Robert A. Mendralla, Bloomingdale, Ill., assignor to Wilson Sporting Goods Co., Chicago, Ill.
Filed Jul. 6, 1993, Ser. No. 85,727
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—173 **23 Claims**

1. A golf club head comprising a body having a sole, a toe portion, a heel portion, a top surface, a back surface, and a ball-striking face, the face being formed of a first material and

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having a plurality of elongated spaced-apart recesses therein, the recesses being filled with an insert material which is different than the first material and which is substantially flush with the ball-striking face.

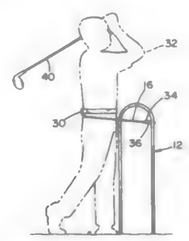


5,358,250

GOLF CLUB SWING TRAINING AID

Harold L. Spencer, 10327 Hwy. 150, Greenville, Ind. 47124

Filed Jan. 10, 1994, Ser. No. 179,325
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187.2 20 Claims



1. A golf club swing training device comprising

ground mountable frame means adapted for disposition immediately beside a golfer for inhibiting a swaying movement of said golfer in a direction of a follow through portion of said golfer's forward swing of a golf club,

stretchable, resilient means, one end of which is attachable to a back central portion of said golfer's waist and being removably attachable on the other end thereof to said frame means for inhibiting a swaying movement of said golfer in a direction opposite the direction of said follow through portion.

5,358,251

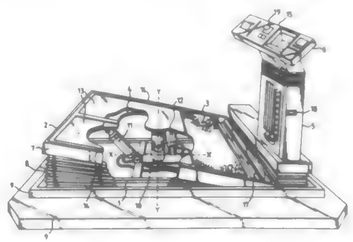
GOLF TRAINING AID/SIMULATOR

James T. Ashton, 33 Woodgrange Gardens, Bush Hill Park, Enfield, Middx, England

Continuation of Ser. No. 834,334, Feb. 12, 1992, abandoned.
This application Sep. 20, 1993, Ser. No. 123,813
Claims priority, application United Kingdom, Aug. 14, 1989, 8918510
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—195 B 19 Claims

1. A golf training device comprising a base including a platform providing a standing area for a user to take a stance in relation to a ball playing area, the platform is adjustably mounted on the base whereby the platform is tiltable to a desired position in relation to a practice ball and means for tilting and maintaining the platform in a desired selected position,

wherein the platform is mounted centrally on two vertically alignable elongate support members, one of said support members is centrally mounted to said base and the other of said support members is centrally mounted to an under surface of said platform, a universal joint, providing X and Y horizontal pivot axes, interconnects adjacent ends said two vertically alignable elongate support members together to effect said tilting, at least one telescopic unit is connected between the base and the under surface of the platform for the X horizontal pivot axis, and at least one telescopic unit is connected between the base and the under surface of the platform for the Y horizontal axis, and the telescopic units are arranged to act in concert with one another to cause the platform to tilt via the universal joint into and maintain a desired tilt angle.

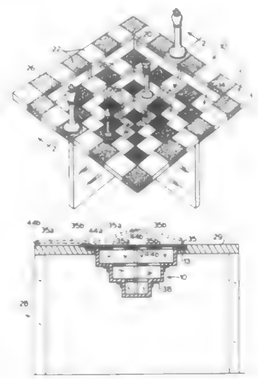


5,358,252

THREE-DIMENSIONAL MULTI-TIERED CHESS BOARD

Alfred McPhaul, Rte. 1, Box 667-D, Red Springs, N.C. 28377

Filed Nov. 23, 1993, Ser. No. 157,227
Int. Cl.[5] A63F *3/02*
U.S. Cl. 273—241 9 Claims



1. A multi-dimensional game board comprising:

a. a plurality of horizontal tiers, each of said tiers having an upwardly facing playing surface enclosing a center space therebetween, said playing surfaces being arranged in an internally descending stepwise order, such that each successive internally descending playing surface is one step down, parallel to and immediately interior to the playing surface located immediately above;

b. a vertical support system to permanently support said tiers in a fixed, parallel, stepped relation to each other;

c. a supporting means attached to and extending downwardly from said game board for supporting said game board on a flat horizontal surface; and

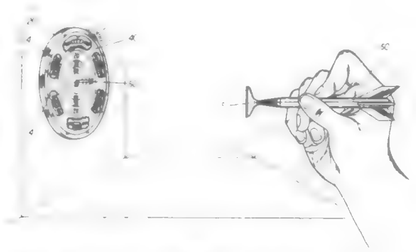
d. a table having an upper support surface with a receiving hole therethrough for receiving said game board, and a lip located along the edge of said receiving hole to engage said lower surface of said upper tier to support said game board upon said table.

5,358,253

LIGHT AND SOUND EMITTABLE DARTSBOARD

Sheng-kun Chen, No. 20, Alley 73, Lane 231, Chung-chen Road, Tou Fen Down, Miao Li Hsien, Taiwan

Filed Nov. 24, 1992, Ser. No. 980,699
Int. Cl.[5] F41J *3/02*
U.S. Cl. 273—344 4 Claims



1. A light and sound emittable dartsboard comprising

a bottom member on which a central induction board, a cell compartment, speakers, and other related items are preset;

a top member which is adapted to be covered over said bottom member and thereby join with said bottom member; and

a surface layer of patterns for covering and protecting top surface of said top member;

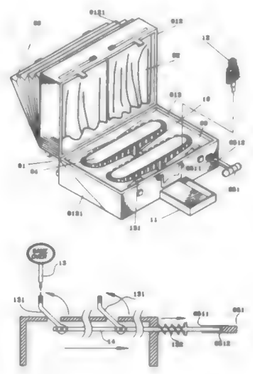
said dartsboard being characterized by that said bottom member has a plurality of bulbs disposed near outer periphery thereof such that said bulbs each may project out of a through hole correspondingly formed on said top member; and that said top member has a switch control means received in a central opening formed on said top member such that said switch control means is just above and shortly away from said induction board and may contact said induction board to close circuit thereof to emit preset sound and cause said bulbs to flash at random when said central switch control means is hit and therefore depressed by a dart.

5,358,254

TOY GUN AND TARGET SET

Hsiu-Ying Yeh, 2F. No. 4-1, Alley 7, Lane 135, Chu Kwang Road, Pao-Chiao Taipei, Taiwan

Filed Oct. 28, 1993, Ser. No. 142,039
Int. Cl.[5] A63F *9/02*; F41J *9/00*
U.S. Cl. 273—366 1 Claim



1. A toy gun and target set, comprising:

a carrying case formed of a case body and a cover hinged to said case body, said cover comprising a pleated, expansible back board and a curtain hung on the inside in front of said back board, said case body comprising a bottom chamber, which receives at least one toy gun, a toy bullet collecting drawer, a guide slot connected to said toy bullet collecting drawer, a concave top surface for guiding toy bullets to said toy bullet collecting drawer through said guide slot;

a driving mechanism installed inside said case body and comprised of a sliding rack and a clockwork and gear set meshed with said sliding rack, said clockwork and gear set being turned to work as said sliding rack is pulled out of said case body, said sliding rack having a series of parallel teeth on a body portion thereof meshed with said clockwork and gear set and a neck portion on one end of said body portion;

two target conveyers mounted within said case body and driven to rotate by said clockwork and gear set at different speeds, each target conveyer comprising two wheels and a conveyer belt mounted around the wheels, said conveyer belt having a series of flanges around the outside surface, each flange having a plug hole;

a mobile target mounted on the plug hole on either flange of the conveyer belt of either target conveyer, said mobile target having pins longitudinally and transversely aligned on two opposite sides of a target body thereof and respectively inserted through pin holes on two opposite face boards thereof, said face boards being respectively hinged to said target body and turned outwards from said target body to remove toy bullets being retained in spaces between said pins; and

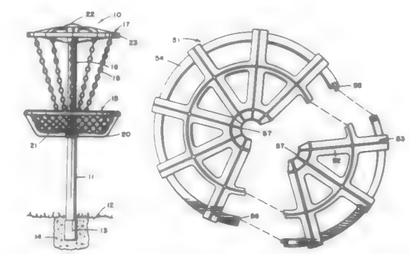
a game over sign and a linking mechanism connected to said sliding rack, said linking mechanism being moved from said neck portion of said sliding rack to said body portion of said sliding rack to turn said game over sign from a vertical position to a horizontal position as said sliding rack is pulled out of said case body, said linking mechanism being moved from said body portion of said sliding rack to said neck portion of said sliding rack to turn said game over sign from said horizontal position to said vertical position as said sliding rack is moved back into said case body by said clockwork and gear set.

5,358,255

DISC CATCHING APPARATUS

Alfred S. Jolson, 1850 Greenwich Ave., Winter Park, Fla. 32789

Filed Dec. 27, 1993, Ser. No. 173,204
Int. Cl.[5] A63B *67/06*
U.S. Cl. 273—400 14 Claims



1. A disc catching apparatus for use in playing a flying disc game comprising:

a vertical extending post;

a basket attached around said post for catching falling discs, said basket having a frame formed in a plurality of seg-

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ments and having attaching fasteners for locking said basket segments together around said post;

a top housing attached to said post above said basket and spaced therefrom; and

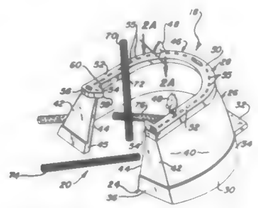
a plurality of elongated flexible disc stopping members attached to said top housing and hanging downwardly into said basket for stopping flying objects impinging thereupon whereby the flying objects will fall into said basket.

5,358,256

HORSESTICKS GAME ASSEMBLY AND METHOD OF PLAY

Sandy F. Kraemer, 2402 Ceresa Ln., Colorado Springs, Colo. [illegible]

Filed Jun. 7, 1993, Ser. No. 72,119
Int. Cl.[5] A63B *67/00*
U.S. Cl. 273—401 20 Claims



1. A main game target assembly used in a method of game play between a pair of game players similar to a horseshoe game, comprising:

a) a support base assembly including a support contact base member to rest on a ground support surface, an inclined support wall integral with and extended upwardly from said support contact base member, and an upper deflector and scoring member secured to an upper portion of said inclined support wall;

b) said upper deflector and scoring member extended inwardly of said upper portion of said inclined support wall; and

c) said upper deflector and scoring member of a generally U-shape providing an opening into a cavity formed between said support contact base member and said upper deflector and scoring member to receive objects in said cavity during the method of game play.

5,358,257

VOLLEYBALL GAME NET

Edward M. Pardi, Madison, Conn., assignor to Jayfro Corporation, Waterford, Conn.

Filed Sep. 10, 1993, Ser. No. 119,415
Int. Cl.[5] A63B *6/00, 67/00*
U.S. Cl. 273—411 12 Claims

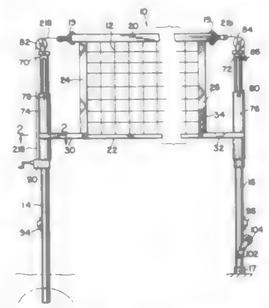
1. A volleyball game net which comprises:

a net adapted by size and configuration to meet the requirements of play in a volleyball game, said net having a mesh fabric body with a peripheral margin defined by a top edge, a bottom edge, a first side edge and a second side edge, said side edges being spaced apart from each other and joining the top edge to the bottom edge;

a headband attached to the top edge and extending between the first and the second side edges, said headband being a textile cloth having a high tensile strength and an elongation of less than about 0.00083 percent at a specified working tension and temperature;

a textile cloth footband attached to the bottom edge;

textile cloth marginal tapes attache dot the first and second side edges; and



a first reinforcing rod within the marginal tape of the first side edge and a second reinforcing rod within the marginal tape of the second side edge.

5,358,258

APPARATUS FOR SOCCER TRAINING

Darryl Killion, 830 W. Almond St., Orange, Calif. 92668

Filed Feb. 4, 1994, Ser. No. 192,295
Int. Cl.[5] A63B *67/10*
U.S. Cl. 273—414 6 Claims



1. Apparatus for soccer training comprising:

a belt of a length adapted for encircling a waist of a user, a means for fixing the belt to the user, and further including a first attachment means extending away from the user;

a tether line made of an elastic material, the line adapted for lengthening under tensile forces on the line, and thereafter contracting due to elastic resilience of the material, the line including second and third attachment means fixed at opposing ends of the line respectively; and

a girdle of a resilient elastic sheet material of a length adapted for encircling a soccer ball when the girdle is in a stretched condition, and having a width sufficient to secure the ball within the girdle, opposing lateral portions of the girdle wrapping around the ball, the girdle including securing means at longitudinal ends thereof for securing the girdle around the ball, and a fourth attachment means extending from the girdle;

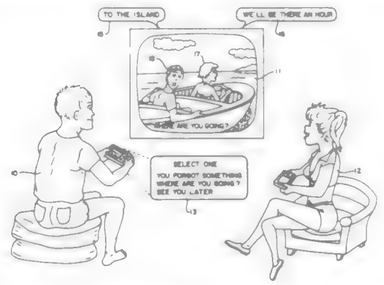
whereby with the line interconnecting the belt with the girdle; the first and second, and the third and fourth attachment means each being mutually engaged respectively, the ball being positioned in front of the user, blows delivered to the ball by the user result in the ball being propelled away from the user, the natural resiliency of the line returning the ball to the front of the user in each case for cyclic, repetitive practice in striking the ball by the user.

5,358,259

TALKING VIDEO GAMES

Robert M. Best, 777 108th Ave. NE., Ste. 2460, Bellevue, Wash. 98004

Continuation of Ser. No. 614,843, Nov. 14, 1990, abandoned.
This application Oct. 21, 1993, Ser. No. 140,266
Int. Cl.[5] A63F *9/22*
U.S. Cl. 273—434 16 Claims



1. A method of electronically simulating voice conversations between at least two talking animated characters, the words of one character being selected by a human player, comprising the steps of:

(a) digitally storing a catalog of distinctive voices for at least two talking characters, each in the form of voice sound data representing a plurality of sentences, phrases, word segments or phonemes;

(b) digitally storing a preprogrammed branching dialog between a first animated character and a second animated character, each branch comprising a plurality of alternative verbal expressions;

(c) generating a video signal representing an image of said first and second characters for display on a video screen;

(d) displaying on a hand-held controller apparatus a first set of alternatively selectable verbal expressions, each corresponding to a branch in said dialog;

(e) receiving from said hand-held controller a manually initiated signal representing a selected verbal expression in said first set of verbal expressions, thereby selecting a branch in the dialog;

(f) digitally reading from said catalog of voices first voice sound data that corresponds to said selected verbal expression of the voice of said first character;

(g) generating an audio signal from said first voice sound data representing the voice of said first character speaking said selected verbal expression;

(h) digitally reading from said catalog of voices second voice sound data for the voice of said second character speaking the verbal expression that follows next in the selected branch of the dialog;

(i) generating an audio signal from said second voice sound data representing the voice of said second character; and

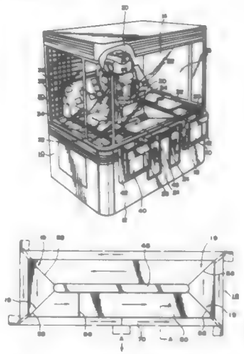
(j) displaying on said hand-held controller apparatus a second set of alternatively selectable verbal expressions that follows next for said first character in the selected branch of the dialog.

5,358,260

DISPLAYING AND CONVEYING APPARATUS AND GAME MACHINE USING THE SAME

Mitsuru Ogata, Kawasaki; Hiroyuki Kobayashi, Tokyo; Toshitake Inagaki, Sagamihara; Takashi Masuko, Kawaguchi, and Hiroshi Takeuchi, Tokyo, all of Japan, assignors to Namco Ltd., Tokyo, Japan

Filed Apr. 14, 1993, Ser. No. 45,889
Claims priority, application Japan, Apr. 16, 1992, 4-124345
Int. Cl.[5] A63F *9/00*; B65G *15/12, 15/28*
U.S. Cl. 273—454 35 Claims



1. A displaying and conveying apparatus for conveying articles to be displayed along an endless conveyance path including a plurality of corners, said displaying and conveying apparatus comprising:

main conveyor means including a main conveyor belt for endlessly conveying said articles to be displayed, and

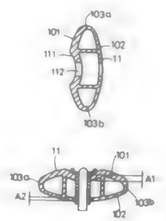
side conveyor means including a side conveyor belt for guiding said articles in the direction of conveyance, said main conveyor belt being disposed along an endless conveyance path having a plurality of corners, said side belt conveyor belt being disposed along the outer periphery of said main conveyor means and in a direction in which the conveyance plane of said side conveyor belt intersects the plane of conveyance in said main conveyor belt.

5,358,261

METAL RACKET FRAME

Chin-Cheng Cheng, No.37-8, Lane 59, Nan Yang Rd., Pongyuan City, Taichung Hsien, Taiwan

Filed Dec. 16, 1993, Ser. No. 166,992
Int. Cl.[5] A63B *49/12*
U.S. Cl. 273—73 H 6 Claims



1. A metal racket frame comprising an integrally formed hollow looped head portion which includes an inner peripheral wall with a first wall thickness and an outer peripheral wall with a second wall thickness that is thicker than said first wall thickness by about 0.1 mm to about 0.7 mm.

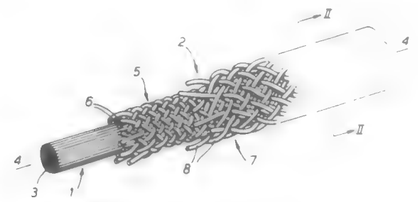
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5,358,262

MULTI-LAYER SEAL MEMBER

Martyn G. Roberts, Roswell, Ga., assignor to Rolls-Royce, Inc., Reston, Va.

Filed Oct. 9, 1992, Ser. No. 958,677
Int. Cl.[5] F16J 15/00
U.S. Cl. 277—230 11 Claims



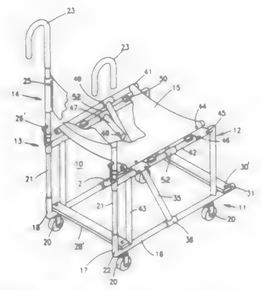
1. A multi-layer seal member comprising:
a core of elongate fibers disposed in an axial direction of the core, said fibers having a first coefficient of thermal expansion,
a plurality of cylindrical layers arranged concentrically around said core and including,
a first layer of braided metal wires forming a closely fitted cylinder surrounding said core, said braided metal wire being a mesh of multiple wires woven crosswise at a first braid angle relative to the axis of said core, said braided metal wires having a second coefficient of thermal expansion substantially greater than said first coefficient of thermal expansion,
a second layer of braided ceramic fibers forming a closely fitted cylinder surrounding said first layer, said braided ceramic fibers of said second layer being a mesh of multiple fibers woven crosswise at a second braid angle relative to the axis of said core, said braided ceramic fibers having a third coefficient of thermal expansion which is substantially equal to said first coefficient of thermal expansion,
said second braid angle being smaller than said first braid angle such that diametral thermal expansion of the seal is determined by said first layer.

5,358,263

TRAVEL-AIR CHAIR

Richard E. Aldus, and Anita L. Aldus, both of 407 Valletta Ct., Punta Gorda, Fla. 33950

Filed Apr. 30, 1993, Ser. No. 54,169
Int. Cl.[5] B62B 3/02
U.S. Cl. 280—42 3 Claims



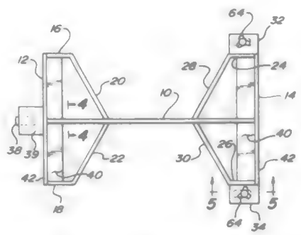
1. A narrow, light-weight folding wheel chair that can be easily and rapidly unfolded and folded comprising:
a pair of side frames including two lower horizontal tubes in parallel relationship to each other, said lower horizontal tubes extending upwardly at a first end, and extending forwardly at a second end, pivot sleeve means rotatably affixed on each of said lower horizontal tubes between said first and second ends, a pair of vertical support means including vertical tubes affixed at a lower end to said lower horizontal tubes near said first and second ends, and a pair of upper horizontal tubes, each affixed at a top end of said vertical tubes, each upper horizontal tube having pivot means rotatably mounted centrally thereon, and a plurality of bumpers affixed thereon at a top edge,
an extension, removably attached to each of said upwardly extending lower horizontal tubes, for holding said frames in spaced relationship,
an extension, removably attached to each of said forwardly extending lower horizontal tubes for holding said frames in spaced relationship, and for providing a horizontal foot rest,
seat means having a pair of horizontal seat bars each affixed to one of a first pair of braces, intersecting diagonally, and connected together by a longitudinal bolt, a bottom section of each of said braces affixed to one of each of said lower horizontal tube pivot means, and fabric means looped over and fastened to and between said seat bars, said plurality of bumpers providing a cushioned rest for said seat bars when in an unfolded position,
a second pair of braces, each pivotally connected to one of said first braces at a first end, and each of said second pair of braces rotatably connected to each of said upper horizontal tubes pivot means at a second end for retaining said side frames in a vertical position during folding or unfolding,
a plurality of strap means looped over and affixed to and between each of said horizontal seat bars,
a forward pair, and a rearward pair, of swivel wheels attached to said lower horizontal tubes, and
seat back means removably attached to said side frames at said first end.

5,358,264

MOBILE MACHINE SUPPORT

Timothy W. Hewitt, 18 Kensington, Pleasant Ridge, Mich. 48069

Filed Mar. 2, 1992, Ser. No. 844,204
Int. Cl.[5] B62B 3/00
U.S. Cl. 280—79.11 14 Claims



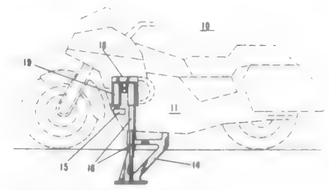
1. A mobile support for an apparatus having four legs, comprising:
an "I"-shaped frame structure having a centrally-disposed longitudinal member and two parallel transverse members attached to the opposite ends of said longitudinal member;
a platform associated with each of said two transverse members for supporting said legs of said machine within said frame structure;
angularly-disposed brace members connecting the ends of said two transverse members to said longitudinal member;
a pair of rear wheels attached to the ends of one of said two transverse members rotatable about an axis normal to said longitudinal axis; and
a centrally-disposed front wheel swivelably mounted to the other of said two transverse members in line with said longitudinal member, said front wheel solely supporting one end of said apparatus.

5,358,265

MOTORCYCLE LIFT STAND AND ACTUATOR

Winfred E. Yaple, 6428 Pepperdine, NE., Albuquerque, N. Mex. 87111

Continuation-in-part of Ser. No. 880,169, May 6, 1992, Pat. No. 5,234,225, and a continuation-in-part of Ser. No. 567,256, Aug. 13, 1990, Pat. No. 5,118,126. This application Aug. 5, 1993, Ser. No. 103,427
Int. Cl.[5] B62H 1/06
U.S. Cl. 280—293 30 Claims



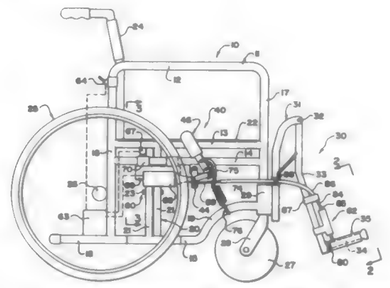
1. A motorcycle stand comprising:
upper stand unit means mounted upon a respective side of a motorcycle;
said upper stand unit means comprising drive unit means and linear actuator means driven by said drive unit means;
said linear actuator means further comprising rotary-to-linear motion conversion means;
lower stand unit means pivotally mounted for movement between a retracted position and a ground contactable position by said linear actuator means; and
said motorcycle stand further comprising encoder means.

5,358,266

WHEEL CHAIR ELECTRIC BRAKE AND PEDAL SAFETY [illegible]

Gail Roth, Miami, and Henry Guenther, Manitoba, both of Canada, assignors to Salem Home Inc., Winkler, Canada

Filed Jul. 12, 1993, Ser. No. 90,580
Int. Cl.[5] A61G 5/00
U.S. Cl. 280—304.1 13 Claims



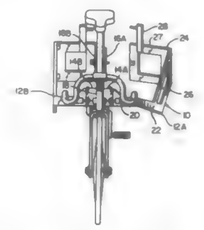
1. A wheel chair comprising a frame, a seat bottom mounted on the frame for receiving and supporting the buttocks of a patient in a seated position, a seat back mounted on the frame against which the back of the seated patient can rest, ground wheels attached to the frame for wheeled movement of the frame and seated patient across the ground, a pair of foot rest elements located in a foot rest position forwardly of and downwardly from the seat bottom, each for receiving a respective foot of the seated patient to maintain the foot carried above the ground during the wheeled movement, and actuation means responsive to movement of the patient from the seated position to effect movement of the foot rest elements from the foot rest position to a retracted position allowing the patient to place the feet on the ground forwardly and downwardly of the seat bottom and to step forwardly therefrom without engaging the foot rest elements, wherein said actuation means includes a switch actuable by the lifting of the weight of the patient from the seat bottom.

5,358,267

DETACHABLE LEG SHIELD

Stella O. Wakefield, 524 Beatrice Dr., Dayton, Ohio 45404

Filed Nov. 19, 1993, Ser. No. 155,427
Int. Cl.[5] B62J 27/00
U.S. Cl. 280—304.3 13 Claims



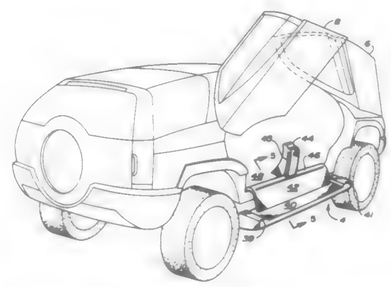
1. A detachable leg shield for use with a bike, comprising:
a first frame member having a first end, a second end, and an intermediate portion, said first end and said second end extending generally laterally from said intermediate portion;
means for detachably securing said first end of said first frame member to a front part of a frame of the bike, which includes means for biasing said first frame member generally laterally outwardly from the frame of the bike; and
means for detentably attaching said second end of said first frame member to a rear part of the frame of the bike.

5,358,268

MOTOR VEHICLE SIDE STEP

Clive A. Hawkins, Chichester, England, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Oct. 13, 1993, Ser. No. 135,890
Int. Cl.[5] B60R 3/02
U.S. Cl. 280—166 8 Claims



1. Apparatus for a vehicle, comprising
a movable side step, a movable toe kick panel coupled to said

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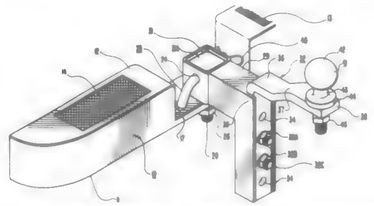
side step, said side step comprising an elongated member having a stepping side and a non-stepping side, the non-stepping side of said side step forming a portion of the generally vertical outer surface of the vehicle when the side step is in a closed position, and at the same time the toe kick panel being located generally vertically between the stepping side of said side step and said vehicle, said side step being mounted for movement from the closed position to an open position extending outboard of the vehicle in which the stepping side of said side step is substantially horizontal and below the level of the vehicle floor for assisting passengers to ingress and egress said vehicle, said side step in moving to the open position simultaneously outward and downward relative of the vehicle floor, said side step pulling the coupled side toe kick panel downward as the side step rotates while maintaining the side kick panel generally vertical, said toe kick panel extending from the vehicle floor to the stepping side of said side step when the side step is in the open position, means mounted to said vehicle for pivotally supporting said side step, and means mounted to said vehicle for guiding said toe kick panel generally vertically as the toe kick panel is pulled downward by said side step.

5,358,269

TRAILER HITCH

Walter L. Jakeman, 776 William Way, Salt Lake City, Utah 84107, and Steven R. Warburton, 1869 Yuma St., Salt Lake City, Utah 84108

Filed Aug. 30, 1993, Ser. No. 112,933
Int. Cl.[5] B60D *1/06*
U.S. Cl. 280—490.1 **12 Claims**



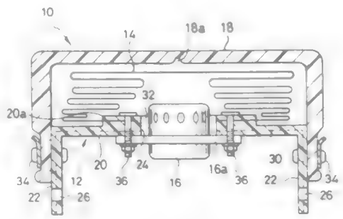
1. A trailer hitch including, in combination, a mount member for securement to an external rear bumper of a towing vehicle; a principal member comprising a forward mount receptacle receiving as a socket said mount member, an intermediate portion integral with said mount receptacle, and a rearward, vertical elongate carrier joined to said intermediate portion and provided with a first series of mutually vertically spaced apertures; means for releasably securing said mount member to said mount receptacle; a support member having a vertically upstanding, elongate support portion provided with a second series of mutually vertically spaced apertures dimensioned for selective registry with said first series of mutually vertically spaced apertures, and a rearwardly, essentially horizontally extending tongue integral with said support portion, said tongue being provided with a mounting aperture; a ball connector having a threaded shaft portion disposed in said mounting aperture, a flange portion above and integral with said threaded shaft portion, and a connector ball provided with a depending riser integral with said flange portion; nut means threadedly engaging said threaded shaft portion of said ball connector for releasably securing said ball connector to said tongue; and a series of attachments securing said elongate support portion to said elongate carrier at selected ones of said first and second series of apertures.

5,358,270

AIR BAG DEVICE

Masato Kuretake; Kazuhiko Yamakawa; Motonobu Kitagawa; Sawayo Uda; Yoshimi Yoshida, and Takayasu Zushi, all of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Jul. 20, 1993, Ser. No. 93,897
Claims priority, application Japan, Aug. 31, 1992, 4-231799
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 A **10 Claims**



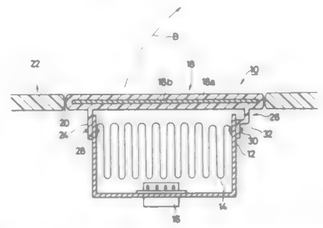
1. An air bag device for a driver seat, comprising;
a retainer composed of a main plate portion having an opening for mounting an inflator and mounting pieces extending uprightly from peripheral edges of the main plate portion, said retainer having a reinforcement material embedded therein,
an air bag having a rear end connected to said retainer,
an inflator mounted on said retainer, and a module cover for covering said air bag,
said retainer being made of a synthetic resin, and
the rear end of said air bag being connected to the reinforcement material and secured to said retainer by embedding said rear end in said retainer.

5,358,271

STRUCTURE FOR ATTACHING A MODULE COVER OF AN AIR BAG DEVICE FOR A PASSENGER

Kazuo Watanabe, and Takayasu Zushi, both of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Mar. 11, 1993, Ser. No. 29,574
Claims priority, application Japan, Mar. 25, 1992, 4-67194
Int. Cl.[5] B60R *21/20*
U.S. Cl. 280—728 B **5 Claims**



1. A module cover attaching structure of an air bag device for a passenger, comprising:
a casing for accommodating an air bag and having an opening at a front portion,
a module cover having a plate for covering said opening of said casing and an edge portion around the plate located outside the opening of the casing when attached to the casing,
a first attachment piece formed on a rear surface of said plate, said first attachment piece being fixed to the casing so that the first attachment piece disengages from the casing upon development of the air bag, and

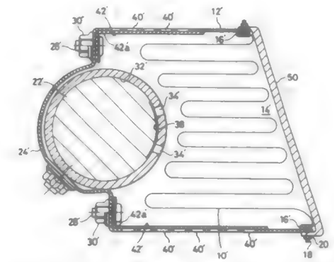
a second attachment piece being unconfined and formed on the rear surface of said plate at a side opposite to the first attachment piece, said second attachment piece having a flat first portion extending from the rear surface at a position near the edge portion to orient substantially perpendicularly to the rear surface, a second portion extending from the first portion in a direction away from the edge portion of the plate and bent relative to the first portion at about 90 degrees, and a third portion extending from the second portion and bent relative to the second portion at about 90 degrees to extend substantially parallel to the first portion, said third portion being fixed to the casing so that the second attachment piece can be easily bent upon inflation of the air bag, and the edge portion turns smoothly without being blocked by the casing.

5,358,272

AIR BAG DEVICE FOR USE IN A PASSENGER'S SEAT

Akira Kokeguchi, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan

Filed Mar. 19, 1993, Ser. No. 34,810
Claims priority, application Japan, Apr. 9, 1992, 4-088742
Int. Cl.[5] B60R *21/30*
U.S. Cl. 280—738 **3 Claims**



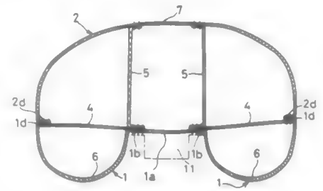
1. An air bag device for use in a passenger's seat comprising:
a retaining box having a front face, lateral sides, an opening disposed at the front face, and air intake ports formed in the lateral sides of said retaining box,
a gas generator disposed in the retaining box at a side opposite to the front face,
an air bag folded and contained in the retaining box between the gas generator and the opening,
a lid for covering the opening of the retaining box, and
valves disposed in said retaining box for covering said lateral sides to close said air intake ports, said valves being formed of a material with a melting point temperature lower than an igniting temperature of said gas generator by heat so that when the gas generator is actuated upon detection of a predetermined deceleration, gas from the gas generator enlarges the air bag together with air passing through the air intake ports while allowing the valves to move to an inside of the retaining box without melting of the valves, and when heat is applied to the air bag device, the valves melt before the gas generator is actuated by the heat to thereby allow the gas from said gas generator to discharge through said air intake ports.

5,358,273

INFLATABLE BAGS FOR AIRBAG PASSIVE RESTRAINT SYSTEMS FOR DRIVER AND METHOD FOR PRODUCTION THEREOF

Osamu Onishi, Akashi; Toru Ozaki, Toyota; Hidehito Sogi; Shigeyoshi Fukushima, both of Nagoya; Koji Sugiura, Kasugai, and Atsushi Onoda, Nagoya, all of Japan, assignors to Toyo Tire & Rubber Co., Ltd., Osaka, Japan

Filed Feb. 16, 1993, Ser. No. 17,874
Claims priority, application Japan, Mar. 9, 1992, 4-021400[U]; Mar. 9, 1992, 4-021401[U]; Mar. 9, 1992, 4-086541; Mar. 9, 1992, 4-086542
Int. Cl.[5] B60B *21/20*
U.S. Cl. 280—743 R **13 Claims**



1. An inflatable bag for an airbag passive restraint system of a vehicle, comprising:
a generally circular upper base cloth;
a lower base cloth of generally the same size and shape as the upper base cloth, said upper and lower base cloths being seamed together at respective outer peripheral portions thereof and being adapted to face toward the driver and to be connected to an inflator for releasing gas into the inflatable bag for inflation thereof, said lower base cloth having a central opening through which to communicate with the inflator; and
lateral regulating means for regulating the inflation of the bag in lateral and upward directions and causing downward inflation in a lower area of the bag, said lateral regulating means having a length which is shorter than a radial distance between the outer peripheral portions of both cloths and an inner peripheral portion around the central opening of the lower base cloth, said lateral regulating means extending radially to link the inner peripheral portion of the lower base cloth and the outer peripheral portions of both cloths in a mutually opposing manner to shorten a radial distance between the inner and outer peripheral portions thus forming, in a non-inflated state, a circumferential sag portion which enables downward inflation of the lower base cloth.

5,358,274

SHOULDER ANCHOR HEIGHT ADJUSTING APPARATUS

Yasutaka Watanabe, Aichi, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Dec. 22, 1992, Ser. No. 994,997
Claims priority, application Japan, Dec. 26, 1991, 3-107454[U]
Int. Cl.[5] B60R *22/20*
U.S. Cl. 280—801.2 **20 Claims**

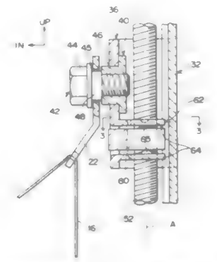
1. A shoulder anchor height adjusting apparatus for adjusting a height of a shoulder anchor by moving said shoulder anchor through which a longitudinal intermediate portion of a webbing having one end would up by a retractor and the other end anchored by an anchor plate passes, at an upper portion of a side wall of a vehicle in a vertical direction of said vehicle, said apparatus comprising:
a rail disposed at said upper portion of said side wall of said vehicle, and extending in the vertical direction of said vehicle;
a slider to which said shoulder anchor is attached, said slider

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supported by said rail so as to be guided along said rail, and moving in the vertical direction of said vehicle so as to move said shoulder anchor in the vertical direction of said vehicle;

a feed screw disposed further towards an outer side of said vehicle in a transverse direction of said vehicle than an intermediate portion of said slider in a longitudinal direction of said vehicle and disposed at said upper portion of said side wall of said vehicle, having an axis in the vertical direction of said vehicle, and provided so as to be rotatable about said axis;

a screw member screwed into said feed screw, and movable in the vertical direction of said vehicle by rotation of said feed screw; and



arm means including a pair of arm pieces outwardly extending from said slider in the transverse direction of said vehicle for reducing an angular moment applied to said feed screw and said screw member, said arm pieces being provided respectively on an upper side and a lower side of said elevator nut in the vertical direction of said vehicle, said arm pieces moving said slider in the vertical direction of said vehicle when said contact portion is pushed by said screw member as said screw member moves in the vertical direction of said vehicle, and

an elongated contact projection disposed between each of said arm pieces and said elevator nut for contacting said arm pieces and said elevator nut.

5,358,275

ENERGY CONVERTER IN A RESTRAINING SYSTEM FOR VEHICLE OCCUPANTS

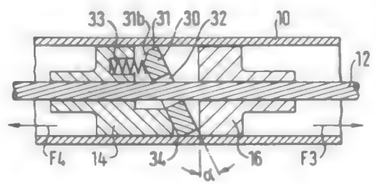
Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed Feb. 19, 1993, Ser. No. 19,420

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1992, 4206093

Int. Cl.[5] **B60R** *22/36*

U.S. Cl. 280—806 **2 Claims**



1. An energy converter in a restraining system for a vehicle occupant, comprising a tubular converter body with a wall of plastically deformable material and a piston which is slidingly accommodated therein and to which a pulling cable is connected, said piston supporting at least one deformation member adapted to move in said converter body in a predetermined direction and to engage said wall of said converter body and, on further displacement to deform said wall plastically, said deformation member deforms said wall asymmetrically on only one of two diametrically opposite sides, said deformation member is a plate having opposed ends adjacent said wall and provided with at least one engagement projection formed on one of said ends, said plate being pivotal between a rest position inclined to the axis of said converter body and an engaging position in which it brings said engagement projection into engagement with the inner side of said converter body and said plate having the other of said ends slidingly supported on the inner side of said converter body, wherein a pair of adjacent engagement projections are formed on said plate, said engagement projections being rounded at their radial ends.

5,358,276

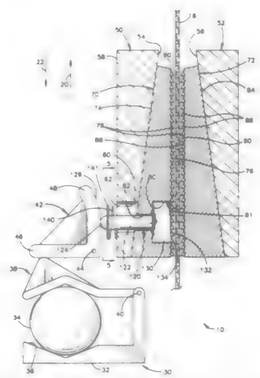
SEAT BELT WEBBING CLAMP ASSEMBLY

Wendell C. Lane, Jr., Romeo, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Oct. 25, 1993, Ser. No. 142,878

Int. Cl.[5] **B60R** *22/42*

U.S. Cl. 280—806 **17 Claims**



1. An apparatus for blocking movement of belt webbing in a vehicle occupant restraint system, said apparatus comprising:

a first clamp member having a first clamping surface;

a second clamp member having a second clamping surface spaced from said first clamping surface, said first and second clamping surfaces defining between them a passage through which the belt webbing is movable in first and second directions;

said first clamp member being movable relative to said second clamp member between a released condition allowing movement of the belt webbing in the first direction in said passage and an engaged condition clamping the belt webbing between said first and second clamping surfaces to block movement of the belt webbing in the first direction in said passage;

an initiator member having a first portion movable between a first position not in engagement with the belt webbing and a second position in engagement with the belt webbing to couple said initiator member for movement with the belt webbing in the first direction; and

actuator means for moving said initiator member first portion from the first position into engagement with the belt webbing;

said initiator member having means engageable with said first clamp member for moving said first clamp member from the released condition to the engaged condition in response to movement of said initiator member in the first direction.

5,358,277

SKI POLE ASSEMBLY WITH SCRAPER

Ronald J. Klement, Jr., 1441 S. 58th St., West Allis, Wis. 53214

Filed Jul. 20, 1993, Ser. No. 94,843

Int. Cl.[5] **A63C** *11/24*

U.S. Cl. 280—813 **8 Claims**



1. A ski pole assembly, comprising:

an elongated pole defining an upper end and a lower end; and

a snow head mounted adjacent the lower end of the pole, the snow head comprising a substantially flat disc-like member defining an upper surface, a lower surface, and a substantially uninterrupted outer peripheral edge which includes a substantially linear transverse scraping edge oriented substantially perpendicular to the longitudinal axis of the pole, wherein the transverse scraping edge is defined by the juncture of one of the upper and lower surfaces with a substantially continuous surface which extends between the upper and lower surfaces of the disc-like member.

5,358,278

POCKET-SIZE PERSONAL FINANCIAL ORGANIZER

Dennis J. Ellis, 2510 Creekwood Dr., Dothan, Ala. 36301

Filed Dec. 29, 1993, Ser. No. 174,803

Int. Cl.[5] **B42D** *1/00*

U.S. Cl. 281—31 **1 Claim**

1. An apparatus for monitoring, controlling, and reducing spending referred to as a personal financial organizer, having a plurality of pages connected by a binding means, said personal financial organizer thereby having pages on a left side and a right side of said binding means, said pages containing parallel horizontal and vertical lines forming columns, rows, and discrete rectangular areas for entering data

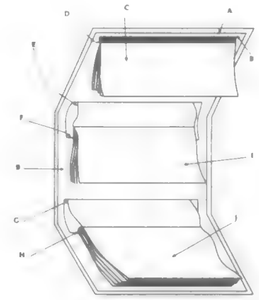
wherein

(a) first and second pages comprise means for organizing monthly fixed bills, referred to as a Systematic Bill Payment Organizer having columns labeled monthly fixed bills, due date, average monthly payment, and six month payment history and rows labeled savings, periodic expense savings, total monthly payments and check number-/amount, said first page having an extension so that the extension forms a left portion, the first page a middle portion, and the second page a right portion of said Systematic Bill Payment Organizer;

(b) third and fourth pages comprise means for listing spending categories, referred to as a Category Descriptions having columns labeled with spending categories including housing/child care, food, transportation, clothing/personal care, savings/retirement, medical/life insurance, recreation/education, and contribution/miscellaneous and comprise means for recording monthly projected spending per category for comparison to monthly net income, referred to as a Trac-A-Spending-Plan TM Worksheet having columns labeled income deductions, income, interest income, miscellaneous income, and totals and rows labeled monthly gross income, less tithes, less withholding taxes, and monthly net income, said fourth page having an extension so that said third page forms a left portion and said fourth page forms a right portion of said Category Descriptions and said extension forms said Trac-A-Spending-Plan TM Worksheet;

(c) fifth and sixth pages comprise said Trac-A-Spending-Plan TM Worksheet having columns labeled with monthly projected spending and said spending categories, said fifth page having an extension so that said extension forms a left portion, said fifth page forms a middle portion and said sixth page forms a right portion of said Trac-A-Spending-Plan TM Worksheet;

(d) seventh and eighth pages comprise means for recording projected spending per category per week, referred to as a Weekly Projected Spending Worksheet having columns labeled with said spending categories and rows labeled



first week, second week, third week, and fourth and fifth week and comprise means for recording actual spending per category by week for comparison to weekly projected spending per category, calculating a total weekly spending differential, calculating a total-to-date spending differential balance, and calculating monthly actual spending per category, referred to as a Household Spending Record having columns labeled with said categories, combined totals, week's spending differential, and spending differential total-to-date and rows labeled first week projected spending/actual spending, second week projected spending/actual spending, third week projected spending/actual spending, and fourth/fifth week projected spending-/actual spending, said eighth page having an extension so that said seventh page forms a left portion and said eighth page forms a right portion of said Weekly Projected Spending Worksheet and said extension forms said Household Spending Record;

(e) ninth and tenth pages comprise means for determining how much income to set aside for future spending based upon prior spending by projecting spending per category per week and per month, referred to as an Earmarked Funds Worksheet having columns labeled with said categories, net income and combined totals and rows labeled first week, second week, third week, and fourth and fifth week, and comprise means for recording actual spending per category per day for each week of a month, weekly actual spending per category, weekly projected spending

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per category, total actual spending per day, total weekly projected spending, and total weekly actual spending, referred to as a Money-Tracker TM having columns labeled with said spending categories, remarks/daily combined totals, and days and rows labeled 1,2, 3, 4, 5, 6, 7, projected spending, and actual spending, said ninth page having an extension so that said ninth page forms a left portion and said tenth page forms a right portion of said Money-Tracker TM and said extension forms said Earmarked Funds Worksheet;

(f) eleventh, twelfth, thirteenth, fourteenth, fifteenth, and sixteenth pages comprise said Money-Tracker TM without said extension on the pages, said eleventh and twelfth pages having said rows labeled 8, 9, 10, 11, 12, 13, 14, said thirteenth and fourteenth pages having said rows labeled 15, 16, 17, 18, 19, 20, and 21, and said fifteenth and sixteenth pages having said rows labeled 22, 23, 24, 25, 26, 27, 28, 29, 30, and 31;

(g) a seventeenth page comprises a page for recording comments, suggestions, objectives and goals;

(h) an eighteenth page comprises means for recording monthly actual spending per category for comparison to monthly projected spending per category, recording monthly net income, calculating monthly spending differentials per category, total monthly projected spending, total monthly actual spending, total monthly spending differential, and calculating a month's cash flow, referred to as a Monthly Grand Totals having columns labeled with said spending categories, combined totals, first week, second week, third week, fourth and fifth week, and rows labeled monthly projected spending, monthly actual spending, spending differential, monthly net income, monthly summary, combined spending, and net cash flow amount;

(i) nineteenth and twentieth pages comprise means for creating a semi-annual financial progress report presenting recommended spending percents per category, monthly projected spending per category, actual spending per month per category, net income per month, six month average net income, six month average actual spending per category, six month average spending percents per category, total actual spending per month, cash flow per month, six month average total actual spending per month, and six month average cash flow per month, referred to as a Semi-annual Financial Progress Report having columns labeled spending category, recommended spending percents, monthly projected spending amount, monthly net income, monthly actual spending, six month average income, six month average spending, and six month average spending percent and rows labeled with said spending categories and recommended spending percents, monthly actual spending, and net cash flow so that said fifteenth page forms a left portion and said sixteenth page forms a right portion of said Semi-Annual Financial Progress Report;

(j) twenty-first and twenty-second pages comprise means for recording debt payments to determine total monthly debt obligations, to calculate, a debt ratio, and to determine extra amounts of payments to reduce debt, referred to as a Debt Reduction Worksheet having columns labeled type loan, creditors, APR%, remaining balance, average monthly payments, amount toward interest, amount toward principal, months left to pay, and amount extra and rows labeled home, automobile, education, installments, credit cards, and other, said twenty-first page having an extension so that the extension forms a left portion, the twenty-first page a middle portion, and the twenty-second page a right portion of said Debt Reduction Worksheet;

(k) twenty-third and twenty-fourth pages comprise means for recording tax deductible spending, referred to as a Tax-Trac TM having columns labeled date, check number, charity donations, medical and dental, real estate taxes, personal property tax, job expenses, interest paid, investment interest, child care and a row labeled totals;

(l) said extension of said eighth page forming said Household Spending Record folds over the eleventh through seventeenth pages thereby lying adjacent to said eighteenth page so that said Household Spending Record and said Monthly Grand Totals may be viewed together; and

(m) said personal financial organizer has multiples of said Household Spending Record, Monthly Grand Totals, Money-Tracker TM, and Semi-annual Financial Progress Report so that said personal financial organizer may be used over a twelve month period,

whereby a user monitors, controls, and reduces spending by

(1) entering fixed bill amounts on said Systematic Bill Payment organizer;

(2) examining said Category Descriptions to determine applicable spending categories and entering categories that are unique for the user;

(3) completing said Trac-A-Spending-Plan TM Worksheet to determine monthly net income, monthly projected spending per category, total monthly projected spending, and the relationship of total monthly projected spending to monthly net income;

(4) completing said Weekly Projected Spending Worksheet to determine weekly projected spending per category;

(5) entering on said Monthly Grand Totals monthly spending amounts that are projected for each spending category and entering weekly income amount as it is paid;

(6) entering on said Household Spending Record weekly projected spending amounts per category and total combined weekly projected spending amounts;

(7) entering on said Earmarked Funds Worksheet the portions of a paycheck that will be set aside for future spending for a particular category during a particular week;

(8) entering on said Money-Tracker TM weekly projected spending amounts per category, total Weekly projected spending amount, actual spending amounts incurred during the week on a daily basis for each category, total actual spending amounts for the day, weekly actual spending amounts per category, and total actual weekly spending amounts;

(9) transferring weekly actual spending amounts per category from said Money-Tracker TM to said Household Spending Record, adding said weekly actual spending amounts per category to obtain monthly actual spending per category and total actual spending per week, and subtracting said total actual spending per week from total weekly projected spending to obtain said weekly spending differential;

(10) adding said spending differential to said spending differential total-to-date balance;

(11) using said spending differential to make adjustments in a next week's projected spending to maintain said spending differential balance positive and repeating this process for each week of a month until the end of said month;

(12) entering on said Household Spending Record total monthly actual spending amount;

(13) entering on said Monthly Grand Totals said monthly actual spending amount per category, total monthly actual spending amount, the monthly spending differential amount per category, total monthly spending differential amount, income amount per week, and total monthly income amount;

(14) calculating on said Monthly Grand Totals a net monthly cash flow by subtracting total monthly actual spending from total monthly income, then making adjustments on a next month's and week's projected spendings to make said cash flow positive for a next month, and repeating this process each month;

(15) entering on said Semi-annual Financial Progress Report, for each of six months, total monthly income amount, monthly actual spending amount per category, total monthly actual spending amount, and monthly cash flow amounts, calculating six month averages for income, actual spending per category, total monthly actual spending and cash flow, and calculating thereon six month spending percents by dividing six month average actual spending per category and total six month actual spending by average six month income;

(16) adjusting the next month's and week's projected spendings to increase cash flow;

(17) entering debt information on said Debt Reduction Worksheet to determine debt cost, debt ratio, how much payment can be made to increase the rate at which debt is reduced, and how debt spending can be reduced; and

(18) recording spending on said Tax-Trac TM to provide total annual tax deductible spending to reduce income tax liability.

5,358,279

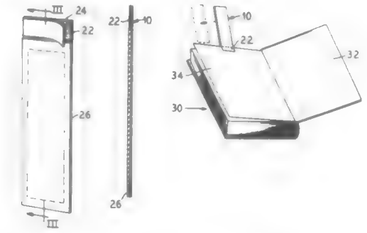
ELASTOMERIC BOOKMARK ASSEMBLY WITH STATIC ELECTRICITY AND ADHESIVE PORTIONS

Stephen Sweet, Keizer, Oreg., assignor to Xertrex International, Inc., Itasca, Ill.

Continuation of Ser. No. 959,608, Oct. 13, 1992, abandoned. This application Dec. 23, 1993, Ser. No. 178,851

Int. Cl.[5] **B42D** *9/00*

U.S. Cl. 281—42 **7 Claims**



1. A bookmark assembly having a body to be attached to a book and to be flexed and inserted between pages of a book so as to mark a designated place, which assembly includes:

an elongated strip-shaped body having a front, a back, a pair of side edges, a top end and a bottom end, said body fabricated of an elastomeric material which exhibits static electric properties and is flexible, so that said body can be flexed over book pages and be positioned between pages;

an adhesive applied on an area on the back side of the body adjacent one end thereof and extending between said side edges for securement to a book so that said flexible body can be attached to a book;

said back side of said body having a remaining area without adhesive, said remaining area locating from the other end to a side of said adhesive area;

a stiffener member removably secured by static electricity to the back side of the elastomeric body in said remaining area so as to be secured to the body and be removable to expose elastomeric material of said body underlying the stiffener;

wherein the exposed flexible body when adhesively secured to a page of said book by said adhesive area defining a point of attachment thereof, said body is flexed from said point of attachment over book page to another pages of said book to thereby designate the desired pages.

5,358,280

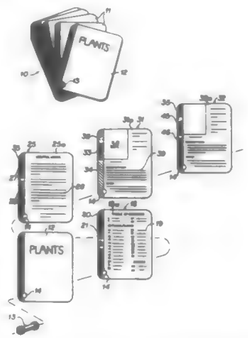
APPARATUS FOR ASSEMBLING AND DISPLAYING INFORMATION

Thomas C. Scales, 6391 Gleanidge Dr., No. 150, Atlanta, Ga. 30328

Continuation of Ser. No. 144,729, Oct. 28, 1993, abandoned, which is a continuation of Ser. No. 32,432, Mar. 15, 1993, abandoned, which is a continuation of Ser. No. 746,911, Aug. 19, 1991, abandoned. This application Mar. 8, 1994, Ser. No. 208,053

Int. Cl.[5] **B42D** *15/00*

U.S. Cl. 283—63.1 **7 Claims**



1. Apparatus for assembling and displaying information in predetermined format, comprising:

a plurality of cards each having a front surface and a back surface;

means mutually interconnecting the cards to maintain a predetermined sequential arrangement of the cards;

the first card in the sequence bearing indicia indicating a particular topic of information contained in others of the cards;

a plurality of the other cards being subject cards bearing indicia containing information on particular subjects relating to the topic;

the subject cards including indicia containing information on different groups of subjects relating to the topic; and

each subject card including subject indicia along a marginal portion of the card and denoting a specific one of the groups of subjects,

so that a person can locate the cards for a particular subject groups by selecting the subset of cards having the corresponding marginal subject indicia and moving the selected cards within respect to the interconnecting means.

5,358,281

SECURITY PRESSURE SENSITIVE LABEL

Walter G. Greig, Lewiston, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Feb. 10, 1993, Ser. No. 15,824

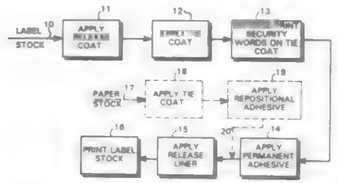
Int. Cl.[5] **B42D** *15/00*

U.S. Cl. 283—81 **21 Claims**

1. A method of making a label from label stock having top and bottom faces, comprising the steps of:

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(a) applying a release coat to the label stock bottom face;
(b) applying a non-opaque first tie coat to the release coat;
(c) printing security indicia on the first tie coat; and



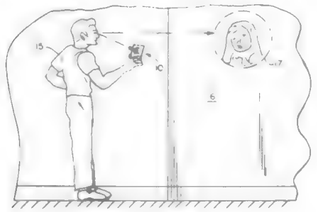
(d) coating the printed security indicia and first tie coat with pressure sensitive adhesive.

5,358,282

OPTICAL NIGHT SKY IMAGEER

Anthony J. Giambruno, 42 Storey La., Yonkers, N.Y. 10710, and Frank Marocco, 10 Stewart Pl., Apt. 7-D-W, White Plains, N.Y. 10603

Filed Feb. 22, 1993, Ser. No. 21,479
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—117 **7 Claims**



1. An optical imageer article of manufacture for producing a positive optical afterimage comprising an image carrier having a negative image of high contrast corresponding to a desired positive afterimage marked on a face of the carrier thereof so as to be within a visual field of a user and a focussing target marked on a generally central location of the negative image, wherein the negative image is a generally black face with white features and surrounded by a white veil, itself surrounded completely by a circular black area.

5,358,283

SPLIT CONNECTOR PIPE JOINING DEVICE AND METHOD

Lawrence S. Silva, 153 E. Falmouth Hwy., E. Falmouth, Mass. 02536

Filed Jun. 21, 1993, Ser. No. 78,921
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—24 **5 Claims**

1. A split connector for joining pipe elements insitu comprising:

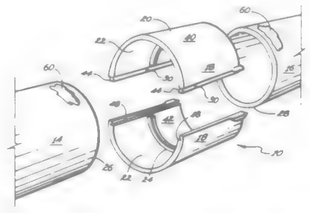
a) conduit means constructed of composite material comprising a first pipe element having a terminal end and a second pipe element having a terminal end wherein each of said first and second pipe elements are positioned insitu in a structure;

b) split connector means constructed of like composite material for connecting the first pipe element to the second pipe element insitu comprising;

i) a first half-section comprising a male half-cylinder having a first and second end and including a transverse mid-ridge positioned at the mid-point of said male half-cylinder dividing said half-cylinder into two arcuate sections;

ii) a second half-section comprising a female half cylinder having a first and second end including a transverse mid-ridge positioned at the mid-point of the female half cylinder dividing said half-cylinder into two arcuate sections adapted to cooperate with the two arcuate sections of the male half cylinders when joined together to provide a first chamber for receiving the distal end of the first pipe segment and a second chamber for accepting the distal end of the second pipe element;

iii) locking means of dovetailed construction for fastening the male half cylinder to the female half cylinder comprising a pair of continuous ridges on the male half cylinder positioned on spaced apart longitudinal edges having wedge members extending along the entire longitudinal edges of said male half cylinder adapted to associate with a pair of continuous grooves of angular configuration on the female half cylinder on each longitudinal edge for providing locking engagement of said male half cylinder with the female half cylinder for



forming a generally circular coupling connector having a cylindrical body and including an internal facing surface divided at the mid point, the first half adapted to engage a tubular end of the first pipe element and the second half adapted to engage the second pipe element;

c) an external shoulder on the half section positioned at the first end thereof capable of engaging an associated lug on the second half section positioned at the first end of thereof for alignment of the split connector means; and

d) seal means for providing a watertight seal comprising adhesive means applied to the terminal ends of the pipe ends and the facing surfaces of said split connector means including said internal facing surface of said first and second chambers of the split connector means for providing a watertight seal and structural strength of the piping components wherein the pair of matched semi circular body elements are placed over the end of the first pipe section and the end of the second pipe section with the mid ridge positioned between the enclosed end of the first pipe and the enclosed end of second pipe section and manually compressed together to engage the locking means fastened thereto with said adhesive means.

5,358,284

HIGH TEMPERATURE NON-METALLIC EXPANSION JOINT

Robert K. Broyles, Knoxville, Tenn., assignor to Pathway Bellows, Inc., Oak Ridge, Tenn.

Filed Jan. 7, 1993, Ser. No. 1,762
Int. Cl.[5] F16L *11/12*
U.S. Cl. 285—47 **20 Claims**

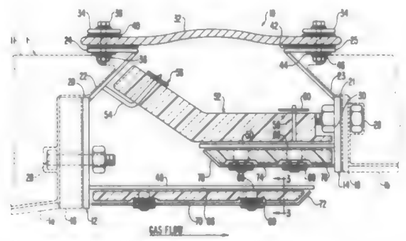
1. An expansion joint for use in connection with a high-temperature medium, comprising:

a first frame portion having a length;

a second frame portion having a length, said first and second frame portions being spaced from one another in a direction transverse to said lengths;

means for connecting said first and second frame portions to one another;

a first metal element connected to said first frame portion, said first element projecting from said first frame portion toward said second frame portion;



thermal insulation positioned between said first metal element and said connecting means; and

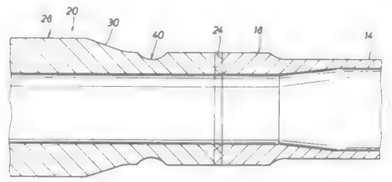
means for thermally insulating said first metal element from the high-temperature medium.

5,358,285

STRESS RELIEF GROOVE FOR DRILL PIPE

Gerald E. Wilson, Montgomery, Tex., assignor to Prideco, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 985,832, Dec. 3, 1992, Pat. No. 5,286,069. This application Jan. 13, 1994, Ser. No. 182,211
The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.
Int. Cl.[5] F16L *13/04*
U.S. Cl. 285—114 **13 Claims**



1. In a joint of drill pipe having a tube section with upset ends to increase the wall thickness of the tube at its ends and tool joints connected to each end of the tube, each tool joint having a cylindrical section connected to a weld neck of smaller diameter by a tapered section, said connection between the tapered section and the weld neck having a radius of curvature, said weld neck having a wall thickness equal to that of the upset end of the tube that is welded to the weld neck, the improvement comprising an external, stress relief groove in the weld neck to increase the fatigue life of the tube section of the drill pipe when the drill pipe is subjected to varying stresses produced by rotating the drill pipe while bent, one end of the relief groove being arcuate and an extension of the radius of curvature between the tapered section and the weld neck.

5,358,286

COMPLETELY FABRICATED PIPE SLEEVE ASSEMBLY

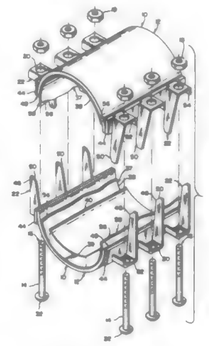
Delbert H. Eaton, Buckley, and Mark W. Kirchner, Seattle, both of Wash., assignors to Romac Industries, Inc., Seattle, Wash.

Filed Nov. 30, 1993, Ser. No. 159,860
Int. Cl.[5] F16L *41/00*
U.S. Cl. 285—197 **16 Claims**

1. A completely fabricated pipe sleeve assembly, adapted to receive gasket material, having bolt and nut fasteners, which are independently removable, and this assembly is ready for pipe repair, when a selected gasket material is added, and also this assembly is ready for additional fabrication and assembly to make another overall product, to be used, with respect to both metal and plastic pipes, without any substantial distortion of plastic pipes, comprising:

a. a split sleeve adapted to be fitted about a pipe and configured to be in one or more pieces;

b. at least two side bar and lug units welded to the split sleeve in opposing positions to receive at least two independently removable bolt and nut fasteners; wherein the side bar and and lug units, in turn comprise:



two identical units of a bar, each bar having at least two spaced identical lugs, and each lug having a hole to receive a portion of a bolt; and

one of the two identical units is assembled end for end opposite the other unit, and both units are welded to the split sleeve along opposite sides of the separation gap of the split sleeve, and

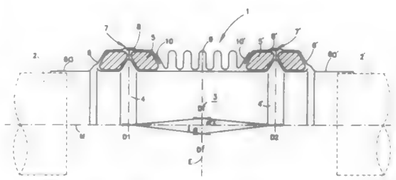
c. at least two independently removable bolt and nut fasteners.

5,358,287

JOINTED PIPE CONNECTION

Wilfried Winzen, Pforzheim, Fed. Rep. of Germany, assignor to Witzenmann GmbH Metallschlauch-Fabrik Pforzheim, Pforzheim, Fed. Rep. of Germany

Filed Jun. 30, 1993, Ser. No. 85,326
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1992, 4224745
Int. Cl.[5] F16L *27/00*
U.S. Cl. 285—227 **13 Claims**



1. A jointed pipe connection for interconnecting a first pipe segment (2) and a second pipe segment (2') in a gas-tight manner, while permitting limited axial, angular, and lateral oscillations of the two pipe segments (2,2') with respect to each other, comprising

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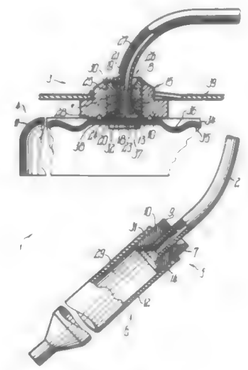
a pipe link (3, 21) located axially between said pipe segments and having first and second ends located respectively adjacent said first and second pipe segments (2,2');
at least a first annular pad (5, 25) of elastic, heat-resistant material, mounted circumferentially around said first end of said pipe link (3,21);
a first cuff (6) secured to said first pipe segment extending axially over said first annular pad (5,25); and
a sealing bellows (9, 29) radially outside and surrounding said pipe link (3, 21) and having a first end secured in a gas-tight manner (8) to said first cuff (6);
said pipe link first end, said first annular pad, and said sealing bellows first end collectively defining a first joint having a first pivot point (D1);
at least a second annular pad (5', 25') of elastic, heat-resistant material, mounted circumferentially around said second end of said pipe link (3, 21);
a second cuff (6') secured to said second pipe segment (2') and extending axially over said second annular pad (5', 25');
said sealing bellows (9, 29) having a second end secured in a gas-tight manner (8') to said second cuff (6');
said pipe link second end, said second annular said sealing bellows second end collectively defining a second joint having a second pivot point (D2).

5,358,288

CAPILLARY DUCT SYSTEM AND PROCESS AND APPARATUS FOR PRODUCING A CAPILLARY DUCT SYSTEM

Hajo Lindner, Oberderdingen, and Josef Zwickl, Bretten, both of Fed. Rep. of Germany, assignors to E.G.O. Elektro-Gerate Blanc u. Fischer, Fed. Rep. of Germany

Filed Aug. 24, 1992, Ser. No. 935,445
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1991, 4127747
Int. Cl.[5] F16L *13/02*
U.S. Cl. 285—286 25 Claims



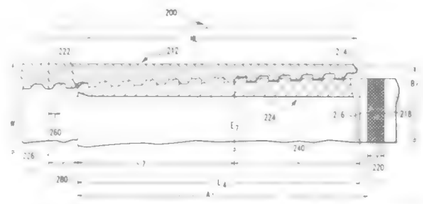
1. A capillary duct system comprising:
a tube having a capillary tube section having a tube end providing an end face, said end face being expanded in cross section relative to a substantially uniform cross section of said capillary tube section;
a connecting unit; and
a connecting member having an interior end interconnecting said capillary tube section with said connecting unit in substantially pressure proof manner by means of a sealed connection, said connecting member having a reception opening that receives said capillary tube section, said sealed connection being provided by connecting material solidified from a non-solid state to produce said sealed connection, wherein said sealed connection is provided on said expanded end face and interconnects said expanded end face and said interior of said connecting member.

5,358,289

BUTTRESS-THREADED TUBULAR CONNECTION

Edward O. Banker, Houston, Tex.; Teruo Suzuki, Yokohama, Japan; Erich F. Klementich, and Jeffrey K. Bouche, both of Houston, Tex., assignors to NKK Corporation, Tokyo, Japan and Marubeni Tubulars, Inc., Houston, Tex.

Filed Mar. 13, 1992, Ser. No. 850,744
Int. Cl.[5] F16L *25/00*
U.S. Cl. 285—334 22 Claims



1. A tubular and coupling connection comprising a tubular member having a cylindrical outer surface with a tapered buttress threaded section disposed adjacent to and through the end of said outer surface, wherein said threaded section leading edge is located at the end of said tubular member and wherein said threaded section includes fully formed perfect threads and vanishing imperfect threads which vanish at the trailing edge of said threaded section, and a coupling member corresponding with said threaded tubular member and having a complementary threaded section on the internal surface thereof, said complementary threaded section including fully formed perfect threads throughout the length thereof and at least as long as the total length of said perfect and imperfect threads on said tubular member, said threaded section and complementary threaded section having threads forming crests and roots, wherein the improvement comprises:
said threads of said tubular member and said coupling member each having a pitch diameter tolerance of ±0.0015 inch;
said threads forming clearance voids between mating crests and roots ranging from slightly greater than 0.000 inches to less than 0.0035 inches;
whereby a relatively constant thread bearing contact pressure is provided over the entire length of said connection.

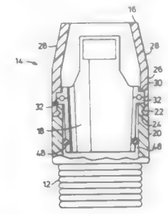
5,358,290

RELEASE MECHANISM FOR USE WITH A VACUUM CLEANING HOSE

Ken Fleet, Waterloo; Keith McQuarrie, Kitchener, and Anthony Tsui, St. Catherines, all of Canada, assignors to Iona Appliances Inc., Welland, Canada

Filed Mar. 2, 1993, Ser. No. 24,963
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—7 9 Claims

1. A device for coupling a pipe slidably mounted inside a hose, said device comprising:
(a) means for retaining the pipe inside the hose; and
(b) means for coupling said retaining means to one end of the hose;
(c) said means for retaining having actuating means for pivotally moving said retaining means between an open position and a closed position, in said closed position said retaining means preventing the pipe from being removed from the hose, and in said open position said retaining means allowing the pipe to be removed from the hose.

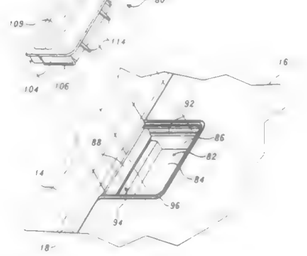


5,358,291

HATCH WITH IMPROVED LATCH AND HINGE ASSEMBLY

John A. Malmanger, SeaTac, and Kim Hunter, Gig Harbor, both of Wash., assignors to Tempress, Inc., Seattle, Wash.

Division of Ser. No. 906,824, Jun. 30, 1992, Pat. No. 5,231,948.
This application Jul. 22, 1993, Ser. No. 96,601
Int. Cl.[5] E05C *1/10*
U.S. Cl. 292—175 16 Claims



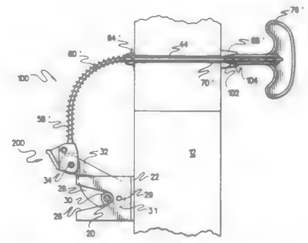
1. A latch assembly, comprising:
(a) a handle receptacle adapted for use with a cover, the handle receptacle including opposing sides, a back wall, and retaining means, for maintaining a handle in the handle receptacle, coupled to the opposing sides, the retaining means including a ledge extending outwardly from the opposing sides; and
(b) a handle slidably mounted within the handle receptacle so as to be movable from a latched position to an unlatched position, the handle including:
(1) a top adapted to be approximately flush with a top of the handle receptacle;
(2) opposing walls extending downwardly from the top, each wall including a shoulder adapted to slidably engage a bottom surface of the ledge to maintain the handle in the handle receptacle;
(3) a latch located near one end of the handle, adapted to engage a latch receptacle when the handle is in the latched position; and
(4) biasing means for biasing the handle toward the latched position.

5,358,292

GATE LATCH

Peter C. Van Wiefe, 211 Queensland Rd. S.E., Calgary, Alberta, Canada T2J 3S1 , and Dietmar H. Penno, 3004 Pallister Dr. S.W., Calgary, Alberta, Canada T2V 4G2

Continuation-in-part of Ser. No. 849,773, Mar. 12, 1992, abandoned. This application Jul. 30, 1993, Ser. No. 105,282
Int. Cl.[5] E05C *3/16*
U.S. Cl. 292—235 20 Claims



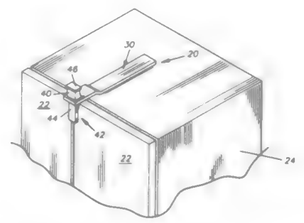
1. In combination with a gate latch including a hinged gate and a stationary gate post, a latch bar mounted on one of said gate and said post, a latch bracket secured on the other of said gate and said post disposed for receiving the latch bar when the gate is in a closed position, a latch lever pivotally mounted to the latch bracket and including a recess dimensioned for partially surrounding the latch bar in a latched position, an accessory gate latch actuating mechanism comprising:
an elongated cord member including first and second opposite ends;
a clip member securing said first end of said cord member to said latch lever, said clip member including two hinged body portions dimensioned to capture said latch lever therebetween and said clip member including retaining means for retaining said two hinged body portions together and in engagement with said latch lever;
a coil spring surrounding said cord member, said coil spring including a first end portion abutting said clip member and biasing said latch lever to a latched position; and
grasping means for grasping by an individual secured to said second end of said cord member for selectively moving said latch lever between latched and unlatched positions.

5,358,293

REMOVABLE REFRIGERATOR DOOR RESTRAINT DEVICE

James B. Bradley, Jr., 4805 Inverness Dr., Tyler, Tex. 75703, and Richard W. Beasley, Lindale, Tex., assignors to James B. Bradley, Jr., Tyler, Tex.

Filed Aug. 24, 1993, Ser. No. 110,980
Int. Cl.[5] E05C *19/18*
U.S. Cl. 292—288 5 Claims



1. A restraint device for preventing access to a compartment

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having a door by blocking the opening of the door, the device comprising:

a plate having first and second ends and top and bottom surfaces, said second end thereof including an aperture;

means for releasably mounting said plate to the compartment;

closure means slidably disposed within said plate aperture for selectively blocking opening of the compartment door, said closure means disposed generally perpendicularly to said plate and adapted to be positioned adjacent to the compartment door, and being operable between first and second positions, such that in said first position, said closure means rigidly engages said plate and is positioned adjacent to the compartment door to thereby block opening of the compartment door, and in said second position, said closure means is disengaged from said plate and retained within said plate aperture and slidable to a position to allow opening of the compartment door; and

said closure means including:

a bar extending above and below said plate within said plate aperture;

a resilient tab attached to said bar and movable between a retracted position adjacent said bar and disposed adjacent said top surface of said plate, in said closure means second position, and an extended position, spaced apart from said bar, in said closure means first position to engage said bottom surface of said plate thereby preventing slidable movement of said bar in said plate aperture; and

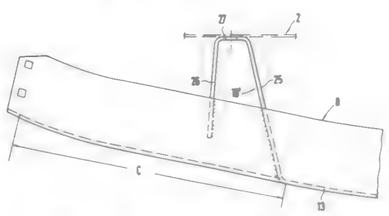
means attached to said bar for preventing removal of said bar from said plate aperture.

5,358,294

BUMPER FOR VEHICLES

Eberhard Palmer, Niefern, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Mar. 25, 1993, Ser. No. 36,720
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1992, 4210476; Dec. 4, 1992, 4240826
Int. Cl.[5] B60R *19/24*
U.S. Cl. 293—155 9 Claims



1. A bumper for a vehicle having a vehicle body, comprising:

a dimensionally stable support having a web with a longitudinal axis;

an elastic covering of the support;

wherein the stable support is a contoured extruded profile, has horizontal legs, and has holders that hold the support to the vehicle body;

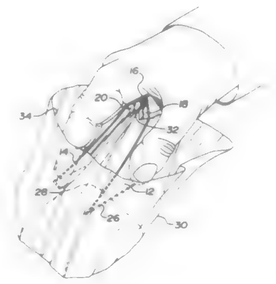
wherein each holder is a partly severed, locally bent-away section of the web of the support and has a longitudinal course, with the longitudinal course of the bent-away section being substantially transverse to the longitudinal axis of the web, and wherein each bent-away section is connected to the horizontal legs at least along a partial area of the longitudinal course of the bent-away section.

5,358,295

TONG/DISPOSABLE BAG COMBINATION

Donald G. Campbell, 236 Sunmills Place S.E., Calgary, Alberta, Canada T2X 2P2

Continuation of Ser. No. 72,085, Jun. 7, 1993, abandoned. This application Mar. 21, 1994, Ser. No. 210,745
Int. Cl.[5] A01K *29/00*; E01H *1/12*
U.S. Cl. 294—1.3 1 Claim



1. In combination:

a. tongs, comprising:

i) a resilient sheet of material folded to form two arms pivotally connected along a fold line, the arms having object engaging tips;

ii) a pair of contact members of a resilient compressible material on an interior surface of the arms adjacent to the pivotal connection, such that the contact members engage and compress as the arms are closed; and

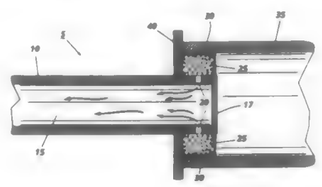
b. a disposable polymer plastic bag having a bottom and a peripheral edge defining an opening, the bottom of the bag being disposed between the contact members of the tongs and the peripheral edge being folded over the tips of the arms such that the bag serves as a sanitary shield between an object being picked up and the arms of the tongs.

5,358,296

SUBSTRATE HOLDING DEVICE

David J. Kilmer, Ontario; Geoffrey M. Foley, Fairport; Alexander A. Antonelli, Rochester; Eugene A. Swain, Webster; Mark C. Petropoulos, Ontario; Robert A. Duffy, Webster, and John K. Williams, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 14, 1993, Ser. No. 61,698
Int. Cl.[5] B66C *1/46*
U.S. Cl. 294—98.1 16 Claims



1. An apparatus for internally holding a substrate having an opening in at least a portion thereof, comprising:

(a) a member defining a fluid passageway comprised of a chamber and an opening on the surface of the member in communication with the chamber;

(b) a normally inflated porous material mounted on the member in communication with the fluid passageway of the member, wherein the porous material lies on top of the opening and extends beyond the edge of the opening along a portion of the surface of the member; and

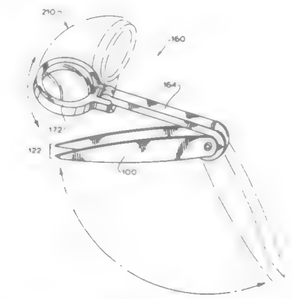
(c) means, in communication with the member, for deflating the porous material, the deflating means being de-energized in response to the porous material being disposed into the opening in the substrate for enabling the porous material to return to being normally inflated to hold the substrate.

5,358,297

TWEEZERS WITH HINGED MAGNIFYING GLASS

Kenneth J. Coleman, P.O. Box 71, Crystal Lake, Ill. 60014-0071

Continuation-in-part of Ser. No. 871,475, Apr. 21, 1992, Pat. No. 5,263,754, and Ser. No. 58,948, May 7, 1993, Pat. No. 5,307,595, which is a division of Ser. No. 871,475, Apr. 21, 1992. This application Nov. 8, 1993, Ser. No. 148,949
The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.
Int. Cl.[5] A45D *26/00*; A61B *17/28*
U.S. Cl. 294—99.2 6 Claims



1. In a combination of a tweezers and a magnifying glass for removing a foreign object from skin, wherein:

a) the tweezers includes a spacer means, and a first arm and a second arm;

b) the first arm has a first rounded end and a first barbed end oppositely disposed from the first rounded end;

c) the second arm has a second rounded end and a second barbed end oppositely disposed from the second rounded end;

d) the first rounded end and the second rounded end are secured to the spacer means;

e) the first arm and the second arm are flexible;

f) the first barbed end and the second barbed end are normally spaced apart by the spacer means;

g) the first barbed end and the second barbed end combine to form a cone shape for a barbed tip;

h) the barbed tip serves to penetrate the skin, grip, and remove a foreign particle from the skin;

i) the spacer means is a substantially cylindrical shape;

j) the substantially cylindrical shape includes a tip side and a bottom side;

k) the first rounded end is adjacent to the top side;

l) the second rounded end is adjacent to the bottom side;

m) the first arm ad the second arm are substantially flat; and

n) a magnifying means is secured in a pivotal fashion to the spacer means;

the improvement comprising:

the magnifying means includes an arm having a first end and a second end:

the first end includes a means for pivotally securing the magnifying means to the spacer means; ad

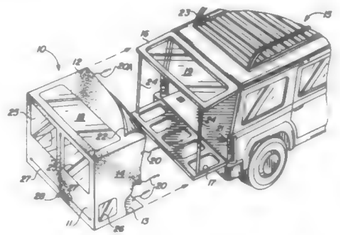
the second end includes a means for pivotally securing a magnifying glass to the arm.

5,358,298

CAMPING ENCLOSURE

David G. Fate, 2700 E. Dublin Grandville, Ste. 290, Columbus, Ohio 43231

Filed Apr. 15, 1993, Ser. No. 47,961
Int. Cl.[5] B60P *3/345*
U.S. Cl. 276—26 16 Claims



1. A portable enclosure comprising in combination a face panel peripherally bordered by a top panel, a bottom panel, and a pair of side panels, the combination forming a foldable, open, box-like structure;

an automotive vehicle having a rear, a roof, a lift window gate and a drop tailgate;

a plurality of protuberances within the interior of said vehicle to which load securing straps may be removably affixed;

a plurality of load securing straps coupling said pair of side panels and said bottom panel to said plurality of protuberances so as to draw said side panels inwardly toward the forward interior of said vehicle and said bottom panel forwardly and upwardly against said drop tailgate; and

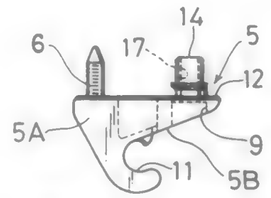
means for securing said top panel to said roof so as to draw said top panel forwardly and downwardly atop said lift window gate, the drawn panels of the structure cooperating to allow the high speed movement of the vehicle when the structure is coupled thereto, the drawn panels further inhibiting entry of persons and inclement weather into said box-like structure.

5,358,299

SUN VISOR HOLDER

Takumi Seto, Toyota, Japan, assignor to Neo-Ex Lab. Inc., Toyota, Japan

Filed Nov. 3, 1993, Ser. No. 145,088
Claims priority, application Japan, Nov. 6, 1992, 4-083131
Int. Cl.[5] B60J *3/00*
U.S. Cl. 296—97.9 5 Claims



1. A sun visor holder for supporting a supporting bar of a sun visor to be mounted in a mounting opening formed on an automobile body comprising:

a main body having an upper surface, a positioning pin on said surface, a slanted holding portion for receiving the supporting bar of a sun visor, and a plug member formed on the upper surface of said main body for insertion into

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the mounting opening, said plug member having a vertical slit, a through bore into which a fastening member is receivable, said through bore including a tapered surface extending along said slit,

said plug member including protuberances formed thereon so as to be sufficiently retained after insertion in the mounting opening,

said plug member having a rectangular configuration in cross section, a pair of opposed surfaces each of which includes said protuberances, said through bore having a rectangular configuration in cross section, and having a pair of opposed bore surfaces each of which includes said tapered surface; and

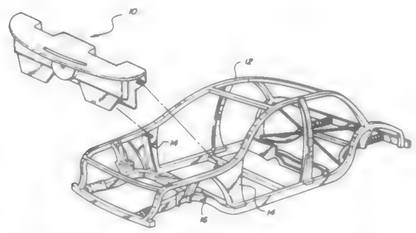
said fastening member includes a slanted end plate, a rectangular stick-like main portion and a pair of flanged portions formed on laterally opposed sides, said flanged portions being engageable with said plug member for preventing the coming off of said fastening member from said through bore, said plug member being capable to flare by virtue of said slit so as to be hold in said mounting opening when said fastening member is inserted into the through bore of said plug member, whereby said main body is fixed to the automobile body and said slanted end plate closing said through bore.

5,358,300

MODULAR ASSEMBLY FOR VEHICLE BODY

John D. Gray, Union, N.H., assignor to Davidson Textron Inc., Dover, N.H.

Filed Oct. 25, 1993, Ser. No. 140,881
Int. Cl.[5] B62D *25/14*
U.S. Cl. 296—192 **18 Claims**



18. A modular assembly for separating a passenger compartment from an engine compartment in an automotive vehicle body comprising:

an instrument panel subassembly that includes a shell, an underlying foam cushion and an instrument panel carrier,

the modular assembly further comprising a front of dash panel and a close out panel,

the instrument panel carrier, the front of dash panel and the close out panel being attached to each other to form two sets of horizontal ducts on opposite sides of the close out panel, and

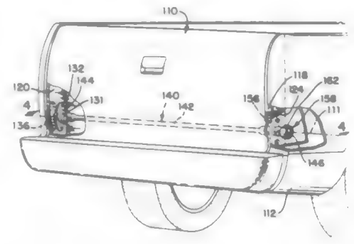
the instrument panel carrier, the front of dash panel and the close out panel being combined to provide an upper cross car beam with sufficient cross car stiffness when attached to the side pillars of a vehicle body so as to eliminate any need for another upper cross car beam at the cowl of the vehicle body.

5,358,301

COUNTERBALANCE MECHANISM FOR A REMOVABLE TAILGATE

Jeffrey L. Konchan, Shelby Township, Macomb County, and William W. Froehner, Troy, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 22, 1993, Ser. No. 156,111
Int. Cl.[5] B62D *33/033*
U.S. Cl. 296—146.1 **10 Claims**



1. In a vehicle body having a closure panel removably connected to the vehicle body for pivotal movement about a hinge axis and in which the panel is pivoted to a panel removal position, the improvement comprising:

a torque rod counterbalance spring carried by the panel and having an elongated portion extending between a crank end anchored to the panel for pivotal movement therewith and a stationary end;

a receptacle anchored to the vehicle body and capturing the stationary end of the torque rod therein to restrain pivotal movement thereof so that the torque rod is torsionally wound when the panel is pivoted away from the panel removal position to provide a counterbalance force for continuously urging the panel towards the panel removal position, and the torque rod is completely unwound when the panel is pivoted to the panel removal position;

and said receptacle including a slotted opening capturing the stationary end by a releasable slip-fitted connection therewith so that the stationary end is released from the slotted opening of the receptacle when the panel is removably lifted from the vehicle body;

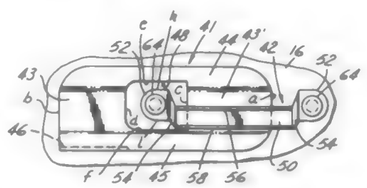
whereby the torque rod and receptacle cooperatively provide a counterbalance effort to assist with pivotal movement of the panel, and yet permit facile removal of the panel and the torque rod from the vehicle body.

5,358,302

RETAINING ARRANGEMENT FOR FENDER

Robert M. Schoen, West Bloomfield; Peter D. Greb, Farmington Hills, and Rickie A. North, Fenton, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 26, 1993, Ser. No. 112,020
Int. Cl.[5] B62D *25/16*
U.S. Cl. 296—187 **6 Claims**



1. A clip and bracket retainer arrangement for securing a support wall of plastic exterior panel to an automotive vehicle

subjacent frame, the support wall defining inboard and outboard surfaces, the panel and frame being constructed of materials having substantially dissimilar rates of thermal expansion, the fastener arrangement allowing the panel member to longitudinally expand and contract relative to the frame for accommodating thermal movement thereof, the fastening arrangement comprising:

a clip formed in a U-shape when viewed in horizontal section having a longitudinally elongated web, the web having one inboard surface positioned in a vertically extending plane offset a predetermined dimension from the support wall outboard surface, said web having a foot portion formed at each opposite end, and fastener means fixedly securing each said foot portion to the support wall outboard surface, whereby said web inboard surface and the support wall outboard surface defining a slotted clearance therebetween having a predetermined longitudinal extent;

an L-section sheet metal bracket comprising a vertically disposed longitudinally elongated head plate having forward and aft vertically extending terminal edges, said head plate formed with a lower inboard extending base plate adjacent said aft terminal edge, said head plate having a generally rectangular-shaped aperture located intermediate said forward and aft terminal edges of a predetermined size defining vertically spaced upper and lower horizontal internal edges and horizontally spaced forward and aft vertical internal edges;

said bracket head plate providing a forward portion defined by said head plate forward terminal edge and said aperture forward vertical internal edge configured and sized for capture in said slotted clearance with said clip aft foot substantially centered within the confines of said bracket head plate aperture, whereby said panel and clip are free for limited fore and aft longitudinal travel together with limited upper and lower vertical travel relative to said bracket and vehicle frame; and

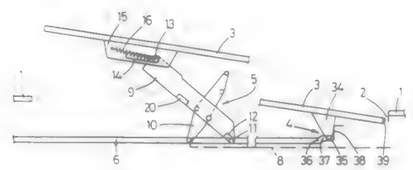
adjustable securing means attaching said bracket base plate on the vehicle frame permitting limited inboard and outboard conjoint movement of the base plate and panel relative to the vehicle frame prior to positive positioning of said bracket.

5,358,303

ROOF PANEL FOR A MOTOR VEHICLE

Johannes N. Huyer, Velserbroek, Netherlands, assignor to Vermeulen-Hollandia Octrooien II B.V., Haarlem, Netherlands

Continuation of Ser. No. 735,413, Jul. 24, 1991, abandoned. This application Jul. 30, 1993, Ser. No. 99,805
Claims priority, application Netherlands, Jul. 25, 1990, 9001686
Int. Cl.[5] B60J *7/05*
U.S. Cl. 296—221 **21 Claims**



1. A tiltable and slidable roof panel assembly for a motor vehicle having a fixed roof (**1**), comprising: a roof panel (**3**) supported by a front support (**4**), a rearward lifter means (**5**) on a respective guide rail (**6**) extending along a side of an aperture (**2**) in the fixed roof (**1**) and rearwardly beyond the aperture of the fixed roof, said lifter means (**5**) being adapted to be driven by a driving means (**8**) in a sliding movement along the guide rail (**6**) and in an up and down movement to enable the roof panel (**3**) to pivotally move between a closed position and an upwardly displaced venting position and between the closed position and a downwardly displaced position prior to the sliding movement of the roof panel (**3**), said lifter means (**5**) including a set-out lever (**9**) being at least in pivotal engagement with the roof panel (**3**) through a first pivot (**13**) and being pivotally and slidably connected with the guide rail (**6**) by a second pivot (**11**), and further including an auxiliary lever (**10**) joined to the set-out lever (**9**) with a third pivot, the third pivot allowing the auxiliary lever (**10**) to slide with the set-out lever (**9**) relative to the guide rail (**6**), the third pivot allowing the auxiliary lever (**10**) to pivot relative to the set-out lever (**9**) during pivotal movement of the roof panel (**3**), and the third pivot sliding within a forcing guide for relative sliding movement longitudinally along one of the levers during pivotal movement of the roof panel (**3**), whereby during the relative sliding movement between the set-out lever (**9**) and the auxiliary lever (**10**) one of the levers is prevented from substantial sliding relative to the guide rail (**6**) by means of a fixed locking stop (**30**) connected to the guide rail (**6**) contacting the lifter means (**5**).

11. A slidable roof panel assembly for a motor vehicle comprising:

a roof panel (**3**);

a guide rail (**6**) extending along a side of an aperture (**2**) in a roof of the motor vehicle below the roof panel (**3**), the guide rail (**6**) having a first guide portion (**27**), a forwardly inclined guide portion (**36**) connected to the first guide portion (**27**) and a second substantially horizontal guide portion (**37**) connected to the inclined portion (**36**) on an end opposite the first guide portion (**27**);

an adjustable lifter means (**5**) connected to the roof panel (**3**) and a slidably connected to the guide rail (**6**), the adjustable lifter means (**5**) moving the roof panel (**3**) between a closed position wherein the roof panel (**3**) closes the aperture (**2**) and an upwardly inclined venting position, and between the closed position and a downwardly displaced position wherein the roof panel (**3**) can be slid under the roof of the motor vehicle;

a front support (**4**) joined to the roof panel (**3**) and slidably connected to the guide rail (**6**), the front support (**4**) permitting pivotal movement of the roof panel (**3**) about a pivot axis perpendicular to the guide rail (**6**) and sliding movement of the roof panel (**3**) along the guide rail (**6**) wherein the front support (**4**) is located in the second substantially horizontal guide portion (**37**) when the roof panel (**3**) is in the closed position, and wherein the front support (**4**) is slidably guided in the second substantially horizontal portion (**37**), the inclined portion (**36**) and the first guide portion (**27**), for movement of the roof panel (**3**) under the roof from the closed position; and

means for displacing the front support a selected distance rearwardly from a front edge of the aperture (**2**) during movement of the roof panel (**3**) from the closed position to the inclined venting position, said means being positioned closer to the front support (**4**) than to the adjustable lifting means (**5**).

5,358,304

FRONT BODY STRUCTURE OF A VEHICLE AND ASSEMBLING METHOD

Norihiko Kanemitsu; Kazuhiro Hara; Takashi Umeda; Masamichi Kogai, and Kiyoshige Yamada, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 908,868, Jul. 1, 1992, abandoned, which is a continuation of Ser. No. 629,854, Dec. 18, 1990, abandoned. This application Jul. 27, 1993, Ser. No. 97,732
Claims priority, application Japan, Dec. 21, 1989, 1-333140
Int. Cl.[5] B62D *25/08*
U.S. Cl. 296—194 **38 Claims**

1. A front body structure of a vehicle including a front fender mounted to a front part of a vehicle body, wheel apron means mounted to the front part of said vehicle body, and a nose unit having at least both a shroud panel and a shroud

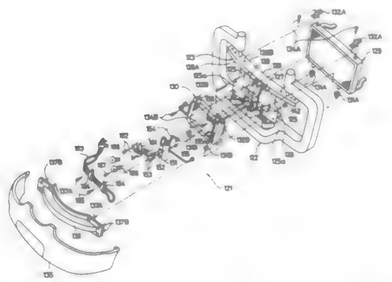
VOL 1167 ISS 4 OC 25 1994 UMI

upper mounted to the front part of said vehicle body, said nose unit comprising:

a first mounting portion for mounting said front fender to said wheel apron means; and

a second mounting portion for mounting said nose unit to said wheel apron means being disposed further inboard with respect to said vehicle body than said first mounting portion, said second mounting portion comprising a bracket having a base part connected to a front end portion of said wheel apron means and a mounting part extending inboard from said base part,

said nose unit being a unitary assembly of components,



including components not utilized for mounting said nose unit to said front part, said nose unit being separately attachable to and detachable from said vehicle body, whereby said nose unit is capable of separate assembly prior to mounting on said body,

said nose unit further including an engaging part formed on each end of said shroud upper, said engaging part containing a fitting hole for detachably connecting a jig engaging pin and a plurality of fixing holes for fixing said shroud upper, by bolts, to said second mounting portion of said vehicle body, wherein said shroud upper is disposed in the width direction of the vehicle and said shroud panel extends downwardly from said shroud upper.

5,358,305

SUSPENSION SYSTEM FOR AUTOMOTIVE VEHICLE OR THE LIKE

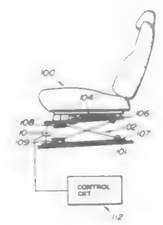
Takanobu Kaneko; Toshimichi Hanai, both of Yokosuka; Sadahiro Takahashi, Ageo, and Takeshi Fujishiro, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Japan

Continuation of Ser. No. 449,128, Dec. 8, 1989, abandoned, which is a continuation of Ser. No. 231,266, Aug. 12, 1988, abandoned. This application Jun. 25, 1991, Ser. No. 718,929

Claims priority, application Japan, Aug. 13, 1987, 62-201000; Aug. 13, 1987, 62-201001

Int. Cl.[5] B60N *2/52*

U.S. Cl. 296—65.1 **11 Claims**



1. In a vehicle provided with a chassis and a seat, a seat suspension system for controllably suspending said seat on said chassis, said seat suspension system comprising:

a spring;

a vibration damper, said vibration damper being self-contained and without an external source of fluid under pressure, said damper including a device for varying damping characteristics of the same;

structural members which operatively interconnect said seat and said chassis, said vibration damper being connected at a first end to said seat and at a second end to said chassis;

a sensor, said sensor being arranged to sense a position of said seat relative to said chassis; and

a control circuit,

said control circuit being arranged to be exclusively responsive to an instantaneous output of said sensor and to control said damper;

wherein said control circuit includes means for determining a position which is indicative of the damper being in a neutral position wherein it is neither compressed or elongated,

means for comparing the instantaneous output of the sensor with respect to the neutral position to determine the relative position of the seat with respect to said chassis,

means for assigning a first polarity to the sensor output if the vibration damper is elongated beyond said neutral position and assigning a second polarity to the output if the vibration damper is compressed beyond said neutral position,

means for determining a relative velocity of the seat from said sensor output,

means for assigning a first polarity to the relative velocity when the seat is moving in a first direction away from said neutral position and a second polarity to the relative velocity when the seat is moving in a second direction away from said neutral position,

means for comparing the polarities of the relative position and the relative velocity of said seat, and

means for conditioning said damper to produce first suspension characteristics when the polarities of the relative position and relative velocity are the same and conditioning said damper to produce second suspension characteristics when the polarities are different.

5,358,306

CONVERTIBLE CHAIR INSTALLATION FOR OR IN VEHICLES

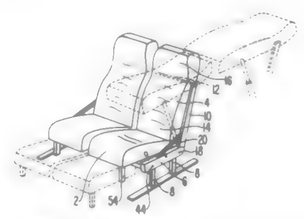
Ole V. Christensen, Skødstrup, Denmark, assignor to V. Brondum A/S, Silkeborg, Denmark

Filed May 29, 1992, Ser. No. 890,250

Claims priority, application Denmark, May 29, 1991, 1024/91

Int. Cl.[5] A47C *13/00*

U.S. Cl. 297—62 **11 Claims**



1. A convertible seat installation of the type where a row of chairs in a combined sitting and sleeping vehicle are convertible from seats in a sitting position to beds in upper and lower rows by upward pivoting of a backrest of each of the chairs to form the upper row of beds and by placing fill-in-elements between chair seats to form the lower row of beds with a front side of the backrest of each of the chairs in a row in a sitting position facing in an identical orientation wherein:

said backrest is pivotable about an upper, transverse carrier rod to an upward position when said backrest is converted from the sitting position to the upper row of beds with the carrier rod projecting from an upper end of an angularly adjustable carrier post which is adjusted to vary an angular inclination of the backrest and which is spaced outside of the backrest with a lower end of the carrier post being joined to a lower part of the seat installation;

the backrest when pivoted about the upper, transverse rod to the upward position about said carrier rod is stabilized by the carrier post and the front side has headrest and loin support portions; and

the transverse carrier rod in the sitting position is underneath a top end of the backrest.

5,358,307

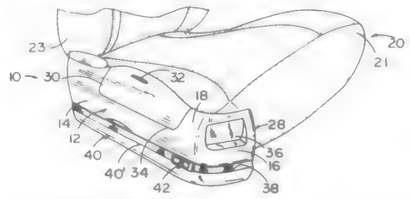
CONSOLE

Russell P. Shafer; Scott S. Bainbridge; Dale J. Frye; David J. Spykerman, and Nathan W. Young, all of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Filed Mar. 20, 1992, Ser. No. 855,199

Int. Cl.[5] A47C *7/62*

U.S. Cl. 297—188 **4 Claims**



1. A console for use with a vehicle seat comprising:

a housing made of an integrally molded polymeric material and having an outer wall, an upper wall and an inner wall wherein said inner wall is shaped to extend along and attach to the side of a seat of a vehicle, and a storage bin formed in said housing, wherein said housing includes a cover to provide access to said storage bind for storing articles, and an adjustable strap mounted to said housing to extend along said outer wall for holding objects between said outer wall and said housing, said housing including an elongated recess for nestably receiving said strap when not in use.

5,358,308

VEHICLE SEATS HAVING MULTIPLE ADJUSTMENTS

Jean-Marc Judic, Orsay, and Joël Canteleux, Armenonville, both of France, assignors to Bertrand Faure Automobile "BFA", Massy, France

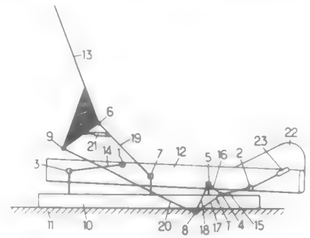
Filed Jun. 18, 1993, Ser. No. 78,077

Claims priority, application France, Jun. 18, 1992, 92 07428

Int. Cl.[5] A47C *1/02*

U.S. Cl. 297—316 **6 Claims**

1. A vehicle front seat comprising a base (**10**), a seat proper (**12**), and a back (**13**), and for which the seat proper is mounted on the base by means of two rods, a rear rod (**14**) and a front rod (**15**), the top ends of the rods being pivotally mounted about two axes (**1**, **2**) secured to the seat proper, the bottom end of the rear rod being pivotally mounted about a third axis (**3**) secured to the base, and the bottom end of the front rod the base, the front seat being characterized in that the triangle (T) itself pivotally mounted about a fifth axis (**5**) secured to the base and disposed behind the fourth axis (**4**) and above it; in that the back is pivotally mounted firstly about a sixth axis (**6**) for adjusting inclination and secondly about a tilting seventh axis (**7**) secured to the base; and in that a relatively long third rigid rod (**20**) connects an eighth axis (**8**) secured to the triangle and disposed lower down than the fourth and fifth axes (**4**, **5**) and behind the fourth axis to a ninth axis (**9**) secured to the



back and disposed behind the sixth axis (**6**) and lower down than the sixth axis in normal positions.

5,358,309

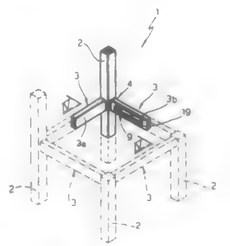
LOCK DEVICE FOR DECOMPOSABLE FURNITURE ELMENTS, IN PARTICULAR FOR WOODEN-FRAME CHAIRS, AND FURNISHING ITEM INCORPORATING SUCH A DEVICE

Franco Fedele, Manzano, Italy, assignor to Effedue S.r.l., Manzano, Italy

Filed Nov. 27, 1992, Ser. No. 982,720

Int. Cl.[5] A47C *7/00*

U.S. Cl. 297—440.1 **16 Claims**



1. A decomposable furniture item comprising first, second and third elements extending substantially perpendicularly to one another, and a joint connecting said elements together with the third element gripped between the first and second elements, said joint comprising a lock device releasably connecting said three elements together, said second element having a first axial stop, said first element having a transverse hole substantially aligned with the second element, and a second axial stop formed on a side of said first element remote from said second element, said lock device including a threaded nut engaged in said hole in said first element, a screw engaged in said second element and cooperating with said first axial stop to threadably engage said nut, and plate means integral with said nut at an end thereof remote from said screw and in engagement with said second axial stop for axially securing said nut in relation to said first element, and angular retaining means for angularly retaining said nut in relation to said first element, said third element housing, at least partially, said nut and said plate means.

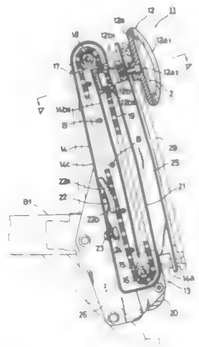
VOL 1167 ISS 4 OC 25 1994 UMI

5,358,310

SEAT BELT DEVICE IN AN AUTOMOTIVE SEAT

Akira Nemoto, Akishima, Japan, assignor to Tachi-S. Co., Ltd., Akishima, Japan

Filed Sep. 17, 1992, Ser. No. 946,398
Int. Cl.[5] B60R 22/18
U.S. Cl. 297—483 6 Claims



1. A seat belt device in an automotive seat for an automobile, in which the seat includes a seat cushion and a seat back having an upper corner portion and means to provide the seat back to be inclinable relative to said seat cushion, said seat belt device comprising:

a seat belt having two ends, one end thereof for anchoring to the automobile, said seat belt extending over said seat for restraining a passenger thereon; and

a seat belt guide means provided at said upper corner portion of said seat back, said seat belt guide means including:

a drive mechanism which is disposed in said seat back at a location corresponding to said upper corner portion of said seat back, said drive mechanism including:

(a) a mounting means;

(b) a drive means for causing said mounting means to be moved in a vertical direction along a longitudinal direct on of said seat back; and

(c) a motor for causing operation of said drive means, and

a guide anchor which extends from said seat back and connected to said mounting means of said drive mechanism, such that said anchor is located at the same location with that of said drive mechanism at said upper corner portion of said seat back, wherein said seat belt slidably passes through said guide anchor;

wherein operation of said mechanism causes said guide anchor to be displaced in said vertical direction, so that said seat belt may be anchored at a desired initial point in said upper corner of said seat back and thus the initial point of said seat belt with respect to the seat back front said anchor to the automobile may be varied to accommodate the fit of the seat belt to passengers of different sizes when the seat is reclined.

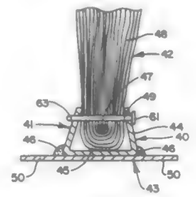
5,358,311

STRIP BRUSH FOR MOUNTING ON A ROTARY DRUM

Arthur E. Drumm, 14808 Hillview Rd., Marysville, Ohio 43040

Division of Ser. No. 958,799, Oct. 9, 1992, Pat. No. 5,251,355, which is a continuation-in-part of Ser. No. 777,905, Oct. 17, 1991, Pat. No. 5,160,187. This application Oct. 5, 1993, Ser. No. 132,099
Int. Cl.[5] A46D 3/00
U.S. Cl. 300—21 7 Claims

1. A method of producing a bristle strip which comprises providing an elongated support channel of U-form with upstanding side flanges and a bottom, providing a guide strip which has an upper surface upon which the bottom of the channel is rested, welding the channel longitudinally along its length to said surface, and providing a mat of U-shaped bristles



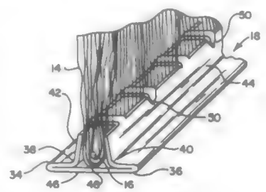
having a closed lower end and an open upper end and positioning said mat between said upstanding flanges with the bottom end of said mat above the bottom of said channel, and clamping the mat in said channel by crimping said flanges together to engage said mat.

5,358,312

METHOD OF MAKING A STRIP BRUSH FOR MOUNTING OF A ROTARY DRUM

Arthur E. Drumm, 14808 Hillview Rd., Marysville, Ohio 43040

Continuation-in-part of Ser. No. 132,099, Oct. 5, 1993, Pat. No. 5,358,311, which is a division of Ser. No. 958,799, Oct. 9, 1992, Pat. No. 5,251,355, which is a continuation-in-part of Ser. No. 777,905, Oct. 17, 1991, Pat. No. 5,160,187. This application Dec. 16, 1993, Ser. No. 167,083
Int. Cl.[5] A46D 3/00
U.S. Cl. 300—21 8 Claims



1. A process for making a bristle strip comprising,

providing a flat elongated metal strip having a length greater than its width, said strip including a centerline along its length equidistant between its side edges,

folding each side of said strip upward and toward said centerline to form two double layers of said strip to serve as guiding and mounting ears,

deflecting the edge areas of each of said folded sides away from said centerline to form a trough with sides diverging from said centerline in an upward direction,

placing an elongated U-shaped bristle mat in said trough with a retaining wire confined in the closed end of said U-shape, said wire being aligned parallel with said centerline,

crimping said trough sides together to clamp said bristle mat in said trough with said trough sides converging toward said centerline in an upward direction, and

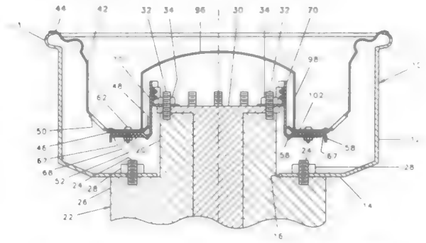
mechanically joining said trough sides together to prevent spreading of said trough sides.

5,358,313

ADJUSTABLE WHEEL LINER FOR TRUCKS

John G. Polka, 1355 Margate, Libertyville, Ill. 60048

Filed Jun. 11, 1993, Ser. No. 75,649
Int. Cl.[5] B60B 7/06
U.S. Cl. 301—37.37 5 Claims



1. A wheel liner for covering portions of a truck wheel of the type having a generally planar hub section and a generally tubular section extending outwardly of said hub section defining an outer rim, and over which a tire is adapted to be mounted, said hub section of said truck wheel being adapted to be mounted over a first plurality of wheel mounting lugs on the axle of a truck, said axle having a centrally located oil hub extending axially outwardly of said wheel mounting lugs and having a second plurality of threaded studs positioned radially inward of said first plurality of mounting lugs, said wheel liner comprising in combination:

a liner member having an outer lip for fitting against said outer rim of a wheel, and a central opening for fitting over an oil hub,

a first bracket member,

first attachment means for attaching said first bracket member to said liner member,

a second bracket member,

second attachment means for attaching said second bracket member to at least one of said second plurality of threaded studs of an axle of a truck,

third attachment means for attaching said first bracket member to said second bracket member,

said third attachment means being longitudinally adjustable for axial adjustment of said liner member relative to said second attachment means.

5,358,314

WHEEL AND ROTATION SHAFT ASSEMBLY FOR A HOSE-WINDING CART

Oliviano Spadotto, Pordenone, Italy, assignor to Claber S.p.A., Italy

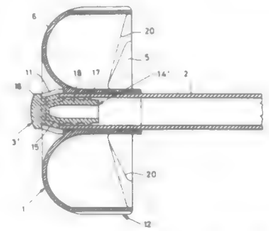
Filed Jun. 11, 1993, Ser. No. 74,549
Claims priority, application Italy, Jun. 15, 1992, MI92U005505
Int. Cl.[5] B60B 37/00
U.S. Cl. 301—111 7 Claims

1. A wheel and rotation shaft assembly comprising:

a rotation shaft;

a wheel having an axial hole passing therethrough to receive the rotation shaft, a circumferential series of elastic laminas being provided on the wheel to form an end portion of the axial hole;

a blocking device having a portion thereof axially fitted with the rotation shaft prior to reception of the rotational shaft by the wheel, the blocking device further having a terminal head portion which is engaged by the elastic laminas of



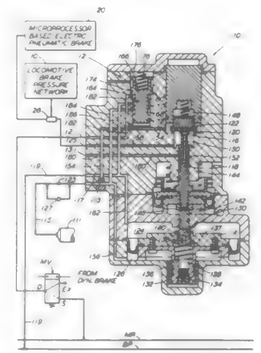
the wheel after reception of the rotation shaft and blocking device by the wheel.

5,358,315

MICROPROCESSOR-BASED ELECTROPNEUMATIC LOCOMOTIVE BRAKE CONTROL SYSTEM HAVING PNEUMATIC BACKUP BRAKE CONTROL

Richard F. Balukin, Pittsburgh, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Apr. 1, 1993, Ser. No. 41,094
Int. Cl.[5] B60T 15/14
U.S. Cl. 303—15 4 Claims



1. A locomotive brake control system having an air brake and a dynamic brake, said air brake including a brake pipe charged to a certain chosen pressure to provide a source of compressed air, a supply reservoir charged to the pressure carried in said brake pipe, brake means, and a control valve device via which pressurization of said brake means is controlled comprising:

(a) said control valve device having:

(i) a control chamber to which said brake pipe is connected;

(ii) a reference chamber to which said supply reservoir is connected via a first flow path;

(iii) a control piston interposed between said control and reference chambers so as to be subject on the respective opposite sides thereof to said brake pipe fluid pressure and said supply reservoir fluid pressure;

(iv) said control piston being movable from a release position to an application position in response to a reduction of said brake pipe fluid pressure creating a predetermined fluid pressure differential between said control chamber and said reference chamber;

(v) valve means operable in response to movement of said control piston to said application position for establish-

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ing fluid pressure communication between said supply reservoir and said brake means via a second flow path having fluid pressure communication with said first flow path, whereby a reduction of fluid pressure occurs in said reference chamber until such time as the fluid pressure differential across said control piston is less than said predetermined differential;

(b) quick release means operative in response to operation of said dynamic brake for interconnecting said control chamber and said reference chamber; and

(c) means for restricting the flow of fluid under pressure from said supply reservoir to said reference chamber via said first flow path comprising;

(i) a common flow path via which said first and second flow paths are interconnected with said supply reservoir; and

(ii) a first choke in said common flow path.

5,358,316

PRESSURE-REGULATING DEVICE FOR A HYDRAULIC CIRCUIT

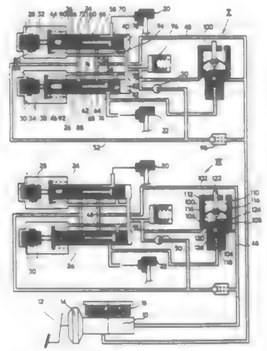
Gilbert Kervagoret, Montreuil, and Jean M. Cheron, Longperrier, both of France, assignors to Bendix Europe Services Techniques, Drancy, France

Continuation of Ser. No. 909,267, Jul. 6, 1992, abandoned. This application Mar. 28, 1994, Ser. No. 219,010

Claims priority, application France, Jul. 30, 1991, 91 09667

Int. Cl.[5] B60T *13/18*

U.S. Cl. 303—116.1 **7 Claims**



1. A pressure regulating device in an anti-lock and anti-slip hydraulic braking circuit of a motor vehicle, comprising at least one first source of fluid under pressure connected to a reservoir of fluid under low pressure and, in at least one subcircuit, a second source of fluid under pressure and two pressure receivers, characterized in that a single proportional solenoid valve is associated with each respective pressure receiver to effect anti-lock and anti-slip functions and is connected to the first source of fluid under pressure and to the second source of fluid under pressure, and in that a differential pressure/vacuum valve closes, at rest, a communication between the first source of fluid under pressure and a supply connection to the second source of fluid under pressure, the communication being opened when the second source of fluid under pressure begins operating and a suction side thereof causes less than atmospheric pressure to be communicated via the supply connection to the differential pressure/vacuum valve which operates responsively to open the communication and permit fluid flow from the first source of fluid under pressure to the second source of fluid under pressure.

5,358,317

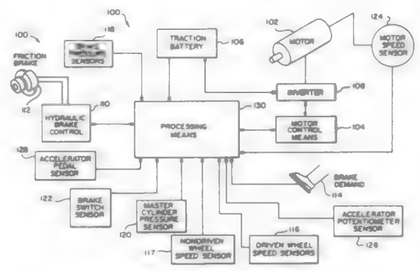
FUZZY LOGIC ELECTRIC VEHICLE REGENERATIVE ANTISKID BRAKING AND TRACTION CONTROL SYSTEM

Susan R. Cikanek, Wixom, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 7, 1993, Ser. No. 1,965

Int. Cl.[5] B60T *8/58*; B60L *7/10*

U.S. Cl. 303—100 **22 Claims**



1. A regenerative antiskid braking and traction control system for a vehicle having at least right and left driven wheels, a regenerative braking system operatively connected to an electric traction motor having motor control means for controlling the operation of said motor, and a separate hydraulic braking system having brake control means for controlling fluid pressure applied at each wheel by said hydraulic braking system, said regenerative antiskid braking and traction control system comprising:

sensing means for sensing vehicle parameters representative of vehicle behavior; and

processing means, responsive to said sensing means, for calculating vehicle parameters defining said vehicle behavior not directly measurable by said sensing means, for applying fuzzy logic to said sensed vehicle parameters and said calculated vehicle parameters to determine critical values of said vehicle parameters according to a plurality of first language control rules, for determining a vehicle state of said vehicle based on said sensed vehicle parameters, said calculated vehicle parameters and said critical values, said vehicle state being any of requiring regenerative antiskid braking control, requiring hydraulic braking control, and requiring traction control, for generating command signals based on said vehicle state and said sensed and calculated vehicle parameters, and for providing said command signals to said motor control means to control operation of said electric traction motor and to said brake control means to control fluid pressure applied at each wheel to provide said regenerative antiskid braking control, hydraulic braking control, and traction control.

5,358,318

DUTY CYCLE CONTROLLER FOR ANTI-LOCK BRAKE PRESSURE REGULATING VALVE, USING WHEEL SPEED DEVIATION FROM TARGET VALUE AND TIME DERIVATIVE THEREOF

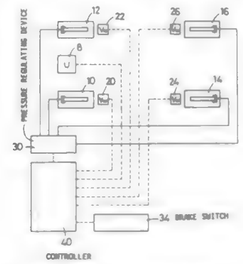
Shinji Ikeda, and Masashi Mizukoshi, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Division of Ser. No. 942,981, Sep. 10, 1992. This application Mar. 18, 1994, Ser. No. 214,499

Claims priority, application Japan, Sep. 24, 1991, 3-273317; Dec. 2, 1991, 3-347917

Int. Cl.[5] B60T *8/32*

U.S. Cl. 303—100 **14 Claims**



1. A control apparatus for controlling an anti-lock brake system for a vehicle having a plurality of wheel speed sensors for detecting actual speeds of respective wheels of the vehicle, an electrically controlled brake pressure regulating device including at least one solenoid-operated valve for regulating a braking pressure applied to each of said plurality of wheels, and a controller for controlling said pressure regulating device so as to prevent locking of each said wheel, on the basis of a relationship between the actual speed of the wheel detected by the corresponding wheel speed sensor, and a running speed of the vehicle, said control apparatus comprising:

a ground-speed sensor for detecting as said running speed a ground-speed of the vehicle relative to a road surface; and

said controller controlling each of said at least one solenoid-operated valve at a controlled duty cycle, so as to prevent the locking of each said wheel, said controller comprising duty cycle determining means for determining the duty cycle of each said solenoid-operated valve, on the basis of at least a wheel speed error and a time derivative of said wheel speed error, said wheel speed error being a deviation of said actual speed of the wheel detected by said corresponding wheel speed sensor, from a target wheel speed obtained on the basis of the ground-speed of the vehicle detected by said ground-speed sensor.

5,358,319

METHOD AND SYSTEM FOR LOW-TO-SPLIT MU DETECTION AND CONTROL FOR ANTI-LOCK BRAKE SYSTEMS

Dan Negrin, Westmount, Canada, assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Jul. 30, 1993, Ser. No. 100,128

Int. Cl.[5] B60T *8/84*

U.S. Cl. 303—103 **21 Claims**

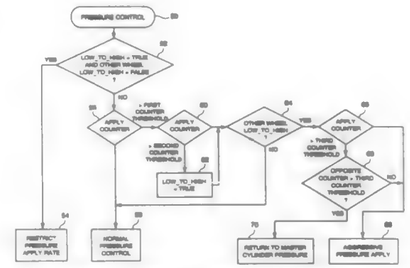
1. A method of detecting a transition onto a split-mu surface from a lower-mu surface during an anti-lock brake system event of a vehicle, the vehicle comprising two wheels aligned on a latitudinal axis of the vehicle and an anti-lock brake system capable of cyclic control of brake pressure with at least one pressure apply stage per anti-lock brake system cycle, the method comprising the steps of:

(a) measuring a time duration, defined in terms of the anti-lock brake system cycle, for each wheel;

(b) comparing each time duration to a predetermined threshold;

(c) characterizing each of the wheels, wherein each wheel is characterized as normal-duration if the corresponding time duration is less than the predetermined threshold, and each wheel is characterized as long-duration if the corresponding time duration is greater than the predetermined threshold; and

(d) determining that the transition from the lower-mu surface to the split-mu surface as occurred if one wheel is characterized as normal-duration and the other wheel is characterized as long-duration.



5,358,320

ANTI-SKID BRAKE CONTROL SYSTEM FOR AUTOMOTIVE VEHICLES

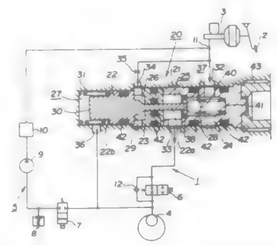
Takeshi Fuchida, Atsugi, Japan, assignor to Atsugi Unisia Corporation, Atsugi, Japan

Filed Feb. 25, 1993, Ser. No. 22,222

Claims priority, application Japan, Feb. 28, 1992, 4-009729[U]; Feb. 28, 1992, 4-009730[U]; Feb. 28, 1992, 4-009731[U]; Feb. 28, 1992, 4-009732[U]

Int. Cl.[5] B60T *8/32*

U.S. Cl. 303—116.1 **6 Claims**



1. A brake-fluid reflux type anti-skid brake control system for automotive vehicles, comprising:

a main brake-fluid supply circuit for supplying a brake fluid from a master cylinder to a wheel cylinder, during braking;

a brake-fluid reflux circuit arranged in parallel with said main brake-fluid supply circuit, for pressurizing and refluxing the brake fluid from said wheel cylinder to said main brake-fluid supply circuit, during operation of the anti-skid brake control system;

flow control valve means being arranged in said main brake-fluid supply circuit, for controlling a flow rate of the brake fluid introduced into said wheel cylinder in response to a pressure difference between the fluid pressure of a master-cylinder side and a fluid pressure of the wheel-cylinder

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side, such that when said pressure difference is less than a predetermined threshold value said flow control valve means operates in a fully open mode in which said flow control valve means provides a maximum flow rate of the brake fluid, and when said pressure difference is greater than or equal to said predetermined threshold value said flow control valve means operates in a fully throttling mode in which said flow control valve means provides a minimum flow rate of the brake fluid; and

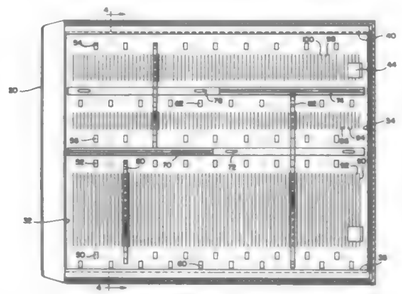
said flow control valve means including a valve housing defining a substantially cylindrical hollow therein, a piston slidably enclosed in said cylindrical hollow to be movable depending on said pressure difference, partition means arranged in said cylindrical hollow for partitioning an internal space facing onto one end of said piston into first and second fluid chambers, said first fluid chamber being arranged in series to said main brake-fluid supply circuit to introduce the fluid pressure of the master-cylinder side into said wheel cylinder therethrough, said second fluid chamber connected to a communication passage to receive the fluid pressure of the master-cylinder side, said housing cooperative with said piston to define a third fluid chamber essentially corresponding to an internal space facing onto the other end of said piston, said third fluid chamber receiving the fluid pressure of the wheel-cylinder side, and a throttling valve arranged in said first fluid chamber to operate at either one of said two modes based on an axial sliding movement of said piston, an area of a first pressure receiving surface of said piston facing onto said first fluid chamber being considerably smaller than an area of a second pressure receiving surface of said piston facing onto said second fluid chamber such that said first pressure receiving surface is insusceptible to a rapid pressure-rise in said first fluid chamber during quick braking where the anti-skid brake control system is in an inoperative state, and an orifice being provided in said communication passage and responsive to a steep pressure gradient in the fluid pressure of the master-cylinder side such that a pressure-rise in said second fluid chamber is suppressed through an orifice constriction of said orifice during quick braking.

5,358,321

MODULAR MULTI-MEDIA CABINET

Paolo Leonardi, Sirolo Ancona, Italy, assignor to Fellowes Manufacturing Company, Itasca, Ill.

Filed Jan. 4, 1993, Ser. No. 256
Int. Cl.[5] A47B *81/06, 88/00*
U.S. Cl. 312—9.55 **41 Claims**



1. An extractable drawer for a modular multi-media cabinet comprising:

a bottom and four walls extending upwardly from the bottom to define an inside of the drawer, the walls including a front wall, a rear wall spaced from and substantially parallel to the front wall, a first side wall at a substantially right angle to the front wall, and a second side wall spaced from and substantially parallel to the first side wall;

the bottom having an approximate center longitudinal line located approximately at the midpoint between the first and second side walls, the bottom further having

i. a first column of spaced apart slots adjacent to the first side wall,

ii. a first column of complementary spaced apart slots adjacent to and on a first side of the approximate center longitudinal line of the bottom, with at least some of the slots in the first column of complementary spaced apart slots lying in the same transverse plane as the slots in the first column of spaced apart slots,

iii. a second column of spaced apart slots adjacent to the second side wall,

iv. a second column of complementary spaced apart slots adjacent to and on a second side of the approximate center longitudinal line of the bottom, with at least some of the slots in the second column of complementary spaced apart slots lying in the same transverse plane as the slots in the second column of spaced apart slots, and

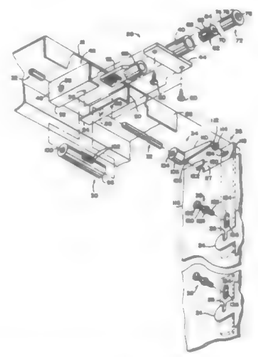
v. a column of complementary spaced apart intermediate slots located between the second column of spaced apart slots and the second column of spaced apart complementary slots, with at least some of the slots in the column of complementary intermediate spaced apart slots lying in the same transverse plane as the slots in the first column of spaced apart slots.

5,358,322

DRAWER LOCKING SYSTEM

Gordon McLaughlin, Beachburg, Canada, assignor to Krueger International, Inc., Green Bay, Wis.

Filed Dec. 16, 1992, Ser. No. 992,379
Int. Cl.[5] E05B *65/46*
U.S. Cl. 312—219 **16 Claims**



1. A lock system for an article of furniture having a front, a back and a pair of spaced sides, at least one movable component mounted to the article of furniture for movement between an open position and a closed position, and a vertically movable lock member selectively movable between a locked position and an unlocked position, the lock system comprising:

a rotatable operator-controlled actuator member mounted toward the front of the article of furniture;

a pivotable lifting and lowering mechanism interconnected with the vertically movable lock member for moving the lock member between its drawer locked and drawer unlocked positions; and

an operating mechanism interposed between the actuator member and the lifting and lowering mechanism for vertically moving the lifting and lowering mechanism in response to rotation of the actuator member, the operating mechanism including a first member interconnected with the actuator member, and an arrangement for converting rotation of the actuator member into linear movement of the first member along a front-rear axis;

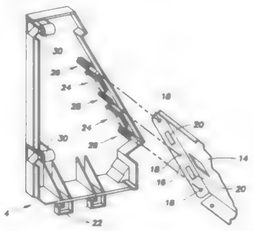
wherein the lifting and lowering mechanism is interconnected with the first member and is pivotable in response to the front-rear linear movement of the first member to provide vertical movement of the locking member between its locked and unlocked positions.

5,358,323

CONSOLE WITH SNAP FIT END CAPS

Brian Ripley, Webster City, Iowa, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Continuation of Ser. No. 890,672, May 29, 1992, abandoned.
This application Feb. 28, 1994, Ser. No. 203,660
Int. Cl.[5] A47B *47/00*
U.S. Cl. 312—228 **12 Claims**



1. A snap fit end cap for an appliance control console, said control console extending between a pair of end caps and having a generally planar front face and a pair of lateral end portions being generally perpendicular to said front face, said end portions having a predetermined thickness, said end cap comprising:

means for securing the end cap to a top wall portion of an appliance cabinet;

a stop surface for limiting inward movement of the end cap relative to the control console end portion, said stop surface defining a first plane; and,

means for retention of said end cap on said control console end portion, said retention means engaging an inner surface of said control console to inhibit outward movement of said end cap relative to said control console, said retention means defining a second plane generally parallel to said first plane, wherein a distance between said first and second planes is generally equal to the predetermined thickness of the control console end portion whereby said end portion is trapped between said stop surface and said retention means and said end cap is thereby inhibited from moving relatively toward or away from said control console.

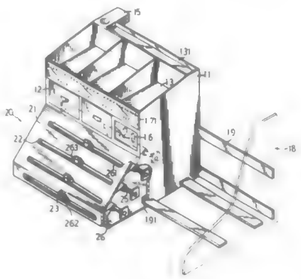
5,358,324

STATIONERY GOODS HOLDER AND BOOK SHELF COMBINATION

Zuo-Heng Liu, No. 61, Sec. 2, Tung Hsing Rd., Taichung, Tai-[illegible]

Filed Jan. 19, 1993, Ser. No. 4,850
Int. Cl.[5] A47B *41/06, 81/00*
U.S. Cl. 312—233 **5 Claims**

1. A combination comprising a housing including a top having at least one opening formed therein, at least one drawer provided in an upper portion of said housing for accommodating stationery goods, a plurality of bars laterally engaged in a side portion of said housing and each including a first end engaged in said housing and a second end extended outward of said housing, a board fixed to said second ends of said bars so as to form a book shelf, said housing including a front panel having at least one slot formed therein, a shaft rotatably supported in said housing, a sheet material wound on said shaft.

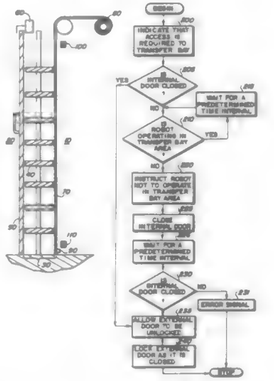


5,358,325

ROBOTIC SYSTEM

David C. Teale, Winchester, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1992, Ser. No. 884,580
Claims priority, application European Pat. Off., Jul. 1, 1991, 91305924.2
Int. Cl.[5] A47B *81/00*
U.S. Cl. 312—287 **7 Claims**



1. A robotic system comprising:

a housing separating an interior from an exterior;

a robot in the interior;

a transfer bay through which a piece may be exchanged between said robot and the exterior;

an internal door through which said robot may access said transfer bay;

an external door through which said transfer bay may be accessed from the exterior;

means for controlling said doors such that said external door may only be open when said internal door is closed; and

means for instructing said robot not to access said transfer bay when said internal door is closed.

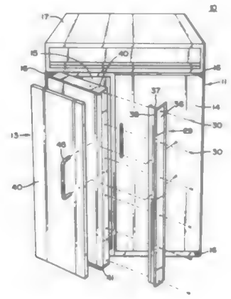
VOL 1167 ISS 4 OC 25 1994 UMI

5,358,326

REFRIGERATOR WITH IMPROVED DOOR FRONT AND HANDLE ATTACHMENT

David N. Cherry, and Donald G. Falk, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jan. 14, 1993, Ser. No. 4,715
Int. Cl.[5] A47B 95/02
U.S. Cl. 312—405 11 Claims



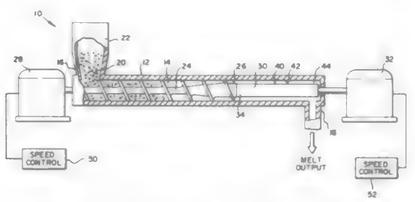
1. A refrigerator including:
a refrigerated compartment having an access opening;
a door mounted for pivotal movement to selectively close said access opening; said door including a vertically extending front wall bounded by a pair of spaced apart, vertically extending side walls;
a pair of elongated support members, each of said support members being removably mounted to a corresponding door side wall;
a decorative cover removably secured to said support members in overlying juxtaposition to said door front wall;
a handle; and
means removably mounting said handle on said cover in a position overlying a portion of the corresponding one of said support members; said means removably mounting said handle including elongated threaded shafts secured in said handle and extending through said cover and said portion of said corresponding support member.

5,358,327

APPARATUS FOR PLASTICIZING PARTICULATE PLASTIC MATERIAL

Stephen J. Derezinski, Penfield, and Stephen T. Faulkenberry, Conesus, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 9, 1992, Ser. No. 942,253
Int. Cl.[5] B29B 7/46, 13/02; B29C 47/50, 47/80
U.S. Cl. 366—79 7 Claims



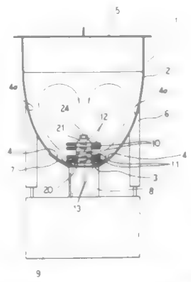
1. An apparatus for plasticizing particulate plastic material, the apparatus comprising:
a housing, the housing having a bore therethrough, and the bore having an inlet end and an outlet end;
means for feeding particulate plastic material into the bore at the inlet end;
an auger positioned in the bore, the auger having an inlet end to receive material from the means for feeding and a discharge end at an intermediate location in the bore;
means for rotating the auger to convey the particulate plastic material from the means for feeding along the bore and to frictionally melt the particulate plastic material before the particulate material passes the discharge end;
means for controlling the speed of rotation of the auger to control the flow rate of melted plastic through the outlet end;
a smooth-walled, cylindrical rotor positioned in the bore between the auger and the outlet end, the bore and the rotor defining an annulus therebetween, the rotor having a first end positioned proximate to the discharge end of the auger, the rotor having an axial length and the annulus extending from the first end along the length of the rotor;
means for rotating the rotor to heat the melted particulate plastic material passing from the discharge end of the auger and through the annulus, independent of the flow rate of melted plastic through the annulus; and
means for controlling the speed of rotation of the rotor for obtaining a desired temperature of melted plastic particulate material at the outlet end of the housing.

5,358,328

MIXING DEVICE

Takao Inoue, Setagaya, and Yukihiro Omika, Suginami, both of Japan, assignors to Kajima Corporation, Tokyo, Japan

Continuation of Ser. No. 795,023, Nov. 20, 1991. This application Mar. 17, 1993, Ser. No. 32,704
Claims priority, application Japan, Nov. 21, 1990, 2-317004; Sep. 17, 1991, 3-236652
Int. Cl.[5] B28C 5/08
U.S. Cl. 366—65 6 Claims



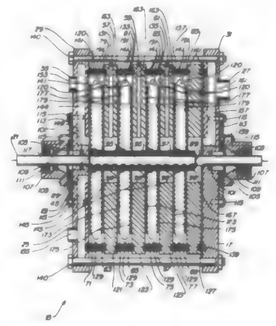
1. A mixing device for mixing cement, aggregate and water together, comprising:
a mixing container for holding materials to be mixed and having a bottom;
a rotary shaft extending vertically upwardly into said mixing container from said bottom;
at least one upper mixing blade unit having a hub mounted on said rotary shaft for rotation therewith and having a plurality of radially extending horizontal slender, rectangular, flat upper blades thereon, said upper blades being in a planar space extending perpendicular to said rotary shaft, each said upper blade being inclined downward from a front edge, relative to a direction of rotation of said rotary shaft, to a rear edge, relative to the direction of rotation of said rotary shaft;
at least one lower mixing blade unit having a hub mounted on said shaft below said upper mixing blade unit for rotation with said rotary shaft and having a plurality of radially extending horizontal slender, rectangular, flat lower blades thereon the same in number as the number of upper blades, said lower blades being in a planar space extending perpendicular to said rotary shaft, each said lower blade being inclined upward from a front edge, relative to the direction of rotation of said rotary shaft, to a rear edge, relative to the direction of rotation of said rotary shaft;
each of said upper blades being in vertical spaced opposed relationship to a corresponding one of said lower blades and the spaces between said upper blades and said lower blades being unobstructed throughout the circumferential space between said blade units, the opposed upper and lower blades being sufficiently closely spaced to force particles of the cement and aggregate toward each other for causing the particles to collide when said rotary shaft is rotated at a predetermined speed;
said mixing container further having an annular side wall curving upwardly and outwardly from said bottom to provide an upwardly and outwardly expanding space radially outwardly of the radially outer ends of said upper and lower blades; whereby materials being mixed in said container are guided between said front edges of said upper and lower blades and then along said upper and lower blades and between said rear edges of said upper and lower blades so as to be caused to flow rearwardly and radially outwardly of said blades so as to come into collision with each other rearwardly of said blades and in said upwardly and outwardly expanding space when said upper and lower blade units rotate in said direction of rotation and the materials being mixed are then recirculated along said annular side wall to said upper and lower mixing blade units.

5,358,329

APPARATUS FOR MIXING PLURAL FLOWABLE MATERIALS

Paul R. Plache, Boulder, and Martin W. Selch, Niwot, both of Colo., assignors to Fluid Dynamics, Inc., Boulder, Colo.

Filed Feb. 12, 1993, Ser. No. 17,513
Int. Cl.[5] B01F 5/12
U.S. Cl. 366—97 20 Claims



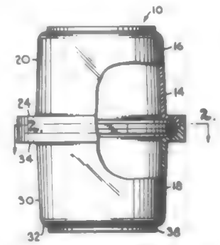
1. An apparatus for mixing plural flowable materials comprising:
a rotatable member having a selected surface complexity defined at at least one material contacting surface thereof;
driving means connected with said rotatable member to rotate said rotatable member;
a housing defining a chamber having said rotatable member rotatably mounted therein and including a static member positioned in a spaced relationship relative to said rotatable member along its entire said material contacting surface including said surface complexity so that an interstice is defined between said static member and said entire said one material contacting surface of said rotatable member;
flowable material inlet means through said housing for introducing flowable materials into said housing and thereby said interstice between said static member of said housing and said entire said one material contacting surface of said rotatable member; and
outlet means connected to said housing for accommodating flow of mixed flowable materials from said chamber.

5,358,330

MANUAL INGREDIENT BLENDING APPARATUS FOR FOOD PREPARATION

Donald Moll, 14613 Locust, Olathe, Kans. 66062

Filed Sep. 27, 1993, Ser. No. 127,160
Int. Cl.[5] B01F 9/00
U.S. Cl. 366—130 4 Claims



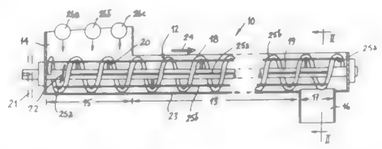
1. A blending apparatus for mixing and blending dry and granular ingredients, said blending apparatus comprised of:
a container having a substantially planar first end, a container sidewall, and a second end: and
a cover including a blending subassembly, said blending subassembly including a screen element spaced away from and parallel to said cover by an extender to extend into said container, said screen element further including a plurality of perpendicularly disposed blending elements, said cover selectively engageable with said container second end.

5,358,331

BLENDING DEVICE FOR PARTICULATE MATERIAL, WITH HELICAL CONVEYER

John William Cruse, Robertsbridge, United Kingdom, assignor to John William Cruse, Robertsbridge and Pharmakopius Limited, Pharmakopius at:Goring-on-Thames, both of United Kingdom

Continuation of Ser. No. 221,789, Jul. 20, 1988, abandoned. This application Jun. 21, 1993, Ser. No. 80,558
Claims priority, application United Kingdom, Feb. 27, 1986, 8604611
Int. Cl.[5] B01F 15/02, 7/08
U.S. Cl. 366—181 4 Claims



1. In a device for continuously blending particulate materials including a central shaft having an axis, a plurality of metering means, each to meter a respective quantity of a respective particulate material; blending means to receive and blend the metered quantities of particulate material delivered from the

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respective metering means, said blending means comprising conveying means in the form of an elongate member having a rotating axis coinciding with said axis of said shaft, said elongate member being disposed helically in turns about and concentric to the rotating axis, means to rotate the elongate member about its rotating axis to trace out an envelope shape of the casing in which the conveying means is located, said casing having a discharge end and a lower portion conforming to said envelope shape of the helically formed elongate member, the conveying means rotating in the casing so as to generate a conveying direction for particulate material in the casing towards the discharge end thereof, and stirring members provided on the conveying means and extending between at least some adjacent turns of the helically formed member, the elongate member having a cross-section which is of arcuate form at least on a side thereof facing said conveying direction to create an inefficient conveying means, and the stirring members being arranged on an outside portion of at least some adjacent turns of the elongate member, the stirring members extending a full length of the helically formed member so that the adjacent stirring members are positioned alternatingly inside and outside the helical turns, each metering means including a respective metering conveying means formed from a metering elongate member having turns helically disposed about an axis of rotation, means to rotate the metering elongate member about the axis of rotation, a metering casing to contain the metering elongate member, the metering casing having a lower portion, the turns of the helically formed metering elongate member rotating so as to trace out an envelope shape, said lower portion of the metering casing conforming to the envelope shape of the helically formed metering elongate member, at least some of the metering conveying means in the metering means are equipped with means to vary a pitch of a helix of the respective elongate member; a single prime mover, the conveying means in the metering means and the blending means being driven from said single prime mover at correlated speeds of rotation.

5,358,332

MIXING DEVICE HAVING AXIALLY ADJUSTABLE MIXING BLADES

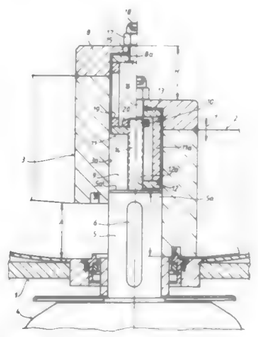
Michael Derksen, Lüdenscheid, and Norbert Siegmund, Neuenrade, both of Fed. Rep. of Germany, assignors to Dr. Herfeld GmbH & Co. KG, Neuenrade, Fed. Rep. of Germany

Filed Oct. 1, 1993, Ser. No. 131,401

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1992, 4235498

Int. Cl.[5] **B01F** *7/16, 15/00*

U.S. Cl. 366—286 **9 Claims**



1. Mixing apparatus comprising:

a mixing vessel having a base;

a mixing tool accommodated within said vessel and having a central hub;

a drive shaft rotatable about an axis and extending into said vessel through said base and having an axially fixed free end, said free end mounting said hub for rotation about said axis while enabling said hub to move axially on said shaft between a normal mixing position in which said tool is supported in close proximity to said base and a cleaning position in which said tool is displaced axially from said base; and

tool adjustment means provided between said free end of said shaft and said hub and movable axially with respect to said shaft for positioning said hub selectively between said mixing and cleaning positions.

5,358,333

METHOD OF AND MEASURING ARRANGEMENT FOR CONTACTLESS ON-LINE MEASUREMENT

Hugo Schmidt, Giessen-Luetzellinden; Manfred Ruckszio, Taunusstein, and Raimund Haas, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

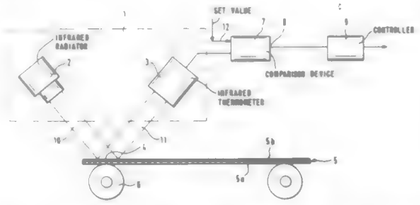
Continuation of Ser. No. 876,429, Apr. 30, 1992, abandoned. This application Jun. 4, 1993, Ser. No. 72,877

Claims priority, application Fed. Rep. of Germany, May 6, 1991, 4114672

The portion of the term of this patent subsequent to Jan. 24, 2011, has been disclaimed.

Int. Cl.[5] **G01N** *25/00, 21/17, 25/72;* **G01B** *11/06*

U.S. Cl. 374—7 **19 Claims**



1. A method of performing a contactless on-line measurement of one of a plurality of surface conditions of a material, said method comprising the steps of:

(A) maintaining the temperature of said material constant over an outlined measuring area;

(B) exposing said outlined measuring area of a surface of said material to obliquely incident infrared radiation;

(C) measuring the temperature of radiation reflected from said measuring area of said surface of said material, said reflected radiation having an intensity which depends on a reflectivity of a surface roughness of the material and on an absorptivity of surface structures including at least one of layer thickness, oxide weight, and material thickness; and

(D) comparing the measured temperature of the reflected radiation with a set value to determine said one of a plurality of surface conditions of said material including at least one of a surface structure of said material, a thickness of said material, a thickness of a layer disposed on said material, and a weight of a layer disposed on said material, and to obtain a signal for controlling a treatment of said surface of said material.

12. A measuring arrangement for performing a contactless on-line measurement of one of a plurality of surface conditions including a surface structure of a material, the thickness of said material, and the thickness or the weight of a layer disposed on said material, said measuring arrangement comprising:

(A) an infrared radiator which directs infrared rays onto an outlined measuring area of a surface of said material in a path which is directed obliquely onto said surface of said material;

(B) an infrared thermometer which receives infrared rays reflected from said surface of said material, said reflected infrared rays having an intensity which depends on a reflectivity of a surface roughness of the material and on an absorptivity of the surface structure including one of layer thickness, oxide weight, and material thickness; and

(C) a comparison device, which is electrically connected to said infrared thermometer, in which comparison device are stored measured temperature values of the radiation reflected from said surface of said material and in which comparison device the measured temperature values are compared to a set value which is fed into said comparison device after the measured temperature values are determined, said comparison device generating differential signals from said measured temperature values and said set value to obtain control signals, said differential signals being indicative of said one of a plurality of surface conditions including said one of layer thickness, oxide weight, and material thickness, said comparison device being connected to a control device which receives said control signals for altering one of said surface conditions of said material.

5,358,334

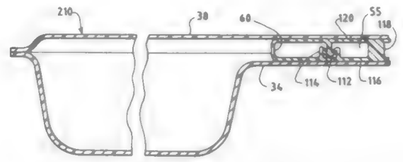
RECLOSABLE PROFILE STRIP WITH JOINING WEB

Steven H. Simonsen, Neenah, Wis., assignor to Reynolds Consumer Products Inc., Appleton, Wis.

Continuation of Ser. No. 16,364, Feb. 11, 1993, abandoned. This application Dec. 14, 1993, Ser. No. 166,676

Int. Cl.[5] **B65D** *33/34*

U.S. Cl. 383—63 **11 Claims**



1. A reclosable package having a reclosable profile strip, said reclosable profile strip comprising:

a top web having an interlocking member;

a bottom web having an interlocking member that interlocks with said interlocking member of said top web;

a joining web that joins said top web and said bottom web at a margin of said bottom web and a margin of said top web interior within said package with respect to said interlocking members, said joining web being substantially thinner than said top web and said bottom web; and

a peel seal formed from bonding material on opposing portions of said top web and said bottom web, said peel seal being positioned exterior within said package with respect to said interlocking members, such that said interlocking members are hermetically isolated between said joining web and said peel seal.

5,358,335

BULK BAG WITH CONICAL TOP

Lee LaFleur, Manistee, Mich., assignor to Custom Packaging Systems, Inc., Manistee, Mich.

Filed Jun. 1, 1993, Ser. No. 71,460

Int. Cl.[5] **B65D** *30/10*

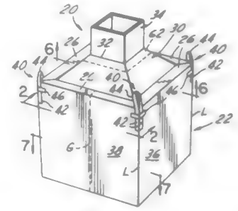
U.S. Cl. 383—107 **7 Claims**

1. A collapsible bag suitable for containing material in bulk comprising:

(a) tubular blank of a flexible material having a circumferentially continuous peripheral wall adapted in use to have the axis of the tubular blank oriented upright and having axially opposite top and bottom blank edges extending transverse to such axis, said blank when collapsed into a compact configuration having six fold lines extending longitudinally from said top to said bottom edges of said blank, with two pairs of said fold lines individually defining laterally opposite outer side edges of a pair of overlying generally rectangular panels, a pair of generally rectangular folded gusset panels being received one between each pair of said overlying rectangular panels and being defined at their overlaid interior side edges by an associated one of the remaining two of said six fold lines,

(b) said collapsed blank having four top corners formed one each at the intersection of said blank top edge with each of said outer side edge fold lines, said blank having a line of connection at each of said top corners joining the mutually facing surfaces of each gusset panel and exteriorly adjacent side panel to define four seams extending individually one along each associated said line of connection diagonally across each of said top corners, each said seam being oriented to extend at an angle of about 45 degrees relative to the associated blank top edge and sidewall panel outer side edge, each said seam thereby forming a triangular pleat of overlapped material in the portion of the associated gusset panel and exteriorly adjacent side panel defined between said seam, said blank top edge and associated sidewall panel outer side edge fold,

(c) said tubular blank with said seams so formed therein, when turned inside out to invert the same and expanded into upright orientation for use, having a circumferentially



continuous sidewall with said four outer side edge fold lines forming said sidewall into a sidewall of generally rectangular configuration in horizontal plan cross section having two pairs of laterally mutually opposed sidewall panels of generally rectangular configuration in elevation, said blank when so inverted causing each said seam to draw inwardly from said continuous sidewall a narrow portion of all of said sidewall panels extending along said blank top edge and thereby forming four inturned shoulder panels defining a circumferentially continuous seam-joined planar top border along the top of said sidewall oriented generally perpendicularly thereto, each said shoulder panel having an outer edge defined by a fold line with the associated one of said sidewall panels and extending horizontally between the intersection of an associated pair of said seams with said outer side edge fold lines of the associated one of said sidewall panels, each said shoulder panel having an inner edge extending parallel to its outer edge between the intersection of said associated pair of said seams with said blank top edge, each said seam when so inverted in turning said blank inside out having the associated pleat portion of said associated gusset panel and exteriorly adjacent side panel extending interiorly of said shoulder top border and said sidewall panels,

(d) a bottom wall secured to and extending inwardly from said bottom edge of said blank when expanded,

(e) a generally frustoconical top wall vertically opposite said bottom wall joined in underlying relation to and extending inwardly from the interior surface of each of said shoulder

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panels when said blank is inverted and expanded for use, said top wall having an inlet opening located centrally in said top wall, and

(f) an inlet spout attached in underlying relation to the interior surface of said top wall when said blank is inverted and expanded for use, said spout encompassing said inlet opening.

5,358,336

LINEAR MOTION ROLLING GUIDE UNIT

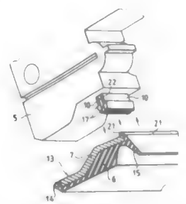
Norimasa Agari, Seki, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1993, Ser. No. 108,401

Claims priority, application Japan, Aug. 20, 1992, 4-063565[U]

Int. Cl.[5] **F16C** *29/06*

U.S. Cl. 384—15 **6 Claims**



1. In a linear motion rolling guide unit comprising:

a track rail having first raceway grooves formed on longitudinally extending side walls thereof;

a casing slidable relative to the track rail and having second raceway grooves formed at positions facing the first raceway grooves, the casing also having return passages formed therein;

end caps mounted to the longitudinal ends of the casing, the end caps each having direction changing passages;

a large number of rolling elements rolling and circulating through raceways formed between the first raceway grooves and the second raceway grooves and through the direction changing passages and the return passages; and

under seals fitted to the end caps, each of the under seals being made up of a metallic core member and an elastic sealing member secured to the core member;

said linear motion rolling guide unit characterized in:

that each sealing member has a first lip portion that can be brought into sealing contact with the underside of the casing and the end caps and a second lip portion that can be brought into sealing contact with the side wall surfaces of the track rail;

that the end caps each have on each side a pair of projections protruding from the underside of the end caps, the projections in each pair being spaced from each other widthwise, and each projection is formed with an engagement portion at the front end thereof;

that the under seals are each formed with engagement opening in the core member and the engagement opening has an engagement claw formed at each longitudinal edge portion thereof; and

that the projections are elastically deformed and inserted into the engagement openings until the engagement portions of the projections engage the engagement claws to attach the under seals to the end caps.

5,358,337

LOAD BEARING BALL

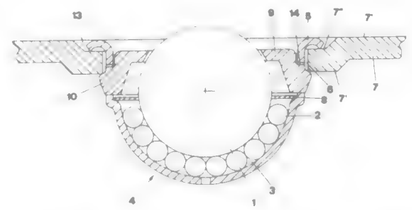
Antonio Codatto, Lonigo, Italy, assignor to Sapim Amada S.p.A., Turin, Italy

Filed Mar. 11, 1993, Ser. No. 29,452

Claims priority, application Italy, Mar. 19, 1992, VI92U000031

Int. Cl.[5] **F16C** *29/04*

U.S. Cl. 384—41 **1 Claim**



1. In a load bearing ball for supporting a working structure (7), said load bearing ball being of the type which comprises a first main ball (1) of great diameter on which the loads are intended to rest, said ball (1) in turn resting and rolling on a plurality of second balls (2) of a diameter substantially smaller with respect to the diameter of said first main ball (1), said plurality of balls (2) being located on the bottom (3) of a container (4), said container having a substantially hemispheric shape, means for closing said container and for holding said first main ball (1) and said plurality of second balls (2) in the interior thereof, the improvement which comprises said means for closing said container consisting of ring (9) of elastic material, said container having a mouth, said ring being placed corresponding to the mouth of said container, said ring (9) essentially surrounding said first main ball (1) whereby only a small portion of said first main ball (1) may exit from said container, said working structure (7) having an opening (6), said working structure (7) having a first surface (7′) and a second surface (7″), said second surface (7″) being opposite said first surface (7′), said ring (9) having laterally at least two protrusions (10) capable of fastening along the border of said opening (6) formed on said working structure (7), corresponding to said first surface (7′), said container (4) resting on said second surface (7″).

5,358,338

LINEAR MOTION ROLLING GUIDE UNIT WITH INSULATING MEMBERS

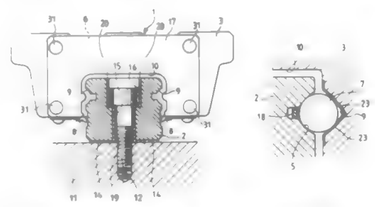
Yoshiyuki Komiya, Kawasaki, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed May 27, 1993, Ser. No. 67,609

Claims priority, application Japan, May 28, 1992, 4-159998

Int. Cl.[5] **F16C** *29/06*

U.S. Cl. 384—45 **18 Claims**



1. A linear motion rolling guide unit comprising:

a base;

track rails having bolt insertion holes so as to fix the track rails to the base, and having rail raceway surfaces on both side walls thereof;

mounting bolts inserted through the bolt insertion holes in the track rails and screwed into the base to fix the track rails to the base;

casings mounted astride the track rails so as to be slidable on the track rails, and having casing raceway surfaces formed at positions facing the rail raceway surfaces;

end caps secured to the longitudinal ends of the casing, a longitudinal direction of the casing being the same as the sliding direction of the casing;

many rolling elements traveling rolling between the rail raceway surfaces and the casing raceway surfaces, the rolling elements changing their directions in the end caps;

a table mounted on the casings; and

insulating members secured to mounting surfaces of the track rails facing the base when the track rails are secured to the base and to surfaces of the bolt insertion holes in the track rails.

5,358,339

HYDRODYNAMIC FLUID BEARING WITH LIQUID-RADIAL BEARING AND GAS-THRUST BEARING

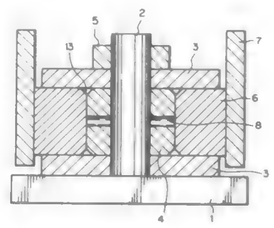
Daisuke Konno, and Yumiko Noda, both of Kanagawa, Japan, assignors to Ebara Corporation, Tokyo, Japan

Continuation of Ser. No. 10,399, Jan. 28, 1993, abandoned. This application Jan. 12, 1994, Ser. No. 180,467

Claims priority, application Japan, Jan. 30, 1992, 4-010092

Int. Cl.[5] **F16C** *32/06, 33/72*

U.S. Cl. 384—107 **20 Claims**



1. In a bearing device comprising a base, a spindle stood on a central portion of said base, a hub, and radial and thrust hydrodynamic bearings provided between said spindle and said hub, a radial cylindrical member is secured to said base so that said spindle extends through a central portion thereof, a pair of thrust plates are secured to both end surfaces, respectively, of said radial cylindrical member and each having said spindle extending through a central portion thereof, a radial sleeve is rotatably supported at an inner periphery and two end surfaces thereof by an outer peripheral surface of said radial cylindrical member and opposing inner surfaces of said two thrust plates respectively and secured to said hub, said radial cylindrical member and said radial sleeve constitute said radial hydrodynamic bearing, either two end portions of said radial sleeve or the opposing inner surfaces of said two thrust plates are provided with spiral grooves for generating dynamic pressure, and the two end portions of said radial sleeve and said thrust plates constitute said thrust hydrodynamic bearings:

a fluid for generating dynamic pressure in said thrust hydrodynamic bearings is a gas;

said radial hydrodynamic bearing has a minute clearance;

a chamfer portion is provided on an outer periphery of each end of said radial cylindrical member, and another chamfer portion is provided on an inner periphery of each end of said radial sleeve, thereby providing an air gap at each axial end of said radial hydrodynamic bearing, which is surrounded by the chamfer portion of said radial cylindrical member, the chamfer portion of said radial sleeve and one of said thrust plates;

a fluid for generating dynamic pressure in said radial hydrodynamic bearing is a lubricating liquid, and a small hole for collecting said lubricating liquid is formed in an outer peripheral surface of said radial cylindrical member; and

said lubricating liquid is sealed in the clearance of said radial hydrodynamic bearing by virtue of the presence of said air gaps, and a change in volume of said lubricating liquid at the time of rotation and stop is absorbed by said small hole.

5,358,340

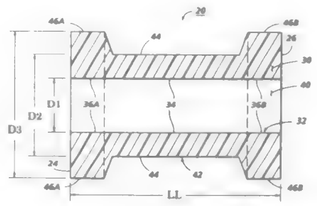
BUSHING DEVICE FOR FORMING MULTIPLE PRE-ALIGNED BEARING SURFACE REGIONS IN A ROTARY ASSEMBLY

Henry T. Bober, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 20, 1993, Ser. No. 123,670

Int. Cl.[5] **F16C** *17/02*

U.S. Cl. 384—125 **20 Claims**



1. A bushing device for use in a mounting hole of a rotary assembly around a journaled shaft, the bushing device comprising a generally cylindrical wall made of a compressible material and including:

(a) an interior surface defining a central bore for receiving the journaled shaft, said central bore having a uniform unassembled diameter greater than the diameter of the journaled shaft; and

(b) an exterior surface including a low region having a diameter less than the diameter of the mounting hole of the rotary assembly, and a plurality of raised regions each having a diameter greater than the diameter of such mounting hole, whereby upon assembly, a plurality of regions of said interior surface, aligned radially with said plurality of raised regions of said exterior surface, are compressed inwardly to form a plurality of bearing surface regions around the journaled portion of the shaft.

5,358,341

STRUCTURED PRODUCT DYNAMOELECTRIC MACHINE

Harald E. Blaettner, Hendersonville, Tenn.; Richard F. Uhen, Ft. Wayne, Ind.; Robert E. Ellis, Ft. Wayne, Ind.; Eldon R. Cunningham, Ft. Wayne, Ind.; Michael J. Usher, Ft. Wayne, Ind., and Joseph E. Miller, Ft. Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 805,080, Dec. 11, 1991, Pat. No. 5,237,231. This application Mar. 29, 1993, Ser. No. 38,218

Int. Cl.[5] **F16C** *23/04;* **H02K** *5/16*

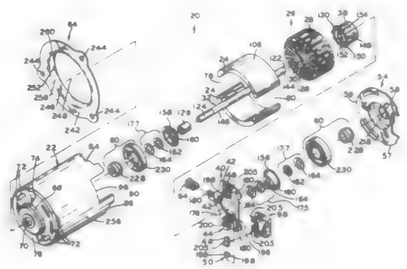
U.S. Cl. 384—204 **16 Claims**

1. A freely aligning bearing assembly for an electric motor comprising:

a sleeve bearing and a generally non-resilient retainer, operatively positioned in a bearing receiving means, for operatively interacting with a shaft, the retainer being adhesively held in position in the bearing receiving means after the establishment of a predetermined set of conditions

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therebetween, the same set of preconditions being repeatedly duplicatable in a plurality of individual bearing assemblies in a plurality of individual bearing receiving



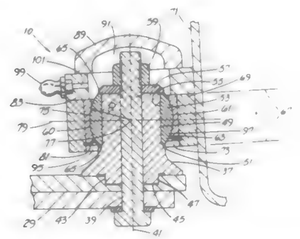
means despite dimensional variations in each individual sleeve bearing, each individual retainer and each individual bearing receiving means.

5,358,342

PIVOT ASSEMBLY WITH GRAVITY LUBRICATION FEATURE

Claude M. Frisbee, Schofield, and Ronald H. Werner, Edgar, both of Wis., assignors to Case Corporation, Racine, Wis.

Filed Dec. 17, 1992, Ser. No. 992,475
Int. Cl.[5] F16C *11/08, 23/04;* E02F *3/76*
U.S. Cl. 384—213 11 Claims



1. In combination, (a) a dozer having a frame and a blade and (b) a pivot assembly mounting the blade to the dozer, the assembly having (a) an inner, generally spherical bearing with a bearing surface and (b) a ring-like outer race mounted for movement on the surface and defining a sliding contact area, the improvement comprising:

a dome-like cap above the spherical bearing and spaced therefrom;

an enclosed grease chamber positioned substantially entirely above the sliding contact area and in gravity flow communication therewith, the grease chamber being defined at least in part by the space between the cap and the bearing; and wherein:

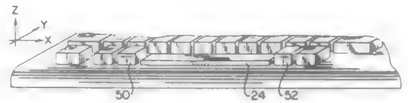
the bearing is cantilever-mounted to the frame.

5,358,343

KEYBOARD WITH TRANSVERSELY ACTIVATED NON-ALPHANUMERIC KEYS

Robert D. Klauber, Fairfield, Iowa, assignor to Keyboard Advancements, Inc., Fairfield, Iowa

Continuation-in-part of Ser. No. 813,289, Dec. 19, 1991, which is a continuation-in-part of Ser. No. 339,075, Apr. 14, 1989. This application Mar. 11, 1992, Ser. No. 849,533
Int. Cl.[5] B41J *5/10*
U.S. Cl. 400—485 26 Claims



1. A keyboard for a computer, electronic typewriter, word processor, and the like comprising:

a plurality of alphanumeric keys comprising at least twenty-six alphabetic keys and ten numeric keys arranged corresponding to touch typing position each of which alphanumeric keys automatically types a different alphanumeric character in response to downward actuation thereof; and

at least one cursor control actuator movable transversely for automatically effecting a cursor control function in response to actuation thereof, and

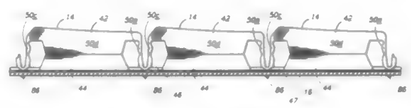
at least one space bar positioned within reach of a thumb of a touch typist having hands and fingers positioned on the keyboard in touch typing position, wherein said cursor control actuator is positioned outside of the area occupied by said plurality of alphanumeric keys in the row of said space bar and within reach of at least one thumb of the touch typist having hands and fingers positioned on the keyboard in touch typing position.

5,358,344

KEYBOARD WITH FULL-TRAVEL, SELF-LEVELING KEYSWITCHES

Kenny R. Spence, Bend, Oreg., assignor to Key Tronic Corporation, Spokane, Wash.

Continuation-in-part of Ser. No. 939,103, Sep. 1, 1992, abandoned. This application Jul. 15, 1993, Ser. No. 93,042
Int. Cl.[5] B41J *5/12*
U.S. Cl. 400—490 95 Claims



1. A keyboard comprising:

a) a plurality of full-travel electrical keyswitches arranged in a keyboard pattern at a plurality of keyswitch locations;

b) a plurality of keytops arranged in the keyboard pattern at the keyswitch locations for receiving fingers of a keyboard operator;

c) a molded unitary keytop support substructure overlying the keyswitches movably supporting the keytops for movement a full-travel distance, comprising:

i) a common base member extending between the keyswitch locations;

ii) a plurality of individual keytop support means associated with respective keytops, in which individual keytop support means interconnect a respective keytop to the base member (1) for permitting the keytop to move in a substantially linear path the full-travel distance between a non-actuating switch position and a depressed actuating switch position without noticeable lateral movement, and (2) for biasing the respective keytop from the depressed actuating position to the non-actuating position;

d) individual keytop support means including a plurality of hinge elements, individual hinge elements having (1) an upper hinge panel hinged to the keytop for pivotal movement about an upper pivot axis between a normally extended orientation when the keytop is in the non-actuating position and a contracted orientation when the keytop is in the depressed actuating position, (2) a lower hinge panel hinged to the base element for pivotal movement about a lower pivot axis in coordination with the pivotal movement of the upper hinge panel between the normally expanded orientation and the contracted orientation, and (3) an elastomeric web integrally interconnecting the upper hinge panel and the lower hinge panel enabling the upper and lower hinge panels to pivot about an intermediate pivot axis as the panels move between the normally expanded orientations and the contracted orientations while preventing lateral movement of the keytop;

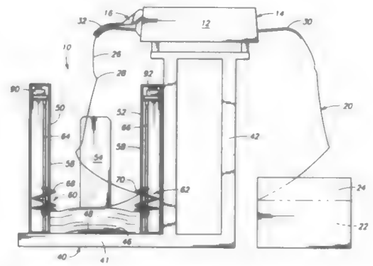
e) said elastomeric web being sufficiently resilient to pivot the hinge panels to their expanded orientation when the keytop is released.

5,358,345

PRINTER OUTFEED PAPER COLLECTOR FOR REFOLDING AND RESTACKING FANFOLD PAPER DISCHARGED FROM A CONTINUOUS FORM PRINTER OR THE LIKE

Stephen S. Damitio, Veradale, Wash., assignor to Output Technology Corporation, Spokane, Wash.

Filed Feb. 16, 1994, Ser. No. 197,080
Int. Cl.[5] B41J *15/00;* B31B *1/00*
U.S. Cl. 400—613.2 5 Claims



1. A printer output paper collector for refolding and restacking fanfold paper discharged from a continuous form printer or the like, in which the fanfold paper has fold lines at prescribed intervals, comprising:

a platform for receiving and supporting a reformed stack of fanfold paper discharged from the continuous form printer;

opposing helical refolding guides on opposite sides of the platform that are movably mounted for (1) rotation about substantially upright parallel axes, and (2) vertical movement relative to the platform;

each of said helical refolding guides having a spiral element for engaging the fanfold paper discharged from the continuous form printer and refolding the fanfold paper at the fold lines;

rotating drive means operatively connected to the helical refolding guides for rotating the helical refolding guides about the upright parallel axes to (1) move the spiral elements into engagement with the fanfold paper discharged from the continuous form printer, and (2) guide the fanfold paper downward toward the platform to progressively refold the fanfold paper along the fold lines, and (3) restack the fanfold paper on the platform with the height of the reformed stack progressively increasing on the platform; and

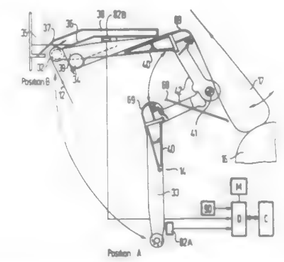
vertical movement means for permitting the helical refolding guides to progressively move vertically relative to the platform as the height of the stack increases to maintain the spiral elements on top of the reformed stack to engage the fanfold paper discharged from the output of the printer.

5,358,346

PAPER-SEPARATING DEVICE FOR PREFOLDED CONTINUOUS PAPER IN A PRINTING DEVICE

Ludwig Schmidt, Munich, and Peter Rumpel, Feldkirchen, both of Fed. Rep. of Germany, assignors to Siemens Nixdorf Informationssysteme AG, Fed. Rep. of Germany

PCT No. PCT/DE89/00766, § 371 Date Oct. 3, 1991, § 102(e) Date Oct. 3, 1991, PCT Pub. No. WO90/12374, PCT Pub. Date Oct. 18, 1990
PCT Filed Dec. 13, 1989, Ser. No. 768,084
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1989, 3911025
Int. Cl.[5] B41J *15/04*
U.S. Cl. 400—619 1 Claim



1. A paper-separating device for prefolded continuous paper of a predetermined stiffness which is drawn from a stockpile by a paper-transport device and is fed to a printer, comprising:

means for guiding the paper web between the paper-transport device and the stockpile in a first deflecting direction via a first deflecting element, a deflection radius of said first deflection element being sufficiently small that folded paper layers of said predetermined stiffness which adhere together are fanned out and said guiding means guiding the paper web via a further, second deflecting element which deflects the paper web in a second deflecting direction, said second deflecting element being arranged downstream of the first deflecting element in a direction of paper-transport, the first deflecting element being swivellably mounted and the second deflecting element being stationarily mounted in a swivel area of the first deflecting element, and in an insertion position assigned to the swivelled position (position A) of the first deflecting element, the paper web can be inserted into the paper-transport device and, when the first deflecting element is swivelled into an operational position (position B) with swivelled-in first deflecting element, the deflecting element grips the paper web on one side and places it in the area of the second deflecting element; a paper-guiding element opposite said first deflecting element and receiving following folded paper layers of the pre-folded paper which had been stuck to preceding folded paper layer and which have been fanned out by passage over said first deflecting element.

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5,358,347

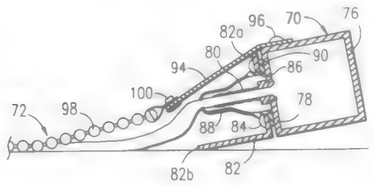
ROOF MASTIC APPLICATOR

Paul L. Morris, 8815 W. 104th St., Overland Park, Kans. 66212

Continuation-in-part of Ser. No. 989,648, Dec. 11, 1992, abandoned, which is a division of Ser. No. 825,982, Jan. 27, 1992. This application Jan. 3, 1994, Ser. No. 176,417

Int. Cl.[5] B05C *17/00, 5/00*

U.S. Cl. 401—48 6 Claims



1. Apparatus for evenly spreading a flowable roof mastic, comprising:

an elongated, hollow mastic delivery bar adapted to be transversely pulled across a roofing surface and having structure defining a plurality of mastic delivery openings therethrough along the length of the bar;

a plurality of individual valve members operably coupled with each of said delivery openings for selectively permitting flow of mastic from the delivery bar; and

means for evenly spreading mastic passing through said individual valve members.

5,358,348

WRITING IMPLEMENT AND HOLDER ASSEMBLY

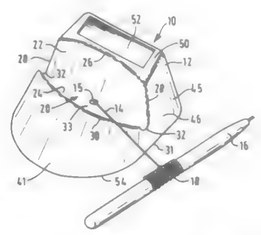
Guy W. Kennedy, 7 Cedar Close, Epsom, Surrey K517 4HG, England

Filed Feb. 3, 1993, Ser. No. 14,189

Claims priority, application United Kingdom, Feb. 3, 1992, 9202218.5

Int. Cl.[5] B43K *29/20, 31/00*

U.S. Cl. 401—131 7 Claims



1. A writing implement and holder assembly comprising an elongated writing implement having a mid-portion of said writing implement provided generally midway between the opposed ends of said elongated writing implement,

a retracting cord having one end secured to said mid-portion,

a holder having top, bottom and front surfaces, said top and front surfaces defining an elongated ovaloid concave cavity with truncated opposite end portions defining edge supports for said writing implement, said cavity having a central opening for receiving said cord, and

means for retracting said cord provided inside said housing so as to normally bias said writing implement into a position where said implement is supported by said edge supports in a position where the implement can be readily grasped at its mid-portion by the user as a result of the concave ovaloid shaped cavity provided for this purpose in the holder.

5,358,349

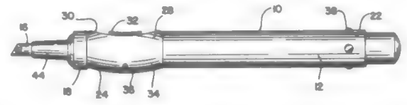
GLUE APPLICATOR

Andrew C. Burroughs, Kenosha, Wis.; Andrew B. Hodge, Evanston, and Edward F. Sexton, Northbrook, both of Ill., assignors to Revell-Monogram, Inc., Morton Grove, Ill.

Filed Nov. 3, 1993, Ser. No. 147,157

Int. Cl.[5] B43K *8/04, 8/06*

U.S. Cl. 401—184 18 Claims



1. A glue applicator for continuously, storing and applying liquid glue, comprising:

(a) an elongated generally cylindrical body member having a closed proximal end portion and an open distal end portion, said body member having a squeezable portion located adjacent the distal end portion thereof that may be deflected inwardly by a force applied by a finger;

(b) a substantially rigid elongated inner core member positioned within said body member and extending along substantially the entire length thereof, said inner core member having portions thereof that are in contact with an inner surface of said body member along substantially the entire length thereof, said inner core member having a distal end portion and a proximal end portion, said distal end portion of said inner core member having an elongated cavity formed therein that extends distally beyond the distal end portion of said body member;

(c) a fibrous tip member having a proximal end portion that is received within said cavity and a distal end portion that extends distally beyond the distal end portion of said inner core member;

(d) liquid glue contained with said body member, said inner core member having a plurality of openings formed therein for permitting the passage of said liquid glue from said body member therethrough into said cavity so as to contact said fibrous tip member; and

(e) means for sealing the distal end of said body member to preclude liquid glue from escaping from said body member other than through said cavity.

5,358,350

CONNECTION DEVICE FOR A STEERING COLUMN OF A MOTOR VEHICLE

Max Oertle, Mauren, Liechtenstein, assignor to Etablissement Supervis, Vaduz, Liechtenstein

Filed Feb. 1, 1993, Ser. No. 11,962

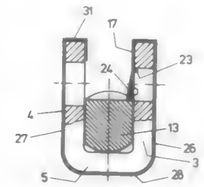
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1992, 4202684

Int. Cl.[5] F16B *1/00*

U.S. Cl. 403—12 10 Claims

1. A device for connecting a steering column of a motor vehicle with a shaft journal of a steering mechanism, comprising a U-shaped coupling member having side walls and a web connecting the side walls, the coupling member having a transverse axis, the coupling member being connected to the steering column so as to be swingable about the transverse axis, each side wall defining a bore, the bores being arranged in alignment with each other, a tightening screw being inserted in the bores of the side walls, the tightening screw having means for securing the tightening screw against rotation, and a nut for securing the tightening screw, an auxiliary piece bearing against at least one of the side walls of the coupling member, the auxiliary piece defining a cutout essentially in alignment

with the bores of the side walls, the cutout having a rim, lugs projecting into the bore of the side wall being formed at the rim of the cutout, the auxiliary piece further comprising tongues on each side of the cutout. The tongues projecting



toward a center plane of the U-shaped coupling member and toward the web of the U-shaped coupling member, the tongues having front edges, the front edges bearing against the shaft journal so as to prevent removal of the shaft journal from the U-shaped coupling member.

5,358,351

PRINTING APPARATUS AND PRINTING TAPE CASSETTE USED THEREFOR

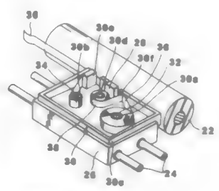
Yoshiyuki Murata, Oome, and Kenji Kobayashi, Akigawa, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed May 20, 1993, Ser. No. 64,277

Claims priority, application Japan, Sep. 30, 1992, 4-286926; Dec. 15, 1992, 4-334366

Int. Cl.[5] B41J *3/02, 11/48*

U.S. Cl. 400—605 16 Claims



1. A printing apparatus comprising:

an apparatus main body in which a sheet-like printing medium or a tape-like printing medium contained in a cassette can be mounted;

printing means capable of printing an image either on the sheet-like printing medium or the tape-like printing medium contained in said cassette; and

control means for, when an image is printed on the sheet-like printing medium, controlling said printing means and the sheet-like printing medium to make them move relative to each other and cause said printing means to print the image on the sheet-like printing medium, and for, when an image is printed on the tape-like printing medium, controlling said printing means and the tape-like printing medium to make them move relative to each other and cause said printing means to print the image on the tape-like printing medium.

5,358,352

SWIVEL JOINT FOR A SUPPORT ARM ADJUSTABLY RECEIVING AN APPLIANCE, LIGHTING FIXTURE OR THE LIKE

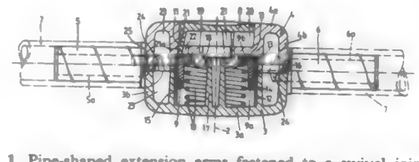
Guenter Klarhorst, Eisgrundstrasse 7, D-4800 Bielefeld 18, Fed. Rep. of Germany

Filed Nov. 18, 1992, Ser. No. 978,953

Claims priority, application Fed. Rep. of Germany, May 21, 1992, 4216767

Int. Cl.[5] F16C *11/10;* F16M *11/08;* F21Y *21/28*

U.S. Cl. 403—104 20 Claims



1. Pipe-shaped extension arms fastened to a swivel joint having a cable lead therethrough, said swivel joint comprising,

two joint shells,

said two joint shells being limitedly rotatable about a common axis and held together axially,

each of said two joint shells having one tubular outrigger arm for connection to one of each of said pipe-shaped extension arms,

actuation element means adjustably engaged to said two joint shells for permitting rotation of said two joint shells in relation to each other and locking said two joint shells in a particular rotated position,

said actuation element means having a manually actuatable pushbutton (8) and an axially displaceable spring-loaded blocking device (9),

said blocking device (9) cooperatively engaged in a form-filling and/or force-locking fashion with both said two joint shells (3, 4) in a blocking position where rotation of said two joint shells (3, 4) is blocked and with only one of said two joint shells (3) in a release position where rotation of said two joint shells is possible,

said actuation element means being disposed in both said two joint shells (3, 4), and said pushbutton (8) being connected to said blocking device in a force-locking fashion,

wherein said two joint shells (3, 4) each have on their inside a concentric cylinder ring (15, 16) rising from a shell bottom,

wherein each of said two joint shells (3, 4) each have one encompassing receiving chamber (23) around each said cylinder ring (15, 16), and each said chamber together form a common, continuous receiving chamber (23) said cable (1) to be passed therethrough, and each said outrigger arm (5, 6) is continuously connected to said receiving chamber (23) by conduits (5a, 6a), each via a respective recess (24) in an associated joint shell of said two joint shells (3, 4),

wherein the blocking device (9) has at least one stop (11), and both the blocking device (9) and stop (11) are completely contained within the cylindrical ring (15, 16).

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5,358,353

DEVICE AND METHOD FOR THE EQUIAXIAL CONNECTION OF MULTIPLE-PART LINKAGES

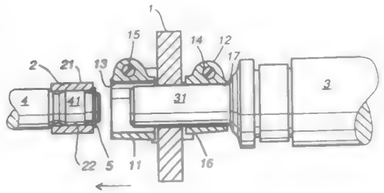
Gottfried Schremmer, Tamm, and Wolfgang Jörg, Stuttgart, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Mar. 3, 1993, Ser. No. 25,650

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1992, 4208497

Int. Cl.[5] F16B *1/00;* B62D *1/16*

U.S. Cl. 403—196 7 Claims



1. Device for equiaxial connection of multiple-part steering linkages of vehicles, with precise setting of rotational positions of rods of the steering linkages, comprising:

a coupling, mounted between the rods, said coupling having first and second flanges, rotational positions of the flanges with respect to one another being fixed, each said flange firmly surrounding a respective end of said rods, the end of at least one rod having an even, fine surface toothing, and

a bush having an inside contour that is serrated and which surrounds the end of one of said rods, said end of said one rod having the surface toothing, wherein the first flange of the coupling has an inside contour and grips around the bush in an interlocking manner, and wherein the bush has an outside contour with at least one axially parallel contact surface that engages in a corresponding profile of the inside contour of the first flange.

5,358,354

RESILIENT COUPLING

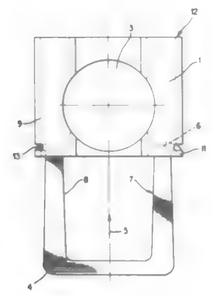
Michael Brümmer, Laudenbach; Volker Daume, Hirschhorn, and Bernhard Gesenhues, Birkenau, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Mar. 18, 1993, Ser. No. 32,896

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1992, 4209608

Int. Cl.[5] F16B *21/18*

U.S. Cl. 403—326 6 Claims



1. A coupling comprising:

a first machine element having a recess,

a second machine element which can be inserted into the recess,

an elastic, U-shaped bracket, comprising first and second axial legs and a base, and

first and second adjacent positioning devices integral with the first and second machine elements, respectively,

wherein the bracket has a direction of movement extending transverse to a direction of coupling and is able to be brought into engagement with the positioning devices,

wherein the first machine element has in the region of its positioning devices in the direction of movement of the bracket at least a first and a second detent located one behind the other,

wherein the first and second detents are arranged in the direction of movement in front of and behind the recess of the first machine element, respectively,

wherein the bracket is provided in the direction of movement at least at a front end of at least one of said first and second axial legs with a lock device which can be brought into engagement with the detents of the first machine element,

wherein the bracket can in a retracted condition be brought into engagement with the first detent, so that the bracket is arranged outside the recess,

wherein the lock device faces outwardly with respect to a longitudinal axis of said bracket, and

wherein the first detent faces inwardly toward said recess of said first machine element so that in said retracted condition said lock device is biased outwardly from said longitudinal axis of said bracket to engage said first detent.

5,358,355

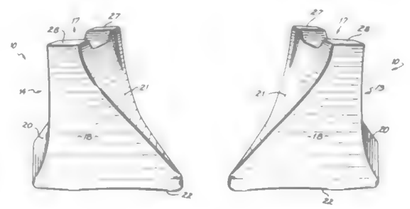
COMPACTION WHEEL CLEAT

Robert J. Brockway, Milwaukee, Wis., assignor to Terra Environmental Group Inc., Caledonia, Wis.

Filed Apr. 23, 1993, Ser. No. 52,120

Int. Cl.[5] B60B *15/02;* E01C *19/25*

U.S. Cl. 404—121 17 Claims



1. A cleat for being mounted to the working face of a wheel of a compaction machine, said cleat comprising:

a cutting face having two side edges;

two ends;

a bottom face; and

two side faces, substantially all of the surface area of each of said side faces sloping downward from one side edge of said cutting face toward said bottom face and gradually continuously sloping toward a different respective end of said cleat.

5,358,356

EROSION CONTROL MAT

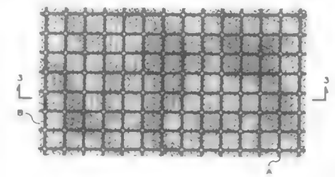
Gerald A. Romanek; Roger E. Moon, both of Greenville; Mark L. Marienfield, Greer, and Sukhdev S. Guram, Greenville, all of S.C., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 338,784, Apr. 13, 1989, Pat. No. 5,249,893.

This application Jul. 29, 1993, Ser. No. 99,043

Int. Cl.[5] E02D *3/12*

U.S. Cl. 405—16 2 Claims



1. A composite fabric comprising a scrim of polypropylene having a weight in the range of from about 3 ½ pounds per thousand square feet to about 1 pound per thousand square feet and having an open grid structure characterized by a grid opening size ranging from a maximum of about 1 inch to a minimum of about 1/16 inch; and a uniform lightweight web comprising polypropylene staple fibers having a denier in the range of about 60 to about 1 and staple length in the range of from about 7 inches to about ¾ inches and having a weight in the range of from about 2½ ounces per square yard to about ½ ounce per square yard secured to said scrim by needle-punching.

5,358,357

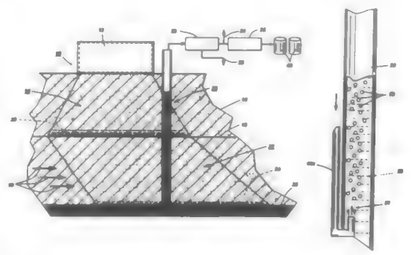
PROCESS AND APPARATUS FOR HIGH VACUUM GROUNDWATER EXTRACTION

Alfonso R. Mancini, Penfield; Ronald E. Hess, Webster; Richard A. Williams, Sodus Point; Douglas J. Montgomery, Ontario, and Heinrich J. Jurzysta, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 30, 1993, Ser. No. 56,349

Int. Cl.[5] E03B *3/12;* E21B *43/00*

U.S. Cl. 405—128 18 Claims



1. A process for removing contaminants from a contaminated area of the ground having a vadose zone and a water table, which comprises providing a borehole in the contaminated area to a depth below the water table; placing in the borehole to a depth below the water table a perforated riser pipe inside of which is situated a vacuum extraction pipe with a bottom opening situated within the perforated riser pipe, said vacuum extraction pipe containing groundwater prior to application of a vacuum thereto, said vacuum extraction pipe having at least one gas inlet situated below the groundwater level in the vacuum extraction pipe; while introducing a gas into the riser pipe, applying a vacuum to the vacuum extraction pipe to draw gases and liquid from the soil into the perforated riser pipe and from the riser pipe into the vacuum extraction pipe and transport both the gases and the liquid to the surface as a two-phase common stream; introducing a gas into the vacuum extraction pipe at a level below the groundwater level in the vacuum extraction pipe to initiate two-phase flow within the vacuum extraction pipe; forming from the common stream a stream which is primarily liquid and a stream which is primarily gaseous; and separately treating the separated liquid and gas streams, wherein the flow of gas into the vacuum extraction pipe from the gas inlet is terminated after two-phase flow has been established within the vacuum extraction pipe.

5,358,358

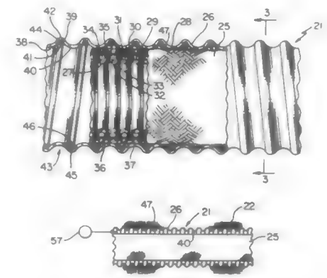
SYSTEM FOR CONVEYING A FLUID THROUGH AN UNDER-THE-GROUND LOCATION AND METHOD OF MAKING THE SAME

Joseph V. Tassone, Kettering, Ohio; Richard L. Marsh, Springfield, Mo., and James T. Candor, Washington Township, Montgomery County, Ohio, assignors to Dayco Products, Inc., Dayton, Ohio

Filed Feb. 17, 1993, Ser. No. 18,687

Int. Cl.[5] F16L *11/11*

U.S. Cl. 405—154 18 Claims



1. In a system for conveying a fluid through an under-the-ground location, said system comprising a primary flexible conduit means for conveying said fluid therethrough and having an inner peripheral surface means and an outer peripheral surface means, and an outer secondary conduit means having at least a portion of said primary conduit means removable disposed therein and having an inner peripheral surface means and an outer peripheral surface means that engages said ground in said under-the-ground location thereof, the improvement wherein said secondary conduit means has said inner peripheral surface means thereof comprising a helically disposed and inwardly directed projection thereof that engages said outer peripheral surface means of said primary conduit means in a spiral manner and cooperates therewith to define a helically disposed passage that extends therebetween throughout substantially the entire engagement area thereof, said system comprising fluid pump means for forcing a fluid between said outer peripheral surface means of said primary conduit means and said inner peripheral surface means of said secondary conduit means to tend to separate said conduit means from contacting each other so as to facilitate removal of said primary conduit means from said secondary conduit means while said secondary conduit means remains in said under-the-ground location thereof.

10. In a method of making a system for conveying a fluid through an under-the-ground location, said method comprising the steps of forming a primary flexible conduit means for conveying said fluid therethrough and a secondary conduit means for containing at least part of said primary conduit means therein with each said conduit means having an inner peripheral surface means and an outer peripheral surface means, and disposing said conduit means in said ground at said

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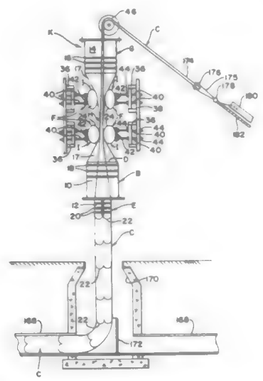
under-the-ground location so that said ground engages said outer peripheral surface means of said secondary conduit means and said at least part of said primary conduit means is removably disposed within said secondary conduit means, the improvement comprising the steps of forming said inner peripheral surface means of said secondary conduit means to comprise a helically disposed and inwardly directed projection thereof that engages said outer peripheral surface means of said primary conduit means in a spiral manner and cooperates therewith to define a helically disposed passage that extends therebetween throughout substantially the entire engagement area thereof, and forming said system to comprise fluid pump means for forcing a fluid between said outer peripheral surface means of said primary conduit means and said inner peripheral surface means of said secondary conduit means to tend to separate said conduit means from contacting each other so as to facilitate removal of said primary conduit means from said secondary conduit means while said secondary conduit means remains in said under-the-ground location thereof.

5,358,359

APPARATUS FOR EVERTING A TUBE

Charles A. Long, Jr., Birmingham, Ala., assignor to Insituform (Netherlands) B.V., Netherlands

Filed Apr. 30, 1993, Ser. No. 54,307
Int. Cl.[5] F16L *55/165*
U.S. Cl. 405—154 **28 Claims**



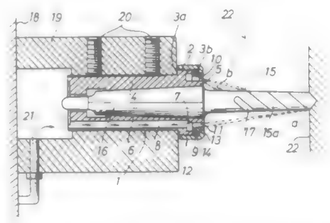
1. In apparatus for everting a tube comprising a support, a chamber mounted on said support having an inlet through which said eversion tube is adapted to pass to enter said chamber and having an outlet through which said eversion tube is adapted to pass to leave said chamber, means for developing fluid under pressure in said chamber for everting said eversion tube, and valving upstream from said chamber inlet through which said eversion tube passes, said valving permitting said eversion tube to slide therethrough while maintaining said fluid pressure in said chamber, the improvement which comprises curtain means mounted on said support sealed to and extending upstream of said chamber inlet through which said eversion tube is adapted to slide, inflatable means so mounted on said support adjacent said curtain means that when said inflatable means is inflated it presses against said curtain means and causes said curtain means to substantially fluid-sealingly press against said eversion tube and when said inflatable means is not inflated said curtain means is not thus pressed against said eversion tube, and means active on said inflatable means for inflating the latter.

5,358,360

DEVICE FOR SUPPLYING FLUID TO TOOL

Tsunetaka Mai, Osaka, Japan, assignor to Nikken Kosakusho Works, Ltd., Osaka, Japan

Filed May 6, 1993, Ser. No. 60,184
Claims priority, application Japan, Sep. 10, 1992, 4-063456[U]
Int. Cl.[5] B23B *51/06;* **B23C** *5/28*
U.S. Cl. 408—61 **6 Claims**



1. A device for supplying a fluid to a tool with a shank for machining a workpiece, said device comprising:

a tool holder for receiving and holding the shank of the tool in an attachable and detachable manner, said tool holder having a forward end formed to include an annular fluid supply groove open at said forward end, and an interior provided with a fluid passageway for communicating said fluid supply groove with a supply source of the fluid; and

a nozzle ring having a forward side and provided with a plurality of nozzles which are unadjustably formed in said nozzle ring and which are open to said forward side and communicating with said fluid supply groove, said nozzle ring being fixed to the forward end of said tool holder in an attachable and detachable manner, wherein said nozzle ring is designed to be used with a particular tool, and the nozzle ring and tool it is used with are chosen depending on the machining requirements of the workpiece, and wherein each said nozzle is oriented such as to direct the fluid to different points along the length of the tool the device is being used with, to thereby ensure that the tool is properly lubricated along its length during its use, especially at a tip of the tool and at a base portion of the tool.

5,358,361

QUICK CHANGE SELF-FEED DRILL ASSEMBLY

Thomas R. Jurski, Auburn Hills, Mich., assignor to GenCorp Inc., Fairlawn, Ohio

Filed May 17, 1993, Ser. No. 62,872
Int. Cl.[5] B23B *45/00*
U.S. Cl. 408—67 **20 Claims**

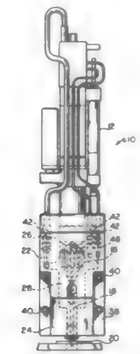
1. A self-feed drill assembly for forming an opening within a work piece, said drill assembly comprising:

a power driven drill having a rotating cutting element;

a mounting for maintaining the relative position of said power driven drill with respect to the work piece, said mounting including a nose piece housing defining a first chamber adapted to receive a leading portion of said power driven drill; and

a foot mount housing defining a second chamber adapted to receive said nose piece housing and in communication with said first chamber such that at least said rotatable cutting element extends through said first chamber and said second chamber and foot mount housing to contact the work piece; and

a means for releasably joining said nose piece housing and said foot mount housing in an axially coupled position, said joining means includes a detent member and detent opening for joining said nose piece housing and said foot mount housing in an axially coupled position.

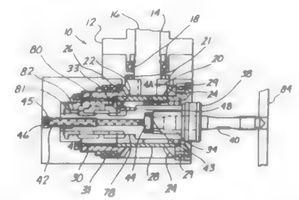


5,358,362

TAPPING ATTACHMENT FOR RADIAL TAPPING

Allan S. Johnson, Newport Beach, Calif., assignor to Tapmatic Corporation, Id.

Filed Apr. 2, 1993, Ser. No. 41,776
Int. Cl.[5] B23G *3/02, 5/14*
U.S. Cl. 408—139 **17 Claims**



1. A self-reversing tapping attachment for radial tapping comprising:

(a) a tap spindle member for holding a tap and rotatable to tap in a tapping direction;

(b) a forward drive member engageable with said tap spindle member to drive said tap spindle member in said tapping direction;

(c) a reverse drive member engageable with said tap spindle member for driving said tap spindle member in a direction opposite to said tapping direction;

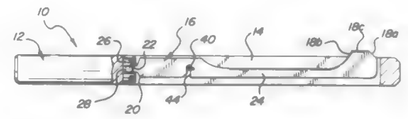
(d) drive transmitting means for transmitting drive to said forward drive member and said reverse drive member and engageable with said driving part for receiving drive therefrom, said tap spindle member being moveable axially along said tapping direction relative to said forward drive member and said reverse drive member, whereby forward drive is imparted to said tap spindle member for tapping and upon movement of the forward drive member relative to said tap spindle member in a direction opposite to said tapping direction, said forward drive member disengagable from said spindle member and said reverse member engages in driving engagement with said tap spindle member to impart reverse rotation thereto.

5,358,363

DEBURRING TOOL

William A. Robinson, Canton, Mich., assignor to E-Z Burr Tool Company, Plymouth, Mich.

Filed Dec. 9, 1993, Ser. No. 164,745
Int. Cl.[5] B23B *51/00*
U.S. Cl. 408—153 **3 Claims**



1. A deburring tool comprising;

an elongated arbor formed with a cutting blade recess, a unitary cutting tool having a cutting head, a trailing terminal portion, and an elongated, flat resilient blade extending therebetween and received in said recess and mounting means securing said cutting tool to said arbor such that said cutting head projects from said recess;

said mounting means including an adjustable screw threadably mounted in said arbor transversely of the longitudinal axis of said arbor for fixedly engaging the terminal portion of said cutting tool so as to determine the distance said cutting head projects from said recess and an adjustable locking screw extending transversely through said recess and said blade to define a pivot point about which said cutting tool can pivot, said locking screw having a non-threaded hemispherical portion which terminates in a flat edge;

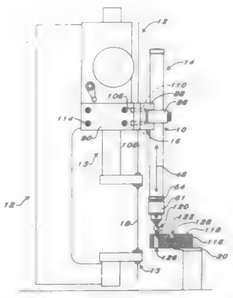
said resilient blade including an open ended slot having an arcuate closed end which presents a flat at one end of the arc of said slot, said hemispherical portion of said locking screw being received in said slot and adapted to rotate relative to said arcuate end of said slot until said flat edge of said hemispherical portion comes into abutting engagement with said flat in said slot to lock said blade within said arbor while permitting said resilient blade to pivot about said locking screw.

5,358,364

SETUP DEVICE AND METHOD FOR MILLING MACHINES

Ronald J. Kall, 4758 W. 11th St., Cleveland, Ohio 44109

Filed Sep. 7, 1993, Ser. No. 116,909
Int. Cl.[5] B23Q *16/00*
U.S. Cl. 409—131 **6 Claims**



5. A method of positioning a machine relative to a part to be machined, comprising the steps of:

a) creating a feature in a fixture using the machining process

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of a machine when the machining process is at a known position;
b) determining the center of said created feature by rotating a rotatable element of a spindle attached to the machine;
c) calculating the offset of the part relative to the machine as a function of the position of the machining process when said created feature was created and the position of said spindle when the center of said created feature was determined by use of the spindle;
d) determining the location of a part to be machined relative to said machine by rotating said rotatable element of said spindle to find a specific feature having a known position on said part; and
e) offsetting said machining process by said calculated offset.

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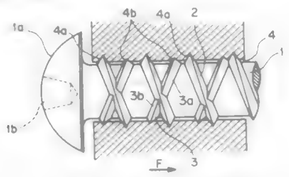
Patent Not Issued For This Number

5,358,366

SCREW AND THREAD ROLLING DIE

Yasuo Suzuki, Saitama, Japan, assignor to O S G Corporation and Kabushiki Kaisha Suzuki Rashi Seisakusho, both of Japan

PCT No. PCT/JP91/00939, § 371 Date Dec. 18, 1992, § 102(e) Date Dec. 18, 1992, PCT Pub. No. WO92/01165, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 12, 1991, Ser. No. 949,821
Claims priority, application Japan, Jul. 13, 1990, 2-183888; Sep. 18, 1990, 2-246203
Int. Cl.[5] F16B *35/04, 39/30;* **B29D** *17/00*
U.S. Cl. 411—311 **3 Claims**



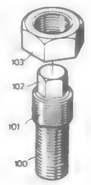
1. A screw comprising: a head portion formed at an end of said screw, said head portion having engaging means for engaging said head portion with a rotating driver; a main clockwise/counterclockwise thread to be screwed in; and a counterclockwise/clockwise sub-thread formed in the direction opposite to the main thread; said sub-thread having an external diameter smaller than that of the main thread and larger than a diameter of a pre-drilled hole of a mating member, characterized in that a slant surface of said sub-thread on a screw-loosening side has a sharp slope and that on a screw-tightening side has a gentle slope.

5,358,367

SCREW OR NUT PACKING MICRO-ADJUSTMENT

Tai-Her Yang, 5-1 Taipin St. Si-Hu Town, Dzan-Hwa, Taiwan

Filed Aug. 4, 1993, Ser. No. 101,757
Int. Cl.[5] F16B *23/00, 35/06*
U.S. Cl. 411—397 **6 Claims**



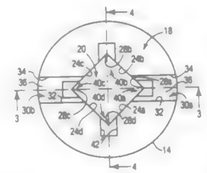
1. An elongated threaded fastener comprising:
a) a generally cylindrical first portion having an external surface with first threads formed thereon, the first threads having a diameter d_1 and a pitch p_1;
b) a generally cylindrical second portion located adjacent to the first portion, the second portion having an external surface with second threads formed thereon, the second threads having a diameter d_2 such that $d_2 > d_1$ and a pitch P_2 such that $P_2 < P_1$;
c) drive means formed on the second portion and configured to engage a driving tool to apply a rotative face to the threaded fastener; and,
d) a nut threadingly engaged with the threads on the second portion.

5,358,368

SCREW WITH IMPROVED HEAD DESIGN

Gary D. Conlan, and Dennis Barber, both of Mansfield, Ohio, assignors to General Signal Corporation, Stamford, Conn.

Filed Sep. 9, 1993, Ser. No. 119,283
Int. Cl.[5] F16B *35/06*
U.S. Cl. 411—410 **6 Claims**



1. A screw having an elongated threaded body with an axially aligned head including a driving socket capable of receiving a square socket type driver, a cross-recess type screw driver, and a flat blade driver, the driving socket comprising:
a square recess extending axially into the head to a depth h and defined by four vertical walls which meet at four vertical corners, said recess sized and arranged to receive a square type driver;
aligned slots extending radially outwardly in alignment with two diagonally located corners of the square recess for receiving a flat blade driver, each slot being defined by two parallel spaced walls which extend into the head a distance of approximately one-half h to a transverse bottom wall, the vertical walls in each slot being aligned with those in the diagonally opposite slot; and,
four grooves extending diagonally outwardly from the corners of the square recess to define a cross-shaped recess to receive a cross-point type screw driver, the grooves each defined by a pair of vertical sides more closely spaced than the parallel walls defining the slots and extending into the head a distance greater than one-half h and than that of the aligned slots but less than h, each groove having an inclined bottom wall joining the sides, and the grooves in the corners from which the diagonal slots extend being located centrally of the slots in the transverse bottom walls thereof.

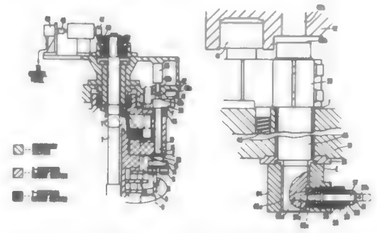
5,358,369

CAN SEAMER

Naoyoshi Katou; Hirofumi Itoh; Seiki Tamiya, and Masateru Takahara, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 953,788, Sep. 30, 1992, Pat. No. 5,320,469. This application May 7, 1993, Ser. No. 57,836
Claims priority, application Japan, Oct. 30, 1991, 3-310200; Oct. 30, 1991, 3-310201; Oct. 30, 1991, 3-310202
Int. Cl.[5] B21D *51/26*
U.S. Cl. 413—27 **12 Claims**

1. A seaming roll mounting an dismounting mechanism in a can seamer comprising a can seamer main body frame having a vertical center axis, a rotary frame rotatable about the vertical center axis, a plurality of can seaming mechanisms circumferentially distributed about the vertical center axis, at a constant pitch and equidistant from the vertical center axis, each said can seaming mechanism including a seaming roll shaft carried by said rotary frame, a set of two seaming rolls removably mounted on a lower end of said shaft, a rotatable can table for supporting a bottom of a can and a seaming chuck rotatable with said can table for supporting a lid of the can from above, said seaming roll mounting and dismounting mechanism comprising:
a tapered bore extending into a said seaming roll shaft from a vertical plane portion at a lower portion of said seaming roll shaft towards a center axis of said shaft;



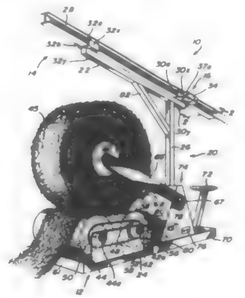
a seaming lever fitted externally around the lower portion of said shaft, said seaming lever supporting the set of two seaming rolls of said shaft, and said seaming lever having a threaded hole therein;
a set shaft threadedly engaged with said threaded hole in said lever, said set shaft having a cylindrical space therein;
a cylindrical adjusting screw provided within said cylindrical space of said set shaft, said cylindrical adjusting screw having an inner cylindrical space; and
a center pin extending through said inner cylindrical space of said adjusting screw so as to be freely movable into and out of said tapered bore for adjustable positioning and fitting of said seaming lever to said seaming roll shaft.

5,358,370

UN-WINDER FOR HAY BALES

André Carpentier, 108 Chemin Dion, Saint Élie d'Orford, Qc, Canada J0B 2S0

Filed Jan. 11, 1993, Ser. No. 2,918
Int. Cl.[5] A01D *90/08*
U.S. Cl. 414—24.6 **18 Claims**



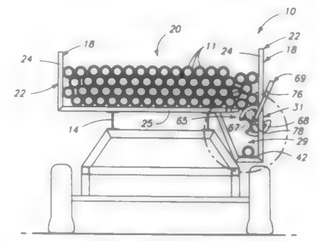
1. An un-winder for hay bales comprising:
a means to unwind a bale of hay;
a rail mounted to a barn, said barn having a roof and a floor, the rail having a length;
a frame having a pair of opposite arms,
one of said arms suspended from the rail such that said one of said arms is linearly translatable along the length of the rail; and an other of said arms supporting said means to unwind and
whereby the means to unwind rotates a bale of hay such that an outermost layer of the bale is unwound from the bale.

5,358,371

PIPE HAULING AND FUSION TRAILER

E. John Neddo, 4607 S. Conklin Rd., Greenacres, Wash. 99016

Filed Jan. 19, 1993, Ser. No. 5,655
Int. Cl.[5] F16L *1/024*
U.S. Cl. 414—745.5 **20 Claims**



16. A trailer for supporting and dispensing individual elongated pipe sections to a location laterally adjacent a stack of pipe sections held on the trailer, comprising:
an elongated wheel supported frame;
means for connecting the wheel supported frame to a towing vehicle;
rack means on the elongated wheel supported frame for supporting and releasably confining a stack of elongated pipe sections;
wherein the rack means includes substantially horizontal floor members on the frame;
a dispensing station along the frame situated at a side of and under the rack means;
a pipe discharge opening along the horizontal floor members above the dispensing station for gravitationally discharging pipe sections toward the dispensing station;
escapement means on the frame spanning the pipe discharge opening and between the rack means and dispensing station, and having a stack supporting surface selectively pivotable about an axis for selectively spanning the pipe discharge opening to support pipe sections within the rack means above the pipe discharge opening, and a pipe receiving recess for pivotal movement on the axis to selectively receive and deposit individual elongated pipe sections from the pipe discharge opening to the dispensing station.

5,358,372

SHEET BLOCK INVERTER

Craig E. Meredith, Valleyford, Wash., assignor to Thermoguard Equipment, Inc., Spokane, Wash.

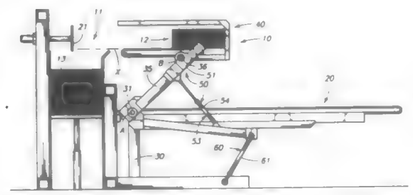
Filed Jul. 8, 1993, Ser. No. 89,885
Int. Cl.[5] B65H *1/00*
U.S. Cl. 414—778 **11 Claims**

8. A sheet block inverter for inverting a block of sheets fed along an infeed plane, comprising:
a support frame;
a sheet block discharge conveyor mounted to the support frame for pivotal movement about a first axis;
an inverter yoke mounted to the support frame for pivotal movement about said first axis;
a sheet block receiving magazine with a sheet block receiving surface thereon, mounted to the inverter yoke for

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pivotal motion thereon about a second axis parallel to and spaced from said first axis between a sheet block receiving position wherein the sheet block receiving surface is substantially parallel to the infeed plane and a sheet block discharge station angularly spaced about the second axis from the infeed plane;

a magazine pivot driver operatively mounted between the



inverter yoke and sheet block receiving magazine for pivoting the sheet block receiving magazine through an angle about the second axis of less than 180° from the sheet block receiving position; and

an inverter yoke driver operatively mounted between the inverter yoke and the support frame for angularly pivoting the inverter yoke and the sheet block receiving magazine about the first axis through an angle of less than 90°.

5,358,373

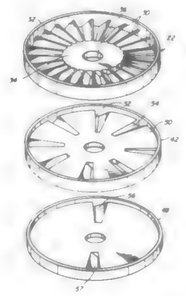
HIGH PERFORMANCE TURBOMOLECULAR VACUUM PUMPS

Marsbed Hablanian, Wellesley, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Apr. 29, 1992, Ser. No. 875,891

Int. Cl.[5] F01D *1/36*

U.S. Cl. 415—90 **7 Claims**



1. A turbomolecular vacuum pump comprising:

a housing having an inlet port and an exhaust port;

a plurality of axial flow vacuum pumping stages located within said housing and disposed between said inlet port and said exhaust port, each of said vacuum pumping stages including a rotor and a stator, each said rotor having a substantially constant number of inclined blades and each said stator having a number of spaced-apart openings which number diminishes in relation to the displacement of said stator from said exhaust port, wherein said number of inclined blades of each said rotor equals or exceeds said number of opening of each said stator.

5,358,374

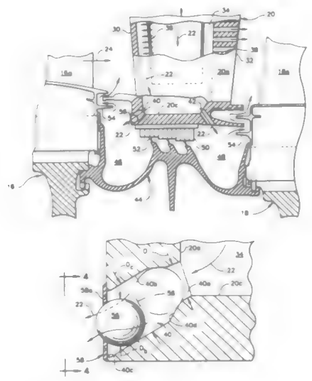
TURBINE NOZZLE BACKFLOW INHIBITOR

Victor H. S. Correia, Scotia, N.Y.; Richard W. Albrecht, Fairfield, and Robert A. Frederick, West Chester, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 21, 1993, Ser. No. 94,804

Int. Cl.[5] F01D *9/06, 11/00*

U.S. Cl. 415—47 **9 Claims**



1. A gas turbine nozzle comprising:

an outer band;

an inner band;

a vane integrally joined between said outer and inner bands and being hollow for receiving cooling air, said inner band having a purge hole extending therethrough for discharging a portion of said cooling air from said vane; and

means disposed in said nozzle for preventing backflow through said purge hole into said vane when pressure inside said vane is less than pressure outside said vane adjacent to said purge hole.

5,358,375

DEVICE FOR TRANSFERRING MATERIALS AND PRODUCT WITH RESPECT TO A PROCESSING MACHINE

Kijuu Kawada, Atsugi, and Yukio Uchino, Odawara, both of Japan, assignors to Amada Company, Limited, Japan

PCT No. PCT/JP92/00438, § 371 Date Dec. 9, 1992, § 102(e) Date Dec. 9, 1992, PCT Pub. No. WO92/18286, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 8, 1992, Ser. No. 956,013

Claims priority, application Japan, Apr. 11, 1991, 3-79365

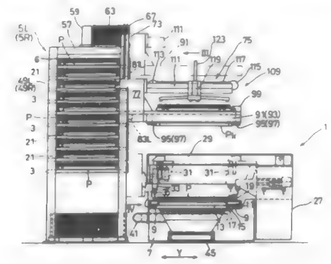
Int. Cl.[5] B65G *1/04*

U.S. Cl. 414—277 **7 Claims**

1. A device for transferring materials and products with respect to a worktable (13) of a processing machine, comprising:

a pallet stacker (5R, 5L) having a plurality of shelves to and from which material and product pallets are passable and dischargeable; and

a pallet carrying elevator (75) provided in a vertically movable manner with respect to the pallet stacker (5R, 5L), the pallet carrying elevator being able to support and pass and discharge the pallet with respect to the shelves, wherein the pallet carrying elevator (75) is provided at an upper portion thereof with a work holding portion (109) for holding the material and product and at a lower portion thereof with a holding device (95) for holding and releasing a processing pallet (Pk), for passing and discharging the processing pallet (Pk) with respect to the worktable (13), and wherein further the pallet carrying elevator (75) includes a pallet supporter (91) for supporting the pallet; and the work holding portion (109) includes



a movable body (127) that is vertically movable relative to the pallet supporter (91), and a pick-up means provided on the vertically movable body (127), for picking up a material or product.

5,358,376

DEVICE FOR OPENING AND EMPTYING FILLED FOOD CANS

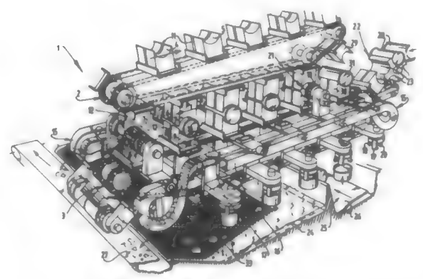
Hendrik van den Top, Bellstraat 19, 3771 AH Barneveld, Netherlands

Filed Mar. 19, 1993, Ser. No. 33,399

Claims priority, application Netherlands, Mar. 20, 1992, 9200521

Int. Cl.[5] B30B *9/00*

U.S. Cl. 414—412 **16 Claims**



1. A device for opening and emptying filled food cans having opposed end walls and a sidewall, the device comprising:

a feed device for bringing cans into the opening and emptying device;

a conveyor path along which cans are moved in the opening and emptying device;

clamping means for receiving a can from the feed device and movable in the conveyor path, said clamping means adapted to be displaceable between an inactive, open position and an active, closed position clamping around said sidewall of the can;

a pair of movable claws for gripping the opposed end walls of the can received in the clamping means as the can moves along the conveyor path has;

a knife placed in the conveyor path for slicing through said sidewall to open the can and means positioned after the knife with respect to a direction of movement of the clamping means in the conveyor path for causing portions of the can held in said movable claws to perform a pivoting movement between a first position in the conveyor path and a second pivoting position differing therefrom to empty the can, wherein the means for causing portions of the can held in said movable claws to perform the pivoting movement includes a guide track along which said movable claws move.

5,358,377

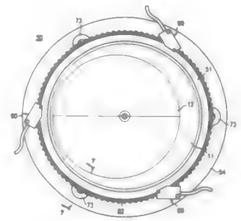
SYSTEM AND METHOD FOR SUPPORT AND ROTATION OF VOLUME

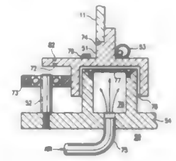
Tommy D. Wright, Irving; Felix Garcia, Round Rock, and Rodney D. Williams, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 563,180, Aug. 6, 1990. This application May 4, 1992, Ser. No. 879,514

Int. Cl.[5] F04D *29/00*

U.S. Cl. 415—165 **22 Claims**





9. A system for rotating a screen, comprising:

a dome with said screen fused to the inside of said dome;

a circumferential support structure for suspending said dome;

a system for rotating said dome;

a circular channel of said circumferential support structure attached to the bottom of said dome;

a stationary circular gas chamber slidably engaged with said channel and in fluid connection with a reservoir of gas;

said chamber having a radius of curvature and a cross-section matching said channel;

a gas gap between said channel and said chamber; and

a plurality of holes in said chamber for releasing gas into said gas gap.

21. A system for rotating a dome, said system comprising:

a movable dome having a circumferential edge for controlling said rotation;

a stationary member for supporting said dome, means for cushionably displacing said dome off of said stationary member, said means for cushionably displacing having a radius of curvature matching the radius of curvature of said circumferential edge;

fluid directing means affixed to said stationary member for directing fluid; and

a movable member affixed to said dome and responsive to fluid directed from said fluid directing means to said movable member for imparting rotational force to said dome.

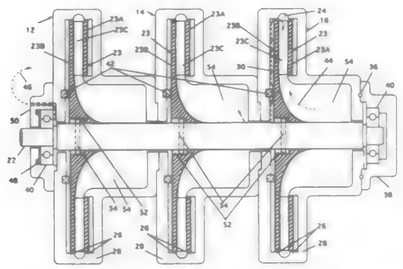
VOL 1167 ISS 4 OCT 25 1994 UMI

5,358,378

MULTISTAGE CENTRIFUGAL COMPRESSOR WITHOUT SEALS AND WITH AXIAL THRUST BALANCE

Donald J. Holscher, 7935 W. 81st St., Playa del Rey, Calif. 90293

Filed Nov. 17, 1992, Ser. No. 977,777
Int. Cl.[5] F01D 5/14
U.S. Cl. 415—170.1 1 Claim



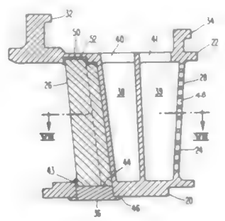
1. A high efficiency radial flow type centrifugal compressor comprising:
a. at least two compressor units mounted together with a common shaft,
b. a means for supporting said shaft on both ends at the outside of said compressor unit,
c. a leakage path defined by between said compressor units and said shaft,
d. each of said compressor units has an intake chamber prior to a rotor assembly and an outlet at the radial periphery of said rotor assembly,
e. said rotor assembly mounted on said shaft axially movably,
f. a means for limiting the axial movement of said rotor assembly at a base of said rotor assembly,
g. a throttle ring provided between a rear face of said rotor assembly and a compressor casing for regulating leakage before flowing into said intake chamber of said proceeding compressor unit,
h. wherein said leakage entering to said intake chambers of said proceeding compressor unit through said leakage path balances the axial force on said rotor assembly.

5,358,379

GAS TURBINE VANE

Barton M. Pepperman, Orlando, and Andrew J. Ayoob, Oviedo, both of Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 27, 1993, Ser. No. 141,756
Int. Cl.[5] F04D 29/44
U.S. Cl. 415—191 17 Claims



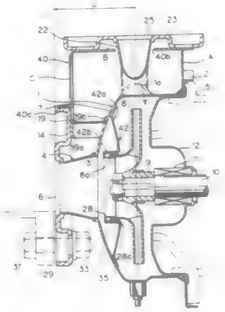
1. A gas turbine, comprising:
a turbine section having a rotating shaft disposed therein to which a row of rotating blades are attached;
a row of stationary vanes circumferentially arranged around said shaft, each of said vanes having an airfoil portion, said airfoil having a leading edge portion, a trailing edge portion, a center portion disposed between said leading edge portion and said trailing edge portion, and means for slidably securing said leading edge portion to said center portion; and wherein said vanes further comprise a shroud attached to said airfoil and a radial gap formed between said leading edge portion and said shroud.

5,358,380

PUMP CASING MADE OF SHEET METAL

Shinichiro Arakawa, Tokyo, Japan, assignor to Ebara Corporation, Tokyo, Japan

Continuation of Ser. No. 819,881, Jan. 13, 1992. This application Sep. 20, 1993, Ser. No. 123,673
Claims priority, application Japan, Jan. 11, 1991, 3-12700; Mar. 12, 1991, 3-13894
Int. Cl.[5] F04D 29/42
U.S. Cl. 415—200 2 Claims



1. A pump casing made of sheet metal, comprising:
a casing jacket having a cylindrical cup shape and including, at one end thereof, a casing flange, and, at the other end thereof, an end plate axially outwardly bulged to form an arcuately curved end surface; and
wherein a radially outwardly bulged projecting portion projects radially outwardly from a radially outer periphery of said casing jacket in a volute shape, said projecting portion having first and second base portions connecting to said casing jacket and a radially outermost portion between said first and second base portions, said first base portion being formed as an extension of said arcuately curved end surface such that a major portion of said arcuately curved end surface, together with a first portion extending from said first base portion to said radially outermost portion of said projecting portion, constitute a continuous portion having no inflection points.

5,358,381

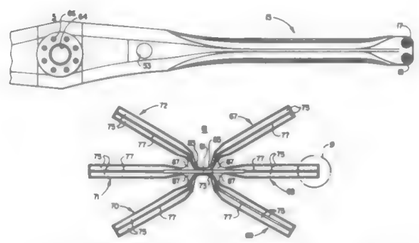
YOKE FOR HELICOPTER ROTOR SYSTEMS

Cecil E. Covington, Hurst; Timothy K. Ledbetter, Euless; Ernest A. Powell, Bedford; Madison K. Robinson, Bedford; Ajay Sehgal, Bedford, and Patrick R. Tisdale, Roanoke, all of Tex., assignors to Bell Helicopter Textron Inc., Fort Worth, Tex.

Filed Mar. 19, 1993, Ser. No. 34,345
Int. Cl.[5] B64C 27/38
U.S. Cl. 416—134 A 3 Claims

1. In a helicopter rotor blade system yoke, a feathering flexure comprising, in transverse cross section:
a thin central web;

at least two flanges extending from each of at least two separated points on said web, said flanges lying substantially in planes which are approximately radial relative to a neutral feathering axis of said feathering flexure; and



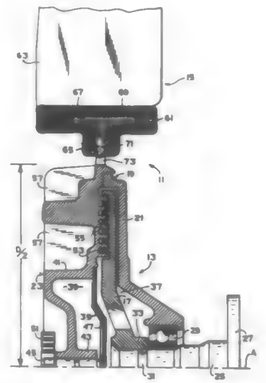
each said flange comprising two belts constructed of unidirectional composite material and a bias pack constructed of bias composite material, said belts being disposed on opposite sides of said bias pack and tapering inwardly toward said bias pack adjacent to an intersection of said flange and said web.

5,358,382

FAN AND FAN DRIVE ASSEMBLY

Günther Mühlbach, Meersburg, Fed. Rep. of Germany, assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 21, 1993, Ser. No. 95,637
Int. Cl.[5] F04D 29/00
U.S. Cl. 416—169 A 11 Claims



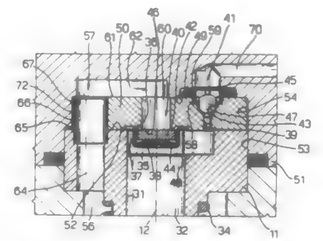
1. A fan and fan drive assembly for use in cooling an engine, said assembly including a fan comprising an annular hub and a plurality of fan blades formed integrally with said hub, said fan being formed of a moldable plastic material; said assembly further including a fan drive comprising an input member, an output assembly, and means operable to transmit torque from said input member to said output assembly in response to rotation of said input member; said output assembly comprising a body member and a cover member, and one of said body member and said cover member comprising a cast member defining a nominal outside diameter; characterized by:
(a) said one of said body member and said cover member including at least one monolithically formed connecting portion extending radially outward beyond said nominal outside diameter and terminating in a radially outward terminal portion; and
(b) said annular hub of said fan being non-rotatably attached to said terminal portion of said connecting portion.

5,358,383

RADIAL-PISTON PUMP FOR INTERNAL COMBUSTION ENGINE FUEL

Egon Eisenbacher, Karlstadt; Bernhard Arnold, Roden-Assbach, and Franz Paweliek, Hafenlohr, all of Fed. Rep. of Germany, assignors to Elasis Sistema Ricerca Fiat Nel Mezzogiorno, Pomigliano D'Arco, Italy

Filed Apr. 23, 1993, Ser. No. 52,340
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1992, 4213781; Apr. 27, 1992, 4213798
Int. Cl.[5] F04B 21/00, 1/04
U.S. Cl. 417—569 16 Claims



1. A radial-piston pump, for internal combustion engine fuel, having a number of radial cylinders (11), each housing a radially-sliding piston (32); each said cylinder (11) being inserted inside a shell (10), and being closed by a respective head (51); a valve plate (50) with two flat parallel surfaces (52, 61) being located in a recess (54) in said head (51), secured by said cylinder (11); said plate (50) presenting a first seat (46) for an intake valve (40), and a second seat (47) for a delivery valve (41); and said first seat (46) being located at a first portion (60, 60') of an intake channel (57) extending through said two surfaces (52, 61); characterized by the fact that said intake channel (57) comprises a second portion (62) formed between said head (51) and said plate (50) and substantially perpendicular to the axis (12) of said cylinder (11).

5,358,384

DEVICE AND METHOD TO RELIEVE CORDELLE ACTION IN A CHAIN DRIVEN PUMP

Edward D. Dysarz, 11423 Triola La., Houston, Tex. 77072

Filed May 3, 1993, Ser. No. 55,542
Int. Cl.[5] F04B 21/04
U.S. Cl. 417—555.2 15 Claims

1. An apparatus for use in a mechanical chain driven sucker rod pump having at least one sucker rod, for relieving cordelle action or arching action in the chain while the chain is bending over a sprocket or roller and moving from one direction into another direction comprising;
at least one sprocket wherein said sprocket rotates around an axis;
at least one mechanical chain with a first end and a second end and with a first side, a second side, a third side and a fourth side, and further having at least one link plate on said third side and at least one link plate on said fourth side and further having at least one roller, said roller extending from said first side to said second side of said mechanical chain, and wherein said roller is further located between each of said link plates and wherein said mechanical chain bends over said sprocket and said mechanical chain further has a center axis located between said link plates;
at least one coupling wherein said coupling has first end and

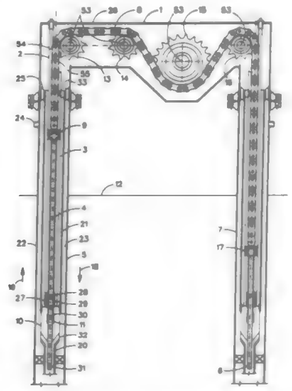
VOL 1167 ISS 4 OCT 25 1994 UMI

a second end and said coupling is further fixed to said second end of said mechanical chain at said first end of said coupling;

at least one sucker rod string, wherein said sucker rod string has a first end and a second end and wherein said first end of said sucker rod string is fixed to said second end of said coupling;

at least one pump casing, wherein said pump casing has a first end and a second end and wherein said casing is a hollow tube with a center axis and wherein said mechanical chain, said coupling and said sucker rod disposed inside of said casing;

at least one guide rod, said first guide rod having a first end and a second end and wherein said guide rod is fixed near



said first end of said pump casing and said guide rod is fixed near the second end of said pump casing and said guide rod is located near the center axis of said pump casing and said guide rod is further located near said roller and on the center axis of said mechanical chain wherein as said mechanical chain is moving off of said sprocket at a rapid rate, said mechanical chain will bend around said sprocket and will move in the direction of said sucker rod string but the momentum of said chain will also cause said chain to move in the same direction that it was moving in prior to bending around the said sprocket wherein the said rollers of said chain will roll on said guide rod thus preventing said chain from arching within said casing and further preventing said casing from being damaged by said link plate of said chain.

5,358,383

DUAL DIAPHRAGM PUMP WITH ADJUSTABLE DISCHARGE SIDE PRESSURE TRIP SWITCH

Nancy Wang, No. 13, Minchuan Road, Tamshui Taipei, Taiwan

Filed Sep. 16, 1993, Ser. No. 122,089

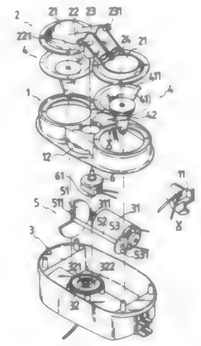
Int. Cl.[5] **F04B** *39/00, 45/04*

U.S. Cl. 417—44.3 **1 Claim**

1. A new structure for an electric pump comprising a housing and a top cover therefor, a cover plate forming a ball shaped chamber which fits on top of said top cover, and pump components including a dual piston device in which each piston set has a suction disk and a linkage member, an eccentric transmission device which further consists of a large gear, a transmission rod and an eccentric wheel, an electric motor having an output shaft and a small gear mounted thereon, a switch, a pressure switch, a rotary dial for adjustment of said pressure switch said housing containing said components wherein:

said electric motor and said eccentric transmission device are housed inside said housing, the small gear on the shaft of said electric motor meshing with the large gear of the eccentric transmission device, and the large gear being also connected axially to the eccentric wheel through the transmission rod, the outside face surfaces of the large gear and the eccentric wheel being provided with eccentric posts which axially spaced from the transmission rod parallel thereto, and located 180 degrees apart from each other, thereby when one eccentric post is disposed below said rod the other is disposed above said rod, each of the linkages extending between one of said eccentric posts, and one of said suction disks, each disk having a flange secured between the cover plate and the top cover whereby each suction disk to be free to move within the ball-shaped chamber formed by the cover plate;

the ball shaped chamber of said cover plate provided with left and right ball-shaped areas which receive respectively the said suction disks, the two-ball-shaped areas having discharge and suction channels which are separate but are joined to form an inverted V-shaped passage, each of the channels having respective discharge nozzle and suction nozzle, the ends of the channels disposed adjacent the ball-shaped chamber having clack valves, characterized in that the clack valve on the discharge channel only allows air to pass from the ball-shaped chamber into the discharge channel, the clack valve on the suction channel



only allows the air flow from the suction channel into the ball-shaped chamber so that when the suction disk is pulled downwardly, air is drawn from the suction nozzle, through the suction channel and its clack valve into the ball-shaped chamber, and when the suction disk is pushed upwardly, air inside the ball-shaped chamber is pushed through the clack valve and the discharge channel to exit the discharge nozzle;

said pressure switch sensing the pressure inside the discharge channel, and said pressure switch being connected in series with said switch which is coupled to control a source of the electrical power to said electric motor, said pressure switch including adjustment means including an adjustment screw tooth, for adjusting the switch pressure and a rotary dial the center of said dial connected to a tooth post, allowing it to be geared with the adjustment screw tooth, and a slot being provided in the top cover so that the rotary dial is exposed partially for adjustment when the top cover and the housing are assembled.

the bottom of said housing mounting a plurality of post support legs at post holes therein, each of legs having a compression spring provided in a post hole on the bottom of said housing, and a padding provided on each leg opposite the spring whereby vibrations transmitted thereto are dampened.

5,358,386

HERMETIC COMPRESSOR

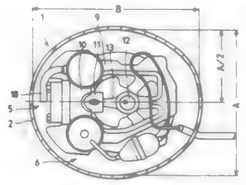
Takashi Koyama, Chigasaki; Takao Yoshimura, Kamakura; Hironari Akashi, Fujisawa; Koh Inagaki, Fujisawa; Ichiro Kita, Fujisawa, and Junichiro Yabiki, Chigasaki, all of Japan, assignors to Matsushita Refrigeration Company, Osaka, Japan

Filed Aug. 25, 1993, Ser. No. 112,179

Claims priority, application Japan, Aug. 26, 1992, 4-226932

Int. Cl.[5] **F04B** *21/00*

U.S. Cl. 417—312 **9 Claims**



1. A hermetic compressor comprising:

a sealed casing which stores lubricant therein at its lower part;

compressing means, provided in said sealed casing, for compressing a refrigerant;

driving means, provided in said sealed casing, for driving said compressing means; and

induction means for introducing the refrigerant into said compressing means, said induction means having a first end communicating with said compressing means and a second end which is opened to space in said sealed casing at a position on a first plane intersecting with a first line segment at its middle point and in perpendicular thereto, said first line segment having a minimum length among lengths of line segments each extending between arbitrary two points on an internal wall of said sealed casing at a level of a horizontal section of the interior of said sealed casing via a center of gravity of said horizontal section, said horizontal section having a maximum area over a vertical length of said sealed casing.

5,358,387

OIL-FREE SCROLL COMPRESSOR

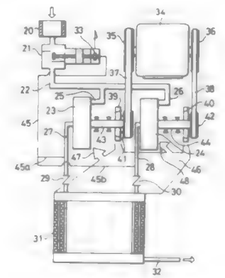
Akira Suzuki, Tokyo, and Masakazu Aoki, Shimizu, both of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Continuation of Ser. No. 890,246, May 29, 1992, abandoned. This application Feb. 16, 1994, Ser. No. 197,466

Claims priority, application Japan, May 29, 1991, 3-126154

Int. Cl.[5] **F04B** *35/04, 41/06, 49/02;* **F04C** *18/04*

U.S. Cl. 417—295 **3 Claims**



1. An oil-free scroll compressor comprising:

a throttle valve disposed downstream of a suction filter, said throttle valve being adapted to be opened during a loading of the compressor and closed at a time of no loading of the compressor; an air release valve arranged to operate in association with the throttle valve so as to close the throttle valve during the non-loading of the compressor; a plurality of oil-free scroll compressing mechanism blocks connected in parallel, each for compressing a gas; suction pipes branching from a single collecting pipe from the throttle to conduct suctioned air to the respective compressing mechanism blocks; air releasing pipes connected to the air release valves and discharging pipes for discharging air from the respective compressing mechanism blocks through check valves into a single after cooler and through a single discharge port; and a single motor for driving said plurality of oil-free scroll compressing mechanism blocks, wherein an entire capacity of the oil-free scroll compressor is increased.

5,358,388

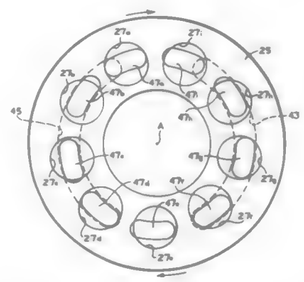
NOISE REDUCTION AT THE SECOND ORDER FREQUENCY

Herman P. Schutten; Danny M. Wakefield; Donald R. Zimmerer, all of Eden Prairie, Minn., and David W. Malaney, West Bloomfield, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 27, 1994, Ser. No. 187,564

Int. Cl.[5] **F04B** *1/12;* **F01B** *3/00*

U.S. Cl. 417—269 **9 Claims**



1. A hydraulic unit of the type including housing means, an input-output shaft rotatably supported relative to said housing means, a cylinder block rotatably disposed within said housing means and operably associated with said input-output shaft for rotation therewith, said cylinder block defining a plurality N of cylinders, each cylinder defining an imaginary axis (a) and said imaginary axes being uniformly circumferentially spaced about an axis of rotation (A) of said cylinder block, and a piston member disposed for reciprocation within each of said cylinders in response to rotation of said cylinder block; said housing means defining a fluid inlet and a fluid outlet, and said cylinder block defining a plurality N of cylinder ports, each cylinder port being associated with, and in open fluid communication with, one of said cylinders; each of said cylinder ports being disposed for serial communication with said fluid inlet and said fluid outlet during rotation of said cylinder block; characterized by:

(a) each of said cylinder ports defining a leading edge (L) relative to the instantaneous direction of rotation of said cylinder block; and

(b) each leading edge (L) defined by each cylinder port being disposed at a different distance from its respective imaginary axis (a) than either of the leading edges defined by the circumferentially adjacent cylinder ports.

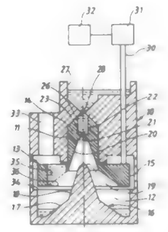
VOL 1167 ISS 4 OC 25 1994 UMI

5,358,389

TWO-STAGE COMPRESSION VACUUM PUMP HAVING VALVED PISTON AND POWER LIMITING VALVE

Anders Haegermarck, Trångsund, Sweden, assignor to Electrolux Research & Innovation Aktiebolag, Sweden

Filed Sep. 1, 1993, Ser. No. 115,479
Claims priority, application Sweden, Sep. 10, 1992, 9202608
Int. Cl.[5] F04B *39/10*
U.S. Cl. 417—260 14 Claims



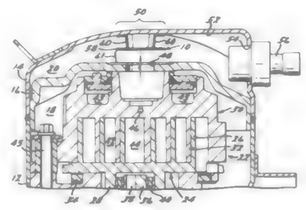
1. Vacuum pump comprising a pump housing (10) having upper and lower cylindrical, partly liquid filled, compression chambers (11 and 12 respectively) which are separated from each other and in which upper and lower parts (14, 15) of a piston (13) are movable, the piston having a passage (21) which is provided with a first check valve and which provides communication between the upper and lower chambers (11 and 12 respectively), the upper chamber, via an opening (26) which is provided with a second check valve, communicating with a liquid filled de-aeration receptacle (27), and the lower chamber (12), via an inlet (33), communicating with a space being evacuated during a portion of a piston cycle, wherein said upper part of said piston closes said upper chamber to prevent direct communication between said upper chamber and said space being evacuated throughout said piston cycle.

5,358,391

HERMETIC COMPRESSOR WITH HEAT SHIELD

Frank S. Wallis; Timothy R. Houghtby; Kenneth J. Monnier, all of Sidney, Ohio, and Roger C. Weatherston, East Amherst, N.Y., assignors to Copeland Corporation, Sidney, Ohio

Continuation-in-part of Ser. No. 978,947, Nov. 18, 1992, abandoned, and a continuation-in-part of Ser. No. 998,557, Dec. 30, 1992, which is a division of Ser. No. 884,412, May 18, 1992, Pat. No. 5,219,281, which is a division of Ser. No. 649,001, Jan. 31, 1991, Pat. No. 5,114,322, which is a division of Ser. No. 387,699, Jul. 31, 1989, Pat. No. 4,992,033, which is a division of Ser. No. 189,485, May 2, 1988, Pat. No. 4,877,382, which is a division of Ser. No. 899,003, Aug. 22, 1986, Pat. No. 4,767,293.
This application Jul. 23, 1993, Ser. No. 95,185
Int. Cl.[5] F04C *18/04, 29/04;* F04B *39/06*
U.S. Cl. 418—55.1 10 Claims



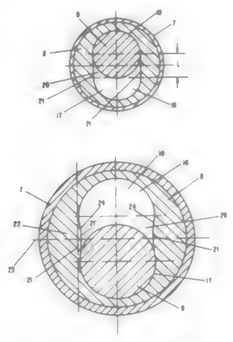
1. A hermetic compressor comprising:
(a) a hermetic shell defining an enclosed chamber and having an exit port;
(b) a gas compressor disposed in said chamber having a discharge port from which relatively hot compressed gas is discharged, said discharge port being positioned so that said hot compressed gas is discharged in a direction toward a local area on an interior surface of said shell, said exit port being spaced from said local area; and
(c) a heat shield having a substantially planar baffle and a plurality of support members for affixing said baffle to said shell and for spacing said baffle from said shell, said heat shield being disposed between said discharge port and said local area to insulate said shell from the relatively high temperature of said discharge gas, said baffle being disposed a sufficient distance from said discharge port to facilitate relatively unrestricted discharge flow, said baffle being formed having no flow passage in a flow path between said discharge port and said exit port.

5,358,390

ECCENTRIC SCREW PUMP

Arnold Jäger, Gehrbergsweg 6, 3167 Burgdorf, Fed. Rep. of Germany

Filed Oct. 15, 1993, Ser. No. 138,487
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1992, 4237966
Int. Cl.[5] F01C *1/10*
U.S. Cl. 418—48 14 Claims



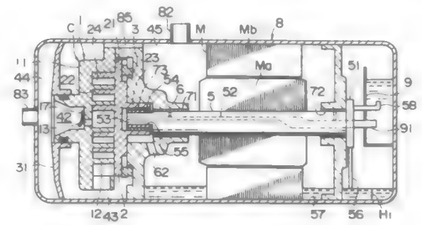
1. An eccentric screw pump, comprising:
a rigid rotor, which is embodied as a spiral and has a circular cross-sectional configuration; and
a stator that is provided with an elastic lining that delimits an interior cavity which accommodates said rotor and has the form of a spiral with a cross-sectional configuration that essentially has the shape of a rectangle bounded on opposite sides by a respective semicircle, whereby those sides of the essentially rectangular portion that interconnect said semicircles, proceeding essentially from said semicircles and over at least most of a length of said stator, are provided with projections that bulge convexly in a direction toward an interior of said cavity of said stator, whereby in the vicinity of an inlet end of said stator, said projections of said sides of said essentially rectangular portion of said cross-sectional configuration of said stator bulge inwardly to a lesser extent than at a pressure end of said stator.

5,358,392

HORIZONTAL HERMETIC COMPRESSOR HAVING AN OIL RESERVOIR

Tetuzou Ukai, Aichi, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1993, Ser. No. 75,784
Claims priority, application Japan, Jun. 12, 1992, 4-177756
Int. Cl.[5] F04C *18/04, 29/02;* F01M *1/02*
U.S. Cl. 418—55.6 4 Claims



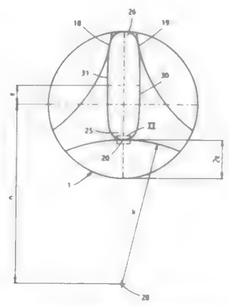
1. In a horizontal hermetic scroll compressor having a low pressure housing comprising:
a closed housing;
a scroll compression member and a motor contained in said housing;
a rotary shaft extending horizontally through said housing for transmitting rotation of said motor to said compression mechanism, said rotary shaft having an oil feed hole for feeding a lubricant to said compression mechanism and the sliding surfaces of said rotary shaft;
an oil pump mounted near the end of said rotary shaft;
an oil suction pipe, connected to said oil pump, having an open end, said open end positioned below maximum desired oil level in said housing;
an oil reservoir located inside said closed housing for storing lubricant from said oil pump in a position higher than said oil feed hole; and
an oil feed pipe connected to said oil reservoir for supplying lubricant to said oil feed hole.

5,358,393

INTERNAL AXIS SINGLE-ROTATION MACHINE

Peter Kuhn, Weinheim, Fed. Rep. of Germany, assignor to The Wankel Technische Forschung-und Entwicklungsstelle Lindau GmbH, Lindau, Fed. Rep. of Germany

Filed Mar. 31, 1993, Ser. No. 40,636
Claims priority, application Switzerland, Apr. 1, 1992, 01 048/92-0
Int. Cl.[5] F01C *1/10*
U.S. Cl. 418—168 2 Claims



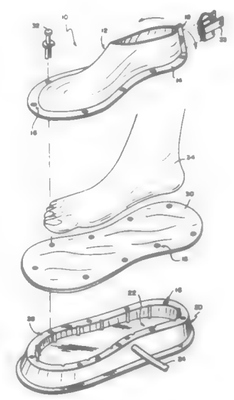
1. An internal axis single-rotation machine for gas feeding at high rotational speeds, comprising: an external rotor and an internal rotor sealingly enclosed by a common housing, wherein:
the external rotor and internal rotor rotate in a speed ratio of 2:3 about axes having a constant eccentricity (e) relative to each other;
the external rotor has a geometrical rotation axis and has three engagement parts each with a radial width corresponding to twice the eccentricity (2×e) and each having an arcuate inner facial engagement surface; and
the internal rotor has a continuous outer engagement surface defined by two engagement end portions having outer engagement surfaces and nonconcave long lateral facial engagement surfaces joining the outer engagement surfaces of the end portions, the outer engagement surface of the internal rotor and the inner facial engagement surfaces of the external rotor being in constant mutual engagement during rotation;
the radial cross-section of each of the three engagement parts of the external rotor are defined by an inner and an outer circular arc;
the center of a circle containing the inner arc of any one of said external rotor engagement parts has a spacing (m) from the geometrical rotation axis of said external rotor, (m) being at least approximately 9 times the eccentricity (9×e); and
the radius (k) of said circle is equal to 7 to 7.5 times the eccentricity (7 to 7.5×e).

5,358,394

APPARATUS FOR MAKING AN INSOLE

George C. Riecken, 2154 Adams Ave., Evansville, Ind. 47714

Division of Ser. No. 780,036, Oct. 21, 1991, Pat. No. 5,275,775.
This application Aug. 16, 1993, Ser. No. 107,297
Int. Cl.[5] A43B *10/00, 19/00*
U.S. Cl. 425—2 4 Claims



1. A casting shell for making an insole to conformingly fit a shoe and a patient's foot within the shoe comprising
an upper shell half having a shape which conforms to a last of the shoe, the upper shell half having an opening flange to allow removal from the patient's foot,
a lower shell half having a shape which conforms to the last of the shoe and has an aperture in the medial arch area,
an injector tube coupled to the aperture in the lower shell half for injecting insole forming material,
fasteners for fastening the upper and lower shell halves together, and
a clamp for maintaining the opening flange in the closed position while injecting insole forming material.

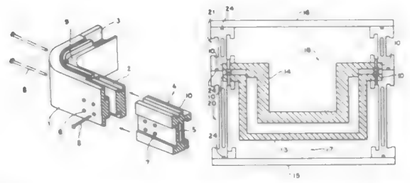
VOL 1167 ISS 4 OC 25 1994 UMI

5,358,395

FRAME ASSEMBLY FOR MOLD FOR EXPANSION MOLDING

Takao Hane, 4-603, Kusunoki-ajima, Kita-ku, Nagoya-shi, Aichi, Japan

Continuation-in-part of Ser. No. 909,023, Jul. 6, 1992, abandoned. This application Dec. 10, 1993, Ser. No. 166,349
Claims priority, application Japan, Sep. 3, 1991, 3-253041
Int. Cl.[5] B29C *33/40, 37/00*
U.S. Cl. 425—4 R **21 Claims**



7. A frame assembly for supporting a mold for use in manufacturing a product from expanded polystyrene, said mold including a first mold member having a surface which defines a portion of said product, and a second mold member having a surface which defines another portion of said product, said surfaces cooperating to define an enclosed cavity representing boundaries of said product, said frame assembly comprising:

a first frame having first and second walls fixedly supporting a first backplate and said first mold member, respectively;

a second frame having third and fourth walls fixedly supporting said second mold member and a second backplate, respectively, said first and second frames abutting along said second wall of said first member and said third wall of said second member so that said first and second mold member surfaces are oriented to define said enclosed cavity therebetween;

said first and second frames each including a plurality of angled corner locking members having a pair of diverging legs and a contoured mating portion extending along a longitudinal axis of each said leg at an end thereof, and an interior facing wall having a longitudinally extending recessed portion;

a plurality of profile members, each extending between mutually adjacent corner locking members and having complementary mating portions extending along a longitudinal axis of said profile members at each end thereof, said complementary mating portions conforming with said contoured mating portions for slidably interfitting with said contoured mating portions on said mutually adjacent corner locking members, each said adjacent contoured mating portion and complementary mating portion interfitting together to define an interlocked engagement constraining relative movement to a back and forth movement along a single axis, said plurality of profile members further including an interior facing wall having a longitudinally extending recessed portion, said recessed portions of said corner locking members and said profile members supporting said respective mold members therein; and

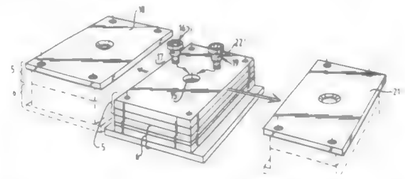
fastening means for fixedly securing said corner locking members and said profile members together when said contoured mating portions and said complementary mating portions are in said interlocked engagement to prevent said relative back and forth movement.

5,358,396

MULTI-FUNCTIONAL MOULD

Henricus B. Antonius Giesen, Didam, Netherlands, assignor to Sony Corporation, Tokyo, Japan

PCT No. PCT/EP92/00162, § 371 Date Sep. 7, 1993, § 102(e) Date Sep. 7, 1993, PCT Pub. No. WO92/12838, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 24, 1992, Ser. No. 94,069
Claims priority, application Belgium, Jan. 29, 1991, 9100083
Int. Cl.[5] B29C *45/02, 45/18, 45/26*
U.S. Cl. 425—116 **12 Claims**



1. A multi-functional mould convertible between transfer moulding and injection moulding for encapsulating chips placed on lead frames, comprising:

mutually movable mould halves having mutually facing surfaces on which cavities are arranged for receiving chips for encapsulating,

runners for the passage of encapsulating material to the cavities,

a chamber in one of the mould halves and extending to the runners,

a replaceable first insert member having a lengthwise bore for communicating with the chamber, the bore of the first insert member being dimensioned to receive a transfer mould apparatus plunger, and

a replaceable second insert member having a lengthwise bore for communicating with the chamber, the bore of the second insert member being dimensioned to mate with an injection nozzle of an injection mould,

whereby by exchanging the second insert member for the first insert member, the mould is readily convertible from transfer moulding to injection moulding, and

by exchanging the first insert member for the second insert member, the mould is readily convertible from injection moulding to transfer moulding.

5,358,397

APPARATUS FOR EXTRUDING FLOWABLE MATERIALS

Robert M. Ligon; Thomas B. Carter, both of Phoenix, Ariz., and Jurg Hauptli, Romeo, Mich., assignors to L&L Products, Inc., Romeo, Mich.

Filed May 10, 1993, Ser. No. 60,106
Int. Cl.[5] B29C *47/92;* **B30B** *15/26*
U.S. Cl. 425—145 **8 Claims**

1. An apparatus for extruding a highly viscous material onto a substrate, comprising:

a housing defining an interior and an inlet opening to the interior at a first end of the housing for receiving material to be extruded and an outlet opening to the interior at a second end or the housing for exiting extruded material;

a screw rotatably supported within said housing interior and extending between the first end of the housing and the second end of the housing for displacing and compressing the material within the housing;

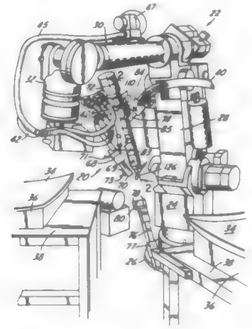
a nozzle arrangement including an extrusion die disposed at the second end of the housing defining a die opening through which material is extruded from the housing interior onto the substrate;

hydraulically operated motor means connecting with the screw;

means on the housing for heating said material to a desired temperature;

a pressure sensor carried on the housing at the second end for generating a signal indicative of the pressure of the material at the second end; and

a controller electrically connected to the hydraulically operated motor means and to the pressure sensor, for generating a control signal in response to the pressure signal and transmitting the control signal to the hydraulically operated motor means.



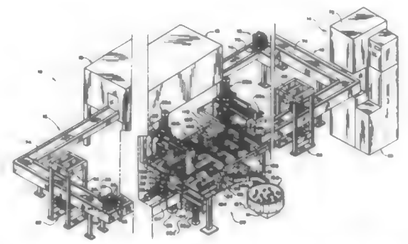
4. The apparatus of claim **1**, including a discrete localized feed system having a hopper connected to the inlet opening of the extruder with a volume of pellets dispensed into the hopper sufficient for a particular application.

5,358,398

MOLD SEPARATOR APPARATUS

Robert L. Brown, Hartville; David E. Baxter, Ravenna, and Gregory L. Baxter, Akron, all of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Continuation-in-part of Ser. No. 877,349, Apr. 30, 1992, which is a continuation of Ser. No. 621,675, Nov. 30, 1990, abandoned. This application Oct. 20, 1992, Ser. No. 963,797
Int. Cl.[5] B29C *33/34, 45/04*
U.S. Cl. 425—186 **5 Claims**



1. An apparatus for removing molded articles from a continuous molding system having multi-section molds with first and second sections, said apparatus comprising:

a support table,

first and second co-planar, parallel tracks secured to said support table for receiving and supporting said first and second sections of said multi-section mold,

an elevator supported on said support table for vertically moving said multi-section mold into alignment with said first track,

a position mover for moving said mold from said elevator to an initial engagement position within said first track,

an actuator for moving said second mold section into an initial engagement position within said second track and aligned with said initial engagement position of said first track,

first and second track movers aligned along said first and second tracks for engaging said mold sections at aligned, co-planar initial engagement positions within their respective first or second tracks and moving said mold sections simultaneously from said initial engagement positions to aligned, co-planar first work positions along said first and second tracks, and

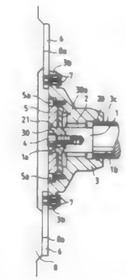
an intermediate remover for removing molded articles from said first or second mold sections positioned at said work position.

5,358,399

CUTTER HOLDER DEVICE IN A PELLETIZER

Syunji Ogoshi, and Yasuhiko Ishida, both of Hiroshima, Japan, assignors to The Japan Steel Works, Ltd., Tokyo, Japan

Filed Apr. 7, 1993, Ser. No. 43,843
Claims priority, application Japan, Apr. 9, 1992, 4-088727
Int. Cl.[5] B29C *47/00*
U.S. Cl. 425—311 **4 Claims**



1. A cutter holder device in a pelletizer comprising:

a cutter holder connected to a cutter shaft;

a crowned involute spline gear for transmitting torque from said cutter shaft to said cutter holder, said crowned involute spline gear being positioned between said cutter holder and said cutter shaft; and

an elastic member secured to a front end face of said cutter shaft in such a manner that said elastic member is joined with said cutter holder.

5,358,400

PLUG MOUNT STRUCTURE OF A PULSE COMBUSTION APPARATUS

Susumu Ejiri, and Makoto Kimura, both of Momozono No. 6-23 Mizuho-ku, Nagoya, Japan

Continuation of Ser. No. 973,345, Nov. 9, 1992, abandoned. This application Feb. 28, 1994, Ser. No. 203,851
Claims priority, application Japan, Nov. 13, 1991, 3-101811[U]
Int. Cl.[5] F23C *11/04*
U.S. Cl. 431—1 **7 Claims**

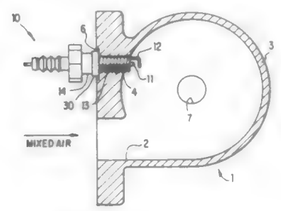
3. A method of installing an ignition plug into a pulse combustion apparatus, the combustion apparatus having a combustion chamber with an inner wall having a curved inner surface and a threaded hole which extends through the inner wall, and the ignition plug having a ground electrode at a top end thereof, a stopper portion and a threaded securing part between said ground electrode and said stopper portion, said threaded securing part being adapted to be threadedly received in the threaded hole to secure the ignition plug to the combustion apparatus such that the ground electrode is positioned in the combustion chamber, the threaded securing part

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having a distal edge extending into the chamber and the inner surface having a curvature such that positions on the distal edge closer to a center of the chamber are positioned further away from the inner surface than positions on the distal edge further from the center of the chamber, the method comprising the steps of:

determining a desired rotational orientation of the ground electrode in the combustion chamber;

selecting a spacer of a predetermined spacer thickness from a plurality of spacers having different predetermined spacer thicknesses, in dependence on said desired rotational orientation such that the thickness of the spacer determines the rotational orientation of the ground elec-



trode in the combustion chamber to the desired rotational orientation and provides that the ground electrode is positioned close to the inner surface of the inner wall of the combustion chamber so as to reduce the temperature of the ground electrode in the combustion chamber;

positioning the selected spacer between said stopper portion and said combustion chamber; and

threadedly securing said ignition plug into said threaded hole with the selected spacer being positioned between and in contact with said stopper portion and said combustion chamber, such that said ground electrode is at said desired rotational orientation in, and close to the inner surface of the inner wall of, the combustion chamber so as to reduce the temperature at the ground electrode.

5,358,401

IGNITION MECHANISM FOR A LIGHTER

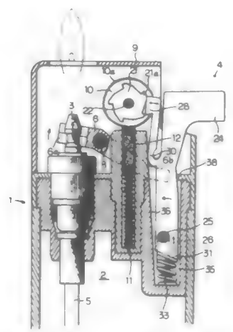
Masayuki Iwahori, 15-19, Nakada Honmachi, Shizuoka-Shi, Shizuoka-ken, and Fukuo Iwahori, Shizuoka, both of Japan, assignors to Masayuki Iwahori, Shizuoka, Japan

Filed Apr. 1, 1993, Ser. No. 42,233

Claims priority, application Japan, Apr. 9, 1992, 4-116856; Dec. 22, 1992, 4-357588

Int. Cl.[5] F23Q *1/02*

U.S. Cl. 431—277 **8 Claims**



1. An ignition mechanism for a lighter adapted to ignite fuel by sparks caused by friction between a striker wheel and a flint, said fuel being emitted through a nozzle, said striker wheel being rotatably mounted in a lighter body, said flint being in spring-supported pressurized contact with said striker wheel, the improvement comprising said striker wheel being provided at least on one side thereof with a toothed wheel, said toothed wheel being coaxial with said striker wheel, an operation member positioned adjacent said toothed wheel, said operation member being mounted on a shalt so as to be movable up and down and inclinable in the direction of moving to and away from said toothed wheel, said operation member having at least one engagement portion corresponding to the teeth of said toothed wheel, said engagement portion being integrally formed with said operation member, said engagement portion being inclinable relative to said operation member on a hinge portion in the direction of moving to and away from said toothed wheel, a coiled spring disposed between the lower end of said operation member and said lighter body, said coiled spring pushing said operation member toward said toothed wheel, said operation member being connected with a nozzle lifting lever so that the nozzle lifting lever lifts said nozzle when said operation member is pushed down.

5,358,402

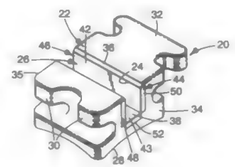
CERAMIC ORTHODONTIC BRACKET WITH ARCHWIRE SLOT LINER

David P. Reed, Laguna Hills; John S. Kelly, Arcadia, and James D. Hansen, Duarte, all of Calif., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn. and Ceradyne, Inc., Costa Mesa, Calif.

Continuation of Ser. No. 61,215, May 13, 1993, abandoned. This application Oct. 25, 1993, Ser. No. 142,836

Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—8 **17 Claims**



1. A ceramic orthodontic bracket comprising a ceramic body having an elongated channel, said bracket including a liner received in said channel and having an archwire slot, said liner being made of a material having a Knoop hardness that is less than the Knoop hardness of said ceramic body, said liner being brazed to said ceramic body.

5,358,403

GINGIVAL RETRACTION CORD APPLICATOR

Eric Groth, Camarillo, Calif., assignor to Berport Company, Inc., Camarillo, Calif.

Filed Nov. 26, 1993, Ser. No. 157,410

Int. Cl.[5] A61C *5/14*

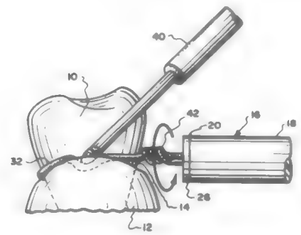
U.S. Cl. 433—136 **3 Claims**

1. A gingival retraction cord applicator comprising:

a handle;

a loop of gingival retraction cord terminating in a pair of ends, said ends being permanently secured to said handle, a portion of said ends abutting making said loop closed; and

whereby said loop is to be placed around a tooth with the cord located against the gum and then the cord is tightened on the tooth by turning of the handle which twists



the cord decreasing the size of the loop with the cord being then being packed between the gum and the tooth.

5,358,404

APPARATUS FOR COMPRESSING AND ADAPTING FILLING MATERIAL

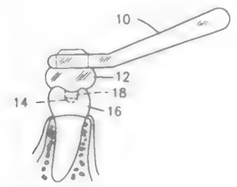
Dieter Schumacher, Beselerstr. 2, 2370 Rendsburg, Fed. Rep. of Germany

Filed Apr. 12, 1993, Ser. No. 46,278

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1992, 9205153[U]; Jun. 17, 1992, 4219793

Int. Cl.[5] A61C *3/06*

U.S. Cl. 433—164 **8 Claims**



1. An apparatus for compressing a light-hardening filling in a dental activity comprising,

an elastomeric transparent punch having a bottom portion attached to a top adaptor portion, the bottom portion having a bottom surface, and

a rigid transparent holder adapted to be held by a dentist, the rigid holder having an aperture formed at an end portion for receiving the adapter portion of the punch, the adaptor portion frictionally mounted in the aperture.

5,358,405

TOOTH FIXING MEMBER AND METHOD OF FIXING TEETH WITH THE MEMBER

Mototsugu Imai, Osaka, Japan, assignor to Daigen Sangyo Inc., Osaka, Japan

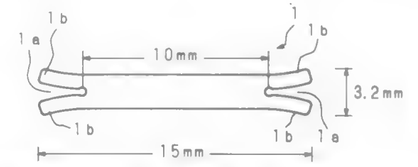
Continuation of Ser. No. 894,052, Jun. 3, 1992, abandoned. This application Feb. 17, 1993, Ser. No. 19,989

Claims priority, application Japan, Jun. 5, 1991, 3-162163

Int. Cl.[5] A61C *5/00, 13/12, 13/225, 3/00*

U.S. Cl. 433—215 **21 Claims**

1. A tooth-fixing member comprising: a band base having a longitudinal axis and a respective pair of integral fixing fingers projecting in opposite directions generally along the longitudinal axis from each end of the band base for engaging a tooth, at least said fixing fingers being of a shape memory alloy which transforms its shape between a parent phase and a martensite



phase the pairs of fixing fingers being formed to open in parent phase and close in martensite phase.

5,358,406

METHOD FOR ADAPTING AND IMPLANTING A DENTAL PORCELAIN CHIP, AND THE CHIP

Bård Bjerknes, Vesterasveien 40B, Oslo, Norway N-0283

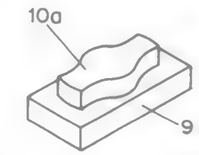
PCT No. PCT/NO91/00148, § 371 Date May 26, 1993, § 102(e) Date May 26, 1993, PCT Pub. No. WO92/09241, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 26, 1991, Ser. No. 66,085

Claims priority, application Norway, Nov. 26, 1990, 905109

Int. Cl.[5] A61C *5/04, 5/00*

U.S. Cl. 433—226 **11 Claims**



1. A method for adapting a dental porcelain chip for implanting in a cavity within an original tooth, comprising:

(a) making a molding of the cavity;

(b) fastening the porcelain chip to the molding; and

(c) contouring the porcelain chip to the same shape as the molding.

5,358,407

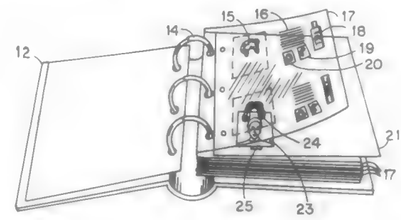
APPEARANCE MODIFICATION DISPLAY/SELECTION SYSTEM AND METHOD

Lisa M. Lainer, 22 Fieldstone Dr., Mansfield, Mass. 02048

Filed Jun. 23, 1992, Ser. No. 902,832

Int. Cl.[5] G09B *19/10, 19/00*

U.S. Cl. 434—94 **19 Claims**



1. A system for selecting a desired appearance modifier which best matches a user and for displaying a mutually scaled picture of the user and any of a variety of appearance modifiers, wherein the system for selecting a desired appearance modifier comprises:

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photographically produced scaled images of appearance modifiers printed on clear transparent overlay sheets;

means for photographing a user, having a scaled viewing guide in the viewfinder of the photographing means for framing a user through the viewing system to produce a photographically produced image of the user scaled to fit with the image of the appearance modifiers, wherein the scaled viewing guide comprises a transparent masking sheet partially shaded to leave a clear portion scaled to outline a desired portion of a user viewed through a camera viewfinder;

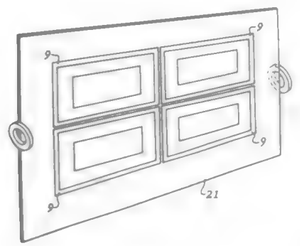
a photographically produced image of the user to the same scale as the images of the appearance modifiers, wherein the image of the user is secured by an attaching means to a blank carrier sheet and each overlay sheet one at a time overlays the carrier sheet such that the appearance modifiers appear to be on the user in the photograph.

5,358,408

TISSUE SPECIMEN SUSPENSION DEVICE

Marelyn Medina, 81 Browning Ave., Nashua, N.H. 03062

Filed Mar. 9, 1993, Ser. No. 28,325
Int. Cl.[5] G09B *23/28*
U.S. Cl. 434—262 30 Claims



1. A tissue specimen suspension device comprising,

a tissue supporting member comprising a mesh material having a plurality of anchoring sites;

a mounting member adapted to engage the supporting member, the mounting member constructed and arranged to adjustably position the tissue supporting member; and

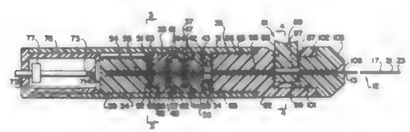
a means for affixing the tissue specimen to said anchoring site of said tissue supporting member.

5,358,409

ROTARY CONNECTOR FOR FLEXIBLE ELONGATE MEMBER HAVING ELECTRICAL PROPERTIES

Robert Z. Obara, Sunnyvale, Calif., assignor to Cardiometrics, Inc., Mountain View, Calif.

Filed Aug. 31, 1993, Ser. No. 114,767
Int. Cl.[5] H01R *17/18*
U.S. Cl. 439—20 7 Claims



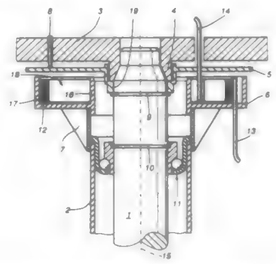
1. A rotary connector for use with a flexible elongate member having electrical properties and having a proximal extremity with at least first and second spaced-apart conductive sleeves provided thereon comprising a housing having a bore therein, first and second spaced-apart conductive disks disposed in said bore, said conductive disks being adapted to have said proximal extremity extend therethrough and to have said conductive sleeves be in contact with the conductive disks while permitting substantially free rotation of the flexible elongate member, means carried by the housing adapted to retain the proximal extremity of the flexible elongate member in the housing against a moderate pull on the flexible elongate member, and leads connected to the conductive disks.

5,358,410

CASING FOR A SPIRAL CABLE

Joachim Kieserling, Kernen im Remstal; Manfred Link, Waiblingen, and Andreas Franke, Stuttgart, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Stuttgart, Fed. Rep. of Germany

Filed Oct. 13, 1993, Ser. No. 135,353
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1992, 4235055
Int. Cl.[5] H01R *35/04*
U.S. Cl. 439—164 3 Claims



1. Casing arrangement for holding an electrical spiral cable which connects electrical line terminals at a stationary steering column and a steering wheel carried on a steering wheel shaft rotatably mounted in the steering column, said casing arrangement comprising:

a first casing part rigidly connectible to the steering column, and

a second casing part rigidly connectible to the steering wheel shaft,

wherein one of said first and second casing parts defines an annular space coaxial with the steering column and steering wheel shaft for accommodating the entire spiral cable, and wherein the other of said first and second casing parts is located entirely outside of the annular space and includes a substantially flat plate which in its installed condition covers the entire annular space in its axial direction and is located at an axial spacing from the annular space.

5,358,411

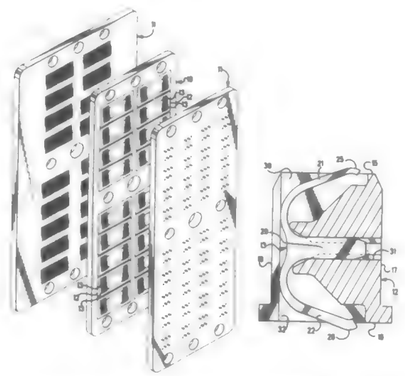
DUPLEX PLATED EPSILON COMPLIANT BEAM CONTACT AND INTERPOSER

Robert S. Mroczkowski, Landisville, and Richard E. Rothenberger, Harrisburg, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 9, 1993, Ser. No. 103,613
Int. Cl.[5] H05K *1/00*
U.S. Cl. 439—66 13 Claims

1. An electrical contact for mating/unmating with electrical interfaces comprising:

an epsilon-shaped unit having a center leg, a first beam and a second beam, said beams being connected to said center leg at a point, wherein each said beam and said center leg follows a path of continuously increasing distance from said point and from each other,



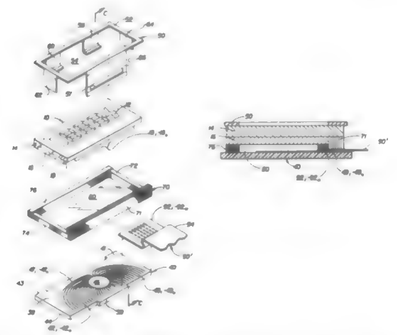
each said beam having an end distal from said point, wherein electrical contact with respective electrical interfaces is made.

5,358,412

METHOD AND APPARATUS FOR ASSEMBLING A FLEXIBLE CIRCUIT TO AN LCD MODULE

Martin A. Maurinus, and Richard Delmerico, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 26, 1993, Ser. No. 51,927
Int. Cl.[5] G02F *1/133*
U.S. Cl. 439—66 12 Claims



1. Apparatus for making an electrical interconnection between first and second, parallel, spaced apart, circuit bearing, substrates or boards and a flex circuit formed on a flexible film, each substrate or board having a plurality of terminal pads formed in first and second arrays on the respective parallel surfaces thereof, at least one of the substrates or boards having a further plurality of terminal pads formed in a third array on the surface thereof, and the flex circuit having a plurality of terminal pads formed on a surface thereof in a fourth array matching the third array, through an assembly comprising:

a unitary spacer element having a resilient, elastomeric frame with a plurality of side walls for being positioned between and cushioning the spaced apart, circuit bearing, substrates or boards and having a resilient, elongated array of conductors formed as a connector strip along one side wall thereof, the conductor array configured to provide an electrical connection between the respective arrays of terminal pads formed on the surfaces of the parallel, circuit bearing, substrates or boards when positioned therebetween; and

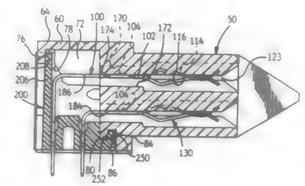
retainer means for compressing the unitary spacer element between the parallel, spaced apart, circuit bearing, substrates or boards to form a secure electrical connection between the first and second arrays of terminal pads and for also compressing the unitary spacer element over the matching third and fourth arrays of terminal pads when the flex circuit is positioned with the third and fourth arrays of terminal pads in alignment.

5,358,413

RIGHT-ANGLE BOARD-MOUNTABLE ELECTRICAL CONNECTOR WITH PRECISION TERMINAL POSITIONING

John K. Daly, Scottsdale, and Dean A. Puerner, Maracopa, both of Ariz., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 987,971, Dec. 8, 1992, abandoned. This application Jan. 6, 1994, Ser. No. 178,347
Int. Cl.[5] H01R *13/629*
U.S. Cl. 439—79 13 Claims



1. A board-mountable electrical connector of the type including contacts having elongate post sections extending from a housing for insertion into and through corresponding through-holes of a circuit board, comprising:

a main housing member including passageways extending therethrough from a mating face to a rear face and further including at least two board-mounting members secured thereto at selected locations;

a plurality of contacts disposed in respective said passageways and each having a contact section exposed along the mating face for electrical connection with corresponding contact sections of contacts of a mating connector, and each having a post section extending from said rear face for insertion into a corresponding through-hole of a board upon connector mounting thereto, said post sections of said contacts coextending in parallel and arranged in a pattern corresponding to a like pattern of board through-holes; and

a post locating member securable to said main housing member along said rear face, said post locating member including a like plurality of post-receiving apertures through a board-parallel section thereof extending to a board-proximate surface thereof defining a mounting face, and said post-receiving apertures including post-locating aperture portions adjacent said mounting face to be adjacent the circuit board upon connector mounting thereto;

said post locating member being securable to said main housing member upon said coextending post sections being received into respective said post-receiving apertures, and extending through said post-locating aperture portions and beyond said mounting face;

said post locating member including a transverse housing-engageable surface portion pressed against a corresponding surface of said main housing member upon securing said post locating member to said main housing member; and,

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said main housing member including a rear section having a top wall which extends from said rear face to a rearward end, and a downwardly extending lip along at least a portion of said rearward end for receiving forwardly thereof a top edge portion of a rear wall of said post locating member upon full assembly;

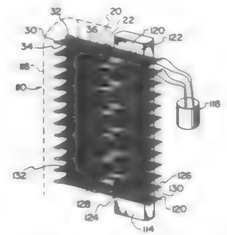
whereby said post locating member is molded as a separate part permitting said post-locating aperture portions to be defined with reference to a physical feature thereof, while said main housing member is molded as a separate part permitting the positions of said passageways thereof at the mating face thereof to be defined independently of passageway positions at said board mounting face of said connector.

5,358,414

MULTI-TERMINAL ELECTRICAL CONNECTORS

Paul P. Kish, St-Lazarf, and Joseph Maroun, St. Laurent, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Division of Ser. No. 940,279, Sep. 3, 1992, Pat. No. 5,282,754.
This application Oct. 28, 1993, Ser. No. 141,360
Int. Cl.[5] H01R *23/02*
U.S. Cl. 439—108 **1 Claim**



1. A multi-terminal electrical connector and wire combination in which the connector comprises:

a dielectric housing means;

a first row and a second row of terminals accessible at a front side of the housing means and a third row and a fourth row of terminals accessible at a rear side of the housing means with the two rows of terminals accessible at each side being laterally spaced with each terminal in one row associated with a laterally spaced terminal in the other row to provide a pair of terminals;

a plurality of pairs of electrical conductors extending through the housing means each pair of conductors connecting an individual one of a pair of terminals on the front side of the housing means with an individual one of a pair of terminals on the rear side of the hosing means, one of the conductors in each pair connecting terminals in the first and third rows and the other conductor in each pair connecting terminals in the second and fourth rows;

and an elongate spacer located at the rear side of the housing means for spacing wires, the elongate spacer extending in the direction of the rows of terminals;

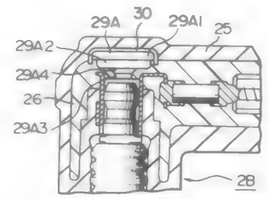
and the wires include a plurality of pairs of wires connected to the third and fourth rows of terminals, the wires in each oak being twisted together exteriorly of the connector and having untwisted end portions which extend one on each side of and are separated by the spacer with first wires of the pairs on one side of the spacer and second wires of the pairs on the other side of the spacer, and in which wires in alternate pairs crossover each other between the spacer and the terminals with the first wires of the alternate pairs connected to terminals of the fourth row and the second wires of the alternate pairs connected to terminals in the third row, and in the other pairs of wires, the first wires are connected to terminals in the third row and the second wires are corrected to terminals in the fourth row.

5,358,415

SPARK PLUG CAP

Shigemitsu Nitta, Kakogawa, and Mikio Kamitake, Kobe, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Division of Ser. No. 5,215, Jan. 15, 1993, Pat. No. 5,297,971.
This application Nov. 12, 1993, Ser. No. 150,863
Claims priority, application Japan, Jul. 17, 1992, 4-213305
Int. Cl.[5] H01R *11/28*
U.S. Cl. 439—125 **6 Claims**



1. A spark plug cap comprising:

a metal connection member for electrically connecting a spark plug to a high-volume cord;

a tubular rubber body for mounting on an end of the high-voltage cord and an insulating portion of the spark plug to seal said end and said insulating portion;

a core member within said rubber body surrounding said metal connection member;

a recess extending from an inner surface of said core member, through said core member, and into said tubular rubber body in combination with a space formed between the spark plug and said rubber body; and

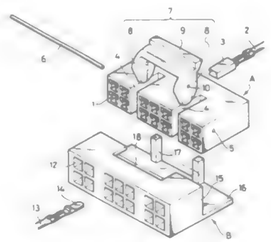
a support cap secured to said tubular rubber body therein and defining an end surface of said recess.

5,358,416

ELECTRIC CONNECTOR

Michael Power, Shizuoka, Japan, assignor to Yazaki Corporation, Japan

Filed Nov. 23, 1993, Ser. No. 155,803
Claims priority, application Japan, Nov. 24, 1992, 4-313448
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—157 **7 Claims**



1. An electric connector comprising:

a male connector housing comprising a plurality of slits formed so as to be substantially parallel with the engagement direction, a cam shaft crossing said slits and laterally passing through said male connector housing, and a plurality of cam plates supported by said cam shaft so as to be respectively rotatable in said slits, said plurality of cam plates being connected by a lateral connecting member having a handle portion and being formed integrally therewith; and

a female connector housing comprising bottom walls and an insertion guide wall extending from one of the bottom walls toward a side receiving said male connector housing, and a plurality of vertical members erected at positions at an edge of said insertion guide wall corresponding to said plurality of slits of said male connector housing; wherein

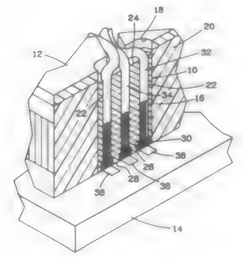
when said vertical members are respectively inserted into said slits, and when said cam plates are rotated through a predetermined angle, said male connector housing is moved to be inserted into said female connector housing due to the pressure of said cam plates on said vertical members.

5,358,417

SURFACE MOUNTABLE ELECTRICAL CONNECTOR

George R. Schmedding, Hummelstown, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 27, 1993, Ser. No. 113,461
Int. Cl.[5] H01R *13/44*
U.S. Cl. 439—178 **6 Claims**



1. An electrical connector for interconnecting a powered device to a power supply with a surface mount connection, said connector comprising an elongated housing having plural, axially oriented through holes having an essentially uniform diameter and extending between a top end and a contact end, where each hole is adapted to snugly receive an electrical conductor to electrically interconnect said device and said power supply, a respective said conductor within each said through hole, where at least one end of each said conductor within its corresponding hole is spaced a distance from said contact end, means cooperating with said housing to fixedly secure said conductors within said through holes, and quantities of an electrically conductive gel within said holes extending between said conductor to beyond said contact end to form conductive gel leads, whereby said housing may be mounted between said powered device and said power supply to effect an electrical interconnection therebetween.

5,358,418

WIRELINE WET CONNECT

Alan L. Carmichael, 24002 Farmhill, Spring, Tex. 77373

Filed Mar. 29, 1993, Ser. No. 38,243
Int. Cl.[5] E21B *23/00*
U.S. Cl. 439—190 **3 Claims**

1. A connectable and releasable electrical wet connect for transmitting electricity between wirelines within a well drill string comprising:

a male connecting assembly releasably receivable within a female connecting assembly;

said male connecting assembly comprising a generally cylindrical body, a conductor rod contained axially therein and extending therefrom;

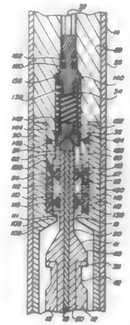
rod insulation means provided externally of said conductor rod;

said conductor rod provided with an electrical contact;

said female connecting assembly including an outer shell, shell insulation means interior of said outer shell, and an electrical conductor contained axially interior of said shell insulating means;

an electrical receptacle electrically connected with said electrical conductor;

said conductor rod contact receivable by said receptacle;



said conductor rod including a conductor rod extension extending upwardly beyond said cylindrical body;

the electrical contact at the upper end of said conductor rod extension;

the conductor rod insulation means extending to the said electrical contact;

said outer shell and said outer shell insulating means surrounding said conductor rod extension;

said sealing means comprising at least one pair of concentrically arranged, flexibly connected sealing ring the outer sealing ring in sealing contact with the outer shell insulation and the inner sealing ring in sealing contact with the rod insulation means.

5,358,419

ELECTRICAL POWER TUBE CONNECTOR

Paul N. Pejsa, New Berlin, Wis., and John W. Newman, Bellwood, Ill., assignors to General Electric Company, Milwaukee, Wis.

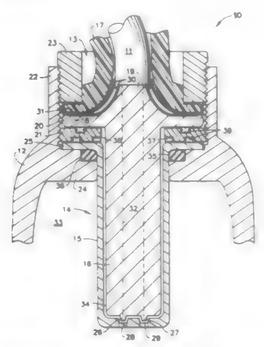
Filed Aug. 30, 1993, Ser. No. 113,008
Int. Cl.[5] H01R *4/60*
U.S. Cl. 439—201 **9 Claims**

1. In an electrical power tube having a generally cylindrical electrical plug-in unit thereon adapted to have an electrical input cable connected thereto and which is exposed to volume expansion of hot oil in said tube leading to oil leaking past said plug-in unit, the improvement comprising,

(a) a non-metal volume compensator ring encircling said plug-in unit and exposed to said volume expansion of hot oil to be compressed by said oil to thereby increase the

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available volume for oil expansion and minimize oil leakage past said plug-in unit,



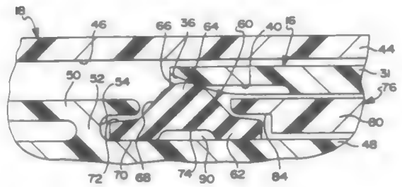
(b) said compensator ring comprising a closed cell cellular synthetic resin material.

5,358,420

PRESSURE RELIEF FOR AN ELECTRICAL CONNECTOR

Thomas M. Cairns, Beverly Hills, Mich., and William N. Moroney, Fairfield Glade, Tenn., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 7, 1993, Ser. No. 72,020
Int. Cl.[5] H01R *4/60*
U.S. Cl. 439—206 **20 Claims**



1. An electrical connector assembly comprising:
a first connector member;
a second connector member;
sealing means disposed between said first and second connector members; and
one of said first and second connector members including relief means for allowing gaseous fluid trapped between said first and second connector members to escape to atmosphere during the mating of said first and second connector members and for preventing gaseous fluid from entering past said sealing means and into said first and second connector members when mated together.

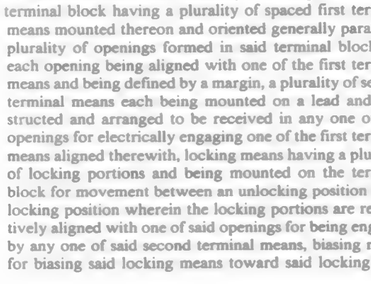
5,358,421

ZERO-INSERTION-FORCE SOCKET FOR GULL WING ELECTRONIC DEVICES

Kurt H. Petersen, Austin, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 6, 1993, Ser. No. 103,080
Int. Cl.[5] H01R *11/22*
U.S. Cl. 439—266 **6 Claims**

1. A test socket for an electronic device having leads for electrical contact with another device, the test socket comprising:
a base;
at least one row of contacts mounted on said base, each contact including a first spring portion terminating at an end defining a fulcrum and a second spring portion extending from said fulcrum and terminating in a contact tip for contact with the electronic device;
a lever mounted on said fulcrums of said row of contacts and including fulcrum sockets engaging said contact fulcrums, a cam-follower arm and an actuating arm disposed opposite said fulcrums with respect to said cam-follower arm; and
a cover movable between a rest position spaced from said base and a contact actuation position spaced a lesser distance from said base than said rest position, said cover including cam surfaces for interacting with said lever as



said cover is moved from said rest position to said actuation position to lift said contact tips from the device leads in the direction opposite the movement of said cover by flexing said second spring portions without substantially affecting said first spring portions and subsequently to flex said first spring portions to retract said contact tips from said device leads in a direction substantially perpendicular to the direction of movement of said cover, wherein said cover includes first and second cam surfaces, said first cam surfaces acting on said lever to pivot said lever with respect to said fulcrums as said cover moves a first distance from said rest position toward said base and said second cam surfaces acting to move said lever substantially perpendicularly to the direction of movement of said cover without pivoting said lever as said cover moves beyond said first distance toward said base.

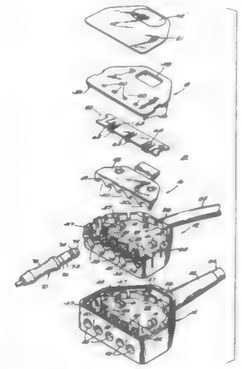
5,358,422

TERMINAL ASSEMBLY

David M. Schaffer, deceased, late of Jupiter, Fla.; by Steven R. Schaffer, Personal Representative, and Robert J. Flowers, of Jupiter, Fla., assignors to Marquette Electronics, Inc., Milwaukee, Wis.

Filed Feb. 11, 1993, Ser. No. 16,722
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—346 **18 Claims**

1. An electrical connector assembly including:
a terminal block having a plurality of spaced first terminal means mounted thereon and oriented generally parallel, a plurality of openings formed in said terminal block and each opening being aligned with one of the first terminal means and being defined by a margin, a plurality of second terminal means each being mounted on a lead and constructed and arranged to be received in any one of said openings for electrically engaging one of the first terminal means aligned therewith, locking means having a plurality of locking portions and being mounted on the terminal block for movement between an unlocking position and a locking position wherein the locking portions are respectively aligned with one of said openings for being engaged by any one of said second terminal means, biasing means for biasing said locking means toward said locking position, said second terminal means also having a first portion for engaging said locking means and for moving the same against said biasing means and away from said locking position until said second terminal means is fully engaged with said first terminal means or fully removed from said terminal block as said second terminal means is moved into and out of engagement with first terminal means, each of said second terminal means having a second portion



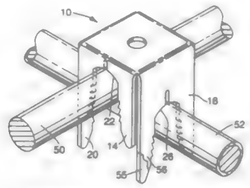
formed thereon and positioned to be engaged by one of the locking portions on said locking means when said second terminal means is in electrical engagement with said first terminal means, and a third portion formed on said second terminal means for frictionally engaging the margin of one of the openings as the second terminal means is being inserted or removed from said terminal block for frictionally resisting movement of the second terminal means through said opening.

5,358,423

CONNECTING CLIP

Christopher J. Burkhard, Austin, and Daryl A. Ramm, Cedar Park, both of Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 24, 1993, Ser. No. 158,683
Int. Cl.[5] H01R *4/26*
U.S. Cl. 439—402 **17 Claims**



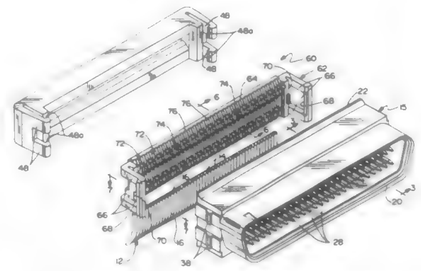
1. A clip for connecting elongate reinforcing members, said clip comprising:
a rectangular plate having opposite surfaces, opposite side edges and opposite end edges,
a side tab affixed to and extending from each of said opposite side edges perpendicularly to one of said surfaces of said plate,
an end tab affixed to and extending from each of said opposite end edges perpendicularly to said one said surface a distance greater than said side tabs,
said side tabs and said end tabs each having a U-shaped contact element formed in the free end thereof, said contact element having means for making resilient mechanical contact with elongate reinforcing members whereby a junction can be formed of elongate members by applying a said clip to rigidly connect pairs of elongate reinforcing members.

5,358,424

ELECTRICAL CONNECTOR FOR HIGH DENSITY RIBBON CABLE

David C. Bowen; Frank A. Harwath, both of Downers Grove, and Jerry A. Long, Elgin, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Aug. 11, 1993, Ser. No. 105,224
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—405 **11 Claims**



1. In an electrical connector for insulation displacing termination of ribbon cable having insulated conductors on predetermined close centerline spacing, including a dielectric housing having a mating face, an opposed cable-receiving face and a plurality of terminal-receiving passages extending between the faces, a plurality of terminals received in the passages, each terminal including a mating portion toward said mating face and a slotted U-shaped insulation displacement portion toward the cable-receiving face, the insulation displacement portions of the terminals being arranged staggered in at least two rows, and a dielectric cover for forcing the conductors into the U-shaped insulation displacement portions and embracing the cable between the cover and the cable-receiving face of the housing, the cover including surface means for engaging the cable and recess means in the surface means for receiving the U-shaped insulation displacement portions of the terminals, wherein the improvement comprises:
said surface means of the cover define a plurality of parallel conductor support channels, each of the channels defining upper and lower conductor support levels arranged such that a lower conductor support level of one channel is between two upper conductor support levels of adjacent channels, and
conductor hold down means operatively associated with each channel to hold a respective conductor therein,
whereby the ribbon cable can be pressed into the conductor support channels of the cover and held on the cover for subsequent termination of the cable to the terminals on the connector housing.

5,358,425

WIRE GRIPPING ENTRYWAY FOR CONNECTOR

Anna M. P. Rosen, Austin, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 20, 1993, Ser. No. 94,561
Int. Cl.[5] H01R *13/58*
U.S. Cl. 439—460 **3 Claims**

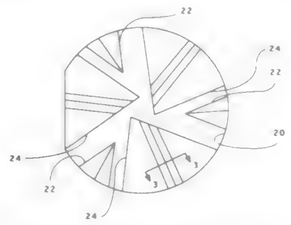
1. A wire gripping entryway for gripping a cylindrical, insulated electrical wire and particularly adapted for use with an electrical connector comprising:

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a wall having an inner surface defining a substantially circular hole for insertion of the electrical wire;

a first set of resilient projections, each projection being triangular in shape with one side attached to said wall inner surface and an apex of said triangular shape extending a first distance radially inwardly from said inner surface of said wall for gripping a wire having a diameter within a first range of diameters;

a second set of resilient projections, each projection being



triangular in shape with one side attached to said wall inner surface and an apex of said triangular shape extending a second distance greater than said first distance radially inwardly from said inner surface of said wall for gripping a wire having a diameter within a second range of diameters;

wherein said apexes of said second set of projections are offset from the centerline of said hole so that a wire inserted into said hole is engaged by a side of each of said triangular projections.

5,358,426

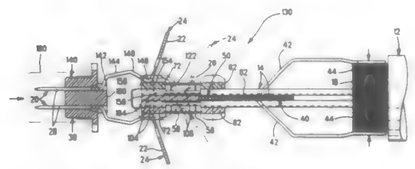
CONNECTOR ASSEMBLY FOR DISCRETE WIRES OF A SHIELDED CABLE

Homer E. Henschen, Carlisle, and Joseph M. Pawlikowski, Lancaster, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 884,791, May 18, 1992, Pat. No. 5,211,578. This application Apr. 29, 1993, Ser. No. 61,609

Int. Cl.[5] H01R *9/07*

U.S. Cl. 439—497 **13 Claims**



1. An electrical connector assembly for termination to ends of a plurality of discrete insulated conductor wires of a shielded cable to define a wire harness, comprising:

a connector subassembly including a dielectric front cover member having a plurality of passageways extending therethrough from a rearward fact to a mating face in which are disposed a plurality of terminals for contact sections to be at least exposed along said mating face for electrical connection with a corresponding electrical article, each signal one of said terminals including a rearward section exposed along a rearward face of said front cover member for termination to a respective said conductor;

a body member adapted to be mounted to said front cover member upon connector assembly, said body member including a planar section extending to a rearward end and including outwardly facing side surfaces defining wire-receiving regions along which will be secured ends of said wires of said shielded cable;

said body member including at least integrally affixed thereto a conductive shield ground section isolated from signal conductors of said wires upon securing thereof in said wire-receiving regions and including at least one section extending rearwardly from said body member to a respective tabular free end portion positioned and shaped to coextend along an end portion of the cable and along an exposed end portion of a shielding braid thereof, and further including at least one ground contact section at least exposed along a forward end of said body member for eventually grounding said conductive shield ground section to a corresponding ground circuit of said mating electrical article,

whereby ends of said wires are securable to said body member defining a wire-carrying subassembly movable forwardly as a unit to said front cover member for termination of said rearward sections of said signal terminals to signal conductors of said wires, and said conductive shield ground section is easily terminated to said shielding braid of the cable, assembling said wire-carrying subassembly to said connector subassembly defining a connector assembly having an integral ground for said shielding braid.

5,358,427

CONNECTOR HAVING A DUAL TERMINAL-FASTENING STRUCTURE

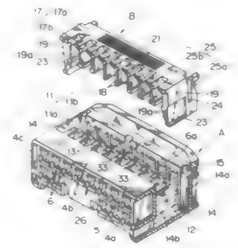
Takeya Miwa, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 939,717, Sep. 2, 1992, abandoned. This application Feb. 17, 1994, Ser. No. 197,554

Claims priority, application Japan, Sep. 4, 1991, 3-070813[U]

Int. Cl.[5] H01R *13/436*

U.S. Cl. 439—595 **8 Claims**



1. A connector having a dual terminal-fastening structure, comprising:

at least one terminal having an engagement hole and two engagement straps disposed adjacent to and on opposite sides of said engagement hole;

a housing having a terminal chamber therein for housing the terminal inserted into the housing;

a support portion projecting from a wall of the terminal chamber into the terminal chamber;

an elongated resilient engagement arm having a first end portion and a second end portion which engages said engagement hole of the terminal to hold the terminal within the terminal chamber, said arm being supported at an intermediate portion thereof on said support portion and extending within the chamber in a direction in which the terminal is inserted into the housing;

a terminal-fastener fitted into said housing for fastening the terminal in place within the terminal chamber, said terminal-fastener being first moved to a temporary fastening position and then to a permanent fastening position;

a plurality of first engagement portions being disposed on said terminal-fastener, two of said plurality of first engagement portions respectively engaging said two engagement straps of the terminal to fasten said terminal within the terminal chamber when said terminal-fastener is fitted into said housing; and

a second engagement portion provided on said terminal-fastener for engaging an outer surface of the wall of the terminal chamber and the support portion when the terminal retainer is in a temporary fastening position, and for engaging the support portion and the first end portion when said terminal fastener is fitted into said housing, thereby preventing the resilient arm from being deformed when a force is exerted on the resilient arm in the direction opposite to the direction in which the terminal is inserted.

5,358,428

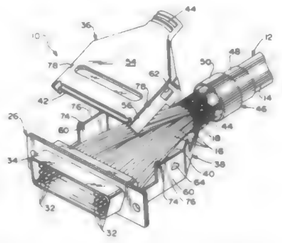
SHIELDED ELECTRICAL CONNECTOR

Craig Bixler, Elmhurst, and Michael O'Sullivan, Willowbrook, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Oct. 12, 1993, Ser. No. 135,198

Int. Cl.[5] H01R *13/648*

U.S. Cl. 439—607 **15 Claims**



1. A shielded electrical connector assembly adapted to engage a shielded cable having an outer cable braid for shielding the cable, the connector assembly including:

an insulative housing with terminal receiving regions;

a plurality of terminals mounted in the housing;

a conductive housing shell mounted on the housing;

upper and lower conductive shield halves, each having

a housing shell engaging end for engaging a portion of said conductive housing shell; and

a rear cable engaging end for electrically and mechanically engaging said cable braid;

said shield halves being movable from an initial position at which said cable engaging ends are spaced apart to a final position at which said cable engaging ends are adapted to engage said cable braid;

the improvement comprising:

a projection on one shield half between the housing shell engaging end and the rear cable engaging end; and

means defining a pivot region on the other shield half between the housing shell engaging end and the rear cable engaging end interengaging said projection and about which said shield halves pivot relative to one another between said initial and final positions in order to increase the force of engagement between said housing shell engaging ends and the conductive housing shell upon rotating said shield halves between said initial and final positions.

5,358,429

HAZARDOUS LOCATION-RATED PLUG

Nabil L. Mina, Roselle, Ill., assignor to Appleton Electric Company, Chicago, Ill.

Filed Aug. 27, 1993, Ser. No. 112,860

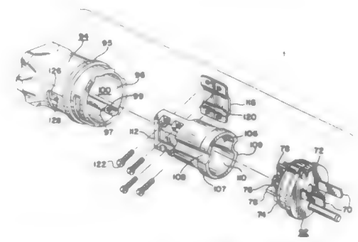
Int. Cl.[5] H01R *13/512, 13/595*

U.S. Cl. 439—695 **16 Claims**

1. An electrical plug for connection to an associated electrical device by means of conductor wires, for use in hazardous locations for delivering current from an energized receptacle to said plug, comprising:

(a) a metal housing comprising a cylindrically-shaped side wall and an end wall for defining a plug chamber, the end wall having a hole for permitting the conductor wires to enter said plug chamber;

(b) a cylindrically-shaped sleeve made from a nonconductive material having an outside diameter slightly less than that of the inside diameter of said plug chamber, said sleeve being positioned inside said plug chamber so that one end abuts the end wall of said metal housing, and the opposite end provides a bearing surface, said sleeve insulating the conductor wires from accidental contact with the metallic surface of said housing side wall;



(c) a dead-front plug base comprising a nonconductive base portion having at least two holes bored therethrough, a like number of conductive line terminal prongs protruding through said holes having a first end for insertion into the receptacle, and a second end connected to fastening means for securing the ends of the conductor wires to the terminal prongs, said plug base fitting inside said plug chamber in abutted relation to the bearing surface of said insulating sleeve to cover the open end of said plug housing; and

(d) means for securing said plug base to said plug housing to provide a secure seal for containing any ignited hazardous materials inside said plug.

5,358,430

FEMALE SOCKET OF "MODULAR JACK" TYPE WITH INTEGRATED CONNECTIONS

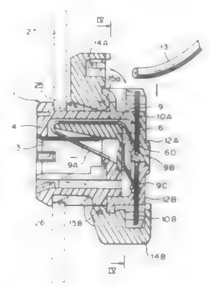
Pierre Bonvallat, and Xavier Fasce, both of Cluses, France, assignors to Pouyet International, Ivry-sur-Seine, France

Filed Jul. 29, 1993, Ser. No. 98,881

Claims priority, application France, Jul. 31, 1992, 92 09744

Int. Cl.[5] H01R *23/02*

U.S. Cl. 439—676 **9 Claims**



1. A female socket of the "modular jack" type, with integrated connections,

wherein it comprises:

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a hollow insulating body presenting a female opening at the front adapted to receive a complementary male "modular jack" plug, and an opening at the rear;

a solid insulating piece fitting tightly in the rear opening of the body, and provided with longitudinal notches around almost all of the piece and each receive an elastic conducting arm so as to form towards the front conventional elastic, parallel "modular jack" contacts located at a back of said female opening, the notches widening rearwardly on an upper face of the piece, arriving on a transverse rear face of the piece and serving as guides for free, elastic rear parts of the arms which form contact members and which are associated, by couples of contacts of different lengths, with a short contact, with a couple arriving substantially halfway up the rear face, and the other, long, descending much further down;

and two insulating half-caps which are positioned beneath each other to cover the rear part of the body and which each imprison a number of self-stripping contacts equal to half the number of pins of the modular jack socket, with the result that, when the half-caps are placed in position, the self-stripping contacts of the upper half-cap each rub respectively against one of said "short" contacts, whilst, in the same way, the self-stripping contacts of the lower half-cap then each rub respectively against one of said "long" contacts.

5,358,431

ELECTRICAL CONNECTOR

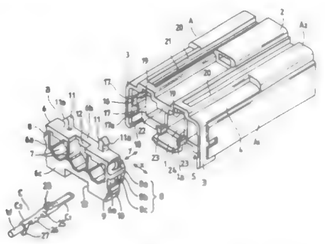
Masayuki Yamamoto; Kazuaki Sakurai, and Toshiro Maejima, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 897,054, Jun. 11, 1992, Pat. No. 5,299,959. This application Nov. 2, 1993, Ser. No. 144,516

Claims priority, application Japan, Jun. 13, 1991, 3-141591; Apr. 8, 1992, 4-87316; Apr. 13, 1992, 4-92702

Int. Cl.[5] H01R *13/436*

U.S. Cl. 439—752 **8 Claims**



1. An electrical connector, comprising:

a housing including a terminal receiving chamber extending in a longitudinal direction for receiving a terminal, said housing having a mating end for mating with another housing and a terminal receiving end, opposite said mating end, from which the terminal is inserted into said receiving chamber;

a terminal engagement holder for preventing the terminal from being withdrawn from said receiving chamber and having a terminal insertion hole therein, said holder being inserted into said housing in a longitudinal direction to a provisional engagement position and being movable solely in a transverse direction from said provisional engagement position to a complete engagement position;

first means for retaining said holder in said provisional engagement position at which said terminal insertion hole of said holder is aligned with said receiving chamber to allow the terminal to be inserted therein; and

second means for retaining said holder in said complete engagement position at which said terminal insertion hole is at least partially misaligned with said receiving chamber so that said terminal cannot be removed from aid receiving chamber, wherein said holder includes cam means for camming an incompletely inserted terminal toward said mating end so as to move said terminal completely into said receiving chamber upon movement of said holder in said transverse direction.

5,358,432

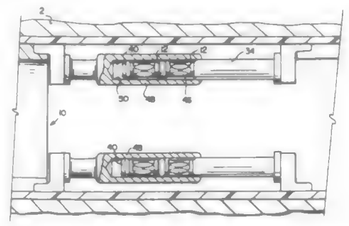
RESILIENT CONNECTORS FOR A GENERATOR/MOTOR ROTOR

True T. Shih; James B. Archibald; Thomas B. Jenkins, all of Schenectady; Frederick J. Rink, Jr., Clifton Park; Paul C. Rasmussen, Scahaghticoke; James F. Hopeck, Mechanicville, and Robert Nygard, Saratoga Springs, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 800,529, Dec. 5, 1991, which is a continuation-in-part of Ser. No. 680,065, Apr. 3, 1991, abandoned. This application May 18, 1993, Ser. No. 62,728

Int. Cl.[5] H01R *13/05*

U.S. Cl. 439—825 **2 Claims**



1. In a dynamoelectric machine having a rotor bore conductor extending between a field winding and an exciter/rectifier assembly, a first resilient electrical connection between said bore conductor and said field winding and a second resilient electrical connection between said bore conductor and said exciter/rectifier assembly; said first resilient electrical connection comprising a first receptacle member attached to said field winding, and a first terminal stud extending from said bore conductor, said first terminal stud having at least a first resilient connector band located circumferentially about said first terminal stud, said terminal stud and said at least one connector band telescopingly engaged within said first receptacle member; and said second resilient electrical connection comprising a second receptacle member attached to said bore conductor and a second terminal stud extending from said exciter/rectifier assembly, said second terminal stud having at least a second resilient connector band circumferentially located about said second terminal stud, said second terminal stud and said second resilient connector band telescopingly received within said second receptacle member.

5,358,433

FEMALE ELECTRICAL CONTACT TERMINAL FOR A CONNECTOR

Jean Michel Dechanteloup, le Mans, and Patrick Leger, Mulsanne, both of France, assignors to Framatome Connectors International, Paris la Defense, France

Filed Jun. 9, 1993, Ser. No. 73,520

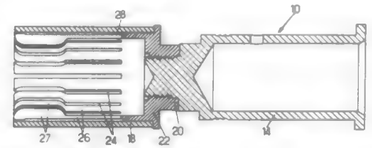
Claims priority, application France, Jun. 9, 1992, 92 06914

Int. Cl.[5] H01R *11/22*

U.S. Cl. 439—843 **12 Claims**

1. A female electrical contact terminal having:

a rear tubular shank for connection with an electrical conductor, a forwardly opening electrically conductive annular portion for receiving a male terminal, subdivided by a plurality of circumferentially distributed axial slots into a plurality of fingers, each said finger extending axially from a root securely connected to said rear tubular shank up to a free end portion thickened to have a radially inwardly directed projection, the projections of all arms defining a male terminal entrance, and



a rigid tubular section secured to the roots of the fingers, surrounding the fingers and shaped to limit radially outward resilient deformation of the fingers from a free condition of the fingers in which they mutually converge forwardly and are each at an increasing radial distance from a tubular wall of the tubular section from the root to the free end thereof.

5,358,434

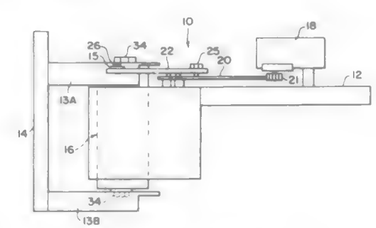
MOUNTING APPARATUS FOR TROLLING MOTOR

Ronald Brown, P.O. Box 783, Rock Springs, Wyo. 82902

Filed Sep. 10, 1993, Ser. No. 120,154

Int. Cl.[5] B63H *5/12*

U.S. Cl. 440—60 **9 Claims**



1. Apparatus for attaching an auxiliary motor to the transom of a marine craft, said apparatus comprising:

(a) a frame member for attachment to the transom of said marine craft;

(b) a motor mount member for supporting said auxiliary motor; wherein said motor mount member comprises a plate member which is oriented in a generally-vertical plane;

(c) pivot means for enabling said motor mount member to pivot relative to said frame member;

(d) motor means supported by said frame member;

(e) gear means carried by said frame member and being adapted to be rotatably driven by said motor means; wherein said gear means includes opposite side edges which limit rotational movement of said motor mount member to an arc of about 110°; and

(f) a linking member connected between said gear means and said motor mount member for pivoting said motor mount member relative to said frame member in response to rotation of said gear means;

wherein said pivot means is positioned between said motor mount member and said gear means.

5,358,435

BOAT PROPULSION UNIT

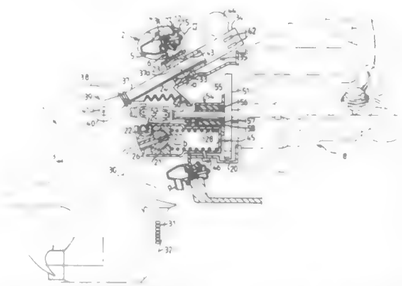
Christian Rodskier, Torslanda, Sweden, assignor to AB Volvo Penta, Gothenburg, Sweden

Filed Jun. 22, 1993, Ser. No. 79,804

Claims priority, application Sweden, Jun. 22, 1992, 9201909

Int. Cl.[5] B63H *5/12*

U.S. Cl. 440—61 **5 Claims**



1. Boat propulsion unit intended to be suspended on the outside of a boat transom and driveably connected to an engine on the inside of the transom, said unit comprising a propeller drive shaft housing, a suspension arrangement intended to be fixedly secured to the transom, upper and lower universal joints which pivotally connect the drive shaft housing to the suspension arrangement to allow pivotal displacement of the drive shaft housing relative to the suspension arrangement about a pivot axis in a vertical plane and pivot axis in a horizontal plane, steering means which are arranged to effect pivotal displacement of the drive shaft housing about said first-mentioned axis, and trim and tilt means which are arranged to effect pivotal displacement of the drive shaft housing about said second-mentioned axis, a combined steering, trim and tilt arm (35) in the form of a powered telescopic arrangement being pivotally attached at its one end (29) to the drive shaft housing (3) so as to impart pivotal displacement of the arm and the drive shaft housing relative to each other about a horizontal axis (41) and which arm at, or in proximity to, an opposite end on the inside of the transom (4) presents means (42) for connection to a steering mechanism, and at a point between its ends the arm is connected to the boat via said upper universal joint (24) in order to achieve a steering displacement of the drive shaft housing (3) by pivoting the arm about an axis (a) accommodated in a vertical plane.

5,358,436

TILT CYLINDER DEVICE FOR OUTBOARD ENGINE

Chiharu Soda, Saitama, and Kimiaki Ueno, Tochigi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 690,647, Apr. 24, 1991, abandoned. This application Dec. 6, 1993, Ser. No. 163,579

Claims priority, application Japan, Apr. 24, 1990, 2-107835; Apr. 24, 1990, 2-107836; Apr. 24, 1990, 2-107837

Int. Cl.[5] B63H *21/26*

U.S. Cl. 440—61 **14 Claims**

1. A tilt device in a boat propelling apparatus having a pair of stern brackets adapted to be fixed to a boat body, a swivel case vertically swingably supported on the stern brackets by a tilt shaft, said swivel case being adapted to have a propulsion unit mounted thereon, said tilt device being disposed between the swivel case and the stern brackets, said tilt device comprising:

a pressurized fluid supply for supplying a pressurized fluid;

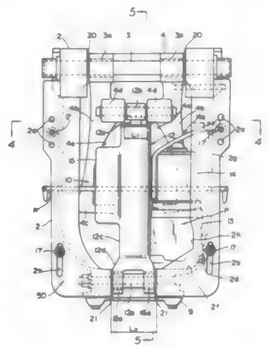
a cylinder unit actuatable by the pressurized fluid supplied from said pressurized fluid supply;

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said pressurized fluid supply and said cylinder unit being disposed within an outer profile established by said pair of stern brackets;

said cylinder unit including a cylinder case which is relatively angularly movably coupled at a lower end thereof to said stern brackets, and a piston rod which is expandable from the cylinder case and is relatively angularly movably coupled at an upper end thereof to said swivel case;

said pressurized fluid supply including an assembly of a pump and a motor, said assembly being coupled with the cylinder case and being positioned lower than the upper end of the piston rod in a fully contracted state thereof;

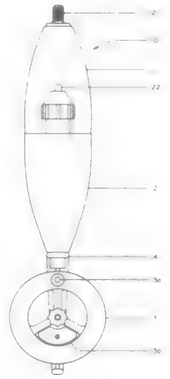


said pump and motor assembly being disposed on one side of said cylinder unit, and said pressurized fluid supply further including a reservoir disposed on the other side of said cylinder unit, said reservoir being formed on an upper portion of said cylinder unit, and said pump and said motor assembly being coupled to a lower portion of said cylinder unit; and

said swivel case including support members coupled to the upper end of said piston rod and extending laterally above said pump and motor assembly on the one side of said cylinder unit and above the reservoir on the other side of said cylinder unit.

5,358,437
REVERSIBLE, LIGHTED MARKER BUOY
Lawrence J. Allen, 2020 11th Ave., E. Hibbing, Minn. 55746
Filed Oct. 20, 1992, Ser. No. 963,766
Int. Cl.[5] B63B *22/18*
U.S. Cl. 441—13 **4 Claims**

1. A water marking buoy comprising an automatic unwinding line reel with said reel possessing two flanges, with said reel flanges being connected centrally by a medial portion upon which an elongated anchor line is flexibly wound, with one end of said elongated anchor line being attached to said medial portion of said reel and the other end of said elongated anchor line being attached to an anchoring device, with said reel rotatably mounted upon a reel mounting bracket so configured as to allow the free dispersal of said elongated anchor line through an aperture of a greater diameter than that of said elongated anchor line, with said aperture being located in the distal end of said reel mounting bracket and so placed as to guide said elongated anchor line on to and off of said reel, with said reel having an additional weight attached to either one or both reel flanges, with said additional weight being peripherally disposed in a concentrated area of only one hemisphere of said reel flange(s), one half of said reel resultingly being substantially heavier than the other due to the attachment of said peripherally mounted weight, with said reel being mounted upon said reel mounting bracket on its medial axis so as to allow the unencumbered rotation of said reel about its medial axis, thereby allowing said peripherally attached weight to influence the rotation of said reel about its medial axis, whereby said peripherally attached weight gravitationally



tends to position said reel in a naturally resting location at the bottom of said reel's rotation about its medial axis due to the gravitational forces being exerted upon said peripherally attached weight, thereby restraining any further rotation of said reel.

5,358,438
RECREATIONAL FLOATATION DEVICE
Henry Wolfe, Palmetto, Fla., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Continuation of Ser. No. 89,728, Jul. 9, 1993, Pat. No. 5,304,082.
This application Sep. 17, 1993, Ser. No. 123,516
The portion of the term of this patent subsequent to Apr. 19, 2011, has been disclaimed.
Int. Cl.[5] B63B *7/00*
U.S. Cl. 441—41 **7 Claims**



1. A recreational floatation device, comprising:

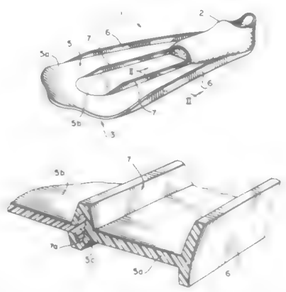
a single inflatable main body having an elongated horizontal axis and a flattened configuration, said main body having at least two openings and a plastic wall defining said body, each opening sized to receive a user, and positioned a predetermined distance along said horizontal axis;

a stretchable fabric material overlaying said plastic wall, providing a comfortable and aesthetically pleasing effect; and

a main body valve directly secured on said plastic wall for inflating and deflating the entire inflatable main body,

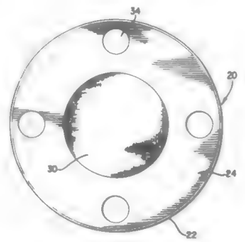
said main body, when inflated, having a buoyancy in water sufficient to support a plurality of users.

5,358,439
SWIMMING FLIPPER
Ferraro Paolo, Genoa, Italy, assignor to Technisub S.p.A., Genoa, Italy
Filed Jul. 16, 1993, Ser. No. 91,984
Claims priority, application Italy, Jul. 17, 1992, T092A000612
Int. Cl.[5] A63B *31/08*
U.S. Cl. 441—64 **10 Claims**



1. Swimming flipper comprising a flexible but relatively rigid blade and a relatively soft shoe associated to one end of the blade, wherein the blade, in an undeformed condition, has a substantially planar active portion formed by at least two materials of which the first is a relatively rigid and inextensible thermoplastic material and the second occupies areas wherein said active portion of the blade is devoid of the first material, wherein the second material is also a relatively rigid and inextensible thermoplastic material and occupies a central area of the active portion of the blade having a width comprised between 5 and 95% of said active portion, and wherein the two thermoplastic materials are rigidly joined to each other by chemical-thermal adhesion along the edges of said area.

5,358,440
COLLAPSIBLE FLYING DISC
Yu Zheng, 1065 Howard Ave., Covina, Calif. 91722
Filed Jan. 6, 1994, Ser. No. 178,050
Int. Cl.[5] A63H *27/00, 33/00*
U.S. Cl. 446—48 **15 Claims**



1. A flexible flying disc, comprising:

an enclosed resilient loop having a folded and an unfolded orientation;

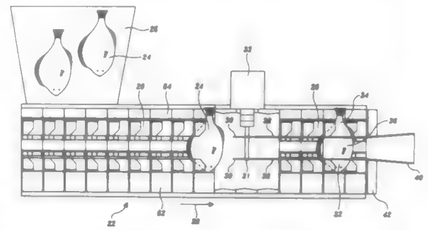
a peripheral binding for retaining the resilient loop, the binding having an internal periphery and an internal edge along the internal periphery thereof;

a meshed panel substantially covering the resilient loop in its unfolded orientation and attached to the internal edge of the binding, the meshed panel having means for allowing air to pass therethrough; and

at least one non-meshed panel stitched to a portion of the meshed panel to cover the portion of the meshed panel;

wherein the resilient loop and panels may be twisted and folded to form a plurality of concentric loops and panels to substantially reduce the size of the flying disc.

5,358,441
DEVICE FOR HOLDING FLAT FISH DURING PROCESSING
Jens Hjorth, Seattle, Wash., assignor to Royal Seafoods, Inc., Seattle, Wash.
Filed Oct. 13, 1992, Ser. No. 959,385
Int. Cl.[5] A22C *25/08*
U.S. Cl. 452—180 **15 Claims**

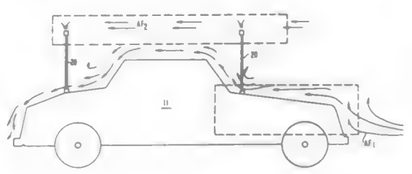


1. A fish holder for holding and centering a flat fish so that the flat fish may be cut along selected paths, the fish holder comprising:

a) a tray having an upper surface upon which the flat fish rests while being cut up; and

b) first and second stationary arms extending upwardly from the tray and extending over at least part of the upper surface, the flat fish being secured between the upper surface and the first and second arms, the first and second arms including opposing slanted and beveled rear walls angled so as to define a recess that guides the flat fish between the first and second arms and the upper surface, and simultaneously centers the flat fish lengthwise within the recess as the flat fish is placed in the fish holder.

5,358,442
AIR INTAKE DEVICE FOR LAND VEHICLES
Mehmet M. Ekinci, 400 E. 57th St., #4H, New York, N.Y. 10022
Filed Apr. 16, 1993, Ser. No. 18,502
Int. Cl.[5] B60H *3/06*
U.S. Cl. 454—158 **11 Claims**



1. An air intake device for a land vehicle having a closeable passenger compartment, comprising

an antenna having a first end and a second end opposite to said first end,

air inlet means arranged on said first end of said antenna, and

an air plenum box arranged on said second side of said antenna such that air is passed from said air inlet means through said antenna to said air plenum box.

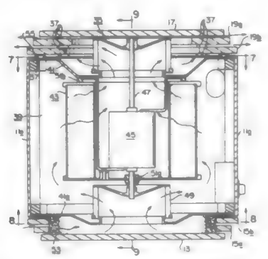
VOL 1167 ISS 4 OC 25 1994 UMI

5,358,443

DUAL FAN HEPA FILTRATION SYSTEM

Robert G. Mitchell, Westfield, and George Havrilla, Somerville, both of N.J., assignors to CenterCore, Inc., Wayne, Pa.

Filed Apr. 14, 1993, Ser. No. 47,597
Int. Cl.[5] F24F *7/007*
U.S. Cl. 454—230 14 Claims



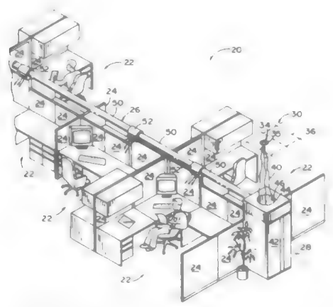
1. A device for use with at least one workspace, comprising:
a chamber including an outer wall and end walls forming the chamber;
filter means defining an inner wall of said chamber and being the sole outlet of air entering said chamber;
a fan motor mounted inside said filter means and including a drive shaft extending axially out from motor in two directions;
an intake fan mounted on one end of the shaft, including first path defining means for defining a sealed path which is the sole air inlet to said chamber;
an exhaust fan mounted on the other end of shaft, including second path defining means for defining a path from said sole outlet to said exhaust fan for exhausting air in a generally axial direction; and
baffle means for deflecting air in said axial direction to a radial direction while reducing the velocity of said air to laminar flow.

5,358,444

WORKSTATION VENTILATION SYSTEM

Randall S. Helm, Kentwood, Mich., and James R. Ahart, St. Louis, Mo., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Apr. 27, 1993, Ser. No. 54,079
Int. Cl.[5] F24F *13/02*
U.S. Cl. 454—306 24 Claims



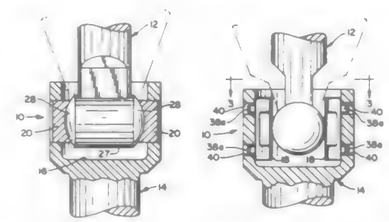
1. In a modular furniture system of the type in which a plurality of modular furniture units are positioned in a preselected plan configuration to form multiple workstations, said modular furniture units including an upper portion, the improvement of a personal ventilation system therefor, comprising:
an air supply adapted to pressurize and flow ventilation air therethrough;
an air duct having a closed construction shaped to flow ventilation air therethrough, and arranged in a plan configuration similar to the preselected plan configuration of said modular furniture units, with said air duct extending along at least some of said modular furniture units to predetermined locations adjacent each of said workstations; said air duct being operably connected with said air supply to provide pressurized ventilation air at each of said workstations; said air duct being attached to said modular furniture units along said upper portion of said modular furniture units;
a plurality of air diffusers communicating with said air duct, and located at preselected positions adjacent each of said workstations; each of said air diffusers being adjustable to control the flow of ventilation air therethrough, whereby ventilation air from said air supply is supplied to each of said workstations through said air duct, and may be selectively flowed through said air diffusers to maximize personal comfort within each of said workstations.

5,358,445

VARIABLE ANGLE TORQUE TRANSMITTING COUPLING DEVICE

Robert A. Wuebker, Westerville, Ohio, assignor to General Signal Corporation, Stamford, Conn.

Continuation of Ser. No. 653,870, Feb. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 494,010, Mar. 15, 1990, abandoned. This application Aug. 27, 1993, Ser. No. 113,584
Int. Cl.[5] F16D *3/20*
U.S. Cl. 464—112 20 Claims



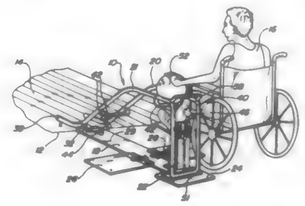
1. A variable angle torque transmitting coupling apparatus which comprises:
a first member which is generally T-shaped and includes an elongated shaft having a length that is greater than the width thereof and an elongated cylindrical head having a length greater than the width thereof, said head and said shaft each having an axis, the respective axes thereof being disposed substantially at a right angle in a first plane, the first plane being perpendicular to a second plane in which the entire extent of the axis of said shaft is disposed, the maximum dimension of said head in said first plane being greater than the maximum dimension of said head in said second plane, said elongated cylindrical head having surfaces at the axial extremities thereof which are spherical section shaped, all other surfaces of said head being cylindrical section shaped; and
a second member having a housing in which an elongated first slot is disposed, said first slot being dimensioned and configured for receiving said head of said first member, first and second bearing elements having generally planar bearing surfaces disposed in said first slot on the sides thereof, said first and second bearing surfaces being dimensioned and configured to engage said cylindrical section shaped surfaces of said head with sliding engagement in all possible positions of said first and second members.

5,358,446

BOWLING RAMP

David Bergman, 27319 Aberdeen, Southfield, Mich. 48076

Filed Aug. 11, 1993, Ser. No. 104,713
Int. Cl.[5] A63D *5/00*
U.S. Cl. 473—56 10 Claims



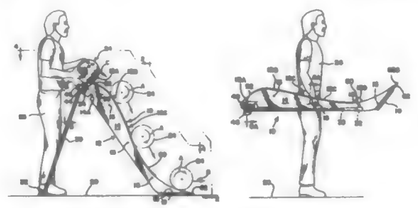
1. A ramp apparatus for accelerating a bowling ball along a bowling lane toward bowling pins comprising:
a base adapted to be positioned with respect to the bowling lane;
a pair of guide rails for accelerating a bowling ball toward the bowling pins, the guide rails having one end pivotably attached to one end of the base and an opposite end slidably connected to the other end of the base for adjusting the one end about the pivot to aim the bowling ball toward selected ones of the bowling pins; and
an aiming and locking mechanism for alternately aiming the acceleration of a bowling ball toward selected bowling pins and securing the opposite end of the guide rails to the base.

5,358,447

BOWLING RAMP

Bernard A. Erickson, 1411 Eastgate Pkwy., Rockford, Ill. 61108

Filed Nov. 23, 1993, Ser. No. 156,883
Int. Cl.[5] A63D *5/00*
U.S. Cl. 473—56 18 Claims



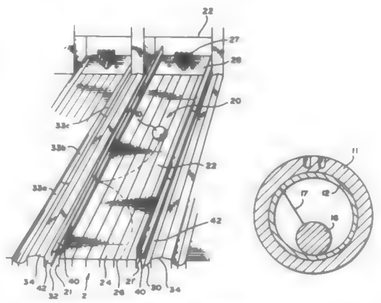
1. A bowling ramp useful for acceleration and directional control of a bowling ball by handicapped, disabled, weak and infirm persons of all ages, comprising:
sloping guide track means having a lower end adapted to rest on a bowling alley surface and an upper end having a horizontal segment adapted to support a bowling ball at rest;
leg means having an upper end connected to support said upper end of said guide track means and a lower end adapted to be supported from said bowling alley surface;
friction means on said guide track means for engaging a bowling ball moving downwardly on said track means causing said ball to spin about a roll axis extending through said bowling ball; and
alignment means adjacent a lower end of said ramp extending laterally outwards of said guide track means over said bowling alley surface for aiding in the directional alignment of said ramp with respect thereto.

5,358,448

BUMPER BOWLING GAME AND ERRATICALLY ROLLABLE WEIGHTED BOWLING BALL

Michael W. Stephens, Richmond, Va., assignor to AMF Bowling, Inc., Mechanicsville, Va.

Filed Jul. 13, 1993, Ser. No. 90,240
Int. Cl.[5] A63D *5/00*; A63B *43/04*
U.S. Cl. 473—113 2 Claims



1. A bumper bowling game comprising an elongated bowling lane anti it pair of longitudinally extending gutters with one of said gutters adjacent to and extending along each side of said lane; a foul line disposed at a first end of said lane and a pin deck disposed at the opposite end of said lane; a plurality of bowling pins disposed on said pin deck and a pair of retractable bumpers for blocking said gutters to thereby prevent a bowling ball from falling into said gutters when said retractable bumpers are in an extended position and for allowing a bowling ball to fall into said gutters when in a retracted position; a bowling ball for rolling along said lane and toward said pins, said bowling ball comprising an outer semi-rigid shell portion and an inner hollow core portion surrounded by said outer shell and including means for defining a plurality of finger holes within said outer shell portion, means including a relatively small but relatively heavy off-center weight disposed in said inner core for causing said ball to follow an erratic path when rolled on said bowling lane, means for separating said finger holes from said off-center weight and wherein said bowling ball includes a hollow core having an inner wall, a pivotable rod disposed in said hollow core and pivotally fixed at one end thereof to said inner wall and a pendulum-like weight fixed to an opposite end of said pivotable rod and suspended within said hollow core.

5,358,449

Patent Not Issued For This Number

5,358,450

DRIVEN PULLEY WITH FLYWEIGHTS EFFECTIVE AT LOW SPEEDS

Jean Robert, Drummondville, Canada, assignor to Powerbloc IBC Canada Inc., Drummondville, Canada

Filed Jun. 28, 1993, Ser. No. 84,284
Int. Cl.[5] F16H *59/00*
U.S. Cl. 474—13 9 Claims

1. In a driven pulley of a variable speed transmission, said pulley comprising:
a shaft having two ends;
two coaxial flanges located on said shaft, each flange having an inner conical wall, said inner walls facing each other and providing therebetween a V-shaped groove for a trapezoidal pulley belt exerting substantially a radial force and a tangential force on said inner walls, one of said flanges, hereinafter called "fixed flange", being rigidly attached at one end of said shaft, the other flange, herein-

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after called "movable flange", being slidably and rotatably mounted on said shaft;

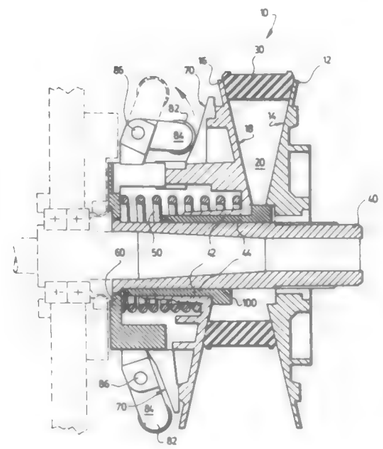
a helicoidal spring, mounted around said shaft, for forcing said movable flange to get closer to the fixed flange;

a cam plate rigidly attached to one end of said shaft opposed to said end where said fixed flange is attached, said cam plate having at least two cam surfaces symmetrically disposed around a circular path, said cam surfaces having an end projecting towards said movable flange; and

slider buttons in number equal to said cam surfaces, rigidly attached to said movable flange and projecting therefrom towards said cam plate, symmetrically disposed around a circular path substantially similar to said circular path of said cam surfaces, said slider buttons being made of a low friction material and having a shape suitable for easily sliding on said cams;

the improvement comprising:

a substantially annular-conical surface provided on the movable flange and facing said cam plate, said annular-conical surface having an inner edge and an outer edge, the inner edge being closer to said cam plate than the outer edge;



at least two cylindrical flyweights symmetrically disposed around said cam plate, each flyweight being operatively attached to an arm, said arm being operatively attached to said cam plate and extending therefrom, each of said arm being able to revolve, about a tangential axis disposed at an edge of said cam plate, between a first position where the corresponding flyweight projects substantially towards and against the annular conical surface and a second position where the corresponding flyweight projects substantially radially with reference to said shaft; and

biasing means for forcing said flyweights to apply a force on said annular-conical surface having an axial resultant force for moving said movable flange closer to the fixed flange, said force being maximum at said first position;

whereby,

at minimum rotation speed, said flyweights are at said first position; and

as rotation speed increases, said flyweights are subjected to a centrifugal force counterbalancing said biasing means, therefore moving said flyweights closer to said second position.

5,358,451

DEVICES ENABLING SHIFTING OF GEARS ON BICYCLES

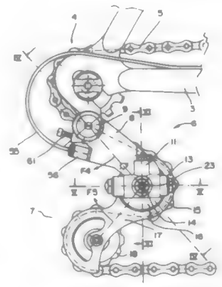
Jean-Pierre Lacombe, Chavanod, and Jean-Pierre Mercat, Cran-Gevrier, both of France, assignors to B. G. Innovation (S.A.R.L.), Annecy Cedex, France

Filed Feb. 25, 1993, Ser. No. 22,953

Claims priority, application France, Feb. 27, 1992, 92 02553

Int. Cl.[5] F16H *61/00*

U.S. Cl. 474—78 **20 Claims**



1. Gear shifting device for a cycle having a chain and pinion transmission, comprising:

a mobile gear shift assembly adapted to laterally displace the chain for enabling passage from one gear to another gear;

transformation means for transforming rotation of at least one pivoting gear into a lateral displacement of said mobile gear shift assembly; and

control means for controlling lateral displacement of said mobile gear shift assembly.

5,358,452

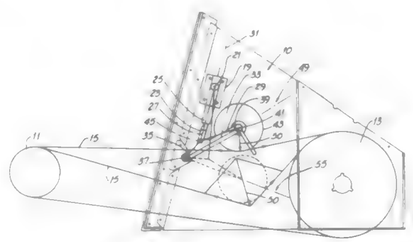
BELT TENSIONING MECHANISM

Kai Zhao, Downers Grove, Ill., assignor to Case Corporation, Racine, Wis.

Filed Sep. 1, 1993, Ser. No. 114,159

Int. Cl.[5] F16H *7/08*

U.S. Cl. 474—133 **13 Claims**



1. In a belt tensioning system having a lever, an idler pulley attached to the lever and contacting a belt, and a fluid cylinder acting on the lever for belt tensioning, the improvement wherein:

the lever is mounted for pivoting movement between a first position and a second position;

the cylinder is free of springs and applies a substantially constant force to the lever through a moment arm;

the length of the moment arm at the first position is different than the length of the moment arm at the second position; and,

belt tension is substantially constant, irrespective of lever position and irrespective of the length Of the moment arm.

5,358,453

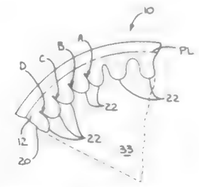
COGGED V-BELT

Taisuke Kimura, and Hiroyuki Okawa, both of Hyogo, Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan

Filed Oct. 13, 1993, Ser. No. 135,794

Int. Cl.[5] F16G *5/20*

U.S. Cl. 474—238 **21 Claims**



1. A power transmission belt comprising:

a belt body having a length; and

a plurality of cogs spaced lengthwise along the belt body for engaging a pulley with which the belt cooperates,

wherein adjacent cogs are configured and relatively located so that the adjacent cogs contact each other as the power transmission belt is wrapped around a cooperating pulley having a diameter of 60 to 130 mm.

5,358,454

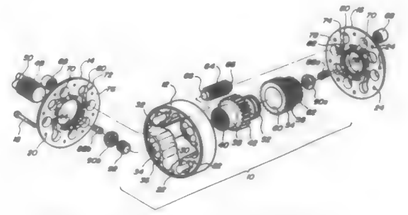
TEMPERATURE AND PRESSURE COMPENSATED GEARED TRACTION UNIT

Thomas Bowen, Thousand Oaks, Calif., and Barry L. Frost, Waterford, Mich., assignors to New Venture Gear, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 76,008, Jun. 11, 1993. This application Nov. 5, 1993, Ser. No. 148,461

Int. Cl.[5] F16H *3/74*

U.S. Cl. 475—94 **17 Claims**



1. A geared torque transfer device comprising;

a housing;

an input sun gear rotatably supported in the housing;

an output sun gear rotatably supported in the housing;

a plurality of planet gears rotatably supported in the housing and in mutual engagement with the input and output sun gears;

a quantity of viscous fluid disposed with the housing;

means for defining a fluid flow path such that rotation of the planet gears causes the viscous fluid to flow through the fluid flow path; and

means responsive to the temperature of the viscous fluid for restricting the free flow of fluid through the flow path thereby creating resistance to the rotation of the planet gears and housing in response to differences in rotational velocity of the input and output sun gears whereby torque is transferred between the input and output sun gears.

5,358,455

DEVICE FOR TRANSMITTING TORQUE BETWEEN TWO ROTATABLE SHAFTS

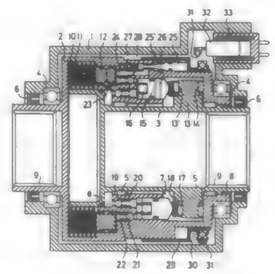
Bo Lundström, Glumslöv, Sweden, assignor to Ipumatic AB, Sweden

Filed Apr. 9, 1993, Ser. No. 44,626

Claims priority, application Sweden, May 19, 1992, 9201564-3

Int. Cl.[5] F16H *1/44*

U.S. Cl. 475—101 **7 Claims**



1. A device for transmitting torque between two rotatable, generally axially aligned shafts, the device containing in a stationary housing (**1**; **40**) two rotatable shaft members (**2**, **3**; **41**, **42**) for connection to said shafts, a number of alternate clutch discs (**10**, **11**; **47**, **48**) connected to the two shaft members and engageable to counteract differential rotational speed between the shaft members, at least one hydraulic clutch piston (**12**; **49**) to engage the clutch discs, and a hydraulic pump arrangement (**13**–**22**; **54**–**63**) driven by the speed differential between the two shaft members, the high-pressure side of the pump arrangement being connected to the clutch piston and a restriction (**25**–**27**; **68**–**70**) being provided in the hydraulic connection from the clutch piston back to the low-pressure side of the pump arrangement, wherein the restriction is an externally controllable pressure-reducing valve (**25**–**27**; **68**–**70**).

5,358,456

GEAR UNIT FOR COMBINATION WITH AN AUXILIARY POWER CONSUMING UNIT OF A MOTOR-VEHICLE

Reinhard Deppert, Gochsheim; Manfred Lutz, Schweinfurt; Walter Kurz, Durach, and Wolfgang Baier, Obbach, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 893,644, Jun. 5, 1992, which is a continuation-in-part of Ser. No. 893,924, Jun. 4, 1992, abandoned. This application Dec. 3, 1992, Ser. No. 985,594

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1991, 4118853

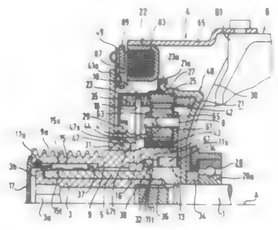
Int. Cl.[5] F16H *3/44*

U.S. Cl. 475—154 **93 Claims**

1. A planetary gear driven power consuming unit (**6**), comprising stator means (**81**) and an input shaft unit (**1**,**3**,**5**) with an axis (A), for driving a driven unit within said stator means (**81**), said input shaft unit (**1**,**3**,**5**) being rotatably mounted with respect to said stator means (**81**) about said axis (A) through shaft bearing means (**28**,**28***a*) and extending axially beyond said shaft bearing means (**28**,**28***a*) towards a free end of said input shaft unit (**1**,**3**,**5**) and further comprising planetary gear means (**25**,**43**,**61**,**63**,**65**) including a sun wheel (**43**), a ring wheel (**25**), a planetary wheel carrier (**61**,**63**) and at least one planetary wheel (**65**) on said planetary wheel carrier (**61**,**63**), and further comprising free wheel means (**13**), a gear change brake unit (**22**) controllable by external control means (**24**) and a lubricant

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chamber (42) for receiving a liquid lubricant (35), an input torque transmission unit (9) of said planetary gear means (25,43,61,65) being in driving connection with said planetary wheel carrier (61,63), said ring wheel (25) being connected for common rotation with said input shaft unit (1,3,5), said gear change brake unit (22) being adapted for selectively either preventing a rotation of said sun wheel (43) with respect to said stator means (81) or releasing said sun wheel (43) for rotation about said axis (A) with respect to said stator means (81), said free wheel means (13) permitting rotation of said input shaft unit (1,3,5) with respect to said input torque transmission unit (9) in a predetermined sense of rotation in response to said gear change brake unit (22) preventing said sun wheel (43) from rotation with respect to said stator means (81), said free wheel means (13) transmitting an input torque from said input torque transmission unit (9) to said input shaft unit (1,3,5) in said predetermined sense of rotation in response to said gear change brake unit (22) releasing said sun wheel (43) for rotation about said axis (A) with respect to said stator means (81), said sun wheel (43) being hollow with a central passage therethrough, with a first axial end portion nearer to said shaft bearing means



(28,28*a*) and with a second axial end portion nearer to said free end, said input torque transmission unit (9) extending through said hollow sun wheel (43) for transmitting an input torque from drive means engagement means (9*a*) located adjacent a second end portion side of said sun wheel (43) to a planetary wheel carrier portion (61) located adjacent a first end portion side of said sun wheel (43), said second axial end portion of said sun wheel (43) being connected for common rotation about said axis (A) with a sun wheel braking member (41*a*), said sun wheel braking member (41*a*) carrying a first brake portion (87) of said gear change brake unit (22), a second brake portion (83) of said gear change brake unit (22) being operationally fastened against rotation about said axis (A) with respect to said stator means (81), a ring wheel support member (21) connecting said ring wheel (25) with said input shaft unit (1,3,5) for common rotation being located on a side of said planetary wheel carrier portion (61) axially remote from said sun wheel (43), said input torque transmission unit (9) surrounding said input shaft unit (1,3,5) along an axial overlapping path, said input torque transmission unit (9) being rotatably mounted on and radially supported by said input shaft unit (1,3,5) within said axial overlapping path.

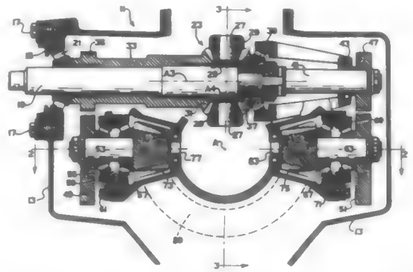
5,358,457

TWIN PINION AXLE ASSEMBLY

Eugene R. Braun, Royal Oak, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 21, 1992, Ser. No. 994,245
Int. Cl.[5] F16H *1/38*
U.S. Cl. 475—225 **21 Claims**

1. An axle assembly of the type including independently rotatable, generally co-axial first and second axle shafts, defining an axis of rotation (A); first and second ring gear means, being mounted concentric to said axis of rotation (A) and operable to drive said first and second axle shafts, respectively; first and second drive pinion gears in meshing engagement with said first and second ring gear means, respectively; a differential gear means including at least one input pinion gear in driven relationship with an input means and first and second output gears in meshing engagement with said input pinion gear; said first output gear being operable to transmit torque to said first drive pinion gear through a first parallel axis gear set, and said second output gear being operable to transmit torque to said second drive pinion gear through a second parallel axis gear set; said first and second parallel axis gear sets defining first and second gear ratios, respectively, said first and second



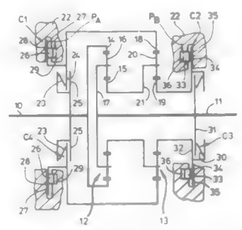
parallel axis gear sets being readily replaceable by third and fourth parallel axis gear sets, respectively, said third and fourth parallel axis gear sets having third and fourth gear ratios, said third and fourth said gear ratios being different than said first and second gear ratios, to change the overall gear ratio of said axle assembly without any other substantial change of said axle assembly.

5,358,458

PLANETARY GEAR UNITS

Raymond J. Hicks, Powys, United Kingdom, assignor to Massey-Ferguson Services, N.V., Netherlands Antilles

PCT No. PCT/GB91/01330, § 371 Date Apr. 1, 1992, § 102(e) Date Apr. 1, 1992, PCT Pub. No. WO92/03670, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 5, 1991, Ser. No. 842,376
Claims priority, application United Kingdom, Aug. 15, 1990, 9017921
Int. Cl.[5] F16H *37/06*
U.S. Cl. 475—269 **13 Claims**



1. A planetary gear unit comprising a plurality of inter-connected co-axial three element planetary gear trains (12, 13) each including a sun (15, 19) a planet carrier (17, 21) and an annulus (14, 18), said gear unit being characterized in that:
(i) one (12) of said planetary gear trains is a dominant train with a first element (14) permanently connected for rotation with an input member (10) of the unit and a second element (17) permanently connected for rotation with an output member (11) of the unit,
(ii) a remaining train or trains (13) of the unit are connected with a third element (15) of said dominant train to vary, by

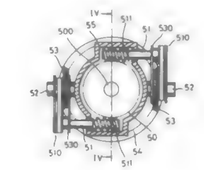
the use of associated clutches (Cl, C2, C3, C4) acting between elements of said trains and ground, a direction and speed of rotation of said third element (15), thus providing a number of overall gear ratios from the unit, and (iii) no further elements of said planetary gear trains (12, 13) are permanently connected for rotation with said input member (10) or said output member (11).

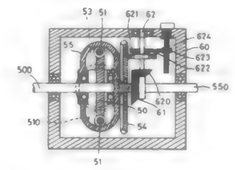
5,358,459

MECHANIC DRIVE APPARATUS

Hung-Chung Lin, No.8, Lane 255, Lai-Nan St., Kaohsiung City

Filed Nov. 3, 1993, Ser. No. 145,534
Int. Cl.[5] F16H *1/30, 15/10*
U.S. Cl. 475—306 **3 Claims**





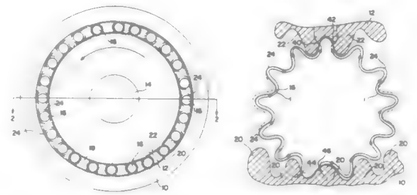
1. A mechanic drive apparatus, comprising:
a rotatable driving shaft;
a hollow rotatable housing having a rear side mounted on one end of said driving shaft;
an output shaft extending into said rotatable housing and being mounted rotatably thereto, said output shaft being aligned axially with said driving shaft;
a driven gear mounted fixedly on said output shaft and disposed inside said rotatable housing;
a pair of driven transmission shafts disposed on opposite edges of said driven gear, each of said driven transmission shafts being provided with a worm segment that extends into said rotatable housing and that meshes with said driven gear;
a pair of intermediate shafts mounted rotatably to said rotatable housing in a direction which is transverse to said output shaft;
a small bevel gear mounted fixedly on each of said intermediate shafts;
a pair of drive members for transmitting rotating force of said intermediate shafts to said driven transmission shafts; and
a large bevel gear mounted rotatably on said driving shaft and disposed adjacent to said rear side of said rotatable housing, said large bevel gear meshing with said small bevel gears.

5,358,460

FLEX-GEAR POWER TRANSMISSION SYSTEM FOR TRANSMITTING EMF BETWEEN SUN AND RING GEARS

John M. Vranish, Crofton, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 25, 1993, Ser. No. 8,424
Int. Cl.[5] F16H *57/00*
U.S. Cl. 475—344 **10 Claims**



1. A gear system for providing both mechanical and electrical transfer of energy, comprising:
an outer gear member having an inner toothed surface of a predetermined first diameter;
an inner gear member concentric and substantially coplanar with said outer gear member and having an outer toothed surface of a predetermined second diameter,
said first diameter being greater than said second whereby an annular space is generated between said toothed surfaces; and
a plurality of planetary flex-gear members each comprising a circular cylindrical band of flexible material shaped to include a set of gear teeth for meshing with said inner and outer toothed surfaces, said planetary gear members being located in said annular space and being in contact with said toothed surfaces of said outer and inner gear members, and rotating in said annular space upon rotation of said outer and inner gear members.

5,358,461

EXERCISER ACTIVATED BODY-MOUNTED LIGHTS AND GENERATORS

Russell M. Bailey, Jr., R.F.D 2 Box 495-2, Claremont, N.H. 03743

Filed Aug. 16, 1993, Ser. No. 107,234
Int. Cl.[5] A63B *71/00*
U.S. Cl. 482—2 **15 Claims**



1. An apparatus having body-mounted lights and generators activated by an exerciser during exercise, comprising:
a clothing accessory worn by an exerciser during exercise having a front oriented in a direction of travel of an exerciser, a back oriented in a direction opposite the direction of travel and two sides in-between the front and the back;
light means having at least one bright light mounted on the

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front of the clothing accessory for illuminating a path of travel of the exerciser;

generator means having at least one generator mounted on the back of the clothing accessory to power the light means, and a water-proof covering covers the generator means;

at least one spring-loaded self-returning reel rotatably connected to the generator means by a one-way clutch;

a pull cord wound around the spring-loaded self-returning reel;

a handgrip connected to an end of the pull cord and is grasped by the exerciser for pulling during the normal arm movement of the exercise; and

wires connect the generator means under the clothing accessory and the light means for providing power to the light means.

5,358,462

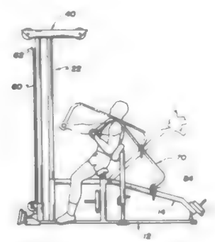
EXERCISE APPARATUS

Michael P. Calderone, 9080 Evergreen, Brighton, Mich. 48116

Continuation of Ser. No. 67,178, May 24, 1993, abandoned, which is a continuation of Ser. No. 816,277, Jan. 3, 1992, abandoned. This application Jan. 12, 1994, Ser. No. 180,109

Int. Cl.[5] A63B *21/00*

U.S. Cl. 482—137 **5 Claims**



1. An exercise apparatus having:

a base;

a pivoted lever arm pivotably connected at a fixed end to said base and having a free lever end forwardly spaced and extending generally transversely from said base;

an attachment having a generally elongate body with first and second body ends and a central region therebetween, aligned along a longitudinal axis, said central region adjacent the first body end including a pair of elongate members spaced apart sufficiently to form a central opening to accommodate the head of a user of said apparatus, each of said pair of elongate members being provided with a first section generally parallel to said longitudinal axis and a second section extending generally orthogonally to said first section and to said transverse axis to accommodate the shoulders of a user, said attachment pivotably connected at the second body end to said lever arm at a point spaced from said fixed end and pivotable toward said fixed end;

a pair of handles disposed at said first body end, affixed respectively to said pair of elongate members and extending along a transverse axis generally perpendicular to said longitudinal axis; and

connection means for pivotably connecting said attachment to said lever arm.

5,358,463

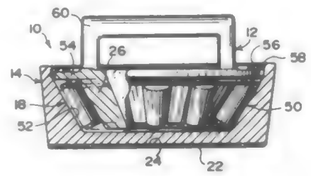
EXERCISE DEVICE

Jesus Fuentes, 12 South Rd., Central Islip, N.Y. 11722

Filed Sep. 28, 1992, Ser. No. 952,595

Int. Cl.[5] A63B *26/00*

U.S. Cl. 482—141 **7 Claims**



1. An improved exercise device for facilitating push-up exercises which comprises:

a pair of nonconnecting hand engaging members including a inverted frustum cone shaped body to sit upon a rotating means;

an inverted frustum cone shaped base for each said hand engaging member, having a tapered compartment therein, for supporting each said hand engaging member separately on an underlying surface;

a circular nonslip pad affixed to the underside of each said base to grip the underlying surface upon which the device rests, each of said non-slip pad is fabricated from a high friction material and is affixed to the underside of each of said base by an adhesive material;

said rotating means is a roller bearing assembly positioned between each said body and said base for rotating each said hand engaging member about a vertical axis relative to said base, each of said roller bearing assembly is tapered to fit into each of said tapered compartment about said body, and;

wherein said hand engaging members rotate relative to said bases so that a user can develop the forearm/arm and upper body, while doing modified push-ups, so as to better execute karate punches and other sport motions of a like nature.

5,358,464

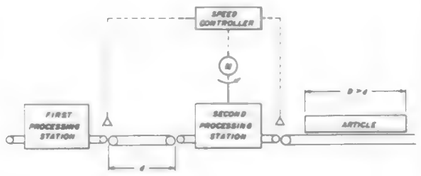
CONVEYOR SYSTEM AND MULTI-SPEED FOLDER

Warren S. Funk, Chalfont; Mark L. Novack, Cheltenham; Robert S. Ott, Perkasie, and James W. Thompson, Horsham, all of Pa., assignors to R. Funk & Co., Inc., Doylestown, Pa.

Filed Dec. 31, 1992, Ser. No. 999,084

Int. Cl.[5] B31B *1/88;* **B65G** *43/00*

U.S. Cl. 493—320 **16 Claims**



1. A conveyor and sheet folder, comprising:

a printer;

a conveyor for passing a series of separate sheets from said printer to a folder, said conveyor having an entry and an exit;

a folder having an entry and an exit and at least two speeds of operation, fast and slow, the entry of said folder located adjacent said conveyor exit for receiving said separate sheets therefrom and for folding them;

first indicating means signalling when said sheets leave the printer;

second indicating means for signalling when said sheets are released from said folder; and

a controller connected between both of said indicating means and said folder which changes the folder speed from said slow speed to said fast speed when said sheet is released from said printer, and returns said folder to said slow speed when said sheet is released from said folder.

5,358,465

BAG FOLDER

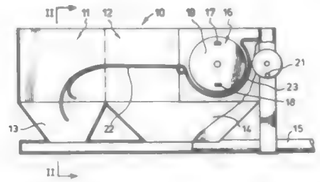
Barrie A. Poulton, Cheltenham, England, assignor to Flomat Limited, Derbyshire, England

Filed Mar. 18, 1993, Ser. No. 33,578

Claims priority, application United Kingdom, Mar. 25, 1992, #206501

Int. Cl.[5] B65H *18/00, 54/00, 45/04*

U.S. Cl. 493—462 **5 Claims**



1. A machine for folding air-containing bulky emptied bags comprising

a) a spool rotatable about an axis,

b) a pair of diametrically opposed tines on the spool,

c) means for rotating the spool in one direction,

d) constraining means spaced from an envelope described by the tines as the spool is rotated for causing the bag to wind tightly around the tines in the form of a generally flat package which is slidable from the tines, and

e) at least one hopper in a base of the machine for collecting any particulate material released by the bag during operation of the machine.

5,358,466

APPARATUS FOR DESTROYING A CALCULUS

Satoshi Aida, Tokyo; Katsuhiko Fujimoto, Kawasaki; Kaoru Suzuki, Utsunomiya; Nobuyuki Iwama, Tochigi, and Akinori Ishida, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 15, 1992, Ser. No. 868,414

Claims priority, application Japan, Apr. 15, 1991, 3-11104; May 10, 1991, 3-105863; Mar. 25, 1992, 4-66823

Int. Cl.[5] A61H *1/00*

U.S. Cl. 601—4 **2 Claims**

1. An apparatus for destroying a calculus, comprising:

ultrasonic wave generating means, including a plurality of ultrasonic wave generating elements, for generating an intense ultrasonic wave that serves as a shock wave when a high voltage is applied and a weak ultrasonic wave that does not serve as a shock wave when a low voltage is applied and for selectively radiating the intense and weak ultrasonic waves to a calculus in a living body;

drive means, including a plurality of drive elements, for driving said ultrasonic wave generating means by selectively supplying at least one low voltage and one high voltage to said ultrasonic wave generating elements of said ultrasonic wave generating means;

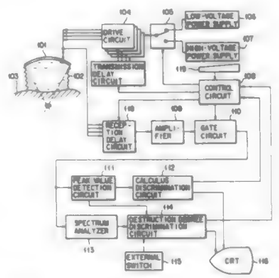
receiving means, including a plurality of receiving elements, for receiving an echo signal from the living body when said ultrasonic wave generating means is driven by the low voltage and radiates the weak ultrasonic waves to the calculus in the living body;

first control means for controlling said drive means and said receiving means;

peak value detecting means for detecting a peak value, in a predetermined time width, of the echo signal in a reception signal received by said receiving means;

first comparing means for comparing the peak value detected by said peak value detecting means with a first predetermined threshold value;

frequency analyzing means for analyzing a frequency component, in the predetermined time width, of the echo signal in the reception signal;



first calculating means for calculating a predetermined characteristic value on the basis of frequency component data obtained by said frequency analyzing means;

second comparing means for comparing the characteristic value obtained by said calculating means with a second predetermined threshold value; and

display means for displaying destruction degree information of the calculus defined by a comparison result of said first comparing means and a comparison result of said second comparing means, wherein said display means displays first data indicating a relationship between the peak value and the first predetermined threshold value and second data indicating a relationship between the characteristic value and the second predetermined threshold value.

5,358,467

METHOD FOR VACUUM MECHANOTHERMAL STIMULATION OF THE BODY SURFACE

Anatole Milstein, 3 Covered Bridge Path, and Arkady Relin, 2301 Woodward St., Apt. A-14, both of Philadelphia, Pa. 19115

Continuation-in-part of Ser. No. 700,265, May 5, 1991, abandoned. This application Mar. 31, 1993, Ser. No. 40,832

Int. Cl.[5] A61H *1/00*

U.S. Cl. 601—10 **2 Claims**

1. A method of stimulation of a body using a massage device that comprises a housing containing pressure means, an inlet for negative pressure with a plurality of projections located in a region of the inlet, and means for cooling and heating the user, the method comprising the steps of:

1) applying the housing inlet to a user and applying a negative pressure over a whole part of a body surface;

2) simultaneously with step 1) increasing mechanical pressure on local points distributed over the whole part of the body surface by acting on the local points with the plurality of projections;

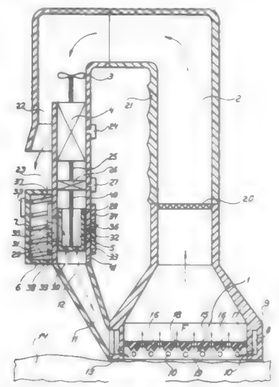
3) simultaneously with steps 1) and 2) using the massage device to cool the part of the body surface by interrupting a supply of a fluid matter to the inlet which has been previously heated by the cooling and heating means;

4) maintaining said steps 1), 2), 3), over a preset period of time;

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5) reducing the negative pressure over the whole part of the body surface;

6) simultaneously with step 5) reducing the mechanical pressure on the local points over part of the body surface;



7) simultaneously with steps 5) and 6), warming the part of the body surface by supplying the fluid matter which has been previously heated by the cooling and heating means to the inlet; and

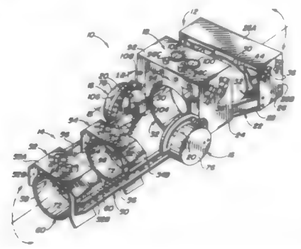
8) maintaining the steps 5), 6), and 7) over a preset period of time.

5,358,468

ADJUSTABLE RESISTANCE KNEE REHABILITATING AND STRENGTHENING APPARATUS

Matthew C. Longo, 1800 Liberty Dr., Pueblo, Colo. 81006; John C. Vukich, and Jon A. Genova, both of Pueblo, Colo., assignors to Matthew C. Longo, Pueblo, Colo.

Filed Mar. 26, 1993, Ser. No. 38,630
Int. Cl.[5] A61H *1/02*
U.S. Cl. 601—33 **29 Claims**



19. A knee rehabilitating and strengthening apparatus, comprising:

(a) an upper frame assembly having a pair of opposite forward and rearward ends;

(b) first means mounted to said upper frame assembly adapted for releasably securing said upper frame assembly along a thigh region of a user's leg above a knee joint thereof;

(c) a lower frame assembly having a pair of opposite forward and rearward ends, said forward end of said lower frame assembly being located remote from said rearward end of said upper frame assembly, said rearward end of said lower frame assembly being located adjacent to said forward end of said upper frame assembly;

(d) second means mounted to said lower frame assembly adapted for releasably securing said lower frame assembly along a shin region of the user's leg below the knee joint thereof;

(e) a pair of separate torque unit assemblies disposed between said upper and lower frame assemblies and being attached to said forward end of said upper frame assembly and to said rearward end of said lower frame assembly located adjacent to said forward end of said upper frame assembly, said torque unit assemblies adapted to be disposed at opposing lateral sides of the knee joint and define a common rotational axis adapted to be generally aligned with the knee joint and about which said upper and lower frame assemblies undergo pivotal movement relative to one another, each of said torque unit assemblies including

(i) a housing fixedly attached to said forward end of said upper frame assembly and defining an interior chamber,

(ii) a shaft rotatably mounted through said housing and fixedly attached to said rearward end of said lower frame assembly,

(iii) a shoe element stationary mounted in said interior chamber of said housing; and

(iv) a rotary vane fixedly mounted to said shaft and disposed in said housing such that together said shoe, shaft and vane on opposite sides thereof divide said interior chamber into first and second portions; and

(f) a fluid flow control arrangement including

(i) a pair of first and second flow branches being respectively coupled to said housing of said torque unit assemblies so as to separately interconnect in flow communication said first portions of said chambers with one another and said second portions of said chambers with one another,

(ii) a third flow branch extending between and interconnecting said first and second flow branches, and

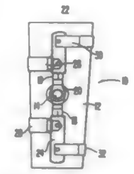
(iii) a pair of first and second flow control devices each operable to permit fluid flow therethrough in either one or the other of two opposite directions and being adjustable to preset a desired resistance to fluid flow therethrough in one but not the other of said two opposite directions, said first and second flow control devices being interposed in said third flow branch such that fluid flow through said first flow control device encounters resistance only in said first direction while fluid flow through said second flow control device encounters resistance only in said second direction being opposite to said first direction whereby fluid flow proceeds against a first preset resistance from said first portions of said housing chambers to said second portions thereof whereas fluid flow proceeds against a second preset resistance, independent of said first preset resistance, from said second portions of said housing chambers to said first portions thereof in response to rotary movement of said vanes and shaft in said housing chambers by pivotal movement of said upper and lower frame assemblies relative to one another whereby the amounts of work required to be exerted respectively in flexion and extension of the user's leg is adjustable and preset independently of one another.

5,358,469

DYNAMIC SPLINT

Kenneth A. Patchel, Kennett Square, Pa., and Andrew L. Mitchell, Wilmington, Del., assignors to Ultraflex Systems, Inc., Malvern, Pa.

Continuation-in-part of Ser. No. 477,460, Feb. 9, 1990, Pat. No. 5,036,837. This application Aug. 5, 1991, Ser. No. 740,387
The portion of the term of this patent subsequent to Aug. 6, 2008, has been disclaimed.
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—5 **34 Claims**



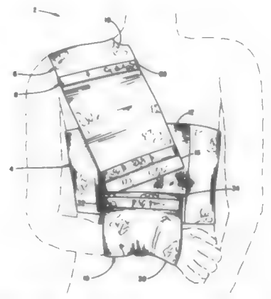
1. An adjustable splint device for applying force across a body joint comprising a first strut member having a longitudinal axis extending between opposed ends thereof, a second strut member having a longitudinal axis extending between opposed ends thereof, joint means for connecting one end of said first and second strut members for pivotal movement bout a pivot axis which is transverse to the longitudinal axes of said first and second strut members, said joint means including pivot means for mounting at least one of said first and second strut members for pivotal movement about said pivot means, bias means connected to provide a bias to oppose pivotal movement of said first and second elongated strut members in a first direction and to aid such pivotal movement in a second direction opposite to said first direction, said bias means being connected to said pivot means and to at least one of said first and second strut members, bias adjustment means mounted at said joint means and operative to rotate said pivot means to adjust the bias of said bias means, and locking means for selectively preventing any relative movement of said first and second strut members.

5,358,470

SHOULDER IMMOBILIZATION RESTRAINT

James Johnson, 1702 S. University Ave., P.O. Box 6001, Fargo, N. Dak. 58108

Filed Apr. 23, 1993, Ser. No. 51,394
Int. Cl.[5] A61F *5/04*
U.S. Cl. 602—20 **13 Claims**



1. Shoulder support apparatus comprising:

(a) harness means for mounting about the abdomen of a convalescent and having a belt, wherein said belt comprises a continuous web of elastic material, wherein said belt includes a plurality of fastener regions of hook and loop fastener material secured to front and rear surfaces of said belt, wherein a selected one of said fastener regions secured to the rear surface mounts to a selected one of said fastener regions at the front surface to establish the tension and length of said belt about the abdomen;

(b) a continuous elastic strap including a plurality of regions of hook and loop fastener material mounted to front and rear surfaces of said strap, wherein said strap comprises a web of a width substantially spanning the length of the convalescent's clavicle, wherein at least a selected one of said fastener regions at each end of said strap on said rear surface mounts to a selected one of said fastener regions on the front surface of said belt, and whereby upon training said strap over a shoulder of the convalescent the tension of said strap may be varied;

(c) a conformal support pad; and

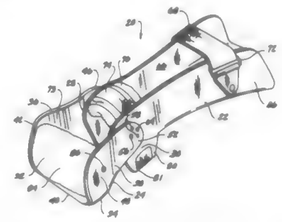
(d) means for retaining said pad along said strap in contact with a selected region of the torso.

5,358,471

WRIST BRACE

John S. Klotz, 3417 S. 59th St., Belleville, Ill. 62223

Filed Mar. 24, 1993, Ser. No. 36,457
Int. Cl.[5] A61F *5/04, 5/10*
U.S. Cl. 602—21 **12 Claims**



1. A wrist brace for therapeutic support of a wrist of a patient comprising:

a forearm support member having a base portion engageable with a forearm of the patient and first and second side portions extending from the base portion and adapted for traversing opposite sides of the wrist of the patient when the forearm is engaged by the forearm support member;

a hand engageable member having a hand grip adapted to support the palm or fingers of the patient and a hand grip support for spacing the hand grip from the forearm support member, said hand grip support comprising a first side portion having a first grip securing region connected to a first end of the hand grip and having a first wrist region, and a second side portion having a second grip securing region connected to a second end of the hand grip and having a second wrist region;

a forearm strap for releasably securing the base portion of the forearm support member to the forearm of the patient;

a wrist strap secured adjacent the side portions of the forearm support member for engaging the dorsum of the wrist of the patient;

at least one connector pivotally connecting said first and second wrist regions to the first and second side portions of the forearm support member, respectively, for pivotal movement of the hand engageable member relative to the forearm support member from a wrist dorsiflexion position to a wrist palmarflexion position about a pivot axis generally coaxial with a wrist axis passing through the radioulnar joint of the wrist of the patient when the patient is wearing the wrist brace; and

means for locking the hand engageable member to the forearm support member in any one of a plurality of predeter-

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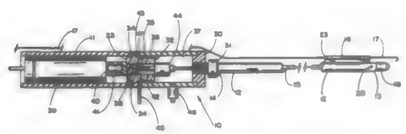
mined positions between the dorsiflexion position and the palmarflexion position to prevent relative movement between the hand engageable member and the forearm support member.

5,358,472

GUIDEWIRE ATHERECTOMY CATHETER AND METHOD OF USING THE SAME

Jeffrey D. Vance, Hugo, and Rick L. Shockey, Coon Rapids, both of Minn., assignors to Schneider (USA) Inc., Plymouth, Minn.

Continuation of Ser. No. 819,853, Jan. 13, 1992, abandoned. This application Sep. 9, 1993, Ser. No. 118,949
Int. Cl.[5] A61B *17/22*
U.S. Cl. 604—22 8 Claims



3. A surgical device for excising deposits from the interior of a blood vessel comprising:

(a) an outer flexible hollow vascular catheter tube having a proximal and a distal end with at least one radial fluid passage opening formed at or near the distal end thereof;

(b) an inner flexible hollow catheter tube having a proximal and a distal end coaxially disposed within the outer catheter tube member and further being journaled in the distal end of the outer catheter tube, the distal end of the inner tube extending beyond that of the outer tube;

(c) a substantially hollow cylindrically symmetric cutting tool fixed to the distal end of the inner catheter tube comprising a generally dome-shaped distal nose portion forming the distal end thereof and containing a plurality of radially disposed cutter openings in communication with a hollow interior and disposed such that an edge thereof excises tissue upon rotation of the cutting tool, the excised tissue being generally directed into the hollow interior of the tool, the hollow interior further being in communication with the hollow interior of the inner tube;

(d) drive means connected to the proximal end of the inner tube for rotating the inner tube and the cutting tool to excise tissue deposits;

(e) a guidewire port for receiving a guidewire comprising a hollow, tubular appendage located near the distal end of the outer catheter tube just proximal the cutting tool fixed to and spaced radially from the outer tube to a point beyond the radius of the cutting tool such that a guidewire having its distal end extending through the guidewire port is operable to independently control the disposition of the cutting tool relative to its position and attitude throughout the circumference of the vessel of interest, the position of the guidewire port to prevent interference between the guidewire and the cutting tool.

5,358,473

APPARATUS AND METHOD FOR THE REMOVAL OF ADHERENT VISCOELASTIC MATERIAL

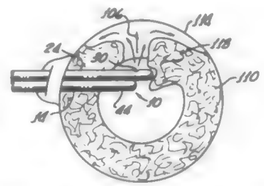
Paul G. Mitchell, 822 Pinnacle Pl., Marietta, Ga. 30062

Filed Apr. 30, 1993, Ser. No. 56,373
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—27 14 Claims

1. A method for the removal of viscoelastic material from an eye chamber, said method comprising the steps of:

directing an irrigation fluid toward a viscoelastic material disposed in an eye chamber in order to loosen said viscoelastic material from eye chamber surfaces without substantial breakup of the viscoelastic material;

hydraulically forcing by pushing the loosened viscoelastic



material from the chamber surfaces without substantial breakup of the loosened viscoelastic material; and

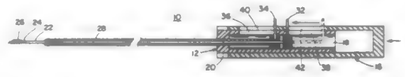
aspirating the loosened viscoelastic material from the eye chamber.

5,358,474

SUBCUTANEOUS DRUG DELIVERY DEVICE

Antoine Kaldany, Chestnut Hill, Mass., assignor to InterMED, Inc., Chestnut Hill, Mass.

Continuation-in-part of Ser. No. 908,353, Jul. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 724,706, Jul. 2, 1991, Pat. No. 5,127,419. This application Oct. 23, 1992, Ser. No. 965,638
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—57 10 Claims



1. A subcutaneous drug delivery device comprising:

a) a housing with a bore extending along a longitudinal axis of the housing and a track extending parallel to the bore, said track having an elongate housing slot extending along the longitudinal axis

b) a piston having a distal end with a piston notch at said piston distal end forming a platform for supporting said drug;

c) a cannula mounted concentric with the piston within the bore and extending along the longitudinal axis thereof with a distal end of the cannula extending beyond the piston notch at said piston distal end to concentrically enclose the drug;

d) a driving member slideably engaged in said track for longitudinal movement therein, the driving member having an elongate driving member slot extending along the longitudinal axis, the driving member slot having a notch formed therein;

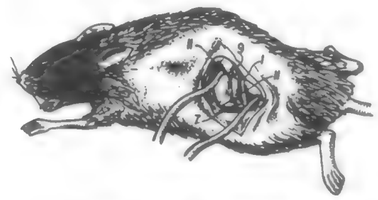
e) a piston drive pin for engaging the notch in the driving member slot for advancing the piston, the piston drive pin extending from the piston in a direction perpendicular to the longitudinal axis through the housing slot and the driving member slot; such that, as the driving member is moved distally along the track toward the piston distal end, the notch in the driving member slot is engaged by the piston drive pin and the piston is extended until the piston drive pin reaches the distal end of the housing slot whereupon the piston notch extends beyond the distal endof the cannula leaving the drug exposed so that the drug can be delivered.

5,358,475

HIGH MOLECULAR WEIGHT BIORESORBABLE POLYMERS AND IMPLANTABLE DEVICES THEREOF

Frank Mares, Whippany; Reginald T. Tang, Warren, both of N.J.; Tin-Ho Chiu, Reading, Mass., and Theodore Largman, Morristown, N.J., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 618,580, Nov. 27, 1990, abandoned, which is a division of Ser. No. 809,978, Dec. 17, 1985, abandoned. This application Sep. 28, 1992, Ser. No. 952,203
Int. Cl.[5] A61F *2/54*
U.S. Cl. 623—66 12 Claims



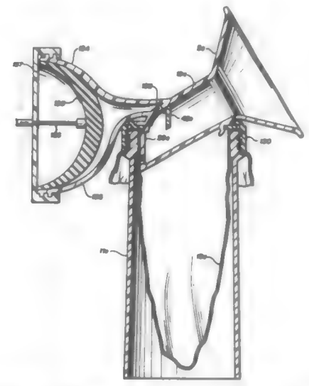
1. In a nerve channel suitable for implantation into a living organism and in the form of a tube, the improvement which comprises that at least a portion of said nerve channel is comprised of a homopolymer of poly(DL-lactide) having an average molecular weight of between about 234,000 and 320,000.

5,358,476

BREAST PUMP ADAPTER FOR FILLING INFANT NURSERS HAVING DISPOSABLE LINERS AND METHODS OF OPERATION

Michael J. Wilson, Vancouver, Canada, assignor to Aurora Search Ltd., Delta, Canada

Continuation-in-part of Ser. No. 746,661, Aug. 19, 1991, abandoned. This application Jan. 28, 1993, Ser. No. 12,165
Claims priority, application Canada, Aug. 17, 1990, 2023580
The portion of the term of this patent subsequent to Aug. 21, 2007, has been disclaimed.
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—74 42 Claims



1. A method of filling an infant nurser including a rigid shell and a flexible liner within said shell romping a container for storing milk and employing an adapter having a chamber in the adapter in communication with a breast shield, and a passage through said adapter for communication between said chamber and said flexible container, comprising the steps of:

applying a first pressure within the chamber in communication with a female breast through the breast shield for expressing milk from the breast into the chamber in response to the application of said first pressure in said chamber, the step of applying said first pressure including applying a negative suction to said chamber to draw a portion of said flexible liner against said adapter to seal said passage;

applying a second pressure within said chamber higher than said first pressure to displace the flexible liner portion away from said adapter to enable flow of milk from said chamber through said passage into the flexible container;

temporarily storing in said chamber the milk expressed during application of said first pressure;

flowing the milk from said chamber into said flexible container during application of said second pressure; and

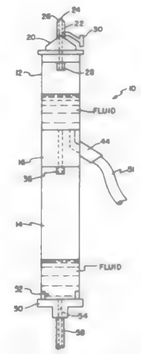
alternating the pressure applied to said chamber between said first and second pressures.

5,358,477

DIFFERENTIAL PRESSURE ADMINISTRATION SET

Igor Strukel, New York, N.Y., assignor to Surgical Design Corporation, Long Island City, N.Y.

Filed Jun. 25, 1993, Ser. No. 82,604
Int. Cl.[5] A61M *5/14*
U.S. Cl. 604—80 8 Claims



1. A differential pressure administration set comprising:

an elongated tubular member;

separation means being disposed intermediate a vertical length of said tubular member and defining upper and lower chambers;

inlet means at the upper end of said tubular member for admitting liquid into the upper chamber,

said separation means having a first outlet for supplying the liquid from the upper chamber into the second chamber and a second outlet for supplying the liquid from the upper chamber to an external device, and

outlet means at the lower end of said tubular member for supplying the liquid from the lower chamber to the external device simultaneously with the liquid being supplied from said second outlet.

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5,358,478

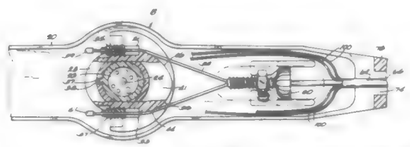
CATHETER STEERING ASSEMBLY PROVIDING ASYMMETRIC LEFT AND RIGHT CURVE CONFIGURATIONS

Russell B. Thompson, Menlo Park; Robert A. Kelley, Newark, and Fernando Pumares, San Bruno, all of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 790,207, Nov. 8, 1991, Pat. No. 5,273,535, and a continuation-in-part of Ser. No. 991,474, Dec. 16, 1992, Pat. No. 5,254,088, which is a continuation of Ser. No. 736,384, Jul. 26, 1991, abandoned, which is a division of Ser. No. 473,667, Feb. 2, 1990, abandoned. This application May 6, 1993, Ser. No. 58,319

Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—95 **15 Claims**



12. A catheter having an elongated tubular body bendable adjacent its distal end in response to external forces, and a proximal end attached to a handle for manipulating said tubular body by applying the external forces thereto, comprising,

a steering assembly for applying bending forces on the body, the steering assembly including a movable component located in said handle,

a steering wire operable in response to movement of said movable component for bending the tubular body in a first direction into a non-linear configuration,

said steering wire being connected to said movable component by a means for connection, said means for connection attaching said wire so that tensile forces are applied to said wire when said movable component is moved in a first direction, but said wire is relaxed when said movable component is moved in a second direction opposite said first direction.

5,358,479

MULTIFORM TWISTABLE TIP DEFLECTABLE CATHETER

James E. Wilson, Bound Brook, N.J., assignor to Electro-Catheter Corporation, Rahway, N.J.

Filed Dec. 6, 1993, Ser. No. 163,326

Int. Cl.[5] A61M *37/00, 25/00*

U.S. Cl. 604—95 **15 Claims**



1. A tip-deflectable, steerable catheter comprising:

a catheter handle having a first body and a second body, said second body being slidably mounted to and for selective longitudinal sliding movement relative to said first body;

an elongated catheter tube having longitudinally spaced apart proximal and distal ends, said proximal end of said catheter tube being fixedly attached to said second body of said catheter handle;

a catheter tip portion carried at said distal end of said catheter tube and having a distal end most remote from said handle; and

an elongated, substantially flat planar shim having longitudinally spaced apart proximal and distal ends disposed within said catheter tip portion, said shim having a lateral twist between said proximal and distal ends of said shim, said shim distal end being attached to said distal end of said catheter tip portion and to said catheter handle first body, and said shim proximal end being attached to said second body of said catheter handle so that longitudinal movement of said catheter tube distal end as said second body is selectively moved longitudinally toward said catheter tip portion relative to said handle first body causes said proximal end of said shim to move correspondingly longitudinally and said attachment of said shim to said catheter handle body causes three-dimensional tip-deflecting curvature of said catheter tip portion in accordance with said selective longitudinal movement of said second body relative to said first body.

5,358,480

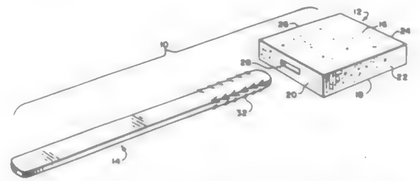
METHOD OF USING A SWAB

Jerald R. Melcher, 9812 Emmet St., Omaha, Nebr. 68134, and Debra A. Speichert, 2531 Lillian, Bellevue, Nebr. 68147

Division of Ser. No. 823,366, Jan. 21, 1992, Pat. No. 5,212,847. This application Jan. 4, 1993, Ser. No. 205

Int. Cl.[5] A61M *35/00*

U.S. Cl. 604—1 **2 Claims**



1. A method of using a swab comprising the steps of:

forming a plurality of resilient applicator pads;

forming a plurality of elongated handles each having a corresponding longitudinal axis, a corresponding first end and a corresponding second end with the corresponding first end being on one end of the corresponding longitudinal axis and the corresponding second end being on the opposite end of said corresponding longitudinal axis;

forming an opening in at least one of said plurality of resilient pads which conforms to the shape of said first end of at least one of said plurality of handles;

forming barbs on said at least one handle;

shipping said at least one handle and at least one pad to a location where surgery is to be performed;

inserting said at least one end in said at least one of said plurality of pads without an adhesive to form a swab and autoclaving said swab;

utilizing said autoclaved swab under conditions requiring surgical antiseptic conditions.

5,358,481

APPARATUS AND METHODS FOR CONTROLLING MIXTURES OF BLOOD AND CARDIOPLEGIA

Robert J. Todd, and Kevin G. Marcus, both of Salt Lake City, Utah, assignors to Research Medical, Inc., Salt Lake City, Utah

Filed Jun. 3, 1993, Ser. No. 71,692

Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—4 **17 Claims**

1. A system for supplying a variably controlled ratio of blood and cardioplegia solution to a patient, comprising:

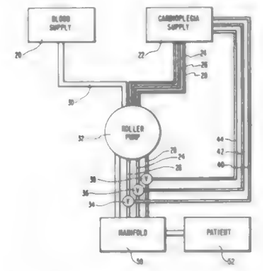
(a) a source of blood;

(b) a source of cardioplegia solution;

(c) blood tubing means for carrying a flow of blood from the source of blood for infusion into a patient;

(d) cardioplegia tubing means for carrying a flow of cardioplegia solution from the source of cardioplegia solution for infusion into the patient, said cardioplegia tubing means comprising a plurality of cardioplegia supply tubes;

(e) a plurality valve means each of which is associated with each of the plurality of cardioplegia tubes for controlling the flow of cardioplegia solution between the source of cardioplegia solution and the patient, said valve means



having a first position which permits administration of cardioplegia solution to a patient and a second position which results in recirculation of cardioplegia solution so that selection of the first or second positions of said valve means results in a plurality of different ratios of blood to cardioplegia solution; and

(f) pump means for pumping blood and cardioplegia solution.

(g) a second pump connected to the third line between the plasma reservoir and plasma side of the plasma separation means for pumping plasma from the plasma side of the plasma separation means to the plasma reservoir wherein a transmembrane pressure from the blood side to the plasma side of the membrane is established; and

(h) control means operably connected to the first and second pumps for maintaining the transmembrane pressure at a preset level.

5,358,482

SINGLE-NEEDLE EXTRACORPOREAL PLASMAPHERESIS CIRCUIT

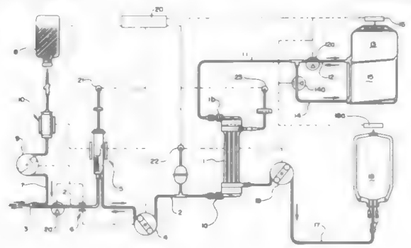
Ivo Panzani, Mirandola, Italy, assignor to Roerig Farmaceutici Italiana S.R.L., Mirandola, Italy

Continuation of Ser. No. 793,767, Nov. 18, 1991, abandoned. This application Oct. 7, 1993, Ser. No. 133,769

Claims priority, application Italy, Nov. 22, 1990, 22146 A/90

Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—6 **10 Claims**



1. An extracorporeal plasmapheresis circuit for separation of plasma from blood, comprising:

(a) a needle for connecting to a blood source;

(b) plasma separation means for separating plasma from blood, the plasma separation means divided by a membrane into a blood side and a plasma side;

(c) a first line connecting the needle to the blood side of the plasma separation means;

(d) a blood reservoir connected by a second line to the blood side of the plasma separation means;

(e) a plasma reservoir connected by a third line to the plasma side of the plasma separation means;

(f) a first pump connected to the first line between the needle and the plasma separation means for pumping blood from the needle to the blood side of the plasma separation means;

5,358,483

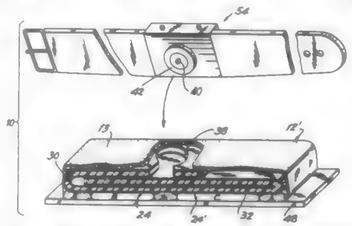
DISPOSABLE TRANSDERMAL DRUG APPLICATORS

Dan Sibalis, Stony Brook, N.Y., assignor to Drug Delivery Systems Inc., New York, N.Y.

Division of Ser. No. 380,196, Jul. 14, 1989, Pat. No. 5,167,617, which is a division of Ser. No. 105,889, Oct. 7, 1987, Pat. No. 4,856,188, which is a division of Ser. No. 807,234, Dec. 10, 1985, Pat. No. 4,731,926, which is a continuation-in-part of Ser. No. 702,486, Feb. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 500,080, Jun. 1, 1983, Pat. No. 4,510,626, and a continuation-in-part of Ser. No. 660,192, Oct. 12, 1984, Pat. No. 4,622,031, which is a continuation-in-part of Ser. No. 524,252, Aug. 18, 1983, Pat. No. 4,557,723. This application Sep. 23, 1992, Ser. No. 949,721

Int. Cl.[5] A61N *1/30*

U.S. Cl. 604—20 **25 Claims**



1. A transdermal drug applicator which is electrically powered by a power source comprising: a flexible non-conductive substrate having a plurality ofconductive coated areas, said conductive coated areas forming drug reservoir electrodes, a plurality of drug reservoirs separated by occlusive adhesive dams and in electrical contact with said drug reservoir electrodes, said power source comprising a battery connected to the electrodes of the drug reservoirs and said applicator including electrical current conditioning means, a conformal cover adhesively secured to said transdermal drug applicator and a release liner for covering protecting said plurality of drug reservoirs until use.

5,358,484

Patent Not Issued For This Number

5,358,485

CUTTER FOR ATHERECTOMY CATHETER

Jeffrey D. Vance, Hugo, and Rick L. Shockey, Coon Rapids, both of Minn., assignors to Schneider (USA) Inc., Plymouth, Minn.

Continuation of Ser. No. 819,780, Jan. 13, 1992, abandoned. This application Aug. 16, 1993, Ser. No. 109,003

Int. Cl.[5] A61B *17/22*

U.S. Cl. 604—22 **12 Claims**

4. A surgical cutting system for excising abnormal tissue deposits from the interior of a vascular passage or vessel of interest comprising:

(a) an outer hollow elongated flexible catheter tube having an outside diameter smaller than and capable of being advanced through the lumen of the vessel of interest, the

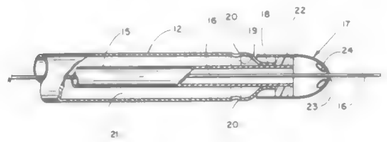
VOL 1167 ISS 4 OCT 25 1994 UMI

outer tubular member having a proximal end and a distal end;

(b) an inner hollow elongated flexible catheter tube coaxially disposed within the outer tube and having a proximal end and a distal end with the outside of the inner catheter tube journalled for rotation inside the outer tube;

(c) drive means connected to the proximal end of the inner catheter tube for rotating the inner catheter tube;

(d) a substantially hollow symmetric, generally cylindrically symmetric cutting tool fixed to the distal end of the inner catheter tube member, having an oval-shaped distal nose portion of diminishing diameter and a tubular proximal portion, the nose portion further comprising a plurality of elongate radially disposed cutting openings extending along and rearward from a point near the center of the distal nose thereof, the openings being in communication with the hollow interior and disposed such that an edge thereof excises tissue encountered upon rotation of the cutting tool about its longitudinal axis, the excised tissue



being directed into the hollow interior of the tool, wherein the plurality of openings are wholly contained in the distal portion of diminished diameter and spaced from any portion of undiminished diameter such that the cutting surfaces only engage in front of the cutting tool, the hollow interior of the cutting tool further being in communication with the interior of the inner tubular member; and

(e) a non-rotating guidewire means having a proximal and a distal end and over which the system is threaded such that the guidewire is disposed in the inner catheter tube member and extends beyond both the proximal and distal ends thereof, the distal end of the guidewire means protruding from a central bore provided in the nose of the cutting tool, the inner tube member and the cutting tool being free to rotate about the guidewire means, the proximal end of the guidewire extending through the drive means on the proximal end to allow external control and operation of the guidewire independent of the operation of the remainder of the system.

5,358,486

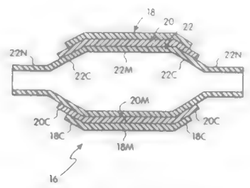
MULTIPLE LAYER HIGH STRENGTH BALLOON FOR DILATATION CATHETER

Mark A. Saab, Lawrence, Mass., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Continuation of Ser. No. 523,490, May 15, 1990, abandoned. This application Aug. 11, 1992, Ser. No. 928,135

Int. Cl.[5] A61M *29/00*

U.S. Cl. 604—96 **7 Claims**



1. In an inelastic balloon for a dilatation catheter, the interior of the balloon being in fluid communication with an inflation lumen within the dilatation catheter when mounted on said dilatation catheter, the balloon being formed from polymeric material and having a cylindrical midportion, an outwardly tapering conical portion at each end of the midportion and a cylindrical neck portion at the ends of the conical portions, the improvement comprising the balloon being formed of at least two inelastic layers including an inner layer and an outer layer, the outer layer having first and second ends which terminate within the conical portions of the inner layer.

5,358,487

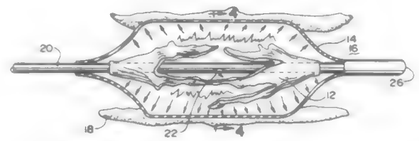
FRANGIBLE BALLOON CATHETER

Jay F. Miller, Miramar, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Filed Oct. 15, 1993, Ser. No. 137,631

Int. Cl.[5] A61M *29/00, 31/00*

U.S. Cl. 604—96 **14 Claims**



1. The method of inserting a catheter into the arterial system of a patient and pressurizing an inflation lumen of said catheter to cause a catheter balloon portion to expand, said catheter balloon portion comprising an inner balloon surrounded by a separate outer balloon, said outer balloon having greater maximum inflated diameter than said inner balloon, said method comprising the step of pressurizing said lumen at a first pressure/expansion gradient to expand said balloons until said inner balloon breaks, and thereafter further pressurizing said lumen to further expand said outer balloon at a second pressure/expansion gradient.

5,358,488

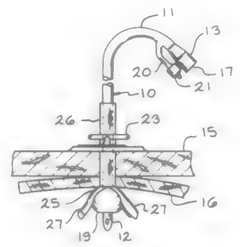
DEVICE TO CONTROL GASTROSTOMY LEAKAGE

Chinda Suriyapa, 6761 Gaines Mill Dr., Sylvania, Ohio 43560

Filed Nov. 16, 1993, Ser. No. 153,827

Int. Cl.[5] A61M *29/00*

U.S. Cl. 604—96 **12 Claims**



1. A gastrostomy device comprising an elongated feeding tube having a first end for insertion through a patient's abdominal wall and a second end including a feeding inlet, an inflatable balloon mounted on said feeding tube near said first end, a fluid supply conduit near said second end in communication with said balloon, wherein said balloon can be inflated upon correct positioning of said first end within the patient and a leakage seal valve connected to said first end adjacent said balloon, said leakage seal valve including a flexible, elastomeric member mounted adjacent said balloon to seal the opening in the patient and prevent leakage upon inflation of said balloon.

5,358,489

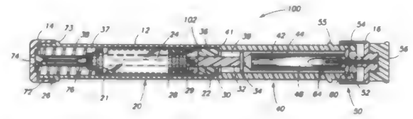
RELOADABLE AUTOMATIC OR MANUAL EMERGENCY INJECTION SYSTEM

Ronald E. Wyrick, Spokane, Wash., assignor to Washington Biotech Corporation, Spokane, Wash.

Filed May 27, 1993, Ser. No. 68,644

Int. Cl.[5] A61M *5/20*

U.S. Cl. 604—136 **46 Claims**



1. A reloadable fluid medication injection apparatus comprising:

a barrel having a cavity therein;

a replaceable, disposable syringe subassembly within the barrel and sized to slide within the cavity, the syringe subassembly having an ampule for housing fluid medication, a needle, and a plunger for forcing the fluid medication from the ampule through the needle;

a driver for forcing the syringe subassembly to inject the needle and displace fluid medication through the needle, the driver being movable between a cocked position and extended positions;

a driver release for controllably releasing the driver from the cocked position into an extended position;

a removable stop within the barrel for halting movement of the driver at an extended position, the removable stop being positioned at least partially around the plunger of the syringe subassembly to prevent full discharge movement of the plunger.

5,358,490

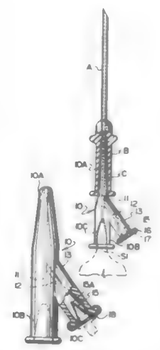
APPARATUS FOR USE IN CENTRAL VEIN CANNULATION

Richard A. Henry, 7 Toronto Street, Kingston, Ontario K7L 4A3, and Stevenson Shelley, 32 MacDonnell Street, Kingston, Ontario K7L 4B6, both of Canada

Filed Jun. 25, 1993, Ser. No. 81,197

Int. Cl.[5] A61M *5/178*

U.S. Cl. 604—167 **8 Claims**



1. A device for use in central venous catheterization comprising a Y-connector having a main arm and a side arm as an integral unit, a main passage through said main arm and an auxiliary passage through said side arm, said auxiliary passage merging into said main passage and at a selected angle thereto, said main arm having a distal end sealingly insertable directly into a socket of an introducer needle and a proximal end, said proximal end having a cavity thereto sealingly to receive directly therein a nozzle end portion of a syringe, said main passage providing fluid flow communication between a passage through said introducer needle and said syringe, said auxiliary passage commencing at an open inlet end thereto and terminating at an end opposite thereto which merges into said main passage at a position between said syringe nozzle and said introducer needle, means, on at least one of a portion of said main passage adjacent said distal end and said socket of said introducer needle, to guide the leading end of a guide wire fed progressively through said auxiliary passage into a passage through the introducer needle and a one way valve means in said auxiliary passage at said open inlet end thereof, said one way valve having a normally closed opening therethrough preventing back flow of blood from said side arm during use of the device and permitting alternately removably inserting directly thereinto an end portion of a tube and a guide wire to be fed through said introducer needle.

5,358,491

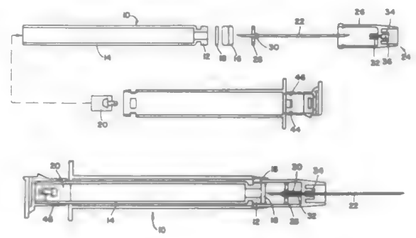
CARTRIDGE-NEEDLE UNIT HAVING RETRACTABLE NEEDLE

Kevin M. Johnson, Rochester, and Dennis J. O'Dea, Macedon, both of N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Sep. 13, 1993, Ser. No. 120,257

Int. Cl.[5] A61M *5/145*

U.S. Cl. 604—232 **27 Claims**



1. A cartridge-needle unit comprising:

a cartridge comprising:

a hollow body,

a septum at the distal end of said body,

means for retaining the septum, and

a plunger, axially and reciprocally slidable through the interior of said body;

a needle capable of being retracted within said cartridge;

a hub comprising:

a sleeve adapted to be snapped on the distal end of said cartridge,

means for retaining said needle within the hub during an injection; and

means for releasing the needle from the hub after the injection comprising an element attached to said needle, said element having a diameter substantially greater than said needle and wherein said element and said needle are capable of passing through said septum as an assembly.

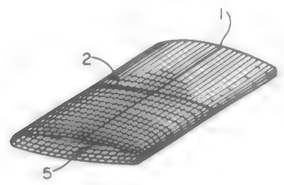
VOL 1167 ISS 4 OC 25 1994 UMI

5,358,492

WOVEN SURGICAL DRAIN AND METHOD OF MAKING

Miriam H. Feibus, 2557 Morrocroft La., Charlotte, N.C. 28226

Continuation-in-part of Ser. No. 694,748, May 2, 1991, Pat. No. 5,180,375. This application Sep. 30, 1992, Ser. No. 954,227
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—264 20 Claims



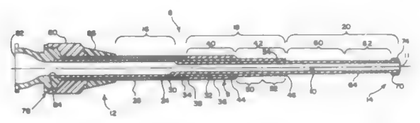
1. A woven surgical drain comprising: a first plurality of yarns and a second plurality of yarns, the yarns of said first plurality of yarns being substantially parallel to each other and extending in a first direction, the yarns of said second plurality of yarns being substantially parallel to each other and extending in a second direction substantially perpendicular to said first direction and woven with said first plurality of yarns to form an elongate woven fabric defining a tube-like channel having an external surface defining a longitudinal length and wherein said first plurality of yarns and said second plurality of yarns include conductive and nonconductive yarns and said conductive yarns make electrical contact with one another so as to form an electrically conductive matrix, and a non-stick coating applied to the external surface of said drain.

5,358,493

VASCULAR ACCESS CATHETER AND METHODS FOR MANUFACTURE THEREOF

Cyril J. Schweich, Jr., St. Paul; James R. Pray, New Hope, and Brian J. Brown, Hanover, all of Minn., assignors to Scimed Life Systems, Inc., Maple Grove, Minn.

Filed Feb. 18, 1993, Ser. No. 19,479
Int. Cl.[5] A61M *5/00, 25/00*
U.S. Cl. 604—264 33 Claims



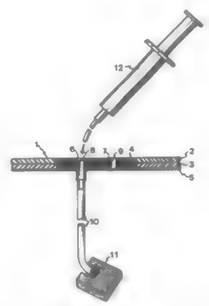
1. An intravascular catheter for providing access to a distal vascular site and having a lumen extending therethrough, the catheter comprising an elongate shaft comprised of:
a proximal relatively stiff section;
a distal section relatively more flexible than said proximal section, said distal section having surface contours that impart flexibility to said distal section; and
an intermediate section between said proximal and said distal sections, said intermediate section having a flexibility between said proximal section and said distal section.

5,358,494

IRRIGATION DRESSING

Pål Svedman, Östanvägen 85 B, S-216 19 Malmö, Sweden

Continuation of Ser. No. 793,377, Jan. 3, 1992, abandoned. This application Sep. 16, 1993, Ser. No. 121,892
Claims priority, application Sweden, Jul. 11, 1989, 8902498
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—313 8 Claims



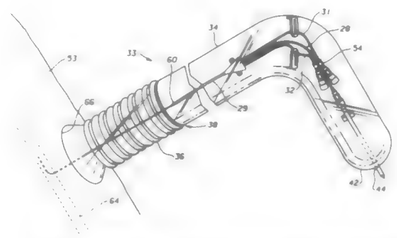
1. An irrigation dressing for deep wounds comprising a substantially air- and water-impermeable, substantially flat and flexible plate (**1**) comprising an outer layer (**2**), an inner adhesive layer (**3**) and, optionally, a release layer (**5**) applied to the adhesive layer, said plate being formed with at least one perforation (**6**) to which one end of a conduit (**10**) is connected for supplying and removing liquid, and which is also used for pressure equalization, an opposite end of the conduit (**10**), which is to be placed in the wound, being provided with a pad (**11**) of capillary-active material such that said pad (**11**) is provided at a distance from the plate (**1**); and
the pad (**11**) being provided with ducts (**22**) and outlet tubes communicating therewith.

5,358,495

STERILE GUIDEWIRE EXCHANGE SYSTEM

Lawrence A. Lynn, 862 Curleys Ct., Worthington, Ohio 43235

Filed Feb. 1, 1993, Ser. No. 11,696
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—171 28 Claims



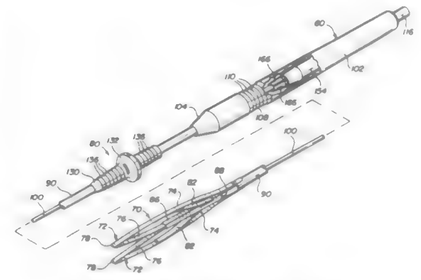
1. A guidewire insertion assembly for inserting a guidewire into a catheter within a patient, the catheter having fluid terminal, the assembly comprising:
a) an elongated container having a distal end and a proximal end, said distal end including means for engaging said fluid terminal,
b) a guidewire contained within said elongated container,
c) said container further including an interrupted portion along said container proximal to said engaging means, said portion having a length and width sufficient to allow the opposed thumb and finger of a physician to directly contact and grasp said guidewire along said interrupted portion and advance said guidewire from said container into said catheter, and
d) a barrier system coupled to said container and selectively extendable therefrom for receiving and enclosing said catheter when said catheter is retracted from said patient.

5,358,496

ENDOSCOPIC TISSUE MANIPULATOR

Mark S. Ortiz, Milford, Ohio; M. Joshua Tolkoff, Brookline; William W. Malecki, Newton, and Fernando A. de Toledo, Concord, all of Mass., assignors to Ethicon, Inc., Somerville, N.J.

Continuation of Ser. No. 780,697, Oct. 18, 1991, abandoned. This application Sep. 30, 1993, Ser. No. 130,162
Int. Cl.[5] A61M *29/00*
U.S. Cl. 606—198 18 Claims



1. An endoscopic tissue manipulator, comprising:
a handle;
a support shaft extending from said handle;
a tube slidably mounted on said support shaft for longitudinal movement relative to said support shaft; and
an expandable frame mounted at the distal end of said support shaft and connected to said tube, said frame being expandable by movement of said tube relative to said support shaft to provide a platform for manipulating tissue wherein said frame includes
a pair of expandable fingers each comprising a flexible outer strip secured to the distal end of said tube and a flexible inner strip secured to the distal end of said support shaft, said inner and outer strips being joined together at a distal finger tip; and
said fingers being flexed laterally outward in opposite directions by axial movement of said tube relative to said shaft to provide a platform for engaging the tissue.

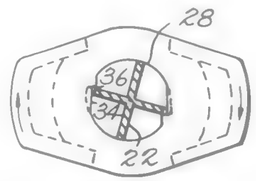
5,358,497

MEDICAL LOCKING DEVICE

Denis P. Dorsey, Levittown, and Shih-Mei Wu, Newtown, both of Pa., assignors to Bioteque America, Inc., Langhorne, Pa.

Filed Jan. 11, 1994, Ser. No. 179,948
Int. Cl.[5] A61M *5/315*
U.S. Cl. 604—220 11 Claims

1. A medical locking device for mounting on finger grips of a syringe having a plunger for freely moving axially in and out of a barrel of the syringe, said locking device comprising:
a flat top defining a plane and having an aperture centrally positioned in said plane, said aperture for receiving the plunger and being axially aligned with the barrel of the syringe when mounted on the finger grips;
a pair of retaining members extending perpendicularly from said flat top, said retaining members for completely engaging the finger grips on at least three sides to eliminate shifting of the locking device and insure proper axis alignment of said centrally positioned aperture with the barrel of the syringe;
a pair of diametrically opposed cutters, said cutters chordally positioned in said centrally located aperture and extending from the plane of the flat top into the aperture, said pair of cutters tapering to a cutting edge in said aperture;



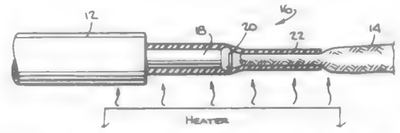
said medical locking device securely fitting onto the finger grips of the syringe with said aperture axially aligned with the syringe for receiving the plunger of the syringe, wherein the plunger can be twisted so that said cutters cut into the plunger to eliminate and prevent further plunger movement in either direction along the axis defined by the plunger and said centrally positioned aperture; and
said locking device further includes a pair of stop members diametrically positioned from each other and fixed at opposite ends of said cutters, each said stop member extending from said flat top to the other side of said flat top.

5,358,498

NEEDLED SUTURE

William H. Shave, New York, N.Y., assignor to Deknatel Technology Corporation, Inc., Fall River, Mass.

Filed Feb. 1, 1990, Ser. No. 474,594
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—224 8 Claims



1. A needle-suture combination comprising a needle having first and second ends, a suture, and a heat shrunk polymeric sleeve surrounding and anchoring therewithin a first end of said needle and an end of said suture establishing a high strength mechanical attachment between said needle and said suture.

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5,358,499

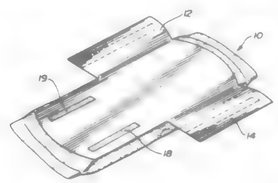
SANITARY NAPKIN WITH DISPOSAL MEANS

Wassim F. Seidy, Somerset, N.J., assignor to McNeil-PPC, Inc., Milltown, N.J.

Continuation of Ser. No. 16,472, Feb. 10, 1993, abandoned, which is a continuation of Ser. No. 926,550, Aug. 5, 1992, abandoned, which is a continuation of Ser. No. 827,543, Jan. 29, 1992, abandoned, which is a continuation of Ser. No. 618,012, Nov. 26, 1990, abandoned, which is a continuation of Ser. No. 489,767, Feb. 26, 1990, abandoned, which is a continuation of Ser. No. 358,539, May 30, 1989, abandoned, which is a continuation of Ser. No. 75,020, Jul. 16, 1987, abandoned. This application Jan. 13, 1994, Ser. No. 181,352

Int. Cl.[5] A61F *13/16*

U.S. Cl. 604—385.1 **23 Claims**



1. A sanitary napkin capable of being folded or rolled and self-sealed for disposal comprising:

(a) an elongated central absorbent element having two ends, two longitudinal edges, an undergarment facing side and a body-facing side;

(b) a backing layer substantially covering said undergarment-facing side of said absorbent element,

(c) one or two flaps extending transversely beyond the longitudinal edge of said backing layer at one end thereof, and

(d) first adhesive means disposed on said backing layer in a position to adhere said flap to said backing layer when said napkin is rolled or folded for disposal about transverse axis and said flap is wrapped around said rolled or folded napkin.

5,358,500

ABSORBENT ARTICLES PROVIDING SUSTAINED DYNAMIC FIT

Gary D. Lavon, Harrison; Edward P. Carlin, Maineville; Kenneth B. Buell; Thomas A. Desmarais, both of Cincinnati, all of Ohio; John A. Chang, Paris, France; Christina-Susanne Mueller, Heidelberg, Fed. Rep. of Germany, and Takako Haga, Hyogo, Japan, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 3, 1993, Ser. No. 72,300

Int. Cl.[5] A61F *13/15, 13/20*

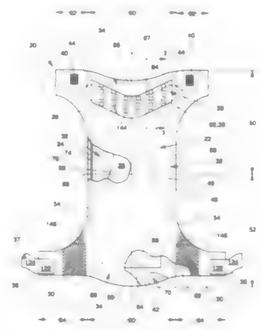
U.S. Cl. 604—385.2 **40 Claims**

1. An absorbent article for fitting about a wearer to contain body exudates, the wearer having a low motion zone, the absorbent article comprising:

a containment assembly having a front waist region, a back waist region opposed to said front waist region, a front end edge, a back end edge, longitudinal edges, a longitudinal axis, a longitudinal direction defined as the direction parallel to said longitudinal axis, a lateral axis, a lateral direction defined as the direction parallel to said lateral axis, said containment assembly comprising:

an outer covering layer; and

an anatomically low motion zone-fitting absorbent core joined with said outer covering layer, said absorbent core having a longitudinal centerline, side edges, a front waist edge having an abdominal point oriented on said longitudinal centerline, and a back waist edge, each said side edge having a leg segment and a buttocks segment, each said leg segment having a substantially concave arcuate shape so as to provide a narrowed crotch portion to fit between the legs of the wearer which defines a crotch point, said absorbent core being positioned within said containment assembly such that a ratio of the longitudinal distance from said crotch points to said back end edge of said containment assembly to the longitudinal distance from said abdominal point to said crotch points is at least about 1.5:1; and



closure means for anchoring the absorbent article on the wearer by forming a primary line of tension disposed at an angle of greater than about 5° from the lateral direction about the low motion zone of the wearer to sustain fit of the absorbent article throughout wearing, said closure means being joined to said containment assembly.

5,358,501

STORAGE BOTTLE CONTAINING A CONSTITUENT OF A MEDICINAL SOLUTION

Gabriel Meyer, Vesenaz, Switzerland, assignor to Becton Dickinson France S.A., Pont de Claix, France

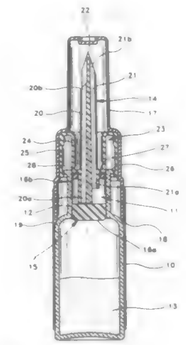
PCT No. PCT/EP90/01884, § 371 Date Jul. 11, 1991, § 102(e) Date Jul. 11, 1991, PCT Pub. No. WO91/07160, PCT Pub. Date May 30, 1991

Continuation of Ser. No. 721,584, Jul. 11, 1991, abandoned. This PCT application Nov. 10, 1990, Ser. No. 140,717

Claims priority, application Switzerland, Nov. 13, 1989, [illegible]

Int. Cl.[5] A61B *19/00*

U.S. Cl. 604—414 **6 Claims**



1. A bottle comprising:

a bottle body having a neck of reduced diameter,

a capsule slidably mounted to the neck of the bottle, the capsule including first and second conduits, the first and second conduits each having a bottom opening designed to open inside the bottle, the first and second conduits each having a top opening designed to open outside the bottle, the bottom opening of one of said conduits being disposed below the bottom opening of the other conduit, the top opening of one of said conduits being disposed above the top opening of the other conduit, the outer surface of the first and second conduits and the inner surface of the neck of the bottle defining an annular passage;

a first seal slidably mounted within the annular passage and above said bottom openings, said capsule including means for engaging said first seal such that said first seal slides with respect to said neck upon movement of the capsule, and

a second seal slidably mounted within the neck of the bottle and engaging said capsule, the second seal preventing communication of the bottom openings of the first and second conduits and the annular space with the bottle when the first and second conduits and the second seal are in a storage position.

5,358,502

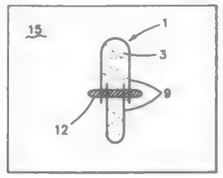
PH-TRIGGERED OSMOTIC BURSTING DELIVERY DEVICES

Scott M. Herbig, and Kelly L. Smith, both of Groton, Conn., assignors to Pfizer Inc, New York, N.Y.

Filed Feb. 25, 1993, Ser. No. 23,227

Int. Cl.[5] A61K *9/22*

U.S. Cl. 604—892.1 **14 Claims**



11. An osmotic bursting device for dispensing a beneficial agent to an aqueous environment comprising:

a. a pharmaceutical or veterinary osmotic agent;

b. a wall surrounding said agent, said wall formed at least in part of a semipermeable membrane which is permeable to the aqueous environment and substantially impermeable to the beneficial agent; and

c. pH-sensitive trigger means for triggering the bursting of the device and rapid release of beneficial agent as a bolus, said trigger means attached to said semipermeable membrane and said trigger means activated by a predetermined pH of from 3 to 9 wherein said device includes an aqueous swellable material and wherein said device is a capsule, said capsule formed from capsule parts, said capsule parts bonded together with said pH-sensitive trigger.

5,358,503

PHOTO-THERMAL THERAPEUTIC DEVICE AND METHOD

Dale E. Bertwell, 2100 Dayton, Denver, Colo. 80231, and Joseph P. Markham, 12094 W. 75th Pl., Arvad, Colo. 80005

Filed Jan. 25, 1994, Ser. No. 187,399

Int. Cl.[5] A61N *5/06*

U.S. Cl. 606—27 **23 Claims**

1. Apparatus for simultaneous treatment of an area of the skin and adjacent subcutaneous structures of a patient utilizing photo energy and therapeutic thermal energy, said apparatus comprising:

a plurality of juxtaposed diodes, defining a treatment area, each diode having a longitudinal axis and being capable of projecting a non-coherent cone of light when energized, the cone of light from each diode overlapping the cone of light from each other juxtaposed diodes so that the light completely covers the treatment area;



means for holding each of said diodes in juxtaposed position with each other and in contact with the skin in substantially perpendicular relationship to said longitudinal axis;

means for heating each of said diodes so that the treatment area of the skin and the adjacent subcutaneous structure of the patient receive light treatment and thermal treatment simultaneously or selectively; and

means connected to said diodes and said heating means for activating each of them.

5,358,504

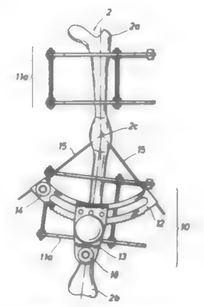
FIXATION BRACE WITH FOCAL HINGE

Dror Paley, Baltimore; John E. Herzenberg, Owings Mills, both of Md.; Mark S. Gosney, and James E. Orsak, both of Memphis, Tenn., assignors to Smith & Nephew Richards, Inc., Memphis, Tenn.

Filed May 5, 1993, Ser. No. 57,744

Int. Cl.[5] A61F *5/04*

U.S. Cl. 606—56 **33 Claims**



1. A device for moving a first bone segment relative to a second bone segment to externally fix bone fractures and to correct bone deformities, the first and second bone segments having a plane of deformity and a focal point, comprising:

an arc mechanism having an arc gear member having radii and an attachment point, and a drive means for moving the arc gear member relative to the drive means such that the attachment point moves through an arc shaped path in the plane of the arc gear member;

a first attachment means to secure the attachment point of the arc gear member to the first bone segment;

a second attachment means to secure the drive means to the second bone segment;

means for aligning and positioning the device in a plane for moving the first bone segment, at the attachment point, in

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an arc shaped path, such that the device will move the first bone segment into a predetermined position in relation to the second bone segment;

wherein the first and second attachment means are designed to allow the arc gear member to selectively be placed about the first and second bone segments so as to allow the arc gear member to be placed in the plane of deformity with the radii intersecting at the focal point.

5,358,505

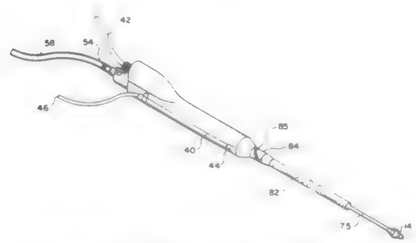
TAPERED TIP ULTRASONIC ASPIRATION METHOD

David G. Wuchinich, New York, N.Y., assignor to Sonokinetics, Inc., Hoboken, N.J.

Division of Ser. No. 964,570, Oct. 21, 1992, Pat. No. 5,221,282, which is a continuation-in-part of Ser. No. 706,669, May 29, 1991, abandoned. This application Jun. 22, 1993, Ser. No. 81,580

Int. Cl.[5] A61B *17/56*

U.S. Cl. 606—99 **12 Claims**



1. A method for removing thermoplastic prosthetic cement from bone comprising:

contacting thermoplastic prosthetic cement adherent to a bone surface with an aspirating ultrasonically vibrating surgical device, having a centrally located bore which extends throughout the length of said device;

vibrating said device to provide ultrasonic vibration of a sufficient amplitude and frequency to melt said cement while simultaneously irrigating said bone surface; and

aspirating said melted cement and irrigant through said bores of said device;

wherein the distal end of the bore expands in diameter in the direction of aspirant flow to facilitate removal of said melted cement and wherein removal of said irrigant cools heat generated by said device.

5,358,506

APPROXIMATING APPARATUS FOR SURGICAL JAW STRUCTURE

David T. Green, Westport; Henry Bolanos, East Norwalk; Jeffrey J. Blewett, Plantsville; Keith Ratcliff; Frank J. Viola, both of Sandy Hook, and Charles R. Sherts, Southport, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 703,625, May 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 669,352, Mar. 14, 1991, abandoned. This application Mar. 5, 1993, Ser. No. 27,555

Int. Cl.[5] A61B *17/28*

U.S. Cl. 606—151 **15 Claims**

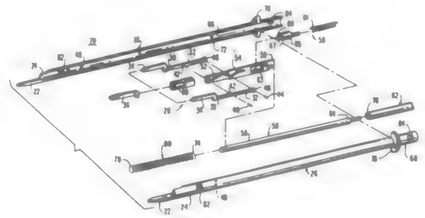
10. Apparatus for approximating jaw structure of surgical instrumentation comprising:

a tubular endoscopic housing defining a longitudinal axis, a distal end and a proximal end, said housing having an axial bore in said distal end;

first jaw structure extending from said distal end to said endoscopic housing and stationary with respect thereto, said first jaw structure having a distal working end and a proximal end;

second jaw structure disposed in spaced relation to and connected with said first jaw structure, said second jaw structure having a distal working end for substantially parallel working interaction with said first jaw structure and a proximal end, said first and second jaw structure being disposed substantially parallel to the longitudinal axis of the surgical instrumentation and interconnected for substantially parallel approximation; and

approximating means, at least partially disposed in said axial bore, having camming structure for camming said second



jaw structure in substantially parallel relation with respect to said first jaw structure to permit working interaction between said distal working ends of said first and second jaw structure; and

tissue stop means disposed proximally from said distal working ends of said jaw structures for maintaining captured tissue within said distal working ends, wherein said working ends of said first and second jaw structure collectively comprise tissue measuring structure.

5,358,507

THROMBOENDARTERECTOMY SUCTION DISSECTOR

Pat O. Daily, 16560 El Camino Real, Rancho Santa Fe, Calif. 92067, assignor to Pat O. Daily, San Diego, Calif.

Continuation-in-part of Ser. No. 736,404, Jul. 26, 1991. This application Dec. 15, 1992, Ser. No. 990,908

Int. Cl.[5] A61B *19/00*

U.S. Cl. 606—159 **9 Claims**



2. A set of combination suction dissectors for performing pulmonary thromboendarterectomy, said set comprising:

a plurality of unitary, elongated tubular instruments, each instrument having a handle section having means for connection to a source of vacuum, an elongated substantially rigid probe section with a rounded tip having a plurality of suction inlet ports and, one of said instruments having said probe section aligned coaxially of said handle section, and a plurality of said instruments having said probe section at an angle to said handle section, wherein said plurality of said instruments having said probe section at an angle to said handle section comprises five in number and said angles are fifteen degrees, thirty degrees, forty-five degrees, sixty degrees and eighty degrees, respectively.

5,358,508

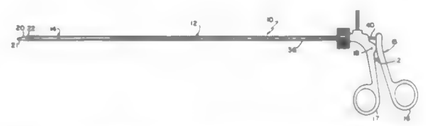
LAPAROSCOPIC DEVICE

Eric Cobb; Henri F. de Guillebon, both of c/o Microline, Inc., 199 Newbury St., Danvers, Mass. 01923

Filed Sep. 15, 1993, Ser. No. 121,694

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—174 **19 Claims**



1. A laparoscopic instrument assembly having a disposable tip said assembly including:

actuator means comprising a tubular sheath structure having an actuator rod having a forward end and a rear end disposed for axial movement therein;

means disposed adjacent the rear end of said actuator rod for moving said actuator rod axially within said sheath;

said actuator rod having a continuous internal thread formed therein at the forward end thereof;

said sheath structure further having a continuous external thread formed therein adjacent said rod forward end;

replaceable tip means comprising a tip rod having a rear end disposed for axial movement within a tubular tip casing structure said tip casing having a rear end;

said tip rod having a plurality of external threads formed on the rear end thereof for mating engagement with said actuator rod internal threads; and

said tip casing structure having a plurality of internal threads at the rear end adjacent said rear end of said tip rod for mating engagement with said external threads of said sheath structure;

said tip rod in its rearwardmost position locating a first thread on said tip rod a first predetermined distance from a first thread on said tip casing structure, and said actuating rod in its rearwardmost position locating a first thread on said actuating rod a second predetermined distance from said first thread on said sheath structure, said first predetermined distance being greater than said second predetermined distance;

whereby assembly of said replaceable tip on said actuator means is accomplished by the threading of said tip rod into said actuating rod prior to the threading of said sheath structure into said tip casing structure; and

an instrument disposed at the forward end of said tip casing structure operative by movement of said tip rod within said tip casing structure.

5,358,509

ATHERECTOMY CATHETER WITH IMPROVED FLUID INFUSION

Michael J. Fine, Coral Springs, and Enora S. Rogers, Hialeah, both of Fla., assignors to Theratech International, Inc., Miami Lakes, Fla.

Continuation of Ser. No. 734,381, Jul. 22, 1991, Pat. No. 5,261,877. This application Jun. 1, 1993, Ser. No. 69,903

The portion of the term of this patent subsequent to Aug. 4, 2009, has been disclaimed.

Int. Cl.[5] A61B *17/32*

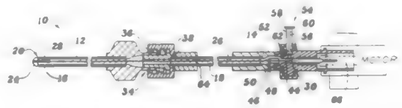
U.S. Cl. 606—180 **12 Claims**

1. An intravascular catheter comprising:

(a) an elongated flexible jacket having opposed proximal and distal ends and a central passageway extending between said ends, said jacket including a pair of separable proximal and distal sections releasably coupled to one another;

(b) a working head located at the distal end of the jacket and having a high-speed canalizing tip, capable of removing occlusions from a vessel, the tip being rotatably supported on the working head, said head having a central guide therethrough;

(c) a flexible drive assembly extending through the passage-



way of the jacket and adapted for rotating the drive cable at high speed, said drive assembly having a disconnectable drive cable;

(d) a releasable coupling to disconnect the working head from the drive cable and,

(e) a plurality of infusion ports in the jacket adjacent the distal end, capable of delivering an injectable fluid contrast media at relatively high volumetric flow rates through the passageway into the lumen of a vessel.

5,358,510

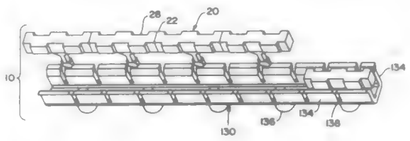
TWO PART SURGICAL FASTENER

Brian H. Luscombe, Somerset; Izi Bruker, Flemington; Leslie Hamilton, Ringoes, and Thu A. Le, Edison, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jan. 26, 1993, Ser. No. 9,157

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—220 **35 Claims**



1. A surgical fasteners used to pierce tissue, said fasteners comprising a tissue compressing bar and at least one tissue piercing prong extending therefrom, said prong having a height, and a receiver adapted to receive said tissue compressing bar and said at least one prong, having a generally uniform width and a height, said receiver comprising:

a pair of generally parallel walls adapted to receive said bar width therein with tissue compressed therebetween, said walls having a height, and said walls separated by and connected to a base generally perpendicular to said walls.

5,358,511

SUTURE ANCHOR

Roland F. Gatturna, Walpole; James E. Nicholson, Lincoln, and James O'Leary, Medford, all of Mass., assignors to Mitek Surgical Products, Inc., Norwood, Mass.

Continuation of Ser. No. 853,261, Mar. 18, 1992, Pat. No. 5,192,303, which is a continuation of Ser. No. 711,145, Jun. 6, 1991, abandoned, which is a continuation of Ser. No. 439,452, Nov. 20, 1989, Pat. No. 5,046,513, which is a continuation of Ser. No. 51,367, May 18, 1987, Pat. No. 4,898,156. This application Nov. 24, 1992, Ser. No. 981,011

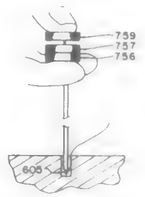
Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—232 **19 Claims**

1. Apparatus for use in attaching a suture anchor assembly to a bone comprising:

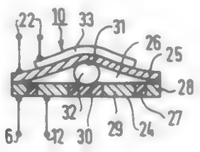
VOL 1167 ISS 4 OCT 25 1994 UMI

an insertion cannula in the form of a first hollow tube;
a suture anchor loader in the form of a second hollow tube sized to make a close sliding fit in said first hollow tube;
a plunger in the form of an elongate member sized to make a close sliding fit in said second hollow tube; and



stop means limiting the extent to which said second hollow tube may be inserted into said first hollow tube;
said insertion cannula, said suture anchor loader and said plunger being sized so as to have substantially the same length.

5,358,512
DEFIBRILLATOR WITH CONTROLLABLE DISCHARGE SWITCH
Kurt Hoegnelid, Västerhaninge, and Kenth-Ake-Sune Nilsson, Akersberga, both of Sweden, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Aug. 17, 1993, Ser. No. 107,059
Claims priority, application European Pat. Off., Aug. 28, 1992, 92114797.1
Int. Cl.[5] A61N *1/39*
U.S. Cl. 607—7 **11 Claims**



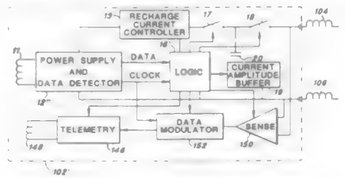
1. A defibrillator comprising:
a capacitor;
means for charging said capacitor with energy;
electrode means for delivering said energy from said capacitor to a heart for defibrillating said heart;
controllable switch means connected between said capacitor and said electrode means for selectively controlling said delivery of energy to said heart, including two normally-open electrical contacts, a contact maker disposed between said two contacts, said contact maker consisting of deformable material having a restorative force which normally maintains said contacts open, electro-mechanical transducer means disposed for acting on said contact maker given a predetermined excursion of said transducer means, for deforming said contact maker to make an electrical connection between said two contacts, and given an excursion deviating from said predetermined excursion, for varying the electrical resistance of said connection between said two contacts; and
control pulse generator means connected to said electro-mechanical transducer means for supplying a control pulse thereto having a variable pulse height for selecting said electrical resistance between said two contacts.

5,358,513
PARAMETER SELECTION AND ELECTRODE PLACEMENT OF NEUROMUSCULAR ELECTRICAL STIMULATION APPARATUS
Jack H. Powell, III; Joseph J. Seaman, both of Newman; Russell A. Foley, Fayetteville, and JoAnn Leahy, Atlanta, all of Ga., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Dec. 9, 1992, Ser. No. 987,851
Int. Cl.[5] A61N *1/36*
U.S. Cl. 607—48 **12 Claims**



1. A method of treatment and prevention of deep vein thrombosis in a lower extremity of an immobilized patient, the method comprising:
placing a plurality of electrodes on an anterior portion of at least one knee of the immobilized patient, proximal a common peroneal nerve of said patient; and
applying an electrical current to said electrodes while the patient remains immobilized thereby stimulating the common peroneal nerve transcutaneously, such that dorsiflexion muscle stimulation is produced, whereby blood flow in the deep leg veins of said patient is increased with minimal pain imparted to said patient.

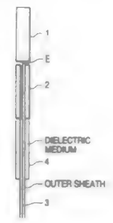
5,358,514
IMPLANTABLE MICRODEVICE WITH SELF-ATTACHING ELECTRODES
Joseph H. Schulman, Santa Clarita; Primoz Strojnik, Granada Hills, and Paul Meadows, Altadena, all of Calif., assignors to Alfred E. Mann Foundation for Scientific Research, Sylman, Calif.
Continuation-in-part of Ser. No. 25,994, Mar. 3, 1993, which is a continuation of Ser. No. 812,051, Dec. 18, 1991, Pat. No. 5,193,540. This application May 17, 1993, Ser. No. 62,283
Int. Cl.[5] A61N *1/36*
U.S. Cl. 607—61 **22 Claims**



1. An implantable microstimulator comprising:
an hermetically sealed case wherein electronic stimulation circuitry is housed, said electronic stimulation circuitry including means for inductively receiving power signals and control signals from an external source and means for generating electrical stimulation pulses as a function of said control signals; and
first and second opposing electrodes electrically connected to said electronic stimulation circuitry and extending from said sealed case, said electrical stimulation pulses being electrically applied to said first and second electrodes;
said first and second electrodes having means at distal ends thereof for self-attachment to a nerve;

said microstimulator being adapted for implantation within living tissue with the means for self-attachment of the first and second electrodes being connectable to the same nerve, with said microstimulator interposed therebetween, the microstimulator attached to the nerve thereby floating with the nerve;
whereby tugging or tethering of the nerve is avoided.

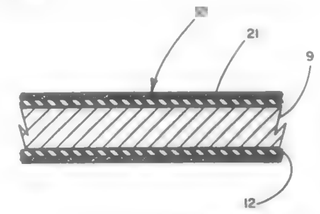
5,358,515
MICROWAVE HYPERTHERMIA APPLICATOR
Willibald Hürter, Heidelberg, and Fritz Reinbold, Sandhausen, both of Fed. Rep. of Germany, assignors to Deutsches Krebsforschungzentrum Stiftung des Offentlichen Rechts, Heidelberg, Fed. Rep. of Germany
PCT No. PCT/DE90/00627, § 371 Date Jun. 17, 1991, § 102(e) Date Jun. 17, 1991, PCT Pub. No. WO91/02560, PCT Pub. Date Mar. 7, 1991
PCT Filed Aug. 16, 1990, Ser. No. 671,877
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1989, 3926934
Int. Cl.[5] A61N *1/06*
U.S. Cl. 607—101 **13 Claims**



1. In a microwave hyperthermia applicator having a defined limited distribution of its electromagnetic field comprising an outwardly insulated system including a dipole antenna having a first dipole half which is an extension of a center conductor of a coaxial feeder cable for the antenna and a second dipole half adjacent said first dipole half and extending along and being connected to an outer sheath of said coaxial feeder cable; the improvement wherein:
a conductive covering surrounds a portion of the outer sheath of the feeder cable to change an impedance of the applicator;
said covering has an open first end adjacent but spaced from the second dipole half, is filled with a dielectric medium and forms one of a $\pi/2$ and a π transformer; and,
the outwardly insulated system composed of the dipole antenna, the transformer and the coaxial feeder cable forms a defined complex resistance with a dissipative medium that primarily surrounds the dipole antenna during use so that heating of the dissipative medium is limited directly to a predeterminable area around the dipole and thus there is no heating of the dissipative medium along the outer sheath of the feeder cable.

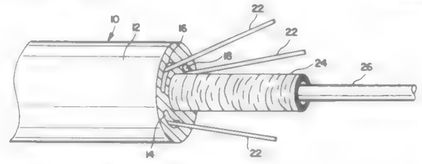
5,358,516
IMPLANTABLE ELECTROPHYSIOLOGY LEAD AND METHOD OF MAKING
David J. Myers, Camp Verde, and John M. Williams, Flagstaff, both of Ariz., assignors to W. L. Gore & Associates, Inc., Newark, Del.
Filed Dec. 11, 1992, Ser. No. 988,998
Int. Cl.[5] A61N *5/04*
U.S. Cl. 607—116 **22 Claims**

1. An implantable lead comprising:
a) at least one electrical conductor wire;
b) a layer of impervious plastic insulation tubularly and coaxially surrounding the at least one electrical conductor wire; and



c) an exterior coaxial covering comprised of porous polytetrafluoroethylene.

5,358,517
ELECTRICAL MEDICAL LEAD WITH TEXTURED STYLET GUIDE
Peter J. Pohndorf, Stillwater, and Richard L. Molacek, Maple Grove, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Jan. 14, 1993, Ser. No. 4,389
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—116 **4 Claims**



1. An implantable lead, comprising:
an elongated lead body having a substantially cylindrical, longitudinal axial bore;
an elongated electrical conductor disposed in said lead body;
an elongated, substantially cylindrical, hollow tubular member, formed of a plastic, disposed in said longitudinal axial bore, said hollow tubular member having a longitudinal axis and extruded to define an inner wall defining a lumen for receiving a stylet therein and having ridges formed therein generally perpendicular to said longitudinal axis of said tubular member, said ridges comprising means for contacting a said stylet received in said lumen.

5,358,518
ARTIFICIAL VENOUS VALVE
Sante Camilli, Via Casole D'Elsa, 15, Rome, Italy
Continuation of Ser. No. 802,611, Dec. 5, 1991, abandoned. This application Jan. 25, 1993, Ser. No. 8,823
Claims priority, application Italy, Jun. 25, 1991, 000458 A/91
Int. Cl.[5] A61F *2/24, 2/54*; F16K *15/00, 17/00*
U.S. Cl. 623—2 **3 Claims**



1. An artificial venous valve configured to allow unidirectional flow and to be inserted into a human venous system, biocompatible with the system, comprising:
a hollow elongated support having a predetermined length with a periphery and a predetermined width, said length being greater than said width, said support having openings therethrough for suturing the valve to a vein said

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support having arcuate edges intersecting linear vertical edges in a longitudinal-lateral sectional view; and

a plate carried by and within the support and movable relative to the support between a first position to permit flow of blood in one direction and a second position in which to prevent flow of blood in an opposite direction through said support, said plate in both of said first and second positions being disposed entirely within said support, said plate being movable to open and close over a pressure differential range on opposite sides of said plate of 1–50 mm Hg.

5,358,519

MUSCLE CONTROL AND MONITORING SYSTEM

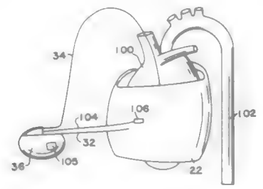
Pierre A. Grandjean, Bassenge, Belgium, assignor to Medtronic, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 786,133, Oct. 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 446,593, Dec. 6, 1989, Pat. No. 5,067,960, Ser. No. 446,592, Dec. 6, 1989, Pat. No. 5,089,019, and Ser. No. 446,811, Dec. 6, 1989, Pat. No. 5,098,442. This application Jul. 15, 1993, Ser. No. 92,180

The portion of the term of this patent subsequent to Nov. 26, 2008, has been disclaimed.

Int. Cl.[5] A61M *1/10*

U.S. Cl. 623—3 **8 Claims**



1. A cardiac assist system for assisting a natural heart having ventricles which contract at a ventricular rate, said cardiac assist system adapted for coupling to a surgically prepared muscle responsively coupled to said heart and to a circulatory system, and said cardiac assist system comprising:

a. control means adapted to be coupled to the heart and to the muscle for stimulating the muscle and for causing it to contract in synchrony with said ventricles of said heart; and

b. means, coupled to said control means and adapted to be responsively coupled to the muscle, for monitoring a parameter indicative of a predetermined level corresponding to adequacy of circulatory support to the muscle.

5,358,520

SUPPLEMENTARY INTRAOCULAR LENS SYSTEM

Anilbhai S. Patel, Seattle, Wash., assignor to Nestle S.A., Switzerland

Continuation of Ser. No. 956,450, Oct. 2, 1992, abandoned, which is a continuation of Ser. No. 859,640, Mar. 23, 1992, abandoned, which is a continuation of Ser. No. 653,863, Feb. 8, 1991, abandoned, which is a continuation of Ser. No. 344,705, Apr. 28, 1989, abandoned. This application Jun. 4, 1993, Ser. No. 72,362

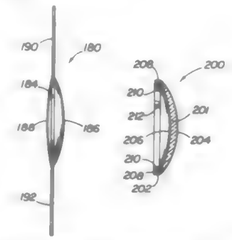
Int. Cl.[5] A61F *2/16*

U.S. Cl. 623—6 **17 Claims**

7. A composite intraocular lens, comprising:

a. an implanted primary intraocular lens formed of a biocompatible transparent material having a first refractive power;

b. supplemental intraocular lens formed of a biocompatible transparent material with a predetermined diopter power wherein the predetermined diopter power will alter the refractive power of said implanted primary intraocular lens to effect refractive correction and enhance focusing ability; said lens being sized so as to be removeably insertable to a position complementary to said primary intraocular lens; and



c. a means for selective connecting or disconnecting the supplemental intraocular lens to the implanted primary intraocular lens while the primary intraocular lens remains implanted in the eye of a patient.

5,358,521

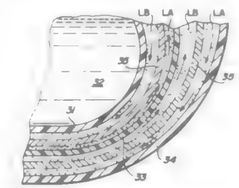
MULTIPLE-LAYER PROSTHESIS IMPLANT WITH TISSUE TACTILITY

Fred Shane, 205 E. Harmon, Apt. 803, Las Vegas, Nev. 89109

Filed Apr. 1, 1992, Ser. No. 861,522

Int. Cl.[5] A61F *2/12, 2/54*

U.S. Cl. 623—8 **24 Claims**



1. A multiple lumen prosthesis comprising:

a first, ballast lumen;

a second lumen enclosing said ballast lumen;

each said lumen having flexible exterior and interior walls, said interior walls defining an interior void, said ballast lumen being enclosed within said interior void of said second lumen;

a first thin coating of lubricant on the interior walls of said second lumen;

a second thin coating of lubricant on the exterior walls of said ballast lumen; said first coating and said second coating of lubricant being insufficient in quantity of lubricant contained therein to inflate said second lumen and of a volume selected to provide a thin coating of lubricant sufficient for inhibiting direct contact of said exterior walls of said ballast lumen with said interior walls of said second lumen; and

means coupling said first and second coatings of lubricant for renewing said first and said second coatings of lubricant by redistributing lubricant within said first and said second coatings,

said means for renewing said first and said second coatings of lubricant comprises an interstitial, distribution layer of lubricant, immiscible in said first and said second coatings of lubricant,

said distribution layer of lubricant being generally located between said first and said second coatings of lubricant, further inhibiting direct contact of said exterior walls of said ballast lumen with said interior walls of said second lumen, and redistributing lubricant in said first and second coatings of lubricant along boundaries at which said distribution layer of lubricant moves relative to said first and said second coatings.

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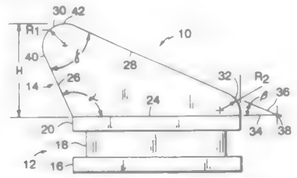
THYROPLASTY IMPLANT

William W. Montgomery, Chestnut Hill, and Stuart K. Montgomery, Needham, both of Mass., assignors to Boston Medical Products, Inc., Waltham, Mass.

Division of Ser. No. 707,704, May 30, 1991. This application Jul. 16, 1993, Ser. No. 93,259

Int. Cl.[5] A61F *2/02, 2/20*

U.S. Cl. 623—11 **7 Claims**



1. A thyroplasty implant for anchoring in a window cut through a thyroid lamina and causing medial displacement of a vocal cord comprising

a base for anchoring in said window, said base including a first tier to be received in said window, said first tier having a length and width, said first tier being larger in size along said length and width than said first tier is thick along a perpendicular axis, and

a projecting member attached to and extending from said base along said perpendicular axis for causing medial displacement of a vocal cord,

said base being made of a firm biocompatible material to facilitate firm anchoring of the implant, said projecting member being made of biocompatible material that is softer than said firm biocompatible material and is sufficiently soft to avoid damage to the vocal cord.

5,358,523

Patent Not Issued For This Number

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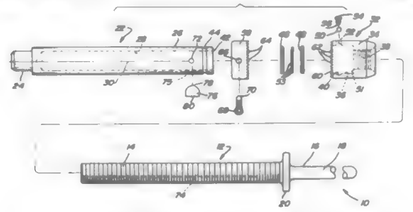
ADJUSTABLE LENGTH PROSTHETIC IMPLANT

Marc E. Richelsoph, Cordova, Tenn., assignor to Wright Medical Technology, Inc., Arlington, Tenn.

Filed Feb. 16, 1993, Ser. No. 17,567

Int. Cl.[5] A61F *2/28*

U.S. Cl. 623—16 **2 Claims**



1. An adjustable length prosthetic implant comprising:

a stem including a threaded portion and an end portion adapted for mounting with a bone;

a barrel including a first end portion adapted for mounting with a bone and a sleeve portion extending therefrom and including an elongated chamber defining an axial dimension and overlying at least a portion of said threaded portion; said barrel including a second end portion axially opposite said first end portion and having an outer surface, said outer surface including an annular groove thereabout;

connecting means mounted on said barrel for interconnecting said barrel and stem and controlling the axial extension and retraction of said stem from said barrel; said connecting means including a nut member having a passageway extending therethrough having an inner surface, said inner surface including a threaded portion for threaded engagement with said threaded portion of said stem, said inner surface further including an annular groove encircling said passageway;

bearing means connecting said connecting means to said barrel to prevent relative axial movement therebetween while allowing relative rotation therebetween about said axis and spacing said connecting means from said barrel to minimize relative friction therebetween during said relative rotation, said bearing means including a plurality of roller bearings disposed between said grooves as said grooves define a pair of opposed races entrapping said roller bearings therebetween, said roller bearings spacing said outer surface of said barrel from said inner surface of said nut member while providing a stable interconnection therebetween;

said nut member including an outer surface and a port extending from said outer surface through said groove in said inner surface allowing for insertion of said roller bearings into and removal of said roller bearings from said opposed races;

said connecting means including closure means for sealing closed said port, said closure means including a pin member including an end portion for forming part of said groove when said pin member is inserted in said port; and

rotation locking means for locking said nut member from rotating relative to said barrel;

said nut member including an end portion axially medial relative to said barrel and including recesses therein, said locking means including a ring member axially movable over said barrel and including projection for mating engagement with said recesses of said nut member, said locking means including fixing means for fixing said ring member from movement relative to said barrel while in mating engagement with said nut member to reversibly lock said nut member from rotation relative thereto.

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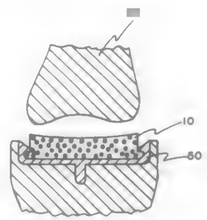
BEARING SURFACE FOR PROSTHESIS AND REPLACEMENT OF MENISCAL CARTILAGE

John E. Fox, 11 Hickory Trail, Lake Mohawk, Sparta, N.J. 07871, and Stephen J. Fox, 3 Ridgewood La., Concord, N.H. 03301

Filed Dec. 28, 1992, Ser. No. 998,184

Int. Cl.[5] A61F *2/30*

U.S. Cl. 623—18 **9 Claims**



1. An implantable cartilage replacement apparatus comprising:

a pad of pliable and compliant shock absorbing material with a hollow interior;

load bearing material which fills the interior of said pad, and moves in response to varying load vectors applied to said pad; wherein said load bearing material further comprises numerous, small ball bearings of surgical-grade stainless steel; and

wherein, said pad with said load bearing material is capable

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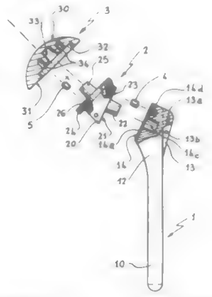
of self-modulation, congruency and shock absorbency in a manner similar to actual cartilage.

5,358,526

MODULAR SHOULDER PROSTHESIS

Alain Tornier, Saint-Ismier, France, assignor to Etablissements Tornier, Saint-Ismier, France

Filed Nov. 10, 1992, Ser. No. 974,297
Claims priority, application France, Dec. 27, 1991, 91 16445
Int. Cl.[5] A61F *2/40*
U.S. Cl. 623—19 **17 Claims**



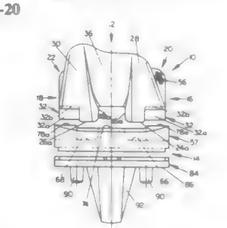
1. A prosthesis of the upper end of the humerus comprising, a stem which is anchored in a humeral canal, the stem having an outer bearing face, the prosthesis also including a single semi-spherical cap having a geometrical axis and a base and adapted to cooperate with a socket of a shoulder, the prosthesis being provided with a spacer in the form of a wedge having a first face oriented toward the bearing face of the stem and a second face oriented toward the base of the cap, the spacer being adapted to vary the distance of the base of the cap with respect to the bearing face of the stem, securing means engageable with both the cap and the spacer, the securing means being selectively engageable to retain the cap at any one of a plurality of angular positions relative to the spacer about a second geometrical axis which is eccentric with respect to the geometrical axis of the cap to thereby allow a selected alignment of the cap with respect to the spacer and stem.

5,358,527

TOTAL KNEE PROSTHESIS WITH RESURFACING AND POSTERIOR STABILIZATION CAPABILITY

Mark R. Forte, 11 Oak La., Pine Brook, N.J. 07058

Continuation-in-part of Ser. No. 673,790, Mar. 22, 1991. This application Mar. 20, 1992, Ser. No. 854,225
Int. Cl.[5] A61F *2/38*
U.S. Cl. 623—20 **16 Claims**



1. A total knee prosthesis capable of providing resurfacing to adjacent ends of existing bone structures, as well as total posterior stabilization to a knee joint, comprising:

a) a femoral component including:

i) a medial condyle having an anterior portion, a distal portion and a posterior portion;

ii) a lateral condyle having an anterior portion, a distal portion and a posterior portion;

iii) an anterior patella flange interconnecting the anterior portions of the medial and lateral condyles in parallel, spaced apart relation; and

iv) cam member means integral with said medial and lateral condyles and located outboard thereof, said cam member means having an anteriorly located concave cam member surface and a posteriorly located convex cam member surface;

b) a tibial component including:

i) multi-radius tibias plateau bearing surface means for receiving said medial and lateral condyles for rolling and sliding movement thereon; and

ii) follower member means integral with said bearing surface means for receiving the cam member surfaces of said cam member means for rotational and sliding movement thereon; and

c) the cam member surfaces of said cam member means being in contact with said follower member means for substantially the entire flexion range of the knee,

wherein said tibial plateau bearing surface means includes:

a. a medial multi-radius tibial plateau bearing surface means located inboard of said follower means and having an anterior, central and posterior portion for receiving said medial femoral condyle for rolling and sliding movement thereon;

b. a lateral inboard multi-radius tibial plateau bearing surface means located inboard of said follower means and having an anterior, central and posterior portion for receiving said inboard portion of the lateral femoral condyle for rolling and sliding movement thereon;

c. a medial outboard-located follower member consisting of a convex follower member surface anteriorly and a concave arcuate follower member surface posteriorly for receiving said anterior concave cam member surface and posterior convex cam member surface of the medial cam member means for rolling and sliding movement thereon, said medial concave arcuate follower member surface being connected to the respective posterior portion of the concave arcuate tibial plateau bearing surface means;

d. a lateral outboard-located follower member consisting of a convex follower member surface anteriorly and a concave arcuate follower member surface posteriorly for receiving said anterior concave cam member surface and posterior convex cam member surface of the medial cam member means for rolling and sliding movement thereon, said lateral concave arcuate follower member surface being connected to the respective posterior portion of the concave arcuate tibial plateau bearing surface means; and

e. an interconnecting intercondylar eminence centrally disposed between the medial and lateral multi-radius tibial plateau bearing surface means, said interconnecting eminence being connected to said plateau bearing surface means, and said being removed within the posterior intercondylar portion to provide required clearance for retained anterior and posterior cruciate ligament structures.

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Patent Not Issued For This Number

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PLASTIC KNEE FEMORAL IMPLANTS

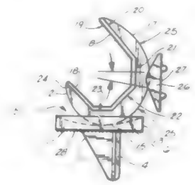
James A. Davidson, Germantown, Tenn., assignor to Smith & Nephew Richards Inc., Memphis, Tenn.

Filed Mar. 5, 1993, Ser. No. 27,000
Int. Cl.[5] A61F *2/38*
U.S. Cl. 623—20 **44 Claims**

1. A total knee prosthesis comprising:

a) a bridged, near-anatomically shaped, bicondylar polymer femoral component having a pair of spaced, generally convex polymeric bearing surface of thickness greater than about six millimeters (6 mm) at articulating surface regions;

b) a tibial component with a metallic bearing surface portion that includes concavities that receive the polymeric bearing surface of the femoral component during articulation of the femoral component upon the tibial component;



c) a patella component with a metallic bearing surface portion that receives the polymer bearing surface of the femoral component during articulation of the femoral component upon the patella component; and

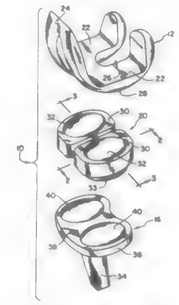
d) a femoral attachment that enables the femoral component to be attached to the patient's femur.

5,358,530

MOBILE BEARING KNEE

Robert A. Hodorek, Warsaw, Ind., assignor to Zimmer, Inc., Warsaw, Ind.

Filed Mar. 29, 1993, Ser. No. 38,302
Int. Cl.[5] A61F *2/38*
U.S. Cl. 623—20 **10 Claims**



1. A prosthetic mobile bearing knee for implantation in a leg comprising:

a femoral implant for attachment to a femur defining a pair of condyle sections;

a mobile tibial bearing having a top bearing surface for cooperation with said femoral condyle sections, said tibial bearing further including, on a side opposite said top bearing surface, a pair of spaced apart, convexly curved surfaces; and

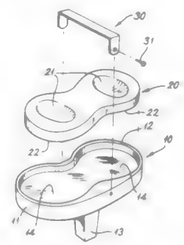
a tibial tray implant for attachment to a tibia, said tibial tray implant including a plateau facing toward said femoral implant having a pair of spaced apart, concavely curved bearing surfaces for cooperation with said convexly curved surfaces of said tibial bearing, said plateau bearing surfaces having a shape permitting a gradual increasing resistance to sliding motion of said tibial bearing on said plateau, and wherein said tibial bearing includes two separate independent and unconnected parts, one part medially located and the other part laterally located relative the leg, each said part comprising one said top bearing surface and one said convexly curved surface.

5,358,531

PROSTHETIC KNEE JOINT DEVICES

John W. Goodfellow, Woodeaton, and John J. O'Connor, Headington, both of England, assignors to British Technology Group Limited, London, England

Continuation of Ser. No. 842,336, Mar. 23, 1992, abandoned. This application Aug. 12, 1993, Ser. No. 104,930
Claims priority, application United Kingdom, Jun. 12, 1990, 9103025
Int. Cl.[5] A61F *2/30*
U.S. Cl. 623—20 **7 Claims**



1. A prosthetic bone joint device comprising:

a first component having a convexly curved articulation surface;

a second component having a relatively flat articulation surface;

a third component disposed between and engaging said first and second components for movement relative to each of said first and second components, said third component having two articulation surfaces in mutual back-to-back disposition, said two articulation surfaces being respectively complementary shaped to, but differently sized from, so as to allow mutual, rotational and translational engagement with, said convexly curved and said relatively flat articulation surfaces in the assembled device; and

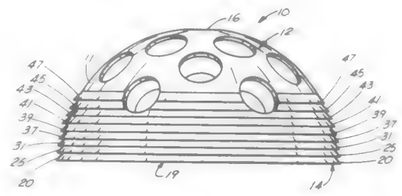
a member separably connected with said second component to project therefrom and at least partially bridge said third component to limit said relative movement and maintain said mutual engagement.

5,358,532

CEMENTLESS ACETABULAR CUP

David L. Evans, Bartlett; Peter E. Stegemann, and Robert-Jan Enzerink, both of Memphis, all of Tenn., assignors to Smith & Nephew Richards Inc., Memphis, Tenn.

Filed Jun. 16, 1992, Ser. No. 900,059
Int. Cl.[5] A61F *2/34*
U.S. Cl. 623—22 **12 Claims**



1. A prosthetic joint acetabular cup component, comprising:

a) a cup body portion having outer convex and inner concave surfaces, an apex portion, and a lower rim portion defining a plane;

b) a plurality of annular and generally parallel circular rings

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spaced along the body outer surface between the lower rim and the apex of the cup body, each ring having a crest portion and a trough portion;

c) the rings each define a plane and, the planes include a plurality of planes that are parallel and of different spacing therebetween, wherein said spacing between at least one adjacent pair of said rings increases in a direction from the lower rim towards said apex portion; and

d) wherein the outer surface portion has a dual radius curvature.

5,358,533

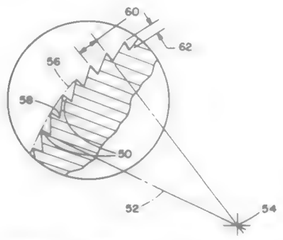
SINTERED COATINGS FOR IMPLANTABLE PROSTHESES

Douglas G. Noiles, New Canaan, and Alfred F. DeCarlo, Jr., Stamford, both of Conn., assignors to Joint Medical Products Corporation, Stamford, Conn.

Division of Ser. No. 838,577, Feb. 19, 1992, Pat. No. 5,263,986. This application Jan. 21, 1993, Ser. No. 7,059

Int. Cl.[5] A61F *2/32, 2/36, 2/30*

U.S. Cl. 623—22 **4 Claims**



1. An acetabular prosthesis for implantation in bone comprising a body having a substantially spherical outer surface at least a portion of which is stepped, said substantially spherical outer surface defining a pole, and said steps:

a) having similar radial cross-sectional shapes irrespective of their azimuthal locations on the surface of the prosthesis, and

b) being substantially covered with a sintered coating of particles,

each of said steps comprising a tread and a riser which intersect at a corner, said tread and riser being oriented so that the step opens towards the pole at said corner, whereby, when the prosthesis is implanted in bone, the forces between the bone and the sintered coating tend to drive the particles of the sintered coating into the corner.

5,358,534

FEMORAL COMPONENT FOR A HIP PROSTHESIS

Michael W. Dudasik, Nutley, N.J.; Anthony K. Hedley, Paradise Valley, Ariz.; David S. Hungerford, Cockeysville, Md., and Matthew P. Poggie, Union City, N.J., assignors to Howmedica Inc., New York, N.Y.

Filed Apr. 29, 1993, Ser. No. 55,426

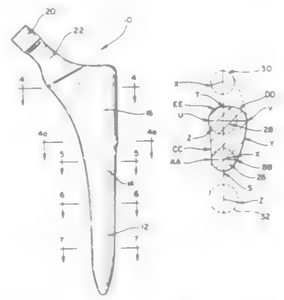
Int. Cl.[5] A61F *2/32*

U.S. Cl. 623—22 **8 Claims**

1. A femoral component for a hip prosthesis comprising:

a distal portion defining a central longitudinal axis of the component for disposition within an intramedullary canal of a femur; and

a proximal portion having a cross-section perpendicular to the central axis defining medial, posterior, lateral and anterior surfaces, said medial surface formed as a first circular arc having a center located within said cross-section, a corner of said cross-section formed by said posterior and said lateral surfaces formed as a second circular arc with a center on said central axis, said anterior surface being substantially arcuate and convex in form and being tangent to said first circular arc at the point of intersection therewith, said posterior surface being substantially arcuate and concave in form and being tangent to both said first and second circular arcs and a generally arcuate



portion connecting said second circular arc and said anterior surface, the connection being made at a connecting point on said second circular arc and said anterior surface and said arcuate portion forming a tangent therewith at said connecting points.

5,358,535

USE OF POLYALKYLENEGLYCOL DIESTERS AS FORMALDEHYDE COLLECTORS AND FINISHING PROCESS FOR THE TEXTILE INDUSTRY

Wilhelm Didier, Issy Les Moulineaux, and Antonio Gelabert, Bouffemont-Moisselles, both of France, assignors to Societe Francaise Hoechst, Puteaux, France

Filed May 7, 1993, Ser. No. 57,914

Claims priority, application France, May 7, 1992, 92 05653

Int. Cl.[5] D06M *15/423, 101/06*

U.S. Cl. 8—182 **12 Claims**

1. In a finishing process for fabrics based on cellulose fibers using an aminoplastic resin containing formaldehyde in the free or combined state in which the fabrics are placed in a finishing bath, the improvement wherein a compound of formula I

$$R\text{-}(O\text{—}CHR_1\text{—}(CH_2)_n\text{—}O)_m\text{-}R \quad (I)$$

in which R represents an acetoacetyl or 3,5-dioxo hexanoyl group, R_1 represents a hydrogen atom or a methyl radial, m is equal to 1, 2, 3 or 4, and n is either equal to 1 when R_1 represents a methyl radical or equal to 1, 2 or 3 when R_1 is hydrogen, is present as a formaldehyde collector.

5,358,536

DYESTUFF FOR HEAT-SENSITIVE TRANSFER RECORD AND TRANSFER SHEET CONTAINING SAME

Hitoshi Koshida; Isamu Ghoda, both of Hyougo; Tsukasa Ohyama, and Keisuke Takuma, both of Fukuoka, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Jul. 31, 1992, Ser. No. 921,805

Claims priority, application Japan, Jul. 31, 1991, 3-191544; Jul. 31, 1991, 3-191552

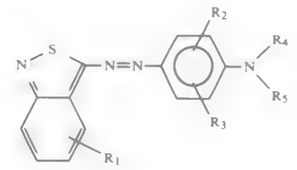
Int. Cl.[5] B41M *5/26;* **C09B** *56/00*

U.S. Cl. 8—471 **2 Claims**

1. A black dyestuff for heat-sensitive transfer record comprising at least one orange dyestuff represented by the formula (1)

$$Ar_1\text{—}N{=}N\text{—}Ar_2\text{—}N{=}N\text{—}Ar_3 \quad (1)$$

wherein each of Ar_1, Ar_2 and Ar_3 is independently an aryl group or an aryl group having as a substituent an alkyl group having 1 to 4 carbon atoms, halogen atom, nitro group or hydroxy group; and at least one blue dyestuff represented by the formula (2)



(2)

wherein each of R_1, and R_2 and R_3 is independently a hydrogen atom, halogen atom, nitro group, hydroxy group, alkyl group which may have a substituent, alkoxy group, alkylsulfonylamino group or alkylcarbonylamino group, wherein the alkyl groups therein have 1 to 4 carbon atoms, R_4 is an alkyl group having 1 to 8 carbon atoms, which may have a substituent, aralkyl group or alkoxycarbonylethyl group, and R^6 is an alkylcarbonylethyl group; wherein the blend ratio of the dyestuff (1) to the dyestuff (2) is from 2:8 to 4:6.

5,358,537

PROCESS FOR DYEING POLYMERIC FIBERS

David R. Kelly, Dalton, Ga.; Richard Castle, Chatte, Tenn., and Christopher Bryant, Dalton, Ga., assignors to Shaw Industries, Inc., Dalton, Ga.

Filed Sep. 17, 1991, Ser. No. 761,216

Int. Cl.[5] D06P *3/79, 1/16, 5/00*

U.S. Cl. 8—483 **34 Claims**

1. A process for printing or space dyeing polyolefin fibers to produce discrete dyed and undyed regions comprising the steps of:

providing polyolefin fibers, which polyolefin fibers have limited or no dye sites as part of the polymeric structure;

contacting said polyolefin fibers at intermittent regions with a dye composition comprising a disperse dye and a swelling agent;

applying dry heat to said polyolefin fibers in contact with said dye composition at a temperature at least above about 80° F. less than the melting point of the polyolefin fibers for a time sufficient to effect dispersion of a portion of said disperse dye into said polyolefin fibers;

removing residual dye composition from said polyolefin fibers.

5,358,538

PROCESS FOR PRODUCTION OF BLACK COLORING MATERIAL AND COSMETICS CONTAINING SAID BLACK COLORING MATERIAL AND USE THEREOF

Susumu Shimoyama, Hasuda; Ujo Maeda; Keiko Maeda, both of Kyoto; Yasuko Noda, Atsugi; Kunio Katsoka, Fuji; Eiichi Eto, Numazu; Satoru Shimoyama, and Tasuku Shimoyama, both of Minamisshigara, all of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/00921, § 371 Date Mar. 10, 1992, § 102(e) Date Mar. 10, 1992, PCT Pub. No. WO92/01022, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 10, 1991, Ser. No. 838,305

Claims priority, application Japan, Jul. 11, 1990, 2-183537

Int. Cl.[5] C09B *67/00*

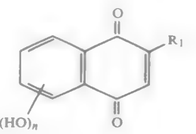
U.S. Cl. 8—597 **17 Claims**

3. A process for staining fiber to impart a black coloring comprising

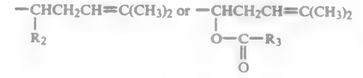
treating a fiber having amino groups,

said fiber comprising sugar,

with a naphthoquinone derivative represented by the general formula:



wherein R_1 represents a hydrogen atom, a hydroxyl group, a halogen atom, or a group represented by the following formula:



wherein R_2 represents a hydrogen atom or a hydroxyl group, R_3 represents an alkyl group, an alkenyl group or a hydroxylalkyl group, and n represents 1 or 2.

5,358,539

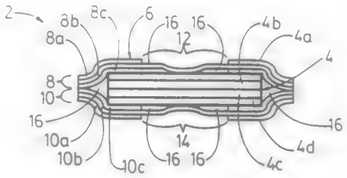
METHOD FOR MAKING A BATTERY ASSEMBLY

Lev M. Dawson, Los Altos, and Scot S. Cheu, San Jose, both of Calif., assignors to Valence Technology, Inc., San Jose, Calif.

Filed Oct. 29, 1992, Ser. No. 968,179

Int. Cl.[5] H01M *6/00*

U.S. Cl. 29—623.2 **6 Claims**



1. A method for making a battery assembly comprising:

providing a laminar battery cell and a protective envelope with a terminal not in electrical contact with the cell;

enclosing the laminar battery cell in said protective envelope, said envelope defining a chamber; and

evacuating and sealing said chamber causing the terminal to contact the battery cell.

5,358,540

EXHAUST CLEANER FOR FILTER HOODS

Chang Tsan-Yun, E402 No. 13, Wu-Chuan 1 Rd., Hsin Chuang City, Taipei Hsien, and Chen-Shing Wu, No. 104, San Jun St., Shulin Chen, Taipei Hsien, both of Taiwan

Filed Dec. 22, 1993, Ser. No. 171,703

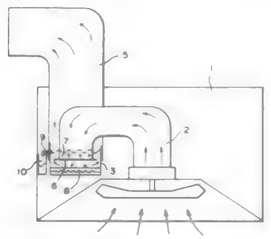
Int. Cl.[5] B01D *47/02*

U.S. Cl. 55—227 **3 Claims**

1. An exhaust cleaner comprising a filter hood having a ducted outlet connected to an exhaust pipe for drawing smoke, grease and odor laden air out of work area; and a water trough installed in said ducted outlet and having a hole connected to a waste grease collector thereof on the outside; wherein:

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said ducted outlet of said filter has an outlet dipped into water in said water trough; said water trough is added



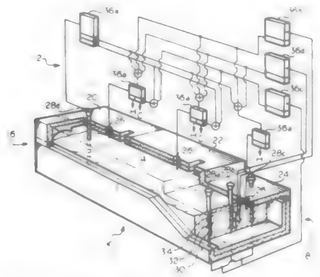
with a chemical detergent and installed with a water heater controlled to heat water in said water trough.

5,358,541

FOREHEARTH TEMPERATURE CONTROL SYSTEM

Glen E. Kindall, Toledo, Ohio, assignor to The BOC Group, Inc., Murray Hill, N.J.

Filed Jan. 8, 1993, Ser. No. 2,250
Int. Cl.[5] C03B *5/16*
U.S. Cl. 65—29.17 **18 Claims**



1. A method of controlling exit glass temperature and thermal homogeneity of glass exiting from a glass forehearth having at least two temperature control zones and having in each temperature control zone at least one temperature regulating means responsive to the difference between a set point signal and an actual value signal for each temperature control zone, the temperature control method comprising adjusting the set point signal of each temperature control zone as a function of the glass temperature entering the glass forehearth and as a function of the glass temperature exiting the glass forehearth.

5,358,542

GLASS CONTAINER FORMING MACHINE INCLUDING NECK RING MOLD COOLING

Robert S. Johnson; Robert D. Hall, Sr., and Roger L. Erb, all of Marion, Ind., assignors to American National Can Company, Chicago, Ill.

Filed Dec. 9, 1992, Ser. No. 987,655
Int. Cl.[5] C03B *9/00, 9/38*
U.S. Cl. 65—265 **10 Claims**

1. A glass molding machine comprising:

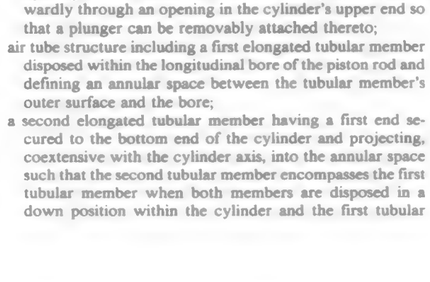
a parison mold means,

a movable hanger means;

a neck ring mold means mounted on said movable hanger means; said hanger means and the neck ring mold means mounted thereon being adapted to move between a first position in operative molding relationship with said parison mold means and a second position outwardly from said parison mold means and out of operative molding relationship with said parison mold means;

a cooling means positioned adjacent said first position of said neck ring mold means; said cooling means being adapted to direct a flow of cooling medium against said neck ring mold means when said neck ring mold means is in said first position whereby said neck ring mold means is subject to cooling medium flow while it is in said first position;

said neck ring mold means having outer surfaces including an extension portion;



said parison mold means being moveable between a closed position surrounding all but said extension portion of said neck ring mold means and an open position not surrounding said outer surfaces of said neck ring mold; and

said cooling means being adapted to direct a flow of cooling medium against said extension portion when said parison mold means is in said closed position and to direct said flow of cooling medium toward all of said outer surfaces of said neck ring mold means including said extension portion when said parison mold means is in said open position.

5,358,543

AIR TUBE STRUCTURE IN A GLASS CONTAINER FORMING MACHINE

Joseph W. Kozora, P.O. Box 559, Valencia, Pa. 16059

Continuation of Ser. No. 521,327, May 9, 1990, abandoned. This application Mar. 26, 1993, Ser. No. 37,512
The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.
Int. Cl.[5] C03B *9/38, 11/12*
U.S. Cl. 65—319 **4 Claims**

1. A plunger cycling mechanism in a glass container forming machine comprising:

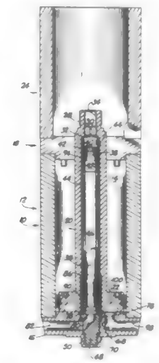
a cylinder defining an inner elongated chamber and having a bottom end cap and an opposite upper end, the bottom end cap further defining a central socket;

a piston slidably disposed within the chamber and having an annular base with an upwardly-projecting piston rod coextensive with the chamber axis;

the piston rod having a first end fixed to the base and a longitudinal bore, the lower end of which is a central opening in the base, and a second end projecting outwardly through an opening in the cylinder's upper end so that a plunger can be removably attached thereto;

air tube structure including a first elongated tubular member disposed within the longitudinal bore of the piston rod and defining an annular space between the tubular member's outer surface and the bore;

a second elongated tubular member having a first end secured to the bottom end of the cylinder and projecting, coextensive with the cylinder axis, into the annular space such that the second tubular member encompasses the first tubular member when both members are disposed in a down position within the cylinder and the first tubular member will telescopically slide within and along the second tubular member when the piston and the piston rod are slidably moved in the cylinder to a maximum up position; and



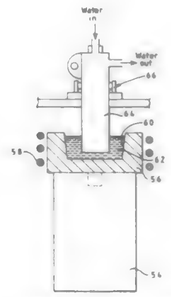
the first end of the second tubular member being secured in the socket for limited radial floating movement therein.

5,358,544

METHOD OF RECOVERING ZINC

Noel A. Warner, Birmingham, United Kingdom, assignor to The University of Birmingham, England

Filed May 10, 1993, Ser. No. 60,031
Claims priority, application United Kingdom, Mar. 18, 1993, 9205560
Int. Cl.[5] C22B *4/00*
U.S. Cl. 75—10.3 **11 Claims**



1. A method of recovering zinc from a zinc sulphide material comprising the steps of circulating molten copper sulphide matte in a closed loop path serially through a feed station, a zinc recovery station and an oxidising station; heating the matte to maintain it in a molten state; introducing zinc sulphide material into the molten matte at the feed station; contacting the surface of the matte with oxygen at the oxidising station; and recovering zinc at the zinc recovery station; wherein (a) the circulating matte is heated resistively during zinc recovery by passing an electric current directly therethrough over at least part of the closed loop path, and wherein (b) the oxygen contacting step is controlled so as to prevent copper metal saturation of the matte in the main matte circuit and thereby prevent separation of a layer of copper at least over that part of the closed loop path which is being resistively heated.

5,358,545

CORROSION RESISTANT COMPOSITION FOR WEAR PRODUCTS

Louis A. Nagro, Columbus, N.C., assignor to Carmet Company, Duncan, S.C.

Continuation of Ser. No. 584,294, Sep. 18, 1990, abandoned. This application May 4, 1993, Ser. No. 57,220
Int. Cl.[5] C22C *29/06, 29/10*
U.S. Cl. 75—236 **21 Claims**

1. A sintered cemented carbide composition comprising by weight from 62% to about 90% titanium carbide and the balance stainless steel matrix.

5,358,546

HIGHLY REACTIVE FORMS OF ZINC AND REAGENTS THEREOF

Reuben D. Rieke, Lincoln, Nebr., assignor to Board of Regents of the University of Nebraska, Lincoln, Nebr.

Filed Feb. 4, 1992, Ser. No. 830,629
Int. Cl.[5] B22F *1/00;* **C21B** *11/10;* **C07F** *3/00*
U.S. Cl. 75—252 **23 Claims**

1. A zerovalent zinc species comprising a mixture of formally zerovalent zinc metal atoms and an alkali metal salt of cyanide.

2. A method for preparation of a zerovalent zinc species comprising contacting a $Zn(CN)_2$ species in a nonhydroxylic solvent with a reducing agent having a reduction potential of about −1.0 volt or more negative relative to a standard calomel electrode.

5,358,547

COBALT-PHOSPHOROUS-BASE WEAR RESISTANT COATING FOR METALLIC SURFACES

Kenneth H. Holko, 7384 Trade St., San Diego, Calif. 92121-2422

Filed Feb. 18, 1993, Ser. No. 19,256
Int. Cl.[5] C22C *19/07;* **B32B** *15/00*
U.S. Cl. 75—254 **9 Claims**



1. A Cobalt-Phosphorous-base wear resistant substance for coating a metallic substrate comprising a first alloy mixed with a second alloy, the first alloy being comprised of about 89%, by weight, Cobalt and about 11%, by weight, Phosphorous, the second alloy comprising a Nickel base alloy having at least 60%, by weight, Nickel, said substance containing about 75–90%, by weight, of said first alloy and about 10–25%, by weight, of said second alloy.

5,358,548

CONDENSATION OF METAL VAPOURS IN A FLUIDIZED BED AND APPARATUS

Roger L. Player, Mount Isa, and Rodney J. Dry, Glen Waverley, both of Australia, assignors to Mount Isa Mines Limited, Brisbane and Commonwealth Scientific and Industrial Research Organisation, Campbell, both of Australia

PCT No. PCT/AU90/00535, § 371 Date Jun. 29, 1991, § 102(e) Date Jun. 29, 1991, PCT Pub. No. WO91/07225, PCT Pub. Date May 30, 1991
PCT Filed Nov. 7, 1990, Ser. No. 855,019
Claims priority, application Australia, Nov. 8, 1989, PJ 7283
Int. Cl.[5] C22B *9/02*
U.S. Cl. 75—381 **40 Claims**

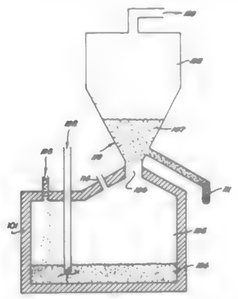
1. A method of recovery of elemental metal from a gas

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stream containing the metal as a vapor, said method comprising:

(a) bringing the stream into direct contact with a fluidized bed of solid particles, the bed having a particulate loading of greater than 10 Kg/m^3;

(b) controlling the fluidized bed so as to include an inventory of particles having a combined mass, specific heat and



temperature such as to rapidly reduce the temperature of the vapor in heat exchange relationship with the bed to below the condensation temperature of the metal, thereby condensing the metal vapor as elemental metal; and

(c) controlling the oxygen potential of the stream to be brought into contact with the bed so as to maximize the recovery of the vapor as elemental metal.

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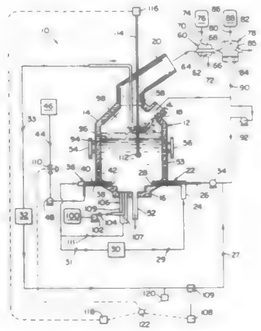
METHOD OF INDIRECT CHEMICAL REDUCTION OF METALS IN WASTE

Christopher J. Nagel, Wayland, Mass., and Robert D. Bach, Gross Pointe, Mich., assignors to Molten Metal Technology, Inc., Waltham, Mass.

Continuation-in-part of Ser. No. 879,978, May 5, 1992, Pat. No. 5,324,341. This application Mar. 19, 1993, Ser. No. 33,846

Int. Cl.[5] C22B *60/00*

U.S. Cl. 75—414 **35 Claims**



1. A method for indirect chemical reduction of a component of a waste, comprising the steps of:

a) directing the waste, containing the component, into a molten metal bath, the molten metal bath including a metal-containing first reducing agent which, under the operating conditions of the molten metal bath, chemically reduces said component of the waste to form a dissolved metal-containing intermediate; and thereafter

b) exposing the metal of the metal-containing intermediate to a second reducing agent in the molten metal bath, the second reducing agent, under the operating conditions of the bath, chemically reducing said metal at a rate, relative to the rate at which the component of the waste is directed into the molten metal bath, which is sufficient to cause essentially all metal-containing intermediate formed to dissolve in the molten metal bath for subsequent reduction of the metal component of said intermediate, thereby indirectly reducing the component of the waste.

5,358,550

DESULFURIZATION AGENT

W. Neil Roosborough, Bay Village, Ohio, assignor to Roosborough Manufacturing Company, Avon Lake, Ohio

Filed Oct. 26, 1992, Ser. No. 966,805

Int. Cl.[5] C21C *7/02*

U.S. Cl. 75—533 **39 Claims**

1. A method for desulfurizing molten pig-iron which comprises injecting into said molten pig-iron a gas-evolving desulfurization agent, whereby the evolved gas mixes said agent in said pig-iron, said agent being injected beneath the surface of said pig-iron and includes a calcium compound and a gas-forming material comprising a liquid gas-producing compound absorbed in a porous slag-forming agent and at least 50 weight percent magnesium.

5,358,551

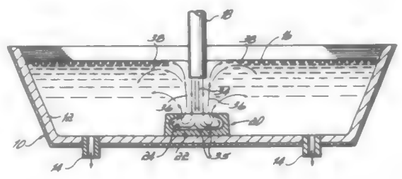
TURBULENCE INHIBITING TUNDISH AND IMPACT PAD AND METHOD OF USING

Karl J. Saylor, Maineville, Ohio, assignor to CCPI, Inc., Blanchester, Ohio

Filed Nov. 16, 1993, Ser. No. 153,662

Int. Cl.[5] C21B *7/14*

U.S. Cl. 75—584 **21 Claims**



21. A method of preventing turbulence and high velocity flow of molten metal in a tundish, the method comprising the steps of:

providing an impact pad within said tundish, said impact pad including an endless outer side wall extending upwardly therefrom and fully enclosing an interior spacing having an upper opening for receiving a stream of said molten metal, said outer wall including an annular inner surface having at least a first portion extending inwardly and upwardly toward said opening,

directing an incoming stream of molten metal vertically downwardly into said tundish and against said impact pad from a ladle outlet disposed above an upper edge of said impact pad to create a bath of molten metal in said tundish,

reversing said stream into a vertically upward and inward direction toward said incoming stream, and

creating generally radially outward flows of said molten metal in said tundish on all sides of said incoming stream such that said flows are each directed away from said incoming stream toward the surface of said bath of molten metal.

5,358,552

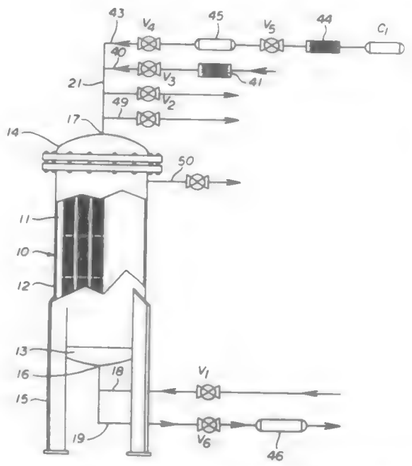
IN SITU FILTER CLEANING SYSTEM FOR GAS STREAMS

Jeffrey M. Seibert, and Nelson Sobel, both of Cortland, Lawrence P. Wilber, Holbrook, all of N.Y., assignors to Pall Corporation, East Hills, N.Y.

Filed Jul. 30, 1992, Ser. No. 922,321

Int. Cl.[5] B01D *46/04*

U.S. Cl. 95—281 **33 Claims**



1. A method for cleaning a gas filtration system, the filtration system having a holding vessel containing a gas filter for clarifying an influent gas stream passing through the gas filter in one direction, the cleaning method comprising:

terminating the flow of influent gas into the holding vessel;

introducing a backwash liquid into the holding vessel;

pressurizing the holding vessel with a pressurized gas after the liquid is introduced into the holding vessel; and

expanding the pressurized gas to pass the backwash liquid through the gas filter in the opposite direction of the influent gas for cleaning the gas filter.

5,358,553

MEMBRANE AND SEPARATION PROCESS

Mitri S. Najjar; Tansukhlal G. Dorawala, both of Wappingers Falls, and Uygar Koturk, Poughkeepsie, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 5, 1991, Ser. No. 726,434

Int. Cl.[5] B01D *53/22, 69/04, 71/02;* **C25D** *13/00*

U.S. Cl. 96—11 **15 Claims**

1. The method which comprises

maintaining at 500° C.–1300° C. a molten salt bath containing a halide of an alkali metal or an alkaline earth metal;

maintaining in said molten salt bath a porous graphite cathode and an anode and a source of Group VIII noble metal;

passing a direct current through said cathode, said bath, and said anode at cathode current density of 0.1–4.0 asd thereby depositing on said cathode a thin, dense membrane layer of Group VIII noble metal; and

recovering said cathode bearing a thin, dense membrane layer of Group VIII noble metal.

13. A separating structure, charactertized by its ability to separate hydrogen from mixtures thereof with hydrocarbons, which comprises a porous graphite body bearing on a surface thereof a thin dense electrodeposited membrane of a Group VIII noble metal prepared by the method which comprises

maintaining at 500° C.–1300° C. a molten salt bath containing a halide of an alkali metal or an alkaline earth metal;

maintaining in said molten salt bath a porous graphite cathode and an anode and a source of Group VIII noble metal;

passing a direct current through said cathode, said bath, and said anode at cathode current density of 0.1–4.0 asd thereby depositing on said cathode a thin, dense membrane of layer of Group VIII noble metal; and

recovering said cathode bearing a thin, dense electrodeposited membrane layer of Group VIII noble metal.

5,358,554

LIQUID COMPOSITION FOR IMPROVING STRENGTH AND WATER REPELLENCY OF CAST CELLULOSIC FIBER PRODUCTS

Kevin M. Seymour, Toronto, and Desmond G. Seymour, Victoria, both of Canada, assignors to 753541 Ontario Inc., Don Mills, Canada

Continuation-in-part of Ser. No. 52,921, Apr. 27, 1993, abandoned. This application Jan. 12, 1994, Ser. No. 180,278

Int. Cl.[5] C04B *12/04*

U.S. Cl. 106—2 **24 Claims**

1. A liquid composition comprising a dispersion of finely divided paraffin wax in an aqueous solution of alkali metal silicate wherein the weight ratio of said silicate to said wax is from about 3:1 to about 850:1, and the concentration of silicate plus water, based on the total weight of the composition is about 60% to about 99.9%.

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5,358,555

INK FOR AN INK JET PRINTER

Massimo Argentero, Montanaro, and Anna Maria Soudaz, Ivrea, both of Italy, assignors to Ing. C. Olivetti & C. S.p.A., Ivrea, Italy

Filed Mar. 30, 1993, Ser. No. 40,252
Claims priority, application Italy, Mar. 31, 1992, TO 92A000289
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—20 R 5 Claims

1. A pigmented ink for ink jet printers comprising a microdisperse three-phase suspension composed of a continuous liquid phase, a discontinuous liquid phase, and a solid phase dispersed in the discontinuous phase, said continuous liquid phase being composed of water or of mixtures of water and water-soluble organic solvents selected from the group consisting of glycols, thioglycols, glycol ethers, polyvinylpyrrolidone and N-methylpyrrolidone, said discontinuous liquid phase being composed of natural oils, paraffin oils, naphthenic oils, synthetic or siloxane oils, said continuous and discontinuous liquid phases being mixed as an emulsion with emulsifiers selected from the group consisting of triethanolamine oleate and sodium dodecylsulphate and with coemulsifiers selected from the group consisting of alkyl phenol ethoxylates, amines, alcohol and fatty acid ethoxylates, esters and ethoxylates esters of sorbitol, wherein said emulsion contains a quantity of water in a ratio of water/emulsion of between 3:1 and 10:1 by weight and said discontinuous phase is present in an amount of from 2% to 30% by weight of the ink.

5,358,556

MEMBRANES HAVING SELECTIVE PERMEABILITY

Richard B. Kaner, Beverly Hills; Mark R. Anderson, Los Angeles; Howard Reiss, Encino, all of Calif., and Benjamin R. Mattes, Santa Fe, N. Mex., assignors to The Regents of the University of California, Oakland, Calif.

Filed Feb. 25, 1993, Ser. No. 988,935
Int. Cl.[5] B01D *53/22*
U.S. Cl. 95—45 16 Claims

1. A method for separating a component from a mixture comprising same, which method comprises:

bringing said mixture into contact with a membrane at a first side thereof, said membrane having selective permeability and comprising a layer of at least one fully dense dopable polymer, wherein said layer has an average pore size distribution of less than about 20 Angstroms in diameter and a density as formed of at least 90% of theoretical density, said layer being characterized by a network of interconnected porosity; and

recovering a product enriched in said component at a second, opposite side thereof.

5,358,557

WATER MANAGEMENT DEVICE FOR GAS CHROMATOGRAPHY SAMPLE CONCENTRATION

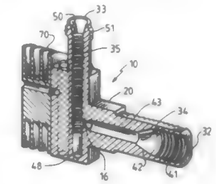
Kenneth K. Jiang, and Bernie B. Bernard, both of College Station, Tex., assignors to O.I. Corporation, College Station, Tex.

Division of Ser. No. 848,395, Mar. 9, 1992, Pat. No. 5,250,093. This application May 14, 1993, Ser. No. 61,986
Int. Cl.[5] B01D *15/08*
U.S. Cl. 95—82 31 Claims

1. A method for removal of water from analytes being purged from a sparge vessel to a trap and desorbed from the trap to a gas chromatograph, comprising the steps of:

(a) purging the analytes from the sparge vessel and passing the purged analytes through a passage connecting the sparge vessel to the trap, the passage being at a first temperature higher than the sparge vessel;

(b) desorbing the analytes from the trap and passing the desorbed analytes through the passage from the trap to the gas chromatograph, while cooling the passage with a fan to a second temperature lower than in step (a) but not lower than ambient room temperature;



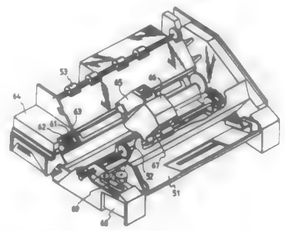
(c) heating the passage to a temperature sufficient to expel water vapor from the passage through a vent.

5,358,558

INK-JET TEXTILE PRINTING INK AND INK-JET TEXTILE PRINTING PROCESS

Tomoya Yamamoto; Shoji Koike, both of Yokohama; Koromo Shirota, Inagi, and Shinichi Satoh, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 948,492, Sep. 22, 1992, Pat. No. 5,250,121. This application Jul. 7, 1993, Ser. No. 87,066
Claims priority, application Japan, Sep. 26, 1991, 3-247637; Sep. 26, 1991, 3-247638; Sep. 26, 1991, 3-247639; Sep. 26, 1991, 3-247640; Sep. 26, 1991, 3-247641; Sep. 26, 1991, 3-247642; Nov. 13, 1991, 3-297290; Nov. 13, 1991, 3-297291; Nov. 13, 1991, 3-297292
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—22 R 26 Claims



21. An ink-set containing at least two ink compositions selected from the following ink compositions for a color ink-jet printing method, said ink-set comprising:

a first component ink composition comprising from 5% to 30% by weight of a reactive dye having at least one of a monochlorotriazine group and a vinyl sulfone group, and a water-based liquid medium, wherein said liquid medium comprises from 1% to 50% by weight of thiodiglycol and from 2% to 45% by weight of at least one organic solvent selected from a di-, tri- or tetramer of oxyethylene, a di-, tri- or tetramer or oxypropylene, and a mono- or di-C_1–C_4-alkyl ether of any of these di-, tri- or tetramers, and wherein said dye comprises at least one dye selected from the group consisting of C.I. Reactive Yellow 2, 15, 37, 42, 76 and 95;

a second component ink composition comprising from 5% to 30% by weight of a reactive dye having at least one of a monochlorotriazine group and a vinyl sulfone group, and a water-based liquid medium, wherein said liquid medium comprises from 1% to 50% by wight of thiodiglycol and from 2% to 45% by weight of at least one organic solvent selected from a di-, tri- or tetramer of oxyethylene, a di-, tri- or tetramer of oxypropylene, and a mono- or di-C_1–C_4-alkyl ether of any of these di-, tri- or tetramers, and wherein said dye comprises at least one dye

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selected from the group consisting of C.I. Reactive Red 24, 31, 45, 218 and 226; and

a third component ink composition comprising from 5% to 30% by weight of a reactive dye having at least one of a monochlorotriazine group and a vinyl sulfone group, and a water-based liquid medium, wherein said liquid medium comprises from 1% to 50% by weight of thiodiglycol and from 2% to 45% by weight of at least one organic solvent selected from a di-, tri- or tetramer of oxyethylene, a di-, tri- or tetramer of oxypropylene, and a mono- or di-C_1–C_4-alkyl ether of any of these di-, tri- or tetramers, and wherein said dye comprises at least one dye selected from the group consisting of C.I. Reactive Blue 15, 21, 72 and 77.

5,358,559

STARCH-HEMICELLULOSE ADHESIVE FOR HIGH SPEED CORRUGATING

Larry E. Fitt, Orland Park; James J. Pienkowski, Oak Forest, and Jack R. Wallace, Bolingbrook, all of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Jan. 28, 1993, Ser. No. 10,247
Int. Cl.[5] C09J *103/02, 105/14*
U.S. Cl. 106—213 18 Claims

1. A starch-based carrier, no-carrier or carrier-no-carrier corrugating adhesive composition wherein the improvement comprises incorporating in the adhesive composition from about 0.1 to about 20.0% hemicellulose by weight based on total starch.

5,358,560

SOLID-FORM ADDITIVE SYSTEMS DISPERSIBLE IN AQUEOUS MEDIA AND METHOD FOR THEIR PREPARATION

Brenda J. Hitch; Mahendra K. Sharma, both of Kingsport, and Leo P. Voetgli, Blountville, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Oct. 4, 1991, Ser. No. 771,908
Int. Cl.[5] C09D *7/14*
U.S. Cl. 106—499 16 Claims

1. A water dispersible particulate composition comprising:

(a) about 5 to 99 wt. % based on the total weight of the dry composition of at least one polymer additive component,

(b) up to about 95 wt. % based on the total weight of the dry composition of at least one tackifying agent that is non-tacky up to about 50° C., wherein said tackifying agent can also be the polymer additive component of (a), and

(c) about 0.2 to 20 wt. % based on the total weight of the dry composition of at least one surfactant, having an HLB of at least 4, wherein the surfactant is intimately coated on particles of (a) and particles of (b), or particles that comprise a mixture of (a) and (b)

wherein said surfactant is essentially only coated on said particles and no more than 10 wt. % of the composition is in the form of permanent aggregate particles larger than 600 microns that are not easily separable in water.

5,358,561

USE OF WATER-SOLUBLE SULPHOALKYL DERIVATIVES OF CELLULOSE IN GYPSUM-AND CEMENT-CONTAINING COMPOUNDS

René Kiesewetter, Soltau-Ahlften; Klaus Szablikowski, Walsrode, and Werner Lange, Visselhövede, all of Fed. Rep. of Germany, assignors to Wolff Walsrode AG, Walsrode, Fed. Rep. of Germany

Filed Jan. 27, 1993, Ser. No. 9,536
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1992, 4203530
Int. Cl.[5] C04B *16/02, 24/38;* C08B *11/193*
U.S. Cl. 106—805 8 Claims

1. A composition comprising

(A) at least one of gypsum and cement, and

(B) cellulose etherified with

(i) sulphoalkyl radicals, and

(ii) at least two radicals selected from the group consisting of hydroxyalkyl, alkoxyhydroxyalkyl, aryl and arylalkyl radicals.

5,358,562

ORGANOCLAY RHEOLOGICAL ADDITIVE FOR CLEAR SYSTEMS

H. Nae, Princeton Junction, N.J.; R. Sivasubramanian, Newtown, Pa.; D. Smith, Cologne, Fed. Rep. of Germany; G. Schütte, Bergish Gladbach, Fed. Rep. of Germany, and M. Skibbe, Leverkusen, Fed. Rep. of Germany, assignors to Rheox, Inc., Hightstown, N.J.

Filed Jul. 8, 1993, Ser. No. 88,059
Int. Cl.[5] C04B *14/04*
U.S. Cl. 106—487 12 Claims

1. A method of controlling rheological properties in a clear system without a decrease in clarity, transparency or gloss comprising mixing into said system an organophillic clay with an average particle size of 44 microns or less.

5,358,563

IN-SITU SILICA CEMENTATION FOR PROFILE CONTROL DURING STEAM INJECTION

Paul Shu, Cranbury, N.J.; Craig H. Phelps, Bakersfield, Calif., and Ricky C. Ng, Dallas, Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 810,649, Dec. 19, 1991, Pat. No. 5,211,232.
This application May 18, 1993, Ser. No. 63,196
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[5] C04B *12/04;* E21B *33/138*
U.S. Cl. 106—600 7 Claims

1. A cement for closing off fluid flow to a permeable zone of a formation obtained by a process comprising the steps of:

a) injecting into said zone an aqueous solution containing a member selected from the group consisting of an alkali metal hydroxide, ammonium hydroxide, or organoammonium hydroxide;

b) injecting next into said zone a spacer volume of a water-miscible organic solvent selected from the group consisting of methanol, ethanol, higher alcohols, ketones, tetrahydrofuran, and dimethyl sulfoxide; and

c) injecting thereafter a water-miscible organic solvent containing an alkylpolysilicate in an amount sufficient to react with a member from step a) so as to form a silica cement in-situ.

5,358,564

IN-SITU CEMENTATION FOR PROFILE CONTROL

Paul Shu, Cranbury, N.J.; Ricky C. Ng, and Craig H. Phelps, both of Dallas, Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 810,586, Dec. 19, 1991, Pat. No. 5,211,231.
This application May 18, 1993, Ser. No. 63,204
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[5] C04B *12/04;* E21B *33/138*
U.S. Cl. 106—600 11 Claims

1. A silica cement sufficient to close a zone of a formation to fluid flow obtained by a process comprising the steps of:

a) injecting into said zone an aqueous solution of a silicate selected from a member of the group consisting of an alkali metal silicate, ammonium silicate and organoammonium silicate;

b) injecting next into said zone a spacer volume of a water-miscible organic solvent selected from the group consisting of methanol, ethanol, higher alcohols, ketones, tetrahydrofuran, and dimethyl sulfoxide; and

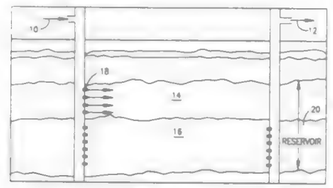
c) injecting thereafter into said zone a water-miscible organic solvent containing an alkylpolysilicate in an amount sufficient to react with the silicate solution of step a) when the solutions of steps a) and b) are contacted with a zone of a formation so as to form a silica cement in-situ.

5,358,565

STEAM INJECTION PROFILE CONTROL AGENT AND PROCESS

Paul Shu, Cranbury, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 810,662, Dec. 19, 1991, Pat. No. 5,257,664, which is a continuation-in-part of Ser. No. 622,588, Dec. 3, 1990, Pat. No. 5,103,907. This application Jul. 6, 1993, Ser. No. 86,297
Int. Cl.[5] C04B *12/04;* E21B *33/13*
U.S. Cl. 106—634 7 Claims



1. A composition for forming a silicate cement sufficient to close a zone of a formation to fluid flow consisting of:

(a) an aqueous solution of a silicate selected from a member of the group consisting of alkali metal silicate, ammonium silicate and organoammonium silicate which is contained in said solution in an amount of from about 10 to about 60 wt %;

(b) a spacer volume of a water-miscible organic solvent selected from the group consisting of methanol, ethanol, higher alcohols, glycols, ketones, tetrahydrofuran and dimethyl sulfoxide; and

(c) a water-miscible organic solvent containing an alkylpolysilicate in an amount of about 10 to about 100 wt % and a member selected from the group consisting of an inorganic salt or chelated calcium in an amount of from about 10 to about 40 wt % sufficient to react with said organoammonium silicate, alkali metal or ammonium silicate so as to form a permeability retentive silicate cement within a zone of a formation so as to close said zone to fluid flow.

5,358,566

CEMENT DISPERSING AGENT

Yoshio Tanaka, Komae; Minoru Yaguchi, and Teruhiko Yamamoto, both of Chigasaki, all of Japan, assignors to Sandoz Ltd., Basel, Switzerland

Filed Nov. 5, 1990, Ser. No. 609,288
Claims priority, application Japan, Nov. 6, 1989, 1-288170
Int. Cl.[5] C04B *24/02;* C08F *20/00*
U.S. Cl. 106—823 9 Claims

1. An aqueous solution, for use as a cement dispersing agent, of a polymer salt, which is formed by reacting 1 part by weight of a polycarboxylic acid with 0.001 to 10 parts by weight of a nitrogenous acrylic polymer.

5,358,567

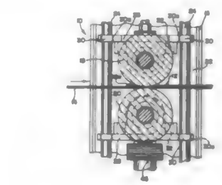
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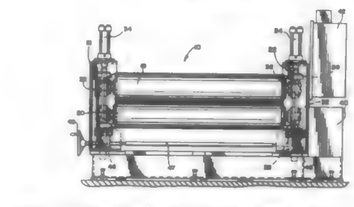
Gary A. Wagner, Schererville, Ind., and James S. Ruscyk, Palos Heights, Ill., assignors to Hadady Corporation, Lansing, Ill.

Filed Oct. 15, 1992, Ser. No. 961,422
Int. Cl.[5] B05C *11/02*
U.S. Cl. 118—114 4 Claims

1. A coil mill roll stand comprising: first and second cylindrical shaped roll means adapted to provide a uniform thickness layer of lubricant across a surface of a strip of sheet steel material passing therebetween;

first and second support members spaced apart, each of said support members adapted for rotatably securing an end of each of said first and second rolls extending therebetween to maintain said rolls in parallel confronting relationship; each of said first and second support members including first and second parallel guide rods having first and second carriers extending therebetween, said carriers each having first and second holes therein receiving each of said respective first and second guide rods therethrough in slideable engagement therewith, said first and second holes each including a bushing therein in slideable engagement therewith, the first and second carriers on said first support member being spaced apart from and independently movable relative to the first and second carriers on said second support member, a first and second bearings mounted on each of said respective first and second carriers, said first and second bearings each rotatably securing a respective end of each of said first and second rolls, means for removably attaching said first and second bearings to said respective first and second carriers whereby said bearings and associated rolls may be attached or detached without removal of said carrier from said first and second guide rods and first and second means associated with each of said first and second carriers respectively for moving each of said respective first and second carriers along each of their respective first and second guide rods exactly relative to each other to move each of said respective first and second rolls exactly relative to each other.





5,358,568

SPRAYING APPARATUS

Tadashi Okano; Jun Nishimura; Hajime Nomura; Takehiro Yoshida, all of Tokyo, and Masahiko Jotani, Saitama, all of Japan, assignors to Shimizu Corporation and Nichias Corporation, both of Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 18,741
Claims priority, application Japan, Feb. 26, 1992, 4-076080
Int. Cl.[5] B05B *13/04*
U.S. Cl. 118—323 6 Claims

1. A spraying apparatus comprising:

a carriage movable in a Y-axis direction;

a rising and lowering platform supported on said carriage for movement relative thereto in a Z-axis direction;

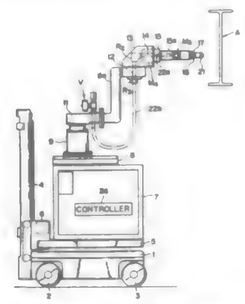
a manipulator which has a plurality of articulations and is supported on said platform;

a spraying nozzle member disposed on a terminal side articulation of said manipulator;

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means for supplying material to be sprayed to said nozzle member, including a first piping member disposed in an interior of one of said articulations, and an external second piping member communicating with said first piping member;

a sensor for detecting a distance between said nozzle member and a body on which the material should be sprayed,



said sensor being supported on one of said nozzle member and said manipulator; and

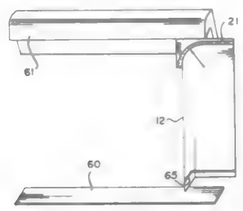
control means for controlling a position of said nozzle member in response to a detection signal from said sensor so that said manipulator is positioned in the Y-axis direction and said nozzle is moved in an X-axis direction to carry out spraying while maintaining the nozzle member at a substantially constant distance from a surface of said body.

5,358,569

CURTAIN COATING METHOD AND APPARATUS

James E. Conroy, Hamlin, and Kenneth J. Ruschak, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 18, 1992, Ser. No. 993,479
Int. Cl.[5] B05B *13/02;* **B05C** *5/00*
U.S. Cl. 118—324 **5 Claims**



1. An apparatus for curtain coating a support by depositing one or more coating liquids onto a moving support comprising:

conveyor means including a coating roll for moving said support along a path through a coating zone;

hopper means for forming one or more flowing layers of coating liquids to form a composite free falling curtain which extends transversely of said path and impinges on said moving support;

edge guide means spaced a distance apart for laterally guiding said falling curtain;

liquid distributing means for issuing a lubricating liquid from said edge guide means to maintain wetting contact with said falling curtain, said liquid means issuing the lubricating liquid in essentially laminar flow, said liquid distributing means comprising a duct having a circular cross-section and a length, the length in cm of the duct being equal to or greater than L wherein L is determined by the relationship:

$$L = 0.07\left[\frac{\rho Q}{\mu}\right]$$

Q is the flow rate through the duct in cm^3/sec.

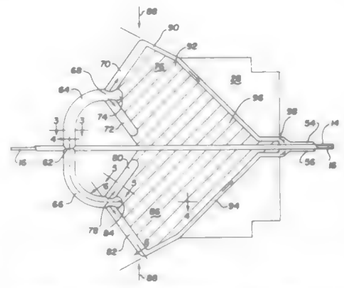
ρ is the density of the lubricating liquid in gm/cc, and μ is the viscosity of the lubricating liquid in gm/cm sec, wherein the duct is curved and has minimum radius of curvature of from about 0.6 cm. to about 1.2 cm.

5,358,570

CROSSHEAD APPARATUS FOR JACKETING WIRE CORE

William W. Drawbaugh, 10680 E. Lake Highland Blvd., Dallas, Tex. 75218

Continuation of Ser. No. 96,026, Jul. 22, 1993, abandoned. This application Mar. 16, 1994, Ser. No. 210,064
Int. Cl.[5] B05L *9/00*
U.S. Cl. 118—404 **11 Claims**



1. Crosshead apparatus for dispensing a tubular section of polymeric plastic composition comprising in combination;

a) a generally annular body having an inlet at which to receive a continuous flow of at least partially molten polymer plastic composition of which said section is to be formed, said body having an internal bore extending axially therethrough;

b) a manifold having a bore and disposed coaxially within the internal bore of said body for at least a partial length of said body;

c) die means disposed coaxially within the internal bore of said body downstream of said manifold and defining a relatively narrow aperture having an inlet and an outlet in flow communication with the bore of said manifold;

d) means defining a flow path between said body and said manifold for conducting flow of the plastic composition received at said body inlet to near the inlet of said die means and including a pair of matching primary flow channels, each effecting an intersection with a tri-directional splitter for diverting the flow to oppositely oriented secondary channels and over a ramped diversion dam, a substantially annular distribution path defined between said manifold and said body and at least a partially frustoconical path downstream from said annular path in flow communication between said annular path and the inlet of said die means for said composition to emerge as a tubular section from the outlet of said die means; and

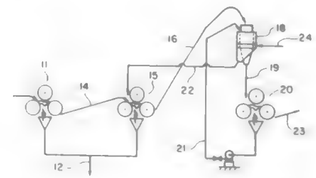
e) temperature controlled heating means operable to maintain the plastic composition in said flow path means in a molten state until reaching at least the aperture inlet of said die means.

5,358,571

ENHANCED SUGAR RECOVERY

Eduardo J. Villavicencio, and Eduardo G. Villavicencio Charpentier, both of Canada #135 Jardines Del Pedregal De, San Angel, Mexico D.F., Mexico

Filed May 27, 1993, Ser. No. 67,591
Int. Cl.[5] C13D *1/02;* **B30B** *9/02, 9/20*
U.S. Cl. 127—2 **12 Claims**



1. An extraction process for removing sugar from cane comprising feeding a prepared sugar cane containing cane fibers to a plurality of extraction mills located in series, macerating the cane fibers in each extraction mill to rupture cells, applying to at least a first extraction mill a first liquid in an amount effective to solubilize sugar from the cane fibers, feeding the cane fibers to a fiber depither along with a second liquid in an amount effective to solubilize sugar, wherein said depither is located between at least two of said extraction mills, depithing said cane fibers, and flowing said depithed cane fibers to at least one further extraction mill.

5,358,572

METHOD FOR CLEANING AN ALDEHYDE FROM SILANE COATED CONTAINER WITH AN ACID SOLUTION

Ming-Haiung Yeh, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed May 27, 1993, Ser. No. 68,020
Int. Cl.[5] B08B *3/08;* **C23G** *1/02*
U.S. Cl. 134—3 **7 Claims**

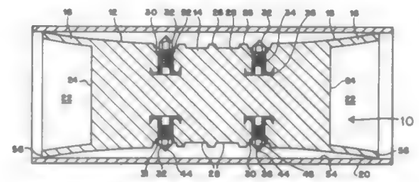
1. A method of cleansing an aldehyde from a silane coated substrate for use in a beverage container, comprising the step of washing said silane coated substrate in an acid, whereby said aldehyde is removed.

5,358,573

METHOD OF CLEANING A PIPE WITH A CYLINDRICAL PIPE PIG HAVING PINS IN THE CENTRAL PORTION

Orlande Sivacoe, #601, 4700-55 Street, Red Deer, Alberta, Canada T4N 2H8

Continuation-in-part of Ser. No. 828,234, Jan. 30, 1992, Pat. No. 5,265,302, which is a continuation-in-part of Ser. No. 674,386, Mar. 25, 1991, Pat. No. 5,150,493. This application May 12, 1993, Ser. No. 61,151
Int. Cl.[5] B08B *9/04*
U.S. Cl. 134—8 **3 Claims**



1. A method of cleaning a pipe contaminated with a scale using a cylindrical pipe pig operated with hydraulic pressure, the pipe pig having a central portion, the method comprising the steps of:

driving the pig through the pipe a first time without pins on the pig while recording the hydraulic pressure to drive the pig;

identifying a section of the pipe that is contaminated with scale by observing and recording locations at which the hydraulic pressure required to drive the pig increases;

identifying the thickness of scale according to the degree of hydraulic pressure required to drive the pig;

sampling the hydraulic fluid to identify the scale in the pipe;

selecting and inserting pins into the central portion of the pig that are selected according to the type and thickness of scale; and

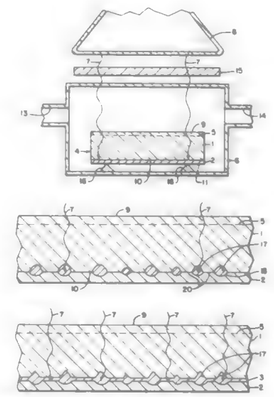
moving the pig backwards and forwards primarily through the section of the pipe that is contaminated with scale until a desired amount of scale is removed.

5,358,574

DRY TEXTURING OF SOLAR CELLS

Bhushan L. Sopori, Denver, Colo., assignor to Midwest Research Institute, Kansas City, Mo.

Filed Nov. 22, 1993, Ser. No. 155,385
Int. Cl.[5] H01L *25/00*
U.S. Cl. 136—249 **25 Claims**



25. A method of texturing a second surface of a semiconductor device that has a first side and a second side with a metal layer deposited on said second side to create a semiconductor/metal interface and of alloying semiconductor material with metal at said interface, comprising the steps of:

illuminating said first side of said semiconductor with electromagnetic radiation having a wavelength to which the semiconductor material, but not the metal, is substantially transparent and at a first energy level that is sufficient to form local, isolated hot spots having temperatures high enough to form "pits" in said second surface by melting the semiconductor material and the metal at said hot spots and maintaining said first energy level for a sufficient time to allow said "pits" to form;

increasing the energy of said illumination to a second energy level that is sufficient to quickly melt semiconductor material and metal over substantially the entire interface area including between said "pits," and maintaining said second energy level for a sufficient time to allow said melted semiconductor material and metal to form a then alloy layer between said semiconductor and said metal layer; and

decreasing and removing the energy level of said illumina-

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tion over a time that allows epitaxial crystal growth of said alloy layer.

5,358,575

METHOD FOR BLACKENING NI-FE SHADOW MASK AND MESH BELT TYPE BLACKENING LEHR FOR CARRYING OUT THE METHOD

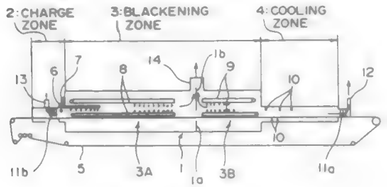
Hiroshige Nakagawa, Sakurai; Shigeo Yamamoto, Tondabayashi; Motokazu Ikeuchi, Nara, and Yoshinori Yoshimura, Toyonaka, all of Japan, assignors to Chugai Ro Company, Limited, Osaka, Japan

Filed Mar. 20, 1992, Ser. No. 854,856

Claims priority, application Japan, Apr. 3, 1991, 3-070824

Int. Cl.[5] C23C *8/10*; H01J *9/14*

U.S. Cl. 148—287 1 Claim



1. A method for blackening a Ni-Fe shadow mask comprising the steps of:

first, forming an oxide film consisting essentially of Fe_2O_3, Fe_3O_4, and FeO on the surface of said shadow mask, in an atmosphere of a mixture of air and a humidification exothermic gas at a temperature of 600° to 700° C. for 10 to 20 minutes; and

second, reducing said Fe_2O_3 in an atmosphere of humidification exothermic type gas at a temperature of 600° to 700° C. for 10 to 20 minutes to form an oxide film of mainly Fe_3O_4 on the surface of said shadow mask.

5,358,576

AMORPHOUS MATERIALS WITH IMPROVED PROPERTIES

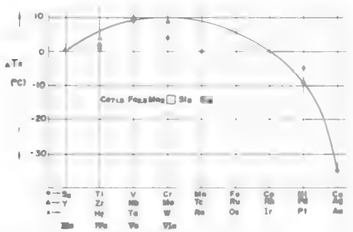
Harufumi Senno, Yamatokoriyama; Hiroshi Sakakima, Hirakata; Masatsugu Yamaguchi, Kumamoto, and Eiichi Hirota, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 6, 1980, Ser. No. 157,112

Claims priority, application Japan, Jun. 9, 1979, 54-72589; Dec. 5, 1979, 54-158653; Jan. 11, 1980, 55-2417

Int. Cl.[5] C22C *19/07*; H01F *1/047*

U.S. Cl. 148—304 2 Claims



1. An amorphous material of the formula $Co_{100-x-y-(v+w)}Fe_yMn_xSi_vB_w$, where

$0.5 \leqq x \leqq 10$,

$0 < y \leqq 5$,

$0 \leqq v \leqq 15$,

$5 \leqq w \leqq 25$, and

$5 \leqq v+w \leqq 30$.

5,358,577

HIGH STRENGTH AND HIGH TOUGHNESS MARTENSITIC STAINLESS STEEL AND METHOD OF MANUFACTURING THE SAME

Toshihiro Uehara, Yasugi; Rikizo Watanabe, Mooka, and Nobuhito Nakama, Kawanishi, all of Japan, assignors to Hitachi Metals, Ltd.; The Society of Japanese Aerospace Companies, Inc. and Sumitomo Precision Products Co., Ltd., Tokyo, Japan

Division of Ser. No. 893,888, Jun. 4, 1992, Pat. No. 5,288,347, which is a continuation of Ser. No. 704,927, May 23, 1991, abandoned. This application Jul. 20, 1993, Ser. No. 93,860

Claims priority, application Japan, May 28, 1990, 2-137560; Feb. 8, 1991, 3-039147

Int. Cl.[5] C22C *38/52*

U.S. Cl. 148—325 8 Claims

4. A high strength, high toughness martensitic stainless steel consisting, by weight, of C from 0.17% to 0.23%, Si more than 0.25% but not more than 0.8%, Mn not more than 0.1%, Ni 0.05% to 1.5%, Cr from 12% to 13%, Mo from 1.5% to 2.5%, Co from 13.0% to 16.5%, V from 0.1% to 0.5%, and the balance of Fe and incidental impurities, said martensitic stainless steel having a tensile strength not less than 175 kgf/mm^2 and a fracture toughness not less than 250 $kgf/mm^2 \cdot \sqrt{mm}$ at room temperature.

5,358,578

PROCESS FOR THE PRODUCTION OF PRESTRESSED STEELS AND ITS NAMED PRODUCT

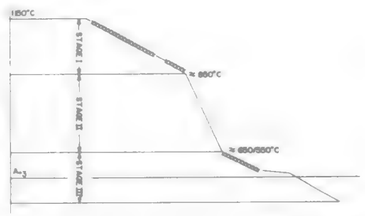
Max W. Tischhauser, Weinmanngasse 26, Kuesnacht, Switzerland

Continuation of Ser. No. 809,228, Dec. 17, 1991, abandoned, which is a continuation of Ser. No. 674,413, Mar. 22, 1991, abandoned, which is a continuation of Ser. No. 236,693, Aug. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 887,174, Jun. 30, 1986, abandoned. This application Jan. 12, 1993, Ser. No. 4,486

Claims priority, application Switzerland, Oct. 30, 1984, 5210/84-3; Fed. Rep. of Germany, Oct. 8, 1985, 3535886

Int. Cl.[5] C21D *8/00*

U.S. Cl. 148—328 22 Claims



1. A process for the production of low carbon, high strength, weldable corrosion-resistant, brittle-fracture-resistant prestressing steel comprising the steps of heating a steel composition containing:

0.04 to 0.20	percent by weight	carbon
1.20 to 1.70	percent by weight	manganese
0.30 to 0.50	percent by weight	silicon
0.035 to 0.06	percent by weight	niobium
0.035 to 0.05	percent by weight	vanadium
0.30 to 0.50	percent by weight	molybdenum
0.30 to 2.00	percent by weight	copper
0.04 to 0.06	percent by weight	aluminum
0.015 to 0.02	percent by weight	nitrogen

-continued

≦0.030	percent by weight	phosphorus
≦0.020	percent by weight	sulphur

the balance being iron and incidental impurities to melt the composition, thereafter cooling said melted composition to form a solidified ladle-composition and thermomechanically treating said solidified ladle-composition by reheating at a temperature below about 1150° C. in a pusher-type furnace, and then rolling said reheated steel into billets of about 120 mm in diameter;

wherein the thermomechanical treatment comprises a stage in which accelerated cooling is effected without rolling to approximately 650° to 550° C. whereby there is a reduction of the σ-α transformation and a recrystallization delay; and

wherein the thermomechanical treatment comprises another stage in which rolling takes place in a controlled manner with at least one with a high degree of deformation and at a high speed from approximately 650° to 550° C. to a low final rolling temperature just above the Ar_3 limit, followed by a residence time and delayed cooling of approximately 0.25 minutes per mm diameter.

5,358,579

METHOD FOR MANUFACTURING A PANEL SWITCH ATTACHED TO ELECTRONIC APPARATUS

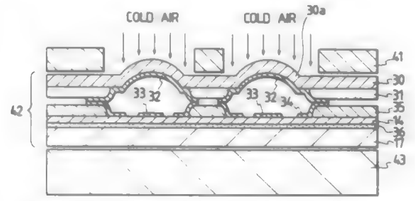
Koji Tanabe, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 29, 1993, Ser. No. 10,692

Claims priority, application Japan, Feb. 7, 1992, 4-22300; Feb. 19, 1992, 4-31673

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—73.1 10 Claims



1. A method for manufacturing a panel switch, comprising the steps of:

providing an upper sheet and printing an upper contacting point on one side of the upper sheet;

forming the upper contacting point into a hemisphere form having its convex surface facing the upper sheet;

arranging a lower contacting point on one side of a lower sheet;

arranging an insulating layer on the one side of the lower sheet to surround the lower contacting point;

preparing a first adhesive which does not have an adhesive quality at a room temperature but has the adhesive quality at a moderate temperature higher than the room temperature, the moderate temperature being lower than melting points of the upper sheet and the lower sheet;

preparing a second adhesive which does not have an adhesive quality at the room temperature but has the adhesive quality at the moderate temperature;

arranging a first adhesive layer formed of the first adhesive between the one side of the upper sheet and the insulating layer, the first contacting point being surrounded by the first adhesive layer and not covered by the first adhesive layer;

arranging a second adhesive layer formed of the second adhesive between another side of the lower sheet and a reinforcing plate positioned under the another side of the lower sheet;

assembling the reinforcing plate, the lower sheet and the upper sheet in that order for the upper contacting point to face the lower contacting point, the upper and lower contacting points, the insulating layer, and the first adhesive layer being positioned between the upper and lower sheets, and the second adhesive layer being positioned between the lower sheet and the reinforcing plate;

pressing the reinforcing plate, the lower sheet and the upper sheet to one another; and

simultaneously heating both the first adhesive layer and the second adhesive layer to the moderate temperature to adhere the upper sheet to the lower sheet and to adhere the lower sheet to the reinforcing plate, a panel switch in which the upper contacting point comes into contact with the lower contacting point when the upper contacting point is pushed toward the lower contacting point being manufactured.

5,358,580

PROCESS FOR MANUFACTURING HOSE HAVING REINFORCEMENT INCORPORATED THEREIN AND APPARATUS THEREFOR

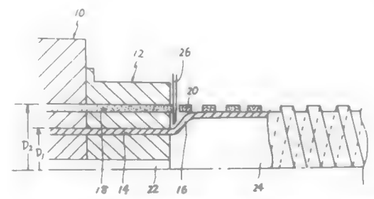
Masashi Miyamura; Isamu Nishida, and Yoshihiro Nakagawa, all of Toyama, Japan, assignors to Toyox Co., Ltd., Japan

Filed Jul. 12, 1993, Ser. No. 90,499

Claims priority, application Japan, Feb. 2, 1993, 5-037445

Int. Cl.[5] B29C *47/06*

U.S. Cl. 156—143 11 Claims



1. A process for manufacturing a hose having a reinforcement incorporated therein, comprising the steps of:

co-extruding an inner tube of a flexible synthetic resin material and a reinforcement of a rigid synthetic resin material which is coaxial with the inner tube and has a diameter larger than the inner tube;

cutting the reinforcement into a spiral shape which has turns spaced at predetermined intervals from each other concurrent with the co-extrusion; and

expanding the inner tube to contact an outer periphery of the inner tube with an inside of the reinforcement, resulting in carrying out adhesion between the outer periphery of the inner tube and the inside of the spirally cut reinforcement.

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5,358,581

METHOD OF AND APPARATUS FOR APPLYING FLEXIBLE EXTENSIONS TO SECTIONS OF PHOTOGRAPHIC ROLL FILMS

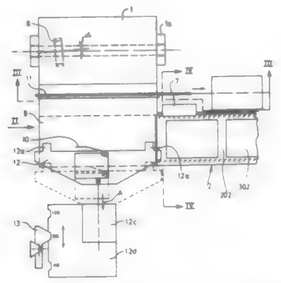
Gerhard Benker, Pullach; Josef Gruber, Munich; Peter Lermann, Weyarn; Reinhard Nicko; Bernd Payrhammer, both of Munich, and Manfred Schlechte, Neuried, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 415,175, Sep. 29, 1989, abandoned. This application Jul. 17, 1992, Ser. No. 918,214

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1988, 3833730

Int. Cl.[5] B65H *69/02*

U.S. Cl. 156—157 **7 Claims**



1. For use in a photographic copying machine wherein spaced apart transporting means advance a photographic film past a copying window, a method of extending the length of a section of photographic film which otherwise would not be properly engaged by said transporting means, said sections of photographic films having a series of neighboring frames with frame lines of predetermined width between neighboring frames, comprising the steps of placing a strip-shaped extension of flexible material which is coated with hotmelt in line with a film section so that one end of the extension overlaps with one end of the film section a distance at most matching said predetermined width; and heat sealing the overlapping ends of the extension and film section to each other by applying heat to said overlapping ends in an area no wider than said predetermined width while maintaining the remaining area of said extension substantially non-adhesive.

5,358,582

ID CARD AND METHOD OF ITS PRODUCTION

Kunihiro Koshizuka; Shigehiro Kitamura; Atsushi Nakajima, and Tomonori Kawamura, all of, Hino, Japan, assignors to Konica Corporation, Japan

Filed Apr. 21, 1992, Ser. No. 871,963

Claims priority, application Japan, Apr. 26, 1991, 3-97349

Int. Cl.[5] B44C *1/16*; B32B *7/00*; B42D *15/00*

U.S. Cl. 156—235 **16 Claims**

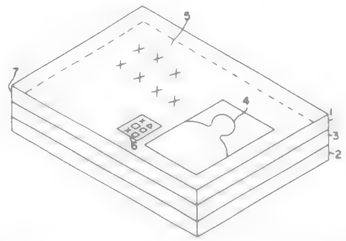
1. A method for the production of an ID card comprising

(a) forming an image-receiving layer on a support,

(b) forming a gradation image with a heat diffusible dye on said image-receiving layer,

(c) forming a character information bearing image with said heat diffusible dye or a hot melt ink on said image-receiving layer where said gradation image is absent,

(d) preprinting a transparent sheet with a preprinted image common to a plurality of the ID cards to be produced,



(e) applying said transparent sheet to said image receiving layer, and

(f) hot stamping an entire surface of said transparent sheet.

5,358,583

APPARATUS AND METHOD FOR SHAPING FIBER REINFORCED RESIN MATRIX MATERIALS AND PRODUCT THEREOF

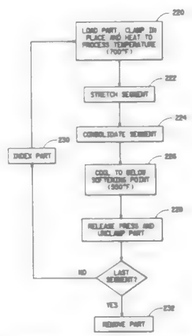
Edward Hatchadoorian, and Steven J. Medwin, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 971,151, Nov. 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 710,803, Jun. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 603,280, Oct. 25, 1990, Pat. No. 5,206,036, which is a division of Ser. No. 463,898, Jan. 9, 1990, Pat. No. 5,077,110, which is a continuation-in-part of Ser. No. 347,054, May 4, 1989, Pat. No. 4,927,581, which is a continuation-in-part of Ser. No. 259,837, Oct. 19, 1988, abandoned. This application Oct. 13, 1993, Ser. No. 135,241

The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.

Int. Cl.[5] B29C *55/00*

U.S. Cl. 264—257 **2 Claims**



1. A method of shaping a rigid elongated composite structure of a polyetherketoneketone resin matrix reinforced with fibers into a predefined path comprising:

a) defining said path as a plurality of component lengths;

b) clamping said structure adjacent each end of a component length, stretching said component length from one of its ends by applying a force to said one end along its longitudinal axis away from said one end to shape the component length into the component length defined by said path;

c) heating said structure intermediate its ends in a forming tool 9 inches in length, said forming tool being heated along the length of the forming tool according to the temperature profile shown in FIG. 35 while stretching the structure according to step (b);

d) holding said component length of the structure in place to consolidate said component length;

e) cooling the structure;

f) unclamping said component length;

g) indexing said structure to the next component length; and

h) repeating steps (a) through (g) on the next component length.

5,358,584

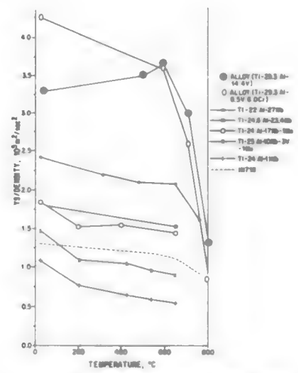
HIGH INTERMETALLIC TI-AL-V-CR ALLOYS COMBINING HIGH TEMPERATURE STRENGTH WITH EXCELLENT ROOM TEMPERATURE DUCTILITY

Leonid A. Bendersky, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Jul. 20, 1993, Ser. No. 93,645

Int. Cl.[5] C22C *14/00*

U.S. Cl. 148—421 **9 Claims**



1. A Ti—Al—V—Cr intermetallic alloy having an atomic percent composition of 25–35 Al, 10–15 (V+Cr), the balance being Ti.

5,358,585

PROCESS OF PRODUCING SILVER-OR SILVER-COPPER ALLOY-METAL OXIDE COMPOSITE MATERIAL

Akira Shibata, 298-45, Takada-cho, Kohoku-ku, Yokohama, Kanagawa, Japan, assignor to Akira Shibata, Yokohama and Sumitomo Metal Mining Co., Ltd, Tokyo, both of Japan

Division of Ser. No. 722,296, Jun. 27, 1991, Pat. No. 5,236,523. This application Mar. 25, 1993, Ser. No. 36,891

Claims priority, application Japan, Jun. 28, 1990, 2-168371

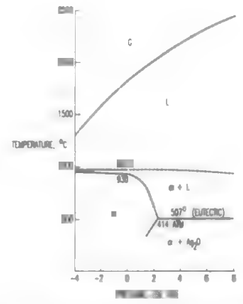
Int. Cl.[5] C21D *9/00*

U.S. Cl. 148—514 **6 Claims**

1. A process for producing a silver-metal oxide composite material comprising the steps of:

(A) raising the partial pressure of oxygen and heating therein a mixture comprising silver, (a) from 0.5 to 25% by weight, in terms of elemental metal, of at least one element selected from the group consisting of Mg, Al, Zr, Ca, Ce, Be, Th, Sr, Ti, Cr, Hf and Si in a metallic and/or oxide state and, optionally, (b) from 0.01 to 5% by weight, in terms of elemental metal, of at least one element selected from the group consisting of Bi, Pb, Cd, Zn, Sn, Sb, Mn, Fe, Ni and Co, in a metallic and/or oxide state to thereby bring the mixture into a state wherein a solid phase and a liquid phase coexist, whereby all of the (a) element in a metallic state and, where present, the (b) element in a metallic state are precipitated as oxides, and

(B) lowering the partial pressure of oxygen and cooling the mixture thus treated;



wherein the oxide of the (a) element and, where present, the oxide of the (b) element are dispersed in the form of fine particles with a particle size of not more than about 0.1 μm uniformly throughout the matrix from the surface to a core thereof.

5,358,586

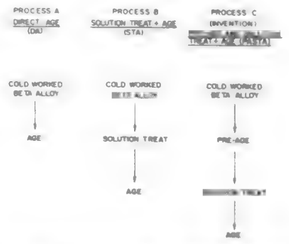
AGING RESPONSE AND UNIFORMITY IN BETA-TITANIUM ALLOYS

Ronald W. Schutz, Canfield, and Stanley R. Seagle, Warren, both of Ohio, assignors to RMI Titanium Company, Niles, Ohio

Division of Ser. No. 806,077, Dec. 11, 1991. This application Dec. 17, 1992, Ser. No. 991,989

Int. Cl.[5] C22C *14/00*

U.S. Cl. 148—671 **6 Claims**



1. A beta-titanium alloy product having high strength, ductility, thermal stability and accelerated but uniform aging response formed by the steps comprising:

(a) cold working a beta-titanium alloy to at least about 5%, said alloy comprising at least 500 ppm Zr and at least 80 ppm Si;

(b) pre-aging said cold worked alloy at a temperature of about 900° F. to about 1300° F. for a period of time in excess of about 5 minutes to obtain a pre-aged alloy;

(c) solution treating said pre-aged alloy at a low temperature and for a sufficient time to achieve a reasonable degree of recrystallization of said pre-agent alloy above the beat transus and to also obtain substantially maximum ductility and substantially minimal non-uniform aging, and thereby produce a solution treated alloy; and

(d) aging said solution treated alloy at a temperature of about 900° F. to about 1200° F. for a period of time of about 6 to about 36 hours, to obtain a pre-aged, solution-treated and

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aged alloy substantially in a state of metallurgical equilibrium.

5,358,587

SIMPLIFIED EMULSION COATING OF CRYSTALLINE EXPLOSIVES IN A TNT MELT

H. William Voigt, Jr., 63 Brooklyn Rd., Stanhope, N.J. 07874

Continuation of Ser. No. 724,075, Jul. 1, 1991, abandoned. This application Oct. 16, 1992, Ser. No. 962,090

Int. Cl.[5] C06B *45/06*

U.S. Cl. 149—18 1 Claim

1. In an explosive composition comprising trinitrotoluene (TNT) and cyclotrimethylenetrinitramine (RDX) or cyclotetramethylenetetranitramine (HMX) crystals, the improvement wherein:

a polyethylene film coating substantially all of the HMX or RDX crystals,

the polyethylene coating having been made from a polyethylene latex, the polyethylene particles of said latex having a particle size of about 0.1 microns and a melting point of about 124 degrees Centigrade.

5,358,588

SEALING METHOD FOR ELECTRIC WIRE CONNECTION

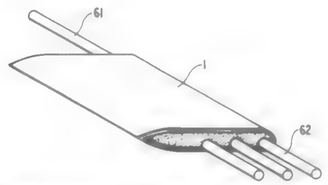
Masaharu Tahara, and Kiyonobu Yoshimura, both of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Division of Ser. No. 701,913, May 17, 1991, Pat. No. 5,246,755. This application Jun. 15, 1993, Ser. No. 76,645

Claims priority, application Japan, May 19, 1990, 2-129498; Jan. 14, 1991, 3-14766

Int. Cl.[5] B32B *31/20*; H01B *13/10*

U.S. Cl. 156—49 4 Claims



1. A sealing method for an electric wire connection, which comprises

providing a tape-form releasable material having sealing material formed thereon at a constant interval,

removing a sealing material for an electric wire connected portion from the tape-form releasable material,

covering an electric wire connected portion comprising a main electric wire and branched electric wires with the sealing material for an electric wire connection portion, said sealing material for an electric wire connected portion comprising a sheet-form base material and a viscous sealing piece comprising a waterproofing compound formed on the sheet-form base material wherein the marginal portions of the base material extended Outwardly from the marginal portion of the viscous sealing piece and the viscous sealing piece is positioned to contact the electric wire connected portion, and

pressing the sealing material to adhere the viscous sealing piece to the surfaces of the electric wires.

5,358,589

LINING OF ORGANISM DEPOSIT-INHIBITING STRUCTURE

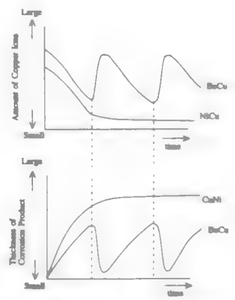
Shunji Inoue, Nagoya, Japan, assignor to NGK Insulators, Ltd., Japan

Filed Mar. 8, 1993, Ser. No. 27,758

Claims priority, application Japan, Apr. 2, 1992, 4-81050; Apr. 2, 1992, 4-81051

Int. Cl.[5] B29C *63/36*

U.S. Cl. 156—294 10 Claims



1. A method of preventing organism deposition on a surface of an object in contact with sea water, comprising the steps of:

forming an insulator layer on said surface; and

bonding a metal gauze comprised of a beryllium-copper alloy to the insulator layer, whereby copper ions are continuously liberated and deposition of marine organisms on said surface is prevented.

5,358,590

METHOD OF MANUFACTURING INDIVIDUAL ELEMENT ARRAYS

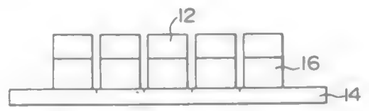
Hideo Yamanaka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 7, 1993, Ser. No. 43,812

Claims priority, application Japan, Apr. 8, 1992, 4-114196

Int. Cl.[5] B32B *31/18, 31/28*

U.S. Cl. 156—247 15 Claims



1. A method of manufacturing a plurality of individual element arrays, comprising the steps of:

forming a wafer comprising a substrate and a plurality of active elements formed on said substrate at an upper surface thereof, indicia used to guide cutting during creation of the individual elements being provided at said upper surface;

bonding a transparent protective tape to all areas of said upper surface of said wafer at which said active elements are exposed to protect said wafer and said active elements from dust created during cutting;

bonding a supporting tape to a lower surface of said wafer to support said wafer;

cutting said transparent protective tape, said wafer and an upper portion of said supporting tape to form said individual element arrays separated from each other, alignment Of said cutting being accomplished by viewing said indicia through said transparent protective layer; and

peeling off said transparent protective tape and supporting tape from said individual element arrays.

5,358,591

METHOD OF AND APPARATUS FOR COVER SHEET REMOVAL FROM LAMINATED BOARDS

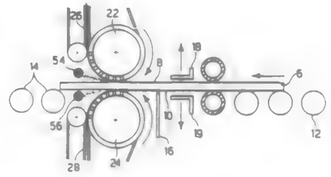
Amedeo Candore, Bodio Lomnago, Italy, assignor to Morton International S.p.A., Mozzate, Italy

Filed Nov. 4, 1993, Ser. No. 147,803

Claims priority, application Italy, Feb. 3, 1993, RM93A 000057

Int. Cl.[5] B32B *31/18*

U.S. Cl. 156—344 13 Claims



1. A method of removing the cover sheet from a dry film laminated on a board comprising the steps of:

(a) moving a knurling device relatively to the board along and in contact with an edge of said dry film while pressing on said knurling device,

(b) at the same time blowing a first stream of air, in following relation to said knurling device, against said edge of said dry film to separate in this area a portion of the cover sheet from the dry film, and

(c) conveying the board to a sucking roll which upon touching the surface of the board starts to rotate whereby the said cover sheet portion, already separated in an area thereof from the dry film, is sucked and peeled from the dry film by the sucking roll and with continued rotation of the sucking roll is removed in its entirety from the dry film,

wherein the dry film laminated board is rectangular in shape,

wherein in step (a) the knurling device is in contact with an edge of said dry film in the first 2–3 mm thereof,

wherein in step (b) blowing a stream of air in following relation to said knurling means, against said edge of said dry film in this area pulls up the cover sheet in the first 20–30 mm, and

wherein in step (c) the sucking action of said sucking roll is reinforced by the injection of a second stream of air by pressing the separated portion of the cover sheet onto the sucking roll, said second steam of air being weaker than said first stream of air.

5,358,592

BAG MAKING MACHINE CONTROL

Yoshiaki Fukuyama, Kawagoe, Japan, assignor to Nippon Flute Co., Ltd., Saitama, Japan

Continuation of Ser. No. 377,581, Jul. 11, 1989, abandoned. This application Nov. 17, 1992, Ser. No. 978,171

Int. Cl.[5] B31B *1/14*

U.S. Cl. 156—361 9 Claims

1. A bag making machine for producing thermoplastic resin film bags comprising:

roller means for intermittently advancing, in a first direction, a flat tubular web of thermoplastic resin film to be formed into a thermoplastic bag;

sealing means positioned downstream from said roller means for applying heat to and thereby providing a transverse seal across the flat web of the thermoplastic resin film, said sealing means comprising,

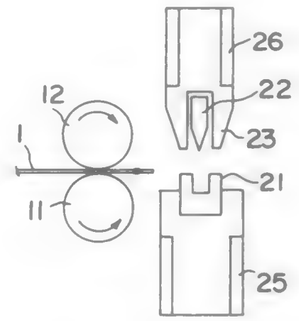
a lower stationary sealing bar having a generally U-shaped configuration in cross-section, and

an upper reciprocating sealing bar having mutually parallel downward extending arms, said upper reciprocating sealing bar dimensioned to cooperate with said lower stationary sealing bar to seal the flat web of thermoplastic resin film;

a heated cutting bar having a sharp edge positioned between said downward extending arms of said upper reciprocating sealing bar which transversely severs the thermoplastic resin film, said heated cutting bar being heated to a higher degree than said sealing means for providing efficient cutting and concomitantly preventing build-up of any carbon by-product from cutting the flat web of thermoplastic resin film;

said roller means being operable for reversing the direction of advancement of the flat web of thermoplastic resin film in a second direction and retracting the flat web of thermoplastic resin film material to rapidly withdraw the material from juxtaposition to said heated cutting bar upon interruption of the bag making procedure;

first drive means for controllably driving said roller means in said first and second directions;



second drive means for transversely driving said sealing means and said heated cutting bar toward and away from the flat web of the thermoplastic resin film;

encoder means for sensing the position of said first drive means and producing a count signal in response thereto;

processing means responsive to said encoder means for controlling the operation of said first and second drive means and controlling said intermittent advancement and retraction of said flat web of thermoplastic resin film;

said processing means producing first, second, and third operating mode signals wherein said third operating mode signal is a stop signal; and

said first drive means operating in said first direction in response to said first operating mode signal and further operating in a second direction opposite to said first direction in response to said second operating mode signal, wherein upon production of said third operating mode signal by said processing means at any time during the bag making procedure, a current bag making cycle is completed and then said second operating mode signal is produced by said processing means whereby the flat web of thermoplastic resin film is rapidly drawn away from said heated cutting bar to isolate a free end of said flat web of thermoplastic resin film from damaging heat transfer from said heated cutting bar.

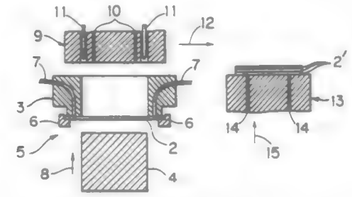
VOL 1167 ISS 4 OC 25 1994 UMI

5,358,593

APPARATUS FOR LAMINATING CERAMIC GREEN SHEETS

Mitsuro Hamuro; Kunikazu Nakahara; Hirokazu Higuchi, and Kenich Watanabe, all of Kyoto, Japan, assignors to Murata Mfg. Co., Ltd., Japan

Division of Ser. No. 605,995, Oct. 30, 1990, Pat. No. 5,174,842.
This application Oct. 30, 1992, Ser. No. 969,007
Claims priority, application Japan, Oct. 30, 1989, 1-282189
Int. Cl.[5] B32B *31/00*; B65G *57/04*
U.S. Cl. 156—378 8 Claims



1. An apparatus for laminating punched-out ceramic green sheets to form a predetermined electrical element, comprising:

a punching device comprising a die and a punch for punching out a portion of a ceramic green sheet to form a punched-out ceramic green sheet having a material film formed thereon in a predetermined pattern which is adapted to form said predetermined electrical element,

a transfer head movable between an initial position at a terminal position of the punch for receiving and holding the punched-out ceramic green sheet and a terminal position, and having a surface formed with suction holes for holding the punched-out ceramic green sheet by the action of vacuum suction,

a hot iron contained in said transfer head and movable between a first position where it is exposed to the surface of the transfer head which holds the punched-out ceramic green sheet and a second position where it is not so exposed, and

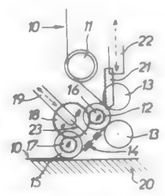
a stacking block disposed at said terminal position of said transfer head and serving to receive thereon a stacked plurality of punched-out ceramic green sheets each of which is conveyed thereto by said transfer head.

5,358,594

DEVICE AND METHOD TO EMBODY A COMPLEX STRUCTURAL PIECE BY WIRE OR STRIP CONTACT PLACING

Jean-Louis Darrieux, Saint Medard en Jalles, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Feb. 3, 1993, Ser. No. 12,853
Claims priority, application France, Feb. 17, 1992, 92 01747
Int. Cl.[5] B65H *81/00*
U.S. Cl. 156—433 13 Claims



1. A device to embody a complex structural piece by a wire contact placing on a form comprising

a placing head, with an axis of rotation, mounted on a tool, with a center axis, forming part of a wire distributing machine, wherein said placing head is translation mobile with respect to a distributing interface between said tool and said placing head;

complementary means for providing variable pressure on said placing head, disposed between said placing head and said tool;

said placing head comprising a plurality of rollers with at least one drive roller and one placing wheel; and

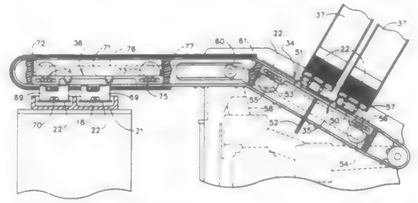
a retractable intermediate gear with a retracted position and a non-retracted position, wherein when said intermediate gear is in a non-retracted position said intermediate gear interconnects said drive roller and said placing wheel.

5,358,595

LABEL FEEDER FOR OPEN-TOP CONTAINERS

Roger S. Williams, 1777 Bethel New Richmond Rd., New Richmond, Ohio 45157

Filed Oct. 6, 1993, Ser. No. 132,519
Int. Cl.[5] B65B *61/00*
U.S. Cl. 156—571 9 Claims



1. A label feeder for use with a packaging conveyor line to transfer individual labels from a label hold bin into open-top containers as they pass along the conveyor line, said label feeder comprising:

(a) an open frame having mounted thereon (i) a supporting arm wherein at least a portion thereof is capable of extending substantially horizontally from the open frame a sufficient distance to overlie the conveyor line and (ii) a motor;

(b) an endless conveyor for the labels mounted on the supporting arm and driven by the motor, said endless conveyor having sets of pusher pins to receive and hold an individual label and capable of conveying the label to a position directly overlying an open-top container on the conveyor line;

(c) a loading ram system mounted on the supporting arm and driven by the motor, said loading ram system having at least one vacuum means to pull a label from the label hold bin and deposit it onto the endless conveyor for the labels;

(d) an unloading ram system mounted on the supporting arm and driven by the motor, said unloading ram system having at least one vacuum means to pull a label from the endless conveyor and capable of inserting it into an open-top container; and

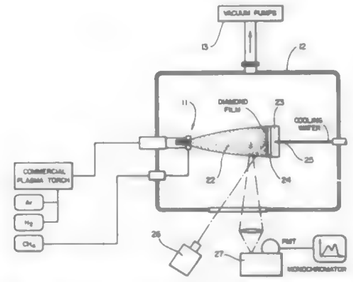
(e) at least one label hold bin mounted on the supporting arm in operable association with the loading ram system to hold a plurality of individual labels in a stacking relationship.

5,358,596

METHOD AND APPARATUS FOR GROWING DIAMOND FILMS

Mark A. Cappelli, Mountain View, and Michael H. Loh, Menlo Park, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Jul. 2, 1992, Ser. No. 907,802
Int. Cl.[5] C30B *29/04*
U.S. Cl. 117—99 9 Claims



1. The method of forming diamond films using an arcjet assembly comprising a vacuum chamber, an anode having a throat and an expansion region extending into said vacuum chamber, a cathode spaced from the throat of said anode and a substrate in said vacuum chamber spaced from the expansion region of the anode which comprises the steps of

maintaining pressure in said vacuum chamber below 1 torr

applying a high DC voltage between the cathode and anode to create a direct current, low pressure arc,

introducing a mixture of an inert gas and hydrogen into the cathode end of said arcjet assembly whereby the mixture flows through the throat as a result of pressure differential between the cathode end and the vacuum chamber and the arc heats the mixture to temperatures on the order of 20,000° K. to dissociate the hydrogen to form atomic hydrogen as well as ionize the inert gas to produce a high velocity plasma plume as a result pressure differential and arc heating, said high velocity plasma plume and low pressures in the nozzle, causing the arc to diffusely attach to the expansion region of the anode,

introducing a hydrocarbon into the arc plasma plume to form hydrocarbon precursors, and

causing the hydrocarbon precursors and atomic hydrogen to impinge upon the surface of the substrate where they react to form a diamond film.

5,358,597

METHOD OF PROTECTING ALUMINUM NITRIDE CIRCUIT SUBSTRATES DURING ELECTROLESS PLATING USING SOL-GEL OXIDE FILMS AND ARTICLE MADE THEREFROM

Sandra L. Smith, Georgetown, and Brian J. Hazen, Framingham, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Continuation of Ser. No. 754,882, Sep. 4, 1991, abandoned. This application Aug. 10, 1993, Ser. No. 103,997
Int. Cl.[5] C23C *26/00*
U.S. Cl. 156—625 4 Claims

1. A method for forming a microwave circuit on an aluminum nitride substrate comprising the steps of:

coating said substrate with a metal stack to form a coated substrate;

etching said coated substrate to form a pattern of said metal stack and exposed surfaces of said coated substrate;

covering said exposed surfaces of said coated substrate with a dielectric coating; and

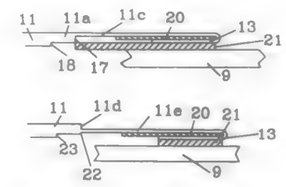
electrolesly gold plating said metal stack pattern by dipping said coated substrate into an alkaline electroless gold plating bath.

5,358,598

FOLDED BUS BAR LEADFRAME AND METHOD OF MAKING

Anthony M. Chiu, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 941,596, Sep. 8, 1992, Pat. No. 5,286,999.
This application Jan. 26, 1994, Ser. No. 186,840
Int. Cl.[5] B44C *1/22*; C23F *1/00*
U.S. Cl. 156—634 4 Claims



1. A method for making a leadframe having a plurality of lead fingers and a bus bar attached to at least two of said lead fingers, comprising the steps of;

etching the bus bar and a portion of said lead fingers;

placing a strip of insulating material on said bus bar;

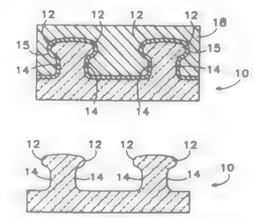
folding said bus bar at the points of attachment to said at least two lead fingers, said folded bus bar underlying said plurality of lead fingers such that the strip of insulating material is between said bus bar and said plurality of lead fingers.

5,358,599

PROCESS FOR ETCHING A SEMICONDUCTOR DEVICE USING AN IMPROVED PROTECTIVE ETCHING MASK

David A. Cathey, and J. Brett Rolfson, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 824,792, Jan. 23, 1992, Pat. No. 5,223,083. This application Jun. 29, 1993, Ser. No. 84,394
Int. Cl.[5] H01L *21/306*; B44C *1/22*
U.S. Cl. 156—643 9 Claims



1. An etch process for use in the manufacture of integrated circuits comprising the steps of:

a) providing an in-process semiconductor wafer on which have been formed a plurality of structural layers, at least one of said structural layers having been etched in selected regions and is employed in the formation of elevated features which have acquired re-entrant sidewall profiles during previous processing steps;

b) forming a material on said structured layers which is to be patterned;

c) forming an etch mask pattern on said material with negative photoresist, said pattern covering certain portions of the material to be etched, and exposing other portions thereof;

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d) etching exposed portions of the material.

5,358,600

METHOD OF MAKING SILICON QUANTUM WIRES

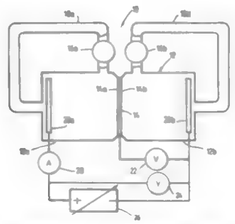
Leigh-Trevor Canham; John M. Keen, and Weng Y. Leong, all of Worcestershire, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Division of Ser. No. 852,208, Jun. 4, 1992. This application Jul. 26, 1993, Ser. No. 96,410

Claims priority, application United Kingdom, Dec. 7, 1989, 8927709

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—644 6 Claims



1. A method of producing luminescent silicon, said method comprising the steps of:

providing a crystalline silicon substrate;

anodizing at least a portion of said substrate to produce a porous layer of silicon at said portion of said substrate; and

etching said porous layer so as to produce sufficient pore overlap with a porosity of between 60–90%, such that, when stimulated, said porous silicon emits light of a wavelength shorter than an emission wavelength of bulk silicon.

5,358,601

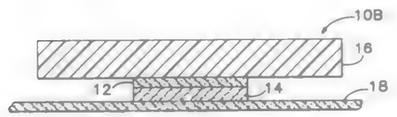
PROCESS FOR ISOTROPICALLY ETCHING SEMICONDUCTOR DEVICES

David A. Cathey, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 765,152, Sep. 24, 1991, abandoned. This application Sep. 14, 1993, Ser. No. 121,089

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—656 4 Claims



1. A process for controllably, isotropically etching a semiconductor device to form an etched pattern therein, comprising:

a) providing a semiconductor device having a plurality of structural layers, one of the outer structural layers of the semiconductor device comprising a tungsten polysilicide layer on a polysilicon layer;

b) forming on a top surface of the semiconductor device a protective etch mask defining a plurality of openings, said plurality of openings exposing a plurality of areas of the top surface of the semiconductor device;

c) controllably isotropically etching the plurality of exposed areas of the top surface of the semiconductor device with an etchant material to form an etched profile in which the tungsten polysilicide layer and the polysilicon layer are etched at similar etch rates to form a similar etch profile, and producing a tungsten polysilicide/polysilicon profile having vertical sides and having resist overhang projecting laterally from the vertical sides of the tungsten polysilicide/polysilicon profile;

d) the etchant material comprising a chemical etchant composition including NF_3, a gaseous carbon dioxide; and at least one of chlorine gas and HCL.

5,358,602

METHOD FOR MANUFACTURE OF PRINTED CIRCUIT BOARDS

Gary R. Sutcliffe, Kensington, and Jay B. Conrod, Cheshire, both of Conn., assignors to Enthone-OMI Inc., West Haven, Conn.

Filed Dec. 6, 1993, Ser. No. 163,042

Int. Cl.[5] B44C *1/22;* B29C *37/00;* C23F *1/00*

U.S. Cl. 156—656 14 Claims

1. A method for making printed circuit boards comprising:

a. contacting the board with a conditioner to clean the board surface;

b. contacting the conditioned board with a metal containing activator to activate the board surface for plating;

c. treating the activated board with a post-activator;

d. treating the resulting board with a stabilizer;

e. treating the stabilized surface with an etchant to etch the board surface;

f. forming the desired circuit pattern on the board;

g. plating the board to the desired thickness.

5,358,603

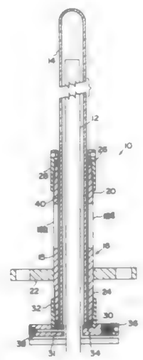
PROCESS FOR THE REMOVAL OF A SILICON COATING FROM A SURFACE

Jameel Ibrahim, Humble; Richard J. Fendley, Seabrook; Troy E. DeSoto, Houston, all of Tex., and Jerry G. Hitchens, Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Filed Oct. 6, 1992, Ser. No. 957,319

Int. Cl.[5] H01L *21/312*

U.S. Cl. 156—657 4 Claims



1. A process for etching a silicon coating from a product withdrawal tube, which tube is used to discharge polysilicon granules from a fluidized bed reactor, the process comprising:

(a) shutting down the reactor;

(b) inserting a heating means into the interior of the withdrawal tube while the withdrawal tube is still associated with the reactor;

(c) using the heating means to heat the silicon coat about the interior wall of the withdrawal tube whereby the coat is

heated to a temperature within the range of from about 500° C. to about 750° C.; and

(d) etching the heated coat with a mineral acid.

5,358,604

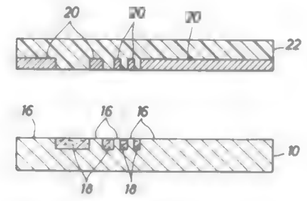
METHOD FOR PRODUCING CONDUCTIVE PATTERNS

Charles W. C. Lin, San Antonio; Chung J. Lee, Austin; Tom J. Hirsch, Austin, and Kimcuc T. Tran, Austin, all of Tex., assignors to Microelectronics and Computer Technology Corp., Austin, Tex.

Filed Sep. 29, 1992, Ser. No. 953,520

Int. Cl.[5] B05D *1/00*

U.S. Cl. 156—664 28 Claims



1. A method of making conductive patterns, comprising:

(1) selecting a mold with at least one surface, said surface being treatable to produce a pattern on said surface;

(2) treating the surface of the mold to selectively remove material to a preselected depth from portions of the surface of the mold, thereby creating gaps in the surface and producing a pattern on the mold surface corresponding to a mirror image of a desired conductive pattern;

(3) filling the gaps created by the selective removal of material with a composition that is resistant to metallization;

(4) metallizing the mirror image pattern on the surface of the mold without metallizing the filled gaps; and

(5) printing the metallized mirror image pattern onto a substrate by transferring said metallized mirror image pattern to said substrate without the removal of said filling composition in said gaps so as to produce a conductive pattern on the surface of the substrate.

5,358,605

PROCESS FOR RECYCLING WASTE PAPER

Hans-Dieter Dörflinger, and Michael Schwarz, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Mar. 3, 1993, Ser. No. 25,956

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1992, 4206748; May 12, 1992, 4215532; Jun. 26, 1992, 4221028

Int. Cl.[5] D21B *1/08*

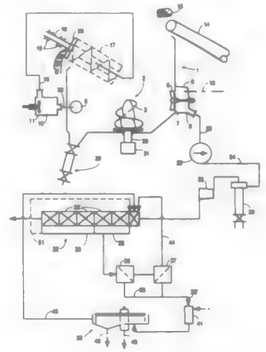
U.S. Cl. 162—4 17 Claims

1. A process for recycling waste paper containing fine contaminants and, optionally, large impurities in a deinking process comprising a selective flotation system having at least one additional cleaning stage downstream of said selective flotation system and wherein said selective flotation system comprises multiple stages, said process comprising the steps of:

(a) performing a selective flotation procedure in said selective flotation system, said procedure comprising at least three stages, and wherein said selective flotation procedure generates foam;

(b) collecting said foam from step (a) at a point up to the three initial stages of said selective flotation procedure;

(c) removing and purifying said foam of step (b) by means of microflotation to provide clear water and separated foam or sludge containing said contaminants; and



(d) removing said foam or sludge from the paper recycling process.

5,358,606

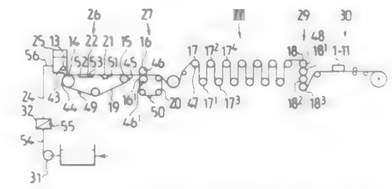
PROCEDURE AND APPARATUS FOR FAULT LOCATION IN THE FUNCTIONING OF MACHINE ELEMENTS OF A PAPER MACHINE

Timo Makkonen, Helsinginkatu 15 B 46, SF-00500 Helsinki, Finland

Continuation of Ser. No. 434,510, Nov. 14, 1989, abandoned, which is a continuation of Ser. No. 223,663, Jul. 21, 1988, abandoned, which is a continuation of Ser. No. 57,710, Jun. 1, 1987, abandoned, which is a continuation of Ser. No. 721,315, Apr. 9, 1985, abandoned. This application Apr. 23, 1991, Ser. No. 689,664

Int. Cl.[5] D21F *7/06*

U.S. Cl. 162—49 8 Claims



1. A process for determining which paper machine element of a plurality of paper machine elements is faulty and causing a periodically-recurring variation in one or more characteristics of the paper produced by the paper machine, the paper machine elements each exhibiting a period during its operation, said process comprising the steps of:

continuously monitoring at least one paper characteristic and thereby variations in said paper characteristic;

recording the periods of recurrence of variations in the monitored paper characteristic;

continuously monitoring the operation of each of the plurality of machine elements of the paper machine, so as to monitor the period of recurring variation of each machine element during its operation;

recording the period of recurring variation of each of the plurality of machine elements of the paper machine during operation of the machine element;

comparing the recorded periods of recurrence of the variations occurring in the monitored paper characteristic with

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the recorded periods of recurring variation of each of the plurality of machine elements during operation; and

ascertaining, from the comparison, the existence of a temporal similarity between the period of recurrence of the paper characteristic variation and the periods of recurring variation of one of the plurality of machine elements during operation for determining which one of the plurality of the machine elements in the paper machine is causing the periodic variation in the characteristic of the paper being produced by the paper machine.

4. Process according to claim 1, wherein at least one of the following elements of the paper machine is continuously monitored and the period of recurring variation of the machine element during operation recorded and compared to the periods of recurrence of variations in the monitored paper characteristic: vibrations of the perforated roll in the headbox, of the breast roll of the wire section, of the suction cylinder in the wire section, of a roll in the press section, of a roll in the drying section, of a calender roll, of a doctor blade, and of the suction box; rotation of the wire or of the felt; and pressure variations in the suction box of the wire section or in the headbox approach pipe system.

5,358,607

POROUS LOW DENSITY SHOT-LIKE DEGRADABLE ABSORBENT MATERIALS AND MANUFACTURING PROCESS THEREFOR

Douglas E. Ellis, 16606 - 20th Avenue, White Rock, British Columbia, Canada V4B 1T7

Filed Feb. 24, 1992, Ser. No. 840,297

Int. Cl.[5] D21J *3/00*

U.S. Cl. 162—100 **32 Claims**

1. A process for forming discrete, shot-like, absorbent pellets having a bulk density in the range of from about 13 lbs./ft.^{3} to less than 30 lbs./ft^3 and minimal inorganic solids content wherein each of the pellets is characterized by: i) a smooth, soft, porous, compressible, generally rounded external configuration essentially devoid of projecting fiber ends; ii) a soft, open, porous compressible, internal fiber structure; and iii), an absorptive capacity in terms of percentage by volume in excess of about 53%, said process comprising the steps of:

a) obtaining cellulose fiber materials having minimal inorganic solids content;

b) rehydrating the cellulose fiber materials to produce a water/fiber slurry comprising on the order of about 96.5% water by weight and about 3.5% total solids by weight;

c) de-watering the slurry to form a shreddable press cake containing total solids in the range of about 15% to about 50% by weight;

d) shredding the press cake to form discrete particles each having a maximum dimension of not more than about ½";

e) rolling the discrete shredded particles formed in Step (d) in an agglomerator so as to gather a plurality of discrete shredded particles into soft, discrete, shot-like, agglomerated, compressible pellets each having a smooth, soft, porous, compressible outer surface essentially devoid of projecting fiber ends and a soft, open, porous, compressible internal fiber structure; and,

f) drying the pellets formed in Step (e) to remove excess water resulting in discrete shot-like pellets having a total dry solids content in excess of 75% by weight, a bulk density in the range of from about 13 lbs./ft.^{3} to less than 30 lbs./ft.^{3}, and an absorptive capacity in terms of percentage by volume in excess of about 53%.

5,358,608

SEPARATION OF 1-PROPANOL FROM 2-BUTANOL BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, assignor to Lloyd Berg, Bozeman, Mont.

Filed Jan. 18, 1994, Ser. No. 181,795

Int. Cl.[5] B01D *3/40*; C07C *29/84*

U.S. Cl. 203—57 **1 Claim**

1. A method for recovering 1-propanol from a mixture of 1-propanol and 2-butanol which comprises distilling a mixture of 1-propanol and 2-butanol in the presence of about one part by weight of an extractive agent per part of 1-propanol—2-butanol mixture, recovering the 1-propanol as overhead product and obtaining the 2-butanol and the extractive agent as bottoms product, wherein said extractive agent consists of one material selected from the group consisting of 1-nitropropane, 2-nitropropane, ethyl salicylate, isophorone, ethyl butyrate, propyl butyrate, n-butyl acetate, isobutyl acetate, amyl acetate, hexyl acetate, ethyl n-valerate, isoamyl formate, methyl caproate, isobutyl isobutyrate, isobornyl methyl acetate and cyclopentanone.

5,358,609

ELECTROLYTIC PRODUCTION OF HYDROGEN PEROXIDE USING BIPOLAR MEMBRANES

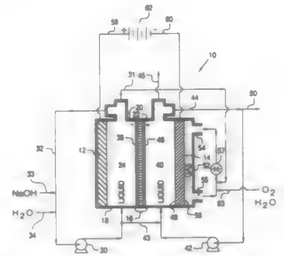
Thomas S. Drackett, Vancouver, Canada, assignor to Chemetics International Company Ltd., Vancouver, Canada

Filed Jan. 27, 1993, Ser. No. 10,006

Claims priority, application United Kingdom, Dec. 4, 1992, 9125471.8

Int. Cl.[5] C25B *1/30*

U.S. Cl. 204—84 **7 Claims**



1. A method for producing hydrogen peroxide comprising the steps of:

(a) passing an alkaline aqueous anolyte between an alkali resistant anode and an anion selective surface of a bipolar membrane;

(b) passing an alkaline aqueous catholyte between a cation selective surface of the bipolar membrane and a first surface on a gas-diffusion cathode;

(c) introducing oxygen-containing gas to a second surface on said gas-diffusion cathode;

(d) connecting said alkali resistant anode and said gas-diffusion cathode with an external power supply for causing,

(i) the oxygen to be reduced at said diffusion cathode to produce O_2H- ions within said alkaline aqueous catholyte,

(ii) the hydroxyl OH— ions in said alkaline aqueous anolyte to be oxidized to produce oxygen, water and electrons within said alkaline aqueous anolyte,

(iii) the water in said bipolar membrane to be dissociated into hydrogen ions H+ and hydroxyl OH— ions while the dissociated water in said bipolar membrane is replenished by a migration of water from the aqueous electrolytes,

(iv) the dissociation produced OH— ions, to move through the anion selective surface of said bipolar membrane to the alkaline aqueous anolyte whereupon said OH— ions maintain electroneutrality by replacing anodically oxidized OH— ions of said alkaline aqueous anolyte, and

(v) the dissociation produced hydrogen ions H+, to move through the cation selective surface of said bipolar membrane to the alkaline aqueous catholyte whereupon said hydrogen ions H+ react with the cathodically produced HO_2- ions to produce hydrogen peroxide within said alkaline aqueous catholyte.

5,358,610

METHOD FOR ELECTROLYTIC TREATMENT

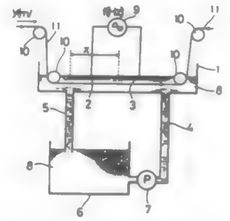
Seiji Kawasumi, and Akio Uesugi, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 19, 1993, Ser. No. 92,901

Claims priority, application Japan, Jul. 20, 1992, 4-191778; Jul. 22, 1992, 4-195006

Int. Cl.[5] C25F *3/04*

U.S. Cl. 204—129.4 **4 Claims**



1. A method for electrolytic treatment comprising forming electrochemically a rough surface on a material to be treated by supplying alternating current between the material to be treated and electrodes in an electrolytic solution containing metal ion, when y[m/min.] indicates a travelling speed of the material, f[Hz] indicates an line frequency of power source and x[cm] indicates a distance between leading ends of the electrodes, said electrolytic roughening treatment being conducted by selecting x, y and f so as to satisfy the following formula;

$$0 \leqq g\left(\frac{60 \cdot x \cdot f}{100 \cdot z}\right) \leqq 0.2$$

or

$$0.8 \leqq g\left(\frac{60 \cdot x \cdot f}{100 \cdot z}\right) < 1$$

(in the formula, g(a)=a−[a], here [a] indicates a maximum integer which does not exceed a).

5,358,611

METHOD OF REDUCING IMPURITIES IN AQUEOUS MONOMER SOLUTIONS

William Bauer, Jr., Huntingdon Valley, and Nelson I. Quirós, North Wales, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed May 17, 1993, Ser. No. 61,873

Int. Cl.[5] C07C *57/07*

U.S. Cl. 204—157.093 **10 Claims**

1. A method of reducing the level of impurities in an aqueous monomer solution, consisting essentially of: subjecting an impurity-containing aqueous monomer solution consisting essentially of

(a) from about 10% to about 95 percent by weight of monomer;

(b) water; and

(c) impurities including carbonyl compound impurities;

to ultraviolet radiation for from about 2 minutes to about 5 hours to reduce the level of the carbonyl compound impurities by at least 5 percent based on the amount of carbonyl compound impurities in the impurity-containing aqueous monomer solution without unwanted polymer formation.

5. A method of reducing the level of impurities in an aqueous monomer solution, consisting essentially of: subjecting an impurity-containing aqueous monomer solution consisting essentially of

(a) from about 10 to about 95 percent by weigh of a monomer selected from the group consisting of acrylic acid and methacrylic acid,

(b) water and

(c) impurities including carbonyl compound impurities selected from the group consisting of acrolein, methacrolein, acetaldehyde, furfural, protoanemonin, formaldehyde, crotonaldehyde, acetone and benzaldehyde

to ultraviolet radiation for from about 2 minutes to about 5 hours to reduce the level of the carbonyl compound impurities by at least 5 percent based on the amount of carbonyl compound impurities in the impurity-containing aqueous monomer solution without unwanted polymer formation.

5,358,612

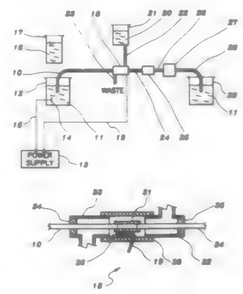
ELECTROPHORESIS WITH CHEMICALLY SUPPRESSED DETECTION

Purnendu K. Dasgupta, and Bao Li-Yuan, both of Lubbock, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 764,645, Sep. 24, 1991, abandoned. This application Oct. 4, 1991, Ser. No. 771,597

Int. Cl.[5] G01N *27/26, 27/447*

U.S. Cl. 204—180.1 **2 Claims**



1. An anion analysis method comprising the steps of:

(a) introducing a sample into a capillary, the capillary containing an electrophoresis buffer, the sample comprising anions of interest, the electrophoresis buffer also being in contact with a cation exchange material, the cation exchange material partitioning the electrophoresis buffer from a source of regenerant cations;

(b) applying an electric field along the channel of the capillary and across the cation exchange material so that the electrophoresis buffer flows towards the cation exchange material by electroosmotic flow;

(c) exchanging the cations of the electrophoresis buffer for regenerant cations with the cation exchange material whereby the electrical conductivity of the electrophoresis buffer is reduced to form a suppressed electrophoresis buffer; and

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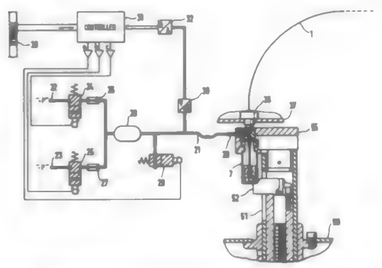
(d) measuring the electrical conductivity of the suppressed buffer to determine the separated anions.

5,358,613

METHOD AND APPARATUS FOR INJECTING LIQUID INTO A CAPILLARY TUBE

Werner Schneider, Ettlingen, and Klaus Witt, Keltern, both of Fed. Rep. of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 27, 1993, Ser. No. 174,286
Claims priority, application European Pat. Off., Jan. 21, 1993, 93100847.8
Int. Cl.[5] B01D *57/02*
U.S. Cl. 204—180.1 11 Claims



1. A method of injecting liquid into a capillary tube comprising the steps of

immersing an end of the capillary tube in the liquid to be injected,

applying a fluid pressure, different from ambient pressure, on the liquid to be injected, whereby liquid flows into the capillary tube,

wherein, during an injection, the fluid pressure is continuously varied in a controlled way by correspondingly controlling a source of overpressure and a source of underpressure, with the fluid pressure increasing during a time interval t0–t1 and decreasing during another time interval t1–t2.

5,358,614

METHOD AND APPARATUS FOR THE REMOVAL OF BIOCONVERSION OF CONSTITUENTS OF ORGANIC LIQUIDS

Timothy Scott, Knoxville, and Charles D. Scott, Oak Ridge, both of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Sep. 3, 1993, Ser. No. 116,772
Int. Cl.[5] B03C *5/00*
U.S. Cl. 204—186 22 Claims

1. A method for converting a constituent contained in an organic liquid into a product, comprising the steps of:

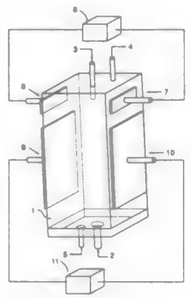
introducing an organic liquid into a vessel, the organic liquid containing at least one constituent, the vessel having at least one inlet and at least one outlet;

introducing an aqueous liquid in droplet form into the vessel to cause the aqueous liquid to contact the organic liquid, the droplets flowing countercurrently with respect to the organic liquid, the droplets containing at least one biocatalyst;

subjecting the droplets upon entry into the organic liquid to a first electrical field to cause the droplets to rupture to form a plurality of microdroplets; the microdroplets dispersing and recoalescing during countercurrent flow through the organic liquid;

subjecting the droplets during countercurrent flow through the organic liquid to a second electrical field to cause the recoalesced droplets to continuously recoalesce and rupture to form a plurality of microdroplets;

reacting the biocatalyst with the constituent to form a product, the reaction removing the constituent from the organic liquid,



recovering the organic liquid; and

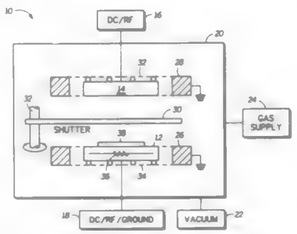
recovering the aqueous liquid.

5,358,615

PROCESS FOR FORMING A SPUTTER DEPOSITED METAL FILM

Leroy Grant; Robert Fiordalice, both of Austin, and Iraj E. Shahvandi, Round Rock, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 4, 1993, Ser. No. 140,341
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.15 10 Claims



1. A process for fabricating a sputter deposited metal film in a semiconductor device comprising the steps of:

providing a sputtering target having a surface layer of aluminum overlying a refractory metal layer;

sputtering away the aluminum layer to expose the refractory metal layer; and

forming a refractory metal layer on a semiconductor substrate by sputter deposition from the sputtering target.

5,358,616

FILLING OF VIAS AND CONTACTS EMPLOYING AN ALUMINUM-GERMANIUM ALLOY

Michael G. Ward, 1 Haven Ct., #S-3B, Nyack, N.Y. 10960

Filed Feb. 17, 1993, Ser. No. 18,769
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.15 7 Claims

1. A method of filling vias in a semiconductor substrate comprising:

sputter depositing a first layer of nongermanium containing aluminum onto a substrate containing said vias at a temperature less than 150° C.;

sputter depositing a layer of aluminum-germanium alloy at a temperature less than 150° C.;

coating said layer of aluminum-germanium alloy with a second layer of a nongermanium containing aluminum alloy by sputter depositing said second layer of nongermanium containing aluminum at less than or equal to 150° C.;

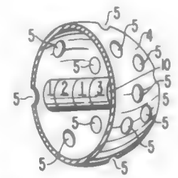
depositing a third layer of nongermanium containing aluminum onto said substrate at a temperature of 400° to 500° C. wherein the total thickness of all said layers is from about 5000 to about 15,000 angstroms.

5,358,617

SELF-CONTAINED WATER TREATMENT DEVICE

Jack K. Ibbott, Tokyo, Japan, assignor to Makiko Yoshida, Tokyo, Japan

Filed Nov. 16, 1992, Ser. No. 977,248
Int. Cl.[5] C25B *9/00, 11/04*
U.S. Cl. 204—248 21 Claims



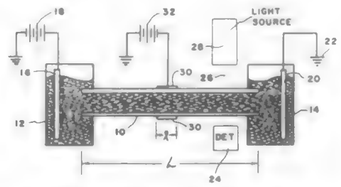
1. A self-contained water treatment device comprising a body, a first electrode integral with said body and comprising a layer of paint of an electrically conductive material, and a second electrode integral with said body and comprising a layer of paint of an electrically conductive material, the electrically conductive paint constituting said first electrode and the electrically conductive paint constituting said second electrode having different electrochemical potentials, whereby when the self-contained device is placed into a reservoir of water such that the water extends between the electrodes, the water is ionized due to the electric potential established between the electrodes.

5,358,618

CAPILLARY ELECTROPHORESIS APPARATUS WITH IMPROVED ELECTROOSMOTIC FLOW CONTROL

Andrew G. Ewing; Mark A. Hayes, and I. Kheterpal, all of State College, Pa., assignors to The Penn State Research Foundation, University Park, Pa.

Filed Jan. 22, 1993, Ser. No. 7,214
Int. Cl.[5] C25B *9/00*
U.S. Cl. 204—299 R 12 Claims



1. Electrophoretic separation apparatus comprising:

capillary tube means having a length L, a cross section, an inlet and an outlet;

a first reservoir for containing a solvent and, upon injection, a solute, in fluid flow communication with said inlet;

a second reservoir for containing at least a second solvent, in fluid flow communication with said outlet, said capillary thereby filled with at least said solvent when solvent is present in a reservoir;

first power supply means for applying a separation potential between said reservoirs and along the length of said capillary to establish an electrophoretic flow of a said solute therethrough;

an electrical conductor of length l, juxtaposed to an external surface of said capillary tube means, said length l being in the range of approximately 5% to 60% of length L; and

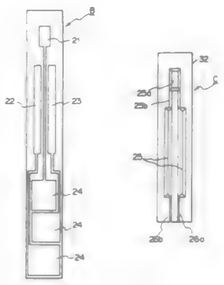
second power supply means for applying a voltage to said electrical conductor that creates an electrostatic field in said capillary tube means.

5,358,619

OXYGEN ELECTRODE

Hiroaki Suzuki; Akio Sugama, and Naomi Kojima, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 761,005, Sep. 17, 1991, abandoned. This application Dec. 17, 1992, Ser. No. 993,486
Claims priority, application Japan, Sep. 17, 1990, 2-243849; Jun. 6, 1991, 3-151573; Dec. 20, 1991, 3-338678; Jul. 22, 1992, 4-195578
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—403 24 Claims



1. An oxygen electrode comprising:

a flat electrode substrate having at least a working electrode and a counter electrode formed thereon

a container substrate having dents formed to confront said working electrode and said counter electrode and having fine grooves for connecting said dents to one another said dents and said fine grooves containing an electrolyte containing water therein, said container substrate being bonded to said flat electrode substrate, wherein of said dents, said dent confronting said working electrode has a through hole extending to a side opposite to said flat electrode substrate; and

a gas-permeable film which is impermeable to said electrolyte containing water, is formed to cover said through hole.

5,358,620

ALLYL POLYELECTROLYTES

M. Neal Golovin, Owings Mills, Md., and Benjamin M. Chaloner-Gill, Santa Clara, Calif., assignors to Valence Technology, Inc., San Jose, Calif.

Filed Oct. 13, 1993, Ser. No. 136,423
Int. Cl.[5] G01N *27/26;* H01M *6/18, 10/40*
U.S. Cl. 204—421 15 Claims

1. A solid electrolyte which comprises:

a solid polymeric matrix; an inorganic ion salt; and

an electrolyte solvent;

wherein said solid polymeric matrix comprises an allylic represented by Formula I:

$$R^1CH{=}CR^2(CH_2)_pR^3 \qquad I$$

where R^1 and R^2 are independently selected from the group consisting of hydrogen and an alkyl group having

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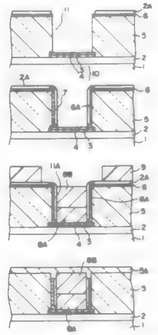
from 1 to 3 carbon atoms and R^3 is selected from the group consisting of $OC(O)(OR^4)_nOR^5$, $S(O_2)(OR^4)_nOR^5$ and $OC(O)R^6C(O)(OR^4)_nOR^5$, wherein R^4 is an alkylene group of from 2 to 4 carbon atoms such as ethylene or propylene, R^5 is a hydrocarbyl group of from 1 to 30 carbon atoms, R^6 is a divalent hydrocarbylene or oxyhydrocarbylene group such as ethylene, hexylene, or poly-(oxyalkylene), in each case containing from 2 to about 20 carbon atoms, n is an integer from 0 to 50 and p is an integer from 1 to about 5.

5,358,621

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

Yasuo Oyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 975,096
Claims priority, application Japan, Dec. 10, 1991, 3-326073
Int. Cl.[5] C25D *5/02, 5/10*
U.S. Cl. 205—123 **6 Claims**



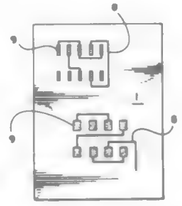
1. A method of manufacturing a semiconductor device, comprising the steps of:
forming at least one conductive base layer on a first insulating film covering a semiconductor substrate;
forming a second insulating film to cover said at least one conductive base layer and said first insulating film;
selectively forming an opening in said second insulating film to expose a part of said at least one conductive base layer, said second insulating film having a sidewall surface defining said opening;
forming a current delivering conductor on said sidewall surface of said second insulating film and said part of said at least one conductive base layer, said current delivering conductor having a first portion formed in contact with said sidewall surface of said second insulating film and a second portion formed in contact with said part of said at least one conductive base layer;
covering said current delivering conductor with a third insulating film, said third insulating film having third and fourth portions covering said first and second portions of said current delivering conductor, respectively;
removing respective parts of said fourth portion of said third insulating film and said second portion of said current delivering conductor to expose a portion of said part of said at least one conductive base layer with leaving a remaining part of said second portion of said current delivering conductor in contact with a remaining portion of said part of at least one conductive base layer; and
plating a metal by supplying a current through said current delivering conductor to said at least one conductive base layer so that said metal is grown only from said portion of said part of said at least one conductive base layer and preventing said metal from being grown from said first portion and said remaining part of said second portion of said current delivering conductor by said third insulating film.

5,358,622

PROCEDURE FOR THE PRODUCTION OF PRINTED CIRCUIT BOARDS PROVIDED WITH PADS FOR THE INSERTION OF SMDS

Günter Korsten, Haan, Fed. Rep. of Germany, assignor to Firma Korsten & Goossens, Fed. Rep. of Germany

Filed Jun. 16, 1993, Ser. No. 78,144
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1993, 4307784
Int. Cl.[5] C25D *5/02*
U.S. Cl. 205—125 **6 Claims**



1. Procedure for the production of printed circuit boards provided with pads having a certain depth for the insertion of surface-mounted devices (SMDs), comprising the steps of:
a) providing a copper-lined base plate with a positive photoprotective layer having a coating thickness lesser than the depth of the pads to be built up for the connection of SMD components;
b) exposing the positive photoprotective layer using a primary film with a window mask corresponding to a desired pad arrangement, with the window mask modeling an extension on the pads in a connecting area for strip conductors with the extensions having the approximately width of the strip conductors:
c) developing the exposed base plate in a developing bath such that the photoprotective layer is removed in an area of the windows exposed by the window mask, laying bare an open copper area at the area of each window;
d) exposing the base plate developed in the previous steps with a secondary film with a mask for the strip conductors, whereby the strip conductors are modeled as opaque areas;
e) electroplating the base plate exposed in the preceding steps in a tin or tin-lead bath, whereby a tin or tin-lead coating is built up on the area of the open copper areas until the pads have formed by this step with a depth greater than the thickness of the photoprotective layer;
f) developing the electroplated base plate in a developing bath, whereby the tin or tin-lead plated pad areas and the protective layer regions covered by the opaque strip conductor areas of the secondary film remain alongside unprotected regions of the base plate, laying open the copper areas in the unprotected regions; and
g) etching the base plate developed according to the previous steps, whereby the laid-open copper areas are removed and the protective layer existing in the strip conductor areas is removed, laying bare copper strip conductor areas modeled by the mask for the strip conductor.

5,358,623

CORROSION RESISTANT ANODIZED ALUMINUM

John W. Bibber, Batavia, Ill., assignor to Sanchem, Inc., Chicago, Ill.

Filed Apr. 21, 1993, Ser. No. 50,841
Int. Cl.[5] C23F *11/18;* **C23C** *22/66*
U.S. Cl. 205—201 **7 Claims**

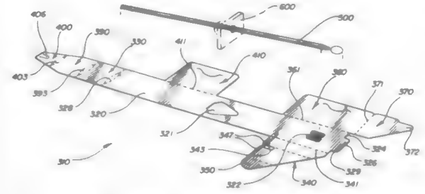
1. A method of protecting an aluminum or aluminum alloy which has not been treated with chromium and which has been anodized by electrolysis to provide an anodized aluminum or aluminum alloy comprising preparing a non-chromium alkali metal permanganate solution having a pH in the range of about 4.0 to about 8.0, heating the solution to a temperature of from about 170° F. to about 212° F., rinsing said anodized aluminum or aluminum alloy with warm water to warm said anodized aluminum or aluminum alloy, coating said warm anodized aluminum or aluminum alloy with said permanganate solution, and forming a non-chromium mixed metal oxide coating of aluminum and manganese oxides on the anodized aluminum or aluminum alloy.

5,358,624

PACKAGE FOR ENDOSCOPIC SUTURE LOOP AND CANNULA

Constance E. Roshdy, New Egypt, N.J., and Robert J. Cerwin, Pipersville, Pa., assignors to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 835,872, Feb. 14, 1992, Pat. No. 5,226,535. This application Jun. 9, 1993, Ser. No. 74,240
The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.
Int. Cl.[5] B65D *83/10*
U.S. Cl. 206—363 **5 Claims**



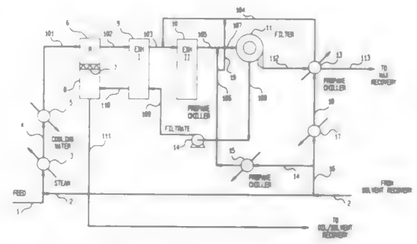
1. A foldable package for an endoscopic suture loop and cannula assembly, comprising:
a central floor panel, said panel having a top tab for retaining the suture loop and a bottom;
a first extension panel having a top and a bottom foldably connected to the bottom of the central floor panel;
a bottom tab foldably connected to the bottom of the extension panel;
a loop retaining panel foldably connected to the top of the central floor panel;
a package closure panel foldably connected to the central floor panel;
a first U-shaped slot in the bottom tab for receiving and engaging a proximal end of the cannula;
a second U-shaped slot, and at least one tab extending from the second slot
a cannula retaining means for receiving and engaging a distal end of the cannula;
a closure tab and a closure tab pocket in the closure panel, for locking the package such that the closure tab and closure tab pocket of the closure panel receive and engage the central panel and the loop retaining panel along the fold line between the central panel and the loop retaining panel; and,
a gusset formed between the bottom of the central panel and the first extension panel;
a gusset formed between the first extension panel and the bottom tab; and,
a cannula retaining panel foldably connected to the central floor panel having means for locking the cannula retaining panel to the central floor panel.

5,358,625

LUBRICATING OIL DEWAXING USING MEMBRANE SEPARATION OF COLD SOLVENT FROM DEWAXED OIL

Ronald M. Gould, Sewell, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Apr. 23, 1993, Ser. No. 52,326
Int. Cl.[5] C10G *73/06, 73/32;* **B01D** *39/00;* **C07C** *7/144*
U.S. Cl. 208—31 **10 Claims**



1. A process for solvent dewaxing a waxy oil feed comprising contacting the waxy oil feed at a temperature of 100° to 180° F. with one side of a selective semipermeable membrane, which selectively permeates dewaxing solvent and contacting the other side of the semipermeable membrane with a cold oil/solvent filtrate stream at a temperature of 5° to 65° F., obtained by filtering wax from an oil/solvent/wax feed fed to a wax filter, maintaining the oil/solvent filtrate stream side of the membrane at a positive pressure of 200 to 1000 psig relative to a pressure of 200 to 300 psig on waxy oil feed side of the membrane, selectively transferring 30 to 70% by volume of the solvent from the filtrate side of the membrane to the waxy oil feed side of the membrane to simultaneously separate solvent from the oil/solvent filtrate stream, inject solvent into the waxy oil feed stream, dilute the waxy oil feed stream with solvent and cool the waxy oil feed stream to a temperature of 40° to 140° F., and at the same time to countercurrently cool the waxy oil feed by indirect contact with the cold filtrate, then sequentially indirectly cooling the waxy oil feed in indirect heat exchangers to crystallize and precipitate wax crystals, sequentially directly injecting additional solvent into the waxy oil feed stream to further cool and dilute and to obtain a desired viscosity of the waxy oil feed stream to facilitate handling of the waxy oil feed stream through the process and to facilitate filtering crystallized wax from the waxy oil feed and to obtain the desired pour point of dewaxed oil product, and during the sequential cooling of the waxy oil feed crystallizing and precipitating wax from the waxy oil feed to obtain an oil/solvent-/wax mixture at a temperature of −30° to +70° F., feeding the oil/solvent/wax mixture to a filter to remove the wax and obtain an oil/solvent filtrate stream, contacting the oil/solvent filtrate stream at a temperature of 5° to 65° F. with the selective semipermeable membrane in a membrane module to selectively transfer solvent through the membrane to the waxy oil feed, withdrawing the remaining oil/solvent filtrate stream at a temperature of 40° to 135° F. from the membrane module and treating the oil/solvent/filtrate stream to separate the solvent from the oil, and recovering a dewaxed oil product stream, and a deoiled wax product stream and recycling the separated solvent to the dewaxing process.

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5,358,626

METHOD FOR RETARDING CORROSION AND COKE FORMATION AND DEPOSITION DURING PYROLYTIC HYDROCARBON PROCSSING

Zalman E. Gandman, and Hong K. Jo, both of Placentia, Calif., assignors to Tetra International, Inc., Brea, Calif.

Filed Aug. 6, 1993, Ser. No. 103,291
Int. Cl.[5] C10G *9/00*
U.S. Cl. 208—48 R 32 Claims

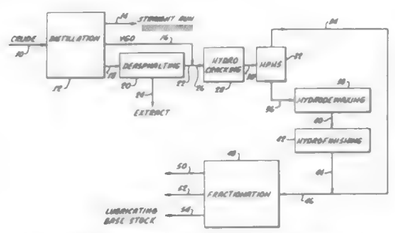
1. A method for inhibiting the formation and deposition of coke on the coil of a pyrolysis furnace having a radiation stage and convection stage during high temperature processing of hydrocarbon feedstock for the production of ethylene while minimizing corrosion of the coils which comprises: adding to the hydrocarbon feedstock in the coil at the end of the convection stage of the pyrolysis furnace a coke inhibiting amount of a mixture of a Group IA metal salt, a Group IIA metal salt, a boron acid or salt thereof and a silicon compound.

5,358,627

HYDROPROCESSING FOR PRODUCING LUBRICATING OIL BASE STOCKS

David E. Mears, Fullerton, and Michael G. Hunter, Downey, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Jan. 31, 1992, Ser. No. 828,728
Int. Cl.[5] C10G *45/08*
U.S. Cl. 208—59 28 Claims



1. A method for producing lubricating oil base stocks comprising:

hydrocracking a heavy hydrocarbon feedstock comprising essentially all its components boiling above 650° F. under conditions to convert at least 20% of the feedstock into components boiling at less than 650° F. to produce a hydrocrackate product;

separating the hydrocrackate product into a light hydrocarbon fraction comprising middle distillate fuel and a heavy hydrocarbon fraction at a cut point temperature between 400° F. and 550° F., the light hydrocarbon fraction comprising components boiling below the cut point temperature and the heavy hydrocarbon fraction boiling above the cut point temperature;

hydrodewaxing the heavy hydrocarbon fraction;

hydrofinishing the hydrodewaxed product;

combining essentially all the light hydrocarbon fraction with the hydrofinished product; and

distilling the combined hydrocarbon to produce a (1) middle distillate fuel blending stock having an aromatic content of less than about 10 wt. % and a boiling range from 300° F. to 700° F. and (2) lubricating oil base stocks.

5,358,628

PRODUCTION OF HIGH VISCOSITY INDEX LUBRICANTS

Minas R. Apelian, Vincetown, N.J.; Charles L. Baker, Jr., Thornton, Pa.; Thomas F. Degnan, Moorestown, N.J.; David O. Marler, Deptford, N.J.; Dominick N. Mazzone, Wenonah, N.J., and Dennis E. Walsh, Richboro, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 548,702, Jul. 5, 1990, abandoned. This application Jun. 15, 1992, Ser. No. 898,615
Int. Cl.[5] C10G *69/02*
U.S. Cl. 208—60 39 Claims

1. A process for producing a high Viscosity Index lubricant having a Viscosity Index of at least 130 from a hydrocarbon feed of mineral oil origin having a wax content of at least 50 weight percent, which comprises:

(i) hydrocracking the feed at a hydrogen partial pressure of at least 800 psig over a bifunctional lube hydrocracking catalyst comprising a metal hydrogenation component on an acidic, amorphous, porous support material to hydrocrack aromatic components present in the feed at a severity which results in a conversion of not more than 50 weight percent of the feed to products boiling outside the lube boiling range;

(ii) isomerizing waxy paraffins present in the effluent from the hydrocracking step in the presence of a low acidity isomerization catalyst having an Alpha Value of not more than 25 and comprising a noble metal hydrogenation component on a porous support material comprising a dicarboxylic acid-treated zeolite selected from the group consisting of zeolite Beta and mordenite to isomerize waxy paraffins to less waxy isoparaffins.

5,358,629

HYDROCONVERSION PROCESS CONTAINING A MOLYBDENUM COMPLEX RECOVERED FROM EPOXIDATION OF OLEFINIC HYDROCARBONS

George R. Tamalis; David D. Chess, both of Houston, Tex.; Mahendra S. Patel, Hopewell Junction; Ajit K. Bhattacharya, Beacon, both of N.Y., and Robert M. Gipson, Port Arthur, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 21, 1993, Ser. No. 6,594
Int. Cl.[5] C10G *47/02, 45/04*
U.S. Cl. 208—112 2 Claims

1. The method of catalytically hydroconverting a charge hydrocarbon oil containing a substantial quantity of components boiling above about 1000° F. in an ebullated bed to convert a substantial portion thereof to product containing components boiling below 1000° F., said product being characterized by an undesirably high content of sediment—forming components which comprises:

passing said charge hydrocarbon oil containing a substantial quantity of components boiling above about 1000° F. into contact in a conversion zone with (i) a solid heterogeneous catalyst containing a metal of Group IV-B, V-B, VI-B, VII-B, or VIII on a support and (ii) as an oil-miscible catalyst, a molybdenum complex comprising:

2–5 wt % molybdenum;

0.03 wt % alkali metal;

0.1–3 wt % water;

80–96 wt % unreacted diol plus by-product alcohol; and

0.5–10 wt % oxygenates,

said oil-miscible catalyst being present in amount sufficient to provide metal in amount of less than about 60 wppm, based on charge hydrocarbon oil;

maintaining said charge hydrocarbon oil containing a substantial quantity of components boiling above about 1000° F. in said conversion zone at conversion conditions in the presence of hydrogen and mercaptan as a substantial portion of said components boiling above about 1000° F. are converted to components boiling below 1000° F. thereby forming product containing a substantial portion of components boiling below about 1000° F. and a content of sediment-forming components which is less than would be formed in the absence of said oil-soluble catalyst; and

recovering said product containing a substantial portion of components boiling below about 1000° F.;

wherein said oil-miscible catalyst contains a complex of molybdenum which has been recovered from a reaction mixture wherein it has catalyzed the epoxy-forming reaction of a C_3–C_{20} olefin charge stock and an organic peroxide or hydroperoxide.

5,358,630

REGENERATING ZEOLITIC CRACKING CATALYST

Brent J. Bertus; Harold W. Mark; John S. Roberts, and Arnold M. Schaffer, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 17, 1980, Ser. No. 207,511
Int. Cl.[5] C10G *11/05;* B01J *29/38, 38/18, 38/10*
U.S. Cl. 208—120 49 Claims

13. In a hydrocarbon cracking process wherein:

A. hydrocarbon feedstock containing at least two metal contaminantes selected from the class consisting of nickel, vanadium, and iron is passed into a cracking zone having a crystalline zeolite alumino-silicate-containing cracking catalyst therein at cracking conditions to form cracked hydrocarbon products and wherein coke and metal contaminants are deposited on the catalyst; and

B. the coke and metal contaminated catalyst is passed to a regeneration zone maintained at regeneration conditions having a regeneration gas passing therethrough whereby at least a portion of the coke is removed from the catalyst, the improvement which comprises passing the catalyst from the regeneration zone through a reduction zone maintained at a temperature of 600° C. to 704° C. whereby the metal contaminants are at least partially passivated prior to the catalyst being returned to the reaction zone, a reducing atmosphere maintained in the reduction zone by the addition to the reduction zone of a material selected from the class consisting of hydrogen, carbon monoxide, a mixtures thereof, said catalyst passing without further processing from the reduction zone to the cracking zone.

5,358,631

DEHYDROCYCLIZATION OR CATALYTIC REFORMING USING SULFUR TOLERANT ZEOLITE CATALYST

Stephen J. Miller, San Francisco, and Bernard F. Mulasky, Fairfax, both of Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Division of Ser. No. 488,332, Mar. 2, 1990, Pat. No. 5,169,813.
This application Jun. 23, 1992, Ser. No. 902,987
The portion of the term of this patent subsequent to Jun. 23, 2009, has been disclaimed.
Int. Cl.[5] C10G *35/06, 35/085, 35/095*
U.S. Cl. 208—138 29 Claims

1. A process for processing a hydrocarbon feed to increase the aromatics content thereof in a reaction zone which may be subjected to periodic exposure to more than 100 ppb sulfur, which comprises contacting the feed under catalytic reforming conditions with a catalyst comprising:

(a) a noble metal;

(b) an intermediate pore size crystalline silicate having a silica to alumina mole ratio of about 200 or greater; and

(c) an alkali content of less than 6000 ppm in the crystalline silicate; and

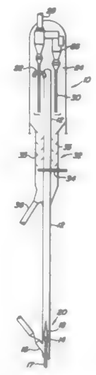
(d) an alkali to aluminum ratio in the crystalline silicate between 1 and 5 on a molar basis.

5,358,632

FCC FEED INJECTION WITH NON-QUIESCENT MIXING

Brian W. Hedrick, Rolling Meadows, Ill., assignor to UOP, Des Plaines, Ill.

Filed Jul. 16, 1993, Ser. No. 92,635
Int. Cl.[5] C10G *11/18, 35/14*
U.S. Cl. 208—163 12 Claims



1. A method of mixing fluidized particles with a fluid feed stream comprising hydrocarbons, said method comprising:

a) combining fluidized particles and a fluidizing medium in an upstream section of a conduit to produce a dense bed of catalyst;

b) passing said dense bed of catalyst downstream through said conduit into a feed contact zone having a reduced cross sectional area relative to said upstream section;

c) discharging a fluid feed stream radially into said feed contact zone to produce a mixture of feed and catalyst;

d) accelerating said mixture of feed and catalyst in a downstream direction in said conduit through an acceleration zone, said acceleration zone having a continuously increasing cross sectional area;

e) maintaining a residence time of at least 0.05 seconds for said mixture of feed and catalyst in said acceleration zone; and,

f) passing said mixture of feed and catalyst from said acceleration zone into a section of said conduit having a uniform cross sectional area.

5,358,633

HYDRODESULFURIZATION OF CRACKED NAPHTHA WITH LOW LEVELS OF OLEFIN SATURATION

Eugene Pei-Shing Dai, Port Arthur, and David E. Sherwood, Jr., Beaumont, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 28, 1993, Ser. No. 68,045
The portion of the term of this patent subsequent to Aug. 23, 2011, has been disclaimed.
Int. Cl.[5] C10G *45/08*
U.S. Cl. 208—216 R 9 Claims

1. The process for selective hydrodesulfurization of a charge cracked naphtha containing paraffins, isoparaffins, aromatics, naphthenes, and olefins while reducing olefin saturation which comprises

maintaining in a reaction zone a bed of catalyst containing a transition alumina support, containing less than 1 wt % of Group I-A metal oxide, less than about 0.5 wt % of Group II-A metal oxide, and bearing 10–25 wt % of a non-noble metal oxide of Group VIII and 3–15 wt % of a metal oxide

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of Group VI-B, the atomic ratio of non-noble Group VIII metal to Group VI-B metal being 1–8:1;

passing said cracked naphtha containing paraffins, isoparaffins, aromatics, naphthenes, and olefins to said reaction zone and into contact with said bed of catalyst;

maintaining said bed of catalyst at hydrodesulfurizing conditions thereby producing a product stream, and

recovering said product stream of hydrodesulfurized naphtha wherein the olefin content of said product stream is at least about 75 wt % of the olefin content of said charge cracked naphtha to said reaction zone.

5,358,634

PROCESS FOR TREATING HEAVY OIL

Lillian A. Rankel, Princeton, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 728,663, Jul. 11, 1991, abandoned. This application Oct. 30, 1992, Ser. No. 969,543

Int. Cl.[5] C10G *45/04, 45/02*

U.S. Cl. 208—251 H 20 Claims

1. A process for hydrotreating a hydrocarbon oil feedstock, said process comprising hydrotreating said feedstock in the presence of a hydrotreating catalyst consisting essentially of an activated carbon, said activated carbon possessing a pore volume in the 100Å to 400Å pore diameter range of at least about 0.08 cc/g and an average pore diameter of from about 15Å to about 54Å .

5,358,635

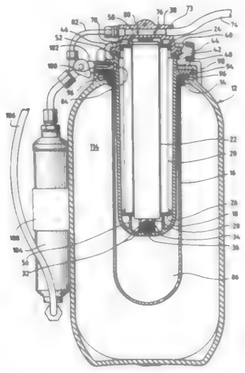
INTEGRATED REVERSE OSMOSIS WATER TREATMENT AND STORAGE SYSTEM

Martin A. Frank, Minneapolis, Minn., and Kenneth J. Merchak, Hudson, Wis., assignors to Ecowater Systems, Inc., Woodbury, Minn.

Filed Apr. 16, 1993, Ser. No. 48,602

Int. Cl.[5] B01D *61/08*

U.S. Cl. 210—90 17 Claims



1. A reverse osmosis system comprising:

a pressure tank having an open end,

an expandable bladder received within said pressure tank, said bladder having an open end,

means for securing and sealing said open end of said bladder in said open end of said pressure tank, so as to form a first enclosed variable volume between said pressure tank and said bladder,

a second tank assembly including a second tank received within said bladder, said second tank having an open end and a closed end,

means for securing and sealing said second tank assembly in the open end of said bladder, so as to form a second enclosed variable volume between said bladder and said second tank,

a prefilter and a reverse osmosis membrane assembly received within said second tank,

said second tank assembly including a cap for closing said open end of said second tank,

said second tank assembly having a first opening through which raw water may enter said second tank, such that the raw water may flow through said prefilter to said reverse osmosis membrane assembly,

said second tank assembly having a second opening through which purified product water which has passed through said prefilter and said reverse osmosis membrane assembly may flow into said second variable volume,

said second tank assembly having a third opening through which concentrated water which has passed through said prefilter but not through said reverse osmosis membrane assembly may flow for disposal,

said second variable volume having a discharge opening through which purified product water may flow for use,

whereby a reverse osmosis system including a prefilter, a reverse osmosis assembly and a storage tank for purified product water is constructed as compact assembly.

5,358,636

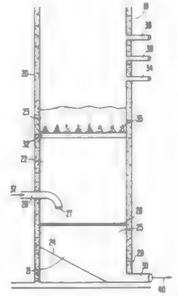
APPARATUS FOR THE TREATMENT OF WASTE SLUDGE

Gaétan Brouillard, 341 chemin Brouillard, Route 249, St-Georges de Windsor, Quebec, Canada J0A 1J0

Filed May 18, 1993, Ser. No. 62,744

Int. Cl.[5] C02F *11/02*

U.S. Cl. 210—207 11 Claims



1. An apparatus for the treatment of waste sludge, said apparatus comprising:

a vertically extending housing unit having a height/width ratio sufficient to provide separate zones in said housing unit, including a settling zone for thickened sludges, a mid-level buffer zone for waste sludge containing solid matter in suspension and a supernatant treatment zone for supernatant treatment, said housing unit having an inclined bottom with a slope sufficient to cause a lateral and a gravity force to be exerted by solid matter in said sludge along said inclined bottom to yield a thickened sludge at said settling zone of said housing unit and a supernatant liquid having a reduced solid content at said supernatant treatment zone of said housing unit;

a sludge inlet for feeding said waste sludge into said housing unit, said sludge inlet being located at substantially in the lower portion of said buffer mid-level housing zone in said housing unit;

a thickened sludge outlet substantially at the base of said housing unit;

a diffusing device for providing air in said supernatant treatment zone with minimal disturbance in said settling zone; and

a supernatant outlet located at variable positions in said supernatant treatment zone of said housing unit.

5,358,637

APPARATUS FOR SORTING AND DEFLAKING FIBROUS SUSPENSIONS

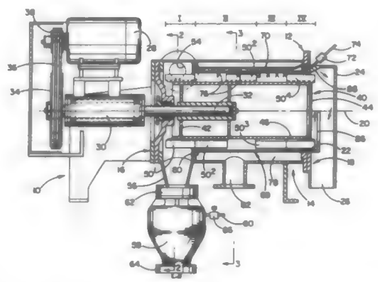
Hagen Hutzler, Reutlingen, and Erich Czerwoniak, Pfullingen, both of Fed. Rep. of Germany, assignors to Herman Finckh Maschinenfabrik GmbH & Co., Pfullingen, Fed. Rep. of Germany

Continuation of Ser. No. 598,618, Oct. 19, 1990, abandoned. This application Jan. 4, 1993, Ser. No. 512

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1989, 3904960

Int. Cl.[5] B01D *25/38*

U.S. Cl. 210—415 26 Claims



1. An apparatus for sorting and deflaking fibrous suspension, comprising:

at least one annular screen;

a housing accommodating said screen and having a first and a second housing end region, said housing including an inlet for the fibrous suspension to be processed being disposed proximate said first housing end region, an accepted material outlet for receiving a sorted suspension portion passed through said screen, and a rejected material outlet for receiving a rejected suspension portion not passed through said screen, said rejected material outlet being disposed proximate said second housing end region;

rotor means mounted within said housing for rotation about a substantially horizontal rotor axis for sorting and deflaking fibrous suspension, said rotor means having

(a) a first rotor region facing said first housing end region with projections for circulating the suspension to be processed, said first rotor region being surrounded by an annular housing wall section with a bottom zone having an outlet opening, said projections centrifuging impurity particles having at least a predetermined specific weight against said annular housing wall section;

(b) a last rotor region facing said second housing end region with projections disposed at a periphery of the last rotor region for circulating said rejected suspension portion in an annular chamber between the last rotor region and a portion of said screen surrounding said last rotor region for draining the rejected suspension portion; and

(c) an intermediate rotor region for sorting the fibrous suspension and for deflaking and disintegration of fiber agglomerations contained in the fibrous suspension to be processed, said intermediate rotor region having projections disposed at a periphery of the intermediate rotor region for effecting deflaking and disintegration of fibre agglomerations and being surrounded by a portion of said screen which has an inlet side facing said intermediate rotor region and an outlet side which is in communication with said accepted material outlet.

5,358,638

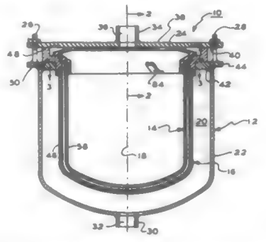
MULTIPLE LAYER FILTER BAG INCLUDING ABRASION-RESISTANT MATERIAL

Moshe Gershenson, Mohegan Lake, N.Y., assignor to ISP Investments Inc., Wilmington, Del.

Filed Aug. 27, 1993, Ser. No. 112,727

Int. Cl.[5] B01D *29/27*

U.S. Cl. 210—448 6 Claims



1. In a filter apparatus for filtering particles from a liquid comprising:

an enclosure subassembly having an axis and having a housing with a top flange and having a cover plate connected to the housing;

a basket subassembly having a basket portion and having an annular ring in sealing engagement with the top flange; and

a bag filter subassembly having a filter bag unit and an integral collar; the improvement which minimizes basket locking comprising a

filter bag unit having four layers, the first layer of abrasion-resistant material being the farthest from the basket, the second layer of filtration material disposed next to and radially outwardly of the first layer, the third layer of physically protective material disposed next to and radially outwardly of the second layer and the fourth outer layer adjacent to the basket of mesh material with a strand diameter which is substantially larger than a strand diameter of the fiber of the third layer and with a pore width which is substantially larger than a pore width of the fiber of the third layer.

5,358,639

METHOD OF ANALYZING HEMOGLOBINS

Kenji Yasuda, Tokyo; Yoshinori Takata, Chiba; Harumi Tsuruta, Ibaraki; Sadabumi Ohnuma, and Junkichi Miura, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,396

Claims priority, application Japan, Apr. 1, 1992, 4-079508

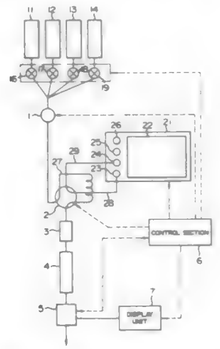
Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—635 3 Claims

1. A method for analyzing hemoglobins in blood samples by supplying phosphate-based buffer solutions as an eluting solu-

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tion to a separation column provided with carboxyl groups or carboxyalkyl groups as ion exchange groups, which comprises



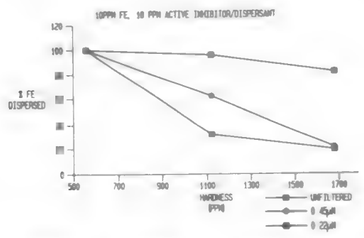
supplying a solution containing S-(carboxyalkyl)-L-cysteine and a phosphate based buffer agent to the separation column.

5,358,640

METHOD FOR INHIBITING SCALE FORMATION AND/OR DISPERSING IRON IN REVERSE OSMOSIS SYSTEMS

E. H. Kelle Zeiher, Naperville, and Cynthia A. Soderquist, Bolingbrook, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation-in-part of Ser. No. 916,905, Jul. 20, 1992, Pat. No. 5,256,303. This application Sep. 16, 1993, Ser. No. 122,729
The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.
Int. Cl.[5] C02F 5/14
U.S. Cl. 210—639 17 Claims

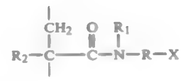


1. A method for inhibiting calcium sulfate scale formation and deposition from a feedstream passing through a reverse osmosis system which comprises the steps of:

a. controlling the pH of said feedstream within the range between about 6.0 to about 7.0;

b. controlling the temperature of said feedstream within the range between about 50° to about 80° F.; and

c. adding a scale inhibitor to said feedstream in an amount between about 0.002 ppm per ppm hardness (as $CaCO_3$) of said feedstream to about 0.005 ppm per ppm hardness (as $CaCO_3$) of said feedstream, said scale inhibitor comprising a water-soluble organic phosphonate of (hexamethylene bis(nitrilodimethylene))-tetraphosphonic acid or salts thereof and an N-substituted acrylamide polymer containing an amide structure as follows:



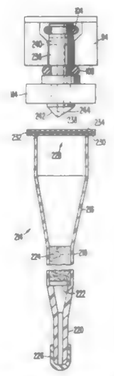
where R_2 is hydrogen or methyl, R_1 is a hydrogen or an alkyl, and R is alkylene or phenylene and X is sulfonate, (poly)hydroxyl, (poly)carboxyl or carbonyl, and combinations thereof, with the weight ratio of polymer to phosphonate being within the range of about 0.2:1 to about 6:1.

5,358,641

COLUMN ANALYZER SYSTEM AND IMPROVED CHROMATOGRAPH COLUMN FOR USE IN THE SYSTEM

James R. M. Sanford, Vidor; Patrick M. Frank, Beaumont; Joseph H. Golias, Beamount, and William C. Jennings, Beaumont, all of Tex., assignors to Helena Laboratories Corporation, Beaumont, Tex.

Division of Ser. No. 779,186, Oct. 22, 1991, Pat. No. 5,228,988, which is a continuation-in-part of Ser. No. 733,714, Jul. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 708,298, May 31, 1991, Pat. No. 5,207,918, which is a division of Ser. No. 427,346, Oct. 27, 1989, Pat. No. 5,045,208. This application May 10, 1993, Ser. No. 58,364
Int. Cl.[5] B01D 15/08
U.S. Cl. 210—656 14 Claims



1. A method for conducting column chromatography, comprising the steps of:

(a) mounting a chromatographic column in a rack, the column having a top end and a seal member closing the top end;

(b) lowering a pressure cylinder with a protruding head toward the column until the head ruptures the seal member, the pressure cylinder additionally having a bore which communicates with the head;

(c) raising the pressure cylinder from the column;

(d) introducing fluid into the column through the ruptured seal member;

(e) lowering the pressure cylinder toward the column again;

(f) sealing the pressure cylinder to the column using a resilient pad carried by the pressure cylinder; and

(g) exposing the interior of the column to pressure through the bore in the pressure cylinder.

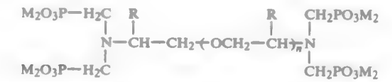
5,358,642

POLYETHER POLYAMINO METHYLENE USING PHOSPHONATES METHOD FOR HIGH PH SCALE CONTROL

Shih-Ruey T. Chen, Pittsburgh, and Gary F. Matz, Carnegie, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Division of Ser. No. 879,231, May 11, 1992, which is a continuation-in-part of Ser. No. 708,527, May 31, 1991, abandoned. This application Sep. 18, 1992, Ser. No. 946,065
The portion of the term of this patent subsequent to Apr. 5, 2011, has been disclaimed.
Int. Cl.[5] C02F 5/14
U.S. Cl. 210—700 13 Claims

1. A method of inhibiting the formation, deposition, and adherence of scale-forming salts including calcium carbonate in recirculating cooling water systems, boiler water systems, reverse osmosis systems, gas scrubbers, and evaporators having a pH of at least 8.5 and a calcium saturation level of at least 150 times the solubility limit of calcium as calcite, comprising the step of adding to said system an amount sufficient to establish a concentration of from 1 to 100 mg/L of a polyether polyamino methylene phosphonate of the formula:



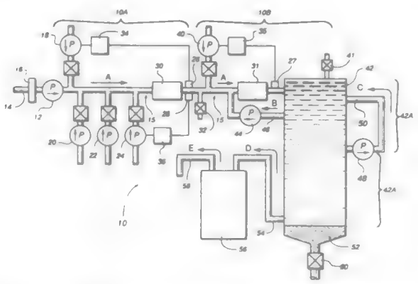
where n is an integer or fractional integer which is, or on average is, from about 2 to about 12, inclusive; M is hydrogen or a suitable cation; and each R may be the same or different and is independently selected from hydrogen and methyl.

5,358,643

TREATMENT METHOD FOR REMOVING ARSENIC FROM ARSENIC CONTAMINATED WATER

William W. McClintock, 1165 Coppet St., Fairbanks, Ak. 99709-4721

Filed Feb. 8, 1994, Ser. No. 193,220
Int. Cl.[5] C02F 1/52, 1/58
U.S. Cl. 210—709 12 Claims



9. A method of removing arsenic from arsenic contaminated water, comprising the steps of:

(a) flowing the arsenic contaminated water under pressure through a closed treatment apparatus, the apparatus including a conditioning section and a reaction section including a reaction chamber, and the apparatus arranged such that water flows through the conditioning section before it flows into the reaction section;

(b) analyzing the flowing arsenic contaminated water to determine concentration of iron, pH, and ORP;

(c) if the arsenic contaminated water in the conditioning section has a pH greater than about 7.0, adding sulfuric acid to the arsenic contaminated water until pH is less than about 7.0;

(d) if iron concentration of the arsenic contaminated water in the conditioning section is less than about 20 ppm, adding iron sulfate solution into the flowing arsenic contaminated water until the iron concentration thereof is greater than about 20 ppm;

(e) if arsenic contaminated water in the conditioning section has a pH less than about 7.0 and an iron content greater than about 20 ppm adding sodium hypochlorite solution to the arsenic contaminated water until the ORP thereof is about 600 millivolts;

(f) adding a reagent including at least one of a solution of sodium hydroxide and a solution of sodium carbonate to the arsenic contaminated water exiting the conditioning section until the pH thereof is between about 7.2 and 8.0;

(g) following step (f), reacting the arsenic contaminated water and the reagent in the reaction chamber to form a precipitate in the treated water, the precipitate including iron in the form of at least one of iron oxide and iron hydroxide, and arsenic in the form of iron arsenate; and

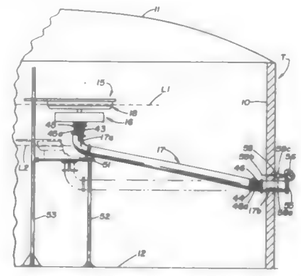
wherein at least steps (c)–(f) are executed in the absence of air.

5,358,644

METHOD AND APPARATUS FOR DECANTING LIQUID

Thomas A. Dennis, Dixon, Ill., assignor to Aqua-Aerobic Systems, Inc., Rockford, Ill.

Filed May 10, 1993, Ser. No. 58,178
Int. Cl.[5] B01D 21/24
U.S. Cl. 210—744 16 Claims



9. A method of decanting liquid from adjacent the surface of liquid in a tank comprising:

(a) providing a decanter assembly in the tank, the decanter assembly including a decanter receptacle having a top opening surrounded by a decanter rim, a decant pipe having an inlet end communicating with the decanter receptacle and a discharge end extending out the tank, and a float overlying the decanter receptacle and connected thereto for relative movement between a decanter closed position in which the float engages the decanter rim and a decanter open position in which the decanter rim is spaced below the float, the decanter receptacle and decant pipe when empty having sufficient positive buoyancy to buoyantly support the float in the decanter closed position, the float having sufficient positive buoyancy to buoyantly support the decanter receptacle, when the latter is in the decanter open position and filled with liquid,

(b) operating the decanter assembly through a decant cycle including the steps of:

i) starting a decant cycle when the surface of the liquid in the tank is at an upper level and the decanter assembly is buoyantly supported in the decanter closed position at the surface of the liquid in the tank, the starting step including preventing flow of liquid from the discharge

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end of the decant pipe and supplying decanter priming liquid to the closed decanter receptacle until the buoyancy of the decanter receptacle changes to a negative value and the decanter receptacle moves downwardly relative to the float to the decanter open position;

ii) a decant step comprising discontinuing supply of priming liquid to the decanter assembly and discharging decanted liquid from the decanter receptacle through the decanter pipe and

iii) stopping downward movement of the decanter receptacle when the receptacle reaches a preselected lower position and continuing discharge of liquid from the decanter receptacle while the float moves downwardly relative to the decanter receptacle to the decanter closed position and at least until the decanter receptacle is sufficiently empty to buoyantly hold the decanter receptacle in the decanter closed position in engagement with the float.

5,358,645

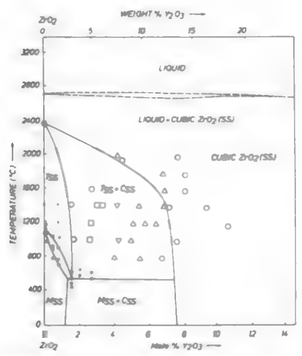
ZIRCONIUM OXIDE CERAMICS FOR SURFACES EXPOSED TO HIGH TEMPERATURE WATER OXIDATION ENVIRONMENTS

Glenn T. Hong, Tewksbury; William R. Killilea, West Chelmsford, and David W. Ordway, Natick, all of Mass., assignors to Modar, Inc., Houston, Tex.

Continuation of Ser. No. 682,465, Apr. 9, 1991, abandoned. This application Aug. 26, 1992, Ser. No. 935,408

Int. Cl.[5] C02F *11/08*

U.S. Cl. 210—761 **18 Claims**



1. A process for high temperature water oxidation of combustible corrosive material in a high temperature water oxidation apparatus, in which during at least part of the oxidation, corrosive material is present and contacts the apparatus over a contact area on the apparatus, the process comprising contacting in an aqueous phase the combustible corrosive material and an oxidizing agent under conditions suitable to cause the combustion of the combustible corrosive material, wherein the combustion is at a temperature range of about 400° C. to about 650° C. and at pressures from about 27.5 bar (400 psi) to about 345 bar (5000 psi), and the contact area comprises a zirconia based ceramic.

5,358,646

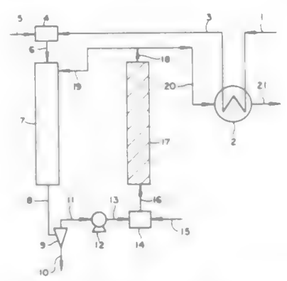
METHOD AND APPARATUS FOR MULTIPLE-STAGE AND RECYCLE WET OXIDATION

Earnest F. Gloyna; Lixiong Li, and Roy N. McBrayer, all of Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Jan. 11, 1993, Ser. No. 3,240

Int. Cl.[5] C02F *1/72*

U.S. Cl. 210—762 **48 Claims**



1. A multistage reactor for reacting a feed compound, comprising:

two reaction zones adapted to contact the feed compound with an oxidant, the first reaction zone being adapted to oxidize compounds during use to form an intermediate product comprising a first intermediate compound which is intermediate the feed compound and an end product, and the second zone being adapted to further oxidize the intermediate product during use so that the first intermediate compound passed through the first zone is reacted to form an end product, or a second intermediate compound which is intermediate the first intermediate compound and an end product; and

wherein the first zone is substantially non-catalytic and adapted to oxidize compounds at conditions that are supercritical for water and the second zone is adapted to catalytically oxidize compounds during use.

5,358,647

FABRIC SOFTENING PRODUCTS BASED ON A COMBINATION OF PENTAERYTHRITOL COMPOUND AND BENTONITE

Eduardo Puentes-Bravo, Alleur; Anita M. Hertmoesilla, Othee; Jean-Paul M. H. F. Grandmaire, Andrimont; Viviane E. A. Tack, Ayeneux; Jan R. P. Doms, Tongeren; Marcel J. E. G. Gillis, Argenteau; Pierre M. Lambert, Cortil-Wodon, and Paul A. Heckles, Tiff, all of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

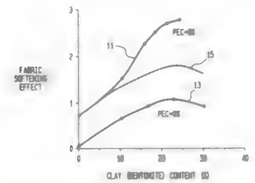
Continuation of Ser. No. 756,030, Sep. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 638,945, Jan. 9, 1991, Pat. No. 5,126,060. This application Aug. 16, 1993, Ser. No. 107,434

The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.

Int. Cl.[5] D06M *10/08*

U.S. Cl. 252—8.6 **27 Claims**

1. A fabric softening product for application to fibrous materials so that a fabric softening component thereof is deposited on the fibrous materials and softens them, which product is selected from the group consisting of A) liquid and gel state rinse cycle and wash cycle additive compositions and dryer articles, B) liquid and gel state detergent compositions, C) particulate and solid detergent compositions and D) particulate and solid wash and rinse cycle additive compositions, each of which comprises pentaerythritol derivatives, which is a fabric softening component thereof, selected from the group consisting of a higher aliphatic acid ester of pentaerythritol, an oligomer of pentaerythritol, a lower alkylene oxide derivative of pentaerythritol, a lower alkylene oxide derivative of an oligomer of pentaerythritol, or a mixture thereof, and a montmorillonite clay, and said composition being essentially free of quaternary ammonium fabric softener, with the proportions of pentaerythritol derivative: clay being in the range of 1–40:99–60 for the A products, 1–25:1–50 for the B products, 1–25:10–30 for the C products and 1–25:10–99 for the D products, with all proportions being by weight.



5,358,648

SPIN FINISH COMPOSITION AND METHOD OF USING A SPIN FINISH COMPOSITION

Kalidas Chakravarti, Midlothian, Va., assignor to Bridgestone/-Firestone, Inc., Akron, Ohio

Filed Nov. 10, 1993, Ser. No. 150,518

Int. Cl.[5] D06M *13/224, 13/335*

U.S. Cl. 252—8.6 **9 Claims**

1. Non-aqueous spin finish composition for application to polyester yarn, said composition consisting essentially by weight of

(a) from 10 to 70% of trimethylol or tetramethylol C_1–C_3 alkane ester wherein all the methylol groups are esterified with C_8–C_{10} saturated carboxylic acid,

(b) from 10 to 70% of tetraethylene glycol diester of C_8–C_{10} saturated carboxylic acid,

(c) from 5 to 50% of light mineral oil consisting essentially of C_{10}–C_{20} isoparaffinic hydrocarbon and having a vapor pressure less than about 8 mm Hg at 38° C. as determined by ASTM Test Method D2879, a viscosity of less than 8.0 centipoises at 25° C. as determined by ASTM Test Method D445, and a surface tension of less than 31.0 dynes/cm at 25° C. as determined with a duNuoy ring tensiometer, and

(d) from 2 to 20% of 1H-imidazolium, 1-ethyl-4,5-dihydro-3-(2-hydroxyethyl) -2-(8-heptadecenyl)-,ethyl sulfate.

5,358,649

DIAGNOSIS FOR PORCINE MALIGNANT HYPERTHERMIA

David H. MacLennan, Toronto, and Peter J. O'Brien, Guelph, both of Canada, assignors to University of Guelph and The University of Toronto Innovations Foundation, Ontario, Canada

PCT No. PCT/CA91/00457, § 371 Date Mar. 15, 1993, § 102(e) Date Mar. 15, 1993, PCT Pub. No. WO92/11387, PCT Filed Dec. 20, 1991, Ser. No. 30,159

Claims priority, application United Kingdom, Dec. 21, 1990, 90 27869; May 20, 1991, 91 10865; Sep. 9, 1991, 91 19250

Int. Cl.[5] C12Q *1/68;* C12P *19/34;* C07H *21/04*

U.S. Cl. 435—6 **9 Claims**

1. A method for screening a pig to determine if said pig is suceptible to malignant hyperthermia comprising:

i) providing a biological sample which was removed from said pig to be screened, and

ii) conducting a biological assay to determine presence in said biological sample of mutant RYR1 gene having a nucleotide mutation of C1843 to T1843 in the DNA sequence of FIG. 2.

5,358,650

GEAR OIL COMPOSITIONS

Sanjay Srinivasan, and Rolfe J. Hartley, both of St. Louis, Mo., assignors to Ethyl Corporation, Richmond, Va.

Filed Apr. 1, 1993, Ser. No. 41,791

Int. Cl.[5] C10M *111/02, 111/04*

U.S. Cl. 252—45 **5 Claims**

1. An essentially metal-free and essentially halogen-free, boron-containing gear oil lubricant composition which comprises:

a) base oil consisting essentially of a blend of (1) di-(2-ethylhexyl)sebacate; (2) hydrogenated poly-α-olefin oligomer having a kinematic viscosity at 100° C. of about 40 cSt; (3) hydrogenated poly-α-olefin oligomer having a kinematic viscosity at 100° C. of about 8 cSt; and (4) hydrogenated poly-α-olefin oligomer having a kinematic viscosity at 100° C. of about 2 cSt, in proportions such that for each 100 parts by weight of (2) there are from about 24 to about 40 parts by weight of (1), from about 3 to about 12 parts by weight of (3), and from about 11 to about 20 parts by weight of (4);

b) about 0.7 to about 7 wt % of at least one oil-soluble organic sulfur-containing antiwear and/or extreme pressure agent having a sulfur content of at least about 20% by weight;

c) about 0.2 to about 3 wt % of at least one oil-soluble organic phosphorus-containing antiwear and/or extreme pressure agent;

d) about 0.05 to about 0.35 wt % of at least one oil-soluble copper corrosion inhibitor;

e) about 0.1 to about 0.8 wt % of at least one oil-soluble rust inhibitor;

f) about 0.005 to about 0.06 wt % of at least one oil-soluble foam inhibitor; and

g) about 0.15 to about 3 wt % of at least one oil-soluble ashless dispersant;

all of the foregoing percentages being based on the weight of the total composition, said composition being still further characterized in that the sulfur:phosphorus weight ratio of said composition is in the range of about 8:1 to about 35:1, and in that the boron content of said composition is in the range of about 0.0025 to about 0.07 wt %.

5,358,651

COMPOSITIONS, CONCENTRATES, LUBRICANT COMPOSITIONS, FUEL COMPOSITION AND METHODS FOR IMPROVING FUEL ECONOMY OF INTERNAL COMBUSTION ENGINES

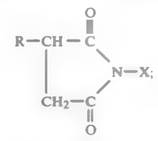
Reed H. Walsh, Mentor, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Division of Ser. No. 471,657, Jan. 23, 1990, Pat. No. 4,997,594, which is a continuation of Ser. No. 283,691, Dec. 13, 1988, abandoned, which is a division of Ser. No. 791,260, Oct. 25, 1985, abandoned. This application Dec. 13, 1990, Ser. No. 626,812

Int. Cl.[5] C10M *133/56, 133/16*

U.S. Cl. 252—51.5 A **12 Claims**

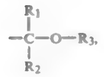
1. A composition comprising one or more substituted succinimide derivatives represented by the formula:



wherein X is

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-continued



(II)

wherein R is a hydrocarbon-based group containing from about 8 up to about 35 carbon atoms, R_1 and R_2 are each independently hydrogen or an alkyl group containing up to 8 carbon atoms wherein at least one of R_1 and R_2 is an alkyl group , R_3 is a hydrocarbon-based group containing up to about 28 carbon atoms.

11. A lubricating composition comprising a major amount of a lubricating oil and a minor amount of at least one composition according to claim 1.

5,358,652

INHIBITING HYDROLYTIC DEGRADATION OF HYDROLYZABLE OLEAGINOUS FLUIDS

Ian Macpherson, St. Louis, Mo., assignor to Ethyl Petroleum Additives, Limited, Bracknell, England

Filed Oct. 26, 1992, Ser. No. 966,514
Int. Cl.[5] C10M *105/36, 133/14*
U.S. Cl. 252—51.5 R **17 Claims**

1. A lubricant or functional fluid composition which comprises:

a) a major proportion of a hydrolyzable oleaginous base fluid in contact with at least a small amount of water, wherein 50 to 100% by volume of said hydrolyzable oleaginous base fluid is composed of hydrolyzable oleaginous glyceride containing lecithin; and

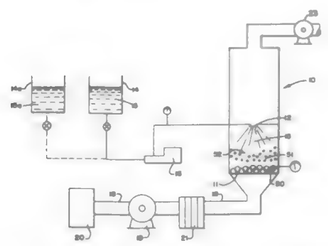
b. as a hydrolysis inhibitor and inhibitor of acidity buildup in adventitious water, a minor amount of at least one oil-soluble compound containing at least one 3,5-dihydrocarbyl-4-hydroxybenzyl group attached to a primary, secondary, or tertiary amino nitrogen atom, the two alpha-positions of the benzyl group being substituted by two hydrogen atoms, by two organic groups, or by one hydrogen atom and one organic group, said oil-soluble compound stabilizing said composition against hydrolytic degradation in the presence of moisture.

5,358,653

CHLORINATED SOLID RINSE AID

Elizabeth J. Gladfelter, Falcon Heights; James L. Copeland, Burnsville; Stephen A. Morganson, Eagan, and Keith Olson, Apple Valley, all of Minn., assignors to Ecolab, Inc., St. Paul, Minn.

Filed Jun. 25, 1990, Ser. No. 543,211
Int. Cl.[5] B08B *9/28;* **C11D** *1/72, 3/395, 17/00*
U.S. Cl. 252—90 **52 Claims**



1. A solid chlorinated rinse aid concentrate, suitable for dispensing into an aqueous rinse composition useful for rinsing ware after a wash cycle, said concentrate comprising:

(a) a continuous organic solid phase comprising about 10–90 wt-% of a low foaming polyoxyalkylene surfactant; and

(b) about 5–60 wt-%, each percentage based on the rinse concentrate, of an encapsulate dispersed throughout said organic solid phase comprising an encapsulate layer and a core comprising an active chlorine compound, wherein said encapsulate is substantially stable in the presence of said polyoxyalkylene surfactant providing stain control or sanitization with an effective rinsing-sheeting action.

18. A solid, cast, chlorinated rinse aid concentrate, suitable for dispensing into an aqueous rinse composition useful for rinsing ware after a wash cycle, said concentrate comprising:

(a) about 20–70 wt-% of a low foaming polyoxyalkylene surfactant; and

(b) about 10–50 wt-%, each percentage based on the rinse concentrate, of an encapsulated source of active chlorine; and

(c) about 1–30 wt-% of a diluent organic carrier;

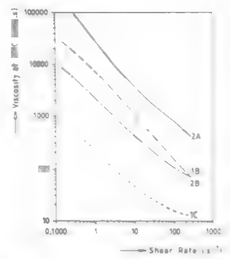
wherein said encapsulate is substantially stable in the presence of said organic carrier and polyoxyalkylene surfactant providing stain control or sanitization with an effective rinsing-sheeting action.

5,358,654

STABLE POURABLE AQUEOUS BLEACHING COMPOSITIONS COMPRISING SOLID ORGANIC PEROXY ACIDS AND AT LEAST TWO POLYMERS

Reinder Torenbeek, Terwolde, and Jan J. H. Ploumen, Roermond, both of Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

Continuation-in-part of Ser. No. 639,304, Jan. 2, 1991, Pat. No. 5,126,066, which is a continuation of Ser. No. 368,507, Jun. 20, 1989, abandoned, and a continuation-in-part of Ser. No. 562,778, Aug. 3, 1990. This application Mar. 3, 1992, Ser. No. 845,291
Claims priority, application European Pat. Off., Jun. 22, 1988, 88109925.3; Aug. 8, 1989, 89202052.0
Int. Cl.[5] C11D *3/37, 3/39, 3/395*
U.S. Cl. 252—95 **13 Claims**



1. A pourable bleaching composition comprising a solid, substantially water-insoluble organic peroxyacid stably suspended in an aqueous medium, said aqueous medium comprising from about 0.1 to about 1% by weight of the bleaching composition of a first polymer selected from the group consisting of polysaccharides having at least 60% of the units in the polysaccharide backbone linked together by a 1,4-β-oxy linkage and from about 0.02 to about 2% by weight of the bleaching composition of a second selected from the group consisting of polyvinyl alcohol, one or more cellulose derivatives and mixtures thereof, said first and second polymers being present in amounts effective to provide a physically and chemically stable, pourable bleaching composition.

5,358,655

PROCESS FOR THE PRODUCTION OF DETERGENT TABLETS FOR DISHWASHING MACHINES

Hans Kruse; Christiane Zeise, both of Korschenbroich; Jochen Jacobs, Wuppertal, and Juergen Haerer, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Fed. Rep. of Germany

PCT No. PCT/EP92/00744, § 371 Date Oct. 12, 1993, § 102(e) Date Oct. 12, 1993, PCT Pub. No. WO92/18604, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 3, 1992, Ser. No. 137,106
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1991, 4112075
Int. Cl.[5] C11D *3/60, 11/00, 11/02, 17/00*
U.S. Cl. 252—95 **7 Claims**

1. The process of producing a stable, dual-function, phosphate- and metasilicate-free, low-alkaline detergent tablet for dishwashing machines comprising:

a) agglomerating a homogeneous, spray-dried granular alkaline detergent additive with builders, nonionic surfactants and water to form an agglomerate, said additive comprising

(1) 35 to 60% by weight of sodium salts of at least one homopolymeric or copolymeric (meth) acrylic acid,

(2) 35 to 50% by weight of anhydrous sodium carbonate,

(3) 4 to 20% by weight of anhydrous sodium sulfate, and

(4) 1 to 7% by weight of water, all weights being based on the weight of said granular detergent additive,

b) treating said agglomerate with hot air in a fluidized bed,

c) mixing said agglomerate with a bleaching agent, and

d) tabletting said agglomerate and bleaching agent mixture to provide a tablet containing 5 to 30% by weight of said granular detergent additive 5 to 40% by weight of trisodium citrate dihydrate, 5 to 60% by weight of anhydrous sodium carbonate, 3 to 15% by weight of bleaching agent, and 3 to 15% by weight of water, wherein said tablet has a broad dissolving profile whereby at least 10 to 40% by weight of said tablet is dissolved in cold water flowing into a dishwashing machine during the prerinse cycle and at least 60 to 90% by weight of said tablet is available for the main dishwashing cycle.

5,358,656

COMPOSITIONS COMPRISING GLYCEROGLYCOLIPIDS HAVING AN AMINE LINKAGE AS A SURFACTANT OR COSURFACTANT

Robert W. Humphreys, Oradell, N.J.; Anthony Hung, New City, N.Y.; Shang-Ren Wu, Mahwah, N.J., and Abid N. Khan-Lodhi, Hoole Chester, England, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 816,423, Dec. 31, 1991. This application Nov. 25, 1992, Ser. No. 982,199
Int. Cl.[5] C11D *3/22*
U.S. Cl. 252—174.12 **2 Claims**

1. A liquid detergent comprising (percentages by weight):

(a) 5–70% of a detergent active mixture wherein said mixture comprises 65 to 100% of a glyceroglycolipid compound having the structure



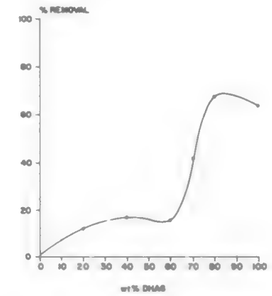
wherein [1] comprises one to four saccharide units, R or R_1 are the same or different and are hydrogen or a branched or unbranched, saturated or unsaturated, hydrocarbon radical having from about 1 to about 24 carbons; and B is OH or NR_2R_3, wherein R_2 and R_3 are the same or different and are hydrogen, a branched or unbranched hydrocarbon, saturated or unsaturated radical having 1 to 24 carbons; wherein the NRR_1 group and B group are positionally interchangeable; and

wherein at least one of R, R_1, R_2 or R_3 must be a hydrocarbon radical having 1 to 24 carbons;

and wherein said mixture further comprises a nonionic surfactant;

(b) 0–50% builder;

(c) 0–40% electrolyte;



(d) 0.01–5% enzyme;

(e) 0.1–15% enzyme stabilizer;

(f) 0–20% phase regulant; and

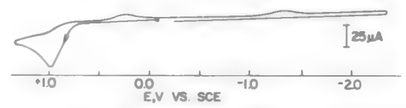
(g) remainder water and minors.

5,358,657

REACTIVE COMPOSITIONS CONTAINING SUPEROXIDE ION FOR THE DEGRADATION OF HALOGENATED ORGANIC COMPOUNDS

Donald T. Sawyer; Seungwon Jeon, and Paul K. S. Tsang, all of College Station, Tex., assignors to Texas A&M University System, College Station, Tex.

Continuation-in-part of Ser. No. 455,571, Dec. 22, 1989, Pat. No. 5,143,710. This application Nov. 5, 1990, Ser. No. 609,630
Int. Cl.[5] C09K *3/00*
U.S. Cl. 252—183.13 **3 Claims**



1. A reagent composition comprising an aprotic solvent having dissolved therein (a) an effective amount of a hydrogen donor; (b) an effective amount of a compound which produces hydroxide ion or alkoxide ion; (c) a catalyst selected from the group consisting of quinones, phenazines and flavins; and (d) dioxygen.

5,358,658

METHOD FOR MIXING $LiPF_6$ ELECTROLYTES AT ELEVATED TEMPERATURES

Bhuwon Pradhan, Santa Clara; Milton N. Golovin, San Jose, and Jose Gonzales, Sunnyvale, all of Calif., assignors to Valence Technology, Inc., San Jose, Calif.

Filed Apr. 19, 1993, Ser. No. 49,200
Int. Cl.[5] H01G *9/02*
U.S. Cl. 252—62.2 **19 Claims**

1. A method for preparing an electrolyte solution comprising an electrolyte solvent, a polyalkylene oxide film forming agent, a prepolymer and $LiPF_6$ salt while inhibiting decomposition of the $LiPF_6$ salt which method comprises the steps of:

(a) combining the electrolyte solvent and the prepolymer and mixing until homogeneous;

(b) adding the polyalkylene oxide film forming agent to the composition prepared in step (a) above and mixing until a

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uniform dispersion is formed as evidenced by the lack of solids visible in the dispersion;

(c) heating the composition produced in step (b) above at a temperature above 55° C. until the polyalkylene oxide is dissolved;

(d) cooling the composition prepared in step (c) to a temperature above the precipitation point for the polyalkylene oxide film forming agent to 50° C.; and

(e) adding the $LiPF_6$ to the composition prepared in step (d) while maintaining the temperature in said composition above the precipitation point for the polyalkylene oxide film forming agent and less than 55° C. so as to form an electrolyte solution.

5,358,659

MAGNETIC MATERIALS WITH SINGLE-DOMAIN AND MULTIDOMAIN CRYSTALLITES AND A METHOD OF PREPARATION

Ronald F. Ziolo, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 9, 1992, Ser. No. 910,805

Int. Cl.[5] H01F *1/06, 1/20, 1/28*

U.S. Cl. 252—62.54 **13 Claims**



1. A magnetic material comprising

a submicron ion exchange resin bead containing both single-domain and multidomain crystallites of magnetic material.

5,358,660

MAGNETIC PARTICLES FOR PERPENDICULAR MAGNETIC RECORDING

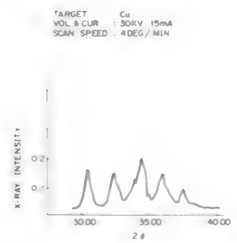
Takanori Kidoh; Katsura Ito, and Kenzo Hanawa, all of Shiojiri, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 830,454, Feb. 5, 1992, abandoned, which is a continuation of Ser. No. 766,914, Sep. 19, 1991, abandoned, which is a continuation of Ser. No. 297,288, Jan. 19, 1989, abandoned. This application Jul. 20, 1992, Ser. No. 915,294

Claims priority, application Japan, Jan. 14, 1988, 63-6277

Int. Cl.[5] C04B *35/26*

U.S. Cl. 252—62.63 **3 Claims**



1. Magnetic particles for perpendicular magnetic recording, wherein said magnetic particles are hexagonal ferrite particles having a hexagonal platelet shape, have a crystal structure different from both a magnetoplumbite structure and a spinel structure, have an x-ray diffraction pattern in accordance with FIG. 2,. and are represented by the formula:

$$MM'_xM''_yFe_{2x-y+2z}O_{1+4+3z}$$

wherein M represents at least one element or a combination of elements selected from Ba, Sr, Ca and Pb;

M′ is at least one element or a combination of elements selected from Co, Zn and Mn;

M″ is at least one element or a combination of elements selected from Co, Ti, In, Zn, Mn, Ge, Nb, Zr, Ta, V and Sn, M″ having an average valency of 3;

All Fe's are trivalent and no divalent Fe is present;

x is a number of z/4 to z, inclusive;

y is a number of from more than 0 to (x+z)/3, inclusive; and

z is a number of 5.5 to 9.0, inclusive.

wherein said magnetic particles have an average particle size of from 0.01 to 0.3 μm, a saturation magnetization at room temperature of 60 emu/g or higher, a coercive force of 300 to 1500 Oe and a degree of dependence of coercive force on temperature of 0.2%/° C. or lower based on the temperature range of 20° to 120° C.

5,358,661

LIQUID CRYSTALLINE POLYESTERS

Hitoshi Mazaki, Kawasaki, and Takuya Matsumoto, Yokohama, both of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

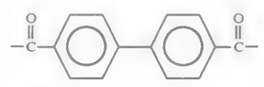
Filed Jan. 26, 1994, Ser. No. 186,826

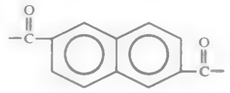
Claims priority, application Japan, Jan. 27, 1993, 5-045625; Feb. 5, 1993, 5-056289

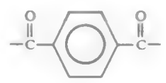
Int. Cl.[5] C09K *19/52;* **C08G** *63/00*

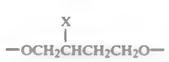
U.S. Cl. 252—299.01 **3 Claims**

1. A liquid crystalline polyester consisting essentially of repeating units represented by the following formulae (a), (b) or (b′) and (c):


[a]


[b]


[b′]


[c]

where the repeating unit c contains an optically active carbon and X is an alkyl group having 1 to 4 carbon atoms or a halogen atom, the repeating units a, b and c or a, b′ and c being in mole ratios such that a/b is in the range from 95/5 to 5/95, a/b′ is in the range from 95/5~50/50 and (a+b)/c or (a+b′)/c is approximately 1.

5,358,662

LIQUID CRYSTAL COMPOSITION AND A LIQUID CRYSTAL DISPLAY ELEMENT USING THE SAME

Taku Hirose, Chibaken; Kanetsugu Terashima, Shigaken, and Shinichi Sawada, Chibaken, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed May 28, 1993, Ser. No. 68,952

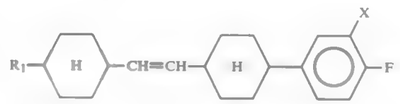
Claims priority, application Japan, May 28, 1992, 4-160011

Int. Cl.[5] C09K *19/30, 19/52, 19/12;* **G02F** *1/13*

U.S. Cl. 252—299.63 **6 Claims**

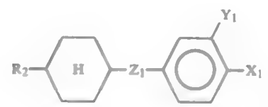
1. A liquid crystal composition comprising:

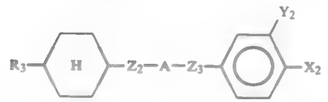
(1) a first component which comprises at least one compound expressed by the formula (I)

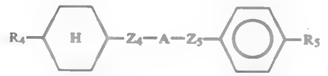

(I)

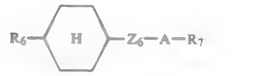
wherein R_1 represents an alkyl or alkenyl group of 1 to 10 carbon atoms, in which one or two non-adjacent methylene group(s) can be substituted by oxygen atom(s); and X represents a hydrogen atom or a fluorine atom, and

(2) a second component which comprises at least one compound selected from the group consisting of the respective compounds expressed by the formulas (II), (III), (IV) and (V)


(II)


(III)


(IV)


(V)

wherein R_2, R_3, R_4 and R_5 are each as defined for R_1; R_6 and R_7 each independently represent an alkyl or alkenyl group of 1 to 10 carbon atoms, in which one or two non-adjacent methylene group(s) can be substituted by oxygen atom(s) or carboxyl group(s); X_1 and X_2 each represent a fluorine atom, a trifluoromethyl group, a trifluoromethoxy group, a difluoromethyl group or a difluoromethoxy group; Y_1 and Y_2 each represent a hydrogen atom or a fluorine atom; Z_1, Z_2 and Z_4 each represent a single bond, a carbonyloxy group or an ethan-1,2-diyl group; Z_3, Z_5 and Z_6 each represent a single bond, a carbonyloxy group, an ethan-1,2-diyl group or an ethyn-1,2-diyl group; and A represents a 1,4-cyclohexylene or phenylene group at least one hydrogen atom of which can be substituted by fluorine atom(s), and first and second components being contained in said composition in an amount of 50% by weight or more, with the proviso that no cyano compound is contained in said composition.

5,358,663

LATERALLY CYANO- AND FLUORO-SUBSTITUTED TERPHENYLS

George W. Gray, Cottingham; David Lacey; Michael Hird, both of Hull, and Kenneth J. Toyne, Hull, all of England, assignors to The Secretary of State for Defence in her Britannic Majesty's Government of U.K. of Gt. Britain and N. Ireland, United Kingdom

PCT No. PCT/GB88/00880, § 371 Date Apr. 11, 1990, § 102(e) Date Apr. 11, 1990, PCT Pub. No. WO89/03821, PCT Pub. Date May 5, 1989

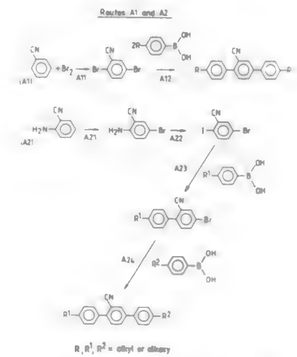
Continuation of Ser. No. 469,486, Apr. 11, 1990, abandoned.

This PCT application Oct. 19, 1988, Ser. No. 946,773

Claims priority, application United Kingdom, Oct. 19, 1987, 8724458

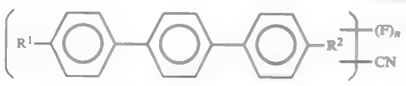
Int. Cl.[5] C09K *19/12, 19/06, 19/52;* **G02F** *1/13*

U.S. Cl. 252—299.660 **13 Claims**



1. A ferroelectric smectic liquid crystal material being a mixture of compounds wherein at least one of the said compounds is a laterally cyano-substituted terphenyl having the Formula I:

Formula I



wherein R^1 and R^2 are independently selected from hydrogen or C_{1-15} alkyl, alkoxy, or alkyl or alkoxy in which one or more CH_2 groups are replaced by O, COO, OOC, CHX, CX_2, CH=CX, CX=CH, CX=CX, where X is fluorine or chlorine, CRCN where R is alkyl, or C≡C, or in which a terminal CH_3 of the alkyl or alkoxy chain is replaced by CF_3, n is 0 or 1, and the F substituents, if present, and the CN substituent are independently located in any of the available substitution positions.

5,358,664

GELLED OIL COMPOSITIONS

Melvin Brauer, East Brunswick, N.J., assignor to Caschem, Inc., Bayonne, N.J.

Filed Oct. 15, 1992, Ser. No. 961,233

Int. Cl.[5] B01J *13/00;* **C10M** *117/10;* **G02B** *6/44*

U.S. Cl. 252—315.4 **24 Claims**

1. A gelled oil composition comprising about 40 to 90% of an oil component, about 4 to 15% of an aluminum soap complex, and about 5–50% of a bleed inhibitor comprising the combination of a synthetic oil selected from the group consisting polybutene, polyisoprene, polyhexene, polyheptene, po-

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lyoctene and polynonene and at least one styrene-rubber block copolymer.

5,358,665

ANTISTATIC COMPOSITION COMPRISING DIETHANOL AMIDE AND HYDROXY-FUNCTIONAL AMIDE ESTER

Kenneth J. Sienkowski, Bethlehem, and Paritosh M. Chakrabarti, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 498,200, Mar. 23, 1990, abandoned. This application Aug. 21, 1991, Ser. No. 748,123

Int. Cl.[5] H01B *1/00*

U.S. Cl. 252—500 **15 Claims**

1. An antistatic composition comprising diethanol amide of monocarboxylic acid represented by the formula:

$$RC(O)N(CH_2CH_2OH)_2$$

and hydroxy-functional amide ester represented by the formula:

$$RC(O)NCH_2CH_2OC(O)R$$
$$|$$
$$CH_2CH_2OH$$

wherein

(a) each R is independently a hydrophobic hydrocarbon group;

(b) the molar ratio of said hydroxy-functional amide ester to said diethanol amide is in the range of from about 0.01:1 to about 0.25:1; and

(c) the molar ratio of diethanolamine to the sum of said diethanol amide and said hydroxy-functional amide ester is less than about 0.1.

5,358,666

OHMIC ELECTRODE MATERIALS FOR SEMICONDUCTOR CERAMICS AND SEMICONDUCTOR CERAMICS ELEMENTS MADE THEREOF

Kiyomi Sasaki, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 902,524, Jun. 22, 1992, abandoned, which is a division of Ser. No. 797,308, Nov. 25, 1991, abandoned. This application Oct. 4, 1993, Ser. No. 131,435

Claims priority, application Japan, Nov. 30, 1990, 2-340860

Int. Cl.[5] H01B *1/00, 1/04*

U.S. Cl. 252—512 **8 Claims**

1. A semiconductor ceramic element including a semiconductor ceramic body and an ohmic electrode formed on the surface of said semiconductor ceramic body, wherein said ohmic electrode comprises 10–50 weight % of glass frit selected from the group consisting of zinc borosilicate and lead zinc borosilicate, in addition to a conductive component comprising 48–96 weight % of aluminum and 4–52 weight % of silicon.

5,358,667

CONDITIONING SHAMPOO COMPOSITION AND METHOD OF PREPARING AND USING THE SAME

Wolfgang Bergmann, Highland Park, Ill., assignor to Helene Curtis, Inc., Chicago, Ill.

Continuation of Ser. No. 869,536, Apr. 15, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 152,251

Int. Cl.[5] A61K *7/075, 7/06*

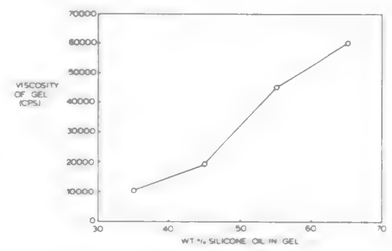
U.S. Cl. 252—547 **34 Claims**

1. A conditioning shampoo composition comprising:

(a) about 5% to about 30% by weight of an anionic cleansing surfactant;

(b) about 0.1% to about 8% by weight of a water-insoluble conditioning agent;

(c) about 0.25% to about 15.5% by weight of an emulsifying composition comprising:



(i) a polyhydric compound, and

(ii) a hydrophilic quaternary ammonium compound, having the structure

$$\left[R_1-\overset{\overset{O}{\|}}{C}-\overset{\overset{R_2}{|}}{N}-(CH_2)_n-\overset{\overset{R_3}{|}}{\underset{\underset{R_5}{|}}{N}}-R_4 \right]^{+} X^{-},$$

wherein R_1 is an alkyl group including about 5 to about 21 carbon atoms; R_2 is hydrogen or methyl; R_3 and R_4, independently, are methyl, ethyl, or benzyl; R_5 is methyl, ethyl, benzyl, acetamido or (2-pyrrolidonyl)-methyl; n is a numeral from one to about 10; and X is an anion selected from the group consisting of chloride, bromide, ethosulfate, methosulfate, acetate, nitrate, tosylate, phosphate, and combinations thereof,

wherein the polyhydric compound is present in an amount of about 0.2% to about 15% by weight of the total composition, and the hydrophilic quaternary ammonium compound is present in an amount of about 0.05% to about 0.5% by weight of the total composition;

(d) about 0.1% to about 1% by weight of a suspending agent; and

(e) a suitable carrier comprising water.

5,358,668

PHOTOSTIMULABLE PHOSPHOR AND ITS USE IN RADIOGRAPHY

Paul Leblans, Berchem, and Paul Lardon, Wijnegem, both of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

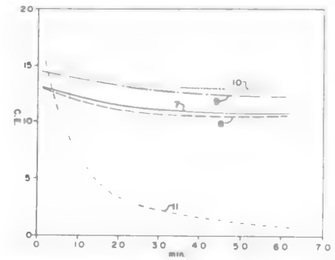
Filed Jun. 17, 1992, Ser. No. 899,852

Claims priority, application European Pat. Off., Jul. 8, 1991, 91201762.1

Int. Cl.[5] G02B *5/20;* **C09K** *11/08*

U.S. Cl. 252—584 **6 Claims**

1. A photostimulable X-ray energy absorbing halosilicate phosphor, characterized in that said phosphor contains as host metal at least one alkaline earth metal, as halogen at least one



member selected from the group consisting of Cl, Br and I, as dopant Eu^{2+} and as co-dopant lithium.

5,358,669

PLASTIC COMPOSITE GLAZINGS

Hulya Demiryont, Farmington Hills, and Ralph T. Nichols, Romulus, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 736,839, Jul. 29, 1991, abandoned. This application Apr. 16, 1992, Ser. No. 868,932

Int. Cl.[5] F21V *9/04;* **B32B** *5/16*

U.S. Cl. 252—587 **8 Claims**

7. A process for preparing a solar control glazing material for automotive or architectural use, which reflects infrared energy and transmits visible light, comprising the steps of:

A) depositing a metal film to a thickness from about 10 Angstroms to about 2,000 Angstroms on a surface of a plastic sheet;

B) heating the plastic and metal film thereon to a temperature above the plastic set temperature; and

C) deforming the plastic to cause the metal film to disintegrate into metal particles having an average mean particle size from about 5 Angstroms to about 1,000 Angstroms, and mixing the plastic and metal particles to form a plastic matrix having a plurality of the metal particles homogeneously dispersed therein.

5,358,670

PROCESS FOR PREPARING GRIGNARD REAGENTS IN DIETHYLENE GLYCOL DIBUTYL ETHER

Stanhope P. Turnbull, New Orleans, and Charles R. Egedy, Baton Rouge, both of La., assignors to Ferro Corporation, Cleveland, Ohio

Filed Jul. 2, 1993, Ser. No. 86,686

Int. Cl.[5] C07F *3/02*

U.S. Cl. 260—665 G **3 Claims**

1. A novel method for preparing Grignard reagents comprising the steps of: (1) reacting an organic halide with magnesium metal in the presence of diethylene glycol dibutyl ether, and (2) cooling the mixture to room temperature, wherein the process occurs in the absence of tetrahydrofuran, benzene, toluene, and diethyl ether stabilizing agents.

5,358,671

AERATOR DEVICE

Matti O. Leiponen, Espoo, Finland, assignor to Outokumpu Mintec Oy, Espoo, Finland

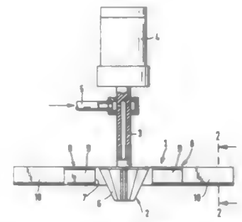
Filed Jul. 16, 1993, Ser. No. 92,758

Claims priority, application Finland, Jul. 17, 1992, 923271

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—87 **25 Claims**

1. An aerator comprising a stator defining a central axis, and a rotor mounted for rotation relative to the stator about said central axis, and wherein the stator comprises wall portions defining a plurality of flow channels extending radially relative to the central axis and open radially at each end, each flow channel having an inner part and an outer part, the inner part



being defined between two lateral walls and being closed both at the top and at the bottom, and the outer part being open at the top.

5,358,672

METHOD FOR REMOVING FINISHED ARTICLES FROM GLASS, PLASTIC OR METALLIC MOLDS

Ronald D. Blum, Roanoke, Va., assignor to InnoTech, Inc., Roanoke, Va.

Filed Jun. 8, 1992, Ser. No. 895,072

Int. Cl.[5] B29C *39/36*

U.S. Cl. 264—1.38 **30 Claims**



30. A method for molding an ophthalmic optic comprising the steps of:

providing a mold having a mold cavity with a molding surface;

providing at least one tape segment on said molding surface, said tape segment having an extended portion extending beyond an edge of said molding surface;

providing a predetermined volume of resin in said mold cavity;

positioning an optical preform on the surface of said resin in said mold cavity;

curing said resin;

demolding said ophthalmic lens by pulling on said extended portion of said tape segment; and

removing the tape segment from the ophthalmic lens.

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5,358,673

APPLICATOR DEVICE AND METHOD FOR DISPENSING A LIQUID MEDIUM IN A LASER MODELING MACHINE

Timmy B. Heller, Attleboro, Mass.; Ray M. Hill, Smithfield, R.I.; Michael R. Greenhalgh, Taunton, Mass., and Abdalla F. Saggal, Pawtucket, R.I., assignors to 3D Systems, Inc., Valencia, Calif.

Continuation-in-part of Ser. No. 802,242, Dec. 9, 1991, abandoned, and a continuation-in-part of Ser. No. 655,948, Feb. 14, 1991, abandoned, said Ser. No. 802,242, is a continuation-in-part of Ser. No. 655,948, Feb. 14, 1991, which is a continuation-in-part of Ser. No. 479,702, Feb. 15, 1990, Pat. No. 5,071,337. This application Jun. 30, 1992, Ser. No. 909,528

Int. Cl.[5] B29C *35/08, 41/02*

U.S. Cl. 264—22 20 Claims



1. A method for forming a three-dimensional object from a medium capable of solidification when subjected to prescribed energy, comprising the steps of:

providing a container for holding the medium;

providing a support within the container for supporting the object being formed;

forming a layer of medium above the support;

solidifying a preselected cross-section of the layer by exposure to the prescribed energy according to the design for the object;

relatively raising the medium surrounding the solidified cross-section thereby forming a meniscus around the periphery of the cross-section;

forming a successive layer of medium above the solidified cross-section by filling the meniscus with medium from a coating means thereby breaking the meniscus such that the medium surrounding and above the solidified cross-section flow together;

solidifying a preselected cross-section of the successive layer by exposure to the source of the prescribed energy according to the design of the object; and

alternately repeating the successive layer-forming step and solidifying step to form the object.

5,358,674

PROCESS FOR PREPARING CERAMIC FIBERS FROM POLYSILOXANES

James A. Rabe, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

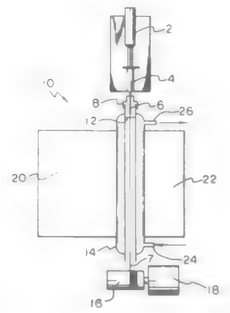
Filed Mar. 18, 1993, Ser. No. 33,723

Int. Cl.[5] D01F *9/10*

U.S. Cl. 264—22 12 Claims

1. A method for preparing a ceramic fiber comprising:

spinning a composition comprising a substantially linear polysiloxane fluid having units of the structure $[R_2SiO]$ and a photoinitiator into a fiber, wherein R independently comprises a hydrogen or a hydrocarbon radical and at least about 20% of the polysiloxane units contain at least 1 unsaturated hydrocarbon radical;



exposing the fiber to radiation for a time sufficient to render it non-flowable; and

heating the non-flowable fiber in an inert environment to a temperature above about 800° C. to convert it to a ceramic fiber.

5,358,675

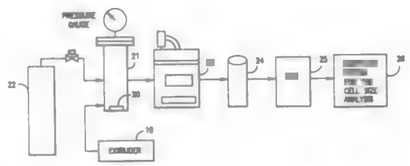
CONTROLLING HETEROGENEOUS NUCLEATION AND GROWTH OF FOAMS

Gregory A. Campbell, and Don H. Rasmussen, both of Canton, N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed May 13, 1992, Ser. No. 882,465

Int. Cl.[5] B29C *67/22*

U.S. Cl. 264—50 44 Claims



1. A method for producing closed cell foamed structures, comprising:

blending a polymeric matrix material with a second phase material which has a transition temperature below that of said polymeric matrix material to form an unfoamed composition, said second phase material being present in said unfoamed composition in a concentration between 0.001 and 18 volume percent;

heating said unfoamed composition to a temperature above the transition temperature of the matrix material;

cooling said unfoamed composition to a temperature below the transition temperature of the polymeric matrix material to provide sites which can be activated for bubble nucleation, whereby said sites are provided by voids resulting from stresses caused by differing thermal expansion coefficients between the second phase material and the polymeric phase material;

impregnating said unfoamed composition with gas at an elevated pressure; and

heating said impregnated unfoamed composition to expand cells at said sites to form a foamed structure.

5,358,676

METHODS OF MANUFACTURE AND USE FOR HYDRAULICALLY BONDED CEMENT

Hamlin M. Jennings, Evanston, Ill.; Per J. Andersen, and Simon K. Hodson, both of Santa Barbara, Calif., assignors to E. Khashoggi Industries, Santa Barbara, Calif.

Continuation-in-part of Ser. No. 856,257, Mar. 25, 1992, abandoned, which is a continuation of Ser. No. 526,231, May 18, 1990, abandoned. This application Nov. 25, 1992, Ser. No. 981,615

Int. Cl.[5] B28B *1/08, 1/26, 3/00;* C04B *40/02*

U.S. Cl. 264—71 125 Claims

1. A method for preparing a cementitious article from a hydraulic cement composition, the method comprising the steps of:

(a) applying pressure to a powdered hydraulic cement composition within a mold such that air within the powdered hydraulic cement composition is substantially removed and the powdered hydraulic cement composition is formed into a mechanically self-supporting structure of a near net final position substantially corresponding to a desired article shape;

(b) removing the mechanically self-supporting structure from the mold; and

(c) hydrating the mechanically self-supporting structure by contacting the structure with an aqueous solution without substantial mechanical mixing of the cement composition and aqueous solution, thereby forming the cementitious article.

5,358,677

METHODS OF FORMING BIOABSORBABLE OBJECTS FROM POLYVINYL ALCOHOL

Ross R. Muth, Brookfield; Nagabhushanam Totakura, Norwalk, both of Conn., and Keith D'Alessio, Warsaw, Ind., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Mar. 17, 1992, Ser. No. 852,964

Int. Cl.[5] B29B *11/12;* B29C *43/14, 43/56*

U.S. Cl. 264—87 26 Claims

1. A method of preparing a bioabsorbable object comprising:

forming a mixture comprising polyvinyl alcohol and water, said mixture having a water content between about 25% and about 50% by weight water based upon the total weight of said mixture;

drying the mixture to reduce the water content of the mixture to less than about 25% by weight based on the total weight of the mixture;

forming a film from the mixture by pressing the mixture;

drying said film until the water content of the film is no more than 10% based on the weight of the film; and

molding the dried film into a shape.

5,358,678

POLYTETRAFLUOROETHYLENE POROUS FILM AND PROCESS FOR PREPARING THE SAME

Atsushi Nakamura, Kanagawa, and Satoshi Nakashima, Tokyo, both of Japan, assignors to Mitsubishi Kasei Corporation and Nippon Valqua Industries, Ltd., both of Tokyo, Japan

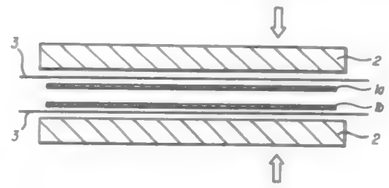
Continuation-in-part of Ser. No. 907,849, Jul. 2, 1992, abandoned. This application Jul. 6, 1992, Ser. No. 909,174

Claims priority, application Japan, Jul. 4, 1991, 3-164563; Dec. 13, 1991, 3-330480; Dec. 13, 1991, 3-330481

Int. Cl.[5] B27J *5/00*

U.S. Cl. 264—127 6 Claims

1. A process for preparing a polytetrafluoroethylene porous film comprising the steps of compression-molding a polytetrafluoroethylene resin molding powder obtained by a suspension polymerization to prepare a polytetrafluoroethylene preform, sintering the preform at a temperature not lower than the melting point of the unsintered polytetrafluoroethylene, processing the sintered preform into films, then superposing at least two of the films one upon another and fusing them at a temperature not lower than the melting point of the sintered polytetrafluoroethylene resin to unite them, followed by cooling, and then subjecting the fused and united film to uniaxial or



biaxial stretching at a temperature not higher than the melting point of the sintered polytetrafluoroethylene resin.

5,358,679

MANUFACTURE OF REGENERATED CELLULOSIC FIBER BY ZINC FREE VISCOSE PROCESS

Indubhai H. Parekh, and Sunanda K. R. Moulik, Both of Birla Research Institute for Applied Sciences Birlagram-456 331, Nagda(M.P), India

Filed Apr. 29, 1993, Ser. No. 55,524

Int. Cl.[5] D01F *2/08*

U.S. Cl. 264—177.13 2 Claims

1. A process for the production of regenerated cellulose fibre having increased lustre and softness and having substantially "C" cross section with well developed skin which comprises soaking a rayon grade pulp in caustic soda solution of 17.5 to 18.5% to produce alkali cellulose having 33–34% cellulose and 15.55 to 16.00% sodium hydroxide, shredding the alkali cellulose, aging same to get a viscous solution having viscosity of 35–75 ball fall seconds, converting the alkali cellulose into cellulose xanthate by reaction with 28 to 33% carbondi-sulphide, preparing a viscose solution from the xanthate by dissolving same in dilute caustic soda solution, said viscose solution having 6–11% cellulose and 52–60% caustic soda/cellulose, allowing the viscose solution to ripen and thereafter subjecting the ripened solution to spinning in a spin bath containing 6.5–12% sulphuric acid, 0.3–2.0% aluminium sulphate $[(Al_2(SO_4)_3)]$ and 18–26% sodium sulphate followed by stretching the spun filament and thereafter, regenerating, desulphurizing, bleaching, finishing and drying the filament in a conventional manner.

5,358,680

PROCESS FOR MANUFACTURING A COMPOSITE PRODUCT BY MOULDING

Philippe Boissonnat, Barby; Dominique Loubinoux, Chambery; Giordano Roncato; Robert Fedorowsky, both of Aix les Bains, and Guy Zanella, Cognin, all of France, assignors to Vetrotex France, Chambery, France

Filed Nov. 6, 1992, Ser. No. 973,124

Claims priority, application France, Nov. 8, 1991, 91 13773

Int. Cl.[5] B29B *7/90*

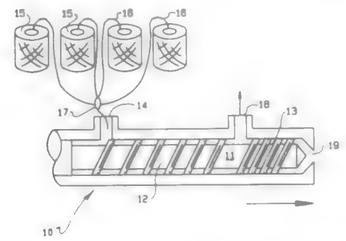
U.S. Cl. 264—177.2 18 Claims

1. A process for manufacturing a composite product comprising a thermoplastic organic material and reinforcing fibers, wherein said product is obtained by extrusion or injection molding of a blend of said thermoplastic organic material and reinforcing fibers from an extruder,

said process comprising the step of introducing at least some of the thermoplastic organic material into the extruder in

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the form of separate continuous filaments or fibers formed thereof, wherein the diameter of said filaments is between



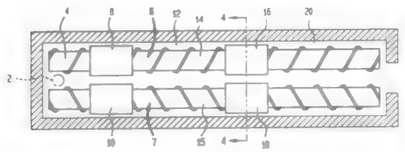
10 and 50 microns to provide rapid melt homogenization and reduced reinforcing fiber fragmentation.

5,358,681

BACKSEAL EXTRUDER

Robert E. Jerman, Southampton; Paul J. Raymond, Newtown, and Sunil Sattja, Holland, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 29, 1993, Ser. No. 54,736
Int. Cl.[5] B29C *47/64, 47/74*
U.S. Cl. 264—211.23 9 Claims



1. An apparatus for treating material fed therein comprising a housing having two congruent bores extending through said housing, an inlet extending through said housing and into at least one of said congruent bores, a pair of non-intermeshing parallel or tangential co or counter rotating twin screws, each disposed within one of said bores, means connected operably to said screws for turning said screws, said screws having flow restriction means disposed on each of said screws, said bores having a nip region, said nip region being defined by the nip ratio being the ratio of the height between a pair of imaginary parallel lines, said lines being parallel to a plane defined by the center lines of the bores, one of which imaginary lines would touch the top of the nip and the other of which would touch the bottom of the nip divided by the bore diameter, said ratio being from about 0.1 to about 0.38, said nip region defined by said nip ratio of from about 0.1 to about 0.38 being coextensive with at least a portion of the length of said flow restriction means, and an outlet in said apparatus for discharging material fed to and worked in said apparatus whereby a higher back pressure is created in the section of the extruder immediately preceding the section of the extruder having a nip ratio of from about 0.1 to about 0.38.

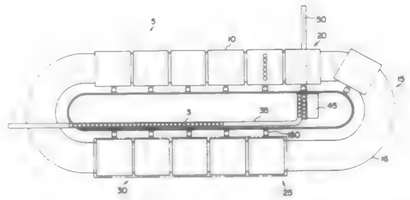
7. A process for treating material in an extruder comprising the steps of introducing material into a reaction or mixing zone of an extruder having twin non-intermeshing co or counter rotating screws arranged parallel or tangential to one another and flow restriction means separating the mixing or reaction zone from a lower pressure zone downstream of the flow restriction means, adjusting the pressure in the reaction or mixing zone independent of the pressure in said reaction or mixing zone, maintaining the pressure in said reaction or mixing zone by maintaining a nip ratio of from about 0.1 to about 0.38 along at least part of the length of the flow restricting means, moving material from the reaction or mixing zone into the lower pressure zone and discharging material from said extruder through a discharge outlet.

5,358,682

METHOD AND APPARATUS FOR ROTATIONAL APPLICATION OF POLYMERS

L. Keith Rogerson, No. 9 Fourth Ave., Isle of Palms, S.C. 29451

Filed Aug. 23, 1991, Ser. No. 749,160
Int. Cl.[5] B29C *41/06*
U.S. Cl. 264—265 10 Claims



1. A process for chemically bonding a polymeric lining to the interior surface of an enclosed structure such as a vessel or the like, comprising the steps of:

(a) securing said enclosed structure to an apparatus adapted to rotate said enclosed structure about a first and a second axis;

(b) loading the interior of said enclosed structure with a charge of polymeric material, said charge comprising a sufficient amount of polymeric material to cover substantially the entirety of said interior surface, said polymeric material having the capability of chemically bonding to said interior surface of said enclosed structure;

(c) rotating said loaded enclosed structure about said first and second axes while heating said structure to ensure that said polymeric material will flow sufficiently to cover substantially the entirety of said interior surface and to chemically bond said polymeric material to said interior surface;

(d) discontinuing said rotation and said heating and allowing said enclosed structure to cool so that the polymeric material is chemically adhered to said interior surface in the form of a lining; and

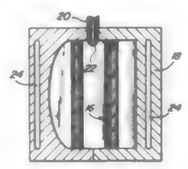
(e) removing said enclosed structure from said apparatus to obtain an enclosed structure having a polymeric lining chemically bonded to its interior surface.

5,358,683

PROCESS OF MAKING A CONTINUOUS FIBER REINFORCED THERMOPLASTIC ARTICLE

Richard Rhodes, Somersworth, N.H., assignor to Davidson Textron Inc., Dover, N.H.

Filed Apr. 8, 1993, Ser. No. 44,935
Int. Cl.[5] B29C *49/04, 49/20*
U.S. Cl. 264—515 8 Claims



1. A process for making a continuous fiber reinforced ther-

moplastic article that is sufficiently strong and rigid for use as a structural member, comprising the steps of:

providing an open tubular parison of predetermined length from a tubular composite of reinforced thermoplastic material that consists essentially of continuous, axially oriented filaments embedded in a thermoplastic resin, said filaments extending substantially from one parison end to the other parison end,

enclosing the open tubular parison in a cavity of a blow mold, and

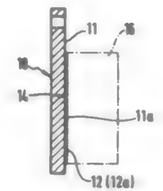
admitting a pressurized fluid blowing medium into the interior of the tubular parison to expand the tubular parison outwardly against the blow mold to form a continuous fiber reinforced thermoplastic article.

5,358,684

FRICTION LINING FOR DISK BRAKES, MORE PARTICULARLY FOR ROAD VEHICLES AND RAIL VEHICLES

Wolfgang Valentin, Glinde, Fed. Rep. of Germany, assignor to Jurid Werke GmbH, Glinde, Fed. Rep. of Germany

Division of Ser. No. 636,917, Jan. 2, 1991, Pat. No. 5,161,654.
This application Aug. 19, 1992, Ser. No. 932,178
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1990, 9001709[U]; Nov. 26, 1990, 90122522
Int. Cl.[5] B22F *7/04*
U.S. Cl. 419—10 15 Claims



1. A method for the manufacture of a friction lining for disc brakes, in particular, for disc brakes for road and rail vehicles, said method comprising the steps of:

providing a carrier metal plate made of a material selected from a group of materials consisting of steel, V2A-steel, ceramic material, and aluminum;

providing on a first carrier plate side which is opposite to a second carrier plate side for bearing a block of friction material, a corrosion protective coating;

thereafter providing, on the second carrier plate side a sintered-fused mounting bed formed of a material mixture comprising a metal component with a low melting point and selected from a group consisting of low-melting metals and low-melting alloys, and a component with a high melting point and selected from a group of materials consisting of iron, sand, and ceramic powder and having a melting point lower than a melting point of the carrier plate, the mounting bed including a plurality of separate retention bodies having at least one of undercuts and recesses for retaining the friction material block; and

attaching a friction material block to the mounting bed.

5,358,685

MONOLITHIC, FULLY DENSE SILICON CARBIDE MIRROR AND METHOD OF MANUFACTURING

Andre Exis, Vista, Calif., assignor to Cercom Inc., Vista, Calif.

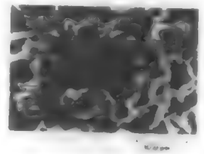
Division of Ser. No. 29,713, Mar. 11, 1993, Pat. No. 5,302,561.
This application Sep. 3, 1993, Ser. No. 115,679
Int. Cl.[5] B22F *3/12*
U.S. Cl. 419—19 11 Claims

1. A process for making a silicon carbide ceramic material for use in making an optical device including the steps of:

a) preparing a powder consisting of at least 92%, by weight, pure Silicon Carbide powder, said Silicon Carbide powder comprising alpha-type SiC or beta-type SiC, said powder having an average particle diameter of 0.3 to 3 micrometers;

b) adding to said powder a densification agent in a ratio of from 0.1% up to 0.25%, by weight, of densification agent for each m^2/g of surface area of said powder to form a powder mix;

c) homogenizing said powder mix and densification agent utilizing either a dry procedure or a wet mill process;



d) subjecting homogenized powder mix and densification agent to a hot pressing operation including the step of obtaining a state of substantially closed porosity of said material before temperature exceeds 1900° C. whereby said densification agent is precluded from volatizing and is thereby captured within said material;

e) cooling said homogenized powder mix and densification agent; and

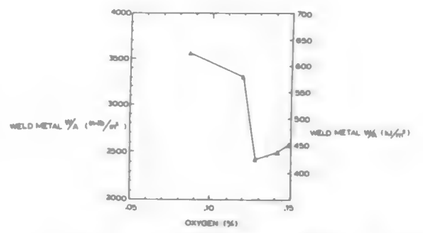
f) polishing a surface of said material, said material exhibiting intergranular fracture.

5,358,686

TITANIUM ALLOY CONTAINING AL, V, MO, FE, AND OXYGEN FOR PLATE APPLICATIONS

Warren M. Parris, 1804 Loch Lomond Way, Las Vegas, Nev. 89102; James A. Hall, 2454 S. Paseo Loma Clr., Mesa, Ariz. 85202; Paul J. Bania, 1533 Kay Ct., Boulder City, Nev. 89055, and Ivan L. Capian, 142 Tall Tree Trail, Arnold, Md. 21012

Filed Feb. 17, 1993, Ser. No. 18,394
Int. Cl.[5] C22C *14/00*
U.S. Cl. 420—419 4 Claims



1. A titanium base alloy having a combination of high strength and toughness in both the welded and unwelded condition, and immunity from stress corrosion cracking in an aqueous 3.5% NaCl solution, said alloy consisting essentially of, in weight percent, aluminum 4 to 5.5, tin up to 2.5, zirconium up to 2.5, vanadium 0.5 to 2.5, molybdenum 0.3 to 1, silicon up to 0.15, oxygen 0.04 to 0.12, iron 0.01 to 0.12 and balance titanium and incidental impurities.

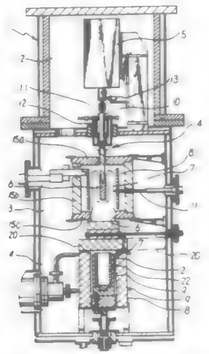
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5,358,687

PROCESSES FOR MANUFACTURING INTERMETALLIC COMPOUNDS, INTERMETALLIC ALLOYS AND INTERMETALLIC MATRIX COMPOSITE MATERIALS MADE THEREOF

Kiyoshi Ichikawa; Yoshiji Kinoshita, both of Tsukuba, and Satoshi Ishizuka, Hamamatsu, all of Japan, assignors to Agency of Industrial Science and Technology, Tokyo and Suzuki Motor Corporation, Hamamatsu, both of Japan

Filed Jun. 21, 1993, Ser. No. 79,369
Int. Cl.[5] C01G *15/00*
U.S. Cl. 420—590 10 Claims



1. A process for manufacturing an intermetallic compound or an intermetallic alloy thereof, which comprises the steps of:

melting a charge having the composition of an intermetallic compound or an intermetallic alloy thereof in a crucible by applying a high-frequency current in a vacuum or under an inert atmosphere in a high-frequency furnace;

transferring the crucible containing the molten charge into an isothermal furnace which is under said vacuum or under said inert atmosphere;

stirring the solidifying charge with a stirrer rotated at a speed sufficient to break the crystals which form in the charge and sufficient to result in a homogeneous fine-grained microstructure in the intermetallic compound or intermetallic alloy; and then

returning the obtained compound or alloy having the homogeneous fine-grained microstructure to the high-frequency furnace for reheating in order to release the strain energy built-up therein.

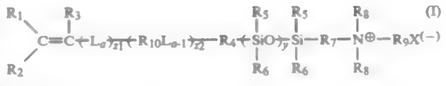
5,358,688

ANTIMICROBIAL QUATERNARY AMMONIUM GROUP-CONTAINING POLYMERS, COMPOSITIONS THEREOF, AND MONOMERS USED TO PRODUCE SAID POLYMERS

J. Richard Robertson, Alpharetta, Ga., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 17,374, Feb. 9, 1993, abandoned. This application Nov. 16, 1993, Ser. No. 152,888
Int. Cl.[5] A01N *51/00*; A61L *2/18*
U.S. Cl. 422—28 15 Claims

1. An antimicrobial quaternary ammonium group-containing polymer comprising in its structure repeating monomer units of the formula:

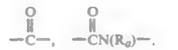


wherein

R_1, R_2 and R_3 are independently H, C_{1-7}alkyl, or —$COOR^{13}$ with R^{13} being H or C_{1-4} alkyl;

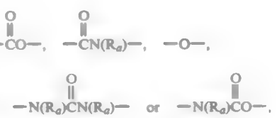
Z_1 and Z_2 are independently 0 or 1;

L_a is



or a bond;

L_{a-1} is



wherein R_d is H or C_1–C_8 alkyl;

R_{10} is C_{1-20}aliphatic, C_{1-25} cycloaliphatic or C_{1-20} aryl, each of which may be substituted with up to five halogen atoms, or $(CH_2CH(R_d)O)_j$ where j is from 1 up to 50 and R_d is as defined above;

R_4 and R_7 are independently C_{2-10} aliphatic, C_{2-8} alkylene, C_{1-4} alkylene-(oxy-C_{1-4} alkylene)$_g$, C_{1-4} alkylene (—)OCH_2-(hydroxy C_{1-4} alkylene)-CH_2, cycloaliphatic up to 25 carbon atoms or aryl up to 25 carbon atoms, wherein g is an integer from 1 to 10;

y is an integer of 1 to 10;

R_5 and R_6 are independently C_1–C_8 alkyl, C_6–C_{25} aryl, or C_6–C_{25} cycloaliphatic which may be substituted by one or more halogen, hydroxy, C_{1-4}alkyl, carboxy or C_{1-12} perhaloalkyl groups or R_5 or R_6 may be —$Si(OSiCH_3)_3$;

R_8 and R_9 are independently C_1–C_{24} alkyl, C_{2-24} alkenyl, C_3–C_{24} cycloaliphatic and C_{6-25} aryl, which groups may be each substituted with from 1–11 groups selected from hydroxy, C_{1-4} alkyl, carboxy, C_{1-12} perhaloalkyl or halogen or R_8 and R_9 may also be $(CH_2CH_2O)_xH$, where x is from 1 to 10 units, and

X is an ophthalmically acceptable counterion.

13. A method for cleaning and disinfecting contact lenses which comprises treating the contact lenses with an aqueous solution containing an antimicrobially effective amount of the antimicrobial quaternary ammonium group-containing polymer according to claim 1.

5,358,689

HOLLOW FIBER BLOOD OXYGENATOR

Kenneth A. Jones, Lake Elsinore; Francis M. Servas, San Juan Capistrano; Timothy C. Ryan, and Gregory G. Ulrich, both of Mission Viejo, all of Calif., assignors to Shiley Incorporated, Irvine, Calif.

Division of Ser. No. 853,513, Mar. 18, 1992, Pat. No. 5,240,677, which is a division of Ser. No. 302,422, Jan. 26, 1989, Pat. No. 5,124,127. This application Apr. 15, 1993, Ser. No. 31,172
Int. Cl.[5] A61M *1/14*
U.S. Cl. 422—46 9 Claims

1. An upright hollow fiber oxygenator comprising:

a fiber bundle positioned around a supporting core having a top end and a bottom end and an axis extending therebetween, the bundle including hollow gas permeable fibers each having an open top end, an open bottom end, and a hollow interior, the top ends of the fibers being adjacent to

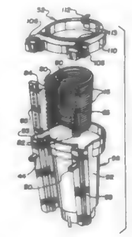
top end of the core and the bottom ends of the fibers being adjacent to the bottom end of the core;

an interior housing surrounding said bundle, said interior housing being made of a material which allows heat transfer therethrough;

upper potting means to seal the outside of the top ends of each of said fibers in said bundle to one another and to seal the bundle to the top end of the core and to the surrounding interior housing thereabout;

lower potting means to seal the outside of the bottom ends of each of said fibers in said bundle to one another and to seal the hollow fiber bundle to the bottom end of the core and to the surrounding interior housing thereabout, wherein the upper and lower potting means, the core, and the interior housing together define an enclosed fiber bundle unit, the top and bottom ends of each said fibers in the fiber bundle being open to the hollow interiors of said fibers;

a gas inlet port to allow gas passage into the hollow interiors of said fibers at one end of the fibers, and a gas outlet port



to permit gas passage from the hollow interiors of said fibers at the opposite end of said fibers;

a heat exchanger unit which surrounds and receives the fiber bundle unit;

an outer housing enclosing said heat exchanger unit, said outer housing having a fluid inlet port and a fluid outlet port in fluid communication with said heat exchanger unit for passage of a heat transfer fluid therethrough;

a blood inlet port in fluid communication with said heat exchanger unit through a bottom end of said outer housing to allow blood flowing therethrough to communicate with said heat exchanger unit with an upward flow through said heat exchanger unit so that gasses in the blood can rise therewith and therefrom during flow through the heat exchanger unit; and

a gas trap and a venous gas port placed in a top outer housing cap in an upper portion of said heat exchanger unit, wherein gas which is released from the blood while the blood flows upward through said heat exchanger unit collects in said gas trap, and wherein said venous gas port is constructed to permit gas to escape therethrough.

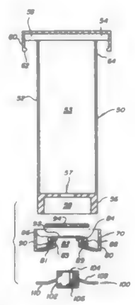
5,358,690

ENVIRONMENTAL SAMPLE COLLECTION AND MEMBRANE TESTING DEVICE

Raouf A. Guirguis, Rockville, Md., assignor to LaMina, Ltd., Fairfax, Va.

Continuation-in-part of Ser. No. 506,070, Apr. 9, 1990, Pat. No. 5,077,012, which is a continuation-in-part of Ser. No. 308,763, Jan. 10, 1989, Pat. No. 4,961,432, and a continuation-in-part of Ser. No. 440,117, Nov. 22, 1989, Pat. No. 5,022,411. This application Dec. 30, 1991, Ser. No. 814,447
The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.
Int. Cl.[5] G01N *21/00*
U.S. Cl. 422—58 30 Claims

1. An apparatus for collecting environmental, biological and physiological samples for quantitative and qualitative testing of at least one analyte in a sample, comprising a tubular container having open ends; a particulate collection cup removably secured to one end of said container, said particulate collection cup including a cytology membrane, a piston assembly slidably mounted in said tubular container, said piston assembly comprising a hollow piston body with an internal surface defining a chamber, an opening formed in an end face of said piston



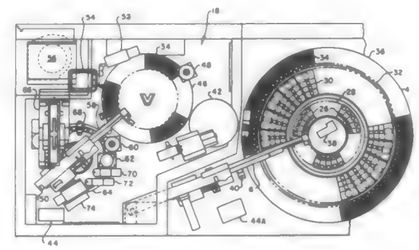
body, a membrane based immunoassay test assembly with immobilized a member of a ligand-receptor specific binding pair secured across said opening of said piston body and a removable bead housing assembly in mating engagement with said membrane based immunoassay test assembly, said bead housing having an aperture allowing fluid flow therethrough to contact the membrane based immunoassay test assembly.

5,358,691

AUTOMATED CONTINUOUS AND RANDOM ACCESS ANALYTICAL SYSTEM

Frederic L. Clark, Plano; Gilbert Clift, Mesquite; Kendall B. Hendrick, Southlake; William J. Kanewske, III, Dallas, all of Tex.; Peter A. Lagocki, Park Ridge, Ill.; Richard R. Martin, Irving, Tex.; James E. Mitchell, Lake Barrington, Ill.; Larry W. Moore, Plano, Tex.; Charles D. Pennington, Lake Zarich; Edna S. Walker, Chicago; B. Jane Smith, Vernon Hills; Apparao Tayi, Grayslake, Ill.; James A. Vaught, Euless, Tex., and David A. Yost, Poolesville, Md., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 859,218, Mar. 27, 1992, abandoned. This application Sep. 24, 1993, Ser. No. 126,447
Int. Cl.[5] G01N *35/06*
U.S. Cl. 422—64 17 Claims



1. An automated, continuous and random access analytical system apparatus capable of simultaneously performing multiple assays of a plurality of liquid samples, said apparatus comprising:

a. a front end carousel assembly inclusive of a sample cup

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carousel, a reagent pack carousel and a reaction vessel carousel mounted concentrically;

b. kitting means for kitting a reaction vessel positioned in said reaction vessel carousel, said kitting means further including a transfer pipetting means positioned adjacent said front end carousel assembly for transferring a liquid sample from said sample cup carousel and reagents from said reagent pack carousel to said reaction vessel without initiation of an assay reaction sequence;

c. a process carousel positioned within a controlled environment having environment means for maintaining said controlled environment within a predetermined temperature;

d. a transfer station having means for transferring said kitted reaction vessel from said reaction vessel carousel to said process carousel;

e. a process carousel transfer means for transferring and mixing reagents with said liquid sample in said kitted reaction vessel to form a reaction mixture;

f. at least two different assay reader means, at least one of said assay reader positioned adjacent said process carousel for detecting said reaction mixture;

g. means for transferring said reaction mixture from said process carousel to a reaction cartridge contained in a cartridge wheel carousel, another one of said assay reader means positioned adjacent said cartridge wheel carousel for detecting said reaction mixture in said cartridge;

h. means for transferring said reaction vessel from said process carousel to said transfer station, said transfer station having removing means for removing said reaction vessel from said system; and

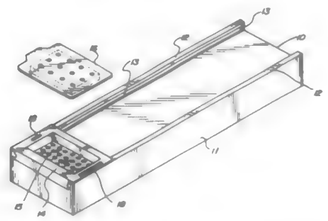
i. means for removing said cartridge from said cartridge wheel carousel.

5,358,692

TISSUE CASSETTE HOLDER

Douglas W. Reynolds, 4499 Craig La., Vacaville, Calif. 95688

Filed Sep. 2, 1993, Ser. No. 114,929
Int. Cl.[5] B01L *9/00*
U.S. Cl. 422—104 **4 Claims**



1. A tissue cassette holder for holding at least one tissue cassette having sides, said holder comprising:

an open-top tray for holding said at least one tissue cassette, said tray having first and second ends, a first vertical side rail spaced from a second vertical side rail, and a base;

a first elastomeric projection projecting inwardly from said first vertical side rail;

a second elastomeric projection projecting inwardly from said second vertical side rail, said projections being operable to frictionally engage said sides of said at least one tissue cassette to retain said at least one tissue cassette between said rails;

a plurality of elastomeric tabs projecting outwardly from said side rails, said tabs being frictionally engagable with mating grooves on a base of another tissue cassette holder, thereby to permit stacking of a plurality of tissue cassette holders; and,

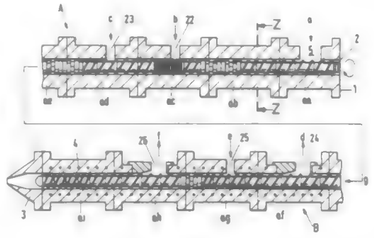
a fastening cable connected to said first end of said tray and releasably connected to said second end of said tray for further securing said at least one tissue cassette within said tray by means of the cable extending across the full length of the tray and over said at least one tissue cassette therein.

5,358,693

METHOD AND APPARATUS FOR THE SINGLE-STAGE CONTINUOUS PRODUCTION OF A RUBBER BASE COMPOUND AND A RUBBER END COMPOUND

Heinz Brinkmann, Springe, and Gerd Capelle, Langenhagen, both of Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Division of Ser. No. 806,364, Dec. 13, 1991, Pat. No. 5,302,635.
This application Aug. 18, 1993, Ser. No. 107,614
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1990, 4039943
Int. Cl.[5] C08F *2/00;* **B01F** *7/00;* **B28C** *5/08;* **A21C** *1/06*
U.S. Cl. 422—137 **13 Claims**



1. An apparatus for continuously producing a rubber base compound (g) and a rubber end compound in a single stage from crude rubber, the arrangement including:

twin-screw extruder having a housing and having a predetermined length subdivided into two zones A and B along said length so as to be disposed one behind the other;

two intermeshing screws rotatably mounted in said housing and defining respective longitudinal axes;

drive means for driving each of said screws about the longitudinal axis corresponding thereto;

first crude rubber inlet means formed in said housing for admitting said crude rubber (a) into said extruder wherein the crude rubber (a) is plasticized and homogenized;

second crude rubber non-reactive mixing additives inlet means formed in said housing within said zone A for admitting said non-reactive mixing additives needed for producing the base compound (g) into the twin-screw extruder at preselected distances along said zone A whereby said non-reactive mixing additives become mixed and homogenized with the crude rubber in said extruder at temperatures in the range of 100° C. to 160° C. to form the base compound (g);

cooling means in said zone B for cooling the base compound (g) down to a temperature in the range of 100° C. to 120° C.;

third crude rubber reactive mixing additives inlet means formed in said housing within said zone B for admitting all said reactive mixing additives needed for producing the end compound into the twin-screw extruder at preselected distances along said zone B whereby said reactive mixing additives become mixed and homogenized with said base compound (g); and,

cooling means being arranged along said zone B for maintaining the temperature of said base compound within said range of 100° C. to 120° C. as said reactive mixing additives are mixed and homogenized with said base compound (g) thereby preventing vulcanization and producing the rubber end product.

5,358,694

METHOD FOR PREPARING BASIC ALUMINUM HALIDES AND PRODUCT PRODUCED THEREFROM

Rocco Giovanniello, Port Jervis, N.Y., assignor to Westwood Chemical Corporation, Middletown, N.Y.

Continuation-in-part of Ser. No. 81,638, Aug. 3, 1987, Pat. No. 4,871,525, which is a continuation-in-part of Ser. No. 922,753, Oct. 24, 1986, abandoned, which is a continuation of Ser. No. 817,047, Jan. 8, 1986, abandoned. This application Sep. 19, 1989, Ser. No. 409,654
The portion of the term of this patent subsequent to Oct. 3, 2006, has been disclaimed.
Int. Cl.[5] A61K *7/38;* **C01F** *7/56*
U.S. Cl. 423—462 **42 Claims**



1. A process for preparing a basic aluminum halide having the empirical formula:

$$Al_2(OH)_{6-y}X_y \cdot nH_2O$$

where n has a numerical value of about 0.8 to about 4, X is chlorine, bromine or iodine and y has a numerical value of about 0.7 to about 3, which comprises:

(a) reacting aluminum metal with a hydrohalogen acid having the formula HX wherein X is chlorine, bromine or iodine at a temperature of about 50° C. to about 100° C., the concentration of the product in the solution being about 8 to about 25% by weight of the solution; and

(b) recovering the basic aluminum compound from the hot solution by spray drying;

whereby the polymer distribution of the product formed as characterized by size exclusion chromatography is:

(c) 100% of the polymers are found in Bands II, III and IV, with no part of the product found in Band I; and

(d) Band III contains at least 25% of the polymer.

5,358,695

PROCESS FOR PRODUCING NANOSCALE CERAMIC POWDERS

Joseph J. Helble, Andover, Mass.; Gary A. Mouix, Windham, N.H., and Joseph R. Morency, Salem, Mass., assignors to Physical Sciences, Inc., Andover, Mass.

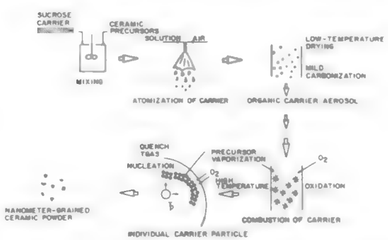
Filed Jan. 21, 1993, Ser. No. 7,149
Int. Cl.[5] C01B *13/34*
U.S. Cl. 423—592 **12 Claims**

1. A process for producing nanometer sized ceramic particles comprising the steps of:

combining a ceramic precursor with a carbohydrate carrier material forming a combination in which the precursor is associated with the carrier material;

atomizing the combination thereby forming an aerosol;

exposing the aerosol to a temperature above about 1000 K. thereby causing combustion of the carrier material and vaporization and nucleation, or diffusion and oxidation, of the ceramic precursor thereby forming substantially non-



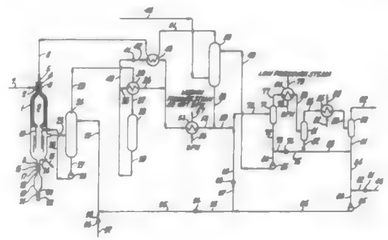
agglomerated ceramic particles having a diameter of less than 100 nm.

5,358,696

PRODUCTION OF H_2-RICH GAS

Frederick C. Jahnke, Rye, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 1, 1993, Ser. No. 159,610
Int. Cl.[5] C01B *3/24, 3/26, 3/12*
U.S. Cl. 423—650 **42 Claims**



1. A partial oxidation process for the production of H_2-rich gas comprising:

(1) reacting by partial oxidation a fuel feed comprising a hydrocarbonaceous fuel having a minimum C/H weight ratio of 3.3 and comprising a stream of water saturated gaseous hydrocarbonaceous fuel or a mixed stream of said saturated gaseous hydrocarbonaceous fuel and a liquid hydrocarbonaceous fuel at a temperature in the range of about 2000° F. to 2800° F., and a pressure in the range of about 200 to 2500 psia, with a stream of substantially pure oxygen gas at an atomic ratio of oxygen gas to carbon in the fuel in the range of about 0.6 to 1.6, a weight ratio H_2O/fuel in the range of about 0.1 to 5.0, and including supplemental H_2O temperature moderator, wherein said partial oxidation reaction takes place in the reaction zone of a free-flow non-catalytic partial oxidation gas generator to produce a process stream of synthesis gas comprising H_2, CO, CO_2, H_2O, N_2, H_2S, COS and particulate carbon, and having a reducing mole ratio H_2+CO/H_2O+CO_2 in the range of about 5 to 15;

(2) quench cooling and scrubbing the process gas stream from (1) with water in gas quenching and scrubbing zones to produce clean process gas stream having a temperature in the range of about 300° F. to 600° F.;

(3)(a) heating the process gas stream from (2) to a temperature in the range of about 500° F. to 700° F. by indirect heat exchange with a first portion of the direct shifted process gas stream from subsequent step (4); and (b) passing the remainder of said direct shifted process gas stream from step (4) in indirect heat exchange with water satu-

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rated hydrocarbonaceous gaseous fuel from subsequent step (9), thereby heating said gaseous hydrocarbonaceous fuel feed to a temperature in the range of about 400° F. to 800° F., and introducing said heated water saturated gaseous fuel feed into said partial oxidation gas generator in (1) as at least a portion of the fuel;

(4) passing the heated process gas stream from step (3)(a) through a catalytic water-gas direct shift conversion zone to produce a H_2-rich shifted process gas stream having a reducing mole ratio H_2+CO/H_2O+CO_2 of less than 2;

(5) combining the two streams of partially cooled direct shifted process gas stream from (3)(a) and (3)(b) and partially cooling the combined process gas stream to a temperature in the range of about 260° F. to 550° F. by indirect heat exchange with boiler feed water thereby producing medium pressure steam or hot boiler feed water;

(6) mixing the partially cooled shifted process gas stream from step (5) with supplemental shift condensate from the bottom of the gas saturating zone in subsequent step (9), wherein said supplemental shift condensate is heated by direct contact with said partially cooled shifted process gas stream;

(7) dewatering the mixture of shifted process gas and shift condensate from (6) in a knock-out chamber and separating heated shift condensate;

(8) cooling and dewatering the shifted process gas stream from step (7) in a dewatering process gas stream zone to produce shift condensate by cooling the process gas stream below the dew point and collecting the condensed water in at least one knock-out chamber; and

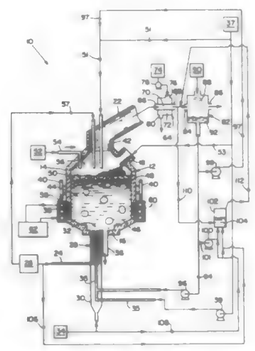
(9) saturating a feedstream of hydrocarbonaceous gaseous fuel with at least a portion of said heated shift condensate from step (7) in a gas saturating zone, and removing excess shift condensate from the bottom of said gas saturating zone for use in step (6).

5,358,697

METHOD AND SYSTEM FOR CONTROLLING CHEMICAL REACTION IN A MOLTEN BATH

Christopher J. Nagel, Boston, Mass., assignor to Molten Metal Technology, Inc., Waltham, Mass.

Division of Ser. No. 737,048, Jul. 29, 1991, Pat. No. 5,191,154. This application Feb. 26, 1993, Ser. No. 23,696
Int. Cl.[5] B09B *3/00*
U.S. Cl. 422—184 16 Claims



1. A system for controlling chemical reaction of a feed, comprising:

a) a reactor;

b) a molten bath disposed in the reactor which allows chemical reaction of the feed;

c) means for directing the feed onto the molten bath, the molten bach causing chemical reaction of the feed to form an off-gas which includes an intermediate component;

d) means for separating at least a portion of the intermediate component from the off-gas emitted from the reactor to form a solid and/or liquid intermediate stream; and

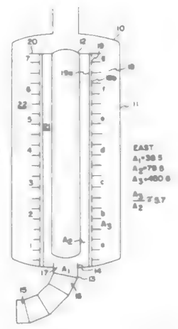
e) means for injecting said stream into the molten bath for chemical reaction of the intermediate component returned to the reactor in the intermediate stream to atomic constituents and subsequent exothermic reaction of at least a portion of the atomic constituents with a component of the molten bath, whereby heat generated by the exothermic reaction initiates additional chemical reaction of the feed and of the intermediate component, thereby controlling chemical reaction of the feed.

5,358,698

APPARATUS FOR DEHYDROGENATION OF ETHYLBENZENE TO STYRENE

James R. Butler, and Thomas W. Johnston, both of Houston, Tex., assignors to Fina Technology, Inc., Dallas, Tex.

Filed Feb. 26, 1991, Ser. No. 661,359
Int. Cl.[5] B01J *8/02*
U.S. Cl. 422—218 1 Claim



1. In a gas flow catalyst bed reactor assembly having an ell-shaped inlet tube for radial gas flow across an annular catalyst bed surrounding, and displaced a distance from a coaxial central cylindrical displacing member, the improvement comprising:

said inlet tube having a flow control baffle attached to the inside wall of said inlet tube at a point on the outer radius of said ell,

said baffle comprising a semi-circular arcuate vertical plate and a curved ramp, a semi-circular portion of said vertical plate attached to the inside wall of said tube, said ramp attached to said plate at the downstream flow side and said inlet wall on the upstream flow side of said plate.

5,358,699

PRECIOUS METAL RECOVERY PROCESS FROM CARBONACEOUS ORES

Thomas J. Clough, Santa Monica, Calif., assignor to Ensci, Inc., Pismo Beach, Calif.

Continuation-in-part of Ser. No. 936,237, Aug. 26, 1992, which is a continuation-in-part of Ser. No. 751,793, Aug. 29, 1991, which is a continuation-in-part of Ser. No. 627,896, Dec. 13, 1990, abandoned, which is a continuation of Ser. No. 213,884, Jun. 30, 1988, abandoned, which is a continuation-in-part of Ser. No. 5,130, Jan. 20, 1987, Pat. No. 4,765,827, and Ser. No. 25,069, Mar. 12, 1987, Pat. No. 4,801,329. This application Nov. 24, 1992, Ser. No. 980,676
Int. Cl.[5] C22B *11/04, 11/00*
U.S. Cl. 423—22 19 Claims

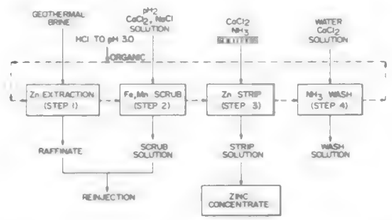
1. A process for recovering at least one first metal selected from the group consisting of gold, silver, the platinum group metals and mixtures thereof from an ore containing carbonaceous material comprising contacting said ore with a least one added plant derived aromatic component selected from the group consisting of lignin, and tannin and having ortho-quinone functionality wherein the ortho-quinone functionality is present in the component in the range of from at least about 1 weight percent to about 40 weight percent of the total weight of the plant derived aromatic component and mixtures thereof said plant derived aromatic component being present in an aqueous soluble amount to at least promote the oxidation of at least a portion of said carbonaceous material and at least partially liberate the metal to be recovered from said ore and an additional oxidant being present to provide at least one of the following: (1) form and cycle to an oxidized state said plant derived aromatic component between ortho-quinone and catechol oxidation states and (2) cycle to an oxidized state said plant derived aromatic component between ortho-quinone and catechol oxidation states and recovering said first metal from said ore.

5,358,700

METHOD OF EXTRACTING ZINC FROM BRINES

Patrick M. Brown, Exton, Pa.; Jerry Dobson, Tucson, Ariz.; Enzo L. Coltrinari, Golden, Colo., and Eugenio Iasillo, Tucson, Ariz., assignors to Cyprus Power Company, Englewood, Colo.

Filed Oct. 5, 1992, Ser. No. 957,502
Int. Cl.[5] C22B *3/26*
U.S. Cl. 423—100 15 Claims



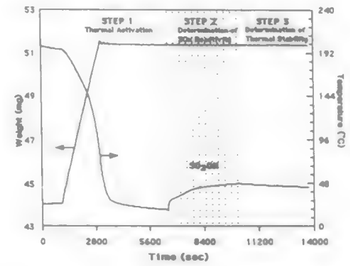
1. A method of extracting zinc from an aqueous brine containing a mixture of salts and other elements including Zn, Fe, and Mn comprising the steps of (1) contacting the aqueous brine with a selected organic extractant to remove Zn from the brine, producing an organic extractant loaded with Zn; (2) scrubbing the loaded organic extractant with a dilute acidified brine to remove co-extracted Fe and Mn from the loaded organic extractant, producing a scrubbed organic extractant containing Zn; and (3) stripping the Zn from the scrubbed organic extractant with a solution of ammonia and a suitable salt to produce a concentrated and purified aqueous Zn strip solution having a Zn concentration of at least 10 g/L.

5,358,701

PROCESS OF USING LAYERED DOUBLE HYDROXIDES AS LOW TEMPERATURE RECYCLABLE SORBENTS FOR THE REMOVAL OF SO_x FROM FLUE GAS AND OTHER GAS STREAMS

Thomas J. Pinnavaia, East Lansing, and Jayantha Amarasekera, Inkster, both of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Filed Nov. 16, 1992, Ser. No. 976,543
Int. Cl.[5] C01B *17/00*
U.S. Cl. 423—242.1 12 Claims



1. A process of removing SO_x, components from a gas stream which comprises contacting:

(a) contacting the said gas stream with a heated sorbent composition at a temperature of between 100° C. and less than 400° C. wherein the said sorbent before being heated is selected from the group consisting of a layered double hydroxide composition of formula:

$$[M^{II}_{1-x}M^{III}_{x}(OH)_2](A^{n-})_{x/n}\cdot pH_2O$$

wherein M^{II} is a divalent metal cation, M^{III} is a trivalent metal cations, A is an interlayer anion of charge n-selected from the group consisting of CO_3^{2-}, NO_3^- and OH^- which reacts with the components in said gas stream to form sulfur containing anions containing said components, p is moles of water and x is between 0.8 and 0.12; and

(b) regenerating the sorbent composition by heating to convert the sulfur containing anions to SO_x and removing them from the composition.

5,358,702

METHOXYLATED GEL PARTICLE CONTRAST MEDIA FOR IMPROVED DIAGNOSTIC IMAGING

Evan C. Unger, La Cebadilla, Tucson, Ariz. 85749

Continuation of Ser. No. 794,437, Nov. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 507,125, Apr. 10, 1990, abandoned. This application May 14, 1993, Ser. No. 62,325
Int. Cl.[5] A61B *5/055;* A61K *31/715*
U.S. Cl. 424—9 61 Claims

1. A pharmaceutically acceptable contrast medium comprising firm gel particles of less than about 90μ in mean diameter, said firm gel particles comprising at least one methoxylated natural or methoxylated modified natural polymer entrapping at least one contrast enhancing metal.

5,358,703

METHOD FOR THE DETECTION OF NITRIC OXIDE

Ching-San Lai, Brookfield, Wis., assignor to MCW Research Foundation, Inc., Milwaukee, Wis.

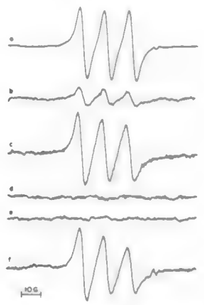
Filed Sep. 27, 1993, Ser. No. 127,665
Int. Cl.[5] A61K *49/00;* G01N *33/00*
U.S. Cl. 424—9 6 Claims

1. A method for detecting nitric oxide in a body fluid of a mammal which comprises adding to said body fluid an effec-

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tive amount of a chelating agent selected from the group consisting of

iminodiacetic acid dithiocarbamate and its trisodium salt;
sarcosine dithiocarbamate and its disodium salt; di(hydroxyethyl)dithiocarbamate and its monosodium salt;
N-methyl-D-glucamine dithiocarbamate;
N-benzyl-D-glucamine dithiocarbamate;
N-iso-amyl-N-glucamine dithiocarbamate;



N-(4-methylbenzyl)-D-glucamine dithiocarbamate;
proline dithiocarbamate; and
N-p-isopropylbenzyl-D-glucamine dithiocarbamate;

which will combine with any such amounts of nitric oxide and any metallic ions which act like reduced iron ions which may be present in the body fluid to form a water-soluble, paramagnetic complex and then detecting said complex by use of a magnetic resonance method at ambient temperature.

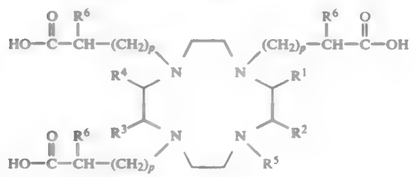
5,358,704

HEPATOBILIARY TETRAAZAMACROCYCLIC MAGNETIC RESONANCE CONTRAST AGENTS

Jean F. Desreux, Angleur, Belgium; Michael F. Tweedle, Princeton, N.J.; Peter C. Ratsep, Hamilton Square, N.J.; Thomas R. Wagler, Princeton, N.J., and Edmund R. Marinelli, Lawrenceville, N.J., assignors to Bristol-Myers Squibb, Princeton, N.J.

Filed Sep. 30, 1993, Ser. No. 129,870
Int. Cl.[5] A61B *5/055; C07D 245/00*
U.S. Cl. 424—9 **20 Claims**

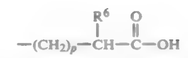
1. A compound of the formula:



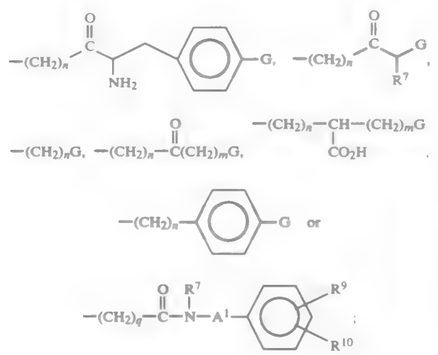
wherein

R^1 and R^2 and R^3 and R^4 independently form, together with the carbon atoms in the tetraazacyclododecane macrocycle to which they are attached, a fused fully or partially saturated nonaromatic cyclohexyl ring which may be unsubstituted or substituted by one or more halogen, alkyl, ether, hydroxy or hydroxyalkyl groups, and which may be further fused to a carbocyclic ring, or R^1 and R^2 are each hydrogen and R^3 and R^4 form a fused fully or partially saturated non-aromatic cyclohexyl ring as defined above, or R^1 and R^2 form a fused fully or partially saturated non-aromatic cyclohexyl ring as defined above and R^3 and R^4 are hydrogen;

R^5 is



or hydrogen, alkyl, aralkyl, aryl, alkoxy, hydroxyalkyl,

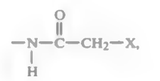


A^1 is $-(CH_2)_q-$, $-(CH{=}CH)-$, $-(CH{=}CH)_2-$ or a single bond; each $-(CH_2)_q-$ may be independently substituted with alkyl or hydroxyalkyl;

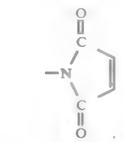
R^6 is hydrogen or alkyl;

R^7 is hydrogen, hydroxyalkyl, alkoxy, alkyl, aryl or aralkyl;

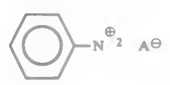
G is $-NH_2$, $-NCS$,



$-CO_2H$, $-NHR^8$, $-N(R^8)_2$ or $-CN$;



R^8 is alkyl, hydroxyalkyl,



(where A is an anion),



R^9 and R^{10} are each independently hydrogen, alkyl, $-NO_2$, $-NH_2$,



or $-NR^7COR^6$;

R^{11} is hydrogen, alkyl or hydroxyalkyl;

R^{12} is hydrogen, hydroxyalkyl, alkoxy, alkyl, aryl or aralkyl;

X is chloro, bromo or iodo;

m and n are each independently zero or an integer from one to five;

p is zero or one; and

q is an integer from 1 to 5;

or a salt thereof.

5,358,705

USE OF N-ACETYLATED AMINO ACID COMPLEXES IN ORAL CARE COMPOSITIONS

Robert W. Boggs, Cincinnati, and John R. Wietfeldt, Wyoming, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 905,963, Jun. 29, 1992, Pat. No. 5,286,480. This application Nov. 19, 1993, Ser. No. 154,841
Int. Cl.[5] A61K *7/16, 7/22*
U.S. Cl. 424—54 **20 Claims**

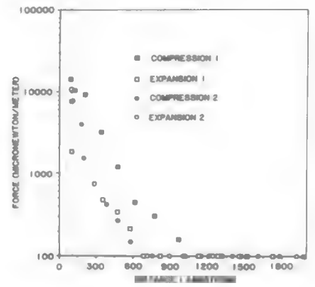
1. A method for reducing or preventing dental plaque, or gingival or periodontal diseases comprising contacting tooth surfaces within the oral cavity in humans or lower animals with a composition comprising a safe and effective amount of a complex of metal ions with N-acetylated amino acids wherein the amino acids are selected from the group consisting of naturally occurring amino acids and wherein the metal ions are selected from the group consisting of In^{3+}, Ga^{3+}, and Al^{3+}; and a pharmaceutically-acceptable topical oral carrier which comprises a pharmaceutically-acceptable dental abrasive.

5,358,706

MUCO-ADHESIVE POLYMERS

Lawrence Marlin, Bridgewater, N.J., and Ronald K. Yamamoto, San Francisco, Calif., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Sep. 30, 1992, Ser. No. 954,753
Int. Cl.[5] A61K *47/36, 9/08*
U.S. Cl. 424—78.04 **6 Claims**



1. A method for delivery of an anionic therapeutic agent to the eyes, which method comprises providing an aqueous solution to the eyes, said aqueous solution comprising:

(a) water;

(b) a cationic polysaccharide polymer with a cationic substitution of greater than about 0.2 which is substantive to the eye; and

(c) an anionic therapeutic agent;

wherein the anionic therapeutic agent is selected from the group consisting of hyaluronan, hyaluronic acid or hyaluronan derivatives, the anionic therapeutic agent is electrostatically bonded to the cationic polysaccharide and the solution is clear.

5,358,707

OXIDIZED VARIANTS OF GM-CSF

Paul Reichert, Montville; Gail F. Seelig, Watchung, and Paul P. Trotta, Secaucus, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

PCT No. PCT/US91/00007, § 371 Date Jun. 25, 1992, § 102(e) Date Jun. 25, 1992, PCT Pub. No. WO91/10684, PCT Pub. Date Jul. 25, 1991
Continuation-in-part of Ser. No. 462,180, Jan. 8, 1990, abandoned. This PCT application Jan. 4, 1991, Ser. No. 867,186
Int. Cl.[5] A61K *45/05*
U.S. Cl. 424—85.1 **14 Claims**

1. A biologically active oxidized GM-CSF variant having at least one oxidized methionine residue, which variant is essentially free of unoxidized GM-CSF.

5,358,708

STABILIZATION OF PROTEIN FORMULATIONS

Suman T. Patel, Neshanic Station, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Jan. 29, 1993, Ser. No. 11,431
Int. Cl.[5] A61K *45/05*
U.S. Cl. 424—85.1 **12 Claims**

1. A method for increasing the storage stability of an aqueous formulation containing a protein component selected from the group consisting of a granulocyte-macrophage colony-stimulating factor and an interleukin, the method comprising adding a stabilizing amount of methionine, histidine or mixtures thereof to the formulation.

5,358,709

ANTITUMORAL COMPOSITION BASED ON POLYPEPTIDES HAVING HUMAN INTERLEUKIN 2 ACTIVITY

Thomas Tursz, Cedex, and Maud Brandely, Paris, both of France, assignors to Roussel Uclaf, France

PCT No. PCT/FR90/00951, § 371 Date Jul. 8, 1992, § 102(e) Date Jul. 8, 1992, PCT Pub. No. WO92/07577, PCT Pub. Date May 14, 1992
PCT Filed Dec. 27, 1990, Ser. No. 867,114
Claims priority, application France, Oct. 30, 1990, 90 13441
Int. Cl.[5] A61K *45/05*
U.S. Cl. 424—85.2 **9 Claims**

1. A method of treating an epithelial malignant tumor of the upper aerodigestive tract or of the thymus of a warm-blooded animal comprising administering to said warm-blooded animal an antitumorally effective amount of interleukin 2.

5,358,710

METHOD FOR THE SUPPRESSION OF AN IMMUNE RESPONSE

Alec Sehon, 695 Academy Road, Winnipeg, MB, Canada R3N 0E8; Pradip K. Maiti, 80 Lake Village Road, Winnipeg, MB, Canada R3T 4M8, and Masaru Takata, 508-571 William Avenue, Winnipeg, MB, Canada R3E 0Z2

Continuation of Ser. No. 444,263, Dec. 1, 1989, abandoned. This application May 24, 1993, Ser. No. 66,314
Int. Cl.[5] A61K *39/35, 39/385, 39/44, 39/00*
U.S. Cl. 424—178.1 **7 Claims**

1. A method of suppressing a mammal's antibody-mediated immune response to a second antigenic polypeptide, or biologically active fragments thereof, the method comprising

(a) selecting a mammal which is unsensitized to a first antigenic polypeptide or antigenically active fragments thereof,

(b) administering an immunosuppressive amount of a tolerogenic conjugate comprising said first antigenic polypep-

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tide, or antigenically active fragments thereof, covalently bound to a physiologically-acceptable, monovalent, water-soluble polymer, and subsequently

(c) administering to said mammal a conjugate comprising said first antigenic polypeptide, or biologically active fragments thereof covalently bound to said second antigenic polypeptide, or biologically active fragments thereof, said conjugate administered in an amount effective to deliver a biologically-effective amount to suppress said mammal's immune response to said second antigenic polypeptide, or biologically active fragments thereof;

(d) wherein administration of said tolergenic conjugate suppresses the capacity of said mammal to mount a humoral antibody response to said first antigenic polypeptide so that when said first antigenic polypeptide is conjugated to said second antigenic polypeptide said mammal's antibody-mediated immune response to said biologically active second antigenic polypeptide is suppressed.

5,358,711

STIMULATION OF STEM CELL GROWTH BY THE BRYOSTATINS

W. Stratford May, Baltimore, Md., and Lyle L. Sensenbrenner, Grosse Pointe Park, Mich., assignors to Johns Hopkins University, Baltimore, Md.

Continuation of Ser. No. 987,999, Dec. 9, 1992, abandoned, which is a continuation of Ser. No. 123,736, Nov. 23, 1987, abandoned. This application Sep. 10, 1993, Ser. No. 118,694

Int. Cl.[5] **A61K** *35/14, 31/365, 35/28;* **C12N** *5/08*

U.S. Cl. 424—93.7 **28 Claims**

1. A method of stimulating the formation of CFU-GM comprising:

obtaining a cell preparation containing hematopoietic stem cells; and

incubating the cell preparation in vitro with a bryostatin having an acylated C20 carbon in an amount effective to stimulate the formation of granulocyte-macrophage colonies.

10. The method of claim 1 wherein the cell preparation, after incubation with bryostatin, is administered to a mammal.

5,358,712

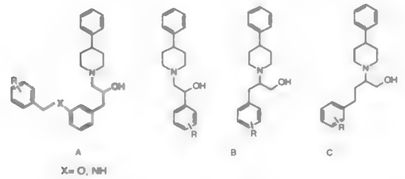
RADIOPHARMACEUTICAL AGENTS FOR THE DETECTION OF ALZHEIMER'S DISEASE

Simon M. Efange, Plymouth, Minn., and Stanley M. Parsons, Santa Barbara, Calif., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

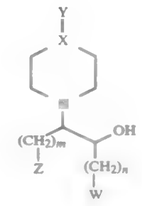
Continuation of Ser. No. 668,967, Mar. 13, 1991, abandoned. This application Sep. 8, 1993, Ser. No. 117,736

Int. Cl.[5] **A61K** *43/00, 49/02;* **C07F** *13/00*

U.S. Cl. 424—1.65 **6 Claims**



1. A radiopharmaceutical for binding to a vesamicol receptor for mapping cholinergic innervation in the brain comprising a chemical with the structural formula:



wherein

X is CH, N;

m is 0 to 5;

n is 0 to 3;

Y is a phenyl group;

Z is H, or a phenyl, fused bicyclic, naphthyl, thiophene or pyrrol group;

W is H, or a phenyl, fused bicyclic, naphthyl, thiophene or pyrrol group; and

further characterized in that both Z and W cannot be H, and Z or W includes a radionuclide of iodine or a transition metal radionuclide joined chemically thereto.

5,358,713

METHOD OF PREVENTING THE TRANSMISSION OF INFECTION CAUSED BY METHICILLIN-RESISTANT *STAPHYLOCOCCUS AUREUS*

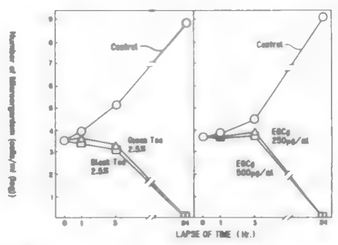
Tadakatsu Shimamura, 4-4, Nishihara 1-chome, Shibuya-ku, Tokyo, Japan, assignor to Mitsui Norin Co., Ltd. and Tadakatsu Shimamura, both of Tokyo, Japan

Continuation of Ser. No. 831,003, Feb. 6, 1992, abandoned, which is a continuation of Ser. No. 580,808, Sep. 11, 1990, abandoned. This application Jul. 22, 1993, Ser. No. 96,060

Claims priority, application Japan, Feb. 23, 1990, 2-42984

Int. Cl.[5] **A61K** *35/78;* **C12N** *11/02;* **C07C** *69/88*

U.S. Cl. 424—195.1 **14 Claims**



1. A method of preventing the transmission of an infection caused by methicillin-resistant *Staphylococcus aureus* comprising applying to a human host to be protected or a human host who has been infected, an effective antibacterial amount of a tea polyphenol.

5,358,714

COSMETIC COMPOSITION

Martin R. Green, Buckingham, United Kingdom, assignor to Unilever Patent Holdings B.V., Rotterdam, Netherlands

Continuation of Ser. No. 807,780, Dec. 10, 1991, abandoned, which is a continuation of Ser. No. 538,601, Jun. 14, 1990, abandoned, which is a continuation of Ser. No. 326,952, Mar. 22, 1989, abandoned. This application Dec. 22, 1992, Ser. No. 995,312

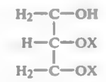
Claims priority, application United Kingdom, Mar. 23, 1988, 8506891

Int. Cl.[5] **A61K** *9/00, 7/06, 37/02*

U.S. Cl. 424—400 **8 Claims**

1. A preserved composition suitable for topical application to mammalian skin or hair which comprises:

(i) a chemical activator of protein kinass C enzymes chosen from diacylglycerols having the structure (1):



(1)

where X is the same or different, is limited to X having a chain length containing at least 15 carbon atoms and is represented by the grouping:

where

x′ is an integer of from 13 to 28, and y is 0, or an integer of from 1 to 5:

the OX groups being of either stereochemical configuration with respect to one another and to the carbon backbone of the glycerol molecule, and the double bonds being of either cis or trans configuration; and

(ii) a cosmetically acceptable vehicle for the chemical activator present in an amount from 0.00001 to 99.9% by weight of the composition.

5,358,715

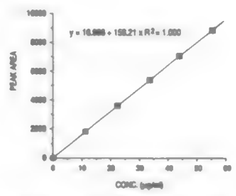
ENHANCEMENT OF TRANSDERMAL DRUG DELIVERY USING MONOALKYL PHOSPHATES AND OTHER ABSORPTION PROMOTERS

Ooi Wong, Fremont, and Thuytien N. Nguyen, Hayward, both of Calif., assignors to Cygnus Therapeutic Systems, Redwood City, Calif.

Division of Ser. No. 938,775, Sep. 2, 1992, Pat. No. 5,308,625. This application Dec. 8, 1993, Ser. No. 163,817

Int. Cl.[5] **A61F** *13/00*

U.S. Cl. 424—449 **5 Claims**



1. A pharmaceutical formulation, comprising:

a pharmaceutically active drug; and

an absorption promoter in the form of a compound selected from the group consisting of monoalkyl phosphates and pharmaceutically acceptable salts thereof.

5,358,716

PHARMACEUTICAL COMPOSITION FOR TOPICAL APPLICATION CONTAINING DITHRANOL AND PREPARATION PROCESS

Jean-Pierre Laugier, Antony, and Evelyne Segot, Nogent-sur-Marne, both of France, assignors to L'Oreal, Paris, France

Filed Sep. 16, 1992, Ser. No. 945,703

Claims priority, application France, Sep. 17, 1991, 91 11417

Int. Cl.[5] **A61K** *9/127, 31/05*

U.S. Cl. 424—450 **14 Claims**

1. Pharmaceutical composition for topical application comprising an oil-in-water type emulsion containing dithranol, wherein the emulsion contains, in dispersed form, vesicles prepared from a lipid wherein said lipid phase represents between 2 and 14 percent of said composition phase containing at least one nonionic amphiphilic lipid, the dispersion vesicles preventing oxidation of said dithranol without the addition of an antioxidant, wherein said composition has improved degradation resistance in comparison with the same composition not containing nonionic amphiphilic lipid.

5,358,717

DIRECTLY-COMPRESSIBLE NAPROXEN OR NAPROXEN SODIUM COMPOSITIONS

Roy Kuramoto, Redwood City; Zakauddin T. Chowhan, Sunnyvale; Randal O. Pendleton, Palo Alto, all of Calif., and Hafez Hafezzadeh, Boulder, Colo., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 759,783, Aug. 27, 1991, abandoned, which is a continuation of Ser. No. 455,109, Dec. 22, 1989, abandoned. This application May 4, 1992, Ser. No. 878,145

Claims priority, application The Bahamas, Dec. 18, 1990, 999

Int. Cl.[5] **A61K** *9/16, 9/20*

U.S. Cl. 424—464 **7 Claims**

1. A process for preparing a directly-compressible naproxen composition, which process comprises:

(1) spray drying an aqueous mixture containing 20 to 70% solids, the solids consisting essentially of 90.46 to 100% naproxen, optionally binder in an amount less than or equal to 6.25% and optionally disintegrating agent in an amount less than or equal to 6.25%, to obtain a spray-dried naproxen composition with a free moisture content that does not exceed 1.63%; and

(2) combining the spray-dried naproxen composition with sufficient amounts of water and dry excipients to obtain a directly-compressible naproxen composition consisting essentially of 90 to 97% spray-dried naproxen, 0.5 to 1.5% free moisture content, 1 to 6% binder, 1 to 6% disintegrating agent, and 0.1 to 2.0% lubricant.

5,358,718

TABLET CONTAINING MESNA AS ACTIVE SUBSTANCE AND METHOD OF MAKING SAME

Dieter Sauerbier, Werter; Jürgen Engel, Alzenau, and Eckhard Milsmann, Bielefeld, all of Fed. Rep. of Germany, assignors to Degussa, Hanau, Fed. Rep. of Germany

Division of Ser. No. 730,178, Jul. 16, 1991, Pat. No. 5,262,169. This application Jul. 26, 1993, Ser. No. 96,422

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1990, 4022525

Int. Cl.[5] **A61K** *9/46, 47/00*

U.S. Cl. 424—466 **13 Claims**

1. A tablet comprising, as active ingredient, mesna in combination with, for each part by weight of mesna:

0.01–1 parts by weight of a binding agent selected from the group consisting of polyvinylpyrrolidone, gelatin and microcrystalline cellulose

0.03–0.4 parts by weight of a disintegrant selected from the group consisting of starch, crosslinked polyvinylpyrrolidone and bentonite

0.01–0.2 parts by weight of a lubricant selected from the group consisting of stearates, talcum and polyglycols

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0.1–1 parts by weight of a filling agent selected from the group consisting of starch, cellulose, lactose, fructose, saccharose, sorbitol, mannitol, calcium phosphate and calcium hydrogen phosphate.

0.05–30 parts by weight, for each part by weight of mesna, of a conventional physiologically acceptable effervescent mixture.

5,358,719

POROUS MICROSPHERES COATED WITH A PERFLUORINATED OIL, A FLUORINATED SILICONE OIL OR A SILICONE GUM AND COSMETIC COMPOSITIONS CONTAINING THEM

Myriam Meliai, L'Hay les Roses, and Pascal Arnaud, Paris, both of France, assignors to L'Oreal, Paris, France

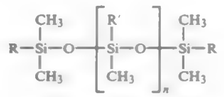
Filed Apr. 21, 1992, Ser. No. 871,799

Claims priority, application France, Apr. 22, 1991, 91 04932

Int. Cl.[5] A61K *7/02, 7/027, 7/035*

U.S. Cl. 424—497 **19 Claims**

1. Porous microspheres having fixed on the exterior surface thereof a coating of a substance not penetrating the interior of the pores of said microspheres, said coating consisting of a member selected from the group consisting of a perfluorinated oil, a fluorinated silicone oil and a silicone gum having the formula



wherein

R represents $-CH_3$, OH or $-CH=CH_2$,

R′ represents $-CH_3$ or $-C_6H_5$ and

n is such that said silicone gum has a viscosity greater than $1\times10^{-2}m^2/s$ at 25° C.

5,358,720

TREATMENT OF ARTHRITIC CONDITIONS

Richard M. Koppel, 554 River Vale Rd., and Karl Verebey, 638 Debchar Ct., both of River Vale, N.J. 07675

Filed Oct. 22, 1993, Ser. No. 139,742

Int. Cl.[5] A61K *33/32, 35/78, 33/26, 31/70*

U.S. Cl. 424—639 **9 Claims**

1. A method for the treatment of arthritic conditions amenable to the treatment which comprises orally administering to a host in need thereof a combination of nutritional substances consisting essentially of about 25–100 mg of nicotinic acid administered three times per day, about 200–1000 mg of calcium ascorbate administered three times a day, and a single dosage form of a copper-free multivitamin with multiminerals also to be taken once a day.

5,358,721

ANTIVIRAL THERAPY

George V. Guittard, Cupertino; Patrick S. L. Wong, Palo Alto; Anthony L. Kuczynski, Mountain View, and David J. Kidney, Palo Alto, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Filed Dec. 4, 1992, Ser. No. 985,989

Int. Cl.[5] A61K *9/24*

U.S. Cl. 424—473 **15 Claims**

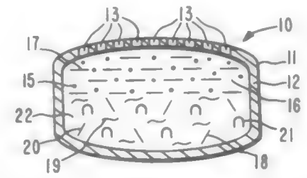
1. A method for administering an antiviral drug to the gastrointestinal tract of a human in need of antiviral therapy, wherein the method comprises:

(a) admitting a dosage form orally into the gastrointestinal tract of the human, said dosage form comprising:

(1) a semipermeable wall permeable to the passage of fluid and substantially impermeable to the passage of an antiviral drug, said wall comprising a member selected from the group consisting of a cellulose acylate, cellulose diacylate, and cellulose triacylate, which wall surrounds;

(2) a compartment comprising 0.05 ng to 200 mg of an antiviral drug and a flux promoter selected from the group consisting of a cationic, anionic, and nonionic promoter for promoting the therapeutic effects of the antiviral drug;

(3) an exit passageway in the wall that connects the gastrointestinal tract with the compartment:



(4) a displacement composition in the compartment:

(b) imbibing gastrointestinal fluid through the semipermeable wall for activating the displacement composition causing the displacement composition to expand and displace the antiviral drug composition from the compartment through the exit passageway, and wherein the method is characterized by:

(c) administering from the compartment the antiviral drug composition comprising the antiviral drug and the flux promoter to the gastrointestinal tract for antiviral therapy.

5,358,722

FERRITIN ANALOGS

Bruce F. Monzyk, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 395,934, Aug. 18, 1989, abandoned. This application Jan. 25, 1993, Ser. No. 8,864

Int. Cl.[5] A61K *9/50, 9/64*

U.S. Cl. 424—489 **9 Claims**

1. A composition comprising an apoferritin protein shell surrounding a solid spherule-shaped core of inorganic or organic material which is essentially devoid of ferrihydrite.

5,358,723

PROCESS AND COMPOSITION FOR THE DEVELOPMENT OF CONTROLLED RELEASE GEMFIBROZIL DOSAGE FORM

Issac Ghebre-Sellassie, Morris Plains, and Uma Iyer, Mendham, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 798,275, Nov. 26, 1991, abandoned. This application May 4, 1993, Ser. No. 57,203

Int. Cl.[5] A61K *9/14*

U.S. Cl. 424—485 **11 Claims**

1. A method of preparing a formulation of gemfibrozil having both immediate and controlled release of said gemfibrozil, comprising:

(a) providing gemfibrozil particles;

(b) adding a release-control agent which is a pH neutral polymer to the gemfibrozil particles wherein the ratio of said gemfibrozil particles to said release-control agent is form about 11:0.5 to about 11:5 by weight of said dispersion to provide both immediate and controlled release of said gemfibrozil;

(c) mixing the gemfibrozil particles and the release-control agent; and

(d) granulating the mixture of the gemfibrozil particles and the release-control agent to provide a formulation consisting of a single granulation.

5,358,724

DOUBLE CHAMBER INFUSION BAG AND METHOD OF MANUFACTURE

Peter R. Raffaele, Park Avenue, Manilla, New South Wales 2346, Australia

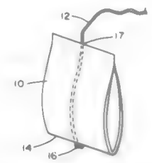
PCT No. PCT/AU91/00093, § 371 Date Sep. 11, 1992, § 102(e) Date Sep. 11, 1992, PCT Pub. No. WO91/13580, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 13, 1991, Ser. No. 934,472

Claims priority, application Austria, Mar. 14, 1990, PJ 9069; Mar. 26, 1990, PJ 9305

Int. Cl.[5] B65B *29/02, 61/14*

U.S. Cl. 426—79 **6 Claims**



1. An improved infusion bag comprising a double chamber, a base and an apex, each chamber being attached to the other at the base and apex, the bag incorporating means for compressing the bag, characterised in that the compression means are provided in the form of a flexible handle at least a portion of which is located within the bag, the flexible handle being secured at or near the base and adapted to pass slidably between said chambers, each chamber being additionally attached together in a region between the base and the apex, so that said handle is capable of compressing said bag by drawing said apex towards said base.

5,358,725

METHOD AND DEVICE FOR EXTRACTING EFFECTIVE INGREDIENTS FROM DRIED PLANT MATERIALS

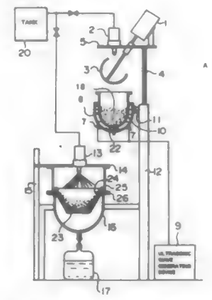
Maremitsu Izumitani, Kokubunji, and Yoshimi Sawada, Tachikawa, both of Japan, assignors to McCoffee Co., Ltd., Tokyo, Japan

Filed Jul. 1, 1993, Ser. No. 85,985

Claims priority, application Japan, Jul. 1, 1992, 4-197788

Int. Cl.[5] A23F *3/00, 5/00;* **A47J** *31/00*

U.S. Cl. 426—238 **5 Claims**



1. A method for extracting an effective ingredient from dried plant material comprising extracting the effective ingredient as a concentrated liquid by adding water at 40° C. to 60° C. to the dried, plant material, applying ultrasonic waves at a frequency in the range of 100 to 500 KHz to the mixture of plant material and water, and filtering under a pressure reduction of 20 to 60 Torr to separate the effective ingredient contained therein.

5,358,726

PROCESS FOR THE STABILIZATION OF HOP PRODUCTS

Paul Klüsters, Pfaffenhofen, and Jan Cully, Garching, both of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg and Fromm, Mayer-Baas GmbH, München, both of Fed. Rep. of Germany

Filed Aug. 11, 1993, Ser. No. 105,897

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1992, 4226811

Int. Cl.[5] A23L *3/00;* **C12C** *3/00*

U.S. Cl. 426—242 **13 Claims**

1. In the method of stabilizing a hop product by drying said hop product in circulating air at a temperature of 60° to 80° C. until the residual moisture content of the dried hop product is between 12 and 14% by weight, the improvement which comprises subjecting the said dried hop product for 30 seconds to 10 minutes to a thermal irradiation at 40° to 90° C. in an inert gas atmosphere.

5,358,727

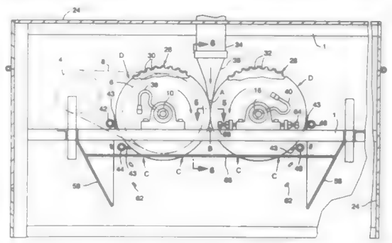
METHOD FOR PRODUCING MOLDED FOOD PIECES

Robert L. Yates, Yuba City, Calif.; Lyle Burkholder, Partridge, and Greg Roepke, Hitchinson, both of Kans., assignors to Sunsweet Growers, Inc., Yuba City, Calif.

Filed Mar. 1, 1993, Ser. No. 24,602

Int. Cl.[5] A23P *1/00*

U.S. Cl. 426—512 **26 Claims**



1. A method for molding a fruit paste, including the steps of:

(a) extruding the fruit paste into a sheet; and

(b) molding portions of the sheet into pieces having desired shape by pressing the sheet between counter-rotating wheels, wherein the wheels have outer surfaces which define mold cavities, and wherein step (b) includes the step of:

chilling the wheels to a temperature, in the range from about −10° F. to about 32° F., sufficient to cause portions of the fruit paste to set up into said pieces as the portions are carried between aligned pairs of the mold cavities of the counter-rotating wheels from a loading station to a release station.

5,358,728

NON-FAT FROZEN DAIRY PRODUCT

Robert W. Martin, Mundelein, and William S. Hine, Evanston, both of Ill., assignors to Kraft General Foods, Inc., Northfield, Ill.

Continuation-in-part of Ser. No. 733,703, Jul. 22, 1991, Pat. No. 5,171,602, which is a continuation-in-part of Ser. No. 538,216, Jun. 13, 1990, abandoned. This application Dec. 3, 1992, Ser. No. 985,835

The portion of the term of this patent subsequent to Dec. 15, 2009, has been disclaimed.

Int. Cl.[5] A23G *9/00*

U.S. Cl. 426—565 **27 Claims**

1. A non-fat frozen dairy dessert having organoleptic properties and body comparable to a milk fat containing frozen

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dairy dessert comprising from about 8% to about 18% of milk solids not fat, from about 6% to about 15% of sweetener, from about 6% to about 15% of corn syrup solids having a D.E. of from about 25 to about 36, from 0% to 6% of corn syrup solids having a D.E. of from about 36 to about 95, from 0% to 6% of dextrins having a D.E. of less than about 20, from about 0.5% to about 3% unmodified starch, from about 0.03% to about 0.3% of a polyphosphate complexing salt and from 0% to , about 0.5% of stabilizer.

5,358,729

INDIGESTIBLE DEXTRIN

Kazuhiro Ohkuma, Sanda; Isao Matsuda, Itami, and Yoshiki Nogami, Kobe, all of Japan, assignors to Matsutani Chemical Industries Co., Ltd., Hyogo, Japan

Filed Aug. 25, 1992, Ser. No. 934,386

Claims priority, application Japan, Aug. 28, 1991, 3-244587; Jul. 17, 1992, 4-213627

Int. Cl.[5] A23L *1/308, 1/09, 1/31, 1/325*

U.S. Cl. 426—567 **19 Claims**

1. An indigestible dextrin characterized in that the dextrin contains:

(A) up to 50% of 1→4 glycosidic linkages, and

(B) at least 60% of an indigestible component,

(C) the content of indigestible component as actually determined varying within the range of ±5% from a value Y calculated from at least one of equations, i.e., Equations 1 to 62, given below,

(D) the indigestible dextrin being prepared by adding hydrochloric acid to corn starch and forming a mixture thereof having a Water content of about 5.5% to 8% by weight, and heating the corn starch mixture at 140° to 200° C. using an extruder to react the corn starch in a molten state,

the value Y being a calculated content (%) of the indigestible component,

in the equations given below, X1, X2, X3, X4, X5 and X6 have the following meaning and are values quantitatively determined for the dextrin by "Hakomori's methylation method",

X1: amount (%) of glucose residues at non-reducing ends

X2: amount (%) of glucose residues having a 1→4 glycosidic linkage

X3: amount (%) of glucose residues having a 1→6 glycosidic linkage

X4: amount (%) of glucose residues having a 1→3 glycosidic linkage

X5: amount (%) of glucose residues having both 1→2 and 1→4 glycosidic linkages

X6: amount (%) of glucose residues having glycosidic linkages other than the above residues, glucose residues having both 1→4 and 1→6 glycosidic linkages and glucose residues having both 1→3 and 1→4 glycosidic linkages

$Y=-64.8+4.618\cdot X1$ 1

$Y=104.8-0.934\cdot X2$ 2

$Y=32.7+3.425\cdot X3$ 3

$Y=47.2+3.337\cdot X4$ 4

$Y=-11.7+36.852\cdot X5$ 5

$Y=55+3.124\cdot X6$ 6

$Y=92.1+0.349\cdot X1-0.868\cdot X2$ 7

$Y=29.9+0.13\cdot X1+3.335\cdot X3$ 8

$Y=4.2+1.745\cdot X1+2.157\cdot X4$ 9

$Y=-30+1.381\cdot X1+26.857\cdot X5$ 10

$Y=-23.5+2.974\cdot X1+1.332\cdot X6$ 11

$Y=59.5-0.349\cdot X2+2.159\cdot X3$ 12

$Y=154.6-1.733\cdot X2-2.924\cdot X4$ 13

$Y=57.6-0.559\cdot X2+14.955\cdot X5$ 14

$Y=115.7-1.13\cdot X2-0.731\cdot X6$ 15

$Y=34.7+2.9\cdot X3+0.536\cdot X4$ 16

$Y=16.4+2.206\cdot X3+13.336\cdot X5$ 17

$Y=34.7+3.069\cdot X3+0.377\cdot X6$ 18

$Y=-5.1+0.393\cdot X4+32.664\cdot X5$ 19

$Y=44.3+4.805\cdot X4-1.474\cdot X6$ 20

$Y=-27.3+45.744\cdot X5-0.835\cdot X6$ 21

$Y=60.9-0.052\cdot X1-0.353\cdot X2+2.18\cdot X3$ 22

$Y=164.8-0.223\cdot X1-1.809\cdot X2-3.045\cdot X4$ 23

$Y=-66+1.76\cdot X1+0.249\cdot X2+33.886\cdot X5$ 24

$Y=180.5-1.479\cdot X1-1.61\cdot X2-1.476\cdot X6$ 25

$Y=34.3+0.02\cdot X1+2.889\cdot X3+0.534\cdot X4$ 26

$Y=-5.7+0.77\cdot X1+1.276\cdot X3+17.679\cdot X5$ 27

$Y=27.3+0.35\cdot X1+2.789\cdot X3+0.417\cdot X6$ 28

$Y=-42.6+1.597\cdot X1-0.584\cdot X4+31.521\cdot X5$ 29

$Y=-22.1+2.909\cdot X1+0.111\cdot X4+1.265\cdot X6$ 30

$Y=-36.4+1.201\cdot X1+33.184\cdot X5-0.472\cdot X6$ 31

$Y=184.7-2.166\cdot X2-0.776\cdot X3-3.735\cdot X4$ 32

$Y=30-0.135\cdot X2+1.963\cdot X3+10.639\cdot X5$ 33

$Y=56.2-0.302\cdot X2+2.273\cdot X3+0.061\cdot X6$ 34

$Y=135.3-1.552\cdot X2-2.719\cdot X4+5.007\cdot X5$ 35

$Y=160.5-1.819\cdot X2-3.521\cdot X4+0.291\cdot X6$ 36

$Y=49.9-0.644\cdot X2+22.064\cdot X5-0.983\cdot X6$ 37

$Y=17.9+2.185\cdot X3+0.104\cdot X4+12.452\cdot X5$ 38

$Y=34.5+3.189\cdot X3-0.245\cdot X4+0.504\cdot X6$ 39

$Y=13+2.09\cdot X3+15.681\cdot X5-0.104\cdot X6$ 40

$Y=-10.8+1.93\cdot X4+34.174\cdot X5-1.681\cdot X6$ 41

$Y=196.8-0.234\cdot X1-2.264\cdot X2-0.811\cdot X3-3.899\cdot X4$ 42

$Y=-39.6+1.132\cdot X1+0.233\cdot X2+1.258\cdot X3+24.371\cdot X5$ 43

$Y=797.3-8.856\cdot X1-8.09\cdot X2-11.209\cdot X3-9.1\cdot X6$ 44

$Y=-17.5+1.005\cdot X1+1.066\cdot X3-0.363\cdot X4+22.089\cdot X5$ 45

$Y=-17.7+2.298\cdot X1+3.1\cdot X3-3.813\cdot X4+2.613\cdot X6$ 46

$Y=-17.5+0.869\cdot X1+0.851\cdot X3+24.42\cdot X5-0.275\cdot X6$ 47

$Y=-17.3+0.323\cdot X1+1.451\cdot X4+33.667\cdot X5-1.373\cdot X6$ 48

$Y=105.1+0.293\cdot X1-1.294\cdot X2-2.381\cdot X4+9.397\cdot X5$ 49

$Y=152.4+0.284\cdot X1-1.795\cdot X2-3.87\cdot X4+0.535\cdot X6$ 50

$Y=28.9+0.314\cdot X1-0.489\cdot X2+24.497\cdot X5-0.852\cdot X6$ 51

$Y=156.6-1.84\cdot X2-0.46\cdot X3-3.236\cdot X4+4.127\cdot X5$ 52

$Y=177-2.056\cdot X2-0.452\cdot X3-3.89\cdot X4+0.24\cdot X6$ 53

$Y=55.2-0.768\cdot X2-0.491\cdot X3+24.591\cdot X5-1.183\cdot X6$ 54

$Y=-32.7+0.232\cdot X2+2.626\cdot X4+38.544\cdot X5-1.933\cdot X6$ 55

$Y=-17.5-0.522\cdot X3+2.323\cdot X4+39.32\cdot X5-2.035\cdot X6$ 56

$Y=16+0.81\cdot X1-0.354\cdot X2+0.773\cdot X3-0.916\cdot X4+18.622\cdot X5$ 57

$Y=-17.7+2.506\cdot X1+3.427\cdot X3-4.368\cdot X4-3.553\cdot X5+3.034\cdot X6$ 58

$Y=65.4+0.304\cdot X1-0.874\cdot X2-1.142\cdot X4+17.26\cdot X5-0.443\cdot X6$ 59

$Y=-47+1.221\cdot X1+0.311\cdot X2+1.394\cdot X3+24.356\cdot X5+0.092\cdot X6$ 60

$Y=11.3+1.955\cdot X1-0.306\cdot X2+2.571\cdot X3-3.822\cdot X4+2.259\cdot X6$ 61

$Y=73.4-0.959\cdot X2-0.485\cdot X3-0.58\cdot X4+20.917\cdot X5-0.97\cdot X6$. 62

5,358,730

PROCESS FOR COAGULATING OR GELLING A NONDENATURED PROTEIN AND PRODUCT THEREOF

Michèle Dame-Cahagne, Gif sur Yvette; Pascale Mouret, Nogent le Roi; André Frouin, Versailles, and Yves Audidier, Verriers-le-Buisson, all of France, assignors to Bongrain S.A., Guyancourt, France

PCT No. PCT/FR92/00113, § 371 Date Dec. 7, 1992, § 102(e) Date Dec. 7, 1992, PCT Pub. No. WO92/14367, PCT Pub. Date Sep. 3, 1992

PCT Filed Feb. 10, 1992, Ser. No. 930,695

Claims priority, application France, Feb. 8, 1991, 91 01450

Int. Cl.[5] A23L *1/0562*

U.S. Cl. 426—573 **43 Claims**

1. A process for the coagulation or gelling of an aqueous solution containing alkali metal ions and at least 1.5 weight percent of a nondenatured protein, wherein said nondenatured protein is of the type which undergoes coagulation at its isoelectric pH, said aqueous solution having a pH higher than said isoelectric pH, comprising the steps of:

a) adjusting the alkali metal ions content of said solution and

b) heating said solution to a selected temperature ranging from 20° to 100° C.,

where in said step a) the resulting adjusted alkali metal ions content is such that, at said pH higher than said isoelectric pH, said nondenatured protein coagulates or gels instantaneously at said temperature.

5,358,731

PROCESS FOR PRODUCING KONJAK MANNAN CONTAINING PROCESSED MINCED MEAT FOODS

Jiro Sakamoto, and Itsuo Iga, both of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation of Ser. No. 975,123, Nov. 12, 1992, abandoned, which is a continuation of Ser. No. 865,659, Apr. 7, 1992, abandoned, which is a continuation of Ser. No. 742,188, Aug. 2, 1991, abandoned, which is a continuation of Ser. No. 434,577, Nov. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 260,609, Oct. 21, 1988, abandoned. This application Dec. 2, 1993, Ser. No. 160,288

Claims priority, application Japan, Dec. 9, 1987, 62-311417

Int. Cl.[5] A23L *1/314, 1/317*

U.S. Cl. 426—574 **10 Claims**

1. A process for preparing a konjak mannan containing processed minced meat which has a hamburger-like, or coarse cut sausage-like texture, consisting essentially of:

i) mixing

a) at least one part by weight of konjak mannan,

b) 0.2 to 10 parts by weight of a gel forming material other than konjak mannan, and

c) 15–50 parts by weight of water, thereby obtaining an aqueous sol;

ii) mixing 0.01–0.04 parts by weight of an alkaline substance into said aqueous sol;

iii) allowing the mixture obtained in ii) to form a swollen gel;

iv) chopping the gel obtained in iii);

v) mixing said chopped gel with a minced meat; and then

vi) freezing said mixture of chopped gel and minced meat thereby improving said hamburger-like or coarse cut sausage-like texture.

5,358,732

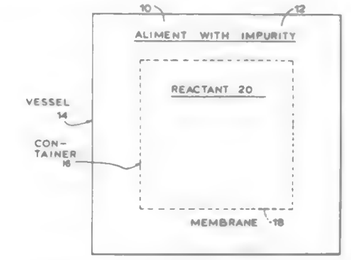
METHOD AND SYSTEM FOR REMOVING IMPURITIES FROM ALIMENTS

Eli Seifter, New Hyde Park; Jacques Padawer, Hastings-On-Hudson, and Iraj Lalezari, Scarsdale, all of N.Y., assignors to Albert Einstein College of Medicine of Yeshiva University, Bronx, N.Y.

Filed Aug. 10, 1993, Ser. No. 105,024

Int. Cl.[5] A23L *1/015;* **C12G** *3/08*

U.S. Cl. 426—592 **23 Claims**



1. A method for improving the quality of an aliment by removing therefrom an impurity selected from the group consisting of carbamates, sulfites, bioamines, and combinations thereof, comprising the steps of:

(A) contacting an aliment containing an impurity selected from the group consisting of carbamates, sulfites, bioamines and combinations thereof, with a container formed of a membrane permeable to the impurity and its breakdown products and enclosing a reactant non-diffusible through the membrane and selected from the group consisting of:

(i) a binding agent,

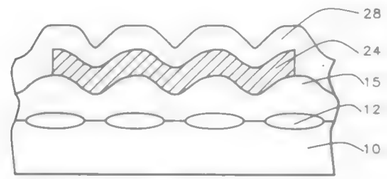
(ii) a neutralizing agent,

(iii) an oxidizing agent,

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(iv) a transesterifying agent,
(v) a hydrolyzing agent, and
(vi) combinations thereof; and
(B) separating the container and the contents thereof from the aliment after a period of time sufficient for the reactant to react with the impurity.

5,358,733
STRESS RELEASE METALLIZATION FOR VLSI CIRCUITS
Water Lur, Taipei, and J. Y. Wu, Dou-Liu, both of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan
Filed Jan. 8, 1993, Ser. No. 2,419
Int. Cl.[5] C23C *14/00, 16/00*
U.S. Cl. 427—58 18 Claims

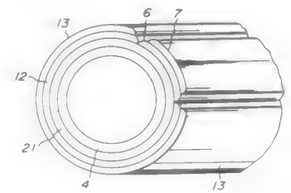


1. The method of stress releasing metallization in a very large scale integrated circuit (VLSI) comprising:
providing semiconductor device structures in and on a semiconductor substrate within the central area of said VLSI circuit;
depositing a metal line in a wavy pattern on said VLSI circuit wherein said metal line connects said semiconductor device structures to a bonding pad on the periphery of said VLSI circuit whereby:
the topography of a layer underlying said metal line is shaped into a pattern comprising a repeating wave formation; and
said metal line is deposited on top of said repeating wave formation pattern; and
said wavy pattern of said metal line acts to release compressive stress in said substrate and tensile stress in said metal line.

5,358,734
PROCESS FOR PRODUCING A BLUE EMITTING LAMP PHOSPHOR
Joseph J. Lenox, and Albert K. Fan, both of Towanda, Pa., assignors to GTE Products Corporation, Danvers, Mass.
Continuation of Ser. No. 984,000, Dec. 1, 1992, abandoned, which is a continuation of Ser. No. 712,387, Jun. 10, 1991, abandoned, which is a division of Ser. No. 330,586, Mar. 30, 1989, abandoned. This application Nov. 24, 1993, Ser. No. 158,063
Int. Cl.[5] B05D *5/06*
U.S. Cl. 427—71 5 Claims

1. A process for producing a phosphor, comprising the steps of:
a) forming a relatively uniform admixture of (1) a source of aluminum oxide, (2) a source of magnesium oxide, (3) barium halide, (4) a source of europium oxide, and (5) barium carbonate, wherein the atomic ratio of magnesium to aluminum in said admixture is 0.942:11 and the atomic ratio of europium to aluminum is from 0.086:11 to 0.12:11 and the atomic ratio of barium to aluminum is from about 0.6:11 to about 0.65:11 and the molar ratio of said barium halide to barium carbonate is from about 14:86 to about 16:84;
b) firing said admixture at a temperature of from about 1625° C. to about 1675° C. for at least about 3 hours in a mildly reducing atmosphere of hydrogen-nitrogen to form a fired material; and
c) dry milling said fired material by vibratory milling of said fired material in the presence of a finely divided aluminum oxide having a particle size below 1 micron and a surface area of from about 85 to about 115 square meters per gram to thereby crush and deagglomerate said fired material to form particles of said fired material and coat said particles with a coating of finely divided aluminum oxide sufficient to impart stir-in qualities to said phosphor.

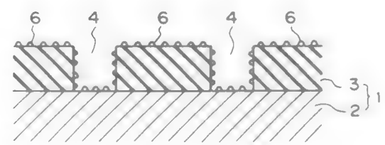
5,358,735
METHOD FOR MANUFACTURING SOLID OXIDE FILM AND METHOD FOR MANUFACTURING SOLID OXIDE FUEL CELL USING THE SOLID OXIDE FILM
Shinji Kawasaki, Nagoya; Shigenori Ito, Kasugai, and Kiyoshi Okumura, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan
Filed Mar. 26, 1992, Ser. No. 857,965
Claims priority, application Japan, Mar. 28, 1991, 3-87344; Jan. 31, 1992, 4-16654
Int. Cl.[5] B05D *1/00*
U.S. Cl. 427—115 38 Claims



1. A method for manufacturing a solid oxide electrolyte film for a fuel cell comprising the following steps:
preparing a solid oxide electrolyte material;
spraying said solid oxide electrolyte material on a substrate to form a sprayed solid oxide film;
impregnating a solution of a compound comprising at least one metal selected from the group consisting of manganese, cobalt, nickel, copper and zinc into said sprayed solid oxide electrolyte film; and
subjecting the solid oxide electrolyte film to a heat treatment after the impregnation step in order to improve an airtightness of the solid oxide electrolyte film formed on the substrate.

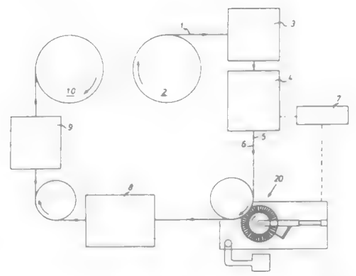
5,358,736
METHOD OF FORMING A THIN AND CONTINUOUS FILM OF CONDUCTIVE MATERIAL
Ryoichi Mukai, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Continuation-in-part of Ser. No. 34,671, Mar. 19, 1993, abandoned. This application Sep. 1, 1993, Ser. No. 115,051
Claims priority, application Japan, Mar. 19, 1992, 4-063611; Jun. 30, 1992, 4-172928; Sep. 2, 1992, 4-234797
Int. Cl.[5] C23C *14/00;* B05D *5/12*
U.S. Cl. 427—124 26 Claims

1. A method of forming a thin and continuous film of a conductive material on a substrate by a physical vapor deposition process, the method comprising:
(a) placing said substrate into a vacuum chamber of a physical vapor deposition system, and creating a vacuum in the chamber,
(b) introducing a nucleus forming gas into the vacuum chamber and allowing the atoms of the gas to be adsorbed on the surface of the substrate, while holding the substrate at a temperature not exceeding room temperature,
(c) stopping the introduction of the gas and re-creating a vacuum in the chamber, and carrying out a first physical vapor deposition of a conductive material at a temperature of the substrate not exceeding room temperature until stable nuclei of the conductive material are formed on the substrate, and



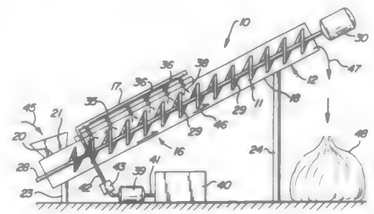
(d) heating the substrate and carrying out a second physical vapor deposition of the conductive material, wherein the temperature at which the substrate is heated is a substantially higher temperature than room temperature, thereby forming a thin and continuous film of the conductive material on the substrate.

5,358,737
METHOD OF BRUSHING INCOMPLETELY DRIED COATING REGIONS FROM A COATED WEB
Willem Muës, Tremelo, and Hendrik J. Geerts, Hulshout, both of Belgium, assignors to Agfa-Gevaert N. V., Mortsel, Belgium
Continuation of Ser. No. 824,539, Jan. 23, 1992, abandoned. This application Jan. 14, 1993, Ser. No. 75,915
Claims priority, application European Pat. Off., Feb. 20, 1991, 91200362.1
Int. Cl.[5] B05D *3/12*
U.S. Cl. 427—177 7 Claims



1. In a method for coating a moving web in which a continuous web is advanced at a linear velocity from a supply roll through a coating station where a substantially uniform coating of a liquid coating composition having a thickness is applied to a face thereof, then through a drying station to dry the thus-applied coating on said advancing web, and finally to a take-up station for collection into a roll, in combination, the improvement of preventing contamination of surfaces coming in contact with an undried coated face of said web in the event of the presence on the coated web of nonuniformly coated regions due to temporary disturbance of the application of said coating, which comprises the steps of:
advancing the coated web prior to passage thereof through said drying station through a web brushing station containing web brushing means having a periphery defining a continuous path,
when a disturbance in the coating application occurs, temporarily displacing said web brushing means in said web brushing station from a inoperative position separated from the coated web surface to an operative position where said periphery of the web brushing means makes contact with the undried coated face of said web at a locus along the path of the web, and
driving the periphery of said web brushing means along said continuous path while in said operative position at a different linear velocity relative to the linear velocity of the coated web, whereby the web brushing means in said operative position at least partially removes said nonuniformly coated regions from the web face.

5,358,738
METHOD AND APPARATUS FOR PAINTING THE SURFACES OF WOOD CHIPS
Craig S. Sawka, 7777 Ives, Grosse Ile, Mich. 48138
Filed Mar. 31, 1993, Ser. No. 40,885
Int. Cl.[5] B05D *7/00*
U.S. Cl. 427—220 4 Claims



1. A method for autogenously painting the surfaces of wood chips with a liquid colorant including:
conveying a mass of wood chips along a path from an entry point to a discharge point and continuously tumbling the chips as they are conveyed along the path so that adjacent chips continuously contact against numerous other adjacent chips as the chips are conveyed;
applying an amount of liquid colorant upon the tumbling mass of chips at a number of separated places along about the first half of the path, as the mass of chips are conveyed;
correlating the total amount of liquid colorant applied at all of the places along the conveyor path to the amount needed to paint the surfaces of the chips without soaking into the chips so as to avoid saturating the chips with the liquid colorant;
autogenously spreading the liquid colorant upon and, thereby, painting the surfaces of the chips with the liquid colorant by the contacting actions of adjacent chips;
and continuing spreading the liquid colorant upon the surfaces of the chips and simultaneously drying the painted surfaces of the chips as the chips are conveyed along the second half of the path to the discharge point and the dry chips are substantially dry to enable handling as the chips exit the path.

5,358,739
COATING ELECTRONIC SUBSTRATES WITH SILICA DERIVED FROM SILAZANE POLYMERS
Ronald H. Baney, Tokyo, Japan; Grish Chandra, and Loren A. Haluska, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.
Continuation of Ser. No. 13,873, Feb. 5, 1993, abandoned. This application Mar. 10, 1994, Ser. No. 209,321
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—226 9 Claims

1. A method for depositing a silica coating on an electronic substrate comprising:
applying a coating comprising a silazane polymer on an electronic substrate, wherein the silazane is selected from the containing disilane of the formula $(Cl_xR_ySi)_2$ with a

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disilazane of group consisting of silazanes prepared by reacting a chlorine the formula $(R_3'Si)_2NH$, wherein R is vinyl, an alkyl group of 1–3 carbon atoms or a phenyl group; R' is vinyl, hydrogen an alkyl group of 1–3 carbon atoms or a phenyl group; x has a value of 0.5–3; y has a value of 0–2.5 and the sum of x+y equals 3 and silazane polymers prepared by reacting trichlorosilane with a disilazane of the formula $(R''_3Si)_2NH$, where R'' is selected from the group consisting of vinyl, hydrogen, phenyl and alkyl radicals containing 1 to 3 carbon atoms; and

heating the coated substrate in an oxidizing atmosphere at a temperature sufficient to convert the silazane polymer to a silica coating.

5,358,740

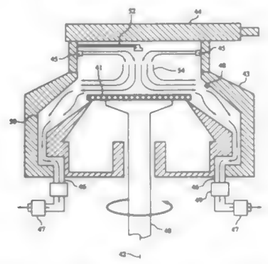
METHOD FOR LOW PRESSURE SPIN COATING AND LOW PRESSURE SPIN COATING APPARATUS

David E. Bornside, Arlington, and Robert A. Brown, Winchester, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 903,773, Jun. 24, 1992, abandoned. This application Jan. 11, 1994, Ser. No. 179,871

Int. Cl.[5] B05D *3/2*

U.S. Cl. 427—240 **35 Claims**



1. A method of forming a gas flow adjacent a spinning surface, comprising:

providing a film upon the surface, said surface being within a chamber;

spinning the surface about an axis substantially perpendicular to a plane of the surface; and

maintaining a Reynolds number sufficiently low to cause the gas to flow substantially laminar, axisymmetric and steady adjacent the film by reducing a pressure adjacent substantially the entire film; and

injecting said gas into said chamber through at least one gas inlet during said maintaining step.

5,358,741

COMPOSITE FIBERS HAVING A DIAMOND SURFACE

Roy Gat, Cleveland, Ohio, assignor to Case Western Reserve University, Cleveland, Ohio

Filed Sep. 23, 1992, Ser. No. 950,067

Int. Cl.[5] C23C *16/00*; B24D *3/00*

U.S. Cl. 427—249 **23 Claims**

1. The method of forming a composite of a diamond deposit on an inorganic fiber substrate which comprises the steps of:

disposing an inorganic fiber in a reactor suitable for diamond deposition;

providing an atmosphere of gaseous hydrocarbon and hydrogen atoms in said reactor at a temperature of from about 700° C. to about 1400° C. and a pressure of from about 5 to about 150 Torr;



causing diamond crystals to be deposited as a film on the surface of said inorganic fiber to provide a composite fiber having a diamond surface and an inorganic fiber core.

5,358,742

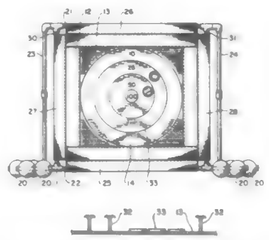
PROCESS FOR PROVIDING A VISUALLY DISTINCTIVE TARGET BY COLORING AND HEAT DEFORMATION OF HOOK MATERIAL ON THE TARGET

Irving Ziff, 27603 Saddle Rd., Rolling Hills, Estates, Calif. 90274

Filed Oct. 7, 1993, Ser. No. 133,524

Int. Cl.[5] B05D *5/06*

U.S. Cl. 427—276 **3 Claims**



1. A process of providing a visually distinctive target of a given graphic representation comprising the steps of:

laying out a sheet of hook material having a multiplicity of raised hooks composed of heat sensitive material;

selecting a portion of said hooks intended to define the graphic representation;

applying heat to the selected portion of the hooks causing deformation to a sufficiently lower height than surrounding unselected hooks to form the graphic representation; and

cooling the deformed hooks in ambient temperature.

5,358,743

SELECTIVE AND BLANKET CHEMICAL VAPOR DEPOSITION OF CU FROM (β-DIKETONATE)CU(L)$_n$ BY SILICA SURFACE MODIFICATION

Mark J. Hampden-Smith, and Toivo T. Kodas, both of Albuquerque, N. Mex., assignors to University of New Mexico, Albuquerque, N. Mex.

Filed Nov. 24, 1992, Ser. No. 980,087

Int. Cl.[5] C23C *14/04*

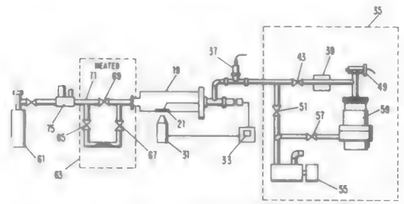
U.S. Cl. 427—282 **16 Claims**

1. The method of selectively depositing copper onto exposed metallic substrates partially covered by a layer of silica, said method comprising the following steps:

a. partially covering a metallic substrate with a layer of silica such that the metallic substrate is exposed partially;

b. treating the silica with a functionalized organosilane to render the silica unreceptive to the deposition of copper thereon; and

c. subjecting the treated silica and the exposed metallic substrate to a precursor material containing copper,



whereby the copper is deposited only onto the exposed metallic substrate.

5,358,744

PROCESS FOR COATING A FERRITIC STAINLESS STEEL STRIP WITH ALUMINUM BY HOT QUENCHING

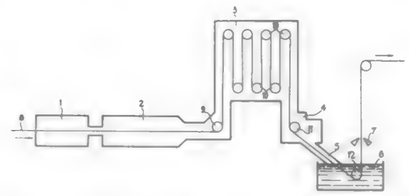
Eric Buscarlet, Marell-Marly; Charles G. Brun, Chantilly; Danielle Quantin, Montataire; Jean-Paul Hennechart, Mouzon; Marc Mantel, Albertville; Patrice de Veyrac, Versailles, and Bernard Baroux, Saint Jorioz, all of France, assignors to Sollac and Ugine, Aciers de Chatillon & Gueugnon, both of Puteaux, France

Continuation of Ser. No. 727,846, Jul. 11, 1991, abandoned. This application Apr. 5, 1993, Ser. No. 43,608

Claims priority, application France, Jul. 16, 1990, 90 09048

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—320 **12 Claims**



1. A process for aluminizing a ferritic stainless steel strip, by hot quenching, in a continuous coating plant consisting of:

i) preheating a ferritic stainless steel strip to a temperature less than 500° C. in a first non-oxidizing atmosphere wherein said first non-oxidizing atmosphere contains less than 3% by volume oxygen,

ii) heating the product of step (i) to a temperature less than 950° C. in a second non-oxidizing atmosphere of nitrogen and hydrogen, wherein said second non-oxidizing atmosphere has a dew point less than −40° C.,

iii) conveying the product of step (ii) to an atmosphere consisting of nitrogen above a coating bath, and

iv) quenching the product of step (iii) in said coating bath.

5,358,745

METHOD OF MAKING THIN-FILM COMPOSITE MEMBRANES

Chinh N. Tran, Garden Grove; Adrian C. Maldonado, Chula Vista, and Ratnasamy Somasuthan, San Diego, all of Calif., assignors to Fluid Systems Corporation, San Diego, Calif.

Continuation of Ser. No. 882,396, May 13, 1992, Pat. No. 5,234,598. This application Apr. 27, 1993, Ser. No. 54,911

Int. Cl.[5] B05D *3/00*

U.S. Cl. 427—333 **12 Claims**

1. A process for preparing a thin film composite membrane comprising the steps of

(a) applying an aqueous solution of an N-alkyl phenylene diamine to a porous support;

(b) interfacially redacting said applied diamine of (a) by applying an organic solution of a polyacyl halide to the support to form a thin film reaction product thereon;

(c) post-treating the product of (b) with an acid solution;

(d) coating the product of (c) with a solution of polyvinyl alcohol and a buffer and/or a base; and

(e) drying the coated product of (d).

5,358,746

OPTICAL MOLDINGS MADE FROM SILICON NITRIDE, AND A PROCESS FOR THEIR PRODUCTION

Martin Brück, Hofheim am Taunus; Tilo Vaahs, Kelkheim am Taunus; Marcellus Peuckert, Hofheim am Taunus; Ude Scheunemann, Liederbach; Thomas Stehlin, Hofheim am Taunus, and Jürgen Thels, Oberursel, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 690,656, Apr. 24, 1991, abandoned. This application Sep. 27, 1993, Ser. No. 127,987

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1990, 4013306

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—376.2 **3 Claims**

1. A process for preparing a transparent article for optical applications from silicon nitride comprising:

a) an initial step selected from the group consisting of:

i) pyrolysis of polymeric silazanes in an atmosphere comprising ammonia or a mixture of ammonia and an inert gas to give a silicon nitride product;

ii) pressing pulverulent polymeric silazanes to give moldings and subjecting the moldings to pyrolysis in an atmosphere comprising ammonia or an ammonia and an inert gas to give a silicon nitride product;

iii) dissolving polymeric silazanes into a solution of an inert organic solvent, drawing fibers from the solution, evaporating the solvent, and subjecting the fibers to pyrolysis in an atmosphere comprising ammonia or an ammonia and an inert gas to give a silicon nitride product; and

iv) melting polymeric silazanes to form molten polymeric silazanes, casting or injection-molding or extruding the molten polymeric silazanes to give formed polymeric silazanes and subjecting the formed polymeric silazanes to pyrolysis in an atmosphere comprising ammonia or a mixture of ammonia and an inert gas to give a silicon ntiride product; and

b) producing an oxidic coating on the silicon nitride product in an oxygen-containing atmosphere wherein the production of the oxidic coating occurs either during or after the pyrolysis, and at a temperature in the range of from about 800° to about 1400° C. within which the pyrolysis is performed and, wherein at λ=546 nm the silicon nitride product has a refractive index from about 1.65 to about 2.00 and the oxidic coating thereon has a refractive index from about 1.44 to about 1.55.

5,358,747

SILOXANE COATING PROCESS FOR CARBON OR GRAPHITE SUBSTRATES

Willy M. Balaba, Monroeville; George H. Armstrong, New Kensington; Suzanne Kauffman, Apollo, and Princewill N. Anyalebechi, Pittsburgh, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 28, 1992, Ser. No. 997,434

Int. Cl.[5] B32B *9/00*

U.S. Cl. 427—387 **8 Claims**

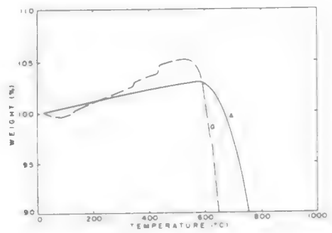
8. A method for producing a polymer-coated carbon graphite fiber, comprising:

(a) providing a polysiloxane liquid solution having non-linear silicon to oxygen bonding characterized by the general formula of $R_nSiO_{(4-n)/2}$, wherein R is a phenyl radical and

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n has an average value of about 0.95 to 1.05, said polysiloxane being formed by acid hydrolyzing a mono-phenyl silane monomer and condensing to form a cross-linked polyphenylsiloxane polymer having ladder polymer heterocyclic silicon to oxygen bonding,

(b) applying said cross-linked ladder polymer heterocyclic



polyphenylsiloxane as a liquid solution in an alcohol and water mixture to carbon graphite fiber, and

(c) drying said liquid cross-linked, ladder polymer, heterocyclic polyphenylsiloxane onto said carbon graphite fiber at a temperature of about 75° C.–110° C. to form a polysiloxane polymer-coated carbon graphite fiber being substantially infusible above about 400° C. to about 600° C.

5,358,748

ACIDIC GLASS FIBER BINDING COMPOSITION, METHOD OF USE AND CURABLE GLASS FIBER COMPOSITIONS

Dale J. Mathews, Toledo, Ohio; Philip F. Miele, Highlands Ranch, Colo., and Edmund G. Dornfeld, Defiance, Ohio, assignors to Schuller International, Inc., Denver, Colo.

Filed May 19, 1992, Ser. No. 886,666

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—389.8 **28 Claims**

27. A method of decreasing the odor of cured glass fiber composition comprising the steps of:

a. providing newly formed glass fibers;

b. applying an acidic glass fiber binding composition comprising an aqueous soluble phenol formaldehyde resin in an effective film forming amount from about 1 to about 5% by weight when applied, an effective scavenging amount of a formaldehyde scavenger, and an effective amount of a strong aqueous soluble acid, wherein the composition has an acid pH of about four to less than six and the solids content ranges from about 1 to about 30% by weight of the total composition; and

c. curing the resin wherein the cured composition has a alkylamine content of less than 5 ppm.

5,358,749

LINING, COATING OR MANUFACTURING UNDERWATER STRUCTURES TO PREVENT LIVING MARINE ORGANISMS ADHERING TO OR BUILDING UP ON EXPOSED SURFACES

Clois D. Fears, 487 Cole Rd., Murrysville, Pa. 15668

Division of Ser. No. 872,017, Apr. 22, 1992, Pat. No. 5,304,236. This application Jan. 31, 1994, Ser. No. 189,485

Int. Cl.[5] B05D *3/00;* **C09D** *5/14*

U.S. Cl. 427—397.7 **13 Claims**

1. A method of protecting exposed surface areas of underwater structures against both detrimental adherence to and buildup of living marine organisms thereon, said method comprising the steps of:

(a) providing a composition of matter in which a cement which is at least sufficient to provide said composition of matter a requisite amount of both adhesion capability during curing thereof and rigidity after said curing of said composition of matter, is thoroughly mixed with from 60 to 75 percent by volume, on a dry basis, of sand, having a particle size distribution which is sufficient to provide said composition of matter a requisite amount of bonding sites for said cement and a requisite strength after said curing, and an anti-fouling agent which is present in said composition of matter in an amount which is at least sufficient to provide said composition of matter a capability of substantially minimizing both any detrimental adherence to and buildup of said living marine organisms on said exposed surface areas of said underwater structure;

(b) mixing water with said composition of matter provided in step (a), in an amount being at least sufficient to activate said cement and cause said composition of matter to become a coherent mass;

(c) applying said coherent mass of step (b) to said exposed surface areas of said underwater structures as at least one of a lining and a coating, and

(d) curing said at least one of said lining and said coating applied in step (c).

5,358,750

INDUSTRIAL FABRICS

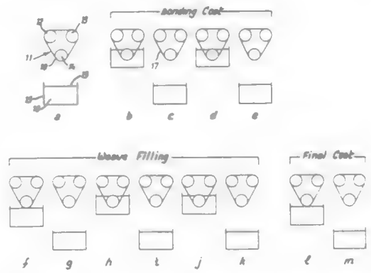
Frank Brookfield, Rochdale, England, assignor to Scapa Group PLC, Lancashire, England

Continuation-in-part of Ser. No. 804,679, Dec. 11, 1991, abandoned. This application Aug. 13, 1993, Ser. No. 105,996

Claims priority, application United Kingdom, Dec. 14, 1990, 9027143.8

Int. Cl.[5] B32B *27/20;* **B05D** *3/02*

U.S. Cl. 427—412 **8 Claims**



1. The method of producing a fusing belt which includes the steps of providing a woven base fabric, said fabric having opposed fabric surfaces and recesses in said surfaces formed by and between yarns of the fabric present at said surfaces, applying successive coating layers of a synthetic plastic coating material to said base fabric, wherein the said application of successive coating layers includes the step of filling the recesses of at least one of said opposed fabric surfaces by the application, utilizing a lick coating technique, of at least one said synthetic plastic coating layer which contains silicate bodies, followed by application utilizing a dip coating technique, of at least one said synthetic plastic coating layer; thereby forming a coated fabric.

5,358,751

FERROCEMENT LINING UNITS, METHODS OF MAKING THEM AND METHODS OF LINING A WATER COURSE WITH THEM

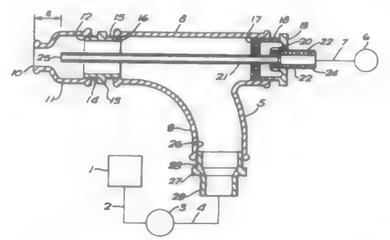
Anthony B. Vean, Leeds, United Kingdom, assignor to Haligarth Construction Limited, London, United Kingdom

Filed Aug. 11, 1992, Ser. No. 916,867

Claims priority, application United Kingdom, Feb. 12, 1990, 9003086.7; Feb. 12, 1990, 9003125.3

Int. Cl.[5] B05D *1/02;* **B23P** *6/00;* **E04B** *1/16*

U.S. Cl. 427—421 **35 Claims**



1. A method of making a water course lining unit comprising a section of ferrocement useful for the in-situ lining of the lower part of a water course, a preformed section comprising a wire mesh reinforcement embedded in at least one layer of an aqueous cementitious composition such that a portion of the wire mesh reinforcement projects out of the aqueous cementitious composition, the method comprising:

providing an assembly which comprises at least one layer of wire mesh and an adjacent backing layer;

spraying over the steel wire mesh at least a first and a second layer in turn of an aqueous cementitious composition comprising sand, cement and water;

working into the interstices of the steel wire mesh and against the backing layer the aqueous cementitious composition of at least the first layer sprayed on the steel wire mesh,

allowing each layer of aqueous cementitious composition sprayed over the steel wire mesh to dry at least partially before spraying on any next succeeding layer;

trowelling over the steel wire mesh aqueous cementitious composition of each layer subsequent to the first layer; and

allowing the final layer of aqueous cementitious composition that is sprayed over the steel wire mesh to set whereby a final layer of cement is formed over said steel wire mesh while a portion of said wire mesh reinforcement is left projecting from the section.

5,358,752

SKIN CARE COMPOSITION

David A. Evans, and Uy Nguyen, both of Edmonton, Canada, assignors to Norac Technologies Inc., Edmonton, Canada

Filed Feb. 23, 1993, Ser. No. 23,217

Int. Cl.[5] A61K *37/22*

U.S. Cl. 424—450 **7 Claims**

1. A skin composition, comprising an antioxidant effective amount of a pure phenolic diterpene compound of the ferruginol type selected from the group consisting of carnosic acid, a C_{1-5} alkyl ester of carnosic acid, an alkali metal salt of carnosic acid, carnosol and mixtures thereof, which is dissolved or dispersed in a skin compatible carrier, the antioxidant effective amount of diterpene being in the range of 1–100,000 ppm based on the total weight of the composition, and further comprising an amount of ascorbic acid or erythorbic acid, or an alkali metal salt of either of them, or mixture thereof in the range of 1000–100,000 ppm by total weight of the composition said composition providing a temporary prophylactic effect against the production of peroxides in skin tissues to which it has been applied.

5,358,753

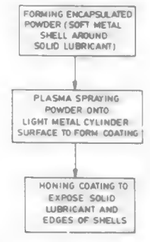
METHOD OF MAKING AN ANTI-FRICTION COATING ON METAL BY PLASMA SPRAYING POWDER HAVING A SOLID LUBRICANT CORE AND FUSABLE METAL SHELL

V. Durga N. Rao, Bloomfield Hills; Daniel M. Kabat, Oxford, and Robert A. Rose, Grosse Pointe Park, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 88,486, Jul. 6, 1993, Pat. No. 5,302,450. This application Sep. 24, 1993, Ser. No. 133,412

Int. Cl.[5] B05D *1/12*

U.S. Cl. 427—451 **13 Claims**



1. A method of making an anti-friction coating on a metal surface subject to sliding wear, comprising:

(a) forming a powder having grains comprising a core of solid lubricant of graphite and MoS_2 and a shell of fusable metal having a hardness no greater than Rc40;

(b) plasma spraying said powder onto a metal surface to form a coating; and

(c) finish-smoothing said coating to a uniform thickness of about 25–175 microns.

5,358,754

METHOD FOR FORMING DIAMOND FILMS BY VAPOR PHASE SYNTHESIS

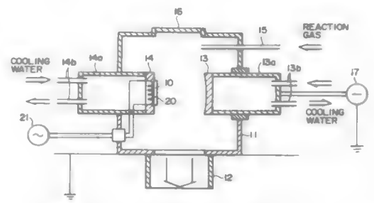
Koji Kobashi; Shigeaki Miyauchi; Kozo Nishimura; Kazuo Kumagai, and Rie Kato, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jul. 6, 1992, Ser. No. 908,084

Claims priority, application Japan, Jul. 9, 1991, 3-195811

Int. Cl.[5] B05D *3/06;* **C23C** *16/50*

U.S. Cl. 427—577 **2 Claims**



1. A method for forming diamond films by vapor phase synthesis comprising forming a diamond film on a substrate using a DC plasma discharge chemical vapor deposition reactor with a concave cathode in an atmosphere of a reaction gas mixture containing methane, oxygen and hydrogen at a gas pressure between 0.1 and 5 Torr and a substrate temperature between 300° and 1000° C.

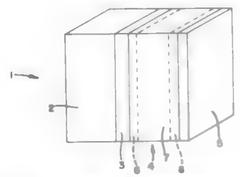
VOL 1167 ISS 4 OC 25 1994 UMI

5,358,755

AMORPHOUS HYDROGENATED SILICON-CARBON ALLOYS AND SOLAR CELLS AND OTHER SEMICONDUCTOR DEVICES PRODUCED THEREFROM

Yuan-Min Li, Langhorne, and Benjamin F. Fieselmann, Newtown, both of Pa., assignors to Amoco Corporation, Chicago, Ill.

Filed Aug. 13, 1993, Ser. No. 106,369
Int. Cl.[5] B05D *3/06*; C23C *16/00*
U.S. Cl. 427—577 14 Claims



12. A process for preparing a photovoltaic device comprising:

a) preparing a vapor deposition chamber;

b) placing a substrate in the chamber and maintaining the substrate at a temperature above ambient temperature and below about 260° C., and;

c) introducing into the deposition chamber a gaseous mixture comprising

(1) at least one compound having the formula:

$(SiX_3)_3CX^1$

wherein each X and X^1 is selected from the group consisting of hydrogen and halogen, and

(2) hydrogen, in a ratio by volume of from about 50 parts to about 2000 parts hydrogen to 1 part $(SiX_3)_3CX^1$ compound,

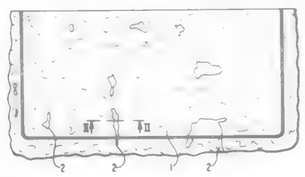
d) under deposition conditions of excitation power density of less than about 50 mW/cm^2 at a surface of the substrate, and a pressure of more than about 0.1 torr whereby one or more hydrogenated amorphous silicon-carbon alloy regions are deposited onto the substrate; and front and back contacts are applied to the substrate thereby forming the photovoltaic device.

5,358,756

MOTOR VEHICLE VENEERED INTERIOR TRIM COMPONENT AND METHOD OF ASSEMBLY THEREOF

Ulrich Bruhnke, Ehningen; Andreas Kellermann, Weil der Stadt, and Jürgen Körber, Sindelfingen, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Jul. 12, 1993, Ser. No. 89,178
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1992, 4223236
Int. Cl.[5] B32B *3/10*
U.S. Cl. 428—40 4 Claims



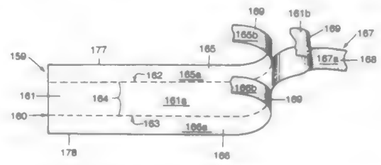
1. A veneered component for a motor vehicle body interior, comprising a base part and a thin, peelable decorative natural cork cover layer provided on an exposed side of the base part so as to be firmly adhered thereon, wherein the thickness of the cover layer is sized such that pores in the natural cork cover layer are holes completely penetrating the cover layer and allowing a surface of the base part disposed below the cover layer to be visible, and the cover layer is arranged in an adhesively bonded manner, via a clear transparent adhesive, on the surface of the base part which has been painted in a uniform hue contrasting with the hue of the natural cork cover layer.

5,358,757

WALLBOARD BUNDLING TAPE AND METHOD

Joseph R. Robinette, Bristol, Tenn., and Raymond G. Syracuse, Charlotte, N.C., assignors to National Gypsum Company, Dallas, Tex. and The Robinette Company, Bristol, Tenn.

Continuation-in-part of Ser. No. 833,002, Feb. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 460,587, Jan. 3, 1990, Pat. No. 5,087,310. This application Jan. 25, 1993, Ser. No. 8,319
Int. Cl.[5] B32B *3/10*, *3/06*
U.S. Cl. 428—43 10 Claims



1. A laminated bundling tape, comprising:

an elongated top strip of material with a first basis weight ranging between about fifteen pounds per thousand square feet and about twenty-five pounds per thousand square feet, said top strip having a first edge, a second edge and at least two longitudinally extending rows of perforations;

a first outer band on said top strip extending from said first edge to a first row of said at least two rows of perforations;

a second outer band on said top strip extending from said second edge to a second row of said at least two rows of perforations;

a center band on said top strip extending from said first perforation row to said second perforation row; and

an elongated tear strip of material with a second basis weight ranging between about fifteen pounds per thousand square feet and about fifty-five pounds per thousand square feet;

said tear strip being adhered to said center band, whereby said tear strip facilitates the easy removal of said center band from said top strip when the first and second outer bands are adhered to at least one surface.

5,358,758

STRUCTURAL MEMBER

John Skelton, Sharon, and David S. Brookstein, Wellesley, both of Mass., assignors to Albany International Corp., Albany, N.Y.

Continuation-in-part of Ser. No. 447,096, Dec. 6, 1989, abandoned. This application Jan. 24, 1992, Ser. No. 825,389
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—53 19 Claims

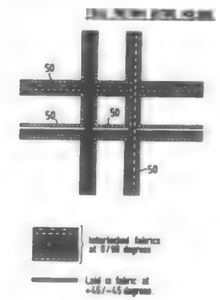
1. A structural member comprising:

a plurality of layers of interwoven fibrous material, said plurality of layers intersecting and joining each other along lines of contact, said lines of contact forming axes of the member, each said layer including a first layer portion extending between two of said lines of contact and a second layer portion;

said layers cooperating to open into a three dimensional shape defining the shape of the structural member and including a hollow central portion, said hollow portion

having a perimeter defined by said first layer portions and said lines of contact;

a plurality of points formed on the perimeter of said hollow central portion defined by said lines of contact forming said axes; and



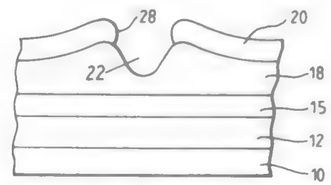
at least one flange extending outwardly of said hollow central portion at each of said points, said flange being formed by said second layer portions wherein in said three dimensional shape the first and second layer portions of each layer are substantially coplanar .

5,358,759

OPTICAL RECORDING ELEMENT

Robert A. McLean; Lynn Y. Dorey, and Paul A. Hunt, all of Essex, England, assignors to Imperial Chemical Industries PLC, London, England

Filed Jun. 11, 1992, Ser. No. 897,464
Claims priority, application United Kingdom, Jun. 11, 1991, 9112567.4
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—64 9 Claims



1. An optical recording medium comprising a recording layer which absorbs radiation within a predetermined wavelength range and into which information pits can be written by means of a laser beam having a wavelength within said predetermined range, and an overcoat layer overlying the recording layer and through which the laser beam is transmitted, the overcoat layer being such that the energy content required of the laser beam in order to write a pit having a depth less than the thickness of the recording layer is sufficient to breach at least part of the overcoat layer locally overlying the pit.

5,358,760

PROCESS FOR PRODUCING SOLID BRICKS FROM FLY ASH, BOTTOM ASH, LIME, GYPSUM, AND CALCIUM CARBONATE

Tresea Furlong, and John Hearne, both of Nacogdoches, Tex., assignors to Earl Richhart, Nacogdoches, Tex.

Filed Jun. 14, 1993, Ser. No. 76,998
Int. Cl.[5] B32B *1/06*, *13/00*, *13/12*
U.S. Cl. 428—70 4 Claims

1. A compressed block with structural strength for use in building and construction, said block comprising:

a cured, compressed mixture of from about 40 to about 45 wt. % fly ash; from about 40 to about 45 wt. % bottom ash; from about 2.5 to about 5 wt. % gypsum; from about 2.5 to about 5 wt. % calcium carbonate; and from about 5 to about 10 wt. % lime;

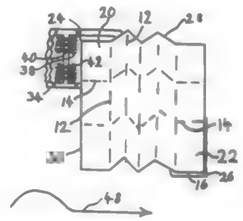
wherein said block is prepared by compressing the mixture of fly ash, bottom ash, and waste under from about 1,500 to about 2,350 psi, without the application of externally supplied heat.

5,358,761

FOLDED SHEET

George W. McDonald, Bella Luce, Moulin Huet, St. Martins, Guernsey, Channel Islands

Continuation of Ser. No. 457,711, Oct. 10, 1990, abandoned. This application Nov. 3, 1992, Ser. No. 970,953
Claims priority, application United Kingdom, May 7, 1988, 8810866.7
The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.
Int. Cl.[5] B32B *3/06*, *3/10*
U.S. Cl. 428—77 19 Claims



1. A sheet of material comprising:

a first set of concertina folds and a second set of concertina folds to permit folding of said sheet between an unfolded and a folded condition, said second set of concertina folds being transverse to said first set of concertina folds when said sheet is folded, and the quantity of said first and said second set of concertina folds being different from each other;

said sheet having two diagonally opposite segments and being provided with solely two diagonally opposite corner holding portions, one of said diagonally opposite corner holding portions being at one of said diagonally opposite segments and the other of said corner holding portions being at the other of said diagonally opposite segments, said segments being at diagonally opposite corners of said sheet and being defined by at least one of a fold and an edge thereof;

one of said corner holding portions being stiff and intended for holding and said opposite corner holding portion including a beyond extending part extending beyond the remainder of said diagonally opposite segments of said sheet when folded and intended for holding and retaining; and

holding means associated with said beyond extending part adapted for holding and retaining said sheet in a binder

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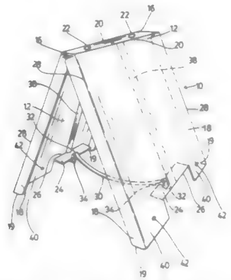
while leaving said one of said corner holding portions free for holding and opening with a single movement.

5,358,762

RIGID POLYETHYLENE SANDWICH BOARD

Stephen E. McGrath, 64 Carl Crescent, Scarborough, Ontario, Canada

Filed Aug. 18, 1993, Ser. No. 107,574
Int. Cl.[5] G09F *15/00*
U.S. Cl. 428—12 10 Claims



1. A sandwich board formed from rigid recyclable plastics material sheet, comprising:

a pair of overlying panels;

each panel having an outer surface for the presentation of information, the outer surface being coated with an ink adherent to the plastics material;

each panel having opposed elongate side flanges extending along opposed sides of the panel and bent inwardly at substantially 90 degrees from the outer surface thereof;

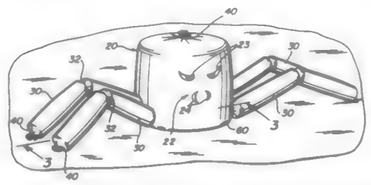
each panel having a lower flange hingable inwardly from a horizontal hinge line in a lower part of the panel; the panels being hingably connected at respective top edges of the panel through at least one top member coextensive with the top edges of both panels; and restraining means extending between lower parts of the panel to limit the angle to which the panels hingable with respect to the top member.

5,358,763

SPIDER-LIKE DECORATIVE OBJECT

Benson Zinberg, Stamford, Conn., assignor to Sun Hill Industries, Inc., Stamford, Conn.

Continuation of Ser. No. 664,023, Mar. 4, 1991, Pat. No. 5,211,996. This application Feb. 12, 1993, Ser. No. 16,967
Int. Cl.[5] B44C *3/06*
U.S. Cl. 428—16 12 Claims



1. A decorative object simulating the appearance of a fanciful conception of a spider, comprising:

a main bag member having a filling therein, said main bag member being made of flexible plastic material and simulating the appearance of a body portion of said decorative object; and

a plurality of elongated tubular leg members each made of a flexible elongated tubular plastic bag and having a filling therein, said leg members simulating the appearance of legs of a fanciful conception of a spider, said leg members being arranged adjacent said main bag member, and arranged at spaced apart locations around the periphery of said main bag member to extend from said main bag member and simulate the appearance of a plurality of legs of a fanciful conception of a spider;

each leg member having an articulated portion at an intermediate portion of said leg member; and

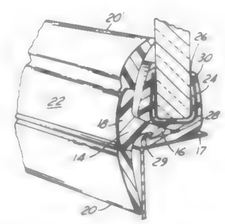
said articulated portion comprising a tied-off portion at said intermediate portion of said elongated tubular member.

5,358,764

INTEGRALLY MOLDED T-SHAPED DECORATIVE TRIM

Edward A. Roberts, Mt. Clemens, and Raymond C. Brautigam, Shelby Township, Macomb County, both of Mich., assignors to Color Custom, Inc., Warren, Mich.

Continuation of Ser. No. 788,618, Nov. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 707,582, May 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 574,603, Aug. 29, 1990, Pat. No. 5,112,549, which is a division of Ser. No. 114,500, Oct. 30, 1987, Pat. No. 4,963,403. This application Oct. 13, 1993, Ser. No. 135,846
Int. Cl.[5] B60R *27/00*
U.S. Cl. 428—31 12 Claims



1. A vehicular decorative trim assembly in combination comprising:

(a) an integrally molded T-shaped decorative trim comprised of a hard plastic leg portion having a top portion and an edge portion, soft plastic tip portions bound to the top portion of the hard plastic leg portion, a decorative metallic portion integrally molded to one of the top portion or the tip portions, and, at the edge portion of the hard plastic leg portion, a locking flange member; and

(b) a multi-channel member having a first channel for insertion of a panel of glass and a second channel for insertion of the edge portion of the hard plastic leg portion therein in snapped-into engagement.

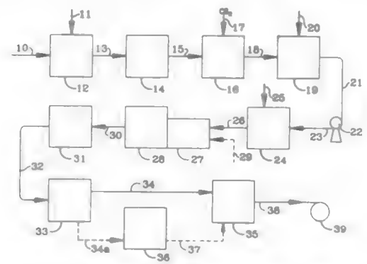
5,358,765

CELLULOSIC ARTICLE CONTAINING AN OLEFINIC OXIDE POLYMER AND METHOD OF MANUFACTURE

John Markulin, Oak Lawn, Ill., assignor to Viskase Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 846,455, Mar. 4, 1992, abandoned. This application Oct. 25, 1994, Ser. No. 15,751
Int. Cl.[5] B65D *85/72*
U.S. Cl. 428—34.8 36 Claims

1. A cellulosic tubular food casing containing an olefinic oxide polymer uniformly dispersed through the tube wall in admixture with the cellulose and in sufficient quantity so that the olefinic oxide polymer-to-cellulose weight ratio is at least



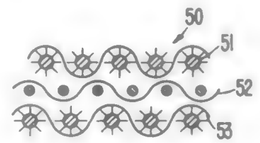
about 1:200, and wherein said olefinic oxide polymer has an average molecular weight of at least about 70,000.

5,358,767

TEXTILE STRUCTURE USEFUL AS REINFORCEMENTS IN THE MANUFACTURE OF COMPOSITE MATERIALS, AND TECHNICAL YARNS FOR SUCH STRUCTURES

Bruno Bompard; Jean Charles Durand, both of Lyon, and Jean Paul Lamarie, Caluire, all of France, assignors to Brochier S.A., Decines Cédex, France

PCT No. PCT/FR89/00676, § 371 Date Oct. 22, 1990, § 102(e) Date Oct. 22, 1990, PCT Pub. No. WO90/07422, PCT Pub. Date Jul. 12, 1990
PCT Filed Dec. 22, 1989, Ser. No. 566,359
Claims priority, application France, Dec. 23, 1988, 88 17135
Int. Cl.[5] D03D *27/00, 3/00;* D02G *3/36, 3/02*
U.S. Cl. 428—86 15 Claims



1. A textile structure useful as a reinforcement in the manufacture of composite materials, said structure comprising technical yarns, wherein each of at least some of said yarns includes:

a substantially straight core so as to be nontwisted,

a relief yarn having reliefs of a multidimensional raised configuration, and

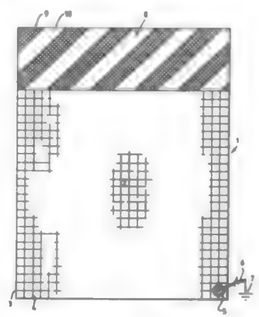
an independent binding yarn, the relief yarn being secured to the core by the binding yarn.

5,358,766

MAT

Stephen J. Field, 61 Bellvue Crescent, Cliftonwood, Bristol BS8 4FT, England

Filed Mar. 26, 1993, Ser. No. 38,358
Claims priority, application United Kingdom, Mar. 26, 1992, 9206647; Feb. 19, 1993, 9303388
Int. Cl.[5] C09J *7/02*
U.S. Cl. 428—77 27 Claims



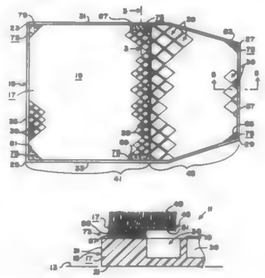
1. A computer mouse mat for a device incorporating a rolling ball or roller, such as a computer mouse, comprising: a major surface, having an operational surface and having a ball or roller cleaning surface that is tacky such that the ball or roller of the device can be cleaned by passing the ball or roller over the tacky roller cleaning surface of said major surface, said operation surface being of a different material than said roller cleaning surface.

5,358,768

MAT FOR THE FLOOR OF A VEHICLE

James M. Wiley, III, 6416 Baird Ln., Bartlett, Tenn. 38135

Filed Jun. 25, 1993, Ser. No. 81,235
Int. Cl.[5] B32B *3/06*
U.S. Cl. 428—95 5 Claims



1. In combination, a vehicle having a floor covered by carpet, and a removable mat for placement on top of the carpet that covers the floor of the vehicle, said mat comprising:

(a) a lower mat means for removable placement on top of the carpet that covers the floor of the vehicle; said lower mat means including a body having an upper surface, a lower surface, a first side edge, a second side edge, a third side edge, and a fourth side edge, in which said upper surf of said lower mat means has a plurality of cavities thereof for holding liquid;

(b) an upper mat means for placement over said upper surface of said lower mat means; said upper mat means including a body having an upper surface, a lower surface,

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a first side edge, a second side edge, a third side edge, and a fourth side edge; and

(c) attachment means for removably attaching said upper mat means to said lower mat means; said attachment means including first attachment means secured to said upper surface of said lower mat means and including second attachment means secured to said lower surface of said upper mat means for coacting with said first attachment means to removably attach said first side edge, said second side edge, said third said edge and said fourth side edge of said body of said upper mat means to the respective said first side edge, said second edge, said third said edge and said fourth said edge of said lower mat means.

5,358,769

PROCESS PROVIDING DURABLE STAIN-RESISTANCE BY USE OF MALEIC ANHYDRIDE POLYMERS

Engelbert Pechhold, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 2, 1993, Ser. No. 12,792
Int. Cl.[5] B32B *3/02*
U.S. Cl. 428—96 **11 Claims**

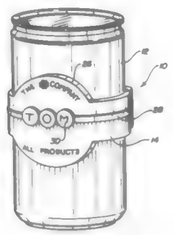
1. A process for imparting to polyamide substrates resistance to staining by acid dyes, which resistance is durable to shampooing, comprising applying (A) one or more epoxy resins and (B) a polymeric stain-resist consisting essentially of one or more hydrolyzed copolymers of maleic anhydride and one or more ethylenically unsaturated aromatics, 1-alkenes containing 4 to 8 carbon atoms, alkyl vinyl ethers, or alkyl allyl ethers.

5,358,770

DEVICE FOR RELEASABLY IDENTIFYING OBJECTS

Jordan I. Evans, 1429 Thickett Rd., Castleton, N.Y. 12033

Filed Oct. 18, 1993, Ser. No. 136,895
Int. Cl.[5] B32B *3/06, 3/08*
U.S. Cl. 428—99 **8 Claims**



1. A device for releasably affixing identifying indicia to an object, comprising:

a flexible arcuate member arranged and constructed to releasably clamp about the external circumferential surface of an object,

said flexible arcuate member including a semi-circular portion having an inner circumference approximately the same as that of the outer circumference of the object to which it is to be releasably affixed,

said semi-circular portion further having a leg portion extending from each end of said semi-circular portion, said semi-circular portion further including an enlarged central region having an outer surface arranged and constructed to receive personal identifying indicia; and

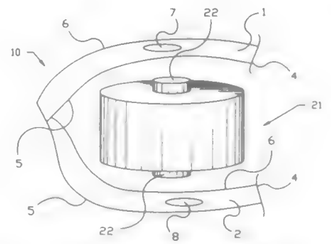
means to facilitate storage of said device when it is not in use, said means including enlarged outwardly directed planar magnet face surfaces disposed at the terminating end of each of said leg portions to allow said device to be held to a ferromagnetic member for storage of said device when it is not in use.

5,358,771

PERFORATED FILM WITH PREPUNCHED TUBE HOLES

Stephen F. Compton, Spartanburg, S.C., assignor to W. R. Grace & Co.-Conn., Duncan, S.C.

Filed Mar. 5, 1993, Ser. No. 26,898
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—131 **6 Claims**



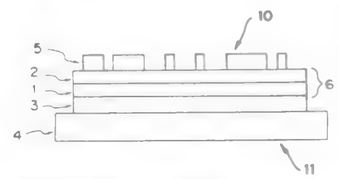
1. An oriented heat-shrinkable film suitable for wrapping dye packages having a central tube and yarn wound around the tube, comprising a perforated polymeric film having holes to accept the central tube of the dye package.

5,358,772

INDICATION LABEL TO BE ADHERED TO RUBBER TIRE AND MATERIAL OF LABEL

Shunji Nakagawa, Takahama; Takuya Mizuta, Akashi; Ryuji Morimura, Iruma, and Tadao Nishikawa, Higashimatsuyama, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed May 24, 1993, Ser. No. 64,989
Claims priority, application Japan, May 25, 1992, 4-034618[U]
Int. Cl.[5] C09J *7/02*
U.S. Cl. 428—148 **2 Claims**



1. An indication label for adhesion to a rubber tire, the label being disposed on an unvulcanized raw rubber tire and then fixed by vulcanizing the rubber tire using heat and pressure, comprising:

a label base material including a heat-resistant plastic film with upper and lower surfaces, and an abrasive surface coating layer of hardened resin and filler formed on the upper surface of the heat-resistant plastic film for receiving

an indication formed of an ink layer on an exposed surface of the abrasive surface coating layer, wherein the exposed abrasive surface has a profile with a stylus surface roughness measurement having a mean deviation in the range of between 0.5 μ to 3.0 μ and a maximum profile height in the range of between 1 μ to 20 μ; and

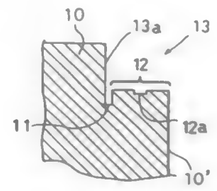
a rubber adhesive laminated on the lower surface of the heat-resistant plastic film of the label base material for adhering the label base material to the rubber tire.

5,358,773

ADHESIVE STRUCTURE

Minoru Fujii, and Etsuro Nishio, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1992, Ser. No. 939,156
Claims priority, application Japan, Sep. 13, 1991, 3-081893[U]
Int. Cl.[5] B32B *3/28*
U.S. Cl. 428—167 **15 Claims**



1. A structure comprising:

a recess having a first surface to which an adhesive is applied;

a second surface which is substantially perpendicular to said first surface; and

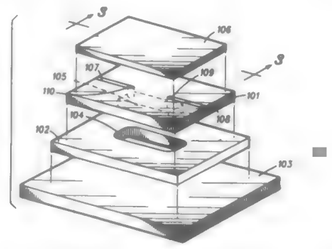
a guide groove provided on said first surface in order to introduce the adhesive into said guide groove and onto said first surface.

5,358,774

ELECTROMAGNETIC SHIELDING ASSEMBLY AND FABRICATION METHOD

Thomas E. Garvens, Streamwood, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 26, 1993, Ser. No. 52,873
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—209 **14 Claims**



1. An electromagnetic shielding assembly that comprises:

a substrate that has, deposited on a first major surface, at least one circuit that emits, or is sensitive to, electromagnetic energy and that has, adhered to a second major surface, a metallic shielding area, wherein the first major surface and the second major surface are substantially parallel separated by a thickness of the substrate and wherein the metallic shielding area has a predetermined shape;

an electrically conductive carbon composition shielding plate that has a predetermined thickness and a cutout area, wherein the first major surface of the substrate is physically and electrically attached to a first major surface of the electrically conductive carbon composition material, wherein the at least one circuit is positioned within the cutout area, and wherein the metallic shielding area substantially covers the cutout area; and

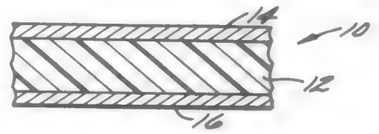
a metallic plate having a predetermined thickness that is physically and electrically coupled to a second major surface of the electrically conductive carbon composition plate, wherein the second major surface of the electrically conductive carbon composition plate and the first major surface of the electrically conductive carbon composition plate are substantially parallel separated by the predetermined thickness of the electrically conductive carbon composition plate.

5,358,775

FLUOROPOLYMERIC ELECTRICAL SUBSTRATE MATERIAL EXHIBITING LOW THERMAL COEFFICIENT OF DIELECTRIC CONSTANT

Allen F. Horn, III, Danielson, Conn., assignor to Rogers Corporation, Rogers, Conn.

Filed Jul. 29, 1993, Ser. No. 99,245
Int. Cl.[5] B32B *3/00, 7/00*
U.S. Cl. 428—209 **21 Claims**



1. An electrical substrate composite material comprising:

(1) a fluoropolymeric matrix;

(2) particulate ceramic filler material, said filler material comprising a mixture of;

(a) at least one first ceramic material having a dielectric Constant of ≧30 and a thermal coefficient of dielectric constant with an absolute value of <500 ppm/° C.; and

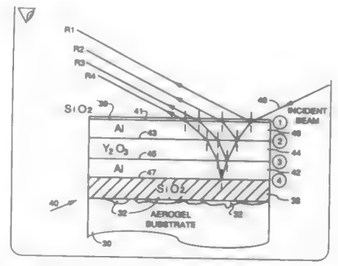
(b) at least one second ceramic material having a coefficient of thermal expansion of ≦15 ppm/° C., said mixture of ceramic fillers being proportioned in a ratio effective to provide the composite material with a dielectric constant of ≧4 and a thermal coefficient of dielectric constant with an absolute value of ≦150 ppm/° C. over a temperature range that spans 20° C. to 50° C.

5,358,776

LIGHTWEIGHT AEROGEL REFLECTOR

Steven P. Hotaling, Syracuse, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 31, 1992, Ser. No. 830,010
Int. Cl.[5] B32B *17/00*
U.S. Cl. 428—304.4 **7 Claims**



1. A lightweight low density aerogel reflector comprising,

a) a substrate of low density aerogel at densities between 10–500 mg/cc,

b) the surface of said substrate being polished,

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c) a dielectric planarization layer being vapor deposited on the so-polished surface and
d) at least one reflective layer deposited on said planarization layer.

5,358,777

MAGNETIC RECORDING MEDIUM COMPRISING AN UNDERLAYER OF NON MAGNETIC POWDER AND BINDER RESIN AND A MAGNETIC LAYER WITH A SPECIFIED YOUNG'S MODULUS

Masaya Kojima; Satoru Hayakawa, and Toshio Kawamata, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 18, 1993, Ser. No. 19,257
Claims priority, application Japan, Feb. 18, 1992, 4-060939
Int. Cl.[5] G11B *05/00*
U.S. Cl. 428—212 7 Claims

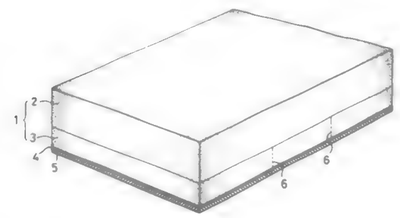
1. A magnetic recording medium, comprising a non-magnetic support; a non-magnetic layer comprising a non-magnetic powder and a binder resin, said binder resin comprising a vinyl chloride resin, a polyurethane resin and a polyisocyanate resin; and a magnetic layer comprising a ferromagnetic metal powder and a binder resin, wherein said non-magnetic layer is coated on said non-magnetic support; said magnetic layer is coated on said non-magnetic layer while said non-magnetic layer is still wet; said magnetic layer has a thickness of up to 0.6 μml said magnetic layer has a young's Modulus ranging from 94% to 95% of the Young's Modulus of said non-magnetic layer; said magnetic layer has a glass transition temperature lower than the glass transition temperature of said non-magnetic layer; wherein the magnetic recording medium is a disc-shaped magnetic recording medium; and said magnetic layer has an orientation ratio of at least 0.85, and wherein the Youngs Modulus. of the magnetic layer is greater than about 4.0×10^4 kg/cm^2.

5,358,778

HEAT TRANSFER SHEET

Kousaku Nagashima, Kitamoto; Shin-ichi Namiki, Tokyo, and Kiyoshi Sakai, Kumagaya, all of Japan, assignors to Lintec Corporation, Tokyo, Japan

Filed Jun. 23, 1993, Ser. No. 80,104
Claims priority, application Japan, Jun. 26, 1992, 4-169509
Int. Cl.[5] B41M *5/26*
U.S. Cl. 428—212 6 Claims



1. A heat transfer sheet, comprising
a first substrate,
a second substrate being peelably integrated with said first substrate, and
a thermally transferable layer being formed on said second substrate integrated with said first substrate, wherein at least said first substrate is air permeable and has a low air resistance.

5,358,779

ENHANCED SURFACE APPEARANCE OF GLASS FIBER REINFORCED PLASTICS (FRP)

Frederick J. McGarry, Weston, Mass., assignor to GenCorp Inc., Fairlawn, Ohio

Filed Jun. 26, 1992, Ser. No. 904,811
Int. Cl.[5] B62D *29/00;* B32B *7/00;* D04H *1/58*
U.S. Cl. 428—268 10 Claims

1. A laminate comprising:
a fiber-reinforced thermoset substrate comprising a cured polyester resin or vinyl ester resin, or combinations thereof and from 5 to 85 percent by weight fibers, based on the weight of the substrate; and
a coating comprising a reaction product of (a) a liquid epoxy resin comprising one or more resins containing more than one 1,2-epoxy groups per molecule, and (b) about 200 to 900 parts by wt. of a liquid amine-terminated butadiene-acrylonitrile polymer per 100 parts by weight of said epoxy resin wherein said coating has an elongation capacity of at least 100 percent and a thickness of from 1 micron to 200 μm.

5,358,780

BREATHABLE WATER-RESISTANT FABRICS

Edward R. Kafchinski, Winfield; Tai-Shung Chung, Randolph; William Timmons, Gladstone, and Jeanne Gasman, West Milford, all of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Filed Apr. 1, 1992, Ser. No. 861,756
Int. Cl.[5] B32B *7/00*
U.S. Cl. 428—284 5 Claims

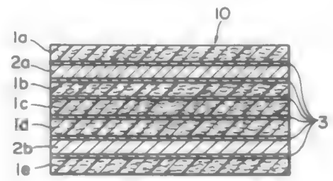
1. A breathable fabric comprising a substrate fabric having a surface, and a microporous layer of poly bonded to said surface, wherein said microporous layer has mores which are substantially free of polymeric material.

5,358,781

HEAT INSULATING PLATE COMPRISING SYNTHETIC PAPER SHEETS AND METAL FILMS

Takeo Sakai, Okazaki, and Tsuneo Kawamura, Yokkaichi, both of Japan, assignors to Somar Corporation, Japan

Filed Nov. 18, 1991, Ser. No. 793,515
Claims priority, application Japan, Nov. 30, 1990, 2-337241
Int. Cl.[5] B32B *15/00*
U.S. Cl. 428—285 13 Claims



1. A heat insulating plate comprising a plurality of superposed, heat-resisting, synthetic paper sheets integrally bonded with each other, each of said paper sheets having an open porous structure for providing heat insulation and being a nonwoven mixture of fibrids and short fibers of an aromatic polyamide or polyimide, and one or more films of a metal selected from the group consisting of aluminum and copper and interposed between an adjacent pair of said plurality of synthetic paper sheets.

5,358,782

COEXTRUDED MULTI-LAYERED, ELECTRICALLY CONDUCTIVE POLYIMIDE FILM

Darrell J. Parish, Circleville, Ohio, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 15, 1992, Ser. No. 991,522
Int. Cl.[5] B32B *27/00*
U.S. Cl. 428—323 10 Claims

1. A coextruded, electrically conductive, multilayered polyimide film consisting essentially of a base layer of a first aromatic polyimide containing from 15% to 45% by weight, based on the weight of the polyimide base layer, of carbon filler particles uniformly dispersed therein and at least one layer of a second untilled aromatic polyimide, wherein said first and second aromatic polyimides are the same or different and comprise the reaction product of an aromatic tetracarboxylic acid dianhydride and an aromatic diamine.

5,358,783

BLENDS CONTAINING POLYSTYRENE-POLYISOPRENE-POLYSTYRENE BLOCK COPOLYMERS AND ARTICLES THEREOF

Charles F. Diehl, and Jean M. Tancrede, both of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich. and Exxon Chemical Patents, Inc., Linden, N.J.

Division of Ser. No. 626,084, Dec. 11, 1990, Pat. No. 5,292,806, which is a continuation-in-part of Ser. No. 393,545, Aug. 11, 1989, Pat. No. 5,143,968. This application Dec. 17, 1993, Ser. No. 169,165
Int. Cl.[5] C08L *9/06, 47/00, 53/02*
U.S. Cl. 428—344 20 Claims

1. A composition of matter which comprises a blend of A-B-A block copolymers, where the A component of each block copolymer of the blend is polystyrene and the B component is polyisoprene, said blend including:
A) a first A-B-A block copolymer having an overall number average molecular weight ranging from about 90,000 to about 250,000, wherein the polyisoprene has a number average molecular weight ranging from about 80,000 to about 225,000, the polystyrene block has a number average molecular weight ranging from about 8,000 to about 17,000 and the overall styrene content of the block copolymer ranges from about 10 percent to about 24 percent; and
B) a second A-B-A block copolymer having an overall number average molecular weight ranging from about 60,000 to about 110,000, wherein the polyisoprene has a number average molecular weight ranging from about 30,000 to about 70,000, the polystyrene block as a number average molecular weight ranging from about 12,000 to about 20,000, and the overall styrene content of the block copolymer ranges from about 25 percent to about 50 percent.

5,358,784

TUBULAR FOOD CASING WITH IMPROVED PEELABILITY

Klaus-Dieter Hammer, Mainz-Mombach; Manfred Siebrecht, and Hermann Winter, both of Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 5, 1992, Ser. No. 846,171
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1991, 4107238; Jun. 26, 1991, 4121068
Int. Cl.[5] A22C *13/00*
U.S. Cl. 428—34.8 14 Claims

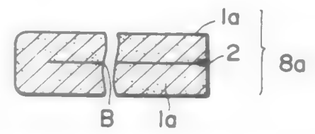
1. A tubular food casing useful for encasing contents and having an inner surface, comprising:
a cellulose and
a coating on the inner surface of said casing, wherein said coating improves the peelability of said casing from its contents, and wherein said coating comprises lecithin and at least one substance selected from the group consisting of alginates, chitosans, and casein.

5,358,785

LAMINATED FILM AND PROCESS FOR PRODUCING THE SAME

Mutsuo Akao; Hiroyuki Osanai; Makoto Kawamura, all of Kanagawa, and Koji Nakai, Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 27, 1992, Ser. No. 888,845
Claims priority, application Japan, May 28, 1991, 3-123964; Jun. 3, 1991, 3-131056; Jun. 17, 1991, 3-171615; Dec. 19, 1991, 3-337194; Dec. 19, 1991, 3-337200
Int. Cl.[5] B32B *7/12*
U.S. Cl. 428—349 17 Claims



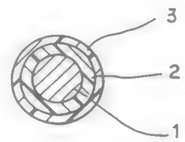
1. A laminated film comprising an inflation film of which the inner surface is joined by blocking and having a cut end that is joined by heat fusion and which has a peel strength greater than the peel strength of the portion joined by blocking.

5,358,786

ELECTRIC INSULATED WIRE AND CABLE USING THE SAME

Izumi Ishikawa; Isao Takahashi; Hideo Sunazuka; Akira Yoshino; Masatake Hasegawa, and Motohisa Murayama, all of Tokyo, Japan, assignors to Fujikura Ltd., Tokyo, Japan

Continuation of Ser. No. 648,169, Jan. 31, 1991, abandoned. This application Apr. 22, 1993, Ser. No. 50,988
Claims priority, application Japan, Mar. 31, 1990, 2-19165; May 23, 1990, 2-133647
Int. Cl.[5] B32B *15/08;* H01B *7/00*
U.S. Cl. 428—380 5 Claims



1. An insulated wire comprising:
a conductor;
an inner insulation layer having a thickness of from 0.1 mm to 1 mm and comprising a halogen-free polymer provided directly on, or via another insulation on the outer periphery of said conductor, said inner insulation layer having a bending modulus of less than 10,000 Kg/cm^{2}m;
an intermediate insulation layer having a thickness of from 0.001 mm to 0.5 mm and comprising a second halogen-free polymer being provided on said inner insulation layer, said intermediate insulation layer having a bending modulus less than 10,000 Kg/cm^{2}m, said first and second halogen-free polymers being different from each other but having a melting point (or glass transition point in the case of polymers with no melting point) below 155° C.; and
an outer insulation layer having a thickness of from 0.05 mm to 1 mm and comprising a third halogen-free polymer being provided on said intermediate insulation material,

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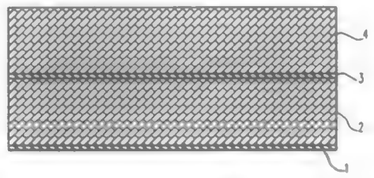
said outer insulation layer having a bending modulus greater than 10,000 Kg/cm^2, said third halogen-free polymer having a melting point (or glass transition point in the case of polymers with no melting point) of above 155° C, wherein said third halogen-free polymer comprises at least one heat-resistant, halogen-free resin selected from the group consisting essentially of polyether ketone, polyether ether ketone, polybutylene terephthalate, polyphenylene sulfide, polyethylene terephthalate, polyphenylene oxide, polycarbonate, polysulfone, polyether sulfone, polyether imide, and polyarylate or polyamide with at least one said resin from said group or a polymer alloy containing such resins as the main component.

5,358,787

RF ABSORPTIVE WINDOW

Thomas P. Fontana, White Bear Lake, and Peter A. Bellus, Eden Prairie, both of Minn., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 30, 1992, Ser. No. 998,220
Int. Cl.[5] B32B 7/00
U.S. Cl. 428—432 12 Claims



1. A window which transmits visible or infrared radiation while absorbing radio frequency energy comprising:
a first layer comprising a conductor having a resistivity in the range of one ohm/square to 100 ohm/square;
a second layer disposed on said first layer and comprising a dielectric material;
a third layer disposed on said second layer and comprising a conductor having a resistivity greater than 100 ohm/-square;
a fourth layer disposed on said third layer and comprising a dielectric material.

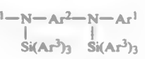
5,358,788

ORGANIC ELECTROLUMINESCENCE DEVICE CONTAINING A SILANAMINE COMPOUND

Hisayuki Kawamura; Chishio Hosokawa, and Tadashi Kusumoto, all of Sodegaura, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 35,676
Claims priority, application Japan, Apr. 2, 1992, 4-080980
Int. Cl.[5] B32B 9/00
U.S. Cl. 428—446 16 Claims

1. An organic electroluminescence device which comprises (a) one or more layers comprising an organic light-emitting layer and (b) a pair of electrodes sandwiching said one or more layers, at least one of said layers containing a silanamine compound of the formula (I),



(I)

wherein:
each Ar^1 is independently an aryl group having 6 to 20 ring-forming carbon atoms which is unsubstituted or substituted with a substituent selected from the group consisting of an alkyl group having 1 to 6 carbon atoms, an alkoxy group having 1 to 6 carbon atoms, a phenoxy group, an alkyl-substituted phenoxy group and a vinyl group,
Ar^2 is an arylene group having 6 to 20 ring forming carbon atoms which is unsubstituted or substituted with an alkyl group having 1 to 6 carbon atoms, and
each Ar^3 is independently an aryl group having 6 to 12 ring forming carbon atoms which is unsubstituted or substituted with an alkyl group having 1 to 3 carbon atoms.

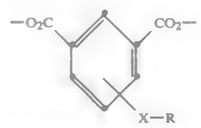
5,358,789

THERMOSETTING COATING COMPOSITIONS

Thauming Kuo, and Charles H. Foster, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 982,545, Nov. 27, 1992, Pat. No. 5,350,830.
This application Mar. 3, 1994, Ser. No. 206,593
Int. Cl.[5] B32B 27/36; C08L 67/04
U.S. Cl. 428—482 18 Claims

1. An enamel composition comprising
(I) about 25 to about 65 weight % of a curable polyester having a number average molecular weight of about 800 to about 6,000 and a weight average molecular weight of about 3,000 to about 40,000, comprising
(a) about 20 to about 60 mol % of diol residues, based on the total moles of components (a), (b), (c), (d), (e) and (f);
(b) 0 to about 20 mol % of polyol residues, based on the total moles of components (a), (b), (c), (d), (e) and (f);
(c) about 5 to about 40 mol % of hydroxy functionalized isophthalic acid residues, based on the total moles of (a), (b), (c), (d), (e) and (f); said hydroxy functionalized residues having the formula



wherein X is selected from —O—, —S—, —SO_2— or —O—$(CH_2—)_n$ (n is 1 to about 6); R is a phenyl radical containing 1-3 hydroxy groups with the proviso that when X is —O— or —S—, that R may also be hydrogen;
(d) about 10 to about 40 mol % of diacid residues, derived from an aromatic diacid or a cycloaliphatic diacid or a mixture thereof, based on the total moles of (a), (b), (c), (d), (e) and (f);
(e) about 0 to about 40 mol % of diacid residues derived from an aliphatic diacid, based on the total moles of components (a), (b), (c), (d), (e) and (f);
(f) 0 to about 10 mol % of residues derived from trimellitic acid or trimellitic anhydride, based on the total moles of components (a), (b), (c), (d), (e) and (f); based on the total weight of components I, II, and III;
(II) about 5 to about 20 weight % of an amino crosslinking agent, based on the total weight of (I), (II) and (III);
(III) about 20 to about 70 weight % of a water-miscible organic solvent, based on the total weight of (I), (II) and (III), the total being 100%.

5,358,790

METHOD FOR REDUCING THE WATER VAPOUR PERMEABILITY OF PAPER

Walter Rüf, Wolfsberg, and Josef Bachler, St. Gertraud, both of Austria, assignors to Patria Papier & Zellstoff AG Frantschach, St. Gertraud i.L., Austria

Filed Nov. 15, 1991, Ser. No. 792,948
Claims priority, application Austria, Nov. 19, 1990, A2337/90; Feb. 8, 1991, A279/91
Int. Cl.[5] B32B 9/06
U.S. Cl. 428—486 14 Claims

10. A sheet of paper having reduced water vapor permeability, comprising
a coating of a film of 5–30 g/m^2 of a chlorine-free coating medium consisting of a rosin sizing dispersion containing additives improving the film-forming properties of the coating medium, which additives include surfactants and waxes; and
a top coat containing polyvinyl alcohol and ethylene acrylic acid.

5,358,791

STERILIZABLE PACKAGING FILM

Richard E. Johnson, Appleton, Wis., assignor to American National Can Company

Filed Mar. 1, 1993, Ser. No. 25,356
Int. Cl.[5] B32B 27/08
U.S. Cl. 428—516 13 Claims



1. A sterilizable multilayer film comprising a first outer layer comprising polypropylene or propylene copolymers, a core layer comprising polyisobutylene modified high density polyethylene and a second outer layer of about 100% to 10% polyisobutylene modified high density polyethylene and about to 90% of a second component comprising polypropylene or at least one copolymer thereof.

5,358,792

HEAT SEALABLE BLEND OF VERY LOW DENSITY POLYETHYLENE OR PLASTOMER WITH POLYPROPYLENE BASED POLYMERS AND HEAT SEALABLE FILM AND ARTICLES MADE THEREOF

Aspy K. Mehta, Humble, Tex., and Michael C. Chen, Duisburg-Tervuren, Belgium, assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 660,402, Feb. 22, 1991, abandoned.
This application Apr. 23, 1993, Ser. No. 51,594
Int. Cl.[5] C08L 23/08, 23/10; B32B 27/32, 27/00
U.S. Cl. 428—516 16 Claims

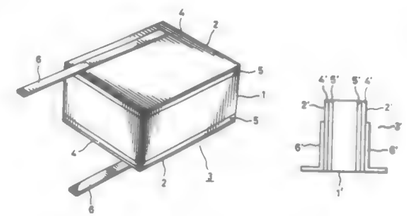
1. A polymer blend composition when formed into a film has a seal initiation temperature below about 100° C. said polymer blend composition comprising:
(a) from about 30 to about 70 weight percent of a polymer comprising an ethylene-alpha-olefin copolymer having a density of from about 0.88 g/cm^3 to about 0.915 g/cm^3, a melt index of from about 1.5 dg/min to about 7.5 dg/min, a molecular weight distribution less than about 3.0, essentially a single peak melting point of between about 60° C. to about 100° C., and a composition breadth index greater than about 70 percent; and,
(b) from about 70 to about 30 weight percent of a propylene based polymer having from about 88 mole percent to about 100 mole percent propylene and from about 12 mole percent to about 0 mole percent of an alpha-olefin other than propylene.

5,358,793

PTC DEVICE

Toshiyuki Hanada, Kawaguchi; Mayumi Takata; Naoki Yamazaki, both of Tokyo; Isao Morooka, and Kazuhiko Harazaki, both of Hachioji, all of Japan, assignors to Daito Communication Apparatus Co., Ltd., Tokyo, Japan

Filed May 7, 1992, Ser. No. 879,566
Claims priority, application Japan, May 7, 1991, 3-101465; Sep. 2, 1991, 3-221613
Int. Cl.[5] B22F 7/04
U.S. Cl. 428—560 13 Claims

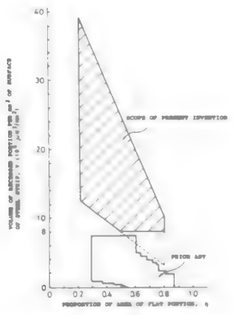


1. A PTC device comprising:
a PTC element formed of a PTC composition, including a polymer having conductive particles dispersed therein;
said polymer further includes at least one of a high density polyethylene and ethylene-acrylic acid copolymer;
two electrodes formed of an electrode composition;
said electrode composition including a metal foil having a conductive layer formed of a conductive paste;
said conductive paste further comprising a mixture of conductive particles and a binder coated thereon;
said conductive particles further comprising at least one conductive material selected from the group consisting of pure metal particles, metal alloy particles, metallic plated metal particles, carbonaceous particles, metallic coated carbonaceous particles, and metallic alloy coated carbonaceous particles;
wherein said pure metal particles include at least one selected from the group consisting of Pt, Au, Ag and NI and wherein said metal alloy particles include at least on of PD and Ag-Pd;
said binder being mixture of at least one of thermosetting resins and a thermoplastic resin having heat resistant properties capable of withstanding operational temperatures of said PTC device;
said two electrodes being affixed to opposed surfaces of said PTC element with said conductive paste contacting said opposed surfaces; and
said conductive paste having a thermal coefficient of expansion intermediate between thermal coefficients of expansion of said PTC element and said metal foil.
6. A process for producing a PTC device which comprises:
forming a PTC element, formed of a PTC composition, including a polymer having conductive particles dispersed therein, having opposing sides;
said polymer further including at least one of a high density polyethylene, ethylene-acrylic acid copolymer, and conductive particles, wherein said conductive particles include at least one conductive material selected from the group consisting of pure metal particles, metal alloy particles, metallic plated metal particles, carbonaceous particles, metallic coated carbonaceous particles, and metallic alloy coated carbonaceous particles;
wherein said pure metal particles is at least one material selected from the group consisting of Pt, Au, Ag and Ni, and wherein said metal alloy particles are at least one selected from the group consisting of Au-Pd and Ag-Pd;
mixing a conductive paste further comprising a mixture of conductive particles and a binder;
said binder being mixture of at least one of thermosetting

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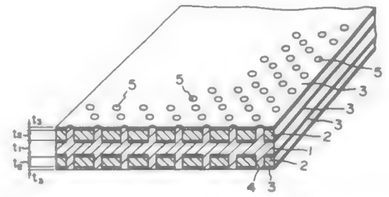
resins and a thermoplastic resin having heat resistant properties capable of withstanding operational temperatures of said PTC device;
coating first and second metal foils with said conductive paste;
curing said conductive paste to create a conductive layer on each of said first and second metal foils;
affixing said conductive layer on said first metal foil to a first surface of said PTC element; and
affixing said conductive layer on said second metal foil to an opposed surface of said PTC element, whereby said PTC element is disposed between said first and second metal foils, with said conductive layers interposed between said PTC element and the respective metal foils.

5,358,794
STEEL STRIP AND METHOD FOR PRODUCING ROLLING DULL ROLL
Takaharu Kawamoto; Yasutaka Nawata; Yasuo Hamamoto; Hiromi Toyota, and Shuichi Shiozawa, all of Kimitsu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
PCT No. PCT/JP92/01079, § 371 Date May 3, 1993, § 102(e) Date May 3, 1993, PCT Pub. No. WO93/04796, PCT Pub. Date Mar. 18, 1993
PCT Filed Aug. 26, 1992, Ser. No. 50,140
Claims priority, application Japan, Sep. 3, 1991, 3-248502; Sep. 3, 1991, 3-248503; Sep. 3, 1991, 3-248504; Sep. 13, 1991, 3-261430; Sep. 13, 1991, 3-261431
Int. Cl.[5] B21B *27/00*; B21D *53/00*
U.S. Cl. 428—600 7 Claims



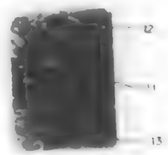
1. A steel strip having excellent painting sharpness and press moldability, characterized by having a plurality of small recessed portions provided on the surface of the steel strip; said recessed portion having a configuration satisfying requirements of a diameters d, of 50 to 500 μm, a depth, h, of the recessed portion of 2 to 40 μm and a total volume of recessed portions per $mm^2$of the surface of the steel strip of 0.70×10^6 μm^3 or more, the center line distance, P_1, between recessed portions adjacent to each other in the direction of rolling being in the range of from 1.0 d to 2.0 d, the center line distance, P_2, between rows in the direction of rolling being in the range of from 1.0 d to 2.0 d.

5,358,795
HEAT-CONDUCTIVE MATERIAL AND METHOD OF PRODUCING THE SAME
Yasuyuki Nakamura, Takatsuki, and Makoto Kawakami, Suita, both of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan
Filed Oct. 13, 1992, Ser. No. 959,606
Claims priority, application Japan, Oct. 12, 1991, 3-292494; Oct. 12, 1991, 3-292495
Int. Cl.[5] B32B *3/24*; H01L *23/373*; H05K *7/20*; B23K *20/04*
U.S. Cl. 428—614 14 Claims



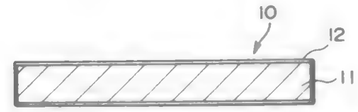
1. A heat-conductive material comprising a metal sheet of high thermal expansion which is heated at room temperature or a temperature higher than a recrystallizing temperature and a metal sheet of low thermal expansion having a metal foil of high thermal expansion clad on at least an outer surface thereof and a plurality of through-holes formed in the direction of thickness thereof, wherein said metal sheet of low thermal expansion is pressure-welded onto either one surface or both surfaces of said metal sheet of high thermal expansion so as to protrude the metal material of said metal sheet of high thermal expansion through said through-holes to be exposed to a surface of said metal foil of high thermal expansion.

5,358,796
JOINED PARTS OF NI-TI ALLOYS WITH DIFFERENT METALS AND JOINING METHOD THEREFOR
Masayuki Nakamura, Yokohama; Keisuke Shiroyama, Zama; Satoru Masunaga, and Kazuo Murata, both of Fukui, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo and Masunaga Menlo Park Co., Ltd., Fukui, both of Japan
Continuation of Ser. No. 865,036, Apr. 7, 1992, abandoned. This application Jun. 15, 1993, Ser. No. 76,868
Claims priority, application Japan, Apr. 9, 1991, 3-103452
Int. Cl.[5] B32B *7/04*
U.S. Cl. 428—660 4 Claims



1. A joined article of a Ni-Ti alloy having a shape memory characteristic or a superelasticity characteristic and a metal different from said Ni-Ti alloy, said article having interfacial parts of said Ni-Ti alloy joined with said metal different from said Ni-Ti alloy, comprising:
i) a melt-forged layer obtained through reactive fusion under application of pressure of at least a portion of said different metal bordering on a joined surface with said Ni-Ti alloy;
ii) a hot-forged layer of said Ni-Ti alloy across a side of layer i), said hot-forged layer having been obtained by softening a portion of said Ni-Ti alloy at high temperature and applying pressure on the side of said Ni-Ti alloy across from said layer (i); and
iii) a hot-forged layer of said different metal across a side of said layer i) opposite that of said layer ii), said hot-forged layer having been obtained by softening a portion of said different metal at high temperature and applying pressure on the side of said different metal across said layer (i).

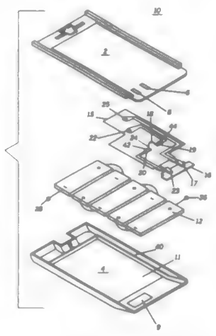
5,358,797
ADJUSTING SHIM
Kenji Matsunuma; Takao Nishioka; Takehisa Yamamoto, and Akira Yamakawa, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan
Filed Jul. 10, 1992, Ser. No. 911,914
Int. Cl.[5] F01L *1/14*
U.S. Cl. 428—698 1 Claim



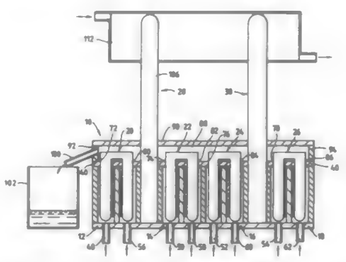
1. An adjusting shim produced from a base material consisting of a ceramic, said ceramic containing 80 to 98 wt % of silicon nitride and/or sialon, and having a porosity of no more than 3%, a bending strength of not less than 1.0 GPa, and an impact compressive elastic limit, (Hugoniot elastic limit) of not less than 15 GPa, wherein said base material is provided, on a surface thereof which contacts a cam, with a ceramic surface layer having a composition different from that of said base material, and a hardness lower than that of said base material, said surface layer consisting of a composition containing at least silicon and oxygen, with an oxygen content of 23.8 to 51.3 wt %, based on the total weight of said surface layer, and having a thickness of not more than 50 μm, said base material on which said surface layer has not yet been provided having a ten-point average roughness of not more than 0.2 μm.

5,358,798
BATTERY ASSEMBLY HAVING A THERMAL FUSE
Raymond J. Kleinert, III, Ft. Lauderdale; Michael P. Cicci, Coral Springs, and Russell E. Gyenes, Sunrise, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 6, 1993, Ser. No. 161,626
Int. Cl.[5] H01M *2/34*
U.S. Cl. 429—7 13 Claims

1. A battery assembly, comprising:
a battery assembly contact;
at least one battery cell having a battery terminal;
a circuit carrier having first and second metallized land areas; and
a thermal fuse located on the circuit carrier and in thermal proximity to the at least one battery cell, the thermal fuse electrically coupling the battery assembly contact with the battery terminal, the thermal fuse comprising:
a resilient electrically conductive member having first and second ends, the first end being attached to the first metallized land area using low temperature solder and the second end being attached to the second metallized land area, the resilient electrically conductive member being attached so that the first end of the resilient electrically conductive member springs away from the first metallized land area causing the electrical interconnection between the battery assembly contact and the battery terminal to be disconnected in response to the at least one battery cell generating enough heat to raise the temperature of the thermal fuse above a predetermined temperature.



5,358,799
FUEL CELL
Frederick J. Gardner, Derby, England, assignor to Rolls-Royce and Associates Limited, London, England
Filed Jun. 28, 1993, Ser. No. 82,467
Claims priority, application United Kingdom, Jul. 1, 1992, 9213964.1
Int. Cl.[5] H01M *8/04*
U.S. Cl. 429—26 22 Claims



1. A fuel cell comprising an anode chamber, a cathode chamber, means to supply a fuel gas to the anode chamber, means to supply an oxidant gas to the cathode chamber, the anode chamber having an anode electrode, the cathode chamber having a cathode electrode, an electrolyte located between the anode electrode and the cathode electrode, and a hollow member positioned partially in the anode chamber and partially in the cathode chamber, the hollow member containing a non electrolyte aqueous solution, the walls of the hollow member comprising a semi-permeable membrane which allows water to permeate therethrough but which prevents the permeation of the solute of the non-electrolyte aqueous solution, the fuel gas or the oxidant gas therethrough, whereby, in operation, water produced or collected in the cathode chamber permeates through the wall of the hollow member into the hollow member by osmosis such that water in the hollow member permeates through the wall of the hollow member into the anode chamber by osmosis.

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5,358,800

ACTIVE MATERIAL OF HYDROGEN STORAGE ALLOY ELECTRODE

Yunshi Zhang, North Village; Deying Song, Southwest Village; Youxiao Chen, Tianjin; Jun Chen; Huatang Yuan, both of Southwest Village; Genshi Wang, North Village; Zaoxiang Zhou, North Village; Xuejun Cao, North Village, and Yufeng Jin, North Village, all of China, assignors to Nan Kai University, Tianjin, China

Filed Jul. 15, 1993, Ser. No. 91,572
Claims priority, application China, Jul. 16, 1992, 92104667.7
Int. Cl.[5] H01M *4/02*
U.S. Cl. 429—59 9 Claims

1. An active hydrogen storage material for use in preparing a hydrogen storage electrode, comprising an alloy base having the formula:

$$MmNi_{5-x-y-z}Zn_xQ_yR_z$$

wherein Mm is a mischemetal; Q is Al, Ca or Sr; R is Li Na or K; $0<x\leqq 1$, $0<y\leqq 0.8$, $0<z\leqq 1$, and Ni-P metallic compound coated on the alloy base.

5,358,801

SOLID ELECTOCHEMICAL CELL OF IMPROVED CAPACITY AND CYCLING CAPABILITY HAVING SURFACTANT IN VANADIUM OXIDE CATHODE MIXTURE

Ralph J. Brodd, Morgan Hill, Calif., assignor to Valence Technology, Inc., San Jose, Calif.

Filed Sep. 3, 1993, Ser. No. 116,783
Int. Cl.[5] H01M *4/02*
U.S. Cl. 429—215 20 Claims

6. A solid electrochemical cell which comprises:
an anode containing a compatible anodic material;
a cathode mixture containing at least one vanadium oxide cathode material in an amount of at least one surface active agent of molecular weight of from 200 to 1000 sufficient to improve the wetting characteristics of said vanadium oxide in an aprotic electrolyte solvent; and
a solid electrolyte interposed there between,
wherein said surface active agent is selected from the group consisting of $R_fSO_3NH_4$, $R_fSO_2N(C_2H_5)CH_2CO_2K$, $R_fSO_2NHC_3H_6N(CH_3)_3I$, $R_fSO_2N(C_2H_5)CH_2CH_2O)_xH$, $R_fSO_2N(C_2H_5)(CH_2CH_2O)_xCH_3$, fluoroaliphatic polymeric ester, ammonium perfluoroalkyl sulfonate, perfluoroalkyl sulfonate amine, and mixtures thereof, wherein R_f is C_nF_{2n+1}, and n is about 8, octylphenoxypolyethoxyethanol, sorbitan monooleates, and alkyloxypolyethyleneoxypolypropyleneoxy ethanol.

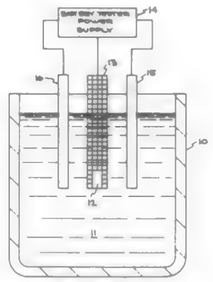
5,358,802

DOPING OF CARBON FOAMS FOR USE IN ENERGY STORAGE DEVICES

Steven T. Mayer, San Leandro; Richard W. Pekala, Pleasant Hill; Robert L. Morrison, Modesto, and James L. Kaschmitter, Pleasanton, all of Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Apr. 1, 1993, Ser. No. 41,507
Int. Cl.[5] H01M *4/36*
U.S. Cl. 429—218 35 Claims

27. In a lithium ion battery having electrodes located in a nonaqueous electrolyte, the improvement comprising:
an electrode adapted to be located in the nonaqueous electrolyte and which includes a quantity of carbon foam



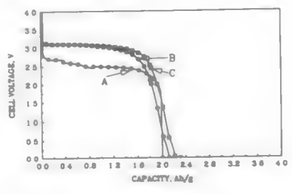
doped with material selected from the group consisting of phosphorus, boron, arsenic, and antimony.

5,358,803

CATALYZED CATHODES FOR ELECTROCHEMICAL CELLS

Kuzhikalail M. Abraham, Needham, and Mohamed Alamgir, Dedham, both of Mass., assignors to EIC Laboratories, Inc., Norwood, Mass.

Filed May 6, 1992, Ser. No. 879,654
Int. Cl.[5] H01M *10/36*
U.S. Cl. 429—101 4 Claims



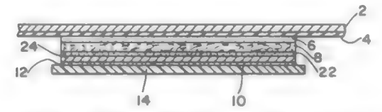
1. In a nonaqueous electrochemical cell having an active metal anode, a high surface area carbon cathode and a nonaqueous electrolyte in a sulfur oxyhalide depolarizer solvent, the improvement comprising:
a catalyst for the reduction of said oxyhalide depolarizer consisting of a mixture of polyacrylonitrile and cobalt acetate.

5,358,804

MULTILAYER ADHESIVE LABEL

Rolf Will, Bad Toelz, and Hans-Peter Ast, Holzkirchen, both of Fed. Rep. of Germany, assignors to Zweckform Etikettiertechnik GmbH, Holzkirchen, Fed. Rep. of Germany

Division of Ser. No. 702,237, May 17, 1991, Pat. No. 5,262,251, which is a division of Ser. No. 454,518, Dec. 21, 1989, Pat. No. 5,032,477, which is a division of Ser. No. 254,383, Oct. 5, 1988, Pat. No. 4,911,994, which is a continuation of Ser. No. 70,642, Jul. 2, 1987, Pat. No. 4,801,514, which is a continuation of Ser. No. 739,376, May 30, 1985, abandoned. This application Jun. 28, 1993, Ser. No. 83,797
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 3430162
The portion of the term of this patent subsequent to Jun. 28, 2010, has been disclaimed.
Int. Cl.[5] H01M *2/02*
U.S. Cl. 429—167 12 Claims



1. Multilayer adhesive label adhering onto a circumferential surface of a dry-cell battery body, the body having an axis and top and bottom end faces, wherein the label comprises:
a) a bottom layer of a stretchable foil stretched in circumferential direction of the body, a contact adhesive layer on the bottom side of the bottom layer adhering onto the circumferential surface, an imprint on the top side of the bottom layer,
b) a top layer of a stretchable foil stretched in circumferential direction of the body, a laminating adhesive layer on the bottom side of the top layer adhering onto the top side of the bottom layer and the imprint,
wherein the bottom layer and the top layer are shrinkable, and wherein the label defines first edge portions extending along a generating line of the circumferential surface and overlap and second edge portions which extend axially beyond the end faces of the body, the second edge portions being shrunk onto the end faces and the contact adhesive layer on the bottom side of the bottom layer adhering onto the end faces.

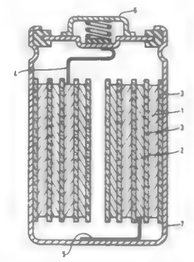
5,358,805

SECONDARY BATTERY AND MANUFACTURING METHOD THEREFOR

Masahisa Fujimoto, Osaka; Noriyuki Yoshinaga, Sumoto; Koji Ueno, Higashi-osaka; Kazuro Moriwaki, Sumoto, and Koji Nishio, Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 23, 1993, Ser. No. 21,242
Claims priority, application Japan, Apr. 9, 1992, 4-116926
Int. Cl.[5] H01M *10/40*
U.S. Cl. 429—218 8 Claims

1. A secondary battery comprising:
a positive electrode;
an electrolyte; and
a negative electrode which is capable of intercalating lithium reversibly;
wherein said negative electrode comprises a carbon compound having a crystal structure of graphite in which carbon (C) is partially replaced by both boron (B) and nitrogen (N), said carbon compound having the formula BC_3N.

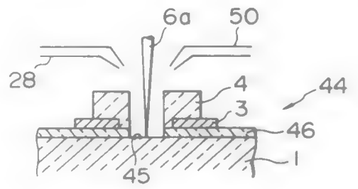


5,358,806

PHASE SHIFT MASK, METHOD OF CORRECTING THE SAME AND APPARATUS FOR CARRYING OUT THE METHOD

Satoshi Haraichi, Yokohama; Fumikazu Itoh, Fujisawa; Akira Shimase, Yokohama; Hiroshi Yamaguchi, Fujisawa; Junzou Azuma, Yokohama, and Yasuhiro Koizumi, Sayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1992, Ser. No. 854,861
Claims priority, application Japan, Mar. 19, 1991, 3-054311; Jun. 28, 1991, 3-184071; Dec. 12, 1991, 3-328534
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 25 Claims



1. A phase shift mask comprising:
a transparent substrate; and
a phase shifter disposed on said transparent substrate, said phase shifter being formed into a predetermined pattern and acting to shift a phase of exposure light transmitted therethrough by a predetermined magnitude;
wherein an etching stopper layer which is resistant to an etching to which said phase shifter is subjected and transparent for the exposure light is disposed between said phase shifter and said transparent substrate; and
wherein said etching stopper layer has a thickness corresponding to a negligible magnitude of an optical path for the exposure light as compared with the length of the optical path for the exposure light in said phase shifter.

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5,358,807

MASK FOR MANUFACTURING SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURE THEREOF

Yoshihiko Okamoto, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

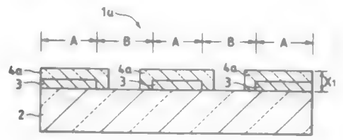
Continuation of Ser. No. 730,221, Jul. 15, 1991, abandoned, which is a continuation of Ser. No. 437,268, Nov. 16, 1989, Pat. No. 5,045,417. This application Jul. 7, 1993, Ser. No. 87,074

Claims priority, application Japan, Nov. 22, 1988, 63-295350; Oct. 2, 1989, 1-257226

The portion of the term of this patent subsequent to Jul. 7, 2010, has been disclaimed.

Int. Cl.[5] G03F 9/00

U.S. Cl. 430—5 118 Claims



1. A semiconductor device projection exposure method for transferring a pattern, on a mask, onto a semiconductor wafer, the method comprising:

exposing the mask to an exposure light beam having a predetermined wavelength, the mask comprising a transmission region substantially transparent with respect to the exposure light beam, with at least one phase-shifting region formed in a part of said transmission region, the transmission region having a phase non-reversing region and a phase reversing region for substantially reversing the phase of a transmitted light, without substantially attenuating the amplitude of the transmitted light, relative to the phase non-reversing region and bordering on the phase non-reversing region, one of the phase non-reversing region and the phase reversing region corresponding to the at least one phase-shifting region, whereby resolution is improved due to destructive interference between light beams from both vicinity sides of a boundary between the phase reversing region and the phase non-reversing region; and

focusing a clear image of the pattern, on the mask, onto a light sensitive resist film on the semiconductor wafer through an optical projection system.

5,358,808

EXPOSURE MASK, METHOD OF MANUFACTURING THE SAME, AND EXPOSURE METHOD USING THE SAME

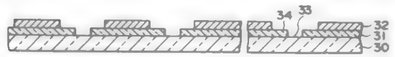
Akihiro Nitayama, Kawasaki; Makoto Nakase, Tokyo; Kouji Hishimoto, Yokohama, and Hirotsugu Wada, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 467,149, Jan. 18, 1990, Pat. No. 5,234,780. This application Jul. 21, 1993, Ser. No. 94,442

Claims priority, application Japan, Feb. 13, 1989, 1-31084; Jul. 13, 1989, 1-180920

Int. Cl.[5] G03F 9/00

U.S. Cl. 430—5 13 Claims



1. An exposure mask for lithography having a pattern of light-transmitting openings, comprising:

an optically transparent substrate;

a light-transmitting layer formed on said optically transparent substrate, said light-transmitting layer being patterned such that exposed portions of said optically transparent substrate are formed at positions substantially corresponding to the center of each of said light-transmitting openings and such that extension portions of said light-transmitting layer surround said exposed portions; and

a light-shielding layer formed on said light-transmitting layer, said light-shielding layer being patterned to define said light-transmitting openings so that said extension portions of said light-transmitting layer are adjacent to said light-shielding layer, wherein each of said light-transmitting openings has a main light-transmitting region located at positions corresponding to said exposed portions of said optically transparent substrate and a phase shift region located at positions corresponding to said extension portions of said light-transmitting layer, said main light-transmitting region having a first optical path length and said phase shift region having a second optical path length which is different from said first optical path length.

5,358,809

METHODS OF FABRICATING THIN FILM STRUCTURES BY IMAGING THROUGH THE SUBSTRATE IN DIFFERENT DIRECTIONS

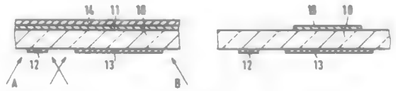
Cornelis Van Berkel, Brighton, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 19, 1993, Ser. No. 19,530

Claims priority, application United Kingdom, Feb. 20, 1992, 9203595.3

Int. Cl.[5] G03F 9/00

U.S. Cl. 430—6 16 Claims



1. A method of fabricating on one surface of a transparent substrate a thin film structure comprising a plurality of thin film layers in predetermined patterns, which method comprises the steps of providing a light shielding pattern adjacent the opposing surface of the substrate and photolithographically patterning a first thin film layer deposited over the one surface according to the light shielding pattern using radiation directed into the light shielding pattern in a first direction, and photolithographically patterning a second thin film layer deposited over the one surface of the substrate using radiation directed onto the light shielding pattern in a second direction with respect to the substrate different from said first direction used for patterning said first thin film layer.

5,358,810

METHOD OF MANUFACTURING LIQUID CRYSTAL DISPLAY DEVICE

Thunekazu Yoshino, Kamakura, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 824,881, Jan. 22, 1992, abandoned, which is a continuation of Ser. No. 493,310, Mar. 14, 1990, abandoned. This application Nov. 23, 1993, Ser. No. 156,796

Claims priority, application Japan, Mar. 15, 1989, 1-60742; Jul. 27, 1989, 1-192503

Int. Cl.[5] G03C 5/00

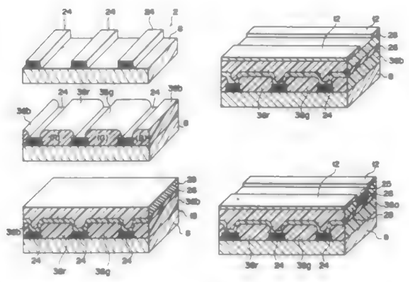
U.S. Cl. 430—20 14 Claims

1. A method of manufacturing an electrode substrate for a liquid crystal display device comprising the steps of:

forming a plurality of color portions on a light-transmitting substrate and light-shielding portions between said color portions on said light-transmitting substrate;

forming a transparent resin layer on said color and light-shielding portions;

forming a plurality of transparent electrodes each having a predetermined shape, on said transparent resin layer; and



heating said transparent resin layer in an atmosphere containing oxygen, thereby blackening regions of said transparent resin layer on which said transparent electrodes are not formed.

5,358,811

ELECTROPHOTOGRAPHIC METHOD USING AN AMORPHOUS SILICON LIGHT RECEIVING MEMBER WITH A LATENT IMAGE SUPPORT LAYER AND A DEVELOPED IMAGE SUPPORT LAYER AND INSULATING TONER HAVING A VOLUME AVERAGE PARTICLE SIZE OF 4.5 TO 9.0 MICRON

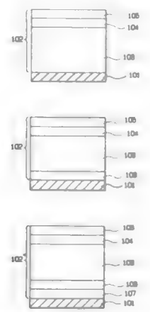
Koji Yamazaki; Toshimitsu Kariya; Tatsuyuki Aoike; Toshiyuki Ehara; Takehito Yoshino, and Hirokazu Otoshi, all of Nagahama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 935,356, Aug. 28, 1992, abandoned, which is a continuation of Ser. No. 811,925, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 456,741, Dec. 26, 1989, abandoned. This application Apr. 29, 1993, Ser. No. 53,822

Claims priority, application Japan, Dec. 27, 1988, 63-329636

Int. Cl.[5] G03G 13/01, 13/08

U.S. Cl. 430—42 12 Claims



7. An electrophotographic process for forming full color pictorial copied images comprising the steps of:

(a) charging a light receiving member for use in electrophotography comprising a substrate and a light receiving multilayer, said light receiving multilayer comprising (i) a charge injection inhibition layer comprising an amorphous material containing silicon atoms as a matrix; (ii) a photoconductive layer comprising an amorphous material containing silicon atoms as a matrix and at least one kind of atom selected from the group consisting of hydrogen atoms and halogen atoms; (iii) a latent image supporting layer comprising an amorphous material containing silicon atom as a matrix, carbon atoms, atoms of an element belonging to Group III of the Periodic Table and at least one kind of atom selected from the group consisting of hydrogen atoms and halogen atoms; and (iv) a developed image supporting layer comprising an amorphous material containing silicon atoms as a matrix, carbon atoms and at least one kind of atoms selected from the group consisting of hydrogen atoms and halogen atoms.

(b) exposing the light receiving member to form a latent image;

(c) developing said latent image employing a plurality of fine particle insulating toners of different colors, each said toner comprising a fine particle insulating toner comprising a colorant and a binder, said toner having a volume average particle size from 4.5 to 9 microns and an apparent viscosity from 1×10^4 to 2×10^5 poise at 100° C. to thereby form a developed toner image on said light receiving member; and

(d) transferring said developed toner image formed on said light receiving member to a transfer sheet.

5,358,812

ORGANIC PHOTOSENSITIVE DEVICE FOR ELECTROPHOTOGRAPHY AND A METHOD OF PROCESSING A SUBSTRATE OF THE DEVICE

Masaaki Oide, Utsunomiyashi, Japan, assignor to Showa Aluminum Corporation, Osaka, Japan

Filed Jan. 7, 1993, Ser. No. 1,539

Claims priority, application Japan, Jan. 14, 1992, 4-004685

Int. Cl.[5] G03G 5/047

U.S. Cl. 430—58 20 Claims

1. A photosensitive device for use in electrophotography employing as its light source a coherent monochromatic light beam, the device comprising:

an aluminum substrate;

an anodized stained membrane formed on the aluminum substrate and having a thickness of 0.5–4μm;

an anodized sulfate membrane covering the anodized stained membrane and having a thickness of 3–20μm;

the interface between the stained membrane and the sulfate membrane being rugged; and

a photosensitive layer made of an organic material and covering the sulfate membrane.

5,358,813

CRYSTALS OF CHLOROGALLIUM PHTHALOCYANINE AND METHOD OF PREPARING THEM

Masakazu Iijima; Katsumi Nukada; Katsumi Daimon; Akira Imai; Toru Ishii; Yasuo Sakaguchi; Kiyokazu Mashimo, and Ichiro Takegawa, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 871,552, Apr. 21, 1992. This application Jan. 12, 1993, Ser. No. 3,123

Claims priority, application Japan, Jan. 13, 1902, 4-21682; Apr. 22, 1991, 3-116630; Jan. 20, 1992, 4-027449

Int. Cl.[5] G03G 5/06

U.S. Cl. 430—59 34 Claims

1. Chlorogallium phthalocyanine crystals having distinct diffraction peaks at 7.4°, 16.6°, 25.5° and 28.3° of the Bragg angle ($2\theta\pm0.2$) to a CuKα characteristic X-ray.

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5,358,814

TONER COMPOSITIONS CONTAINING AS A NEGATIVE CHARGE-CONTROLLING AGENT A MIXTURE OF ORTHO-BENZOIC SULFIMIDE AND PARA-ANISIC ACID

John W. Osterhoudt, Spencerport; John C. Wilson, Rochester, and Steven M. Bonser, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1993, Ser. No. 114,541
Int. Cl.[5] G03G 9/097
U.S. Cl. 430—106.6 16 Claims

1. A dry, negatively charged electrostatographic toner composition comprised of resin particles and from about 0.1 to about 10 percent by weight based on the weight of the resin particles of a charge-controlling additive dispersed or otherwise distributed in the resin particles wherein the resin particles comprise a polyester having a glass transition temperature of 50° to 100° C. and a weight average molecular weight of 20,000 to 100,000 and the charge-controlling additive is a mixture of ortho-benzoic sulfimide and para-anisic acid wherein the weight ratio of ortho-benzoic sulfimide to para-anisic acid is 1:1.

9. A dry, electrostatographic developer composition comprised of a mix of carrier particles and negatively charged toner particles wherein the toner particles are comprised of resin particles and from about 0.1 to about 10 percent by weight based on the weight of the resin particles of a charge-controlling additive dispersed or otherwise distributed in the resin particles wherein the resin particles comprise a polyester having a glass transition temperature of 50° to 100° C. and a weight average molecular weight of 20,000 to 100,000 and the charge-controlling additive is a mixture of ortho-benzoic sulfimide and para-anisic acid wherein the weight ratio of ortho-benzoic sulfimide to para-anisic acid is 1:1 and wherein each of the carrier particles comprises a core particle having an overcoat of a polymer comprising poly(methyl methacrylate) or a copolymer of p-t-butylstyrene and a C_1–C_4 alkyl methacrylate.

5,358,815

TONER COMPOSITIONS CONTAINING NEGATIVE CHARGE-CONTROLLING ADDITIVE

John C. Wilson, Rochester; Steven M. Bonser, Fairport, and Hans W. Osterhoudt, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1993, Ser. No. 114,706
Int. Cl.[5] G03G 9/097
U.S. Cl. 430—106.6 16 Claims

1. A dry, negatively charged electrostatographic toner composition comprised of finely divided resin particles and from about 0.1 to about 10 percent by weight based on the weight of the resin particles of a charge-controlling additive dispersed or otherwise distributed in the resin particles wherein the resin particles comprise a polyester having a glass transition temperature of 50° to 100° C. and a weight average molecular weight of 20,000 to 100,000 and the charge-controlling additive is 6-tert-butyl-ortho-benzoic sulfimide.

9. A dry, electrostatographic developer composition comprised of a mix of carrier particles and negatively charged toner particles wherein the toner particles are comprised of resin particles and from about 0.1 to about 10 percent by weight based on the weight of the resin particles of a charge-controlling additive dispersed or otherwise distributed within the resin particles wherein the resin particles comprise a polyester having a glass transition temperature of 50° to 100° C. and a weight average molecular weight of 20,000 to 100,000 and the charge-controlling additive is 6-tert-butyl-ortho-benzoic sulfimide and wherein each of the carrier particles comprises a core particle having an overcoat of a polymer comprising poly(methyl methacrylate) or a copolymer of p-t-butylstyrene and a C_1–C_4 alkyl methacrylate.

5,358,816

ZINC SALT OF ORTHO-BENZOIC SULFIMIDE AS NEGATIVE CHARGE-CONTROLLING ADDITIVE FOR TONER AND DEVELOPER COMPOSITIONS

John C. Wilson, Rochester; Steven M. Bonser, Fairport, and Hans W. Osterhoudt, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1993, Ser. No. 114,708
Int. Cl.[5] G03G 9/097
U.S. Cl. 430—106.6 21 Claims

1. A dry, negatively charged electrostatographic toner composition comprised of finely-divided resin particles of a polyester having a glass transition temperature of 50° to 100° C. and a weight average molecular weight of 20,000 to 100,000 having dispersed or otherwise distributed in the resin particles a colorant and, as a charge-controlling additive, the zinc salt of ortho-benzoic sulfimide or the dihydrate of the zinc salt of ortho-benzoic sulfimide.

11. A dry, electrostatographic developer composition comprised of a mix of carrier particles and negatively charged toner particles wherein the toner particles are comprised of resin particles of a polyester having a glass transition temperature of 50° to 100° C. and a weight average molecular weight of 20,000 to 100,000 having dispersed or otherwise distributed in the resin particles a colorant and, as a charge-controlling additive the zinc salt of orthobenzoic sulfimide or the dihydrate of the zinc salt of ortho-benzoic sulfimide and wherein each of the carrier particles comprises a core particle having an overcoat 30 of a polymer comprising poly(methyl methacrylate) or a copolymer of p-t-butylstyrene and a C_1–C_4 alkyl methacrylate.

5,358,817

TONER COMPOSITIONS CONTAINING AS A NEGATIVE CHARGE-CONTROLLING AGENT THE CALCIUM SALT OF ORTHO-BENZOIC SULFIMIDE

John C. Wilson, Rochester; Steven M. Bonser, Fairport, and Hans W. Osterhoudt, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1993, Ser. No. 115,276
Int. Cl.[5] G03G 9/097
U.S. Cl. 430—106.6 16 Claims

1. A dry, fusible negatively charged electrostatographic toner composition comprised of finely-divided fusible resin particles and from about 0.1 to about 10 percent by weight based on the weight of the resin particles of a charge-controlling additive dispersed or otherwise distributed in the resin particles wherein the resin particles comprise a polyester having a glass transition temperature of 50° to 100° C. and a weight average molecular weight of 20,000 to 100,000 and the charge-controlling additive is the calcium salt of ortho-benzoic sulfimide.

9. A dry, electrostatographic developer composition comprised of a mix of carrier particles and negatively charged toner particles wherein the toner particles are comprised of resin particles and from about 0.1 to about 10 percent by weight based on the weight of the resin particles of a charge-controlling additive dispersed or otherwise distributed in the resin particles wherein the resin particles comprise a polyester having a glass transition temperature of 50° to 100° C. and a weight average molecular weight of 20,000 to 100,000 and the charge-controlling additive is the calcium salt of ortho-benzoic sulfimide and wherein each of the carrier particles comprises a core particle having an overcoat of a polymer comprising poly(methyl methacrylate) or a copolymer of p-t-butylstyrene and a C_1–C_4 alkyl methacrylate.

5,358,818

ORTHO-BENZOIC SULFIMIDE AS CHARGE-CONTROLLING AGENT

John C. Wilson, Rochester; Steven M. Bonser, Fairport, and Hans W. Osterhoudt, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1993, Ser. No. 115,369
The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.
Int. Cl.[5] G03G 9/097
U.S. Cl. 430—106.6 16 Claims

1. A dry, negatively charged electrostatographic toner composition comprised of finely divided resin particles and from about 0.1 to about 10 percent by weight based on the weight of the resin particles of a charge-controlling additive dispersed or otherwise distributed in the resin particles wherein the resin particles comprise a polyester having a glass transition temperature of 50° to 100° C. and a weight average molecular weight of 20,000 to 100,000 and the charge-controlling additive is ortho-benzoic sulfimide.

9. A dry, electrostatographic developer composition comprised of a mix of carrier particles and negatively charged toner particles wherein the toner particles are comprised of resin particles and from about 0.1 to about 10 percent by weight based on the weight of the resin particles of a charge-controlling additive dispersed or otherwise distributed within the resin particles wherein the resin particles comprise a polyester having a glass transition temperature of 50° to 100° C. and a weight average molecular weight of 20,000 to 100,000 and the charge-controlling additive is ortho-benzoic sulfimide and wherein each of the carrier particles comprises a core particle having an overcoat of a polymer comprising poly(methyl methacrylate) or a copolymer of p-t-butylstyrene and a C_1–C_4 alkyl methacrylate.

5,358,819

DEVELOPER FOR ELECTROPHOTOGRAPHY

Yoshinori Urata, Kashihara; Toshihisa Ishida, Nara; Norio Tateishi, Nabari; Shigeaki Tasaka, Nara, and Naotaka Funayama, Tenri, all of Japan, assignors to Sharp Kabushiki Kaishi, Osaka, Japan

Filed Apr. 13, 1993, Ser. No. 47,649
Claims priority, application Japan, Apr. 20, 1992, 4-125333; Mar. 3, 1993, 5-042406
Int. Cl.[5] G03G 9/10
U.S. Cl. 430—108 1 Claim

1. A developer for electrophotography, compounded of:

a toner component; and

a carrier component prepared from a ferrite powder mixture in total of 100 parts, consisting of 10 to 90 parts by weight of a ferrite powder having a specific surface range of 200 to 230 cm^2/g, and 10 to 90 parts by weight of a ferrite powder having a specific surface range of more than 230 to 300 cm^2/g.

5,358,820

THERMALLY ASSISTED TRANSFER PROCESS FOR TRANSFERRING ELECTROSTATOGRAPHIC TONER PARTICLES TO A THERMOPLASTIC BEARING RECEIVER

Douglas E. Bugner, Rochester, N.Y.; David S. Hays, Newark, Ohio; Jeanne E. Kaeding, and Steven J. Spinelli, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 13, 1992, Ser. No. 976,071
Int. Cl.[5] G03G 13/14
U.S. Cl. 430—126 32 Claims

1. A method of non-electrostatically transferring dry toner particles which comprise a toner binder and have a particle size of less than 8 micrometers from the surface of an element which comprises a conductive support and a surface layer, said surface layer having an electrically insulating polymeric binder resin matrix which comprises a polymer containing polyester repeating units which have crystalline side chains to a receiver which comprises a substrate having a coating of a thermoplastic addition polymer on a surface of the substrate wherein the Tg of the thermoplastic polymer is less than approximately 10° C. above the Tg of the toner binder which comprises:

(A) contacting said toner particles with said thermoplastic polymer coating on said receiver;

(B) heating said receiver to a temperature such that the temperature of said thermoplastic polymer coating on said receiver during said transferring is at least approximately 15° C. above the Tg of said thermoplastic polymer; and

(C) separating said receiver from said element at a temperature above the Tg of said thermoplastic polymer,

whereby virtually all of said toner particles are transferred from the surface of said element to said thermoplastic polymer coating on said receiver.

5,358,821

PROCESS FOR PRODUCING ELECTROPHOTOGRAPHIC TONERS CONTAINING PASSIVATED PIGMENTS

Jacques C. Bertrand, Ontario, and Roger N. Ciccarelli, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 28, 1990, Ser. No. 635,661
Int. Cl.[5] G03G 5/00
U.S. Cl. 430—137 9 Claims

1. A process for the production of electrophotographic toner particles, which process comprises:

(a) encapsulating a particulate pigment in a polymer by dispersing particles of said pigment in a solution capable of depositing said polymer as a substantially continuous coating on the surfaces of the pigment particles to provide discrete encapsulated pigment particles;

(b) flushing said encapsulated pigment particles into a toner resin which does not substantially dissolve or melt said polymer coating and under conditions which permit said polymer coating to remain intact; and

(c) forming the resulting dispersion into toner particles of a predetermined size.

5,358,822

METHOD OF MAKING A LIQUID TONER FOR ELECTROPHOTOGRAPHIC IMAGING

Wei-Hsin Hou, Whitehall, Pa., assignor to Coulter Corporation, Miami, Fla.

Division of Ser. No. 645,174, Jan. 24, 1991, Pat. No. 5,270,445.
This application Oct. 12, 1993, Ser. No. 135,195
Int. Cl.[5] G03G 9/08, 9/10; C08F 6/00
U.S. Cl. 430—137 14 Claims

1. A method for making a liquid toner for use in electrophotographic imaging comprising the steps of:

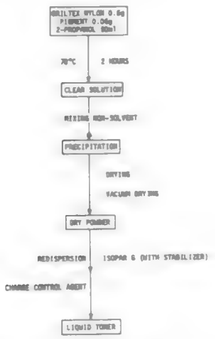
forming a mixture of a thermoplastic polymer material, a fine particulate pigment and a solvent for said polymer;

heating the polymer/pigment/solvent mixture to form a solution of the polymer and solvent with the pigment therein;

cooling the resulting polymer/solvent solution with the pigment therein effecting precipitation of fine polymer-encapsulated pigment particles of generally uniform size and morphology therefrom;

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removing the solvent;
drying the said precipitated particles; and,



redispersing the said precipitated particles in a dispersant medium along with the addition of a charge control agent thereto to form said liquid toner.

5,358,823

RADIATION-SENSITIVE COMPOSITION CONTAINING ESTERIFICATION PRODUCT OF (1,2-NAPHTHOQUINONE-2-DIAZIDE)-SULFONIC ACID WITH 2,3,4,4'-TETRAHYDROXYBENZOPHENONE AND A DI- OR TRI-HYDROXYBENZOPHENONE

Wolfgang Zahn, Eltville, Fed. Rep. of Germany; Hans-Joachim Merrem, Basking Ridge, N.J.; Fritz Erdmann, Eltville-Martinsthal, and Axel Schmitt, Walluf, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 1, 1992, Ser. No. 863,681
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1991, 4111445
Int. Cl.[5] G03F *7/023*
U.S. Cl. 430—165 **20 Claims**

1. A coating composition comprising a radiation-sensitive composition comprising an admixture of

(a) a polymeric binder which is insoluble in water but soluble or at least swellable in aqueous alkaline solution, and

(b) an ester mixture comprising (i) a 2,3,4,4'-tetrahydroxybenzophenone which is partially esterified with at least one of (1,2-naphthoquinone 2-diazide)-4-sulfonic acid and (1,2-naphthoquinone 2-diazide)-5-sulfonic acid, and (ii) a compound selected from the group consisting of a dihydroxybenzophenone which is completely esterified with at least one of (1,2-naphthoquinone 2-diazide)-4-sulfonic acid and (1,2-naphthoquinone 2-diazide)-5-sulfonic acid, and a trihydroxybenzophenone which is partially or completely esterified with at least one of (1,2-naphthoquinone 2-diazide)-4-sulfonic acid and (1,2-naphthoquinone 2-diazide)-5-sulfonic acid,

wherein the weight ratio of esterified 2,3,4,4'-tetrahydroxybenzophenone to esterified di- or trihydroxybenzophenone is from about 4.5:5.5 to 7:3, and said ester mixture is present in an amount from about 5 to 40% by weight of said composition, based on the total weight of solids in said composition, and

wherein said tetraester is present in said ester mixture in an amount from about 80 to 95% by weight, based on the total weight of said partially or completely esterified tetrahydroxy-benzophenone in said mixture, and

propylene glycol monoalkylether acetate as a solvent.

5,358,824

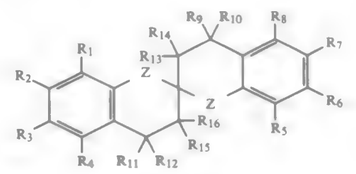
PHOTOSENSITIVE RESIN COMPOSITION UTILIZING 1,2-NAPHTHOQUINONE DIAZIDE COMPOUND HAVING SPIROBICHROMAN OR SPIROBIINDANE RING

Shiro Tan; Yasunori Takata; Yoshimasa Aotani, and Fumiyuki Nishiyama, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 10, 1993, Ser. No. 118,590
Claims priority, application Japan, Sep. 11, 1992, 4-243093
Int. Cl.[5] G03F *7/023*
U.S. Cl. 430—192 **1 Claim**

1. A photosensitive resin composition, comprising an admixture of (a) 5 to 100 weight parts of a photosensitive material having the following general formula (A):

General formula (A)



where R_1 to R_8 each independently represents a hydrogen atom, a hydroxyl group, a halogen atom, an alkyl group, an alkoxyl group, a aralkyl group, an aryl group, an amino group, a monoalkylamino group, a dialkylamino group, an acylamino group, an alkylcarbamoyl group, an arylcarbamoyl group, an alkylsulfamoyl group, an arylsulfamoyl group, a carboxyl group, a cyano group, a nitro group, an acyl group, an alkyloxycarbonyl group, an aryloxycarbonyl group, an acyloxy group, or —OD, —N(R)—D where R represents a hydrogen atom or an alkyl group, and D represents a 1,2-napthoquinonediazide-5-sulfonyl group or a 1,2-napthoquinonediazide-4-sulfonyl group, and at least one of R_1 to R_8 represents —OD or —N(R)—D;

R_9 to R_{12} each independently represents a hydrogen atom, a lower alkyl group, or R_9 and R_{10} and/or $R_{11}$and R_{12}may form a ring;

R_{13} to R_{14} each independently represents hydrogen atom, a lower alkyl group, or R_{13} or R_{14} and any of R_{15} or R_{16} may form a ring, whereas at least one of R_{13} to R_{16} is a substituent other than hydrogen; and

Z represents an oxygen atom or a single bond, and (b) 100 weight parts of an alkali-soluble resin.

5,358,825

MANUFACTURE OF PRINTED CIRCUIT CONDUCTORS BY A PARTIALLY ADDITIVE PROCESS

David B. James, Newark, Del., assignor to AMP-Akzo Corporation, Newark, Del.

Filed Mar. 24, 1993, Ser. No. 36,307
Int. Cl.[5] G03C *5/00;* **H05K** *3/00*
U.S. Cl. 430—271 **10 Claims**

1. In a method for adhering an epoxy-resin containing resist to a copper surface, in which method the copper surface is coated with a photoresist layer, the resist layer is imagewise exposed to actinic radiation, the resulting resist layer is developed and the resulting resist layer is hardened, the improvement further comprising the steps of:

(a) contacting the copper surface with a N-heterocyclic six membered ring compound comprising —NH_2 groups, said N-heterocyclic compound characterized in that it coordinates to a copper surface and is sufficiently reactive with epoxy resin comprising resists to prevent peeling of said resists from the copper surface when immersed in an electroless plating solution; and

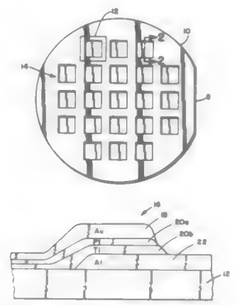
(b) allowing the copper surface comprising said N-heterocyclic compound to dry prior to application of said resist.

5,358,826

METHOD OF FABRICATING METALLIZED CHIP CARRIES FROM WAFER-SHAPED SUBSTRATES

Richard R. Steitz, Chippewa Falls; Diane M. Christie, Eau Claire; Eugene F. Neumann, Chippewa Falls; Melvin C. August, Chippewa Falls, and Stephen Nelson, Chippewa Falls, all of Wis., assignors to Cray Research, Inc., Eagan, Minn.

Continuation of Ser. No. 647,937, Jan. 30, 1991, abandoned, which is a division of Ser. No. 506,729, Apr. 9, 1990, Pat. No. 5,182,420, which is a continuation-in-part of Ser. No. 343,506, Apr. 25, 1989, abandoned. This application May 8, 1992, Ser. No. 884,285
Int. Cl.[5] G03F *7/00*
U.S. Cl. 430—312 **29 Claims**



17. A method of fabricating a chip carrier for a plurality of integrated circuit chips, each of said plurality of integrated circuit chips occupying an integrated circuit position on said chip carrier, comprising:

(a) fashioning a substrate into a circular wafer having first and second surfaces, with the thickness between the first and second surfaces being greater than that of each of said plurality of integrated circuit chips;

(b) keying said wafer such that said wafer is shaped substantially similar to a semiconductor wafer;

(c) depositing at least one thin-film trace on the first surface of said wafer using standard semiconductor processing apparatus, thereby electrically connecting each of said plurality of integrated circuit chips to the periphery of said chip carrier; and

(d) forming a plurality of cavities within said chip carrier, each of said plurality of cavities comprising a depression in the first surface of said wafer having a depth less than the thickness of said wafer and further being sized to contain at least one of said plurality of integrated circuit chips.

5,358,827

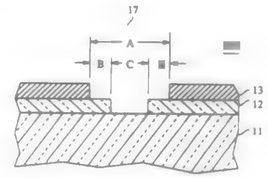
PHASE-SHIFTING LITHOGRAPHIC MASKS WITH IMPROVED RESOLUTION

Joseph G. Garofalo, South Orange; Robert L. Kostelak, Jr., Bernardsville, and Sheila Vaidya, Watchung, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 622,680, Dec. 5, 1990, abandoned. This application Feb. 19, 1993, Ser. No. 19,973
Int. Cl.[5] G03F *7/00*
U.S. Cl. 430—313 **16 Claims**

1. A method for printing in a photoresist layer an isolated aperture feature having a width W, using an optical focusing system having a lateral magnification m that focuses onto the photoresist layer the optical radiation emanating from an isolated phase-shifting mask feature located in a reticle comprising the steps of

directing the optical radiation onto the reticle, the phase-shifting mask feature having a central transparent portion located in a dark field or having a central opaque portion located in a bright field, respectively, of width C and having a peripheral rim portion of width B that imparts a phase shift to the radiation propagating therethrough which is different from the phase shift imparted to the radiation by the central portion; and



developing the photoresist layer sufficiently to form the feature having a width W in the photoresist layer such that the ratio mC/W is equal to at least 1.2 in a dark field or in which the ratio m(C+2B)W is less than 1/(1.2) in a bright field.

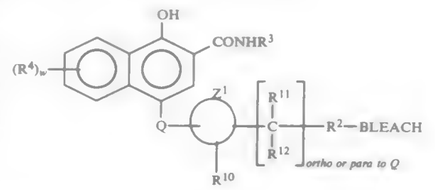
5,358,828

PHOTOGRAPHIC ELEMENT AND PROCESS COMPRISING A BLEACH ACCELERATOR RELEASING COMPOUND

William J. Begley, Webster; Stephen P. Singer, Spencerport; David T. Southby, Rochester, and Donald Singleton, Jr., Hamlin, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 29, 1992, Ser. No. 906,252
Int. Cl.[5] G03C *7/305, 7/34*
U.S. Cl. 430—385 **9 Claims**

1. A color photographic element comprising a support bearing at least one photographic silver halide emulsion layer, an image dye-forming coupler, and a coupler (A) capable of forming a compound upon reaction with oxidized developer that is washed out of the photographic element upon processing or forms a compound that washes out after further reaction and is capable of releasing a bleach accelerator group, wherein the coupler (A) is represented by the formula:



wherein

R^2 is selected from —OC(O)—, —OC(S)—, —SC(O)— and —SC(S)—;

R^3 and R^5 are selected from the group consisting of hydrogen, substituted or unsubstituted alkyl containing 1–5 carbon atoms and substituted or unsubstituted aryl containing 6–8 carbon atoms wherein the substituted or unsubstituted alkyl or aryl is a solubilizing group or contains a solubilizing group;

R^4 is selected from hydrogen, —Cl, —NO_2, —OCH_3, —$NHSO_2R^5$, —$NHCOR^5$, —SO_2NHR^5, —$CONHR^5$, —CO_2R^5, and —COR^5;

R^{10} is selected from hydrogen and a substituted or unsubstituted alkyl, aryl, nitro, amino, carboxylic acid, sulfonic acid. methoxy, chloro, bromo, CO_2CH_3, —$COCH_3$, —$NHCOCH_3$, —$CONHCH_3$, —$NHSO_2CH_3$, or —SO_2NHCH_3 group;

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R^{11}, and R^{12} are selected from hydrogen, and substituted or unsubstituted alkyl or aryl;
w is 0, 1, 2 or 3,
Q is Selected from O (oxygen), S (sulfur), or N (nitrogen);
Z^1 represents the atoms necessary to complete a 5 or 6 member aryl or heterocyclic group; and BLEACH is a bleach accelerator group.

9. A process of forming an image in an exposed photographic element as defined in claim 1 comprising developing the photographic element with a color developer.

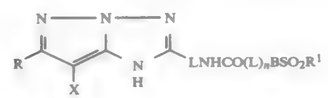
5,358,829

PHOTOGRAPHIC MATERIAL AND PROCESS COMPRISING A BICYCLIC PYRAZOLO COUPLER

Ping W. Tang, and Stanley W. Cowan, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 18, 1992, Ser. No. 993,921
Int. Cl.[5] G03C *7/38*
U.S. Cl. 430—386 7 Claims

1. A photographic element comprising a support bearing at least one photographic silver halide emulsion layer and a dye-forming bicyclic pyrazolo-based coupler having the formula:



wherein
R is a fully substituted carbon;
each L is independently a divalent group linking the adjacent groups and the L bonded to the bicyclic pyrazolo ring is an aryloxyalkyl or an alkyloxyaryl group;
n is 0 or 1;
X is hydrogen or a coupling-off group;
B is a divalent group selected from substituted or unsubstituted aryl, aryloxy, aryloxyalkyl, and —C(R^2) (R^3)— wherein R^2 and R^3 are independently hydrogen or alkyl; and
R^1 is a substituted or unsubstituted alkyl having 1 to 22 carbon atoms.

7. A process of forming a dye image comprising developing an exposed photographic element as defined in claim 1 with a color silver halide developing agent.

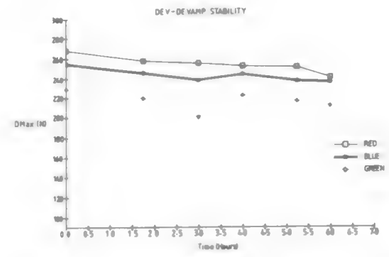
5,358,830

METHOD OF PHOTOGRAPHIC PROCESSING

Peter J. Twist, Bucks, United Kingdom, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 3, 1993, Ser. No. 162,449
Claims priority, application United Kingdom, Dec. 4, 1992, 9225353
Int. Cl.[5] G03C *5/18, 5/26, 7/00, 3/00*
U.S. Cl. 430—399 14 Claims

1. A method of processing an imagewise exposed color photographic silver halide material, comprising:
treating said color photographic material in a first processing bath containing a color developer solution comprising a color developing agent;
treating said color photographic material, after treatment in said first bath, in a second processing bath containing a developer/amplifier solution comprising hydrogen peroxide, or a compound which provides hydrogen peroxide, and a color developing agent;
replenishing said second bath with one or more replenisher solutions in sufficient volume to cause overflow of said developer/amplifier solution from said second bath;
forming developer replenisher solution by treating said overflow to remove hydrogen peroxide; and



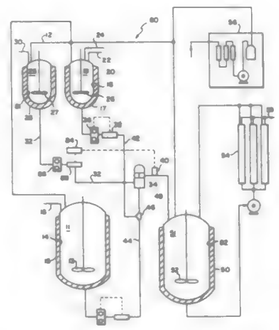
replenishing said first bath solely with said developer replenisher solution.

5,358,831

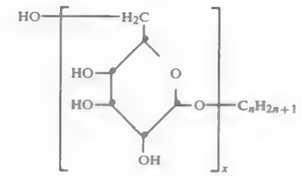
HIGH DYE STABILITY, HIGH ACTIVITY, LOW STAIN AND LOW VISCOSITY SMALL PARTICLE YELLOW DISPERSION MELT FOR COLOR PAPER AND OTHER PHOTOGRAPHIC SYSTEMS

Pranab Bagchi, Webster; James L. Edwards, Rochester, both of N.Y.; Danuta Gibson, Watford, United Kingdom; Thomas A. Rosick, Honeoye Falls, N.Y.; Brian Thomas, Fairport, N.Y., and Vincent J. Flow, III, Kendall, N.Y., assignors to Eastman Kodak company, Rochester, N.Y.

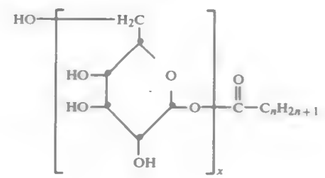
Filed Dec. 13, 1990, Ser. No. 627,154
The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.
Int. Cl.[5] G03C *7/388*
U.S. Cl. 430—449 14 Claims



1. A process of forming a stable photographic material dispersion comprising providing a stirred microprecipitation of photographic material particles and water combining said microprecipitation with a solution of gelatin, water, and at least one of the sugar surfactants:

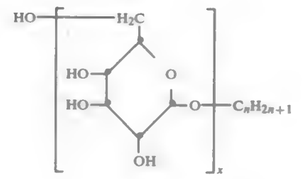


or

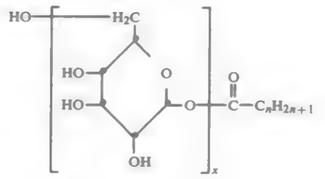


wherein
n=5 to 20 and
x=1 to 4

11. A process of forming a stable photographic material dispersion comprising providing a stirred microprecipitation of photographic material particles and water, adding a permanent high boiling solvent for said photographic material to said microprecipitation, combining said microprecipitation with a solution of gelatin, water, and at least one of the sugar surfactants:



or



wherein
n=5 to 20 and
x=1 to 4

5,358,832

FIXING BATH

Robert S. Millington, Hazel Grove, and Ross Fielding, Knutsford, both of England, assignors to Ilford Limited, Knutsford, England

Filed Oct. 18, 1993, Ser. No. 138,704
Claims priority, application United Kingdom, Oct. 21, 1992, 9222048
Int. Cl.[5] G03C *5/38*
U.S. Cl. 430—459 6 Claims

1. A fixing bath for developed silver halide photographic material which comprises as the active silver halide solvent a combination of sodium thiosulphate and potassium thiosulphate, the molar ratio of sodium to potassium being from 2:3 to about 3:2, and the total thiosulphate content being from about 0.05 to about 1.5 moles/liter.

5,358,833

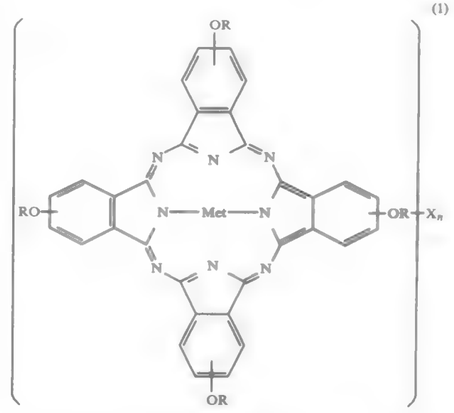
AMORPHOUS PHTHALOCYANINE COMPOUND OR MIXTURE OF AMORPHOUS PHTHALOCYANINE COMPOUNDS, AND METHOD FOR PREPARING SAME

Hisato Itoh; Takahisa Oguchi; Shin Aihara, and Kenichi Sugimoto, all of Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo and Yamamoto Chemicals, Inc., Yao, both of Japan

Filed Jun. 19, 1992, Ser. No. 901,035
Claims priority, application Japan, Jun. 21, 1991, 3-150553; Jun. 21, 1991, 3-150554; Sep. 6, 1991, 3-227054
Int. Cl.[5] G03C *1//735*
U.S. Cl. 430—495 22 Claims

1. An amorphous alkoxyphthalocyanine which is a compound or a mixture of compounds represented by the formula (1)

(1)

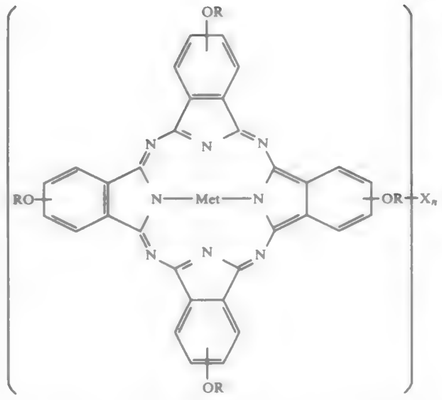


wherein R is a branched alkyl group; X is a halogen atom; n is the number of X and from 0 to 4; and Met is a divalent metal atom, a trivalent or a tetravalent metallic derivative or an oxy metal,
said compound or mixture of compounds having good solubility in an organic solvent suitable for use in a spin coating.

2. A method for preparing an amorphous alkoxyphthalocyanine which is a compound or a mixture of compounds represented by the formula (1)

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(1)



wherein R is a branched alkyl group; X is a halogen atom; n is the number of X and from 0 to 4; and Met is a divalent metal atom, a trivalent or a tetravalent metallic derivative or an oxy metal,

said compound or mixture of compounds having good solubility in an organic solvent suitable for use in a spin coating, which method comprises the step of heating a crystalline phthalocyanine compound or a mixture of crystalline phthalocyanine compounds in an organic solvent suitable for a heat treatment.

5,358,834

PHOTOGRAPHIC ELEMENT PROVIDED WITH A BACKING LAYER

David F. Jennings; Charles C. Anderson, both of Penfield; Benneth C. Ouah, Rochester, and Mario D. DeLaura, Hamlin, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 23, 1993, Ser. No. 125,880
Int. Cl.[5] G03C *1/76*
U.S. Cl. 430—535 **14 Claims**

1. A photographic element that is useful as an imaging master in the field of graphic arts; said photographic element comprising a dimensionally stable polyester film having a radiation-sensitive silver halide emulsion layer on one side thereof and having on the opposite side, in order, a latex subbing layer directly overlying said polyester film and a backing layer directly overlying said latex subbing layer, said backing layer comprising:
   (a) gelatin in an amount of at least 300 mg/m^2;
   (b) a matting agent;
   (c) a filter dye; and
   (d) a blocked gelatin-hardening agent; said backing layer serving to:
      (1) prevent curl;
      (2) provide halation protection;
      (3) promote effective vacuum contacting in a vacuum drawdown process;
      (4) absorb water-based ink used for correction of image defects; and
      (5) resist aqueous alkaline developing solutions used in processing of said photographic element.

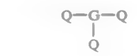
5,358,835

PHOTOGRAPHIC ELEMENTS CONTAINING NEW YELLOW-DYE-FORMING TRIS COUPLERS

Ping-Wah Tang; Philip T. S. Lau, and Stanley W. Cowan, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1993, Ser. No. 169,458
The portion of the term of this patent subsequent to Aug. 23, 2011, has been disclaimed.
Int. Cl.[5] G03C *7/36*
U.S. Cl. 430—548 **6 Claims**

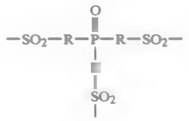
1. A photographic element comprising a support having thereon a photographic silver halide emulsion layer and a yellow-dye forming tris coupler having the structure:



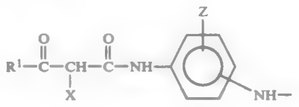
wherein



has the structure



wherein each —R— is independently a substituted or unsubstituted alkylene, alkoxylene, arylene, or aryloxylene group, and Q— has the structure



wherein:
each R[1]— is independently t-butyl or a substituted aryl group;
each Z— is independently H—, halo, or a substituted or unsubstituted alkyl, aryl, alkoxy, or aryloxy group; and
each X— is independently H— or a coupling-off group.

5,358,836

PHOTOGRAPHIC ELEMENTS CONTAINING NEW MAGENTA-DYE-FORMING TRIS COUPLERS

Ping-Wah Tang; Philip T. S. Lau, and Stanley W. Cowan, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1993, Ser. No. 169,465
The portion of the term of this patent subsequent to Aug. 23, 2011, has been disclaimed.
Int. Cl.[5] G03C *7/38*
U.S. Cl. 430—548 **8 Claims**

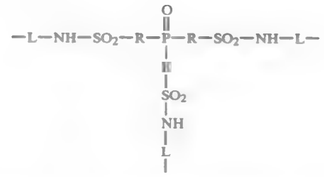
1. A photographic element comprising a support having thereon a photographic silver halide emulsion layer and a magenta-dye-forming tris coupler having the structure:



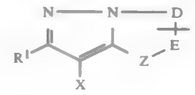
wherein



has the structure



wherein each —R— is independently a substituted or unsubstituted alkylene, alkoxylene, arylene, or aryloxylene group, and each —L— is independently a substituted or unsubstituted alkylene, alkoxylene, arylene, aryloxylene, or aryloxyalkylene group, and
Q— has the structure:



wherein: each R[1]— is independently H— or a substituent; each X— is independently H— or a coupling-off group; and each of D, E, and Z is independently a substituted or unsubstituted methine group, =N—, or —NH—, with the provisos that one of either the D—E or the E—Z bonds is a double bond and the other is a single bond, and when the D—E bond is a carbon-carbon double bond it may form part of an aromatic ring fused with Q—, and one of D, E, and Z is a methine group bonded to



5,358,837

PHOTOGRAPHIC ELEMENTS CONTAINING NEW MAGENTA-DYE-FORMING BIS COUPLERS

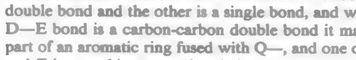
Ping-Wah Tang; Terrence C. Mungal; Philip T. S. Lau, and Stanley W. Cowan, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1993, Ser. No. 169,469
Int. Cl.[5] G03C *7/38, 7/327*
U.S. Cl. 430—548 **8 Claims**

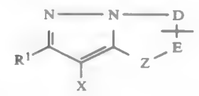
1. A photographic element comprising a support having thereon a photographic silver halide emulsion layer and a magenta-dye-forming bis coupler having the structure:



wherein —G— has the structure:



wherein —R— is substituted or unsubstituted alkylene, alkoxylene, arylene, or aryloxylene, and
each —L— is independently substituted or unsubstituted alkylene, alkoxylene, arylene, aryloxylene, or aryloxyalkylene, and
Q— has the structure:



wherein: each R[1]— is independently H— or a substituent; each X— is independently H— or a coupling-off group; and each of D, E, and Z is independently a substituted or unsubstituted methine group, =N—, or —NH—, with the provisos that one of either the D—E or E—Z bonds is a double bond and the other is a single bond, and when the D—E bond is a carbon-carbon double bond it may form part of an aromatic ring fused with Q—, and one of D, E, and Z is a methine group bonded to —G—.

5,358,838

PHOTOGRAPHIC ELEMENTS CONTAINING NEW YELLOW-DYE-FORMING TRIS COUPLERS

Ping-Wah Tang; Philip T. S. Lau, and Stanley W. Cowan, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1993, Ser. No. 169,473
The portion of the term of this patent subsequent to Aug. 23, 2011, has been disclaimed.
Int. Cl.[5] G03C *7/36*
U.S. Cl. 430—548 **6 Claims**

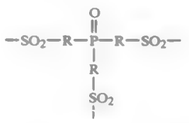
1. A photographic element comprising a support having thereon a photographic silver halide emulsion layer and a yellow-dye forming tris coupler having the structure:



wherein

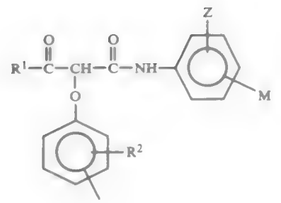


has the structure



wherein each —R— is independently a substituted or unsubstituted alkylene, alkoxylene, arylene, or aryloxylene group, and Q— has the structure

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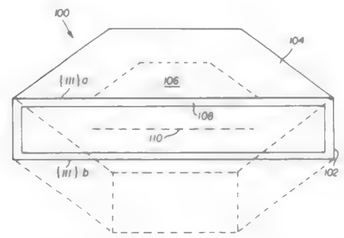
wherein:
each R^1— is independently t-butyl or a substituted aryl group;
each Z— is independently H—, halo, or a substituted or unsubstituted alkyl, aryl, alkoxy, or aryloxy group;
each M— is independently H— or a substitutent; and
each R^2— is independently H— or a substitutent.

5,358,839
PROCESS FOR PRODUCING SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL AND PRODUCT THEREBY
Fumie Fukazawa, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan
Filed Jan. 26, 1993, Ser. No. 9,577
Claims priority, application Japan, Jan. 31, 1992, 4-015849
Int. Cl.[5] G03C *1/005, 1/035*
U.S. Cl. 430—567 **26 Claims**

1. A process for forming a silver halide photographic light-sensitive material having a silver iodide-containing silver halide emulsion layer, said process comprising;
forming a seed emulsion comprising silver halide seed grains,
growing said seed grains by simultaneously supplying an aqueous solution of a water-soluble silver salt, an aqueous solution of a water-soluble halide, and a suspension of silver iodide grains, to a mother liquid of said seed emulsion to form a silver halide photographic emulsion, and
coating and drying said photographic emulsion on a support to form a silver halide emulsion layer,
wherein an oxidant capable of converting metallic silver to silver ions is added to said silver halide emulsion during the growth phase of said silver halide seed grains said oxidant comprising elemental iodine.

5,358,840
TABULAR GRAIN SILVER IODOBROMIDE EMULSION OF IMPROVED SENSITIVITY AND PROCESS FOR ITS PREPARATION
Eleanor Chaffee, Webster; Mamie Kam-Ng, Fairport; Allen K. Tsaur, Fairport; David E. Fenton, Fairport, and Donald L. Black, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jul. 22, 1993, Ser. No. 96,104
Int. Cl.[5] G03C *1/035, 1/005*
U.S. Cl. 430—567 **13 Claims**

1. A process of preparing a silver iodobromide tabular grain emulsion of enhanced photographic sensitivity comprised of the steps of
providing within a reaction vessel a population of silver bromide or iodobromide host grains exhibiting a coefficient of variation of less than 20 percent and containing less than 2 mole percent iodide, said host grains consisting essentially of tabular grains,
while maintaining a pBr of at least 2.2 within the reaction vessel introducing iodide ions simultaneously with bromide and silver ion into the reaction vessel for deposition onto the major faces on the host tabular grains, with iodide ions accounting for at least 25 mole percent of total halide ions introduced, and



limiting the overall iodide content of the emulsion to the range of from 2 to less than 10 mole percent, based on total silver.

5,358,841
METHOD FOR PREPARING A SILVER HALIDE EMULSION
Hirofumi Ohtani, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan
Continuation of Ser. No. 714,692, Jun. 13, 1991, abandoned. This application Sep. 29, 1993, Ser. No. 129,026
Claims priority, application Japan, Jun. 19, 1990, 2-160954
Int. Cl.[5] G03C *1/035*
U.S. Cl. 430—569 **8 Claims**

1. A method for preparing a silver halide emulsion comprising silver halide grains which are mixed crystals comprising: preparing a seed emulsion comprising seed grains; and adding potentially effective silver iodide grains comprising a silver halide micro grains, at least 50 mol % having a γ-AgI structure, a soluble silver salt and a soluble halide to the seed emulsion.

5,358,842
SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL
Shigetami Kasai; Tadanobu Sekiya, and Sadayasu Ishikawa, all of Hino, Japan, assignors to Konica Corporation, Japan
Filed Jul. 20, 1993, Ser. No. 95,086
Claims priority, application Japan, Jul. 23, 1992, 4-197169
Int. Cl.[5] G03C *1/035, 1/005*
U.S. Cl. 430—569 **9 Claims**

1. A silver halide photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing silver halide grains, wherein said silver halide grains are formed in the presence of a halogen oxidizing agent; and the silver halide grains thus formed each have a maximum silver iodide content at a distance of L_1 from the grain center and a minimum silver iodide content at a distance of L_2 from the grain center, wherein L_1 is less than 0.67 L, L_2 is 0.58 L or more, and L represents a distance from the grain center to the grain surface; the silver iodide content decreases substantially monotonously from the point of distance L_1 to the point of distance L_2 and the following relation is satisfied:

$$(L_2-L_1)/L \geqq 0.20$$

5,358,843
PHOTOTHERMOGRAPHIC ELEMENTS CONTAINING SILYL BLOCKING GROUPS
Kumars Sakizadeh, Woodbury; Sharon M. Simpson, Lake Elmo; Omar Farooq, Woodbury, and Sam Kalousdian, Maplewood, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Aug. 20, 1993, Ser. No. 109,637
Int. Cl.[5] G03C *1/498*
U.S. Cl. 430—619 **20 Claims**

12. A heat-developable, photothermographic element comprising a support bearing at least one photosensitive, image-forming photothermographic emulsion layer comprising:
(a) a photosensitive silver halide;
(b) a non-photosensitive, reducible silver source;
(c) a binder; and
(d) a compound capable of releasing, in the presence of a source of fluoride ion, a reducing agent for said non-photosensitive, reducible silver source, said compound having the formula:



wherein:
R^1, R^2, and R^3 independently represent hydrogen, an alkyl group, an aryl group, an alkaryl group, an aralkyl group, and an alkenyl group; and
A represents a group in which a hydrogen atom of the corresponding compound AH, which is a reducing agent for said non-photosensitive, reducible source of silver, has been replaced by:



5,358,844
PRESERVATION OF BLOOD PLATELETS
Thomas P. Stossel, Belmont; John H. Hartwig, Jamaica Plain, and Paul A. Janmey, Arlington, all of Mass., assignors to Brigham and Women's Hospital, Inc., Boston, Mass.
Filed Feb. 18, 1993, Ser. No. 19,045
Int. Cl.[5] A01N *1/02*
U.S. Cl. 435—2 **32 Claims**

1. A method for the preservation of platelets with preserved hemostatic activity, the method comprising the steps of:
(a) contacting a preparation of platelets with a first agent for inhibiting actin filament severing and with a second agent for inhibiting actin polymerization to form a treated platelet preparation; and
(b) storing said treated platelet preparation at a temperature of less than about 15° C.

5,358,845
METHOD OF DETECTING PROTEINS IN BODY FLUIDS AND MEANS OF CARRYING OUT THE METHOD
Jurgen Horn, Egelsbach, and Heike Nebel-Schickel, Hammersbach-Markobel, both of Fed. Rep. of Germany, assignors to Biotest AG, Dreieich, Fed. Rep. of Germany
Continuation of Ser. No. 786,491, Nov. 1, 1991, abandoned. This application Dec. 24, 1992, Ser. No. 997,618
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1990, 4035174
Int. Cl.[5] G01N *33/569, 33/543;* **C12Q** *1/00*
U.S. Cl. 435—5 **9 Claims**

1. A diluting buffer solution for detecting proteins in body fluids by immunoassay, comprising a phosphate or carbonate buffer solution containing about
25% calf serum
0.1 to 0.15M NaF and
0.1 to 0.15M Na propionate.

5,358,846
METHODS FOR DIAGNOSING INFECTOUS DISEASES AND METHODS FOR DETECTING AND IDENTIFYING MICROORGANISMS
Tsuneya Ohno, Tokyo, and Akio Matsuhisa, Kawasaki, both of Japan, assignors to Fuso Yakuhin Kogyo Kabushiki Kaisha, Osaka, Japan
PCT No. PCT/JP89/00424, § 371 Date Feb. 2, 1990, § 102(e) Date Feb. 2, 1990, PCT Pub. No. WO89/10411, PCT Pub. Date Nov. 2, 1989
PCT Filed Apr. 19, 1989, Ser. No. 449,931
Claims priority, application Japan, Apr. 20, 1988, 63-97808
Int. Cl.[5] C12Q *1/68, 1/00;* **C07H** *17/00*
U.S. Cl. 435—6 **8 Claims**

1. In a method for detecting biotin-containing bacteria or yeast in a sample obtained from a patient comprising fixing a phagocyte containing specimen obtained from the patient on a solid support for a time and under conditions sufficient for said phagocytes to become fixed to said support, the improvement comprising exposing the fixed phagocytes to a reagent having a preferential binding affinity for biotin, and detecting any product formed by binding of the reagent to bacterial or yeast biotin contained within said fixed phagocytes.

5,358,847
METHOD OF SCREENING FOR HUMAN SPERM ABNORMALITIES AS PART OF A REGIMEN FOR ASSESSING FERTILIZING CAPACITY BASED UPON REDUCED RATES OF CHROMATIN DECONDENSATION AND DNA SYNTHESIS
David B. Brown, 1216 Pin Oak, Dickinson, Tex. 77539
Filed Oct. 24, 1991, Ser. No. 781,357
Int. Cl.[5] C12Q *1/68*
U.S. Cl. 435—6 **32 Claims**

1. An in vitro method for screening human sperm for abnormalities as part of a regimen for assessing fertilizing capacity comprising:
obtaining a human sperm sample and isolating a number of sperm therefrom to provide a sperm test sample having a sperm count;
obtaining a human sperm sample from a male of proven fertility and isolating a number of sperm equal to the number in the sperm test sample to provide a sperm control sample having a sperm count;
permeablizing the sperm of the sperm test sample and the control sperm sample to provide a permeablized sperm test sample and a permeablized sperm control sample;
chemically reducing the permeablized sperm test sample and the permeablized sperm control sample in the presence of dithiothreitol to provide a reduced sperm nuclei test sample and a reduced sperm nuclei control sample;
incubating a volume of the reduced sperm nuclei test sample and an equal volume of the reduced sperm nuclei control samples to provide an amount of sperm chromatin sufficient to assess sperm chromatin decondensation in a *Xenopus laevis* frog egg extract;
quantifying the sperm nuclei test sample and the sperm nuclei control sample activation events, first, for chromatin decondensation, and second, for DNA synthesis in the presence of a detectable labeling compound; and
determining differences between the sperm test sample and the sperm control sample activation events to assess the fertilizing capacity of the sperm test sample,
wherein a sperm test sample demonstrating 80% or less decondensed sperm nuclei or 80% or less DNA synthesis relative to the sperm control sample, identifies abnormal human sperm.

5,358,848

Patent Not Issued For This Number

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5,358,849

MONOCLONAL ANTIBODY RECOGNIZING MEMBRANE PHOSPHOLIPASE A_2 AND IMMUNOASSAY OF MEMBRANE PHOSPHOLIPASE A_2

Nobuo Yoshida; Misao Ide, both of Hyogo; Masao Kono, Osaka, and Akiko Kanda, Hyogo, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Continuation of Ser. No. 697,008, May 8, 1991, abandoned. This application Apr. 28, 1993, Ser. No. 53,350
Claims priority, application Japan, May 30, 1990, 2-142462
Int. Cl.[5] G01N *33/573, 33/541;* C07K *15/28;* C12N *5/16*
U.S. Cl. 435—7.4 16 Claims

5. A monoclonal antibody secreted by a cell line selected from the group consisting of the hybridoma FERM BP-2889, hybridoma FERM BP-2890, hybridoma FERM BP-2891 and hybridoma FERM BP-2892.

10. An immunoassay for the detection of human spleen membrane phospholipase A_2, which comprises the steps of:

i) contacting a sample suspected of containing human spleen membrane phospholipase A_2 with an antibody according to claim 5, under conditions which promote binding of said antibody to said human spleen membrane phospholipase A_2; and

ii) detecting binding of said antibody to said human spleen membrane phospholipase A_2.

5,358,850

SANDWICH IMMUNOASSAY OF β-N-ACETYLGLUCOSAMINIDASE AND MONOCLONAL ANTIBODY USED THEREIN

Yoshito Numata, Yao; Yoko Kosugi, Sakai, and Kazunori Shibata, Osaka, all of Japan, assignors to Shionogi Seiyaku Kabushiki Kaisha, Osaka, Japan

Filed Jun. 18, 1993, Ser. No. 77,868
Claims priority, application Japan, Jun. 19, 1992, 4-186194
Int. Cl.[5] G01N *33/536, 33/543, 33/573, 33/577*
U.S. Cl. 435—7.4 11 Claims

2. A sandwich immunoassay for detecting the presence of NAG isozyme B, comprising:

(1) contacting a sample with an immobilized monoclonal antibody and a labelled monoclonal antibody such that NAG isozyme B present in said sample forms an immobilized antibody-NAG isozyme B-labelled antibody complex, wherein said immobilized monoclonal antibody is contacted with said sample at pH 4.5–5.2 and wherein said immobilized monoclonal antibody is monoclonal antibody Hex 31 produced by Hybridoma Hex 31 (FERM BP-3858) and wherein said labelled monoclonal antibody is monoclonal antibody Hex 32 produced by Hybridoma Hex 32 (FERM BP-3859); and

(2) detecting the amount of said immobilized antibody-NAG isozyme B-labelled antibody complex.

5,358,851

IMMUNOASSAY FOR AROMATIC RING CONTAINING COMPOUNDS

Dana P. Peck, Kennebunk, Me., assignor to Quantix Systems, L.P., Cinnaminson, N.J.

Continuation of Ser. No. 200,952, Jun. 1, 1988, abandoned, which is a continuation-in-part of Ser. No. 59,721, Jun. 9, 1987, abandoned. This application Jun. 6, 1991, Ser. No. 711,377
Int. Cl.[5] G01N *33/53;* C12Q *1/64*
U.S. Cl. 435—7.93 35 Claims

4. A method for determining the presence or amount of an analyte in a sample, wherein the analyte is an aromatic ring-containing compound derivable from petroleum or a petroleum product and selected from the group consisting of benzene, 2-(p-tolyl)-ethylamine, toluene, toluidine, styrene, xylene, ethylbenzene, propylbenzene and 2-methylnaphthalene, which method comprises the steps of:

(a) contacting the sample with

(i) a predetermined amount of conjugate comprising a detectable label conjugated to p-tolylacetic acid, and

(ii) a predetermined amount of an antibody, wherein said antibody (I) is a polyclonal antibody produced by immunizing an animal with p-tolylacetic acid conjugated to an immunogenic carrier protein and (II) specifically binds to the aromatic ring of benzene and to an aromatic ring of one or more compounds selected from the group consisting of 2-(p-tolyl)-ethylamine, toluene, toluidine, styrene, xylene, ethylbenzene, propylbenzene and 2-methylnaphthalene, under conditions in which the analyte in the sample competes with the predetermined amount of conjugate for specific binding sites on the predetermined amount of antibody; and

(b) determining the specific binding of the conjugate to the antibody by measuring the amount of the label specifically bound to the antibody, wherein the amount of label specifically bound to the antibody is inversely proportional to the amount of the analyte present in the sample.

5,358,852

USE OF CALCIUM IN IMMUNOASSAY FOR MEASUREMENT OF C-REACTIVE PROTEIN

Annie L. Wu, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 21, 1992, Ser. No. 993,569
Int. Cl.[5] G01N *33/531, 33/543, 30/91*
U.S. Cl. 435—7.94 8 Claims

1. A specific binding assay method comprising:

(1) contacting a liquid sample containing C-reactive protein (CRP) in the presence of from 0.01M to 0.5M calcium ions with (a) a first polyclonal antibody Ab1 specific for CRP, Ab1 being immobilized on a water-insoluble substrate and (b) a labeled, unbound second monoclonal antibody Ab2 specific for CRP to obtain a water-insoluble complex of Ab1, ligand, and Ab2;

(2) separating the water-insoluble complex from the liquid sample and unreacted Ab2; and

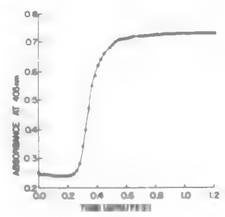
(3) measuring either the amount of Ab2 associated with said water-insoluble complex or the amount of unreacted Ab2 as an indication of the amount of C-reactive protein in the sample.

5,358,853

LIQUID THROMBOPLASTIN REAGENT

James R. Butler, Chapel Hill; Juan L. Torres, Durham, and Rajesh Sharma, Cary, all of N.C., assignors to Akzo AV, Arnhem, Netherlands

Filed Aug. 3, 1992, Ser. No. 924,211
Int. Cl.[5] C12Q *1/56, 1/34;* G01N *33/48, 1/00*
U.S. Cl. 435—13 7 Claims



1. A liquid thromboplastin reagent comprising an aqueous solution of rabbit brain acetone powder, calcium gluconate, polyethylene glycol, sodium chloride, sodium citrate, bovine serum albumin, sodium propionate, sodium azide, piperacillin, chloramphenicol and ciprofloxacin, having a shelf life of greater than one month in a sealed container.

5,358,854

METHOD, TEST MEDIA AND CHROMOGENIC COMPOUNDS FOR IDENTIFYING AND DIFFERENTIATING GENERAL COLIFORMS AND *ESCHERICHIA COLI* BACTERIA

Wilfred J. Ferguson, Lakewood, Ohio, assignor to Research Organics, Inc., Cleveland, Ohio

Continuation of Ser. No. 906,751, Jun. 30, 1992, abandoned, which is a division of Ser. No. 512,188, Apr. 20, 1990, Pat. No. 5,210,022. This application Jun. 3, 1993, Ser. No. 71,332
Int. Cl.[5] C12Q *1/04, 1/06, 1/10;* C07H *15/00*
U.S. Cl. 435—14 6 Claims

1. 6-chloroindolyl-β-D-galactoside.

5,358,855

INOSINIC ACID DEHYDROGENASE ASSAY

Olivera T. Markovic, Philadelphia, Pa.; Nenad S. Markovic, Novi Sad, Yugoslavia; Jay Roberts, Rosemont, Pa.; Charles D. Puglia, Glenside, Pa., and Svetomir N. Markovic, Philadelphia, Pa., assignors to The Medical College of Pennsylvania, Philadelphia, Pa.

Filed May 14, 1992, Ser. No. 882,647
Int. Cl.[5] C12Q *1/32*
U.S. Cl. 435—26 6 Claims

1. A method for assaying inosinic acid dehydrogenase activity within a cell, comprising the steps of:

a) obtaining a tissue sample containing at least one cell from biopsied animal or human tissue in which increased inosinic acid dehydrogenase activity is suspected;

b) using said tissue sample to prepare at least one smear containing cells and morphologically classifying said cells;

c) drying said smear in ambient air for at least five minutes;

d) contacting said at least one smear with a reagent containing at least one inosinic acid derivative, nicotinamide adenine dinucleotide, PMS and NBT to produce, during incubation of said smear, a visible formazan precipitate indicative of inosinic acid dehydrogenase activity; and

e) quantifying said formazan precipitate to confirm and to measure the level of inosinic acid dehydrogenase activity in at least one morphologically classified cell of said smear.

5,358,856

GENE EXPRESSION IN MAMMALIAN CELLS USING A CAP INDEPENDENT 5' NONCODING REGION

David Baltimore, New York, N.Y., and Didier Trono, Solana Beach, Calif., assignors to Whitehead Institute for Biomedical Research, Cambridge, Mass.

Continuation of Ser. No. 144,013, Jan. 14, 1988, abandoned. This application May 18, 1992, Ser. No. 887,223
Int. Cl.[5] C12N *5/10, 15/85;* C12P *21/02*
U.S. Cl. 435—69.1 11 Claims

1. A method of producing a protein or a polypeptide of interest in mammalian cells, wherein the protein or the polypeptide is not a poliovirus protein or polypeptide, comprising the steps of:

a) introducing into mammalian cells a construct comprising the following components:

1) the poliovirus cap independent 5' noncoding region and

2) a nucleotide sequence encoding a protein or a polypeptide of interest which is not a poliovirus protein or polypeptide and is positioned downstream of the poliovirus cap independent 5' noncoding region, thereby producing cells containing the construct;

b) maintaining cells containing the construct under conditions appropriate for production of the corresponding mRNA;

c) inducing inhibition of cap dependent translation, thereby inhibiting cellular protein synthesis in cells containing the construct; and

d) maintaining cells containing the construct under conditions appropriate for cap independent translation to occur, whereby the protein or polypeptide which is not a poliovirus protein or polypeptide is produced in a cap-independent manner.

5,358,857

METHOD OF PREPARING FUSION PROTEINS

Siegfried Stengelin, Hofheim am Taunus; Paul Habermann, Eppstein/Taunus; Eugen Uhlmann, Glashutten/Taunus, all of Fed. Rep. of Germany, and Brian Seed, Boston, Mass., assignors to The General Hospital Corp., Charlestown, Mass. and Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 838,221, Apr. 23, 1992, Pat. No. 5,227,293, which is a continuation-in-part of Ser. No. 399,874, Aug. 29, 1989, abandoned. This application Jun. 9, 1993, Ser. No. 73,508
The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.
Int. Cl.[5] C12N *15/12, 15/62*
U.S. Cl. 435—69.7 12 Claims

1. A process for the preparation of fusion proteins wherein said fusion proteins contain a desired protein and a ballast constituent, and wherein said process comprises:

(a) constructing a mixed oligonucleotide which codes for said ballast constituent and wherein said mixed oligonucleotide is 4 to 12 codons in length exclusive any start or cleavage site codons which may be present;

(b) creating a population of vectors by inserting said mixed oligonucleotide into a vector so that it is functionally linked to a regulatory region and to a structural gene coding for said desired protein;

(c) transforming host cells with the so-obtained vector population; and

(d) selecting from the transformants one or more clones expressing a fusion protein in high yield.

5,358,858

PROCESS FOR PREPARING PHYCOERYTHRIN FROM BANGIA ATROPURPUREA AND PORPHYRA ANGUSTA

Young-Meng Chiang, and Hong-Nong Chou, both of Taipei, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Mar. 17, 1994, Ser. No. 214,374
Int. Cl.[5] C12P *21/00;* C12N *1/12*
U.S. Cl. 435—71.1 9 Claims

1. A process for preparing crude gel-form phycoerythrin concentrate from red algae, comprising the following steps:

a) providing a mature red algae thalli selected from the group consisting of *Bangia atropurpurea* gametophytes and *Porphyra angusta* gametophytes;

b) cultivating said red algae thalli in a SWM-III medium to obtain spores therefrom;

c) cultivating said spores in a condition wherein the temperature, light intensity and daily illuminating period are respectively 15° C.–25° C., 1000 lx–4000 lx and 10–16 hours to germinate filaments;

d) breaking up said filaments into minute segments and cultivating them in a larger tank in the above condition until the cultivated filaments grow to the required amounts;

e) collecting said cultivated filaments, drying and grinding them into powder;

f) adding said powder to a liquid selected from the group consisting of water and phosphate solution to obtain a clear-red pigment protein solution containing said phycoerythrin; and

g) salting out said gel-form phycoerythrin concentrate from said clear-red pigment protein solution.

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5,358,859

KDO ALDOLASE AND CONDENSATION REACTIONS EMPLOYED THEREWITH

Chi-Huey Wong, Rancho Santa Fe, Calif.; Takeshi Sugai, Kawasaki, Japan, and Gwo-Jenn Shen, Carlsbad, Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Filed Dec. 18, 1992, Ser. No. 993,140
Int. Cl.[5] C12P 19/02
U.S. Cl. 435—105 11 Claims

1. A method for synthesizing 2-keto-3-deoxy-onic acids and analogs thereof, the 2-keto-3-deoxy-onic acids being selected from the group consisting of 2-keto-3-deoxy-hexulosonic acid, 2-keto-3-deoxy-heptulosonic acid, 2-keto-3-deoxy-octulosonic acid, and 2-keto-3-deoxy-nonulosonic acid, the 2-keto-3-deoxy-octulosonic acid excluding 3-deoxy-D-manno-2-octulsonic acid, the method comprising the following steps, viz.:

Step A: providing a purified KDO aldolase; then

Step B: admixing, in an aqueous solution, a 3–6 carbon aldose, exclusive of D-arabinose, an excess of pyruvate, and a catalytic amount of the purified KDO aldolase from said Step A; and then

Step C: incubating the admixture of said Step B for condensing the 3–6 carbon aldose with the pyruvate for producing the 2-keto-3-deoxy-onic acid.

5,358,860

STEREOSELECTIVE EPOXIDATION OF ALKENES BY CHLOROPEROXIDASE

Lowell P. Hager, Urbana, and Eric J. Allain, Champaign, both of Ill., assignors to The Board of Trustees of the University of Illinois, Urbana-Champaign, Ill.

Filed Apr. 5, 1993, Ser. No. 43,049
Int. Cl.[5] C12N 9/08; C12P 17/02
U.S. Cl. 435—123 22 Claims

1. A method of converting olefins to chiral epoxides, comprising (a) combining an asymmetric alkene substrate with a non-alkaline chloroperoxidase solution, and (b) adding an effective substrate oxidant to form a stabilized reaction mixture, such that the oxidant is maintained at a concentration that does not produce a substantial oxidant excess, and the chloroperoxidase catalyzes the conversion of the substrate to the corresponding epoxide in enantiomeric excess.

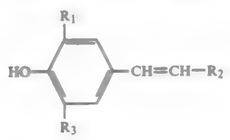
5,358,861

PROCESS FOR THE PREPARATION OF PHENYLALDEHYDES

Paul H. Markus, Loosdrecht; Alfons L. Peters, and Robert Roos, both of Bussum, all of Netherlands, assignors to Unilever Patent Holdings B.V., Vlaardingen, Netherlands

Filed Nov. 10, 1992, Ser. No. 973,991
Claims priority, application European Pat. Off., Nov. 11, 1991, 91202920.4
Int. Cl.[5] C12P 7/24, 1/04; C12R 1/06
U.S. Cl. 435—147 11 Claims

1. Process for the preparation of phenylaldehyde comprising converting a compound having the formula (I)



(I)

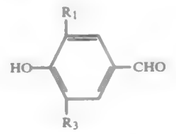
wherein

R_1=H, OH, OCH_3 and C_{1-4} alkyl,

R_3=H, OH, OCH_3 and C_{1-4} alkyl,

R_2=H, C_{1-6} alkyl, —CH_2OH, —COOH, —OCH_3 and —CH_2O —R_4

wherein R_4=benzoyl and C_{1-4} alkanoyl or R_2=—CO—CH-2—CO—(I), thus combining two groups having formula I; or the tautomeric isomers of formula I in the presence of the enzyme lipoxidase (E.C. 1.13.11.12), oxygen and a solvent into a phenylaldehyde compound having the formula



(II)

wherein R_1 and R_3 have the meanings indicated above and recovering the phenylaldehyde compound.

5,358,862

SYNTHETIC TRNAS

Boyd Hardesty, and Wendy L. Picking, both of Austin, Tex., assignors to Research Development Foundation, Carson City, Nev.

Division of Ser. No. 753,266, Aug. 30, 1991, abandoned. This application Jul. 14, 1992, Ser. No. 914,212
Int. Cl.[5] C12N 15/11; C07H 21/04
U.S. Cl. 435—172.3 12 Claims

1. A DNA sequence containing a synthetic tRNA, wherein said DNA sequence comprises:

an AAA anticodon;

a RNA polymerase promoter;

a tRNA gene, wherein said tRNA gene includes specific tRNA synthetase recognition sites for an amino acid of interest; and

at least two restriction endonuclease sites.

5,358,863

OIL AND ABSORBENT COATED GRANULES CONTAINING ENCAPSULATED LIVING ORGANISMS FOR CONTROLLING AGRICULTURAL PESTS

Paul C. Quimby, Jr.; Jennifer L. Birdsall; Anthony J. Caesar, all of Bozeman, Mont.; William J. Connick, Jr., New Orleans, La.; Clyde D. Boyette, Leland, Miss.; T. Can Caesar, and David C. Sands, both of Bozeman, Mont., assignors to The United States of America as represented by the Secretary of the Agriculture, Washington, D.C.

Filed Mar. 30, 1993, Ser. No. 39,679
Int. Cl.[5] C12N 11/10, 11/04; A01N 63/00
U.S. Cl. 435—178 10 Claims

1. Coated granules of encapsulated living organism for controlling agricultural pests, said granules coated with a mixture of (a) an inverting oil that is nontoxic to said living organism and (b) an adsorbent for said oil, wherein said living organism is selected from the group consisting of bacteria, fungi and nematodes; wherein said organism is encapsulated with an encapsulation agent selected from the group consisting of alginate, starch and wheat gluten; wherein said pests are selected from the group consisting of weeds, insects, diseases and nematodes that are harmful to desirable plants; wherein said inverting oil is an oil that forms a water-in-oil emulsion; wherein said absorbent is present in an amount which makes said granules free-flowing and said coated granules containing about 1 to 10% moisture.

5,358,864

CLONING AND EXPRESSION OF XYLANASE GENES FROM FUNGAL ORIGIN

Henriette C. van den Broeck, Wageningen; Leendert H. de Graaff, Arnhem; Jan D. R. Hille, Bergen op Zoom; Albert J. J. van Ooyen, Voorburg; Jacob Visser, Wageningen, and Abraham Harder, Berkel en Rodenrijs, all of Netherlands, assignors to Gist-Brocades, N.V., Delft, Netherlands

PCT No. PCT/NL91/00137, § 371 Date Apr. 27, 1992, § 102(e) Date Apr. 27, 1992, PCT Pub. No. WO92/01793, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 24, 1991, Ser. No. 842,349
Claims priority, application European Pat. Off., Jul. 24, 1990, 90202020.5
Int. Cl.[5] C12N 9/42, 9/24; C07H 21/04; C12P 21/06
U.S. Cl. 435—209 19 Claims

1. A DNA molecule in purified and isolated form that comprises a coding region that encodes a fungal endoxylanase, wherein said fungal endo-xylanase has the amino acid sequence shown as positions 1–184 in SEQ ID:1 or is encoded by a nucleotide sequence that hybridizes to the DNA of SEQ ID:1 under stringency conditions equivalent to those in two washes in 5×SSC, 0.1% SDS at 60° C. followed by two washes in 3×SSC at 60° C.

5,358,865

ALKALINE PROTEASE FROM *BACILLUS J 20*

Helle Outtrup, Ballerup; Claus Dambmann, Soeborg, and Dorrit A. Aaslyng, Roskilde, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK91/00309, § 371 Date Feb. 22, 1993, § 102(e) Date Feb. 22, 1993, PCT Pub. No. WO92/07067, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 11, 1991, Ser. No. 975,553
Claims priority, application Denmark, Oct. 12, 1990, 2462/90
Int. Cl.[5] C12N 9/52, 9/54; C11D 3/386
U.S. Cl. 435—221 9 Claims

1. An isolated protease having

(a) an apparent molecular weight of 29 kD determined by SDS-PAGE;

(b) a pI around 8.8;

(c) a pH optimum above pH 10 at 25° C.;

(d) a temperature optimum in the range of from 45° to 65° C. at pH 9.5; and

(e) binds to a monospecific antibody raised against a protease derived from the strain Bacillus sp. J 20, NCIMB No. 40262.

5,358,866

CYTOSINE DEAMINASE NEGATIVE SELECTION SYSTEM FOR GENE TRANSFER TECHNIQUES AND THERAPIES

Craig A. Mullen, Bethesda, and R. Michael Blaese, Rockville, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jul. 3, 1991, Ser. No. 725,076
Int. Cl.[5] C12P 21/06; C12N 5/00, 9/78; C07H 21/04
U.S. Cl. 435—240.2 6 Claims

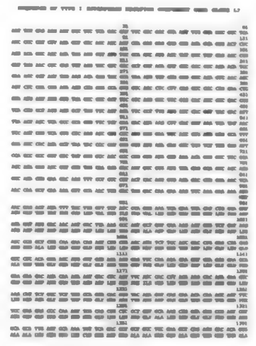
1. A DNA construct that comprises an *E. coli* cytosine deaminase gene linked to a mammalian expression vector, said cytosine deaminase gene modified at the GTG translation initiation codon to ATG to facilitate initiation of translation in a mammalian cell.

5,358,867

DNA CLONING AND EXPRESSION OF AN L7 PROTEIN WHICH MODULATES THE 2'–5' OLIGOSYNTHETASE AND H2-K*K RESPONSE TO TYPE-I INTERFERON

Michel Revel; Lester Shulmann, both of Rehovot, Israel, and Marc Fellous, Paris, France, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

Continuation of Ser. No. 436,332, Nov. 14, 1989, abandoned. This application Sep. 13, 1993, Ser. No. 120,030
Claims priority, application Israel, Nov. 14, 1988, 88377
Int. Cl.[5] A61K 37/66; C12P 21/06; C12N 15/00; C07H 17/00
U.S. Cl. 435—240.2 6 Claims



1. Isolated DNA consisting essentially of nucleotides 899–3253 in FIG. 1 and which encodes a protein which induces increased 2'–5 ' oligosynthetase activity and increased H2-K^k antigen expression in cell culture.

5,358,868

GENETIC DETOXIFICATION OF PERTUSSIS TOXIN

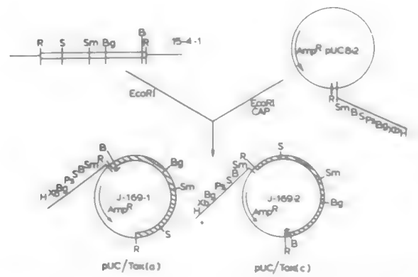
Michel H. Klein, Willowdale; Heather A. Boux, Aurora; Stephen A. Cockle, Richmond Hill; Sheena M. Loosmore, Aurora, and Gavin R. Zealey, Concord, all of Canada, assignors to Connaught Laboratories Limited, Willowdale, Canada

Division of Ser. No. 589,423, Sep. 28, 1990, Pat. No. 5,244,657, which is a continuation-in-part of Ser. No. 275,376, Nov. 23, 1988, Pat. No. 5,085,862. This application Nov. 5, 1991, Ser. No. 788,313
Claims priority, application United Kingdom, Nov. 24, 1987, 8727489
The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.
Int. Cl.[5] C12N 1/00, 15/00, 1/12; C07K 3/00
U.S. Cl. 435—243 8 Claims

1. A strain of *Bordetella pertussis* in which the toxin operon has been replaced by a mutant gene formed by site-directed mutagenesis of a nucleotide sequence coding for at least one

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specific amino acid residue in the S1 and for S3 subunit of pertussis holotoxin responsible for pertussis toxin toxicity and



having ATCC accession number 53833, 53834, 53835, 53836, 53837, 53974, 53975 or 53976.

5,358,869

MICROBIAL CLEAVAGE OF ORGANIC C-S BONDS

John J. Kilbane, II, Woodstock, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Continuation-in-part of Ser. No. 461,389, Jan. 5, 1990, Pat. No. 5,104,801, and a continuation-in-part of Ser. No. 640,931, Jan. 14, 1991, Pat. No. 5,198,341, which is a continuation of Ser. No. 461,265, Jan. 5, 1990, Pat. No. 5,002,888. This application Mar. 12, 1992, Ser. No. 850,081

Int. Cl.[5] **C12S** *1/00;* **C10G** *32/00;* **C10L** *5/00*

U.S. Cl. 435—282 **9 Claims**

1. A process for cleavage of organic C—S bonds comprising:

contacting an organic carbonaceous material selected from the group consisting of oil and coal having C—S bonds with microorganisms selected from the group consisting of *Rhodococcus rhodochrous* strain ATCC No. 53968 having a capability for selective cleavage of organic C—S bonds while leaving C—C bonds intact, a mutant microorganism of *Rhodococcus rhodochrous* strain ATCC No. 53968 having the capability of the parent microorganism for selective cleavage of organic C—S bonds while leaving C—C bonds intact, and mixtures thereof under metabolic conditions for said *Rhodococcus rhodochrous* suitable for cleaving said organic C—S bonds in a growth medium comprising mineral nutrients and an assimilable source of carbon in substantial absence of a sulfur-containing compound except said organic carbonaceous material and in the presence of oxygen wherein said microorganism cleaves said C—S bonds.

5,358,870

MICROEMULSION PROCESS FOR DIRECT BIOCATALYTIC DESULFURIZATION OF ORGANOSULFUR MOLECULES

Daniel J. Monticello, The Woodlands, Tex., and John J. Kilbane, II, Woodstock, Ill., assignors to Institute of Gas Technology, Chicago, Ill. and Energy BioSystems Corporation, The Woodlands, Tex.

Continuation-in-part of Ser. No. 486,597, Feb. 28, 1990, Pat. No. 5,132,219. This application Jun. 11, 1992, Ser. No. 897,314

Int. Cl.[5] **C10G** *32/00;* **C12N** *9/14, 1/12, 1/00*

U.S. Cl. 435—282 **20 Claims**

1. A method for desulfurizing a petroleum liquid which contains organic sulfur molecules, through the use of an aqueous catalytic agent, wherein the catalytic agent comprises a cell-free enzyme preparation from *Rhodococcus* sp. ATCC 53969, *Bacillus sphaericus* ATCC 53969, or a mutant thereof having the ability to selectively cleave organic carbon-sulfur bonds including those in sulfur-bearing heterocycles, comprising the steps of:

a) forming a microemulsion between the petroleum liquid and the aqueous catalytic agent; and

b) incubating the microemulsion under conditions sufficient to bring about the catalytic cleavage of organic carbon-sulfur bonds for a sufficient period of time for a significant number of catalytic cleavages to occur, whereby the organic sulfur content of the petroleum liquid is significantly reduced, thereby producing a desulfurized petroleum liquid.

5,358,871

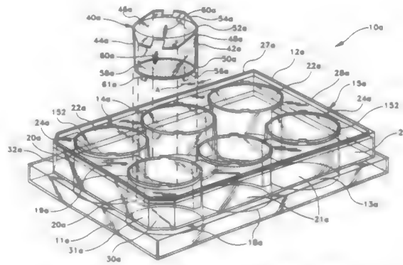
CULTURE VESSEL

Timothy A. Stevens, Madison; Edward F. Mussi, Hewitt; Douglas P. Henderson, Morristown, and Tadeusz A. Tyndorf, Manalapan Township, Monmouth County, all of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation-in-part of Ser. No. 3,774, Jan. 13, 1993. This application Aug. 12, 1993, Ser. No. 105,830

Int. Cl.[5] **C12M** *3/06*

U.S. Cl. 435—284 **10 Claims**



1. Apparatus for use in growing tissue cultures in vitro comprising:

a culture vessel comprising an tipper surface, a lower surface, a plurality of wells extending from said upper surface to said lower surface, a raised mouth surface extending from each said upper surface of each well, and at least one projecting portion extending from each said raised mouth surface; and

a cell culture insert suspended in one of said wells and comprising an upper portion, a lower portion, a sidewall comprising an inner and outer surface and extending from said upper portion to said lower portion, a permeable membrane attached to said lower portion and a flange comprising a slot extending from said upper portion for engaging with said projecting portions of said culture vessel.

5,358,872

VESSEL AND CLOSURE ASSEMBLY

Edward F. Mussi, Hewitt, and Harry E. Gray, Bloomingdale, both of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 12, 1993, Ser. No. 105,786

Int. Cl.[5] **C12M** *1/24;* **B65D** *53/00*

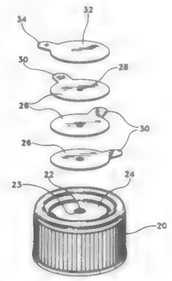
U.S. Cl. 435—296 **10 Claims**

1. An assembly for use in growing cell cultures in incubators comprising:

a vessel comprising a body forming a chamber, a neck connected to said body having an opening for introducing cells and culture fluids into said chamber;

a closure for covering said opening in said neck comprising a top portion with an annular skirt extending from said top portion and having an inner surface and an outer surface and an orifice in said top portion with a means for removably mounting said closure to said neck, and means for allowing gases to be exchanged within said chamber; and

a plurality of gas impermeable films removably superimposed over each other with one of said plurality of gas impermeable films being removably attached to said top portion of said closure wherein at least the gas imperme-



able film that is removably attached to said top portion has a gas restricting orifice for selectively occluding gas diffusion into and out of said vessel through the orifice in said top portion.

5,358,873

METHOD FOR DETERMINING ADULTERATION OF GASOLINES

Anthony V. Nowak, Fullerton, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 135,864, Oct. 13, 1993, abandoned, which is a continuation of Ser. No. 920,071, Jul. 27, 1992, abandoned. This application Oct. 20, 1993, Ser. No. 139,365

Int. Cl.[5] **G01N** *35/08*

U.S. Cl. 436—56 **14 Claims**

1. A method for determining the presence of a marker dye composition in automotive motor gasoline, said marker dye composition including a Rhodamine dye, said method comprising the steps of:

mixing a sample of gasoline suspected of containing said marker dye with a quantity of fine-ground silica in a container and determining a change in the color of the silica to detect the presence of said Rhodamine dye.

5,358,874

NITROGEN OXIDE ANALYZER AND METHOD OF MEASURING OXIDES OF NITROGEN

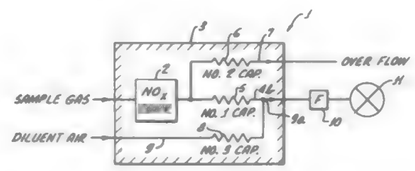
Kazuya Tsurumi, Miyanohigashi, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Sep. 3, 1993, Ser. No. 116,362

Claims priority, application Japan, Sep. 9, 1992, 4-069813[U]

Int. Cl.[5] **G01N** *21/76*

U.S. Cl. 436—116 **14 Claims**



7. A method of quantitatively analyzing a sample gas flow for NO_x, said method including the steps of;

reducing in a convertor the NO_x in the sample gas flow to NO;

flowing a first portion of the reduced sample gas flow through a first capillary to an analysis cell;

flowing a second portion of the reduced sample gas flow through a second capillary to ambient atmosphere;

including said first and said second capillaries in a heating zone; and

diluting said first sample gas portion with air after flowing of said first sample gas portion through said first capillary and before flowing of said first sample gas portion to said analysis cell.

5,358,875

METHOD AND COMPOSITION FOR HALOHYDROCARBON DETECTION

Kisholoy Goswami; Dileep K. Dandge; Stanley M. Klainer, all of Henderson, and Chuka H. Ejiofor, Las Vegas, all of Nev., assignors to FIC - FiberChem, Inc., Las Vegas, Nev.

Filed Jun. 25, 1993, Ser. No. 82,248

Int. Cl.[5] **G01N** *21/78, 21/64*

U.S. Cl. 436—124 **18 Claims**

1. A composition for detecting halogenated hydrocarbons, comprising:

pyridine or a derivative thereof;

an alkoxide;

a nonaqueous organic solvent which is less reactive to carbene than the reactivity of pyridine or a derivative thereof.

5,358,876

OXYGEN INDICATOR

Yoshiaki Inoue; Hidetoshi Hatakeyama, and Isamu Yoshino, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 914,082, Jul. 16, 1992, abandoned. This application Apr. 2, 1993, Ser. No. 42,252

Claims priority, application Japan, Jul. 17, 1991, 3-202484

Int. Cl.[5] **G01N** *33/00*

U.S. Cl. 436—136 **19 Claims**

1. A method of indicating the presence of oxygen in an atmosphere comprising:

contacting said atmosphere with an indicator consisting essentially of a combination of:

(a) at least one aliphatic organic compound containing at least three carbon atoms, at least one primary amine group, and at least one hydroxyl group; and

(b) at least one dyestuff selected from the group consisting of thiazine dyes, indigo dyes, and mixtures thereof which complexes with said organic compound in the effective presence of oxygen; and

determining if the color of said indicator changes as an indication of the presence of oxygen.

5,358,877

SOFT PROTON ISOLATION PROCESS FOR AN ACOUSTIC CHARGE TRANSPORT INTEGRATED CIRCUIT

Michael J. Hoskins, Mahomet, and Martin J. Brophy, Urbana, both of Ill., assignors to Electronic Decisions Inc., Urbana, Ill.

Filed Mar. 29, 1991, Ser. No. 676,965

Int. Cl.[5] **H01L** *21/265*

U.S. Cl. 437—22 **10 Claims**

1. A method for electrically isolating an integrated circuit element in an acoustic charge transport device, said method comprising the steps of:

a) providing a semi-insulating substrate;

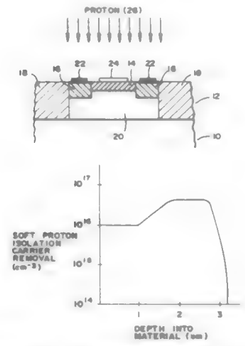
b) providing an epitaxial layer on the semi-insulating substrate with a thickness and carrier concentration appropriate for an ACT device;

c) providing a circuit element semiconductor layer in the epitaxial layer for construction of an integrated circuit element, the layer having a thickness substantially less than the thickness of the epitaxial layer and having a

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carrier concentration substantially greater than the ACT epitaxial layer;

d) laterally isolating the semiconductor layer from other regions of the ACT epitaxial layer; and



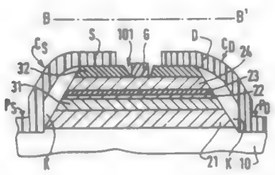
e) bombarding the semiconductor layer with protons or deuterons at a dose and energy sufficient to provide significant vertical electrical isolation from underlying regions of the epitaxial layer semi-insulating with minimal detrimental effect on the electrical characteristics of the semiconductor layer.

5,358,878

METHOD OF MANUFACTURING AN INTEGRATED HIGH ELECTRON MOBILITY TRANSISTOR HAVING A SURROUNDING INSULATING LAYER

Philippe Suchet, Vincennes, and Jean-Jacques Vingrief, Yerres, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 9, 1992, Ser. No. 848,615
Claims priority, application France, Mar. 15, 1991, 91 03198
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—40 **6 Claims**



1. A method of manufacturing an integrated circuit on a substrate (10), which method comprises steps for forming a high electron mobility transistor (HEMT), these steps including:

forming a superimposed structure (11) of layers on the substrate, among which are at least a layer (31) of a semiconductor material having a narrower bandgap which is lighter doped for forming a channel of the transistor, and a donor layer (23) of a semiconductor material having a wider bandgap which is heavier doped for providing electrons;

forming an insulation zone as a dielectric layer (K) completely surrounding the HEMT relative to the other elements of the integrated circuit; and

forming gate, source and drain electrodes, characterized in that, forming the insulation zone as a dielectric layer (K) comprises the steps of:

forming a mask (M) at the surface of the superimposed structure of layers, which mask covers and defines an active zone of the transistor;

etching the superimposed structure of layers isotropically down to the substrate (10) with underetching under the mask (M) so as to shape the active zone in the form of a mesa;

forming a dielectric layer (K) on said mask, flanks of said mesa, and said substrate by uniform deposition;

etching the dielectric layer (K) directionally while maintaining the portions of this layer (K) which are protected by the mask as a result of the under-etching and are disposed on the flanks of the mesa around the active zone of the transistor; and

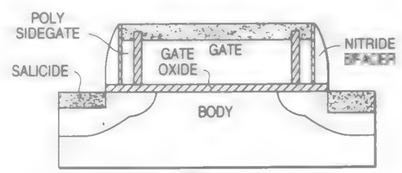
removing the mask (M).

5,358,879

METHOD OF MAKING GATE OVERLAPPED LIGHTLY DOPED DRAIN FOR BURIED CHANNEL DEVICES

Frederick T. Brady, Chantilly; Charles P. Breiten, Culpeper; Nadium F. Haddad, Oakton; William G. Houston, Elkwood; Oliver S. Spencer, Manassas, and Steven J. Wright, Fredericksburg, all of Va., assignors to Loral Federal Systems Company, Bethesda, Md.

Filed Apr. 30, 1993, Ser. No. 54,994
Int. Cl.[5] H01L *21/266*
U.S. Cl. 437—44 **3 Claims**



1. A method of fabricating a semiconductor device, comprising the steps of:

forming a transistor structure having a gate electrode, source and drain regions and a gate oxide on a semiconductor substrate;

forming a nitride cap on an oxide layer over the gate electrode;

implanting first ions into the substrate to form an LDD layer in the substrate;

forming a nitride spacer over the gate electrode;

implanting second ions into the substrate to form source and drain regions containing the LDD layer;

stripping nitride cap and spacer material;

forming a polysilicon sidegate adjacent to the gate electrode;

forming a second nitride spacer adjacent to the polysilicon sidegates; and

implanting heavy ions of a neutral conductivity type in silicon into the gate region to electrically short the gate electrode and polysilicon sidegate together.

5,358,880

METHOD OF MANUFACTURING CLOSED CAVITY LED

Michael S. Lebby, Apache Junction; Chan-Long Shieh, Paradise Valley, and Craig A. Gaw, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 12, 1993, Ser. No. 44,787
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—23 **21 Claims**

1. A method of manufacturing closed cavity LEDs comprising the steps of:

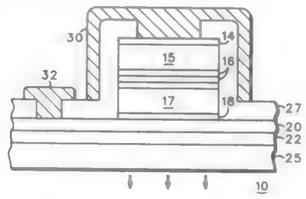
providing a first substrate having a major surface;

depositing a plurality of layers of material on the major surface of the first substrate to form an LED, the plurality of layers being deposited with two electrically conductive layers, a first conductive layer of the two electrically conductive layers being formed in overlying relationship adjacent the major surface of the first substrate and on one side of the plurality of layers and a second conductive layer of the two electrically conductive layers being formed on an opposite side of the plurality of layers, the second conductive layer further defining a light emitting area;

depositing a light transparent, electrically conductive layer of material on the second conductive layer in overlying relationship to the light emitting area and in electrical contact with the second conductive layer;

fixing a protective optically transparent substrate in overlying relationship to the transparent conductive layer;

removing the first substrate and exposing the first conductive layer;



removing portions of the plurality of layers of material whereby sides of the LED are defined;

depositing a layer of dielectric material on the sides of the LED and in overlying relationship on exposed portions of the first conductive layer and the transparent conductive layer;

opening first and second contact areas through the layer of dielectric material to the first conductive layer and to the transparent conductive layer of material, respectively; and

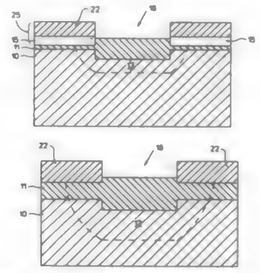
depositing a layer of electrical contact material over the layer of dielectric material and in the open first and second contact areas in contact with the first conductive layer and the transparent conductive layer of material to form first and second external electrical contacts of the LED and to form a reflector on all sides of the LED, except the light emitting area.

5,358,881

SILICON TOPOGRAPHY CONTROL METHOD

Donald L. Packwood, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 19, 1993, Ser. No. 64,296
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—26 **9 Claims**



1. The method of establishing a constant silicon recess of predetermined thickness in a semiconductor structure, including the steps of:

a. growing an oxide layer on a semiconductor surface of a semiconductor structure;

b. depositing a layer of polysilicon over the oxide layer;

c. photolithographically defining at least a single window in said layer of polysilicon;

d. etching away the layer of polysilicon in said at least a single window to the level of the oxide layer;

e. ion implanting a selected dopant within said at least a single window; and

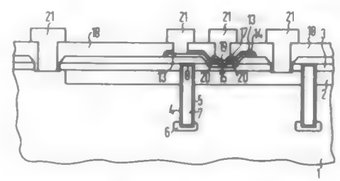
f. annealing and then oxidizing the semiconductor surface sufficiently at least to completely oxidize the layer of polysilicon, whereby a constant silicon recess is established.

5,358,882

METHOD FOR MANUFACTURING A BIPOLAR TRANSISTOR IN A SUBSTRATE

Emmerich Bertagnolli, and Helmut Klose, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 15, 1993, Ser. No. 30,901
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1992, 4211050
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 **8 Claims**



1. A method for forming a bipolar transistor in a substrate of a first conductivity type, comprising the steps of:

forming in the substrate a buried layer of a conductivity type opposite that of the substrate;

forming over the substrate an epitaxial layer of the same conductivity type as that of the buried layer;

forming in the epitaxial layer, the buried layer and the substrate an insulating trench which surrounds a region in which the bipolar transistor is to be formed;

depositing surface wide a layer of SiO_2 by means of thermal decomposition of $Si(OC_2H_5)_4$ at a deposition temperature;

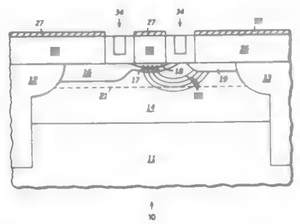
forming an active transistor region for a base, collector and emitter and a collector terminal region within the region surrounded by the insulating trench by appropriate etching of the SiO_2 layer down to the epitaxial layer, the unetched portions of the SiO_2 layer forming insulating regions;

forming a base terminal and an emitter terminal by operative deposition and anisotropic etching of first and second, respectively, doped polysilicon layers, the anisotropic etching being selective relative to the insulating regions, the anisotropic etching of one of the doped polysilicon layers being overetched to the extent necessary to etch out the epitaxial layer down to the buried layer within the collector terminal region; and

forming a collector terminal with the collector terminal region.

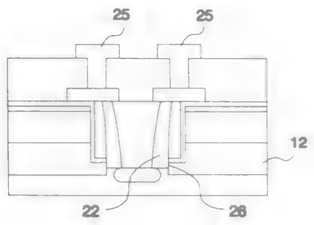
VOL 1167 ISS 4 OCT 25 1994 UMI

5,358,883
LATERAL BIPOLAR TRANSISTOR
Wayne R. Burger, and Yee-Chaung See, both of Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 829,658, Feb. 3, 1992, abandoned. This application Aug. 12, 1993, Ser. No. 105,490
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—32 11 Claims



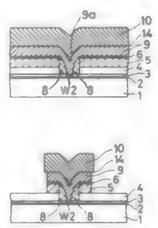
1. A method of forming a transistor comprising:
providing a semiconductor substrate of a first conductivity type without an epitaxial layer and having a first surface;
forming a collector region of a second conductivity type by doping a portion of the substrate with a retrograde doping profile that has a peak doping concentration a first distance from the first surface wherein the peak doping concentration forms a low resistance collector region;
forming a base dopant in a layer overlying the first surface;
forming a base region within the collector region wherein the base region is on the first surface and includes an active base area formed from a first portion of the base dopant and an inactive base area formed from a second portion of the base dopant;
forming an emitter region within the active base area wherein current substantially flows through the emitter region through the active base region and through the low resistance collector region; and
forming a collector ohmic area immediately adjacent to the active base area.

5,358,884
DUAL PURPOSE COLLECTOR CONTACT AND ISOLATION SCHEME FOR ADVANCED BICMOS PROCESSES
Michael P. Violette, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Filed Sep. 11, 1992, Ser. No. 943,840
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—341 6 Claims



1. A method for fabricating a semiconductor bipolar device for use in an integrated circuit comprising:
forming a combination of substantially horizontal layers comprising:
a semiconductor substrate layer;
a buried layer on top of said substrate, said buried layer doped to form a semiconductor element of a first type;
a first surface layer on top of said buried layer;
a second surface layer embedded into a section of said first surface layer;
an insulating oxide layer on top of said first and second surface layer;
etching a trench network into said combination of layers from the top down into the buried layer thereby generating a mesa;
depositing a substantially vertical layer of insulating material onto a vertical wall of said mesa;
deepening the trench network, thereby exposing the buried layer;
implanting an isolating region into a portion of the substrate exposed at a bottom end of the trench network:
depositing a substantially vertical layer of polysilicon to exposed layers on said vertical wall of the mesa,
filling the trench network with insulating material;
creating a first tap to contact the polysilicon layer, a second tap to contact the first surface layer, and a third tap to contact the second surface layer.

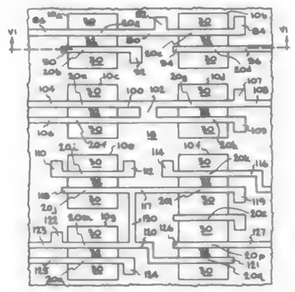
5,358,885
METHOD OF MANUFACTURING A FIELD EFFECT TRANSISTOR WITH A T-SHAPED GATE ELECTRODE AND REDUCED CAPACITANCE
Tomoki Oku; Masayuki Sakai, and Yasutaka Kohno, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 16, 1993, Ser. No. 46,811
Claims priority, application Japan, Aug. 19, 1992, 4-244217
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—39 5 Claims



1. A method of producing a field effect transistor comprising:
successively depositing a first insulating film and a metal film on a semiconductor epitaxial layer disposed on a semiconductor substrate;
forming and patterning a first resist film to have an aperture on said metal film;
etching said metal film and said first insulating film using said first resist film as a mask to form a first aperture having side walls;
removing said first resist film and depositing a second insulating film on said metal film and in the first aperture;
etching said second insulating film in a direction perpendicular to said first insulating film, leaving portions of said second insulating film on the side walls of the first aperture to produce a second aperture within the first aperture;
depositing a gate electrode metal layer on said metal film and in the second aperture on the portions of said second insulating film;
patterning said gate electrode metal layer, said metal film, and said first insulating film to form a T-shaped gate structure;
completely removing said first and second insulating films;

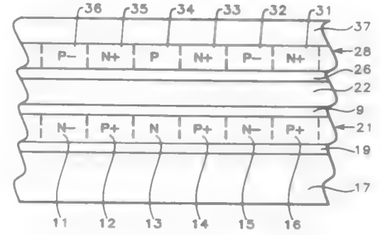
depositing a third insulating film atop said semiconductor epitaxial layer and on said T-shaped gate structure;
forming and patterning a second resist film on said third insulating film, said second resist film being patterned with apertures at regions where source and drain electrodes are to be formed;
removing portions of said third insulating film using said second resist film as patterned as a mask; and
depositing an ohmic electrode metal on said second resist film and in the apertures in said second resist film on said semiconductor epitaxial layer and removing said second resist film with the overlying portions of said ohmic electrode metal by lift-off, thereby producing source and drain electrodes.

5,358,886
METHOD OF MAKING INTEGRATED CIRCUIT STRUCTURE WITH PROGRAMMABLE CONDUCTIVE ELECTRODE/INTERCONNECT MATERIAL
Abraham Yee, Santa Clara; Stanley Yeh, Fremont; Tim Carmichael, San Jose, and Gobi Padmanabhan, Sunnyvale, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.
Filed Jul. 1, 1993, Ser. No. 86,487
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—49 19 Claims



1. A process of making an integrated circuit structure on a semiconductor wafer wherein said structure may be partially formed with a plurality of electrodes of conductive material interconnected together by busses of the same conductive material formed between said electrodes to initially form a genetic structure which may then be customized for specific circuitry which comprises:
a) forming an array of active areas on said wafer by forming a pattern of insulation surrounding each active area;
b) forming a layer of conductive material over said wafer;
c) patterning said layer of conductive material to form:
i) one or more electrode strips over each of said active areas; and
ii) busses over said insulation and connected to each end of each of said electrode strips to be subsequently customized; and
d) then subsequently further patterning busses in a separate step to form interconnections, terminations, and contact pads for said electrode strips to thereby customize said integrated circuit structure;
whereby at least a portion of the interconnections between said electrode strips are made at the same level as said electrode strips by said subsequent patterning of said busses formed from the same conductive material as said electrode strips.

5,358,887
ULSI MASK ROM STRUCTURE AND METHOD OF MANUFACTURE
Gary Hong, Hsinchu, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan
Filed Nov. 26, 1993, Ser. No. 157,402
Int. Cl.[5] A01L *21/70*
U.S. Cl. 437—48 8 Claims



1. A method of manufacture of a ROM structure on a substrate, said method comprising
a) forming a field oxide layer on said substrate,
b) forming a first polysilicon layer on said field oxide layer and said substrate,
c) doping said first polysilicon layer with a dopant having a first conductivity type,
d) making said first polysilicon layer with a source/drain mask,
e) ion implanting a dopant having a second conductivity type into source/drain regions in said first polysilicon layer through said source/drain mask,
f) stripping said source/drain mask,
g) forming a gate oxide on said first polysilicon layer,
h) forming a second polysilicon layer on said gate oxide layer,
i) doping said second polysilicon layer with a dopant of the first conductivity type,
j) masking said second polysilicon layer with a word line mask,
k) etching said second polysilicon through said work line mask,
l) stripping said work line mask,
m) forming a first ROM code mask,
n) ion implanting a dopant having the first conductivity type to form a first ROM code region through said ROM code mask into said first polysilicon layer, and stripping said ROM code mask,
o) forming a second gate oxide layer on said second polysilicon layer,
p) forming a third polysilicon layer on said second gate oxide layer,
q) doping said third polysilicon layer with a dopants having the second conductivity type,
r) masking said third polysilicon layer with a second source/drain mask,
s) ion implanting dopants of the first conductivity type into said second source/drain regions in said third polysilicon layer through said second source/drain mask, and stripping said second source/drain mask,
t) forming a second ROM code mask, on said third polysilicon layer and
u) ion implanting dopants of the second conductivity type to form a second ROM code region through said second ROM codemask into said third polysilicon layer, and stripping said second ROM code mask.

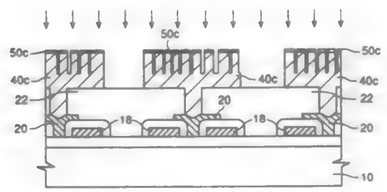
VOL 1167 ISS 4 OC 25 1994 UMI

5,358,888

METHOD FOR MANUFACTURING A CAPACITOR OF AN INTEGRATED SEMICONDUCTOR DEVICE HAVING INCREASED SURFACE AREA

Ji-hong Ahn, Seoul, and Young-woo Seo, Kyungsangbuk-do, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Dec. 18, 1992, Ser. No. 992,905
Claims priority, application Rep. of Korea, Dec. 18, 1991, 91-23197
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—52 6 Claims



1. A method of manufacturing a capacitor electrode of an integrated semiconductor memory device comprising the steps of:

a) forming a conductive layer on the entire surface of a semiconductor substrate;

b) forming a first material layer on the entire surface of said conductive layer;

c) forming a second material layer on the entire surface of said first material layer;

d) forming a second material layer pattern for storage electrode formation, by patterning said second material layer, using a mask pattern for storage electrode formation;

e) forming a third material layer on the entire surface of the resultant structure having said second material layer pattern thereon;

f) forming a spacer on the sidewall of said second material layer pattern by anisotropically etching said third material layer;

g) forming a first material layer pattern for storage electrode formation by anisotropically etching said first material layer, using said second material layer pattern and said spacer as etch-masks;

h) forming a conductive layer pattern for storage electrode formation by etching said conductive layer, using said first material layer pattern as an etch-mask;

i) forming a polysilicon layer having hemispherical grains on the entire surface of the structure resulting from step h, such that some of said hemispherical grains are spaced apart from one another to leave portions of said first material layer partially exposed;

j) forming an etched first material layer pattern by etching said first material layer, using said hemispherical grains of said polysilicon layer as an etch-mask;

k) removing said polysilicon layer having hemispherical grains;

l) partially etching said conductive layer pattern by anisotropically etching said conductive layer, using said etched first material layer pattern as an etch-mask; and

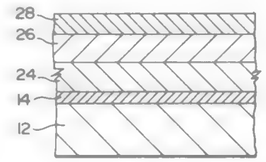
l) removing said etched first material layer pattern.

5,358,889

FORMATION OF RUTHENIUM OXIDE FOR INTEGRATED CIRCUITS

Ismail T. Emesh, Cumberland, and David R. McDonald, Ottawa, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 29, 1993, Ser. No. 53,755
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—60 12 Claims



1. A method of forming a conductive layer of ruthenium oxide for an integrated circuit, the method comprising:

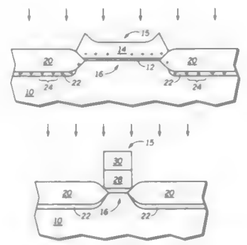
coating an integrated circuit substrate with a layer of an aqueous solution comprising a water soluble ruthenium (III) nitrosyl salt, a water soluble viscosity modifier, and a volatile organic acid, and subsequently heating the layer to a temperature in the range from 150° C. to 200° C. to form an amorphous phase of ruthenium oxide.

5,358,890

PROCESS FOR FABRICATING ISOLATION REGIONS IN A SEMICONDUCTOR DEVICE

Richard D. Sivan, and James R. Pfiester, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Apr. 19, 1993, Ser. No. 47,933
Int. Cl.[5] H01L *21/302*
U.S. Cl. 437—64 18 Claims



1. A process for fabricating isolation regions in a semiconductor device comprising:

providing a substrate having a surface;

forming an isolation mask on the substrate surface to overlie an active region and to leave exposed regions;

forming dielectric isolation regions in the exposed regions using a thermal oxidation process; and

implanting dopant atoms into the substrate through the dielectric isolation regions to form doped regions immediately below the dielectric isolation regions and coextensive with the dielectric isolation regions and spaced apart from the active region,

wherein the implant step is performed without removing the isolation mask, and

wherein the isolation mask substantially prevents the dopant atoms from entering the active region.

12. A process for fabricating isolation regions in a semiconductor device comprising:

providing a substrate having a surface;

forming a pad oxide layer on the substrate surface;

forming a silicon nitride layer to overly the pad oxide layer;

forming a germanium oxide layer to overly the silicon nitride layer;

patterning the germanium oxide layer and the silicon nitride layer to form an oxidation mask;

oxidizing the substrate to form dielectric isolation regions;

implanting dopant atoms into the substrate through the dielectric isolation regions to form doped regions immediately below the dielectric isolation regions; and

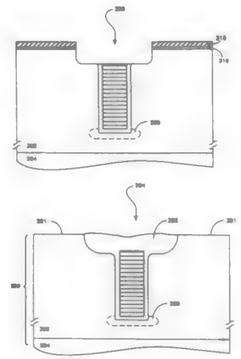
removing the germanium oxide layer in a water rinse.

5,358,891

TRENCH ISOLATION WITH PLANAR TOPOGRAPHY AND METHOD OF FABRICATION

Chi-Hwa Tsang, Aloha; Kerry L. Spurgin, Hillsboro; Deborah A. Parsons, Portland; William L. Hargrove, Sherwood, and Ganesan Radhakrishnan, Hillsboro, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 29, 1993, Ser. No. 84,795
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—67 15 Claims



1. A method of forming a trench and refilling said trench in a substrate comprising the steps of:

etching a trench in said substrate wherein said trench has a first depth and a first width;

filling said trench with a conformal material;

etching a recess into said refilled trench wherein said recess has a second depth and a second width wherein said second depth is less than said first depth; and

growing a thermal oxide in said recess until said thermal oxide is substantially planar with said substrate.

5,358,892

ETCH STOP USEFUL IN AVOIDING SUBSTRATE PITTING WITH POLY BUFFERED LOCOS

J. Brett Rolfson, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Feb. 11, 1993, Ser. No. 17,100
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—70 21 Claims

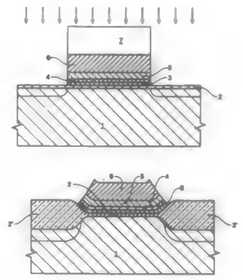
6. A process for isolating active areas on a semiconductor substrate, said process comprising the following steps of:

creating an oxide/nitride/oxide sandwich on a semiconductor substrate using thermal re-oxidation;

disposing a buffer layer superjacent said sandwich;

disposing a nitride layer superjacent said buffer layer;

masking said nitride layer, said nitride layer having masked portions and unmasked portions;



anisotropically etching said unmasked portions of said nitride layer through said buffer layer and said sandwich; and

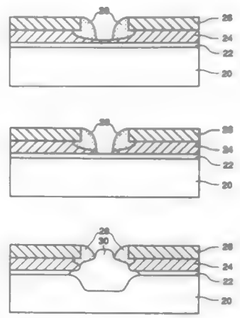
oxidizing said substrate.

5,358,893

ISOLATION METHOD FOR SEMICONDUCTOR DEVICE

Won-suk Yang, Suwon; Min-ak Hwang, and Chang-gyu Hwang, both of Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Sep. 10, 1993, Ser. No. 118,818
Claims priority, application Rep. of Korea, Jun. 10, 1993, 93-10568
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—70 16 Claims



1. A method of forming an isolation region in a semiconductor device comprising the steps of:

forming a first oxide film, a first polysilicon layer and a first anti-oxidative layer on a semiconductor substrate;

defining an isolation region;

etching said first anti-oxidative layer of said isolation region;

etching a first portion of said first polysilicon layer thereby leaving a remaining portion;

forming a sidewall spacer on a sidewall of said etched first anti-oxidative layer and on a sidewall of said etched first portion of said first polysilicon layer;

etching said remaining portion of said first polysilicon layer using said sidewall spacer as a mask; and

thermally oxidizing said semiconductor device to form said isolation region.

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5,358,894

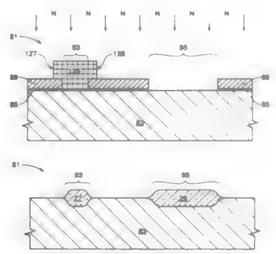
OXIDATION ENHANCEMENT IN NARROW MASKED FIELD REGIONS OF A SEMICONDUCTOR WAFER

Pierre Fazan; Viju Mathews; Gurtej S. Sandhu; Mohammed Anjum, and Hiang C. Chan, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 832,142, Feb. 6, 1992, abandoned. This application Dec. 30, 1993, Ser. No. 175,481

Int. Cl.[5] H01L *21/76*

U.S. Cl. 437—70 9 Claims



3. Method of forming semiconductor circuit devices formed on a semiconductor wafer substrate which include, as a part of each device, a plurality of active regions separated by field regions, wherein some of the field regions have narrow width dimension as compared to other field regions on the device, wherein an initial dielectric layer is formed over the substrate, a buffer layer of semiconductor material is formed over the initial dielectric layer, a further dielectric layer is deposited and photopatterned in order to define field regions, field oxide is formed in said defined field regions, the formation of field oxide consuming the buffer layer at the field regions, and removing said further dielectric layer, the method further comprising:

a) selecting areas on the wafer for retardation of an oxidation rate of the other field regions;

b) applying photoresist and patterning the photoresist in order to expose said selected areas to an impurity while covering said field regions having said narrow width dimension; and

c) applying an impurity to said substrate at said exposed selected areas, whereby the impurity retards the oxidation rate at said selected areas so that the oxidation growth in the exposed selected regions is equal to the oxidation growth in the field regions having narrow width dimension, thereby reducing a thinning effect at said field regions having a narrow width dimension.

5,358,895

LOW TEMPERATURE SILICON EPITAXY WITH GERMANIUM DOPING

John W. Steele, Chandler, and Cliff Stein, Gilbert, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 27, 1993, Ser. No. 67,888

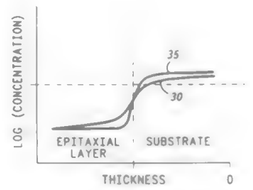
Int. Cl.[5] H01L *21/00*

U.S. Cl. 437—80 12 Claims

1. A method of forming a non-strained, germanium doped, silicon epitaxial layer, comprising the steps of:

providing a substrate; and

forming the non-strained, germanium doped, silicon epitaxial layer in the presence of a germanium source gas wherein the germanium reacts with oxygen to form a germanium oxide which sublimates from the surface of the non-strained, germanium doped, silicon epitaxial layer during formation resulting in a germanium percentage concentration in the non-strained, germanium doped, silicon epitaxial layer



wherein electrical characteristics of the non-strained, germanium doped, silicon epitaxial layer are essentially the same as a silicon epitaxial layer.

5,358,896

METHOD OF PRODUCING OPTICAL INTEGRATED CIRCUIT

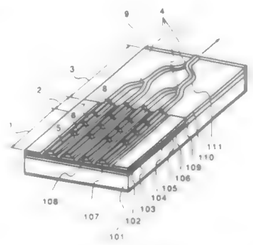
Keiro Komatsu; Tatsuya Sasaki; Tomoaki Kato, and Ikuo Mito, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 25, 1992, Ser. No. 841,025

Claims priority, application Japan, Feb. 25, 1991, 3-028994

Int. Cl.[5] H01S *3/19*; H04B *10/12*; G02B *6/12*

U.S. Cl. 437—89 3 Claims



1. Method for producing a custom optical integrated circuit for wavelength multiplexing a predetermined number of different light sources comprising the steps of:

forming an array of ridge-type active optical devices on a semiconductor substrate,

burying a portion of said semiconductor substrate not occupied by said ridge-type active optical devices with semiconductor layers comprising an optical guiding layer and a cladding layer,

forming a dielectric mask pattern to be used for selective growth on said semiconductor layers,

forming simultaneously, by selective growth only at windows of said dielectric mask, a plurality of Y-branching optical waveguides connected to said array of active optical devices, in such a pattern as to wavelength multiplex said predetermined number of different light sources.

5,358,897

METHOD OF MANUFACTURING RADIATION-EMITTING SEMICONDUCTOR DEVICES

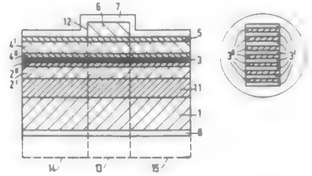
Adriaan Valster, and Coen T. H. F. Liedenbaum, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 94,585, Jul. 20, 1993, Pat. No. 5,296,717, which is a continuation of Ser. No. 691,205, Apr. 25, 1991. This application Dec. 17, 1993, Ser. No. 169,846

Claims priority, application Netherlands, May 23, 1990, 9001192; May 23, 1990, 9001193

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—129 6 Claims



1. A method of manufacturing a radiation-emitting semiconductor diode comprising the steps, whereby at least a first cladding layer of indium-aluminium-gallium phosphide and of a first conductivity type, an active layer of indium-gallium phosphide, and a second cladding layer of indium-aluminium-gallium phosphide and of a second conductivity type are provided in that order on a semiconductor substrate of gallium arsenide and of the first conductivity type, a buffer layer being provided before the application of the first cladding layer, characterized in that the semiconductor material chosen for the buffer layer is aluminium-gallium arsenide with an aluminium content which is at least equal to a minimum value belonging to the band gap of the active layer, while a growing temperature is chosen higher than 700° C.

5,358,898

METHOD OF MAKING A TUNABLE LASER DIODE HAVING A DISTRIBUTED FEEDBACK STRUCTURE

Shouichi Ogita, Sagamihara; Yuji Kotaki, Hadano, and Manabu Matsuda, Atsugi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 987,454, Dec. 7, 1992, abandoned, which is a division of Ser. No. 789,427, Nov. 5, 1991, Pat. No. 5,170,402, which is a continuation of Ser. No. 552,116, Jul. 13, 1990, abandoned. This application Dec. 23, 1993, Ser. No. 171,963

Claims priority, application Japan, Jul. 15, 1989, 1-184144; Sep. 12, 1989, 1-235928; Sep. 12, 1989, 1-235929; Sep. 19, 1989, 1-239150

Int. Cl.[5] H01L *21/203*

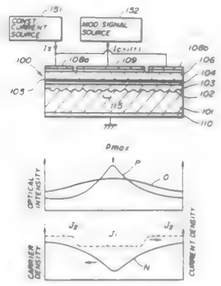
U.S. Cl. 437—129 4 Claims

1. A method for fabricating a laser diode comprising a generally rectangular layered body elongated in a first direction, said layered body comprising a substrate, a waveguide layer provided on the substrate, an active layer further provided on the waveguide layer, said wave guide layer and said active layer forming a mesa structure projecting upwards from the substrate, and a clad layer defined by a top surface provided on the substrate so as to bury the mesa structure, said method comprising:

forming a plurality of segmented grooves separated from each other in the first direction on the clad layer in correspondence to both sides of the mesa structure such that each of the segmented grooves extends in the first direction and reaches a depth corresponding to the mesa structure;

providing an insulator layer on the clad layer including the segmented grooves;

providing a plurality of contact openings on the top surface of the insulator layer each in correspondence to a part of the clad layer existing between a pair of segmented grooves opposite to each other across the mesa structure; and



providing a plurality of segmented electrodes respectively in correspondence to the plurality of contact openings.

5,358,899

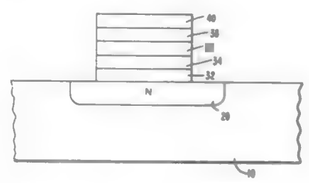
OXYGEN ASSISTED OHMIC CONTACT FORMATION TO N-TYPE GALLIUM ARSENIDE

Aaron J. Fleischman, Teaneck, N.J.; Naftali E. Lustig, Croton-on-Hudson, and Robert G. Schad, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 782,683, Oct. 25, 1991, Pat. No. 5,317,190. This application Feb. 9, 1994, Ser. No. 193,968

Int. Cl.[5] H01L *21/44*

U.S. Cl. 437—184 4 Claims



1. A method for fabricating a contact to GaAs, comprising:

depositing a first layer on said GaAs, said first layer comprising nickel;

depositing a second layer on said first layer, said second layer comprising gold;

depositing a third layer on said second layer, said third layer comprising germanium;

depositing a fourth layer on said third layer, said fourth layer comprising nickel;

depositing a fifth layer on said fourth layer, said fifth layer comprising metallic tungsten oxide; and

annealing said deposited layers to form a multi-metallic compound interposed between said GaAs and said metallic tungsten oxide layer wherein said multi-metallic compound comprises a gallium oxide compound.

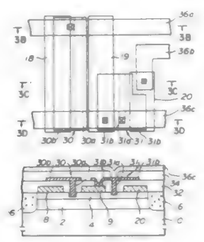
VOL 1167 ISS 4 OCT 25 1994 UMI

5,358,900

SEMICONDUCTOR DEVICE HAVING OVERLAPPING CONDUCTOR LAYERS AND METHOD OF PRODUCING THE SEMICONDUCTOR DEVICE

Masahisa Suzuki, Tokyo, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 809,041, Dec. 16, 1991, Pat. No. 5,252,843, which is a continuation of Ser. No. 573,758, Aug. 28, 1990, abandoned. This application Jul. 13, 1993, Ser. No. 90,279
Claims priority, application Japan, Sep. 1, 1989, 1-227214; Jan. 17, 1990, 2-7868
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—187 17 Claims



15. A method of producing a semiconductor device comprising the steps of:

forming a plurality of field effect transistor parts in an array on an active layer which is formed on a substrate, each of said field effect transistors including a source electrode, a drain electrode and a gate contact portion; and

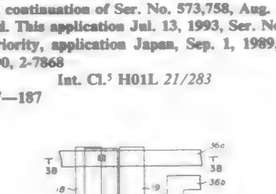
coupling arbitrary ones of said field effect transistor parts by forming overgate portions which make contact with corresponding gate contact portions of said field effect transistor parts, each of said overgate portions extending over at least a portion of one of the source and drain electrodes of a corresponding one of said field effect transistor parts.

5,358,901

PROCESS FOR FORMING AN INTERMETALLIC LAYER

Robert W. Flordalice, Austin; Stanley M. Filipiak, Pflugerville; Johnson O. Olowolafe, and Hisao Kawasaki, both of Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 1, 1993, Ser. No. 24,042
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—192 36 Claims



1. A process for forming an intermetallic layer over a semiconductor substrate comprising the steps of:

forming a first layer over the substrate, wherein the first layer is a solid and includes a first metal that has first metal atoms; and

reacting the first layer with a gas to form products including the intermetallic layer and a gaseous product, wherein:

the gas includes a second metal that has second metal atoms, which are different from the first metal atoms;

the intermetallic layer includes intermetallic molecules that include the first and second metals atoms;

all of the first metal atoms in the intermetallic layer are supplied by the first layer and all of the second metal atoms in the intermetallic layer are supplied by the gas; and

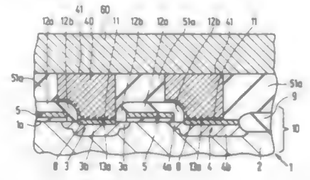
the substrate is at a temperature no higher than 700 degrees Celsius during the step of reacting.

5,358,902

METHOD OF PRODUCING CONDUCTIVE PILLARS IN SEMICONDUCTOR DEVICE

Robertus D. J. Verhaar, and Leendert De Bruin, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 946,043, Sep. 9, 1992, abandoned, which is a continuation of Ser. No. 727,290, Jul. 9, 1991, abandoned, which is a continuation of Ser. No. 513,692, Apr. 24, 1990, abandoned. This application Dec. 10, 1993, Ser. No. 165,556
Claims priority, application United Kingdom, Jun. 26, 1989, 8914626.0
Int. Cl.[5] H01L *21/441*
U.S. Cl. 437—192 9 Claims



1. A method of manufacturing a semiconductor device, which method comprises providing an organic polymer layer on a major surface of a semiconductor body, which major surface has adjacent thereto a device region bounded by an insulating region also adjacent to said major surface, by applying a layer of a flowable carbon-containing organic polymer, easily etchable in a plasma containing mostly oxygen, on said major surface, providing a masking layer over and in contact with the layer of the organic polymer, etching the layer of the organic polymer selectively with respect to the underlying device region and insulating region through a window in the masking layer with said plasma to form an opening exposing a contact area of a device region, depositing electrically conducting material in the opening to form a conductive pillar contacting the contact area, removing the remaining portions of the layer of the organic polymer thereby to expose side surfaces of said pillar, providing a layer of insulating material other than the layer of organic polymer to contact and to cover the pillar, etching the layer of insulating material to expose a top surface of the pillar and depositing electrically conductive material to contact the pillar.

5,358,903

CONTACT OF A SEMICONDUCTOR DEVICE AND ITS MANUFACTURING PROCESS

Jae K. Kim, Kyoungki, Rep. of Korea, assignor to Hyundai Electronics Industries Co. Ltd., Rep. of Korea

Filed Jun. 15, 1993, Ser. No. 77,136
Claims priority, application Rep. of Korea, Jun. 16, 1992, 92-10445
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—195 6 Claims

1. A method for reducing the width of conducting line of semiconductor device comprising the steps of:

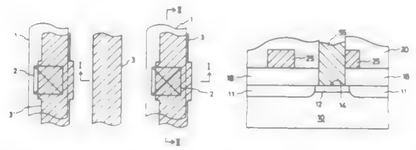
forming a first conducting line on a semiconductor substrate which has a field oxide and an exposed region formed by an opening in the field oxide, wherein said first conducting line is formed in said exposed region;

forming a first insulating layer over the top of said first conducting line and semiconductor substrate;

depositing a second conducting layer over the top of said first insulating layer and forming a second conducting line through a patterning process using a mask for the second conducting layer, said second conducting line being parallel to said first conducting line and having a width over at least a portion of its length that is no greater than the width of the underlying first conducting line;

forming a second insulating layer over the semiconductor substrate;

forming a photoresist pattern for a contact mask on the second insulating layer;



etching a contact area in the second insulating layer by using said photoresist pattern as a mask to expose the second conducting line in the portion of its length that is no wider than the underlying first conducting line;

sequentially etching the second conducting line and the first insulating layer that had been exposed at the contact area to create a contact hole that exposes a portion of the first conducting line;

removing the photoresist pattern; and

filling a third conducting layer for contact plug into the contact hole in order to make the first conducting line contact with the second conducting line.

5,358,904

SEMICONDUCTOR DEVICE

Gen Murakami, Machida; Kunihiro Tsubouchi, Hino; Masahiro Ichitani, Kodaira; Kunihiko Nishi, Kokubunji; Ichiro Anjoh, Koganei; Asao Nishimura, Ushiku; Makoto Kitano; Akihiro Yaguchi, both of Shimotsuga-yoshi; Sueo Kawai, Iwama; Masatsugu Ogata, Hitachi; Syunji Eguchi, Hitachi; Hiroyoshi Kokaku, Hitachi; Masanori Segawa, Hitachi; Hiroshi Hozoji, Hitachi; Takashi Yokoyama, Hitachi; Noriyuki Kinjo, Hitachi; Aino Kaneda, Yokohama; Junichi Saeki, Yokohama; Shozo Nakamura, Yokohama; Akio Hasebe, Yokohama; Hiroshi Kikuchi, Zushi; Isamu Yoshida, Yokohama; Takashi Yamazaki; Kazuyoshi Oshima, both of Ohme, and Tetsurou Matsumoto, Higashiyamato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

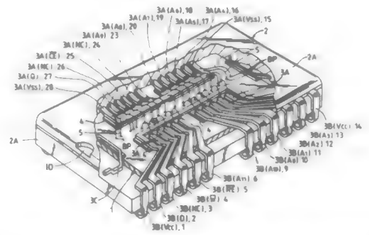
Division of Ser. No. 915,861, Jul. 20, 1992, abandoned, which is a continuation of Ser. No. 690,551, Apr. 24, 1991, abandoned, which is a continuation of Ser. No. 409,332, Sep. 19, 1989, Pat. No. 5,068,712. This application Dec. 14, 1992, Ser. No. 990,272
Claims priority, application Japan, Sep. 20, 1988, 63-236156; Mar. 20, 1989, 1-65844
The portion of the term of this patent subsequent to Nov. 26, 2008, has been disclaimed.
Int. Cl.[5] H01L *21/60*
U.S. Cl. 437—209 15 Claims

1. A method of fabricating a semiconductor device, comprising the steps of:

preparing a semiconductor chip having a principle surface with circuit elements and a plurality of external terminals thereon, and only one piece of lead frame having a plurality of leads each comprising an inner lead portion and an outer lead portion, said inner lead portion includes a first region, a second region and a stepped portion between said first region and said second region;

bonding said first region of said inner lead portion to said principle surface of said semiconductor chip through an insulating film;

electrically connecting each of said leads at said first region of said inner leads to each of said external terminals by wire and



molding said chip and said inner lead portions of said plurality of leads by a molding resin in such an arrangement that the chip is supported by said lead frame,

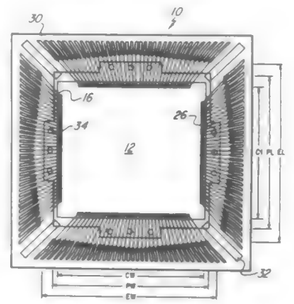
wherein a part of said inner lead portion extends to overlap with said semiconductor chip, and distance between said second region and said principle surface being larger than that of between said first region and said principle surface.

5,358,905

SEMICONDUCTOR DEVICE HAVING DIE PAD LOCKING TO SUBSTANTIALLY REDUCE PACKAGE CRACKING

Anthony M. Chiu, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 2, 1993, Ser. No. 42,026
Int. Cl.[5] H01L *21/60*
U.S. Cl. 437—209 20 Claims



1. A method for making an improved semiconductor chip package, comprising the steps of:

forming a die pad having at least one ear or tab extending outward from said die pad, said at least one ear or tab having at least one hole passing therethrough;

fixing a semiconductor chip to said die pad at a location spaced from said at least one hole;

electrically interconnecting lead fingers to said chip; and

sealing said die pad, said chip and said lead fingers with a packaging material, said packaging material extending around and through said at least one hole of said at least one ear or tab.

VOL 1167 ISS 4 OC 25 1994 UMI

5,358,906

METHOD OF MAKING INTEGRATED CIRCUIT PACKAGE CONTAINING INNER LEADS WITH KNURLED SURFACES

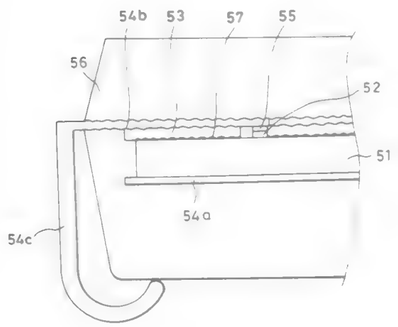
Hee G. Lee, Seoul, Rep. of Korea, assignor to Gold Star Electron Co., Ltd., Rep. of Korea

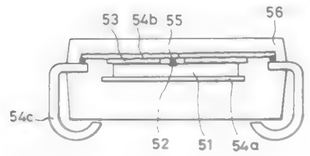
Division of Ser. No. 943,908, Sep. 11, 1992. This application Oct. 22, 1993, Ser. No. 141,455

Claims priority, application Rep. of Korea, Sep. 11, 1991, 15863/1991

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—217 8 Claims





1. A method of making a lead on chip package comprising the steps of:

preparing a lead frame including a paddle, a plurality of inner leads and a plurality of outer leads each extending from each corresponding inner lead;

die bonding a semiconductor chip to the paddle of the lead frame, the semiconductor chip having a plurality of bonding pads arranged in a line at the center portion of the upper surface of the semiconductor chip;

forming a plurality of minute protrusions at both side portions of the upper surface of the semiconductor chip except for its portions corresponding to the bonding pads;

forming an insulating film over the protrusion-carrying upper surface of the semiconductor chip, the insulating film having knurled surfaces at its upper and lower surfaces;

forming knurled surfaces at each of the inner leads, one of the knurled surfaces of each inner lead being in contact with one of the knurled surfaces of the insulating film;

forming a solder over each pad of the semiconductor chip;

soldering each inner lead to each corresponding solder so as to connect electrically the inner leads to the semiconductor chip;

molding a predetermined part including the semiconductor chip, the insulating film and the inner leads so as to form a package body; and

trimming and shaping the package body.

5,358,907

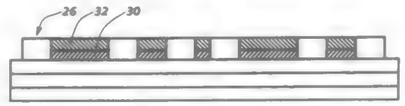
METHOD OF ELECTROLESSLY DEPOSITING METALS ON A SILICON SUBSTRATE BY IMMERSING THE SUBSTRATE IN HYDROFLUORIC ACID CONTAINING A BUFFERED METAL SALT SOLUTION

Kaiser H. Wong, Torrance, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 852,884, Mar. 17, 1992, abandoned, which is a continuation of Ser. No. 546,125, Jun. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 472,132, Jan. 30, 1990, abandoned. This application May 10, 1993, Ser. No. 58,891

Int. Cl.[5] H01L *21/02*

U.S. Cl. 437—230 33 Claims



1. A method of deposition of classes IB, IIB, IIIA, IVB, VB, VIB, VIIB, or VIII metals on a solid silicon compound member comprising the step of:

depositing an approximately from 1000 angstroms to 2000 angstroms thick layer of metal of classes IB, IIB, IIIA, IVB, VB, VIB, VIIB, or VIII on said solid silicon compound member by immersing said solid silicon compound member in a buffered aqueous salt solution comprising an etchant of hydrofluoric acid, a buffer and a dissolved metallic salt, wherein said metallic salt comprises a metal of classes IB, IIB, IIIA, IVB, VB, VIB, VIIB, or VIII metals, and wherein said buffered aqueous salt solution has a molarity of less than about 0.032M of metal cations from said dissolved metallic salt.

5,358,908

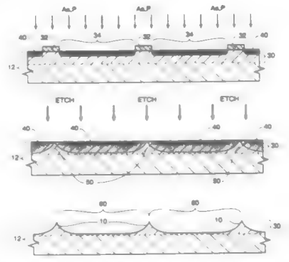
METHOD OF CREATING SHARP POINTS AND OTHER FEATURES ON THE SURFACE OF A SEMICONDUCTOR SUBSTRATE

Alan R. Reinberg, Westport, Conn., and Howard E. Rhodes, Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Feb. 14, 1992, Ser. No. 837,833

Int. Cl.[5] H01L *21/465*

U.S. Cl. 437—228 22 Claims



1. A method of etching an amount of material from a substrate, comprising the steps of:

a) doping a surface of the substrate with a first-type dopant;

b) forming a doping barrier on said surface of the substrate, said barrier having vias through which doping material can pass into said substrate;

c) counterdoping first regions of the substrate with a second type dopant and leaving second regions of the substrate uncounterdoped;

d) diffusing said second type dopant to form a three dimensional variation in first type and second type active doping concentrations of the substrate;

e) etching the substrate using said first type active doping concentration as an etch stop, said etch removing said first regions of the substrate which are counterdoped above a first active doping concentration and leaving said uncounterdoped second regions and portions of said first regions of the substrate which are counterdoped below said first active doping concentration intact to form a feature from said uncounterdoped regions and from said first regions which are counterdoped below said first active doping concentration.

5,358,909

METHOD OF MANUFACTURING FIELD-EMITTER

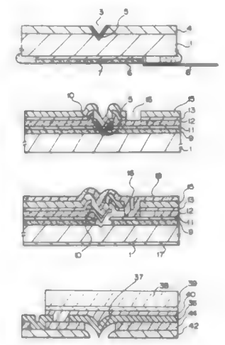
Gen Hashiguchi; Satoshi Kanazawa; Kazuhiko Kawamura, and Hikaru Sakamoto, all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 26, 1992, Ser. No. 840,896

Claims priority, application Japan, Feb. 27, 1991, 3-56075; Oct. 22, 1991, 3-302353

Int. Cl.[5] H01L *21/465*

U.S. Cl. 437—228 3 Claims



2. A method of manufacturing a field emitter cathode having a sharp point at a tip thereof, said method comprising the steps of:

(a) providing a substrate;

(b) forming a stack of a first insulating layer, a first electrically conductive layer and a second insulating layer, in this order, on the substrate;

(c) forming an opening in said stack to expose the substrate;

(d) depositing a silicon layer in the opening and on the second insulating layer;

(e) oxidizing the silicon layer to form a silicon oxide layer having a recess, the sides of which recess 10 intersect and form a sharp point at the bottom thereof;

(f) depositing a second electrically conductive layer on the silicon oxide layer, the second electrically conductive layer having a sharp point in the recess of the silicon oxide layer; and

(g) removing at least a portion of the silicon oxide layer to expose the sharp point of the second electrically conductive layer.

5,358,910

POROUS SILICON CARBIDE CERAMICS USING FILLED POLYSILOXANES

William H. Atwell; Chandan K. Saha, and Gregg A. Zank, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 55,892, May 3, 1993, Pat. No. 5,283,019. This application Sep. 20, 1993, Ser. No. 122,985

Int. Cl.[5] C04B *35/56*

U.S. Cl. 501—88 1 Claim

1. A porous body which was heated above 1600° C., comprising silicon carbide having a density less than 2.4 g/cm^3, an open porosity greater than 25% and a 3 point bending strength greater than 25 Ksi.

5,358,911

POLYMERIC BINDERS FOR CERAMIC PROCESSING

Kevin J. Moeggenborg, Aurora, and Peter E. Reed, Naperville, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

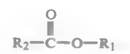
Filed Oct. 12, 1993, Ser. No. 134,721

Int. Cl.[5] C04B *35/02*

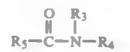
U.S. Cl. 501—94 11 Claims

1. A method for preparing a ceramic material, which comprises:

mixing a ceramic powder with an aqueous solution containing a substantially hydrolyzed polymer of an ester and an amide to produce a slurry, said ester being of the formula:



wherein R_1 is a vinyl group, and R_2 is an alkyl group having 1 to about 4 carbon atoms, and said amide being of the formula:



wherein R_3 is hydrogen or an alkyl group having 1 to about 4 carbon atoms, R_4 is a vinyl group, and R_5 is hydrogen or an alkyl group having 1 to about 4 carbon atoms said polymer having a weight-average molecular weight of about 2000 to about 500,000 g/mole;

drying the slurry to produce particles which include said polymer;

compacting the particles to produce an aggregate structure; and

heating the aggregate structure to produce a fired ceramic material.

5,358,912

BAS REINFORCED IN-SITU WITH SILICON NITRIDE

Douglas W. Freitag, and Kerry K. Richardson, both of Arlington, Tex., assignors to Loral Vought Systems Corporation, Grand Prairie, Tex.

Filed Aug. 8, 1991, Ser. No. 742,410

Int. Cl.[5] C04B *35/58*

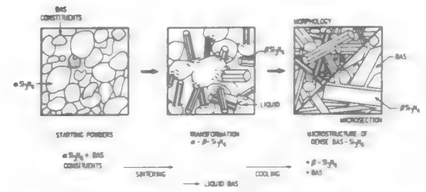
U.S. Cl. 501—97 15 Claims

1. A composition of matter, comprising:

(a) between about 50–90 volume % of Si_3N_4 of which 30–100 volume % is β-Si_3N_4 elongated fiber-like grains and the remainder is α-Si_3N_4; and

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(b) between about 10–50 volume % of barium aluminosilicate,



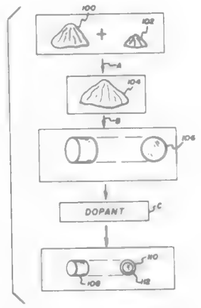
wherein said composition is an in-situ reinforced ceramic composite.

5,358,913

ZIRCONIA CERAMIC ARTICLES HAVING A TETRAGONAL CORE AND CUBIC CASING

Dilip K. Chatterjee; Debasis Majumdar; Syamal K. Ghosh, and Jose M. Mir, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 846,646, Mar. 5, 1992, Pat. No. 5,290,332. This application Aug. 18, 1993, Ser. No. 107,878
The portion of the term of this patent subsequent to Mar. 11, 2011, has been disclaimed.
Int. Cl.[5] C04B 35/48
U.S. Cl. 501—103 2 Claims



1. A sintered ceramic article including a core and a casing, said casing being exterior to and continuous with said core, said core consisting of a mass of sintered particles having a tetragonal crystalline structure and an elemental composition including Zr, O, and at least one element selected from the group consisting of Mg, Ca, Y, Sc and rare earth elements, said casing consisting of a mass of sintered particles having a cubic crystalline structure and an elemental composition including Zr, O, and at least one element selected from the group consisting of Mg, Ca, Y, Sc and rare earth elements.

5,358,914

METHODS OF MAKING SHAPED CERAMIC COMPOSITES

Marc S. Newkirk, Newark, Del., and Shirley L. Zwicker, Elkton, Md., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 659,481, Feb. 25, 1991, Pat. No. 5,162,273, which is a continuation of Ser. No. 368,484, Jun. 19, 1989, abandoned, which is a continuation of Ser. No. 109,972, Oct. 19, 1987, abandoned, which is a division of Ser. No. 861,025, May 8, 1986, abandoned. This application Nov. 9, 1992, Ser. No. 973,808
The portion of the term of this patent subsequent to Apr. 11, 2006, has been disclaimed.
Int. Cl.[5] C04B 35/65
U.S. Cl. 501—127 15 Claims

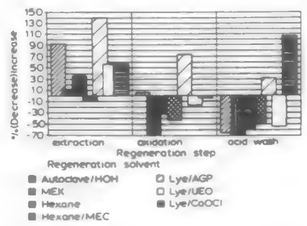
1. A method for producing a ceramic composite body of desired shape comprising a preform infiltrated by a ceramic matrix obtained by oxidation of a parent metal to form a polycrystalline material consisting essentially of (i) the oxidation reaction product of said parent metal with one or more oxidants including a vapor-phase oxidant, and, optionally, (ii) one or more metallic constituents, said method comprising the steps of: heating said parent metal to a temperature above its melting point but below the melting point of the oxidation reaction product to form a body of molten metal; contacting a zone of a permeable preform with said body of molten metal, said permeable preform having a porosity of between about 5–90% by volume and at least one defined surface boundary spaced from said contacting zone such that formation of said oxidation reaction product will occur into said preform and in a direction toward said defined surface boundary; and at said temperature (a) reacting said molten metal with said oxidant to form said oxidation reaction product, (b) maintaining at least a portion of said oxidation reaction product in contact with and between said molten metal and said oxidant, to progressively draw molten metal through the oxidation reaction product towards the oxidant so that oxidation reaction product continues to form at the interface between said oxidant and previously formed oxidation reaction product that has infiltrated the preform, and (c) continuing said reacting until said polycrystalline material has infiltrated said preform to said defined surface boundary to produce said ceramic composite body having a configuration of said preform.

5,358,915

PROCESS FOR REGENERATING SPENT ACID-ACTIVATED BENTONITE CLAYS AND SMECTITE CATALYSTS

Robert S. Nebergall, Lombard; Dennis R. Taylor, Palatine, and Carolyn J. Kucharz, Chicago, all of Ill., assignors to American Colloid Company, Arlington Heights, Ill.

Filed Feb. 12, 1993, Ser. No. 17,382
Int. Cl.[5] B01J 20/34, 38/60, 38/64; C11B 3/10
U.S. Cl. 502—27 18 Claims



1. An organic solvent-free method of regenerating a spent acid-activated clay, after said clay has adsorbed oil and carotenoid and/or chlorophyll contaminants from said oil, for further

adsorption of carotenoids and/or chlorophyll, comprising the steps of:

removing a majority of said oil from said spent acid-activated clay by extraction with water and essentially without an organic solvent, at a temperature of about 80° C. to about 370° C.; and

oxidizing said clay with an aqueous oxidant solution, after said oil removal step, to a degree sufficient such that the capacity to adsorb sufficient such that the capacity to adsorb carotenoids and/or chlorophyll is restored to at least 98% of its original activity for adsorption of carotenoids and/or chlorophyll.

5,358,916

CATALYST FOR PURIFYING EXHAUST GAS

Kazuhiko Shiokawa, and Takashi Itoh, both of Ichikawa, Japan, assignors to N.E. Chemcat Corporation, Tokyo, Japan

Filed May 17, 1993, Ser. No. 62,196
Claims priority, application Japan, Nov. 16, 1992, 4-329973
Int. Cl.[5] B01J 29/10, 29/20
U.S. Cl. 502—65 10 Claims

1. A catalyst for purifying exhaust gas, comprising a zeolite carrier having a mole ratio of SiO_2/Al_2O_3 of from 20 to 200, and a compound oxide of copper and silicon supported on the carrier.

5. The catalyst according to claim 1, further comprising at least one noble metal selected from the group consisting of Pt, Pd, Rh, Au and Ir.

8. The catalyst according to claim 1, further comprising an oxide of at least one rare earth element selected from the group consisting of La, Ce, Ho and Y.

5,358,917

HYDROCARBON CONVERSION CATALYST

Johannes A. R. Van Veen; Johannes K. Minderhoud, and Willem H. J. Stork, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 29, 1992, Ser. No. 968,134
Claims priority, application European Pat. Off., Nov. 1, 1991, 91202861.6
Int. Cl.[5] B01J 29/08, 29/16
U.S. Cl. 502—66 10 Claims

1. A composition useful as a catalyst support which comprises a crystalline aluminosilicate of the zeolite Y type having a water absorption capacity of at least 8% by weight of crystalline aluminosilicate, an inorganic oxide binder and a dispersion of silica-alumina in an alumina matrix, wherein the aluminosilicate is less that 25% by weight of the total composition, the binder is more than 25% by weight of the total composition and the dispersion is greater than 30% by weight of the total composition.

7. A supported catalyst composition comprising at least one metal hydrogenation component of Group VI metal with or without at least one metal hydrogenation catalyst component of Group VIII metal, the components being in oxidic or sulfidic form, supported on the composition of claim 1.

5,358,918

HYDROCARBON CONVERSION CATALYST FOR PRODUCING HIGH QUALITY GASOLINE AND C_3 AND C_4 OLEFINS

Lu Yukang; Huo Yongqing; Shu Xingtian; Wang Yousheng; Wang Zeyu; Zhang Shuqin; Liu Haibin, and Cui Suxin, all of Beijing, China, assignors to China Petro-Chemical Corporation and Research Institute of Petroleum Processing, Sinopec, both of Beijing, China

Filed Mar. 12, 1993, Ser. No. 30,579
Claims priority, application China, Oct. 22, 1992, 92111446.X
Int. Cl.[5] B01J 29/06
U.S. Cl. 502—67 19 Claims

1. A catalyst for converting hydrocarbons into C_3 and C_4 olefins and gasoline which comprises:

10–40 wt % of three zeolitic active components consisting of a rare-earth-containing high silica zeolite having the structure of pentasil (ZRP), a REY zeolite, and a high silica Y zeolite, based on the total weight of the catalyst; and

a synthetic matrix or a semi-synthetic matrix containing 10–40 wt % (based on the total weight of the catalyst) of silica and/or alumina binder.

5,358,919

PREPARATION AND USE OF ISOMERIZATION CATALYSTS

An-hsiang Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 12,662, Feb. 3, 1993, Pat. No. 5,292,988.
This application Oct. 1, 1993, Ser. No. 131,042
Int. Cl.[5] B01J 27/122
U.S. Cl. 502—225 20 Claims

1. A method of preparing a composition of matter consisting essentially of the steps of:

(1) impregnating alumina having a surface area of at least about 40 m^2/g with a solution of at least one metal salt selected from the group consisting of copper(II) sulfate, iron(II) sulfate, cobalt(II) sulfate, nickel(II) sulfate, manganese(II) sulfate, zinc sulfate and magnesium sulfate;

(2) calcining the material obtained in step (1) for a period of at least 0.5 hour at a temperature of about 400°–750° C.;

(3) heating for a period of at least one hour, at a temperature in the range of about 40° C. to about 90° C. and in substantial absence of water, a mixture consisting essentially of the calcined material obtained in step (2), aluminum chloride and at least one chlorinated hydrocarbon selected from the group consisting of dichloromethane, chloroform, carbon tetrachloride, 1,1-dichloroethane, 1,2-dichloroethane, 1,1,1-trichloroethane, 1,1-dichloropropane, 2,2-dichloropropane, 1-chlorobutane and 2-chloro-2-methylbutane, wherein the weight ratio of $AlCl_3$ to said calcined material obtained in step (2) is at least about 0.35:1; and

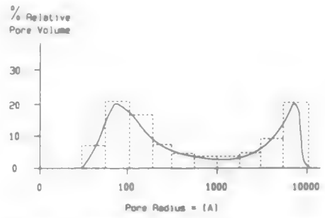
(4) separating the solid material contained in the reaction mixture formed in step (3) from said at least one chlorinated hydrocarbon under a dry gas atmosphere.

5,358,920

DEHYDROGENATING CATALYST FOR SATURATE HYDROCARBONS

Yongfu Ma; Peicheng Wu; Yong Sun; Sangjian Zhu; Yuexin Huang; Weiying Yang; Kaiwen Yao, and Youreng Zou, all of Nanjing, China, assignors to China Petro-Chemical Corporation and Jing Ling Petrochemical Company, Sinopec, Beijing, China

Filed Nov. 19, 1993, Ser. No. 155,400
Claims priority, application China, Dec. 21, 1992, 92114525.X
Int. Cl.[5] B01J 23/78, 21/04, 35/08; C07C 5/333
U.S. Cl. 502—330 8 Claims



1. A long life supported catalyst for use in dehydrogenating saturated hydrocarbons consisting essentially of 0.01–2.0% by weight of platinum, 0.01–5.0% by weight of tin, 0.01–5.0% by weight of sodium, and the remainder large pore diameter

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τ-Al_2O_3 support, having a dual pore diameter distribution wherein at least 40% of the total pore volume is contributed by pores having a pore diameter in the range of 1000–10000 Å.

5,358,921

SELECTIVE REMOVAL OF HYDROGEN SULFIDE OVER A ZINC OXIDE AND SILICA ABSORBING COMPOSITION

Dennis R. Kidd, Dewey; Gary A. Delzer, Bartlesville; Donald H. Kubicek, Bartlesville, and Paul F. Schubert, Bartlesville, all of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 875,005, Apr. 24, 1992, Pat. No. 5,248,489, which is a continuation of Ser. No. 363,030, Jun. 7, 1989, abandoned. This application May 3, 1993, Ser. No. 55,586

Int. Cl.[5] B01J *20/10, 20/30*

U.S. Cl. 502—407 **8 Claims**

1. An absorbing composition comprising zinc oxide and silica in the substantial absence of alumina.

5. A method for preparing an absorbing composition comprising zinc oxide and silica in the substantial absence of alumina comprising the steps of:

a.) mixing zinc oxide or a precursor of zinc oxide with silica or a precursor of silica to form a homogeneous mixture thereof;

b.) adding a dilute acid to said homogeneous mixture to form an extrudable paste;

c.) extruding said extrudable paste to form an extrudate;

d.) drying said extrudate; and

e.) calcining the dried extrudate to produce said composition.

5,358,922

THERMAL TRANSFER IMAGE RECORDING MATERIAL AND IMAGE USING METAL ION PROVIDING COMPOUND

Noritaka Nakayama; Katsunori Kato; Tatsuo Tanaka; Yoriko Nakayama, and Tawara Komamura, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jun. 14, 1993, Ser. No. 77,013

Claims priority, application Japan, Jul. 16, 1992, 4-189575; Sep. 7, 1992, 4-238298

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **8 Claims**

8. A thermal transfer image forming method comprising the steps of:

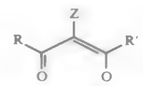
(a) superposing an image receiving layer of an image receiving material upon an ink sheet comprising a support having thereon an ink layer containing a heat diffusible dye capable of forming a chelated dye, said image receiving layer coming into contact with the ink layer and said image receiving layer containing a binder and a metal ion providing compound;

(b) applying imagewise heat to the superposed material to transfer the dye in the ink layer to the image receiving layer and forming a chelated dye image by reaction of said metal ion providing compound with said heat diffusible dye on the image receiving layer; and

(c) peeling apart the ink sheet from the superposed material; wherein said metal ion providing compound is represented by the following Formula (I):

$$M^{2+}(X^-)_2 \qquad \text{(Formula (I)}$$

wherein M^{2+} represents a divalent transition metal ion; and X represents a ligand capable of combining with the metal ion to form a complex, said ligand being represented by the following Formula (II):



Formula (II)

wherein Z represents an alkyl group, an aryl group, an aryloxycarbonyl group, an alkoxycarbonyl group, an acyl group, a halogen atom, or a hydrogen atom; and R and R′ independently represent an alkyl group or an aryl group, provided that when Z represents a hydrogen atom, R and R′ are not simultaneously methyl groups, or at least one of R and R′ may combine with Z to form a ring.

5,358,923

COLOR SHEET AND COLOR TRANSFER METHOD USING THE SAME

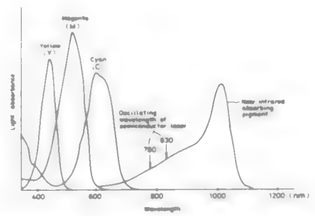
Takanori Mitsuhata, and Fumio Matsui, both of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 9, 1993, Ser. No. 88,548

Claims priority, application Japan, Jul. 10, 1992, 4-183673

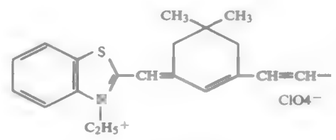
Int. Cl.[5] B41M *5/035, 5/38*

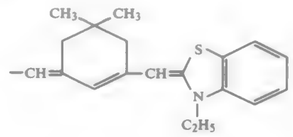
U.S. Cl. 503—227 **10 Claims**



6. A color transfer method comprising the steps of:

preparing a color sheet comprising a flexible substrate and a dye layer formed on said substrate made of a mixture of at least one sublimating dye and a near infrared absorbing pigment which exhibits a light absorption property for a near infrared region from 760 to 830 nm without exhibiting a substantial light absorption property for a visible wavelength region from 380 to 780 nm wherein said near infrared absorbing pigment has the following structural formula:





abutting said dye layer of said color sheet onto an image receiving sheet to be printed; and

irradiating an optical laser beam to said dye layer, the laser beam consisting of at least one wavelength only within said near infrared region to be absorbed by said near infrared absorbing pigment, whereby light energy absorbed by said near infrared absorbing pigment is converted into heat energy thereby sublimating said sublimating dye and transferring the sublimated dye onto said image receiving sheet arranged so as to face the dye layer.

5,358,924

3-HYDROXY-4-ARYL-5-OXO-PYROZOLINE DERIVATIVES, COMPOSITIONS AND USE

Bernd-Wieland Krüger, Bergisch-Gladbach; Reiner Fischer, Monheim; Heinz-Jurgen Bertram, Holzminden; Thomas Bretschneider, Siegburg; Stefan Böhm, Leverkusen; Andreas Krebs, Odenthal-Holz; Thomas Schenke, Bergisch Gladbach; Hans-Joachim Santel, Leverkusen; Klaus Lurssen; Robert R. Schmidt, both of Bergisch Gladbach; Christoph Erdelen, Leichlingen; Ulrike Wachendorff-Neumann, Monheim, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

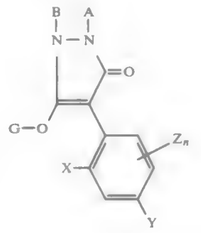
Continuation-in-part of Ser. No. 849,863, Mar. 12, 1992, abandoned. This application Dec. 31, 1992, Ser. No. 999,058

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1991, 4109208

Int. Cl.[5] A01N *57/24;* **C07D** *237/26;* **C07F** *9/40*

U.S. Cl. 504—197 **20 Claims**

1. A 3-hydroxy-4-aryl-5-oxo-pyrazoline derivative of the formula (I)



(I)

in which

A and B together represent a saturated or unsaturated butylene radical,

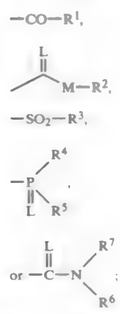
X represents alkyl, halogen or alkoxy,

Y represents hydrogen, alkyl, halogen, alkoxy or halogenoalkyl,

Z represents alkyl, halogen or alkoxy,

n represents a number 0, 1, 2 or 3,

G represents the group



(b), (c), (d), (e), (f)

in which

L and M represent oxygen and/or sulphur,

R^1 represents optionally halogen-substituted alkyl, alkenyl, alkoxyalkyl, alkylthioalkyl, polyalkoxyalkyl or cycloalkyl which can be interrupted by hereto atoms, optionally substituted phenyl, optionally substituted phenylalkyl, substituted hetaryl, substituted phenoxyalkyl or substituted hetaryloxyalkyl,

R^2 represents optionally halogen-substituted alkyl, alkenyl, alkoxyalkyl, polyalkoxyalkyl or optionally substituted phenyl or benzyl,

R^3, R^4 and R^5 independently of one another represent optionally halogen-substituted alkyl, alkoxy, alkylamino, dialkylamino, alkylthio, alkenylthio, alkynylthio or cycloalkythio, and optionally substituted phenyl, phenoxy or phenylthio, and

R^6 and R^7 independently of one another represent hydrogen, optionally halogen-substituted alkyl, alkenyl, alkoxy or alkoxyalkyl, optionally substituted phenyl, optionally substituted benzyl, or

R^6 and R^7 together represent an alkylene radical which is optionally interrupted by oxygen.

5,358,925

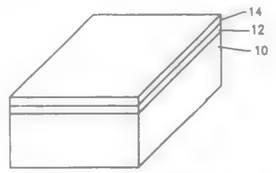
SILICON SUBSTRATE HAVING YSZ EPITAXIAL BARRIER LAYER AND AN EPITAXIAL SUPERCONDUCTING LAYER

George A. Neville Connell, Cupertino; David B. Fenner, Menlo Park; James B. Boyce, Los Altos, and David K. Fork, Palo Alto, all of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Continuation of Ser. No. 693,770, Apr. 3, 1991, abandoned, which is a continuation of Ser. No. 510,699, Apr. 18, 1990, abandoned. This application Aug. 10, 1992, Ser. No. 927,791

Int. Cl.[5] H01L *39/22, 39/12*

U.S. Cl. 505—235 **2 Claims**



1. A structure comprising a monocrystalline silicon substrate having a major surface,

an epitaxial layer of monocrystalline yttria stabilized zirconia formed on said major surface, and

an exiptaxial layer of monocrystalline high temperature superconductor material selected from a group consisting of $YBa_2Cu_3O_{7-\delta}$ and $Bi_2Sr_2Ca_{n-1}Cu_nO_{2n+4}$, where n is an integer an $0 \leq \delta \leq 0.5$, formed on said layer of yttria stabilized zirconia, said high temperature superconductor material having a resistivity of 300° K. of no more than 300 micro-ohn-centimeter and a ratio of resistivity at 300° K. to resistivity at 100° K. of 3.0 ± 0.2.

an in-plane (100) direction of said monocrystalline yttria stabilized zirconia being parallel to an in-plane (100) direction of said monocrystalline silicon.

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5,358,926

EPITAXIAL THIN SUPERCONDUCTING THALLIUM-BASED COPPER OXIDE LAYERS

William L. Olson, Solvang; Michael M. Eddy, Goleta; Robert B. Hammond, Santa Barbara; Timothy W. James, Goleta, and McDonald Robinson, Santa Barbara, all of Calif., assignors to Superconductor Technologies Inc., Santa Barbara, Calif.

Continuation of Ser. No. 852,352, Mar. 17, 1992, abandoned, which is a continuation of Ser. No. 712,147, Jun. 6, 1991, abandoned, which is a continuation of Ser. No. 238,919, Aug. 31, 1988, Pat. No. 5,071,830. This application Jul. 29, 1993, Ser. No. [illegible]

Int. Cl.[5] H01L *39/00*

U.S. Cl. 505—210 15 Claims

1. A superconducting article comprising an oriented, epitaxial superconducting layer of thallium, optionally calcium, barium and copper oxide on a crystalline substrate, said layer being at least 30 Å thick, and having a c-axis oriented normal to the crystalline substrate surface and being epitaxial to the substrate in that the a and b axes of the layer are at a fixed relationship to the substrate.

5,358,927

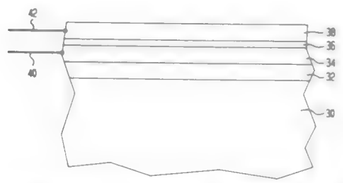
GROWTH OF A,B-AXIS ORIENTED PERVOSKITE THIN FILMS

Arun Inam, Somerset; Ramamoorthy Ramesh, Eatontown, and Charles T. Rogers, Jr., Oceanport, all of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed May 31, 1990, Ser. No. 531,255

Int. Cl.[5] C30B *25/22*

U.S. Cl. 505—434 16 Claims



1. A method of growing an oriented perovskite film, comprising the steps of:

depositing on a crystalline substrate a first film of a first perovskite composition under first growth conditions favoring growth of said first film as an a,b-axis oriented film; and

depositing on said first film a second film of a second perovskite composition under second growth conditions favoring, in the absence of said first film, growth of said second film as a c-axis oriented film, wherein said second film grows on said first film as an a,b-axis oriented film.

5,358,928

HIGH TEMPERATURE SUPERCONDUCTOR STEP-EDGE JOSEPHSON JUNCTIONS USING TI-CA-BA-CU-O

David S. Ginley, Evergreen, Colo.; Vincent M. Hietala, Placitas, N. Mex.; Gert K. G. Hohenwarter, Madison, Wis.; Jon S. Martens, Sunnyvale, Calif.; Thomas A. Plut, Albuquerque, N. Mex.; Chris P. Tigges, Albuquerque, N. Mex.; Gregory A. Vawter, Albuquerque, N. Mex., and Thomas E. Zipperian, Albuquerque, N. Mex., assignors to Sandia Corporation, Albuquerque, N. Mex.

Filed Sep. 22, 1992, Ser. No. 949,098

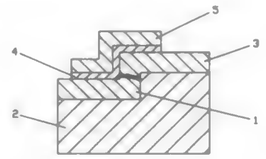
Int. Cl.[5] H01L *39/22, 27/12;* H01B *12/00*

U.S. Cl. 525—192 5 Claims

1. A hysteretic Josephson junction comprising:

(a) a crystalline substrate having a step etched into said substrate;

(b) a film of TlCaBaCuO, a high temperature superconductor, deposited on said crystalline substrate where said Tl film overlays said step, thus, creating a grain boundary at said step with the resultant formation of a non-hysteric Josephson junction;



(c) a thin dielectric layer overlaying the region of said Tl film containing the grain boundary;

(d) a metal cap wherein said metal cap overlays said dielectric over the region in the Tl film containing the grain boundary creating a capacitor when said cap is electrically coupled to said Tl film and where the added capacitance coupled with said non-hysteretic Josephson junction forms a hysteretic Josephson junction.

5,358,929

METHOD OF JOINING SUPERCONDUCTING WIRE USING OXIDE HIGH-TEMPERATURE SUPERCONDUCTOR

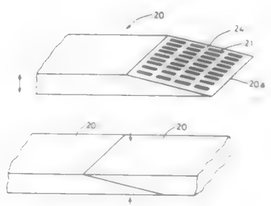
Jun Fujikami; Kenichi Sato; Nobuhiro Shibuta; Hidehito Mukai, and Takeshi Kato, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 19, 1993, Ser. No. 19,976

Claims priority, application Japan, Feb. 20, 1992, 4-033421; Jun. 16, 1992, 4-156781

Int. Cl.[5] H01R *43/00*

U.S. Cl. 505—100 26 Claims



1. A method of joining superconducting multi-filament wires each comprising a plurality of oxide superconductor filaments, said method comprising the steps of:

exposing portions of said oxide superconductor filaments in portions of said superconducting multi-filament wires to be joined with each other to form partially exposed superconductor filaments;

superposing said exposed oxide superconductor filaments with each other;

joining the superposed oxide superconductor filaments by applying a plastic deformation processing to said superposed portions of said superconducting multi-filament wires; and

performing a heat treatment step wherein said plastic deformation processing is applied before said heat treatment or simultaneously with said heat treatment.

5,358,930

2-ETHOXY-4-FORMYL PHENYL ESTER OF PROPIONIC ACID AND USE IN AUGMENTING OR ENHANCING THE AROMA OF PERFUME COMPOSITIONS, COLOGNES AND PERFUMED ARTICLES

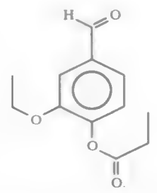
Mark A. Sprecker, Sea Bright; Richard A. Weiss, Pine Brook; Richard M. Boden, Ocean, and Olivier J. Gillotin, Denville, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Dec. 17, 1993, Ser. No. 168,349

Int. Cl.[5] A61K *7/46*

U.S. Cl. 512—21 12 Claims

1. 2-ethoxy-4-formyl phenyl ester of propionic acid having the structure:



2. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of adding to said consumable material an aroma augmenting, imparting or enhancing quantity of 2-ethoxy-4-formyl phenyl ester of propionic acid defined according to claim 1.

5,358,931

INTERACTION OF THERMAL HYSTERESIS PROTEINS WITH CELLS AND CELL MEMBRANES AND ASSOCIATED APPLICATIONS

Boris Rubinsky, Albany, Calif.; Arthur L. Devries, Urbana, Ill., and Amir Arav, Albany, Calif., assignors to The Regents of the University of California, Alameda, Calif.

Continuation-in-part of Ser. No. 910,151, Jul. 16, 1992, abandoned, Ser. No. 910,254, Jul. 16, 1992, abandoned, and Ser. No. 562,461, Aug. 3, 1990, abandoned, which is a continuation-in-part of Ser. No. 466,050, Jan. 17, 1990, abandoned. This application Jan. 15, 1993, Ser. No. 4,919

Int. Cl.[5] A61K *37/00, 37/10;* A01N *1/02*

U.S. Cl. 514—12 38 Claims

1. A method for the protection and preservation of the viability of mammalian cells undergoing exposure to a non-physiological temperature of up to about 40° C., said method comprising contacting said cells with a physiologically compatible liquid solution comprising one or more proteins having the molecular structure of thermal hysteresis proteins isolated and purified from a polar fish species.

5,358,932

HYBRID PROTEIN C

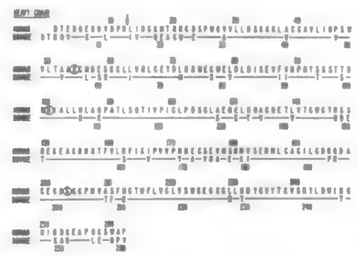
Donald C. Foster, and Richard D. Holly, both of Seattle, Wash., assignors to ZymoGenetics, Inc., Seattle, Wash.

Continuation of Ser. No. 634,988, Dec. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 515,378, Apr. 27, 1990, which is a continuation-in-part of Ser. No. 458,856, Dec. 29, 1989, abandoned. This application Sep. 23, 1993, Ser. No. 126,440

Int. Cl.[5] C07K *15/06*

U.S. Cl. 514—12 18 Claims

1. A composition comprising protein C having a light chain and human-like heavy chain, where said heavy chain contains at least one amino acid substitution as compared to the human activated protein C heavy chain sequence of FIG. 8 and said substitution is within Lys-Met-Thr-Arg-Arg, amino acids 17–21; His-Ser-Arg-Glu-Lys-Gly-Ala, amino acids 146–153; or His-Asn-Gly-Cys-Ser-Glu-Val-Met-Ser-Asn-Met, amino acids 171–181, wherein said protein C when activated has anticoagulant activity and wherein said one or more amino acid substitutions result in increased resistance to inactivation by human plasma or alpha-1-antitrypsin when compared to naturally occurring activated human protein C.



5,358,933

SYNTHETIC PEPTIDES FOR DETOXIFICATION OF BACTERIAL ENDOTOXINS AND FOR THE PREVENTION AND TREATMENT OF SEPTIC SHOCK

Massimo Porro, Siena, Italy, assignor to BiosYnth S.r.l., Siena, Italy

Continuation of Ser. No. 658,744, Feb. 11, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 49,871

Int. Cl.[5] A61K *37/02;* C07K *7/06*

U.S. Cl. 514—15 16 Claims

1. A peptide of the formula:

Cys-Lys-Phe-Leu-Lys-Lys-Cys S----------S (SEQ ID NO:1)

5,358,934

MATERIALS AND METHODS FOR CONTROL OF PESTS

Dov Borovsky, Vero Beach, and David A. Carlson, Gainesville, both of Fla., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C. and University of Florida, Gainesville, Fla.

Filed Dec. 11, 1992, Ser. No. 989,290

Int. Cl.[5] A61K *37/00;* C12N *9/00*

U.S. Cl. 514—17 9 Claims

1. An isolated peptide having an amino acid sequence consisting of SEQ ID NO. 1, or a salt or derivative thereof wherein said derivative is an acid addition salt or a methyl or ethyl ester of said amino acid sequence.

5,358,935

NONANTIGENIC KERATINOUS PROTEIN MATERIAL

Robert A. Smith, 2246 E. Northside Dr., Jackson, Miss. 39211; Cheryl R. Blanchard, and James Lankford, Jr., both of San Antonio, Tex., assignors to Robert Allen Smith, Jackson, Miss.

Filed Nov. 19, 1992, Ser. No. 978,768

Int. Cl.[5] A61F *2/02;* A61K *37/12;* C07K *3/02*

U.S. Cl. 514—21 12 Claims

1. A nonantigenic implant material comprising:

(a) a nonantigenic keratinous protein processed to a powder form;

(b) a biocompatible material combined with the processed keratinous protein to provide a nonantigenic interface between an implant recipient's tissue and the biocompatible material; and

(c) said processed keratinous material is coated onto the surface of the biocompatible material.

VOL 1167 ISS 4 OCT 25 1994 UMI

5,358,936

ANIONIC FURANOSE DERIVATIVES, METHODS OF MAKING AND USING THE SAME

Paul Gordon, 1220 E. 48th St., Chicago, Ill. 60615, and Edward P. Gamson, Highland Park, Ill., assignors to Paul Gordon, Chicago, Ill.

Continuation-in-part of Ser. No. 563,103, Aug. 3, 1990, Pat. No. 5,095,104. This application Jul. 31, 1991, Ser. No. 738,597
The portion of the term of this patent subsequent to Mar. 10, 2009, has been disclaimed.
Int. Cl.[5] A61K *31/70*; C07H *13/02, 15/04, 23/00*
U.S. Cl. 514—25 55 Claims

42. A method of treating an inflammatory or gastric ulcerative condition in a mammal comprising administering to a mammal with an inflammatory or gastric ulcerative condition an anti-inflammatory effective amount of an aldofuranose ring compound whose carbon skeleton contains 5–7 carbon atoms, whose 1- and 2-positions have a substituent group that is electrically neutral at pH 7.2–7.6, the 1-position substituent group being hydroxyl, C_1–C_8 ester, C_1–C_6 alkyl ether, benzyl ether, C_1–C_6 or aryl urethane, and the 2-position substituent being hydrogen or a 1-position substituent group, or the 1- and 2-position substituent groups together forming an alkylidene bis-ether of the formula CR^3R^4 wherein R^3 and R^4 are independently hydrogen or C_1–C_6 alkyl with the total number of carbon atoms in CR^3CR^4 being nine or fewer or CR^3R^4 together form an unsubstituted cycloaliphatic group containing a total of 5–9 carbon atoms, and two through four of whose remaining skeletal ring carbons present having an oxygen-linked radical that is a sulfate ester, phosphate ester or an ether-linked carbon-bonded carboxylate that bears an anionic charge at pH 7.2–7.6, which charge is neutralized by a pharmaceutically acceptable cation.

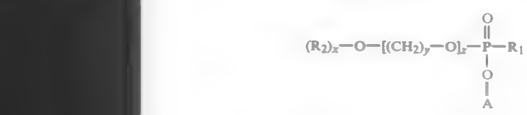
5,358,937

GLYCOSYL PHOSPHOLIPID DERIVATIVES OF NUCLEOSIDES AND THEIR USE AS MEDICINES

Tam Huynh Dinh, Croissy Sur Seine; Catherine Gouyette, Vanves; Jean Igolen, Le Mesnil St-Denis; Robert Fauve, Sevres; Luc Montagnier, Le Plessis Robinson; Yvette Henin, and Olivier Schwartz, both of Paris, all of France, assignors to Institut Pasteur, Paris, France

Continuation of Ser. No. 582,966, Nov. 15, 1990, abandoned. This application Sep. 21, 1992, Ser. No. 947,991
Claims priority, application France, Jan. 30, 1989, 89 01134
Int. Cl.[5] A61K *31/70*; C07H *19/10*
U.S. Cl. 514—49 18 Claims

1. A glycosylated nucleotide of the formula:



wherein:

R_1 is a nucleoside derivative selected from the group consisting of 3'-azidothymidine (AZT); 2',3'-dideoxythymidine (ddT); and 2'-deoxy-5-fluorouridine (dFU);

R_2 is a hexose or pentose sugar, with the exception of glucose when x is 1;

A is a hydrogen atom or an alkyl or alkoxy chain containing from 5 to 20 carbon atoms, said alkyl or alkoxy chain having at its extremity a group selected from the group consisting of a hydrogen atom and an NR'R" group, wherein R' and R" represent hydrogen or an alkyl group of 1 to 4 carbon atoms;

x is a number from 1 to 12;

y is a number from 1 to 4; and

z is 0 or 1; and

further wherein:

attachment of said hexose sugar is at position 1 or position 6 of said hexose sugar, and attachment of said pentose sugar is at position 1 or position 5 of said pentose sugar.

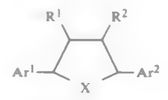
5,358,938

COMPOUNDS AND METHODS FOR THE TREATMENT OF DISORDERS MEDIATED BY PLATELET ACTIVATING FACTOR OR PRODUCTS OF 5-LIPOXYGENASE

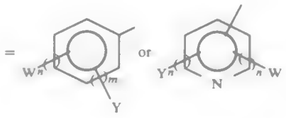
Xiong Cai, Allston; Saijat Hussoin, Cambridge; San-Bao Hwang, Wayland; David Killian, Cambridge, all of Mass., and T. Y. Shen, Charlottesville, Va., assignors to CytoMed, Inc., Cambridge, Mass.

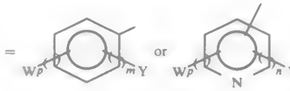
Filed Jul. 13, 1992, Ser. No. 912,788
Int. Cl.[5] A61K *31/535*; H01N *43/40*; C07D *333/22, 413/00*
U.S. Cl. 514—231.5 25 Claims

1. Compounds of the formula:



wherein:

Ar^1 =  or

Ar^2 =  or

where

X is O, S, S(O), $S(O)_2$, CR^9, or NR^{10};

W is independently —AN(OM)C(O)N(R^3)R^4, —AN(R^3)-C(O)N(OM)R^3, —AN(OM)C(O)R^4, —AC(O)N(OM)R^4, —N(OM)C(O)N(R^3)R^4, —N(R^3)C(O)N(OM)R^4, —N-(OM)C(O)R^4, —C(O)N(OM)R^4, —OR^6N(R^5)-R^6—(C_5H_4N)R^6R^7, —OR^6N(COR^5)R^6—(C_5H_4N)R^6R^7, —OR^6O(-CO)N(CO_2R^6)R^6(C_5H_4N)R^6R^7, —A(C_5H_4N)R^6R^7;

n is 1 or 2;

m is 1, 2 or 3;

p is 0 or 1;

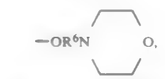
A is alkyl, alkenyl, alkynyl, alkyaryl, aralkyl, halo lower alkyl, halo lower alkyl, halo lower alkynyl, —C^{1-10}alkyl-(oxy)C^{1-10}alkyl, —C^{1-10}alkyl((thio)C^{1-10}alkyl, —(R^3)-C(O)alkyl, —N(R^3)C(O)alkenyl, —N(R^3)C(O)alkynyl, —N(R^3)C(O)(alkyl)oxy(alkyl), —N(R^3(C(O)(alkyl)thio(alkyl), —N(R^3)C(O)N(alkyl), —N(R^3)C(O)N(alkenyl), —N(R^3)C(O)N(alkynyl), —N(R^3)C(O)N(alkyl)oxy(alkyl), —N(R^3)C(O)N(alkyl)thio(alkyl), —N(R^3)C(O_2)alkyl, —N(R^3)C(O_2)alkenyl, —N(R^3)C(O_2)alkynl, —N(R^3)C(O_2)(alkyl)oxy(alkyl), —N(R^3)C(O_2)(alkyl)thio(alkyl) —OC(O_2)alkyl, —OC(O_2)alkenyl, —OC(O_2-)alkynyl, —OC(O_2)(alkyl)oxy(alkyl), —OC(O_2)(alkyl)thio(alkyl), —N(R^3)C(S)alkyl, —N(R^3)C(S)alkenyl, —N(R^3)C(S)alkynyl, —N(R^3)C(S)alkyl)oxy(alkyl), —N(R^3)C(S)(alkyl)thio(alkyl), —N(R^3)C(S)N(alkyl), —N(R^3)C(S)N(alkenyl), —N(R^3)C(S)N(alkynyl), —N(R^3)C(S)N(alkyl)oxy(alkyl), —N(R^3)C(S)N(alkyl)-thio(alkyl), —N(R^3)C(S)S(alkyl), —N(R^3)C(S)S(alkenyl), —N(R^3)C(S)S(alkynyl), —N(R^3)C(S)S(alkyl)oxy(alkyl), —N(R^3)C(S)S(alkyl)thio(alkyl), —SC(S)S(alkyl), —SC(S)S(alkenyl), —SC(S)S(alkynyl), —SC(S)S(alkyl-)oxy(alkyl), and —SC(S)S(alkyl)thio(alkyl);

M is hydrogen, a pharmaceutically acceptable cation, or a metabolically cleavable leaving group;

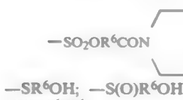
Y is independently;

(a) hydrogen;

(b) R^{1-6}, R^8, R^{10}, —OR^3, —OR^{11}, —OR^{12}, R^3S—, R^5S, R^3SO—, R^5SO—, R^3SO_2—, R^5SO_2—, CF_3O—, CF_3S—, CF_3SO—, —CF_3SO_2, —OCH_2oxycyclopropyl, —OCH_2-C(O)OR^3, —OCH_2OR^3—OCH_2C(O)OR^3, —OCH_2C_{3-8} cycloalkyl, —OCH_2CH(R)R^3, —OCH_2cyclopropyl, —OCH_2-aryl, —OCH_2CH(OH)CH_2OH, aryl-CH_2—SO_2—, (R^3)$_2$CHCH_2SO_2—, —CH_2CH(OH)C-H_2OH, CF_3SO_2—, R^3R^4N—, —$OCH_2CO_2R^3$, —NR-^{3}COR^3, —OCONH$_2$, —COONR^{3}R^4, —CONH$_2$, —CONR^{3}R^4, —CR^{3}R^{3}R^4, —SO_2NR^{3}R^4, —SONR^{3}R^4, $CH_3OCH_2ONR^3R^6$, —SNR^{3}R^4, —CO_2R^3, —NR^{3}R-$^4SO_2R^3$, —NR^{3}R^{4}SOR, —COR^3, —CONR^3, —NO_2, —CN, —N(R^5)CONR^{3}R^4, —CH_2N(R^5)CONR^{3}R^4, —R^{6}NR^{3}R^4, —OR^{6}NR^{3}R^4, —O(O)CR^5, —O-(O)CNR^{3}R^4,

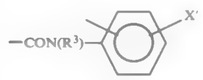


SR^{6}NR^{3}R^4, —S(O)R^{6}NR^{3}R^4, —SO_2R^{6}NR^{3}R^4,



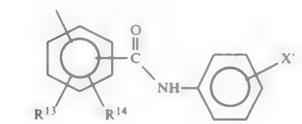
—SR^{6}OH; —S(O)R^{6}OH; —SO_2R^{6}OH; or —OR^{6}OC(O)N-(CO_2R^6)R^6;

(c) pyridyl, and optionally substituted with a group described in Y section (b);

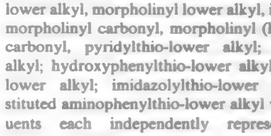


(d)

wherein X' is halo, —C(O)aryl, CF_3, or OR^3; —NR_3COR^3; —OCONH_2; —CR^{3}R^{3}R^4; —CH_2OR^3; —CH_2OR^3; —CH-$_2CO_2R^3$; —CH_2OCOR^3; R^{3}CH(R^3)CH_2SO_3—; —NHCH-$_2$COOR^3; halo such as F, Cl, Br and I; N+R^{3}R^{3}R^{4}R^7; —NR-$^3SO_2R^3$; COR^3; NO_2: or CN;



wherein R^{13}, R^{14} and R^{15} independently represents: BO— wherein B is —CH_2oxacyclopropyl, —CH_2OR^3, —CH_2-C(O)R^3, —CH_2CH(R^3)R^3, —CH_2Aryl, —CH_2CH(OH-)—CH_2OH; R^{3}C(R^3)$_2CH_2SO_2$; or R^{13}—R^{14} or R^{14}—R^{15} are joined together to form a bridge such as —OCHR^{2}CHR^2—S-$(O)_n$— wherein n is 0 to 3; or



where X' is halo, —C(O)aryl, CF_3, or OR^3; —CH_2OR^3; —$CH_2CO_2R^3$; —CH_2COR^3; —NHCH$_2$COOR^3; —N+R^{3}R^{3}R^{4}R^7.

R^1 and R^2 are independently hydrogen, halogen, or lower alkyl, halo lower alkyl, halo, —COOH; —CONR^{16}R^{17} where R^{16} and R^{17} independently represent C_{1-16} alkyl and hydrogen, —COOR^3, alkenyl, —COR^3; —CH_2OR^3; lower alkynyl, CH_2NR^{4}R^3; —CH_2SR^3=O; —OR^3; or —NR^{3}R^3;

R^3 and R^4 are independently cyclic and acyclic alkyl, alkenyl, alkynyl, aryl, aralkyl, alkyaryl, hydrogen, C_{1-6} alkoxy-C_{1-10} alkyl, C_{1-6} alkylthio-C_{1-10} alkyl, and C_{1-10} substituted alkyl (wherein the substituent is independently hydroxy or carbonyl, located on any of C_{1-10});

R^5 is cyclic and acyclic lower alkyl, lower alkenyl, lower alkynyl, halo lower alkyl, halo lower alkenyl, halo lower alkynyl, aralkyl, or aryl;

R^6 is cyclic and acyclic lower alkyl, lower alkenyl, lower alkynyl, aralkyl, halo lower alkyl, halo lower alkenyl, halo lower alkynyl, or aryl;

R^7 is an organic or inorganic anion;

R^8 is halo alkyl, halo lower alkyl, halo lower alkenyl, halo lower alkynyl, lower alkenyl, lower alkynyl, aralkyl, or aryl;

R^9 is independently hydrogen, halogen, lower alkyl, halo lower alkyl, lower alkenyl, lower alkynyl, —CONR^{3}R^4, —COR^5, —CO_2R^5, —CH_2OR^5, —$CH_2NR^5R^5$, —CH_2SR^5, =O, =NR^5, —NR^{3}R^4, —NR^{3}R^4§R^7, or —OR^5; and

R^{10} is —R^3, —R^8, —C(O)N(OR^3)R^3, or —OR^3,

R^{11} is C_1 to C_{12} alkyl; substituted C_1 to C_{12} alkyl wherein the substituent is selected from the group consisting of hydroxy and amino, alkenyl, lower alkoxy-alkyl; alkylcarbonylalkyl, -alkylamino, -alkylamino(alkyl or dialkyl), lower alkyl $S(O)_m$-lower alkyl in which m is 0, 1 or 2; imidazolyl lower alkyl, morpholinyl lower alkyl, imidazolylcarbonyl, morpholinyl carbonyl, morpholinyl (lower alkyl) aminocarbonyl, pyridylthio-lower alkyl; morpholinyl-lower alkyl; hydroxyphenylthio-lower alkyl; cyanophenylthio-lower alkyl; imidazolylthio-lower alkyl; N,N-di-substituted aminophenylthio-lower alkyl wherein the substituents each independently represent lower alkyl; aminophenylthio-lower alkyl; henylsulfinyl-lower alkyl; or phenylsulfonyl lower alkyl;

R^{12} is selected from the group consisting of: alkyl; substituted alkyl wherein the substituent is selected from the group consisting of hydroxy and amino; -lower alkyl-O-R^{18}, wherein R^{18} is —PO_2(OH)—M+ wherein M+ is a pharmaceutically acceptable cation; C(O)$(CH_2)_2CO_2$—M+, or —SO_3—M+; -lower alkylcarbonyl-lower alkyl; carboxy lower alkyl; -lower alkylamino-lower alkyl; N,N-di-substituted amino lower alkyl-, wherein the substituents each independently represent lower alkyl; pyridyl-lower alkyl; imidazoly-lower alkyl; imidazolyl-Y-lower alkyl wherein Y is thio or amino; morpholinyl-lower alkyl; morpholinyl-lower hydroxyalkyl; wherein the substituent is lower alkyl.

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5,358,939

FUNGICIDAL 2-ARYL-2,2-DISUBSTITUTED ETHYL-1,2,4-TRIAZOLES

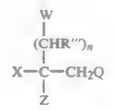
Steven H. Shaber, Horsham, Pa., and Luong T. Nguyen, Pinewood Garden, Singapore, assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jun. 25, 1992, Ser. No. 904,230

Int. Cl.[5] C07D *249/08, 249/17, 249/14, 239/02, 241/02;* A01N *43/64*

U.S. Cl. 514—63 12 Claims

1. A compound of the formula:



wherein

X is (C_6–C_{10})aryl or (C_6–C_{10})aryl substituted with one, two or three substituents selected from the group consisting of hydroxy, halo, acetoxy, trihalomethyl, (C_1–C_4)alkyl, (C_1–C_4)alkoxy, (C_1–C_4)alkythio, (C_1–C_4)alkylsulfinyl, (C_1–C_4)alkylsulfonyl, (C_1–C_4)alkoxy(C_1–C_4)alkoxy, (C_1–C_4)alkylcarbonyl, (C_2–C_8)alkenyl, (C_2–C_4)alkenyloxy, (C_2–C_8)alkynyl, (C_2–C_4)alkynyloxy, phenyl, phenyl monosubstituted with halo, (C_1–C_4)alkyl or (C_1–C_4)alkoxy, phenoxy and phenoxy monosubstituted with halo, (C_1–C_4)alkyl or (C_1–C_4)alkoxy Q is 1-(1,2,4-triazolyl), or 4-(1,2,4-triazolyl) or either of said triazolyls substituted with one or two substituents selected from halo, (C1–C4)alkyl, nitro, cyano, mercapto and (C_1–C_5)alkylmercapto;

Z is (C1–C6)alkyl(C_2–C_8)alkenyl, halo(C_2–C_8)alkenyl, (C_2–C_8)alkynyl, (C_3–C_8)cycloalkyl, (C_5–C_8)cycloalkenyl, cyclo(C_1–C_{12})alkyl(C_1–C_{12})alkyl, (C_6–C_{10})aryl or (C_6–C_{10})aryl substituted with one, two or three substituents selected from the group consisting of hydroxy, halo, acetoxy, trihalomethyl, (C_1–C_4)alkyl, (C_1–C_4)alkoxy, (C_1–C_4)alkythio, (C_1–C_4)alkylsulfinyl, (C_1–C_4)alkylsulfonyl, (C_1–C_4)alkoxy(C_1–C_4)alkoxy, (C_1–C_4)alkylcarbonyl, (C_2–C_8)alkenyl, (C_2–C_4)alkenyloxy, (C_2–C_8)alkynyl, (C_2–C_4)alkynyloxy, phenyl, phenyl monosubstituted with halo, (C_1–C_4)alkyl or (C_1–C_4)alkoxy, phenoxy and phenoxy monosubstituted with halo, (C_1–C_4)alkyl or (C1–C4)alkoxy, (C_6–C_{10})aryl (C_1–C_{12})alkyl;

W is —OR, —OCOR″, —OCOY, —OCOR′Y, —OCOR′OR″, —OR′OCOR″, —OR′OR, —NH_2, —NHCOR, —NHCOR′Y, —NHCOY, —OCONHY, —OSO_2A, —O-SiA_3, —$OPO(OA)_2$ or halo wherein A is (C_1–C_6)alkyl;

R is (C_1–C_{12})alkyl, X, Y-(C_1–C_{12})alkyl, (C_3–C_8)alkenyl, (C_3–C_8)alkynyl, (C_3–C_8)cycloalkyl, cyano (C_1–C_{12})alkyl or epoxy (C_1–C_{12})alkyl, all halogenated or unhalogenated, or is hydrogen, provided that when Z is methyl, R is not halo(C_1–C_{12})alkyl;

R′ is (—$CH(CH_3)$—)$_p$(—CH_2—)$_m$ or (—CH_2—)$_s$CH═CH(—CH_2—)$_t$;

m is an integer from 0 to 6;

p is 0 or 1, provided m and p are not both 0;

s and t are each independently integers of from 0 to 3;

R″ is phenyl, (C_1–C_6)alkyl, (C_2–C_4)alkenyl or (C_1–C_2)-trialkylsilyl(C_1–C_4)alkyl, all halogenated or unhalogenated, or is hydrogen;

R‴ is hydrogen or (C_1–C_6)alkyl;

n is an integer front 1 to 6; and

Y is phenyl, naphthyl, thienyl, furyl or cycloalkyl, all substituted or unsubstituted; or the agronomically acceptable enantiomorphs, acid addition salts, or metal salt complexes thereof.

9. A method for controlling fungi which comprises applying to the locus where control is desired a fungicidally effective amount of a compound of claim 1.

5,358,940

CHELATE COMPLEXES AND PROCESSES FOR THEIR PREPARATION

Hans G. Capraro, Rheinfelden, and Marcus Baumann, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

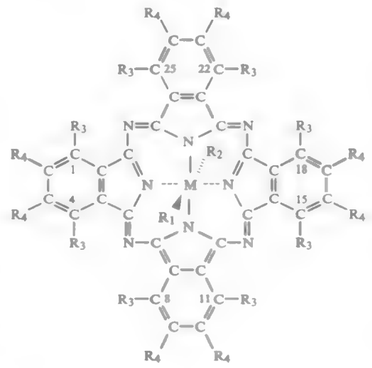
Filed Feb. 25, 1993, Ser. No. 22,246

Claims priority, application Switzerland, Feb. 27, 1992, [illegible]/92

Int. Cl.[5] A61K *31/40;* C07J *73/00*

U.S. Cl. 514—63 10 Claims

1. A compound of formula I

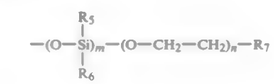


(I)

wherein

M is an element of main group III or IV of the Periodic Table having an atomic number of from 31 to 50 inclusive, aluminum or ruthenium,

R_1 is a radical of formula II



(II)

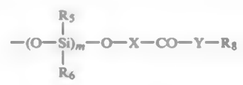
wherein

m is 0 or 1,

n is an integer from 0 to 200 inclusive,

R_5 and R_6 are each independently of the other lower alkyl or unsubstituted or substituted phenyl, and

R_7 is cholestan-3-yloxy, cholesteryloxy, unsubstituted or cholestan-3-yloxy- or cholesteryloxy-substituted aliphatic hydrocarbyloxy having from 1 to 24 carbon atoms in the aliphatic moiety, or R_1 is a radical of formula III



(III)

wherein

X is a bivalent aliphatic hydrocarbon radical having from 1 to 23 carbon atoms,

Y is oxygen or the group —NH—,

R_8 is cholesteryl, or cholesteryloxy-substituted aliphatic hydrocarbyl having from 1 to 24 carbon atoms in the aliphatic moiety, and

R_5, R_6 and m are as defined above,

R_2 has the same definition as R_1 when M is an element of main group W, or R_2 is absent when M is an element of main group III or ruthenium,

R_3 is hydrogen, lower alkyl, lower alkylthio, unsubstituted or lower alkoxy-substituted alkoxy having from 1 to 20 carbon atoms, tri-lower alkylsilyl or halogen, and

R_4 is hydrogen, lower alkyl, lower alkylthio, unsubstituted or lower alkoxy-substituted alkoxy having from 1 to 20 carbon atoms, tri-lower alkylsilyl or halogen.

5,358,941

DRY MIX FORMULATION FOR BISPHOSPHONIC ACIDS WITH LACTOSE

Simon R. Bechard, Laval, Canada; Kenneth A. Kramer, Green Lane, and Ashok V. Katdare, Norristown, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 2, 1992, Ser. No. 984,399

Int. Cl.[5] A61K *31/66*

U.S. Cl. 514—102 8 Claims

1. A pharmaceutical composition comprising by weight, about 0.5 to 40% by weight of an active ingredient selected from the group consisting of:

4-amino-1-hydroxybutylidene-1,1-bisphosphonic acid;

N-methyl-4-amino-1-hydroxybutylidene-1,1-bisphosphonic acid;

4-(N,N-dimethylamino)-1-hydroxybutylidene-1,1-bisphosphonic acid;

3-amino-1-hydroxypropylidene-1,1-bisphosphonic acid;

3-(N,N-dimethylamino)-1-hydroxypropylidene-1,1-bisphosphonic acid;

1-hydroxy-3-(N-methyl-N-pentylamino)propylidene-1,1-bisphosphonic acid;

1-hydroxy-2-[3-pyridyl]ethylidene-1,1-bisphosphonic acid; and

4-(hydroxymethylene-1,1-bisphosphonic acid)piperidine;

or a pharmaceutically acceptable salt thereof; and from about 60 to 99.5% by weight of excipients consisting essentially of:

anhydrous lactose; microcrystalline cellulose; croscarmallose sodium; and magnesium stearate.

5,358,942

INHIBITION OF PROTEIN KINASE C WITH CYCLIC PHOSPHONATE COMPOUNDS

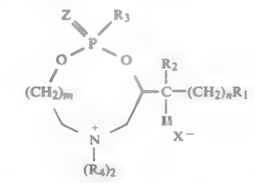
Richard D. Gandour, and Gnanasambandam Kumaravel, both of Blacksburg, Va., assignors to Louisiana State University, Baton Rouge, La.

Filed Sep. 29, 1993, Ser. No. 128,340

Int. Cl.[5] A61K *31/675;* C07F *9/6581*

U.S. Cl. 514—110 22 Claims

1. An optically active or racemic mixture of a compound of the formula:



I

where R_1 and R_3 are the same or different and are halo or a linear or branched chain of 1 to 22 carbon atoms selected from the group consisting of alkyl, alkenyl; and alkynyl; said C_1 to C_{22} chain is optionally substituted with halo, —SR_5, —OR_5, —NHR_5, —NR_5R_5 or —C(O)OR_6 where R_6 is hydrogen or C_1 to C_6 alkyl;

R_5 and R_5· are the same or different and are hydrogen; amino-alkyl substituted with phenyl, substituted phenyl, benzoyl, substituted benzoyl, heteroaryl or substituted heteroaryl;

R_2 is hydrogen, C_1 to C_6 alkyl, phenyl or substituted phenyl;

R_4 is hydrogen, C_1 to C_6 alkyl, phenyl or substituted phenyl;

Z is sulfur or oxygen;

m is an integer from 1 to 3;

n is an integer from 1 to 23; and

X is a pharmaceutically acceptable counter ion.

5,358,943

USE OF TETRAHYDROCORTISOL TO PREVENT ELEVATIONS IN INTRAOCULAR PRESSURE CAUSED BY CORTICOSTEROIDS

Abbot F. Clark, 5708 Stage Line Dr., Arlington, Tex. 76017, and Aaron L. Southren, 107 Grandview Ave., Monsey, N.Y. 10952

Continuation of Ser. No. 399,349, Aug. 28, 1989, abandoned, which is a continuation of Ser. No. 139,227, Dec. 29, 1987, abandoned. This application Feb. 2, 1993, Ser. No. 12,181

Int. Cl.[5] A61K *31/56, 31/33*

U.S. Cl. 514—170 12 Claims

1. In a method of treating ocular inflammation in a human patient by topically applying to an eye of the patient a topical ophthalmic composition containing an antiinflammatory effective amount of a glucocorticoid and a pharmaceutically acceptable carrier therefor, the improvement which comprises including in said composition an amount of tetrahydrocortisol effective to control elevations of intraocular pressure caused by the glucocorticoid, whereby the topical application of the glucocorticoid to the eye does not significantly increase the intraocular pressure of the eye.

5,358,944

RAPAMYCIN ESTERS FOR TREATING TRANSPLANTATION REJECTION

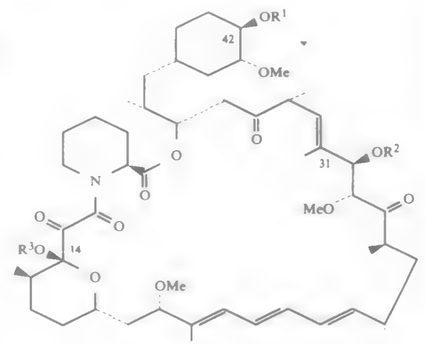
Craig E. Caufield, Middlesex, N.J., assignor to American Home Products Corporation, Madison, N.J.

Continuation of Ser. No. 777,983, Oct. 17, 1991, Pat. No. 5,221,670, which is a continuation-in-part of Ser. No. 584,833, Sep. 19, 1990, abandoned. This application Apr. 7, 1993, Ser. No. 44,341

Int. Cl.[5] A61K *31/395;* C07D *498/16*

U.S. Cl. 514—183 1 Claim

1. A method of treating transplantation rejection in a mammal by administering an effective amount of a compound having the structure



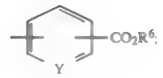
wherein

R^1, R^2, and R^3 are each, independently, hydrogen or



with the proviso that R^1, R^2, and R^3 are not all hydrogen; R^4 is —$(CH_2)_m$X$(CH_2)_n$$CO_2R^5$ or

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R^5 and R^6 are each, independently, alkyl of 1–6 carbon atoms, aralkyl of 7–10 carbon atoms, or phenyl which is optionally mono-, di-, or tri-substituted with a substituent selected from alkyl of 1–6 carbon atoms, alkoxy of 1–15 carbon atoms, hydroxy, cyano, halo, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, amino, or a carboxylic acid;

X is



O, or S;

R^7 and R^8 are each, independently, hydrogen or alkyl of 1–6 carbon atoms;

Y is CH or N;

m is 0–4;

n is 0–4;

with the proviso that m and n are not both 0 when X is O or S;

or a pharmaceutically acceptable salt thereof.

5,358,945

PYRIMIDINE COMPOUND AND PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

Akira Mizuchi, Mobara; Ken Ikeda, Chiba; Yuichiro Kokubun; Kazutoshi Horikomi, both of Mobara; Tadayuki Sasaki, Funabashi; Akira Awaya, Yokohama; Ikuo Tomino, Yamaguchi; Masaharu Ishiguro, Yamaguchi; Takumi Kitahara, Yamaguchi, and Noriaki Kihara, Yamaguchi, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd. and Mitsui Pharmaceuticals, Inc., both of Tokyo, Japan

PCT No. PCT/JP91/00898, § 371 Date Mar. 30, 1992, § 102(e) Date Mar. 30, 1992, PCT Pub. No. WO92/00970, PCT Pub. Date Jan. 23, 1992

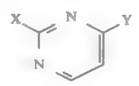
PCT Filed Jul. 3, 1991, Ser. No. 836,283

Claims priority, application Japan, Jul. 3, 1990, 2-176077

Int. Cl.[5] C07D *239/48, 401/02, 401/14;* **A61K** *31/505*

U.S. Cl. 514—227.8 **4 Claims**

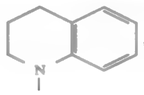
1. A pyrimidine compound represented by the following formula (I)



(I)

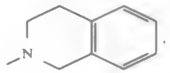
wherein

X is selected from the group consisting of

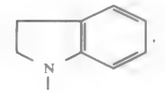


(a)

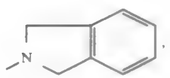
-continued



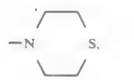
(b)



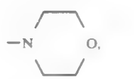
(c)



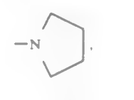
(d)



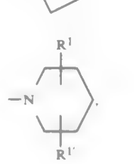
(e)



(f)

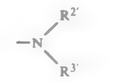


(g)



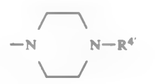
(h)

where R^1 and $R^{1'}$ may be the same or different and each represents a hydrogen atom, a lower alkyl group, a benzyl group, a phenyl group or a lower alkoxycarbonyl group,



(i)

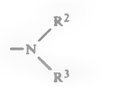
wherein $R^{2'}$ and $R^{3'}$ represent a lower alkyl group, and



(j)

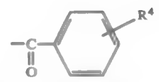
wherein $R^{4'}$ is a hydrogen atom, a lower alkyl group, a phenyl group or a benzyl group; and

Y represents

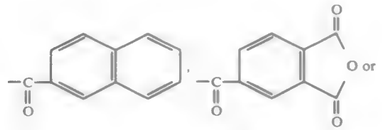


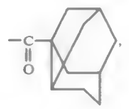
(a')

wherein R^2 is a hydrogen atom or a lower alkyl group,



wherein R^4 is a hydrogen atom, a trifluoromethyl group, a hydroxyl group, a cyano group, a formyl group, a lower acyl group, a lower alkoxycarbonyl group or a fluorosulfonyl group

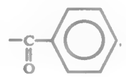




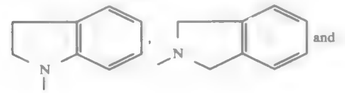
provided that, when Y is



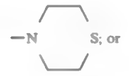
and R^3 is a lower acyl group or



X is selected from the group consisting of



and



pharmaceutically acceptable salts thereof.

5,358,946

HETEROCYCLE-SUBSTITUTED AMIDES, CARBAMATES AND UREAS AS AGENTS FOR THE TREATMENT OF ATHEROSCLEROSIS

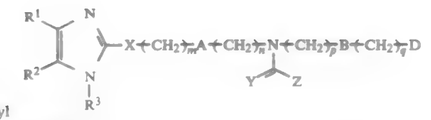
Richard G. Wilde, New Castle, Del., assignor to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Filed May 29, 1992, Ser. No. 889,896

Int. Cl.[5] A61K *31/535, 31/415;* **C07D** *413/02, 265/28, 233/66, 233/00*

U.S. Cl. 514—235.8 **12 Claims**

1. A compound of the formula (I):



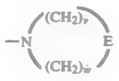
I

wherein

A is selected from the group O, or —C(=O)O—;

B is selected from the group $—CH_2—$, —O—, NR^6 or $—S(O)_r—$;

D is selected from the group



wherein

E is $=CH_2=$, O, $=NR^7$, =C=O, $—C(=O)NR^7—$, or —C(=O)O—, and v and w are independently 0–4, with the proviso that v and w cannot both be 0;

X is $S(O)_r$ or $—CH_2$, where r is 0–2;

Y is O or, H_2;

Z is NHR^4, OR^4 or R^4;

R^1 and R^2 are selected independently from phenyl unsubstituted or substituted with 1 to 3 groups selected from F, C_1–C_4 alkoxy, C_1–C_4 alkyl, C_3–C_8 branched alkyl, $CH_3S(O)_r$ or NR^7R^8;

R^3 is —H, $—CH_3$ or phenyl;

R^4 is C_1–C_8 alkyl, C_3–C_8 branched alkyl, C_3–C_7 cycloalkyl, C_4–C_{10} cycloalkylalkyl, C_7–C_{14} aralkyl, phenyl unsubstituted or substituted with 1 to 3 groups selected from C_1–C_4 alkyl, C_3–C_8 branched alkyl, F, C_1–C_4 alkoxy, or —CN, benzyl unsubstituted or substituted with 1 to 3 groups selected from $—CH_3$, $—CH_3O$, —F, or —CN, pyridyl, pyrrolyl, pyrimidyl, or imidazolyl;

R^5 is H, CH_3, or phenyl;

R^6, R^7 and R^8 are selected independently from H or C_1–C_4 alkyl;

n, p and q are independently 0–4; and m is 1 or 2;

or a pharmaceutically acceptable salt thereof.

5,358,947

ANGIOTENSIN II RECEPTOR BLOCKING 2,3-SUBSTITUTED PYRAZOLO[1,5-A]-1,3,5-TRIAZIN-4(3H)-ONES

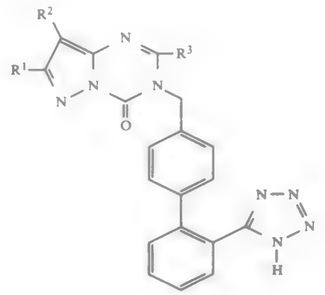
Aranapakam M. Venkatesan, Elmhurst, N.Y., assignor to American Cyanamid Company, Wayne, N.J.

Filed Sep. 13, 1993, Ser. No. 120,888

Int. Cl.[5] C07D *403/10;* **A61K** *31/53*

U.S. Cl. 514—246 **20 Claims**

1. A pyrazolo[1,5-a]-1,3,5-triazin-4(3H)-one compound having the formula:



VOL 1167 ISS 4 OCT 25 1994 UMI

wherein:

R^1 is selected from H, lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl, (substitution selected from mono lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, 0-alkyl of 1 to 3 carbon atoms, F, Cl, and Br), pyridinyl, thienyl, furanyl, Br or Cl;

R^2 is selected from H, lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl, (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl or Br), pyridinyl, thienyl, furanyl, Br and Cl;

R^3 is lower alkyl of 3 to 5 carbon atoms; or the pharmaceutically acceptable salts thereof.

5,358,948

BENZANILIDE DERIVATIVES

John Bradshaw, and John W. Clitherow, both of Ware, Great Britain, assignors to Glaxco Group Limited, London, England

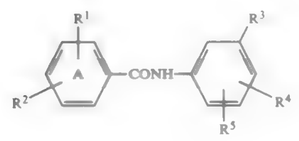
Filed Sep. 17, 1992, Ser. No. 946,099

Claims priority, application United Kingdom, Sep. 18, 1991, 9119932.3

Int. Cl.[5] **A61K** *31/495;* **C07D** *401/00*

U.S. Cl. 514—252 **23 Claims**

1. A compound of formula (I):



(I)

or a physiologically acceptable salt or solvate thereof wherein

R^1 represents a hydrogen atom, a halogen atom or a group selected from C_{1-6}alkyl and C_{1-6}alkoxy;

R^2 represents a pyridinyl group optionally substituted by one or two substituents selected from halogen atoms, C_{1-6}alkyl, hydroxyC_{1-6}alkyl, C_{1-6}alkoxyC_{1-6}alkyl, C_{1-6}alkoxy, hydroxy, —CN, —NO_2, —CO R^6, —COR^6, —$CONR^6R^7$ and —$(CH_2)_mOC(O)C_{1-4}$alkyl;

R^3 represents the group



R^4 and R^5, which may be the same or different, each independently represent a hydrogen atom or a halogen atom or a group selected from hydroxy, C_{1-6}alkoxy and C_{1-6}alkyl; R^6, R^7 and R^8, which may be the same or different, each independently represent a hydrogen atom or a C_{1-6}alkyl group; and m represents zero or an integer from 1 to 3.

5,358,949

CARBOSTYRIL DERIVATIVES AND SALTS THEREOF AND ANTI-ARRHYTHMIC AGENTS CONTAINING THE CARBOSTYRIL DERIVATIVES

Fujio Tabusa; Kazuyoshi Nagami, and Hironori Tsutsui, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

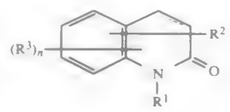
Continuation of Ser. No. 336,539, Apr. 11, 1989, abandoned, which is a continuation of Ser. No. 21,492, Mar. 4, 1987, abandoned. This application Mar. 6, 1991, Ser. No. 666,490

Claims priority, application Japan, Mar. 5, 1986, 61-47824; Sep. 25, 1986, 61-226729; Jan. 14, 1987, 62-6758

Int. Cl.[5] **A61K** *31/54;* **A01N** *43/04;* **C07D** *401/00*

U.S. Cl. 514—254 **41 Claims**

1. A carbostyril compound or a salt thereof represented by the formula (1),

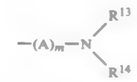


(1)

wherein

R^1 is hydrogen, C_1–C_{16} alkyl, lower alkenyl, lower alkynyl, phenyl-lower alkyl, carboxy-lower alkyl, phenyl-lower alkoxycarbonyl-lower alkyl, amino-lower alkyl which optionally has lower alkyl as the substituents, or carbonyl-lower alkyl which has pyrrolidinyl as substituent on the carbonyl;

R^2 is piperazinyl or piperazinyl having 1 to 3 substituents selected from the group consisting of phenyl, hydroxy, phenyl-lower alkyl which optionally has lower alkoxy as substituents on the phenyl ring, C_1–C_{10} alkyl which optionally has 1 to 3 hydroxy, lower alkoxy or halogen as substituents, lower alkenyl, lower alkoxycarbonyl lower alkyl, tetrahydrofuryl-lower alkyl, thienyl-lower alkyl, cycloalkyl-lower alkyl, cycloalkyl, benzoyl-lower alkyl which optionally has halogen as substituents on the phenyl ring, pyridyl lower alkyl, lower alkylamino, lower alkynyl, lower alkanoyl-lower alkyl, phenyl-lower alkoxycarbonyl, benzoyl which optionally has lower alkoxy as substituents on the phenyl ring, and a group of the formula



wherein R^{13} and R^{14} are each the same or different, and are each hydrogen, lower alkyl, phenyl-lower alkyl which optionally has lower alkoxy as substituents on the phenyl ring; or wherein R^{13} and R^{14} as well as the adjacent nitrogen being bonded thereto, together with or without other nitrogen or oxygen from 5- or 6-membered heterocyclic ring selected from the group consisting of piperazinyl, piperidinyl, morpholino and pyrrolidinyl, or said 5- or 6-membered heterocyclic ring having lower alkyl as substituents; A is lower alkylene or

wherein A' is lower alkylene; m is 0 or 1;

R^3 is hydrogen, lower alkyl which optionally has 1 to 3 halogen as substituents, lower alkoxy, hydroxy, halogen, carboxyl, phenyl, phenyl-lower alkoxy, lower alkenyloxy, lower alkanoyl-lower alkoxy or lower alkylaminocarbonyl lower alkoxy;

n is 1 or 2;

the carbon-carbon bond between the 3- and 4-positions in the carbostyril skeleton is a single or double bond;

R^2 and R^3 are each substituted at any position of the 3- to 8-positions in the carbostyril skeleton, provided that R^2 and R^3 are not substituted at the same position at the same time; and at least one of R^2 and R^3 is substituted at the 8-position in the carbostyril skeleton;

provided further, that when n is 1 and R^3 is hydrogen or lower alkoxy, then R^2 is not 1-piperazinyl which optionally has phenyl-lower alkyl which optionally has lower alkoxy as substituents on the phenyl ring, lower alkyl, lower alkenyl, lower alkoxyl-carbonyl-lower alkyl, lower alkynyl or benzoyl which optionally has lower alkoxy as substituents on the phenyl ring, as a substituent at the 4-position in the piperazine ring, and

provided that when R^2 is bonded at the 4-position in the carbostyril skeleton, and the carbon-carbon bond between the 3- and 4-positions in the carbostyril skeleton is a double bond, then R^1 should be neither C_1–C_6 alkyl, lower alkenyl, propargyl nor phenyl-lower alkyl;

further provided that, when n is 2, the carbon-carbon bond between the 3- and 4-positions in the carbostyril skeleton is a double bond, and 4-methyl-1-piperazinyl or 4-(2-hydroxyethyl)-1-piperazinyl is substituted at the 4-position in the carbostyril skeleton, while R^1 is hydrogen and R^3 is carboxy which is substituted at the 3-position in the carbostyril skeleton, then the other R^3 is not chlorine or bromine which is substituted at the 8-position in the carbostyril skeleton.

5,358,950

TRIAZOLOPYRIMIDINE DERIVATIVES WHICH ARE ANGIOTENSIN II RECEPTOR ANTAGONISTS

Nicole Bru-Magniez, Paris; Eric Nicolai, Caen, and Jean-Marie Teulon, La Celle Saint Cloud, all of France, assignors to Laboratoires UPSA, Agen, France

Continuation-in-part of Ser. No. 741,134, Aug. 7, 1991, Pat. No. 5,217,973. This application Jun. 24, 1992, Ser. No. 906,526

Claims priority, application France, Jul. 5, 1991, 91 08486

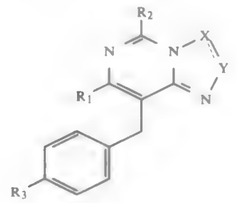
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.

Int. Cl.[5] **A61K** *31/505;* **C07D** *487/04*

U.S. Cl. 514—258 **9 Claims**

1. Triazolopyrimidinc compounds of formula (I):

Formula (I)



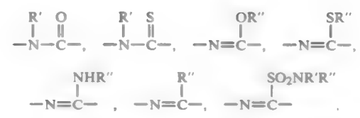
in which:

R_1 represents a lower alkyl radical having 1 to 6 carbon atoms or a C_3–C_7 cycloalkyl radical,

R_2 represents a hydrogen atom, a lower alkyl radical having 1 to 6 carbon atoms, a lower haloalkyl radical having 1 to 6 carbon atoms, a group $NR_4R'_4$, an NH—NH_2 group or a group $(CH_2)_mOR_4$ or $(CH_2)_mSR_4$,

R_4 and R'_4, which may be identical or different, represent a hydrogen atom or a lower alkyl radical having 1 to 6 carbon atoms and m represents an integer from 0 to 5,

the assembly —X Y— or —Y X— represents one of the following bivalent radicals:

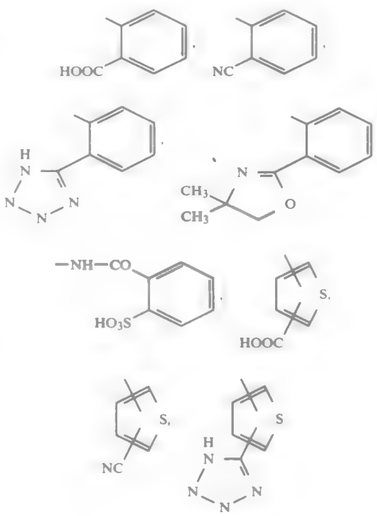


in which R' and R'', which may be identical or different, represent:

a hydrogen atom, a lower alkyl radical having 1 to 6 carbon atoms, a lower haloalkyl radical having 1 to 6 carbon atoms or a group $(CH_2)_nCOOR_5$,$(CH_2)_{n'}$—OR_5,$(CH_2)_{n'}$—O—CO—R_5 or $(CH_2)_nSR_5$; n being an integer from 0 to 5, n'being an integer from 1 to 5 and R_5 being a hydrogen atom or a lower alkyl radical having 1 to 6 carbon atoms,

a phenyl, pyridyl, thienyl or furyl radical,

R_3 represents an NO_2 or NH_2 group or represents one of the following radicals:



or their tautomeric forms and their addition salts, especially pharmaceutically acceptable addition salts.

5,358,951

ANGIOTENSIN II RECEPTOR BLOCKING 2, 3, 6 SUBSTITUTED QUINAZOLINONES

Jeremy L. Levin, Nanuet, and Aranapakam M. Venkatesan, Elmhurst, both of N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Filed Apr. 23, 1993, Ser. No. 52,945

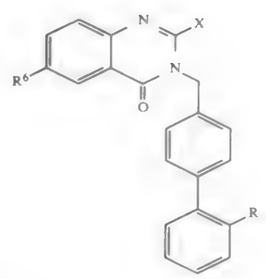
Int. Cl.[5] **A61K** *31/55, 31/505;* **C07D** *498/04, 498/08*

U.S. Cl. 514—259 **56 Claims**

1. A quinazolinone compound having the formula:

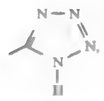
VOL 1167 ISS 4 OCT 25 1994 UMI

FORMULA I



wherein:

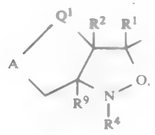
R is

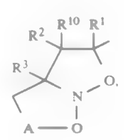


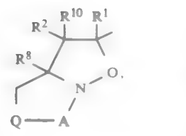
—CO_2H or —$NHSO_2CF_3$;

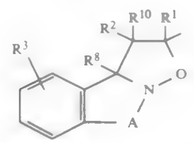
X is lower alkyl of 3 to 5 carbon atoms;

R^6 is:









R^1 is H, lower alkyl of 1 to 4 carbon atoms (optionally substituted with —OR^7, —CO_2R^7, —CN, —$N(R^7)(R^{13})$, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br)), phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), pyridine, thiophene, furan, —OR^7, —CO_2R^7, —CN, —$CON(R^7)(R^{13})$, —CF_3, —SPh, —$N(R^7)(R^{13})$ or



R^2 is H, lower alkyl of 1 to 4 carbon atoms (optionally substituted with —OR^7, —CO_2R^7, —CN, —$N(R^7)(R^{13})$, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br)), phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), pyridine, thiophene, furan, —CO_2R^7, —CN, —$CON(R^7)(R^{13})$, or



R^3 is H, lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), pyridine, thiophene or furan, —CO_2R^7, —$CON(R^7)(R^{13})$, —CN, —NO_2, or



R^4 is H, —CO_2R^7, —SO_2R^{12}, lower alkyl of 1 to 4 carbon atoms, benzyl, substituted benzyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br) phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), —$CON(R^7)(R^{13})$, or



R^{12} is phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br);

R^5 is H, lower alkyl of 1 to 4 carbon atoms;

R^7 is H, lower alkyl of 1 to 4 carbon atoms;

R^8 is H, lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), —CO_2R^7, —CH_2OH, —CN, —$CON(R^7)(R^{13})$, or



R^9 is H, lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br);

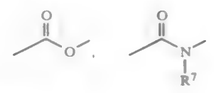
R^{10} is H, lower alkyl of 1 to 4 carbon atoms (optionally substituted with —OR^7, —CO_2R^7, —CN, —$N(R^7)(R^{13})$, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br)), phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), pyridine, thiophene, furan, —OR^7, —CO_2R^7, —CN, —$CON(R^7)(R^{13})$, —CF_3, or



R^{13} is H, lower alkyl of 1 to 4 carbon atoms;

Q is —O—, —$(CR^{11}R^{14})_n$— or a single bond;

Q^1 is —O—, —$(CR^{11}R^{14})_n$—,



or a single bond;

n is 1 to 5;

A is —$(CR^{11}R^{14})_m$—;

m is 2 to 5, provided that n+m is not greater than 6;

R^{11} is H, lower alkyl of 1 to 4 carbon atoms (optionally substituted with —OR^7, —CO_2R^7, —CN, —$N(R^7)(R^{13})$, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br)), phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), pyridine, thiophene, furan, —OR^7, —CO_2R^7, —CN, —$CON(R^7)(R^{13})$, —CF_3, or



R^{14} is H, lower alkyl of 1 to 4 carbon atoms (optionally substituted with —OR^7, —CO_2R^7, —CN, —$N(R^7)(R^{13})$, phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br)), phenyl, substituted phenyl (substitution selected from mono-lower alkyl of 1 to 3 carbon atoms, trifluoromethyl, nitro, O-alkyl of 1 to 3 carbon atoms, F, Cl, or Br), pyridine, thiophene, furan, —OR^7, —CO_2R^7, —CN, —$CON(R^7)(R^{13})$, —CF_3, or



and pharmaceutically acceptable salts thereof.

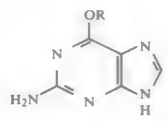
5,358,952

O⁶-SUBSTITUTED GUANINE COMPOUNDS AND METHODS FOR DEPLETING O⁶-ALKYLGUANINE-DNA ALKYLTRANSFERASE LEVELS

Robert C. Moschel, Frederick, Md.; M. Eileen Dolan, Chicago, Ill., and Anthony E. Pegg, Hershey, Pa., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C. and The Penn State Research Foundation, University Park, Pa.

Division of Ser. No. 492,468, Mar. 13, 1990, Pat. No. 5,091,430.
This application Dec. 12, 1991, Ser. No. 805,634
Int. Cl.[5] A61K *31/32; C07D 473/18*
U.S. Cl. 514—262 **17 Claims**

1. A pharmaceutical composition which comprises compounds of the formula,



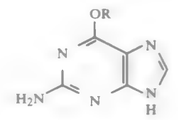
wherein R is a benzyl group or a substituted benzyl group substituted at the ortho, meta or para position, with a substituent selected from the group consisting of halogen, nitro, phenyl, substituted phenyl, alkyl of 1–4 carbon atoms, alkoxy of 1–4 carbon atoms, alkenyl of up to 4 carbon atoms, alkynyl of up to 4 carbon atoms, amino, monoalkylamino, dialkylamino, trifluoromethyl, hydroxy, hydroxymethyl, and SO_nR_1 wherein n is 0, 1, 2 or 3 and R_1 is hydrogen, alkyl of 1–4 carbon atoms, phenyl, or substituted phenyl;

an anti-neoplastic alkylating agent which causes cytotoxic lesions at the O^6-position of guanine; and

a pharmaceutically acceptable excipient.

10. A method of enhancing the chemotherapeutic treatment of tumor cells in a mammal with an antineoplastic alkylating agent which causes cytotoxic lesions at the O^6-position of guanine, which method comprises:

administering to the mammal an effective amount of a composition containing an O^6-substituted guanine compound of the formula

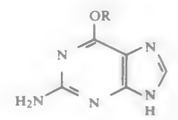


wherein R is a benzyl group or a substituted benzyl group substituted at the ortho, meta, or para position with a substituent selected from the group consisting of halogen, nitro, phenyl, substituted phenyl, alkyl of 1–4 carbon atoms, alkoxy of 1–4 carbon atoms, alkenyl of up to 4 carbon atoms, alkynyl of up to 4 carbon atoms, amino, monoalkylamino, dialkylamino, tirfluoromethyl, hydroxy, hydroxymethyl, and SO_nR_1 wherein n is 0, 1, 2, or 3 and R_1 is hydrogen, alkyl of 1–4 carbon atoms, phenyl, or substituted phenyl; and

administering to the mammal an effective amount of a composition containing an antineoplastic alkylating agent which causes cytotoxic lesions at the O^6-position of guanine, wherein said antineoplastic alkylating agent is selected from the group consisting of chloroethylnitrosoureas, streptozotocin, procarbazine, and dacarbazine.

14. A method of enhancing the chemotherapeutic treatment of colon tumor cells in a mammal with an antineoplastic alkylating agent which causes cytotoxic lesions at the O^6-position of guanine, which method comprises:

administering to the mammal an effective amount of a composition containing an O^6-substituted guanine compound of the formula



wherein R is a benzyl group or a substituted benzyl group substituted at the ortho, meta, or para position with a substituent selected from the group consisting of halogen, nitro, phenyl, substituted phenyl, alkyl of 1–4 carbon atoms, alkoxy of 1–4 carbon atoms, alkenyl of up to 4 carbon atoms, alkynyl of up to 4 carbon atoms, amino, monoalkylamino, dialkylamino, tirfluoromethyl, hydroxy, hydroxymethyl, and SO_nR_1 wherein n is 0, 1, 2, or 3 and R_1 is hydrogen, alkyl of 1–4 carbon atoms, phenyl, or substituted phenyl; and

administering to the mammal an effective amount of a composition containing an antineoplastic alkylating agent which causes cytotoxic lesions at the O^6-position of guanine.

VOL 1167 ISS 4 OC 25 1994 UMI

5,358,953

IMIDAZOPYRIDINE PAF/H_1 ANTAGONISTS

David Alker; Robert J. Bass, both of Sandwich, United Kingdom, and Kelvin Cooper, Groton, Conn., assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/EP92/00163, § 371 Date Jul. 12, 1993, § 102(e) Date Jul. 12, 1993, PCT Pub. No. WO92/14734, PCT Pub. Date Sep. 3, 1992

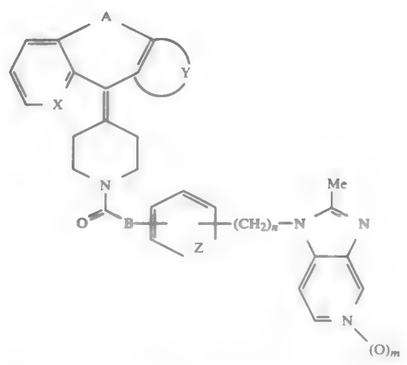
PCT Filed Jan. 24, 1992, Ser. No. 87,736

Claims priority, application United Kingdom, Feb. 13, 1991, 9102997

Int. Cl.[5] A61K *31/435;* C07D *471/04, 235/00, 519/00*

U.S. Cl. 514—290 8 Claims

1. A compound having the formula



(I)

or a pharmaceutically acceptable salt thereof wherein:

X is CH or N;

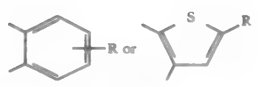
Z is CH=CH or S;

A is CH_2CH_2, CH=CH, $CH(OH)CH_2$, or $COCH_2$;

BV is a direct link or $—CH_2—$, $—CH(CH_3)—$ or $—C(CH_3)_2—$, or when

Z is CH=CH, B may form a cyclopentane ring fused to the attached benzene ring;

Y completes a fused ring which is



wherein R is H, halo or C_1–C_4 alkyl;

n is 0, 1 or 2;

and M is 0 or 1.

5,358,954

BENZIMIDAZOLINE-2-OXO-1-CARBOXYLIC ACID DERIVATIVES USEFUL AS 5-HT RECEPTOR ANTAGONISTS

Marco Turconi, Voghera; Arturo Donetti, Milan; Ernesto Montagna, San Giuliano Milanese; Massimo Nicola, Pavia; Annamaria Uberti, Milan; Rosamaria Micheletti, Milan, and Antonio Giachetti, Milan, all of Italy, assignors to Boehringer Ingelheim Italia, Milan, Italy

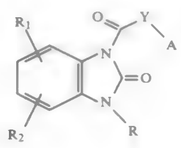
Division of Ser. No. 845,891, Mar. 4, 1992, Pat. No. 5,223,511, which is a continuation-in-part of Ser. No. 768,497, Sep. 30, 1991, abandoned, which is a continuation of Ser. No. 552,353, Jul. 12, 1990, abandoned, which is a continuation of Ser. No. 243,949, Sep. 13, 1988, abandoned. This application Mar. 16, 1993, Ser. No. 33,675

Claims priority, application Italy, Sep. 23, 1987, 21997 A/87

Int. Cl.[5] A61K *31/46;* C07D *451/12*

U.S. Cl. 514—304 7 Claims

1. A method for treating a human host suffering from anxiety, which method comprises administering to such host an anxiolytically effective amount of a compound of the formula I



(I)

wherein,

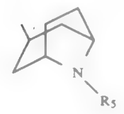
R is hydrogen, C_{1-6} alkyl, C_{2-6} alkenyl, or C_{2-6} alkynyl;

R_1 is hydrogen;

R_2 is hydrogen, halogen, or C_{1-6} alkoxy;

Y is oxygen or N—R_3, in which R_3 is hydrogen; and,

A is a group of the formula



in which R_5 is hydrogen, C_{1-6} alkyl, or R_5 is a group of the formula $—CR_6=N—R_7$, wherein R_6 is hydrogen, C_{1-4} alkyl or amino and R_7 is hydrogen or C_{1-6} alkyl; or a pharmaceutically acceptable acid addition salt thereof.

5,358,955

ARYL AND HETEROARYLMETHOXYPHENYL INHIBITORS OF LEUKOTRIENE BIOSYNTHESIS

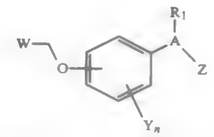
Dee W. Brooks, Libertyville, and Teodozy J. Kolasa, Lake Villa, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 969,898, Oct. 30, 1992, abandoned. This application Jan. 2, 1993, Ser. No. 71,737

Int. Cl.[5] C07D *215/14, 213/30;* A61K *31/47, 31/44*

U.S. Cl. 514—311 11 Claims

1. A compound selected from the group consisting of compounds of the formula I:



or a pharmaceutically acceptable salt thereof wherein Z is selected from the group consisting of

$—COONR_2R_3$,

$—CON(OH)R_2$,

$—SCH(R_4)COONR_2R_3$,

$—SCH(R_4)CON(OH)R_2$,

$—OCH(R_4)COONR_2R_3$,

$—OCH(R_4)CON(OH)R_2$,

$—CON(R_4)NR_2R_3$,

—O—N=$CHCOONR_2R_3$, and

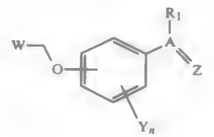
—O—N=$CHCON(OH)R_2$;

where R_2, R_3 and R_4 are independently selected from the group consisting of hydrogen

C_1–C_6 alkyl, and

C_1–C_6 hydroxyalkyl; and

compounds of the formula II:



II

or a pharmaceutically acceptable salt thereof wherein Z is selected from the group consisting of

=$NOCH(R_4)COONR_2R_3$, and

=$NOCH(R_4)CON(OH)R_2$,

where R_2, R_3 and R_4 are as defined above;

A is C_1–C_6 alkylene; R_1 is selected from the group consisting of:

C_3–C_8 cycloalkyl,

C_1–C_6 alkoxy,

phenoxy,

pyridyloxy,

phenyl,

pyridyl,

thienyl,

furyl,

benzofuryl,

benzothienyl, and

thiazolyl

all of which groups are optionally substituted with halogen,

C_1–C_6 alkoxy,

C_1–C_6-alkyl, or

C_1–C_6-haloalkyl;

Y is selected from the group consisting of

hydrogen,

C_1–C_6 alkyl,

C_1–C_6 alkoxy,

phenoxy, and

halogen;

n is an integer selected from 0, 1, 2, 3, or 4; and

W is selected from the group consisting of

2-, 3-, and 4-pyridyl, optionally substituted with halogen, C_1–C_6-alkyl or C_1–C_6-alkoxy,

1- and 2-naphthyl, optionally substituted with halogen, C_1–C_6-alkyl or C_1–C_6-alkoxy or

2-, 3-, 4-, 5-, 6-, 7-, and 8-quinolyl, optionally substituted with halogen, C_1–C_6 alkyl or C_1–C_6 alkoxy.

5,358,956

FIBRINOGEN RECEPTOR ANTAGONISTS

George D. Hartman, and Wasyl Halczenko, both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

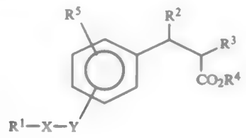
Filed Oct. 14, 1992, Ser. No. 960,741

The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.

Int. Cl.[5] A61K *31/445;* C07D *211/32*

U.S. Cl. 514—331 8 Claims

1. A compound of the formula:



I

wherein

R^1 is



;

R^2 is chosen from

wherein alkyl is either unsubstituted or substituted with R^6,

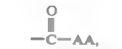
wherein phenyl is either unsubstituted or substituted with R^6,



wherein phenyl is either unsubstituted or substituted with R^6,



and



where AA is an L- or D- amino acid or amino acid ester connected through an amide linkage;

R^3 is chosen from

hydrogen, C_{1-10} alkyl, (C_{0-6}) alkylphenyl,

$(CH_2)_{0-1}—NHSO_2C_{1-10}$ alkyl,

$(CH_2)_{0-1}—NHSO_2C_{0-6}$ alkylphenyl,

$(CH_2)_{0-1}—NHSO_2NH\ C_{0-10}$ alkyl,

$(CH_2)_{0-1}—NHSO_2NH\ C_{0-6}$ alkylphenyl,

$(CH_2)_{0-1}—NHSO\ C_{1-10}$ alkyl,

$(CH_2)_{0-1}—NHSO\ C_{0-6}$ alkylphenyl,

$(CH_2)_{0-1}—NHSO_2\ C_{1-10}$ alkyl,

$(CH_2)_{0-1}—NHSO_2\ C_{0-6}$ alkylphenyl,

$(CH_2)_{0-1}—SO_2NH\ C_{0-10}$ alkyl,

VOL 1167 ISS 4 OC 25 1994 UMI

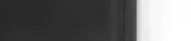
$(CH_2)_{0-1}$—SO_2NH C_{0-6} alkylphenyl,



$(CH_2)_{0-1}$—CNH C_{0-10} alkyl,



$(CH_2)_{0-1}$—CNH C_{0-6} alkylphenyl,



$(CH_2)_{0-1}$—C—C_{1-10} alkyl,



$(CH_2)_{0-1}$—C—C_{0-6} alkylphenyl,

$(CH_2)_{0-1}$—NHCONH C_{0-10} alkyl,
$(CH_2)_{0-1}$—NHCONH C_{0-6} alkylphenyl,
$(CH_2)_{0-1}$—SO_2 C_{1-10} alkyl,
$(CH_2)_{0-1}$—SO_2 C_{0-6} alkylphenyl,



$(CH_2)_{0-1}$—C C_{1-10} alkyl,



$(CH_2)_{0-1}$—C C_{0-6} alkylphenyl;

X is chosen from C_{1-10} alkyl either unsubstituted or substituted with R^5 or R^6;
Y is chosen from O, S, SO, and SO_2;
R^4 is chosen from H, C_{1-4} alkyl, and C_{0-6} alkyl;
R^5 is chosen from H, C_{1-6} alkyl, C_{0-6} alkyl, carboxy $(CH_2)_{0-6}$ alkyl, C_{1-6} alkyloxy, and halogen; and
R^6 is hydrogen, C_{1-10} alkoxycarbonyl or unsubstituted or substituted C_{1-10} alkyl wherein said substitutents are
C_{1-10} alkoxy,
C_{1-10} alkoxyalkyl,
C_{1-10} alkoxyalkyloxy,
C_{1-10} alkoxycarbonyl,
C_{1-10} alkylcarbonyl,
C_{0-6} alkylaminocarbonyl,
phenyl C_{0-6} alkylcarbonyl, phenyl C_{0-6} alkyl,
C_{1-4} alkanoylamino,
C_{1-10} alkylsulfonylamino, or
phenyl C_{0-6} alkylsulfonylamino.

5,358,957

BUTYRIC ACID DERIVATIVES

Peter Maienfisch, Rodersdorf, Switzerland; Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, and Thomas Pitterna, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 969,628, Oct. 30, 1992. This application Sep. 2, 1993, Ser. No. 116,156
Claims priority, application Switzerland, Nov. 1, 1991, 3195/91-4
Int. Cl.[5] A61K *31/425, 31/44;* C07D *277/34, 277/38*
U.S. Cl. 514—342 16 Claims

1. A compound of formula



(I)

wherein
A is substituted or unsubstituted thiazolyl, isothiaxolyl or benzothiaxolyl that is bonded by way of carbon atoms to X; each of R_1 and R_2, independently of the other, si hydrogen or C_1–C_6alkyl;
X is NR_3, O or S; and
R_3 is hydrogen or C_1C_4alkyl, in free form or in salt form.
15. A method for controlling pests, wherein, as pesticidally active ingredient, at least one compound according to claim 1 of formula I, in free form or in agrochemically acceptable salt form, is applied, in a pesticidally effective amount, to the pests or to the locus thereof.

5,358,958

PROCESS FOR FOLIAR FUNGICIDE TREATMENT AND FUNGICIDE COMPOSITION FOR IMPLEMENTING THE PROCESS

Alfred Greiner, St Cyr Au Mont d'Or; Jean Hutt, Lyons; Jacques Mugnier, La Balme, and Regis Pepin, Rilleux La Pape, all of France, assignors to Rhone-Poulenc Secteur Agrochimie, Lyons, France

Division of Ser. No. 714,725, Jun. 13, 1991, Pat. No. 5,246,954. This application Jun. 10, 1993, Ser. No. 74,956
Claims priority, application France, Jun. 13, 1990, 90 07606
The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.
Int. Cl.[5] A01N *43/653, 43/40, 43/42, 43/36*
U.S. Cl. 514—383 26 Claims

1. A process for the treatment of a plant suffering from, or protection of a plant subject to, fungat dims which comprises applying to the leaves of the plant a fungicidal and non-phytotoxic amount of a component (a) 2-(4-chlorobenzylidene)-5,5-dimethyl-1-(1H-1,2,4-triazol-1-ylmethyl)-1-cyclopentanol and a component (b) at least one derivative comprising a heterocyclic compound selected from the group consisting of quinolines, morpholines, pyrroles and piperidines, wherein the weight ratio of component (a) to component (b) is from 0.0003:1 to 3,000:1.

5,358,959

METHODS FOR TREATING ARTERIOSCLEROSIS

Jose Halperin, Brookline, and Carlo Brugnara, Newton Highlands, both of Mass., assignors to President and Fellows of Harvard University, Cambridge, Mass.

Filed Feb. 18, 1993, Ser. No. 18,835
Int. Cl.[5] A61K *31/415*
U.S. Cl. 514—396 21 Claims

1. A method for treating an arteriosclerotic condition, comprising:
administering to a subject in need of such treatment an imidazole selected from the group consisting of: chlotrimazole, miconazole, econazole and their pharmaceutically acceptable salts.

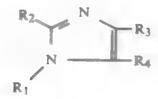
5,358,960

METHOD FOR INHIBITING ADVANCED GLYCOSYLATION OF PROTEINS USING AMINOSUBSTITUTED IMIDAZOLES

Peter Ulrich, Old Tappan, N.J.; Anthony Cerami, Shelter Island, and Dilip R. Wagle, Valley Cottage, both of N.Y., assignors to The Rockefeller University, New York, N.Y. and Alteon Inc., Northvale, N.J.

Continuation-in-part of Ser. No. 805,200, Dec. 10, 1991, Pat. No. 5,238,963, which is a division of Ser. No. 481,869, Feb. 20, 1990, Pat. No. 5,128,360, which is a continuation-in-part of Ser. No. 220,504, Jul. 18, 1988, abandoned, which is a division of Ser. No. 798,032, Nov. 14, 1985, Pat. No. 4,758,583, which is a continuation-in-part of Ser. No. 590,820, Mar. 19, 1984, Pat. No. 4,665,192. This application Dec. 8, 1992, Ser. No. 986,662
Int. Cl.[5] A61K *31/415*
U.S. Cl. 514—400 29 Claims

1. A composition comprising an effective amount of a compound for inhibiting the advanced glycosylation of a target protein, said compound selected from the group consisting of compounds of the formula



(I)

wherein R^1 is an amino group; R_2 is hydrogen, an amino group or a mono- or di-amino lower alkyl group; R_3 and R_4 are independently hydrogen, a lower alkyl group, an aryl group or an acyl group and their biologically or pharmaceutically acceptable acid or alkali addition salts; and mixtures thereof, and a pharmaceutical carrier thereof.

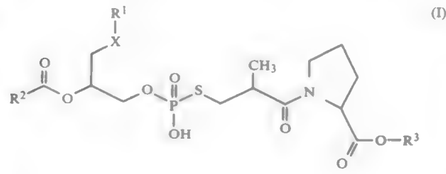
5,358,961

PYRROLIDINE DERIVATIVES

Ki Hong Lee; Dong Soo Kim, both of Seoul; Il Hwan Ryu, Kangweon-Do; Man Keun Kim, and Kwan Ho Lee, both of Seoul, all of Rep. of Korea, assignors to Jin Ro Limited, Seoul, Rep. of Korea

PCT No. PCT/KR92/00066, § 371 Date Nov. 15, 1993, § 102(e) Date Nov. 15, 1993, PCT Pub. No. WO93/11136, PCT Pub. Date Jun. 10, 1993
PCT Filed Nov. 24, 1992, Ser. No. 84,268
Claims priority, application Rep. of Korea, Nov. 30, 1991, 91-21842; Nov. 30, 1991, 91-21843
Int. Cl.[5] A61K *31/40;* C07F *9/02*
U.S. Cl. 514—423 18 Claims

1. Pyrrolidine derivatives and salts represented by formula (I) as below



(I)

wherein,
R^1 is saturated or unsaturated alkyl of 2 to 20 carbon atoms, or aryl group;
R^2 is saturated or unsaturated alkyl of 1 to 17 carbon atoms, or aryl group;
R^3 is hydrogen atom, saturated or unsaturated alkyl of 1 to 20 carbon atoms, or aryl group and
X is oxygen or sulfur atom.

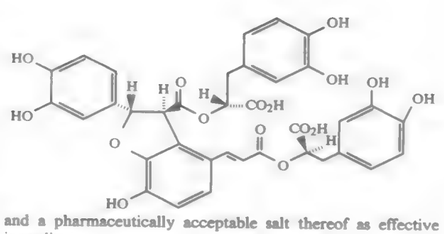
5,358,962

ANTIHYPERTENSIVE METHOD

Hikokichi Oura, Toyama; Itsuo Nishioka, Fukuoka; Takako Yokozawa, Toyama, and Tadao Takeuchi, Yamato, all of Japan, assignors to Minophagen Pharmaceutical Company, Tokyo, Japan

Filed Apr. 22, 1993, Ser. No. 51,942
Int. Cl.[5] A61K *31/34*
U.S. Cl. 514—469 4 Claims

1. An antihypertensive method comprising the step of administering to a hypertensive patient an effective anti-hypertensive amount of a pharmaceutical agent comprising a compound selected from the group consisting of lithospermic acid B represented by the formula:



(I)

and a pharmaceutically acceptable salt thereof as effective ingredient.

5,358,963

SYNERGISTIC ANTIMICROBIAL COMPOSITIONS CONTAINING 2-(2-BROMO-2-NITROETHENYL) FURAN

William F. McCoy, and Geoffrey A. Brown, both of W. Lafayette, Ind., assignors to Great Lakes Chemical Corporation, W. Lafayette, Ind.

Division of Ser. No. 918,973, Jul. 24, 1992, Pat. No. 5,246,963.
This application Jun. 11, 1993, Ser. No. 75,824
Int. Cl.[5] A01N *37/34, 43/08*
U.S. Cl. 514—471 3 Claims

1. A method of inhibiting the growth of *Pseudomonas aeruginosa* comprising contacting said *Pseudomonas aeruginosa* with an effective amount of a synergistic composition including
2-(2-bromo-2-nitroethenyl)furan and
2,2-dibromo-3-nitrilopropionamide, the weight ratio of
2-(2-bromo-2-nitroethenyl)furan to
2-2-dibromo-3-nitrilopropionamide being about 1:1.3.

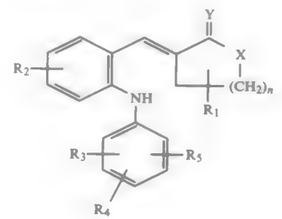
5,358,964

BENZYLIDENE-LACTONE AND THEIR THIOCARBONYL ANALOGS AS INHIBITORS OF PROTEOGLYCAN DEGRADATION

Vijaykumar Baragi, Ann Arbor; Diane H. Boschelli, Plymouth; David T. Connor, Ann Arbor, and Richard R. Reukiewicz, Novi, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jul. 26, 1993, Ser. No. 97,356
Int. Cl.[5] A61K *31/34;* C07D *307/88*
U.S. Cl. 514—471 11 Claims

1. A compound of the formula



I

wherein
X is O;
Y is O or S;
R_1 is hydrogen or lower alkyl;
n is an integer of 1; and
R_2, R_3, R_4, and R_5 are each independently hydrogen, halogen, trifluoromethyl, lower alkyl, CN, hydroxy, lower alkoxy, $S(O)_m$-lower alkyl, NO_2, or NR_6R_7 wherein R_6 and R_7 are each independently hydrogen, lower alkyl, lower alkanoyl or benzoyl, and m is an integer of 0, 1, or 2, or a pharmaceutically acceptable acid addition salt thereof.

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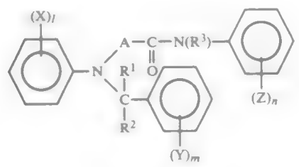
5,358,965

HYDRAZONE DERIVATIVES, PROCESSES FOR PRODUCTION THEREOF, AND USES THEREOF

Tomokazu Hino, Ibaraki; Nobuharu Andoh, Osaka; Hiroshi Hamaguchi, Kyoto, and Atsushi Kanaoka, Kawachinagano, all of Japan, assignors to Nihon Nohyaku Co., Ltd., Japan

Division of Ser. No. 791,227, Nov. 13, 1991, Pat. No. 5,304,573.
This application May 28, 1993, Ser. No. 68,204
Claims priority, application Japan, Nov. 17, 1990, 2-312414; Nov. 30, 1990, 2-334471
Int. Cl.[5] C07C *251/80, 243/22;* A01N *33/26, 37/44*
U.S. Cl. 514—539 13 Claims

1. A hydrazone derivative represented by the general formula (I):



(I)

wherein each of R^1, R^2 and R^3 independently represents a hydrogen atom, or an alkyl group having 1 to 5 carbon atoms; A represents —N=C(R^4)— or —NH—CH(R^4)— (wherein R^4 represents a hydrogen atom or an alkyl group having 1 to 5 carbon atoms); X, which may be the same or different, represents a halogen atom, nitro group, an alkyl group having 1 to 5 carbon atoms, a haloalkyl group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, an alkylthio group having 1 to 5 carbon atoms, an alkylsulfinyl group having 1 to 5 carbon atoms, or an alkylsulfonyl group having 1 to 5 carbon atoms; Y, which may be the same or different, represents a halogen atom, nitro group, an alkyl group having 1 to 5 carbon atoms, a haloalkyl group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, a haloalkoxy group having 1 to 5 carbon atoms, an alkylthio group having 1 to 5 carbon atoms, an alkylsulfinyl group having 1 to 5 carbon atoms, an alkylsulfonyl group having 1 to 5 carbon atoms, a haloalkylthio group having 1 to 5 carbon atoms, a haloalkylsulfinyl group having 1 to 5 carbon atoms, a haloalkylsulfonyl group having 1 to 5 carbon atoms, an alkynyl group having 2 to 5 carbon atoms, or an alkoxycarbonyl group having 1 to 5 carbon atoms; Z, which may be the same or different, represents a halogen atom, nitro group, an alkyl group having 1 to 5 carbon atoms, a haloalkyl group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, a haloalkoxy group having 1 to 5 carbon atoms, an alkylthio group having 1 to 5 carbon atoms, a haloalkylthio group having 1 to 5 carbon atoms, an alkylsulfinyl group having 1 to 5 carbon atoms, a haloalkylsulfinyl group having 1 to 5 carbon atoms, an alkylsulfonyl group having 1 to 5 carbon atoms, a haloalkylsulfonyl group having 1 to 5 carbon atoms, a haloalkylsulfonyloxy group having 1 to 5 carbon atoms, an alkylcarbonyl group having 1 to 5 carbon atoms, or phenoxy group; l, m and n each represents 0 or an integer of 1 to 5.

5,358,966

TURFGRASS INSECTICIDES

William N. James, Jr., Hatfield, and Harold E. Aller, Norristown, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jun. 8, 1993, Ser. No. 73,842
Int. Cl.[5] A01N *37/18*
U.S. Cl. 514—615 11 Claims

1. A method of controlling the larvae or grub of insects which comprise the southern masked chafer, the northern masked chafer, the Japanese beetle, the European chafer, the cupreous chafer, the oriental beetle and the May or June beetle which comprises contacting the larvae or grub in the soil with an insecticidally effective amount of a compound selected from
N'-tert-butyl-N-benzoyl-N'-(4-fluorobenzoyl)hydrazine,
N'-tert-butyl-N-benzoyl-N'-(2-chlorobenzoyl)hydrazine ,
N'-tert-butyl-N-benzoyl-N'-(2-chloro-4-fluorobenzoyl)hydrazine ,
N'-tert-butyl-N-(4-methylbenzoyl)-N'-benzoylhydrazine,
N'-tert-butyl-N-(4-chlorobenzoyl)-N'-benzoylhydrazine,
N'-tert-butyl-N-(4-chlorobenzoyl)-N'-(2-chlorobenzoyl)hydrazine,
N'-tert-butyl-N-benzoyl-N'-(2-bromobenzoyl)hydrazine,
N'-tert-butyl-N-(4-ethylbenzoyl)-N'-benzoylhydrazine,
N'-tert-butyl-N-(2-fluorobenzoyl)-N'-benzoylhydrazine,
N'-tert-butyl-N-benzoyl-N'-(2-iodobenzoyl)hydrazine,
N'-tert-butyl-N-(4-fluorobenzoyl)-N'-benzoylhydrazine,
N'-tert-butyl-N-(4-iodobenzoyl)-N'-benzoylhydrazine and
N'-tert-butyl-N-(4-fluorobenzoyl)-N'-(2-chlorobenzoyl)hydrazine.

5,358,967

WOOL PROTECTING COMPOSITONS AND METHODS

Glenn R. Carlson, North Wales, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Jul. 6, 1993, Ser. No. 87,581
Int. Cl.[5] A01N *37/18*
U.S. Cl. 514—615 6 Claims

1. A composition comprising an effective amount of N'-(3,5-dimethylbenzoyl)-N-(4-ethylbenzoyl)-N'-(tert-butyl)-hydrazine and a treatment bath agent selected from the group consisting of wool treatment carriers; wool treatment additives; dispersants; cleaning agents; emulsifiers; solvents; surfactants; dyes; leveling agents; antimicrobial agents; and finishing agents, to treat wool for protection from keratin digesting insects.

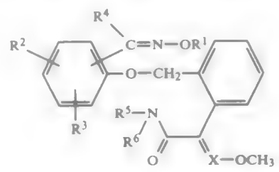
5,358,968

SUBSTITUTED OXIME ETHERS, THEIR PREPARATION AND THEIR USE FOR CONTROLLING PESTS AND FUNGI

Klaus Oberdorf, Heidelberg; Hubert Sauter, Mannheim; Wassilios Grammenos, Ludwigshafen; Reinhard Kirstgen, Neustadt; Volker Harries, Frankenthal; Gisela Lorenz, Neustadt; Eberhard Ammermann, Heppenheim; Randall E. Gold, Wachenheim; Wolfgang Siegel, Mannheim, and Albrecht Harreus, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 15, 1993, Ser. No. 91,254
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1992, 4223210; Sep. 30, 1992, 4232816; Mar. 31, 1993, 4310495
Int. Cl.[5] A61K *31/165;* C07C *251/38*
U.S. Cl. 514—620 8 Claims

1. A substituted oxime ether of the formula I



I

where
R^1 is C_1-C_6-alkyl, C_3-C_6-alkenyl, C_3-C_4-alkynyl, C_1-C_6-haloalkyl, C_3-C_6-haloalkenyl, C_1-C_4-alkoxy-C_1-C_6-alkyl, C_3-C_6-cycloalkyl, C_3-C_6-cycloalkyl-C_1-C_4-alkyl, cyano-C_1-C_6-alkyl, C_1-C_6-alkoxycarbonyl-C_1-C_6-alkyl, aryl-C_1-C_6-alkyl, hetaryl-C_1-C_6-alkyl, aryl-C_3-C_6-alkenyl or aryloxy-C_1-C_6-alkyl, where the aromatic or heteroaromatic ring is unsubstituted or substituted by one or more of the following radicals: C_1-C_4-alkyl, C_1- or C_2-haloalkyl, C_3-C_6-cycloalkyl, C_1-C_4-alkoxy, C_1 or C_2-haloalkoxy, halogen, aryl or aryloxy,
R^2 and R^3 are identical or different and are each hydrogen, C_1-C_4-alkyl, C_1- or C_2-haloalkyl, C_1-C_4-alkoxy, C_1- or C_2-haloalkoxy, halogen, cyano or nitro,
R^4 is hydrogen, C_1-C_6-alkyl, C_3-C_6-cycloalkyl, C_1-C_2-haloalkyl or aryl, where the aromatic ring is unsubstituted or substituted by one or more of the following radicals: C_1-C_4-alkyl, C_1- or C_2-haloalkyl, C_1-C_4-alkoxy, C_1- or C_2-haloalkoxy, halogen, cyano or nitro,
R^5 and R^6 are identical or different and are each hydrogen or C_1-C_4-alkyl and
X is CH or N.

5,358,969

METHOD OF INHIBITING NITRIC OXIDE FORMATION

Joseph R. Williamson, Town and Country; John A. Corbett, St. Louis; Michael L. McDaniel, Glendale, and Ronald G. Tilton, St. Louis, all of Mo., assignors to Washington University, St. Louis, Mo.

Continuation-in-part of Ser. No. 843,387, Feb. 28, 1992, Pat. No. 5,246,971, and a continuation-in-part of Ser. No. 906,632, Jun. 30, 1992, Pat. No. 5,246,970, each is a continuation-in-part of Ser. No. 807,912, Dec. 16, 1991, abandoned. This application Aug. 24, 1993, Ser. No. 110,915
Int. Cl.[5] A61K *31/155*
U.S. Cl. 514—632 10 Claims

1. A method of inhibiting nitric oxide production in a warm blooded mammal afflicted with physiological conditions manifested by an acute or inflammatory disease which is not immunologically-mediated which comprises administering to said mammal a nitric oxide inhibitory effective amount of an inhibitory compound selected from the group consisting of aminoguanidine, N,N'-diaminoguanidine, methylguanidine and 1,1'-dimethylguanidine.

5,358,970

PHARMACEUTICAL COMPOSITION CONTAINING BUPROPION HYDROCHLORIDE AND A STABILIZER

Michael D. Ruff, Greenville, N.C.; Sanyasi R. Kalidindi, Edison, N.J., and Joel E. Sutton, Jr., Greenville, N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Aug. 12, 1993, Ser. No. 105,437
Int. Cl.[5] A61K *31/135*
U.S. Cl. 514—649 17 Claims

1. A pharmaceutical composition in solid form comprising bupropion hydrochloride and a pharmaceutically acceptable stabilizer in an effective stabilizing amount and which is solid or liquid at 30° C. wherein said stabilizer has a aqueous solution pH of about 0.9 to about 4 at an aqueous solution concentration of about 6% w/w, and said composition, when stored for 6 weeks at about 50 degrees C. and at about 27% relative humidity contains at least about 80% of the labelled amount of bupropion hydrochloride in the composition, said stabilizer selected from the group consisting of L-cysteine hydrochloride, glycine hydrochloride, malic acid, sodium metabisulfate, citric acid, tartaric acid and L-cysteine dehydrochloride.

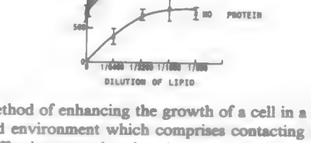
5,358,971

SUBSTITUTED 2-AMINOTETRALINS

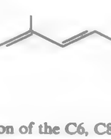
James V. Peck, and Gevork Minaskanian, both of Richmond, Va., assignors to Whitby Research, Inc., Richmond, Va.

Division of Ser. No. 837,229, Feb. 18, 1992, Pat. No. 5,274,003, which is a continuation-in-part of Ser. No. 375,583, Jul. 5, 1989, abandoned. This application Oct. 4, 1993, Ser. No. 131,845
Int. Cl.[5] A61K *31/135;* C07C *217/10*
U.S. Cl. 514—651 14 Claims

1. An optically active compound having the formula



where R_1 is selected from the group consisting of



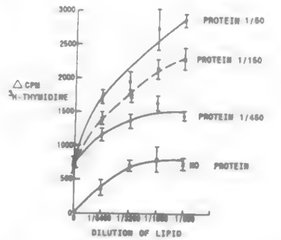
where Y is hydrogen, halogen or C_1 to C_6 linear or branched alkyl; R_6 is C_1 to C_4 linear or branched alkyl; X is oxygen or sulfur; a is an integer from zero to 3; and n is an integer from 1 to 4.

5,358,972

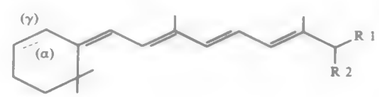
RETRO-ALPHA-RETINOL(4-14-RETRO-RETINOL) DERIVATIVES AND USES OF RETRO-α-RETINOL

Jochen Buck; Ulrich Hammerling; Padila Dergunsi, and Koji Nakanishi, all of New York, N.Y., assignors to Sloan-Kettering Institute for Cancer Research and The Trustees of Columbia University in the City of New York, both of New York, N.Y.

Division of Ser. No. 682,909, Apr. 9, 1991. This application Aug. 9, 1993, Ser. No. 104,491
Int. Cl.[5] A61K *31/07, 31/70*
U.S. Cl. 514—725 13 Claims



1. A method of enhancing the growth of a cell in a vitamin A reduced environment which comprises contacting the cell with an effective growth enhancing amount of a compound having the structure:



wherein the configuration of the C6, C8, C10 and C12 double bonds independently are Z or E and the absolute configuration at C14 is independently R or S; wherein R_1 is an alkyl, alkyl halide, alcohol, ester, ether, aldehyde, ketone, carboxylic acid, carboxylic ester, acid halide, amide nitrile, or amine; and wherein R_2 is a hydroxyl, halide, alkoxy, ester, alkyl, alcohol, ether, aldehyde, ketone, carboxylic acid, carboxylic ester, nitrile, amine, azide, alkyl halide, acid halide, acid azide, or

VOL 1167 ISS 4 OCT 25 1994 UMI

amide; or wherein R_1 and R_2 are replaced by a 14, 15-oxirane group; and wherein the retro structure is alpha or gamma.

5,358,973

COMPOSITION AND METHOD FOR PREVENTION OF ADHESIONS BETWEEN BODY TISSUES

Gert Lindblad, Gosselmansgatan 1, S-271 33 Ystad, and Peter Buckley, Gläntvägen 5, S-752 56 Uppsala, both of Sweden

Division of Ser. No. 585,064, Oct. 22, 1990, Pat. No. 5,190,759.
This application Nov. 30, 1992, Ser. No. 982,854
Claims priority, application Sweden, Feb. 21, 1989, 8900586
Int. Cl.[5] A01N *25/04, 43/04;* C07H *5/04;* C08B *37/02*
U.S. Cl. 514—777 2 Claims

1. A composition for use in surgical operations to prevent adhesions between tissue surfaces, said composition being an aqueous solution containing dextran in an amount of 7 to 20% and hyaluronic acid in an amount of 0.5 to 6%, the dextran having a weight average molecular weight within the range of 30,000 to 75,000 and the hyaluronic acid having a weight average molecular weight within the range 500,000 to 6,000,000.

5,358,974

PROCESS FOR PREPARING LOW DENSITY POROUS CROSSLINKED POLYMERIC MATERIALS

Thomas F. Brownscombe; Ronald M. Bass, and Larry S. Corley, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 99,018, Jul. 29, 1993, Pat. No. 5,290,820.
This application Nov. 29, 1993, Ser. No. 159,072
Int. Cl.[5] C08J *9/28*
U.S. Cl. 521—64 4 Claims

1. In a process for the production of a porous crosslinked polymeric material comprising polymerizing and crosslinking monomers in a water-in-oil high internal phase emulsion comprising

a) a mixture of polymerizable monomers comprising at least one vinyl monomer and from 2 to 70 weight percent, based on the mixture, of at least one multifunctional unsaturated crosslinking monomer,

b) at least 90 weight percent, based on the emulsion, of water as the internal phase,

c) a surfactant, and

d) a polymerization initiator, the improvement which comprises polymerizing the monomers in the presence of a polymerization initiator selected from the group consisting of alkylperoxycarbonates branched at the 1-carbon position and alkylperoxycarboxylates branched at least one of the α-carbon or 1-carbon position.

5,358,975

ORGANOSILOXANE ELASTOMERIC FOAMS

Dorian Anderson, Wiesbaden, Fed. Rep. of Germany, assignor to Dow Corning Limited, Barry, Wales

Filed Jul. 26, 1993, Ser. No. 96,288
Claims priority, application United Kingdom, Aug. 13, 1992, 9217151.1
Int. Cl.[5] C08J *9/02*
U.S. Cl. 521—77 6 Claims

1. A method for the production of an organosiloxane elastomeric foam exhibiting a density of less than 208 kg./m^3, said method comprising mixing together (A) a triorganosiloxy end-blocked polydiorganosiloxane wherein the organic substituents are selected from alkyl and halogen-substituted alkyl groups having from 1 to 6 carbon atoms, phenyl groups and alkenyl groups having from 2 to 6 carbon atoms, there being an average of at least two alkenyl groups per molecule, and at least 80 percent of the total substituents being methyl, (B) an organohydrogensiloxane having an average at least three silicon-bonded hydrogen atoms per molecule and wherein the organic substituents are selected form the group consisting of alkyl groups having from 1 to 6 carbon atoms and the phenyl group, (C) a platinum catalyst in an amount sufficient to provide from 5 to 200 parts by weight of platinum per million parts of the combined weights of (A) and (B), (D) an alpha, omega-diol of the general formula HOROH wherein R represents an alkylene group having from 3 to 7 carbon atoms and (E) from 10 to 35 parts by weight per 100 parts of the combined weights of (A) and (B) of a resinous copolymer containing $R'_3SiO^{0.5}$ units and SiO_2 units wherein the R' substituents are selected form methyl groups and vinyl groups, at least 1% and up to 20% of the total R' groups being vinyl, and thereafter allowing the mixture to foam and cure.

5,358,976

STABLE THIOL-ENE COMPOSITIONS

Joseph P. Dowling; Sarah C. Richardson, and Killian Quigley, all of Dublin, Ireland, assignors to Loctite (Ireland) Limited, Dublin, Ireland

Continuation of Ser. No. 612,759, Nov. 14, 1990, abandoned.
This application Dec. 23, 1992, Ser. No. 996,837
Int. Cl.[5] C08G *75/26, 75/04;* C08K *5/24*
U.S. Cl. 522—18 8 Claims

1. A composition polymerizable to a crosslinked polythioether comprising

i) an 'ene compound having a plurality of groups of the formula



where Q is CR^1_2, O,S, NR^1 or S_2, each R^1 is independently H or alkyl, and m is 0–10;

ii) a compound having at least two pendant or terminally positioned —SH functional groups per average molecule, the ratio of reactive carbon-carbon unsaturated groups in the 'ene compound (i) to —SH functional groups on the thiol compound (ii) being in the range from about 0.75/1 to about 1.5/1;

iii) a stabilizing amount of a non-acidic nitroso compound selected from the group consisting of N-nitroso amines, N-nitroso amino acids, N-nitroso amides, N-nitroso hydroxylamine salts, nitrosobenzene, 4-nitroso-N,N-dimethylaniline, 1-nitrosopyrrolidine and 2-methyl-2-nitrosopropane; and

iv) a phenyl ketone photoinitiator.

5,358,977

STABILIZED PAPER SUBSTRATE FOR RELEASE LINERS USING AROMATIC AND ALIPHATIC PRIMERS, AND NOVEL PRIMER COAT

George Krankkala, Naperville, and John Bachman, Chicago, both of Ill., assignors to Daubert Coated Products, Inc., Willowbrook, Ill.

Continuation-in-part of Ser. No. 625,457, Dec. 11, 1990, Pat. No. 5,084,354, and a continuation-in-part of Ser. No. 601,409, Oct. 23, 1990, abandoned. This application Jan. 27, 1992, Ser. No. 826,752
Int. Cl.[5] C08F *2/50*
U.S. Cl. 522—100 3 Claims

1. A primer coat for the preparation of kraft paper, said primer coat consisting essentially of at least 72.5% of an epoxy compound having two or more epoxy groups; a reactive diluent, said reactive diluent selected from the group including 4-vinyl cyclohexene monoepoxide, aliphatic glycidyl ether, or a diglycidyl ether of 1,4-butanediol; a surfactant; and a photoinitiator.

5,358,978

ALKENYL ETHER POLYCARBONATES

Jeffrey S. Plotkin, Mossey, N.Y.; Fulvio J. Vara, Chester, N.J.; James A. Dougherty, Pequannock, N.J.; Paul D. Taylor, West Milford, N.J., and Kolazi S. Narayanan, Palisades Park, N.J., assignors to ISP Investments Inc., Wilmington, Del.

Division of Ser. No. 490,867, Mar. 9, 1990, Pat. No. 5,254,710.
This application Feb. 3, 1993, Ser. No. 13,269
Int. Cl.[5] C08F *2/50, 220/18, 220/26*
U.S. Cl. 522—163 6 Claims

1. A polymerizable composition comprising a photoinitiator and a compound having the formula



wherein A is selected from the group consisting of lower alkyl and R'HC═CHOR—; R and R'' are each independently a divalent radical having from 2 to 20 carbon atoms and are selected from the group of alkylene, mono- or poly-alkoxylated alkylene, alkenylene, alkynylene, arylene, alkarylene and aralkylene radicals, which radicals are optionally substituted with halo, alkyl, cyano, nitro or alkoxy; R' is hydrogen or lower alkyl; (n) has a value of from 1 to 10 and (m) has a value of from 0 to 10; with the proviso that R'' contains at least 3 carbon atoms when m is zero.

5,358,979

PRIMARILY SOLID CONCENTRATE WHICH CONTAINS A BIOCIDE

Nicolaas J. van Hoboken; Roelof van de Worp, both of Deventer, and Marius C. Verploegh, Bathmen, all of Netherlands, assignors to Akzo Nobel nv, Arnhem, Netherlands

PCT No. PCT/EP91/02378, § 371 Date Jun. 22, 1993, § 102(e) Date Jun. 22, 1993, PCT Pub. No. WO92/10530, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 9, 1991, Ser. No. 74,855
Claims priority, application European Pat. Off., Dec. 13, 1990, 90203396.7
Int. Cl.[5] C08K *5/56, 5/39*
U.S. Cl. 523—122 7 Claims

1. A concentrate which contains a biocide and is primarily solid under ambient conditions, which comprises

1–30 wt. % of a microbiocide selected from the group consisting of phenoxyarsene compounds, copper compounds and zinc compounds, having microbiocidal activity,

a plasticizer which is solid under ambient conditions, in a sufficient amount to act as a carrier for the microbiocide, and

0–20 wt. % of a thermoplastic resin.

5,358,980

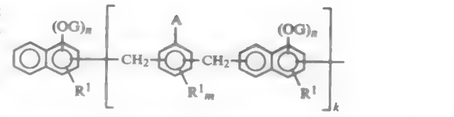
NAPHTHOL NOVOLAC EPOXY RESIN COMPOSITIONS AND SEMICONDUCTOR DEVICES ENCAPSULATED THEREWITH

Toshio Shiobara, Annaka, and Kazutoshi Tomiyoshi, Takasaki, both of Japan, assignors to Shin-Etsu Chemical Company, Limited, Tokyo, Japan

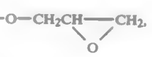
Continuation-in-part of Ser. No. 955,251, Oct. 1, 1992, abandoned. This application Jan. 14, 1994, Ser. No. 181,540
Claims priority, application Japan, Oct. 3, 1991, 3-283548
Int. Cl.[5] C08L *61/06, 61/08, 61/12;* C08K *3/22, 3/28*
U.S. Cl. 523—427 2 Claims

1. A thermosetting resin composition comprising

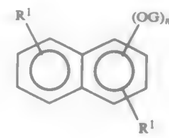
(A) a naphthalene ring-bearing epoxy resin having the general formula



wherein R^1 is a hydrogen atom or an alkyl group having 1 to 6 carbon atoms, OG is a glycidyl group, n is equal to 1 or 2, the R^1 and OG groups may be attached to either one ring or both rings of the naphthalene ring, A is a hydrogen atoms or



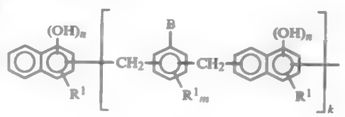
k is an integer of from 0 to 5, l is an integer of from 0 to 3, and m is an integer of from 0 to 2, wherein said naphthalene ring-bearing epoxy resin contains 1% to 10% by weight of a compound of the following formula (1):



(1)

wherein R^1 is a hydrogen atom or an alkyl group having 1 to 6 carbon atoms, OG is a glycidyl group, n is equal to 1 or 2, and the R^1 and OG groups may be attached to either one ring or both rings of the naphthalene ring,

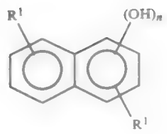
(B) a naphthalene ring-bearing phenolic resin having the general formula



wherein R^1 is a hydrogen atom or an alkyl group having 1 to 6 carbon atoms, OG is a glycidyl group, n is equal to 1 or 2, the R^1 and OG groups may be attached to either one ring or both rings of the naphthalene ring, B is a hydrogen atom or OH, k is an integer of from 0 to 5, l is an integer of from 0 to 3, and m is an integer of from 0 to 2,

wherein said naphthalene ring-bearing phenolic resin contains 1% to 10% by weight of a compound of the following formula (2):

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(2)

wherein R^1 is a hydrogen atom or an alkyl group having 1 to 6 carbon atoms, n is equal to 1 or 2, and the R^1 and OH groups may be attached to either one ring or both rings of the naphthalene ring, and

(C) an inorganic filler selected from the group consisting of silica, crystalline silica, alumina, silicon nitride and aluminum nitride, in an amount from 200 to 1000 parts by weight per 100 parts by weight of the total resin components,

wherein the combined content of the compounds of formulae (1) and (2) is 1 to 5% by weight based on the total resin components, the content of the epoxy resin (A) and phenolic resin (B) is 30 to 100 parts by weight of phenolic resin (B) per 100 parts by weight of epoxy resin (A), and the equivalent ratio of epoxy to hydroxyl group is from 0.5 to 2.

5,358,981

SOLVENT-FREE WATER-BASED EMULSIONS OF ANIONICALLY POLYMERIZED POLYMERS

Jeffrey G. Southwick, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 986,192, Dec. 7, 1992, abandoned. This application May 24, 1993, Ser. No. 66,598

Int. Cl.[5] C08K *3/20*

U.S. Cl. 523—402 **2 Claims**

1. A solventless process of making a solvent-free water-based emulsion of an anionically polymerized polymer having a melt viscosity of at least 500 cp which comprises:

(a) heating the polymer until its viscosity is no more than 3,000 cp,

(b) mixing water with a surfactant,

(c) adding the mixture of (b) to the polymer of (a) while agitating the polymer at at least 5000 rpm, thereby forming an emulsion,

(d) cooling the emulsion to below 100° C., and

(e) optionally, subjecting the emulsion to turbulent flow and/or cavitation such that the dissipation of energy into the emulsion is greater than 10^8 watts per cubic meter.

5,358,982

CROSSLINKED POLYMER MICROPARTICLES BASED ON EPOXY RESIN, THEIR PREPARATION AND THEIR USE

Joerg-Peter Geisler, Ingelheim, and Stefan Petri, Taunusstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft AG, Fed. Rep. of Germany

Filed Aug. 4, 1993, Ser. No. 101,909

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1992, 4225999

Int. Cl.[5] C08L *63/02*

U.S. Cl. 523—414 **12 Claims**

1. Crosslinked polymer microparticles based on epoxy resin, obtained by polymerization of an aqueous dispersion (A) of a compound containing epoxide groups in the presence of up to 0.2 mol (based on the nitrogen contained in (B)) of a nitrogen-containing organic compound (B) per epoxide equivalent and subsequent isolation.

5,358,983

CURABLE SILICONE COMPOSITION

Yoshitsugu Morita, Chiba, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

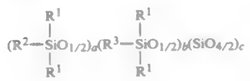
Filed Apr. 6, 1993, Ser. No. 43,248

Claims priority, application Japan, May 26, 1992, 4-158528

Int. Cl.[5] C08K *5/09*; **C08L** *63/00*

U.S. Cl. 523—455 **17 Claims**

1. A curable silicone composition consisting essentially of (A) an organopolysiloxane represented by the formula



wherein R^1 is a monovalent hydrocarbon group except R^1 is not an alkenyl group; R^2 is hydrogen or a monovalent hydrocarbon group except R^2 is not an alkenyl group; R^3 is selected from organic groups that contain an epoxy group or an alkoxysilylalkyl group with the proviso that at least one R^3 group is an organic group containing an epoxy group; a is a positive number; b is a positive number; c is a positive number; a/c has a value of between 0 to 4, b/c has a value of between 0.05 to 4, and (a+b)/c has a value of between 0.2 to 4; and

(B) a curing compound selected from curing agents or curing catalysts.

5,358,984

POLYMER POLYOL DISPERSANTS FROM POLYMERS CONTAINING ANHYDRIDE GROUPS

John E. Hayes, Wilmington, Del., and Robert G. Gastinger, West Chester, Pa., assignors to Arco Chemical Technology, L.P., Greenville, Del.

Continuation-in-part of Ser. No. 774,685, Oct. 11, 1991, abandoned. This application May 24, 1993, Ser. No. 66,607

Int. Cl.[5] C08J *7/14*; **C08K** *5/15*

U.S. Cl. 524—112 **39 Claims**

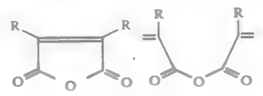
1. A stable polymer polyol composition comprising a continuous phase, a disperse phase within the continuous phase, and a dispersant for enhancing the stability of the polymer polyol, wherein

(a) the disperse phase consists essentially of vinyl polymer particles;

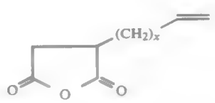
(b) the continuous phase consists essentially of a first polyoxyalkylene polyether polyol; and

(c) a dispersant produced by the process comprising:

(1) polymerizing, in the presence of a free radical initiator, from about 1 to about 50 weight percent of at least one anhydride monomer selected from the group consisting of C_1-C_{20} anhydride monomers having a formula selected from the group consisting of:



and



where each R group is independently H, lower alkyl or phenyl and x is an integer from 0 to 6; in from about 99 to about 50 weight percent of a second polyoxyalkylene polyether polyol to form a single phase homogeneous liquid intermediate reaction product and

(2) esterifying from about 1 to about 100 mole percent of the total anhydride groups in the intermediate reaction product with the hydroxyl groups of the second polyoxyalkylene polyether polyol to form the dispersant, carboxylic acid groups being produced thereby;

where the polymerizing and esterifying are conducted (i) simultaneously in situ or (ii) sequentially with esterifying following polymerizing;

said dispersant being employed in an effective amount to stabilize the resulting polymer polyol.

5,358,985

IONIC SILOXANE AS INTERNAL MOLD RELEASE AGENT FOR POLYURETHANE, POLYURETHANEUREA AND POLYUREA ELASTOMERS

John E. Dewhurst, and Ronald M. Pearlstein, both of Macungie, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 16, 1992, Ser. No. 992,360

Int. Cl.[5] C08K *5/20*

U.S. Cl. 524—233 **16 Claims**

1. In an active hydrogen-containing B-side composition for reaction with a polyisocyanate-containing A-side composition to make a polyurethane, polyurethaneurea or polyurea elastomer by reaction injection molding, the improvement which comprises a mold release composition consisting essentially of the reaction product of triethylenediamine and a C_2–C_{21} epoxide reacted in the presence of a carboxy functional siloxane.

5,358,986

COVER FOR ACCOMMODATING AIR BAG IN AIR BAG SYSTEM

Norio Onofusa, Yokohama, and Toshiaki Yamazaki, Tokyo, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Filed Nov. 27, 1991, Ser. No. 799,832

Claims priority, application Japan, Nov. 29, 1990, 2-325391

Int. Cl.[5] C08K *5/09*

U.S. Cl. 524—284 **7 Claims**

1. A cover for accommodating an air bag in an air bag system, wherein said cover is a unitary molded body obtained by an injection molding of a thermoplastic elastomer consisting essentially of the following components (a), (b), (c) and (d) and having a hardness of between 60 and 85 measured according to JIS K 6301 TypeA, said cover having a recess for accommodating the air bag and a portion having a fragile structure to be broken when the air bag is expanded:

(a) A hydrogenated styrene and conjugated diene block copolymer between 30% by weight and 55% by weight and obtained by hydrogenating a block copolymer composed of at least two polymer blocks including styrene units as a main part thereof, and at least one polymer block including conjugated diene units, having 1.4 bound units and 1.2 bound units in a ratio of 1.4 bound units to 1.2 bound units between 75 to 25 and 50 to 50, as a main part thereof, a content of the styrene in the copolymer being between 20% by weight and 40% by weight and an umber-average molecular weight of the copolymer being 10^5 or more;

(b) a plasticizer to be used for a rubber, between 25% by weight and 50% by weight; and

(c) an olefin group resin between 15% by weight and 30% by weight;

(d) additives including at least an antioxidant, a light stabilizer and a heat stabilizer of 5 parts by weight or less based on a total of 100 parts of components (a), (b) and (c).

5,358,987

POLYSILANE COMPOSITIONS

Masahiro Kanai, Tokyo; Hisami Tanaka, Yokohama; Harumi Sakon, Tokyo; Tatuyuki Aoike, Nagahama; Kouichi Matuda, Nagahama; Keishi Saitou, Nagahama; Mituyuki Niwa, Nagahama, and Masahumi Sano, Nagahama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

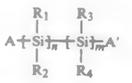
Filed Jun. 12, 1992, Ser. No. 689,879

Claims priority, application Japan, Sep. 27, 1989, 1-249021; Dec. 11, 1989, 1-319003; Dec. 11, 1989, 1-319004

Int. Cl.[5] C08K *5/17*

U.S. Cl. 524—254 **8 Claims**

1. A polysilane composition comprising a polysilane compound for forming film having a weight average molecular weight of 6000 to 200000 said polysilane compound being free from chlorine and oxygen containing groups and which is represented by the following general formula (I) and at leash either an acceptor level forming material comprising a halogen compound represented by the general formula: MXa wherein, M is an element belonging to the group VA of the periodic table, X is halogen element, and a is an integer whose value is determined by the valence number of said element M or a donor level forming material comprising an amine compound, in which the content of said acceptor level forming material or said donor level forming material or the total content of a combination of said acceptor level forming material and said donor level forming material is 1×10^{-4} to 10 parts by weight versus 100 parts by weight of said polysilane compound,



(I)

wherein, R_1 is an alkyl group of 1 to 2 carbon atoms; R_2 is an alkyl group, cycloalkyl group, aryl group or aralkyl group of 3 to 8 carbon atoms; R_3 is an alkyl group of 1–4 carbon atoms; R_4 is an alkyl group of 1 to 4 carbon atoms; A and A′ respectively are an alkyl group, cycloalkyl group, aryl group or aralkyl group of 4 to 12 carbon atoms wherein the two substituents may be the same or different one from the other; and each of n and m is a mole ratio showing the proportion of the number of respective monomers versus the total of the monomers in the polymer wherein $n+m=1$, $O<n\leqq1$ and $O\leqq m<1$.

5,358,988

WATER-IN-OIL EMULSIONS

Ludwig Schieferstein, Ratingen; Herbert Fischer, Duesseldorf; Hermann Kroke, Mettmann; Brigitte Spei, Duesseldorf; Volker Wehle, Haan; Rainer Jeschke, Duesseldorf, and Uwe Ploog, Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP91/02081, § 371 Date Jul. 14, 1993, § 102(e) Date Jul. 14, 1993, PCT Pub. No. WO92/08744, PCT Pub. Date May 29, 1992

PCT Filed Nov. 5, 1991, Ser. No. 50,457

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1990, 4036207; Apr. 8, 1991, 4111334

Int. Cl.[5] C08K *5/10*

U.S. Cl. 524—280 **20 Claims**

1. Water-in-oil emulsions comprising emulsion polymers that are dissolved in water, swellable in water, or both dissolved in and swellable in water in the presence of water-in-oil emulsifiers, in a liquid oil phase that contains below 0.3% by weight of dissolved water and contains monoether compounds, the monoether compounds containing two at least C_5 hydrocarbon moieties linked by the ether oxygen, the hydrocarbon moieties of the monoether compounds optionally being substituted by inert groups.

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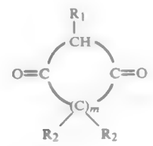
5,358,975

COMPOSITIONS OF POLYPHENYLENE OXIDE OR MIXTURES OF POLYPHENYLENE OXIDE WITH β-DIKETONES

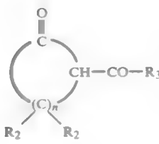
Andrea Casarini; Giorgio della Fortuna, and Aurelio De Chirico, all of Milan, Italy, assignors to Enichem S.p.A., Milan, Italy

Continuation of Ser. No. 774,514, Oct. 8, 1991, Pat. No. 5,194,476. This application Mar. 12, 1993, Ser. No. 30,877
Claims priority, application Italy, Oct. 10, 1990, 21699 A/90
The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.
Int. Cl.[5] C08K 5/20, 5/10
U.S. Cl. 524—360 20 Claims

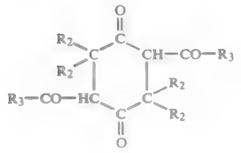
1. Polymeric compositions based on at least one polyphenylene ether (PPE) obtained from the (co)polymerization by oxidative coupling of one or more substituted phenols, either alone or together with at least one (co)polymer of styrene, characterized by the fact that they contain a stabilizing additive in a stabilizing amount of at least one compound having at least one ketone selected from the group consisting of the following structural formulae:



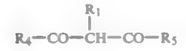
(I)



(II)



(IIB)



(III)

where m is an integer ranging from 2 to 5, and n is an integer ranging from 3 to 6, R_1 and R_2, which can be independently either the same or different, are selected from the group consisting of hydrogen, alkyl, cycloalkyl, arylalkyl, aryl, haloalkyl, acyl radical, a chlorine atom, a bromine atom and a $-(CH_2)_x-COOR_6$ radical where x is an integer ranging from 1 to 5, and R_6 is selected from the group consisting of hydrogen, alkyl, cycloalkyl, arylalkyl, aryl, alkylaryl, haloalkyl, haloaryl and haloarylalkyl, R_4 and R_5, which can be independently either the same or different, are selected from the group consisting of:

cycloalkyl, arylalkyl, haloalkyl;

aryl, alkylaryl, haloaryl, haloalkylaryl;

OR_7, CH_2R_7, CH_2-COR_7 and CH_2-COOR_7 wherein R_7 independently is selected from the group consisting of hydrogen, alkyl, cycloalkyl, arylalkyl, haloalkyl, aryl, alkylaryl, haloaryl and haloalkylaryl and R_3 is selected from the group consisting of

hydrogen

alkyl, cycloalkyl, arylalkyl, haloalkyl;

aryl, alkylaryl, haloaryl, haloalkylaryl;

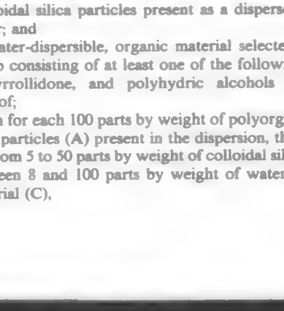
OR_7, CH_2R_7, CH_2-COR_7 and CH_2-COOR_7 wherein R_7 independently is selected from the group consisting of hydrogen, alkyl, cycloalkyl, arylalkyl, haloalkyl, aryl, alkylaryl, haloaryl and haloalkylaryl.

5,358,976

AQUEOUS FILM-FORMING COMPOSITIONS FOR CONTROLLING THE RELEASE OF ACTIVE AGENTS

John T. Woodard; Martin C. Musolf, and Patrick J. Miller, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation of Ser. No. 787,749, Nov. 5, 1991, abandoned, which is a continuation of Ser. No. 10,484, Feb. 3, 1987, abandoned. This application Feb. 11, 1993, Ser. No. 17,404
Int. Cl.[5] C08L 83/04, 43/04
U.S. Cl. 524—377 11 Claims



1. An aqueous coating composition for forming an elastomer coating around an active core for the controlled release of an active agent through said coating, said composition comprising a dispersion of:

A) polyorganosiloxane latex particles consisting essentially of a cross-linked reaction product of an oil-in-water emulsion of:

i) 100 parts by weight of a polydiorganosiloxane polymer of the formula $HO(R_2SiO)_xH$;

ii) 0.5 to 15 parts by weight of an alkoxy silicon compound selected from the group consisting of silanes of the formula $R'_zSi(OR'')_{4-z}$, a partial hydrolyzate of the silane where the partial hydrolyzate is soluble in said polydiorganosiloxane polymer, and mixtures of the silane and partial hydrolyzate; and

iii) a quantity of anionic surfactant effective to both disperse said polydiorganosiloxane polymer in water and to catalyze the reaction of said alkoxy silicon compound with said polydiorganosiloxane polymer;

wherein said emulsion is maintained at a temperature of at least 15° C. for at least 5 hours at a pH of less than 5 until said cross-linked reaction product is formed, and where R is selected from the group consisting of phenyl, vinyl, alkyl, and 3,3,3-trifluoropropyl radicals, R′ is a monovalent hydrocarbon radical having up to 12 carbon atoms, R″ is an alkyl radical having 1 to 6, inclusive, carbon atoms, x has an average value in the range of from 3 to 100, inclusive, and a is 0 or 1;

B) colloidal silica particles present as a dispersed phase in water; and

C) a water-dispersible, organic material selected from the group consisting of at least one of the following: polyvinylpyrrollidone, and polyhydric alcohols and esters thereof;

wherein for each 100 parts by weight of polyorganosiloxane latex particles (A) present in the dispersion, there is present from 5 to 50 parts by weight of colloidal silica (B), and between 8 and 100 parts by weight of water-dispersible material (C),

and wherein the viscosity of the entire mixture forming the aqueous coating composition is in a range which permits coating the coating composition on an active core, and the mixture forms a continuous, elastomeric film upon removal of the aqueous portion of said mixture and said film is free of any catalysts and other materials which are toxic to animals.

5,358,991

FLAME RETARDED POLYETHYLENE WIRE INSULATIONS

Douglas D. O'Brien, Richmond, Ind., assignor to Belden Wire & Cable Company, Richmond, Ind.

Filed Jul. 15, 1993, Ser. No. 91,977
Int. Cl.[5] C08K 3/10, 5/02, 3/38; C08L 23/04
U.S. Cl. 524—399 19 Claims

1. A flame retarded composition for wire insulations comprising:

a polyethylene blend comprising a high density polyethylene, in an amount at least about 50 parts per hundred parts of said polyethylene blend, a low density polyethylene in an amount of at least about 10 per hundred parts of said polyethylene blend, a very low density polyethylene, in an amount of at least about 5 parts per hundred of said polyethylene blend, and a polypropylene lubricating polymer, in an amount from about 2 to about 10 parts per hundred;

a primary brominated flame retardant in an amount from about 30 to about 40 parts per hundred of said polyethylene blend;

a secondary chlorinated flame retardant, in an amount from about 5 to about 15 parts per hundred;

a mixture comprising a first flame retarding material of antimony oxide in an amount from about 12 to about 20 parts per hundred and a second flame retarding material in an amount from about 7 to about 11 parts per hundred, said second flame retarding material is selected from the group consisting of zinc borate, zinc stearate, zinc stannate and ammonium octamolybdate;

a first hindered phenolic stabilizer, in an amount from about 0.05 to about 0.30 parts per hundred; and

a second hindered phenolic stabilizer, in an amount from about 0 to about 0.30 parts per hundred.

5,358,992

DIE-ATTACH COMPOSITION COMPRISING POLYCYANATE ESTER MONOMER

Stephen M. Dershem; Deborah L. Derfelt, both of San Diego, and Dennis B. Patterson, La Jolla, all of Calif., assignors to Quantum Materials, Inc., San Diego, Calif.

Filed Feb. 26, 1993, Ser. No. 23,962
Int. Cl.[5] C08K 3/08, 5/09; H01B 1/02; C08G 73/00
U.S. Cl. 524—439 17 Claims

1. A composition for attaching a semiconductor device to a substrate comprising:

8 to 20 wt. percent monomer vehicle comprising at least one polycyanate ester monomer;

80 to 92 wt. percent electrically conductive metal filler substantially free of catalytically active metal ions; and

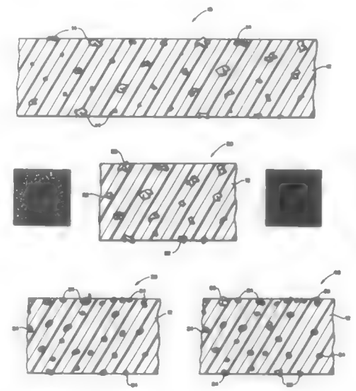
50 to 1500 ppm metal catalyst wherein said monomer vehicle is liquid under ambient conditions.

5,358,993

INLAID GRANITE PLASTIC FLOOR TILE

Walter C. Timm, Cornwall, and Michael H. McNally, New Windsor, both of N.Y., assignors to Tarkett AB, Rosneby, Sweden

Continuation-in-part of Ser. No. 819,135, Jan. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 589,595, Sep. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 413,208, Sep. 27, 1989, Pat. No. 4,965,299. This application Nov. 25, 1992, Ser. No. 981,225
Int. Cl.[5] C08K 3/34
U.S. Cl. 524—445 49 Claims



1. A method for making a tile composition formed with resinous chips which are partially cross-linked to allow such chips to remain discrete during processing, which method comprises:

(a) providing a tile base in the form of a filled, thermoplastic material, said tile base containing (i) about 10 to 25 weight percent of a thermoplastic polymer in the form of polyvinyl chloride homopolymer or a vinyl chloride copolymer in which the vinyl chloride portion is predominant, (ii) about 50 to 85 weight percent of a filler material and (iii) a lubricant component; and

(b) adding particulate materials in the form of filled thermoplastic chips to said tile base, said chips containing (i) about 25 to 80 weight percent of a thermoplastic polymer in the form of polyvinyl chloride homopolymer or a vinyl chloride copolymer in which the vinyl chloride portion is predominant, (ii) about 10 to 75 weight percent of filler material and (iii) a plasticizer selected from the group consisting of phenolic resin, polyester or epoxy resin, each of said chips being cross-linked in an amount of from about 18 weight percent of the polymeric phase to an amount not greater than an amount which prevents flowing at elevated temperatures.

5,358,994

THERMOPLASTIC MATERIAL FOR PRODUCTION AND REPAIR OF POLYMERIC PRODUCTS AND COATING OF METALS

William A. Mallow, Helotes, Tex., assignor to Gas Research Institute, Chicago, Ill.

Filed Aug. 31, 1992, Ser. No. 938,453
Int. Cl.[5] C08K 3/04
U.S. Cl. 524—495 9 Claims

1. A thermoplastic repair and coating composition, comprising about 100 to 800 parts by weight of polyethylenes or copolymers thereof having a melt index of about 1 to 4 g/10 min.,

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a density of about 0.93 to 0.95 g/cc, and a weight average molecular weight of about 5×10^4 to 1×10^5;

about 100 to 400 parts by weight of polyethylene having a melt index of about 2 to 6.5 g/10 min., a density of about 0.930 to 0.950 g/cc, and a molecular weight of about 6×10^4 to 2×10^5;

about 0 to 100 parts per weight of polypropylene having a melt index of about 5 to 9 g/10 min., and a density of about 0.8 to 1.2 g/cc;

about 0 to 150 parts by weight of copolymer selected from the group consisting of ethylene-propylene copolymers and ethylene-vinyl acetate copolymers;

about 0 to 100 parts by weight of graphite or carbon black;

about 0.04 to 0.1 parts by weight of antioxidant; and

about 0.1 to 2.0 parts by weight of ultraviolet radiation stabilizer, said composition having adhesive properties that make it suitable for the repair and coating of soiled surfaces in the absence of cleaning and scraping.

5,358,995

SURFACE WETTABLE SILICONE HYDROGELS

Yu-Chin Lai, Pittsford; Dominic V. Ruscio, Webster, and Paul L. Valint, Jr., Pittsford, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

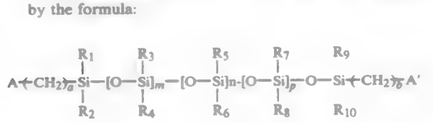
Filed May 15, 1992, Ser. No. 883,449

Int. Cl.[5] C08F *230/08*

U.S. Cl. 524—547 **21 Claims**

1. A silicone-containing, hydrogel material formed from the polymerization product of a monomer mix comprising:

a) an acrylic-capped polysiloxane prepolymer represented by the formula:



wherein;

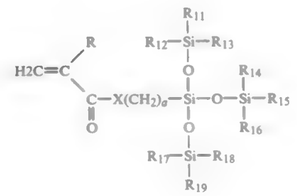
A and A′ are independently an ester or amide of an acrylic or a methacrylic acid;

R_1–R_{10} are independently an alkyl, fluoroalkyl, alcohol, ether, or fluoroether group having 1–10 carbons, or an aromatic group having 6–18 carbons;

m, n, and p are independently 0 to 200 m+n+p being from about 23 to 200; and

a and b are independently 1 to 10;

b) a bulky polysiloxanylalkyl (meth)acrylate monomer represented by the formula:



wherein:

X is O or N—R;

R is H or CH_3;

R_{11}–R_{19} are independently an alkyl, fluoroalkyl, alcohol, ether or fluoroether group having 1–10 carbons, or an aromatic group having 6–18 carbons; and

a is 1, or 3 to 10; and

c) at least one hydrophilic monomer.

5,358,996

ROOM TEMPERATURE CURABLE POLYETHER COMPOSITION

Toshio Takago, Annaka; Kouichi Yamaguchi, Takasaki; Shinichi Sato, and Takashi Matsuda, both of Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

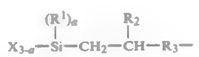
Filed Aug. 4, 1993, Ser. No. 101,709

Claims priority, application Japan, Aug. 4, 1992, 4-227983

Int. Cl.[5] C08L *83/00*; C08G *77/06*; C09K *3/00*

U.S. Cl. 524—588 **9 Claims**

1. A room temperature curable polyether composition, comprising a polyether compound of which at least one terminal has a silicon-containing organic group, represented by the general formula (1):



(1)

wherein R^1 is an alkyl group having 1 to 12 carbon atoms or an aryl group having 6 to 12 carbon atoms, R^2 is a hydrogen atom or a monovalent organic group having 1 to 20 carbon atoms, R^3 is a divalent organic group having 1 to 20 carbon atoms, X is a hydrogen atom, a halogen atom, a hydroxyl group, an alkoxyl group, an alkenyloxy group, an acyloxy group, a ketoximate group, an amide group, an aminoxy group or a mercapto group and a is an integer of 0 to 2, and of which backbone chain comprises a fluorine-containing polyether chain with a molecular weight of 500 to 50,000, represented by the general formula (2):



(2)

wherein R_f is a perfluoroalkyl group having 1 to 12 carbon atoms, R^4 is divalent organic group having 1 to 20 carbon atoms, m is an integer of 4 or more and n is an integer of 0 of more; and a curing catalyst.

5,358,997

REACTIVE AQUEOUS POLYUREA DISPERSIONS PREPARED BY AN EMULSION POLYMERIZATION PROCESS

James W. Rosthauser, Glen Dale, and Robin E. Tirpak, Wheeling, both of W. Va., assignors to Miles Inc., Pittsburgh, Pa.

Filed May 7, 1992, Ser. No. 879,828

Int. Cl.[5] C08J *3/20*; C08K *3/20*; C08L *75/00*

U.S. Cl. 524—591 **16 Claims**

1. A process for the preparation of an aqueous polyurea dispersion containing blocked isocyanate groups and unreacted isocyanate-reactive groups selected from primary and secondary amino groups and hydroxyl groups which comprises

I) dispersing in water

a) a polyisocyanate which has an average functionality of 1.5 to 4.0 and an isocyanate content of at least 12% by weight,

b) 10 to 70 equivalent percent, based on the isocyanate groups of component a), of a monofunctional blocking agent which is more reactive with isocyanate groups than water and

c) an amine component containing

i) 2 to 55 equivalent percent of a polyamine having at least two primary and/or secondary amino groups and a molecular weight of at least 1000,

ii) 5 to 70 equivalent percent of a polyamine having at least two primary and/or secondary amino groups, a molecular weight of less than 400 and at least one anionic or potential anionic group and

iii) up to 70 equivalent percent of an isocyanate-reactive compound having a molecular weight of less than 400 and containing at least one primary or secondary amino group and at least one other isocyanate-reactive group selected from primary and secondary amino groups and hydroxyl groups,

wherein the equivalent percents of component c) are based on the total equivalents of isocyanate-reactive groups present in component c) and wherein the polyurea contains an equivalent ratio of blocked isocyanate groups to said unreacted isocyanate-reactive groups of 2:1 to 0.8:1, and

II) reacting the polyisocyanate with components b) and c) to form an aqueous polyurea dispersion.

5,358,998

AQUEOUS POLYMER DISPERSIONS

Kurt Wendel, Ludwigshafen; Thomas Schwerzel, Meckenheim, and Guenter Hirsch, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 7, 1992, Ser. No. 957,170

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1991, 4133193

Int. Cl.[5] C08K *5/13*

U.S. Cl. 524—734 **43 Claims**

1. An aqueous polymer dispersion obtained by free-radical polymerization of a monomer mixture containing from 39 to 69% by weight of at least

one ester of α,β-monoethylenically unsaturated mono- and dicarboxylic acids having 3 to 6 carbon atoms with alkanols having 1 to 6 carbon atoms, from 30 to 60% by weight of styrene, from 1 to 10% by weight of at least one monomer selected from the group

consisting of α,β-mono-ethylenically unsaturated carboxylic acids having 3 to 6 carbon atoms, amides and nitriles thereof, and

from 0 to 10% by weight of crosslinking monomers, which contains at least one added starch-degradation product which is water-soluble at room temperature and obtained by hydrolysis in the aqueous phase and has a weight average molecular weight M_w of from 2500 to 25000.

5,358,999

PROCESS FOR PREPARATION OF PHOTOSENSITIVE COMPOSITIONS OF STILBAZOLIUM QUATERNARY

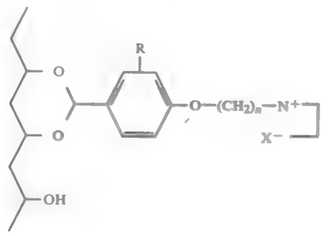
John Curtis, Princeton, N.J., assignor to Ulano Corporation, Brooklyn, N.Y.

Division of Ser. No. 890,238, May 29, 1992, Pat. No. 5,330,877. This application Apr. 5, 1993, Ser. No. 42,682

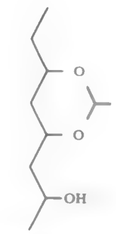
Int. Cl.[5] C08F *8/00*

U.S. Cl. 525—59 **9 Claims**

1. A process for preparing a compound having a polymer composition of the structure



wherein



represents a polyvinyl alcohol unit,

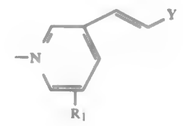
R is hydrogen or alkyl having from 1 to 6 carbon atoms or alkoxy having from 1 to 6 carbon atoms,

n is an integer from 1 to 6,

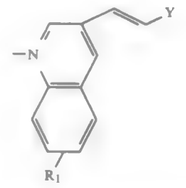
X is an inorganic anion, and



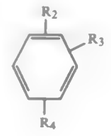
is a radical having the structure



or



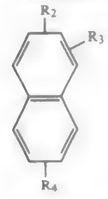
where Y is a monovalent radical having the structure



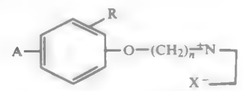
or

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-continued



where R_1, R_2, R_3, and R_4 are hydrogen, alkyl, alkenyl, alkoxy, aralkyl, carboxyl, carboxyl ester, amino, amido, cyano, hydroxy, nitro, isocyanato, sulfonyl halide, sulfonic acid, halide, "and may be the same or different" or R_2 taken together with R_3 is methylenedioxy, which process comprises heating under acidic conditions a polyvinyl alcohol and a compound of the structure



wherein A is a formyl or acetal group and R, n, X and



are the same as defined above.

5,359,000

GOLF BALL

Akihiko Hamada, Kakogawa; Kuniyasu Horiuchi, Kobe, and Akira Kato, Nishinomiya, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kyogo, Japan

Filed Sep. 25, 1992, Ser. No. 950,685

Claims priority, application Japan, Sep. 25, 1991, 3-274582

Int. Cl.[5] C08L *23/26*; A63B *37/12*

U.S. Cl. 525—74 **9 Claims**

1. A golf ball comprising a core and a cover covering the core, said cover comprising a heated mixture of the following three components:

(A) an ionomer resin comprising a copolymer of 10 to 20% by weight of an α,β-unsaturated carboxylic acid having 3 to 8 carbon atoms with 80 to 90% by weight of α-olefin, at least a portion of the carboxyl groups in said copolymer being neutralized with a metal ion;

(B) a polymer containing at least maleic anhydride as one constituent component, selected from the group consisting of maleic anhydride-modified ethylene-propylene copolymer, maleic anhydride-modified ethylene-propylene-diene monomer terpolymer, maleic anhydride-modified polyethylene, maleic-anhydride modified polypropylene, ethylene-ethyl acrylate-maleic anhydride terpolymer, and mixtures thereof; and

(C) a metal salt selected from the group consisting of metal hydroxides, metal carbonates and metal acetates.

5,359,001

POLYMER BLENDS OF CYCLOOLEFIN POLYMERS AND POLYOLEFINS

Ulrich Epple, Eschborn, and Michael-Joachim Brekner, Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main

Filed Apr. 20, 1993, Ser. No. 49,990

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1992, 4213219; Dec. 5, 1992, 4241001

Int. Cl.[5] C08L *45/00, 53/00, 23/04, 23/10*

U.S. Cl. 525—97 **17 Claims**

1. A process for preparing a polymer blend comprising (i) combining at least one of (A) a finely particulate cycloolefin polymer, and (B) a finely particulate polyolefin, with (C) at least one block copolymer, to form a mixture; and (ii) processing the mixture at an elevated temperature, under the action of shear forces, to form the polymer blend, wherein:

in the polymer blend, (A) is present in an amount of 0 to 95 parts by weight, (B) is present in an amount of 0 to 95 parts by weight, (C) is present in an amount of 0.1 to 99 parts by weight and, the sum of the amounts of (A), (B) and (C) present is 100 parts by weight;

the finely particulate cycloolefin polymer (A) comprises at least one monomer of formula I, II, III, IV, V and VI and at least one monomer of formula VII and VIII, but said cycloolefin polymer is not a block copolymer;

the block copolymer (C) is obtained by polymerizing:

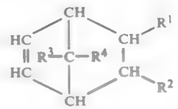
a) 0.1 to 95% by weight, with respect to the total amount of monomers employed, of at least one monomer of the formula I, II, III, IV, V and VI,

b) 0 to 95% by weight, with respect to the total amount of monomers employed, of a cycloolefin of the formula VII, and

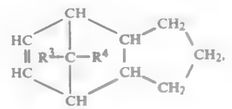
c) 0 to 99% by weight, with respect to the total amount of monomers employed, of at least one acyclic olefin of the formula VIII,

at a temperature of −78° to 150° C. and a pressure 0.01 to 64 bar, in the presence of a catalyst comprising a cocatalyst and a metallocene, and at a molecular weight distribution M_w/M_n of less than 2, always with respect to the polymer block forming, the reaction conditions are changed one or more times in such a way that the monomer/comonomer ratio changes by at least 10% or a further polymerizable monomer of the formulae I–VIII is metered into the monomer or the monomers; and

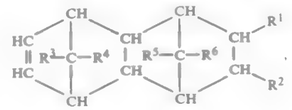
the monomers of the formula I, II, III, IV, V, VI, VII and VIII are:



(I)

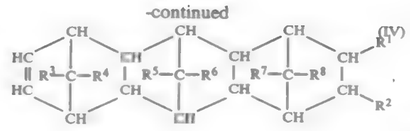


(II)

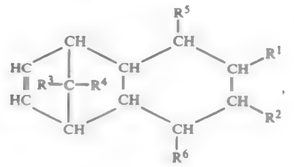


(III)

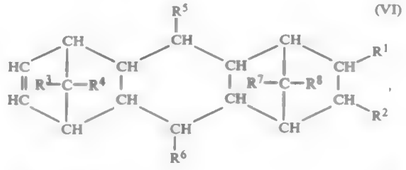
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(IV)



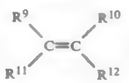
(V)



(VI)



(VII)



(VIII)

in which R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, R^{10}, R^{11}, and R^{12} are identical or different and are a hydrogen atom or a C_1–C_8-alkyl radical and n is a number from 2 to 10.

5,359,002

EPOXY POLYACRYLATE WITH OH OR AMIDE-CONTAINING MONOMER

David S. Cobbledick, Kent; Donald F. Reichenbach, Massillon; Brian Sullivan, Akron, and Robert L. Spencer, Lyndhurst, all of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Continuation of Ser. No. 703,986, May 22, 1991, abandoned, which is a division of Ser. No. 351,353, May 12, 1989, Pat. No. 5,084,353. This application Sep. 13, 1993, Ser. No. 120,702

Int. Cl.[5] C08L *33/10, 31/04, 63/10*

U.S. Cl. 525—119 **3 Claims**

1. A thermosetting coating composition consisting essentially of:

(a) 100 parts by weight of at least one polymerizable epoxy based oligomer having at least two acrylate groups and a weight average molecular weight of from about 500 to about 1,500;

(b) from about 80 to about 160 parts by weight of at least one copolymerizable ethylenically unsaturated monomer other than those of component (c);

(c) from about 10 to about 120 parts by weight of at least one copolymerizable monoethylenically unsaturated compound having a —CO— group and one or more members of the group consisting of —NH_2, —NH—, and —OH group; and

(d) up to 15 parts by weight of a polyvinyl acetate adhesive agent;

said coating composition having a viscosity of from 5,000 to 10,000 cps at 86° F.

5,359,003

POLYSULFIDE DERIVATIVES

Gerhard Hörpel, Nottuln, and Karl-Heinz Nordsiek, Marl, both of Fed. Rep. of Germany, assignors to Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Division of Ser. No. 624,009, Dec. 7, 1990, Pat. No. 5,241,108. This application Aug. 11, 1993, Ser. No. 104,681

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1989, 3941002

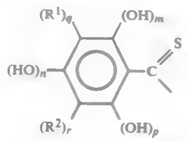
Int. Cl.[5] C08F *8/00*

U.S. Cl. 525—167 **4 Claims**

1. A process for vulcanizing rubber which comprises blending a sulfide derivative of an aromatic dithiocarboxylic acid of the formula

$(A—S—S—)_z X —S—S—A'$ with an organic polymeric rubber to form a mixture and heating the mixture to a temperature in the range of 100° C. to 250° C. wherein

A and A' are, independently, amine-free aromatic thiocarbonyl groups of formula I



wherein

n, m, p, q and r are 0 or 1 and the sum of n+m+p is at least 1,

R^1 and R^2 are, independently, C_1–C_{10}-alkyl radicals, alkenyl radicals with up to 10 carbon atoms (C_1–C_{10}) or aralykyl radicals with up to 15 carbon atoms,

z is a natural number with $0<z<50$, and

x is a divalent or polyvalent (wherein z is greater than 1) linear or branched aliphatic, cycloaliphatic or araliphatic compound, or polymer having a degree of polymerization up to 50 and a valence of at least two,

and where $z=1$, X is a C_1–C_{30}-alkylene radical, or alkyenylene radical with up to 30 carbon atoms (C_1–C_{30}), or aralkylene radical with up to 40 carbon atoms and wherein $1<4$, X is a polyvalent C_1–C_{20z} alkane, polyvalent alkene with up to 20z carbon atoms (C_1–C_{20z}) or polyvalent arylalkane with up to 20z carbon atoms.

5,359,004

COCRACKED POLYMER BLEND AND PRODUCTS PRODUCED THEREFROM

Dale J. Wilpers, Houston, and Charles C. Hwo, Sugar Land, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 894,485, Jun. 5, 1992, abandoned. This application Sep. 2, 1993, Ser. No. 116,105

Int. Cl.[5] C08L *23/26*

U.S. Cl. 525—194 **2 Claims**

1. A method of producing a polypropylene-polybutylene blend comprising the steps of:

(a) utilizing polybutene with a starting melt flow of from about 25–75 g/10 min. blended with polypropylene with a starting melt flow of from about 0.1 to 0.8 g/10 min.;

(b) adding to (a) from about 1000–5000 ppm of a peroxide cracking agent;

(c) preferentially cracking the polybutene component of (b) at a temperature of about 130° C., and the polypropylene component of (b) at a temperature of about 170° C.; and

(d) producing a polypropylene-polybutylene blend having a melt flow of from about 1–100 g/10 min.

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5,359,005

STABLE, ONE-PACKAGE, NON-GELLED COATING COMPOSITION CURABLE UNDER AMBIENT CONDITIONS

Charles M. Kania, Natrona Heights; Padmanabhan Sundararaman, Allison Park; David T. McKeough; Gregory J. McCollum, both of Gibsonia, and James B. O'Dwyer, Valencia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 692,417, Apr. 29, 1991, abandoned. This application Dec. 29, 1992, Ser. No. 998,159

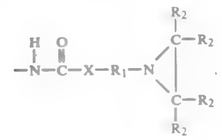
Int. Cl.[5] C08F *265/00, 283/02, 291/12;* C08K *5/29*

U.S. Cl. 525—203 48 Claims

1. Stable, non-gelled, coating compositions capable of being cured at ambient conditions to form coatings having excellent durability comprising:

(A) at least one polymer, oligomer or combinations thereof having a number average molecular weight of at least about 100 and bearing at least two moieties selected from the following groups:

(1) aziridine moieties defined by the following structural formula:



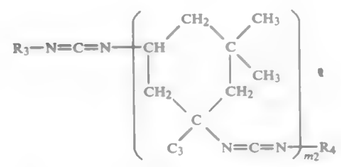
wherein

X represents 0, S, NR, R representing H, alkyl having from 1 to 12 carbon atoms, or higher, or phenyl,

R_1 represents $(CH_2)_{m1}$, m_1 being an integer ranging from 1 to 3 and

R_2 represents H, CH_3 or combinations thereof, and/or

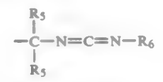
(2) carbodiimide moieties defined by one of the following structural formulas:



(a)

wherein

R_3 and R_4 represent alkyl having one to four carbon atoms, cycloalkyl having from three to six carbon atoms, phenyl or substituted derivatives thereof and m_2 is an integer ranging from 1 to 20; and



wherein

R_5 represents alkyl having from one to three carbon atoms and

R_6 represents alkyl having from 1 to 20 carbon atoms, cycloalkyl having from three to six carbon atoms, phenyl or substituted derivatives thereof; and

(B) at least one polymer, oligomer or combinations thereof having a number average molecular weight of at least about 100 and bearing at least two silyl ester blocked carboxylic acid moieties.

5,359,006

POLY(VINYLALKYLETHER)-CONTAINING HOT MELT ADHESIVES FOR POLYETHLLENE AND POLYPROPYLENE

Matthew A. Kulzick, Warrenville; Wayne R. Pretzer; Tsuei-Yun Lynch, both of Wheaton, and Paul A. Koning, Aurora, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 761,258, Sep. 17, 1991, abandoned, which is a division of Ser. No. 689,353, Apr. 22, 1991, Pat. No. 5,080,978, which is a continuation-in-part of Ser. No. 292,413, Dec. 30, 1988, abandoned. This application Mar. 22, 1993, Ser. No. 34,152

Int. Cl.[5] C08L *23/06, 23/10, 29/10, 23/20*

U.S. Cl. 525—231 11 Claims

1. A hot-melt adhesive composition having a melt viscosity in the range of about 100 to about 150,000 centipoise at 177° C. useful for binding polyethylene, polypropylene, and ethylene-propylene copolymers comprising at least about 10 percent by weight of substantially amorphous poly(vinylmethylether), at least about 20 percent by weight of a tackifier resin having a softening point above about 75° C., and at least about 50 percent by weight of a thermoplastic resin selected from the group consisting of amorphous C_3 to C_6 olefins homopolymers, amorphous copolymers consisting of C_2 to C_6 olefins, and low density polyethylene.

5,359,007

THERMOPLASTIC RUBBER OBTENTION METHOD

Luiz C. Oliveira Da Cunha Lima, Rio de Janeiro, Brazil, assignor to Relastomer S/A, Rio de Janeiro, Brazil

PCT No. PCT/BR91/00015, § 371 Date May 26, 1992, § 102(e) Date May 26, 1992, PCT Pub. No. WO92/01745, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 24, 1991, Ser. No. 842,408

Claims priority, application Brazil, Jul. 26, 1990, 9003627

Int. Cl.[5] C08K *3/08;* C08L *23/04, 27/06, 9/00*

U.S. Cl. 525—232 5 Claims

1. A method of producing a thermoplastic rubber comprising the following steps:

forming a mixture of waste vulcanized rubber, solvent and a thermoplastic selected from the group consisting of polyolefins and vinylchloride polymers and copolymers;

grinding said mixture in a mill in the presence of manganese which devulcanizes said vulcanized rubber to a reclaimed rubber; and

heating and homogenizing said mixture to result in a smooth, homogeneous thermoplastic rubber.

5,359,008

SECOND-ORDER NONLINEAR OPTICAL POLYMER AND METHOD FOR PRODUCING THE SAME

Michiyuki Amano, Urizura; Makoto Hikita, Mito; Satoru Tomaru, Mito; Toshikuni Kaino, Mito, and Yoshito Shuto, Hitachi, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed May 17, 1993, Ser. No. 62,138

Claims priority, application Japan, May 18, 1992, 4-149995

Int. Cl.[5] C08F *222/30, 228/06, 8/32*

U.S. Cl. 525—295 10 Claims

1. A second-order nonlinear optical polymer comprising a polymer backbone and side groups bonded to the polymer backbone, wherein the side groups include one or more of a first nonlinear optical group represented by the following formula (C-1) and one or more of a second nonlinear optical group represented by the following formula (C-2) or (C-2)':



(C-1)

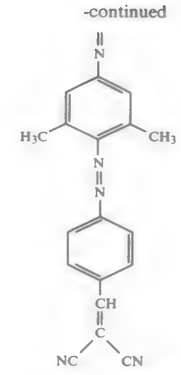
(C-2)

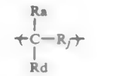
(C-2)'

wherein π_1 to π_n, π'_1, π'_2, and π''_1 each represent independently a π-conjugated cyclic compound group; X_1 to X_{n-1}, X'_1, Y_1 to Y_{n-1}, and Y'_1 each represent independently CH, N, or N→O; A_1, A_2, and A_3 each represent independently an electron attracting group; D_1, D_2, and D_3 each represent independently an electron donating group; and n represents an integer of 3 or greater.

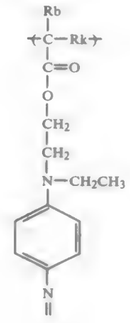
3. A second-order nonlinear optical polymer as recited in claim 1, which includes three units represented by the following formulae (C-9), (C-10), and (C-11), wherein the unit represented by formula (C-11) includes the first nonlinear optical group represented by formula (C-1) and the unit represented by formula (C-10) includes the second nonlinear optical group represented by formula (C-2):

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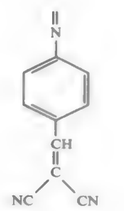


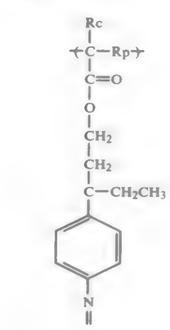


(C-9)



(C-10)





(C-11)

wherein R_a to R_c each represent independently an alkyl group, deuterized alkyl group, substituted alkyl group, substituted deuterized alkyl group, hydrogen atom, deuterium atom, phenyl group, deuterized phenyl group, substituted phenyl group, substituted deuterized phenyl group, or halogen atom; R_d represents a phenyl group, deuterized phenyl group, substituted phenyl group, substituted deuterized phenyl group, halogen atom, —$COOR_e$, or —$CONR_fR_g$; and R_j, R_k, and R_p each represent independently a group represented by a formula: —CH_2— or —CD_2—.

5,359,009

METHOD FOR MAKING SOLID ELASTOMERIC BLOCK COPOLYMERS

Thomas S. Coolbaugh, Morrisville; Frederick C. Loveless, Yardley, both of Pa., and Demetreos N. Matthews, Ewing, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 735,552, Jul. 25, 1991, Pat. No. 5,292,820, which is a continuation-in-part of Ser. No. 466,233, Jan. 16, 1990, Pat. No. 5,187,236. This application Feb. 14, 1994, Ser. No. 195,180

Int. Cl.[5] C08F *297/04*

U.S. Cl. 525—314 30 Claims

1. A method of preparing a solid elastomeric block copolymer wherein either

1) the terminal blocks are polymers of at least one conjugated diene I, which contains at least five carbon atoms with at least one of each pair of double-bonded carbon atoms in the polymerized diene I units being additionally single-bonded to two carbon atoms, at least one middle or interior block is a butadiene polymer, and at least one middle or interior block is a polymer of at least one aryl-substituted olefin S; or

2) the terminal blocks are random copolymers IB of at least one diene I and butadiene (B), and at least one middle or interior block is a polymer of at least one aryl-substituted olefin S, said butadiene polymer or random IB copolymer blocks containing below about 10% of polyethylene crystallinity after hydrogenation, said method comprising either

1) polymerizing under anionic polymerization conditions a conjugated diene I to form a living I polymer block, adding to the reaction mixture a member of the pair consisting of butadiene (B) and an aryl-substituted olefin S to form a living block polymer containing an I polymer block on the non-living end and a B or S polymer block, adding to the reaction mixture the other member of the pair consisting of B and S to form a living block polymer containing an I polymer block on the non-living end, the remainder of the latter living

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block polymer containing B and S polymer blocks in any order, and coupling the living block polymer in the presence of a coupling agent to form such said category 1) block copolymer; or

2) polymerizing under anionic polymerization conditions a mixture of diene I and butadiene (B) to form a living random IB copolymer block, adding to the reaction mixture an aryl-substituted olefin S to form a living block copolymer containing said random IB copolymer blocks on the non-living end and an S polymer block, and either coupling the latter living block copolymer in the presence of a coupling agent or adding an additional amount of said mixture of diene I and butadiene to the latter living polymer to form said category (2) block copolymer.

5,359,010

METHOD TO IMPART COFFEE STAIN RESISTANT TO POLYAMIDE TEXTILE SUBSTANCES

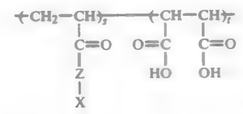
Lidia T. Calcaterra; Mathias P. Koljack, both of Arlington Heights; Qamardin Farishta, Bensenville; Michael G. Kochler; William B. Bedwell, both of Chicago, all of Ill.; Dale A. Hangey, Midlothian, Va., and George D. Green, Park Ridge, Ill., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Division of Ser. No. 894,702, Jun. 5, 1992, which is a division of Ser. No. 500,813, Mar. 27, 1990, Pat. No. 5,135,774. This application Dec. 10, 1992, Ser. No. 988,506

Int. Cl.[5] C08F *222/20, 222/08*

U.S. Cl. 525—327.8 **4 Claims**

1. A composition useful in imparting coffee stain resistance to a textile substrate, said composition comprising a copolymer having the formula



wherein s is 2 to 50 and t is 2 to 50, X is selected from the group consisting of phenyl, naphthyl, 5,6,7,8-tetrahydro-1-naphthyl and 5,6,7,8-tetrahydro-2-naphthyl, and Z is -O-CH_2-CH_2-O-, the copolymer having a weight average molecular weight between about 2,000 and 15,000.

5,359,011

PROCESS FOR THE COMPLETE NEUTRALIZATION OF CHLORINATED POLYVINYL CHLORIDE AND PRODUCT RESULTING THEREFROM

Robert G. Vielhaber, Avon, Ohio, and Raymond W. Ballman, Jr., Louisville, Ky., assignors to The B.F. Goodrich Company, Akron, Ohio

Filed Oct. 14, 1992, Ser. No. 960,654

Int. Cl.[5] C08F *8/42*

U.S. Cl. 525—366 **4 Claims**

1. A method for the neutralization of chlorinated polyvinyl chloride resin to increase the stability of said chlorinated polyvinyl chloride resin comprising chlorinating polyvinyl chloride resin and neutralizing the chlorinated polyvinyl chloride resin by the addition of a neutralizing agent, wherein the neutralizing agent is a weak non-gassing base, wherein the weak non-gassing base is a soluble citrate.

5,359,012

GLYCIDYL AZIDE POLYMER

Guy Ampleman, St-Augustin de Desmaures, Canada, assignor to Her Majesty the Queen as represented by the Ministry of National Defence of Her Majesty's Canadian Government, Ontario, Canada

Division of Ser. No. 955,995, Oct. 2, 1992, Pat. No. 5,256,804. This application Jul. 23, 1993, Ser. No. 95,852

Claims priority, application Canada, Oct. 3, 1991, 2052728

Int. Cl.[5] C07C *247/04, 43/11, 43/115*

U.S. Cl. 525—403 **6 Claims**

1. A process for preparing a linear glycidyl azide polymer, said process comprising the steps of:

epoxidizing polyepichlorohydrin wherein epoxidation occurs only at the ends of the polyepichlorohydrin;

opening the resulting epoxide so as to produce a polymer having terminal groups of the formula —$CR_2(R_3)$—CH_2OH, wherein R_2 is selected from the group consisting of OH, methyl and CH_2OH and R_3 is selected from the group consisting of H and CH_2OH with the proviso that when R_2 is OH, R_3 is H, and when R_2 is methyl or CH_2OH, R_3 is CH_2OH; and azidizing the thus produced polymer with an alkali metal azide.

5,359,013

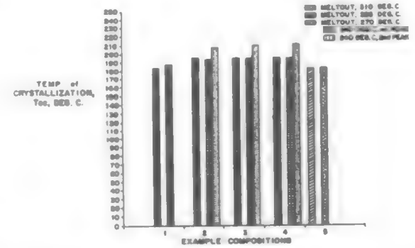
POLYMER NYLON COMPOSITIONS FEATURING IMPROVED RATES OF CRYSTALLIZATION AND METHOD FOR FORMING THE SAME

Charles D. Mason, Chatham Township, Morris County, and Nicholas Vanderkooi, Jr., Pompton Plains, both of N.J., assignors to AlliedSignal Inc., Morristownship, Morris County, N.J.

Continuation of Ser. No. 76,492, Jun. 14, 1993, abandoned, which is a continuation of Ser. No. 609,689, Nov. 6, 1990, abandoned. This application Mar. 24, 1994, Ser. No. 217,004

Int. Cl.[5] C08L *77/00*

U.S. Cl. 525—432 **11 Claims**



1. A process for producing a polyamide molding resin composition suitable for use in extrusion molding and injection molding, comprising at least two polyamides, which process includes the process step of:

heating the polyamide molding resin composition to a temperature which is above the melting point of a first polyamide having the lower melting temperature but below the melting temperature of a second polyamide having the higher melting temperature than the first polyamide, with the proviso that at no time during the process is the temperature of the composition raised to or above the melting temperature of the polyamide having the higher melting temperature.

5,359,014

VINYL-TERMINATED CARBAMYLMETHYLATED MELAMINES, VINYL-TERMINATED POLYURETHANE/POLYAMIDE POLYMERS AND COATING/ADHESIVE COMPOSITIONS CONTAINING SAME

Peter S. Forgione, Stamford; Yuhshi Lah, Orange; Balwant Singh, and William A. Henderson, Jr., both of Stamford, all of Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Division of Ser. No. 264,661, Oct. 31, 1988, Pat. No. 5,175,201. This application Sep. 11, 1992, Ser. No. 943,637

Int. Cl.[5] C08L *75/16*

U.S. Cl. 525—455 **20 Claims**

1. A curable adhesive composition comprising:

A. from about 5 to about 70 weight percent of at least one nitrogen containing heterocyclic compound having as reactive groups at least two vinyl-terminated organic groups, and at least one carbamylmethyl group;

B. from about 30 to about 90 weight percent of a vinyl-terminated polymer containing urethane and, optionally, amide linkages, and having a molecular weight from about 3000 to about 80,000;

C. from about 2 to about 30 weight percent of a polymerizable diluent;

D. from about 0.5 to about 5 weight percent of a free-radical catalyst; and

E. from about 0.5 to about 10 weight percent of an adhesion promoter/coupling agent;

wherein the sum of A, B, C, D and E does not exceed 100 weight percent.

5,359,015

METALLOCENE CATALYSTS AND THEIR PRODUCTION AND USE

Moses O. Jejelowo, Kingwood, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 31,054, Mar. 12, 1993, abandoned, which is a continuation of Ser. No. 922,124, Jul. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 865,579, Apr. 9, 1992, Pat. No. 5,281,679, which is a continuation-in-part of Ser. No. 788,972, Nov. 7, 1991, abandoned. This application Feb. 1, 1994, Ser. No. 190,718

Int. Cl.[5] C08F *4/64*

U.S. Cl. 526—114 **17 Claims**

1. A process for producing ethylene polymers having a broad molecular weight distribution and a unimodal molecular weight distribution, said process comprising the steps of:

(a) polymerizing ethylene monomer, optionally with comonomer, in the presence of a catalyst system comprising:

(i) a first component comprising at least one first transition metal metallocene of Group IV or V of the Periodic Table of Elements having at least one cyclopentadienyl ring that is substituted with a first substituent, which is a C_3 to C_{20} hydrocarbon substituent having a 2° or 3° carbon atom with which it is bonded to said at least one cyclopentadienyl ring of said first component in the system, and a second component comprising at least one second transition metal metallocene of Group IV or V of the Periodic Table of Elements having at least one cyclopentadienyl ring that is substituted with a second substituent, which is hydrogen or optionally a C_3 to C_{20} hydrocarbon substituent different from said first substituent, with which it is bonded to said at least one cyclopentadienyl ring of said second component in the system; and

(ii) an activator selected from ionic activators or alumoxane or combinations thereof.

5,359,016

PROCESS FOR THE SYNTHESIS OF STYRENE-ISOPRENE RUBBER

Wen-Liang Hsu, Copley; Adel F. Halasa, Bath, and Barry A. Matrana, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

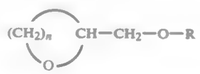
Filed Mar. 29, 1993, Ser. No. 37,835

The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.

Int. Cl.[5] C08F *2/06, 4/48, 236/10*

U.S. Cl. 526—181 **12 Claims**

1. A process for the synthesis of styrene-isoprene rubbers which comprises copolymerizing isoprene monomer and styrene monomer in an organic solvent in the presence of a catalyst system which is comprised of (a) a lithium initiator and (b) a modifier having the structural formula:



wherein n represents an integer within the range of 3 to 6, and wherein R represents an alkyl group containing from 1 to 10 carbon atoms, wherein the molar ratio of the modifier to the lithium initiator is within the range of 2:1 to 40:1.

5,359,017

CATIONICALLY POLYMERIZABLE ORGANIC MATERIAL COMPOSITIONS AND METHOD FOR THE STABILIZATION THEREOF

Fumio Hamazu; Tatsuya Koizumi, both of Yamaguchi; Minoru Yokoshima, Toride; Masaki Fujimoto, Yono, and Takeshi Endoh, Yokohama, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo and Sanshin Chemical Industry Co., Ltd., Yanai, both of Japan

Division of Ser. No. 910,015, Aug. 3, 1992, abandoned. This application Aug. 18, 1993, Ser. No. 108,435

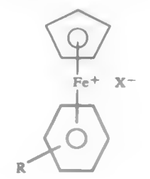
Claims priority, application Japan, Nov. 16, 1990, 2-312152; Oct. 21, 1991, 3-301041

Int. Cl.[5] C08F *4/20, 4/80;* **C08G** *59/18*

U.S. Cl. 526—211 **14 Claims**

1. A method for stabilizing a composition comprising a cationic polymerization catalyst(s) and a cationically polymerizable organic material(s) as essential ingredients, which comprises incorporating in said composition, as a stabilizer, one or more onium salts having a counteranion selected from the group consisting of halogen, perchlorate, alkyl sulfate and p-toluenesulfonate ions, or one or more iron aromatic compound salts represented by the formula (I):

(I)

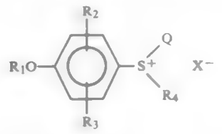


wherein R is hydrogen, halogen, or a C_1–C_4 alkyl group; and X is halogen, perchlorate, alkyl sulfate, or p-toluenesulfonate, said cationic polymerization catalyst(s) being selected from the group consisting of sulfonium salts and ammonium salts, having hexafluoroantimonate or hexafluorophosphate ion as a counteranion.

3. A method according to claim 1, wherein the onium salt stabilizer is a sulfonium salt.

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4. A method according to claim 3, wherein the sulfonium salt stabilizer is represented by the formula (II):



(II)

where R_1 is hydrogen, methyl group, acetyl group, methoxycarbonyl group, ethoxycarbonyl group, or benzyloxycarbonyl group; R_2 and R_3 are independently hydrogen, halogen, or a C_1–C_4 alkyl group; R_4 is a C_1–C_4 alkyl group; Q represents a C_1–C_4 alkyl group, benzyl group, methylbenzyl group, dimethylbenzyl group, trimethylbenzyl group, chlorobenzyl group, dichlorobenzyl group, trichlorobenzyl group, nitrobenzyl group, dinitrobenzyl group, trinitrobenzyl group, or naphthylmethyl group; and X is halogen, perchlorate, alkyl sulfate, or p-toluenesulfonate.

5. A method according to claim 4, wherein Q is a substituted or unsubstituted benzyl group.

6. A method according to claim 5, wherein the sulfonium salt is p-nitrobenzyl-4-hydroxyphenylmethylsulfonium chloride.

5,359,018

METHOD OF CONTROLLING THE POLYMERIZATION OF ACRYLATES

Ming-Hsiung Yeh, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jan. 10, 1994, Ser. No. 179,179
Int. Cl.[5] C08F 4/06
U.S. Cl. 526—221 1 Claim

1. A method of preparing a polyacrylate polymer, said method comprising

(I) contacting and reacting

A. an initiator and

B. one or more acrylic monomers in the presence of

C. a catalyst,

for a time sufficient and at a temperature sufficient to create a polyacrylate polymer, said polymer selected from the group consisting essentially of

i polyacrylate homopolymers and

ii polyacrylate co-polymers, said catalyst being a mixture of at least one metal halide compound selected from Zn, Cd and Hg halides, mixed with I_2, and

(II) quenching the reaction after the desired polyacrylate polymer is formed, and

(III) recovering the polyacrylate polymer from II.

5,359,019

USE OF POLYETHYLENICALLY UNSATURATED MONOMERS IN POLYMERS POLYOL DISPERSANTS

John E. Hayes, Wilmington, Del., and Robert G. Gastinger, West Chester, Pa., assignors to Arco Chemical Technology, L.P., Greenville, Del.

Filed May 17, 1990, Ser. No. 525,269
Int. Cl.[5] C08F 222/40, 220/10, 236/06, 212/08; C08K 5/06
U.S. Cl. 526—262 35 Claims

1. Polymer polyols produced by a process comprising the steps of:

polymerizing, via a free-radical reaction, at least a first monomer having at least two ethylenically unsaturated sites, in the presence of a polyoxyalkylene polyether polyol having a molecular weight within the range of from about 500 to about 15,000, to produce a dispersant; and

polymerizing, via a free-radical reaction, a second monomer in the presence of a base polyol and the dispersant, where the second monomer is different from the first monomer, where the dispersant exhibits a dispersant effect and the second monomer is not the same as the first monomer.

5,359,020

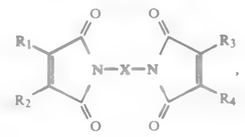
HARDENABLE COMPOSITIONS COMPRISING BISMALEIMIDES, ALKENYLPHENOLS AND PHENOL DIALLYL ETHERS

Rudolf Brunner, Belfaux; René Huwyler, Aesch, and Andreas Kramer, Düdingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 16, 1991, Ser. No. 701,264
Claims priority, application Switzerland, May 22, 1990, 1730/90-5
Int. Cl.[5] C08F 222/40, 228/02, 216/12
U.S. Cl. 526—262 12 Claims

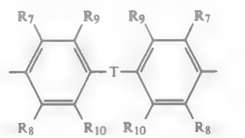
1. A composition comprising

A) a compound of formula I



(I)

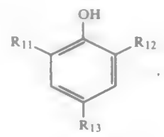
wherein R_1, R_2, R_3 and R_4 are identical or different and each is hydrogen or methyl, and X is $-(CH_2)_p-$, with p = from 2 to 20, phenylene, xylylene, naphthylene, cyclopentylene, 1,5,5-trimethylcyclohexylene-1,3; cyclohexylene-1,4; 1,4-bis(methylene)cyclohexylene, the radical of 4,4'-bicyclohexylmethane or a group of formula VII



(VII)

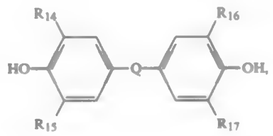
wherein R_7 and R_8 are identical or different and each is hydrogen or C_1–C_4alkyl, each of R_9 and R_{10}, independently of the other, is a hydrogen or halogen atom, and T is methylene, 2,2-propylidene, —CO—, —O—, —S— or—SO_2—,

B) a compound of formula II, III or IV



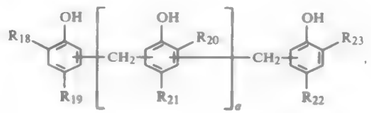
(II)

wherein each of R_{11}, R_{12} and R_{13}, independently of the others, is a hydrogen atom or a C_3–C_{10}alkenyl group, at least one of the radicals R_{11} to R_{13} being an alkenyl group,



(III)

wherein Q is a direct bond, methylene, 2,2-propylidene, —CO—, —O—, —S—, —SO— or —SO_2— and each of R_{14}, R_{15}, R_{16} and R_{17}, independently of the others, is a hydrogen atom or a C_3–C_{10}alkenyl group, at least one of the radicals R_{14} to R_{17} being an alkenyl group, or



(IV)

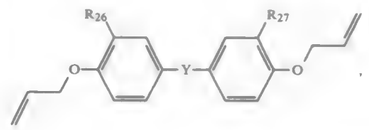
wherein each of R_{18}, R_{19}, R_{20}, R_{21}, R_{22} and R_{23}, independently of the others, is a hydrogen atom, C_1–C_4alkyl or C_3–C_{10}alkenyl, at least one of the radicals R_{18} to R_{23} being an alkenyl group, and a is a number from 0 to 10, and

C) a compound of formula V



(V)

wherein R_{24} and R_{25} are identical or different and each is hydrogen or C_1–C_{10}alkyl, or of formula VI,



(VI)

wherein R_{26} and R_{27} are identical or different and each is hydrogen or C_1-C_8alkyl, and Y is a direct bond, methylene, 2,2-propylidene, —O—, —S—,—SO—, —SO_2— or —CO—.

5,359,022

PROCESS FOR THE PREPARATION OF ORGANOPOLYSILOXANE RESINS

Konrad Mautner, Burgkirchen; Richard Weidner, Burghausen, and Helmut Oswaldbauer, Stubenberg, all of Fed. Rep. of Germany, assignors to Wacker Chemie GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 947,581, Sep. 21, 1992, abandoned. This application Nov. 3, 1993, Ser. No. 148,102
Int. Cl.[5] C08G 77/08
U.S. Cl. 528—23 17 Claims

1. A process for preparing an organopolysiloxane resin, which consists essentially of reacting in a first stage at least one silane of the formula

$$R_aSi(OR^1)_{4-a} \quad (I)$$

in which a is 0, 1, 2 or 3, R is a monovalent organic radical, R^1 is a monovalent organic radical, and/or a partial hydrolyzate thereof, with the proviso that at least one silane of formula (I) in which a is equal to 0 or 1, and/or a partial hydrolyzate thereof, is present, and, optionally, an organo(poly)siloxane selected from the group consisting of

$$R^2_3Si—O—SiR^2_3 \quad (II)$$

in which R^2 is the same as R,

$$(R^3_2SiO)_b \quad (III)$$

in which R^3 is the same as R, and b is an integer with a value of from 3 to 8, and mixtures thereof, with water in the presence of acid and optionally a polymerization inhibitor, in a second stage reacting the reaction mixture obtained in the first stage with a base and in a third stage adding with agitation the reaction mixture obtained in the second stage into water and precipitate the organopolysiloxane resin.

5,359,021

POLYMERIC COMPOSITIONS AND INTRAOCULAR LENSES MADE FROM SAME

Joseph I. Weinschenk, III, and F. Richard Christ, both of Laguna Beach, Calif., assignors to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 973,470, Nov. 9, 1992. This application Sep. 16, 1993, Ser. No. 123,016
Int. Cl.[5] C08F 226/10, 220/54, 220/10, 212/08; A61F 2/16
U.S. Cl. 526—264 19 Claims

1. A composition comprising a copolymer including a first constituent derived from a first monomeric component the homopolymers of which have a refractive index of at least about 1.50, said first monomeric component including one or more aryl-containing groups, a second constituent derived from a second monomeric component other than said first monomeric component the homopolymers of which have a glass transition temperature of less than about 30° C., and a third constituent derived from a crosslinking monomeric component in an amount effective to facilitate returning a deformed intraocular lens made of said composition to its original shape.

5,359,023

CYCLOHEXANENORBORNANE EPOXY RESIN WITH CURING AGENT

Pen-Chung Wang, Houston, and Donald R. Kelsey, Fulshear, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 29,192, Mar. 10, 1993, Pat. No. 5,284,929. This application Jan. 21, 1994, Ser. No. 184,539
Int. Cl.[5] C08G 59/04, 59/50, 59/62
U.S. Cl. 528—97 4 Claims

1. A composition comprising

(a) an epoxy resin of the formula



in which Gly is a glycidyl ether group, Ar is a C_{6-20} aromatic moiety, L is a divalent cyclohexanenorbornane linking moiety, L' is a divalent cycloaliphatic linking moiety, and each of m and n is a number with the range of 0 to about 10; and

(b) a curing agent for the epoxy resin.

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5,359,024

PROCESS FOR THE PREPARATION OF A PHENOL-FORMALDEHYDE RESIN

Renier H. M. Kierkels, Beegden; van Kempen Carolien H. M., Geleen, and Henricus A. C. Baur, Herten, all of Netherlands, assignors to DSM N.V., Heerlen, Netherlands

Filed Aug. 17, 1993, Ser. No. 107,199

Claims priority, application Netherlands, Aug. 17, 1992, 9201461

Int. Cl.[5] C08G 8/04

U.S. Cl. 528—137 11 Claims

1. A process for the preparation of a phenolformaldehyde resin comprising allowing a phenol and formaldehyde to condense in the presence of a basic catalyst which is an aqueous solution that contains alkali metal ions, carbonate ions, anions of carboxylic acid, and at least one ion selected from the group consisting of transition metal ions and borates wherein said aqueous solution has a pH greater than 8.5.

5,359,025

THERMOSETTING COATING COMPOSITIONS

Thauming Kuo, Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 883,509, May 15, 1992, Pat. No. 5,256,758, which is a continuation-in-part of Ser. No. 712,380, Jun. 10, 1991, abandoned. This application Oct. 18, 1993, Ser. No. 138,316

The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.

Int. Cl.[5] C08G 63/00

U.S. Cl. 528—176 15 Claims

1. A curable polyester having a number average molecular weight of about 800 to about 3500 and a weight average molecular weight of about 3000 to about 70,000, comprising

(a) about 35 to 45 mole percent of diol residues, based on the total moles of (a), (b), (c), (d), (e), and (f);

(b) about 4 to about 8 mole percent of triol residues, based on the total moles of (a), (b), (c), (d), (e), and (f);

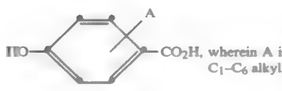
(c) about 5 to about 18 mole percent, based on the total moles of (a), (b), (c), (d), (e), and (f), of residues of an aliphatic diacid.

(d) about 0 to about 30 mole percent of aromatic dicarboxylic acid residues based on the total moles of (a), (b), (c), (d), (e), and (f);

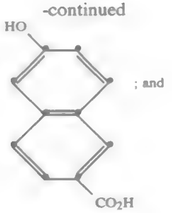
(e) about 5 to about 35 mole percent of terephthalic acid residues based on the total moles of (a), (b), (c), (d), (e), and (f);

(f) about 12 to about 20 mole percent, based on the total moles of (a), (b), (c), (d) (e), and (f) of hydroxy acid residues selected from residues of

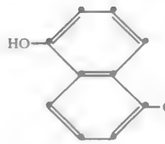


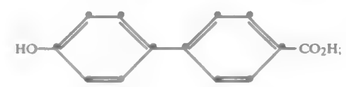


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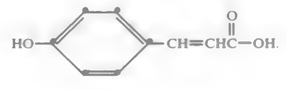


; and









5,359,026

POLY(LACTIDE) COPOLYMER AND PROCESS FOR MANUFACTURE THEREOF

Patrick R. Gruber, St. Paul, Minn., assignor to Cargill, Incorporated, Minneapolis, Minn.

Filed Jul. 30, 1993, Ser. No. 100,550

Int. Cl.[5] C08G 63/08

U.S. Cl. 528—354 27 Claims

1. A polymer composition comprising the reaction product of a mixture comprising:

(a) lactide; and,

(b) about 0.1 to 10%, by weight, of a copolymerizing agent comprising an expoxidized material containing two or more epoxy groups per molecule.

5,359,027

PROCESS FOR THE SYNTHESIS OF LACTIC ACID POLYMERS IN THE SOLID STATE AND PRODUCTS THUS OBTAINED

Gabriele Perego, Ivrea, and Enrico Albizzati, Arona, both of Italy, assignors to Himont Incorporated, Wilmington, Del.

Continuation of Ser. No. 837,513, Feb. 18, 1992, abandoned. This application Sep. 30, 1993, Ser. No. 129,790

Claims priority, application Italy, Feb. 21, 1991, MI91A000450

Int. Cl.[5] C08G 63/08

U.S. Cl. 528—354 5 Claims

1. A process for increasing the molecular weight of a polymer selected from the group consisting of solid homopolymers and copolymers of L(+) and D(−) lactic acids, which homopolymers and copolymers have average molecular weight by viscosimeter from 500 to 10,000, and x-ray diffraction crystal-

linity of at least 10%, said process comprising heating said polymer (a) in powder or particle form, (b) in the absence of a solvent or other liquid, (c) in a vacuum or anhydrous gas current, and (d) at a temperature higher than the glass transition temperature of the polymer, but lower than its melting temperature.

5,359,028

POLYKETONE POLYMERS

Eit Drent, Amsterdam, Netherlands, and Pen-Chung Wang, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

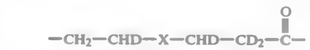
Filed May 7, 1993, Ser. No. 58,725

Claims priority, application European Pat. Off., May 7, 1992, 92201303.2

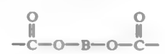
Int. Cl.[5] C08G 67/02

U.S. Cl. 528—392 8 Claims

1. Polyketone polymers comprising a repeating structure of the general formula



wherein each D, independently, represents a hydrogen atom or an alkyl group of up to 4 carbon atoms and X is a member of a divalent bridging group represented by the general formula:



(III)

wherein R^5 and R^6 independently are hydrogen or an alkyl group of up to 4 carbon atoms and B represents an inert divalent bridging group.

5,359,029

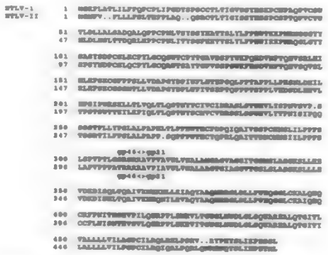
PEPTIDES AND ANALOGUES AND MIXTURES THEREOF FOR DETECTING ANTIBODIES TO HTLV-I AND HTLV-II VIRUSES

Martial Lacroix, Brossard, and Maan Zrein, Laval, both of Canada, assignors to Biochem Immunosystems Inc., Montreal, Canada

Continuation-in-part of Ser. No. 554,258, Jul. 18, 1990, abandoned. This application Mar. 20, 1991, Ser. No. 672,483

Int. Cl.[5] C07K 7/00, 7/10; G01N 33/569

U.S. Cl. 530—300 13 Claims



1. A peptide having the formula

a-AIVSSPSHNSLILPPFSLSPVPTLGSR-b
(BCH-416)

wherein:

a is an amino terminus or a substituent effective to facilitate coupling or to improve the immunogenic or antigenic activity of the peptide; and

b is a carboxy terminus or a substituent effective to facilitate coupling or to improve the immunogenic or antigenic activity of the peptide; or said peptide which contains deletions or conservative substitutions which do not alter the immunoreactivity of the peptide.

5,359,030

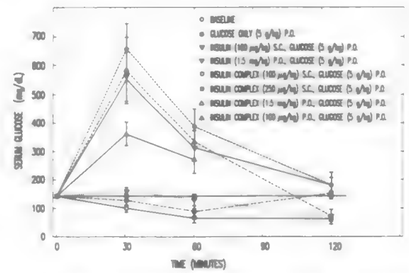
CONJUGATION-STABILIZED POLYPEPTIDE COMPOSITIONS, THERAPEUTIC DELIVERY AND DIAGNOSTIC FORMULATIONS COMPRISING SAME, AND METHOD OF MAKING AND USING THE SAME

Nnochiri N. Ekwuribe, Southfield, Mich., assignor to Protein Delivery, Inc., Durham, N.C.

Filed May 10, 1993, Ser. No. 59,701

Int. Cl.[5] C07K 7/40, 7/36, 17/08; C08H 1/00

U.S. Cl. 530—303 33 Claims



1. A peptide composition comprising a peptide stabilizingly and covalently conjugatively coupled with one or more molecules of a non-naturally-occurring polymer, said polymer comprising a lipophilic moiety and a hydrophilic polymer moiety, thereby imparting balanced lipophilic and hydrophilic characteristics to the composition such that the composition is soluble in pharmaceutically acceptable solvents and able to interact with biological membranes.

5,359,031

UNIQUE PROTEIN MARKER FOR BLADDER CANCER

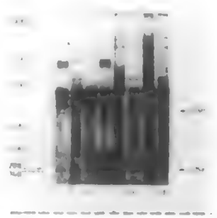
Haiyen E. Zhau, and Richard J. Babaian, both of Houston, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 318,790, Mar. 3, 1989, Pat. No. 5,221,612. This application Apr. 28, 1992, Ser. No. 875,626

The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.

Int. Cl.[5] C07K 15/00

U.S. Cl. 530—350 4 Claims



1. a sustantially purified immunoglobulin-free and bladder cancer-associated proteinaceous antigen found complexed with immunoglobulin in urine of bladder cancer patients, said

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antigen having a molecular weight of about 180 kDa, being unreactive with antibodies specifically binding carcinoembryonic antigen or epidermal growth factor receptor, and being eluted at a concentration of about 0.72M when bound to concanavalin A-Sepharose and subjected to a 0 to 1.0M α-methyl-D-mannopyranoside gradient.

5,359,032

INTERKEUKIN-1 INHIBITOR

Jean M. Dayer, Geneva; Philippe L. Seckinger, Carouge; Gonzalo J. Mazzei, Geneva, and Alan R. Shaw, Geneva, all of Switzerland, assignors to Biogen Inc., Cambridge, Mass.

Continuation of Ser. No. , Mar. 3, 1989, which is a continuation of Ser. No. 435,501, Jun. 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 89,632, Aug. 26, 1987, abandoned. This application Dec. 1, 1992, Ser. No. 985,506

Int. Cl.[5] C07K *15/00*; A61K *37/02*

U.S. Cl. 530—350 12 Claims

1. A substantially pure IL-1 INH, migrating as a single band on SDS/PAGE and substantially free of apolipoprotein Al and retinol binding protein, the IL-1 INH being characterized by an inhibitory activity to

(1) the LAF activity of IL-1

(2) the MCF activity of IL-1,

(3) the IL-1 mediated fibroblast proliferation, and

(4)the IL-1 binding to IL-1 receptors, and non-inhibitory activity to the TNFα mediated production of PGE_2 and collagenase, wherein the IL-1 INH has a specific activity of at least 1.2×10^3U/mg in an IL-1 mediated IL-2 production assay.

5,359,033

CLEAVED DIMERS OF MULLERIAN INHIBITING SUBSTANCE-LIKE POLYPEPTIDES

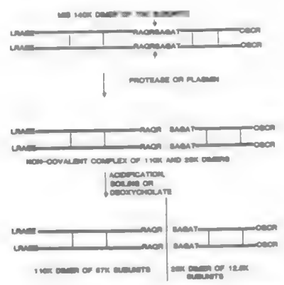
Richard L. Cate, Cambridge, and R. Blake Pepinsky, Watertown, both of Mass., assignors to Biogen, Inc., Cambridge, Mass.

PCT No. PCT/US89/00239, § 371 Date Jul. 23, 1990, § 102(e) Date Jul. 23, 1990, PCT Pub. No. WO89/06695, PCT Pub. Date Jul. 27, 1989

Continuation of Ser. No. 543,719, Jul. 23, 1990, abandoned. This PCT application Jan. 25, 1989, Ser. No. 80,140

Int. Cl.[5] C12P *21/06*; C12Q *1/00*; C07K *3/00, 15/00*

U.S. Cl. 530—350 5 Claims



1. A C-terminal dimer of a polypeptide displaying a biological or immunological activity of an MIS protein, said dimer being produced by cleavage between Arg-Ser in the sequence AQRSAG of the polypeptide.

5,359,034

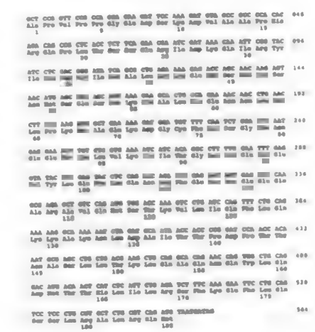
CYSTEINE DEPLETED IL-6 MUTEINS

Susan M. Skelly, Dunellen, N.J.; Charles T. Tackney, Brooklyn, N.Y.; John N. Snouwaert, Carrboro, and Dana M. Fowlkes, Chapel Hill, both of N.C., assignors to Imclone Systems Inc., New York, N.Y. and The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Continuation-in-part of Ser. No. 724,698, Jul. 2, 1991, abandoned. This application Jul. 2, 1992, Ser. No. 907,710

Int. Cl.[5] C07K *13/00*

U.S. Cl. 530—351 10 Claims



1. A mutein of IL-6 wherein the cysteine residues at positions, or at positions corresponding to positions, 45 and 51 of native human IL-6 have each been replaced by other amino acids, and the cysteine residues at positions, or at positions corresponding to positions, 74 and 84 have been retained.

5,359,035

BIFUNCTIONAL PROTEINS INCLUDING INTERLEUKIN-2 (IL-2) AND GRANULOCTYTE MACROPHAGE COLONY STIMULATING FACTOR (GM-CSF)

Paul Habermann, Frankfurt am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 812,838, Dec. 20, 1991, abandoned, which is a continuation of Ser. No. 181,374, Apr. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 943,432, Dec. 19, 1986, abandoned. This application Oct. 19, 1992, Ser. No. 963,040

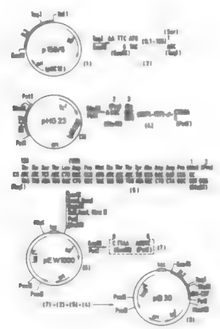
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1985, 3545568; Apr. 16, 1987, 3712985

Int. Cl.[5] C07K *13/00*; A61K *37/02*

U.S. Cl. 530—351 14 Claims

1. A bifunctional protein consisting of a biologically active interleukin-2 (IL-2) constituent and a biologically active granuloctye macrophage colony stimulating factor (GM-CSF) consistuent, wherein

said IL-2 constituent includes the complete amino acid sequence that encodes a natural IL-2 protein, and



wherein said GM-CSF constituent includes the complete amino acid sequence that encodes a natural GM-CSF protein.

5,359,036

GROWTH HORMONE-LIKE GLYCOPROTEINS

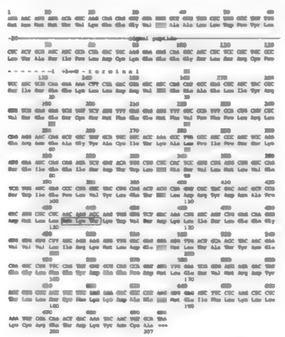
Shusaku Sakata, Kawasaki; Hiroshi Kawauchi, Kesen, and Masao Ono, Zushi, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Feb. 15, 1991, Ser. No. 656,566

Claims priority, application Japan, Feb. 19, 1990, 2-36090

Int. Cl.[5] A61K *37/02*; C07K *3/00*; A23J *1/00*; C12P *21/06*

U.S. Cl. 530—399 4 Claims



1. A protein having fish growth promoting activity wherein said protein has the following physicochemical properties:

(1) Molecular weight: SDS-PAGE about 28,000 daltons,

(2) Isoelectric point: Isoelectric point-PAGE 6.5,

(3) Amino acid composition (residues per mole)

Amino Acid	Residue Number
Cys	7.0
Asp	21.8
Glu	30.1
Ser	17.3
His	6.4
Gly	2.9
Arg	8.9
Thr	8.8
Ala	9.6

-continued

Amino Acid	Residue Number
Pro	9.6
Tyr	6.9
Val	10.3
Met	7.6
Ile	12.0
Leu	29.3
Phe	6.2
Trp	. . .
Lys	12.8

(4) 23 Amino acid residues at N-terminal end having the following sequence SEQ ID NO: 1:

Ile—Pro—Leu—Asp—Cys—Lys—
Glu—Glu—Gln—Gly—Ser—Leu—
Ser—Arg—Cys—Pro—Ser—Ile—
Ser—Gln—Glu—Lys—Leu.

5,359,037

ANTIBODIES TO TNF BINDING PROTEIN I

David Wallach, Rehovot, Israel; Hartmut Engelmann, Munich, Fed. Rep. of Germany, and Dan Aderka, Holon, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

Continuation-in-part of Ser. No. 243,092, Sep. 12, 1988, abandoned. This application Aug. 6, 1990, Ser. No. 563,151

Claims priority, application Israel, Aug. 6, 1989, 91229; Apr. 6, 1990, 94039

Int. Cl.[5] C07K *15/00*

U.S. Cl. 530—388.22 6 Claims

1. An antibody to a human tumor necrosis factor binding protein designated TBP-I which specifically recognizes said protein.

5,359,038

METHOD FOR ISOLATING IMMUNOGLOBULIN COMPOUNDS IN THE FECES

Eloy Padron, 7841 SW. 134th Ter., Miami, Fla. 33156

Filed May 3, 1993, Ser. No. 50,166

The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.

Int. Cl.[5] A61K *39/395*

U.S. Cl. 530—390.5 8 Claims

1. A method for isolating IgAs in the feces of animals and humans including the steps of:

A. placing said feces in a container with a buffer solution;

B. homogenizing the feces in said buffer solution thereby forming a homogenized solution;

C. separating the solids from said homogenized solution leaving a clear solution; and

D. chemically precipitating substantially all material contained in said clear solution with the exception of the IgAs, IgMs, IgD, IgG and its subclasses 1; 2; 3 and 4 through the use of protamine and using a conventional method for the detection and classification of antigens and antibodies found in said isolated IgAs, IgMs, IgD, IgG and its subclasses 1; 2; 3 and 4.

5,359,039

ISOLATED POXVIRUS A53R-EQUIVALENT TUMOR NECROSIS FACTOR ANTAGONISTS

Craig A. Smith, and Raymond G. Goodwin, both of Seattle, Wash., assignors to Immunex Corporation, Seattle, Wash.

Filed Jul. 9, 1993, Ser. No. 89,458

Int. Cl.[5] C07K *13/00, 15/04*

U.S. Cl. 530—350 2 Claims

1. An isolated and substantially homogeneous soluble viral protein encoded by an open reading frame present in a Pst

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I/Cla I fragment of cowpox virus, wherein the viral protein comprises the sequence of amino acids 1 through 186 of SEQ ID NO:6.

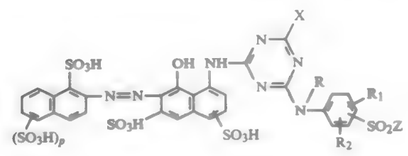
5,359,040

MONOAZO COMPOUNDS HAVING NAPHTHYLAZONAPHTYLAMINO GROUP AND USE THEREFOR FOR DYEING OR PRINTING FIBER MATERIALS

Kingo Akahori, Toyonaka; Masayuki Miki, Ashiya; Takeshi Washimi, Toyonaka, and Yutaka Kayane, Ikoma, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 20, 1992, Ser. No. 963,553
Claims priority, application Japan, Oct. 24, 1991, 3-277690
Int. Cl.[5] C09B *62/51*; D06P *1/384*
U.S. Cl. 534—635 8 Claims

1. A monoazo compound represented by the following formula (I) in the free acid form:



(I)

wherein X is an alkylamino, C_5–C_7 cycloalkylamino, piperidino, pyrrolidino or morpholino group which is unsubstituted or substituted with a substituent other than sulfo, R is hydrogen or unsubstituted or substituted C_1–C_4 alkyl, R_1 and R_2 independently of one another are each hydrogen, methoxy, ethoxy, methyl, ethyl, chloro, bromo, nitro, carboxy or sulfo, Z is vinyl or $-CH_2CH_2Y$ in which Y is a group which is split by the action of an alkali and p is 0 or 1.

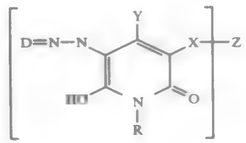
5,359,041

PYRIDONE DYESTUFFS

Wolfram Reddig, Bergisch Gladbach, and Karl-Josef Herd, Odenthal-Holz, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 1, 1992, Ser. No. 907,277
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1991, 4122866
Int. Cl.[5] C09B *62/245*; D06P *1/382*
U.S. Cl. 534—635 5 Claims

1. A monoreactive mono- or disazo reactive dyestuff of the formula



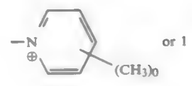
(1)

in which

D denotes the radical of a diazo component,

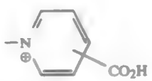
R denotes H, a C_1-C_6-alkyl radical which is unsubstituted or substituted by OH, OSO_3H, NH_2, CO_2H, $NH(C_1$-C_4-alkyl) or C_1-C_4-alkoxy, a cycloaliphatic C_3-C_6-hydrocarbon radical, a phenyl or betaryl radical each of which is unsubstituted or substituted by SO_3H, CO_2H, CH_3, Cl, Br, OCH_3, OC_2H_5, NH_2, $NH(C_1$-C_4-alkyl),

X denotes H, Cl, Br, CH_3, CH_2SO_3H, $CH(CH_3)$-SO_3H, $CONH_2$, CN, $COCH_3$, SO_3H,



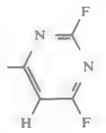
or 1

or



Y denotes H, OH, a C_1-C_4-alkyl radical which is unsubstituted or substituted by Cl, OH, SO_3H, OSO_3H, CO_2H; a phenyl or benzyl radical each of which is unsubstituted or substituted by SO_3H, CO_2H, CH_3, Cl, Br, OCH_3, OC_2H_5, NH_2, $NH(C_1$-C_4-alkyl) or denotes CO_2H and

Z denotes a fibre-reactive radical of the formula (2)



(2)

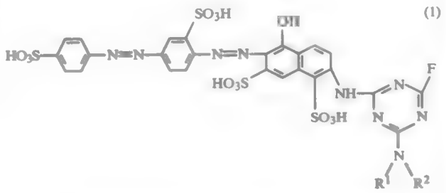
5,359,042

2,4-DIAMINO-6-FLUOROTRIAZINE DIAZO REACTIVE DYESTUFFS

Horst Jäger, Leverkusen, and Frank-Michael Stöhr, Odenthal-Oesnau, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 29, 1993, Ser. No. 55,447
Claims priority, application Fed. Rep. of Germany, May 6, 1992, 4214945
Int. Cl.[5] C09B *62/09, 62/03*; D06P *1/382*
U.S. Cl. 534—635 8 Claims

1. Reactive dyestuff which, in the form of the free acid, corresponds to the following formula



(1)

R^1 represents hydrogen or an aliphatic, cycloaliphatic or araliphatic radical,

R^2 represents R^1 or a heteroaryl radical or an optionally substituted phenyl radical which is free of an $SO_2CH{=}CH_2$— or $SO_2CH_2CH_2X$— group bonded directly to the phenyl radical,

X denotes a group such as Cl or OSO_3H, which can be eliminated by alkali and

wherein either the radicals R^1 and R^2, optionally including a further heteroatom, form a heterocyclic ring or wherein R^1 contains a heterocyclic reactive group.

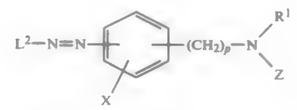
5,359,043

REACTIVE DYES HAVING A SULPHONAMIDO GROUP

Stephen B. Bostock, Ramsbottom; Michael G. Hutchings, Holcombe, and John A. Taylor, Manchester, all of England, assignors to Zeneca Limited, London, United Kingdom

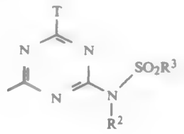
Filed Apr. 21, 1992, Ser. No. 871,473
Claims priority, application United Kingdom, May 17, 1991, 9110689
Int. Cl.[5] C09B *62/04, 62/06, 62/08, 62/10*
U.S. Cl. 534—638 5 Claims

1. A water soluble reactive dye of the Formula (5):



(5)

wherein each Z independently is:



each R^1 independently is H or alkyl having up to four carbon atoms;

T is halo or 3- or 4-carboxypyridinium;

R^2 and R^3 are each independently a C_{1-4}-alkyl group;

p is 0 or 1;

L^2 is a substituted or unsubstituted mono- or di-cyclic aryl radical wherein the optional substituent is halogen, C_{1-4}-alkyl, acetylamino, benzamido, sulphonated benzamido, amino, hydroxy, C_{1-4}-alkoxy, vinyl sulphonyl, a group convertible to vinyl sulphonyl on treatment with base or $-NR^1Z$ wherein R^1 and Z are as hereinbefore defined; and

X is halogeno, alkyl, alkoxy, sulpho, carboxy, ureido or acetamido.

5,359,044

CYCLOBUTYL OLIGONUCLEOTIDE SURROGATES

Phillip D. Cook, Carlsbad, Calif., and Gerhard Baschang, Bettingen, Switzerland, assignors to ISIS Pharmaceuticals, Carlsbad, Calif. and Ciba-Geigy Ltd., Basel, Switzerland

Filed Dec. 13, 1991, Ser. No. 808,201
Int. Cl.[5] C07H *21/04*
U.S. Cl. 536—23.1 13 Claims

1. An oligonucleotide surrogate comprising at least two cyclobutyl moieties wherein each of said cyclobutyl moieties include a purine or pyrimidine heterocyclic base attached at a C-1 cyclobutyl position and wherein said cyclobutyl moieties are joined through a C-2, C-3, or C-4 position on a first of said cyclobutyl moieties and a C-2, C-3, or C-4 position on a second of said cyclobutyl moieties by a linkage that contains 4 or 5 consecutive, covalently-bound atoms selected from the group consisting of C, N, O, S, Si and P.

5,359,045

NUCLEIC ACID CODING FOR THE HUMAN ANGIOTENSIN CONVERTING ENZYME (ACE), AND ITS USES, ESPECIALLY FOR THE IN VITRO DIAGNOSIS OF ARTERIAL HYPERTENSION

Florent Soubrier; Francois Alhenc-Gelas, both of Paris; Christine Hubert, Sevres, and Pierre Corvol, Paris, all of France, assignors to Institut National de la Sante et de la Recherche Medicale, Paris, France

PCT No. PCT/FR89/00496, § 371 Date May 23, 1990, § 102(e) Date May 23, 1990, PCT Pub. No. WO90/03435, PCT Pub. Date Apr. 5, 1990
PCT Filed Sep. 27, 1989, Ser. No. 460,126
Claims priority, application France, Sep. 27, 1988, 88 12620
Int. Cl.[5] C07H *21/04*
U.S. Cl. 536—23.2 9 Claims



1. An isolated nucleic acid encoding a portion of human angiotensin converting kinins.

5,359,046

CHIMERIC CHAINS FOR RECEPTOR-ASSOCIATED SIGNAL TRANSDUCTION PATHWAYS

Daniel J. Capon, Hillsborough; Arthur Weiss, Mill Valley; Brian A. Irving; Margo R. Roberts, both of San Francisco, and Krisztina Zsebo, Woodside, all of Calif., assignors to Cell Genesys, Inc., Foster City and The Regents of the University of California, Oakland, both of Calif.

Continuation-in-part of Ser. No. 627,643, Dec. 14, 1990, abandoned. This application Dec. 9, 1992, Ser. No. 988,194
Int. Cl.[5] C07H *17/00*; A61K *35/14*; C12P *21/00*; C07K *3/00*
U.S. Cl. 536—23.4 21 Claims



1. Chimeric DNA sequence encoding a membrane bond protein, said chimeric DNA comprising in reading frame:

a DNA sequence encoding a signal sequence which directs the membrane bound protein to the surface membrane;

a DNA sequence encoding a non-MHC restricted extracellular binding domain of a surface membrane protein selected from the group consisting of CD4, CD8, immunoglobulin and single-chain antibody that binds specifically

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to at least one ligand, wherein said ligand is a protein on the surface of a cell or a viral protein;

a transmbembrane domain from a protein selected from the group consisting of CD4, CD8, immunoglobulin, single-chain antibody, the CD3 zeta chain, the CD3 gamma chain, the CD3 delta chain and the CD3 epsilon chain; and

a cytoplasmic signal-transducing domain of a protein that activates an intracellular messenger system selected from the group consisting of the CD3 zeta chain, the CD3 gamma chain, the CD3 delta chain and the CD3 epsilon chain,

wherein said extracellular domain and cytoplasmic domain are not naturally joined together and said cytoplasmic domain is not naturally joined to an extracellular ligand-binding domain, and when said chimeric DNA is expressed as a membrane bound protein in a selected host cell under conditions suitable for expression, said membrane bond protein initiates signalling in said host cell.

5,359,047

NUCLEIC ACIDS ENCODING DNA STRUCTURE-SPECIFIC RECOGNITION PROTEIN AND USES THEREFOR

Brian A. Donahue, Menlo Park, Calif.; Jeffrey H. Toney, Westfield, N.J.; John M. Essigmann, Brookline, Mass.; Stephen J. Lippard, Cambridge, Mass.; Pieter M. Pil, Cambridge, Mass.; Suzanne L. Bruhn, Cambridge, Mass.; Steven J. Brown, Cambridge, Mass., and Patti J. Kellett, Cincinnati, Ohio, assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 539,906, Jun. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 410,981, Sep. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 247,774, Sep. 22, 1988, abandoned. This application Dec. 26, 1991, Ser. No. 814,964

Int. Cl.[5] C17N *5/12*

U.S. Cl. 536—23.5 **9 Claims**

1. Isolated DNA or RNA encoding a eukaryotic DNA structure specific recognition protein having the following properties:

(a) selective binding to a double-stranded DNA fragment having at least one region of DNA damage comprising a 1,2-intrastrand d(ApG) or d(GpG) dinucleotide adduct, to form a (damaged DNA fragment):(protein) complex which has a retarded electrophoretic mobility relative to the mobility of the damaged DNA fragment alone; and

(b) when affixed to a solid support, said protein binds selectively to a double-stranded DNA fragment having at least one region of DNA damage comprising a 1,2-intrastrand d(ApG) or d(GpG) dinucleotide adduct, and not to a double-stranded DNA fragment lacking said region of DNA damage.

5,359,048

POLYNUCLEOTIDE ENCODING A TOXIN WITH ACTIVITY AGAINST COLEOPTERANS

Michio Ohba, Fukuoka; Hidenori Iwahana; Ryoichi Sato, both of Tokyo; Nobukazu Suzuki, Ibaraki; Katsutoshi Ogiwara, Ibaraki; Kazunobu Sakanaka, Ibaraki; Hidetaka Hori, Kanagawa; Shouji Asano, and Tadaaki Kawasugi, both of Ibaraki, all of Japan, assignors to Mycogen Corporation, San Diego, Calif.

Filed Jul. 23, 1992, Ser. No. 915,203

Claims priority, application Japan, Aug. 2, 1991, 3-193810

Int. Cl.[5] C12N *15/32*

U.S. Cl. 536—23.71 **2 Claims**

1. An isolated polynucleotide molecule encoding a toxin having activity against coleopterans wherein said toxin has the amino acid sequence in SEQ ID NO. 2.

5,359,049

DNA PROBE FOR LACTOBACILLUS DELBRUECKII

Michèle Delley, Savigny; Herbert Hottinger, Blonay, and Beat Mollet, Mollie-Margot, all of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Mar. 14, 1990, Ser. No. 494,139

Claims priority, application European Pat. Off., Apr. 6, 1989, 89106016.2; Feb. 10, 1990, 90102651.8

Int. Cl.[5] C07H *21/04;* C12Q *1/68;* C12N *15/00*

U.S. Cl. 536—24.32 **1 Claim**

1. A DNA probe for identifying bacterial strains of the *Lactobacillus delbrueckii* species comprising a DNA fragment which hybridizes specifically to chromosomal DNA of strains of the *L. delbrueckii* species, wherein the DNA fragment comprises an EcoRI fragment of chromosomal DNA from a strain of the *L. delbrueckii* species or a subspecies thereof, wherein the EcoRI fragment is ligated into a vector capable of being transformed into an *E. coli* strain, wherein the vector is the plasmid YRP17, wherein the DNA fragment is an EcoRI fragment of chromosomal DNA from the strain *L. bulgaricus* NCDO 1489, and wherein the DNA fragment is an EcoRI fragment of the plasmid pY85.

5,359,050

EIMERIA MITIS 16S OR DNA PROBES

Prasanta R. Chakraborty, Scotch Plains; Alex Elbrecht, Watchung; Michael Dashkevicz, Jamesburg; Scott D. Feighner, Scotch Plains; Paul A. Liberator, Jackson, all of N.J., and Helen Profous-Juchelka, Staten Island, N.Y., assignors to Merck and Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 707,355, May 29, 1991, abandoned. This application May 12, 1992, Ser. No. 879,640

Int. Cl.[5] C07H *21/04;* C12Q *1/68;* C12P *19/34*

U.S. Cl. 536—24.32 **2 Claims**

1. A DNA probe, the DNA probe consisting of 5'TGACCTGGTGACCCAGG 4'(SEQ ID NO:15).

5,359,051

COMPOUNDS USEFUL IN THE SYNTHESIS OF NUCLEIC ACIDS CAPABLE OF CLEANING RNA

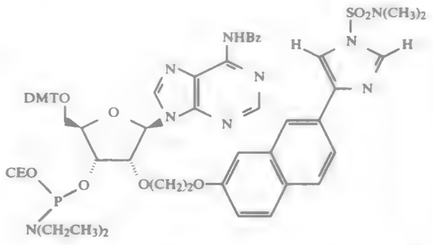
Phillip D. Cook; Charles J. Guinosso, and Thomas Bruice, all of Carlsbad, Calif., assignors to ISIS Pharmaceuticals, Carlsbad, Calif.

and a continuation-in-part of Ser. No. 566,977, Aug. 13, 1990, abandoned. This application Mar. 5, 1992, Ser. No. 846,556

Int. Cl.[5] C07H *19/207*

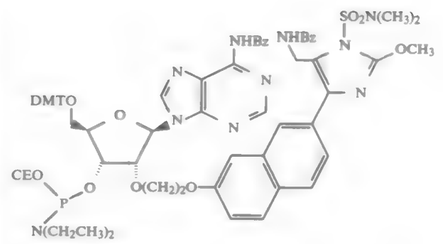
U.S. Cl. 536—26.7 **2 Claims**

1. A compound having the structure:



wherein DMT is dimethoxytrityl, CEO is cyanoethoxy, and Bz is benzyl.

2. A compound having the structure:



wherein DMT is dimethoxytrityl, CEO is cyanoethoxy, and Bz is benzyl.

5,359,052

CHALCOPHOSPHOLANES USEFUL IN THE SYNTHESIS OF OLIGONUCLEOSIDE PHOSPHOROTHIOATES, PHOSPHORODITHIOATES AND RELATED SELENATES

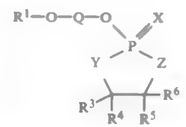
Wojciech J. Stec; Andrzej Grajkowski, and Bogdan Uznanski, all of Lodz, Poland, assignors to Polish Academy of Sciences, Lodz, Poland

Continuation-in-part of Ser. No. 826,929, Jan. 23, 1992, which is a continuation-in-part of Ser. No. 740,435, Aug. 5, 1991, abandoned. This application May 12, 1992, Ser. No. 883,622

Int. Cl.[5] C07H *19/10, 19/20*

U.S. Cl. 536—26.7 **14 Claims**

1. A compound selected from the group defined by the following formula:



wherein:

Z is S or Se;

Q is an alkyl or alkenyl having from 1 to 8 carbon atoms; an alkyloxy or alkylthio having from 1 to 8 carbon atoms and from 1 to 2 heteroatoms; or when taken together with both adjacent oxygens, is a nucleoside or a nucleoside analog;

R^1 is hydrogen or a hydroxyl protecting group;

X is S, O, or Se, or a substituted imino of the form $=NR^2$ wherein R^2 is alkyl having from 1 to 6 carbon atoms or R^2 is aryl, alkyl-substituted aryl, or alkenyl-substituted aryl having from 6 to 12 carbon atoms;

Y is S, O, or Se; and

R^3, R^4, R^5, and R^6 are separately hydrogen or alkyl having from 1 to 4 carbon atoms or are separately or together with the carbon atoms to which they are attached aryl or alkyl-subsituted aryl having from 6 to 12 carbon atoms.

5,359,053

MODIFIED DEAZAPYRIMIDINES

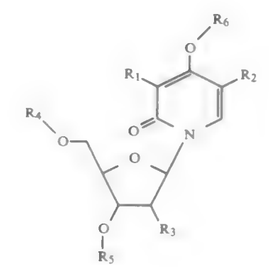
Thomas E. Rogers, Manchester; Steven H. Gray, Ellisville; Balekudru Devadas, Chesterfield, and Steven P. Adams, St. Charles, all of Mo., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation of Ser. No. 400,205, Aug. 29, 1989, Pat. No. 5,134,066. This application May 6, 1992, Ser. No. 879,648

Int. Cl.[5] C07H *15/12, 17/00, 19/06*

U.S. Cl. 536—28.4 **10 Claims**

1. A compound of the formula:



in which

R_1 and R_2 independently are C_1–C_5 alkyl, C_2–C_5 alkenyl, halo or hydrogen,

R_3 is hydrogen, halo, C_1–C_5 alkoxy or tri(C_1–C_5 alkyl) substituted silyloxy,

R_4 is triphenylmethyl or mono-, di- or tri (C_1–C_5 alkoxy) substituted triphenylemethyl,

R_5 is hydrogen phosphonate



in which R' is B- cyanoethyl, C_1–C_5 alkoxy, or C_1–C_5 alkyl, and R'' is morpholino, or mono- or di(C_1–C_5 alkyl) substituted amino, and

R_6 is tri(C_1–C_5 alkyl or C_1–C_5 alkoxy) substituted silyloxy, benxoyl, methylcarbonyl, carbamoyl, or carbamoly substituted with C_1–C_5 alkyl, phenyl, acetyl or isobutyryl.

5,359,054

INITIAL COMPOUNDS FOR THE PRODUCTION OF 10β-H-STEROIDS AND A PROCESS FOR THE PRODUCTION OF THESE INITIAL COMPOUNDS

Eckhard Ottow; Gunter Neef; Arwed Cleve, and Rudolf Weichert, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin und Bergkamen, Fed. Rep. of Germany

PCT No. PCT/EP91/01017, § 371 Date Nov. 30, 1992, § 102(e) Date Nov. 30, 1992, PCT Pub. No. WO91/18917, PCT Pub. Date Dec. 12, 1991

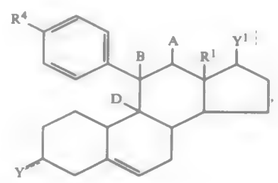
PCT Filed Jun. 3, 1991, Ser. No. 952,736

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1990, 4018168

Int. Cl.[5] C07J *1/00, 17/00, 21/00*

U.S. Cl. 540—4 **3 Claims**

1. A compound of formula III



(III)

wherein

A and B together mean an additional bond and D means a hydrogen atom or

B and D together mean an additional bond and A means a hydrogen atom

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R^4 stands for a hydrogen atom, a cyano group, a chlorine, fluorine, bromine, iodine atom, for a trialkylsilyl, trialkylstannyl group, for a straight-chain or branched, saturated or unsaturated C_1–C_8.

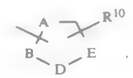
alkyl, acyl or alkoxyalkyl radical, for an amino group



in which R^7 and R^8 independently of one another mean a hydrogen atom or a C_1–C_4-alkyl group or for a corresponding amine oxide



or for the groupings $—OR^9$ or $—S(O)_iR^9$ with i=0, 1 or 2 in which R^9 means a hydrogen atom, a methyl, ethyl, propyl, isopropyl, methoxyphenyl, allyl or a 2-dimethylaminoethyl group, or for a heteroaryl radical of formula Iα


(Iα)

in which A symbolizes a nitrogen, oxygen, or sulfur atom, —B—D—E the element sequence —C—C—C, —N—C—C— or —C—N—C— and R^{10} a hydrogen atom, a cyano group, a chlorine, fluorine, bromine, iodine atom, a trialkylsilyl, trialkylstannyl group, a straight-chain or branched, saturated or unsaturated C_1–C_8-alkyl, acyl or alkoxyalkyl radical, for an amino group



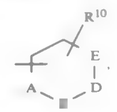
, in which

R^7 and R^8 independently of one another mean a hydrogen atom or a C_1–C_4-alkyl group, or stand for a corresponding amine oxide



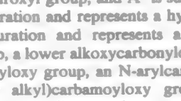
or the groupings $—OR^9$ or $—S(O)_iR^9$ with i=0, 1 or 2, in which R^9 means a hydrogen atom, a methyl, ethyl, propyl, isopropyl, methoxyphenyl, allyl or a 2-dimethylaminoethyl group,

or stands for a heteroaryl radical of formula Iβ


(Iβ)

in which A means a nitrogen atom and —B—D—E—the element sequence —C—C—C—, —N—C—C—, —C—N—C— or —C—C—N— and R^{10} has the already indicated meaning,

or stands for a phenyl radical of formula Iγ


(Iγ)

in which R^{10} has the already indicated meaning,

Y and Y′ means a protected keto group or a protected hydroxy group and a hydrogen atom, and Y and Y′ can be identical or different, and

R^1 means a methyl or ethyl group.

5,359,055

PREGNANE DERIVATIVES AND PROCESSES FOR PRODUCTION THEREOF

Jiro Tsuji, Okayama; Takashi Takahashi, Tokyo; Masao Tsuji, Kurashiki; Naoshi Nakagawa, Kurashiki, and Tetsuo Takigawa, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Division of Ser. No. 545,120, Jun. 15, 1990, Pat. No. 5,112,998, which is a continuation of Ser. No. 283,927, Nov. 30, 1988, abandoned. This application Nov. 27, 1991, Ser. No. 799,186

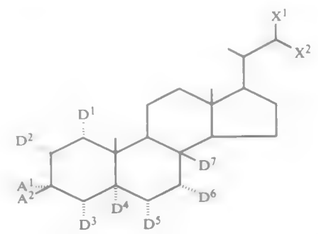
Claims priority, application Japan, Mar. 30, 1987, 62-77849; Mar. 30, 1987, 62-77850; Mar. 30, 1987, 62-77851; Mar. 31, 1987, 62-80588; Mar. 31, 1987, 62-80589

The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.

Int. Cl.[5] C07J *7/00, 71/00*

U.S. Cl. 540—4 **11 Claims**

1. A pregnane derivative of the general formula



wherein A^1 is in the α-configuration and represents a hydrogen atom or a hydroxyl group, and A^2 is such that where A^1 is in the α-configuration and represents a hydrogen atom, A^2 is in the β-configuration and represents a hydroxyl group, an acyloxy group, a lower alkoxycarbonyloxy group, an N-lower alkylcarbamoyloxy group, an N-arylcarbamoyloxy group, an N,N-di(lower alkyl)carbamoyloxy group, a tri-substituted silyloxy group or an alkoxymethoxy group which may optionally be substituted and that where A^1 is in the α-configuration and represents a hydroxyl group, A^2 is in the β-configuration and represents a hydrogen atom, or A^1 and A^2 jointly represent an oxo group (=O); D^1 is in the α-configuration and represents a hydroxyl group, an acyloxy group, a lower alkoxycarbonyloxy group, an N-lower alkylcarbamoyloxy group, an N-arylcarbamoyloxy group, an N,N-di(lower alkyl)carbamoyloxy group, a tri-substituted silyloxy group or an alkoxymethoxy group which may optionally be substituted, and D^2 is in the α-configuration and represents a hydrogen atom, or D^1 and D^2 jointly represent an epoxy group (—O—) which is in the α-configuration or a single bond; D^3 is in the α-configuration and represents a hydrogen atom, D^4 is in the α-configuration and represents a hydroxyl group, D^5 is in the α-configuration and represents a hydrogen atom, D^6 is in the α-configuration and represents a hydroxyl group, a lower alkoxycarbonyloxy group, an acyloxy group, an N-lower alkylcarbamoyloxy group, an N-arylcarbamoyloxy group or an N,N-di(lower alkyl)carbamoyloxy group, D^7 is in the β-configuration and represents a hydrogen atom; provided that D^3 and D^4 may jointly represent an epoxy group (—O—) which is in the α-configuration or a single bond, D^4 and D^5 may jointly represent a single bond, D^5 and D^6 may jointly represent an epoxy group (—O—) which is in the α-configuration or a single bond, and D^6 and D^7 may jointly represent a single bond; and X^1 and X^2 each is a lower alkoxyl group or jointly represent a lower alkylenedioxy group or an oxo group (=O).

5,359,056

PHTHALOCYANINE COMPOUNDS, PRODUCTION METHOD THEREOF, AND NEAR INFRARED RAY ABSORPTION MATERIALS CONTAINING THE SAME

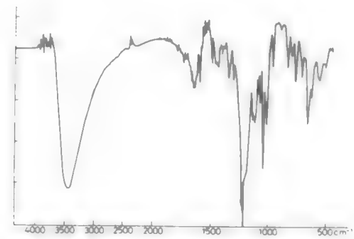
Osamu Kaieda; Takashi Yodoshi, both of Tsukuba; Hideki Itoh, Toride, and Miho Onozaki, Tsukuba, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Jul. 14, 1992, Ser. No. 913,028

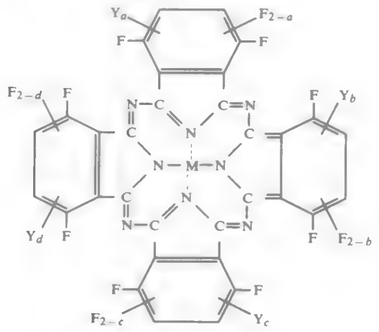
Claims priority, application Japan, Jul. 15, 1991, 3-174019; Feb. 28, 1992, 4-042586; Apr. 14, 1992, 4-094522

Int. Cl.[5] C07D *487/22;* C09B *47/10*

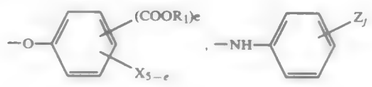
U.S. Cl. 540—137 **7 Claims**



1. A fluorine-containing phthalocyanine compound represented by the following formula (I):

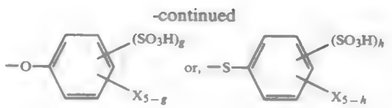

(I)

wherein Y is



$—(OCH_2CH_2)_pW$, $—NH(C_nH_{2n+1})$,

-continued



wherein R_1 is a hydrogen atom or a C1–C8 alkyl group; X is a hydrogen atom, a C1–C4 alkyl group, a C1–C4 alkoxyl group or a halogen atom; Z is a hydrogen atom, a C1–C4 alkyl group, a C1–C4 alkoxyl group, a C1–C4 alkoxycarbonyl group or a halogen atom; W is a C1–C4 alkoxyl group; e, g, h and j are independently an integer of 1 or 2; n is an integer of 1 to 8; and p is an integer of 1 to 6; a to d are integers of 0 to 2 with the proviso that the sum of a to d is 1 to 8; and M is a metal, a metal oxide, a metal carbonyl or a metal halide.

5,359,057

ACYLATION OF AMINES

André Furlenmeier, Basel, and Urs Weiss, Prattein, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

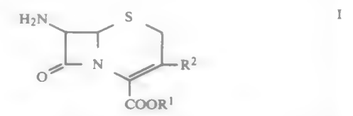
Continuation of Ser. No. 499,839, Mar. 27, 1990, abandoned, which is a continuation of Ser. No. 11,795, Feb. 6, 1987, abandoned. This application Jan. 16, 1992, Ser. No. 822,173

Claims priority, application Switzerland, Feb. 7, 1986, 487/86

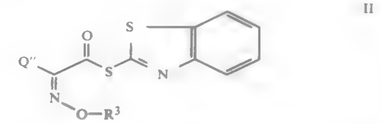
Int. Cl.[5] C07D *501/06, 499/12*

U.S. Cl. 540—222 **11 Claims**

1. A process for the preparation of an amide of a penicillin or cephalosporin derivative which comprises reacting a 6-aminopenicillin derivative or a 7-aminocephalosporin derivative of the formula


I

wherein R^1 is hydrogen or the group —A—OCOR, A is lower alkylidene, R is lower alkyl or lower alkoxy and R^2 is hydrogen, halogen, lower alkyl, lower alkenyl, lower alkanoyloxyalkyl, lower azidoalkyl, lower carbamoyloxy alkyl or the group —CH_2—S—Q, —CH=CH—S—Q, Q is a heterocyclic group bonded via a carbon atom wherein the heterocyclic group is a monocyclic 5- or 6-membered, partially unsaturated or heterocyclic group containing 1–4 nitrogen atoms or an oxygen or sulphur atom and 1–4 nitrogen atoms; or a bicyclic 8- to 10-membered, partially unsaturated or aromatic heterocyclic group containing 1–5 nitrogen atoms or an oxygen or sulphur atom and 1–5 nitrogen atoms, in the form of an acid addition salt with its amino moiety with a 2-benzothiazolyl thioester of the formula


II

wherein R^3 is lower alkyl, lower alkenyl, lower alkanoyl or the group —A′—COOR′, A′ is lower alkylene, R′ is a carboxy protecting group and Q″ is a heteroaromatic group bonded via a carbon atom, to obtain the corresponding amide.

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5,359,058

CEPHEM DERIVATIVES

Jan Verweij, Leiden; Henri G. J. Hira, Zoetermeer; Hendrik A. Witkamp, Pijnacker; Everardus J. A. M. Leenderts, Rhoon; Jan J. Dekoning, Rijswijk, and Herman H. Grootveld, Benthuizen, all of Netherlands, assignors to Gist-Brocades, N.V., Netherlands

Continuation-in-part of Ser. No. 452,764, Dec. 19, 1989, abandoned, and Ser. No. 327,978, Mar. 23, 1989, abandoned, which is a division of Ser. No. 216,877, Jul. 8, 1988, Pat. No. 4,921,954. This application Apr. 27, 1992, Ser. No. 874,738

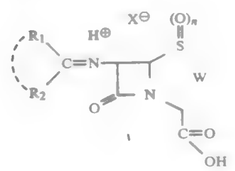
Claims priority, application European Pat. Off., Jul. 10, 1987, 87201316.4; Jun. 6, 1989, 89200034.0

The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.

Int. Cl.[5] C07D *501/04;* **A61K** *31/545*

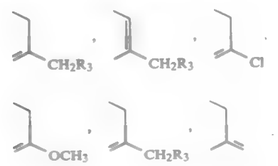
U.S. Cl. 540—226 **2 Claims**

1. A compound having the formula



(I)

wherein W is selected from the group of



R_3 is selected from the group consisting of hydrogen, (lower) alkoxy, (lower)alkylthio, (lower)alkanoyloxy, (lower)alkanoylthio and S—R_4, R_4 is selected from the group consisting of pyridine, pyrimidine, pyridazine, pyrrole, imidazole, pyrazole, isoxazole, isothiazole, thiazole, triazole, oxadiazole, thiadiazole, triazine, thiatriazole or tetrazole linked by a ring carbon atom to the sulfur atom and optionally substituted on a ring carbon atom with a member of the group consisting of lower alkyl, cyano, chloro, di(lower)alkylamino, (lower)alkyloxy, (lower)alkyloxycarbonyl, di(lower)carbamoyl, hydroxy, sulfo and carboxy and optionally substituted with lower alkyl on a ring nitrogen atom group, R'$_3$ is (lower)alkylidene, n is 0, 1 or 2, X^- is an anion from an acid HX, R_1 and R_2 are individually of 1 to 16 carbon atoms or R_1 and R_2 together with the carbon atom to which they are attached form a cycloalkylidene ring of up to 8 carbon atoms.

5,359,059

PROCESS FOR PREPARING CARBAPENEM DERIVATIVES

Tameo Iwasaki, Nishinomiya; Kazuhiko Kondo, Osaka, and Hiroshi Horikawa, Kawanishi, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

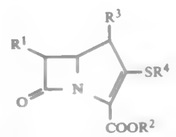
Filed Aug. 2, 1993, Ser. No. 100,460

Claims priority, application Japan, Aug. 6, 1992, 4-209840

Int. Cl.[5] C07D *487/04, 499/00*

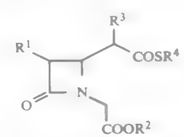
U.S. Cl. 540—350 **4 Claims**

1. A process for preparing a carbapenem derivative of the formula [I]:



[I]

wherein R^1 is a protected or unprotected hydroxy-substituted lower alkyl group, R^2 is a hydrogen atom or an ester residue, R^3 is hydrogen atom or a lower alkyl group, R^4 is a substituted or unsubstituted lower alkyl group; a substituted or unsubstituted cycloalkyl group; a substituted or unsubstituted 6- to 8-membered aryl group; a substituted or unsubstituted 4- to 8-membered alicyclic heterocyclic group having a nitrogen atom, an oxygen atom and/or an sulfur atom, or a condensed ring group thereof; a substituted or unsubstituted 4- to 8-membered aromatic heterocyclic group having a nitrogen atom, an oxygen atom and/or a sulfur atom, or a condensed ring group thereof; and the group of the formula —SR^4 is a substituent at 2-position of the carbapenem antimicrobials, which comprises treating an azetidinone compound of the formula [II]:



[II]

wherein R^1, R^2, R^3 and the group of the formula —SR^4 are the same as defined above, or a salt thereof, with a base and a silylating agent, followed by treating with an active-esterification agent for hydroxy group, and when R^1 is the protected hydroxy-substituted lower alkyl group and/or R^2 is the ester residue, optionally removing the protecting group for the hydroxy-substituted lower alkyl group and/or the ester residue.

5,359,060

PHOSPONATED DERIVATIVES OF MACROLIDES

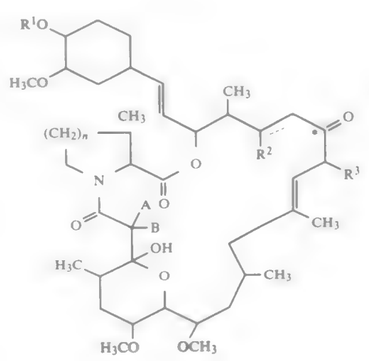
James R. Hauske, New York, N.Y., assignor to Pfizer, Inc., New York, N.Y.

Filed Jul. 6, 1993, Ser. No. 88,011

Int. Cl.[5] C07D *498/16;* **A61K** *31/395*

U.S. Cl. 540—456 **4 Claims**

1. A compound of the formula



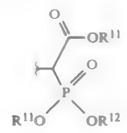
I

or a pharmaceutically acceptable salt thereof;

wherein n is 1 or 2;

A is H and B is H or —OH, or A and B taken together form an oxo moiety (=O);

R^1 is a group of the formula

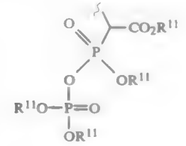


R^2 is H or (C_2–C_5)alkanoyloxy, wherein the dotted line represents an optional double bond in the case where R^2 is H;

R^3 is (C_1 to C_3)alkyl or allyl;

R^{11} is independently selected from (C_1–C_3)alkyl; and

R^{12} is (C_1–C_3)alkyl or a group of the formula



5,359,061

CONTROLLED CATALYTIC AND THERMAL SEQUENTIAL PYROLYSIS AND HYDROLYSIS OF POLYMER WASTE COMPRISING NYLON 6 AND A POLYOLEFIN OR MIXTURES OF POLYOLEFINS TO SEQUENTIALLY RECOVER MONOMERS OR OTHER HIGH VALUE PRODUCTS

Robert J. Evans, Lakewood, and Helena L. Chum, Arvada, both of Colo., assignors to Midwest Research Institute, Kansas City, Mo.

Division of Ser. No. 711,546, Jun. 7, 1991, Pat. No. 5,216,149. This application Oct. 27, 1992, Ser. No. 943,526

Int. Cl.[5] C07D *201/12;* **C07C** *4/00*

U.S. Cl. 540—540 **7 Claims**

1. A process of using fast pyrolysis in a carrier gas to convert a plastic waste feed stream comprising nylon 6 and a polyolefin or mixtures of polyolefins having a mixed polymeric composition in a manner such that pyrolysis of a given nylon 6 and a polyolefin or mixtures of polyolefins and its high value monomeric constituent or derived high value products occurs prior to pyrolysis of other plastic components therein comprising:

a) selecting a first temperature program range to cause pyrolysis of said given nylon 6 and a polyolefin or mixtures of polyolefins and its high value monomeric constituent prior to a temperature range that causes pyrolysis of other plastic components;

b) selecting a catalyst and a support and treating said feed stream with said catalyst to affect acid or base catalyzed reaction pathways to maximize yield or enhance separation of said high value monomeric constituent or high value product in said first temperature program range;

c) differentially heating said feed stream at a heat rate within the first temperature program range to provide differential pyrolysis for selective recovery of optimum quantities of said high value monomeric constituent or high value product of said nylon 6 and a polyolefin or mixtures of polyolefins prior to pyrolysis of other plastic components therein;

d) separating said high value monomer constituent or derived high value product of said nylon 6 and a polyolefin or mixtures of polyolefins;

e) selecting a second higher temperature program range to cause pyrolysis to different high value monomeric hydrocarbon constituents of said plastic waste and differentially heating said feed stream at said higher temperature program range to cause pyrolysis of said plastic into different high value hydrocarbon monomeric constituents or derived products; and

f) separating said different high value monomeric hydrocarbon constituents or derived high value products.

5,359,062

RECOVERY OF CAPROLACTAM FROM POLYCAPROLACTAM

Hugo Fuchs, Ludwigshafen; Gerald Neubauer, Weinheim; Josef Ritz, and Claus-Ulrich Priester, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 29, 1993, Ser. No. 54,064

Claims priority, application Fed. Rep. of Germany, May 7, 1992, 4215087

Int. Cl.[5] C07D *201/12*

U.S. Cl. 540—540 **7 Claims**

1. A process for the recovery of caprolactam from polycaprolactam by hydrolyric cleavage of polycaprolactam with from 5 to 50 parts by weight of water per part by weight of polycaprolactam at from 200° to 350° C. under superatmospheric pressure to give an aqueous solution or suspension which contains monomeric caprolactam and oligomers thereof and may contain polycaprolactam and subsequent isolation of monomeric caprolactam from the aqueous solution or suspension by distillation or extraction, wherein the hydrolytic cleavage is carried out in the presence of an alkali metal hydroxide.

5,359,063

HETEROCYCLENE DERIVATIVES

Thomas G. C. Bird, Witry-les-Reims, France, assignor to Imperial Chemical Industries PLC, London, England and ICI Pharma, Cergy Cedex, France

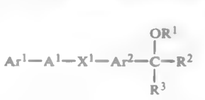
Division of Ser. No. 717,505, Jun. 19, 1991, Pat. No. 5,217,978. This application Mar. 4, 1993, Ser. No. 26,019

Claims priority, application France, Jun. 21, 1990, 90 401758; Jan. 15, 1991, 91 400077

Int. Cl.[5] C07D *265/36, 265/34*

U.S. Cl. 544—105 **9 Claims**

1. A heterocyclene compound of the formula I



I

wherein Ar^1 is 4H-1,4-benzoxazinyl or a hydrogenated derivative thereof optionally having up to five substituents selected from amino, halogeno, hydroxy, cyano, oxo, thioxo, (1–4C)alkyl, (1–4C)alkoxy, (1–4C)alkylthio, (1–4C)alkylsulphinyl, (1–4C)alkylsulphonyl, (1–4C)alkylamino, di-[(1–4C)alkyl]amino, (2–4C)alkanoyl, fluoro-(1–4C)alkyl, cyano-(1–4C)alkyl, phenyl, benzoyl and phenyl-(1–4C)alkyl, and wherein said phenyl, benzoyl or phenyl-(1–4C)alkyl substituent optionally has a substituent selected from halogeno, (1–4C)alkyl and (1–4C)alkoxy;

wherein A^1 is a direct link to X^1 or is (1–3C)alkylene;

wherein X^1 is oxy, thio, sulphinyl, sulphonyl or imino;

Ar^2 is a 5-membered heterocyclene moiety having one heteroatom selected from nitrogen, oxygen and sulphur, optionally having one substituent selected from halogeno, (1–4C)alkyl and (1–4C)alkoxy;

wherein R^1 is (1–4C)alkyl, (3–4C)alkenyl or (3–4C)alkynyl; and

wherein R^2 and R^3 together form a group of the formula —A^2—X^2—A^3— which, together with the carbon atom

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to which A^2 and A^3 are attached, defines a ring having 5 to 7 ring atoms, wherein A^2 and A^3, which are the same or different, each is (1–3C)alkylene and X^2 is oxy, thio, sulphinyl or sulphonyl, and which ring optionally has one, two or three substituents, which are the same or different, selected from hydroxy, (1–4C)alkyl and (1–4C)alkoxy;

or a pharmaceutically-acceptable salt thereof.

5,359,066

SALTS OF TRIAZINE DERIVATIVES WITH OXYGENATED ACIDS OF PHOSPHORUS

Roberto Cipolli, Novara; Enrico Masarati, Piacenza; Gilberto Nucida, Milan; Roberto Oriani, Milan, and Mario Pirozzi, Milan, all of Italy, assignors to Ministero Dell 'Universita' e Della Ricerca Scientifica e Tecnologica, Rome, Italy

Filed Jul. 10, 1991, Ser. No. 727,710

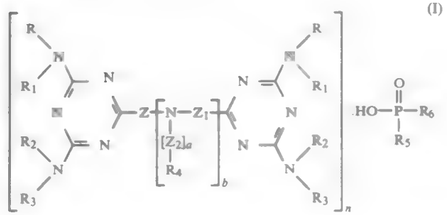
Claims priority, application Italy, Jul. 11, 1990, 20919 A/90

Int. Cl.[5] C07D *419/12, 419/14;* C07F *9/54*

U.S. Cl. 544—195 **2 Claims**

1. Salts of triazine compounds with oxygenated acids of phosphorus having formula (I)

(I)



where:

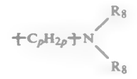
the radicals from R to R_3, either alike or different, and which can also have different meanings for each triazine ring, are:

H; C_1–C_{18} alkyl; C_2–C_{16} alkenyl; C_6–C_{16} cycloalkyl or C_6–C_{16} alkylcycloalkyl, optionally substituted with a hydroxyl or C_1–C_4 hydroxy alkyl group;

$$+C_mH_{2m}+O-R_7$$

where m is an integer between 2 and 8 and

R_7=H; C_1–C_8 alkyl; C_2–C_6 alkenyl; $[C_qH_{2q}]$—O—R_9 where q is an integer between 1 and 4 and R_9 is H or C_1–C_4 alkyl; C_6–C_{12} cycloalkyl or C_6–C_{12} alkyl cycloalkyl;

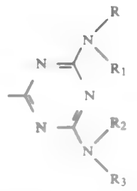


where p=an integer between 2 and 6 and the R_8 radicals, either alike or different, are: H; C_1–C_8 alkyl; C_2–C_6 alkenyl; C_6–C_{12} cycloalkyl or C_6–C_{12} alkyl cycloalkyl; C_1–C_4 hydroxy alkyl; or —NR_8BR_8 forms a heterocyclic radical selected from the group consisting of aziridine, pyrrolidine, piperidine, morpholine, thiomorpholine, piperazine, 4-methylpiperazine or 4-ethylpiperazine; or at least one of the groups —NRR_1 or NR_2R_3 in the formula (I) forms a heterocyclic radical selected from the group consisting of aziridine; pyrrolidine; piperidine; morpholine; thiomorpholine; piperazine; 4-methylpiperazine; 4-ethylpiperazine; 2-methylpiperazine; 2,5-dimethylpiperazine; 2,3,5,6-tetramethylpiperazine; 2,2,5,5-tetramethylpiperazine; 2-ethylpiperazine or 2,5-diethylpiperazine;

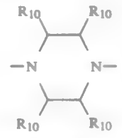
a is 0 or 1

b is 0 or an integer between 1 and 5;

R_4 is hydrogen or:

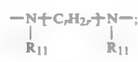


and its meaning can vary within each repetition unit; when b is 0, Z is a bivalent radical selected from one of the following formulae:

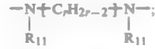


(II)

where the R_{10} radicals, either alike or different, are hydrogen or C_1–C_4 alkyl:

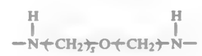


(III)



(IV)

where r is an integer between 2 and 14 and R_{11} is hydrogen; C_1–C_4 alkyl; C_2–C_6 alkenyl; C_1–C_4 hydroxy alkyl;

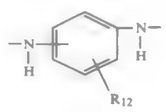


(V)

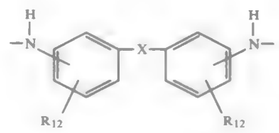


(VI)

where s is an integer between 2 and 5 and t is an integer between 1 and 3;

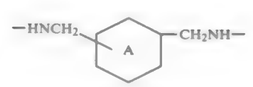


(VII)



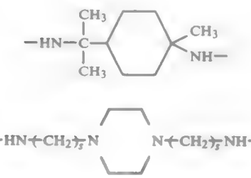
(VIII)

where X is a C—C bond; O; S; S—S; SO; SO_2; NH; $NHSO_2$; NHCO; N=N; CH_2; and R_{12} is hydrogen; a hydroxy radical; C_1–C_4 alkyl; or C_1–C_4 alkoxy;



(IX)

where A can be a saturated or unsaturated cycle;

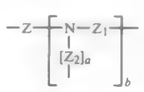


(X)

(XI)

where s has the previously defined meaning;

when b is an integer between 1 and 5, the group:



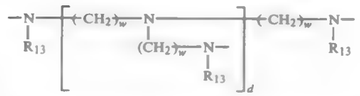
is a polyvalent radical selected from one of the following formulae:



(XII)

where: R_{13} is hydrogen or C_1–C_4 alkyl;

c is an integer between 1 and 5; indexes s, either alike or different, have the above defined meaning;



(XIII)

where: R_{13} has the previously defined meaning;

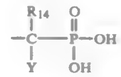
w is an integer between 2 and 4; d is either 1 or 2;

n is a number from greater than 0 to 3;

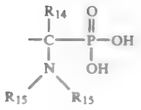
R_5 is H, OH, —O—C_1–C_8 alkyl; —O—C_6–C_{12} aryl, optionally substituted with a C_1–C_8 alkyl; C_7–C_{12} aralkyl, optionally substituted with a C_1–C_4 alkyl; C_1–C_4 alkyl, optionally substituted with a carboxylic group; C_6–C_{12} aryl;

R_6 is H, OH, —O—C_1–C_8 alkyl; —O—C_6–C_{12} aryl; C_1–C_4 alkyl; C_6–C_{12} aryl;

R_6 is also



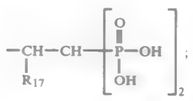
where: R_{14} is H or C_1–C_{12} alkyl; Y is OH or R_{14};



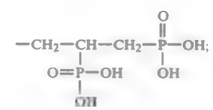
where: R_{14} has the previously defined meaning, and the R_{15} radicals, either alike or different, are H or C_1–C_4 alkyl;

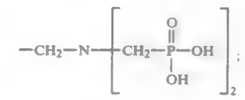


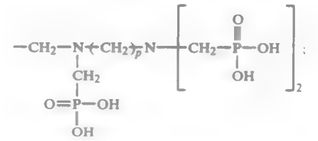
where: R_{16} is H or C_1–C_8 alkyl; and t has the previously defined meaning;

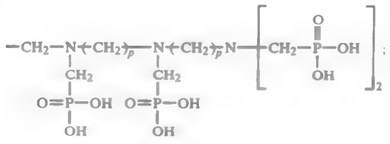


where: R_{17} is H or OH;

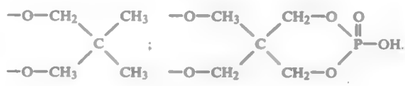








where: p has the previously defined meaning; or R_5 and R_6 together may form a cyclic structure having formula:



with the proviso that the bivalent or polyvalent radical,

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defined above, belongs to the formulae (II), (IV)–(XI) and (XIII), and the radicals R_5 and R_6, defined above, are different from H and OH respectively.

5,359,065

METHOD OF PREPARATION OF ORGANOSILYL SUBSTITUTED AROMATIC OR HETEROAROMATIC COMPOUNDS

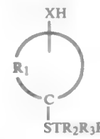
Sundaram Krishnamurthy, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 7, 1992, Ser. No. 986,240

Int. Cl.[5] C07F *7/02, 704;* C07D *303/02*

U.S. Cl. 544—229 **21 Claims**

1. A process for preparing an ortho-, meta- or para-silyl aromatic or heteroaromatic compound represented by the formula



wherein

X is oxygen or sulfur,

R_1 represents the atoms necessary to complete an unsubstituted or substituted aromatic or heteroaromatic ring, and

R_2, R_3 and R_4 individually are unsubstituted or substituted alkyl groups,

which comprises the steps of:

(i) reacting an ortho-, meta-, or para-bromoaromatic or heteroaromatic compound represented by the formula



wherein X and R_1 are as defined above, with an excess of a silylating agent selected from the group consisting of a hexaalkyldisilazane of the formula $R_2R_3R_4SiNHSiR_2R_3R_4$ and a halotrialkylsilane of the formula $R_2R_3R_4SiCl$;

(ii) removing excess reagent, solvent, and/or by-products;

(iii) adding an organic solvent that is compatible with a preselected metallizing agent;

(iv) cooling the resulting reaction mixture;

(v) adding said metallizing agent in an organic solvent to the cooled reaction mixture dropwise to form a metallized intermediate;

(vi) mixing the resulting reactants and monitoring the reaction stopping the reaction before the formation of a significant amount of alkylated by-product.

5,359,066

CERTAIN TRICYCLIC PYRIDO[3,2,1-IJ]CINNOLINE-8-CARBOXYLATES, USEFUL AS ANTIMICROBIAL AGENTS

Hideo Tsutsumi, Toyonaka; Takeshi Terasawa, Osaka; David Barrett, Nara; Masayoshi Murata, Osaka; Kazuo Sakane, Kawanishi; Akira Yazaki, and Satoshi Inoue, both of Hiroshima, all of Japan, assignors to Wakunaga Pharmaceutical Co., Ltd. and Fujisawa Pharmaceutical Co., Ltd., both of Osaka, Japan

PCT No. PCT/JP92/00215, § 371 Date Jun. 15, 1993, § 102(e) Date Jun. 15, 1993, PCT Pub. No. WO92/15584, PCT Pub. Date Sep. 17, 1992

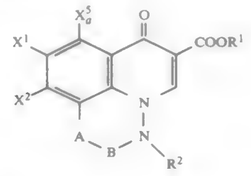
PCT Filed Feb. 27, 1992, Ser. No. 938,249

Claims priority, application Japan, Feb. 28, 1991, 3-120674; May 31, 1991, 3-229848; Jul. 4, 1991, 3-164356; Aug. 27, 1991, 3-[illegible]

Int. Cl.[5] C07D *471/06, 487/06;* A61K *31/50*

U.S. Cl. 544—234 **4 Claims**

1. A compound of the formula:



wherein

R^1 is a hydrogen atom or a carboxyl-protecting group;

R^2 is a hydrogen atom or a lower alkyl group;

X^1 is a hydrogen atom or a halogen atom;

X^2 is a halogen atom;

X_a^5 is a hydrogen atom or a halogen atom;

A is a methylene group; a group of >CH—$COOR^4$, or a group of:



in which R^4, R^5 and R^6 each are a hydrogen atom or a carboxyl-protecting group;

B is a methylene group or a carbonyl group; provided that both A and B must not be methylene groups at the same time, or a pharmaceutically acceptable salt thereof.

5,359,067

PROCESS FOR THE PREPARATION OF 5-SUBSTITUTED CYTOSINES AND OTHER 4,5-DISUBSTITUTED PYRIMIDIN-2(1H)-ONES, AND INTERMEDIATES ARISING IN THE COURSE OF THIS

Gerhard Jähne, Frankfurt am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 19, 1992, Ser. No. 978,730

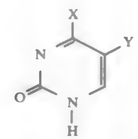
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1991, 4138585

Int. Cl.[5] C07D *239/36*

U.S. Cl. 544—317 **8 Claims**

1. A process for the preparation of a pyrimidine of the formula I,

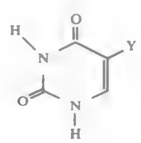
I



where X is amino, alkylamino, dialkylamino, hydrazino, N2-alkylhydrazino, N2-dialkylhydrazino, alkenylamino, alkynylamino, benzylamino, dialkenylamino, dialkynylamino, dibenzylamino, phenylamino, alkoxy, alkenyloxy, alkynyloxy, benzyloxy, phenyloxy, mercapto, alkylthio, alkenylthio, alkynylthio, phenylthio or benzylthio, wherein the alkyl, alkenyl and alkynyl groups in the foregoing substituents contain up to 8 carbon atoms, and

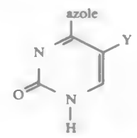
Y is hydrogen, C_1–C_6-alkyl, C_1–C_5-cycloalkyl, benzyl, benzyloxymethyl, halogen, ethenyl, ethynyl, (E)-2-bromovinyl, vinyl, (E)-2-alkoxycarbonylvinyl or propargyl, wherein the benzylamino, dibenzylamino, phenylamino, benzyloxy, phenyloxy, phenylthio, benzylthio, benzyl and benzyloxymethyl substituents X and Y may be ring-substituted by C_1–C_5-alkyl, nitro, halogen or C_1–C_5-alkoxy, which comprises reacting a pyrimidine of the formula II

II



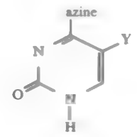
where Y has the abovementioned meanings, with a nitrogen-containing heterocycle selected from the group consisting of 1,2,4-triazole, 3-nitro-1,2,4-triazole, N-methylimidazole and pyridine and a phosphoric acid halide in an aprotic solvent with addition of a nitrogen-containing base to give an azole intermediate of the formula III

III



or an azine intermediate of the formula IV

IV



where Y has the abovementioned meanings, and reacting said azole intermediate or said azine intermediate with the amino, alkylamino, dialkylamino, hydrazino, benzylamino, dialkenylamino, dialkynylamino, dibenzylamino, phenylamino, alkoxy, alkenyloxy, alkynyloxy, benzyloxy, phenyloxy, mercapto, alkylthio, alkenylthio, alkynylthio, phenylthio or benzylthio nucleophiles corresponding to the radical X to give compounds of the formula I, in which X and Y have the abovementioned meanings.

5,359,068

PROCESSES AND INTERMEDIATES FOR THE PREPARATION OF 5-[2-(4-(BENZOISOTHIAZOL-3-YL)-PIPERAZIN-1-YL)ETHYL]-6-CHLORO-1,3-DIHYDRO-INDOL-2-ONE

Frank J. Urban, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

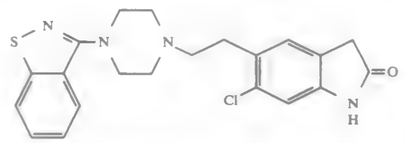
Filed Jun. 28, 1993, Ser. No. 83,429

Int. Cl.[5] C07D *417/00*

U.S. Cl. 544—368 **17 Claims**

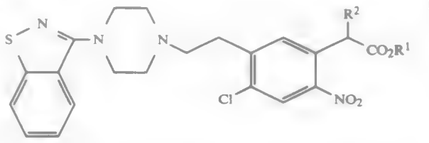
1. A process for preparing a compound of the formula

I



which comprises treating a compound of the formula

II



wherein R^2 is hydrogen, CN or CO_2R^1 and R^1 is hydrogen or (C_1–C_6)alkyl with a reducing agent selected from the group consisting of sodium hydrosulfite, hydrogen in the presence of a hydrogenation catalyst, iron in acetic acid, zinc and $CaCl_2$ in acetic acid and NaH_2PO_2 in the presence of Pd/C with the proviso that when R^2 is CN or CO_2R^1 and R^1 is (C_1–C_6) alkyl the product of the reduction is heated with an acid.

5,359,069

NON-MIGRATING 1-HYDROCARBYLOXY HINDERED AMINE DERIVATIVES AS POLYMER STABILIZERS

James P. Galbo, Hartsdale; Ramanathan Ravichandran, Nanuet, both of N.Y.; Peter J. Schirmann, Fairfield, and Andrew Mar, Norwalk, both of Conn., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

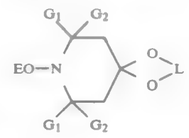
Division of Ser. No. 903,699, Jun. 24, 1992, Pat. No. 5,286,865, which is a division of Ser. No. 480,173, Feb. 14, 1990, Pat. No. 5,145,893, which is a continuation-in-part of Ser. No. 326,702, Mar. 21, 1989, abandoned. This application Jan. 7, 1994, Ser. No. 179,652

Int. Cl.[5] C07D *491/113*

U.S. Cl. 546—19 **5 Claims**

1. A 1-hydrocarbyloxy substituted hindered amine compound having the formula III,

(III)



wherein

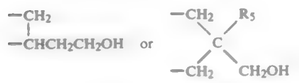
G_1 and G_2 are independently alkyl of 1 to 4 carbon atoms, or G_1 and G_2 together are pentamethylene,

E is alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, alkenyl of 2 to 18 carbon atoms, propargyl, cycloalkenyl of 5 to 12 carbon atoms, phenylalkyl wherein

VOL 1167 ISS 4 OC 25 1994 UMI

the alkyl groups have 1 to 9 carbon atoms, a radical of a saturated or unsaturated bicyclic or tricyclic hydrocarbon of 7 to 12 carbon atoms

L is



where R_5 is methyl, ethyl or $—CH_2OH$.

5,359,070

UNSYMMETRICAL BIS-IMIDES AS ANTICANCER AGENTS

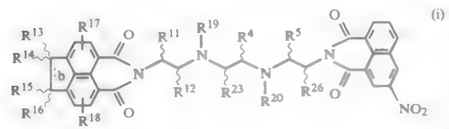
Robert J. Cherney, Newark, and Steven P. Seitz, Swarthmore, both of Del., assignors to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Filed Feb. 11, 1993, Ser. No. 16,555

Int. Cl.[5] C07D *221/18*; A61K *31/435*

U.S. Cl. 546—76 **4 Claims**

1. A compound, and pharmaceutically acceptable salts thereof, having the formula (i):



(i)

and enantiomeric or diastereomeric forms thereof, or mixtures of enantiomeric or diastereomeric forms thereof, wherein:

R^{11}, R^{12}, R^{23}, R^4, R^5, and R^{26} are independently selected from H and CH_3 and CH_2CH_3;

R^{19} and R^{20} are H or CH_3;

R^{18} is selected from: H, C_1–C_6 alkyl, C_2–C_6 alkenyl, trihalomethyl, halogen, C_1–C_6 alkoxy, hydroxy, amino, C_1–C_6 di- or mono-alkylamino, C_1–C_6 alkylcarbonyl, C_1–C_7 carboalkoxy, cyano, nitro; and

R^{13}, R^{15}, R^{17}, R^{14} and R^{16} are H;

b, the bond between carbon atoms substituted with R^{13} and R^{15}, is a single bond.

5,359,071

15-SUBSTITUTED 4-AZASTEROIDS

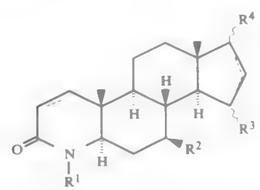
Philippe L. Durette, New Providence; Craig K. Esser, Belford; William Hagmann, Westfield, and Ihor E. Kopka, Millburn, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 12, 1993, Ser. No. 30,508

Int. Cl.[5] A61K *31/535*

U.S. Cl. 546—78 **3 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt or ester thereof, wherein

R^1 is selected from the group consisting of hydrogen and C_{1-10} alkyl;

R^2 is selected from the group consisting of hydrogen and C_{1-10} alkyl;

R^3 is selected from the group consisting of C_{1-10} alkyl, C_{2-10} alkenyl, C_{1-10} alkoxyl, cyano, hydroxyl and triphenylthio-C_{1-6} alkyl;

R^4 is either monosubstituted by a substituent selected from the group consisting of keto, spiro-dioxolane and oximino or is disubstituted by hydrogen and R^5;

R^5 is selected from the group consisting of hydrogen, hydroxyl, Alk-R^6, Alk-X-Alk-R^6.

R^6 is selected from the group consisting of hydrogen, hydroxyl, —CO—R^7, —COO—R^7, —CO—NH—R^7, —NH—CO—R^7 and phenyl;

R^7 is selected from the group consisting of hydrogen, C_{1-6} alkyl, pyridyl and unsubstituted or substituted phenyl where said substituent is halogen, C_{1-5} alkoxyl, C_{1-5} alkylcarbonyl, C_{1-5} alkoxycarbonyl, or C_{1-5} alkylaminocarbonyl;

X is O or NH; and

Alk is C_{0-10} alkyl or C_{2-10} alkenyl with the proviso that when C is O, there is no Alk moiety present.

5,359,072

NONLINEARLY OPTICALLY ACTIVE COMPOUNDS

Gerard Mignani, Lyons; Gerard Soula, Meyzieu, and Remi Meyrueix, Lyons, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

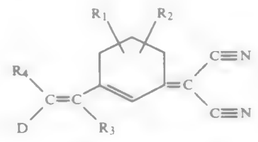
Continuation of Ser. No. 407,744, Sep. 15, 1989, abandoned. This application Jan. 13, 1991, Ser. No. 714,585

Claims priority, application France, Sep. 15, 1988, 88 12028

Int. Cl.[5] C07D *451/02*; G02F *1/35*

U.S. Cl. 546—94 **11 Claims**

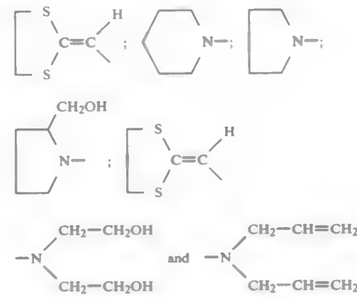
1. A nonlinearly optically active compound having the formula



wherein the radical D has the general formula:

$$—R_6—D_1$$

in which R_6 is an aryl radical, and D_1 is an electron donating radical selected from among amino, alkylamino, arylamino, thiol, alkylthio, alkoxy, aryloxy, halogenoalkyl, or one of the radicals



and R_1, R_2, R_3 and R_4 are each hydrogen or a lower alkyl radical.

5,359,073

SUBSTITUTED-PHENYL (N,N'-CYCLOALKYL/ALKYL CARBOXAMIDE)-1H/3H-IMIDAZO[4,5-B]PYRIDINE COMPOUNDS AS PAF ANTAGONISTS

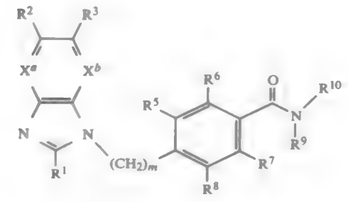
Richard M. Weier, Lake Bluff; Ish K. Khanna, Vernon Hills; Michael A. Stanley, Libertyville; Janet A. Julien, Glenview, and Kirk T. Lentz, Niles, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Nov. 24, 1992, Ser. No. 981,957

Int. Cl.[5] C07D *471/04, 471/06*

U.S. Cl. 546—118 **36 Claims**

1. A compound of Formula I:



(I)

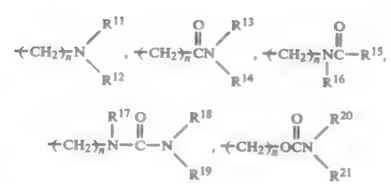
wherein each of X^a and X^b is independently selected from nitrogen atom and $>CR^4$, with the proviso that when one of X^a and X^b is selected as nitrogen atom then the other of X^a and X^b must be selected from $>CR^4$ and with the further proviso that one of X^a and X^b must be a nitrogen atom; wherein m is a number selected from one through six, inclusive;

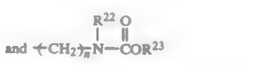
wherein R^1 is selected from hydrido, alkyl, hydroxyalkyl, formyl, halo, haloalkyl, cycloalkyl, alkylcycloalkyl, cycloalkylalkyl, cycloalkylhaloalkyl, cycloalkylcarbonyl, alkoxy, aralkyl, aralkylhaloalkyl, aryl, haloaryl, aroyl, aryloxy, aryloxyalkyl, aralkoxy, alkoxyalkyl, alkylcarbonyl, alkylcarbonylalkyl, alkoxycarbonyl, alkenyl, cycloalkenyl, alkynyl, cyano, carboxyl, carboxyalkyl, alkylcarbonyloxy, alkylcarbonyloxyalkyl, alkoxycarbonylalkyl, aralkoxycarbonylalkyl, aralkylcarbonyloxyalkyl, alkylsilyloxyalkyl, aryl/alkylsilyloxyalkyl, arylsilyloxyalkyl, mercaptoalkyl, alkoxycarbonyloxy, alkylthio, alkylthioalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, cycloalkylthio, cycloalkylalkylthio, alkylcarbonylthio, arylthio, arylcarbonylthio, aralkylthio and aralkylcarbonylthio;

wherein each of R^2, R^3 and R^4 is independently selected from hydrido, alkyl, hydroxyalkyl, formyl, halo, haloalkyl, cycloalkyl, alkylcycloalkyl, cycloalkylalkyl, cycloalkylhaloalkyl, cycloalkylcarbonyl, alkoxy, aralkyl, aralkylhaloalkyl, alkoxyalkyl, alkylcarbonyl, alkylcarbonylalkyl, alkylsilyloxyalkyl, alkoxycarbonyl, cyano, nitro, alkylthio, alkylthioalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, cycloalkylthio and cycloalkylalkylthio;

wherein each of R^5, R^6, R^7 and R^8 is independently selected from hydrido, alkyl, hydroxy, hydroxyalkyl, formyl, halo, haloalkyl, cycloalkyl, alkylcycloalkyl, cycloalkylalkyl, cycloalkylhaloalkyl, cycloalkylcarbonyl, alkoxy, aralkyl, aralkylhaloalkyl, aryl, haloaryl, aroyl, aryloxy, aryloxyalkyl, aralkoxy, alkoxyalkyl, alkylcarbonyl, alkylcarbonylalkyl, alkoxycarbonyl, alkenyl, cycloalkenyl, alkynyl, cyano, nitro, carboxyl, carboxyalkyl, alkylcarbonyloxy, alkylcarbonyloxyalkyl, alkoxycarbonylalkyl, aralkoxycarbonylalkyl, aralkylcarbonyloxyalkyl, alkylsilyoxyalkyl, alkoxycarbonyloxy, alkylthio, alkylthioalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, cycloalkylthio, cycloalkylalkylthio, alkylcarbonylthio, arylthio, arylcarbonylthio, aralkylthio and aralkylcarbonylthio, with the proviso that at least one of R^5, R^6, R^7 and R^8 must be a group other than hydrido;

wherein each of R^1, R^2, R^3, R^4, R^5, R^6, R^7 and R^8 may be further independently selected from amino and amido radicals of the formulae



and 

wherein each n is a number independently selected from zero to six, inclusive; wherein each of R^{11} through R^{23} is independently selected from hydrido, alkyl, cycloalkyl, hydroxyalkyl, cycloalkylalkyl, alkoxyalkyl, aralkyl and aryl;

wherein each of R^9 and R^{10} is independently selected from hydrido, alkyl, haloalkyl, cycloalkyl, polycycloalkyl, polycycloalkylalkyl, cycloalkylalkyl, aralkyl, aryl, alkenyl and cycloalkenyl; wherein any of said R^9 and R^{10} groups may be substituted at one or more substitutable positions by one or more groups selected from alkyl, halo, haloalkyl and alkoxy; or a pharmaceutically-acceptable salt thereof.

5,359,074

PROCESS FOR THE PREPARATION OF RACEMIC AND OPTICALLY ACTIVE 1,2,3,4-TETRAHYDROISOQUINOLINE-3-CARBOXYLIC ACID AND ITS PRECURSORS

Bernhard Kaempmeier, Frankfurt am Main, and Ulrich Lerch, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 822,930, Jan. 21, 1992, Pat. No. 5,252,738. This application Jun. 15, 1993, Ser. No. 76,772

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1991, 4102017

Int. Cl.[5] C07D *217/20, 217/18*; A61K *31/47*

U.S. Cl. 546—147 **9 Claims**

1. A compound of the following formula: C_1-C_4 Dialkyl 1,2,3,4-tetrahydroisoquinoline-N-acyl-3,3-dicarboxylates.

5,359,075

QUINOPHTHALONE COMPOUND

Tsukasa Ohyama; Yasushi Shimokawa; Yoriaki Matsuzaki; Keisuke Takuma, all of Fukuoka; Isamu Ghoda, and Hitoshi Koshida, both of Hyogo, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

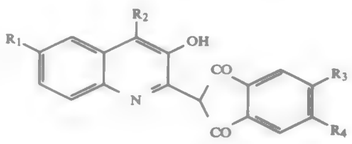
Filed Aug. 5, 1992, Ser. No. 924,875

Claims priority, application Japan, Aug. 6, 1991, 3-196624; Dec. 27, 1991, 3-345869

Int. Cl.[5] C09B *25/00*

U.S. Cl. 546—154 **19 Claims**

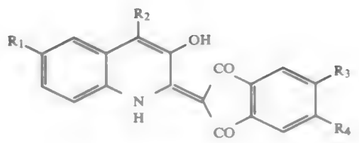
1. A quinophthalone compound represented by formula (1)



(1)

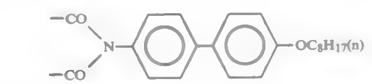
or the 2(2')-ene tautomer thereof represented by Formula (1')

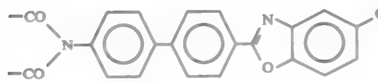
VOL 1167 ISS 4 OC 25 1994 UMI



(1')

wherein R_1 is a hydrogen atom, an alkyl group having 2 to 8 carbon atoms which may be branched, or cycloalkyl group having 5 to 6 carbon atoms, R_2 is a hydrogen atom, halogen atom, alkylthio group having 1 to 8 carbon atoms, arylthio group which may be substituted by an alkyl group of 1 to 4 carbon atoms, each of R_3 and R_4 is a hydrogen atom, a dialkyl amino carbonyl or alkylaminocarbonyl group, or a heterocyclic ring group selected from the group consisting of an oxazoline, an oxazole, a benzooxazole, a thiazoline, a thiazole, a benzothiazole, an imidazoline, an imidazole, a benzoimidazole, and oxadiazole, a thiadiazole, or a benzooxazoline, each optionally substituted by alkyl, alkoxy, hydroxymethylene, alkylcarboxyalkyl or alkoxycarboxyalky group(s) or R_3 and R_4 may be bonded to each other to form an N-substituted maleimide ring of one of the following formulae:





provided, however, when R_1 is a hydrogen atom, and R_4 is a hydrogen atom, R_3 is a heterocyclic ring as defined above.

5,359,076

CYCLIC AMINOPHENYLACETIC ACID DERIVATIVES, PROCESS FOR PREPARING THE SAME AND IMMUNE RESPONSE MODULATOR HAVING THE SAME AS AN EFFECTIVE INGREDIENT

Yasushi Kohno; Katsuya Awano, both of Oyama; Takayoshi Ishizaki, Washimiya; Eisuke Kojima, Koga; Shinji Kudoh, Nogi; Yasuhiko Sakoe, and Koji Saito, both of Oyama, all of Japan, assignors to Kyorin Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/00476, § 371 Date Dec. 9, 1992, § 102(e) Date Dec. 9, 1992, PCT Pub. No. WO92/18482, PCT Pub. Date Oct. 29, 1992

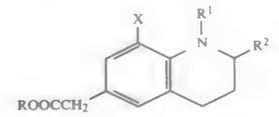
PCT Filed Apr. 15, 1992, Ser. No. 956,012

Claims priority, application Japan, Apr. 16, 1991, 3-111000; Apr. 10, 1992, 4-116730

Int. Cl.[5] C07D *215/24, 215/48, 215/16, 215/06*

U.S. Cl. 546—165 **2 Claims**

1. A cyclic aminophenylacetic acid compound having the formula:



(1)

wherein R and R^1 are each independently a hydrogen atom or a lower alkyl group, R^2 is a phenyl group which is unsubstituted or is substituted with 1 to 3 to groups of halogen atoms, methoxy groups or a combination thereof, or trifluoromethyl groups; and

X is a hydrogen atom, a lower alkyl group, lower alkoxy group, cyano group, thiocyano group, trimethylsilylethinyl group, phenyl group which is unsubstituted or substituted by halogen, methoxy, methyl or a combination thereof, carbamoyl, carboxyl, lower alkoxycarbonyl, acetyl, benzoyl, nitro, amino, lower alkanoylamino, benzoylamino, phenylsulfonylamino, lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl or halogen or optical isomers of salts thereof.

5,359,077

PROCESS FOR PREPARATION OF 2-OXO-1 PIPERIDINYL DERIVATIVES

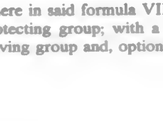
Ramachandran S. Ranganathan, Princeton; Thangavel Arunachalam, Plainsboro, and Kenneth J. Natalie, Jr, Dayton, all of N.J., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Jun. 5, 1992, Ser. No. 893,856

Int. Cl.[5] C07D *211/02, 211/40*

U.S. Cl. 546—219 **21 Claims**

1. A process for preparing a compound of the formula



I

where X is hydrogen or an oxygen protecting group;

R is alkyl, cycloalkyl, aryl, hydroxyalkyl, protected hydroxyalkyl or

Ra and Rb are independently selected from hydrogen, $—COX_1$,

X_1 is —OX or a leaving group;

R_1 and R_2 are the same or different and are hydrogen, alkyl, hydroxyalkyl or protected hydroxyalkyl;

R_3 and R_4 are the same or different and are hydrogen, alkyl, hydroxyalkyl or protected hydroxyalkyl;

the term alkyl refers to straight or branched chain groups of one to six carbon atoms;

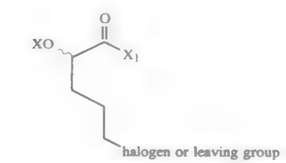
hydroxyalkyl refers to said alkyl groups having one or more hydroxy moieties;

which process comprises treating a compound of the formula

VIII

where in said formula VIII, X_1 is —OX and X is an oxygen protecting group; with a Lewis acid, a source of halide or leaving group and, optionally, a source of oxygen protection

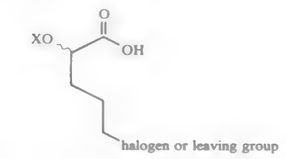
selected from anhydrides; sulfonyl halides; silyl halides; mixed anhydrides; silyl sulfonates; sulfonic anhydrides; and acyl halides for the protection of the oxygen of the group XO of the following compound of formula IX, said oxygen present as a member of the tetrahydrofuran ring of formula VIII, to provide a compound of formula IX



IX

halogen or leaving group

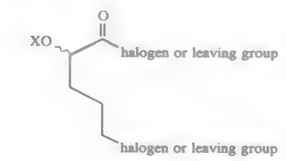
reducing the compound IX to provide



X

halogen or leaving group

activating compound X to provide



XI

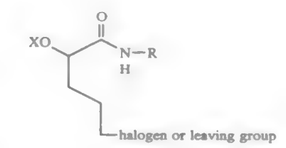
halogen or leaving group

halogen or leaving group

reacting compound XI with a compound of the formula

H_2NR

to provide



halogen or leaving group

and thereafter treating the so-formed compound with a base;

wherein said leaving group is

halogen,

alkylsulfonate,

arylsulfonate,

—OCOalkyl,

ONR_5R_6 where R_5 and R_6 together with the N to which they are attached form succinoyl or N-hydroxybenzotriazoyl; or

a group derived from carboxylic acid halides, sulfonyl halides, trialkylsilylhalides; or said Lewis acid, when said Lewis acid is also a source of halide; or optionally, said source of oxygen protection, when said source of oxygen protection also functions as a source of halide or leaving group.

5,359,078

SIGNAL TRANSDUCTION INHIBITOR COMPOUNDS

Elise C. Kohn, Olney; Lance A. Liotta, Potomac, and Christian C. Felder, Bethesda, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 355,744, May 19, 1989, Pat. No. 5,132,315, and a continuation-in-part of Ser. No. 944,009, Sep. 11, 1992, abandoned, which is a continuation of Ser. No. 637,145, Jan. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 894,891, Jun. 8, 1992, abandoned. This application Dec. 4, 1992, Ser. No. 985,402

Int. Cl.[5] C07D *249/06*

U.S. Cl. 548—255 **4 Claims**

1. A compound having the formula:

$$Y—(CH_2)_p—Ar^{11}—X—Ar^{12} \quad \text{(III)}$$

wherein:

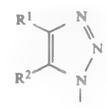
p is an integer of from 0 to 4;

Ar^{11} and Ar^{12} are each aromatic moieties independently selected from the group consisting of phenyl, naphthyl, and substituted versions thereof in which the substituents are members selected from the group consisting of halogen, nitro, carboxyl and alkoxy;

X is a linking moiety selected from the group consisting of O, S, SO_2, CO, CHCN, straight chain alkyl, alkoxy, and alkoxyalkyl; and

Y is a nitrogen-containing heterocyclic moiety selected from the group consisting of:

(a) radicals of the formula



(IV)

wherein:

R^1 is a member selected from the group consisting of hydrogen, $—CONH_2$, $—CONHR^5$, $—CO_2H$, $—CO_2R^5$ and $—SO_2NH_2$,

R^2 —$NHCOC_6H_5$, and

R^5 is lower alkyl of from 1 to 6 carbon atoms.

5,359,079

5-AMINO-1,2,4-TRIAZOLE-3-SULFONAMIDES

Jack C. Little, Lafayette; Patricia A. Thibos, Concord; Mariam G. Kidisti, Pittsburg, and Susan D. Thompson, San Leandro, all of Calif., assignors to DowElanco, Indianapolis, Ind.

Division of Ser. No. 287,952, Dec. 19, 1988. This application May 14, 1993, Ser. No. 62,104

Int. Cl.[5] C07D *249/14*

U.S. Cl. 548—263.8 **1 Claim**

1. The compound 5-amino-3-chlorosulfonyl-1,2,4-triazole.

5,359,080

YELLOW DYE-FORMING COUPLER AND SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL CONTAINING SAME

Yoshio Shimura; Hidetoshi Kobayashi, and Yasuhiro Yoshioka, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 670,277, Mar. 15, 1991, abandoned. This application Feb. 12, 1993, Ser. No. 17,447

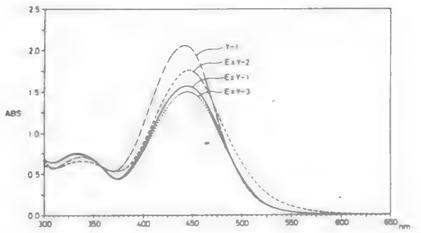
Claims priority, application Japan, Mar. 15, 1990, 2-64718

Int. Cl.[5] C07D *233/78;* **C07C** *233/14, 311/08*

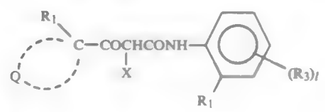
U.S. Cl. 548—317.5 **39 Claims**

1. An acylacetamide yellow photographic coupler represented by formula (Y):

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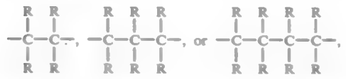
Formula (Y)



wherein:

R_1 is a halogen atom, a cyano group, an unsubstituted or a substituted alkyl group, an unsubstituted or a substituted alkoxy group, an unsubstituted or a substituted aryl group, an unsubstituted or a substituted aryloxy group, benzyl hydroxymethyl, methoxyethyl, ethoxycarbonylmethyl or phenoxyethyl, wherein the substituents, except for the aryl group, are selected from the group consisting of a halogen atom, an alkyl group, an alkoxy group, a nitro group, an amino group, a 1-pyrrolidinyl group, a carbonamido group, a sulfonamido group, an acyl group, and combinations of two or more of said substituents thereof, and the aryl group is selected from the group consisting of phenyl, 1-naphthyl, p-tolyl, o-tolyl, p-chlorophenyl, 4-methoxyphenyl, 8-quinolyl, 4-hexadecyloxyphenyl, pentafluorophenyl, p-hydroxyphenyl, p-cyanophenyl, 3-pentadecylphenyl, 2,4-di-t-pentylphenyl, p-methanesulfonamideophenyl, and 3,4-dichlorophenyl,

Q represents a group of non-metallic atoms that forms together with the carbon atom a substituted or unsubstituted 3 to 5 membered cyclic hydrocarbon ring having a total carbon number of 3 to 30 and said Q is selected from the group consisting of:



wherein the R groups may be the same or different and represent a halogen atom, a hydrogen atom, or an alkyl group having a carbon number of 1 to 24;

R_2 represents a hydrogen atom, a halogen atom, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted aryloxy group, a substituted or unsubstituted alkyl group, or an amino group, wherein the substituents are selected from the group consisting of a halogen atom, an alkyl group, an alkoxy group, an aryloxy group and combinations of two or more of said substituents thereof;

R_3 is a halogen atom, an unsubstituted or substituted alkyl group, an unsubstituted or substituted aryl group, an unsubstituted or substituted alkoxy group, an unsubstituted or substituted aryloxy group, an unsubstituted or substituted alkoxycarbonyl group, an unsubstituted or substituted aryloxycarbonyl group, an unsubstituted or substituted carbonamido group, an unsubstituted or substituted sulfonamido group, an unsubstituted or substituted carbamoyl group, an unsubstituted or substituted sulfamoyl group, an unsubstituted or substituted alkylsulfonyl group, an unsubstituted or substituted arylsulfonyl group, an unsubstituted or substituted ureido group, an unsubstituted or substituted sulfamoylamino group, an unsubstituted or substituted alkoxycarbonylamino group, an unsubstituted or substituted alkoxysulfonyl group, a nitro group, an unsubstituted or substituted heterocyclic group, a cyano group, an unsubstituted or substituted acyl group, an unsubstituted or substituted acyloxy group, an unsubstituted or substituted alkylsulfonyloxy group, or an unsubstituted or substituted arylsulfonyloxy group, wherein the substituents are selected from the group consisting of a halogen atom, an alkyl group, an aryl group, a heterocyclic group, an alkoxy group, an aryloxy group, a heterocyclic oxy group, an alkylthio group, an arylthio group, a heterocyclic thio group, an alkylsulfonyl group, an arylsulfonyl group, an acyl group, a carbonamido group, a sulfonamido group, a carbamoyl group, a sulfamoyl group, an alkoxycarbonylamino group, a sulfamoylamino group, a ureido group, a cyano group, a nitro group, an acyloxy group, an alkoxycarbonyl group, an aryloxycarbonyl group, an alkylsulfonyloxy group, an arylsulfonyloxy group and combinations of two or more of said substituents thereof;

X represents a hydrogen atom or a group capable of being released upon a coupling reaction thereof with an oxidized product of an aromatic primary amine developing agent;

l is an integer of 0 to 4, and when l is 2 or more, the R_3 groups may be the same or different.

5,359,081

CARBONYLATION OF EPOXIDES

Eit Drent, and Eric Kragtwijk, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 82,211, Jun. 24, 1993, Pat. No. 5,310,948.
This application Mar. 3, 1994, Ser. No. 206,293
Claims priority, application European Pat. Off., Jun. 29, 1992, 92201940.1
Int. Cl.[5] C07D *305/12*
U.S. Cl. 549—328 **5 Claims**

1. A process for the preparation of α,β-unsaturated carboxylic acids or derivatives thereof comprising:

(a) reacting an epoxide with carbon monoxide in the presence of a cobalt-containing catalyst system comprising a source of cobalt and a hydroxyl-substituted pyridine compound thereby producing a β-propiolactone monomer or polymer; and

(b) dehydrating said β-propiolactone monomer or polymer.

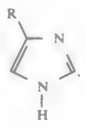
5,359,082

PREPARATION OF 4-SUBSTITUTED IMIDAZOLES FROM N-FORMYL-α-AMINONITRILE

Ulrich Koehler, Mannheim; Thomas-Michael Kahl, Roemerberg; Horst Neuhauser, Dudenhofen; Hardo Siegel, Speyer, and Michael Kroener, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 23, 1993, Ser. No. 36,032
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1992, 4209847
Int. Cl.[5] C07D *233/58, 233/56, 233/54*
U.S. Cl. 548—335.1 **4 Claims**

1. A process for the preparation of a 4-substituted imidazole of the formula I



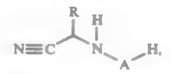
(I)

in which

R denotes C_1–C_{20} alkyl, C_3–C_{20} cycloalkyl, aryl, or C_7–C_{20} aralkyl,

wherein

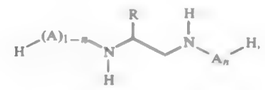
a) an N-formyl-α-aminonitrile of the formula II



(II)

in which R has the meanings stated above and A stands for carbonyl, is reacted, at a temperature ranging from 20° to 200° C. and a pressure ranging from 20 to 500 bar, with hydrogen in the presence of a hydrogenation catalyst and

b) the resulting N-formyl-1,2-diamine of the formula III



(III)

in which R and A have the meanings stated above and n stands for 0 or 1, is reacted over a cyclization/dehydrogenation catalyst at a temperature ranging from 200° to 600° C. and a pressure ranging from 0.001 to 5 bar.

5,359,083

PROCESS FOR THE PREPARATION OF SUBSTITUTED INDOLES

Marc Gerspacher, Aeschi, and Alfred Sallmann, Bottmingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 964,186, Oct. 21, 1992, abandoned.
This application Feb. 10, 1994, Ser. No. 195,891
Claims priority, application Switzerland, Oct. 25, 1991, 03136/91
Int. Cl.[5] C07D *209/04; C07C 69/96*
U.S. Cl. 548—485 **7 Claims**

1. Dicyclopentyl dicarbonate.

5,359,084

METHOD OF PREPARING AROMATIC ETHER DISIMIDES

Brent Dellacoletta, Evansville, and Roy R. Odle, Mt. Vernon, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Feb. 18, 1993, Ser. No. 18,993
Int. Cl.[5] C07D *403/12*
U.S. Cl. 548—461 **25 Claims**

1. A method for removing by-products from a reaction mixture obtained from the reaction of a substituted phthalimide with an alkali metal salt of a hydroxy aromatic compound in a non-polar organic solvent, under imide-forming conditions, comprising extracting the by-products with an aqueous solution of about 4% to about 6% by weight alkali, wherein the by-products are extracted for a residence time of between 1 second and 4 minutes.

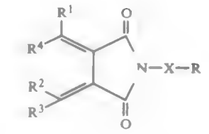
5,359,085

FULGIMIDE DERIVATIVES

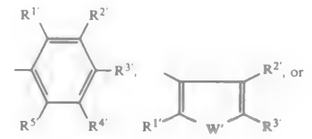
Osamu Iwamoto, Ikeda; Taizo Hara, Ibaraki, and Haruhiko Sugiyama, Shiga, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Filed Jul. 27, 1990, Ser. No. 558,549
Claims priority, application Japan, Jul. 28, 1989, 1-195640; Sep. 19, 1989, 1-242446
Int. Cl.[5] C07D *207/404, 403/06, 407/06, 409/06, 421/06*
U.S. Cl. 548—468 **19 Claims**

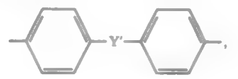
1. A fulgimide derivative of the formula:



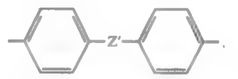
wherein R^1, R^2 and R^3 are independently a hydrogen atom, a halogen atom, a C_{1-4} alkyl group which may be substituted with one or more hydroxyl groups, C_{1-4} alkoxyl groups or halogen atoms, a C_{1-4} alkoxy group, a C_{3-6} cycloalkyl group, a C_6-C_{12} aryl group, a C_{7-17} aralkyl group or a C_{6-16} aryloxy group, and R^2 and R^3 may be bonded to each other to form an adamantyl or a norbornyl group; R^4 is a group of the formula:



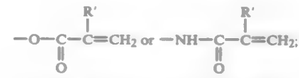
wherein $R^{1'}$ is a hydrogen atom, a halogen atom, a C_{1-4} alkyl group or a C_{1-4} alkoxy group; $R^{2'}$, $R^{3'}$, $R^{4'}$, and $R^{5'}$ are independently a hydrogen atom, a C_{1-4} alkyl group, C_{1-4} alkoxy group, a C_{6-12} aryl group, a C_{7-17} aralkyl group, a C_{6-16} aryloxy group or a halogen atom; W' is an oxygen atom, a sulfur atom, a selenium atom, or $>N-R^{6'}$; $R^{6'}$ is a C_{1-4} alkyl group; X is an arylene group, a group of the formula



wherein Y' is an alkylene group; or a group of the formula:



wherein Z' is an oxygen atom, a sulfur atom or a sulfonyl group; R is an amino group which may be substituted with one or more C_{1-4} alkyl groups, hydroxy alkyl groups, and sulfoalkyl groups and acyl groups having 2 to 16 carbon atoms, a hydroxyl group, a formyl group, a carboxyl group, a sulfonic acid group, an acetal group, a halogen atom,



R' is a hydrogen atom or a C_{1-4} alkyl group.

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5,359,086

PROCESS FOR PREPARING ALKYL-L-ALANYL-L-PROLINE DERIVATIVES

Marjo Mersiavic, Straza, and Janja Crinski, Novo Mesto, both of Spratly Islands, assignors to KRKA, Pharmaceutical & Chemical Works, Novo Mesto, Spratly Islands

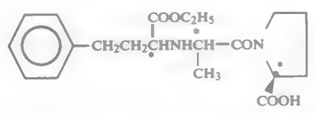
Filed Sep. 16, 1993, Ser. No. 122,709

Claims priority, application Spratly Islands, Sep. 16, 1992, 9200713

Int. Cl.[5] C07D *207/12*

U.S. Cl. 548—533 6 Claims

1. A process for preparing N-[1(S)-ethoxycarbonyl-3-phenylpropyl]-L-alanyl-L-proline of the formula (I)



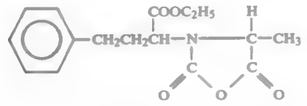
(I)

which comprises condensing a compound of the formula (II)



(II)

with N-[1(S)-ethoxycarbonyl-3-phenylpropyl]-L -alanine N-carboxy anhydride of the formula (III)



(III)

in a non-aqueous medium in the absence of any base.

5,359,087

BIOACTIVE QUISQUALIC ACID ANALOGS

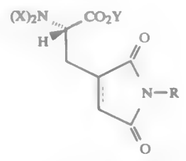
Rodney L. Johnson; Nalin L. Subasinghe, both of Minneapolis, and James F. Koerner, Columbia Heights, all of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Jun. 3, 1993, Ser. No. 72,033

Int. Cl.[5] C07D *207/404, 207/448*

U.S. Cl. 548—546 15 Claims

1. A compound of the formula:



wherein R is H, $(C_1–C_4)$alkyl, $(C_3–C_6)$cycloalkyl, $(C_3–C_6)$cycloalkyl$(C_1–C_4)$alkyl, allyl, $(C_6–C_{10})$aryl or $(C_1–C_4)$alkyl-CO_2Y; Y is H, $(C_1–C_4)$alkyl or $(C_6–C_{10})$aryl; each X is individually H, $(C_1–C_4)$alkyl, $(C_6–C_{10})$aryl, $(C_3–C_6)$cycloalkyl$(C_1–C_4)$alkyl or $(C_3–C_6)$cycloalkyl; the bond represented by—is present or is absent; and the pharmaceutically acceptable salts thereof.

5,359,088

ENANTIOMERICALLY PURE AMINOPYRROLIDINE COMPOUNDS

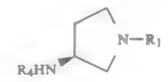
Daniel T. Chu, Vernon Hills, Ill., and Terry J. Rosen, East Lyme, Conn., assignors to Abbott Laboratories, Ill.

Continuation of Ser. No. 844,262, Mar. 2, 1992, abandoned, which is a division of Ser. No. 531,816, Jun. 1, 1990, Pat. No. 5,099,032, which is a division of Ser. No. 356,970, May 25, 1989, Pat. No. 4,956,475, which is a division of Ser. No. 167,058, Mar. 11, 1988, Pat. No. 4,859,776. This application Mar. 29, 1993, Ser. No. 39,545

Int. Cl.[5] C07D *207/14*

U.S. Cl. 548—557 1 Claim

1. The pure (S) enantiomer of a compound of the formula:



wherein R_1 is hydrogen, benzyl, carbobenzyloxy, tert-butoxycarbonyl, C_1 to C_6 alkanoyl, aroyl, C_1 to C_6 alkylsulfonyl or arylsulfonyl; and R_4 is hydrogen, C_1 to C_6 alkanoyl, aroyl, benzyl, carbobenzyloxy, tert-butoxycarbonyl, C_1 to C_6 alkylsulfonyl or arylsulfonyl.

5,359,089

PROCESS FOR THE PREPARATION OF 2,4,5-TRIBROMOPYRROLE-3-CARBONITRILE

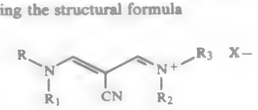
Victor M. Kamhi, Hamilton Square, N.J., assignor to American Cyanamid Company, Wayne, N.J.

Filed Dec. 22, 1993, Ser. No. 172,452

Int. Cl.[5] C07D *207/34*

U.S. Cl. 548—561 11 Claims

1. A process for the preparation of 2,4,5-tribromopyrrole-3-carbonitrile which comprises reacting a vinamidinium salt having the structural formula



wherein

R, R_1, R_2 and R_3 are each independently C_1–C_4 alkyl, or when taken together, R and R_1, and R_2 and R_3, may form a 5- or 6-membered ring in which each of RR_1 and R_2R_3 are represented by the structure —$(CH_2)_4$—or —$(CH_2)_5$—; and

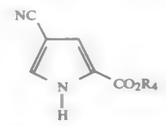
X^- is an anion;

with a glycine ester having the structural formula

$$H_2NCH_2CO_2R_4$$

wherein R_4 is C_1–C_4 alkyl;

and a first base in the presence of a first solvent to form a mixture comprising 4-cyanopyrrole-2-carboxylic acid and a 4-cyanopyrrole-2-carboxylate having the structural formula



wherein R_4 is as described above, hydrolyzing said mixture with a second base in the presence of a second solvent to form a 4-cyanopyrrole-2-carboxylic acid salt, and reacting said 4-cyanopyrrole-2-carboxylic acid salt with a third base and a brominating agent in the presence of a third solvent to form said 2,4,5-tribromopyrrole-3-carbonitrile.

5,359,090

ALKOXYMETHYLATION OF PYRROLES

Robert F. Doehner, E. Windsor, N.J., and Jerry M. Barton, Langhorne, Pa., assignors to American Cyanamid Company, Wayne, N.J.

Filed Dec. 29, 1993, Ser. No. 174,999

Int. Cl.[5] C07D *207/34, 207/42*

U.S. Cl. 548—561 10 Claims

1. A method for the preparation of a 1-(alkoxymethyl)pyrrole compound which comprises reacting a 1-H-pyrrole compound with di-(alkoxy)methane, dimethylformamide and phosphorous oxychloride in the presence of an aprotic solvent to form a reaction mixture and treating the reaction mixture with a tertiary amine, optionally at an elevated temperature.

5,359,091

INTERMEDIATES FOR PRODUCING ENYNE DERIVATIVES

Susumu Nakagawa; Akira Asai; Satoru Kuroyanagi; Makoto Ishihara, and Yoshiharu Tanaka, all of Okazaki, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

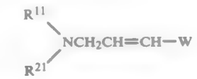
Division of Ser. No. 974,488, Nov. 12, 1992, Pat. No. 5,296,612, which is a division of Ser. No. 861,160, Mar. 27, 1992, Pat. No. 5,231,183, which is a continuation of Ser. No. 588,931, Sep. 27, 1990, abandoned. This application Nov. 18, 1993, Ser. No. 153,956

Claims priority, application Japan, Oct. 2, 1989, 1-257310

Int. Cl.[5] C07D *211/02, 333/58*

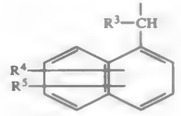
U.S. Cl. 549—49 1 Claim

1. A compound of the formula:

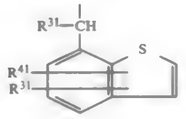


wherein R^{11} is hydrogen, lower alkyl, halologweralkyl, lower alkenyl, lower alkynyl or cycloalkyl; R^{21} is a group of the formula:

[III^a]

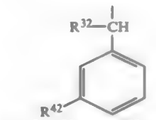


[III^b]



or

[III^c]



wherein each of R^3, R^{31}, and R^{32} which may be the same or different, is a hydrogen atom or a lower alkyl group, each of R^4, R^5, R^{41} and R^{51}, which may be the same or different, is a hydrogen atom, a halogen atom, a hydroxyl group, a lower alkyl group or a lower alkoxy group, R^{42} is a hydroxyl group, a halogen atom, a group of the formula R^8—O— wherein R^8 is a protecting group for a hydroxyl group, a hydroxymethyl group, a formyl group, a carboxyl group, a lower alkoxycarbonyl group, a lower alkanoyl group, an amino group, a mercapto group or a group of the formula R^6—X—Y— wherein R^6 is a phenyl or thienyl group which may have one or two substituents selected from the group consisting of a halogen atom, a hydroxyl group, a lower alkyl group, a cyano group, a lower alkoxy group, a furyl group, a tetrahydrofuryl group, a pyrrolyl group, pyrrolydinyl group, an imidazolyl group, a pyrazolyl group, an oxazolyl group, an isoxazolyl group, a furazanyl group, a thiazolyl group, an isothioazolyl group, a thiadiazolyl group, a thienyl group, a pyridyl group, a piperidyl group, a pyrazinyl group, a pyrimidinyl group, a pyridazinyl group, a piperadinyl group, a morpholinyl group, a thiomorpholinyl group, a triazinyl group, a quinolyl group, an isoquinolyl group, a phthalazinyl group, a naphthyridinyl group, a quinoxalinyl group, a quinazolinyl group, a benzofuranyl group, a benzothienyl group, a benzoisoxazolyl group, a benzothiazolyl group and a benzofurazanyl group, each of X and Y which may be the same or different, is an oxygen atom, a sulfur atom, a carbonyl group, a group of the formula —CHR^8— wherein R^a is a hydrogen atom or a lower alkyl group or a group of the formula —NR^b wherein R^b is a hydrogen atom or a lower alkyl group, or X and Y together form a vinylene group or an ethynylene group, provided that when either one of X and Y is an oxygen atom, a sulfur atom or a group of the formula —NR^b wherein R^b is as defined above, the other is a carbonyl group or a group of the formula —CHR^8— wherein R^a is as defined above, and R^7 is a lower alkyl or cycloalkyl group which may have a hydroxyl group or a lower alkoxy group, a phenyl group or a tri-lower alkylsilyl group; and W is chlorine or bromine.

5,359,092

BIS-N-AMINOIMIDES

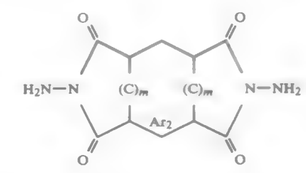
Allan S. Hay, 5015 Glencairn Avenue, Montreal, Quebec, Canada H3W 2B3 , and Hossein Ghassemi, 3440 Durocher Street, Apt. 1503, Montreal, Quebec, Canada H2X 2E2

Filed Jun. 2, 1993, Ser. No. 70,246

Int. Cl.[5] C07D *209/48, 221/06*

U.S. Cl. 546—99 10 Claims

1. A bis-N-aminoimide of formula (III):



(III)

wherein m is 0 or 1; and

Ar^2 is a mono- or polycyclic aromatic radical, provided that when m is 1, Ar^2 is other than a naphthalene or perylene radical, and does not include a diazomethine linkage.

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5,359,093

REAGENTS AND METHODS FOR THE DETECTION AND QUANTIFICATION OF THYROXINE IN FLUID SAMPLES

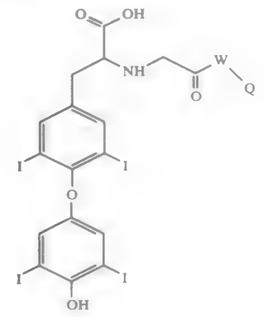
Maciej Adamczyk, Gurnee; Donald D. Johnson, Lindenhurst; Phillip G. Mattingly, Grayslake; Diana E. Clarisse, Naperville; Joan D. Tyner, Beach Park, and Mary M. Perkowitz, Lake Zarich, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 859,775, Mar. 30, 1992. This application Nov. 6, 1992, Ser. No. 973,140

Int. Cl.[5] C07D *493/10*

U.S. Cl. 549—223 7 Claims

1. A labelled reagent of the formula:



wherein Q is a detectable moiety and W is a linking moiety.

5,359,094

PREPARATION OF GLYCERYL CARBONATE

Joaquim H. Teles, Ludwigshafen; Norbert Rieber, Mannheim, and Wolfgang Harder, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 29, 1993, Ser. No. 99,142

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1992, 4225870

Int. Cl.[5] C07D *317/36*

U.S. Cl. 549—228 4 Claims

1. A process for the preparation of glyceryl carbonate, which comprises reacting glycerol with carbon monoxide and oxygen in the presence of a copper catalyst at a temperature from 0°–180° C.

5,359,095

METHOD FOR SYNTHESIS OF PROSTAGLANDIN DERIVATIVES

Bahram Resul, Uppsala, Sweden, assignor to Pharmacia AB, Uppsala, Sweden

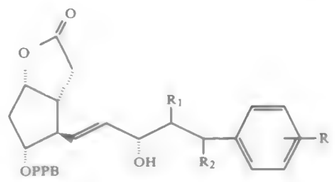
Continuation of Ser. No. 838,811, Mar. 19, 1992, abandoned. This application Feb. 8, 1994, Ser. No. 193,525

Claims priority, application Sweden, Aug. 8, 1990, 9002596-6

Int. Cl.[5] C07C *405/00*; C07D *307/935*

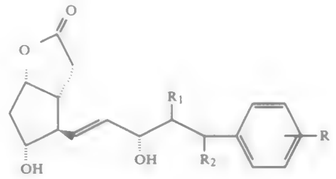
U.S. Cl. 549—305 2 Claims

1. Method for preparing 13,14-dihydro-17-phenyl analogues of $PGF_{2\alpha}$ or PGE_2 which comprises reacting the compound (4)



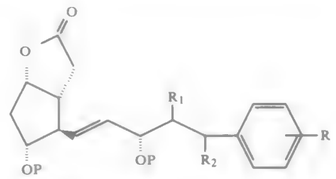
(4)

by basic hydrolysis to give the compound (6)



(6)

which is thereafter provided with a protecting group to protect the hydroxyl groups to give the compound (7)



(7)

which is reduced under hydrogen atmosphere to give the compound (8) T,213

wherein

R is hydrogen or a halogen, hydroxyl, cyanide, alkyl, hydroxyalkyl, or trifluoromethyl, on the aromatic ring,

R_1 and R_2 are each hydrogen, alkyl, hydroxyl, halogen or hydroxyalkyl substituents,

P is a protecting group, and

PPB is para phenyl benzoyl.

5,359,096

CHOLESTEROL LOWERING COMPOUNDS

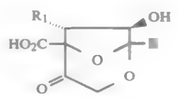
Laszlo R. Treiber, Gillette; Byron H. Arison, Watchung; Shieh-Shung T. Chen, Morganville; George A. Doss, Westfield; Leeyuan Huang, Watchung, and John G. MacConnell, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 957,350, Oct. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 715,518, Jun. 14, 1991, abandoned. This application Nov. 20, 1992, Ser. No. 979,559

Int. Cl.[5] C07D *319/08*

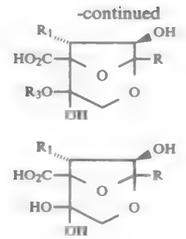
U.S. Cl. 549—363 26 Claims

13. A composition comprising a compound of formula (I) and formula (II) and formula (III):



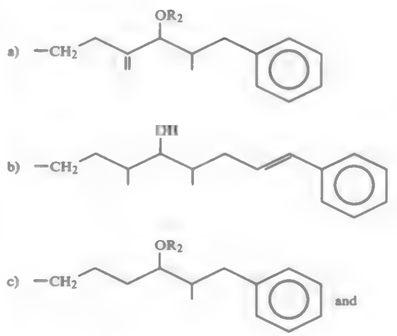
(I)

-continued



wherein

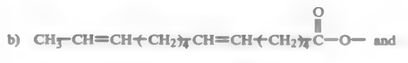
R is selected from

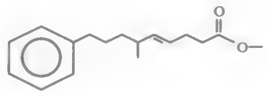


and

R_1 is selected from

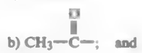






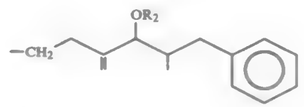
R_2 is selected from

a) H and



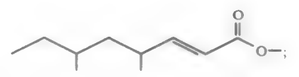
R_3 is $C_{1\text{-}5}$alkyl;

Provided that when R is



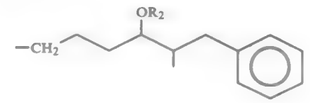
then R_1 is

(II)

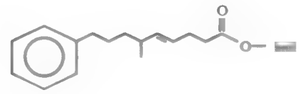


and when R is

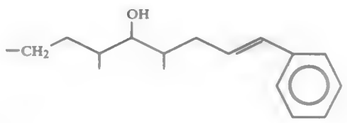
(III)



then R_1 is



When



then R_1 is

$$CH_3-CH=CH-(CH_2)_4-CH=CH-(CH_2)_4-\overset{O}{\overset{\|}{C}}-O-.$$

5,359,097

PROCESS FOR PREPARATION OF GLYCIDYL ETHER

Kiyoshi Kawamura, Niiza, and Tomio Ota, Sayama, both of Japan, assignors to Kowa Company Ltd., Aichi, Japan

PCT No. PCT/JP89/01293, § 371 Date Jul. 18, 1990, § 102(e) Date Jul. 18, 1990, PCT Pub. No. WO90/07506, PCT Pub. Date Jul. 12, 1990

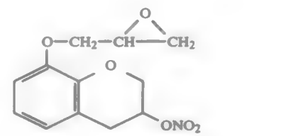
PCT Filed Dec. 25, 1989, Ser. No. 571,543

Claims priority, application Japan, Dec. 26, 1988, 63-326205

Int. Cl.[5] C07D *311/04*

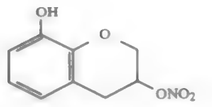
U.S. Cl. 549—399 6 Claims

1. In a process for preparation of optically active 3,4-dihydro-8-(2,3-epoxy)propoxy-3-nitroxy-2H-1-benzopyran of the formula



which comprises reacting optically active 3,4-dihydro-8-hydroxy-3-nitroxy-2H-1-benzopyran of the formula

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with an optically active epihalohydrin, and further treating the reaction product with a base,

the improvement which comprises conducting the reaction in the presence of a tetra(lower alkyl) ammonium iodide and at a temperature in the range of about 15° C. to about 30° C.

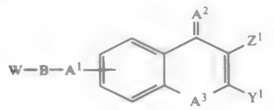
5,359,098

INTERMEDIATES FOR MAKING SIGMA BINDING SITE AGENTS

Ronald H. Erickson; Kenneth J. Natalie, Jr., both of Baltimore; Michael J. Pontecorvo, So. Belcamp, and Waclaw J. Rzeszotarski, Millersville, all of Md., assignors to Guilford Pharmaceuticals Inc., Baltimore, Md.

Division of Ser. No. 700,296, May 17, 1991, Pat. No. 5,278,174, which is a continuation-in-part of Ser. No. 533,127, Jun. 4, 1990, abandoned. This application Nov. 15, 1993, Ser. No. 151,825
Int. Cl.[5] C07D *311/76*
U.S. Cl. 549—400 17 Claims

1. A compound represented by the formula:



in which:

W is I, Br, or Cl;

Z^1 is —H, C_{1-4} alkyl, or —OR;

R is —H or C_{1-4} alkyl;

Y^1 is selected from the group consisting of cycloC_{3-7} alkyl, unsubstituted phenyl and phenyl substituted with —OH, —Cl, —F, —OC_{1-4} alkyl, C_{1-4} alkyl, —CF_3 or any accessible combination thereof;

A^1, A^2, and A^3 independently are O or S; and

B is C_{4-10} alkyl.

5,359,099

CONTROLLED CATALYTIC AND THERMAL SEQUENTIAL PYROLYSIS AND HYDROLYSIS OF MIXED POLYMER WASTE STREAMS TO SEQUENTIALLY RECOVER MONOMERS OR OTHER HIGH VALUE PRODUCTS

Robert J. Evans, Lakewood, and Helena L. Chum, Arvada, both of Colo., assignors to Midwest Research Institute, Kansas City, Mo.

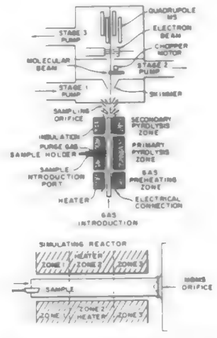
Division of Ser. No. 711,546, Jun. 7, 1991, Pat. No. 5,216,149. This application Oct. 27, 1992, Ser. No. 943,506
Int. Cl.[5] C07D *307/08*
U.S. Cl. 549—429 8 Claims

1. A process of using fast pyrolysis in a carrier gas to convert a polyvinyl chloride, and polyurethane containing plastic waste feed stream having a mixed polymeric composition in a manner such that pyrolysis of a given polyvinyl chloride and polyurethane and to yield its high value monomeric constituent or other high value derived product occurs prior to pyrolysis of other plastic components therein comprising:

a) selecting a first temperature program range of from about 200° to about 400° C. to cause pyrolysis of said given polyvinyl chloride and polyurethane to yield high value monomeric constituent prior to a temperature range that causes pyrolysis of other plastic components;

b) selecting an acid or base catalyst and an oxide or carbonate support and treating said feed stream with said catalyst to affect acid or base catalyzed reaction pathways to maximize yield or enhance separation of said high value monomeric constituent or other high value product of polyvinyl chloride and polyurethane in said first temperature program range;

c) differentially heating said feed stream at a heat rate within said first temperature program range to provide differential pyrolysis for selective recovery of optimum quantities of said high value monomeric constituent or other high value product of said polyvinyl chloride and polyurethane prior to pyrolysis of other plastic components therein;



d) separating high value products selected from HCl, methylene-4,4'-di-aniline, methylene-4-aniline-4-phenylisocyanate, methylene-di-p-phenylene-di-isocyanate monomer, aniline or mixtures thereof of said polyvinyl chloride and polyurethane;

e) selecting a second higher temperature program range of from about 300° to about 700° C. to cause pyrolysis to a different high value derived product composed of tetrahydrofuran of said plastic waste and differentially heating said feed stream at said higher temperature program range to cause pyrolysis of said plastic into a different high value derived product composed of tetrahydrofuran; and

f) separating said different derived high value product composed of tetrahydrofuran.

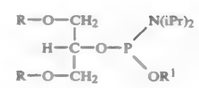
5,359,100

BIFUNCTIONAL BLOCKED PHOSPHORAMIDITES USEFUL IN MAKING NUCLEIC ACID MUTIMERS

Michael S. Urdea, Alamo; Brian Warner, Martinez; Joyce A. Running, Concord; Janice A. Kolberg, Richmond; Jennifer M. Clyne, Martinez; Ray Sanchez-Pescador, San Leandro, and Thomas Horn, Berkeley, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 823,890, Jan. 22, 1992, which is a division of Ser. No. 340,031, Apr. 18, 1989, Pat. No. 5,124,246, which is a continuation-in-part of Ser. No. 252,638, Sep. 30, 1988, abandoned, which is a continuation-in-part of Ser. No. 185,201, Apr. 22, 1988, abandoned, which is a continuation-in-part of Ser. No. 109,282, Oct. 15, 1987, abandoned. This application Aug. 13, 1993, Ser. No. 107,358
Int. Cl.[5] C07F *9/24*
U.S. Cl. 552—105 13 Claims

1. A blocked phosphoramidite of the formula:



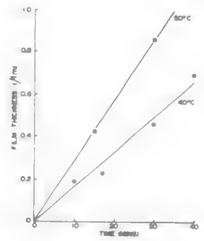
wherein each R is independently a hydroxyl protecting group, iPr is isopropyl and R^1 is methyl or β-cyanoethyl.

5,359,101

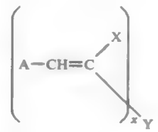
ANIONICALLY POLYMERIZABLE MONOMERS, POLYMERS THEREOF AND USE OF SUCH POLYMERS IN PHOTORESISTS

John Woods, Dublin, and Pauline Coakley, Kilkenny, both of Ireland, assignors to Loctite Ireland, Ltd., Dublin, Ireland

Continuation of Ser. No. 542,464, Jun. 22, 1990, abandoned. This application Oct. 1, 1991, Ser. No. 769,511
Claims priority, application Ireland, Nov. 21, 1989, 3713/89
Int. Cl.[5] C07F *7/28, 7/10*
U.S. Cl. 556—52 21 Claims



1. Anionically polymerizable monomers of the formula I:



wherein A is —H or —CH=CH_2;

X is a strong electron withdrawing group selected from the group consisting of —CN, —COR, —COOR, —SO_2R and —SO_3R, wherein R is H or a hydrocarbyl group;

Y is a x-valent strong electron withdrawing group containing at least one silicon or titanium atom; and

x is equal to 1.

5,359,102

TRANSITION METAL COMPOUND HAVING TWO TRANSITION METAL ATOMS IN ONE MOLECULE AND METHOD FOR POLYMERIZING OLEFIN BY USING THE COMPOUND

Norihide Inoue, Yokohama; Tetsunosuke Shiomura, Tokyo; Masahiro Kouno, Kanagawa; Yoshiho Sonobe, and Kazumi Mizutani, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

PCT No. PCT/JP92/00080, § 371 Date Oct. 8, 1992, § 102(e) Date Oct. 8, 1992, PCT Pub. No. WO92/15596, PCT Pub. Date Sep. 17, 1992
PCT Filed Jan. 29, 1992, Ser. No. 941,056
Claims priority, application Japan, Mar. 11, 1991, 3-044682
Int. Cl.[5] C07F *17/00, 7/00, 7/28;* C08F *4/64, 4/76*
U.S. Cl. 556—53 5 Claims

1. A transition metal compound represented by the formula


(I)

wherein each of A^1, A^2, A^3 and A^4 is a cyclopentadienyl group, an indenyl group, or a fluorenyl group; A^5 is a hydrocarbondiylidene having 4 to 30 carbon atoms; a pair of A^1 and A^2 and a pair of A^3 and A^4 are respectively bonded to the identical carbon atom in A^5 to form a crosslinked structure; each of R^1 and R^2 is a halogen, hydrogen, alkyl or a silicon-containing alkyl having 1 to 10 carbon atoms, aryl, alkylaryl, arylalkyl, or a halogenated aryl having 6 to 20 carbon atoms; R^1 and R^2 are identical or different; each of M^1 and M^2 is titanium, zirconium or hafnium; and M^1 and M^2 are mutually identical or different.

5,359,103

MANUFACTURE OF FERROUS PICRATE

Alan F. Elliott, South Melbourne; Glen B. Deacon, Clayton, and William R. Jackson, Glen Waverley, all of Australia, assignors to FPC Australia, Inc., Australia

Filed May 27, 1992, Ser. No. 888,490
Int. Cl.[5] C07F *15/02*
U.S. Cl. 556—150 17 Claims

1. A process for preparing ferrous picrate comprising reacting picric acid in solution in a straight- or branched-chain aliphatic alcohol with an iron carbonyl at a temperature between 10° C. and 120° C.

5,359,104

SOLID ANTIMICROBIAL

Bruce S. Higgs, Sydney, Australia, and William C. White, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 431,415, Nov. 3, 1989, Pat. No. 5,064,613. This application Apr. 8, 1991, Ser. No. 681,585
Int. Cl.[5] C07F *7/18*
U.S. Cl. 556—406 2 Claims

1. A composition comprising the reaction product of a triethanolamine and a silane having the formula:



wherein

Y is R or RO where R is an alkyl radical of one to four carbon atoms or hydrogen;

a has a value of zero, one or two;

R′ is a methyl or ethyl radical;

R″ is an alkylene group of one to four carbon atoms;

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R''', R'''' and R^y are each an alkyl radical of one to eighteen carbon atoms provided that at least one R'''' and R^y radical is larger than eight carbon atoms; and
X is chloride, bromide, fluoride, acetate or tosylate.

5,359,105
DEPROTONATION OF CYCLOPENTADIENYL DERIVATIVES

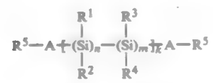
Jamie R. Strickler, and John M. Power, both of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.
Filed Nov. 1, 1993, Ser. No. 144,463
Int. Cl.^{5} C07F 7/08, 7/10, 7/18, 3/02
U.S. Cl. 556—410 9 Claims

1. A process for the deprotonation of a cyclopentadienyl derivative, said process comprising reacting a Grignard reagent with said cyclopentadienyl derivative in an inert solvent which contains from about 0.5 to 1.5 equivalents per equivalent of said cyclopentadiene derivative of an ether selected from the group consisting of cyclic ethers and acyclic polyethers so as to form a dianionic magnesium halide salt of said cyclopentadiene derivative.

5,359,106
TERMINALLY REACTIVE POLYSILANE AND PROCESS FOR MAKING

Eiichi Tabei, and Shigeru Mori, both of Kawasaki, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Filed Dec. 22, 1993, Ser. No. 171,437
Claims priority, application Japan, Dec. 24, 1992, 4-357521
Int. Cl.^{5} C07F 7/08, 7/10
U.S. Cl. 556—413 7 Claims

1. A terminally reactive polysilane of the formula:



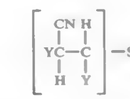
(I)

wherein R^1, R^2, R^3, and R^4 are independently selected from alkyl groups having 1 to 12 carbon atoms and aryl groups,
R^5 is an organic group containing at least one member selected from the group consisting of alkoxysilyl, epoxy, glycidyloxy, acryl, methacryl, acetoxysilyl, and amino groups,
A is an alkylene group having 2 to 6 carbon atoms,
letters n, m and k are numbers in the range: $0 \leqq n \leqq 10$, $0 \leqq m \leqq 10$, $n+m \geqq 10$, and $k \geqq 1$.

5,359,107
β-CYANOALKYLSILANE PREPARATION USING TRIORGANOPHOSPHINE COMPOUNDS AS CATALYST

Howard M. Bank, Freeland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
Filed Nov. 23, 1993, Ser. No. 155,883
Int. Cl.^{5} C07F 7/10
U.S. Cl. 556—415 18 Claims

1. A process for preparation of beta-cyanoalkylsilanes described by formula



the process comprising:
contacting a silicon hydride described by formula

$HSiX_3$,

with an unsaturated olefinic nitrile described by formula



in the presence of a catalyst selected from a group consisting of organic resin supported triorganophosphine, organic resin supported triorganophosphine oxide, and triorganophosphine oxide at a temperature within a range of about 50° C. to 250° C.; where X is a halogen and each Y is independently selected from a group consisting of hydrogen and alkyl radicals comprising one to eight carbon atoms.

5,359,108
DI-, TRI- AND TETRAFUNCTIONAL METHYL ISOBUTYL AND METHYL AMYL KETOXIME-BASED SILANES

Chempolil T. Mathew, Randolph; Edward T. Asirvatham, Madison; Jeffrey A. Knepper, Somerville, and Dale R. Flackett, Somerset, all of N.J., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.
Filed Sep. 17, 1992, Ser. No. 947,015
Int. Cl.^{5} C07F 7/10
U.S. Cl. 556—422 4 Claims

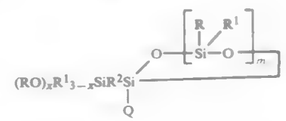
1. Liquid ketoxime silanes selected from the group consisting of tetrakis-(methyl isobutyl ketoximino) silane; tetrakis-(methyl amyl ketoximino) silane; and mixtures thereof.

5,359,109
SURFACE-ACTIVE SILOXANE COATING COMPOUNDS AND THEIR USE IN COATINGS

James S. Ritscher; James D. Reedy, both of Marietta, Ohio, and Kenneth W. Hartman, Middlebourne, W. Va., assignors to OSi Specialties, Inc., Danbury, Conn.
Filed Jun. 16, 1993, Ser. No. 78,590
Int. Cl.^{5} C07F 7/08
U.S. Cl. 556—434 10 Claims

1. A siloxane compound having the general formula

$(RO)_xR^1{}_{3-x}SiR^2SiX_yR^1{}_{3-y}$ or



wherein
X is selected from the group consisting of
(i) —$OSiR_3$ and
(ii)

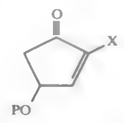


q has a value of 1 to 5;
R is an alkyl group having 1 to 6 carbon atoms;
R^1 is selected from the group consisting of
(i) an alkyl group having 1 to 6 carbon atoms;
(ii) an aryl group having 6 to 12 carbon atoms;
(iii) an aralkyl group having 7 to 13 carbon atoms; and
(iv) an alkaryl group having 7 to 13 carbon atoms;
R^2 is a linear or branched alkylene group having 2 to 12 carbon atoms;
Q is X or R^1 as defined herein; m has a value of 3 to 5; x has a value of 1 to 3; and y has a value of 2 to 3.

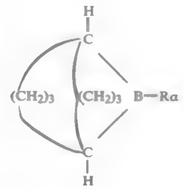
5,359,110
PROCESS FOR THE PREPARATION OF A R-ALPHA CYCLOPENTENONES AND R-ALPHA AND R-OMEGA CYCLOPENTANOIDS

Carl R. Johnson, Detroit, Mich., and Matthew P. Braun, Sandusky, Ohio, assignors to Board of Governors of Wayne State University, Detroit, Mich.
Filed Nov. 16, 1993, Ser. No. 155,589
Int. Cl.^{5} C07F 7/08
U.S. Cl. 556—436 12 Claims

1. A process for preparing a Rα-cyclopentenone which comprises:
(a) reacting in a reaction mixture at a temperature between about −25° and 50° C. an enone compound of the formula:



wherein P is a protecting group with an alkylborane of the formula



where Rα is an aliphatic group containing 3 to 20 carbon atoms and X is iodo or bromo in an organic solvent mixture containing a catalytic amount of a transition metal compound in the presence of a base and water to produce the Rα-cyclopentenone; and
(b) separating the Rα-cyclopentenone from the reaction mixture.

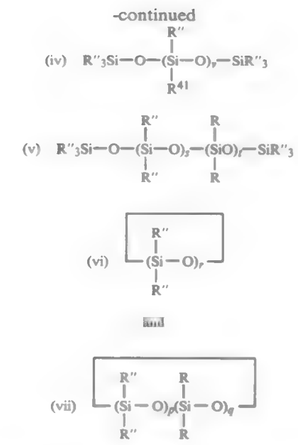
5,359,111
METHOD FOR CONTROLLING HYDROSILYLATION IN A REACTION MIXTURE

Don L. Kleyer, Hemlock; Binh T. Nguyen; Dale E. Hauenstein, both of Midland; Sean P. Davern, Auburn, and William J. Schulz, Jr., Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.
Continuation of Ser. No. 991,072, Dec. 14, 1992, and a continuation-in-part of Ser. No. 9,169, Jan. 26, 1993, abandoned, which is a continuation of Ser. No. 762,672, Sep. 18, 1991, abandoned. This application Jul. 30, 1993, Ser. No. 99,783
Int. Cl.^{5} C07F 7/08
U.S. Cl. 556—479 55 Claims

1. A method of controlling hydrosilylation in a reaction mixture by controlling the solution concentration of oxygen relative to any platinum in said reaction mixture said hydrosilylation consisting essentially of: reacting
(A) a silicon hydride selected from silicon hydrides having the general formulae:

(i) R_xSiH_{4-x}
(ii) $R_yH_wSiX_{4-y-w}$
(iii) $R_z(R'O)_{4-z-w}SiH_w$

-continued



wherein each R is independently selected from the group consisting of substituted and unsubstituted alkyl groups of 1 to 30 carbon atoms and substituted, aryl groups of 6 to 16 carbon atoms; each R' is independently selected from alkyl groups of 1 to 6 carbon atoms; R'' is independently selected from the group consisting of R and the hydrogen atom, with the proviso that at least one R'' in each molecule is a hydrogen atom; p has a value of at least one; q has a value of at least 1 with the proviso that p+q has a value of 3 to 8; r has a value of 3 to 8; s has a value of 1 or greater; t has a value of 1 or greater; u has a value of 1, 2, or 3 with the proviso that $u+y \leqq 3$; v has a value of zero or an integer of 1 or greater; w has a value of 1 to 3; x has the value of 1 to 3; y has a value of 0 to 2; and z has a value of 0 to 2 with the proviso that $w+z \leqq 3$, with
(B) unsaturated compounds selected from the group consisting of
(i) substituted or unsubstituted unsaturated organic compounds or mixtures thereof,
(ii) substituted or unsubstituted unsaturated silicon compounds or mixtures thereof and,
(iii) mixtures of (i) and (ii);
in the presence of a catalyst selected from the group consisting of
(a) platinum metal on a support,
(b) platinum compounds and,
(c) platinum complexes, wherein oxygen is added to the reaction mixture in controlled amounts during the course of the reaction whereby said hydrosilylation is controlled.

5,359,112
HYDROSILYLATION PROCESS

Robert A. Drake, Penarth, United Kingdom, assignor to Dow Corning Limited, Barry, Wales
Filed Nov. 2, 1993, Ser. No. 144,365
Claims priority, application United Kingdom, Nov. 6, 1992, 9223335
Int. Cl.^{5} C07F 7/08
U.S. Cl. 556—479 9 Claims

1. A process for the preparation of an organosilicon compound having at least one silicon-bonded hydrocarbon group containing terminal olefinic unsaturation which comprises reacting (A) a silicon compound having in the molecule at least one silicon-bonded hydrogen atom, with (B) a diene having from 6 to 14 carbon atoms and wherein the unsaturation is located at the terminal carbon atoms, in the presence of (C) a

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catalyst selected from mixtures and reaction products of a compound of platinum and a compound having at least one amino group.

5,359,113

METHOD FOR MAINTAINING CATALYTIC ACTIVITY DURING A HYDROSILYLATION REACTION

Howard M. Bank, Freeland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 8, 1993, Ser. No. 148,944
Int. Cl.[5] C07F 7/08
U.S. Cl. 556—479 18 Claims

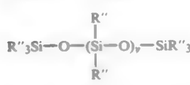
1. A method of maintaining catalytic activity during a hydrosilylation reaction by adding a peroxide into the hydrosilylation reaction wherein the hydrosilylation reaction comprises, reacting:

(A) a silicon hydride selected from silicon hydrides having the general formulae:

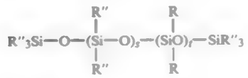
$$R_xSiH_{4-x} \quad (i)$$

$$R_yH_zSiX_{4-y-z} \quad (ii)$$

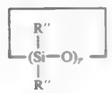
$$R_s(R'O)_{4-s-w}SiH_w \quad (iii)$$



(iv)

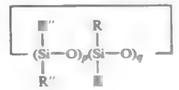


(V)



(vi)

and



(vii)

wherein each R is independently selected from the group consisting of substituted and unsubstituted alkyl groups having 1 to 30 carbon atoms, substituted and unsubstituted cycloalkyl groups having at least 4 carbon atoms and substituted and unsubstituted aryl groups having 6 to 16 carbon atoms; each R′ is independently selected from alkyl groups having 1 to 6 carbon atoms; R″ is independently selected from the group consisting of R and the hydrogen atom, with the proviso that at least one R″ in each molecule is a hydrogen atom; X is a halide; p has a value of at least one; q has a value of at least 1 with the proviso that p+q has a value of 3 to 8; r has a value of 3 to 8; s has a value of 1 or greater; t has a value of 1 or greater; u has a value of 1, 2, or 3 with the proviso that u+y≦3; v has a value of zero or an integer of 1 or greater; w has a value of 1 to 3; x has the value of 1 to 3; y has a value of 0 to 2; and z has a value of 0 to 2 with the proviso that w+z≦3, with

(B) unsaturated compounds selected from the group consisting of

(i) substituted or unsubstituted unsaturated organic compounds or mixtures thereof,

(ii) substituted or unsubstituted unsaturated silicon compounds or mixtures thereof and,

(iii) mixtures of (i) and (ii); in the presence of

(C) a hydrosilylation catalyst selected from the group consisting of (a) platinum metal on a support, (b) platinum compounds, and (c) platinum complexes; wherein a peroxide is added to the reaction mixture whereby said hydrosilylation reaction is maintained.

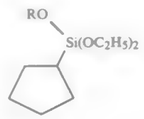
5,359,114

SILANE COMPOUND AND PROCESSES FOR THE PREPARATION THEREOF

Tomoko Aoki, Iruma; Satoshi Ueki, Shiki, and Tadanao Kohara, Urawa, all of Japan, assignors to Tonen Corporation, Tokyo, Japan

Filed Mar. 31, 1993, Ser. No. 41,399
Claims priority, application Japan, Apr. 1, 1992, 4-105260; Apr. 17, 1992, 4-122783; Apr. 30, 1992, 4-135636; Apr. 30, 1992, 4-135637
The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.
Int. Cl.[5] C07F 7/08, 7/18
U.S. Cl. 556—482 8 Claims

1. A silane compound represented by the following formula (I):



(I)

wherein R represents an organic group selected from the group consisting of isopropyl, sec-butyl, tert-butyl and tert-amyl groups.

5,359,115

METHODS FOR THE SYNTHESIS OF PHOSPHONATE ESTERS

David A. Campbell, Redwood Shores, and Jeffrey W. Jacobs, San Mateo, both of Calif., assignors to Affymax Technologies, N.V., Palo Alto, Calif.

Continuation-in-part of Ser. No. 858,298, Mar. 26, 1992, Pat. No. 5,302,707. This application Sep. 11, 1992, Ser. No. 943,805
Int. Cl.[5] C07F 9/40
U.S. Cl. 558—110 11 Claims

1. A method for preparing a desired phosphonic acid monoester from a first phosphonic acid monoester, said first phosphonic acid monoester having the structure:



wherein:

R^1 is selected from the group consisting of alkyl, aryl, substituted alkyl, substituted aryl, heteroaryl, alkylaryl, and aminoalkyl; and

R^2 is selected from the group consisting of methyl, ethyl, benzyl, and substituted benzyl;

by treating said first phosphonic acid monoester with:

a dialkylazodicarboxylate;

triphenylphosphine; and

a secondary alcohol having the structure R^3OH, wherein the R^3 is selected from the group consisting of alkyl, substituted alkyl, and aminoalkyl, provided that R^3 is chosen such that R^2 and R^3 are not identical and R^2 can be selectively hydrolyzed without hydrolyzing R^3 and wherein said alcohol is covalently linked to a solid support;

in an aprotic solvent to yield a phosphonate diester having the structure:



and further treating said phosphonate diester to hydrolyze selectively said R^2 to yield said desired phosphonic acid monoester having the structure:



5,359,116

PROCESS FOR PREPARING TRIMETHYLALUMINUM BY REDUCING METHYLALUMINUM CHLORIDES WITH SODIUM USING HIGH SHEARING FORCES

Ralf J. Becker, Hamm; Stefan Gürtzgen, Wuppertal; Jürgen Schneider, and Rolf Schrader, both of Uana, all of Fed. Rep. of Germany, assignors to Witco GmbH, Bergkamen, Fed. Rep. of Germany

Filed Apr. 9, 1993, Ser. No. 44,953
Claims priority, application Fed. Rep. of Germany, May 13, 1992, 4215745
Int. Cl.[5] C07F 5/06
U.S. Cl. 556—187 16 Claims

1. A process for preparing trimethylaluminum from reactants consisting essentially of methylaluminum chloride and sodium in a suspending agent, the process comprising shearing the reactants by operation of a rotor-stator machine.

5,359,117

PROCESSES FOR PRODUCING AROMATIC POLYCARBONATE OLIGOMER AND AROMATIC POLYCARBONATE

Yoshiyuki Totani; Motokazu Hirao; Tomonori Ito; Masakatsu Nakatsuka, all of Yokohama; Akihiro Yamaguchi, Kamakura; Ken-Ichi Goto, Ohmuta; Takashi Kuroki, Ohmuta; Yukiko Mori, Ohmuta; Shoji Obuchi, Ohmuta, and Masahiro Ohta, Ohmuta, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jul. 8, 1993, Ser. No. 87,340
Claims priority, application Japan, Jul. 27, 1992, 4-199553; Dec. 18, 1992, 4-338582
Int. Cl.[5] C07C 69/96
U.S. Cl. 558—268 17 Claims

1. A process for producing continuously an aromatic polycarbonate oligomer by reacting an aromatic dihydroxy compound and an alkali metal base or an alkaline earth metal base with a carbonyl halide compound which comprises:

(1) feeding continuously to a tank reactor an aromatic dihydroxy compound, water, a molecular weight controlling agent, a polymerization catalyst, a carbonyl halide compound, and an organic solvent, and an alkali metal base or an alkaline earth metal base in an amount of 1.15–1.6 equivalents based on the aromatic dihydroxy compound,

(2) carrying out the reaction with a residence time as defined by the following formula,

$$\log Y < -2.19X + 1.84 \ (0.0005 \leqq X < 0.84, 1 \leqq Y < 69)$$

where X is an amount of the polymerization catalyst in terms of mole % based on the amount of mole of the aromatic dihydroxy compound fed per unit time, and Y is a residence time (min.), and

(3) continuously withdrawing the reaction mixture from the tank reactor to obtain an aromatic polycarbonate oligomer having a number average molecular weight of 1,000–10,000.

5,359,118

PROCESS FOR THE CONTINUOUS PREPARATION OF DIALKYL CARBONATES

Paul Wagner; Franz-Josef Mais, both of Duesseldorf; Hans-Josef Buysch, Krefeld; Reinhard Langer, Krefeld, and Alexander Klausener, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 10, 1993, Ser. No. 59,489
Claims priority, application Fed. Rep. of Germany, May 15, 1992, 4216121
Int. Cl.[5] C07C 69/96
U.S. Cl. 558—277 17 Claims

1. A process for the continuous preparation of dialkyl carbonate of the formula

$$(R^1O)_2CO,$$

in which R^1signifies straight-chain or branched C_1–C_4-alkyl, by catalysed reesterification of ethylene glycol carbonate or propylene glycol carbonate with an alcohol of the formula

$$R^1OH,$$

in which R^1 has the above meaning,

wherein the reesterification is carried out in a column in counter-current in such a manner that ethylene glycol carbonate OF propylene glycol carbonate is introduced into the upper part of the column and a dialkyl carbonate-containing alcohol, whose dialkyl carbonate content is 0.2 to 30% by weight is introduced into the central or lower part of the column and pure alcohol is additionally introduced below the introduction of the dialkyl carbonate-containing alcohol.

5,359,119

HOMOGENEOUS, LOW-TEMPERATURE TRANSITION METAL-MEDIATED SYNTHESIS OF NITRILES

Eric A. Maatta, Manhattan, Kans., assignor to Kansas State University Research Foundation, Manhattan, Kans.

Continuation-in-part of Ser. No. 65,456, May 20, 1993, abandoned, which is a continuation of Ser. No. 914,995, Jul. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 764,006, Sep. 23, 1991, abandoned. This application Feb. 10, 1994, Ser. No. 194,411
Int. Cl.[5] C07C 253/00
U.S. Cl. 558—308 8 Claims

1. A method of synthesizing nitrile compounds comprising the steps of:

forming a solution of a transition metal complex bearing an imido moiety in a non-interferring solvent, said complex having the general formula:

$$[(R—CH_2—N)_aM_bM'_{b'}X_xX'_{c'}Y_d][Q]_e$$

where R is selected from the group consisting of alkyl and alkenyl groups having from 1 to 9 carbon atoms and substituted and unsubstituted aryl groups, M and M′ are each one member of individually selected from the group consisting of Mo, W and V, X and X′ are each one member of and selected from the group consisting of oxygen, halogen, silicon and phosphorous atoms and imido and alkoxide groups, Y is one member of and selected from the group consisting of the nitriles, ethers, phosphines and phosphine oxides, Q is a charged counterion, a ranges from about 1 to 40, the sum of b and b′ ranges from about 1 to 40, the sum of c and c′ ranges from about 1 to 40, d ranges from about 0 to 6, and e ranges from about 0 to 7;

reacting said solution at a temperature of from about 0°–250° C. for a period of at least about 12 hours to form a nitrile

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having the general formula R—C≡N, where R is defined above; and
recovering said nitrile.

5,359,120
IMPROVEMENTS RELATING TO THE PRODUCTION OF PRODRUGS

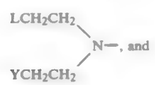
Caroline J. Springer, London, United Kingdom, assignor to Cancer Research Campaign Technology Limited, London, United Kingdom

PCT No. PCT/GB89/01042, § 371 Date May 6, 1991, § 102(e) Date May 6, 1991, PCT Pub. No. WO90/02729, PCT Pub. Date Mar. 22, 1990
PCT Filed Sep. 5, 1989, Ser. No. 681,536
Claims priority, application United Kingdom, Sep. 5, 1988, 8820850.9
Int. Cl.[5] C07C *237/30, 309/66;* A61K *31/165, 31/255*
U.S. Cl. 560—10 9 Claims

1. A process for the preparation of a compound of the formula XX:

M-Ar-CONH-R (XX)

wherein Ar represents a phenylene group which may be substituted, R-NH represents a group which is a residue of an α-amino acid R-NH_2 or oligopeptide R-NH_2 and contains at least one carboxylic acid group in the form of a tertiary butyl ester, and M represents a nitrogen mustard group of formula



wherein Y and L, which may be the same or different, are leaving groups selected from the group consisting of halogen, mesyloxy, trifluoromesyloxy and 4-tosyloxy, the process comprising:
reacting a compound of formula

$(HOCH_2CH_2)_2N$-Ar-CONH-R

wherein R-NH and Ar are defined above, with a compound of formula

A-SO_2-B

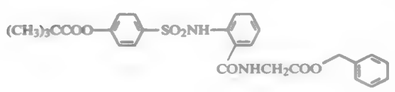
wherein A is a methyl, trifluoromethyl or 4-tosyl group, and B is a halogen.

5,359,121
GLYCINE DERIVATIVE MONOSODIUM SALT TETRAHYDRATE

Katsuhiro Imaki, and Hirohisa Wakatsuka, both of Osaka, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 963,552, Oct. 20, 1992, abandoned. This application Jan. 18, 1994, Ser. No. 182,366
Claims priority, application Japan, Oct. 25, 1991, 3-306925
Int. Cl.[5] C07C *311/15*
U.S. Cl. 560—13 1 Claim

1. N-[o-(p-pivaloyloxybenzenesulfonylamino)benzoyl]glycine benzyl ester of the formula (III):



(III)

5,359,122
PREPARATION OF 3-ARYLACRYLIC ACIDS AND THEIR DERIVATIVES

Michael Huellmann, Bensheim; Josef Gnad, Ludwigshafen, and Rainer Becker, Bad Duerkhaim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 771,184, Oct. 4, 1991, abandoned. This application Feb. 8, 1994, Ser. No. 193,872
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1990, 4039782
Int. Cl.[5] C07C *69/734*
U.S. Cl. 560—20 5 Claims

1. A process for preparing a 3-arylacrylic acid or its derivative of the formula I



(I)

where
Ar is aryl which has one or more substituents which do not react with ketene and are stable under the conditions of the reaction described below, and
R^1 is hydrogen, an alkali metal, an alkaline earth metal, ammonium or C_1–C_{20}-alkyl,
which comprises a first stage in which a dialkyl acetal of an aromatic aldehyde of the formula II



(II)

where R^2 is C_1–C_4-alkyl, is reacted with ketene of the formula CH_2=C=O in the presence of catalytic amounts of a protic or Lewis acid to give a 3-arylpropionic acid derivative of the formula III



(III)

and a second stage in which this intermediate III is reacted in the presence of acid or base and, in the case where R^1 is C_1–C_{20}-alkyl, additionally with a C_1–C_{20}-alkanol to give the final product I.

5,359,123
POLYOXYALKYLENE POLYAMINES HAVING SECONDARY AMINO GROUPS

Toshiyuki Ohshima, Ibaraki; Hideo Ishibashi, Neyagawa; Rie Tamura, Toyonaka; Satoshi Yamamoto, Hirakata, and Takaharu Izumo, Shimamoto, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 834,100, Feb. 12, 1992, abandoned. This application Mar. 29, 1993, Ser. No. 37,823
Int. Cl.[5] C07C *69/66, 229/08;* C08G *18/32;* C09K *3/00*
U.S. Cl. 560—39 6 Claims

1. A composition consisting essentially of a trifunctional secondary polyoxyalkylene polyamine having a plurality of terminal secondary amino groups of the formula:

—NH—CH_2CH_2COOR

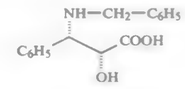
wherein R is an alkyl of from 4–10 carbon atoms.

5,359,124
β-PHENYLISOSERINE DERIVATIVE, ITS PREPARATION AND ITS USE

Jean-Pierre Duchesne, 160 rue Marcel Merieux, 69007 Lyon, and Michel Mulhauser, Frenes 4, Residence Carriere Blanche, 69130 Ecully, both of France

PCT No. PCT/FR91/00132, § 371 Date Aug. 21, 1992, § 102(e) Date Aug. 21, 1992, PCT Pub. No. WO91/13053, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 20, 1991, Ser. No. 920,508
Claims priority, application France, Feb. 21, 1990, 90 02099
Int. Cl.[5] C07C *229/12*
U.S. Cl. 560—40 3 Claims

1. β-Phenylisoserine derivative of formula:



(I)

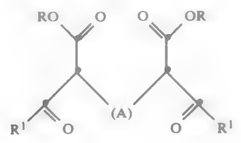
optionally in the form of an alkali metal salt or a salt with a nitrogenous base or a methyl ester.

5,359,125
THERMOSETTING COATING COMPOSITIONS

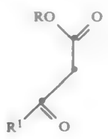
J. Stewart Witzeman, Kingsport, and Allen L. Crain, Blountville, both of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 709,049, Jun. 3, 1991, Pat. No. 5,247,122. This application Aug. 9, 1993, Ser. No. 103,622
Int. Cl.[5] C07C *69/76*
U.S. Cl. 560—54 4 Claims

1. A process for preparing a compound of the formula



wherein A is a group of the formula —CH_2—, R is C_4-C_{10} tertiary alkyl, and R^1 is C_1-C_6 alkyl or aryl, which comprises contacting a mixture comprised of a compound of the formula



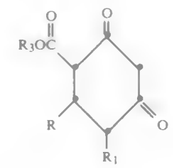
and aqueous formaldehyde with a basic ion exchange resin.

5,359,126
ORGANIC COMPOSITIONS AND THEIR MANUFACTURE

Charles A. McCombs, Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 63,825, May 20, 1993, Pat. No. 5,294,733, which is a division of Ser. No. 829,640, Feb. 3, 1992, Pat. No. 5,225,589, which is a division of Ser. No. 681,281, Apr. 8, 1991, abandoned, which is a division of Ser. No. 399,790, Aug. 28, 1989, Pat. No. 5,041,613. This application Feb. 7, 1994, Ser. No. 192,518
Int. Cl.[5] C07C *69/74*
U.S. Cl. 560—126 2 Claims

1. The composition of matter comprising a compound of the formula



wherein:
R is selected from alkylthio or alkylthioalkyl, wherein the alkyl groups or moieties have 1 to 20 carbons; and
R_1 and R_3 are each selected from hydrogen or alkyl or cycloalkyl of up to 20 carbons.

5,359,127
PROCESS FOR THE PREPARATION OF ACYLOXYALKANESULFONATES

Gerd Reinhardt, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 159,669, Feb. 24, 1988, abandoned. This application Oct. 6, 1992, Ser. No. 957,447
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1987, 3706232
Int. Cl.[5] C07C *261/00*
U.S. Cl. 560—179 7 Claims

1. A process for the preparation of an acyloxyalkanesulfonate of the formula



where R denotes C_7–C_{21}-alkyl or C_7–C_{21}-alkenyl, A denotes C_2–C_4-alkylene and M denotes an alkali metal atom or an alkaline earth metal atom, by esterification of a carboxylic acid using a salt of a hydroxyalkanesulfonic acid, wherein a carboxylic acid of the formula R—CO_2H where R has the above-mentioned meaning is esterified using a salt of the formula HO—A—SO_3M, where A is C_2–C_4-alkylene and M is an alkali metal or an alkaline earth metal, in the presence of aqueous hydrochloric acid, wherein the reaction is carried out at 80° C. to below 110° C. for a time between 30 minutes to 4 hours and after this time the temperature is raised to 145° C. whereby the water of the reaction and the aqueous hydrochloric acid is removed by distillation.

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5,359,128

MALIC ACID DERIVATIVES AND COMPOSITIONS FOR THE TREATMENT OF PSORIASIS

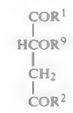
Izhak Blank, 4 Simtat Arnon, Kiriat Ono, Israel 55000

Continuation of Ser. No. 643,553, Jan. 18, 1991, abandoned. This application Feb. 11, 1993, Ser. No. 16,778

Int. Cl.[5] C07C *229/00*

U.S. Cl. 560—169 **1 Claim**

1. A compound of formula



or a pharmaceutically acceptable salt thereof, wherein:

R^1 and R^2 are the same and each is a residue of an amino acid of formula



R^3 is H;

R^4 is ethyl; and

R^9 is



5,359,129

METHOD FOR PREVENTING COLORATION OF DIPHENYLMETHANE DIISOCYANATE COMPOUND

Masato Shimizu, and Toshiaki Nakano, both of Amagasaki, Japan, assignors to Sumitomo Bayer Urethane Co. Ltd., Amagasaki, Japan

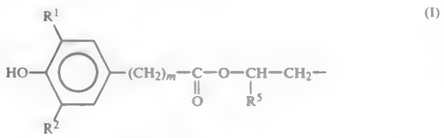
Filed Dec. 15, 1993, Ser. No. 167,506

Claims priority, application Japan, Dec. 24, 1992, 4-343991

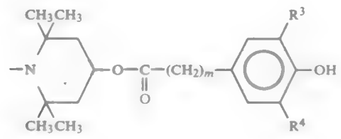
Int. Cl.[5] C07C *265/14*; C07D *211/00*

U.S. Cl. 560—332 **1 Claim**

1. A method for preventing the coloration of a diphenylmethane diisocyanate compound, which comprises adding, to the diphenylmethane diisocyanate compound, a hindered amine compound of the formula:



(I)



wherein

R^1 and R^3 are, the same or different, each a hydrogen atom or a C_1–C_8 hydrocarbon group,

R^2 and R^4 are, the same or different, each a C_1–C_8 hydrocarbon group,

R^5 is a hydrogen atom, a methyl group, an ethyl group, a phenoxymethyl group or a phenyl group, and

m is 0, 1 or 2,

in an amount of 0.001 to 1.0 parts by weight per 100 parts by weight of the diphenylmethane diisocyanate compound.

5,359,130

USE OF SUPPORTED PALLADIUM/PLATINUM CATALYSTS IN THE PREPARATION OF TERTIARY BUTYL ALCOHOL FROM TERTIARY BUTYL HYDROPEROXIDE

John R. Sanderson, Leander; Roger G. Duranleau, Georgetown, and John F. Knifton, Austin, all of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Nov. 12, 1993, Ser. No. 150,915

Int. Cl.[5] C07C *29/132, 31/12*

U.S. Cl. 568—909.8 **11 Claims**

1. In a method wherein a solvent solution of a tertiary butyl hydroperoxide charge stock is brought into contact with a catalytically effective amount of a hydroperoxide decomposition catalyst in a hydroperoxide decomposition reaction zone in liquid phase with agitation to convert said tertiary butyl hydroperoxide to decomposition products, principally tertiary butyl alcohol, the improvement which comprises:

a) using, as said hydroperoxide decomposition catalyst, an alumina supported hydroperoxide decomposition catalyst consisting essentially of a mixture of palladium and platinum, and

b) recovering tertiary butyl alcohol from the products of said hydroperoxide decomposition reaction.

5,359,131

SULFONIC ACID DERIVATIVES IN THE TREATMENT OF VIRAL DISEASES

Alan D. Cardin; Norton P. Peet, both of Cincinnati, and Nelsen L. Lentz, West Chester, all of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 838,639, Feb. 20, 1992, abandoned. This application Aug. 13, 1993, Ser. No. 106,311

Int. Cl.[5] C07C *229/00*

U.S. Cl. 562—51 **11 Claims**

1. A compound of the formula wherein

B is —CH=CH— (cis or trans), CH_2CH_2 or a bond;

X is NH or oxygen;

Y is sulfur;

Z is NH, CH_2, oxygen or sulfur;



1

R_1 is C_1—C_4 alkyl, —CH_2—Ar, or —Ar wherein Ar is a phenyl group optionally substituted by a C_1–C_4 alkyl or SO_3M_3 group; and

M_1, M_2, and M_3 are each independently a hydrogen or a pharmaceutically acceptable cation.

5,359,132

PROCESS FOR THE PREPARATION OF SODIUM SALTS OF AROMATIC SULPHINIC ACIDS CONTAINING NITRO GROUPS

Gunter Silber, Cologne; Gerold Schade, and Udo Thiel, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

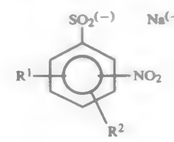
Filed Nov. 24, 1993, Ser. No. 157,768

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1992, 4240708

Int. Cl.[5] C07C *313/02*

U.S. Cl. 562—125 **5 Claims**

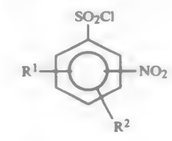
1. In the preparation of a compound of the formula



(I)

in which R^1 and R^2 independently of one another are hydrogen, C_1–C_6-alkyl, C_5–C_7-cycloalkyl, halogen, C_6–C_{12}-aryl, C_6–C_{18}-aralkyl, C_1–C_6-alkoxy, C_6–C_{12}-aryloxy, amino, C_2–C_5-acylamino or carboxy,

by reacting a sulphonyl chloride of the formula



(II)

with an alkali metal sulphite in the presence of sodium hydroxide solution, the improvement which comprises introducing the sulphonyl chloride (II) into an aqueous solution of the alkali metal sulphite which is at a temperature of −10° to 45° C. and has a pH of 6 to 10, thereby to form a suspension, if the temperature of the suspension is above 0° C. cooling the suspension to −10° to 0° C., and then metering sodium hydroxide solution into the suspension in such a way that the temperature does not exceed 0° C. for at least 80% of the reaction time.

5,359,133

PROCESS FOR PRODUCING HIGHLY PURIFIED BENZENEDICARBOXYLIC ACID ISOMERS

Vladimir F. Nazimok; Nadezhda N. Goncharova; Valerij P. Yurjev, and Vladimir D. Manzarov, all of Tula, Russian Federation, assignors to Joint-Stock Company of Research and Design Institute of Monomers (AO NIPIM), U.S.S.R. and General Chemical Co., Ltd. Samsung, Rep. of Korea

Filed Oct. 27, 1993, Ser. No. 141,738

Claims priority, application Russian Federation, Sep. 28, 1993, 93046191; Sep. 28, 1993, 93056190

Int. Cl.[5] C07C *51/16*

U.S. Cl. 562—413 **19 Claims**

1. A process for producing highly purified benzenedicarboxylic acid isomers without an additional catalytic reductive purification step, which comprises (a) an oxidation step wherein xylene isomer is oxidized with molecular oxygen or molecular oxygen containing gas in the presence of a catalyst system composed of cobalt, manganese, bromine and at least one selected from nickel, chromium, zirconium and cerium in lower aliphatic carboxylic acid; and (b) an extraction/post-oxidation step wherein the oxidation product is crystallized to give cake of crude benzenedicarboxylic acid isomer, the cake is reslurried by adding lower aliphatic carboxylic acid solvent thereto followed by heating in order to extract impurities contained therein into the solvent, and the resulting slurry is oxidized with said catalyst system at a temperature of 2°–80° C. lower than that of said heating, each of said oxidation and extraction/post-oxidation being carried out once or twice, provided that any one or both of said steps should be carried out twice.

5,359,134

PROCESS FOR PREPARING PHENYLTEREPHTHALIC ACID

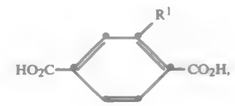
Bruce L. Gustafson; Charles E. Sumner, Jr.; Michael Bellas, all of Kingsport; Gether Irick, Jr., Gray; Dewey W. Fuller, Jr., Bristol; Ernest W. Arnold, Blountville, all of Tenn., and Eric J. Fugate, Gate City, Va., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Aug. 14, 1992, Ser. No. 930,887

Int. Cl.[5] C07C *51/265*

U.S. Cl. 562—416 **12 Claims**

1. A process for preparing a compound of Formula (1),

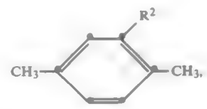


wherein R^1 is phenyl, which comprises the steps

(a) alkylating a compound of the formula



with cyclohexene in the presence of an acid catalyst to provide a compound of Formula (2),



(2)

wherein R^2 is cyclohexyl; followed by

(b) dehydrogenation; and

(c) oxidation in the presence of air or oxygen and a cobaltous bromide oxidation catalyst system, at a temperature of about 75° C. to 250° C., and at a pressure of about 10 to 1000 psig wherein the concentration of reaction off-gas oxygen is maintained in the range of 1% to 12%.

5,359,135

TRIASULFURONE COMPOUNDS

Jean-Marc Schlaeppi, Basel; Klaus Ramsteiner, Mutteaz, and Willy Meyer, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 722,650, Jun. 28, 1991, abandoned. This application Nov. 29, 1993, Ser. No. 159,030

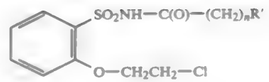
Claims priority, application Switzerland, Dec. 21, 1990, 4078/90; Jun. 29, 1991, 2173/90

Int. Cl.[5] C07C *311/51*

U.S. Cl. 562—430 **3 Claims**

1. A triasulfurone compound of formula (B),

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(B)

wherein
R′ is COOH, NH_2 or SH, and
n is an integer from 1 to 10.

5,359,136

Patent Not Issued For This Number

5,359,137

PREPARATION OF ADIPIC ACID FROM LACTONES

Patrick M. Burke, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 26, 1989, Ser. No. 343,421
Int. Cl.[5] C07C *51/14*
U.S. Cl. 562—517 **14 Claims**

1. A process for the preparation of adipic acid which comprises:

a) reacting at least one lactone selected from the group consisting of γ-valerolactone, α-methyl-γ-butyrolactone, αβ-dimethylpropiolactone, α-ethylpropiolactone and β-ethylpropiolactone with carbon monoxide and water in the presence of a homogeneous rhodium catalyst and at least one promoter selected from the group consisting of an iodide compound and a bromide compound at a temperature of about 190° C. to about 250° C. and at a carbon monoxide partial pressure of about 100 psi to about 2000 psi, wherein the mole ratio of promoter to rhodium is between about 1:1 and about 20:1; and wherein said temperature and pressure are within the polygon shown in the Figure; and

b) quenching the reaction when the rate of carbon monoxide uptake declines sharply.

5,359,138

POSTSTATIN AND RELATED COMPOUNDS OR SALTS THEREOF

Tomio Takeuchi, Tokyo; Takaaki Aoyagi, Fujisawa; Masa Hamada, Tokyo; Hiroshi Naganawa, Tokyo; Keiji Ogawa, Tokyo; Machiko Nagai, Tokyo; Yasuhiko Muraoka, Tokyo, and Makoto Tsuda, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Continuation-in-part of Ser. No. 613,759, Dec. 7, 1990, Pat. No. 5,162,500. This application Jun. 29, 1992, Ser. No. 905,792
Claims priority, application Japan, Apr. 15, 1989, 1-094328
Int. Cl.[5] C07C *229/00*; A61K *37/00, 37/02*; C07K *5/00*
U.S. Cl. 562—567 **3 Claims**

1. (2R,3S)-3-Amino-2-hydroxypentanoic acid.

5,359,139

TERTIARY AMINE TREATMENT

Kim R. Smith; James E. Borland, and Joe D. Sauer, all of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Filed Mar. 18, 1991, Ser. No. 670,568
Int. Cl.[5] C07C *209/90*
U.S. Cl. 564—2 **8 Claims**

1. A process for treating a tert-amine that contains an acid-activated color body precursor so as to prevent pink coloration of the tert-amine or a derivative thereof when exposed to acidic conditions, which process comprises containing the tert-amine with at least about 0.05% of ascorbic acid, based on the weight of the tert-amine.

5,359,140

UREA PRODUCTION PROCESS OF HIGH ENERGY EFFICIENCY

Franco Granelli, Milan, and Giuseppe Carloni, San Donato Milanese, both of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed Mar. 19, 1992, Ser. No. 854,298
Claims priority, application Italy, Mar. 22, 1991, MI91-A-000778
Int. Cl.[5] C07C *273/04*
U.S. Cl. 564—67 **12 Claims**

1. A process for producing urea comprising:

(a) reacting ammonia and carbon dioxide in a reactor operating at a temperature of 175°–220° C. and a pressure of 13–23 MPa using an ammonia to carbon dioxide molar ratio of between 2.5 and 5 to produce a urea solution including ammonium carbamate and free ammonia;

(b) transferring said urea solution to a first decomposer;

(c) heating said urea solution in said first decomposer to strip part of the free ammonia and decompose a portion of the ammonium carbamate into carbon dioxide and ammonia, said first decomposer being operated at about 200°–210° C. and substantially at the same pressure as the reactor;

(d) recycling the gaseous carbon dioxide and ammonia from said first decomposer to said reactor for further reaction;

(e) feeding the urea solution from the first decomposer, wherein the urea solution has a molar ratio of ammonia to carbon dioxide between about 6 and 12, to an adiabatic stripping column and contacting said urea solution in said stripping column with a countercurrent flow of more than 70% of the total carbon dioxide used in the process to remove ammonia and thereby concentrate the urea solution and to form a vapor phase, the stripping column being operated at a pressure which is at about 1–7 MPa less than the reactor pressure;

(f) feeding the urea solution obtained from said adiabatic stripping column, which solution has a molar ratio of ammonia to carbon dioxide of between about 2.0 and 4.0, to a second thermal decomposition stage operating at a pressure of about 1–4 MPa, and heating said urea solution in said second thermal decomposition stage to form a vapor phase and a further concentrated urea solution;

(g) feeding said vapor phase from said second thermal decomposition stage to a shell side of a vacuum concentrator to condense said vapor and form a recyclable carbamate solution and using the heat of condensation of said vapor phase to further concentrate the urea solution in said vacuum concentrator;

(h) mixing said recyclable carbamate solution from said vacuum concentrator with vapor phase from said adiabatic stripping column and partially condensing said resultant mixture to provide heat required for the second decomposition; and

(i) further condensing said mixture to produce steam and to form a recyclable stream that is returned to the reactor for reaction.

5,359,141

PROCESS FOR THE PRODUCTION OF POLYNUCLEAR AROMATIC POLYAMINES

Hartmut Knöfel, Odenthal; Michael Brockelt, Leverkusen, both of Fed. Rep. of Germany; Marcel Petinaux, Pittsburgh, Pa.; Rudolf Uchdorf, Krefeld, and Hans-Peter Schal, Dormagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 6, 1992, Ser. No. 863,938
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1991, 4112130
The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.
Int. Cl.[5] C07C *209/78, 209/84, 209/84*
U.S. Cl. 564—331 **4 Claims**

1. In a process for the production of polynuclear aromatic

polyamines by reaction of aniline with formaldehyde in the presence of water and acidic catalysts in a single or two stage reaction at a temperature of from 0° to 180° C., optionally preceded by a preliminary aminal stage in which N,N′-disubstituted aminal is formed and is then converted into the desired end product in one or more stages in the presence of acid catalyst at a temperature of from 0° to 180° C., working up of the resulting reaction mixture by extraction with an aniline-containing hydrophobic solvent in a product extraction stage, separation of the resulting organic phase by distillation into (i) a distillate consisting of aniline-containing solvent, which distillate is reused in the extraction stage, optionally after addition of fresh aniline, and (ii) a distillation residue consisting essentially of end product and recycling of aqueous phase accumulating during extraction and containing the acid catalyst, with reuse of the catalyst contained in the aqueous phase and removal of the water of condensation formed in the condensation reaction and of the water introduced into the process with the aqueous formaldehyde solution in a water separator placed downstream of the preliminary aminal stage and upstream of the first reaction stage and/or in an evaporator placed downstream of the extraction stage, the improvement wherein

a) the formaldehyde is either reacted by mixing in a preliminary aminal stage with an organic phase consisting of aniline and hydrophobic solvent, and optionally aniline/-formaldehyde condensates, and/or in a first reaction stage with an organic phase consisting of aniline and hydrophobic solvent, and optionally aniline/formaldehyde condensates, and with recycled aqueous phase containing the catalyst in the form of amine salts,

b) the two-phase reaction mixture obtained is separated on completion of the reaction into an aqueous phase and an organic phase in a phase separator upstream of the product extraction stage,

c) the organic phase accumulating in said phase separator is extracted in a post-extraction stage following the product extraction stage with at least a portion of the aqueous phase substantially freed from reaction product which accumulates in the product extraction stage,

d) the aqueous phase accumulating in the post-extraction stage, which is enriched with reaction product of the organic phase accumulating in the phase separator is completely or at least partly recycled to the reaction before the completion of rearrangement and any aqueous phase remaining is recycled to a point between the completion of rearrangement and the product extraction stage,

e) the organic phase consisting of aniline and hydrophobic solvent, and, optionally aniline/formaldehyde condensates, which accumulates in the post-extraction stage, is returned to the beginning of the process and reacted in accordance with a),

f) the aqueous phase accumulating in the phase separator is extracted with aniline-containing hydrophobic solvent in the product extraction stage,

g) the aqueous phase accumulating in the product extraction stage is delivered at least partly to the post extraction stage, and any residue remaining is returned to the beginning of the process before the rearrangement,

h) the organic phase accumulating in the product extraction stage is separated in the distillation stage into a distillate consisting of aniline-containing hydrophobic solvent and a distillation residue consisting essentially of end product, and

i) the distillate accumulating in the distillation stage is used as extractant in the product extraction stage after addition of fresh aniline.

5,359,142

METHOD FOR ENHANCED EXPRESSION OF A PROTEIN

Joan C. McPherson, Vancouver, and Robert Kay, West Vancouver, both of Canada, assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 977,600, Nov. 17, 1992, Pat. No. 5,322,938, which is a continuation of Ser. No. 395,155, Aug. 17, 1989, Pat. No. 5,164,316, which is a continuation of Ser. No. 147,887, Jan. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 2,780, Jan. 13, 1987, abandoned. This application Mar. 9, 1994, Ser. No. 209,752
The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.
Int. Cl.[5] A01H *5/00*; C12N *5/14, 15/67, 15/82*
U.S. Cl. 800—205 **6 Claims**

1. A differentiated plant comprising that comprise a DNA construct having as components (a) a tandemly duplicated CaMV 35S enhancer sequence comprising an AluI-EcoRV fragment of a CaMV 35S upstream region; and (b) a promoter comprising an RNA polymerase binding site and an mRNA initiation site; (c) a nucleotide sequence of interest; and (d) a termination region; wherein said components are operably joined.

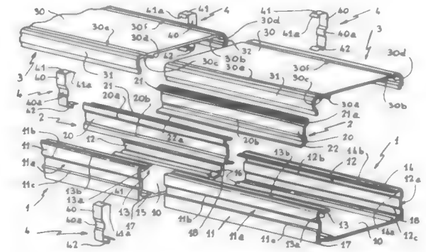
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5,359,143

PLASTIC CABLEWAY ASSEMBLY

Bernard Simon, Caluire, France, assignor to Mavil, Liernais, France

Filed Jan. 8, 1993, Ser. No. 1,619
Claims priority, application France, Jan. 14, 1992, 92 00515
Int. Cl.[5] H02G *3/06*
U.S. Cl. 174—101 **10 Claims**



1. A cableway comprising, a plurality of generally u-shaped portions having ends and spaced arms extending from a central web, each of said arms having a flange oriented toward one another and generally parallel with respect to said central web, each of said flange having upper and lower surfaces, each of said central webs including first and second beads which extend generally parallel to said arms, said first bead including a step oriented toward one of said arms and said second bead including a step oriented toward the other of said arms, each of said arms including exterior and interior surfaces, a longitudinal central groove in each of said exterior surfaces of said arms thereby defining two spaced and inclined faces on the interior surface thereof, each of said upper flanges of said arms including a longitudinal rib oriented toward said central web, and means for assembling said portions in assembled end to end relationship, said means for assembling including at least one fish plate having a central web portion of a configuration to be cooperatively seated against said interior surface of one of said arms, said at least one fish plate including a pair of spaced arm members extending outwardly from said central web portion thereof, one of said arm members extending from said central web portion and into abutment with said step of one of said first and second beads when said central web portion of said at least one fish plate is engaged with said interior surface of said one of said arms, the other of said arm members of said at least one fish plate including a shoulder portion for engaging against one of said longitudinal ribs in said flange of said arms, whereby said at least one fish plate frictionally locks adjacent portions of the cableway in assembled relationship with respect to one another.

5,359,144

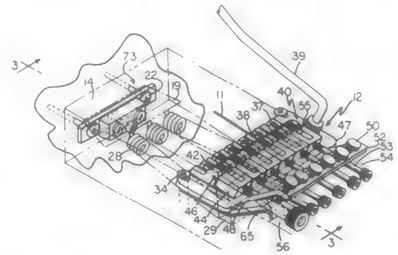
PITCH CHANGING APPARATUS FOR STRINGED INSTRUMENT TREMOLO

Robert Benson, 8002 San Luis Cir., Buena Park, Calif. 90620

Filed May 21, 1993, Ser. No. 65,199
Int. Cl.[5] G10D *3/00*
U.S. Cl. 84—313 **24 Claims**

1. A pitch changing apparatus for tremolos of the type used to vary in unison the pitch of a plurality of strings of a stringed musical instrument, having a body including a head, a sounding board and a plurality of tone producing strings stretched between said head and a bridge on the upper surface of said sounding board, said pitch changing apparatus affording means for independently varying the pitch of a selected string to a selected one of a plurality of predetermined discrete pitches, said apparatus comprising;

a. a tremolo bridge adapted to clampably hold the lower ends of a plurality of said tone-producing strings, said bridge adapted to pivotably mount to the upper surface of said sounding board of said stringed instrument, whereby said bridge may be pivoted rearward to increase tension and pitch of each of said plurality of strings, and forward to decrease such tension and pitch, said bridge having individual tuning mechanisms, each adapted to clampably hold at an adjustable predetermined tension the lower end of a separate one of said tone-producing strings, at least one of said tuning mechanisms including means for manually varying the tension and therefore pitch of a string held by said tuning mechanism to a selected one of a plurality of discrete values, each of said tuning elements comprising in combination a fixed front segment having an upper surface located above said upper surface of said sounding board and a transversely disposed rear surface, a



rear segment including a front fulcrum portion, pivotably mounted to said front segment, a rear clamping block slidably movable with respect to said fulcrum portion and means for clamping said clamping block to said rear segment, thereby clamping the lower end of a string stretched over said upper and rear surfaces of said front segment between said rear surface of said front segment and said front surface of said clamping block, and

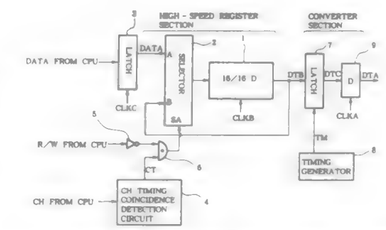
b. a counter tensioning spring means connected between said tremolo bridge and said body of said instrument, said counter tensioning spring means being adapted to maintain constant the tension exerted on said plurality of strings in spite of variations in tension of a string whose pitch is varied to said selected one of a plurality of discrete values.

5,359,145

TIME-DIVISIONAL DATA REGISTER

Kazuhisa Okamura, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 748,103, Aug. 21, 1991. This application May 18, 1993, Ser. No. 64,747
Claims priority, application Japan, Aug. 27, 1990, 2-222546
Int. Cl.[5] G10H *1/18*
U.S. Cl. 84—602 **14 Claims**



1. A time-divisional data register for temporarily storing data transmitted from a central processing unit for controlling generation of musical tone signals and transferring the stored

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data to a sound source having a plurality of channels for respectively generating musical tone signals, for performing time-divisional processing of a plurality of channels at a first rate having a first period, comprising:

channel designation means for designating at least one of the plurality of channels;

storage means for storing, at a second rate having a second period shorter than the first period, data transmitted from the central processing unit asynchronously with the processing of the plurality of channels, the storage means storing the data at a storage position corresponding to the designated channel and circulatively repetitively outputting the stored data at the second rate; and

latch means for latching the data output from said storage means in synchronism with the processing of the plurality of channels in the sound source, and outputting the latched data to the sound source in the channel processing order of the sound source.

5,359,146

MUSICAL TONE SYNTHESIZING APPARATUS HAVING SMOOTHLY VARYING TONE CONTROL PARAMETERS

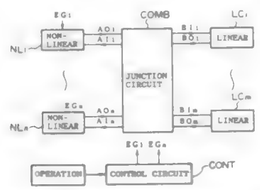
Tomoyuki Funaki; Iwao Higashi; Toru Kitayama; Hideyuki Masuda, and Toshifumi Kunimoto, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Feb. 19, 1992, Ser. No. 838,572

Claims priority, application Japan, Feb. 19, 1991, 3-024923; Apr. 26, 1991, 3-097760; May 16, 1991, 3-111866

Int. Cl.[5] G10H *1/057, 1/08, 1/12*

U.S. Cl. 84—624 **17 Claims**



7. A musical tone synthesizing apparatus for generating a musical tone signal whose characteristics are gradually varied over time, the musical tone synthesizing apparatus comprising:

a plurality of non-linear transformation means, each including a corresponding non-linear transformation function, for transforming a common input signal into a plurality of output signals based on the corresponding non-linear transformation functions;

variation control means for generating a function selection signal indicative of at least two non-linear transformation means, the function selection signal being varied over time;

selection means for selecting at least two non-linear transformation means in accordance with the function selection signal; and

mixing means for mixing the output signal from each selected non-linear transformation means in accordance with a mixing ratio which is gradually varied over time to produce a mixed output signal coefficients.

5,359,147

ELECTROSTATIC LATENT IMAGE DEVELOPER

Noriaki Satoh, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

Filed Oct. 13, 1993, Ser. No. 135,343

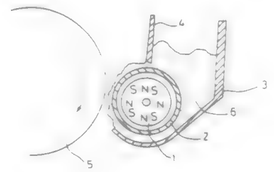
Claims priority, application Japan, Dec. 24, 1992, 4-344355

Int. Cl.[5] G03G *15/08*

U.S. Cl. 118—653 **15 Claims**

1. An electrostatic latent image developer comprising:

a magnetic toner comprising a magnetic powder and a resin, the magnetic toner having an average particle size of from 5 to 10 μm, a bulk density of at least 0.4 g/cc, a cohesion not larger than 20%, and a volume resistivity of at least 10^9 Ω cm at an AC electric field of 1 kHz; and



a carrier comprising a transition metal oxide, the carrier having an average particle size of from 30 to 70 μm.

5,359,148

HEAT-TREATING APPARATUS

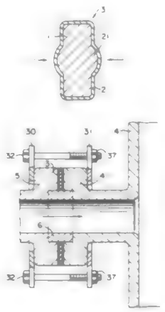
Wataru Okase; Takashi Tanahashi, both of Sagamihara, and Takenobu Matsuo, Kofu, all of Japan, assignors to Tokyo Electron Kabushiki Kaisha and Tokyo Electron Tohoku Kabushiki Kaisha, Japan

Filed Jul. 26, 1993, Ser. No. 96,893

Claims priority, application Japan, Jul. 31, 1992, 4-223519

Int. Cl.[5] C23C *16/00*

U.S. Cl. 118—724 **16 Claims**



1. A heat-treating apparatus, comprising:

a reaction vessel being adapted for performing a heat-treating for a workpiece to be treated and having a joint pipe portion;

an outer pipe jointed to said joint pipe portion of said reaction vessel; and

a sealing member disposed between said outer pipe and said joint pipe portion and adapted for tightly closing a passage defined inside said outer pipe and said joint pipe portion,

wherein said sealing member having a relatively soft core member and a film disposed on the surface of said core member and harder than said core member, said film having heat resistance and a chemical resistance.

5,359,149

SUPERCONDUCTIVE DEVICE FOR HELPING SHIELD MAGNETIC FIELD

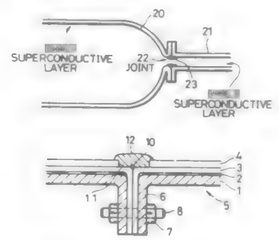
Shoji Seike; Hideki Shimizu, both of Nagoya, and Makoto Tani, Inazawa, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Dec. 9, 1991, Ser. No. 803,940

Claims priority, application Japan, Dec. 8, 1990, 2-407265

Int. Cl.[5] H05K *9/00;* **H01L** *39/00;* **H04B** *3/28*

U.S. Cl. 505—213 **19 Claims**



1. A superconductive device for shielding a magnetic field, comprising:

at least two members, each member having a superconductive layer containing a first superconductive oxide positioned thereon;

means for connecting said members at a joint to form a substrate;

means for connecting said superconductive layers along the joint connecting said members to prevent the magnetic field from penetrating the joint;

at least two intermediate mediums individually placed between one of said members and one of said superconductive layers, wherein each of said intermediate mediums comprises a noble metal layer which contacts said superconductive layer, and a glass layer placed between said noble metal layer and said member; and

means for connecting said intermediate mediums along a joint connecting said members.

5,359,150

WIRE RIBBON

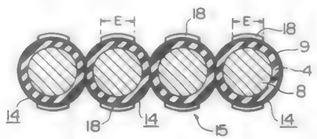
Hiroshi Ikeuchi, Nagaokakyo, Japan, assignor to Murata Mfg. Co., Ltd., Kyoto, Japan

Filed Sep. 23, 1993, Ser. No. 126,054

Claims priority, application Japan, Sep. 30, 1992, 4-285530

Int. Cl.[5] H01B *7/08*

U.S. Cl. 174—117 F **2 Claims**



1. A wire ribbon having a plurality of insulator-coated conductive wires, each having an insulating layer formed on a surface of a conductive wire, said insulator-coated conductive wires being arranged parallel in a row to be adjacent to each other, and said adjacent insulator-coated conductive wires being bonded to each other through interconnection adhesive layers so as to be integrated, wherein a thermoplastic adhesive interlayer having an adhesion temperature lower than that of said interconnection adhesive layer is formed in a local circumferential region on an apex of each single-core wire on at least one of upper and lower surface sides of said wire ribbon.

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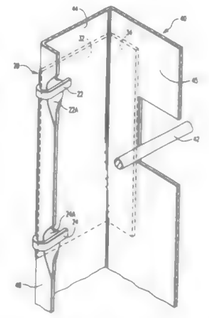
CONSTRUCTION STUD PROTECTOR PLATE

William Nattel, Montreal; Daniel R. Lalancette, Quebec, and Mark E. Fabian, St. Jean, all of Canada, assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 9, 1992, Ser. No. 896,040

Int. Cl.[5] H02G *3/26*

U.S. Cl. 174—48 **3 Claims**



3. A protector plate for disposal on a metal construction beam which is defined by a side surface intermediate spaced first and second end surfaces, where said first end surface terminates in a first end surface edge which is spaced from said side surface, comprising:

a front plate;

a bendable, tabular member attached to said front plate which cooperates with said first end surface for preventing substantial movement of said front plate in a plane substantially transverse to said side surface:

grasping means protruding from said front plate and which cooperates with said second end surface for preventing substantial movement of said front plate in a plane substantially parallel to said side surface, and

said front plate having an outwardly disposed substantially dove-tailed protuberance, said protuberance cooperating with a tool used to bend said bendable tabular member.

5,359,152

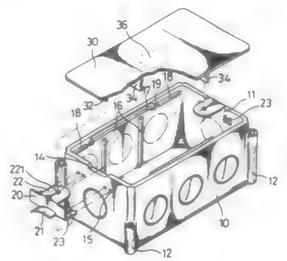
STRUCTURE OF WALL MOUNTING JUNCTION BOX

Tan Hone-Lin, No. 6, Alley 166, Yuh Cheng Street, Taipei, Taiwan

Filed Apr. 6, 1993, Ser. No. 43,226

Int. Cl.[5] H02G *3/08*

U.S. Cl. 174—53 **4 Claims**



1. A junction box comprising:

a casing having two recessed portions on the topmost edge around a top opening thereof at two opposite locations, a plurality of first through holes and a plurality of second

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through holes on an upright peripheral wall thereof respectively disposed below said recessed portions, a plurality of horizontal flanges spaced by gaps around said upright peripheral wall on the inside;

two mounting tabs respectively made of stainless steel through a punching process, each mounting tab comprising a horizontal projection inserted into either recessed portion and projecting into the holding space of said casing, said horizontal projection having a through hole for inserting a screw in fastening an electric device within said casing, pairs of horizontal pins respectively fitted into said first through holes or said second through holes, and a horizontal wing disposed outside said casing;

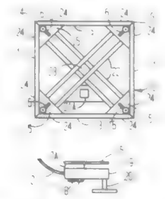
a cover board made of a rigid plate fitted into the top opening of said casing and supported above said horizontal flanges and over covered the horizontal projection of each metal mounting tab, said cover board having two bottom pins respectively fitted into the through hole on the horizontal projection of either metal mounting tab, and a plurality of bottom ribs respectively inserted into the gaps in said horizontal flanges.

5,359,153

PORTABLE, CLEAN-IN-PLACE INDUSTRIAL FLOOR SCALE

Frederick Herrmann, and Gregory A. Morris, both of Terre Haute, Ind., assignors to Indiana Scale Co., Inc., Terre Haute, Ind.

Filed Jun. 2, 1993, Ser. No. 70,217
Int. Cl.[5] G01G *21/00, 19/02*
U.S. Cl. 177—176 **5 Claims**



1. A portable, industrial floor scale having a weighing capacity of about 5,000 pounds comprising:

a non-metallic platform having four corner edges, and top and bottom surfaces, and which weighs less than about eighty pounds;

a metallic base frame having four reinforced corner brackets, outer vertical flanges extending around the corners of the base frame above the corner brackets to enclose the corner edges of the non-metallic platform, and horizontally disposed reinforcing struts interconnecting the opposed corner brackets to further strengthen the base frame, the base frame weighing less than about two hundred pounds;

cantilevered load cells, each having first and second ends, and each being disposed below, and attached at its first end to one of the reinforced corner brackets; and

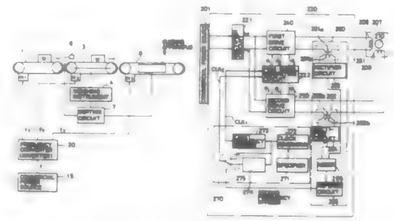
a support leg attached to each load cell at its second end so that the floor scale and any load thereon is totally supported by the load cells disposed at each reinforced corner bracket, the platform and base frame of said platform scale being easily moved by one or two workers by merely separating the platform from the base frame and moving them separately to facilitate cleaning and relocation without requiring a forklift, hoist, or other motorized equipment.

5,359,154

CONVEYOR APPARATUS HAVING PLURAL CONVEYORS WITH EQUALIZED CONVEYING SPEEDS CONTROLLED BY AN INVERTER MEANS

Fumihiro Tsukasa, Kanagawa; Hideya Fujimoto, Atsugi; Kazuhiko Horikoshi, Atsugi; Osamu Tanaka, Atsugi, and Kunio Kikuchi, Minamiashigara, all of Japan, assignors to Anritsu Corporation, Tokyo, Japan

PCT No. PCT/JP90/01640, § 371 Date May 1, 1991, § 102(e) Date May 1, 1991, PCT Pub. No. WO91/09463, PCT Pub. Date Jun. 27, 1991
Continuation of Ser. No. 684,952, May 1, 1991, abandoned. This PCT application Dec. 15, 1990, Ser. No. 2,119
Claims priority, application Japan, Dec. 15, 1989, 1-325565; Dec. 22, 1989, 1-333655; Jan. 26, 1990, 2-17455; Jan. 26, 1990, 2-17456; Feb. 13, 1990, 2-32119; Mar. 31, 1990, 2-87275; Sep. 21, 1990, 2-252730
Int. Cl.[5] G01G *19/00, 13/02;* **H02P** *1/40*
U.S. Cl. 177—145 **7 Claims**



1. A weighing/sorting apparatus using conveyors, comprising:

conveyor means for conveying an object to be weighed with a desired speed, said conveyor means comprising at least a feeding conveyor for feeding the object and a weighing conveyor for receiving the object from said feeding conveyor;

first and second single phase brushless motors each having a first coil and a second coil, for driving said feeding conveyor and said weighing conveyor, respectively;

inverter means for providing predetermined frequency signals to said first and second single phase brushless motors in accordance with a desired speed, so as to equalize the speed of said feeding conveyor and the speed of said weighing conveyor, said inverter means comprising:

(a) a rectifier circuit for rectifying an AC voltage into a DC voltage;

(b) a pulse modulated signal generating circuit for generating alternately first and second pulse modulated signals for a given period of time to modify AC currents respectively flowing through said first and second coils of said first and second single phase type brushless motors so as to trace sinusoidal waves with phases differentiated by 90° from each other according to first and second pulse width data corresponding to the first and second pulse modulated signals and generating alternately third and fourth pulse modulated signals for the same period of time with timings respectively shifted by a half of said given period of time for generating timings of the first and second pulse modulated signals;

(c) a first drive circuit for supplying an AC current having a given frequency obtained by switching the DC voltage to said first coils of said first and second single phase brushless motors in accordance with said first and second pulse modulated signals; and

(d) a second drive circuit for supplying an AC current having a same frequency as that of said AC current and a phase differentiated by 90° from that of said AC current obtained by switching the DC voltage to said second coils of said first and second single phase brushless motors in accordance with said third and fourth modulated signals;

weighing means provided in a conveying path of said weighing conveyor, and for measuring a weight of the object; and

a sorting means for producing a sorting signal for the object in accordance with a weighing output from said weighing means;

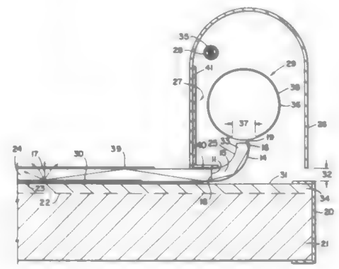
wherein each of said first and second drive circuits comprises flywheel effect means for forming a bidirectional closed loop circuit for absorbing a current induced by a counter-electromotive force generated in one of said first and second coils of said first and second single phase brushless motors during an idle period of said first and second pulse modulated signals by permitting the current induced by the counter electromotive force to continuously flow in two directions with reference to said one of said firsthand second coils of first and second single phase brushless motors, said flywheel effect means having switch means for forming said bidirectional closed loop circuit which permits the induced current to flow in two directions with reference to said one of said first and second coils of said first and second single phase brushless motors without including a path of the DC voltage, to thereby turn on said switch means at the idle period, so that said flywheel effect means causes one of said first and second single phase brushless motors to smoothly rotate without any momentary interruption.

5,359,155

ILLUMINATION APPARATUS FOR A DIGITIZER TABLET

George Heiser, Gaithersburg, Md., assignor to Tiger Scientific Corp., Gaithersburg, Md.

Filed Mar. 25, 1993, Ser. No. 36,701
Int. Cl.[5] G08C *21/00*
U.S. Cl. 178—18 **30 Claims**



1. An illumination apparatus for a digitizer tablet which has a hand-held digitizing member and an associated conductor arrangement embedded in the tablet, said apparatus comprising:

a non-optical-fiber flat light conductor located on top of and covering the conductor arrangement embedded in the digitizer tablet, said non-optical-fiber flat light conductor including a top surface, a bottom surface, and a light-receiving edge, and

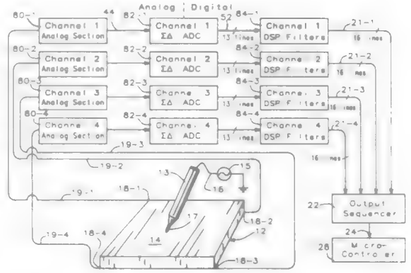
a light source located peripheral to said non-optical-fiber flat light conductor, said light source providing light to said light-receiving edge of said non-optical-fiber flat light conductor, wherein a portion of light received by said light-receiving edge from said light source is emitted from said top surface for back lighting an object to be digitized that is placed over said non-optical-fiber flat light conductor.

5,359,156

INTEGRATED CIRCUIT FOR DIGITIZER TABLE WITH DEDICATED DIGITAL SIGNAL PROCESSOR FOR IMPROVED NOISE IMMUNITY

Sang K. Chan; Chong L. Neoh, and Maisy M. L. Ng, all of Singapore, Singapore, assignors to TriTech Microelectronics International Pte Ltd, Singapore, Singapore

Filed Nov. 18, 1992, Ser. No. 977,681
Int. Cl.[5] G08C *21/00*
U.S. Cl. 178—19 **16 Claims**



1. A tablet of the type that multiplexes pen signals from a plurality of connection points (**18**) to the tablet, the connection points being spaced apart to define a coordinate system for the tablet surface, and circuits forming a channel (**80**, **82** and **84**) for each tablet surface connection point, wherein the improvement comprises,

an analog processing section (**80-1**) in each channel connected to an associated connection point of the tablet to receive the corresponding pen signal and producing an analog output,

a sigma-delta modulator section (**82-1**) in each channel connected to receive the output of the analog processing section and producing an alternating polarity signal having digitized values,

digital filter means (**84-1**) in each channel connected to receive the output of the sigma-delta modulator section and producing a filtered digital output,

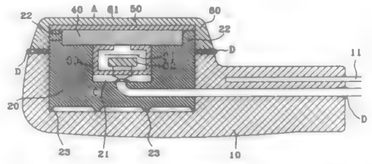
and an output sequencer (**22**) for combining the digital signals (**21-1**, **21-2**, **21-3**, **21-4**) from the digital filter means for each channel onto a common line (**24**).

5,359,157

CONTACT TYPE INDIRECT CONDUCTION, VIBRATING TYPE MICROPHONE

Luis Liu, Kao Hsiung, Taiwan, assignor to Jen-Cheng Peng, Yung Ho, Taiwan

Filed Aug. 30, 1993, Ser. No. 113,475
Int. Cl.[5] H04R *25/00*
U.S. Cl. 181—129 **2 Claims**



1. A contact type indirect conduction, vibrating type microphone comprising a body, a fastening device connected to said body for fastening, said body comprising a vibration damper disposed inside, said vibration damper comprising a top and a bottom, said top having a top recess in the center, a flange

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extending from said top, and a plurality of projecting rods raised from a bottom thereof, a capacitive microphone disposed within said top recess, a sponge covering said vibration damper and disposed over said capacitive microphone, and a top cover disposed over said sponge and adhered thereto by a double-sided adhesive tape, said top cover comprising a cover face formed of a diaphragm having a thickness thinner than the walls of said top cover and said body.

5,359,158

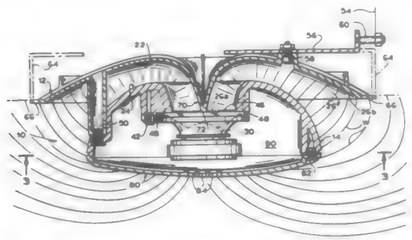
CEILING-MOUNTED LOUDSPEAKER

Daniel L. Queen, New York, N.Y., assignor to Sonic Systems, Inc., Stamford, Conn.

Continuation of Ser. No. 854,949, Mar. 23, 1992, abandoned. This application Dec. 20, 1993, Ser. No. 170,454

Int. Cl.[5] H05K *5/00*

U.S. Cl. 181—150 **15 Claims**



1. A ceiling mounted loudspeaker providing a distribution of sound energy in a plane below the loudspeaker, comprising:

(A) a source of sound energy directing said sound energy upwardly; and

(B) a housing supporting said source and including a first portion defining a passageway having a gradual hyperbolic cross-sectional area expansion for permitting sound energy produced by said source to be directed outside said housing and a second portion defining a bottom wall of monotonic continuous positive curvature for causing at least a portion of said sound energy emanating from said passageway to be diffracted downwardly and toward the vertical axis of said housing, said first and second portions being contiguous and continuous;

thereby to provide a distribution of sound energy both radially from and below said loudspeaker.

5,359,159

INTERNAL COMBUSTION ENGINE

Reinhard Gommel, Backnang, Fed. Rep. of Germany, assignor to Firma Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Feb. 4, 1994, Ser. No. 192,136

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1993, 4303127

Int. Cl.[5] F01N *3/02;* **F02B** *33/04*

U.S. Cl. 181—230 **20 Claims**

1. An internal combustion engine comprising:

a crankcase;

a cylinder with an outlet;

a muffler having an inlet and connected with said inlet to said outlet of said cylinder, said muffler formed as a unitary part;

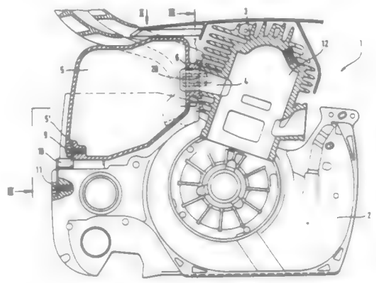
said outlet having a first flange surface and said inlet having a second flange surface, said first flange surface and said second flange surface contacting one another so as to form a flange connection;

at least two slip-on clamps connected to a circumference of said flange connection;

said clamp having substantially the shape of a bracket with two legs extending in a same direction;

said legs having inner surfaces facing one another; and

said flange connection having receiving surfaces for said legs



wherein said inner surfaces of said legs cooperate with said receiving surfaces so as to force said first and said second flange surfaces against one another.

5,359,160

PEG TRAY TYPE YARN TUBE CARRIER WITH TRANSMITTING-RECEIVING DEVICE

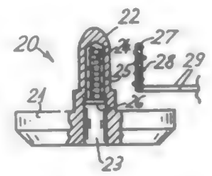
Ulrich Wirtz, Moenchengladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst AG & Co., Moenchengladbach, Fed. Rep. of Germany

Filed Dec. 23, 1991, Ser. No. 813,105

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1990, 4041713

Int. Cl.[5] B65G *47/46*

U.S. Cl. 198—350 **11 Claims**



1. A carrier for transporting a textile yarn tube comprising a base plate, a tube supporting pin extending in upstanding relation from the base plate for telescopic insertion into a yarn tube, a selectively encodable, readable and erasable information carrying device, and a transmitting-receiving device connected to the information carrying device for communication without physical contact with a device for reading, erasing and encoding thereof having a compatible transmitting-receiving device, the base plate and the tube supporting pin defining a central axis of the tube carrier, the transmitting-receiving device for the information carrying device being disposed generally in the region of the central axis to define a generally uniform transmission interval between the transmitting-receiving device for the information carrying device and the compatible transmitting-receiving device for the reading, erasing and encoding device when disposed in proximity thereto essentially without regard to the rotational disposition of the base plate and tube supporting pin about the central axis, the transmitting-receiving device for the information carrying device comprising a coil having a winding arranged concentrically to the central axis to facilitate an inductive coupling of the coil with the compatible transmitting receiving device for the reading, erasing and encoding device.

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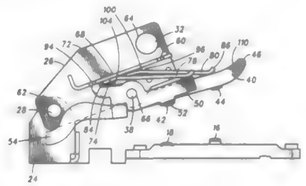
NON-LINEAR SPRING FOR CIRCUIT INTERRUPTERS

Thomas C. Leach, Lexington, Ky., and Steven A. DeCook, Marion, Iowa, assignors to Square D Company, Palatine, Ill.

Filed Jan. 8, 1993, Ser. No. 2,009

Int. Cl.[5] H01H *33/02, 1/50*

U.S. Cl. 200—746 R **16 Claims**



7. A circuit interrupter assembly comprising:

at least one stationary electrical contact located therein;

at least one movable contact operable between open and closed positions with respect to each stationary contact, each movable contact attached to a contact blade;

a contact carrier hingedly attached to the contact blade;

means for effecting movement of the carrier and the contact blade so that the movable contact moves between the open and closed positions, the moving means connected to the carrier; and

a spring disposed between the carrier and the contact blade, the spring having at least one elongated cantilever portion, the length of the cantilever portion having the shape of an arch made with a non-uniform angle across the length of the cantilever portion, the cantilever portion being formed from an elastic material, the spring having means for supporting one end of the cantilever portion against the carrier with the length of the cantilever portion positioned parallel to the carrier and the opposite end of the cantilever portion abutting the contact blade so that the carrier supports an increasing amount of the length of the cantilever portion as the displacement between the carrier and the contact blade decreases.

5,359,162

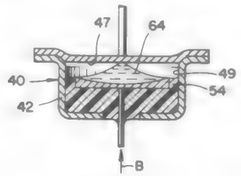
SHOCK SENSOR SWITCH HAVING A LIQUID CONDUCTOR

Sheldon S. Bitko, East Brunswick, N.J., assignor to Fifth Dimension Inc., Trenton, N.J.

Continuation of Ser. No. 974,518, Nov. 12, 1992, abandoned. This application Jan. 3, 1994, Ser. No. 176,685

Int. Cl.[5] H01H *35/14*

U.S. Cl. 200—226 **9 Claims**



1. A shock sensor for sensing shock, comprising:

a housing defining an interior space, said housing forming an interior end surface situated at one end of said space, and a cylindrical side surface extending from said end surface, said end and side surfaces being electrically conductive and connected to a first contact terminal,

an electrically insulative mass disposed at an end of said space,

an insert supported by said mass and including a support surface defining a recess facing said interior end surface, said support surface being electrically conductive and connected to a second contact terminal, and

a volume of electrically conductive liquid contained in said recess,

said support surface being wetted to said liquid, and said end and side surfaces being non-wetted to said liquid so that in an absence of shock the liquid is situated in said recess and out of electrical contact with said end and side surfaces regardless of the orientation of said housing relative to vertical, and so that said liquid moves into electrical contact with said end surface and/or side surface in response to shock and is restored to said recess when the shock subsides.

5,359,163

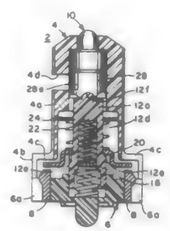
PUSHBUTTON SWITCH WITH ADJUSTABLE PRETRAVEL

Tony O. Woodard, Pine Level, N.C., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 28, 1993, Ser. No. 53,278

Int. Cl.[5] H01H *1/34*

U.S. Cl. 200—249 **12 Claims**



1. A plunger operated switch comprising:

a housing having an opening through a wall thereof;

a plunger assembly guided for linear reciprocal movement within said housing along an axis extending through said opening to be operated through said opening, said plunger assembly comprising a contact carrier movable along said axis;

a pair of stationary contacts mounted in said housing on opposite sides of said plunger assembly contact carrier;

a movable contact carried by said contact carrier overlying said stationary contacts for movement by said plunger assembly into and out of bridging engagement with said stationary contacts;

means for biasing said plunger assembly to an extended position against said housing wall and said movable contact out of engagement with said stationary contacts;

said plunger assembly further comprising adjustment for adjusting an axial dimension of said plunger assembly between said wall and said movable contact, thereby adjusting initial spacing between said movable and stationary contacts in said extended position of said plunger assembly wherein said initial spacing is always greater than zero.

5,359,164

ILLUMINATED SWITCHING ASSEMBLY

John Kucharski, Jr., Itasca, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 14, 1993, Ser. No. 63,582

Int. Cl.[5] H01H *9/00*

U.S. Cl. 200—315 **6 Claims**

1. An illuminated electrical switching assembly comprising:

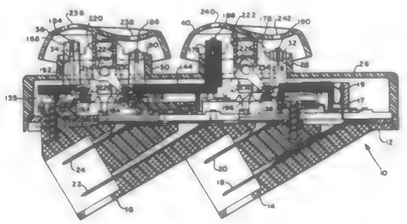
(a) base structure having plural electrical connector terminals thereon for external electrical connection thereto;

(b) a first bus means comprising an elongated strip of conductive material relatively thin with respect to its width,

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said strip encapsulated with insulating material molded thereover for stiffening and quieting said strip and having a plurality of first exposed portions with each of said first exposed portions having an electrical contact provided thereon;

(c) a second bus means comprising an elongated strip of conductive material relatively thin with respect to its width, said strip encapsulated with insulating material and having a plurality of second exposed portions with each of said second exposed portions having an electrical contact



provided thereon; said second bus attached to said first bus with the electrical contacts on said second bus means disposed in spaced super-posed arrangement with the contacts on said first bus;

(d) a plurality of electrical switches, each with a movable contact member, each of said switches disposed for switching between a pair of said super-posed contacts;

(e) actuator means operable upon user movement to effect switching of each of said switches; and,

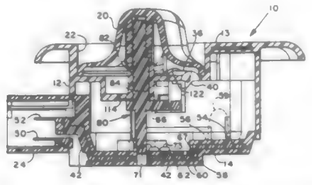
(f) lamp means attached to said second bus means and operable to illuminate said actuator means.

5,359,165

ILLUMINATED ROTARY SWITCH ASSEMBLY

Denis J. Leveque, Milwaukee, Wis., and Richard G. Johnson, McHenry, Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 16, 1993, Ser. No. 93,125
Int. Cl.[5] H01H *9/00*
U.S. Cl. 200—317 **6 Claims**



1. An illuminated rotary switch assembly comprising:

(a) housing means, including upper and lower shell portions joined along a parting line and operative to define a receptacle portion having a plurality of connector terminals for external connection thereto;

(b) said lower shell portion having a first section with an array of protruding strips formed of platable thermoplastic material, and a second section formed of unplatable thermoplastic material molded thereover, said strips being plated with conductive material to form electrical conductors, a first end of each strip having a fixed contact attached thereto and an opposite end of each strip connected to said connector terminals;

(c) said upper shell means molded of opaque material with translucent windows molded integrally therewith for providing indicia for indicating switch operation functions;

(d) shaft means journalled for rotation in said housing means and extending through said upper housing portion and having thereon a knob for facilitating user rotating of said shaft means;

(e) movable contact means associated with said shaft means and operable, upon user rotation of said shaft means, to effect switching between individual pairs of said contacts; and,

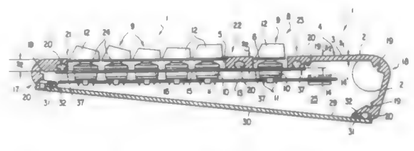
(f) lamp means operably connected to said conductors operable to illuminate said windows in said upper shell portion.

5,359,166

KEYBOARD, ESPECIALLY FOR ELECTRONIC DATA-PROCESSING APPARATUSES

Heinz Elsaesser, Rietheim-Weilheim; Kurt Klaiber, Spaichingen, and Ralf Sauer, Wurmlingen; all of Fed. Rep. of Germany, assignors to Marquardt GmbH, Rietheim-Wilheim, Fed. Rep. of Germany

PCT No. PCT/DE91/00322, § 371 Date Oct. 29, 1992, § 102(e) Date Oct. 29, 1992, PCT Pub. No. WO91/17557, PCT Pub. Date Nov. 14, 1991
PCT Filed Apr. 17, 1991, Ser. No. 968,407
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1990, 4013819
Int. Cl.[5] H01H *13/70*
U.S. Cl. 200—5 A **30 Claims**



1. A keyboard, comprising:

an L-shaped outer keyboard housing having an open bottom side and two open ends;

closure means for closing the keyboard housing on all sides to provide a high level of RF radiation shielding, the closure means including a frame and a housing base to seal the open bottom side of the keyboard housing; and

a control panel which is arranged on the top of the keyboard housing, the control panel including individual key switches which emit key-specific RF signals when they are operated, each key switch having an individual key housing and being inserted into matched recesses in the frame, the frame surrounding the individual key switches with at most a small gap,

wherein the frame is mounted without a gap on the keyboard housing,

wherein the internal space of the keyboard is connected to the region outside the keyboard only via direction-deflecting surfaces or via very small gaps,

wherein the keyboard additionally includes a common circuit board and at least one electronic device on the common board, the individual key switches being connected directly to the common board, the common board being arranged in the keyboard housing,

wherein the keyboard housing is produced from an extruded profile which is integral over its entire length,

wherein the closure means additionally includes two metallic end pieces, each of which dips into and is mounted in an end of the keyboard housing, is matched to the profile of the keyboard housing, and terminates flush with the housing base,

wherein the housing base is constructed as a covering plate and is mounted from underneath in the lower region of the

front side and rear side of the keyboard housing and of the end pieces,

wherein a recess for the control panel is located in a wall of the keyboard top of the keyboard housing,

wherein the frame holding the key switches is mounted directly on the underside of the wall of the keyboard top in the region surrounding the recess, and

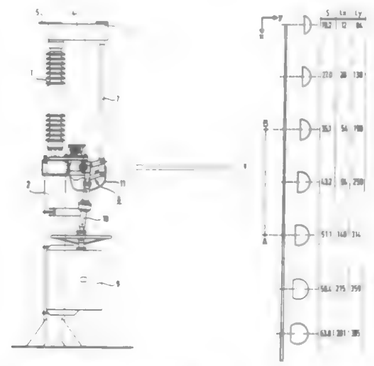
wherein all the direction-deflecting surfaces and very small gaps between the keyboard housing and, respectively, the frame, the housing base and the end pieces, are provided at surfaces which contact with one another.

5,359,167

WHIP FOR A HIGH TENSION SECTION SWITCH

Daniel Demissy, Montreal; Jean-Guy Chevaliere, Anjou; Hadj Alidou, and Anh Dung Huynh, both of Montreal, all of Canada, assignors to GEC Alsthom Energie Inc., La Praire, Canada

Filed May 7, 1993, Ser. No. 57,860
Claims priority, application France, May 11, 1992, 92 05692
Int. Cl.[5] H01H *31/00*
U.S. Cl. 200—48 R **5 Claims**



1. A whip for use in a high tension section switch, the whip comprising a flexible metal rod having a base and a tip and an electrical contact portion between said base and said tip, and wherein said rod has a cross-section defining a truncated circle whose area diminishes progressively from said base to said tip.

5,359,168

SWITCHING AND CONTROL MECHANISMS

Peter R. Cunningham, 32-32 Sir William Drive, East Tamaki, Auckland, New Zealand

Continuation of Ser. No. 721,991, Jun. 27, 1991, abandoned. This application Dec. 29, 1993, Ser. No. 174,754
Claims priority, application New Zealand, Jul. 4, 1990, 234359
Int. Cl.[5] H01H *85/00*
U.S. Cl. 200—61.08 **18 Claims**

1. A switching means for controlling electrical circuitry comprising electrical circuitry including a first circuit portion and at least one second circuit portion, said at least one second circuit portion being physically separable or removable from said first circuit portion to switch the electrical state of said first circuit portion, characterized in that:

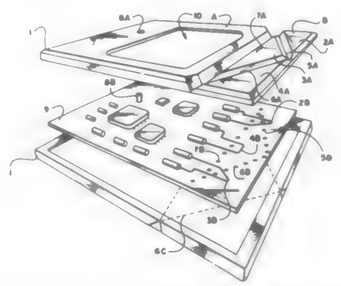
at least said first circuit portion of said electrical circuitry is operative to provide an activated state and a deactivated state;

said first circuit portion provides means for the detection of loss of said at least one second circuit portion;

said first circuit portion is operative in response to said loss to switch from an initial one of said states to the opposite state;

said first circuit portion is provided on a circuit support member;

a plurality of said second circuit portions are provided on respective portions of said circuit support member, said respective portions each being physically separable from a



remaining portion of said support member providing the first circuit portion; and

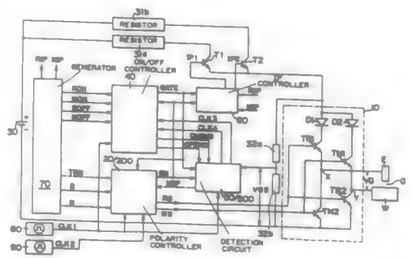
a cover member is provided for said circuit support member, said cover member having physically separable portions thereof, each commensurate with one of said respective portions of said circuit support whereby separation of said cover member portion also acts to remove a corresponding portion of a said circuit support member.

5,359,169

ELECTRIC DISCHARGE MACHINING METHOD AND APPARATUS

Yuji Kaneko, Kanagawa, Japan, assignor to Sodick Co., Ltd., Kanagawa, Japan

PCT No. PCT/JP91/00828, § 371 Date Mar. 23, 1992, § 102(e) Date Mar. 23, 1992, PCT Pub. No. WO92/03246, PCT Pub. Date Mar. 5, 1992
PCT Filed Jun. 20, 1991, Ser. No. 842,209
Claims priority, application Japan, Aug. 14, 1990, 2-215252
Int. Cl.[5] B23H *1/02*
U.S. Cl. 219—69.18 **25 Claims**



23. An electric discharge machining method for electric discharge machining a workpiece by repeatedly applying a machining pulse voltage in one polarity through a machining fluid across a machining gap formed between a machining electrode and the workpiece, the electric discharge machining method comprising:

a detection step for detecting impedance across the machining gap, and

a step for applying a prescribed number of pulses of the machining pulse voltage in the other polarity across the

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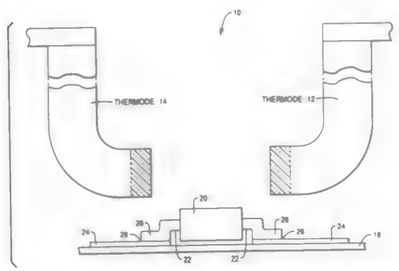
machining gap when it is detected that the impedance across the machining gap is at or below a prescribed value.

5,359,170

APPARATUS FOR BONDING EXTERNAL LEADS OF AN INTEGRATED CIRCUIT

Sy-Hwa Chen; Johnston W. Peeples, both of Columbia, and Terry Craps, Lexington, all of S.C., assignors to AT&T Global Information Solutions Company, Dayton, Ohio

Filed Feb. 18, 1992, Ser. No. 838,637
Int. Cl.[5] B23K *3/047*
U.S. Cl. 219—85.18 3 Claims



1. An apparatus for soldering each external lead of an integrated circuit to a respective conductor comprising:

a first thermode for converting a first electrical current into heat to effect a first temperature thereof including first and second adjacent strut members having first and second electrical connectors at top ends of first and second strut member and having a hot bar made of a refractory metal connected at lower ends of the first and second strut members to form a first soldering end;

a second thermode for converting a second electrical current into heat to effect a second temperature thereof including first and second adjacent strut members having first and second electrical connectors at top ends of the first and second strut members and having a hot bar made of the refractory metal connected at lower ends of the first and second strut members to form a first soldering end facing the first soldering end of the first thermode;

a first temperature sensor attached to the middle of the hot bar of the first thermode for sensing said first temperature of said first thermode;

a second temperature sensor attached to the middle of the hot bar of the second thermode for sensing said second temperature of said second thermode;

controller connected to said first and second temperature sensors and said first and second thermodes to limit said first and second electrical currents to maintain said first and second temperatures at first and second predetermined levels and then to reduce them in accordance with a temperature profile;

a first diamond coating covering a portion of said first thermode that provides a first durable layer that said heat is transferred through to solder bond a first external lead to its respective conductor; and

a second diamond coating covering a portion of said second thermode that provides a second durable layer that said heat is transferred through to solder bond a second external lead to its respective conductor;

said first and second diamond coatings being formed by a low pressure deposition process;

said first and second diamond coatings being located in physical contact with the first and second exterior leads while the first and second temperatures are being maintained to melt solder between the first and second exterior leads and their respective conductors; and

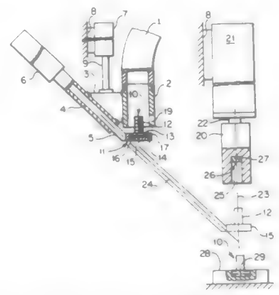
said first and second diamond coatings being located in physical contact with the first and second exterior leads while the first and second temperatures are being reduced to allow the solder to solidify and form bonds.

5,359,171

PARTS FEEDING DEVICE

Yoshitaka Aoyama, 20-11, Makitsukadai 2-cho, Sakai-shi, Osaka 590-01, Japan

Filed Feb. 20, 1992, Ser. No. 837,889
Claims priority, application Japan, Feb. 23, 1991, 3-114181
Int. Cl.[5] B23K *11/14*; B23Q *7/04*
U.S. Cl. 219—93 4 Claims



1. A parts feeding apparatus comprising:

a main feed rod reciprocating along a first axis and having a recess formed therein for receiving a part delivered to a transfer point along the first axis;

an auxiliary feed rod reciprocating within a sleeve along a second axis, which intersects the first axis, and forms an acute angle therewith;

means for supplying the part to a preselected pickup point along the second axis;

means fixed to an outward end of the auxiliary feed rod, for removably retaining the part, when the outward end is displaced to the pickup point;

means for connecting the sleeve to the part supplying means;

means for jointly displacing the sleeve and part supplying means along a direction parallel with the first axis;

means for extending the auxiliary rod relative to the sleeve, along the second axis, until the part is located at the transfer point along the first axis;

means for displacing the main feed rod to achieve engagement of the part by the main feed rod at the transfer point along the first axis; and

means located in the recess of the main feed rod for releasably retaining the part while the displacing mean continues movement of the retained part beyond the engagement point.

5,359,172

DIRECT TUBE REPAIR BY LASER WELDING

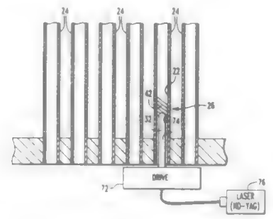
Larry M. Kozak, Greensburg; Richard A. Miller, N. Huntingdon, and Wesley G. Pope, Port Vue, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 30, 1992, Ser. No. 998,218
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.64 29 Claims

1. A method for repairing a wall of a tube having a degraded area, comprising the steps of:

placing a welding head into the tube at the degraded area;

activating and moving the welding head relative to the tube so as to melt a localized area that is advanced along a line of welding on a surface of the wall, thereby melting the degraded area over a first welding width along the line of welding, and at least to a depth of 80% of the thickness of the wall, allowing the localized area to cool following passage of said welding head; and,



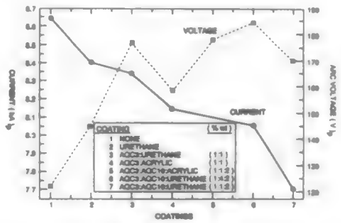
laterally advancing the line of welding and continuing said welding to melt the degraded area over a further width adjacent the first welding width, thereby successively melting and fusing the wall along linear sections.

5,359,174

THERMALLY CONDUCTIVE, INSULATING, ARC-QUENCHING COATING COMPOSITIONS FOR CURRENT INTERRUPTERS

James D. B. Smith, Monroeville; John J. Shea, Ross Township, Allegheny County; William R. Crooks, Mt. Lebanon, and Norman Davies, Penn Township, Westmoreland County, all of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Aug. 31, 1993, Ser. No. 114,726
Int. Cl.[5] H01H *33/04*, *9/30*
U.S. Cl. 200—144 C 20 Claims



1. An arc-quenching composition comprising:

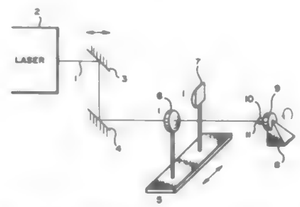
an effective amount of an inorganic nitride for arc-quenching, and a polymeric resinous binder selected from the group consisting of urethane, melamine and acrylic based resins.

5,359,173

SCANNING TECHNIQUE FOR LASER ABLATION

Kenneth L. Opdyke, Fairport, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation-in-part of Ser. No. 953,607, Sep. 29, 1992, abandoned. This application Jun. 22, 1993, Ser. No. 80,885
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.69 19 Claims



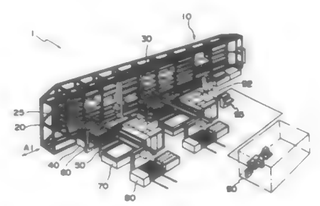
1. A method for photoablating a target surface comprising the steps of: a) directing a beam of pulsed UV radiation at a predetermined initial scanning area on the target surface; b) scanning said beam in a direction away from said predetermined initial scanning area to a first edge of the target surface; c) rotating the target in increments; d) returning the beam to said predetermined initial scanning area on the target surface; e) scanning the beam in a direction away from said predetermined initial scanning area to the edge opposing said first edge of said target surface; and repeating steps c), d) and e) in sequence such that the entire target surface is scanned.

5,359,175

LASER MACHINING SYSTEM

Naoomi Miyagawa, Gifu; Minoru Tashiro, Kani; Kazuyuki Toda, Aichi, and Yukiyasu Nakamura, Isazawa, all of Japan, assignors to Kiwa Giken Kabushiki Kaisha, Japan

Filed Mar. 31, 1992, Ser. No. 857,600
Claims priority, application Japan, Apr. 3, 1991, 3-096105; Apr. 30, 1991, 3-124452
Int. Cl.[5] B23K *26/02*
U.S. Cl. 219—121.82 26 Claims



1. A laser machining system comprising:

a laser machine for working a plate;

a stack yard for storing pallets;

a stacker crane for transferring pallets;

a loading station for loading a pre-worked plate from a pallet to the laser machine;

a returning means for returning a post-worked plate from the laser machine to a pallet; and

a transfer device having a pair of holders for transferring pre-worked and post-worked plates between said loading station, said laser machine, and said returning means.

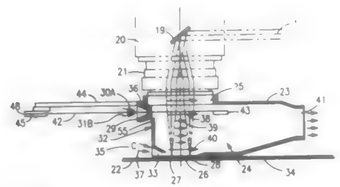
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5,359,176

OPTICS AND ENVIRONMENTAL PROTECTION DEVICE FOR LASER PROCESSING APPLICATIONS

Clifford M. Balliet, Jr., Endicott, and David E. Houser, Apalachin, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 2, 1993, Ser. No. 42,324
Int. Cl.[5] B23K *26/14*
U.S. Cl. 219—121.84 25 Claims



1. An optics and environmental protection device for laser processing applications in which a laser processing assembly including a laser beam source producing a laser beam is used to process a substrate, said laser processing assembly also including an optical focusing assembly including at least one lens located between said laser source and said substrate for focusing said laser beam on said substrate, said optics and environmental protection device comprising:

a housing defining a chamber, said housing being located between said optical focusing assembly and said substrate, said housing including a first opening located adjacent to said optical focusing assembly and for admitting said laser beam into said chamber, a second opening located adjacent to said substrate for allowing said beam to exit said chamber, a third opening adjacent to which a source of pressurized gas is located, and a fourth opening adjacent to which a vacuum source is located, wherein said pressurized gas directs smoke, vapor, particles, and other debris produced by said laser processing away from said optical focusing assembly and said substrate and toward said fourth opening in said housing and said vacuum source directs said smoke, vapor, particles and other debris away from said optical focusing assembly and said substrate, toward said fourth opening in said housing and removes them from said chamber, said pressurized gas and said vacuum source creating a cross-flow through said chamber.

5,359,177

MICROWAVE PLASMA APPARATUS FOR GENERATING A UNIFORM PLASMA

Masakazu Taki; Kenji Yoshizawa; Junichi Nishimae, and Keisuke Namba, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

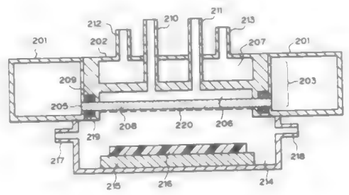
Filed Oct. 17, 1991, Ser. No. 778,569
Claims priority, application Japan, Nov. 14, 1990, 2-310364; Nov. 14, 1990, 2-310365
Int. Cl.[5] B23K *9/00*; H05H *1/46*
U.S. Cl. 219—121.43 43 Claims

1. A microwave plasma apparatus comprising:

a discharge chamber for generating a uniform plasma therein;

a dielectric plate including a planar surface and a side surface about a perimeter of the planar surface wherein the planar surface is a surface of said discharge chamber; and

a microwave circuit coupled to substantially the whole side surface of said dielectric plate, such that a microwave signal in said microwave circuit having an electric field component in a direction parallel to the side surface of said dielectric plate is coupled to substantially the whole side surface of the dielectric plate,



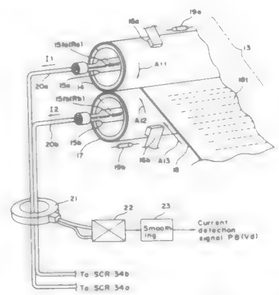
wherein a microwave electric field is uniformly formed within said discharge chamber to generate the uniform plasma.

5,359,178

APPARATUS FOR DETECTING TURN-ON STATE OF PLURAL HEAT LAMPS OF A THERMAL FIXING UNIT OF A COPYING MACHINE

Akio Kotani, Aichi, and Keiji Yoshida, Toyokawa, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 25, 1991, Ser. No. 797,695
Claims priority, application Japan, Nov. 26, 1990, 2-324618
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—486 6 Claims



1. An apparatus for detecting turn-on state of plural heaters, comprising:

electric power supply means for supplying electric power to said plural heaters;

control means, operably connected between said electric power supply means and said plural heaters, for controlling said electric power supply means to be turned on and off so that each of said plural heaters is turned on and off in a predetermined manner;

measuring means, operably connected between said control means and said plural heaters, for measuring the total current supplied from said electric power supply means to said plural heaters;

comparing means for comparing said total current measured by said measuring means with plural reference values different from each other and outputting signals for representing comparison results thereof; and

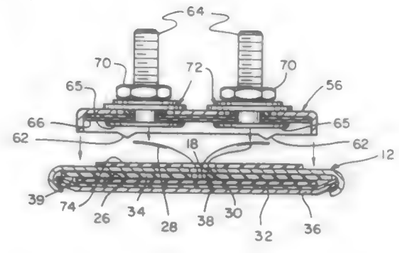
judging means for judging turn-on or off state of each of said plural heaters based on said signals outputted from said comparing means.

5,359,179

BAND AND STRIP HEATER CONSTRUCTION WITH VARIABLE LEAD/TERMINAL CONNECTION CAPABILITY

George B. Dealoge, Frontenac; Raymond H. Fiehler, St. Louis; Keith M. Gegg, Bel-Nor, and Steven M. Klump, St. Louis, all of Mo., assignors to Watlow Electric Manufacturing Company, St. Louis, Mo.

Continuation of Ser. No. 608,242, Nov. 2, 1990. This application Dec. 29, 1992, Ser. No. 999,459
Int. Cl.[5] H05B *3/58, 3/08*
U.S. Cl. 219—535 12 Claims



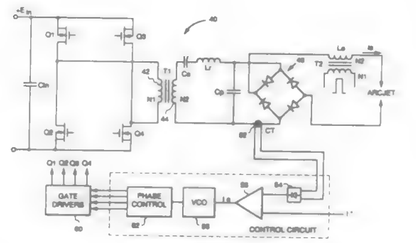
1. A band or strip heater assembly comprising a heating element having a plurality of end portions associated therewith, at least one sheet of insulation means positioned adjacent one side of said heating element, at least one sheet of insulation means positioned adjacent the opposite side of said heating element, a housing member enclosing said heating element and said insulation means, slot means extending through at least a portion of said insulation means located adjacent one side of said heating element and through at least a portion of said housing member for receiving said plurality of heating element end portions, the slot means associated with said insulation means being smaller than the slot means associated with said housing member, said plurality of heating element end portions extending through said slot means so as to be readily exposed exterior of said housing member after said heater assembly has been fully assembled and sealed, said plurality of heating element end portions being of the same gauge as that of the rest of said heating element and being of the same resistance per unit of length as that of the rest of said heating element, terminal connection means selectively attachable to said exposed heating element end portions after said heater assembly has been fully assembled and sealed, said terminal connection means including a downwardly extending peripheral flange having a terminal edge portion associated therewith positioned and located for making contact with said housing member when said terminal connection means is positioned for attachment thereto, said downwardly extending peripheral flange including a plurality of downwardly extending weld projections positioned and spaced along the terminal edge portion thereof for facilitating the welding of said terminal connection means to said housing member, said weld projections extending below the terminal edge portion of said peripheral flange so as to make the first contact with said housing member when said terminal connection means is positioned for attachment thereto, each downwardly extending weld projection being meltable during a welding process so as to form a fusion bond thereat with said housing member.

5,359,180

POWER SUPPLY SYSTEM FOR ARCJET THRUSTERS

John N. Park, Rexford; Robert L. Steigerwald, Burnt Hills, both of N.Y.; George D. Goodman, Phoenixville, Pa., and David B. Stewart, Cranbury, N.J., assignors to General Electric Company, East Windsor, N.J.

Filed Oct. 2, 1992, Ser. No. 956,131
Int. Cl.[5] B23K *9/06, 9/073*
U.S. Cl. 219—121.54 5 Claims



1. An arcjet/power supply arrangement, comprising:

a source of direct voltage;

an arcjet including an electrical input port requiring a known power;

a plurality of power converters coupled to said source of direct voltage for being energized thereby, each of said power converters including an output port at which a smoothed direct current is produced at a predetermined power less than said known power, each of said power converters also including (a) bridge switching means for converting said direct voltage to an alternating voltage, (b) transformer means including a primary winding coupled to said switching means and also including a secondary winding, for transforming said alternating voltage for providing isolation and impedance transformation between said source of direct voltage and said output port, (c) a resonant circuit coupled to at least one of said primary and secondary windings for creating a sinusoidal alternating current from said alternating voltage, (d) rectifying means coupled for receiving said alternating current, for rectifying said alternating current for producing direct current, and (e) inductance means coupled to said rectifying means for smoothing said direct current to produce said smoothed directed current at said output port, said plurality of power converters being greater, by an integer number, than the quotient of said known power divided by said predetermined power; and

paralleling and coupling means coupled to said output port of each of said power converters and to said electrical input port of said arcjet, for combining said smoothed direct currents from said plurality of power converters for application to said electrical input port of said arcjet.

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5,359,181

DEVICE FOR TRANSPORTING RECORDING MEDIA IN PRINTERS OR PHOTOCOPIERS

Rudolf Waechtler, Hohenpolding; Edmund Creutzmann, Markt Schwaben, and Walter Kopp, Taufkirchen, all of Fed. Rep. of Germany, assignors to Siemens Informationssysteme Aktiengesellschaft, Paderborn, Fed. Rep. of Germany

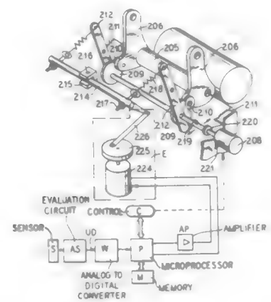
PCT No. PCT/EP90/02089, § 371 Date Aug. 3, 1992, § 102(e) Date Aug. 3, 1992, PCT Pub. No. WO91/11755, PCT Pub. Date Aug. 8, 1991

PCT Filed Dec. 4, 1990, Ser. No. 917,082

Claims priority, application European Pat. Off., Feb. 2, 1990, 90102129.5

Int. Cl.[5] G03G *15/20*

U.S. Cl. 219—216 **10 Claims**



1. A device for transporting recording media in printers or photocopiers, comprising:

a) a counter roller and a feed roller mounted movably relative to the counter roller, between said rollers the recording medium is transported by friction, an electric motor connected to drive at least one of the rollers,

b) lateral bearing elements on which said feed roller is mounted for rotation, means for supporting said counter roller for rotation,

c) a guide bar mounted as a balance beam spaced from and parallel to said feed roller and so as to be pivotable about an axis of rotation relative to said feed roller,

d) spring elements which are coupled to said guide bar and which bias said lateral bearing elements of the feed roller and are arranged on each side of the axis of rotation of said guide bar, and

e) means for coupling said spring elements to said feed roller in order to press the feed roller against the counter roller in a force-compensating manner.

5,359,182

WIRELESS TELEPHONE DEBIT CARD SYSTEM AND METHOD

Donald L. Schilling, Sands Point, N.Y., assignor to InterDigital Technology Corporation, Wilmington, Del.

Filed Oct. 6, 1992, Ser. No. 956,851

Int. Cl.[5] G06K *5/00*

U.S. Cl. 235—380 **15 Claims**

1. A wireless telephone debit card system comprising:

a radio telephone including:

means for reading a credit amount and a telephone number of a debit card;

memory means for scoring the credit amount and the telephone number on the debit card;

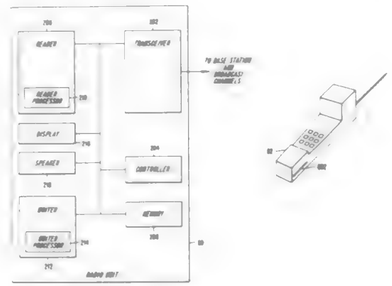
processing means for generating a credit signal from the credit amount and from the telephone number;

means for communicating, using radio waves, the credit signal; and

changing means for changing the telephone number of the debit card and for changing the credit amount of the debit card;

a base station, responsive to receiving the credit signal for relaying the credit signal over a communications channel;

an end station having a telephone switch, responsive to receiving the credit signal, for generating a first control signal to allocate the credit amount of the debit card to said radio telephone, and to set a telephone number of said radio telephone to the telephone number of the debit card with a communication path through said base station, and



for generating a second control signal for changing the credit amount and the telephone number of the debit card;

wherein said radio telephone is responsive to the first control signal for allocating the credit amount of the debit card to said radio telephone, and for setting a telephone number of said radio telephone to the telephone number of the debit card; and

wherein the changing means of said radio telephone is responsive to the second control signal for changing the credit amount and the telephone number of the debit card.

5,359,183

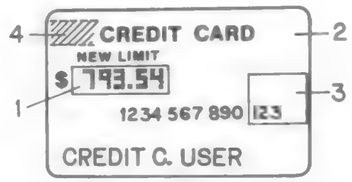
PAYMENT CARD WITH DISPLAY

Rafael Skodlar, 1585 Keesling Ave., San Jose, Calif. 95125

Filed Apr. 6, 1992, Ser. No. 864,217

Int. Cl.[5] G06K *19/06*

U.S. Cl. 235—493 **11 Claims**



1. A payment card for enabling the operation of vending machines by a user, comprising:

a substantially rectangular flat card including first magnetic data storage means for storing information including value data including a first value, and means for displaying said first value; said first value representing an operating limit for said vending machines, said means for displaying said first value including a magnetically controllable non-volatile display storage means having a transparent front window and an opaque background, said display storage means being controllable by externally applied magnetic fields for replacing said first value with a second value.

5,359,184

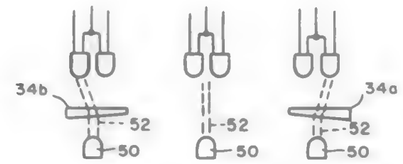
OPTICAL ENCODING UTILIZING SELECTIVELY REFRACTED LIGHT

John A. Froehlich, West Readding, Conn., and Eric S. Anderson, Pleasantville, N.Y., assignors to Medical Laboratory Automation, Inc., Pleasantville, N.Y.

Division of Ser. No. 272,159, Nov. 16, 1988, Pat. No. 5,098,661. This application Nov. 8, 1991, Ser. No. 790,685

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—454 **15 Claims**



1. Apparatus for use with an object which travels along a predetermined path, said apparatus including:

a light source for providing a light beam;

means for detecting light from the light source and for providing an output signal representative thereof;

a flange made of a transparent material and attached to the object so as to pass between the light source and the detecting means as the object travels along its path, the flange including:

at least one encoding element for refracting light from the light source to said means for detecting so as to provide a photo-optically detectable code for the object, each encoding element refracting light in a different direction for each code state of the element, light being unrefracted if no element is present; and

wherein said means for detecting includes a separate light detecting element for each of said code states, light being refracted to the detecting element by an encoding element in the corresponding code state.

5,359,185

CHROMATIC RANGING METHOD AND APPARATUS FOR READING OPTICALLY READABLE INFORMATION OVER A SUBSTANTIAL RANGE OF DISTANCES

George E. Hanson, Cedar Rapids, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa

Continuation-in-part of Ser. No. 913,693, Jul. 14, 1992, abandoned, and a continuation-in-part of Ser. No. 881,096, May 11, 1992, abandoned. This application Sep. 14, 1992, Ser. No. 945,174

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—472 **9 Claims**

1. An apparatus for focusing an image of optical information over a substantial range of distances, comprising:

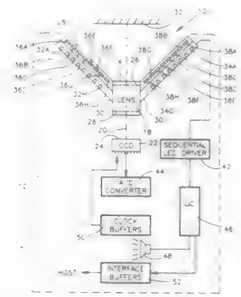
(a) a housing having an opening for facing optical information;

(b) optical means, disposed in said housing, for refracting images of optical information of varying wavelengths to different focal points along a longitudinal axis at a predetermined reading position;

(c) illumination means for sequentially illuminating optical information with light of different wavelengths;

(d) reading sensor means, disposed at said predetermined reading position and having a light receiving plane, for converting an image of optical information into an electrical signal;

(e) control means for determining and decoding the reflected light image formed by that wavelength of light from said illumination means which produces the best focus; and



(f) means for producing a digital information set corresponding to the image of said optical information.

5,359,186

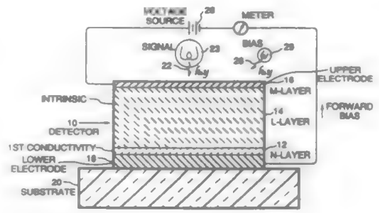
PARTICLES HAVING A POTENTIAL BARRIER FORMED IN A REGION OF DEFECTS IN A REGION OF DEFECTS

Stephen J. Fonash, State College; Jing-ya Hou, University Park, both of Pa., and Francisco A. Rubinelli, Santa Fe, Argentina, assignors to Pennsylvania State University, University Park, Pa.

Continuation-in-part of Ser. No. 888,769, May 22, 1992, abandoned. This application Feb. 26, 1993, Ser. No. 23,846

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—214 PR **17 Claims**



1. A particle detector for detecting ionizing particles, the detector comprising:

(i) a substrate;

(ii) first electrode means formed on said substrate;

(iii) a body portion supported by said first electrode, said body portion including at least two monolithic, contiguous amorphous silicon regions a first region of which is disposed proximate said first electrode means and is doped to be of a first conductivity type and a second region of which is disposed on said first region and is an intrinsic region, and wherein a region of defect states exist proximate the interface between said first and said second regions;

(iv) second electrode means formed over said body portion; and

(v) means to apply a forward bias voltage across said detector between said first and said second electrode means, wherein said voltage is greater than the flat band voltage of said detector and is sufficient to bias the detector into a space charge limited regime in which charge carriers, injected at the first electrode, are blocked by a potential barrier formed in the region of defects, such that, when an ionizing particle penetrates the detector, the potential

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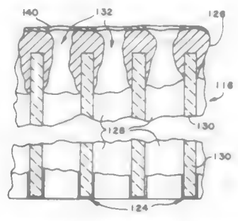
barrier is modulated to allow previously blocked charge carriers to pass over the barrier and to move across the detector and be collected by the second electrode thereby providing an enhanced signal in response to the ionizing particle penetrating the detector.

5,359,187

MICROCHANNEL PLATE WITH COATED OUTPUT ELECTRODE TO REDUCE SPURIOUS DISCHARGES

Robert E. Weiss, San Francisco County, Calif., assignor to Intevac, Inc., Santa Clara, Calif.

Filed Mar. 18, 1993, Ser. No. 33,514
Int. Cl.[5] H01V *31/50*
U.S. Cl. 250—214 VT **13 Claims**



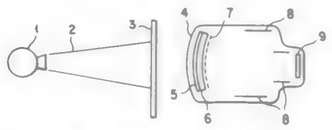
1. In a microchannel plate comprising a multiplicity of channels to multiply the electron output of electrons entering therein, an output electrode at the output end of said microchannel plate, the improvement comprising a dielectric binding coating having a thickness of approximately 700 to approximately 1000 angstroms on said output electrode to reduce spurious discharges therefrom in a vacuum environment.

5,359,188

X-RAY IMAGE INTENSIFIER

Hiroshi Kubo, Utsunomiya; Atsuya Yoshida, Ootawara; Hiroki Tanaka, Kyoto, and Shin Tsuchida, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki and Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

Filed Mar. 31, 1993, Ser. No. 40,645
Claims priority, application Japan, Mar. 31, 1992, 4-074810
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 VT **16 Claims**



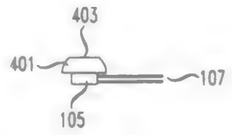
1. An X-ray image intensifier comprising:
an envelope having an input window consisting essentially of an aluminum alloy; and
an input phosphor screen arranged in said envelope to oppose said input window, and including a substrate, an input phosphor layer formed on said substrate, and a photocathode formed on said input phosphor layer,
wherein said aluminum alloy contains 3 to 6 wt % of Mg and 0.01 to 0.5 wt % of Zr.

5,359,189

INFRARED COLLECTOR HAVING A FLATTENED CONVEX SURFACE

Joseph P. Savicki, Clinton, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 29, 1993, Ser. No. 37,860
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—216 **7 Claims**



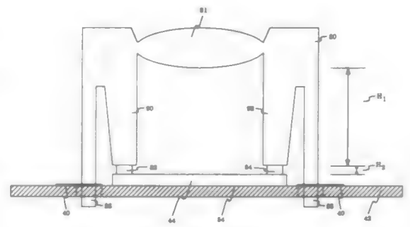
1. A collector for receiving infrared communications signals comprising:
a non-directive concentrator for receiving and concentrating signals including infrared communications signals, the concentrator having a flattened convex surface which is substantially transparent to infrared radiation; and
infrared radiation detection means for receiving the concentrated infrared communications signals from the concentrator.

5,359,190

METHOD AND APPARATUS FOR COUPLING AN OPTICAL LENS TO AN IMAGING ELECTRONICS ARRAY

Eoin P. O'Regan; Paul A. Coburn; Robert P. Nash; Pat. T. O'Donnell, all of Cork, Ireland, and Peter B. Denver, Edinburgh, Scotland, assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 999,095, Dec. 31, 1992, abandoned.
This application Apr. 11, 1994, Ser. No. 225,816
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—216 **10 Claims**



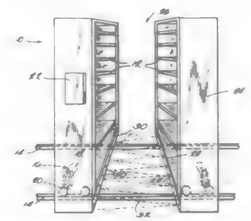
1. A computer system, comprising:
processor subsystem comprising a central processing unit and an input/output circuit;
imaging subsystem coupled to the input/output circuit, the imaging subsystem comprising a tape automated bonding (TAB) tape, an integrated circuit die having an imaging circuit and at least one z-height bump, and an optical lens for transferring an image onto the imaging circuit and for engaging the at least one z-height bumps, the imaging subsystem generating imaging information corresponding to an image scene received by the optical lens;
display device coupled to the input/output circuit, the display device receiving the imaging information and rendering the image scene.

5,359,191

CROSS-AISLE PHOTO-DETECTOR FOR MOBILE STORAGE SYSTEM HAVING A LIGHT DETECTOR MOUNTED TO THE MOVABLE STORAGE UNIT

Patrick J. Griesemer, Greenfield, and William B. McHenry, Sun Prairie, both of Wis., assignors to Spacesaver Corporation, Fort Atkinson, Wis.

Filed Apr. 16, 1993, Ser. No. 48,619
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—221 **17 Claims**



1. In a mobile storage system including at least a first movable storage unit with a prime mover adapted to move the shelving unit along a path of movement, and at least one blocking object, such as a second movable storage unit, stationary storage unit or wall positioned on said path, a presence detector for detecting the presence of an obstacle in said path of movement and discontinuing movement of the first unit while the obstacle is in said path of movement, said presence detector comprising:
at least one light source mounted to one of said first unit and said blocking object so as to provide light into said path of movement;
at least one light detector mounted to the other of said first unit and said blocking object, and positioned to receive light from said at least one light source; and
a control unit connected to said light detector and receiving a signal from said light detector, said signal indicating whether or not said light detector is receiving light from said light source, said control unit disabling said prime mover from moving said movable shelving unit along said path when said signal is received from said light detector indicating that light is not being received from said light source, which in turn indicates that said obstacle is in said path.

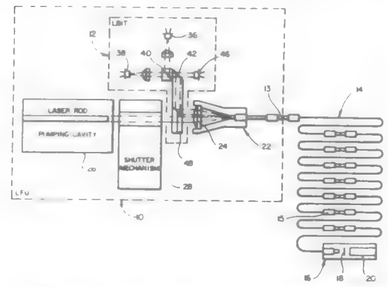
5,359,192

DUAL-WAVELENGTH LOW-POWER BUILT-IN-TEST FOR A LASER-INITIATED ORDNANCE SYSTEM

Michael S. Williams, Half Moon Bay; Jeffrey M. Moser, Oakland, and Helen V. Gourley, San Francisco, all of Calif., assignors to Quantic Industries Inc., San Carlos, Calif.

Filed Jun. 10, 1992, Ser. No. 896,218
Int. Cl.[5] G02B *5/14*
U.S. Cl. 250—227.23 **29 Claims**

1. In a laser ordnance initiation system having a laser firing channel, including a fiber optic conduit coupling a laser firing unit to a laser initiated device for firing the laser initiated device using an initiating laser, apparatus for testing optical integrity of the laser ordnance initiation system, comprising:
means associated with the laser initiated device for providing optical spectrally-dependent reflection of light back into the fiber optic conduit;
means associated with the laser firing unit for illuminating the fiber optic conduit and for detecting the intensity of light reflected through the fiber optic conduit within a plurality of wavelength bands in which said means associated with the laser initiated device presents different degrees of reflectance; and
means for processing detected intensities of reflected light within said plurality of wavelength bands for verifying the optical continuity of the laser firing channel and presence



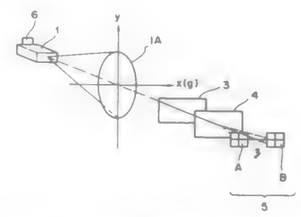
of the laser initiated device at a far terminus of the laser firing channel.

5,359,193

TALBOT'S INTERFERENCE TYPE OPTICAL ENCODER

Masaru Nyui, and Masahiko Igaki, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 28, 1993, Ser. No. 82,301
Claims priority, application Japan, Jun. 30, 1992, 4-173250
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—237 G **7 Claims**



1. An optical encoder for obtaining information on a displacement of a diffraction grating by detecting light beams via the diffraction grating, said optical encoder comprising:
irradiating means comprising a semiconductor laser for emitting light beams;
a first diffraction grating for receiving the light beams emitted from said irradiating means; and
a second diffraction grating onto which interference fringes produced by beams of diffracted light of said first diffraction grating on the basis of the Talbot's interference principle are projected,
wherein said semiconductor laser is disposed such that a vertical transverse mode of the light beams emitted is set in a direction substantially vertical to a moving direction of said first diffraction grating.

5,359,194

X-RAY CT MEASUREMENT OF SECONDARY (VUGULAR) POROSITY IN RESERVOIR CORE MATERIAL

Robert M. Moss, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 877,512, May 1, 1992, abandoned. This application Sep. 20, 1993, Ser. No. 123,672
Int. Cl.[5] G01N *23/087*; G01V *5/00*
U.S. Cl. 250—255 **6 Claims**

1. A method for measuring the fractional contribution of

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secondary porosity in reservoir core material from X-ray CT measurements, comprising the steps of:

providing an earthen core;

providing an X-ray computed tomography (CT) scanner for scanning said core and generating signals corresponding to each scan;

scanning said core and generating said signals;

transferring the signals from the CT scanner to an image analysis computer for processing;

translating a CT number image from said image analysis computer, in Hounsfield Units (HU), into an estimated porosity image using an equation that relates porosity to the CT number image as given below;

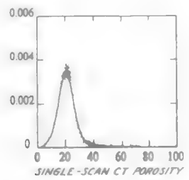
$$H_c=(1-\phi)*H_r+\phi*(S_f*H_f+S_g*H_g)$$

where

H_c=CT number (Hounsfield Units) of the core

H_r=CT number of the zero porosity rock matrix

ϕ=core porosity



H_f=CT number of the fluid in the core

H_g=CT number of the gas in the core

S_f and S_g=the fractional saturations of the fluid and the gas in the core, respectively;

selecting a region of interest within the estimated porosity image to create a porosity histogram of the porosity distribution within that region;

describing a gaussian distribution the shape of which approximates the peak of the porosity histogram caused by the intragranular matrix component of said earthen core;

fitting the described gaussian distribution to said peak and indentifying the secondary porosity as any areas of the porosity histogram whose porosity is more than three standard deviations above the mean of the fitted gaussian distribution; and

defining the fractional contribution of secondary porosity to the total pore volume as a ratio of the area under the porosity histogram that has been identified as secondary porosity to the total area under the porosity histogram.

5,359,195

GAS HOLD UP TOOL FOR USE IN CASED WELL BOREHOLES

Michael L. Gartner, Austin; Paul L. Sinclair, Clear Lake Shore, and Christopher A. Schnoor, Austin, all of Tex., assignors to Halliburton Logging Services, Inc., Houston, Tex.

Filed Feb. 26, 1992, Ser. No. 841,949

The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.

Int. Cl.[5] G01V *5/12*

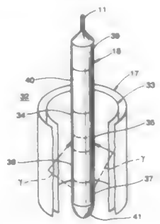
U.S. Cl. 250—269.1 **21 Claims**

1. A system for determining the percentage of gas by volume in mixed phase well fluids produced in a cased well borehole and flowing upwardly through a metal casing comprising:

(a) a source of relatively low energy gamma rays, the energy of said gamma rays being chosen such that there is a small probability that a gamma ray from said source could penetrate the metal casing and be scattered back through the metal casing by material outside the casing;

(b) a scintillation detector of gamma radiation and cooperative shielding for preventing direct irradiation of said detector by said source while allowing the placement of said detector in close proximity to said source to allow detection of gamma rays emitted by said source and scattered by materials inside said metal casing;

(c) means for counting gamma rays detected by said detector and storing count rate signals thereof; and



(d) means for processing said count rate signals according to a predetermined relationship to derive a measurement of the percentage of gas by volume in the well fluid in the vicinity of said source.

5,359,196

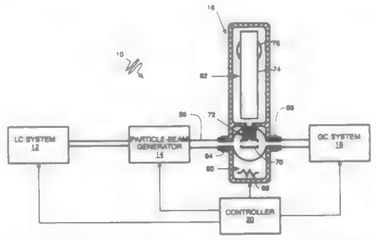
MASS SPECTROMETRY WITH GAS COUNTERFLOW FOR PARTICLE BEAM

Robert T. Whitt, Carrollton, Tex., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 24, 1993, Ser. No. 66,369

Int. Cl.[5] H01J *49/04*

U.S. Cl. 250—288 **7 Claims**



1. A method of analyzing an initially non-ionized particle beam, said method comprising the steps of:

generating an initially non-ionized particle beam;

flowing gas counter to said particle beam while said particle beam is non-ionized;

ionizing said non-ionized particle beam so that it becomes an ionized particle beam;

directing said ionized particle beam into a mass analyzer; and

mass analyzing said ionized particle beam.

5,359,197

APPARATUS AND METHOD OF ALIGNING ELECTRON BEAM OF SCANNING ELECTRON MICROSCOPE

Fumio Komatsu, Fuchu, and Motosuke Miyoshi, Minato, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 16, 1993, Ser. No. 92,466

Claims priority, application Japan, Jul. 16, 1992, 4-212014

Int. Cl.[5] G01N *23/225*

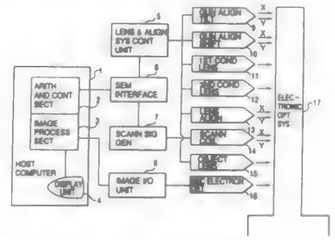
U.S. Cl. 250—310 **32 Claims**

1. A gun alignment control apparatus for an scanning electron microscope, comprising:

first control means for controllably setting either one of a condenser lens and a scan coil to first and second conditions, respectively;

image inputting means for inputting first and second filament images obtained under the first and second conditions, respectively;

image processing means for processing the first and second filament images to obtain first and second binarized images, respectively;



histogram processing means for processing the first and second binarized images to obtain first and second histograms, respectively;

coordinate detecting means for detecting first and second coordinates at which the first and second histograms become maximum in frequency, respectively; and

gun alignment coil control means for controlling exciting current for a gun alignment coil so that the distance between the two coordinates lies within an allowable range.

5,359,198

SCINTILLATION DEVICE USABLE FOR MEASURING ATTENUATION THROUGH TRANSMISSION TOMOGRAPHY

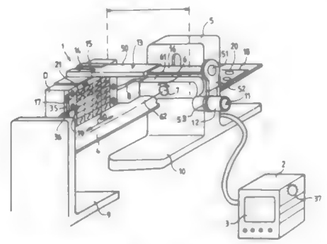
Michel Bourguignon, Sceaux; Marie-Michèle Vassiliou, Paris, and Francois de la Barre, Sevres, all of France, assignors to Sopha Medical and Commissariat a l'Energie Atomique, both of Paris, France

Filed Mar. 27, 1992, Ser. No. 820,613

Claims priority, application France, Jul. 28, 1989, 89 10225

Int. Cl.[5] G01T *1/166, 1/20*

U.S. Cl. 250—363.07 **8 Claims**



1. A scintillation device comprising a gamma camera that can be used to measure the attenuation by transmission, through a body to be examined, of a gamma radiation emitted by a radioactive point source kept in a state of correspondence with a detector of said gamma camera, said detector being deprived of a collimator and being placed on a first side of the body, opposite in relation to another side of the body where the point source is placed, said body being shifted by a relative rotational motion with respect to the assembly formed by said point source and said detector, wherein said gamma camera is mounted on a movable structure, this structure being capable of making the gamma camera rotate in a vertical plane about the body positioned in an elongated horizontal position on a support, and wherein this structure also carries along the point source of gamma radiation, and means to weight the measured attenuation as a function of the source-detector distance and as a function of the plane character of the detector.

5,359,199

SPECIFIC MODIFICATION OF THE SURFACES OF SOLIDS IN THE NANOMETER RANGE BY LOCAL DELAMINATION, AND THE STORAGE OF INFORMATION UNITS

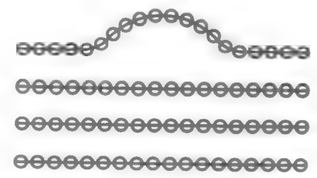
Harald Fuchs, Carlsberg, and Thomas Schimmel, Hof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 4, 1992, Ser. No. 924,487

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1991, 4126497

Int. Cl.[5] H01J *37/30*

U.S. Cl. 252—492.3 **10 Claims**



1. A process for the specific, location-selective and time-stable modification of the surface of a solid in the nanometer range without destruction of the atomic order of the surface at the location of the structure or in its vicinity, which comprises causing a local delamination of at least one layer of the surface having a layered structure through the action of a local probe which exerts an attractive force, which is limited spatially and in time, onto the surface, forming a time-stable, local elevation with a lateral elongation in the nanometer range.

5,359,200

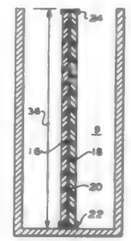
RADIATION DOSIMETER

J. Michael Donahue, Oakland, N.J.; David F. Lewis, Monroe, Conn., and Sotiri A. Papoulias, Florham Park, N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Oct. 22, 1993, Ser. No. 141,173

Int. Cl.[5] G01T *1/02*

U.S. Cl. 250—475.2 **7 Claims**



1. A radiation dosimeter system capable of measuring the intensity of radiation comprising: a watertight cassette containing

a first panel;

a second panel assembled to the first panel defining said watertight cassette; and

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a removable radiation-sensitive layer which is sandwiched between the first panel and the second panel;

said watertight cassette residing in a water-filled canister that rotates.

5,359,201

AFTERTREATMENT APPARATUS FOR IMAGEWISE EXPOSED PRINTING PLATES

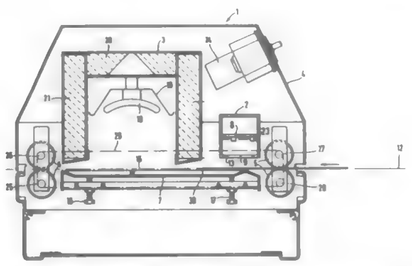
Rudolf Zertani, Mainz; Helmuth Haberhauer, Taunusstein, and Norbert Kraemer, Heidenrod, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 28, 1993, Ser. No. 98,065

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1992, 4225831

Int. Cl.[5] G03F *7/20, 7/38*

U.S. Cl. 250—492.1 **22 Claims**



1. An aftertreatment apparatus for treating imagewise exposed printing plates as they are conveyed, said apparatus comprising means for conveying said printing plates in a direction of conveyance; an exposure station comprising a first housing having upper and lower portions, a linear LED arrangement disposed within said upper portion of said first housing, a light scattering plate comprising said lower portion of said first housing, and means for varying the luminosity of said linear LED arrangement over a luminous power range of 0 to 100%, wherein said linear LED arrangement is of sufficient extent to expose the full width of said printing plates as they are conveyed; and a heating station located immediately downstream of said exposure station in the direction of conveyance, said heating station comprising an insulated housing with an open bottom and an IR radiation source disposed within said insulated housing; wherein said printing plates are conveyed beneath said exposure station and between said heating station and a reflector table.

5,359,202

ELECTRON BEAM EXPOSURE APPARATUS EMPLOYING BLANKING APERTURE ARRAY

Hiroshi Yasuda; Yoshihisa Ooae, and Tomohiko Abe, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 23, 1993, Ser. No. 95,424

Claims priority, application Japan, Jul. 24, 1992, 4-198615

Int. Cl.[5] H01J *37/30*

U.S. Cl. 250—492.2 **7 Claims**

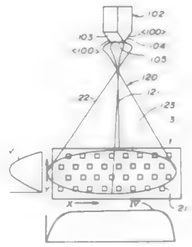
1. An electron beam exposure apparatus which exposes a surface of an object, the electron beam exposure apparatus comprising:

an electron gun which emits an electron beam;

a blanking aperture array to which the electron beam is directed and including a plurality of two-dimensionally arranged blanking apertures for selectively deflecting the electron beam passing through the blanking apertures in a predetermined direction so as to shape the electron beam into a plurality of electron beams passing through the blanking aperture array;

deflection means for deflecting the plurality of electron beams passing through said blanking aperture array; and

electron beam control means for controlling the plurality of electron beams passing through said blanking aperture array so as to irradiate and expose the surface of the object,



said electron gun having a needle shaped chip which comprises:

a pair of sloping surfaces which are <100> faces; and

a vertex portion defining a tip end of the needle shaped chip and connecting the sloping surfaces, the vertex portion forming an inverted V-shape when viewed in a direction in which the vertex portion extends.

5,359,203

LASER OLB APPARATUS AND METHOD OF MOUNTING SEMICONDUCTOR DEVICE

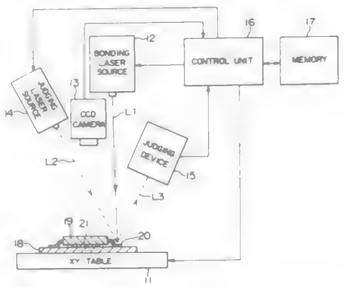
Mitsuya Hashii; Haruo Shimamoto, and Hideya Yagoura, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1993, Ser. No. 70,242

Claims priority, application Japan, Jun. 3, 1992, 4-142809

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—561 **23 Claims**



1. A laser OLB apparatus comprising: an XY table; a bonding laser source for irradiating, with bonding laser beams, bonding parts between bonding lands of a substrate and leads of a semiconductor device that are located on the substrate, thus bonding said bonding parts;

a light source for illuminating the bonding part between each of the leads and the bonding lands with illumination light for determining bonding conditions;

a device for determining the bonding conditions of the bonding parts from the light reflected from the bonding parts; and

a control unit for controlling said XY table and said bonding laser source in response to a determination made by said device.

5,359,204

SWITCHING DEVICE

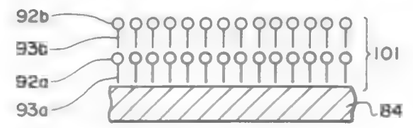
Ken Eguchi, Atsugi; Kunihiro Sakai, Yamato; Haruki Kawada, Atsugi; Hiroshi Matsuda, Yokohama; Yuko Morikawa, Kawasaki; Takashi Nakagiri, Tokyo; Takashi Hamamoto, Yokohama, and Masaki Kuribayashi, Isagi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 662,389, Feb. 19, 1991, abandoned, which is a continuation of Ser. No. 106,271, Oct. 9, 1987, abandoned. This application Oct. 21, 1992, Ser. No. 964,481

Claims priority, application Japan, Oct. 13, 1986, 61-243684; Dec. 24, 1986, 61-309431; May 27, 1987, 62-133157

Int. Cl.[5] H01L *49/02*

U.S. Cl. 257—2 **72 Claims**



1. A switching device comprising an electrode-insulator-electrode structure supported on a substrate having a supporting function, said insulator having a periodical layer structure from 10Å to 1000Å in thickness of an organic insulator comprising a molecule having Pi electron conjugated system, one of said electrodes, which is close to said substrate as compared to the other electrode, being selected from a noble metal or an oxide conductor, said device having a first memorable electrical state exhibiting a first resistance and a second memorizable electrical state exhibiting a higher second resistance in a voltage region below a first threshold voltage and above a different second threshold voltage, said device being switchable from the first electrical state to the second electrical state upon application of a voltage of one polarity equal to or exceeding said first threshold voltage and switchable from the second electrical state to the first electrical state upon application of an opposite polarity voltage equal to or exceeding the second threshold voltage.

5,359,205

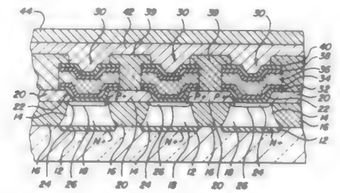
ELECTRICALLY ERASABLE MEMORY ELEMENTS CHARACTERIZED BY REDUCED CURRENT AND IMPROVED THERMAL STABILITY

Stanford R. Ovshinsky, Bloomfield Hills, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 789,234, Nov. 7, 1991. This application May 8, 1992, Ser. No. 880,763

Int. Cl.[5] H01L *45/00*

U.S. Cl. 257—3 **32 Claims**



1. A directly overwritable, single-cell memory element comprising:

a volume of memory material defining a single cell memory element, said memory material including at least one chalcogen element and at least one transition metal element and said memory material constituting means for assuming at least two electrically detectable values of resistance with the ability to be set directly to one of said detectable values without the need to be set to a specific starting or erased resistance value, regardless of the previous resistance value of said material in response to a selected electrical input signal so as to provide said single cell with data storage capabilities; and

means for applying an input signal to set said memory material to a selected resistance value; said input means consisting of two spacedly disposed contacts, said two contacts providing the terminals for reading information stored in and writing information into said memory material.

5,359,206

THIN FILM TRANSISTOR SUBSTRATE, LIQUID CRYSTAL DISPLAY PANEL AND LIQUID CRYSTAL DISPLAY EQUIPMENT

Hideaki Yamamoto, Tokorozawa; Haruo Matsumaru, Tokyo; Yasuo Tanaka, Koganei; Ken Tsutsui, Tokyo; Toshihisa Tsukada, Musashino; Kazuo Shirahashi, Mobara; Akira Sasano, Tokyo, and Yuka Matsukawa, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

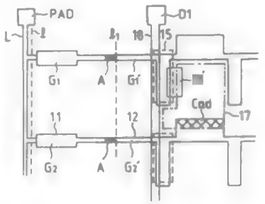
PCT No. PCT/JP90/01039, § 371 Date Apr. 15, 1991, § 102(e) Date Apr. 15, 1991, PCT Pub. No. WO91/02999, PCT Pub. Date Mar. 7, 1991

PCT Filed Aug. 13, 1990, Ser. No. 674,328

Claims priority, application Japan, Aug. 14, 1989, 1-207792; Nov. 22, 1989, 1-302120; Nov. 22, 1989, 1-302122

Int. Cl.[5] H01L *29/04, 31/036, 27/01, 23/48*

U.S. Cl. 257—59 **17 Claims**



1. A thin film transistor substrate at least having a plurality of gate terminals disposed on an insulative substrate, a plurality of gate bus-lines electrically connected therewith, a plurality of signal bus-lines disposed in intersection with said plurality of gate bus-lines, a plurality of thin film transistors arranged in a matrix-like form and a plurality of thin film capacitances, wherein each of said gate terminals has a layer at least comprising one of chromium and tantalum, a gate bus-line pattern constituted with said gate bus-lines, a plurality of gate electrodes of said thin film transistors and one of the electrodes of each of said plurality of thin film capacitances are made of one of aluminum and a metal mainly composed of Al, said gate terminals being made of a material different from a material of the gate electrodes, and a desired portion at the surface of the gate bus-line pattern is covered with an anodic oxidized film.

5,359,207

WEDGE SCANNER UTILIZING TWO DIMENSIONAL SENSING ARRAYS

William D. Turner, San Marino, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 29, 1993, Ser. No. 158,676

Int. Cl.[5] H01L *27/14*

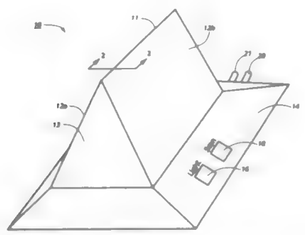
U.S. Cl. 257—81 **7 Claims**

1. A scanner for capturing the image of pages in a book, said scanner comprising:

a substantially wedge shaped member having an apex and a pair of angularly splayed surfaces extending from said apex, upon which a partially opened book may be sup-

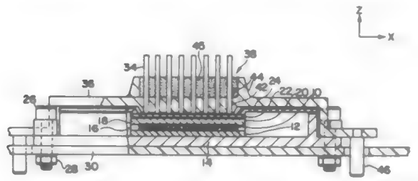
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ported with its spine adjacent said apex and its opposing pages adjacent said surfaces;
a 2-dimensional detector located upon each of said surfaces for collecting image data;



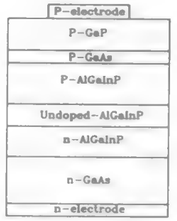
a light source for illuminating the opposing pages through said detector; and
read-out circuitry connected to said detector for obtaining image data collected by said detector.

5,359,208
CHIP PACKAGE WITH MICROLENS ARRAY
Kazuo Katsuki, Osaka, Japan; John C. Connolly, Monmouth Junction, N.J.; Thomas T. Hitch, Lawrenceville, N.J., and Robert R. Demers, Cranbury, N.J., assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan
Filed Feb. 26, 1993, Ser. No. 23,598
Int. Cl.[5] H01L *31/12*
U.S. Cl. 257—82 **12 Claims**



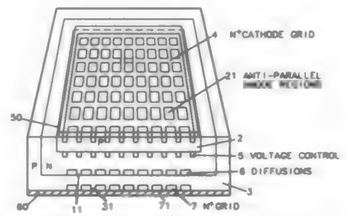
1. A chip package holding a light-emitting array integrated circuit chip having an electrical-signal input/output section, and an optical-signal output section which has a predetermined number of bit positions, said chip package comprising:
a microlens array provided on said chip and having multiple microlenses each corresponding to a respectively different one of said bit positions and which convey optical control and data signals in parallel from the optical-signal output section of the processor chip;
a component provided on an upper part of said microlens array and adapted to fix a plurality of optical-signal transmitting elements in a predetermined spatial position, to convey, through said optical-signal transmitting elements, multiple parallel control bits and data bits of optical signals to be output from said processor chip via said microlens array and said optical-signal output section; and
adjusting means for adjusting one of the component and the processor chip in position;
wherein the processor chip includes means, coupled to the electrical signal input/output section, for causing the optical-signal output section to produce optical signals at predetermined locations in the optical signal output section, while the adjusting means is adjusting the position of the one of the component and the processor chip, to facilitate alignment of the optical signal transmitting elements with the optical-signal output section.

5,359,209
EFFICIENT LIGHT EMITTING DIODES WITH MODIFIED WINDOW LAYERS
Kuo-Hsin Huang, 10-1F, No. 36, Sec. 1, Kwang Fu Road, Hsin-chu City, Taiwan
Filed Dec. 9, 1993, Ser. No. 164,915
Int. Cl.[5] H01L *29/161, 29/205, 29/225, 33/00*
U.S. Cl. 257—94 **4 Claims**



1. A light emitting diode comprising:
a semiconductor substrate of a first conductivity type;
a first electrode formed on a part of said substrate;
a first confining layer of first conductivity type AlGaInP formed on said substrate;
an active layer of undoped AlGaInP formed on said first confining layer;
a second confining layer of second conductivity type AlGaInP formed on said active layer;
a first window layer of second conductivity type semiconductor having high conductivity formed on said second confining layer, said first window layer having a smaller band gap than the band gap of said active layer;
a second window layer of second conductivity type semiconductor having high conductivity formed on said first window layer, said second window layer having a higher band gap than the band gap of said active layer; and
a second electrode formed on a part of said second window layer.

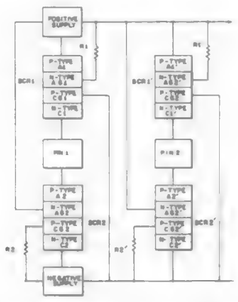
5,359,210
INTEGRATED CIRCUIT
Stephen W. Byatt, Bromham, United Kingdom, assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Oct. 27, 1992, Ser. No. 966,932
Claims priority, application United Kingdom, Jan. 24, 1992, 9201820
Int. Cl.[5] H01L *29/74*
U.S. Cl. 257—109 **15 Claims**



1. An integrated circuit including a first device having respective input and output electrodes at opposed first and second faces of a semiconductor block in which the device is formed, and a second device, formed in the semiconductor block, having its respective input and output electrodes at the first face and at the second face of the semiconductor block,

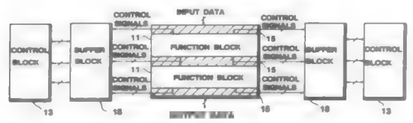
the electrodes at the first face of the semiconductor block intermingling with each other so that the electrode of the first device at the first face of the semiconductor block includes a plurality of discrete contact areas distributed over the first face of the semiconductor block, and the electrode of the second device at the first face of the semiconductor block includes a contact area lying between the discrete contact areas of the electrode of the first device.

5,359,211
HIGH VOLTAGE PROTECTION USING SCRS
Gregg D. Croft, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.
Filed Jul. 18, 1991, Ser. No. 732,475
Int. Cl.[5] H01L *29/74, 29/06, 29/78*
U.S. Cl. 257—173 **22 Claims**



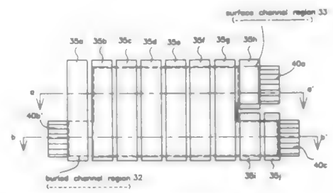
1. A high voltage protection circuit, for a first circuit which has a terminal to be protected and first positive and negative supply terminals, comprising:
a first terminal to be connected to the terminal of said first circuit to be protected;
second positive and negative supply terminals to be connected to the first positive and negative power supply terminals of the first circuit;
a first SCR having an anode and an anode gate connected to said second positive terminal, a cathode connected to said first terminal and a cathode gate connected to said second negative terminal for providing protective current paths for said first terminal.

5,359,212
INTEGRATED CIRCUIT WITH LAYOUT EFFECTIVE FOR HIGH-SPEED PROCESSING
Tsuneaki Kudou, Kawasaki, and Takeji Tokumaru, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 700,939, May 13, 1991, abandoned, which is a continuation of Ser. No. 391,968, Aug. 10, 1989, abandoned. This application Sep. 24, 1992, Ser. No. 950,731
Claims priority, application Japan, Aug. 12, 1988, 63-200202
Int. Cl.[5] H01L *27/10*
U.S. Cl. 257—211 **3 Claims**



2. An integrated circuit comprising:
a plurality of function blocks arranged to extend in parallel in a given direction, each block of said blocks being constructed to perform a respective function;
a plurality of routing areas respectively located between said function blocks;
a pair of control blocks respectively located at opposite ends of said function blocks for supplying control signals to said function blocks in order to enable said function blocks to carry out said respective functions, each of said control blocks being an assembly of standard cells;
wiring provided for transmitting said control signals from said control blocks to said function blocks and located in said routing areas, said wiring entering said routing areas through opposite ends of said routing areas from said control blocks; and
a pair of buffer blocks respectively located between said control blocks and said function blocks.

5,359,213
CHARGE TRANSFER DEVICE AND SOLID STATE IMAGE SENSOR USING THE SAME
Seo K. Lee, Sungnam, and Uya Shinji, Kwancheon, both of Rep. of Korea, assignors to Goldstar Electron Co., Ltd., Rep. of Korea
Filed Mar. 30, 1993, Ser. No. 40,072
Claims priority, application Rep. of Korea, Apr. 3, 1992, 5608/1992
Int. Cl.[5] H01L *29/796, 27/14, 31/00*
U.S. Cl. 257—223 **14 Claims**



1. A charge transfer device comprising:
a semiconductor substrate of a first conductivity type;
a surface channel region of the first conductivity type formed over the first conductivity type semiconductor substrate;
a buried channel region of a second conductivity type formed beneath the surface channel region and extending beyond one side portion of the surface channel region at its one side portion;
an electrode insulating film is formed over the resulting entire exposed surfaces of the semiconductor substrate, the surface channel region and the buried channel region;
a charge injection source formed in the surface of the semiconductor substrate such that it is in contact with the one side portion of the buried channel region extending beyond the surface channel region;
a floating diffusion region formed in the surface of the semiconductor substrate such that it is in contact with the other side portion of the buried channel region and adapted to detect signal charge;
a sweep-out drain formed in the surface of the semiconductor substrate such that it is spaced a predetermined distance apart from the other side portion of the surface channel region and adapted to discharge dark current accumulated in the surface channel region;
a charge injection electrode formed on a surface portion of the electrode insulating film disposed over the one side portion of the buried channel region extending beyond the surface channel region, the charge injection electrode being adapted to inject signal charge into the buried channel region;
a sweep-out electrode formed on a surface portion of the electrode insulating film disposed between the surface

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channel region and the sweep-out drain, the sweep-out electrode being adapted to transfer dark current to the sweep-out drain; and

a plurality of uniformly spaced transfer electrodes formed on a surface portion of the electrode insulating film disposed over the surface channel region between the charge injection electrode and the sweep-out drain.

5,359,214

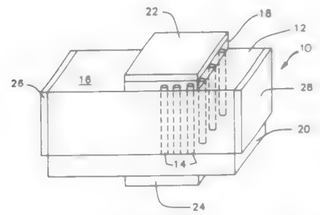
FIELD EFFECT DEVICES FORMED FROM POROUS SEMICONDUCTOR MATERIALS

Anthony D. Kurtz, Teaneck, N.J.; Joseph S. Shor, Flushing, N.Y., and Alexander A. Ned, Bloomingdale, N.J., assignors to Kulite Semiconductor Products, Leonia, N.J.

Filed Jun. 2, 1993, Ser. No. 71,669

Int. Cl.[5] H01L *29/80, 29/06*

U.S. Cl. 257—287 **14 Claims**



1. A field effect semiconductor device comprising a channel formed from a layer of semiconductor material of a first conductivity type, said channel including a porous region having internal pn junctions formed therein, said device further including first and second gate means disposed on opposed surfaces of said channel, said gate means being comprised of semiconductor material having a conductivity type opposite that of the channel.

5,359,215

SEMICONDUCTOR MEMORY CELL FOR HOLDING DATA WITH SMALL POWER CONSUMPTION

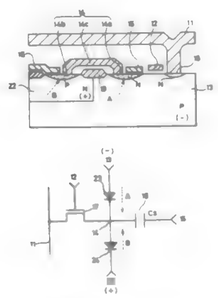
Yasuhiro Konishi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1991, Ser. No. 795,865

Claims priority, application Japan, Nov. 26, 1990, 2-324268

Int. Cl.[5] H01L *29/78*

U.S. Cl. 257—296 **7 Claims**



1. A DRAM comprising:

a semiconductor substrate of a first conductivity type having a main surface;

a first region of a second conductivity type formed on the main surface of said semiconductor substrate;

a storage capacitor formed on said main surface and including:

a second region of a second conductivity type formed on said main surface;

a third region of the first conductivity type formed in said first region of the second conductivity type and on the main surface of said semiconductor substrate;

a first conductive layer connecting said third region of the first conductivity type and said second region of the second conductivity type to recombine first minority carriers flowing from said semiconductor substrate to said second region of the second conductivity with second minority carriers flowing from said first region of the second conductivity type to said third region of the first conductivity type; wherein

said third region of the first conductivity type, said second region of the second conductivity type, and said first conductive layer constitute a storage node of the storage capacitor,

a second conductive layer having a first portion formed on said third region of the first conductivity type with an insulating film interposed therebetween; and

a second portion formed on said second region of the second conductivity type with an insulating film interposed therebetween,

said first and second portions being integrally formed.

5,359,216

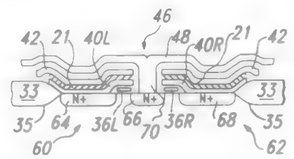
DRAM PROCESS WITH IMPROVED POLYSILICON-TO-POLYSILICON CAPACITOR AND THE CAPACITOR

Donald J. Coleman, Plano, and Roger A. Haken, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 967,952, Oct. 27, 1992, Pat. No. 5,244,825, which is a continuation of Ser. No. 737,821, Jul. 26, 1991, abandoned, which is a continuation of Ser. No. 113,974, Oct. 29, 1987, abandoned, which is a division of Ser. No. 858,850, Apr. 30, 1986, abandoned, which is a continuation of Ser. No. 468,921, Feb. 23, 1983, abandoned. This application Jul. 16, 1993, Ser. No. 92,626

Int. Cl.[5] H01L *29/78, 29/92*

U.S. Cl. 257—306 **19 Claims**



1. An integrated circuit including an array of memory cells, comprising:

(a) a monocrystalline substrate,

(b) a field oxide formed on said substrate defining plural locations for memory cells in said array of memory cells,

(c) each memory cell having:

(i) a pair of spaced implanted regions disposed in said substrate,

(ii) a gate electrode spaced from said substrate,

(iii) a first capacitor electrode on said substrate contacting one of said implanted regions and extending over at least a portion of and spaced from said gate electrode and over a portion of said field oxide,

(d) a second capacitor electrode coextensive over said array, in every memory cell said second capacitor electrode extending substantially over said gate electrode and said first capacitor electrode and being spaced therefrom and extending over said field oxide beyond said first capacitor electrode, and

(e) a bit line extending over the second capacitor electrode and having a portion extending down to the substrate and contacting the other one of said implanted regions.

5,359,217

MOS SEMICONDUCTOR MEMORY DEVICE HAVING STACK CAPACITOR WITH METAL PLUG

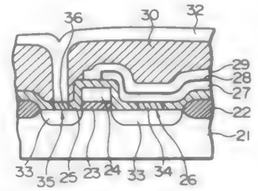
Ichiro Murai, Sagamihara, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Aug. 10, 1993, Ser. No. 103,706

Claims priority, application Japan, Aug. 11, 1992, 4-235325

Int. Cl.[5] H01L *27/10*

U.S. Cl. 257—306 **7 Claims**



1. A semiconductor memory device comprising:

a semiconductor substrate;

a MOS transistor formed on said semiconductor substrate and having source and drain diffused layers and a gate;

an interlayer insulating film covering said MOS transistor;

a contact hole formed in said interlayer insulating film and reaching one of said source and drain diffused layers;

a metallic layer filling up said contact hole; and

a capacitor formed on said interlayer insulating film and including a first polysilicon layer containing impurities and formed on said metallic layer, a dielectric film formed on said first polysilicon layer and a second polysilicon layer containing impurities and formed on said dielectric film, said first polysilicon layer being connected electrically to said one of said source and drain diffused layers through said metallic layer.

5,359,218

SEMICONDUCTOR MEMORY DEVICE WITH SELECTION GATE IN A GROOVE

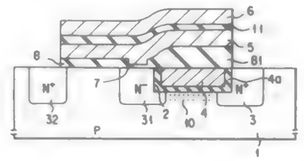
Hirohito Taneda, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 1, 1992, Ser. No. 955,278

Claims priority, application Japan, Oct. 3, 1991, 3-281911

Int. Cl.[5] H01L *27/115*

U.S. Cl. 257—321 **11 Claims**



1. A semiconductor memory device, comprising:

a semiconductor substrate of a first conductivity type;

first and second impurity diffusion layers of a second conductivity type formed in said semiconductor substrate with a first preset distance therebetween;

a selection gate electrode formed over that area of said semiconductor substrate between said first and second impurity diffusion layers, said selection gate electrode being formed in a groove which is formed in a portion of said semiconductor substrate between said first and second impurity diffusion layers;

a third impurity diffusion layer of said second conductivity type formed in an area of said semiconductor substrate which is different from the area between said first and second impurity diffusion layers and is at a second preset distance from said first impurity diffusion layer;

a first gate oxide film formed on the area of said semiconductor substrate between said first and second impurity diffusion layers and an area of said semiconductor substrate between said first and third impurity diffusion layers, formed to be at least partly superposed on said selection gate electrode and having a tunnel oxide film formed on said first impurity diffusion layer;

a floating gate electrode formed on portions of said first gate oxide film which lie over the area of said semiconductor substrate between said first and second impurity diffusion layers and the area of said semiconductor substrate between said second and third impurity diffusion layers and formed to be at least partly disposed over said selection gate electrode;

a second gate oxide film formed on said floating gate electrode; and

a control gate electrode formed over said floating gate electrode with said second gate oxide film disposed therebetween.

5,359,219

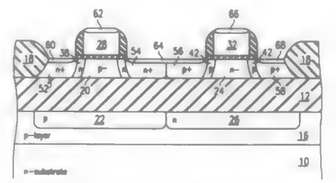
SILICON ON INSULATOR DEVICE COMPRISING IMPROVED SUBSTRATE DOPING

Jeong-Mo Hwang, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 4, 1992, Ser. No. 985,976

Int. Cl.[5] H01L *27/01, 27/12, 31/392*

U.S. Cl. 257—351 **16 Claims**



8. A silicon on insulator device, comprising:

a silicon substrate having a predetermined conductivity type;

an insulating layer disposed outwardly from and substantially completely covering said silicon substrate;

an outer silicon layer disposed outwardly from said insulating layer and separated from said silicon substrate by said insulating layer;

a first doped region disposed proximate said insulating layer and separated from said outer silicon layer by said insulating layer, said first doped region comprising a conductivity type different than said predetermined conductivity type; and

a second doped region disposed proximate said insulating layer and separated from said outer silicon layer by said insulating layer, said second doped region having said conductivity type, said second doped region separated from said silicon substrate by a portion of said first doped region.

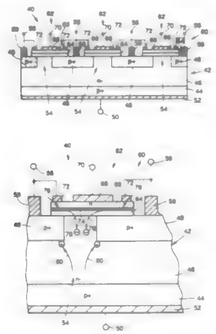
VOL 1167 ISS 4 OC 25 1994 UMI

5,359,220

HYBRID BIPOLAR/FIELD-EFFECT POWER TRANSISTOR IN GROUP III-V MATERIAL SYSTEM

Lawrence E. Larson, Santa Monica; Peter Asbeck, San Diego, and Julia J. Brown, Santa Monica, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 22, 1992, Ser. No. 994,734
Int. Cl.[5] H01L *27/07, 29/205*
U.S. Cl. 257—378 45 Claims



2. A hybrid transistor, comprising:

vertical bipolar transistor means having a collector, an emitter and a floating base; and

junction-gate type field-effect transistor means having a gate, a lateral channel overlying said floating base, means for directing a lateral current flow through said channel, and a vertical charge carrier injection path from the channel into the underlying base of said vertical bipolar transistor means, said vertical charge carrier injection path being modulated in response to a signal applied to said gate, and said gate, channel and means for directing current through said channel each being spatially separated from said vertical bipolar transistor means,

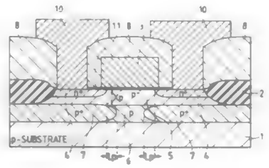
in which the channel comprises a heterojunction structure.

5,359,221

SEMICONDUCTOR DEVICE

Masafumi Miyamoto, Koganei; Ryo Nagai, Mizuho; Tatsuya Ishii, Hachioji, and Koichi Seki, Hino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 6, 1993, Ser. No. 86,096
Claims priority, application Japan, Jul. 10, 1992, 4-183448
Int. Cl.[5] H01L *29/10, 29/78*
U.S. Cl. 257—408 25 Claims



1. A semiconductor device comprising:

a first region formed within a surface region of a semiconductor substrate having a first conductivity type, said first region having a low doping concentration and the first conductivity type;

a source region and drain region arranged through prescribed spacing with a surface region of said first region, and having a second conductivity type opposite to the first conductivity type;

a gate electrode formed on a surface of said first region between said source region and said drain region through an insulation film;

a second region formed within said semiconductor substrate contacting with a lower surface of said first region, said second region having a doping concentration higher than that of said first region and having the first conductivity type; and

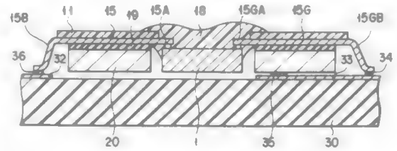
a third region formed within said second region below said source region, said third region having a doping concentration higher than that of said second region and having the first conductivity type, wherein the third region extends in a lateral direction beyond an inner edge of the source region toward the drain region.

5,359,222

TCP TYPE SEMICONDUCTOR DEVICE CAPABLE OF PREVENTING CROSSTALK

Takayuki Okutomo, and Morihiko Ikemizu, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 29, 1993, Ser. No. 11,133
Claims priority, application Japan, Jan. 31, 1992, 4-017097; Nov. 14, 1992, 4-328893
Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—659 9 Claims



1. A semiconductor device comprising:

a semiconductor chip;

a wiring pattern having an under surface and having leads each including an inner lead portion connected to said semiconductor chip and an outer lead portion extending from said inner lead portion;

a shield plate having a surface facing the under surface of the wiring pattern and having a lower surface;

an insulating adhesive agent bonding said shield plate to the under surface of the wiring pattern;

a base plate on which said semiconductor chip is mounted; and

a plurality of lead wires on said base plate and connected to said outer lead portions, at least one of said plurality of lead wires being grounded and electrically connected to said shield plate;

the lower surface of said shield plate and the connections of said lead wires to said outer lead portions being in substantially the same plane.

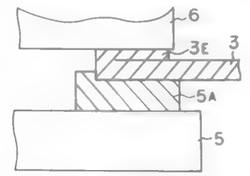
5,359,223

LEAD FRAME USED FOR SEMICONDUCTOR INTEGRATED CIRCUITS AND METHOD OF TAPE CARRIER BONDING OF LEAD FRAMES

Susumu Nakamori, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 18, 1992, Ser. No. 947,266
Claims priority, application Japan, Sep. 19, 1991, 3-238527
Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—666 11 Claims

1. A lead frame structure used in connection with a type of semiconductor devices (5) which are fabricated by a tape carrier (1) bonding method, said lead frame comprising at least one contact lead (3) which has an end portion (3E, 3F) that is bent to become thicker than the rest of the contact lead in order to form a convex portion at a top side of said contact lead, said convex portion being positioned to be subjected to



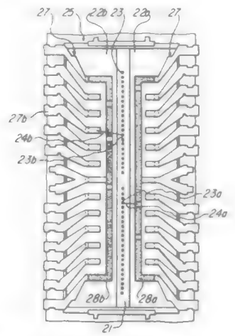
compression by a bonding tool (6), said convex portion comprises said bent portion (3E, 3F) formed by said contact lead being bent back toward said bonding tool (6) at an angle of at least approximately 90 degrees, whereby said bent portion prevents a depression area from being formed in said lead upon compression by said bonding tool.

5,359,224

INSULATED LEAD FRAME FOR INTEGRATED CIRCUITS AND METHOD OF MANUFACTURE THEREOF

Katherine G. Heines, Dallas, Tex., and Henry F. Breit, Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 31,086, Mar. 12, 1993, abandoned, which is a continuation of Ser. No. 587,189, Sep. 24, 1990, abandoned. This application Jul. 15, 1993, Ser. No. 92,659
Int. Cl.[5] H01L *23/48, 23/28*
U.S. Cl. 257—666 17 Claims



1. An insulated lead frame, comprising:

a first plurality of conductive lead fingers;

a second plurality of conductive lead fingers;

a first power supply bus lying between the first and second pluralities of conductive lead fingers;

a second power supply bus lying between the first and second pluralities of conductive lead fingers, adjacent to the first power supply bus; and

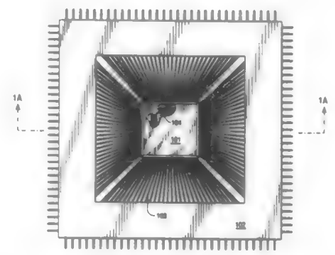
an aluminum oxide insulator on selected portions of the first power supply bus and on selected portions of the second power supply bus, the selected portions of the first and second power supply busses having no electrical connection made to them.

5,359,225

THIN, HIGH LEADCOUNT PACKAGE

Kevin J. Haley, San Jose, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 6, 1992, Ser. No. 972,754
Int. Cl.[5] H01L *23/28*
U.S. Cl. 257—671 20 Claims



1. A high leadcount surface mount integrated circuit package comprising:

an integrated circuit die;

a substantially planar leadframe having a plurality of leads, wherein each of the plurality of leads includes a first end, a second end and an intermediate portion between the first end and the second end, wherein the first end of each of said plurality of leads is coupled the die in an interconnect area

support means for permanently supporting the plurality of leads, wherein the support means is attached to the intermediate portion of each of the plurality of leads, such that the plurality of leads are held in a single plane and each of the plurality of leads is held permanently in a predetermined position with respect to the other of said plurality of leads; and

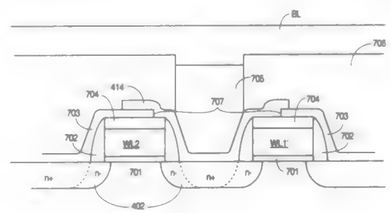
a plastic encapsulating molded compound, wherein the compound encapsulates only the die and the interconnect area and is localized over the die and the interconnect area, wherein the compound only extends to an area that covers the interconnect area and the die, such that said compound is spaced apart from the support means.

5,359,226

STATIC MEMORY WITH SELF ALIGNED CONTACTS AND SPLIT WORD LINES

Jan L. DeJong, San Jose, Calif., assignor to Paradigm Technology, Inc., San Jose, Calif.

Filed Feb. 2, 1993, Ser. No. 12,191
Int. Cl.[5] H01L *23/48, 27/02;* G11C *11/34*
U.S. Cl. 257—773 11 Claims



1. In an integrated circuit formed in and on a semiconductor substrate, a portion of a memory cell comprising:

a first and a second pass transistor having active regions

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formed in the semiconductor substrate, each pass transistor having a gate electrode;

a split word line comprising a first and a second word line formed above the semiconductor substrate, wherein the first word line is connected to the gate electrode of the first pass transistor and the second word line is connected to the gate electrode of the second pass transistor;

a first and a second pull-down transistor having active regions formed in the semiconductor substrate, the first pull-down transistor having a gate electrode formed above the semiconductor substrate, the first pull-down transistor being electrically connected to the first pass transistor, the second pull-down transistor being electrically connected to the second pass transistor; and

a contact structure comprising:

an insulating layer located above the semiconductor substrate and above the gate electrode of the first pull-down transistor, the insulating layer having a cavity at least partly overlying the active region of the first transistor, the cavity having a width greater or equal to a length of the gate electrode of the first pull-down transistor; and

a contact layer, a part of the contact layer being located in the cavity, a portion of the part of the contact layer in the cavity being in electrical contact with the gate electrode of the first pull-down transistor.

5,359,227

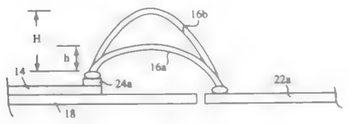
LEAD FRAME ASSEMBLY AND METHOD FOR WIRING SAME

Louis H. Liang, Los Altos, and Sang S. Lee, Sunnyvale, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 893,553, Jun. 3, 1992, Pat. No. 5,296,744, which is a continuation of Ser. No. 728,927, Jul. 12, 1991, abandoned. This application Dec. 30, 1993, Ser. No. 175,647

Int. Cl.[5] H01L *23/48, 29/44, 29/52*

U.S. Cl. 257—784 **14 Claims**



1. An integrated circuit structure comprising:

a lead frame assembly including a die attach pad and a plurality of fingers having tips on one end of the fingers, wherein the tips of said fingers surround said die attach pad and lie substantially within a first plane;

a four-sided integrated circuit die affixed to said die attach pad of said lead frame assembly, wherein said integrated circuit die is provided with four rows of die attach pads, where each row is aligned with an associated side of said integrated circuit die, where the die attach pads of each row are linearly arranged, said plurality of said die attach pads lying substantially within a second plane and said finger tips of said lead frame assembly being spaced a substantially constant distance from an adjacent edge of said die;

a first plurality of longer connecting wires connecting non-adjacent attach pads to associated finger tips of said lead frame assembly, said longer wires forming high loops having a central portion extending above both said first and second planes;

a second plurality of shorter connecting wires connecting non-adjacent attach pads to associated finger tips of said lead frame assembly, said shorter wires forming low loops having a central portion extending above both said first and second planes but not substantially overlapping said high loops, said high loops and said low loops alternating along each of said rows of die attach pads.

5,359,228

OPERATING METHOD FOR A HYBRID CAR

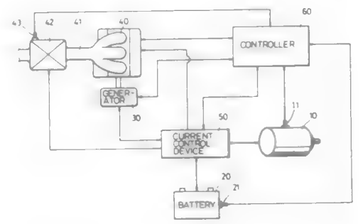
Masato Yoshida, Kyoto, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1993, Ser. No. 60,989

Claims priority, application Japan, May 15, 1992, 4-123818

Int. Cl.[5] B60L *11/02, 11/12;* **F02D** *29/06*

U.S. Cl. 290—17 **8 Claims**



1. An operating method for a hybrid car which has an electric motor for driving the hybrid car, a battery for supplying electric power to the electric motor, a generator for charging the battery, and an internal combustion engine operatively isolated from the electric motor and used to drive the generator, the method comprising the steps of:

(a) discriminating an operating state of the hybrid car by first discriminating means;

(b) discriminating a charged state of the battery by second discriminating means;

(c) controlling the operating state of the internal combustion engine by a controller in accordance with at least one results of the discriminations relating to the hybrid car operating state and the battery charged state by said first and second discriminating means at said steps (a) and (b); and

(d) controlling the electric power supplied to the electric motor, said step (d) including the steps of.

(d) (2) supplying electric power solely from the battery to the electric motor in accordance with the operating state of the hybrid car when the internal combustion engine is in a non-operating condition, and

(d) (2) supplying electric power generated by the generator to the electric motor when the internal combustion engine is operated to generate electric power by the generator, the electric power from the generator being adjusted such that an equivalent generator electric power to the battery electric power, obtained through an equivalence conversion, or a sum of the equivalent generator electric power and the battery electric power matches the operating state of the hybrid car.

5,359,229

APPARATUS FOR CONVERTING WAVE MOTION INTO ELECTRICAL ENERGY

George M. Youngblood, 12935 Wincrest Ct., Cypress, Tex. 77429

Continuation-in-part of Ser. No. 102,891, Aug. 6, 1993, abandoned. This application Mar. 28, 1994, Ser. No. 218,838

Int. Cl.[5] F03B *13/12, 13/18*

U.S. Cl. 290—53 **22 Claims**

1. An apparatus for converting water wave motion into electrical energy, comprising:

a) a plurality of interconnected conversion units, each conversion unit including:

A) support means mounted in a substantially fixed position relative to the surface of a body of water;

B) float means slideably mounted to the support means;

C) a drive shaft rotatably mounted to the support means;

D) pulley system means attached to the support means;

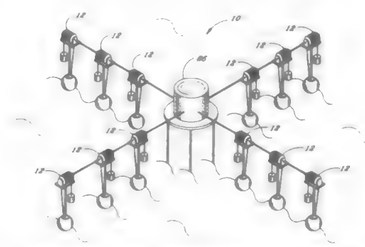
E) float cable means having a first end attached to the float and a second end;

F) a counter-weight connected to the pulley system means;

G) counter-weight cable means having a first end attached to the pulley system means and a second end, the counter-weight cable means being looped through the pulley system means to reduce the vertical motion of the counter weight in response to the rise and fall of waves;

H) a downstroke drive transfer mechanism for rotating the shaft in a predetermined direction in response to the downward movement of the float means, the downstroke drive transfer mechanism comprising,

i) a hollow drive mechanism housing rotatably mounted to the drive shaft, the drive mechanism housing having a float cable means section and a counter-weight cable means section,



ii) a cylindrical ratchet drum housed within the drive mechanism housing and secured to the drive shaft,

iii) cable guide means on the outside surface of the drive mechanism housing, the cable guide means being attached to the second end of the float cable means and to the second end of the counter-weight cable means, the float cable means being wound around the float cable means section of the drive mechanism housing in a first direction and the counter-weight cable means being wound around the counter-weight cable means section of the drive mechanism housing in a second direction opposite to that of the first direction,

iv) means for transferring the rotation of the drive mechanism housing caused by the downward motion of the float means to the ratchet drum;

b) means connected to the drive shaft for converting the rotation of the drive shaft into electrical energy.

5,359,230

ON-VEHICLE ELECTRONIC DEVICE

Akio Namiki; Yoshio Aoyagi; Shigetoshi Kato; Osamu Yoshizawa; Hiroshi Wakimoto; Akira Kawahara, and Takayuki Iijima, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 17, 1992, Ser. No. 930,999

Claims priority, application Japan, Aug. 27, 1991, 3-215474

Int. Cl.[5] B60L *1/08*

U.S. Cl. 307—10.1 **8 Claims**

8. An on-vehicle electronic device, comprising:

a main body which is fastened to a vehicle and has a first terminal; and

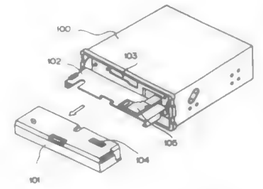
an operation unit detachably mounted in said main body, said operation unit comprising a second terminal electrically connected to said first terminal when said operation unit is mounted in said main body, and a detachment sense voltage generating means for generating at said second terminal a predetermined detachment sense voltage which value is not equal to 0 volt and is determined by a voltage applied from said first terminal to said second terminal,

wherein said main body comprises:

a reference power source applying a reference voltage to said first terminal;

voltage detection means for detecting a voltage applied to said first terminal; and

mounting detection means, coupled to said voltage detection means, for determining that said operation unit is mounted in and electrically connected to said main body if said



voltage detection means detects the predetermined detachment sense voltage, and determining that said operation unit is not mounted in said main body if said voltage detection means detects a voltage other than the predetermined detachment sense voltage and wherein:

said voltage detection means comprises a first resistor connected between said reference power source and said first terminal, and a second resistor connected between said mounting detection means and said first terminal; and

said detachment sense voltage generating means comprises a third resistor connected between said second terminal and a ground.

5,359,231

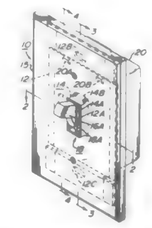
WALLBOX-MOUNTABLE SWITCH AND DIMMER

Woodie C. Flowers, Weston, Mass.; James R. Graybill, Jr., Emmaus, Pa.; Elliot G. Jacoby, Jr., Glenside, Pa.; John E. Longenderfer, Orefield, Pa., and Joel S. Spira, Coopersburg, Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.

Continuation of Ser. No. 719,223, Jun. 21, 1991, Pat. No. 5,262,678. This application Apr. 16, 1993, Ser. No. 48,714

Int. Cl.[5] H01C *10/38*

U.S. Cl. 307—125 **7 Claims**



1. A mechanism for controlling the ON/OFF state of an electrical switch and the operation of a dimming device, both electrical switch and dimming device being contained by a wall box and collectively operating to control the level of power supplied to an electrical load, said mechanism comprising:

(a) a manipulatable toggle switch actuator;

(b) a manipulatable dimmer actuator;

(c) a frame for (i) supporting said dimmer actuator for movement in a second plane substantially parallel to said first

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plane, a portion of said frame defining first and second, side-by-side. rectangular openings in which said actuators are movable; and

(d) a support member for supporting said frame so that (i) said toggle switch actuator is operatively connected to said electrical switch, (ii) said dimmer actuator is operatively connected to said device, and (iii) said actuators extend through an opening in a wall box faceplate.

5,359,232

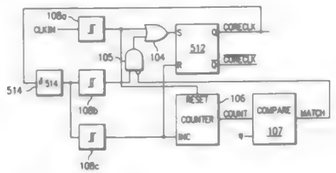
CLOCK MULTIPLICATION CIRCUIT AND METHOD

John K. Eitrheim, Garland, and Richard B. Reis, McKinney, both of Tex., assignors to Cyrix Corporation, Richardson, Tex.

Continuation-in-part of Ser. No. 880,550, May 8, 1992, Pat. No. 5,336,939. This application Nov. 13, 1992, Ser. No. 975,809

Int. Cl.[5] H03K *5/01*

U.S. Cl. 307—268 17 Claims



1. A clock multiplier circuit for generating an output clock signal with a frequency that is a multiplication of an input clock frequency, comprising:

(a) a detection circuit that detects an active edge of the input clock;

(b) an edge generating circuit that includes a delay line, and that provides the output clock signal defined by output clock edges;

(c) the edge generating circuit being responsive to the detection of an active edge of the input clock to generate a first output clock edge corresponding to the active edge, and then to generate n more output clock edges (where n is at least two) by successively feeding back through the delay line the first output clock edge and the next n−1 output clock edges; and

(d) an inhibiting circuit responsive to the generation of output clock edges to inhibit the edge generating circuitry after generation of the n output clock edges after the first output clock edge.

5,359,233

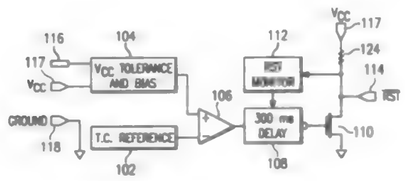
RESET MONITOR FOR DETECTION OF POWER FAILURE AND EXTERNAL RESET

Eric W. Mumper, Dallas, and Donald R. Dias, Carrollton, both of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Filed Sep. 28, 1990, Ser. No. 589,937

Int. Cl.[5] H03K *3/01, 5/00*

U.S. Cl. 307—272.3 10 Claims



1. An integrated circuit, comprising:

(a) a first terminal having a voltage with a magnitude;

(b) a power supply terminal having a voltage with a magnitude;

(c) a reference supply terminal having a voltage with a magnitude;

(d) a first detector for detecting a change of said magnitude of the voltage of said power supply terminal relative to said reference supply terminal from greater than to less than a first reference voltage;

(e) a second detector for detecting a change of the magnitude of the voltage of said first terminal relative to said magnitude of said voltage of said reference supply terminal from greater than to less than a second reference voltage;

(f) a third detector for detecting a change of the magnitude of the voltage of said first terminal relative to said magnitude of said voltage of said reference supply terminal from less than to greater than a third reference voltage, said third reference voltage less than said second reference voltage;

(g) a time period generator; and

(h) a state machine with inputs coupled to outputs of said first detector, said second detector, and said third detector and said time period generator and with outputs coupled to inputs of said time period generator and a switch between said first terminal and said reference supply terminal, said state machine characterized by an input from any of said first detector, said second detector, and said third detector that detects one of said corresponding magnitude changes causing a first output to close said switch and a second output to start said time period generator and maintaining said switch closed until an input from said time period generator indicates that a time period has expired.

5,359,234

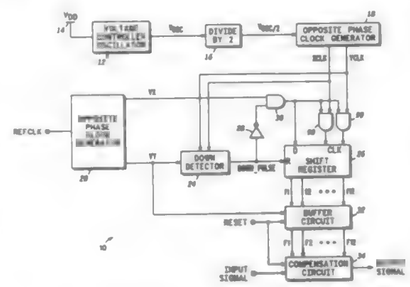
CIRCUIT AND METHOD OF SENSING PROCESS AND TEMPERATURE VARIATION IN AN INTEGRATED CIRCUIT

Ahmad H. Atrias, Chandler; Benjamin C. Peterson, Tempe, and Lanny L. Parker, Mesa, all of Ariz., assignors to Codex, Corp., Mansfield, Mass.

Filed Feb. 1, 1993, Ser. No. 11,611

Int. Cl.[5] H01L *31/00;* G06G *7/10;* H03K *13/17*

U.S. Cl. 307—310 15 Claims



9. A circuit for sensing process and temperature variation, comprising:

a voltage controlled oscillator having a control input coupled for receiving a first power supply potential and having an output for providing an oscillator signal;

a divider circuit having an input coupled for receiving said oscillator signal and having an output for providing a reduced frequency oscillator signal;

a first opposite phase clock generator having an input coupled for receiving said reduced frequency oscillator signal

and having first and second outputs for providing first and second clock signals;

first means for generating third and fourth clock signals in response to an input clock signal;

second means for counting a number of said first and second clock signals occurring during a first state of said third clock signal and providing a plurality of output signals indicative of said temperature and process variation, said second means being reset at each first transition of said fourth clock signal; and

third means having a first input coupled for receiving an input signal and a second input coupled for receiving said plurality of output signals from said third means, said third means providing an output signal with compensation for said temperature and process variation.

5,359,235

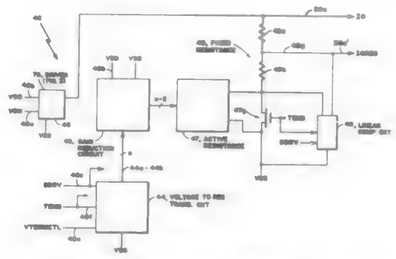
BUS TERMINATION RESISTANCE LINEARITY CIRCUIT

Joseph P. Coyle, Leominster, and William B. Gist, Chelmsford, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 18, 1993, Ser. No. 79,516

Int. Cl.[5] H03H *11/100*

U.S. Cl. 307—296.1 11 Claims



1. A programmable termination, comprising:

means, responsive to a voltage reference signal representative of a desired impedance value for the programmable termination, for providing control signals related to the impedance;

means, responsive to said control signals, for providing an impedance in accordance with said control signals, said means for providing said impedance having a non-linear relationship between said control signals representing the desired impedance and said provided impedance, said means further including:

a plurality of field effect transistors each having source and drain electrodes, with the drain electrodes of said transistors coupled together and the source electrodes of said transistors coupled together, and each transistor having a control electrode fed by one of said control signals; and

means for compensating for the non-linear impedance characteristic of said means for providing said impedance having a non-linear relationship to provide said desired impedance value.

5,359,236

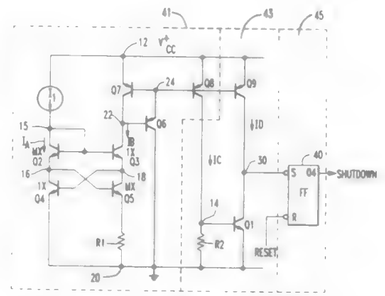
INTEGRATED CIRCUIT THERMAL SENSOR

Raymond L. Giordano, Flemington, and Thomas R. Deshazo, Jr., Frenchtown, both of N.J., assignors to Harris Corporation, Melbourne, Fla.

Filed May 25, 1993, Ser. No. 66,854

Int. Cl.[5] H03F *1/30*

U.S. Cl. 307—310 10 Claims



1. A thermal sensor comprising:

a bipolar transistor having a base, an emitter and a collector; said bipolar transistor being characterized in that its base to emitter voltage (V_{BE}) decreases as a function of increasing temperature to which the bipolar transistor is subjected during operation;

a first means, coupled to the base of said bipolar transistor for supplying an increasing turn on signal to the base of said bipolar transistor as a function of increasing temperature; said first means including:

(a) first, second, third and fourth transistors of same conductivity type, each transistor having a base, an emitter and a collector;

(b) means coupling the bases of said first and second transistors and the collector of the first transistor to a first node;

(c) means coupling a source of current to said first node of a polarity to induce conduction in said first and second transistors;

(d) means connecting the collector of the third transistor and the base of the fourth transistor to the emitter of the first transistor;

(e) means connecting the collector of the fourth transistor and the base of the third transistor to the emitter of the second transistor;

(f) means connecting the emitter of said third transistor to a point of operating potential;

(g) a first resistor connected between the emitter of the fourth transistor and the point of operating potential;

(h) a second resistor connected between the base and emitter of said bipolar transistor; and

(i) means coupling the collector of said second transistor to the base of said bipolar transistor for producing a voltage at the base of said bipolar transistor which has a positive temperature coefficient and which is substantially independent of power supply variations;

means coupling the emitter of said bipolar transistor to the point of operating potential; and

a load circuit coupled to the collector of said bipolar transistor, said bipolar transistor controlling the load current to said load as a function of the increasing turn-on signal generated by said first means and the decreasing V_{BE} of said bipolar transistor in response to increasing temperatures.

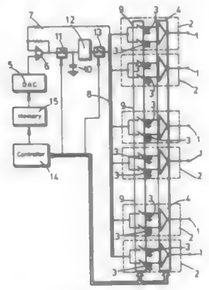
VOL 1167 ISS 4 OCT 25 1994 UMI

5,359,237

DC LEVEL GENERATOR

Richard Pye, Stockport, England, assignor to Genrad Limited, United Kingdom

Filed Jun. 12, 1992, Ser. No. 897,876
Claims priority, application United Kingdom, Jun. 29, 1991, 9114123
Int. Cl.[5] H03K 17/16, 5/24
U.S. Cl. 307—353 4 Claims



1. A DC level generator comprising a plurality of sample and hold output circuits, each of which is intended to store a DC level, a voltage level source circuit for sequentially generating each DC level to be stored, and a controller for sequentially connecting each sample and hold output circuit in turn to the voltage level source circuit to refresh the stored voltage level, wherein the voltage level source circuit comprises means for comparing the voltage stored by each sample and hold output circuit to which it is connected with the generated DC level to be stored by that sample and hold output circuit, an error correction storage and hold circuit for storing charge proportional to the difference between the compared DC voltages, and means for transferring charged proportional to the voltage stored by the error correction storage and hold circuit to the storage and hold output circuit to which the voltage level source circuit is connected to reduce the difference between the compared DC voltages, wherein the voltage level source circuit comprises a first switch connected between the error correction storage and hold circuit and the comparing means, a second switch connected between the error storage and hold circuit and a conductor to which each storage and hold output circuit is connected by a respective one of an array of third switches, and a feedback path connected between the comparing means and the conductor, and wherein the controller is arranged to open the second switch and close the first switch and one third switch to charge the error correction storage and hold circuit, and thereafter to open the first switch and close the second switch to transfer charge proportional to the voltage stored by the error correction storage and hold circuit to the storage and hold output circuit connected to the closed third switch.

5,359,238

ANALOG TO DIGITAL INTERFACE CIRCUIT WITH INTERNAL RESISTANCE COMPENSATION AND INTEGRITY VERIFICATION

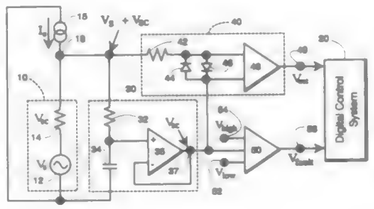
Alan J. Lesko, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 4, 1992, Ser. No. 924,818
Int. Cl.[5] G01B 7/14; G01N 27/72; H03K 5/153
U.S. Cl. 307—358 9 Claims

2. Apparatus for compensating for variations in the internal resistance of a signal source comprising, in combination,

a current source connected to pass a substantially constant current through said signal source,

a bandwidth-limited operational amplifier having an input connected to said signal source, having an output for delivering an offset signal, and having a negative feedback connection between said input and said output such that said amplifier exhibits unit gain whereby the magnitude of said offset signal is equal to the magnitude of the direct current component of the signal produced by said signal source,



a utilization circuit, and

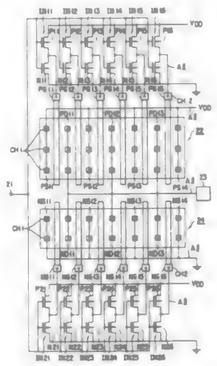
an output circuit for effectively connecting said utilization circuit between said signal source and the output of said bandwidth-limited amplifier whereby said utilization circuit is supplied with only the time-varying component of the signal from said source.

5,359,239

OUTPUT CIRCUIT WITH REDUCED SWITCHING NOISE

Yasushi Sato, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 18, 1992, Ser. No. 993,065
Claims priority, application Japan, Dec. 20, 1991, 3-338768
Int. Cl.[5] H03K 19/20
U.S. Cl. 307—451 18 Claims



1. An output circuit having an output terminal and an input terminal, comprising:

a first power supply;

a MOS transistor of a first conductivity type having one terminal connected to said first power supply, the other terminal connected to said output terminal, and a plurality of gates;

a second power supply;

a MOS transistor of a second conductivity type having one terminal connected to said output terminal, the other terminal connected to said second power supply, and a plurality of gates;

a plurality of first inverter circuits, arranged in correspondence with said plurality of gates of said MOS transistor of the first conductivity type and respectively connected to said plurality of gates of said MOS transistor of the first conductivity type, for independently driving said plurality of gates of said MOS transistor of the first conductivity type in response to input signals input to said input terminal; and

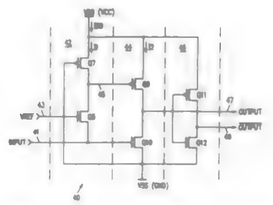
a plurality of second inverter circuits, arranged in correspondence with said plurality of gates of said MOS transistor of the second conductivity type and respectively connected to said plurality of gates of said MOS transistor of the second conductivity type, for independently driving said plurality of gates of said MOS transistor of the second conductivity type in response to the input signals input to said input terminal.

5,359,240

LOW POWER DIGITAL SIGNAL BUFFER CIRCUIT

Bal S. Sandhu, Fremont, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 25, 1993, Ser. No. 8,165
Int. Cl.[5] H03K 19/20, 19/0175
U.S. Cl. 307—451 14 Claims



1. A low power signal buffer circuit, comprising:

input signal inverter means for receiving an active reference signal and a digital input signal, and for inverting said received digital input signal in accordance with said received active reference signal to provide a digital output signal; and

active reference signal generator means coupled to said input signal inverter means for receiving at least one fixed reference voltage and said digital input signal and in accordance therewith providing said active reference signal;

wherein said input signal inverter means and active reference signal generator means receive a dc supply current which includes first and second current levels, said received digital input signal includes low and high logic levels, said first and second current levels are received when said low and high logic levels are received, respectively, and said second current level is substantially less than said first current level.

5,359,241

ECL CIRCUIT

Koichi Hasegawa, and Tetsuya Iga, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 30, 1993, Ser. No. 54,192
Claims priority, application Japan, May 13, 1992, 4-120478; Oct. 1, 1992, 4-263313
Int. Cl.[5] H03K 19/086, 19/0175
U.S. Cl. 307—455 7 Claims

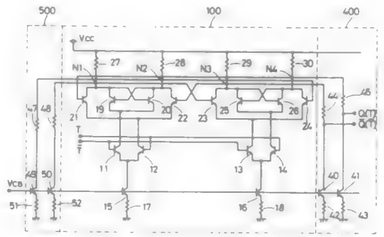
1. An ECL circuit comprising:

an ECL circuit portion having an ECL structure without emitter follower output transistors for deriving first and second differential signals; and

a level shift circuit portion for level-shifting said first and second signals to output the level-shifted first and second signals wherein said level-shift circuit portion includes:

a first resistor having a first and directly receiving, without buffering, said first signal;

a second resistor having a first end directly receiving, without buffering, said second signal;



a first constant-current source connected to a second end of said first resistor: and

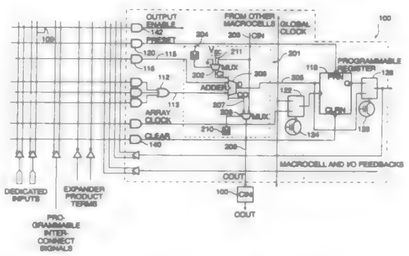
a second constant-current source connected to a second end of said second resistor.

5,359,242

PROGRAMMABLE LOGIC WITH CARRY-IN/CARRY-OUT BETWEEN LOGIC BLOCKS

Kerry Veenstra, San Jose, Calif., assignor to Altera Corporation, San Jose, Calif.

Filed Jan. 21, 1993, Ser. No. 6,321
Int. Cl.[5] H03K 19/177
U.S. Cl. 307—465 21 Claims



1. A programmable logic device comprising:

an array of AND gates coupled to logic inputs;

an OR gate for producing a logic OR of outputs of selected AND gates;

an adder for adding an output of one of said AND gates and an output of said OR gate, a carry input to said adder coupled to a multiplexer output, and multiplexer selecting between at least ground and a carry output from an adjacent adder;

a flip-flop for storing an output of said adder;

an output selection multiplexer selecting between said output of said adder and an output of said flip-flop; and

a carry-out multiplexer selecting between a carry-out output of said adder and said carry output of said adjacent adder for output to a second adjacent adder.

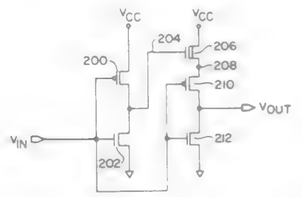
VOL 1167 ISS 4 OC 25 1994 UMI

5,359,243

FAST TTL TO CMOS LEVEL CONVERTING BUFFER WITH LOW STANDBY POWER

Kevin A. Norman, San Mateo, Calif., assignor to Altera Corporation, San Jose, Calif.

Filed Apr. 16, 1993, Ser. No. 49,694
Int. Cl.[5] H03K *19/0175, 19/094*
U.S. Cl. 307—475 **3 Claims**



1. A voltage level converting circuit in a complementary metal-oxide-semiconductor (CMOS) process having depletion mode transistors, said circuit having an input and an output and coupled between a power supply terminal and ground, comprising:

a first enhancement mode CMOS inverter having a PMOS transistor smaller in size than an NMOS transistos, and connected between the power supply terminal and ground, having an input connected to the circuit input and an output;

a debiasing depletion mode transistor connected between the power supply terminal and a first node, with a gate terminal connected to the output of the first enhancement mode CMOS inverter; and

a second enhancement mode CMOS inverter connected between the first node and ground, having an input connected to the circuit input and an output coupled to the circuit output,

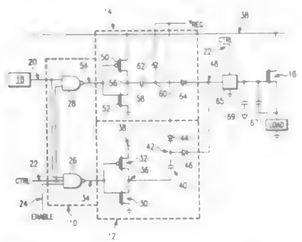
wherein, the depletion mode transistor operates to debias the second enhancement mode CMOS inverter to reduce power consumption.

5,359,244

GATE DRIVE CIRCUIT FOR A MOS POWER TRANSISTOR

Thomas L. R. Hopkins, Cary, Ill., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jul. 31, 1992, Ser. No. 923,266
Int. Cl.[5] H03K *17/687*
U.S. Cl. 307—571 **16 Claims**



1. A circuit for driving a MOS power transistor, comprising:

a first gate drive circuit for charge pumping a node connected to a gate of the MOS power transistor to a gate supervoltage higher than a positive supply voltage by at least an amount equal to a threshold voltage of the MOS power transistor, wherein the first gate drive circuit utilizes a first charge current to charge the MOS power transistor gate to the gate supervoltage at a first rate;

a second gate drive circuit for charge pumping the node connected to the gate of the MOS power transistor to maintain the voltage on such node at the gate supervoltage, wherein the second gate drive circuit utilizes a second charge current, less than the first charge current, to charge the MOS power transistor gate to the gate supervoltage at a second rate which is slower than the first rate; and

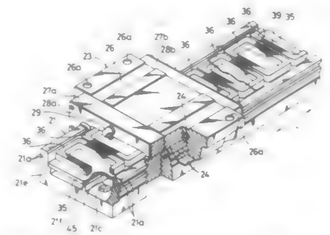
a control circuit, wherein the control circuit enables the first and second gate drive circuits when the MOS power transistor is initially turned on, and thereafter disables the first gate drive circuit after a selected period of time.

5,359,245

GUIDE UNIT AND A DIRECT DRIVE UNIT ON WHICH IT IS EQUIPPED

Seiji Takei, Kanagawa, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Mar. 17, 1993, Ser. No. 32,249
Claims priority, application Japan, Mar. 27, 1992, 4-100331
Int. Cl.[5] H02K *41/00*
U.S. Cl. 310—12 **8 Claims**



1. A guide unit comprising: a track rail wherein a track is formed in a lengthwise direction; a slider guided by the track; and, a position detection device for detecting the relative positions of the track rail and the slider; wherein, insertion holes for inserting fastening members for fixing said track rail onto a prescribed frame are arranged in a row in the lengthwise direction in the track rail, the position detection device is composed of a detected element and a detecting element, one of either the detected element or the detecting element is mounted on the slider, and the other is inserted into the insertion holes.

5,359,246

LOW BACKLASH DIRECT DRIVE ACTUATOR

Thomas C. Kuklo, Oakland, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 12, 1993, Ser. No. 89,916
Int. Cl.[5] H02K *37/24*
U.S. Cl. 310—49 R **21 Claims**

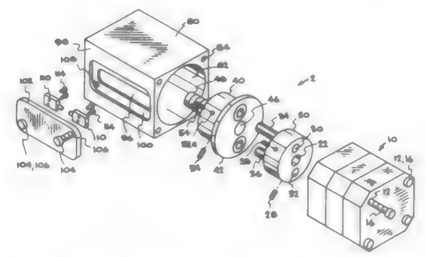
1. A direct drive actuator for providing accurate and repeatable lateral motion of a lead screw which comprises:

a) a motor having a plurality of steps per revolution;

b) a cylindrical drive hub coaxially attached to a drive shaft of said motor and having a plurality of drive pins therein;

c) a cylindrical driven hub having a plurality of bores in one end thereof in alignment with said drive pins in said drive hub and having approximately the same diameter as said pins to thereby snugly receive said pins therein, and a threaded shaft coaxially mounted and secured in an opposite end of said driven hub; and

d) a housing having a central cylindrical bore therein to receive said drive hub and said driven hub, said housing also having motor mounting means on one end thereof for mounting said stepper motor, and said housing further provided with a closed end portion at an opposite end of



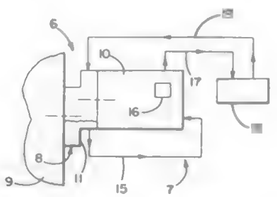
said central cylindrical bore with a threaded opening therein coaxial with said central bore in said housing to receive therein said threaded shaft attached to said driven hub.

5,359,247

COOLING ARRANGEMENT AND METHOD FOR OFFSET GEARBOX

Jeffrey D. Baldwin, Rockford, Ill.; Ellen J. Wagle, Indianapolis, Ind., and Jude C. T. Lai, Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Apr. 27, 1992, Ser. No. 874,786
Int. Cl.[5] H02K *9/19;* **F01M** *5/00*
U.S. Cl. 310—54 **12 Claims**



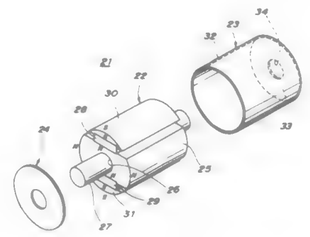
1. A cooling arrangement for an offset gearbox and an electrical power generating unit drivingly connected thereto in an aircraft, comprising an offset gearbox drivingly connected to an engine gearbox, said offset gearbox having a sump with a fluid lubricant therein for lubricating the offset gearbox, an electrical power generating unit drivingly connected to said offset gearbox, fluid coolant for cooling both the lubricant of the offset gearbox and the electrical power generating unit, and means for circulating the fluid coolant through both the electrical power generating unit, for cooling the unit, and in thermal communication with but not mixed with the lubricant of the offset gearbox for cooling the lubricant of the offset gearbox.

5,359,248

CORROSION RESISTANT ROTOR WITH AUXILIARY YOKES

Takashi Nagate; Kenichi Endo; Yoshikazu Koike; Takeshi Seto, and Yoshihiko Yamagishi, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

PCT No. PCT/JP91/00926, § 371 Date Apr. 8, 1993, § 102(e) Date Apr. 8, 1993, PCT Pub. No. WO92/07407, PCT Pub. Date Apr. 30, 1992
PCT Filed Jul. 10, 1991, Ser. No. 39,066
Claims priority, application Japan, Oct. 12, 1990, 2-273769; Nov. 9, 1990, 2-304539
Int. Cl.[5] H02K *21/12*
U.S. Cl. 310—156 **2 Claims**



1. A corrosion resistant rotor with auxiliary yokes for a brushless motor, comprising:

a rotatable shaft;

a main yoke surrounding said rotatable shaft and having at least one pair of flat surfaces and at least one pair of curved surfaces, said flat and curved surfaces being arranged alternately;

at least one pair of permanent magnets provided on said flat surfaces;

at least one pair of auxiliary yokes provided on said permanent magnets to form a rotor proper together with said main yoke and permanent magnets;

a metallic case made from a corrosion resistant material in a form of deep bowl having a cylindrical portion for covering a circumferential surface of said rotor proper and a circular portion for covering an end surface of said rotor proper; and

a circular molding provided on another end surface of said rotor proper;

said rotatable shaft extending through and hermetically sealed to said circular portion of said metallic case and said circular molding.

5,359,249

AC GENERATOR WITH TAPERED SLOTS

Toshinori Tanaka, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

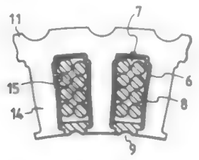
Filed Jul. 17, 1992, Ser. No. 914,314
Claims priority, application Japan, Jul. 19, 1991, 3-204818
Int. Cl.[5] H02K *1/06, 15/00*
U.S. Cl. 310—216 **5 Claims**

1. A stator of an AC generator comprising:

a stator core which is formed in a ring shape having tooth portions projecting inside said ring shape and forming slots which include an inner half section and an opening side half section with respect to a depth direction thereof between said tooth portions, said inner half section being tapered in width so that a bottom portion thereof is wider than any other portion of said inner half section, and said

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opening side half section including a constant width and parallel side edges; and



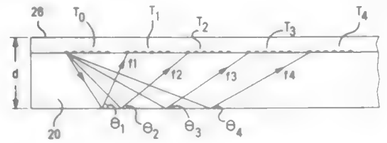
a stator coil which is wound around said stator core through said slots.

5,359,250

BULK WAVE TRANSPONDER

Minoru Toda, Lawrenceville, N.J., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 4, 1992, Ser. No. 845,685
Int. Cl.[5] H01L *41/02*; G01S *13/80*
U.S. Cl. 310—313 R 1 Claim



1. A transponder, comprising:

(a) an antenna; and

(b) a bulk wave transducer, coupled to said antenna, comprising a substrate, first and second bus electrodes, a plurality of interdigital transducers (IDTs) so disposed upon said substrate as to generate, in response to an interrogation signal received by said antenna, a response signal conveying an identifying code, and a layer of piezoelectric film in contact with said IDTs; wherein each of said IDTs is coupled to at least one of said first and second bus electrodes; wherein said plurality of IDTs comprises a series of connected and unconnected IDTs (T_1, T_2, T_3 . . . T_N) so disposed as to generate a response signal in which is encoded a prescribed sequence of digits, wherein the connected IDTs are connected to both said first and second bus electrodes and the unconnected IDTs are unconnected to said second bus electrode; wherein all of said IDTs are disposed on a single surface of said substrate; wherein each digit (digit$_i$) corresponds to a unique IDT (T_i) and is capable of representing at least two conditions, including the connected/unconnected state of its corresponding IDT; wherein each digit is carried via a unique frequency (f_i); and wherein the inter-IDT spacings D_i are related to the frequencies f_i as follows:

$$D_i = 2d/\tan(\arccos(v_a/Lf_i)),$$

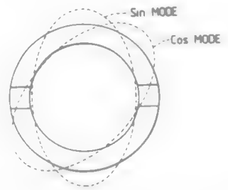
where v_a represents the velocity of the bulk waves in the substrate, d represents the thickness of the substrate, and L represents two times the spacing between adjacent electrodes of the IDTs plus the width of an electrode.

5,359,251

VIBRATION DRIVEN ACTUATOR

Takayuki Tsukimoto, Fujisawa, and Shinichi Koreeda, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1993, Ser. No. 9,994
Claims priority, application Japan, Jan. 29, 1992, 4-013824
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—323 20 Claims



1. A vibration driven motor or actuator comprising:

a vibrating member for generating a vibration therein in response to an electrical signal applied thereto; and

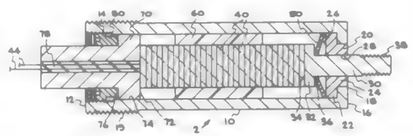
a contact member, frictionally engaged with said vibrating member, to be driven by said vibration, said contact member having a vibration noise suppressing element for causing sin and cos modes of said vibration generated in the contact member to have different natural frequencies, when said contact member is driven by the vibration.

5,359,252

LEAD MAGNESIUM NIOBATE ACTUATOR FOR MICROPOSITIONING

Charles D. Swift, Livermore, and John W. Bergum, Concord, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 30, 1993, Ser. No. 39,614
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—328 24 Claims



1. A lead magnesium niobate actuator for micropositioning which comprises:

a) a cylindrical casing having an open end and a partially closed end, said partially closed end having a central opening therein of smaller diameter than the inner diameter of said casing;

b) a cylindrical lead magnesium niobate crystal stack mounted within said casing, said crystal stack:

i) having a smaller diameter than the inner diameter of said casing;

ii) having a generally hemispherical end portion bonded to one end of said stack; and

iii) being electrically actuatable from a contracted position to an extended position;

c) a shaft member received in said central opening in said partially closed end of said casing, said shaft member having a threaded end portion outside of said casing and an enlarged head portion within said casing, said enlarged head portion of said shaft formed with a central conical opening in a surface facing said one end of said crystal stack to receive said hemispherical head bonded to said one end of said crystal stack;

d) bias means located between the inner portion of said closed end of said casing and a surface on said enlarged head portion of said shaft, to urge said head portion of said shaft toward said hemispherical head bonded to said one end of said crystal stack; and

e) adjustable means within said casing and adjacent an opposite end of said crystal stack for adjustably urging said crystal stack against said enlarged head on said shaft;

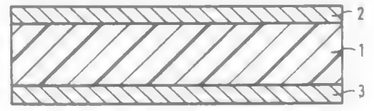
whereby said adjustable means and said bias means cooperate to exert an adjustable compressive force constantly against opposite ends of said crystal stack.

5,359,253

PIEZOELECTRIC MATERIAL COMPRISING A POLYMER NETWORK

Rifat A. M. Hikmet, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 25, 1993, Ser. No. 36,772
Claims priority, application European Pat. Off., Mar. 27, 1992, 92200874.3
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—357 5 Claims



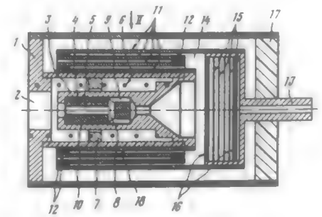
1. A piezoelectric material comprising a chiral compound and an anisotropic polymer network having a smectic structure, characterized in that the piezoelectric material has permanently oriented dipoles.

5,359,254

PLASMA COMPENSATION CATHODE

Boris A. Arkhipov; Yuriy M. Gorbachev; Viktor A. Ivanov; Konstantin N. Kozubsky, and Georgy A. Komarov, all of Kaliningrad, Russian Federation, assignors to Research Institute of Applied Mechanics and Electrodynamics, Moscow, Russian Federation

Continuation-in-part of Ser. No. 720,564, Jun. 25, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 17,577
Claims priority, application U.S.S.R., Jun. 26, 1990, 4843045
Int. Cl.[5] H01J *17/26*
U.S. Cl. 313—15 3 Claims



1. A plasma compensation cathode comprising:

an outer casing defining an enclosed chamber and an outlet hole having a longitudinal axis and located at a side of said casing;

inlet pipe means for feeding a gas into said chamber and a support insulator securing the pipe to said casing on a side of the casing opposite said outlet hole;

a plurality of filters located in the chamber adjacent said inlet pipe and disposed transversely to said longitudinal axis, and a getter between said filters;

a plurality of tubular heat screens in said chamber coaxially connected with said inlet pipe and separated by sealing, annular spacers, said heat screens being interposed between said outlet hole and said inlet pipe and further defining a cavity formed by an innermost one-of said screens and at least one of said filters; and

a tubular holder in said cavity and coaxial to said outlet hole, a thermal emitter disposed inside said holder, a heater disposed about the holder and located between the holder and the heat screens, and an insulation sleeve between said heat screens and said heater,

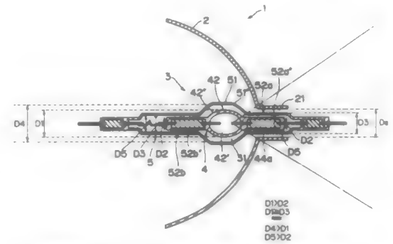
said thermal emitter having an outer surface proximate an interior surface of the holder and a layer of material disposed therebetween which is chemically inert at high temperatures to the material of the holder and the emitter, said emitter including a central passage therethrough coaxial to said outlet hole, said central passage terminating short of an axial end of the emitter proximate the inlet pipe, said emitter further including at least one axially oriented groove on its outer surface extending from the end of the emitter proximate the inlet pipe towards and short of an opposite end of the emitter, and at least one radially extending inlet aperture extending from said passage to said at least one groove, whereby gas can pass from said hollow cavity along said at least one groove and into said central passage through said inlet aperture.

5,359,255

DISCHARGE TUBE HAVING A DOUBLE-TUBE TYPE STRUCTURE

Koji Kawai; Shigeki Ishihara, and Naoki Masuda, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Shizuoka, Japan

Filed Jul. 27, 1992, Ser. No. 918,759
Claims priority, application Japan, Jul. 25, 1991, 3-186544; Jun. 4, 1992, 4-144421
Int. Cl.[5] H01J *5/16, 1/52, 61/30*
U.S. Cl. 313—17 33 Claims



1. A discharge tube for emitting light, comprising:

an inner bulb including a bulb wall having an inner surface for defining an arc discharge chamber for enclosing therein gas for emitting light and an outer surface for defining an outer diameter of a first value and a pair of solid portions continuously connected from the bulb wall, each for supporting a corresponding one of a pair of electrodes and corresponding one of a pair of metal members which is connected to the corresponding one of the pair of electrodes, the pair of electrodes being projected in the arc discharge chamber from the pair of solid portions and the pair of metal members being projected outwardly of said inner bulb from the pair of solid portions, the pair of solid portions having an outer surface; and

an outer tube for sealingly enclosing therein the inner bulb,

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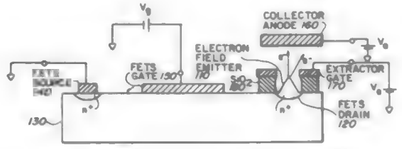
said outer tube including a tube wall having a large-diameter part having an inner surface for defining a large-diameter hollow portion and a small-diameter cylindrically-shaped part continuously connected from the large-diameter part, the small-diameter cylindrically-shaped part having an inner surface for defining a small-diameter hollow portion and an outer surface defining a substantially constant outer diameter of a second value which is equal to or smaller than the first value, said inner bulb being enclosed in said outer tube with the metal members projected outwardly of said inner bulb being supported by said tube wall, the large-diameter hollow portion receiving therein an entire part of the bulb wall of said inner bulb with a gap being formed between the outer surface of the bulb wall and the inner surface of the large-diameter part, the small-diameter hollow portion receiving therein at least a part of one of the pair of solid portions of said inner bulb and the metal member projected from the solid portion with a gap being formed between the outer surface of the part of the solid portion and the inner surface of the small-diameter cylindrically-shaped part.

5,359,256

REGULATABLE FIELD EMITTER DEVICE AND METHOD OF PRODUCTION THEREOF

Henry F. Gray, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 30, 1992, Ser. No. 921,658
Int. Cl.[5] H01J *37/26, 1/02, 29/52*
U.S. Cl. 313—169 **29 Claims**



1. A field emitter device comprising:
a voltage controlled current source to output a regulated current in dependence upon a control voltage; and
an electron field emitter operatively connected to said voltage controlled current source and configured in an arrangement sufficient to allow electrons to be emitted from said electron field emitter.

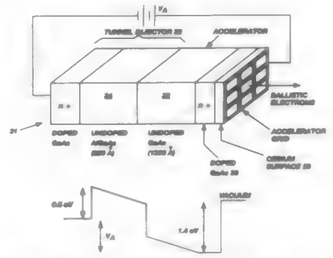
5,359,257

BALLISTIC ELECTRON, SOLID STATE CATHODE

Kyle J. Bunch, 391 E. Woodlake Dr., Murray, Utah 84107; William N. Cain, 138 P St., #1, Salt Lake City, Utah 84103, and Richard W. Grow, 4311 S. Spruce Cir., Holladay, Utah 84117

Filed Dec. 3, 1990, Ser. No. 621,636
Int. Cl.[5] H01L *29/161*
U.S. Cl. 313—310 **55 Claims**

54. A ballistic electron solid state cathode comprising:
an emitting surface for emitting electrons, said emitting surface having a work function and a current density of said electrons, and said electrons having energy levels associated therewith;
a ballistic electron injector for injecting said electrons ballistically toward said emitting surface;
a potential barrier proximate said ballistic electron injector for increasing said energy levels of said electrons;
a solid state semiconductor for receiving and conducting said electrons ballistically to said emitting surface;
means for accelerating said electrons ballistically through said solid state semiconductor toward said emitting surface;
means to modulate said energy levels of said electrons with respect to said work function of said emitting surface so that said energy levels exceed said work function and said



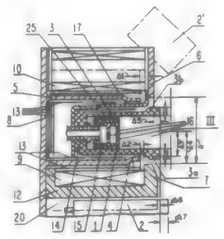
electrons are thereby emitted from said emitting surface; and
means for modulating said current density of said electrons, said means for modulating said current density being operably associated with said potential barrier.

5,359,258

PLASMA ACCELERATOR WITH CLOSED ELECTRON DRIFT

Boris A. Arkhipov, Kaliningrad; Andrey M. Bishaev; Vladimir M. Gavriushin, both of Moscow; Yury M. Gorbachov, Kaliningrad; Vladimir P. Kim; Vjacheslav I. Kozlov, both of Moscow; Konstantin N. Kozuesky; Nikolai N. Maslennikov, both of Kaliningrad; Alexei I. Morozov, and Dominic D. Sevruk, both of Moscow, all of U.S.S.R., assignors to Fakel Enterprise, Kaliningrad, U.S.S.R.

Filed Apr. 9, 1992, Ser. No. 866,149
Claims priority, application U.S.S.R., Nov. 4, 1991, 5018122/25
Int. Cl.[5] H01J *1/52;* **F03H** *1/00;* **H05H** *1/00*
U.S. Cl. 313—359.1 **6 Claims**



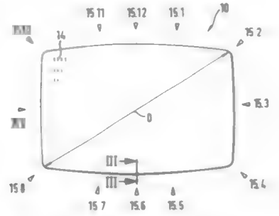
1. A thruster with closed electron drift having improved efficiency and lifetime, said thruster comprising:
a discharge chamber having an exit part and forming an annular accelerating channel facing said exit part of said discharge chamber, said accelerating channel formed by closed equidistant cylindrical working surfaces of internal and external walls of said discharge chamber;
an annular anode gas-distributor having channels for receiving gas from a supply and channels sending gas to the accelerating channel via a system of feedthrough holes in the accelerating channel, said annular anode gas-distributor placed inside the accelerating channel at a distance from an exit plane of the discharge chamber exceeding an accelerating channel width;
a magnetic system for producing substantially radial magnetic fields in the discharge chamber having at least one internal and at least one external source of magnetic fields, an external pole and an internal pole, with an operating gap, said external pole positioned proximate the exit part of the discharge chamber walls and outside an outer wall of the discharge chamber, said internal pole positioned proximate the exit part of the discharge chamber and inside an inner discharge chamber wall;
a magnetic path having a central core, said magnetic path having said at least one internal and said at least one external source of magnetic field positioned in said magnetic path at the internal and external poles, respectively;
an internal magnetic screen of magnetic permeable material that covers the internal source of the magnetic field, said internal magnetic screen placed with a first longitudinal gap relative to the internal pole, said first longitudinal gap not exceeding half the distance of the operating gap between the internal and external poles, said internal magnetic screen having an exit end, and
an external magnetic screen made of magnetic permeable material situated between the discharge chamber and the external source of magnetic field, said external magnetic screen substantially surrounding the discharge chamber, said external magnetic screen placed with a second longitudinal gap relative to the external pole, said second longitudinal gap not exceeding half the distance of the operating gap between the internal and external poles; and a gas discharge hollow cathode positioned outside the region of the accelerating channel.

5,359,259

MASK-FRAME COMBINATION FOR A COLOR PICTURE TUBE

Rolf Reidinger, Ebersbach, and Rolf Schmidt, Esslingen, both of Fed. Rep. of Germany, assignors to Nokia (Deutschland) GmbH, Pforzheim, Fed. Rep. of Germany

Filed Jun. 12, 1992, Ser. No. 897,862
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1991, 4119481
Int. Cl.[5] H01J *29/07*
U.S. Cl. 313—407 **6 Claims**



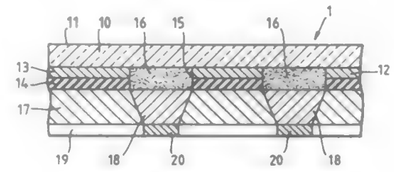
1. A mask-frame combination for a color picture tube comprising:
a rectangular mask frame made of steel,
a metal mask placed over the frame with a skirting that overhangs the frame with an overhang height and that is bent back toward the frame, and
long side and short side spot welds located around the mask skirting for attaching the mask to the frame,
wherein the mask skirting bears against the outside of the frame for attaching the mask where it is bent back, wherein
the long side spot welds are arranged on each of the long sides in such a manner that in said each long side there is a central spot weld situated close to the mid-point of the long side and an outer spot weld on each side of the central spot weld and separated from the central spot weld by a distance of between D/14 and D/9, where D equals the length of the diagonal of the frame and is between about five hundred and seven hundred millimeters, and wherein
the mask skirting is provided on each long side with openings on two sides of and adjacent to each outer spot weld, and wherein
the short side spot welds are arranged on each of the short sides in such a manner that in said each short side there is a mid-point spot weld situated in the center or close to the center of the short side.

5,359,260

DISPLAYS

Keith C. Rawlings, Cheltenham, and Neil A. Fox, Eversham, both of England, assignors to Smiths Industries Public Limited Company, London, England

Filed Dec. 4, 1991, Ser. No. 802,406
Claims priority, application United Kingdom, Dec. 20, 1990, 9027618
Int. Cl.[5] H05B *33/14;* **H01L** *33/00*
U.S. Cl. 313—498 **6 Claims**



1. A display comprising a substrate that includes a first layer containing a fluorescent material and a second layer of semiconductor material, an array of electron-emitting active components formed within said second layer and in contact with said first layer, and first and second pluralities of electrodes for energizing selected ones of said active components, said first and second pluralities of electrodes being located respectively in two different planes that are spaced from one another in said substrate, energization of a selected component causing electrons to be generated by the component and emitted from the component directly into said layer of fluorescent material so that the electrons generated by each energized component excite a portion of said first layer adjacent the energized component to produce optical radiation.

5,359,261

ELECTROLUMINESCENCE DISPLAY

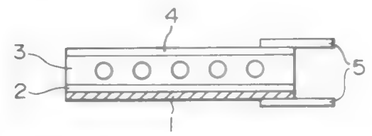
Kenichi Kondo, Fujisawa; Takahiro Saida; Shuichi Taya, both of Yokohama; Toyoshi Iida, Tsukuba; Takeshi Sotomura, Tsukuba; Yuko Fujii, Tsukuba; Keiji Sato, Tsukuba; Mamoru Takahashi, Gunma; Sadayasu Yamakawa, and Shunichi Osawa, both of Nagai, all of Japan, assignors to Stanley Electric Co., Ltd. and Japan Metals & Chemicals Co., Ltd., both of Tokyo, Japan

Filed Dec. 20, 1991, Ser. No. 812,577
Claims priority, application Japan, Dec. 28, 1990, 2-416782; Jul. 25, 1991, 3-186335; Oct. 11, 1991, 3-263749; Oct. 15, 1991, 3-266485
Int. Cl.[5] H05B *33/00*
U.S. Cl. 313—509 **16 Claims**

1. An EL lamp comprising:
an aluminum foil;
an anodized oxide film that functions as a barrier for electrons, said anodized oxide film being formed on a surface of said aluminum foil and containing γ-alumina formed by anodic oxidation in a neutral electrolyte;
a light emitting EL layer formed directly on said anodized

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oxide film and including electro-luminescence powders dispersed in a binder; and



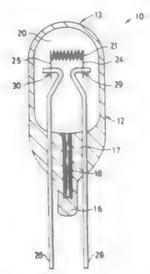
a transparent electrode formed on said light emitting EL layer.

5,359,262

SUB-MINIATURE TUNGSTEN HALOGEN LAMP WITH MAJOR INERT GAS AND MINOR HALIDE GAS CONSTITUTES

Dean A. Bell, Marcellus, and John W. Harkins, Baldinsville, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Aug. 31, 1992, Ser. No. 938,876
Int. Cl.[5] H01K *1/50*
U.S. Cl. 313—579 12 Claims



1. A sub-miniature, halogen lamp comprising:
a cylindrical envelope formed of high temperature glass having a sealed chamber capable of withstanding internal pressures of between 3.5 and 30 atmospheres, the diameter of said cylindrical envelope being equal to or less than 0.16 inches;
at least one refractory metal filament mounted within said sealed chamber, said at least one refractory metal filament being connected to a pair of leads passing out of the envelope;
a fill gas contained within said sealed chamber at a pressure of between 3.5 and 30 atmospheres;
said fill gas containing an inert gas major constituent and a halide gas minor constituent, the fractional percentage of halide gas being linearly related to the pressure of said fill gas and varying within the range of from 2500 ppm at 3.5 atmospheres to 100 ppm at 30 atmospheres so that the lamp produces an efficacy of up to 20 lumens per watt when operating within a range of from 1.0 and 7.5 watts.

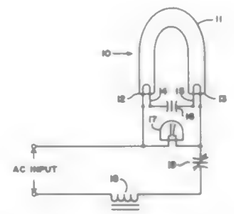
5,359,263

TUNED LRC BALLASTING CIRCUIT FOR COMPACT FLUORESCENT LIGHTING

Gary D. Roberts, Riverton, Utah, assignor to RemTech Company, Lindon, Utah

Filed Nov. 20, 1992, Ser. No. 979,765
Int. Cl.[5] H01J *7/44*
U.S. Cl. 315—58 1 Claim

1. A fluorescent lamp which includes an elongated tube having a pair of cathodic emitters mounted therein and means for igniting the emitters, a series-resonant ballasting circuit which remains in resonance and operates at essentially unity power factor both during and after lamp ignition connected in



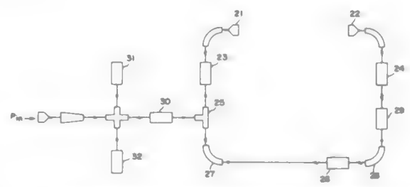
series with both emitters, said ballasting circuit including a series-connected inductance and capacitance which remain fully operative in the circuit during and after lamp ignition, said capacitance being sized to match and neutralize said inductance.

5,359,264

INTEGRAL IMPEDANCE MATCHING STRUCTURE FOR ELECTRODELESS DISCHARGE LAMP

Scott J. Butler, North Oxford; Walter P. Lapatovich, Marlborough, both of Mass., and Jason R. Bochinski, Springfield, Oreg., assignors to GTE Products Corporation, Danvers, Mass.

Filed Dec. 18, 1992, Ser. No. 993,343
Int. Cl.[5] H05B *41/24*
U.S. Cl. 315—248 11 Claims



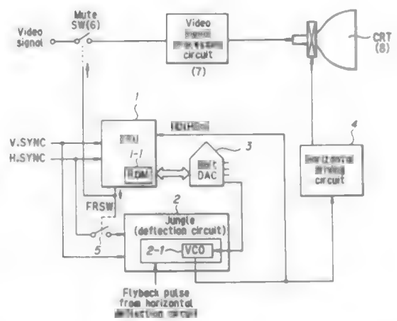
1. An assembly having an input impedance comprising: first and second field applicators oriented to define a gap therebetween;
an electrodeless discharge lamp disposed in said gap between said first and second field applicators, said field applicators and said electrodeless lamp having an effective series impedance,
an integral impedance matching structure for electromagnetically coupling energy from a power source to said electrodeless discharge lamp, said integral impedance matching structure comprising:
a Tee junction having first and second outputs; and
a transmission line including a first branch having a predetermined effective electrical length connecting said first output of said Tee junction to said first field applicator and a second branch having a predetermined electrical length connecting said second output of said Tee junction to said second field applicator, the difference between said predetermined electrical lengths of said first and second branches being substantially shorter than a half-wavelength.

5,359,265

DISPLAY APPARATUS HAVING PLURAL SCANNING FREQUENCIES

Kazuo Kii, Tokyo, and Yasunori Mori, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 24, 1993, Ser. No. 80,493
Claims priority, application Japan, Jul. 21, 1992, 4-214726
Int. Cl.[5] H01J *29/70, 29/72*
U.S. Cl. 315—367 12 Claims



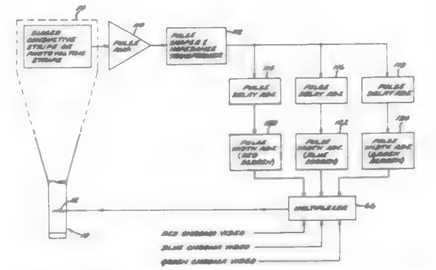
1. A display apparatus for displaying a video image of an input video signal having one of a plurality of different horizontal scanning frequencies, comprising:
horizontal scanning frequency generating means including a voltage controlled oscillator for generating a horizontal drive signal in synchronism with a horizontal synchronous signal of an input video signal, said voltage controlled oscillator being responsive to a control signal fed thereto;
a digital-to-analog converter producing said control signal fed to said voltage controlled oscillator in response to a frequency data signal;
digital processor means for controlling a frequency of said horizontal drive signal output from said horizontal scanning frequency generating means and receiving said horizontal synchronous signal of said input video signal, said digital processor means providing said frequency data signal fed to said digital-to-analog converter;
a free-running switch operated by said digital processor means for selectively connecting said horizontal synchronous signal to said horizontal scanning frequency generating means for comparison therein with a flyback pulse fed to said frequency generating means for effecting synchronism between said horizontal synchronous signal and said horizontal drive signal;
said digital processor means comparing said horizontal synchronous signal and said horizontal drive signal and upon detecting a substantial difference therebetween operating said free running switch to disconnect said horizontal synchronous signal from said frequency generating means, whereby upon opening said free running switch said digital processor means changes the frequency data signal fed to said digital-to-analog converter based on the detected difference, whereupon said digital processor means operates said free running switch to connect said horizontal synchronous signal to said frequency generating means; and
displaying means for displaying the video image.

5,359,266

SYSTEM FOR GENERATING TRIGGERING PULSES FOR USE IN BEAM INDEXING TYPE COLOR CATHODE RAY TUBES

Ceil E. Smith, Los Angeles, Calif., and Philip L. Writer, Marietta, Ga., assignors to Howard Nusbaum, Stamford, Conn., a part interest and Cosmo F. Zaccardo, Jr., Bayville, N.J., a part interest to each

Filed Nov. 20, 1992, Ser. No. 978,934
Int. Cl.[5] H01J *29/52, 31/26*
U.S. Cl. 315—383 18 Claims



1. A system for generating indexing signals for use in a single gun color cathode ray tube, the cathode ray tube having a screen upon which the electron beam emitted by the gun scans across the screen surface comprising:
a screen comprising a sequence of vertical phosphor strips in a predetermined array of strips, each array having three phosphor strips, the first strip emitting illumination corresponding to a first color when scanned by the electron beam, the second phosphor strip emitting illumination corresponding to a second color when scanned by the electron beam and a third strip emitting illumination corresponding to a third color when scanned by the electron beam, a layer of material for generating pulses when scanned by an electron beam overlying each phosphor strip;
means for connecting the pulse generating material in three parallel arrays, the first array comprising all phosphor strips emitting said first color illumination, the second array comprising all phosphor strips emitting said second color illumination and the third array comprising all phosphor strips emitting said third color illumination;
means for connecting each array to a corresponding electrical bus, an electrical pulse being generated by each strip of pulse generating material when scanned by said electron beam;
means for adjusting each pulse generated on each electrical bus; and
means for coupling said adjusted electrical pulses from each electrical bus to a multiplexer for connection to the cathode ray tube whereby the electron beam is modulated by externally generated video color signals in synchronism with the particular color phosphor strip being scanned.

5,359,267

VERTICAL DEFLECTION WITH VERTICAL SHRINK MODE

James A. Wilber, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Sep. 3, 1993, Ser. No. 115,612
Int. Cl.[5] H01J *29/70, 29/76*
U.S. Cl. 315—403 8 Claims

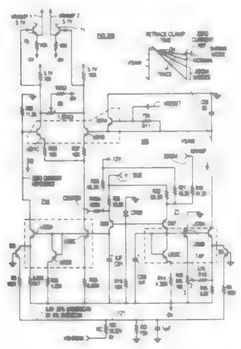
1. A video deflection apparatus, comprising:
a cathode ray tube;

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a vertical deflection winding mounted on a neck of said cathode ray tube;

a sawtooth signal generator responsive to a first vertical size control signal for generating, selectively, in accordance with said first vertical size control signal, a first sawtooth signal at a first amplitude to provide for a vertical non-shrink mode of operation and at a second amplitude to provide for a vertical shrink mode of operation;

a deflection amplifier responsive to said sawtooth signal for



generating a vertical deflection current in said deflection winding that causes a vertical position of an electron beam to vary on a display screen of said cathode ray tube in accordance with said sawtooth signal; and

a nonlinear element coupled to said sawtooth signal generator for varying said sawtooth signal in a nonlinear manner to provide for vertical S-correction, such that a nonlinearity introduced in said sawtooth signal by said nonlinear element is the same in a given vertical position in both the vertical shrink and non-shrink modes.

5,359,268

CONTROL APPARATUS FOR VIBRATION DRIVEN MOTOR

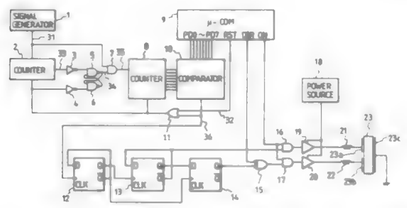
Ritsuo Kashiyama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 975,513

Claims priority, application Japan, Nov. 12, 1991, 3-295762; Jan. 7, 1992, 4-001028

Int. Cl.[5] H01L *41/08*

U.S. Cl. 318—116 **12 Claims**



1. A control apparatus for a vibration motor which obtains a driving force upon application of a frequency signal to electro-mechanical energy converting elements, comprising:

an oscillation circuit for outputting a signal;

a first counter circuit for counting a number of signal pulses of the signal output from said oscillation circuit, and for generating an output signal when a predetermined number of signal pulses are counted;

a second counter circuit for counting a number of signal pulses of the signal output from said oscillation circuit in response to the output signal from said first counter circuit;

a data circuit for setting data;

a control circuit for generating an output when a count value from said second counter circuit becomes a value according to a data value from said data circuit; and

a frequency signal forming circuit for forming a frequency signal on the basis of the output from said control circuit.

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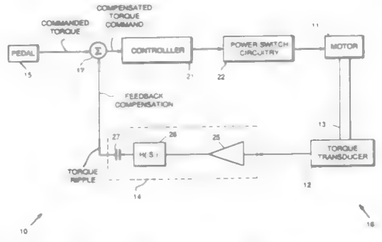
TORQUE OSCILLATION COMPENSATION USING TORQUE TRANSDUCER FEEDBACK

Robert S. Wedeen, Manhattan Beach, and Gholam D. Goodarzi, Torrance, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 13, 1993, Ser. No. 61,657

Int. Cl.[5] H02P *7/00*

U.S. Cl. 318—432 **18 Claims**



1. A torque oscillation compensation system for use with an electric motor having an output shaft, said system comprising:

a torque input source for providing a command torque input signal;

a summing circuit having an output and having one input coupled to the torque input source;

a controller coupled to the output of the summing circuit;

power switching circuitry coupled between the controller and the electric motor;

a torque transducer coupled to the output shaft of the electric motor for sensing torque pulsations present in output shaft of the electric motor; and

an oscillation compensation circuit coupled between the torque transducer and a second input of the summing circuit that generates a feedback compensation signal that is combined with the commanded torque input signal that compensates for oscillations present in the output shaft of the electric motor.

5,359,270

NUMERICAL CONTROL SYSTEM

Hideaki Kawamura, Hachioji; Kentaro Fujibayashi, Musashino, and Shouichi Sagara, Minamitsuru, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP89/00224, § 371 Date Oct. 19, 1989, § 102(e) Date Oct. 19, 1989, PCT Pub. No. WO89/08875, PCT Pub. Date Sep. 21, 1989

Continuation of Ser. No. 432,759, Oct. 19, 1989, abandoned. This PCT application Mar. 2, 1989, Ser. No. 842,762

Claims priority, application Japan, Mar. 9, 1988, 63-55760

Int. Cl.[5] G05B *19/18*

U.S. Cl. 318—571 **1 Claim**

1. A method of controlling a plurality of spindles of a single machine tool using a plurality of numerical control channels, comprising the steps of:

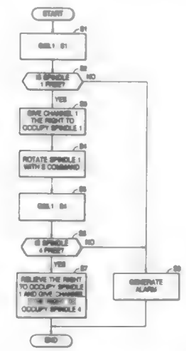
(a) decoding a first numerical control code instructing use of a first spindle by one of the numerical control channels;

(b) checking availability of the first spindle;

(c) assigning use of the first spindle to a first numerical control channel when the spindle is available;

(d) controlling rotation of the spindle by the one of the channels in accordance with the first numerical control code;

(e) preventing steps (c) and (d) until the spindle becomes



available, if the spindle was previously assigned to one of said numerical control channels when checked in step (b);

(f) decoding a second numerical control code instructing use of a second spindle by one of the numerical control channels;

(g) checking availability of the second spindle; and

(h) releasing use of the first spindle and assigning use of the second spindle to the first numerical control channel when the second spindle is available and the first numerical control channel has completed said controlling in step (d).

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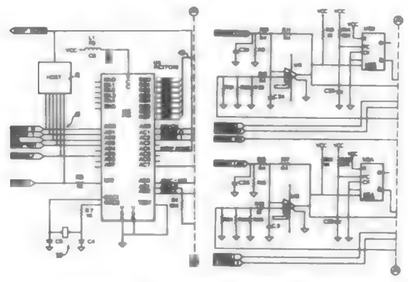
MICROSTEPPING BIPOLAR STEPPING MOTOR CONTROLLER FOR DOCUMENT POSITIONING

Frederick K. Husher, Blackstone, Mass., assignor to Gtech Corporation, West Greenwich, R.I.

Filed Jan. 25, 1993, Ser. No. 8,187

Int. Cl.[5] H02P *8/00*

U.S. Cl. 318—696 **13 Claims**



1. A controller for operating a stepping motor having a plurality of motor coils and defining rotor and stator poles, the controller comprising:

at least one processor having control inputs for receiving operational commands, data and program memory means including random access memory for storage of information defining at least one stepping motor operation;

a digital memory addressable by the processor and a digital to analog converter coupled to an output of the digital memory, the digital memory storing data values representing sinusoidally varying current levels in the motor coils over at least 90° of a passage of rotor and stator poles, and the digital to analog converter being operable to convert data values selected in the digital memory by the processor to analog levels simultaneously for a plurality of outputs of the digital to analog converter at least equal in number to the motor coils;

a plurality of power stages coupled to said outputs of the digital to analog converter and operable to produce currents in the motor coils corresponding to the analog levels; and,

wherein the processor is operable selectively to read out the data values in the digital memory for accomplishing the stepping motor operation.

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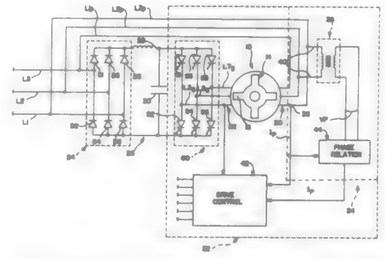
SENSORLESS DRIVE CONTROL AND METHOD FOR DOUBLY-FED RELUCTANCE MOTOR

Yuefeng Liao, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 5, 1993, Ser. No. 14,254

Int. Cl.[5] H02P *1/26*

U.S. Cl. 318—732 **17 Claims**



1. A drive control for a doubly-fed reluctance motor having at least one primary winding and at least one secondary winding for each motor phase comprising:

means connected to the primary winding for developing a primary winding current signal and a primary winding voltage signal, said means including phase means to which said signals are supplied for said phase means to produce a phase signal representing the phase relationship between the primary winding's current and voltage;

processing means for determining the magnitude and phase of a secondary winding current for the motor when it is operating at a predetermined speed as represented by a speed input signal supplied to the processing means, said processing means including scheduling means to which said speed input signal is supplied, said scheduling means including a look-up table which provides a desired secondary phase relationship for the motor at the predetermined speed as represented by said speed input signal, and said scheduling means providing as an output respective secondary current and secondary phase signals, and said processing means further including summing means for respectively summing said primary phase signal and said secondary phase signal and said secondary current signal and the summed primary and secondary current signals, and phase synchronizing means responsive to said speed input signal and said primary current signal; and, switching means responsive to outputs from said summing means and said phase synchronizing means of said processing means for establishing and maintaining a desired phase

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relationship between said primary and secondary winding currents, said switching means opening and closing a secondary winding circuit through which said secondary current flows through said secondary winding in response to said processing means outputs.

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LOAD-CONTROL CIRCUIT FOR A MAINS-POWERED ASYNCHRONOUS SINGLE-PHASE CAPACITOR MOTOR

Daniel Flückiger, Walkringen, Switzerland, assignor to Ascom Hasler Mailing Systems AG, Bern, Switzerland

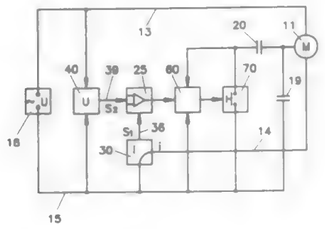
PCT No. PCT/CH92/00107, § 371 Date Feb. 2, 1993, § 102(e) Date Feb. 2, 1993, PCT Pub. No. WO92/22126, PCT Pub. Date Dec. 10, 1992

PCT Filed Jun. 4, 1992, Ser. No. 969,169

Claims priority, application Switzerland, Jun. 7, 1991, 01 697/91-7

Int. Cl.[5] H02P 7/622

U.S. Cl. 318—794 9 Claims



1. Load-control circuit for an asynchronous motor (11), where the asynchronous motor is operated at a single-phase mains with the aid of a first capacitor (19), wherein a second capacitor (20) is furnished, which can be connected in parallel to the first capacitor (19) by a switch (70), comprises:

a current sensor (30) for continuously detecting the motor current (i) through the main winding of the motor (11) and for delivering a first direct current signal (S_1) proportional to the current (i);

a voltage sensor (40) for continuously detecting the mains voltage (U) and for delivering a second direct current signal (S_2) proportional to the mains voltage; and

a comparator (25) with relaxation hysteresis for continuously comparing the first direct current signal (S_1) and the second direct current signal (S_2) and for delivering a switching signal to the switch (70), as long as the first signal (S_1) is larger than the second signal (S_2).

5,359,274

ACTIVE OFFSET FOR POWER FACTOR CONTROLLER

Michael W. Bandel, Elk Grove Village, Ill., assignor to North American Philips Corporation, New York, N.Y.

Filed Aug. 20, 1992, Ser. No. 932,839

Int. Cl.[5] G05F 1/70, 1/565; H02M 7/5387

U.S. Cl. 323—207 25 Claims

1. A switch mode power supply, comprising:

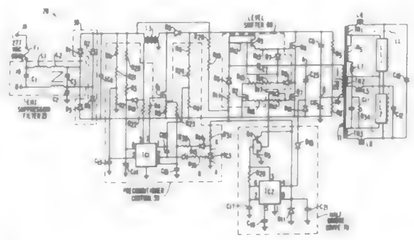
a current source for producing current;

output means responsive to said current for providing an output voltage;

switch means for conditioning current supplied to said output means;

control means responsive to a control signal for controlling conditioning by said switch means of current supplied to said output means; and

sensing means for producing said control signals, said control signal including a sensed signal representing current



flow through said switch means and a varying offset based on the output voltage of said output means.

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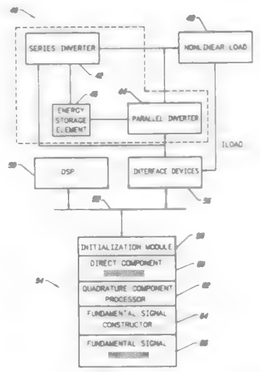
LOAD CURRENT FUNDAMENTAL FILTER WITH ONE CYCLE RESPONSE

Charles W. Edwards, Monroeville, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 30, 1992, Ser. No. 969,081

Int. Cl.[5] G05F 1/70

U.S. Cl. 323—207 13 Claims



1. An apparatus to construct, within one cycle, a sinusoidal output signal corresponding to the fundamental component of a sinusoidal input signal, said apparatus comprising:

means for dividing said sinusoidal input signal into a direct component signal corresponding to said fundamental component and a quadrature component signal corresponding to said fundamental component;

first means for filtering said direct component signal with one or more former direct component signal values to construct a filtered direct component signal with an amplitude corresponding to said fundamental component amplitude;

second means for filtering said quadrature component signal with one or more former quadrature component signal values to construct a filtered quadrature component signal with an amplitude corresponding to said fundamental component amplitude;

first means for multiplying said filtered direct component signal by said fundamental component of a cosine reference signal to provide a modified filtered direct component signal with a phase value corresponding to said input signal;

second means for multiplying said filtered quadrature component signal by said fundamental component of a sine reference signal to provide a modified filtered quadrature component signal with a phase value corresponding to said input signal; and

means for adding said modified filtered direct component signal and said modified filtered quadrature component signal to form said output signal corresponding to said fundamental component of said sinusoidal input signal.

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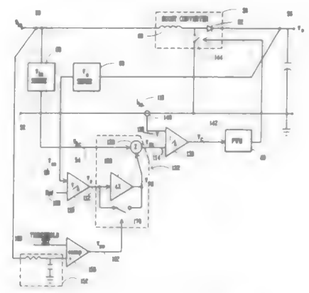
AUTOMATIC GAIN SELECTION FOR HIGH POWER FACTOR

Robert A. Mammano, Costa Mesa, Calif., assignor to Unitrode Corporation, Billerica, Mass.

Filed May 12, 1993, Ser. No. 61,630

Int. Cl.[5] G05F 1/70

U.S. Cl. 323—207 10 Claims



9. A high power factor circuit comprising:

a first input-voltage terminal and a second input-voltage terminal for connection to a rectified AC line supply;

an output-voltage terminal;

a pulse width modulator comprising a pulse width modulator output terminal and a pulse width modulator input terminal;

a boost converter comprising a first boost converter terminal in electrical communication with said first input-voltage terminal, a second boost converter terminal in electrical communication with said output-voltage terminal, a third boost converter terminal in switchable electrical communication with said second input-voltage terminal, and a fourth boost converter terminal in electrical communication with said pulse width modulator output terminal, said third boost converter terminal being switchable in response to signals applied to said fourth boost converter terminal from said pulse width modulator output terminal;

an output voltage sensing circuit comprising a first output-voltage sensing terminal and a second output-voltage sensing terminal, said first output-voltage sensing terminal in electrical communication with said output-voltage terminal;

an input-voltage sensing circuit comprising a first input-voltage sensing terminal and a second input-voltage sensing terminal, said first input-voltage sensing terminal in electrical communication with said first input-voltage terminal;

a current sensing circuit in electrical communication with said second input-voltage terminal, said current sensing circuit comprising a current sensing circuit output terminal and producing a current signal in response to current flowing in said high power factor circuit;

a current amplifier comprising a first current amplifier input terminal, a second current amplifier input terminal, and a current amplifier output terminal, said first current amplifier input terminal in electrical communication with said current sensing circuit output terminal and said current amplifier output terminal in electrical communication with said pulse width modulator input terminal;

a multiplier comprising a first multiplier input terminal, a second multiplier input terminal and a multiplier output terminal in electrical communication with said second current amplifier input terminal;

an input-voltage comparator comprising a first input-voltage comparator input terminal in electrical communication with a threshold reference voltage, a second input-voltage comparator input terminal in electrical communication with said first input-voltage terminal and an input-voltage comparator output terminal;

an output-voltage amplifier comprising a first output-voltage amplifier input terminal in electrical communication with an output reference voltage, a second output-voltage amplifier input terminal in electrical communication with said second output-voltage sensing terminal, and an output-voltage amplifier output terminal in electrical communication with said second multiplier input terminal;

a gain amplifier comprising an input terminal in electrical communication with said second input-voltage sense terminal and an output terminal in electrical communication with said first multiplier input terminal; and

a switch comprising a switch input terminal in electrical communication with said gain amplifier input terminal, a switch output terminal in electrical communication with said gain amplifier output terminal and a switch control terminal in electrical communication with said input-voltage comparator output terminal,

wherein said switch connects said switch input terminal to said switch output terminal in response to a signal applied to said switch control terminal from said input voltage comparator output terminal.

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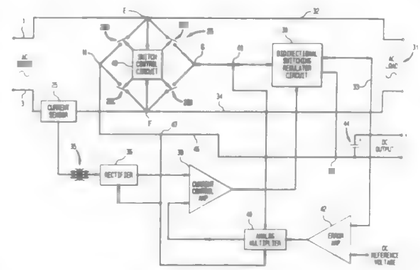
LOW DISTORTION ALTERNATING CURRENT OUTPUT ACTIVE POWER FACTOR CORRECTION CIRCUIT USING BI-DIRECTIONAL BRIDGE RECTIFIER AND BI-DIRECTIONAL SWITCHING REGULATOR

Philip M. Cowett, Jr., Baltimore, Md., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Jan. 5, 1993, Ser. No. 862

Int. Cl.[5] H02M 1/12

U.S. Cl. 323—207 5 Claims



1. A low distortion alternating current output active power factor correction circuit comprising:

bi-directional bridge means having a pair of input terminals and a pair of output terminals, said means arranged to be effective as a rectifier;

bi-directional regulating means connected to one of the pair of output terminals of the bi-directional bridge means and providing an output at an output conductor thereof;

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an other output conductor connected to the other of the pair of output terminals of the bridge means;
a bulk energy storage capacitor connected to the output conductor of the bi-directional regulating means and the other output conductor connected to the other of the pair of output terminals of the bi-directional bridge means, with a direct current output being provided across the capacitor;
a pair of alternating current input lines;
one of the pair of alternating current input lines connected to one of the pair of input terminals of the bi-directional bridge means;
a current sensor;
the other of the pair of alternating current input lines connected to the current sensor, whereby the current sensor provides an output at an output conductor which is applied to the other of the pair of input terminals of the bi-directional bridge means;
a power factor corrected alternating current output being provided across the one and the other of the pair of input terminals of the bi-directional bridge means for being applied to an alternating current load;
an error amplifier connected to the output conductor of the bi-directional regulating means for receiving the output from said regulating means;
a reference input received by the error amplifier;
the error amplifier providing an output corresponding to a difference between the regulating means output and the reference input received thereby;
a multiplier connected to the one of the pair of output terminals of the bi-directional bridge means between said terminal and the bi-directional regulating means and connected to the error amplifier, and responsive to the outputs therefrom for providing a multiplied output;
current control amplifier means connected to the multiplier and to the current sensor and responsive to the outputs therefrom for providing a controlling output, said current control amplifier means including an isolation transformer connected to the current sensor, a rectifier connected to the isolation transformer, a current control amplifier connected to the rectifier and providing the controlling output, and the bi-directional regulating means connected to the current control amplifier for being controlled by the controlling output therefrom;
the bi-directional regulating means connected to the current control amplifier means for being controlled by the controlling output therefrom; and
said bi-directional regulating means including inductor means connected to the one of the pair of output terminals of the bi-directional bridge means and first current flow control means connected to the other of the pair of output terminals of the bi-directional bridge means, first switching means connected across the first current flow control means, second current flow control means and second switching means connected in parallel, and means connected to the current control amplifier and controlled thereby for driving the first and second switching means, whereby one of the first and second switching means is rendered open when the other of said first and second switching means is simultaneously rendered closed.

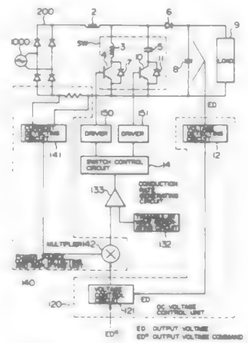
5,359,278

ZERO CURRENT SWITCHING CIRCUIT AND CONVERTING APPARATUS USING THE SAME

Yasuo Notohara; Motoo Futami; Kazuo Tahara, Hitachi, and Tsunehiro Endo, Hitachiota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,212
Claims priority, application Japan, Jun. 19, 1991, 3-147095
Int. Cl.[5] G05F *1/613*
U.S. Cl. 323—222 7 Claims

2. A switching network comprising:
a primary switching element for turning ON and OFF a primary current, said primary switching element permitting flow of the primary current in a single direction;
a first diode connected in parallel with said primary switching element with a polarity permitting current flow in a direction opposite to the single direction of current flow through said primary switching element, to constitute a switching circuit;
a reactor connected in series with said switching circuit;
an auxiliary switching circuit including an auxiliary switching element and a second diode, said auxiliary switching element permitting current flow in a single direction only, said second diode connected in parallel with said auxiliary switching element with a polarity permitting current flow in a direction opposite to the single direction of current flow through said auxiliary switching element; and



a capacitor connected in series with said auxiliary switching circuit, the series connection of said capacitor and said auxiliary switching circuit connected in parallel with the series connection of said primary switching circuit and said reactor, such that said capacitor and said reactor constitute a resonance circuit, said first diode limits charge and discharge operations of said capacitor, a resonance current generated by said resonance circuit flows through said first diode upon turning OFF of said primary switching element, and the turning OFF of said primary switching element occurs after the turning ON of said auxiliary switching element,
wherein said resonance circuit includes a loop, formed upon turning ON of said primary switching element, having an impedance greater than the impedance of a loop of said resonance circuit formed upon turning OFF of said primary switching element.

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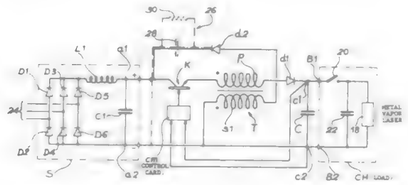
PULSED ELECTRICAL ENERGY POWER SUPPLY

Serge Gidon, Tulette, and Bernard Hennevin, Decines, both of France, assignors to Commissariat a l'Energie Atomique, France

PCT No. PCT/FR90/00839, § 371 Date May 18, 1992, § 102(e) Date May 18, 1992, PCT Pub. No. WO91/08605, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 22, 1990, Ser. No. 857,929
Claims priority, application France, Nov. 23, 1989, 89 15423
Int. Cl.[5] H01S *3/097*
U.S. Cl. 323—282 20 Claims

1. In a pulse generator for supplying pulsed electrical energy from a charge stored in an accumulation means (c), comprising, in combination, means (S) for continuous electrical supply of said accumulation means, switching means (K) for connecting the Continuous electrical supply means (S) to the electrical energy accumulation means (C) and whose closure permits

charging of the accumulation means, means (cm) for controlling the switching means, an inductive means (p) for temporary accumulation of magnetic energy and means for diverting an excess electrical energy, essentially of a magnetic origin and liable to appear in the apparatus during charging of the accumulation means (C), to means (S, 26) for absorbing said excess electrical energy, to avoid sending said excess energy to the accumulation means, wherein the switching means is directly controlled switching means for opening and closing operations, the control means comparing with a given voltage threshold a voltage at terminals of the electrical energy accumulation means (C) to control opening of the switching means



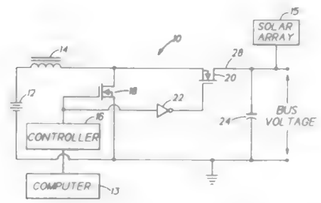
when the threshold is reached by said voltage at the terminals of the accumulation means and the apparatus also comprises a transformer (T) having a primary winding (p) forming the inductive means and connected to the switching means (K) and to the electrical energy accumulation means (C) across a diode (D1), which prevents discharging of the accumulation means to the continuous electrical supply means (S) and a secondary winding (s) for evacuation of the excess electrical energy to the means (S, 26) for absorbing said excess energy, said secondary winding being connected to said means for absorbing across another diode (D2), whose polarity permits said evacuation and to a terminal of the continuous electrical supply means.

5,359,280

BILATERAL POWER CONVERTER FOR A SATELLITE POWER SYSTEM

Stanley Canter, Phoenix, Ariz., and Ronald J. Lenk, Mountain View, Calif., assignors to Space Systems/Loral, Palo Alto, Calif.

Continuation of Ser. No. 818,842, Jan. 10, 1992, abandoned. This application Feb. 4, 1994, Ser. No. 192,186
Int. Cl.[5] G05F *1/62*; H02J *7/04*; H02M *3/155*
U.S. Cl. 323—282 14 Claims



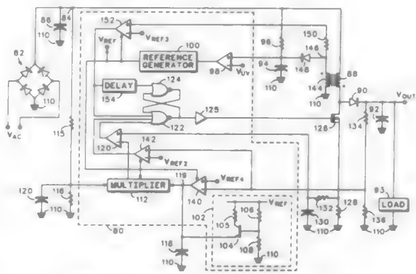
1. A bilateral power converter system comprising at least one bilateral power conversion unit, said at least one power conversion unit comprising:
at least one inductance having a first terminal and a second terminal, said first terminal for coupling to a first terminal of an electrical power source/sink;
a common bus for coupling to a second terminal of the power source/sink;
a power bus for coupling to an electrical power source;
a capacitance coupled between said power bus and said common bus;
at least one first switching means having a first terminal coupled to said second terminal of said at least one inductance, a second terminal coupled to said common bus, and a control terminal responsive to a first control signal for coupling said first terminal to said second terminal in response to a first state of said first control signal and for uncoupling said first terminal from said second terminal in response to a second state of said first control signal;
at least one second switching means having a first terminal coupled to said second terminal of said at least one inductance, a second terminal coupled to said power bus, and a control terminal responsive to a second control signal for coupling said first terminal to said second terminal in response to said first state of said second control signal and for uncoupling said first terminal from said second terminal in response to said second state of said second control signal; and
a control circuit having a first input terminal for inputting a first signal that indicates a magnitude of a voltage potential between said power bus and said common bus, said control circuit having a second input terminal for inputting a second signal that indicates a magnitude of a reference voltage potential, said control circuit having a third input terminal for inputting a third signal that indicates a magnitude of a current flow through said first switching means, said control circuit having an output terminal for outputting a single control signal having a pulse width set in accordance with said first signal, said second signal, and said third signal for controlling both the magnitude and the direction of the current flow through said at least one inductance to maintain the magnitude of the voltage potential of said power bus at a magnitude specified by said second signal;
wherein said single control signal is coupled to said control terminal of one of said first switching means and said second switching means, and wherein an inverse of said single control signal is coupled to said control terminal of the other one of said first switching means and said second switching means.

5,359,281

QUICK-START AND OVERVOLTAGE PROTECTION FOR A SWITCHING REGULATOR CIRCUIT

Steven M. Barrow, Phoenix, and Jade H. Alberkrack, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 8, 1992, Ser. No. 895,067
Int. Cl.[5] G05F *1/56*
U.S. Cl. 323—284 21 Claims



1. A switching regulator circuit, comprising:
a power converter having an input, a control input and an output, said input receiving an input signal, said output being coupled to an output of the switching regulator

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circuit for providing an output voltage, said control input receiving a control signal to regulate said output voltage;

a regulation loop having an input coupled to said output of said power converter and an output coupled to said control input of said power converter, said regulation loop developing a loop regulation voltage at a loop node for comparison against an oscillating signal to establish a duty cycle of said oscillating signal to control said output voltage of the switching regulator circuit, said regulation loop including,

(a) an error amplifier having first and second inputs and an output, said first input receiving a first reference potential, said second input being coupled to said output of said power converter, said output providing said loop regulation voltage at said loop node,

(b) a first transistor having a base, an emitter and a collector, said emitter being coupled to said loop node, said collector being coupled to a first power supply conductor,

(c) a first capacitor coupled between said base of said first transistor and said first power supply conductor, and

(d) a first comparator having first and second inputs and an output, said first input receiving said oscillating signal, said second input being coupled to said loop node, said output being coupled to said control input of said power converter; and

circuit means having an output coupled to said base of said first transistor for increasing said loop regulation voltage during power-up of the switching regulator circuit until said loop regulation voltage reaches a predetermined value, said circuit means including,

(e) a second transistor having a base, an emitter and a collector, said collector receiving said input signal, said emitter being coupled to said base of said first transistor, said base being coupled for receiving said first reference potential.

5,359,282

PLASMA DIAGNOSING APPARATUS

Shinriki Teii; Kibatsu Shinohara, both of Yokohama; Kozo Obara, Kamakura, and Tsuku Umezawa, Yokohama, all of Japan, assignors to Nichimen Kabushiki Kaisha, Osaka and Nihon Kosyuha Kabushiki Kaisha, Yokohama, both of Japan

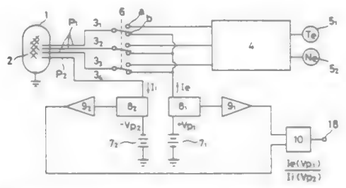
PCT No. PCT/JP91/01568, § 371 Date Jul. 15, 1992, § 102(e) Date Jul. 15, 1992, PCT Pub. No. WO92/09185, PCT Pub. Date May 29, 1992

PCT Filed Nov. 15, 1991, Ser. No. 910,143

Claims priority, application Japan, Nov. 16, 1990, 2-310411; Mar. 13, 1991, 3-073832

Int. Cl.[5] G01N *27/06*

U.S. Cl. 324—71.1 **7 Claims**



1. A plasma diagnosing apparatus, comprising

a plurality of probes for diagnosing plasma, for insertion into the plasma;

first measuring means for measuring saturated ion current by application of a negative voltage to one of said probes;

second measuring means for measuring saturated electron current by application of a positive voltage to another one of said probes; and

means for determining a ratio between said saturated ion current and said saturated electron current.

5,359,283

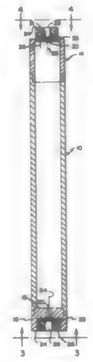
HAND HELD WAND FOR TRANSFERRING DATA FROM ONE DEVICE TO ANOTHER

Alan E. Strick, Hopedale, Mass., and John R. Widly, Orange, Calif., assignors to Brooklyn Computer Systems Inc., Brooklyn, N.Y.

Filed Mar. 29, 1993, Ser. No. 39,577

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—72.5 **6 Claims**



1. A hand held wand comprising:

an elongated rigid hollow electrically conductive longitudinally extending metal tube open at both ends;

a data collection probe disposed in one tube end;

a data uploading port disposed in the other tube end;

said probe and port each including an electrically conductive metal body of like metal to the tube and having one end electrically and mechanically engaging the corresponding tube end in which the corresponding one of the port and probe is disposed, each body having a front surface disposed outside of the tube with a peripheral annular ring and a central recess extending inwardly from the front surface and terminating in a rear surface having a first opening, each body further including a corresponding longitudinally extending central electrode disposed in the corresponding recess, each central electrode having an exposed front surface adjacent the ring and a rear surface aligned with and spaced from the opening, and electrical insulation disposed in the recess to electrically isolate the electrode from the body and the tube, the two bodies and the tube defining a common external electrical ground with respect to the central electrodes.

5,359,284

AIR CORE GAUGE MAGNETIC HYSTERESIS COMPENSATION

Kevin J. Hawes, Greentown, and Reynolds P. Weber, Lafayette, both of Ind., assignors to Delco Electronics Corp., Kokomo, Ind.

Filed Sep. 14, 1992, Ser. No. 944,378

Int. Cl.[5] G01R *5/16;* **G01P** *3/42*

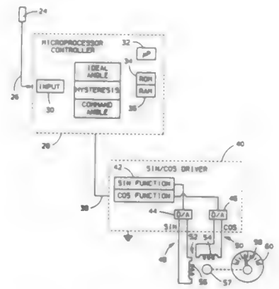
U.S. Cl. 324—146 **10 Claims**

1. An apparatus comprising:

a sensor for determining a measure of a parameter;

an air core gauge display including an air core gauge, a pointer, and graphics, the pointer being pivotally mounted and magnetically rotatable in response to a drive signal;

a microprocessor controller receiving the measure of the parameter from the sensor and operative to (a) determine an ideal gauge position responsive to the parameter measurement, (b) determine a center position representing an assumed position of the pointer of the air core gauge at which there is zero magnetic hysteresis, (c) compare the ideal position to the center position to determine an offset value, (d) determine a command signal responsive to the ideal gauge position and the offset value, and (e) output the command signal; and



means for driving the gauge, and providing the drive signal responsive to the command signal to rotate the pointer to an angular position representative of the parameter measurement.

5,359,285

METHOD AND APPARATUS FOR VARYING TEMPERATURE AND ELECTRONIC LOAD CONDITIONS OF A SEMICONDUCTOR DEVICE IN A BURN-IN TEST CHAMBER WHILE PERFORMING A BURN-IN TEST

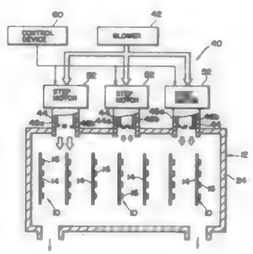
Tatsuya Hashinaga, and Masanori Nishiguchi, both of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 17, 1992, Ser. No. 914,556

Claims priority, application Japan, Jul. 19, 1991, 3-179774; Jul. 29, 1991, 3-189019; Jul. 30, 1991, 3-190024; Jul. 31, 1991, 3-192295; Jul. 31, 1991, 3-192296; Jul. 31, 1991, 3-192303; Jul. 31, 1991, 3-192306; Jul. 31, 1991, 3-192311

Int. Cl.[5] G01R *15/12;* **F25B** *29/00*

U.S. Cl. 324—158.1 **27 Claims**



1. A burn-in apparatus comprising:

a burn-in test chamber having a plurality of air nozzles, each nozzle directing heated air into said burn-in test chamber;

a burn-in board, disposed in said burn-in test chamber, for mounting a semiconductor device having a semiconductor chip having a temperature sensor therein;

measuring means for detecting electric characteristics of said temperature sensor to individually measure a junction temperature of said semiconductor chip and outputting a temperature signal indicative thereof;

air flow control means for controlling air flow from said nozzles onto said burn-in board to control amounts of heat radiated on said semiconductor chip to adjust said junction temperature of said semiconductor chip; and

means for controlling, in accordance with said temperature signal, said air flow control means to control said amounts of heat to cause said junction temperature to be within a predetermined temperature range.

5,359,286

SENSOR INCLUDING HALL ELEMENT, MOVABLE MAGNETIC BODY AND PERMANENT MAGNET FOR AUTOMATICALLY TRIGGERING SAFETY DEVICES IN MOTOR VEHICLES

Harry Kaiser, Markgröningen, and Manfred Abendroth, Marbach/Neckar, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

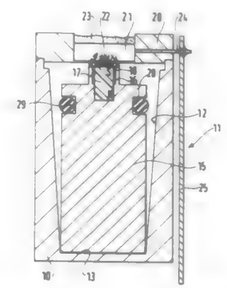
PCT No. PCT/DE91/00853, § 371 Date Jun. 19, 1992, § 102(e) Date Jun. 19, 1992, PCT Pub. No. WO92/08989, PCT Pub. Date May 29, 1992

PCT Filed Nov. 2, 1991, Ser. No. 862,548

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1990, 4036224

Int. Cl.[5] G01P *15/08;* **G01B** *7/14;* **H01H** *35/02;* **B60R** *21/32*

U.S. Cl. 324—207.2 **10 Claims**



1. A sensor for automatically triggering safety devices in motor vehicles, comprising a housing having a recess; a body arranged in said recess of said housing so as to serve as a seismic mass which under the action of outside force moves relative to said housing, said body being composed of magnetically conductive material; a cover member being attached to said housing and covering said recess; a Hall element located within one of said cover member and said body; a permanent magnet enclosed at least partially by a magnetically nonconductive region and arranged in the other of said cover member and said body opposite to and in working connection with said Hall element, said Hall element being penetrated by magnetic flux lines running parallel to a polarization direction of said permanent magnet in a basic position of said body, and being penetrated by magnetic flux lines running in an opposite direction in a tilting position of said body beyond a predetermined threshold value so as to trigger a control signal for automatically triggering a safety device of a motor vehicle.

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5,359,287

MAGNETIC DETECTING CIRCUIT HAVING MAGNETORESISTANCE EFFECTIVE ELEMENTS ORIENTED IN AT LEAST TWO DIFFERENT DIRECTIONS

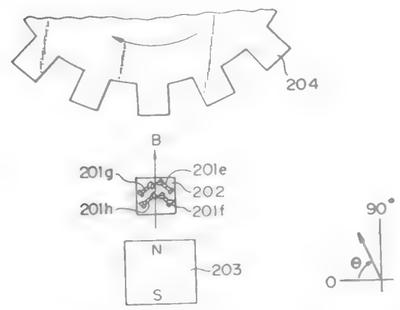
Takamoto Watanabe, Nagoya; Yoshinori Ohtsuka, Okazaki; Koichi Hoshino, Obu, and Katsumi Nakamura, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of Japan

Continuation of Ser. No. 867,428, Apr. 13, 1992, abandoned, which is a division of Ser. No. 467,402, Jan. 18, 1990, Pat. No. 5,134,371. This application Jul. 12, 1993, Ser. No. 89,610

Claims priority, application Japan, Jan. 18, 1989, 1-10235; Jan. 20, 1989, 1-12526; Apr. 17, 1989, 1-96873; Oct. 11, 1989, 1-264319; Dec. 14, 1989, 1-324290; Dec. 26, 1989, 1-336089

Int. Cl.[5] G01P *3/488;* G01R *33/06;* G01B *7/30*

U.S. Cl. 324—207.21 19 Claims



1. A magnetic detecting circuit operable with an object to be detected having magnetic materials therein which comprises:

a magnetic field generating means for generating a bias magnetic field toward said object; and

a plurality of magnetoresistance effective elements provided on a predetermined plane arranged in said bias magnetic field, a resistance value of said elements being changed in response to a change of conditions of said bias magnetic field due to a movement of said object to be detected, whereby a changing condition of said bias magnetic field can be detected on a basis of the change of the resistance value of said magnetoresistance effective elements;

wherein said predetermined plane on which said magnetoresistance effective elements are provided includes at least two directions, one of which is a direction of said bias magnetic field generated from said magnetic field generating means and the other of which is a moving direction of said object to be detected, and said magnetoresistance effective elements are each defined along an axial line arranged on said plane, a first axial line along one of said elements is inclined in a first direction at a certain angle excluding 0° and 90° with respect to a direction of said bias magnetic field, and axial line along another of said elements is inclined in a second direction opposite to said first direction at an angle having a same absolute value as said certain angle of said one element but oriented in a different direction with respect to the direction of said bias magnetic field, wherein directions of said bias magnetic field which are applied to said elements, respectively, are changed in approximately the same direction to each other as said object moves, so that a change of angle of the bias magnetic field changes said resistance value of each of said elements to have a monotonic increment or a monotonic reduction per change of said bias magnetic field.

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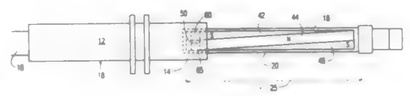
POSITION DETECTING APPARATUS USING VARIABLE MAGNETIC FIELD INTENSITY

William D. Riggs, Southington, and Hermann Roshirt, Bristol, both of Conn., assignors to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 842,829, Feb. 27, 1992, abandoned. This application Dec. 1, 1993, Ser. No. 161,042

Int. Cl.[5] G01B *7/14*

U.S. Cl. 324—207.22 11 Claims



1. A position sensor system, comprising:

a magnetic medium having a top surface and a longitudinal axis divided into a first area of magnetization having a first polarity, a second are of magnetization having a second polarity and a third area of magnetization having the first polarity for producing a magnetic field with a variable intensity;

means for detecting the intensity of the magnetic field produced by the magnetic medium;

means for producing an electric signal which corresponds to the intensity detected; and

means for moving the magnetic medium with respect to the detecting means so that the detecting means scans along the top surface of the medium along the longitudinal axis and detects the intensity of the magnetic field at any given point along the longitudinal axis of the medium, the medium having a monotonically varying magnetic field intensity along the longitudinal axis.

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MAGNETIC RESONANCE DEVICE

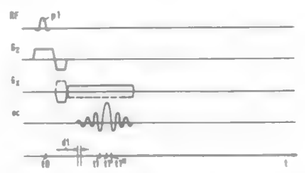
Peter van der Meulen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 25, 1992, Ser. No. 981,739

Claims priority, application European Pat. Off., Nov. 29, 1991, 91203131.7

Int. Cl.[5] G01R *33/40*

U.S. Cl. 324—320 8 Claims



1. A magnetic resonance device, comprising a measurement space for accommodating an object to be examined, a main field magnet for generating a steady magnetic field in the measurement space, a gradient coil system for generating a gradient magnetic field in the measurement space having a gradient in any desired direction, an RF coil system for transmitting RF electromagnetic pulses into the measurement space and for receiving magnetic resonance signals generated in the object, means for detecting and sampling the received magnetic resonance signals, control means for controlling the RF and gradient coil systems to produce sequences of RF pulses and gradient waveforms, shimming means for shimming the steady magnetic field with a shimming gradient, and shimming gradient determination means for configuring the control means to control the gradient coil system and the RF coil system to produce a shimming gradient determination sequence including one or more RF excitation pulses and one or more measuring gradient waveforms during which echo magnetic resonance signals are generated in the object, which echo magnetic resonance signals are detected and sampled by the detecting and sampling means, and for determining a shimming gradient on the basis of the temporal position within the sequence of a maximum of the detected and sampled echo magnetic resonance signals.

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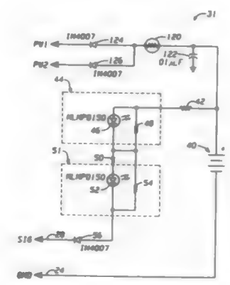
METHOD AND APPARATUS USING A PAIR OF TEST CIRCUITS HAVING LED INDICATORS FOR TESTING ENGINE SENSORS AND IGNITION MODULES IN VEHICLES

Robert A. Cervas, Highland Heights, Ohio, assignor to Actron Manufacturing Company, Cleveland, Ohio

Filed Jan. 11, 1993, Ser. No. 2,618

Int. Cl.[5] G01R *31/02, 19/165, 31/28;* F02P *17/00*

U.S. Cl. 324—384 9 Claims



1. A multi-test, hand-held instrument for testing engine sensors and ignition modules, comprising:

a housing enclosing an electrical circuit, said electrical circuit including (i) a first test circuit for testing potentiometer-type, temperature-type and Hall effect type sensors and ignition modules, (ii) a second test circuit including at least a portion of said first test circuit and electrically interconnected with said at least a portion of said first test circuit by means of a first switch, said second testing circuit for testing oxygen, reluctance, and knock sensors, (iii) electrical leads including a signal lead and a ground lead connectable to an oxygen, reluctance, air temperature or knock sensor or module being tested, and further including at least one power lead connectable to Hall effect sensors or ignition modules being tested and (iv) a power source electrically connected to said first and second test circuits for providing electrical current thereto,

said first or second test circuit including at least one indicator circuit responsive to electrical current provided by said power source and passing therethrough to visually display an indication of the operability of the sensor or ignition module being tested when said electrical leads are connected to the sensor or ignition module and said first switch is set appropriately, wherein said at least one indicator circuit comprises a light emitting diode (LED) connected electrically in parallel with a corresponding resistor.

5,359,291

METHOD AND APPARATUS FOR DETECTING SHORT CIRCUITS

Alexander L. Dommerich, III, Frederick, Md., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Apr. 1, 1993, Ser. No. 41,665

Int. Cl.[5] G01R *31/08*

U.S. Cl. 324—523 10 Claims

1. A short circuit detection device for detecting the precise location of a short circuit between a first circuit and a second circuit comprising:

a. a voltage source means for impressing a voltage potential between a first contact point on said first circuit and a second contact point and a third contact point on said second circuit, wherein said second and third contact points span said short circuit so said second circuit is at a different voltage potential with respect to said first circuit, whereby electrical current flows from said second contact point and third contact point of said second circuit to said first circuit through the path created by said short circuit;

b. detecting means for contacting said second circuit in various location points between said second and third contact points in order to detect a measurable voltage potential between said first and second circuit;

c. amplifying means for amplifying said measured voltage potential detected by said detecting means;

d. adjusting means for adjusting the gain of said amplifying means; and

e. display means for displaying a representation of said amplified measured voltage potential,

whereby the location point along said second circuit which displays the minimum measured voltage potential with respect to said impressed voltage potential indicates the precise location of said short circuit between said first and second circuits.

5,359,292

Patent Not Issued For This Number

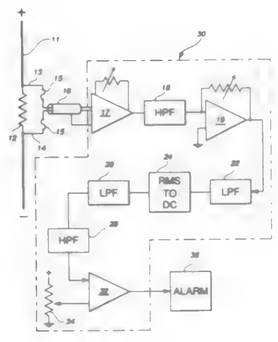
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5,359,293

ELECTRICAL CABLE ARCING FAULT DETECTION BY MONITORING POWER SPECTRUM IN DISTRIBUTION LINE

Jeffrey Boksiner, Landing, and Edward J. Silverman, Rockaway, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Jun. 3, 1993, Ser. No. 71,916
Int. Cl.[5] G01R *31/02*; H01H *3/24*
U.S. Cl. 324—544 **12 Claims**



1. A method of detecting an arcing fault in a DC electrical power distribution line which comprises monitoring the power spectrum over a predetermined frequency bandwidth for current flowing in said line characterized in that
   a) a voltage signal is created varying as a function of said current flow;
   b) the varying intensity of said voltage signal over said frequency bandwidth is determined; and
   c) said voltage signal intensity is compared with a preselected threshold voltage to determine the existence of an excessive voltage level indicative of an arcing fault.

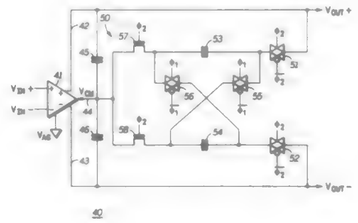
5,359,294

CHARGE-BALANCED SWITCHED-CAPACITOR CIRCUIT AND AMPLIFIER CIRCUIT USING SAME

Jeffrey D. Ganger; Kelvin E. McCollough, and Jules D. Campbell, Jr, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 5, 1993, Ser. No. 132,004
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—258 **20 Claims**

1. A charge-balanced switched-capacitor circuit comprising:
   first and second capacitors each having first and second terminals;
   equalization means for coupling said first terminal of said first capacitor to said first terminal of said second capacitor, and said second terminal of said first capacitor to said second terminal of said second capacitor, during a first time period;
   coupling means for coupling said first terminal of said first capacitor to a first signal line, said second terminal of said second capacitor to a second signal line, and said second terminal of said first capacitor to said first terminal of said second capacitor, during a second time period, said coupling means comprising first and second switching elements;



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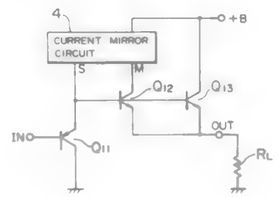
said first switching element having a first terminal coupled to said second terminal of said first capacitor, and a second terminal for providing a common-mode output terminal of the switched-capacitor circuit, said first switching element active in response to a first control signal; and
said second switching element having a first terminal coupled to said common-mode output terminal, and a second terminal coupled to first terminal of said second capacitor, said second switching element active in response to said first control signal.

5,359,295

POWER AMPLIFIER

Yasushi Nishimura, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 9, 1993, Ser. No. 29,230
Claims priority, application Japan, Apr. 9, 1992, 4-089098
Int. Cl.[5] H03F *3/18*
U.S. Cl. 330—263 **5 Claims**



1. A power amplifier comprising:

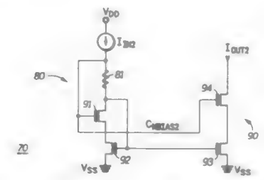
   a first transistor for receiving an input signal at a base thereof;
   a second transistor in a conductive type reverse to that of said first transistor, having a base coupled to a emitter of said first transistor through a first resistor and an emitter coupled to a second resistor;
   current supplying means for supplying the coupled point of said first resistor and the base of said second transistor with a current proportional to a collector current of said second transistor;
   an output stage having a third transistor for outputting through a third resistor an emitter current in accordance with a base-to-emitter voltage of said second transistor; and
   output means for outputting a total of currents flowing through said second and third resistors as an output current of said power amplifier.

5,359,296

SELF-BIASED CASCODE CURRENT MIRROR HAVING HIGH VOLTAGE SWING AND LOW POWER CONSUMPTION

Todd L. Brooks, and Mathew A. Rybicki, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Sep. 10, 1993, Ser. No. 119,940
Int. Cl.[5] H03F *3/16*
U.S. Cl. 330—288 **7 Claims**



1. A self-biased cascode current mirror circuit, comprising:
   a resistive element having a first terminal for providing a bias voltage in response to receiving an input current, and a second terminal;
   a first transistor having a first current electrode coupled to the second terminal of the resistive element, a control electrode coupled to the first terminal of the resistor for receiving the bias voltage, and a second current electrode;
   a second transistor having a first current electrode coupled to the second current electrode of the first transistor, a control electrode coupled to the first current electrode of the first transistor, and a second current electrode coupled to a power supply voltage terminal;
   a third transistor having a first current electrode for providing an output current, a control electrode for receiving the bias voltage, and a second current electrode; and
   a fourth transistor having a first current electrode coupled to the second current electrode of the third transistor, a control electrode coupled to the first current electrode of the first transistor, and a second current electrode coupled to the power supply voltage terminal.

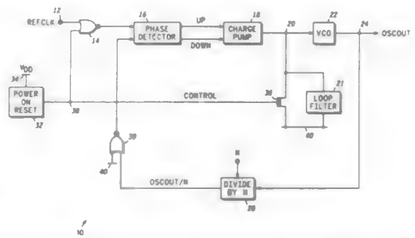
5,359,297

VCO POWER-UP CIRCUIT FOR PLL AND METHOD THEREOF

Michael W. Hodel, Mesa, and William H. Gulliver, Gilbert, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 28, 1993, Ser. No. 141,361
Int. Cl.[5] H03L *3/00, 7/093*
U.S. Cl. 331—1 A **18 Claims**

1. A phase lock loop, comprising:
   first means responsive to a first power supply potential for providing a first control signal while detecting said first power supply potential below a predetermined threshold;
   second means coupled for receiving a reference signal and operating in response to said first control signal for enabling and disabling said reference signal to an output;
   third means for comparing phase between said reference signal from said output of said second means and a feedback signal and generating a loop node voltage at a loop node;
   a voltage controlled oscillator having an input coupled to said loop node for providing an oscillator signal operating at a frequency as determined by said loop node voltage; and
   a divider circuit coupled for receiving said oscillator signal and providing said feedback signal.



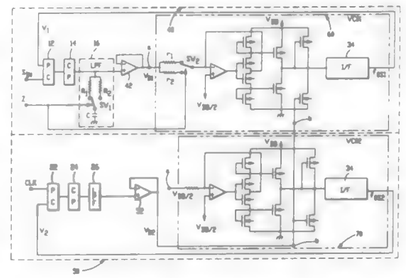
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5,359,298

VCO HAVING VOLTAGE-TO-CURRENT CONVERTER AND PLL USING SAME

Akira Abe, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 862,581, Aug. 20, 1992, Pat. No. 5,302,919. This application Dec. 29, 1993, Ser. No. 174,974
Claims priority, application Japan, Oct. 23, 1990, 2-285233; May 14, 1991, 3-109121
Int. Cl.[5] H03K *3/354*; H03L *7/07, 7/099*
U.S. Cl. 331—2 **4 Claims**



1. A voltage-controlled oscillator having a voltage-current conversion apparatus that generates a converted current proportional to the level of an input voltage and a current frequency conversion apparatus that generates an oscillation frequency output corresponding to the level of the converted current, wherein the voltage-current conversion apparatus comprises:
   voltage differential-current conversion means comprising a voltage-current conversion switching means for selecting a conversion coefficient in response to a switching signal, said voltage differential-current conversion means for

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receiving the input voltage as a first input voltage and for converting it to a current in proportion to a difference between the input voltage and a reference voltage, the proportional coefficient of the converted current corresponding to the conversion coefficient; and

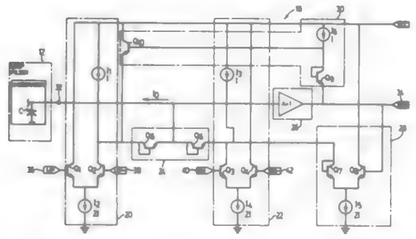
current adder-subtracter means for generating a second current proportional to a second input voltage and for generating the converted current by adding or subtracting a first current based on the current generated by the voltage differential-current conversion means and the second current.

5,359,299

HIGH SPEED AND LOW DRIFT CHARGE PUMP CIRCUIT

Stephen Webster, Oakville, Canada, assignor to Gennum Corporation, Burlington, Canada

Filed Jan. 21, 1993, Ser. No. 6,396
Int. Cl.[5] H03L *7/089, 7/093;* **H03K** *17/56, 17/28*
U.S. Cl. 331—8 **12 Claims**



1. A device for producing an output current switchable between a source current and a sink current in response to binary logic pulses, said device comprising:

(a) a first input stage for inputting a first binary logic pulse, said first input stage having an output and means for generating a first current component at said first output in response to said first binary logic pulse;

(b) a second input stage for inputting a second binary logic pulse, said second input stage having an output and means for generating a second current component at the output of said second input stage in response to said second binary logic pulse;

(c) current drive means for producing a third current component, said current drive means having an output for said third current component coupled to the output of said first input stage and including means responsive to a control signal for controlling said third current component; and

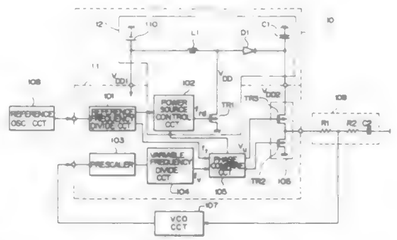
(d) commutating means responsive to said first, second and third current components for producing the output current, said commutating means including first and second switches and an output port for the output current, said first switch having an input coupled to the output of said first input stage and an output and means for sourcing a constant output current at said output in response to said first and third current components, and said second switch having an output coupled to the output of said second input stage and having an input coupled to the output of said first switch and including means for sinking a constant output current at said input in response to said second current component, said output port being formed from the output of said first switch and the input of said second switch.

5,359,300

PHASE LOCKED LOOP (PLL) HAVING A POWER SUPPLY CIRCUIT

Yoichiro Minami, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jun. 24, 1993, Ser. No. 82,245
Claims priority, application Japan, Jun. 26, 1992, 4-168120
Int. Cl.[5] H03L *7/06, 7/085, 7/089, 7/093*
U.S. Cl. 331—17 **6 Claims**



1. A phase locked loop (PLL) circuit comprising:

a variable frequency signal dividing circuit for variably dividing an oscillation frequency signal to produce a variable divided frequency;

a reference frequency dividing circuit for producing a first reference divided frequency signal and a second reference divided frequency signal in response to a reference frequency signal;

a phase comparing circuit for comparing said variable divided frequency signal with said first reference divided frequency signal;

a charge pump circuit coupled to receive an output of said phase comparing circuit; and

a power supply means coupled to apply a voltage to each of said circuits;

said power supply means comprising: a battery, boosting means for boosting an output voltage of said battery to produce a boosted voltage for application to said charge pump circuit means, a switching circuit means for controlling said boosting means, and a power supply control circuit means responsive to said variable divided frequency signal being advanced in phase relative to the phase of said first reference divided frequency signal for controlling said switching circuit means by said second reference divided frequency signal for only a period of time during which said phase comparing circuit outputs a control signal.

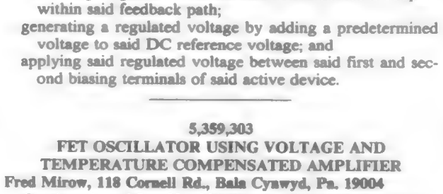
5,359,301

PROCESS-, TEMPERATURE-, AND VOLTAGE-COMPENSATION FOR ECL DELAY CELLS

Anthony B. Candage, Portland, Me., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 26, 1993, Ser. No. 37,929
Int. Cl.[5] H03K *3/354, 5/14*
U.S. Cl. 331—57 **20 Claims**

1. A calibrated-resistance device comprising a master resistive element, one or more slave resistive elements, a means for imparting a specific resistance to said master resistive element,



and a means for mirroring said specific resistance to each of said slave resistive elements.

5,359,302

SELF-REGULATING OSCILLATOR CIRCUIT AND METHOD

Rudolph D. Balusek, Garland, Tex., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Jun. 26, 1992, Ser. No. 904,426
Int. Cl.[5] H03L *5/00*
U.S. Cl. 331—109 **14 Claims**

1. A method of operating an oscillator having an active device for providing an oscillating signal and comprising a first and second biasing terminal, comprising:

providing a DC biasing current from said first biasing terminal through said second biasing terminal of said active device;

coupling a portion of said DC biasing current through a reference device coupled to said second biasing terminal of said active device, said portion of said DC biasing current generating a DC reference voltage across said reference device;

feeding back said DC reference voltage in a feedback path to a voltage regulator such that said active device is coupled within said feedback path;

generating a regulated voltage by adding a predetermined voltage to said DC reference voltage; and

applying said regulated voltage between said first and second biasing terminals of said active device.

5,359,303

FET OSCILLATOR USING VOLTAGE AND TEMPERATURE COMPENSATED AMPLIFIER

Fred Mirow, 118 Cornell Rd., Bala Cynwyd, Pa. 19004

Continuation of Ser. No. 952,194, Sep. 28, 1992, Pat. No. 5,241,286, which is a continuation of Ser. No. 751,122, Aug. 28, 1991, abandoned. This application Jun. 4, 1993, Ser. No. 71,778
The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.
Int. Cl.[5] H03B *5/24;* **H03L** *1/02;* **H03K** *5/13*
U.S. Cl. 331—176 **10 Claims**

1. A field effect transistor (FET) oscillator system having an oscillator with an active amplifier element and a feedback network, said an oscillator having oscillator output frequency and receiving a frequency control signal, said oscillator output frequency having first frequency variations induced by temperature variations and second frequency variations induced by variations in said frequency control signal, comprising:

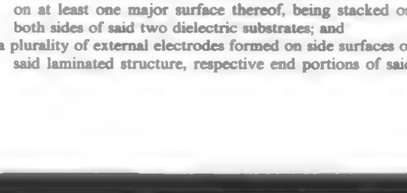
temperature means for providing a temperature signal level in accordance with temperature;

reference means for providing a reference voltage level adjusting means for receiving the reference voltage level and the temperature signal level to provide the variations of said frequency control signal in accordance with said reference voltage level and said temperature signal level;

means within said amplifier element for receiving said frequency control signal to induce said second frequency variations; and,

said second frequency variations compensating said first frequency variations to provide a constant oscillator output frequency.

2. A field effect transistor (FET) signal delay system having an amplifier having an amplifier element, said amplifier having



a delay time between signal input and signal output and receiving a delay time control signal, said amplifier delay time having first propagation delay time variations induced by temperature variations and second propagation delay time variations induced by said delay time control signal, comprising:

temperature means for providing a temperature signal level in accordance with temperature;

reference means for providing a reference voltage level independent of temperature;

adjusting means for receiving the reference voltage level and the temperature signal level to provide the variations of said delay time control signal in accordance with said reference voltage level and said temperature signal level;

means within said amplifier element for receiving said delay time control signal to induce said second propagation delay time variations; and,

said second propagation delay time variations compensating said first propagation delay time variations to provide a constant amplifier propagation delay time.

5,359,304

CHIP TYPE DIRECTIONAL COUPLER

Yasuhiro Fujiki, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Nov. 24, 1992, Ser. No. 981,074
Claims priority, application Japan, Nov. 27, 1991, 3-312355
Int. Cl.[5] H01P *5/18*
U.S. Cl. 333—116 **16 Claims**

1. A chip type directional coupler comprising:

a laminated structure comprising a plurality dielectric sheets including:

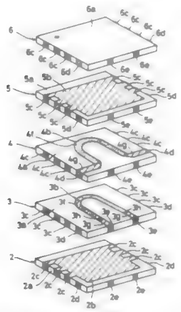
two dielectric substrates, each being provided with a curved quarter-wavelength stripline electrode on one major surface thereof, each said stripline electrode being located in said laminated structure so as to electromagnetically couple said stripline electrodes with each other, and

two substrates each being provided with a ground electrode on at least one major surface thereof, being stacked on both sides of said two dielectric substrates; and

a plurality of external electrodes formed on side surfaces of said laminated structure, respective end portions of said

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stripline electrodes and said ground electrodes being electrically connected to different ones of said external electrodes,



wherein said plurality of dielectric sheets comprise at least one additional dielectric sheet disposed between a stripline electrode and a ground electrode.

5,359,305

ELECTROMAGNETIC RELAY

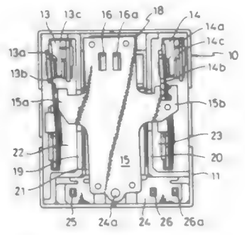
Nobuhiro Kitamura; Naoki Kanemoto; Yoichi Yokoyama; Kiwamu Shibata; Tetsuyasu Kawamoto, and Masahiro Kutsuna, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jan. 7, 1993, Ser. No. 73,369

Claims priority, application Japan, Jan. 15, 1992, 4-155211; Jul. 8, 1992, 4-181352; Jul. 29, 1992, 4-202595; Jul. 29, 1992, 4-202596; Jan. 29, 1993, 5-014278

Int. Cl.[5] H01H *51/22*

U.S. Cl. 335—78 9 Claims



1. An electromagnetic relay comprising:

an electromagnetic means having a magnetic pole part, an armature provided for engaging and disengaging motion with respect to said magnetic pole part, an actuator coupled to said armature and having pivot parts for a rocking motion together with said motion of the armature, a yoke provided with a magnetic pole means opposed to said magnetic pole part with said armature interposed between them, and with a first end opposing a rockable side end of said actuator and formed in a square shape as viewed in endwise direction, and a coil bobbin having an exciting coil wound thereon and a stationary core axially passed through said coil bobbin,

said actuator including a pair of arms, each arm including one of said pivot parts, said arms extending in parallel to each other to dispose said pivot parts at symmetric positions,

said yoke comprising two divided halves mutually coupled to provide a pair of arm parts extending in parallel to each other, a pair of supporting parts symmetrically positioned for pivotably supporting said pivot parts of the actuator, and a pair of connecting parts connecting across said arm parts on both sides thereof at said end to form said square shape, one of said pairs of said arm parts and connecting parts in said square shape acting as said magnetic pole means of the yoke, and

said stationary core of said coil bobbin having a base end secured to said yoke at a second end of said yoke opposite the first end opposing the rockable side end of said actuator; and

an opening end closing contact means including a high fusion-bonding resistant contact pair and a low contact-resistance contact pair,

said high fusion-bonding resistant contact pair being provided in both lift-off and flexure types while said low contact-resistance contact pair being provided in a flexure type, and

said contact pairs being disposed to mutually oppose with aid actuator of said electromagnet means interposed between them and respectively including a stationary contact and movable contactor carrying a movable contact for opening and closing operation with respect to said stationary contact;

wherein said movable contactors in both of said contact pairs are caused to rock through said actuator in response to said engaging and disengaging motion of said armature with respect to said magnetic pole part in said electromagnet means, and said high fusion-bonding resistant contact pair are closed prior to said low contact-resistance contact pair.

5,359,306

ELECTROMAGNETIC DEVICE FOR CONTROLLING THE SUPPLY OF CURRENT TO THE ELECTRIC STARTER MOTOR OF AN INTERNAL COMBUSTION ENGINE

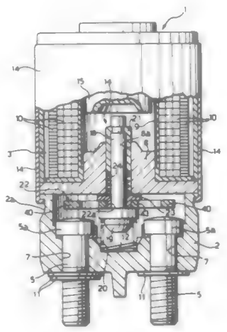
Giancarlo Fasola; Fabio Arpino, and Giovanni Cerizza, all of Milan, Italy, assignors to Industrie Magneti Marelli S.p.A., Milan, Italy

Filed Jun. 1, 1993, Ser. No. 69,583

Claims priority, application Italy, Jun. 10, 1992, 92 A 000 498

Int. Cl.[5] H01H *67/02*

U.S. Cl. 335—126 4 Claims



1. An electromagnetic device for controlling the supply of current to the electric starter motor of an internal combustion engine, comprising

a support element carrying two fixed contacts intended to be connected to a voltage source and to the electric starter motor respectively,

a support structure fixed to the said support element and including

a stationary stop element,

an assembly movable relative to the stop element and coupled to a central portion of a movable contact the free ends of which can cooperate with said fixed contacts to control the supply of current to the electric motor,

a control electromagnet comprising a stationary solenoid and an associated movable core displaceable by excitation of the solenoid from an initial rest position to a final position in which it strikes the stop element, the movable core carrying with it the movable assembly in such a way as to bring the ends of the movable contact into abutment with the fixed contacts before reaching the final position; the movable contact being able to flex like a resilient beam under the effect of its engagement with the fixed contacts;

the arrangement being such that, when the core strikes the stop element the fixed contacts oscillate about their normal working positions; said movable contact being made in such a way that, when the fixed contacts start to oscillate, its free ends follow the movement of the fixed contacts, its acceleration in its own mode of vibration being greater than the acceleration of the fixed contacts and its amplitude of oscillation being greater than the amplitude of oscillation of the fixed contacts.

5,359,307

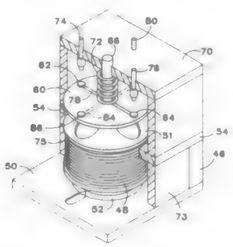
HIGH VOLTAGE RELAY

Steven A. Mahoney, and David B. Cameron, both of McMinnville, Oreg., assignors to Hewlett-Packard Corporation, Palo Alto, Calif.

Filed Aug. 12, 1993, Ser. No. 105,277

Int. Cl.[5] H01H *67/02*

U.S. Cl. 335—128 14 Claims



1. A high voltage double pole, double throw relay assembly comprising:

a first pair of terminals across which a high voltage signal is applied;

a second pair of terminals across which a second high voltage signal is applied;

a motor having a shaft for movement between an open position and a closed position in response to an actuation signal applied to said motor; and

a nonconductive contact plate mounted to said shaft, said nonconductive contact plate having a first conductor mounted linearly along a top surface thereof and a second conductor disposed thereon, said nonconductive contact plate movable from said open position distant from said first and second pairs of terminals to said closed position in which said first conductor contacts both of said first pair of terminals and said second conductor contacts both of said second pair of terminals, substantially simultaneously.

5,359,308

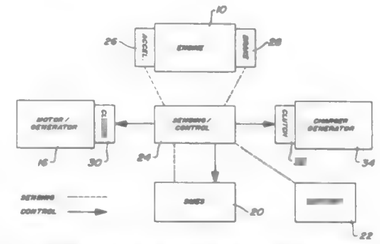
VEHICLE ENERGY MANAGEMENT SYSTEM USING SUPERCONDUCTING MAGNETIC ENERGY STORAGE

Xiaoguang Sun, King of Prussia, and Mark S. Colyar, Newtown, both of Pa., assignors to AEL Defense Corp., Lansdale, Pa.

Filed Oct. 27, 1993, Ser. No. 143,804

Int. Cl.[5] H01F *1/00*; B60K *1/00*; H02P *1/00*

U.S. Cl. 335—216 18 Claims



1. An energy management system for a hybrid internal combustion and electric vehicle having an internal combustion engine, an electric motor/generator and at least one electric storage battery for storing and dispensing energy, comprising

a sensing and control unit having as an input thereto at least one sensor signal representative of a preselected vehicle parameter and generating as an output a control signal in response to said at least one sensor signal, said sensing and control unit being electrically connected to said motor/-generator and said battery, and

a magnetic energy storage device for storing and dispensing energy and being connected to said sensing and control unit and to said motor/generator and said battery through said sensing and control unit, said device being operated by said control signal to selectably draw energy from said battery at a rate compatible with maximum battery efficiency, charge said battery at said rate, supply energy to said motor/generator, and store energy from said motor/-generator, in response to said control signal.

5,359,309

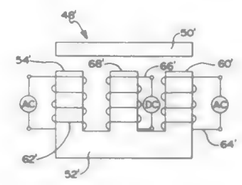
MULTIPLE POLE SOLENOID USING SIMULTANEOUSLY ENERGIZED AC AND DC COILS

Mark A. Juds, New Berlin, and Bruce C. Beihoff, Wauwatosa, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 68,041, May 28, 1993, Pat. No. 5,281,939. This application Sep. 22, 1993, Ser. No. 125,610

Int. Cl.[5] H01F *3/00, 5/00*

U.S. Cl. 335—256 4 Claims



1. A solenoid actuator comprising:

means to produce an alternating current;

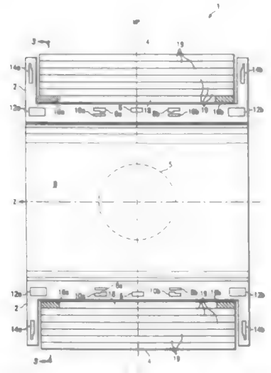
means to produce a direct current;

a magnetic pole structure comprised of first, second and third magnetic poles, said magnetic poles magnetically joined one to the other and structurally attached to a common base;

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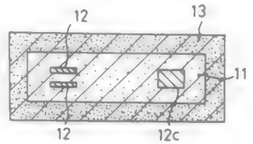
a first AC coil formed around said first magnetic pole and electrically connected to said alternating current;
a second AC coil formed around said second magnetic pole and electrically connected to said alternating current;
a DC coil formed around said third magnetic pole and electrically connected to said direct current;
a magnetic armature disposed to be magnetically attracted and moved upon energization of said first AC coil and said second AC coil and said DC coil by said alternating current and said direct current respectively;
where said first AC coil and said second AC coil and said DC coil are simultaneously energized by said alternating current and said direct current respectively; and
where said first magnetic pole and said second magnetic pole and said third magnetic pole magnetically attract said armature in a common direction.

5,359,310
ULTRASHORT CYLINDRICAL SHIELDED ELECTROMAGNET FOR MAGNETIC RESONANCE IMAGING
Sergio Pissanetzky, The Woodlands, Tex., assignor to Houston Advanced Research Center, The Woodlands, Tex.
Filed Apr. 15, 1992, Ser. No. 869,544
Int. Cl.[5] G01V *3/00*; H01F *7/22, 3/00*
U.S. Cl. 335—301 **19 Claims**



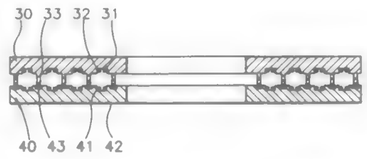
11. An apparatus for generating a high magnetic field suitable for nuclear magnetic resonance, comprising:
a superconducting driving solenoid comprising a plurality of driving coils, and having an inner and an outer radius so as to define a cylindrical bore, each of said driving coils conducting current of a first polarity to generate a magnetic field in said bore;
a flux return, comprising ferromagnetic material and having an inner radius greater than the outer radius of said driving solenoid so as to surround at least one of said plurality of driving coils in said driving solenoid, and having an axial length less than the distance between axially outermost ones of said plurality of driving coils; and
first and second superconducting shielding coils, disposed at first and second axial ends of said flux return, each of said first and second shielding coils surrounding said bore and conducting current of a second polarity opposing said first polarity to direct the path of return magnetic flux into and out of the first and second ends of said flux return, respectively.

5,359,311
SOLID INDUCTOR WITH VITREOUS DIFFUSED OUTER LAYER
Toshio Kawabata; Hiroyuki Takeuchi; Hisashi Katsurada; Kazutaka Nakamura, and Tomoaki Ushiro, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan
Filed Jul. 7, 1992, Ser. No. 909,595
Claims priority, application Japan, Jul. 8, 1991, 3-194939
Int. Cl.[5] H01F *15/02, 27/26*
U.S. Cl. 336—83 **13 Claims**



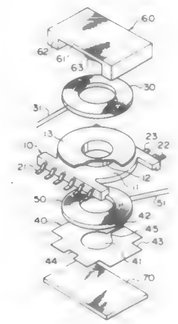
1. A solid inductor comprising:
a magnetic material formed of a ceramic body obtained by laminating green sheets, followed by cofiring;
an inner conductor so provided as to pass through said magnetic material from one end to the other end;
a pair of outer electrodes provided in both ends of said magnetic material so as to be electrically connected to both ends of said inner conductor, respectively; and
a diffusion layer, which is formed by diffusion of a vitreous diffused material applied to the surface of said magnetic material into the magnetic material, exhibiting lower permeability than the magnetic material.

5,359,312
ROTARY TRANSFORMER ASSEMBLY FOR ROTARY HEAD DRUM DEVICE
Young C. Choi, Kyungki, Rep. of Korea, assignor to Goldstar Co., Ltd, Rep. of Korea
Filed Aug. 3, 1992, Ser. No. 924,100
Claims priority, application Rep. of Korea, Aug. 3, 1991, 12403/1991
Int. Cl.[5] H01F *15/04*
U.S. Cl. 336—84 M **3 Claims**



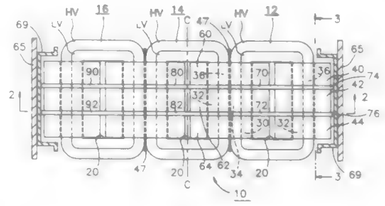
1. A rotary transformer assembly of a rotary head drum device, comprising a transformer rotor, mountable on an upper rotary drum of said device, and a transformer stator, mountable on a lower stationary drum of said device, said transformer rotor and transformer stator being disposed so as to face each other with a predetermined space formed therebetween and having at their facing surfaces a plurality of channels, respectively, said channels being so disposed that each channel of the transformer rotor faces a corresponding channel of the transformer stator in order to provide pairs of channels, the assembly comprising:
a plurality of concentric circular shielding walls for isolating adjacent ones of said pairs of channels from each other so as to prevent leakage of electromotive force between said adjacent pairs of channels, said shielding walls being provided at one of the transformer rotor and the transformer stator, protruding at an outer side of an outermost channel, at an inner side of an innermost channel and at a position between each of said adjacent pairs of channels; and
a plurality of concentric circular slots for receiving the ends of said shielding walls so as to isolate the adjacent pairs of channels from each other with the shielding walls, each said slot being provided at a portion, corresponding to each shielding wall, of the other of the transformer rotor and the transformer stator.

5,359,313
STEP-UP TRANSFORMER
Shigetoshi Watanabe, Sakado; Tomomi Hiura, Kawagoe; Minoru Nakano, Hino, and Akira Shinmei, Higashi-Matsuyama, all of Japan, assignors to Toko, Inc., Tokyo, Japan
Filed Dec. 1, 1992, Ser. No. 983,682
Claims priority, application Japan, Dec. 10, 1991, 3-350063; Oct. 12, 1992, 4-299232; Oct. 16, 1992, 4-304887
Int. Cl.[5] H01F *15/10, 27/30*
U.S. Cl. 336—178 **1 Claim**



1. A step-up transformer comprising:
a bobbin including a base portion, formed of an insulating material, having terminals embedded on opposing two side surfaces thereof, and a cylindrical winding shaft protruding upward from substantially a center of said base portion;
a primary winding wound on said winding shaft, lead wires of which being connected to said terminals on one of said opposing two side surfaces of said base portion;
a secondary winding electromagnetically coupled to said primary winding, disposed downward from said base portion, wound in alignment in ring-like multi-layers, lead wires of which being connected to said terminals on another of said opposing two side surfaces of said base portion;
a first core formed of a magnetic material, having an E-shaped cross section including a cylindrical center leg, and said center leg being inserted into both openings of said winding shaft and said secondary winding from an upper side of said bobbin;
a second core having a flat plate formed of a magnetic material, attached to a lower side of said bobbin facing against said first core; and
an insulating sheet provided between said first and second cores and wherein one of said lead wires of said secondary winding goes through between said sheet and said second

5,359,314
CORE AND COIL ASSEMBLY FOR AN AMORPHOUS-STEEL CORED ELECTRIC TRANSFORMER
Edgar E. McQuay, Conover; William E. McCain, and Ram R. P. Sinha, both of Hickory, all of N.C., assignors to General Electric Company, Schenectady, N.Y.
Filed Jul. 1, 1993, Ser. No. 84,132
Int. Cl.[5] H01F *27/26, 27/30*
U.S. Cl. 336—192 **6 Claims**



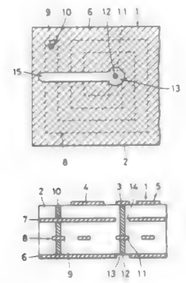
1. A transformer core and coil assembly comprising:
(a) a low voltage coil surrounding a coil window and comprising first and second coil legs on opposite sides of said coil window,
(b) a high voltage coil surrounding said low voltage coil,
(c) a first plurality of side-by-side amorphous steel core loops surrounding one of said coil legs and extending through said coil window,
(d) a second plurality of side-by-side amorphous steel core loops surrounding the other of said coil legs and extending through said coil window, and
(e) a brace of plate form and of electrical insulating material extending between said coil legs for blocking motion of said coil legs toward each other in response to coil-collapsing forces developed by short-circuit currents through said low voltage coil, said brace being located between two of said side-by-side core loops in said first plurality of core loops and two of said side-by-side core loops in said second plurality of core loops.

5,359,315
METHOD OF FORMING A THREE-LAYER STRUCTURAL SPIRAL INDUCTOR
Atsushi Inoue; Tatsuo Bizen; You Funada, and Takashi Hiroshima, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan
Filed May 29, 1992, Ser. No. 891,171
Claims priority, application Japan, May 29, 1991, 3-126213
Int. Cl.[5] H01F *5/00*
U.S. Cl. 336—200 **4 Claims**

1. A method of obtaining a selected inductance from a three-layer structural spiral inductor, comprising the steps of:
providing a three-layer structural spiral inductor comprising an electric insulating substrate, a wiring pattern formed on one main surface of said substrate, a first ground electrode formed on the other main surface of said substrate, a second ground electrode formed inside said substrate, a spiral inductor conductive part formed inside said substrate between said first ground electrode and said second ground electrode, a first through hole conductor provided in said substrate so as to electrically connect an outer peripheral end of said inductor conductive part and said first and second ground electrodes, and a second through hole conductor provided in said substrate so as to electrically connect an inner peripheral end of said inductor conductive part and said wiring pattern, an electrodeless void being formed in said first ground electrode adjacent on end of said second through hole conductor to expose

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said second through hole conductor through said first ground electrode; and



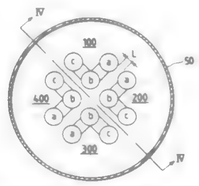
removing a portion of said first ground electrode to form an electrodeless area connected to and extending away from said electrodeless void.

5,359,316

ZINC OXIDE TYPE ARRESTER

Jun Ozawa, Hitachi; Kazuya Ooishi, Toukai, and Katsuji Shindo, Hitachi, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 18,501
Claims priority, application Japan, Feb. 24, 1992, 4-36511
Int. Cl.[5] H01C *7/10*
U.S. Cl. 338—21 8 Claims



1. A zinc oxide type arrester comprising:
a closed container which is filled with an insulating medium; and
a plurality of constitutional units disposed within said closed container, each of said constitutional units includes a plurality of columnar stack bodies, each of said columnar stack bodies is composed by stacking zinc oxide elements and insulating spacers in a predetermined order, and said zinc oxide elements in a plurality of said columnar stack bodies contained in one constitutional unit are connected in series as adjoining constitutional units among said constitutional units are arranged to face each other and the respective facing columnar stack bodies are constituted so as to have substantially equal potentials along the stacking direction thereof.

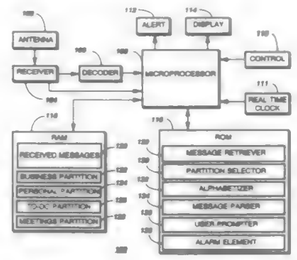
5,359,317

METHOD AND APPARATUS FOR SELECTIVELY STORING A PORTION OF A RECEIVED MESSAGE IN A SELECTIVE CALL RECEIVER

Fernando A. Gomez, West Palm Beach, and Mark T. Stair, Delray Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 9, 1992, Ser. No. 958,847
Int. Cl.[5] H04Q *7/00*
U.S. Cl. 340—825.44 22 Claims

1. A method for selectively storing by a user portion of a received message in a selective call receiver comprising first and second memory means for storing the received message and the portion thereof, respectively, the second memory means having a plurality of partitions corresponding to a plurality of file types, the method comprising the steps of:
(a) defining by the user the portion of the received message



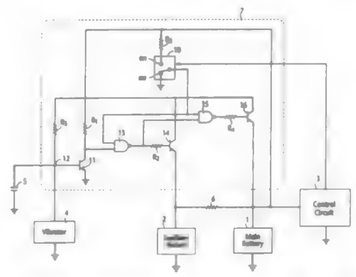
stored in the first memory means to be stored in the second memory means;
(b) selecting by the user one of the plurality of partitions for storing the defined portion of the received message; and
(c) storing in the selected one of the plurality of partitions the defined portion of the received message.

5,359,318

HAND-HELD ELECTRONIC APPARATUS USING TWO BATTERIES SEQUENTIALLY SUPPLYING CURRENT TO INDUCTIVE ELEMENT

Takayuki Asai, Tokyo, and Yukio Sato, Shizuoka, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 29, 1992, Ser. No. 967,906
Claims priority, application Japan, Oct. 29, 1991, 3-309801
Int. Cl.[5] H04Q *1/30*
U.S. Cl. 340—311.1 8 Claims



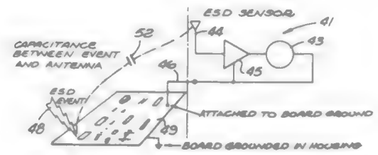
1. A hand-held electronic apparatus including an inductive device, and a control circuit powered by a first, replaceable battery for producing a control signal for operating the inductive device, the apparatus comprising:
a second, rechargeable battery having an internal resistance lower than an internal resistance of the first battery;
a capacitor connected in parallel with the inductive device;
sensor means for detecting when a voltage developed across the capacitor exceeds a prescribed level and producing a sensor output;
first switch means responsive to a presence of the control signal for coupling the inductive device to the second battery and responsive to the sensor output for decoupling the inductive device from the second battery; and
second switch means responsive to the sensor output for coupling the inductive device to the first battery and responsive to an absence of the control signal for decoupling the inductive device from the first battery.

5,359,319

ELECTROSTATIC DISCHARGE DETECTOR AND DISPLAY

Jeffrey D. Campbell, Hawthorne, and Graham O. Gearing, Monrovia, both of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 13, 1990, Ser. No. 567,009
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—649 11 Claims



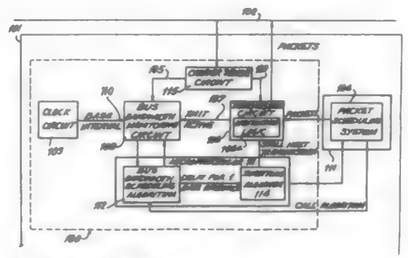
1. In a detector for detecting electrostatic discharge events in an electronic component or assembly device, the combination of:
a non-destructive direct reading display element which changes indication on exposure to a change in voltage level;
an electrostatic discharge sensor including amplifier means and antenna means; and
means for connecting an output of said amplifier means to said display element;
said antenna means including first and second antennae, and circuit means for connecting said first antenna and second antenna into said amplifier means for receiving electrostatic discharge events of different polarity.

5,359,320

METHOD AND APPARATUS FOR SCHEDULING ACCESS TO A CSMA COMMUNICATION MEDIUM OF A NODE HAVING ARBITRATION CIRCUIT

David H. Jaffe, Belmont; Hoke S. Johnson, III, Monte Sereno, and Chris W. Eidler, Morgan Hill, all of Calif., assignors to MTI Technology Corporation, Anaheim, Calif.

Continuation of Ser. No. 501,663, Mar. 29, 1990, abandoned.
This application Jan. 22, 1992, Ser. No. 825,282
Int. Cl.[5] H04Q *3/00*
U.S. Cl. 340—825.5 10 Claims



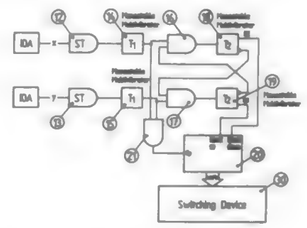
1. In a network including:
a plurality of nodes,
a single-carrier communication medium shared by the plurality of nodes for permitting data transmissions among the plurality of nodes, the network being arranged such that concurrent data transmissions on the communication medium interfere with one another,
a carrier sense multiple access communication protocol that (a) requires each data transmission on the communication medium to be accompanied by a carrier signal; (b) permits one carrier signal to be present on the communication medium at a time; and (c) includes at least one set of prioritized arbitration time slots assigned to the plurality of nodes sharing the communication medium, and
the plurality of nodes including a first node having transmission means for accessing the communication medium, the transmission means comprising:
means for sensing the presence of a carrier signal on the communication medium and providing corresponding sense information;
means coupled to the carrier signal sensing means for delaying the transmission means from attempting to access the communication medium while the sensing means senses the presence a carrier signal from another node on the communication medium;
means for arbitrating for access to the communication medium, the arbitrating means further delaying the transmission means from attempting to access the communication medium for a timed waiting period, the duration of the timed waiting period being determined in accordance with an arbitration time slot assigned to the first node; and
means coupled to the carrier signal sensing means for controlling when the transmission means is to attempt to access the communication medium after the timed waiting period, the controlling means using the sense information provided by the carrier signal sensing means to determine total transmission activity on the communication medium and temporarily further delaying the transmission means from attempting to access the communication medium if total transmission activity on the communication medium including transmission activity of the first node exceeds a total use threshold value and transmission activity of the first node exceeds a local use threshold value, and otherwise permitting the transmission means to attempt to access the communication medium by arbitration in accordance with the arbitration time slot assigned to the first node.

5,359,321

REMOTE CONTROL DEVICE FOR CONTROLLING APPARATUSES CARRIED ON THE BODY, IN PARTICULAR HEARING AIDS

Zlatan Ribic, Vienna, Austria, assignor to Viennatone Gesellschaft m.b.H., Vienna, Austria

Filed Aug. 3, 1992, Ser. No. 924,179
Claims priority, application Austria, Aug. 14, 1991, 1605/91
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.06 9 Claims



1. A control circuit remotely controlled by a magnetic field for operating a switching device of a hearing aid with predefined switching signals, the control circuit comprising:
(a) at least two sensors located a short distance from each other for individually sensing a magnetic field;

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(b) a logic circuit connected to said at least two sensors for generating an output signal dependent on the sequence in which the sensors sense the magnetic field; and

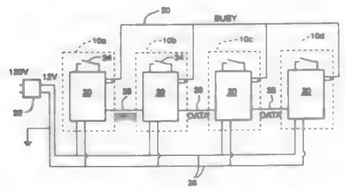
(c) a switch controller connected between said logic circuit and the hearing aid switching device for operating the switching device with the predefined switching signals based on the logic circuit output signal.

5,359,322

METHOD AND APPARATUS FOR INTERCONNECTED ELECTRONIC LOCKS

James S. Murray, South Lyon, Mich., assignor to Stanley Home Automation, Novi, Mich.

Filed Sep. 28, 1992, Ser. No. 951,813
Int. Cl.[5] G06F 7/04
U.S. Cl. 340—825.31 19 Claims



1. An electronically controlled lock system for a plurality of lockable units comprising:

a plurality of electronic locks, one for each unit;

at least one key with a key code for presentation to the locks;

each lock having means for reading a key code when a key is presented to the lock, a memory containing at least one access code, means for comparing a presented key code and an access code, and means for opening the lock when a presented key code matches an access code; and

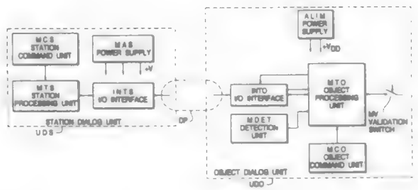
means for transmitting key codes presented at one lock to locks in other units, whereby any lock having an access code matching a transmitted key code is opened in response to presentation of a key to one lock.

5,359,323

DEVICE FOR REMOTE DIALOG BETWEEN A STATION AND ONE OR MORE PORTABLE OBJECTS

Philippe Michel, Herouville Saint-Clair, France, assignor to France Telecom (Centre National d-Etudes des Telecommunications), Paris, France

Filed Aug. 20, 1991, Ser. No. 747,870
Claims priority, application France, Aug. 24, 1990, 90 10651
Int. Cl.[5] H04Q 9/00
U.S. Cl. 340—825.54 33 Claims



1. A device for remote exchange of information between a station and at least one portable object, comprising:

a station-dialog unit including

means for defining a range of action;

station-processing means for processing the information exchanged with the at least one portable object, by repeatedly generating, in a primary condition, an enquiry message in the range of action, followed by a silence zone, then selectively analyzing respective contents of a plurality of disjoint time intervals in the silence zone, until identification in one of the disjoint time intervals a specified response message associated with a single portable object, generating a selection message intended for the single portable object and entering a dialog condition for communication with the single portable object;

station-command means for selecting between the primary and dialog conditions of said station-processing means as a function of previously specified station-command criteria; and

an object-dialog unit in each portable unit, having an active state to mutually interact remotely with said station-dialog unit inside the range of action, including

communication means for performing the exchange of information with said station-dialog unit;

object-processing means for responding to reception of the enquiry message in an initialization condition in the active state, by randomly choosing one of the time intervals to generate the specified response message associated therewith and to generate an acknowledgement message upon reception of the selection message and then entering a transactional communication condition for communication with said station-dialog unit; and

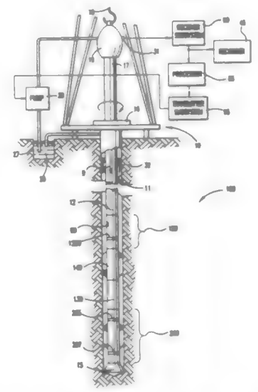
object-command means for changing said object-processing means from the initialization condition to the transactional communication condition if another enquiry message is not received after transmission of the acknowledgement message.

5,359,324

WELL LOGGING APPARATUS FOR INVESTIGATING EARTH FORMATIONS

Brian Clark, Missouri City; Stephen D. Bonner, Sugar Land; Jacques Jundt, Missouri City, all of Tex., and Martin Luling, Danbury, Conn., assignors to Schlumberger Technology Corporation, Houston, Tex.

Division of Ser. No. 786,137, Oct. 31, 1991, Pat. No. 5,235,285.
This application May 21, 1993, Ser. No. 65,279
Int. Cl.[5] G01V 1/00
U.S. Cl. 340—854.3 10 Claims



1. For use in conjunction with earth borehole drilling apparatus that includes a drill string, and a drill bit coupled to an end thereof; a logging-while-drilling system, comprising:

a first subassembly mountable in said drill string near said bit, said first subassembly including: a first electrically conductive body; means disposed in said first electrically conductive body for measuring a physical parameter relating to said drilling; a first toroidal coil antenna disposed on said first electrically conductive body; means for generating a local communication signal which depends on said measured physical parameter, and for coupling said local communication signal to said first toroidal coil antenna;

said means for measuring a physical parameter including means for energizing said first toroidal coil antenna with a measurement signal, and means mounted on said first electrically conductive body for receiving said measurement signal after the passage thereof through formations surrounding the borehole;

a second subassembly mountable in said drill string near said bit, said second subassembly including: a second electrically conductive body; a second toroidal coil antenna disposed on said second electrically conductive body; means coupled with said second toroidal coil antenna for receiving said local communication signal and generating a surface communication signal which depends on said local communication signal; an acoustic transmitter for transmitting an acoustic surface communication signal; and

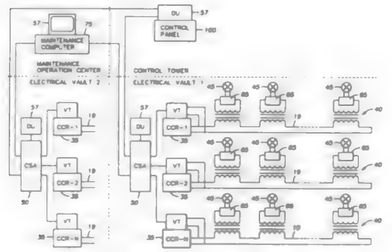
an acoustic receiver at the earth's surface for receiving said acoustic surface communication signal.

5,359,325

AUTOMATIC MONITORING SYSTEM FOR AIRFIELD LIGHTING SYSTEMS

Seward E. Ford, Windsor, Conn., and Simcha Ohrenstein, Tel-Aviv, Israel, assignors to Cooper Industries, Inc., Houston, Tex.

Filed Oct. 3, 1991, Ser. No. 770,686
Int. Cl.[5] G08G 5/00
U.S. Cl. 340—953 11 Claims



1. A runway lighting system comprising:

a plurality of lamps for providing illumination along the runway;

a series transmission line supplying current to said lamps;

a plurality of monitoring means for monitoring each of said plurality of lamps to determine if any one of said lamps has malfunctioned, wherein one monitoring means is associated with each lamp in said runway lighting system;

a plurality of transmitting means, one of which is associated with each monitoring means, for transmitting a signal during a preassigned time window, which preassigned time window is unique for each lamp, on said transmission line indicating that the lamp associated with said monitoring means has malfunctioned, with said signal comprising a change in voltage and current on said transmission line; and

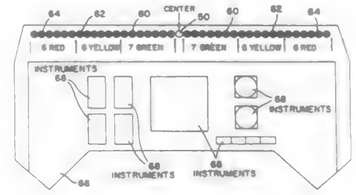
circuit analyzing means connected to said transmission line for receiving said signal and monitoring the voltage and current in the transmission line and determining whether a change in magnetic flow has occurred.

5,359,326

AIRCRAFT MANEUVER ENVELOPE WARNING SYSTEM

Courtland C. Bivens, San Jose; Joel M. Rosado, Sunnyvale, and Burnett Lee, San Mateo, all of Calif., assignors to The United States of America as represented by the Administrator of National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 16, 1993, Ser. No. 32,067
Int. Cl.[5] G01C 21/00
U.S. Cl. 340—971 1 Claim



1. A maneuver envelope warning system for an aircraft having operating limits, the system comprising:

sensor means for sensing operating conditions of the aircraft;

processing means for determining a relationship between the sensed operating conditions and the operating limits, said processing means including thresholding means for determining whether the determined relationship falls within one of a first range, a second range, and a third range, and for providing an output signal responsive to the determination, said processing means further including a voltage generating means for generating a voltage corresponding to a location of the determined relationship within the first range, second range and third range;

an array of indicators corresponding to the operating limits, said indicators of said array, being of a first color and located in a middle of the array, indicators being of a second color flanking the indicators of the first color, and the indicators being of a third color flanking the indicators of the second color; and

indicating means for illuminating a number of the indicators in proportion to the determined relationship, said indicating means including driving means for receiving the output signal, for illuminating at least one of the indicators of the first color when the determined relationship falls within the first range, for illuminating at least two of the indicators of the second color when the determined relationship falls within the second range, and for illuminating at least two of the indicators of the third color when the determined relationship falls within the third range, said driving means including means for symmetrically driving at least two indicators lying on either side of the middle of the array based on the generated voltage, the driven indicators disposed farthest from the middle of the linear array being called the lead indicators, and further wherein the indicating means includes user selectable means for controlling the driving means to one of (a) only drive the lead indicators and (b) drive the lead indicators and indicators disposed closer to the middle of the array than the lead indicators.

5,359,327

A/D CONVERTER SYSTEM WITH INTERFACE AND PASSIVE VOLTAGE REFERENCE SOURCE

Eric W. Brown, and James A. Littlefield, both of 98 Baycrest Ct., Newport Beach, Calif. 92660-2922

Filed May 28, 1993, Ser. No. 69,029
Int. Cl.[5] H03M 1/18
U.S. Cl. 341—139 28 Claims

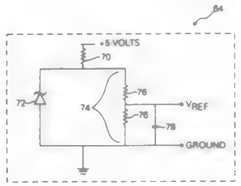
1. An A/D converting system having low noise for convert-

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ing an analog signal having a full scale input range into a digital signal, the system comprising:

an interface circuit; and

an A/D convertor circuit coupled to the interface circuit, the A/D converter circuit having a diode with two terminals and a passive attenuation circuit coupled in parallel between the two diode terminals to provide a voltage reference signal, and the voltage reference signal being attenuated by the passive attenuation circuit to correspond to the full scale input range of the analog signal.



5,359,328

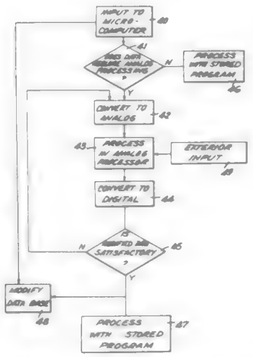
ANALOG PROCESSING SYSTEM

Richard R. Sills, 1085 Park Ave., New York, N.Y. 10128

Continuation-in-part of Ser. No. 933,165, Nov. 20, 1986. This application Mar. 10, 1989, Ser. No. 322,147

Int. Cl.[5] H03M *1/00, 1/06;* G11B *5/00*

U.S. Cl. 341—155 16 Claims



1. An information processing system comprising

a digital computing system,

an analog processing device comprising an electrical analog signal input, an electrical analog signal output, means for converting electrical information at said analog signal input to analog energy, means for modifying said analog energy, and means responsive to said modified analog energy for producing output electrical information and applying it to said analog signal output,

digital-to-analog conversion means for applying output data from said digital computing system to said analog signal input, and

analog-to-digital conversion means for converting analog signals at said analog signal output to digital signals and applying said last mentioned digital signals to said digital computing system.

5,359,329

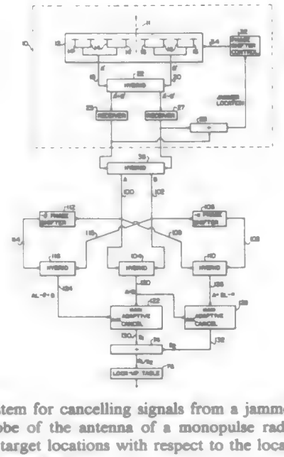
JAMMER REFERENCE TARGET MEASUREMENT SYSTEM

Bernard L. Lewis, Oxon Hill, and Frank F. Kretschmer, Jr., Laurel, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 18, 1981, Ser. No. 247,578

Int. Cl.[5] G01S *7/36, 13/44*

U.S. Cl. 342—17 28 Claims



1. A system for cancelling signals from a jammer entering the mainlobe of the antenna of a monopulse radar and for providing target locations with respect to the location of the jammer comprising:

means for notching the antenna response at the jammer location with the antenna pointing so that the jammer is positioned within the 3 dB points of the mainlobe of the antenna;

means for shifting the effective orientation of said antenna by a small amount and notching the antenna response at the jammer location at the new effective orientation, said new orientation being such that the jammer is still located approximately within the 3 dB points of the new mainlobe orientation; and

means for determining the ratio between echo signals from the same targets in these two notched antenna responses, said ratio being proportional to the angle separating the target in the response from the jammer.

5,359,330

MICROBURST PRECURSOR DETECTION UTILIZING MICROWAVE RADAR

Willian L. Rubin, Whitestone, and Carl H. Leyh, Floral Park, both of N.Y., assignors to Unisys Corporation, Great Neck, N.Y.

Continuation of Ser. No. 882,394, May 13, 1992, Pat. No. 5,262,782, which is a continuation of Ser. No. 683,356, Apr. 9, 1991, Pat. No. 5,130,712. This application Jul. 29, 1993, Ser. No. 99,030

The portion of the term of this patent subsequent to Jul. 24, 2009, has been disclaimed.

Int. Cl.[5] G01S *13/64, 13/95*

U.S. Cl. 342—26 13 Claims

1. A method for predicting weather disturbances comprising the steps of:

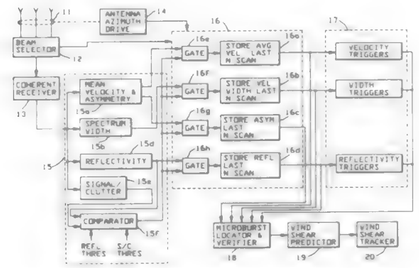
providing radar surveillance over an elevation angular region through a plurality of azimuthally scanned radar beams, each beam providing radar surveillance in a respective elevation angular sector in said angular region;

processing radar signal returns to estimate doppler spectrum parameters generated in each radar beam and to estimate average radar reflectivity of meteorological scatterers in each beam;

utilizing said doppler spectrum parameters and said average reflectivity to respectively estimate vertical velocity of said meteorological scatterers and vertical velocity in still air of said meteorological scatterers;

processing said vertical velocity and vertical velocity in still air to obtain vertical wind velocity; and

utilizing said vertical wind velocity and said average reflectivity to predict the occurrence of a microburst.



5,359,331

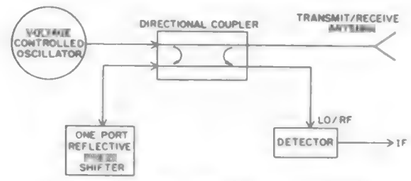
MONOSTATIC RADAR SYSTEM HAVING A ONE-PORT IMPEDANCE MATCHING DEVICE

Zdenek Adler, West Hempstead, N.Y., assignor to General Microwave Corporation, Amityville, N.Y.

Continuation-in-part of Ser. No. 553,890, Jul. 13, 1990, Pat. No. 5,134,411. This application Jul. 27, 1992, Ser. No. 919,833

Int. Cl.[5] G01S *7/03*

U.S. Cl. 342—124 21 Claims



12. An monostatic radar system signals comprising:

means for generating high frequency energy signals;

antenna means for radiating said high frequency energy signals and for receiving reflected target signals whereby a secondary portion of said high frequency energy signals, which are not radiated, reflects from said antenna means;

means for processing received reflected target signals;

a one-port Z-network for receiving an incident signal from said high frequency energy signals and for producing a cancelling signal by controlled reflection of said incident signal; and

a coupling structure coupling said signal generating means, said antenna means, said signal processing means, and said one-port Z-network such that the said Z-network produces a cancelling signal which substantially cancels the reflected secondary portion of the high frequency energy signals.

5,359,332

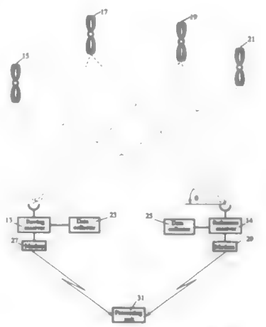
DETERMINATION OF PHASE AMBIGUITIES IN SATELLITE RANGES

Michael T. Allison, Santa Clara; Phillip Deaver, Cupertino, and Scott Dreier, San Francisco, all of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Dec. 31, 1992, Ser. No. 999,099

Int. Cl.[5] G01S *5/02, 3/02*

U.S. Cl. 342—357 27 Claims



1. A method for determining and removing the phase integer ambiguities associated with determination of position of a receiver that is part of a Satellite Positioning System, the method comprising the steps of:

(1) providing a reference receiver and antenna, denoted receiver number 1, whose antenna position r(ref) is known with predetermined accuracy, at a sequence of predetermined times;

(2) providing a roving receiver and antenna, denoted receiver number 2, with a first roving receiver antenna position r(rov, +d, L) that is displaced from the reference receiver antenna position by a distance +d in a first direction along a selected line L also containing the reference receiver antenna position, where d need not be determined;

(3) providing a plurality of n satellites (n≧4), numbered i=1, 2, . . . , n, at predetermined heights above the Earth's surface, where each satellite transmits a predetermined signal at a predetermined sequence of times at each of at least two carrier signal frequencies f=f_{L1} and f=f_{L2};

(4) determining an effective signal frequency $f_{cp}=\alpha_1 f_{L1}+\alpha_2 f_{L2}=c/\lambda_{cp}$, expressed as a selected linear combination of the two carrier frequencies $f_{L1}=c/\lambda_{L1}$ and $f_{L2}=c/\lambda_{L2}$, for the Satellite Positioning System, where c is the velocity of light and λ_{cp} is the corresponding effective wavelength;

(5) determining a phase integer estimate $N_{e;i,f;j,f}(1)$ for the roving receiver located at a first roving receiver antenna position r(rov, +d, L), for satellites number i and i' and receivers number j and j' from the relation

$$N_{e;i,f;j,f}(1)=\Delta R_{i,f;j,f}(1)/\lambda_{cp}+\Phi_{i,f;j,f;cp}(1),$$

where $\Delta R_{i,f;j,f}(1)$ is a double difference range value defined by the relation

$$\Delta R_{i,f;j,f}(1)=(R_{i,f}(1)-R_{f,f}(1))-(R_{i,f}(1)-R_{f,f}(1)),$$

and $R_{i,f}(1)$ is the theoretical range or distance from receiver number j to satellite number i for the first roving receiver antenna position, assuming that d≃0 for this determination, and $\Phi_{i,f;j,f;cp}(1)$ is a phase variable determined by the relation

$$\Phi_{i,f;j,f;cp}(1)=[\beta_{i,j;cp}(1)-\beta_{f,j;cp}(1)]-[\beta_{i,f;cp}(1)-\beta_{f,f;cp}(1)].$$

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where $\beta_{i,j;cp}(1)$ is an effective phase, measured from satellite number i to receiver number j of a carrier signal with effective frequency f_{cp};

(6) determining a phase integer estimate $N_{e;i,i';j,j'}(2)$ for the roving receiver located at a second roving receiver antenna position r(rov, −d, L), for satellites number i and i' and receivers number j and j' from the relation

$$N_{e;i,i';j,j'}(2)=\Delta R_{i,i';j,j'}(2)/\lambda_{cp}+\Phi_{i,i';j,j';cp}(2),$$

where $\Delta R_{i,i';j,j'}(1)$ is a double difference range value defined by the relation

$$\Delta R_{i,i';j,j'}(2)=(R_{i,j}(2)-R_{i',j}(2))-(R_{i,j'}(2)-R_{i',j'}(2)),$$

and $R_{i,j}(2)$ is the theoretical range or distance from receiver number j to satellite number i for the first roving receiver antenna position, assuming that d=0 for this determination, and $\Phi_{i,i';j,j';cp}(2)$ is a phase variable determined by the relation

$$\Phi_{i,i';j,j';cp}(2)=[\beta_{i,j;cp}(2)-\beta_{i',j;cp}(2)]-[\beta_{i,j';cp}(2)-\beta_{i',j';cp}(2)],$$

where $\beta_{i,j;cp}(2)$ is an effective phase, measured from satellite number i to receiver number j of a carrier signal with effective frequency f_{cp}; and

(7) determining the desired phase integers $N_{i,i';j,j'}$ for the reference and roving receiver antennas by the relations

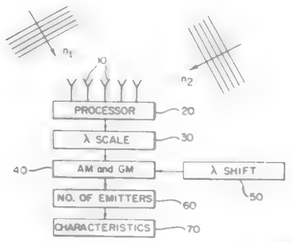
$$N_{i,i';j,j'}=\text{floor}[(N_{e;i,i';j,j'}(1)+N_{e;i,i';j,j'}(2))/2+0.5].$$

5,359,333

ROBUST MULTIPLE COCHANNEL EMITTER DETECTORS

Langhorne P. Withers, Jr., Springfield, Va., assignor to E-Systems, Inc., Dallas, Tex.

Filed Jul. 21, 1993, Ser. No. 94,350
Int. Cl.[5] G01S *3/16, 3/28*
U.S. Cl. 342—378 **23 Claims**



1. A method of identifying characteristics of signals impinging on an array of sensors that requires an estimate of the number of emitters having signals impinging on the array of sensors, in which a method of estimating the number of the emitters n comprises the steps of:

(a) providing an array of m sensors for receiving the impinging signals in the presence of noise;

(b) sensing the impinging signals from the n emitters and the noise at the array of m sensors;

(c) processing the sensed signals and noise to identify a sensor correlation matrix and the m eigenvalues λ_k (k=1, . . . , m) thereof;

(d) scaling said eigenvalues λ_k by dividing each by noise power σ^2 to create scaled eigenvalues λ_k';

(e) evaluating the difference between a scaled eigenvalue λ_k' and an arithmetic mean of the scaled eigenvalues λ_1', . . . , λ_{k-1}' to determine whether λ_k' increases sufficiently to declare n=m−k, stepping k from 1 to m until the increase is sufficient; and

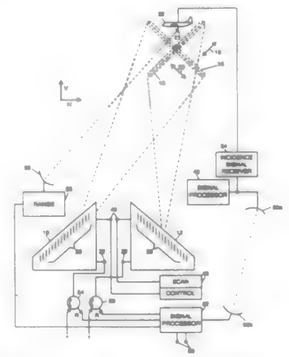
(f) providing the declared number of emitters n so that the characteristics of the impinging signals can be determined.

5,359,334

X-SCAN AIRCRAFT LOCATION SYSTEMS

John H. Gutman, Huntington, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Filed Jan. 14, 1993, Ser. No. 4,357
Int. Cl.[5] G01S *1/16, 13/00;* **H01Q** *13/00*
U.S. Cl. 342—408 **23 Claims**



1. An X-scan aircraft location system comprising;

a linear array first antenna system for providing a first antenna beam pattern having a first diagonal orientation relative to vertical and horizontal normal coordinates, said first antenna system including a linear array of radiating elements positioned along a first line diagonal to said normal coordinates, all of said radiating elements having a substantially parallel alignment with one of said normal coordinates;

a linear array second antenna system for providing a second antenna beam pattern having a second diagonal orientation transverse to said first diagonal orientation, said second antenna system including a linear array of radiating elements positioned along a second line diagonal to said normal coordinates and transverse to said first line, all of said radiating elements having a substantially parallel alignment with one of said normal coordinates;

scan control means, coupled to said first and second antenna systems, for controlling relative phase of signals coupled to respective ones of said radiating elements of each of said first and second antenna systems to cause said first and second antenna beam patterns to be scanned transversely to each other; and

processor means for utilizing data representative of time of incidence of said first and second antenna beam patterns at the location of an aircraft in determining the azimuth of said aircraft relative to a reference location.

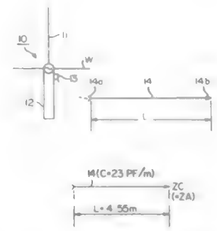
5,359,335

AUTOMOBILE ANTENNA

Yoshimi Egashira, Sagamihara, and Masaki Shinkawa, Kanagawa, all of Japan, assignors to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 387,006, Jul. 28, 1989, abandoned. This application Jun. 8, 1992, Ser. No. 895,208
Int. Cl.[5] H01Q *1/32*
U.S. Cl. 343—715 **2 Claims**

1. An AM/FM broadcast band automobile antenna comprising: an antenna element provided on a vehicle body and having an input impedance in an FM broadcast band substantially less than an input impedance of said antenna element in an AM broadcast band, said antenna element for receiving said AM and FM broadcast bands and a feeder cable having one end thereof connected to a feeding point of said antenna element and the other end to an input of a receiver set, said feeder cable having an electrical length from the feeding point of said antenna element to the input of said receiver set equal to an integral multiple of ½ the wavelength of the FM broadcast band and said feeder cable further comprising a coaxial cable whose impedance is substantially greater than said input impedance of said antenna element in said FM broadcast band and whose electro static capacitance per unit length is less than 30 pf/m, whereby not only is the sensitivity of the automobile antenna in the AM broadcast band increased, but also the sensitivity in the FM broadcast band increased.

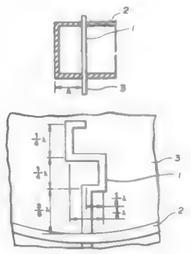


5,359,336

CIRCULARLY POLARIZED WAVE GENERATOR AND CIRCULARLY POLARIZED WAVE RECEIVING ANTENNA

Yoshikazu Yoshida, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 24, 1993, Ser. No. 36,153
Claims priority, application Japan, Mar. 31, 1992, 4-103967
Int. Cl.[5] H01Q *19/00*
U.S. Cl. 343—756 **15 Claims**



1. A circularly polarized wave generator for transmitting circularly polarized waves comprising:

a tubular waveguide having an open front end and a closed rear end;

a substrate in the form of a flat plate having a major surface substantially the same Size as said open end of said waveguide and arranged in said waveguide between said front end and said rear end, so that said major surface is substantially perpendicular to a longitudinal axis of said waveguide; and

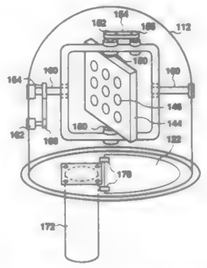
a conductor pattern provided on said major surface of said substrate forming said front end of said waveguide, said conductor pattern being made up of a first straight section of a length approximately equal to ½λ having a proximal end as a reception end for transmitted electromagnetic waves with a wavelength λ, a second straight section of a length equal to approximately ¼λ contiguous to said first straight section from a distal end of said first straight section and extended in a first lateral direction perpendicular to said first straight section, a third straight section of a length equal to approximately ¼λ contiguous to said second straight section from a distal end of said second straight section and extended parallel to said first straight section in a direction of extension of said first straight section, a fourth straight section of a length equal to approximately ¼λ contiguous to said third straight section from a distal end of said third straight section and extended in the opposite lateral direction perpendicular to said third straight section, a fifth straight section of a length equal to approximately ¼λ contiguous to said fourth straight section from a distal end of said fourth straight section and extended parallel to said first straight section in the direction of extension of said first straight section, and a sixth straight section of a length approximately equal to ¼λ contiguous to said fifth straight section from a distal end of said fifth straight section and extended in said first lateral direction perpendicular to said fifth straight section.

5,359,337

STABILIZED ANTENNA SYSTEM

Kouichi Eguchi, Tokyo, Japan, assignor to Japan Radio Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1991, Ser. No. 796,704
Claims priority, application Japan, Nov. 30, 1990, 2-339317
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[5] H01Q *3/00*
U.S. Cl. 343—765 **9 Claims**



1. A stabilized antenna system to be installed on a moving platform, comprising:

(a) an array antenna including

(i) a plurality of antenna elements arranged in a plurality of columns, and

(ii) variable phase shifters associated with at least respective columns of said antenna elements and being adopted to phase-shift high frequency signals related to said antenna elements in the columns associated therewith, thereby steering a beam of said antenna electronically around a virtual axis,

(b) first antenna steering means for steering said array antenna around first mechanical axis perpendicular to the virtual axis for steering the beam by said variable phase shifters;

(c) second antenna steering means for steering said array antenna and said first antenna steering means around second mechanical axis perpendicular to the first mechanical axis;

(d) inclination detecting means for detecting inclination angle of the moving platform;

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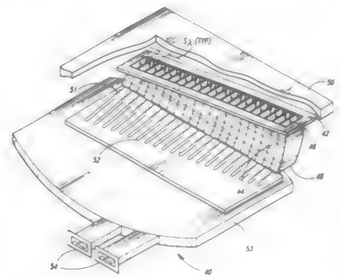
(e) control means for controlling said variable phase shifters end said first and second antenna steering means according to the detected inclination angle so that the beam of said array antenna is directed toward a satellite;
(f) a radome for covering at least said array antenna and said first and second antenna steering means, and being made of material passing the radio waves; and
(g) a frame for supporting said first antenna steering means, said frame being mainly made of resin and being supported at the side of said radome.

5,359,338

LINEAR CONFORMAL ANTENNA ARRAY FOR SCANNING NEAR END-FIRE IN ONE DIRECTION

Eugene C. Hatcher, Jr.; Mark J. DeHart, and Douglas W. Sherman, all of King County, Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 410,088, Sep. 20, 1989, abandoned. This application May 16, 1991, Ser. No. 702,452
Int. Cl.[5] H01Q *13/00*
U.S. Cl. 343—778 **21 Claims**



1. An antenna, comprising a plurality of rectangular waveguide antenna elements each having an input end, an output end, and first and second mutually orthogonal pairs of parallel walls, the output ends of the second walls of each of said antenna elements being generally tapered inwardly toward the input end of said antenna elements from one of said first walls to the other of said first walls along a first axis extending perpendicularly from one of said first walls to the other, said antenna elements being arranged in a row having a longitudinal axis with the first walls of all of said antenna elements being generally parallel to each other and with the first axis of each of said antenna elements generally aligned with each other along the longitudinal axis of said row.

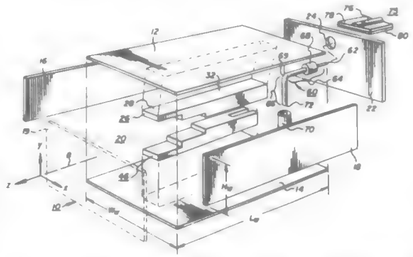
5,359,339

BROADBAND SHORT-HORN ANTENNA

Ashok K. Agrawal, Mount Laurel; Michael S. Perry, Haddonfield, and Norman R. Landry, Mount Laurel, all of N.J., assignors to Martin Marietta Corporation, Moorestown, N.J.

Filed Jul. 16, 1993, Ser. No. 92,645
Int. Cl.[5] H01Q *13/00*
U.S. Cl. 343—786 **12 Claims**

1. A horn antenna adapted to be fed from an unbalanced transmission line including a larger reference conductor spaced apart from a smaller conductor, said antenna comprising:
first and second mutually parallel, electrically conductive broad walls, spaced apart by first and second mutually parallel, electrically conductive narrow walls, together defining a rectangular waveguide centered about a longitudinal axis, and also defining first (yz) and second (xz) planes, each of which planes contains said longitudinal axis, said first plane (yz) being orthogonal to said first and second broad walls and parallel to said narrow walls, and said second (xz) plane being orthogonal to said first and second narrow walls and parallel to said broad walls, said waveguide including a rectangular radiating aperture at a radiating end of said waveguide and also including a feed end;
an electrically conductive short-circuiting wall at least electrically coupled to said first and second broad walls and to said first and second narrow walls at said feed end of said waveguide, said short-circuiting wall defining a feed aperture offset toward said first broad wall from said second (xz) plane, and centered between said first and second narrow walls;
a first electrically conductive waveguide ridge, said first waveguide ridge including a flat support surface and an opposed surface substantially parallel to said flat support surface, nominally mutually parallel side surfaces nominally orthogonal to said support and opposed surfaces, and also including a feed-end surface orthogonal to said side surfaces and to said support and opposed surfaces, said first waveguide ridge also having length (L_R), width (W_R) and depth dimensions, said length dimension (L_R) of said first waveguide ridge being equal to the length of said flat support surface of said first waveguide ridge and no greater than the distance between said radiating aperture and said short-circuiting wall, said width dimension (W_R) of said first waveguide ridge being measured between said side surfaces and being less than the width of said broad walls in a plane (xz) transverse to said longitudinal axis, and said depth dimension in a first portion of said first waveguide ridge, nearest to said feed-end surface of said



first waveguide ridge, being constant as measured from said flat support surface to said opposed surface, which constant depth dimension is less than one-half the spacing between said broad walls, and said depth dimension, as measured from said flat support surface in a second portion of said first waveguide ridge remote from said feed-end surface, ranging from said constant depth dimension to a depth less than said constant depth dimension, said first waveguide ridge being mounted inside said rectangular waveguide with said flat support surface against, and supported by, said first broad wall, with said length dimension (L_R) of said first waveguide ridge parallel to said longitudinal axis of said rectangular waveguide, with said side surfaces symmetrically disposed about said first (yz) plane, and with said opposed surface nearest to and parallel with said second (xz) plane, said first ridge further defining a slot in its said opposed surface, which slot extends from said feed-end surface parallel to said first (xz) plane, and which has a slot width dimension (W_S) measured in a plane transverse to said longitudinal axis;
a second electrically conductive waveguide ridge, said second waveguide ridge including a flat support surface and an opposed surface substantially parallel to said flat support surface, nominally mutually parallel side surfaces nominally orthogonal to said support and opposed surfaces, and also including a feed-end surface orthogonal to said side surfaces and to said support and opposed surfaces, said second waveguide ridge also having length,

width and depth dimensions, said length dimension of said second waveguide ridge being equal to the length of said flat support surface of said second waveguide ridge and no greater than the distance between said radiating aperture and said short-circuiting wall, said width dimension of said second waveguide ridge being measured between said side surfaces and being less than the width of said broad walls in a plane transverse to said longitudinal axis, and said depth dimension in a first portion of said waveguide ridge, nearest to said feed-end surface of said second waveguide ridge, being constant as measured from said flat support surface to said opposed surface, which constant depth dimension is less than one-half the spacing between said broad walls, and said depth dimension, as measured from said flat support surface in a second portion of said second waveguide ridge remote from said feed-end surface, ranging from said constant depth dimension to a depth less than said constant depth dimension, said second waveguide ridge being mounted inside said rectangular waveguide with said flat support surface against, and supported by, said second broad wall, and with said side surfaces symmetrically disposed about said first plane, with said length dimension of said second waveguide ridge parallel to said longitudinal axis of said rectangular waveguide, and with said opposed surface nearest to and parallel with said second plane, said second ridge further defining a slot in its said opposed surface, which slot extends from said feed-end surface parallel to said first plane, and which has a slot width dimension measured in a plane transverse to said longitudinal axis; and
coupling means, said coupling means including an elongated probe defining support and second ends and an intermediate point therebetween, said probe being electrically isolated from, and mechanically supported at said support end by, said short-circuiting wall, said coupling means including means adapted for coupling (a) said support end of said probe to said smaller conductor of said transmission line and (b) said aperture of said short-circuiting wall to said reference conductor of said transmission line, said probe including a first portion, extending from said support end to said intermediate point, which extends parallel to said longitudinal axis of said rectangular waveguide into said slot of said first waveguide ridge in a manner electrically isolated from said first waveguide ridge, said probe also including a second portion, extending in said first plane (yz) at an angle relative to said first portion from said intermediate point to said second end of said probe, generally toward said second broad wall, in a manner which is electrically isolated from said second broad wall.

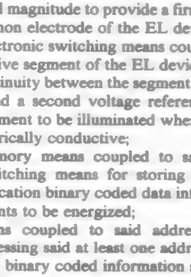
5,359,340

HELICAL ANTENNA FOR PORTABLE RADIO COMMUNICATION EQUIPMENT

Yasuhiro Yokota, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 30, 1992, Ser. No. 953,374
Int. Cl.[5] H01Q *11/08*
U.S. Cl. 343—792 **34 Claims**

1. A small size helical antenna for radio communication equipment including at least one of a portable transmitter/-receiver, a pocket telephone, and a small power type mobile telephone, said helical antenna comprising:
a first conductor being continuously wound helically from a top end to a bottom end, said first conductor connected to a casing of said equipment; and
a second conductor being helically wound together in parallel with said helically wound first conductor with a predetermined space between facing surfaces thereof;
wherein said second conductor having a same length as said first conductor, a predetermined length from a top end of said second conductor is folded in parallel to a remaining portion of said second conductor to form a folded part with said predetermined space between facing surfaces thereof, an unfolded part thereof is helically wound in parallel together with said first conductor with a bottom end of said second conductor aligned with said bottom



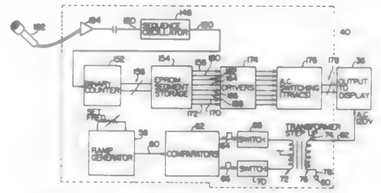
end of said first conductor to form a parallel feeder, and said folded part of said second conductor and a predetermined length from said top end of said first conductor comprise a radiator.

5,359,341

POWER SUPPLY FOR SEQUENTIALLY ENERGIZING SEGMENTS OF AN ELECTROLUMINESCENT PANEL TO PRODUCE ANIMATED DISPLAYS

Philip D. Hutchings, Wilshire, England, assignor to Tek Electronics Manufacturing Corporation, Manchester, Conn.

Filed Apr. 22, 1992, Ser. No. 872,165
Int. Cl.[5] G09G *3/30;* **H05B** *33/08*
U.S. Cl. 345—45 **10 Claims**



10. Apparatus for sequentially powering segments of an electroluminescent (EL) display device to produce an animated graphic display, said device comprising:
means for generating an alternate wave voltage having a predetermined magnitude to provide a first voltage potential to a common electrode of the EL device;
controllable electronic switching means coupled to an associated respective segment of the EL device for providing electrical continuity between the segment electrode of the EL device and a second voltage reference potential to cause said segment to be illuminated when said switching means is electrically conductive;
addressable memory means coupled to said controllable electronic switching means for storing at at least one addressable location binary coded data information defining the segments to be energized;
addressing means coupled to said addressable memory means for accessing said at least one addressable location to retrieve the binary coded information stored therein;
timing means coupled to said addressing means for producing timing pulses in a predetermined timed relationship with respect to one another and in a random timed relationship with respect to one another whereby said segments of the EL display are energized with the binary coded data information retrieved from said addressable

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memory locations in accordance with a programmed sequence to produce the desired animated graphic display;

wherein said alternating wave generating means further comprises:

circuit means for generating a triangular waveform voltage;

first comparator circuit means having an input coupled to said triangular waveform voltage generating circuit for producing a first voltage pulse signal;

second comparator circuit means having an input coupled to said triangular waveform generating circuit for producing a second voltage pulse signal 180° out of phase with respect to said first voltage pulse signal;

voltage transformer circuit means having a primary winding and a secondary winding, said primary winding being centertapped and having one end driven by said first voltage pulse signal and an opposite end driven by said second voltage pulse signal to induce alternating wave voltage across said secondary winding, said transformer circuit means having a transformation ratio for stepping-up said voltage pulse signals driving said primary winding to a predetermined voltage magnitude across said secondary winding sufficient to excite said segments of said EL display device.

5,359,342

VIDEO SIGNAL COMPENSATION APPARATUS

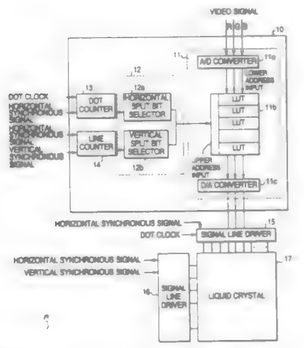
Seiji Nakai, Osaka, and Masashi Kubota, Katano, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 537,939, Jun. 14, 1990, abandoned. This application Feb. 1, 1993, Ser. No. 11,828

Claims priority, application Japan, Jun. 15, 1989, 1-153391; Jul. 7, 1989, 1-175854

Int. Cl.[5] G09G 3/36

U.S. Cl. 345—89 9 Claims



1. A display apparatus comprising a dot matrix type display apparatus for displaying a video signal on a pixel by pixel basis by a dot clock and horizontal and vertical synchronous signals, and a video signal compensation apparatus for compensating the video signal, wherein said video signal compensation apparatus comprises:

a dot counter for counting the dot clock and outputting a first count signal indicative of a horizontal screen position;

a line counter for counting said the horizontal synchronous signal and outputting a second count signal indicative of a vertical screen position;

a screen split control means for producing an output signal according to said first and second count signals which is indicative of a screen split region, said split screen region being one of a plurality of screen split regions; and

a correction processing means for correcting an input video signal according to said output signal from said screen split control means and for outputting a corrected video signal to said dot matrix type display apparatus;

and wherein said correction processing means comprises:

an analog-to-digital converter for converting the input video signal to a digital signal;

a look-up-table memory means including therein a plurality of tables each of which has stored therein correction data for a corresponding one of said plurality of screen split regions, said look-up-table memory means being responsive to said output signal from said screen split control means for selecting one of said plurality of tables corresponding to a screen split region indicated by said signal outputted from said screen split control means and for correcting said digital signal from said analog-to-digital converter according to the correction data stored in the selected one of said plurality of tables; and

a digital-to-analog converter for converting a corrected digital signal outputted from said look-up-table memory means to an analog signal, said analog signal from said digital-to-analog converter being outputted as said corrected video signal from said correction processing means;

wherein the correction data stored in each look-up-table is data prepared by measuring a video signal level versus screen brightness characteristic curve of the dot matrix display apparatus for each of three primary colors in a corresponding one of the plurality of screen split regions and computing an inverse conversion curve to said characteristic curve;

and wherein said screen split control means comprises a horizontal split bit selection circuit connected to said dot counter for selecting from bits of said first count signal a bit which is renewed by every horizontal split position and bits which are higher order than said bit, and a vertical split bit selection circuit connected to said line counter for selecting from bits of said second count signal a bit which is renewed by every vertical split position and bits which are higher order bits than said bit, the selected bits of said first and second cut signals being outputted as said signal indicative of a screen split region.

5,359,343

DYNAMIC ADDRESSING DISPLAY DEVICE AND DISPLAY SYSTEM THEREWITH

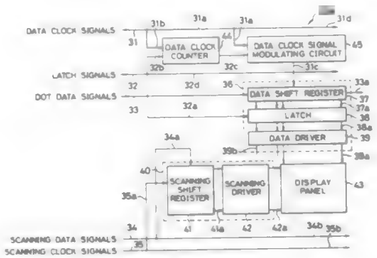
Tadashi Nakamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 27, 1993, Ser. No. 9,893

Claims priority, application Japan, Jan. 27, 1992, 4-011524

Int. Cl.[5] G09G 3/36

U.S. Cl. 345—100 12 Claims



1. A dynamic addressing display device comprising:

a display panel having a plurality of scanning electrodes and a plurality of data electrodes;

scanning driver means coupled to said display panel for driving said plurality of scanning electrodes upon receipt of scanning data signals and scanning clock signals;

data driver means coupled to said display panel for driving said plurality of data electrodes upon receipt of dot data signals and data clock signals, wherein each dot data signal and data clock signal is representative of a bit and a required number of bits are needed to drive said plurality of data electrodes, said data driver means containing at least one additional bit exceeding the required number of bits;

a data clock counter for counting the data clock signals applied to said data driver means; and

data clock adder means including means for receiving said data clock signals; and means for adding an additional clock signal to a set of data clock signals upon receipt of a count signal from said data clock counter indicating a count equal to the required number, said additional clock signal including a number of bits corresponding in number to the at least one additional bit, wherein said additional clock signal is not used for driving said plurality of data electrodes.

5,359,344

DATA PROCESSING SYSTEM AND APPARATUS

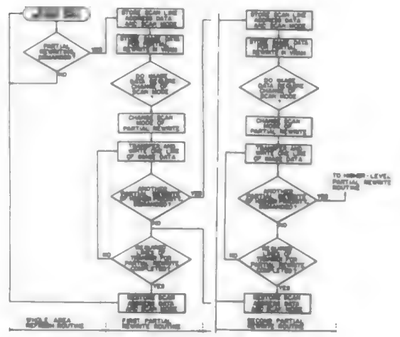
Hiroshi Inoue, Yokohama; Atsushi Mizutome, Fujisawa, and Aiko Enomoto, Zama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 410,731, Sep. 21, 1989. This application Jan. 29, 1993, Ser. No. 11,241

Claims priority, application Japan, Sep. 29, 1988, 63-246089; Sep. 30, 1988, 63-246307; Sep. 30, 1988, 63-246308; Oct. 6, 1988, 63-252992; Oct. 11, 1988, 63-256324; Oct. 12, 1988, 63-258185

Int. Cl.[5] G09G 3/36

U.S. Cl. 345—100 11 Claims



1. A data processing apparatus, comprising:

(a) means for receiving image data having a plurality of graphic events;

(b) means for controlling an image data storage memory so that the received image data is stored in the memory in the order of from a higher display priority level of the graphic events based on prescribed display priority levels of the graphic events, with the storage of image data for higher priority graphic events occurring before the storage of image data for lower priority graphic events; and

(c) means for controlling the image data storage memory so that the stored image data is transferred in the order of from a higher priority level of the graphic events to drive control means, with the transfer of stored image data corresponding to higher priority graphic events occurring before the transfer of stored image data corresponding to lower priority graphic events.

5,359,345

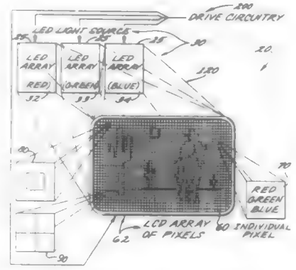
SHUTTERED AND CYCLED LIGHT EMITTING DIODE DISPLAY AND METHOD OF PRODUCING THE SAME

C. Eric Hunter, Chapel Hill, N.C., assignor to Cree Research, Inc., Durham, N.C.

Filed Aug. 5, 1992, Ser. No. 926,035

Int. Cl.[5] G09G 3/36

U.S. Cl. 345—102 9 Claims



1. A method of producing a high resolution, high intensity, full color display that is particularly useful for a flat display, comprising the steps of:

sequentially and cyclically lighting a set of one red, one green, and one blue LEDs by lighting the respective LEDs in the set for a predetermined time period for each LED in which one cycle is defined by the sum of the predetermined time periods, and in which one cycle is a time period less than that for which the sequential lighting of the LEDs can be detected by the human eye, the blue LED being formed in silicon carbide and being selected from the group having a peak emission at a wavelength ranging between about 424–428 nanometers, about 455–460 nanometers, about 465–470 nanometers, and about 475–480 nanometers so that a high intensity blue light source is thereby provided; and

shuttering the set of LEDs with only a portion of a liquid crystal pixel for at least a portion of the sequential predetermined time periods to thereby emit light from the shuttered portion of the liquid crystal pixel for a selected time period from each of the red, green, and blue LEDs so that the light emitted from the portion of the pixel is a sequential emission of red, green, and blue light, each for a time period less than or up to the predetermined time period so that the emission from the portion of the pixel during each cycle is defined by the amount of time a light pulse from each LED is shuttered and will normally be perceived by a human eye as a blend of the colors emitted by the respective LEDs rather than as a sequential appearance of those colors.

5,359,346

ELECTROPHORETIC DISPLAY PANEL AND ASSOCIATED METHODS FOR BLINKING DISPLAYED CHARACTERS

Frank J. DiSanto, North Hills, and Denis Krusos, Lloyd Harbor, both of N.Y., assignors to Copytele, Inc., Huntington Station, N.Y.

Continuation of Ser. No. 841,364, Feb. 25, 1992, abandoned. This application Jul. 7, 1993, Ser. No. 88,615

Int. Cl.[5] G09G 3/34

U.S. Cl. 345—107 17 Claims

1. An electrophoretic display apparatus adapted to display a plurality of written character lines with at least one selected character of said display blinking in a manner visible to the user of said apparatus, comprising:

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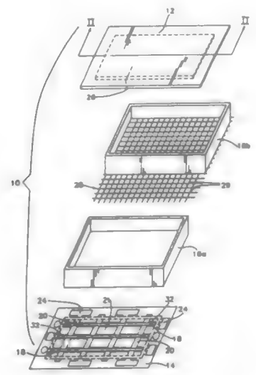
a fluid-tight envelope having a portion thereof which is at least partially transparent;

an electrophoretic fluid contained within said envelope, said fluid having pigmented particles suspended therein, and a matrix of row and column electrodes passing through said envelope and said fluid;

a plurality of anode segments passing through said envelope, wherein each displayed character area of said display is defined by at least one of the anode segments and by a corresponding group of row and column electrode intersections;

supply means for supplying individual voltages to selected row and column intersections and to said anode segments to write characters to said display;

control means coupled to said supply means, said control means operating said supply means to cause written characters to remain continuously visible to said user while also causing said supply means to sequentially apply a first



potential bias of a given polarity between a group of row and column intersections corresponding to a displayed character area and an associated anode segment long enough to cause pigment particles to move relative to said intersections and to thereby erase a character written to said displayed character area and a second potential bias of an opposite polarity between said anode segment and said group of row and column intersections for a period of time sufficient to rewrite said character to said displayed character area, said supply means being responsive to said control means to alternately apply said first and second potential bias so that said selected character is blinked in a manner visible to said user; and

a remote anode coupled to said supply means, said supply means being further responsive to said control means to supply a third potential bias of said given polarity between said row and column intersections and said remote anode to fully erase characters written on said display.

5,359,347

CURSOR PROCESSOR

Hong-seok Kim, and Hyeong-bok Lee, both of Kyunggi, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyunggi, Rep. of Korea

Filed Jun. 30, 1992, Ser. No. 906,469

Claims priority, application Rep. of Korea, Dec. 4, 1991, 91-22165

Int. Cl.[5] G09G *3/02*

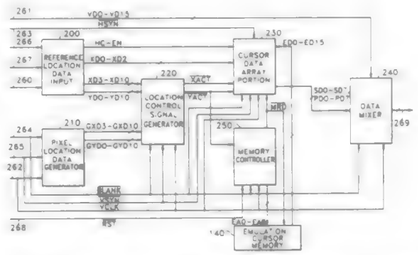
U.S. Cl. 345—145 **9 Claims**

1. A cursor processor comprising:

reference location designation generator means for receiving an external cursor location data signal and cursor display control and write control signals to generate first and second X-axis reference location data signals and Y-axis location data signals and cursor display driving data signals for designating a location where a cursor is displayed;

pixel location data generator means for generating location data signals of a currently-displayed pixel, said pixel location data generator means comprising a first counter for counting a blanking sign to generate a Y-axis pixel location data signal and a second counter for counting a video pulse to generate an X-axis pixel location data signal;

location control signal generator means for generating location active section signals of x and Y axes to set a cursor display region according to the reference location data and the pixel location data, said location control signal generator means comprising a first comparator for comparing the X-axis reference location data signal from said reference location designation generator means with the X-axis pixel location data signal from said pixel location data generator means to generate a pulse which indicates the start position of the cursor with respect to a vertical axis, a second comparator for comparing the Y-axis reference location data signal from said reference location designation generator means with the Y-axis pixel location data signal from said pixel location data generator means to generate a pulse which indicates the start position of the cursor with respect to a horizontal axis, first pulse width regulating means for regulating the width of pulses from said first comparator to generate a Y-axis active section signal, and second pulse width regulating means for regulating the width of pulses from said second comparator to generate an X-axis active section signal;



cursor data generator means for generating cursor data signals according to the Y-axis location active section signal;

cursor data array means for re-arranging cursor data signals into cursor shape data signals and cursor pattern data signals and bit-shifting the cursor shape and cursor pattern data signals according to the value of the first X-axis reference location data signal generated from said reference location designation generator means; and

data mixer means for mixing said re-arranged cursor data with video data.

5,359,348

POINTING DEVICE HAVING IMPROVED AUTOMATIC GAIN CONTROL AND INFORMATION REPORTING

L. Stephen Pilcher, N. Ferrisburg, and Donald S. Odell, Burlington, both of Vt., assignors to Selectech, Ltd., Colchester, Vt.

Filed May 21, 1992, Ser. No. 886,087

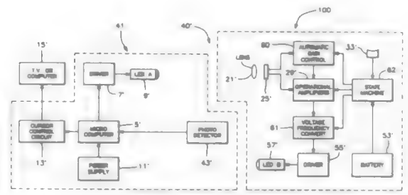
Int. Cl.[5] G09G *3/02*

U.S. Cl. 345—158 **24 Claims**

1. A pointing device for use within a prescribed space and adapted to be interconnected with a display device having a display screen, a cursor movable on said display screen and a cursor control circuit for controlling the position of the cursor on said display screen, the pointing device comprising:

a first unit including computer means connected to said cursor control circuit;

a second unit movably contained within said space and comprising orientation detection means for detecting angular rotative and/or translational position and generating an information signal representative of a plurality of



components of said angular rotative and/or translational position, means for converting the information signal to a series of spaced component pulses which are equal in number to the plurality of components, the time spacing between any two consecutive component pulses being proportional to a particular component of the angular rotative and/or translational position.

5,359,349

VDU WORKSTATION IN A VEHICLE

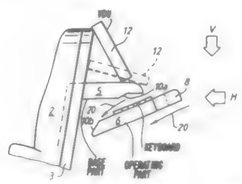
Arno Jambor, Vaihingen; Gerd Seidenfaden, Leonberg; Jürgen Mutschler, Sindelfingen, and Wilhelm Seeger, Nagold, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Jan. 22, 1991, Ser. No. 643,938

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1990, 4001448

Int. Cl.[5] G09G *3/02*

U.S. Cl. 345—168 **20 Claims**



20. Video display unit workstation in a vehicle comprising a video display unit, a keyboard arranged on an operating part, and a computing unit connecting said video display unit and said keyboard to one another electrically, said video display unit and keyboard being supported by a base part which, in an operating position of the video display unit workstation, projects approximately horizontally from a supporting part and extends in the direction of a user seat, said video display unit being moveable from an upright reading position into a flat storage position, wherein;

in said operating position, the base part extends over only a part of the video display unit workstation in the direction of the user seat, and the operating part containing the keyboard adjoins the base part, extending away from the latter in the direction of the user seat;

said operating part is adapted to be displaced in a defined manner which is one of: below the base part and at least partially into the base part, in response to an impact-specific horizontal or vertical force when said video display unit workstation is in the operating position, whereby the overall extension of said base part and operating part in the direction of the user can be shortened as a whole; and

said video display unit is adapted to be superposed on the base part when an impact specific force is applied thereto.

5,359,350

METHOD OF DRIVING INK JET PRINTING HEAD

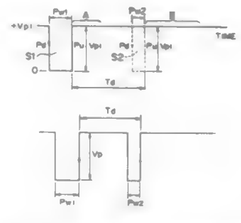
Tomoaki Nakano; Hiromichi Komai, both of Yokohama; Toshitaka Hirata, Tokyo; Toshio Inada, Sagamihara, and Masami Kadonaga, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 11, 1992, Ser. No. 897,383

Claims priority, application Japan, Jun. 14, 1991, 3-170707

Int. Cl.[5] B41J *2/055*

U.S. Cl. 347—10 **6 Claims**



1. A method of driving an ink jet printing head for ink jet recording of image data, said method comprising the steps of:

providing an ink jet printing head including a plurality of transversely spaced parallel liquid passages having a plurality of discharge ports for discharging ink therethrough, ink supplying means for supplying ink to each of said liquid passages, and piezoelectric means associated with each of said discharge ports for discharging ink when said associated piezoelectric means is driven, and a prescribed source voltage being constantly applied to said piezoelectric means to maintain a capacity of each of said liquid passages at a predetermined level;

applying a voltage falling edge of a first pulse signal to cause said associated piezoelectric means vertically contract so that the capacity of a corresponding liquid passage is increased from said predetermined level so as to supply ink from said ink supplying means to said corresponding liquid passage;

applying a voltage rising edge of the first pulse signal to cause said associated piezoelectric means to vertically expand so that the capacity of the corresponding liquid passage is decreased, for discharging an ink droplet through a corresponding discharge port, said first pulse signal having a first pulse width between said falling edge and said voltage rising edge and having a first peak voltage amplitude; and

applying a voltage rising edge of a second pulse signal to said associated piezoelectric means after a predetermined delay time has elapsed since application of said voltage rising edge of said first pulse signal for discharging the ink droplet, a pulse width of said second pulse signal between a voltage falling edge thereof and said voltage rising edge being smaller than said first pulse width, and a peak voltage amplitude of said second pulse signal being equal to said first peak voltage amplitude,

wherein said predetermined delay time is set to a value equal to a multiple of a half-period of a residual oscillation, the multiple being three, said residual oscillation occurring to said piezoelectric means due to application of the first pulse signal.

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5,359,351

THICK FILM THERMAL PRINTING HEAD

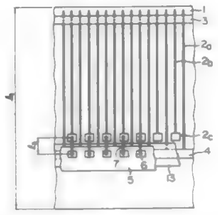
Kazutaka Sato, Kashiwa; Michihiro Watanabe, Tsuchiura; Shogo Matsumoto, Ibaraki, and Hiroyuki Tobita, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 18, 1991, Ser. No. 671,083

Claims priority, application Japan, Mar. 16, 1990, 2-066336

Int. Cl.[5] B41J *2/335*

U.S. Cl. 346—76 PH **18 Claims**



7. A thick film thermal printing head comprising:
a substrate;
an insulating glaze layer formed on said substrate;
a heating resistor disposed on said glaze layer; and
a driver IC for controlling energization of said heating resistor;
a plurality of first lead wires electrically connected to said heating resistor and connecting said heating resistor with said driver IC;
a common electrode serving as an intermediate power supply point through which electric power is supplied to said heating resistor;
a plurality of second lead wires disposed in parallel with said first lead wires and electrically connecting said heating resistor with said common electrode;
a plurality of bonding wires electrically connecting said first lead wires with said driver IC;
at least said first lead wires, said common electrode and said second lead wires being disposed on said glaze layer; and
a resistant insulating protective layer covering said common electrode;
wherein said driver IC is disposed on said resistant insulating protective layer; and said common electrode, said first lead wires and said heating resistor are formed on one substrate.

5,359,352

DRIVING METHOD OF HEAT GENERATING RESISTOR IN HEAT RECORDING DEVICE

Yoshiaki Saita; Norimitsu Sanbongi, and Yoshinori Sato, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

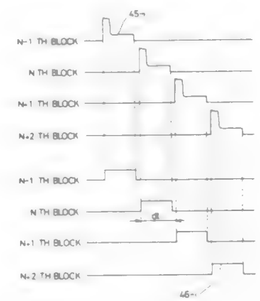
Filed Apr. 9, 1991, Ser. No. 682,917

Claims priority, application Japan, Apr. 9, 1990, 2-94768; Apr. 9, 1990, 2-94769

Int. Cl.[5] B41J *2/35*

U.S. Cl. 347—62 **6 Claims**

1. A method of driving heating resistors in a thermal recording apparatus, comprising the steps of: dividing a plurality of heating resistors into a plurality of blocks, each of the heating resistors having an electrical resistance value which changes from a first lower resistance value in a lower temperature range to a second higher resistance value in a higher temperature range in a stepped manner during supply of a constant voltage pulse; and driving the plurality of heating resistors in the plurality of blocks by sequentially applying a pulse to each of the blocks to generate heat sequentially so that a current which is generated in the heating resistors by application of a constant voltage pulse changes from a first state with a large current to a second state with a small current in a stepped manner within a pulse application time, and the plurality of blocks are sequentially driven so that the first state with a large current within the pulse application time of one of the blocks



does not overlap with the first state within the pulse application time of another one of the blocks.

5,359,353

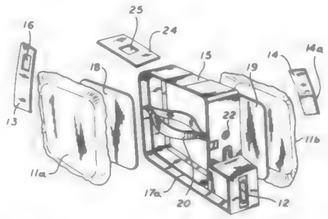
SPRING-BAG PRINTER INK CARTRIDGE WITH VOLUME INDICATOR

David S. Hunt, San Diego, and W. Bruce Reid, Socana Beach, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 19, 1991, Ser. No. 717,735

Int. Cl.[5] B41J *2/17*

U.S. Cl. 347—86 **7 Claims**



1. A negative pressure ink reservoir cartridge comprising:
a housing having a rigid wall defining a perimeter of said cartridge;
a flexible ink bag disposed in said housing inside said rigid wall, said bag having a pair of opposed substantially parallel side walls, at least one of said side walls being moveable toward the other of said side walls inside of said rigid wall of said housing;
at least one rigid panel in said bag engaged with said moveable side wall of said bag, said rigid wall being substantially parallel to said side walls of said bag;
spring means for biasing said panel and moveable side wall apart from said other side wall of the bag in said housing to establish an ink reservoir as a spring-bag from which ink is withdrawn;
at least one flexible strip attached to one of said side walls and folded over an edge of said rigid housing wall, said strip having ink volume indicia thereon;
and said housing having a stationary window along said rigid wall through which said indicia may be monitored as said strip moves past said window during depletion of the ink in said bag.

5,359,354

INK JET HEAD WITH DUMMY SLOTS

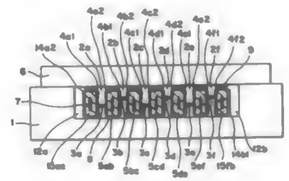
Hisato Hiraishi; Fumio Maeno; Motonobu Hoshino; Yoshihiko Yanagawa, and Keisuke Kigawa, all of Saitama, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1991, Ser. No. 790,751

Claims priority, application Japan, Nov. 9, 1990, 2-302720; Jan. 14, 1991, 3-016053

Int. Cl.[5] B41J *2/045, 2/055*

U.S. Cl. 347—69 **20 Claims**



1. A shearing mode ink jet head comprising:
a base having an upper surface and a pair of upwardly projecting peripheral side walls;
a plurality of linearly spaced apart elongated barriers projecting upwardly from said upper surface of said base to form a plurality of elongated active slots along said upper surface of said base between adjacent ones of said elongated barriers, each of said active slots being defined between two of said elongated barriers, and each adjacent pair of said active slots having one of said elongated barriers as a common side wall, a dummy slot being formed outside of each outermost one of said plurality of active slots between one of said elongated barriers and one of said upwardly projecting peripheral side walls;
a common ink reservoir in communication with each of said active slots;
means, comprising electrodes mounted on opposing side walls of each of said elongated barriers which forms a side wall of one of said active slots, for selectively applying voltage to particular ones of said barriers and causing lateral displacement of said particular ones of said barriers, in order to compress ink contained in the ones of said active slots formed between said particular ones of said barriers; and
means, comprising nozzle holes communicating respectively with said active slots, for controllably dispensing ink contained in said active slots formed between said particular ones of said barriers when said voltage applying means operates to compress the ink contained in said ones of said active slots formed between said particular ones of said barriers, said dummy slots being devoid of nozzle holes so as to prevent ink from being dispensed from said dummy slots.

5,359,355

INK JET RECORDING APPARATUS FOR RECORDING WITH VARIABLE SCANNING SPEEDS

Shigeyasu Nagaoki, Kawasaki; Hiromitsu Hirabayashi, Yokohama; Atsushi Arai, Kawasaki; Yuji Akiyama; Hitoshi Sugimoto, both of Yokohama, and Miyuki Matsubara, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

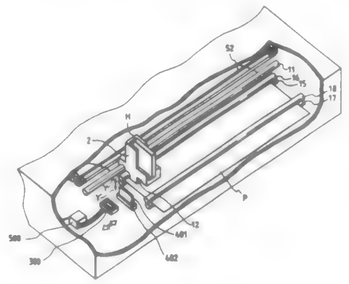
Filed Jun. 8, 1992, Ser. No. 894,998

Claims priority, application Japan, Jun. 14, 1991, 3-143282

Int. Cl.[5] B41J *2/07*

U.S. Cl. 347—9 **19 Claims**

1. An ink jet recording apparatus for recording an image on a recording medium using recording means for recording comprising a plurality of recording elements, said apparatus comprising:
scan means for performing a scan operation by moving said recording means including said plurality of recording elements relative to said recording medium in a main scan direction;
driving means for driving said plurality of recording elements of said recording means in the scan operation by said scan means;
selection means for selecting one of a first recording mode for performing image recording by a first number of times of scan operations on a predetermined region of said recording medium, and a second recording mode for performing image recording by a second number of times of scan operations larger than the first number of times of scan operations on the predetermined region, wherein a



scan speed of said scan means in the second recording mode is higher than a scan speed in the first recording mode; and
control means for controlling said driving means so that in said second recording mode in each of the second number of times of scan operations, a recording of thinning image of mutually complementary dot arrangement is effected,
wherein the dot arrangement is determined so that a recording density of the image, which is obtained by sequentially providing recordings of said thinning image in said mutually complementary dot arrangement in said second recording mode, is equal to a recording density of the image obtained in said first recording mode.

5,359,356

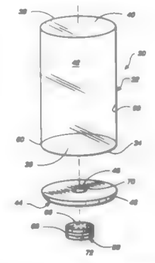
COLLAPSIBLE JET-INK CONTAINER ASSEMBLY AND METHOD

Joel E. Ecklund, 14 Gate 6½, Sausalito, Calif. 94966

Filed Sep. 30, 1992, Ser. No. 954,294

Int. Cl.[5] B41J *2/175*

U.S. Cl. 347—86 **21 Claims**



1. A collapsible ink container assembly for mounting to a piercing barb assembly of an jet ink printer apparatus, said barb assembly having a needle formed to cooperate with said ink container assembly to draw jet ink therefrom, said ink container assembly comprising:

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flexible sleeve member having a first edge portion defining a first distensible opening, an opposite second edge portion defining a second distensible opening, and an interior portion therebetween;

a substantially rigid wafer member having a needle receiving port and an outwardly facing perimeter wall defining a conical portion having an apex positioned distally away from said first distensible opening, said wafer is positioned in said first distensible opening such that said perimeter wall distends said sleeve member at said first edge portion to an open position, and said first edge portion is hermetically sealed to said perimeter wall at said conical portion of said wafer to form a first hermetic seal; and

a frangible membrane cooperating with said receiving port to provide a second hermetic seal.

5,359,357

INK-JET RECORDING APPARATUS

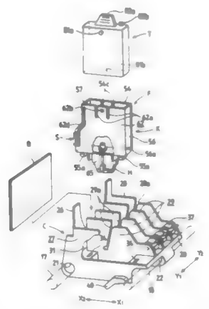
Jun Takagi; Tatsuhiro Ishize, and Hisayuki Kinoshita, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1993, Ser. No. 33,801

Claims priority, application Japan, Mar. 19, 1992, 4-064262; Jul. 2, 1992, 4-175536; Jul. 2, 1992, 4-175537; Jul. 14, 1992, 4-186752; Jul. 14, 1992, 4-187162; Jul. 14, 1992, 4-187163

Int. Cl.[5] B41J *2/175, 2/19*

U.S. Cl. 347—49 43 Claims



1. An ink-jet recording apparatus comprising:

an ink joint;

a head chip in which a plurality of ink exhausting outlets are formed;

an ink-jet recording head having a transfer fluid chamber for communicating an inside of the ink joint with said plurality of ink exhausting outlets;

a head carriage on which said ink-jet recording head is mounted; and

a capping unit having a capping member which is abutted to a tip portion of said ink-jet recording head mounted on said head carriage during a nonprinting operation so as to seal said ink exhausting ports, thereby avoiding dries of ink, and for abutting and separating said capping member with respect to said ink-jet recording head; wherein

a bubble ventilation port is provided on said ink-jet recording head, said bubble ventilation port being communicated with an upper portion of said opened along the same direction of said ink exhausting outlets;

an opening/closing valve changing between a closing state and an opening state is provided between said transfer fluid chamber and said bubble ventilation port; and

a suction nozzle is arranged in such a manner that said suction nozzle is abutted to, and is operated from said bubble ventilation port.

5,359,358

RECORDING APPARATUS WITH INK JET RECORDING HEAD AND CAPPING DEVICE

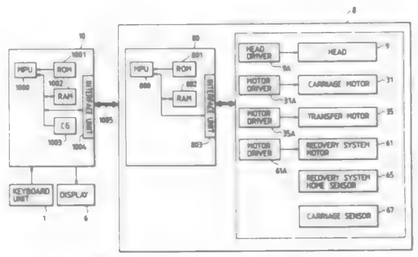
Yoshiyuki Shimamura, Yokohama, and Masasumi Nagashima, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 653,492, Feb. 11, 1991, abandoned. This application May 24, 1993, Ser. No. 59,012

Claims priority, application Japan, Feb. 13, 1990, 2-031706; Feb. 19, 1990, 2-039512; Jul. 20, 1990, 2-192678; Jul. 20, 1990, 2-197000

Int. Cl.[5] B41J *2/01*

U.S. Cl. 347—9 30 Claims



1. A recording apparatus for performing recording on a recording medium with an ink jet recording head for discharging ink, said apparatus comprising:

a cap for covering a face of said recording head, said face of said head being formed with discharging orifices for jetting said ink therefrom;

a stepping motor rotatable according to a supplied exciting phase for driving a carriage carrying said recording head;

detecting means for detecting reaching of a predetermined position by said carriage driven with rotation of said stepping motor;

memory means for storing as a reference exciting phase, a phase with which said stepping motor is excited when a detection signal is provided from said detecting means, every time a recording period starts;

position recognition means for recognizing a position of said carriage, said position recognition means being operable in a first mode for recognizing a position of said carriage through comparison of the exciting phase of said stepping motor and the reference exciting phase stored in said memory means and a second mode for recognizing a position of said carriage not on a basis of said stored reference exciting phase but on a basis of the detection signal; and

control means for causing said position recognition means to operate in the first mode during the recording period, and causing said position recognition means to operate in the second mode in a case when said recording head is covered by said cap after the recording period.

5,359,359

DISPOSABLE POSTAGE METER ASSEMBLY

Klaus Dietrich; Stephan Günther; Norbert Knoth; Friedrich-Viktor Miehe, and Wolfgang Thiel, all of Berlin, Fed. Rep. of Germany, assignors to Francotyp-Postalia GmbH, Berlin, Fed. Rep. of Germany

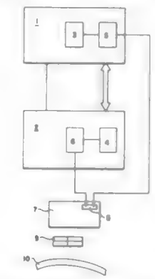
Filed Feb. 19, 1992, Ser. No. 838,489

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1991, 4105497

Int. Cl.[5] B41J *29/40;* G07B *17/04*

U.S. Cl. 346—143 11 Claims

1. A disposable postage meter assembly for printing charges and captions on envelopes postage strips, comprising a base unit and a non-rechargeable disposable module, said base unit and said disposable module having means for setting variable information, said disposable module having means for printing variable information regarding charges, dates and security



information, and said base unit having a print head for printing at least partially limitedly variable information regarding an adresser, advertising and manner of mailing.

5,359,360

Patent Not Issued For This Number

5,359,361

IMAGE FORMING APPARATUS FOR FORMING TONER IMAGES

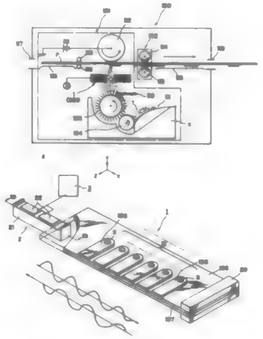
Naoto Iwao, Nagoya, and Shoji Yamada, Konan, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Dec. 22, 1992, Ser. No. 994,958

Claims priority, application Japan, Dec. 24, 1991, 3-341009; Feb. 20, 1992, 4-033370; May 13, 1992, 4-120512

Int. Cl.[5] G01D *15/06*

U.S. Cl. 346—159 25 Claims



1. An image forming apparatus for forming a toner image on image recording medium, comprising:

an aperture electrode for modulating electrically charged toner particles to be applied on image recording medium to thereby form a toner image on the image recording medium, said aperture electrode having a first end and a second end opposite to said first end;

oscillating means for causing said aperture electrode to vibrate, comprising:

an exciting member for exciting an incident vibration wave to be propagated in said aperture electrode, said exciting member being connected to said first end of said aperture electrode; and

a reflecting member for reflecting the incident vibration wave propagated along said aperture electrode to form a reflective vibration wave to be propagated along said aperture electrode back to the exciting member, said reflecting member being connected to said second end of said aperture electrode; and

modulating means for modulating vibration properties of the vibration caused by said oscillating means.

5,359,362

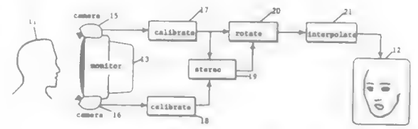
VIDEOCONFERENCE SYSTEM USING A VIRTUAL CAMERA IMAGE

John P. Lewis; Maximillian A. Ott, both of Princeton, and Ingemar J. Cox, Lawrenceville, all of N.J., assignors to NEC USA, Inc. and NEC Research Institute, Inc., Princeton, N.J.

Filed Mar. 30, 1993, Ser. No. 40,161

Int. Cl.[5] H04N *7/12*

U.S. Cl. 348—15 5 Claims



1. A video conferencing system in which virtual eye contact can be established between participants in a teleconference characterized in that each station of the system comprises:

at least a pair of camera means, each camera means disposed for recording a different view of a first participant at the instant station, each view having common features,

monitor means for reproducing a virtual image of a second participant at a distant station for viewing by the first participant at the instant station,

means supplied with the different views of the first participant for generating a virtual image of the first participant viewing the virtual image of the second participant in said monitor means, and

means for supplying the virtual image of the first participant to said monitor means for viewing by the second participant.

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OMNIVIEW MOTIONLESS CAMERA SURVEILLANCE SYSTEM

Daniel P. Kuban, Roane County; H. Lee Martin, Knox County; Steven D. Zimmermann, Knox County, and Nick Busko, Knox County, all of Tenn., assignors to TeleRobotics International, Inc., Knoxville, Tenn.

Continuation-in-part of Ser. No. 699,366, May 13, 1991, Pat. No. 5,185,667. This application Feb. 8, 1993, Ser. No. 14,508

Int. Cl.[5] H04N *5/30*

U.S. Cl. 348—36 18 Claims

2. A surveillance device for providing perspective corrected views of a selected portion of perspective distorted optical images from an environment into a desired format, said device comprising:

an imaging system for receiving optical images from the environment and for producing output signals corresponding to said perspective distorted optical images, said imaging system including a wide angle lens for optical conveyance of said optical images to a video camera within said imaging system and positioned within the environment, said optical images to said video camera being perspective distorted by said wide angle lens;

image capture circuitry for receiving, and producing digitized signals from, said output signals from said imaging system;

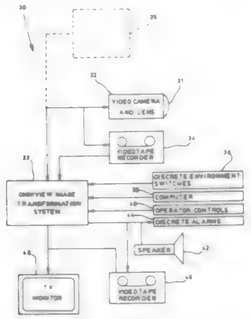
input image memory circuitry for receiving said digitized signals from said image capture circuitry;

image transform circuitry for processing said digitized signals in said input memory circuitry according to selected

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viewing angles of pan, tilt, rotation and magnification degrees for producing output signals of perspective corrected images according to a combination of said digitized signals and said selected viewing angles of pan, tilt, rotation and magnification degrees;

output image memory circuitry for receiving said output signals from said image transform circuitry;



an input for selecting said viewing pan, tilt, rotation and magnification degrees, and for producing signals to control said processing of said image transform circuitry as to said viewing pan, tilt, rotation and magnification degrees; and

an output connected to said output image circuitry for recording said perspective corrected views according to said selected viewing pan, tilt, rotation and magnification degrees.

5,359,364

ELECTRONIC STILL CAMERA HAVING AN OPTICAL SYSTEM FOR TTL DIMMING

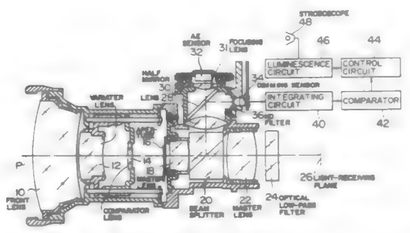
Yasunobu Kayanuma, Tokyo, and Kazunori Ohno, Omiya, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 820,804, Jan. 15, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 135,421

Claims priority, application Japan, Jan. 17, 1991, 3-003850

Int. Cl.[5] H04N *5/225*

U.S. Cl. 348—343 **6 Claims**



1. An electronic still camera, which fails to use silver salt film, having an auto-strobe device and an automatic exposure control device comprising:

a taking lens for focusing a straight light from a subject at a light receiving plane of a solid state image sensing device;

transducing means for photo-electrically transducing said light from said subject by said solid state image sensing device to obtain image signals;

a beam splitter provided on the optical axis of said taking lens, for diverging at least a part of said light from said subject which passes through said taking lens; and

a half mirror for further diverging and leading the light diverged by said beam splitter to a dimming sensor of said auto-strobe device and further leading the light diverged by said beam splitter to an AE sensor of said automatic exposure control device via a focusing lens, wherein said half mirror has a transmittance corresponding to the sensitivity of said dimming sensor and a reflectance corresponding to the sensitivity of said AE sensor.

5,359,365

MOVING IMAGE PROCESSING METHOD AND APPARATUS

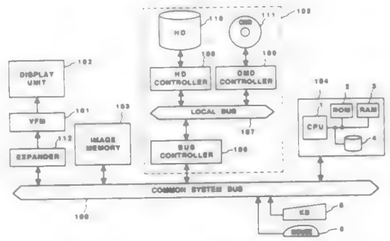
Miyuki Enokida, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 20, 1992, Ser. No. 885,870

Claims priority, application Japan, May 24, 1991, 3-119760; May 24, 1991, 3-119761

Int. Cl.[5] H04N *7/13*

U.S. Cl. 348—390 **9 Claims**



1. A moving image processing method for expanding compressed moving image data and displaying the expanded data, comprising the steps of:

a first transfer step of transferring the compressed moving image data stored in a storage medium having a large capacity and a relatively slow access speed to a storage disk having a small capacity and a fast access speed;

a second transfer step for reading the compressed moving image data out of the storage disk and transferring the compressed moving image data to an image expanding unit, adjusting the transfer speed to a predetermined display speed of the moving image;

a third transfer step for transferring the moving image data expanded by the image expanding unit to a display image memory; and

a display step for displaying the moving image data stored by the display image memory.

5,359,366

TIME BASE CORRECTION APPARATUS

Tsuneo Ubukata, Yokohama, and Hiroshi Takeshita, Ebina, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Dec. 24, 1992, Ser. No. 996,597

Claims priority, application Japan, Dec. 27, 1991, 3-360513

Int. Cl.[5] H04N *5/12*

U.S. Cl. 348—536 **3 Claims**

1. An apparatus for compensating for a time base error of a video signal, in which an input video signal sampled by a first clock signal corresponding with a time base error of the input video signal is stored in memory means and read out therefrom by a second clock signal having a fixed frequency, the apparatus comprising:

signal generation means for generating a master clock signal having a constant frequency;

signal output means for detecting a difference between a

standard and an interval of a synchronizing signal of the input video signal of the basis of the master clock signal, to output a difference signal indicating the difference;

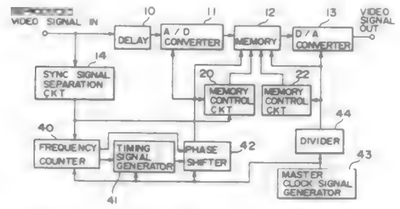
control means responsive to the difference signal for controlling a phase of an intermediate signal on the basis of the master clock signal, thus to output the first clock signal;

sampling means for sampling the input video signal by the first clock signal; and

clock generating means for generating the second clock signal derived from the master clock signal; wherein, the signal output means comprises:

a counter for down-counting from a predetermined number by the master clock signal in the interval of the synchronizing signal included in the input video signal, to output a pulse signal according to a difference between a counted number of the master clock signal and the predetermined number; and

a comparator for comparing the predetermined number and the number of the master clock signal counted during the



interval of the synchronizing signal, to output a positive signal when the predetermined number is smaller than the counted number, and to output a negative signal when the predetermined number is larger than the counted number.

2. An apparatus according to claim 1, wherein the control means comprises:

a first divider for dividing the master clock signal by the difference between the counted number and the predetermined number to output a pulse signal containing pulses of a number equal to the difference and having an interval set on the basis of the division result;

a second divider for dividing the master clock signal by a predetermined integer to generate the intermediate signal; and

a phase shifter responsive to the positive signal for delaying phase by a specific period of the intermediate signal at every occurrence of the pulse signal, and responsive to the negative signal for advancing the phase of the intermediate signal by the specific period at every occurrence of the pulse signal to output the first clock signal.

5,359,367

PERSONAL COMPUTER WITH BROADCAST RECEIVER ON EXPANSION BOARD CONTROLLED BY COMPUTER MICROPROCESSOR

Trevor R. Stockill, Romford, United Kingdom, assignor to Videologic Limited, Hertfordshire, United Kingdom

Filed Jun. 8, 1992, Ser. No. 859,690

Claims priority, application United Kingdom, Oct. 9, 1989, #9227012.9

Int. Cl.[5] H04N *5/46, 5/445*

U.S. Cl. 348—552 **24 Claims**

1. A personal computer provided with a broadcast receiver, said personal computer comprising:

a main housing;

a microprocessor and a main memory in said housing;

a plurality of expansion slots in said housing, each said expansion slot having a first connector therein for receiving a mating connector on an expansion card;

an interface bus connecting said first connectors of said expansion slots and coupled to said microprocessor;

a visual display unit coupled to said housing;

a keyboard coupled to said housing; and

a broadcast receiver expansion card in a selected one of said expansion slots, said broadcast receiver expansion card comprising:

a tuner for receiving broadcast signals;

a data extraction circuit for extracting data from signals received by said tuner;

a second connector engaged with said first connector of said selected expansion slot;

an external signal receiving connection coupled to an input of said tuner; and

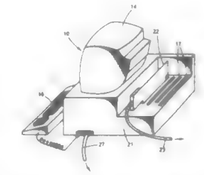
a control interface connected to said second connector and including control means connected to said tuner for controlling said tuner and connected to said data extraction circuit for controlling said data extraction circuit, such that said control means are directly controlled by said microprocessor of said personal computer.

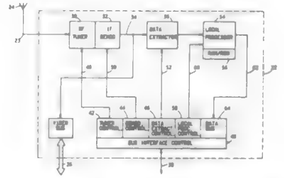
7. A personal computer provided with a broadcast receiver, said personal computer comprising:

a microprocessor; and

connector means coupled to said microprocessor;

wherein said broadcast receiver is a unit removably installed





in said personal computer and releasably coupled by said connector means to said microprocessor, said broadcast receiver including:

a tuner for receiving broadcast signals;

a demodulator coupled to said tuner for demodulating signals received by said tuner, said demodulator having controllable demodulation parameters;

a data extraction circuit coupled to said demodulator for extracting data from signals received by said tuner; and

a control interface releasably coupled by said connector means to said microprocessor and including control means, said control means being connected to said tuner, to said demodulator, and to said data extraction circuit for control thereof under the control of said microprocessor of said personal computer, including control of said demodulation parameters for said demodulator.

9. A personal computer provided with a broadcast receiver, said personal computer comprising:

a main housing;

a microprocessor and a main memory in said housing, said main memory being coupled to said microprocessor;

a plurality of expansion slots in said housing, each said expansion slot having a first connector therein for receiving a mating connector on an expansion card;

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an interface bus connecting said connectors of said expansion slots and coupled to said microprocessor;
a visual display unit coupled to said housing and said microprocessor therein;
a keyboard coupled to said housing and said microprocessor therein; and
a broadcast receiver expansion card in a selected one of said expansion slots, said broadcast receiver expansion card comprising:
a tuner for receiving broadcast signals;
a second connector matingly engaging said first connector of said selected expansion slot;
an external signal receiving connection coupled to an input of said tuner; and
a control interface connected to said second connector and including control means connected to said tuner for controlling said tuner, said control means being directly controlled by said microprocessor of said personal computer.

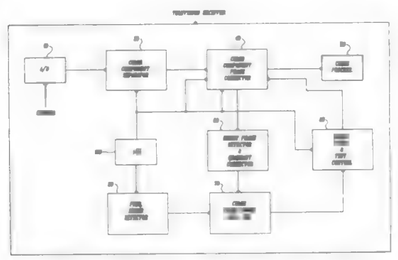
10. A personal computer provided with a broadcast receiver, said personal computer comprising:
a main housing;
a microprocessor and a main memory in said housing, said main memory being coupled to said microprocessor;
an interface bus coupled to said microprocessor; .
a visual display unit coupled to said housing;
a keyboard coupled to said housing; and
a broadcast receiver in said housing, said broadcast receiver comprising:
a tuner for receiving broadcast signals;
a data extraction circuit for extracting data from signals received by said tuner;
an external signal receiving connection coupled to an input of said tuner; and
a control interface connected to said interface bus and including control means connected to said tuner and to said data extraction circuit for controlling said tuner and to said data extraction circuit for controlling said data extraction circuit, said control means being directly controlled by said microprocessor of said personal computer.

5,359,368

DEMODULATING A LINE LOCKED DIGITAL COLOR TELEVISION SIGNAL

Gopal K. Srivastava, Arlington Heights, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Apr. 12, 1993, Ser. No. 45,955
Int. Cl.[5] H04N *9/65, 9/66*
U.S. Cl. 348—641 **16 Claims**



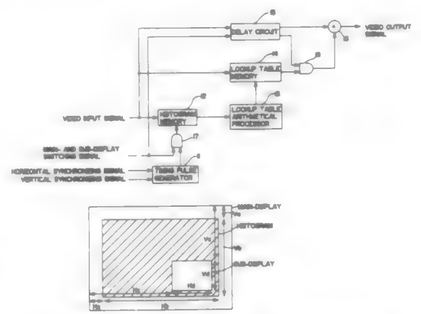
1. A method of demodulating a line locked digital color television signal including orthogonally related V and U color components and a reference burst signal bearing a known phase relationship to the V and U color components:
developing components of the burst signal VB and UB along the V and U axes;
generating a correction signal as a function of the difference between VB and UB, said difference being zero when the magnitudes of −UB and +VB are equal;
measuring the number of clock pulses occurring in a given period extending over a plurality of lines of video in said color television signal;
comparing the measured number of clock pulses with a standard number;
producing a frequency error component for said correction signal based upon the comparison; and
using the correction signal to adjust the V and U axes.

5,359,369

GRADATION CORRECTING APPARATUS FOR CORRECTING GRADATION OF VIDEO SIGNALS

Yosuke Izawa, Ibaraki, and Naoji Okumura, Minoo, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 10, 1993, Ser. No. 59,910
Claims priority, application Japan, May 8, 1992, 4-115697
Int. Cl.[5] H04N *5/57*
U.S. Cl. 348—672 **9 Claims**



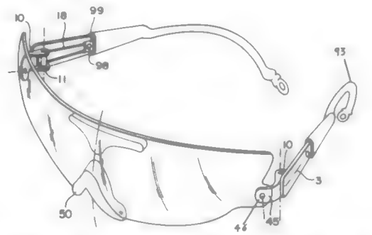
1. A gradation correcting apparatus comprising:
timing pulse generating means for generating window pulses, said window pulses being derived from a horizontal synchronizing signal and a vertical synchronizing signal of an input video signal;
first switching means for producing a first control signal by using window pulses and a main- and sub-display switching signal, said main- and sub-display switching signal being a second control signal to differentiate a predetermined display domain from a sub-display domain therein;
histogram memory for storing luminance levels according to said first control signal in order to generate a histogram;
correction signal output means for generating a correction signal according to the histogram;
delay means for delaying both the input video signal and the main- and sub-display switching signal for a predetermined period;
second switching means for generating an output derived from the correction signals and the delayed main- and sub-display switching signal; and
adding means for adding the output of the second switching means to the delayed input video signal to produce an output video signal with gradation correction.

5,359,370

MULTI-COMPONENT EYEWEAR

Marc Mugnier, Nice, France, assignor to Mugnier Design, Wayne, N.J.

Filed Feb. 1, 1993, Ser. No. 12,291
Claims priority, application France, Dec. 11, 1992, 92 13814
Int. Cl.[5] G02C *13/00*
U.S. Cl. 351—41 **19 Claims**



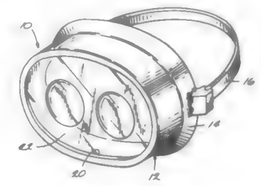
1. Eyewear having a frame with right and left sides, wherein said frame is adapted for securing a lens thereto, and a right earpiece and a left earpiece hingedly attached to the respective sides of the frame, wherein said eyewear comprises:
a) a member having two arms extending from the frame, wherein said member has a first side and a second side;
b) a shaft attached to said two arms of said member;
c) an elastic member attached to each earpiece, wherein said elastic member detachably engages said shaft; and
d) perpendicular positioning means for selecting the perpendicular position of each earpiece relative to a plane containing the frame;
wherein each earpiece can be independently positioned in a first position, a second position, and a third position relative to the frame, wherein said first position corresponds to the earpiece substantially parallel to the plane of the frame, wherein said second position corresponds to the earpiece at substantially right angles to the plane of the frame and wherein the earpiece extends proximate said first side of said member, and wherein said third position corresponds to the earpiece substantially aligned in the same plane as the frame, wherein each earpiece extends proximate and is releasably engaged with said second side of said member.

5,359,371

LENS SYSTEM FOR DIVER'S MASK

Philip Nolan, 133 South Scoville St., Oak Park, Ill. 60302

Continuation-in-part of Ser. No. 518,184, May 3, 1990, abandoned. This application Feb. 27, 1992, Ser. No. 842,428
Int. Cl.[5] G02C *1/00*
U.S. Cl. 351—43 **9 Claims**



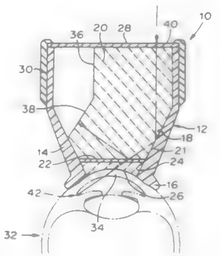
1. An underwater diving mask comprising:
a preformed face piece of suitable material so as to yieldably fit the contour of a wearer's face and having a single large opening formed in the forward part thereof so that the face piece fits over at least both eyes of the wearer;
means for holding said face piece against the wearer's face;
a flat supporting plate carried by said face piece and closing said opening; and
a pair of concave areas constituting lenses integrally formed in the side of said supporting plate facing away from the wearer's face, in side-by-side relationship to each other, one said lens positioned appropriately for each eye of the wearer.

5,359,372

CONTACT LENS FOR INTRAOCULAR OBSERVATION

Hideki Kida; Shinji Ishiguro, and Toshiharu Morino, all of Nagoya, Japan, assignors to Tomey Corp., Nagoya, Japan

Filed Feb. 23, 1993, Ser. No. 21,463
Int. Cl.[5] A61B *3/00*
U.S. Cl. 351—219 **1 Claim**



1. A contact lens for intraocular observation capable of optically recognizing an inner portion of an eyeball, wherein the contact lens contacts a surface of a cornea of an eye to be inspected and a light ray is transmitted through an inner portion of the contact lens, the contact lens comprising:
an optical path dividing member provided on an optical path for leading a light ray incident on the inner portion of the contact lens to the eye to be inspected for dividing a portion of the light ray on said optical path; and
an index provided at a position approximately optically conjugate with a portion to be observed of the eye to be inspected on a divided optical path divided by the optical path dividing member;
whereby said portion to be observed and said index can optically be recognized by at least partially superposing a first image of the index on a second image of the portion to be observed.

5,359,373

HIGH RESOLUTION CONTACT LENS STRUCTURE IN COMBINATION WITH A MICROSCOPE OBJECTIVE

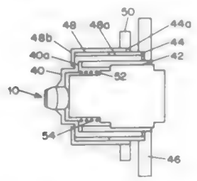
Charles J. Koester, Glen Rock, N.J., and Robert B. Tackaberry, Williamsville, N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation of Ser. No. 825,250, Jan. 24, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 153,471
Int. Cl.[5] A61B *3/00*
U.S. Cl. 351—219 **13 Claims**

1. A high resolution contact lens structure combined with a long working distance microscope objective having a characteristic numerical aperture, for examining a cornea of an eye, comprising:
a long working distance microscope objective having a characteristic numerical aperture;
a first lens element comprising a substantially flat first lens surface optically coupled to the cornea, a convex second lens surface having a selected radius of curvature, and having a selected thickness and characteristic index of dispersion and index of refraction;
a second lens element comprising a concave first lens surface

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having a radius of curvature matching said radius of curvature of said convex first lens surface of the first lens element and disposed in contact therewith, a convex second lens surface having a selected radius of curvature and having a selected thickness and characteristic index of dispersion and index of refraction;



wherein said contact lens structure thicknesses, lens surface radii, and indices of dispersion and refraction are selected to provide a numerical aperture greater than that of the microscope objective alone, and by a factor greater than that of the index of refraction of said first lens element.

5,359,374

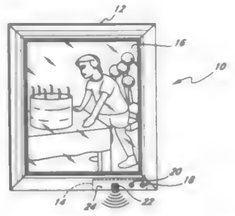
TALKING PICTURE FRAMES

Jeffrey M. Schwartz, San Clemente, Calif., assignor to Talking Frames Corp., San Clemente, Calif.

Continuation-in-part of Ser. No. 990,593, Dec. 14, 1992. This application Apr. 22, 1993, Ser. No. 51,638

Int. Cl.[5] G03B *17/24*; A47G *1/06*

U.S. Cl. 354—76 23 Claims



1. A method for creating a reusable audio enhanced picture frame or plaque enabling a user to record and replay an audio event corresponding to a picture placed in said picture frame to increase the resulting informational content or enjoyment, and enabling a user to play a prerecorded message in sequence with said audio event to provide commercial or other information, wherein said method comprises the following steps:

providing a picture frame adapted for accommodating a self-contained recording and playback device;

providing a self-contained recording and playback device having a non-volatile solid state memory and attaching said device to said picture frame;

wherein said recording and playback device has a circuit for controlling the location in said memory where said audio event and said prerecorded message are stored;

permanently recording said prerecorded message at a first location within said self-contained recording and playback device wherein said prerecorded message is unalterable by said user;

combining said picture frame or plaque and said recording and playback device to create a portable assembly so that said present or past audio event is recordable at any remote location and at any time;

recording a present or past audio event at a second location within said self-contained recording and playback device by initiating a record sequence at a desired time;

providing a picture representing a memorable moment corresponding to said present or past audio event and removably mounting said picture within said picture frame;

displaying said picture and picture frame at a location within visual and audible range of a user; and

playing said recorded audio event and said prerecorded message in sequential fashion and on repeated occasions by initiating a playback function on said recording and playback device to create an audio enhanced picture and to convey commercial or other information.

5,359,375

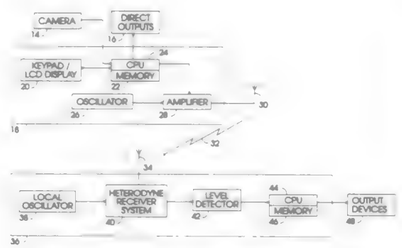
MICROPROCESSOR PROGRAMMABLE DIGITAL REMOTE RADIO PHOTOGRAPHIC CONTROL

James E. Clark, Charlotte, Vt., assignor to Lab Partners Associates, Inc., S. Burlington, Vt.

Filed Dec. 3, 1992, Ser. No. 985,265

Int. Cl.[5] G03B *15/03*

U.S. Cl. 354—131 20 Claims



1. A multifunction programmable remote control system for photographic devices wherein the system comprises

a programmable transmitter comprising a first microprocessor electrically connected to a radio transmitter and a first power source for sending digitally encoded signals;

a programming means for digitally encoding the radio signals;

at least one signal receiving means wherein the signal receiving means comprises a programmable receiver comprising a radio receiver electronically connected to a second microprocessor and a second power source for receiving the digitally encoded signals remotely from the radio transmitter;

at least one output control from each receiving means to at least one photographic device.

5,359,376

CAMERA AND FILM WINDING-UP APPARATUS FOR CAMERA

Masuo Ogihara; Yoichi Seki, and Hiroyuki Saito, all of Chiba, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1992, Ser. No. 992,861

Claims priority, application Japan, Dec. 24, 1991, 3-341088; Dec. 26, 1991, 3-344960; Dec. 26, 1991, 3-344962; Jan. 17, 1992, 4-006430; Jan. 17, 1992, 4-006431; Jan. 21, 1992, 4-008264; Jan. 22, 1992, 4-009315

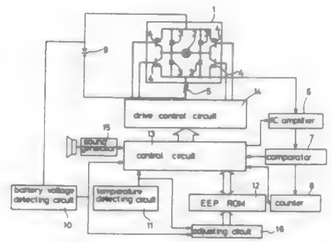
Int. Cl.[5] G03B *1/18*

U.S. Cl. 354—173.1 25 Claims

1. An apparatus for winding up film in a camera, comprising:

a direct current brush motor for winding up said film;

means for detecting brush noise made by said motor during rotation thereof and for producing a pulse train in response thereto; and



means responsive to said pulse train for controlling winding up of said film.

5,359,377

REAL IMAGE TYPE VARIABLE MAGNIFICATION VIEW-FINDER OPTICAL SYSTEM

Yuji Kamo, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1993, Ser. No. 128,200

Claims priority, application Japan, Sep. 30, 1992, 4-261855

Int. Cl.[5] G03B *13/10*

U.S. Cl. 354—222 8 Claims

1. A real image type variable magnification view-finder optical system comprising:

an objective lens system comprising a plurality of lens units and having a positive refractive power as a whole, and

an eyepiece lens system for allowing observation of an image formed by said objective lens system;

wherein a magnification of said view-finder optical system is changed over an entire zooming range from a wide position to a telephoto position thereof by varying at least one of airspaces reserved in said plurality of lens units,

wherein at least one of said plurality of lens units comprises two or more lens components and

wherein a change of magnification is performed for switching between a usual photographing mode and a panoramic photographing mode by varying at least one of airspaces reserved between said two or more lens components.

5,359,378

FILM CASSETTE WITH LOCKABLE LIGHT SHIELD

Dennis R. Zander, Penfield, and Douglas M. Czarzar, Williamson, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 13, 1994, Ser. No. 181,286

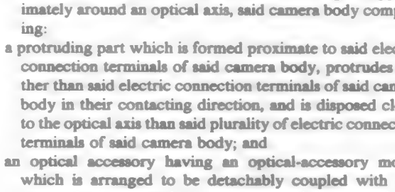
Int. Cl.[5] G03B *17/26*

U.S. Cl. 354—275 7 Claims

2. A film cassette comprising light blocking means supported for movement to a light blocking position for preventing ambient light from entering the cassette interior and to a non-blocking position, is characterized in that:

said light blocking means has a cavity for receiving a driver element in driving engagement to allow the driver element to move the light blocking means from its light blocking position to its non-blocking position; and

a locking pawl protrudes into said cavity to secure said light blocking means in its light blocking position and is adapted to be displaced from the cavity to release the light blocking means when the driver element is received in the cavity.



5,359,379

CAMERA SYSTEM

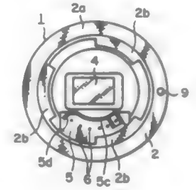
Takahiro Kohno, and Hitoshi Narita, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 813,821, Dec. 27, 1991, abandoned, which is a division of Ser. No. 419,742, Oct. 11, 1989, Pat. No. 5,079,578. This application May 4, 1993, Ser. No. 56,616

Claims priority, application Japan, Oct. 13, 1988, 63-259198; Dec. 19, 1988, 63-319945

Int. Cl.[5] G03B *17/00*, *7/26*

U.S. Cl. 354—286 31 Claims



1. A camera system comprising:

a camera body having a camera-body mount and a plurality of electric connection terminals which are aligned approximately around an optical axis, said camera body comprising:

a protruding part which is formed proximate to said electric connection terminals of said camera body, protrudes further than said electric connection terminals of said camera body in their contacting direction, and is disposed closer to the optical axis than said plurality of electric connection terminals of said camera body; and

an optical accessory having an optical-accessory mount which is arranged to be detachably coupled with said camera-body mount by rotating around the optical axis and having a plurality of electric connection terminals which include power supply receiving terminals and which are aligned approximately around said optical axis in a position to come into contact with said electric connection terminals of said camera body when said optical-accessory mount is rotatably coupled with said camera-body mount,

wherein said plurality of electric connection terminals of said camera body are supported by a first contact holder and said plurality of electric connection terminals of said optical accessory are supported by a second contact holder, and said protruding part of said camera body is formed integrally with said first contact holder.

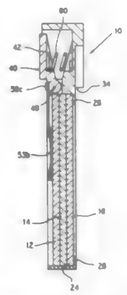
VOL 1167 ISS 4 OCT 25 1994 UMI

5,359,380

ANTI-REFLECTION FILTER SUPPORT SYSTEM

Harry M. Mathias, Marina del Rey, Calif., assignor to Panavision International, L.P., Tarzana, Calif.

Filed Dec. 3, 1992, Ser. No. 985,849
Int. Cl.[5] G03B *11/00*
U.S. Cl. 354—295 23 Claims



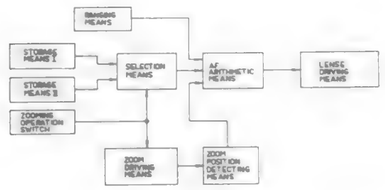
1. A filter mechanism for a matte box of a camera comprising a holder frame;
a plurality of filters insertable into the holder frame, the plurality of filters being stacked in parallel one next to the other within the holder frame;
biasing means for pressing the plurality of filters together in a touching relationship to eliminate air gaps therebetween.

5,359,381

CAMERA CAPABLE OF AUTOMATIC FOCAL DISTANCE CORRECTION UTILIZING STORED CORRECTION DATA SELECTED RESPONSIVE TO A DIRECTION OF MOVEMENT OF A TAKING LENS SYSTEM

Azuma Miyazawa, Mitaka; Koji Mizobuchi, Hachioji, and Yasuo Yamazaki, Hino, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 26, 1993, Ser. No. 54,186
Claims priority, application Japan, Apr. 30, 1992, 4-111815
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—400 20 Claims



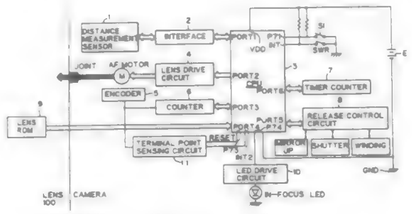
1. A camera in which an extension amount of a focusing lens is determined by a plural kind of table data stored in a first storage means for determining a moving amount of said lens from information on a distance to an object and information on a set focal distance, comprising:
second storage means for storing data representing a zooming direction of an optical system during zooming;
selection means for selecting data from said plural kind of table data in said first storage means based on data stored in said second storage means; and
arithmetic means for computing an extension amount of said focusing lens on the basis of the data selected by said selection means.

5,359,382

AUTOMATIC FOCUSING DEVICE

Yukio Uenaka, Tokyo, Japan, assignor to Asahi Kogaku kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 800,480, Nov. 29, 1991, abandoned.
This application Jul. 13, 1993, Ser. No. 90,643
Claims priority, application Japan, Nov. 29, 1990, 2-332865; Feb. 8, 1991, 3-103988; Feb. 8, 1991, 3-103989; Feb. 8, 1991, 3-103990; Feb. 13, 1991, 3-104057; Feb. 13, 1991, 3-104058; Feb. 13, 1991, 3-104059; Feb. 13, 1991, 3-104060
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—400 18 Claims



1. An automatic focusing device, comprising:
a lens that is movable along an optical axis thereof;
means for driving said lens;
means for obtaining a defocus amount of said lens with respect to a photographing object to obtain a distance measurement;
means for controlling said obtaining means to repeat distance measurements during a predetermined time interval;
means for determining a value representing a release-time-lag that occurs between a first event and a second event;
means for determining an integration time to obtain said defocus amount;
means for computing a relative speed of movement of said photographing object with respect to said lens along said optical axis, based upon a comparison of successive defocus amounts obtained by said obtaining means;
means for initiating a predictive focusing mode when said distance measurements indicate that a relative distance between said lens and said photographing object is decreasing; and
means for controlling said driving means in said predictive focusing mode to drive said lens, based upon computational results by said computing means, to a position where an in-focus condition is obtainable, said release-time-lag being modified when said predictive focusing mode is initiated by subtracting half said integration time from said release-time-lag, so that said lens is driven to said in-focus condition by an amount obtained by multiplying said relative speed of movement of said photographing object by said modified release-time-lag.

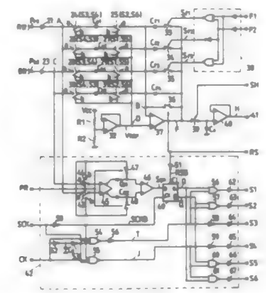
5,359,383

AUTOMATIC FOCUSING SYSTEM WITH PHASE DIFFERENCE DETECTING UNIT EMPLOYING CORRELATION OPERATING CIRCUIT

Takashi Miida; Hiroshi Iwabuchi; Yoshimitsu Kudoh, and Hideki Mutoh, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 28, 1991, Ser. No. 706,539
Claims priority, application Japan, May 30, 1990, 2-138549
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—402 14 Claims

1. An automatic focusing system, comprising:
sensor means for receiving a pair of optical images with a predetermined period of time, and for producing a plurality of output signals representative of said images;
comparison means for comparing said optical images to determine which of said output signals has a higher or lower level relative to each other; and
integrator means for storing a difference of said plurality of



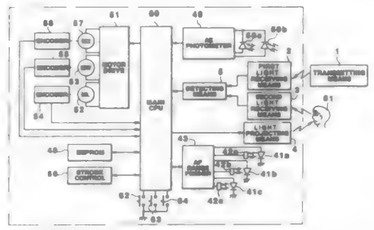
output signals in accordance with the determination by said comparison means, and for maintaining the levels of said plurality of output signals by connection with said sensor means.

5,359,384

CAMERA AND CAMERA CONTROL UNIT

Masataka Ide, Hachioji, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan

Filed Feb. 19, 1993, Ser. No. 20,154
Claims priority, application Japan, Feb. 18, 1992, 4-30958
Int. Cl.[5] G03B *13/36, 17/38*
U.S. Cl. 354—403 26 Claims



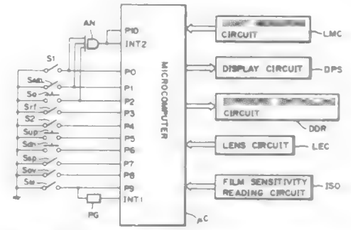
1. A camera control unit, comprising:
a remote controller for remotely controlling camera operations;
a first light-projecting means incorporated in said remote controller for transmitting a first light signal;
a first light-receiving means installed on a front portion of a camera body for receiving said first light signal;
a second light-projecting means installed on a back portion of a camera body for transmitting a second light signal whose state differs from that of said first light signal;
a second light-receiving means installed on a back portion of a camera body for receiving light of said second light signal reflected from a camera user;
a detecting means connected to said first light-receiving means and to said second light-receiving means, and that determines which has been input; a first light signal or a second light signal, and provides an output; and
a control means that receives an output of said detecting means and controls the operations of a camera.

5,359,385

CAMERA HAVING LEARNING FUNCTION

Tatsuya Ishida, Kawachinagano; Koji Hata, Osaka; Kohtaro Hayashi, Hirakata; Akuhiko Fujino, Sakai; Hiroshi Ootsuka, Sakai, and Katsuyuki Nanba, Sakai, all of, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 661,814, Feb. 28, 1991, abandoned.
This application Jan. 11, 1993, Ser. No. 2,673
Claims priority, application Japan, Mar. 1, 1990, 2-50717; Mar. 1, 1990, 2-50718; Mar. 1, 1990, 2-50719; Mar. 1, 1990, 2-50720; Jun. 29, 1990, 2-173921
Int. Cl.[5] G03B *7/091, 7/28, 17/20, 17/00*
U.S. Cl. 354—412 37 Claims



1. A camera, comprising:
first setting means for manually setting first data for photographing;
first controlling means for controlling operation of said camera in accordance with the first data;
storage means having storage sections corresponding to possible conditions of an object to be photographed, each of said storage sections storing data for automatic control of the camera;
condition detecting means for detecting a condition of an object to be photographed;
second setting means for setting second data in accordance with the data stored in the storage section corresponding to the condition detected by said condition detecting means;
second controlling means for controlling operation of said camera in accordance with the second data;
selecting means for selecting one of said first controlling means and said second controlling means; and
storage controlling means for updating data of one of said storage sections which corresponds to the condition detected by said condition detecting means in accordance with the first data.

5,359,386

PANORAMIC ENLARGING PRINTER WITH NEGATIVE SHUTTLE

Philip R. Rich, Omaha, Nebr.; Paul L. Jaswal, Richland, Wash.; Thomas L. Bono, Bethlehem, and Scott Lindenmuth, Allentown, both of Pa., assignors to Amazing Pictures Corporation, Omaha, Nebr.

Filed Mar. 31, 1993, Ser. No. 40,875
Int. Cl.[5] G03B *27/53, 27/58, 37/00*
U.S. Cl. 355—32 23 Claims

1. An apparatus for enlarging and printing panoramic photographs comprising;
a light source;
a negative shuttle having a generally translucent bottom plate for mounting and securing a negative placed thereon, said plate being of a size and shape to mount substantially the entire length of a negative thereon;
focus means interposed between said light source and said negative shuttle for concentrating light emanating from said light source;
said light source, said focus means and said negative shuttle aperture to project an image from a negative secured in

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said negative shuttle in a direction opposite said light source;

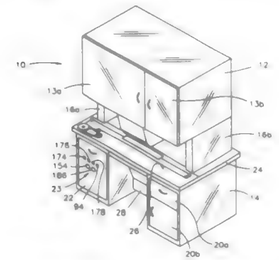
lens means operative to magnify and focus said image;

adjustable lens support means for supporting said lens means at an adjustable distance from said negative shuttle;

supply means adapted to receive and support a quantity of photosensitive material;

take-up means adapted to receive photosensitive material from said supply means;

means for supporting photosensitive material such that a



part of photosensitive material is supported in substantially parallel relation to said negative shuttle and is exposed to said image projected through said lens means;

at least one drive means for running said take-up means, said support means and said negative shuttle; and

said drive means operative to run said negative shuttle in a first direction and run said take-up means in a second direction opposite said first direction such that photosensitive material is run in said second direction whereby said image may be transposed onto a part of photosensitive material.

5,359,387

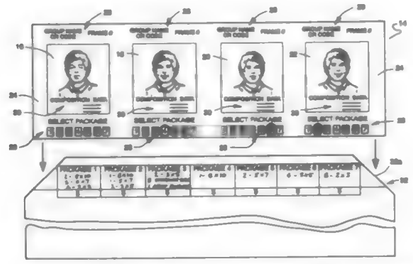
PHOTOGRAPHIC PROCESS UTILIZING COMBINED PRINT AND ORDER FORM

Ray Hicks, 2605 Corunna Rd., Flint, Mich. 48503

Filed Jul. 6, 1992, Ser. No. 908,374

Int. Cl.[5] G03B *27/52*

U.S. Cl. 355—40 **6 Claims**



1. A method of facilitating the production of final positive photographic prints of a subject from a photographic exposure of the subject characterized in that the exposure is developed to produce a negative, a proof print is made from the negative on a sheet of photographic proof paper, and order information enabling a customer to order specific sizes and quantities of final photographic prints is printed on the sheet of photographic proof paper proximate the print image to create a combined print and order form and thereby eliminate the necessity of providing a separate order form and eliminate the necessity of correlating separate order forms with separate proof prints to produce the final positive photographic prints.

5,359,388

MICROLITHOGRAPHIC PROJECTION SYSTEM

Richard F. Hollman, Chelmsford, Mass., assignor to General Signal Corporation, Stamford, Conn.

Filed Apr. 2, 1993, Ser. No. 42,150

Int. Cl.[5] G03B *27/42*

U.S. Cl. 355—53 **9 Claims**



1. A microlithographic projection system comprising:

mount means for holding a reticle whose image is to be projected;

a projection lens;

a light source;

at least one lens for imaging said light source through a reticle into said projection lens;

interposed between said one lens and said projection lens, a phase grating means for suppressing zero order transmission and for concentrating incident energy in an annularly diverging array.

5,359,389

EXPOSURE APPARATUS INCLUDING TWO ILLUMINATING SYSTEMS AND EXPOSURE PROCESS USING THE SAME

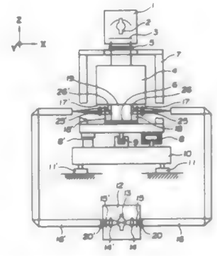
Junji Isohata, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 846,065, Mar. 5, 1992, abandoned. This application Oct. 13, 1993, Ser. No. 134,857

Claims priority, application Japan, Mar. 13, 1991, 3-048101

Int. Cl.[5] G03B *27/42*

U.S. Cl. 355—53 **27 Claims**



1. An exposure apparatus for transferring a pattern on a first object onto a second object, said apparatus comprising:

holding means for holding the first and second objects;

first illumination means for illuminating the first object held by said holding means with an exposure light;

projection optical means for projecting an image of a portion of the first object, illuminated with the exposure light, through the first object onto the second object held by said holding means;

second illumination means for illuminating a portion of the second object held by said holding means, outside of a portion of the second object illuminated with the exposure light from said first illumination means, wherein said first illumination means simultaneously illuminates the first object, while said second illumination means illuminates the portion of the second object, respectively; and

moving means for moving the first and second objects relative to said projection optical means during the simultaneous illumination by said first and second illumination means.

5,359,390

APPARATUS FOR TRANSMISSIVE EXPOSURE OF COPY PAIRS

Siegfried R. Theimer, Birstein-Obersotzbach, Fed. Rep. of Germany, assignor to Siegfried Theimer Grafische Geraete GmbH, Birstein-Obersotzbach, Fed. Rep. of Germany

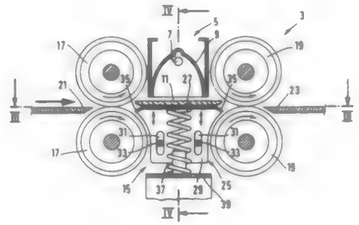
PCT No. PCT/DE92/00452, § 371 Date Jan. 4, 1993, § 102(e) Date Jan. 4, 1993, PCT Pub. No. WO92/22011, PCT Pub. Date Dec. 10, 1992

PCT Filed May 26, 1992, Ser. No. 961,928

Claims priority, application Fed. Rep. of Germany, May 29, 1991, 4117548; Sep. 2, 1991, 4129072

Int. Cl.[5] G03B *27/04*

U.S. Cl. 355—99 **10 Claims**



1. Apparatus for transmissive exposure of copy pairs, having a light source (5) directed onto a glass plate (11) and a pressure device (15), which is disposed on the other side of the glass plate (11) and which is immovable in the direction of transmission as well as a respective pair of transport rollers (17, 19) in front of and behind the transmission gap formed between glass plate (11) and pressure device (15), to push the copy pairs through the transmission gap, characterized in that the pressure device (15) comprises a plurality of pressure shoes (25) which are disposed side by side in the transverse direction and which are pressed in the height direction by resilient spring force towards the glass plate (11), with a flat base surface (27), which are tiltable about an axis extending in the longitudinal direction (L) and an axis extending in the transverse direction (T).

5,359,391

EQUIPMENT CONTROL APPARATUS

Satoshi Kuroyanagi, Tokyo; Masanori Miyata, Yokohama; Hideki Adachi; Shinichi Nakamura, both of Kawasaki; Naoyuki Ohki; Tokuharu Kaneko, both of Yokohama; Hiroshi Ozaki, Tokyo; Hisatsugu Tahara; Satoshi Kaneko, both of Kawasaki; Taisei Fukada, Tokyo, and Mitsuharu Takizawa, Fuchu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 869,185, Apr. 16, 1992, abandoned. This application Aug. 27, 1993, Ser. No. 112,318

Claims priority, application Japan, Apr. 18, 1991, 3-085609; Apr. 18, 1991, 3-085613; Apr. 18, 1991, 3-085616; Apr. 18, 1991, 3-085619; Apr. 18, 1991, 3-085620; Apr. 18, 1991, 3-085621; Apr. 18, 1991, 3-085622; Apr. 18, 1991, 3-085623

Int. Cl.[5] G03G *21/00*

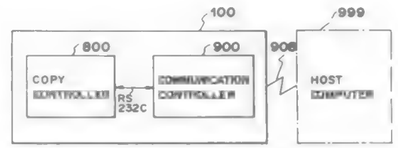
U.S. Cl. 355—204 **33 Claims**

1. An apparatus for controlling communication between equipment and a centralized control apparatus located at a position apart from said equipment, said apparatus comprising:

storage means for storing data indicative of a state of the equipment;

communication means for communicating said data with said centralized control apparatus; and

controlling means for initiating communication of the stored data to said centralized control apparatus in response to a



request for transmission of said data received from one of said equipment and said centralized control apparatus,

wherein said controlling means initiates communication of the stored data to said centralized control apparatus after an operation of said equipment is terminated, when the request for the transmission of said data is received during the operation of said equipment.

5,359,392

ELECTRO-PHOTOGRAPHIC DEVICE

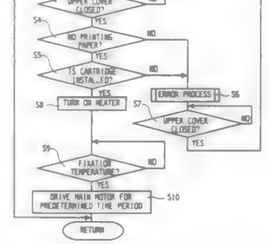
Kiyoshi Muto, Yokkaichi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 21, 1992, Ser. No. 994,326

Claims priority, application Japan, May 22, 1992, 4-130587

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—206 **18 Claims**



1. An electro-photographic device for forming an image on a substrate and having a main body and a cover mounted thereto for movement between an open position and a closed position, comprising:

paper supply means for supplying a substrate;

paper feeding means for feeding the substrate supplied from said paper supply means in a paper path;

paper detecting means located in said paper path for detecting presence of the substrate in said paper path;

image forming means located in said paper path for forming an image on the substrate;

image fixing means located in said paper path for fixing the image formed by said image forming means on the substrate, including heating means for heating the image and heating determining means for determining when said heating means is heated to within a predetermined fixing temperature range;

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driving means coupled to said paper feeding means or driving said paper feeding means and coupled to said image forming means when said cover is in the closed position; and

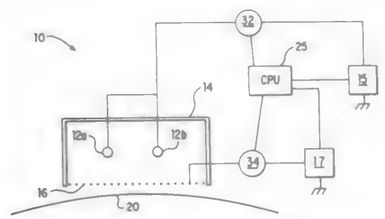
control means coupled to said driving means, said paper detecting means and said image fixing means for delaying said driving means from driving and including synchronizing means for driving said driving means during a predetermined period after closing of said cover to synchronize and engage said driving means with said image forming means after said heating means has reached the fixing temperature range and said paper detecting means detects no substrate in said paper path.

5,359,393

METHOD AND APPARATUS FOR MEASURING PHOTORECEPTOR VOLTAGE POTENTIAL USING A CHARGING DEVICE

Jeffrey J. Folkins, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 22, 1992, Ser. No. 995,260
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—208 **47 Claims**



1. A method of determining a voltage potential of a portion of a photoreceptor adjacent to a photoreceptor charging device comprising the steps of:

measuring a current supplied from a power supply to said photoreceptor charging device in order for said photoreceptor charging device to charge said portion of the photoreceptor to a predetermined voltage potential; and

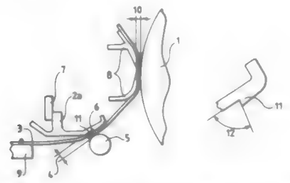
deriving the voltage potential of said portion of the photoreceptor from said measured current.

5,359,394

FOREIGN MATTER REMOVING MECHANISM FOR ELECTROPHOTOGRAPHIC PRINTER

Hiroyuki Ogawa; Kuraichi Fukaya; Takao Chikuzenya, and Shunbo Yokokawa, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1993, Ser. No. 44,455
Claims priority, application Japan, Apr. 30, 1992, 4-111145
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—215 **2 Claims**



1. A foreign matter removing mechanism for an electrophotographic printer, comprising:

a sheet guide arranged between a photosensitive drum and a tractor, for guiding a print sheet, said sheet guide having a first surface on which the print sheet is guided; and

a foreign matter removing member arranged to confront said sheet guide and to define a predetermined gap in cooperation with said sheet guide, said foreign matter removing member having a second surface which opposes said first surface;

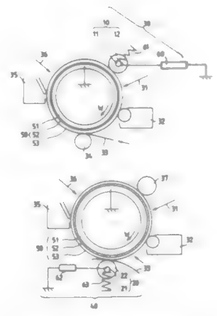
wherein a recess is formed in at least one of said first and second surfaces.

5,359,395

CONTACT CHARGE SUPPLY DEVICE

Hidetsugu Shimura; Hajime Kurihara; Akihiko Ikegami; Hiroshi Tanaka, and Kenjirou Yoshioka, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Nov. 5, 1993, Ser. No. 147,572
Claims priority, application Japan, Nov. 6, 1992, 4-297350; Jan. 20, 1993, 5-007897; Jul. 27, 1993, 5-185348; Sep. 28, 1993, 5-241735
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—219 **31 Claims**



1. A contact charge supply device for controlling the charges, which are supplied to a member to be charged by bringing a contact member applied with an external voltage into contact with the member to be charged, which at least includes an underlayer, characterized in that the following inequality holds

$$\log(R) \geq \log\{Rp \times (Va - Vt)/Vt) + (\alpha - \beta) \times \log(S/s) + \gamma \times \log(i/I)$$

where $|Va| \geq |Vt|$

Va (V): voltage applied to a contact member in contact with the member to be charged

I (μA): current flowing from the contact member to the member to be charged

S (cm^2): contact area of the member to be charged and the contact member

R (Ω): resistance of the contact member when current I (μA) is fed to an area corresponding to the contact area S (cm^2) of the contact member

γ: current dependency of the resistance of the contact member

$1-\beta$: area dependency of the resistance of the contact member

s (cm^2): area of a defective part of the member to be charged

Vt (V): breakdown voltage of the underlayer

i (μA): current flowing into an area of the underlayer corresponding to the contact area S (cm^2) when a voltage, slightly lower than the breakdown voltage Vt (V), is applied to that area

Rp (Ω): resistance of the underlayer when the current i (μA) flows into the area of the underlayer corresponding to the contact are S (cm^2) when a voltage, slightly lower than the breakdown voltage Vt (V), is applied to that area

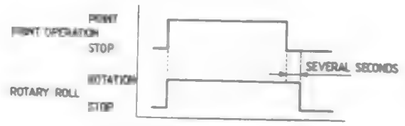
$1-\alpha$: area dependency of the resistance of the underlayer.

5,359,396

TONER DENSITY DETECTION METHOD FOR ELECTROPHOTOGRAPHIC APPARATUS

Yoshio Ogura; Yasuyuki Tsuji; Shunbo Yokokawa; Kunitomo Takahashi; Isao Nakajima; Muneyoshi Akai; Hiroshi Ueno; Isao Watanabe, and Tsukasa Onose, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed May 19, 1993, Ser. No. 63,426
Claims priority, application Japan, Jun. 12, 1992, 4-153357
Int. Cl.[5] G03G *21/00, 15/06*
U.S. Cl. 355—246 **3 Claims**



1. In a toner density detection apparatus for an electrophotographic apparatus including a developing agent comprising a mixture of toner and magnetic carrier in a predetermined proportion, a vessel having an aperture portion at its upper part and a developing agent outlet at its lower part and provided in a developer so that said developing agent is continuously supplied to said vessel, a permeability sensor provided inside said vessel for detecting a magnetic permeability of said developing agent, and a rotary roll provided at said developing agent outlet of said vessel for removing said developing agent in said vessel, a toner density detection method comprising the step of:

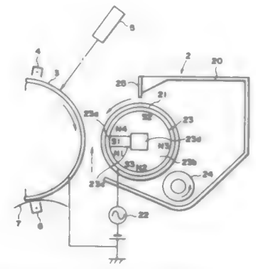
continuously driving said rotary roll for a predetermined length of time after said electrophotographic apparatus is stopped and until all or substantially all of the developing agent is exhausted from said vessel.

5,359,397

DEVELOPING APPARATUS

Masaaki Yamaji, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1993, Ser. No. 111,483
Claims priority, application Japan, Aug. 28, 1992, 4-254079
Int. Cl.[5] G03G *15/09*
U.S. Cl. 355—251 **13 Claims**



1. A developing apparatus for developing an electrostatic latent image formed on an image bearing member, comprising:

a developer carrying member for carrying a developer containing toner particles and magnetic carrier particles, said developer carrying member moving through a developing zone for applying the developer to the electrostatic latent image;

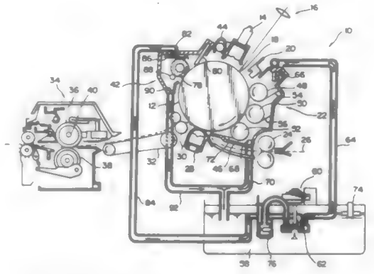
a stationary magnet assembly disposed in said developer carrying member, said magnet assembly comprising a rare earth magnet having a first magnetic pole for forming a magnetic field in the developing zone and a resin magnet having a second magnetic pole disposed adjacent to the first magnetic pole downstream of the first magnetic pole with respect to a movement direction of said developer carrying member, wherein a maximum magnetic flux density on a developer carrying member provided by the first magnetic pole is larger than a maximum magnetic flux density on said developer carrying member by the resin magnet.

5,359,398

ELECTROPHOTOGRAPHIC COPIER WITH A DEVELOPING DEVICE USING A LIQUID DEVELOPER

Katsuhiro Echigo, Yokohama; Ichiro Tsuruoka, Tokyo; Manabu Mochizuki, Yokohama; Tsuneo Kurotori, Tokyo; Kenzo Ariyama, Yokohama; Kenji Kojima; Mayumi Miyao, both of Tokyo; Hiroshi Tanabe, Kawasaki, and Minoru Iwamoto, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 610,781, Nov. 8, 1990, abandoned. This application Oct. 30, 1992, Ser. No. 969,501
Claims priority, application Japan, Nov. 9, 1989, 1-289999; Dec. 15, 1989, 1-325473
Int. Cl.[5] G03G *15/10, 21/00*
U.S. Cl. 355—256 **7 Claims**



1. An image forming equipment comprising:

an image carrier for electrostatically forming a latent image on a surface thereof by exposure;

a developing unit for developing the latent image by a liquid developer stored in a tank to produce a visible image;

an image transferring unit for transferring the visible image to a recording medium;

a movable cleaning unit for cleaning the surface of the image carrier after image transfer;

the liquid developer comprises a mixture of a toner and a liquid carrier;

wherein said liquid carrier consist essentially of polymethyl phenyl siloxane having a low volatility;

a print command switch which is continuously held in a printable state after the turn-on of a power source;

means for causing said cleaning unit to perform a cleaning operation upon the turn-on of the print command switch;

stirring means coupled to said tank for periodically stirring said liquid developer contained therein, and

means for, after the cleaning unit has cleaned a leading edge of an image on the image carrier once, to commence a recording operation which begins when the exposure is started.

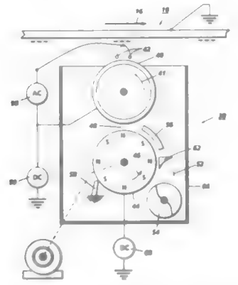
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5,359,399

HYBRID SCAVENGELESS DEVELOPER UNIT HAVING A MAGNETIC TRANSPORT ROLLER

Jan Bares, and Cyril G. Edmunds, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 12, 1993, Ser. No. 105,238
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—259 14 Claims



1. An apparatus for developing a latent image recorded on a surface with toner, including:

a donor roll, spaced from the surface, for moving developer material to a development zone adjacent the surface to develop the latent image recorded thereon;

a unitary magnetic roll, positioned adjacent said donor roll, for advancing developer material to a position adjacent said donor roll with toner being attracted to said donor roll;

a housing defining a chamber storing a supply of developer material therein, said magnetic roll being disposed in the chamber of said housing with said donor roll being disposed, at least partially, in the chamber of said housing, interposed between the surface and said magnetic roll;

an electrode member positioned in the development zone between the surface and said donor roll; and

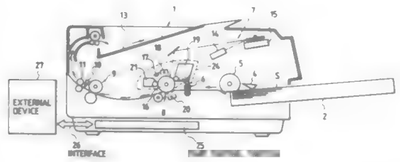
means for electrically biasing said electrode member to detach toner from said donor roll to form a cloud of toner in the space between said electrode member and the surface with the toner developing the latent image recorded on the surface.

5,359,400

IMAGE FORMING APPARATUS

Toshiyuki Itoh, Toride; Junichi Kimizuka, Yokohama, and Takeji Gima, Toride, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1992, Ser. No. 988,906
Claims priority, application Japan, Dec. 12, 1991, 3-350643
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—285 7 Claims



1. An image forming apparatus comprising:

a sheet supply cassette for holding a plurality of recording members therein, said cassette removably mounted within the image forming apparatus;

image forming means for forming a non-fixed image on the recording member supplied from said sheet supply cassette;

fixing means having a heater for thermally fixing the non-fixed image on the recording member;

remaining amount detection means for detecting a remaining amount of recording members in said sheet supply cassette; and

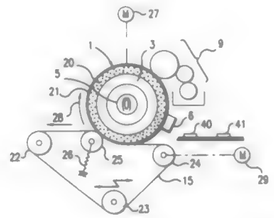
energization stopping means for stopping energization of said heater on the basis of a detection signal from said remaining amount detection means.

5,359,401

FIXING DEVICE

Yasuhiro Uehara; Yasuhiro Kusumoto, and Shohzoh Yamamoto, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 22, 1993, Ser. No. 139,770
Claims priority, application Japan, Feb. 25, 1993, 5-036699
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 7 Claims



1. A fixing device, comprising: a contact portion formed by making a part of an endless belt supported by a plurality of tension rollers contact a fixing roller having an elastic body applied thereon, the contact portion including a contact point formed by making a pressure roller inside the endless belt bear against the fixing roller under pressure through the endless belt at an exit point of the contact portion; and a braking means for braking the transport of the endless belt at the contact point.

5,359,402

IMAGE FORMING APPARATUS CAPABLE OF FORMING IMAGES SIDE BY SIDE

Akinobu Nakahata, Sakai; Katsuhide Yamaguchi, Takatsuki; Kenji Oda, Toyonaka; Kouji Migita, Sakai; Hiroshi Kubota, Osaka; Yoshinori Makiura, Kawachinagano, and Masami Fuchi, Neyagawa, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Dec. 4, 1992, Ser. No. 985,416
Claims priority, application Japan, Dec. 17, 1991, 3-333375
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—309 10 Claims

1. An image forming apparatus comprising:

mount portion means for mounting a cassette containing a plurality of stacks of sheet material arranged side by side in rows to the image forming apparatus;

feed means for feeding said sheet material side by side when the cassette is mounted to the mount portion means;

image bearing means for bearing an electrostatic latent image;

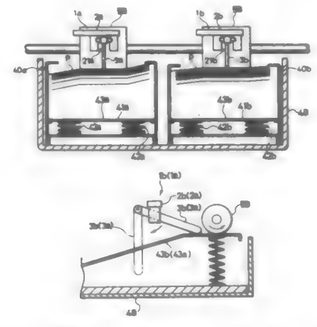
image forming means for forming the electrostatic latent image on the image bearing means, the electrostatic latent image including a plurality of sub-images with one sub-image being associated with each stack of sheet material;

developer means for developing the electrostatic latent image to a toner image;

transfer means for transferring the developed toner image to said sheet material being fed side by side;

sheet material detector means positioned in proximity of said cassette for detecting a row in which said sheet material has been depleted from a stack of sheet material in said cassette; and

control means for controlling the image forming means when depletion of said sheet material is detected by said sheet material detector means in any of said stacks of sheet material to thereby preclude forming a sub-image for the row associated with the depleted stack while continuing to form sub-images for the rows associated with the non-depleted stacks.

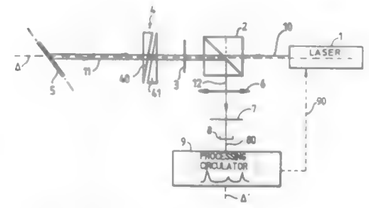


5,359,403

TELEMETRY DEVICE AND APPLICATION THEREOF TO A SYSTEM FOR THE DETECTION OF OBSTACLES

Benoist Grosmann, Issy Les Moulineaux; Martin Defour, Croissy S/Seine, and Rémi Fertala, St Cyr L'Ecole, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Mar. 26, 1993, Ser. No. 37,595
Claims priority, application France, Mar. 27, 1992, 9203716
Int. Cl.[5] G01C *3/08;* G01B *11/26;* G08B *21/00;* G02B *26/08*
U.S. Cl. 356—5 13 Claims



1. A telemetry device comprising:

sending means for sending a pencil of light energy along an axis of sight for measurement of distances between the sending means and a target, located in an environment, which reflects back, as an echo, at least a part of the received energy back towards the sending means; and

means for reception of the reflected energy

wherein said device further comprises at least one contra-rotating wedge provided with two prisms that are moved by rotational speeds in opposite directions about said axis and that communicate a time-variable deflection to the pencil of light energy to generate a determined scanning pattern in a plane that is perpendicular to said axis, the pencil of light energy that is sent out scanning the target according to the configuration of the scanning pattern,

said device further including:

means for determining a shape and distance of said target using said received reflected energy;

camera means for determining an image of the environment, said camera means being unable to clearly detect said target; and

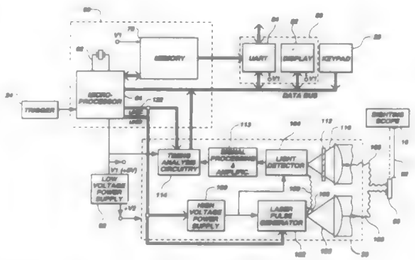
display means for displaying an overlay of said determined shape of said target onto said image of the environment.

5,359,404

LASER-BASED SPEED MEASURING DEVICE

Jeremy G. Dunne, Littleton, Colo., assignor to Laser Technology, Inc., Englewood, Colo.

Continuation-in-part of Ser. No. 914,764, Jul. 15, 1992, Pat. No. 5,291,262, and Ser. No. 877,259, Apr. 28, 1992, which is a continuation of Ser. No. 489,720, Feb. 26, 1990, which is a continuation of Ser. No. 329,303, Mar. 27, 1989. This application Sep. 14, 1992, Ser. No. 945,233
The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.
Int. Cl.[5] G01C *3/08;* G01P *3/36*
U.S. Cl. 356—5 35 Claims



1. A laser speed detector, comprising: a housing having dimensions suitable for being hand-held during operation;

a power source positioned Within said housing and providing a high voltage output and a low voltage output as required to other components;

a laser rangefinder system disposed within said housing, including a laser pulse generator and laser light detection means, and constructed to determine the time-of-flight of a laser pulse to a target and back to said light detection means;

a sighting scope attached to said housing and operably associated with said laser rangefinder such that when a user views a selected target through said sighting scope, said laser pulse generator and said light detector are simultaneously aimed at said selected target;

a trigger mounted to said housing to be operable by a user to trigger operation of said speed detector when said laser pulse generator is aimed at said selected target; and

control means including a microcontroller having memory means for storing instructions and data, said microcontroller being communicatively interconnected to said Dower source and said laser rangefinder and said control means being configured to:

calculate a plurality of distances to said target from said flight times and the speed of light, each corresponding to a different successive ones of a series of laser pulses; and

calculate a velocity of said target relative to said observer based on said distances and the elapsed time between the individual said pulses corresponding to said distances.

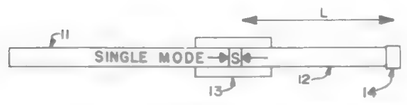
VOL 1167 ISS 4 OC 25 1994 UMI

5,359,405

HYBRID FIBER OPTIC SENSOR INCLUDING A LEAD OUT OPTICAL FIBER HAVING A REMOTE REFLECTIVE END

Jeffrey P. Andrews, Abingdon, Md., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Nov. 6, 1992, Ser. No. 972,393
Int. Cl.[5] G01B 9/02
U.S. Cl. 356—35.5 12 Claims



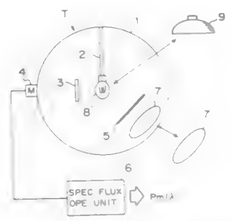
1. An apparatus for sensing an environmental parameter comprising:
- a lead-in optical fiber with a first end for injecting an input optical signal and a semi-reflective end opposite said first end for creating a first partial reflection of said input optical signal; and
- a predetermined length of lead-out optical fiber with a first at least partially reflective end for creating a far-end reflection of said input optical signal and a second semi-reflective end for creating a second partial reflection of said input optical signal; said lead-in and lead-out optical fibers being axially aligned with a gap provided between the semi-reflective end of the lead-in optical fiber and the second semi-reflective end of the lead-out optical fiber such that the first partial reflection, the second partial reflection, and the far-end reflection of the input optical signal form an output signal at said first end of the lead-in optical fiber.

5,359,406

LUMINOUS FLUX MEASURING APPARATUS WHICH CALCULATES SPECTRAL EFFICIENCIES FOR ERROR COMPENSATION

Kenichi Suzuki, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 14, 1993, Ser. No. 60,983
Claims priority, application Japan, May 15, 1992, 4-123011
Int. Cl.[5] G01J 1/42
U.S. Cl. 356—236 8 Claims



1. A luminous flux measuring apparatus comprising:
- a standard lamp having a known spectral radiant flux value of $P_{std}(\lambda)$;
- an integrating sphere having an interior surface area of A and also having a light sensing window defined therein;
- a lamp holder for holding and lightening any one of said standard lamp and a lamp to be measured inside said integrating sphere;
- a photometer means for measuring light transmitted through said light sensing window;
- a first light shielding means for shielding, when said any one of said standard lamp and said lamp is lightened inside said integrating sphere, a portion of light emitted therefrom that travels directly towards said light sensing window;
- a light absorption means for attenuating, when said any one of said standard light and said lamp is lightened, light inside said integrating sphere, said light absorption means having a spectral reflectance of $\rho_{abs}(\lambda)$ and an area of s required to attenuate the light inside said integrating sphere;
- a second light shielding means for shielding, when said any one of said standard lamp and said lamp is lightened inside said integrating sphere, a portion of light emitted therefrom that travels directly towards said light absorption means; and
- a spectral radiant flux operation means for calculating a spectral radiant flux $P_m(\lambda)$ of said lamp upon receipt of outputs from said photometer means,

wherein said spectral radiant flux operation means calculates, when said standard lamp is held by said lamp holder and is lightened inside said integrating sphere, a spectral efficiency $Q_{std}(\lambda)$ of said integrating sphere using an equation (1), and also calculates, when said lamp is held by said lamp holder and is lightened inside said integrating sphere, a spectral efficiency $Q_m(\lambda)$ of said integrating sphere using an equation (2), and wherein the spectral radiant flux $P_m(\lambda)$ of said lamp is calculated using an equation (3),

$$Q_{std}(\lambda) = \frac{1 - a_{std}(\lambda) \cdot (1 - c \cdot \rho_{abs}(\lambda))}{c \cdot a_{std}(\lambda) \cdot (1 - \rho_{abs}(\lambda))} \quad (1)$$

$$Q_m(\lambda) = \frac{1 - a_m(\lambda) \cdot (1 - c \cdot \rho_{abs}(\lambda))}{c \cdot a_m(\lambda) \cdot (1 - \rho_{abs}(\lambda))} \quad (2)$$

$$P_m(\lambda) = \frac{I_{m0}(\lambda)}{I_{std0}(\lambda)} \cdot \frac{Q_m(\lambda)}{Q_{std}(\lambda)} \cdot P_{std}(\lambda) \quad (3)$$

where $a_{std}(\lambda) = I_{std1}(\lambda)/I_{std0}(\lambda)$, $a_m(\lambda) = I_{m1}(\lambda)/I_{m0}(\lambda)$, $c = s/A$, $I_{std0}(\lambda)$ indicates an output from said photometer means when said standard lamp is lightened inside said integrating sphere with said light absorption means deactivated, $I_{std1}(\lambda)$ indicates an output from said photometer means when said standard lamp is lightened inside said integrating sphere with said light absorption means activated, $I_{m0}(\lambda)$ indicates an output from said photometer means when said lamp is lightened inside said integrating sphere with said light absorption means deactivated, and $I_{m1}(\lambda)$ indicates an output from said photometer means when said lamp is lightened inside said integrating sphere with said light absorption means activated.

5,359,407

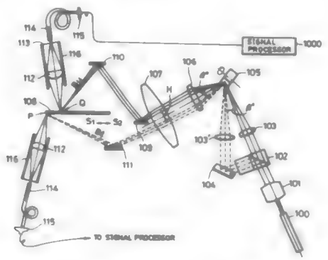
OPTICAL SCANNING APPARATUS, SURFACE-STATE INSPECTION APPARATUS AND EXPOSURE APPARATUS

Akiyoshi Suzuki, and Michio Kohno, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 813,031, Dec. 24, 1991, abandoned.
This application Jan. 3, 1994, Ser. No. 177,189
Claims priority, application Japan, Dec. 28, 1990, 2-408924
Int. Cl.[5] G01N 21/88
U.S. Cl. 356—237 9 Claims

1. An apparatus for inspecting a surface-state of a substrate, comprising:
- a radiation source for emitting a radiation beam;
- means for dividing said radiation beam emitted from said radiation source into a first beam and a second beam;
- a scanning optical system having a scanner for deflecting said first beam to scan a first surface of said substrate and for deflecting said second beam to scan a second surface of said substrate, wherein

said scanning optical system is arranged so that when said first beam is incident on the first surface of said substrate, said second beam is not incident on the second surface of said substrate, and when said second beam is incident on the second surface of said substrate, said first beam is not incident on the first surface of said substrate;
- a first light-receiving means for receiving scattered light generated by the incidence of said first beam on the first surface of said substrate; and



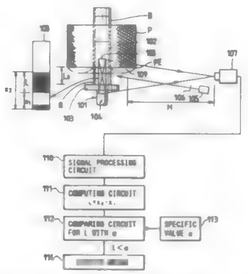
- a second light-receiving means for receiving scattered light generated by the incidence of said second beam on the second surface of said substrate.

5,359,408

PACKAGE INSPECTION APPARATUS

Kenichi Inada, Ohtsu; Tetsuji Masai, Kusatsu, and Yutaka Okimura, Takatsuki, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed May 21, 1992, Ser. No. 888,045
Claims priority, application Japan, May 23, 1991, 3-046925[U]; Jul. 1, 1991, 3-050620[U]
Int. Cl.[5] G01N 21/88
U.S. Cl. 356—238 5 Claims



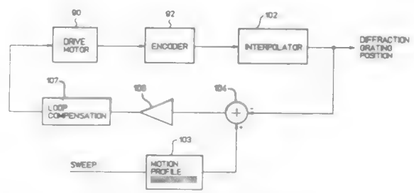
1. A package bulge winding inspection apparatus for inspecting a package, the apparatus comprising:
- a tray including a peg shaft having a bobbin supporting member disposed for contacting an end of a bobbin of a package,
- a light source for illuminating the bobbin supporting member and an end of the package inserted on the peg shaft,
- an area sensor for capturing an image of the end of the package and the bobbin supporting member exposed to light from the light source, the image including at least a first area and a second area between the end of the package and the bobbin supporting member, the first area being relatively darker than the second area,
- a computing circuit for determining a length of the first, relatively darker area between the end of the package and the bobbin support member based upon the image captured by the area sensor, and
- a comparing circuit for comparing the length determined by the computing circuit with a predetermined value.

5,359,409

DIFFRACTION GRATING POSITION SENSING AND CONTROL FOR A SCANNING MONOCHROMATOR

Kenneth R. Wildnauer; James R. Stimple; John D. Knight, all of Santa Rosa; Joseph N. West, Petaluma, and Barry G. Broome, Glendora, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 788,444, Nov. 6, 1991, Pat. No. 5,233,405. This application Jul. 28, 1993, Ser. No. 98,559
Int. Cl.[5] G01J 3/18
U.S. Cl. 356—334 18 Claims



1. A scanning monochromator comprising:

means for providing an input light beam;
- a diffraction grating for diffracting the input light beam to produce a spatially dispersed light beam;
- means for rotating said diffraction grating such that said dispersed light beam is scanned along a dispersion axis, said means for rotating said diffraction grating comprising a drive shaft rigidly connected to said diffraction grating and defining an axis of rotation, and a motor for rotating said drive shaft about said axis of rotation;
- an optical shaft angle encoder directly connected to said drive shaft for sensing the rotational position of said diffraction grating;
- a motion profile generator for generating a sweep profile signal:
- feedback means responsive to the sensed rotational position and to the sweep profile signal for controlling said motor; and

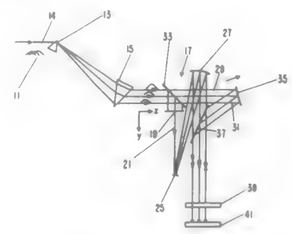
means for converting said dispersed light beam into an output light beam.

5,359,410

COMPLETE DIAGNOSTICS OF ULTRASHORT PULSES WITHOUT NONLINEAR PROCESS

Jean-Claude Diels, and Ming Lai, both of Albuquerque, N. Mex., assignors to University of New Mexico, Albuquerque, N. Mex.

Filed Mar. 10, 1992, Ser. No. 848,890
Int. Cl.[5] G01B 9/02
U.S. Cl. 356—345 8 Claims



1. A method of determining or reconstructing the temporal phase and amplitude profile of one or more incoming pulses of electromagnetic energy comprising the steps of:

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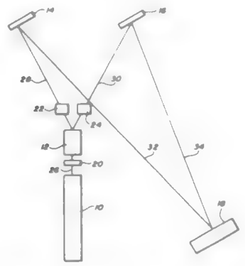
a) phase shifting along at least one axis less than all of the spectral portions of an incoming pulse;
b) detecting the spectral amplitude of the pulse and the extent of shift of the phase-shifted portions of the pulse in relation to a non-shifted portion to produce and output, the non-shifted portion comprising a central frequency of the pulse spectrum; and
c) applying an inverse Fourier transform to said output whereby the temporal profile of the pulse in amplitude and phase is determined.

5,359,411

METHOD AND APPARATUS FOR EVALUATING THE OPTICAL SPATIAL RESPONSE CHARACTERISTICS OF OBJECTS

Michael J. Marchywka, Lanham, and Dennis G. Socker, Bowie, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 8, 1992, Ser. No. 896,079
Int. Cl.[5] G01B 9/02
U.S. Cl. 356—345 8 Claims



1. An apparatus for optically testing an object, said apparatus comprising:
means for providing a first and second beam of light, said first and second beams being non-mutually incoherent with respect to one another;
means for interfering said first and said second beams to form a sinusoidally varying interference fringe pattern on said object, said fringe pattern having a first preselected spatial frequency;
means for determining the optical response of said object to said fringe pattern of said first preselected spatial frequency;
means for causing said means for providing and said means for interfering to form at least one additional sinusoidally varying interference fringe pattern on said object of a preselected spatial frequency different from said first preselected spatial frequency; and
means for causing said means for determining to determine the optical response of said object to said at least one additional sinusoidally varying interference fringe pattern.

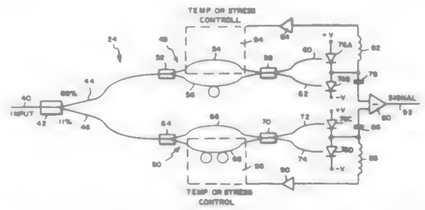
5,359,412

OPTICAL FREQUENCY DISCRIMINATOR USING TWO MACH-ZEHNDER INTERFEROMETER ARRANGEMENT

Peter A. Schulz, Andover, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 20, 1992, Ser. No. 963,807
Int. Cl.[5] G01B 9/02
U.S. Cl. 356—345 14 Claims

1. An optical frequency discriminator for an optical FM signal having a center frequency f' and an instantaneous frequency f, the discriminator comprising:
a first optical interferometer having two paths with an optical path length difference ΔL;
a second optical interferometer having two paths with an optical path length difference of mΔL, where m>1;
means for simultaneously applying said optical FM signal in parallel to said first and second optical interferometers, approximately m^3 times as much of said signal being applied to the first interferometer as to the second interferometer;



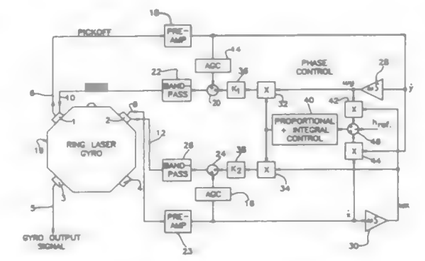
each of said interferometers having an output signal versus frequency characteristic with a substantially linear region about a center frequency, which frequency is approximately equal to f', each of said linear regions having a slope, which slopes may be different for each interferometer; and
means for combining the interferometer outputs such that the difference in absolute values of the slopes is obtained.

5,359,413

SYSTEM FOR SUBSTANTIALLY ELEMINATING LOCK-IN IN A RING LASER GYROSCOPE

Timothy H. Chang, Pompton Plains; Bo H. G. Ljung, Wayne, and Bernard Friedland, West Orange, all of N.J., assignors to Kearfott Guidance and Navigation Corporation, Wayne, N.J.

Filed Jan. 13, 1992, Ser. No. 819,746
Int. Cl.[5] G01C 19/66
U.S. Cl. 356—350 21 Claims



1. A system for substantially eliminating lock-in in a ring laser gyroscope, said system comprising:
a mounting block;
at least one fixed mirror mounted within said mounting block;
first and second movable mirror assemblies mounted within said mounting block, said first and second movable mirror assemblies each including a mirror and each being specially constructed to naturally oscillate at a common natural resonant frequency such that the mirrors of said first and second movable mirror assemblies both oscillate at said common natural resonant frequency, the combination of said at least one fixed mirror and the mirrors of said first and second movable mirror assemblies being arranged for reflecting laser beams therebetween, thereby establishing a beam path within said mounting block for two counter rotating laser beams;

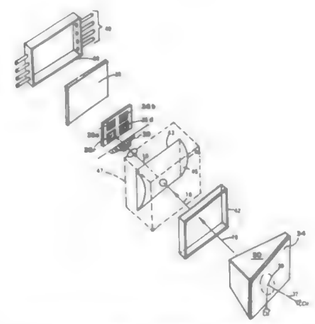
first and second amplitude control means corresponding to said first and second movable mirror assemblies, respectively, for controlling the amplitudes of oscillation of said first and second movable mirror assemblies so as to insure that the mirrors of said first and second movable mirror assemblies oscillate at said common natural resonant frequency at a predetermined amplitude of oscillation; and
phase control means cross-coupled to said first and second amplitude control means, for controlling the phase relationship between said first and second movable mirror assemblies so as to insure that the mirrors of said first and second movable mirror assemblies oscillate at said common natural resonant frequency with a 180° phase difference therebetween.

5,359,414

RING LASER GYROSCOPE FRINGE DETECTOR APPARATUS WITH RADIATION PHOTOCURRENT COMPENSATION

Timothy L. Howard, Placentia, and Charles W. Kohlenberger, Fullerton, both of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Dec. 29, 1986, Ser. No. 947,257
Int. Cl.[5] G01C 19/64
U.S. Cl. 356—350 13 Claims



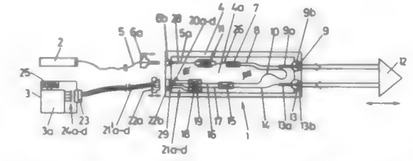
1. A ring laser gyroscope detector lens system for mounting on an ring laser gyroscope body subject to operating in a recurrent transient high-intensity gamma-radiation environment, said ring laser gyroscope body having a resonant cavity, said ring laser gyroscope body having CW and CCW counter-propagating light beams propagating in a plane normal to the rate input axis of said ring laser gyroscope, said ring laser gyroscope detector lens system comprising:
a means for extracting a component of each of said CW and a CCW light beams from said cavity and for providing extracted CW and CCW beams;
a means for combining said extracted CW and CCW beams to form a substantially circular interference light source;
a planar array of at least four detector elements, each detector in said planar array of detector elements being subject to said recurrent transient gamma-radiation, said radiation producing respective electrical photo currents in each detector proportional to each detectors' respective rate of absorption, a first and second of said four detector elements being positioned to form a first pair of adjacent detector elements, a third and fourth of said four detector elements being positioned to form a second pair of detector elements and being electrically coupled to produce electrical photo currents of a magnitude and a polarity characterized to substantially cancel the photo-currents produced by said first and second detector elements in response to said recurrent transient gamma-radiation;
an objective lens means responsive to said interference light source for forming a substantially eliptical interference light source pattern on said first and second adjacent detector elements;
bias and amplification means for conditioning said first and second detectors in said array to be independently responsive to said elliptical interference light source incident light intensity, said amplification means being further characterized to provide
a first and second detector output signal for said first and second adjacent detector elements in response to said incident light intensity penetrating a predetermined threshold;
whereby, the phase relationship and the repetition rate of said first and second detector output signals characterize the rotational polarity and rotational rate of said ring laser gyroscope body on said input axis; and
whereby the output of said first, second, third and fourth detectors produced in response to said recurrent transient gamma-radiation environment substantially cancel each other thereby preserving said detector output signals produced in response to said elliptical interference light source incident light intensity on said first and second detector elements.

5,359,415

INTERFEROMETER FOR DETERMINING THE POSITION OF DISPLACEMENT TRAVEL OF A MOVABLE MEASURING MIRROR OR THE LIKE

Werner Tabarelli, Landstrasse 152, FL9494 Schaan/Liechtenstein, Austria

PCT No. PCT/AT91/00034, § 371 Date Sep. 1, 1992, § 102(e) Date Sep. 1, 1992, PCT Pub. No. WO91/13317, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 28, 1991, Ser. No. 934,447
Claims priority, application Austria, Mar. 2, 1990, 497/90
Int. Cl.[5] G01B 11/02
U.S. Cl. 356—358 34 Claims



1. An interferometer for determining the position or displacement travel of a movable measuring mirror or the like, comprising:
an interferometer head to whose housing or carrier are rigidly connected a beam divider for dividing the laser light into a measuring beam and a reference beam, and a recombination device, wherein the measuring beam which is passed by way of the movable measuring mirror or the like and the reference beam which is passed by way of a fixed reference section interfere in the recombination device, forming at least one optical interference signal,
a laser light source arranged outside the interferometer head, least one flexible optical fiber for the laser light feed being arranged between the laser light source and the beam divider of the interferometer head, and
a photoelectric detector device for evaluation of the interference signal or signals coming from the recombination device, characterised in that
arranged downstream of the flexible optical fiber or fibers (5) for the laser light feed and upstream of the beam divider (7) is a polarisation means (11) which is rigidly connected to the interferometer head housing or carrier (1 or 4) for fixing a defined, optionally linear polarisation of the laser light at the entrance of the beam divider (7).

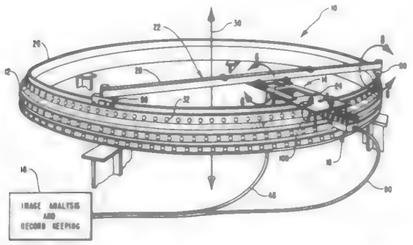
VOL 1167 ISS 4 OC 25 1994 UMI

5,359,416

SYSTEM AND PROCESS FOR DETECTING AND MONITORING SURFACE DEFECTS

Mark K. Mueller, West Point, Utah, assignor to Thiokol Corporation, Ogden, Utah

Filed Oct. 19, 1992, Ser. No. 963,572
Int. Cl.[5] G01N 21/47
U.S. Cl. 356—371 28 Claims



1. A process for detecting defects in a surface, comprising the steps of:
positioning a light source relative to the surface;
generating positional information about the position of the light source relative to the surface by using positioning indicia located on the surface;
directing a plurality of beams of light from the light source onto a region of the surface;
detecting a portion of the light which is reflected from the surface at an angle other than the angle of expected reflectance;
generating reflectance information corresponding to the light detected during said detecting step; and
analyzing the reflectance information and the positional information to discern and identify the location of defects in the surface.

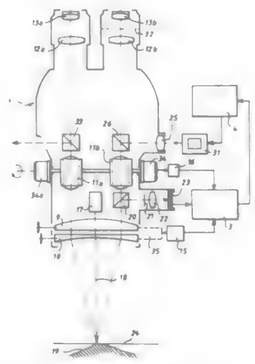
5,359,417

SURGICAL MICROSCOPE FOR CONDUCTING COMPUTER-SUPPORTED STEREOTACTIC MICROSURGERY AND A METHOD FOR OPERATING THE SAME

Werner Müller, Essingen, and Joachim Luber, Essingen/Forst, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim

Filed Oct. 15, 1992, Ser. No. 961,339
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1991, 4134481
Int. Cl.[5] G02B 21/22, 11/14; G01B 11/14
U.S. Cl. 356—375 14 Claims

1. A surgical microscope arrangement for computer-supported stereotactic microsurgery, the arrangement comprising:
a surgical stereomicroscope having an optical system defining two viewing beam paths for viewing an object defining an object plane;
detector means for monitoring said optical system to obtain a first signal indicative of the setting of said optical system;
an optical position detection system integrated into said optical system for detecting the position of said object plane and for supplying a second signal indicative of said position;
process control means for processing said first and second signals and supplying an output signal; and,



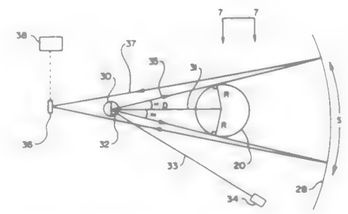
an image-processing unit for converting the output signal of said process control means into display signals for providing a graphic display.

5,359,418

PHOTOMETRIC GRINDER AND LATHE GAUGE

Bogdan Zaleski, Columbus, Ohio, assignor to Omnitech Electronics, Inc., Columbus, Ohio

Filed Nov. 2, 1992, Ser. No. 970,039
Int. Cl.[5] A01N 21/86
U.S. Cl. 356—387 13 Claims



1. A photometric gauge for measuring radial dimensions of a workpiece, the gauge comprising:
(a) a mirror having an approximately elliptical curvature and a pair of foci;
(b) a coherent light source for scanning a beam radially across the workpiece, and a significant distance on either side of the workpiece, at a selected angular velocity, through only a fluidic medium, the light source located at one focus of the elliptical mirror and the workpiece located between the light source and the mirror;
(c) a light responsive detector circuit including a photodetector located at the other focus of the mirror, for receiving light reflected form the elliptical mirror that has passed by both sides of the workpiece, and generating an electrical signal which is a function of the quantity of received light wherein the photodetector is between the light source and the workpiece; and
(d) an electronic data processor connected to the detector circuit for calculating the radial dimension of the workpiece scanned by the beam from said angular velocity, the detected time interval during which the scanning beam is

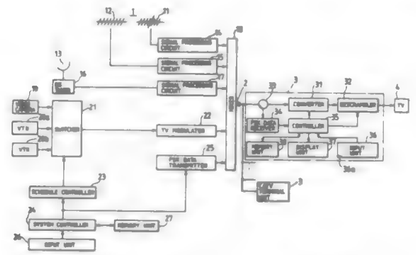
interrupted by the workpiece and the positioning dimension of the light source with respect to the workpiece.

5,359,419

PROGRAMMABLE CATV SYSTEM AND TERMAINAL UNIT THEREFOR, INCLUDING ACKNOWLEDGEMENT OF PROGRAM REQUEST

Masahiko Kawasaki, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 432,942, Nov. 7, 1989, abandoned. This application Mar. 5, 1992, Ser. No. 845,365
Claims priority, application Japan, Apr. 10, 1989, 1-88073
Int. Cl.[5] H04N 7/10
U.S. Cl. 348—6 8 Claims



1. A one-way addressable CATV system comprising a head end and at least one terminal unit comprising:
means at said head end for transmitting program data to a subscriber prior to broadcasting a selected program that has been reserved by said subscriber and registered in said head end;
memory means at said at least one terminal unit for storing said program data;
input means at said at least one terminal unit for inputting an instruction for reading said program data stored in said memory means, wherein said input means comprises a confirming key for inputting said instruction for reading said program data stored in said memory means;
reading means at said at least one terminal unit for reading said program data stored in said memory means according to said instruction; and
display means responsive to said confirming key at said at least one terminal unit for displaying data by which said selected program is identified based on said program data read by said reading means, wherein said program data comprises a program number, identifying said selected program and said reading means comprises means for receiving said program number from said memory means.

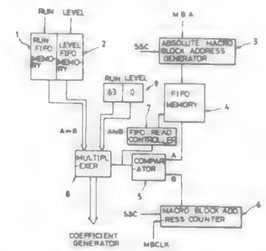
5,359,420

MACRO BLOCK ADDRESS PROCESSOR FOR DIGITAL COMPRESSED VIDEO SIGNAL DECODER

Young M. Kim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed May 14, 1993, Ser. No. 61,906
Claims priority, application Rep. of Korea, Aug. 22, 1992, 15154/1992
Int. Cl.[5] H04N 7/130
U.S. Cl. 348—384 1 Claim

1. A macro block address processor for a digital compressed video signal decoder, comprising:
input run and level memory means for storing a zero run value and a level value for each macro block coefficient data from decoding means, respectively;
absolute macro block address generating means for converting relative macro block addresses inputted therein into absolute macro block addresses using a slice start code;
absolute macro block address memory means for storing an output signal from said absolute macro block address generating means;
macro block address counting means for sequentially counting macro block addresses by one slice in response to a macro block clock;
comparing means for comparing an output signal from said absolute macro block address memory means with an output signal from said macro block address counting means;



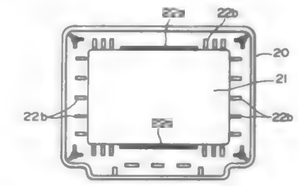
read control means for controlling a read operation of said absolute macro block address memory means in response to an output signal from said comparing means; and
multiplexing means for selecting one of the zero run value from said run memory means and one of the level value from the level memory, or for selecting a zero run value from a zero setter and a level value from the zero setter, in response to the output signal from said comparing means and outputting the selected values to coefficient generating means.

5,359,421

BEZEL WITH A PAIR OF OPPOSING ELONGATE RIBS AND A NUMBER OF SMALLER RIBS FOR CONTACTING A CATHODE RAY TUBE

Hiroyoshi Maeda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 17, 1992, Ser. No. 852,725
Claims priority, application Japan, Mar. 25, 1991, 3-082841
Int. Cl.[5] H04N 5/645
U.S. Cl. 348—818 4 Claims



1. A bezel having a substantially rectangular opening formed therein, said bezel having a contact area around said opening at which said bezel is to contact a cathode ray tube to which said bezel is to be assembled, said contact area being provided by a combination of a pair of first ribs formed on said bezel along a pair of opposing edges of the inner periphery of said opening in such a manner as to extend in parallel to the edges and a plurality of second ribs formed in a suitably spaced relationship from each other on said bezel along the remaining part of the inner periphery of said opening in such a manner as to extend perpendicularly to the inner periphery of said opening.

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5,359,422

DISPLAY DEVICE HAVING A PLURALITY OF DISPLAY MODES

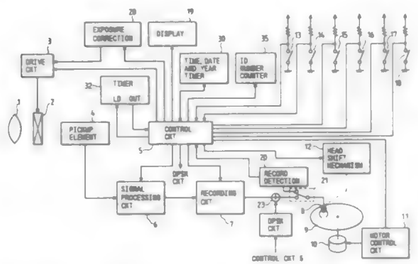
Nobuo Fukushima, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 371,082, Jun. 26, 1989, abandoned. This application Nov. 8, 1993, Ser. No. 148,416

Claims priority, application Japan, Jun. 29, 1988, 63-163110

Int. Cl.[5] H04N *1/00, 5/30;* G09G *3/02;* G03B *17/18*

U.S. Cl. 358—296 26 Claims



1. A camera apparatus for recording received image information, comprising:

recording means for recording the image information;

information display means for displaying data;

exposure correction means for correcting an exposure characteristic of said image information, and for providing exposure correction information in response to a setting operation;

means for generating an identification code to be recorded together with the image information; and

control means having a first display mode for causing said information display means to display the correction information from said exposure correction means when the exposure correction information has been set, and a second display mode for causing said information display means to display the identification code generated by said generating means instead of said correction information when the exposure correction information has not been set.

5,359,423

METHOD FOR STATISTICAL GENERATION OF DENSITY PRESERVING TEMPLATES FOR PRINT ENHANCEMENT

Robert P. Loce, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 17, 1993, Ser. No. 169,565

Int. Cl.[5] H04N *1/21*

U.S. Cl. 358—296 18 Claims

1. A method for automatically creating a template-based filter for filtering an image bitmap, wherein the filtering will result in an alteration of the bitmap resolution while preserving the density thereof, comprising the steps of:

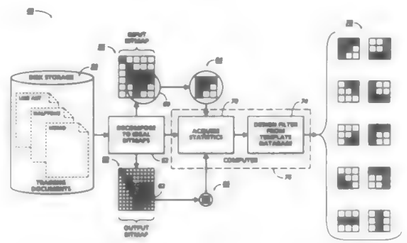
(a) generating a first resolution image from a training document and storing the first resolution image in a first bitmap memory;

(b) generating a second resolution image from the training document and storing the second resolution image in a second bitmap memory;

(c) defining an input template window that may be passed through the first bitmap memory;

(d) defining an output pattern window that may be passed through the second bitmap memory, so that the position of the output pattern window within the second bitmap memory is a function of the position of the input template window within the first bitmap memory;

(e) storing, in a database memory, pixel patterns occurring within the input template window and relative frequencies of occurrence of black pixels in individual pixel positions within the output pattern window as the input template



window is passed through a plurality of positions within the first bitmap memory; and

(f) deriving, from the database memory, a set of template-pattern pairs, wherein each output pattern is representative of a density preserving pixel pattern to be generated in response to the detection of a pattern of pixels within a corresponding input template.

5,359,424

THERMAL TRANSFER IMAGE FORMING APPARATUS USING DIFFERENT GAMMA FUNCTIONS FOR DIFFERENT DENSITY RANGES

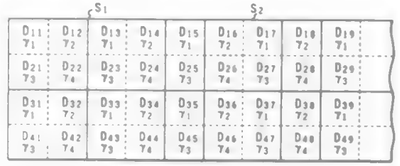
Takao Kobayashi, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Jun. 3, 1992, Ser. No. 893,081

Claims priority, application Japan, Jun. 5, 1991, 3-161134; Sep. 10, 1991, 3-230205; Sep. 10, 1991, 3-230206; Sep. 10, 1991, 3-230207

Int. Cl.[5] H04N *1/21;* G01D *15/10*

U.S. Cl. 358—296 9 Claims



1. A thermal transfer image forming apparatus comprising:

a recording head having a plurality of heating resistor elements arranged in a line for recording images on recording paper;

means for carrying a sheet of said recording paper and an ink sheet at a predetermined pitch past said recording head;

image data reading means for continuously reading pixel data of N lines constituting input image data, where N is an integer ≥ 2;

sampling means for sampling said pixel data of N lines into a matrix of N×N pixels, wherein said pixel data varies in density;

gamma conversion means for converting said pixel data associated with each of said pixels in said matrix into output print data, said gamma conversion means having a first gamma characteristic conversion function for outputting print data which forms main dots by performing gamma conversion proportionally in a pixel data density range of from a low density to a high density, a second gamma characteristic conversion function for outputting print data being lower in density than said first gamma characteristic conversion function for forming subsidiary dots, and third and fourth gamma characteristic conversion functions for outputting print data to form no dot in a large part of said density range, thereby expressing pixel density as a dot size for each of the N×N pixels;

conversion characteristic selection means for assigning the gamma characteristic conversion functions to the sampled N×N pixels to arrange dots based on the first gamma characteristic conversion function at a predetermined angle; and

means for supplying electric energy corresponding to the print data to the heating resistor elements of the recording head so that images are recorded on said recording paper by forming said dots in accordance with said print data.

5,359,425

IMAGE RECORDING APPARATUS FOR SELECTIVELY PERFORMING A PRINTER MODE AND A SCANNER MODE

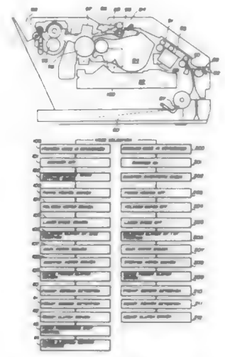
Hidejirou Maehara, Yokohama, and Yasuyuki Nukaya, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 24, 1992, Ser. No. 950,839

Claims priority, application Japan, Sep. 30, 1991, 3-252256; Nov. 21, 1991, 3-306216; Aug. 17, 1992, 4-217980

Int. Cl.[5] H04N *1/21*

U.S. Cl. 358—300 10 Claims



1. An image recording apparatus which selectively performs a document reading mode in which an image is read from a document sheet and an image printing mode in which an image is printed on a copy sheet, said image recording apparatus comprising:

a scanner unit, built in the image recording apparatus, for reading an image from a document sheet;

image forming means for generating a light beam in accordance with an image signal, and for forming an electrostatic latent image on a photosensitive medium by using the generated light beam;

transfer means for transferring the electrostatic latent image, formed on said photosensitive medium of said image forming means, to a copy sheet as a visible image;

fixing means for producing an image recorded on the copy sheet by fixing the visible image, transferred by said transfer means, to the copy sheet using a pressure roller and a fixing roller with a fixing heater;

first transporting means for transporting a sheet to a registration roller through a common sheet transport path, said common sheet transport path being usable to either transport a document sheet from the scanner unit to the registration roller or transport a copy sheet from a paper feeding cassette to the registration roller;

second transporting means for transporting a sheet passed through the registration roller to a paper ejection part through a second sheet transport path, the second sheet transport path extending from the registration roller to the paper ejection part via the image forming means, the transfer means and the fixing means,

wherein said image forming means, said transfer means and said fixing means are not driven when a document sheet is transported through the second sheet transport path by said second transporting means during the document reading mode.

5,359,426

REPRODUCING A BANDWIDTH EXPANDED CHROMA SIGNAL WITH REDUCED NOISE AND REDUCED FLICKER

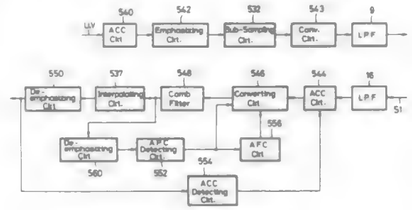
Takashi Honda, and Dai Sato, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 8, 1992, Ser. No. 986,706

Claims priority, application Japan, Dec. 16, 1991, 3-332118

Int. Cl.[5] H04N *9/83*

U.S. Cl. 358—310 4 Claims



1. A reproducing apparatus, comprising:

head means for reproducing a recorded signal having a chroma signal component and a burst signal component from a recording medium, said chroma signal component representing fields having pixels sampled with a sampling offset differing in four consecutive fields;

phase correction means for correcting a phase of the reproduced signal as a function of a side band suppressed burst signal;

first de-emphasizing means for suppressing a side band of the burst signal component in the phase corrected reproduced signal to produce said side band suppressed burst signal;

interpolating means for interpolating adjacent pixels from four consecutive fields of the chroma signal component of the phase corrected reproduced signal to produce an interpolated chroma signal having an expanded bandwidth; and

second de-emphasizing means for non-linearly de-emphasizing said interpolated chroma signal to produce a demodulated chroma signal.

5,359,427

DEVICE FOR REPRODUCING A RECORDED STILL IMAGE WITH A GENERAL-PURPOSE COMPUTER

Yoshiaki Sato, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 10, 1991, Ser. No. 727,911

Claims priority, application Japan, Jul. 12, 1990, 2-184776

Int. Cl.[5] H04N *5/781*

U.S. Cl. 358—335 15 Claims

15. A device for reproducing a still image in a recording

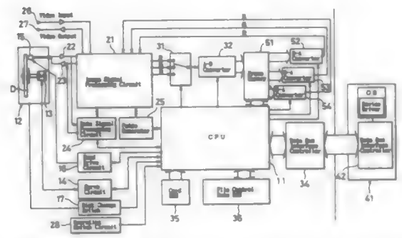
VOL 1167 ISS 4 OC 25 1994 UMI

medium by using a general purpose computer, said device comprising:

means for converting file control data of said recording medium to a data reading format used by an operating system of the general purpose computer, said file control data including an ID code provided for identifying said still image;

a file control data memory for storing said file control data converted by said converting means;

means for transferring said file control data stored in said file control data memory to said general purpose computer; and



means for transferring image data recorded in said recording medium to said general purpose computer in accordance with said file control data, said image data transferring means comprising means for transferring said image data to said general purpose computer in accordance with a logic block address scheme designated by said operating system of said general purpose computer, said logic block address scheme being stored in a memory device, said logic block address scheme comprising a plurality of addressable logic blocks that each have a predetermined number of bytes that correspond to a sampling rate per scanning line of said still image, one logic block corresponding to one horizontal scanning line of image data.

5,359,428

DIGITAL VIDEO RECORDER OPERABLE IN STANDARD AND LONG PLAY MODES

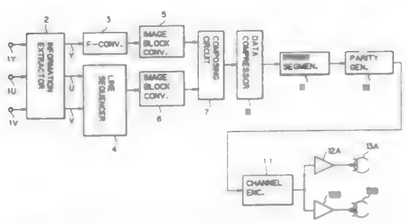
Yukio Kubota, and Yoichirou Senshu, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 19, 1992, Ser. No. 901,226

Claims priority, application Japan, Jun. 28, 1991, 3-183609

Int. Cl.[5] H04N *5/782*

U.S. Cl. 358—335 **11 Claims**



1. Digital video tape recording apparatus of the type having block segmenting means for converting a vertical interval of picture data into image blocks of digital picture element data, compression encoding means for compressing the blocks of digital picture element data and generating a compression code representative thereof and recording means for recording said compression code on said magnetic tape, said apparatus comprising: selectable tape drive means for driving said magnetic tape at first or second speeds for recording said compression code, said second speed being approximately 1.5 times faster than said first speed; and first and second rotatable transducer means disposed approximately 180° apart and coupled to said recording means each for recording said compression code when said tape is driven at said first speed and when said tape is driven at said second speed each of said transducer means having a recording gap length for recording a track pitch, said gap length being at least equal to the track pitch recorded by said transducer means when said tape is driven at said second speed, and said first and second transducer means having respectively different azimuth angles.

5,359,429

FACSIMILE MACHINE HAVING LINE DENSITY SWITCHING FUNCTION

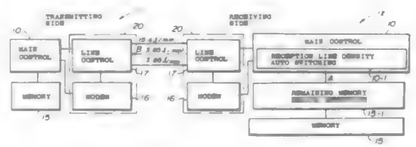
Yoshiaki Takahashi, Tokyo, Japan, assignor to Fujitsu Limited, Japan

Filed Mar. 5, 1992, Ser. No. 820,909

Claims priority, application Japan, May 22, 1990, 2-131543

Int. Cl.[5] H04N *1/32, 1/40*

U.S. Cl. 358—439 **5 Claims**



1. A facsimile machine or receiving image data in any of a plurality of line densities, the image data being transmitted from a transmitting facsimile machine which sends the image data in a selected one of the plurality of line densities, the facsimile machine having a memory reception mode in which the image data is received from the transmitting facsimile machine during an automatic reception and is stored, comprising:

control means for sending an initial capability notification to the transmitting facsimile machine in a pre-procedure during the automatic reception, said control means receiving an initial specification of line density from the transmitting facsimile machine so that the receiving facsimile machine receives the image data at the specified line density;

memory means for storing the received image data;

detecting means coupled to said memory means for detecting a remaining memory region which is usable within said memory means during data transmission; and

line density switching means for providing an instruction to said control means for switching of the line density during data transmission if the remaining memory region detected by said detecting means is less than or equal to a predetermined region;

said control means automatically transmitting a second capability notification to the transmitting facsimile machine in response to said instruction from said line density switching means so as to receive the image data from the transmitting facsimile machine with a line density which is lower than the specified line density when the automatic reception was started.

5,359,430

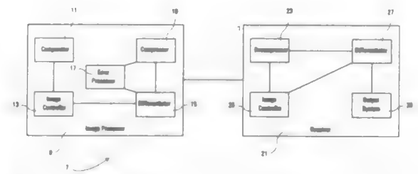
BLOCK-HALFTONING METHOD AND SYSTEM WITH COMPRESSED ERROR IMAGE

Shenzhi Zhang, Issaquah, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed May 15, 1992, Ser. No. 883,546

Int. Cl.[5] H04N *1/41, 1/415, 1/40*

U.S. Cl. 358—455 **29 Claims**



10. A method of processing a continuous-tone image having one or more blocks of a plurality of pixels, each pixel being associated with a luminance value defining a brightness level of the pixel, comprising:

a. establishing a predetermined threshold array of cell values;

b. comparing the luminance values of the pixels of a block of the continuous-tone image with the predetermined threshold array of cell values;

c. determining a block count equal to the number of pixels of the block having luminance values that are greater than or equal to corresponding cell values in the threshold array;

d. establishing a plurality of halftone gray pattern blocks of pixels;

e. selecting a gray pattern block having the same number of pixels of the first binary bit value are identified by the block count;

f. repeating steps a–e until all blocks of the continuous-tone image have been compared to the threshold array; and

g. combining the selected gray pattern blocks into a halftone image.

5,359,431

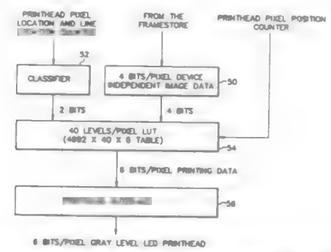
CLASSIFICATION TO CHANGE EXPOSURE WITHIN A CELL OF DIFFERENT PIXELS

Yee S. Ng, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 5, 1992, Ser. No. 894,858

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—457 **11 Claims**



1. A method of reproducing an original image, comprising:

scanning an original image to produce a digitized image, said digitized image containing a plurality of pixels having different grey level values;

grouping the pixels into cells;

comparing grey level values for the pixels with sets of thresholding values and in response to said comparing generating a multibits per pixel device independent image data signal;

classifying the pixels in each cell into one of at least two classes wherein the step of classifying includes classifying the pixels of a cell into a first class which includes a central pixel of the cell, and a second class which includes pixels which surround the central pixel;

generating exposure level signals for printing said pixels according to said classification and said device independent image data signal; and

printing said pixels according to said exposure level signals to reproduce the original image.

5,359,432

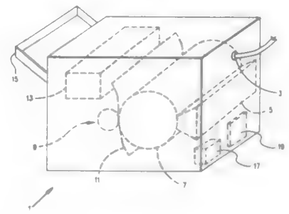
PRINTER PAGE COMPOSITION WITH COLOR AND TEXT

Bruce A. Peltzer, and Robert S. Samson, both of Lexington, Ky., assignors to Lexmark International, Inc., Greenwich, Conn.

Filed Nov. 25, 1991, Ser. No. 797,669

Int. Cl.[5] H04N *11/04*

U.S. Cl. 358—452 **13 Claims**



1. A method for composing in electronic memory page information in pel form for a page to be printed comprising storing in said electronic memory basic pel information defining binary information received, said storing being in separate regions of said memory for each of at least two hues of subtractive primary colors and for black, storing in said memory in a region for black basic pel information defining binary information received, storing in said memory in separate memory regions for each of at least two said hues of subtractive primary colors intensity information for predetermined groups of basic pels, said intensity information occupying parts of said memory regions otherwise occupied by said basic pel information, and storing in a separate region of said memory information defining the meaning of said groups of basic pels by identifying the previous storing of said intensity information for each of said predetermined groups of basic pels.

5,359,433

IMAGE PROCESSING APPARATUS WITH REDUCED IMAGE DETERIORATION IN HIGHLIGHT PORTIONS

Yukio Nagase, Kawasaki, and Kazuhisa Kemmochi, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 647,809, Jan. 30, 1991, abandoned. This application Sep. 10, 1993, Ser. No. 118,783

Claims priority, application Japan, Feb. 1, 1990, 2-20400

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—466 **22 Claims**

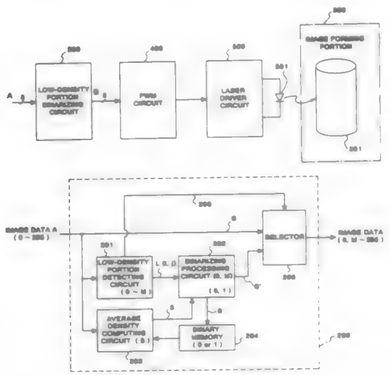
1. An image processing apparatus which receives multi-level objective pixel data and delivers the received data to an image forming apparatus capable of forming a gradation image, said image processing apparatus comprising:

determining means for determining whether the density level of the received multi-level objective pixel data is below a predetermined reproducible density level defined in multi-level terms; and

binarizing means for binarizing the multi-level objective

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pixel data by changing the data either to a minimum density level or to the predetermined reproducible density level in accordance with the received multi-level pixel data, an output average density obtained from an output a result of the binarization and a binarized error generated by the binarization, when said determining means has determined that the density level of the objective pixel



data is below the predetermined reproducible density level,

wherein said binarizing means conducts the binarization of the data between the minimum density level and the predetermined reproducible density level and outputs a result of the binarization in such manner as to preserve average density of the received data.

5,359,434

SCANNING OPTICAL APPARATUS

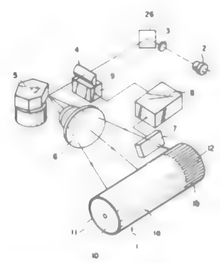
Hideyuki Nakao, Kawasaki; Yuzo Koike, Yokohama; Tutomu Saito, Yokohama; Shuzo Hirahara, Yokohama, and Masafumi Mori, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 26, 1992, Ser. No. 858,022

Claims priority, application Japan, Mar. 26, 1991, 3-061665; Jul. 12, 1991, 3-197283; Nov. 29, 1991, 3-339447

Int. Cl.[5] G02B *26/10*; H04N *1/04*

U.S. Cl. 358—481 **13 Claims**



1. A scanning optical apparatus comprising:

beam generating means for generating a beam, a photoconductor having a portion irradiated and sensitized by the beam generated by said beam generating means, optical means for scanning the beam in one direction on a photoconductive surface of said photoconductor, driving means for driving said optical means, and means for moving said photoconductor in a direction perpendicular to the direction of scan,

further comprising:

a support member moving in synchronism with the moving speed of said photoconductor;

a mark section having a plurality of marks with a reflectance characteristic and a transmission characteristic different from those of the surface of said photoconductor, said mark being provided integrally on the surface of said support member;

at least two photoelectric conversion means for detecting a light quantity of the beam irradiated on the surface of said mark section and converting the detected light quantity into corresponding electric signals;

means for generating an error signal indicating a position error from the optimal scanning position of the beam, on the basis of the electric signals corresponding to said mark section; and

means, connected to said driving means and said photoelectric conversion means, for correcting the scanning position of the beam on the basis of the error signal.

5,359,435

FACSIMILE APPARATUS

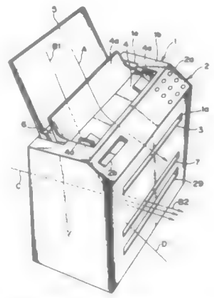
Toshiyuki Hayashi; Takeshi Ikeda, both of Yokohama; Toshiyuki Takano, Kawasaki, and Hiroshi Ogushi, Shirol, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1992, Ser. No. 934,328

Claims priority, application Japan, Aug. 30, 1991, 3-219830; Nov. 28, 1991, 3-314567

Int. Cl.[5] H04H *1/04*

U.S. Cl. 358—498 **18 Claims**



1. A facsimile apparatus comprising:

a main body forming an outer surface of said facsimile apparatus;

a recording unit, which adopts serial recording type ink-jet recording means, and being arranged in said main body;

an original reader arranged in an upper portion of said recording unit;

an original insertion port for an original, which is formed in an upper surface of said main body;

a sheet insertion port for a recording sheet, which is formed in the upper surface of said main body;

an original discharge port for the original, which is formed in a front surface of said main body;

a sheet discharge port for the recording sheet, which is formed in a lower portion of the front surface of said main body;

an original convey path for conveying the original from said original insertion port formed in an upper surface of said main body to said original discharge port formed in the front surface of said main body through said original reader; and

a recording sheet convey path for conveying the recording sheet from said sheet insertion port formed in an upper surface of said main body to said sheet discharge port formed in the lower portion of the front surface of said main body through said recording unit, wherein both said recording sheet convey path and said original convey path are arranged to slant from the upper surface to the front surface of said main body, and wherein both original and recording sheets are inserted from said original insertion port, and said sheet insertion port, respectively, and are discharged from said original discharge port, and said sheet discharge port, respectively.

5,359,436

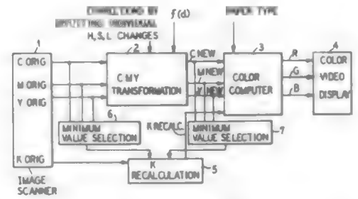
BLACK RECALCULATION FOR ARBITRARY HSL CORRECTIONS IN CMY COLOR SPACE

Wilhelm Dichter, Tewksbury, Mass., and Eggert Jung, Schönberg, Fed. Rep. of Germany, assignors to Linotype-Hell AG, Eschborn, Fed. Rep. of Germany

Filed Nov. 12, 1992, Ser. No. 974,528

Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—500 **7 Claims**



7. A method for defining a new value of K and new values of CMY components corresponding with an HSL color manipulation change in CMY components in digital image processing, comprising the steps of:

providing original CMYK printing colors having an original gray balance;

correcting the original CMY printing colors in a CMY transformation by inputting HSL changes in a transformation to create new CMY printing colors;

sensing a value of a smallest one of the original CMY colors;

sensing a value of a smallest one of the new CMY colors; and

by use of each of said smallest values modifying a value of the original K printing color to create a recalculated K printing color value which minimizes distortion of original gray balance.

5,359,437

METHOD FOR UNDER-COLOR REMOVAL IN COLOR IMAGE FORMING APPARATUS

Yoshiharu Hibi, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 16, 1992, Ser. No. 869,170

Claims priority, application Japan, Apr. 17, 1991, 3-085241

Int. Cl.[5] H04N *1/46*; G03F *3/00*

U.S. Cl. 358—529 **7 Claims**

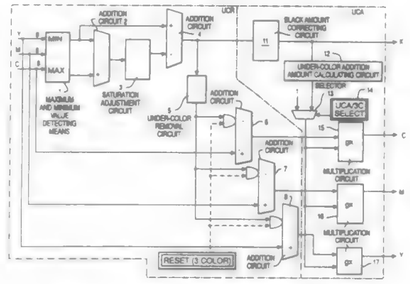
1. A device for under-color removal in a color image forming apparatus comprising:

color conversion means for converting separated color signals into first color output signals;

first black generation means for calculating first black output signal based on the maximum and minimum values of the first color output signals obtained by said color conversion means;

means for performing under-color removal to calculate second color output signals by correcting said first color output signals converted by said color conversion means based on said first black output signal generated by said first black generation means and then removing under-color values from said first color output signals;

black amount correction means for calculating second black output signal by correcting said first black output signal obtained by said first black generation means; and



chroma correction means for correcting said second color output signals obtained by said means for performing under-color removal based on said second black output signal obtained by said black amount correction means.

5,359,438

ENCODING APPARATUS FOR COLOR IMAGE DATA

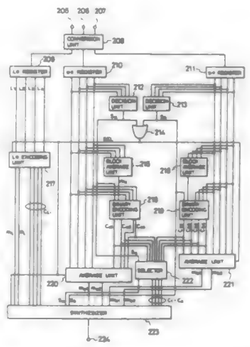
Mitsuru Maeda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 586,306, Sep. 21, 1990, abandoned, which is a division of Ser. No. 185,024, Apr. 22, 1988, Pat. No. 4,974,071. This application Sep. 17, 1992, Ser. No. 946,148

Claims priority, application Japan, Apr. 28, 1987, 62-103001; Apr. 28, 1987, 62-103002; Apr. 28, 1987, 62-103003

Int. Cl.[5] H04N *4/415*

U.S. Cl. 358—539 **41 Claims**



1. A color image data encoding apparatus for encoding color image data, consisting of luminance data and color data, by the unit of a block of a predetermined size, comprising:

means for extracting from the color image data color data which does not include a luminance component;

means for discriminating a presence/absence of a color edge in said block using said color data extracted by said extracting means; and

encoding means for encoding said color image data into a code of a predetermined bit length for each block,

wherein said code has a first part related to said luminance data and a second part related to said color data, and a

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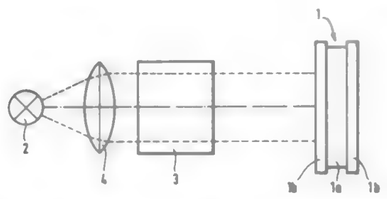
ratio of lengths of the first and second parts is variable in accordance with a discrimination result of said discriminating means.

5,359,439

OPTICAL ELEMENTS BASED ON LIQUID-CRYSTALLINE SUBSTANCES WITH NO BIREFRINGENCE IN A NON-PERPENDICULAR DIRECTION AND A PROCESS FOR THEIR PREPARATION

Alfred Miller, Planegg; Horst Leigeber, Oberhaching, and Franz-Heinrich Kreuzer, Planegg, all of Fed. Rep. of Germany, assignors to Consortium fur elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 1, 1993, Ser. No. 11,587
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1992, 4206089
Int. Cl.[5] G02F 1/1337, 1/137, 1/13
U.S. Cl. 359—76 10 Claims



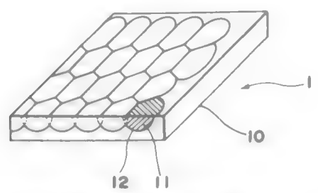
2. A process for the production of optical elements based on liquid-crystalline substances, which comprises illuminating a liquid-crystalline substance with unpolarized light of suitable wavelength at a defined angle in such a way that, after illumination, the director of said substance is aligned parallel to the direction of the illuminating light on passing through said substance.

5,359,440

IMAGE DISPLAY APPARATUS WITH MICROLENS PLATE HAVING MUTUALLY FUSED TOGETHER LENSES RESULTING IN HEXAGONAL SHAPED MICROLENSES

Hiroshi Hamada, Nara; Fumiaki Funada, Yamatokoriyama; Kenjiro Hamanaka, and Kouji Tanaka, both of Tsukuba, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka and Nippon Sheet Glass Co., Ltd., Tokyo, both of Japan

Continuation of Ser. No. 936,078, Aug. 28, 1992, abandoned, which is a continuation of Ser. No. 601,297, Oct. 22, 1990, abandoned. This application Oct. 25, 1993, Ser. No. 140,978
Claims priority, application Japan, Oct. 23, 1989, 1-275410
Int. Cl.[5] G02F 1/1335, 1/1343
U.S. Cl. 359—41 27 Claims



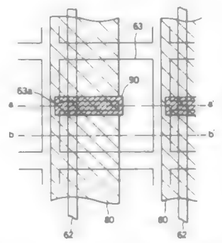
1. An image display apparatus comprising:
at least one display panel, having a plurality of pixels, for producing an image;
a light source for outputting light; and
a flat-plate microlens array, of a refraction index distribution type, for directing the output light from the light source through the plurality of pixels for subsequent projection of the image, the flat-plate microlens array including:
a single substrate, and a plurality of microlenses formed in rows on the single substrate, each row being offset from adjacent rows by a one-half microlens pitch, for converging output light from the light source onto the respective ones of the pixels, each microlens overlapping a region of each adjacent microlens of said flat-plate microlens array and being mutually fused to the adjacent microlenses in the overlapping regions so as to form one continuous effective lattice of hexagonal microlenses on said substrate, with non-overlapping lens regions between adjacent microlenses being substantially eliminated, and the refraction index of the microlens array plate being reduced in the overlapping regions of the microlenses.

5,359,441

REFLECTION TYPE LIQUID CRYSTAL DISPLAY APPARATUS HAVING A REFLECTIVE PIXEL ELECTRODE WITH AN ELONGATED WINDOW OVER A PHOTOCONDUCTIVE ELEMENT

Yuji Mori, and Shinichi Komura, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 17, 1992, Ser. No. 992,532
Claims priority, application Japan, Dec. 18, 1991, 3-334896; Jan. 20, 1992, 4-007669
Int. Cl.[5] G02F 1/13, 1/1343, 1/135
U.S. Cl. 359—51 9 Claims



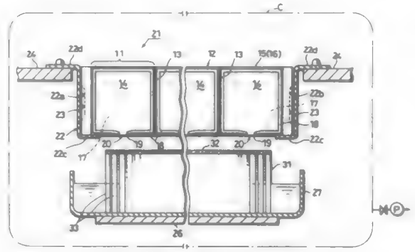
1. A reflection type liquid crystal display apparatus having pixels disposed in the form of a matrix, said apparatus comprising:
a transparent upper substrate on which a transparent belt-like signal electrode is formed in a direction of the row of the matrix;
a lower substrate having, on a surface thereof which opposes the surface of said upper substrate on which said signal electrode is formed, a belt-like scanning electrode formed in a direction of the column of the matrix, an elongated photo-conductive element connected to said scanning electrode and formed at a position corresponding to each of said pixels, and a pixel electrode having an elongated window above said photo-conductive element and formed such that it covers said photo-conductive element, said pixel electrode having a surface serving as a reflection surface; and
a liquid crystal filled between said upper and lower substrates.

5,359,442

APPARATUS AND METHOD FOR INTRODUCING LIQUID CRYSTAL INTO LIQUID CRYSTAL CELLS USING SUCTION AND RETENTION MEANS

Kenji Tanaka, and Haruo Kato, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Nov. 20, 1992, Ser. No. 979,282
Claims priority, application Japan, Nov. 22, 1991, 3-307715
Int. Cl.[5] G02F 1/1335, 1/1339
U.S. Cl. 359—62 12 Claims



1. An apparatus for introducing liquid crystal into liquid crystal cells comprising:
holding means for holding each of the liquid crystal cells;
liquid crystal retention means wetted with liquid crystal drawn by liquid crystal suction means;
drive means for causing relative movement between said holding means and said liquid crystal retention means to selectively bring a liquid crystal inlet of said each liquid crystal cell into and out of contact with said liquid crystal retention means; and
a vacuum vessel accommodating said holding meats, liquid crystal suction means, liquid crystal retention means and drive means, said vacuum vessel being capable of varying its inner pressure;
wherein said liquid crystal retention means comprises a felt member.

5,359,443

PROCESS FOR PRODUCING HEAT-RESISTANT OPTICAL ELEMENT BY HEATING LIQUID CRYSTAL POLYMER AT POLYMERIZATION TEMPERATURE DURING OR AFTER ORIENTATION TREATMENT

Takehiro Toyooka, and Hiroyuki Itoh, both of Yokohama, Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Nov. 23, 1992, Ser. No. 980,482
Claims priority, application Japan, Nov. 22, 1991, 3-354205; Nov. 22, 1991, 3-354206
Int. Cl.[5] G02F 1/1337, 1/13; C09K 19/52, 19/00
U.S. Cl. 359—76 9 Claims

1. A process for producing a heat-resistant optical element comprising a light transmitting substrate, an alignment film formed on said substrate, and a layer of a heat-polymerizable liquid crystalline polymer which exhibits a nematic orientation or a twisted nematic orientation in the liquid crystal phase and which assumes a glassy state at a temperature below a liquid crystal transition point of the polymer, characterized in that said liquid crystalline polymer layer is heat-treated at a temperature high enough for the polymerization of the liquid crystalline polymer to proceed at at least one of the stages of during an orientating treatment and after fixing of the orientation obtained.

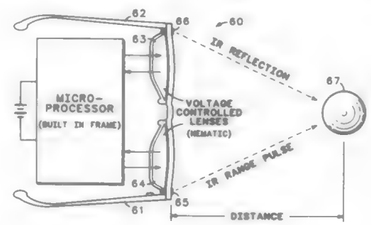
2. A process for producing a heat-resistant optical element, involving transferring a layer of a heat-polymerizable liquid crystalline polymer formed on an orientating substrate onto a light transmitting substrate, said liquid crystalline polymer exhibiting a nematic orientation or a twisted nematic orientation in the liquid crystal phase and assuming a glassy state at a temperature below a liquid crystal transition point of the polymer, characterized in that said liquid crystalline polymer layer is heat-treated at a temperature high enough for the polymerization of the liquid crystalline polymer to proceed at at least one of the stages of during an orientating treatment, after fixing of the orientation obtained and after the transfer.

5,359,444

AUTO-FOCUSING OPTICAL APPARATUS

Gerald V. Ploscnka, and Peter J. Leahy, both of Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 24, 1992, Ser. No. 996,531
Int. Cl.[5] G02F 1/137
U.S. Cl. 359—94 9 Claims



1. Auto focusing optical apparatus comprising:
an optical lens having a focal length determined by a refractive index thereof and containing electrically alterable material positioned to alter the refractive index of the optical lens in response to a voltage applied thereto, and a pair of electrical terminals coupled to supply an electrical field to the material and designed to have applied thereto a voltage so as to produce a predetermined alteration of the refractive index of the lens, the optical lens including a plurality of individual optically transparent, pixel regions each defined by a pair of electrically conductive transparent electrodes positioned on opposite regions of the optical lens, thereby enabling the impression of an independent electrostatic field within the pixel region;
a frame operatively mounting the optical lens;
a microprocessor mounted in the frame and connected to the electrical terminals of the optical lens, the microprocessor being programmed to automatically supply a voltage to the electrical terminals so as to produce a predetermined alteration of the refractive index of the optical lens; and
a ranging system mounted in the frame and connected to the microprocessor.

5,359,445

FIBER OPTIC SENSOR

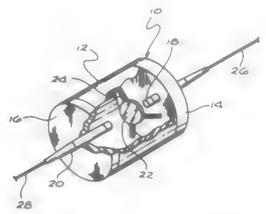
Robert M. Robertson, Valencia, Calif., assignor to AlliedSignal Inc., Morris Township, N.J.

Filed Oct. 30, 1987, Ser. No. 114,963
Int. Cl.[5] G01D 5/32
U.S. Cl. 359—151 17 Claims

1. A fiber optical sensor including a housing having a wall adapted to be exposed to a variable condition to be sensed, a source of light, a fiber optic transmitter connected to receive light from said source and connected to emit light within said housing, a thin film in said housing operatively connected to said wall positioned to receive light from said transmitter and

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capable of modulating said light with movement of said wall in response to changes in said variable condition, and optical



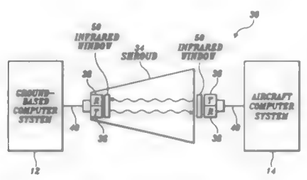
receiver means in said housing responsive to the modulated light from said thin film.

5,359,446

WIDE-ANGLE, HIGH-SPEED, FREE-SPACE OPTICAL COMMUNICATIONS SYSTEM

Bruce E. Johnson, Seattle; Thomas A. Lindsay, Brier; David L. Brodeur, Seattle; Randall E. Morton, Redmond, and Mark A. Regnier, Bothell, all of Wash., assignors to ELDEC Corporation, Lynnwood, Wash.

Filed Sep. 10, 1992, Ser. No. 943,328
Int. Cl.[5] H04B *10/00*
U.S. Cl. 359—152 **17 Claims**



6. A free-space optical communications system for transmitting data bi-directionally between an aircraft computer system and a ground-based computer system, comprising:

a first optical transmitter coupled to the aircraft computer system and a second optical transmitter coupled to the ground-based computer system, each transmitter including

(a) one or more light-emitting diodes (LEDs) that produce optical signals corresponding to the data to be transmitted between the aircraft computer system and the ground-based computer system;

(b) a horn-shaped beam former optically coupled to one or more LEDs to collect the optical signals produced by the one or more LEDs and direct the optical signals toward a corresponding optical receiver; and

a first optical receiver coupled to the ground-based computer system and a second optical receiver coupled to the aircraft computer system that receive the optical signals transmitted from a corresponding optical transmitter, wherein each optical receiver includes:

(a) a photodiode that produces an output signal that is proportional to a received optical signal;

(b) a compound parabolic concentrator bonded to the photodiode that collects the optical signals transmitted from the optical transmitter and directs the optical signals onto the photodiode;

(c) current shunt means coupled to an output of the photodiode for shunting away a portion of the output signal that is due to ambient light collected by the compound parabolic concentrator; and

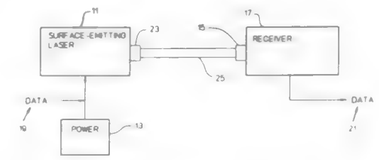
shroud means for surrounding the first and second optical receivers to reduce the amount of ambient light received by the photodiodes.

5,359,447

OPTICAL COMMUNICATION WITH VERTICAL-CAVITY SURFACE-EMITTING LASER OPERATING IN MULTIPLE TRANSVERSE MODES

Kenneth H. Hahn, Cupertino; Michael R. T. Tan, Mountain View, and Shih-Yuan Wang, Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 25, 1993, Ser. No. 83,739
Int. Cl.[5] H04B *10/00*
U.S. Cl. 359—154 **6 Claims**



1. An optical communication network comprising:

a vertical-cavity, surface-emitting semiconductor laser structure having an aperture larger than eight micrometers through which an optical signal may be emitted;

a power supply that provides a bias current to drive the laser into a multiple transverse mode of Operation in which the laser is responsive to a signal carrying data to provide an optical signal modulated with the data and to emit the optical signal through the aperture; and

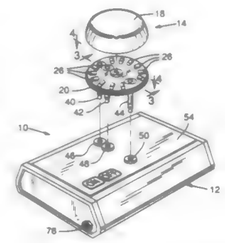
a multimode Optical medium optically coupled to the laser to carry the optical signal from the laser to a remotely-located receiver.

5,359,448

INFRARED SIGNAL TRANSMITTER

Charles A. Laszlo, Vancouver, and Paul L. Geyer, Burnaby, both of Canada, assignors to Assistive Listening Device Systems, Inc., British Columbia, Canada

Filed Feb. 23, 1993, Ser. No. 20,579
Int. Cl.[5] H04B *10/04*
U.S. Cl. 359—180 **13 Claims**



1. An infrared signal transmitter comprising:

a signal generator,

a housing in which said signal generator is housed,

a mount removably secured to said housing,

a plurality of infrared transmitting elements secured on said mount and operatively connected to said signal generator for transmitting signals received from said signal generator, said transmitting elements being arranged to transmit signals in a multi-directional pattern, and

mating plug-in connector parts on said housing and mount respectively, through which connector parts said mount is removably secured to said housing and said transmitting

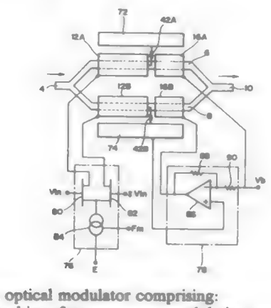
elements are operatively connected to said signal generator.

5,359,449

OPTICAL MODULATOR FOR AN OPTICAL TRANSMITTER

Hiroshi Nishimoto; Hironao Hakogi, and Takatoshi Minami, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 19, 1992, Ser. No. 979,491
Claims priority, application Japan, Nov. 19, 1991, 3-302893; Dec. 5, 1991, 3-322033; Feb. 14, 1992, 4-027755
Int. Cl.[5] H04B *10/04*
U.S. Cl. 359—181 **23 Claims**



16. An optical modulator comprising:

an optical interferometer type modulating means for modulating in intensity light from a light source; and

driving means, connected operatively to said modulating means for supplying said modulating means with a driving signal based on an input signal;

said modulating means including:

an input-side optical waveguide;

a first branching portion for branching in two directions the light transmitted through said input-side optical waveguide;

a first and a second branching waveguide for transmitting the light branched by said first branching portion;

a second branching portion for converging the light transmitted through said first branching waveguide and said second branching waveguide;

an output-side optical waveguide for transmitting the light converged by said second branching portion;

a first and second electrode cooperating respectively with said first branching waveguide and said second branching waveguide;

a delay optical waveguide coupled directionally to at least one of said first branching waveguide and said second branching waveguide; and

a control electrode for controlling the coupling ratio of the directional coupling between said at least one branching waveguide and said delay optical waveguide.

5,359,450

OPTICAL TRANSMISSION SYSTEM

Mani Ramachandran, and Hermann Gysel, both of San Jose, Calif., assignors to Synchronous Communications, Inc., San Jose, Calif.

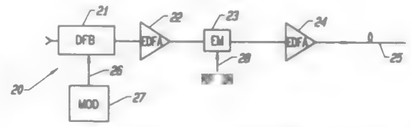
Filed Jan. 25, 1992, Ser. No. 904,375
Int. Cl.[5] H04B *10/04, 10/12*
U.S. Cl. 359—188 **8 Claims**

1. An optical transmission system comprising:

a fiber optic cable having a predetermined stimulated Brillouin scattering threshold to unmodulated coherent radiation having a first predetermined line width relative to a predetermined center wavelength;

means for providing said coherent radiation having said predetermined center wavelength to said fiber optic cable; and

means for modulating said coherent radiation providing means with a modulating signal having a predetermined modulating frequency so as to increase said line width of



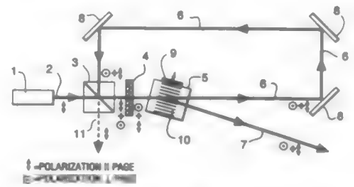
said coherent radiation from said first predetermined line width relative to said predetermined center wavelength to a second predetermined line width relative to said predetermined center wavelength, said increase in said line width effecting a corresponding increase in said stimulated Brillouin scattering threshold.

5,359,451

HIGH EFFICIENCY ACOUSTO-OPTIC MODULATOR

Daniel Gelbart, and Eviatar Halevi, both of Vancouver, Canada, assignors to Creo Products Inc., Burnaby, Canada

Filed Jan. 29, 1993, Ser. No. 11,244
Int. Cl.[5] G02F *1/33*
U.S. Cl. 359—285 **3 Claims**



1. A high efficiency acousto-optic modulation system comprising of:

an input beam of polarized light;

an acousto-optic modulator using an acoustic wave to diffract some of the input beam while transmitting the remainder of the input beam as an undiffracted beam;

means of changing the polarization state of said undiffracted beam by using a waveplate:

means of re-directing said undiffracted beam and combining it with the input beam in a manner keeping the area the combined beams interact with the acoustic wave, substantially the same as the area over which the acoustic wave interacts with the input beam alone, thus maintaining the bandwidth of said modulator while increasing the amount of light in the diffracted beam, said combining utilizing the different polarizations of the said input beam and said undiffracted beam.

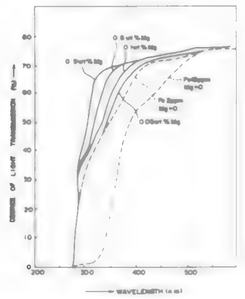
VOL 1167 ISS 4 OCT 25 1994 UMI

5,359,452

LITHIUM TANTALATE MONOCRYSTAL, MONOCRYSTAL SUBSTRATE, AND PHOTO ELEMENT

Fumio Nitanda; Yasunori Furukawa; Masayoshi Sato; Kohei Ito, all of Fukaya, and Satoshi Makio, Kumagaya, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Apr. 16, 1993, Ser. No. 46,955
Claims priority, application Japan, Apr. 24, 1992, 4-105075; May 8, 1992, 4-115749; Oct. 7, 1992, 4-293832
Int. Cl.[5] G02F *1/37*
U.S. Cl. 359—328 32 Claims



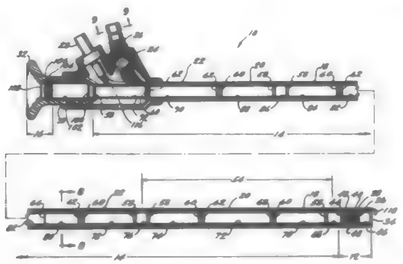
1. A lithium tantalate monocrystal containing 0.1 % or more of Mg by weight and limiting Fe to 10 ppm or less by weight.

5,359,453

OPTICAL VIEWING DEVICE

Xiaohui Ning, North Providence, R.I., assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 838,602, Feb. 19, 1992, abandoned. This application Dec. 21, 1993, Ser. No. 171,376
Int. Cl.[5] A61B *1/00, 1/06;* G02B *23/24, 1/04*
U.S. Cl. 359—435 7 Claims



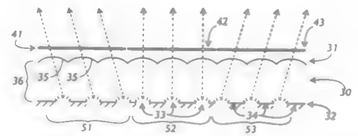
1. A rod-less endoscope device for use in an operative procedure comprising:
- a tubular housing having opposed first and second ends with an eye piece section at said first end, an objective lens section at said second end and a relay lens section between said eye piece section and said objective lens section;
- said relay lens section comprising a plurality of rod-less lens groupings separated from each other by open space, each said rod-less lens grouping comprising a plurality of polymeric lenses.

5,359,454

APPARATUS FOR PROVIDING AUTOSTEREOSCOPIC AND DYNAMIC IMAGES

Richard A. Steenblik, Stone Mountain, and Mark J. Hurt, Alpharetta, both of Ga., assignors to Applied Physics Research, L.P., Atlanta, Ga.

Filed Aug. 18, 1992, Ser. No. 931,871
Int. Cl.[5] G02B *27/22, 27/12*
U.S. Cl. 359—463 20 Claims



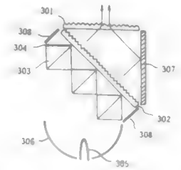
1. A light control material for displaying autostereoscopic or dynamic images formed of a series of image elements, said light control material comprising:
- a plurality of focusing elements; and
- light control optics having dark zones and bright zones, said dark zones and bright zones arranged in a predetermined pattern, and wherein there are a plurality of said focusing elements associated with each image element of the series of image elements, and wherein said dark zones and bright zones cause light to be directed through all of the focusing elements associated with a particular image element in the same direction such that an observer is provided with a view of an autostereoscopic or dynamic image.

5,359,455

POLARIZATION FORMING OPTICAL DEVICE

Noriji Oishi, Aichi, Japan, assignor to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 743,425, Aug. 21, 1991, abandoned. This application Feb. 12, 1993, Ser. No. 17,968
Claims priority, application Japan, Dec. 26, 1989, 1-334896; Dec. 27, 1989, 1-336649; Jun. 4, 1990, 2-144528; Jun. 28, 1990, 2-168247; Oct. 1, 1990, 2-260521
Int. Cl.[5] G02B *5/30, 27/28;* G02F *1/1335*
U.S. Cl. 359—487 15 Claims



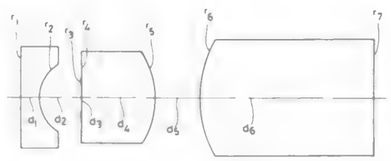
7. A polarization forming optical device comprising a polarizing section and a light beam width reducing section, wherein:
- said polarizing section comprises a polarization beam splitter for reflecting one of a p-polarization component and an s-polarization component of light emitted from a light source and for transmitting the other; transmitting means for transmitting one of a reflected light and a transmitted light from said polarization beam splitter and for rotating a plane of polarization at 90°; a first prism formed plate having one surface formed with a plurality of prism rows for making an advancing direction of a transmitted light from said transmitting means coincident with an advancing direction of the other of said reflected light and said transmitted light from said polarization beam splitter to synthesize the two light beams from said transmitting means and said polarization beam splitter; and a pair of reflectors for reflecting a part of the other of said reflected light and said transmitted light from said polarization beam splitter and also for reflecting a part of said transmitted light from said transmitting means, so as to guide both the parts to said first prism formed plate; and
- said light beam width reducing section comprises a reflecting surface for reflecting at least one part of a synthesized light from said first prism formed plate; and a second prism formed plate having one surface formed with a plurality of prism rows for making an advancing direction of a reflected light from said reflecting surface coincident with an advancing direction of the other part of said synthesized light from said first prism formed plate to synthesize said reflected light and said other part.

5,359,456

OBJECTIVE LENS SYSTEM FOR ENDOSCOPES

Akira Kikuchi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,543
Claims priority, application Japan, Oct. 15, 1991, 3-293811; Oct. 15, 1991, 3-293815; Oct. 15, 1991, 3-293928
Int. Cl.[5] G02B *23/00*
U.S. Cl. 359—654 24 Claims



1. An objective lens system for endoscopes comprising, in order from the object side: a front lens unit having a negative refractive power, an aperture stop, and a rear lens unit having a positive refractive power; wherein said front lens unit includes a graded refractive index lens component, and wherein said graded refractive index lens component satisfies the following conditions (6) and (7) when a refractive index and an Abbe's number of said graded refractive index lens component are approximated by formulae (1) through (5) mentioned below:

$$N_d(r)=N_{0d}+N_{1d}r^2+N_{2d}r^4+N_{3d}r^6 \quad (1)$$

$$N_F(r)=N_{0F}+N_{1F}r^2+N_{2F}r^4+N_{3F}r^6 \quad (2)$$

$$N_C(r)=N_{0C}+N_{1C}r^2+N_{2C}r^4+N_{3C}r^6 \quad (3)$$

$$\nu_{0d}=(1-N_{0d})/(N_{0F}-N_{0C}) \quad (4)$$

$$\nu_{1d}=N_{1d}/(N_{1F}-N_{1C}) \quad (6)$$

$$N_{1d}<0 \quad (6)$$

$$0\leqq\nu_{0d}\leqq\nu_{1d} \quad (7)$$

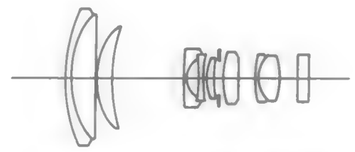
wherein the reference symbols $N_d(r)$, $N_F(r)$ and $N_C(r)$ represent refractive index of said graded refractive index lens component for the d-line, F-line and C-line respectively when a radial distance as measured from an optical axis is designated by r, the reference symbols N_{0d}, N_{1d}, N_{2d} and N_{3d} denote refractive index distribution coefficient for the d-line, the reference symbols N_{0F}, N_{1F}, N_{2F} and N_{3F} represent refractive index distribution coefficients for the F-line, the reference symbols N_{0C}, N_{1C}, N_{2C} and N_{3C} designate refractive index distribution coefficients for the C-line, and the reference symbols ν_{0d} and ν_{1d} denote Abbe's numbers.

5,359,457

WIDE-ANGLE ZOOM LENS SYSTEM

Manami Saka, Kyoto, and Katsuhiro Takamoto, Nagaokakyo, both of Japan, assignors to Minolta Camera Co., Ltd., Osaka, Japan

Filed Sep. 18, 1992, Ser. No. 947,788
Claims priority, application Japan, Oct. 3, 1991, 3-256569
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—684 11 Claims



1. A wide-angle zoom lens system, comprising from the object side to the image side:
- a first positive lens unit being stationary on an optical axis during a zooming operation;
- a second negative lens unit shifting along the optical axis during the zooming operation;
- a third positive lens unit being stationary on the optical axis during the zooming operation; and
- a fourth positive lens unit shifting along the optical axis during the zooming operation;
- wherein the zoom lens system fulfills the following conditions:

$$0.155<\Phi 1Z\cdot Y'^3/fs^2<0.355$$

$$0.040<(\Phi 1/|\Phi 2|)\cdot(Y'/fs)^3<0.065$$

wherein:
- $\Phi 1$ represents a refractive power of the first lens unit;
- $\Phi 2$ represents a refractive power of the second lens unit;
- Y' represents a maximum image height;
- fs represents the shortest focal length of said zoom lens system; and
- Z represents a zoom ratio.

5,359,458

SCANNER

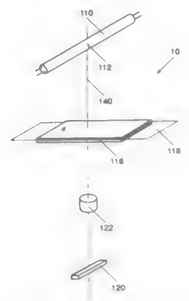
Haim Z. Melman, Kfar Sava, and Eran Elizur, Tel Aviv, both of Israel, assignors to Scitex Corporation Ltd., Herzliya, Israel

Filed Jul. 27, 1992, Ser. No. 920,031
Claims priority, application Israel, Aug. 1, 1991, 99039; Jul. 21, 1992, 102594
Int. Cl.[5] G02B *27/02*
U.S. Cl. 359—799 24 Claims

1. An illumination means for a scanner comprising:
- a light source, having non-uniformities, for transmitting light through an input sample;
- a cassette for holding said input sample; and
- a color separation sensor for sensing said input sample,
- wherein a distance from said light source to said cassette is

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long enough to cause the effects of said non-uniformities to be substantially reduced,



the scanner comprising a 15 mm diameter lens located 200 mm from said cassette, said distance from said light source to said cassette being 100 mm.

5,359,459

OPTICAL SYSTEM DRIVING APPARATUS

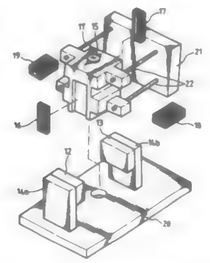
Chun-dong Kim, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 11, 1992, Ser. No. 851,678

Claims priority, application Rep. of Korea, May 13, 1991, 91-7718

Int. Cl.[5] G02B *7/02;* G11B *21/10*

U.S. Cl. 359—824 7 Claims



1. An optical system driving apparatus for displacing an optical system along a tracking axis and a focusing axis orthogonal to said tracking axis, said optical system comprising:

an objective lens defining an optical axis extending parallel to said focusing axis[, said driving apparatus comprising:

a base;

an objective lens holder for carrying said objective lens; a first magnet and a second magnet each disposed at different longitudinal ends of said objective lens holder, such that said first magnet and said second magnet do not contact said objective lens holder;

means for elastically supporting said objective lens holder on said base between said first magnet and said second magnet;

means for supporting said first magnet and said second magnet on said base;

a first focusing coil and a second focusing coil mounted on said objective lens holder at said different longitudinal ends of said objective lens holder, said first focusing coil and said second focusing coil for displacing said optical system along said focusing axis to focus light transmitted through said objective lens, said first focusing coil and said second focusing coil being wound around a first core axis, said first core axis being perpendicular to said optical axis; and

a first tracking coil and a second tracking coil mounted on said objective lens holder on different lateral sides of said objective lens holder and located substantially equidistantly between said first magnet and said second magnet, said first tracking coil and said second tracking coil for displacing said optical system along said tracking axis to provide for tracking of said light transmitted through said objective lens onto said an information storage medium, said first tracking coil being wound around a second core axis, said second tracking coil being wound around a third core axis, said second core axis and said third core axis being parallel to said first core axis.

5,359,460

POLYGON MIRROR FOR A LASER SCANNING OPTICAL SYSTEM

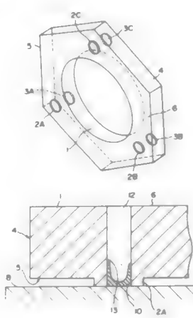
Toshio Urakawa, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 12, 1993, Ser. No. 17,484

Claims priority, application Japan, Feb. 18, 1992, 4-060945; Dec. 10, 1992, 4-330639

Int. Cl.[5] G02B *26/10, 5/08*

U.S. Cl. 359—855 7 Claims



1. A polygon mirror made by resin-forming, provided with a plurality of first projections on its referential surface for attachment; and a plurality of second projections at positions corresponding to said first projections on its clamping member-receiving surface opposite said referential surface.

6. A polygon mirror made by resin-forming, provided with a plurality of projections and through holes on its referential surface for attachment; wherein said through holes are arranged and disposed to penetrate through respective projections; and being characterized in that said through holes are filled with an adhesive in contact with said referential surface for attachment.

5,359,461

PORTABLE COSMETIC MIRROR APPARATUS

Virginia Rice, 300 E. H. St. #155, Benicia, Calif. 94510, and Maybelle I. gailas, 214 Twin Lake Dr., Elyria, Ohio 44035-4700

Filed Jul. 28, 1998, Ser. No. 98,042

Int. Cl.[5] G02B *7/18*

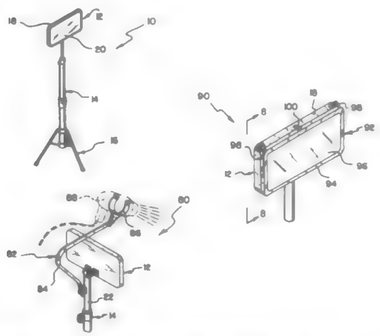
U.S. Cl. 359—874 4 Claims

1. A new portable cosmetic mirror apparatus comprising:

a stand comprising a telescoping pole means having a base means for supporting said telescoping pole means in a substantially vertical orientation, said base means being coupled to a lower end of said telescoping pole means,

said telescoping pole means being operable to be extended to various heights;

a mirror pivotally coupled to a top end of said telescoping pole means;



a magnification means pivotally coupled to said mirror for selectively magnifying said mirror; and,

a holding means pivotally coupled to a portion of said telescoping pole means for releasably holding a hair appliance proximal said mirror.

5,359,462

DEVICE FOR ELIMINATING NOISES DURING SLOW AND HIGH SPEED SEARCH OPERATION IN A VIDEO TAPE RECORDER AND METHOD THEREFOR

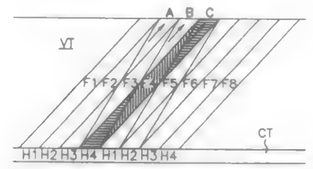
Chan-Young Park, Seoul, and Kye-Jong Kim, Suwon-city, both of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 13, 1992, Ser. No. 820,072

Claims priority, application Rep. of Korea, Mar. 30, 1991, 1991-5096

Int. Cl.[5] H04N *5/78;* G11B *15/14*

U.S. Cl. 360—10.2 15 Claims



1. A method of providing slow and/or high speed search modes of operation in a video tape recorder having a head drum mounting a plurality of heads, comprising the steps of:

recording addresses indicative of tape position on a control track of a video tape, each of said addresses comprising a single address block;

jumping over a given number of said addresses when operating in the slow speed search mode of operation, to perform tracking and thereafter reading said picture data, recording the picture data in a memory, and reproducing said picture data from said memory repeatedly during said jumping over of said given number of addresses; and

switching on and off, successively, a first plurality of said plurality of heads substantially at ⅓ and ⅔ positions of a full control tracking time when operating in the high speed search mode of operation to produce a continuous sweep across a recorded track of said picture data, recording the picture data in the memory to form a complete picture of one frame to be reproduced, and reading the picture data from the memory.

5,359,463

RECORD/REPRODUCE APPARATUS HAVING MEANS FOR SWITCHING AUTOMATICALLY BETWEEN DIFFERENT TYPES OF AUDIO

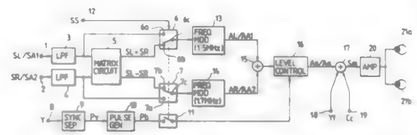
Yoshiki Shirochi, Chiba, and Hirokazu Takaoka, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 11, 1990, Ser. No. 535,650

Claims priority, application Japan, Jun. 19, 1989, 1-156585

Int. Cl.[5] G11B *5/02*

U.S. Cl. 360—19.1 57 Claims



1. Apparatus for recording and reproducing video and audio signals on a record medium, wherein the audio signal may be of at least two different types subjected to respectively different types of audio processing, said apparatus comprising:

a recording section, including video signal supply means for supplying a video signal having blanking intervals therein; FM modulating means for producing frequency modulated (FM) audio signal components; level adjusting means for selectively adjusting the level of at least one FM audio signal component during blanking intervals as a function of the type of audio signal being modulated; and combining means for combining the FM audio signal components and the video signal;

transducer means for recording the combined FM audio signal components and video signal on a record medium and for reproducing combined FM audio signal components and video signal from a record medium; and

a reproducing section including separating means for separating the reproduced FM audio signal components from the reproduced video signal; level detecting means for detecting the level of at least one separated FM audio signal component during blanking intervals; FM demodulating means for producing demodulated audio signals from the FM audio signal components; and audio signal processing means responsive to the detected level of the separated FM audio signal component to process the demodulated audio signals in accordance with a selected type of audio processing.

5,359,464

METHODS OF AND APPARATUS FOR CODING TELEVISION SIGNALS HAVING VARYING FRAME RATES

James H. Wilkinson, Basingstoke, United Kingdom, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 643,353, Jan. 22, 1991, abandoned. This application Apr. 22, 1993, Ser. No. 51,576

Claims priority, application United Kingdom, Feb. 6, 1990, 9002557.4

Int. Cl.[5] H04N *5/78*

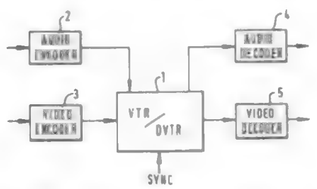
U.S. Cl. 360—33.1 15 Claims

1. A method of coding a television signal comprised of pixels of video information arranged in a sequence of video frames and audio information associated with said video frames, respectively, said television signal having a frame rate which is selected from a plurality of predetermined different values and said audio information having a sample rate selected from among a plurality of predetermined different values, the method comprising the steps of:

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coding the video information of each video frame into at least one video block for recording in at least one oblique track on a magnetic tape, said coding having a common image format wherein the number of pixels per video frame in both the horizontal and vertical directions is the same for all said values of the frame rate; and

coding said audio information associated with each video frame into at least one audio block for recording on the



oblique track containing the corresponding at least one video block, in which the video and audio blocks on each oblique track are alternately arranged along the respective track and in which each said audio block comprises a number of bytes of digital audio data and a pointer having data which indicates the selected frame rate, said number of bytes of digital audio data comprised in each audio block being determined on the basis of said selected frame rate.

5,359,465

DEVICE AND METHOD FOR EDITING SIGNALS RECORDED ON DISK

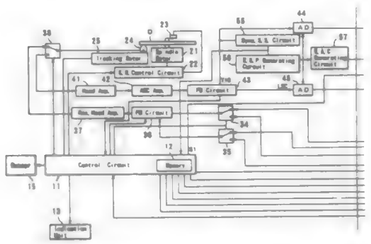
Shunichi Miyadera, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1993, Ser. No. 5,297

Claims priority, application Japan, Jan. 20, 1992, 4-046434

Int. Cl.[5] G11B *27/02;* **H04N** *5/78, 5/225*

U.S. Cl. 360—35.1 **16 Claims**



1. A device for editing signals recorded in recording areas of a recording medium used for a still video device, said device comprising:

a first memory in which a signal which is recorded in one recording area of said recording medium can be stored;

a second memory in which a signal which is recorded in another recording area of said recording medium can be stored during the same time which the signal, in said first memory is stored;

means for storing a signal recorded in a first recording area of said recording medium in said first memory, and for storing a signal recorded in a second recording area of said recording medium in said second memory while said signal from said first recording area remains stored in said first memory;

means for erasing the signal recorded in said first recording area, after said storing means stores the signals in said first and second memories; and

means for reading the signal recorded in said second memory so that the signal recorded in said second memory can be recorded in said first recording area.

5,359,466

MAGNETIC HEAD DRIVING CIRCUIT WITH IMPEDANCE ELEMENTS TO BALANCE AUXILIARY COIL LOADS

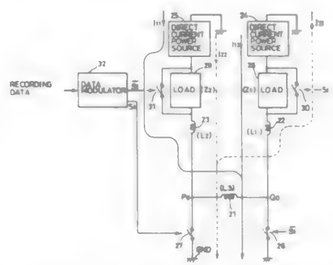
Hiroshi Fuji, Nara, and Mitsuo Ishii, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 19, 1992, Ser. No. 901,025

Claims priority, application Japan, Jun. 21, 1991, 3-150478

Int. Cl.[5] G11B *5/09, 5/02*

U.S. Cl. 360—46 **18 Claims**



1. A circuit for driving a magnetic head coil comprising:

a first auxiliary coil having an impedance larger than an impedance of said magnetic head coil and being coupled to a first end of said magnetic head coil;

a second auxiliary coil having an impedance larger than the impedance of said magnetic head coil and being coupled to a second end of said magnetic head coil;

current generating means for generating first and second currents which alternately drive said magnetic head coil respectively through said first and second auxiliary coils;

path forming means, coupled to said magnetic head coil, for alternately coupling the first and second ends of said magnetic head coil to a predetermined potential to alternately drive said magnetic head coil with the first and second currents in opposite first and second directions; and

first and second load balancing means, coupled between said current generating means and said first and second auxiliary coils respectively, for selectively balancing loads of said first and second auxiliary coils, said first load balancing means balancing the load of said first auxiliary coil when said magnetic head coil is driven by the second current and said second load balancing means balancing the load of said second auxiliary coil when said magnetic head coil is driven by the first current.

5,359,467

WRITE CIRCUIT PROVIDING SELECTIVE WAVEFORM CORRECTION BASED ON RECORDING DENSITY, AND MAGNETIC RECORDING APPARATUS EMPLOYING THE WRITE CIRCUIT

Akira Nakamura, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Mar. 8, 1993, Ser. No. 27,796

Claims priority, application Japan, Mar. 6, 1992, 4-084449

Int. Cl.[5] G11B *5/09, 15/12*

U.S. Cl. 360—46 **7 Claims**

5. A magnetic recording apparatus including a write circuit for switching a direction of a write current flowing through a coil of a magnetic head according to a write signal to magnetize a magnetic recording medium at a predetermined recording density to thereby record information, said magnetic recording apparatus comprising:

a detection circuit for detecting a recording medium for a magnetic recording apparatus for magnetically recording information at a recording density different from said predetermined recording density; and

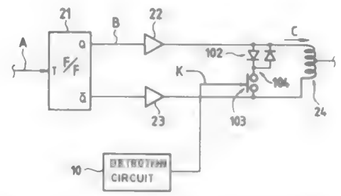
said write circuit comprising:

a binary signal generator circuit responsive to the write signal for generating logical "0" and "1" signals;

a drive circuit responsive to the logical signals for supplying the write current to said coil;

a waveform correction circuit for changing the waveform of leading and trailing portions of the write current; and

selection means for selectively inserting and removing said waveform correction circuit into and from said write circuit upon receipt of a selection signal for selecting between a recording state with said different recording density and the predetermined recording density, respectively;



wherein said binary signal generator circuit comprises a flip-flop circuit having a trigger terminal supplied with said write signal, and said drive circuit comprises a first driver arranged to directly receive a Q output of said flip-flop circuit and a second driver arranged to receive a Q output of the flip-flop circuit, and said waveform correction circuit comprises a series circuit of a bidirectional diode circuit and a switch circuit, said series circuit being connected in parallel to said coil, said switch circuit being closed upon receipt of said selection signal to insert said waveform correction circuit in circuit.

5,359,468

DIGITAL DATA STORAGE TAPE FORMATTER

Edward J. Rhodes; Daryl K. Adams, both of San Jose; Clifford R. Berry, Fremont; Ta-Lin Chang, Cupertino, and David R. Lee, San Jose, all of Calif., assignors to R-Byte, Inc., San Jose, Calif.

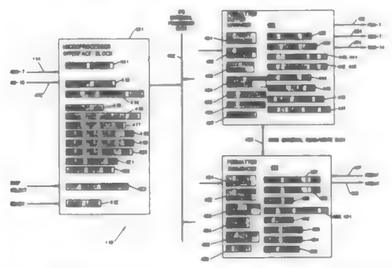
Filed Aug. 6, 1991, Ser. No. 740,755

Int. Cl.[5] G11B *5/09*

U.S. Cl. 360—48 **38 Claims**

MICROFICHE APPENDIX INCLUDED

(16 Microfiche, 93/2 Pages)



1. A formatter write device for a digital data storage system, said digital data storage system having a data bus, a main buffer, a frame buffer, a frame buffer bus, a microcontroller, and a head drum in communication with magnetic tape comprising:

randomizer means for randomizing data, said randomizer means coupled to the data bus;

track checksum means for computing a running track checksum, said track checksum means coupled to said randomizer means;

data interleaving means for interleaving data, said data interleaving means coupled to said track checksum means;

arbiter means for arbiting access to the frame buffer, said arbiter means coupled to frame buffer;

C2 parity byte computing means for generating C2 parity bytes, said C2 parity byte computing means coupled to said interleaving means and said arbiter means;

C1 parity byte computing means for generating C1 parity bytes, said C1 parity byte computing means coupled to the frame buffer bus;

8–10 conversion means for performing 8–10 coding conversion of data, said 8–10 conversion means coupled to the frame buffer bus;

track format data generating means for generating track format data and for synchronizing data writing with the head drum means, said track format data generating means coupled to the frame buffer bus and to the head drum; and

status register means for registering the status of a write operation, said status register means coupled to the microcontroller and to the frame buffer bus.

5,359,469

INFORMATION DATA RECORDING APPARATUS

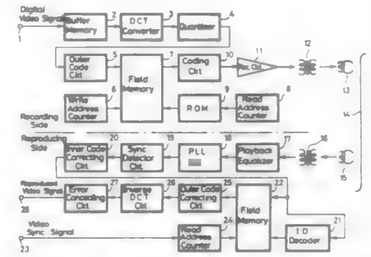
Mamoru Ueda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 30, 1993, Ser. No. 40,288

Claims priority, application Japan, Apr. 1, 1992, 4-080067

Int. Cl.[5] G11B *5/00, 5/09*

U.S. Cl. 360—53 **17 Claims**



1. An apparatus for recording a digital signal on a magnetic tape, comprising:

means for orthogonal converting said digital signal to produce an orthogonally converted digital signal;

means for quantizing said orthogonally converted digital signal to produce quantized data;

means for generating outer data in response to said quantized data for correction of said quantized data and for combining the same to said outer data;

means for rearranging an order of said quantized data and said outer data so that said outer data precedes said quantized data on each track formed on said magnetic tape when recorded; and

record heads coupled to said means for rearranging for recording said outer data at a beginning area of each successive oblique track formed on said magnetic tape and for recording said quantized data at a succeeding area after said beginning area of each said successive oblique track formed on said magnetic tape.

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5,359,470

MAGNETIC RECORDING/REPRODUCING APPARATUS

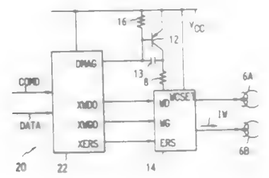
Keiichi Taguchi; Satoshi Goto; Masaharu Yanagi; Yoshihiro Fujimoto, and Keiichi Yanagiya, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 22, 1992, Ser. No. 901,939

Claims priority, application Japan, Jun. 24, 1991, 3-178754; Jun. 24, 1991, 3-178756

Int. Cl.[5] G11B *5/03, 5/02*

U.S. Cl. 360—57 3 Claims



1. A magnetic recording/reproducing apparatus of the type in which a recording/reproducing magnetic head scans an area on a recording medium which area has been previously erased by an erase magnetic head in a recording mode, comprising:

means for supplying a predetermined record current to the recording/reproducing magnetic head and changing over a polarity of the record current in accordance with input data to thereby record the input data on all but a remaining portion of the area of the recording medium; and

means for internally generating data corresponding to the data erased by the erase magnetic head and causing the recording/reproducing magnetic head to record the internally generated data in the remaining portion of the area erased by the erase magnetic head after stopping an erasing operation of the erase magnetic head, and ending the recording mode.

5,359,471

RECORDING AND/OR REPRODUCING APPARATUS USING ROTARY HEADS ACCORDING TO TRAVELLING SPEEDS OF A RECORDING MEDIUM

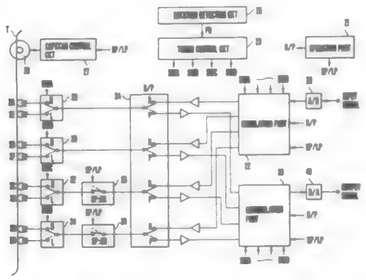
Masahide Hasegawa, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 865,643, Apr. 30, 1992, abandoned, which is a continuation of Ser. No. 355,652, May 22, 1989, abandoned. This application Jan. 13, 1994, Ser. No. 180,703

Claims priority, application Japan, May 25, 1988, 63-126009; May 25, 1988, 63-126010

Int. Cl.[5] G11B *15/14, 15/46*

U.S. Cl. 360—64 18 Claims



6. A recording apparatus for recording signals by forming many parallel tracks on a tape-shaped recording medium comprising:

a) transporting means for transporting the tape-shaped recording medium;

b) an n number of rotary heads arranged to trace the tape-shaped recording medium, transported by said transporting means, the n number of rotary heads including a predetermined m number of rotary heads, m being an integer which is at least 2, n being an integer which is larger than m; and

c) mode selection means for selecting a mode between a plurality of modes which includes, a first mode in which said transporting means transports the tape-shaped recording medium at a first speed in a direction which makes an acute angle with a direction in which the n number of rotary heads rotate, and all the n number of rotary heads are recording signals by forming n number of adjacent tracks on the tape-shaped recording medium, and a second mode in which said transporting means transports the tape-shaped recording medium at a second speed which is lower than m/n of said first speed in a direction which makes an acute angle with the direction in which the n number of rotary heads rotate and only the predetermined m number of rotary heads are recording signals by forming m number of adjacent tracks on the tape-shaped recording medium.

5,359,472

METHOD AND APPARATUS FOR IDENTIFYING SEGMENTS OF INFORMATION RECORDED ON DIGITAL AUDIO TAPE OR THE LIKE

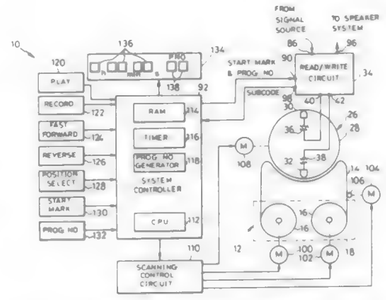
Shigeo Motohashi, Oume, Japan, assignor to TEAC Corporation, Tokyo, Japan

Continuation of Ser. No. 640,962, Jan. 14, 1991, abandoned. This application Aug. 30, 1993, Ser. No. 113,961

Claims priority, application Japan, Jan. 16, 1990, 2-6709

Int. Cl.[5] G11B *15/12, 15/18;* H04N *5/76, 5/95*

U.S. Cl. 360—72.2 15 Claims



1. In a recording and reproducing apparatus of the type having transducer means for writing and reading information on a record medium, a method of writing control data such as start marks or program numbers in selected positions between segments of information that have been written one after another on the record medium, the record medium also having recorded thereon positional data representative of the position of the record medium with respect to the transducer means, which method comprises:

(a) audibly reproducing the information on the record medium;

(b) concurrently with step (a), visibly displaying on display means the varying current position of the record medium with respect to the transducer means on the basis of the positional data being read by the transducer means on the record medium;

(c) selecting a position on the record medium between two successive segments of information thereon in response to the actuation of a position select means;

(d) writing on memory means the positional data that is read by the transducer means when the position select means is actuated at step (c) and which, therefore, represents the selected position on the record medium;

(e) visibly displaying on the display means the selected position on the record medium on the basis of the positional data written on the memory means at step (d);

(f) continuing the audible reproduction of the information on the record medium for a preassigned time after the actuation of the position select means at step (c), with the display means continuously displaying the selected position on the record medium in the face of such continued reproduction;

(g) relatively returning the transducer means to the selected position on the record medium; and

(h) writing desired control data in the selected position on the record medium.

5,359,473

TRACKING DEVICE

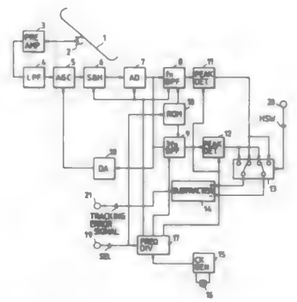
Kouji Kaniwa; Hideo Nishijima; Toshio Nakamoto, all of Ibaraki, and Koichi Ono, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 806,334, Dec. 13, 1991, abandoned. This application Sep. 15, 1993, Ser. No. 120,825

Claims priority, application Japan, Dec. 14, 1990, 2-402207; Mar. 1, 1991, 3-035839

Int. Cl.[5] G11B *5/584*

U.S. Cl. 360—77.14 33 Claims



1. A tracking device for a magnetic recording and reproducing apparatus in which, in recording, a plurality of pilot signals having mutually different frequencies are recorded sequentially on tracks of a magnetic recording medium formed by helical scan of the magnetic recording medium by means of a magnetic head such that a difference between the frequency of each of the pilot signals recorded on the magnetic recording medium and the frequency of an adjacent one of the pilot signals recorded on the magnetic recording medium is less than twice the frequency of the adjacent pilot signal and, in reproducing, tracking control is performed according to a level difference of the pilot signals reproduced from one of the tracks which is currently being scanned and both tracks adjacent to said one track, said tracking device comprising:

sampling means for sampling reproduced pilot signals with frequencies of at least two of the pilot signals;

digital filter means for deriving an aliasing signal component of each of the reproduced and sampled pilot signals obtained by said sampling means; and

feedback means for feeding back a tracking error signal corresponding to a signal level of the aliasing signal component derived by said digital filter means to a magnetic tape drive means of said recording and reproducing apparatus.

5,359,474

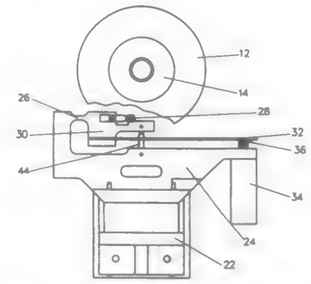
SYSTEM FOR THE SUB-MICRON POSITIONING OF A READ/WRITE TRANSDUCER

Thomas P. Riederer, 1215 Tunnel Rd., Santa Barbara, Calif. 93105

Filed Sep. 18, 1992, Ser. No. 947,146

Int. Cl.[5] C11B *5/596*

U.S. Cl. 360—78.05 13 Claims



1. A device for moving a read/write transducer variable distances of approximately or less than a micron relative to a rotating information storage recording disk comprising:

(a) a holder for securing said transducer,

(b) locating means for locating said holder whereby previously recorded information may be read from one of a plurality of concentric circular recording tracks on said disk by said transducer,

(c) a beam which flexibly attaches said holder to said locating means,

(d) a compliant input spring, the stiffness of which is significantly less than that of said beam, one end of which is fixedly attached to said holder,

(e) input means for providing a force against the free end of said compliant input spring whereby said force urges a deflection of said spring which in turn urges a deflection of said beam, whereby the ratio of said deflections is substantially equal to the ratio of the respective compliances of said spring and said beam,

(f) whereby said deflection of said beam causes a movement of said holder and henceforth said transducer in a direction substantially parallel to the plane of said disk.

5,359,475

AIR FILTER SYSTEM FOR HELICAL SCANNER DRUM WITH VENTED DRUM COVER

Lester M. Ascera, Woodbury; Gerald J. Niles, St. Paul; Robert L. Hanson, East Bethel, and Marvin J. Niezgocki, Maplewood, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 23, 1992, Ser. No. 855,579

Int. Cl.[5] G11B *5/027;* B01D *50/00, 59/50*

U.S. Cl. 360—85 24 Claims

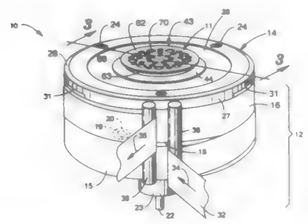
1. A helical scanner drum of the type having a drum cover provided with an air vent, wherein the helical scanner drum is fitted with a filter system which comprises:

(a) a replaceable air filter element for entrapping airborne particles when air is drawn through the filter element; and

(b) means for removably securing the filter element to the drum cover such that the filter element covers the air vent, wherein means for removably securing the filter element to the drum cover comprises a filter housing having a cavity with first and second openings to allow air to pass through the cavity, wherein the filter housing is

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attached to the drum cover in a position such that the air vent of the drum cover opens into the first opening of the



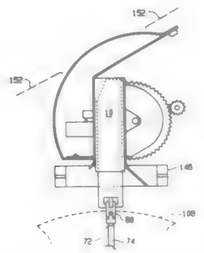
cavity, and wherein the replaceable air filter element is retained in the cavity of the filter housing such that the filter element covers the air vent.

5,359,476

EXPRESS PORT FOR CARTRIDGE CAROUSEL SYSTEM

Warren L. Dalziel, Monte Sereno, Calif., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Nov. 30, 1992, Ser. No. 982,940
Int. Cl.[5] G11B *15/68*
U.S. Cl. 360—92 **7 Claims**



1. An express port for manual loading and unloading of single data cartridges into and out of a carousel, the carousel being movable about a central axis within the outer case of an automatic library system, each of said data cartridges having a tapered edge along a front face, said data cartridges being carried in cartridge chambers in the carousel with the front face of each of said cartridges directed outward with respect to the central axis, comprising:

a rotatable chamber having an opening at one end, and being movable from a first preselected position to a second preselected position by rotation about an axle substantially parallel to the central axis of the carousel;

a door attached to the rotatable chamber and movable with the rotatable chamber; and

a manipulator for drawing single cartridges out of the rotatable chamber and into the carousel and for pushing single cartridges out of the carousel and into the rotatable chamber;

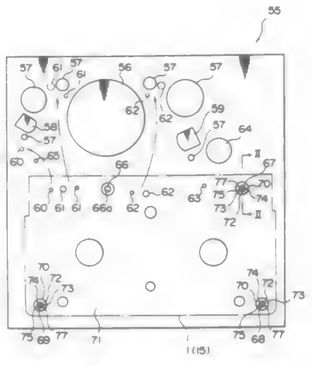
the first position of the rotatable chamber being disposed to present the opening at one end of the rotatable chamber toward a cartridge chamber of the carousel, to enable the transfer of a cartridge between the carousel and the express port by the manipulator, while simultaneously placing the door in front of a gap in the outer case of the automatic library system, and the second position of the rotatable chamber being disposed to present the opening at one end of the rotatable chamber toward the gap in the outer case of the automatic library system, while simultaneously displacing the door away from the gap.

5,359,477

RECORDING AND/OR REPRODUCING APPARATUS HAVING A CASSETTE LOADING APPARATUS

Keitaro Yamashita, and Hiroshi Fujii, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 682,267, Apr. 8, 1991, abandoned. This application Apr. 22, 1993, Ser. No. 52,236
Claims priority, application Japan, Apr. 13, 1990, 2-098560
Int. Cl.[5] G11B *5/008*
U.S. Cl. 360—94 **13 Claims**



1. A recording/reproducing apparatus adapted for operating with either one of two different types of tape cassettes, said two types of tape cassettes being of substantially the same length and differing slightly in width, each of said types of tape cassettes including a cassette housing with a bottom wall having an underside formed with locating holes in a respective pattern which pattern is different from that of the locating holes of the other of said types of tape cassettes, comprising:

cassette mounting means adapted to have either one of said two types of tape cassettes positioned thereon; and

a plurality of locating pin devices on said cassette mounting means at locations corresponding to the patterns of said locating holes of said two types of tape cassettes, at least three of said locating pin devices including respective retractable locating pins adapted for being pushed downward so as to be retracted by the underside of the bottom wall of the positioned tape cassette when the latter lacks a locating hole at the location of the respective locating pin device and for respectively engaging a locating hole when such locating hole is at the location of the respective locating pin device, all of the locating pins being either retracted or engaged in a respective locating hole when either one of said two types of tape cassettes are positioned on said cassette mounting means.

8. A method of positioning a tape cassette on a cassette mounting section of a recording/reproducing apparatus, said tape cassette having a bottom side with at least one locating hole formed therein, the method comprising the steps of:

providing a plurality of retractable locating pins on said cassette mounting section of said recording/reproducing apparatus;

positioning said tape cassette on said cassette mounting section of said recording/reproducing apparatus so that a first one of said plurality of retractable locating pins is inserted in an unretracted condition into said locating hole formed in said bottom side of said tape cassette; and

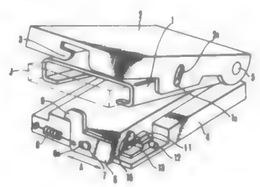
retracting a second one of said plurality of retractable locating pins at a time when said first one of said retractable locating pins is inserted into said locating hole.

5,359,478

RECORDING MEDIUM LOADING DEVICE WITH DETECTION SWITCH

Kenji Kawano, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 34,860, Apr. 3, 1987, abandoned. This application Apr. 27, 1989, Ser. No. 344,481
Claims priority, application Japan, Apr. 11, 1986, 1-082325
Int. Cl.[5] G11B *15/675, 17/03*
U.S. Cl. 360—96.6 **15 Claims**



1. A recording medium loading device comprising:

(a) holder means for holding a recording medium, said holder means being movable between a first position capable of receiving said recording medium and a predetermined second position, while holding a recording medium inserted therein;

(b) latching means movable between a latching position for latching said holder means which has been moved to said second position, thereby locking the same in the second position, and an unlatching position for unlocking said holder means from said second position; and

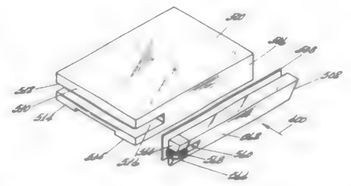
(c) detecting means movable between an operating position where said detecting means operates to detect the presence or absence of said recording medium in said holder means and to detect whether said holder means is latched by said latching means or not in cooperation with movement of said latching means from said unlatching position to said latching position and a non-operating position where such detecting means does not cooperate with said movement of said latching means, said detecting means being arranged to engage said recording medium held in said holder means when said holder means is moved from said first position to said second position and to move from said non-operating position to said operating position.

5,359,479

MAGNETIC HEAD SLIDER HAVING A MAGNETIC TRANSDUCING ELEMENT AFFIXED TO A SLIDER BODY SIDE SURFACE

Raymond M. Karam, II, Santa Barbara, Calif., assignor to Applied Magnetics Corporation, Goleta, Calif.

Filed Jun. 12, 1992, Ser. No. 897,866
Int. Cl.[5] G11B *5/60*
U.S. Cl. 360—103 **28 Claims**



1. A magnetic head slider comprising

means defining a slider body having a leading edge, a trailing edge and a side surface extending therebetween, said slider body defining means including means defining an air bearing surface which extends between said leading edge and said trailing edge and which is substantially perpendicular to said side surface;

means operatively attached to said side surface for defining a magnetic transducing element formed of a ferrite material and having a transducing gap located adjacent said trailing edge and air bearing surface; and

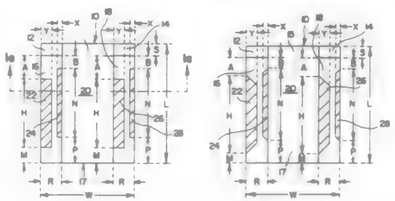
means for rigidly joining said means defining said magnetic transducing element to said side surface of the slider body wherein said rigidly joining means comprises a bonding layer comprising material by weight of approximately 80% gold and approximately 20% tin, said rigidly joining means further comprising a diffusion layer located between said magnetic transducer defining means and said bonding layer.

5,359,480

MAGNETIC HEAD AIR BEARING SLIDER

Daniel A. Nepela, San Jose; Chak M. Leung, Palo Alto, and Cluter Chang, Fremont, all of Calif., assignors to Read-Rite Corporation, Milpitas, Calif.

Filed Dec. 21, 1992, Ser. No. 993,438
Int. Cl.[5] G11B *5/60, 5/48*
U.S. Cl. 360—103 **6 Claims**



1. An air bearing slider for a thin film magnetic head having an air bearing surface with a leading edge and a trailing edge defining the length of said slider therebetween and first and second opposing sides extending from said leading edge to said trailing edge defining the width of said slider comprising:

at least first and second tapered portions at its leading edge;

first and second side rails each having an outer edge along said first and second opposing sides of said slider and an inner edge extending respectively from said tapered portions to said trailing edge of said slider, and a central recessed section between said inner edges of said side rails;

a first one of said side rails having at least one outer recess along said first opposing side of said slider and at least one inner recess along said inner edge of said first side rail adjacent to said central recessed section; a second one of said side rails having at least one outer recess along said second opposing side of said slider and at least one inner recess along the inner edge of said second rail adjacent to said central recessed section;

said outer and inner recesses being spaced from said tapered portions, said outer recess of said first rail and said inner recess of said second rail being nonaligned relative to said inner recess of said first rail and said outer recess of said second rail with reference to said width of said slider, so that said recesses of said side rails are disposed asymmetrically relative to the width or lateral dimension of said slider.

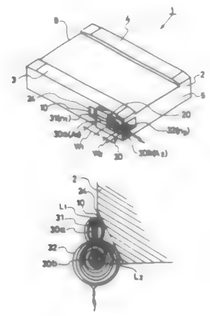
VOL 1167 ISS 4 OCT 25 1994 UMI

5,359,481

COMPOSITE TYPE FLOATING MAGNETIC HEAD

Motoji Egawa, Shizuoka, Japan, assignor to Minebea Co., Ltd., Nagano, Japan

Filed Apr. 26, 1993, Ser. No. 51,547
Claims priority, application Japan, Oct. 30, 1992, 4-316274
Int. Cl.[5] G11B *5/60*
U.S. Cl. 360—103 3 Claims



1. A floating magnetic head comprising:

a substantially rectangular slider made of a nonmagnetic material and having leading and trailing ends, the slider being provided with a groove which gradually increases in depth along one side of the slider extending toward the trailing end and opening at the trailing end:

rails mounted on surface of the slider which is opposite to a magnetic recording medium to produce a floating force;

a head core located on the one side of the slider and having first and second legs, the second leg being located at the trailing end of the slider such that the first leg is located between the second leg and the leading end of the slider, the core having a read/write gap;

a coil wound around the first leg in one sense and another coil wound around the second leg in an opposite sense, the coils being at least partially in the groove;

a number of turns of the coil on the first leg being less than a number of turns of the coil on the second leg;

the cross-sectional area of the first leg of the core being larger than the cross-sectional area of the second leg; and

a product of the number of turns of the first coil and the cross-sectional area of the first leg being set substantially equal to the product of the number of turns of the second coil and the cross-sectional area of the second leg.

5,359,482

MAGNETIC HEAD HAVING A SYSTEM OF WINDINGS FOR COMPENSATING MAGNETIC LEAKAGE

Richard Juncker, Chaville, France, assignor to Schlumberger Industries, Montrouge, France

Continuation of Ser. No. 973,496, Nov. 9, 1992, abandoned. This application Feb. 28, 1994, Ser. No. 203,730
Claims priority, application France, Nov. 8, 1991, 91 13772
Int. Cl.[5] G11B *5/20*
U.S. Cl. 360—123 3 Claims

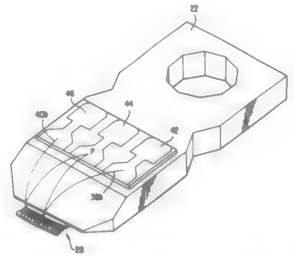
1. A magnetic head for a digital signal, the magnetic head comprising:

a substantially U-shaped core of magnetic material having two branches with their ends located facing each other to form a gap;

a separator of non-magnetic material placed in the gap; and

a double coil system, each coil having one half wound in one sense around one of the branches of the core and having its other half wound in the opposite sense around the other branch,

and when an appropriate current flows through each coil, it is suitable for creating, on the one hand, a first magnetic field in a first direction inside one half of said coil, a major portion of said first magnetic field being channelled inside one of the branches of the core whereas a minor portion of said first magnetic field constitutes a leakage magnetic field, and on the other hand, a second magnetic field of the same intensity but in the opposite direction inside the other half of said coil, a major portion of said second



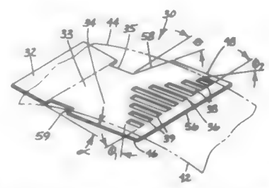
magnetic field being channelled inside the other branch of said core whereas a minor portion of said second magnetic field constitutes a leakage magnetic field, said major portions of said first and second magnetic fields channelled inside the branches travelling around said core and being added, said leakage magnetic fields of said first and second magnetic fields being observed at a certain distance compensate so as to give a zero resultant.

5,359,483

LIFTER HAVING AN ANGLED TRAILING EDGE AND CUT-OUT REGION FOR CLEANING A FLEXIBLE MAGNETIC RECORDING DISC

Cathleen M. Arsenault; Eric J. Donaldson, both of St. Paul, and John W. Swanson, Maplewood, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 16, 1992, Ser. No. 962,470
Int. Cl.[5] G11B *23/03*
U.S. Cl. 360—133 16 Claims



1. A lifter for supporting a fabric liner of a flexible magnetic recording disc so that the disc is cleaned by rotation of the disc with respect to the liner, wherein the lifter includes a foot, to be secured to an inner surface of a cartridge, and a head connected to the foot by an arm, wherein the head has a front end, a rear end, and two opposite, parallel sides, the sides being separated by a distance sufficient to span the distance between the innermost and outermost data tracks on the magnetic recording disc, wherein the head is bounded on its front end by a straight leading edge which is substantially perpendicular to the two parallel sides of the head, wherein the head is bounded on its rear end by the arm and a trailing edge, wherein that portion of the trailing edge that is between the arm and the side of the head intended to be the closer of the two sides to the outermost data tracks on the disc is angled toward trhe leading edge from the arm to said side of the head closer to the outer-

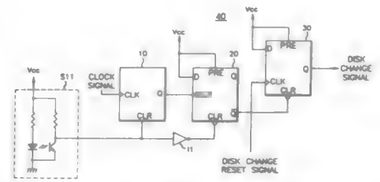
most data track at an angle within the range from 5° to 40°, whereby, as a result of said angle, a force profile of the lifter taken across its leading edge is smooth, and therefore not characterized by sudden changes in force across the width of the lifter.

5,359,484

CIRCUIT FOR GENERATING A DISK CHANGE SIGNAL

Jik Kim, Suweon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation-in-part of Ser. No. 755,555, Sep. 5, 1991, Pat. No. 5,278,718. This application Jan. 29, 1992, Ser. No. 827,751
Claims priority, application Rep. of Korea, May 24, 1991, 8451/1991
The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.
Int. Cl.[5] G11B *33/10*
U.S. Cl. 360—137 20 Claims



1. A circuit for generating a disk change signal for a disk driver, comprising:

index sensing means for generating an index pulse signal upon detection of rotation of a floppy disk, said index sensing means comprising means for emitting light and means for receiving said light;

timer means connected to receive said index pulse signal into a clear input terminal and to receive a clock signal into a clock input terminal, for generating a timing signal at a predetermined time; and

output means connected to receive said timing signal, an inverted index pulse signal and a disk change reset signal, for generating said disk change signal, said output means comprising flip-flop means.

5,359,485

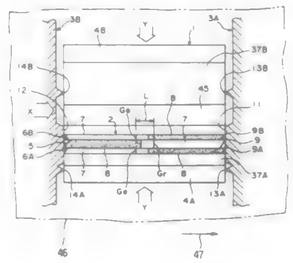
MAGNETIC HEAD HAVING A TOOTHED CORE STRUCTURE OF A LAMINATE TYPE

Masahiro Onishi, Kofu, Japan, assignor to TDK Corporation, Tokyo, Japan

Filed Jul. 13, 1992, Ser. No. 912,775
Claims priority, application Japan, Jul. 20, 1991, 3-064665[U]
Int. Cl.[5] G11B *5/265*
U.S. Cl. 360—121 5 Claims

1. A magnetic head comprising:

a core lamination structure which comprises a recording/reproducing head and erase heads laminated on both sides of the recording/reproducing head and sliders fixed on both sides of the core lamination structure, said recording/reproducing head and said erase heads being laminated in a direction perpendicular to a travel direction of a magnetic medium, wherein at least one end surface of each of said recording/reproducing head and said erase heads is formed as a plane which is not perpendicular to a laminated surface of said core lamination structure so as to define tooth-like ridges which extend in the travel direction of the magnetic medium, and said recording/reproducing head and said erase heads are laminated in a manner to align said tooth-like ridges of said non-perpendicular end surfaces on a same plane which is perpendicular to said laminated surface.

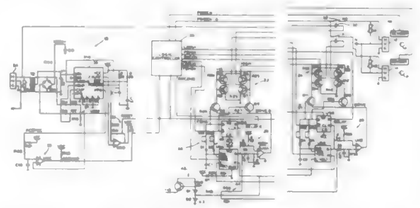


5,359,486

METHOD AND CIRCUIT FOR SYNCHRONIZATION OF RELAY OPERATION

Burke J. Crane, Lombard, Ill., and Garth S. Jones, Virginia Beach, Va., assignors to Molex Incorporated, Lisle, Ill.

Filed Mar. 23, 1993, Ser. No. 35,850
Int. Cl.[5] H05B *1/02*
U.S. Cl. 361—3 19 Claims



1. A control circuit controlling switching of a relay, said relay having a relay coil and an electrical contact switched by said relay coil, said contact, in use, being connected between an AC power source and a load, to synchronize contact opening or closure with a zero-crossing of AC power, comprising:

command means for developing a command signal to close or open said contact to selectively connect or disconnect the load to the power source;

a controllable switch circuit connected to said relay coil for controlling energization of said relay coil; and

a switch control circuit electrically connected to said command means and said switch circuit for controlling said switch circuit to switch said relay coil to open or close said contact in response to a command signal from said command means, said switch control circuit including time delay means for delaying switching of said relay coil a select duration so that said contact changes state at or near a second zero crossing of AC power subsequent to receipt of a command signal to close or open said contact.

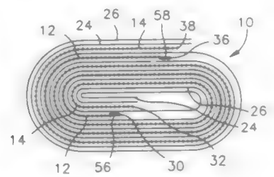
VOL 1167 ISS 4 OC 25 1994 UMI

5,359,487

CAPACITOR ASSEMBLY OF THE WOUND-FOIL TYPE

Philip H. Carrico, Greenfield Center, and Roger W. Holmes, Queensbury, both of N.Y., assignors to General Electric Company, Schnectady, N.Y.

Filed Jan. 27, 1993, Ser. No. 9,479
Int. Cl.[5] H01G 4/00
U.S. Cl. 361—301.5 9 Claims



1. A capacitor assembly comprising an inner sheet of metal foil constituting one electrode of the capacitor assembly, an outer sheet of metal foil constituting a second electrode of the capacitor assembly, and dielectric film interposed between said inner and outer sheets of metal foil and insulating the foil sheets from each other when the capacitor assembly is energized, said capacitor assembly being further characterized by:

(a) said foil sheets and said dielectric film being wound about a central axis to form a roll in which said sheets and film are disposed in interleaving turns extending about said axis;

(b) said roll having a flattened form when viewed in transverse cross-section from a plane perpendicular to said axis;

(c) each of said foil sheets having a head edge near said central axis and a tail edge near the outer periphery of said roll;

(d) the head and tail edges of said inner foil sheet being folded over to reduce electric-field stress concentrations thereadjacent;

(e) the head and tail edges of said outer foil sheet being unfolded, and said outer foil sheet adjacent its head and tail edges extending about said axis substantially beyond the respective head and tail folded edges of the inner foil sheet;

(f) as between said two foil sheets, the foil sheet closer to the outer periphery of said roll being considered as said outer foil sheet, and

(g) the outer foil sheet extending about said central axis for at least one extra turn as compared to said inner foil sheet.

5,359,488

PACKAGING SYSTEM FOR A STANDARD ELECTRONIC MODULE

Kevin A. Leahy, Eldersburg; Andrew J. Piloto, Columbia; John G. McKinley, IV, Ellicott City; David B. Harris, Columbia; Timothy M. Fertig, Pasadena, and Keith W. Sparks, Columbia, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

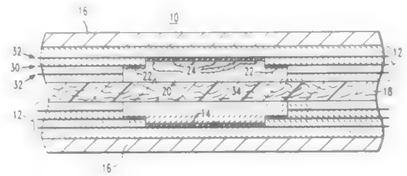
Filed Jun. 21, 1993, Ser. No. 79,767
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—707 7 Claims

1. A packaging system for a standard electronic module comprising:

a. a low temperature, co-fired ceramic motherboard, said motherboard provided with a plurality of wells, said motherboard having multiple layers provided therein, at least one of said layers containing a radio frequency conductor, said radio frequency conductor being isolated from other layers by ground planes;

b. a radio frequency device package, said radio frequency device package fitting into one of said plurality of wells provided in said motherboard, said radio frequency device package being formed of a low temperature co-fired ceramic dielectric material;

c. at least one pressure contact interconnect in contact with said radio frequency device package which connects said radio frequency device package to a conductor provided in said motherboard;



d. a composite heat sink provided along a first face of said motherboard, said radio frequency device package being mounted on said composite heat sink; and

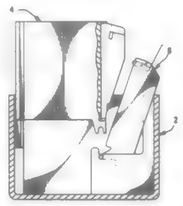
e. at least one pressure plate provided along a second face of said motherboard opposite said heat sink, said pressure plate being fastened to said heat sink to compress the standard electronic module and to force said at least one pressure contact interconnect into contact position.

5,359,489

ELECTRONIC CONTROL MODULE ASSEMBLY WITH PIVOTABLE CONNECTOR

Jürgen Hass, Erzhausen, and Josef Woller, Griesheim, both of Fed. Rep. of Germany, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Dec. 21, 1992, Ser. No. 994,562
Claims priority, application United Kingdom, Dec. 30, 1991, 9117466
Int. Cl.[5] H05K 7/02; H01R 13/62
U.S. Cl. 361—732 30 Claims



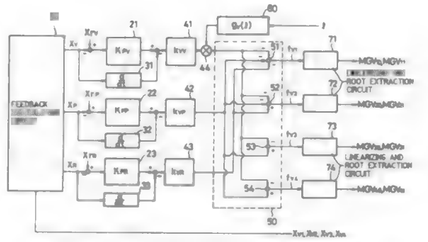
1. An electronic control assembly comprised of a control box, at least one control module receivable in said control box and a mateable electrical connector positionable in said box, said module having electrical elements electrically connectable with connection elements of said mateable electrical connector, said assembly being characterized in that said control module is slidably receivable into said control box into juxtaposition relative to said electrical connector, said electrical connector being movable relative to said module by the provision of locator members cooperably provided on said connector and said module, to define an insertion position of said control module into said control box, and to locate said electrical elements of said control module to said connection elements of said electrical connector, for proper alignment upon said movement.

5,359,490

METHOD OF CONTROLLING MOVING ELEMENT OF MAGNETIC LEVITATION AND TRANSPORT SYSTEM

Ryuichi Oguro, Kitakyushu, Japan, assignor to Kabushiki Kaisha Yaskawa Denki Seizakusho, Kitakyushu, Japan

Continuation of Ser. No. 684,920, Apr. 23, 1991, abandoned.
This application Oct. 22, 1993, Ser. No. 139,886
Claims priority, application Japan, Aug. 24, 1989, 1-215985
Int. Cl.[5] H02N 15/00
U.S. Cl. 361—144 3 Claims



1. A method of controlling a moving element of a magnetic levitation and transport system wherein when a rectangular plate-like moving element is moved in a linear direction by a linear motor disposed in a stator, the moving element is vertically supported at supporting points corresponding to positions in which first, second, third, and fourth pairs of electromagnetic devices are disposed at the corners of a horizontal rectangle in the state, force are applied to the moving element by a fifth and sixth pair of electromagnetic devices which are disposed in a horizontal plane along the direction in which the moving element is moved and in a direction perpendicular to the direction in which the vertically supported moving element is moved and gaps between the moving element and the electromagnetic devices are detected by gap sensors associated with the respective electromagnetic devices for outputting first, second, third, fourth, fifth, and sixth gap data (X_{V1}, X_{V2}, X_{V3}, X_{V4}, X_{H1}, X_{H2}), respectively, whereby the moving element is moved while supporting the moving element in a desired state based on the gap data and the position (l) of the center of gravity of the moving element in a linear direction, wherein,

attractive force commands f_{V1} and f_{V2} which are applied through linearizing circuits to the first and second pair of electromagnetic devices to exert forces on the moving element are expressed by:

$$f_{V1} = -g_V(l)\cdot K_{VV}\left(K_{PV}(X_{rV} - X_V) + \frac{d}{dt}(-X_V) \right) -$$

$$K_{VP}\left(K_{PP}(X_{rP} - X_P) + \frac{d}{dt}(-X_P) \right) +$$

$$(-1)^i K_{VR}\left(K_{PR}(X_{rR} - X_R) + \frac{d}{dt}(-X_R) \right)$$

where i=1, 2,

attractive force commands f_{V3} and f_{V4} which are applied through linearizing circuits to the third and fourth pair of electromagnetic devices to exert forces on the moving element are expressed by;

$$f_{V3} = -g_V(l)\cdot K_{VV}\left(K_{PV}(X_{rV} - X_V) + \frac{d}{dt}(-X_V) \right) +$$

$$K_{VP}\left(K_{PP}(X_{rP} - X_P) + \frac{d}{dt}(-X_P) \right) +$$

$$K_{VR}\left(K_{PR}(X_{rR} - X_R) + \frac{d}{dt}(-X_R) \right)$$

where i=3, 4,

attractive force commands f_{H1} and f_{H2} which are applied through linearizing circuits to the fifth and sixth pair of electromagnetic devices to exert forces on the moving element are expressed by:

$$f_{H1} = -g_H(l)\cdot K_{VH}\left(K_{PH}(X_{rH} - X_H) + \frac{d}{dt}(-X_H) \right) -$$

$$K_{VY}\left(K_{PY}(X_{rY} - X_Y) + \frac{d}{dt}(-X_Y) \right)$$

$$f_{H2} = -g_H(l)\cdot K_{VH}\left(K_{PH}(X_{rH} - X_H) + \frac{d}{dt}(-X_H) \right) +$$

$$K_{VY}\left(K_{PY}(X_{rY} - X_Y) + \frac{d}{dt}(-X_Y) \right)$$

where

$X_V = \frac{1}{4}(X_{V1} + X_{V2} + X_{V3} + X_{V4})$,
$X_P = \frac{1}{4}(X_{V1} + X_{V2} - X_{V3} - X_{V4})$,
$X_R = (X_{V1} - X_{V2})$,
$X_H = \frac{1}{2}(X_{H1} + X_{N2})$,
$X_Y = X_{H1} - X_{H2}$,

Xr (suffixes following r are omitted) is a command value, K_{VV}, K_{VP}, K_{VR}, K_{PV}, K_{PP}, K_{PR}, K_{VH}, K_{PH}, K_{VY}, K_{PY} are predetermined gains, and

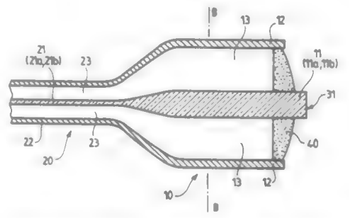
$g_V(l)$ and $g_H(l)$ are variable gains.

5,359,491

CAPACITIVE SENSOR COMPRISING A CONDUCTIVE FRONT SURFACE FOR FORMING A CAPACITOR PLATE, AND A COAXIAL CABLE SHIELDED BY A MINERAL INSULATOR

Patrick Coville, Le Chesnay; Modeste Renard, Epinay sur Orge, both of France, and Gilles Bailleul, Dunwoody, Ga., assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 5, 1992, Ser. No. 972,189
Claims priority, application France, Nov. 27, 1991, 91 14673
Int. Cl.[5] H01G 7/00
U.S. Cl. 361—280 10 Claims



1. A capacitance sensor, comprising a sensor body which includes a housing, a conductive front surface and insulating means provided between the conductive surface and the housing, and also comprising a coaxial cable of the type shielded by

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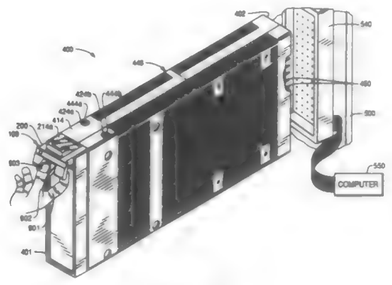
a mineral insulator for connecting the conductive surface to a device for measuring the capacitance of the system formed by said conductive surface, constituting a first capacitor plate, and a reference conductive surface which is arranged opposite thereto and at a given distance therefrom and which constituted a second capacitor plate, characterized in that the sensor body consists of an electrically open extension of the coaxial cable shielded by a mineral insulator, the free end of the core constituting the conductive surface, whereas the extension of the sheath constitutes the housing and the insulation means are formed by the mineral insulator and characterized in that the diameter of the sensor body is at least two times greater than that of the cable.

5,359,492

LATCH ASSEMBLY FOR MODULAR COMPUTER COMPONENT

Warren W. Porter, Escondido, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Jul. 29, 1992, Ser. No. 921,160
Int. Cl.[5] H05K *7/10;* **H01R** *13/627*
U.S. Cl. 361—683 **7 Claims**



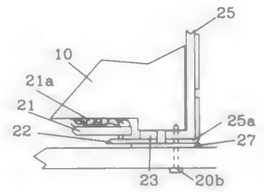
1. A computer assembly comprising:
a computer housing including a notch, a first notch wall, and a second opposing notch wall;
a modular computer component insertable into said housing; and
a latch assembly that releasably latches said modular computer component relative to said computer housing, said latch assembly including:
a latch body secured to the component;
a resilient latching means, operatively connected to the latch body, said latching means including a catch member designed to resiliently engage the notch in the housing; and
an unlatching means, operatively connected to the latch body and the latching means, for unlatching the latch body relative to the housing, said unlatching means being designed to urge the catch member out of biased engagement with said notch, wherein
the unlatching means assumes a standard position relative to the latch body independent of bias force exerted by the latching means;
the catch member and the unlatching means are cantilevered relative to a rear end of the latch body, and
upon insertion of the component into the housing, leading surfaces on the catch member and the unlatching means contact the first notch wall in the housing, and
upon further insertion of the component, the catch member and the unlatching means resiliently deflect away from the notch in response to contact with the first notch wall, and
upon further insertion of the component, trailing surfaces on the catch member and the unlatching means pass the first notch wall, and
due to resilient bias, the catch member and the unlatching means deflect into the notch, and
the leading surface on the catch member contacts the second, opposing notch wall in the housing that prevents the catch member from resuming its unbiased position, but the leading surface on the unlatching means deflects into a recess in the second notch wall that allows the unlatching means to resume its unbiased position.

5,359,493

THREE DIMENSIONAL MULTI-CHIP MODULE WITH INTEGRAL HEAT SINK

Anthony M. Chiu, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 9, 1993, Ser. No. 88,996
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—719 **11 Claims**



1. A three dimensional multi-chip module with integral heat sink, comprising:
an integrated circuit mounted on a printed wiring board having electrical contacts and conductors thereon;
a heat sink mounted over the integrated circuit and secured to the printed wiring board;
a plurality of submodules, having semiconductor devices thereon, mounted on sides of the heat sink, each submodule having flexible circuit connectors, and extending under the heat sink making electrical contact with the printed wiring board and the integrated circuit, and held in place and secured to the printed circuit board by the heat sink; and
locating pins on the printed wiring board positioning the submodules over the electrical contacts on the printed wiring board.

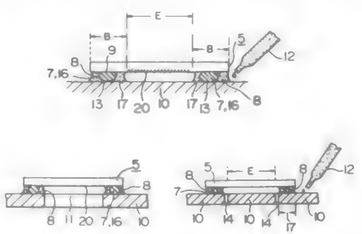
5,359,494

MOUNTING STRUCTURE OF PIEZOELECTRIC ELEMENT

Ryoichi Morimoto, Kyoto, Japan, assignor to Murata Mfg. Co., Ltd., Kyoto, Japan

Filed Oct. 8, 1993, Ser. No. 134,415
Claims priority, application Japan, Oct. 13, 1992, 4-077526[U]; Jan. 8, 1993, 5-002825[U]
Int. Cl.[5] H05K *7/02;* **H01L** *41/04*
U.S. Cl. 361—760 **6 Claims**

1. A mounting structure of a piezoelectric element comprising:
connecting electrodes each disposed in the vicinity of opposite ends of an element body longitudinally of the same;
said piezoelectric element having a vibration region formed between both said connecting electrodes of the element body; and
a circuit board to which said connecting electrodes are directly connected and fixed through a solder, the improvement being such that a bonding agent is applied to surrounding regions of soldered connection portions between the piezoelectric element and the circuit board for fixing said circuit board and said piezoelectric element in



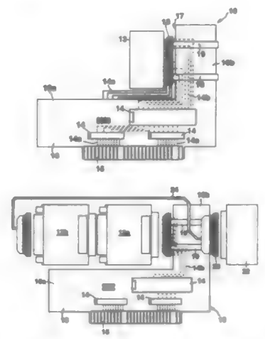
a united manner being kept away from said vibration region of said piezoelectric element.

5,359,495

PRINTED CIRCUIT BOARD HAVING A CUTOUT

Yanki Margalit, Givataim, and Danny Margalit, Tel Aviv, both of Israel, assignors to Aladdin Knowledge Systems Ltd., Tel-Aviv, Israel

Filed Jan. 21, 1993, Ser. No. 27,316
Int. Cl.[5] H05K *7/02*
U.S. Cl. 361—760 **17 Claims**



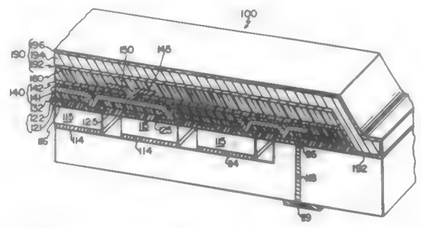
1. A printed circuit board including a rigid insulating base and electrical circuit components mounted thereon and electrically connected to a first plurality of connectors formed on the rigid insulating base and extending outwardly of one edge of the rigid insulating base for connecting the board into an electrical system; characterized in that said rigid insulating base is formed with a cutout adjacent a second edge thereof to define a first rigid insulating base section bordering one side of said cutout and including said first edge mounting said first plurality of electrical connectors outwardly thereof, and a second rigid insulating base section bordering another side of said cutout and including said second edge facing outwardly of the rigid insulating base and another edge facing inwardly of the rigid insulating base; said inwardly-facing edge of the second rigid insulating base section being formed with a second plurality of connectors connected to said circuit components, to permit mounting an electrical device to extend inwardly of said second rigid insulating base section into said cutout.

5,359,496

HERMETIC HIGH DENSITY INTERCONNECTED ELECTRONIC SYSTEM

William P. Kornrumpf, Albany; Robert J. Wojnarowski, Ballston Lake, and Charles W. Eichelberger, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 454,546, Dec. 21, 1989, abandoned. This application May 26, 1993, Ser. No. 67,157
Int. Cl.[5] H05K *1/11*
U.S. Cl. 361—795 **35 Claims**



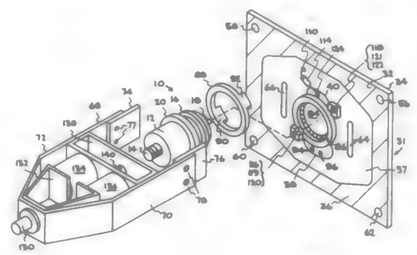
1. An electronic system comprising:
a substrate having a plurality of electronic components disposed thereon;
a multilayer interconnect structure comprising interleaved layers of dielectric material and conductive material disposed over said substrate and said electronic components;
a continuous metal layer comprising a thin adhesion promoting sub-layer disposed on said multilayer interconnect structure and a thicker electroplated metal sealing sub-layer disposed on said adhesion promoting sub-layer;
said multilayer interconnect structure being set back from the edges of said substrate; and
said continuous metal layer extending beyond said multilayer interconnect structure on all sides thereof.

5,359,497

PLANAR TRIODE PULSER SOCKET

Rex Booth, Livermore, Calif., assignor to Regents of the University of California, Oakland, Calif.

Filed May 10, 1993, Ser. No. 58,370
Int. Cl.[5] H03K *7/02*
U.S. Cl. 361—807 **20 Claims**



1. A planar triode, printed circuit board (PCB) socket, comprising:
a PCB having a grid side and a cathode side, said PCB further having at least one cathode socket for insertion therein of a cathode element of at least one said planar triode;
a first cathode conductive PC layer disposed on said cathode side of said PCB in communication with the periphery of said socket;

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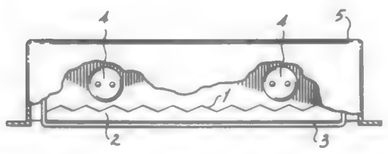
a second cathode conductive PC layer disposed on said cathode side of said PCB electronically isolated from and surrounding said first cathode conductive PC layer;
cathode contact means disposed on the periphery of said socket for releasably holding fast and making electrical contact between said cathode element of said planar triode and said first cathode PC layer;
a first grid conductive PC layer disposed on said grid side of said PCB contiguous with at least one edge of said socket;
a second grid conductive PC layer disposed on said grid side of said PCB electronically isolated from and surrounding said first grid conductive PC layer;
grid contact means disposed on said grid side of said PCB concentric to said socket for making electrical contact between a grid element of said planar triode and said first grid conductive PC layer;
at least one leg extension orthogonally extending from said grid side of said PCB and on at least one side of said socket, said extension passing through said PCB and making firm physical and electrical contact with said first cathode conductive PC layer; and
an anode output yoke releasably coupled to said cathode leg extension, said yoke extending over and retaining said planar triode in said socket.

5,359,499

ULTRAVIOLET TRANSMITTING MULTI-LAYER POLARIZER

Daniel N. Karpen, 3 Harbor Hill Dr., Huntington, N.Y. 11743

Filed Oct. 21, 1992, Ser. No. 964,656
Int. Cl.[5] F21V *9/14*
U.S. Cl. 362—19 3 Claims



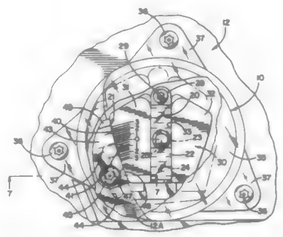
1. A multi-layer polarized diffuser with improved ultraviolet light transmission, the improvement comprising:
a thin multi-layered polarizer being disposed between a source of visible and ultraviolet light; and an area to be illuminated;
wherein the thin multi-layered polarizer is capable of transmitting wavelengths of polarized light of wavelengths between about 290 nanometers and about 800 nanometers;
wherein the multi-layered polarizer comprises a light transmitting support layer and a light polarizing layer;
wherein the light transmitting support layer is composed of material capable of transmitting light of wavelengths between about 290 and about 800 nanometers;
wherein the light transmitting support layer comprises a light diffuser for directed scattering of incident light emanating from a source of visible and ultraviolet light;
wherein the light polarizing layer comprises a thin sheet of light transmissible material, the thin sheet being capable of transmitting and polarizing light of wavelengths between about 290 and about 800 nanometers and
wherein further the support layer comprises a flat light diffuser, the support layer comprising a first substantially flat and smooth surface and a second substantially textured surface and at least one edge, the at least one edge being disposed at the perimeter of the flat light diffuser; and further wherein
the second substantially textured surface of the flat light diffuser faces toward, a source of visible and ultraviolet light, the textured surface being for refracting incident light emanating from a source of visible and ultraviolet light and further for providing a directed scattering of the incident light, the directed scattering comprising diffusion of the incident light; and further wherein
the first substantially flat and smooth surface of the flat light diffuser faces toward the area to be illuminated by a source of visible and ultraviolet light.

5,359,499

VERTICAL/HORIZONTAL INDICATOR FOR A VEHICULAR HEADLAMP

Ronald S. Denley, Woodstock, Ill., assignor to Elco Industries, Inc., Rockford, Ill.

Filed Nov. 18, 1993, Ser. No. 154,604
Int. Cl.[5] F21M *3/20*
U.S. Cl. 362—66 13 Claims



1. Apparatus for providing a visual indication of the horizontal and vertical orientation of a movable component of a headlamp assembly having an electric lamp and having a fixed component supporting said movable component for selective tilting about a generally horizontal axis and about a generally vertical axis, said apparatus comprising a liquid-filled vial mountable on said movable component and having a gas bubble therein, said vial being spaced laterally in one direction from said lamp, indicia associated with said vial and coacting with said bubble to provide a visual indication of the vertical orientation of said movable component about said horizontal axis, means for selectively tilting one end portion of said vial upwardly and downwardly about a generally horizontal axis relative to said movable component thereby to enable said bubble to be located in a predetermined position relative to said indicia, first and second coacting members supported by said movable and fixed components, respectively, said first member being located closely adjacent said vial and being spaced laterally from said lamp in the same direction as said vial, said first member being movable with said movable component, coacting indicia on said first and second members for providing a visual indication of the horizontal orientation of said movable component about said vertical axis, and means for mounting said second member on said fixed component for selective and generally horizontal adjustment relative to said fixed component and said first member thereby to enable the indicia on said second member to be located in a predetermined position relative to the indicia on said first member.

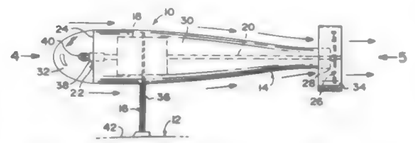
5,359,500

LIGHT PRODUCING ORNAMENT

Edwin S. Parker, 136 Terhune Ave. #D, Lodi, N.J. 07644-2806

Filed Jul. 21, 1993, Ser. No. 94,235
Int. Cl.[5] B60Q *1/26*
U.S. Cl. 362—83.3 4 Claims

1. A light producing ornament for an automobile which comprises:
a torpedo shaped casing having a front end and a rear end and a portion of maximum cross-section adjacent to front end and tapering toward the rear end with a degree of tapering lessening adjacent the rear end which is of substantial uniform cross-section;
means for mounting said casing to the automobile;
a generator carried within said portion of said casing;
a rotatable shaft extending rearward from said generator;
means on the front end of said casing, for emitting illumination and electrically connected to said generator; and



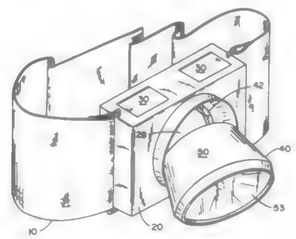
a plurality of fan blades on said rotatable shaft at the rear end of said housing, for rotating said rotatable shaft when the automobile is traveling forward, so that said generator can supply electrical energy to said illumination emitting means and, in an elevated position with the front end forward so that a slipstream can pass about said casing to rotate said fan blades when the automobile is traveling forward.

5,359,501

SAFETY LIGHT BELT WITH ROTATABLE LIGHT SWITCH

Katrine B. Stevens, 5 Pirates Lane, Unit No. 5, Gloucester, Mass. 01930

Filed Feb. 17, 1994, Ser. No. 197,721
Int. Cl.[5] F21L *15/02, 15/08*
U.S. Cl. 362—108 10 Claims



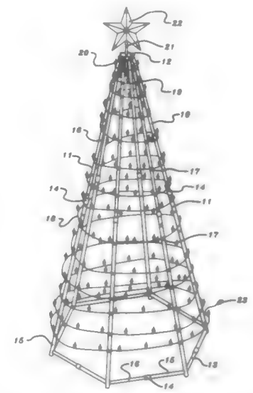
1. A safety light belt worn by a person, comprising:
a holder having a back, a top, a bottom, two sides, a front with a circular cutout substantially centered on said front, and a quadrilaterally shaped cross-section;
two side rings mounted in the holder top and bottom and parallel to said two sides;
a belt comprised of two pieces each having a first end and a second end, each said first end being attached to a separate said side ring;
a light housing having a truncated conical shaped shell with a circular back face and a circular transparent front face and containing a truncated conical reflective surface and an illumination means, said light housing adjustably connected to said holder through said holder front circular cutout and adjustably positioned therein so that said light housing assembly may illuminate an area forwardly, upward, horizontal, or downward from a worn position on a person, said circular back face containing a coplanar adjustment index with an attachment end and a free end said free end located near a top edge of said back face;
an on/off switch having a switch lever for opening and closing said on/off switch fixedly attached and substantially centered within the circular cutout of said holder; and
a power supply means contained within the holder and electrically connecting said on/off switch to said illumination means.

5,359,502

CHRISTMAS LIGHT STAND

Andre Cantin, 3785 St. Samuel Street, Beauport, Quebec, Canada G1C 4L8

Filed Oct. 25, 1993, Ser. No. 140,426
Int. Cl.[5] F21P *1/02*
U.S. Cl. 362—123 5 Claims



1. A new and improved Christmas light stand comprising: an upper small diameter cylindrical core; a plurality of adjustable length tubular members formed of transparent, rigid plastic hingedly connected around said cylindrical core and depending downwardly therefrom to form a substantially conical shape; a plurality of length-adjustable horizontal brace members connecting the base portion of said tubular members one to another; and a plurality of wire clips slidably positioned on said tubular members said clips adapted to engage the wiring of a string of Christmas lights strung spirally around said tubular members.

5,359,503

SURFACE LUMINOUS LIGHTING UNIT

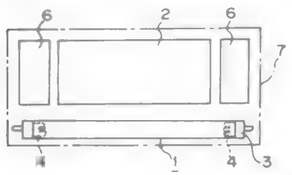
Osamu Myodo; Harumi Sawada; Masao Karino; Takeo Saikatsu; Takehiko Sakurai; Sadayuki Matsumoto, and Kenji Suzuki, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1992, Ser. No. 901,845
Claims priority, application Japan, Jun. 24, 1991, 3-152004; Feb. 12, 1992, 4-025116
Int. Cl.[5] F21V *8/00*
U.S. Cl. 362—127 6 Claims

1. A surface luminous lighting device comprising:
a light panel comprising a plurality of laminated light guiding plates of different lengths;
a linear light source disposed in parallel to said light panel; and
a reflector for reflecting light transmitted through said light panel from said linear light source,
wherein a longer side of said light panel is made shorter than

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a first distance between filaments of said linear light source but longer than a second distance between portions



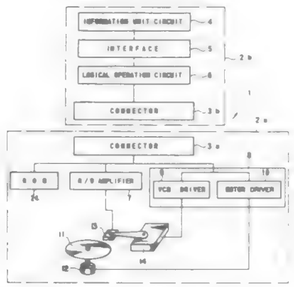
where a luminance of said linear light source is equal to 75% of a maximum luminance of said linear light source.

5,359,504

MAGNETIC DISK APPARATUS

Takao Ohmi, Kamakura, and Shigeru Takekado, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 2, 1992, Ser. No. 862,205
Claims priority, application Japan, Apr. 3, 1991, 3-070728
Int. Cl.[5] G11B *23/03*
U.S. Cl. 360—137 16 Claims



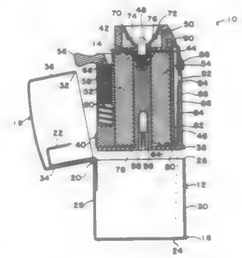
1. A magnetic disk apparatus comprising:
a magnetic disk;
a magnetic head for recording and reproducing information to and from said magnetic disk;
disk driving means for driving said magnetic disk;
head driving means for driving said magnetic head;
a mechanical portion driving circuit for operating said disk driving means and said head driving means;
an interface having a hard disk controller;
a logical operation circuit having a memory for storing position controlling information for controlling a position of said magnetic head, a channel circuit for converting a data signal from said hard disk controller into a data waveform for magnetic recording and for performing code processing of a data signal from said magnetic head, and a servo controller for supplying said position controlling information from said memory to said mechanical portion driving circuit;
a first box for containing at least said magnetic disk, said magnetic head, said disk driving means, and said head driving means; and
a second box, detachably connected to said first box, for containing at least said logical operation circuit and for exchanging signals with said first box.

5,359,505

LAMP OR FLASHLIGHT FOR USE IN CIGARET LIGHTER SHELL

Michael C. Story, and Donald W. Murray, both of Arlington, Tex., assignors to Zippo Manufacturing Company, Bradford, Pa.

Filed Dec. 29, 1992, Ser. No. 998,057
Int. Cl.[5] F21L *7/00*
U.S. Cl. 362—200 22 Claims



1. A flashlight comprising:
an insulative case adapted for insertion into a cigaret lighter shell and having an aperture for retaining a power supply;
a light bulb secured to an upper portion of said case;
a conductor having a proximal end disposed within said case for establishing an electrical contact with said power supply, and having a resilient distal end extending from said case; and
means for completing an electrical circuit to permit electricity to pass from said power supply through said light bulb and said conductor;
said distal end of said conductor being movable between a first position in which said conductor is in contact with said means for completing an electrical circuit and a second position in which said conductor is removed from contact with said means for completing an electrical circuit.

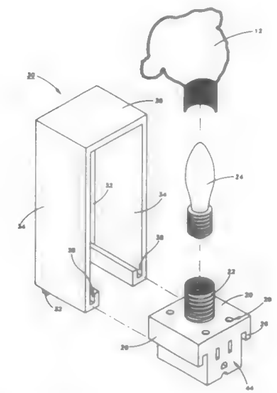
5,359,506

ALL OCCASION LIGHTS

Edward J. Koleno, Box 226, Clarence, Pa. 16829

Filed Feb. 28, 1994, Ser. No. 202,598
Int. Cl.[5] F21V *17/06*
U.S. Cl. 362—248 3 Claims

1. An all occasion light system providing for a permanent installation at a preferred location, said system comprising:
(a) a plurality of spaced apart, electrically connected base members, having means to insert therein a plurality of light bulbs;
(b) means to removably attach ornaments over said light bulbs, with said ornaments to be illuminated thereby, comprising:
a plurality of sockets, each one of said sockets attached to one of said base members and having an outer circumference provided with a first screw thread; and
a plurality of mounting stems, each one of said mounting stems disposed on a bottom of one of said ornaments and having an inside circumference containing a second screw thread matable with said first screw thread to removably attach said one of said ornaments to said one of said sockets; and
(c) means to individually conceal each of said light bulbs, when said ornaments are removed, comprising:
a plurality of opaque covers; and
means to removably attach each of said opaque covers, to each of said base members when said ornaments are removed from said base members, comprising
two, parallel, space apart, U-shaped channels which are formed as extensions of bottom edges of side surfaces of said opaque cover, said extensions being bent inwardly and upwardly to form said U-shaped channels; and



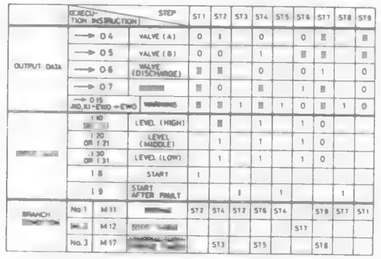
two, parallel flanges depending from outer edges of an upper portion of said base member and spaced apart from a lower portion of said base member, said side flanges and said U-shaped channels forming complementary mating structures.

5,359,507

SEQUENCE CONTROLLER

Noritaka Egami, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 476,608, Feb. 7, 1990, abandoned. This application Mar. 12, 1993, Ser. No. 34,220
Claims priority, application Japan, Apr. 7, 1989, 1-86952; Apr. 7, 1989, 1-86953
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—140 11 Claims



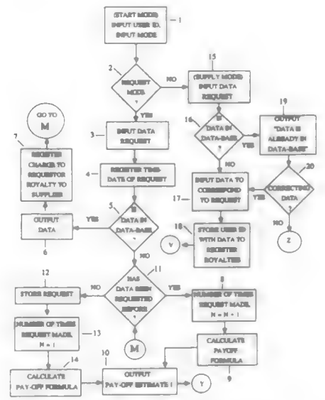
1. A sequence controller which monitors input data during execution of a step, said sequence controller comprising:
means for gathering a plurality of input conditions and transferring the gathered input conditions as input data into a sequence table;
means for gathering a plurality of branch conditions and transferring the gathered branch conditions as branch data into the sequence table;
means for examining conditions gathered in the sequence table, said examining means comprising means for examining the input data and determining if values of the input data match corresponding predetermined values, and
means for examining the branch data and determining if a branch condition is met;
means, responsive to said means for examining the branch data, for outputting output data from said sequence table; and
means for logically and arithmetically combining the input data and the branch data, as required, when said input data and branch data are executed.

5,359,508

DATA COLLECTION AND RETRIEVAL SYSTEM FOR REGISTERING CHARGES AND ROYALTIES TO USERS

Michael T. Rossides, 3666 Upton St., NW., Washington, D.C. 20008

Filed May 21, 1993, Ser. No. 72,386
Int. Cl.[5] G06F *15/00;* H04M *1/64*
U.S. Cl. 364—401 1 Claim



1. A data collection and retrieval system comprising in combination the following elements and steps:
a computer and a database with:
input means for inputting data-requests and data corresponding to said data-requests, along with user identification information,
output means for outputting said corresponding data, along with projected pay-off estimates,
memory means for storing said data-requests and corresponding data,
processing means for comparing data-requests, finding corresponding registering times of inputs, calculating formulas and registering charges and payments due to users,
said computer performing the following steps upon the inputting of a data-request by a user;
a. registering said user's identification information in said database,
b. registers users preference in supplying and retrieving the data corresponding to said data-request,
c. if the user prefers to supply said corresponding data, looks for said corresponding data in said database
c1. if corresponding data is found, outputting a message telling the user that the data is already in said database
c2. if no corresponding data is found, allowing the user to input the data, storing the corresponding data, and registering that royalties are due to the user upon data-request,
d. if the user prefers to retrieve data corresponding to said data-request,

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d1. registering time and date said data-request is inputted,

d2. finding if data corresponding to said data-request is in the database,

d2a. if corresponding data is in the memory, outputting the data, registering a charge due by said user who inputted the data-request and a royalty due to the user who supplied the data, adding one to the number of said data-requests, calculating a pay-off formula that projects the estimated royalties due to the user who inputs the correct data corresponding to said data-request, and outputting the resulting pay-off estimate,

d2b. if no corresponding data is in the database, checking if said data-request is stored in the database,

d2b1. if no, storing the data-request and setting the number of said data-requests to one, and calculating said pay-off formula,

d2b2. if yes, adding one to the number of said data-requests, and calculating said pay-off formula,

d2b3. outputting the resulting pay-off estimate.

5,359,509

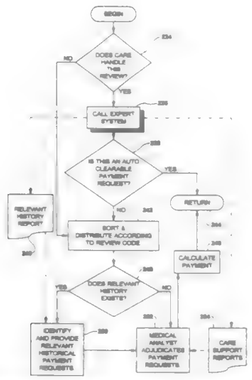
HEALTH CARE PAYMENT ADJUDICATION AND REVIEW SYSTEM

John P. Little, Minneapolis; R. Scott McMahon, Eden Prairie, both of Minn.; Mark Gingrich, Downingtown, Pa., and Roleigh H. Martin, Eden Prairie, Minn., assignors to United Healthcare Corporation, Minneapolis, Minn.

Filed Oct. 31, 1991, Ser. No. 786,123

Int. Cl.[5] G06F *15/21, 15/42*

U.S. Cl. 364—401 **10 Claims**



7. In a networked computer processing system, a method for using a plurality of historical payment requests stored in a database in the networked computer processing system in the adjudication of one or more current payment requests, the method comprising the computer-implemented steps of:

(a) identifying one or more initial selection criteria to be used for selecting a set of the relevant historical payment requests;

(b) creating the set of one or more relevant historical payment requests in response to one or more of the initial selection criteria by selecting the historical payment requests that match the initial selection criteria;

(c) identifying one or more screening criteria to screen the set of relevant historical payment requests selected in (b) for pertinent information;

(d) collecting information from the set of relevant historical payment requests selected in step (b) using the screening criteria to sort the historical payment requests containing information that matches the screening criteria and storing said information in a communications file;

(e) sorting information stored in the communications file according to predetermined presentation order.

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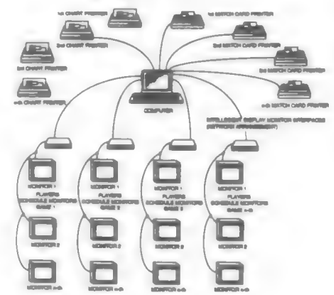
AUTOMATED UNIVERSAL TOURNAMENT MANAGEMENT SYSTEM

Anthony L. Sabalauskas, 2004 Glenwood Ave., Papillion, Nebr. 68128

Continuation of Ser. No. 619,293, Nov. 28, 1990, abandoned. This application Nov. 13, 1992, Ser. No. 976,460

Int. Cl.[5] G06F *15/44*

U.S. Cl. 364—410 **17 Claims**



1. An automatic universal tournament management system adapted to schedule tournaments, comprising,

a digital computer having a processor, memory, at least one input port, and at least one output port;

data entry means for entering and converting tournament information including team/player information, match site information, tournament time information and match results into machine readable tournament information data signals;

first data transfer means connected between said data entry means and said computer input port for transferring tournament information data signals to said computer via said computer input port;

means for receiving, loading and storing said tournament information data signals into said computer memory;

said digital computer further comprising data signal processing means for retrieving said tournament information data signals stored in said computer memory and processing said signals for producing a match scheduling and tournament results chart output including location, time and bracket information for a number of teams/players;

said data signal processing means being operative to initially process said data signals by automatically placing from 17 to 2,048 teams/players in a tournament bracket and assigning an opponent or a bye and automatically initially organizing said match scheduling and tournament results chart output with said initially processed signals;

said data signal processing means being operative automatically assign a chart size to said match scheduling and tournament results chart output based on the number of teams/players input through said data entry means, said chart size selected from the chart size group consisting of 32 slots, 64 slots, 128 slots, 256 slots, 512 slots, 1,024 slots and 2,048 slots;

said data signal processing means automatically assigning a number of byes to said chart output equal to the number of teams/players subtracted from the selected chart size;

second data transfer means;

an output device adapted to display said match scheduling and tournament results chart output processed from said tournament information data signals; and

said output device connected to the output port of said computer via said second data transfer means whereby said match scheduling and tournament results chart output is converted into human readable form via said output device thereby informing tournament teams/players of tournament results, scheduled matches and match times.

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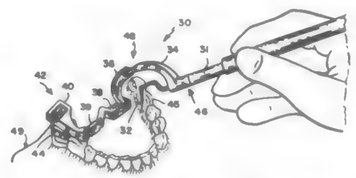
METHOD AND APPARATUS FOR OBTAINING COORDINATES DESCRIBING THREE-DIMENSIONAL OBJECTS OF COMPLEX AND UNIQUE GEOMETRY USING A SAMPLING PROBE

William Schroeder, Wayland; William E. Kendrick, Jamaica Plain, and Bruce Nappi, Reading, all of Mass., assignors to Foster-Miller, Inc., Waltham, Mass.

Continuation of Ser. No. 862,980, Apr. 3, 1992, abandoned. This application Dec. 6, 1993, Ser. No. 163,012

Int. Cl.[5] G06F *15/42*

U.S. Cl. 364—413.28 **31 Claims**



1. A system for obtaining a digitized representation of a surface of an object, comprising:

a probe, having a base and a tip for probing the surface of the object, for obtaining a sequence of electrical signals, indicative of the location of the tip in a reference coordinate system, at a given sampling rate;

means for maintaining the base of the probe and the object in a fixed spatial relationship;

means responsive to the sequence of electrical signals from the probe for providing a corresponding sequence of digital signals indicative of the electrical signals;

a memory for storing information indicative of the digital signals;

means, responsive to the sequence of digital signals, for defining a reference surface and an origin with reference to the object;

means, responsive to each tip position indicated by the sequence of digital signals, for projecting the tip position onto a subregion of the reference surface, and for determining the distance of the tip from the origin, and for replacing, in the memory, any previously stored distance for the subregion with the determined distance when the determined distance is less than the previously stored distance for the subregion;

means, responsive to the means for determining, for determining whether enough tip positions have been obtained;

a display, responsive to the sequence of digital signals, for indicating the position of the probe tip with reference to the reference surface.

5,359,512

PICTURE ARCHIVING COMMUNICATION SYSTEM WITH MIGRATION PROCESSING FILE MANAGEMENT FOR MEDICAL APPLICATION

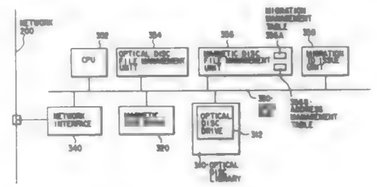
Eitaro Nishihara, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 30, 1992, Ser. No. 969,350

Claims priority, application Japan, Oct. 31, 1991, 3-286603

Int. Cl.[5] G06F *15/42*

U.S. Cl. 364—413.01 **7 Claims**



1. A picture archiving communication system for medical application, comprising:

at least one work station;

a data base, including a low-speed recording medium and a high-speed recording medium, for storing image data collected by a diagnosing apparatus;

means for reading out, when a transfer command for desired image data is sent from the work station to the data base, the image data from the image data registered in the data base and transfers the read-out image data to the work station;

migration processing means for performing migration processing in which image data stored in the low-speed recording medium is copied to the high-speed recording medium in the data base;

file management means connected to the migration processing means and including a management table for storing a migration index number generated by the file management means, said migration index number corresponding to at least one image data in the high-speed recording medium, said image data in the high-speed recording medium subjected to the migration processing and migrated by said migration processing means, and including a record generated by the file management means indicating whether the image data stored in the high-speed recording medium was accessed by said work station after the migration process; and

data deleting means for determining whether at least one of the image data stored in the high-speed recording medium from the management table has been accessed, and, if a least one of the image data has been accessed, for deleting the image data from the high-speed recording medium from the accessed image data at an earliest time.

5,359,513

METHOD AND SYSTEM FOR DETECTION OF INTERVAL CHANGE IN TEMPORALLY SEQUENTIAL CHEST IMAGES

Akiko Kano, and Kunio Doi, both of Willowbrook, Ill., assignors to Arch Development Corporation, Chicago, Ill.

Filed Nov. 25, 1992, Ser. No. 981,471

Int. Cl.[5] G06F *15/00;* **G06K** *9/00*

U.S. Cl. 364—413.23 **14 Claims**

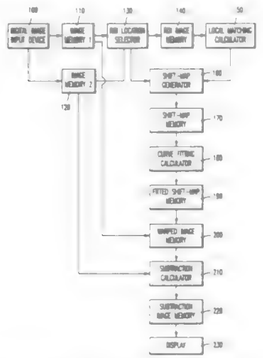
1. A method for computerized analysis of temporally sequential images, comprising:

obtaining first and second images of a patient;

aligning corresponding portions of said first and second images in relation to corresponding anatomical features present in said first and second images, including performing cross-correlation mapping to produce a plurality of shift values indicative of differences in locations between

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corresponding anatomical features of said first and second images with respect to corresponding pixel locations of said first and second images, mathematically fitting a predetermined surface to said shift values for correcting said shift values in order to compensate for errors introduced into said cross-correlation mapping, and shifting the anatomical features in one of said first and second images based on the corrected shift values;



performing subtraction processing between said first and second images; and

determining differences between said first and second images indicative of abnormal changes which have occurred in said patient during the time interval between the taking of said first and second images.

5,359,514

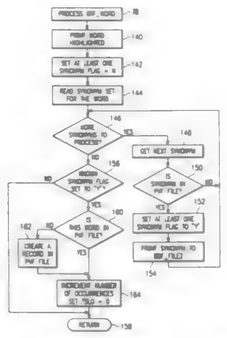
METHOD AND APPARATUS FOR FACILITATING COMPREHENSION OF ON-LINE DOCUMENTS

George C. Manthuruthil, Coppell; Shrikant N. Parikh, Mesquite, and Hari N. Reddy, Colleyville, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 3, 1993, Ser. No. 101,606

Int. Cl.[5] G06F *15/38*

U.S. Cl. 364—419.11 **4 Claims**



1. A computer implemented method of teaching a specific individual reader and automatically improving comprehensibility of a document on a computer system for that reader, comprising the steps of:

storing a business thesaurus file in a storage device accessible by the computer system;

storing a list of reader identified known words in said storage device;

associating reader defined parameters with said known words in order to ensure said known words are currently known to the reader;

automatically comparing all words in the document to said list of known words to identify unknown words;

automatically accessing said business thesaurus file to obtain a synonym for each of said unknown words, said synonym also being on said list of known words;

automatically updating said list of known words to remove words that have become not currently known and to add words that have become currently known in accordance with said reader defined parameters; and

automatically displaying the document to the reader with said synonym displayed adjacent each of said unknown words corresponding thereto, wherein the reader learns a meaning of said unknown words and the document is automatically more comprehensible to the reader.

5,359,515

VEHICLE OCCUPANT SAFETY SYSTEM AND METHOD FOR OPERATING THE SAME

Hugo Weller, Oberriexingen; Peter Taufer, Renningen; Knut Balzer, Ludwigsburg-Pflugfelden, and Wilfried Burger, Hemmingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

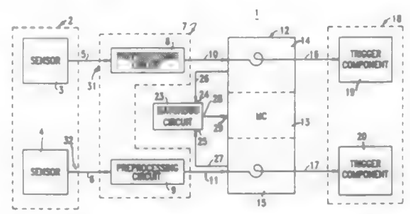
PCT No. PCT/DE90/00364, § 371 Date Feb. 28, 1992, § 102(e) Date Feb. 28, 1992, PCT Pub. No. WO91/00200, PCT Pub. Date Jan. 10, 1991

PCT Filed May 16, 1990, Ser. No. 781,253

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1989, 3921250

Int. Cl.[5] B60R *21/02*

U.S. Cl. 364—424.05 **20 Claims**



1. A safety system for activating a restraining device of a vehicle, comprising:

at least two sensors, each sensor generating a respective sensor signal;

at least two preprocessing circuits, each preprocessing circuit coupled to a respective sensor for receiving the respective sensor signals and for generating respective preprocessing signals based thereon;

a computing system coupled to the preprocessing circuits for continuously processing the preprocessing signals in respective programs which are executed during respective time intervals which are staggered with respect to one another, and starting at times which are determined based on respective independent interrupts; and

at least two trigger circuit components coupled to the computing system for activating the restraining device.

5,359,516

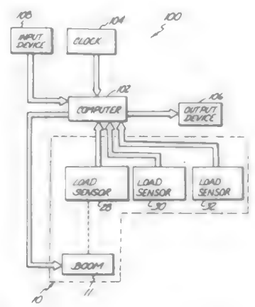
LOAD MONITORING SYSTEM FOR BOOMS

Thomas M. Anderson, Hugo, Minn., assignor to Schwing America, Inc., White Bear, Minn.

Filed Sep. 16, 1993, Ser. No. 122,641

Int. Cl.[5] G06F *7/70*

U.S. Cl. 364—424.07 **34 Claims**



1. A method of monitoring operation of a boom having at least one boom section, each boom section being supported by an actuator assembly such that a total load supported by an actuator assembly includes a load component caused by a weight of a corresponding boom section and includes a load component caused by any external load supported by the boom, the method comprising:

sensing a first parameter related to operation of a first actuator assembly, the first actuator assembly being connected to a first boom section for supporting the first boom section, the first parameter being indicative of a total load supported by the first actuator assembly;

determining from the sensed first parameter when a total load supported by the first actuator assembly exceeds a predetermined value;

storing information indicative of an occurrence of a total load supported by the first actuator assembly which exceeded the predetermined value;

providing an output based upon stored information; and

determining whether a boom warranty is in effect based upon the output.

5,359,517

METHOD AND DEVICE FOR AUTOMATING OPERATION OF CONSTRUCTION MACHINE

Yukio Moriya, Hayamamachi; Fujitoshi Takamura, Hirakata, and Takumi Onoda, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP89/01245, § 371 Date Jun. 5, 1992, § 102(e) Date Jun. 5, 1992, PCT Pub. No. WO91/09183, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 12, 1989, Ser. No. 853,716

Int. Cl.[5] G06F *15/20*

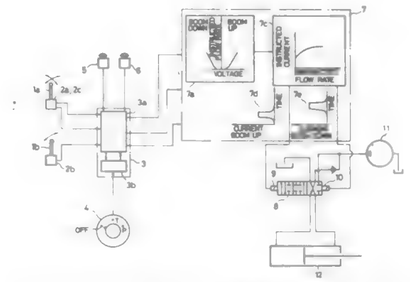
U.S. Cl. 364—424.07 **14 Claims**

1. A method of automating repetitive operations of a machine having an actuator, said method comprising:

in a teaching mode, generating an operation signal for a first operation of said actuator in response to the manual actions of an operator, controlling said actuator responsive to the thus generated operation signal to thereby perform said first operation during the teaching mode, and storing in a memory the thus generated operation signal;

then, in a play back mode, establishing a play back operation control signal responsive to the thus stored operation signal, and controlling said actuator responsive to said play back control operation signal to automatically and repetitively perform a controlled operation of said actuator in the manner of said manual actions of the operator during the teaching mode; and

interrupting said play back mode at a time when the conditions for the controlled operation conducted in the play back mode differ from conditions for the first operation conducted in the teaching mode and providing a correction for said controlled operation of said actuator by generating a correction operation signal for said actuator in response to the manual actions of an operator while said play back mode is interrupted, and controlling said actuator responsive to said correction operation signal while said play back mode is interrupted.



5,359,518

PROCESS FOR MONITORING THE POWER OUTPUT OF THE INDIVIDUAL CYLINDERS OF A MULTICYLINDER INTERNAL COMBUSTION ENGINE

Wolfgang Wimmer, Erlenbach, Fed. Rep. of Germany, assignor to Audi AG, Ingolstadt, Fed. Rep. of Germany

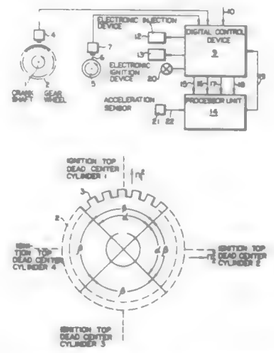
PCT No. PCT/EP90/01410, § 371 Date Nov. 24, 1992, § 102(e) Date Nov. 24, 1992, PCT Pub. No. WO91/02892, PCT Pub. Date Mar. 7, 1991

PCT Filed Aug. 23, 1990, Ser. No. 836,290

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1989, 3927796; Mar. 22, 1990, 4009285

Int. Cl.[5] E02P *5/06;* **G06F** *15/48;* **G06G** *7/70*

U.S. Cl. 364—431.03 **15 Claims**



1. Method for monitoring power output of individual cylinders of a multicylinder internal combustion engine having a predetermined crank shaft position, wherein

a) the crank shaft position is identified, and an instantaneous speed is determined during the cycle of each cylinder for a certain crank shaft rotation angle, and is squared (n^2),

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b) within each cycle of the internal combustion engine, proportion of change between consecutive values of n^2, on the basis of a mean increase or decrease in n^2 during a cycle, which results from a difference between the n^2 value to ignition top dead center of a cylinder within the cycle, and the n^2 value of the same cylinder to its subsequent ignition top dead center, is subtracted from the actual n^2 values determined pursuant to a), to form dynamically corrected n^2 values,

c) for each cylinder, difference between the corrected n^2 value to the ignition top dead center of this cylinder and a corrected n^2 value to the ignition top dead center of the next cylinder in the firing sequence is formed,

d) the difference values are compared with predetermined thresholds to recognize incorrect power input, and

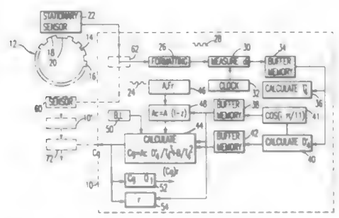
e) relative frequencies of incorrect power outputs in all cylinders are determined, where in case a critical frequency threshold is exceeded, an error display is triggered.

5,359,519

PROCESS AND DEVICE FOR MEASURING THE TORQUE OF AN INTERNAL COMBUSTION HEAT ENGINE TAKING INTO CONSIDERATION, IN PARTICULAR, THE RECIRCULATION OF EXHAUST GASES AND RESIDUAL BURNT GASES AND EXCESS OXIDANT

Gilles Jehanno, Aubergenville, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancouret Cedex, France

Filed Sep. 10, 1992, Ser. No. 942,614
Claims priority, application France, Sep. 12, 1991, 91 11274
Int. Cl.[5] F02B *3/02*
U.S. Cl. 364—431.05 **8 Claims**



1. System for measuring digital value Cg, representative of an average gas torque per combustion of a gas mixture in k cylinders of an internal combustion engine having t periods per operating cycle, said system comprising:

a number n of measuring reference points integrally rotating with one of an inertial flywheel and an crankshaft of the engine;

means for defining at least one indexing reference of the reference points;

a stationary advancement sensor for the reference points, mounted in the vicinity of the reference points; first calculating means for producing a primary digital value d_i, representative of an instantaneous advancement period in front of sensor, of each of the reference points;

second calculating means for producing from the primary digital value d_i a first secondary digital value T_k representative of a total period of advancement in front of the sensor of each series of n_c reference points, relating to the angular period of a combustion in the engine,

$$\text{wherein } n_c = (n \cdot t/2 \cdot k) \text{ and } T_k = \sum_{o}^{(n_c-1)} d_i;$$

third calculating means for producing, from the primary digital value d, and weighing factor $\cos(i.2\pi/n_c)$ stored in a permanent memory, a second secondary digital value $D_k\cos\phi'_i$ representative of a projection, on a phase reference line of the reference points corresponding to an original of the angular periods of the combustion, of the amplitude of an alternating component of the instantaneous periods d_i of advancement of the measuring reference points in front of the sensor, at the frequency of the combustion in the engine, with

$$D_k\cos\phi'_k = (2/n_c) \cdot \sum_{o}^{(n_c-1)} d_i \cdot \cos(i \cdot 2\pi/n_c);$$

fourth calculating means for producing desired digital value Cg, defined by the equation

$$Cg = A.(D_k\cos\phi'_k)/T^3_k + B/T^2_k$$
$$k = A.D'_k/T^3_k + B/T^2_k$$

from two secondary digital values $D_k\cos\phi'_k$ and T_k and two constants A and B experimentally determined and stored in permanent memories;

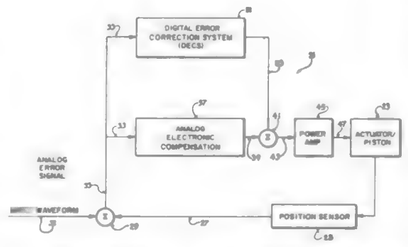
a device for correcting digital value Cg as a function of a total rate q of recirculation of exhaust gases (RGE) and residual burnt gases (GBR), said correcting device comprising fifth calculating means for producing a correction factor $Q_2=(1-p_1.q)$, in which p_2 is an experimentally determined constant close to 0.50 and q is a value of said total rate, and for applying Q_2 to value Cg, corrected as a function of richness r of the gas mixture, for providing a corrected digital value $(Cg)_q$ or $(Cg)_{r,q}$.

5,359,520

ADAPTIVE ERROR CORRECTION CONTROL SYSTEM FOR OPTIMIZING MIRROR POSITIONING IN A SPATIAL CHOPPING OR SCANNING TELESCOPE

Jean-Noel Aubrun, Mountain View; Kenneth R. Lorell, Los Altos, and Paul J. Reshatoff, Menlo Park, all of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 892,855, Jun. 3, 1992, Pat. No. 5,245,830. This application Jun. 8, 1992, Ser. No. 895,313
Int. Cl.[5] G05B *13/02, 19/18, 5/10*
U.S. Cl. 364—148 **15 Claims**



1. A spatial chopping or scanning telescope system of the kind in which a telescope mirror is moved back and forth, in repetitive cycle motions and in a rigidly prescribed pattern, between varied orientations and wherein the mirror is held for a prescribed, relatively long period of time in each orientation and is moved rapidly in a relatively short period of time from one orientation to the other, said telescope system comprising,

mirror actuator means for holding the mirror at one orientation, moving the mirror to another orientation, holding the mirror at the other orientation, and moving the mirror back to the first orientation during each cycle of operation,

desired signal input means for generating a desired cycle waveform command for operation of the mirror actuator means,

mirror position sensing means for sensing the actual position of the mirror, and

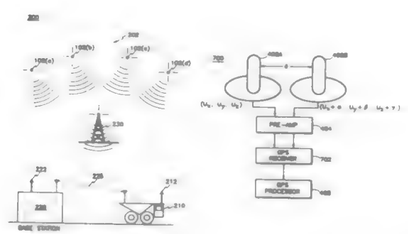
adaptive control means, connected to the desired signal input means, the mirror actuator means and the mirror position sensing means, for accumulating, over a number of cycles of operation, error correction data relating to the sensed mirror position and for forward time shifting and combining the accumulated error correction data with the desired cycle waveform command for reducing error to near zero in the sensed mirror position after a relatively few cycles of operation and for thereafter maintaining the error near zero during continued repetitive cycles of operation and wherein said forward time shifting and said combining the accumulated error correction data with the desired cycle waveform command produce an adapted cycle waveform command which is not only shifted in time with respect to said desired cycle waveform command but which is also reshaped in amplitude at localized portions of the waveform as required to reduce said error to near zero during said repetitive cycle motions.

5,359,521

METHOD AND APPARATUS FOR DETERMINING VEHICLE POSITION USING A SATELLITE BASED NAVIGATION SYSTEM

Christos T. Kyrtsos, Peoria; Adam J. Gudat, Edelstein, and Douglas W. Friedrich, Pekin, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 1, 1992, Ser. No. 983,697
Int. Cl.[5] G01S *5/02;* **H04B** *7/185*
U.S. Cl. 364—449 **7 Claims**



1. An apparatus for determining a position of a vehicle near the surface of the Earth using navigation signals from a satellite based navigation system which includes a plurality of satellites orbiting the Earth, the apparatus comprising:

first means, mounted on the vehicle at a first position, for receiving navigation signals from the plurality of satellites, for determining the position of each satellite from a respective first navigation signal, and for computing a first pseudorange for each satellite from said respective first navigation signal, each said first pseudorange representing a distance between said first means and a corresponding one of the plurality of satellites;

second means, mounted on the vehicle at a second position displaced a fixed distance δ from said first position, for receiving navigation signals from the plurality of satellites, for determining the position of each satellite from a respective second navigation signal, and for computing a second pseudorange for each satellite from said respective second navigation signal, each said second pseudorange representing a distance between said second means and a corresponding one of the plurality of satellites; and

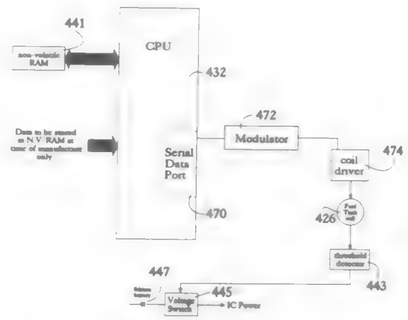
third means for computing the position of the vehicle based on said positions of said satellites, said first and second pseudoranges, and said fixed distance δ.

5,359,522

FLUID DELIVERY CONTROL APPARATUS

Michael C. Ryan, 209 Mill St. SW., Mitchellville, Iowa 50169

Continuation of Ser. No. 902,545, Jun. 22, 1992, abandoned, which is a continuation of Ser. No. 520,727, May 9, 1990, abandoned. This application May 11, 1993, Ser. No. 59,508
The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.
Int. Cl.[5] G06F *15/20, 7/04;* **H04B** *5/02*
U.S. Cl. 364—465 **11 Claims**



1. Apparatus for two-way communication of information between a fluid container and a fluid delivery system, wherein the apparatus has a first information storage and retrieval device associated with the fluid delivery system in which information regarding a fluid delivery transaction is storable; means for transmitting and receiving information between the fluid container and the fluid delivery system; security means for authorizing delivery of fluid to the fluid container only upon the transmission from the fluid container of a first identification signal approved by the first information device; and means associated with the fluid container for generating the first identification signal, the apparatus comprising:

(a) a second information storage and retrieval device associated with the fluid container and having means in which information regarding the fluid transaction is storable; and

(b) wherein the means for transmitting and receiving information comprises means for storing the information relative to the fluid delivery transaction in said second information device and in which information regarding the fluid delivery transaction is storable; and

(c) wherein the security means is further provided with means for discontinuing the fluid delivery transaction if the security means does not receive from the fluid container a series of identification signals transmitted throughout the fluid delivery transaction.

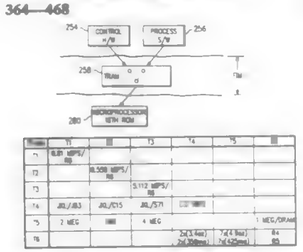
VOL 1167 ISS 4 OC 25 1994 UMI

5,359,523

COMPUTER TOOL FOR SYSTEM LEVEL DESIGN

Marvin T. Talbott, Plano, and Katherine K. Hutchison, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 661,774, Feb. 26, 1991, abandoned. This application Jun. 11, 1993, Ser. No. 75,844
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—468 15 Claims



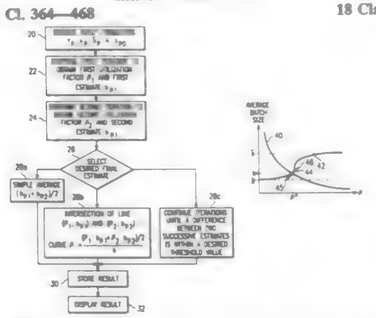
1. A method of system design using a computer, wherein said computer performs the following steps comprising:
generating a first set of objects, each of the first set of objects defining a portion of the system design, each of the objects having a parent-child relationship, wherein at least one of said child objects define a portion of the parent object;
generating a second set of implementable objects associated with said first set of objects;
generating links between said first and second sets, said links describing a relationship between requirements associated with said first set and implementations associated with said second set;
generating a matrix of interdependencies between a set of said links; and
said obtaining alternative system designs for a system being developed, by said matrix of interdependencies.

5,359,524

METHOD AND SYSTEM FOR DETERMINING AN AVERAGE BATCH SIZE

Darius Rohan, 7255 Fernmeadow Dr., Dallas, Tex. 75248

Filed Jun. 29, 1992, Ser. No. 906,155
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—468 18 Claims



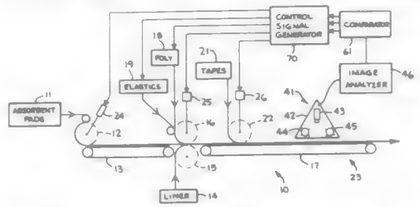
1. A method for determining an average batch size using processing circuitry for reconfiguring a multi-process environment, comprising the steps of:
interfacing with said multi-process environment to determine input parameters corresponding to characteristics of said multi-process environment;
determining a first utilization factor from said input parameters;
determining a first estimate of the average batch size from said first utilization factor;
determining a second utilization factor and a second estimate of the average batch size from said first estimate;
determining a final estimate of the average batch size using said first and second estimate; and
reconfiguring the multi-process environment based on said final estimate of the average batch size.

5,359,525

APPARATUS AND METHOD FOR REGISTRATION CONTROL OF ASSEMBLED COMPONENTS

Steven L. Weyenberg, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 1, 1990, Ser. No. 517,568
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—469 18 Claims



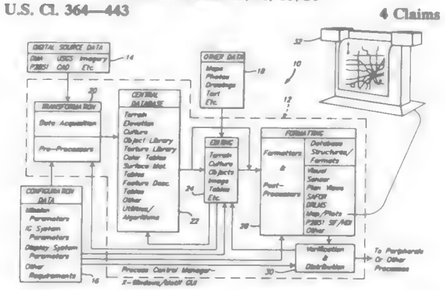
1. An apparatus for fabricating a composite article from a plurality of components so that selected components thereof have positional relationships within acceptable ranges, the apparatus comprising:
a fabrication line with a machine direction and a transverse direction, the fabrication line comprising a supply of each of said plurality of components, means for withdrawing a first one of said plurality of components from its supply and depositing it at a first point in said fabrication line, means for moving the thus deposited first component along the machine direction of the fabrication line, means for withdrawing a second one of said plurality of components from its supply and adding the thus withdrawn second component to the first component at a second point in said fabrication line downstream of said first point to form an in-process article, and means for withdrawing each of the remaining components from the respective supply thereof and sequentially adding it to a previously formed in-process article to form a new in-process article until all of said plurality of components have been added, thereby forming a composite article;
means for creating a two-dimensional image of the composite article at a single station in said fabrication line, said means for creating a two-dimensional image comprising a high shutter speed camera having a matrix of photodiodes disposed therein whereby said matrix of photodiodes electronically produces a still picture image of said composite article;
means for analyzing at least portions of said electronically produced still picture image to establish the location of at least one edge of at least one of said selected components in said composite article with respect to the transverse direction of said composite article in said fabrication line and to establish the location of at least one edge of at least one of said selected components in said composite article with respect to the machine direction of said composite article in said fabrication line;
means for comparing each of the thus determined locations to a respective predetermined desired location to determine any variation between the respective determined location and the respective desired location;
means for generating a control signal responsive to any thus determined variation which is outside of the acceptable range for the location of the respective component; and
means for utilizing each thus generated control signal to control the addition of the respective component to the in-process articles on the fabrication line to promote the actual position of the respective component in subsequently produced composite articles being within its acceptable range.

5,359,526

TERRAIN AND CULTURE GENERATION SYSTEM AND METHOD

Reed C. Whittington; Joe Nguyen, and Judith G. Pafford, all of Arlington, Tex., assignors to Hughes Training, Inc., Arlington, Tex.

Filed Feb. 4, 1993, Ser. No. 13,461
Int. Cl.[5] G06F *12/00, 15/20*
U.S. Cl. 364—443 4 Claims



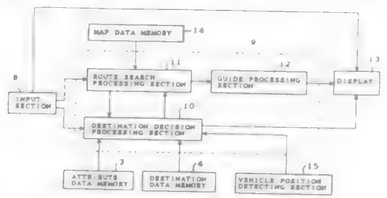
1. A method for generating a reconfigurable terrain and culture database of a simulated environment, comprising the steps of:
providing a parser for each digital data source to be read;
extracting terrain and culture data from at least one of a plurality of digital data sources using the parser for said data source;
transforming the extracted data into a predetermined central database format from which the extracted data may be edited, regardless of the particular digital data source used to receive terrain and culture data;
wherein said transformation step includes the steps of:
building cross-reference tables for surface descriptions, feature descriptions and model footprints from said extracted data;
converting the geometry of said extracted data to a standard coordinate system to facilitate data base editing; and
partitioning a geographic area defined by said extracted data into area blocks of a predetermined size and storing all of the data associated with each of said area blocks into a file associated with said area blocks.

5,359,527

NAVIGATION SYSTEM FOR VEHICLE

Naoko Takanabe; Hiroaki Ideno, and Shuichi Nishikawa, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1992, Ser. No. 963,391
Claims priority, application Japan, Nov. 6, 1991, 3-289843
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 5 Claims



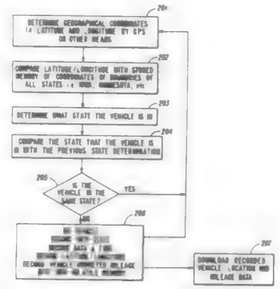
1. A navigation system for a vehicle, comprising:
an input section for inputting a general destination from a plurality of general destination candidates describing general types of destinations;
a map data memory for storing map data;
a vehicle position detecting section for detecting a present position of said vehicle;
a destination data memory for storing destination data consisting of information relating to said types of destinations;
an attribute data memory for storing attribute data which associates said general destination with said destination data;
means for selecting an attribute of said general destination according to said general destination input, said present position of said vehicle, and said attribute data;
means for selecting a plurality of candidates for a specific destination according to said general destination input, said selected attribute, and said destination data;
means for selecting said specific destination from said selected candidates;
route searching means for searching a route from said present position of said vehicle to said selected specific destination with reference to said map data;
output means for outputting said route searched; and
wherein said means for selecting said attribute of said general destination searches a plurality of candidates of said attribute of said general destination input by said input section in an area containing said present position of said vehicle from said attribute data, and selects one of said candidates of said attribute corresponding to input from an operator, as said attribute of said general destination, and wherein said means for selecting said specific destination decides one of said candidates which obtains a shortest one of said routes searched as said specific destination.

5,359,528

SYSTEM FOR ACCURATELY DETERMINING THE MILEAGE TRAVELED BY A VEHICLE WITHIN A STATE WITHOUT HUMAN INTERVENTION

Richard S. Haendel, Cedar Rapids, Iowa, and James C. Neisch, Clarkston, Mich., assignors to Rockwell International Corp., Seal Beach, Calif.

Filed Feb. 19, 1993, Ser. No. 19,714
Int. Cl.[5] G06F *13/00*
U.S. Cl. 364—424.04 8 Claims



1. A system for reporting the mileage that a vehicle travels within a state boundary comprising:
a positioning system for generating present position information including latitude and longitude information of said vehicle;
an odometer for providing a signal representative of the mileage said vehicle has traveled since some predetermined event;
a memory device containing geographic information of the latitudes and longitudes of the boundaries of numerous states;

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a recording device for receiving and recording information; and,

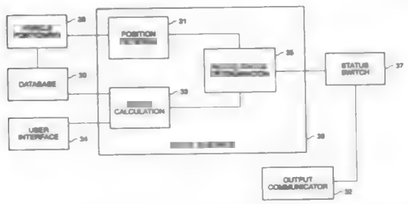
a processor, coupled with said positioning system, said odometer, said memory and said recording device for comparing the present position information for said vehicle with the geographic information regarding latitudes and longitudes of state boundaries and recording a signal representative of the mileage the vehicle has traveled if the present position information represents that the vehicle has traveled across a state boundary, the recording of the signal representative of the vehicle mileage is done on the recording device.

5,359,529

ROUTE GUIDANCE ON/OFF-ROUTE STATE FILTER

Peter Snider, San Carlos, Calif., assignor to Zexel Corporation, Japan

Filed May 15, 1992, Ser. No. 884,749
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 23 Claims



1. A method for determining whether a vehicle is following a predetermined route on a map of roadways, said route comprising a selected portion of said roadways, the method comprising the steps of:

receiving a set of position possibilities corresponding to possible positions of said vehicle on said roadways of said map;

verifying that the set of position possibilities are valid possibilities;

filtering the set of position possibilities to remove those least likely to correspond to actual position of the vehicle;

comparing the position possibilities with a set of positions on the route;

classifying each position possibility by route state, the route state being selected from the group consisting of ON ROUTE and OFF ROUTE, ON ROUTE being position possibilities corresponding to positions on the route, and OFF ROUTE being position possibilities corresponding to positions not on the route;

calculating the distance from a known location on said map to each ON ROUTE position possibility;

selecting a current position, the current position being the ON ROUTE position possibility furthest along the route toward the destination; and

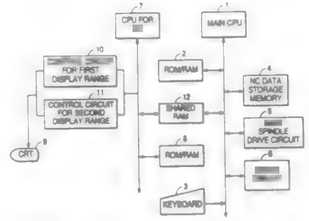
determining a route status of the vehicle based on said current position.

5,359,530

ANIMATED PLOTTING METHOD IN NC APPARATUS FOR MULTI-SYSTEM LATHE

Teruyuki Matsumura, Oshino, and Satoru Shinozaki, Shimodate, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP92/00890, § 371 Date Mar. 3, 1993, § 102(e) Date Mar. 3, 1993, PCT Pub. No. WO93/01536, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 10, 1992, Ser. No. 984,411
Claims priority, application Japan, Jul. 10, 1991, 3-195079
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.26 4 Claims



1. An animated plotting method for use in a numerical control (NC) apparatus for a multi-system lathe including at least two tool rests, in which at least one workpiece is controllably machined by the tool rests, and the state of the machining is simulatively plotted on a display screen, comprising the steps of;

imparting a code for specifying a plotting range on the display screen with respect to each of the tool rests in advance to a machining program at a predetermined position; and

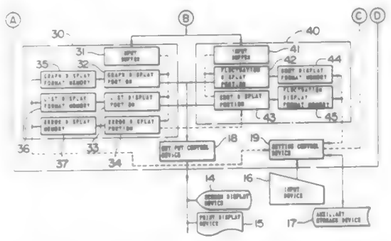
defining the plotting range on the display screen for each tool rest, in association with a block of NC data read by the NC apparatus and correspondingly with the range specified by the code.

5,359,531

METHOD OF AND APPARATUS FOR DISPLAYING CASTING-DATA IN DIE-CAST MACHINE

Norihiro Iwamoto, and Masayuki Takamura, both of Zama, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 8, 1992, Ser. No. 818,151
Claims priority, application Japan, Jan. 9, 1991, 3-023651
Int. Cl.[5] G06F *15/46;* B22D *17/32*
U.S. Cl. 364—476 6 Claims



1. A method of displaying casting-data in a die-cast machine which indicates casting operation condition of the die-cast machine after processing output signals from sensors disposed at several points in the die-cast machine, said method comprising the steps of:

selecting at least one sensoring output as data to be displayed before beginning casting operation;

setting a rectangular coordinate system for displaying data values of the selected data items, wherein one axis of the rectangular coordinate system is a data value axis, for representing the selected data items, and another axis is a time axis for representing time progress in one injection cycle; and

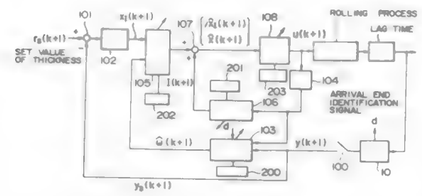
selecting one of four display formats, wherein the first format is a direct display format for displaying the data values of a present injection cycle, the second format is a start-adjusted display format for displaying the data values wherein a start position on the time axis is adjusted to a predetermined time after a present injection cycle start signal has been issued, the third format is a peak-adjusted display format for adjusting a peak position of the data values according to a predetermined position on the time axis, and the fourth format is a rise-adjusted display format for adjusting a point where the actual data value exceeds a predetermined value according to a predetermined position on the time axis, so that the data values of the selected data item are superimposed on the selected rectangular coordinate system successively in accordance with the selected display format.

5,359,532

FILM THICKNESS CONTROLLER

Noriyuki Akasaka, Nagoya, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 5, 1992, Ser. No. 972,132
Claims priority, application Japan, Nov. 12, 1991, 3-295978
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—476 2 Claims



1. A film thickness controller comprising:

a die having a mechanism for adjusting and operating a discharge amount of molten resin along a width direction of a film,

a thickness gauge for detecting thickness of the film at a measurement position, the thickness gauge being movable along the width direction of the film, molten resin discharged from the die having a lag time L1 before reaching the measurement position,

a subtracter for producing a thickness difference between a detected value of film thickness measured by said thickness gauge at the measurement position and a set value of thickness,

an integrator for time-integrating the thickness difference produced by said subtracter,

a memory for storing a time sequence of a past operation amounts during a time L, time L being governed by the equation

$$L = L1 + L2$$

where L2 represents time required for said thickness gauge to reach an end of the film from the measurement position,

an operational calculator using the time sequence of said past operation amounts stored in said memory for producing an estimated value of state variable before a time when said thickness gauge reaches the end of the film by said lag time L,

an operation calculator adapted for modifying a matrix used in an operation equation in said operational calculator to be coincident with operation conditions,

a state shifter supplied with an output of said integrator and an output of said operational calculator for producing state estimated value at a time that state is shifted by an average lag time /L which is an average value of said lag time L at both ends of the film,

a state shifter adapter for modifying a matrix used in an operation equation in said state shifter to be coincident with the operation conditions,

a state prediction device for producing a state variation amount due to input from time greater than said average lag time /L to a time when said thickness gauge reaches an end of the film on the basis of time sequence of the past operation amounts stored in said memory,

a state prediction device adapter for modifying a matrix used in an operation equation in said state prediction device to be coincident with the operation conditions,

an adder for adding an output of said state shifter and an output of said state prediction device and producing a state estimated value at a time when said thickness gauge reaches the end of the film,

an operation amount commander for multiplying the state estimated value produced by said adder by state feedback gain for producing a command value of the operation amount of the operation end, and

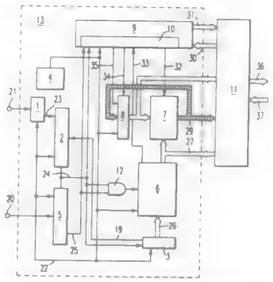
an operation amount commander adapter for modifying a matrix used in an operation equation in said operation amount commander to be coincident with the operation conditions.

5,359,533

METHOD FOR DETERMINING A FREQUENCY/TIME PROFILE OF HITS, AND DEVICE FOR CARRYING OUT THE METHOD

Jaroslav Ricka, Bern, and Max Wüthric, Burgdorf, all of Switzerland, assignors to ASEA Brown Boveri Ltd., Baden, Switzerland

Filed Feb. 11, 1993, Ser. No. 16,457
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1992, 4213717
Int. Cl.[5] G01R *23/02*
U.S. Cl. 364—484 3 Claims



1. A device for determining a frequency/time profile of hits, comprising:

a) a control unit comprising a personal computer (PC);

b) a multiple time interval analyzer (MTIA) for detection, analysis and processing of hit sequences; and

c) a PC interface between the MTIA and the PC, which adapts signals coming from the PC to a form required by the MTIA and which adapts signals coming from the

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MTIA to a form required by the PC, the MTIA comprising:

d) two inputs, a first input being a hit input and a second input being a starting pulse input;

e) a clock generator which generates a digital system clock;

f) a starting pulse synchronization circuit, having a first input connected to the starting pulse input, and having a second input connected to an output of the clock generator, and which locks the starting pulse present at the starting pulse input to the system clock;

g) a start/stop logic, having a first input connected to an output of the starting pulse synchronization circuit, and having a second input connected to the system clock, and which controls opening and closing of a measuring window;

h) a time mark counter, having a first input connected to the system clock, and having a second input connected to an output of the start/stop logic, and which counts the pulses of the system clock for as long as the output of the start/-stop logic is active, wherein the time mark counter comprises a (K+1)-bit binary counter which, after an opening of the measuring window, counts from 0 to 2^K-1, the (K+1)th bit being connected to the start/stop logic and causes the start/stop logic to close the measuring window;

i) a hit synchronization circuit, having a first input connected to the hit input, and having a second input connected to the output of the clock generator, and which locks the hit signal present at the hit input to the system clock;

k) an AND gate, having a first input connected to an output of the hit synchronization circuit, and having a second input connected to the output of the start/stop logic, and which logically ANDs the two inputs;

l) a time mark register, having a load input connected to an output of the AND gate, and having a data input connected to an output of the time mark counter, and which, following an active edge of the signal present at the load input, reads in the value present at the output of the time mark counter, which time mark register comprises a K-bit register;

m) a histogram memory, having an address input connected to an output of the time mark register, and which delivers a content of a storage location addressed by the address input to its data output, the histogram memory comprising a $(2^K \times D)$-bit RAM, D designating a word length of the data;

n) a plus one counter, having a data input connected to the data output of the histogram memory, and which increments the value present at its data input by one and writes this value via its data output to the storage location of the histogram memory addressed by the address output of the time mark register, the plus one counter comprising a binary D-bit counter which can be loaded in parallel

o) a hit control logic which selects function blocks in accordance with steps d)–n); and

p) a control logic which controls data and address flow from and to the PC interface.

5,359,534

VERIFICATION METHOD OF LOGICAL CIRCUIT LAYOUT PATTERNS

Hirokazu Fujiki, and Makoto Morikawa, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Jan. 22, 1992, Ser. No. 823,966
Claims priority, application Japan, Jan. 22, 1991, 3-022937
Int. Cl.[5] G06F *15/20, 15/60*
U.S. Cl. 364—489 **4 Claims**

1. A method of analysis of a circuit layout having a plurality of circuit logic elements, comprising the steps of:

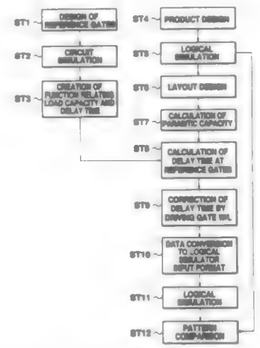
determining a delay time function representative of a relationship between delay time and load capacitance from a reference logic element corresponding to one of said plurality of circuit logic elements by the steps of:

determining delay times for said reference logic element at a plurality of load capacitances, and

determining said delay time function from the delay times at said plurality of load capacitances;

determining an actual delay time for said one of said plurality of circuit logic elements by the steps of:

determining a parasitic capacitance of said one circuit logic element,



determining a delay time corresponding to said parasitic capacitance from said delay time function for said corresponding reference logic element, and

correcting said delay time to produce an actual delay time using a W/L ratio of said one circuit logic element; and

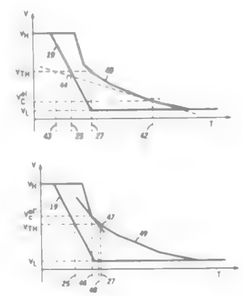
using said actual delay time for analysis of the circuit layout.

5,359,535

METHOD FOR OPTIMIZATION OF DIGITAL CIRCUIT DELAYS

Gregory Djaja, Tempe; Timothy J. Jennings, Chandler; Douglas W. Schucker, and Frederic B. Shapiro, both of Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 4, 1992, Ser. No. 878,062
Int. Cl.[5] G06F *15/16*
U.S. Cl. 364—489 **7 Claims**



1. A method for optimization of digital circuit delays, comprising:

constructing an electrical model of an ideal logic gate which predicts a driving voltage from the ideal logic gate at a desired time when driving a predetermined load combined with a predetermined interconnect line;

refining the electrical model by adjustment of predetermined parameters to enhance accuracy;

providing a digital circuit having a plurality of signal paths each of which includes a plurality of logic gates and a plurality of predetermined interconnect lines associated with the logic gates, the predetermined interconnect lines each having an interconnect delay time, and at least one predetermined load associated with each interconnect line;

selecting a single signal path from the digital circuit;

selecting a single logic gate from the single signal path, the predetermined interconnect line associated with the single logic gate, and the predetermined load associated with the interconnect line;

calculating an initial estimate of the total delay time of the single logic gate which is known to be less than the actual total delay time of the single logic gate;

predicting the driving voltage from the single logic gate using the electrical model based on the initial estimate of the total delay time;

refining the initial estimate of the total delay time by using the driving voltage at the initial estimate of the total delay time as the basis for a linear interpolation to a later calculated delay time when the driving voltage will equal a predetermined switching threshold voltage;

repeating the steps of selecting a single logic gate, calculating an initial estimate, computing a predicted driving voltage, and refining the initial estimate for each logic gate which comprises the signal path;

calculating a total signal path delay time by summing the calculated delay time due to each logic gate and interconnect delay time;

repeating the steps of selecting a single logic gate, calculating an initial estimate, computing a predicted driving voltage, refining the initial estimate, and calculating a total signal path delay time for each signal path which comprises the digital circuit; and

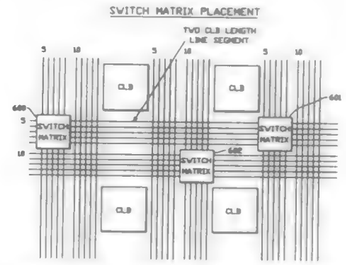
using the total signal path delay time for each signal path to modify the signal path so as to optimize the signal path delay time according to a predetermined target delay time.

5,359,536

PROGRAMMABLE GATE ARRAY WITH IMPROVED INTERCONNECT STRUCTURE, INPUT/OUTPUT STRUCTURE AND CONFIGURABLE LOGIC BLOCK

Om P. Agrawal, San Jose; Michael J. Wright, Menlo Park, and Ju Shen, San Jose, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 394,221, Aug. 15, 1989, Pat. No. 5,212,652.
This application Mar. 3, 1993, Ser. No. 25,551
Int. Cl.[5] H03K *17/693*
U.S. Cl. 364—489 **14 Claims**



1. A programmable integrated circuit chip comprising:

a first row of spaced-apart logic blocks extending over a first distance, the first row including, in succession, at least first through third logic blocks;

a first interconnect bus co-extensive with the first row of logic blocks, the first bus including a plurality of short-haul line segments for carrying signals over distances less than the first distance, where each short-haul line segment is substantially shorter than the first distance but equal to or longer than a second distance, the second distance being that spanned by at least two neighboring logic blocks in said first row of spaced-apart logic blocks;

where a first of the short-haul line segments in the first bus is co-extensive with, and programmably coupled or fixedly coupled to, the first and second logic blocks; and

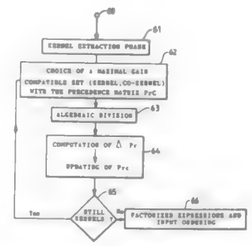
where a second of the short-haul line segments in the first bus is co-extensive with, and programmably coupled or fixedly coupled to, the second and third logic blocks.

5,359,537

AUTOMATIC SYNTHESIS OF INTEGRATED CIRCUITS EMPLOYING CONTROLLED INPUT DEPENDENCY DURING A DECOMPOSITION PROCESS

Gabriele Saucier, Bresson, and Franck J. Poirot, Valbonne, both of France, assignors to VLSI Technology, Inc., San Jose, Calif.

Filed May 14, 1990, Ser. No. 523,448
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—489 **12 Claims**



1. A method of automatic synthesis and physical realization of an integrated circuit having a multiplicity of inputs and at least one output, comprising the steps of:

(i) providing at least one Boolean function relating a multiplicity of inputs and at least one output of an integrated circuit;

(ii) performing by means of a programmed computer factorization of said at least one function to produce a factorized expression in which the order of precedence of said inputs is compatible with a reference order of said inputs in a lexicographical expression of said at least one function; and

(iii) making said integrated circuit in accordance with said factorized expression whereby in said integrated circuit said inputs enter in a physical order corresponding to said reference order.

5,359,538

METHOD FOR REGULAR PLACEMENT OF DATA PATH COMPONENTS IN VLSI CIRCUITS

Siu-Tong Hui, San Jose, and Dale M. Wong, San Francisco, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Aug. 20, 1991, Ser. No. 747,541
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—491 **10 Claims**

1. A method for placement of components for a VLSI circuit, the method comprising the steps of:

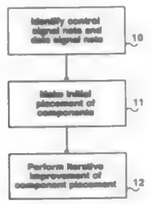
(a) identifying control signal connection networks and data signal connection networks;

(b) making an initial placement of the components for the VLSI circuit; and,

(c) iteratively improving the initial placement of the components for the VLSI circuit using an algorithm having a cost metric in which a horizontal component for length of a connection network and a vertical component for length

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of the connection network are weighted differently dependent on whether in step (a) the connection network



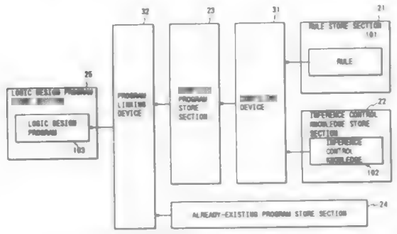
was identified as a control signal connection network or a data signal connection network.

5,359,539

LOGIC DESIGN SYSTEM AND CIRCUIT TRANSFORMATION RULE COMPILER

Noriko Matsumoto, Kyoto, and Tamotsu Nishiyama, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 571,365, Aug. 23, 1990, abandoned. This application Apr. 20, 1993, Ser. No. 52,240
Claims priority, application Japan, Sep. 7, 1989, 1-233761
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—489 6 Claims



1. A logic design system for transforming input circuit information into other circuit information closer to an actually-provided element level, comprising:

means for storing signals representing a plurality of types of circuit transformation rules having condition parts and conclusion parts;

means for storing signals representing inference control knowledge including knowledge related to (a) a method of inferring the circuit transformation rules and (b) a relation between the circuit transformation rules;

means for compiling the signals representing circuit transformation rules into signals representing circuit transformation programs in response to the signals representing inference control knowledge;

means for storing signals representing the circuit transformation programs;

means for storing signals representing previously-existing programs including a procedural process of a logic design and various functions necessary for execution of the circuit transformation programs;

means for combining the signals representing the circuit transformation programs and the already-existing programs into the signals representing a logic design program;

means for storing the signals representing the logic design program; and

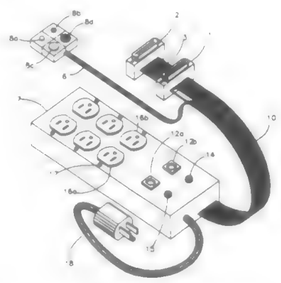
means for executing a circuit transformation process in response to the signals representing the logic design program.

5,359,540

COMPUTER ASSISTED ELECTRIC POWER MANAGEMENT

Hugo Ortiz, c/o 3218 Kenselworth La., Boalta, Calif. 91902

Continuation of Ser. No. 557,158, Jul. 23, 1990, abandoned. This application Jan. 21, 1993, Ser. No. 7,017
Int. Cl.[5] G06F *15/20;* H02B *1/02*
U.S. Cl. 364—492 18 Claims



1. An electric power controller, comprising:

(a) a power input means for receiving electric power,

(b) a power output means for releasing electric power,

(c) a power control means connected intermediate the power input means and the power output means for permitting the flow of electricity from the power input means to the power outpost means responsive to a switch on signal and for disrupting said flow of electricity responsive to a switch off signal,

(d) a computer interface means for allowing signals to pass between a parallel port of a computer and the controller, said computer interface means comprising a first conductor with means for connecting to a signal path of a first predetermined uutput pin of said parallel port and a second conductor with means for connecting to a signal path of a second predetermined output pin of said parallel port, and

(e) a governing means connected to the computer interface means and the power control means for sending a switch on or switch off signal to the power control means responsive to a predetermined enable signal presented to the computer interface means, said enable signal comprising a low logic level on said first conductor and a high logic level on said second conductor, whereby such combination of logic levels allows the computer to power on and power off without causing false switching of the power controller.

5,359,541

FLUID DENSITY AND CONCENTRATION MEASUREMENT USING NONINVASIVE IN SITU ULTRASONIC RESONANCE INTERFEROMETRY

Noah G. Pope, Los Alamos; Douglas K. Veirs, Espanola, and Thomas N. Claytor, Los Alamos, all of N. Mex., assignors to The Regents of the University of California, Office of Technology Transfer, Alameda, Calif.

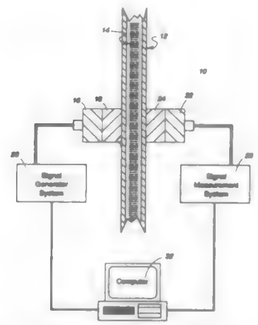
Filed Mar. 1, 1993, Ser. No. 24,128
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—497 2 Claims

1. A method for the determination of a process value functionally related to the specific gravity and solute concentration of a process fluid solution located in a selected structure, comprising the steps of:

attaching an excitation transducer and a receiver transducer

external to said structure in operable proximity to said process fluid solution;

exciting said fluid solution and said structure over a selected range of frequencies greater than response frequencies of said structure to generate an ultrasonic response spectrum for said fluid solution;



performing a fast fourier transform (FFT) of said response spectrum to output a set of FFT values; and

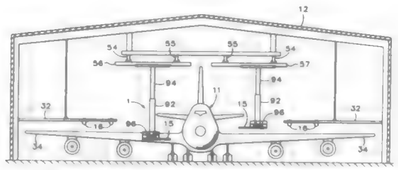
determining the peak value of said FFT from said set of FFT values to output a process value functionally related to said specific gravity and said solute concentration of said process fluid solution.

5,359,542

VARIABLE PARAMETER COLLISION AVOIDANCE SYSTEM FOR AIRCRAFT WORK PLATFORMS

Max C. Pahmeier, Renton, and Richard T. Pierce, Monroe, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 20, 1991, Ser. No. 811,523
Int. Cl.[5] G01B *11/24;* G06F *15/50*
U.S. Cl. 364—461 20 Claims



1. Apparatus for locating an aircraft relative to a known reference and for preventing collisions between the aircraft and a movable work platform, said apparatus comprising:

scanning means for ascertaining a portion of the aircraft and generating and storing a set of data representative of the portion of the aircraft;

means for determining the spatial position of the aircraft relative to the known reference according to the set of data from said scanning means and a known relationship between the portion of the aircraft scanned and another portion of the aircraft;

means for determining the spatial and rotational position of the movable work platform relative to the known reference; and

means for setting three-dimensional and rotational movement restriction limits on the movable work platform when movement beyond such limits will result in a collision between the movable work platform and the aircraft,

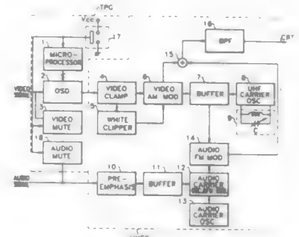
said setting means employing the stored set of data from said scanning means.

5,359,543

APPARATUS AND METHOD FOR GENERATING TEST PATTERN OF FREQUENCY CONVERTER

Il K. Na, Anyang, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi, Rep. of Korea

Filed Apr. 3, 1992, Ser. No. 863,108
Claims priority, application Rep. of Korea, Sep. 9, 1991, 91-15881
Int. Cl.[5] G01M *19/00;* H04N *17/00*
U.S. Cl. 364—550 18 Claims



1. A test pattern generating apparatus for a UHF converter including a video AM modulator for amplitude-modulating a received video signal of a VCR in a UHF band, an audio FM modulator for frequency-modulating a received audio signal of said VCR in the UHF band, and a mixer for outputting a UHF signal by synthesizing the outputs from said video AM modulator and said audio FM modulator, said apparatus comprising:

a test switch;

a microprocessor for operating a predetermined program in response to an operation of said test switch, and for generating and outputting strobe, clock and data signals corresponding to a predetermined test pattern in accordance with said program;

muting circuits for muting said received video and said received audio signals received by said UHF converter in response to the operation of said test switch; and

an on-screen display circuit for generating said predetermined test pattern corresponding to said data signals supplied from said microprocessor and for supplying only the generated test pattern to the UHF converter such that the UHF converter processes only the supplied test pattern in response to the operation of said test switch.

5,359,544

MONITOR FOR CONTINUOUS FEEDING OF COLLATED ARTICLES

Susumu Suwahara, Tokyo, Japan, assignor to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1991, Ser. No. 749,453
Claims priority, application Japan, Nov. 26, 1990, 2-321412
Int. Cl.[5] G01B *5/02, 7/02, 21/02;* G06F *15/46*
U.S. Cl. 364—550 8 Claims

1. An apparatus for monitoring continuous feeding of articles which belong to different classes having different ranges of a characteristic value D(n) and which are provisionally collated according to a given order n of the classes in cyclic manner, the apparatus comprising;

means for continuous feeding of provisionally collated articles;

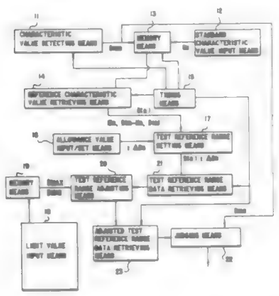
detecting means for sequentially detecting articles during the courses of continuous feeding of the provisionally collated articles to sample a characteristic value D_{mn} of each article where m denotes a cycle number and n denotes an order in one cycle, and wherein the characteristic

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value of articles within at least two orders within a cycle vary;

storing means for storing a varying reference characteristic value D(n) and a corresponding allowance value ΔD_n, which are specific to the particular order of the article in the class;

setting means for setting a test reference range in the form of $D(n)\pm\Delta D_n$ for each order of article;



judging means operative in the m-th cycle to compare the sampled characteristic value D_{mn} with the n-th test reference range $D(n)\pm\Delta D_n$ for sequentially judging as to whether an abnormality occurs or not during the course of the continuous feeding of the articles; and

abnormality indicating means for indicating an abnormality judged by said judging means, by stopping the continuous feeding of the articles.

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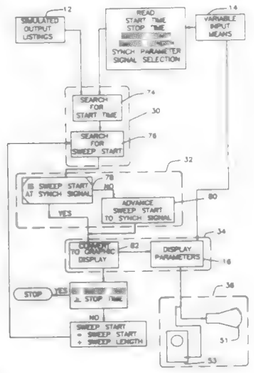
DYNAMIC VIDEO DISPLAY FOR LOGIC SIMULATION SYSTEMS

Douglas E. Ott, Newfoundland; Peter Ditore, Wayne, and Thomas Wilderotter, Morris Plains, all of N.J., assignors to ITT Corporation, New York, N.Y.

Continuation of Ser. No. 867,043, Apr. 10, 1992, abandoned. This application Dec. 14, 1993, Ser. No. 166,614

Int. Cl.[5] G06G *7/62*

U.S. Cl. 364—578 **25 Claims**



1. An apparatus for converting static simulated test data, produced for a theoretical logic circuit, into a dynamic video display, wherein said simulated test data includes the logic states corresponding to a response of said theoretical logic circuit for a plurality of input signals to said theoretical logic circuit throughout a given time period, said apparatus comprising:

an input means for selecting a plurality of input parameters including at least one of said input signals, a start time and a stop time defining a time interval, said start and stop times occurring during said time period, and a plurality of time segments collectively comprising said time interval;

synchronizing means for synchronizing each time segment with a synchronization signal;

an analysis means for recursively analyzing said time segments whereby logic states corresponding to each said selected input signal occurring during each said analyzed time segment are identified;

a converting means for converting said identified logic states into video signals, said video signals being synchronized with said synchronization signal; and

a display means operating in response to said video signals to provide a video representation of said identified logic states in time alignment with said synchronization signal and other of said selected input signals for successive time segments between said start time and said stop time, said successive video representations of said identified logic states thereby constituting a dynamic video representation of said response for said theoretical logic circuit to said selected input signals during said given time period.

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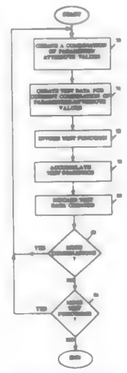
AUTOMATIC GENERATION OF TEST DRIVERS

Roger Hayes, San Francisco, and Luigi A. Pio-di-Savoia, Mountain View, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jun. 30, 1992, Ser. No. 906,692

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—579 **26 Claims**



1. In a computer system comprising a software interface having a plurality of executable procedures and corresponding executable test functions for testing said procedures, a computer implemented method for automatically generating an executable test driver for selectively executing said test functions, said method comprising the steps of:

a) designating said test functions to a test driver generator;

b) specifying assignable attribute values selected for each attribute of each parameter of said test functions to said test driver generator, said test functions comprising a plurality of parameters having a plurality of attributes, said attributes being assigned attribute values when said test functions are invoked for execution; and

c) generating said test driver by said test driver generator based on said designated test functions and said specified assignable attribute values, said generated test driver when executed, selectively and recursively executing said test functions with all combinations of said specified assignable attribute values.

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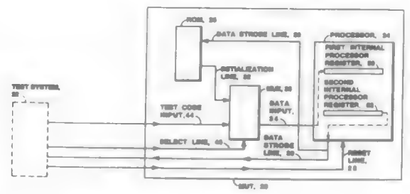
METHOD AND APPARATUS FOR TESTING PROCESSOR-BASED COMPUTER MODULES

William H. Cummins, Tewksbury, Mass.; R. Stephen Polzin, Morgan Hill, and Richard Heye, Sunnyvale, both of Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 26, 1992, Ser. No. 904,784

Int. Cl.[5] G06F *11/22*

U.S. Cl. 364—580 **25 Claims**



1. An apparatus, comprising:

a computer module to be tested, including:

a processor having a data input path for accepting code;

means for storing initialization code, wherein the initialization code is executed by the processor to initialize the operation of the processor; and

interrupting means connected to the storing means and to the processor data input path and disposed between the storing means and the processor; and

means, coupled to the interrupting means, for inputting test code to the processor, wherein the interrupting means are responsive to the inputting means and the inputting means are capable of causing the interrupting means to substitute the test code for the initialization code to the processor on the processor data input path.

5,359,548

FLOATING-POINT ARITHMETIC SYSTEM HAVING MULTIPLE-INPUT ADDITION AND SUBTRACTION MEANS

Hideki Yoshizawa; Katsuhito Fujimoto, and Tatsushi Otsuka, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 14, 1993, Ser. No. 45,766

Claims priority, application Japan, Apr. 15, 1992, 4-095028

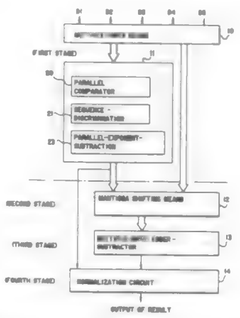
Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—748 **12 Claims**

1. A floating-point arithmetic system, which allows arithmetic operations including at least addition and subtraction calculations to be performed with respect to floating-point data indicated in the floating-point representation by separating each of said floating-point data into an exponent and a mantissa, comprising:

multiple-input addition and subtraction means for executing addition and subtraction calculations of at least three floating-point data, said multiple-input addition and subtraction means, which enables at least three floating-point data to be input, including

shift-amount determining means which compares the respective exponents of said floating-point data in parallel with each other, selects the maximum exponent from said exponents, and determines the amount of shift in the respective mantissas of said floating-point data, based on said maximum exponent, said shift amount determining means including a parallel comparator which compares the respective exponents of said floating-point data in parallel with each other, with respect to the magnitude of said exponents, a sequence-discrimination circuit which selects the maximum exponent in accordance with an output from said parallel comparator, and a parallel-exponent-subtraction circuit which calculates a difference between a value of said selected maximum exponent and a value of each of said exponents of said floating-point data, so as to determine the amount of shift in the respective mantissas of said floating-point data; said multiple-input addition and subtraction means also including



mantissa shifting means which shifts the respective mantissas of said floating-point data in accordance with said determined amount of shift and makes an adjustment of digit positions of said mantissas;

at least one multiple-input adder-subtractor which executes addition and subtraction for said mantissas output from said mantissa shifting means; and

a normalization circuit which normalizes a result of said addition and subtraction obtained by said multiple-input adder-subtractor.

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ORTHOGONAL TRANSFORMATION PROCESSOR FOR COMPRESSING INFORMATION

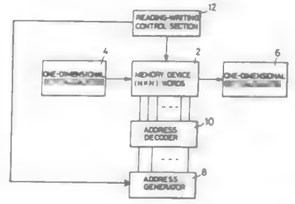
Masafumi Tanaka, Osaka; Kazuo Sakamoto, Kobe; Tatsuya Fujii, Nishinomiya, and Ryo Fukui, Yao, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 616,418, Nov. 21, 1990, Pat. No. 5,268,853. This application May 5, 1993, Ser. No. 58,546

Claims priority, application Japan, Dec. 1, 1989, 1-314018; Dec. 18, 1989, 1-328936; Mar. 12, 1990, 2-61984; Mar. 16, 1990, 2-67500; Apr. 25, 1990, 2-110757; Sep. 20, 1990, 2-253573

Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—725 **10 Claims**



1. An orthogonal transformation processor comprising:

a first one-dimensional orthogonal transformation calculator for calculating a one-dimensional orthogonal transformation;

a memory device for temporarily storing an output of the

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first one-dimensional orthogonal transformation calculator;

a second one-dimensional orthogonal transformation calculator for receiving an output of said memory device thereto, and calculating a one-dimensional orthogonal transformation; and

an address generator for designating an address of said memory device and replacing row and column addresses with each other in synchronization with a switching of writing and reading operations of said memory device,

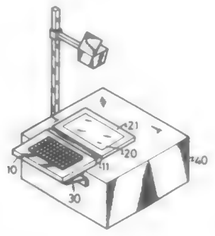
said address generator comprising a first counter, a second counter and a switching circuit for switching so as to selectively combine an output of said first counter with an output of said second counter.

5,359,550

NOTEBOOK COMPUTER SYSTEM FOR COOPERATING WITH PROJECTORS

Chin-Mao Chen, No. 36, Lane 90, Chiao Hsin Rd., Hsin Tien City, Taipei Hsien, Taiwan

Filed Jul. 21, 1993, Ser. No. 95,715
Int. Cl.[5] G06F *1/00*; G03B *21/00*
U.S. Cl. 364—708.1 **7 Claims**



1. A notebook computer set for cooperating with a projector, comprising:

a notebook computer;

a transparent liquid crystal display pivotally attached to said notebook computer;

a bracket of the projectors for carrying said notebook computer so comprising a first member, a second member hinged to the first member and a third member hinged to the second member; and

a magnet firmly attached to the third member of the bracket;

whereby the magnet attaches the third member of the bracket to a housing of the projector so that the second member of the bracket supports the first member of the bracket in order to support the notebook computer so that the liquid crystal display is disposed on a panel of the projector.

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HIGH SPEED LOGARITHMIC FUNCTION GENERATING APPARATUS

Lester C. Pickett, Mountain View, Calif., assignor to Log Point Technologies, Inc., Mountain View, Calif.

Division of Ser. No. 623,238, Jan. 30, 1991, Pat. No. 5,184,317, which is a continuation of Ser. No. 366,376, Jun. 14, 1989, abandoned. This application Jan. 6, 1993, Ser. No. 963
Int. Cl.[5] G06F *1/02*
U.S. Cl. 364—718 **13 Claims**

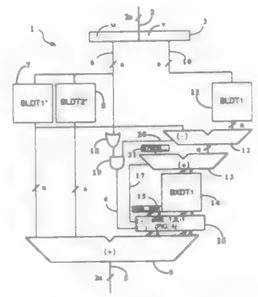
1. Apparatus for generating a radix-r_2 out-put signal g which approximates a base-a logarithmic function of a radix-r_1 input argument signal x in accordance with an approximation

$g(x)\approx alg(x)$ wherein $g(x)=g_L(u^*-h\xi)+hG_R(w+Q1_a)$ wherein $w=G_L(\xi+v^*)-G_L(p^*-h\xi)$ and wherein, regarding notation: $g_L(y)\approx alg(y)$, $G_L(y)\approx alg(y)$, $G_R(y)\approx axp(y)$, $p^*\approx u^*$, $axp(y)\approx a^y$ and $alg(y)\approx log_a(y)$ wherein $a>0$, and wherein $x\approx u^*+hv^*$, $h=r_1^{-n}$ wherein n is a positive integer, $|h|<<1$, $|hv^*|<<|u^*|_{max}$, predetermined bias ξ is restricted to ensure that $\xi+v^*$ is positively displaced from zero to restrict a corresponding value $alg(\xi+v^*)$ and $Q1_a\approx alg(alg\ e)$ wherein e is a Napierian constant, comprising:

means coupled to receive said input argument signal x for partitioning between a most significant dominant portion u^* and an unscaled next most significant adjunct portion v^* which is consistent with a relation $x\approx u^*+hv^*$;

means comprising random access memory coupled to receive said dominant portion u^* for mapping into a radix-r_2 primary function signal f^* in accordance with a primary map $f^*=g_L(u^*-h\xi)$;

means coupled to receive a most significant portion p^* of said dominant portion u^* for mapping into a secondary function signal c in accordance with a secondary map $c=G_L(p^*-h\xi)$;



means coupled to receive said adjunct portion v^* for mapping into an adjunct function signal d in accordance with an adjunct map map $d=G_L(\xi+v^*)$;

means coupled to receive said secondary function signal c and said adjunct function signal d for subtracting said secondary function signal c from said adjunct signal d to produce a difference signal $w=d-c$;

means coupled to receive said difference signal w for mapping into an unscaled correction signal t in accordance with an unscaled correction map $t=G_R(w+Q1_a)$;

means coupled to receive said unscaled correction signal t for scaling by h to produce a scaled radix-r_2 correction signal ht; and

means coupled to receive said primary function signal f^* and said scaled correction signal ht for adding to produce said output signal g as a radix-r_2 sum $g=f^*+ht$.

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POWER SUPPLY TRACKING REGULATOR FOR A MEMORY ARRAY

Sang H. Dhong; Hyun J. Shin, both of Mahopac, and Wei Hwang, Armonk, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 771,295, Oct. 3, 1991, Pat. No. 5,268,871. This application Dec. 6, 1993, Ser. No. 163,337
Int. Cl.[5] G05F *1/40*
U.S. Cl. 365—189.09 **5 Claims**

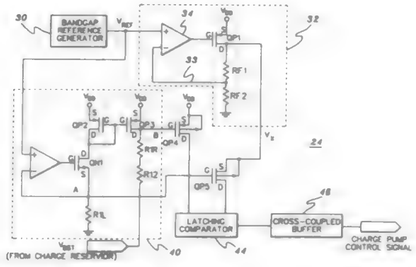
1. A voltage regulator for controlling an on-chip voltage generator which produces a boost voltage V_{BST} supplied to one of two inputs to each of a plurality of word line drivers in a memory array, the other input to each of said word line drivers receiving a power supply voltage V_{DD}, said voltage regulator comprising:

means for generating a reference voltage V_{REF};

first differential means for producing a transition voltage V_X from said reference voltage V_{REF} and said power supply voltage V_{DD}, said transition voltage being representative of a fluctuation in said power supply voltage;

first transistor means for comparing said power supply voltage V_{DD} with said boost voltage V_{BST};

second transistor means for comparing said transition voltage V_X with said reference voltage V_{REF}; and



a latching comparator coupled to receive the signal outputs from said first transistor and said second transistor, said latching comparator outputting a boost voltage control signal for said on-chip voltage generator, said control signal operating to define the following boost voltage:

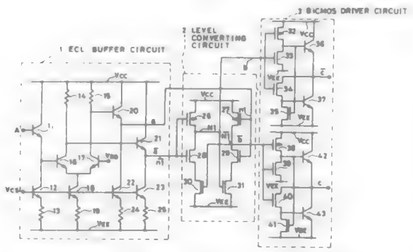
$$V_{BST}=-V_{BASE}+V_{DD}-V_X.$$

5,359,553

LOW POWER ECL/MOS LEVEL CONVERTING CIRCUIT AND MEMORY DEVICE AND METHOD OF CONVERTING A SIGNAL LEVEL

Toru Shiomi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1990, Ser. No. 515,304
Claims priority, application Japan, May 19, 1989, 1-127113
Int. Cl.[5] G11C *11/409, 11/419*; H03K *19/0175, 19/08*
U.S. Cl. 365—189.11 **21 Claims**



1. A logic level converting circuit for converting an emitter-coupled logic (ECL) level signal (A) into complementary metal oxide semiconductor (MOS) logic level signals (c,$\bar{c}$), comprising:

a first potential source node for supplying a potential (Vcc) corresponding to a first logic level (H),

a second potential source node for supplying a potential (Vee) corresponding to a second logic level (L),

an ECL buffer circuit (1) for receiving said ECL level signal and, in response, providing complementary first and second signals ($\bar{a}$, a) of third and fourth logic levels, respectively;

a level converting circuit including

first complementary MOS (CMOS) inverting means (26,28) coupled between said first potential source node (Vcc) and a source/drain node of a first field effect transistor (30) and receiving said first signal ($\bar{a}$) for providing, in response, a third signal (b) of said first or second logic level,

second CMOS inverting means (27,29) connected between said first potential source node and a source/drain node of a second field effect transistor and receiving said second signal (a) for providing, in response, a fourth signal ($\bar{b}$) of said first and second logic levels,

said first field effect transistor (30) having a source/drain path coupled between said first CMOS inverting means (26,28) and said second potential source node, and which is rendered non-conductive in response to said fourth signal ($\bar{b}$) having the second logic level (L) provided by said second CMOS inverting means (27,29), and

said second field effect transistor (31) having a source/drain path coupled between said second CMOS inverting means (27,29) and said second potential source node, and which is rendered non-conductive in response to said third signal having the second logic level (L) provided by said first CMOS inverting means; and

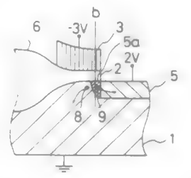
a driver circuit receiving said third and fourth signals (b,$\bar{b}$) and, in response, supplying said CMOS logic level signals (c,$\bar{c}$).

5,359,554

SEMICONDUCTOR MEMORY DEVICE HAVING AN ENERGY GAP FOR HIGH SPEED OPERATION

Yoshinori Odake, and Yasushi Okuda, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 30, 1992, Ser. No. 906,671
Claims priority, application Japan, Aug. 27, 1991, 3-215104; Feb. 20, 1992, 4-33493
Int. Cl.[5] H01L *27/10*
U.S. Cl. 365—184 **17 Claims**



1. A semiconductor memory device comprising at least one memory cell which is formed on a semiconductor substrate of a first conductivity type and comprises a drain region of a second conductivity type which is formed selectively on a surface location of the semiconductor substrate, an insulating layer which is formed on the semiconductor substrate, overlaying, at least partly, an edge of the drain region, and a gate electrode which is formed on the insulating layer, wherein:

an energy gap between the conduction band and the valence band of a semiconductor section including the drain region and the semiconductor substrate is preset to a value not more than an energy gap value corresponding to a first set voltage difference between the drain region and the gate electrode, and either an energy gap between the valence band of the insulating layer and the valence band of the semiconductor section or an energy gap between the conduction band of the insulating layer and the conduction band of the semiconductor section, at the interface between the semiconductor section and the insulating layer, is preset to an energy gap value corresponding to a second set voltage difference between the drain region and the semiconductor substrate which varies, depending on the voltage of the gate electrode,

the memory cell is capable of storing information in a non-

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volatic manner "1" or "0", in which "1" means a state of holding charges in the insulating layer and "0" means a state of not-holding charges therein,

at least one memory cell is previously in the state of "1", and

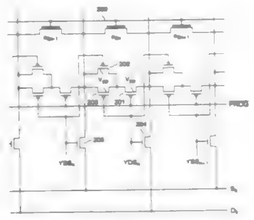
erase means is provided, which imposes between both faces of the insulating layer of the memory cell which holds charges and is in the state of "1" a high electric field to generate a Fowler-Nordheim current to implant charges, which have a reverse polarity with respect to the charges trapped, into the insulating layer thereby shifting the memory cell into the state of "0".

5,359,555

COLUMN SELECTOR CIRCUIT FOR SHARED COLUMN CMOS EPROM

Robert M. Salter, III, Saratoga, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 6, 1992, Ser. No. 847,114
Int. Cl.[5] G11C *11/34*
U.S. Cl. 365—185 4 Claims



1. A shared column EPROM memory comprising

a) a program control line;

b) a plurality of memory transistors sharing a word line, said memory transistors having sources and drains coupled to column lines;

c) means for selecting one of said memory transistors for programming, wherein said memory transistor has a source coupled to a first column line and a drain coupled to a second column line, said selecting means comprising a first column transistor coupling said first column line to a source programming voltage and a second column transistor coupling said second column line to a drain programming voltage, said first and second column transistors controlled by first and second column selection lines, respectively;

d) column coupling means

i) for coupling a first group of said column lines, on a same side of said selected memory transistor as said selected memory transistor source, to said source programming voltage, and

ii) for coupling a second group of said column lines, on a same side of said selected memory transistor as said selected memory transistor drain, to said drain programming voltage,

said coupling means comprising shorting devices between adjacent column lines for connecting said adjacent column lines when said shorting devices are enabled, and means, responsive to said selection means, for enabling a plurality of said shorting devices other than a shorting device connecting said first and second column lines, and wherein

e) each said shorting device comprises

i) a first shorting transistor controlled by said first column selection line,

ii) a second shorting transistor controlled by said second column selection line, and

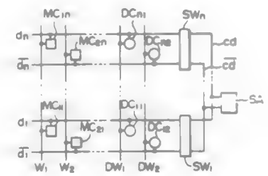
iii) a third shorting transistor controlled by said program control line.

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SEMICONDUCTOR MEMORIES WITH SERIAL SENSING SCHEME

Katsutaka Kimura, Akishima; Takeshi Sakata, Kunitachi, and Kiyoo Itoh, Higashikurume, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 727,114, Jul. 9, 1991, Pat. No. 5,299,157. This application Mar. 11, 1994, Ser. No. 208,664
Claims priority, application Japan, Jul. 9, 1990, 2-179673
Int. Cl.[5] G11C *7/02*
U.S. Cl. 365—189.02 24 Claims



1. In a semiconductor memory chip which comprises a plurality of word lines; a plurality of data lines each disposed, with respect to a plan view arrangement, as to intersect said plurality of word lines; a plurality of memory cells, each comprised of a one transistor, one capacitor cell, disposed at desired intersections of said plurality of word lines and said plurality of data lines so that each memory cell is connected to a word line and a data line; signal sensing means so disposed as to be common to said plurality of data lines; a plurality of signal transferring means, each of which having a switching function, for electrically coupling said signal sensing means to said plurality of data lines, respectively; a data output terminal for providing data of the memory chip to outside the memory chip; and a register coupled between said data output terminal and said signal sensing means, a method of reading data to be outputted from said semiconductor memory chip and inputting data thereto comprising the steps of:

providing data from memory cells corresponding to an individual word line onto said plurality of data lines in accordance with selection of said individual word line;

effecting selection of each of said plurality of data lines, successively;

electrically coupling each successively selected data line to said signal sensing means;

storing the data on said plurality of data lines into said register through said signal sensing means; and

providing readout data from said register to said data output terminal of the memory chip.

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DUAL-PORT ARRAY WITH STORAGE REDUNDANCY HAVING A CROSS-WRITE OPERATION

Anthony G. Aipperspach, and Dennis T. Cox, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 4, 1992, Ser. No, 986,168
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—189.04 15 Claims

1. A dual-port electronic data storage system comprising:

a first set of data and address latches for storing data and address information;

a first memory array coupled to said first set of data and address latches;

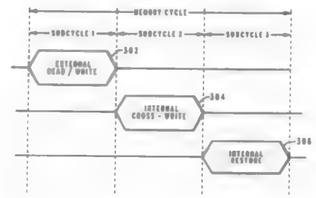
a second set of data and address latches for storing data and address information;

a second memory array coupled to said second set of data and address latches; and

a cross-write circuit, coupled to said first memory array, said second memory array, said first set of data and address latches and said second set of data and address latches, for performing in a plurality of modes of operation, including:

a cross-write mode of operation wherein said cross-write circuit automatically:

(a) writes data stored in a data latch into said second memory array, at a location corresponding to said address information stored in a first address latch, after being initiated by data stored in said first data latch being previously written to said first memory array at a location corresponding to said address information stored in said first address latch; and simultaneously



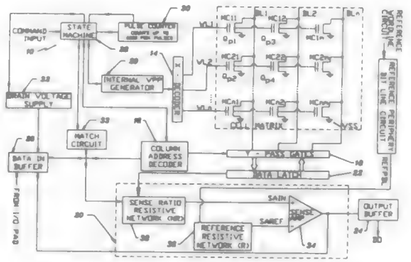
(b) writes data stored in a second data latch into said first memory array, at a location corresponding to said address information stored in a second address latch, after being initiated by data stored in said second data latch being previously written to said second memory array at a location corresponding to said address information stored in said second address latch, wherein a redundant copy of data written to either said first or second memory arrays is created.

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FLASH EEPROM ARRAY WITH IMPROVED HIGH ENDURANCE

Chung K. Chang, Sunnyvale; Johnny C. Chen, Cupertino; Michael A. Van Buskirk, San Jose, and Lee E. Cleveland, Santa Clara, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 23, 1993, Ser. No. 109,886
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—189.07 20 Claims



1. In a semiconductor integrated circuit memory device having an over-erased bit correction structure for performing a correction operation on over-erased memory cells in the memory device, said correction structure comprising, in combination:

a cell matrix (12) having a plurality of memory cells arrayed in rows of word lines and

columns of bit lines intersecting said rows of word lines, each of said memory cells including a floating gate array transistor having its gate connected to one of said rows of word lines, its drain connected to one of said columns of bit lines, and its source connected to a ground potential;

row decoder means (14) responsive to row address signals and being operatively connected to said cell matrix for selecting one of said rows of word lines;

column decoder means (16) responsive to column address signals and being operatively connected to said cell matrix for selecting one of said columns of bit lines;

reference periphery bit line circuit means (42) for generating a reference current for said columns of bit lines;

sensing circuit means (20) for comparing leakage current in a selected one of said columns of bit lines and the reference current associated with the selected one of said columns of bit lines during an APDE mode of operation and for generating a logic signal representative of data stored in the memory cell, said logic signal being at a high logic level when said bit line leakage current is greater than said reference current indicative of an over-erased memory cell and being at a low logic level when said bit line leakage current is less than said reference current indicative of a properly programmed memory cell;

data input buffer circuit means (26) for comparing said logic signal and a data signal representative of data programmed in the memory cell so as to generate a bit match signal which is at a high logic level when said logic signal and said data signal are equal;

pulse counter means (30) coupled to said data input buffer circuit means for counting a plurality of programming pulses applied thereto; and

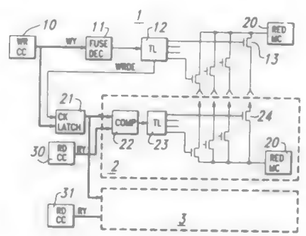
said data input circuit means selectively connecting only certain ones of said columns of bit lines to said pulse counter means in which said bit match signal is at the high logic level so as to program back over-erased memory cells connected to only the certain ones of said columns of bit lines.

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SEMICONDUCTOR MEMORY DEVICE HAVING REDUNDANT MEMORY CELLS

Masayoshi Nomura, Ryugasaki, and Kenya Adachi, Ibaraki, both of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 884,091, May 15, 1992, abandoned. This application Oct. 26, 1993, Ser. No. 143,510
Claims priority, application Japan, May 21, 1991, 3-146800
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—200 6 Claims



1. A semiconductor memory device comprising:

an array of memory cells;

at least one redundant memory cell;

a write access port, said write access port including addressing circuitry having an address input terminal for receiving a memory cell address, having a write decoder which generates a signal for accessing one of said memory cells of said array of memory cells in response to said memory cell address and said write decoder having the address of a defective memory cell stored therein in a nonvolatile manner, said write decoder generating a redundant write

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signal for accessing said redundant memory cell rather than said defective memory cell when said memory cell address corresponds to said address of said defective memory cell;

a register responsive to said redundant write signal, said register storing said memory cell address when said memory cell address corresponds to said address of said defective memory cell in response to said redundant write signal;

a plurality of read access ports each read access port including addressing circuitry for each of said read access ports, said addressing circuitry for each of said read access ports including a read decoder for selecting one memory cell of said array of memory cells to be addressed in response to an address signal provided on an address port, and a comparator, said comparator having a first input connected to said address port and a second input connected to said register, said comparator providing a redundant access signal to said read decoder which causes access to be provided to said redundant memory cell when said address signal and the address stored in said register correspond.

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SEMICONDUCTOR MEMORY DEVICE HAVING IMPROVED REDUNDANCY EFFICIENCY

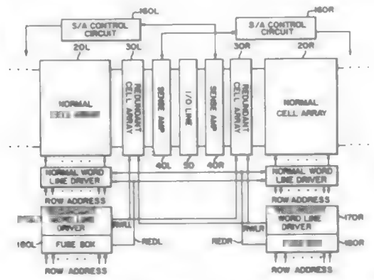
Dong-Il Suh, Kyungki; Tae-Sung Jang, Busan, and Dae-Je Chin, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 7, 1993, Ser. No. 162,467

Claims priority, application Rep. of Korea, Dec. 7, 1992, 23440/1992

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—200 **5 Claims**



1. A row redundancy circuit in a semiconductor memory device including a first memory cell array having a first redundant memory cell array for replacing a defective memory cell, a second memory cell array, adjacent to said first memory cell array, having a second redundant memory cell array for replacing a defective memory cell, and sense amplifier between said first and second memory cell arrays for sensing data from said first and second memory cell arrays, the row redundancy circuit comprising:

fuse box means, receiving block selection address signals, for selecting the redundant memory cell arrays, receiving row address signals, for selecting redundant word lines in the selected redundant memory cell array, and, for producing an output, said fuse box means comprising at least one fuse on a signal path used to receive said block selection address signals; and

redundant word line driver means, receiving the output of said fuse box means, for supplying redundant word line driving signals to said first and second redundant memory cell arrays respectively.

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SEMICONDUCTOR MEMORY DEVICE

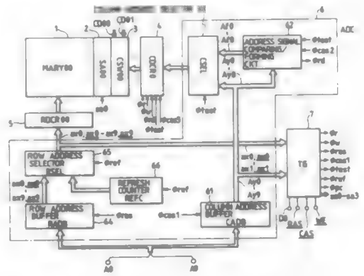
Shigetoshi Sakomura, Ohme; Kazuya Ito, Hamura; Hidetoshi Iwai; Toshiyuki Sakuta, both of Ohme; Masamichi Ishihara, Hamura, all of Japan, and Tomoshi Matsumoto, deceased, late of Kochi, Japan by Tadahiko Matsumoto, adminstrator , assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 23, 1992, Ser. No. 872,958

Claims priority, application Japan, Apr. 23, 1991, 3-091982

Int. Cl.[5] G11C *7/00, 29/00*

U.S. Cl. 365—201 **10 Claims**



1. A semiconductor memory device comprising:

a plurality of data lines;

a redundant data line;

a plurality of memory cells corresponding to said data lines and said redundant data line, respectively;

a common data line coupled through switch circuits respectively corresponding to said data lines and said redundant data line; and

control means for rendering one or plural switch circuits to the ON-state,

wherein said control means renders a first switch circuit corresponding to said redundant data line to the ON-state during a normal read operation, and renders said first switch circuit and said plural switch circuits, except a second switch circuit corresponding to a data line replaced by said redundant data line, to the ON-state during a test operation.

5,359,562

SEMICONDUCTOR MEMORY HAVING POLYCRYSTALLINE SILICON LOAD RESISTORS AND CMOS PERIPHERAL CIRCUITRY

Tokumasa Yasui, Kodaira; Shinji Shimizu, Koganei, and Kotaro Nishimura, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 383,536, Jul. 24, 1989, abandoned, which is a continuation of Ser. No. 140,243, Dec. 31, 1987, abandoned, which is a division of Ser. No. 818,200, Jul. 22, 1977, abandoned. This application Apr. 15, 1991, Ser. No. 684,867

Claims priority, application Japan, Jul. 26, 1976, 51-88159; Jun. 1, 1977, 52-63330; Jul. 6, 1977, 52-79838

Int. Cl.[5] G11C *11/417, 7/02;* **H01L** *27/11*

U.S. Cl. 365—154 **14 Claims**

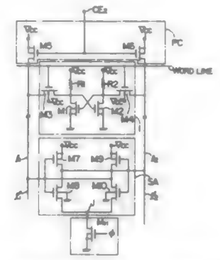
1. A static random access memory device comprising:

a plurality of memory cells disposed on a semiconductor substrate in rows and columns, each memory cell consisting essentially of two cross-coupled field effect transistors, two transmission field effect transistors and two load means, wherein the two load means are comprised of polycrystalline silicon strips; and

a peripheral circuit connected to the memory cells,

wherein the transistors of the memory cells are formed as N-channel field effect transistors in a P-conductivity type well region formed within an N-conductivity substrate,

which well region forms a PN-junction with the substrate, and



wherein the peripheral circuit is comprised of complementary field effect transistors formed on the same substrate.

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MEMORY SYSTEM WITH ADAPTABLE REDUNDANCY

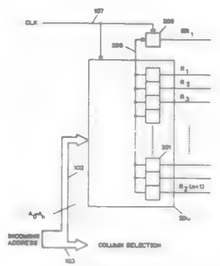
Francis Bredin, Maisons Alfort, and Thierry Cantiant, Dammarie-Les-Lys, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 9, 1992, Ser. No. 848,459

Claims priority, application European Pat. Off., Mar. 29, 1991, 91480052.9

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—200 **4 Claims**



1. A memory system comprising an array of memory elements interconnected into a plurality of lines of memory elements; a plurality of address decoders, each responding to an address signal to activate one of said plurality of lines of memory elements; at least one line of redundant memory elements; a first means producing a deselect output signal that prevents normal activation of a respective one of said plurality of lines of memory elements that is faulty by a respective one of said plurality of address decoders; and a second means for enabling at least one line of redundant memory elements; characterized by each of said plurality of address decoders comprising a decode section and an output driver section and wherein each output driver section comprises a first FET of a first conductivity type coupled between a first power supply and an output line, a second FET of a second conductivity type coupled between a second power supply and said output line, said first and second FETs having gate electrodes coupled to one another and to an output of said decode section.

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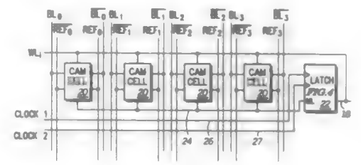
CONTENT ADDRESSABLE MEMORY SYSTEM AND METHOD OF OPERATION

Pei-chun P. Liu, and Karl Wang, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 4, 1993, Ser. No. 55,897

Int. Cl.[5] G11C *15/00*

U.S. Cl. 365—49 **8 Claims**



1. A content addressable memory system comprising:

a plurality of tag memory elements, each of the plurality of tag memory elements comprising:

a node; and

at least one content addressable memory cell coupled to the node, the content addressable memory cell storing a received data bit in a first mode of operation, the content addressable memory cell comparing a received data bit to a stored data bit and coupling a a matchline control signal to the node responsive to the comparison in a second mode of operation, the comparison during a second phase of a first control signal, the first control signal characterized by sequential first and second phases,

a plurality of latching circuits, each of the plurality of latching circuits coupled to a selected differing ones of the nodes, to aterminal for receiving the first control signal, to a terminal for receiving a second control signal, the first control signal characterized by sequential first and second phases, the latching circuit operable to latch a voltage level present on each of the plurality of nodes during the first phase of the second control signal and operable to couple each of the nodes to a first voltage supply terminal during the first phase of the first control signal, each of the plurality of latching circuits generating a latched voltage; and

a plurality of data memory elements, each of the plurality of data memory elements coupled to a selected differing one of the plurality of latching circuits, each of the plurality of memory elements storing a data word and outputting the data word responsive to the latched voltage of the selected one of the plurality of latching circuits.

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OPTICAL MEMORY

Sunao Takatori, Tokyo, Japan, assignor to Yozan Inc., Tokyo, Japan

Filed Apr. 8, 1992, Ser. No. 865,273

Claims priority, application Japan, Apr. 12, 1991, 3-108783

Int. Cl.[5] G11C *11/42, 13/04*

U.S. Cl. 365—105 **3 Claims**

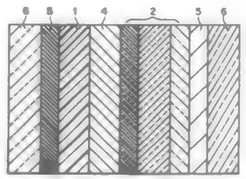
1. An optical memory comprising: light receiving means made from a material having a photovoltaic effect, said light receiving means being divided into a plurality of minute areas corresponding to image pixels to be processed, and wherein each minute area generates a voltage in relation to light each area receives;

a ferroelectric liquid crystal panel having a plurality of liquid crystal parts;

an amplifier layer which is disposed between said light receiving means and said ferroelectric liquid crystal panel, said amplifier layer being divided into a plurality of amplifying area, each said amplifying area corresponding to one

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of said minute areas for amplifying said voltage generated by said corresponding minute area and for creating an amplified first electric field in a corresponding one of said liquid crystal parts;



electrode means for impressing second electric field in a direction which is opposite to a direction of said first electric fields, upon each of said liquid crystal parts; and

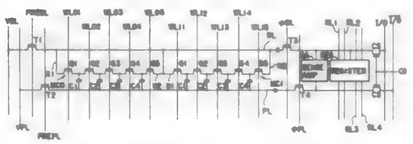
a switch selectively causing said electrode means to impress said second electric field upon each of said liquid crystal parts.

5,359,566

DYNAMIC RANDOM ACCESS MEMORY

Tohru Furuyama, tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 29, 1992, Ser. No. 890,252
Claims priority, application Japan, May 29, 1991, 3-125998
Int. Cl.[5] G11C *11/24*
U.S. Cl. 365—149 45 Claims



1. A semiconductor memory device comprising:

a memory cell array in which cascade memory cells arranged in matrix form, each cell being composed of a plurality of MOS transistors cascade-connected to each other, and a plurality of information storing capacitors one end of each of which is connected to one end of each of the transistors, respectively;

word lines equally connected to the memory cells in each row of the memory cell array;

a bit line equally connected to each column of the memory cell array;

a capacitor-plate line provided for each column of the memory cell array, and equally connected to the other end of each of the capacitor groups in said memory cells in the corresponding column;

a bit-line precharger circuit connected to each of said bit lines;

a capacitor-plate line precharger circuit connected to each of said capacitor-plate lines; and

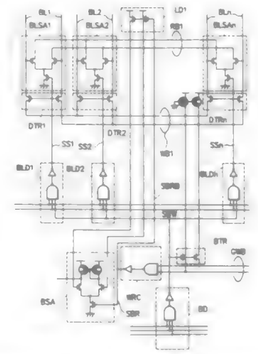
a sense amplifier circuit which is provided for column of said memory cell array, and which senses the potential between said bit line and said capacitor-plate line in the read operation.

5,359,567

SEMICONDUCTOR MEMORY DEVICE

Kenji Kondou, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 9, 1993, Ser. No. 87,898
Claims priority, application Japan, Jul. 9, 1992, 4-181991
Int. Cl.[5] G11C *11/413*
U.S. Cl. 365—207 4 Claims



1. A semiconductor memory device, comprising:

a memory cell array having a plurality of memory cells arranged in row and column directions, a plurality of pairs of bit lines connected to the corresponding columns of the memory cells and a plurality of word lines connected to the corresponding rows of the memory cells;

a plurality of first differential amplifier circuits provided for corresponding ones of said pairs of bit lines;

a plurality of pairs of transfer gates provided for corresponding ones of Said pairs of bit line pairs for transferring when activated, true and complementary signals indicative of write data to said pairs of bit lines;

a second differential amplifier circuit receiving and amplifying an output derived from a selected one of the first differential amplifier circuits; and

a discriminating circuit for distinguishing between a writing condition and a reading condition of said semiconductor memory device by the write data, said discriminating circuit deactivating said second differential amplifier circuit when said discriminating circuit receives a pair of active and inactive signals indicative of write data, which shows the writing condition of said semiconductor memory device; said discriminating circuit activating said second differential amplifier circuit when said discriminating circuit receives a pair of active signals indicative of the write data, which shows the reading condition of said semiconductor memory device.

5,359,568

FIFO MEMORY SYSTEM

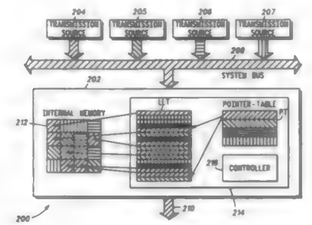
Aviel Livay, Bney Brak; Ricardo Berger, Ramat Hasharon, and Alexander Joffe, Rehovot, all of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 3, 1993, Ser. No. 72,643
Claims priority, application United Kingdom, Jun. 6, 1992, 9212065.8
Int. Cl.[5] G11C *7/00*; G06F *12/00*
U.S. Cl. 365—221 8 Claims

1. A first-in, first-out (FIFO) memory system comprising a plurality of FIFO memories for handling a predetermined number of transmission queues in a serial communication system, only one of said plurality of FIFO memories transmitting data stored therein at a time, the memory system comprising:

a plurality of blocks of memory, each of the plurality of blocks of memory having an information content, and each of the plurality of FIFO memories being assigned a respective, different block of the plurality of blocks of memory, unassigned blocks of memory forming a block pool; and

memory management means for adding at least one of the unassigned blocks of memory from the block pool to a FIFO memory on writing to said FIFO memory, each of said plurality of FIFO memories having a respective size which is selectively variable when not transmitting



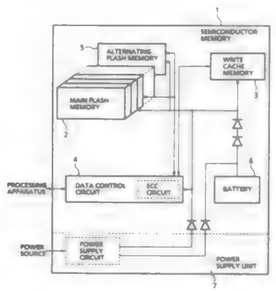
queued data up to a predetermined maximum size, and for returning the at least one of the unassigned blocks of memory from said FIFO memory to said block pool once all of said information content of said at least one of the unassigned blocks of memory has been transmitted, said memory management means, in response to determining that any of said plurality of FIFO memories is transmitting queued data, increasing the size of a transmitting FIFO memory to be more than said predetermined maximum size by adding at least one of said unassigned blocks of memory from said block pool to said transmitting FIFO memory in response to writing thereto.

5,359,569

SEMICONDUCTOR MEMORY

Kenji Fujita, Odawara; Toshiyuki Nakao, Hadano; Hirotsugu Yamagata, and Nobuyuki Saze, both of Odawara, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Oct. 29, 1992, Ser. No. 968,334
Claims priority, application Japan, Oct. 29, 1991, 3-282695
Int. Cl.[5] G11C *14/00*
U.S. Cl. 365—229 14 Claims



1. A semiconductor storage comprising:

a non-volatile semiconductor memory;

a volatile semiconductor memory;

a data control circuit, connected to said non-volatile semiconductor memory and said volatile semiconductor memory, for controlling read out of data from the non-volatile semiconductor memory and writing of data into the volatile semiconductor memory in response to an access instruction;

a battery for supplying power to the non-volatile semiconductor memory and the volatile semiconductor memory for a period of time during which said power supply circuit is in failure,

wherein said data control circuit has first writing means for writing the data written in the volatile semiconductor memory into the non-volatile semiconductor memory for a period of time during which the reading and writing operations responsive to said access instruction are not executed,

wherein said non-volatile semiconductor memory has a redundant non-volatile semiconductor memory, and

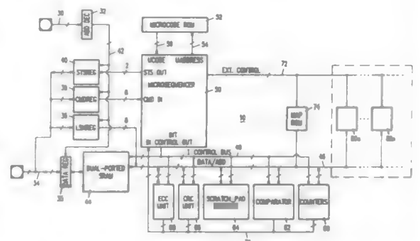
wherein said data control circuit has second writing means for detecting a predetermined condition in the non-volatile semiconductor memory and for writing the data written in the volatile semiconductor memory into said redundant non-volatile semiconductor memory into said redundant non-volatile semiconductor memory.

5,359,570

SOLID STATE PERIPHERAL STORAGE DEVICE

Juei-Chi Hsu; Ching S. Jeng, both of San Jose, and Ping Wang, Saratoga, all of Calif., assignors to Silicon Storage Technology, Inc., Sunnyvale, Calif.

Filed Nov. 13, 1992, Ser. No. 977,697
Int. Cl.[5] G11C *29/00, 8/00*
U.S. Cl. 365—230.01 11 Claims
MICROFICHE APPENDIX INCLUDED
(2 Microfiche, 95 Pages)



1. A solid state storage apparatus for interfacing with a computer providing a first address signal, said apparatus comprising:

means for translating said first address signal into a second address signal;

memory means for storing data signals, said memory means comprising a plurality of floating gate storage cells;

means for addressing said memory means with said second address signal to supply data signals thereto from said computer for storage or to retrieve data signals therefrom supplied to said computer; and

means for changing said translating means to translate said first address signal to a third address signal in the event said floating gate storage cells in said memory means at said second address signal are defective.

5,359,571

MEMORY ARRAY HAVING A PLURALITY OF ADDRESS PARTITIONS

Shih-Chiang Yu, 10451 Davison Ave., Cupertino, Calif. 95014

Continuation-in-part of Ser. No. 9,111, Jan. 27, 1993, abandoned. This application Jan. 25, 1994, Ser. No. 187,683
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.03 22 Claims

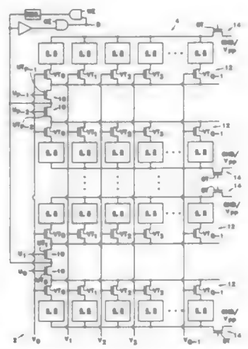
1. A memory array having a plurality of memory cells in

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which each of the memory cells in the memory array includes a first and a second control gate, such that a simultaneous energization of the first and second control gates enables the addressing of each of the memory cells, said memory array comprising:

a plurality of sub-arrays, each of said sub-arrays includes a plurality of memory cells arranged in a matrix of rows and columns, with the first control gate of each of the memory cells in a row being electrically connected, thereby forming a plurality of X-address lines, and with the second control gate of each of the memory cells in a column being electrically connected together, thereby forming a plurality of Y-address lines;

a plurality of row address lines; and



a plurality of column address lines, said plurality of row and column address lines being operatively connected to said sub-arrays such that a simultaneous energization of a pair of address lines selected from each of said row and column address lines enables the selective addressing one of said sub-arrays;

wherein the addressing of a selected memory cell in the memory array comprises the simultaneous energization of a selected pair of said row and column address lines for the selective addressing of one of said sub-arrays, and further comprises the simultaneous energization of a selected pair of said X-address and Y-address lines for the selective addressing of said selected memory cell in said selected sub-array.

5,359,572

SEMICONDUCTOR STORAGE DEVICE

Yoichi Sato, Iruma; Satoshi Shinagawa, Akishima, and Masao Mizukami, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi, VLSI Eng. Corp., Kodaira, both of Japan

Filed Apr. 23, 1992, Ser. No. 872,841

Claims priority, application Japan, Apr. 23, 1991, 3-119284

Int. Cl.[5] G11C *8/00*

U.S. Cl. 365—230.03 14 Claims

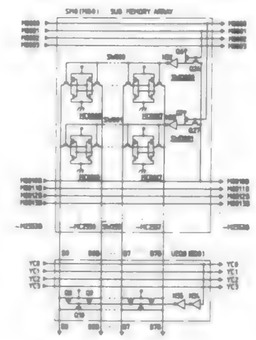
1. A semiconductor memory comprising:

a plurality of sub word lines arranged substantially in a straight line;

a plurality of main word lines, each of which is arranged substantially in parallel with said straight line; and

a plurality of gate circuits provided to correspond to said sub word lines,

wherein each of said gate circuits is coupled to at least two of said main word lines for receiving at least two bits on said plurality of main word lines so that one of said sub



word lines is selected on the basis of the signals from the at least two main word lines.

5,359,573

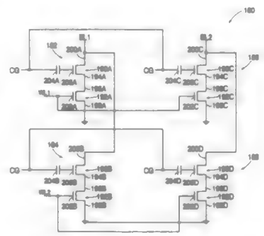
FLASH E[2]PROM ARRAY WITH MINGLE POLYSILICON LAYER MEMORY CELL

Patrick C. Wang, Cupertino, Calif., assignor to Lattice Semiconductor Corporation, Hillsboro, Oreg.

Filed Jun. 19, 1992, Ser. No. 901,357

Int. Cl.[5] H03K *19/21;* G11C *11/34*

U.S. Cl. 365—185 5 Claims



1. A flash E^2PROM cell array comprising a plurality of flash E^2PROM cells arranged in columns and rows, each cell having only a single polysilicon layer and comprising a first transistor having a drain, a source, a floating gate and a control gate, the threshold voltage of such first transistor being changeable by adding hot electrons to the floating gate thereof, and a second transistor having a drain, a source, and a gate, the source of the first transistor being connected to the drain of the second transistor;

a plurality of bit lines, each bit line connected to the drain of each first transistor of each cell in a column of cells;

a plurality of word lines, each word line connected to the gate of each second transistor in each cell in a row of cells;

the control gates of each of the first transistors of each cell in a row of cells being connected.

5,359,574

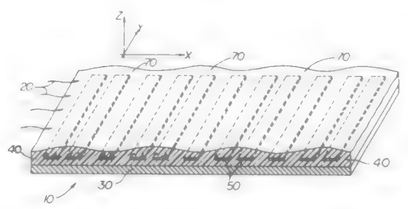
ELECTROMAGNETICALLY ACTIVATED COMPLIANT WAVY-WALL

Richard H. Nadolink, Portsmouth, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 27, 1993, Ser. No. 113,378

Int. Cl.[5] H04K *3/00*

U.S. Cl. 367—1 11 Claims



1. Apparatus for selectively affecting turbulence and noise characteristics of a body operating in a fluid medium, said apparatus comprising:

a coating of compliant material covering said body at least in part; and

a plurality of electromagnets embedded in said coating for generating magnetic forces operative to deform a surface of said coating into a wavy-wall having selected characteristics.

5,359,575

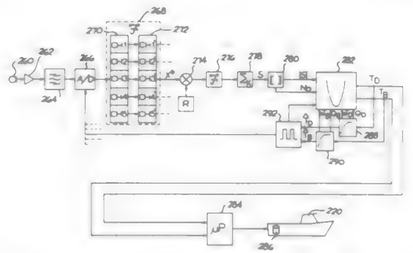
UNDERWATER PULSE TRACKING SYSTEM

Ross E. Williams, Dobbs Ferry, N.Y.; Bryant G. Ragan, Metairie, and Robert H. Kemp, Jr., Harahan, both of La., assignors to The Laitram Corporation, Harahan, La.

Filed Sep. 8, 1993, Ser. No. 118,076

Int. Cl.[5] G01S *15/00*

U.S. Cl. 367—127 25 Claims



1. An underwater acoustic signal tracking apparatus for tracking individual acoustic pulses propagated underwater in response to a synchronizing event, comprising:

a) means for synchronizing the tracking apparatus to the synchronizing event;

b) a transaducer for converting underwater acoustic energy into electrical energy;

c) a receiver connected to the transducer for extracting pulse signals from the electrical energy, the pulse signals representing individual acoustic pulses having predetermined characteristics propagated underwater in response to the synchronizing event, the receiver Further being enabled during an adjustable time window relative to the synchronizing event;

d) a pulse detector connected to the receiver and having an adjustable detection threshold characteristic varying within the time window, the pulse detector further selecting a maximum pulse signal whose amplitude exceeds the detection threshold characteristic according to a predetermined criterion during the time window;

e) means for assigning a time of reception relative to the associated synchronizing event to the maximum pulse signal; and

f) means for adjusting the detection threshold characteristic of the pulse detector as a function of the time of reception of the maximum pulse signal.

5,359,576

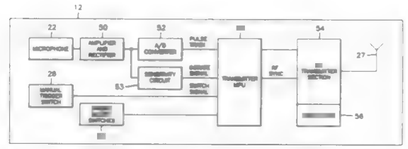
VOICE ACTIVATED TARGET LAUNCHING SYSTEM WITH AUTOMATIC SEQUENCING CONTROL

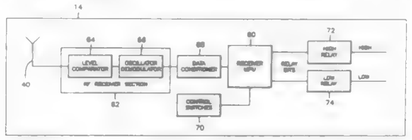
Gary N. Bunner, Starkville, and Michael A. Goines, Pheba, both of Miss., assignors to The Computer Learning Works, Inc., Starkville, Miss.

Filed Jan. 17, 1992, Ser. No. 822,128

Int. Cl.[5] H04Q *1/00*

U.S. Cl. 367—197 24 Claims





1. A system for voice triggering a target launching machine comprising:

transmitter means adapted to be attached to worn on the body of a user comprising:

a microphone carried by a user for detecting a voice trigger command of the user and generally as output an electrical signal representative thereof;

target select switches for designating a particular target to be launched;

means for converting the output of said microphone to a digital pulse train;

transmitter microprocessor means receiving as input the digital pulse train generated by said means for converting and the output of said target select switches for generating a digital word comprising a plurality of binary bits, said digital word indicating the target to be launched;

modulating means for modulating said digital word onto a radio frequency carrier signal;

radio frequency transmission means for transmitting said carrier signal through the air waves;

receiver means adapted to be placed proximate the target launching machine and interfacing therewith, said receiver means comprising:

an interface cable to connect said receiver means with said target launching in place of a cable supporting conventional mechanical pulling switches;

radio frequency receiving means for receiving the carrier signal transmitted by said transmitter means;

demodulation means for demodulating said carrier signal to obtain said digital word;

relay means for generating relay control signals to control the target launching machine, said relay control signals being supplied to said target launching machines through said interface cable;

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receiver microprocessor means for examining said digital word and generating relay control signals to control said relay means, said receiver microprocessor means including storage means for storing a target sequence specifying a normal sequence of targets to be launched, said receiver microprocessor means decoding said digital word to determine which target is to be launched and whether the target designated in said digital word is in sequence, and generating said relay control signals to launch either a target in the target sequence or a target not in the target sequence on the basis of said digital word.

5,359,577

ALARM CLOCK HAVING AN AMBIENT LIGHT DETECTOR

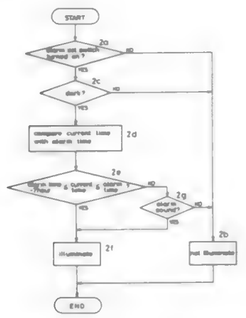
Yukari Hoshino; Takahiro Izukawa, and Hirobumi Okuyama, all of Tokyo, Japan, assignors to Seikosha Co., Ltd., Japan

Filed Sep. 1, 1993, Ser. No. 115,472

Claims priority, application Japan, Sep. 3, 1992, 4-235967; Sep. 7, 1992, 4-238279

Int. Cl.[5] G04B *19/22, 23/02*

U.S. Cl. 368—67 13 Claims



1. An alarm clock, comprising: a time displaying section for displaying time information; alarm setting means for setting an alarm time; controllable illuminating means for illuminating the displaying section; detecting means for detecting ambient light; and controlling means for controlling the illuminating means to illuminate the displaying section depending on both the alarm time and the detected ambient light.

5,359,578

TIMEPIECE FOR GEOMETRICALLY SYNCHRONIZED TIME INDICATIONS

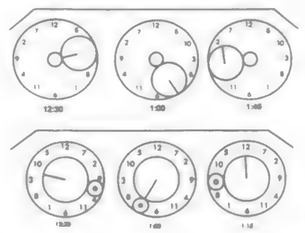
Stefano Truini, 285 Central Park West, New York, N.Y. 10024

Filed Jun. 1, 1992, Ser. No. 891,950

Int. Cl.[5] G04B *19/00, 19/20, 19/06*

U.S. Cl. 368—76 8 Claims

1. A timepiece characterized by a concentric circular plane or ring within which one or more circular discs or rings each with an external circumference less than 11/12 of the external circumference of the concentric circular plane or ring rotate as time indicators to provide the indication of minutes and the indication of hours such that there exists at least one rotating time indicator disc or ring which synchronizes the indication of minutes and the indication of hours by continually acting as a geometrical link between the two indications without which neither indication would be at all possible, and such that there exists at least one rotating time indicator disc or ring which provides its time indication by treating 60 minutes as representing less than 330° but more than 60° of the 360° circumference of the concentric circular plane or ring at any given moment, and that this portion of the 360° circumference of the concentric circular plane or ring as representing 60 minutes changes



its position upon the concentric circular plane or ring from one hour to the next.

5,359,579

MAGNETO-OPTICAL RECORDING METHOD AND MEDIUM FOR RECORDING THREE-VALUE INFORMATION

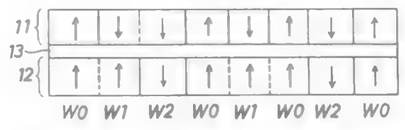
Hiroo Karube, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 12, 1993, Ser. No. 89,547

Claims priority, application Japan, Jul. 10, 1992, 4-183277

Int. Cl.[5] G11B *13/04*

U.S. Cl. 369—13 2 Claims



1. A magneto-optical recording medium, comprising:

a first transparent recording film in the form of a perpendicular magnetization layer;

a second transparent recording film in the form of a perpendicular magnetization layer;

a transparent dielectric film formed between said first and second recording films; and

a substrate having said first recording film, said dielectric film and said second recording film formed in layers on an outer face thereof;

said first and second recording films being magnetized in a same initial magnetization direction in an initial condition of said magneto-optical recording medium;

said first recording film having a first threshold value for a recording magnetic field, which is a minimum magnetic field necessary to reverse the direction of magnetization, lower by a predetermined amount or more than a second threshold value for a recording magnetic field of said second recording film;

said first and second recording films being magnetized such that, while light of a particular power is irradiated upon said magneto-optical recording medium, when a magnetic field higher than the second threshold value is applied in the same direction as the initial magnetization direction, both of said first and second recording films are magnetized in the same direction as the initial magnetization direction; when a magnetic field higher than the first threshold value but lower than the second threshold value is applied in the direction opposite to the initial magnetization direction, only said first recording film is magnetized in the direction opposite to the initial magnetization direction; and when a magnetic field higher than the second threshold value is applied in the direction opposite to the initial magnetization direction, said first and second recording films are magnetized in the direction opposite to the initial magnetization direction.

5,359,580

METHOD OF USING A SINGLE MICROPROCESSOR TO PERFORM DATA RETRIEVAL AND DISC REPRODUCTION CONTROL IN A DISC REPRODUCING APPARATUS

Yoshihiro Miura, Tokyo; Koji Takagi; Takashi Morita, both of Kanagawa, and Fumihiko Yoshii, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

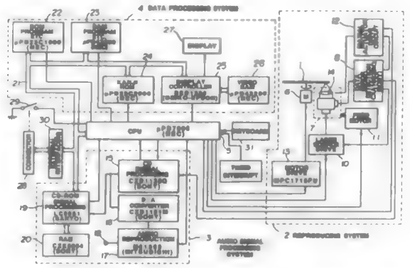
Continuation of Ser. No. 626,216, Dec. 12, 1990, abandoned.

This application Feb. 22, 1993, Ser. No. 20,179

Claims priority, application Japan, Jan. 9, 1990, 2-2149

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—32 4 Claims



1. A method of using a single central processing unit to perform data retrieval and to control a disc reproduction mechanism in a disc reproducing apparatus for reproducing selected data from a disc, the method comprising the steps of:

providing:

a disc reproduction mechanism, and

a single central processing unit operating in response to a program including a main routine and a subroutine;

executing the main routine to cause the single central processing unit to perform data retrieval, wherein data to be reproduced from the disc is selected: and

executing the subroutine in response to a timed interrupt provided to the single central processing unit, the subroutine causing the single central processing unit to control the disc reproduction mechanism in reproducing data from the disc.

5,359,581

DETECTOR FOR MOVING VELOCITY OF LIGHT BEAM SPOT

Kenji Tamaki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 893,890, Jun. 4, 1992, abandoned, which is a continuation of Ser. No. 547,225, Jul. 3, 1990, abandoned. This application Jan. 19, 1994, Ser. No. 183,260

Claims priority, application Japan, Jul. 4, 1989, 1-171101; Jun. 27, 1990, 2-166855

Int. Cl.[5] G11B *7/085*

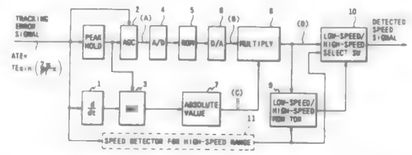
U.S. Cl. 369—44.28 6 Claims

1. A detector for detecting a moving velocity of a light beam spot in moving the light beam spot from a current track to seek a target track, comprising:

differentiation means for differentiating an analog tracking error signal indicating a relative position between a track and the light beam spot, detected during the seeking of the target track;

memory means for storing digital data representing a constant value according to the relative position between a track and the light beam spot;

a digital-to-analog converter for converting the digital data to an analog signal representing the constant value outputted from said memory means; and



operation means for producing and outputting a signal corresponding to a value

$$ATE'\left\{TE\left(\frac{2\pi}{Pt}\right)\sqrt{1-\left(\frac{ATE}{TE}\right)^2}\right\}^{-1}$$

comprising the value of the analog signal multiplied by a value of a signal corresponding to an output from said differentiation means by using the analog signal and the signal corresponding to the output from said differentiation means, wherein ATE is a tracking error signal, ATE' is a differential signal of ATE, TE is an amplitude of ATE, and Pt is a track pitch,

wherein the value of the analog signal multiplied by the value of the signal corresponding to an output of said differentiation means indicates the moving velocity of the light beam spot relative to the track.

5,359,582

SUBCODE READING APPARATUS FOR A COMPACT DISC PLAYER

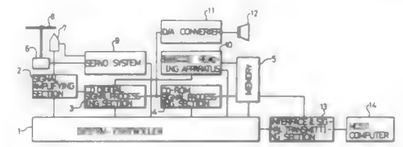
Dae Y. Kim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 28, 1992, Ser. No. 998,578

Claims priority, application Rep. of Korea, Dec. 28, 1991, 91-24908

Int. Cl.[5] G11B *20/10*

U.S. Cl. 369—47 6 Claims



1. A subcode reading apparatus for a compact disc player, comprising:

means for controlling start and stop of processing subcode data;

compact disc digital signal processing means for separating said subcode data from other data obtained from a compact disc;

a memory for storing said subcode data;

shift register means for converting said subcode data in series outputted from said compact disc digital signal processing means into data in parallel and outputting said parallel subcode data to said memory;

address generating means for assigning addresses of said memory to store said subcode data in said memory; and

timing control means for controlling operational timing of said compact disc digital signal processing means, said shift register means and said address generating means,

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respectively, to write said subcode data in said memory according to a command signal from said control means said timing control means comprising:

a first switching means for switching a master clock according to said command signal from said control means to start said subcode data processing;

a counter for counting said master clock inputted from said first switching means;

first to fifth AND gates receiving and AND-gating the outputs of said counter, respectively;

a second switching means for switching said master clock inputted to said shift register means as a shift clock according to the output of the first AND gate;

a third switching means for switching said master clock inputted to said compact disc digital signal processing means as its clock according to the output of the second AND gate;

a first flip-flop receiving the outputs of the fourth and fifth AND gates, the output of the first flip-flop being supplied to said memory as its write signal; and

a first invertor for inverting the output of the third AND gate and outputting the inverted signal to the second and third switching means, respectively, as their clear signals.

5,359,583

METHOD FOR PREVENTING ERRONEOUS RECORDING IN COMPACT DISC PLAYER

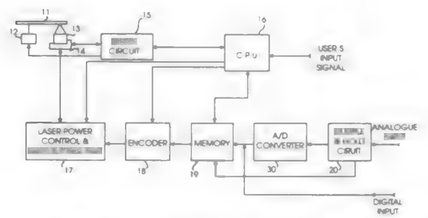
Jung J. Jung, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Feb. 10, 1992, Ser. No. 832,916

Claims priority, application Rep. of Korea, Feb. 13, 1991, 91-2295

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—54 **13 Claims**



1. A method for preventing erroneous recording of music data representing music onto a compact disk in a compact disk player having a panel of a plurality of user selectable keys, the method comprising the steps of:

temporarily storing the music data, to be recorded onto said compact disk, in a memory having a predetermined capacity, to delay recording of the music data onto said compact disk for a period of time substantially the same as a time required to store the music data in said memory in response to user selection of a first one of said keys;

determining whether an error input signal, indicating an erroneous recording, is input in response to user selection of a second one of said keys;

determining whether said period of time has elapsed when said error input signal has been determined to have been input;

halting the storage of the music data into said memory and preventing the recording of the music data onto the compact disc upon determining said error input signal has been input and said period of time has not elapsed; and

storing information regarding the music data into a program memory area of said compact disk and setting a defect flat for removing information regarding an erroneous recording from a Table of Contents music list upon completion of said recording.

5,359,584

DATA RECORDING/REPRODUCING METHOD AND APPARATUS HAVING MEANS FOR RELIABLE DETECTION OF UNRECORDED SECTORS

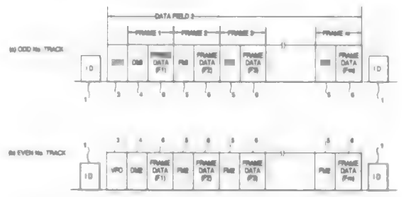
Yoshihisa Fukushima, Osaka; Isao Satoh, Neyagawa; Yuzuru Kuroki, Sapporo, and Tamotsu Matsuo, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 18, 1989, Ser. No. 451,747

Claims priority, application Japan, Dec. 16, 1988, 63-319033

Int. Cl.[5] G11B *5/09*

U.S. Cl. 369—58 **4 Claims**



4. A data reproducing apparatus for reproducing data from a disk-shaped information recording medium having formed thereon a plurality of concentric or spiral tracks each being divided into a plurality of sectors, each of the sectors having an ID field in which address information has been recorded and a data field in which sector data has been recorded subsequent to a data mark, the data mark being a synchronization signal for identifying a head of the data field, wherein a plurality of distinct data marks are recorded such that data marks recorded in sectors which are adjacent to each other and contained in tracks which are adjacent to each other are different from each other, said apparatus comprising:

data mark storing means for storing the plurality of distinct data marks;

means for determining a target sector from which a sector data is to be reproduced;

means for reproducing a data mark recorded in the data field of the target sector;

data mark detection means for selecting one of the plurality of distinct data marks according to an address of the target sector and for detecting a coincidence between the selected data mark and the reproduced data mark;

sector data reproducing means responsive to a detection result by the data mark detection means for reproducing the sector data from the target sector only when the reproduced data mark coincides with the selected data mark;

wherein each data field of each sector is divided into a plurality of frames in which a first frame has the data mark added at the head thereof and each of the remaining frames has a frame mark added at a head thereof, the frame mark for identifying the head of the frame, wherein a plurality of distinct frame marks are recorded on the recording medium such that a frame mark in each sector is different from a frame mark in the adjacent sector, and

wherein said apparatus further comprises:

frame mark storing means for storing the plurality of distinct frame marks;

frame mark reproducing means for reproducing a frame mark recorded in the data field of the target sector;

frame mark detection means for selecting one of the plurality of distinct frame marks according to the address of the target sector and for detecting a coincidence between the selected frame mark and the reproduced frame mark; and

said sector data reproducing means responsive to a detection result by the frame mark detection means for reproducing the sector data from a frame of the target sector only when the reproduced frame mark coincides with the selected frame mark;

wherein the plurality of distinct frame marks are recorded such that a same frame mark is recorded in all sectors having a same track address, and wherein the frame mark selection means selects one of the plurality of distinct frame marks according to the track address of the track containing the target sector, and

wherein two different frame marks are recorded as the plurality of distinct frame marks, and wherein the frame mark storing means stores the two different frame marks, and wherein the frame mark selection means selects one of the two different frame marks when the target sector has an even number track address and the other of the two different data marks when the target sector has an odd number track address.

5,359,585

INFORMATION REPRODUCING APPARATUS WITH VARIABLE DIGITIZING THRESHOLD

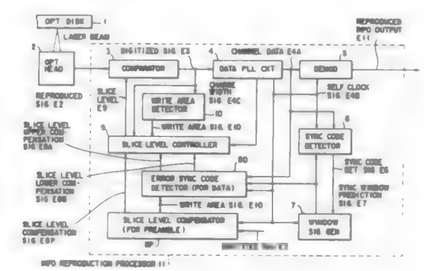
Koki Tanoue; Tomohisa Yoshimaru, both of Yokohama, and Saeo Ueno, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 29, 1992, Ser. No. 953,157

Claims priority, application Japan, Sep. 30, 1991, 3-250668

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—59 **15 Claims**



14. An information reproducing apparatus for reading out data from an optical disc having, as data memory units, a plurality of block units each provided with a preamble part storing a predetermined code for synchronizing the block units and a data storing portion storing data, said optical disc storing data on the basis of the length and interval of pits, said apparatus comprising:

light emitting means for emitting a light beam to the optical disc, thereby forming pits on the optical disc;

control means for controlling the light emission operation of the light emitting means, and changing the length of the pits formed on the optical disc, thereby storing data on the optical disc;

read means for reading the data stored in the optical disc in units of a block, and outputting a read signal;

digitizing means for digitizing the read signal output from the read means by using a slice level;

setting means for setting the slice level of the digitizing means on the basis of the signal digitized by the digitizing means, while the data stored in the preamble part of the block unit is read by the read means;

generating means for comparing the signal digitized by the digitizing means and clock signals output at predetermined intervals, thereby generating a charge width signal representing a phase difference between the digitized signal and the clock signals, while the data stored in the data storing portion of the block unit is read by the read means;

first changing means for changing the slice level of the digitizing means on the basis of the charge width signal generated by the generating means, so as to reduce the charge width signal;

detection means for detecting a sync code included in the digitized signal digitized by the digitizing means; and

second changing means for changing the slice level of the digitizing means by a predetermined amount when the detection means has detected a code different from the sync code.

5,359,586

READ OUT APPARATUS FOR READING OUT INFORMATION FROM MAGNETO-OPTIC DISK

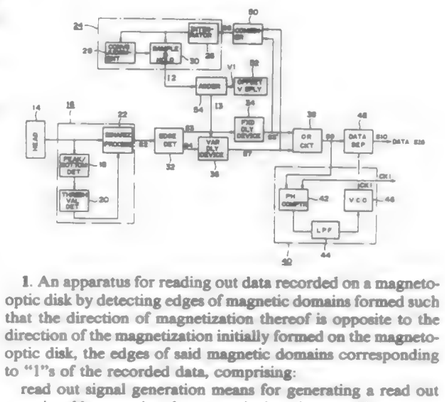
Haruhiko Izumi; Masaharu Moritsugu, and Masakazu Taguchi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 2, 1993, Ser. No. 115,325

Claims priority, application Japan, Sep. 24, 1992, 4-253385

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—59 **7 Claims**



1. An apparatus for reading out data recorded on a magneto-optic disk by detecting edges of magnetic domains formed such that the direction of magnetization thereof is opposite to the direction of the magnetization initially formed on the magneto-optic disk, the edges of said magnetic domains corresponding to "1"s of the recorded data, comprising:

read out signal generation means for generating a read out signal by scanning the magnetic domains on said magneto-optic disk;

binarization means connected with said read out signal generation means for converting the read out signal into a binarized signal;

edge detection means connected with said binarization means for detecting from said binarized signal a front edge signal and a rear edge signal corresponding to the front edge and the rear edge of the magnetic domains, respectively;

fixed delay means connected with said edge detection means for delaying either of said front edge signal and said rear edge signal;

variable delay means connected with said edge detection means for delaying the other of said front edge signal and said rear edge signal;

combiner means connected with said fixed delay means and said variable delay means for combining the output signal of said fixed delay means and the output signal of said variable delay means;

integrator means connected with said variable delay means and said combiner means for integrating the output signal of said combiner means and outputting the integrated value to said variable delay means, said integrated value determining the delay amount of said variable delay means;

an OR circuit connected with said fixed delay means and said variable delay means for outputting an edge signal;

a phase-locked loop circuit connected with said OR circuit for generating a clock signal synchronized with said edge signal; and

data separator means connected with said phase-locked loop circuit and said OR circuit for separating the data from the

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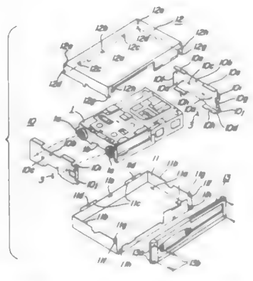
edge signal output from said OR circuit by the use of the clock signal output from said phase-locked loop circuit.

5,359,587

ELECTRONIC EQUIPMENT HOUSING ASSEMBLY WITH INTEGRAL FASTENING COMPONENTS

Yukiyasu Uehara, Toda, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1992, Ser. No. 909,024
Claims priority, application Japan, Jul. 8, 1991, 3-167116
Int. Cl.[5] G11B *33/02*
U.S. Cl. 369—75.1 **5 Claims**



1. A case assembly of an electronic apparatus, wherein the case assembly comprises:

the case having at least an upper case portion and a lower case portion having respective sidewalls;

the sidewall of the lower case portion having an upward engagement projection (**11***c*) overlapping the sidewall of the upper case portion and a claw (**11***d*) at a part of the engagement projection,

the sidewall of the upper case portion having a downward engagement projection (**12***a*) overlapping the sidewall of the lower case portion and a claw (**12***b*) at a part of the engagement projection,

the sidewall of the lower case portion having an opening (**11***e*) which engages the claw (**12***b*) of the upper case portion,

the sidewall of the upper case portion having an opening (**12***c*) which engages the claw (**11***d*) of the lower case portion, and

the engagement projection (**11***c*) of the lower case portion and the engagement projection (**12***a*) of the upper case portion overlapping to provide a hinge connection when the upper case portion is fitted on the lower case portion during assembly of the case;

support means connecting and supporting at least one of the upper and lower case portions provided in the case;

at least one of the support means and the lower case portion having first positioning means (**10***h*, **11***a*, and **10**, **11***b*) for positioning the support means in a horizontal direction to the lower case portion, and the first positioning means engaging a part of the other one of the support means and the lower case portion; and

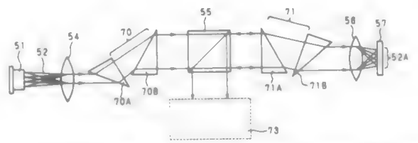
at least one of the support means and the upper case portion having second positioning means (**12***e* and **10***i*, **12***h*) for positioning the support means in a vertical direction to the upper case portion, and the second positioning means engaging a part of the other one of the support means and the upper case portion.

5,359,588

OPTICAL RECORDING/REPRODUCING APPARATUS

Teruo Fujita; Masahisa Shinoda; Naoyuki Egusa; Yasuyuki Sato, and Manabu Koike, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 16,861
Claims priority, application Japan, Feb. 12, 1992, 4-025151; Jun. 8, 1992, 4-147306
Int. Cl.[5] G11B *7/125*
U.S. Cl. 369—110 **22 Claims**



1. An optical system for use in a recording apparatus where a plurality of collimated beams from a plurality of laser beam sources are irradiated on an information recording medium comprising:

first beam reshaping means disposed after said plurality of laser beam sources in a laser propagation direction, for anamorphically expanding the plurality of collimated beam diameters in a first direction along which said plurality of laser beam sources are arranged, in order to change a ratio of the plurality of beam diameters in the first direction to the plurality of beam diameters in a second direction, perpendicular to the first direction; and

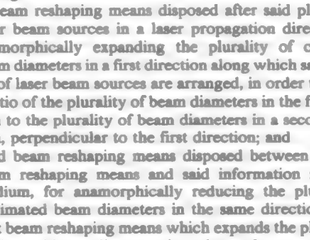
second beam reshaping means disposed between said first beam reshaping means and said information recording medium, for anamorphically reducing the plurality of collimated beam diameters in the same direction as said first beam reshaping means which expands the plurality of collimated beam diameters in order to decrease the ratio.

5,359,589

OPTICAL INFORMATION RECORDING AND REPRODUCING APPARATUS HAVING FUNCTIONS FOR ADJUSTING INTENSITY OF LIGHT BEAM

Akira Mashimo, Tokorozawa, Japan, assignor to Teac Corporation, Japan

Filed Jun. 11, 1990, Ser. No. 535,893
Claims priority, application Japan, Jun. 13, 1989, 1-149790
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—116 **6 Claims**



1. An apparatus for recording and reproducing information on and from a rotary information recording disc by using a light beam comprising:

intensity detection means for detecting a recording light intensity based on a reproduction signal obtained by projecting said light beam onto said rotary information recording disc at a time information is reproduced, said recording light intensity being an intensity of said light beam at a time information is recorded, said intensity detection means including a wave shaping means having center voltage detection means for detecting a center voltage which has a level positioned at a center of a range between a maximum voltage of said reproduction signal and a minimum voltage of said reproduction signal and comparator means for comparing said reproduction signal with said center voltage detected by said center voltage detection means and for outputting a rectangular pulse signal, the level of which varies in accordance with the comparison result of said comparator means, said intensity detection means further including means for integrating said rectangular pulse signal output from said wave shaping means and outputting an average voltage of said rectangular pulse signal as an indication of recording light intensity;

determination means for determining whether or not said recording light intensity detected by said intensity detection means is within a permissible range and for outputting a determination result, said permissible range having an optimum value contained therein; and

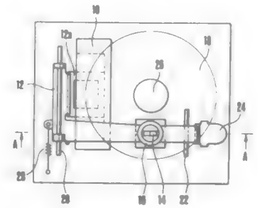
adjusting means for adjusting the intensity of said light beam at the time information is recorded on said disk in accordance with said determination result from said determination means, so that the intensity of said light beam at the time information is recorded is adjusted within the permissible range.

5,359,590

DISC DRIVE DEVICE HAVING NEGATIVE PRESSURE PAD

Shigeo Ogura, and Shigeki Okauchi, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 780,725, Oct. 21, 1991, abandoned.
This application Jan. 3, 1994, Ser. No. 176,332
Claims priority, application Japan, Oct. 24, 1990, 2-284383; Apr. 3, 1991, 3-071053
Int. Cl.[5] G11B *15/60*
U.S. Cl. 369—263 **28 Claims**



1. A disc drive device comprising:

a negative-pressure pad for generating a negative pressure between said negative-pressure pad and a disc-shaped recording medium by the rotation of the disc-shaped recording g medium; and

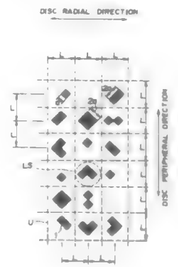
displacement means for bringing said negative pressure pad and a surface of the disc-shaped recording medium close to each other at least once after the disc-shaped recording medium has started to rotate, said displacement means being away from said negative pressure pad and said surface of the disc-shaped recording medium after said bringing operation.

5,359,591

OPTICAL DISC HAVING INFORMATION PITS IN FORM OF PLURALITY OF FRAGMENTS ARRANGED IN SYMMETRICAL PATTERN

Takayuki Nomoto, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 29, 1992, Ser. No. 998,056
Claims priority, application Japan, Jan. 20, 1992, 4-007840
Int. Cl.[5] G11B *7/26*
U.S. Cl. 369—275.4 **10 Claims**



1. An optical disc having an information recording surface on which information is recorded, said information being read out and reproduced by irradiating a laser light having a predetermined wavelength under the condition of a predetermined numerical aperture and receiving a diffracted and reflected laser light, said disc comprising:

a track spirally formed on said information recording surface and extending in a disc peripheral direction defined as a direction along the periphery of said optical disc, said track having a predetermined track pitch between neighboring tracks;

a plurality of information units formed on said track, each of said information units having a predetermined unit length in both of the disc peripheral direction and a disc radial direction defined as a direction perpendicular to the disc peripheral direction,

said information being recorded in the form of an information pit in each of said information units, said information pit having a plurality of pit patterns each of which is formed as combination of a plurality of pit fragments having substantially same shape, each of said pit fragments having a predetermined optical pit height and a plane figure which is symmetrical with respect to one of a first line or a second line, said first line passing through center points of each of said information units and extending in the disc peripheral direction, said second line passing through the center point and extending in the disc radial direction, and a common point in the plane figures of said pit fragments being located at the position substantially coincident with the center point of the information unit.

5,359,592

BANDWIDTH AND CONGESTION CONTROL FOR QUEUE CHANNELS IN A CELL SWITCHING COMMUNICATION CONTROLLER

Charles M. Corbalis, Saratoga; Ross S. Heitkamp, Mountain View, and Rafael Gomez, Sunnyvale, all of Calif., assignors to Stratacom, Inc., San Jose, Calif.

Filed Jun. 25, 1993, Ser. No. 83,623
Int. Cl.[5] H04J *3/14*; H04M *3/22*
U.S. Cl. 370—17 **28 Claims**

15. An apparatus for buffering communication cells in a plurality of queue channels in a communication controller, comprising:

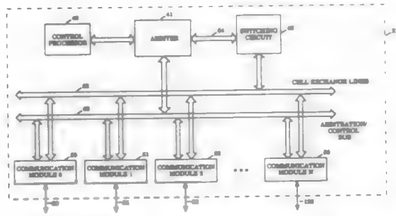
circuit for receiving a first communication cell over a first

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communication link, the first communication cell specifying a destination queue channel from among a plurality of queue channels, the first communication cell comprising a cell loss priority status;

circuit for discarding the first communication cell if the cell loss priority status is in a first state and if a depth of a destination cell queue corresponding to the destination queue channel exceeds a cell loss priority threshold for the destination queue channel;

circuit for entering the communication cell into the destination cell queue if the cell loss priority status is not in the first state or if the depth of the destination cell queue



corresponding to the destination queue channel does not exceed the cell loss priority threshold;

circuit for updating a set of queue service control parameters for each queue channel in a service chain while determining a next serviced queue channel in the service chain according to the queue service control parameters, the queue service control parameters specifying bandwidth allocation on a second communication link;

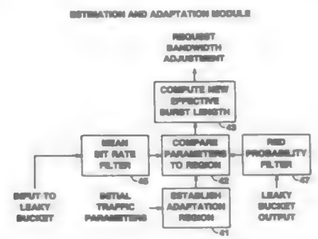
circuit for accessing a second communication cell from a serviced cell queue specified by the next serviced queue channel, and transferring the second communication cell over the second communication link.

5,359,593

DYNAMIC BANDWIDTH ESTIMATION AND ADAPTATION FOR PACKET COMMUNICATIONS NETWORKS

Jeffrey H. Derby, Chapel Hill; John E. Drake, Jr., Pittsboro, both of N.C.; Claude Galand, Cagnes Sur Mer, France; Levent Gun, Durham, N.C.; Gerald A. Marin, Chapel Hill, N.C.; Allen L. Roginsky, Durham, N.C., and Theodore E. Tedijanto, Cary, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 26, 1993, Ser. No. 112,736
Int. Cl.[5] H04J *3/14;* **H04L** *12/56*
U.S. Cl. 370—17 **10 Claims**



1. A packet communications network comprising

a plurality of nodes,

means for interconnecting source nodes and destination nodes of establishing a connection for the transmission of digital packets of information from a source node to a destination node in said network, and

a dynamic access control mechanism,

said dynamic access control mechanism comprising

means for measuring the mean bit rate of signals from said source,

a leaky bucket control circuit for controlling the flow of said signals from said source into said network,

means for measuring the loss probability of packets introduced by said leaky bucket control circuit,

means for establishing limits on the values of simultaneous pairs of measurements from said means for measuring the mean bit rate and said means for measuring the loss probability, and

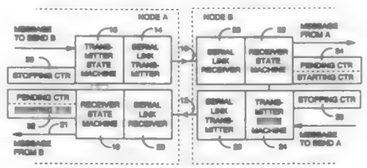
means responsive to a pair of said mean bit rate and loss probability measurements falling outside of said limits for modifying the bandwidth allocated to said connection.

5,359,594

POWER-SAVING FULL DUPLEX NODAL COMMUNICATIONS SYSTEMS

Joel M. Gould, Winchester, and Neal M. Lackritz, Burlington, both of Mass., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 15, 1992, Ser. No. 884,538
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—24 **12 Claims**



1. A system for enabling communications coordination between first and second nodes, said nodes operating asynchronously and having a full duplex transmission link connected therebetween, each node having transmitting means and receiving means connected by lines of said full duplex transmission link for forward and reverse direction message handling, a receiver means at said first node and a transmitter means at said second node connected via a line termed "mates" and a receiver means and a transmitter means resident in a single node and connected to said full duplex transmission link termed "partners", the system comprising:

means coupled to said transmission link for quiescing a line between mates to a non-current flow state in the absence of message traffic;

means responsive to message traffic for enabling lines comprising said full duplex transmission link whenever a message is to be transmitted, by causing said transmitter means at said first node to transmit to said receiver means at said second node, at least a synch character at both a start and an end of a message, said transmitter means at said first node continuing for a period after a synch character at the end of said message to generate blank signals; and

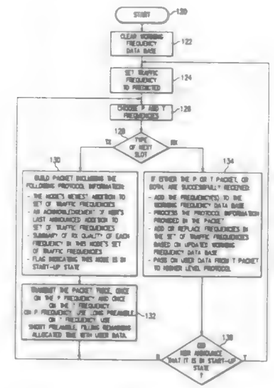
stopping means at said second node responsive to said synch character at the end of said message received from said transmitter means at said first node for controlling said receiver means at said second node to cease detecting signals after a pending time out which commences substantially upon receipt of said synch character, said pending time out set to expire before said transmitter means at said first node ceases transmission of said blank signals.

5,359,595

SKYWAVE ADAPTABLE NETWORK TRANSCEIVER APPARATUS AND METHOD USING A STABLE PROBE AND TRAFFIC PROTOCOL

Daniel O. Weddle, Plano, and C. David Young, Richardson, both of Tex., assignors to Rockwell International Corporation, Seal Beach, Calif.

Continuation of Ser. No. 639,492, Jan. 9, 1991, abandoned. This application Dec. 18, 1992, Ser. No. 993,495
Int. Cl.[5] H04J *1/00, 4/00;* **H04B** *17/00*
U.S. Cl. 370—50 **14 Claims**



1. A network of identical transceiver nodes for relaying traffic messages from node where each node can communicate with multiple predetermined neighbor nodes on a time multiplexed basis with separate time slots for transmitting each of said neighbor nodes intermixed with further separate time slots for receiving from said neighbor nodes, each of said nodes having a unique identification assigned thereto and each of said nodes comprising, in combination:

list means for causing initially transmitted probe signals to any given neighbor node to be at a base carrier frequency ascertained in accordance with a predetermined list of frequencies and a given frequency-time algorithm;

preamble means for generating a network-unique signature synchronization preamble based upon a unique identification assigned to an intended receiving node in the preamble, wherein a receiving node can establish synchronization preparatory to receiving data;

data supplying means for providing control and traffic data to be transmitted;

probe transmission means, connected to said list means, and data supplying means and said preamble means, for normally transmitting, as a probe signal, a first predetermined duration preamble and then a first predetermined number of control data bits in one of first and second portions of a transmit time slot where said first predetermined duration preamble is of a duration sufficient to resolve uncertainties in the time of arrival of the beginning of a probe on a given probe carrier frequency, to enable recognition, by a given receiving neighbor node, of the presence of a probe and the beginning of a data portion following the preamble;

traffic transmission means, connected to said list means, and said data supplying means and said preamble means, for normally transmitting, as a traffic signal after a condition of link-up has been recognized by a node, a second predetermined duration preamble and then a second predetermined number of data bits in the other of said first and second portions of the transmit time slot, the second duration preamble being substantially less in duration than said first duration preamble while being sufficient to resolve uncertainties in the time of arrival after approximate time of arrival has been measured and stored for a given traffic carrier frequency, to enable the recognition, by a given receiving neighbor node, of the presence of a traffic preamble and the beginning of data following the preamble;

receiving and measuring means for receiving probe transmissions of different base probe carrier frequencies and measuring the quality and time of reception, relative to a reference, of the receiving transmissions; and

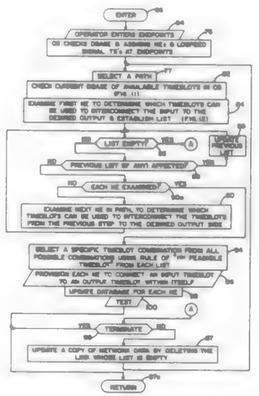
means, connected to said data supplying means, for informing a given neighbor node of a carrier frequency to be used for future traffic preamble and data portions.

5,359,596

APPARATUS AND METHOD FOR FINDING BANDWIDTH AND MAKING CIRCUITS IN A TELECOMMUNICATIONS TRANSPORT NETWORK

Ghazala Sadiq, Raleigh, N.C., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Oct. 1, 1992, Ser. No. 955,293
Int. Cl.[5] H04Q *11/04*
U.S. Cl. 370—54 **7 Claims**



1. A method for centrally establishing a selected, dedicated signal path between two endpoint timeslots in a preselected network path having a plurality of network elements having different timeslot interchangeability constraints, comprising the steps of:

checking a current network database for available timeslots in each network element in the preselected network path;

sequentially examining each of the plurality of network elements in the preselected network path for determining which of the available timeslots can be used to interconnect an input timeslot of a network element being examined, which is the same as an output timeslot of a preceding network element, to an output timeslot of the network element being examined while respecting the timeslot interchangeability constraints thereof and establishing a list for each of the plurality of network elements in the preselected network path of all output timeslots that can be used wherein, for an input timeslot that cannot be so used, deleting that input timeslot from the list of the preceding network element and determining, as a consequence of the step of deleting, if an input timeslot in any further preceding network element cannot any longer be connected to any output timeslot and deleting any such timeslot from the list of that further preceding network element;

selecting a set of timeslots by selecting a first timeslot in each list, in the preselected network path; and

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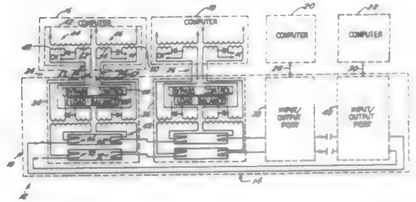
connecting the selected set of timeslots for establishing the selected, dedicated signal path.

5,359,597

MICROCONTROLLER-BASED CONCENTRATOR FOR A DATA NETWORK

Curtis G. McLamb, Sterling, and Timothy E. Dunavin, Rock Falls, both of Ill., assignors to Antec Corporation, Rolling Meadows, Ill.

Filed Sep. 27, 1993, Ser. No. 127,636
Int. Cl.[5] H04J *3/14*
U.S. Cl. 370—56 5 Claims



1. A multiple access unit concentrator for a plurality of computers, each of said computers being capable of supplying a phantom voltage, comprising, in combination:

a plurality of ports for interconnecting to and disconnecting from said computers;

activation means for receiving a manual input and responsively issuing an activation signal to said ports; and

a communications channel for serially connecting said ports, each of said ports including:

a coil actuated switch for connecting one of said computers to said port and disconnecting said one of said computers from said port, said switch including a coil having first and second leads, and

a microcontroller for monitoring said phantom voltage and said activation signal and responsively activating said switch, said microcontroller including first and second pluralities of output gates, said first lead of said coil being interconnected to said first plurality of output gates and said second lead of said coil being interconnected to said second plurality of output gates.

5,359,598

VOICE SERVER FOR DIGITAL COMMUNICATION NETWORK

Robert W. Steagall, North Salt Lake; Steven T. Barham, Salt Lake City, and John W. Love, Bountiful, all of Utah, assignors to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 991,473, Dec. 16, 1992, abandoned, which is a continuation of Ser. No. 542,066, Jun. 22, 1990, abandoned. This application Jun. 15, 1993, Ser. No. 77,887
Int. Cl.[5] H04Q *11/04;* H04J *3/12;* H04M *1/00*
U.S. Cl. 370—58.1 7 Claims

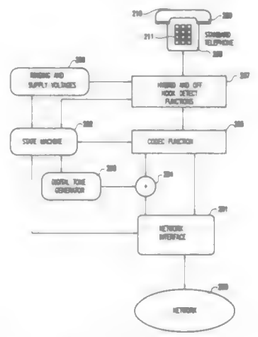
1. Apparatus for connection between a standard telephone set and an interface to a distributed digital communication network, said interface being responsive to digital signals from said apparatus for initiating and controlling progress of a call communication on said network, said apparatus comprising:

a state machine responsive to at least off-hook and keypad signals from said standard telephone set and digital control signals from said interface representing a progress state of said call communication,

a codec having a signal converter means for converting digital signals from said interface to analog signals reproducible by said standard telephone set and converting analog voice signals from said standard telephone set to digital signals for transmission to said interface,

digital tone code generating means responsive to said state machine for generating digital codes representing at least one of said keypad signal and said off-hook signal from said standard telephone set, and

means for inputting said digital codes from said digital tone code generating means to said codec, including means for combining said digital codes from said digital tone code



generating means with said digital signals from said interface, for conversion to analog signals

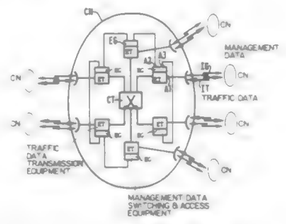
whereby call progress tones representing at least one of said off-hook signal and said keypad signals from said standard telephone set are locally generated independently of said distributed digital communication network or said interface to said distributed digital communication network.

5,359,599

INTERFACE FOR INSERTING A SET OF EQUIPMENTS INTERCONNECTED BY A TELECOMMUNICATION NETWORK INTO A MANAGEMENT SYSTEM FOR SAID EQUIPMENTS

Claude Destouesse, Argenteuil, and Jean Montarges, Fontenay le Fleury, both of France, assignors to Alcatel Telspace, Nanterre Cedex, France

Filed Feb. 17, 1993, Ser. No. 18,540
Claims priority, application France, Feb. 19, 1992, 9201878
The portion of the term of this patent subsequent to Oct. 18, 1994, has been disclaimed.
Int. Cl.[5] H04L *12/24, 12/46;* H04Q *11/04*
U.S. Cl. 370—58.3 2 Claims



1. An interface system for inserting traffic data transmission equipments interconnected by a traffic telecommunication network into a management system comprising a management support telecommunication network for said traffic data transmission equipments and having a plurality of nodes constituted by management data switching and access equipments associated with respective traffic data transmission equipments managed by said management support telecommunication network and said management data switching and access equipments

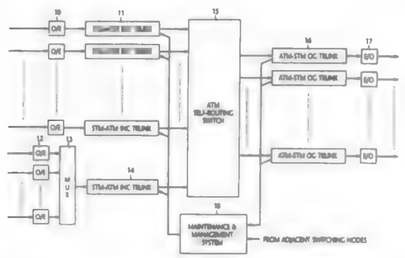
being interconnected to form a meshed network topologically independent of said network, said meshed network using flooding mode broadcasting for transmitting management data, where said interface system is formed by one of said management data switching and access equipments and comprises, for each traffic data transmission equipment and integrated in one and the same physical entity, means for interfacing with said management support network, means for interfacing with said traffic data transmission equipment and means for implementing a management data switching function.

5,359,600

HIGH THROUGHPUT SUPERVISORY SYSTEM FOR ATM SWITCHING SYSTEMS TRANSPORTING STM-N SIGNALS

Hiromi Ueda; Kenji Akutsu, both of Kanagawa; Ryuichi Ikematsu; Takatoshi Kurano, both of Tokyo; Yoshihiro Ashi, Kanagawa; Yukio Nakano, Kanagawa; Takafumi Chujo, Kanagawa, and Shigeo Amemiya, Kanagawa, all of Japan, assignors to Nippon Telegraph and Telephone Corporation; NEC Corporation; Hitachi, Ltd. and Fujitsu Limited, Japan

Filed Feb. 16, 1993, Ser. No. 17,744
Claims priority, application Japan, Feb. 14, 1992, 4-28372
Int. Cl.[5] H04L *12/56;* H04Q *11/04*
U.S. Cl. 370—60.1 3 Claims



1. An asynchronous transfer mode (ATM) switching system, comprising:

an ATM self-routing switch having inlets and outlets for transferring an ATM cell from one of said inlets to one of said outlets according to a virtual path identifier (VPI) contained in a cell header of the ATM cell;

a plurality of incoming trunk circuits connected respectively to the inlets of the ATM self-routing switch, each of said incoming trunk circuits receiving a synchronous transport modules-level N (STM-N) signal containing an STM overhead in a frame of the STM-N signal; and

a plurality of outgoing trunk circuits connected respectively to the outlets of the ATM self-routing switch, each of said outgoing trunk circuits receiving an ATM cell containing a VPI from the ATM self-routing switch;

each of the incoming trunk circuits comprising:

overhead removal means for removing said STM overhead from each frame of said STM-N signal to create a vacant interval in the frame;

STM-ATM format converting means for converting each frame of the STM-N signal from the overhead removal means according to ATM cell format into a series of data ATM cells and deriving at least one idle ATM cell from said vacant interval;

VPI generating means for inserting a VPI into the cell header of each of said data ATM cells and into the cell header of said idle ATM cell, each said inserted VPI identifying one of said outgoing trunk circuits; and

means connected to said STM-ATM format converting means for inserting a supervisory bit sequence into payload field of said idle ATM cell to produce a supervisory ATM cell, and sending the data ATM cells and the supervisory ATM cell into one of said inlets of said ATM self-routing switch;

each of said outgoing trunk circuits comprising:

means for examining the supervisory bit sequence contained in the supervisory ATM cell received from one of said outlets of said ATM self-routing switch, and evaluating the quality of the ATM self-routing switch from the examined bit sequence; and

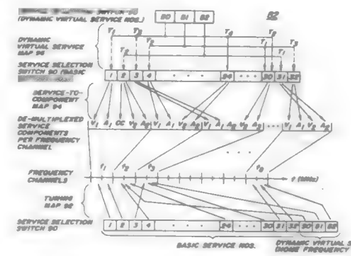
ATM-STM format converting means for converting a series of the data ATM cells received from said one of said outlets of said ATM self-routing switch into an STM-N signal according to STM-N frame format.

5,359,601

APPARATUS PROVIDING DYNAMIC VIRTUAL SERVICE SELECTION IN A MULTI-SERVICE COMMUNICATIONS SYSTEM

Anthony J. Wasilewski, Alpharetta, and William B. Thatcher, Atlanta, both of Ga., assignors to Scientific-Atlanta, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 968,846, Oct. 30, 1992. This application Mar. 8, 1993, Ser. No. 27,782
Int. Cl.[5] H04H *1/06*
U.S. Cl. 370—73 38 Claims



29. In a multi-service communications system wherein a plurality of different basic services are transmitted to a subscriber location, each basic service being transmitted to the subscriber location on one of a plurality of different frequency channels, some frequency channels carrying more than one basic service, a method for providing dynamic virtual service selection at the subscriber location comprising the steps of:

(a) defining a dynamic virtual service as a group of basic services wherein each basic service of said group is to be broadcast over one of said frequency channels during a different time period than the other basic services; and

(b) periodically transmitting to the subscriber location a dynamic virtual service map definition for the defined dynamic virtual service that specifies which of the basic services of said group is currently being broadcast to the subscriber location,

whereby upon selection of the defined dynamic virtual service by a subscriber, a decoder at the subscriber location may employ the transmitted dynamic virtual service map definition for the selected dynamic virtual service to determine the currently active basic service for that dynamic virtual service.

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5,359,602

MULTIPORT-MULTIPOINT DIGITAL DATA SERVICE

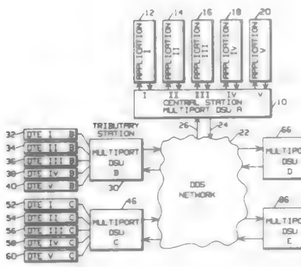
Jose R. Diaz, Sunrise, Fla., and Norman J. Donague, Renton, Wash., assignors to Racal-Datacom, Inc., Sunrise, Fla.

Continuation of Ser. No. 913,894, Jul. 16, 1992, which is a division of Ser. No. 513,353, Apr. 20, 1990, Pat. No. 5,177,739. This application Sep. 21, 1993, Ser. No. 124,044

The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.

Int. Cl.[5] H04J 3/06, 3/16

U.S. Cl. 370—85.8 29 Claims



13. A data communications system for use in a digital data network including at least one digital bridging device which combines digital data bits from a plurality of remote locations into a composite signal and transmits said composite signal to a central location, each said data bit lasting for a predetermined bit time, comprising:

a central station being coupled to said network at said central location, said central station including a plurality of central data ports;

a plurality of remote stations, one of said remote stations being coupled to said network at each of said remote locations, each of said remote stations including at least one remote data port, among said remote stations there being at least one said remote data port associated with each of said central data ports as a source of said data bits for transmission to said each central data port, at least two of said remote data ports being associated with a same one of said central data ports as sources of said data bits for transmission to said same one of said central ports;

said remote stations each including frying means for generating a plurality of periodic fixed size inbound frames for transmission from said each remote station to said central station, each of said inbound frames having a plurality of time slots, there being at least one of said time slots assigned to transmit said data bits to each of said central data ports, said data bits from said at least one remote data port being transmitted in said at least one time slot assigned for transmission to one of said central ports which is associated with said at least one remote data port, said assignment of time slob to said central ports being the same at each of said remote stations; and

alignment means for aligning said inbound frames transmitted by said plurality of remote stations by adjusting transmission times of said inbound frames from at least one of said remote stations by an integer number of said bit times so as to cause said inbound frames from said plurality of remote stations to arrive at said central station simultaneously,

whereby said time slots in each of said inbound frames are allocated to said central data ports and are not dependent upon the number of said remote stations and remote ports.

5,359,603

MOBILE RADIO SYSTEMS

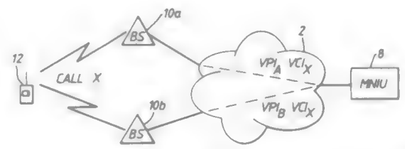
Michael J. McTiffin, Winchester, England, assignor to Roke Manor Research Limited, Hampshire, England

Filed Jun. 17, 1993, Ser. No. 77,434

Claims priority, application United Kingdom, Jun. 24, 1992, 9213373.5

Int. Cl.[5] H04J 3/02

U.S. Cl. 370—94.1 2 Claims



1. An asynchronous transmission mode (ATM) system adapted for use with mobile terminals, said asynchronous transmission mode system comprising a mobile network interface unit connected to a network, a plurality of base stations connected to the network, and at least one mobile terminal arranged to communicate with the base stations over a radio link, the network being arranged to connect the mobile network interface unit and the base stations, said connections being defined by a virtual path identifier and a virtual channel identifier, and the virtual channel identifier being allocated at set up of a call or connection by the mobile network interface unit for identifying a stream of cells associated with a call or connection from a particular mobile terminal, the virtual channel identifier associated with the stream of cells remaining the same throughout the call or connection, even when the mobile terminal switches between different base stations.

5,359,604

INPUT-OUTPUT SIGNAL CONTROL APPARATUS

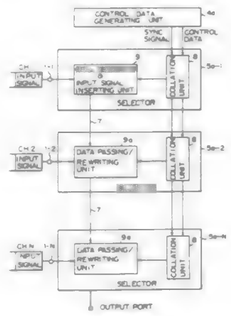
Ryuichi Kondo; Haruo Yamashita, and Tomohiro Shinomiya, all of Kawasaki, Japan, assignors to Fujitsu Limited and Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Jun. 22, 1992, Ser. No. 902,596

Claims priority, application Japan, Jun. 21, 1991, 3-149089

Int. Cl.[5] H04J 3/06

U.S. Cl. 370—100.1 9 Claims



1. An input-output signal control apparatus for receiving input signals through a plurality of input ports respectively and for converting the received input signals into a main signal synchronized with a sequence of time slots, said main signal being output through a main signal line from a single output port, said apparatus comprising:

a control data generating unit for generating control data for designating input signals to be output in synchronization with said sequence of time slots and generating cells in synchronization with said time slots; and

a plurality of selector units, connected to said plurality of input ports respectively, and connected in series between said control data generating unit and said output port, for selecting, in accordance with said control data, input signals to be output through said main signal line in synchronization with said time slots so as to obtain said main signal at said output port, a selecting signal for designating one of said selector units can be included in each of said time slots, each of said selector units comprising:

a determining unit for determining, at every time when said selecting signal is received, whether or not one of said selector units including said determining unit is designated by said selecting signal, when said determining unit determines that said one of said selector units is designated by said selecting signal, the input signal from the corresponding input port is output to said main signal line in synchronization with said time slots of said selecting signal, and when said determining unit determines that said one of said selector units is not designated by said selecting signal, the data on the main signal line in the said time slots of said selecting signal is passed through said of said selector units in question without change; and

a data passing/rewriting unit, operatively connected to said determining unit, for writing a selected input signal into the cell of said input time slot when said determining unit determines that said one of said selector units is designated by said selecting signal, and for passing the cell of said input time slot without change when said determining unit determines that said one of said selector units is not designated by said selecting signal.

5,359,605

CIRCUIT ARRANGEMENT FOR ADJUSTING THE BIT RATES OF TWO SIGNALS

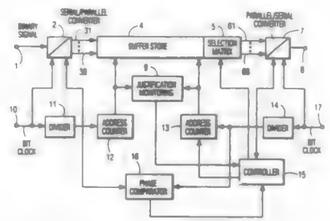
Ralph Urbansky, Schwaig; Michael Niegel, and Miguel Robledo, both of Nurnberg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 935,149, Aug. 24, 1992, abandoned, which is a continuation of Ser. No. 540,996, Jun. 20, 1990, abandoned. This application Dec. 13, 1993, Ser. No. 167,432

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1989, 3920391

Int. Cl.[5] H04J 3/06

U.S. Cl. 370—102 16 Claims



1. A circuit for adjusting bit rates of input and output signals, which input and output signals comprise bits organized into frames, each frame having a same plurality of frame positions, which frame positions are marked by edges of corresponding input and output bit clock signals, the circuit comprising:

a) input divider means (11,14)

responsive to the input bit clock signal for supplying a reduced input bit clock signal at a reduced bit clock rate, which reduced input bit clock rate is reduced at a ratio of 1:n with respect to a bit clock rate of the input bit clock signal, where n is an integer greater than 1, and output divider means responsive to the output bit clock signal, for supplying a reduced output bit clock signal at a reduced output bit clock rate;

b) a serial-to-parallel converter coupled to the input divider means and responsive to the reduced input bit clock signal for converting groups of n serial bits of the input signal into groups of n parallel bits;

c) an elastic store coupled to the serial-to-parallel converter to receive the groups of n parallel bits at the reduced input bit clock rate and to supply the groups of n parallel bits at the reduced input bit clock rate;

d) a controllable selection matrix including n parallel inputs, coupled to the elastic store to receive the groups of n parallel bits from the elastic store, and n parallel outputs, the selection matrix including means for selecting bits from among more than one of the groups of n parallel bits; and

e) a justification decision circuit (9, 15, 16), including

i) a phase comparator (16) coupled to the input divider means and the output divider means for comparing phases of the reduced input and output bit clock signals; and

ii) a controller (15) coupled to the phase comparator and responsive to an output signal of the phase comparator and operating at the reduced output bit clock rate, for

A) evaluating the output signal of the phase comparator at a predetermined frame position, to determine whether insertion of a justification bit is necessary; and

B) controlling the selection matrix and the supplying operation from the elastic store based on a result of the evaluation so that any necessary justification bit is inserted at a second predetermined frame position, so that waiting time jitter is reduced.

5,359,606

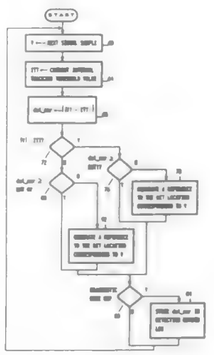
DATA QUALITY ANALYSIS IN A DATA SIGNAL PROCESSING CHANNEL

Brahim Lekmine, Denver; Donald L. Millican, Westminster, and Joe K. Jurnecke, Brighton, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Feb. 12, 1992, Ser. No. 834,600

Int. Cl.[5] H03M 13/00

U.S. Cl. 371—6 27 Claims



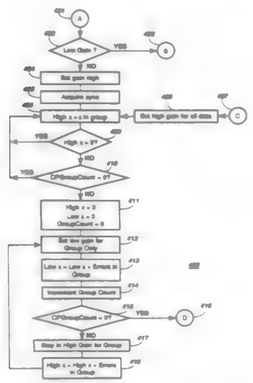
1. A method for monitoring the quality of data in a data signal processing channel, comprising:

obtaining pre-detected data including at least a first pre-detected data value;

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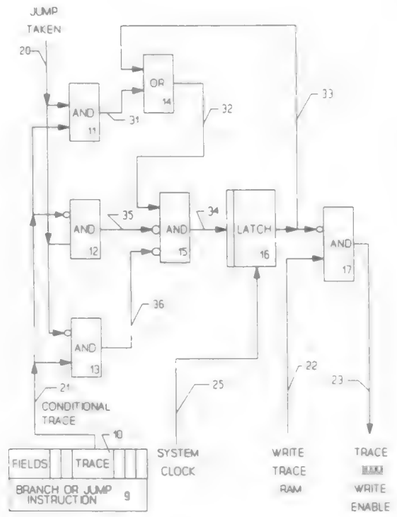
ascertaining a first tracking threshold value;
detecting a first detected data value using said first pre-detected data value and said first tracking threshold value;
determining a first detection margin relating to data quality using said first tracking threshold value and one of said first pre-detected data value and said first detected data value, said first detection margin having a quantitative value and being determined as a function of a voltage amplitude of said one of said first pre-detected and said first detected data values, said first detection margin being correlated with said one of said first pre-detected and said first detected data values and said first detection margin being indicative of data quality of said one thereof.

5,359,607
ADAPTIVE INTERMODULATION CONTROL
Tuan K. Nguyen, Boca Raton; Xuan-Khanh T. Tran, W. Palm Beach, both of Fla.; Richard A. Erhart, Chandler, Ariz., and David J. Hayes, Lake Worth, Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 13, 1991, Ser. No. 791,813
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—5.5 **50 Claims**



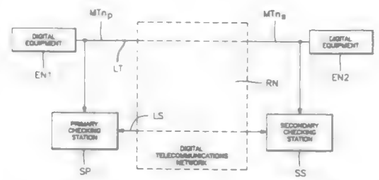
1. In a radio receiver having a receiver section that receives and processes an information signal to provide received information having an error factor that varies at least with respect to operational parameters of the receiver section, a method for adaptively controlling the operational parameters thereof to optimize the error factor of the received information, comprising the steps of:
(a) operating in a first receiver mode in response to a predetermined mode select parameter;
(b) correlating a first signal recovered from the received information to at least a portion of a first code word to establish a first error criteria when operating in said first receiver mode;
(c) maintaining operation in the first receiver mode when the first error criteria does not exceed a predetermined error criteria; and
performing steps (b) and (c) when a group count does not equal a predetermined group count.

5,359,608
APPARATUS FOR ACTIVATION AND DEACTIVATION OF INSTRUCTION TRACING THROUGH USE OF CONDITIONAL TRACE FIELD IN BRANCH INSTRUCTIONS
John Belz, San Jose, Calif., and Linda Newell, Genoa, Nev., assignors to Amdahl Corporation, Sunnyvale, Calif.
Filed Nov. 24, 1992, Ser. No. 980,979
Int. Cl.[5] G06F *11/30, 11/34*
U.S. Cl. 371—16.5 **5 Claims**



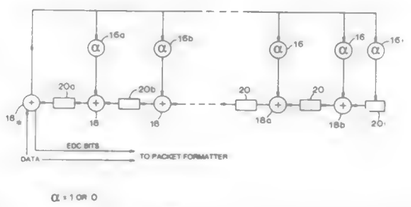
1. A conditional trace apparatus in a computer system for controlling the activation of a trace operation in said computer system, said computer system including a set of instructions for operating said computer, said set of instructions including branch instructions, said branch instructions generating a jump signal whenever said branch instructions perform a branch operation, said conditional trace apparatus comprising:
a conditional trace field in each ssid branch instruction, said conditional trace field having either a first or second value; and
first means responsive to said value of said conditional trace field and said jump signal for selectively activating and deactivating said trace operation of said computer system, said first means comprising:
second means for generating a set signal whenever there is coincidence between said first value of said conditional trace field and said jump signal;
third means for generating a first reset signal whenever there is coincidence between said first value of said conditional trace field and the absence of said jump signal; and
fourth means for generating a second reset signal whenever there is coincidence between said second value of said conditional trace field and said jump instruction.

5,359,609
QUALITY CHECK EQUIPMENTS FOR DIGITAL TRANSMISSION LINKS
Michel Bonnifait, Lannion; René Garandel, and Jean-Yves Tremel, both of Pleumeur-Bodou, all of France, assignors to French State Represented by the Minister of the Post, Telecommunications and Space Centre National D'Etudes des Telecommunications, Issy-les-Moulineaux, France
PCT No. PCT/FR90/00595, § 371 Date May 2, 1991, § 102(e) Date May 2, 1991, PCT Pub. No. WO91/03893, PCT Pub. Date Mar. 21, 1991
PCT Filed Sep. 7, 1990, Ser. No. 684,910
Claims priority, application France, Sep. 8, 1989, 89 11778
Int. Cl.[5] H04L *1/24*
U.S. Cl. 371—20.1 **8 Claims**



1. Equipment for controlling the quality of a digital transmission link in the presence of real traffic,
said equipment comprising first and second checking stations connected to first and second ends of said transmission link respectively, and a service link means connecting said first and second stations and transmitting, between said stations, only check information and corresponding groups of frames affected by transmission errors,
said first and second stations comprising means for respectively calculating first check information relating to groups of frames transmitted from said first end of said transmission link and second check information relating to groups of frames received at said second end of said transmission link, said equipment further comprising means for detecting transmission errors as a function of comparisons between said first and second check information, and means for analyzing at bit level said groups of frames affected by said transmission errors thereby deriving statistical information and recordings relating to said errors.

5,359,610
ERROR DETECTION ENCODING SYSTEM
Lih-Jyh Weng, Lexington, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Continuation of Ser. No. 568,208, Aug. 16, 1990, abandoned. This application Oct. 27, 1992, Ser. No. 967,958
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—38.1 **28 Claims**

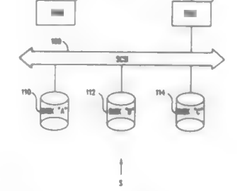


14. A system for encoding up to 64 kilobytes of data, the system comprising:
A. encoding means for generating error detection bits by dividing the data by a binary polynomial, f(x), where f(x) is:

$$f(x)=(x^3+x+1)*(x^{20}+x^{17}+1)*(x+1)*(x^{20}+x^3+1)*(x^{20}+x^3+x^2+X+1)$$

which, in octal representation, is:
f(x)=13*4400001*3*4000011*4000017, the
encoding means including:
i. a plurality of binary multipliers, for multiplying each data bit by binary representations of coefficients of the binary polynomial f(x),
ii. a plurality of binary adders for adding products produced by the multipliers to sums associated with previously encoded data bits, and
iii. means for retrieving as the error detection bits the sums associated with the encoding of a last data bit; and
B. means for concatenating the error detection bits with the data to form a code word.

5,359,611
METHOD AND APPARATUS FOR REDUCING PARTIAL WRITE LATENCY IN REDUNDANT DISK ARRAYS
Terry J. Parks, Round Rock; E. Alan Davis, and Geoffrey B. Hoese, both of Austin, all of Tex., assignors to Dell USA, L.P., Austin, Tex.
Filed Dec. 14, 1990, Ser. No. 628,505
Int. Cl.[5] H03M *13/00*
U.S. Cl. 371—404 **7 Claims**



1. In a computer system including a processor, random access memory and a data storage system having multiple disks rotated by disk spindles in which rotational speed and angular position of said disk spindles are synchronized, said data storage system comprising:
at least three disk drives, each of said disk drives having corresponding tracks and sectors for storing digital data within said sectors;
control means for writing digital data to and reading digital data from said tracks and sectors of said disk drives, said control means connected to said disk drives; wherein
at least one of said disk drives is used to store parity data, and the other of said disk drives is used to store general data, said parity data calculated from the general data stored on said corresponding sectors of said disk drives containing said general data; and wherein
said sectors containing said parity data being position skewed in relation to said corresponding sectors of said disk drives containing said general data so that said control means may read or write said general data across corresponding data stripes and calculate parity for said corresponding data stripes of said disk drives containing said general data before writing the calculated parity onto corresponding sectors of said disk drives containing parity data and before said disk drives containing said parity data have completed a full revolution after reading or writing said general data.

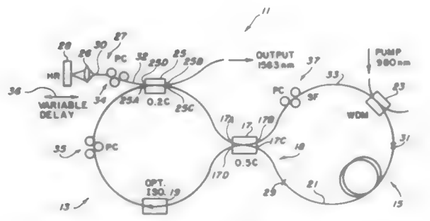
VOL 1167 ISS 4 OCT 25 1994 UMI

5,359,612

HIGH REPETITION RATE, MODE LOCKED, FIGURE EIGHT LASER WITH EXTRACAVITY FEEDBACK

Michael L. Dennis, Alexandria, and Irl N. Duling, III, Round Hill, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 29, 1993, Ser. No. 128,187
Int. Cl.[5] H01S 3/07
U.S. Cl. 372—18 25 Claims



1. An optical pulse generator laser for producing mode-locked optical pulses, said optical pulse generator laser having a cavity comprising:

a beam splitter;

first and second optical loops coupled together by said beam splitter so as to define a figure eight optical path in which a light beam propagating toward said beam splitter in one of said first and second optical loops is split by said beam splitter to form two light beams propagating in opposite directions around the other one of said first and second optical loops;

direction dependent loss means disposed in said first optical loop for reducing the intensity of light propagating in a predetermined direction around said first optical loop;

nonlinear means disposed in said second optical loop and having an intensity dependent nonlinear optical transmission characteristic;

an optical gain medium disposed in a selected one of said first and second optical loops;

means for coupling pump light into said selected one of said first and second optical loops having said gain medium, and for coupling mode-locked optical pulses out of said optical pulse generator laser, said coupling means including:

a fiber wavelength division multiplexer coupler for coupling pump light into said selected one of said first and second optical loops having said gain medium; and

an output coupler having first and second ports internal to said cavity and third and fourth ports external to said cavity, said output coupler being disposed in said first optical loop for coupling mode-locked optical pulses out of said optical pulse generator laser, said first port being coupled to said direction dependent loss means to enable a first portion of mode-locked optical pulses to pass through said second port to said beam splitter and a second portion of mode-locked optical pulses to be coupled through said third port and out of said optical pulse generator laser, said second port being responsive to light from said beam splitter for enabling that light to pass through said fourth port; and

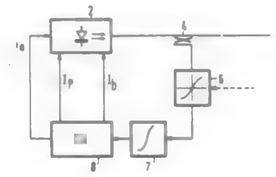
feedback means having a variable delay, coupled to said fourth port of said coupling means, being responsive to light from said fourth port for providing feedback of that light propagating therethrough in a manner which is not interferometrically sensitive, for controlling the repetition rate of said mode-locked optical pulses.

5,359,613

TUNABLE LASER OSCILLATOR

Petrus P. G. Mols; Pieter W. Hooijmans, and Markus T. Tomesen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 26, 1992, Ser. No. 936,149
Claims priority, application European Pat. Off., Aug. 30, 1991, 91202204.3
Int. Cl.[5] H01S 3/10
U.S. Cl. 372—20 15 Claims



1. A laser oscillator, comprising:

a laser for producing a laser output signal, said laser having a first control input and at least one additional control input; and

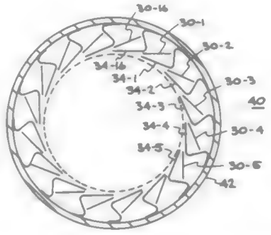
control means for applying a first tuning signal to said first control input and at least one additional tuning signal to said at least one additional control input for tuning said laser output signal to a desired frequency, said first tuning signal and said at least one additional tuning signal having a disproportional relationship.

5,359,614

VARIABLE EMISSIVITY LASER THERMAL CONTROL SYSTEM

Joseph R. Milner, Livermore, Calif., assignor to The United States of America as Represented by the Department of Energy, Washington, D.C.

Filed Jan. 4, 1993, Ser. No. 311
Int. Cl.[5] H01S 3/04, 3/22
U.S. Cl. 372—35 17 Claims



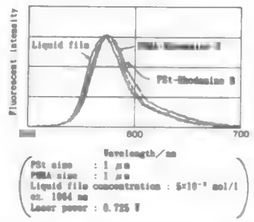
1. A laser thermal control system for a laser discharge tube comprising means for maintaining a plasma wall temperature of said laser discharge tube substantially at a desired level independent of power applied to said laser, including means for changing an effective emissivity of said discharge tube using radiative heat transfer.

5,359,615

METHOD FOR FORMING MICROILLUMINANTS

Keiji Sasaki, Kyoto; Hiroaki Misawa, Takatsuki; Ryo Fujisawa, Uji, and Noboru Kitamura, Kyoto, all of Japan, assignors to Research Development Corporation of Japan, Tokyo, Japan

Filed Nov. 23, 1992, Ser. No. 980,169
Claims priority, application Japan, Nov. 21, 1991, 3-306432
Int. Cl.[5] H01S 3/14
U.S. Cl. 372—39 2 Claims



1. A microparticle processing method comprising:

irradiating a first laser beam onto microparticles contained in a liquid medium to trap the microparticles, said microparticles being doped with a pigment

irradiating a second laser beam onto the microparticles, while microparticles are trapped by the first laser beam, to cause the microparticles trapped by the first laser beam to be pumped to thereby emit light; and,

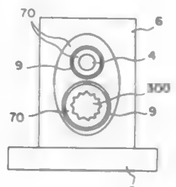
manipulating the microparaticles within the liquid medium, while said microparticles are caused to emit light in response to the second laser beam, by maneuvering the first laser beam within the liquid medium while said first laser beam traps the microparticles.

5,359,616

SOLID STATE LASER APPARATUS AND LASER MACHINING APPARATUS

Koji Yasui; Tetsuo Kojima; Takashi Yamamoto; Akira Ishimori, and Kuniaki Iwashiro, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1993, Ser. No. 114,086
Claims priority, application Japan, Sep. 16, 1992, 4-272520; Aug. 2, 1993, 5-191441
Int. Cl.[5] H01S 3/14
U.S. Cl. 372—39 23 Claims



1. A solid state laser apparatus comprising:

a solid state component which is cooled by contacting liquid, has higher refractive index than that of said liquid, and includes a laser active medium;

a light source for exciting said solid state component;

a light exciting apparatus for transmitting light from said light source to said solid state component; and

a laser resonator for deriving a laser beam from said solid state component,

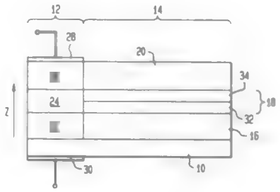
wherein an excitation distribution in a section of said solid state component is adjusted by adjusting a surface roughness of said solid state component.

5,359,617

NONLINEAR OPTICAL DEVICE

Satoru Kano, Yokohama; Kiyoshi Kumata, and Soichi Owa, both of Tokyo, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 19, 1993, Ser. No. 47,982
Claims priority, application Japan, Jul. 30, 1992, 4-203497
Int. Cl.[5] H01S 3/19
U.S. Cl. 372—45 19 Claims



1. A nonlinear optical device comprising:

a substrate, and

material layers disposed upon said substrate, wherein

a portion of said layers alternate between insulator layers and semiconductor layers to form a multi-quantum well structure, and wherein

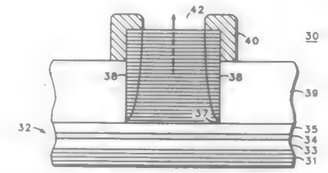
a potential for electrons in said semiconductor layers is asymmetric in a direction which is normal to said substrate, creating a second order non-linear optical effect.

5,359,618

HIGH EFFICIENCY VCSEL AND METHOD OF FABRICATION

Michael S. Lebby, Apache Junction; Chan-Long Shieh, Paradise Valley, both of Ariz., and Hsing-Chung Lee, Calabasas, Calif., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 1, 1993, Ser. No. 69,812
Int. Cl.[5] H01S 3/19
U.S. Cl. 372—45 14 Claims



10. A high efficiency vertical cavity surface emitting laser comprising:

first and second mirror stacks with an active area sandwiched therebetween;

the second mirror stack being formed into a mesa with exposed end surface and outer sidewalls and a centrally located light emission region;

a portion of the second mirror stack adjacent the exposed outer sidewalls having a reduced electrical conductance so as to channel operating current from the outer sidewalls into the centrally located light emission region; and

an electrical contact at least on the end surface of the mesa in overlying relationship to the portion of the second mirror stack with reduced electrical conductance.

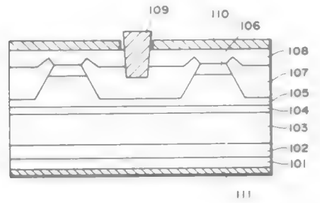
VOL 1167 ISS 4 OC 25 1994 UMI

5,359,619

MULTI-BEAM SEMICONDUCTOR LASER AND METHOD FOR PRODUCING THE SAME

Ichiro Yoshida; Tsukuru Katsuyama, and Junichi Hashimoto, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 19, 1993, Ser. No. 19,652
Claims priority, application Japan, Feb. 20, 1992, 4-033334; Mar. 11, 1992, 4-052427; Jun. 1, 1992, 4-140748
Int. Cl.[5] H01S 3/19
U.S. Cl. 372—50 14 Claims



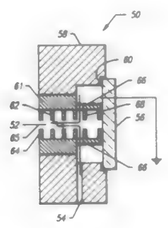
1. A multi-beam semiconductor laser comprising:
an active layer;
a first and second cladding layer sandwiching said active layer, said second cladding layer being made of a first material;
a contact layer provided on said second cladding layer;
a current block means provided in said second cladding layer, said current block means being made of a second material and being spaced from said active layer with a predetermined distance;
dividing means provided above said current block means for physically dividing said contact layer into two areas; and
electrodes respectively provided on said divided areas of said contact layer.

5,359,620

APPARATUS FOR, AND METHOD OF, MAINTAINING A CLEAN WINDOW IN A LASER

Robert P. Akins, Escondido, Calif., assignor to Cymer Laser Technologies, San Diego, Calif.

Filed Nov. 12, 1992, Ser. No. 975,385
Int. Cl.[5] H01S 3/22
U.S. Cl. 372—58 32 Claims



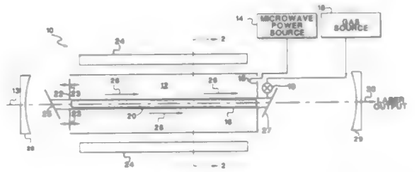
2. In combination,
a laser,
a cavity for receiving from the laser energy radiation and debris travelling in a first direction,
an optical element disposed at the end of the cavity for receiving the radiation and debris travelling through the cavity in the first direction,
means for directing gases through the cavity at a position displaced from the optical element and in a direction away from the optical element and opposite to the first direction to inhibit the debris in the cavity from moving to the optical element, and
a baffle in the cavity for providing a turbulence to the gases directed through the cavity in the direction away from the optical element and opposite to the direction of movement of the radiation and debris toward the optical element.

5,359,621

HIGH EFFICIENCY GAS LASER WITH AXIAL MAGNETIC FIELD AND TUNABLE MICROWAVE RESONANT CAVITY

Stanley I. Tsunoda, Encinitas, and Tihioro Ohkawa, La Jolla, both of Calif., assignors to General Atomics, San Diego, Calif.

Filed May 11, 1993, Ser. No. 59,549
Int. Cl.[5] H01S 3/03, 3/0975
U.S. Cl. 372—82 22 Claims



1. A gas discharge laser comprising:
a cylindrical symmetric cavity having a longitudinal axis and a high unloaded Q;
means for establishing resonant microwave energy within said cavity, thereby forming a resonant microwave cavity;
a discharge tube inside of said cavity and coaxial with said longitudinal axis, said discharge tube having a prescribed gas therein maintained at a pressure that is less than about 100 mTorr;
means for establishing an axial magnetic field having a prescribed intensity within said discharge tube, said axial magnetic field being characterized by magnetic field lines that are substantially parallel to said longitudinal axis along the length of said discharge tube;
first and second mirrors located adjacent first and second ends of said discharge tube, respectively, said first and second mirrors being optically aligned with said longitudinal axis such that light reflects between said mirrors through said discharge tube, said first mirror being totally reflective, and said second mirror being partially transmissive;
optical interface means for optimizing the transmission of light that reflects between said first and second mirrors through said discharge tube;
said resonant microwave energy being coupled into said discharge tube along the entire length of the resonant microwave cavity so as to ionize said prescribed gas and produce a plasma column therein, said ionization causing light emissions to occur that reflect between said first and second mirrors, said reflected light being amplified as it passes through said plasma column by additional light emissions, thereby producing the laser.

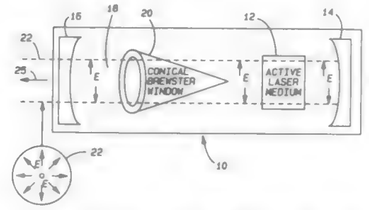
5,359,622

RADIAL POLARIZATION LASER RESONATOR

Chun-Ching Shih, Palos Verdes Estates, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Mar. 30, 1993, Ser. No. 54,426
Int. Cl.[5] H01S 3/08
U.S. Cl. 372—108 20 Claims

1. A laser resonating system for generating a radially polarized laser output comprising:
source means including an active laser medium comprising neodymium for providing a stimulated emission of optical radiation;
resonator means including a resonator cavity in which said optical radiation may oscillate therein;



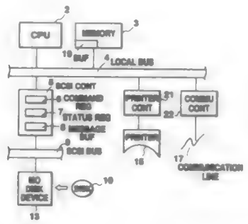
an optically transparent medium disposed within said resonator cavity and having a conical surface oriented in accordance with a polarizing angle for transmitting radial polarization therethrough; and
output means for providing a radially polarized laser beam.

5,359,623

MAGNETO-OPTICAL DISC CONTROL SYSTEM AND METHOD FOR AVOIDING THE NEED TO INITIALIZE AN ENTIRE SURFACE OF A STORAGE MEDIUM ON COMMENCEMENT OF USE

Kenichi Nakamura, Ota, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Oct. 28, 1992, Ser. No. 967,779
Claims priority, application Japan, Oct. 29, 1991, 3-283234
Int. Cl.[5] G11B 17/22
U.S. Cl. 369—32 8 Claims



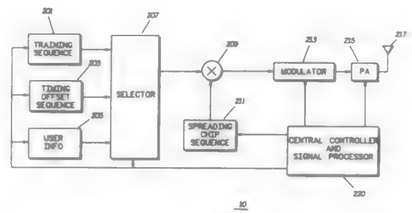
1. A magneto-optical disc control system, comprising:
a magneto-optical disc device for driving a read/write magneto-optical recording medium;
disc control means for controlling the read/write of the magneto-optical disc device;
upper control means for controlling various requests against the disc control means; and
buffer memory means for storing data read out of the magneto-optical disc device by the disc control means,
the upper control means issuing a request for data readout from the magneto-optical recording medium of the magneto-optical disc device to the disc control means,
the disc control means outputting a readout command for reading out data of the data readout request to the magneto-optical disc device in response to the data readout request of the upper control means,
the magneto-optical disc device performing a check of a state of a readout block specified by the readout command on the magneto-optical recording medium in response to the readout command, and returning a blank check status to the disc control means when the readout block is a blank check state representing a blank block where writing has never been carried out,
the disc control means giving a notice representing that a normal readout is performed to the upper control means when receiving the blank check status from the magneto-optical disc device, and writing a specific initial value for the magneto-optical disc control system into the buffer memory means.

5,359,624

SYSTEM AND METHOD FOR CHIP TIMING SYNCHRONIZATION IN AN ADAPTIVE DIRECT SEQUENCE CDMA COMMUNICATION SYSTEM

Edward K. B. Lee, Sunrise; Jimmy Cadd, Coral Springs, and Tracy L. Fulghum, Sunrise, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 7, 1993, Ser. No. 71,878
Int. Cl.[5] H04L 9/00
U.S. Cl. 375—1 12 Claims



1. In a direct sequence CDMA spread spectrum communication system, wherein spread spectrum communication signals comprising binary bits coded with spreading chip sequences are communicated between a transmitter and a receiver; a chip synchronization method for synchronizing receiver chip timing with transmitter chip timing comprising the steps of:
a) transmitting a direct sequence spread spectrum communication signal including a redundant training bit sequence;
b) receiving said predetermined redundant training bit sequence;
c) adaptively determining a representation of a desk, reading chip sequence based on said redundant training bit sequence using a tapped delay line equalizer; said despreading chip sequence being represented by tap coefficient potentials of said equalizer; and
d) determining receiver chip timing offset based on said tap coefficient potentials.

5,359,625

SPREAD SPECTRUM COMMUNICATION SYSTEM PARTICULARLY-SUITED FOR RF NETWORK COMMUNICATION

James E. Vander Mey, and Timothy J. Vander Mey, both of Ocala, Fla., assignors to Intellon Corporation, Ocala, Fla.

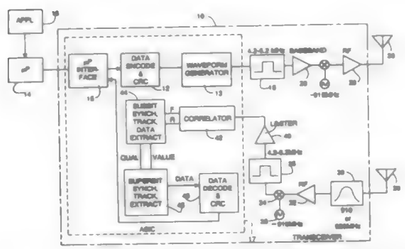
Continuation of Ser. No. 923,331, Jul. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 775,279, Oct. 11, 1991, abandoned, which is a continuation of Ser. No. 397,803, Aug. 23, 1989, Pat. No. 5,090,024, which is a continuation of Ser. No. 863,213, Apr. 3, 1992, Pat. No. 5,278,862. This application Oct. 4, 1993, Ser. No. 131,031
Int. Cl.[5] H04L 27/30
U.S. Cl. 375—1 57 Claims

27. Apparatus for receiving and decoding data that has been encoded and transmitted using forward and reverse swept frequency spread spectrum signals, so that the received signal consists a succession of spread spectrum signals in which information is encoded as the difference in direction of sweep, so that different digital values are represented by different patterns of forward and reverse swept frequency signals, said apparatus comprising:
means for receiving said stream of frequency swept spread spectrum signals;

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means for passing said signals through a correlator having forward and reverse outputs, the forward output representing the correlation of a received signal to the forward swept spread spectrum signal, and the reverse output representing the correlation of a received signal to the reverse swept spread spectrum signal;

means for tracking the forward correlator output so that the forward correlator output is sampled at times when a received signal would be received if it was a forward swept signal;



means for tracking the reverse correlator output independently of the tracking of the forward correlator output so that the reverse correlator output is sampled at times when a received signal would be received if it was a reverse swept signal; and

means for making decisions as to whether a received signal is a forward or reverse swept signal based on samples of the forward and reverse correlator outputs that are taken generally at different times.

5,359,626

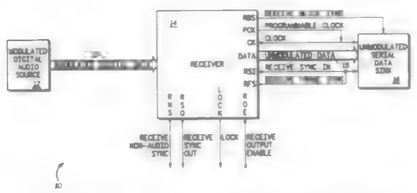
SERIAL INTERFACE BUS SYSTEM FOR TRANSMITTING AND RECEIVING DIGITAL AUDIO INFORMATION

Kevin L. Kloker, Arlington Heights; Thomas L. Wernimont, Palatine, both of Ill., and Clif Liu, San Diego, Calif., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 2, 1992, Ser. No. 939,770

Int. Cl.[5] H04B *1/38*

U.S. Cl. 375—7 **27 Claims**



1. A receiver for providing a plurality of digital data values from a modulated digital audio source to an unmodulated data sink via an interface bus, the interface bus comprising:

a receive output enable conductor for providing a receive enable signal generated by a master controller to the receiver, the receive output enable input selectively enabling the receiver to provide digital data;

a receive system clock conductor for providing a system clock signal from a clock source: to the receiver, the receive system clock selectively enabled in response to the receive output enable signal;

a plurality of digital data conductors, a first portion of the plurality of digital data values providing digital audio values and a second portion of the plurality of digital data values providing digital non-audio data values, each of the digital audio and non-audio data values being provided in a predetermined format by the plurality of digital data conductors;

a receive input synchronization conductor for providing a receive input synchronization signal from an input synchronization source, the receive input synchronization signal indicating a start of communication of at least one of a first one of the plurality of digital audio data values and a first one of the plurality of digital non-audio data values;

a receive output synchronization conductor for providing a receive output synchronization signal generated by the receiver, the receive output synchronization signal indicating an end of communication of at least one of the first one of the plurality of digital audio data values and the first one of the plurality of digital non-audio data values; and

a frequency lock conductor for providing a lock signal generated by the receiver, the lock signal indicating if the receiver has locked to a frequency of the plurality of digital data values communicated between the modulated digital audio source and the unmodulated data sink.

5,359,627

CHANNEL CODEC APPARATUS AND METHOD UTILIZING FLAT CODES

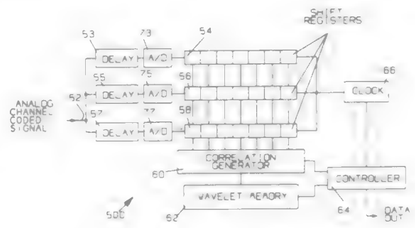
Howard L. Resnikoff, Wincester, Mass., assignor to Aware, Inc., Cambridge, Mass.

Continuation of Ser. No. 679,642, Apr. 2, 1991, abandoned. This application Jul. 1, 1993, Ser. No. 86,198

The portion of the term of this patent subsequent to Jan. 14, 2009, has been disclaimed.

Int. Cl.[5] H04B *1/10*

U.S. Cl. 375—34 **8 Claims**



1. A signal encoding apparatus comprising:

means for receiving an input signal comprising an ordered sequence of symbols;

memory means for storing at least a portion of a first channel coding basis comprising one or more flat channel sequences, each said channel sequence comprising an array of numerical values of length L, where $L \geq 2$, the number of said channel sequences being less than or equal to μ, wherein μ is equal to the multiplier of said first channel coding basis;

clock means for generating a sequence of timing signals;

control means for generating a sum array comprising an ordered array of numerical values $\alpha(k)$, for $k=0$ to (L-1), said control means comprising means for selecting a said channel sequence and for multiplying said selected channel sequence by a numerical value depending on one of said received symbol;

means for storing a channel array comprising an ordered array of numerical values $\beta(k)$ for $k=0$ to L-1;

means for combining said sum array with said channel array comprising means for adding $\alpha(k)$ to $\beta(k+\mu q)$, where q is a positive integer, said combining means being responsive to said clock means having generated μq said timing signals; and

shifting means for outputting $\beta(L\text{-}1)$, for replacing $\beta(k)$ by $\beta(k\text{-}1)$ for $k=1$ to (L-1), and for replacing $\beta(0)$ by 0, said shifting means being responsive to said clock means having generated one of said timing signal;

wherein said control means being operatively connected to said receiving means, said memory means, said clock means, said means for storing a channel array, said means for combining said sum array, and said shifting means.

5,359,628

CHANNEL IMPULSE RESPONSE ESTIMATOR FOR USE IN AN ADAPTIVE MAXIMUM LIKELIHOOD SEQUENCE ESTIMATION RECEIVER WHICH IS APPLICABLE TO A COMMUNICATION SYSTEM HAVING A CHANNEL CHARACTERISTIC WITH RAPID FLUCTUATION

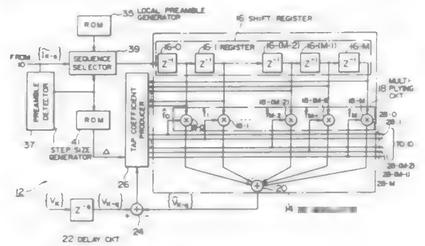
Hiroyasu Muto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 24, 1992, Ser. No. 933,790

Claims priority, application Japan, Aug. 30, 1991, 3-220360

Int. Cl.[5] H03D *1/00*

U.S. Cl. 375—94 **4 Claims**



1. A channel impulse response estimator for use in an adaptive maximum likelihood sequence estimation receiver comprising a maximum likelihood sequence estimator for carrying out a sequence estimation operation on a received signal in response to a plurality of impulse response signals which collectively indicate a channel impulse response to produce an estimated sequence signal indicative of an estimated sequence after a lapse of a predetermined delay time, said received signal comprises a transmission preamble signal indicative of a transmission preamble and a data signal following said transmission preamble signal, said channel impulse response estimator being for carrying out a response estimation operation on said received signal and said estimated sequence signal to produce said impulse response signals, wherein the improvement comprises:

a local preamble generator for generating a local preamble signal indicative of a local preamble which is identical with said transmission preamble;

a preamble detector connected to said maximum likelihood sequence estimator for detecting said transmission preamble signal in the estimated sequence signal to produce a preamble detection signal on detection of said transmission preamble signal;

a sequence selector connected to said maximum likelihood sequence estimator, said local preamble generator, and said preamble detector for selecting, in response to said preamble detection signal, one of said local preamble signal and said estimated sequence signal as a selected sequence signal, said sequence selector selecting said local preamble signal as said selected sequence signal on presence of said preamble detection signal, said sequence selector selecting said estimated sequence signal as said selected sequence signal on absence of said preamble detection signal;

a step-size generator connected to said preamble detector for generating, in response to said preamble detection signal, one of first and second step-size signals as a selected step-size signal, the first step-size signal indicating a first step size larger than a second step size indicated by the second step-size signal, said step-size generator generating said first step-size signal as said selected step-size signal on presence of said preamble detection signal, said step-size generator generating said second step-size signal as said selected step-size signal on absence of said preamble detection signal;

a re-modulator connected to said sequence selector for carrying out a re-modulation operation on said selected sequence signal on the basis of a plurality of tap coefficients to produce a replica signal indicative of a replica of said received signal and a plurality of delayed sequence signals into which said selected sequence signal is delayed;

a delay circuit supplied with said received signal for delaying said received signal for said predetermined delay time to produce a delayed received signal;

a difference calculating circuit connected to said delay circuit and said re-modulator for calculating a difference between said delayed received signal and said replica signal to produce a difference signal indicative of said difference;

a tap coefficient producer connected to said difference calculating circuit, said step-size generator, and said re-modulator for producing a plurality of tap coefficient signals indicative of said tap coefficients on the basis of said difference signal, said selected step-size signal, and said delayed sequence signals; and

supplying means connected to said tap coefficient producer and said maximum likelihood sequence estimator for supplying said tap coefficient signals as said impulse response signals to said maximum likelihood sequence estimator.

5,359,629

Patent Not Issued For This Number

5,359,630

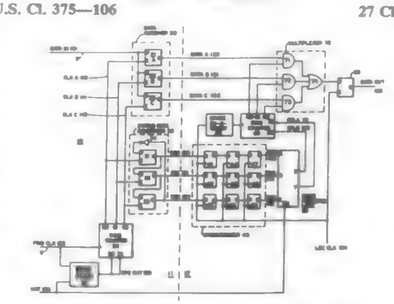
METHOD AND APPARATUS FOR REALIGNMENT OF SYNCHRONOUS DATA

Paul C. Wade, Shirley; David J. Sager, Acton, both of Mass., and Andrey Varpahovsky, Rochester, Minn., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Aug. 13, 1992, Ser. No. 929,623

Int. Cl.[5] H04L *7/04*

U.S. Cl. 375—106 **27 Claims**



1. A circuit for receiving data, which comprises:

inputs for receiving a first clock signal, a second clock signal, an initialization signal, and an incoming data signal, the incoming data signal comprising a series of data items;

a plurality of receiving state devices, each having a data input, each data input being coupled to the incoming data signal, a control input, and a data output;

a multiplexer having a plurality of data inputs, each data

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input being coupled to the data output of one of the plurality of receiving state devices, control inputs, and an output;

control logic, said control logic comprising:

a status code generator having a plurality of outputs,

a first rotating logic block having a clock in-put coupled to the first clock signal, a control input coupled to the initialization signal, and control outputs, each control output being coupled to a preselected respective one of the control inputs of the plurality of receiving state devices,

a synchronizer having a plurality of data inputs, each data input being coupled to a preselected respective one of the plurality of outputs of the status code generator, a clock input coupled to the second clock signal, and a plurality of data outputs,

a second rotating logic block having a clock input coupled to the second clock signal, control inputs, and control outputs, each control output being coupled to a preselected respective one of the control inputs of the multiplexer;

sate prediction logic having a control input coupled to the initialization signal, a plurality of data inputs, each data input being coupled to a preselected respective one of the plurality of data outputs of the synchronizer, and control outputs, each control output being coupled to a preselected respective one of the control inputs of the second rotating logic block,

the first rotating logic block generating a plurality of receive control signals in response to the first clock signal and the initialization signal;

the status code generator generating a plurality of status signals indicating which of the plurality of receiving state devices is capturing data;

the synchronizer generating a plurality of synchronized status signals in response to the second clock signal;

the state prediction logic generating rotating logic control signals in response to the plurality of synchronized status signals and the initialization signal;

the second rotating logic block generating a plurality of multiplexer control signals in response to the rotating logic control signals and the second clock signal;

the plurality of receiving state devices being sequentially controlled by the plurality of receive control signals to capture the series of data items;

the multiplexer sequentially selecting its data inputs to pass the series of data items available at the outputs of the plurality of receiving state devices to the multiplexer output under the control of the plurality of multiplexer control signals.

5,359,631

TIMING RECOVERY CIRCUIT FOR SYNCHRONOUS WAVEFORM SAMPLING

Richard T. Behrens, Louisville; Trent Dudley, Littleton; Neal Glover, Broomfield, all of Colo., and David R. Welland, Austin, Tex., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Sep. 30, 1992, Ser. No. 954,350

Int. Cl.[5] H03D *3/24*

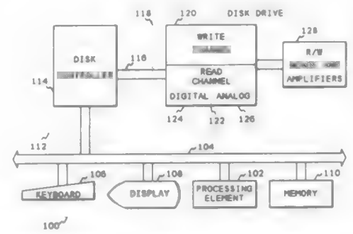
U.S. Cl. 375—120 **15 Claims**

1. A phase detector for creating a phase error measurement signal representative of a difference in phase between a clock signal and pulses within an analog signal, said phase detector comprising:

amplitude sampling means for receiving said analog signal and for taking a plurality of samples of an amplitude of said analog signal, said samples being taken at times determined by said clock signal;

pulse detection means connected to an output of said amplitude sampling means, wherein said pulse detection means determines a location of each of said pulses;

sample selection means connected to an output of said amplitude sampling means and an output of said pulse detection means, said sample selection means for selecting, for each pulse, at least two of said plurality of samples, wherein said at least two samples have a predetermined relationship to a location of said pulse;



arithmetic means for combining said at least two selected samples to create said phase error measurement signal.

5,359,632

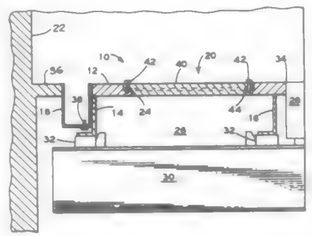
REACTOR VESSEL CAVITY SEAL PLATE

Richard T. Bottoms; Steve K. Brown, both of Lynchburg, and Larry D. Dixon, Forest, all of Va., assignors to E&W Nuclear Service Company, Lynchburg, Va.

Filed Jul. 27, 1993, Ser. No. 97,502

Int. Cl.[5] G21C *13/00*

U.S. Cl. 376—203 **2 Claims**



1. In a nuclear reactor vessel installation where there are support beams in an annular cavity between a reactor vessel having a flange extending radially therefrom and a reactor shield structure, a reactor vessel cavity seal plate, said seal plate comprising:

a. an annular plate having a plurality of ports spaced around its circumference, said annular plate having its outer circumference seal welded to the reactor shield structure;

b. an inner support ring attached to the inner diameter of said annular plate and extending axially from said annular plate and supported by the support beams;

c. an outer support ring attached adjacent the outer diameter of said annular plate and extending axially from said annular plate and supported by the support beams;

d. a U-shaped flexible annular expansion ring positioned between said annular plate and the reactor vessel flange, said ring having its inner circumference seal welded to the reactor vessel flange and its outer circumference seal welded to said annular plate; and

e. a cover plate removably attachable to each of said ports for covering and sealing the ports in said annular plate.

5,359,633

ASSEMBLY METHOD AND GRID FOR NUCLEAR FUEL ASSEMBLY

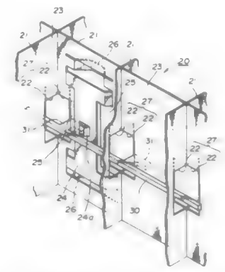
Junichi Oyama; Kazuichi Suzuki; Akhirio Kato, all of Ibaraki; Hitoshi Inada, Kobe; Masaji Mori, Kobe; Hiromasa Miyai, Kobe, and Toshiyuki Kawagoe, Tokyo, all of Japan, assignors to Mitsubishi Nuclear Fuel Co., Tokyo, Japan

Continuation of Ser. No. 745,401, Aug. 15, 1991, Pat. No. 5,289,515, which is a division of Ser. No. 460,626, Jan. 3, 1990, Pat. No. 5,068,081. This application Sep. 29, 1993, Ser. No. 128,138

Claims priority, application Japan, Jan. 6, 1989, 64-957

Int. Cl.[5] G21C *3/334*

U.S. Cl. 376—261 **1 Claim**



1. A method of assembly a fuel assembly, the method comprising the steps of:

setting a plurality of grids in a predetermined position, wherein each grid has a plurality of grid cells for firmly holding a plurality of fuel rods, each fuel rod is firmly held in a grid cell formed with four walls, and wherein each pair of opposing walls are provided with a pair of holding means comprising a dimple and a spring formed on opposing walls;

subsequently, deactivating said springs formed on said walls of said grid cells by key means;

subsequently, inserting at least one of said fueled rods into said grids;

subsequently, removing said key means thereby activating said springs so as to provide firm holding of said fuel rods in said grids;

subsequently, inserting a plurality of control rod guide thimbles into a plurality of predetermined grid cells of said grids; and

subsequently, rigidly fixing said control rod guide thimbles to said predetermined grid cells.

5,359,634

REACTOR CORE FOR A BOILING WATER NUCLEAR REACTOR

Sven-Birger Johannesson, Västerås, Sweden, assignor to ABB Atom AB, Västerås, Sweden

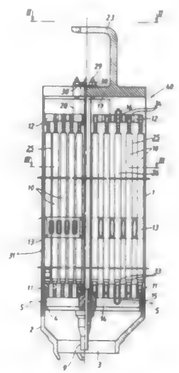
Filed Aug. 23, 1993, Ser. No. 110,734

Claims priority, application Sweden, Sep. 30, 1992, 9202827-3

Int. Cl.[5] G21C *3/30*

U.S. Cl. 376—428 **8 Claims**

1. A reactor core for a boiling water nuclear reactor with a plurality of vertical fuel assemblies, each fuel assembly containing a plurality of fuel rods with enriched nuclear fuel material which are arranged between a bottom tie plate and a top tie plate in a surrounding vertical fuel channel, wherein each fuel assembly is formed with an inlet for water for conducting water in through the bottom tie plate, through the space between the fuel rods in the vertical fuel channel, and out through the top tie plate, and each fuel assembly is arranged with intermediate gaps with respect to adjacent fuel assemblies for conducting water through the core, wherein at least some fuel assemblies are arranged with fuel rods with different enrichment at different levels, wherein each one of at least a main part of those fuel rods, central rods, which in a fuel assembly are surrounded by fuel rods, edge rods, which are located adjacent to a water gap, are arranged with a ratio of the enrichment in the central rod in question to the medium enrichment



for the central rods and the edge rods, in a horizontal section, which is lower for an upper part than for a lower part of the central rod, and each one of at least a main part of the edge rods is arranged with a ratio of the enrichment in the edge rod in question to the medium enrichment for the central rods and the edge rods, in a horizontal section, which is higher for the upper part than for the lower part of the edge rod.

5,359,635

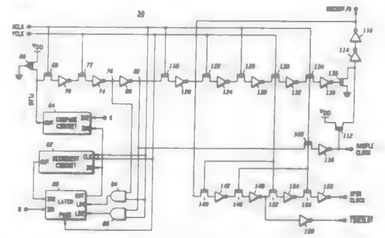
PROGRAMMABLE FREQUENCY DIVIDER IN A PHASE LOCK LOOP

Ahmad H. Atriss, Chandler; Benjamin C. Peterson, Tempe, and Lanny L. Parker, Mesa, all of Ariz., assignors to Codex, Corp., Mansfield, Mass.

Filed Apr. 19, 1993, Ser. No. 47,524

Int. Cl.[5] H03K *21/02*

U.S. Cl. 377—39 **10 Claims**



1. A programmable frequency divider, comprising:

a latching circuit having first and second inputs and an output, said first input receiving a program integer, said output providing a latch integer;

a decrement circuit having an input and an output, said input being coupled to said output of said latching circuit, said output being coupled to said second input of said latching circuit;

a compare circuit having first and second inputs and an output, said first input receiving said latch integer, said second input receiving a constant integer; and

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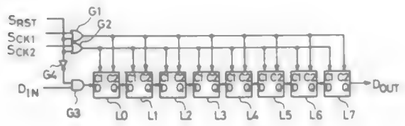
a delay circuit having an input coupled to said output of said compare circuit and operating in response to first and second clock signals for providing a first output signal.

5,359,636

REGISTER CONTROL CIRCUIT FOR INITIALIZATION OF REGISTERS

Koichiro Aoyama, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jul. 15, 1992, Ser. No. 914,299
Claims priority, application Japan, Jul. 24, 1991, 3-184248
Int. Cl.[5] H03K 21/02, 23/42
U.S. Cl. 377—73 5 Claims



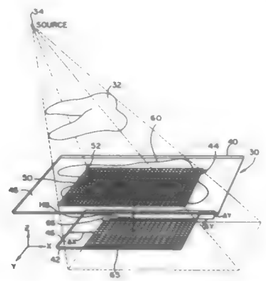
1. A register control circuit comprising:
a plurality of registers connected in series;
a control circuit for generating a plurality of clock signals of different phases, said control circuit having a delay circuit with a delay time which receives said reset signal, an inverter which inverts a reset signal delayed by said delay circuit;
a logic circuit for receiving a reset signal and said plurality of clock signals, and outputting latch clocks to said plurality of registers, said latch clocks being made active during a partial or a full period in which said reset signal is active; and
an AND gate receiving at one input terminal said reset signal and at the other input terminal an output from said inverter and outputting a signal whose active duration corresponds to said delay time and is shorter than the full period in which said reset signal is active.

5,359,637

SELF-CALIBRATED TOMOSYNTHETIC, RADIOGRAPHIC-IMAGING SYSTEM, METHOD, AND DEVICE

Richard L. Webber, Winston-Salem, N.C., assignor to Wake Forest University, Winston-Salem, N.C.

Filed Apr. 28, 1992, Ser. No. 875,249
Int. Cl.[5] G01N 23/00
U.S. Cl. 378—2 69 Claims



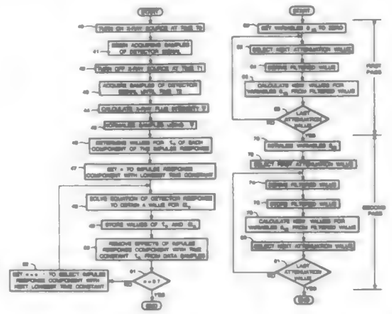
1. A system for synthesizing an image of a selected object at a selected slice position through the selected object from a plurality of projected radiographic images of the selected object comprising:
(a) at least one radiographic recording means for recording radiographic images of the selected object;
(b) at least one fiducial reference held in fixed position relative to the recording means;
(c) positioning means for holding the recording means and the fiducial reference in fixed position relative to the selected object;
(d) at least one source of radiation for irradiating the selected object to enable projected radiographic images of the object and the fiducial reference to be recorded on the recording means;
(e) position varying means for varying the relative positions between (1) the source of radiation and (2) the object, the fiducial reference and the recording means so that projected radiographic images of the object and the fiducial reference are recorded on the recording means at different arbitrary relative positions between (1) the source of radiation and (2) the object, the fiducial reference and the recording means; and
(f) an image synthesizer for synthesizing an image of the selected object at a selected slice position through the object from selected projections of the projected radiographic images of the object and the fiducial reference recorded on the recording means.

5,359,638

METHOD FOR RECURSIVE FILTERING RESIDUAL AFTERGLOW FROM PREVIOUS COMPUTED TOMOGRAPHY SCANS

Jiang Hsieh, Waukesha, and Robert F. Senzig, Germantown, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Mar. 30, 1992, Ser. No. 860,659
Int. Cl.[5] G01N 23/083
U.S. Cl. 378—4 7 Claims



1. A method for producing an image in a computed tomography system, having a source of radiation and a detector for sensing radiation from said source and producing an output signal representing the sensed radiation, said detector having an exponential impulse response that is characterized by N components having different time constants, where N is a positive plural integer; the method comprising the steps of:
rotating said source of radiation and said detector about an object to be imaged;
periodically sampling the output signal from said detector at an interval Δt to acquire a set of radiation attenuation values;
sequentially applying the following expression to a plurality of radiation attenuation values:

$$x_k = \frac{y(k\Delta t) - \sum_{n=1}^{N} (\beta_n e^{-\Delta t/\tau n})\, S_{nk}}{\sum_{n=1}^{N} \beta_n}$$

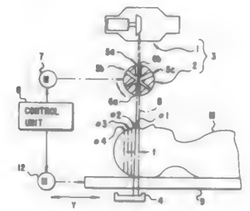
where $y(k\Delta t)$ designates the radiation attenuation value acquired during the kth interval, $\beta_n = \alpha_n(1-e^{-\Delta t/\tau n})$ in which α_n represents the strength of an impulse response component n having time constant τ_n, and $S_{nk} = X_{k-1} + e^{-\Delta t/\tau n}\, S_{n(k-1)}$, to generate a set of values for variables S_{nk};
producing a plurality of filtered values X_k by applying the above expression to each radiation attenuation value, wherein values in the set of values for variables S_{nk} are used in the expression applied to the radiation attenuation value which was acquired first; and
reconstructing an image from the filtered values.

5,359,639

METHOD AND APPARATUS FOR COMPUTERIZED TOMOGRAPHY

Masahiro Saito, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Jul. 14, 1993, Ser. No. 90,933
Claims priority, application Japan, Jul. 16, 1992, 4-213597
Int. Cl.[5] G21K 1/04
U.S. Cl. 378—4 10 Claims



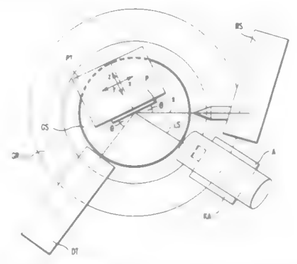
2. An apparatus for obtaining sectional images of a plurality of sectional planes adjacent one another in a direction along a body axis of an examinee, by repeating a process of obtaining one sectional image based on projection data relating to X-ray absorption in each sectional plane of the examinee, which data are collected by X-ray detecting means radially of the sectional plane by causing X-ray emitting means and the X-ray detecting means opposed to each other across the examinee to revolve around the body axis of the examinee lying still while causing the x-ray emitting means to emit X-rays toward each sectional plane to scan the sectional plane, said apparatus comprising:
(a) X-ray emitting direction switching means for shifting a direction of X-ray emission from said X-ray emitting means along the body axis of the examinee;
(b) examinee moving means for moving said examinee along said body axis; and
(c) control means for repeatedly effecting, until completion of scanning of a predetermined number of sectional planes adjacent one another along the body axis of the examinee, a scanning control by driving said X-ray emitting direction switching means to shift the direction of X-ray emission from said X-ray emitting means to scan a group of sectional planes successively from a first sectional plane set to an initial position to a last sectional plane in said group, said X-ray emitting means emitting X-rays toward each sectional plane, thereby scanning each sectional plane of the examinee lying still with the direction of X-ray emission fixed during one scan, the direction of X-ray emission being shifted for each successive scan, a reset control by driving said X-ray emitting direction switching means, after scanning the last sectional plane in said group, to switch the direction of X-ray emission to scan a sectional plane to be set to said initial position, and an examinee moving control by driving said examinee moving means to move said examinee synchronously with said reset control and in a direction in which said direction of X-ray emission is switched in said rest control, to set to said initial position a new first sectional plane adjacent said last sectional plane in said group having been scanned.

5,359,640

X-RAY MICRO DIFFRACTOMETER SAMPLE POSITIONER

Juergen Fink, Elchesheim-Illingen; Rolf Schipper, Karlsruhe, both of Fed. Rep. of Germany; Kingsley Smith, and Richard Ortega, both of Madison, Wis., assignors to Siemens Industrial Automation, Inc., Alpharetta, Ga.

Filed Aug. 10, 1993, Ser. No. 104,311
Int. Cl.[5] G01N 23/20
U.S. Cl. 378—79 6 Claims



1. An X-ray microdiffractometer having a means for positioning a sample, comprising:
a positionable X-ray emitter (RQ) for generating a small diameter X-ray;
a movable sample carrier (PT) for holding the sample (P) and thereby moving said sample within three space coordinates;
a detector (DT) positionable so as to be aimed at the zero point of the diffractometer while said X-ray emitter (RQ) and said sample carrier (PT) are rotated around the zero point;
a light source (LA) for generating a visible small diameter light beam, said light source aimable at the zero point; and
a camera (KA) having an optical axis, said camera aimable such that said optical axis passes through the zero point and forms an angle with said light beam of said light source (LA) so as to visibly indicate the zero point and the position of the sample with respect to the zero point.

5,359,641

TELEMETRY SYSTEM WITH SUPPRESSED RINGING CONNECTION

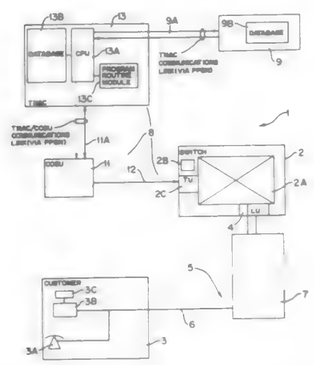
Jerome W. Schull, Marietta, and James T. Soles, Clarkstown, both of Ga., assignors to Bellsouth Corporation, Atlanta, Ga.

Filed Dec. 22, 1992, Ser. No. 995,031
Int. Cl.[5] H04M 11/00
U.S. Cl. 379—106 60 Claims

1. A telemetry system for accessing equipment at telephone subscriber locations over telephone loop networks which require different signalling modes for initiating operation, said equipment at each subscriber location generating an acknowledgement signal when accessed, and said system comprising:
a telephone switching network for providing access to said subscriber locations over said telephone loop networks serving said subscriber locations;
and first means for controlling said telephone switching

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network so as to establish suppressed ringing connections through said telephone switching network to said subscriber locations over said telephone loop networks for accessing said equipment, said first means including a set-up routine for identifying the signalling mode of the telephone loop network serving a subscriber location by: controlling said telephone switching network to sequentially attempt to establish a suppressed ringing connection through said telephone switching network to the subscriber location over the telephone loop network serving the subscriber location using a different one of said signalling modes during each said attempt; after each said attempt waiting for an acknowledgement from the equipment at the subscriber location before proceeding with a next attempt; and after an acknowledgement is received, ceasing any subsequent attempts and identifying the telephone loop network serving the subscriber location with the signalling mode which resulted in said acknowledgement.



5,359,642

METHOD AND APPARATUS FOR PREPAYMENT OF TELECOMMUNICATION CONNECTIONS BY REGISTERED GROUPS OF SUBSCRIBERS IN A TELECOMMUNICATION SWITCHING NETWORK

Peter D. Castro, New York, N.Y., assignor to International Integrated Communications, Inc., Freeport, N.Y.

Continuation of Ser. No. 785,272, Oct. 30, 1991, abandoned.
This application Feb. 26, 1993, Ser. No. 23,335
Int. Cl.[5] H04M *15/00*
U.S. Cl. 379—121 5 Claims

1. A method for prepayment of telecommunication connections between two or more telecommunication devices each operably associable with telecommunication lines of a telecommunication switching network having a central switching system operably connected to a billing system, said method comprising the steps:

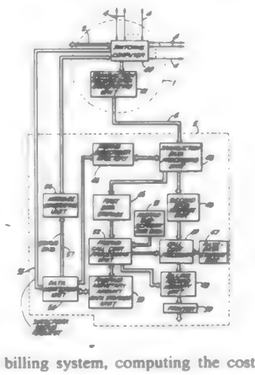
(a) storing in a first storage means in said central switching system, a group of subscriber numbers, each said subscriber number being associated with a subscriber line having membership to a prepaid group of subscriber lines;

(b) storing in a second storage means in said billing system, monetary value data representative of a prepaid amount of monetary value available to each said subscriber line of said prepaid group, for payment of the cost of telecommunication connections in said telecommunication switching network;

(c) transmitting a first called party number over a first subscriber line to said central switching system, in order to establish a first telecommunication connection between at least a first pair of telecommunication devices, wherein at least one of said first pair of telecommunication devices is operably associated with said first subscriber line;

(d) at said central switching system, determining that said first subscriber line is in said prepaid group of subscriber lines;

(e) at said central switching system, measuring the time duration of said first telecommunication connection;



(f) at said billing system, computing the cost of said first telecommunication connection using applicable rate data and said measured time duration of said first telecommunication connection; and

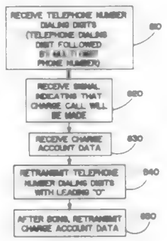
(g) at said billing system, processing said stored monetary value data of said prepaid group, to indicate a first decrement in said prepaid amount of monetary value, said first decrement being essentially equal to said computed cost of said first telecommunication connection.

5,359,643

TELECOMMUNICATIONS DEVICE WITH SIMPLIFIED CALLING PROCEDURES

John R. Gammino, 6 East Point Rd., Linroft, N.J. 07738

Filed Jan. 26, 1993, Ser. No. 9,318
Int. Cl.[5] H04M *17/00*
U.S. Cl. 379—143 11 Claims



1. A method for placing a telephone call through a central office from a telecommunications device according to a desired method of making payment, said method comprising the steps of:

receiving a first plurality of signals which represent a telephone dialing digit not including "0" followed by a multi-digit phone number, said telephone dialing digit being independent of the desired method of making payment;

receiving at least one further signal which indicates said desired method of making payment for said telephone call after said multi-digit phone number has been received;

providing for payment of said telephone call according to said desired method of making payment; and

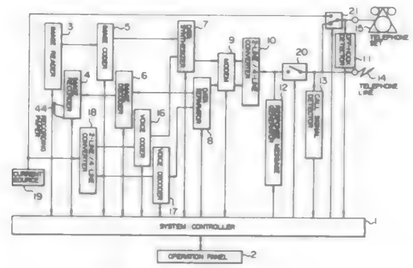
placing said telephone call by transmitting a plurality of Dual Tone Multiple Frequency signals representing said multi-digit phone number to said central office.

5,359,644

VOICE/IMAGE SIMULTANEOUS COMMUNICATION APPARATUS

Toru Tanaka, Fujisawa; Toyota Honda, Yokohama; Teiji Okamoto, Fujisawa, and Seiji Tanaka, Katsuta, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Feb. 23, 1994, Ser. No. 200,521
Claims priority, application Japan, Mar. 2, 1993, 5-040942
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—96 10 Claims



1. A voice/image simultaneous communication apparatus comprising:

image input means for receiving an image to convert it into image data and delivering the image data;

image coder means for compressively coding the image data delivered out of said image input means to convert it into image coded data and delivering the image coded data;

voice input/output means for converting an inputted voice into an analog electric signal to deliver it and converting an inputted analog electric signal into a voice to deliver it;

voice coder means for converting the analog electric signal delivered out of said voice input/output means into a digital signal and thereafter compressively coding the digital signal to convert it into voice coded data so as to deliver it;

data synthesizer means for synthesizing the image coded data delivered out of said image coder means and the voice coded data delivered out of said voice coder means through a predetermined method and delivering synthesized coded data;

data modem means for modulating the coded data delivered out of said data synthesizer means to deliver modulated data to a telephone line and demodulating coded data received from said telephone line to deliver demodulated data, said data modem means being capable of changing the data transmission speed during modem operation stepwise;

data separator means for separating the demodulated data delivered out of said data modem means into image coded data and voice coded data through a predetermined method and delivering them;

image decoder means for decoding the image coded data delivered out of said image decoder means into image data and delivering it;

image output means for receiving the image data delivered out of said image decoder means to convert it into an image and delivering the image;

voice decoder means for decoding the voice coded data delivered out of said data separator means to convert it into an analog electric signal and delivering the analog electric signal to said voice input/output means;

circuit connecting means for connecting said data modem means and said telephone line; and

system controller means for controlling the whole of a system,

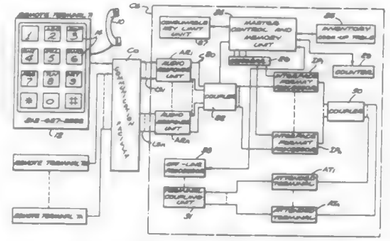
wherein before voice/image simultaneous communication is carried out, said system controller means controls said data modem means in accordance with information produced from said data modem means and used to decide the condition of said telephone line so as to change the data transmission speed in said data modem means and controls said data synthesizer means in accordance with the data transmission speed in said data modem means so as to change the ratio between the image coded data and the voice coded data which are to be synthesized by means of said data synthesizer means.

5,359,645

VOICE-DATA TELEPHONIC INTERFACE CONTROL SYSTEM

Ronald A. Katz, Los Angeles, Calif., assignor to First Data Corporation Inc., Omaha, Nebr.

Continuation of Ser. No. 680,879, Apr. 5, 1991, Pat. No. 5,224,153, which is a continuation-in-part of Ser. No. 481,403, Feb. 20, 1990, Pat. No. 5,014,298, which is a continuation-in-part of Ser. No. 312,792, Feb. 21, 1989, Pat. No. 5,073,929, which is a continuation-in-part of Ser. No. 194,258, May 16, 1988, Pat. No. 4,845,739, which is a continuation-in-part of Ser. No. 18,244, Feb. 24, 1987, Pat. No. 4,792,968, which is a continuation-in-part of Ser. No. 753,299, Jul. 10, 1985, abandoned. This application May 7, 1993, Ser. No. 58,452
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—93 22 Claims



5. A voice-data control system for use with a communication facility including remote terminals for individual callers, wherein said remote terminals may comprise a conventional telephone instrument including voice communication means for providing audio response signals and digital input means for providing digital response signals, said control system comprising:

cue means for cueing select ones of said terminals to prompt selective actuation of said voice communication means and said digital input means to provide responsive signals;

consumable key test means for qualifying individual callers with respect to limited use;

status means to selectively identify responsive signals from each select terminal as digital control signals, digital data signals or audio signals;

control means implementing a stored program to control said cue means and said status means in accordance with said program and said digital control signals to prompt responsive signals from each select terminal in accordance with said status means, said program implementing an order operation; and

means for selectively storing responsive signals from said

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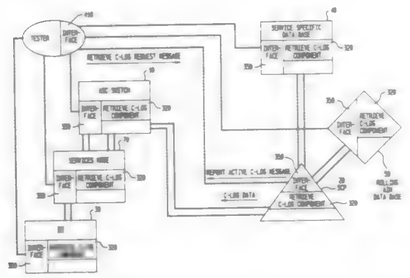
select terminals including digital data signals and audio signals as selectively identified by said status means.

5,359,646

TESTING OF DISTRIBUTED COMMUNICATIONS NETWORKS

Myranda A. Johnson, Freehold, and Timothy J. Zebo, Red Bank, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Apr. 30, 1992, Ser. No. 876,856
Int. Cl.[5] H04M *1/24, 3/08, 3/22*
U.S. Cl. 379—27 25 Claims



1. A testing system for a tester to test a subscriber's service and to sectionalize service trouble in a network comprising a plurality of distributed network nodes, comprising

a test call set-up component for receiving requests from a tester for testing the subscriber's service and for setting up a test call under a test environment defined by the tester, said test call set up component comprising

means for appending a maintenance parameter to messages relating to said test call, wherein said maintenance parameter to comprised of attributes containing information as to the test environment and testing instructions and information and

a test call controller for allowing the tester to place a test call to test the subscriber's service, said test call controller setting up a test call by causing a service logic program to be executed which queries the tester for information defining the test environment, the directory number of the subscriber's line to be tested, testing instructions and information; and

a call history log component for enabling the tester to have data relevant to the processing of said test call collected at each network node.

5,359,647

HEADSET IN-USE INDICATOR

Paul L. Regen, Felton; Anna Marie G. Puentes, Los Gatos, and Richard Hensolt, Ben Lomond, all of Calif., assignors to Plantronics, Inc.

Filed May 28, 1993, Ser. No. 69,294
Int. Cl.[5] H04M *11/00, 1/00*
U.S. Cl. 379—56 9 Claims

1. A telephone headset in-use indicator, comprising:

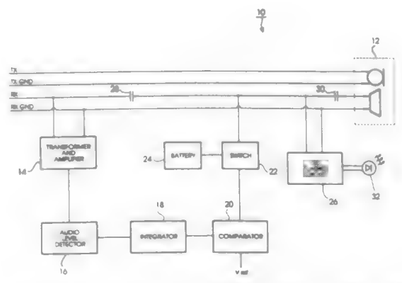
a headset having a microphone coupled to a telephone base unit by first and second transmit signal lines and having a receiver coupled to a telephone base unit by first and second received audio signal lines;

a transformer and amplifier circuit, coupled to said first and second received audio signal lines, said transformer and amplifier circuit producing an amplified received audio signal;

an audio level detector, coupled to said transformer and amplifier circuit and responsive to peaks in said amplified received audio signal exceeding a first predetermined threshold to produce current pulses;

an integrator circuit, coupled to said audio level detector, said integrator circuit producing an integration signal reflecting a time-average of said current pulses produced by said audio level detector;

a comparator, coupled to said integrator, said comparator responsive to excursions of said integration signal above a second predetermined level to issue an activation signal having a predetermined digital logic level;



a switch coupled to said comparator and to a battery, said switch being responsive to said issuance of said activation signal by said comparator to apply a DC voltage from said battery to said first received audio signal line;

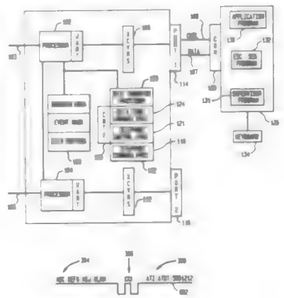
an LED flasher circuit, coupled to said received audio signal lines and responsive to said DC battery voltage on said first received audio line to provide a visual indication of headset use.

5,359,648

ESCAPE SEQUENCE USING MONITORING OF CONTROL SIGNAL STATES

Tave P. Dunn; Elie A. Jreij, both of Austin, Tex.; Richard M. Ladwin, Poughkeepsie, N.Y., and William E. Levene, Austin, Tex., assignors to Rolm Company, Santa Clara, Calif.

Filed Dec. 28, 1992, Ser. No. 997,995
Int. Cl.[5] H04M *11/00;* H04L *5/16*
U.S. Cl. 379—93 17 Claims



1. In a data communication device including an input port for connecting the data communication device to a utilization device and a telephone port for connecting the data communication device to a telephone line; the data communication device having two distinct modes of operation: a transparent mode in which the data communication device provides data received at the input port to the telephone port, and a command mode in which the data communication device responds to the data received at the input port as instructions to the data communication device; the data communication device including means for defining a predetermined sequence of data as an escape code; the improvement comprising:

reception means for receiving at least one control signal from the utilization device;

coincidence detection means for detecting when a predetermined sequence of state changes of the at least one control signal occur in coincidence with reception of the predetermined sequence of data;

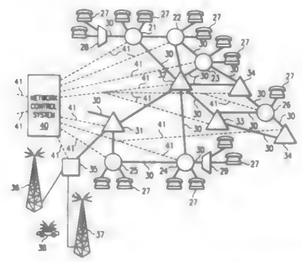
escape control means, responsive to the means for detecting and operative when the data communication device is in the transparent mode, for causing the data communication device to switch to the command mode when the predetermined sequence of state changes of the at least one control signal occur in coincidence with reception of the predetermined sequence of data.

5,359,649

CONGESTION TUNING OF TELECOMMUNICATIONS NETWORKS

Cornelius S. Rosu, Enskede, Sweden, and Tage Dahlquist, Lakewood, Colo., assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Oct. 2, 1991, Ser. No. 769,797
Int. Cl.[5] H04M *7/00, 15/00, 3/42*
U.S. Cl. 379—220 31 Claims



16. A method of optimizing a telecommunications network for improved traffic carrying capacity, said network having a plurality of exchanges and a plurality of routes connecting those exchanges to one another with each of said routes being capable of carrying traffic between said exchanges in the network as set forth in claim 13 wherein said overflow traffic information converting step includes the steps of:

verifying said network management commands with stored off-line simulated events and proposing modified network management commands in response thereto;

determining whether the proposed network management commands improve network congestion conditions; and

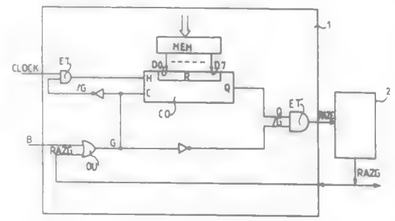
sending the proposed network management commands to affected routes and exchanges within the network in response to a determination that said commands will improve network congestion conditions.

5,359,650

DIGITAL CIRCUIT FOR CONDITIONAL INITIALIZATION

Christian Tournier, Seyssinet, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly, France

Continuation of Ser. No. 720,026, Jun. 24, 1991, abandoned.
This application Aug. 30, 1993, Ser. No. 114,292
Claims priority, application France, Jun. 26, 1990, 90 07985
Int. Cl.[5] H04M *3/00*
U.S. Cl. 379—342 31 Claims



1. A conditional initialization circuit, for circuitry that is remotely powered over a transmission line, and transmits pulses by short-circuiting the transmission line for specific durations, and is temporarily powered from a capacitor during such a short-circuit, wherein the conditional initialization circuit comprises:

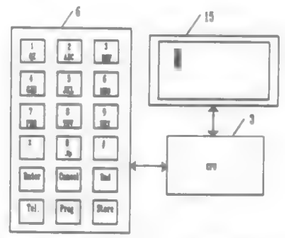
a counter for measuring the duration of a short-circuit, and at least one comparator means for comparing the duration of a short-circuit with at least one respective specified duration and for causing the remotely powered circuitry to be initialized if the duration of a short-circuit is less than the minimum value or greater than the maximum value of a specified range of durations.

5,359,651

TELEPHONE DIALLER WITH FAST ACCESS TELEPHONE DIRECTORY AND "CALL BACK" FEAURE

Georgi H. Draganoff, 565 Serbourne St., Apt. 1111, Toronto Ontario M4X 1W7, Canada

Filed May 6, 1992, Ser. No. 878,987
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—354 14 Claims



1. A telephone dialler operable in a dialling mode to a dial a selected telephone number and in a programming mode to store a set of indicia comprising a telephone number and additional alphanumeric information in a telephone directory memory, said telephone dialler comprising a telephone keypad having a plurality of push buttons each of which is associated with a respective number and a respective set of alphabetic characters, a display and a central processing unit (CPU) to store and retrieve information from the memory, said keypad, display and CPU being connected and controlled by the firm-

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ware in such a way, that upon selection of the programming mode of operation said keypad is operable in one of two functions, one of said functions permitting entry of additional alphanumeric information another of said functions permitting entry of numerical only information, in said one function depression of the push buttons of the keypad are interpreted as follows: upon first depressing of a given push button a code representative for the marked on it number is stored in a temporary buffer, after each subsequent depressing of the same button, a code representing successive letters of the respective set is placed in the buffer and displayed at the same location, until after each letter of the set has been displayed the number will again be displayed, the alphanumeric character being entered in the buffer upon depression of a designated enter button, each successive alphanumeric character being entered in a similar way until termination of the entry of alphanumeric characters, and in said another function depressings of the push buttons enter codes corresponding to numbers associated therewith.

5,359,652

TONE RECEIVER COMPRISING A SWITCH CAPACITOR ZERO CROSSING DETECTOR

Jaap Mulder, Geldrop, Netherlands, and Rolf F. Becker, Liswil, Switzerland, assignors to U.S. Philips Corporation, New York, N.Y.

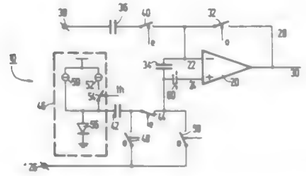
PCT No. PCT/NL92/00115, § 371 Date Mar. 1, 1993, § 102(e) Date Mar. 1, 1993, PCT Pub. No. WO93/01687, PCT Pub. Date Jan. 21, 1993

PCT Filed Jul. 1, 1992, Ser. No. 977,395

Claims priority, application European Pat. Off., Jul. 1, 1991, 91201679.7

Int. Cl.[5] H03F *3/45*; H03K *5/153*

U.S. Cl. 379—386 **5 Claims**



3. A tone receiver comprising a control circuit and at least one zero crossing detector, wherein said detector comprises:

a signal input for receiving an input signal,

a reference voltage source, and a threshold voltage source producing a threshold voltage signal having a fixed step in voltage level,

a first, a second, a third and a fourth on/off switch, said third on/off switch having a first terminal and a second terminal,

amplifier means for amplifying and comparing said input signal and a reference signal, said amplifier means comprising a non-inverting input disconnectably coupled to said reference voltage source, an inverting input, an output coupled to said inverting input by a feedback loop through said first on/off switch, and a first capacitance coupling between said inverting and non-inverting inputs,

a second capacitor connected between said inverting input and said signal input through said second switch,

a third capacitor having one terminal connected to said threshold voltage source, and an other terminal connected to a junction with said first terminal of said third on/off switch, said third on/off switch having said second terminal connected to said non-inverting input,

said fourth on/off switch being connected between said junction and said reference voltage source, and

means, responsive to said control circuit, for opening and closing said first and said second on/off switches in phase opposition, and for opening and closing said third and fourth on/off switches in phase with said second switch and said first switch respectively, and for controlling the disconnectable coupling of said reference voltage to said non-inverting input in phase with said first switch.

5,359,653

CIRCUIT ARRANGEMENT FOR CONTROLLING THE VOLUME RANGE OF A VOICE TERMINAL

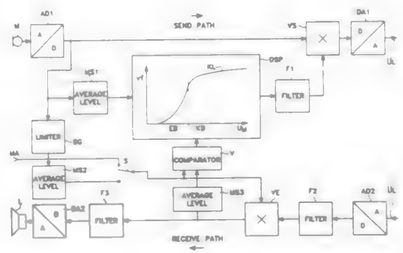
Michael Walker, Baltmannsweiler, and Peter Heitkämper, Grosszimmern, both of Fed. Rep. of Germany, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Sep. 9, 1992, Ser. No. 943,809

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1991, 4130045

Int. Cl.[5] H04M *9/08*

U.S. Cl. 379—390 **8 Claims**



2. A circuit arrangement for controlling a volume range of a voice terminal having at least one microphone and at least one loudspeaker wherein the microphone and the loudspeaker are connected via a send path and a receive path, respectively, to a transmission channel leading to a similar remote terminal, wherein

both the send path and the receive path each include a respective amplifier whose gain is varied in accordance with a signal at a respective control input,

the send path has associated therewith a digital signal processor used as a gain control circuit which

is fed with an average input level value derived from an output of the microphone,

determines a gain from said average input level value in accordance with a predetermined non-linear characteristic stored as a program or table, and

feeds said gain to the control input of the amplifier in the send path,

to derive the average input level value, a first average-value circuit with a first time constant is provided which

samples the output of the microphone several times to provide a sequence of sampled values,

rectifies a current said sampled value,

multiplies the current sampled value by a first weighting factor to form a weighted current sampled value,

multiplies a prior accumulated value derived from prior sampled values by a second weighting factor to form a weighted prior accumulated value, and

adds said weighted prior accumulated value to the weighted current sampled value to form a current accumulated value, and

the current accumulated value, after being multiplied by a fixed correction factor, is fed as the average input level value to the gain control circuit.

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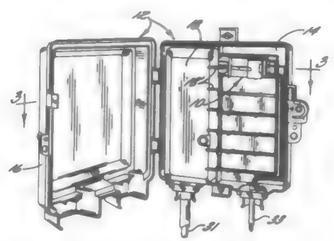
TELECOMMUNICATIONS NETWORK INTERFACE ASSEMBLY

Michael L. Jensen, Cary; Thomas M. Baum, Apex; John E. Francis, Raleigh; John C. Mason, Cary, and Jack A. Smith, Jr., Garner, all of N.C., assignors to Raychem Corporation, Menlo Park, Calif.

Filed May 12, 1992, Ser. No. 881,958

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—397 **74 Claims**



1. A telecommunications network interface assembly, comprising:

a main body having a circuit chamber;

circuit means and protective sealant material within said circuit chamber;

a plurality of modules connected to said main body, said modules including a network interface module including a jack and a shunt plug mateable with said jack;

said shunt plug when mated with said jack transmitting signals across said module, removal of said shunt plug from said jack interrupting signal transmission across said module;

said modules including at least one other module from the group consisting of a drop wire module for connecting telephone company drop wires to said assembly, an electronics interface module, and a subscriber wire module for connecting subscriber wires to said assembly.

5,359,655

SUPPLY CIRCUIT FOR A TELECOMMUNICATION LINE, PROVIDING HIGHLY SYMMETRICAL AND RAPID RESPONSE TO LINE VOLTAGE DISTURBANCES

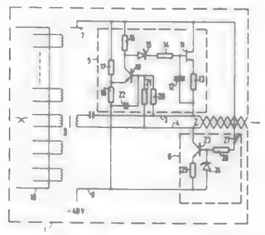
Gerrit Rademaker; Rob Westdorp, and Hendrikus J. Grutter, all of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 29, 1992, Ser. No. 891,307

Claims priority, application European Pat. Off., Jun. 6, 1991, 91201396.8

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—401 **6 Claims**



1. A supply circuit for a two-wire telecommunication line, said supply circuit comprising a voltage adjusting circuit section coupled between a first wire of said line and a first reference potential point, and a current source coupled between a second wire of said line and a second reference potential point; said voltage adjusting circuit section comprising:

transistor having a control electrode, a first main electrode coupled to said first wire, and a second main electrode coupled to said first reference potential point;

a capacitor coupling said control electrode to said first wire; and

means including a threshold voltage diode for further coupling said control electrode to said first reference potential point, said threshold voltage diode becoming conductive in a forward direction when the voltage there-across reaches a first threshold level, thereby charging said capacitor so as to produce a voltage at said control electrode which renders said transistor conductive.

5,359,656

ADAPTIVE ECHO CANCELLATION APPARATUS

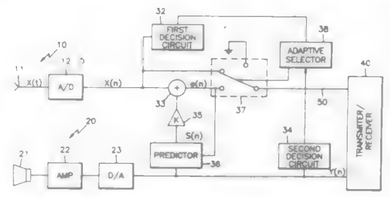
Jong-Il Kim, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 9, 1993, Ser. No. 74,305

Claims priority, application Rep. of Korea, Jun. 9, 1992, 92-9950

Int. Cl.[5] H04M *9/00*

U.S. Cl. 379—410 **8 Claims**



1. In a digital communication system having an audio-processing circuit and a transceiver which transmits an outgoing digital signal over a communication line and receives an incoming digital signal from the communication line, wherein the audio-processing circuit includes an audio input means for converting an outgoing audio wave to the outgoing digital signal and an audio reproduction means for converting the incoming digital signal to an incoming audio wave, an adaptive echo cancellation apparatus for preventing the incoming audio wave from returning to the audio input means, comprising:

a first channel for blocking the outgoing digital signal from flowing to the transceiver;

a second channel for directly coupling the outgoing digital signal to the transceiver;

a third channel for subtracting a predicted echo signal, estimated by using the incoming digital signal, from the outgoing digital signal and for coupling an error signal, representative of the difference between the outgoing and the incoming digital signals, to the transceiver; and

a channel selection means responsive to the outgoing digital signal or the incoming digital signal or both for selecting one of the channels.

5,359,657

TELEPHONE LINE OVERVOLTAGE PROTECTION APPARATUS

Dimitris J. Pelegris, Mount Prospect, Ill., assignor to Oneac Corporation, Libertyville, Ill.

Continuation-in-part of Ser. No. 895,380, Jun. 8, 1992, abandoned. This application Jun. 9, 1993, Ser. No. 71,755

Int. Cl.[5] H02H *1/00, 1/04*

U.S. Cl. 379—412 **12 Claims**

1. An overvoltage protection apparatus used with a pair of telephone lines comprising:

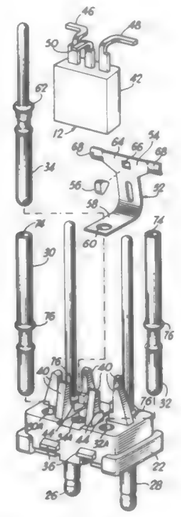
VOL 1167 ISS 4 OCT 25 1994 UMI

first voltage clamping means for clamping voltage signals on said lines at a first predetermined voltage potential;

said first voltage clamping means formed by at least a pair of solid-state protective chip devices and a failure mode mechanism adapted for connecting said lines to ground responsive to increased temperature of said solid-state protective chip devices, said failure mode mechanism providing a ground connection for the pair of solid-state protective chip devices;

a first base housing defining a plurality of terminal-pin receiving channels; a pair of INPUT TIP and RING terminal-pins; a pair of OUTPUT TIP and RING terminal-pins; and a ground terminal-pin, each of said terminal-pins received within a corresponding one of said terminal-pin receiving channels;

each of said pair of INPUT TIP and RING terminal-pins, said pair of OUTPUT TIP and RING terminal-pins, and said ground terminal-pin having an enlarged stop collar portion locating each of said terminal-pins within said first base housing and each of said-terminal-pins having elongated pin portions extending both above and below said first base housing;



said failure mode mechanism comprising an electrically conductive stamped and formed member and a fusible element;

said failure mode electrically conductive stamped and formed member being a unitary member having a base portion supported by said first base housing and defining an aperture receiving said ground terminal-pin in electrical contact engagement;

said failure mode electrically conductive stamped and formed member including a first upstanding portion engaging and providing electrical ground connection to each of said pair of solid-state protective chip devices; and said first upstanding portion having a pair of formed socket portions aligned with said aperture and receiving said ground terminal-pin; and

said first upstanding portion having tab means for positioning and retaining each of said pair of solid-state protective chip devices.

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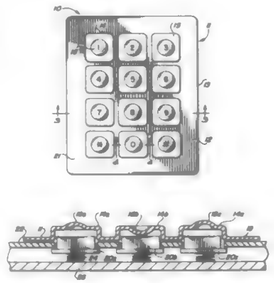
KEY MARKING OVERLAY FOR ALPHANUMERIC KEYPADS

Jonathan M. Goodson, Beverly Hills, Calif., assignor to Mark Goodson Games, Inc., Los Angeles, Calif.

Continuation of Ser. No. 827,144, Jan. 28, 1992, abandoned. This application Aug. 6, 1993, Ser. No. 103,296

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—447 **18 Claims**



1. A key marking device for telephone keypads, comprising;

an overlay for covering telephone keypads;

a skirt portion extending from the overlay beyond the keypad area, the skirt portion having an upper side and an underside;

a body portion of the overlay including indicating means in the form of a plurality of indicating elements, each of said indicating elements being physically associated with only a single corresponding keypad key, for visually indicating the occurrence of a corresponding key press; and

means for connecting the overlay to a touchtone telephone in position to cover the keypad thereof.

5,359,659

METHOD FOR SECURING SOFTWARE AGAINST CORRUPTION BY COMPUTER VIRUSES

Doren Rosenthal, 3737 Sequoia Dr., San Luis Obispo, Calif. 93401

Filed Jun. 19, 1992, Ser. No. 901,552

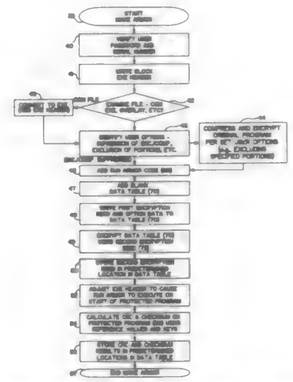
Int. Cl.[5] H04L *9/00*

U.S. Cl. 380—4 **30 Claims**

1. A method of using a computer system to secure against corruption by virus an existing executable software program, said computer system having one or more storage media, said existing executable software program being stored on at least one of said storage media, said method comprising the steps of:

identifying one or more security routines, said one or more security routines to detect corruption by virus of said existing executable software program and to detect the presence of corruption by virus of portions of said computer system external to said existing executable software program;

modifying electronic signals representative of said existing executable software program to cause said computer system to execute said one or more security routines first during each execution of said existing routines to said software program; and



storing said modifications to said existing executable software program.

5,359,660

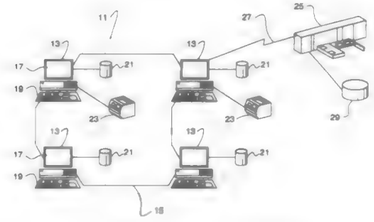
LOCAL AREA NETWORK PERIPHERAL LOCK METHOD AND SYSTEM

David K. Clark, Irving; William J. Johnson, Flower Mound; Larry M. Lachman, Irving, and David Flores, Keller, all of Tex., assignors to International Business Machines Corporation, Roanoke, Tex.

Filed Oct. 7, 1993, Ser. No. 134,014

Int. Cl.[5] H04L *9/32*

U.S. Cl. 380—25 **20 Claims**



11. A data processing network, comprising:

a) a host data processing system;

b) a plurality of data processing systems interconnected with said host data processing system, each of said data processing systems having one or more lockable elements attached thereto;

c) means for providing each of said elements of each of said data processing systems with a lock status, wherein said lock status may be changed between an unlocked condition and a locked condition, wherein each of said elements having said lock status in said unlocked condition may be accessed and each of said elements having said lock status in said locked condition may not be accessed;

d) means for accepting a security request at said host data processing system, said security request being targeted at a target set of said data processing systems, said security request being an instruction to change said lock status of at least one of said elements of each of said data processing systems in said target set of said data processing systems;

e) means for recognizing said security request at said target set of said data processing systems after said security request has been communicated over said network; and

f) means for changing said lock status of at least one of said elements of each of said data processing systems in said target set of said data processing systems in response to said recognized security request.

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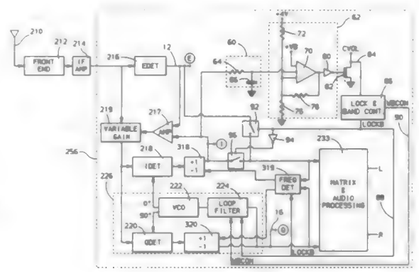
OUT-OF-LOCK DETECTOR FOR SYNCHRONOUS AM DETECTION

Gregory J. Manlove; Detlef Griessman; Richard A. Kennedy, all of Kokomo, and Thomas G. Block, Carmel, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Oct. 1, 1992, Ser. No. 954,997

Int. Cl.[5] H04H *5/00*

U.S. Cl. 381—15 **2 Claims**



1. An AM stereo decoder for processing an IF signal comprising:

means for receiving the IF signal and generating an envelope detected E signal;

means including a phase lock loop for receiving the IF signal and generating a synchronously detected in-phase I signal and a synchronously detected quadrature-phase Q signal;

means for determining an average DC value of the in-phase I signal;

means for providing a reference voltage;

means for comparing the average DC value of the in-phase I signal with the reference voltage and for providing an out-of-lock signal indicating an out-of-lock condition of the phase lock loop when the average DC value falls below the reference voltage and for providing an in-lock signal indicating an in-lock condition of the phase lock loop when the DC value rises a predetermined amount above the reference voltage;

a matrix and audio processor for generating base band audio left and right signals based upon signals applied to first and second inputs of the matrix and audio processor;

means coupling the Q signal to the second input of the matrix and audio processor; and

control means for switching the I signal to the first input of the matrix and audio processor when the phase lock loop is indicated to be in the in-lock condition and for switching the E signal to the first input of the matrix and audio processor when the phase lock loop is indicated to be in the out-of-lock condition.

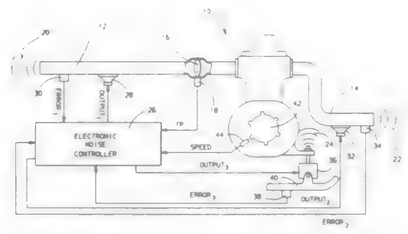
VOL 1167 ISS 4 OC 25 1994 UMI

5,359,662

ACTIVE NOISE CONTROL SYSTEM

Yi Yuan, Warren; Nick S. Kapsokavathis, Shelby Township, Macomb County, both, Mich.; Ke Chen, and Sen M. Kuo, both of De Kalb, Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 29, 1992, Ser. No. 875,775
Int. Cl.[5] G10K *11/16*
U.S. Cl. 381—71 3 Claims



1. A system for attenuating undesirable noise produced by a noise source, wherein the undesirable noise contains multiple sinusoidal noise components each having a different frequency, the system comprising:

signal generating means for producing a plurality of generator output signals, each generator output signal containing at least one sinusoidal signal component varying at a frequency corresponding to that of a respective one of the multiple noise components, wherein signal components varying at frequencies corresponding to those of noise components that are adjacent with respect to frequency are contained in different ones of the generator output signals and at least one of the plurality of generator output signals contains at least two sinusoidal signal components;

a plurality of adaptive filters, each adaptive filter operating to filter a respective one of the generator output signals to produce a corresponding filter output signal in accordance with filtering characteristics of the adaptive filter;

summing means for adding each filter output signal to produce an output canceling signal;

means for generating noise canceling waves in response to the output canceling signal and for superimposing the canceling waves with the undesirable noise, whereby the undesirable noise is attenuated;

means for sensing a residual noise level resulting from the superposition of the canceling waves and the undesirable noise and for developing an error signal indicative of the residual noise level; and

means for adaptively adjusting the filtering characteristics of each one of the adaptive filters in accordance with the error signal to reduce the sensed level of residual noise.

5,359,663

METHOD AND SYSTEM FOR SUPPRESSING NOISE INDUCED IN A FLUID MEDIUM BY A BODY MOVING THERETHROUGH

Richard A. Katz, East Lyme, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

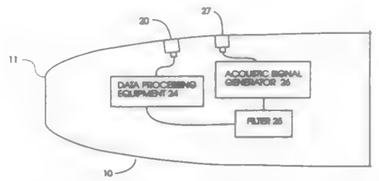
Filed Sep. 2, 1993, Ser. No. 117,513
Int. Cl.[5] G10K *11/16*
U.S. Cl. 381—71 9 Claims

1. A method of suppressing noise induced in a fluid medium by a body moving therethrough comprising the steps of:

supplying in the sidewall of the body, in at least a region of the body in which turbulence is expected to occur, sensors each for generating a signal suitable for measuring amplitude of pressure fluctuations of the medium proximate a region of said sidewall;

during a reference stage during which the body moves through the fluid medium when it is known that turbulence is occurring around at least a portion of said body, (i) enabling the sensors to each generate reference temporal pressure data representing fluctuations in pressure of the fluid medium around said body, and (ii) generating, in response to reference temporal pressure data generated by sensors in a turbulence zone at which turbulence is occurring and sensors in a transition zone between the turbulence zone and a laminar flow zone, indicia identifying the presence of turbulence; and

during an operational stage during which the body moves through the fluid medium (i) enabling the sensors to each generate operational temporal pressure data representing



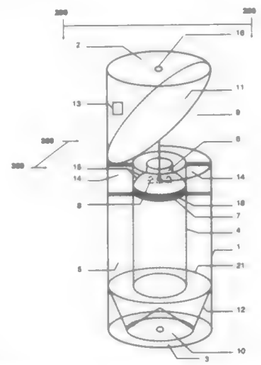
fluctuations in pressure of the fluid medium around said body proximate the respective sensor due to motion of the body through the medium and further due to external acoustic signal sources, (ii) detecting the onset of turbulence proximate the respective sensor in connection with such operational temporal pressure data, (iii) filtering the operational temporal pressure data to separate a portion representing an acoustic turbulence signal from the portion representing acoustic signals from external acoustic signal sources, and (iv) injecting into the medium proximate the respective sensor, in response to the acoustic turbulence signal, an acoustic signal of appropriate phase to reduce the amplitude of said acoustic turbulence signal.

5,359,664

LOUDSPEAKER SYSTEM

Richard Steuben, 3913 Natoma Way, Sacramento, Calif. 95838, assignor to Richard Steuben, Sacramento, Calif.

Continuation of Ser. No. 861,125, Mar. 31, 1992. This application Dec. 16, 1993, Ser. No. 168,689
Int. Cl.[5] H03G *5/00*
U.S. Cl. 381—88 6 Claims



1. A loudspeaker system comprising:

concentric outer and inner cylinder enclosures defining an annular space therebetween and having first and second ends;

an end disk closing off said outer cylinder enclosure at its second end;

said inner cylinder enclosure extending short of said end disk such that a passageway runs from the first to the second end through the inner cylinder enclosure and then turns back at the end disk to the first end through the annular space;

a loudspeaker driver capable of producing sound waves from its front and back faces, the front face generating substantially greater sound pressure than the back face, said loudspeaker driver having a diameter commensurate with that of said inner cylinder and being mounted near the first end thereof and with the front face facing into said passageway, such that resultant sound waves are formed outside the first end of the inner cylinder enclosure by summation of the sound waves directly from the back face and the sound waves indirectly from the front face through the passageway;

said passageway having a length such that the sound waves indirectly from the front face through the passageway is in phase with the sound waves directly from the back face when they form the resultant waves; and

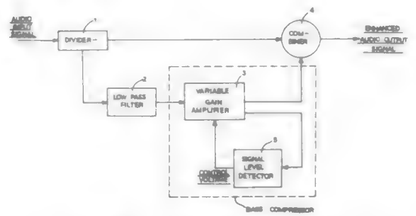
an opening on the outer cylinder enclosure near the first end for the resultant sound waves to exit to a listening position.

5,359,665

AUDIO BASS FREQUENCY ENHANCEMENT

Doan R. Werrbach, Burbank, Calif., assignor to Aphex Systems, Ltd., Sun Valley, Calif.

Continuation of Ser. No. 923,373, Jul. 31, 1992, abandoned. This application Nov. 26, 1993, Ser. No. 157,430
Int. Cl.[5] H03G *9/00*
U.S. Cl. 381—102 7 Claims



1. An audio signal processing device for enhancing bass frequency components of an input audio signal without substantially increasing the peak level of the input audio signal, comprising:

a. means for splitting said input audio signal into a first part and a second part;

b. a low pass filter for filtering said second part of said input audio signal and outputting bass frequency components of said second part of said input audio signal;

c. a close-loop bass compressor coupled to said low pass filter and utilizing a closed loop control circuitry for processing said bass frequency components and producing dynamically compressed bass frequency components; and

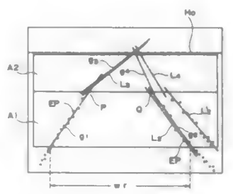
d. said first part of said input audio signal and said dynamically compressed bass frequency components being combined in an out-of-phase relationship for delivering an output signal wherein said bass frequency components are dynamically enhanced without substantially increasing the peak level of said input audio signal to prevent overloading any subsequent audio amplifiers.

5,359,666

DRIVING WAY JUDGING DEVICE AND METHOD

Shigeto Nakayama, Tokyo, and Hiroshi Hasegawa, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 912,070, Jul. 8, 1992, abandoned, which is a continuation of Ser. No. 413,835, Sep. 28, 1989, abandoned. This application Mar. 15, 1993, Ser. No. 32,409
Claims priority, application Japan, Sep. 28, 1988, 63-243329; Sep. 28, 1988, 63-243330; Sep. 28, 1988, 63-243331
Int. Cl.[5] G06K *9/00, 9/48;* G06F *7/70*
U.S. Cl. 382—1 14 Claims



1. A driving way judging device for judging a contour of a driving way by processing data of an image taken of the driving way, the device comprising:

image dividing means for dividing the data into at least two regions including a lower region of the image taken of the driving way and an upper region thereof;

lower straight line extracting means for extracting a first lower straight line approximate to a characteristic point distribution appearing corresponding to one of the edges of the driving way in the lower region;

lower straight line selecting means for selecting a second lower straight line out of a group of straight lines approximate to a characteristic point distribution appearing corresponding to the other of the edges of the driving way, based on a position of the first lower straight line and preset width information of the driving way;

upper straight line extracting means for extracting a first upper straight line approximate to a characteristic point distribution appearing corresponding to one of the edges of the driving way in the upper region;

upper straight line selecting means for selecting a second upper straight line out of a group of straight lines approximate to a characteristic point distribution appearing corresponding to the other of the edges of the driving way, based on a position of the first upper straight line and preset width information of the driving way; and

judging means for judging a contour of the driving way, based on a lower straight line intersection of the first and the second lower straight lines, and an upper straight line intersection of the first and the second upper straight lines.

5,359,667

METHOD FOR IDENTIFYING AND TRACKING DOCUMENT CHARACTERISTICS IN A DOCUMENT IMAGE PROCESSING SYSTEM

Edward F. Borowski, Lathrup Village; Lawrence P. Del Ricci, South Gate, and Norman P. Kera, Birmingham, all of Mich., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Aug. 24, 1992, Ser. No. 934,821
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—7 2 Claims

1. In a document image processing system, wherein a digitized image of each document is formed and a courtesy amount reader searches for predetermined data on the image and performs character recognition on the predetermined data, wherein document characteristics are associated with each of the documents processed by the system, and the document characteristics include an account identifier, a data area on the

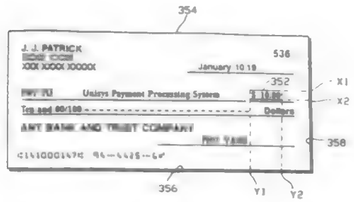
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image in which the predetermined data was found by the courtesy amount reader, a location-status indicating whether the predetermined data was found at the location where the predetermined data was expected to be located, and a success-status indicating whether the courtesy amount reader was successful in reading the predetermined data, a method for tracking and analyzing document characteristics of all documents processed by the document image processing system, comprising the steps of:

archiving the document characteristics for each document processed by the document image processing system, wherein said archiving is performed after the image has been processed by the courtesy amount reader, whereby the document characteristics from said archiving step are available for analysis after the documents and their associated images are no longer available for analysis;

providing a summary of the document characteristics from said archiving step, wherein said summary includes a summary of the data areas for each account identifier;

merging said summary with a historical summary to obtain a new historical summary, wherein said historical summary



contains an accumulation of prior said summaries and said new historical summary becomes said historical summary for subsequent merging steps;

wherein said summary of the data areas includes an uppermost location, a lowermost location, a leftmost location, and a rightmost location for each account identifier, wherein said uppermost location, said lowermost location, said leftmost location, and said rightmost location for each account identifier define the outer boundaries of the data area in which the predetermined data was found for all the documents processed having the same account identifier; and

said historical summary includes a historical-uppermost location, a historical-lowermost location, a historical-leftmost location, and a historical-rightmost location, wherein said historical-uppermost location is an accumulation of said uppermost locations, said historical-lowermost location is an accumulation of lowermost locations, said historical-leftmost location is an accumulation of said leftmost locations, and said historical-rightmost location is an accumulation of said right most locations from one or more prior said summaries.

5,359,668

METHOD AND APPARATUS FOR DETERMINING THE IMAGE CLARITY OF A SURFACE

Christiaan T. W. Lahaije, Heerhugowaard, and Wilhelmus J. van der Meer, Amsterdam, both of Netherlands, assignors to Hoogovens Groep B.V., Ijmuiden, Netherlands

PCT No. PCT/EP91/00932, § 371 Date Nov. 18, 1992, § 102(e) Date Nov. 18, 1992, PCT Pub. No. WO91/18278, PCT Pub. Date Nov. 28, 1991

PCT Filed May 17, 1991, Ser. No. 946,440

Claims priority, application Netherlands, May 18, 1990, 9001164

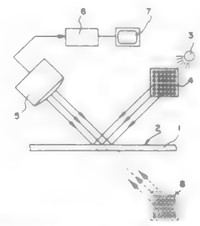
Int. Cl.[5] G01N *21/55*

U.S. Cl. 382—8 **8 Claims**

1. A method for determining the image clarity of a surface of a sheet or strip, comprising projecting an image on to a surface, detecting a virtual image of the image projected onto said surface and processing the detected virtual image into a signal which is presented as a measure of the image clarity of the surface, said image reflected onto the surface being composed of a two-dimensional array of distinct light spots, said processing of the detected virtual image comprising

digitizing said detected virtual image with reference to at least one greyness discriminator value, and

determining, for said greyness discriminator value, the number of distinct light spots in the digitized detected virtual image,



and from said digitizing and said determining, obtaining a signal measuring image clarity of the whole area of the surface illuminated by said image projected onto the surface, said detected virtual image digitizing being performed for each of a plurality of said discriminator values and determining for each discriminator value the number of distinct spots in the virtual image, and wherein said signal that is presented as a measure of the image clarity of the surface is dependent on a relationship found between the discriminator values and the respective numbers of spots in the binary image.

5,359,669

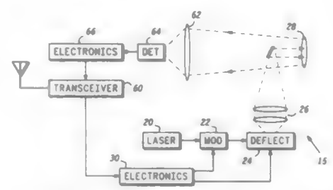
REMOTE RETINAL SCAN IDENTIFIER

Charles W. Shanley, Lake Zurich, Ill.; Karen Jachimowicz, Goodyear, and Michael S. Lebby, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 13, 1992, Ser. No. 867,958

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—6 **8 Claims**



1. A combination remote retinal scan identifier and direct retinal scan display comprising:

a light source, including a laser, forming a directed beam of light;

deflection means positioned to receive the beam of light for scanning the beam of light over at least a portion of a retina, the deflection means including reflecting surfaces moveably mounted to direct the light beam generally in two orthogonal directions;

modulating means positioned to receive the directed light beam from the light source for modulating the light beam with video information prior to the deflection means receiving the light beam;

electronic means coupled to the deflection means and the modulating means for controlling the deflection means and the modulating means to scan a video image on the retina;

a detector positioned to receive reflected light from the scanned retina and provide output signals indicative of the magnitude of reflected light; and

a communication transmitter coupled to the detector to receive the output signals from the detector and transmit the output signals to identification apparatus remote from the communication transmitter; and

electronics coupled to the modulating means and the detector for activating the detector and deactivating the modulator means during remote retinal scan identifying and for deactivating the detector and activating the modulating means to produce a direct retinal scan display.

5,359,670

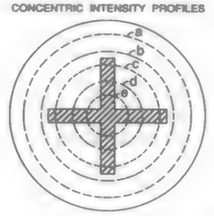
METHOD FOR IDENTIFYING A SIGNAL CONTAINING SYMMETRY IN THE PRESENCE OF NOISE

Alison E. Hunt, Shrewsbury, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 26, 1993, Ser. No. 38,733

Int. Cl.[5] G06K *9/00, 9/64*

U.S. Cl. 382—8 **3 Claims**



1. A method for identifying an unknown one of a plurality of types of fasteners, the video images of known fasteners of said types having been obtained by means of a robotic scanning system to provide a known family of related symmetric signals, the data resulting from said scanning having been stored in a computer, said method comprising the steps of:

scanning said unknown fastener in concentric circles with said robotic imaging system to provide a video image of said unknown fastener, said video image comprising a family of signals representing the intensity profiles from said concentric circles centered on the center of the image of the unknown fastener;

storing said family of signals in said computer;

computing the cross correlation of each intensity profile of the scanned unknown fastener with stored symmetric signals representing said known family of signals; and for each of said cross-correlations:

a. computing the root mean squared power signal of each cross-correlation (the power of said cross-correlations);

b. determining the maximum value among said powers;

c. selecting all the cross-correlations whose power is equal to or greater than 50% of the maximum power;

d. using said selected cross-correlations, computing the average correlation profile indicating the presence of symmetry, and then computing the power of said average correlation profile;

e. computing the ratios relating the powers of said average correlation profiles for each of the expected signals; and

f. comparing the computed ratios to indicate which of the expected known symmetric signals is present in the data being compared.

5,359,671

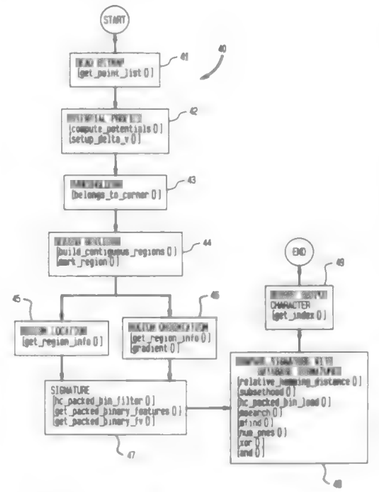
CHARACTER-RECOGNITION SYSTEMS AND METHODS WITH MEANS TO MEASURE ENDPOINT FEATURES IN CHARACTER BIT-MAPS

Arun Rao, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 31, 1992, Ser. No. 860,933

Int. Cl.[5] G06K *9/62, 9/48, 9/68*

U.S. Cl. 382—15 **22 Claims**



1. A character recognition system that identifies an input character as being a unique member of a defined character set, said system comprising:

a bit-map means for generating a character bit-map of an input character;

a character recognition means for processing said character bit-map and generating a set of (M) finite confidence measures one for each of (M) members of said character set, said confidence measures representing the degree of confidence that said input character corresponds to each of said (M) members of said character set;

a decision means for deciding if the confidence measure with the highest degree of confidence is an acceptable confidence measure;

a first output means for reporting as an output character the member of said character set with said acceptable confidence measure;

an augment means for identifying (N) of said (M) members with the (N) highest confidence measures, where (M) is greater than (N), and processing said bit-map if said decision means decides that there is no acceptable confidence measure, said augment means having a measuring means for measuring stroke endpoint locations and orientations of said bit-map and a second output means for reporting one of said (N) members as an output character based on said stroke endpoint locations and orientations; and

wherein said augment means further comprises a database means having a database of character strings, each said character string including a subset of said character set and wherein the members of each said subset represent different characters in said character set which have common stroke endpoint locations and orientations.

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5,359,672

LINE DETECTING METHOD USING TWO RECTANGULAR WINDOWS PASSING THROUGH THE LINE TO BE DETECTED

Shinji Okumura; Seigo Nishikawa; Tatsumi Nakazato, and Kiyoshi Hirakawa, all of Kitakyushi, Japan, assignors to Kabushiki Kaisha Yaskawa Denki, Kitakyushu, Japan

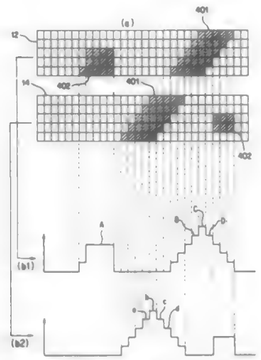
PCT No. PCT/JP91/00777, § 371 Date Feb. 4, 1992, § 102(e) Date Feb. 4, 1992, PCT Pub. No. WO91/20049, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 10, 1991, Ser. No. 828,960

Claims priority, application Japan, Jun. 13, 1990, 2-155922

Int. Cl.[5] G06K *9/66*

U.S. Cl. 382—18 **2 Claims**



1. A method of detecting a position of a rectilinear object of detection by image processing using an imaging device, comprising the steps of:

performing prepatory steps, with respect to a standard sample, of:

(a) setting two parallel rectangular windows having long sides extending in a long side direction and short sides extending in a short side direction, such that said long sides cross a line to be detected;

(b) adding image density values in each pixel column extending in the short side direction of said rectangular windows to obtain one-dimensional data comprising a row of resulting add values for each rectangular window, with each add value corresponding to one said pixel column;

(c) obtaining at least one feature point for each of said one-dimensional data, each said feature point having a characteristic value based on one of size, gradient and change in gradient, of said one-dimensional data;

(d) combining all characteristic values at all feature points in one of said one-dimensional data with all characteristic values at all feature points in the other said one-dimensional data, and obtaining a combination that has a maximum value of a sum of said characteristic values;

(e) storing in memory the inclination of a line connecting the two feature points that show said maximum value, together with the value of said sum;

(f) inclining each of said rectangular windows so that the short sides thereof are parallel to the line connecting said feature points, thereby forming parallelogram-shaped windows;

(g) executing said steps (b) to (e) by using said parallelogram-shaped windows instead of said two parallel rectangular windows, thereby storing said inclination and the value of said sum; and

performing the following final step where a rectilinear object of detection is actually detected:

(h) executing said step (g) again with respect to said object to be detected, and comparing the inclination and the value of the sum, thus obtained, with those obtained in said preparatory stage, to thereby detect the position of the line to be detected.

5,359,673

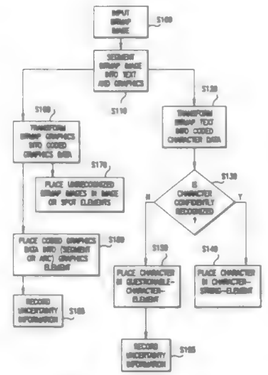
METHOD AND APPARATUS FOR CONVERTING BITMAP IMAGE DOCUMENTS TO EDITABLE CODED DATA USING A STANDARD NOTATION TO RECORD DOCUMENT RECOGNITION AMBIGUITIES

Jean-Marie R. de La Beaujardiere, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 27, 1991, Ser. No. 814,347

Int. Cl.[5] G06K *9/72, 9/03;* **G06F** *15/38*

U.S. Cl. 382—40 **20 Claims**



1. A method of transforming a document represented as a bitmap image into an editable coded data stream defined using a machine readable document description language that records coded information resulting from the document transformation process and information regarding uncertainties in the document transformation process, comprising:

performing a first transformation operation on at least a text portion of said bitmap image using a character recognition apparatus, to transform at least said text portion of said bitmap image into coded information recognized with a level of confidence;

outputting and recording said coded information into one or more elements that are defined using said document description language, each element having a machine readable element type identifier that indicates the type of said coded information regarding the recognized bitmap image recorded in said element so that the type of coded information contained in each element can be known without examining the coded information contained in each element, the element type identifier for each element having been defined based on the type of coded information recorded in the element and the level of confidence with which said bitmap image represented by said coded information was recognized so that each of said elements is selectively identified, each element having coded information of a single type recorded therein; and

when said character recognition apparatus determines that the recognized bitmap image contained in an element has not been recognized with at least a predetermined level of confidence, recording in said element uncertainty information determined by said first recognition apparatus regarding said recognized bitmap image contained in said element;

wherein said element type identifier is a character-string-element or a questionable-character-element, each character-string-element containing a string of consecutive characters recognized by said character recognition apparatus with at least said predetermined level of confidence, each questionable-character-element containing said uncertainty information determined by said character recognition apparatus for a character which was not recognized with at least said predetermined level of confidence by said character recognition apparatus.

5,359,674

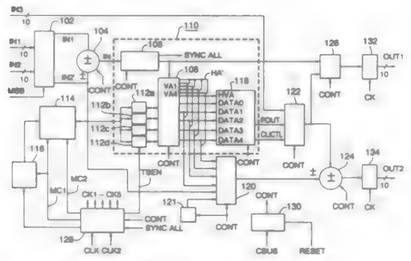
PYRAMID PROCESSOR INTEGRATED CIRCUIT

Gooitzen S. van der Wal, Lawrenceville, N.J., assignor to David Sarnoff Research Center, Inc., Princeton, N.J.

Filed Dec. 11, 1991, Ser. No. 805,149

Int. Cl.[5] G06K *9/36*

U.S. Cl. 382—41 **4 Claims**



1. A pyramid processor comprising:

means for receiving a first and a second digital data input signal, each including a data signal component and a timing signal component;

first means, responsive to a first control signal, for selectively combining the respective data signal components of the first and second digital data signals to generate a third digital data signal, and for delaying and selectively combining the respective timing signal components of the first and second digital data signals to compensate for delays incurred in processing the first and second data signals and for combining the compensated timing signal with the third digital data signal;

two-dimensional digital filter means, including first and second component filters, each of said component filters having a respective tapped delay line, for processing the data signal component of the third digital data signal in accordance with a programmed transfer function to produce a first filtered signal;

means, coupled to the two-dimensional filter for delaying the timing signal component of the third digital data signal to compensate for processing delays incurred by the filtering of the third digital data signal;

means coupled to the filter means to receive the filtered signal and an unfiltered signal provided by the tapped delay line of the first component filter and responsive to a second control signal to selectively combine the filtered signal and the unfiltered signal to produce a second filtered signal; and

control means, responsive to a programming signal to generate the first and second control signals.

5,359,675

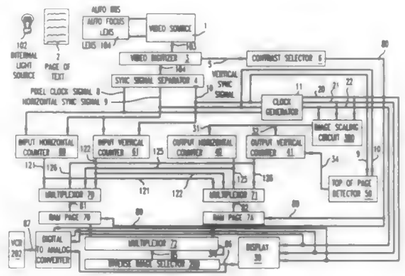
VIDEO SPECTACLES

Ronald Siwoff, 216 Finderne Ave., Bridgewater, N.J. 08807

Continuation-in-part of Ser. No. 558,317, Jul. 26, 1990, Pat. No. 5,125,046. This application Jun. 9, 1992, Ser. No. 896,421

Int. Cl.[5] G06K *9/40;* **H04N** *7/00*

U.S. Cl. 382—54 **17 Claims**



1. Image enhancing video spectacles, comprising:

a video signal digitizer for converting a received analog video signal to a digital video image having a data portion and a signal portion and for transmitting each said portion individually;

sync signal separator receiving said signal portion from said video signal digitizer and for separating said signal portion into at least three separate signals;

contrast selector receiving said data portion of said digitizer image, said contrast selector including means for comparing each pixel in said data portion to predetermined intensity levels, means for enhancing said data portion based on said comparison, and means for selecting at least one contrast level;

means for selecting between 256 shades of gray, 16 shades of gray or black and white without gray shades, or any number of shades in between in a positive or negative image format;

means for producing enlarged enhanced images in the user's eye;

spatial frequency enhancer including at least one filter and control logic means to select a high, low or midrange spatial frequency and to enhance frequency contrast to make that frequency more visible;

means for receiving sync signals from the sync signal separator and generating a plurality of clock timing signals including a vertical sync signal, horizontal sync signal and data pixel clock;

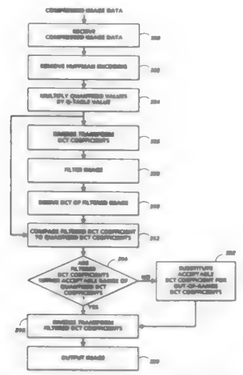
video display means for receiving said digital data and timing signals to produce a new image, said digital data image for protecting into a persons's eyes;

mirrored spectacles having mounting mirrors for receiving said image and for reflecting said image so an individual with impaired vision wearing the image enhancing video spectacles selects said at least one contrast level between pertinent features of the image or selects a specific spatial frequency of an image which is enhanced in order to limit the impairment of the individual's vision; and

a spatial filter, preselected filter coefficients, arithmetic control multiplier and control logic, and arithmetic control adder and control logic for combining the enhanced spatial frequency information with the unprocessed image and project this information in a person's eye utilizing the spectacle mounted mirror.

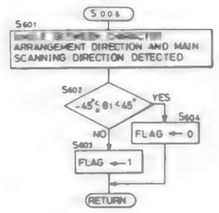
VOL 1167 ISS 4 OC 25 1994 UMI

5,359,676
DECOMPRESSION OF STANDARD ADCT-COMPRESSED DOCUMENT IMAGES
Zhigang Fan, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jul. 19, 1993, Ser. No. 93,546
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—56 **10 Claims**



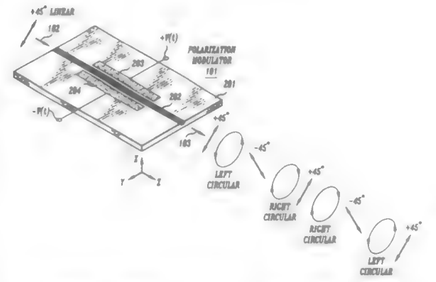
1. A method of improving the appearance of a decompressed document image while maintaining fidelity with an original document image from which it is derived, wherein for compression, an original document image is divided into blocks of pixels, said blocks of pixels are changed into blocks of transform coefficients by a forward transform coding operation using a frequency space transform operation, said transform coefficients subsequently quantized with a lossy quantization process in which each transform coefficient is quantized according to a quantizing value from a quantization table and the result is used as a quantized transform coefficient, the method including the decompression steps of:
a) receiving said quantized transform coefficient blocks for said original image;
b) dequantizing the transform coefficients in a block according to a corresponding quantizing value from the quantization table to obtain a block of received transform coefficients;
c) recovering the image by applying an inverse transform operation to the received transform coefficients and producing blocks of pixels;
d) filtering the image with a non-linear filter, said filtering step including the substeps of:
i. for each block of pixels, determining the dynamic range of the pixel block,
ii. calculating, for each block of pixels, an edge threshold value, as a function of the dynamic range determined for the pixel block;
iii. locating, using the edge threshold value, edges of the image within the block and producing therefrom an edge map;
iv. filtering the image with a sigma filter, averaging pixel values in the block which are not identified as edges in the edge map;
e) changing the filtered recovered image into blocks of new transform coefficients by the forward transform coding operation using the frequency space transform compression operation;
f) comparing each block of new transform coefficients to a corresponding block of received transform coefficients and the selected quantization table, to determine whether the filtered recovered image is derivable from the original image; and
g) upon a positive determination transferring the filtered recovered image to an output buffer.

5,359,677
IMAGE READER AND FACSIMILE MACHINE USING SUCH IMAGE READER
Morihiro Katsurada, and Sadaaki Shimonaga, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 9, 1991, Ser. No. 802,649
Claims priority, application Japan, Dec. 11, 1990, 2-401420
Int. Cl.[5] G06K *9/32*
U.S. Cl. 382—58 **17 Claims**



1. An imaging apparatus comprising:
an image reader including an image sensor and a lens which are moved by a scanning drive for scanning a rectangular original medium and detecting a two-dimensional image reflected from the medium through the lens onto the image sensor and converting the scanned image into two-dimensional image data;
a memory for storing said two-dimensional image data;
correction means for correcting said two-dimensional image data so that the direction of character strings included in said two-dimensional image coincides with a prescribed first direction, said correction means including:
character string direction detection means for automatically detecting the direction of said character strings based on said two-dimensional image data;
skew detection means for detecting skew between the automatically detected direction of said detected character strings and said first direction; and
means for electronically rotating said two-dimensional image data so as to cancel said skew;
side angle detection means for detecting the angle made by one side of said original medium and said first direction when said image reader reads said two-dimensional image;
determination means for determining whether an acute angle made by a straight line in the direction of said character strings and a straight line in said first direction is larger than 45°; and
image rotation means for electrically rotating said two-dimensional image data based on an output from said side angle detection means and an output from said determination means; and
coding means for reading said corrected two-dimensional image data in said predetermined first direction from said memory and coding the read data.

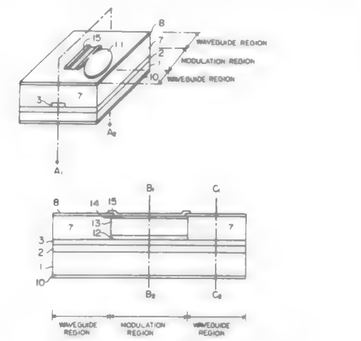
5,359,678
APPARATUS AND METHOD EMPLOYING FAST POLARIZATION MODULATION TO REDUCE EFFECTS OF POLARIZATION HOLE BURNING AND/OR POLARIZATION DEPENDENT LOSS
Fred L. Heismann, Freehold, and Robert L. Rosenberg, Fair Haven, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jun. 18, 1993, Ser. No. 79,437
Int. Cl.[5] G02B *6/10*; **G02F** *1/035*
U.S. Cl. 385—1 **24 Claims**



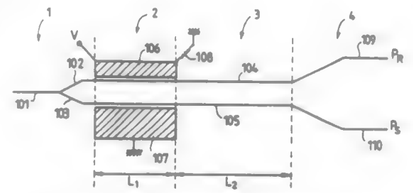
1. Apparatus intended for use in reducing the effects of polarization dependent hole-burning in an optical transmission system employing optical fiber amplifiers, the apparatus comprising:
means for generating a polarized optical signal at a desired wavelength;
waveguide means having an electrooptically induced variable birefringence for modulating the state of polarization of said polarized optical signal periodically over a range of polarization states such that the average degree of polarization is substantially equal to zero over a modulation cycle so that the effects of polarization dependent hole-burning are reduced, and
means for supplying said polarized optical signal to said means for modulating.

5,359,679
OPTICAL MODULATOR
Hideaki Tanaka, Koganei; Masatoshi Suzuki, Kawashima, and Yuichi Matsushima, Tokorozawa, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 4, 1993, Ser. No. 72,986
Claims priority, application Japan, Jun. 11, 1992, 4-175911
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—8 **3 Claims**

1. An optical modulator, in which a substrate, an n-type clad layer and an optical modulation waveguide layer are laminated on an n-side electrode; a modulation region disposed at the center of said optical modulation waveguide layer along a direction of travel of light; two waveguide regions disposed at front and rear ends of said modulation region along the direction of travel of light; a non-doped clad layer, a p-type clad layer and a p-side electrode disposed laminated on said optical modulation waveguide layer forming said modulation region; and a semi-insulating semiconductor formed on said optical modulation waveguide layer forming said two waveguide regions.



5,359,680
INTEGRATED ELECTRO-OPTICAL MODULATION DEVICE
Luc Riviere, Sophia Antipolis, France, assignor to Thomson-CSF, Puteaux, France
PCT No. PCT/FR91/00994, § 371 Date Oct. 12, 1993, § 102(e) Date Oct. 12, 1993, PCT Pub. No. WO92/10780, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 10, 1991, Ser. No. 70,460
Claims priority, application France, Dec. 14, 1990, 90 15678
Int. Cl.[5] G02B *6/12, 6/10*
U.S. Cl. 385—9 **13 Claims**



1. An Electro-optical modulation device, comprising, on an electro-optical substrate:
a first section comprising a Y-junction designed to receive the optical signal to be modulated and to divide it into two identical parts;
a second section comprising two parallel optical guides for receiving the two parts of the optical signal emerging from the first section, said guides being coupled over a first length L1 so as to determine a coupling length lc1 and the second section also comprising two first electrodes extending on the substrate and along and to the outside of the guides, in order to receive the electric modulation signal (V) and to apply an electric modulation field to the guides;
a third section in which the optical guides are extended while remaining parallel and coupled over a second length L2 so as to determine a second coupling length lc2; and
a fourth section which separates the optical guides and furnishes two modulated optical signals (P_R, P_S) of different intensities;
wherein said device is characterized by the fact the ratio L1/Lc1 is between 0.73 and 0.86, and the length of L2 is

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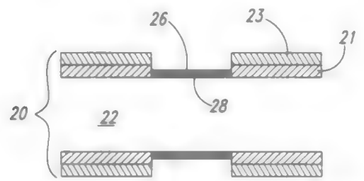
chosen so as to cancel the third-order distortion and obtain a rate of decay greater than 20 dB.

5,359,681

FIBER OPTIC SENSOR AND METHODS AND APPARATUS RELATING THERETO

Ralph C. Jorgenson, Mercer Island, and Sinclair S. Yee, Seattle, both of Wash., assignors to University of Washington, Seattle, Wash.

Filed Jan. 11, 1993, Ser. No. 3,224
Int. Cl.[5] G02B *6/02;* **G01J** *3/42;* **H01J** *5/16*
U.S. Cl. 385—12 **14 Claims**



1. A fiber optic surface plasmon resonance sensing apparatus, comprising:

a fiber optic surface plasmon resonance sensor, comprising an optical fiber having a core waveguide and a cladding or cladding/buffer layer surrounding the core waveguide, wherein the optical fiber has a first end and a second end and has at least one sensing area located between the first end and the second end or at the second end, wherein the sensing area is defined by a surface plasmon resonance supporting metal layer in contact with at least a portion of a surface of the optical fiber core waveguide free from the surrounding cladding or cladding/buffer layer;

a source of electromagnetic radiation of multiple wavelengths whose output is applied to the first end of the optical fiber core waveguide such that the radiation propagates from the first end towards the second end by total internal reflections and exists the optical fiber; and

a detection device for monitoring the radiation exiting the optical fiber.

6. A method for detecting a sample, comprising:

contacting the sample with a optical fiber surface plasmon resonance sensor, wherein the sensor comprises an optical fiber core waveguide and a cladding or cladding/buffer layer surrounding the core waveguide, wherein the optical fiber has a first end and a second end and has at least one sensing area located between the first end and the second end or at the second end, wherein the sensing area is defined by a surface plasmon resonance supporting metal layer in contact with at least a portion of a surface of the optical fiber core waveguide free from the surrounding cladding or cladding/buffer layer, and wherein the sensing area of the sensor is in contact with the sample;

directing a source of electromagnetic radiation of multiple wavelengths into the first end of the optical fiber core waveguide such that the radiation propagates from the first end towards the second end by total internal reflections and exists the optical fiber, and wherein the propagating radiation interacts with the sensing area of the sensor which is in contact with the sample; and

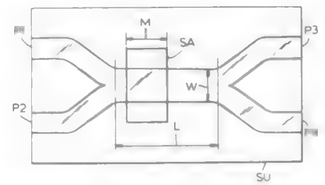
detecting the radiation exiting the optical fiber core waveguide.

5,359,682

METHOD OF ADJUSTING THE OPERATION CHARACTERISTICS OF INTEGRATED OPTICAL DEVICES

Claudio Caldera, Saluzzo; Carlo De Bernardi, Turin, and Salvatore Morasca, Como, all of Italy, assignors to CSELT-Centro Studi E Laboratori Telecomunicazioni S.p.A., Turin, Italy

Continuation-in-part of Ser. No. 658,217, Feb. 20, 1991, Pat. No. 5,139,556. This application Aug. 17, 1992, Ser. No. 931,290
Claims priority, application Italy, Mar. 7, 1990, 67157 A/90
The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—14 **11 Claims**



1. A method of making an integrated optical device, comprising the steps of:

(a) forming on a surface of a substrate a network of optical guides by a manufacturing process resulting in a deviation from a predetermined periodical spatial oscillation of light intensity and from predetermined propagation constants of guided modes of light traversing said optical guides, thereby rendering said optical guides ineffective for said guided modes; and

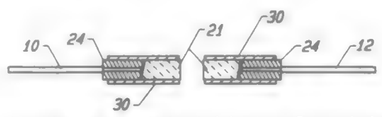
(b) upon completion of said manufacturing process and independently thereof, depositing upon said network and that portion of said surface not beneath said network a covering layer of transparent material, having a refractive index, to a thickness and over an extent to change the periodical spatial oscillation of light intensity and the propagation constants of said guided modes in said optical guides, thereby correcting said optical device and rendering said guides effective for said guided modes.

5,359,683

1×N ELECTROMECHANICAL OPTICAL SWITCH

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Filed Jun. 10, 1993, Ser. No. 74,765
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—22 **11 Claims**



1. In an improved optical switch having a first optical fiber and a plurality of N optical fibers, said first optical fiber forming an optical path with any one of said plurality of N optical fibers by an alignment of a longitudinal axis of an end of said first optical fiber with a longitudinal axis of an end of said one of said plurality of N optical fibers, a switch in optical path being effected by a relative movement of said first optical fiber with respect to said N optical fibers for a realignment of said longitudinal axis of said end of said first optical fiber with a longitudinal axis of an end of another one of said plurality of N optical fibers, the improvement comprising

a first collimating GRIN lens having a longitudinal axis coincident with said longitudinal axis of said first optical fiber and having a surface adjacent to said end of said first optical fiber;

a plurality of N collimating GRIN lenses, each having a longitudinal axis coincident with a longitudinal axis of one of said N optical fibers and having a surface adjacent to said end of said N optical fibers; and

a plurality of ferrules, each ferrule holding an end of said first optical fiber and said N optical fibers respectively, each ferrule and an associated optical fiber having parallel longitudinal axes and coplanar end surfaces, said end surfaces at a slant with respect to a plane perpendicular to said longitudinal axes, said surface of each GRIN lens at a reciprocal slant with respect to said GRIN lens longitudinal axis so that said surface is parallel with said end surfaces of said associated optical fiber and ferrule;

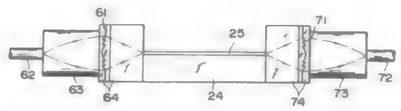
whereby said first optical fiber forms an optical path of enhanced optical performance with any one of said plurality of N optical fibers by an alignment of a longitudinal axis of a GRIN lens associated with said first optical fiber with a longitudinal axis of a GRIN lens associated with said one of said plurality of N optical fibers.

5,359,684

OPTICAL LENSED COUPLER FOR USE WITH A PLANAR WAVEGUIDE

Hayami Hosokawa, Yawata, and Tsukasa Yamashita, Nara, both of Japan, assignors to Omron Corporation, Kyoto, Japan

Division of Ser. No. 426,274, Oct. 25, 1989, Pat. No. 5,114,513.
This application Mar. 23, 1992, Ser. No. 855,890
Claims priority, application Japan, Oct. 27, 1988, 63-269549; Mar. 13, 1989, 1-60278; Mar. 16, 1989, 1-65276
Int. Cl.[5] G02B *6/32, 6/10*
U.S. Cl. 385—33 **11 Claims**



1. An optical coupler comprising: means for emitting light; planar optical waveguide formed on a substrate; and

a first cylindrical lens disposed between said light emitting means and one end of said optical waveguide and arranged such that the focusing direction thereof is in the direction of the thickness of said waveguide so that light emitted from said light emitting means is focused by said first cylindrical lens in a first direction perpendicular to the surface of said optical waveguide and remains unfocused in a second direction, said second direction being perpendicular to said first direction and perpendicular to the direction of the propagation of said light through said optical waveguide.

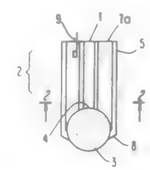
5,359,685

FOCUSING TIPS FOR OPTICAL FIBERS

Ronald W. Waynant, Laurel, and Morton Fink, Silver Spring, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jun. 21, 1991, Ser. No. 718,666
Int. Cl.[5] G02B *6/32*
U.S. Cl. 385—35 **18 Claims**

1. An optical fiber device comprising an optical fiber, a lens positioned adjacent to an end of said optical fiber, and a capsule encasing said optical fiber and securing said lens in position adjacent said optical fiber, said capsule comprising an inward tapered portion at an end thereof which contacts and encompasses all but a distal portion of said lens, said inward tapered portion of said capsule being such that an inner diameter of said capsule decreases in the direction of said end



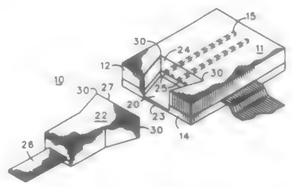
thereof, and said capsule being spaced from the optical fiber to form an annular space therebetween which annular space includes at least two fluid passages which extend along the length thereof.

5,359,686

INTERFACE FOR COUPLING OPTICAL FIBERS TO ELECTRONIC CIRCUITRY

David Galloway, Tempe, and Michael S. Lebby, Apache Junction, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 29, 1993, Ser. No. 38,375
Int. Cl.[5] G02B *6/42*
U.S. Cl. 385—49 **37 Claims**



16. An interface for coupling optical fibers to electronic circuitry comprising:

a base having formed therein a keyway with guide rails having axial alignment means associated therewith;

a plurality of optical waveguides formed in the base by plastic molding with each waveguide having an optical input/output positioned in a first surface of the keyway, the optical waveguides including a first cladding layer, a second cladding layer affixed in overlying relationship on the first cladding layer, a light conducting core positioned between the first and second cladding layers and substantially surrounded thereby, the core having first and second ends optically accessible at opposite ends of the waveguide, and a first electrical conductor formed in the first cladding layer with an externally accessible contact positioned in an end of the waveguide adjacent the first end of the core and an externally accessible portion positioned on an external surface of the first cladding layer;

a keyway mating portion formed to slideably engage the key guide rails and axial alignment means to align at least one surface of the mating portion in two orthogonal directions with the first surface of the keyway; and

a plurality of optical fibers each having one end mounted in the keyway mating portion with the one end of each of the plurality of fibers being positioned to be aligned with one of the input/outputs positioned in the first surface when the mating portion is slideably engaged in the keyway.

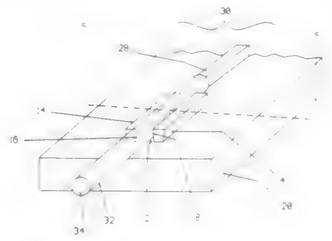
VOL 1167 ISS 4 OC 25 1994 UMI

5,359,687

POLYMER MICROSTRUCTURES WHICH FACILITATE FIBER OPTIC TO WAVEGUIDE COUPLING

Michael J. McFarland, Washington, and Karl W. Beeson, Princeton, both of N.J., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Aug. 23, 1993, Ser. No. 111,254
Int. Cl.[5] G02B *6/30*
U.S. Cl. 385—49 31 Claims



1. An optical coupling device with an optical waveguide comprising:

a substrate;

an optically transmissive waveguide on a surface of said substrate; and

a polymer channel on the surface of said substrate for optically aligning and coupling an optical fiber having a diameter dimension d_1 and said optical waveguide, wherein the longitudinal axis of said channel is in alignment or substantially in alignment with said waveguide such that on placement of said optical fiber in said channel the light carrying core of said fiber and said waveguide are in optical alignment or substantially in optical alignment, said channel having sidewalls and a floor wherein the separation of said sidewalls at a cross-sectional depth dimension d_2 in the direction normal to said floor has a width W_1 and the separation of said sidewalls adjacent to said floor has a width W_2, wherein W_1, W_2, d_1, and d_2 are selected such that:

(a) W_2 is greater than W_1;

(b) d_2 is greater than $\frac{1}{2}$ d_1; and

(c) d_1 is greater than W_1 and is equal to or less than W_2,

wherein on placement of said optical fiber in said channel the force required to displace said optical fiber from said channel is equal to or greater than about 0.01 Newton (N), as determined by retaining force test.

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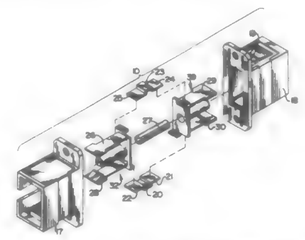
METAL INTERNAL HOLDING CLIPS FOR FIBER OPTIC CONNECTOR COUPLING

David T. Underwood, N. Richland Hills, Tex., assignor to Siecor Corporation, Hickory, N.C.

Filed Mar. 4, 1994, Ser. No. 205,435
Int. Cl.[5] G02B *6/38*
U.S. Cl. 385—70 10 Claims

1. A fiber optic connector coupling, comprising:

two containment members each comprising a wall having opposing first and second sides, two resilient latches mounted to the wall first side and adapted to receive a fiber optic connector sleeve therebetween, an extended first tube mounted between the two latches to the wall first side in communication with a wall perforation, and a wall extension, with the wall second sides placed adjoining each other with communicating wall perforations such that the two first tubes delimit a passage, each wall having at least one extension abutting the extension of the other wall thereby preventing rotation of the two walls with respect to each other; a second tube adapted to receive two opposing optical fiber holding ferrules therein to be connected, the second tube held in the passage; two rigid clips each fitted over the two containment members preventing separation of the wall members; and, an external



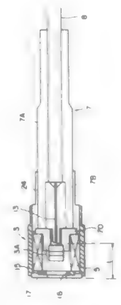
housing adapted to receive the rigid clips and fiber optic connector sleeves to be connected.

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OPTICAL FIBER TERMINAL FITTED WITH OPTICAL ISOLATOR AND METHOD OF ASSEMBLING THE SAME

Shinji Iwatsuka, Shirasato; Kenjiro Hata, Ichikawa, and Masaaki Kobayashi, Tokyo, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jul. 22, 1993, Ser. No. 96,527
Claims priority, application Japan, Jul. 24, 1992, 4-217430; Feb. 19, 1993, 5-053158
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—73 15 Claims



1. An optical fiber terminal fitted with an optical isolator which comprises:

an optical fiber;

a ferrule which holds the optical fiber in position; and

an optical isolator which includes an optical isolator assembly having at least one magneto-optical element and at least one polarizer and means for applying a magnetic field of less than that for saturation to the magneto-optical element;

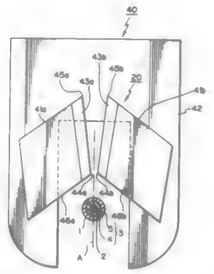
said fiber, ferrule, and isolator being disposed proximate to one another and joined integrally, wherein said means for applying a magnetic field of less than that for saturation to said magneto-optical element comprises a cylindrical magnet whose direction of magnetization is the axial direction thereof, a cylindrical soft-magnetic sleeve fitted around the magnet, and at least one soft-magnetic annular magnetic yoke disposed substantially in contact with at least the front end of the cylindrical magnet, away from the cylindrical soft-magnetic sleeve.

5,359,690

CUTTING METHOD AND APPARATUS FOR REMOVING A SECONDARY COATING LAYER FROM A JACKETED OPTICAL FIBER

Ryosuke Kaizu; Hirotoshi Nagata; Nobuhide Miyamoto, and Makoto Shimada, all of Funabashi, Japan, assignors to Sumitomo Cement Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1993, Ser. No. 107,363
Claims priority, application Japan, Aug. 21, 1992, 4-244044; Oct. 13, 1992, 4-274483; Dec. 22, 1992, 4-087823[U]; Feb. 10, 1993, 5-003950[U]; Mar. 9, 1993, 5-009923[U]
Int. Cl.[5] G02B *6/44*; B26D *1/00*; B26F *3/00*; H02G *1/12*
U.S. Cl. 385—134 25 Claims



1. A cutting method of removing a jacket layer from a jacketed optical fiber, comprising

(A) straightening a terminal portion of a jacketed optical fiber comprising a base optical fiber and a jacket layer comprising a primary coating layer covering the base optical fiber and a secondary coating layer covering the primary coating layer;

(B) grasping the straightened portion of the jacketed optical fiber at at least two portions thereof spaced from each other,

(C) arranging, beside the straightened portion of the jacketed optical fiber, a blade device comprising (a) a pair of cutting blades having straight cutting edges and (b) a blade holder by which the pair of cutting blades are held in such a manner that the straight cutting edges are arranged opposite to each other through a gap left therebetween and on one and the same plane through which a straight axis of the straightened portion of the jacketed optical fiber extends at a substantially right angle thereto, and a center line of the gap between the pair of cutting edges intersects the straight axis of the straightened portion of the jacketed optical fiber; and

(D) cutting the jacket layer of the straight portion of the jacketed optical fiber at a depth equal to or larger than the thickness of the secondary coating layer but smaller than the total thickness of the jacket layers, by moving the pair of cutting blades of the cutting device in at least one transversal direction at a substantially right angle relative to the straight axis of the straightened portion of the jacketed optical fiber.

13. A cutting apparatus for removing a secondary coating layer from a jacketed optical fiber, comprising

(A) a holder for holding a terminal portion of a jacketed optical fiber comprising a base optical fiber, a primary coating layer covering the base optical fiber and a secondary coating layer covering the primary coating layer, said jacketed optical fiber holder having a pair of clamps for grasping the terminal portion of the jacketed optical fiber, spaced from each other to leave a space therebetween through which space a terminal portion of the jacketed optical fiber extends in a straightened form; and

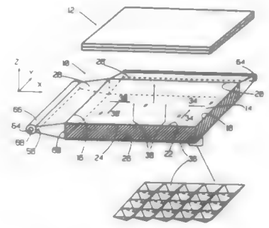
(B) a blade device comprising (a) a pair of cutting blades having straight cutting edges and (b) a blade holder by which the pair of cutting blades are held in such a manner that the straight cutting edges are arranged opposite to each other through a gap left therebetween and on one and the same plane through which a straight axis of the straightened portion of the jacketed optical fiber held by the jacketed optical fiber holder extends at a substantially right angle thereto, and a center line of the gap between the pair of cutting edges intersects the straight axis of the straightened portion of the jacketed optical fiber, the blade device being able to move in a direction at an angle of about 90 degrees to the straight axis of the straightened portion of the jacketed optical fiber.

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BACKLIGHTING SYSTEM WITH A MULTI-REFLECTION LIGHT INJECTION SYSTEM AND USING MICROPRISMS

Chen-Yu Tai, and Han Zou, both of Toledo, Ohio, assignors to Briteview Technologies, Toledo, Ohio

Continuation-in-part of Ser. No. 958,238, Oct. 8, 1992. This application Apr. 19, 1993, Ser. No. 49,509
Int. Cl.[5] G02B *6/04*
U.S. Cl. 385—146 30 Claims



1. An assembly for backlighting a liquid crystal display, comprising:

(a) a backlighting light pipe having opposing top and bottom surfaces which define the thickness of the light pipe, opposing sides which define its width, and opposite ends which define its length;

(b) means for directing light into said light pipe and for causing it to move therethrough; and

(c) an arrangement of immediately adjacent pyramid microprisms in rows extending normal to the lengthwise axis of the light pipe from one side of said light pipe to its opposing side along the entire extent of and serving as the bottom surface of the light pipe, each of said pyramid microprisms having its vertex extending downward from a rectangular base so as to define from said vertex first and second pairs of opposing, upwardly angled light reflecting surface segments for reflecting light within said light pipe upwards through its top surface in a generally collimated manner.

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ELECTRONIC-TYPE VAPORIZER FOR AIRCRAFT HUMIDIFICATION HAVING A SINGLE USE DISPOSABLE STEAM GENERATION CONTAINER

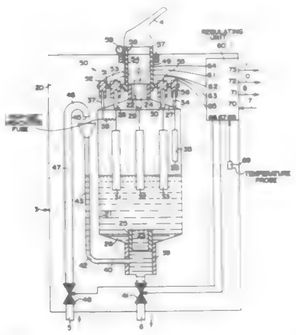
Guy-Paul Alix, and Marc Kohler, both of Brest, France, assignors to Industrielle du Ponant SA, France

Filed Apr. 17, 1991, Ser. No. 686,700
Claims priority, application France, Apr. 18, 1990, 90 05099
Int. Cl.[5] H05B *1/02*; F22B *1/30*; F24F *6/02*
U.S. Cl. 392—327 2 Claims

1. A steam generator for humidifying an air conditioning system, means for connecting said generator through a duct (4) to a dilution cone inside an air circulation duct (1) of a humidifier, said generator comprising a container (21) having an outlet opening (22) for emitting steam that is generated inside

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said container (21), said opening (22) being connectable to the duct (4) of the humidifier, a filling opening (23) for filling the container with water, said fill opening (23) being connected to the output of a water feed valve (48), the intake opening of said valve being connectable to a source of water, at least two electrodes (31, 32, 22) inside said container (21) partially immersed in the water, said electrodes (31, 32, 33) being supplied with electrical current under constant voltage, and a regulating unit (60) that measures the intensity of the current passing through said water between electrodes (31, 32, 33), said regulating unit (60) including means responsive to the measured current intensity for maintaining the value of that current intensity within a current range that is centered on a reference value, means for opening the water feeding valve (48) in response to the intensity of the current passing through said electrodes (31, 32, 33) falling below the range and for closing the feed valve (48) in response to the intensity of the current rising above the range, the container (21) being mounted on a



support (20) that carries the regulating unit (60) and said feed valve (48), a discharge valve (41), said discharge valve (41) being associated with a discharge opening on the container for controlling a discharge of water from the container, and means in the regulating unit (60) for operating the discharge valve (41) to empty container (21) each time the generator is stopped, wherein the discharge opening (23) of container (21) is located at a level inside container (21) that is above the bottom (26) of the container (21), said support (20) being provided with a support means (50) movable in translation along a main axis of the container (21), said support means supporting a tubular part (49) adapted to be connected to the duct (4) of the humidifier, means for selectively moving said support means toward and away from said outlet opening (24) of said container (21), and said support means having electrical connecting terminals (53, 54, 55) that receive the connecting terminals (28, 29, 30) on said container (21) electrically connected to said electrodes (31, 32, 33) in said container.

5,359,693

METHOD AND APPARATUS FOR A RAPID THERMAL PROCESSING OF DELICATE COMPONENTS

Zsolt Nenyei, Blaustein-Herrlingen; Thomas Kaarr, Ulm, and Heinrich Walk, Allmendingen, all of Fed. Rep. of Germany, assignors to AST elektronik GmbH, Kirchheim, Fed. Rep. of Germany

Filed Jul. 14, 1992, Ser. No. 913,093

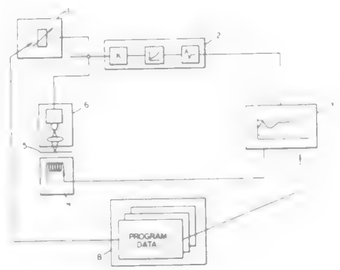
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1991, 4123318

Int. Cl.[5] H01L *21/00*

U.S. Cl. 392—418 **30 Claims**

1. A method for a rapid thermal processing of delicate components of the semiconductor industry, wherein the delicate components are in a heating chamber and the temperature thereof is changed by at least one heating source arranged within the heating chamber, the at least one heating source controlled by a heating control circuit, comprising the steps of:

controlling each heating source to produce a different programmed maximal heating power in consecutive intervals of time shorter than an arbitrary maximum,



changing the heating power of adjacent intervals of time by avoiding sudden changes of the heating power, and

limiting the heating power of the adjacent intervals independently of a control input and control parameters of the heating control circuit.

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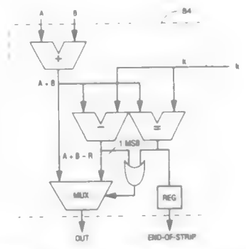
METHOD AND APPARATUS FOR CONVERTING IMAGE DATA

Gilles Concordel, El Cerrito, Calif., assignor to Teknekron Communications Systems, Inc., Berkeley, Calif.

Filed Jul. 27, 1992, Ser. No. 919,853

Int. Cl.[5] G03F *3/08*

U.S. Cl. 358—445 **28 Claims**



1. An apparatus for converting strips of input image data in a first one of a line-scan format and a block-scan format, into output data having a second one of the line-scan format and the block-scan format, wherein B of the strips determine an input image, wherein each of the strips comprises N lines of image data words, and wherein each of the lines of image data words comprises L vectors, where B, N, and L are integers, said apparatus including:.

a random access memory, having memory locations for a strip comprising a set of vectors of the input image data, each of said vectors comprising M words of the input image data, where M is an integer; and

an address generator, wherein the random access memory and the address generator are implemented in a single integrated circuit, and wherein the address generator includes a means for generating a sequence of address signals for the vectors of a strip of the input image data during each cycle of a cyclical address generation operation, wherein said each cycle comprises a sequence of iterations, and wherein the address generator generates an address signal for a vector of the strip during each of the iterations, wherein the address generator includes means for generating a different sequence of address signals for each of at least two strips of the input image data, during different cycles of the cyclical address generation operation, and wherein the address generator includes a means for performing B cycles of the cyclical address generation operation to generate B sequences of address signals, with each of said iterations consisting of modulo k addition by an increment F, where k=NL−1, wherein the increment F has a different value during each of said B cycles, wherein the increment F for a first one of the B cycles is a default value, and the increment F for the Yth one of the B cycles, where Y is an integer greater than one is stored as said increment F is generated during performance of the (Y−1)th one of the B cycles.

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SPEECH PERCEPTION APPARATUS

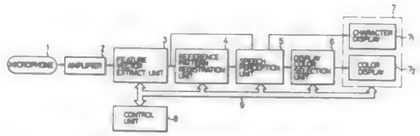
Yasunori Ohora, Kawasaki, and Koichi Miyashiba, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 873,989, Apr. 27, 1992, abandoned, which is a continuation of Ser. No. 579,239, Sep. 6, 1990, abandoned, which is a continuation of Ser. No. 420,749, Oct. 13, 1989, abandoned, which is a continuation of Ser. No. 694,844, Jan. 25, 1985, abandoned. This application Oct. 19, 1993, Ser. No. 137,816

Claims priority, application Japan, Jan. 30, 1984, 59-13422

Int. Cl.[5] G10L *7/08, 7/10*

U.S. Cl. 395—2.44 **16 Claims**



1. A speech recognition apparatus comprising:

memory means for storing a plurality of reference speech data;

input means for inputting ordinary speech data;

deriving means, coupled to said input means and to said memory means, for comparing the input ordinary speech data with each of the stored plurality of reference speech data, and for deriving similarity data indicative of similarity between said ordinary speech data and said reference speech data in response to the comparing result;

data generating means, coupled to said deriving means, for generating level data indicative of a level of said similarity data derived by said deriving means; and

output control means for displaying a plurality of patterns in colors indicative of the level data indicative of a level of similarity between the reference speech data corresponding to the displayed patterns and the input ordinary speech data, wherein based on the color of one of the patterns displayed by said output control means, the one of the patterns can be discriminated from another of the patterns displayed together with the one of the patterns.

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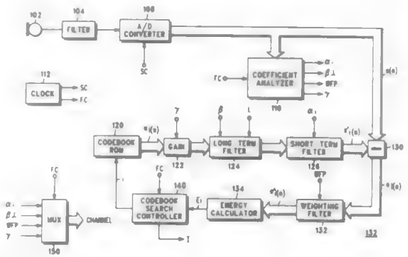
DIGITAL SPEECH CODER HAVING IMPROVED SUB-SAMPLE RESOLUTION LONG-TERM PREDICTOR

Ira A. Gerson, Hoffman Estates, and Mark A. Jasiuk, Chicago, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 966,680, Oct. 26, 1992, abandoned, which is a continuation of Ser. No. 668,384, Mar. 13, 1991, abandoned, which is a continuation of Ser. No. 402,206, Sep. 1, 1989, abandoned, which is a continuation-in-part of Ser. No. 212,455, Jun. 28, 1988, abandoned. This application Mar. 21, 1994, Ser. No. 214,998

Int. Cl.[5] G10L *9/18*

U.S. Cl. 395—2.32 **16 Claims**



1. A method of reconstructing speech comprising the steps of:

receiving from a communication channel a set of speech parameters including codeword I and a delay parameter L, where L may have a value in a predetermined range including integer and non-integer values related to a speech pitch period;

generating an excitation vector having a plurality of samples in response to the codeword I;

filtering the excitation vector based on at least the delay parameter L and stored filter state samples, the step of filtering comprising the steps of:

computing interpolated filter state samples from the stored filtered state samples using a non-integer L to determine the appropriate interpolation parameters, and

combining the excitation vector with the interpolated filter state samples, thereby forming a filter output vector having a plurality of filter output samples; and processing the filter output vector to produce reconstructed speech.

5,359,697

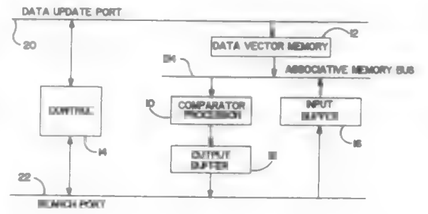
FUZZY ASSOCIATIVE MEMORY

Jack L. Smith, San Diego, and Robert Hecht-Nielsen, Del Mar, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Mar. 25, 1985, Ser. No. 715,429

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—3 **26 Claims**



1. A fuzzy associative memory system, comprising:

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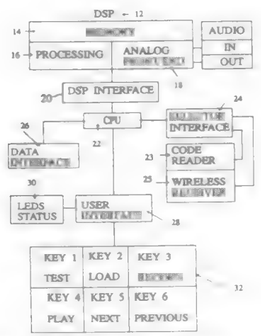
a data vector memory for holding a relatively large number of n-dimensional data vectors;
window-addressable comparison means, for comparing input vectors with pre-stored sets of upper and lower limits, and generating match results from the comparisons;
an output buffer, in which match results and corresponding matched data vectors are combined for output;
input/output means, for accessing the data vector memory, the comparison means, and the output buffer; and
control means, for directing operations of the window-addressable comparison means, to effect processing of a selected set of data vectors stored in the data vector memory.

5,359,698

PORTABLE RANDOM ACCESS AUDIO RECORDING AND PLAYBACK APPARATUS

Shmuel Goldberg, 39 Tel Tzur Street, Even Yehuda, and Geora Oron, 24 Einstein Street, Ra'anana, both of Israel

Filed Dec. 20, 1991, Ser. No. 810,880
Claims priority, application Israel, Dec. 25, 1990, 96777
Int. Cl.[5] G10L *3/00*
U.S. Cl. 395—2.1 **4 Claims**



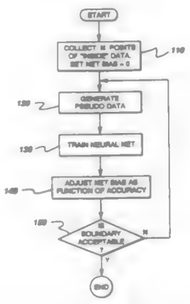
1. Portable random access audio recording and playback apparatus comprising:
a hand held enclosure;
a random access solid state memory disposed in the enclosure for storing and playing back audio information;
means, disposed within said enclosure, for receiving analog audio information and supplying it to said random access solid state memory is compressed digital form;
said random access solid state memory being operative for recording and storing said analog audio information in compressed digital form,
a data interface disposed in said hand held enclosure for downloading compressed audio information to said random access solid state memory from an external audio information source and for uploading said analog audio information in compressed digital form from said random access solid state memory to an external information storage medium,
operator actuated means for selecting information to be played back from said random access solid state memory, and
audio output means for providing an audio output of selected audio information.

5,359,699

METHOD FOR USING A FEED FORWARD NEURAL NETWORK TO PERFORM CLASSIFICATION WITH HIGHLY BIASED DATA

David W. Tong, Scotia, and Paul A. Delano, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 2, 1991, Ser. No. 801,328
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—22 **10 Claims**



1. A method for using an artificial neural network comprising a plurality of weighted interconnected processing elements forming an input layer, an output layer, and a hidden layer connecting the input layer and the output layer, for performing classification of sensor-based data provided to said network wherein the classes to be used include and inside class consisting of one or more classes for which representative sensor-based data is available and an outside class representing an abnormal or novel class for which representative sensor-based data is unavailable or scarce, said method comprising the steps of:
gathering inside data representative of said inside class;
generating pseudo data representative of said outside class;
inputting said inside data and said pseudo data to said artificial neural network;
storing said inputted inside data and said pseudo data in said artificial neural network;
training said artificial neural network to reduce the level of classification error output using said inside data and said pseudo data, said training comprising the step of setting a bias parameter for biasing an output term for identifying said inside data;
repeating said generating, inputting, storing, and training steps until an acceptable class boundary is formed around said inside data by said artificial neural network; and
classifying the sensor-based data in accordance with the accepted class boundary.

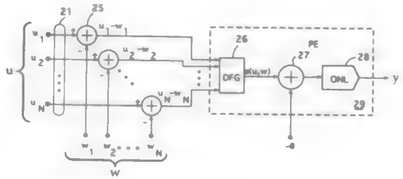
5,359,700

NEURAL NETWORK INCORPORATING DIFFERENCE NEURONS

Daniel Seligson, Palo Alto, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 692,676, Apr. 29, 1991, abandoned. This application Jan. 22, 1993, Ser. No. 8,071
Int. Cl.[5] G06F *15/42*
U.S. Cl. 395—24 **33 Claims**

1. A difference type artificial neuron cell comprising:
a) a distance value generating circuit for generating a distance signal value representative of the distance between an input signal vector and a reference signal vector comprising:
i) a subtraction circuit for forming a difference vector signal representative of the difference between corresponding elements of said input vector signal and said reference vector signal;
ii) a second nonlinear circuit connected to the output of said subtraction circuit for forming a set of unipolar signals from the elements of said difference vector signals representative of the magnitude of said difference distance victor; and
iii) an accumulator circuit for accumulating said unipolar



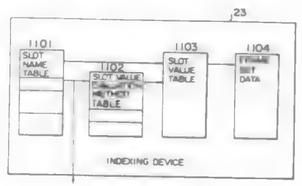
signals from the output of said first nonlinear circuit to form said distance value signal;
b) a subtraction circuit for forming a combined signal by subtracting an offset magnitude signal from said distance signal value for controlling the radius of the neuron cell hyperspherioidal discriminant function surface; and
c) first nonlinear circuit for mapping said combined signal value to a value representative of a prescribed discriminant function.

5,359,701

EXPERT SYSTEM DEVELOPMENT SUPPORT SYSTEM AND EXPERT SYSTEM ENVIRONMENT UTILIZING A FRAME PROCESSING TECNIQUE

Chihiro Fukui; Dai Watanabe; Hiroyuki Kudo, all of Hitachi, Japan; Masahiko Amano, Santa Clara, Calif., and Yasushi Harada, Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 684,662, Apr. 12, 1991, Pat. No. 5,228,117. This application Feb. 17, 1993, Ser. No. 18,581
Claims priority, application Japan, Apr. 12, 1990, 2-96924
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—62 **12 Claims**



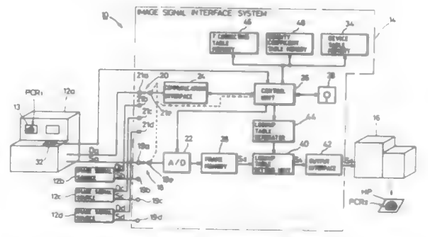
2. An expert system for processing knowledge of an object system that has a plurality of elements, comprising:
a) a knowledge base containing the knowledge of the object system, said knowledge base having a plurality of frames, each of said plurality of frames having a plurality of slots, each of said plurality of slots containing a slot value, wherein said plurality of slots is comprised of different types of slots; and
b) an indexer including:
(i) a plurality of frame managing tables each of which corresponds to one of the types of slot and manages said plurality of frames according to an ordering by the evaluated slot values resulting from an evaluation function executed on the slot values;
(ii) a slot type managing table for managing said plurality of frame managing tables according to an ordering by the types of slots corresponding to the frame managing table;
(iii) a reorganizer reorganizing said frame managing table in response to updating of said slot values, wherein said reorganizing is performed by executing said evaluation function on the updated slot values and changing the content of the frame managing table according to the evaluated slot values resulting from the evaluation function executed on the updated slot values; and
(iv) a retriever retrieving the frame managing table corresponding to the designated slot type by referring to said slot type table according to the designated slot type, retrieving a set of flames according to the designated evaluated slot value by referring to the retrieved frame managing table according to the designated evaluated slot value.

5,359,702

IMAGE SIGNAL INTERFACE SYSTEM

Hachiro Mukai, Minamiashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 399,194, Aug. 28, 1989, abandoned. This application Oct. 29, 1992, Ser. No. 968,476
Claims priority, application Japan, Aug. 31, 1988, 63-219555; Aug. 31, 1988, 63-219557
Int. Cl.[5] G06F *7/00, 13/00*
U.S. Cl. 395—109 **5 Claims**



5. An image signal interface system for use between a plurality of image signal sources having different γ characteristics and a single image output device for producing a hard copy based on an image signal produced by one of the image signal sources at a time, said image signal interface system comprising:
a communication interface for receiving control signals from said image signal sources;
an A/D converter;
a first switch for selectively connecting each of said image signal sources to said A/D converter;
a plurality of device tables containing attribute data corresponding to each of the image signal sources;
a plurality of selectable γ correcting tables for converting the image signals from the image signal sources to image signals which match the γ characteristics of the image output device;
at least one density coefficient table for varying at least the maximum density and contrast of the image signals from said one of the image signal sources;
a lookup table setting unit for converting the image signals from one of the image signal sources according to correction data from said γ correcting table and said density coefficient table corresponding to said one of the image signal sources such that γ correction and gradation correction occur simultaneously in said lookup table setting unit;
control means for receiving information from said communication interface and said memory means and for controlling said A/D converter with said attribute data and supplying said lookup table setting unit with data from said γ correcting table and said density coefficient table; and

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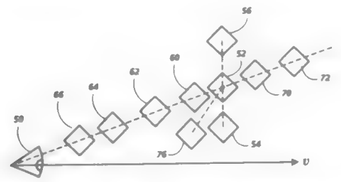
an output means for reproducing an image based on the image signal from said one of the image signal sources.

5,359,703

MOVING AN OBJECT IN A THREE-DIMENSIONAL WORKSPACE

George G. Robertson; Jock Mackinlay, both of Palo Alto, and Stuart K. Card, Los Altos Hills, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 2, 1990, Ser. No. 562,048
The portion of the term of this patent subsequent to Jan. 4, 2011, has been disclaimed.
Int. Cl.[5] G06F *15/72*
U.S. Cl. 395—119 16 Claims



1. A method of operating a system that includes a display, a user input device, and a processor connected for receiving signals from the user input device and for presenting images on the display; the user input device providing motion requesting signals requesting motion of objects; the method comprising a sequence of steps, the sequence of steps including a first step and a number of following steps, each following step having a next preceding step;

the first step comprising a substep of presenting a respective image on the display; the respective image of the first step including a respective object that is perceptible as having a respective position within a three-dimensional workspace;

each following step comprising substeps of:

receiving a respective motion requesting signal from the user input device requesting motion of the respective object of the next preceding step toward a destination position within the three-dimensional workspace; and

presenting a respective image on the display; each respective image including a respective object that is perceptible as having a respective position within the three-dimensional workspace; the respective object of each following step being perceptible as a continuation of the respective object of the next preceding step; the respective position of each following step being displaced by a respective displacement from the respective position of the next preceding step; the respective displacements following a logarithmic function so that the respective positions define an asymptotic path toward the destination position in the three-dimensional workspace.

5,359,704

METHOD FOR SELECTING SILHOUETTE AND VISIBLE EDGES IN WIRE FRAME IMAGES IN A COMPUTER GRAPHICS DISPLAY SYSTEM

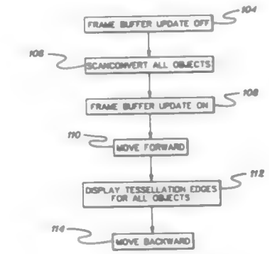
Jaroslaw R. Rossignac, and Maarten J. van Emmerick, both of Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1991, Ser. No. 785,383
Int. Cl.[5] G06F *15/72*
U.S. Cl. 395—122 22 Claims

21. A method for distinguishing between visible and hidden lines in a two-dimensional wire-frame graphics display of a tessellated three-dimensional object in a graphics display system comprising a display screen, and a depth buffer containing a storage location for each pixel on said display screen, said display being produced from surface data representing vertices of a set of polygons defining faces of the three-dimensional object, said surface data being transformed into data representing a two-dimensional projection of the object onto a view plane, said graphics display system allowing for a plurality of object locations at different distances from a chosen view point, wherein a first location for display is set in relation to a particular view point, said method comprising the steps of:

obtaining a depth value for each pixel covered by a projection of the object;

replacing a depth value previously stored in a given pixel location in the depth buffer with the depth value obtained in said step of obtaining if the depth value obtained is less than the depth value previously stored;



altering a position at which display will take place from said first location to a second location which is closer to the viewpoint by subtracting a distance from depth translation coordinates in a viewing matrix within said graphics display system, wherein said distance is determined by an epsilon-based transformation operating on depth values of a farthest and closest vertex of the object in relation to the view point and a number of bits allotted for each pixel in the depth buffer; and

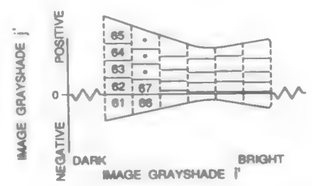
displaying tessellation lines of the object at the altered position.

5,359,705

METHOD OF DISPLAYING COMPOSITE SATELLITE IMAGERY

Larry W. Thomason, Poquoson, Va., and Robert P. d'Entremont, Roslindale, Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 648,246, Jan. 31, 1991, abandoned. This application Jan. 13, 1994, Ser. No. 180,835
Int. Cl.[5] G06F *15/66*
U.S. Cl. 395—131 2 Claims



1. A method for simulating a 16-bit color composite satellite picture upon an 8-bit color display system, the resultant simulated color being of almost equal picture quality as a 16-bit picture, said method comprising the steps of:

(a) inputting said two 8-bit image arrays into a computer;

(b) setting selected primary and secondary color masks for each of said input image arrays;

(c) transforming said two input image arrays, each of said array being an entire picture, by means of equation i'=i+j and j'=j−i wherein i and j are corresponding pixel values of said input image arrays at a given pixel location;

(d) determining a frequency of occurrence for each (i', j') pixel value pair formed by said transforming;

(e) dividing the i' axis into a predetermined number of columns;

(f) determining an upper and lower limits of j' as a function of i' for each column;

(g) determining the j' height for an i' column to generate a plurality of bins for establishing a color to be displayed for that bin, said bins being less than or equal to 256 in number;

(h) generating a color lookup table for each of the bins based upon the selected primary and secondary color masks;

(i) generating an 8-bit color composite image array;

(j) inputting said color lookup table and said 8-bit color composite image array into said 8-bit color display system; and

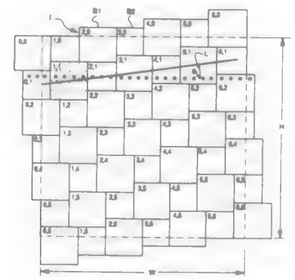
(k) displaying said simulated color picture by the 8-bit color display system.

5,359,706

IMAGE ROTATION USING BLOCK TRANSFERS

Thomas Sterling, 1715 Chandler Ave., Ann Arbor, Mich. 48105

Filed Nov. 7, 1991, Ser. No. 788,991
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—137 6 Claims



1. A method of rotating an image less than forty-five degrees in the clockwise direction said image being stored as digital bits in memory and representing a rectangular array of pixels, said method comprising the steps of:

dividing the image into rectangular contiguous blocks, the center of any selected block being located to the left and down a half pixel from the center of a contiguous block to the right and being located to the right and up a half pixel from the center of a contiguous block on the left, and the center of said selected block being located above and to the left a half pixel from the center of a contiguous block below and located below and to the right a half pixel from the center of a contiguous block above,

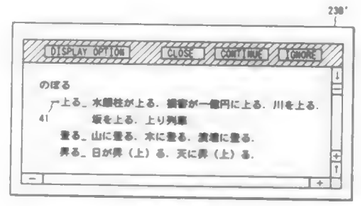
and rearranging the blocks so that the center of said selected block is located to the left and up a half pixel from the center of said contiguous block to the right and to the right and down a half pixel from the center of said contiguous block to the left, and the center of said selected block is located above and to the right a half pixel from the center of said block below and is being located below and to the left a half pixel from the center of said block above.

5,359,707

DOCUMENT PROCESSOR HAVING A PROGRAMMABLE DICTIONARY

Yumi Sato, Saitama, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 594,064, Oct. 10, 1990, abandoned. This application Feb. 22, 1994, Ser. No. 200,558
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—145 6 Claims



1. A document processor for Japanese language documents comprising:

document storage means for storing a document;

first window display means for displaying text of the document in a first window, said text of said document including first word data;

memory means for storing a dictionary including second word data representing Japanese words and characters designating said words, and usage data associated with said second word data, the usage data representing multiple characters and definitions for each of the Japanese words and for Japanese homonyms of each of the Japanese words;

temporary registering means for temporarily storing a list of third word data;

control means for sequentially retrieving said first word data included in said document storage means, for sequentially comparing said retrieved first word data with said second word data and said third word data, and for selecting individual word data from said first word data which coincides with said second word data and which does not coincide with said third word data;

second window display means for displaying in a second window said individual word data selected by said control means;

window control means for opening and closing said second window; and

cancelling means for automatically restoring, when said second window is closed, said temporary registering means to a state corresponding to the state existing when said window control means opens said second window.

5,359,708

DYNAMIC IN A DOCUMENT PROCESSING SYSTEM FOR DYNAMICALLY LOCATING FORMAT CONTROLS AND DETERMINING FORMATTING INFORMATION IN EFFECT BEFORE AND AFTER EACH FORMAT CONTROL

Holly A. Bloomer, and Kenneth A. Zalkes, both of Germantown, Md., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 208,520, Jan. 15, 1988, abandoned. This application Mar. 15, 1991, Ser. No. 670,506
Int. Cl.[5] G06F *3/00*
U.S. Cl. 395—148 11 Claims

6. In a data processing system including a central processing unit, a random access memory, and a user terminal including display means and data input means, all coupled together by means of a system bus, a method for displaying to a user of said data processing system changes in format characteristics due to

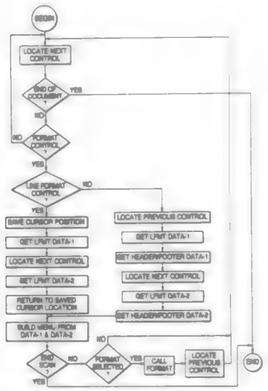
VOL 1167 ISS 4 OC 25 1994 UMI

format controls within a database representation of a document, said format controls containing format characteristic data, said method carried out by said central processor operating on a set of programs stored in said random access memory, said method comprising the steps of:

reading said document database representation into said random access memory from said system bus;

responsive to an input from the user, scanning for and detecting the presence of a first format control within said document database representation and a following format control which first follows said first format control in said document database representation;

retrieving format characteristic data found in said format controls in said document database representation describ-



ing a format of said document which precedes said first format control;

retrieving format characteristic data found in said format controls in said document database representation describing a format of said document which follows said first format control, but which precedes said following format control;

storing said format characteristic data retrieved preceding and following said first format control in said random access memory; and,

displaying said format characteristic data on said display means to present said format characteristic data in effect preceding and following said first format control in the [illegible]

5,359,709

APPARATUS AND METHOD FOR PROVIDING MULTIPLE OPERATING CONFIGURATIONS IN DATA CIRCUIT TERMINATING EQUIPMENT

Alain Blanc, Tourrettes sur Loup; Sylvie Gohl-Roux, La Colle sur Loup, both of France, and Gottfried Ungerboeck, Langnau a.A., Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 27, 1992, Ser. No. 826,504

Claims priority, application European Pat. Off., Feb. 21, 1991, 91480075.3

Int. Cl.[5] G06F *13/42*

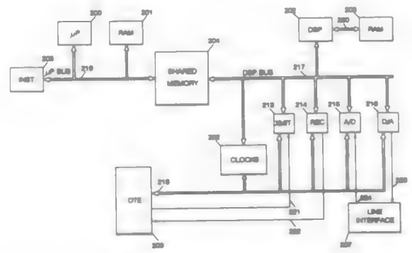
U.S. Cl. 395—200 **14 Claims**

1. An improved data circuit terminating equipment for enabling multiple operating configurations (DCE) including a digital signal processor DSP (202) for processing data transmitted between a DTE (209) and a telecommunication line, transmit (213) and receive (214) circuits being connected to a DTE interface, an A/D converter (215) and a D/A converter (216) for respectively converting the data from an analog form to digital coded data and from digital coded data to an analog form, a control processor (200) for controlling a plurality of communication protocols and a memory (204) which is connected to both said DSP (202) and said control processor (200), the improved DCE comprising:

first means (202, 203, 403) for storing into a first queue (300) in said memory (204) a plurality of bits provided by said transmit circuit (213) for synchronous transmission,

first means (202, 203, 507), cooperative with said first means for storing, for processing said plurality of bits stored into said first queue (300) and storing in a second queue in said memory (204) a first plurality of characters determined by said DSP (202) according to a first transmission protocol,

second means (202, 203, 513) for storing into a third queue (307) in said memory (204 a second plurality of characters provided by said control processor (100) in order to be transmitted asynchronously to a remote DCE via the telecommunication line,



second means (202, 203, 513), cooperative with said second means for storing, for processing said second plurality of characters stored into said third queue (307) and storing into a fourth queue (309) in said memory (204) a second plurality of bits determined by said DSP (202) according to a second transmission protocol,

means (202, 203), cooperative with said first means for processing and storing and said second means for processing and storing, for generating digital coded data from said first plurality of characters stored in said third queue (307), and said second plurality of bits stored in said fourth queue, and storing said digital coded data into a fifth queue (302), said digital coded data being read from said second queue for synchronous transmission, and from said fourth queue for asynchronous transmission.

5,359,710

METHOD AND APPARATUS FOR PROGRAMMING AN AUTOMATIC MONITORING SYSTEM

Masato Aono, Nagaokakyo, and Yoshitaka Mitsunobu, Toyonaka, both of Japan, assignors to Omron Corporation, Kyoto, Japan

Filed Feb. 5, 1990, Ser. No. 474,998

Claims priority, application Japan, Feb. 3, 1989, 1-26378

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—155 **4 Claims**

1. A programming device, comprising:

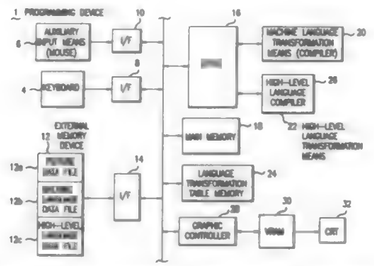
an input means for inputting encoded picture data for graphic plotting,

a picture data filing means for filing said picture data input from said input means,

a higher-level language data filing means for filing picture data filed in said picture data filing means in higher-level language data, and

a programming unit equipped with a machine language transformation means for transforming said higher-level language data into machine language data, said programming unit including a higher-level language transformation means for transforming the picture data filed in said picture data filing means into graphic plotting instructions in said higher-level language in accordance with a predetermined set of higher-level language transformation rules, and

wherein said higher-level language transformation means comprises a language transformation table memory storing the transformation rules relating to the instructions for transforming encoded picture data into higher-level language data and parameter sequences, and a higher-level language composer for composing graphic plotting instructions in the higher-level language from the picture data in accordance with said transformation rules.



5,359,711

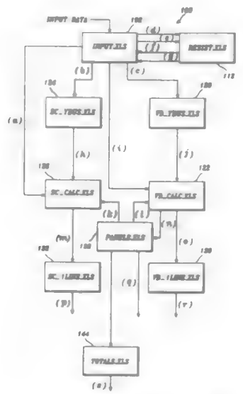
DETERMINATION OF LOAD FLOW IN DIRECT CURRENT ELECTRICAL SYSTEMS

Michael J. Hartmann, Cary, and Glenn P. McCarthy, Round Lake Beach, both of Ill., assignors to VECTRA Technologies, Inc., Federal Way, Wash.

Filed Dec. 18, 1992, Ser. No. 992,712

Int. Cl.[5] 395 *155*; G06F *15/00*

U.S. Cl. 395—161 **11 Claims**



1. A programmed digital computer system for a user to visualize time dependant load flow characteristics of a direct current electrical network, wherein the direct current electrical network has a network architecture of connected elements that include a battery having a time dependant capacity from which current can be drawn at terminal voltages, and a plurality of buses connected to the battery, each bus being defined by a node having one input cable and at least one output cable, said at least one output cable being connected to a resistive or impedance load device, which at any point in time can be in a condition that can change between a functional condition that can be toggled on to enable a load, or off to disable a load and a short circuit fault condition, wherein the direct current electrical network is subjected to a use profile by which the condition of at least one of the resistive or impedance load devices is changed during a period of time from initiation of the use profile to termination of the use profile, such that each node has a time dependant voltage and current, said programmed digital computer system comprising:

a processor;

an operating system program for controlling the processor;

display means for presenting a visual image to the user;

spreadsheet applications program means under the control of the processor, for:

(a) storing in linked data files, data representative of

(i) the network architecture,

(ii) a one-line diagram of the network architecture,

(iii) electrical performance characteristics of said connected elements of the direct current electrical network, and

(iv) the use profile,

(b) performing mathematical computations of voltages and currents at the nodes using data from the linked data files, and

(c) storing results of the mathematical computations in load flow files; and interface means coupled to the display means and the operating system program for the user to:

(a) enter into said linked data files, said data representative of:

(i) the network architecture,

(ii) the one-line diagram of the network architecture,

(iii) the electrical performance characteristics of said connected elements of the direct current electrical network, and

(iv) the use profile,

(b) construct from said data stored in said linked data files and view on the display means, the one-line diagram of the network architecture,

(c) initiate the performance of the mathematical computations, and

(d) view on the display means during the performance of the mathematical computations, the voltages and currents computed by said mathematical computations.

5,359,712

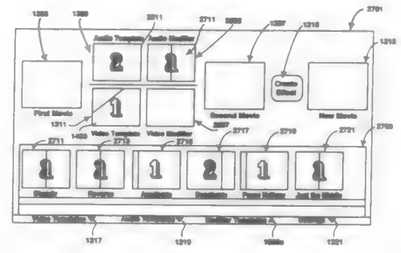
METHOD AND APPARATUS FOR TRANSITIONING BETWEEN SEQUENCES OF DIGITAL INFORMATION

Jonathan R. Cohen, San Francisco, and Michael Mills, Cupertino, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation-in-part of Ser. No. 696,353, May 6, 1991. This application Feb. 21, 1992, Ser. No. 839,620

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—161 **18 Claims**



9. In a computer controlled display system, a method for controlling a rate of transition between a first sequence of

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digital information and a second sequence of digital information, said method comprising:

providing said first sequence and said second sequence to said computer system;

providing a rate transition control means for specifying said rate of transition during said transition;

specifying a duration of said transition and at least a portion of said first and said second sequences for said transition;

creating said transition using said rate transition control means and said portions of said first and said second sequences, wherein said rate transition control means includes a visual representation of said rate of transition over said duration of said transition.

5,359,713

METHOD AND APPARATUS FOR ENHANCING SYNCHRONOUS I/O IN A COMPUTER SYSTEM WITH A NON-VOLATILE MEMORY AND USING AN ACCELERATION DEVICE DRIVER IN A COMPUTER OPERATING SYSTEM

Joseph P. Moran, Santa Clara; Russel P. Sandberg, San Francisco, and Donald C. Coleman, Piedmont, all of Calif., assignors to Legato Systems, Inc., Pala Alto, Calif.

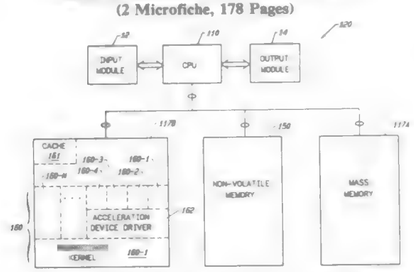
Continuation of Ser. No. 361,012, Jun. 1, 1989, abandoned. This application Mar. 11, 1993, Ser. No. 51,048

Int. Cl.[5] G06F *13/10*

U.S. Cl. 395—200 **30 Claims**

MICROFICHE APPENDIX INCLUDED

(2 Microfiche, 178 Pages)



1. In a computer system having a memory with a first access time, a peripheral storage device with a second access time and a computer operating system that includes a peripheral storage device driver for synchronous transfer of information between said memory and said peripheral storage device, a synchronous operation acceleration device comprising:

stable storage means with a third access time wherein said third access access time is approximately on the same order of magnitude as said first access time; and

control means, operatively coupled to said memory and to said stable storage means, for transferring information to and from said stable storage means, said control means included in said computer operating system, said control means synchronously transferring data between said memory and said stable storage means in response to a synchronous command from said computer operating system intended to transfer information to said peripheral storage device driver, and said control means transferring a selected portion of said data from said stable storage means to said peripheral storage device driver upon a predetermined condition being satisfied.

5,359,714

AVAN COMPUTER BACKPLANE-A REDUNDANT, UNIDIRECTIONAL BUS ARCHITECTURE

Nicolas Avaness, 5 Lyn Oak La., Kings Park, N.Y. 11754

Filed Jan. 6, 1992, Ser. No. 816,294

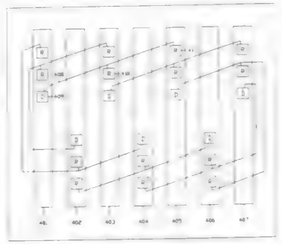
Int. Cl.[5] G06F *13/00, 13/38, 13/40*

U.S. Cl. 395—275 **9 Claims**

1. A signal path topology, comprising:

a plurality of digital modules;

a plurality of data transmission sections, not physically connected to each other, wherein each data transmission section initiates from a predetermined one of said plurality of digital modules and passively connects to a predetermined number (j-1) of other of said plurality of digital modules, and wherein a selected number of said plurality of data transmission sections fold back to continued connecting previously unconnected digital modules, in a continuous loop process, until all of said plurality of digital modules each has been connected with at least j number of data transmission sections, wherein said j number is said predetermined number plus one.



5,359,715

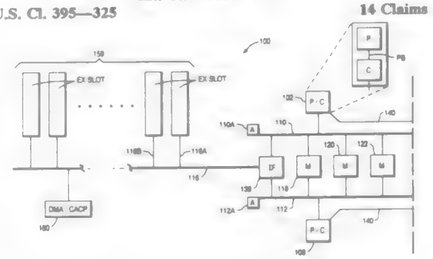
ARCHITECTURES FOR COMPUTER SYSTEMS HAVING MULTIPLE PROCESSORS, MULTIPLE SYSTEM BUSES AND MULTIPLE I/O BUSES INTERFACED VIA MULTIPLE PORTED INTERFACES

Thomas F. Heil; Craig A. Walrath, both of Easley; Jimmy D. Pike, Columbia; Edward A. McDonald, Lexington; Arthur F. Cochcroft, Jr., West Columbia; P. Chris Raeuber, Central; Daniel C. Robbins, Easley, and Gene F. Young, Lexington, all of S.C., assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 16, 1991, Ser. No. 760,786

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—325 **14 Claims**



1. A multiple processor architecture comprising:

at least two system buses;

each of said at least two system buses having at least two processors associated therewith and coupled thereto;

at least two independently accessible interleaved memories, each of said interleaved memories having at least two ports which are coupled to said at least two system buses;

at least one I/O bus for coupling agents resident thereon to one another, to said processors, and to said at least two interleaved memories; and

at least one I/O bus interface means having at least two ports for coupling said at least one I/O bus directly to said at least two system buses, said agents being coupled to said processors and to said interleaved memories via said I/O bus, said I/O interface means and said system buses wherein said system buses and said I/O bus each comprise arbitration means for independently arbitrating control of said system buses and said I/O bus, and said I/O bus interface means comprises buffering means for latching data to be written from said agents to said interleaved memories and for read-ahead prefetching data to be read by said agents from said interleaved memories.

5,359,716

METHOD OF AND SYSTEM FOR PROVIDING ACCESS TO BUS IN MULTI-PROCESSOR SYSTEM

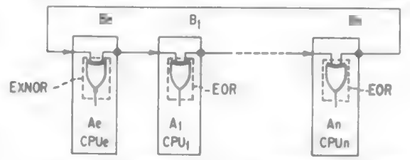
Motomasa Igarashi, Sagamihara, Japan, assignor to Nitsuko Corporation, Kawasaki, Japan

Filed Sep. 17, 1991, Ser. No. 809,646

Claims priority, application Japan, Sep. 17, 1990, 2-246420

Int. Cl.[5] G06F *13/368, 13/37*

U.S. Cl. 395—325 **6 Claims**



1. A method of securing a bus for a multi-processor system, said system comprising a plurality of processors connected in a closed loop, each of said processors having an input terminal used to input a bus arbitration signal output from a preceding processor and an output terminal used to output a bus arbitration signal to a following processor, said method comprising the steps of:

finding an exclusive logical sum of bus arbitration signals input to and output form one of said processors;

judging said one of said processors only to have aright to secure said bus when said exclusive logical sum of bus arbitration signals input to and output form said one of said processors is "1" and judging said one of said processors to have no right to secure said bus when said exclusive logical sum is "0";

causing said one of said processors, when it is judged to have the right to secure said bus, to execute necessary processing over said bus; and

reversing said bus arbitration signal form said one of said processors, after said necessary processing has been executed and when it is judged to have the right to secure said bus, so that said one of said processors having the right to secure said bus abandons its own right to secure said bus and transfers the right to secure said bus to a following processor.

5,359,717

MICROPROCESSOR ARRANGED TO ACCESS A NON-MULTIPLEXED INTERFACE OR A MULTIPLEXED PERIPHERAL INTERFACE

James E. Bowles, and Robert O'Brien, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 713,874, Jun. 12, 1991, abandoned. This application Dec. 29, 1993, Ser. No. 176,281

Int. Cl.[5] G06F *13/00, 13/40;* **G11C** *7/00*

U.S. Cl. 395—325 **24 Claims**

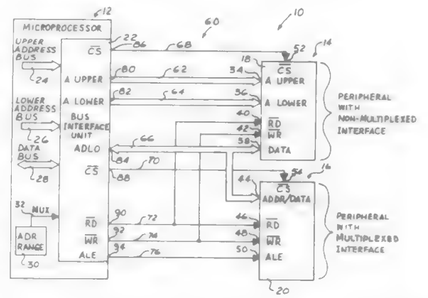
9. A processing system comprising:

a microprocessor, having an internal address bus and an internal data bus, said microprocessor including an address range controller, coupled to said internal address bus, for providing a multiplexer control signal in response to an address on said internal address bus;

a non-multiplexed peripheral interface;

a multiplexed peripheral interface; and

said microprocessor including bus interface means, coupled to said non-multiplexed peripheral interface, to said multiplexed peripheral interface, and to said address range controller, for either coupling said non-multiplexed peripheral interface to said internal address bus and said internal data bus, or for first coupling said multiplexed peripheral interface to said internal address bus and thereafter coupling said multiplexed peripheral interface to said internal data bus in response to said multiplexer control signal.



5,359,718

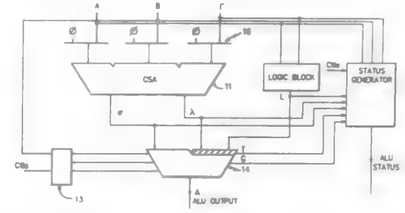
EARLY SCALABLE INSTRUCTION SET MACHINE ALU STATUS PREDICTION APPARATUS

James E. Phillips, Binghamton, and Stamatis Vassiliadis, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1991, Ser. No. 677,692

Int. Cl.[5] G06F *7/38, 7/50*

U.S. Cl. 395—375 **24 Claims**



1. An ALU status determination apparatus comprising:

a three-to-one ALU means for executing plural instructions in parallel, including first and second instructions of a pair of instructions;

predicting means for predicting the status of three-to-one ALU operations, said status being indicative of (a) the presence or absence of carries generated by said three-to-one ALU means and (b) whether or not said second instruction of the pair of instructions is independent or dependent upon the result of the operation of said first instruction; and

overflow means for predicting an overflow and the carries required to compute the overflow computed by:

$$G_1^{*7} = G_1^{*} + T_1^{2}G_2^{*3} + T_1^{3}T_4G_4^{*5} + T_1^{3}T_4^{6}G_6^{7}$$

$$G_{i+1}^{*i+7} = G_{i+1}^{*i+1} + T_{i+1}^{i+2}G_{i+2}^{*i+3} + T_{i+1}^{i+3}T_{i+4}G_{i+4}^{*i+5} \cdot T_{i+1}^{i+3}T_{i+4}^{i+6}G_{i+6}^{*i+7}$$

$i = 0, 8, 16$

$$T_1^{8} = T_1^{3}T_4^{6}T_7T_8$$

$$T_1^{16} = T_1^{3}T_4^{6}T_7^{9}T_{10}^{12}T_{13}^{15}T_{16}$$

$$T_1^{24} = T_1^{3}T_4^{6}T_7^{9}T_{10}^{12}T_{13}^{15}T_{16}^{18}T_{19}^{21}T_{22}^{24}$$

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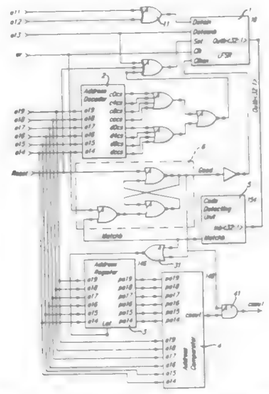
$$\psi_{24}^{30} = G_{24}^{*25} + T_{25}^{26}G_{26}^{*27} + T_{25}^{27}T_{28}G_{28}^{*29} + T_{25}^{27}T_{28}^{30}\psi_{30}$$

5,359,719

ADDRESS RANGE SETTING METHOD AND APPARATUS FOR A COMPUTER EXPANSION CARD

Jack Chang, and Ching-Bang Lu, both of Hsinchu, Taiwan, assignors to Winbond Electronic Corp., Hsinchu, Taiwan

Filed Sep. 18, 1992, Ser. No. 946,663
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—400 **3 Claims**



3. An address range setting apparatus for setting an address range for a computer expansion card of a computer system, comprising:

a programmed means for controlling the computer system to execute a write operation which involves a series of addresses within the address range to be assigned to the computer expansion card;

a linear feedback shift register means adapted to receive said series of addresses from address lines of said computer system and deriving a code output from said series of addresses;

a code detecting unit receiving said code output of said linear feedback shift register means and comparing said code output with a predetermined code, said code detecting unit generating a match signal whenever said code output matches with said predetermined code;

an address register activated by said match signal so as to store most significant bits of the address range to be assigned to the computer expansion card therein, said most significant bits being common to all addresses within the address range; and

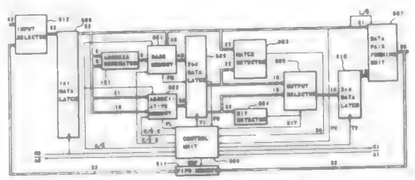
an address comparator having a first set of inputs receiving said most significant bits of the address range from said address register and a second set of inputs receiving most significant bits of an address to be accessed by the computer system from the address lines of the computer system, said address comparator generating a select signal which is used to enable the computer expansion card and permit the computer system to access the computer expansion card when said first set of inputs matches with said second set of inputs.

5,359,720

TAKEN STORAGE APPARATUS USING A HASH MEMORY AND A CAM

Toshiyuki Tamura; Masaki Fujita; Shinji Komori; Hisakazu Sato, and Hidehiro Takata, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 416,887, Oct. 4, 1989, Pat. No. 5,182,799.
This application Jul. 22, 1992, Ser. No. 918,489
The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.
Int. Cl.[5] G06F *12/02*
U.S. Cl. 395—400 **7 Claims**



1. In a data retrieving apparatus which processes an input packet, having identification data and being included in a set of received input packets, to determine a hashing address, the data retrieving apparatus having a hash memory comprising a plurality of storage locations for storing input packets, each of said storage locations having a storing address, the data retrieving apparatus also having a means for storing the input packet in the hash memory at the storage location which has a storing address equal to the hashing address of the input packet when the storage location is empty, the improvement to said data retrieving apparatus comprising:

(1) comparing means for comparing the identification data of a stored packet previously stored in said hash memory with the identification data of the input packet and for determining the equivalence of such compared data, when said stored packet is already stored in said storing address matching the bashing address of the input packet;

(2) an associative memory comprising:

(a) writing means for writing at least a part of the input packet to said associative memory and registering the identification data of said input packet as retrieval data, when said comparing means finds a mismatch between the input packet and the stored packet; and

(b) judging means for simultaneously judging a match of the identification data of the input packet with the identification data of all packets already stored in said associative memory, when the input packet is input; and

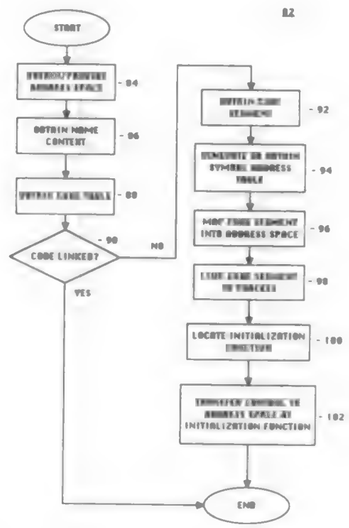
(3) controlling means for controlling the writing of data from the input packet to the hash memory and the associative memory when there is no packet having identification data that matches the identification data of the input packet stored in the hash memory and the associative memory, and for selecting for output the stored packet whose identification data matches the identification data of the input packet from the hash memory when said comparing means determines the identification data are equivalent and for selecting for output the stored packet whose identification data matches the identification data of the input packet from said associative memory when said judging means judges a match of the identification data.

5,359,721

NON-SUPERVISOR MODE CROSS ADDRESS SPACE DYNAMIC LINKING

James Kempf, Mountain View, and Michael L. Powell, Palo Alto, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 18, 1991, Ser. No. 809,668
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—425 **16 Claims**



1. In a network of computer systems comprising at least one central processing unit (CPU) having a supervisor mode and a non-supervisor mode of execution, a method for a first process executing in said non-supervisor mode in a first address space to dynamically link a first program code segment to a second program code segment in a second address space, without compromising said computer systems' security, said method comprising the steps of:

a) obtaining said first and second program code segments and access to said second address space from a first and a second program code manager and an address space manager respectively by said first process, said first and second program code managers and said address space manager authenticating said first process as being authorized to obtain said first and second program code segments and said access to said second address space using a third party authentication manager;

b) causing said obtained first and second program code segments to be mapped into said first and second address spaces by said first process using said address space manager;

c) deriving linkage information of said first and second program code segments by said first process using said mapped first and second program code segments in said first address space, and linking said mapped first program code segment in said second address space to said mapped second program code segment in said second address space by said first process using said derived linkage information; and

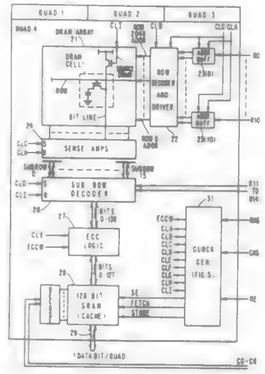
d) transferring execution control by said first process to a start address in said second address space.

5,359,722

METHOD FOR SHORTENING MEMORY FETCH TIME RELATIVE TO MEMORY STORE TIME AND CONTROLLING RECOVERY IN A DRAM

Shiu K. Chan, Poughkeepsie; Joseph H. Dutrea, Jr., Wappingers Falls, and Tin-Chee Lo, Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 23, 1990, Ser. No. 555,960
Int. Cl.[5] G06F *12/00, 1/04*
U.S. Cl. 395—425 **13 Claims**



1. A method of controlling recovery in a semiconductor chip containing at least one dynamic random access memory (DRAM) and an associated static random access memory (SRAM) cache, comprising the steps of:

generating a row address strobe (RAS) sequence and a recovery clock sequence from a clock generator,

transferring data to the cache from a data subset in the DRAM under control of the RAS sequence, and

initiating the recovery clock sequence upon the initiation of the RAS sequence for a fetch request.

5,359,723

CACHE MEMORY HIERARCHY HAVING A LARGE WRITE THROUGH FIRST LEVEL THAT ALLOCATES FOR CPU READ MISSES ONLY AND A SMALL WRITE BACK SECOND LEVEL THAT ALLOCATES FOR CPU WRITE MISSES ONLY

Gregory S. Mathews, Cupertino, and Edward S. Zager, San Jose, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 16, 1991, Ser. No. 808,108
Int. Cl.[5] G06F *12/08*
U.S. Cl. 395—425 **10 Claims**

1. In a data processing system, first and second levels of a cache memory hierarchy comprising;

(a) a write through (WT) cache memory, at the first level of the cache memory hierarchy for

(i) caching a first subset of data stored in a main memory:

(ii) allowing read accesses by a processor and write accesses by said processor, as well as snoop accesses by direct memory access (DMA) devices; and

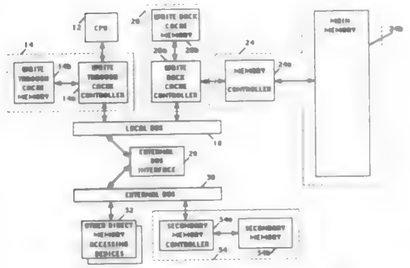
(iii) modifying the contents of said WT cache memory only in response to indications of read misses of said read accesses, by implementing a first allocation policy wherein for each of said read miss indications, said first subset of data stored in the WT cache memory is modified by replacing a line of data in the first subsist with a new line of data from the main memory, said new line of data from the main memory having been the subject of the missed read access; and

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(b) a write back (WB) cache memory, at the second level of the cache memory hierarchy, for

(i) caching a second subset of data stored in said main memory;

(ii) allowing read accesses by said processor and write accesses by said processor, as well as read accesses by said DMA devices and write accesses by said DMA devices; and



(iii) modifying the contents of said WB cache memory only in response to indications of write misses of said write accesses by said processor, by implementing a second allocation policy wherein for each of said write miss indications, said second subset of data stored in the WB cache memory is modified by replacing a line of data in the second subset with a new line data from the processor, said new line of data from the processor having been the subject of the missed write access.

5,359,724

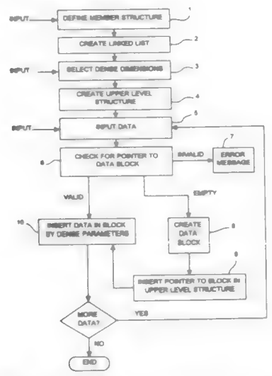
METHOD AND APPARATUS FOR STORING AND RETRIEVING MULTI-DIMENSIONAL DATA IN COMPUTER MEMORY

Robert J. Earle, Sunnyvale, Calif., assignor to Arbor Software Corporation, Santa Clara, Calif.

Filed Mar. 30, 1992, Ser. No. 860,443

Int. Cl.[5] G06F *12/02, 15/40*

U.S. Cl. 395—425 19 Claims



1. A method of storing multi-dimensional data, each unit of which is identified by one or more members of each of a plurality of dimensions, in computer memory, comprising:

selecting a first group of a number of dimensions and a second group of a number of dimensions;

allocating a first portion of memory which contains cells corresponding to combinations of the members of the first group of dimensions;

allocating a second portion of memory which contains a plurality of data blocks, each containing cells corresponding to combinations of the members of the second group of dimensions, wherein each data block corresponds to a different combination of the first group of dimensions, and the size of the data blocks depends upon the dimensions selected and the number of members in each;

storing each unit of data in the data block which corresponds to the combination of members of the first group of dimensions which identifies that unit of data, and in the location within that data block which corresponds to the combination of members of the second group of dimensions which identifies that unit of data; and

inserting a pointer to each data block corresponding to a particular combination of members of the first group of dimensions in the cell in the first portion of memory which corresponds to the same combination of members of the first group of dimensions.

5,359,725

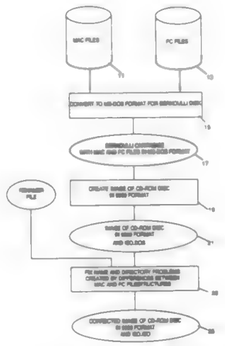
METHOD OF CREATING CD-ROM IMAGE OF FILES OF DIFFERENT FORMAT WITH PROPER DIRECTORIES TO BE READ BY RESPECTIVE OPERATING SYSTEMS

Ben L. Garcia, Conyers, Ga.; Walter R. Klappert, Topanga, and Edward Harmon, Burbank, both of Calif., assignors to Time Warner Interactive Group, Inc., Burbank, Calif.

Filed Oct. 15, 1991, Ser. No. 776,661

Int. Cl.[5] G06F *15/40*

U.S. Cl. 395—500 12 Claims



1. A system for creating an image for placement onto a CD-ROM disc, said image being in a predetermined format capable of storing first files in a first format for use in a first operating system environment and second files in a second format for use in a second operating system environment, said predetermined format being different than said first format and said second format, said image including directory records, said first files in said first format for use in said first operating system environment and second files in said second format for use in said second operating system environment, said directory records containing predetermined information needed for accessing said first files and said second files, wherein said first files in said first format are incompatible with said second operating system environment and said second files in said second format are incompatible with said first operating system environment and said directory records when in said second format include file name errors and system area errors resulting from incompatibilities between said first operating system environment and said second operating system environment, said system comprising:

a) means for reading said first files, converting said read records to said second format and writing said converted first files onto a storage medium in said second format, wherein said writing creates directory records which are in said second format needed for accessing said first files, which directory records have said file name and system area errors caused by said incompatibilities between said first operating system environment and said second operating system environment;

b) means for reading said second files and writing said read second files onto said storage medium in said second format, wherein said writing creates directory records needed for accessing said second files;

c) means for reading said directory and said first and second files on said storage medium and creating said image for placement on a CD-ROM disc;

d) means for creating a third file containing data necessary to correct said file name and system area errors within said directory records portion of said image introduced by said first file reading, converting and writing means;

e) image correction means for reading said third file and said image and correcting said file name and system area errors in said directory records portion of said image, such that said first operating system is able to correctly access said directory and said first files on said CD-ROM disc.

5,359,726

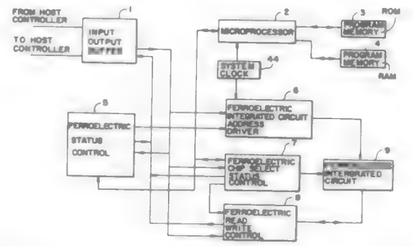
FERROELECTRIC STORAGE DEVICE USED IN PLACE OF A ROTATING DISK DRIVE UNIT IN A COMPUTER SYSTEM

Michael E. Thomas, 201 S. 4th St. #629, San Jose, Calif. 95112

Continuation-in-part of Ser. No. 374,822, Jul. 3, 1989, abandoned, which is a continuation of Ser. No. 288,160, Dec. 22, 1988, abandoned. This application Jun. 8, 1992, Ser. No. 895,328

Int. Cl.[5] G06F *3/00, 13/00;* G11C *11/22*

U.S. Cl. 395—500 12 Claims



1. A solid state, non-volatile random access memory (RAM) pack for emulating a rotating disk drive peripheral device in a host data processing system in response to control signals from the host data processing system, the control signals including stepping and stepping direction signals representing movement from a present location to a desired location; the non-volatile random access memory pack using the control signals to address a selected block of solid state memory within the memory pack using a given controller specification including the stepping and stepping direction signals and an indexing control signal, said memory pack comprising:

a removable solid state non-volatile random access memory means for storing data, said random access memory means comprising a plurality of ferroelectric random access memory integrated circuits, each including a ferroelectric film layer underneath a silicon etched substrate;

interface means for coupling the random access memory means to said host data processing system, the interface means including:

controller means for receiving control signals used for a disk drive peripheral device;

means for generating from the control signals an address for addressing a section of said random access memory means, said section including a plurality of data storage locations; and

means for sequentially addressing said data storage locations within the selected section when reading data from the random access memory means to the disk drive controller and when writing data to the random access memory means from the disk drive controller; and from the host data processing system, including means for providing status signals including an index signal to the host data processing system.

5,359,727

CLOCK GENERATOR USING PLL AND INFORMATION PROCESSING SYSTEM USING THE CLOCK GENERATOR

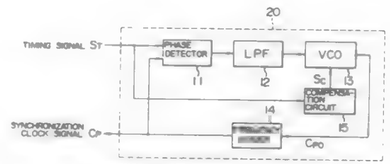
Kozaburo Kurita, Hitachi, and Tetsuo Nakano, Ome, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 184,782, Apr. 22, 1988, Pat. No. 5,133,064. This application Mar. 2, 1990, Ser. No. 487,125

Claims priority, application Japan, Mar. 3, 1989, 1-051387

Int. Cl.[5] G06F *1/06*

U.S. Cl. 395—550 14 Claims



1. A clock generator comprising

phase comparing means for outputting a signal in response to a phase difference between two input signals;

voltage controlled oscillating means for generating a signal of a frequency within a range of oscillating frequencies in response to the output signal of said phase comparing means;

means for generating a clock signal in response to an oscillating output of said voltage controlled oscillating means, an externally supplied input timing signal and said generated clock signal being inputted as said two input signals to said phase comparing means to thereby control said oscillating means to cause said clock signal to be synchronized with said input timing signal; and

compensating means responsive to said input timing signal for controlling said voltage controlled oscillating means to vary range of oscillating frequencies of said voltage controlled oscillating means in response to a frequency change in said input timing signal.

5,359,728

DATA INTEGRITY ASSURANCE IN A DISK DRIVE UPON A POWER FAILURE

Michael R. Rusnack, and Ali Pirasfar, both of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 9, 1992, Ser. No. 866,377

Int. Cl.[5] G06F *11/00*

U.S. Cl. 395—575 7 Claims

1. A disk drive package that includes read/write circuitry and a disk drive mechanism, said disk drive package further comprising:

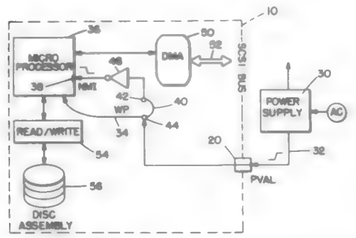
microprocessor means positioned within said disk drive package and having dedicated disk drive function input and an interrupt input, said dedicated disk drive function input accessible via a first pluggable connector in said disk drive package, said microprocessor means programmed to

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examine said dedicated disk drive function input only upon power-up to determine if it has been enabled;

circuit means for coupling said dedicated disk drive function input to said interrupt input to enable a power-fail-imminent signal applied to said dedicated disk drive function input to also be applied to said interrupt input; and

power supply means for providing said power-fail-imminent



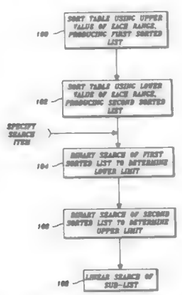
signal, after power-up, to said first pluggable connector, said power fail imminent signal ignored by said dedicated function input, but via said circuit means, causing said microprocessor means to institute an interrupt in operation of said disk drive to enable a write to a disk sector which is in process at a time said power-fail-imminent signal is asserted, to be completed prior to the occurrence of the power failure.

5,359,729

METHOD FOR SEARCHING FOR A GIVEN POINT IN REGIONS DEFINED BY ATTRIBUTE RANGES, THEN SORTED BY LOWER AND UPPER RANGE VALUES AND DIMENSION

David F. Yarnell, Lynnwood, and Donald E. Schuy, Kirkland, both of Wash., assignors to Timeline, Inc., Bellevue, Wash.

Filed Dec. 3, 1993, Ser. No. 162,839
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 11 Claims



1. A method for computer sorting and making a search of a plurality of regions, each region expressed as at least one range, each range having a lower and an upper value, wherein the lower and upper values may be equal, and no two regions have both the same number of ranges and all corresponding ranges overlap, and wherein the search will determine whether a point, expressed as a plurality of coordinates, is included within one of the regions, the search being successful when both the number of coordinates of the point is equal to the number of ranges in a region and each coordinate of the point is within each corresponding range within the region, comprising the steps of:

(a) creating a first sorted list of the regions by:

(i) arranging the regions by the number of ranges within each region, and

(ii) sub-arranging the regions having an equal number of ranges by the lower value of the first range in each region, and for regions having an equal number of ranges and an equal lower value for the first range, proceeding to a comparison of the lower value for each successive corresponding range in the regions until two corresponding lower values are unequal;

(b) creating a second sorted list of the regions by repeating step (a) using the upper values for the ranges instead of the lower values;

(c) performing a preliminary search on the first sorted list to create a first sublist of regions where the point could be located, searching first for regions that have the same number of ranges as the point has coordinates, and thereafter searching said regions having the same number of ranges as the point has coordinates, by comparing coordinate values of the point with the lower values of the corresponding ranges within the regions to identify a region in the first sorted list, wherein all of the preceding regions in the first sorted list could include the point, the first sublist comprising the identified region and all of the preceding regions in the first sorted list;

(d) repeating step (c) using the upper values of the ranges instead of the lower values and the second sorted list instead of the first sorted list, and creating a second sublist of the second sorted list where the point could be located, the second sublist comprising a region identified in the second sorted list, and all of the regions succeeding the identified region in the second sorted list;

(e) comparing the first sublist with the second sublist to determine which sublist is the shorter, or if the sublists are equal in length;

(f) selecting the shorter sublist to linearly search, and if the sublists are equal in length, selecting either sublist; and

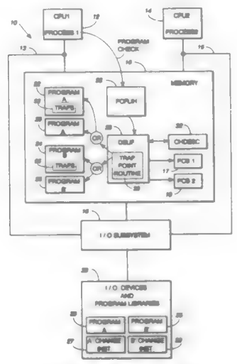
(g) linearly searching the selected sublist until an item in the selected sublist is found where each coordinate for the point falls within each corresponding range within the region.

5,359,730

METHOD OF OPERATING A DATA PROCESSING SYSTEM HAVING A DYNAMIC SOFTWARE UPDATE FACILITY

Assaf Marron, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 4, 1992, Ser. No. 985,762
Int. Cl.[5] G06F *9/06*
U.S. Cl. 395—650 19 Claims



1. The method of dynamically updating an old operating system program (hereinafter "old program") stored in a main memory of a data processing system (DPS) while said DPS is running and executing at least one task that accesses said old program from time to time in a multitasking mode, said method comprising:

(A) storing in said memory a new program that is an updated version of said old program;

(B) establishing an executable safety point in said DPS which produces a machine observable safety point condition;

(C) storing in said memory a selectively settable first marker for indicating whether said one task is safe or unsafe for executing said new program, said first marker being initially set to indicate said one task is unsafe;

(D) executing said one task and entering said old program through an entry point therein;

(E) in response to entering said entry point, examining said first marker and in response to noting said one task is unsafe, passing control to said old program for execution thereof:

(F) executing said safety point to produce said safety point condition;

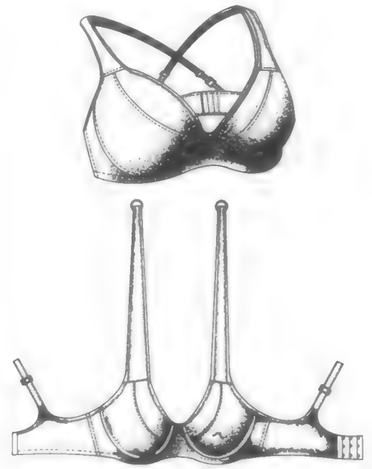
(G) in response to observing said safety point condition, setting said first marker to safe;

and (H) after said marker has been set to safe, executing said new program each time said first task enters said old program.

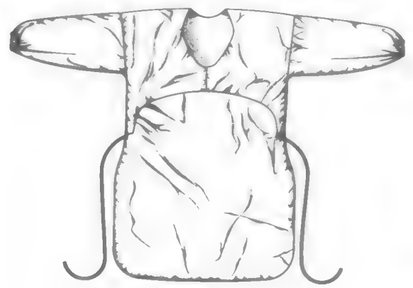
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DESIGNS

351,711
SPORTS BRASSIERE
Kimberly A. Mattson, 7217 Rindge Ave., Playa Del Rey, Calif. 90293
Filed May 21, 1993, Ser. No. 8,571
Term of patent 14 years
U.S. Cl. D2—708



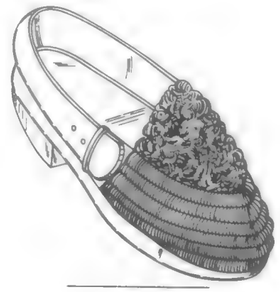
351,712
COMBINED APRON AND GOWN
Frank W. Jackson, Mechanicsburg, Pa., assignor to Chek-Med Systems, Inc., Wormleysburg, Pa.
Filed Nov. 18, 1992, Ser. No. 1,626
Term of patent 14 years
U.S. Cl. D2—720



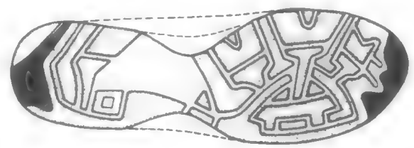
351,713
TREKKING SANDAL
Zenon O. Smotrycz, Reading, and Edward Norton, Boxford, both of Mass., assignors to Der-Tex Corporation, Lawrence, Mass.
Filed Jul. 2, 1993, Ser. No. 10,339
Term of patent 14 years
U.S. Cl. D2—916



351,714
SHOE
John P. Amoah, P.O. Box 415, Brentwood, N.Y. 11717
Filed Apr. 2, 1993, Ser. No. 7,597
Term of patent 14 years
U.S. Cl. D2—919

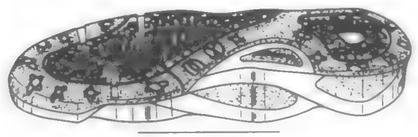


351,715
SHOE SOLE
Raymond F. Tonkel, Sudbury, Mass., assignor to The Rockport Company, Inc., Marlboro, Mass.
Filed Jan. 18, 1994, Ser. No. 17,606
Term of patent 14 years
U.S. Cl. D2—951



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351,716
SHOE SOLE
Toshiaki Kawasaki, Kobe, Japan, assignor to Asics Corporation, Hyogo, Japan
Filed Jun. 25, 1993, Ser. No. 10,862
Claims priority, application Japan, Dec. 28, 1992, 4-38608
Term of patent 14 years
U.S. Cl. D2—952



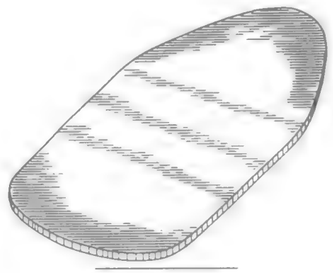
351,717
SHOE SOLE
Toshikazu Kayano, Akashi, and Norio Takaoka, Kobe, both of Japan, assignors to Asics Corporation, Hyogo-ken, Japan
Filed Sep. 7, 1993, Ser. No. 12,609
Claims priority, application Japan, Mar. 12, 1993, 5-7203
Term of patent 14 years
U.S. Cl. D2—957



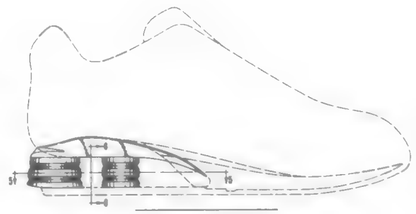
351,718
TREAD SURFACE AND PERIPHERY OF A FOOTWEAR UNIT SOLE
James R. Novy, Framingham, Mass., assignor to Quabang Corporation, North Brookfield, Mass.
Filed Sep. 24, 1993, Ser. No. 13,477
Term of patent 14 years
U.S. Cl. D2—959



351,719
SHOE INSOLE
Kazimierz Piotrowicz, ul. Zurawiec 2, 32-500 Chrzanów, Poland
Filed Mar. 30, 1993, Ser. No. 6,463
Claims priority, application Poland, Feb. 3, 1993, W-97031
Term of patent 14 years
U.S. Cl. D2—961



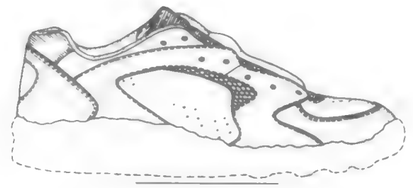
351,720
HEEL INSERT FOR A SHOE SOLE
Bruce J. Kilgore, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Division of Ser. No. 786,930, Nov. 1, 1991, Pat. No. Des. 344,398. This application Jan. 19, 1994, Ser. No. 17,636
Term of patent 14 years
U.S. Cl. D2—967



351,721
SHOE UPPER
Christopher J. Kittle, Cohasset, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Division of Ser. No. 2,870, Dec. 22, 1992, Pat. No. Des. 342,603. This application Dec. 22, 1993, Ser. No. 16,731
Term of patent 14 years
U.S. Cl. D2—969



351,722
SHOE UPPER
John S. Earle, Portland, Oreg., assignor to Avia Group International, Inc., Beaverton, Oreg.
Filed Feb. 15, 1994, Ser. No. 18,752
Term of patent 14 years
U.S. Cl. D2—969



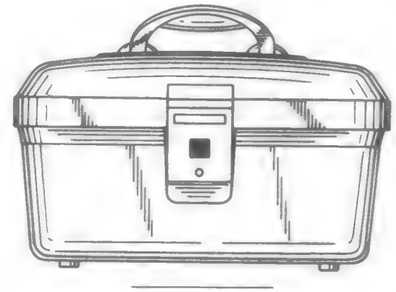
351,723
SHOE UPPER
Joseph Bevier, Tigard, Oreg., assignor to Avia Group International, Inc., Beaverton, Oreg.
Filed Feb. 17, 1994, Ser. No. 18,890
Term of patent 14 years
U.S. Cl. D2—969



351,724
STORAGE AND DISPENSING APPARATUS FOR SPOOLED MATERIALS
Diane O. Roberts, 1309 S. Lamar, and Tara A. Blisaitte, 305 Green Acres Rd., both of Weatherford, Tex. 76086
Filed Apr. 30, 1993, Ser. No. 7,723
Term of patent 14 years
U.S. Cl. D3—21



351,725
LUGGAGE
Michel Aumasson, Rueil-Malmaison, France, assignor to Delsey (Societe Anonyme), Bobigny, France
Filed Jun. 9, 1993, Ser. No. 9,262
Claims priority, application France, Dec. 11, 1992, 927535
Term of patent 14 years
U.S. Cl. D3—276

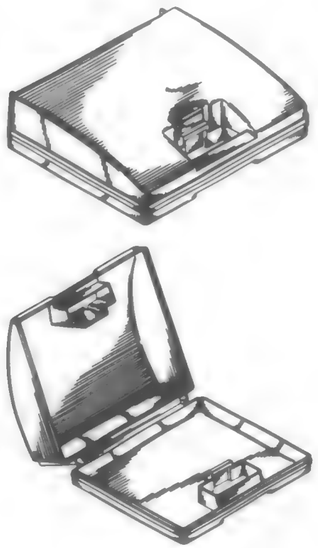


351,726
SUITCASE
Yi-Cheng Liu, No. 7, Lane 37, Wen-Hua St., Fengyuan City, Taiwan
Filed Jun. 10, 1993, Ser. No. 9,313
Term of patent 14 years
U.S. Cl. D3—276

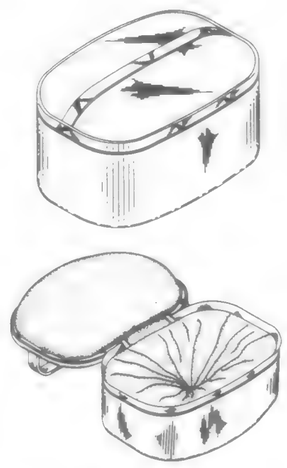


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351,727
CARRYING CASE
Richard A. Taroni, Gales Ferry, Conn., assignor to Binney & Smith Inc., Easton, Pa.
Filed Jan. 11, 1993, Ser. No. 9,399
Term of patent 14 years
U.S. Cl. D3—276

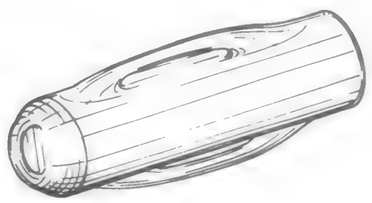


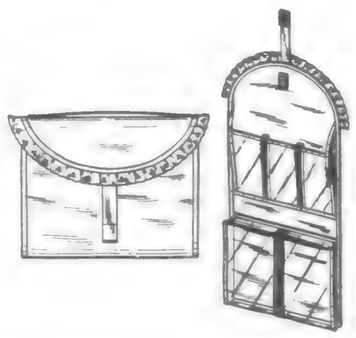
351,729
CASE FOR A BREAST PROSTHESIS
Georg Weber-Unger, Kufstein, Austria, assignor to Dr. Helbig GmbH & Co Orthopädische Produkte AG, Fed. Rep. of Germany
Filed Mar. 11, 1993, Ser. No. 5,764
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1992, M 92 06 773.5
Term of patent 14 years
U.S. Cl. D3—289



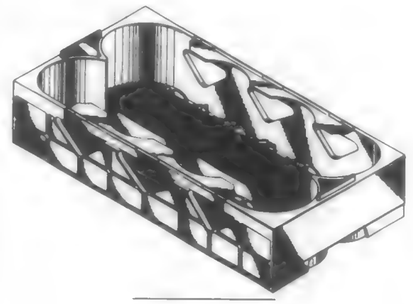
351,730
TRAVEL ORGANIZER
Christopher J. Miller, and Judy Miller, both of 28300 White Rd., Perrysburg, Ohio 43551
Filed Apr. 20, 1993, Ser. No. 7,370
Term of patent 14 years
U.S. Cl. D3—299

351,728
FLOTATION STORAGE UNIT
Anthony J. Drever, 34507 Via Catalina, Capistrano Beach, Calif. 92624
Filed Jul. 12, 1993, Ser. No. 10,500
Term of patent 14 years
U.S. Cl. D3—282

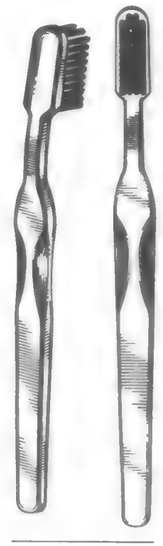




351,731
BEVERAGE BOTTLE TRANSPORTING CRATE
Rafael T. Bustos, Alpharetta, and Joseph M. Battaglia, Douglasville, both of Ga., assignors to L&P Property Management Company, Chicago, Ill.
Filed Sep. 23, 1993, Ser. No. 13,415
Term of patent 14 years
U.S. Cl. D3—314



351,733
TOOTHBRUSH
Kiyoshi Mackawa, Mount Prospect, and Scott Koepsel, Chicago, both of Ill., assignors to John O. Butler Company, Chicago, Ill.
Filed Oct. 5, 1993, Ser. No. 13,879
Term of patent 14 years
U.S. Cl. D4—104



351,732
TOOTHBRUSH HANDLE
Thomas M. Dair, Valley Cottage, N.Y.; Daniel J. Formoso, Montvale, N.J.; Peter Stathis, Cold Spring; David B. Stowell, New York, both of N.Y.; Kevin G. Yost, Short Hills, and Albert C. Chen, East Brunswick, both of N.J., assignors to Johnson & Johnson Consumer Products, Inc., Skillman, N.J.
Filed Feb. 16, 1993, Ser. No. 4,922
Term of patent 14 years
U.S. Cl. D4—104

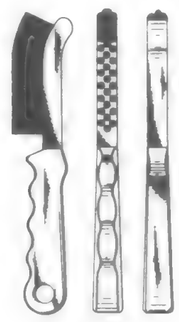


351,734
SHAMPOO BRUSH
Gary L. Schrader, 5 Lakeview, Manistee, Mich. 49660
Filed Mar. 5, 1992, Ser. No. 846,400
Term of patent 14 years
U.S. Cl. D4—115

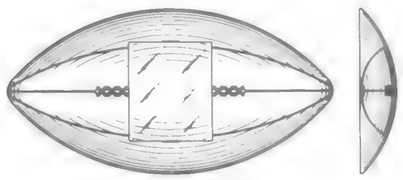


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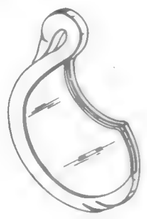
351,735
BRUSH FOR CALLIPERS OF DISK BRAKES
Jürgen Lessman, Oettingen, Fed. Rep. of Germany, assignor to Lessmann GmbH, Fed. Rep. of Germany
Filed Sep. 17, 1993, Ser. No. 13,114
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1993, M9302174.7
Term of patent 14 years
U.S. Cl. D4—134



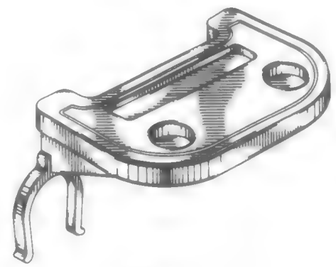
351,736
TRADING CARD DISPLAY FRAME
William D. Shook, P.O. Box 172, Rensselaer, N.Y. 12144
Filed Dec. 13, 1993, Ser. No. 16,309
Term of patent 14 years
U.S. Cl. D6—303



351,737
DECORATIVE MIRROR
Yu K. Chou, Taoyuan, Taiwan, assignor to Prowood Products, Inc., Taipei Hsien, Taiwan
Filed May 28, 1993, Ser. No. 8,880
Term of patent 14 years
U.S. Cl. D6—303



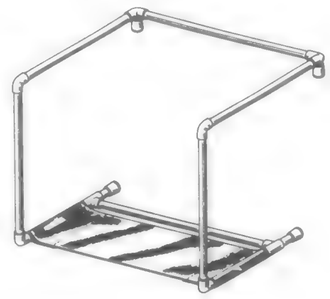
351,738
CHILD'S CAR SEAT TRAY
Sandra LaCombe, Box 271, Hale St., Medway, Me. 04460
Filed Sep. 23, 1992, Ser. No. 950,041
Term of patent 14 years
U.S. Cl. D6—336



351,739
STEP STOOL
James H. Cannon, 27 Pierce La. Box 1121, Edgartown, Mass. 02539
Filed Dec. 3, 1992, Ser. No. 4,591
Term of patent 14 years
U.S. Cl. D6—350



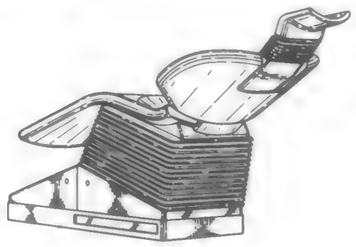
351,740
POOL CHAIR
William A. Tesmer, 191 Ximeno Ave., Long Beach, Calif. 90803
Filed May 3, 1993, Ser. No. 7,798
Term of patent 14 years
U.S. Cl. D6—362



351,741
CHAIR
Charles Pollock, New York, N.Y., assignor to United Chair Company, Inc., Leeds, Ala.
Filed Jun. 14, 1991, Ser. No. 716,377
Term of patent 14 years
U.S. Cl. D6—366



351,742
DENTAL PATIENT CHAIR
Tilman Phleps, Lorsch, and Klaus Stoeckl, Bensheim, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Apr. 20, 1993, Ser. No. 7,256
Claims priority, application World Int. Prop. O., Nov. 4, 1992, DM/001937
Term of patent 14 years
U.S. Cl. D6—367



351,743
CHAIR
Hermann Locher, Schwanden, Switzerland, assignor to Giroflex Entwicklungs AG, Koblenz, Switzerland
Filed Nov. 9, 1992, Ser. No. 1,286
Claims priority, application World Int. Prop. O., Jun. 18, 1992, DM/023 109
Term of patent 14 years
U.S. Cl. D6—373

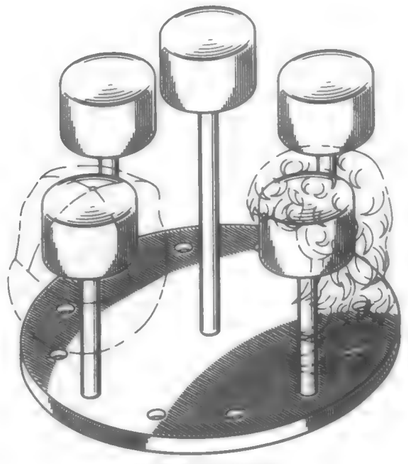


351,744
CHAIR
Jerome Caruso, 1165 W. Ash Lawn Dr., Lake Forest, Ill. 60045, and Steven Caruso, Antioch, Ill., assignors to Jerome Caruso, Lake Forest, Ill.
Filed May 7, 1993, Ser. No. 8,023
Term of patent 14 years
U.S. Cl. D6—373

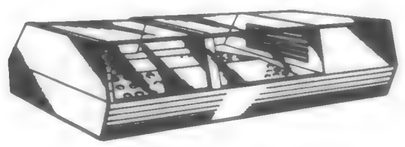


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351,745
MULTI-PORT VARIABLE PEG ROTATING WIG AND CAP HOLDER
Verna Seifert, 168 Bird Creek Estates Rd., Black Mountain, N.C. 28711
Filed Apr. 20, 1993, Ser. No. 7,249
Term of patent 14 years
U.S. Cl. D6—415



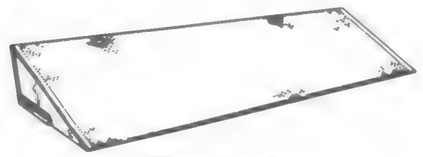
351,746
REFRIGERATED MERCHANDISING DISPLAY SHELF
Rafael T. Bustos, Alpharetta, Ga., assignor to L & P Property Management Company, Chicago, Ill.
Filed Jul. 9, 1992, Ser. No. 910,982
Term of patent 14 years
U.S. Cl. D6—470



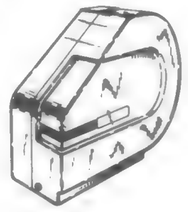
351,747
HEXAGONAL JEWELRY DISPLAY CASE HAVING CYLINDRICAL BASE
Robert I. Rubin, St. Louis, Mo., assignor to The Jewelry Works, Inc., St. Louis, Mo.
Filed Mar. 9, 1992, Ser. No. 847,231
Term of patent 14 years
U.S. Cl. D6—472



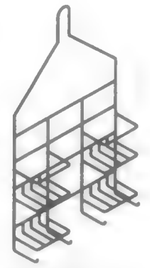
351,748
MEAT DISPLAY UNIT FOR REFRIGERATED CASES
Michael J. Stein, Minneapolis, and Jerome F. Sosso, Apple Valley, both of Minn., assignors to Stein Industries, Inc., Minneapolis, Minn.
Filed Jan. 9, 1993, Ser. No. 9,362
Term of patent 14 years
U.S. Cl. D6—511



351,749
TOILET TISSUE DISPENSER
Paul A. Omdoll, Waukesha, and Scott J. Collins, Brown Deer, both of Wis., assignors to San Jamar, Inc., Elkhorn, Wis.
Filed Oct. 19, 1993, Ser. No. 14,360
Term of patent 14 years
U.S. Cl. D6—523



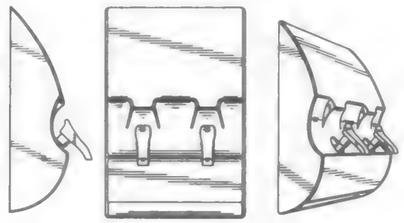
351,750
SHOWER CADDY
Christopher L. Sweeney, 3561 10th Ave. North, Fort Dodge, Iowa 50501
Filed Nov. 30, 1993, Ser. No. 15,813
Term of patent 14 years
U.S. Cl. D6—525



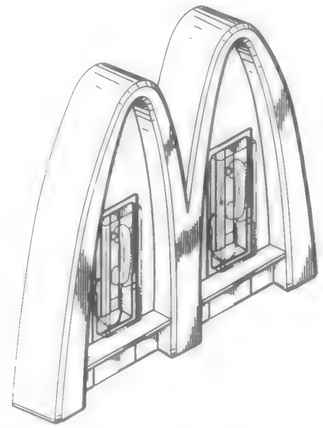
351,751
SHOWER CADDY
Keith E. Brightbill, Wooster; Richard E. Corney, Uniontown, and Coy D. Ward, Norton, all of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Dec. 29, 1993, Ser. No. 16,922
Term of patent 14 years
U.S. Cl. D6—525



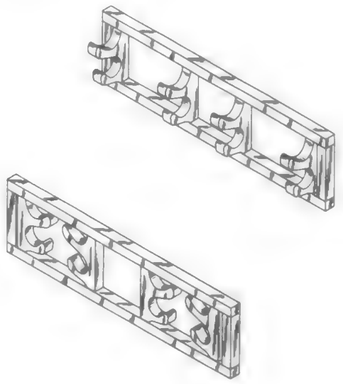
351,752
LIQUID DISPENSING DEVICE
David J. Adamson, 770 N. Main St., Alpine, Utah 84004
Filed Oct. 12, 1993, Ser. No. 14,111
Term of patent 14 years
U.S. Cl. D6—544



351,753
DOUBLE WALL-MOUNTED TELEPHONE BOOTH
James E. Raynor, Woodstock, Ga., assignor to Phillips & Brooks/Gladwin, Inc., Cumming, Ga.
Filed Feb. 7, 1992, Ser. No. 831,299
Term of patent 14 years
U.S. Cl. D6—555

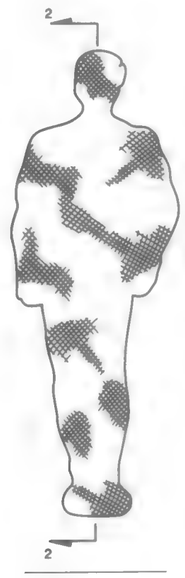


351,754
MULTI-PURPOSE PORTABLE HOOK AND RACK ASSEMBLY
Lyman E. Peck, 367 North St., Winooski, Vt. 05404
Filed Nov. 29, 1993, Ser. No. 15,763
Term of patent 14 years
U.S. Cl. D6—572

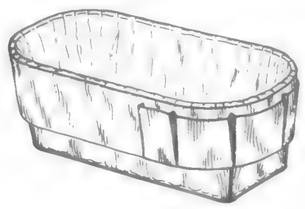


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351,755
BEACH TOWEL
James M. Hrebenar, 538 Armistead Pl., Nashville, Tenn. 37215
Filed Dec. 3, 1992, Ser. No. 2,283
Term of patent 14 years
U.S. Cl. D6—599



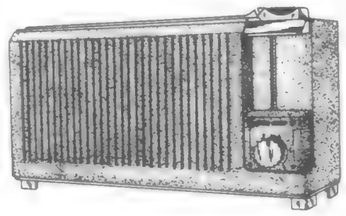
351,756
COMBINED BASSINET LINER AND ORGANIZER
Christopher J. Miller; Judith A. Miller, both of Perrysburg, Ohio, and M. Anthony Villarreal, Houston, Tex., assignors to Proteus Design Group, Holland, Ohio
Filed Jan. 15, 1993, Ser. No. 9,504
Term of patent 14 years
U.S. Cl. D6—611



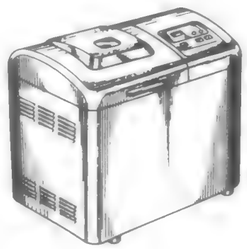
351,757
COFFEE POT
Hartmut Esslinger, Los Gatos, Calif., assignor to Rosenthal Aktiengesellschaft Rechtsabteilung, Fed. Rep. of Germany
Filed Dec. 17, 1992, Ser. No. 2,722
Term of patent 14 years
U.S. Cl. D7—318



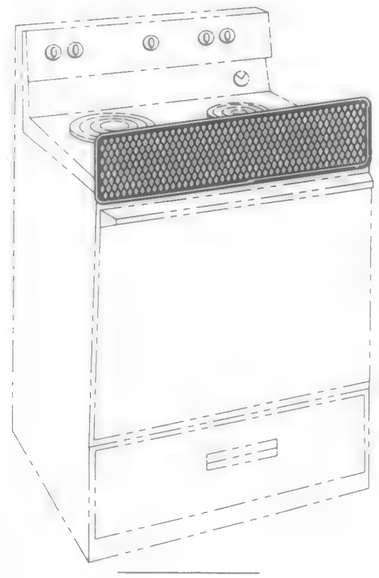
351,758
ELECTRIC TOASTER
Gunter Strosberg, Solingen, Fed. Rep. of Germany, assignor to Robert Krups GmbH & Co. KG, Solingen, Fed. Rep. of Germany
Filed Apr. 22, 1992, Ser. No. 873,278
Claims priority, application France, Oct. 22, 1991, 916598
Term of patent 14 years
U.S. Cl. D7—330



351,759
BREAD BAKING APPLIANCE
Eiki Maruyama, Nagano, and Hiroshi Ogawa, Kohshoku, both of Japan, assignors to MK Seiko Co., Ltd., Kohshoku, Japan
Filed Nov. 24, 1992, Ser. No. 1,788
Claims priority, application Japan, Jan. 15, 1992, 4-17760
Term of patent 14 years
U.S. Cl. D7—350



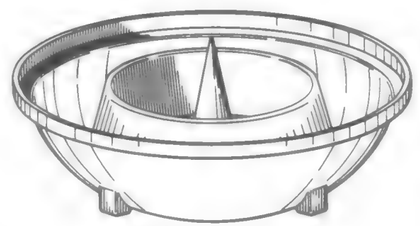
351,760
PROTECTIVE BARRIER SAFETY DEVICE
Phillip L. Frank, RR #1 Italy Cross, 605 Camperdown Road, Lun Co., Nova Scotia, Canada B0J 1V0
Filed Mar. 22, 1993, Ser. No. 6,167
Term of patent 14 years
U.S. Cl. D7—402



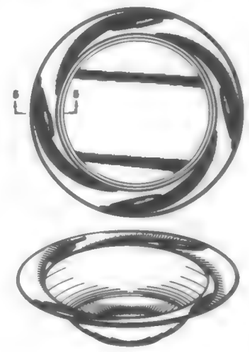
351,761
BEVERAGE BOTTLE
David L. Feer, Medina, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Dec. 28, 1992, Ser. No. 3,102
Term of patent 14 years
U.S. Cl. D7—510



351,762
HOLDER FOR AN ARTICHOKE
Robert E. Williams, and Helen M. Williams, both of P.O. Box 1282, 196 Vista Del Rio, Gridley, Calif. 95948
Filed Jan. 25, 1993, Ser. No. 4,066
Term of patent 14 years
U.S. Cl. D7—547

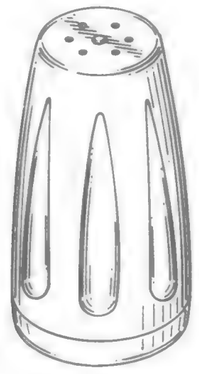


351,763
DINNERWARE
Andre G. Doxey, Shaker Heights, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 8, 1993, Ser. No. 3,472
Term of patent 14 years
U.S. Cl. D7—585

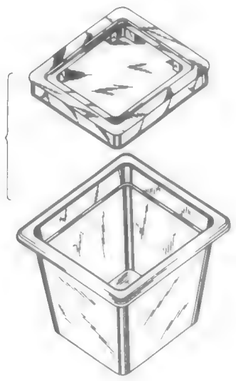


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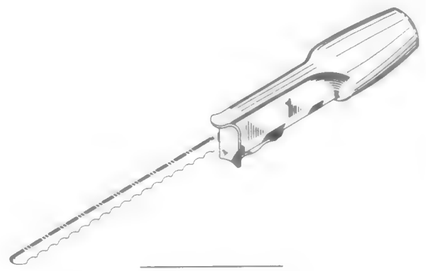
351,764
CONDIMENT SHAKER
Keith Johnson, Laguna Beech, and Robert Monteith, Villa Park, both of Calif., assignors to Burns Philp Food Inc., San Francisco, Calif.
Filed Jul. 23, 1993, Ser. No. 11,020
Term of patent 14 years
U.S. Cl. D7—591



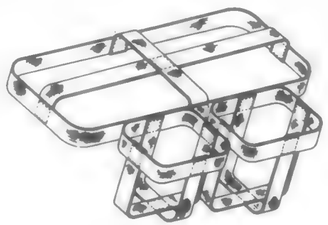
351,765
CLOSABLE VESSEL FOR FOODSTUFF
Kurt Beeler, Bronschhofen; Jean J. Ott, Romansborn, and Urs Virago, Steinach, all of Switzerland, assignors to Huegli Nahrmittel AG, Steinach, Switzerland
Filed Apr. 22, 1993, Ser. No. 7,439
Claims priority, application World Int. Prop. O., Oct. 26, 1992, DMA/00-1-930
Term of patent 14 years
U.S. Cl. D7—629



351,766
HANDLE FOR AN ELECTRIC KNIFE
Don R. McClosky, Stratford, and Gregory K. Hoffman, Hamden, both of Conn., assignors to Black & Decker Inc., Newark, Del.
Filed Jan. 10, 1992, Ser. No. 819,531
Term of patent 14 years
U.S. Cl. D7—646



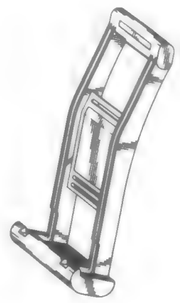
351,767
BEVERAGE CONTAINER HOLDER
Antonio Gambino, 236 S. High St., Baltimore, Md. 21202
Filed Apr. 8, 1993, Ser. No. 6,832
Term of patent 14 years
U.S. Cl. D7—701



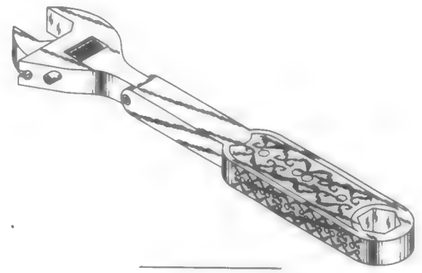
351,768
ELECTRIC GRASS TRIMMER
John Griffin, Phoenix, Ariz., assignor to McCulloch Corporation, Tucson, Ariz.
Filed Apr. 24, 1992, Ser. No. 874,565
Term of patent 14 years
U.S. Cl. D8—8



351,769
PLYWOOD AND SHEETROCK CARRIER
Robert L. Brass, 242 Lake Plymouth Blvd., Plymouth, Conn. 06782, and James M. Ferro, 34 North St., Huntington, Conn. 06484
Filed Jun. 15, 1993, Ser. No. 9,518
Term of patent 14 years
U.S. Cl. D8—14



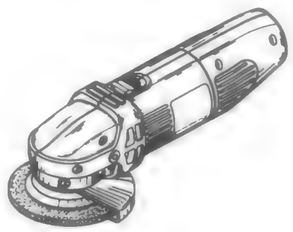
351,770
HINGED ADJUSTABLE WRENCH
Clifford I. Stone, P.O. Box 201, Fate, Tex. 75032
Filed Mar. 29, 1993, Ser. No. 6,516
Term of patent 14 years
U.S. Cl. D8—22



351,771
CORKSCREW HANDLE AND HOLDER THEREFOR
Victor Carranza, Independencia, Mexico, assignor to Godinger Silver Art Co., Ltd., Brooklyn, N.Y.
Division of Ser. No. 724,955, Jul. 2, 1991, Pat. No. Des. 341,722. This application Aug. 25, 1993, Ser. No. 12,157
Term of patent 14 years
U.S. Cl. D8—42



351,772
ANGLE GRINDER
Scott D. Price, Pylesville, Md., assignor to Black & Decker Inc., Newark, Del.
Continuation of Ser. No. 1,276, Nov. 6, 1992, abandoned. This application Nov. 1, 1993, Ser. No. 15,036
Term of patent 14 years
U.S. Cl. D8—62

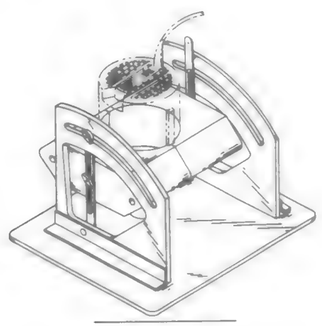


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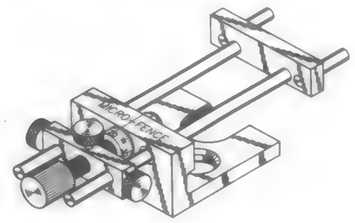
351,773
ABRASIVE SHEET WITH DIE-CUT PATTERN
Robert E. Ward, Sr., St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sep. 27, 1993, Ser. No. 13,562
Term of patent 14 years
U.S. Cl. D8—70



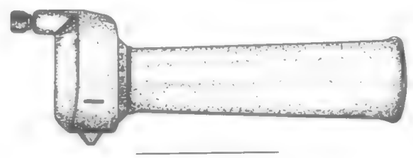
351,774
TILTING ROUTER FRAME
Bradley R. Witt, 5323 W. Kimberly Rd., Davenport, Iowa 52806
Filed Jun. 28, 1993, Ser. No. 10,042
Term of patent 14 years
U.S. Cl. D8—71



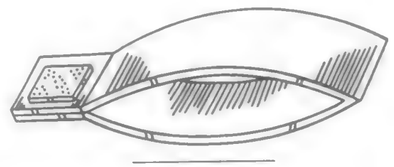
351,775
PRECISION ADJUSTABLE ROUTER FENCE
Richard L. Wedler, 16,650 Pineridge Dr., Granada Hills, Calif. 91344
Filed Sep. 28, 1993, Ser. No. 13,608
Term of patent 14 years
U.S. Cl. D8—71



351,776
BICYCLE POWER GRIP TWIST
Klaus Schuchard, Ponts et marais; Regis Sinoquet, Frouzenneville, and Herve Crepin, Noyelles/Mer, all of France, assignors to Sachs Industries S.A. (Huret et Maillard Reunis), Nanterre, France
Filed Mar. 22, 1991, Ser. No. 674,717
Claims priority, application France, Sep. 24, 1990, 905.937
Term of patent 14 years
U.S. Cl. D8—303



351,777
TOILET SEAT LIFTER
Vito Baiardi, 127 Jean Pl., East Meadow, N.Y. 11554
Filed Feb. 27, 1992, Ser. No. 841,456
Term of patent 14 years
U.S. Cl. D8—307



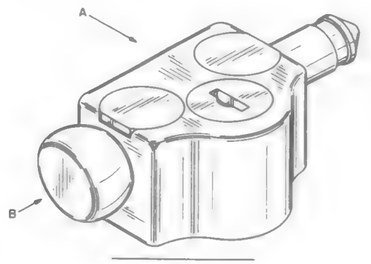
351,778
CUFF LOCK
Li-Tsao Kuo, No. 47-8, Alley 36, Lane 459, Sec. 1, An Ho Road, Tainan City, Taiwan
Filed Dec. 30, 1993, Ser. No. 15,822
Term of patent 14 years
U.S. Cl. D8—333



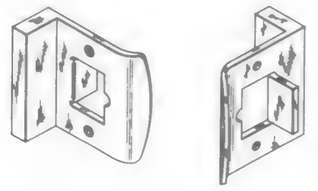
351,779
PIÑATA
Ian T. Allison, P.O. Box 1705, Santa Rosa, Calif. 95402
Filed Jul. 9, 1992, Ser. No. 911,037
Term of patent 14 years
U.S. Cl. D9—335



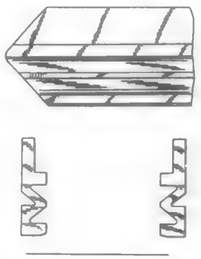
351,780
WINDOW BOLT LOCK BODY
Murray J. Baber, Auckland, New Zealand, assignor to MJ Baber & Company Limited, Palmerston North, New Zealand
Filed Nov. 16, 1993, Ser. No. 15,432
Claims priority, application New Zealand, May 19, 1993, 25211
Term of patent 14 years
U.S. Cl. D8—339



351,781
DOOR STRIKER PLATE
Edward DeWitt, 411 No. Carolina Trail, Browns Mills, N.J. 08015
Filed Jun. 11, 1993, Ser. No. 9,325
Term of patent 14 years
U.S. Cl. D8—344



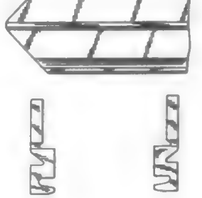
351,782
PORTION OF A KEY BLADE BLANK
Anthony J. Hoffman, Plantsville, Conn., and Robert E. Kearns, San Francisco, Calif., assignors to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,759
Term of patent 14 years
U.S. Cl. D8—347



351,783
BARREL BUNG REINFORCEMENT
Henry E. Shade, Shannon Lake Rd. P.O. Box 2, Dillingham, Ak. 99576
Filed Feb. 10, 1993, Ser. No. 4,647
Term of patent 14 years
U.S. Cl. D8—354

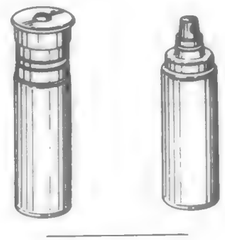


351,784
PORTION OF A KEY BLADE BLANK
Anthony J. Hoffman, Plantsville, Conn., and Robert E. Kearns, San Francisco, Calif., assignors to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,755
Term of patent 14 years
U.S. Cl. D8—347

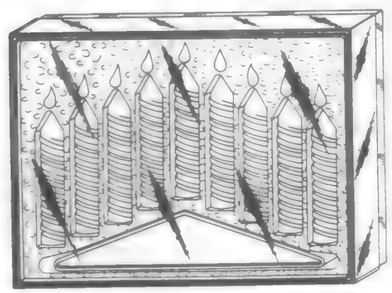


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351,785
COMBINED SPRAY CONTAINER AND CAP
Arthur E. Newell, 500 Danbury La., Topeka, Kans. 66606
Filed Jul. 9, 1992, Ser. No. 911,302
Term of patent 14 years
U.S. Cl. D9—300



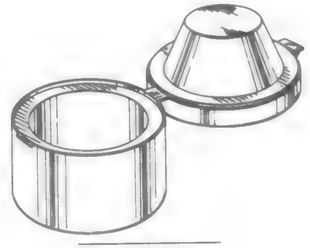
351,786
CANDY PACKAGE
Ernest Granhut, Brooklyn, N.Y., assignor to Ernex Corporation, Brooklyn, N.Y.
Filed May 11, 1993, Ser. No. 8,154
Term of patent 14 years
U.S. Cl. D9—330



351,787
CARRIER FOR BOTTLES
Finn R. Hansen, Hønefoss, Norway, assignor to Norpapp Industri AS, Norway
Filed Jul. 22, 1993, Ser. No. 10,987
Claims priority, application United Kingdom, Feb. 4, 1993, 2012901
Term of patent 14 years
U.S. Cl. D9—346



351,788
HEARING AID CONTAINER
Dena L. Love, 4021-B Crackerneck, Independence, Mo. 64055
Filed Nov. 20, 1992, Ser. No. 1,708
Term of patent 14 years
U.S. Cl. D9—422



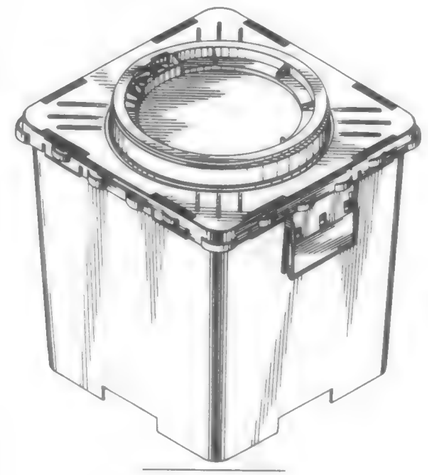
351,789
PACKING CASE FOR CHEWING GUM
Kwang-Bong Lee, Seoul, Rep. of Korea, assignor to Lotte Confectionery Co., Ltd., Seoul, Rep. of Korea
Filed Jan. 13, 1993, Ser. No. 3,670
Term of patent 14 years
U.S. Cl. D9—424



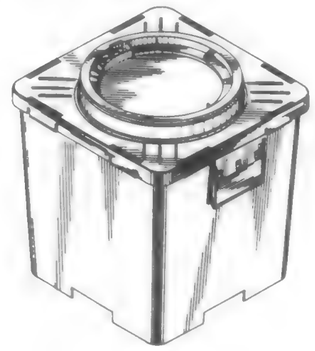
351,790
CONTAINER FOR FOOD
Rudolf Haindl, Walchwil, Switzerland, assignor to Pactrade AG, Baar, Switzerland
Filed Sep. 21, 1992, Ser. No. 948,950
Term of patent 14 years
U.S. Cl. D9—425



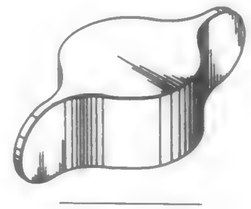
351,791
COMBINED CONTAINER WITH LID
Glenn H. Morris, Sr., 1192 Cumberland Rd., Chattanooga, Tenn. 37419
Filed Jul. 7, 1993, Ser. No. 10,359
Term of patent 14 years
U.S. Cl. D9—425



351,792
CONTAINER WITH LID
Glenn H. Morris, Sr., 1192 Cumberland Rd., Chattanooga, Tenn. 37419
Filed Jul. 7, 1993, Ser. No. 10,360
Term of patent 14 years
U.S. Cl. D9—425



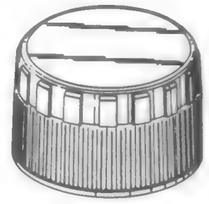
351,793
BOTTLE CAP
David Stoller, 904 Winnington Avenue, Ottawa, Ontario, Canada K2B 5C7
Filed Jun. 3, 1992, Ser. No. 892,006
Claims priority, application Canada, Mar. 13, 1992, 13-03-92-1
Term of patent 14 years
U.S. Cl. D9—443



351,794
LOTION PUMP HEAD
Donald D. Foster, St. Charles, Mo., assignor to Contico International, Inc., St. Louis, Mo.
Filed May 11, 1993, Ser. No. 8,204
Term of patent 14 years
U.S. Cl. D9—448

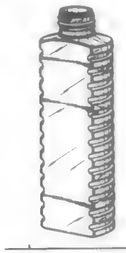


351,795
CONTAINER CAP
Brian L. Ogden, Dartford, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.
Filed Jun. 5, 1992, Ser. No. 892,830
Claims priority, application United Kingdom, Dec. 6, 1991, 2019414
Term of patent 14 years
U.S. Cl. D9—453

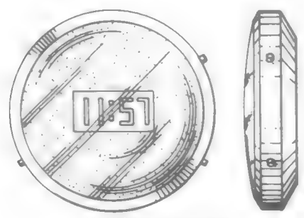


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351,796
BOTTLE
Ludger Deddens, Hamburg, Fed. Rep. of Germany, assignor to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany
Filed Nov. 19, 1993, Ser. No. 15,554
Claims priority, application Fed. Rep. of Germany, May 29, 1993, M9304320.1
Term of patent 14 years
U.S. Cl. D9—522



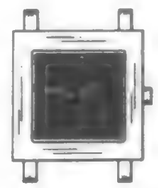
351,797
DIGITAL CLOCK
Richard J. White, 300 Palmcrest Rd., N. Syracuse, N.Y. 13212
Continuation-in-part of Ser. No. 568,694, Aug. 17, 1990. This application Oct. 23, 1991, Ser. No. 781,292
Term of patent 14 years
U.S. Cl. D10—15



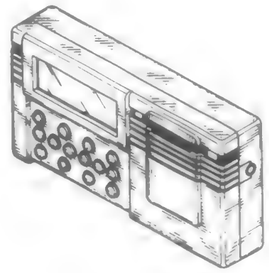
351,798
WRIST WATCH
Yuki Yamamoto, Fussa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 920,840
Term of patent 14 years
U.S. Cl. D10—32



351,799
WRISTWATCH
Paolo Bulgari, Rome, Italy, assignor to Bulgari Time (Switzerland) S.A., Switzerland
Filed Jul. 22, 1992, Ser. No. 919,552
Claims priority, application Int'l Pat. Institute, Feb. 17, 1992, DM/022.022
Term of patent 14 years
U.S. Cl. D10—39



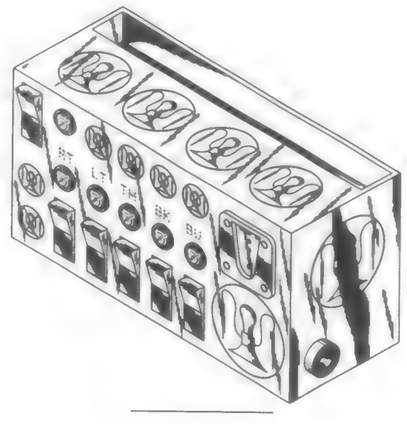
351,800
ELECTRONIC METRONOME
Syh-Fuh Liao, 5th Fl., No. 12, Lin Sen S. Rd., Taipei, Taiwan
Filed Dec. 29, 1992, Ser. No. 3,134
Term of patent 14 years
U.S. Cl. D10—43



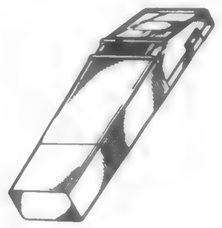
351,801
CALCULATOR ATTACHMENT FOR A TAPE MEASURER
Michael J. Ferra, 3584 Evans Dr., Simi Valley, Calif. 93063
Filed Jul. 1, 1993, Ser. No. 10,160
Term of patent 14 years
U.S. Cl. D10—74



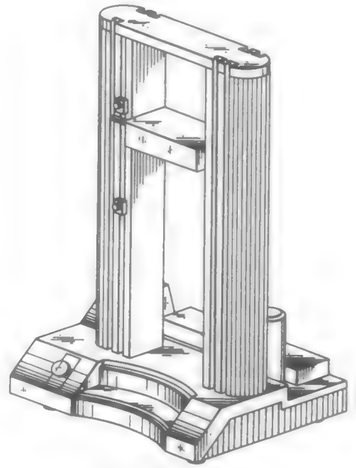
351,802
TESTER FOR VEHICULAR LIGHTS
Norman B. Tyler, 1517 E. Fairbrook, Mesa, Ariz. 85203
Filed Aug. 30, 1993, Ser. No. 12,300
Term of patent 14 years
U.S. Cl. D10—75



351,803
PH PEN CASE DESIGN
Robert S. Foley, Lake Forest, Calif., assignor to Newport Electronics, Inc., Santa Ana, Calif.
Filed Mar. 2, 1993, Ser. No. 5,349
Term of patent 14 years
U.S. Cl. D10—81



351,804
STRESS:STRAIN MATERIALS TESTING INSTRUMENT
Charles W. Kellstedt, Jr.; Joel Lieblein, both of Sudbury; Richard J. Mahoney, III, Mansfield; Paulo A. Martin, Fall River, all of Mass.; Graham E. Mead, Buckinghamshire, England; Ronald K. Pulsifer, Pembroke, and David W. Scanlon, Reboboth, both of Mass., assignors to Instron Corporation, Canton, Mass.
Filed Mar. 18, 1993, Ser. No. 6,028
Term of patent 14 years
U.S. Cl. D10—83



351,805
TRANSMITTER FOR AN EMERGENCY VEHICLE WARNING SYSTEM
Michael Pagano, 3545 Murrow St., Newport Richey, Fla. 34655
Filed Jun. 18, 1993, Ser. No. 9,579
Term of patent 14 years
U.S. Cl. D10—104



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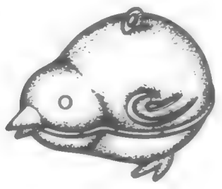
351,806
PORTABLE MOTION DETECTOR
Bert S. Bedrosian, Farmington Hills, Mich., assignor to Isard-Tech Industries, Inc., Scottsdale, Ariz.
Filed Aug. 16, 1993, Ser. No. 11,788
Term of patent 14 years
U.S. Cl. D10—196



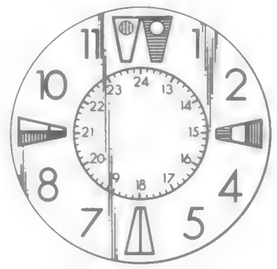
351,807
ILLUMINATED HAND-HELD STOP SIGN
Christopher Smith, and James L. Smith, both of 6305 Knights Way, Riverdale, Ga. 30296
Filed Mar. 4, 1993, Ser. No. 4,678
Term of patent 14 years
U.S. Cl. D10—109



351,808
BELL
Cheng-Shyan Huang, No. 11, Alley 95, Lane 86, Sung Chu Road, Taichung City, Taiwan
Filed Jul. 8, 1992, Ser. No. 909,806
Term of patent 14 years
U.S. Cl. D10—116



351,809
CLOCK FACE
Brendon Nunes, 467 Westney Road S., Unit 3, Ajax, Ontario, Canada L1S 6V7
Filed Apr. 22, 1991, Ser. No. 692,472
Term of patent 14 years
U.S. Cl. D10—126



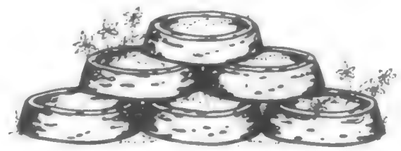
351,810
ILLUMINATED ARTIFICIAL CHRISTMAS TREE
Margaret M. Lange, and Charles M. Lange, both of 630 Sparn Ct., Grand Junction, Colo. 81506
Filed Feb. 22, 1991, Ser. No. 659,119
Term of patent 14 years
U.S. Cl. D11—118



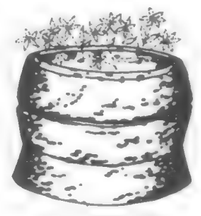
351,811
PLANTER
Daryl Peterson, 1002 Chenowith, N. Bonneville, Wash. 98639
Continuation of Ser. No. 450,003, Dec. 12, 1989, abandoned.
This application Mar. 16, 1993, Ser. No. 32,462
Term of patent 14 years
U.S. Cl. D11—152



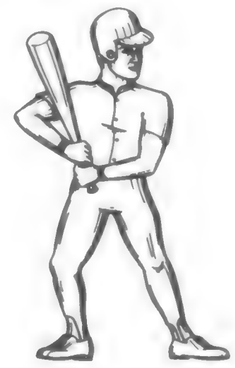
351,812
PLANTER
Daryl Peterson, 1002 Chenowith, N. Bonneville, Wash. 98639
Continuation of Ser. No. 450,005, Dec. 12, 1989, abandoned.
This application Mar. 16, 1993, Ser. No. 32,466
Term of patent 14 years
U.S. Cl. D11—152



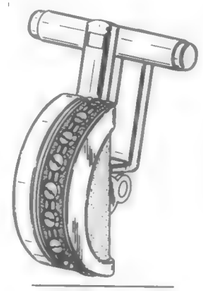
351,813
PLANTER
Daryl Peterson, 1002 Chenowith, N. Bonneville, Wash. 98639
Continuation of Ser. No. 450,004, Dec. 12, 1989, abandoned.
This application Mar. 16, 1993, Ser. No. 9,062
Term of patent 14 years
U.S. Cl. D11—152



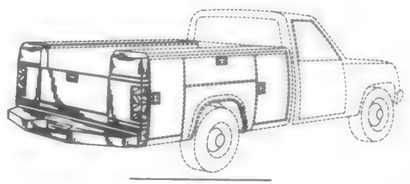
351,814
SPORTS FIGURINE
Granville G. Young, Sr., and Sharon P. Young, both of 803 Robbins St., Cambridge, Md. 21613
Filed May 24, 1993, Ser. No. 8,634
Term of patent 14 years
U.S. Cl. D11—160



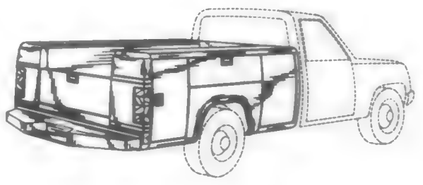
351,815
CUFF LINK
Robert B. Bennett, Englewood, N.J., assignor to Chromalloy American Corporation, St. Louis, Mo.
Filed Mar. 11, 1993, Ser. No. 5,805
Term of patent 14 years
U.S. Cl. D11—222



351,816
TRUCK BODY REAR END UNIT
Richard Lewellen; George Kalis, Jr., and Robert M. Lapsley, all of Wooster, Ohio, assignors to Stahl/Scott Fetner Company, Wooster, Ohio
Filed Jan. 4, 1993, Ser. No. 3,189
Term of patent 14 years
U.S. Cl. D12—98

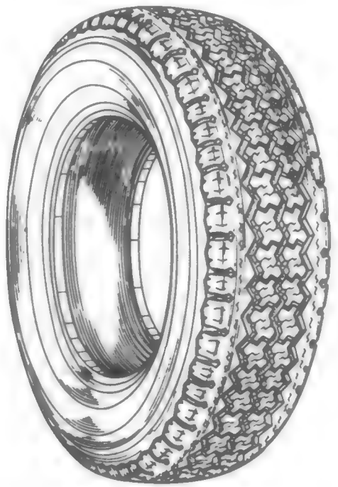


351,817
UTILITY TRUCK BODY
Richard Lewellen; George Kalis, Jr., and Robert M. Lapsley, all of Wooster, Ohio, assignors to Stahl/Scott Fetner Company, Wooster, Ohio
Continuation-in-part of Ser. No. 915,957, Jul. 20, 1992, Pat. No. Des. 346,571. This application Jan. 4, 1993, Ser. No. 3,247
Term of patent 14 years
U.S. Cl. D12—98

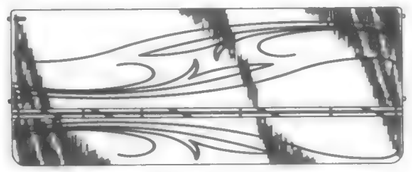


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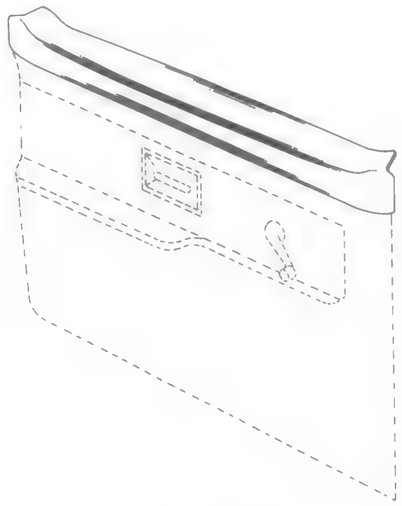
351,818
VEHICLE TIRE
Jean-Jacques Pierot, Desertines, and Jean-Pierre Siramy, Ronnet, both of France, assignors to Dunlop France SA, Issy-Les-Moulineaux, France
Filed Dec. 9, 1992, Ser. No. 2,310
Claims priority, application France, Jun. 11, 1992, 923591
Term of patent 14 years
U.S. Cl. D12—147



351,819
COMBINED PICK UP TRUCK AIR DEFLECTOR AND STORAGE COVER
Fred T. Baddeley, 28 Lakeland Cres. Station B., Richmond Hill, Ontario, Canada L4E 2Z8
Filed Dec. 31, 1992, Ser. No. 3,238
Term of patent 14 years
U.S. Cl. D12—181



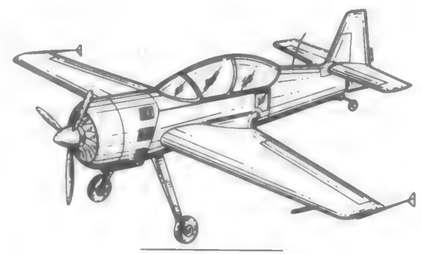
351,820
LINER FOR A VEHICLE DOOR
Leslie E. Knapp, Jr., 5401 Takilma Rd., Cave Junction, Oreg. 97523
Filed Aug. 20, 1993, Ser. No. 12,007
Term of patent 14 years
U.S. Cl. D12—190



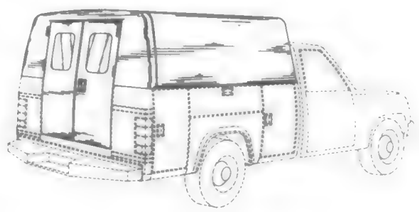
351,821
WHEEL
Koutaron Oka, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan
Filed Jan. 13, 1993, Ser. No. 3,520
Claims priority, application Japan, Jul. 14, 1992, 4-21019
Term of patent 14 years
U.S. Cl. D12—209



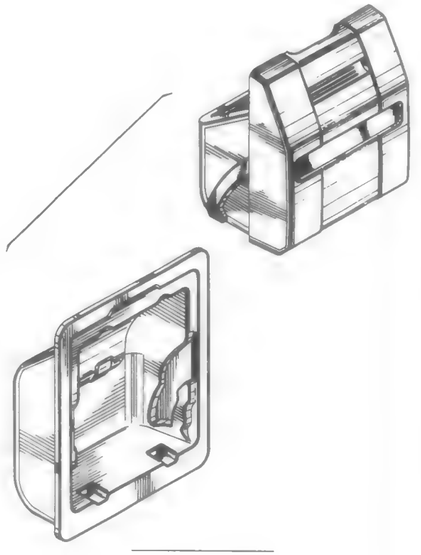
351,822
TWO-SEATED SPORTS PLANE
Mikhail P. Simonov, 125565 Moskva, Konokovsky proezd, 8-2-280, U.S.S.R.; Boris V. Rakitin, 113648 Moskva, Severnoe Chertanovo, 6-607-379, U.S.S.R., and Leonid G. Chernov, 129075 Moskva, ul., Arganovskaya 16-199, U.S.S.R.
Filed Sep. 10, 1992, Ser. No. 943,452
Claims priority, application U.S.S.R., Apr. 30, 1992, 63120
Term of patent 14 years
U.S. Cl. D12—344



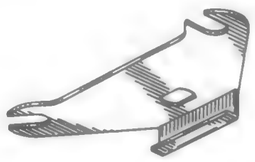
351,823
ENCLOSURE CANOPY FOR A UTILITY TRUCK
Richard Lewellen; Robert M. Lapsley, and Thomas J. Boyer, all of Wooster, Ohio, assignors to Stahl/Scott Fetzer Company, Wooster, Ohio
Filed May 13, 1993, Ser. No. 8,290
Term of patent 14 years
U.S. Cl. D12—405



351,824
PORTABLE COOLER AND HOUSING THEREFOR FOR A VEHICLE
Charles J. Bednar, Oak Park, Ill., assignor to Vermillion Technologies, Elkhart, Ind.
Filed Jun. 28, 1993, Ser. No. 10,051
Term of patent 14 years
U.S. Cl. D12—423



351,825
ELECTRICAL GROUND CONNECTOR PLATE
Isaac Sachs, 283 Newton, Dollard-Des-Ormeaux, Quebec, Canada H9A 3G1
Filed Jan. 13, 1993, Ser. No. 3,673
Term of patent 14 years
U.S. Cl. D13—154

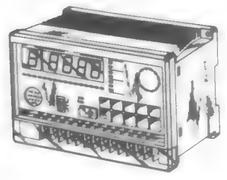


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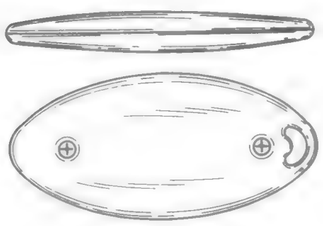
351,826

Patent Not Issued For This Number

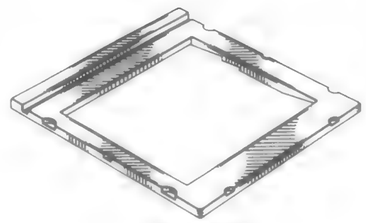
351,827
PROGRAMMABLE ELECTRONIC CAM-OPERATED SWITCH
Norio Shimizu, and Teruo Matsuno, both of Tokyo, Japan, assignors to Koyo Electronics Industries Co., Ltd., Tokyo, Japan
Filed May 25, 1993, Ser. No. 8,696
Claims priority, application Japan, Dec. 10, 1992, 4-36528
The portion of the term of this patent subsequent to Oct. 18, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—162



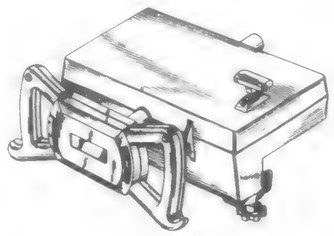
351,828
REMOTE CONTROL HOUSING FOR A VEHICLE IMMOBILIZER/ANTI-THEFT SYSTEM
Franco G. Pucci; Michael D. Wythe, both of Durban, and Kevin E. Moulder, Westville, all of South Africa, assignors to Control Logic (Proprietary) Limited, South Africa
Filed Dec. 23, 1992, Ser. No. 2,953
Claims priority, application South Africa, Jun. 26, 1992, 92/0645
Term of patent 14 years
U.S. Cl. D13—168



351,829
COMPUTER DISK CASE
Steven H. Maines, 1850 Nixon Maines Rd., Shreveport, La. 71107
Filed Jul. 17, 1992, Ser. No. 914,612
Term of patent 14 years
U.S. Cl. D14—114



351,830
COMPUTER INPUT DEVICE FOR FLIGHT OR OTHER ACTION SIMULATION SOFTWARE
Charles L. Hayes, 4421 Highland Ave., Carlsbad, Calif. 92008, assignor to Charles L. Hayes, Carlsbad, Calif.
Filed Jan. 8, 1993, Ser. No. 3,502
Term of patent 14 years
U.S. Cl. D14—114



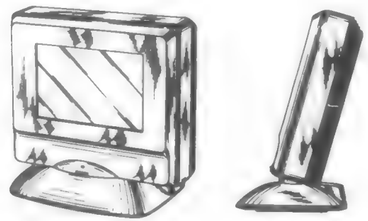
351,831
PORTABLE KEYBOARD
Hiroyuki Kuzumoto, Tokyo; Masashi Odagiri; Motoharu Yamaguchi, both of Yamagata, and Kenichi Yamauchi, Tokyo, all of Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Apr. 16, 1993, Ser. No. 9,997
Claims priority, application Japan, Oct. 16, 1992, 4-30455
Term of patent 14 years
U.S. Cl. D14—115



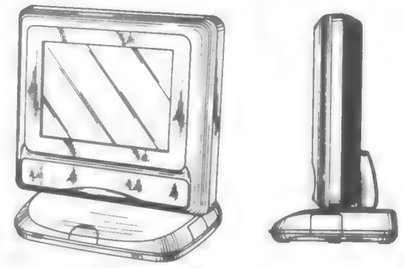
351,832
ROTATING MULTIPLE IMAGE AUDIO/VIDEO CD UNIT
Jeannetta K. Anderson, 902 E. Jefferson St., Kokomo, Ind. 46901
Filed May 11, 1992, Ser. No. 837,624
Term of patent 14 years
U.S. Cl. D14—124



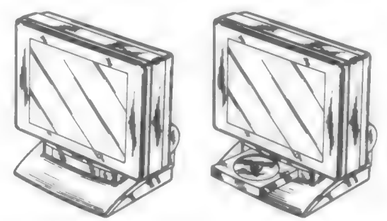
351,833
TELEVISION RECEIVER
Mitsuru Takami, and Yoshinori Harada, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 23, 1993, Ser. No. 9,739
Claims priority, application Japan, Dec. 24, 1992, 4-38483
Term of patent 14 years
U.S. Cl. D14—126



351,834
TELEVISION RECEIVER
Mitsuru Takami; Yoshinori Harada, and Hiroyuki Maeno, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 12, 1993, Ser. No. 15,276
Claims priority, application Japan, May 13, 1993, 5-14033
Term of patent 14 years
U.S. Cl. D14—126



351,835
COMBINED TELEVISION RECEIVER AND DISK PLAYER
Kuniyuki Kawamoto, and Osamu Sugihara, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 15, 1993, Ser. No. 15,350
Claims priority, application Japan, May 17, 1993, 5-14322
Term of patent 14 years
U.S. Cl. D14—129



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351,836
PAGER
Albert L. Nagele, Wilmette; Leonid Soren, Lincolnwood, and Shrirang Jambhekar, Schaumburg, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 22, 1993, Ser. No. 3,941
Term of patent 14 years
U.S. Cl. D14—191



351,837
SELECTIVE CALL RECEIVER
William J. Scheid, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 10, 1993, Ser. No. 12,794
Term of patent 14 years
U.S. Cl. D14—191



351,838
SPEAKER
Charles Rozier, 40 E. 9th St., No. 6F, New York, N.Y. 10003, and Philip K. G. Jones, 22B Mohawk Dr., Londonderry, N.H. 03053
Filed Jan. 6, 1992, Ser. No. 817,404
Term of patent 14 years
U.S. Cl. D14—214



351,839
SPEAKER
Keith A. Ballard; Allen S. Baroa, both of Baltimore; Gary B. Davis, Lutherville; Christian H. Fink; Stuart W. Lumsden, both of Towson; Dale B. Rose, Baltimore, all of Md., and Peter W. Bressler, Philadelphia, Pa., assignors to Polk Investment Corporation, Wilmington, Del.
Filed Mar. 20, 1992, Ser. No. 854,268
The portion of the term of this patent subsequent to Oct. 11, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—214



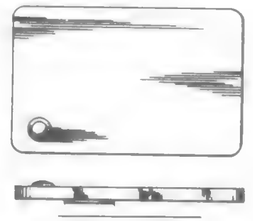
351,840
HOUSING FOR A MICROPHONE
Bruce D. Hillier, Hawthorn Woods; James S. Cleary, Westchester, and Bradford F. Butts, Des Plaines, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 28, 1993, Ser. No. 13,603
Term of patent 14 years
U.S. Cl. D14—228



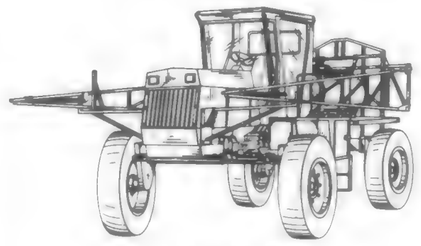
351,841
HANDHELD PORTABLE MODEM
Lowell E. Blankenship, Athens; Jimmy M. Page, Woodville, and Gerald H. Click, Huntsville, all of Ala., assignors to Universal Data Systems, Inc., Huntsville, Ala.
Filed Oct. 7, 1993, Ser. No. 13,958
Term of patent 14 years
U.S. Cl. D14—742



351,842
TELEPHONE DIALER CARD
Jeanine J. Bazemore, Omaha, Nebr., assignor to Dial One Fastcard, Omaha, Nebr.
Filed May 1, 1991, Ser. No. 694,025
Term of patent 14 years
U.S. Cl. D14—245



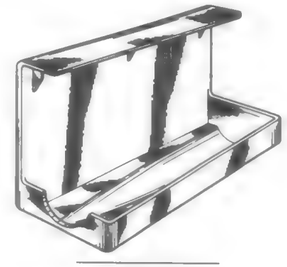
351,843
AGRICULTURAL IMPLEMENT
Roger L. Larson, Waconia, and Norman A. Bauer, Watertown, both of Minn., assignors to Ag-Chem Equipment Co., Inc., Minnetonka, Minn.
Filed May 3, 1993, Ser. No. 7,877
Term of patent 14 years
U.S. Cl. D15—13



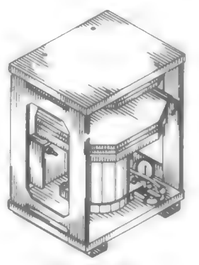
351,844
EXTENSION FOR A CHIPPER/SHREDDER INLET CHUTE
Thomas O. Chesser, Rensselaer, N.Y., assignor to Garden Way Incorporated, Troy, N.Y.
Filed Jan. 17, 1992, Ser. No. 826,154
Term of patent 14 years
U.S. Cl. D15—28



351,845
REFRIGERATOR RACK
Warren F. Johnson; Kenneth M. Hattori, and Roger E. Hamilton, all of Galesburg, Ill., assignors to Maytag Corporation, Newton, Iowa
Filed Dec. 22, 1992, Ser. No. 2,758
Term of patent 14 years
U.S. Cl. D15—89



351,846
VULCANIZER
Douglas J. Goss, North Kingstown, R.I., assignor to Conley Casting Supply Corp., Warwick, R.I.
Filed Jul. 7, 1993, Ser. No. 10,435
Term of patent 14 years
U.S. Cl. D15—135

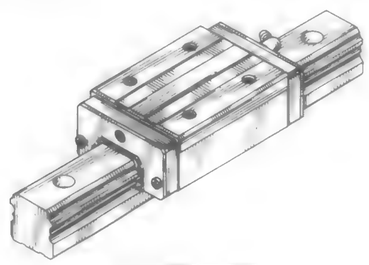


351,847
WORKBENCH FOR ROLLER SUPPORT
Zbigniew Nowiewicz, Kempenich, Fed. Rep. of Germany, assignor to Wolfcraft GmbH, Loehstrasse Weibern, Fed. Rep. of Germany
Filed Jun. 28, 1993, Ser. No. 9,979
Term of patent 14 years
U.S. Cl. D15—141

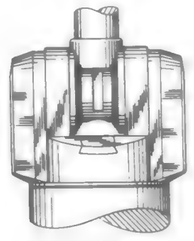


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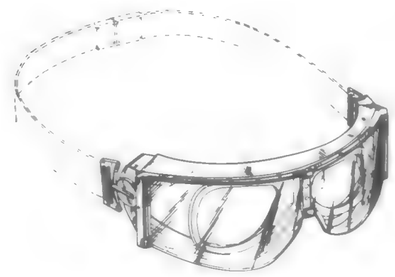
351,848
BALL BEARING FOR RECTILINEAR SLIDING
Mitsuru Yamazaki, Ojiya, Japan, assignor to Nippon Bearing Co., Ltd., Niigata, Japan
Filed Jan. 13, 1993, Ser. No. 3,668
Term of patent 14 years
U.S. Cl. D15—143



351,849
ROBOTIC SHOULDER
Victor Cheung, Arlington, and Amy Potts, Somerville, both of Mass., assignors to Barrett Technology, Inc., Cambridge, Mass.
Filed Jul. 9, 1993, Ser. No. 10,562
Term of patent 14 years
U.S. Cl. D15—199



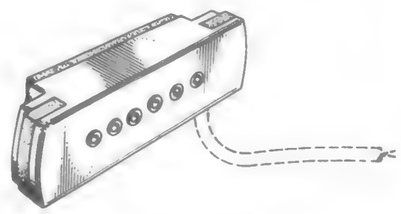
351,850
GOGGLES WITH INSERT LENS
Maurice Bollé, Oyonnax, France, assignor to Etablissments Bollé S.N.C., Oyonnax, France
Filed Feb. 11, 1993, Ser. No. 4,730
Term of patent 14 years
U.S. Cl. D16—304



351,851
CAMERA AND STROBE SUPPORT BRACKET
Gary R. Justice, 21565 Verdun, Farmington Hills, Mich. 48336
Filed Mar. 18, 1993, Ser. No. 5,952
Term of patent 14 years
U.S. Cl. D16—243



351,852
ELECTROMAGNETIC PICKUP FOR ACOUSTICAL GUITAR
Kevin J. Beller, Santa Barbara, Calif., assignor to Carter Duncan Corp., Santa Barbara, Calif.
Filed Nov. 22, 1993, Ser. No. 15,557
Term of patent 14 years
U.S. Cl. D17—20



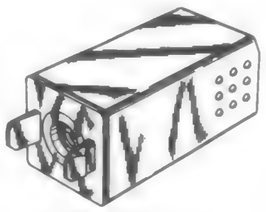
351,853
ELECTRONIC CALCULATOR HAVING THE FUNCTIONS OF TELEPHONE BOOK, ADDRESS BOOK, CALENDAR, SCHEDULE BOOK AND MEMO BOOK
Yukinori Ido, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 28, 1992, Ser. No. 921,484
Term of patent 14 years
U.S. Cl. D18—7



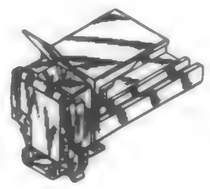
351,854
ELECTRONIC CALCULATOR HAVING THE FUNCTIONS OF TELEPHONE BOOK, ADDRESS BOOK, CALENDAR, SCHEDULE BOOK AND MEMO BOOK
Kenji Takahata, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Nov. 24, 1992, Ser. No. 1,856
Term of patent 14 years
U.S. Cl. D18—7



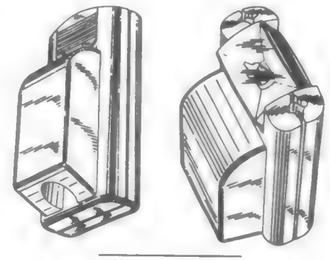
351,855
INK CARTRIDGE FOR PRINTER
Hideaki Kubota, Kumae; Toshihiko Ujita, Yamato; Kenjiro Watanabe, Tokyo; Terachika Onoda, Yokohama, and Kayomi Sato, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 28, 1993, Ser. No. 10,090
Claims priority, application Japan, Dec. 29, 1992, 4-38987
Term of patent 14 years
U.S. Cl. D18—56



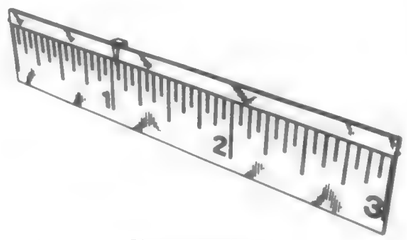
351,856
PRINTING HEAD BODY FOR PRINTER
Kenjiro Watanabe, Tokyo; Yasuo Kotaki, and Masanori Takenouchi, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 28, 1993, Ser. No. 10,093
Claims priority, application Japan, Dec. 29, 1992, 4-38903
Term of patent 14 years
U.S. Cl. D18—56



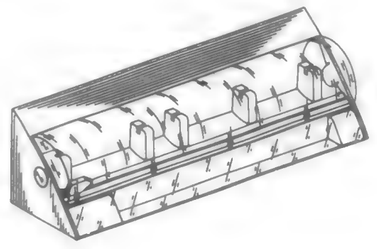
351,857
COMBINED WRITING INSTRUMENT HOLDER AND FLASHLIGHT
Sai Y. Tam, Room 1606, Hollywood Plaza, 610 Nathan Road, Kowloon, Hong Kong
Filed Dec. 28, 1992, Ser. No. 3,032
Term of patent 14 years
U.S. Cl. D19—36



351,858
RULER TEACHING APPARATUS
John J. Jones, 410 Washington, St. Joe, Ind. 46785
Filed Mar. 3, 1993, Ser. No. 5,388
Term of patent 14 years
U.S. Cl. D19—64

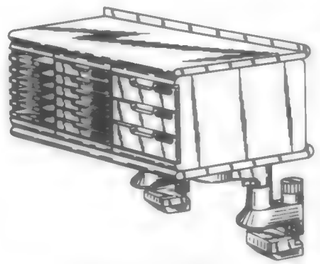


351,859
TAPE DISPENSER
William Elstein; C. Byron Vaughan, and Clarence C. Kersey, all of Sarasota, Fla., assignors to Mod-Tape, Inc., Sarasota, Fla.
Filed Jan. 21, 1992, Ser. No. 823,556
Term of patent 14 years
U.S. Cl. D19—69

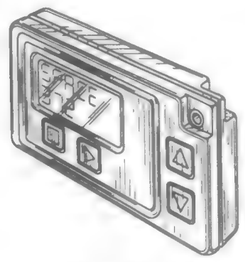


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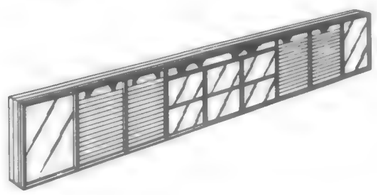
351,860
SURFACE-MOUNTABLE PLURAL PAPER TRAY UNIT
Balthasar Kirchner, Babahofstrasse 8, A-4070 Eferding, and Siegfried Schleicher, Othing 9, A-4611 Buchkirchen, both of Austria
Filed Sep. 2, 1992, Ser. No. 939,526
Claims priority, application Austria, Mar. 9, 1992, MU902/92
Term of patent 14 years
U.S. Cl. D19—92



351,861
PARKING LOT LOCATION INDICATOR
Andrew K. Anderson, Shreveport, La., and Keith A. Becker, Ransom Canyon, Tex., assignors to Gencor, Inc., Ransom Canyon, Tex.
Filed Oct. 1, 1993, Ser. No. 13,772
Term of patent 14 years
U.S. Cl. D20—18



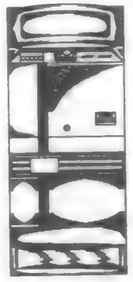
351,862
SIGN BOARD
Blake A. Jarrett, Toronto, Canada, assignor to David Wolf Integrated Marketing Inc., Toronto, Canada
Filed Jan. 14, 1994, Ser. No. 17,492
Term of patent 14 years
U.S. Cl. D20—39



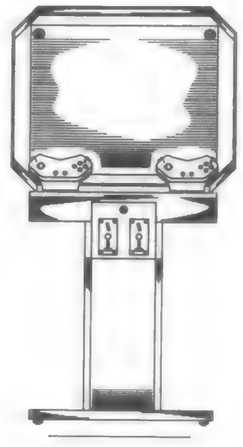
351,863
FREE STANDING SIGN STAND
Robert Sarkisian, Southfield; David J. Muir, Farmington Hills, and David U. Hillstrom, Novi, all of Mich., assignors to Marketing Displays, Inc., Farmington Hills, Mich.
Filed Jun. 11, 1993, Ser. No. 9,460
Term of patent 14 years
U.S. Cl. D20—41



351,864
ELECTRONIC GAME HOUSING
Dirk I. Brettschneider, Lübbecke, Fed. Rep. of Germany, assignor to adp Gauselmann GmbH, Lübbecke, Fed. Rep. of Germany
Filed Jun. 22, 1992, Ser. No. 902,676
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1992, M9201938.2
Term of patent 14 years
U.S. Cl. D21—13



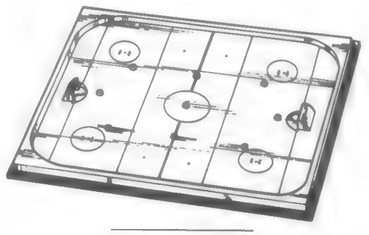
351,865
ELECTRONIC GAME HOUSING
Dirk I. Brettschneider, Lübbecke, Fed. Rep. of Germany, assignor to adp Gauselmann GmbH, Lübbecke, Fed. Rep. of Germany
Filed Aug. 13, 1992, Ser. No. 929,806
Term of patent 14 years
U.S. Cl. D21—13



351,866
ELECTRONIC GAME HOUSING
Kevin A. Freels, Sacramento, Calif., and David L. Burrell, Sun Valley, Nev., assignors to New Gaming Systems, Sacramento, Calif.
Filed Oct. 7, 1993, Ser. No. 13,938
Term of patent 14 years
U.S. Cl. D21—13



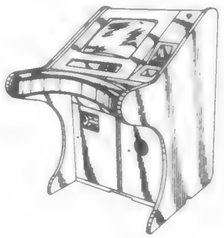
351,867
GAME BOARD
James R. Rafferty, 2015 Alicia, Royal Oak, Mich. 48073
Filed Jul. 26, 1993, Ser. No. 11,105
Term of patent 14 years
U.S. Cl. D21—18



351,868
BUNT TRAINING BASEBALL BAT
Donald Pendergast, 54 Anderson Dr., Methuen, Mass. 01844
Filed Apr. 5, 1993, Ser. No. 6,713
Term of patent 14 years
U.S. Cl. D21—211

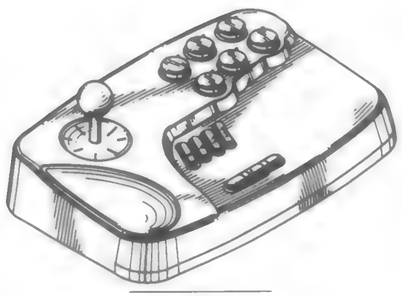


351,869
VIDEO GAME CABINET
Wayne H. Rothschild, Wheeling; Gregory J. Tastad, Stone Park; Herbert H. Hausmann, Lincolnshire, all of Ill.; Robin H. Seaver, Walworth, Wis.; Adam Rhine, Skokie, and William Stringfellow, Roselle, both of Ill., assignors to WMS Gaming, Inc., Chicago, Ill.
Filed Sep. 17, 1993, Ser. No. 13,099
Term of patent 14 years
U.S. Cl. D21—37

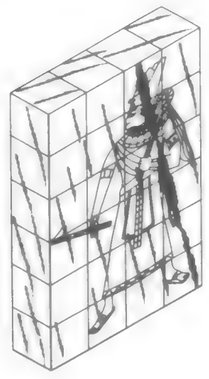


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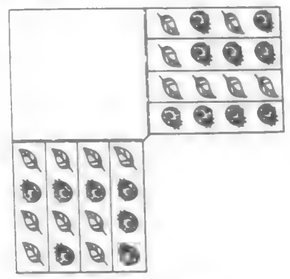
351,870
TELEVISION GAME CONTROLLER
Wai-Man Leung, Block E, 18/F, Flat 2, Lak Yeung Sun Chuen, Tsuen Wan, Hong Kong
Filed Jul. 14, 1993, Ser. No. 10,643
Term of patent 14 years
U.S. Cl. D21—48



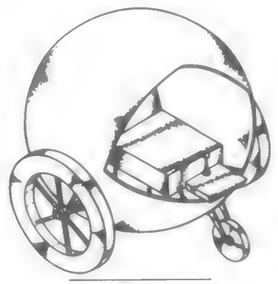
351,871
TOY
Fayek Kandiel, 230 Lantern Rd., No. 23, Revere, Mass. 02151
Filed Apr. 26, 1993, Ser. No. 7,515
Term of patent 14 years
U.S. Cl. D21—104



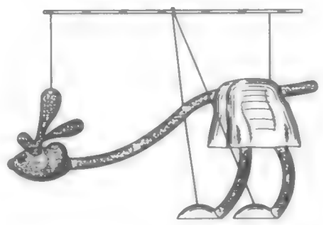
351,872
PUZZLE
Alfred R. Bates, Stonegate, England, assignor to Ladybird Books Limited, Loughborough, England
Division of Ser. No. 856,490, Mar. 24, 1992, Pat. No. D. 345,966. This application Jan. 18, 1994, Ser. No. 17,706
Term of patent 14 years
U.S. Cl. D21—104



351,873
MOBILE REMOTE CONTROLLED TOY
Julius Jones, Jr., 917 W. 68th St., and Bernard Redmond, 7725 S. Adr., both of Chicago, Ill. 60621
Filed Feb. 5, 1993, Ser. No. 4,845
Term of patent 14 years
U.S. Cl. D21—134



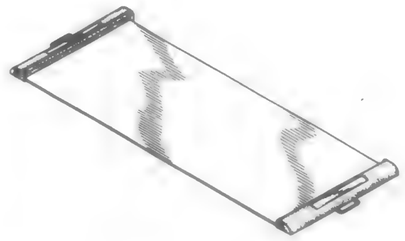
351,874
PUPPET
Joy A. Reester, 216 George St., and Shirley Hammond, 212 Lynhurst Ave., both of North Syracuse, N.Y. 13212
Filed Jan. 8, 1993, Ser. No. 3,395
Term of patent 14 years
U.S. Cl. D21—152



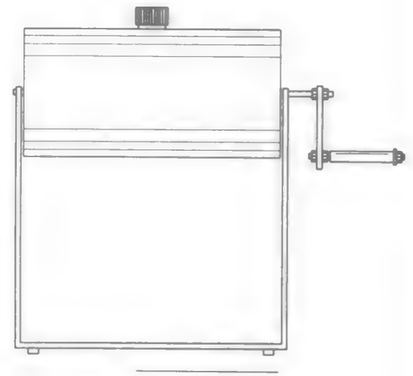
351,875
STUFFED TOY BEAR
Jack J. Ciancimino, 14 Hedges Ave., East Hampton, N.Y. 11937
Filed Feb. 22, 1993, Ser. No. 5,063
Term of patent 14 years
U.S. Cl. D21—159



351,876
PHYSICAL EXERCISE PLATFORM
Jeffrey M. Koblick, 351 Townes Rd., Wayzata, Minn. 55391
Filed May 3, 1993, Ser. No. 7,876
Term of patent 14 years
U.S. Cl. D21—191



351,877
DRUM MIXER FOR LOTTERY GAME BALLS
L. J. Locklear, 3315 Oliver Hills Rd., Greensboro, N.C. 27406
Filed Oct. 14, 1993, Ser. No. 14,157
Term of patent 14 years
U.S. Cl. D21—39

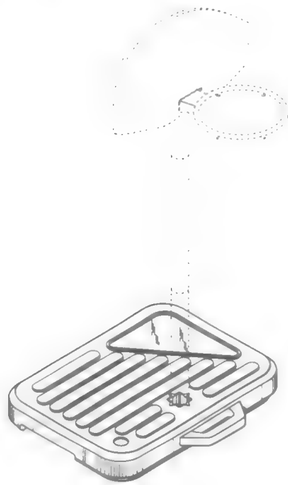


351,878
PHYSICAL EXERCISE STICK
Karin R. Globus, 658 Columbus Dr. East, Tierra Verde, Fla. 33715
Filed Feb. 8, 1993, Ser. No. 4,589
Term of patent 14 years
U.S. Cl. D21—198

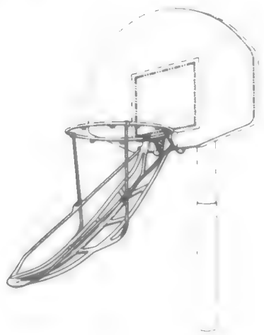


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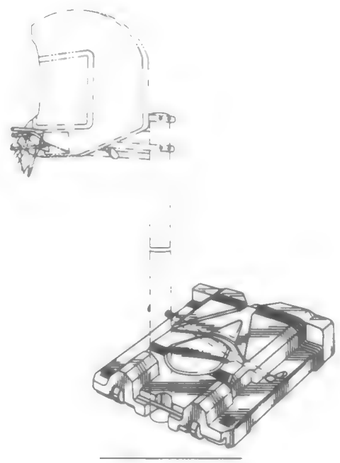
351,879
BASE FOR A BASKETBALL GOAL
Lonny R. Matherne, #10 Chimes Cir., Ogden, Utah 84405; Barry D. Mower, 3310 E. Twin Peaks Dr., Layton, Utah 84040, and Kelly Taylor, 91 W. 1100 North, Layton, Utah 84041
Filed Jul. 30, 1993, Ser. No. 11,216
Term of patent 14 years
U.S. Cl. D21—201



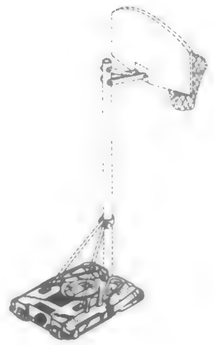
351,880
BASKETBALL RETURN ATTACHMENT
Kelly Taylor, 91 W. 1100 North, Layton, Utah 84040, and Lonny R. Matherne, #10 Chimes Cir., Odgen, Utah 84405
Filed Jul. 30, 1993, Ser. No. 11,294
Term of patent 14 years
U.S. Cl. D21—201



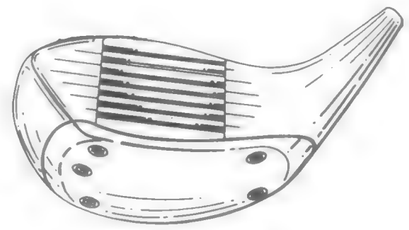
351,881
BASE FOR A BASKETBALL GOAL
Kelly Taylor, 91 W. 1100 N., Layton, Utah 84040; Barry D. Mower, 3310 E. Twin Peaks Dr., Layton, Utah 84040, and Loanny R. Matherne, #10 Chimes Cir., Ogden, Utah 84405
Filed Jul. 30, 1993, Ser. No. 11,296
Term of patent 14 years
U.S. Cl. D21—201



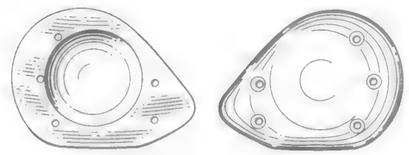
351,882
BASE FOR A BASKETBALL GOAL
Kelly Taylor, 91 W. 1100 North; Barry D. Mower, 3310 E. Twin Peaks Dr., both of Layton, Utah 84040, and Donny R. Matherne, #10 Chimes Cir., Ogden, Utah 84405
Filed Jul. 30, 1993, Ser. No. 11,300
Term of patent 14 years
U.S. Cl. D21—201



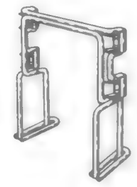
351,883
WOOD TYPE GOLF CLUB HEAD
John A. Solheim, Phoenix, and Anthony D. Serrano, Glendale, both of Ariz., assignors to Karsten Manufacturing Corporation, Phoenix, Ariz.
Filed Jan. 4, 1993, Ser. No. 3,254
Term of patent 14 years
U.S. Cl. D21—214



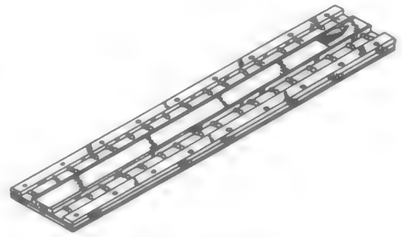
351,884
SOLE PLATE FOR WOOD TYPE GOLF CLUB HEADS
John A. Solheim, Phoenix, and Anthony D. Serrano, Glendale, both of Ariz., assignors to Karsten Manufacturing Corporation, Phoenix, Ariz.
Filed Jan. 4, 1993, Ser. No. 3,263
Term of patent 14 years
U.S. Cl. D21—221



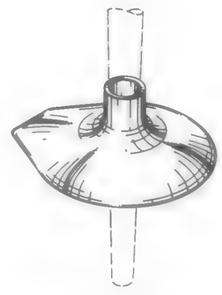
351,885
DEVICE FOR CARRYING SKIS AND POLES
Bernard Gonthier, Lambton, Canada, assignor to Les Productions Gibergo Inc., Lambton, Canada
Filed Dec. 7, 1992, Ser. No. 2,275
Term of patent 14 years
U.S. Cl. D21—230



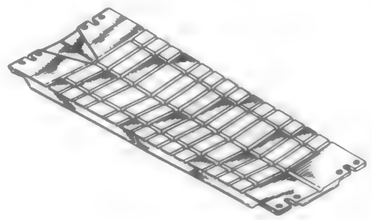
351,886
SKI JUMP TRACK APPARATUS
Michael H. Holland, South Burlington, Vt., assignor to Snow-Tile, Inc., Philadelphia, Pa.
Filed Dec. 21, 1992, Ser. No. 2,804
Term of patent 14 years
U.S. Cl. D21—230



351,887
SKI POLE BASKET
David W. Zimmerman, 45 N. Phyllis, #213, Mesa, Ariz. 85201
Filed Nov. 1, 1993, Ser. No. 14,756
Term of patent 14 years
U.S. Cl. D21—230

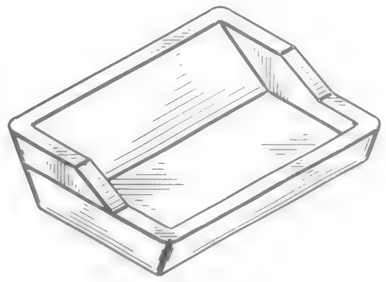


351,888
BOWLING ALLEY BOUNCE BOARD
Michael W. Stephens, Richmond, Va., assignor to AMF Bowling, Inc., Mechanicsville, Va.
Filed Jul. 13, 1993, Ser. No. 10,584
Term of patent 14 years
U.S. Cl. D21—233

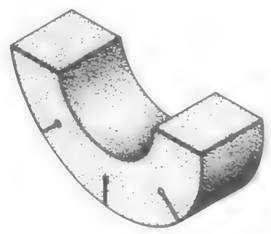


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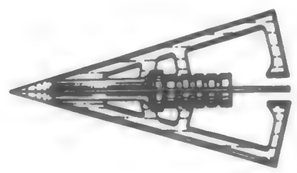
351,889
BUOYANT RECEPTACLE FOR OBJECT RETENTION FOR SWIMMERS
Dona Buchanan, 6250 - 160th La., Ramsey, Minn. 55303
Filed Oct. 18, 1993, Ser. No. 14,239
Term of patent 14 years
U.S. Cl. D21—237



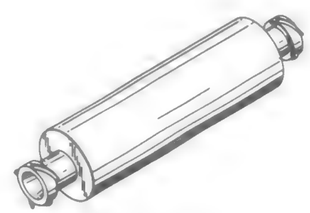
351,890
HOLDER FOR FISHING RODS
Larry A. Rasmussen, Andover, Minn., assignor to Oxboro Medical International, Inc., Ham Lake, Minn.
Filed Apr. 22, 1993, Ser. No. 7,437
Term of patent 14 years
U.S. Cl. D22—147



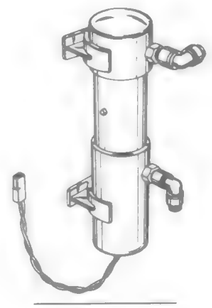
351,891
ARROWHEAD
Greg E. Tinsley, 17231 Tuba St., Northridge, Calif. 91325
Filed Nov. 2, 1992, Ser. No. 1,071
Term of patent 14 years
U.S. Cl. D22—115



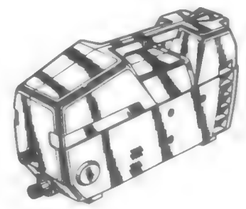
351,892
WATER PURIFICATION CARTRIDGE FOR A DENTAL INSTRUMENT
Leo H. Wolf, and Mark F. Wolf, both of River Falls, Wis., assignors to Time Motion Systems Company, River Falls, Wis.
Filed Nov. 9, 1992, Ser. No. 1,252
Term of patent 14 years
U.S. Cl. D23—207



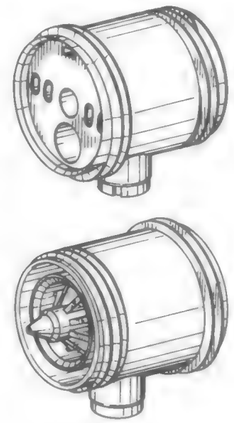
351,893
ULTRA-VIOLET WATER TREATMENT DEVICE
James P. Whitesel, 318 S. Sequoia Ave., Brea, Calif. 92621
Filed Dec. 21, 1992, Ser. No. 2,860
Term of patent 14 years
U.S. Cl. D23—207



351,894
COMPRESSOR FOR A HIGH PRESSURE WASHER UNIT
Corrado Reverberi, Modena, Italy, assignor to Wagner Spray Tech Corporation, Minneapolis, Minn.
Filed May 21, 1993, Ser. No. 8,625
Term of patent 14 years
U.S. Cl. D23—213



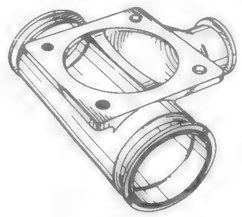
351,895
SPRAY GUN HEAD
Alan H. Fritz, Toledo, Ohio, and William E. Whitt, Temperance, Mich., assignors to Ransburg Corporation, Indianapolis, Ind.
Filed Sep. 17, 1993, Ser. No. 13,065
Term of patent 14 years
U.S. Cl. D23—213



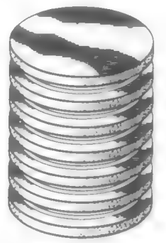
351,896
HAND OPERATED PUMP
Gregory S. Sundheim, 5170 Juniper, Littleton, Colo. 80123, and John M. Sundheim, 1930 S. Navajo St., Denver, Colo. 80223
Filed Jun. 9, 1993, Ser. No. 9,258
Term of patent 14 years
U.S. Cl. D23—231



351,897
HOUSING FOR DIAPHRAM VALVE
Donald J. Keeslar, 1601 Bay Meadows Dr., Modesto, Calif. 95350
Filed Oct. 1, 1993, Ser. No. 13,801
Term of patent 14 years
U.S. Cl. D23—233



351,898
FOAM DISK PIG
Herbert L. Stowers, Jr., Bellaire, Tex., assignor to Pipeline Dehydrators, Inc., Houston, Tex.
Filed Jul. 21, 1992, Ser. No. 917,605
Term of patent 14 years
U.S. Cl. D23—260

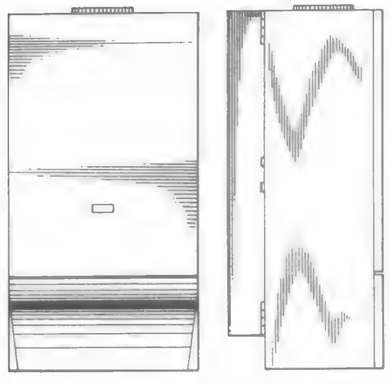


351,899
HEAT TRAP
George M. Isber, 1 Sir Constantine Drive, Markham, Ontario, Canada L3P 2X1
Filed Mar. 1, 1993, Ser. No. 5,272
Term of patent 14 years
U.S. Cl. D23—268

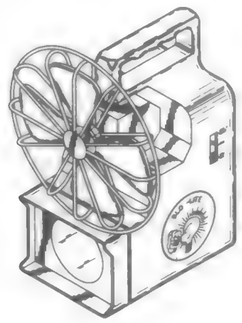


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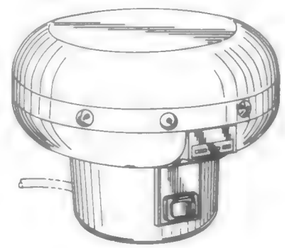
351,900
WATER HEATER
Rene Prevot, Drancy, France, assignor to Societe Elm LeBlanc, Drancy, France
Filed Sep. 20, 1991, Ser. No. 763,075
Claims priority, application France, Mar. 22, 1991, 911,794
Term of patent 14 years
U.S. Cl. D23—318



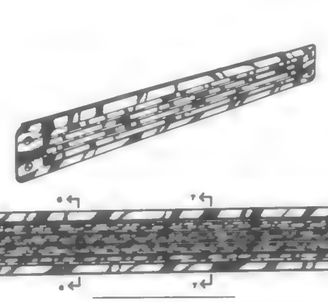
351,901
COMBINATION HAND-HELD FAN AND FLASHLIGHT
Stanley T. Boruch, and Annette H. Boruch, both of 2 Utah Ct., Jackson, N.J. 08527
Filed Jan. 31, 1994, Ser. No. 18,176
Term of patent 14 years
U.S. Cl. D23—328



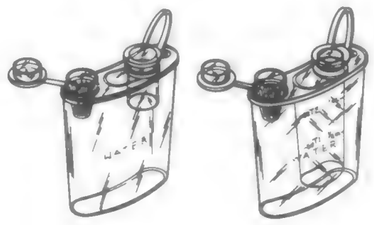
351,902
THERAPEUTIC IONISER
Joshua Shaw, P.O. Box 686, Surfers Paradise, Queensland, Australia
Filed Jan. 11, 1993, Ser. No. 3,595
Term of patent 14 years
U.S. Cl. D23—364



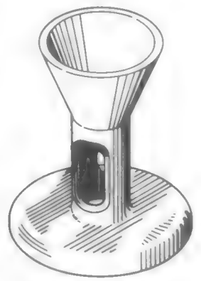
351,903
LOUVERED VENT FOR BOATS
Warwick M. Whitley, II, Lynn Haven, Fla., assignor to Attwood Corporation, Lowell, Mich.
Filed Aug. 26, 1993, Ser. No. 12,223
Term of patent 14 years
U.S. Cl. D23—388



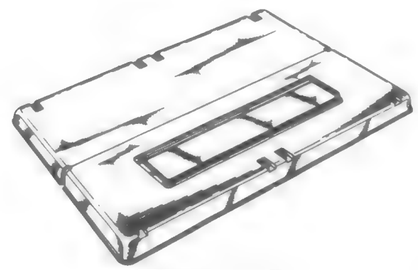
351,904
COMBINED MEDICATION STORAGE AND DISPENSING CONTAINER
David L. Maze, 121 Greenland La., St. Louis, Mo. 63125
Filed Apr. 27, 1992, Ser. No. 874,365
Term of patent 14 years
U.S. Cl. D24—121



351,905
CAPPING TOOL FOR MEDICAL NEEDLES AND SHARPS
James L. Lee, Jr., 2300 Massard Rd., Fort Smith, Ark. 72903
Filed Feb. 5, 1993, Ser. No. 4,495
Term of patent 14 years
U.S. Cl. D24—130



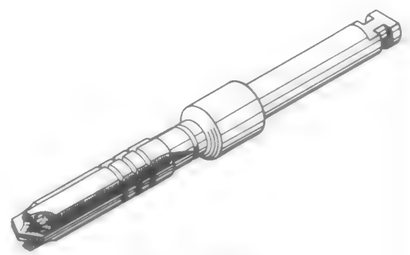
351,906
MEDICAL WASTE DISPOSAL CONTAINER LID
Gordon Marsh, West Hills, Calif., assignor to Devon Industries, Inc., Chatsworth, Calif.
Filed Apr. 7, 1993, Ser. No. 6,786
Term of patent 14 years
U.S. Cl. D24—131



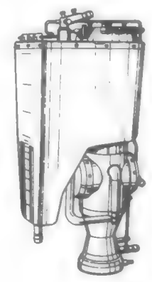
351,907
SLOTTED CAST CUTTER BLADE BASE
John T. Matthai, and Richard F. Huyser, both of Kalmazoo, Mich., assignors to Stryker Corporation, Kalamazoo, Mich.
Filed May 26, 1993, Ser. No. 8,885
Term of patent 14 years
U.S. Cl. D24—146



351,908
MULTI-FLUTED DENTAL IRRIGATION DRILL
Leon Shaw, 1225 Broken Sound Parkway, NW., Boca Raton, Fla. 33487
Filed Oct. 28, 1992, Ser. No. 893
Term of patent 14 years
U.S. Cl. D24—152

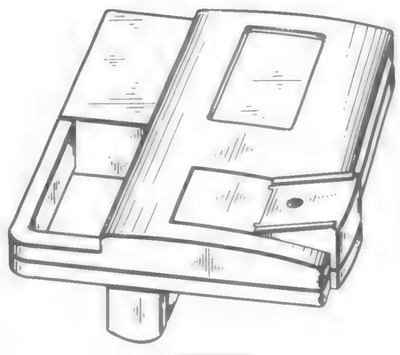


351,909
OXYGENATOR
Atsuhiko Nogawa, Nakai, and Tetsuya Arioka, Tokyo, both of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 4, 1993, Ser. No. 4,429
Claims priority, application Japan, Aug. 7, 1992, 4-23506
Term of patent 14 years
U.S. Cl. D24—169



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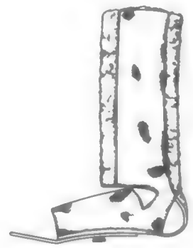
351,910
PORTABLE MEDICAL ANALYZER
Carter R. Anderson, Eagan; Walter L. Sembrowich, White Bear Lake; Kee V. Sin, Lino Lakes, and Frank Solomon, Plymouth, all of Minn., assignors to Diametrics Medical, Inc., Roseville, Minn.
Filed Feb. 25, 1993, Ser. No. 5,165
Term of patent 14 years
U.S. Cl. D24—169



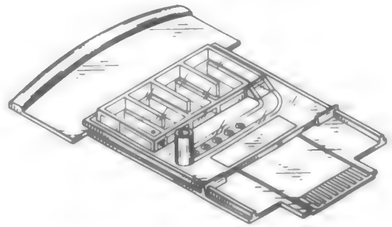
351,911
MEDICAL AND DENTAL CONTROL CONSOLE FOR A LASER
John D. Myers, Hilton Head Island, S.C., assignor to Kigre, Inc., Hilton Head Island, S.C.
Filed Feb. 5, 1992, Ser. No. 832,179
Term of patent 14 years
U.S. Cl. D24—177



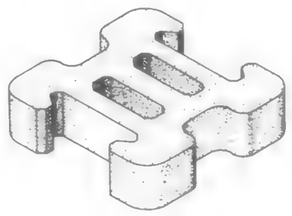
351,912
COMBINED LOWER LEG AND FOOT SPLINT
Craig Turtso, Clearwater; Linda Lee, and Derek Slater, both of Palm Harbor, all of Fla., assignors to Medassist-OP, Inc., Palm Harbor, Fla.
Filed Nov. 23, 1993, Ser. No. 15,651
Term of patent 14 years
U.S. Cl. D24—192



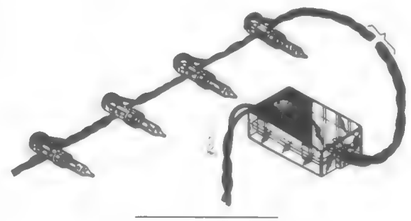
351,913
DISPOSABLE ELECTROCHEMICAL MEASUREMENT CARTRIDGE FOR A PORTABLE MEDICAL ANALYZER
Martin G. Hieb, Roseville; Barbara E. Roth, Shoreview; Russell L. Morris, St. Paul, and David W. Deetz, North Oaks, all of Minn., assignors to Diametrics Medical, Inc., Roseville, Minn.
Filed Feb. 25, 1993, Ser. No. 5,164
Term of patent 14 years
U.S. Cl. D24—223



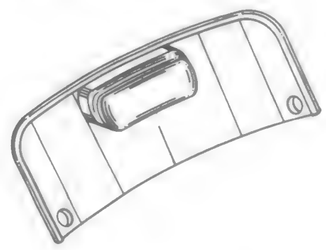
351,914
SOIL EROSION PREVENTION BLOCK
Kossuth J. Landry, Jr., P.O. Box 518, Humble, Tex. 77347
Filed Feb. 22, 1993, Ser. No. 5,230
Term of patent 14 years
U.S. Cl. D25—115



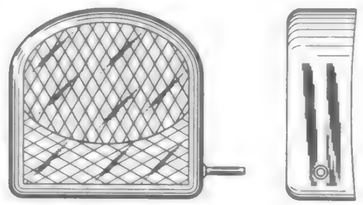
351,915
SET OF TRANSPARENT CHRISTMAS LIGHTS
Terry Hermanson, New York, N.Y., assignor to Mr. Christmas, Inc., New York, N.Y.
Filed Feb. 7, 1992, Ser. No. 831,338
Term of patent 14 years
U.S. Cl. D26—25



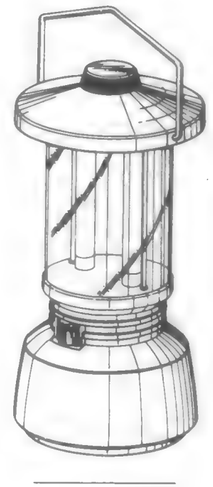
351,916
VEHICLE WHEEL WELL LIGHT
Rowland H. Goble, 145 W. Crystal Lake Ave., Lake Mary, Fla. 32746-2913
Filed Sep. 27, 1993, Ser. No. 13,566
Term of patent 14 years
U.S. Cl. D26—28



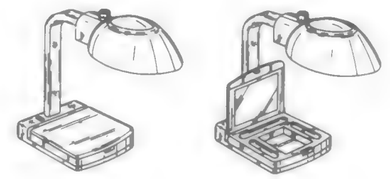
351,917
BRAKE LIGHT FOR HELMETS
Lewis F. Jones, Jr., P.O. Box 559, Magnolia, Tex. 77355
Filed Aug. 3, 1992, Ser. No. 924,254
Term of patent 14 years
U.S. Cl. D26—39



351,918
TWIN LAMP FLUORESCENT LANTERN
Tit Wing Poon, Hong Kong, Hong Kong, assignor to Flying Dragon Development Limited, Chai Wan, Hong Kong
Filed May 11, 1993, Ser. No. 8,145
Claims priority, application United Kingdom, Mar. 4, 1993, 2029579
Term of patent 14 years
U.S. Cl. D26—42

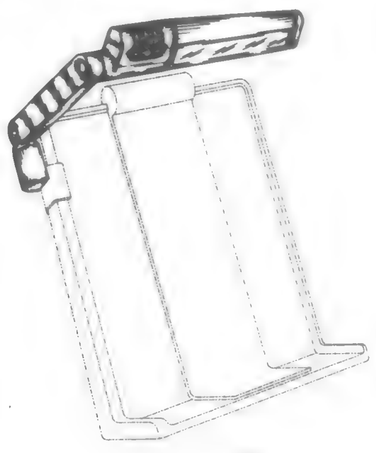


351,919
COMBINED DESK LAMP AND LIFT OFF TRAY
Brooks Rorke, Fairfield, Conn., assignor to Holmes Products Corp., Milford, Mass.
Filed Jan. 4, 1993, Ser. No. 3,260
Term of patent 14 years
U.S. Cl. D26—51

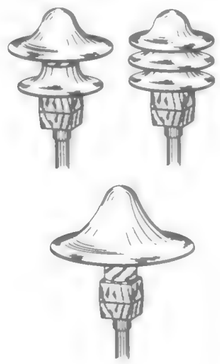


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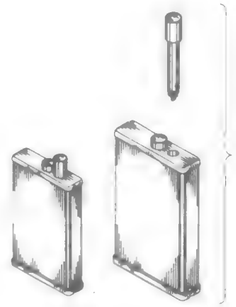
351,920
ADJUSTABLE COMPUTER MONITOR LIGHT
Neil Nagy, Rancho Palos Verdes, and J. Kipton Pohlman, Los Angeles, both of Calif., assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Sep. 27, 1993, Ser. No. 13,578
Term of patent 14 years
U.S. Cl. D26—65



351,921
OUTDOOR LANDSCAPE LIGHTING FIXTURE
William F. Harris, and Michael R. Helms, both of Monroe, N.C., assignors to W.F. Harris Lighting, Inc., Monroe, N.C.
Filed Jul. 2, 1992, Ser. No. 908,022
Term of patent 14 years
U.S. Cl. D26—68



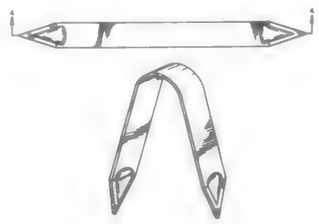
351,922
DESIGN FOR A CIGARETTE LIGHTER
Michael P. Reynolds, Warwick, R.I., assignor to Colibri Corporation, Providence, R.I.
Filed Nov. 15, 1993, Ser. No. 15,301
Term of patent 14 years
U.S. Cl. D27—147



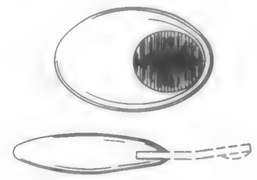
351,923
SOAP BAR
John Crawford, Lake Mahopac, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Jun. 25, 1991, Ser. No. 721,367
Term of patent 14 years
U.S. Cl. D28—8.1



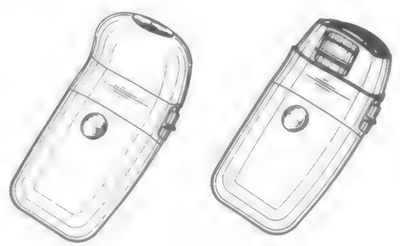
351,924
FACIAL CLEANSER
Morris S. Glover, 6033 Bear Creek Dr., Apt. 104, Bedford Heights, Ohio 44046
Filed Nov. 27, 1991, Ser. No. 798,799
Term of patent 14 years
U.S. Cl. D28—9



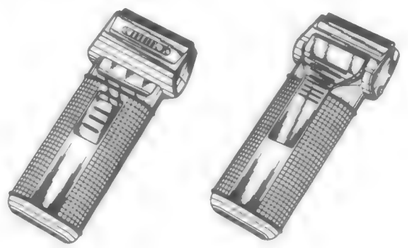
351,925
RAZOR BLADE HANDLE
Edward H. Meisner, Short Hills; Michael P. Ballone, New Providence, and Thomas Van Dyk, Prospect Park, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Nov. 19, 1992, Ser. No. 979,512
Term of patent 14 years
U.S. Cl. D28—48



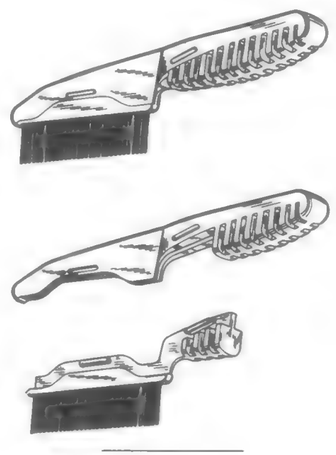
351,926
ELECTRIC SHAVER
Yoshiyuki Nakashima; Takako Takada, and Shinji Yamamoto, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Jun. 15, 1993, Ser. No. 9,498
Claims priority, application Japan, Feb. 17, 1993, 5-4441; Feb. 17, 1993, 5-4442
Term of patent 14 years
U.S. Cl. D28—49



351,927
ELECTRIC SHAVER
Yoshizuki Nakashima; Akio Goto, and Shinji Yamamoto, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Jun. 15, 1993, Ser. No. 9,497
Claims priority, application Japan, Feb. 1, 1993, 5-2647
Term of patent 14 years
U.S. Cl. D28—51



351,928
COMB
Richard K. Ward, The Paddocks, Lapworth Street, Lapworth, Solihull, England
Filed Jul. 23, 1992, Ser. No. 916,403
Term of patent 14 years
U.S. Cl. D28—30



351,929
COMBINED WIRE MESH FACEGUARD AND VISOR
Michael Chiasson, Dollard des Ormeaux, Canada, assignor to Itech Sport Products Inc., Dollard-des-Ormeaux, Canada
Filed Mar. 2, 1992, Ser. No. 843,091
Term of patent 14 years
U.S. Cl. D29—111



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351,930
REINFORCED DIGIT AND PHALANGE PROTECTOR
Tracy A. Snider, and Samuel O. Snider, both of 25 Lepere Village, Dupo, Ill. 62239
Filed Apr. 5, 1993, Ser. No. 6,681
Term of patent 14 years
U.S. Cl. D29—113



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF OCTOBER, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aaslyng, Dorrit A.: *See*—
Outtrup, Helle; Dambmann, Claus; and Aaslyng, Dorrit A., 5,358,865, Cl. 435-221.000.
AB Volvo Penta: *See*—
Rodskier, Christian, 5,358,435, Cl. 440-61.000.
ABB Atom AB: *See*—
Johannesson, Sven-Birger, 5,359,634, Cl. 376-428.000.
Abbott Laboratories: *See*—
Adamczyk, Maciej; Johnson, Donald D.; Mattingly, Phillip G.; Clarisse, Diana E.; Tyner, Joan D.; and Perkowitz, Mary M., 5,359,093, Cl. 549-223.000.
Brooks, Dee W.; and Kolasa, Teodozy J., 5,358,955, Cl. 514-311.000.
Chu, Daniel T.; and Rosen, Terry J., 5,359,088, Cl. 548-557.000.
Clark, Frederic L.; Clift, Gilbert; Hendrick, Kendall B.; Kanewske, William J., III; Lagocki, Peter A.; Martin, Richard R.; Mitchell, James E.; Moore, Larry W.; Pennington, Charles D.; Walker, Edna S.; Smith, B. Jane; Tayi, Apparao; Vaught, James A.; and Yost, David A., 5,358,691, Cl. 422-64.000.
Natwick, Vernon R.; and Lawless, Michael W., 5,357,827, Cl. 74-569.000.
ABCO Office Furniture Inc.: *See*—
Palmer, Dale M., 5,357,874, Cl. 108-50.000.
Abe, Akira, to Seiko Epson Corporation. VCO having voltage-to-current converter and PLL using same. 5,359,298, Cl. 331-2.000.
Abe, Tomohiko: *See*—
Yasuda, Hiroshi; Oae, Yoshihisa; and Abe, Tomohiko, 5,359,202, Cl. 250-492.200.
Abe, Toru: *See*—
Kurosawa, Hisao; Ito, Kohei; Sato, Masayoshi; and Abe, Toru, 5,357,898, Cl. 117-3.000.
Abendroth, Manfred: *See*—
Kaiser, Harry; and Abendroth, Manfred, 5,359,286, Cl. 324-207.200.
Abraham, Kuzhikalail M.; and Alamgir, Mohamed, to EIC Laboratories, Inc. Catalyzed cathodes for electrochemical cells. 5,358,803, Cl. 429-101.000.
Abraham, Leslie R.: *See*—
Kniefel, John H.; Abraham, Leslie R.; Kanengieter, Glenn G., deceased; and Krumholz, Frank C., 5,357,876, Cl. 108-92.000.
Abrams, Joseph, to Woodland Technologies, Inc. Safety system for fluid conduit. 5,357,998, Cl. 137-68.100.
Abretske, Edward V., to Canyon City 4×4. Protective frame structure at rear of vehicle. 5,358,157, Cl. 224-42.040.
Ackermann, Walter T. Plastic article in situ molded to a porous substrate. 5,357,659, Cl. 24-662.000.
ACRO-Techn Inc.: *See*—
Huff, Reggie D., 5,357,914, Cl. 123-79.00C.
Actron Manufacturing Company: *See*—
Cervas, Robert A., 5,359,290, Cl. 324-384.000.
Adachi, Hideki: *See*—
Kuroyanagi, Satoshi; Miyata, Masanori; Adachi, Hideki; Nakamura, Shinichi; Ohki, Naoyuki; Kaneko, Tokuharu; Ozaki, Hiroshi; Tahara, Hisatsugu; Kaneko, Satoshi; Fukada, Taisei; and Takizawa, Mitsuharu, 5,359,391, Cl. 355-204.000.
Adachi, Kenya: *See*—
Nomura, Masayoshi; and Adachi, Kenya, 5,359,559, Cl. 365-200.000.
Adachi, Norihiro: *See*—
Fukui, Kuniaki; and Adachi, Norihiro, 5,357,665, Cl. 29-243.580.
Adamczyk, Maciej; Johnson, Donald D.; Mattingly, Phillip G.; Clarisse, Diana E.; Tyner, Joan D.; and Perkowitz, Mary M., to Abbott Laboratories. Reagents and methods for the detection and quantification of thyroxine in fluid samples. 5,359,093, Cl. 549-223.000.
Adams, Daryl K.: *See*—
Rhodes, Edward J.; Adams, Daryl K.; Berry, Clifford R.; Chang, Ta-Lin; and Lee, David R., 5,359,468, Cl. 360-48.000.
Adams GmbH & Co. Armaturen KG: *See*—
Brueggestrath, Bernd, 5,357,997, Cl. 137-15.000.
Adams, James. Medicine container cap with time indicator. 5,358,117, Cl. 206-534.000.
Adams, Mary B.; Demarest, Scott W.; and Miller, Allen D., to S. C. Johnson & Son, Inc. Spray dispensing package. 5,358,147, Cl. 222-183.000.
Adams, Steven P.: *See*—
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Hyde, Paula; and May, Jennifer, to Keds Corporation, The. Easily fastened shoe. 5,357,691, Cl. 36-54.000.
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Ibbott, Jack K., to Yoshida, Makiko. Self-contained water treatment device. 5,358,617, Cl. 204-248.000.
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Ikeda, Shinji; and Mizukoshi, Masashi, to Toyota Jidosha Kabushiki Kaisha. Duty cycle controller for anti-lock brake pressure regulating valve, using wheel speed deviation from target value and time derivative thereof. 5,358,318, Cl. 303-100.000.
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Surtees, Guy F., to Standard Commercial Tobacco Company, Inc., The. Multiple stage tobacco classifier. 5,358,122, Cl. 209-139.100.

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Suzuki, Hiroaki; Sugama, Akio; and Kojima, Naomi, to Fujitsu Limited Oxygen electrode. 5,358,619, Cl. 204-403.000.

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Swain, Eugene A.: *See*—
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Yaple, Winfred E. Motorcycle lift stand and actuator. 5,358,265, Cl. 280-293.000.
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Boissonnat, Philippe; Loubinoux, Dominique; Roncato, Giordano; Fedorowsky, Robert; and Zanella, Guy, 5,358,680, Cl. 264-177.200.
Zank, Gregg A.: *See*—
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Zarzalis, Nikolaos; and Joos, Franz, to MTU Motoren-Und Turbinen-Union Muenchen GmbH. Burner for gas turbine engines. 5,357,743, Cl. 60-39.230.
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Zebo, Timothy J.: *See*—
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Zeiher, E. H. Kelle; and Soderquist, Cynthia A., to Nalco Chemical Company. Method for inhibiting scale formation and/or dispersing iron in reverse osmosis systems. 5,358,640, Cl. 210-639.000.
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Zeneca Limited: *See*—
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Zenith Electronics Corporation: *See*—
Srivastava, Gopal K., 5,359,368, Cl. 348-641.000.
Zertani, Rudolf; Haberhauer, Helmuth; and Kraemer, Norbert, to Hoechst Aktiengesellschaft. Aftertreatment apparatus for imagewise exposed printing plates. 5,359,201, Cl. 250-492.100.
Zexel Corporation: *See*—
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Zhang, Shenzhi, to Microsoft Corporation. Block-halftoning method and system with compressed error image. 5,359,430, Cl. 358-455.000.
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Zhao, Kai, to Case Corporation. Belt tensioning mechanism. 5,358,452, Cl. 474-133.000.
Zhau, Haiyen E.; and Babaian, Richard J., to Board of Regents, The University of Texas System. Unique protein marker for bladder cancer. 5,359,031, Cl. 530-350.000.
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Ziff, Irving. Process for providing a visually distinctive target by coloring and heat deformation of hook material on the target. 5,358,742, Cl. 427-276.000.
Zimmer, Inc.: *See*—
Hodorek, Robert A., 5,358,530, Cl. 623-20.000.
Zimmer, Johannes. Magnetically pressed doctor blade for cylindrical-screen stencil. 5,357,857, Cl. 101-120.000.
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Zinbarg, Benson, to Sun Hill Industries, Inc. Spider-like decorative object. 5,358,763, Cl. 428-16.000.
Zindorf, Manfred: *See*—
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Ziolo, Ronald F., to Xerox Corporation. Magnetic materials with single-domain and multidomain crystallites and a method of preparation. 5,358,659, Cl. 252-62.540.
Zipper Medical Products, Inc.: *See*—
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Zipperian, Thomas E.: *See*—
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TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF OCTOBER, 1994

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Alexander, Jerry L.; Narayan, Sankar B.; Gerfast, Sten R.; and Nelson, Charles E., to Minnesota Mining and Manufacturing Company. Recording medium annealing process. Re. 34,765, Cl. 156-160.000.

Blair, Alan J., to Outboard Marine Corporation. Exhaust gas discharge system for two-stroke internal combustion engine. Re. 34,764, Cl. 60-313.000.

Chen, Ker-Min: *See*—
Lee, Tzong-Ming; and Chen, Ker-Min, Re. 34,768, Cl. 525-526.000.

Gerfast, Sten R.: *See*—
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Industrial Technology Research Institute: *See*—
Lee, Tzong-Ming; and Chen, Ker-Min, Re. 34,768, Cl. 525-526.000.

Lee, Tzong-Ming; and Chen, Ker-Min, to Industrial Technology Research Institute. Hydantoin or barbituric acid-extended epoxy resin composition. Re. 34,768, Cl. 525-526.000.

Merz, Ekkehard; and Singer, Robert, to Wacker-Chemie GmbH. Laminating and coating adhesive, its manufacturing and use. Re. 34,766, Cl. 156-326.000.

Minnesota Mining and Manufacturing Company: *See*—
Alexander, Jerry L.; Narayan, Sankar B.; Gerfast, Sten R.; and Nelson, Charles E., Re. 34,765, Cl. 156-160.000.

Narayan, Sankar B.: *See*—
Alexander, Jerry L.; Narayan, Sankar B.; Gerfast, Sten R.; and Nelson, Charles E., Re. 34,765, Cl. 156-160.000.

Nelson, Charles E.: *See*—
Alexander, Jerry L.; Narayan, Sankar B.; Gerfast, Sten R.; and Nelson, Charles E., Re. 34,765, Cl. 156-160.000.

Outboard Marine Corporation: *See*—
Blair, Alan J., Re. 34,764, Cl. 60-313.000.

Singer, Robert: *See*—
Merz, Ekkehard; and Singer, Robert, Re. 34,766, Cl. 156-326.000.

Soong, Tsai C. Handle device for sports equipment shafts. Re. 34,767, Cl. 273-81.00R.

Tucker, Ann. Bedding article for supporting infants with gastroesophageal reflux condition, and others. Re. 34,763, Cl. 5-482.000.

Wacker-Chemie GmbH: *See*—
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Lemelson, Jerome H. Molding apparatus. B1 4,318,874, 10-25-94, Cl. 264-40.100.

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adp Gauselmann GmbH: *See*—
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Anderson, Carter R.; Sembrowich, Walter L.; Sin, Kee V.; and Solomon, Frank, to Diametrics Medical, Inc. Portable medical analyzer 351,910, 10-25-94, Cl. D24-169.000.

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Bednar, Charles J., to Vermillion Technologies. Portable cooler and housing therefor for a vehicle. 351,824, 10-25-94, Cl. D12-423.000.

Bedrosian, Bert S., to Iuard-Tech Industries, Inc. Portable motion detector. 351,806, 10-25-94, Cl. D10-196.000.

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Brettschneider, Dirk I., to adp Gauselmann GmbH. Electronic game housing. 351,865, 10-25-94, Cl. D21-13.000.

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Buchanan, Dona. Buoyant receptacle for object retention for swimmers. 351,889, 10-25-94, Cl. D21-237.000.

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Klemm, Siegfried, to Klemm & Sohn. Geranium named Klegom. 8,962, 10-25-94, Cl. 87.120.
Klemm & Sohn: *See*—
Klemm, Siegfried, 8,961, Cl. 87.120.
Klemm, Siegfried, 8,962, Cl. 87.120.
Laboratorie de Physiologie Vegetale: *See*—
Brizard, Jean, 8,959, Cl. 70.300.
Marciel, Jeanne A.: *See*—
Marciel, Stanley G.; and Marciel, Jeanne A., 8,952, Cl. 14.000.
Marciel, Stanley G.; and Marciel, Jeanne A., to DeVor Nurseries, Inc. Hybrid tea rose plant named Devstar. 8,952, 10-25-94, Cl. 14.000.
McGredy, Sam, to DeVor Nurseries, Inc. Hybrid tea rose plant named Machoro. 8,953, 10-25-94, Cl. 20.000.
Peters, Ron D. Peach tree "August Lady". 8,956, 10-25-94, Cl. 43.200.
Polys, Susan M., to Yoder Brothers, Inc. Chrysanthemum plant named White Rochelle. 8,960, 10-25-94, Cl. 82.100.
Schmidt, Hanna: *See*—
Gruppe, Werner; and Schmidt, Hanna, 8,954, Cl. 37.000.
Terra-Nova Nurseries, Inc.: *See*—
Heims, Dan M., 8,958, Cl. 68.100.
Tistram, David R. Scabious plant named Pink Mist. 8,957, 10-25-94, Cl. 68.100.
Vaughn, Terrell. Bermuda grass 'Vaughn's #1'. 8,963, 10-25-94, Cl. 90.000.
Wilson, David A. "Early Rosa" plum tree. 8,955, 10-25-94, Cl. 38.100.
Yoder Brothers, Inc.: *See*—
Polys, Susan M., 8,960, Cl. 82.100.

CLASSIFICATION OF PATENTS

ISSUED OCTOBER 25, 1994

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

16 5,357,633
19 5,357,634
[illegible] 5,357,635
161.7 5,357,636
227 5,357,637
312 5,357,638

CLASS 4

579 5,357,639

CLASS 5

81.1 5,357,640
453 5,357,641
482 Re.34,763
655 5,357,642

CLASS 7

138 5,357,643

CLASS 8

182 5,358,535
471 5,358,536
483 5,358,537
597 5,358,538

CLASS 15

22.1 5,357,644
97.1 5,357,645
111 5,357,646
159.1 5,357,647
302 5,357,648
320 5,357,649
401 5,357,650

CLASS 16

95 R 5,357,651
232 5,357,652

CLASS 24

67.9 5,357,653
68 B 5,357,654
68 R 5,357,655
370 5,357,656
599.9 5,357,657
641 5,357,658
[illegible] 5,357,659
5,357,660

CLASS 26

51 5,357,661

CLASS 29

25.35 5,357,662
34 A 5,357,663
81.08 5,357,664
243.521 5,357,666
243.58 5,357,665
[illegible] 5,357,667
559 5,357,668
566.3 5,357,669
623.2 5,358,539
734 5,357,670
739 5,357,671
[illegible] 5,357,672
[illegible] 5,357,673
843 5,357,674
[illegible] 5,357,675

CLASS 30

28 5,357,676
5,357,677
255 5,357,678
294 5,357,679
298 5,357,680

CLASS 33

27.11 5,357,681
339 5,357,682
528 5,357,683
559 5,357,684

CLASS 34

169 5,357,686
247 5,357,687
369 5,357,688

CLASS 36

3 A 5,357,689
50.1 5,357,690
54 5,357,691
62 5,357,692
71 5,357,693
72 B 5,357,694
115 5,357,695
136 5,357,696
137 5,357,697

CLASS 37

243 5,357,698

CLASS 38

102 5,357,699

CLASS [illegible]

301 5,357,700
618 5,357,701
630 5,357,702

CLASS 42

50 5,357,703
70.11 5,357,704
95 5,357,705

CLASS 43

4 5,357,706
57.2 5,357,707
100 5,357,708
131 5,357,709

CLASS 47

48.5 5,357,710

CLASS 49

42 5,357,711
92.1 5,357,712
276 5,357,713

CLASS 52

11 5,357,719
58 5,357,720
92.2 5,357,721
93.1 5,357,722
167 RS 5,357,723
182 5,357,724
210 5,357,725
309.7 5,357,726
396.06 5,357,727
592.4 5,357,728
653.2 5,357,729
749 5,357,730

CLASS 53

374.4 5,357,731
410 5,357,732
455 5,357,733
579 5,357,734

CLASS 54

9 5,357,735

CLASS 55

227 5,358,540

CLASS 56

12.8 5,357,736
16.4 R 5,357,737
17.5 5,357,738
400.14 5,357,739

CLASS 57

22 5,357,740

CLASS [illegible]

39.05 5,357,741
39.07 5,357,742
39.182 5,357,746
39.23 5,357,743
39.32 5,357,744
39.37 5,357,745
203.1 5,357,747
[illegible] 5,357,748
274 5,357,749
5,357,750
5,357,751
5,357,752
5,357,753
276 5,357,754
[illegible] 5,357,755
313 Re.34,764

CLASS [illegible]

3.1 5,357,756
6 5,357,757
45.1 5,357,758
51.2 5,357,759
55.5 5,357,760
[illegible] 5,357,761
[illegible] 5,357,762
77 5,357,763
93 5,357,764
187 5,357,765
197 5,357,766
256 5,357,767
292 5,357,768
441 5,357,769

CLASS 63

29.1 5,357,770

CLASS 65

29.17 5,358,541
265 5,358,542
319 5,358,543

CLASS 68

18 C 5,357,771
210 5,357,772

CLASS 72

10 5,357,773
62 5,357,774
254 5,357,775
275 5,357,776
305 5,357,777
306 5,357,778
347 5,357,779
444 5,357,780

CLASS 73

19.1 5,357,781
40.7 5,357,782
54.14 5,357,784
54.32 5,357,785
54.33 5,357,783
[illegible] 5,357,786
105 5,357,787
117.3 5,357,788
5,357,789
118.1 5,357,790
119 A 5,357,791
121 5,357,792
146 5,357,793
5,357,799
152 5,357,797
167 5,357,796
170.12 5,357,795
[illegible] 5,357,794
202 5,357,793
290 V 5,357,801
382 G 5,357,802
517 B 5,357,803
705 5,357,804
715 5,357,805
718 5,357,806
721 5,357,807
5,357,808
861.02 5,357,809
861.28 5,357,810
[illegible] 5,357,811
862.451 5,357,812
865.7 5,357,813
865.9 5,357,814
866.3 5,357,815

CLASS 74

2 5,357,816
5.34 5,357,817
[illegible] 5,357,818
89 5,357,819
335 5,357,820
5,357,821
473 P 5,357,823
473 R 5,357,822
479 BP 5,357,824
479 P 5,357,825
551.3 5,357,826
[illegible] 5,357,827

CLASS 75

10.3 5,358,544
236 5,358,545
252 5,358,546
254 5,358,547
381 5,358,548
414 5,358,549
533 5,358,550
[illegible] 5,358,551

CLASS [illegible]

57.39 5,357,828
418 5,357,829

CLASS 83

13 5,357,830
347 5,357,831
423 5,357,832
458 5,357,833
471.3 5,357,834
698.31 5,357,835
5,357,836

CLASS 84

313 5,359,144
383 R 5,357,837
413 5,357,838
602 5,359,145
624 5,359,146

CLASS 87

1 5,357,839

CLASS 89

1.1 5,357,840
1.701 5,357,841
14.3 5,357,842

CLASS 91

172 5,357,844
375 A 5,357,845
491 5,357,843

CLASS 92

[illegible] 5,357,846
128 5,357,847

CLASS 95

45 5,358,556
[illegible] 5,358,557
281 5,358,552

CLASS 96

11 5,358,553

CLASS 99

279 5,357,848
340 5,357,849
422 5,357,850
453 5,357,852
538 5,357,853

CLASS D27

162 B1 8,265,595

CLASS 100

38 5,357,854
48 5,357,855

CLASS 101

120 5,357,856
5,357,857
216 5,357,858
228 5,357,859
248 5,357,860
327 5,357,861
348 5,357,862
389.1 5,357,863
483 5,357,864

CLASS 102

361 5,357,865
509 5,357,866

CLASS 104

2 5,357,867

CLASS [illegible]

180 5,357,868
436 5,357,869

CLASS 106

2 5,358,554
20 R 5,358,555
22 R 5,358,558
213 5,358,559
487 5,358,562
499 5,358,560
[illegible] 5,358,563
5,358,564
634 5,358,565
[illegible] 5,358,561
823 5,358,566

CLASS [illegible]

2 5,357,870
27 5,357,871
35 5,357,872
50 5,357,873
51.3 5,357,874
5,357,875
92 5,357,876

CLASS 110

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185 5,357,878
[illegible] 5,357,879
238 5,357,880
346 5,357,881

CLASS 111

111 5,357,882
118 5,357,883
186 5,357,884

CLASS 112

36 5,357,885
80.4 5,357,886
121.15 5,357,887

CLASS 114

[illegible] 5,357,888
144 E 5,357,889
219 5,357,890
242 5,357,891
244 5,357,892
245 5,357,893
272 5,357,894
343 5,357,895
344 5,357,896

CLASS 116

[illegible] 5,357,897

CLASS 117

3 5,357,898
4 5,357,899
99 5,358,596

CLASS 118

114 5,358,567
323 5,358,568
324 5,358,569
404 5,358,570
653 5,359,147
724 5,359,148

CLASS 119

19 5,357,900
28.5 5,357,901
157 5,357,902
246 5,357,903
[illegible] 5,357,904
5,357,905

CLASS 122

32 5,357,906
406.1 5,357,907

CLASS 123

3 5,357,908
41.54 5,357,909
41.74 5,357,910
B1 5,113,807

CLASS 124

44 B 5,357,911
79 C 5,357,914
90.16 5,357,915
5,357,916
[illegible] 5,357,917
90.67 5,357,918
184.34 5,357,913
193.2 5,357,919
5,357,921
193.6 5,357,920
195 H 5,357,922
[illegible] 5,357,923
276 5,357,924
[illegible] 5,357,925
321 5,357,926
357 5,357,912
421 5,357,927
424 5,357,928
[illegible] 5,357,929
[illegible] 5,357,930
456 5,357,931
488 5,357,932
[illegible] 5,357,933
[illegible] 5,357,944
520 5,357,934
527 5,357,935
571 5,357,936
[illegible] 5,357,937
685 5,357,938

CLASS 124

35.2 5,357,939

CLASS 126

41 R 5,357,940
211 5,357,942
214 D 5,357,943
531 5,357,941

CLASS 127

2 5,358,571

CLASS 128

200.14 5,357,945
200.24 5,357,946
201.13 5,357,947
204.17 5,357,948
204.29 5,357,949
205.24 5,357,950
5,357,951
207.17 5,357,952
633 5,357,953
5,357,960
634 5,357,954
5,357,955
642 5,357,956
[illegible] 5,357,957
653.2 5,357,958
5,357,959
658 5,357,961
660.07 5,357,962
660.1 5,357,963
[illegible] 5,357,965
661.09 5,357,964
691 5,357,967
696 5,357,968
5,357,969
706 5,357,970
719 5,357,971
725 5,357,972
5,357,975
731 5,357,976
733 5,357,973
754 5,357,974
758 5,357,977
772 5,357,978
5,357,979
837 5,357,980
[illegible] 5,357,981
869 5,357,982
898 5,357,983

CLASS 131

[illegible] 5,357,984

CLASS 132

200 5,357,985
[illegible] 5,357,986
218 5,357,987
232 5,357,988
321 5,357,989
5,357,990

CLASS 134

[illegible] 5,358,572
[illegible] 5,358,573
102.1 5,357,991
107 5,357,992
111 5,357,993

CLASS 135

22 5,357,994

CLASS [illegible]

249 5,358,574

CLASS 137

8 5,357,995
12 5,357,996
15 5,357,997
68.1 5,357,998
81.2 5,357,999
124 5,358,000
223 5,358,001
363 5,358,002
[illegible] 5,358,003
505.18 5,358,004
[illegible] 5,358,005
615 5,358,006
5,358,007
625.33 5,358,008
[illegible] 5,358,009

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CLASS 138
94 5,358,010
103 5,358,011
109 5,358,012
5,358,013

CLASS 139
383 A 5,358,014
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CLASS 140
92.1 5,358,016
105 5,358,017

CLASS 144
1 A 5,358,018

CLASS 148
287 5,358,575
306 5,358,576
325 5,358,577
328 5,358,578
421 5,358,584
514 5,358,585
671 5,358,586

CLASS 149
18 5,358,587

CLASS 150
147 5,358,019

CLASS 152
209 A 5,358,021
209 R 5,358,020
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CLASS 156
49 5,358,588
73.1 5,358,579
143 5,358,580
157 5,358,581
160 Re.34,765
235 5,358,582
247 5,358,590
294 5,358,589
326 Re.34,766
344 5,358,591
361 5,358,592
378 5,358,593
433 5,358,594
571 5,358,595
625 5,358,597
634 5,358,598
643 5,358,599
644 5,358,600
656 5,358,601
5,358,602
657 5,358,603
664 5,358,604

CLASS 160
199 5,358,023
236 5,358,024
368.1 5,358,025

CLASS 162
4 5,358,605
49 5,358,606
100 5,358,607

CLASS 164
98 5,358,026
256 5,358,027
478 5,358,028
516 5,358,029

CLASS 165
1 5,358,030
9.1 5,358,031
80.3 5,358,032
104.26 5,358,033
153 5,358,034

CLASS 166
53 5,358,035
68.5 5,358,036
105 5,358,037
5,358,038
241.1 5,358,039
241.3 5,358,040
241.4 5,358,041
241.6 5,358,042
270 5,358,043
273 5,358,045
275 5,358,046
280 5,358,047
285 5,358,048
293 5,358,044
5,358,049
294 5,358,050
295 5,358,051
307 5,358,052
321 5,358,053
386 5,358,054

CLASS 172
470 5,358,055
634 5,358,056

CLASS 174
48 5,359,151
53 5,359,152
101 5,359,143
117 F 5,359,150

CLASS 175
20 5,358,057
24 5,358,058
45 5,358,059
108 5,358,060
371 5,358,061
394 5,358,062
417 5,358,063

CLASS 177
145 5,359,154
176 5,359,153

CLASS 178
18 5,359,155
19 5,359,156

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9.5 5,358,064
209 5,358,065
380 5,358,066

CLASS 181
129 5,359,157
150 5,359,158
230 5,359,159

CLASS 182
91 5,358,067
113 5,358,068
118 5,358,069
173 5,358,070
214 5,358,071

CLASS 184
3.2 5,358,072

CLASS 185
43 5,358,073

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1.11 5,358,075
5,358,076
71.6 5,358,077
72.4 5,358,078
73.38 5,358,079
218 XL 5,358,080
291 5,358,081

CLASS 190
21 5,358,082
123 5,358,083

CLASS 192
21.5 5,358,084
70.25 5,358,085
107 R 5,358,086
143 5,358,087

CLASS 194
206 5,358,088

CLASS 198
333 5,358,089
350 5,359,160
370 5,358,090
399 5,358,091
415 5,358,092
418.7 5,358,093
502.1 5,358,094
698 5,358,095
778 5,358,096
781 5,358,097
806 5,358,098

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5 A 5,359,166
48 R 5,359,167
61.08 5,359,168
144 C 5,359,174
226 5,359,162
249 5,359,163
315 5,359,164
317 5,359,165
746 R 5,359,161

CLASS 203
57 5,358,608

CLASS 204
84 5,358,609
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157.093 5,358,611
180.1 5,358,612
5,358,613
186 5,358,614
192.15 5,358,615
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248 5,358,617
299 R 5,358,618
403 5,358,619
421 5,358,620

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125 5,358,622
201 5,358,623

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45.16 5,358,101
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205 5,358,103
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278 5,358,106
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315.3 5,358,109
316.2 5,358,110
361 5,358,107
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366 5,358,111
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139.1 5,358,122
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207 5,358,636
415 5,358,637
448 5,358,638
635 5,358,639
639 5,358,640
656 5,358,641
700 5,358,642
709 5,358,643
744 5,358,644
761 5,358,645
762 5,358,646

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46 5,358,125
5,358,126
5,358,127
60.1 5,358,128
75 5,358,129

CLASS 215
206 5,358,130
238 5,358,131
252 5,358,219

CLASS 219
69.18 5,359,169
85.18 5,359,170
93 5,359,171
121.43 5,359,177
121.54 5,359,180
121.64 5,359,172
121.69 5,359,173
121.82 5,359,175
121.84 5,359,176
216 5,359,178
486 5,359,179
535 5,359,179

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304 5,358,133
307 5,358,134
337 5,358,135
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403 5,358,138
669 5,358,139

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185 5,358,141

CLASS 222
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5,358,143
78 5,358,144
137 5,358,145
148 5,358,146
183 5,358,147
215 5,358,148
321 5,358,149
401 5,358,150
420 5,358,151
442 5,358,152
505 5,358,153
536 5,358,154

CLASS 223
28 5,358,155

CLASS 224
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162 5,358,158
206 5,358,159
244 5,358,160
252 5,358,161
316 5,358,162

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97 5,358,163
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CLASS 228
4.1 5,358,165
42 5,358,166
5,358,167
132 5,358,168
180.1 5,358,169

CLASS 229
87.02 5,358,170
87.05 5,358,171
103 5,358,172
110 5,358,173
5,358,174
117.14 5,358,175
240 5,358,176

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380 5,359,182
454 5,359,184
472 5,359,185
493 5,359,183

CLASS 236
12.12 5,358,177

CLASS 237
12.3 A 5,358,178

CLASS 239
333 5,358,179
391 5,358,180
409 5,358,181
703 5,358,182

CLASS 241
3 5,358,187
5 5,358,183
16 5,358,184
18 5,358,185
24 5,358,186
40 5,358,188
92 5,358,189

CLASS 242
246 5,358,196
261 5,358,197
338.3 5,358,194
342 5,358,193
343.1 5,358,195
348.4 5,358,198
384.5 5,358,192
388 5,358,190
556 5,358,191

CLASS 244
1 R 5,358,199
15 5,358,156
96 5,358,200
108 5,358,201

CLASS 246
34 R 5,358,202

CLASS 248
118 5,358,203
164 5,358,204
225.31 5,358,205
250 5,358,206
430 5,358,207
441.1 5,358,208
545 5,358,209
628 5,358,210

CLASS 249
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142 5,358,214

CLASS 250
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214 VT 5,359,187
5,359,188
216 5,359,189
5,359,190
221 5,359,191
227.23 5,359,192
237 G 5,359,193
255 5,359,194
269.1 5,359,195
288 5,359,196
310 5,359,197
363.07 5,359,198
475.2 5,359,200
492.1 5,359,201
492.2 5,359,202
561 5,359,203

CLASS 251
121 5,358,212
129.03 5,358,213
129.21 5,358,215
295 5,358,216

CLASS 252
8.6 5,358,647
5,358,648
45 5,358,650
51.5 A 5,358,651
51.5 R 5,358,652
62.2 5,358,658
62.54 5,358,659
62.63 5,358,660
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95 5,358,654
5,358,655
174.12 5,358,656
183.13 5,358,657
299.01 5,358,661
299.63 5,358,662
299.660 5,358,663
315.4 5,358,664
492.3 5,359,199
500 5,358,665
512 5,358,666
547 5,358,667
584 5,358,668
587 5,358,669

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134.4 5,358,218
269 5,358,219

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25 5,358,220

CLASS 257
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3 5,359,205
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82 5,359,208
94 5,359,209
109 5,359,210
173 5,359,211
211 5,359,212
223 5,359,213
287 5,359,214
296 5,359,215
306 5,359,216
5,359,217
321 5,359,218
351 5,359,219
378 5,359,220
408 5,359,221
659 5,359,222
666 5,359,223
5,359,224
671 5,359,225
773 5,359,226
784 5,359,227

CLASS 260
665 G 5,358,670

CLASS 261
87 5,358,671

CLASS 264
1.38 5,358,672
22 5,358,673
5,358,674
40.1 B1 4,318,874
50 5,358,675
71 5,358,676
87 5,358,677
127 5,358,678
177.13 5,358,679
177.2 5,358,680
211.23 5,358,681
257 5,358,583
265 5,358,682
515 5,358,683

CLASS 266
51 5,358,221
135 5,358,222
138 5,358,223

CLASS 267
33 5,358,224
64.12 5,358,225

CLASS 269
21 5,358,226
68 5,358,227
244 5,358,228

CLASS 271
3 5,358,229
114 5,358,230
176 5,358,231
181 5,358,232
183 5,358,233
225 5,358,234
227 5,358,235
248 5,358,236
298 5,358,238
303 5,358,239

CLASS 273
1.5 R 5,358,237
73 H 5,358,261
81 R Re.34,767
118 R 5,358,240
5,358,241
5,358,242
119 R 5,358,243
121 A 5,358,245
121 D 5,358,243
144 B 5,358,245
148 A 5,358,246
153 J 5,358,248
153 S 5,358,247
173 5,358,249
187.2 5,358,250
195 B 5,358,251
241 5,358,252
344 5,358,253
366 5,358,254
400 5,358,255
401 5,358,256
411 5,358,257
414 5,358,258
434 5,358,259
454 5,358,260

CLASS 276
26 5,358,298

CLASS 277
230 5,358,262

CLASS 280
42 5,358,263
79.11 5,358,264
166 5,358,268
293 5,358,265
304.1 5,358,266
304.3 5,358,267
305 5,358,269
728 A 5,358,270
728 B 5,358,271
738 5,358,272
743 R 5,358,273
801.2 5,358,274
806 5,358,275
5,358,276
813 5,358,277

CLASS 281
31 5,358,278
42 5,358,279

CLASS 283
63.1 5,358,280
81 5,358,281
117 5,358,282

CLASS 285
7 5,358,290
24 5,358,283
47 5,358,284
114 5,358,285
197 5,358,286
227 5,358,287
286 5,358,288
334 5,358,289

CLASS 290
17 5,359,228
53 5,359,229

CLASS 292
175 5,358,291
235 5,358,292
288 5,358,293

CLASS 293
155 5,358,294

CLASS 294
1.3 5,358,295
98.1 5,358,296
99.2 5,358,297

CLASS 296
65.1 5,358,305
97.9 5,358,299
146.1 5,358,301

187 5,358,302
192 5,358,300
194 5,358,304
221 5,358,303

CLASS 297
62 5,358,306
5,358,307
316 5,358,308
440.1 5,358,309
5,358,310

CLASS 300
21 5,358,311
5,358,312

CLASS 301
37.37 5,358,313
111 5,358,314

CLASS 303
15 5,358,315
100 5,358,317
5,358,318
103 5,358,319
116.1 5,358,316
5,358,320

CLASS 307
10.1 5,359,230
125 5,359,231
268 5,359,232
272.3 5,359,233
296.1 5,359,235
310 5,359,234
5,359,236
353 5,359,237
358 5,359,238
451 5,359,239
5,359,240
455 5,359,241
465 5,359,242
475 5,359,243
571 5,359,244

CLASS 310
12 5,359,245
49 R 5,359,246
54 5,359,247
156 5,359,248
216 5,359,249
313 R 5,359,250
323 5,359,251
328 5,359,252
357 5,359,253

CLASS 312
9.55 5,358,321
219 5,358,322
228 5,358,323
233 5,358,324
287 5,358,325
405 5,358,326

CLASS 313
15 5,359,254
17 5,359,255
169 5,359,256
310 5,359,257
359.1 5,359,258
407 5,359,259
5,359,260
509 5,359,261
579 5,359,262

CLASS 315
58 5,359,263
248 5,359,264
367 5,359,265
383 5,359,266
403 5,359,267

CLASS 318
116 5,359,268
432 5,359,269
571 5,359,270
696 5,359,271
732 5,359,272
794 5,359,273

CLASS 323
207 5,359,274
5,359,275
5,359,276
5,359,277
222 5,359,278
282 5,359,279
5,359,280
284 5,359,281

CLASS 324
71.1 5,359,282
72.5 5,359,283
146 5,359,284
158.1 5,359,285
207.2 5,359,286
207.21 5,359,287
207.22 5,359,288
320 5,359,289
384 5,359,290
523 5,359,291
536 5,359,292
544 5,359,293

CLASS 330
258 5,359,294
263 5,359,295
288 5,359,296

CLASS 331
1 A 5,359,297
2 5,359,298
8 5,359,299
17 5,359,300
57 5,359,301
109 5,359,302
176 5,359,303

CLASS 333
116 5,359,304

CLASS 335
78 5,359,305
126 5,359,306
128 5,359,307
216 5,359,308
256 5,359,309
301 5,359,310

CLASS 336
83 5,359,311
84 M 5,359,312
178 5,359,313
192 5,359,314
5,359,315

CLASS 338
21 5,359,316

CLASS 340
311.1 5,359,318
5,359,319
5,359,321
825.31 5,359,322
825.44 5,359,317
825.5 5,359,320
825.54 5,359,323
854.3 5,359,324
953 5,359,325
971 5,359,326

CLASS 341
139 5,359,327
155 5,359,328

CLASS 342
17 5,359,329
26 5,359,330
124 5,359,331
357 5,359,332
378 5,359,333
408 5,359,334

CLASS 343
715 5,359,335
756 5,359,336
765 5,359,337
778 5,359,338
786 5,359,339
792 5,359,340

CLASS 345
45 5,359,341
5,359,342
5,359,343
5,359,344
102 5,359,345
107 5,359,346
145 5,359,347
158 5,359,348
168 5,359,349

CLASS 346
76 PH 5,359,351
143 5,359,359
159 5,359,361

CLASS 347
9 5,359,355
5,359,358
10 5,359,350
49 5,359,357
62 5,359,352
69 5,359,354
86 5,359,353
5,359,356

CLASS 348
5,359,419
15 5,359,362
5,359,363
343 5,359,364
364 5,359,420
390 5,359,365
536 5,359,366
552 5,359,367
641 5,359,368
672 5,359,369
5,359,421

CLASS 351
41 5,359,370
43 5,359,371
219 5,359,372
5,359,373

CLASS 354
76 5,359,374
131 5,359,375
173.1 5,359,376
222 5,359,377
275 5,359,378
295 5,359,379
400 5,359,380
5,359,381
5,359,382
5,359,383
403 5,359,384
412 5,359,385

CLASS 355
32 5,359,386
40 5,359,387
53 5,359,388
5,359,389
5,359,390
5,359,391
5,359,392
5,359,393
215 5,359,394
219 5,359,395
5,359,396
251 5,359,397
256 5,359,398
259 5,359,399
285 5,359,400
5,359,401
5,359,402

CLASS 356
5,359,403
5,359,404
35.5 5,359,405
236 5,359,406
237 5,359,407
238 5,359,408
334 5,359,409
345 5,359,410
5,359,411
5,359,412
350 5,359,413
5,359,414
358 5,359,415
371 5,359,416
375 5,359,417
387 5,359,418

CLASS 358
5,359,422
5,359,423
5,359,424
300 5,359,425
310 5,359,426
335 5,359,427
5,359,428
439 5,359,429
445 5,359,694
452 5,359,432
455 5,359,430
457 5,359,431
5,359,433
5,359,434
5,359,435
5,359,436
529 5,359,437
539 5,359,438

CLASS 359
41 5,359,440
51 5,359,441
62 5,359,442
76 5,359,439
5,359,444
151 5,359,445
152 5,359,446
154 5,359,447
5,359,448
181 5,359,449
5,359,450
285 5,359,451
5,359,452
435 5,359,453
5,359,454
487 5,359,455
5,359,456
5,359,457
5,359,458
824 5,359,459
855 5,359,460
5,359,461

CLASS 360
10.2 5,359,462
19.1 5,359,463
33.1 5,359,464
35.1 5,359,465
46 5,359,466
5,359,467
48 5,359,468
53 5,359,469
57 5,359,470
5,359,471
72.2 5,359,472
77.14 5,359,473
78.05 5,359,474
85 5,359,475
92 5,359,476
5,359,477
96.6 5,359,478
103 5,359,479
5,359,480
5,359,481
121 5,359,485
123 5,359,482
133 5,359,483
137 5,359,484
5,359,504

CLASS 361
3 5,359,486
5,359,490
5,359,491
301.5 5,359,487
683 5,359,492
707 5,359,488
719 5,359,493
732 5,359,489
760 5,359,494
5,359,495
795 5,359,496
5,359,497

CLASS 362
19 5,359,498
5,359,499
83.3 5,359,500
5,359,501
123 5,359,502
127 5,359,503
5,359,505
5,359,506

CLASS 364
140 5,359,507
5,359,520
401 5,359,508
5,359,509
410 5,359,510
413.01 5,359,512
413.23 5,359,513
413.28 5,359,511
419.11 5,359,514
424.04 5,359,528
424.05 5,359,515
424.07 5,359,516
5,359,517
431.03 5,359,518
431.05 5,359,519
443 5,359,526
449 5,359,521
5,359,527
5,359,529
461 5,359,542
5,359,522
5,359,523
5,359,524
5,359,525
474.26 5,359,530
476 5,359,531
5,359,532
484 5,359,533
489 5,359,534
5,359,535
5,359,536
5,359,537
5,359,539
5,359,538
5,359,540
497 5,359,541
550 5,359,543
5,359,544
578 5,359,545
579 5,359,546
5,359,547
708.1 5,359,550
718 5,359,551
725 5,359,549
5,359,548

CLASS 365
49 5,359,564
105 5,359,565
149 5,359,566
154 5,359,562
5,359,554
5,359,555
5,359,573
189.02 5,359,556
189.04 5,359,557
189.07 5,359,558
189.09 5,359,552
189.11 5,359,553
200 5,359,559
5,359,560
5,359,563
5,359,561
207 5,359,567
221 5,359,568
229 5,359,569
230.01 5,359,570
230.03 5,359,571
5,359,572

CLASS 366
5,358,328
79 5,358,327
97 5,358,329
130 5,358,330
181 5,358,331
286 5,358,332

CLASS 367
1 5,359,574
127 5,359,575
197 5,359,576

CLASS 368
67 5,359,577
76 5,359,578

CLASS 369
13 5,359,579
32 5,359,580
44.28 5,359,581
47 5,359,582
5,359,583
58 5,359,584
59 5,359,585
5,359,586
75.1 5,359,587
110 5,359,588
116 5,359,589
263 5,359,590
275.4 5,359,591

CLASS 370
17 5,359,592
5,359,593
24 5,359,594
50 5,359,595
54 5,359,596
5,359,597
58.1 5,359,598
58.3 5,359,599
60.1 5,359,600
73 5,359,601
85.8 5,359,602
94.1 5,359,603
100.1 5,359,604
102 5,359,605

CLASS 371
5.5 5,359,607
5,359,606
16.5 5,359,608
20.1 5,359,609
38.1 5,359,610
404 5,359,611

CLASS 372
5,359,612
80 5,359,613
35 5,359,614
39 5,359,615
5,359,616
45 5,359,617
5,359,618
5,359,619
5,359,620
82 5,359,621
108 5,359,622

CLASS 374
7 5,358,333

CLASS 375
1 5,359,624
5,359,625
7 5,359,626
34 5,359,627
94 5,359,628
116 5,359,630
120 5,359,631

CLASS 376
5,359,632
261 5,359,633
428 5,359,634

CLASS 377
39 5,359,635
73 5,359,636

CLASS 378
2 5,359,637
4 5,359,638
5,359,639
79 5,359,640

CLASS 379
27 5,359,646
5,359,647
93 5,359,645
5,359,648
5,359,644
5,359,641
121 5,359,642
143 5,359,643
220 5,359,649
342 5,359,650
354 5,359,651
386 5,359,652
390 5,359,653
397 5,359,654
401 5,359,655
410 5,359,656
412 5,359,657
447 5,359,658

CLASS 380
4 5,359,659
25 5,359,660

CLASS 381
15 5,359,661
71 5,359,662
5,359,663
5,359,664
102 5,359,665

CLASS 382
1 5,359,666
6 5,359,669
7 5,359,667
5,359,668
5,359,670
15 5,359,671
5,359,672
41 5,359,673
45 5,359,674
5,359,675
5,359,676
5,359,677

CLASS 383
63 5,358,334
107 5,358,335

CLASS 384
15 5,358,336
41 5,358,337
45 5,358,338
107 5,358,339
125 5,358,340
204 5,358,341
213 5,358,342

CLASS 385
1 5,359,678
5,359,679
9 5,359,680
12 5,359,681
14 5,359,682
22 5,359,683
33 5,359,684
35 5,359,685
49 5,359,686
5,359,687
70 5,359,688
73 5,359,689
134 5,359,690
5,359,691

CLASS 392
327 5,359,692
418 5,359,693

CLASS 395
2.1 5,359,698
2.32 5,359,696
2.44 5,359,695
5,359,697
22 5,359,699
24 5,359,700
62 5,359,701
5,359,702
119 5,359,703
122 5,359,704
131 5,359,705
137 5,359,706
145 5,359,707
5,359,708
155 5,359,710
161 5,359,711
5,359,712
200 5,359,709
5,359,713
275 5,359,714
325 5,359,715
5,359,716
5,359,717
375 5,359,718
400 5,359,719

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5,359,720
425 5,359,721
5,359,722
5,359,723
5,359,724
500 5,359,725
5,359,726
550 5,359,727
575 5,359,728
600 5,359,729
650 5,359,730

CLASS 400

485 5,358,343
490 5,358,344
605 5,358,351
613.2 5,358,345
619 5,358,346

CLASS 401

48 5,358,347
131 5,358,348
184 5,358,349

CLASS 403

12 5,358,350
104 5,358,352
196 5,358,353
326 5,358,354

CLASS 404

121 5,358,355

CLASS 407

16 5,358,356
128 5,358,357
154 5,358,358
5,358,359

CLASS 408

61 5,358,360
67 5,358,361
139 5,358,362
153 5,358,363

CLASS 409

131 5,358,364

CLASS 411

311 5,358,366
397 5,358,367
410 5,358,368

CLASS 413

27 5,358,369

CLASS 414

24.6 5,358,370
277 5,358,375
412 5,358,376
745.5 5,358,371
778 5,358,372

CLASS 415

47 5,358,374
90 5,358,373
165 5,358,377
170.1 5,358,378
191 5,358,379
200 5,358,380

CLASS 416

134 A 5,358,381
169 A 5,358,382

CLASS 417

44.8 5,358,385
260 5,358,389
269 5,358,388
295 5,358,387
312 5,358,386
555.2 5,358,384
569 5,358,383

CLASS 418

48 5,358,390
55.1 5,358,391
55.6 5,358,392
168 5,358,393

CLASS 419

10 5,358,684
19 5,358,685

CLASS 420

419 5,358,686
590 5,358,687

CLASS 422

28 5,358,688
46 5,358,689
58 5,358,690
64 5,358,691
104 5,358,692
137 5,358,693
184 5,358,697
218 5,358,698

CLASS 423

22 5,358,699
5,358,700
242.1 5,358,701
462 5,358,694
592 5,358,695
650 5,358,696

CLASS 424

1.65 5,358,712
9 5,358,702
5,358,703
5,358,704
54 5,358,705
78.04 5,358,706
85.1 5,358,707
5,358,708
85.2 5,358,709
93.7 5,358,711
178.1 5,358,710
195.1 5,358,713
5,358,714
5,358,715
5,358,716
5,358,752
5,358,717
5,358,718
473 5,358,721
485 5,358,723
5,358,722
497 5,358,719
639 5,358,720

CLASS 425

2 5,358,394
4 R 5,358,395
116 5,358,396
145 5,358,397
186 5,358,398
311 5,358,399

CLASS 426

79 5,358,724
238 5,358,725
242 5,358,726
512 5,358,727
565 5,358,728
567 5,358,729
573 5,358,730
574 5,358,731
592 5,358,732

CLASS 427

58 5,358,733
71 5,358,734
115 5,358,735
124 5,358,736
177 5,358,737
220 5,358,738
226 5,358,739
240 5,358,740
249 5,358,741
276 5,358,742
282 5,358,743
320 5,358,744
333 5,358,745
376.2 5,358,746
387 5,358,747
389.8 5,358,748
397.7 5,358,749
412 5,358,750
421 5,358,751
451 5,358,753
577 5,358,754
5,358,755

CLASS 428

12 5,358,762
16 5,358,763
31 5,358,764
34.8 5,358,765
5,358,784
5,358,756
43 5,358,757
53 5,358,758
5,358,759
70 5,358,760
77 5,358,761
5,358,766
5,358,767
95 5,358,768
96 5,358,769
5,358,770
131 5,358,771
148 5,358,772
167 5,358,773
209 5,358,774
5,358,775
212 5,358,777
5,358,778
268 5,358,779
284 5,358,780
285 5,358,781
304.4 5,358,776
323 5,358,782
344 5,358,783
349 5,358,785
380 5,358,786
432 5,358,787
5,358,788
5,358,789
5,358,790
516 5,358,791
5,358,792
5,358,793
5,358,794
614 5,358,795
660 5,358,796
698 5,358,797

CLASS 429

7 5,358,798
26 5,358,799
59 5,358,800
101 5,358,803
167 5,358,804
215 5,358,801
218 5,358,802
5,358,805

CLASS 430

5 5,358,806
5,358,807
5,358,808
5,358,809
20 5,358,810
42 5,358,811
58 5,358,812
59 5,358,813
106.6 5,358,814
5,358,815
5,358,816
5,358,817
5,358,818
5,358,819
126 5,358,820
137 5,358,821
5,358,822
165 5,358,823
192 5,358,824
271 5,358,825
312 5,358,826
313 5,358,827
385 5,358,828
386 5,358,829
399 5,358,830
449 5,358,831
459 5,358,832
495 5,358,833
535 5,358,834
548 5,358,835
5,358,836
5,358,837
5,358,838
567 5,358,839
5,358,840
569 5,358,841
5,358,842
619 5,358,843

CLASS 431

1 5,358,400
277 5,358,401

CLASS 433

8 5,358,402
136 5,358,403
164 5,358,404
215 5,358,405
226 5,358,406

CLASS 434

5,358,407
262 5,358,408

CLASS 435

5,358,844
5 5,358,845
5,358,649
5,358,846
5,358,847
7.4 5,358,849
5,358,850
7.93 5,358,851
7.94 5,358,852
13 5,358,853
14 5,358,854
26 5,358,855
69.1 5,358,856
69.7 5,358,857
71.1 5,358,858
105 5,358,859
123 5,358,860
147 5,358,861
172.3 5,358,862
178 5,358,863
5,358,864
221 5,358,865
240.2 5,358,866
5,358,867
243 5,358,868
282 5,358,869
5,358,870
284 5,358,871
5,358,872

CLASS 436

56 5,358,873
116 5,358,874
124 5,358,875
136 5,358,876

CLASS 437

22 5,358,877
23 5,358,880
26 5,358,881
31 5,358,882
32 5,358,883
39 5,358,885
5,358,878
5,358,879
48 5,358,887
49 5,358,886
52 5,358,888
5,358,889
5,358,890
67 5,358,891
70 5,358,892
5,358,893
5,358,894
5,358,895
5,358,896
129 5,358,897
5,358,898
5,358,899
5,358,900
187 5,358,901
192 5,358,902
5,358,903
5,358,904
5,358,905
217 5,358,906
228 5,358,908
5,358,909
5,358,907
230 5,358,884
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CLASS 441

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CLASS 451

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